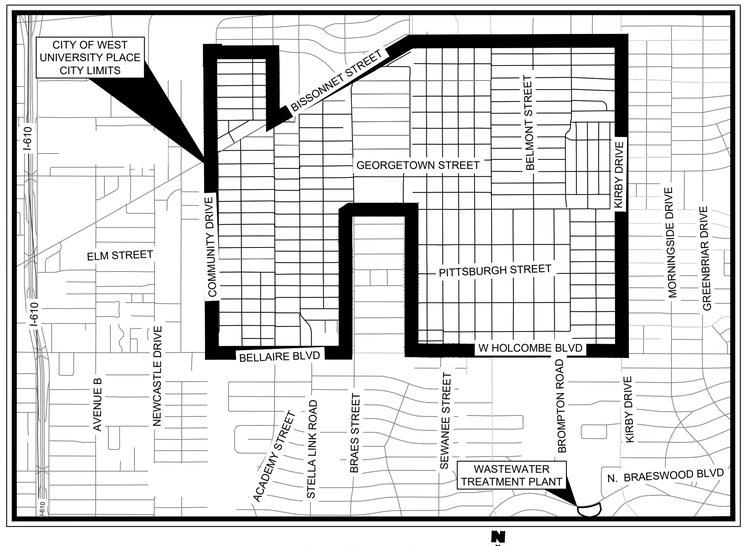
CITY OF WEST UNIVERSITY PLACE, TEXAS

WASTEWATER TREATMENT PLANT IMPROVEMENTS

SEPTEMBER 2022

PROJECT # PW21WWTPMP



VICINITY MAP

1" = 1700'

N

City of West University Place

MAYOR

SUSAN SAMPLE

COUNCIL

COUNCIL MEMBER	JOHN MONTGOMERY
COUNCIL MEMBER	JOHN P. BARNES
COUNCIL MEMBER	MELANIE BELL
COUNCIL MEMBER	SHANNON CARROLL

CITY MANAGER

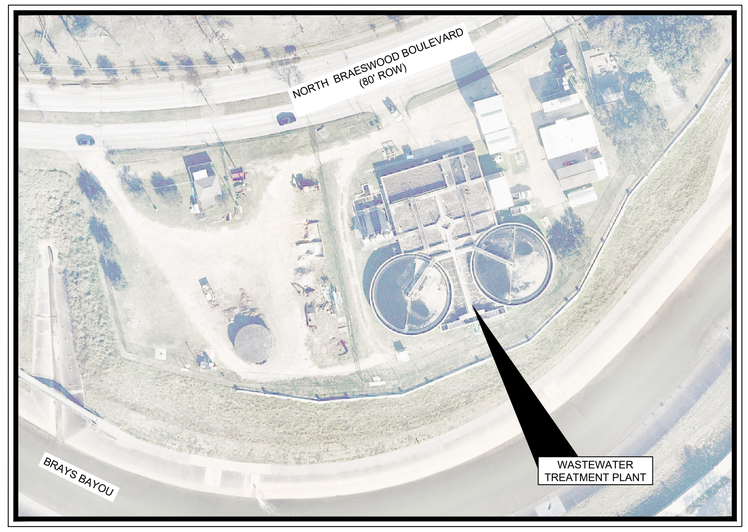
DAVID BEACH

PUBLIC WORKS DIRECTOR

GERARDO BARRERA

WWTP SUPERVISOR

MARK WAHLSTORM



PROJECT LOCATION

1" = 70'

N

PROJECT ADDRESS
2801 N BRAESWOOD BLVD,
HOUSTON, TX 77025

TPDES PERMIT: WQ0010058001

60% SUBMITTAL

PREPARED BY:

Kimley»Horn

11700 KATY FREEWAY, SUITE 800
HOUSTON, TEXAS 77079
CERTIFICATE OF AUTHORIZATION F-928
CONTACT: MICHAEL MORIARTY, P.E.

TEL. NO. (281) 597-9300

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

INDEX

GENERAL

G-100 COVER
G-101 SHEET INDEX
G-102 GENERAL NOTES (1 OF 2)
G-103 GENERAL NOTES (1 OF 2)
G-104 SERVICE AREA MAP
G-105 EXISTING PROCESS FLOW DIAGRAM
G-106 PROPOSED PROCESS FLOW DIAGRAM
G-107 EQUIPMENT SCHEDULE
G-108 EXISTING HYDRAULIC PROFILE
G-109 PROPOSED HYDRAULIC PROFILE
G-110 SURVEY CONTROL

CIVIL

C-100 EXISTING OVERALL SITE LAYOUT
C-101 EXISTING YARD PIPING
C-200 DEMOLITION PLAN KEY MAP
C-300 PROPOSED SITE PLAN
C-301 PROPOSED YARD PIPING
C-302 PROPOSED YARD PIPING PLAN & PROFILES
C-400 PHASING PLAN (1 OF 2)
C-401 PHASING PLAN (2 OF 2)

MECHANICAL

M-100 LIFT STATION AND HEADWORKS DEMOLITION PLAN
M-101 LIFT STATION PLAN, SECTIONS, AND 3D VIEW
M-200 HEADWORKS PLAN AND SECTIONS
M-201 HEADWORKS SECTIONS AND 3D VIEW
M-300 AERATION BASIN DEMOLITION PLAN
M-301 DIGESTER BASIN DEMOLITION PLAN
M-302 BLOWER PAD DEMOLITION PLAN
M-303 GRAVITY THICKENER DEMOLITION PLAN
M-304 AIR PIPING PLAN 1
M-305 AIR PIPING PLAN 2
M-400 CHLORINATION DEMOLITION PLAN
M-401 DISINFECTION PLAN, SECTION, AND 3D VIEW
M-500 SLUDGE PUMPS DEMOLITION PLAN
M-600 NPW SYSTEM DEMOLITION PLAN

ELECTRICAL

E-001 SYMBOLS, ABBREVIATIONS AND NOTES
E-002 EXISTING OVERALL SITE PLAN
E-003 OVERALL PROPOSED SITE PLAN
E-004 PROPOSED ENLARGED SITE PLAN (SHEET 1 OF 4)
E-005 PROPOSED ENLARGED SITE PLAN (SHEET 2 OF 4)
E-006 PROPOSED ENLARGED SITE PLAN (SHEET 3 OF 4)
E-007 PROPOSED ENLARGED SITE PLAN (SHEET 4 OF 4)
E-008 ELECTRICAL SERVICE AREA PLAN
E-009 OVERALL FIXTURE SCHEDULE AND CONTROL DIAGRAM
E-010 ONE-LINE DIAGRAM EXISTING SERVICE
E-011 ONE-LINE DIAGRAM PROPOSED SERVICE
E-012 ONE-LINE DIAGRAM MCC-CB
E-013 PROPOSED SERVICE LOAD ANALYSIS
E-014 DETAIL SHEET I
E-015 DETAIL SHEET II
E-016 DETAIL SHEET III
E-017 DETAIL SHEET IV
E-018 DETAIL SHEET V
E-019 DETAILS SHEET VI
E-020 SITE SECURITY AND LIGHTING
E-100 LIFT STATION AREA PLAN
E-101 LIFT STATION SECTION
E-200 HEADWORKS SITE PLAN AND SECTION
E-300 AERATION BASIN AREA PLAN
E-301 CLARIFIER AND CHLORINE CONTACT AREA PLAN
E-400 BLOWER PAD AREA PLAN
E-500 DISINFECTION AREA PLAN
E-700 DEWATERING FACILITY PLAN AND SECTION
E-800 DIGESTER AREA PLAN
E-900 CONTROL BUILDING ELEVATION
E-901 CONTROL BUILDING AREA PLAN
E-902 CONTROL BUILDING LOWER LIGHTING AND POWER PLAN
E-903 CONTROL BUILDING UPPER LEVEL AREA LIGHTING PLAN
E-904 CONTROL BUILDING UPPER LEVEL AREA POWER PLAN
E-905 CONTROL BUILDING UPPER LEVEL LOW VOLTAGE CONDUIT PLAN
E-906 CONTROL BUILDING ELECTRICAL ROOM
E-907 PANEL BOARD SCHEDULE - I
E-908 PANEL BOARD SCHEDULE - II
E-909 ONE LINE DIAGRAM MCC-OPB
E-910 CONDUIT AND CONDUCTOR SCHEDULE SHEET 2
E-911 CONDUIT AND CONDUCTOR SCHEDULE SHEET 3

INSRUMENTATION

I-001 SYMBOLS AND ABBREVIATIONS SHEET 1 OF 2
I-002 SYMBOLS AND ABBREVIATIONS SHEET 2 OF 2
I-003 LIFT STATION P&ID
I-004 HEADWORKS P&ID
I-005 GRIT SYSTEM P&ID
I-006 AERATION BASIN P&ID
I-007 CLARIFIER NO.1 AND NEW SCUM PUMP STATION P&ID
I-008 CLARIFIER NO.2 AND NEW SCUM PUMP STATION P&ID
I-009 RAS/WAS PUMP STATION P&ID
I-010 RAS/WAS PUMP STATION P&ID
I-011 CHLORINE CONTACT BASIN P&ID
I-012 NPW SYSTEM P&ID
I-013 DIGESTER P&ID
I-014 AERATION BLOWER-1 P&ID
I-015 AERATION BLOWER-2 P&ID
I-016 AERATION BLOWER-3 P&ID
I-017 AERATION BLOWER-4 P&ID
I-018 NEW SODIUM HYPOCHLORITE P&ID
I-019 NEW SODIUM BISULFITE P&ID
I-020 OVERALL PROPOSED SCADA NETWORK DIAGRAM
I-021 DETAILS I
I-022 DETAILS II
I-023 DETAILS III
I-024 DETAILS IV

STRUCTURAL

S-001 STRUCTURAL NOTES I
S-002 STRUCTURAL NOTES II
S-003 STRUCTURAL NOTES III
S-004 SPECIAL INSPECTIONS I
S-005 SPECIAL INSPECTIONS II
S-006 PROJECT SYMBOLS & ABBREVIATIONS
S-007 OVERALL EXISTING & DEMOLITION SITE PLAN
S-008 STRUCTURAL SITE PLAN
S-009 DEWATERING FACILITY REHABILITATION PLANS
S-010 DEWATERING FACILITY REHABILITATION ELEVATION AND DETAILS I
S-011 DEWATERING FACILITY REHABILITATON ELEVATION AND DETAILS II
S-012 TYPICAL STRUCTURAL DETAILS I
S-013 TYPICAL STRUCTURAL DETAILS II
S-014 TYPICAL STRUCTURAL DETAILS III
S-015 TYPICAL STRUCTURAL DETAILS IV
S-016 TYPICAL STRUCTURAL DETAILS V
S-017 TYPICAL STRUCTURAL DETAILS VI
S-018 TYPICAL STRUCTURAL DETAILS VII
S-019 TYPICAL STRUCTURAL DETAILS VIII
S-020 TYPICAL STRUCTURAL DETAILS IX
S-021 TYPICAL STRUCTURAL DETAILS X
S-022 TYPICAL STRUCTURAL DETAILS XI
S-100 LIFT STATION - FOUNDATION
S-101 LIFT STATION UPPER PLAN
S-102 LIFT STATION OVERALL SECTION I
S-103 LIFT STATION OVERALL SECTION II
S-104 LIFT STATION SECTIONS AND DETAILS I
S-201 HEADWORKS DEMOLITION PLAN
S-202 HEADWORKS DEMOLITION UPPER PLAN
S-203 HEADWORKS DEMOLITION OVERALL SECTIONS
S-204 HEADWORKS DEMOLITION SECTIONS AND DETAILS I
S-205 HEADWORKS DEMOLITION SECTIONS AND DETAILS II
S-206 HEADWORKS FOUNDATION PLAN
S-207 HEADWORKS INTERMEDIATE PLAN
S-208 HEADWORKS UPPER PLAN
S-209 HEADWORKS OVERALL SECTION I
S-210 HEADWORKS OVERALL SECTION II
S-301 AERATION BASIN UPPER PLAN
S-302 AERATION BASIN SECTIONS AND DETAILS I
S-303 AERATION BASIN SECTIONS AND DETAILS II
S-401 BLOWER PAD FOUNDATION PLAN
S-402 BLOWER PAD OVERALL SECTIONS
S-501 DISINFECTION UPPER PLAN
S-502 DISINFECTION SECTIONS AND DETAILS I
S-701 CONNECTING BRIDGE FRAMING PLAN AND SECTION
S-702 CONNECTING BRIDGE SECTIONS AND DETAILS
S-901 CONTROL BUILDING FOUNDATION PLAN
S-902 CONTROL BUILDING INTERMEDIATE PLAN
S-903 CONTROL BUILDING ROOF FRAMING PLAN
S-904 CONTROL BUILDING OVERALL SECTION I
S-905 CONTROL BUILDING OVERALL SECTION II
S-906 CONTROL BUILDING OVERALL SECTION III
S-907 CONTROL BUILDING SECTIONS AND DETAILS I
S-908 CONTROL BUILDING SECTIONS AND DETAILS II
S-909 CONTROL BUILDING SECTIONS AND DETAILS III

ARCHITECTURAL

A-900 CONTROL BUILDING LIFE SAFETY AND CODE ANALYSIS
A-901 CONTROL BUILDING 3D MODEL VIEWS
A-902 ACCESSIBILITY GUIDELINES (TAS)
A-903 ACCESSIBILITY GUIDELINES (TAS)
A-904 ACCESSIBILITY GUIDELINES (TAS)
A-905 ACCESSIBILITY GUIDELINES (TAS)
A-910 CONTROL BUILDING FLOOR PLAN
A-911 CONTROL BUILDING DIMENSION FLOOR PLAN
A-912 CONTROL BUILDING PARTITION TYPES
A-913 CONTROL BUILDING REFLECTED CEILING PLAN
A-914 CONTROL BUILDING ROOF PLAN
A-920 CONTROL BUILDING EXTERIOR ELEVATIONS
A-921 CONTROL BUILDING EXTERIOR ELEVATIONS
A-922 CONTROL BUILDING INTERIOR ELEVATIONS
A-930 CONTROL BUILDING SECTIONS
A-931 CONTROL BUILDING SECTIONS
A-932 CONTROL BUILDING WALL SECTIONS
A-933 CONTROL BUILDING WALL SECTIONS
A-940 CONTROL BUILDING ENLARGED RESTROOM PLAN
A-941 CONTROL BUILDING ENLARGED PLAN
A-942 CONTROL BUILDING EQUIPMENT PLAN
A-943 CONTROL BUILDING LAB VIEWS
A-950 CONTROL BUILDING DETAILS
A-951 CONTROL BUILDING DETAILS
A-960 CONTROL BUILDING DOOR AND WINDOW SCHEDULE
A-971 CONTROL BUILDING FINISH SCHEDULE
M-910 CONTROL BUILDING MECHANICAL PLAN
M-950 CONTROL BUILDING MECHANICAL DETAILS & SCHEDULES
P-910 CONTROL BUILDING PLUMBING PLAN
P-950 CONTROL BUILDING PLUMBING DETAILS & SCHEDULES

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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.

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

No.	Revision	By	Date

PRELIMINARY

FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.

Kimley»Horn

Engineer M. A. SHELTON
P.E. No. 95893
Date SEPTEMBER 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

SHEET INDEX

DATE:	AUGUST 2022
DESIGN:	MPM
DRAWN:	HLR
CHECKED:	KPK
KHA NO.:	067812104

SHEET
G-101

K:\HOU_Utilities\067812104_West U WWTP\09_CAD\03_Plan Sheets\WWTP.G - INDEX.dwg 5/7/2013 10:40 AM

GENERAL NOTES

OVERALL:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES, WHETHER PUBLIC OR PRIVATE, PRIOR TO EXCAVATION. THE INFORMATION AND DATA SHOWN WITH RESPECT TO EXISTING UNDERGROUND FACILITIES AT OR CONTIGUOUS TO THE SITE IS APPROXIMATE AND BASED ON PHYSICAL APPURTENANCES OBSERVED IN THE FIELD. THE OWNER AND ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR THE COMPLETENESS OF ANY SUCH INFORMATION AND DATA; AND, THE CONTRACTOR SHALL HAVE FULL RESPONSIBILITY FOR REVIEWING AND CHECKING ALL SUCH INFORMATION AND DATA, FOR LOCATING ALL UNDERGROUND FACILITIES, FOR COORDINATION OF THE WORK WITH THE OWNERS OF SUCH UNDERGROUND FACILITIES DURING CONSTRUCTION, FOR THE SAFETY AND PROTECTION THEREOF, AND FOR REPAIRING ANY DAMAGE THERETO RESULTING FROM THE WORK. THE COST OF ALL OF WHICH WILL BE CONSIDERED AS HAVING BEEN INCLUDED IN THE CONTRACT PRICE. THE CONTRACTOR SHALL NOTIFY ANY AFFECTED UTILITY COMPANIES OR AGENCIES IN WRITING AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.
   a. WEST UNIVERSITY PLACE 1 713 662 5839
   b. CALL BEFORE YOU DIG 811 OR 1 800 344 8377
   c. TEXAS ONE CALL SYSTEM 1 800 245 4545
   d. AT&T 1 713 918 0043
   e. CENTERPOINT (ELECTRICITY) 1 713 207 2222
   f. CENTERPOINT ENERGY (GAS) 1 713 659 2111
   g. COMCAST 1 800 776 9993
2. CONTRACTOR SHALL FIELD LOCATE EXISTING UTILITY LINES TO BE CONNECTED TO PRIOR TO COMMENCING WORK. IF A DISCREPANCY EXISTS BETWEEN THE PLANS AND ACTUAL FIELD CONDITIONS THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY.
3. THE CONTRACTOR SHALL COORDINATE WITH CITY OF WEST UNIVERSITY PLACE PUBLIC WORKS DEPARTMENT A MINIMUM OF 48 HOURS PRIOR TO CUTTING OR CONNECTING TO EXISTING UTILITY LINES OR AFFECTING PLANT OPERATIONS. PUBLIC WORKS DEPARTMENT PERSONNEL SHALL DETERMINE THE MOST APPROPRIATE TIME FOR THESE ACTIVITIES TO TAKE PLACE. CONTACT THE PUBLIC WORKS DIRECTOR (713-662-5845).
4. CONTRACTOR SHALL TAKE SPECIAL PRECAUTIONS IN VICINITY OF ANY OVERHEAD ELECTRIC LINES. CONTRACTOR SHALL ABIDE BY NATIONAL ELECTRIC CODE AND ANY REQUIREMENT BY OWNER OF ELECTRIC LINE.
5. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE CITY OF WEST UNIVERSITY PLACE PUBLIC WORKS DIRECTOR OF ANY DAMAGE OR CHANGED CONDITION CAUSED BY CONSTRUCTION ACTIVITIES THAT MAY RESULT IN A DISRUPTION OF SANITARY SEWER SERVICE.
6. THE CONTRACTOR SHALL NOT COMMENCE WORK BEFORE 7:00AM AND SHALL ARRANGE HIS WORK SO THAT NO MACHINERY OR EQUIPMENT SHALL BE CLOSER THAN 30 FEET TO ANY TRAVEL LANES AFTER SUNSET EXCEPT AS AUTHORIZED BY THE OWNER. NO WORK IS ALLOWED ON WEEKENDS WITHOUT WRITTEN APPROVAL OF THE CITY OF WEST UNIVERSITY PLACE PUBLIC WORKS DEPARTMENT.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE VERTICAL AND HORIZONTAL CONTROL SHOWN ON THE PLANS THROUGHOUT THE PROJECT.
8. THE CONTRACTOR SHALL RE-ESTABLISH ANY PROPERTY MARKER, BENCHMARK, ETC. DISTURBED DURING CONSTRUCTION TO ITS ORIGINAL LOCATION AND ELEVATION.
9. CONTRACTOR SHALL VERIFY THE ELEVATION, CONFIGURATION AND ANGULATION OF EXISTING LINES PRIOR TO CONSTRUCTION.
10. THE CONTRACTOR SHALL MAINTAIN A NEAT AND ACCURATE RECORD OF CONSTRUCTION FOR THE CITY OF WEST UNIVERSITY PLACE'S RECORDS. THE CONTRACTOR SHALL PROVIDE THE CITY FULL SIZE REPRODUCIBLE MARKUPS THAT RECORD ALL CONSTRUCTION DEVIATING FROM THE PLANS AT SUBSTANTIAL COMPLETION.
11. THE CONTRACTOR SHALL TAKE ALL AVAILABLE PRECAUTIONS TO CONTROL DUST. CONTRACTOR SHALL CONTROL DUST BY SPRINKLING WATER, OR AS APPROVED BY CITY OF WEST UNIVERSITY PLACE AND ENGINEER.
12. WHERE THE CONTRACTOR DESIRES TO MOVE EQUIPMENT NOT LICENSED FOR OPERATION ON PUBLIC HIGHWAYS ON OR ACROSS ANY PAVEMENT, THE CONTRACTOR SHALL PROTECT THE PAVEMENT FROM ALL DAMAGE.
13. THE CONTRACTOR SHALL NOT PLACE FILL OR WASTE MATERIAL ON ANY PRIVATE PROPERTY WITHOUT PRIOR WRITTEN AGREEMENT WITH PROPERTY OWNER.
14. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE CITY OF WEST UNIVERSITY PLACE STANDARDS EXCEPT WHERE MODIFIED IN THESE PLANS OR THE SPECIFICATIONS.
15. THE CONTRACTOR SHALL ABIDE BY ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS GOVERNING EXCAVATION. TRENCH SIDE SLOPES SHALL MEET OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARDS THAT ARE IN EFFECT AT THE TIME OF CONSTRUCTION. SHEETING, SHORING AND BRACING SHALL BE REQUIRED WHEN SIDE SLOPE STANDARDS ARE NOT MET. A PULL BOX, MEETING OSHA STANDARDS, MAY BE ACCEPTABLE, UNLESS NEGATED BY GROUNDWATER CONTROL MEASURES.
16. CONSTRUCTION DEWATERING, IF ANY, IS INCIDENTAL TO THE PROJECT BID ITEMS.
17. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PERFORMING ALL CONSTRUCTION LAYOUTS FROM THE SITE LAYOUT CONTROL POINTS, AND FROM THE DIMENSIONS AND CENTERLINES SHOWN. THE CONTRACTOR MUST NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.
18. UNTIL THE WORK IS ACCEPTED BY THE OWNER, THE PROJECT SHALL BE UNDER THE CHARGE AND CUSTODY OF THE CONTRACTOR AND THE CONTRACTOR SHALL TAKE EVERY NECESSARY PRECAUTION AGAINST INJURY AND/OR DAMAGE TO THE WORK.
19. THE CONTRACTOR SHALL IMMEDIATELY REPAIR OR REPLACE ANY DAMAGE TO PRIVATE PROPERTY, INCLUDING, BUT NOT LIMITED TO, FENCES, WALLS, PAVEMENT, GRASS, AND TREES, AT NO ADDITIONAL COST TO THE OWNER. THIS WORK SHALL BE SUBSIDIARY TO THE COST OF THE CONTRACT UNLESS OTHERWISE NOTED.
20. DENSITY TESTS SHALL BE PERFORMED IN ACCORDANCE WITH ASTM. THIS ITEM SHALL BE CONSIDERED AS SUBSIDIARY TO THE PROJECT COST AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED.
21. CONTRACTOR SHALL INSTALL TEMPORARY BACK FILL AS REQUIRED FOR OPEN TRENCH IN ESTABLISHED ROADWAYS. NO OPEN TRENCH WILL BE ALLOWED IN EXISTING PAVEMENT EXCEPT DURING DAYLIGHT HOURS AND DURING CONSTRUCTION OPERATIONS. TEMPORARY BACK FILL SHALL BE INSTALLED TO THE FINISHED GRADE OF THE EXISTING PAVEMENT AND SHALL BE MAINTAINED BY THE CONTRACTOR TO ENSURE A SMOOTH DRIVING SURFACE FREE OF RUTTING AND POTHOLES. REPAIR DAMAGED PAVEMENT IN ACCORDANCE WITH SPECIFICATIONS.
22. TOPSOIL REPLACEMENT IS REQUIRED IN ALL AREAS WHERE TOPSOIL EXISTS. TOPSOIL SHALL INCLUDE THE TOP SIX (6) INCHES OF TRENCH, UNLESS ROCK DEPTH IS LESS THAN SIX (6) INCHES. TOPSOIL SHALL BE KEPT SEPARATE FROM GENERAL TRENCH EXCAVATED MATERIAL AND SHALL BE PLACED ON TOP OF TRENCH BACK FILL. CONTRACTOR SHALL REMOVE ALL ROCK FROM TOPSOIL IN CULTIVATED AREAS.
23. THE GENERAL CONTRACTOR SHALL ABIDE BY THE BUY AMERICAN PROVISION OF PUBLIC LAW 95-217 (SECTION 215) OF PUBLIC LAW 92-500 AS AMENDED GENERALLY REQUIRING THAT PREFERENCE BE GIVEN TO THE USE OF DOMESTIC CONSTRUCTION MATERIALS IN THE PERFORMANCE OF THIS CONTRACT. PROVIDE DOCUMENTATION OF MATERIAL SOURCES TO THE CITY OF WEST UNIVERSITY PLACE DURING SUBMITTAL REVIEW PROCESS.
24. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND SUBMITTING A TRENCH SAFETY PLAN, PREPARED BY A PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, TO THE CITY OF WEST UNIVERSITY PLACE PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TRENCH SAFETY REQUIREMENTS IN ACCORDANCE WITH CITY, STATE, AND FEDERAL REQUIREMENTS, INCLUDING OSHA FOR ALL TRENCHES. NO OPEN TRENCHES SHALL BE ALLOWED OVERNIGHT WITHOUT PRIOR WRITTEN APPROVAL OF THE CITY.
25. CAP OFF ALL WATER AND SANITARY SEWER CONNECTIONS IN EXISTING BUILDINGS TO BE DEMOLISHED IN ORDER TO PREVENT ANY STORM WATER ENTERING SANITARY SEWER COLLECTION SYSTEM.

EROSION CONTROL:

1. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL EROSION CONTROL AND WATER QUALITY REQUIREMENTS, LAWS, AND ORDINANCES THAT APPLY TO THE CONSTRUCTION SITE LAND DISTURBANCE.
2. EROSION CONTROL DEVICES SHOWN ON THE EROSION CONTROL PLAN FOR THE PROJECT SHALL BE INSTALLED PRIOR TO THE START OF LAND DISTURBANCE.
3. CONTRACTOR IS SOLELY RESPONSIBLE FOR INSTALLATION, IMPLEMENTATION, MAINTENANCE, AND EFFECTIVENESS OF ALL EROSION CONTROL DEVICES, BEST MANAGEMENT PRACTICES (BMPS), AND FOR UPDATING THE EROSION CONTROL PLAN DURING CONSTRUCTION AS FIELD CONDITIONS CHANGE.
4. AS STORM SEWER INLETS ARE INSTALLED ON-SITE, TEMPORARY EROSION CONTROL DEVICES SHALL BE INSTALLED AT EACH INLET PER APPROVED DETAILS.
5. THE EROSION CONTROL DEVICES SHALL REMAIN IN PLACE UNTIL THE AREA IT PROTECTS HAS BEEN PERMANENTLY STABILIZED.
6. CONTRACTOR SHALL OBSERVE THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES AND MAKE FIELD ADJUSTMENTS AND MODIFICATIONS AS NEEDED TO PREVENT SEDIMENT FROM LEAVING THE SITE. IF THE EROSION CONTROL DEVICES DO NOT EFFECTIVELY CONTROL EROSION AND PREVENT SEDIMENTATION FROM WASHING OFF THE SITE, THEN THE CONTRACTOR SHALL NOTIFY THE ENGINEER.
7. OFF-SITE SOIL BORROW, SPOIL, AND STORAGE AREAS (IF APPLICABLE) ARE CONSIDERED AS PART OF THE PROJECT SITE AND MUST ALSO COMPLY WITH THE EROSION CONTROL REQUIREMENTS FOR THIS PROJECT. THIS INCLUDES THE INSTALLATION OF BMP'S TO CONTROL EROSION AND SEDIMENTATION AND THE ESTABLISHMENT OF PERMANENT GROUND COVER ON DISTURBED AREAS PRIOR TO FINAL APPROVAL OF THE PROJECT. CONTRACTOR IS RESPONSIBLE FOR MODIFYING THE SWPPP AND EROSION CONTROL PLAN TO INCLUDE BMPS FOR ANY OFF-SITE THAT ARE NOT ANTICIPATED OR SHOWN ON THE EROSION CONTROL PLAN.
8. CONTRACTORS SHALL INSPECT ALL EROSION CONTROL DEVICES, BMPS, DISTURBED AREAS, AND VEHICLE ENTRY AND EXIT AREAS WEEKLY AND WITHIN 24 HOURS OF ALL RAINFALL EVENTS OF 0.5 INCHES OR GREATER, AND KEEP A RECORD OF THIS INSPECTION IN THE SWPPP BOOKLET IF APPLICABLE, TO VERIFY THAT THE DEVICES AND EROSION CONTROL PLAN ARE FUNCTIONING PROPERLY.
9. CONTRACTOR SHALL CONSTRUCT A STABILIZED CONSTRUCTION ENTRANCE AT ALL PRIMARY POINTS OF ACCESS IN ACCORDANCE WITH THE CITY OF WEST UNIVERSITY PLACE STANDARDS. CONTRACTOR SHALL ENSURE THAT ALL CONSTRUCTION TRAFFIC USES THE STABILIZED ENTRANCE AT ALL TIMES FOR ALL INGRESS/EGRESS.
10. SITE ENTRY AND EXITS SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT THE TRACKING AND FLOWING OF SEDIMENT AND DIRT ONTO OFF-SITE ROADWAYS. ALL SEDIMENT AND DIRT FROM THE SITE THAT IS DEPOSITED ONTO AN OFF-SITE ROADWAY SHALL BE REMOVED IMMEDIATELY.
11. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL SILT AND DEBRIS FROM THE AFFECTED OFF-SITE ROADWAYS THAT ARE A RESULT OF THE CONSTRUCTION, AS REQUESTED BY THE CITY OF WEST UNIVERSITY PLACE. AT A MINIMUM, THIS SHOULD OCCUR ONCE PER DAY FOR THE OFF-SITE ROADWAYS.
12. WHEN WASHING OF VEHICLES IS REQUIRED TO REMOVE SEDIMENT PRIOR TO EXITING THE SITE, IT SHALL BE DONE IN AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP BMP.
13. CONTRACTOR SHALL INSTALL A TEMPORARY SEDIMENT BASIN FOR ANY ON-SITE DRAINAGE AREAS THAT ARE GREATER THAN 10 ACRES, PER TCEQ AND THE CITY OF WEST UNIVERSITY PLACE STANDARDS. IF NO ENGINEERING DESIGN HAS BEEN PROVIDED FOR A SEDIMENTATION BASIN ON THESE PLANS, THEN THE CONTRACTOR SHALL ARRANGE FOR AN APPROPRIATE DESIGN TO BE PROVIDED.
14. ALL FINES IMPOSED FOR SEDIMENT OR DIRT DISCHARGED FROM THE SITE SHALL BE PAID BY THE RESPONSIBLE CONTRACTOR.
15. WHEN SEDIMENT OR DIRT HAS CLOGGED THE CONSTRUCTION ENTRANCE VOID SPACES BETWEEN STONES OR DIRT IS BEING TRACKED ONTO A ROADWAY, THE AGGREGATE PAD MUST BE WASHED DOWN OR REPLACED. RUNOFF FROM THE WASH-DOWN OPERATION SHALL NOT BE ALLOWED TO DRAIN DIRECTLY OFF SITE WITHOUT FIRST FLOWING THROUGH ANOTHER BMP TO CONTROL SEDIMENTATION. PERIODIC RE-GRADING OR NEW STONE MAY BE REQUIRED TO MAINTAIN THE EFFECTIVENESS OF THE CONSTRUCTION ENTRANCE.
16. TEMPORARY SEEDING OR OTHER APPROVED STABILIZATION SHALL BE INITIATED WITHIN 14 DAYS OF THE LAST DISTURBANCE OF ANY AREA, UNLESS ADDITIONAL CONSTRUCTION IN THE AREA IS EXPECTED WITHIN 21 DAYS OF THE LAST DISTURBANCE.
17. CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING CONSTRUCTION, ALWAYS CLEANING UP DIRT, LOOSE MATERIAL, AND TRASH AS CONSTRUCTION PROGRESSES.
18. UPON COMPLETION OF FINE GRADING, ALL SURFACES OF DISTURBED AREAS SHALL BE PERMANENTLY STABILIZED. STABILIZATION IS ACHIEVED WHEN THE AREA IS EITHER COVERED BY PERMANENT IMPERVIOUS STRUCTURES, SUCH AS BUILDINGS, SIDEWALK, PAVEMENT, OR A UNIFORM PERENNIAL VEGETATIVE COVER.
19. AT THE CONCLUSION OF THE PROJECT, ALL INLETS, DRAIN PIPE, CHANNELS, DRAINAGEWAYS AND BORROW DITCHES AFFECTED BY THE CONSTRUCTION SHALL BE DREDGED, AND THE SEDIMENT GENERATED BY THE PROJECT SHALL BE REMOVED AND DISPOSED IN ACCORDANCE WITH APPLICABLE REGULATIONS.
20. CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT, ALWAYS CLEANING UP DIRT, TRASH AND LOOSE MATERIALS AS CONSTRUCTION PROGRESSES.
21. THE CONTRACTOR SHALL REVEGETATE UNPAVED AREAS DISTURBED BY CONSTRUCTION PRIOR TO ACCEPTANCE OF THE PROJECT. REVEGETATION SHALL CONSIST OF SEED SOWING, STRAW MULCHING, FERTILIZING AND WATERING. REVEGETATION SHALL BE ACCEPTABLE WHEN VEGETATION ACHIEVES ONE (1) INCH IN HEIGHT, WITH 85% COVERAGE AND NO GREATER THAN 10 SQUARE FEET BARE. THIS ITEM SHALL BE CONSIDERED AS A SUBSIDIARY COST TO THE PROJECT AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED.

STORM WATER DISCHARGE AUTHORIZATION:

1. CONTRACTOR SHALL COMPLY WITH ALL TCEQ AND EPA STORM WATER POLLUTION PREVENTION REQUIREMENTS.
2. CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE TCEQ GENERAL PERMIT TO DISCHARGE UNDER THE TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM TXR 150000.
3. THE CONTRACTOR SHALL ENSURE THAT ALL PRIMARY OPERATORS SUBMIT A NOI TO TCEQ AT LEAST SEVEN DAYS PRIOR TO COMMENCING CONSTRUCTION (IF APPLICABLE), OR IF USING ELECTRONIC SUBMITTAL, PRIOR TO COMMENCING CONSTRUCTION. ALL PRIMARY OPERATORS SHALL PROVIDE A COPY OF THE SIGNED NOI TO THE OPERATOR OF ANY MS4 (TYPICALLY THE CITY) RECEIVING DISCHARGE FROM THE SITE.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR THE IMPLEMENTATION OF THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IF APPLICABLE, INCLUDING POSTING SITE NOTICE, INSPECTIONS, DOCUMENTATION, AND SUBMISSION OF ANY INFORMATION REQUIRED BY THE TCEQ AND EPA (E.G. NOI).
5. ALL CONTRACTORS AND SUBCONTRACTORS PROVIDING SERVICES RELATED TO THE SWPPP SHALL SIGN THE REQUIRED CONTRACTOR CERTIFICATION STATEMENT ACKNOWLEDGING THEIR RESPONSIBILITIES AS SPECIFIED IN THE SWPPP.
6. A COPY OF THE SWPPP, INCLUDING NOI, SITE NOTICE, CONTRACTOR CERTIFICATIONS, AND ANY REVISIONS, SHALL BE SUBMITTED TO DAYTON CITY BY THE CONTRACTOR AND SHALL BE RETAINED ON-SITE DURING CONSTRUCTION.
7. A NOTICE OF TERMINATION (NOT) SHALL BE SUBMITTED TO TCEQ BY ANY PRIMARY OPERATOR WITHIN 30 DAYS AFTER ALL SOIL DISTURBING ACTIVITIES AT THE SITE HAVE BEEN COMPLETED AND A UNIFORM VEGETATIVE COVER HAS BEEN ESTABLISHED ON ALL UNPAVED AREAS AND AREAS NOT OVERLAIN BY PERMANENT STRUCTURES, OR AFTER TRANSFER OF OPERATIONAL CONTROL HAS OCCURRED, OR THE OPERATOR HAS OBTAINED ALTERNATIVE AUTHORIZATION UNDER A DIFFERENT PERMIT. A COPY OF THE NOT SHALL BE PROVIDED TO THE OPERATOR OF ANY MS4 RECEIVING DISCHARGE FROM THE SITE.

PAVING:

1. ALL PAVING MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THESE PLANS, THE CITY OF WEST UNIVERSITY PLACE STANDARDS, THE FINAL GEOTECHNICAL REPORT AND ALL ISSUED ADDENDA, AND COMMONLY ACCEPTED CONSTRUCTION STANDARDS. THE CITY OF WEST UNIVERSITY PLACE STANDARDS SHALL GOVERN WHERE OTHER SPECIFICATIONS DO NOT EXIST. IN CASE OF CONFLICTING SPECIFICATIONS OR DETAILS, THE MORE RESTRICTIVE SPECIFICATION/DETAIL SHALL BE FOLLOWED.
2. ALL PRIVATE ON-SITE PAVING AND PAVING SUBGRADE SHALL COMPLY WITH THE PROJECT'S FINAL GEOTECHNICAL REPORT (OR LATEST EDITION), INCLUDING ALL ADDENDA.
3. FIRE LANES SHALL BE MARKED AND LABELED AS A FIRELANE PER THE CITY OF WEST UNIVERSITY PLACE STANDARDS.
4. ALL FIRELANE PAVING AND PAVING SUBGRADE SHALL COMPLY WITH THE CITY OF WEST UNIVERSITY PLACE STANDARDS. IF THESE ARE DIFFERENT THAN THOSE IN THE GEOTECHNICAL REPORT, THEN THE MORE RESTRICTIVE SHALL BE FOLLOWED.
5. ALL PUBLIC PAVING AND PAVING SUBGRADE SHALL COMPLY WITH THE CITY OF WEST UNIVERSITY PLACE STANDARDS.
6. CONTRACTOR IS RESPONSIBLE FOR ALL PAVING AND PAVING SUBGRADE TESTING AND CERTIFICATION, UNLESS SPECIFIED OTHERWISE BY OWNER. ALL PAVING AND PAVING SUBGRADE TESTING SHALL BE COORDINATED WITH THE APPROPRIATE CITY OF WEST UNIVERSITY PLACE INSPECTOR. TESTING SHALL BE PERFORMED BY AN APPROVED INDEPENDENT AGENCY FOR TESTING PAVING AND SUBGRADE. OWNER SHALL APPROVE THE AGENCY NOMINATED BY THE CONTRACTOR FOR PAVING AND PAVING SUBGRADE TESTING.
7. CONTRACTOR SHALL SHOW BY THE STANDARD TESTING PROCEDURES OF THE PAVING AND PAVING SUBGRADE, THAT THE WORK CONSTRUCTED MEETS THE PROJECT REQUIREMENTS AND CITY OF WEST UNIVERSITY PLACE STANDARDS.
8. DUE TO THE POTENTIAL FOR DIFFERENTIAL SOIL MOVEMENT ADJACENT TO THE BUILDING, THE CONTRACTOR SHALL ADHERE TO GEOTECHNICAL REPORT'S RECOMMENDATION FOR SUBGRADE PREPARATION SPECIFIC TO FLATWORK ADJACENT TO THE PROPOSED BUILDING. THE OWNER AND CONTRACTOR ARE ADVISED TO OBTAIN A GEOTECHNICAL ENGINEER RECOMMENDATION SPECIFIC TO FLATWORK ADJACENT TO THE BUILDING, IF NONE IS CURRENTLY EXISTING.
9. CURB RAMPS ALONG PUBLIC STREETS AND IN THE PUBLIC RIGHT-OF-WAY SHALL BE CONSTRUCTED BASED ON THE CITY OF WEST UNIVERSITY PLACE STANDARDS.
10. PRIVATE CURB RAMPS ON THE SITE (I.E. OUTSIDE PUBLIC STREET RIGHT-OF-WAY) SHALL CONFORM TO ADA AND TAS STANDARDS AND SHALL HAVE A DETECTABLE WARNING SURFACE THAT IS FULL WIDTH AND FULL DEPTH OF THE CURB RAMP, NOT INCLUDING FLARES.
11. ALL ACCESSIBLE RAMPS, CURB RAMPS, STRIPING, AND PAVEMENT MARKINGS SHALL CONFORM TO ADA AND TAS STANDARDS, LATEST EDITION.
12. ANY COMPONENTS OF THE PROJECT SUBJECT TO RESIDENTIAL USE SHALL ALSO CONFORM TO THE FAIR HOUSING ACT, AND COMPLY WITH THE FAIR HOUSING ACT DESIGN MANUAL BY THE US DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT.
13. CONTRACTOR SHALL CONSTRUCT PROPOSED PAVEMENT TO MATCH EXISTING PAVEMENT WITH A SMOOTH, FLUSH, CONNECTION.
14. CONTRACTOR SHALL FURNISH AND INSTALL ALL PAVEMENT MARKINGS FOR FIRE LANES, PARKING STALLS, HANDICAPPED PARKING SYMBOLS, AND MISCELLANEOUS STRIPING WITHIN PARKING LOT AND AROUND BUILDING AS SHOWN ON THE PLANS. ALL PAINT AND PAVEMENT MARKINGS SHALL ADHERE TO THE CITY OF WEST UNIVERSITY PLACE AND OWNER STANDARDS.
15. ALL REINFORCING STEEL SHALL CONFORM TO THE GEOTECHNICAL REPORT, CITY OF WEST UNIVERSITY PLACE STANDARDS, AND ASTM A-615, GRADE 60, AND SHALL BE SUPPORTED BY BAR CHAIRS. CONTRACTOR SHALL USE THE MORE STRINGENT OF THE CITY AND GEOTECHNICAL STANDARDS.
16. ALL JOINTS SHALL EXTEND THROUGH THE CURB.
17. THE MINIMUM LENGTH OF OFFSET JOINTS AT RADIUS POINTS SHALL BE 2 FEET.
18. ALL SAWCUTS SHALL BE FULL DEPTH FOR PAVEMENT REMOVAL AND CONNECTION TO EXISTING PAVEMENT.
19. UNLESS THE PLANS SPECIFICALLY DICTATE TO THE CONTRARY, ON-SITE AND OTHER DIRECTIONAL SIGNS SHALL BE ORIENTED SO THEY ARE READILY VISIBLE TO THE ONCOMING TRAFFIC FOR WHICH THEY ARE INTENDED.
20. BEFORE PLACING PAVEMENT, CONTRACTOR SHALL VERIFY THAT SUITABLE ACCESSIBLE PEDESTRIAN ROUTES (PER ADA, TAS, AND FHA) EXIST TO AND FROM EVERY DOOR AND ALONG SIDEWALKS, ACCESSIBLE PARKING SPACES, ACCESS AISLES, AND ACCESSIBLE ROUTES. IN NO CASE SHALL AN ACCESSIBLE RAMP SLOPE EXCEED 1 VERTICAL TO 12 HORIZONTAL. IN NO CASE SHALL SIDEWALK CROSS SLOPE EXCEED 2.0 PERCENT. IN NO CASE SHALL LONGITUDINAL SIDEWALK SLOPE EXCEED 5.0 PERCENT. ACCESSIBLE PARKING SPACES AND ACCESS AISLES SHALL NOT EXCEED 2.0 PERCENT SLOPE IN ANY DIRECTION.
21. CONTRACTOR SHALL TAKE FIELD SLOPE MEASUREMENTS ON FINISHED SUBGRADE AND FORM BOARDS PRIOR TO PLACING PAVEMENT TO VERIFY THAT ADA/TAS SLOPE REQUIREMENTS ARE PROVIDED. CONTRACTOR SHALL CONTACT ENGINEER PRIOR TO PAVING IF ANY EXCESSIVE SLOPES ARE ENCOUNTERED. NO CONTRACTOR CHANGE ORDERS WILL BE ACCEPTED FOR ADA AND TAS SLOPE COMPLIANCE ISSUES.
22. RESIDENTIAL DRIVEWAYS IN THE CITY OF WEST UNIVERSITY PLACE ROW SHALL HAVE A MINIMUM THICKNESS OF 4" WITH REBAR SPACED AT 24" CENTER ON CENTER WITH A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS. PAVING SUBGRADE SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT, IF AVAILABLE, OTHERWISE PAVING SHALL HAVE MINIMUM THICKNESS OF 18" OF CEMENT STABILIZED SAND WITH 1.5 SACKS/CY WITHIN 2% OF SPECIFIED OPTIMUM MOISTURE CONTENT PRIOR TO COMPACTION.
23. COMMERICAL DRIVEWAYS IN THE CITY OF WEST UNIVERSITY PLACE ROW SHALL HAVE A MINIMUM THICKNESS OF 6" WITH REBAR SPACED AT 18" CENTER ON CENTER WITH A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS. PAVING SUBGRADE SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT, IF AVAILABLE, OTHERWISE PAVING SHALL HAVE MINIMUM THICKNESS OF 18" OF CEMENT STABILIZED SAND WITH 1.5 SACKS/CY WITHIN 2% OF SPECIFIED OPTIMUM MOISTURE CONTENT PRIOR TO COMPACTION.
24. PAVING PLACED FOR REPAIR WORK SHALL HAVE THE SAME THICKNESS AS SURROUNDING PAVING WITH A MINIMUM OF 18" CEMENT STABILIZED SAND SUBGRADE WITH 2.5 SACKS/CY WITHIN 2% OF SPECIFIED OPTIMUM MOISTURE CONTENT PRIOR TO COMPACTION.

STORM DRAINAGE:

1. ALL STORM SEWER MATERIALS AND CONSTRUCTION SHALL COMPLY WITH THE CITY OF WEST UNIVERSITY PLACE STANDARDS.
2. THE SITE UTILITY CONTRACTOR SHALL PROVIDE ALL MATERIALS AND APPURTENANCES NECESSARY FOR COMPLETE INSTALLATION OF THE STORM SEWER.
3. THE CONTRACTOR SHALL FIELD VERIFY THE SIZE, CONDITION, HORIZONTAL AND VERTICAL LOCATIONS OF ALL EXISTING STORM SEWER FACILITIES THAT ARE TO BE CONNECTED TO, PRIOR TO START OF CONSTRUCTION OF ANY STORM SEWER, AND SHALL NOTIFY THE ENGINEER OF ANY CONFLICTS DISCOVERED.
4. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS SHOWN, INCLUDING THE HORIZONTAL AND VERTICAL LOCATION OF CURB INLETS AND GRATE INLETS AND ALL UTILITIES CROSSING THE STORM SEWER.
5. FLOW LINE, TOP-OF-CURB, RIM, THROAT, AND GRATE ELEVATIONS OF PROPOSED INLETS SHALL BE VERIFIED WITH THE GRADING PLAN AND FIELD CONDITIONS PRIOR TO THEIR INSTALLATION.
6. ALL PUBLIC STORM SEWER CONSTRUCTION, PIPE, STRUCTURES, AND FITTINGS SHALL ADHERE TO THE CITY OF WEST UNIVERSITY PLACE STANDARDS. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS.
7. ALL PRIVATE STORM SEWER CONSTRUCTION, PIPE, STRUCTURES, AND FITTINGS SHALL ADHERE TO THE APPLICABLE PLUMBING CODE. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS.
8. ALL PVC TO RCP CONNECTIONS AND ALL STORM PIPE CONNECTIONS ENTERING STRUCTURES OR OTHER STORM PIPES SHALL HAVE A CONCRETE COLLAR AND BE GROUTED TO ASSURE THE CONNECTION IS WATERTIGHT.
9. ALL PUBLIC STORM SEWER LINES SHALL BE MINIMUM CLASS III RCP. PRIVATE STORM SEWER LINES 18-INCHES AND GREATER SHALL BE CLASS III RCP OR OTHER APPROVED MATERIAL.
10. EMBEDMENT FOR ALL STORM SEWER LINES, PUBLIC OR PRIVATE, SHALL BE PER CITY OF WEST UNIVERSITY PLACE STANDARDS.
11. ALL WYE CONNECTIONS AND PIPE BENDS ARE TO BE PREFABRICATED AND INSTALLED PER MANUFACTURERS SPECIFICATIONS.
12. USE 4 FOOT JOINTS WITH BEVELED ENDS IF RADIUS OF STORM SEWER IS LESS THAN 100 FEET.
13. THE CONTRACTOR SHALL KEEP TRENCHES FREE FROM WATER.

WATER AND WASTEWATER:

1. ALL WATER AND WASTEWATER MATERIALS AND CONSTRUCTION SHALL COMPLY WITH THE CITY OF WEST UNIVERSITY PLACE STANDARDS.
2. MATERIAL FOR WATER LINES 3-INCHES OR SMALLER SHALL BE SCHEDULE 40 PVC.
3. MATERIAL FOR WATERLINES 4-INCHES OF LARGER SHALL BE AWWA C900 DR18 PVC.
4. ALL PIPES SHALL BE KEPT FREE OF TRASH AND DIRT AT ALL TIMES. AT THE END OF THE DAY, OPEN PIPE ENDS SHALL BE TEMPORARILY CONNECTED / SEALED.
5. CONTRACTOR SHALL TAKE CARE NOT TO DAMAGE ANY EXISTING UTILITIES DURING CONSTRUCTION. ANY REMOVAL/RELOCATION OF THE UTILITIES SHALL BE COORDINATED WITH THE APPROPRIATE UTILITY COMPANY. THIS ITEM SHALL BE CONSIDERED AS A SUBSIDIARY COST TO THE PROJECT AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED.
6. ALL MANHOLES SHALL BE PRE-CAST CONCRETE AND LINED WITH HIGH SOLIDS EPOXY COATING.
7. PROPOSED MANHOLE AND VAULT RIMS SHALL BE SET AT 6" ABOVE FINAL GRADE IN UNPAVED AREAS. PROPOSED RIM ELEVATIONS ARE APPROXIMATE AND ARE FOR BIDDING AND INFORMATIONAL PURPOSES ONLY.
8. WASTEWATER TREATMENT PLANT OPERATIONS SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION AT ALL TIMES. THE CONTRACTOR SHALL SUBMIT TO THE CITY A PLAN PRIOR TO CONSTRUCTION FOR APPROVAL FOR MAINTAINING SANITARY SEWER SERVICE. THIS COST FOR MAINTAINING SEWER SERVICE AND ANY ASSOCIATED BYPASS PUMPING SHALL BE CONSIDERED SUBSIDIARY TO THE COST OF THE SANITARY SEWER PIPE INSTALLATION.
9. SANITARY SEWER PIPE SHALL BE SDR-26, AS IDENTIFIED ON THE PLANS, EXCEPT WHERE O

GENERAL NOTES

SANITARY SEWER PLUGGING AND BYPASS PUMPING NOTES

1. IF THE CONTRACTOR REQUIRES BYPASS PUMPING TO INSTALL EQUIPMENT, THE CONTRACTOR SHALL SUBMIT A PLUGGING AND BYPASS PUMPING PLAN WHICH SHALL INCLUDE THE FOLLOWING:

   PROPOSED TYPE AND SIZE OF PLUGS TO BE USED AT EACH PLUGGING LOCATION. THE CONTRACTOR SHALL ALSO PROVIDE CALCULATIONS THAT SHOW INFLATION PRESSURE OF THE PLUG FOR THE ANTICIPATED HYDROSTATIC HEAD, THE PRESSURE RATING FOR EACH PLUG, THE METHOD FOR SECURING THE PLUG TO PREVENT IT FROM TRAVELING DOWNSTREAM, AND BRACING CALCULATIONS AND SCHEMATICS TO HOLD THE PLUG IN PLACE DURING THE PLUGGING OPERATION. ALL PLUGS SHALL BE PROVIDED BY A MANUFACTURER REGULARLY ENGAGED IN THE MANUFACTURING OF PLUGS FOR USE IN SANITARY SEWERS OF THE SIZE AND TYPE ON THIS PROJECT. 24-INCH AND SMALLER PLUGS SHALL HAVE A MINIMUM PRESSURE RATING OF 35 PSI. THE PLUG SHALL BE THE APPROPRIATE SIZE FOR THE PIPELINE THAT IT IS INTENDED TO BE USED. THE PLUG AND THE BRACING OF THE PLUG SHALL BE CAPABLE OF WITHSTANDING THE MAXIMUM ANTICIPATED HYDROSTATIC CONDITION FOR EACH PLUGGING LOCATION. THE MINIMUM HYDROSTATIC PRESSURE SHALL BE THE ELEVATION FIVE (5) FEET ABOVE THE NEAREST MANHOLE UP STREAM.
2. PROPOSED TYPE AND SIZE OF PUMPING EQUIPMENT TO BE PROVIDED AT EACH BYPASS PUMPING LOCATION. THE CONTRACTOR SHALL PROVIDE THE TYPE OF PUMP, TYPE AND LENGTH OF DISCHARGE PIPING, TYPE AND LENGTH OF SUCTION PIPING, HYDRAULIC CALCULATIONS FOR EACH LOCATION WHICH INCLUDE THE TOTAL DYNAMIC HEAD VERSUS CAPACITY CURVES FOR EACH PUMP TO BE USED AND SYSTEM CURVE OF THE DISCHARGE PIPING, THE MAXIMUM SUCTION LIFT ACHIEVABLE BY THE PUMPING UNIT, AND THE TYPE OF MOTOR AND/OR GENERATOR PROVIDED WITH ITS FUEL CAPACITY.
3. THE CONTRACTOR IS RESPONSIBLE FOR ALL JOB SITE SAFETY. THE SUBMISSION AND/OR ACCEPTANCE OF THIS BYPASS PUMPING PLAN DOES NOT ALLEVIATE THE CONTRACTOR OF THIS RESPONSIBILITY.
4. PRESSURE GAGES SHALL BE PROVIDED FOR EACH PLUG SO THAT THE CONTRACTOR CAN CONTINUOUSLY MONITOR THAT THE PLUG IS MAINTAINED AT THE PROPER PRESSURE.
5. THE CONTRACTOR SHALL PROVIDE A METHOD FOR RELIEVING THE HYDROSTATIC PRESSURE OFF OF THE PLUG PRIOR TO ANY DEFLATION OF THE PLUG.
6. THE BYPASS PUMPING ASSEMBLY SHALL BE CAPABLE OF CONVEYING THE CAPACITY OF THE UPSTREAM PIPELINE FLOWING FULL. FOR INSTALLATIONS THAT ARE ANTICIPATED TO BE IN PLACE LONGER THAN 4

   HOURS, FULL REDUNDANT CAPACITY FOR BOTH PIPING AND PUMPING EQUIPMENT SHALL BE PROVIDED AT EACH LOCATION. THE REDUNDANT PIPING AND PUMPING EQUIPMENT SHALL BE INSTALLED AND READY FOR SERVICE AT ANYTIME DURING THE BYPASS OPERATION. THE PUMPING EQUIPMENT SHALL HAVE ADEQUATE LIFT SO THAT A LARGE HYDROSTATIC HEAD IS NOT REQUIRED FOR THE PUMPING ASSEMBLY TO CONVEY THE DESIGN FLOW. HOSE WILL NOT BE ALLOWED TO SERVE AS DISCHARGE PIPING FOR PUMPING ASSEMBLIES REQUIRING MORE THAN A 3-INCH DIAMETER DISCHARGE PIPING. IF ANY LEAKAGE OCCURS IN THE DISCHARGE PIPING, THE CONTRACTOR SHALL IMMEDIATELY TAKE THE NECESSARY STEP TO STOP ANY DISCHARGES OUTSIDE OF THE SEWER COLLECTION SYSTEM.

DEMOLITION NOTES

1. FIELD VERIFY AND LOCATE EXISTING STRUCTURES, UTILITIES, AND OTHER FACILITIES PRIOR TO BEGINNING WORK.
2. THE CONTRACTOR SHALL LEGALLY DISPOSE OF ALL DEMOLISHED MATERIALS NOT SALVAGED BY OWNER.
3. OWNER MAY OPT TO KEEP SOME DEMOLISHED EQUIPMENT OR OTHER CONSTRUCTION WASTE. CONTRACTOR SHALL PLACE ANY MATERIALS SO DESIGNATED BY OWNER IN A STORAGE LOCATION ON-SITE AS REQUESTED BY OWNER.

OVERALL LEGEND AND ABBREVIATIONS

SYSTEM ABBREVIATIONS	
AR	AIR PIPING
CL	CHLORINE
DCL	DECHLORINATION
DCT	DECANT
DR	DRAINAGE
EF	EFFLUENT
NPW	NON-POTABLE WATER
RAS	RETURN ACTIVATION SLUDGE
RWS	RAW SEWAGE
SC	SCUM
SLG	SLUDGE
UGE	UNDERGROUND ELECTRIC
W	WATER
WAS	WASTE ACTIVATED SLUDGE
WW	PROCESS PIPING

LEGEND	
	EXISTING PIPING
x	PIPING TO BE REMOVED
//	ABANDONED PIPING
	PROPOSED PIPING
	PROPERTY BOUNDARY
	EASEMENT BOUNDARY
	TOP OF BANK
	EXISTING FENCE
	PROPOSED FENCE

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Kimley»Horn

Engineer M. A. SHELTON
P.E. No. 95893
Date SEPTEMBER 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

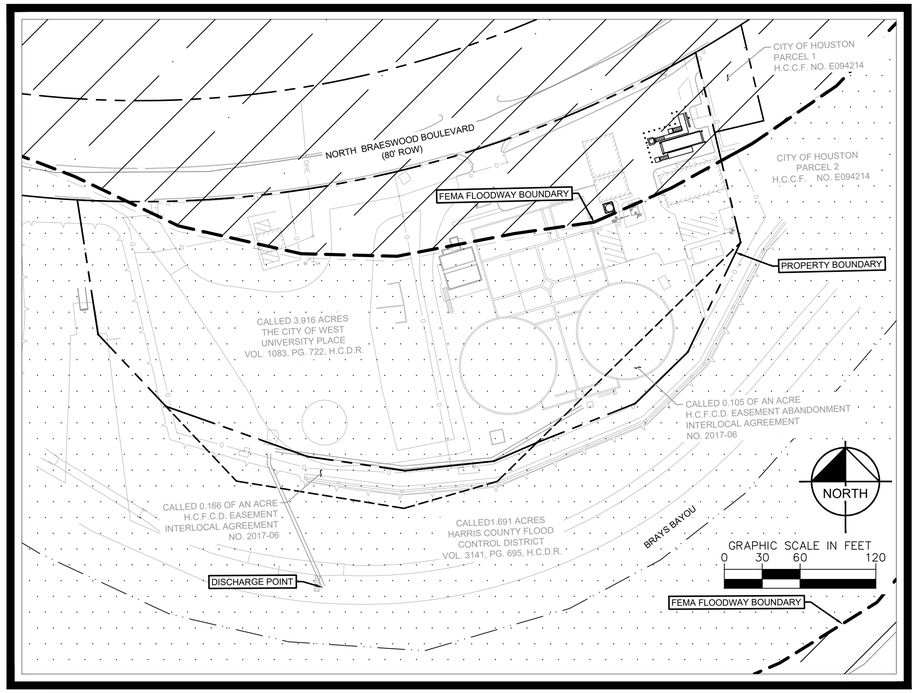
GENERAL NOTES (2 OF 2)

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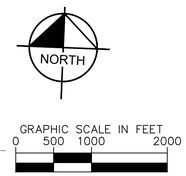
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LEGEND

- FLOODPLAIN SHADED ZONE AE
- FLOODWAY
- WWTP SERVICE AREA

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.

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

SERVICE AREA MAP

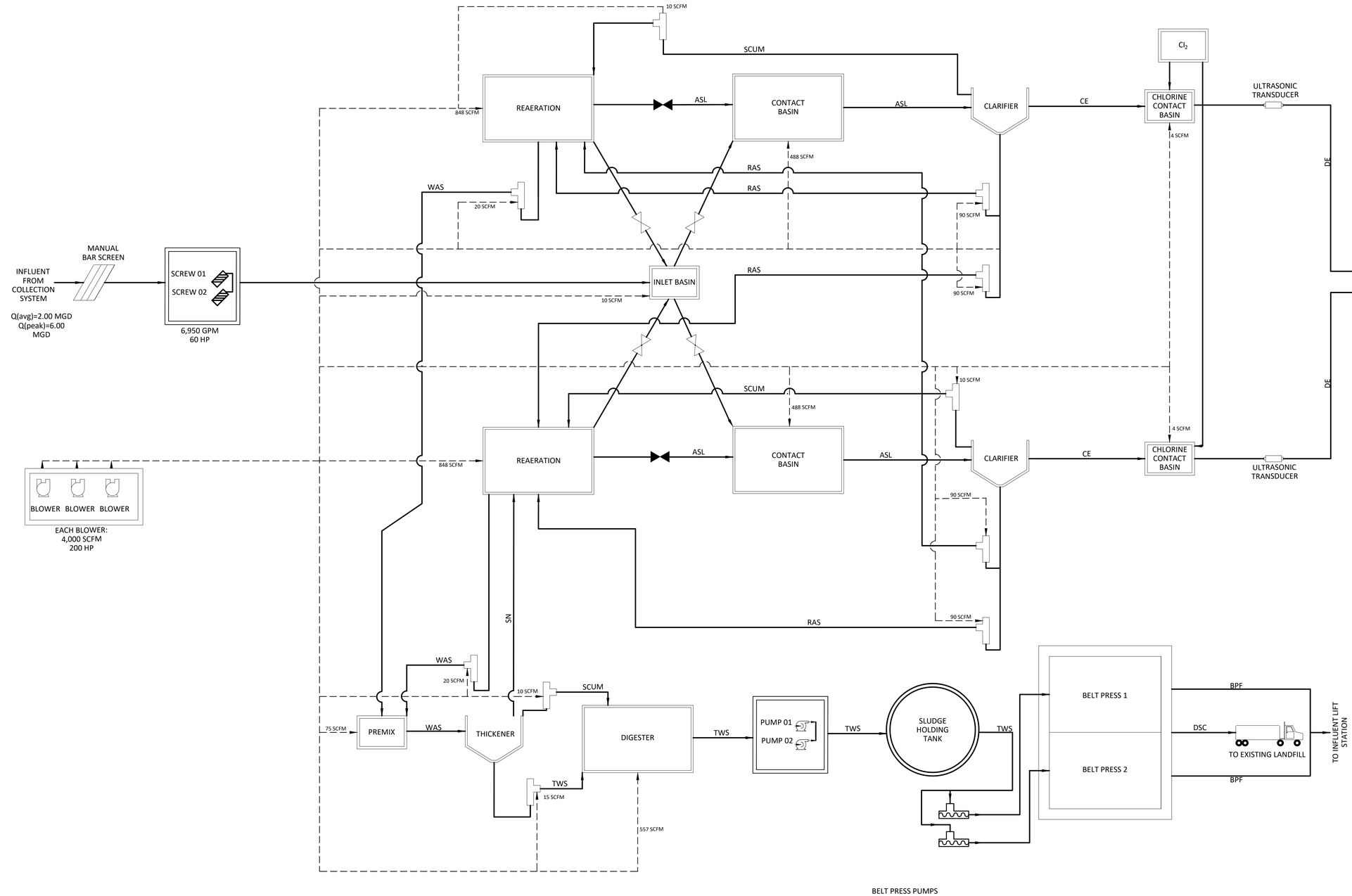
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TOTAL
QAVG - 2 MGD
QPEAK - 6 MGD
RAS FLOW - 8 MGD



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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

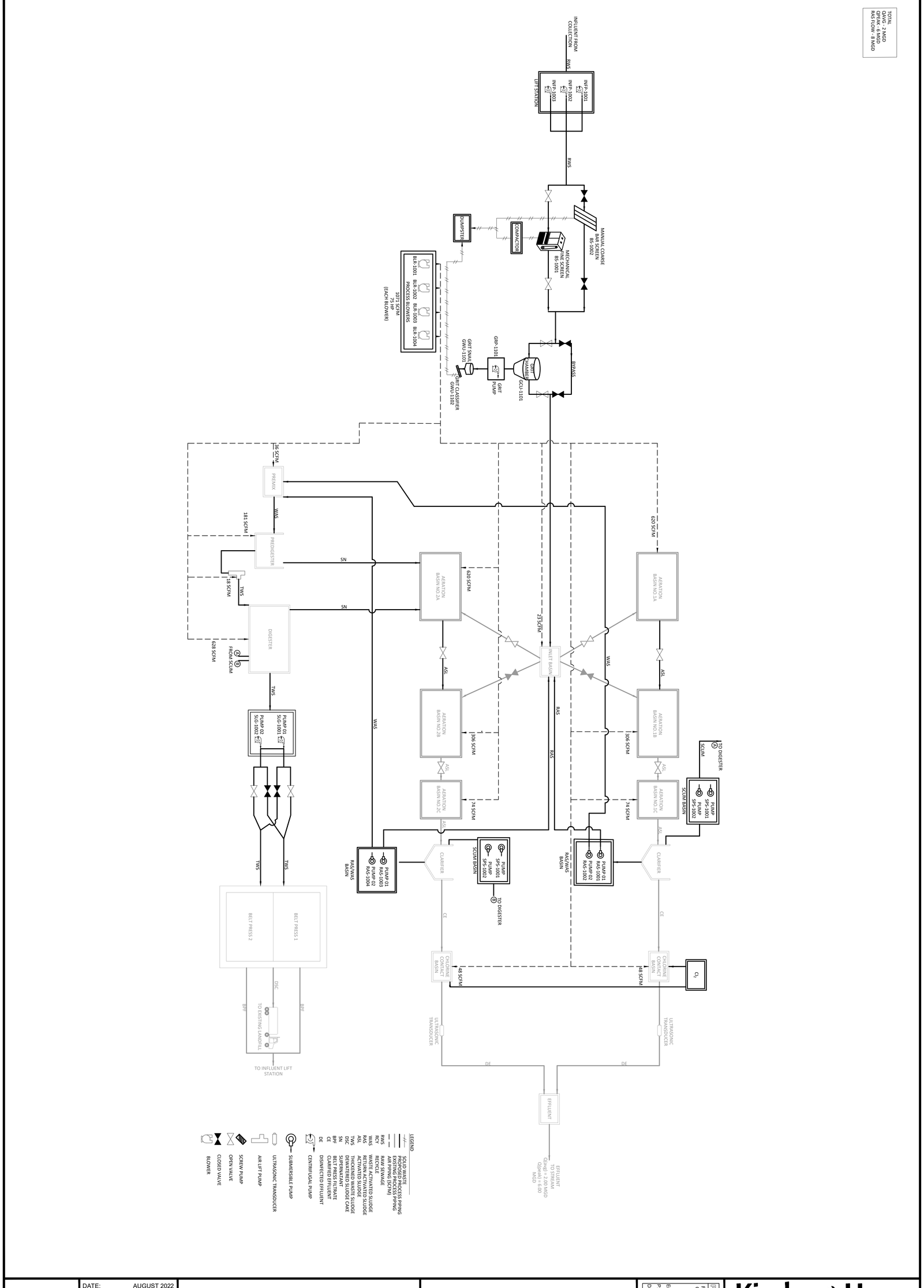
EXISTING PROCESS FLOW DIAGRAM

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PROPOSED PROCESS FLOW DIAGRAM

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

PRELIMINARY

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EQUIPMENT SCHEDULE

NAME	TAG NO.	MAKE/MODEL	LOCATION	TYPE	CAPACITY	WEIGHT (LB)	HP	SUCTION (IN)	DISCHARGE (IN)	EXISTING OR PROPOSED
SUBMERSIBLE PUMP	INFP - 1001	FLYGT NP 3202 MT 3	LIFT STATION	SUBMERSIBLE, VARIABLE SPEED	1388 GPM	-----	35	-----	8	PROPOSED
SUBMERSIBLE PUMP	INFP - 1002	FLYGT NP 3202 MT 3	LIFT STATION	SUBMERSIBLE, VARIABLE SPEED	1388 GPM	-----	35	-----	8	PROPOSED
SUBMERSIBLE PUMP	INFP - 1003	FLYGT NP 3202 MT 3	LIFT STATION	SUBMERSIBLE, VARIABLE SPEED	1388 GPM	-----	35	-----	8	PROPOSED
MECHANICAL SCREEN	BS - 1001	HUBER STEPSCREEN FLEXIBLE 3000	HEADWORKS	-----	6 MDG	2605	2	N/A	N/A	PROPOSED
SCREENING WASH PRESS	BC - 1002	WAP, 1XWAP2	HEADWORKS	-----	70 CFH	530	5	N/A	N/A	PROPOSED
GRIT CLASSIFIER	GWU-1102	TEACUP GRIT CLASSIFICATION UNIT	HEADWORKS	-----	450 GPM WITH 54" HEADLOSS	976	-----	N/A	N/A	PROPOSED
GRIT CONCENTRATOR	GCU - 1101	HEADCELL GRIT CONCENTRATOR UNIT	HEADWORKS	-----	10.9 GPM/FT2	2128.3	-----	N/A	N/A	PROPOSED
FINE BUBBLE DIFFUSER	-----	SANITAIRE MEMDETS1633	AERATION BASIN	-----	-----	-----	-----	N/A	N/A	PROPOSED
BLOWER	BLR - 1001	ATLAS COPCO, ZS4VSD A1	BLOWER PAD	VFD	1488 CFM	3726	100	8	8	PROPOSED
BLOWER	BLR - 1002	ATLAS COPCO, ZS4VSD A1	BLOWER PAD	VFD	1488 CFM	3726	100	8	8	PROPOSED
BLOWER	BLR - 1003	ATLAS COPCO, ZS4VSD A1	BLOWER PAD	VFD	1488 CFM	3726	100	8	8	PROPOSED
RAS RETURN PUMP	RAS - 1001	FLYGT CONCERTOR N100-6950	RAS	SUBMERSIBLE, NON-CLOG	1230 GPM	353	10	-----	4	PROPOSED
RAS RETURN PUMP	RAS - 1002	FLYGT CONCERTOR N100-6950	RAS	SUBMERSIBLE, NON-CLOG	1230 GPM	353	10	----	4	PROPOSED
SCUM PUMP	SPS - 1001	FLYGT CONCERTOR N100-500	WAS	SUBMERSIBLE, NON-CLOG	19.6 GPM	353	3	-----	4	PROPOSED
SCUM PUMP	SPS - 1002	FLYGT CONCERTOR N100-500	WAS	SUBMERSIBLE, NON-CLOG	19.6 GPM	353	3	----	4	PROPOSED
SLUDGE PUMP	SLG-1001	TBD	DIGESTER	----	----	----	----	----	----	PROPOSED
SLUDGE PUMP	SLG-1002	TBD	DIGESTER	----	----	----	----	----	----	PROPOSED
NON-POTABLE SYSTEM	-----	U-SERIES U3A-B-1	NON-POTABLE	-----	134 GPM	-----	14.4	3	3	PROPOSED
DISSOLVED OXYGEN PROBES	-----	HACH LDO PROBE, MODEL 2	AERATION BASIN	-----	N/A	2.2	-----	N/A	N/A	PROPOSED
SCREW PUMP	-----	EVOQUA INTERNALIFT PUMP	LIFT STATION	-----	6950 GPM	-----	60	-----	-----	EXISTING
SCREW PUMP	-----	EVOQUA INTERNALIFT PUMP	LIFT STATION	-----	6950 GPM	-----	60	-----	-----	EXISTING
SLUICE GATE	-----	WATERMAN VALVE	AERATION BUILDING	RECTANGULAR BUTTERFLY, 48"X48"	-----	-----	N/A	N/A	N/A	EXISTING
SLUICE GATE	-----	WATERMAN VALVE	AERATION BUILDING	RECTANGULAR BUTTERFLY, 48"X48"	-----	-----	N/A	N/A	N/A	EXISTING
SLUICE GATE	-----	WATERMAN VALVE	AERATION BUILDING	RECTANGULAR BUTTERFLY, 48"X48"	-----	-----	N/A	N/A	N/A	EXISTING
SLUICE GATE	-----	WATERMAN VALVE	AERATION BUILDING	RECTANGULAR BUTTERFLY, 48"X48"	-----	-----	N/A	N/A	N/A	EXISTING
SLUICE GATE	-----	WATERMAN VALVE	AERATION BUILDING	RECTANGULAR BUTTERFLY, 48"X48"	-----	-----	N/A	N/A	N/A	EXISTING
SLUICE GATE	-----	WATERMAN VALVE	AERATION BUILDING	RECTANGULAR BUTTERFLY, 48"X48"	-----	-----	N/A	N/A	N/A	EXISTING
SLUICE GATE	-----	WATERMAN VALVE	AERATION BUILDING	RECTANGULAR BUTTERFLY, 48"X48"	-----	-----	N/A	N/A	N/A	EXISTING
SLUICE GATE	-----	WATERMAN VALVE	AERATION BUILDING	RECTANGULAR BUTTERFLY, 24"X24"	-----	-----	N/A	N/A	N/A	EXISTING
SLUICE GATE	-----	WATERMAN VALVE	AERATION BUILDING	RECTANGULAR BUTTERFLY, 24"X24"	-----	-----	N/A	N/A	N/A	EXISTING
BLOWER	-----	HSI, 12607	BLOWER PAD	-----	-----	-----	200	-----	-----	EXISTING
BLOWER	-----	HSI, 12607	BLOWER PAD	-----	-----	-----	200	-----	-----	EXISTING
BLOWER	-----	HSI, 12607	BLOWER PAD	-----	-----	-----	200	-----	-----	EXISTING
CLARIFIER	CL - 1001	EVOQUA	CLARIFIER	-----	-----	-----	1	N/A	N/A	EXISTING
CLARIFIER	CL - 1002	EVOQUA	CLARIFIER	-----	-----	-----	1	N/A	N/A	EXISTING
CHLORINE FEED SYSTEM	-----	SUPERIOR	CHLORINE BUILDING	-----	-----	-----	-----	N/A	N/A	EXISTING
CHLORINE FEED SYSTEM	-----	SUPERIOR	CHLORINE BUILDING	-----	-----	-----	-----	N/A	N/A	EXISTING
SLUDGE TRANSFER PUMP	-----	GORMAN-RUPP, 6 A3-B	SLUDGE HOLDING TANK	-----	-----	-----	-----	11.25	-----	EXISTING
SLUDGE TRANSFER PUMP	-----	GORMAN-RUPP, 6 A3-B	SLUDGE HOLDING TANK	-----	-----	-----	-----	11.25	-----	EXISTING
POLYMER FEED SYSTEM	-----	SIEMENS, M601-D2 5AAC	-----	-----	-----	-----	-----	N/A	N/A	EXISTING
BELT PRESS	BP-CP - 1	ALVA LAVAL	BELT PRESS BUILDING	-----	-----	-----	-----	N/A	N/A	EXISTING
BELT PRESS	BP-CP - 2	ALVA LAVAL	BELT PRESS BUILDING	-----	-----	-----	-----	N/A	N/A	EXISTING
DECHLORINATION FEED SYSTEM	-----	MILTON ROY,B921-398SI	SOUTH OF CLARIFIER 1	-----	-----	-----	-----	N/A	N/A	EXISTING
NON-POTABLE FEED PUMP	-----	GORMAN-RUPP,4250-95	EAST OF CLARIFIER 2	-----	-----	-----	10	-----	-----	EXISTING
NON-POTABLE WATER FILTER	-----	ORIVAL WATER FILTERS, OR-06-PE	EAST OF BLOWER PAD	-----	-----	-----	-----	N/A	N/A	EXISTING
NON-POTABLE PUMP	NPW - 1001	BARMESA PUMPS, BMV12-50-753/70120050B	BELT PRESS BUILDING	-----	53 GPM	-----	10	-----	-----	EXISTING
NON-POTABLE PUMP	NPW - 1002	BARMESA PUMPS, BMV12-50-753/70120050B	BELT PRESS BUILDING	-----	53 GPM	-----	10	-----	-----	EXISTING
HYDROPNEUMATIC TANK	-----	WENDLAND MFG.CORP.	BELT PRESS BUILDING	-----	-----	-----	-----	N/A	N/A	EXISTING
GENERATOR	-----	KOHLER,750PROZMB	GENERATOR PAD	-----	-----	-----	-----	N/A	N/A	EXISTING

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TBPE NO. 928
PHONE: 281-597-9300

No.	Revision	By	Date

PRELIMINARY

FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.

Kimley»Horn

Engineer M. A. SHELTON
P.E. No. 95893
Date SEPTEMBER 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

EQUIPMENT SCHEDULE

DATE:	AUGUST 2022
DESIGN:	MPM
DRAWN:	HLR
CHECKED:	KPK
KHA NO.:	067812104

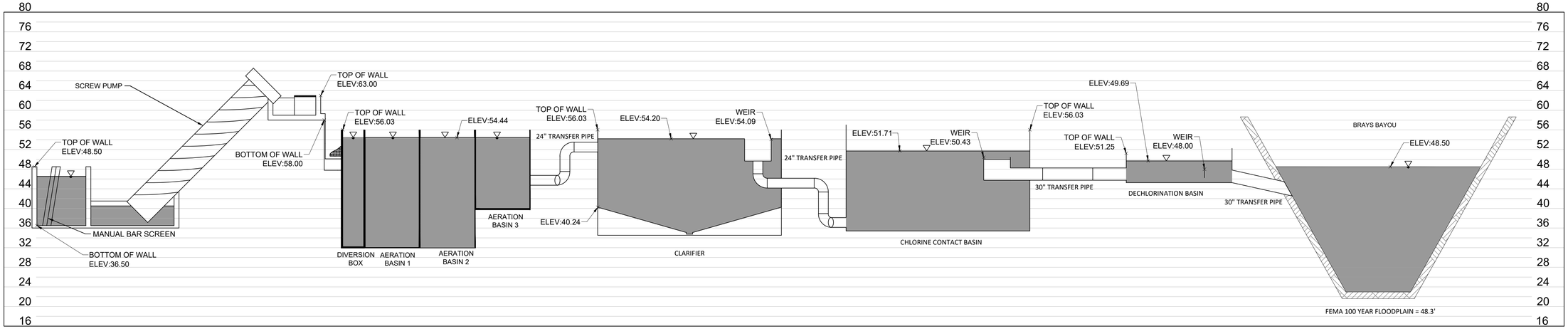
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DESIGN DATA TABLE	
FLOW:	**EXIST WWTP**
AVERAGE DAILY FLOW (MG.P.D.)	2
PEAK 2-HOUR FLOW (MG.P.D.)	6
EFFLUENT LIMITS:	
BOD5 (mg/L)	10
TSS (mg/L)	15
NH3-N (mg/L)	N/A (REPORT)
TOTAL KJELDAHL NITROGEN	N/A (REPORT)
TOTAL SIVLER	N/A (REPORT)
E. COLI (CFU/100 mL)	63
CONTACT BASINS:	
TOTAL VOLUME (CU. FT.)	35,376
REAERATION BASINS:	
TOTAL VOLUME (CU. FT.)	57,420
FINAL CLARIFIERS - ACTIVATED SLUDGE PROCESS:	
TOTAL SURFACE AREA (SQ. FT.)	8,836
SURFACE LOADING - PEAK FLOW (G.P.D./SQ. FT.)	679
WEIR LENGTH (FT.)	471
WEIR LOADING - PEAK FLOW (G.P.D./SQ. FT.)	12,739
SIDE WATER DEPTH (FT.)	11.25
DETENTION TIME AT PEAK FLOW (HRS.)	1.80
DIGESTERS - AEROBIC:	
TOTAL VOLUME (CU. FT.)	31,388
CHLORINE CONTACT BASIN:	
TOTAL VOLUME (CU. FT.)	27,216
DETENTION TIME - PEAK FLOW (MINUTES)	20
AIR BLOWERS	
TOTAL NUMBER	3
TOTAL HORSEPOWER (PER BLOWER)	200
RATED CAPACITY WITH LARGEST UNIT OUT OF SERVICE (S.C.F.M.)	8,200

PEAK FLOW = 6 MGD



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Kimley»Horn

Engineer M. A. SHELTON
P.E. No. 95893
Date SEPTEMBER 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

EXISTING HYDRAULIC PROFILE

DATE:	AUGUST 2022
DESIGN:	MPM
DRAWN:	HLR
CHECKED:	KPK
KHA NO.:	067812104

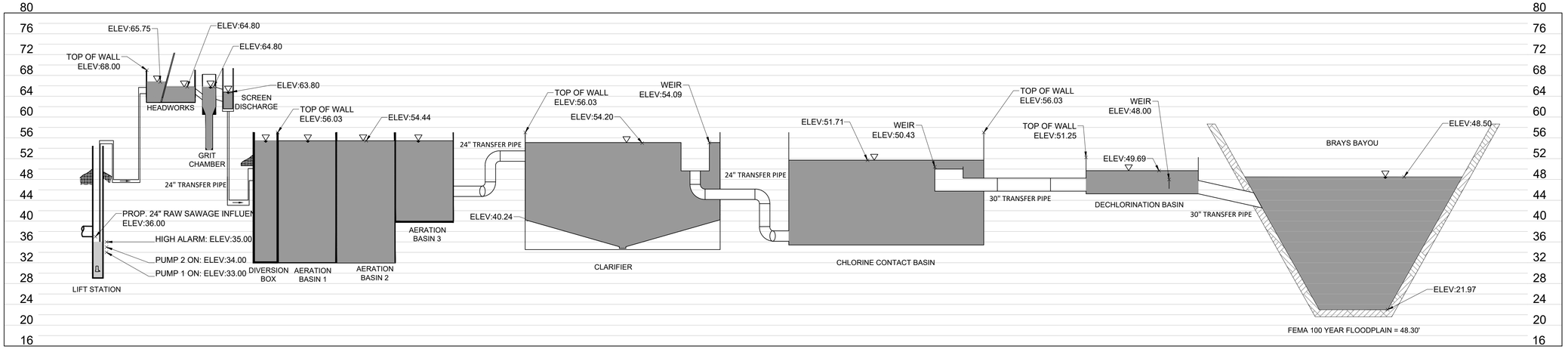
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DESIGN DATA TABLE	
FLOW:	**PROP WWTP**
AVERAGE DAILY FLOW (G.P.D.)	2
PEAK 2-HOUR FLOW (G.P.D.)	6
INFLUENT LOAD:	
BOD5 (LBS./DAY) CONC. 250 mg/L	4,170
TSS (LBS./DAY) CONC. 250 mg/L	5,838
NH3-N (LBS./DAY) CONC. 40 mg/L	667.2
EFFLUENT LIMITS:	
BOD5 (mg/L)	10
TSS (mg/L)	15
NH3-N (mg/L)	N/A (REPORT)
TOTAL KJELDAHL NITROGEN	N/A (REPORT)
TOTAL SIVLER	N/A (REPORT)
E. COLI (CFU/100 mL)	63
AERATION BASINS:	
TOTAL VOLUME (CU. FT.)	92,796
ORGANIC LOADING (LBS. BOD5/DAY/1000 CU. FT.)	44.9
FINAL CLARIFIERS - ACTIVATED SLUDGE PROCESS:	
TOTAL SURFACE AREA (SQ. FT.)	8,836
SURFACE LOADING - PEAK FLOW (G.P.D./SQ. FT.)	679
WEIR LENGTH (FT.)	471
WEIR LOADING - PEAK FLOW (G.P.D./SQ. FT.)	12,739
SIDE WATER DEPTH (FT.)	11.25
DETENTION TIME AT PEAK FLOW (HRS.)	1.80
DIGESTERS - AEROBIC:	
TOTAL VOLUME (CU. FT.)	31,388
SOLIDS RETENTION TIME (DAYS)	20
CHLORINE CONTACT BASIN:	
TOTAL VOLUME (CU. FT.)	27,216
DETENTION TIME - PEAK FLOW (MINUTES)	20
AIR REQUIREMENTS (S.C.F.M.)	
AERATION (S.C.F.M.)	2,020
DIGESTION (S.C.F.M.)	846
CHLORINE CONTACT (S.C.F.M.)	96
AIR LIFT PUMPS & MISC. DROPS (S.C.F.M.)	28
NET TOTAL REQUIRED (S.C.F.M.)	2,990
AIR BLOWERS	
TOTAL NUMBER	4
TOTAL HORSEPOWER (PER BLOWER)	75
RATED CAPACITY WITH LARGEST UNIT OUT OF SERVICE (S.C.F.M.)	3,213

PEAK FLOW = 6 MGD



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Engineer M. A. SHELTON

P.E. No. 95893

Date SEPTEMBER 2022

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

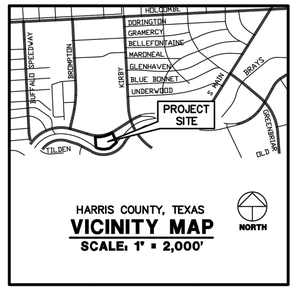
PROPOSED HYDRAULIC PROFILE

DATE:	AUGUST 2022
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DRAWN:	HLR
CHECKED:	KPK
KHA NO.:	067812104

SHEET

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HARRIS COUNTY, TEXAS

VICINITY MAP

SCALE: 1" = 2,000'

NORTH

BENCHMARK — PUBLISHED ELEVATION – 44.30

ALL ELEVATIONS SHOWN HEREON ARE BASED ON HARRIS COUNTY FLOODPLAIN REFERENCE MARK NO. 0401-30, BEING A BRASS DISC FROM THE INTERSECTION OF NORTH BRAESWOOD BOULEVARD AND KIRBY DRIVE, TRAVEL SOUTH ON KIRBY APPROXIMATELY 50 FEET TO BRIDGE OVER BRAYS BAYOU. MONUMENT IS LOCATED ON THE EAST SIDEWALK WITH A PUBLISHED ELEVATION OF 44.30 FEET, NAVD 1988 (2001 ADJ.)

TEMPORARY BENCHMARK "A" — ELEVATION – 46.93

TBM "A" BEING A CUT BOX 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 RIGHT-OF-WAY LINE OF NORTH BRAESWOOD BOULEVARD.

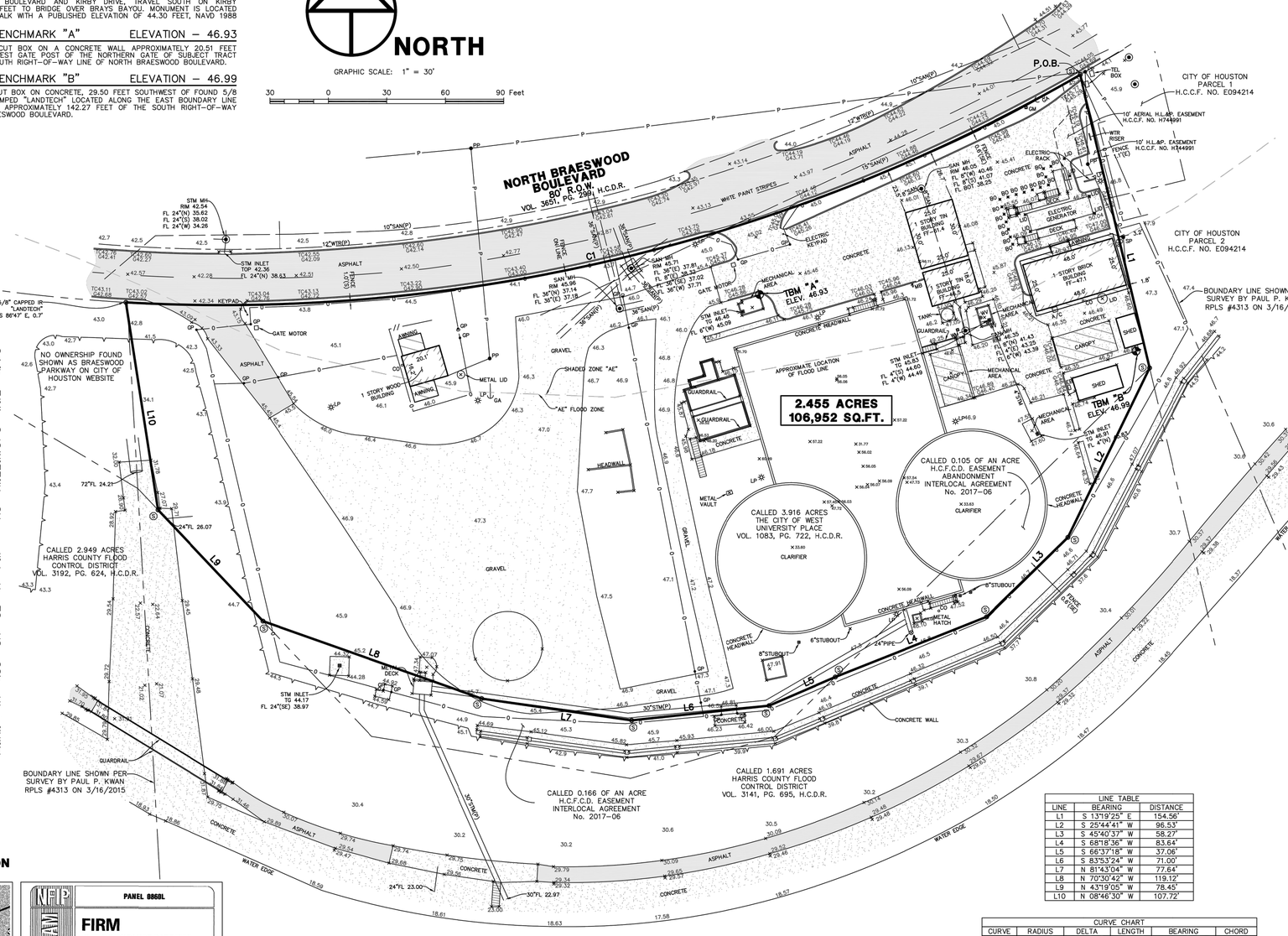
TEMPORARY BENCHMARK "B" — ELEVATION – 46.99

TBM "B" BEING A CUT BOX ON CONCRETE, 29.50 FEET SOUTHWEST OF FOUND 5/8 INCH IRON ROD STAMPED "LANDTECH" LOCATED ALONG THE EAST BOUNDARY LINE OF SUBJECT TRACT, APPROXIMATELY 142.27 FEET OF THE SOUTH RIGHT-OF-WAY LINE OF NORTH BRAESWOOD BOULEVARD.

NORTH

GRAPHIC SCALE: 1" = 30'

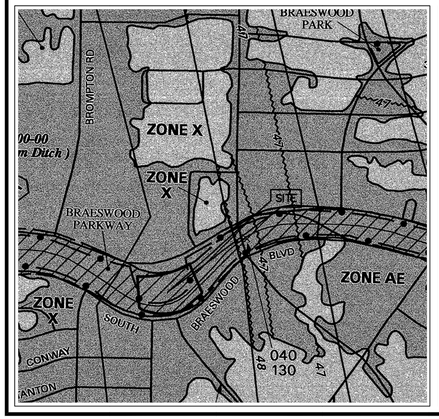
30 0 30 60 90 Feet

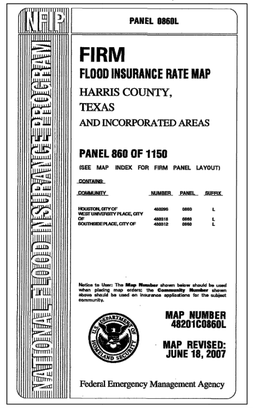


GENERAL NOTES

1. SURVEYOR DID NOT ABSTRACT SUBJECT PROPERTY. THIS SURVEY WAS PREPARED WITH INFORMATION CONTAINED IN CITY PLANNING SEARCH REPORT ORDRE NO. 2021-0202 OF CHARTER TITLE COMPANY, EFFECTIVE DATE OF APRIL 20, 2021, ISSUED DATE OF APRIL 27, 2021, AND IS SUBJECT TO THE LIMITATIONS OF THAT COMMITMENT.
2. BEARINGS WERE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE (NAD 83). ALL DISTANCES SHOWN HEREON ARE SURFACE DISTANCES AND MAY BE BROUGHT TO GRID BY APPLYING THE FOLLOWING SCALE FACTOR: 0.99988463.
3. ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), FLOOD INSURANCE RATE MAP (FIRM) FOR HARRIS COUNTY, TEXAS, MAP NO. 48201C0860L REVISED/DATED JUNE 18, 2007, THE SUBJECT TRACT APPEARS TO LIE WITHIN SHADED ZONE "AE" AND "AE" FLOOD ZONE. THIS DETERMINATION WAS DONE BY GRAPHIC PLOTTING AND IS APPROXIMATE ONLY, AND HAS NOT BEEN FIELD VERIFIED. THIS FLOOD STATEMENT DOES NOT IMPLY THAT THE PROPERTY OR STRUCTURES THEREON WILL BE FREE FROM FLOODING OR FLOOD DAMAGE. ON RARE OCCASIONS FLOODS CAN AND WILL OCCUR AND FLOOD HEIGHTS MAY BE INCREASED BY MAN-MADE OR NATURAL CAUSES. THIS FLOOD STATEMENT SHALL NOT CREATE LIABILITY ON THE PART OF WINDROSE LAND SERVICES.
4. READILY VISIBLE IMPROVEMENTS AND UTILITIES WERE LOCATED WITH THIS SURVEY, NO SUBSURFACE PROBING, EXCAVATION OR EXPLORATION WAS PERFORMED BY WINDROSE LAND SERVICES.
5. ENVIRONMENTAL AND DRAINAGE ISSUES ARE BEYOND THE SCOPE OF THIS SURVEY.
6. THE SQUARE FOOTAGE TOTALS SHOWN HEREON ARE BASED ON THE MATHEMATICAL CLOSURE OF THE COURSES AND DISTANCES REFLECTED ON THE SURVEY. IT DOES NOT INCLUDE THE TOLERANCES THAT MAY BE PRESENT DUE TO THE POSITIONAL ACCURACY OF THE BOUNDARY MONUMENTATION.
7. FENCES SHOWN HEREON WITH DIMENSIONAL TIES ARE SHOWN WHERE THEY ARE PHYSICALLY MEASURED. THE FENCE MAY MEANDER BETWEEN MEASURED LOCATIONS.
8. THE WORD "CERTIFY" OR "CERTIFICATE" AS SHOWN AND USED HEREON MEANS AN EXPRESSION OF PROFESSIONAL OPINION REGARDING THE FACTS OF THE SURVEY AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE EXPRESSED OR IMPLIED.
9. ELEVATIONS SHOWN TO THE NEAREST TENTH ARE NATURAL GROUND SURFACE ELEVATIONS AND ELEVATIONS SHOWN TO THE NEAREST HUNDREDTH ARE SOLID SURFACE ELEVATIONS.
10. GAS, SANITARY, STORM, TELEPHONE AND WATER LINES SHOWN HEREON ARE BASED ON UTILITY PLANS ACQUIRED FROM CITY OF HOUSTON AND CENTERPOINT ENERGY AND WERE FIELD VERIFIED WHERE POSSIBLE. OTHER UTILITY PLANS OR INFORMATION MAY EXIST NOT KNOWN TO THIS COMPANY.
11. SURVEYOR DID NOT PHYSICALLY ENTER MANHOLES. UNDERGROUND PIPE SIZES WERE DETERMINED BY A "MEASURE DOWN" METHOD FROM TOP OF MANHOLE RIM OR TOP OF GRATE OR TOP OF CURB AND WERE COMPARED WITH UTILITY PLANS WHERE POSSIBLE.
12. SURVEYOR HAS CONTACTED DIGTESS FOR LOCATION OF BURIED UTILITY AND FIBER OPTIC LINES PRIOR TO THIS SURVEY. SURVEYOR CANNOT CERTIFY OR GUARANTY THE ACCURACY OR COMPLETENESS OF THIS REQUEST. OTHER UNDERGROUND UTILITY LINES MAY EXIST NOT KNOWN TO THIS COMPANY. IT IS THE CONTRACTORS RESPONSIBILITY TO CONTACT DIGTESS OR OTHER UTILITY NOTIFICATION SERVICES FOR LOCATION OF UNDERGROUND UTILITIES, PRIOR TO CONSTRUCTION.

FLOOD INFORMATION





LEGEND

* SOME OF THESE ELEMENTS MAY NOT BE USED ON THIS SURVEY

- BO – BOLLARD
- HC – HANDICAP
- GM – GAS METER
- GV – GAS VALVE
- FH – FIRE HYDRANT
- WM – WATER METER
- WV – WATER VALVE
- ICV – IRRIGATION CONTROL VALVE
- GI – GRATE INLET
- GI – GRATE INLET
- MH – MANHOLE
- CO – CLEANOUT
- TP – TELEPHONE PEDESTAL
- EB – ELECTRIC BOX
- TSB – TRAFFIC SIGNAL BOX
- LP – LIGHT POLE
- TLP – TRAFFIC LIGHT POLE
- GL – GROUND/SPOT LIGHT
- PP – POWER POLE
- PP/T – POWER POLE W/TRANSFORMER
- PP/LT – POWER POLE W/LIGHT
- PP/CT – POWER POLE W/CONDUIT
- MP – METER POLE
- SP – SERVICE POLE
- GAC – GUY ANCHOR
- OHP – OVERHEAD POWER LINE
- BWF – BARBED WIRE FENCE
- IRF – WROUGHT IRON FENCE
- WF – WOOD FENCE
- CLF – CHAINLINK FENCE
- GP – GATE POST
- (P) – PER PLANS
- APPROX. – APPROXIMATE
- HB – HIGHBANK
- SIGN
- PLM – PIPELINE MARKER
- UCS – UNDERGROUND CABLE SIGN
- CTL – CATHODIC TEST LEAD
- MW – MONITORING WELL
- PK – PIN FLAG/PAINT MARK
- TC – TOP OF CURB
- G – GUTTER
- TG – TOP OF GRATE
- FL – FLOW LINE
- HB – HIGHBANK
- SAN – SANITARY SEWER
- STM – STORM SEWER
- CMP – CORRUGATED METAL PIPE
- CPP – CORRUGATED PLASTIC PIPE
- RCP – REINFORCED CONCRETE PIPE
- TEL – TELEPHONE
- SWBT – SOUTHWESTERN BELL TELEPHONE CO.
- WTR – WATER
- UG – UNDERGROUND
- FND – FOUND
- H.C.C.F. – HARRIS COUNTY CLERK FILE
- H.C.D.R. – HARRIS COUNTY DEED RECORDS
- H.C.M.R. – HARRIS COUNTY MAP RECORDS
- IP – IRON PIPE
- IR – IRON ROD
- NO. – NUMBER
- PG. – PAGE
- R.O.W. – RIGHT-OF-WAY
- SQ. FT. – SQUARE FEET
- VOL. – VOLUME
- F.C. – FILM CODE
- B.L. – BUILDING LINE
- U.E. – UTILITY EASEMENT
- TREE/SHRUB
- SET 5/8" CAPPED IR "WINDROSE"

EASEMENTS AND OTHER ENCUMBRANCES

EASEMENT GRANTED TO HARRIS COUNTY DRAINAGE DISTRICT# 12, AS RECORDED IN VOLUME 1244, PAGE 326 OF THE DEED RECORDS OF HARRIS COUNTY, TEXAS.

EASEMENT GRANTED TO HARRIS COUNTY FLOOD CONTROL DISTRICT, AS RECORDED IN VOLUME 3141, PAGE 695 OF THE DEED RECORDS OF HARRIS COUNTY, TEXAS. (SHOWN HEREON)

EASEMENT GRANTED TO HOUSTON LIGHTING AND POWER COMPANY, AS RECORDED UNDER HARRIS COUNTY CLERK'S FILE NO. H744991. (SHOWN HEREON)

REVISIONS

DATE	REASON	BY

DESCRIPTION

A TRACT OR PARCEL CONTAINING 2.455 ACRES OR 106,952 SQUARE FEET OF LAND SITUATED IN THE PLEASANT W. ROSE LEAGUE, ABSTRACT NO. 645, HARRIS COUNTY, TEXAS, BEING OUT OF A CALLED 3.916 ACRE TRACT, DESCRIBED IN DEED TO THE CITY OF WEST UNIVERSITY PLACE, AS RECORDED IN VOL. 1083, PG. 722, OF THE HARRIS COUNTY DEED RECORDS (H.C.D.R.) AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS, WITH ALL BEARINGS BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE (NAD83):

BEGINNING AT A POINT ON THE SOUTH RIGHT-OF-WAY (R.O.W.) LINE OF NORTH BRAESWOOD BOULEVARD (80' R.O.W.) AS RECORDED IN VOL. 3651, PG. 299, H.C.D.R.; FOR THE NORTHWEST CORNER OF A TRACT OF LAND DESCRIBED IN DEED TO THE CITY OF HOUSTON (PARCEL 1), AS RECORDED UNDER H.C.C.F. NO. E094214 AND FOR THE NORTHWEST CORNER OF SAID 3.916 ACRE TRACT AND FOR THE NORTHEAST CORNER OF THE HEREIN DESCRIBED TRACT, FROM WHICH A FOUND CAPPED 5/8 IRON ROD STAMPED "LANDTECH"BEARS FOR REFERENCE SOUTH 86 DEG. 47 MIN. E – 0.7 FEET;

THENCE, SOUTH 13 DEG. 19 MIN. 25 SEC. EAST, ALONG THE WEST LINE OF SAID PARCEL 1 AND THE WEST LINE OF A TRACT OF LAND DESCRIBED IN DEED TO THE CITY OF HOUSTON (PARCEL 1), AS RECORDED UNDER H.C.C.F. NO. E094214, A DISTANCE OF 154.56 FEET, TO A CAPPED 5/8 INCH IRON ROD STAMPED "WINDROSE" SET FOR THE SOUTHEAST CORNER OF THE HEREIN DESCRIBED TRACT;

THENCE, OVER AND ACROSS SAID 3.916 ACRE TRACT, THE FOLLOWING COURSES AND DISTANCES;

SOUTH 25 DEG. 44 MIN. 41 SEC. WEST, A DISTANCE OF 96.53 FEET, TO A CAPPED 5/8 INCH IRON ROD STAMPED "WINDROSE" SET FOR AN ANGLE POINT;

SOUTH 45 DEG. 40 MIN. 37 SEC. WEST, A DISTANCE OF 58.27 FEET, TO A CAPPED 5/8 INCH IRON ROD STAMPED "WINDROSE" SET FOR AN ANGLE POINT;

SOUTH 68 DEG. 18 MIN. 36 SEC. WEST, A DISTANCE OF 83.64 FEET, TO A CAPPED 5/8 INCH IRON ROD STAMPED "WINDROSE" SET FOR AN ANGLE POINT;

SOUTH 66 DEG. 37 MIN. 18 SEC. WEST, A DISTANCE OF 37.06 FEET, TO A CAPPED 5/8 INCH IRON ROD STAMPED "WINDROSE" SET FOR AN ANGLE POINT;

SOUTH 83 DEG. 53 MIN. 24 SEC. WEST, A DISTANCE OF 71.00 FEET, TO A CAPPED 5/8 INCH IRON ROD STAMPED "WINDROSE" SET FOR AN ANGLE POINT;

NORTH 81 DEG. 43 MIN. 04 SEC. WEST, A DISTANCE OF 77.64 FEET, TO A CAPPED 5/8 INCH IRON ROD STAMPED "WINDROSE" SET FOR AN ANGLE POINT;

NORTH 70 DEG. 30 MIN. 42 SEC. WEST, A DISTANCE OF 119.12 FEET, TO A CAPPED 5/8 INCH IRON ROD STAMPED "WINDROSE" SET FOR AN ANGLE POINT;

NORTH 43 DEG. 19 MIN. 05 SEC. WEST, A DISTANCE OF 78.45 FEET, TO A CAPPED 5/8 INCH IRON ROD STAMPED "WINDROSE" SET FOR THE SOUTHWEST CORNER OF THE HEREIN DESCRIBED TRACT;

THENCE, NORTH 08 DEG. 46 MIN. 30 SEC. WEST, ALONG THE WEST LINE OF SAID 3.916 ACRE TRACT, A DISTANCE OF 107.72 FEET, TO A CAPPED 5/8 INCH IRON ROD STAMPED "WINDROSE" SET ON THE SOUTH R.O.W. LINE OF SAID NORTH BRAESWOOD BOULEVARD AND FOR THE NORTHWEST CORNER OF SAID 3.916 ACRE TRACT AND OF THE HEREIN DESCRIBED TRACT AND THE BEGINNING OF A NON-TANGENT CURVE TO THE LEFT, FROM WHICH A CAPPED 5/8 INCH IRON ROD STAMPED "LANDTECH"BEARS FOR REFERENCE SOUTH 86 DEG. 47 MIN. EAST, 0.7 FEET;

THENCE, WITH SAID CURVE TO THE LEFT, HAVING A RADIUS OF 878.73 FEET, A CENTRAL ANGLE OF 33 DEG. 17 MIN. 30 SEC., AN ARC LENGTH OF 510.59 FEET, AND A CHORD BEARING AND DISTANCE OF NORTH 76 DEG. 35 MIN. 15 SEC. EAST, – 503.44 FEET, TO THE PLACE OF BEGINNING AND CONTAINING 2.455 ACRES OR 106,952 SQUARE FEET OF LAND.

LINE TABLE		
LINE	BEARING	DISTANCE
L1	S 13°19'25" E	154.56'
L2	S 25°44'41" W	96.53'
L3	S 45°40'37" W	58.27'
L4	S 68°18'36" W	83.64'
L5	S 66°37'18" W	37.06'
L6	S 83°53'24" W	71.00'
L7	N 81°43'04" W	77.64'
L8	N 70°30'42" W	119.12'
L9	N 43°19'05" W	78.45'
L10	N 08°46'30" W	107.72'

CURVE CHART					
CURVE	RADIUS	DELTA	LENGTH	BEARING	CHORD
C1	878.73'	33°17'30"	510.59'	N 76°35'15" E	503.44'

SURVEYOR'S CERTIFICATION

TO: THE CITY OF WEST UNIVERSITY PLACE
CHARTER TITLE COMPANY

I DO HEREBY CERTIFY TO THE ABOVE LISTED THAT THIS SURVEY WAS THIS DAY MADE ON THE GROUND AND WAS PERFORMED UNDER MY SUPERVISION, THAT THIS PLAT CORRECTLY REPRESENTS THE PROPERTY LEGALLY DESCRIBED HEREON, THAT THE FACTS FOUND AT THE TIME OF THIS SURVEY SHOW THE IMPROVEMENTS AND THAT THERE ARE NO VISIBLE ENCROACHMENTS APPARENT ON THE GROUND, EXCEPT AS SHOWN. THIS SURVEY SUBSTANTIALLY CONFORMS TO THE CURRENT TEXAS SOCIETY OF PROFESSIONAL SURVEYORS STANDARDS AND SPECIFICATIONS FOR A CATEGORY 1A, CONDITION II SURVEY AND CATEGORY 6 SURVEY, TO THE BEST OF MY KNOWLEDGE.

LUCAS G. DAVIS
Registered Professional Land Surveyor
Texas Registration No. 6599

STATE OF TEXAS REGISTERED LUCAS G. DAVIS 6599 PROFESSIONAL LAND SURVEYOR

7-09-2021
DATE

WINDROSE
LAND SURVEYING | PLATTING
11111 RICHMOND AVE. STE 150 | HOUSTON, TX 77082 | 713.458.2281
FIRM REGISTRATION NO. 10108800 | WINDROSESERVICES.COM

LAND TITLE & TOPOGRAPHIC SURVEY
OF 2.455 ACRES / 106,952 SQ. FT.
SITUATED IN THE
PLEASANT W. ROSE LEAGUE
ABSTRACT NO. 645
HARRIS COUNTY, TEXAS

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FIELDED BY: DK	CHECKED BY: LGD	JOB NO. 54918-TOPO	
DRAWN BY: CG	DATE: MAY 2021	SHEET NO. 1 OF 1	

NORTH BRAESWOOD BOULEVARD
(80' ROW)

EXISTING ANIMAL SHELTER

EXISTING SLUDGE PUMPS

EXISTING SLUDGE DEWATERING FACILITY

EXISTING BELT PRESS PUMP ROOM

EXISTING GENERATOR

CITY OF HOUSTON PARCEL 1
H.C.C.F. NO. E094214

EXISTING AEROBIC DIGESTER

EXISTING GRAVITY THICKENER

EXISTING NPW FILTER

EXISTING OFFICE/LAB

CITY OF HOUSTON PARCEL 2
H.C.C.F. NO. E094214

CALLED 3.916 ACRES
THE CITY OF WEST UNIVERSITY PLACE
VOL. 1083, PG. 722, H.C.D.R.

EXISTING REAERATION BASIN NO. 1

EXISTING REAERATION BASIN NO. 2

EXISTING BLOWER PAD

EXISTING SLUDGE HOLDING TANK

EXISTING LIFT STATION

EXISTING CHLORINE BUILDING

EXISTING CONTACT BASIN NO. 1

EXISTING CONTACT BASIN NO. 2

EXISTING NPW PUMPS

EXISTING DECHLORINATION LOCATION

EXISTING CLARIFIER NO. 1

EXISTING CHLORINE CONTACT BASINS
NO. 1 NO. 2

EXISTING CLARIFIER NO. 2

EXISTING CHEMICAL BUILDING
SODIUM BISULFATE

CALLED 0.166 OF AN ACRE
H.C.F.C.D. EASEMENT
INTERLOCAL AGREEMENT
NO. 2017-06

CALLED 0.105 OF AN ACRE
H.C.F.C.D. EASEMENT ABANDONMENT
INTERLOCAL AGREEMENT
NO. 2017-06

DISCHARGE POINT

CALLED1.691 ACRES
HARRIS COUNTY FLOOD
CONTROL DISTRICT
VOL. 3141, PG. 695, H.C.D.R.

BRAYS BAYOU

NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

Kimley»Horn
11700 KATY FREEWAY, SUITE 800, HOUSTON, TEXAS 77079
TBPE NO. 928 PHONE: 281-597-8300

No.	Revision	By	Date

PRELIMINARY

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Kimley»Horn

Engineer M. A. SHELTON
P.E. No. 95893
Date SEPTEMBER 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT
PLANT IMPROVEMENTS

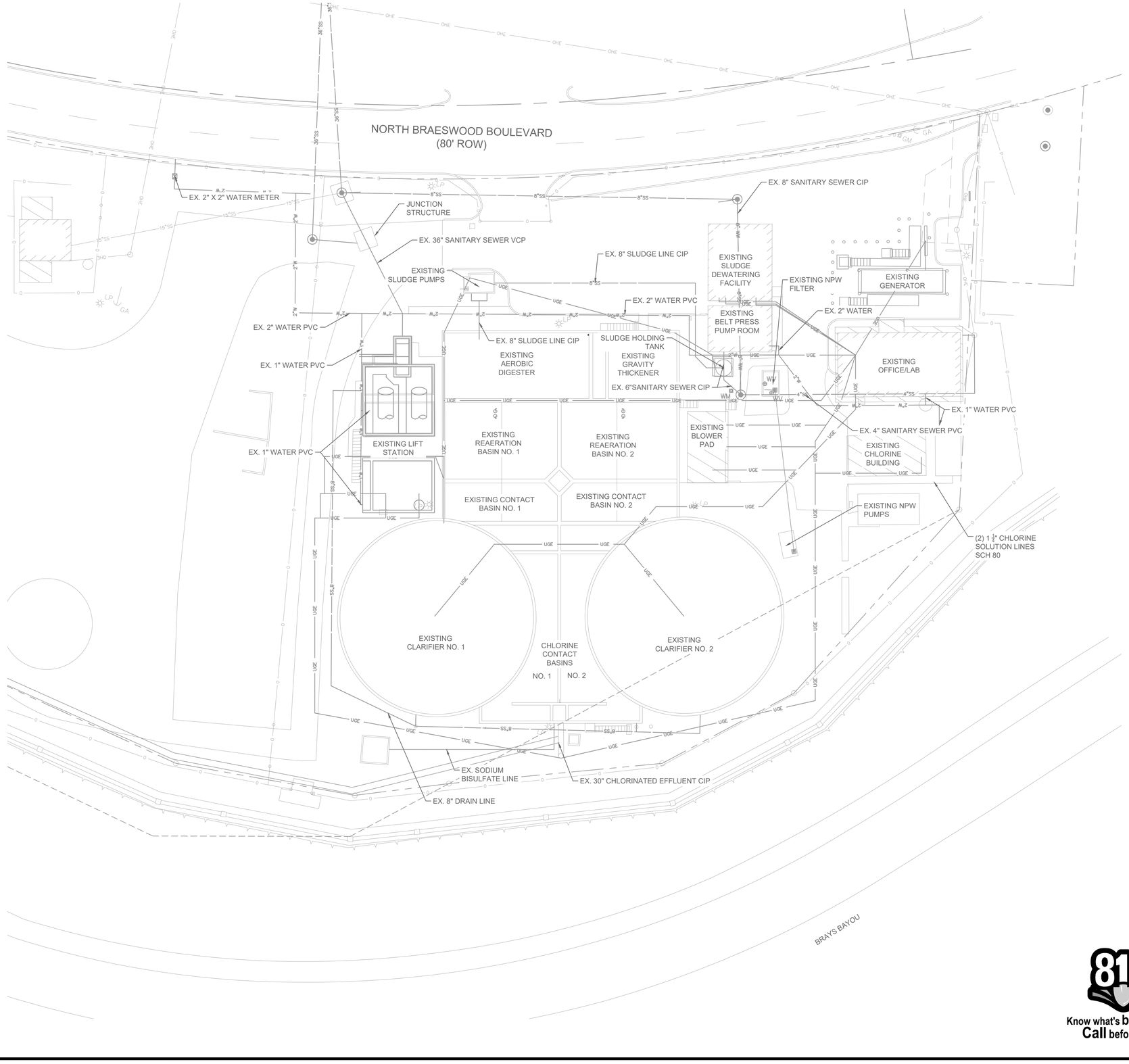
EXISTING OVERALL SITE LAYOUT

DATE:	AUGUST 2022
DESIGN:	MPM
DRAWN:	HLR
CHECKED:	KPK
KHA NO.:	067812104

SHEET

C-100

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NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

LEGEND

- EXISTING PIPING
- UGE — UGE — UNDERGROUND ELECTRIC
- W — W — POTABLE WATER
- SS — SS — SANITARY SEWER
- SANITARY SEWER MANHOLE
- WATER VALVE
- WATER METER

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.

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

EXISTING YARD PIPING

DATE:	AUGUST 2022
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CHECKED:	KPK
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SHEET
C-101

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NORTH BRAESWOOD BOULEVARD
(80' ROW)

NORTH

GRAPHIC SCALE IN FEET
0 5 10 20

SHEET M-500

EXISTING SLUDGE PUMPS

EXISTING SLUDGE DEWATERING FACILITY

EXISTING BELT PRESS PUMP ROOM

SHEET M-100

SHEET M-301

SHEET M-303

EXISTING AEROBIC DIGESTER

EXISTING GRAVITY THICKENER

SHEET M-600

EXISTING NPW SYSTEM

SHEET M-302

EXISTING OFFICE/LAB

SHEET M-400

EXISTING LIFT STATION AND HEADWORKS

EXISTING CONTACT STABILIZATION BASINS

EXISTING BLOWER PAD

EXISTING CHLORINE BUILDING

SHEET M-600

SHEET M-300

EXISTING CLARIFIER NO. 1

EXISTING CLARIFIER NO. 2

K:\HOU_Utilities\067812104_West U WWTP\09_CAD\03_Plan Sheets\WWTPC - DEMO KEY MAP.dwg 5/7/2013 10:40 AM

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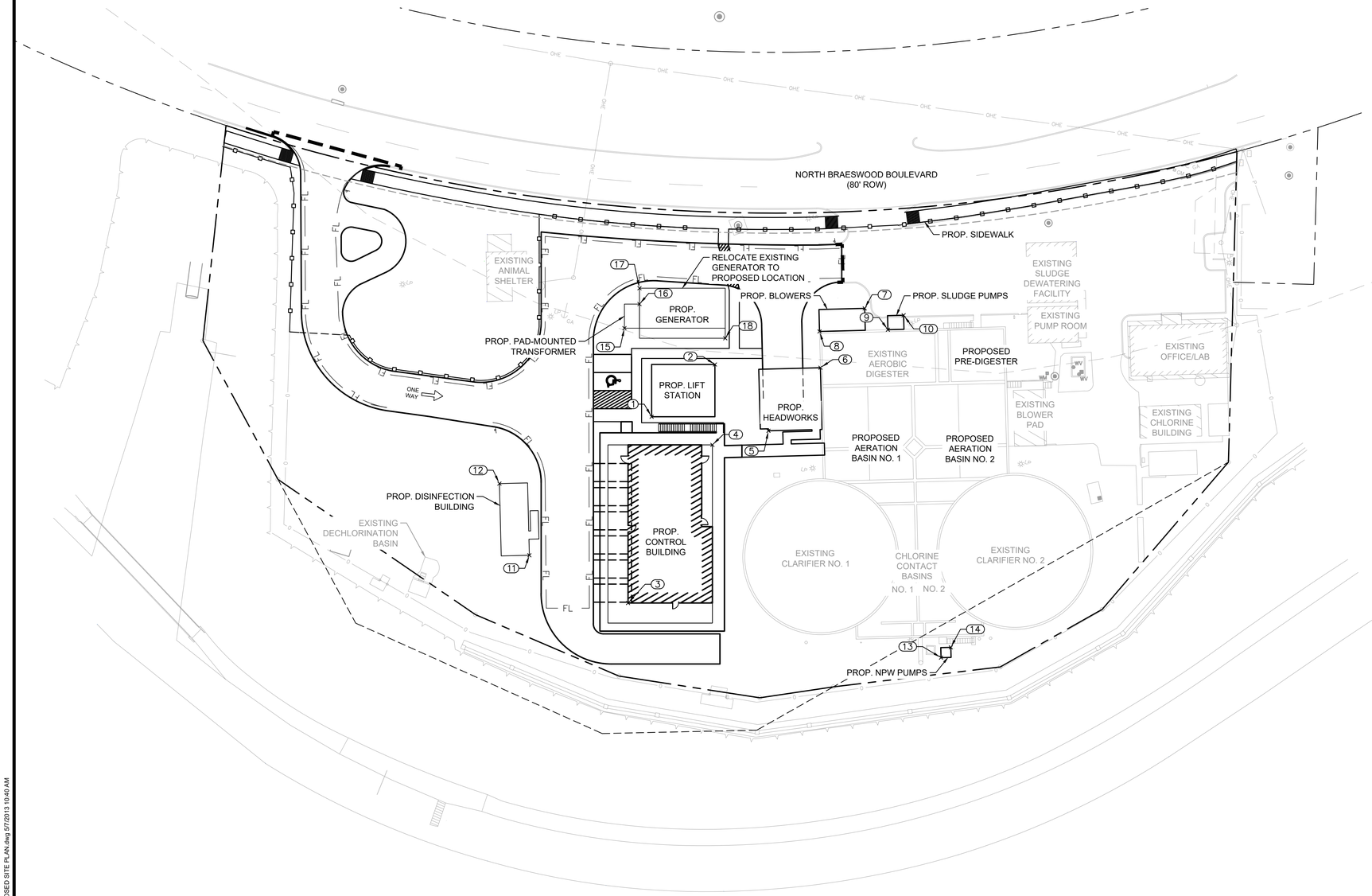
WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEMOLITION KEY MAP

DATE:	AUGUST 2022
DESIGN:	MPM
DRAWN:	HLR
CHECKED:	KPK
KHA NO.:	067812104

SHEET

C-200





GRAPHIC SCALE IN FEET
0 15 30 60

POINT TABLE			
POINT #	NORTHING	EASTING	DESCRIPTION
1	13819735.34	3105087.95	LIFT STATION CORNER
2	13819768.56	3105111.71	LIFT STATION CORNER
3	13819642.76	3105100.40	PROPOSED BUILDING CORNER
4	13819729.58	3105120.77	PROPOSED BUILDING CORNER
5	13819743.52	3105145.92	HEADWORKS CORNER
6	13819780.50	3105162.89	HEADWORKS CORNER
7	13819814.72	3105176.60	BLOWERS CORNER
8	13819797.83	3105157.81	BLOWERS CORNER
9	13819807.41	3105190.50	SLUDGE PUMPS CORNER
10	13819816.38	3105196.20	SLUDGE PUMPS CORNER
11	13819653.10	3105046.82	DISINFECTION CORNER
12	13819683.71	3105023.26	DISINFECTION CORNER
13	13819656.52	3105257.98	NPW PUMP PAD CORNER
14	13819662.73	3105261.37	NPW PUMP PAD CORNER
15	13819774.43	3105063.52	PROPOSED TRANSFORMER PAD CORNER
16	13819787.96	3105067.68	PROPOSED TRANSFORMER PAD CORNER
17	13819795.59	3105065.65	PROPOSED GENERATOR PAD CORNER
18	13819782.50	3105113.31	PROPOSED GENERATOR PAD CORNER

GENREAL NOTES

1. DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
2. REFER TO ELECTRICAL PLANS FOR SIRE LIGHTING POLES AND FIXTURES AND ELECTRICAL PLAN PRIOR TO PLACING PAVEMENT.
3. REFER TO ARCHITECTURAL PLANS FOR EXACT BUILDING DIMENSIONS.
4. SIDEWALKS TO HAVE A 5% MAXIMUM RUNNING SLOPE AND A 2% MAXIMUM CROSS SLOPE IN ACCORDANCE WITH ADA REQUIREMENTS.
5. FIELD VERIFY ADA GRADES PRIOR TO PLACING PAVEMENT. CONTRACTORS SHALL CONSTRUCT ALL ACCESSIBLE ROUTES IN ACCORDANCE WITH ADA STANDARDS AND TAS.
6. CONTRACTOR SHALL BUDGET FOR ACCESSIBLE STALL STRIPING, FIRE LANE STRIPING, DIRECTIONAL ARROWS, ECT.
7. REF. BUILDING PLANS FOR ALL EXTERIOR STAIR DETAILS.
8. CONTRACTOR TO ADJUST EXISTING SANITARY MANHOLES, STORM SEWER MANHOLES, ELECTRICAL MANHOLES, FIRE HYDRANTS, VALVE BOXES, WATER METERS, ECT. TO MATCH PROPOSED FINISHED GRADES IF NECESSARY.
9. CONTRACTOR TO SUBMIT A JOINTING PLAN AS A SHOP DRAWING TO THE ENGINEER PRIOR TO CONSTRUCTION.
10. ACCORDING TO FEMA FIRM MAP PANEL 48201C0860L DATED JUNE 18, 2007. THIS PROJECT LIES IN SPECIAL FLOOD HAZARD AREA AE ZONE WITH A BFE OF 48.3. FOR CONSTRUCTION PURPOSES, THE FLOOD ORDINANCE REQUIREMENTS FOR ZONE AE WILL BE FOLLOWED.

FLOODPLAIN INFORMATION

100-YR BASE FLOOD ELEVATION (BFE) IS 48.30'.

500-YR WATER SURFACE ELEVATION (WSEL) IS 50.85'.

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

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Engineer M. A. SHELTON
P.E. No. 95893
Date SEPTEMBER 2022

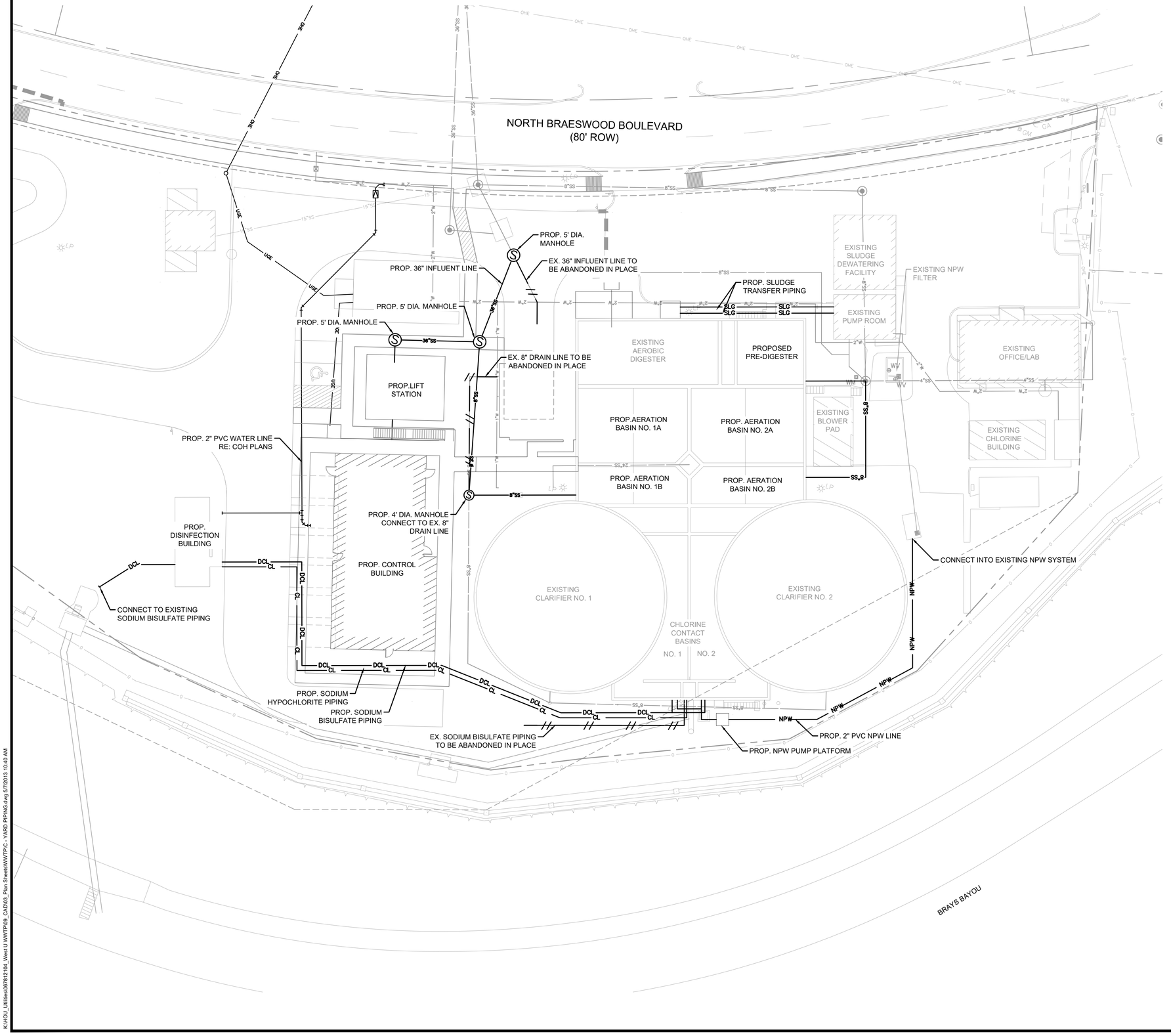
CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

PROPOSED SITE PLAN

DATE:	AUGUST 2022
DESIGN:	MPM
DRAWN:	HLR
CHECKED:	KPK
KHA NO.:	067812104

SHEET
C-300

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NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

LEGEND

- PROPOSED PIPING
- EXISTING PIPING
- // // // PIPING TO BE ABANDONED
- X X PIPING TO BE REMOVED

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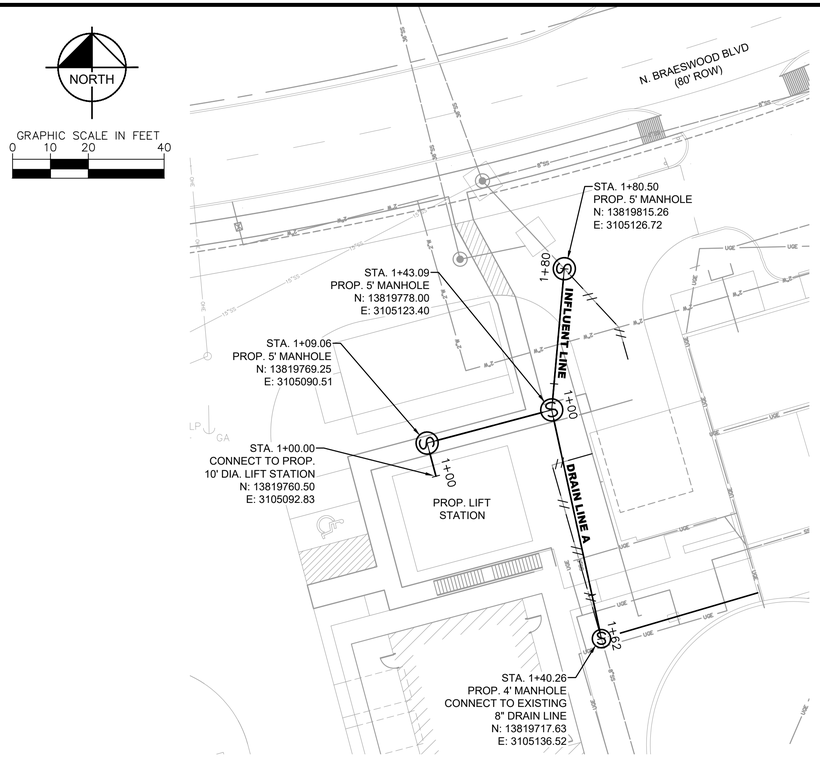
CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

PROPOSED YARD PIPING

DATE:	AUGUST 2022
DESIGN:	MPM
DRAWN:	HLR
CHECKED:	KPK
KHA NO.:	067812104

SHEET
C-301

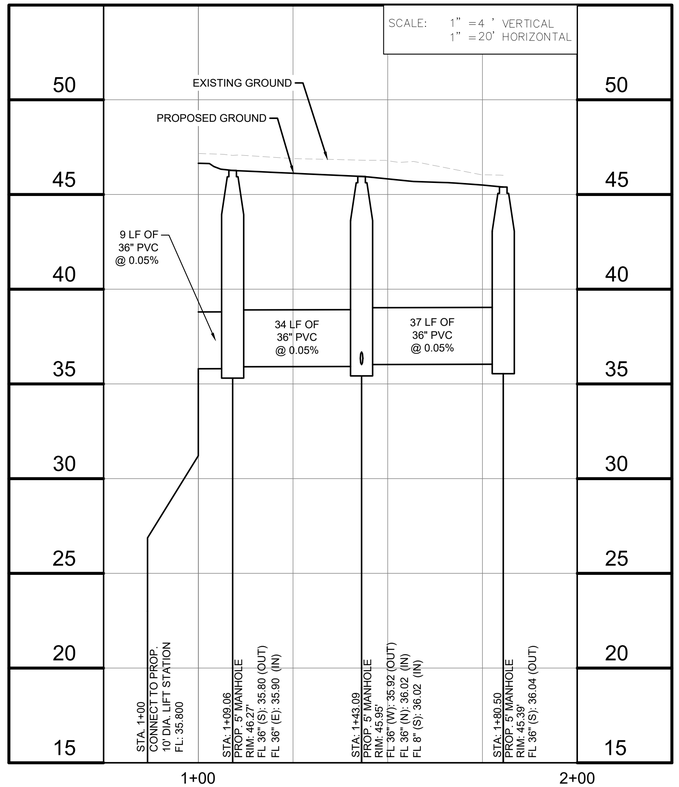
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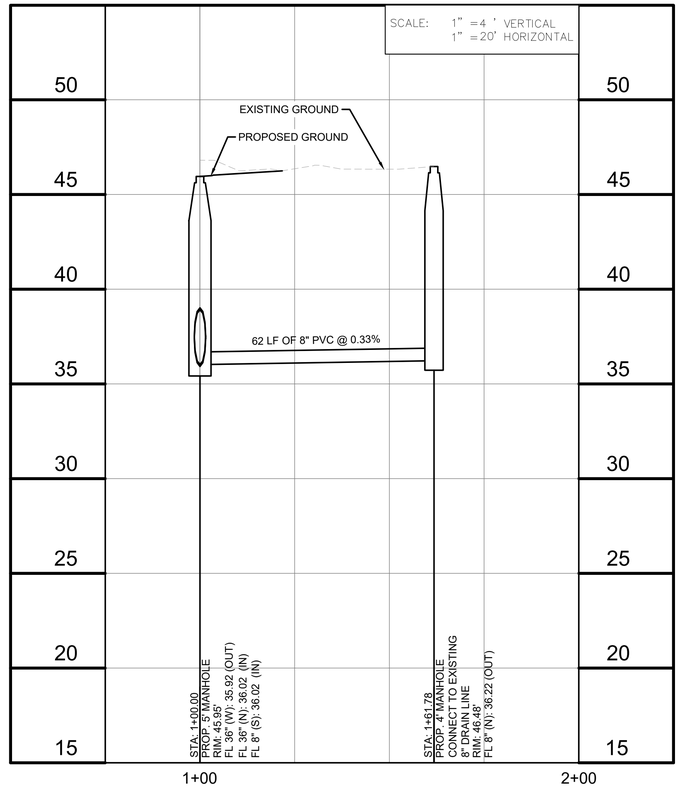
LEGEND

- PROPOSED PIPING
- EXISTING PIPING
- PIPING TO BE ABANDONED
- PIPING TO BE REMOVED

36-IN INFLUENT LINE



8-IN DRAIN LINE A



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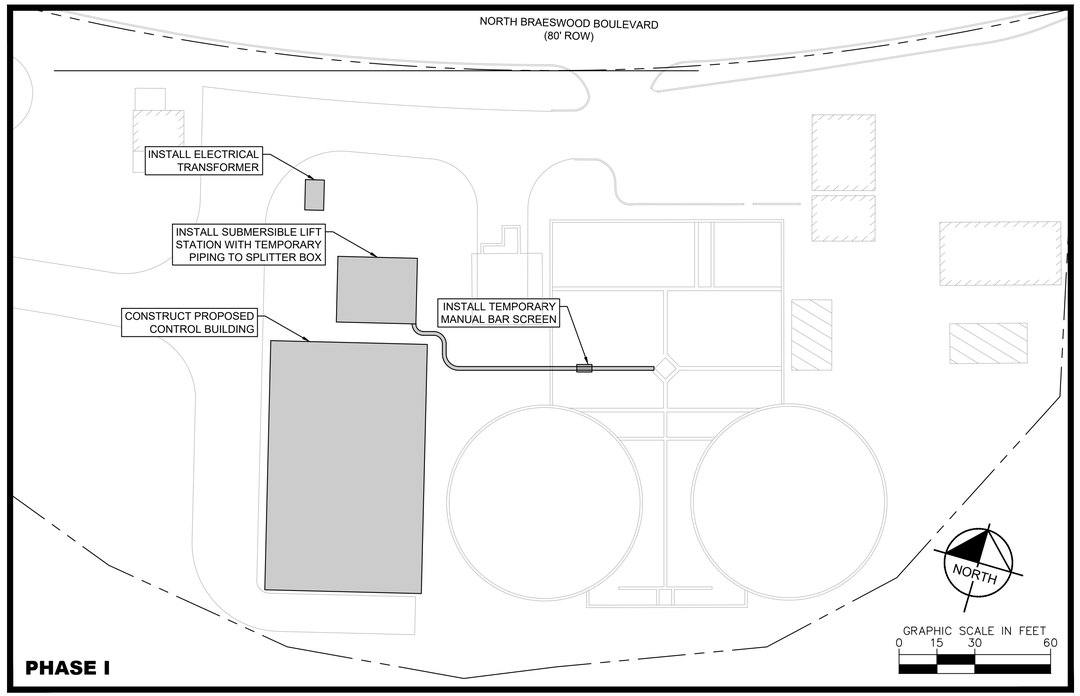
CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT
PLANT IMPROVEMENTS

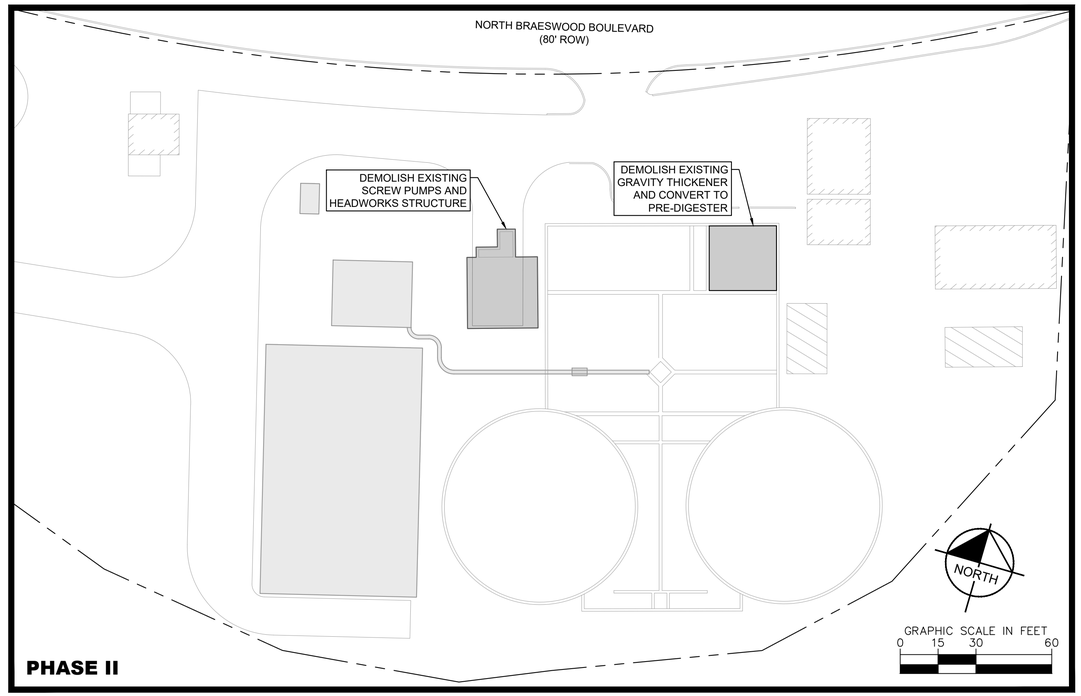
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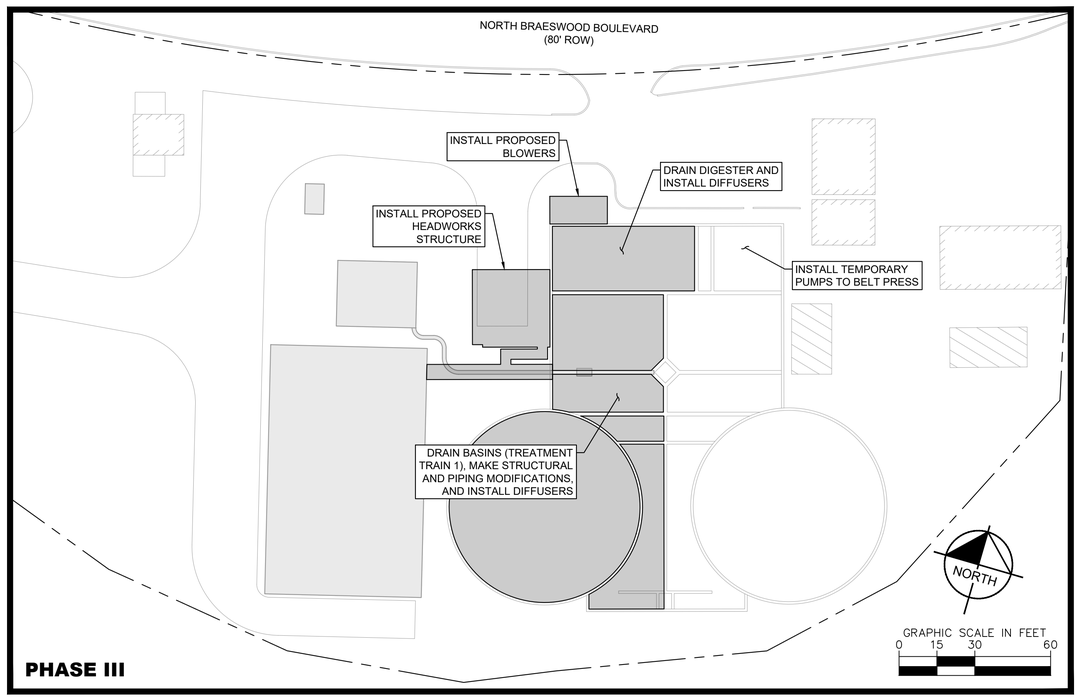
DATE: AUGUST 2022
DESIGN: MPM
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KHA NO.: 067812104

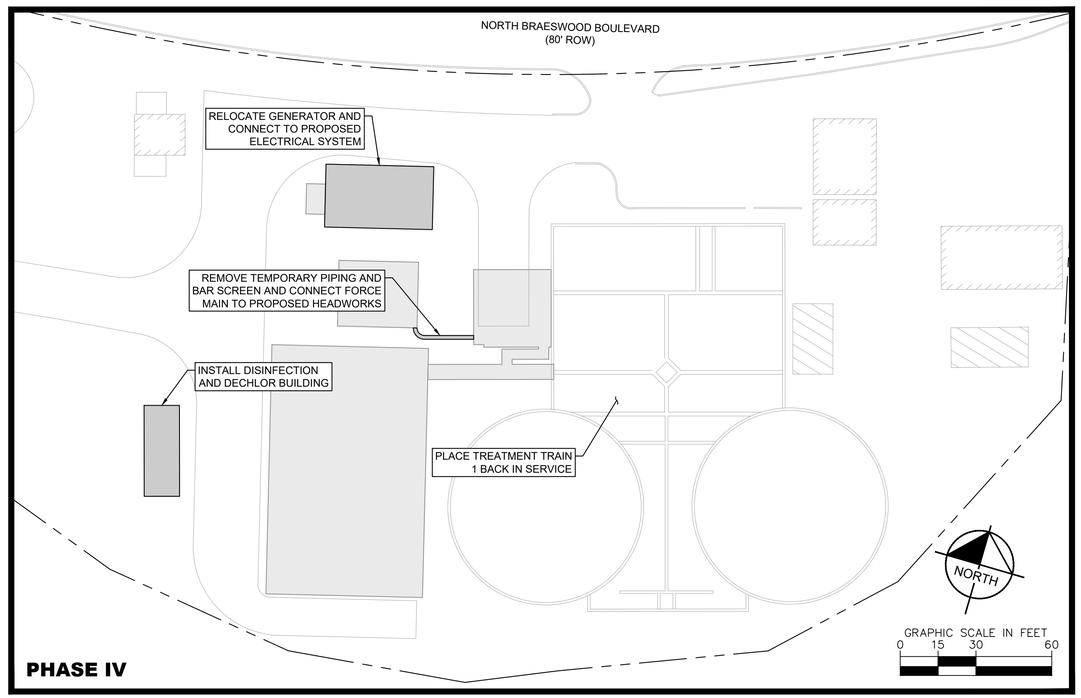
SHEET
C-302

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Kimley»Horn

Engineer MICHAEL ANTHONY JR

P.E. No. 128086

Date SEPTEMBER 2022

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

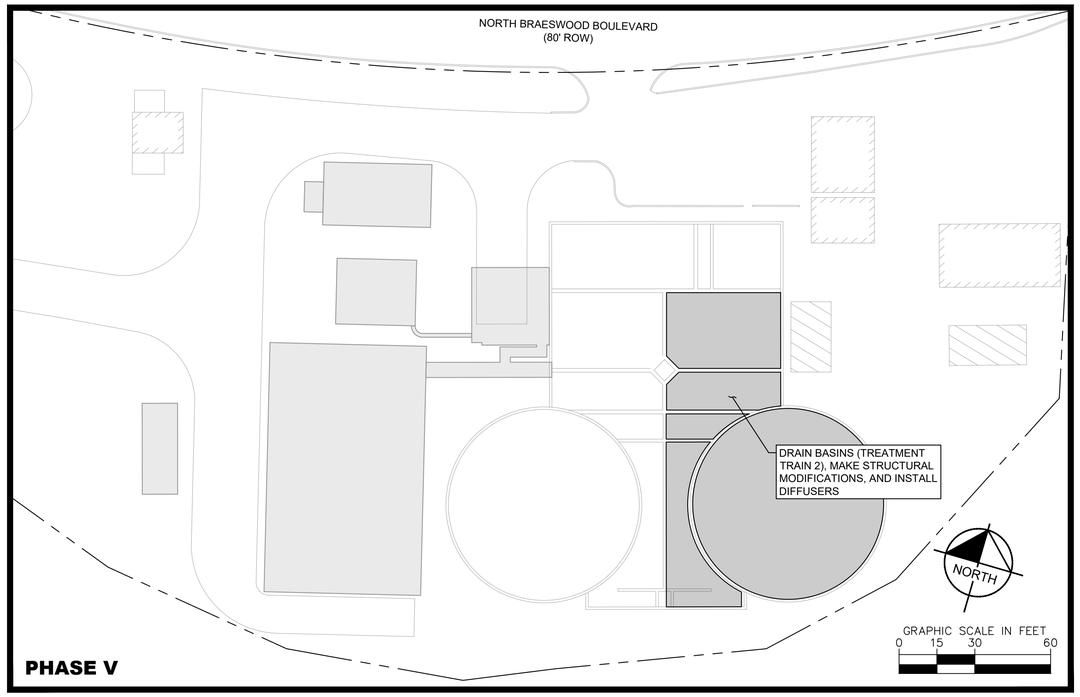
PHASING PLAN (1 OF 2)

DATE:	AUGUST 2022
DESIGN:	MPM
DRAWN:	HLR
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KHA NO.:	067812104

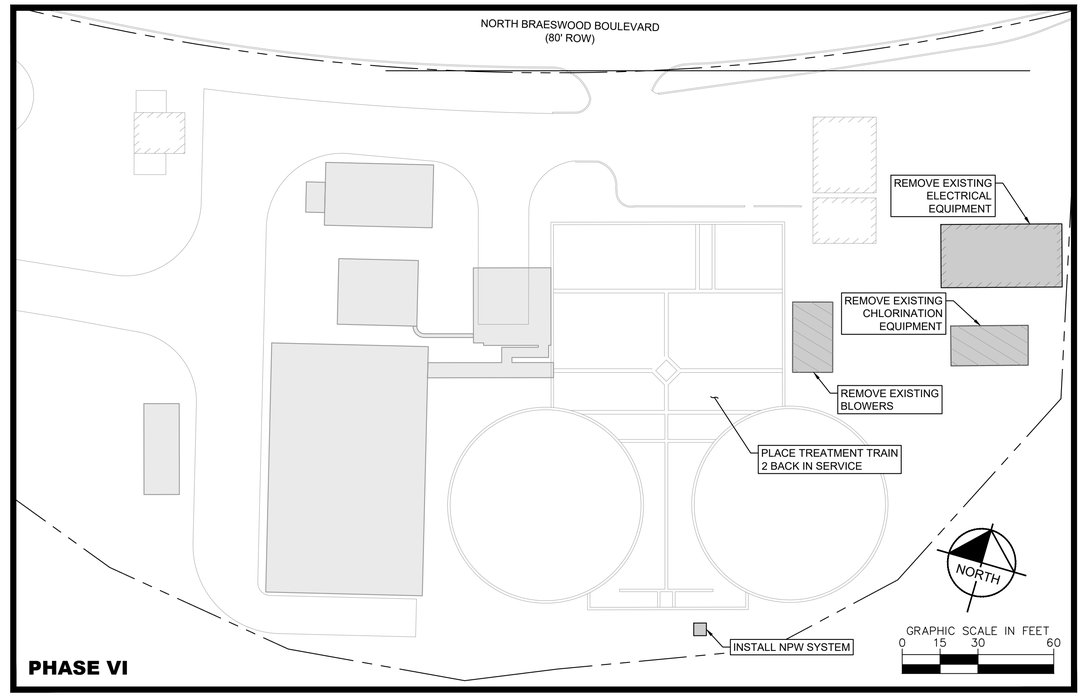
SHEET

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PHASE V



PHASE VI

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Engineer MICHAEL APSMEYER TY JR

P.E. No. 128086

Date SEPTEMBER 2022

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

PHASING PLAN (2 OF 2)

DATE:	AUGUST 2022
DESIGN:	MPM
DRAWN:	HLR
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SHEET

C-401

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1 M-100 Lift Station Demo 1
N.T.S.



2 M-100 Lift Station Demo 2
N.T.S.

NOTES:
1. ALL ITEMS SHOWN CROSS HATCHED ARE TO BE REMOVED AND LEGALLY DISPOSED OF OFF SITE.

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

No.	Revisions	By	Date

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M. A. SHELTON P.E.
SERIAL NO. 95893
SEPTEMBER 2022

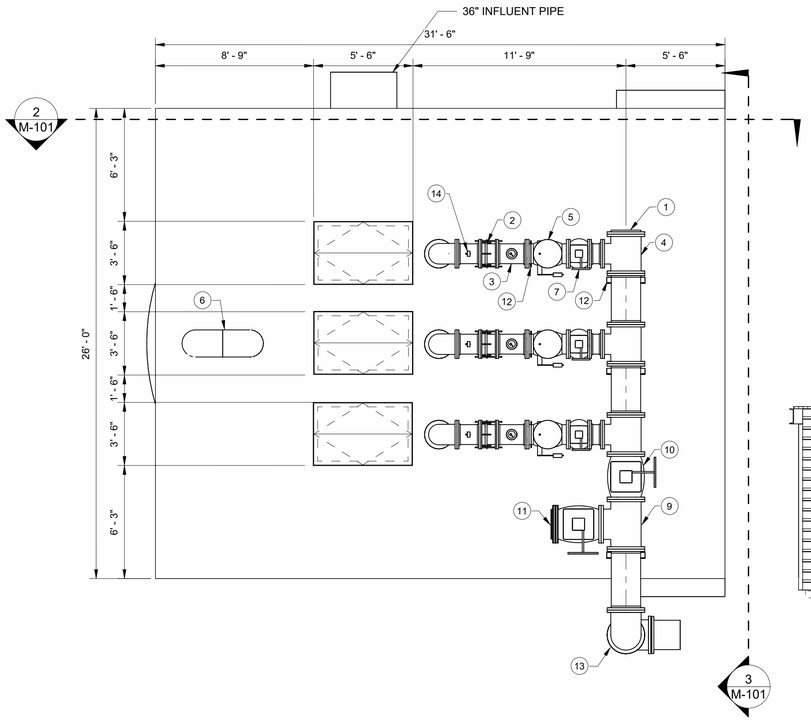
CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

LIFT STATION AND HEADWORKS DEMOLITION PLAN

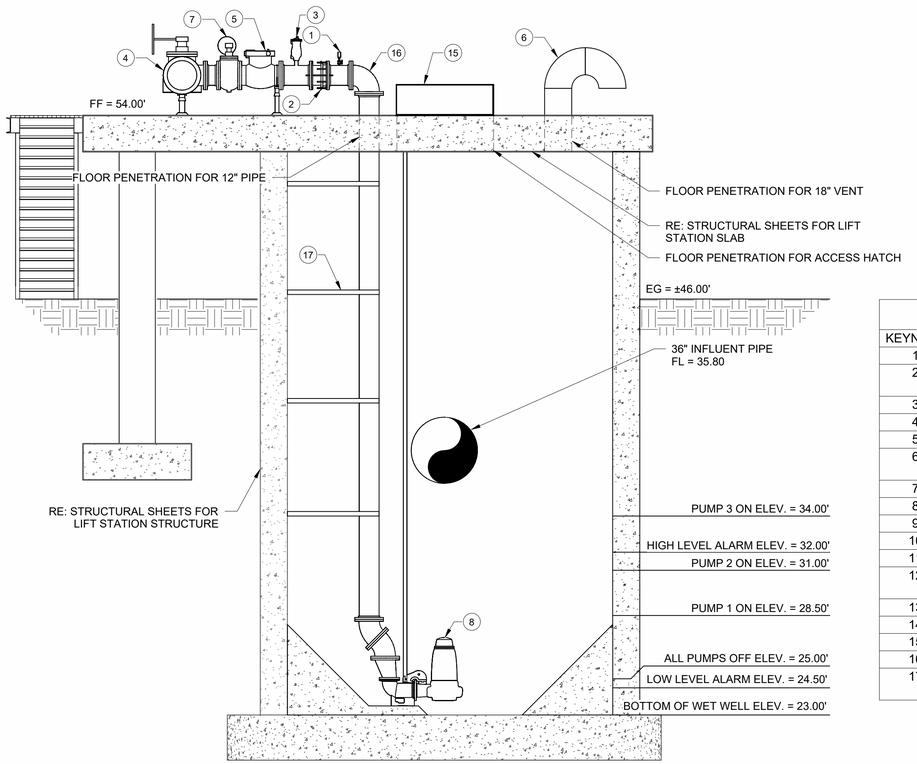
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DESIGN:	MPM
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KHA NO.:	067812104

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M-100

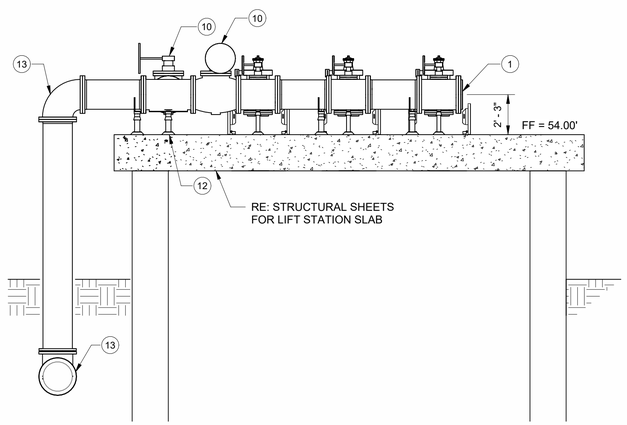
Autodesk Docs://067812104 West U WWTP/West U WWTP - Civil.rvt



1 M-101 LIFT STATION PLAN
1/4" = 1'-0"



2 M-101 LIFT STATION SECTION 1
1/4" = 1'-0"



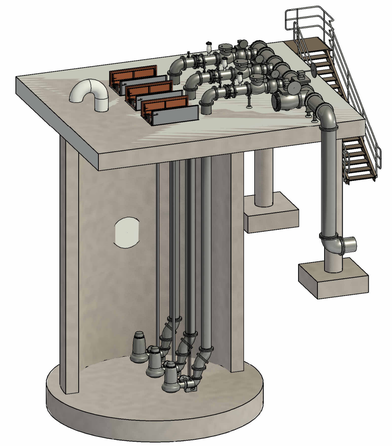
3 M-101 LIFT STATION SECTION 2
1/4" = 1'-0"

PUMP OPERATING POINT

FLOW:	2360 GPM
STATIC HEAD:	39.5 FT
TOTAL DYNAMIC HEAD:	42.8 FT

PUMP INFORMATION

HORSEPOWER:	35 HP
OPERATING SPEED:	1170 RPM
# OF DUTY PUMPS:	2
TOTAL # OF PUMPS:	3



4 M-101 LIFT STATION 3D VIEW

EQUIPMENT LEGEND

KEYNOTE	DESCRIPTION
1	18" BLIND FLANGE
2	12" RESTRAINED FLANGE COUPLING ADAPTOR SMITH BLAIR 912 WITH TIE RODS
3	2" AIR RELEASE VALVE WITH ISOLATION KIT
4	18" X 12" REDUCING TEE
5	12" SWING CHECK VALVE
6	18" GALVANIZED STEEL GOOSENECK VENT PIPE W/ INSECT SCREEN
7	12" PLUG VALVE
8	SUBMERSIBLE PUMP (RE: SPECIFICATIONS)
9	18" TEE
10	18" PLUG VALVE
11	18" CAMLOCK QUICK CONNECT
12	ADJUSTABLE PIPE SUPPORT (ANVIL INTERNATIONAL INC. FIG. 264 WITH FIG. 63T OR APPROVED EQUAL)
13	18" 90 DEG. BEND
14	PRESSURE GAUGE
15	ALUMINUM ACCESS HATCH (66"X42")
16	12" 90 DEG. BEND
17	LATERAL PIPE SUPPORT AT 6' INTERVALS (TYP.) 316 STAINLESS STEEL

NOTES:
1. ACCESS HATCHES SHALL BE FLUSHED MOUNTED, ALUMINUM (BILCO, USF, OR EQUAL) H-10 CAPACITY, AND HAVE PADLOCK HASPS, DRAINS, AND HYDRAULIC OPENERS.
2. CONFIGURATIONS AND DIMENSIONS SHOWN ARE BASED ON THE EQUIPMENT SPECIFIED. THE CONTRACTOR SHALL VERIFY THE LAYOUT AND ALL DIMENSIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL SUBMIT, TO THE ENGINEER, SHOP DRAWING SHOWING THE FINAL LAYOUT AND DIMENSIONS PRIOR TO CONSTRUCTION.
3. REFERENCE SPECIFICATIONS FOR LIFT STATION EQUIPMENT.
4. ALL FLANGES SHALL BE CAPABLE OF A WORKING PRESSURE OF 250 PSI.
5. INSTALL ISOLATION KITS BETWEEN DISSIMILAR PIPING METAL PIPING.
6. PUMP MANUFACTURER SHALL PROVIDE SHOP DRAWING OF LAYOUT OF GUIDE RAIL SYSTEM. SUPPORT GUIDE RAILS PER MANUFACTURER RECOMMENDATIONS.
7. CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE AWAY FROM STRUCTURE.
8. CONTRACTOR SHALL REFERENCE STRUCTURAL PLANS AND SPECIFICATIONS FOR STRUCTURAL DESIGN.
9. INFORMATION ASSOCIATED WITH SUBSURFACE CONDITIONS ARE FOR REFERENCE ONLY. CONTRACTOR SHALL REFER TO CMJ TESTING REPORT FOR SUBSURFACE CONDITIONS.
10. ALL PIPE AND FITTINGS IN WET WELL SHALL BE STAINLESS STEEL.
11. CONTRACTOR SHALL SUBMIT DESIGN FOR GROUT CONE UNDER PUMP SUCTIONS, INCLUDING MEANS OF ATTACHMENT, TO ENGINEER, PRIOR TO ATTACHMENT.
12. CONTRACTOR SHALL HAVE A MINIMUM OF 36" OF SPACE BETWEEN EACH PUMP AND 18" OF SPACE BETWEEN THE WET WELL WALL AND PUMP.
13. HANDRAIL NOT SHOWN IN VIEW 3 FOR CLARITY.

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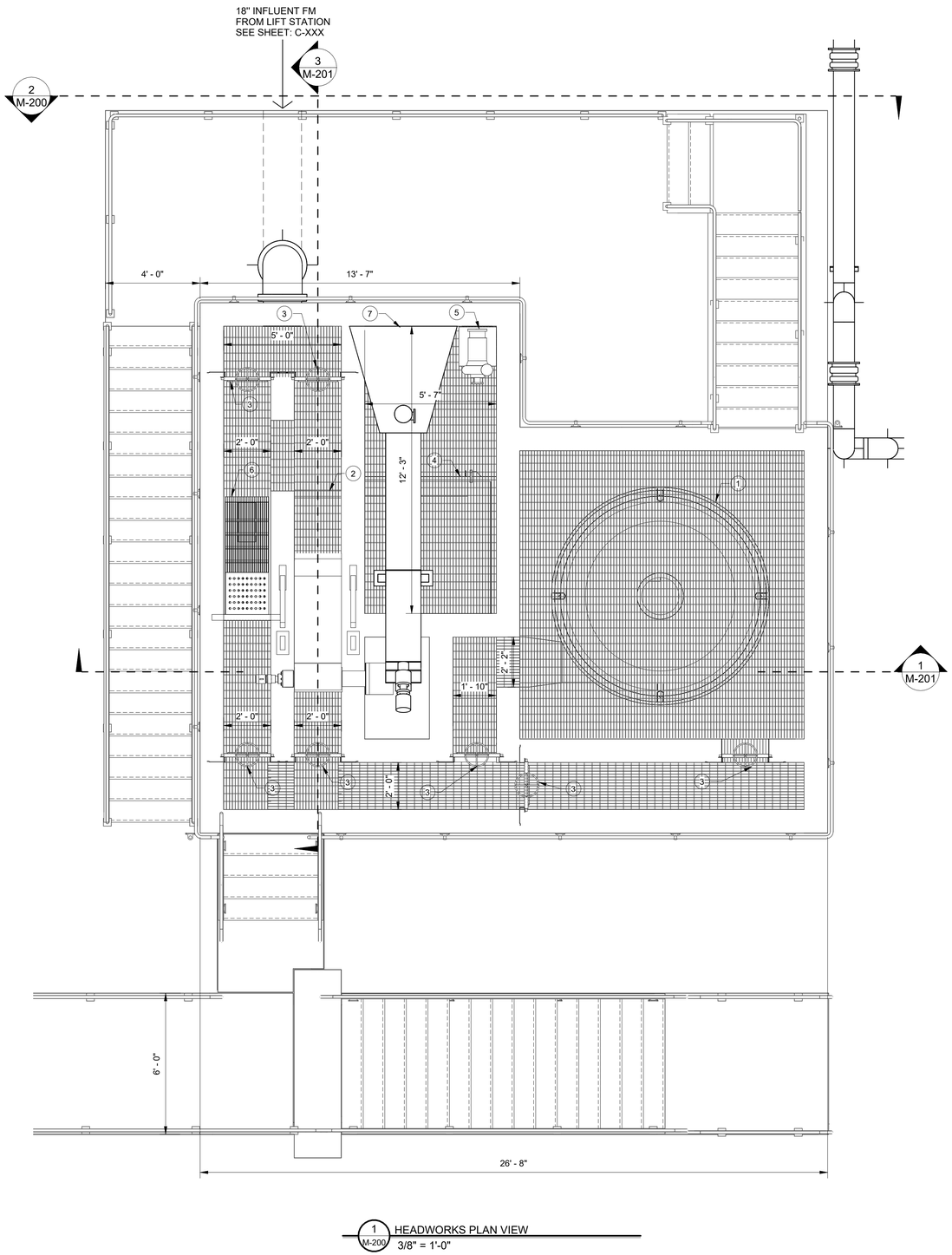
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WASTEWATER TREATMENT PLANT IMPROVEMENTS

LIFT STATION PLAN, SECTIONS, AND 3D VIEW

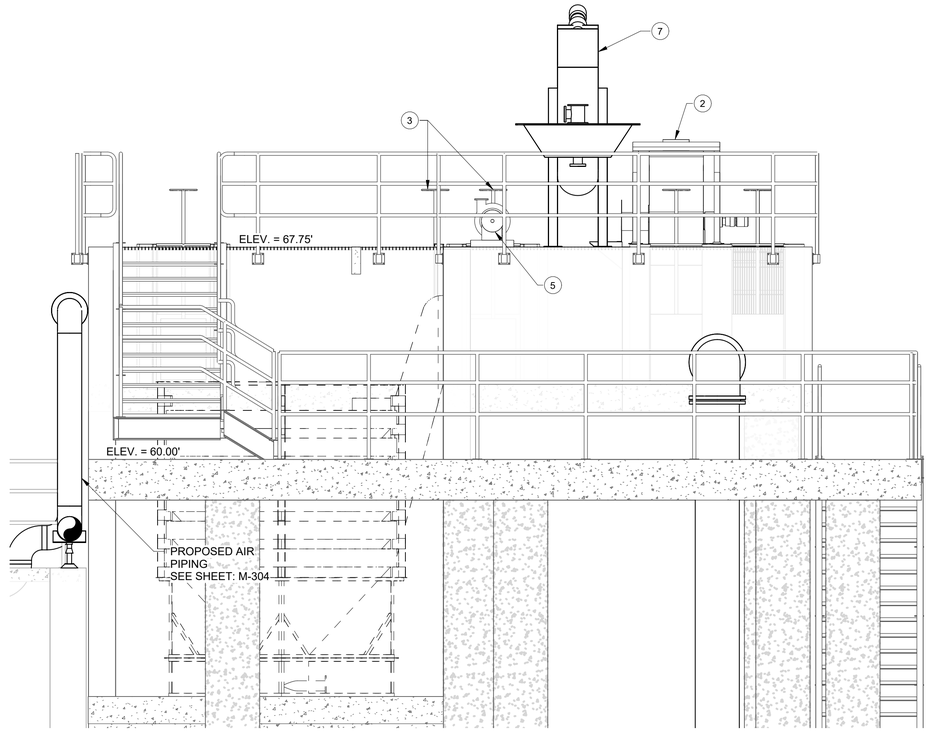
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SHEET
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1 M-200 HEADWORKS PLAN VIEW
3/8" = 1'-0"



2 M-200 HEADWORKS SECTION 1
3/8" = 1'-0"

EQUIPMENT LEGEND	
KEYNOTE	DESCRIPTION
1	GRIT HEADCELL
2	MECHANICAL STEP SCREEN
3	CHANNEL-MOUNTED SLIDE GATE
4	ROLL-OFF DUMPSTER BIN
5	GRIT PUMP
6	MANUAL BAR SCREEN
7	GRIT SNAIL

NOTES:
1. ALL ABOVE GROUND PIPING SHALL BE FLANGED DUCTILE IRON UNLESS OTHERWISE NOTED.
2. CONFIGURATIONS AND DIMENSIONS SHOWN ARE BASED ON EQUIPMENT SPECIFIED. THE CONTRACTOR SHALL VERIFY THE LAYOUT AND ALL DIMENSIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL SUBMIT, TO THE ENGINEER, SHOP DRAWINGS SHOWING THE FINAL LAYOUT AND DIMENSIONS PRIOR TO CONSTRUCTION.

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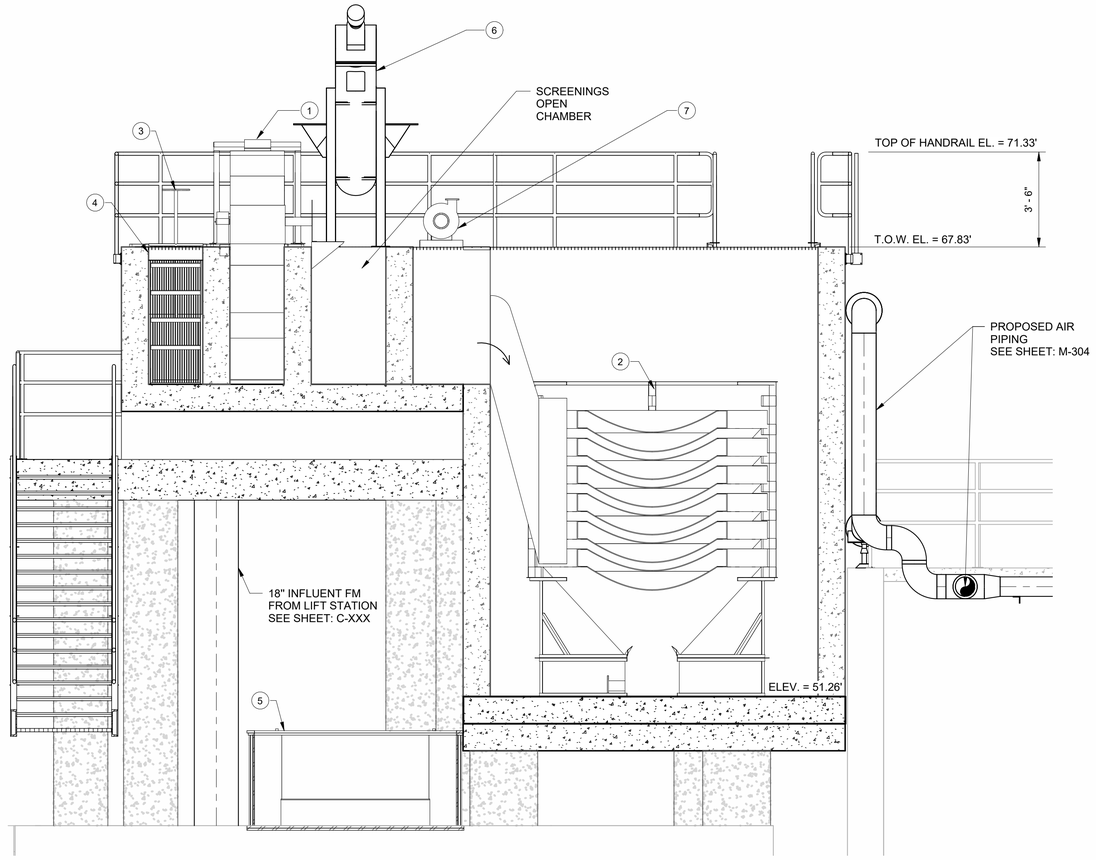
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WASTEWATER TREATMENT PLANT IMPROVEMENTS

HEADWORKS PLAN AND SECTIONS

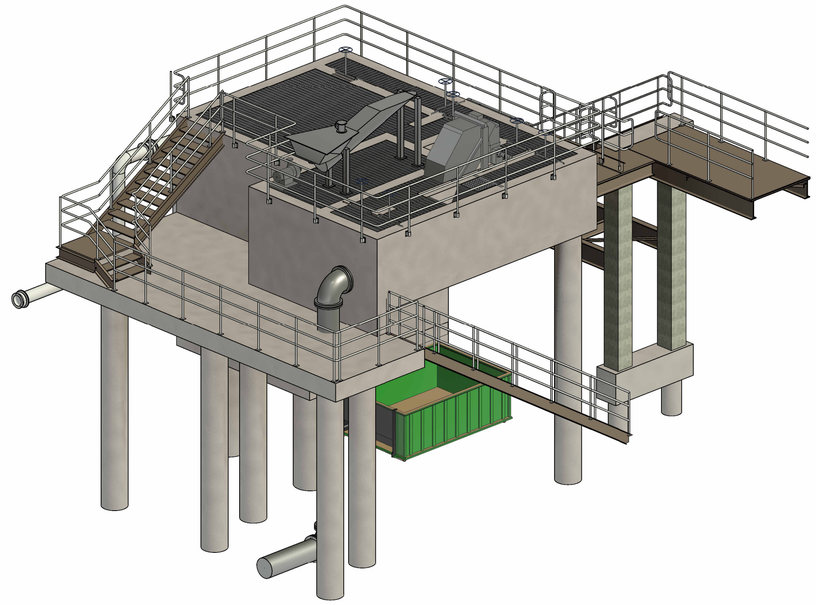
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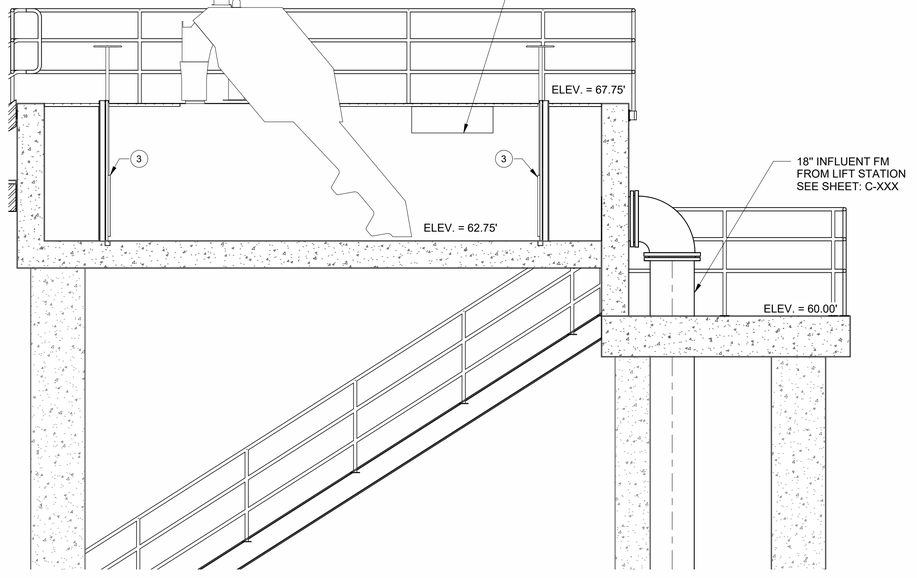
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1 M-201 HEADWORKS SECTION 2
3/8" = 1'-0"



2 M-201 HEADWORKS 3D VIEW



3 M-201 HEADWORKS SECTION 3
3/8" = 1'-0"

EQUIPMENT LEGEND	
KEYNOTE	DESCRIPTION
1	MECHANICAL STEP SCREEN
2	GRIT HEADCELL
3	CHANNEL-MOUNTED SLIDE GATE
4	MANUAL BAR SCREEN
5	ROLL-OFF DUMPSTER BIN
6	GRIT SNAIL
7	GRIT PUMP

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HEADWORKS SECTIONS AND 3D VIEW

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1 M-300 Aeration Basin Demo 1
N.T.S.



2 M-300 Aeration Basin Demo 2
N.T.S.

NOTES:
1. EXISTING AERATION BASIN STRUCTURES SHALL REMAIN. ANY DAMAGE TO EXISTING STRUCTURES SHALL BE REPAIRED OR REPLACED AT NO COST TO OWNER.
2. ALL ITEMS SHOWN CROSS HATCHED ARE TO BE REMOVED AND LEGALLY DISPOSED OF OFF SITE.



3 M-300 Aeration Basin Demo 3
N.T.S.



4 M-300 Aeration Basin Demo 4
N.T.S.

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

AERATION BASIN DEMOLITION PLAN

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1 M-301 Digester Demo 1
N.T.S.



2 M-301 Digester Demo 2
N.T.S.

NOTES:
1. EXISTING DIGESTER BASIN STRUCTURE SHALL REMAIN. ANY DAMAGE TO EXISTING STRUCTURE SHALL BE REPAIRED OR REPLACED AT NO COST TO OWNER.
2. ALL ITEMS SHOWN CROSS HATCHED ARE TO BE REMOVED AND LEGALLY DISPOSED OF OFF SITE.

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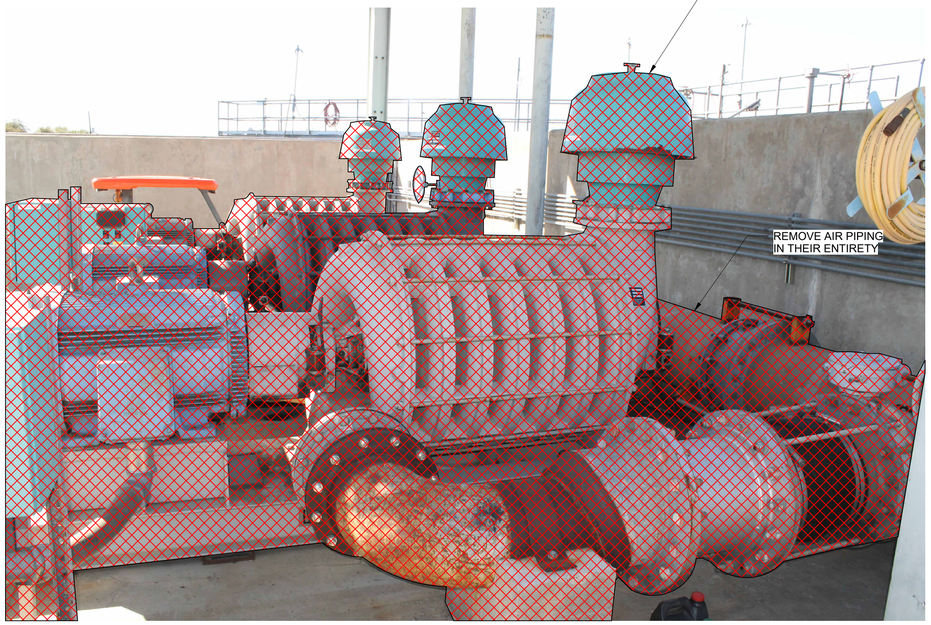
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DIGESTER BASIN DEMOLITION

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1 M-302 Blowers Demo 1
N.T.S.



2 M-302 Blowers Demo 2
N.T.S.

NOTES:
1. EXISTING BLOWER STRUCTURE SHALL REMAIN. ANY DAMAGE TO EXISTING STRUCTURE SHALL BE REPAIRED OR REPLACED AT NO COST TO OWNER.
2. ALL ITEMS SHOWN CROSS HATCHED ARE TO BE REMOVED AND LEGALLY DISPOSED OF OFF SITE.

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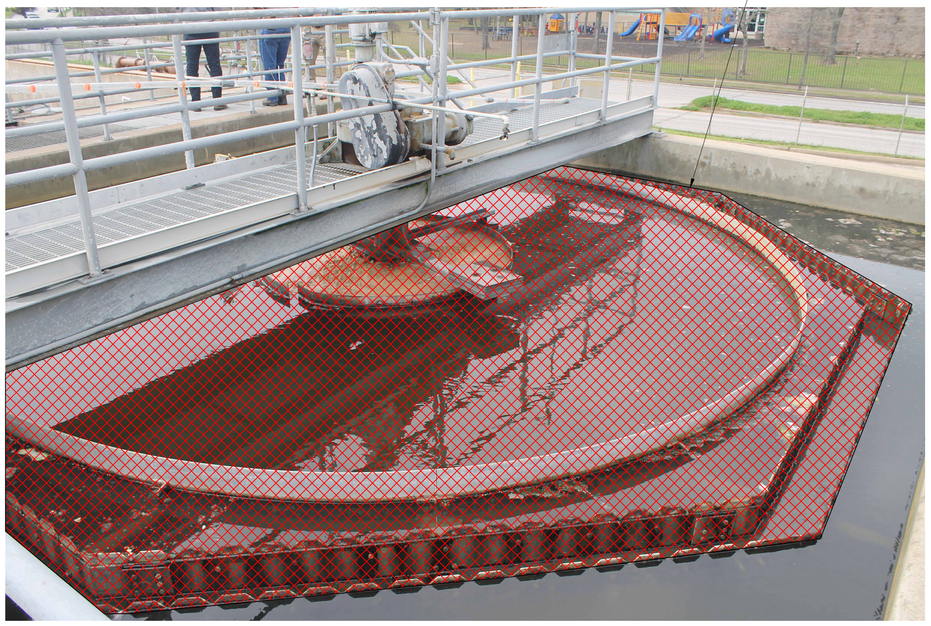
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BLOWER PAD DEMOLITION

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M-302

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1 M-303 Gravity Thickener Demo 1
N.T.S.



2 M-303 Gravity Thickener Demo 2
N.T.S.

NOTES:
1. EXISTING GRAVITY THICKENER BASIN STRUCTURE SHALL REMAIN. ANY DAMAGE TO EXISTING STRUCTURE SHALL BE REPAIRED OR REPLACED AT NO COST TO OWNER.
2. ALL ITEMS SHOWN CROSS HATCHED ARE TO BE REMOVED AND LEGALLY DISPOSED OF OFF SITE.

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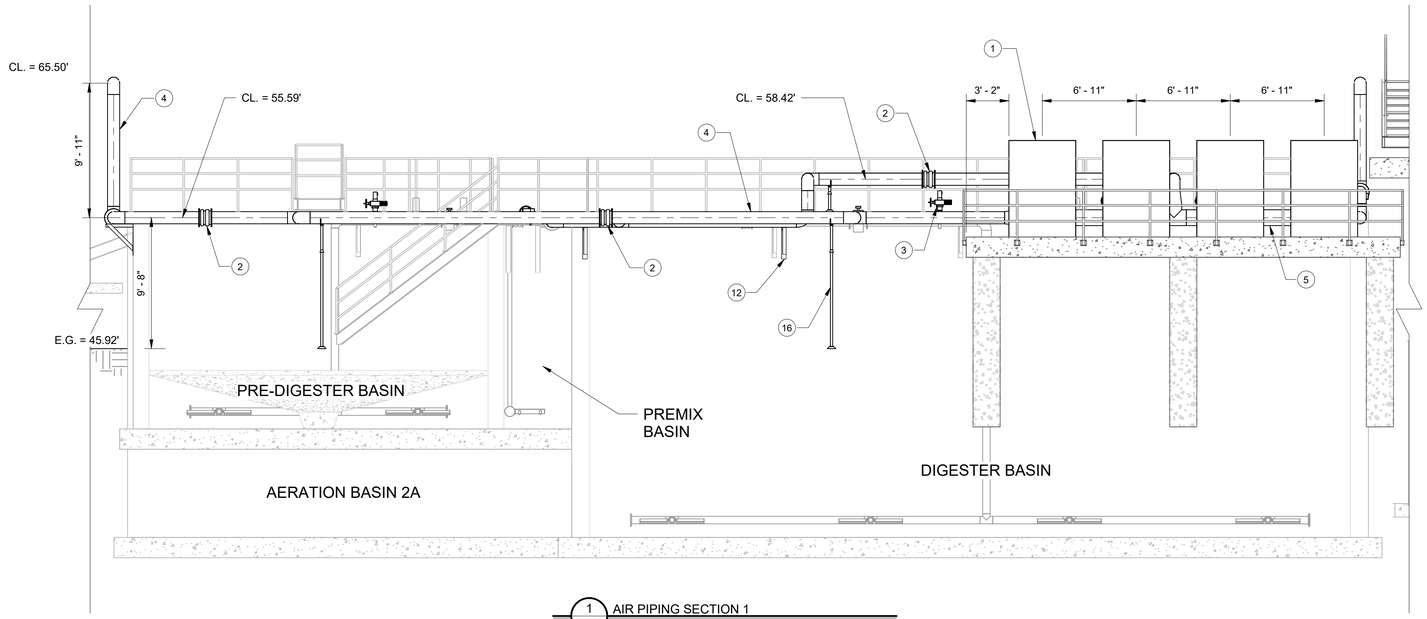
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GRAVITY THICKENER DEMOLITION

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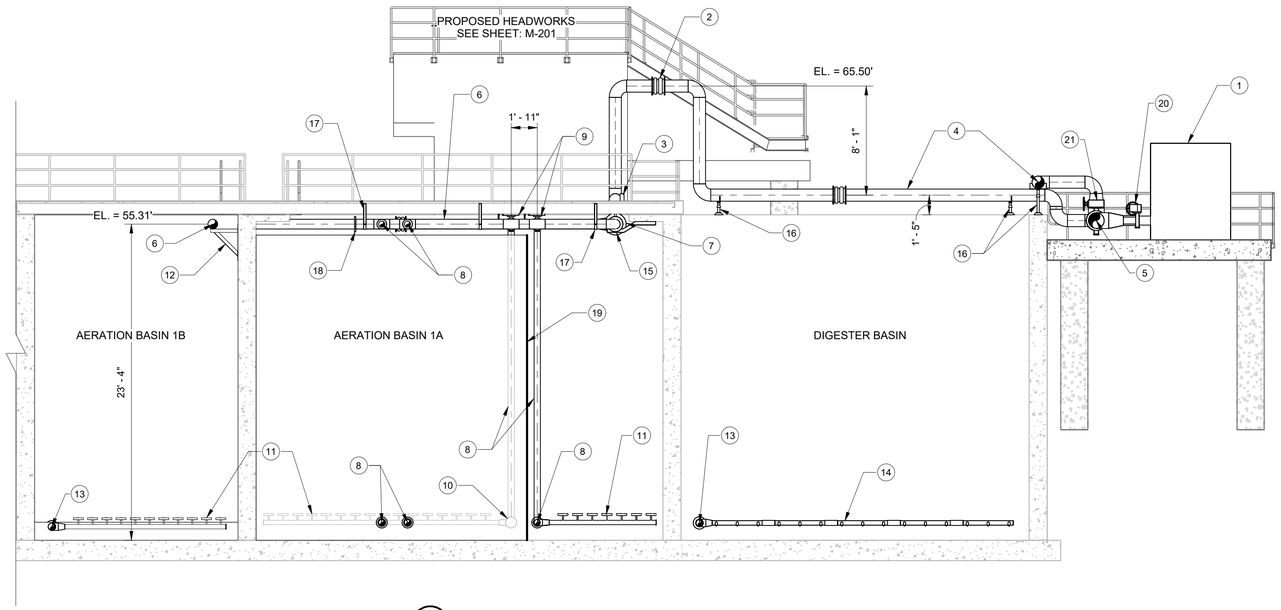
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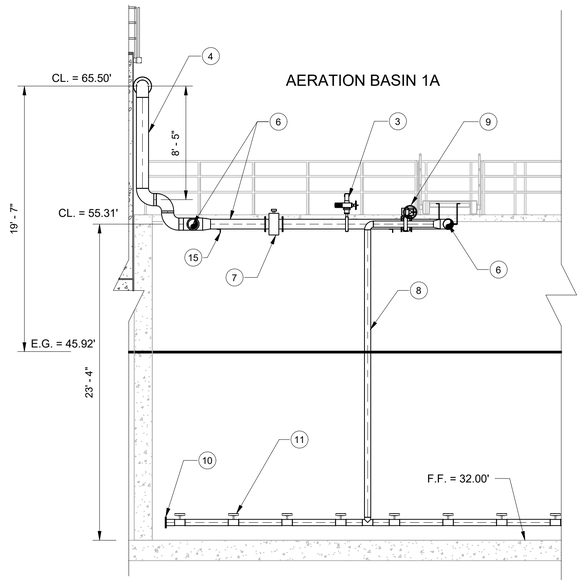
1 M-307 AIR PIPING SECTION 1
3/16" = 1'-0"

EQUIPMENT LEGEND	
KEYNOTE	DESCRIPTION
1	POSITIVE DISPLACEMENT SCREW BLOWER (TYP.)
2	DOUBLE EXPANSION JOINT (TYP.) SEE DETAIL X/X-XXX
3	8" ELECTRICALLY ACTUATED BUTTERFLY VALVE
4	10" AIR LINE
5	14" AIR HEADER
6	8" AIR LINE
7	MAGNETIC FLOWMETER
8	5" AIR LINE
9	5" BUTTERFLY VALVE
10	5" BLIND FLANGE
11	FINE AIR BUBBLE DIFFUSER (TYP.)
12	PIPE SUPPORT (TYP.)
13	6" AIR LINE
14	COARSE AIR BUBBLE DIFFUSER (TYP.)
15	LATERAL PIPE SUPPORT UNDER WALKWAY (TYP.)
16	ADJUSTABLE PIPE SUPPORT SEE SHEET: X/X-XXX
17	ANCHOR PIPE SUPPORT CLAMP (TYP.)
18	8" BLIND FLANGE
19	BAFFLE WALL
20	8" BUTTERFLY VALVE (TYP.)
21	14" BUTTERFLY VALVE (TYP.)

NOTES:
1. CONTRACTOR TO REMOVE ALL EXISTING AIR PIPING PRIOR TO INSTALLTION OF NEW EQUIPMENT.
2. THE AERATION BASINS SHALL BE CLEANED AND INSPECTED FOR STRUCTURAL INTEGRITY BY THE CONTRACTOR PRIOR TO INSTALLATION OF THE PROPOSED IMPROVEMENTS. CONTRACTOR SHALL PROVIDE PHOTO DOCUMENTATION OF AERATION BASINS AND REPORT ANY CONCERNS TO ENGINEER AND OWNER.
3. ALL AIR PIPING & SUPPORTS INSIDE AERATION BASINS 1A, 1B, AND 1C ARE IDENTICAL TO AERATION BASINS 2A, 2B, AND 2C EXCEPT THEY ARE MIRRORED.
4. ALL AIR PIPING & SUPPORTS INSIDE CHLORINE CONTACT BASIN 1 ARE IDENTICAL TO CHLORINE CONTACT BASIN 2 EXCEPT THEY ARE MIRRORED.
5. ALL AIR PIPING FOR THE DIGESTER BASINS AND PRE-MIX BASIN SHALL BE WELDED STAINLESS STEEL PIPE.
6. ALL AIR PIPING FOR THE AERATION BASINS AND CHLORINE CONTACT BASINS SHALL BE SHALL BE WELDED STAINLESS STEEL PIPE UP TO THE DROP LEG.
7. WALKWAYS NOT SHOWN FOR CLARITY.



2 M-307 AIR PIPING SECTION 2
3/16" = 1'-0"



3 M-307 AIR PIPING SECTION 3
3/16" = 1'-0"

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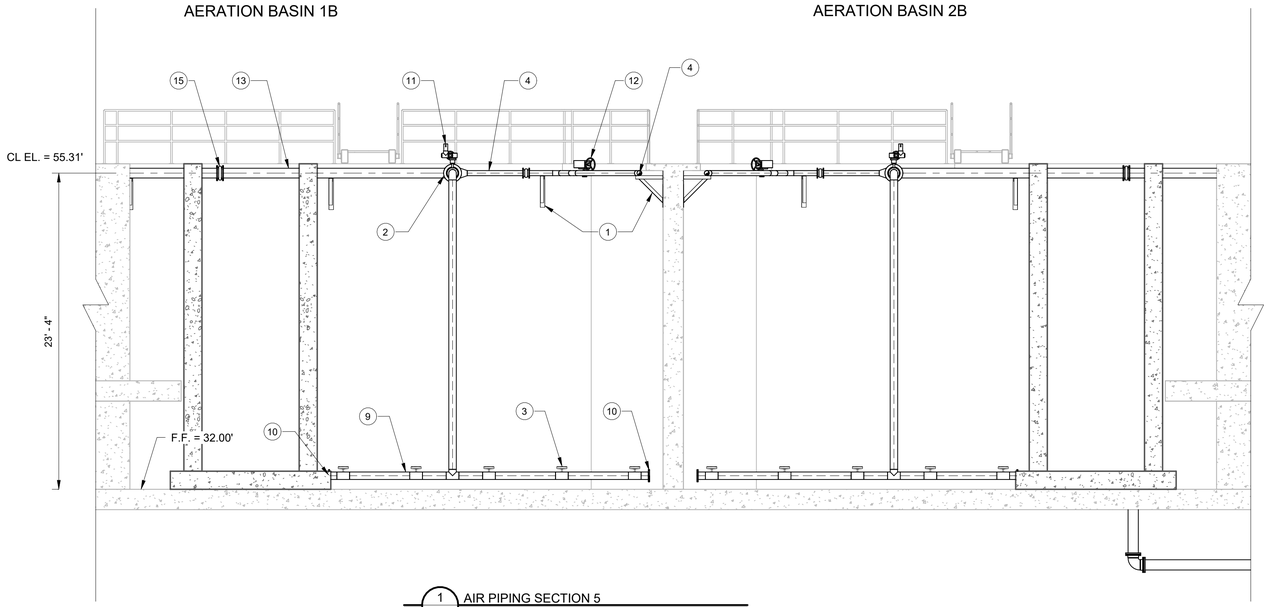
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AIR PIPING SECTION VIEWS 1

DATE:	SEPTEMBER 2022
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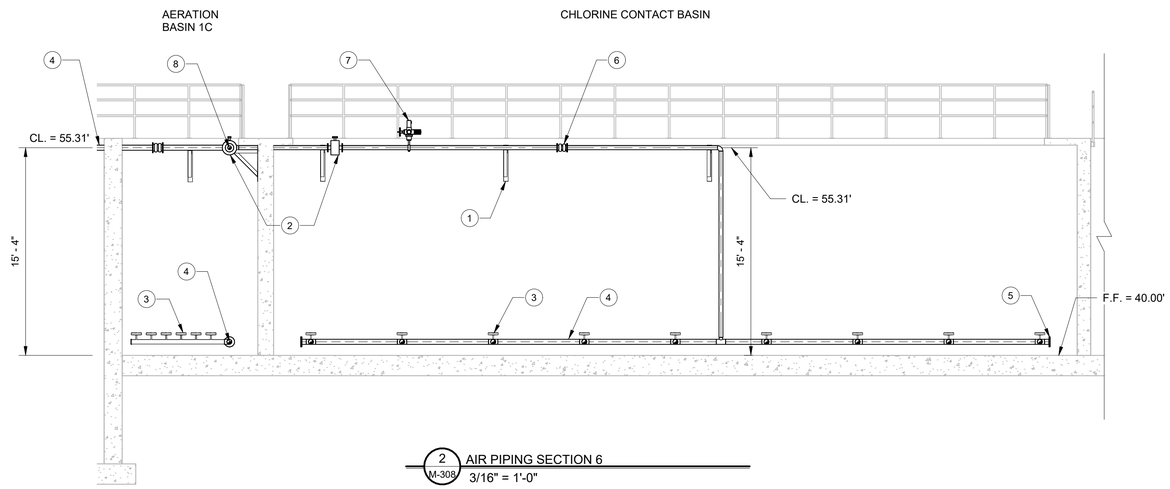
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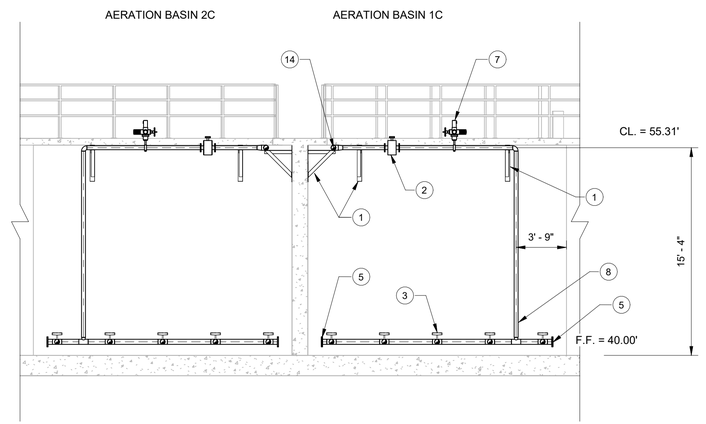
1 M-308 AIR PIPING SECTION 5
3/16" = 1'-0"

EQUIPMENT LEGEND	
KEYNOTE	DESCRIPTION
1	PIPE SUPPORT (TYP.)
2	MAGNETIC FLOWMETER
3	FINE AIR BUBBLE DIFFUSER (TYP.)
4	4" AIR LINE
5	4" BLIND FLANGE
6	DOUBLE EXPANSION JOINT (TYP.) SEE DETAIL X/X-XXX
7	3" ELECTRONICALLY ACTUATED BUTTERFLY VALVE
8	3" AIR LINE
9	6" AIR LINE
10	6" BLIND FLANGE
11	6" ELECTRICALLY ACTUATED BUTTERFLY VALVE
12	2" BUTTERFLY VALVE
13	8" AIR LINE
14	3" AIR LINE
15	SINGLE EXPANSION JOINT (TYP.) SEE DETAIL X/X-XXX

NOTES:
1. CONTRACTOR TO REMOVE ALL EXISTING AIR PIPING PRIOR TO INSTALLTION OF NEW EQUIPMENT.
2. THE AERATION BASINS SHALL BE CLEANED AND INSPECTED FOR STRUCTURAL INTEGRITY BY THE CONTRACTOR PRIOR TO INSTALLATION OF THE PROPOSED IMPROVEMENTS. CONTRACTOR SHALL PROVIDE PHOTO DOCUMENTATION OF AERATION BASINS AND REPORT ANY CONCERNS TO ENGINEER AND OWNER.
3. ALL AIR PIPING & SUPPORTS INSIDE AERATION BASINS 1A, 1B, AND 1C ARE IDENTICAL TO AERATION BASINS 2A, 2B, AND 2C EXCEPT THEY ARE MIRRORED.
4. ALL AIR PIPING & SUPPORTS INSIDE CHLORINE CONTACT BASIN 1 ARE IDENTICAL TO CHLORINE CONTACT BASIN 2 EXCEPT THEY ARE MIRRORED.
5. ALL AIR PIPING FOR THE DIGESTER BASINS AND PRE-MIX BASIN SHALL BE WELDED STAINLESS STEEL PIPE.
6. ALL AIR PIPING FOR THE AERATION BASINS AND CHLORINE CONTACT BASINS SHALL BE SHALL BE WELDED STAINLESS STEEL PIPE UP TO THE DROP LEG.
7. WALKWAYS NOT SHOWN FOR CLARITY.



2 M-308 AIR PIPING SECTION 6
3/16" = 1'-0"



3 M-308 AIR PIPING SECTION 4
3/16" = 1'-0"

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AIR PIPING SECTION VIEWS 2

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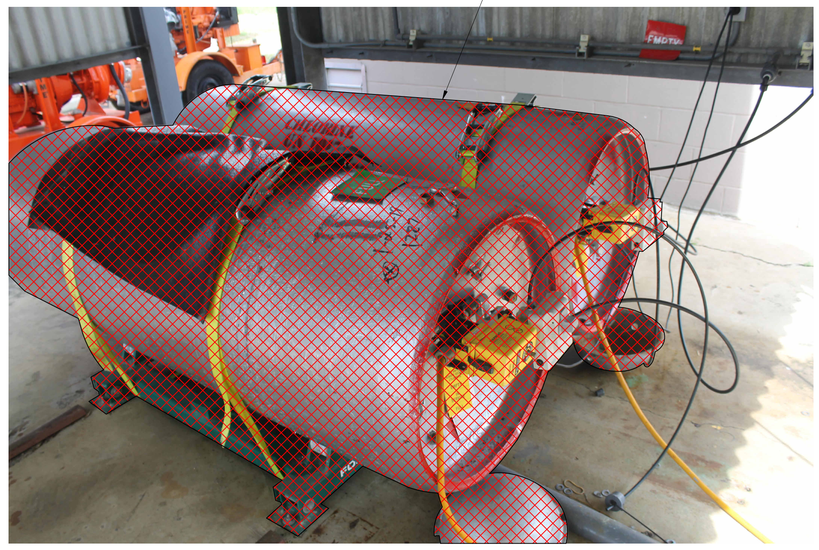
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NOTES:
1. EXISTING CHLORINATION SYSTEM STRUCTURE SHALL REMAIN. ANY DAMAGE TO EXISTING STRUCTURE SHALL BE REPAIRED OR REPLACED AT NO COST TO OWNER.
2. ALL ITEMS SHOWN CROSS HATCHED ARE TO BE REMOVED AND LEGALLY DISPOSED OF OFF SITE.



1 M-400 Chlorination System Demo 1
N.T.S.



2 M-400 Chlorination System Demo 2
N.T.S.

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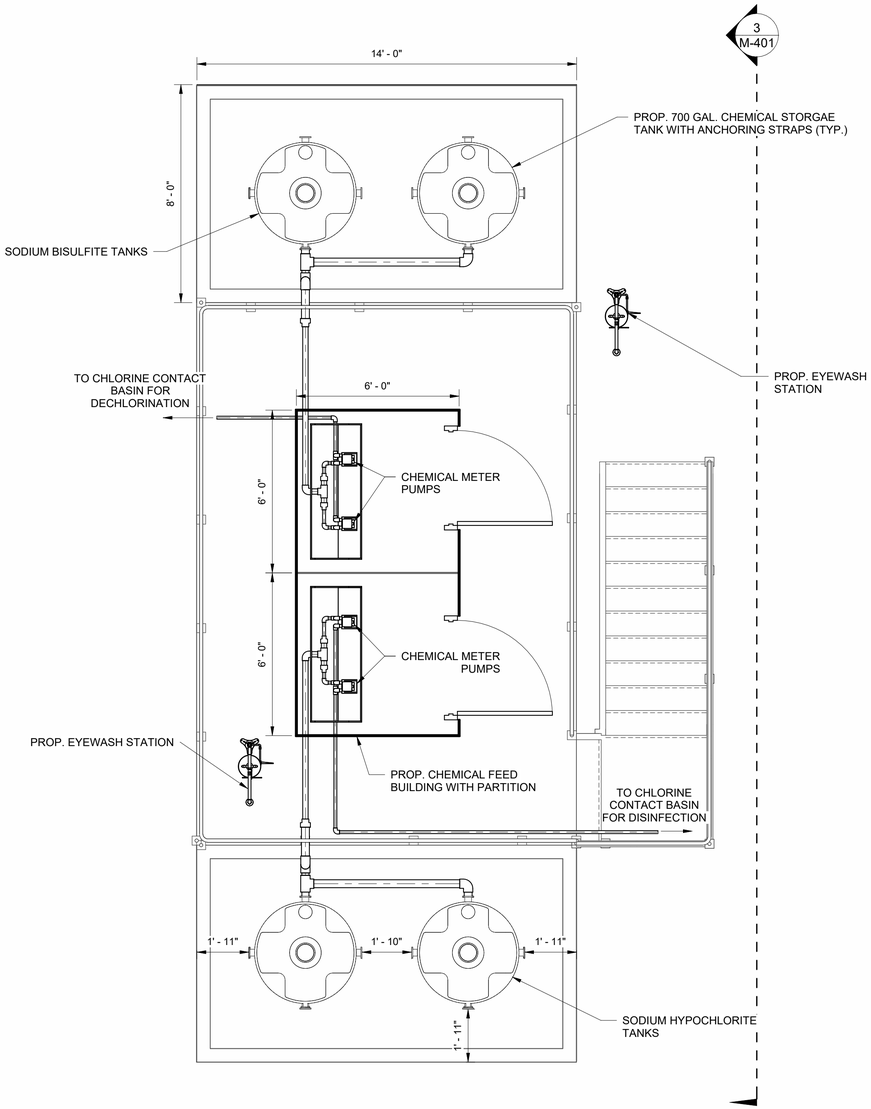
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WASTEWATER TREATMENT PLANT IMPROVEMENTS

CHLORINATION SYSTEM DEMOLITION

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M-400

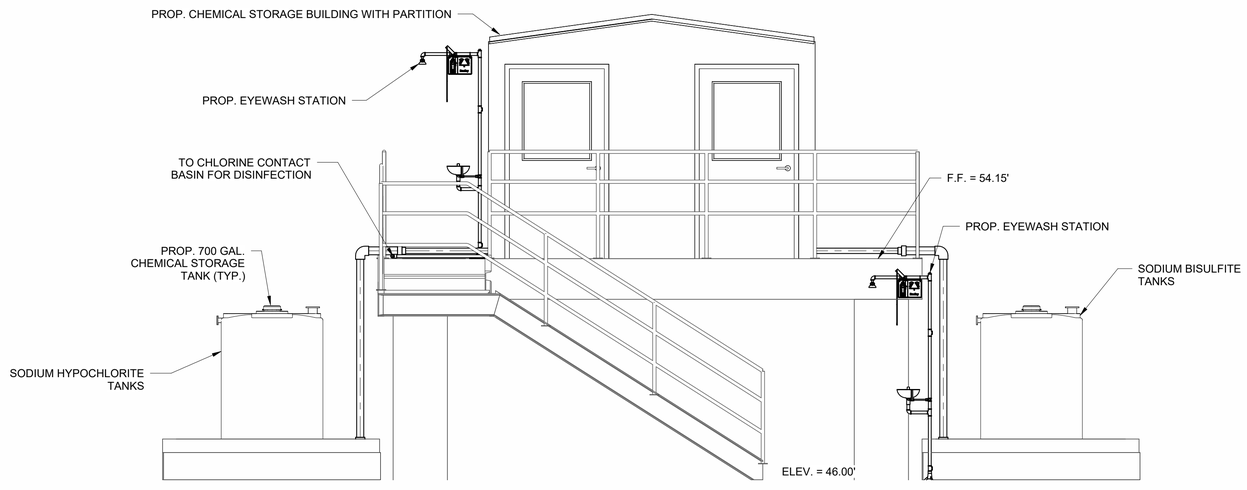
Autodesk Docs://067812104 West U WWTP/West U WWTP - Civil.rvt



1 M-401 DISINFECTION PLAN VIEW
3/8" = 1'-0"



2 M-401 DISINFECTION 3D VIEW
N.T.S.



3 M-401 DISINFECTION SECTION VIEW
3/8" = 1'-0"

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P: 281 597 9300
TBPE No. 928

No.	Revisions	By	Date

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M. A. SHELTON P.E.
SERIAL NO. 95893
SEPTEMBER 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

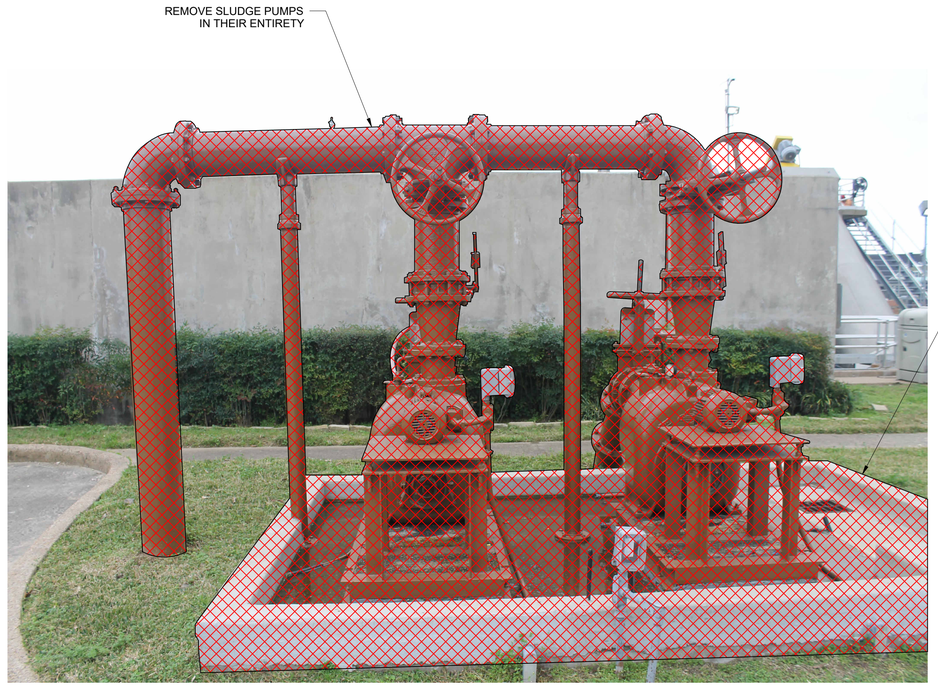
DISINFECTION PLAN, SECTION, AND 3D VIEW

DATE:	SEPTEMBER 2022
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SHEET
M-401

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NOTES:
1. ALL ITEMS SHOWN CROSS HATCHED ARE TO BE REMOVED AND LEGALLY DISPOSED OF OFF SITE.



1 M-500 Sludge Pump Demo 1
N.T.S.

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

SLUDGE PUMPS DEMOLITION

DATE:	SEPTEMBER 2022
DESIGN:	MPM
DRAWN:	AP
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KHA NO.:	067812104

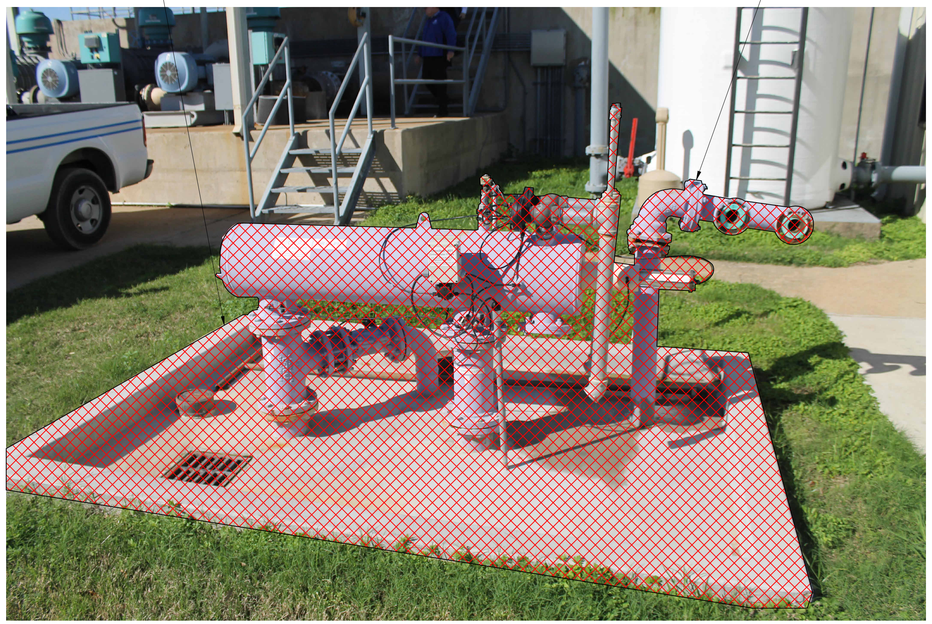
SHEET
M-500

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NOTES:
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REMOVE CONCRETE SLAB IN ITS ENTIRETY

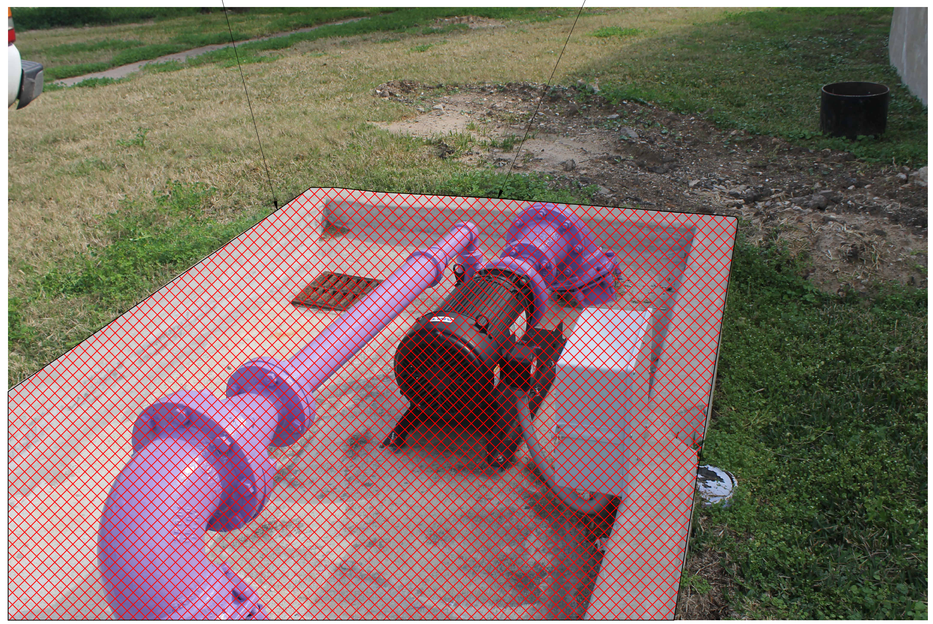
REMOVE NPW FILTER SYSTEM IN ITS ENTIRETY



1 M-600 NPW System Demo 1
N.T.S.

REMOVE CONCRETE SLAB IN ITS ENTIRETY

REMOVE NPW SYSTEM IN ITS ENTIRETY



2 M-600 NPW System Demo 2
N.T.S.

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

NPW SYSTEM DEMOLITION

DATE:	SEPTEMBER 2022
DESIGN:	MPM
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SHEET
M-600

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PLAN SYMBOLS

SYMBOL	DESCRIPTION
	LINEAR LIGHT FIXTURE
3	BRACKET MOUNTED INCANDESCENT OR LED
	POLE OR HIGH BAY LIGHT FIXTURE
	WALL PACK OR FLOOD LIGHT FIXTURE
	BATTERY BACKUP LIGHT FIXTURE
	BRACKET MOUNTED EXIT FIXTURE
	SINGLE CONVENIENCE RECEPTACLE
WP	DUPLEX CONVENIENCE RECEPTACLE WP – WEATHERPROOF COVER GFI – GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLE
A	SINGLE SPECIAL PURPOSE RECEPTACLE (LETTER INDICATES TYPE PER SCHEDULE)
	240V AC, 20 AMP RECEPTACLE
	TELEPHONE UTILITY SYSTEM OUTLET
	DATA OUTLET
	COMBINATION TELEPHONE/DATA OUTLET
	UNFUSED SAFETY SWITCH – 3P, 30A, 600V UNLESS OTHERWISE INDICATED.
30	FUSED SAFETY SWITCH – 3P, 600V, 30A MINIMUM OR AS REQUIRED TO ACCOMODATE FUSE SIZE INDICATED
	OUTLET, PULL OR JUNCTION BOX
	COMBINATION PROTECTIVE DEVICE & MAGNETIC STARTER
	SINGLE UNIT PUSHBUTTON STATION
	2–UNIT PUSHBUTTON STATION
	3–UNIT PUSHBUTTON STATION
5	ELECTRIC MOTOR – NUMBER INDICATES HORSEPOWER
LS	LIMIT SWITCH
FS	FLOW SWITCH
PS	PRESSURE SWITCH
TS	TEMPERATURE SENSOR
DS	MAGNETIC REED DOOR SWITCH
TB	TERMINAL BOX

SYMBOL	DESCRIPTION
PC	PHOTO CELL
FS	FLOAT SWITCH
EP	ELECTRO–PNEUMATIC VALVE
S	SOLENOID VALVE
T	ELECTRIC THERMOSTAT
T	TEMPERATURE ACTUATED DEVICE
$	SINGLE POLE TOGGLE SWITCH
$2	DOUBLE POLE TOGGLE SWITCH
$3	3 – WAY SWITCH
$M	MOTOR RATED TOGGLE SWITCH
$T	MANUAL ROTARY TIMER LIGHT SWITCH
	ELECTRIC UNIT HEATER
	CLASS 1, DIV I, CONDUIT SEAL
	EXPOSED CONDUIT
	EXPOSED PUMP CABLE
	CONDUIT CONCEALED IN FLOOR SLAB OR UNDERGROUND (CONDUITS 1–1/2" OR LARGER SHALL BE INSTALLED INSTALLED UNDER FLOOR SLAB). SEE NOTE 2
	HOMERUN TO PANEL OR MCC AS NOTED
	AIR TERMINAL
	3/4"x20' GROUND ROD
	3/4"x20' GROUND ROD & TEST WELL
G	4/0 BARE COPPER GROUND LOOP AT 24" BELOW GRADE.
XXX	CONDUIT TAG
GND	GROUND BUS
OH	OVERHEAD ELECTRICAL LINE
	RADIO ANTENNA
	CAMERA
HOA	HAND–OFF–AUTO SWITCH

LEGEND

(DARK)
REMOVE EXISTING – EXISTING PLANS
PROPOSED – PROPOSED PLANS

(LIGHT)
EXISTING TO REMAIN

TEXT SHOWN IN ITALICS REPRESENTS EXISTING INFORMATION – COLOR LEGEND APPLIES TO TEXT AS WELL AS LINES

ALL OTHER TEXT IS SHOWN IN NORMAL FORMAT

CONDUIT SYSTEM NOTES

1. ANY CONDUIT WITHOUT DESIGNATION CONTAINS 3 #10, #12 GND IN 1" CONDUIT.
2. CONDUITS IMBEDDED IN STRUCTURAL CONCRETE (FLOOR SLABS, ETC.) SHALL BE SO LOCATED AS NOT TO UNDULY IMPAIR THE STRENGTH OF THE CONSTRUCTION AND SHALL BE SPACED NOT LESS THAN TWO TIMES THE CONDUIT OD BETWEEN ADJACENT CONDUITS, EXCEPT WHERE CROSSING OR OTHERWISE APPROVED BY THE ENGINEER.
3. WIRING FOR LIGHTING, RECEPTACLES AND OTHER MISCELLANEOUS CIRCUITS SHALL CONFORM TO THE CIRCUITING INDICATED ON THE DRAWINGS WITH FIELD ARRANGEMENT AND ROUTING AS REQUIRED.
4. THE WIRING SHALL BE INSTALLED WITH NO MORE THAN 6 CURRENT CARRYING CONDUCTORS IN A CONDUIT.
5. CONDUIT AND CIRCUITS ORIGINATING FROM DIFFERENT SOURCES SHALL BE INSTALLED IN SEPARATE RACEWAYS.

DRAWING NOTES:

A. EXISTING FACILITIES AND OTHER DISCIPLINE'S NEW WORK IS SHOWN LIGHT IN THESE ELECTRICAL DRAWINGS. NEW ELECTRICAL WORK IS SHOWN DARK IN THESE ELECTRICAL DRAWINGS.

B. FOR CLARITY NOT ALL CONDUITS REQUIRED IN THIS PROJECT ARE ILLUSTRATED IN THESE ELECTRICAL DRAWINGS.

C. PLAN DRAWINGS DO NOT ILLUSTRATES ALL ASPECTS OF ELECTRICAL REQUIREMENTS. SEE SPECIFICATIONS, DIAGRAMS, DETAILS AND SCHEDULES FOR COMPLETE WORK SCOPE

BASIC ELECTRICAL MATERIAL NOTES:

A. ALL OUTDOOR CONDUIT SHALL BE PVC COATED RIGID ALUMINUM. CONDUIT BODIES SHALL BE FORM 9 FERROUS FREE ALUMINUM WITH CAPTIVE 316SS SCREWS AND GASKETS. ALL INDOOR CONDUIT SHALL BE RIGID ALUMINUM CONDUIT.

B. ALL FINAL CONNECTIONS SHALL BE FLEXIBLE METALLIC ALUMINUM CONDUIT, WITH SUNLIGHT RESISTANT JACKET AND ALUMINUM WOUND CORE. FLEXIBLE FINAL CONNECTIONS SHALL BE NO LONGER THAN 3'–0" (36" MAX) IN LENGTH WITHOUT SPECIAL PERMISSION. ALL FLEX FITTINGS 1" TRADE SIZE AND SMALLER SHALL BE 316SS. ALL FLEX FITTINGS 1 1/4" TRADE SIZE AND LARGER MAY BE FERROUS FREE ALUMINUM OR 316SS.

C. ALL OUTDOOR PULL, JUNCTION AND TERMINATION BOXES SHALL BE NEMA 4X, 316SS PER SPECIFICATION.

B. ALL STRUT AND STRUT FITTINGS SHALL BE 316SS. ALL ANCHORS, HARDWARE AND CONDUIT STRAPS SHALL BE 316SS.

DIAGRAM SYMBOLS

SYMBOL	DESCRIPTION
	CONTACT, NORMALLY OPEN
	CONTACT, NORMALLY CLOSED
	PUSHBUTTON, NORMALLY CLOSED
	PUSHBUTTON, NORMALLY OPEN
	SELECTOR SWITCH
OL'S X2	OVERLOADS
	FUSE
G	PILOT LIGHT, PUSH TO TEST
M	AUXILIARY STARTER CONTACTS
	PRESSURE SWITCH, OPENS ON RISE
	PRESSURE SWITCH, CLOSES ON RISE
	LIMIT SWITCH, NORMALLY CLOSED
	LIMIT SWITCH, NORMALLY OPEN
	TEMPERATURE ACTUATED SWITCH, OPENS ON RISE
	TEMPERATURE ACTUATED SWITCH, CLOSES ON RISE
	VACUUM SWITCH, OPENS ON RISE
	VACUUM SWITCH, CLOSES ON RISE
	THERMAL OVERLOAD
	EQUIPMENT SPACE HEATER
	GROUND CONNECTION
	SOLENOID
G / M	MOTORIZED TIME DELAY RELAY
TD	TIME DELAY RELAY
TD 0–0–X	TIME DELAY CONTACT (O=OPEN, X=CLOSED, DESIGNATION INDICATES CONTACT POSITION WHEN RELAY IS RESET–TIMING–TIMED OUT)
R	AUXILIARY RELAY
ETM	ELAPSED TIME METER
	CONTROL POWER TRANSFORMER
M	MOTOR STARTER OPERATING COIL
	SEPARABLE CONTACTS
	CIRCUIT BREAKER
	COMBINATION MOTOR STARTER
V	VOLTMETER
VS	VOLTMETER SWITCH
A	AMMETER
AS	AMMETER SWITCH
300:5	CURRENT TRANSFORMER (CT) DESIGNATION INDICATES QUANTITY & RATIO
	POTENTIAL TRANSFORMER
	POWER TRANSFORMER
	POWER FACTOR CORRECTION CAPACITOR
47	PHASE FAILURE/UNDERVOLTAGE MONITOR RELAY
	FUSED DISCONNECT SWITCH
	SURGE PROTECTIVE DEVICE
	FUSED CUTOUT

ABBREVIATIONS

A	AMP
ACLS	ACROSS LINE STARTER
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AI	ANALOG INPUT
ALT	ALTERNATOR
AO	ANALOG OUTPUT
ASD	ADJUSTABLE SPEED DRIVE
C	CONDUIT
CA	CABLE
CAB	CABINET
CAT	CATALOG
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CNP	CENTERPOINT ENERGY
COMM	COMMUNICATIONS
CONT	CONTINUED
CPT	CONTROL POWER TRANSFORMER
CPU	CENTRAL PROCESSING UNIT
CT	CURRENT TRANSFORMER
CU	COPPER
DC	DIRECT CURRENT
DI	DISCRETE INPUT
DIREC	DIRECTIONAL
DIV	DIVISION
DO	DISCRETE OUTPUT
DWG	DRAWING
ETM	ELAPSED TIME METER
FLA	FULL LOAD AMPS
FM	FLOWMETER
FO	FIBER OPTIC
FOC	FIBER OPTIC CABLE
GFI	GROUND FAULT INTERRUPT
GND	GROUND
HOA	HAND OFF AUTO
HSEB	HIGH SERVICE ELECTRICAL BUILDING
IC	INTERMEDIATE CLASS
JB	JUNCTION BOX
KA SYM	THOUSAND AMPS SYMMETRICAL
KS	KEY SWITCH
KVA	KILO–VOLT–AMPS
L	LINE
LPI	LIGHTNING PROTECTION INSTITUTE
LS	LIMIT SWITCH
LV	LOW VOLTAGE
M	MOTOR RUN CONTACT
MA	MILLIAMPERE
MADC	MILLIAMPERE DIRECT CURRENT
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MIN	MINUTES
MOR	MOTOR OVERLOAD RELAY
MV	MEDIUM VOLTAGE
mS	MILLISECOND
N	NEUTRAL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEUT	NEUTRAL
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OL	OVERLOAD
OD	OUTER DIAMETER
OH	OVERHEAD
P	POLE
PFCC	POWER FACTOR CORRECTION CAPACITOR
PLC	PROGRAMMABLE LOGIC CONTROLLER
POS	POSITION
PS	PRESSURE SWITCH
PVC	POLYVINYL CHLORIDE
PVC RGS	PVC COATED RIGID GALV STEEL CONDUIT
PWR	POWER
R	RELAY
RAC	RIGID ALUMINUM CONDUIT
RALM	PUMP ALARM RELAY
REE	ELEC BLDG ENTRY AUX RELAY
RGS	RIGID GALVANIZED STEEL CONDUIT
RHLA	HIGH LEVEL ALARM RELAY
RM	PUMP RUN AUX RELAY
RMOR	MOTOR OVERLOAD AUX RELAY
R.O.W.	RIGHT OF WAY
RPLC	PLC MODE AUX RELAY
RPLCOR	PLC OVERRIDE
RPLM	PLC PUMP RUN RELAY
RPLMP	BACKUP SYSTEM RUN RELAY
RR	REMOTE RADIO
RRST	PUMP RESET AUX RELAY
RTAH	TEMPERATURE ALARM AUX RELAY
RTD	REMOTE THERMAL DETECTOR
RUV	UNDERVOLTAGE AUX RELAY
RVSS	REDUCED VOLTAGE SOLID STATE STARTER
RWD	WATCHDOG RELAY
SE	SERVICE ENTRANCE
SEC	SECONDS
SL	SEAL LEAK
SN	SOLID NEUTRAL
SPD	SURGE PROTECTIVE DEVICE
SPST	SINGLE POLE SINGLE THROW
SS	STAINLESS STEEL
SW	SWITCH
SWGR	SWITCHGEAR
TB	TERMINAL BOX
TEMP	TEMPERATURE
TD	TIME DELAY RELAY
TDLP	LOSS OF POWER TIME DELAY RELAY
TDRM	PUMP TIME DELAY RELAY
TRANS	TRANSITION
TSP	TWISTED SHIELDED PAIR
TST	TWISTED SHIELDED TRIAD
TYP	TYPICAL
UG	UNDERGROUND
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLTS
VA	VOLT–AMP
VAC	VOLTS ALTERNATING CURRENT
VDC	VOLTS DIRECT CURRENT
VFD	VARIABLE FREQUENCY DRIVE
VT	VOLTAGE TRANSFORMER
W	WATT OR WIRE

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

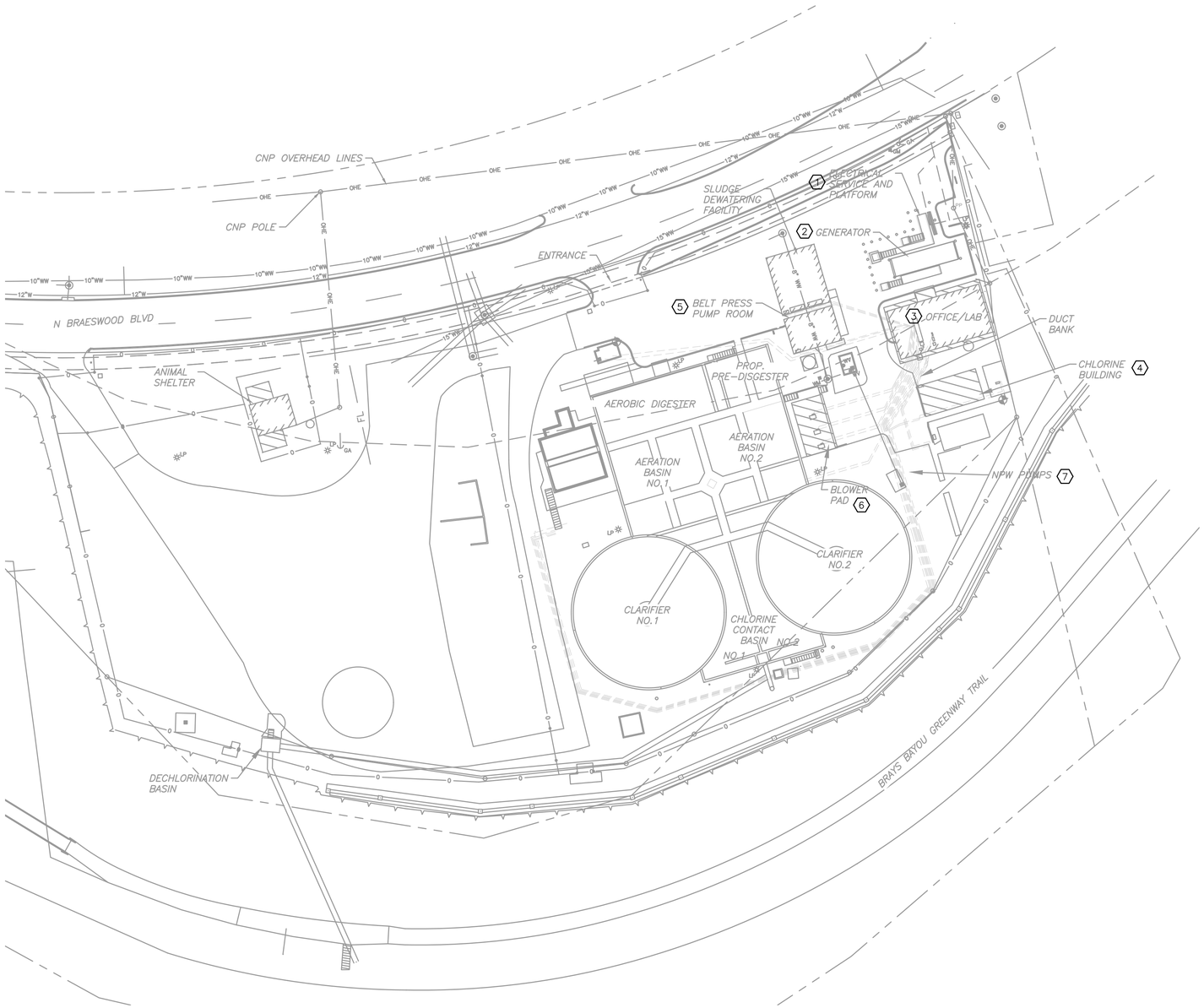
ELECTRICAL

SYMBOLS, ABBREVIATIONS AND NOTES

DATE:	09/01/2022			
DESIGN:	RK			
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CHECKED:	WH			
KHA NO.:	067812104			

SHEET
E-001

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EXISTING OVERALL SITE PLAN

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. ELECTRICAL SERVICE TO BE DISCONNECTED AND REMOVED. PLATFORMS AND PROTECTIVE BOLLARDS SHALL BE INCLUDED AS PART OF REMOVAL. CONTRACTOR SHALL REPAIR PAVEMENT TO MATCH EXISTING.

2. GENERATOR TO BE DISCONNECTED AND RELOCATED. SEE PROPOSED PLANS FOR LOCATION. CONTRACTOR TO PROVIDE TEMPORARY BACKUP GENERATION FOR SERVICE DURING RELOCATION AND COMMISSIONING.

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. SEE PROPOSED PLANS.

6. 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 DISCONNECTED.

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

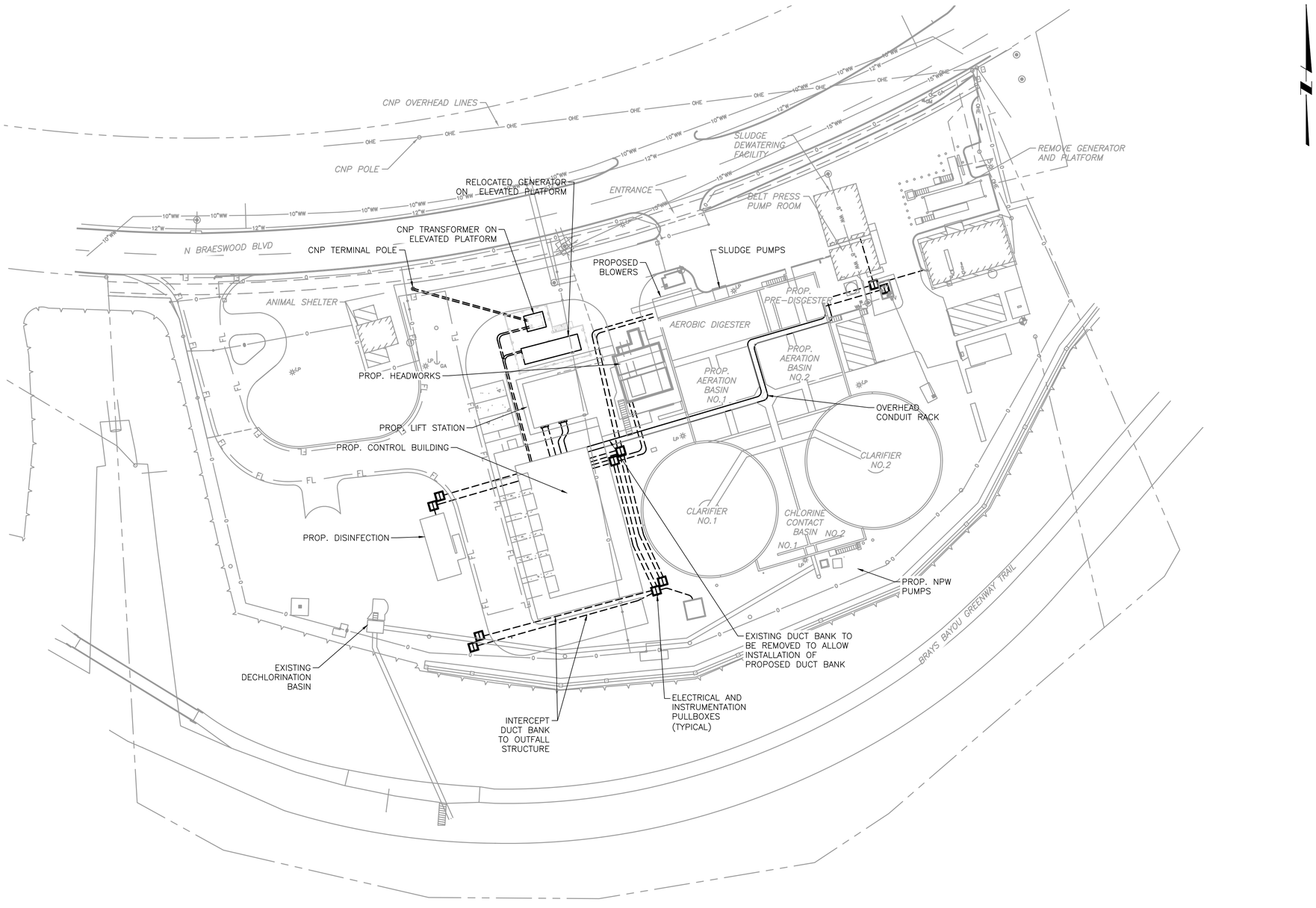
EXISTING OVERALL SITE PLAN

DATE:	09/01/2022
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SHEET

E-002

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ELECTRICAL OVERALL PROPOSED SITE PLAN

PLAN

1/32"=1'-0"

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

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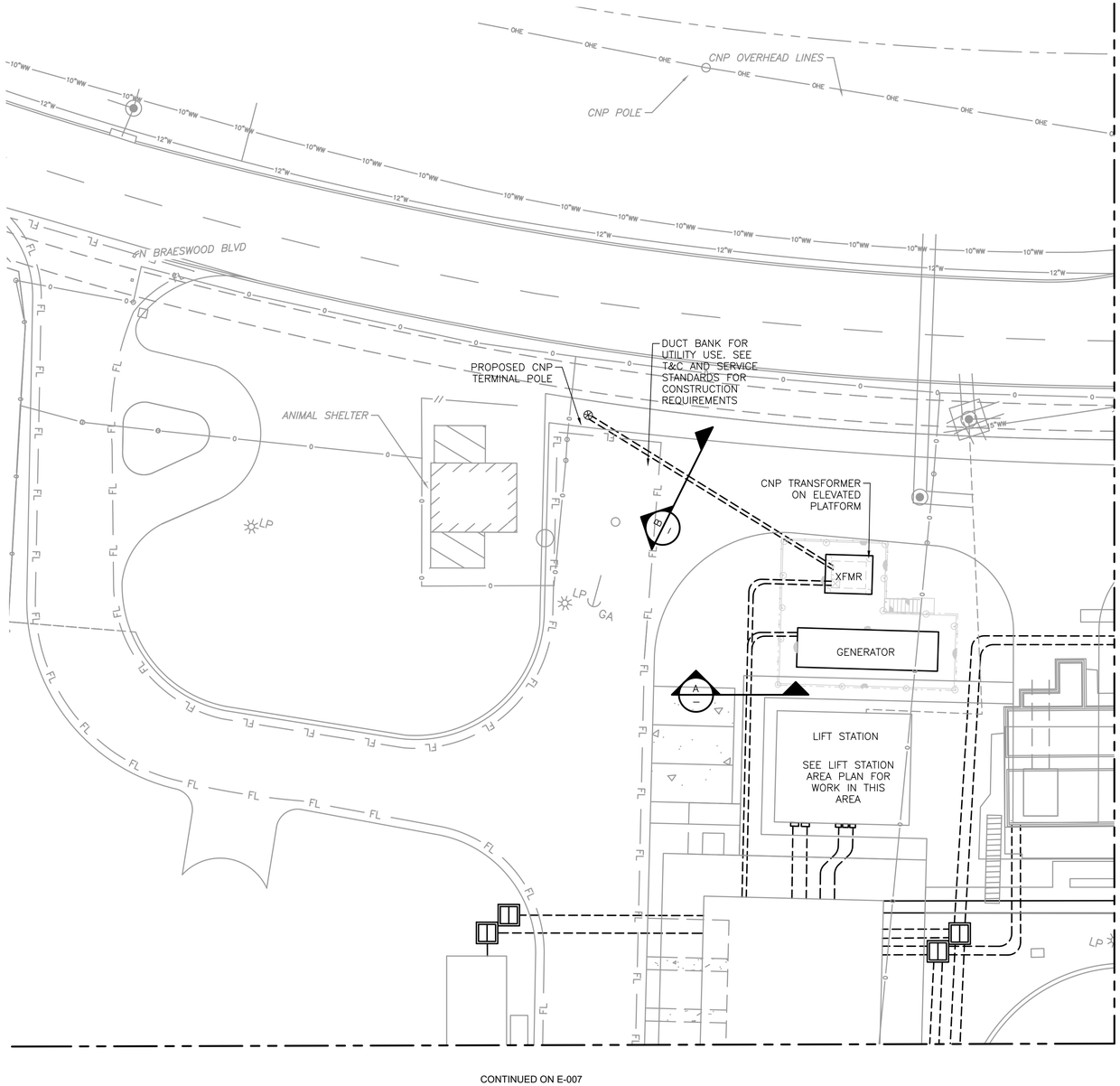
ELECTRICAL OVERALL PROPOSED SITE PLAN

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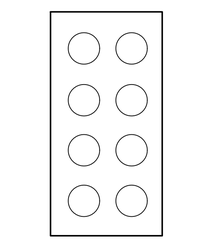
E-003

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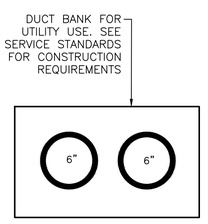
CONTINUED ON E-007



DUCTBANK

SECTION A

N.T.S



DUCTBANK

SECTION B

N.T.S

PROPOSED ENLARGED WEST BUILDING SITE

PLAN

1/16"=1'-0"

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

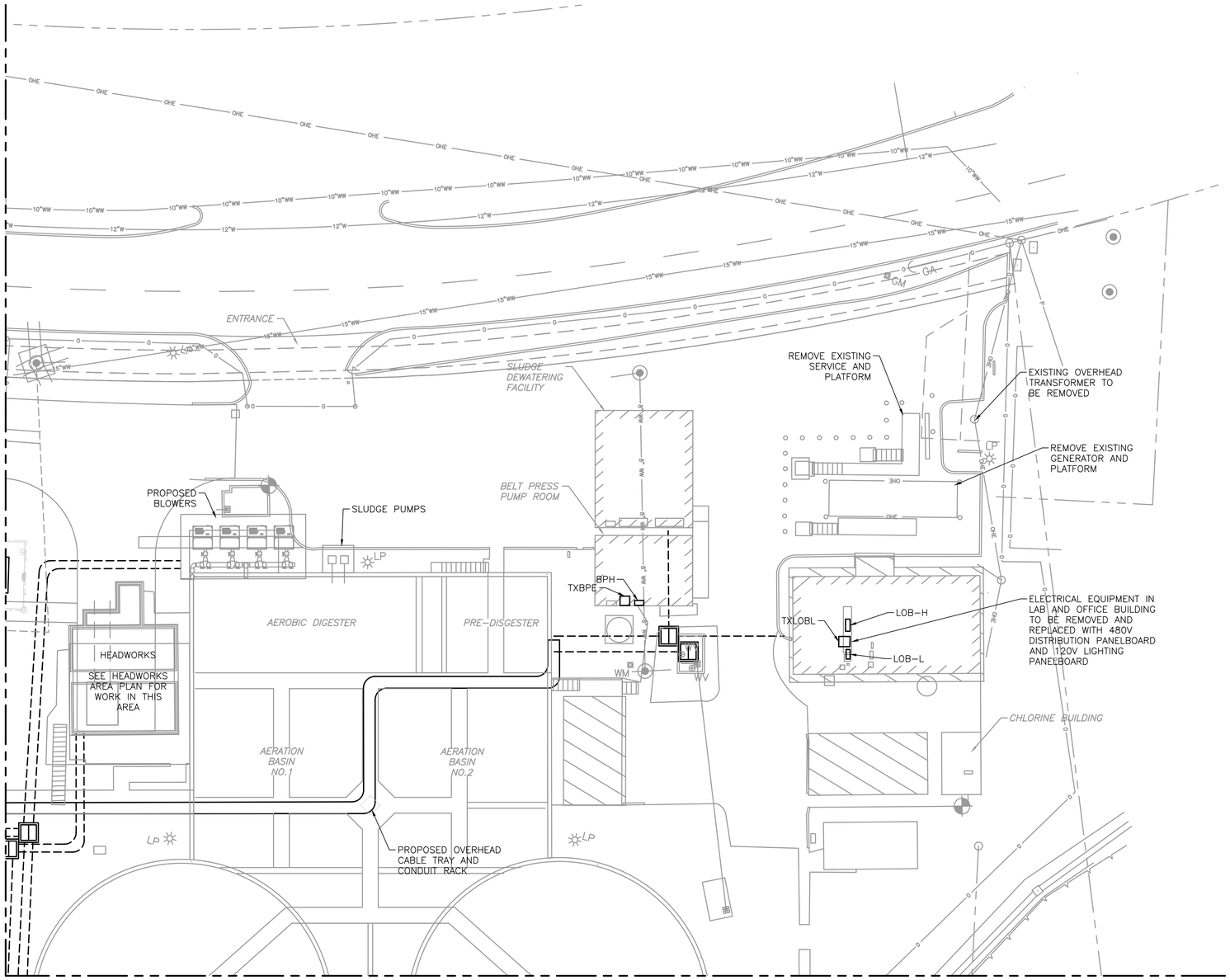
PROPOSED ENLARGED SITE PLAN SHEET 1 OF 4

DATE:	09/01/2022
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KHA NO.:	067812104

SHEET

E-004

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PROPOSED ENLARGED WEST BUILDING SITE

PLAN

1/16"=1'-0"

VERIFY SCALE

0

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KGL
Kalluri Group, Inc.
TBPE Registration No. F-665
16300 Katy Freeway, Suite 172
Houston, Texas 77094
Phone: (713)-360-9088

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

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

PROPOSED ENLARGED SITE PLAN SHEET 2 OF 4

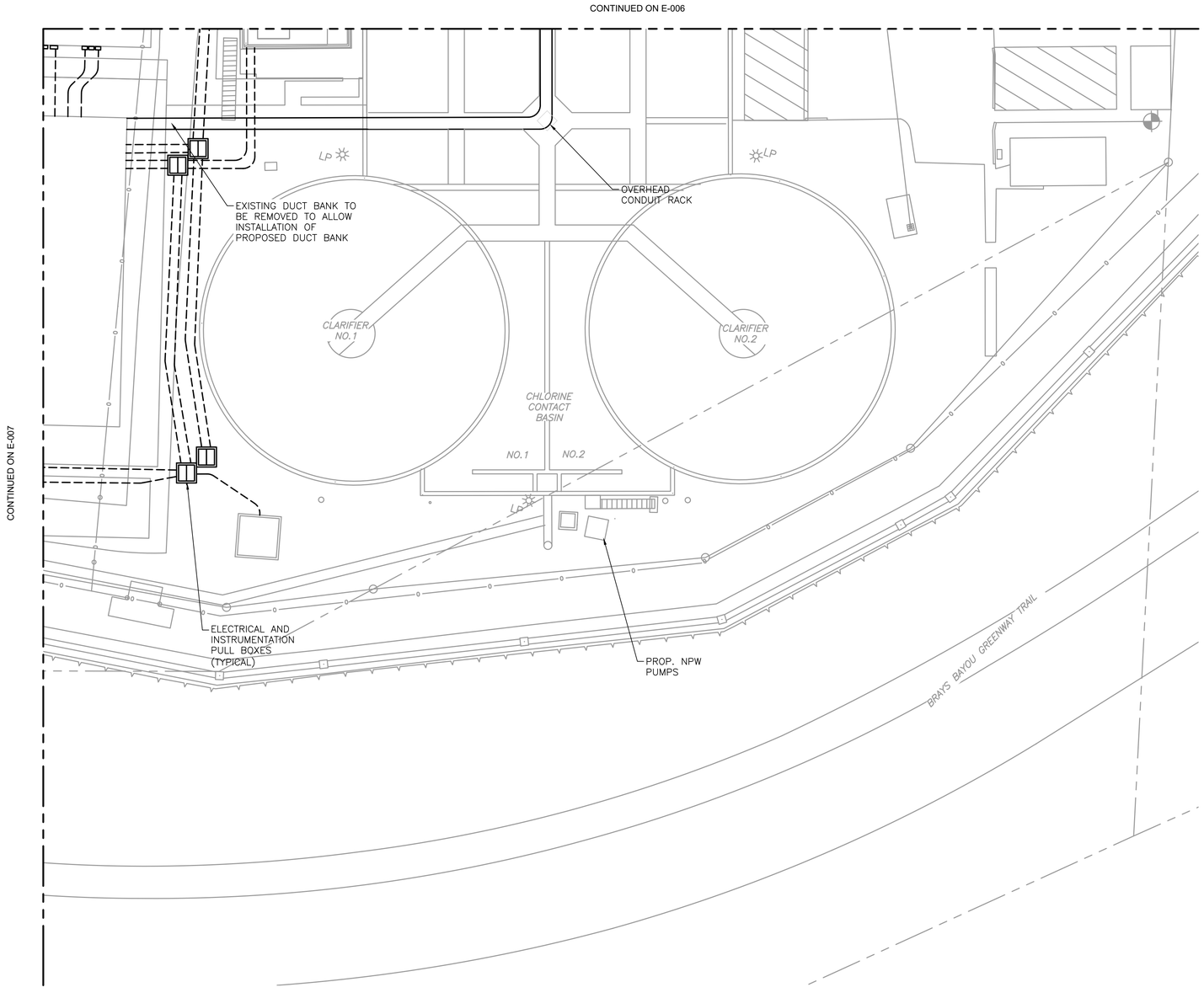
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E-005

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CONTINUED ON E-006



CONTINUED ON E-007

PROPOSED ENLARGED WEST BUILDING SITE

PLAN

1/16"=1'-0"

VERIFY SCALE

0 1

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

PROPOSED ENLARGED SITE PLAN SHEET 3 OF 4

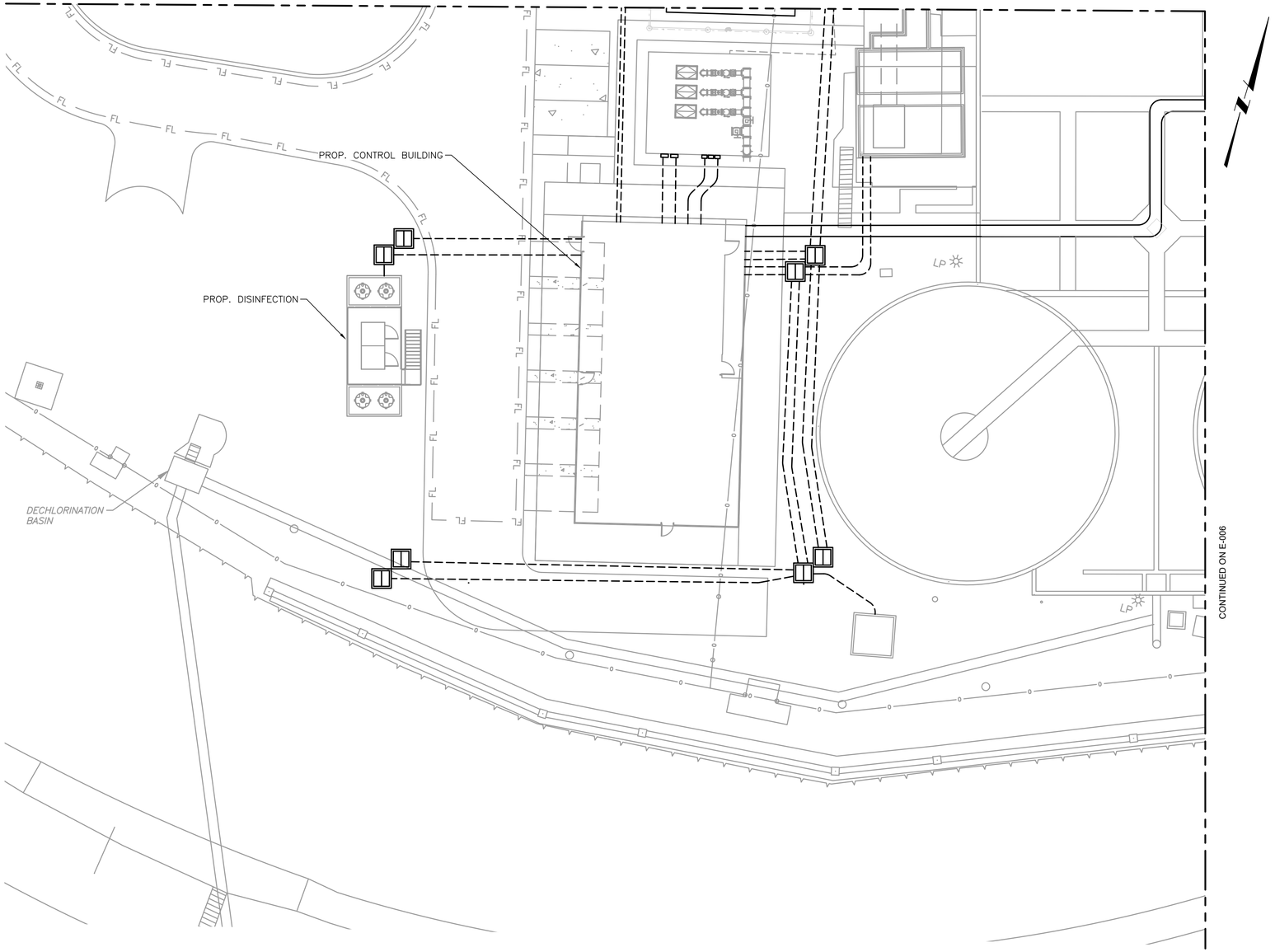
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E-006

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CONTINUED ON E-004



PROPOSED ENLARGED WEST BUILDING SITE

PLAN

1/16"=1'-0"

VERIFY SCALE

0 1"

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

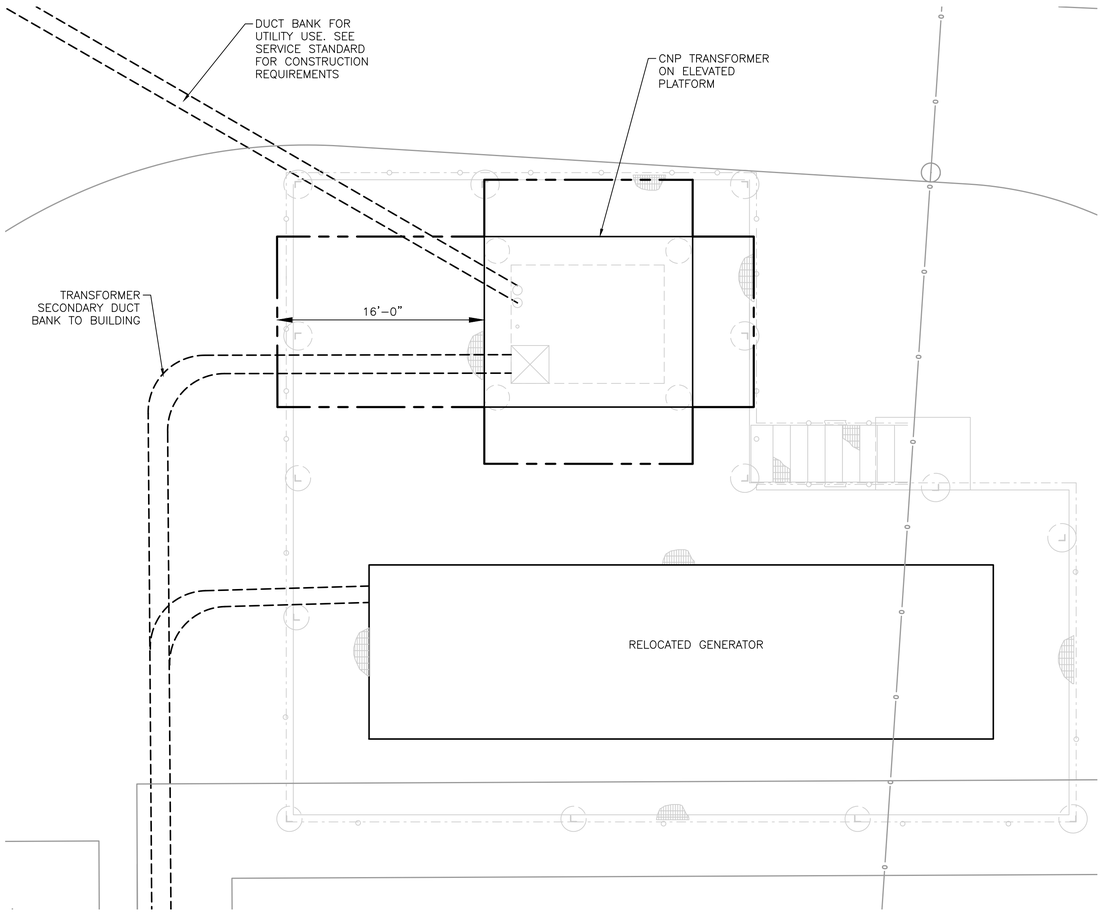
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SHEET

E-007

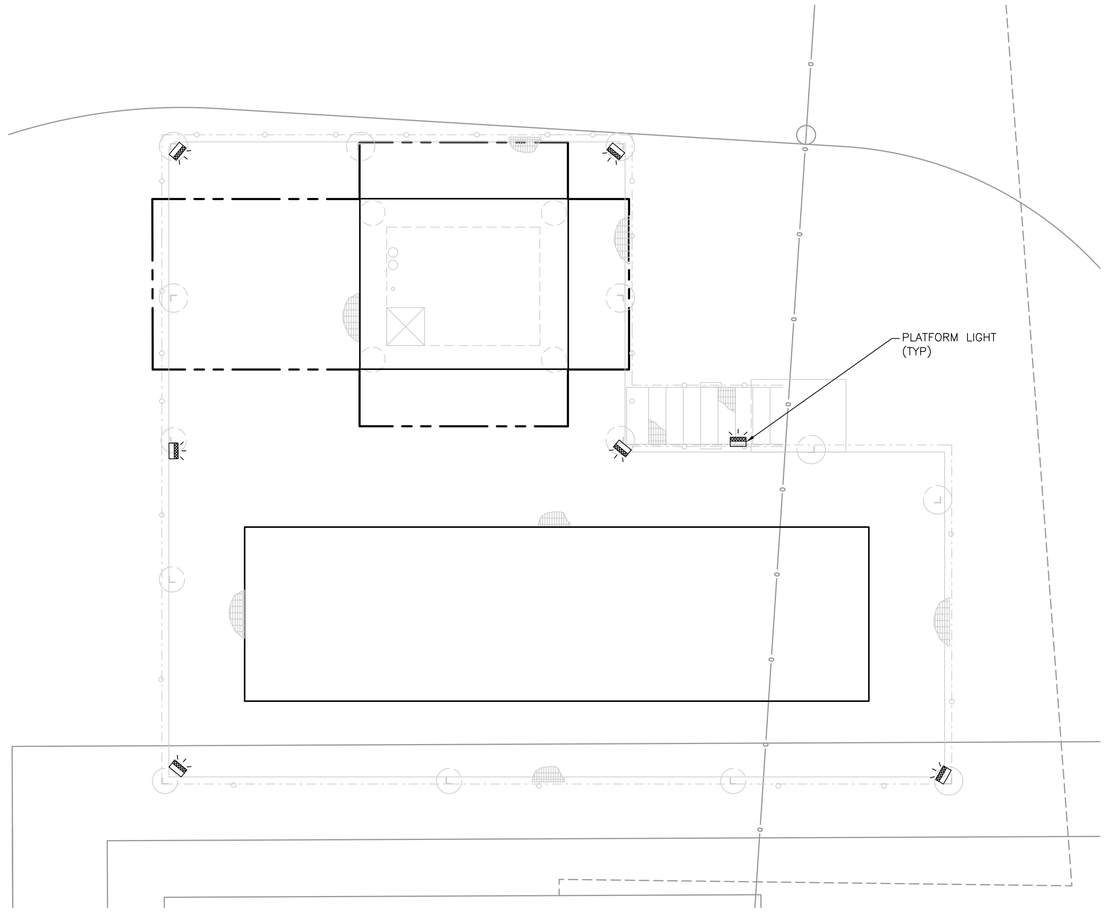
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ELECTRICAL SERVICE AREA

PLAN

1/4"=1'-0"



ELECTRICAL SERVICE PLATFORM POWER AND LIGHTING

PLAN

1/4"=1'-0"

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

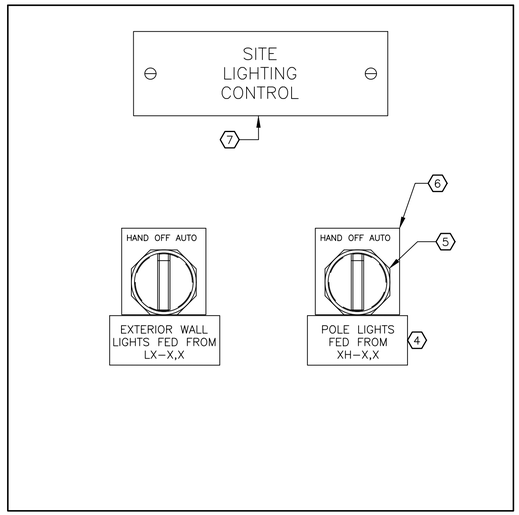
ELECTRICAL SERVICE AREA PLAN

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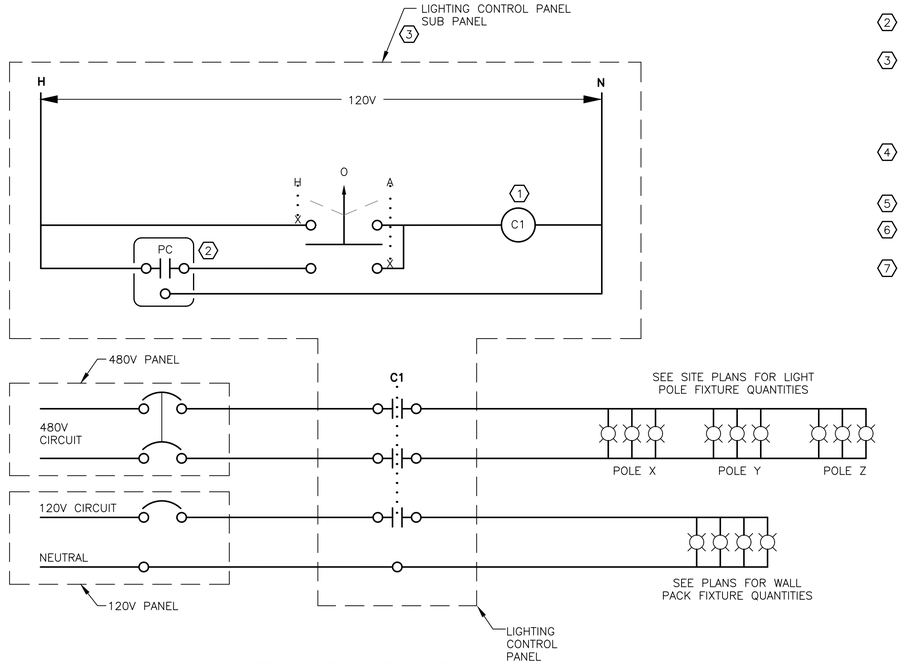
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E-008

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TYPICAL LIGHTING CONTROL PANEL
FRONT



TYPICAL LIGHTING CONTROL PANEL
WIRING SCHEMATIC

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.

LIGHT FIXTURE SCHEDULE

TYPE	CATALOG NUMBER	DESCRIPTION	LAMPS	INPUT VOLTAGE	INPUT WATTS	REMARKS
A	LITHONIA CLX–L48–7000LM–HEF–WDL–MVOLT–GZ10–50K–80CRI–WH–A268	WHITE LINEAR 48" LED FIXTURE WITH WIDE DIFFUSE LENS AND HIGH EFFICIENCY PACKAGE	LED	120	45	INSTALL SUSPENDED FIXTURE ROWS ON CONTINUOUS TYPE 316 S.S. 1⅝" X 1⅝" STRUT SUSPENDED BY ¼" TYPE 316 S.S. THREADED RODS. SINGLE FIXTURES TO BE INSTALLED SIMILAR TO THAT DESCRIBED FOR FIXTURE ROWS.
B	LITHONIA WST–LED–P3–50K–VF–MVOLT–E20WC–DDBXD–A268	DARK BRONZE ALUMINUM WALL PACK LED FIXTURE WITH 90 MINUTE EMERGENCY BATTERY PACK.	LED	120	50	INSTALL FIXTURE WITH TOP AT ONE FOOT BELOW ROOF.
C	LITHONIA ELT24–W–MT–H–A268 WITH ELAMSTS MOUNTING SHELF. PAINT SHELF WHITE.	EMERGENCY FIXTURE WITH TWO HEADS AND SEALED LEAD ACID 90 MINUTE BATTERY.	HALOGEN	120	20	INSTALL FIXTURE WITH BOTTOM OF FIXTURE AT 10'–0" ABOVE THE FLOOR. ADD A CORD WITH PLUG TO THE FIXTURE AND PLUG THE CORD INTO A RECEPTACLE MOUNTED TO THE SIDE OF THE FIXTURE.
D	LITHONIA JHBL–24000LM–GL–WD–MVOLT–GZ10–50K–80CRI–CS89–DWHXD–A268 WITH ACCESSORIES JHBLSCK84 AND HKM	WHITE CAST ALUMINUM HIGH BAY LED FIXTURE WITH GLASS LENS, A HOOK FOR MOUNTING FROM AN EYEBOLT, A 84" SAFETY CABLE AND A 72" CORD FOR CONNECTION TO A JUNCTION BOX.	LED	120	185	PROVIDE TYPE 316 S.S. STRUT TO MOUNT A TYPE 316 S.S. EYEBOLT AT THE DIMENSIONED LOCATION INDICATED ON PROJECT DRAWINGS. INSTALL SAFETY CABLE TO SECURE FIXTURE. CONNECT FIXTURE POWER CORD TO A JUNCTION BOX NEAR THE FIXTURE.
E	LITHONIA FEM–L48–6000LM–IMAFL–WD–MVOLT–GZ10–40K–80CRI–SPD–STSL–WLF–A268	WET LOCATION 52" LED FIXTURE WITH FIBERGLASS HOUSING, ACRYLIC LENS, AND STAINLESS STEEL LENS LATCHES.	LED	120	45	INSTALL EACH FIXTURE ON TYPE 316 S.S. 1⅝" X 1⅝" STRUT SUSPENDED BY ¼" TYPE 316 S.S. THREADED ROD. INSTALL BOTTOM OF FIXTURES AT 10' ABOVE THE FLOOR.
X	LITHONIA LQM–S–W–3–R–120/277–ELN	WHITE LED EXIT SIGN FIXTURE IN A THERMOPLASTIC HOUSING WITH RED LETTERS AND NICKEL CADMIUM BATTERY	LED	120	1	INSTALL A FIXTURE ABOVE EACH EXIT DOOR.

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

OVERALL FIXTURE SCHEDULE AND CONTROL DIAGRAM

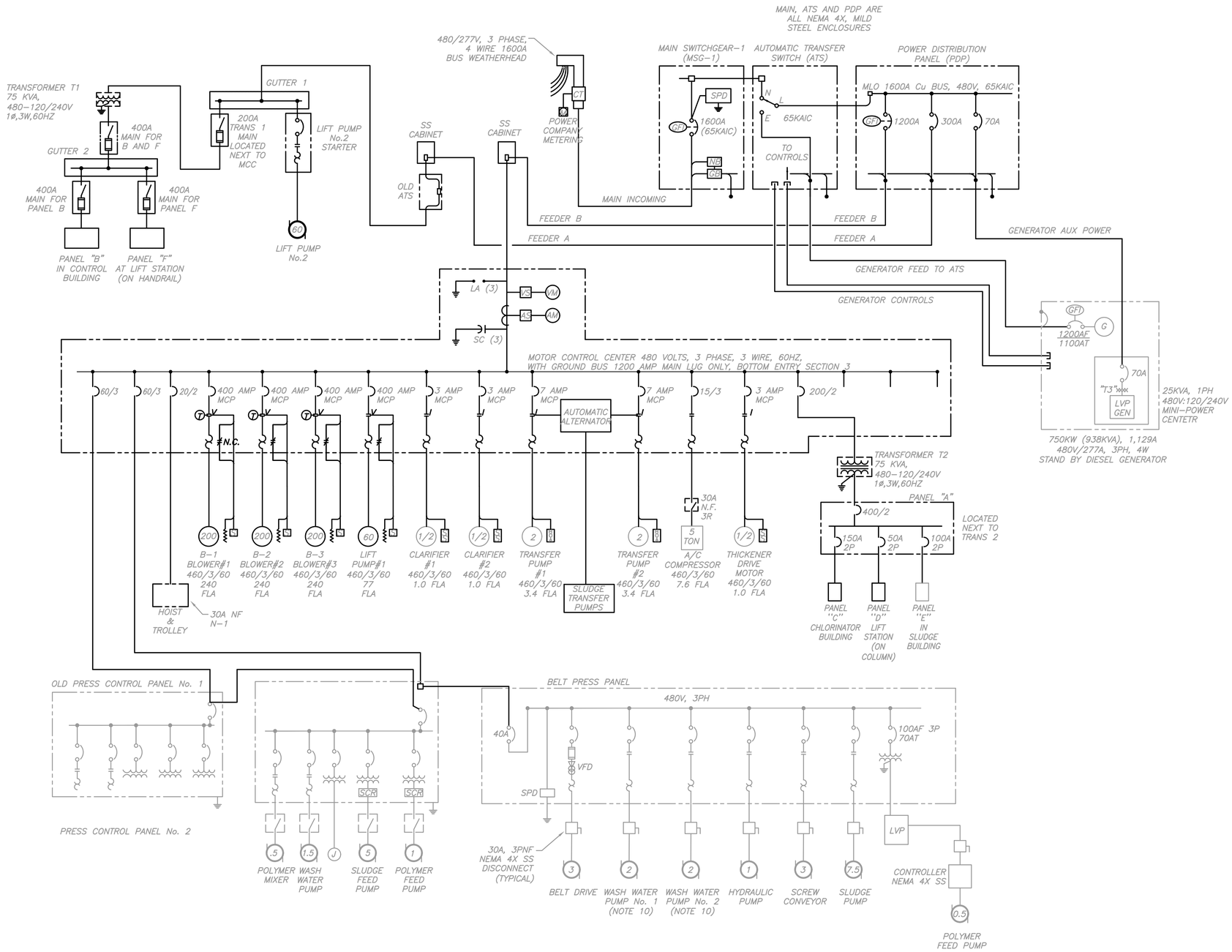
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16300 Katy Freeway, Suite 172
Houston, Texas 77094
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SHEET
E-009

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EXISTING OVERALL

ONE LINE DIAGRAM

NONE

GENERAL NOTES:

A. ALL EQUIPMENT SHOWN IS EXISTING. EQUIPMENT SHOWN IN BOLD IS TO BE REMOVED.

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

ONE LINE DIAGRAM
EXISTING SERVICE

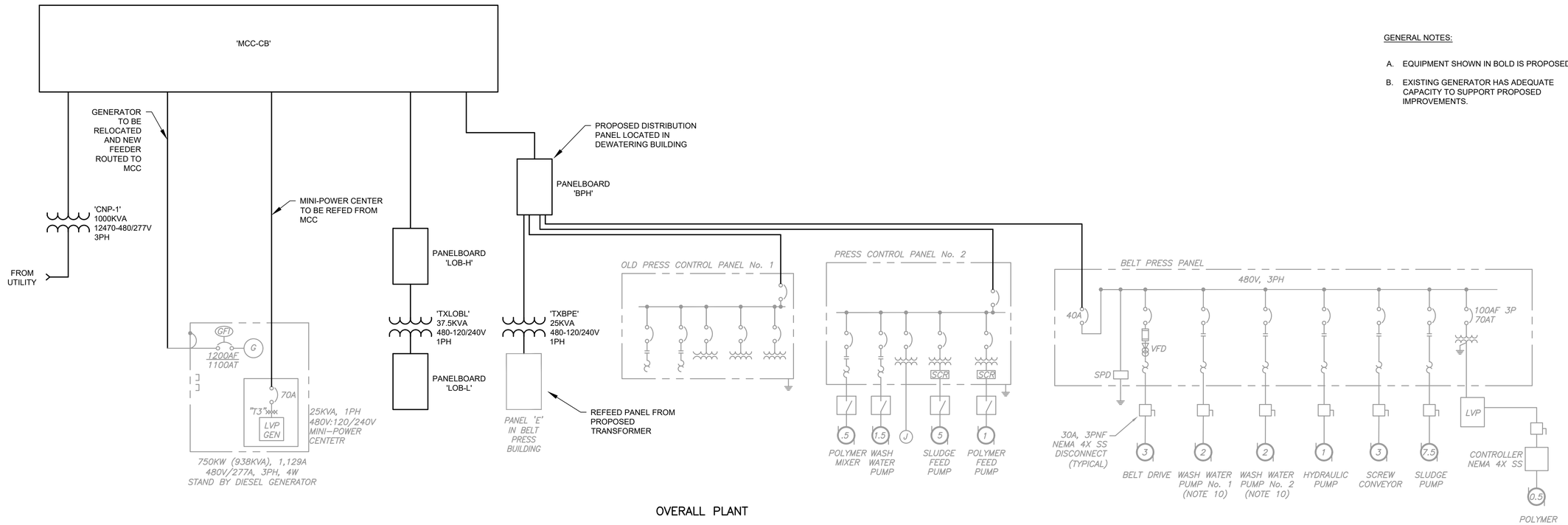
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SHEET
E-010

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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.

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT
PLANT IMPROVEMENTS

ELECTRICAL

ONE LINE DIAGRAM
PROPOSED SERVICE

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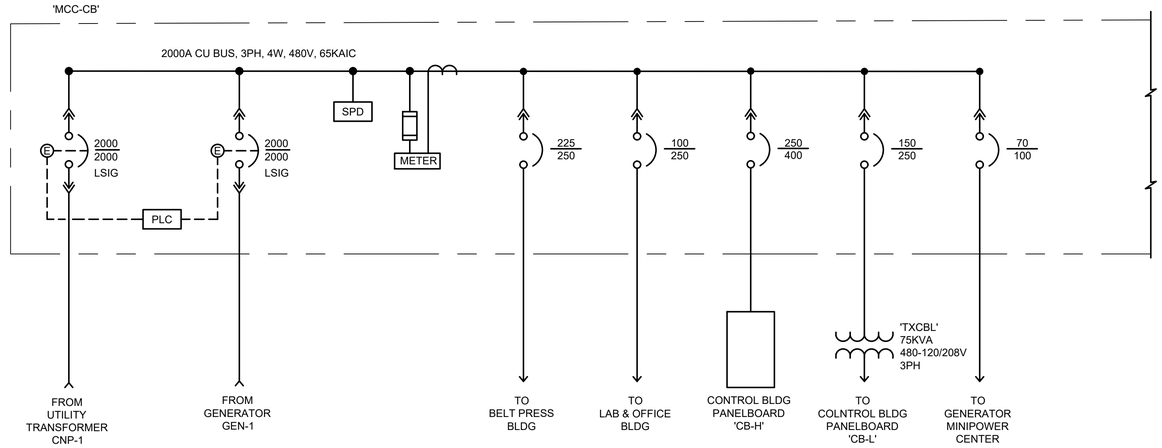
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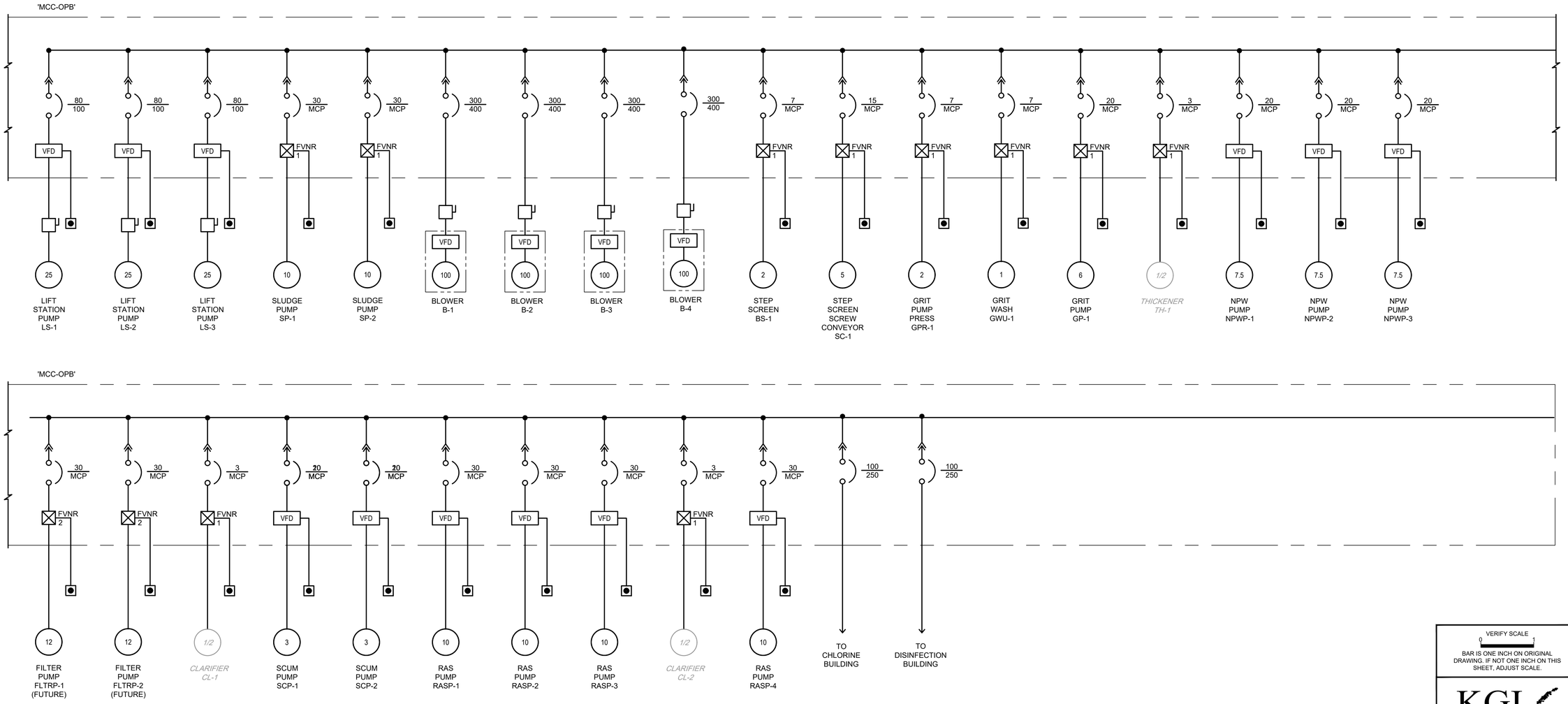
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SHEET

E-011

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OPERATIONS BUILDING MCC

ONE LINE DIAGRAM

NONE

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL
ONE LINE DIAGRAM MCC-CB

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SHEET
E-012

Existing	Proposed	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)
✓	·	BELT PRESS BUILDING	BP-CP-1	OLD PRESS CONTROL PANEL #1	25	FLA	480	3	FEEDER	CONTROL PANEL COMBINED LOAD	1	Motor	25	21	25	21	Y
✓	·	BELT PRESS BUILDING	BP-CP-2	PRESS CONTROL PANEL #2	25	FLA	480	3	FEEDER	CONTROL PANEL COMBINED LOAD	1	Motor	25	21	25	21	Y
✓	·	BELT PRESS BUILDING	BP-CP-3	BELT PRESS PANEL	50	FLA	480	3	FEEDER	CONTROL PANEL COMBINED LOAD	1	Motor	50	42	50	42	Y
✓	·	BELT PRESS BUILDING	PNL 'E'	PANELBOARD 'E'	25	kVA	480	3	FEEDER	PANELBOARD FEEDER	1	Lighting	30	25	30	25	Y
·	✓	BELT PRESS BUILDING	PNL 'BPH'	PANELBOARD 'BPH'	75	FLA	480	3	FEEDER	EXCESS CAPACITY ALLOWANCE	1	Other	75	62	75	62	Y
·	✓	LAB & OFFICE BUILDING	PNL 'LOB-H'	PANELBOARD 'LOB-H'	125	FLA	480	3	FEEDER	EXCESS CAPACITY ALLOWANCE	1	Other	125	104	125	104	Y
·	✓	LAB & OFFICE BUILDING	PNL 'LOB-L'	PANELBOARD 'LOB-L'	37.5	kVA	480	1	FEEDER	FED FROM 'CB-H'	1	Other	78	38	78	38	Y
·	✓	LIFT STATION	LS-1	LIFT STATION PUMP 1	25	HP	480	3	ASD		1	Motor	34	28	34	28	Y
·	✓	LIFT STATION	LS-2	LIFT STATION PUMP 2	25	HP	480	3	ASD		1	Motor	34	28	34	28	Y
·	✓	LIFT STATION	LS-3	LIFT STATION PUMP 3	25	HP	480	3	ASD		0	Motor	34	28	0	0	N
·	✓	CONTROLS BUILDING	PNL 'CB-H'	PANELBOARD 'CB-H'	200	FLA	480	3	FEEDER	MISC. BLDG 480V LOADS	0.5	Other	200	166	100	83	Y
·	✓	CONTROLS BUILDING	PNL 'CB-L'	PANELBOARD 'CP-L'	75	kVA	480	3	FEEDER	MISC. BLDG 120V LOADS	1	Other	90	75	90	75	Y
✓	·	PROCESS AREA	CL-1	CLARIFIER 1	0.5	HP	480	3	FVNR		1	Motor	1	1	1	1	Y
✓	·	PROCESS AREA	CL-2	CLARIFIER 2	0.5	HP	480	3	FVNR		1	Motor	1	1	1	1	Y
✓	·	PROCESS AREA	TH-1	THICKENER 1	0.5	HP	480	3	FVNR		1	Motor	1	1	1	1	Y
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·	✓	PROCESS AREA	BS-1	BAR SCREEN	2	HP	480	3	FVNR		0	Motor	3	3	0	0	Y
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·	✓	PROCESS AREA	GP-1	GRIT PUMP	7.5	HP	480	3	FVNR		1	Motor	11	9	11	9	Y
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·	✓	PROCESS AREA	RASP-3	RAS PUMP 3	10	HP	480	3	FVNR		1	Motor	14	12	14	12	N
·	✓	PROCESS AREA	RASP-4	RAS PUMP 4	10	HP	480	3	FVNR		1	Motor	14	12	14	12	Y
·	✓	PROCESS AREA	RASP-5	RAS PUMP 5	10	HP	480	3	FVNR		1	Motor	14	12	14	12	Y
·	✓	PROCESS AREA	RASP-6	RAS PUMP 6	10	HP	480	3	FVNR		1	Motor	14	12	14	12	N
·	✓	PROCESS AREA	SCP-1	SCUM PUMP 1	3	HP	480	3	FVNR		1	Motor	5	4	5	4	Y
·	✓	PROCESS AREA	SCP-2	SCUM PUMP 2	3	HP	480	3	FVNR		1	Motor	5	4	5	4	N
·	✓	PROCESS AREA	SCP-3	SCUM PUMP 3	3	HP	480	3	FVNR		1	Motor	5	4	5	4	Y
·	✓	PROCESS AREA	SCP-4	SCUM PUMP 4	3	HP	480	3	FVNR		1	Motor	5	4	5	4	N
·	✓	PROCESS AREA	SP-1	SLUDGE PUMP 1	10	HP	480	3	FVNR		1	Motor	14	12	14	12	Y
·	✓	PROCESS AREA	SP-2	SLUDGE PUMP 2	10	HP	480	3	FVNR		1	Motor	14	12	14	12	Y
·	✓	PROCESS AREA	SP-3	SLUDGE PUMP 3	10	HP	480	3	FVNR	STANDBY (REDUNDANT)	0	Motor	14	12	0	0	N
·	✓	SURROUNDING AREA	FLTRP-1	FILTER PUMP 1	15	HP	480	3	FVNR		1	Motor	21	17	21	17	Y
·	✓	SURROUNDING AREA	FLTRP-2	FILTER PUMP 2	15	HP	480	3	FVNR		1	Motor	21	17	21	17	Y
·	✓	SURROUNDING AREA	SB_CL2-BLDGS	SODIUM BISULFITE & CHLORINE BUILDING POWER	60	FLA	480	3	FEEDER		1	Other	60	50	60	50	Y
✓	·											**Existing Total:**	**133**	**111**	**133**	**111**	**111**
·	✓											**Proposed Total:**	**1348**	**1093**	**1197**	**967**	**910**
·	·											**Overall Total:**	**1481**	**1204**	**1330**	**1078**	**1021**

OVERALL PLANT

LOAD ANALYSIS

NONE

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL
PROPOSED SERVICE LOAD ANALYSIS

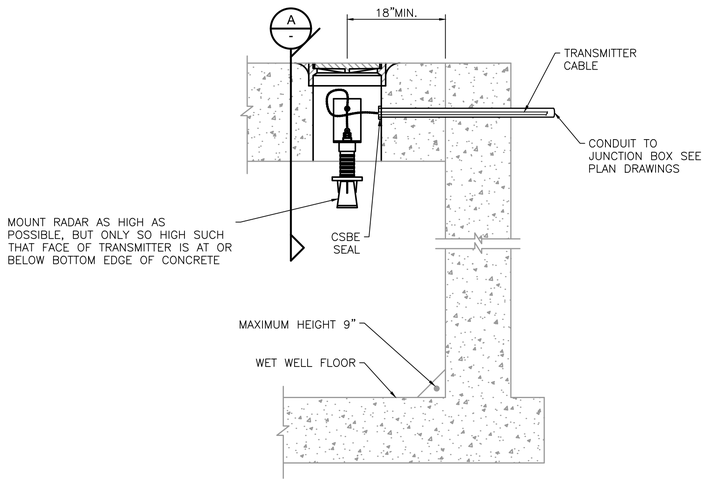
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Houston, Texas 77094
Phone: (713)-360-9088

SHEET
E-013

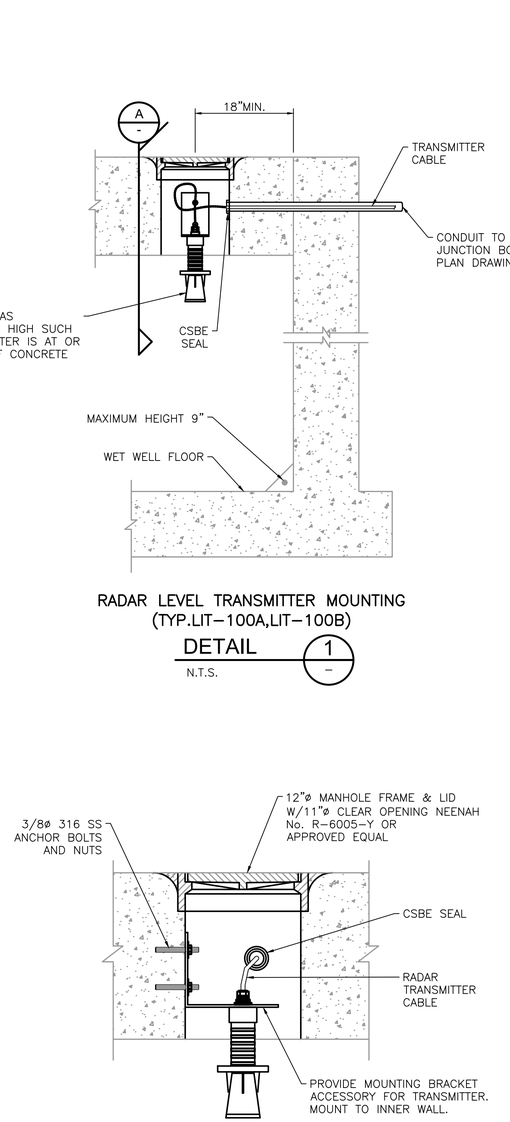
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RADAR LEVEL TRANSMITTER MOUNTING
(TYP.LIT–100A,LIT–100B)

DETAIL 1 –

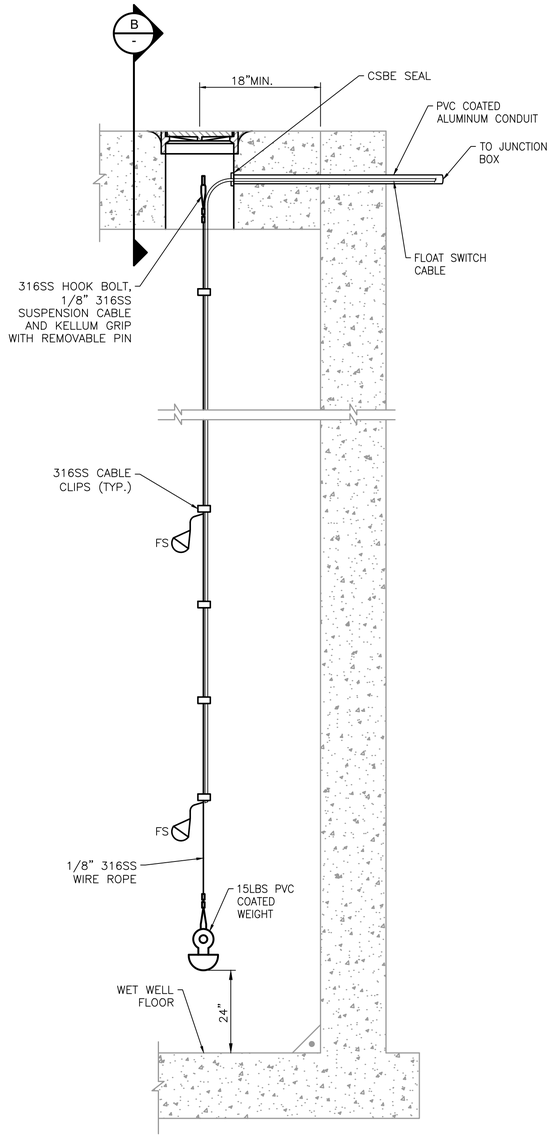
N.T.S.



RADAR LEVEL TRANSMITTER
LIT–100A & 100B MOUNTING SIDE VIEW

SECTION A –

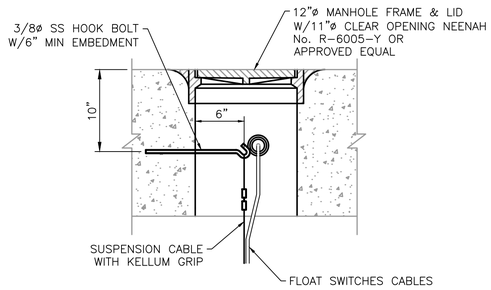
N.T.S.



FLOAT SWITCH MOUNTING

DETAIL 2 –

N.T.S.



ENLARGED FLOAT SWITCHES
CABLE MOUNTING

SECTION B –

N.T.S.

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

DETAIL SHEET I

DATE:	09/01/2022
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KHA NO.:	067812104

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Phone: (713)–365–9288

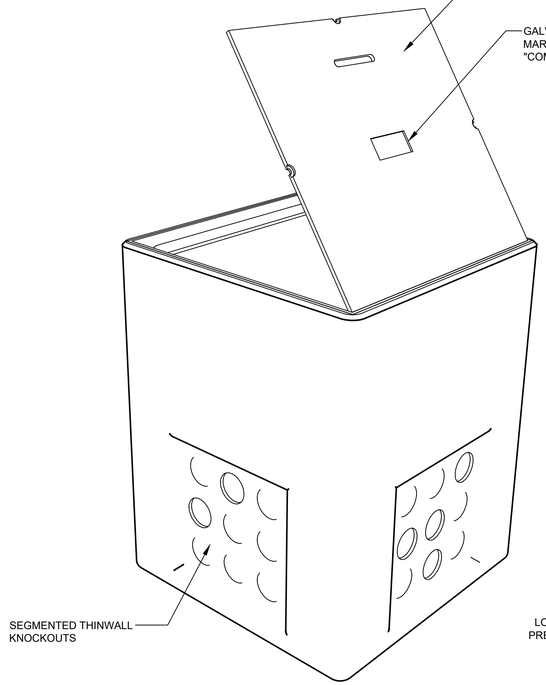
SHEET
E-014

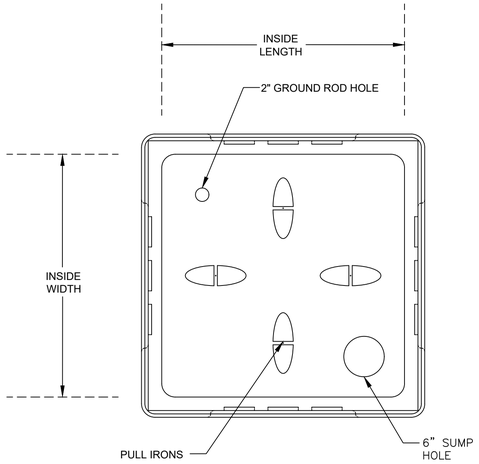
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PULL BOX SIZES			
DESIGANTION	INSIDE WIDTH (W)	INSIDE LENGTH (L)	INSIDE DEPTH (D)
E1	12"	24"	22"
E2	24"	24"	42"
E3	36"	36"	48"
E4	48"	48"	48"
I1	12"	24"	22"
I2	24"	24"	42"
I3	36"	36"	48"
I4	48"	48"	48"

NOTES:

1. COVERS FOR ALL PULL BOXES TO BE HOT-DIP GALVANIZED AND DESIGNED FOR AASHTO HS-20 LOADING.
2. "E" PULL BOXES TO HAVE "ELEC" TAG ON THE COVER.
3. "I" PULL BOXES TO HAVE "COMM" TAG ON THE COVER.

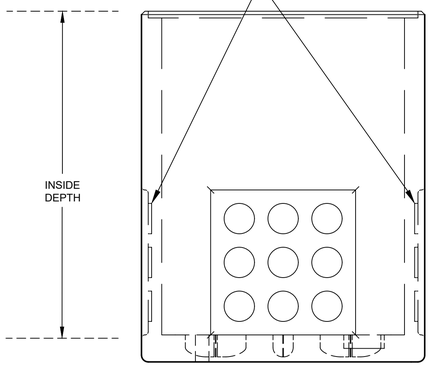




PLAN VIEW

NTS

ATTACH STAMPED STAINLESS STEEL IDENTIFICATION TAGS TO CABLES AT EACH LOCATION WHERE CABLES ENTER THE PULL BOX. ATTACH TAGS WITH STAINLESS STEEL WIRE. TAGS TO LIST THE FOLLOWING IN 3/16" LETTERS: CIRCUIT IDENTIFICATION, CABLE SIZES (PHASE, GROUND, TSP, FO CABLE, ETC.) AND DATE INSTALLED.



LOCKE SOLUTIONS PRECAST CONCRETE PULL BOX

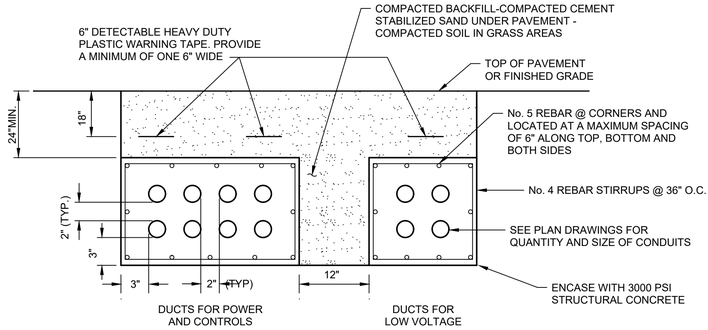
ELEVATION VIEW

NTS

TYPICAL UNDERGROUND PULL BOX

DETAIL 1 / –

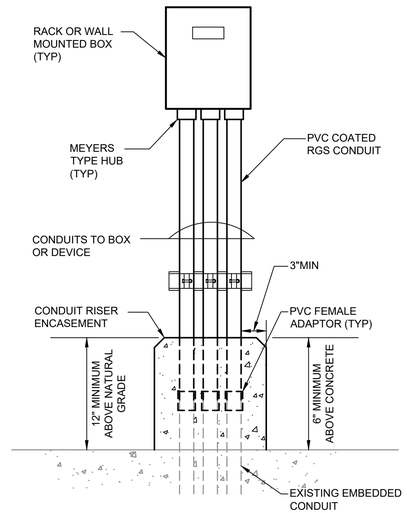
NTS



TYPICAL DUCT BANK INSTALLATION

DETAIL 2 / –

NTS



CONDUIT RISER CONCRETE ENCASEMENT

DETAIL 3 / –

NTS

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

DETAIL SHEET II

DATE:	09/01/2022
DESIGN:	RK
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KHA NO.:	067812104

VERIFY SCALE

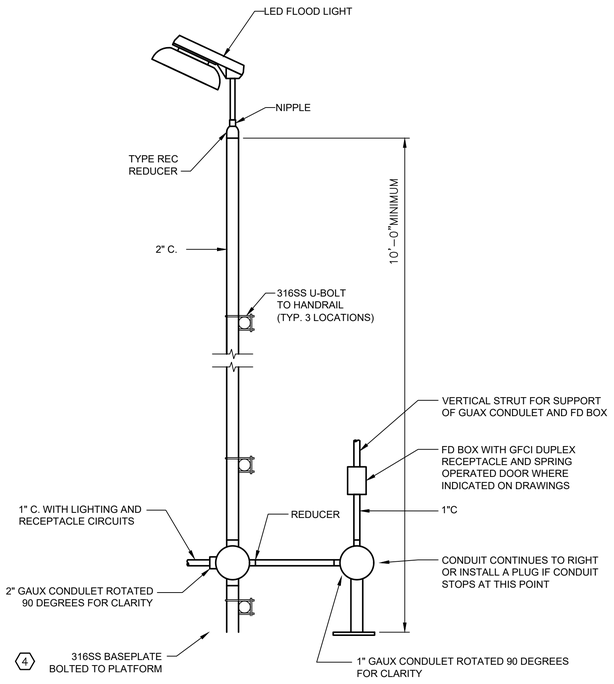
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Houston, Texas 77094
Phone: (713)-360-9288

SHEET

E-015

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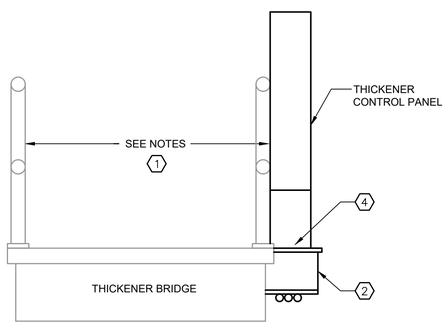


HANDRAIL MOUNTED LIGHT FIXTURE DETAIL — 1 / E-XXX

N.T.S

NOTES:

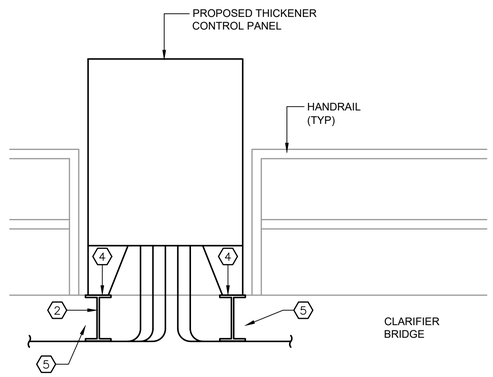
1. PROVIDE MINIMUM OF 42" CLEARANCE BETWEEN CONTROL PANEL AND HANDRAIL.
2. PROVIDE SOLID STRUCTURAL SUPPORT AS REQUIRED FOR CLARIFIER CONTROL PANEL. PANEL MOUNTING IS FREE STANDING WITHOUT ATTACHMENT TO HAND RAILS.
3. EXISTING JUNCTION BOX WILL BE REPLACED WITH 316 SS NEMA 4X JUNCTION BOX IN THIS CONTRACT. REPLACE EXISTING CONDUITS BETWEEN CLARIFIER ELECTRICAL COMPONENTS AND JUNCTION BOX. RECONNECT CONDUCTORS TO EXISTING WIRING IN JUNCTION BOX ON CORROSION RESISTANT TERMINAL BLOCKS. (PHOENIX CONTACT UT SERIES OR APPROVED EQUAL)
4. ALL FASTENERS TO BE 316 SS.
5. ATTACH CONDUITS TO STRUCTURAL SUPPORTS WITH KORNS CLAMP.
6. TERMINATE EXISTING FIELD CONDUIT AND WIRING INSIDE JUNCTION BOX UNDER STAIRWAY PLATFORM ON CORROSION RESISTANT TERMINALS, (PHOENIX CONTACT UT SERIES OR APPROVED EQUAL). NEW CONDUITS BETWEEN THIS JUNCTION BOX AND CLARIFIER CONTROL PANEL SHALL BE INSTALLED WITH NEW CLARIFIER EQUIPMENT.
7. PROVIDE LITHONIA LIGHTING RSX1 50K, P3, WITH ADJUSTABLE ARM FOR ALL FOUR FIXTURES ON EACH POLE.



SIDE VIEW OF TYPICAL CONTROL PANEL

DETAIL — 2 / E-XXX

1" = 1'-0"



REAR VIEW OF TYPICAL CONTROL PANEL

DETAIL — 3 / E-XXX

1" = 1'-0"

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL
DETAIL SHEET III

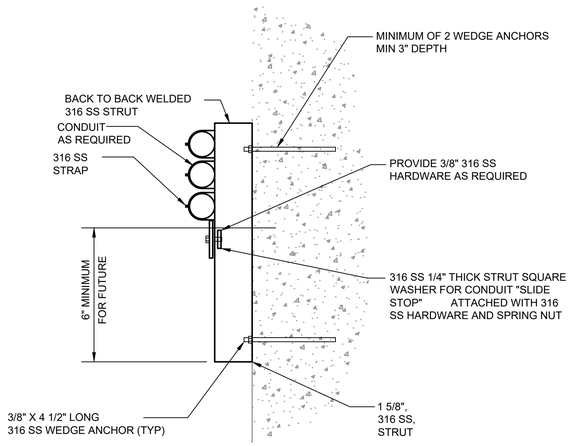
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Phone: (713)-360-9088

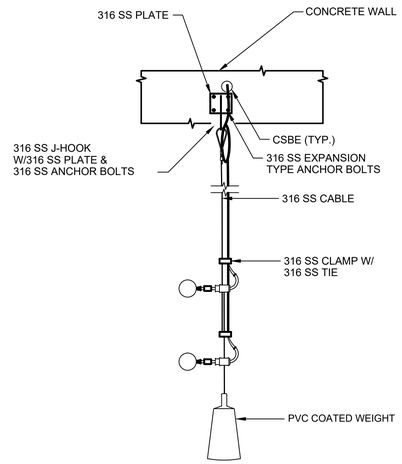
SHEET
E-016

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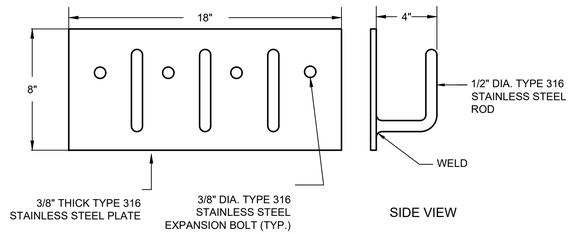
SIDE VIEW
WALL OF STRUCTURE CONDUIT SUPPORT

DETAIL 1
NTS



FLOAT SUPPORT

DETAIL 2
NTS

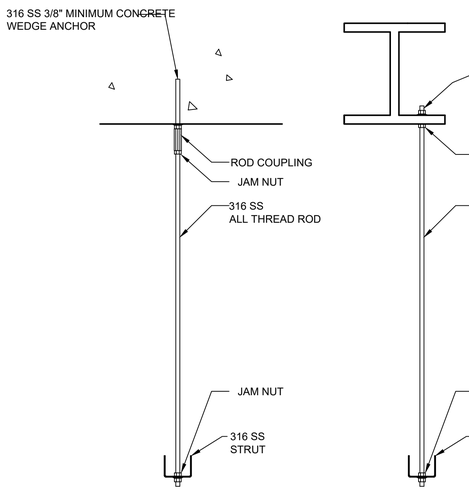


FRONT VIEW

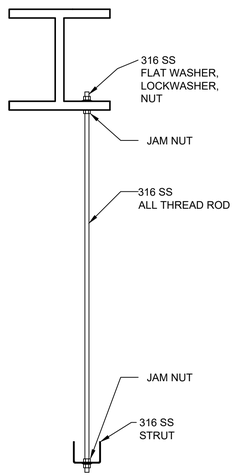
SIDE VIEW

CABLE RACK

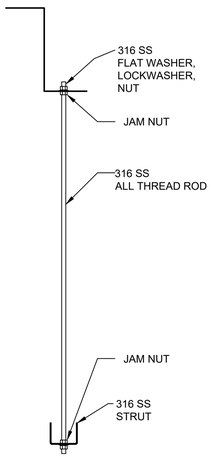
DETAIL 3
-



CONCRETE STRUCTURE



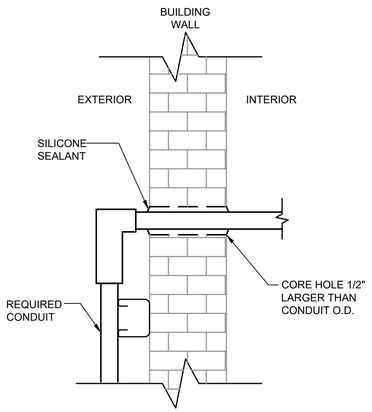
STRUCTURAL METAL



STRUCTURAL FRAMING

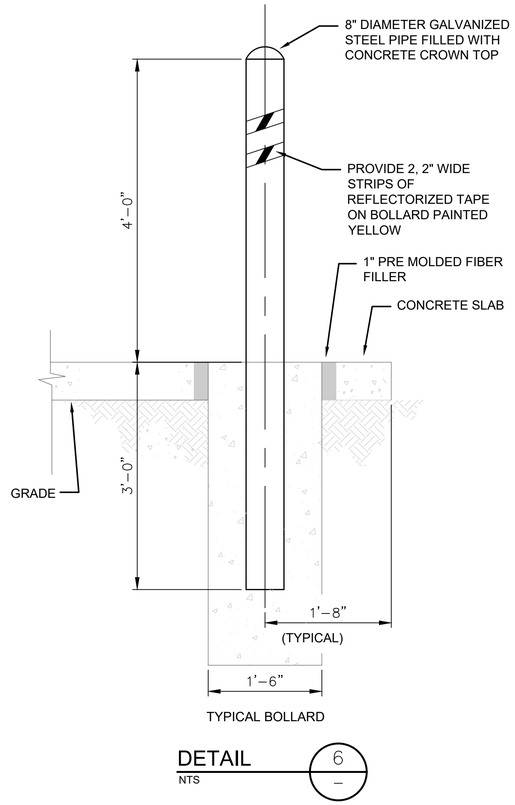
ACCEPTABLE CONDUIT SUPPORTS

DETAIL 4
NTS



TYPICAL WALL PENETRATION

DETAIL 5
NTS



TYPICAL BOLLARD

DETAIL 6
NTS

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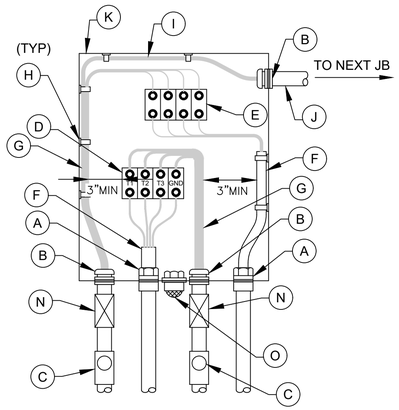
CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT
PLANT IMPROVEMENTS

ELECTRICAL
DETAIL SHEET IV

DATE:	09/01/2022
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KHA NO.:	067812104

SHEET
E-017

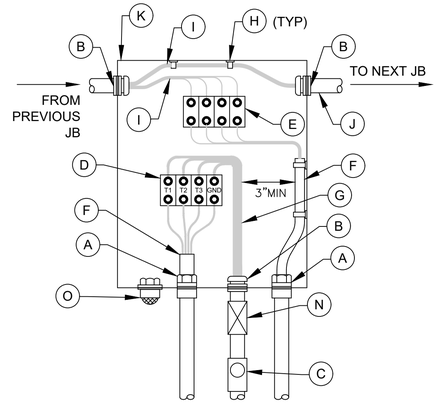
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BEGINNING JUNCTION BOX

DETAIL 3 / –

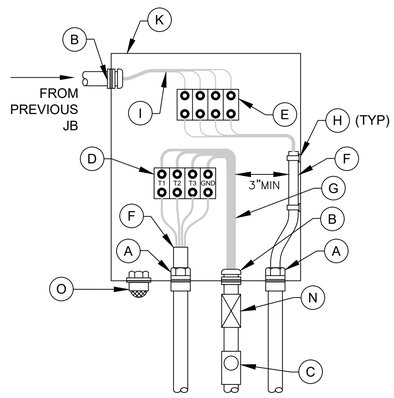
N.T.S



INTERMEDIATE JUNCTION BOX

DETAIL 4 / –

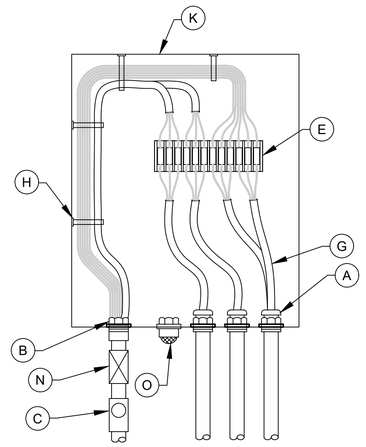
N.T.S



END JUNCTION BOX

DETAIL 5 / –

N.T.S



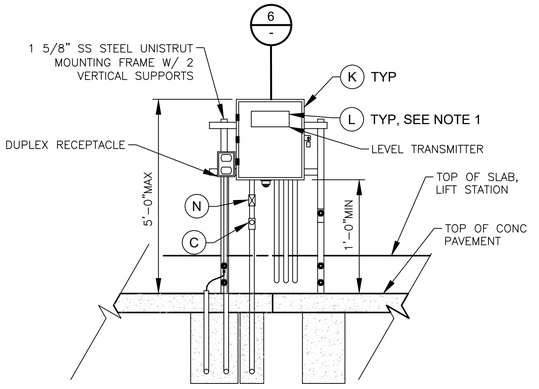
LEVEL TRANSMITTER JUNCTION BOX

DETAIL 6 / –

N.T.S

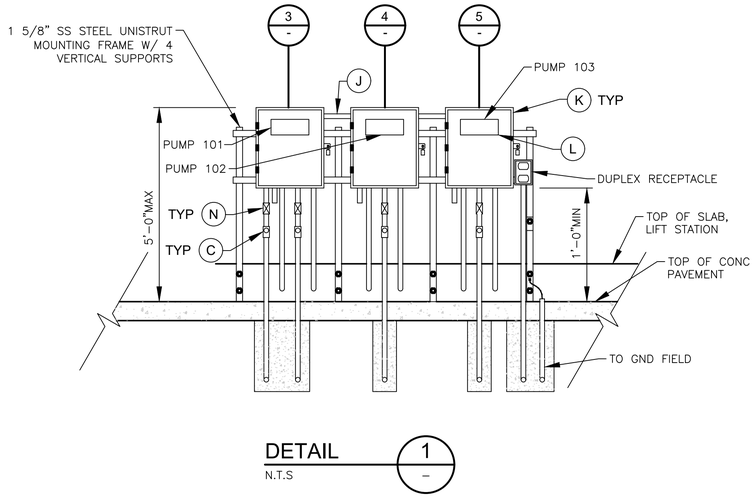
JUNCTION BOX EQUIPMENT SCHEDULE

- A – OZ GEDNEY CSBE SEAL
- B – WATERTIGHT CONDUIT HUB WITH INSULATED BUSHING
- C – CLASS I, DIV 1, EXLOSION PROOF SEAL INSTALLED PER NEC DIV 501
- D – POWER TERMINAL BLOCK W/SCREW DOWN BOX LUGS
- E – CONTROL TERM BLOCK W/SCREW DOWN BOX LUGS
- F – MULTI–CONDUCTOR CABLE, REMOVE OUTER JACKET AS SHOWN
- G – WIRING AS SCHEDULED
- H – WIRING HARNESS PERMANENTLY AFFIXED
- I – PUMP CONTROL WIRING FROM PUMPS 2; 2 & 3; 4; OR D2, AS APPLICABLE
- J – 1 1/2" PVC COATED CONDUIT NIPPLE
- K – NEMA 4X STAINLESS STEEL JUNCTION BOX WITH GASKETED FRONT COVER, SINGLE QUARTER TURN, OIL–TIGHT LATCH AND PADLOCKING PROVISIONS, HOFFMAN A24H2412SS6LP SS LF OR EQUAL. MINIMUM SIZE: 24"W X 24"H X 12"D
- L – NAMEPLATE, SEE SPECIFICATIONES (SEE NAMEPLATE SCHEDULE)
- M – MOTOR RATED SWITCH
- N – EXPANSION FITTING
- O – DRAIN VENT



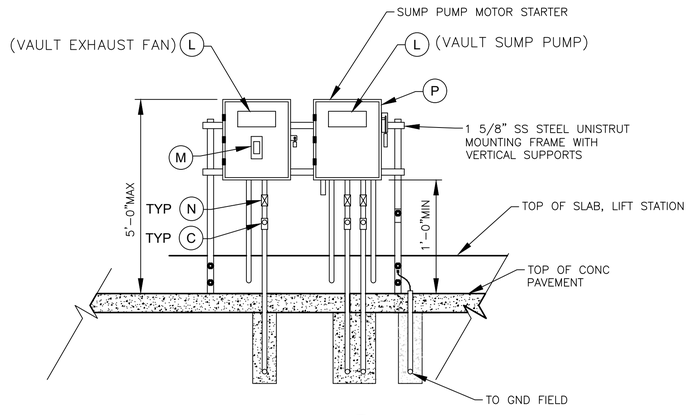
DETAIL 2 / –

N.T.S



DETAIL 1 / –

N.T.S



DETAIL 1A / –

N.T.S

VERIFY SCALE

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TBPE Registration No. F–665

16300 Katy Freeway, Suite 172
Houston, Texas 77094
Phone: (713)–365–8288

Kimley»Horn

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

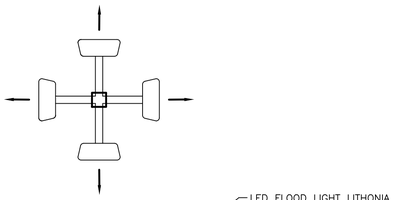
DETAIL SHEET V

DATE:	09/01/2022
DESIGN:	RK
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KHA NO.:	067812104

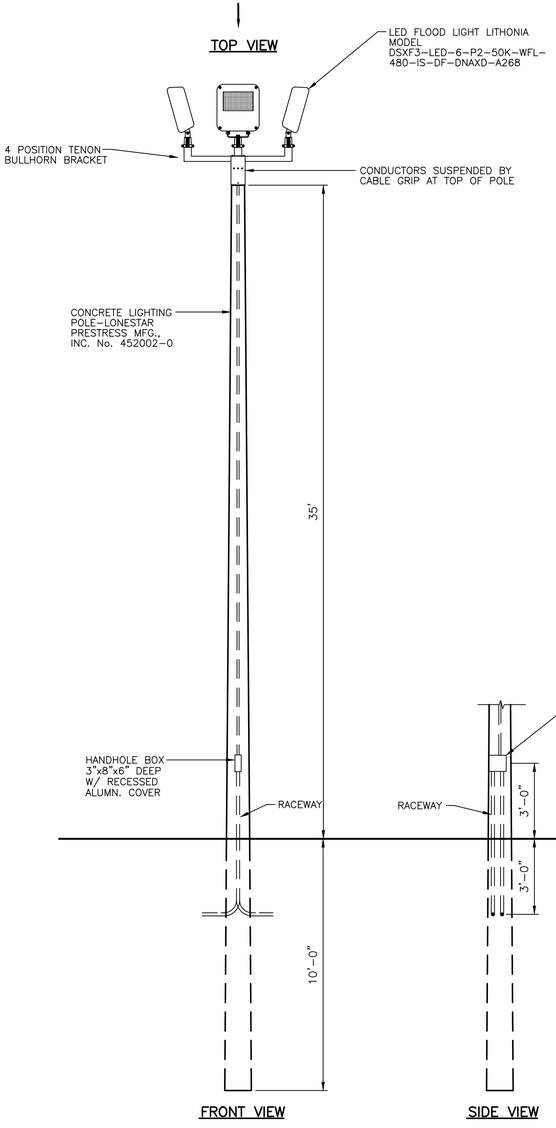
SHEET

E-018

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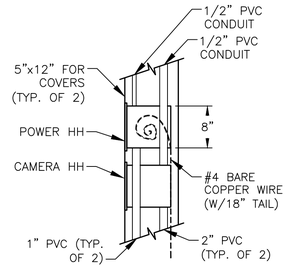


TOP VIEW

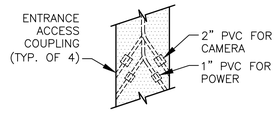


FRONT VIEW SIDE VIEW

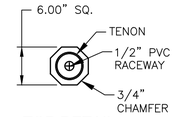
SITE LIGHT
DETAIL 1
NTS



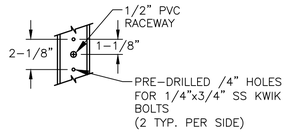
HANDHOLE W/ RECESSED COVER DETAIL
NTS



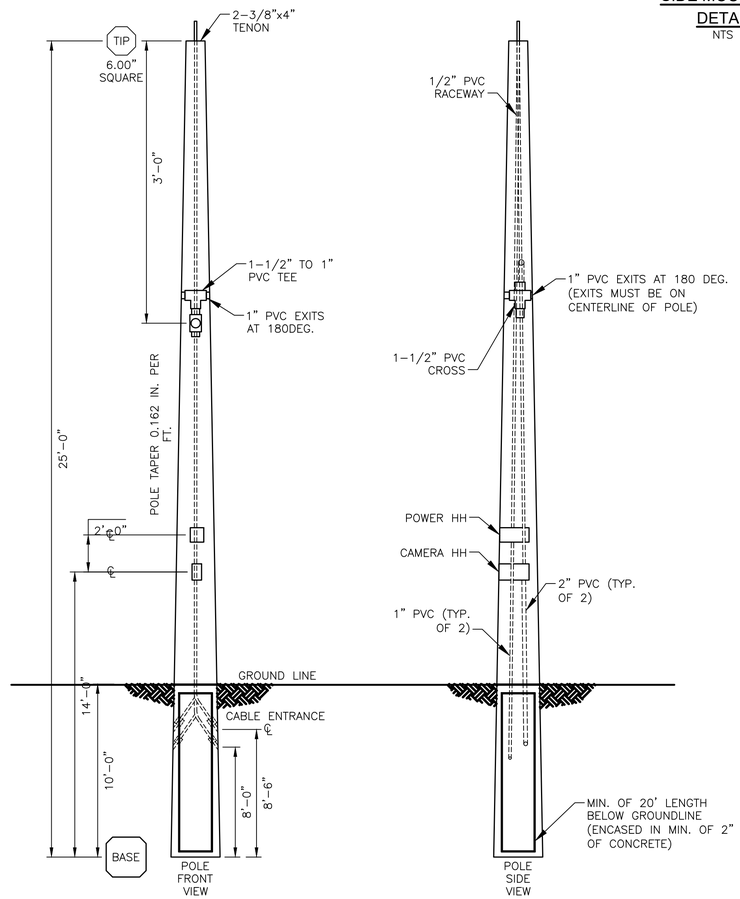
CABLE ENTRANCE DETAIL
NTS



TOP DETAIL
NTS



SIDE MOUNTING DETAIL
NTS



SITE LIGHT AND CAMERA POLE
DETAIL 2
NTS

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

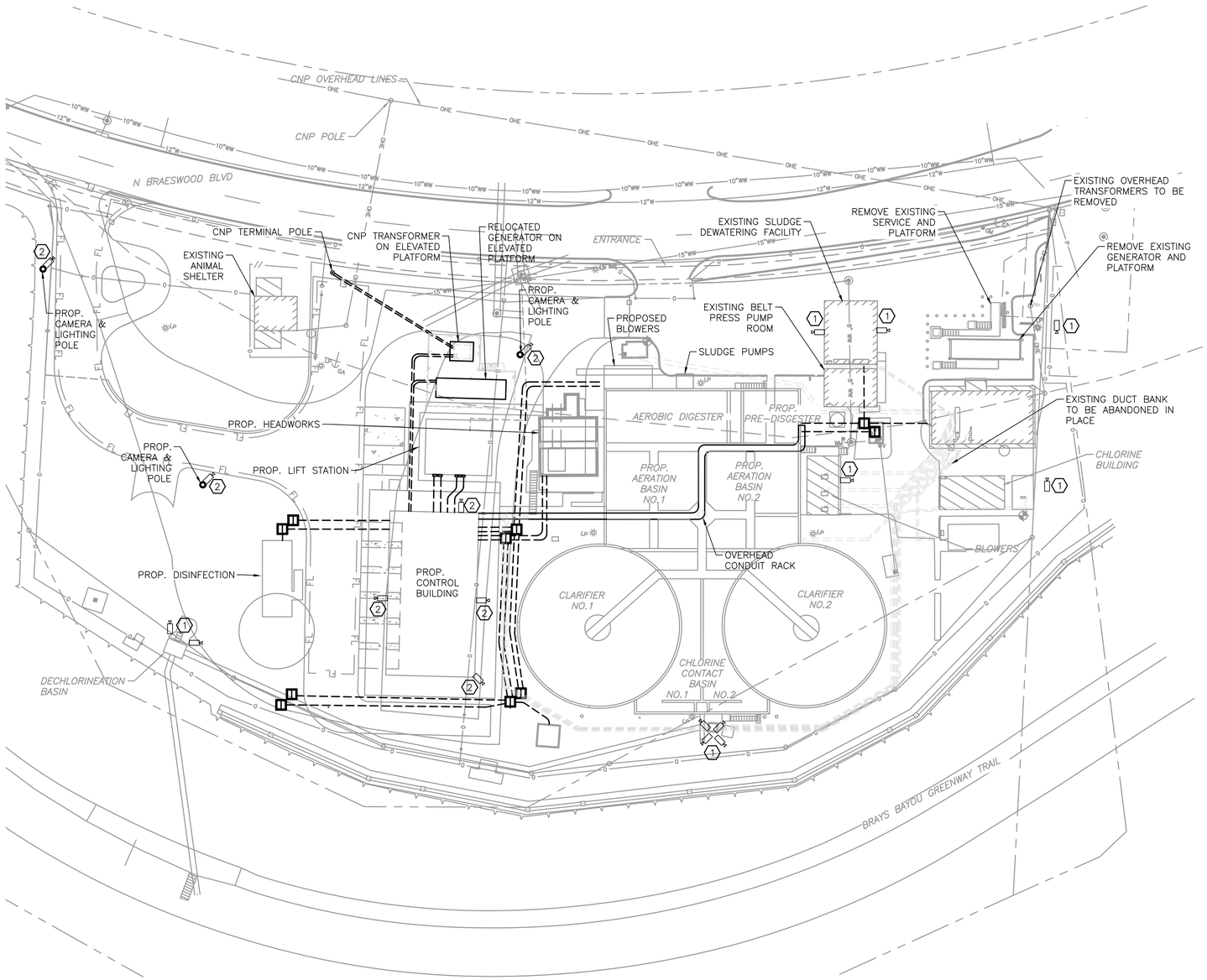
ELECTRICAL
DETAIL SHEET VI

DATE:	09/01/2022			
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SHEET
E-019



NOTES:

1. EXISTING CAMERA
2. PROPOSED NEW CAMERA

SITE SECURITY AND LIGHTING

PLAN

1"=30'-0"

VERIFY SCALE

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

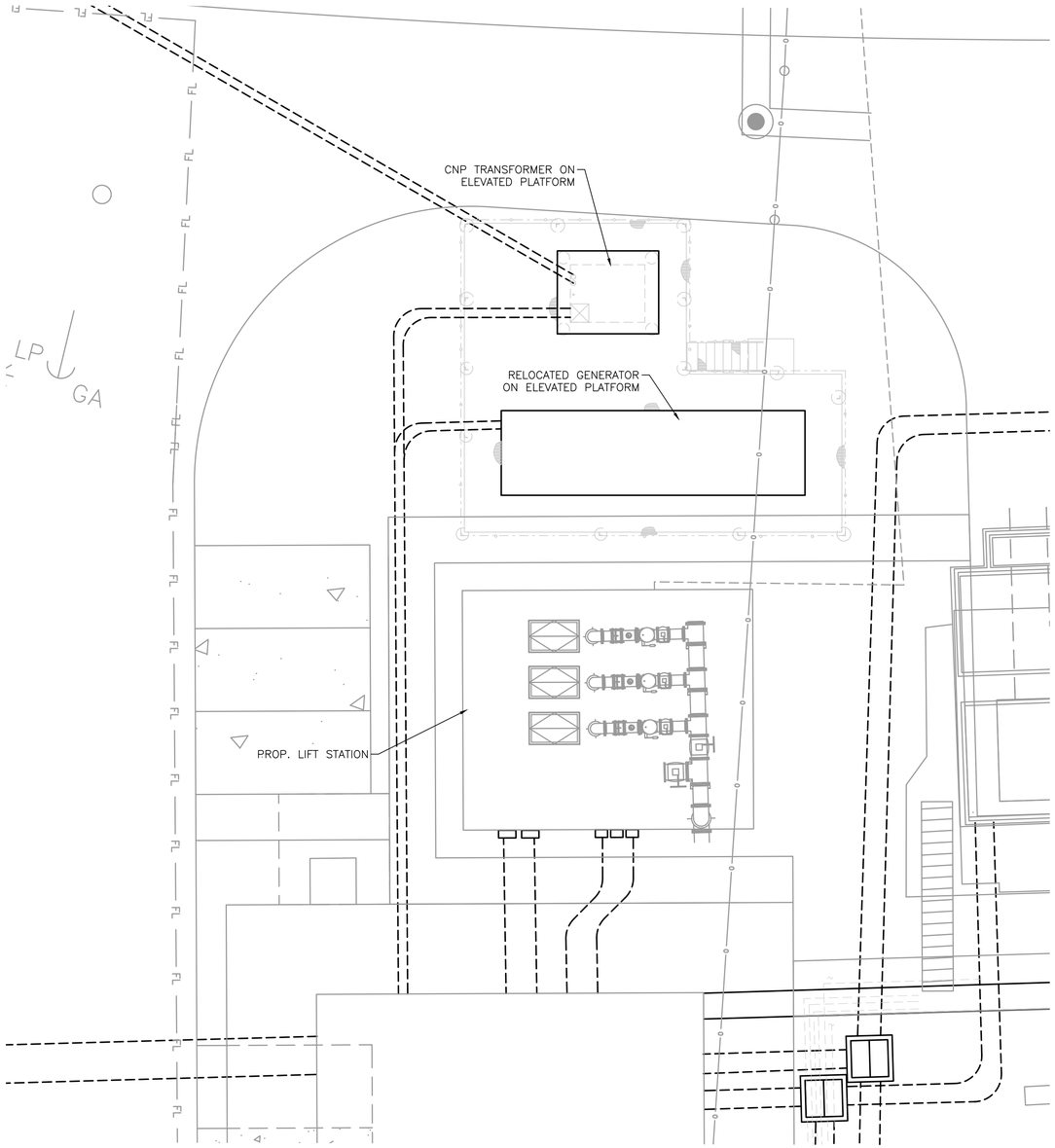
SITE SECURITY AND LIGHTING

DATE:	09/01/2022
DESIGN:	RK
DRAWN:	AP
CHECKED:	WH
KHA NO.:	067812104

SHEET

E-020

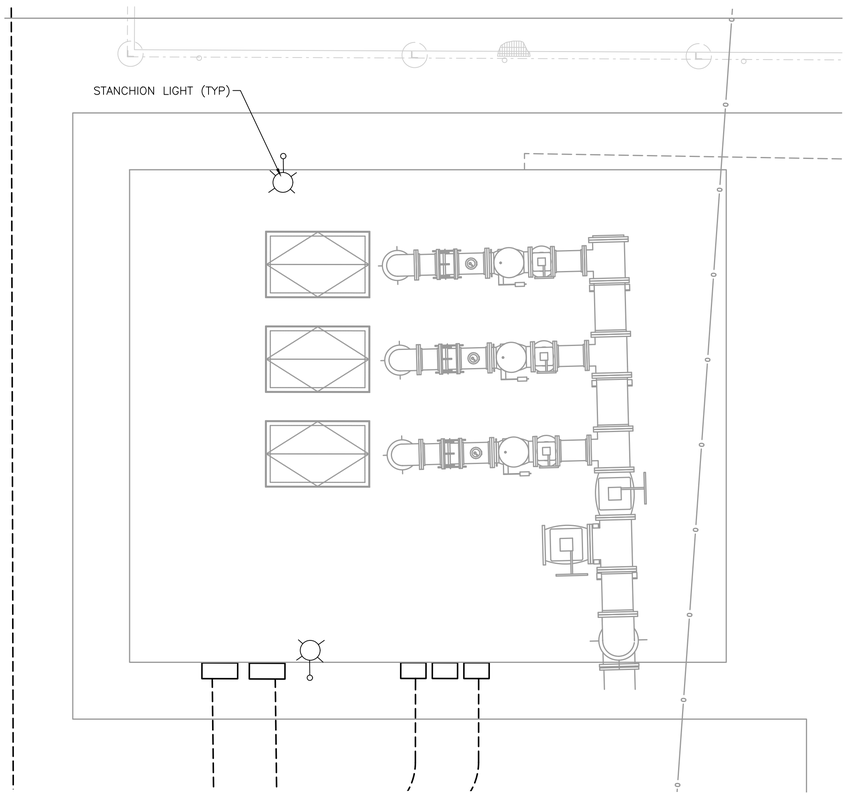
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LIFT STATION AREA PLAN

PLAN

1/8"=1'-0"



ENLARGED LIFT STATION AREA PLAN

PLAN

1/4"=1'-0"

VERIFY SCALE

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

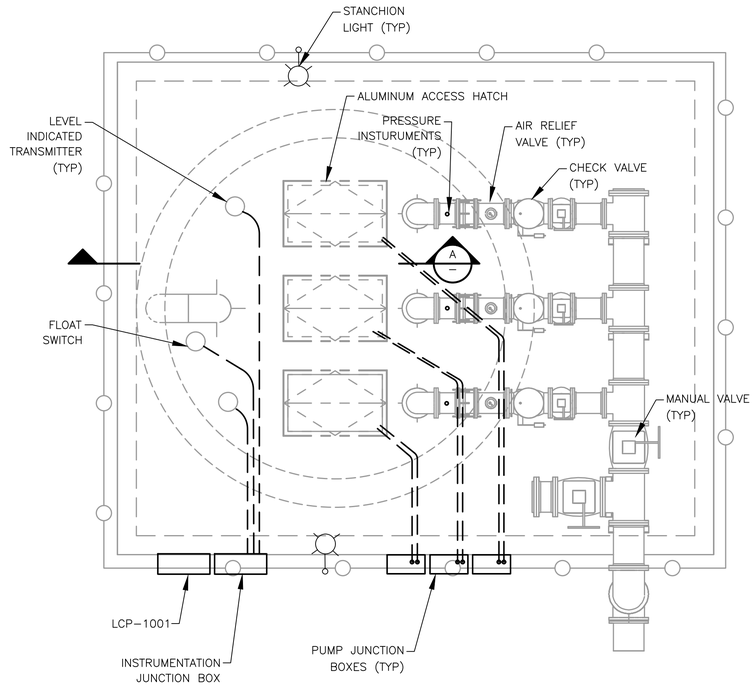
LIFT STATION AREA PLAN

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KHA NO.:	067812104

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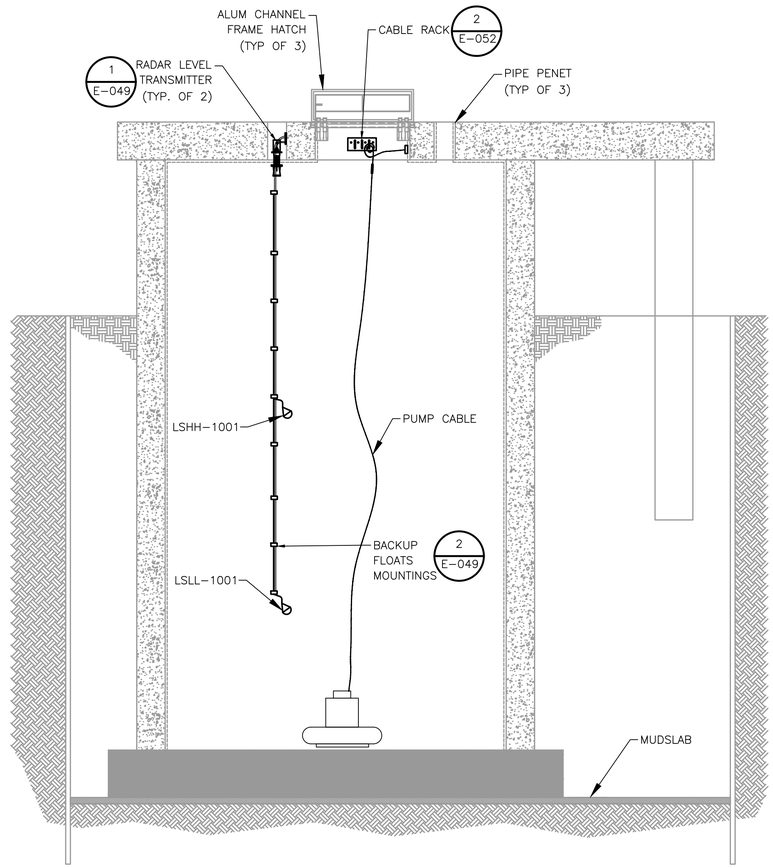
E-100

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LIFT STATION PLAN

PLAN
1/4"=1'-0"



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

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL
LIFT STATION SECTION

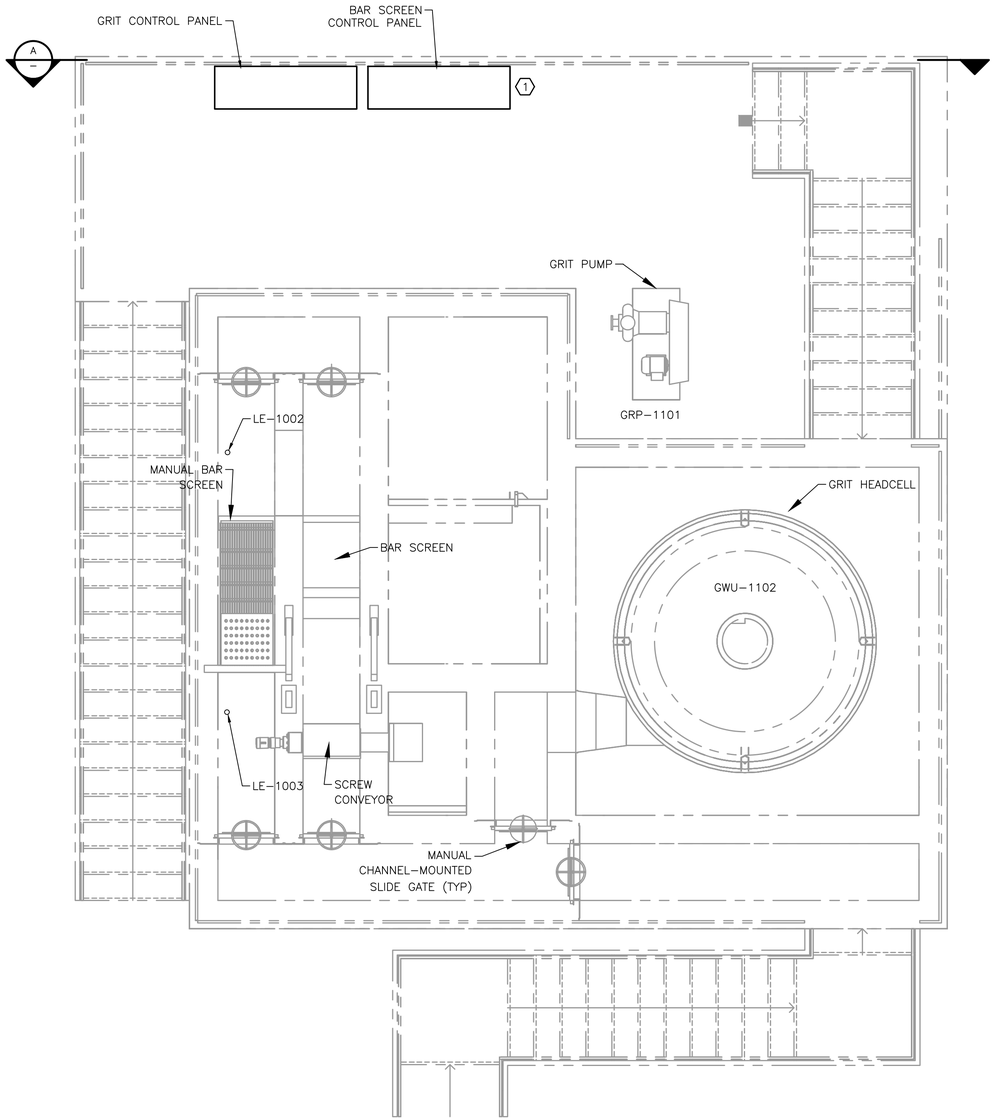
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SHEET
E-101

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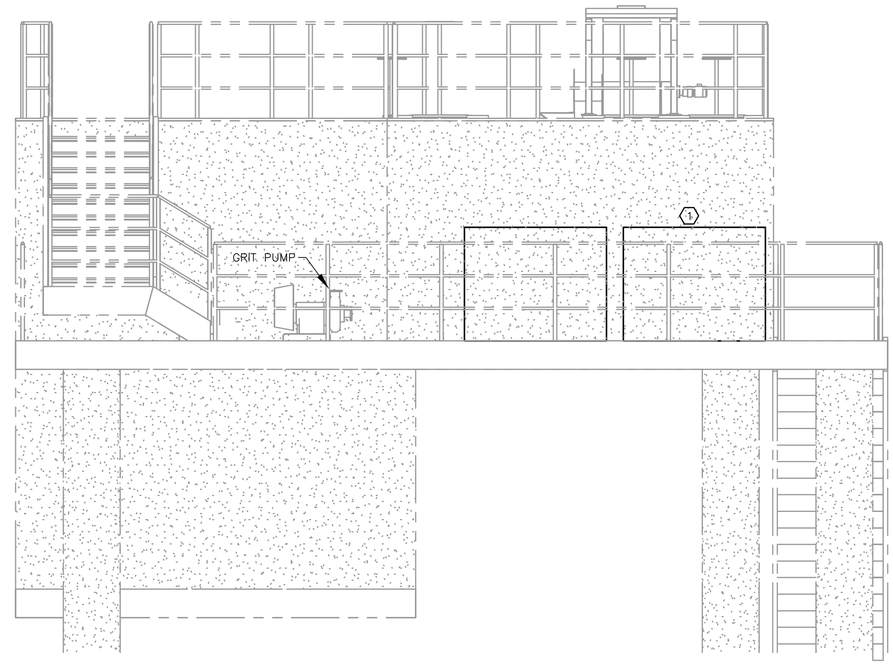
HEADWORK PLAN

PLAN

3/8"=1'–0"

NOTES:

1. 2 CONTROL PANELS FOR GRIT AND BAR SCREEN SHALL BE PLACED AT THE HEADWORK AREA. THE SIZE FOR THESE CONTROL PANELS COULD BE 60" WIDE X 18" DEEP X 48" HIGH AND FLOOR MOUNTED.



HEADWORK ELEVATION

SECTION A

3/8" = 1'–0"

VERIFY SCALE

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

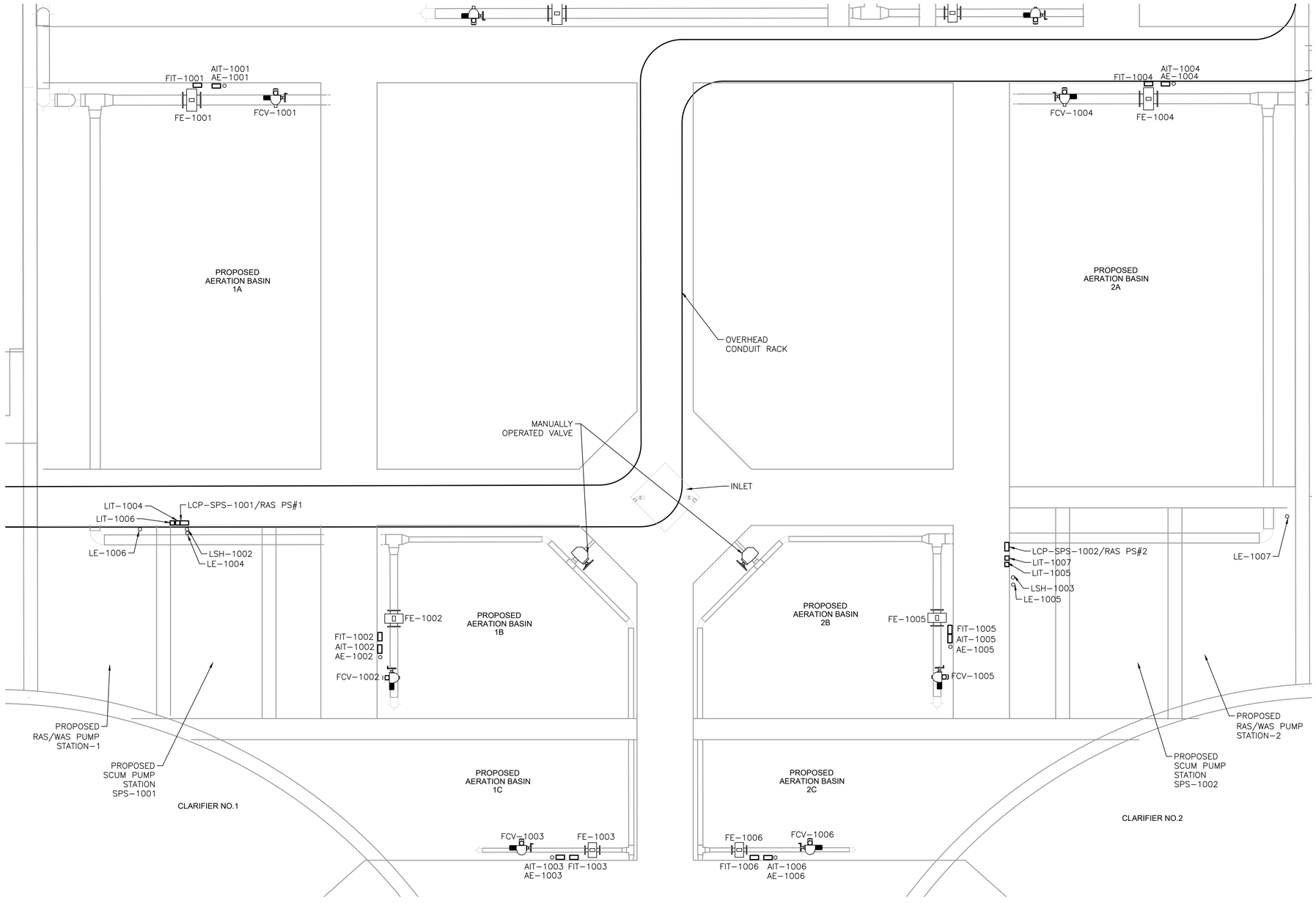
HEADWORK SITE PLAN AND SECTION

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
09/01/2022	RK	AP	WH	067812104

SHEET

E-200

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AERATION BASIN AREA PLAN

PLAN

1/4"=1'-0"

GENERAL NOTES:

A. CONTRACTOR SHALL FIELD VERIFY INSTRUMENT INSTALL LOCATION AND SUPPLY MOUNTING HARDWARE APPROPRIATE FOR THE APPLICATION.

B. ALL INSTRUMENT TRANSMITTER WILL BE PROVED WITH 316 SS SUNSHIELD THAT WOULD COVER THE DISPLAY AND PROTECT IT FROM SUNLIGHT.

C. ANY INSTRUMENT TRANSMITTER SHOULD BE INSTALLED WITH AN OFFSET AND SHOULD NOT BE ON THE WALKWAY.

D. DISSOLVED OXYGEN (DO) PROBES WILL BE HACH LDO SC MODEL 2 WITH LUMINESCENT TECHNOLOGY. EACH PROBE WILL BE ATTACHED TO THE HANDRAIL ON A SWIVEL MOUNT TO ALLOW EASE OF MAINTENANCE. THE SYSTEM WILL INCLUDE A SC4500 CONTROLLER TO MONITOR SIGNALS ITS PROBES AND PROVIDE FEEDBACK TO THE BLOWERS FOR THE APPROPRIATE SET POINT. THE SC4500 WILL BE CLAROS ENABLED.

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WASTEWATER TREATMENT
PLANT IMPROVEMENTS

ELECTRICAL

AERATION BASIN AREA PLAN

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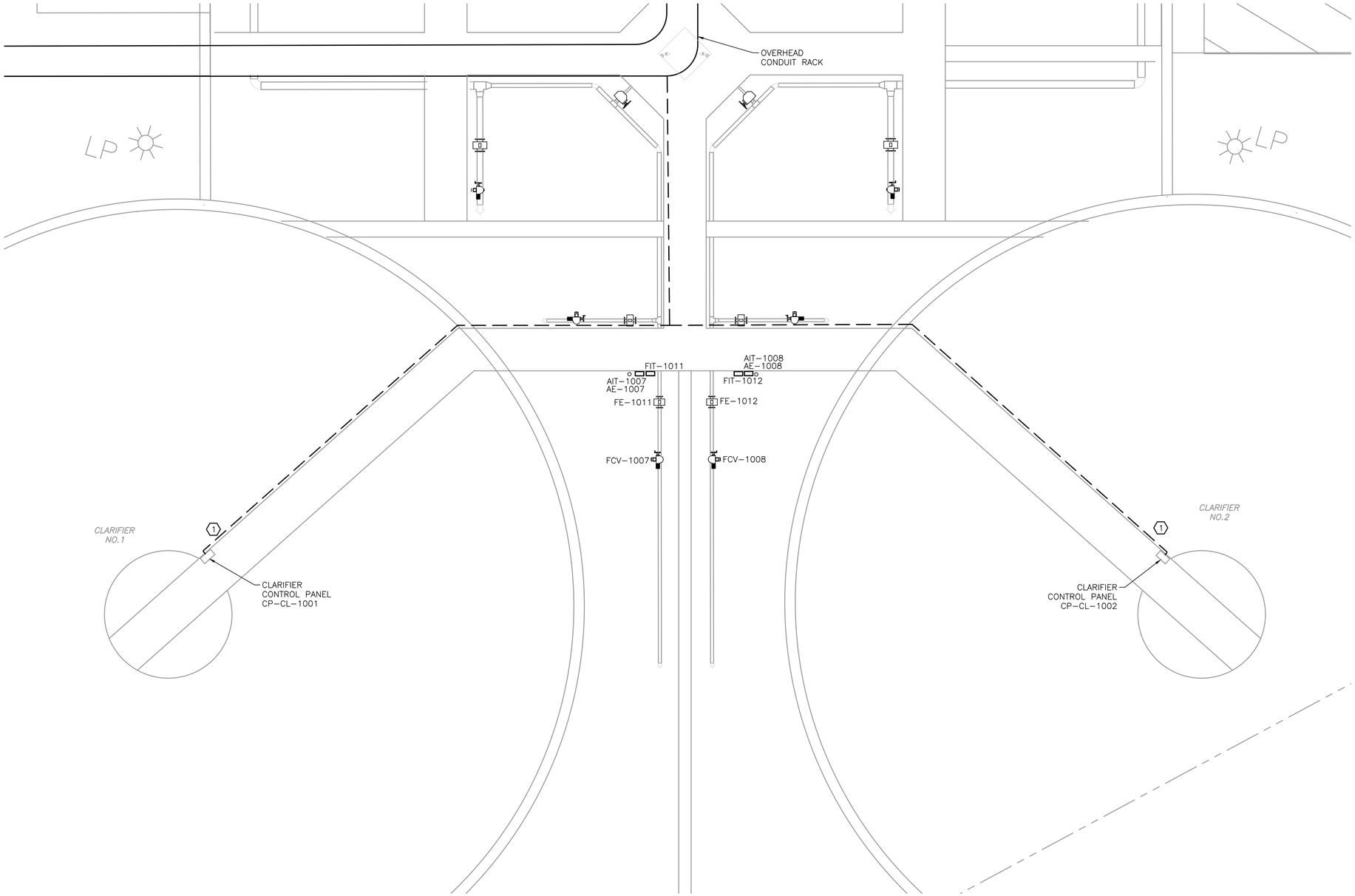
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SHEET

E-300

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CLARIFIER AREA PLAN

PLAN

3/16"=1'-0"

GENERAL NOTES:

A. CONTRACTOR SHALL FIELD VERIFY INSTRUMENT INSTALL LOCATION AND SUPPLY MOUNTING HARDWARE APPROPRIATE FOR THE APPLICATION.

B. ALL INSTRUMENT TRANSMITTER WILL BE PROVED WITH 316 SS SUNSHIELD THAT WOULD COVER THE DISPLAY AND PROTECT IT FROM SUNLIGHT.

C. ANY INSTRUMENT TRANSMITTER SHOULD BE INSTALLED WITH AN OFFSET AND SHOULD NOT BE ON THE WALKWAY.

D. DISSOLVED OXYGEN (DO) PROBES WILL BE HACH LDO SC MODEL 2 WITH LUMINESCENT TECHNOLOGY. EACH PROBE WILL BE ATTACHED TO THE HANDRAIL ON A SWIVEL MOUNT TO ALLOW EASE OF MAINTENANCE. THE SYSTEM WILL INCLUDE A SC4500 CONTROLLER TO MONITOR SIGNALS ITS PROBES AND PROVIDE FEEDBACK TO THE BLOWERS FOR THE APPROPRIATE SET POINT. THE SC4500 WILL BE CLAROS ENABLED.

NOTES:

(1) ROUTE CLARIFIER CONDUITS ON 316 SS STRUT ATTACHED TO THE WALKWAY STRUCTURE OUT OF WALKING PATH.

VERIFY SCALE

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

CLARIFIER AND CHLORINE CONTACT AREA PLAN

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KHA NO.:	067812104

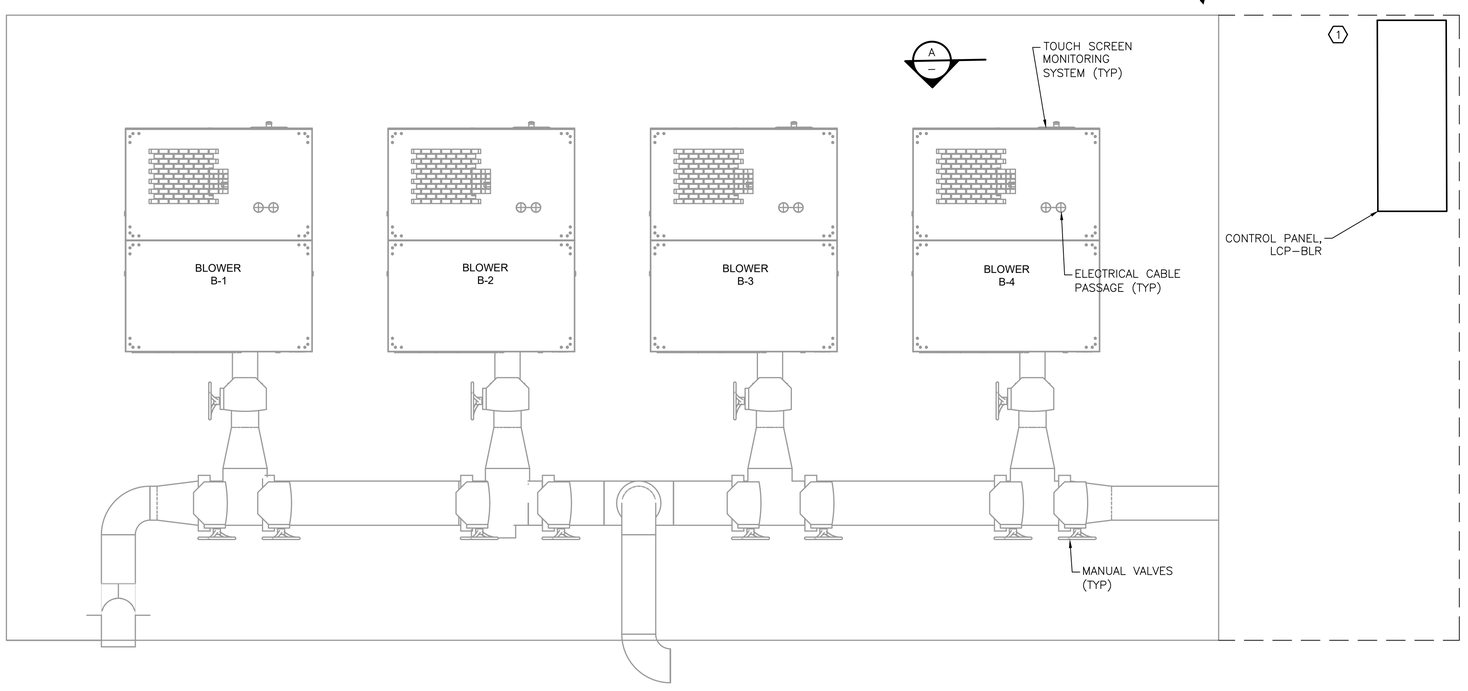
SHEET

E-301

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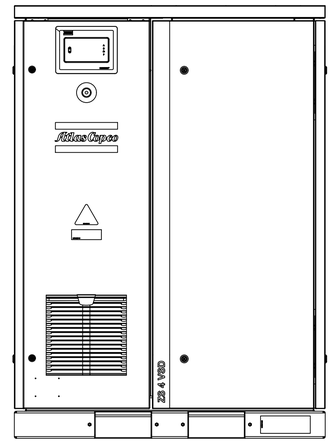
1. THE BLOWER AREA PAD NEED TO BE EXPANDED FOR LOCATING THE CONTROL PANEL.



BLOWER PAD PLAN

PLAN

1/2"=1'-0"



BLOWER FRONT VIEW

SECTION A

N.T.S

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

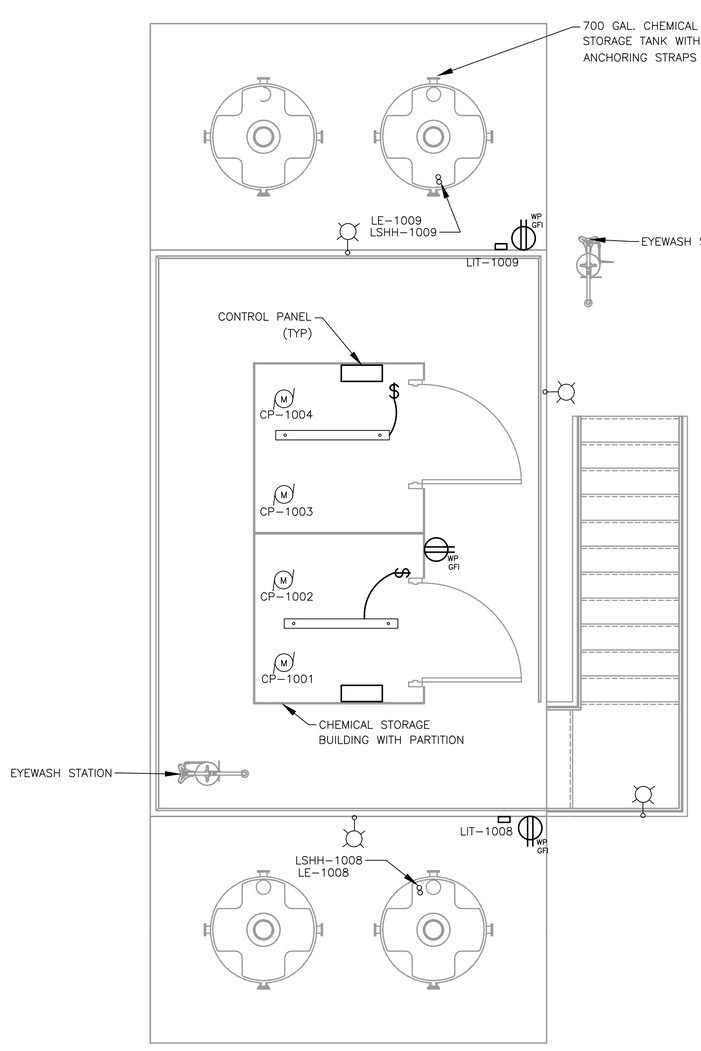
BLOWER PAD AREA PLAN

DATE:	09/01/2022
DESIGN:	RK
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KHA NO.:	067812104

SHEET

E-400

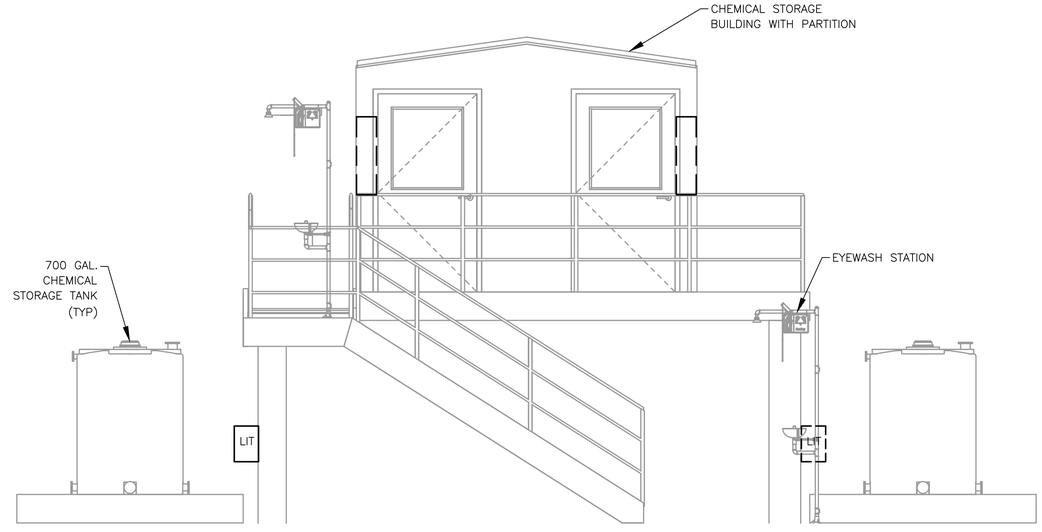
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DISINFECTION AREA PLAN

PLAN

3/8"=1'–0"



DISINFECTION BUILDING ELEVATION

PLAN

3/8"=1'–0"

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

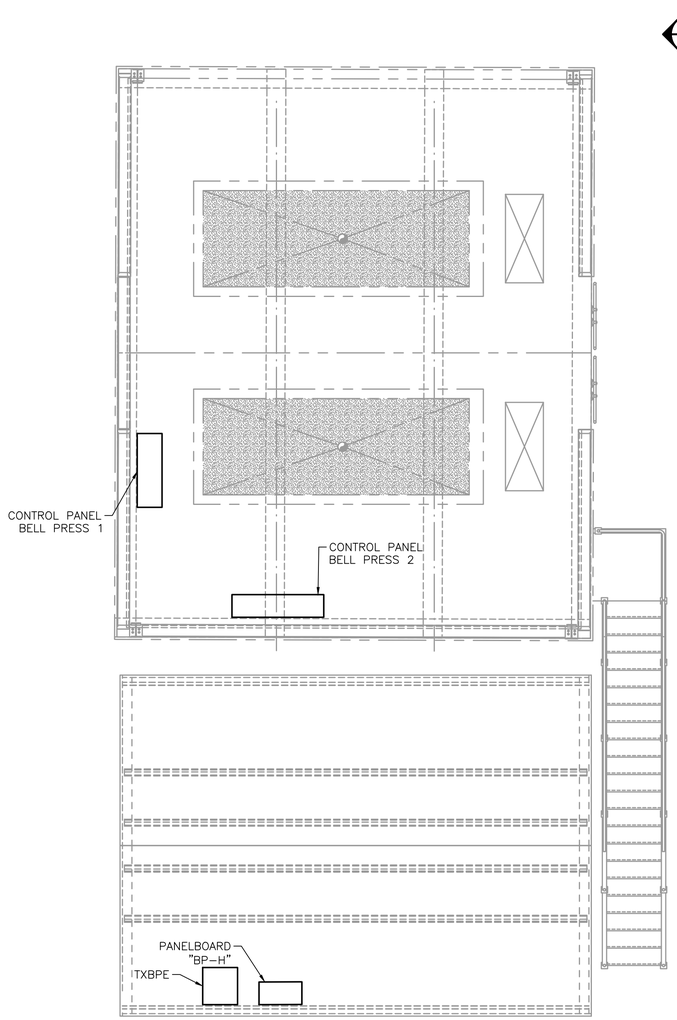
DISINFECTION AREA PLAN

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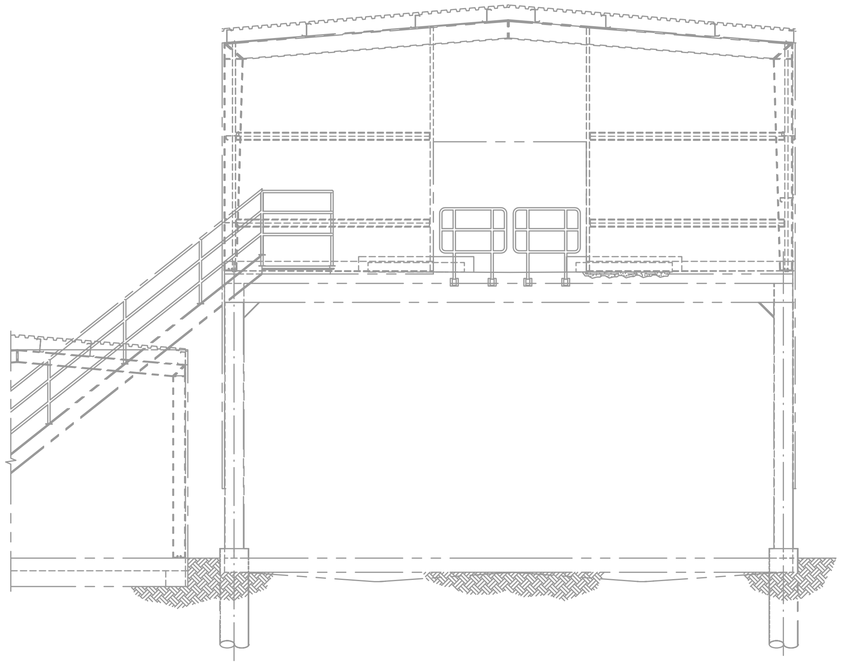
E-500

C:\Users\KGI Laptop4\Kalluri Group, Inc\KGI - Documents\4139-KH (West U - WWTP Imp)\Drawings\E-500 (Disinfection Area Plan).dwg 5/7/2013 10:40 AM



DEWATERING FACILITY PLAN

PLAN
1/4"=1'-0"



DEWATERING FACILITY ELEVATION

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

VERIFY SCALE
0 1
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KGI
Kalluri Group, Inc.
TBPE Registration No. F-665
16300 Katy Freeway, Suite 172
Houston, Texas 77094
Phone: (713)-360-9288

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

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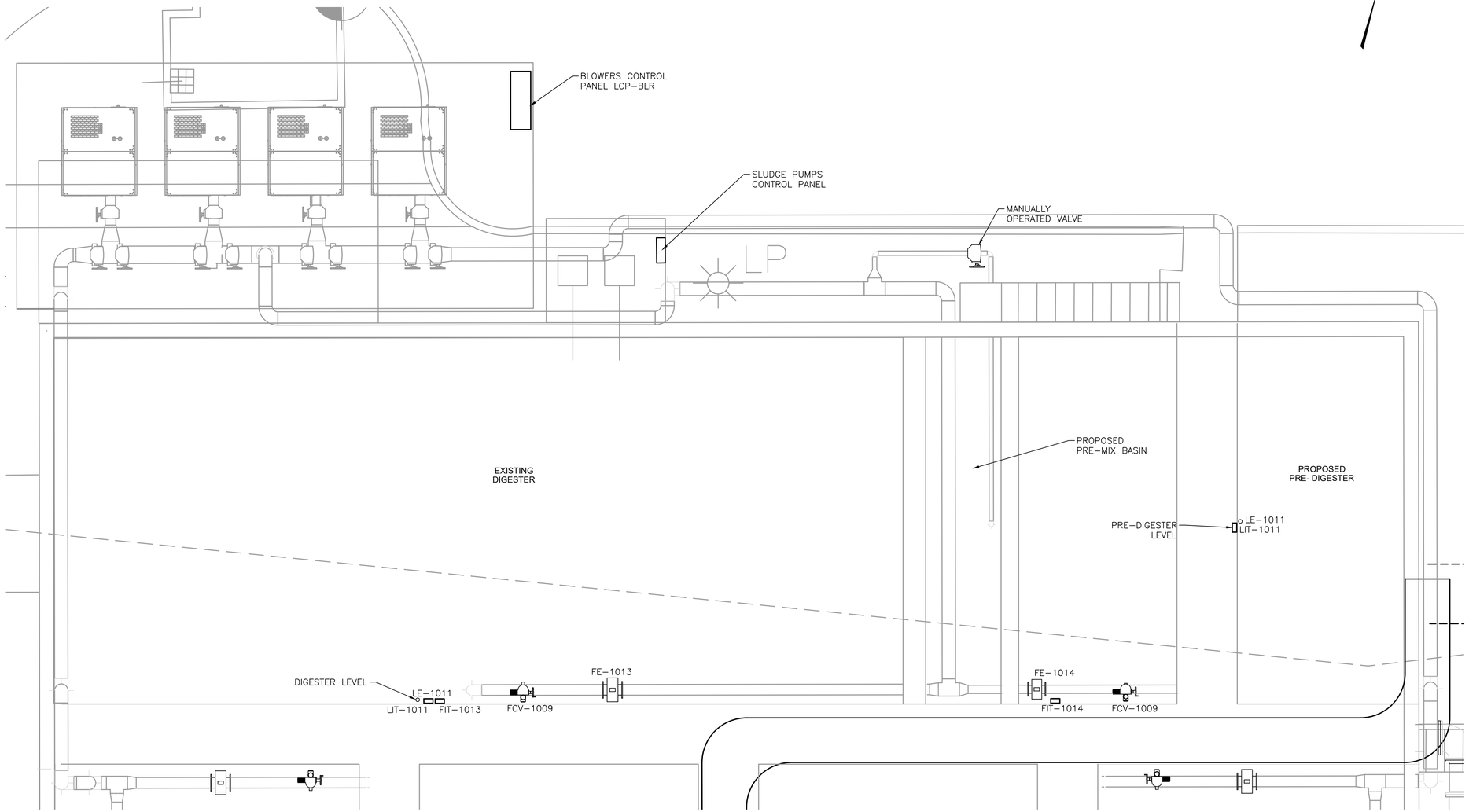
CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL
DEWATERING FACILITY PLAN AND SECTION

DATE:	09/01/2022
DESIGN:	RK
DRAWN:	AP
CHECKED:	WH
KHA NO.:	067812104

SHEET
E-700

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DIGESTER AREA PLAN

PLAN

1/4"=1'-0"

GENERAL NOTES:

A. CONTRACTOR SHALL FIELD VERIFY INSTRUMENT INSTALL LOCATION AND SUPPLY MOUNTING HARDWARE APPROPRIATE FOR THE APPLICATION.

B. ALL INSTRUMENT TRANSMITTER WILL BE PROVED WITH 316 SS SUNSHIELD THAT WOULD COVER THE DISPLAY AND PROTECT IT FROM SUNLIGHT.

C. MANUAL OPERATED VALVES ARE LABELED. ALL OTHER VALVES ARE ELECTRICALLY ACTUATED.

D. ANY INSTRUMENT TRANSMITTER SHOULD BE INSTALLED WITH AN OFFSET AND SHOULD NOT BE ON THE WALKWAY.

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

DIGESTER AREA PLAN

VERIFY SCALE
0
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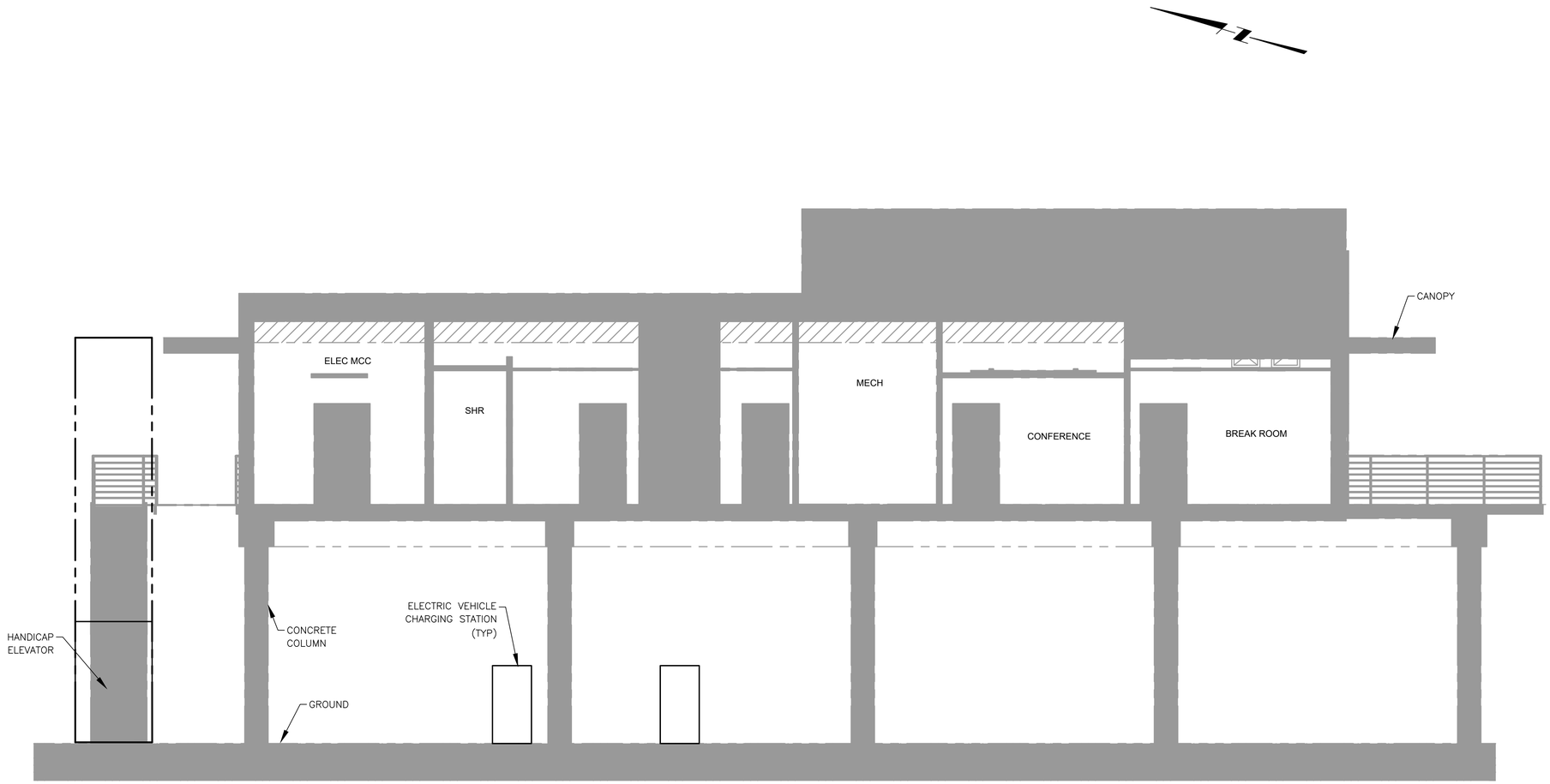
DATE:	09/01/2022
DESIGN:	RK
DRAWN:	AP
CHECKED:	WH
KHA NO.:	067812104

KGL
Kalluri Group, Inc.
TBPE Registration No. F-665
16300 Katy Freeway, Suite 172
Houston, Texas 77094
Phone: (713)-360-9086

SHEET

E-800

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CONTROL BUILDING SECTION

PLAN

1" = 5'-0"

VERIFY SCALE

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Houston, Texas 77094
Phone: (713)-360-9288

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

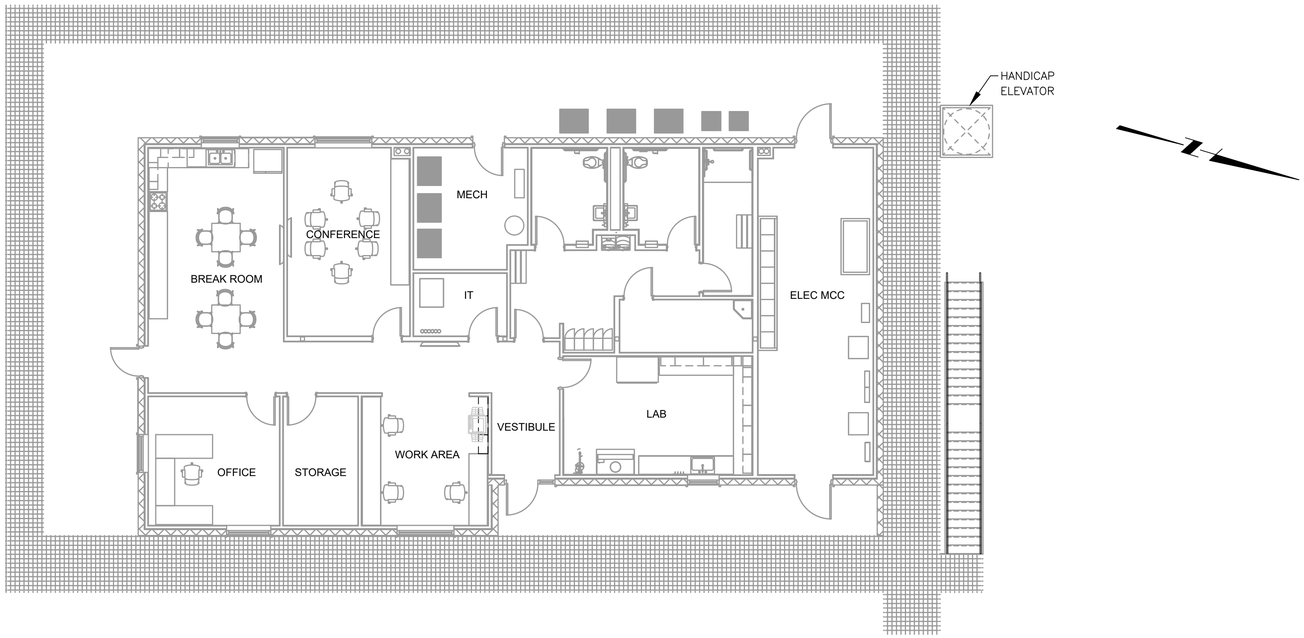
CONTROL BUILDING ELEVATION

DATE:	09/01/2022
DESIGN:	RK
DRAWN:	AP
CHECKED:	WH
KHA NO.:	067812104

SHEET

E-900

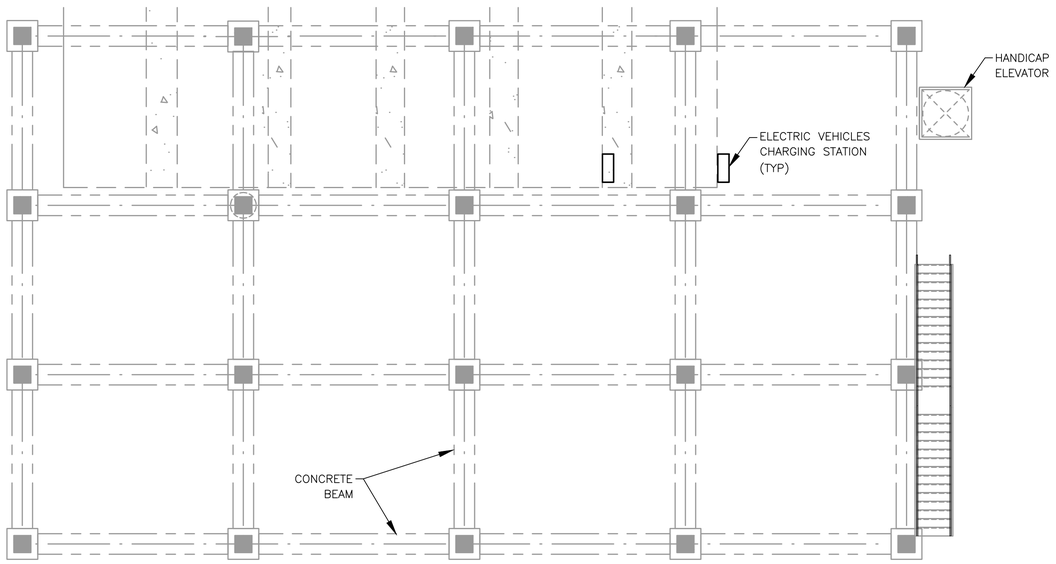
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CONTROL BUILDING UPPER LEVEL AREA PLAN

PLAN

1/8" = 1'-0"



CONTROL BUILDING LOWER LEVEL AREA PLAN

PLAN

1/8" = 1'-0"

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

CONTROL BUILDING AREA PLAN

DATE:	09/01/2022
DESIGN:	RK
DRAWN:	AP
CHECKED:	WH
KHA NO.:	067812104

VERIFY SCALE

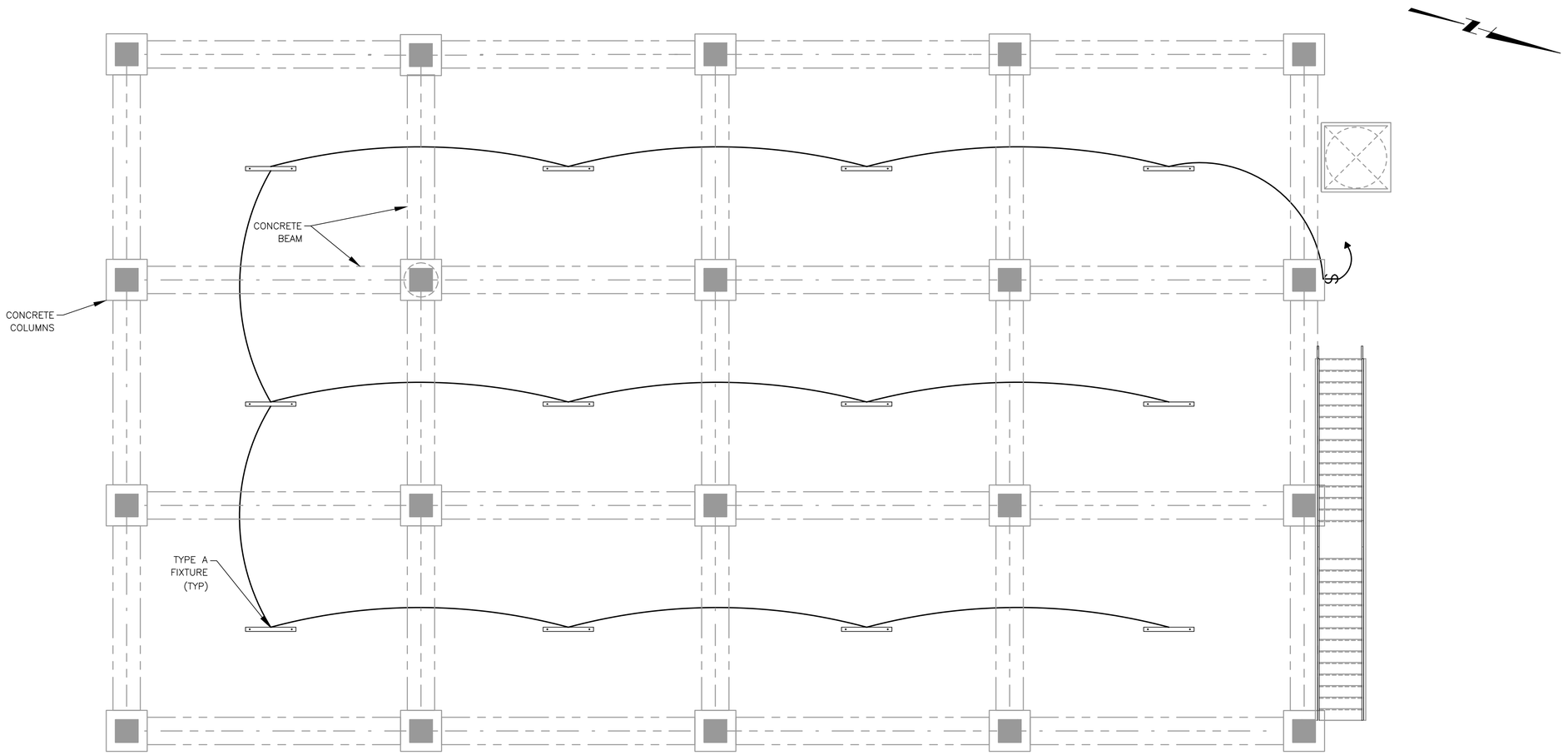
0 1

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TBPE Registration No. F-665
16300 Katy Freeway, Suite 172
Houston, Texas 77094
Phone: (713)-365-9288

SHEET

E-901



CONTROL BUILDING LOWER LEVEL AREA LIGHTING AND POWER PLAN

PLAN

1" = 5'-0"

VERIFY SCALE

0 1"

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TBPE Registration No. F-665
16300 Katy Freeway, Suite 172
Houston, Texas 77094
Phone: (713)-360-9088

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

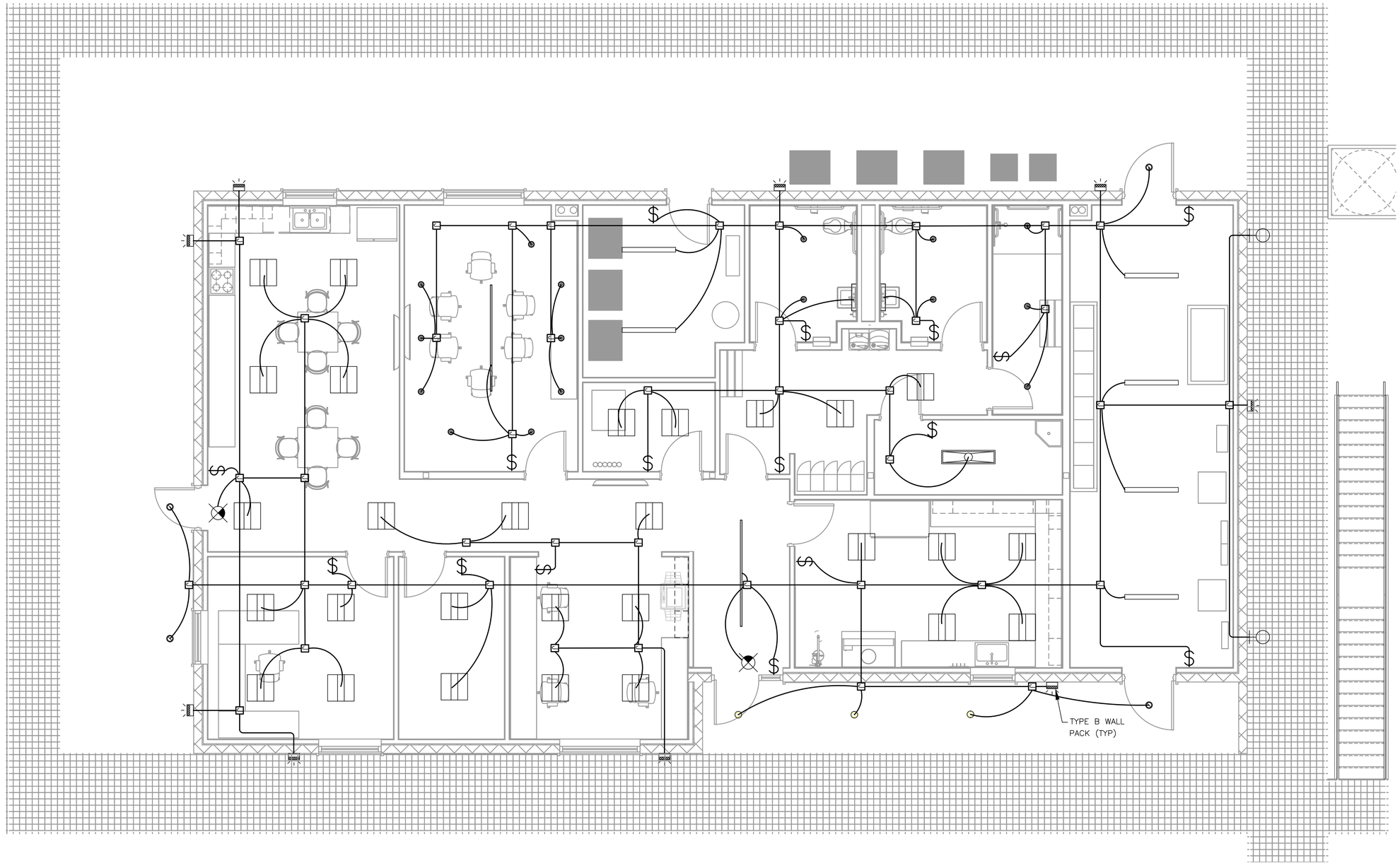
CONTROL BUILDING LOWER LEVEL LIGHTING AND POWER PLAN

DATE:	09/01/2022
DESIGN:	RK
DRAWN:	AP
CHECKED:	WH
KHA NO.:	067812104

SHEET

E-902

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GENERAL NOTES:

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

CONTROL BUILDING UPPER LEVEL AREA LIGHTING PLAN

PLAN

1/4"=1'-0"

VERIFY SCALE

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KGI
Kalluri Group, Inc.
TBPE Registration No. F-665
16300 Katy Freeway, Suite 172
Houston, Texas 77094
Phone: (713)-960-9055

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

CONTROL BUILDING UPPER LEVEL AREA LIGHTING PLAN

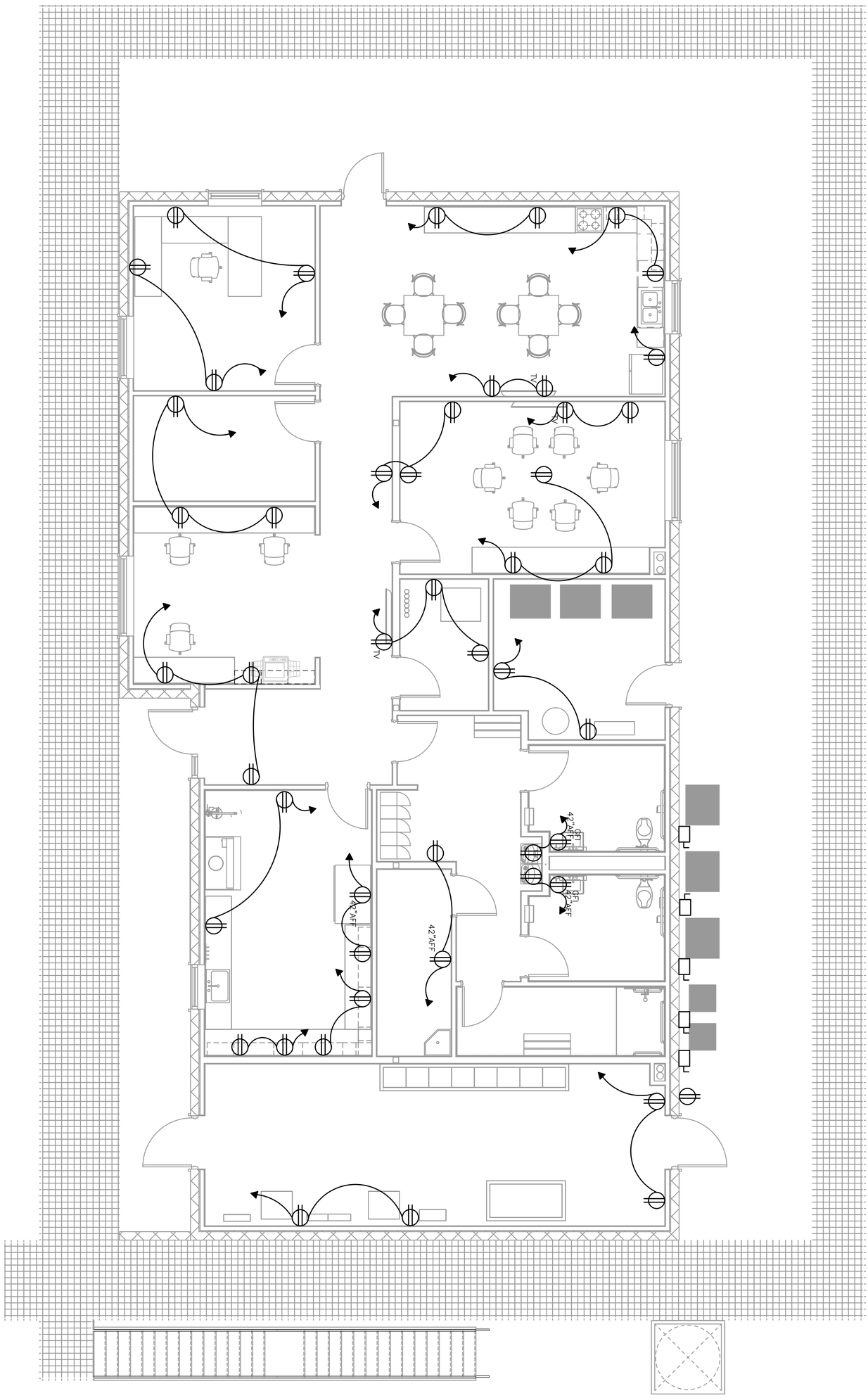
DATE:	09/01/2022
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DRAWN:	AP
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KHA NO.:	067812104

SHEET

E-903

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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.

KGI
Kalluri Group, Inc.
TBPE Registration No. F-485
1999 Bryan Street, Suite 1176
Dallas, Texas 75201
Phone: (713) 547-3888

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E-904

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KHA NO.:	067812104

ELECTRICAL

CONTROL BUILDING UPPER LEVEL AREA POWER PLAN

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

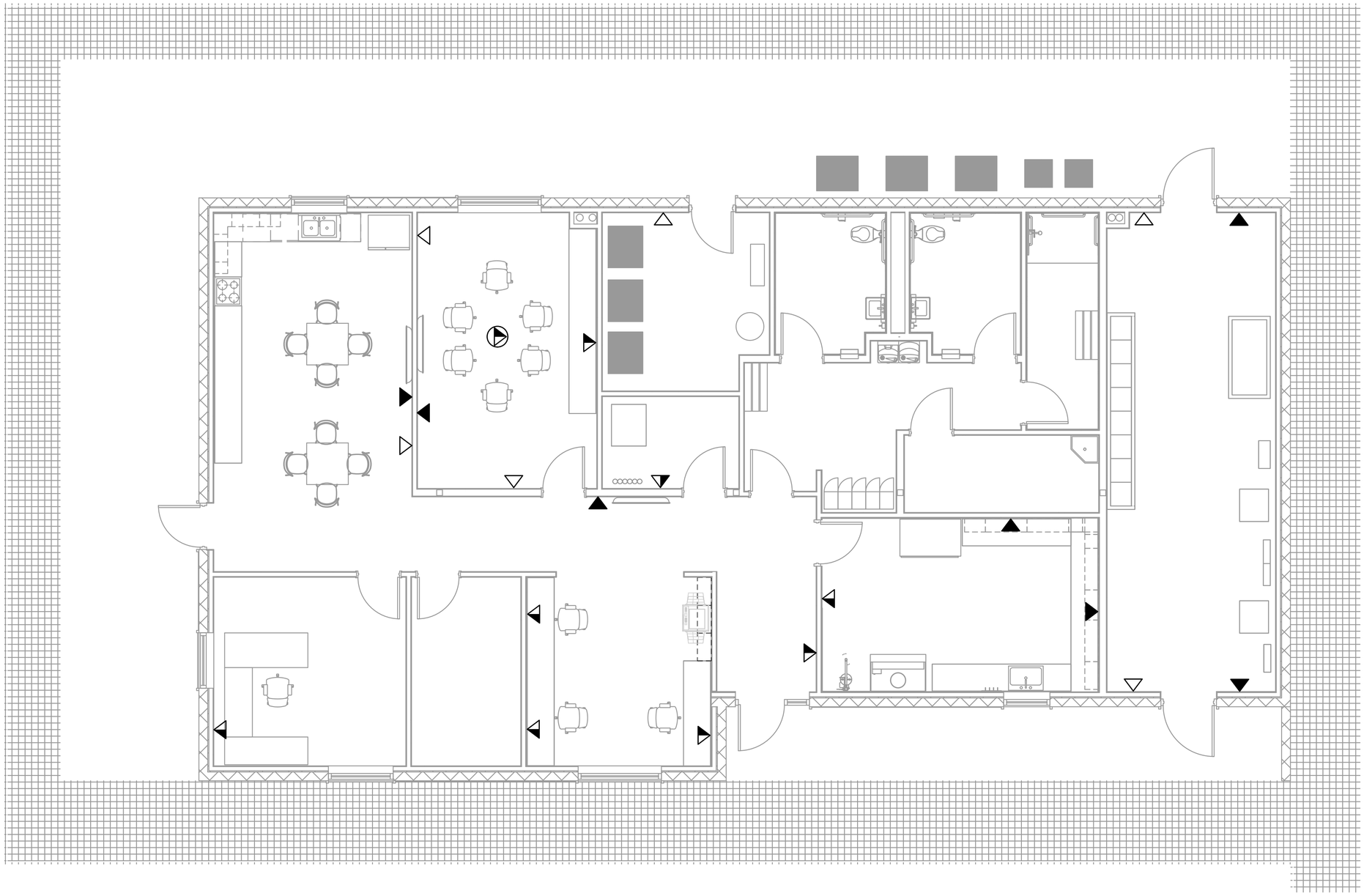
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Kimley»Horn
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TBPE NO. 928 PHONE: 281-597-9300

No.	Revision	By	Date



GENERAL NOTES:

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

NOTES:

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

CONTROL BUILDING UPPER LEVEL LOW VOLTAGE CONDUIT PLAN

PLAN

1/4"=1'-0"

VERIFY SCALE

0

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KGI

Kalluri Group, Inc.

TBPE Registration No. F-665

16300 Katy Freeway, Suite 172
Houston, Texas 77094
Phone: (713)-365-9288

Kimley»Horn

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TBPE NO. 928
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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

CONTROL BUILDING UPPER LEVEL LOW VOLTAGE CONDUIT PLAN

DATE:	09/01/2022
DESIGN:	RK
DRAWN:	AP
CHECKED:	WH
KHA NO.:	067812104

SHEET

E-905

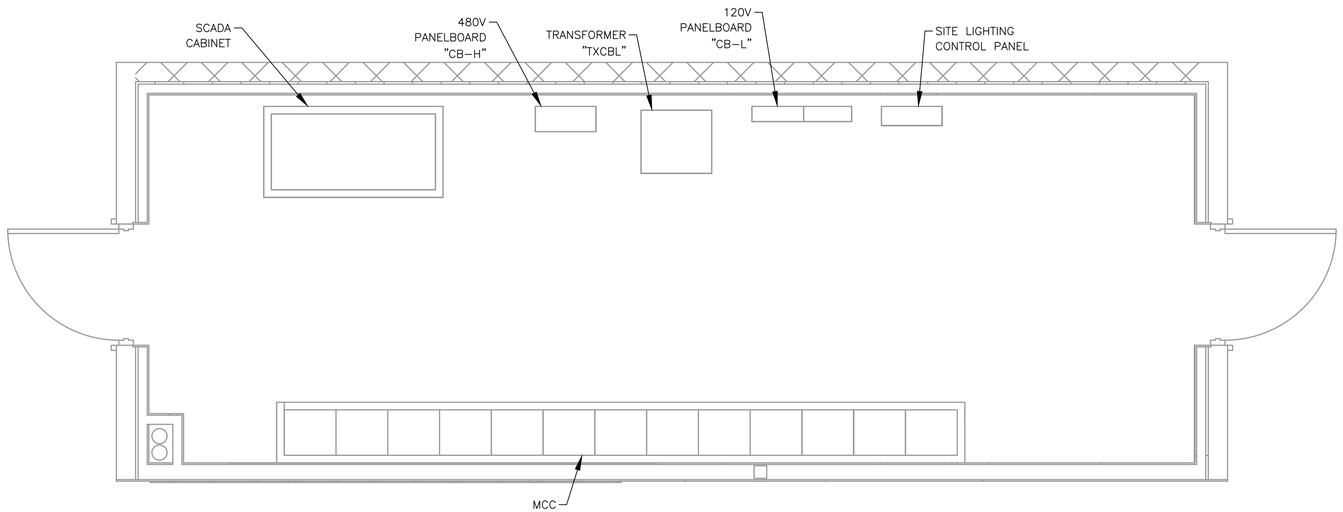
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2000 A CNP–1	2000 A GEN–1	METER SPD (SZ 1) SP–1 BELT PRESS 225A "DPBH" 225A SPACE	"TXOPBL" 150A (SZ 1) SP–2 (SZ 1) SP–3 300A B–1 SPACE	(SZ 1) BS–1 (SZ 1) BSPR–1 LAB 100A SPACE 300A B–2 SPACE	GPR–1 GP–1 TH–1 SPACE 300A B–3 SPACE	SPACE 300A B–4 SPACE	NPWP–1 NPWP–2 NPWP–3 FLTRP–1 FLTRP–2 CL–1	SCP–1 SCP–2 RASP–1 RASP–2 RASP–3 CL–2	RASP–4 SPACE SPACE SPACE SPACE SPACE	VFD LS–1	VFD LS–2	VFD LS–3

MCC ELEVATION

PLAN

NTS



ELECTRICAL ROOM

PLAN

1"=30'–0"

GENERAL NOTES:

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

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

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

CONTROL BUILDING ELECTRICAL ROOM

VERIFY SCALE

0 1

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KGI
Kalluri Group, Inc.
TBPE Registration No. F–665
16300 Katy Freeway, Suite 172
Houston, Texas 77094
Phone: (713)–365–9088

SHEET

E-906

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DISTRIBUTION PANELBOARD "CB-H"

BUS AMPS 250
MAIN BRKR. AMPS 250
VOLTS 480/277 AIC XX KA
PHASE 3 WIRE 4 SN YES

NOTES
1. SURFACE MOUNT
2. NEMA 1 ENCLOSURE

CKT. DESCRIPTION	WIRE	LOAD	BKR.	A	B	C		BKR.	LOAD	WIRE	CKT. DESCRIPTION
	#1/0			1			2			#3/0	
TO BE ASSIGNED	#1/0	–	–	3			4	–	–	#3/0	TO BE ASSIGNED
	#1/0			5			6			#3/0	
	#1			7			8			#4	
TO BE ASSIGNED	#1	–	–	9			10	–	–	#4	TO BE ASSIGNED
	#1			11			12			#4	
	12			13			14			#6	
TO BE ASSIGNED	12	–	–	15			16	–	–	#6	TO BE ASSIGNED
	12			17			18			#6	
	10			19			20			10	
TO BE ASSIGNED	10	–	–	21			22	–	–	10	TO BE ASSIGNED
	10			23			24			10	
	12			25			26			3/0	
TO BE ASSIGNED	12	–	–	27			28	–	–	3/0	TO BE ASSIGNED
	12			29			30			3/0	
	12			31			32			–	
TO BE ASSIGNED	12	–	–	33			34	–	–	–	TO BE ASSIGNED
	12			35			36			–	
	–			37			38			–	
TO BE ASSIGNED	–	–	–	39			40	–	–	–	
	–			41			42			–	
		–			N				–		

TOTAL VA = XXX,XXX
XXX.X KVA = XXX AMPS
THE TRANSFORMER, CONDUCTORS AND MAIN BREAKER
ARE ALL RATED PROPERLY TO SERVE THE LOAD

DISTRIBUTION PANELBOARD "LOB-H"

BUS AMPS 225
MAIN BRKR. AMPS 225
VOLTS 480/277 AIC XX KA
PHASE 3 WIRE 4 SN YES

NOTES
1. SURFACE MOUNT
2. NEMA 1 ENCLOSURE

CKT. DESCRIPTION	WIRE	LOAD	BKR.	A	B	C		BKR.	LOAD	WIRE	CKT. DESCRIPTION
	#1/0			1			2			#3/0	
TO BE ASSIGNED	#1/0	–	–	3			4	–	–	#3/0	TO BE ASSIGNED
	#1/0			5			6			#3/0	
	#1			7			8			#4	
TO BE ASSIGNED	#1	–	–	9			10	–	–	#4	TO BE ASSIGNED
	#1			11			12			#4	
	12			13			14			#6	
TO BE ASSIGNED	12	–	–	15			16	–	–	#6	TO BE ASSIGNED
	12			17			18			#6	
	10			19			20			10	
TO BE ASSIGNED	10	–	–	21			22	–	–	10	TO BE ASSIGNED
	10			23			24			10	
	12			25			26			3/0	
TO BE ASSIGNED	12	–	–	27			28	–	–	3/0	TO BE ASSIGNED
	12			29			30			3/0	
	12			31			32			–	
TO BE ASSIGNED	12	–	–	33			34	–	–	–	TO BE ASSIGNED
	12			35			36			–	
	–			37			38			–	
TO BE ASSIGNED	–	–	–	39			40	–	–	–	
	–			41			42			–	
		–			N				–		

TOTAL VA = XXX,XXX
XXX.X KVA = XXX AMPS
THE TRANSFORMER, CONDUCTORS AND MAIN BREAKER
ARE ALL RATED PROPERLY TO SERVE THE LOAD

PANELBOARD "CB-L1"

BUS AMPS 150
MAIN BREAKER 150 A
VOLTS 120/208 AIC XX KA
PHASE 3 WIRE 4 SN YES

NOTES
1. SURFACE MOUNT
2. NEMA 1 ENCLOSURE

CKT. DESCRIPTION	WIRE	LOAD	BKR.	A	B	C		BKR.	LOAD	WIRE	CKT. DESCRIPTION
SPARE	–	–	20	1			2	20	746	10	SAMPLE RM HOOD
SPARE	–	–	20	3			4	20	360	12	SAMPLE RM HOOD RECEPT
HVAC CONTROL PANEL	12	250	20	5			6	20	720	12	SAMPLE RM 2 RECEPTACLES
CP-1	12	160	20	7			8	20	720	12	SAMPLE RM 2 RECEPTACLES
HEAT TRACE	12	375	20	9			10	20	720	12	SAMPLE RM 2 RECEPTACLES
	12			11			12	20	720	12	SAMPLE RM 2 RECEPTACLES
MENS RR RECEPTACLES	12	1440	20	13			14	20	1520	10	COPIER RM COPIER OUTLET
WOMENS RR RECEPTACLES	12	1440	20	15			16	20	720	12	COPIER RM RECEPTACLES
CONF RM RECESSED LIGHTS	12	1440	20	17			18	20	200	12	BREAK RM REFRIDGERATOR
CONF RM OH A/V EQUIP	12	1440	20	19			20	20	1000	12	BREAK RM MICROWAVE
CONF RM FRONT A/V RECEPT	12	1440	20	21			22	20	1000	12	THREE RECEPTACLES
CONF RM 4 RECEPTACLES	12	1440	20	23			24	20	720	12	THREE RECEPTACLES
CONF RM 4 RECEPTACLES	12	1440	20	25			26	20	720	12	BREAK RM 2 RECEPTACLES
CONF RM 4 RECEPTACLES	12	1440	20	27			28	20	720	12	BREAK RM 2 RECEPTACLES
SPARE	–	–	20	29			30	20	720	12	BREAK RM 4 RECEPTACLES
	–	–	20	31			32	20	1440	12	4 RECEPTACLES
4 RECEPTACLES	12	1440	20	33			34	20	1440	12	4 RECEPTACLES
4 RECEPTACLES	12	1440	20	35			36	20	1440	12	4 RECEPTACLES
4 RECEPTACLES	12	1440	20	37			38	20	1440	12	4 RECEPTACLES
4 RECEPTACLES	12	1440	20	39			40	20	1440	12	4 RECEPTACLES
4 RECEPTACLES	12	1440	20	41			42	20	1440	12	4 RECEPTACLES
4 RECEPTACLES	12	1440	20	43			44	20	1440	12	4 RECEPTACLES
		–			N				–		

TOTAL VA = XX,XXX
XX.X KVA = XX AMPS
THE TRANSFORMER, MAIN BREAKER AND CONDUCTORS
ARE ALL RATED PROPERLY TO SERVE THE LOAD

PANELBOARD "CB-L2"

BUS AMPS 150
MAIN BREAKER 150 A
VOLTS 120/208 AIC XX KA
PHASE 3 WIRE 4 SN YES

NOTES
1. SURFACE MOUNT
2. NEMA 1 ENCLOSURE

CKT. DESCRIPTION	WIRE	LOAD	BKR.	A	B	C		BKR.	LOAD	WIRE	CKT. DESCRIPTION
SPARE	–	–	20	45			46	20	–	–	SPARE
SPARE	–	–	20	47			48	20	–	–	SPARE
	–	–	20	49			50	20	–	–	
	–	–	20	51			52	20	–	–	
	–	–	20	53			54	20	–	–	
	–	–	20	55			56	20	–	–	
	–	–	20	57			58	20	–	–	
	–	–	20	59			60	20	–	–	
	–	–	20	61			62	20	–	–	
	–	–	20	63			64	20	–	–	
	–	–	20	65			66	20	–	–	
	–	–	20	67			68	20	–	–	
	–	–	20	69			70	20	–	–	
	–	–	20	71			72	20	–	–	
	–	–	20	73			74	20	–	–	
	–	–	20	75			76	20	–	–	
	–	–	20	77			78	20	–	–	
	–	–	20	79			80	20	–	–	
	–	–	20	81			82	20	–	–	
	–	–	20	83			84	20	–	–	
	–	–	20	85			86	20	–	–	
	–	–	20	87			88	20	–	–	
		–			N				–		

TOTAL VA = XX,XXX
XX.X KVA = XX AMPS
THE TRANSFORMER, MAIN BREAKER AND CONDUCTORS
ARE ALL RATED PROPERLY TO SERVE THE LOAD

ADMINISTRATION PANELBOARD SCHEDULES

NTS

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

No.	Revision	By	Date

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

PANELBOARD SCHEDULE- I

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
09/01/2022	RK	AP	WH	067812104

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KGI
Kalluri Group, Inc.
TBPE Registration No. F-665
16300 Katy Freeway, Suite 172
Houston, Texas 77094
Phone: (713)-365-9288

SHEET
E-907

C:\Users\KGI Laptop4\Kalluri Group, Inc\KGI - Documents\4138-KH (West U - WWTP Imp)\Drawings\E-907 (Panelboard Schedules I).dwg 5/7/2013 10:40 AM

DISTRIBUTION PANELBOARD "BP–H"

BUS AMPS 100
MAIN BRKR. AMPS 100
VOLTS 480/277 AIC XX KA
PHASE 3 WIRE 4 SN YES

NOTES
1. SURFACE MOUNT
2. NEMA 1 ENCLOSURE

CKT. DESCRIPTION	WIRE	LOAD	BKR.	A	B	C		BKR.	LOAD	WIRE	CKT. DESCRIPTION
	#1/0			1			2			#3/0	
TO BE ASSIGNED	#1/0	–	–	3			4	–	–	#3/0	TO BE ASSIGNED
	#1/0			5			6			#3/0	
	#1			7			8			#4	
TO BE ASSIGNED	#1	–	–	9			10	–	–	#4	TO BE ASSIGNED
	#1			11			12			#4	
	12			13			14			#6	
TO BE ASSIGNED	12	–	–	15			16	–	–	#6	TO BE ASSIGNED
	12			17			18			#6	
	10			19			20			10	
TO BE ASSIGNED	10	–	–	21			22	–	–	10	TO BE ASSIGNED
	10			23			24			10	
	12			25			26			3/0	
TO BE ASSIGNED	12	–	–	27			28	–	–	3/0	TO BE ASSIGNED
	12			29			30			3/0	
	12			31			32			–	
TO BE ASSIGNED	12	–	–	33			34	–	–	–	TO BE ASSIGNED
	12			35			36			–	
	–			37			38			–	
TO BE ASSIGNED	–	–	–	39			40	–	–	–	
	–			41			42			–	
		–							–		

N

TOTAL VA = XXX,XXX
XXX.X KVA = XXX AMPS
THE TRANSFORMER, CONDUCTORS AND MAIN BREAKER
ARE ALL RATED PROPERLY TO SERVE THE LOAD

PANELBOARD "LOB–L1"

BUS AMPS 150
MAIN BREAKER 150 A
VOLTS 120/208 AIC XX KA
PHASE 3 WIRE 4 SN YES

NOTES
1. SURFACE MOUNT
2. NEMA 1 ENCLOSURE

CKT. DESCRIPTION	WIRE	LOAD	BKR.	A	B	C		BKR.	LOAD	WIRE	CKT. DESCRIPTION
SPARE	–	–	20	1			2	20	746	10	SAMPLE RM HOOD
SPARE	–	–	20	3			4	20	360	12	SAMPLE RM HOOD RECEPT
HVAC CONTROL PANEL	12	250	20	5			6	20	720	12	SAMPLE RM 2 RECEPTACLES
CP–1	12	160	20	7			8	20	720	12	SAMPLE RM 2 RECEPTACLES
HEAT TRACE	12	375	20	9			10	20	720	12	SAMPLE RM 2 RECEPTACLES
	12			11			12	20	720	12	SAMPLE RM 2 RECEPTACLES
MENS RR RECEPTACLES	12	1440	20	13			14	20	1520	10	COPIER RM COPIER OUTLET
WOMENS RR RECEPTACLES	12	1440	20	15			16	20	720	12	COPIER RM RECEPTACLES
CONF RM RECESSED LIGHTS	12	1440	20	17			18	20	200	12	BREAK RM REFRIDGERATOR
CONF RM OH A/V EQUIP	12	1440	20	19			20	20	1000	12	BREAK RM MICROWAVE
CONF RM FRONT A/V RECEPT	12	1440	20	21			22	20	1000	12	THREE RECEPTACLES
CONF RM 4 RECEPTACLES	12	1440	20	23			24	20	720	12	THREE RECEPTACLES
CONF RM 4 RECEPTACLES	12	1440	20	25			26	20	720	12	BREAK RM 2 RECEPTACLES
CONF RM 4 RECEPTACLES	12	1440	20	27			28	20	720	12	BREAK RM 2 RECEPTACLES
SPARE	–	–	20	29			30	20	720	12	BREAK RM 4 RECEPTACLES
	–	–	20	31			32	20	1440	12	4 RECEPTACLES
4 RECEPTACLES	12	1440	20	33			34	20	1440	12	4 RECEPTACLES
4 RECEPTACLES	12	1440	20	35			36	20	1440	12	4 RECEPTACLES
4 RECEPTACLES	12	1440	20	37			38	20	1440	12	4 RECEPTACLES
4 RECEPTACLES	12	1440	20	39			40	20	1440	12	4 RECEPTACLES
4 RECEPTACLES	12	1440	20	41			42	20	1440	12	4 RECEPTACLES
4 RECEPTACLES	12	1440	20	43			44	20	1440	12	4 RECEPTACLES
		–							–		

N

TOTAL VA = XX,XXX
XX.X KVA = XX AMPS
THE TRANSFORMER, MAIN BREAKER AND CONDUCTORS
ARE ALL RATED PROPERLY TO SERVE THE LOAD

PANELBOARD "LOB–L2"

BUS AMPS 150
MAIN BREAKER 150 A
VOLTS 120/208 AIC XX KA
PHASE 3 WIRE 4 SN YES

NOTES
1. SURFACE MOUNT
2. NEMA 1 ENCLOSURE

CKT. DESCRIPTION	WIRE	LOAD	BKR.	A	B	C		BKR.	LOAD	WIRE	CKT. DESCRIPTION
SPARE	–	–	20	45			46	20	–	–	SPARE
SPARE	–	–	20	47			48	20	–	–	SPARE
	–	–	20	49			50	20	–	–	
	–	–	20	51			52	20	–	–	
	–	–	20	53			54	20	–	–	
	–	–	20	55			56	20	–	–	
	–	–	20	57			58	20	–	–	
	–	–	20	59			60	20	–	–	
	–	–	20	61			62	20	–	–	
	–	–	20	63			64	20	–	–	
	–	–	20	65			66	20	–	–	
	–	–	20	67			68	20	–	–	
	–	–	20	69			70	20	–	–	
	–	–	20	71			72	20	–	–	
	–	–	20	73			74	20	–	–	
	–	–	20	75			76	20	–	–	
	–	–	20	77			78	20	–	–	
	–	–	20	79			80	20	–	–	
	–	–	20	81			82	20	–	–	
	–	–	20	83			84	20	–	–	
	–	–	20	85			86	20	–	–	
	–	–	20	87			88	20	–	–	
		–							–		

N

TOTAL VA = XX,XXX
XX.X KVA = XX AMPS
THE TRANSFORMER, MAIN BREAKER AND CONDUCTORS
ARE ALL RATED PROPERLY TO SERVE THE LOAD

ADMINISTRATION PANELBOARD SCHEDULES

NTS

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

PANELBOARD SCHEDULE - II

DATE:	09/01/2022			
DESIGN:	RK			
DRAWN:	AP			
CHECKED:	WH			
KHA NO.:	067812104			

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16300 Katy Freeway, Suite 172
Houston, Texas 77094
Phone: (713)-365-9288

SHEET
E-908

TAG	DESCRIPTION	ROUTING		CONDUIT & WIRE SIZES	COMMENTS
		FROM	TO		
T-LSEB2	TRANSFORMER T-LSEB2 FEEDER	MVS-1	TRANSFORMER T-LSEB2 PRIMARY	4"C, 3-#3/0, 1-#1 GND.	8KV MV-105

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

ONE LINE DIAGRAM MCC-OPB

DATE:	09/01/2022
DESIGN:	RK
DRAWN:	AP
CHECKED:	WH
KHA NO.:	067812104

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SHEET
E-909

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TAG	DESCRIPTION	ROUTING		CONDUIT & WIRE SIZES	COMMENTS
		FROM	TO		
T-LSEB2	TRANSFORMER T-LSEB2 FEEDER	MVS-1	TRANSFORMER T-LSEB2 PRIMARY	4"C, 3-#3/0, 1-#1 GND.	8KV MV-105

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

CONDUIT AND CONDUCTOR SCHEDULE SHEET 2

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SHEET
E-910

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TAG	DESCRIPTION	ROUTING		CONDUIT & WIRE SIZES	COMMENTS
		FROM	TO		
T-LSEB2	TRANSFORMER T-LSEB2 FEEDER	MVS-1	TRANSFORMER T-LSEB2 PRIMARY	4"C, 3-#3/0, 1-#1 GND.	8KV MV-105

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

CONDUIT AND CONDUCTOR SCHEDULE SHEET 3

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SHEET
E-911

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GENERAL INSTRUMENT OR FUNCTION SYMBOLS

SHARED DISPLAY/ SHARED CONTROL				
PRIMARY CHOICE	SECONDARY CHOICE	COMPUTER SOFTWARE	DISCRETE	LOCATION AND ACCESSIBILITY
				FIELD MOUNTED AND NORMALLY OPERATOR ACCESSIBLE
				PRIMARY CONTROL PANEL MOUNTED AND NORMALLY OPERATOR ACCESSIBLE
				PRIMARY CONTROL PANEL MOUNTED AND NOT NORMALLY OPERATOR ACCESSIBLE
				SECONDARY CONTROL PANEL MOUNTED AND NORMALLY OPERATOR ACCESSIBLE
				SECONDARY CONTROL PANEL MOUNTED AND NOT NORMALLY OPERATOR ACCESSIBLE


INSTRUMENTS SHARING COMMON HOUSING


PILOT LIGHT

MISCELLANEOUS SYMBOLS


MOTOR


VARIABLE FREQUENCY DRIVE


INDICATES INTERLOCK OR LOGIC IN A MOTOR CONTROL CENTER


INDICATES GENERAL OR MISCELLANEOUS HARDWIRED INTERLOCK

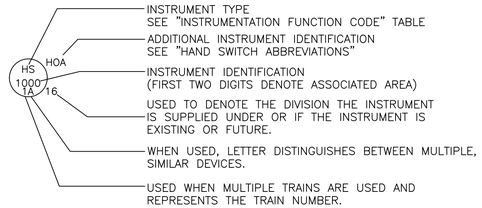

MOTOR STARTER


SILICONE CONTROL RECTIFIER


VARIABLE FREQUENCY DRIVE


PURGE OR FLUSHING DEVICE

TYPICAL TAG NUMBERS & DESIGNATION



HAND SWITCH ABBREVIATIONS

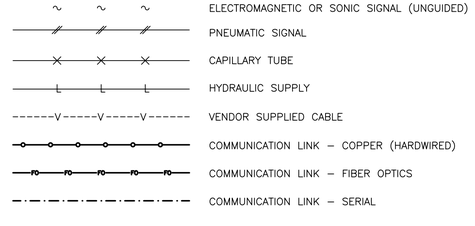
AO = AUTO/OFF	LOR = LOCAL/OFF/REMOTE
AM = AUTO/MANUAL	LOS = LOCKOUT/STOP
CM = COMPUTER/MANUAL	LA = LOCAL/AUTO
CL = COMPUTER/LOCAL	LR = LOCAL/REMOTE
E-STOP = EMERGENCY STOP	OC = OPEN/CLOSE
FR = FORWARD/REVERSE	OCA = OPEN/CLOSE/AUTO
FOR = FORWARD/OFF/REVERSE	OO = ON/OFF
FS = FAST SLOW	OOA = ON/OFF/AUTO
FOS = FAST/OFF/SLOW	OSC = OPEN/STOP/CLOSE
HOA = HAND/OFF/AUTO	RSL = RAISE/STOP/LOWER
LLS = LEAD/LAG/STANDBY	SS = START/STOP
LOC = LOCAL/OFF/COMPUTER	SOR = START/OFF/RESET

INSTRUMENTATION FUNCTION CODE

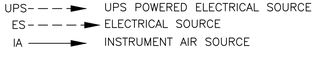
	FIRST LETTERS		SUCCEEDING LETTERS		
	COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5
	MEASURED/INITIATING VARIABLE	VARIABLE MODIFIER	READOUT/PASSIVE FUNCTION	OUTPUT/ACTIVE FUNCTION	FUNCTION MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	USER'S CHOICE			CONTROL	CLOSED
D	USER'S CHOICE	DIFFERENCE, DIFFERENTIAL			DEVIATION
E	VOLTAGE		SENSOR, PRIMARY ELEMENT		
F	FLOW, FLOW RATE	RATIO			
G	USER'S CHOICE		GLASS, GAUGE, VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT		INDICATE		
J	POWER		SCAN		
K	TIME, SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	MOISTURE				MIDDLE, INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE, RESTRICTION		OPEN
P	PRESSURE		POINT (TEST CONNECTION)		
Q	QUANTITY	INTEGRATE, TOTALIZE	INTEGRATE, TOTALIZE		
R	RADIATION		RECORD		RUN
S	SPEED, FREQUENCY	SAFETY		SWITCH	STOP
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	
V	VIBRATION, MECHANICAL, ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL, PROBE		
X	UNCLASSIFIED (1)	X-AXIS	ACCESSORY DEVICES, UNCLASSIFIED (1)	UNCLASSIFIED (1)	UNCLASSIFIED (1)
Y	EVENT, STATE, PRESENCE	Y-AXIS		AUXILIARY DEVICES	
Z	POSITION, DIMENSION	Z-AXIS, SAFETY INSTRUMENT SYSTEM		DRIVER, ACTUATOR, UNCLASSIFIED, FINAL CONTROL ELEMENT	

TABLE NOTES:
(1) WHEN USED SYMBOL OR SIGNAL LINE IS ANNOTATED.

INSTRUMENT LINE SYMBOLS



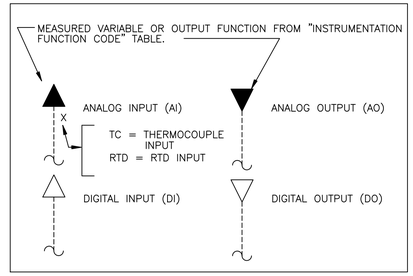
ELECTRICAL / AIR SOURCES



GENERAL NOTES

1. LIGHTER WEIGHT LINES, SHOWN AS ———, INDICATE EQUIPMENT, INSTRUMENTS OR PIPING THAT ARE EXISTING. WEIGHTED LINES, SHOWN AS ———, INDICATE EQUIPMENT, INSTRUMENTS OR PIPING THAT ARE NEW. DASHED WEIGHTED LINES, SHOWN AS ——--—— INDICATED EQUIPMENT, INSTRUMENTS OR PIPING THAT ARE GROUPED AS A PACKAGE.

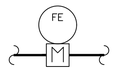
I/O SIGNALS



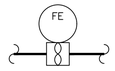
GENERAL ABBREVIATIONS

AI	ANALOG IN
AO	ANALOG OUT
ASD	ADJUSTABLE SPEED DRIVE
CPU	CENTRAL PROCESSOR UNIT
DI	DIGITAL OR DISCRETE INPUT
DO	DIGITAL OUTPUT
FC	FAIL CLOSED
FO	FAIL OPEN OR FIBER OPTIC
HMI	HUMAN MACHINE INTERFACE
MCC	MOTOR CONTROL CENTER
NC	NORMALLY CLOSED
NPW	NON-POTABLE WATER
NO	NORMALLY OPEN
PLC	PROGRAMMABLE LOGIC CONTROLLER
PW	PLANT WATER
RIO	REMOTE INPUT/OUTPUT
UPS	UNINTERRUPTIBLE POWER SUPPLY
OC	OPEN/CLOSE
PPM	PUMP PROTECTION MODULE

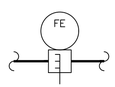
PRIMARY ELEMENTS



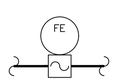
MAGNETIC FLOW METER



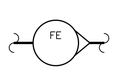
TURBINE OR PROPELLER FLOW METER



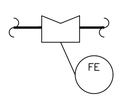
AVERAGING PITOT TUBE



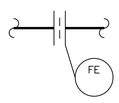
ULTRASONIC FLOW METER



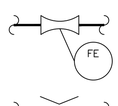
ROTAMETER



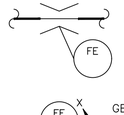
WEIR



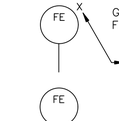
ORIFICE PLATE



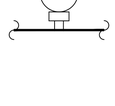
VENTURI TUBE



FLUME



GENERAL INSERTION FLOW METER



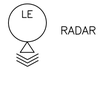
THERMAL MASS FLOW METER



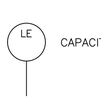
FLOAT SWITCH



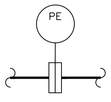
ULTRASONIC LEVEL SENSOR



RADAR LEVEL SENSOR



CAPACITANCE LEVEL SENSOR



PRESSURE SENSOR



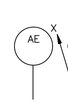
PRESSURE GAUGE



DIFFERENTIAL PRESSURE GAUGE



TEMPERATURE GAUGE



GENERAL ANALYZER

GENERAL NOTES:

1. THIS LEGEND APPLIES TO P&IDS ONLY AND MAY DIFFER FROM LEGENDS FOR OTHER SHEETS.
2. IN GENERAL THIS LEGEND SHEET AND THE P&IDS ARE BASED ON THE INTERNATIONAL SOCIETY OF AUTOMATION (ISA) STANDARDS AND RECOMMENDED PRACTICES FOR INSTRUMENTS AND CONTROL. SOME MODIFICATIONS, ADDITIONS AND ALTERATIONS HAVE BEEN MADE AS REQUIRED TO ACCOMMODATE PROJECT REQUIREMENTS.
3. SOME PROCESS ITEMS SUCH AS EQUIPMENT ISOLATION VALVES, BYPASS LINES, ETC., WHICH ARE NOT CRITICAL FOR AN UNDERSTANDING OF THE INSTRUMENTATION FUNCTIONS ARE NOT SHOWN ON THE P&IDS.
4. SEE ELECTRICAL AND MECHANICAL SHEETS AND SPECIFICATIONS FOR ADDITIONAL CONTROL AND INTERLOCK REQUIREMENTS.
5. LIGHTER WEIGHT LINES, SHOWN AS-----, INDICATE EQUIPMENT, INSTRUMENT OR PIPING, THAT ARE EXISTING. WEIGHTED LINES, SHOWN AS OR HEAVIER -----, INDICATE EQUIPMENT, INSTRUMENTS OR PIPING THAT ARE NEW. DASHED WEIGHTED LINES, SHOWN AS ----- INDICATED EQUIPMENT, INSTRUMENTS OR PIPING THAT ARE GROUPED AS A PACKAGE.
6. HATCHED INSTRUMENTS ARE PROVIDED BY EQUIPMENT SUPPLIER PER SPECIFICATIONS.
7. P&IDS ARE NOT INTENDED TO SHOW ALL DETAILS OF PIPING, JOINTS, SUPPORTS, ETC. CONTRACTOR SHALL INSTALL A COMPLETE SYSTEM PER THE CONTRACT DOCUMENTS AND AS REQUIRED TO PROVIDE A FULLY FUNCTIONING SYSTEM.

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RAMESH KALLURI
SERIAL NO. 68078
DATE: SEPT. 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION

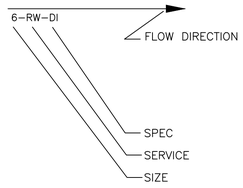
SYMBOLS AND ABBREVIATIONS
SHEET 1 OF 2

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
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SHEET
I-001

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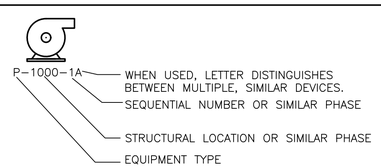
TYPICAL PIPE TAG NUMBERS & DESIGNATION



PIPE LINE SYMBOLS

- PIPE UNION
- FLEXIBLE BELLOWS TYPE COUPLING
- FLEXIBLE COUPLING (GENERAL SYMBOL)
- QUICK CONNECT TYPE COUPLING
- HOSE CONNECTION
- Y–STRAINER
- REDUCER/ENLARGER
- BLIND FLANGE
- CONTINUED PIPE
- CONCENTRIC FLANGE MOUNTED DIAPHRAGM SEAL
- THREADED DIAPHRAGM SEAL
- OPEN EQUIPMENT DRAIN
- DIFFUSER
- BASKET STRAINER
- FILTER
- PULSATION DAMPNER
- MAJOR PROCESS LINE
- MINOR PROCESS LINE
- DOUBLE WALLED PIPE
- E (S) — ELECTRIC (OR STEAM) TRACING
- PROCESS FLUID / DWG NO. / TO/FROM LOCATION — DRAWING CONTINUATION
- SIGNAL LINE / DWG NO. / TO/FROM LOCATION — DRAWING CONTINUATION

TYPICAL EQUIPMENT TAG NUMBERS & DESIGNATION



GATE SYMBOLS

- HEAVY DUTY CAST IRON SLIDE (SLUICE) GATE
- SLIDE GATE (SG)
- WEIR SLIDE GATE (WSG)
- BUTTERFLY GATE
- BULK HEAD GATE/STOP LOG

VALVE ACTUATORS

- HAND (MANUALLY) OPERATED
- DIAPHRAGM, SPRING OPPOSED
- DIAPHRAGM, PRESSURE–BALANCED
- M — ROTARY MOTOR. (SHOWN TYPICALLY WITH ELECTRIC SIGNAL. MAY BE HYDRAULIC OR PNEUMATIC)
- S — SOLENOID
- EAH — ELECTROHYDRAULIC
- CYLINDER, SINGLE–ACTING, SPRING OPPOSED WITHOUT POSITIONER OR PILOT.
- CYLINDER, DOUBLE ACTING, WITHOUT POSITIONER OR PILOT
- EXAMPLE OF CYLINDER WITH POSITIONER
- ANY CYLINDER THAT IS ASSEMBLED WITH A PILOT SO THAT ASSEMBLY IS ACTUATED BY ONE CONTROLLED INPUT. PILOT MAY BE POSITIONER, SOLENOID VALVE, SIGNAL CONVERTER, etc.
- FLOAT ACTUATOR

VALVE SYMBOLS

- GATE VALVE (GV)
- PLUG VALVE (PV)
- BUTTERFLY VALVE (BFV)
- BALL VALVE (BV)
- GLOBE VALVE (GLV)
- PINCH VALVE (PCHV)
- DIAPHRAGM VALVE (DV)
- SWING CHECK VALVE (CV)
- BALL CHECK VALVE (BCV)
- S — SOLENOID VALVE (SV)
- NEEDLE VALVE (NV)
- KNIFE VALVE (KNV)
- MUD VALVE (MV)
- PRESSURE REGULATING VALVE (PREGV)
- BACK PRESSURE REGULATING VALVE (BPV)
- DIFFERENTIAL PRESSURE REGULATING VALVE WITH EXTERIOR TAPS
- SELF–CONTAINED DIFFERENTIAL PRESSURE REGULATING VALVE
- S — SELF–CONTAINED DIFFERENTIAL PRESSURE REGULATING VALVE (SOLENOID OPERATED)
- PRESSURE RELIEF VALVE (PRV)
- VACUUM RELIEF VALVE (VRV)
- AIR–VACUUM RELEASE VALVE (AVRV)

PROCESS EQUIPMENT

PARTIAL LIST – ADDITIONAL SYMBOLS MAY BE SHOWN ON THE FLOW DIAGRAMS

- CENTRIFUGAL PUMP
- SUBMERSIBLE PUMP
- PLUNGER / POSITIVE
- PROGRESSING CAVITY PUMP
- DIAPHRAGM METERING PUMP
- AIR OPERATED DIAPHRAGM PUMP
- ROTARY PUMP
- CENTRIFUGAL BLOWER
- BELT CONVEYOR
- SCREW CONVEYOR
- GRINDER
- MIXER
- ROTARY BLOWER
- VERTICAL PUMP
- STATIC MIXER
- MANUAL SCREEN
- MECHANICAL SCREEN
- CALIBRATION COLUMN
- CLARIFIER

SERVICE LEGEND

DESIGNATION	SERVICE
DR	DRAIN
GR	GRIT
MLSS	MIXED LIQUOR SUSPENDED SOLIDS
NPW	NON–POTABLE WATER
PA	PROCESS AIR
RAS	RETURN ACTIVATED SLUDGE
RW	RAW WATER
SC	SCUM
SCE	SECONDARY CLARIFIER EFFLUENT
WAS	WASTE ACTIVATED SLUDGE

PIPE SPEC LEGEND

DESIGNATION	PIPE MATERIALS
ABS	ACRYLONITRILE – BUTADIENE – STYRENE
BS	BLACK STEEL
CI	CAST IRON
CIS	CAST IRON – SOIL
CM	CORRUGATED METAL
CPVC	CHLORINATED POLYVINYL CHLORIDE
CS	CARBON STEEL
CU	COPPER
DI	DUCTILE IRON
FRP	FIBER REINFORCED PLASTIC
GCS	GALVANIZED CARBON STEEL
PE	POLYETHLENE
PP	POLYPROPYLENE
PVC	POLYVINYL CHLORIDE
PVCI	POLYVINYL CHLORIDE (DOUBLED WALLED PIPE)
RBH	RUBBER HOSE
RC	REINFORCED CONCRETE
RCC	REINFORCED CONCRETE CYLINDER
SS	STAINLESS STEEL
STL	STEEL (CARBON)
VC	VITRIFIED CLAY

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RAMESH KALLURI
SERIAL NO. 68078
DATE: SEPT. 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION

SYMBOLS AND ABBREVIATIONS
SHEET 2 OF 2

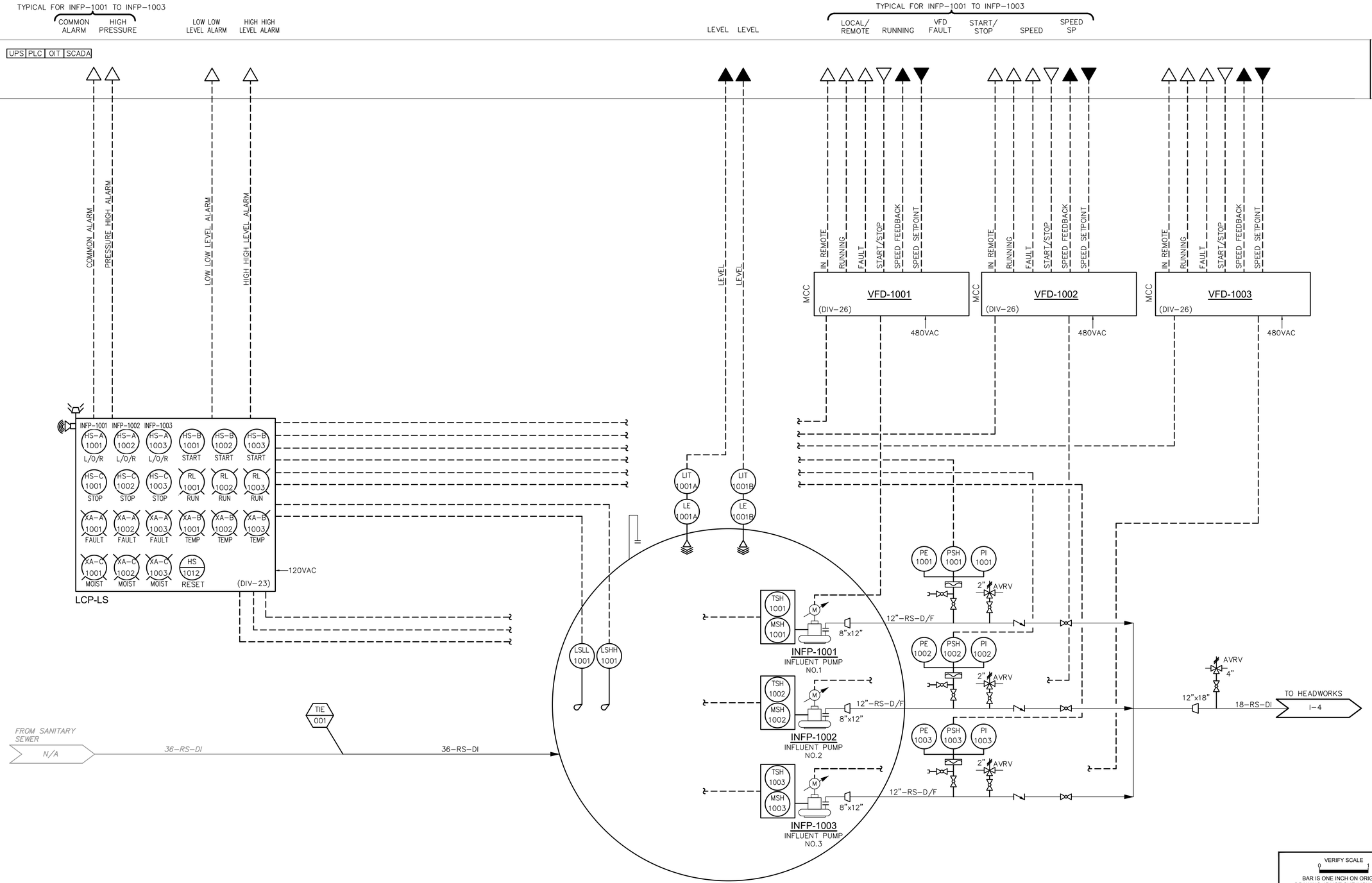
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KHA NO.:	067812104			

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SHEET
I-002

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION

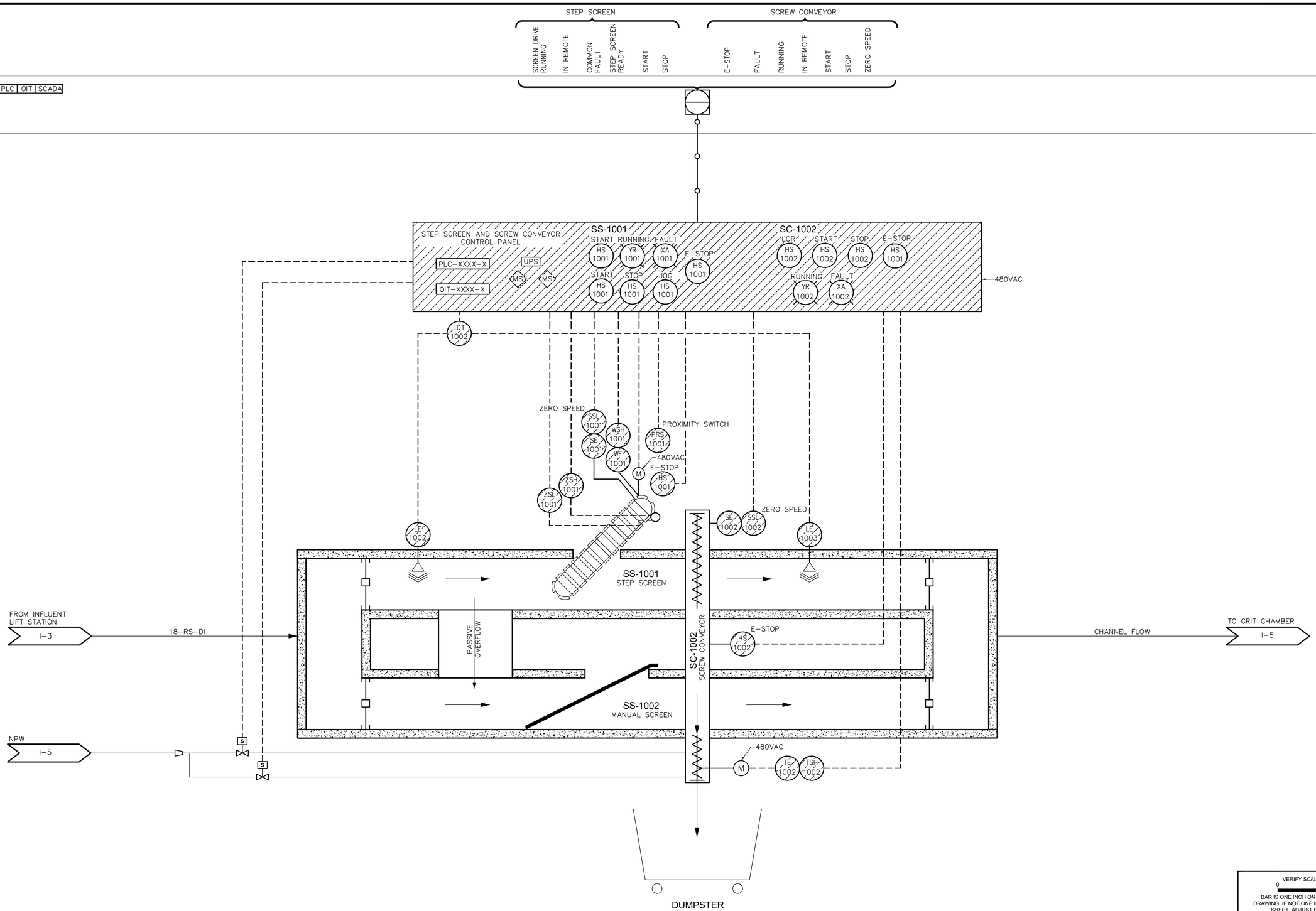
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SHEET
I-003



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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

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SHEET
I-004

NPW
OPENED
CLOSED
OPEN
CLOSE
IN REMOTE
LOW FLOW

WWTP CONTROL PANEL

UPS | PLC | OIT | SCADA

GRIT PUMP
SUCTION PRESSURE
HIGH TEMPERATURE
E-STOP
FAULT
RUNNING
IN REMOTE
START
STOP
DISCHARGE PRESSURE

GRIT WATER
E-STOP
RUNNING
IN REMOTE
FAULT
START/STOP
ZERO SPEED

WWTP CONTROL PANEL

GRIT CONTROL PANEL
PLC-XXXX-X
OIT-XXXX-X
VFD
VFD
VFD
UPS

LCP-GRP
LOR HS 1101
RUNNING YR 1101
FAULT XA 1101
START HS 1101
STOP HS 1101
E-STOP HS 1101

LCP-GWU
LOR HS 1102
RUNNING YR 1102
FAULT XA 1102
START HS 1102
STOP HS 1102
E-STOP HS 1102

LOR HS 1102A
RUNNING YR 1102A
FAULT XA 1102A
START HS 1102A
STOP HS 1102A

480VAC

FROM HEADWORKS
I-4

CHANNEL FLOW

GCU-1101
GRIT CONCENTRATOR UNIT

24-RS-DI

AERATION BASIN SPLITTER BOX
I-6

480VAC
M

ZERO SPEED
SE 1102A
SSL 1102A
480VAC

PULL STRING

E-STOP
HS 1102

ZSH 1102

BELT CONVEYOR

4-GR-DI

1"-NPW-PVC

OVERFLOW

8"-DR-DI

3"-DR

GWU-1102
GRIT WASHING / DE-WATERING UNIT

DUMPSTER

1"-NPW-PVC

TO EXISTING PLANT DRAIN

1"-NPW-PVC

4"-GR-DI

120VAC
M
C

FSL 1101
FE 1101

FI 1101
FE 1101

PIT 1101
PE 1101

TSH 1101
TE 1101
M

PIT 1101
PE 1101

SEAL WATER

GRP-1101
GRIT PUMP

N/A
NPW

FI 1102
FE 1102

FI 1103
FE 1103

HEADWORKS SCREW CONVEYOR
I-4

CLARIFIER NO. 1
I-7

CLARIFIER NO. 2
I-8

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SERIAL NO. 68078
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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION

GRIT SYSTEM P&ID

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SHEET
I-005

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WWTP CONTROL PANEL

UPS | PLC | OIT | SCADA

WWTP CONTROL PANEL

TYPICAL FOR FCV'S

VALVE OPENED | VALVE CLOSED | POSITION S.P. | A/M | VALVE POSITION | L/R | FLOW S.P. | AIR FLOW | TYP. FOR 2 DISSOLVED OXYGEN

TYPICAL FOR FCV'S

VALVE OPENED | VALVE CLOSED | POSITION S.P. | A/M | VALVE POSITION | L/R | FLOW S.P. | AIR FLOW | TYP. FOR 2 DISSOLVED OXYGEN

TYP. FOR 2 DISSOLVED OXYGEN | AIR FLOW

TYPICAL FOR FCV'S

VALVE OPENED | VALVE CLOSED | POSITION S.P. | A/M | VALVE POSITION | L/R | FLOW S.P.

LCP–BLR

LCP–BLR

UPS | PLC | OIT

VENDOR SUPPLIED

FROM BLOWERS

18–PA–SS

14–PA–SS

12–PA–SS

6–PA–SS

TO CHLORINE CONTACT BASIN

I–11

ZSH 1001 | ZSL 1001 | Z | E/H | HS–A 1001 | ZIT 1001 | HS–B 1001 | FIT 1001 | FE 1001

FCV

ZSH 1002 | ZSL 1002 | Z | E/H | HS–A 1002 | ZIT 1002 | HS–B 1002 | FIT 1002 | FE 1002

FCV

FIT 1003 | FE 1003

ZSH 1003 | ZSL 1003 | Z | E/H | HS–A 1003 | ZIT 1003 | HS–B 1003

120VAC | AIT 1001 | AE 1001 | DO | DO–1001

PROP. AERATION BASIN NO.1A

(EXIST. REAERATION BASIN NO. 1)

120VAC | AIT 1002 | AE 1002 | DO | DO–1002

PROP. AERATION BASIN NO.1B

(EXIST. CONTACT BASIN NO. 1)

120VAC | AIT 1003 | AE 1003 | DO | DO–1003

PROP. AERATION BASIN NO.1C

(EXIST. CONTACT BASIN NO. 1A)

24–MLSS–DI

TO CLARIFIER NO. 1

I–7

TIE 001

FROM GRIT CHAMBER

I–5

24–RS–DI

DIVERSION BOX

COMMON WALL

COMMON WALL

NC

NC

FROM RAS PUMP STATION NO.1

I–9

10–RAS–DI

FROM RAS PUMP STATION NO.2

I–9

10–RAS–DI

ZSH 1004 | ZSL 1004 | Z | E/H | HS–A 1004 | ZIT 1004 | HS–B 1004

FCV

FIT 1004 | FE 1004

ZSH 1005 | ZSL 1005 | Z | E/H | HS–A 1005 | ZIT 1005 | HS–B 1005

FCV

FIT 1005 | FE 1005

FIT 1006 | FE 1006

ZSH 1006 | ZSL 1006 | Z | E/H | HS–A 1006 | ZIT 1006 | HS–B 1006

120VAC | AIT 1004 | AE 1004 | DO | DO–1004

PROP. AERATION BASIN NO.2A

(EXIST. REAERATION BASIN NO. 2)

120VAC | AIT 1005 | AE 1005 | DO | DO–1005

PROP. AERATION BASIN NO.2B

(EXIST. CONTACT BASIN NO. 2)

120VAC | AIT 1006 | AE 1006 | DO | DO–1006

PROP. AERATION BASIN NO.2C

(EXIST. CONTACT BASIN NO. 2A)

24–MLSS–DI

TO CLARIFIER NO. 2

I–8

TO CHLORINE CONTACT BASIN

I–11

FROM BLOWERS

18–PA–SS

14–PA–SS

12–PA–SS

6–PA–SS

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DATE: SEPT. 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION

AERATION BASIN P&ID

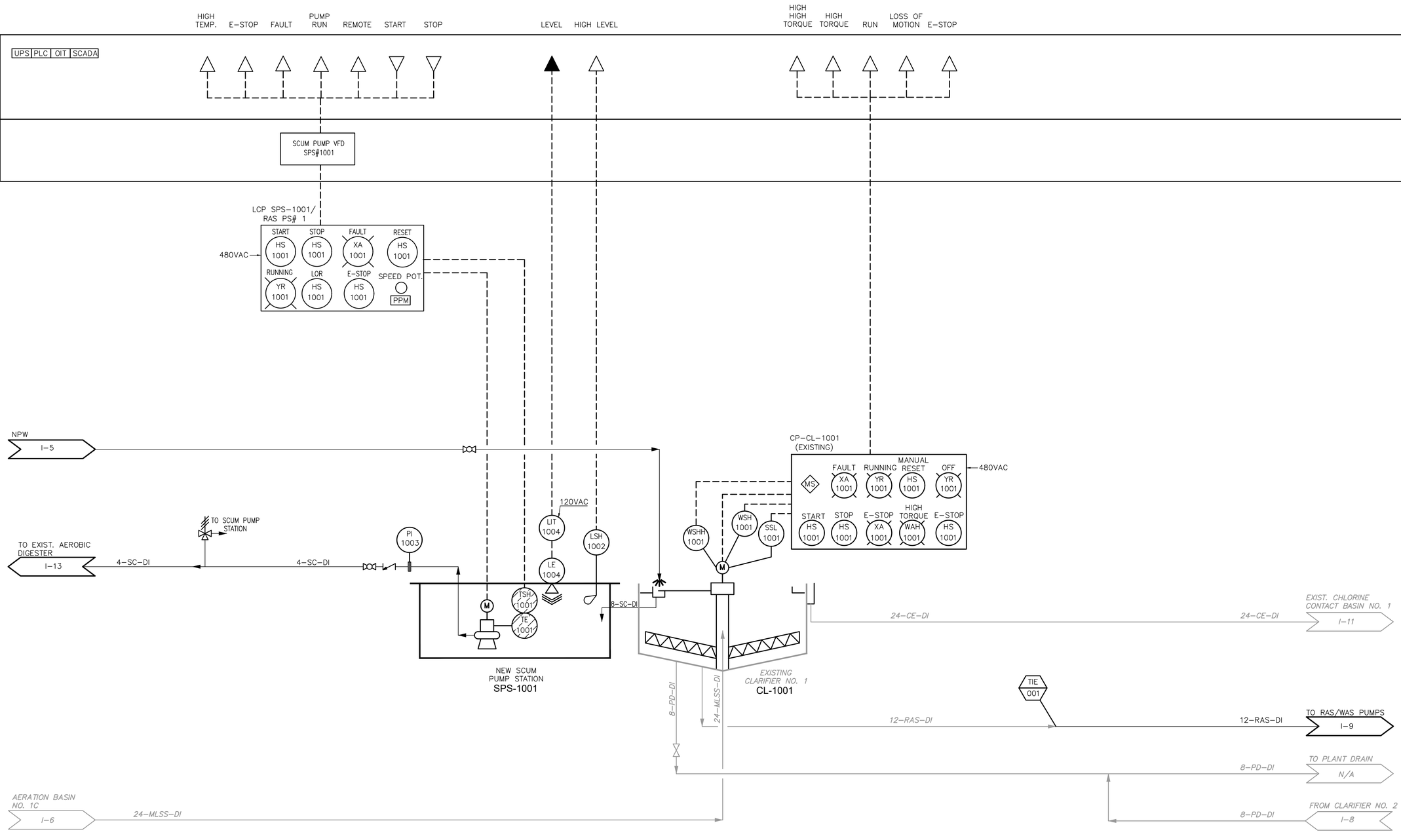
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SHEET

I-006



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SERIAL NO.: 68078
DATE: SEPT. 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION

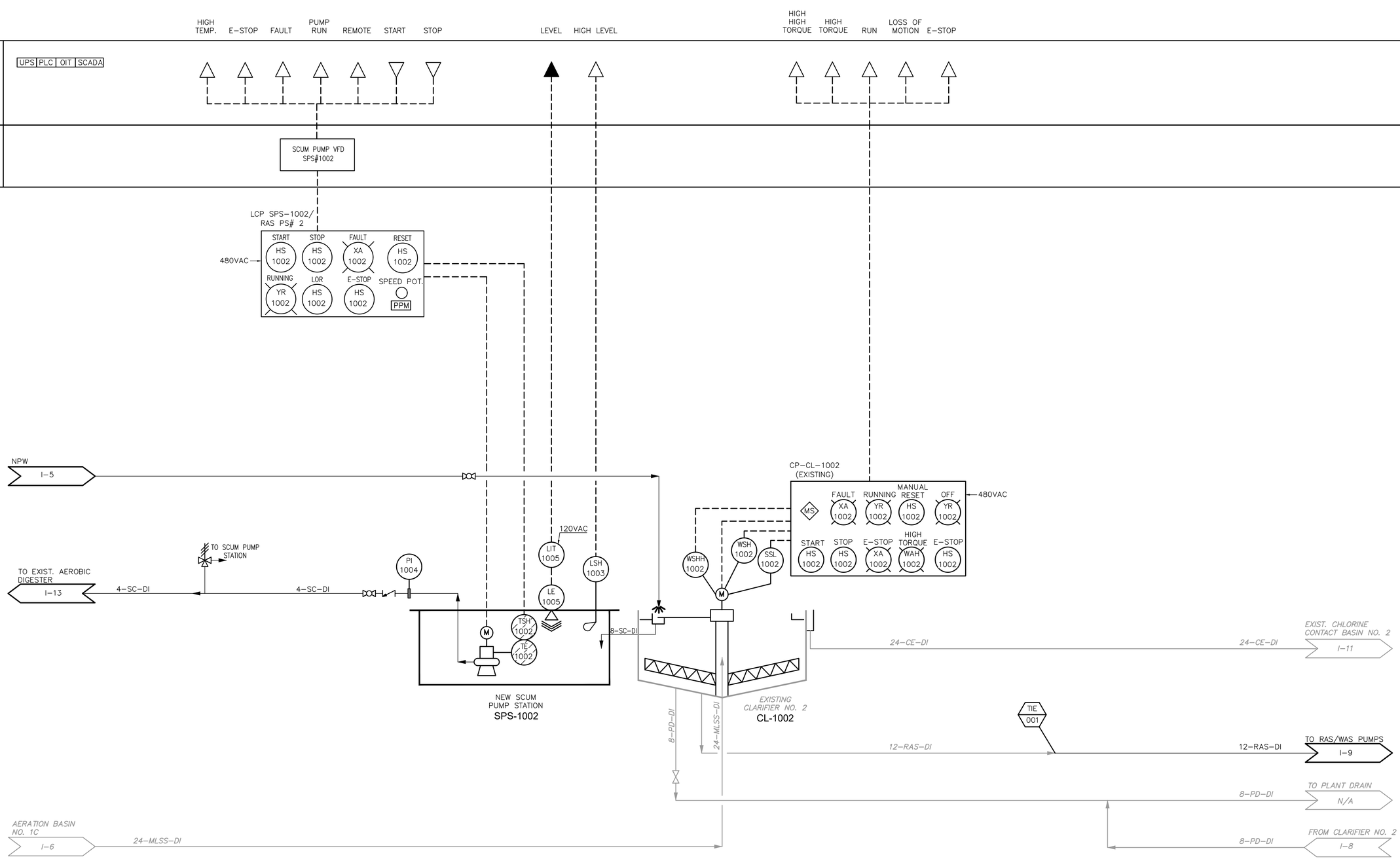
CLARIFIER NO. 1 AND NEW SCUM PUMP STATION P&ID

DATE:	09/01/2022
DESIGN:	RK
DRAWN:	AP
CHECKED:	WH
KHA NO.:	067812104

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SHEET
I-007



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WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION

CLARIFIER NO. 2 AND NEW SCUM PUMP STATION P&ID

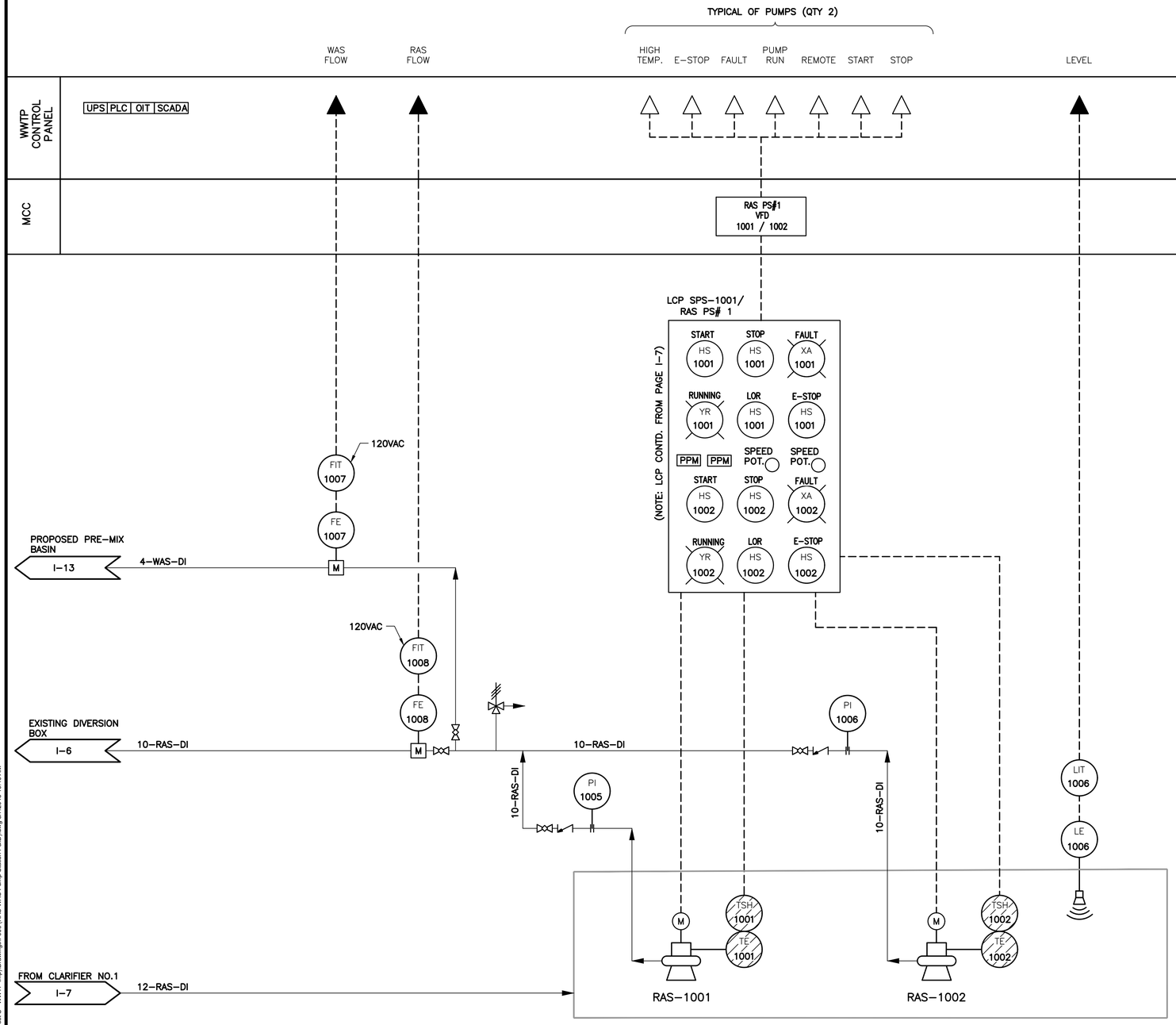
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SHEET
I-008

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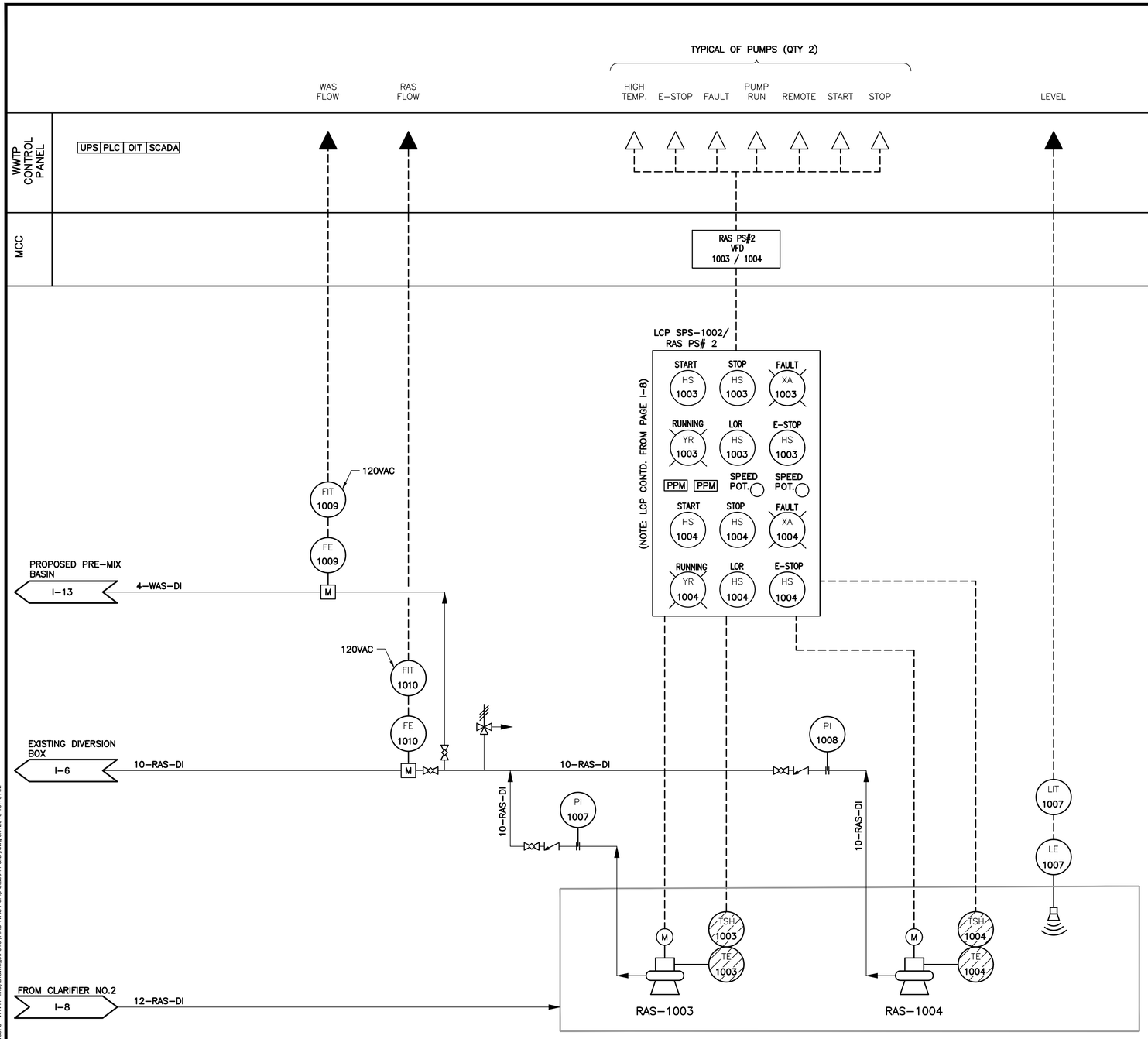
RAS/WAS PUMP STATION P&ID

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SHEET
I-009



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SHEET
I-010

WWTP CONTROL PANEL

UPS | PLC | OIT | SCADA

WWTP CONTROL PANEL

TYPICAL FOR FCV'S

VALVE OPENED | VALVE CLOSED | POSITION S.P. | A/M | VALVE POSITION | L/R | FLOW S.P. | AIR FLOW | TYP. FOR 2 DISSOLVED OXYGEN

LCP-BLR

UPS | PLC | OIT

LCP-BLR

VENDOR SUPPLIED

FROM BLOWERS
I-6
6-PA-SS

ZSH 1007 | ZSL 1007 | Z E/H | HS-A 1007 | ZIT 1007 | HS-B 1007

FIT 1011
FE 1011

FCV

AIT 1007 | AE 1007 | DO
120VAC
DO-1007

FROM SODIUM HYPOCHLORITE TO U/S OF CHLORINE CONTACT BASIN NO. 1
I-18

FROM SODIUM BISULFITE TO D/S OF CHLORINE CONTACT BASIN NO. 1
I-19

CHLORINE CONTACT BASIN NO. 1

I-12
TO NPW SYSTEM

FROM SODIUM HYPOCHLORITE TO U/S OF CHLORINE CONTACT BASIN NO. 2
I-18

FROM SODIUM BISULFITE TO D/S OF CHLORINE CONTACT BASIN NO. 2
I-19

AIT 1008 | AE 1008 | DO
120VAC
DO-1008

CHLORINE CONTACT BASIN NO. 2

ZSH 1008 | ZSL 1008 | Z E/H | HS-A 1008 | ZIT 1008 | HS-B 1008

FCV

FIT 1012
FE 1012

FROM BLOWERS
I-6
6-PA-SS

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION

CHLORINE CONTACT BASIN P&ID

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SHEET
I-011

TYPICAL FOR PUMPS (QTY 3)

SPEED | SPEED SP | START/STOP | RUN | REMOTE | FAIL | TEMP. HIGH | HIGH DISCHARGE PRESSURE | ALARM SILENCE

WWTP CONTROL PANEL

UPS | PLC | OIT | SCADA

WWTP CONTROL PANEL

480VAC

VFD VFD VFD

LCP-NPW

PILOT DEVICES TYPICAL FOR 3 PUMPS

LOR HS XXXX | RUNNING YR XXXX | FAULT XA XXXX | ETM ETM XXXX | SEQUENCE HS XXXX | ALARM SILENCE HS XXXX

CHLORINE CONTACT BASIN

I-11

PI 1009

HS 1001 HOA M TSH 1001

PI 1012 PSH 1012

HYDRO-PNEUMATIC PRESSURE TANK

NPW-1001
NON-POTABLE WATER PUMP NO.1

PI 1010

HS 1002 HOA M TSH 1002

PI 1013 PSH 1013

NPW-1002
NON-POTABLE WATER PUMP NO.2

PI 1011

HS 1003 HOA M TSH 1003

PI 1014 PSH 1014

NPW-1003
NON-POTABLE WATER PUMP NO.3

FLOW

DISTRIBUTION FLOW

PRESSURE

DISCHARGE HEADER PRESSURE

120VAC

FIT 1011

FE 1011

M

PIT 1015

N/A
TO NPW SYSTEM

VERIFY SCALE

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION

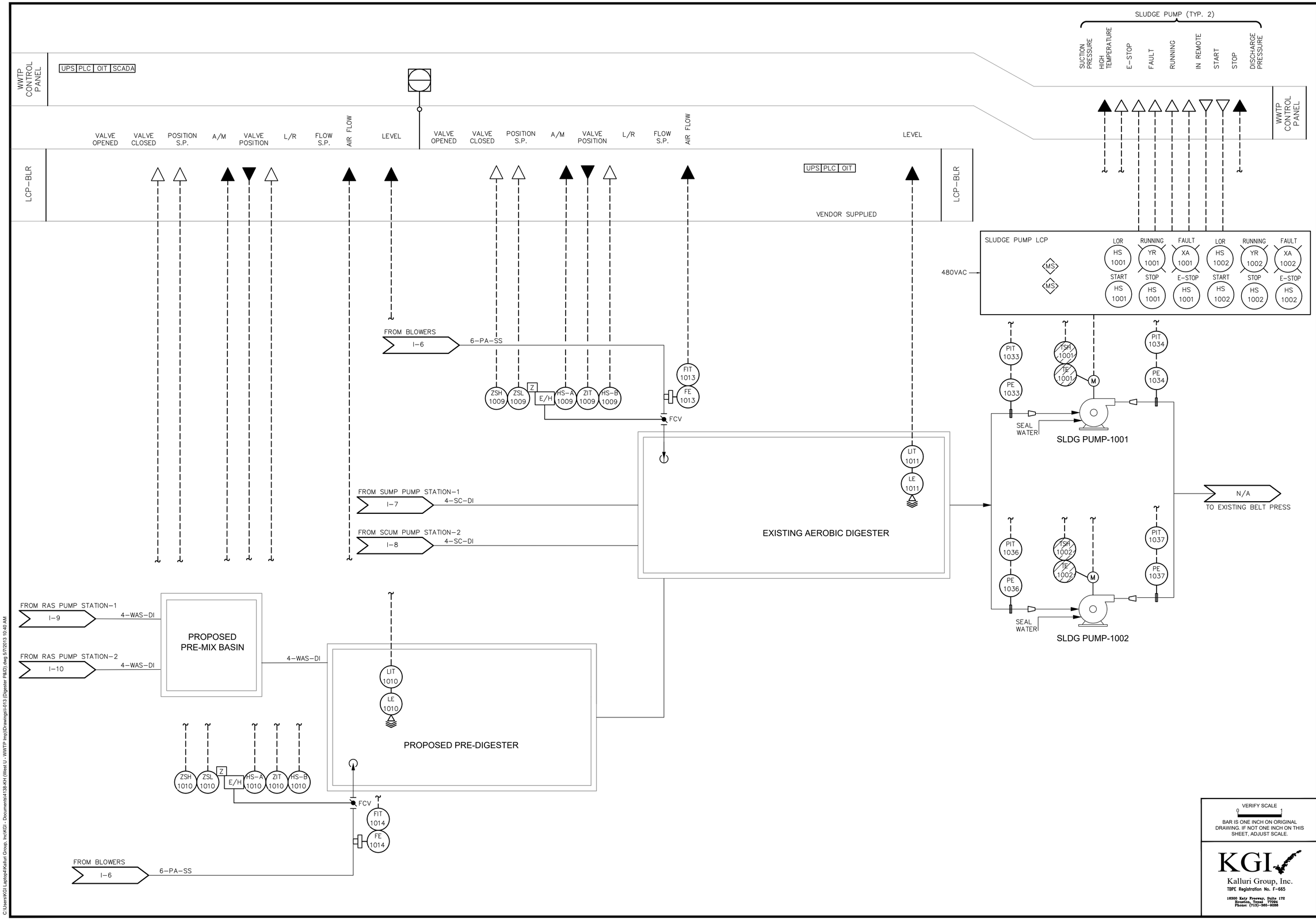
NPW SYSTEM P&ID

DATE:	09/01/2022
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SHEET

I-012

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION

DIGESTER P&ID

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SHEET
I-013

HIGH DIFFERENTIAL PRESSURE
HIGH DIFFERENTIAL PRESSURE
HIGH PRESSURE
TEMPERATURE
IN REMOTE
OPENED
CLOSED
FAIL
POSITION
POSITION SET POINT
DISCHARGE PRESSURE

WWTP CONTROL PANEL
UPS | PLC | OIT | SCADA
WWTP CONTROL PANEL

480VAC
HACH CLAROS DATA MANAGEMENT SYSTEM FOR CONTROL OF BLOWER 1, 2, 3 AND 4
VFD
LCP-BLR
MS
UPS | PLC | OIT

480VAC
BLOW-OFF VALVE
FCV
TO ATMOSPHERE
BLOW-OFF SILENCER
TO ATMOSPHERE
IT
TE
PT
PE

EXPANSION JOINT
OUTLET SILENCER
TO AERATION BLOWER HEADER

TO ATMOSPHERE
PDSH
PDE
PDSH
PDE
SURGE
PSH
PE
TT
TE
AIR
INLET SILENCER
INLET FILTER
FLEX CONNECTOR

BLR-1001
BLOWER NO. 1
VE
VELOCITY
VEZ
VEX
VEY
ZERO SPEED
SSL
SE
IT
TT
TE
SPARE RTD
VEY
TE
VEX
IE
GEAR BOX
MOTOR

PI
PE
TI
TE
PSLL
PE
PDSH
PDE
DUPLEX OIL FILTER

TE
TIT
LI
LE
PRV
OIL-AIR COOLER
PRESSURE CONTROL VALVE
EXPANSION JOINT
EXPANSION JOINT
LSL
LE
TT
TE
AUX.LUBE OIL PUMP MOTOR
PUMP
AUXILIARY LUBE OIL PUMP
OIL SUMP
DRAIN VALVE
FAN

VENDOR SUPPLIED

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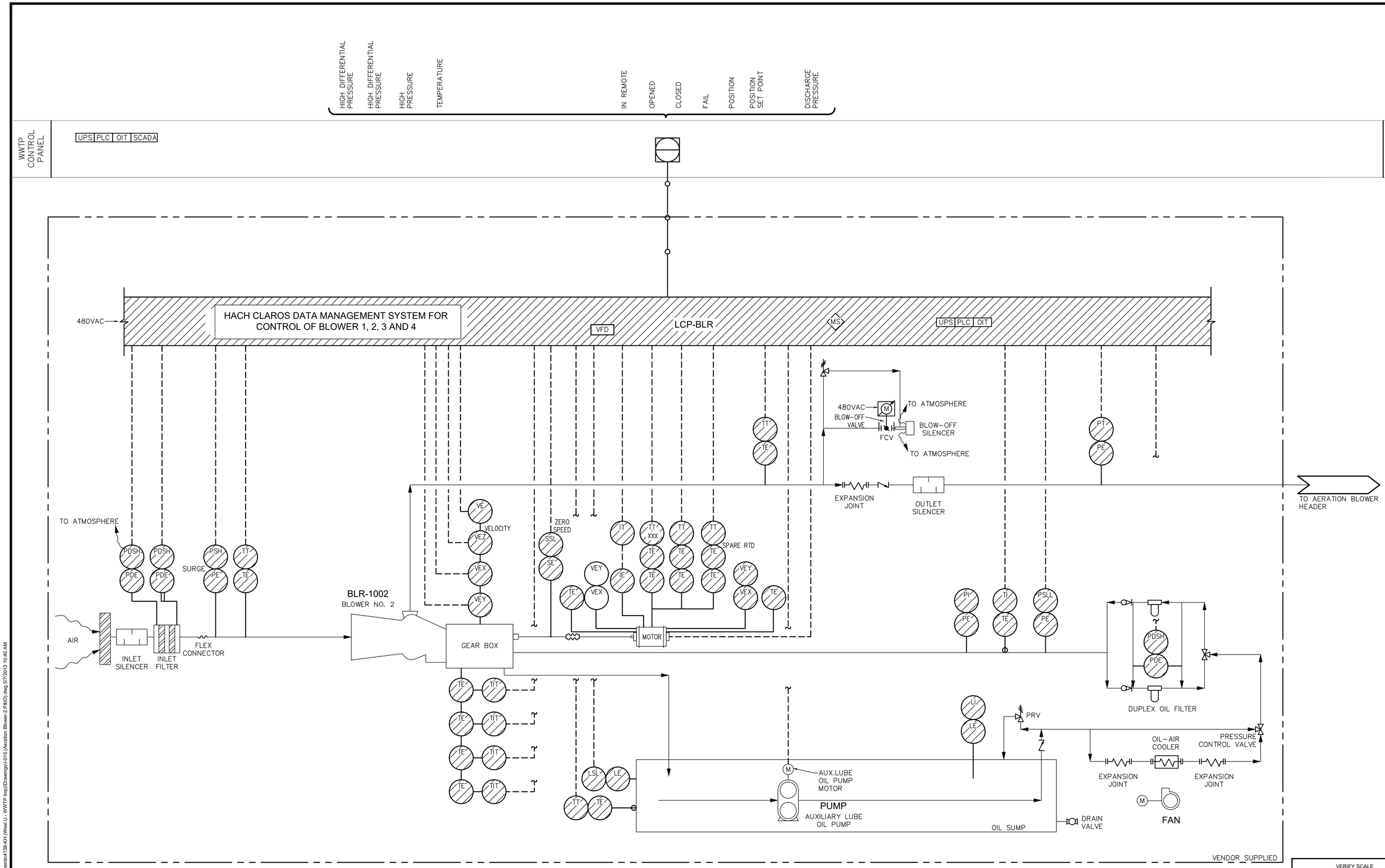
CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION
AERATION BLOWER-1 P&ID

DATE:	09/01/2022			
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SHEET
I-014

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

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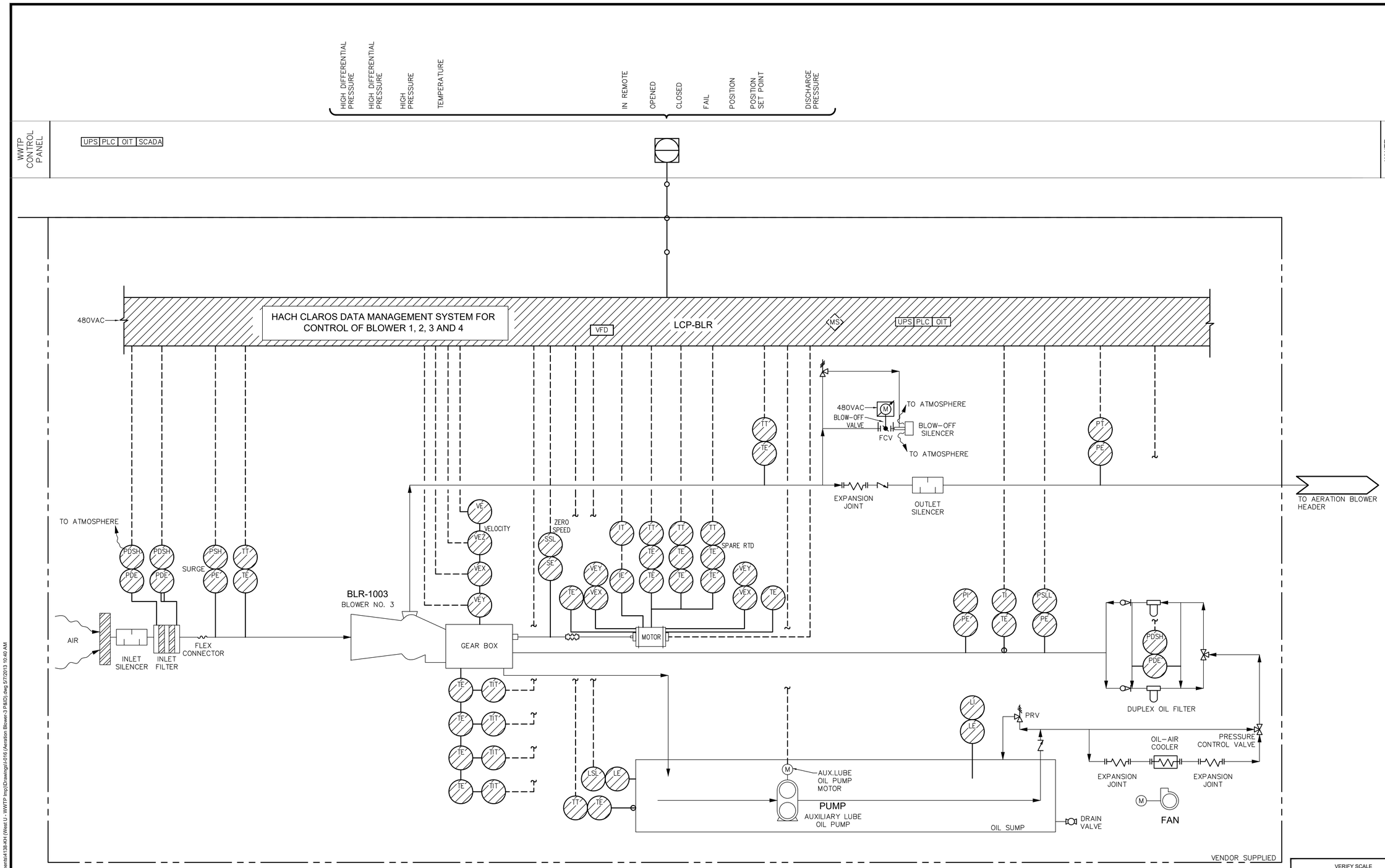
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SHEET
I-015



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WASTEWATER TREATMENT PLANT IMPROVEMENTS

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AERATION BLOWER-3 P&ID

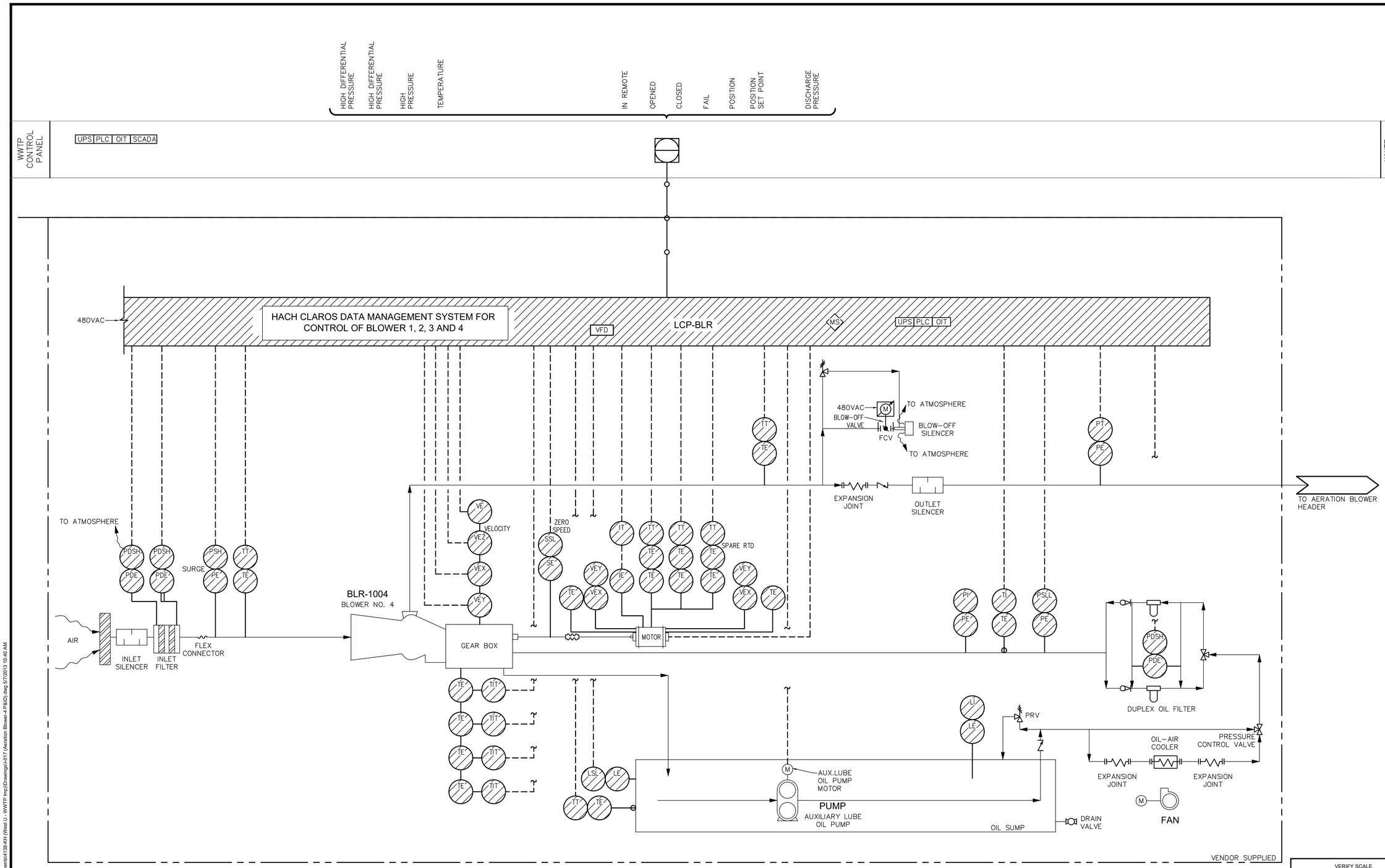
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SHEET
I-016

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AERATION BLOWER-4 P&ID

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HIGH HIGH LEVEL

LEVEL

HIGH DISCHARGE PRESSURE

IN REMOTE

RUNNING

ALARM

START/STOP

SPEED INDICATION

SPEED SETPOINT

EYEWASH STATION A FLOW

EYEWASH STATION B FLOW

WWTP CONTROL PANEL

UPS | PLC | OIT | SCADA

WWTP CONTROL PANEL

NOTE:

1. LOCATE LEVEL INDICATOR AND HIGH LEVEL ALARM AT TRUCK UNLOADING STATION.

EYEWASH STN. A

EYEWASH STN. B

TYPICAL FOR CP-1001, CP-1002

120VAC

LOR HS | START HS | STOP HS | FAULT XA | RUNNING YR | SPEED IND SI | SPEED POT SC

CALIBRATION COLUMN

PSL 1016 | PI 1016 — 0-30 PSIG

PI 1017

0-100 PSIG — PI 1018 | PSH 1018 — SET @ 75 PSIG

SET @ 65 PSIG — PCV 1019

M | XS 1001

CP-1001

FROM TRUCK UNLOADING STATION

N/A

LSHH 1008

LIT 1008 | LSH 1008 — 0-14FT

120VAC NOTE 1

HHLL:

HLL:

T-1001

LLL: 4'-0"

LLLL: 2'-0"

0'-0" (REF.)

CALIBRATION COLUMN

PSL 1020 | PI 1020 — 0-30 PSIG

PI 1021

0-100 PSIG — PI 1022 | PSH 1022 — SET @ 75 PSIG

SET @ 65 PSIG — PCV 1023

M | XS 1002

CP-1002

U/S CHLORINE CONTACT BASIN

I-011

VENDOR PROVIDED

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION

NEW SODIUM HYPOCHLORITE P&ID

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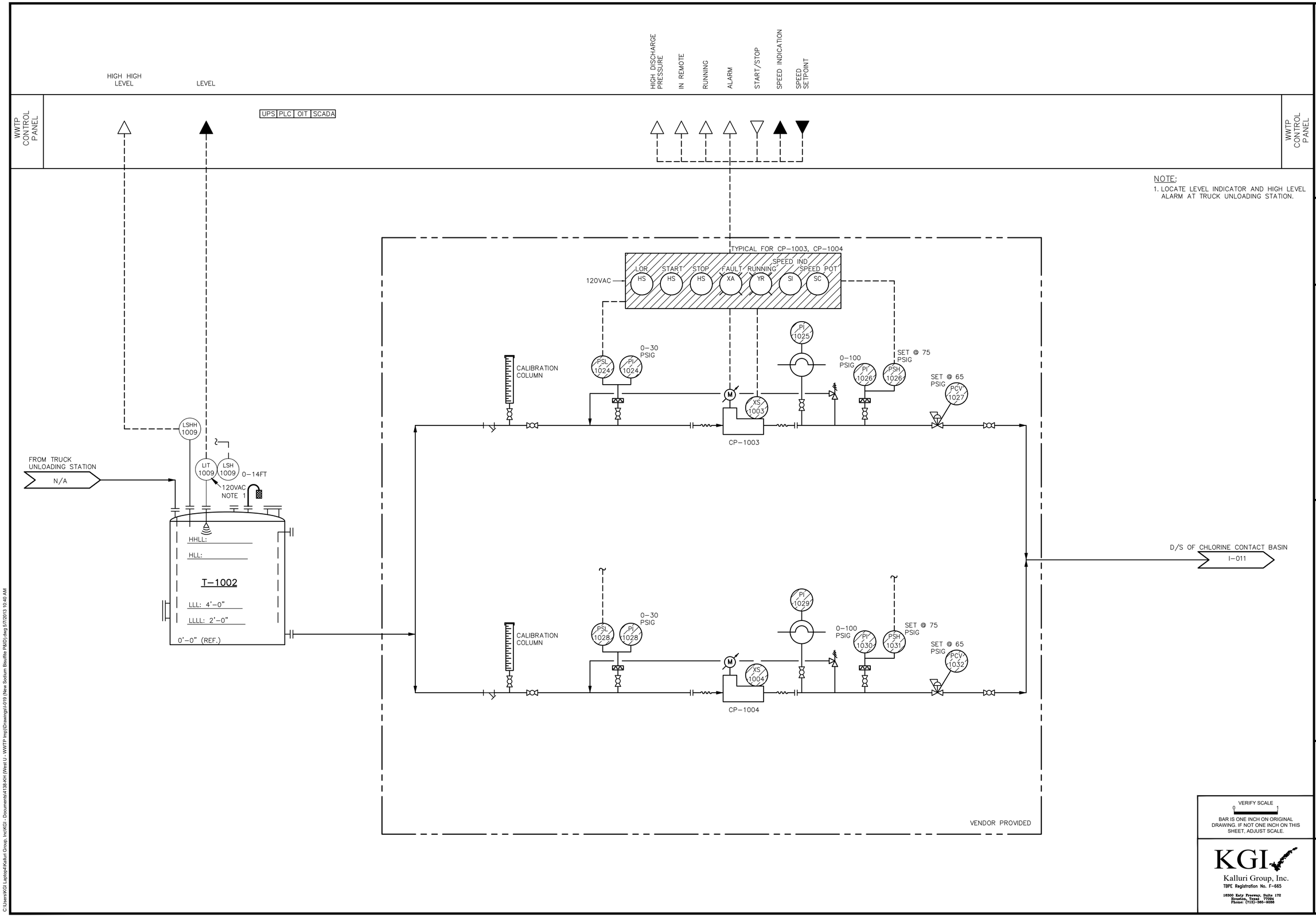
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SHEET

I-018



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NEW SODIUM BISULFITE P&ID

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CHECKED:	WH
KHA NO.:	067812104

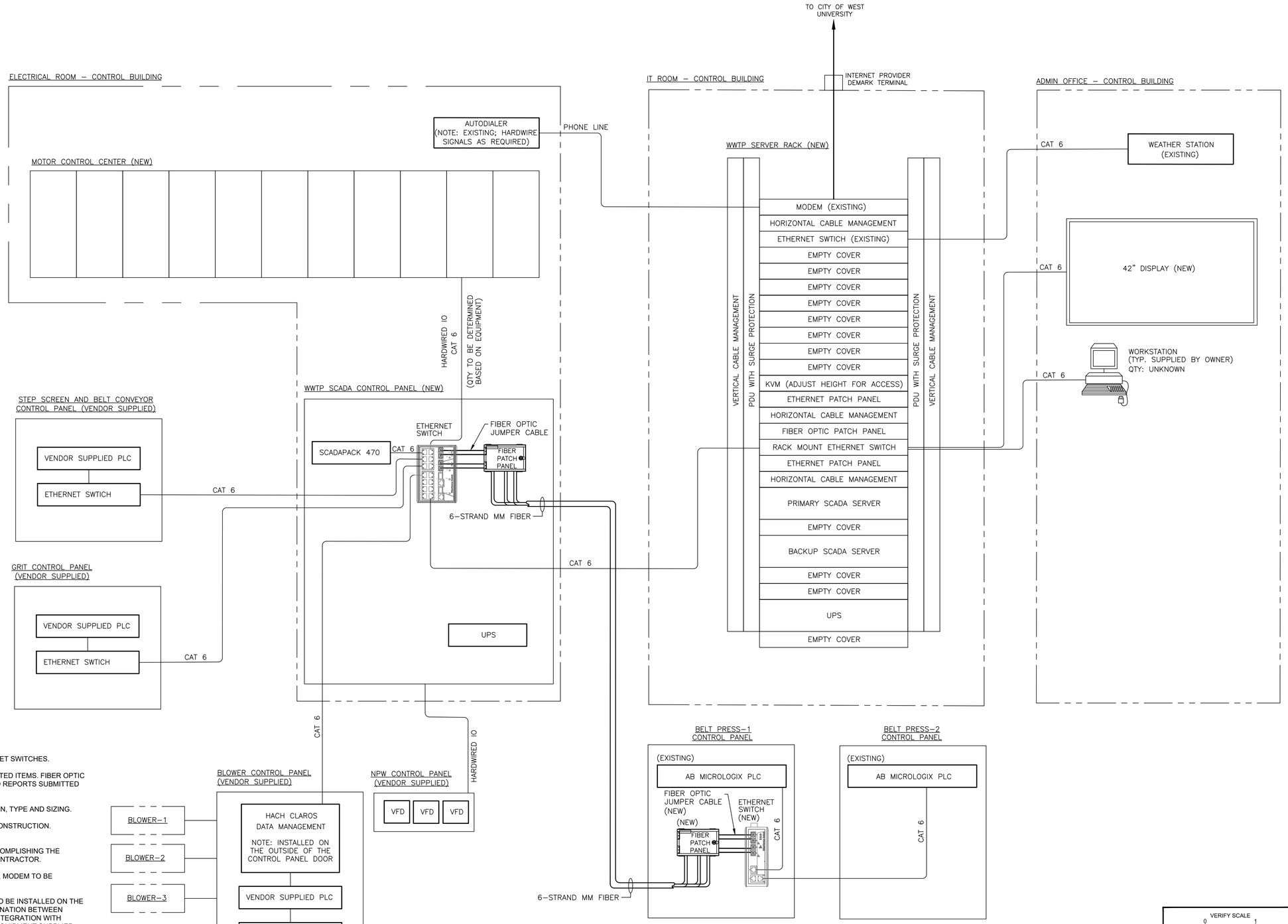
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Phone: (713)-365-6088

SHEET
I-019

NOTES:

1. THE PROPOSED CONTROL BUILDING IS TO BE PROVIDED WITH NEW SCADA EQUIPMENT, THE CONTRACTOR SHALL COORDINATE WITH THE WASTEWATER SCADA AND CITY DATA GROUPS ANY EQUIPMENT TO BE RELOCATED AND USED. THE CONTRACTOR SHALL PROVIDE ANY TEMPORARY NETWORK CABLE BETWEEN THE EXISTING SCADA EQUIPMENT, LOCATED IN THE EXISTING OPERATIONS BUILDING, AND THE NEW FACILITY DURING CONSTRUCTION. THIS INCLUDES ANY ADDITIONAL TEMPORARY CONDUIT, PATCH CABLES AND MISCELLANEOUS CONDUCTORS. ALL TEMPORARY FACILITIES ARE TO BE INSTALLED IN COMPLIANCE WITH THE NEC ARTICLE 590.
2. PROPOSED FIBER OPTIC CABLE SHALL BE ROUTED BETWEEN BELT PRESS BUILDING AND THE ADMINISTRATION BUILDING. A NEW ETHERNET SWITCH AND NEW FIBER OPTIC PANEL PANEL SHOULD BE INSTALLED IN BELT PRESS-1 CONTROL PANEL.
3. ALL PROPOSED SCADA EQUIPMENT SHALL BE PROVIDED IN ACCORDANCE WITH DIVISION 13 SPECIFICATIONS. SHOP DRAWINGS SHALL BE ACCEPTED PRIOR TO ORDERING EQUIPMENT.
4. THE CONTRACTOR SHALL INVESTIGATE EARLY IN THE PROJECT TO LOCATE SERVICE DEMARKS WITH SERVICES PROVIDERS AND CITY DATA SERVICES GROUP.
5. CONTRACTOR SHALL DOCUMENT THE OPERATIONAL STATUS OF ALL EQUIPMENT AND CABLE TO BE REMOVED, PRIOR TO SCHEDULING REMOVAL. THE HMI STATUS, SOURCE OF SIGNALS AND PATH OF SCADA CIRCUITS SHALL BE CONFIRMED.
6. PROVIDE A PROGRAMMING PORT AND RECEPTACLE ALONG WITH A WORKBENCH ON THE OUTSIDE OF THE WWTP SCADA PLC CONTROL PANEL.
7. UPS HEALTH AND CONDITION TO BE MONITORED ON SCADA.
8. A 42" DISPLAY FOR VIEWING SCADA SCREENS WILL BE MOUNTED IN THE ADMIN OFFICE. CONTRACTOR TO SUPPLY REQUIRED LABOR AND HARDWARE FOR MOUNTING OF THE SCREEN.
9. PCSS/AESS TO BE A CERTIFIED VTSCADA SYSTEM INTEGRATOR.
10. REFER SCADA/PLC SOFTWARE SPEC FOR DETAILS FOR SOFTWARE LICENSING. CONTRACTOR TO SUPPLY LICENSES AND SOFTWARE DEVELOPMENT SERVICES. LICENSES TO INCLUDE DUAL SERVER REDUNDANT BUNDLE OFFERED BY VTSCADA WHICH INCLUDES QTY 2 SERVERS (QTY 1 RUNTIME AND QTY 1 DEVELOPMENT RUNTIME) ALONG WITH REDUNDANT VTSCADA ALARM NOTIFICATION SYSTEM AND QTY 2 VTSCADA THIN CLIENTS. CONTRACTOR TO ALSO PROVIDE VTSCADA SUPPORT PLUS FOR A PERIOD OF ONE YEAR UPON COMPLETION OF THE PROJECT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT THE LICENSES PURCHASED INTEGRATE WITH OWNER EXISTING LICENSES WITH AN OVERALL OBJECTIVE IN LINE WITH OWNERS CENTRAL SCADA SYSTEM.
11. PCSS/AESS TO COORDINATE WITH OWNER FOR MERGE OF VTSCADA APPLICATION DEVELOPED FOR WWTP TO OWNERS OVERALL SCADA SYSTEM.
12. REFER COMPUTER HARDWARE SPEC FOR SERVERS, IT RACK AND KVM. PROVIDE WIRE MANAGEMENT ON THE IT RACK.
13. REFER COMPUTER NETWORK SPEC FOR ETHERNET SWITCHES.
14. REFER FIBER OPTIC SPEC FOR FIBER OPTIC RELATED ITEMS. FIBER OPTIC TERMINATIONS TO BE TESTED USING A OTDR AND REPORTS SUBMITTED FOR REVIEW.
15. REFER UPS SPEC FOR DETAILS ON CONSTRUCTION, TYPE AND SIZING.
16. REFER DIVISION 13 SPEC FOR CONTROL PANEL CONSTRUCTION. CONTROL PANEL TO BE UL LISTED.
17. ANY MEDIA CONVERTOR REQUIRED FOR THE ACCOMPLISHING THE CONTROL OBJECTIVE TO BE SUPPLIED BY THE CONTRACTOR.
18. EXISTING WEATHER STATION, ETHERNET SWITCH, MODEM TO BE RELOCATED.
19. HACH CLAROS DATA MANAGEMENT HARDWARE TO BE INSTALLED ON THE DOOR OF THE BLOWER CONTROL PANEL. COORDINATION BETWEEN HACH, BLOWER SUPPLIER AND PCSS/AESS FOR INTEGRATION WITH PLANT SCADA IS A RESPONSIBILITY OF BLOWER EQUIPMENT SUPPLIER. BLOWER EQUIPMENT SUPPLIER TO PROVIDE INSTRUMENTS AND VALVES
20. PCSS/AESS WILL INTEGRATE VENDOR SUPPLIED SYSTEMS TO WWTP SCADA CONTROL PANEL ALONG WITH ALL ASSOCIATED VTSCADA INTEGRATIONS AND SCREEN PRODUCTIONS.
21. WORKSTATIONS TO BE SUPPLIED BY THE OWNER.
22. CCTV CONTRACTOR TO FOLLOW PLANS AND SPEC FOR LOCATION OF THE CAMERAS AND SUPPLY ASSOCIATED HARDWARE. CCTV TO UTILIZE EXISTING ETHERNET SWITCH FOR CONNECTIONS TO OWNERS CENTRAL CAMERA MONITORING SYSTEM.



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SERIAL NO. 68078
DATE: SEPT, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION

OVERALL PROPOSED SCADA NETWORK DIAGRAM

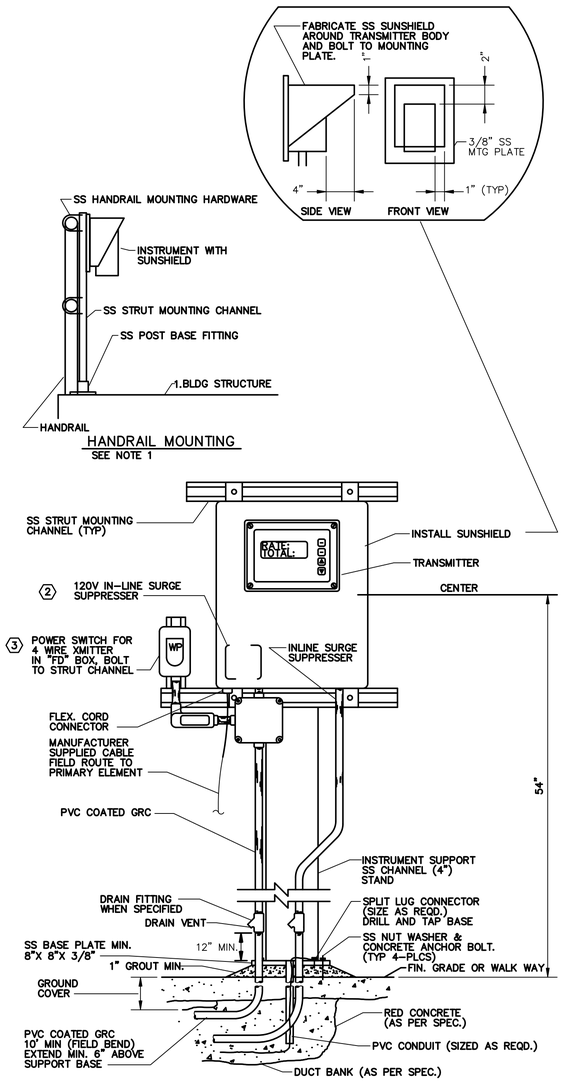
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SHEET
I-020

C:\Users\KGI Laptop4\Kalluri Group, Inc\KGI - Documents\4138-KH (West U - WWTP Imp)\Drawings\I-020 (Overall Proposed Scada Network Diagram).dwg 5/7/2013 10:40 AM

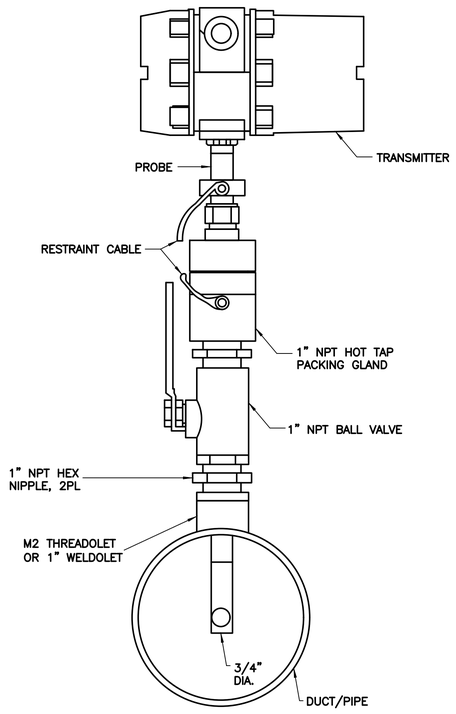


HANDRAIL MOUNTING
SEE NOTE 1

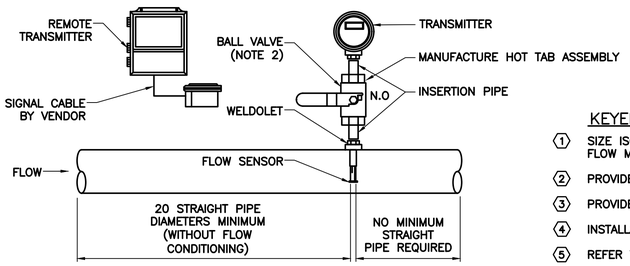
KEYED NOTES:

1. THIS DETAIL IS APPLICABLE FOR HANDRAIL MOUNTING. CONTRACTOR TO MODIFY INSTALLATION AS REQUIRED BY SITE CONDITIONS.
2. SWITCH REQUIRED WHEN UNIT IS REMOTE MOUNTED, OUT OF SIGHT OF CONTROLLING CIRCUIT BREAKER.
3. DIN RAIL MOUNTED SILICON DIODE TYPE SUPPRESSOR FOR REMOTE UNITS MOUNTED OUTSIDE ONLY.

TYPICAL INSTRUMENTATION INSTALLATION



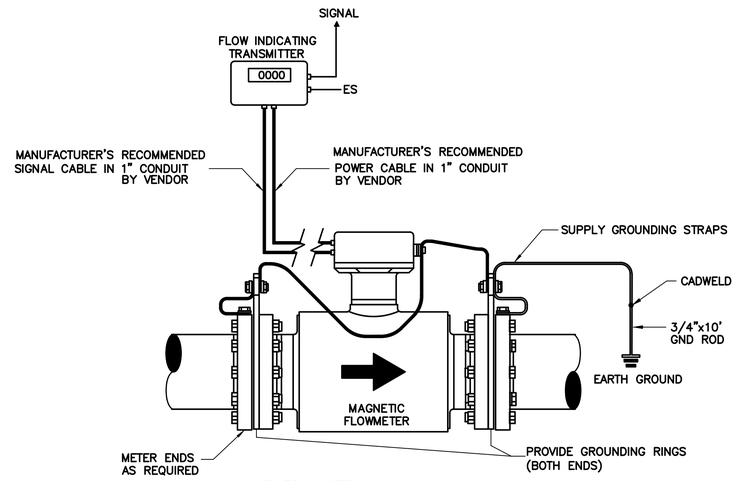
THERMAL MASS FLOW ELEMENT INSTALLATION



THERMAL MASS FLOW METER (WITH HOT TAP)

KEYED NOTES:

1. SIZE ISOLATION BALL VALVE TO ACCOMMODATE THE INSERTION OF THE FLOW METER.
2. PROVIDE CLEARANCE FOR REMOVAL OF PROBE.
3. PROVIDE HOT TAP MANUFACTURER ASSEMBLY.
4. INSTALLATION OF METERS SHALL PER MANUFACTURERS RECOMMENDATION.
5. REFER TO DETAIL G FOR TRANSMITTER SUNSHIELD.



KEYED NOTES:

1. POWER SUPPLY TO MAGNETIC METER PRIMARY DEVICE AND TRANSMITTER TO BE FROM SAME SOURCE WITH RESPECT TO VOLTAGE, FREQUENCY AND PHASE.
2. INSTALLATION OF METERS SHALL PROVIDE FOR 6 PIPE DIAMETERS UPSTREAM AND 6 PIPE DIAMETERS DOWNSTREAM AND PER MANUFACTURERS RECOMMENDATION.
3. METER MUST HAVE ULTRASONIC SELF-CLEANING ELECTRODES.
4. METER SHALL BE INSTALLED SO THAT IT CAN BE TAKEN OUT OF SERVICE FOR CALIBRATION AND/OR MAINTENANCE WITHOUT DISRUPTING ASSOCIATED PROCESS.
5. METER SHALL NOT BE LOCATED NEAR HEAVY INDUCTION EQUIPMENT (MIN 20 FEET) AND PER MANUFACTURERS RECOMMENDATION.
6. ORIENT THE METER SO THAT THE ELECTRODES LIE IN PLANE PARALLEL TO FLOOR.
7. WALL MOUNT THE TRANSMITTER WITHIN SITE OF METER.
8. INSTALL AIR BLEED VALVES FOR METER MOUNTED HORIZONTALLY.
9. REFER DETAIL A AND G FOR GENERAL INSTALLATION DETAILS AND TRANSMITTER SUNSHIELD INSTALLATION.

MAGNETIC FLOW METER INSTALLATION

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RAMESH KALLURI
SERIAL NO.: 68078
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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION
DETAILS I

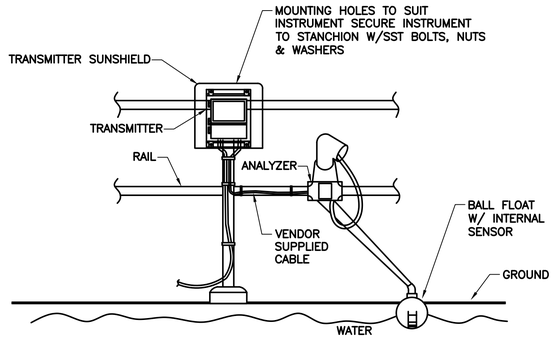
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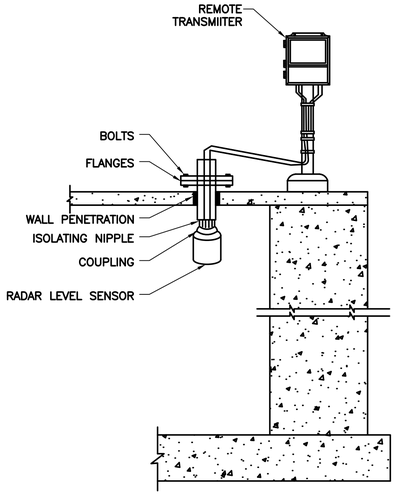
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KEYED NOTES:

1. CONSULT THE ENGINEER AND FINALIZE THE LOCATION FOR INSTALLATION.
2. ENSURE TO PROVIDE EASY ACCESS TO THE FLOATING BALL PROBE FOR MAINTENANCE REASONS.
3. ENSURE THE FLOATING BALL IS LOCATED IN A TURBULENT FREE AREA.
4. ENSURE THE FLOATING BALL IS LOCATED IN A PLACE THAT IS AWAY FROM THE AIR INJECTION POINT IN THE PROCESS.
5. REFER TO DETAIL G FOR TRANSMITTER SUNSHIELD.

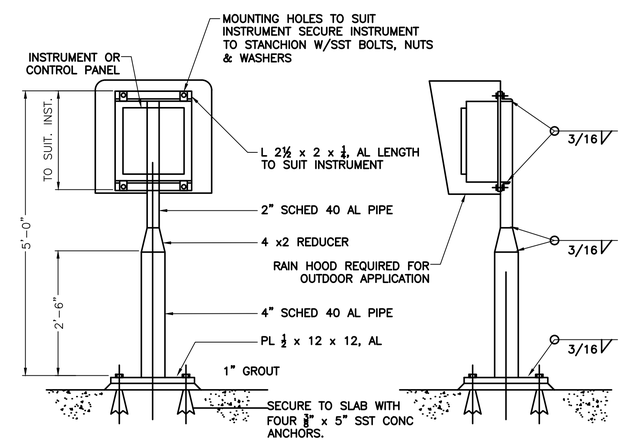
DISSOLVED OXYGEN (DO) AND AMMONIA ANALYZER TRANSMITTERS (FLOATING BALL)



KEYED NOTES:

1. CONTRACTOR TO INSTALL PER MANUFACTURE RECOMMENDATION.
2. CONTRACTOR SHALL COORDINATE WITH ENGINEER TO FINALIZE THE CORE DRILL LOCATIONS
3. REFER TO DETAIL G FOR TRANSMITTER SUNSHIELD.

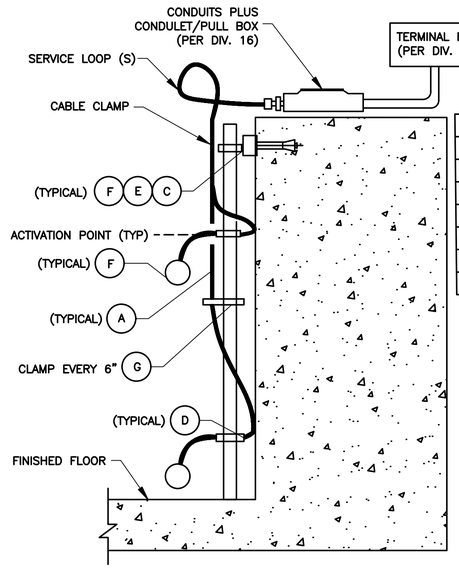
RADAR LEVEL SENSOR MOUNT



KEYED NOTES:

1. ROUND OFF ALL EXPOSED EDGES AND CORNERS.
2. PAINT ALUMINUM IN CONTACT WITH CONCRETE ACCORDING TO SPECIFICATIONS FOR PAINTING.

STANCHION SUPPORT FOR CASE MOUNTED INSTRUMENTS



ITEM	DESCRIPTION	MATERIAL
A	FLOAT SWITCH	SEE 13729
B	1" RIGID PIPE	316SS
C	PIPE WALL MOUNTING BRACKET	316SS
D	PIPE MOUNTING CLIP	316SS
E	NEOPRENE SHEET	N/A
F	1/2" DIA. EXPANSION BOLTS	316SS
G	CABLE CLAMP	316SS

KEYED NOTES:

1. FLOAT SWITCHES SHALL BE POSITIONED TO AVOID OBSTRUCTIONS FROM THE WALL, PROCESS EQUIPMENT OR OTHER FLOATS. ALL FLOAT SWITCHES MUST BE AT MINIMUM 45 DEGREES FROM ANY WALL AND REQUIRE AT LEAST 12 INCHES OF CLEARANCE IN THE HORIZONTAL AND VERTICAL AXIS.
2. FOR INSTALLATIONS WHERE MULTIPLE FLOAT SWITCHES ARE INSTALLED WITHIN THE 12 INCHES OF EACH OTHER, OFFSET THE SWITCHES AT 90 DEGREES FROM THE ADJACENT FLOAT WHILE STILL REMAINING THE CLEARANCE LIMITATIONS IN NOTE 1.

FLOAT SWITCH (OPEN CHANNEL/POLE MOUNTED)

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION
DETAILS II

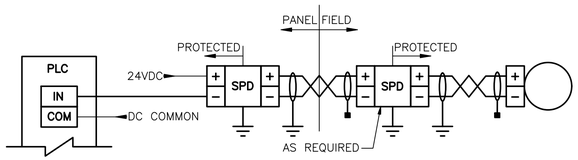
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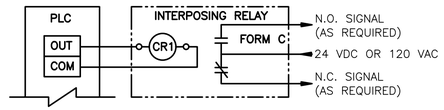
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I-022

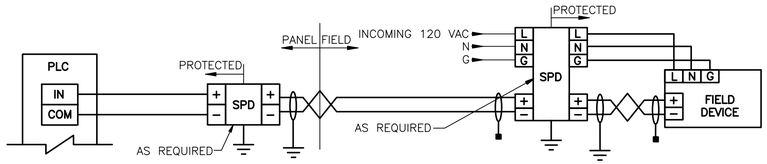
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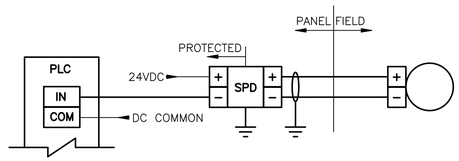
TYPICAL TRANSMITTER LOOP (LOOP POWERED: 2 WIRE)



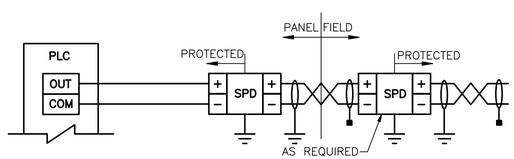
TYPICAL DISCRETE OUTPUT LOOP



TYPICAL TRANSMITTER LOOP (LOOP POWERED: 4 WIRE)



TYPICAL DSCRETE INPUT LOOP



TYPICAL ANALOG OUTPUT LOOP

KEYED NOTES:

1. TERMINATE SPD DIRECTLY TO GROUND BUS. DO NOT DAISY CHAIN.
2. TERMINATE SHIELD/DRAIN WIRE DIRECTLY TO SHIELD BUS/GROUND. DO NOT DAISY CHAIN.
3. TAPE BACK SHIELD/DRAIN WIRE WHERE INDICATED.
4. WHERE SPD ARE REQUIRED IN THE FIELD, INSTALL SURGE PROTECTION AS CLOSE TO FIELD DEVICE AS POSSIBLE.
5. ALL CIRCUITS TO BE FUSED PROTECTED.

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION
DETAILS III

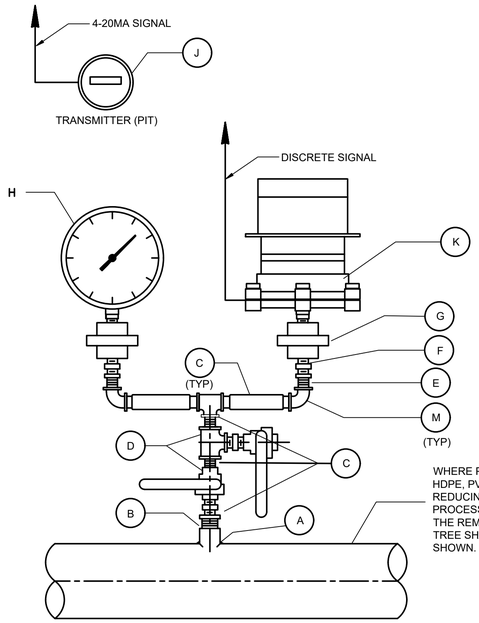
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	ITEM	DESCRIPTION	MATERIAL
*	A	1 1/2" PROCESS CONNECTION	MATCH PIPE
*	B	1 1/2" X 3/4" BUSHING	304SS
*	C	3/4" NIPPLE	304SS
*	D	3/4" BALL VALVE	304SS
*	E	3/4" X 1/2" BUSHING	304SS
*	F	1/2" NIPPLE	304SS
*	G	THREADED DIAPHRAGM SEAL	REFER SPEC
*	H	PRESSURE GAUGE (PG)	REFER SPEC
*	J	PRESSURE TRANSMITTER (PIT)	REFER SPEC
*	K	PRESSURE SWITCH (PSH/PSL)	REFER SPEC
*	L	3/4" TEE	304SS
*	M	3/4" ELBOW	304SS

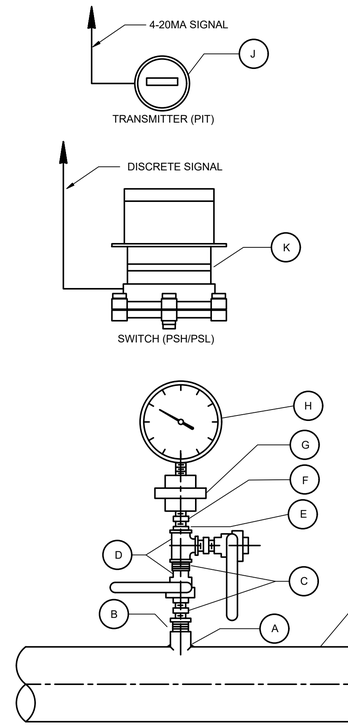
* DENOTES NOTE TO CONTRACTOR

WHERE PROCESS PIPING IS HDPE, PVC OR CPVC, PROVIDE REDUCING TEE FOR THE PROCESS CONNECTION. THE REMAINING INSTRUMENT TREE SHALL REMAIN AS SHOWN.

KEYED NOTES:

1. PROVIDE PROCESS CONNECTION (ITEM A) ACCORDING TO MECHANICAL DETAILS.
2. COMBINATION BLOCK AND BLEED MANIFOLD MAY BE INSTALLED IN PLACE OF BALL VALVES (ITEM D).
3. PROVIDE THREADED DIAPHRAGM SEAL WHERE INDICATED ON DRAWINGS. REFER TO SPECS FOR GUIDANCE.
4. WHEN DIAPHRAGM SEAL IS INSTALLED, EVACUATE SECTION BETWEEN DIAPHRAGM AND INSTRUMENT OF AIR AND SEAL WITH SILICONE FILL FLUID UNLESS SPECIFIED OTHERWISE.
5. PROVIDE PRESSURE DEVICE (ITEM H, J, OR K) WHERE INDICATED ON THE DRAWINGS. REFER TO SPECS FOR GUIDANCE.
6. ROUTE FIELD WIRES FROM DEVICE TO JUNCTION BOX IN FLEXIBLE CONDUIT.
7. SPACE PRESSURE DEVICES TO PROMOTE SERVICING DEVICE WITHOUT INTERFERENCE.

PRESSURE DEVICE (DOUBLE TREE) STANDARD SERVICE TAP



	ITEM	DESCRIPTION	MATERIAL
*	A	1 1/2" PROCESS CONNECTION	MATCH PIPE
*	B	1 1/2" X 3/4" BUSHING	304SS
*	C	3/4" NIPPLE	304SS
*	D	3/4" BALL VALVE	304SS
*	E	3/4" X 1/2" BUSHING	304SS
*	F	1/2" NIPPLE	304SS
*	G	THREADED DIAPHRAGM SEAL	REFER SPEC
*	H	PRESSURE GAUGE (PG)	REFER SPEC
*	J	PRESSURE TRANSMITTER (PIT)	REFER SPEC
*	K	PRESSURE SWITCH (PSH/PSL)	REFER SPEC

* DENOTES NOTE TO CONTRACTOR

WHERE PROCESS PIPING IS HDPE, PVC OR CPVC, PROVIDE REDUCING TEE FOR THE PROCESS CONNECTION. THE REMAINING INSTRUMENT TREE SHALL REMAIN AS SHOWN.

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5. PROVIDE PRESSURE DEVICE (ITEM H, J, OR K) WHERE INDICATED ON THE DRAWINGS. REFER TO SPECS FOR GUIDANCE.
6. ROUTE FIELD WIRES FROM DEVICE TO JUNCTION BOX IN FLEXIBLE CONDUIT.

PRESSURE DEVICE (SINGLE TREE) STANDARD SERVICE TAP

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT
PLANT IMPROVEMENTS

INSTRUMENTATION
DETAILS IV

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SHEET
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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, 2018 EDITION

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 (DRAFT)
DATE:	JUNE 24, 2021

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. PUMP STATION STRUCTURE

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
      h. DESIGN BASE SHEAR, V — XX KIPS
      i. SEISMIC RESPONSE COEFFICIENT(S), CS — 0.0XX
      j. RESPONSE MODIFICATION FACTOR(S), R — X
      k. ANALYSIS PROCEDURE USED — XX

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.

Kimley»Horn
11700 Katy Freeway, Suite 800, Houston, TX 77079
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TBPE No. 928

No.	Revisions	By	Date

INTERIM REVIEW DOCUMENTS
NOT RELEASED FOR BIDDING, PERMIT OR CONSTRUCTION.
JOHN D. MIKHAIL
TEXAS REGISTRATION No. 137558
DATE: SEPTEMBER 7, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

STRUCTURAL NOTES I

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
SEPTEMBER 2022	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

Autodesk Docs://067812104 West U WWTP/West U WWTP - Struct_R22.rvt

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 (LIVE): PSF
   2. ALLOWABLE END BEARING (NET): 5,250 PSF
   3. UPLIFT SIDE FRICTION: 1,000 PSF
   4. UPLIFT DESIGN DEPTH: 8 FEET
   5. SIDE FRICTION (UPLIFT RESISTANCE): XX,000 PSF
   6. 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.

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No.	Revisions	By	Date

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JOHN D. SIBOVICH
TEXAS REGISTRATION No. 137506
DATE: SEPTEMBER 7, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

STRUCTURAL NOTES II

DATE:	SEPTEMBER 2022
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

SHEET
S-002

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Autodesk Docs://067812104 West U WWTP/West U WWTP - Struct_R22.rvt

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. EMBEDDED ASSEMBLIES AND INSERTS, CLAMPS, HANGERS, TRAPEZES, UNISTRUT, ETC. FOR THE SUPPORT OF MEP SYSTEMS.
6. EMBEDDED ASSEMBLIES, INSERTS, AND/OR HANGERS FOR FIRE SUPPRESSION SYSTEMS.
7. EXCAVATION SUPPORT AND PROTECTION
8. 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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PREPARED BY:
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TEXAS REGISTRATION No. 137558
DATE: SEPTEMBER 7, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

STRUCTURAL NOTES III

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
SEPTEMBER 2022	JDM	CG	MKK	067812104

SHEET
S-003

shaping the built environment
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Autodesk Docs://067812104 West U WWTP/West U WWTP - Struct_R22.rvt

SPECIAL INSPECTIONS

1. SPECIAL INSPECTIONS SHALL BE PERFORMED IN ACCORDANCE WITH CHAPTER 17 OF THE 2018 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 ARCHITECT 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 ARCHITECT 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 (AISC 360-16 TABLE N5.4)[1]

SPECIAL INSPECTION REQUIRED	VERIFICATION AND INSPECTION	INSPECTION FREQUENCY		REFERENCED STANDARD	IBC REFERENCE
		CONTINUOUS	PERIODIC		
	1. INSPECTION TASKS PRIOR TO WELDING:				
YES	A. WELDER QUALIFICATION RECORDS AND CONTINUITY RECORDS.	X	--	AISC 360-16 N5.4-1: AWS D1.1	1705.2.1
YES	B. WELDING PROCEDURE SPECIFICATIONS (WPSS) AVAILABLE	X	--		
YES	C. MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES AVAILABLE	X	--		
YES	D. MATERIAL IDENTIFICATION (TYPE/GRADE)[2]	--	X		
YES	E. WELDER IDENTIFICATION SYSTEM[2]	--	X		
YES	F. FIT-UP OF GROOVE WELDS (INCLUDING JOINT GEOMETRY) a. JOINT PREPARATIONS b. DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL)[2] c. CLEANLINESS (CONDITION OF STEEL SURFACES) d. TACKING (TACK WELD QUALITY AND LOCATION) e. BACKING TYPE AND FIT (IF APPLICABLE)	--	X		
YES	G. FIT-UP OF CJP GROOVE WELDS OF HSS T-, Y- AND K-JOINTS WITHOUT BACKING (INCLUDING JOINT GEOMETRY) a. JOINT PREPARATIONS b. DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL c. CLEANLINESS (CONDITION OF STEEL SURFACES) d. TACKING (TACK WELD QUALITY AND LOCATION)	X	--		
YES	H. CONFIGURATION AND FINISH OF ACCESS HOLES.[2]	--	X		
YES	I. 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	J. CHECK WELDING EQUIPMENT	--	X		
	2. INSPECTION TASKS DURING WELDING:				
YES	A. CONTROL AND HANDLING OF WELDING CONSUMABLES[2] a. PACKAGING b. EXPOSURE CONTROL	--	X	AISC 360-16 N5.4-2: AWS D1.1	1705.2.1
YES	B. NO WELDING OVER CRACKED TACK WELDS[2]	--	X		
YES	C. ENVIRONMENTAL CONDITIONS[2] a. WIND SPEED WITHIN LIMITS b. PRECIPITATION AND TEMPERATURE	--	X		
YES	D. 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	E. WELDING TECHNIQUES[2] 1. INTERPASS AND FINAL CLEANING 2. EACH PASS WITHIN PROFILE LIMITATIONS 3. EACH PASS MEETS QUALITY REQUIREMENTS	--	X		
YES	F. PLACEMENT AND INSTALLATION OF STEEL HEADED STUD ANCHORS	X	--		
	3. INSPECTION TASKS AFTER WELDING:				
YES	A. WELDS CLEANED	--	X	AISC 360-16 N5.4-3: 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. WELD ACCESS HOLES IN ROLLED HEAVY SHAPES AND BUILT-UP HEAVY SHAPES[4]	X	--		
YES	G. BACKING REMOVED AND WELD TABS REMOVED (IF REQUIRED)	X	--		
YES	H. REPAIR ACTIVITIES	X	--		
YES	I. DOCUMENT ACCEPTANCE OR REJECTION OF WELDED JOINT OR MEMBER	X	--		
YES	J. NO PROHIBITED WELDS HAVE BEEN ADDED WITHOUT THE APPROVAL OF THE ENGINEER OF RECORD	X	--		

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. INSPECTION OR EXECUTION TASKS PRIOR TO DECK PLACEMENT				
YES	A. VERIFY COMPLIANCE OF MATERIALS (DECK AND ALL DECK ACCESSORIES) WITH CONSTRUCTION DOCUMENTS, INCLUDING PROFILES, MATERIAL PROPERTIES, AND BASE METAL THICKNESS	X	--	SDI QA/QC-2017 TABLE 1.1	IBC 1705.2.2
YES	B. DOCUMENT ACCEPTANCE OR REJECTION OF DECK AND DECK ACCESSORIES	X	--		
	2. INSPECTION OR EXECUTION TASKS AFTER DECK PLACEMENT				
YES	A. VERIFY COMPLIANCE OF DECK AND ALL DECK ACCESSORIES INSTALLATION WITH CONSTRUCTION DOCUMENTS	X	--	SDI QA/QC-2017 TABLE 1.2	IBC 1705.2.2
YES	B. VERIFY DECK MATERIALS ARE REPRESENTED BY THE MILL CERTIFICATIONS THAT COMPLY WITH THE CONSTRUCTION DOCUMENTS	X	--		
YES	C. DOCUMENT ACCEPTANCE OR REJECTION OF INSTALLATION OF DECK AND DECK ACCESSORIES	X	--		
	3. INSPECTION OR EXECUTION TASKS PRIOR TO WELDING				
YES	A. WELDING PROCEDURE SPECIFICATIONS (WPS) AVAILABLE	X	--	SDI QA/QC-2017 TABLE 1.3	IBC 1705.2.2
YES	B. MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES AVAILABLE	X	--		
YES	C. MATERIAL IDENTIFICATION (TYPE/GRADE)	--	X		
YES	D. CHECK WELDING EQUIPMENT	--	X		
	4. INSPECTION OR EXECUTION TASKS DURING WELDING				
YES	A. USE OF QUALIFIED WELDERS	--	X	SDI QA/QC-2017 TABLE 1.4	IBC 1705.2.2
YES	B. CONTROL AND HANDLING OF WELDING CONSUMABLES	--	X		
YES	C. ENVIRONMENTAL CONDITIONS (WIND SPEED, MOISTURE, TEMPERATURE)	--	X		
YES	D. WPS FOLLOWED	--	X		
	5. INSPECTION OR EXECUTION TASKS AFTER WELDING				
YES	A. VERIFY SIZE AND LOCATION OF WELDS, INCLUDING SUPPORT, SIDESLAB, AND PERIMETER WELDS	X	--	SDI QA/QC-2017 TABLE 1.5	IBC 1705.2.2
YES	B. WELDS MEET VISUAL ACCEPTANCE CRITERIA	X	--		
YES	C. VERIFY REPAIR ACTIVITIES	X	--		
YES	D. DOCUMENT ACCEPTANCE OR REJECTION OF WELDS	X	--		
	6. INSPECTION OR EXECUTION TASKS PRIOR TO MECHANICAL FASTENING				
YES	A. MANUFACTURER INSTALLATION INSTRUCTIONS AVAILABLE FOR MECHANICAL FASTENERS	X	--	SDI QA/QC-2017 TABLE 1.6	IBC 1705.2.2
YES	B. PROPER TOOLS AVAILABLE FOR FASTENERS INSTALLATION	--	X		
YES	C. PROPER STORAGE FOR MECHANICAL FASTENERS	--	X		
	7. INSPECTION OR EXECUTION TASKS DURING MECHANICAL FASTENING				
YES	A. FASTENERS ARE POSITIONED AS REQUIRED	--	X	SDI QA/QC-2017 TABLE 1.7	IBC 1705.2.2
YES	B. FASTENERS ARE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS	--	X		
	8. INSPECTION OR EXECUTION TASKS AFTER MECHANICAL FASTENING				
YES	A. CHECK SPACING, TYPE, AND INSTALLATION OF SUPPORT FASTENERS	X	--	SDI QA/QC-2017 TABLE 1.8	IBC 1705.2.2
YES	B. CHECK SPACING, TYPE, AND INSTALLATION OF SIDELAP FASTENERS	X	--		
YES	C. CHECK SPACING, TYPE, AND INSTALLATION OF PERIMETER FASTENERS	X	--		
YES	D. VERIFY REPAIR ACTIVITIES	X	--		
YES	E. DOCUMENT ACCEPTANCE OR REJECTION OF MECHANICAL FASTENERS	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 360-16 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.

4. AFTER ROLLED HEAVY SHAPES AND BUILT-UP HEAVY SHAPES ARE WELDED, VISUALLY INSPECT THE WELD ACCESS HOLE FOR CRACKS.

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No.	Revisions	By	Date

INTERIM REVIEW DOCUMENTS
NOT INTENDED FOR BIDDING, PERMIT OR CONSTRUCTION PURPOSES
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TEXAS REGISTRATION No. 137558
DATE: SEPTEMBER 1, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

SPECIAL INSPECTIONS I

DATE:	SEPTEMBER 2022
DESIGN:	JDM
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CHECKED:	MKK
KHA NO.:	067812104

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SPECIAL INSPECTIONS

1. SPECIAL INSPECTIONS SHALL BE PERFORMED IN ACCORDANCE WITH CHAPTER 17 OF THE 2018 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 ARCHITECT 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 ARCHITECT 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 BOLTING STRUCTURAL STEEL (AISC 360-16 TABLES N5.6)[1]

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 360-16 N5.6-1	1705.2.1
YES	B. FASTENERS MARKED IN ACCORDANCE WITH ASTM REQUIREMENTS	--	X		
YES	C. CORRECT FASTENERS SELECTED FOR THE JOINT DETAIL (GRADE, TYPE, BOLT LENGTH IF THREADS ARE TO BE EXCLUDED FROM SHEAR PLANE)[2]	--	X		
YES	D. CORRECT BOLTING PROCEDURE SELECTED FOR JOINT DETAIL [2]	--	X		
YES	E. CONNECTING ELEMENTS, INCLUDING THE APPROPRIATE FAYING SURFACE CONDITION AND HOLE PREPARATION, IF SPECIFIED, MEET APPLICABLE 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 PLACED IN ALL HOLES AND WASHERS AND NUTS ARE POSITIONED AS REQUIRED.[2]	--	X	AISC 360-16 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 360-16 N5.6-3	1705.2.1

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 360-16 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.

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

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. INSPECT REINFORCEMENT, INCLUDING PRESTRESSING TENDONS, AND VERIFY PLACEMENT.	--	X	ACI 318 CH. 20, 25.2, 25.3, 26.6.1-26.6.3	1908.4
	2. REINFORCING BAR WELDING:			AWS D1.4 ACI 318: 26.6.4	--
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. INSPECT ANCHORS AND DOWELS CAST IN CONCRETE.	--	X	ACI 318: 17.8.2	--
	4. INSPECT POST-INSTALLED ANCHORS AND DOWELS IN HARDENED CONCRETE.				--
YES	A. MECHANICAL ANCHORS AND ADHESIVE ANCHORS AND DOWELS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS.	X[1]	--	ACI 318: 17.8.2.4	
YES	B. MECHANICAL ANCHORS AND ADHESIVE ANCHORS AND DOWELS NOT DEFINED IN 4.A.	--	X[1]	ACI 318: 17.8.2	
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: 26.5, 26.12	1908.10
YES	7. INSPECT CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	X	--	ACI 318: 26.5	1908.6, 1908.7, 1908.8
YES	8. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	--	X	ACI 318: 26.5.3-26.5.5	1908.9
	9. INSPECTION OF PRESTRESSED CONCRETE:				
NO	A. APPLICATION OF PRESTRESSING FORCES	X	--	ACI 318: 26.10	--
NO	B. GROUTING OF BONDED PRESTRESSING TENDONS	X	--	ACI 318: 26.10	
NO	10. INSPECT ERECTION OF PRECAST CONCRETE MEMBERS.	--	X	ACI 318: 26.9	--
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: 26.11.2	--
YES	12. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.	--	X	ACI 318: 26.11.1.2(B)	--

1. POST-INSTALLED ANCHORS AND DOWELS SHALL BE EITHER (A.) VISUALLY INSPECTED DURING INSTALLATION, OR (B.) LOAD TESTED AFTER INSTALLATION AS NOTED BELOW:
   A. VISUAL INSPECTIONS SHALL BE PERFORMED DURING THE INSTALLATION BY A SPECIAL INSPECTOR CERTIFIED BY ACI AS A "POST-INSTALLED CONCRETE ANCHOR INSTALLATION INSPECTOR". SUBMIT A REPORT TO THE LICENSED DESIGN PROFESSIONAL AND BUILDING OFFICIAL DOCUMENTING THAT THE WORK COVERED BY THE REPORT HAS BEEN PERFORMED AND THAT THE MATERIALS USED AND THE INSTALLATION PROCEDURES USED CONFORM WITH THE APPROVED CONSTRUCTION DOCUMENTS AND THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS.
   B. LOAD TESTING SHALL COMPLY WITH THE FOLLOWING:
      a. TEST AT LEAST TEN (10) PERCENT OF EACH TYPE AND DIAMETER OF POST-INSTALLED ANCHORS. IF ONE OR MORE ANCHORS FAIL THE TEST, ALL POST-INSTALLED ANCHORS OF THE SAME DIAMETER AND TYPE INSTALLED THE SAME DAY AS THE FAILED ANCHOR SHALL BE LOAD TESTED AT THE CONTRACTOR'S EXPENSE. IF ADDITIONAL ANCHORS FAIL, THE ENGINEER MAY REQUIRE TESTING ALL ANCHORS OF THE SAME DIAMETER AND TYPE ALREADY INSTALLED AT THE CONTRACTOR'S EXPENSE.
      b. TENSION TESTING SHALL COMPLY WITH ASTM E488
      c. TEST POST-INSTALLED ANCHORS TO 50 PERCENT OF ULTIMATE TENSILE CAPACITY OF POST-INSTALLED ANCHOR.
      d. APPLY TEST LOADS WITH A CALIBRATED HYDRAULIC RAM.
      e. DISPLACEMENT OF POST-INSTALLED ANCHORS SHALL NOT EXCEED D/10, WHERE D IS NOMINAL DIAMETER OF ANCHOR BEING TESTED.
      f. CORRECT DEFECTIVE WORK BY REMOVING AND REPLACING OR CORRECTING, AS DIRECTED BY ENGINEER.
      g. CONTRACTOR SHALL PAY FOR ALL CORRECTIONS, ENGINEERING, AND ADDITIONAL TESTING ASSOCIATED WITH FAILED ANCHOR TESTS.
      h. TESTING AGENCY SHALL SUBMIT TEST RESULTS TO CONTRACTOR AND ENGINEER WITH 24 HOURS OF COMPLETION OF TEST.

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 SECTION 1705.3.	--	--

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No.	Revisions	By	Date

INTERIM REVIEW DOCUMENTS
NOT INTENDED FOR BIDDING, PERMIT OR CONSTRUCTION PURPOSES
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TEXAS REGISTRATION No. 107556
DATE: SEPTEMBER 7, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

SPECIAL INSPECTIONS II

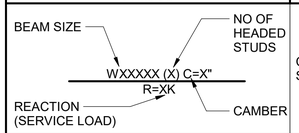
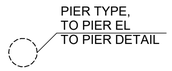
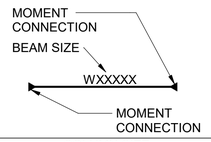
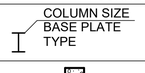
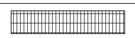
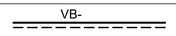
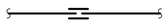
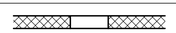
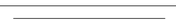
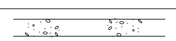
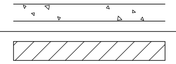
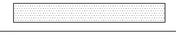
DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
SEPTEMBER 2022	JDM	CG	MKK	067812104

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TBPE FIRM F-7986

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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	HD
HYDROPHILIC	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.

Kimley»Horn
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P: 281 597 9300
TBPE No. 928

No.	Revisions	By	Date

INTERIM REVIEW DOCUMENTS
NOT INTENDED FOR BIDDING, PERMIT OR CONSTRUCTION PURPOSES
JOHN D. SIEGHORST
TEXAS REGISTRATION No. 137598
DATE: SEPTEMBER 1, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

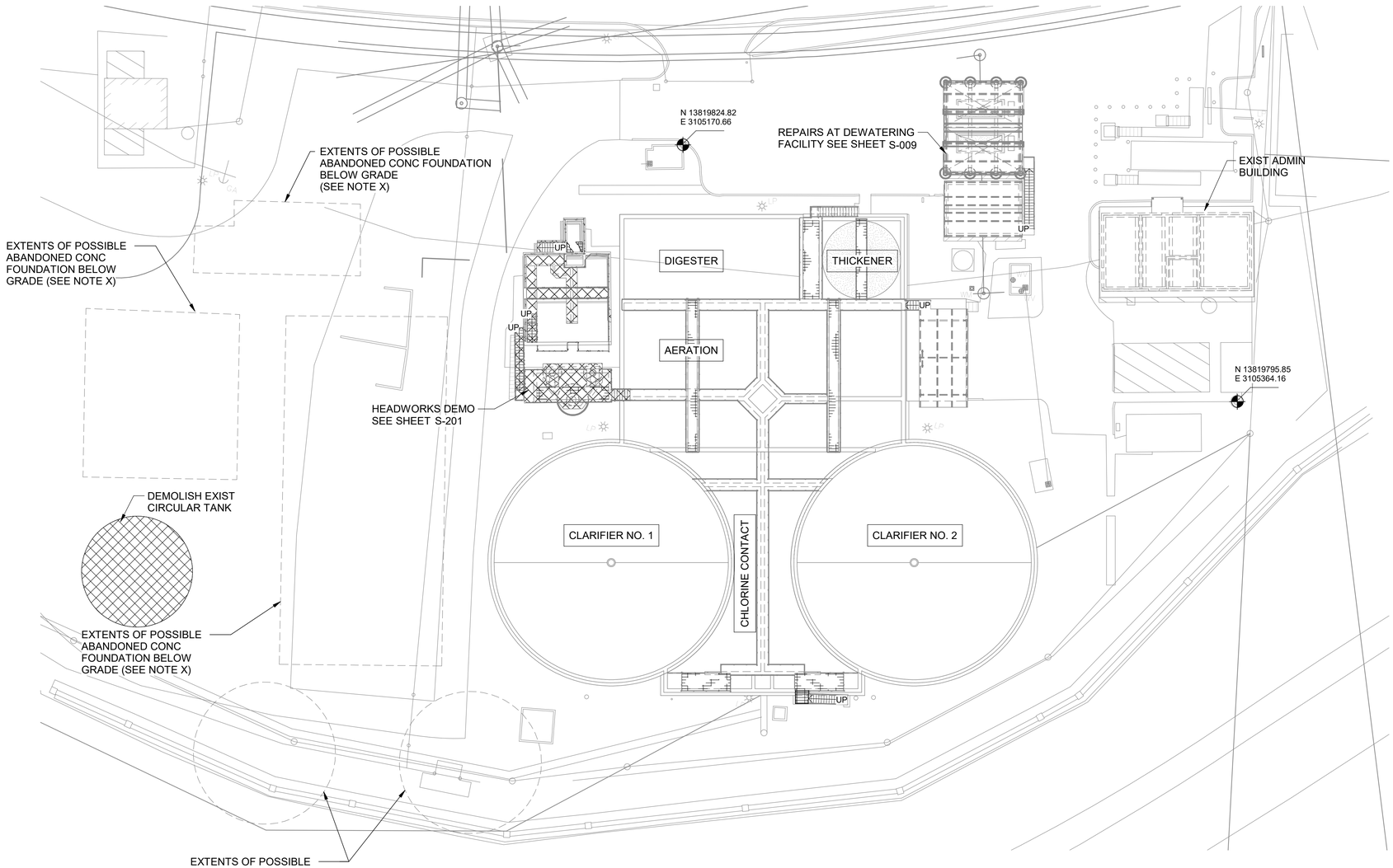
PROJECT SYMBOLS & ABBREVIATIONS

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
SEPTEMBER 2022	JDM	CG	MKK	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-006

Autodesk Docs://067812104 West U WWTP/West U WWTP - Struct_R22.rvt



1 S-007 OVERALL EXISTING & DEMOLITION SITE PLAN
1" = 20'-0"

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No.	Revisions	By	Date

INTERIM REVIEW DOCUMENTS
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JOHN D. MEHNOTT
TEXAS REGISTRATION No. 107598
DATE: SEPTEMBER 7, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

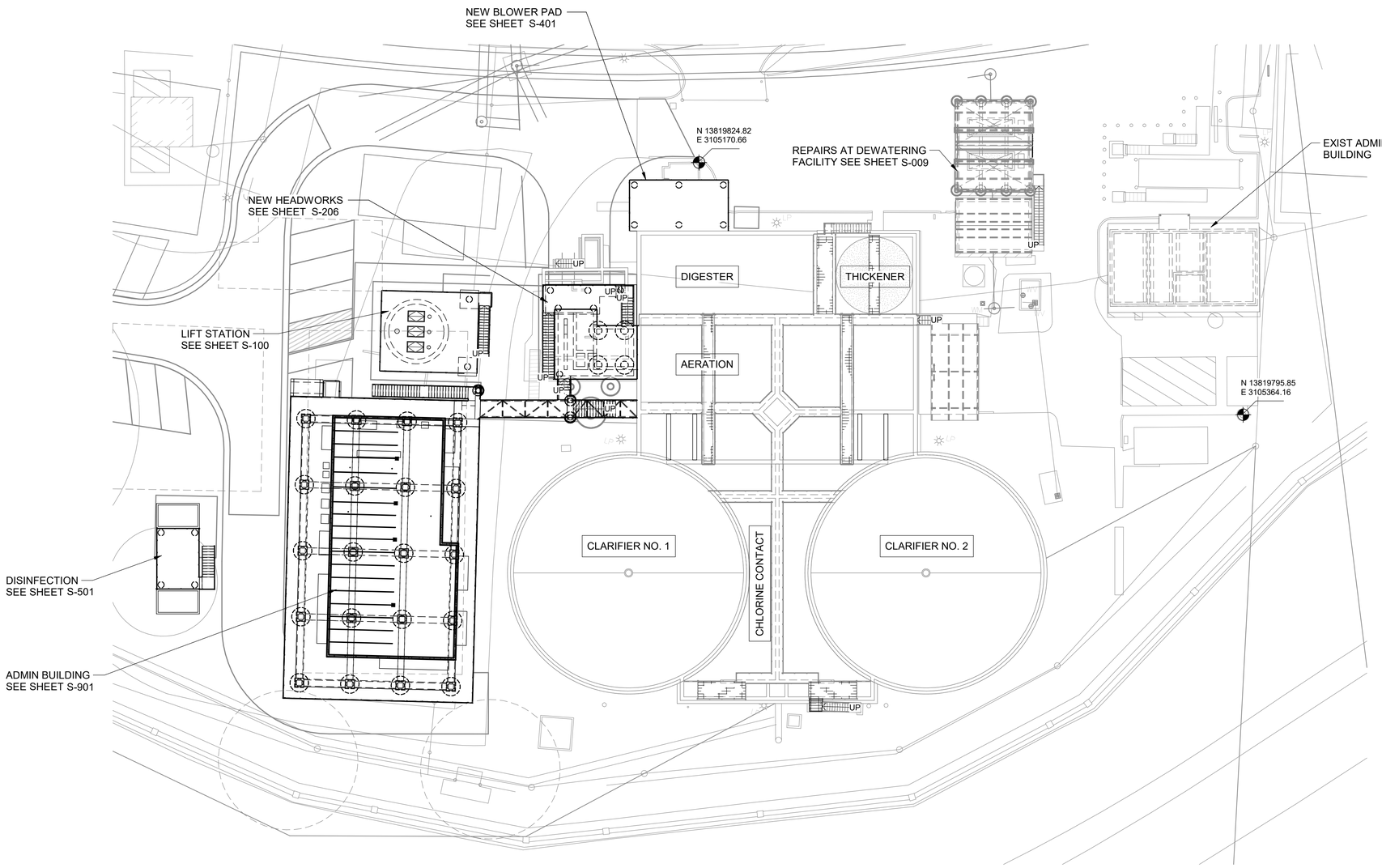
OVERALL EXISTING & DEMOLITION SITE PLAN

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KHA NO.:	067812104

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S-007

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PROJECT NO: 4220079
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1 S-008 STRUCTURAL SITE PLAN
1" = 20'-0"

Autodesk Docs://067812104 West U WWTP/West U WWTP - Struct_R22.rvt

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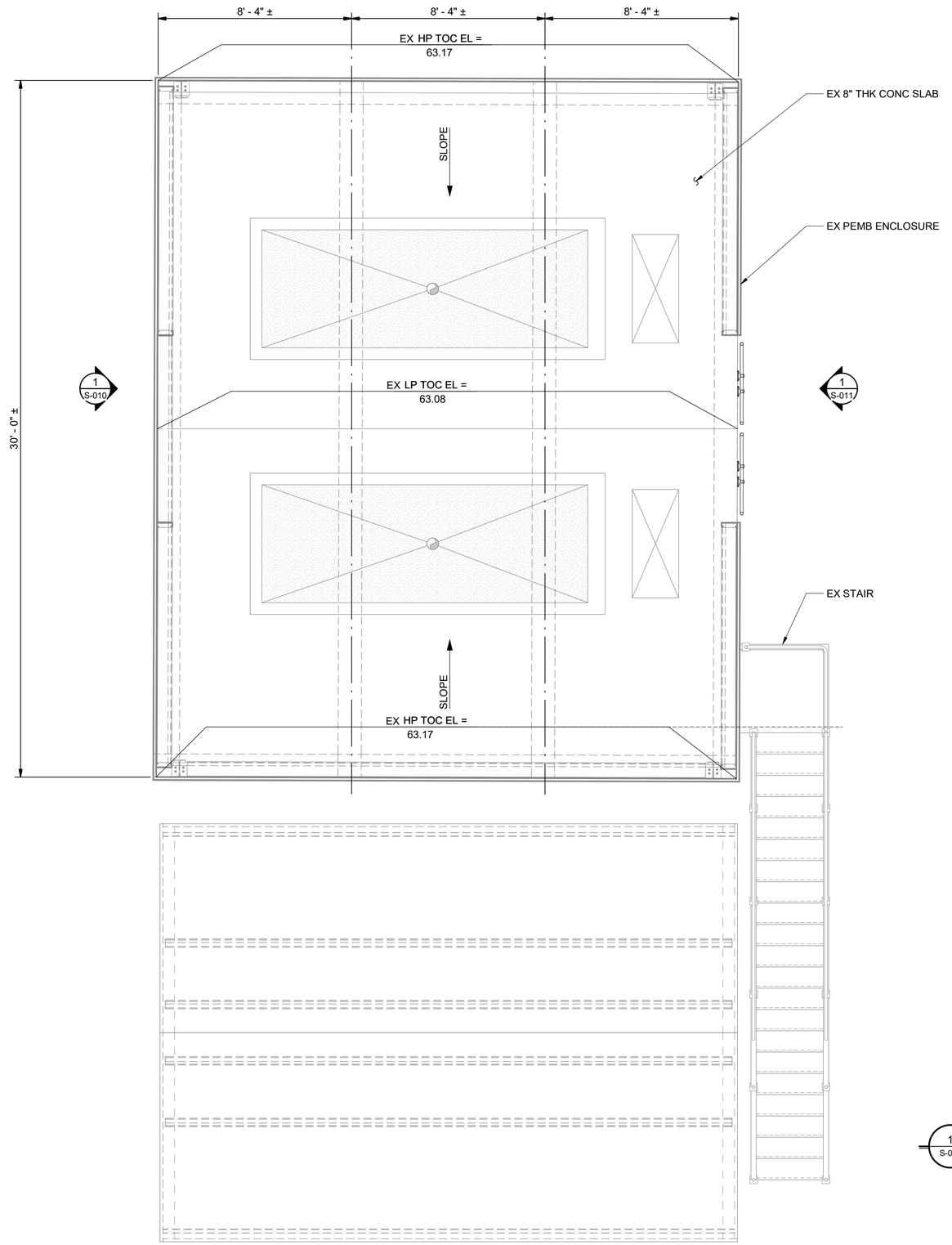
CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

STRUCTURAL SITE PLAN

DATE:	SEPTEMBER 2022
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KHA NO.:	067812104

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S-008

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TBPE FIRM F-7986





1 S-009 DEWATERING FACILITY REHAB PLAN
3/8" = 1'-0"

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TBPE No. 928

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INTERIM REVIEW DOCUMENTS
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JOHN D. MEDHOST
TEXAS REGISTRATION No. 137598
DATE: SEPTEMBER 1, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

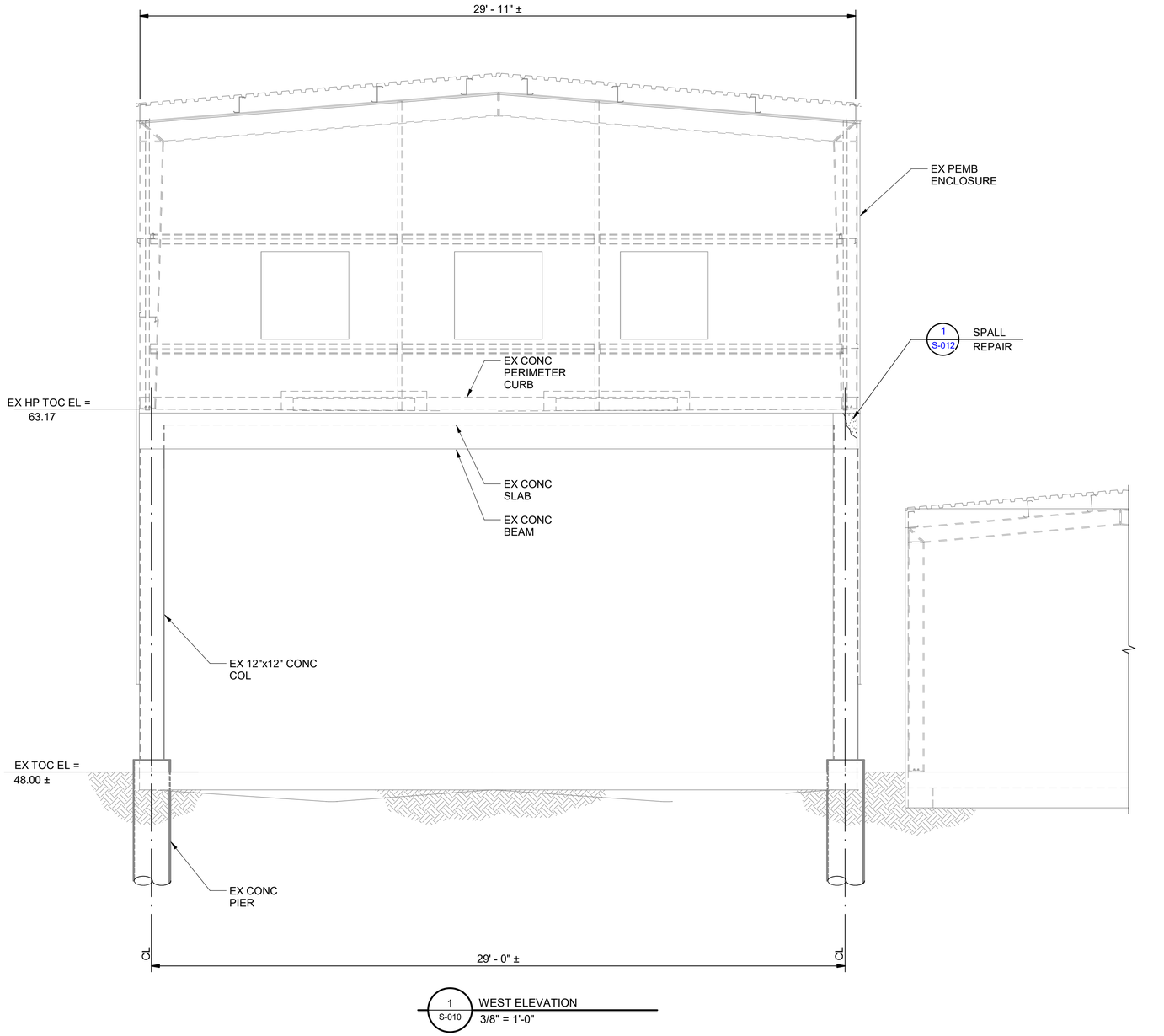
DEWATERING FACILITY REHABILITATION PLANS

DATE:	SEPTEMBER 2022
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KHA NO.:	067812104

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S-009

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HOUSTON, TEXAS 77084
JQENG.COM
PROJECT NO: 4220079
TBPE FIRM F-7986

Autodesk Docs://067812104 West U WWTP/West U WWTP - Struct_R22.rvt



1 S-010 WEST ELEVATION
3/8" = 1'-0"



PHOTO 2
SCALE: NO SCALE

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INTERIM REVIEW DOCUMENTS
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JOHN D. MEHNOTT
TEXAS REGISTRATION No. 137598
DATE: SEPTEMBER 7, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

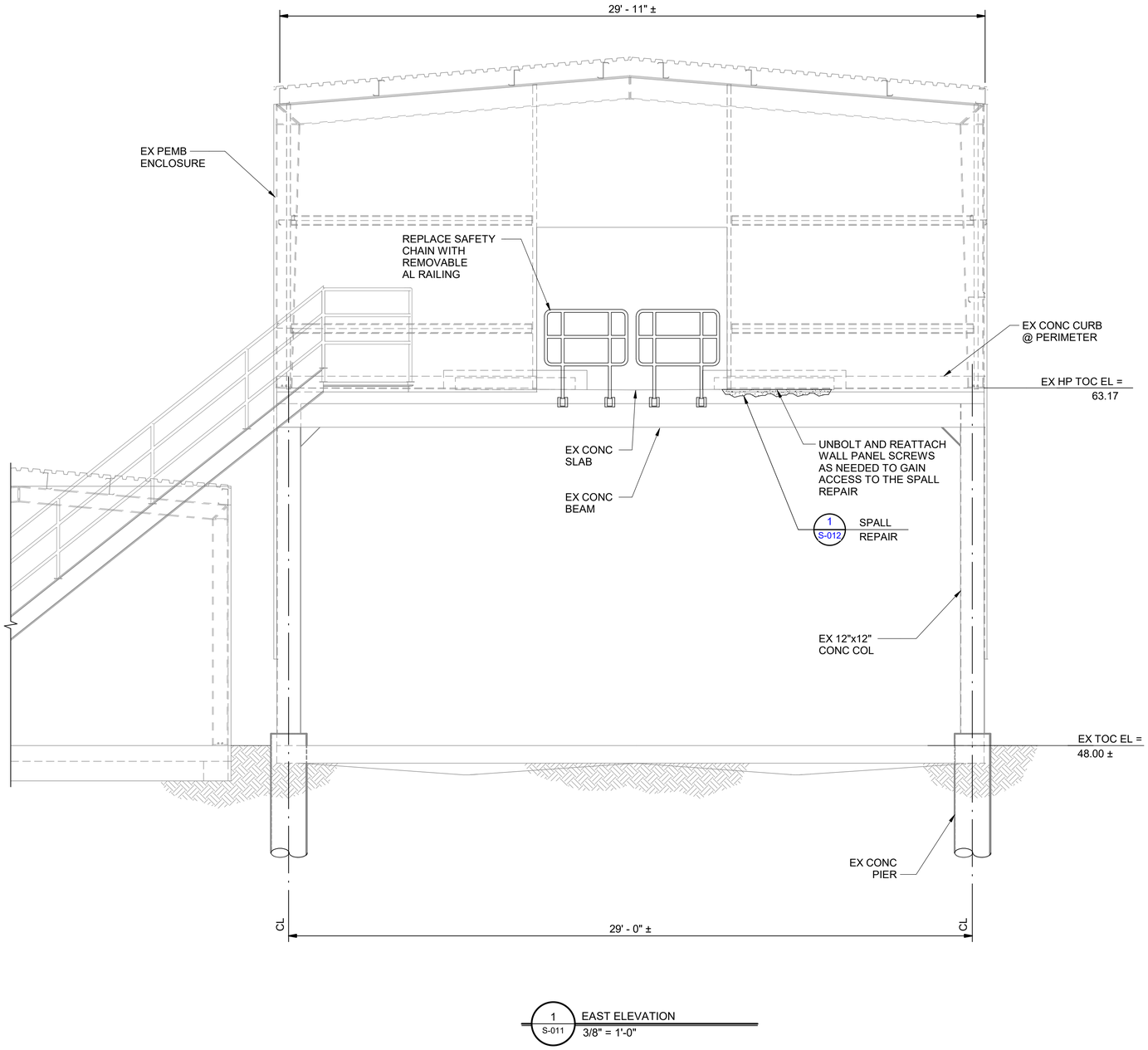
DEWATERING FACILITY REHABILITATION ELEVATION AND DETAILS I

DATE:	SEPTEMBER 2022
DESIGN:	JDM
DRAWN:	CG
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KHA NO.:	067812104

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TBPE FIRM F-7986

Autodesk Docs://067812104 West U WWTP/West U WWTP - Struct_R22.rvt



1 S-011 EAST ELEVATION

3/8" = 1'-0"



PHOTO 2

SCALE: NO SCALE

Autodesk Docs://067812104 West U WWTP/West U WWTP - Struct_R22.rvt

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INTERIM REVIEW DOCUMENTS

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JOHN D. MEHNOTT
TEXAS REGISTRATION No. 107598
DATE: SEPTEMBER 7, 2022

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING FACILITY REHABILITATION ELEVATION AND DETAILS II

DATE:	SEPTEMBER 2022
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

SHEET

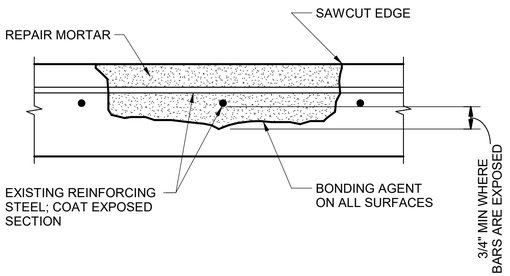
S-011

shaping the built environment

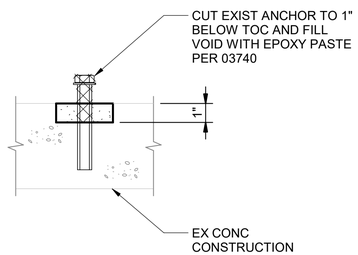
JQ INFRASTRUCTURE, LLC
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PROJECT NO: 4220079
TBPE FIRM F-7986

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.



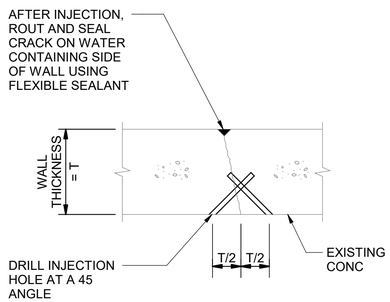
1 S-012 TYPICAL MORTAR REPAIR
N.T.S.



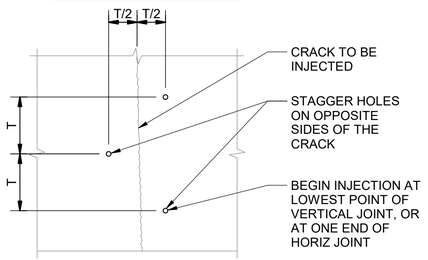
6 S-012 TYPICAL ANCHORAGE REPAIR
N.T.S.

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

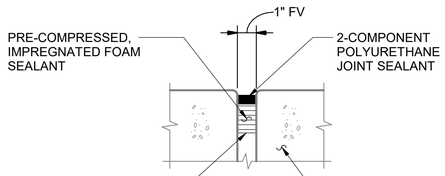


WALL ELEVATION OR SLAB PLAN

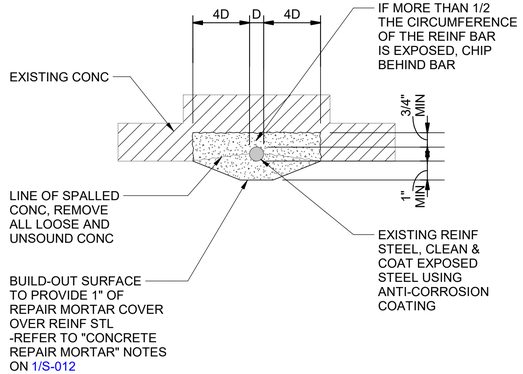
2 S-012 TYPICAL CRACK INJECTION
N.T.S.

PRE-COMPRESSED FOAM SEALANT:

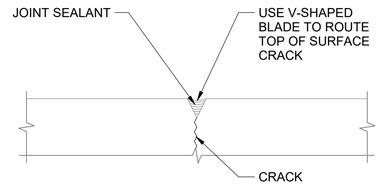
1. PRE-COMPRESSED FOAM SEALANT SHALL BE A PREFORMED EXPANDING FOAM SEALANT PRODUCED BY IMPREGNATING PERMANENTLY ELASTIC, HIGH-DENSITY, OPEN-CELL POLYURETHANE FOAM WITH WATER-BASED, POLYMER-MODIFIED ASPHALT. MATERIAL SHALL BE PRECOMPRESSED TO 20% OF THE MATERIAL'S ORIGINAL UNCOMPRESSED DIMENSION.
2. ALL 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.



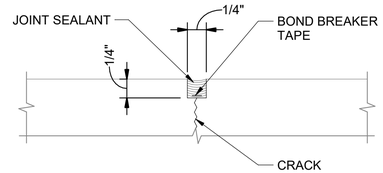
3 S-012 TYPICAL JOINT REPAIR
N.T.S.



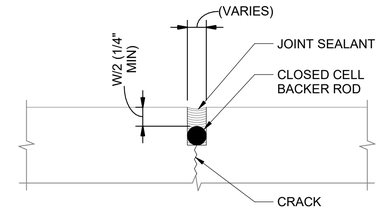
4 S-012 TYPICAL REPAIR
N.T.S.



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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No.	Revisions	By	Date

INTERIM REVIEW DOCUMENTS
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JOHN D. SEBOVICH
TEXAS REGISTRATION No. 137598
DATE: SEPTEMBER 7, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

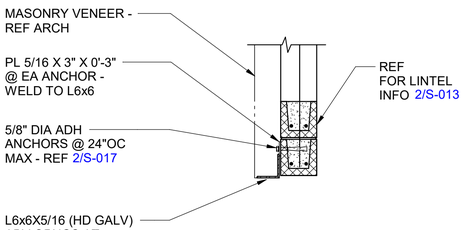
TYPICAL STRUCTURAL DETAILS I

DATE:	SEPTEMBER 2022
DESIGN:	JDM
DRAWN:	CG
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KHA NO.:	067812104

SHEET
S-012

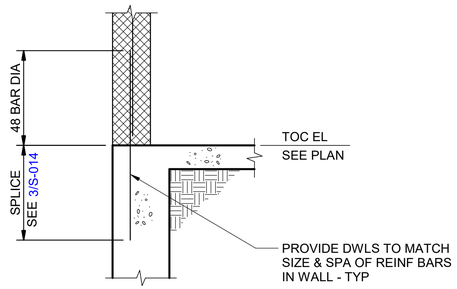
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JQ INFRASTRUCTURE, LLC
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NOTE:
PROVIDE LOOSE LINTEL ANGLES PER 7/S-013 FOR VENEER SUPPORT AT OPNGS EQ TO OR LESS THAN 6'-0".

1 S-013 TYPICAL MASONRY VENEER SUPPORT AT CMU BACK-UP
N.T.S.

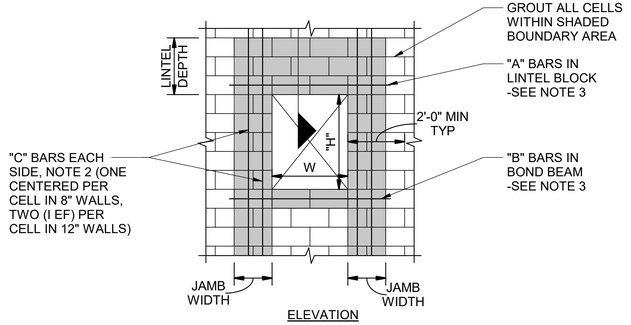


4 S-013 TYPICAL MASONRY FOUNDATION DOWELS
N.T.S.

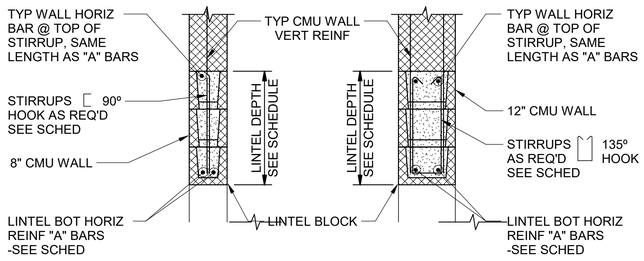
CMU OPENING REINF SCHED						
8" WALLS						
W	NOMINAL DEPTH	STIRRUP SIZE, SPA	"A" BARS	"B" BARS	"C" BARS	JAMB WIDTH
<2'-8"	8"	-	1-#4	1	1	8"
>2'-8" <4'-0"	16"	-	2-#4	1	1	8"
>4'-0" <6'-0"	24"	#3 @ 8"	2-#5	1	2	16"
>6'-0" <8'-0"	32"	#3 @ 8"	2-#5	2	3	24"
>8'-0" <10'-0"	48"	#3 @ 16"	2-#5	2	3	24"
12" WALLS						
W	NOMINAL DEPTH	STIRRUP SIZE, SPA	"A" BARS	"B" BARS	"C" BARS	JAMB WIDTH
<2'-8"	8"	-	2-#4	2	2	8"
>2'-8" <4'-0"	16"	-	2-#4	2	2	8"
>4'-0" <6'-0"	24"	#3 @ 8"	2-#5	2	4	16"
>6'-0" <8'-0"	32"	#3 @ 8"	2-#5	2	6	24"
>8'-0" <10'-0"	48"	#3 @ 16"	2-#5	2	6	24"

NOTES:

1. USE BAR QUANTITIES AND SIZES GIVEN IN LINTEL SCHED UNO ON THE DWGS.
2. EXTEND "C" BARS 48 BAR DIAMETERS OR 2'-0" MIN BEYOND T&B OF OPENING EXCEPT THAT WHEN "H" OR "W" EXCEEDS 2'-0", "C" BARS SHALL EXTEND FULL HT.
3. "A" AND "B" BARS SHALL EXTEND 48 BAR DIAMETERS OR 2'-0" MIN EA SIDE OF THE OPNGS.
4. FOR BAR SIZES NOT SHOWN, MATCH TYP WALL REINF AS SHOWN ON THE BLDG WALL SECT.



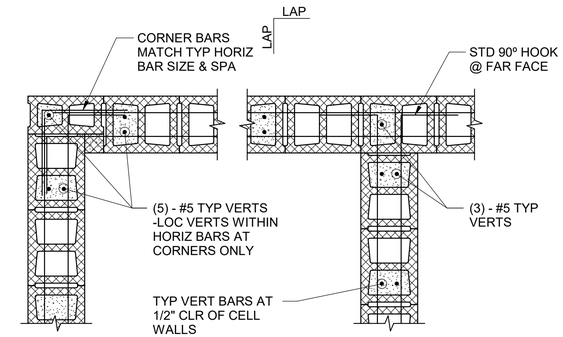
ELEVATION



8" LINTEL SECTION

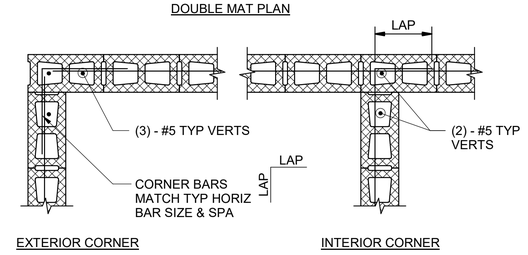
12" LINTEL SECTION

2 S-013 TYPICAL CMU OPENING REINFORCING
N.T.S.



EXTERIOR CORNER INTERIOR CORNER

DOUBLE MAT PLAN



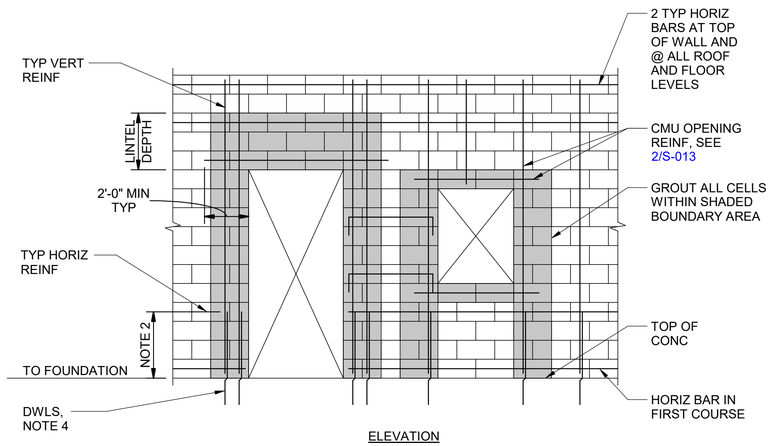
EXTERIOR CORNER INTERIOR CORNER

SINGLE MAT PLAN

NOTES:

1. LAP = LARGER OF 48 BAR DIA OR 2'-0" MIN UNO.
2. PROVIDE A STANDARD 90° HOOK EA END ON ANY HORIZ BAR BETWEEN OPENINGS OR CORNERS LESS THAN 6'-0" IN LENGTH.

3 S-013 TYPICAL CMU WALL CORNERS
N.T.S.

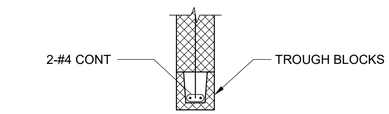


ELEVATION

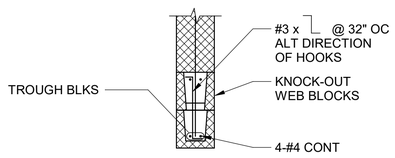
NOTES:

1. FOR TYP WALL REINF, SEE WALL SECTS AND DTLS FOR EA FACILITY.
2. LAP ALL REINF 48 BAR DIAMETERS (2'-0" MIN), EXCEPT LAP VERT BARS IN MID HALF OF WALL HT 72 BAR DIAMETERS.
3. STAGGER SPLICES IN ADJ HORIZ BARS IN THE SAME COURSE BY 2'-0".
4. PROVIDE DWL BARS IN FOUNDATION TO MATCH ALL VERT REINF PER 4/S-013.
5. FOR ADDED REINF @ WALL INTERSECTIONS AND CORNERS, SEE 3/S-013.
6. GROUT EA SIDE OF OPENING AS NOTED IN TYP OPENING REINF DETAIL 2/S-013.

5 S-013 TYPICAL REINFORCED CMU WALL
N.T.S.



OPENINGS < 6'-0"



6'-0" < OPENINGS < 12'-0"

LINTEL CONDITION

6 S-013 TYPICAL CMU LINTEL
N.T.S.

MASONRY LOOSE LINTEL SCHEDULE	
OPENING	LINTEL SIZE
UP TO 5'-0"	L4x4X1/4
5'-0" TO 7'-0"	L6x4X5/16 LLV
7'-0" TO 8'-0"	L6x4X3/8 LLV

NOTES:

1. LINTEL ANGLES SHALL BE HD GALV.
2. PROVIDE 3/8" GAP IN MORTAR AT ENDS OF ANGLE. FORM GAP WITH BACKER ROD.
3. PROVIDE 4" BEARING AT EACH END OF LINTEL ANGLE.

7 S-013 TYPICAL LOOSE LINTEL SCHEDULE
N.T.S.

CMU

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TEXAS REGISTRATION No. 107598
DATE: SEPTEMBER 7, 2022

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

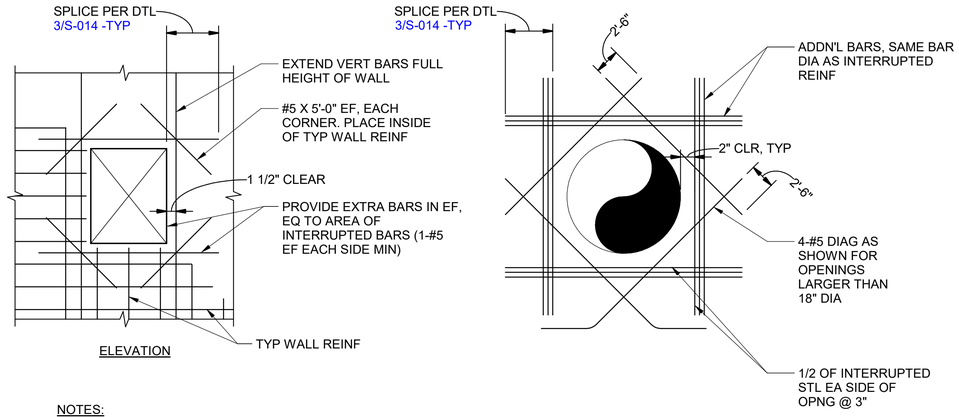
TYPICAL STRUCTURAL DETAILS II

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DESIGN:	JDM
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CHECKED:	MKK
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SHEET
S-013

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PROJECT NO: 4220079
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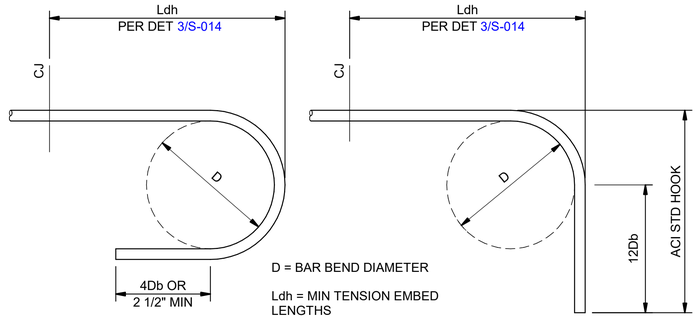
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NOTES:

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.



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

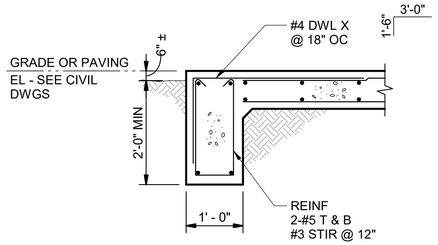
2 S-014 TYPICAL HOOKED BAR
N.T.S.

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

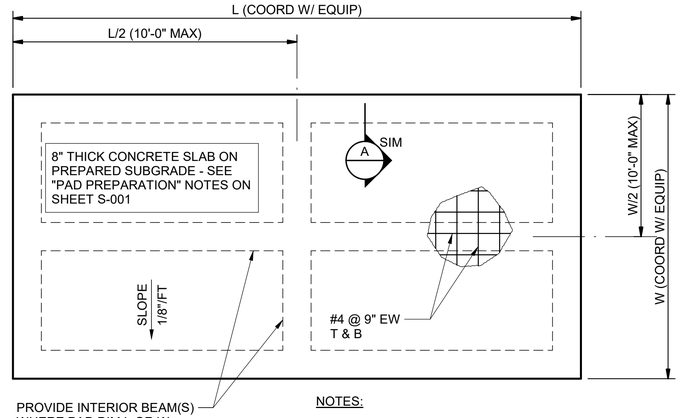
FOOTNOTES:

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.



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.

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INTERIM REVIEW DOCUMENTS
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JOHN D. SIBOVICH
TEXAS REGISTRATION No. 137058
DATE: SEPTEMBER 1, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

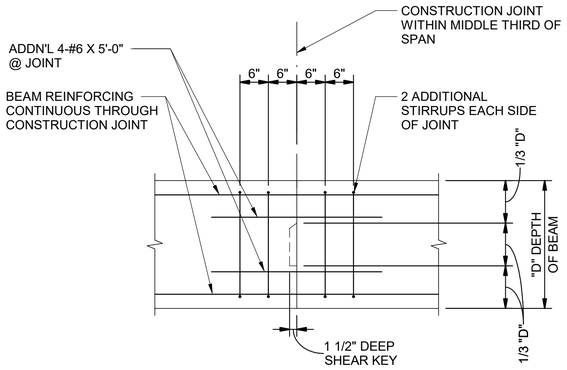
TYPICAL STRUCTURAL DETAILS III

DATE:	SEPTEMBER 2022
DESIGN:	JDM
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SHEET
S-014

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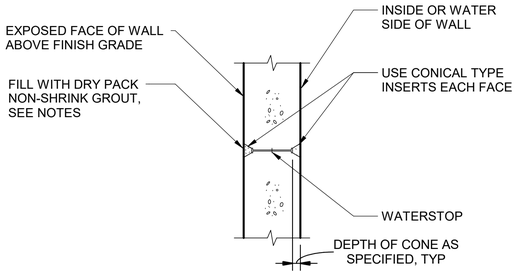
ELEVATION

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"

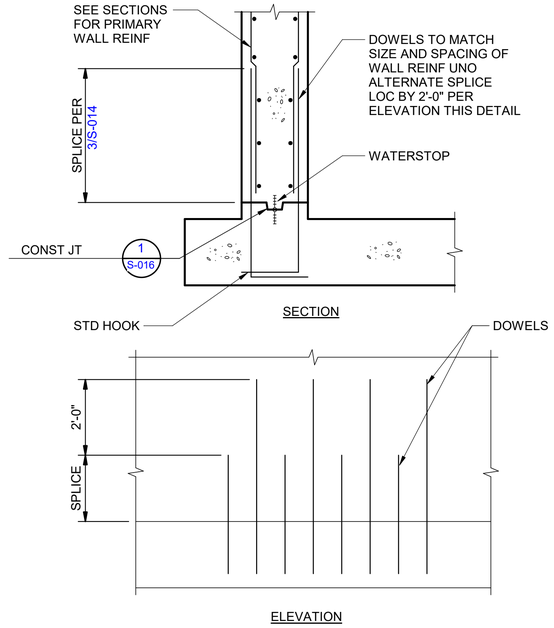
1 S-015 TYPICAL GRADEBEAM CONSTRUCTION JOINT
N.T.S.



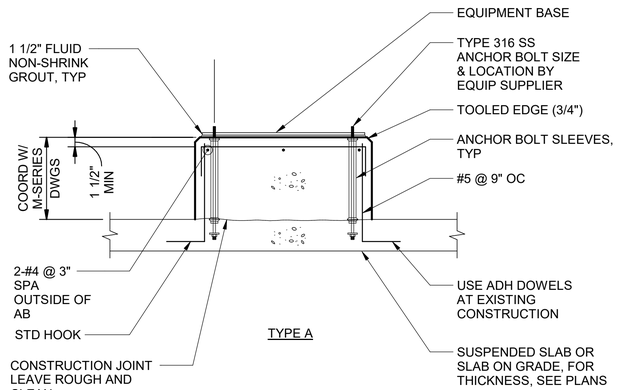
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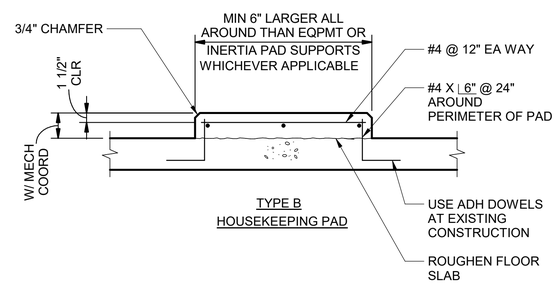
1. THE SPACING OF FORM TIES ON EXPOSED PORTIONS OF WALLS SHALL BE APPROXIMATELY EQUAL HORIZONTALLY AND VERTICALLY AND SHALL BE UNIFORM IN EACH DIRECTION.
2. DRY PACK METHOD SHALL BE AS SPECIFIED USING STEEL TOOLS.

2 S-015 TYPICAL FORM SNAP-TIE HOLE
N.T.S.

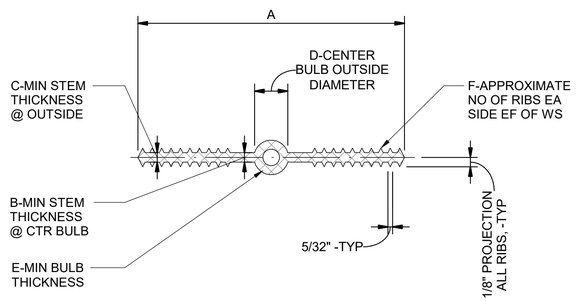


3 S-015 TYPICAL WALL DOWEL
N.T.S.





5 S-015 TYPICAL EQUIPMENT PAD
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.

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JOHN D. MEHNOTT
TEXAS REGISTRATION No. 137558
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CITY OF WEST UNIVERSITY PLACE, TX
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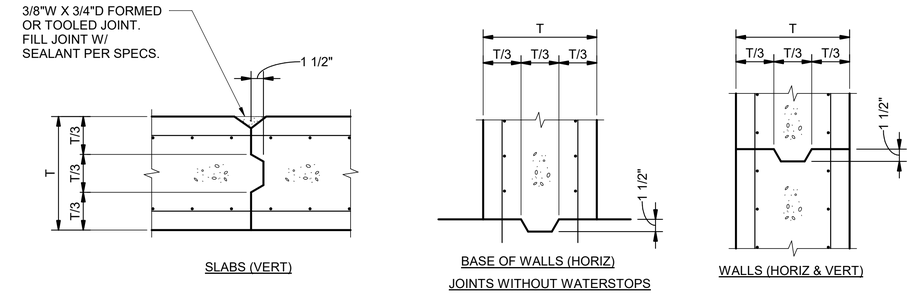
TYPICAL STRUCTURAL DETAILS IV

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DESIGN:	JDM
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KHA NO.:	067812104

SHEET
S-015

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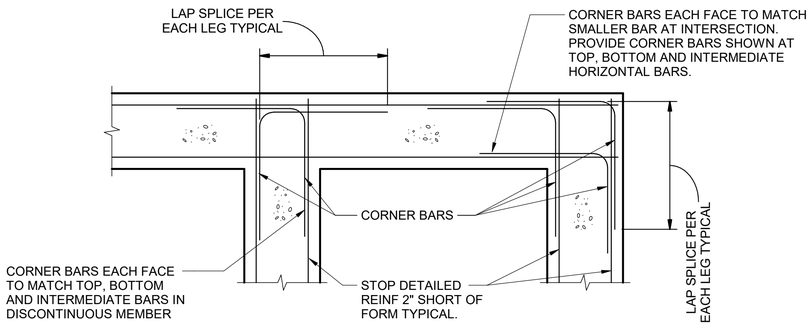
NOTES:

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.

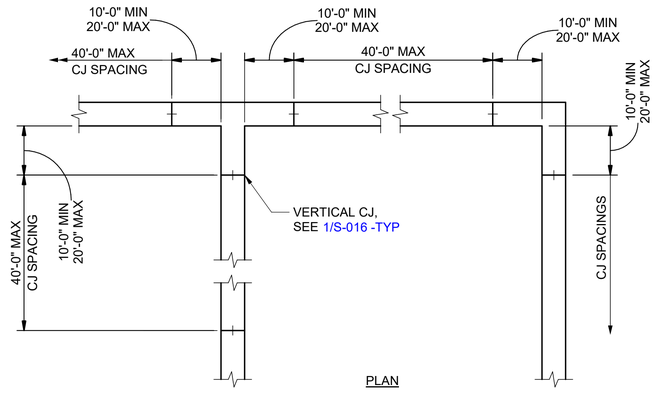
1 S-016 TYPICAL CONSTRUCTION JOINTS
N.T.S.

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.



2 S-016 TYPICAL CORNER BARS AT BEAM
N.T.S.



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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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

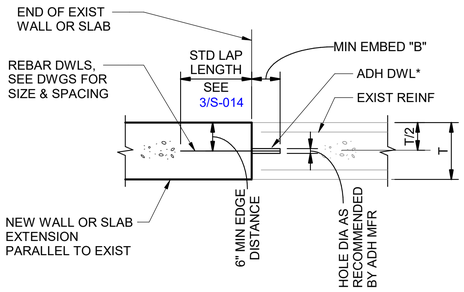
TYPICAL STRUCTURAL DETAILS V

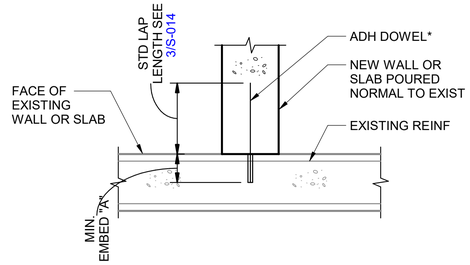
DATE:	SEPTEMBER 2022
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

SHEET
S-016

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

Autodesk Docs://067812104 West U WWTP/West U WWTP - Struct_R22.rvt



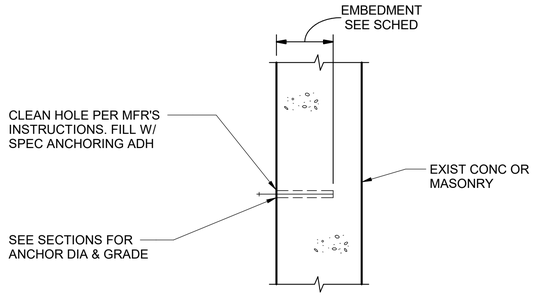


DOWEL SIZE	MIN EDGE DIST	MIN EMBEDMENT "A"	MIN EMBEDMENT "B"
#3	2"	3 1/2"	6"
#4	2 1/2"	5"	8"
#5	3"	6 1/2"	10"
#6	4"	9"	13"
#7	5"	10 1/2"	16"
#8	6"	12"	19"

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.

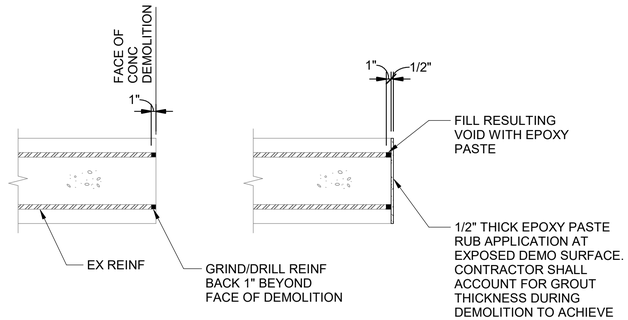


ADHESIVE ANCHOR NOTES

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.

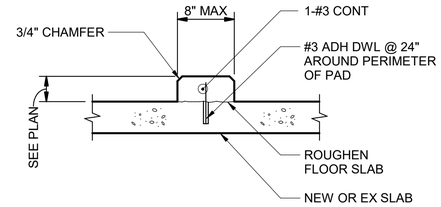
ANCHOR INSTALLATION INFORMATION			
ANCHOR DIAMETER	1/2"	5/8"	3/4"
HOLE DIAMETER	9/16"	11/16"	13/16"
EMBEDMENT FOR SS, A307 OR A36 THIRD ROD HIT-TZ	4 1/4" 3 1/2"	5 1/2" 4"	6 3/4" 5 1/4"
MAX TORQUE (FT LBS) SS, A307, A36 THIRD ROD HIT-TZ	30 20	75 50	150 105

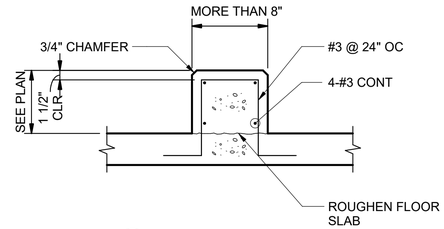
2 S-017 TYPICAL ADHESIVE ANCHOR FOR SOLID & GROUTED MASONRY AND CONCRETE
N.T.S.



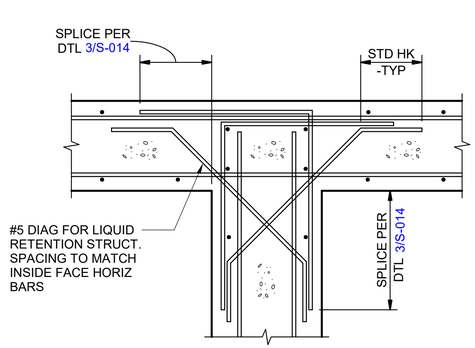
STEP 1 STEP 2

3 S-017 TYPICAL CONCRETE DEMOLITION REPAIR
N.T.S.

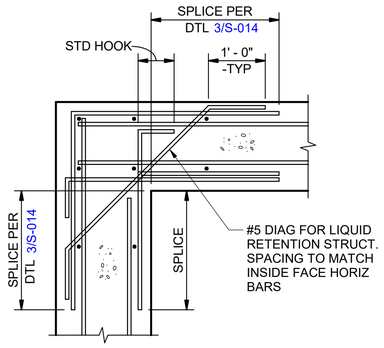




4 S-017 TYPICAL CURB
N.T.S.



INTERSECTION

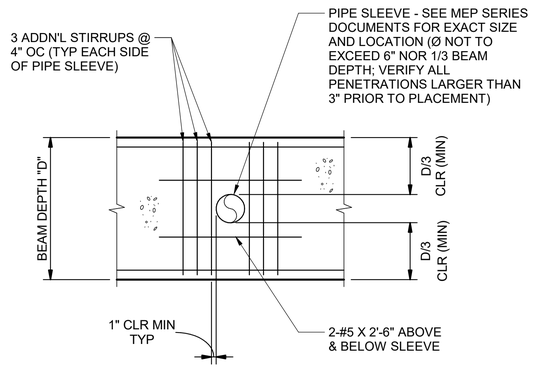


CORNER

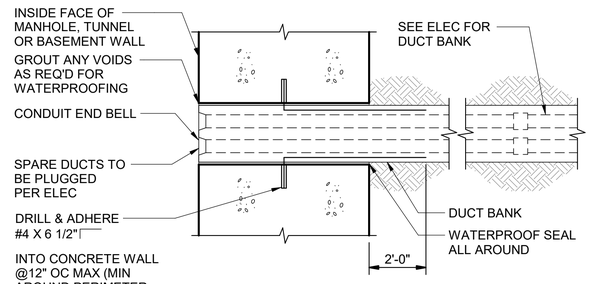
NOTES:

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 TO 1/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

INTERIM REVIEW DOCUMENTS
NOT INTENDED FOR BIDDING, PERMIT OR CONSTRUCTION PURPOSES
JOHN D. MEHOVICH
TEXAS REGISTRATION No. 107598
DATE: SEPTEMBER 1, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

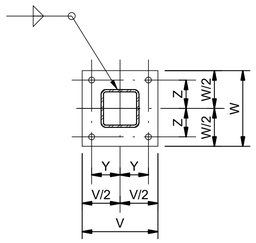
TYPICAL STRUCTURAL DETAILS VI

DATE:	SEPTEMBER 2022
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SHEET
S-017

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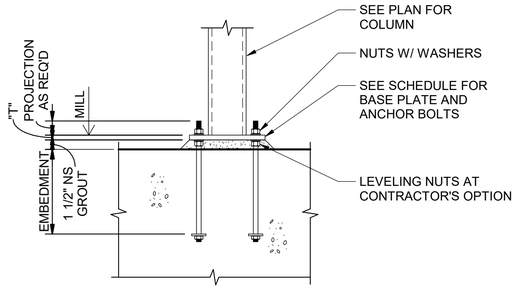
Autodesk Docs://067812104 West U WWTP/West U WWTP - Struct_R22.rvt



NOTES:

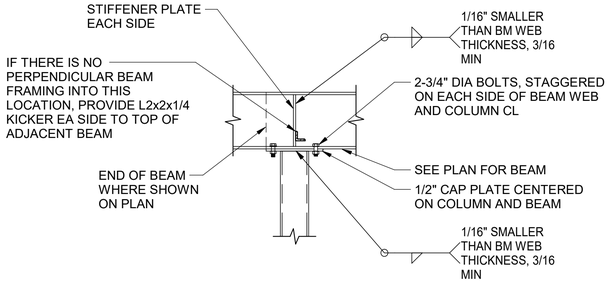
1. WELD TO BE 1/16" SMALLER THAN THICKNESS OF TUBE.
2. FOR BASE PLATE ELEVATION SEE DETAIL 2/S-018.

1 S-018 TYPICAL BASE PLATE
N.T.S.



ELEVATION

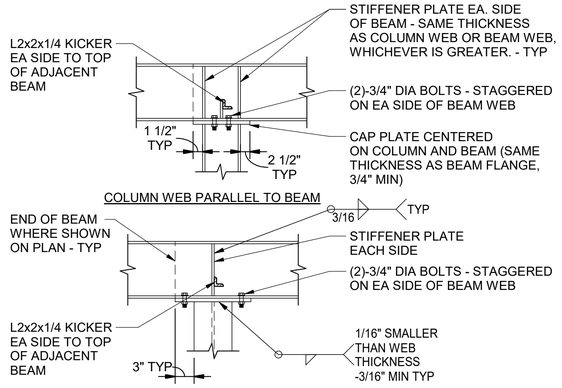
2 S-018 TYPICAL COLUMN BASE PLATE
N.T.S.



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.

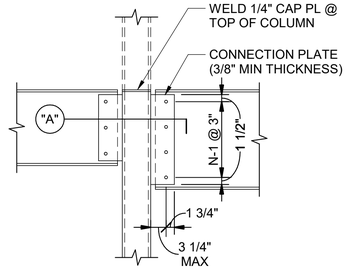


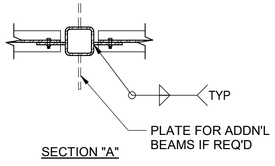
COLUMN WEB PERPENDICULAR TO BEAM

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.





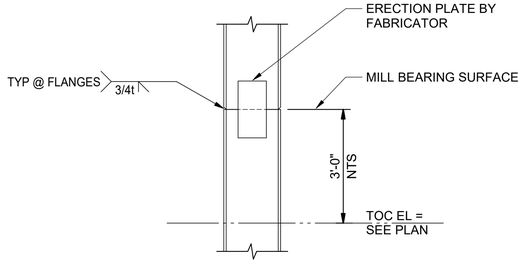
SECTION "A"

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

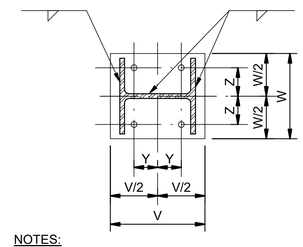
NOTES:

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.



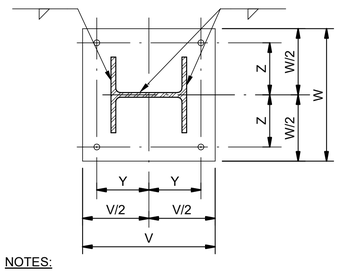
6 S-018 TYPICAL COLUMN SPLICE
N.T.S.



NOTES:

1. WELD TO BE MINIMUM SIZE REQUIRED BY AISC FOR THICKNESS OF BASE PLATE USED.
2. FOR BASE PLATE ELEVATION SEE DTL 9/S-018.

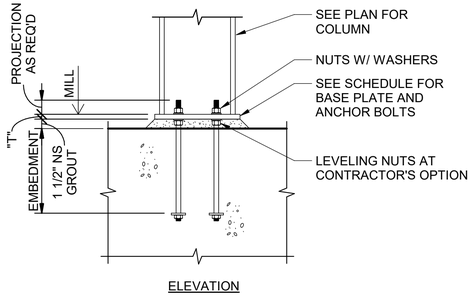
7 S-018 TYPICAL BASE PLATE
N.T.S.



NOTES:

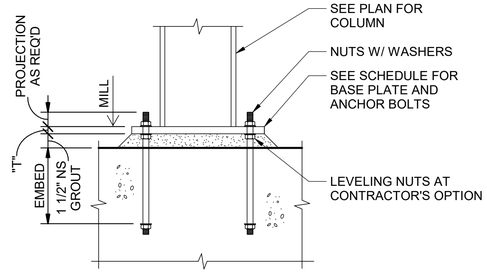
1. WELD TO BE MINIMUM SIZE REQUIRED BY AISC FOR THICKNESS OF BASE PLATE USED.
2. FOR BASE PLATE ELEVATION SEE DTL 9/S-018.

8 S-018 TYPICAL BASE PLATE
N.T.S.



ELEVATION

9 S-018 TYPICAL COLUMN BASE PLATE
N.T.S.



10 S-018 TYPICAL COLUMN BASE PLATE
N.T.S.

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TBPE No. 328

No.	Revisions	By	Date

INTERIM REVIEW DOCUMENTS
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JOHN D. MEDHOST
TEXAS REGISTRATION No. 137598
DATE: SEPTEMBER 7, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

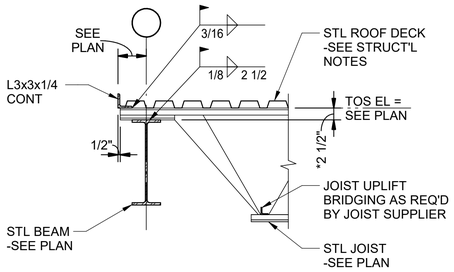
TYPICAL STRUCTURAL DETAILS VII

DATE:	SEPTEMBER 2022
DESIGN:	JDM
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KHA NO.:	067812104

SHEET
S-018

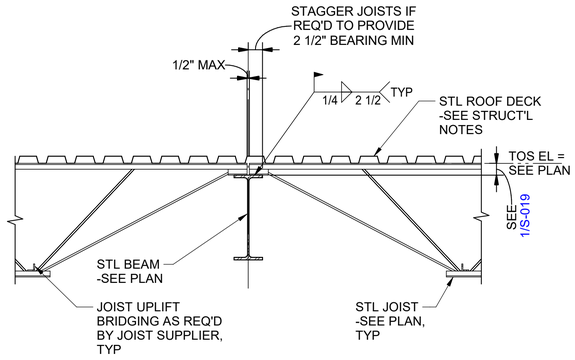
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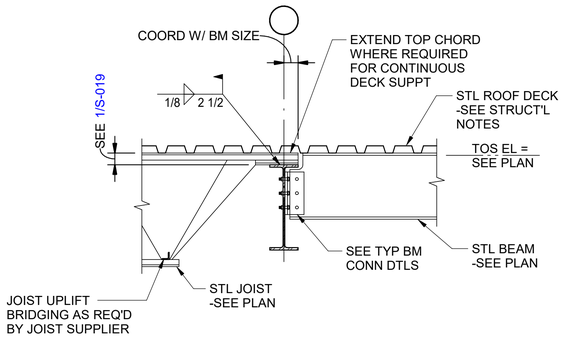


*JOIST MFR TO VERIFY ROOF SLOPES & ADJUST SEAT DEPTH AS NECESSARY.

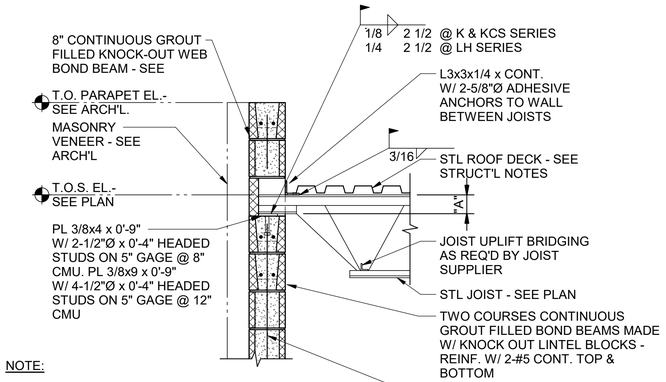
1 S-019 TYPICAL KCS OR K SERIES STEEL JOIST BEARING ON PERIMETER BEAM
N.T.S.



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.

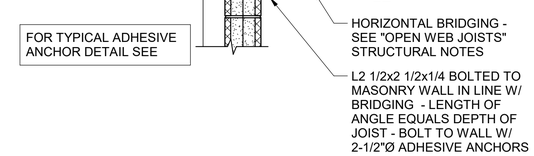


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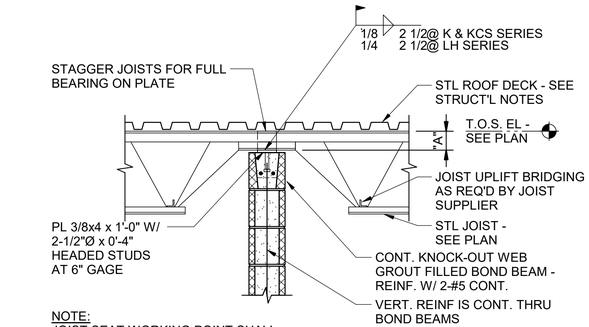
1. JOIST SEAT WORKING POINT SHALL BE AT THE CENTER OF WALL. - JOIST SEAT DEPTHS HAVE BEEN INCREASED TO ALLOW FOR THIS.
2. STEP BOND BEAM AS REQUIRED TO FOLLOW SLOPE OF ROOF. SEE DETAIL

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.



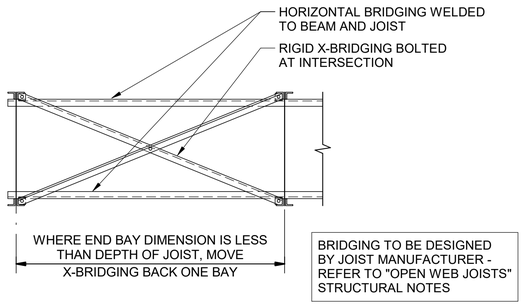
5 S-019 TYPICAL HORIZONTAL BRIDGING TO CMU
N.T.S.



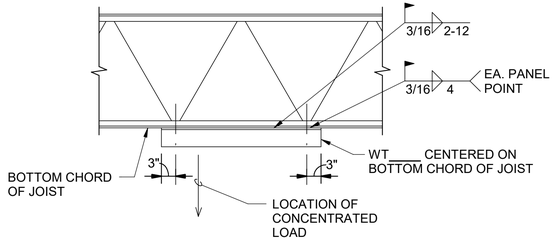
NOTE:
JOIST SEAT WORKING POINT SHALL BE AT CENTER OF WALL. - JOIST SEAT DEPTH HAS BEEN INCREASED TO ALLOW FOR THIS.

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.



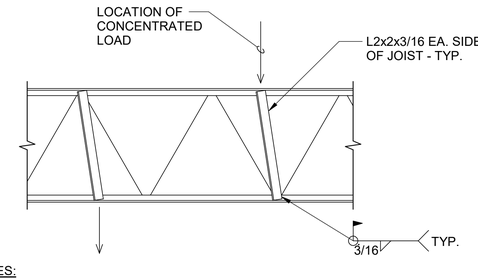
7 S-019 TYPICAL CROSS-BRIDGING AT END BAY FOR K AND KCS SERIES JOISTS
N.T.S.



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.

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TBPE No. 928

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JOHN D. MEHOVICH
TEXAS REGISTRATION No. 137556
DATE: SEPTEMBER 1, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

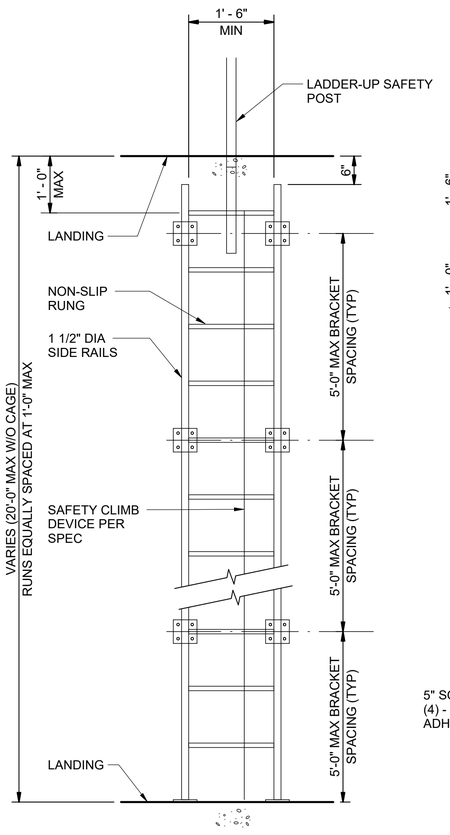
TYPICAL STRUCTURAL DETAILS VIII

DATE:	SEPTEMBER 2022
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

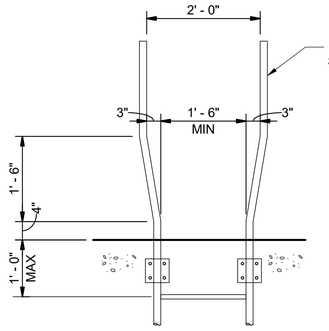
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S-019

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832.941.5233
HOUSTON, TEXAS 77084
JQENG.COM
PROJECT NO: 4220079
TBPE FIRM F-7986

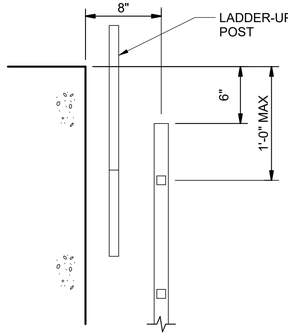
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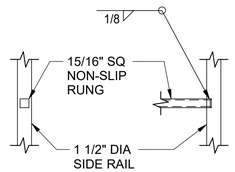
ELEVATION



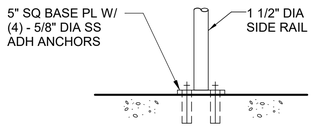
@ STEP THRU



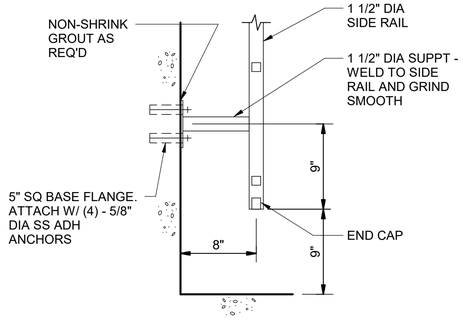
AT ROOF ACCESS HATCH



RUNG DETAIL

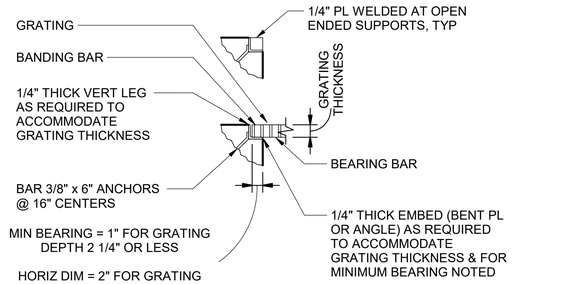


BASE CONNECTION

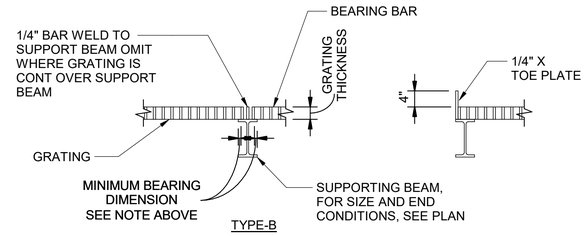


BRACKET CONNECTION

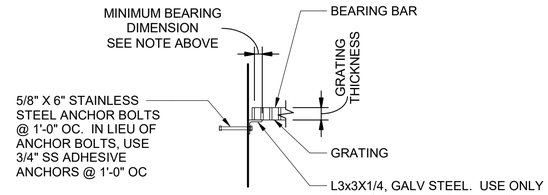
1 S-020 TYPICAL LADDER
N.T.S.



TYPE-A



TYPE-B

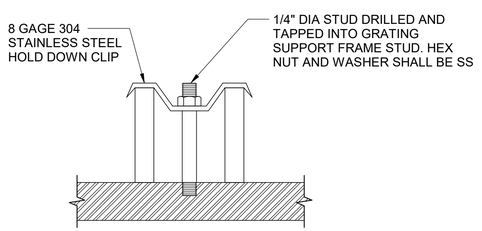


TYPE-C

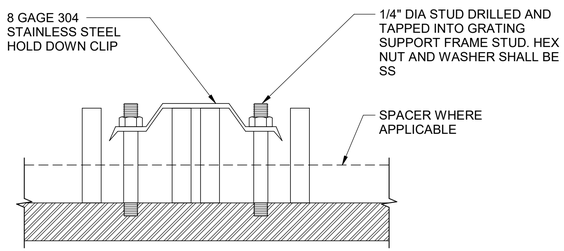
NOTE:

1. ALL BEARING ANGLES AND GRATING EMBEDS SHALL MATCH GRATING MATERIAL UNO ON DRAWINGS.

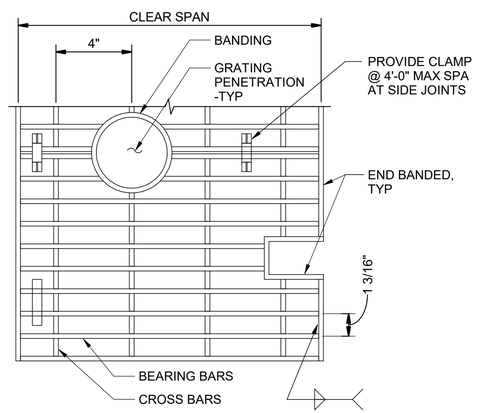
2 S-020 TYPICAL GRATING SUPPORT
N.T.S.



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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TEXAS REGISTRATION No. 137598
DATE: SEPTEMBER 7, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

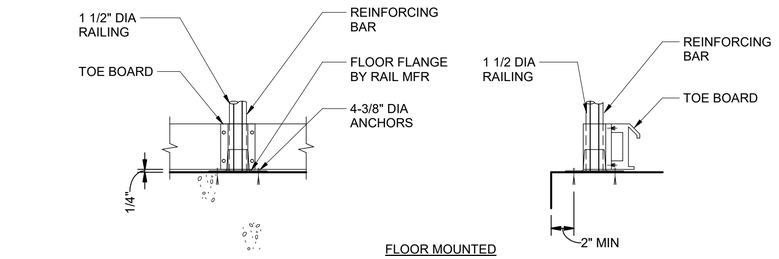
TYPICAL STRUCTURAL DETAILS IX

DATE:	SEPTEMBER 2022
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

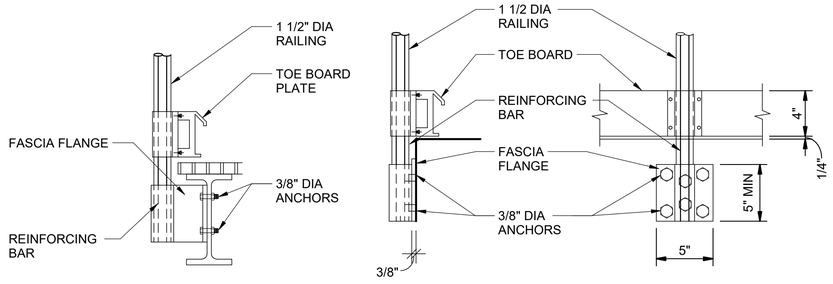
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FLOOR MOUNTED



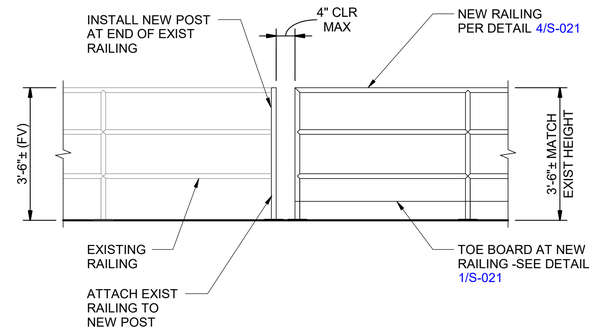
AT BEAM

SIDE MOUNT DETAIL

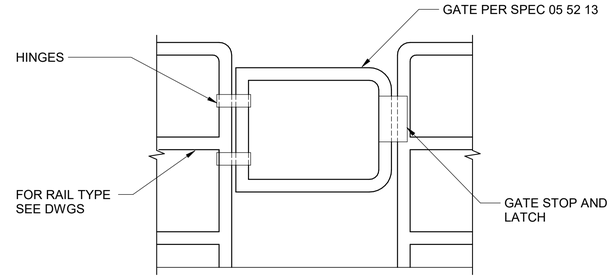
NOTE:

1. ALL ANCHORS, BOLTS, NUTS, AND CONNECTIONS SHALL BE TYPE 316 STAINLESS STEEL.

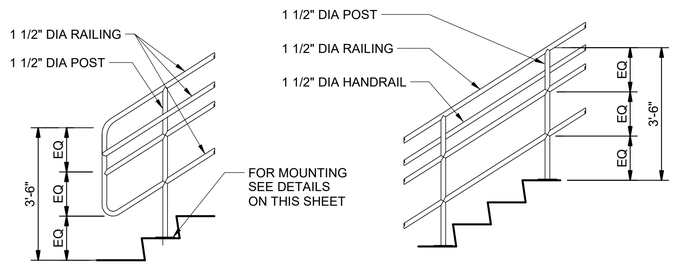
1 S-021 TYPICAL RAILING POST MOUNTING
N.T.S.



2 S-021 TYPICAL EXISTING TO NEW RAILING TRANSITION
N.T.S.

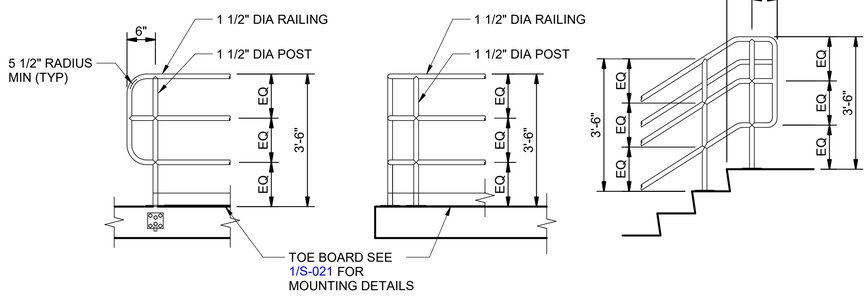


3 S-021 TYPICAL SWING GATE AT RAILING OPENING
N.T.S.



(BOTTOM)
TYPICAL STAIR END

TYPICAL STAIR

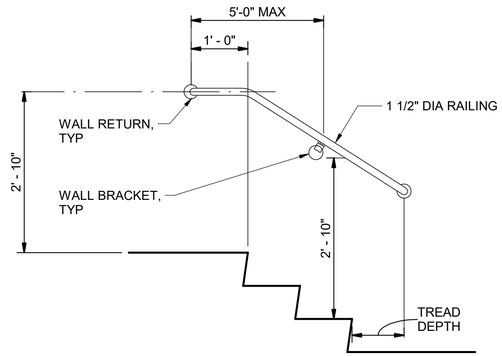


TYPICAL RAILING END

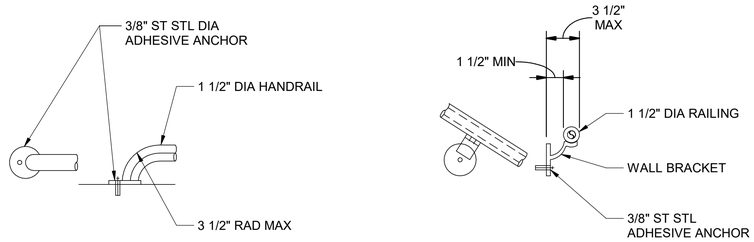
TYPICAL RAILING CORNER

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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TBPE No. 328

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INTERIM REVIEW DOCUMENTS
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TEXAS REGISTRATION No. 137558
DATE: SEPTEMBER 1, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

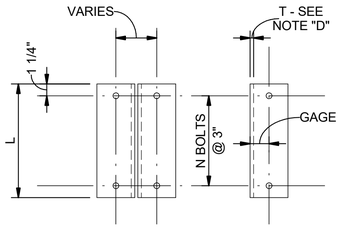
TYPICAL STRUCTURAL DETAILS X

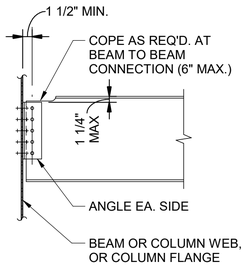
DATE:	SEPTEMBER 2022			
DESIGN:	JDM	CG	MKK	067812104
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CHECKED:				

SHEET
S-021

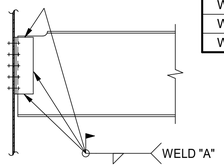
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PROJECT NO: 4220079
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BOLTED/BOLTED CONNECTION



WELD "A"
STANDARD CONN. - 3/16"
HEAVY CONN. - 1/4"

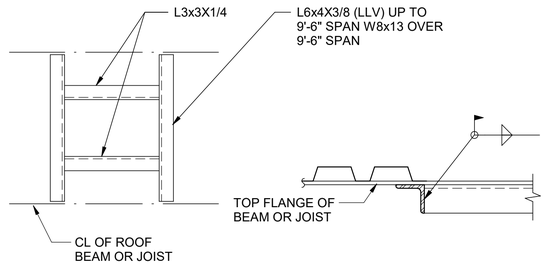
BOLTED/WELDED CONNECTION

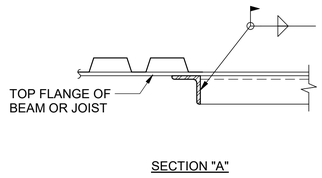
BEAM SIZE	STANDARD			HEAVY		
	ANGLE LENGTH (L)	NO OF ROWS OF BOLTS (N)	MAX BEAM REACTION (KIPS)	ANGLE LENGTH (L)	NO OF ROWS OF BOLTS (N)	MAX BEAM REACTION (KIPS)
W8	5 1/2"	2	17	-	-	NA
W10	5 1/2"	2	19	-	-	NA
W12	5 1/2"	2	20	8 1/2"	3	28
W14	8 1/2"	3	32	11 1/2"	4	42
W16	8 1/2"	3	35	11 1/2"	4	46
W18	11 1/2"	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:

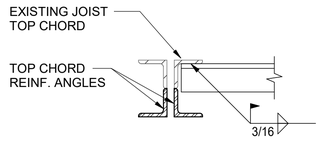
1. RIGHT ANGLE CONNECTIONS SHALL BE DOUBLE ANGLE AS SCHEDULED. SKEWED CONNECTIONS SHALL BE BENT DOUBLE ANGLES OR BENT PLATES PER DET 3/S-022.
2. NOTED REACTIONS ARE FOR SERVICE LOADS.
3. REFER TO "STRUCTURAL STEEL CONNECTIONS" IN STRUCTURAL NOTES FOR ADDN'L INFO.
4. MINIMUM CONNECTION: ANGLE THICKNESS 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.

1 S-022 TYPICAL AISC TYPE 2 SIMPLE FRAMING CONNECTIONS
N.T.S.



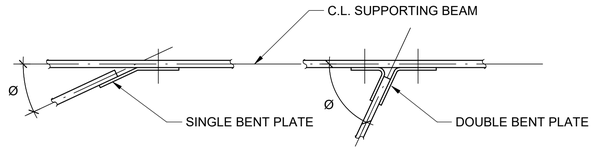


SECTION "A"



SECTION "B"

2 S-022 TYPICAL ROOF OPENING
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.

3 S-022 TYPICAL SKEWED SIMPLE FRAMING CONNECTIONS DETAIL
N.T.S.

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TEXAS REGISTRATION No. 107598
DATE: SEPTEMBER 1, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

TYPICAL STRUCTURAL DETAILS XI

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1 / S-100 LIFT STATION FOUNDATION PLAN

3/8" = 1'-0"

NORTH

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11700 Katy Freeway, Suite 800, Houston, TX 77079
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TBPE No. 928

No.	Revisions	By	Date

INTERIM REVIEW DOCUMENTS
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TEXAS REGISTRATION No. 137598
DATE: SEPTEMBER 7, 2022

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

LIFT STATION - FOUNDATION

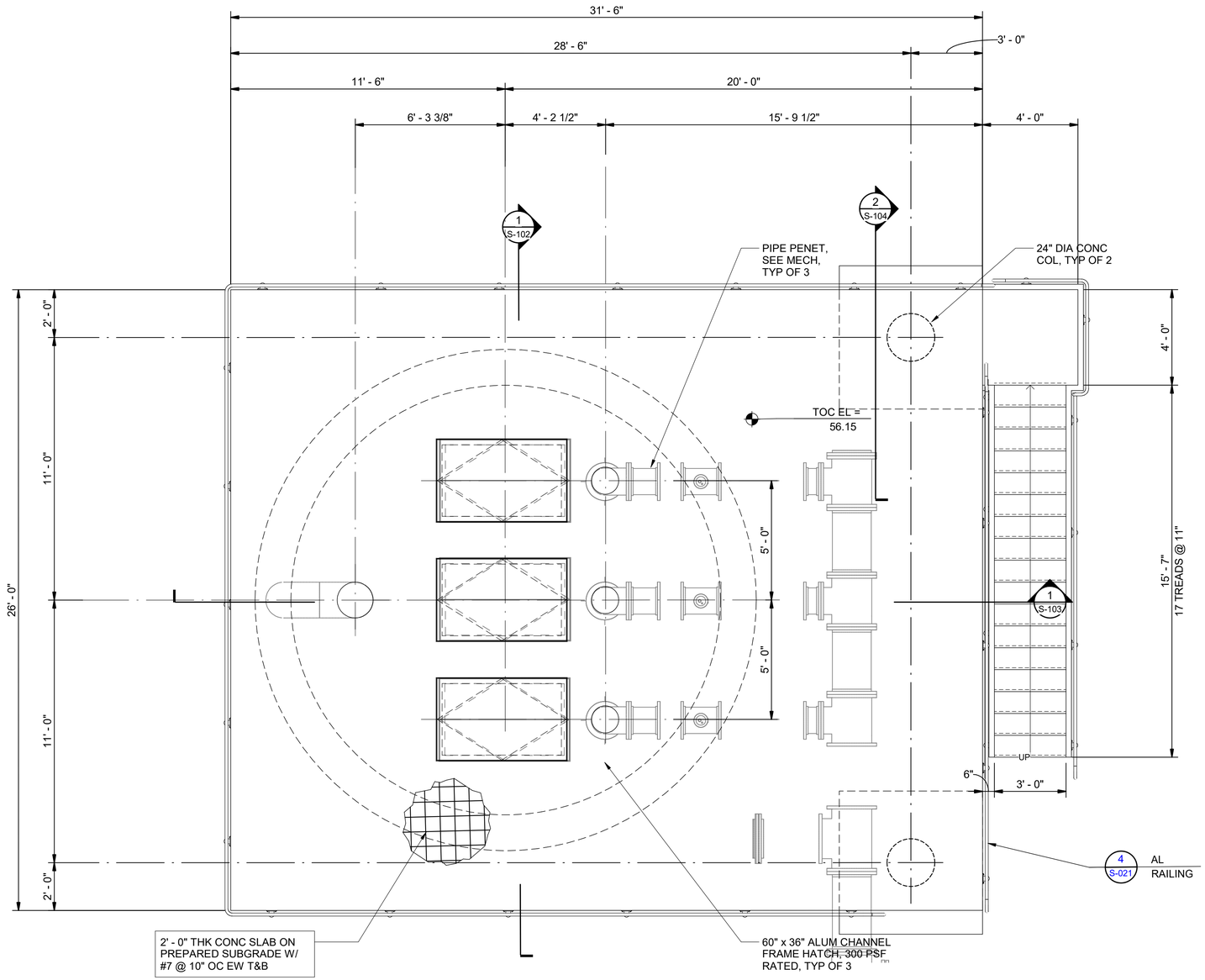
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1 S-101 LIFT STATION UPPER PLAN
3/8" = 1'-0"

NORTH

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TEXAS REGISTRATION No. 137598
DATE: SEPTEMBER 1, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT
PLANT IMPROVEMENTS

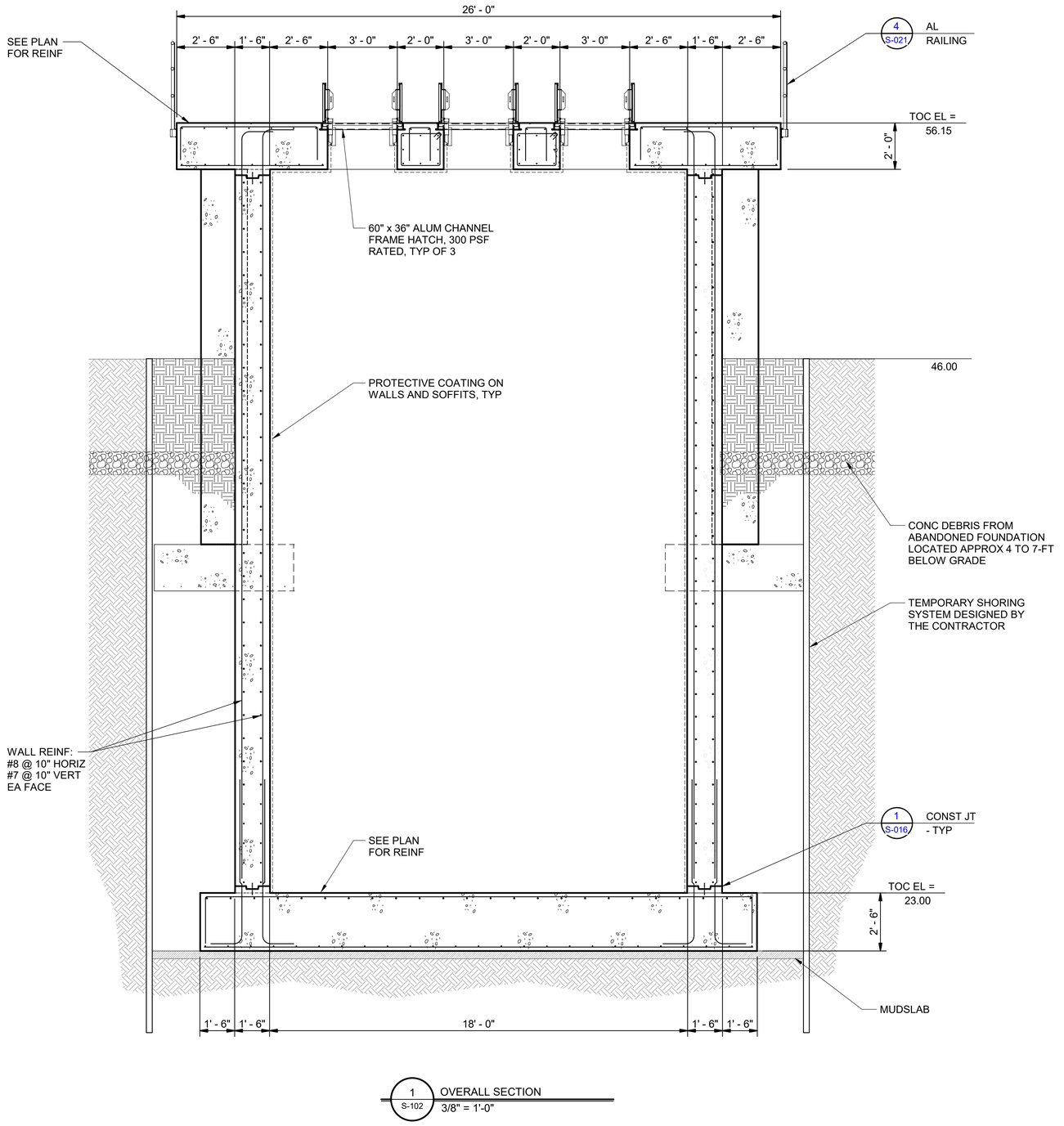
LIFT STATION UPPER PLAN

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1 S-102 OVERALL SECTION
3/8" = 1'-0"

Autodesk Docs://0678121O4 West U WWTP/West U WWTP – Struct_R22.rvt

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PREPARED BY:
JOHN D. SEDWICK
TEXAS REGISTRATION No. 137598
DATE: SEPTEMBER 1, 2022

CITY OF WEST UNIVERSITY PLACE, TX

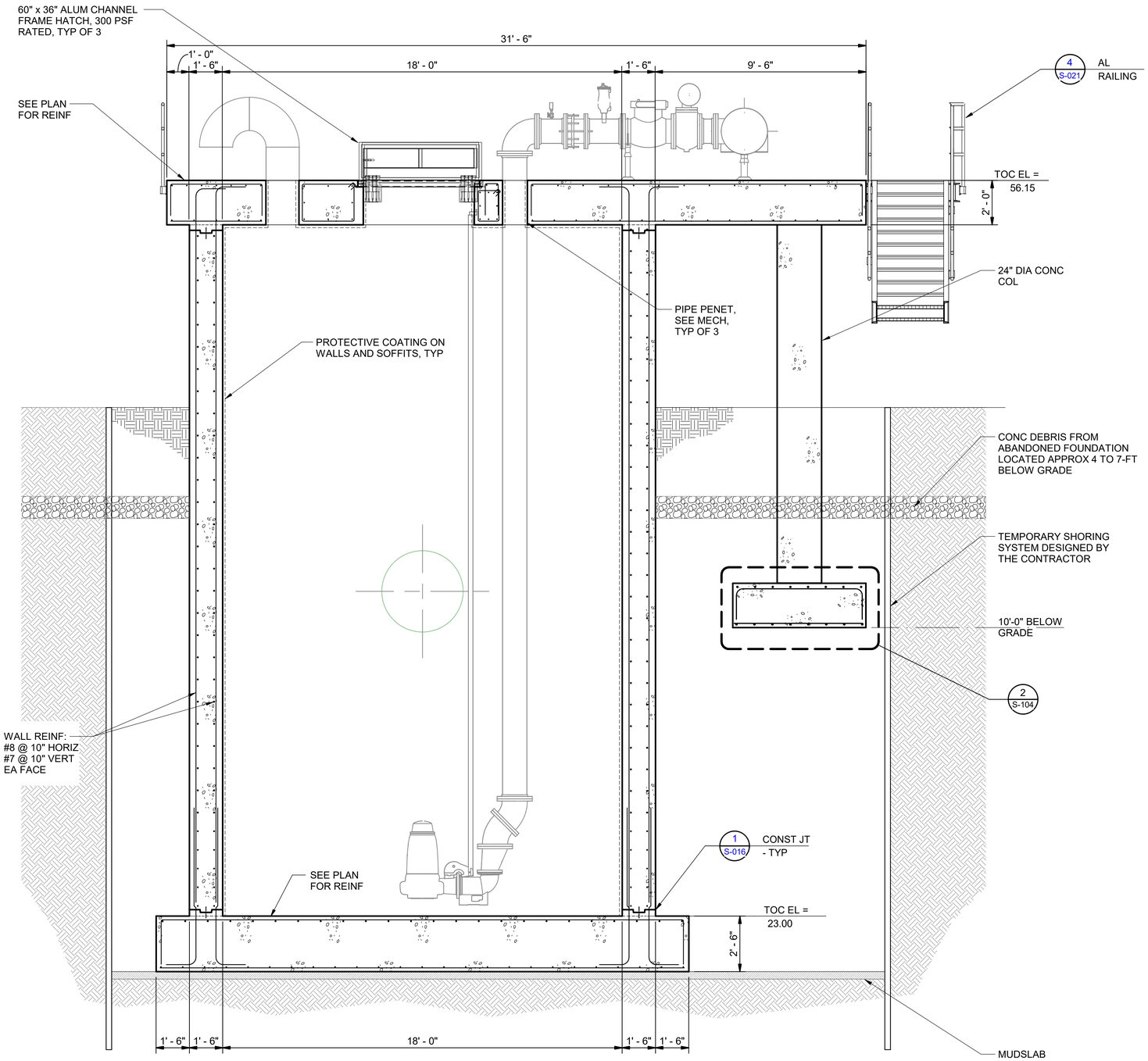
WASTEWATER TREATMENT PLANT IMPROVEMENTS

LIFT STATION OVERALL SECTION I

DATE:	SEPTEMBER 2022
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

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1 S-103 OVERALL SECTION
3/8" = 1'-0"

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TEXAS REGISTRATION No. 137598
DATE: SEPTEMBER 7, 2022

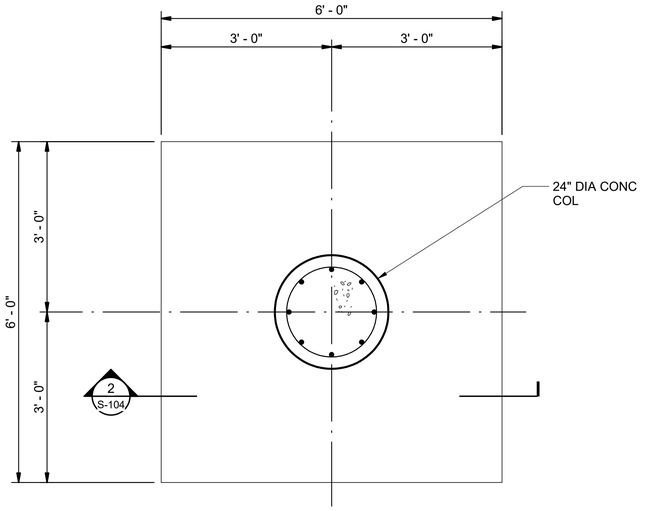
CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

LIFT STATION OVERALL SECTION II

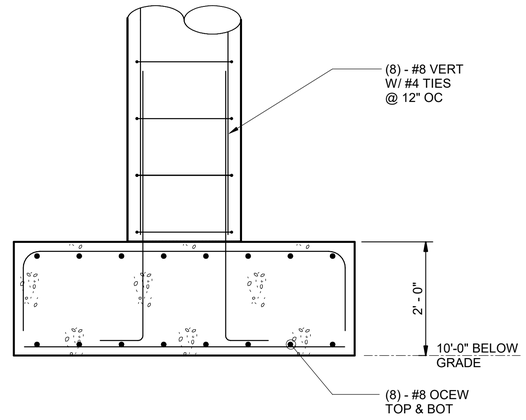
DATE:	SEPTEMBER 2022
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

SHEET
S-103

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-104 CONCRETE FOOTING DETAIL
3/4" = 1'-0"



2 S-104 CONCRETE FOOTING DETAIL
3/4" = 1'-0"

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11700 Katy Freeway, Suite 800, Houston, TX 77079
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TBPE No. 328

No.	Revisions	By	Date

INTERIM REVIEW DOCUMENTS
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TEXAS REGISTRATION No. 137598
DATE: SEPTEMBER 7, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

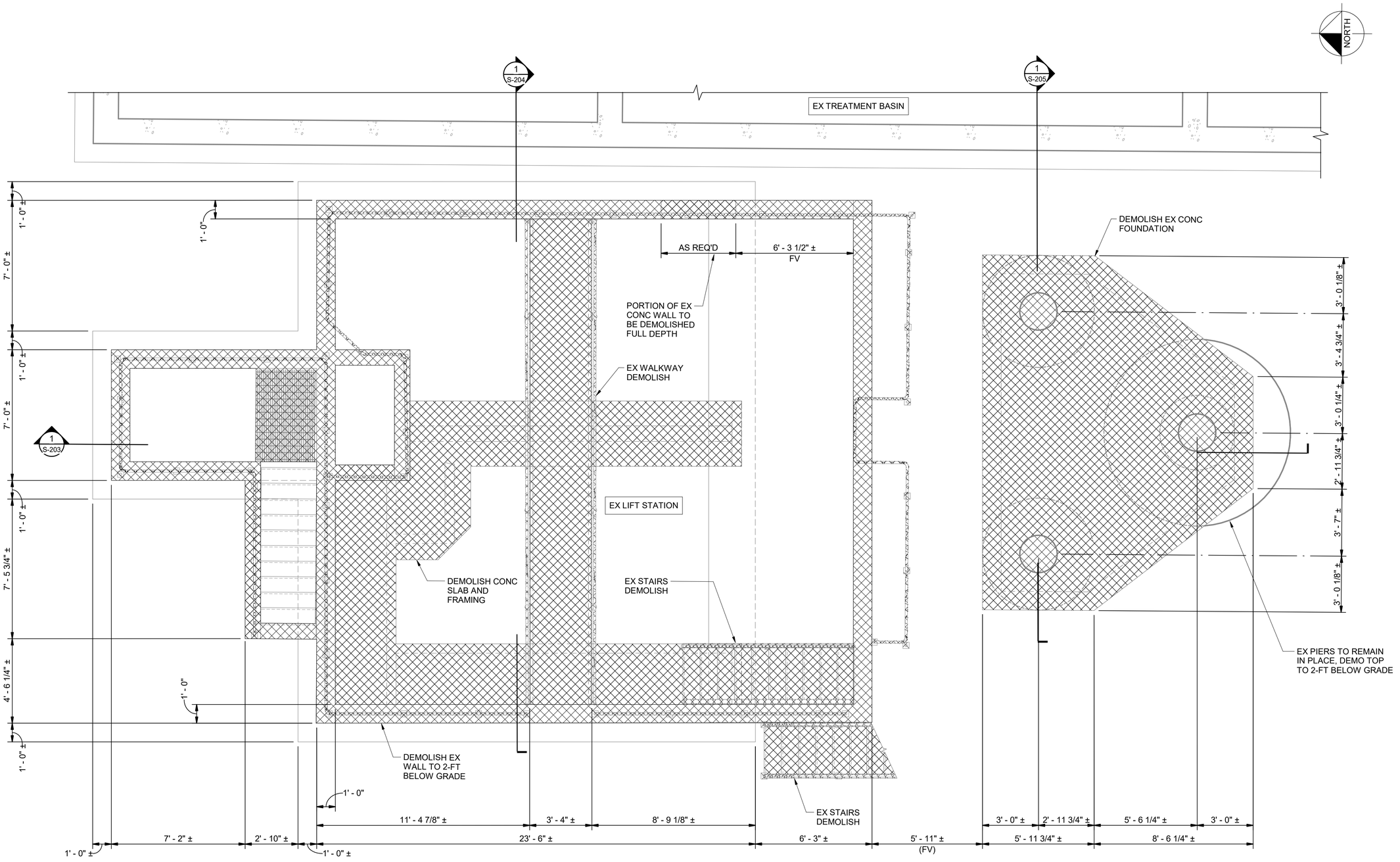
LIFT STATION SECTIONS AND DETAILS I

DATE:	SEPTEMBER 2022
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

SHEET
S-104

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JQ INFRASTRUCTURE, LLC
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832.941.5233
HOUSTON, TEXAS 77084
JQENG.COM
PROJECT NO: 4220079
TBPE FIRM F-7986

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1 S-201 HEADWORKS DEMOLITION PLAN
3/8" = 1'-0"

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TBPE No. 928

No.	Revisions	By	Date

INTERIM REVIEW DOCUMENTS
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TEXAS REGISTRATION No. 137598
DATE: SEPTEMBER 7, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

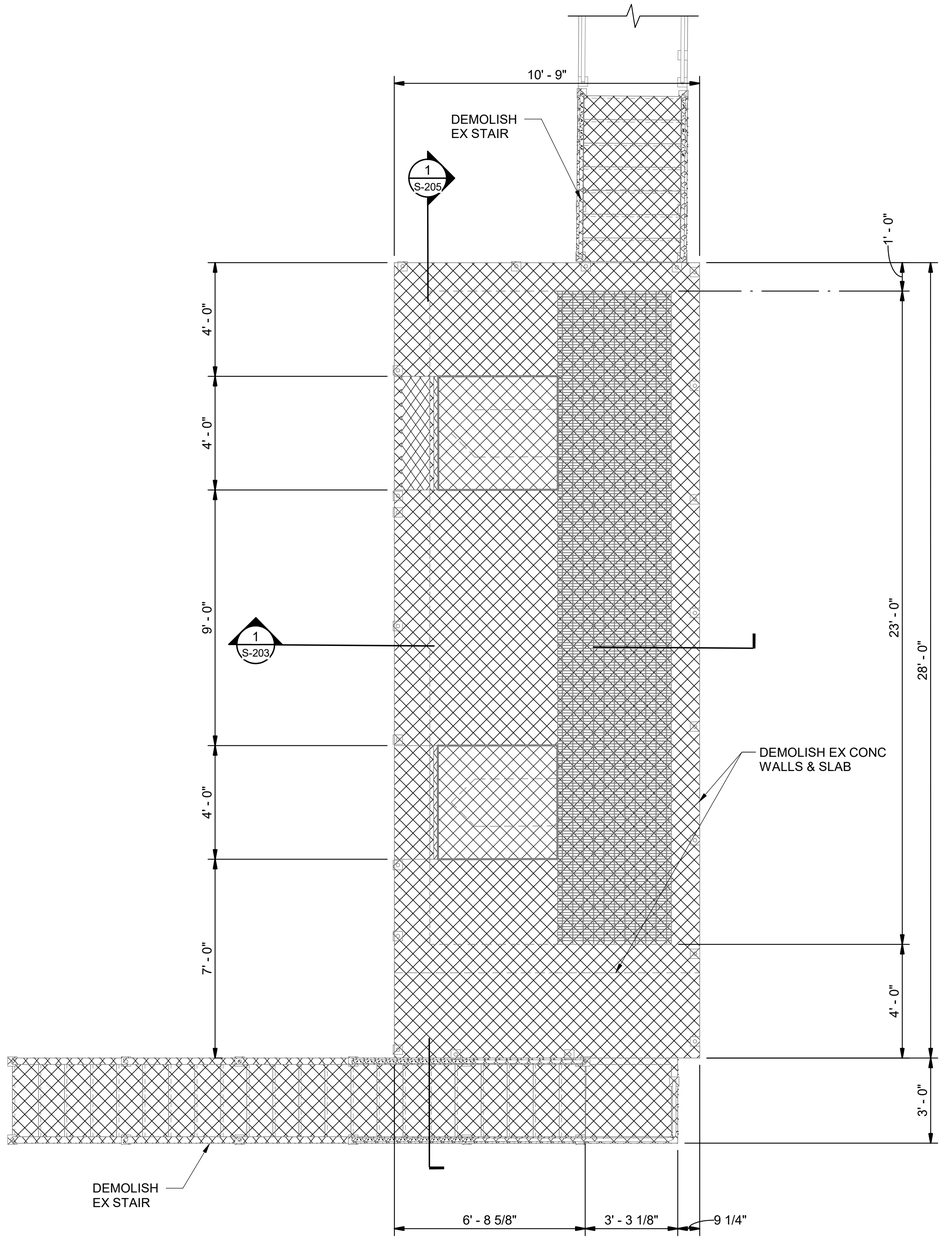
HEADWORKS DEMOLITION PLAN

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
SEPTEMBER 2022	JDM	CG	MKK	067812104

SHEET
S-201

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832.941.5233
HOUSTON, TEXAS 77084
JQENG.COM
PROJECT NO: 4220079
TBPE FIRM F-7986

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1 S-202 HEADWORKS DEMOLITION UPPER PLAN
3/8" = 1'-0"

NORTH

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TEXAS REGISTRATION No. 137598
DATE: SEPTEMBER 7, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

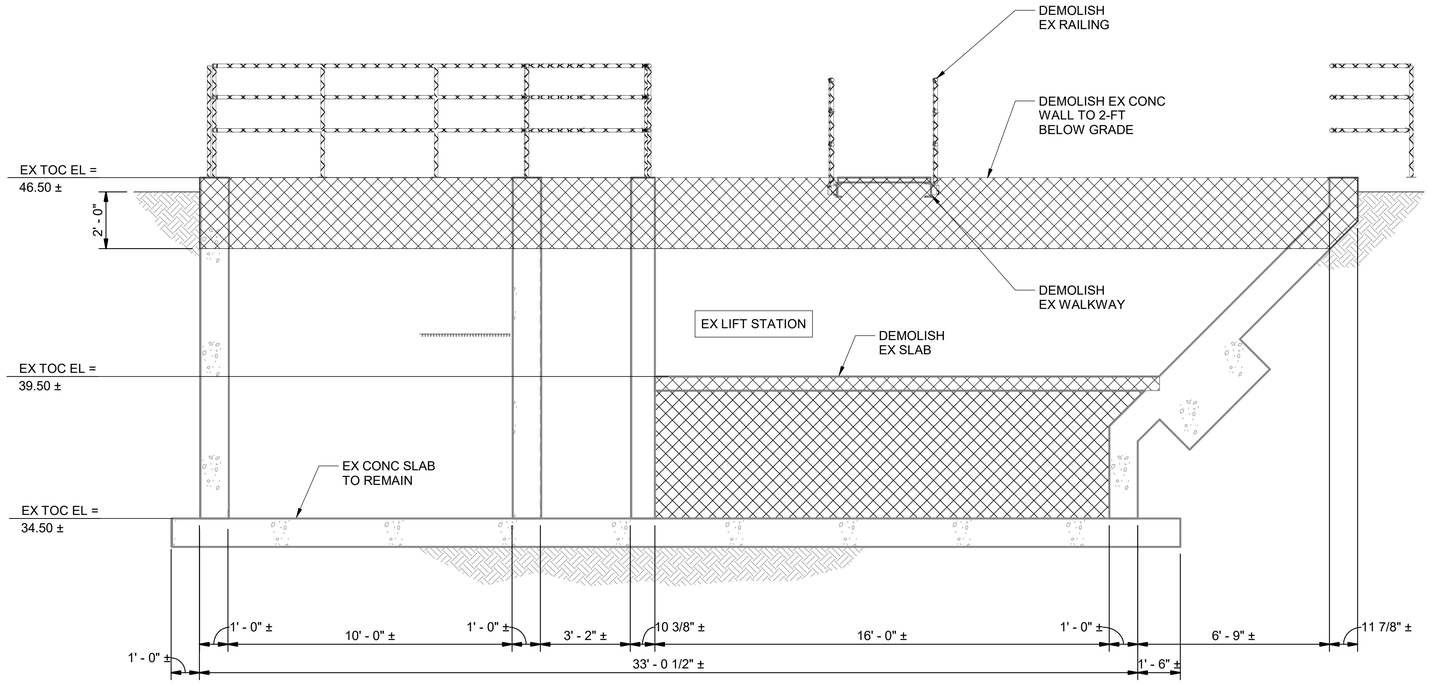
HEADWORKS DEMOLITION UPPER PLAN

DATE:	SEPTEMBER 2022
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

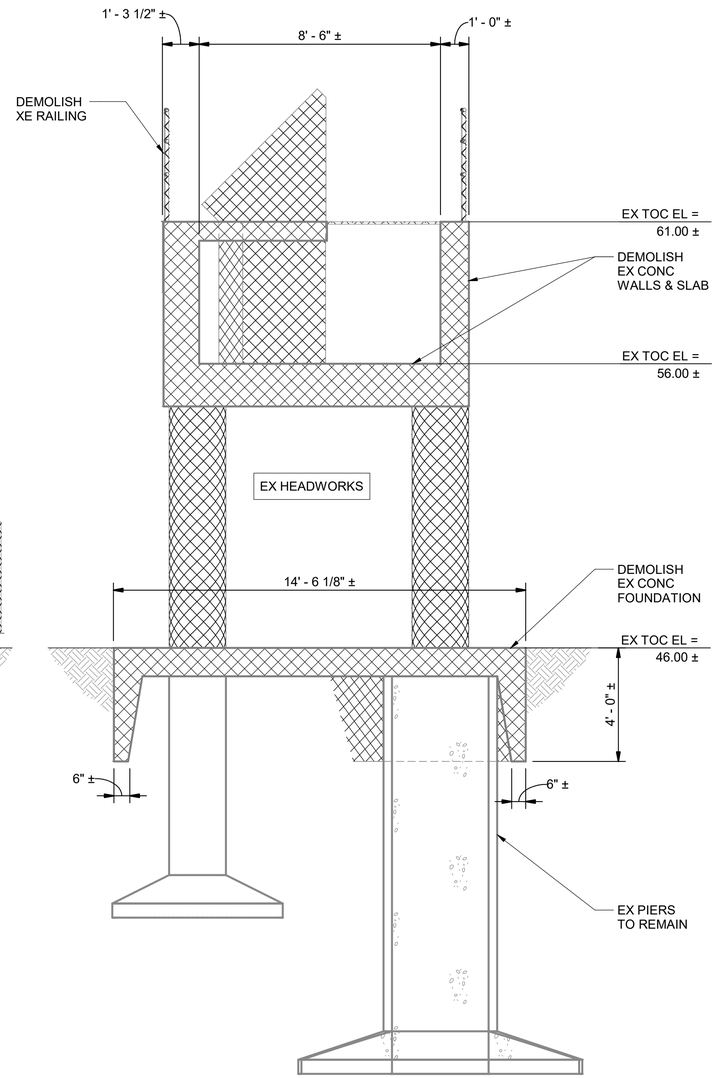
SHEET
S-202

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15810 PARK TEN PLACE, SUITE 225 HOUSTON, TEXAS 77084
832.941.5233 JQIENG.COM
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1 S-203 DEMOLITION OVERALL SECTION
3/8" = 1'-0"



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JOHN D. MEHNOTT
TEXAS REGISTRATION No. 137598
DATE: SEPTEMBER 1, 2022

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

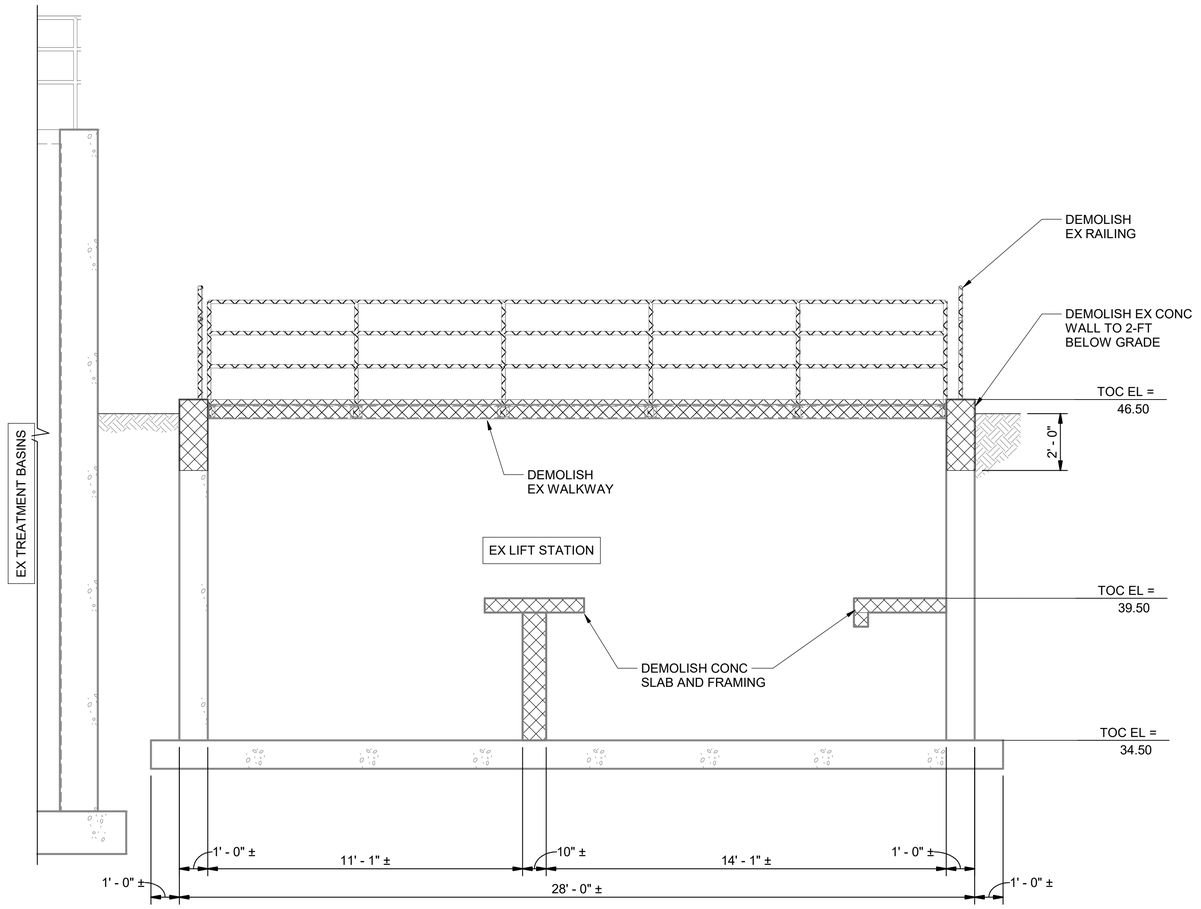
HEADWORKS DEMOLITION OVERALL SECTIONS

DATE:	SEPTEMBER 2022
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

SHEET
S-203

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HOUSTON, TEXAS 77084
JQENG.COM
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1 S-204 DEMOLITION SECTION
3/8" = 1'-0"

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TEXAS REGISTRATION No. 137598
DATE: SEPTEMBER 7, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

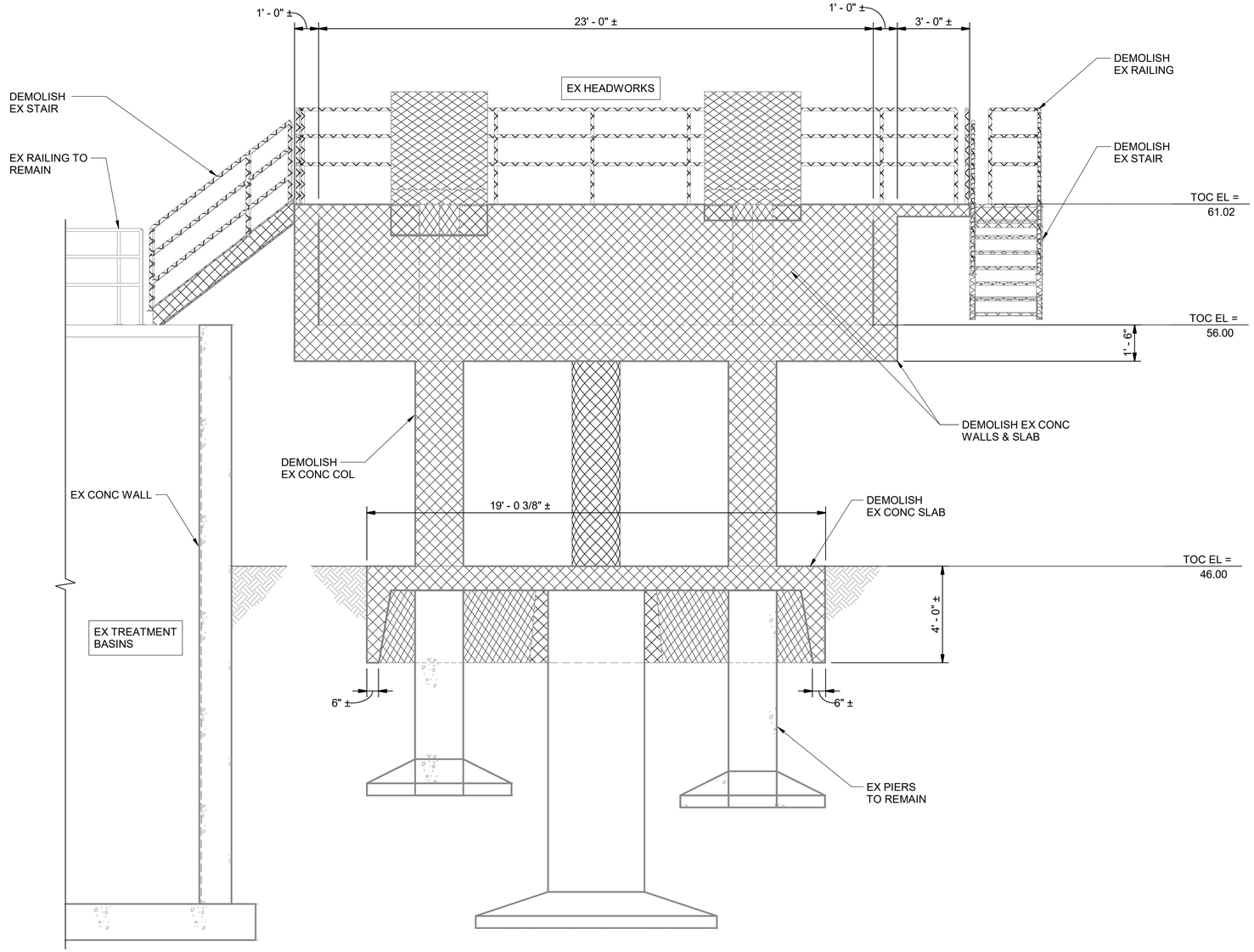
HEADWORKS DEMOLITION SECTIONS AND DETAILS I

DATE:	SEPTEMBER 2022
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

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832.941.5233
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JQIENG.COM
PROJECT NO: 4220079
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SHEET
S-204

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1 S-205 SECTION
3/8" = 1'-0"

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JOHN D. MEDHOUT
TEXAS REGISTRATION No. 137598
DATE: SEPTEMBER 7, 2022

CITY OF WEST UNIVERSITY PLACE, TX

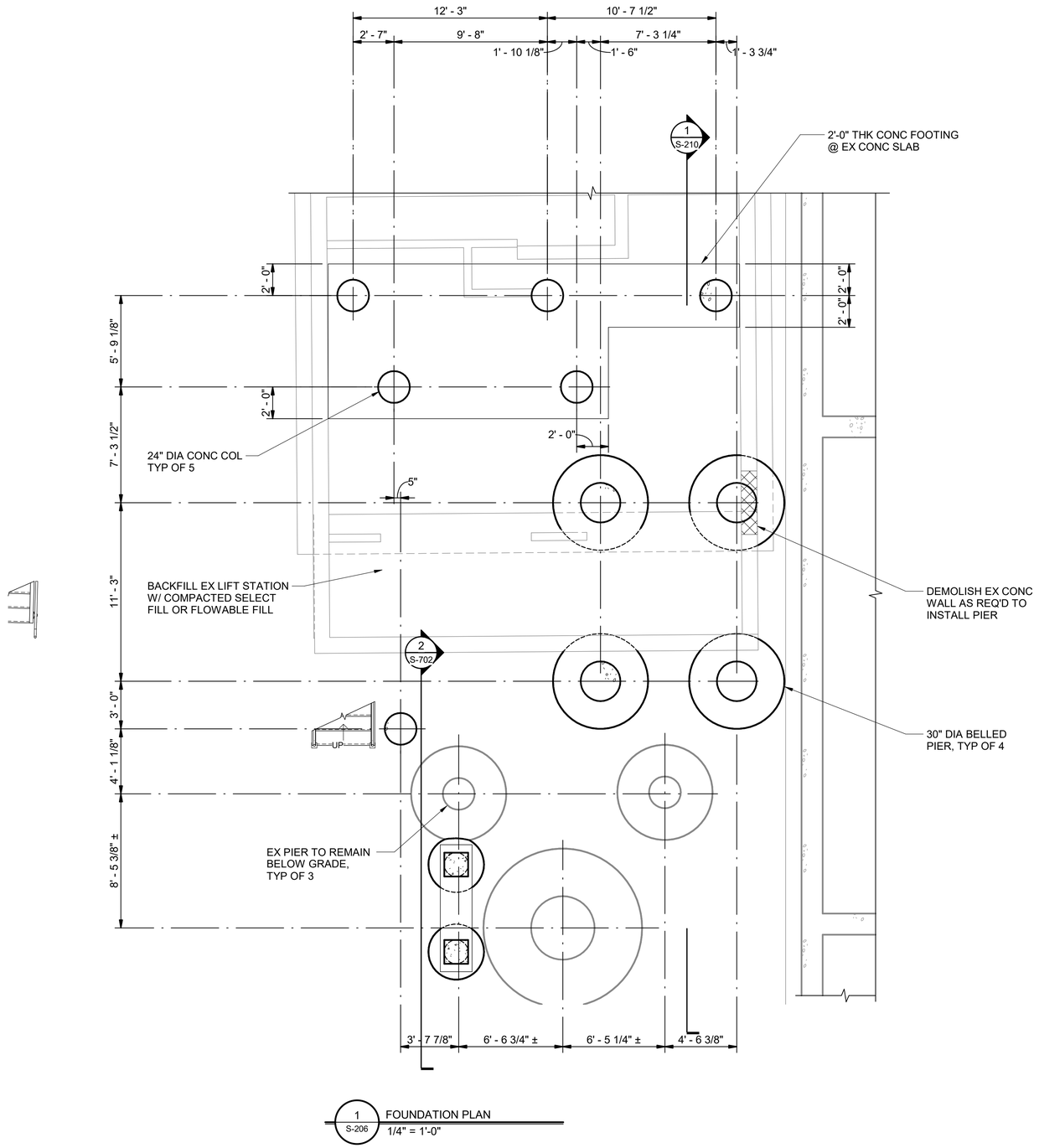
WASTEWATER TREATMENT PLANT IMPROVEMENTS

HEADWORKS DEMOLITION SECTIONS AND DETAILS II

DATE:	SEPTEMBER 2022
DESIGN:	JDM
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SHEET
S-205

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832.941.5233
HOUSTON, TEXAS 77084
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TBPE FIRM F-7986



1 S-206 FOUNDATION PLAN
1/4" = 1'-0"

NORTH

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INTERIM REVIEW DOCUMENTS
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TEXAS REGISTRATION No. 137598
DATE: SEPTEMBER 7, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

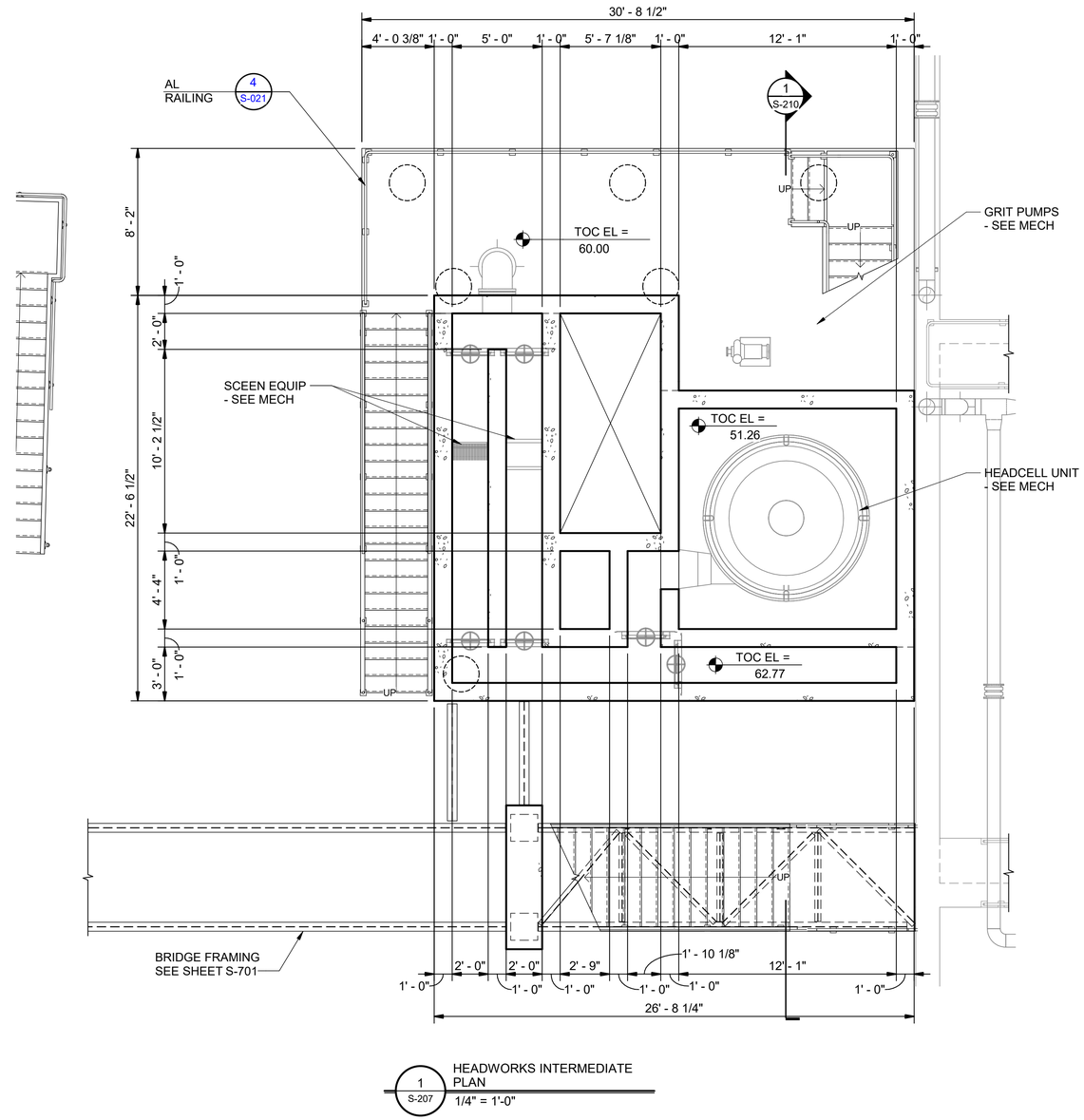
HEADWORKS FOUNDATION PLAN

DATE:	SEPTEMBER 2022
DESIGN:	JDM
DRAWN:	CG
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KHA NO.:	067812104

SHEET
S-206

shaping the built environment
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1 S-207 HEADWORKS INTERMEDIATE PLAN
1/4" = 1'-0"

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INTERIM REVIEW DOCUMENTS
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JOHN D. DEBOHOT
TEXAS REGISTRATION No. 137598
DATED: SEPTEMBER 7, 2022

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

HEADWORKS INTERMEDIATE PLAN

DATE:	SEPTEMBER 2022
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

SHEET
S-207

shaping the built environment
JQ INFRASTRUCTURE, LLC
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HOUSTON, TEXAS 77084
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PROJECT NO: 4220079
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1 S-208 HEADWORKS UPPER PLAN
1/4" = 1'-0"

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TEXAS REGISTRATION No. 137598
DATE: SEPTEMBER 1, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

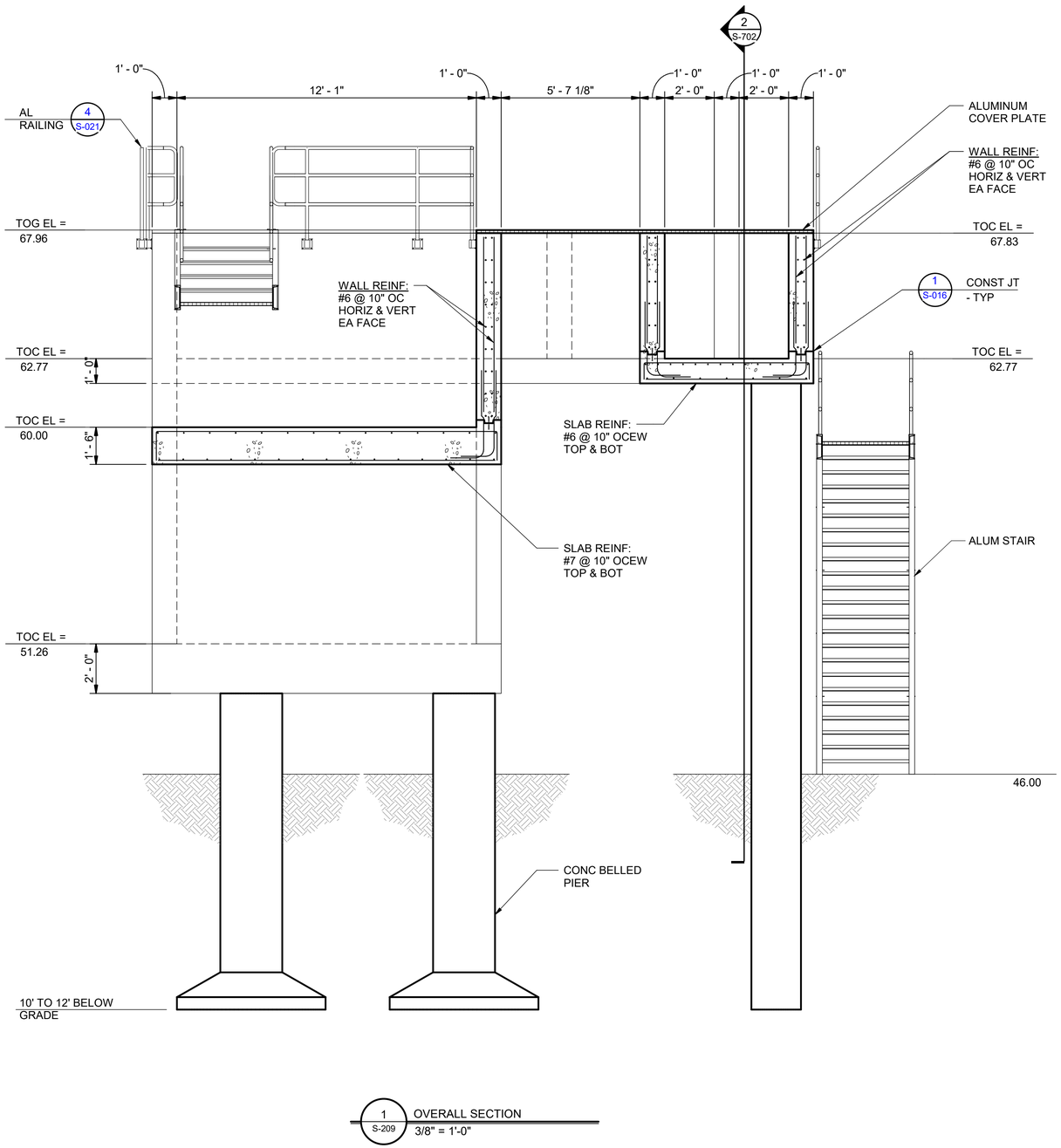
HEADWORKS UPPER PLAN

DATE:	SEPTEMBER 2022
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

SHEET
S-208

shaping the built environment
JQ INFRASTRUCTURE, LLC
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832.941.5233
HOUSTON, TEXAS 77084
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1 S-209 OVERALL SECTION
3/8" = 1'-0"

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TBPE No. 928

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JOHN D. BROCKOT
TEXAS REGISTRATION No. 107598
DATE: SEPTEMBER 1, 2022

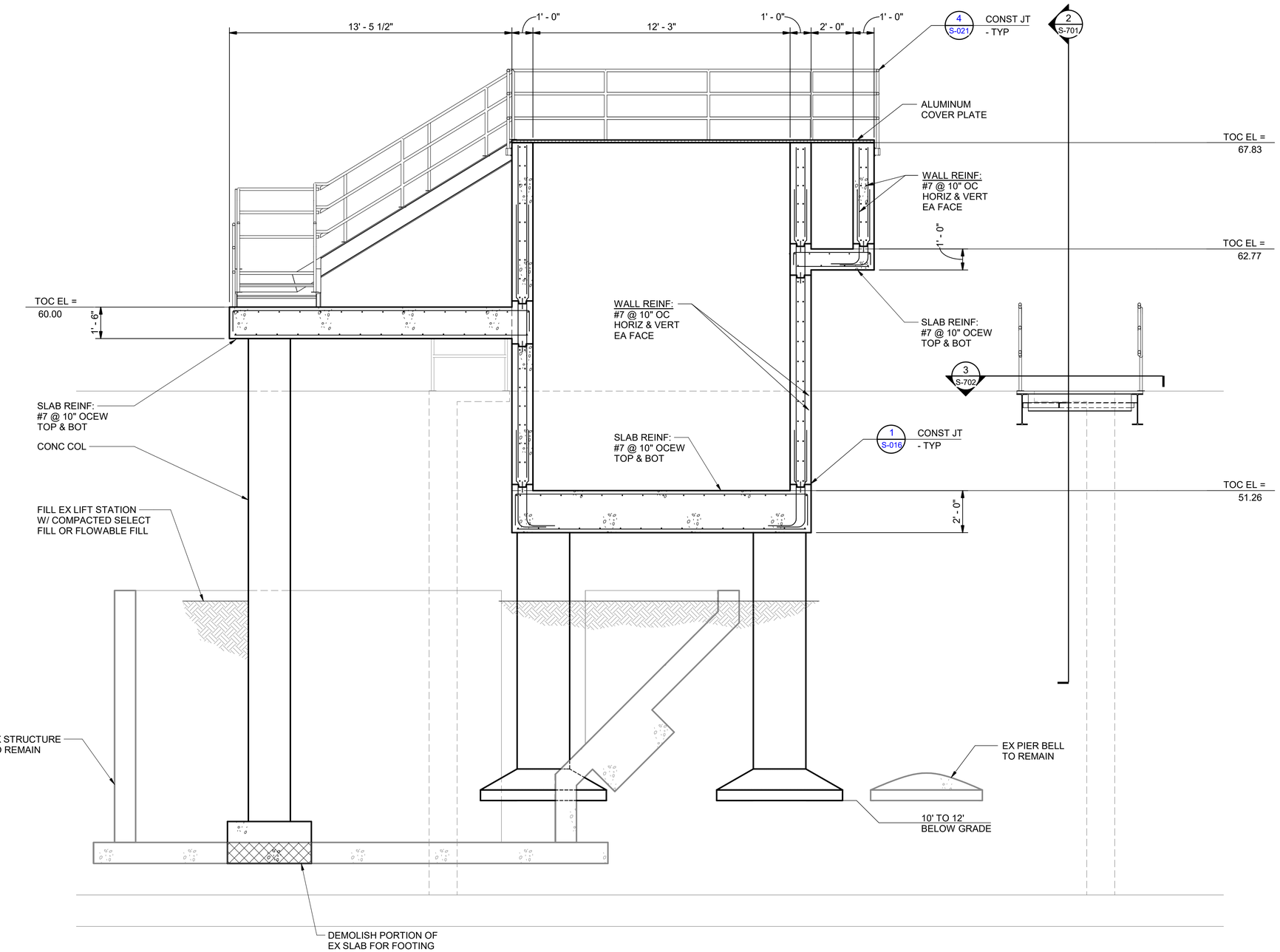
CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

HEADWORKS OVERALL SECTION I

DATE:	SEPTEMBER 2022
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

SHEET
S-209

shaping the built environment
JQ INFRASTRUCTURE, LLC
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PROJECT NO: 4220079
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1 S-210 SECTION
3/8" = 1'-0"

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INTERIM REVIEW DOCUMENTS
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JOHN D. MEDHOST
TEXAS REGISTRATION No. 137598
DATE: SEPTEMBER 1, 2022

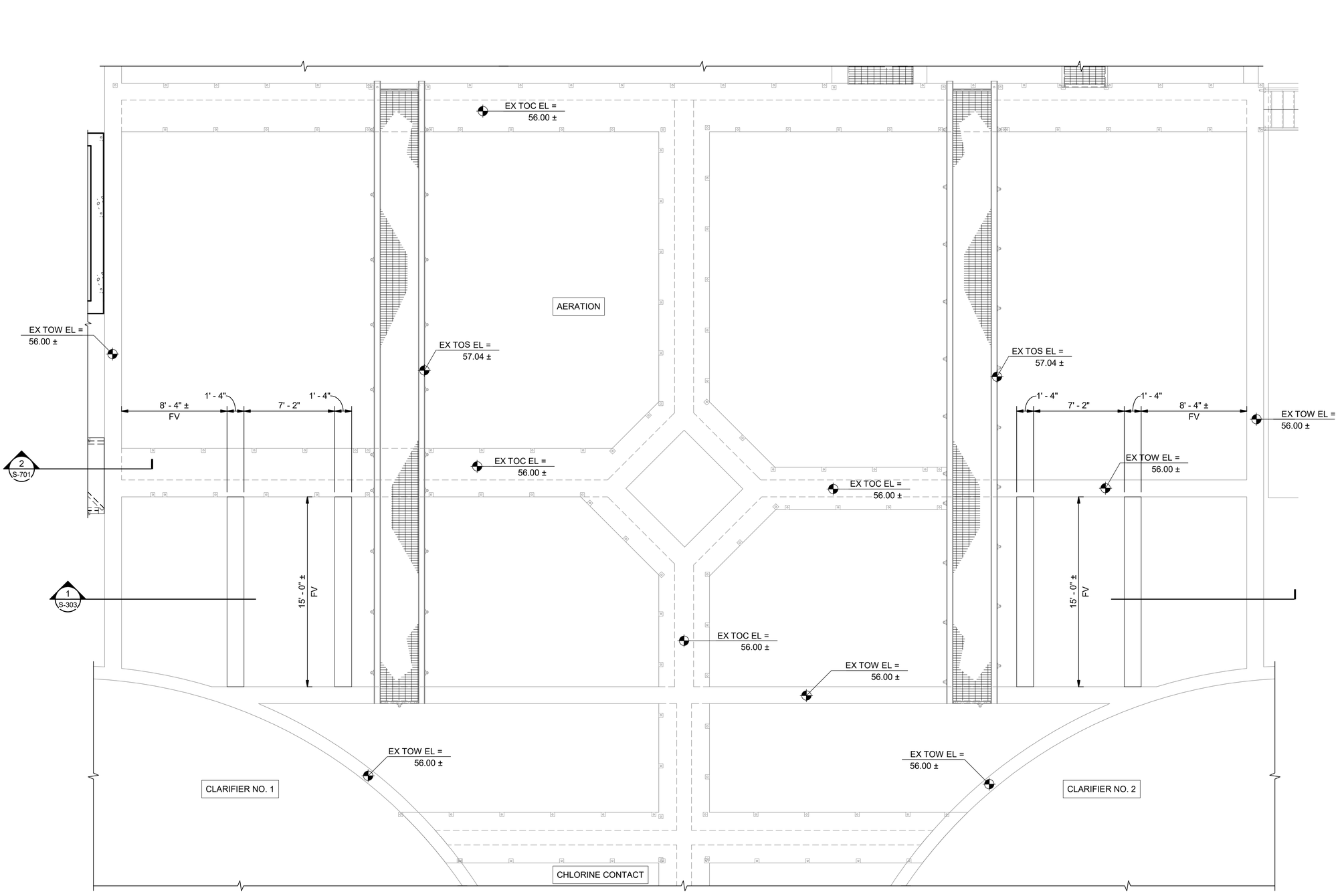
CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

HEADWORKS OVERALL SECTION II

DATE:	SEPTEMBER 2022			
DESIGN:	JDM	CG	MKK	067812104
DRAWN:				KHA NO.:
CHECKED:				

SHEET
S-210

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PROJECT NO: 4220079
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1 S-301 AERATION BASIN UPPER PLAN
1/4" = 1'-0"

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No.	Revisions	By	Date

INTERIM REVIEW DOCUMENTS
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TEXAS REGISTRATION No. 137098
DATE: SEPTEMBER 1, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

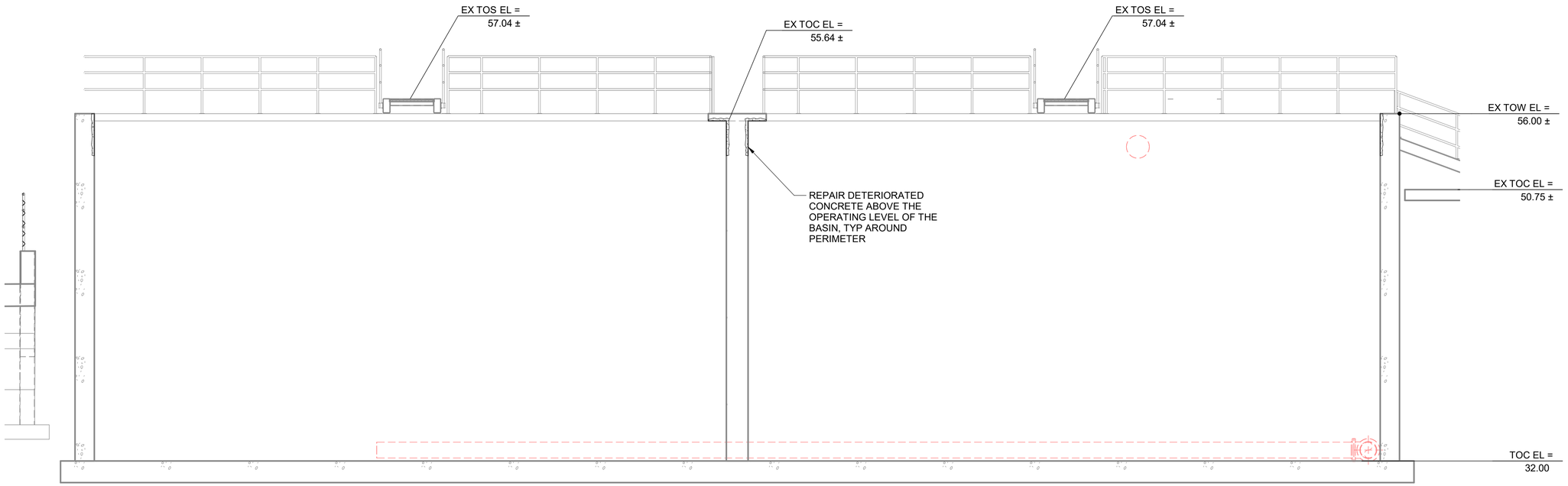
AERATION BASIN UPPER PLAN

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
SEPTEMBER 2022	JDM	CG	MKK	067812104

SHEET
S-301

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HOUSTON, TEXAS 77084
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TBPE FIRM F-7986

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1 S-302 OVERALL SECTION
1/4" = 1'-0"

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INTERIM REVIEW DOCUMENTS
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TEXAS REGISTRATION No. 137598
DATE: SEPTEMBER 1, 2022

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

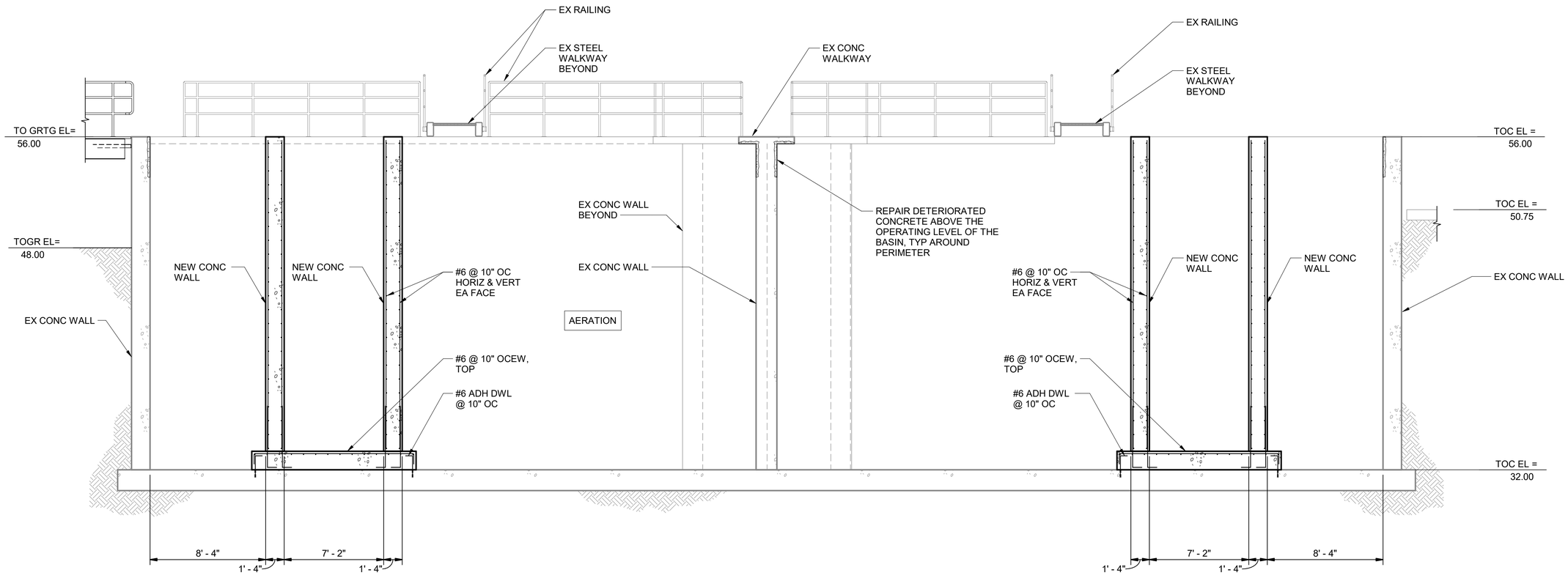
AERATION BASIN SECTIONS AND DETAILS I

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DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

SHEET
S-302

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1 S-303 OVERALL SECTION
1/4" = 1'-0"

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PREPARED BY:
JOHN D. MEHAFFEY
TEXAS REGISTRATION No.107598
DATE: SEPTEMBER 7, 2022

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

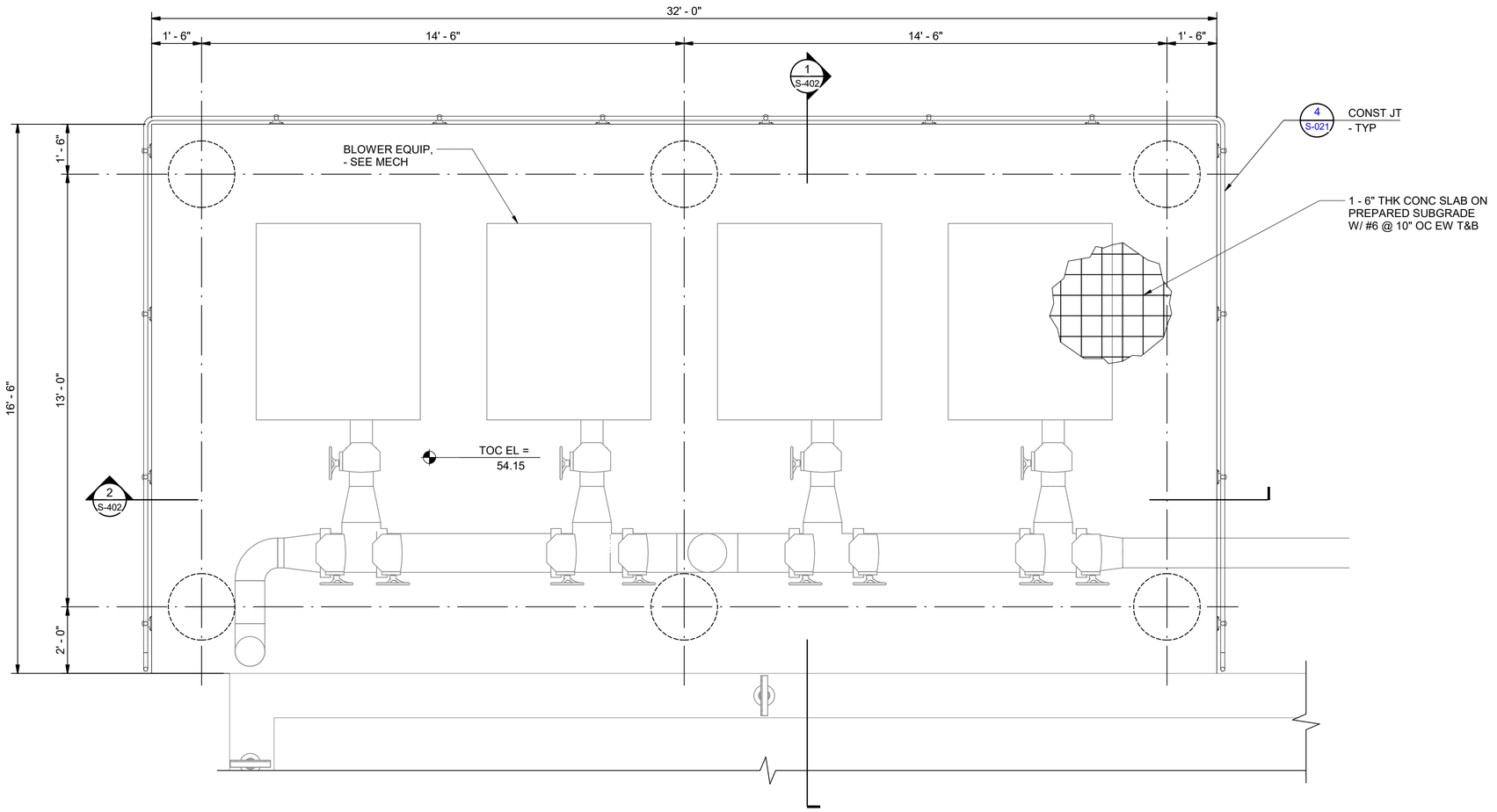
AERATION BASIN SECTIONS AND DETAILS II

DATE:	SEPTEMBER 2022
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

SHEET
S-303

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PROJECT NO: 4220079
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1 S-401 BLOWER PAD FOUNDATION PLAN

1/2" = 1'-0"

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TEXAS REGISTRATION No. 137598
DATE: SEPTEMBER 7, 2022

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

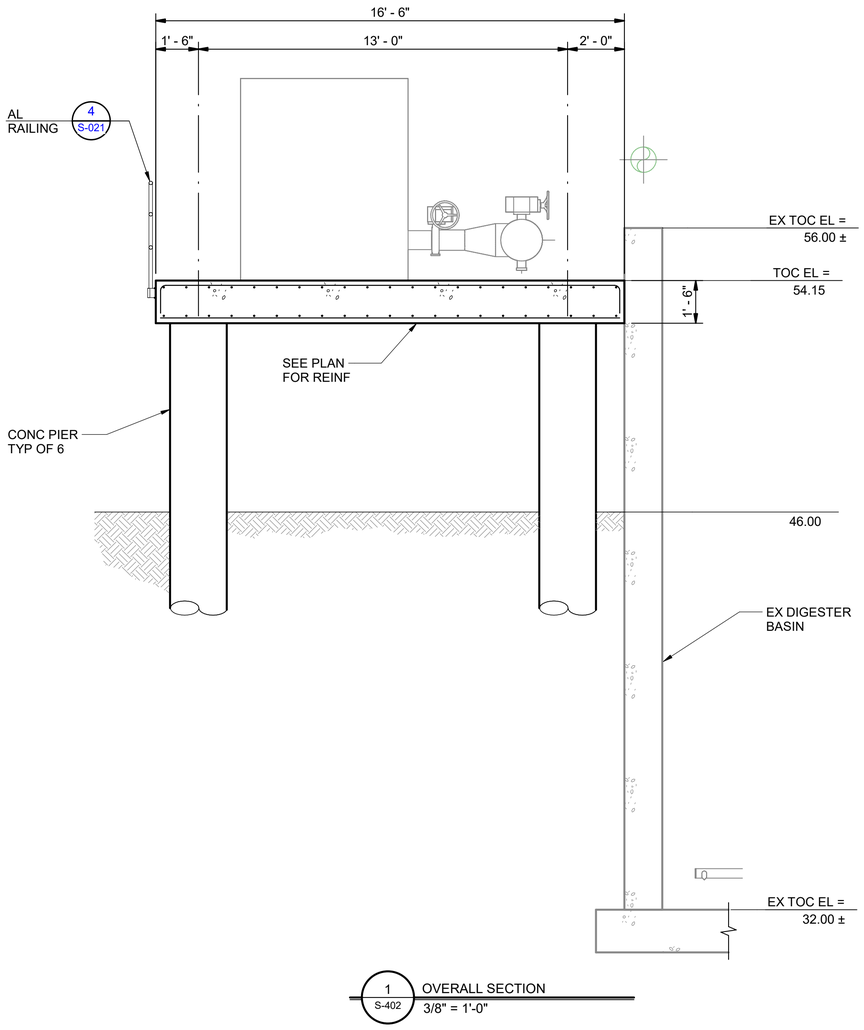
BLOWER PAD FOUNDATION PLAN

DATE:	SEPTEMBER 2022
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

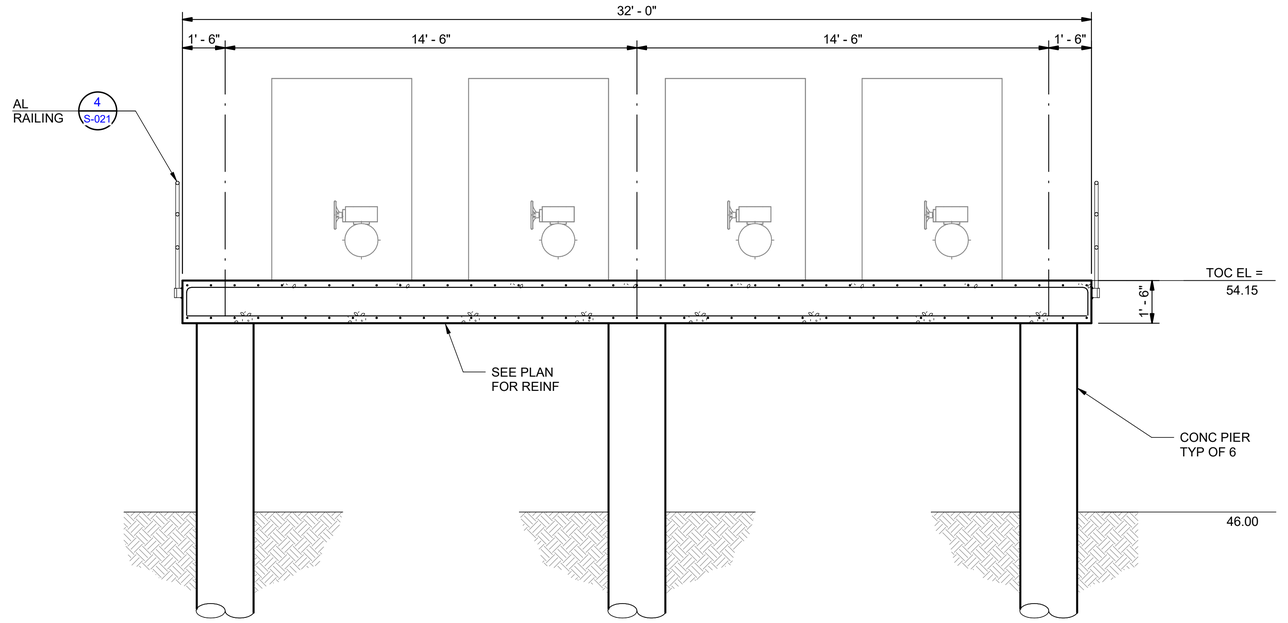
SHEET

S-401

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832.941.5233
HOUSTON, TEXAS 77084
JQIENG.COM
PROJECT NO: 4220079
TBPE FIRM F-7986



1 S-402 OVERALL SECTION
3/8" = 1'-0"



2 S-402 OVERALL SECTION
3/8" = 1'-0"

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TBPE No. 928

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TEXAS REGISTRATION No. 137598
DATE: SEPTEMBER 17, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

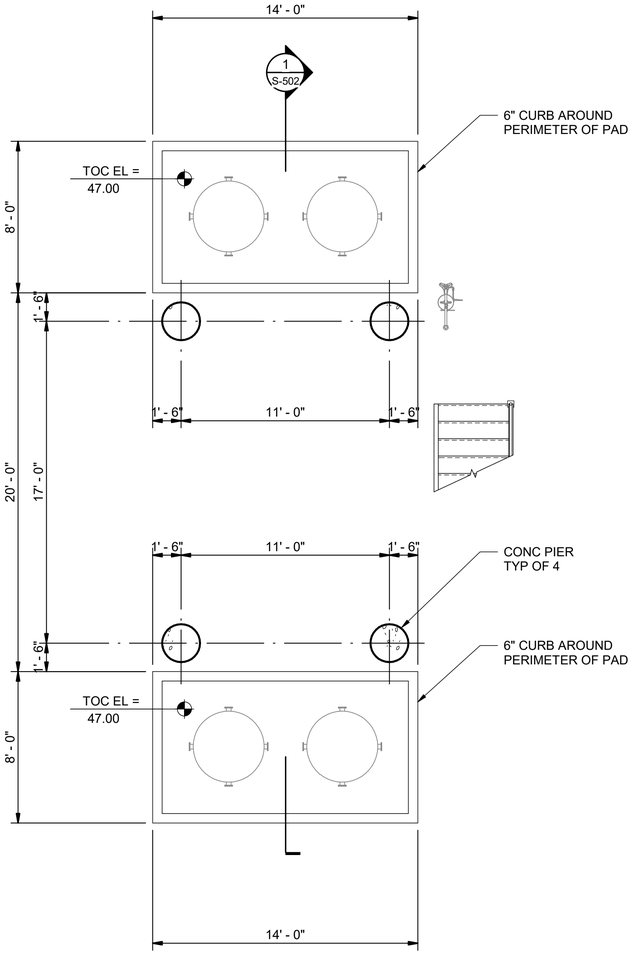
BLOWER PAD OVERALL SECTIONS

DATE:	SEPTEMBER 2022
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

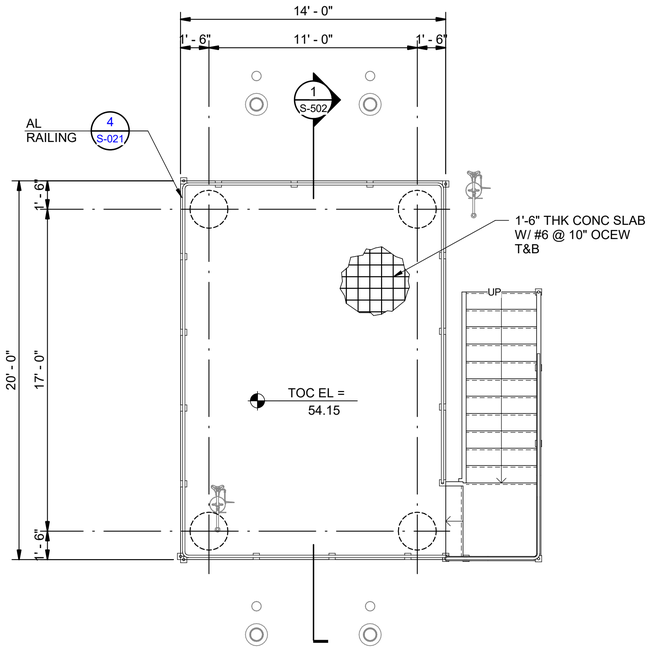
SHEET
S-402

shaping the built environment
JQ Infrastructure
JQ INFRASTRUCTURE, LLC
15810 PARK TEN PLACE, SUITE 225
832.941.5233
HOUSTON, TEXAS 77084
JQENG.COM
PROJECT NO: 4220079
TBPE FIRM F-7986

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1 S-501 DISINFECTION PAD FOUNDATION PLAN
1/4" = 1'-0"



2 S-501 DISINFECTION UPPER PLAN
1/4" = 1'-0"

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TEXAS REGISTRATION No. 137598
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WASTEWATER TREATMENT PLANT IMPROVEMENTS

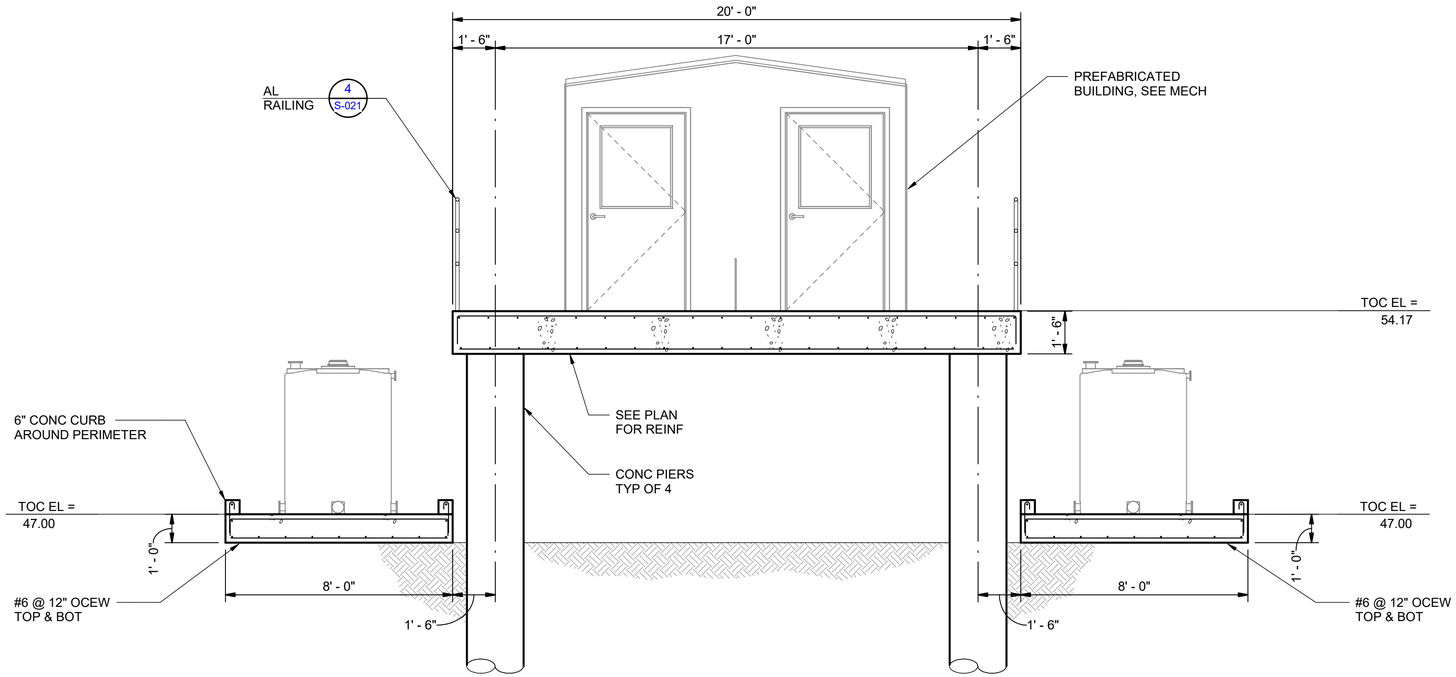
DISINFECTION UPPER PLAN

DATE:	SEPTEMBER 2022
DESIGN:	JDM
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CHECKED:	MKK
KHA NO.:	067812104

SHEET
S-501

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1 S-502 SECTION
3/8" = 1'-0"

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TEXAS REGISTRATION No. 137598
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WASTEWATER TREATMENT PLANT IMPROVEMENTS

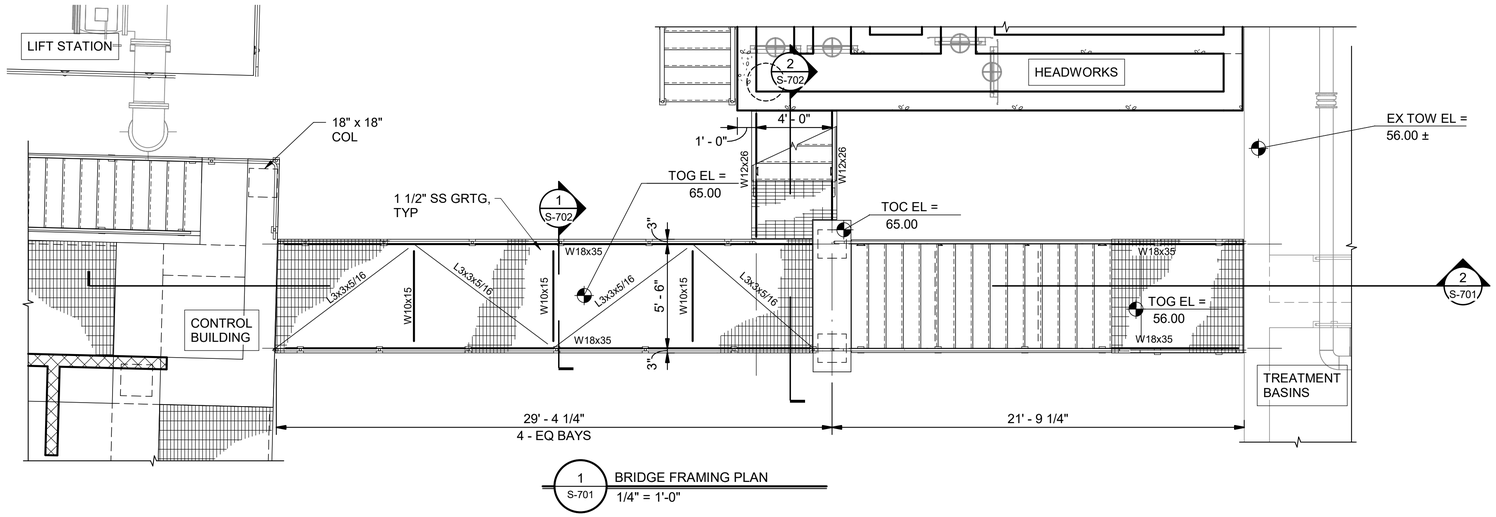
DISINFECTION SECTIONS AND DETAILS I

DATE:	SEPTEMBER 2022
DESIGN:	JDM
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CHECKED:	MKK
KHA NO.:	067812104

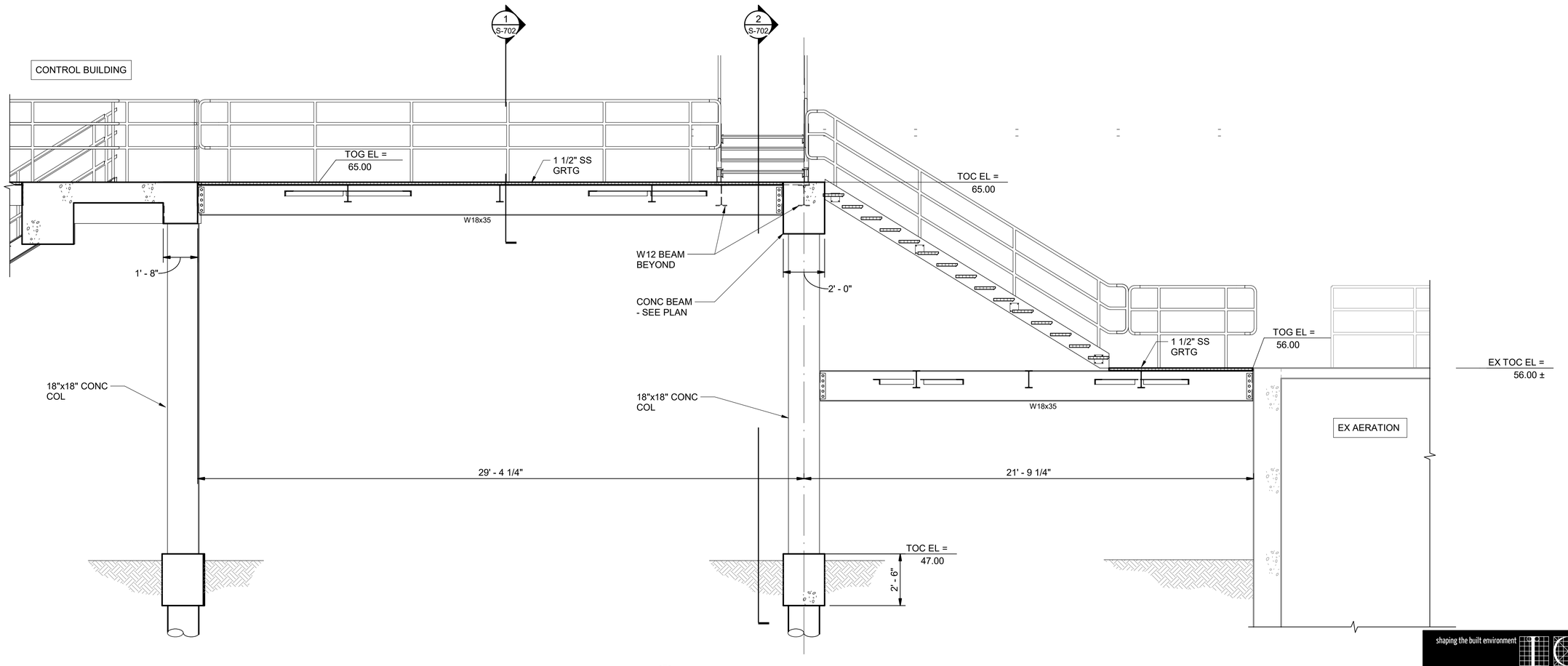
SHEET
S-502

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1 S-701 BRIDGE FRAMING PLAN
1/4" = 1'-0"



2 S-701 SECTION AT BRIDGE
3/8" = 1'-0"

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TEXAS REGISTRATION No. 137598
DATE: SEPTEMBER 7, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

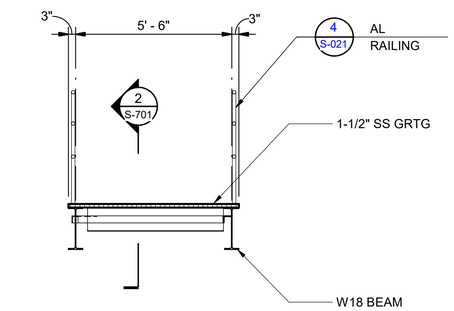
CONNECTING BRIDGE FRAMING PLAN AND SECTION

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DESIGN:	JDM
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CHECKED:	MKK
KHA NO.:	067812104

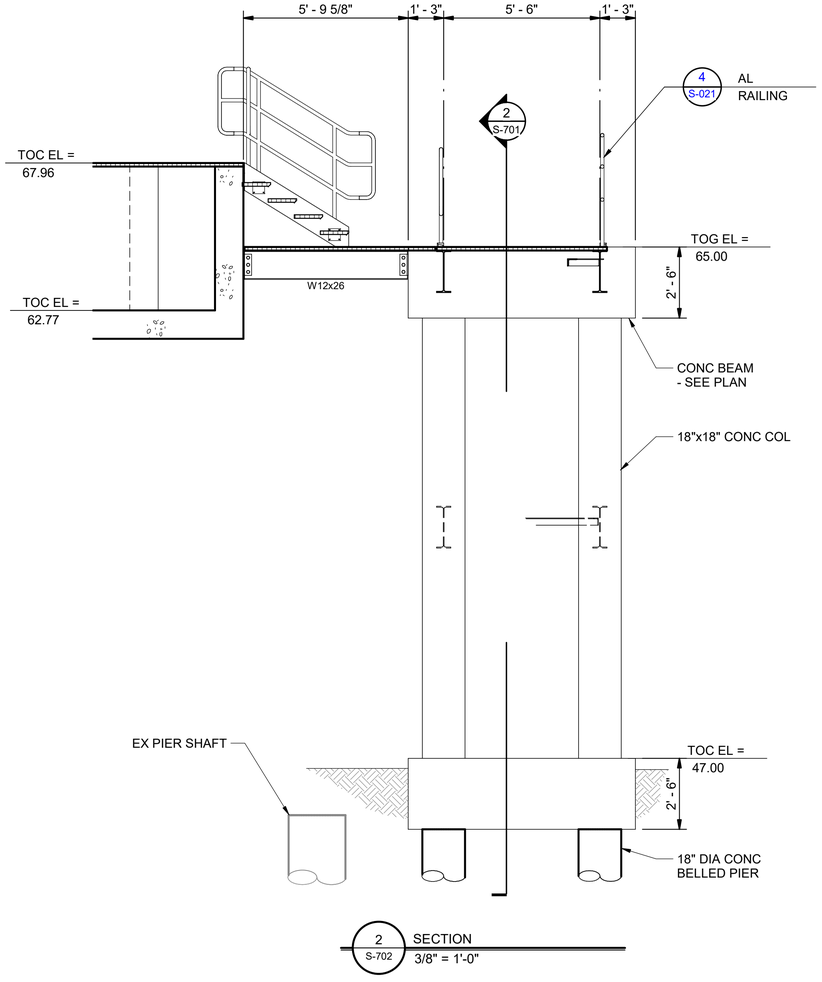
SHEET
S-701

shaping the built environment
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832.941.5233
HOUSTON, TEXAS 77084
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PROJECT NO: 4220079
TBPE FIRM F-7986

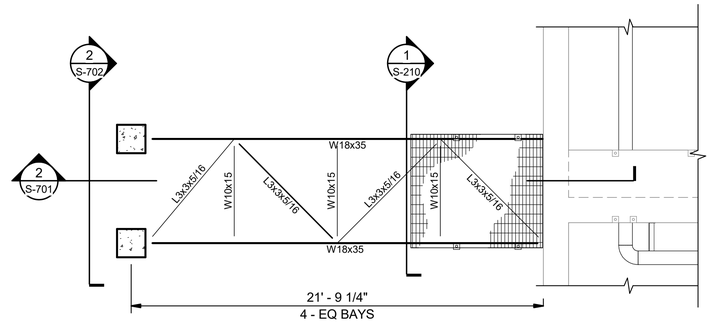
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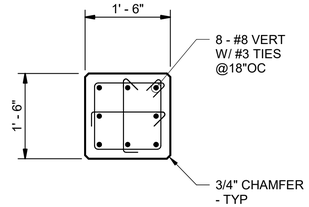
1 S-702 SECTION 3/8" = 1'-0"



2 S-702 SECTION 3/8" = 1'-0"



3 S-702 LOW BRIDGE FRAMING PLAN 1/4" = 1'-0"



4 S-702 COLUMN 3/4" = 1'-0"

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TEXAS REGISTRATION No. 137598
DATE: SEPTEMBER 7, 2022

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

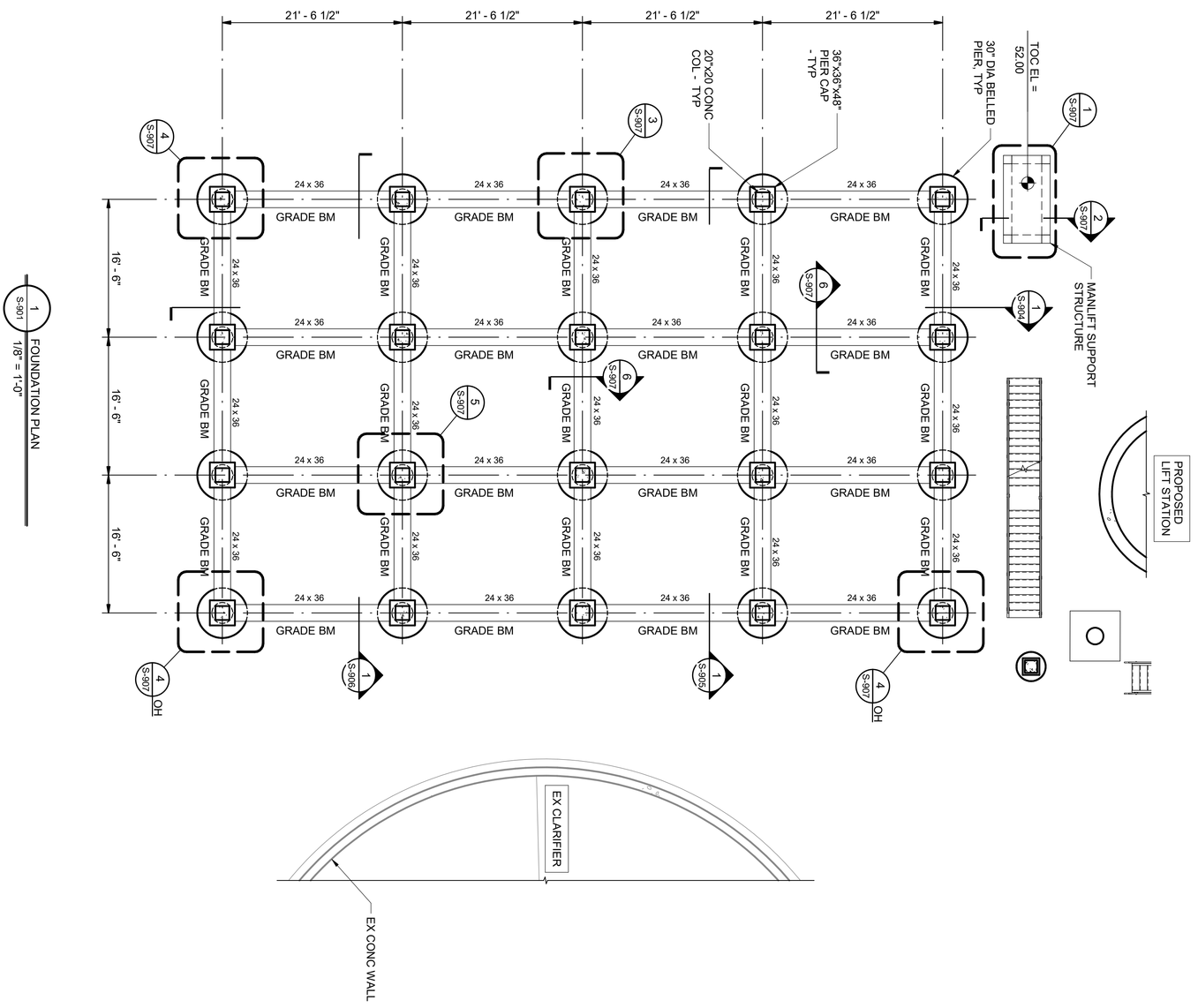
CONNECTING BRIDGE SECTIONS AND DETAILS

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SHEET
S-702

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HOUSTON, TEXAS 77004
832-971-2881
TBPE FIRM # 20070719
1331 LAMAR STREET, SUITE 225
832-541-5231
HOUSTON, TEXAS 77004
PROJECT NO. 4273007.0
TBPE FIRM # 7586

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DESIGN:	JDM
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KHA NO.:	067812104

SHEET S-901

CONTROL BUILDING FOUNDATION PLAN

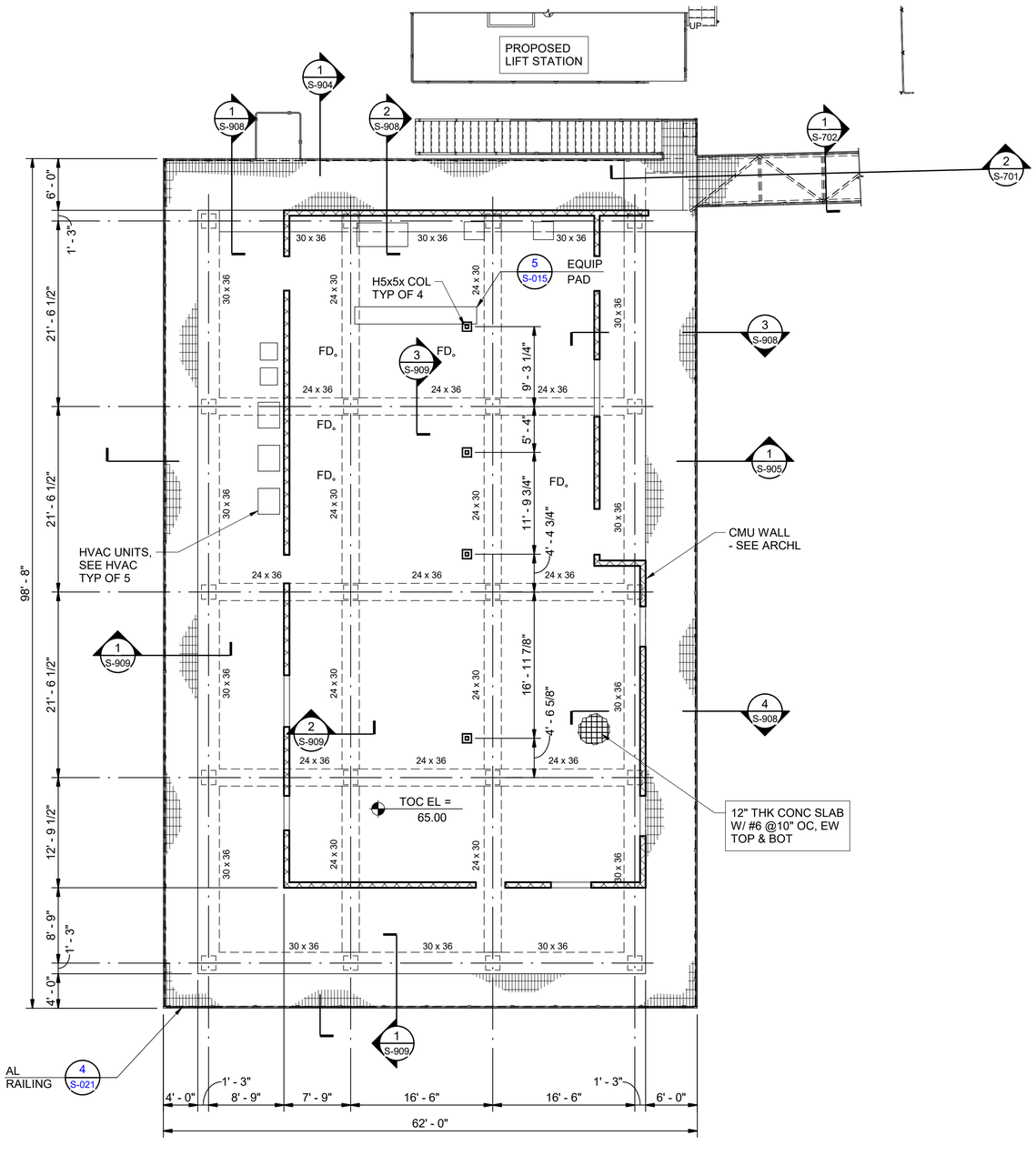
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WASTEWATER TREATMENT PLANT IMPROVEMENTS

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TEXAS REGISTRATION No.107566
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1 S-902 INTERMEDIA FLOOR PLAN
1/8" = 1'-0"

NORTH

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TEXAS REGISTRATION No. 137598
DATE: SEPTEMBER 7, 2022

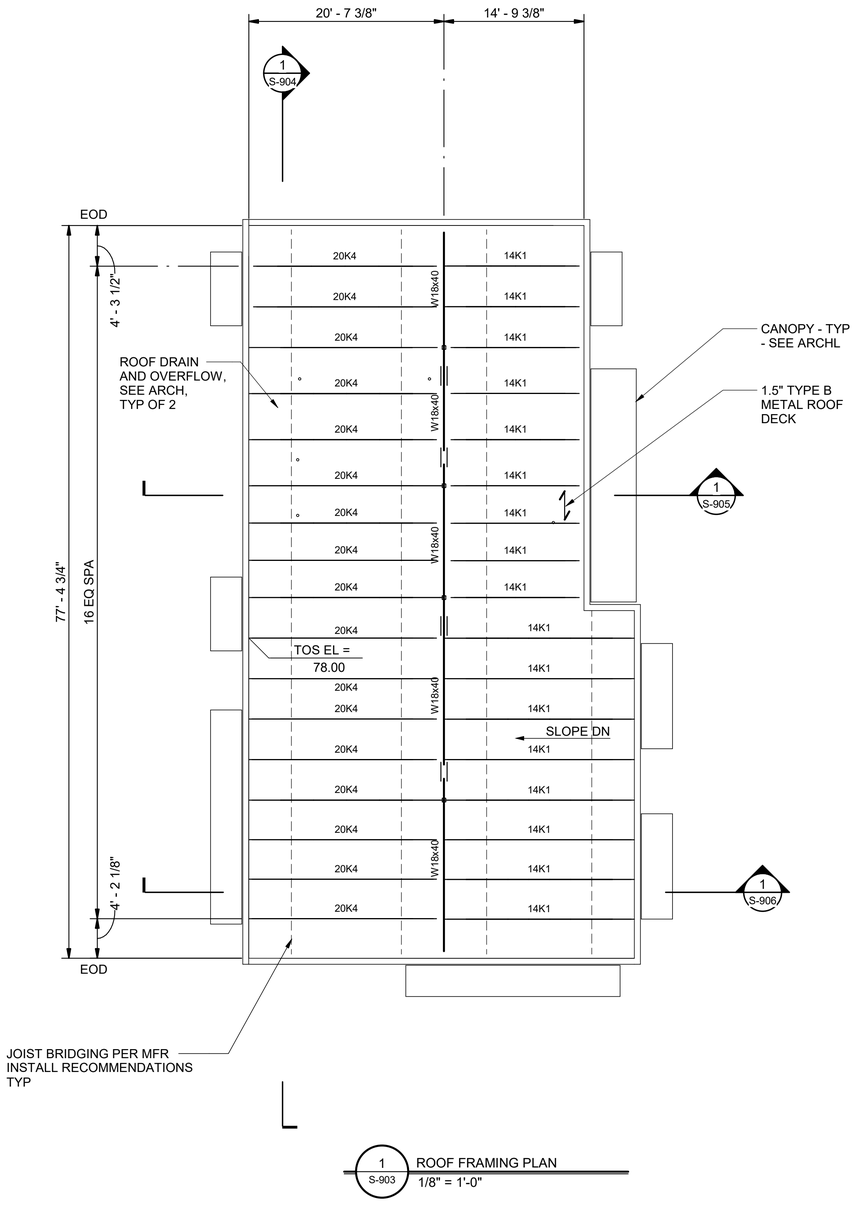
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WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING INTERMEDIATE PLAN

DATE:	SEPTEMBER 2022
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SHEET
S-902

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1 S-903 ROOF FRAMING PLAN
1/8" = 1'-0"

NORTH

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TEXAS REGISTRATION No. 137098
DATE: SEPTEMBER 7, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

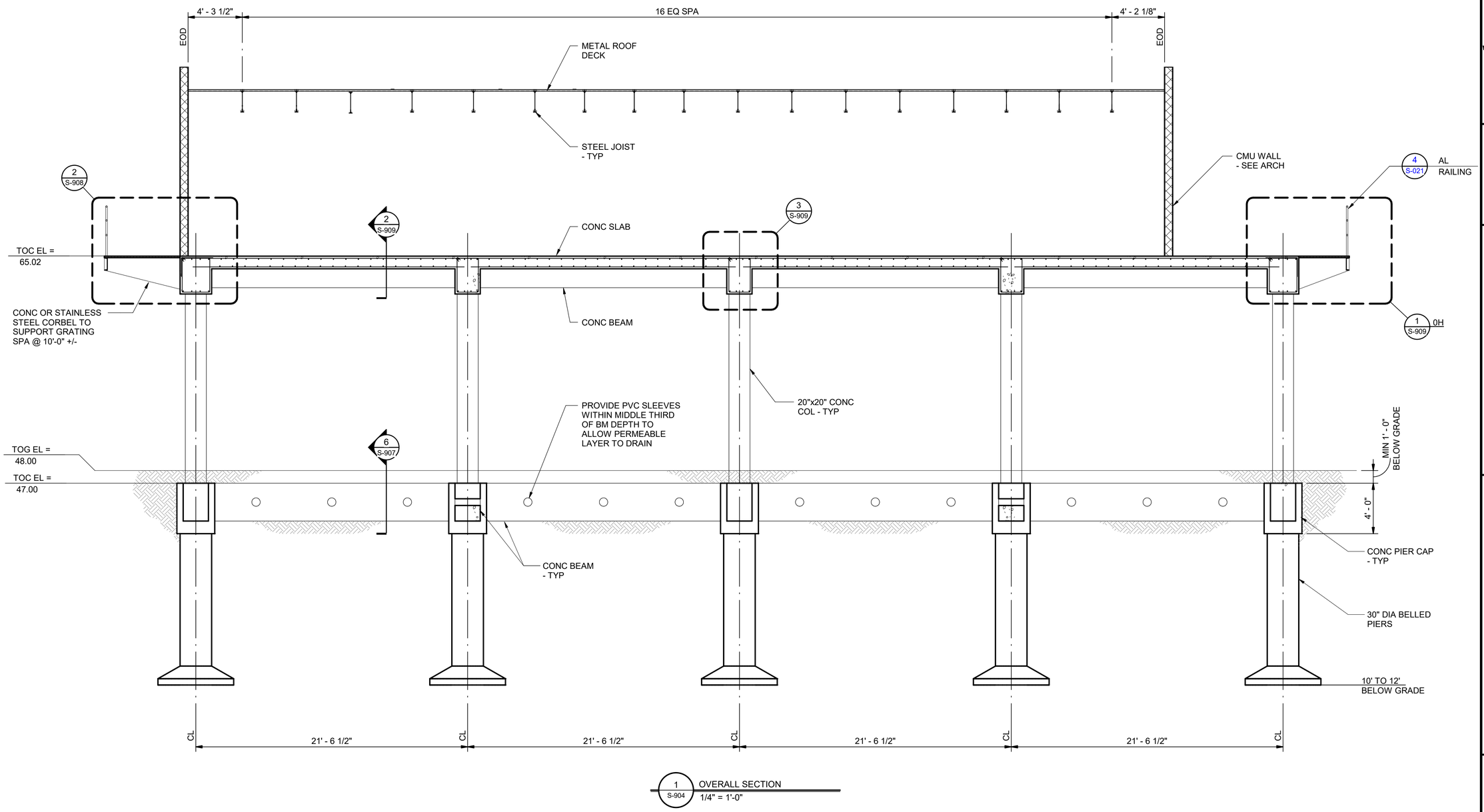
CONTROL BUILDING ROOF FRAMING PLAN

DATE:	SEPTEMBER 2022
DESIGN:	JDM
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SHEET
S-903

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1 S-904 OVERALL SECTION
1/4" = 1'-0"

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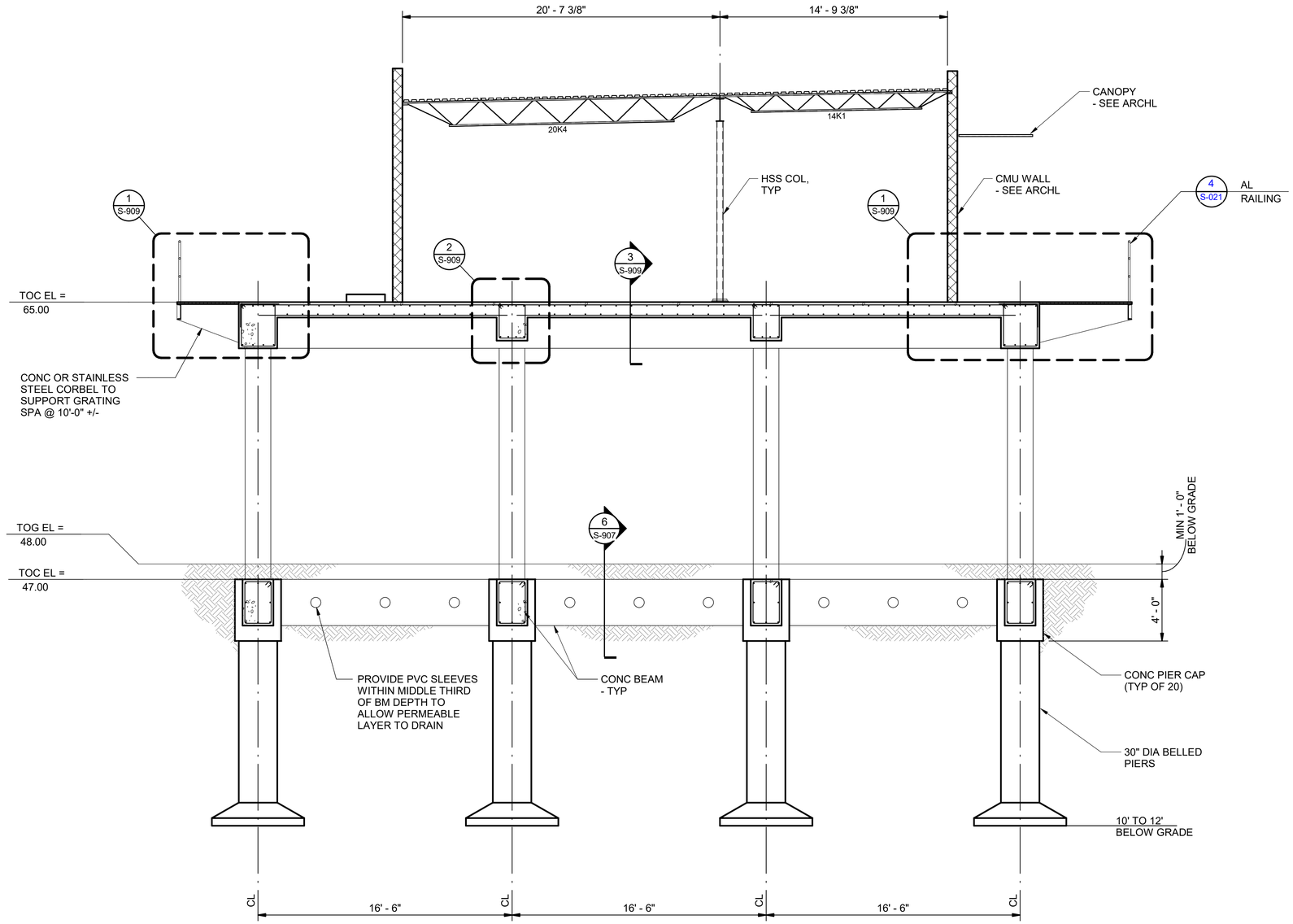
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING OVERALL SECTION I

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
SEPTEMBER 2022	JDM	CG	MKK	067812104

SHEET
S-904

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1 S-905 OVERALL SECTION
1/4" = 1'-0"

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JOHN D. MEDHOUST
TEXAS REGISTRATION No. 137558
DATE: SEPTEMBER 1, 2022

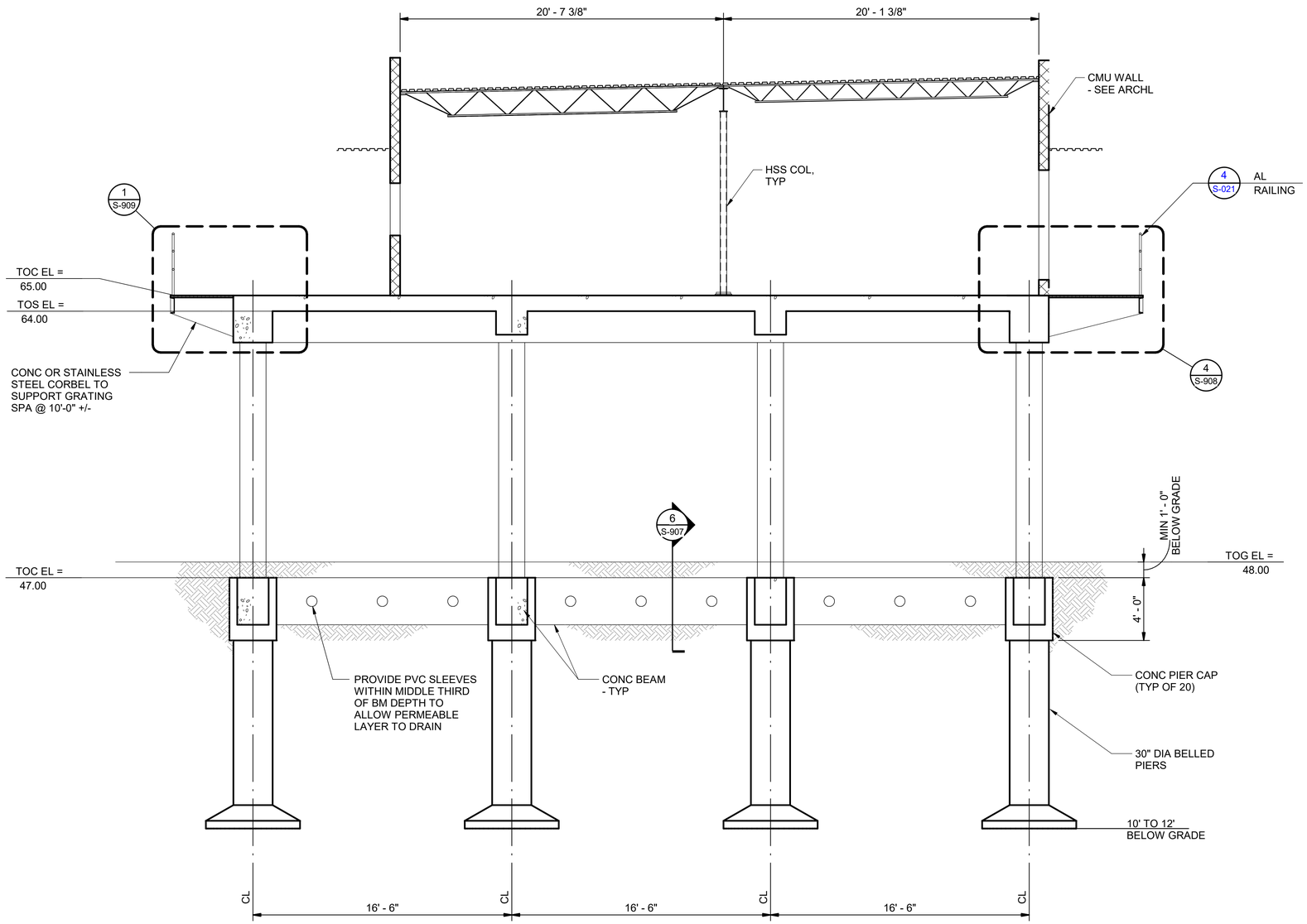
CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING OVERALL SECTION II

DATE:	SEPTEMBER 2022
DESIGN:	JDM
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KHA NO.:	067812104

SHEET
S-905

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1 S-906 OVERALL SECTION
1/4" = 1'-0"

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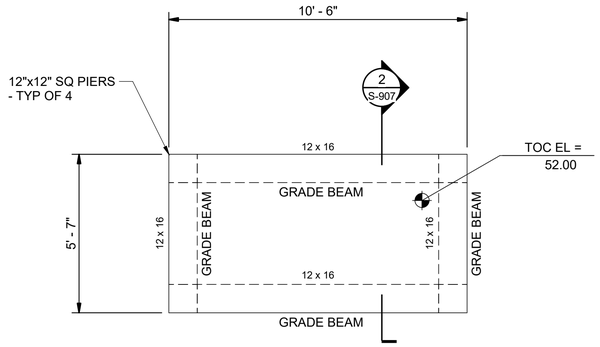
CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING OVERALL SECTION III

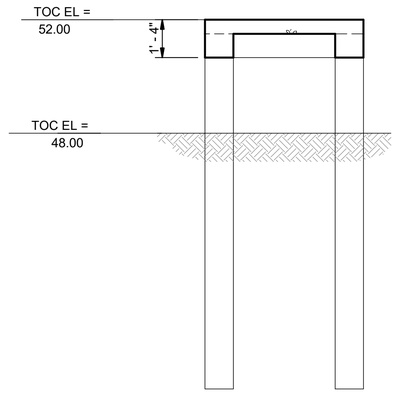
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SHEET
S-906

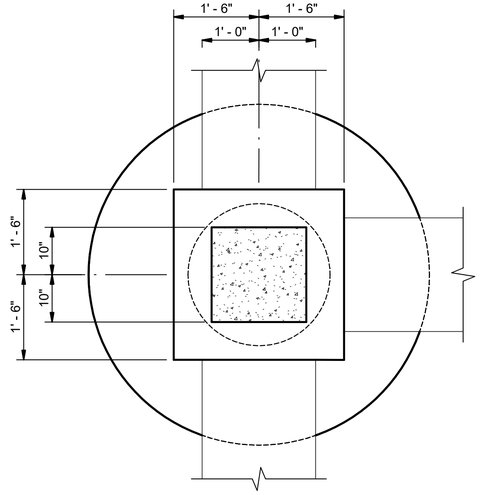
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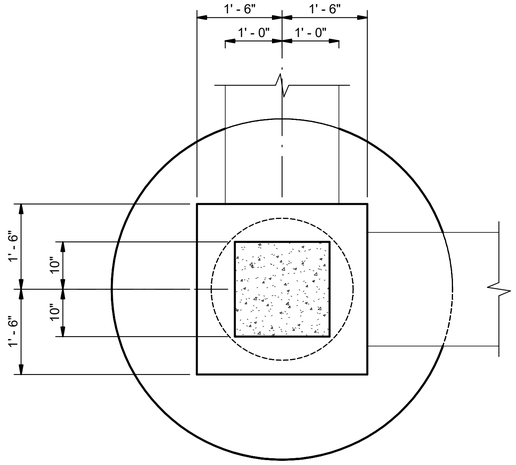
1 S-907 MANLIFT SUPPORT STRUCTURE
3/8" = 1'-0"



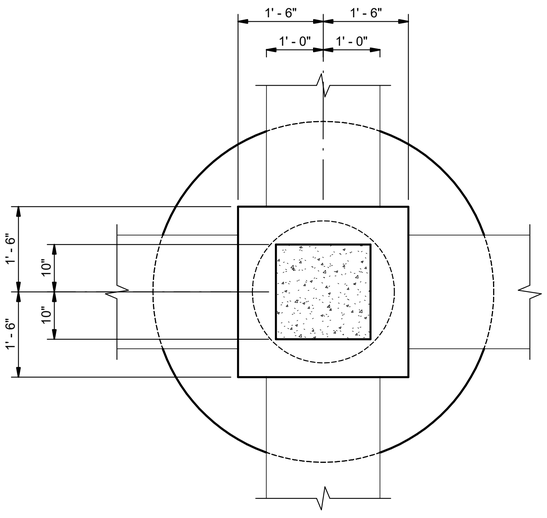
2 S-907 OVERALL SECTION
3/8" = 1'-0"



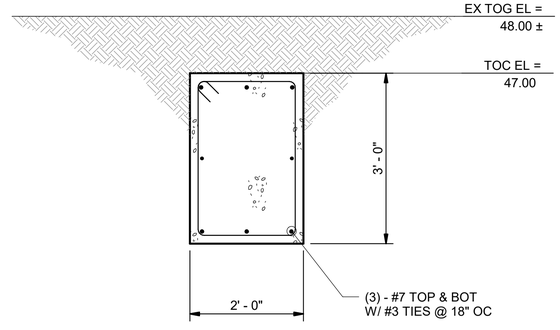
3 S-907 PLAN VIEW DETAIL
3/4" = 1'-0"



4 S-907 PLAN VIEW DETAIL
3/4" = 1'-0"



5 S-907 PLAN VIEW DETAIL
3/4" = 1'-0"



6 S-907 SECTION
3/4" = 1'-0"

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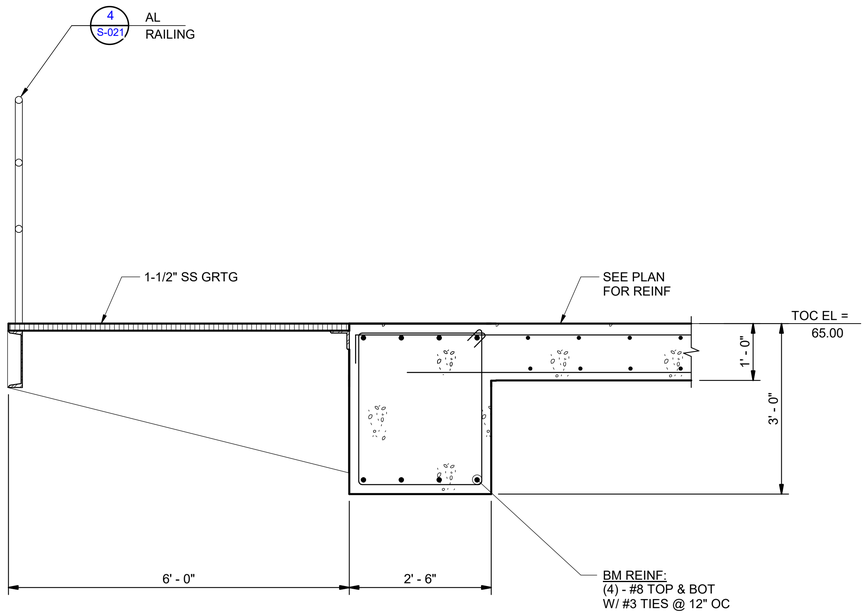
CONTROL BUILDING SECTIONS AND DETAILS I

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CHECKED:	MKK
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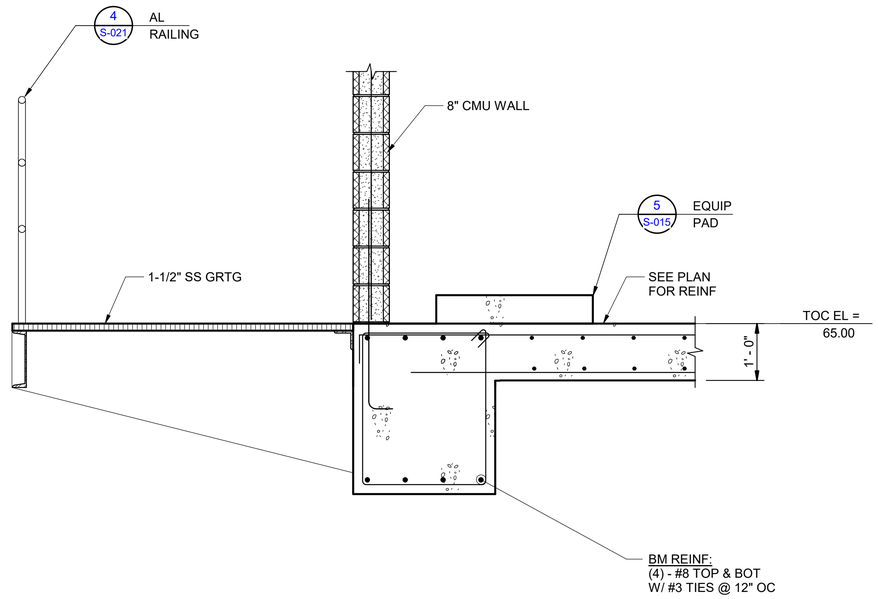
SHEET
S-907

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832.941.5233
HOUSTON, TEXAS 77084
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PROJECT NO: 4220079
TBPE FIRM F-7986

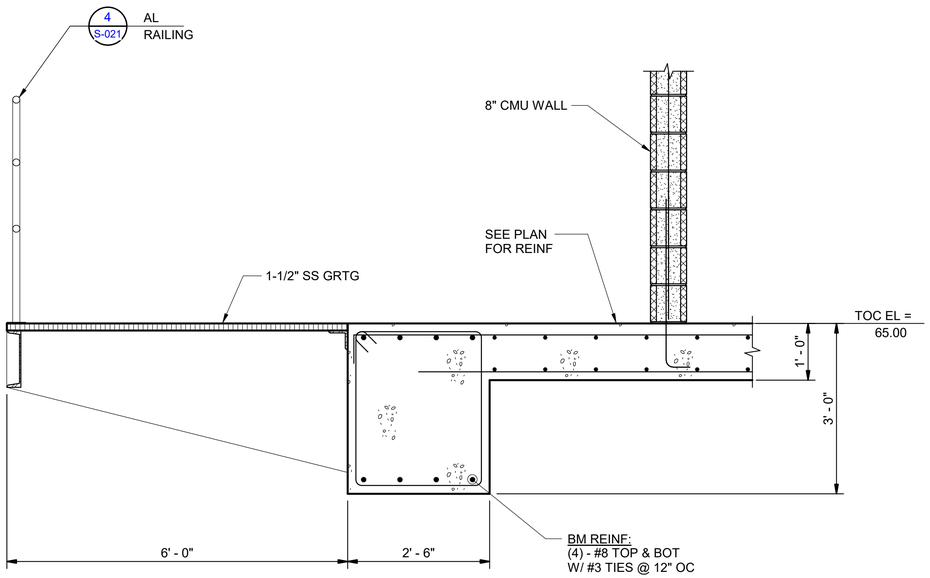
Autodesk Docs://067812104 West U WWTP/West U WWTP - Struct_R22.rvt



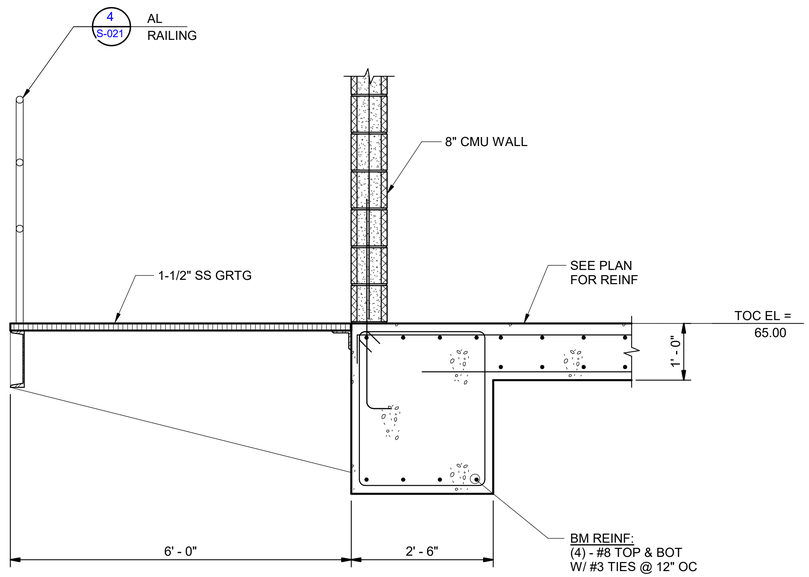
1 S-908 SECTION 3/4" = 1'-0"



2 S-908 SECTION 3/4" = 1'-0"



3 S-908 SECTION 3/4" = 1'-0"



4 S-908 SECTION 3/4" = 1'-0"

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

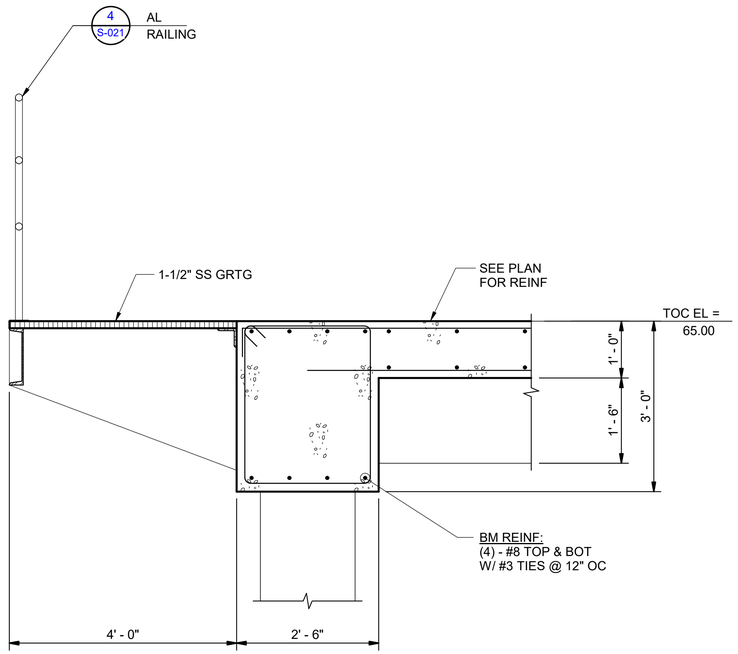
CONTROL BUILDING SECTIONS AND DETAILS II

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DESIGN:	JDM
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CHECKED:	MKK
KHA NO.:	067812104

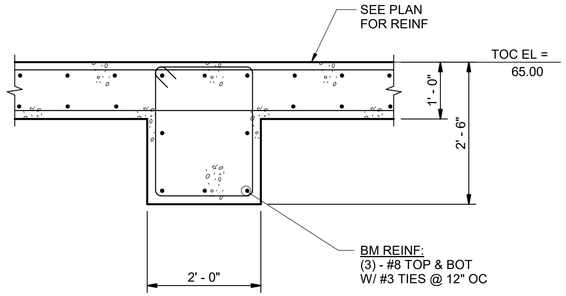
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S-908

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

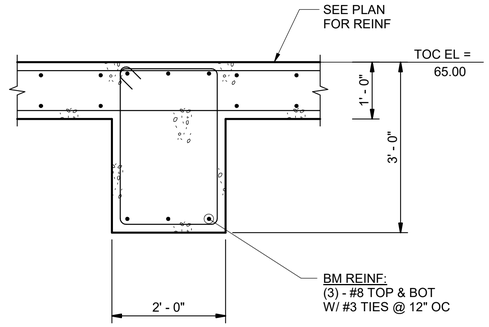
Autodesk Docs://067812104 West U WWTP/West U WWTP – Struct_R22.rvt



1 S-909 SECTION
3/4" = 1'-0"



2 S-909 SECTION
3/4" = 1'-0"



3 S-909 SECTION
3/4" = 1'-0"

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

No.	Revisions	By	Date

INTERIM REVIEW DOCUMENTS
NOT INTENDED FOR BIDDING, PERMIT OR CONSTRUCTION PURPOSES
JOHN D. MEHAFFEY
TEXAS REGISTRATION No. 137558
DATE: SEPTEMBER 7, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING SECTIONS AND DETAILS III

DATE:	SEPTEMBER 2022
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

SHEET
S-909

shaping the built environment
JQ INFRASTRUCTURE, LLC
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TBPE FIRM F-7986

Autodesk Docs://067812104 West U WWTP/West U WWTP – Struct_R22.rvt

NOTE:

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

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. GENERAL CONTRACTOR IS RESPONSIBLE FOR ALL THIRD PARTY ENERGY INSPECTIONS THAT MEET BUILDING CODES, ENERGY CODES, AND LOCAL CODE REQUIREMENTS.

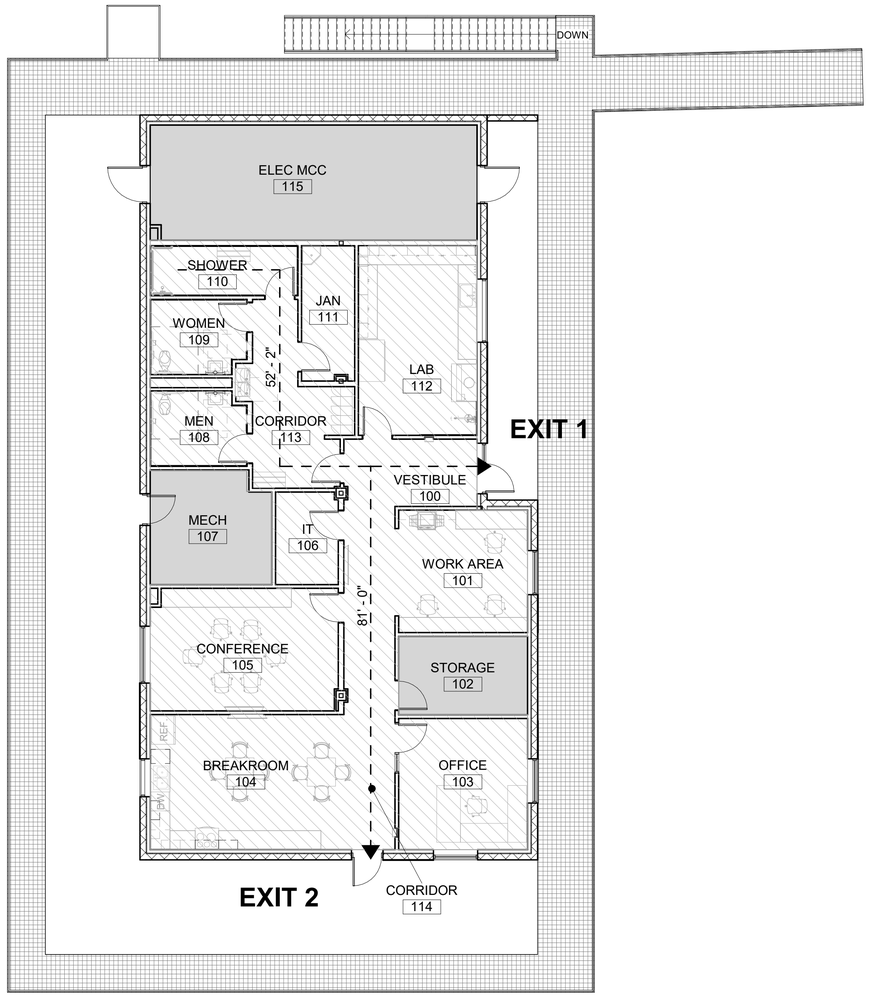
F. ALL WALKS SHALL BE SLOPED 5% MAXIMUM IN THE DIRECTIONS OF TRAVEL AND 2% MAXIMUM ON CROSS SLOPES.

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

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

I. ALL PENETRATIONS AT GYPSUM BOARD PARTITION WALL, KNEE WALLS, BULKHEADS AND BACK UP WALLS ARE TO BE THOROUGHLY SEALED IN A MANNER APPROPRIATE TO WALL TYPE PENETRATED. IE. WEATHER TIGHT, ACOUSTICAL NON-RATED AND FIRE RATED. EXPOSED GYPSUM BOARD TO BE SEALED TAPED AND BEDDED FOR BEST QUALITY APPEARANCE.

J. SHORE AND BRACEALL EXCAVATION IN ACCORDANCE WITH CITY, STATE AND O.S.H.A. REQUIREMENTS.



1 LIFE SAFETY PLAN

A-900 SCALE: 1/8" = 1'-0"

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: 3,100 SF
OCCUPANCY:	GROUP B - BUSINESS
CONSTRUCTION TYPE:	TYPE II-B, NON SPRINKLED
EXITING:	
OCCUPANTS:	TABLE 1004.1.2 STORAGE & MECHANICAL AREAS = 675 SF 675 SF / 300 = 3 OCCUPANTS BUISNESS AREAS = 2158 SF / 100 GROSS = 22 OCCUPANTS TOTAL: 25 OCCUPANTS
MAX TRAVEL DISTANCE:	200' WITHOUT SPRINKLER SYSTEM (TABLE 1017.2)
MAX COMMON PATH:	100' (OCCUPANT LOAD LESS THAN 30, WITHOUT SPRINKLER SYSTEM) (TABLE 1006.2.1)
EXITS:	1 EXIT REQUIRED IF OCCUPANT LOAD LESS THAN 29 (TABLE 1006.2.1)

PLUMBING FIXTURE COUNT

OCCUPANCY: B	
WATER CLOSETS:	1 per 25 (1st 50), 1 per 50 (>50) Proposed: 1 WC per restroom
LAVATORIES:	1 per 40 (1st 80), 1 per 80 (>80) Proposed: 1 LAV per restroom
DRINKING FOUNTAIN:	1 per 100 ; Proposed: (1)
SERVICE SINK:	1 Proposed: 1

APPLICABLE CODES - HOUSTON

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 CATEGORGY III (150 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

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

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
P: 281 597 9300
TBPE No. 928

No.	Revisions	By	Date

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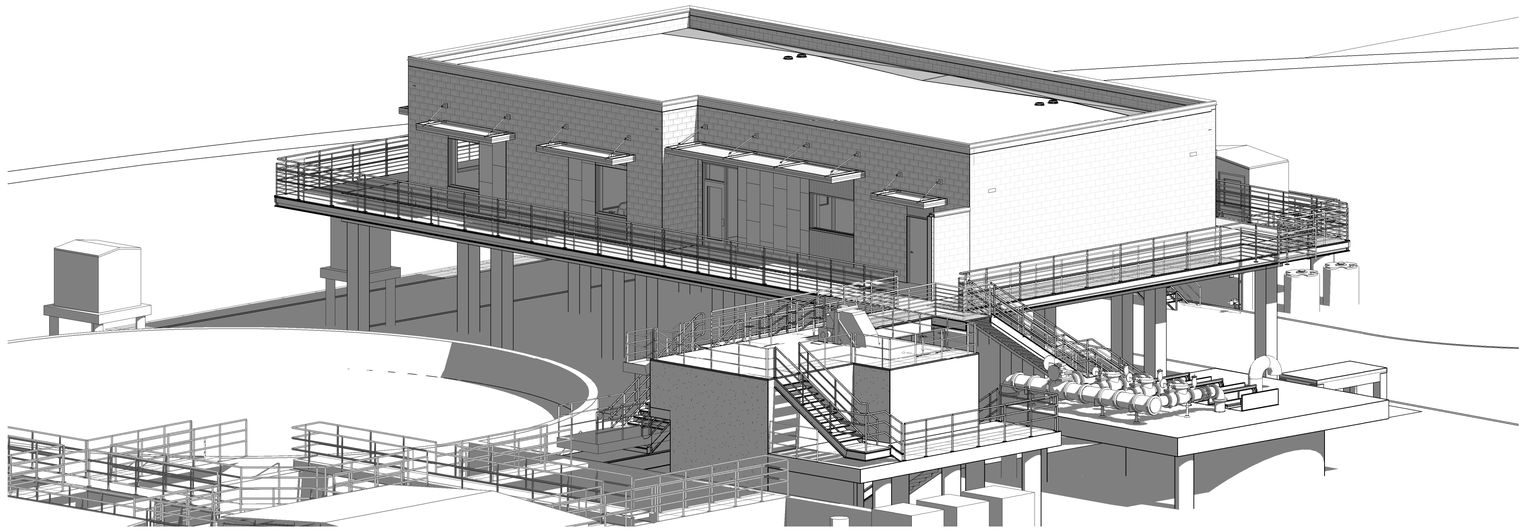
CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING LIFE SAFETY AND CODE ANALYSIS

DATE:	SEPTEMBER 1, 2022
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

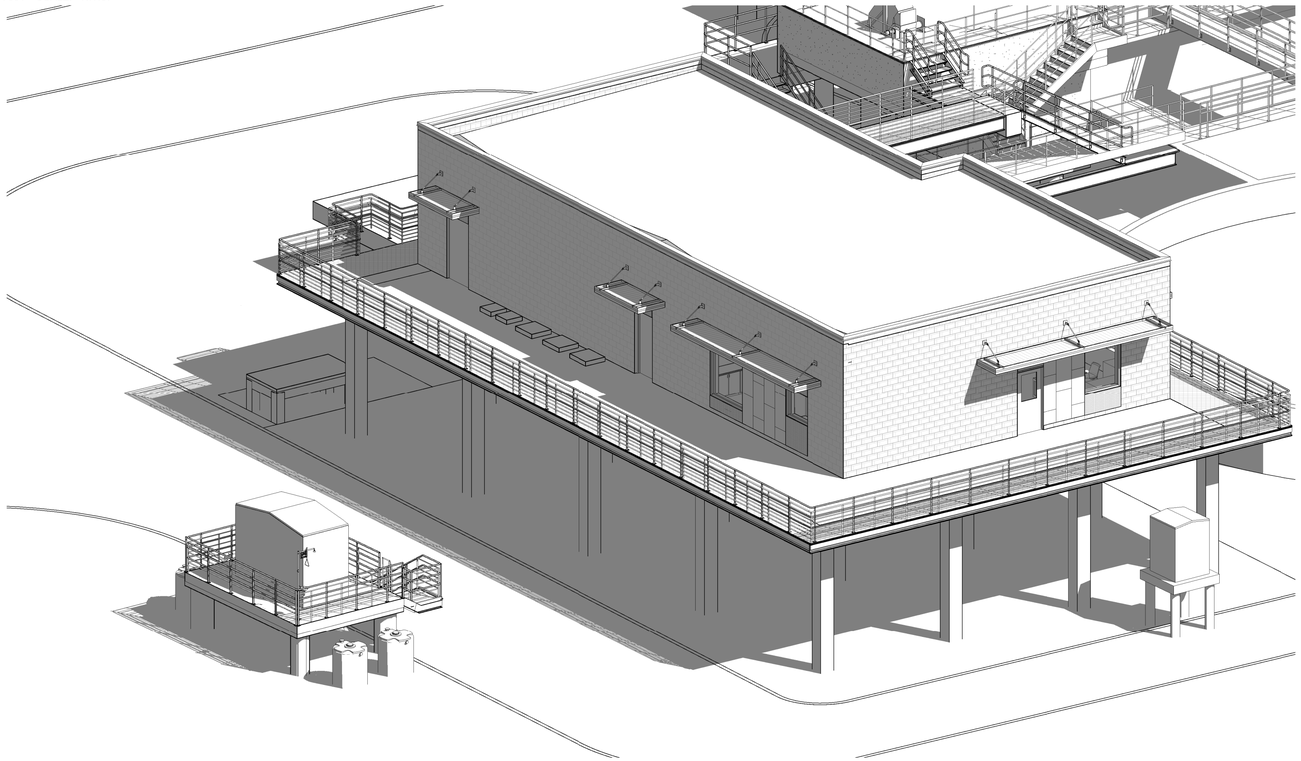
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A-900

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2 VIEW

A-901 SCALE: N.T.S.



1 VIEW

A-901 SCALE: N.T.S.

quorum
ARCHITECTURE · INTERIOR DESIGN
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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING 3D MODEL VIEWS

DATE:	SEPTEMBER 1, 2022
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

SHEET

A-901

C:\Users\trevor\Documents\21051.01 West University WWTP_CENTRAL_trevorAHKBG.rvt

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.

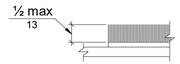


Figure 302.2 Carpet Pile Height

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.

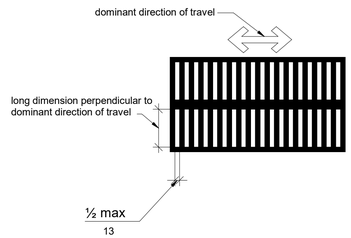


Figure 302.3 Elongated Openings in Floor or Ground Surfaces

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.

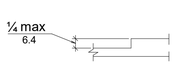


Figure 303.2 Vertical Change in Level

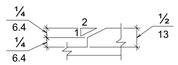


Figure 303.3 Beveled Change in Level

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.

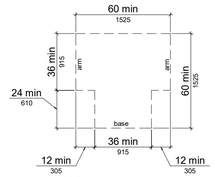


Figure 304.3.2 T-Shaped Turning Space

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.

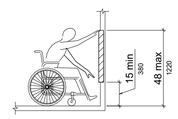


Figure 308.2.1 Unobstructed Forward Reach.

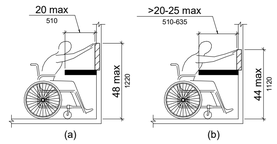
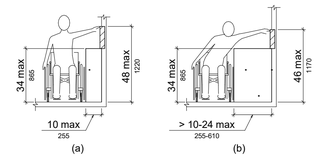


Figure 308.2.2 Obstructed High Forward Reach

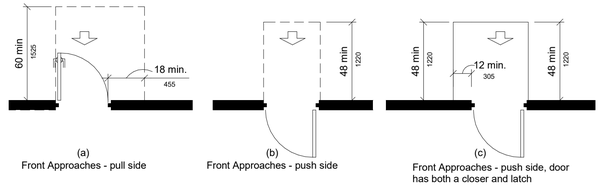
308.3.2 Obstructed High Reach. Where a clear floor or ground space allows a parallel approach to an element and the high side reach is over an obstruction, the height of the obstruction shall be 34 inches (865 mm) maximum and the depth of the obstruction shall be 24 inches (610 mm) maximum. The high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



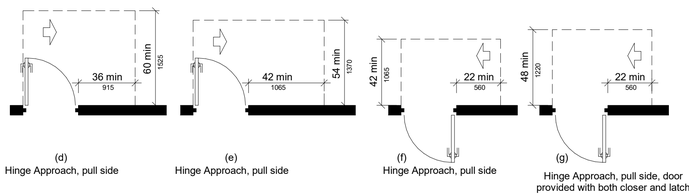
404 Doors, Doorways, and Gates

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

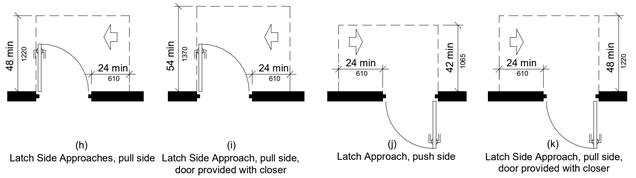
A. Front approach, pull side - 60" min. width & 18" min. beside strike edge
Front approach, push side - 48" min. width & 0" beside strike edge
(12" beside strike edge if door has both a closer and a latch)



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)



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)



FOR REFERENCE ONLY

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

ACCESSIBILITY GUIDELINES (TAS)

DATE:	SEPTEMBER 1, 2022
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

SHEET

A-902

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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.

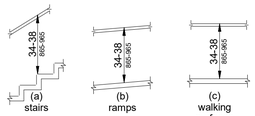


Figure 505.4 Handrail Height

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.

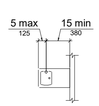


Figure 602.5 Drinking Fountain Spout Location

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.

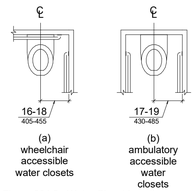


Figure 604.2 Water Closet Location

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:	SEPTEMBER 1, 2022
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CHECKED:	WRM
KHA NO.:	067812104

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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.

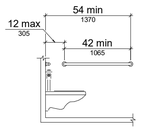


Figure 604.5.1
Side Wall Grab Bar at Water Closets

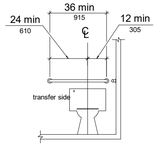


Figure 604.5.2
Rear Wall Grab Bar at Water Closets

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.

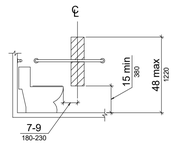


Figure 604.7 Dispenser Outlet Location

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.

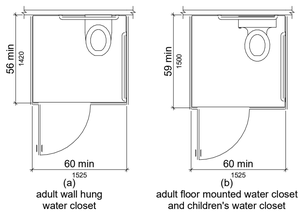


Figure 604.8.1.1 Size of Wheelchair Accessible Toilet Compartment

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.

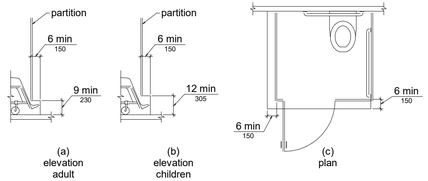


Figure 604.8.1.4 Wheelchair Accessible Toilet Compartment Toe Clearance

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

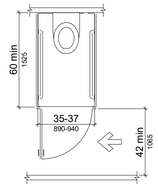


Figure 604.8.2 Ambulatory Accessible Toilet Compartment

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.

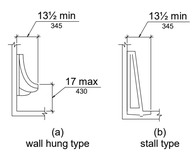


Figure 605.2 Height and Depth of Urinals

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).

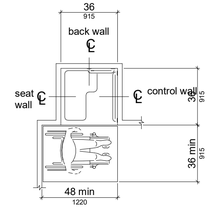
606.4 Faucets: Controls for faucets shall comply with 309. Hand-operated metering faucets shall remain open for 10 seconds minimum.

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.

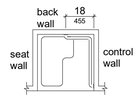


Figure 608.3.1 Grab Bars for Transfer Type Shower

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

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ACCESSIBILITY GUIDELINES (TAS)

DATE:	SEPTEMBER 1, 2022
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.

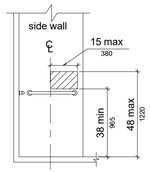


Figure 608.5.1 Transfer Type Shower Compartment Control Location

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.

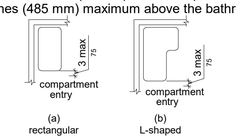


Figure 610.3 Extent of Seat

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.

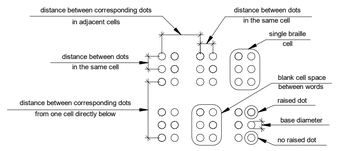


Figure 703.3.1 Braille Measurement

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.

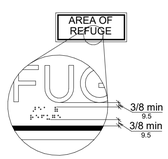


Figure 703.3.2 Position of Braille

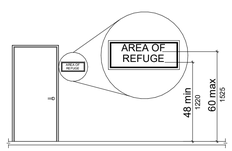


Figure 703.4.1 Height of Tactile Characters Above Finish Floor or Ground

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.

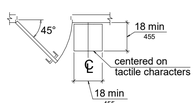


Figure 703.4.2 Location of Tactile Signs at Doors

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.

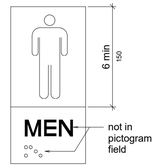


Figure 703.6.1 Pictogram Field

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

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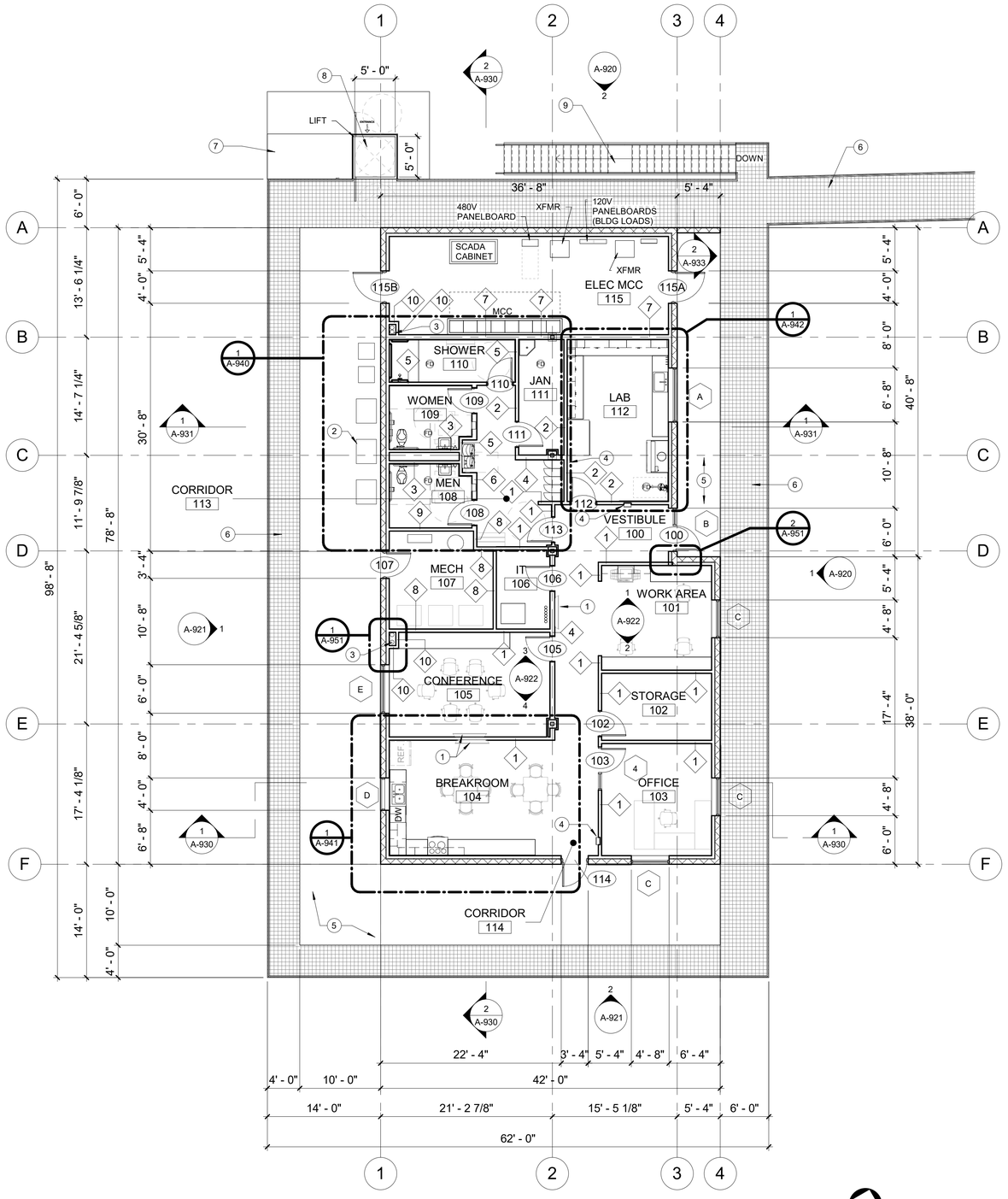
CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ACCESSIBILITY GUIDELINES (TAS)

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KHA NO.:	067812104

SHEET
A-905

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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 WORK, 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. WHERE FLOOR DRAINS (FD) ARE SHOWN SLOPE FLOOR IN ROOM TO FLOOR DRAIN. COMPLY WITH TAS FOR MAX SLOPES.

G. 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.

H. 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.

I. 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.

J. 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).

K. 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.

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

FLOOR PLAN KEY NOTES

1 TV MONITOR DISPLAY BY OWNER.
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 GRATE WALKWAY - REFER TO STRUCTURAL
7 LIFT MECHANISMS AS SPECIFIED
8 WHEELCHAIR LIFT AS SPECIFIED
9 STAIR TO GROUND LEVEL REFER TO STRUCTURAL

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

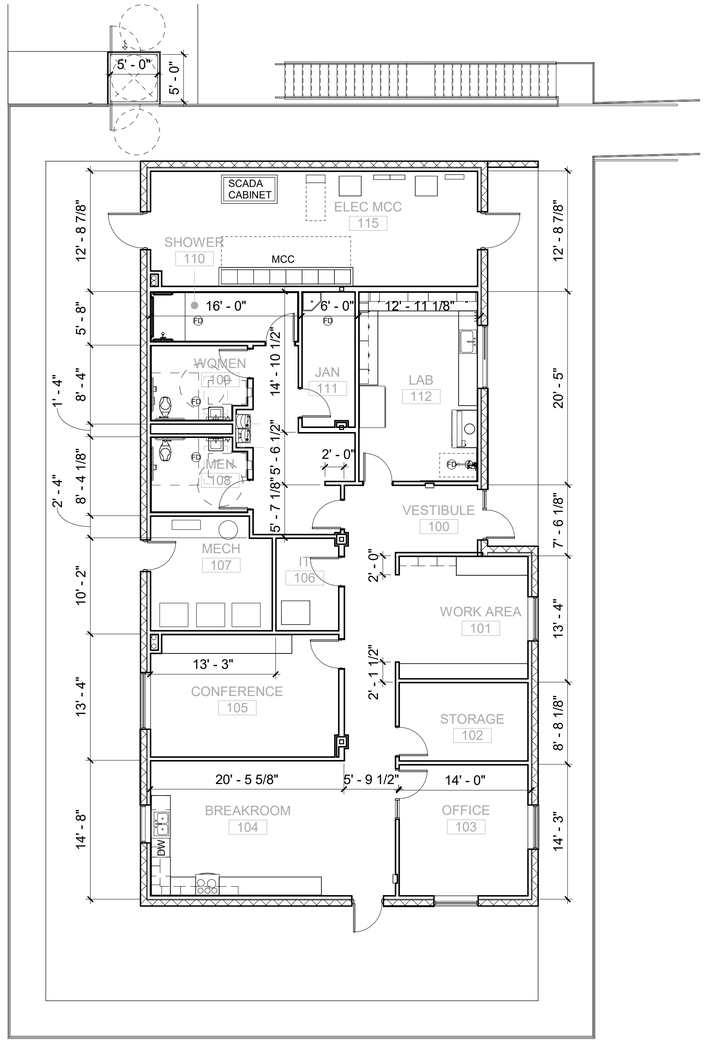
CONTROL BUILDING FLOOR PLAN

DATE:	SEPTEMBER 1, 2022
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

SHEET
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1 DIMENSION FLOOR PLAN

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

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

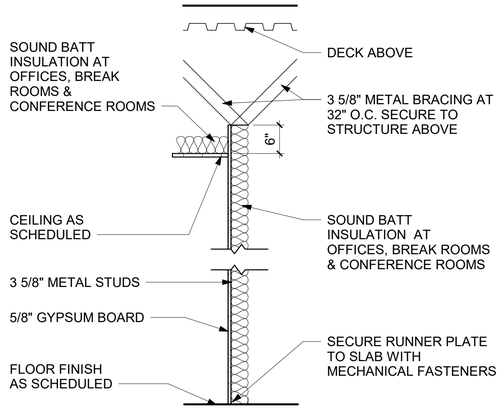
CONTROL BUILDING DIMENSION FLOOR PLAN

DATE:	SEPTEMBER 1, 2022
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CHECKED:	WRM
KHA NO.:	067812104

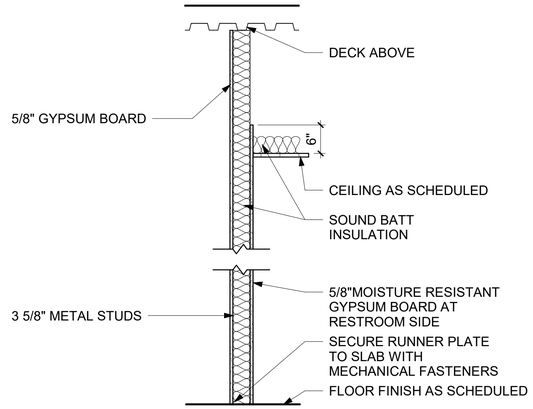
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A-911

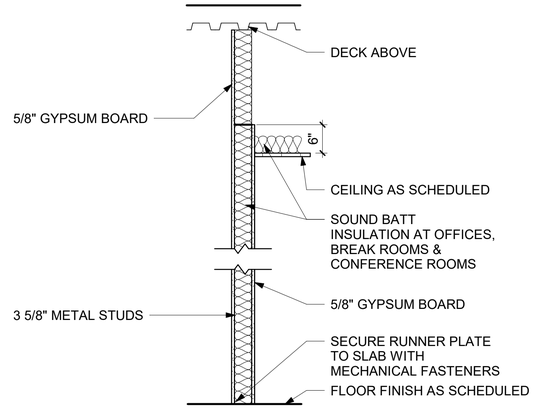
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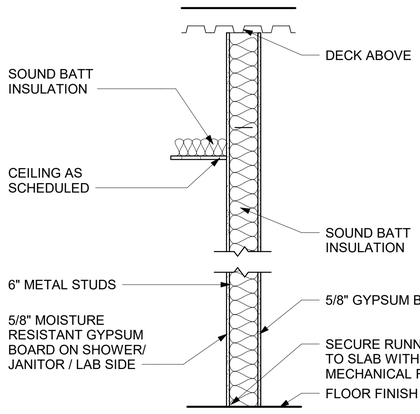
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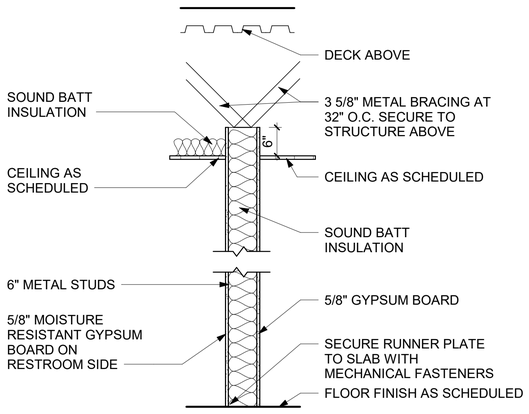
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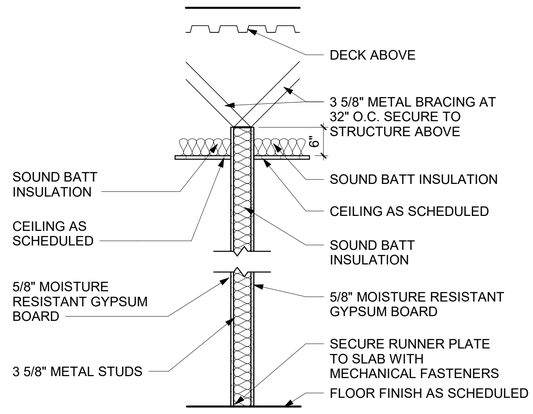
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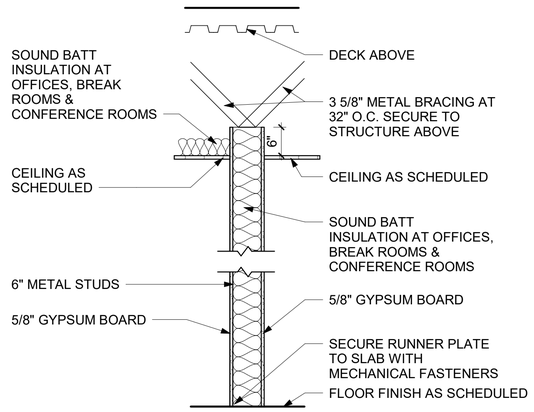
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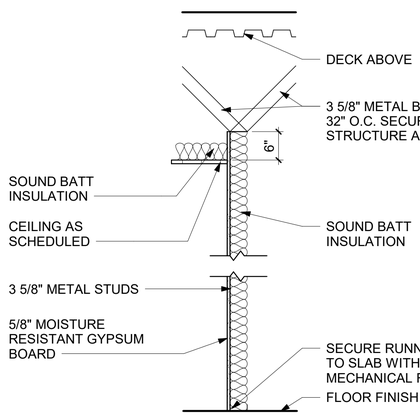
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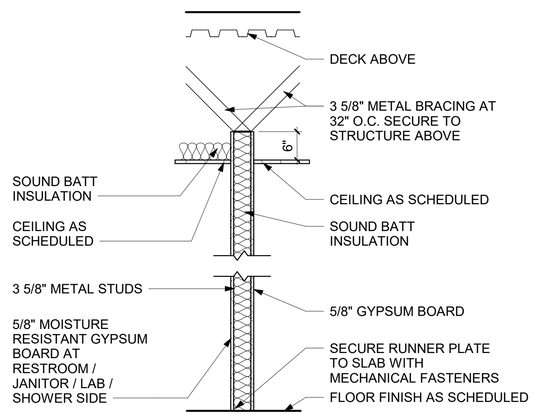
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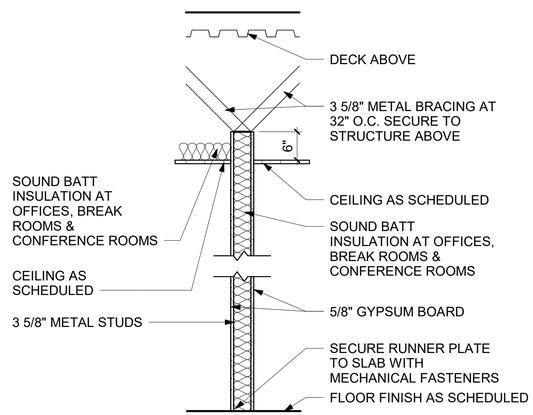
PARTITION TYPE 4



PARTITION TYPE 3



PARTITION TYPE 2



PARTITION TYPE 1

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING PARTITION TYPES

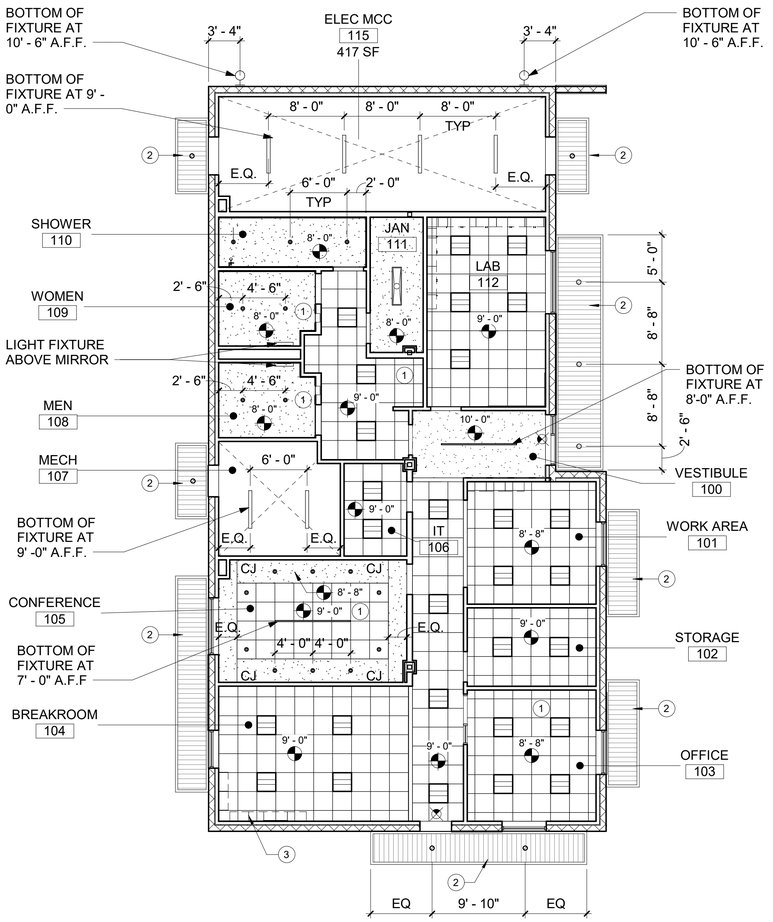
DATE:	SEPTEMBER 1, 2022
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

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A-912

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1 REFLECTED CEILING PLAN

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 DESCREPANCY 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
- 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 ABOVE CEILING - EXTEND TO 4' BEYOND ROOM PERIMETER.
2 PREFINISHED METAL CANOPY AS SPECIFIED.
3 UNDER CABINET LIGHTS. RE: ELECTRICAL

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING REFLECTED CEILING PLAN

DATE:	SEPTEMBER 1, 2022
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GENERAL NOTES - ROOF PLAN

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

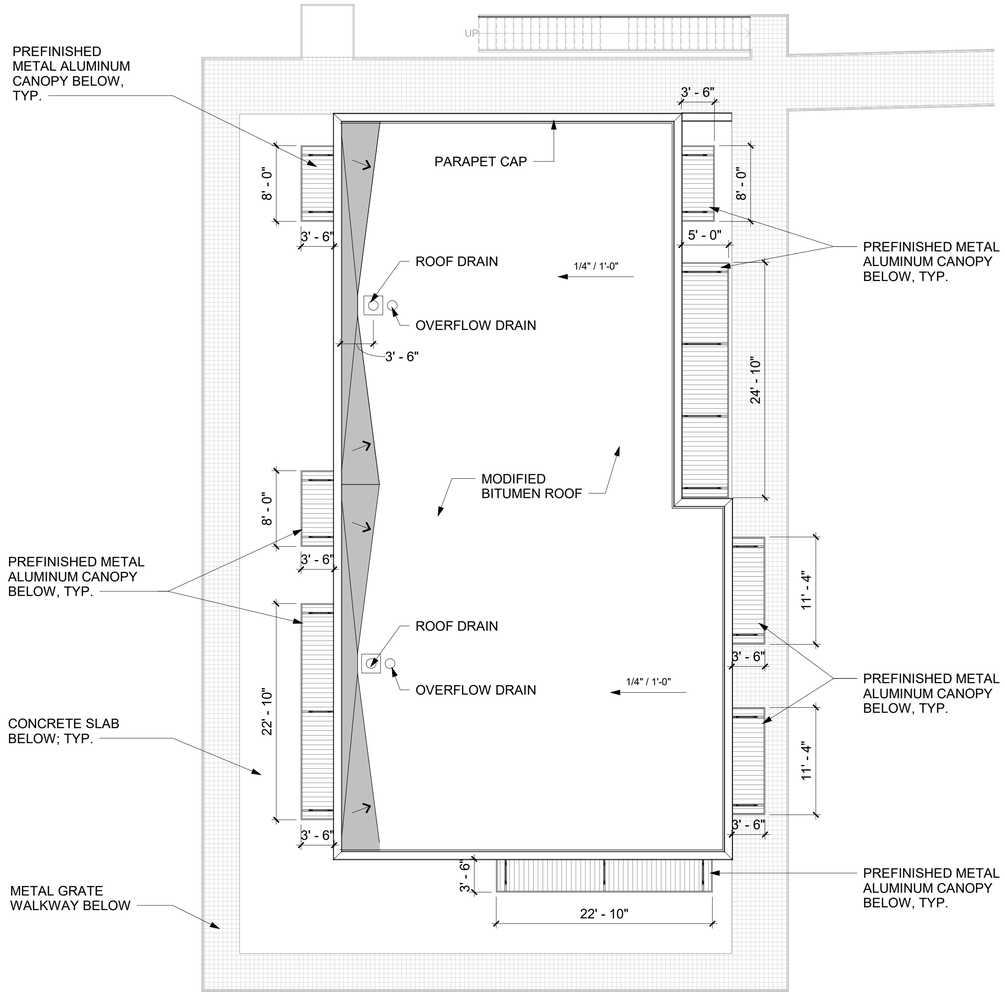
B. ENSURE ROOF DRAINS ARE MOUNTED AT AN INCH LOWER THAN THE SURROUNDING ROOF INSULATION TO CREATE A DRAINSUMP TO MOVE WATER TO THE DRAIN.

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



1 ROOF PLAN

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

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING ROOF PLAN

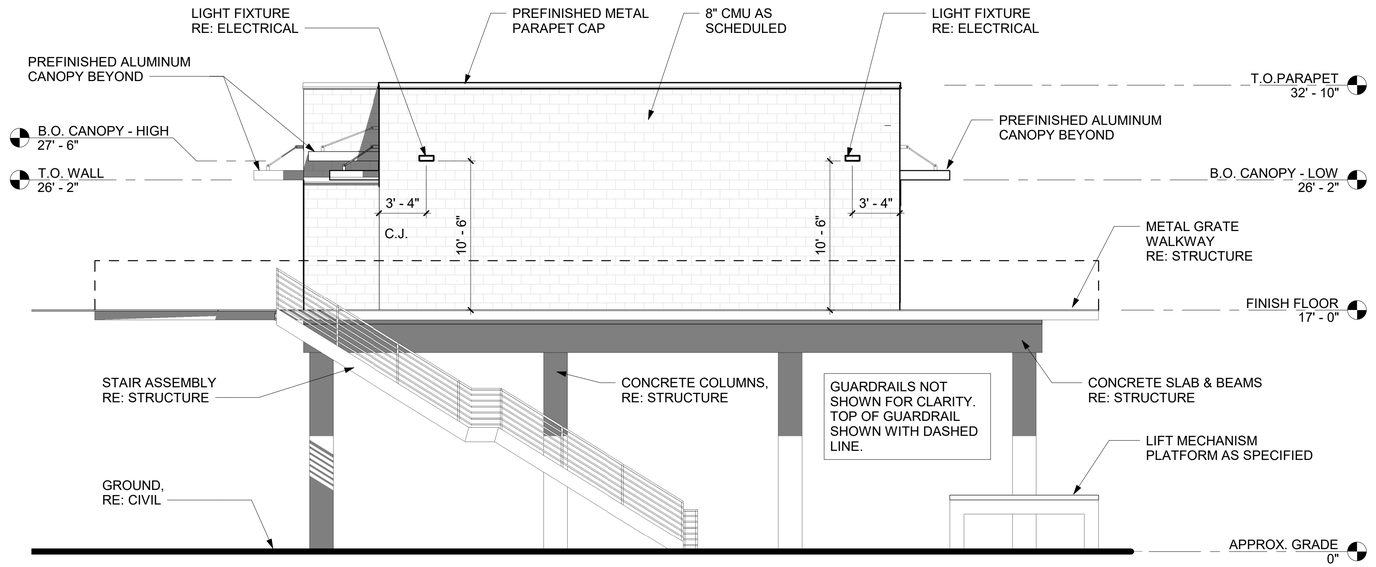
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DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

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A-914

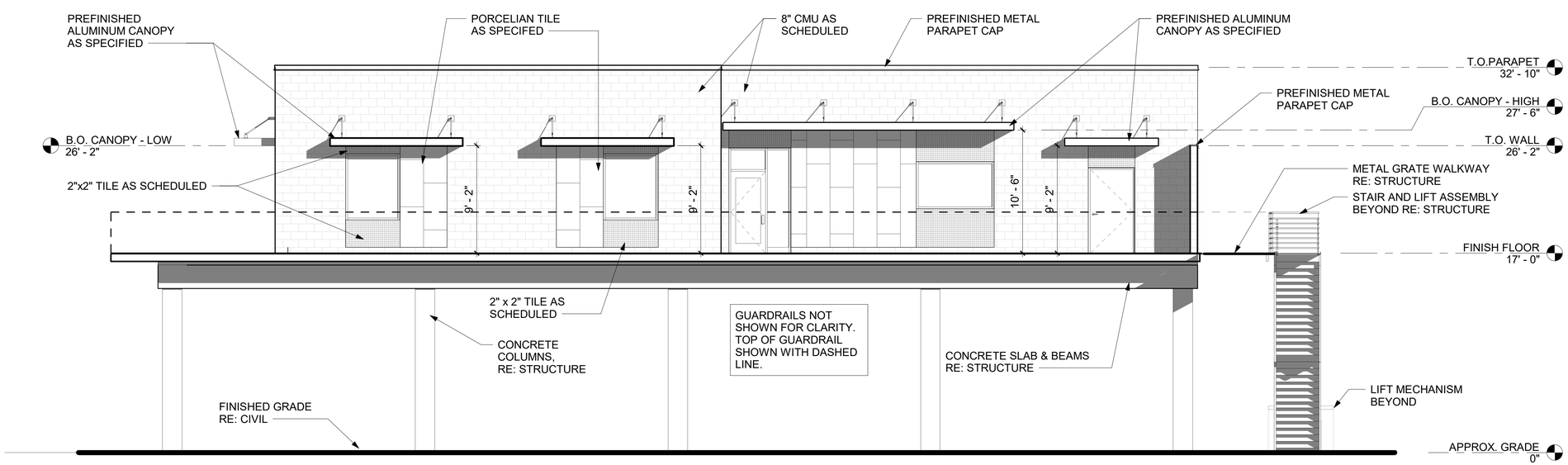
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2 NORTH ELEVATION

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

2" x 2" TILE
MANUF.: DALTILE KEYSTONE
COLOR: TBD

24" x 48" PORCELAIN TILE
MANUF.: PORCELANOSA
COLOR: IMAGE DARK

OTHER MATERIALS:

MATERIAL	MANUFACTURER	COLOR
CANOPIES	ARCH FAB	DARK BRONZE
WINDOW FRAMES	KAWNEER	TBD
HOLLOW METAL DOORS & FRAMES	TBD	TBD
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.

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT
PLANT IMPROVEMENTS

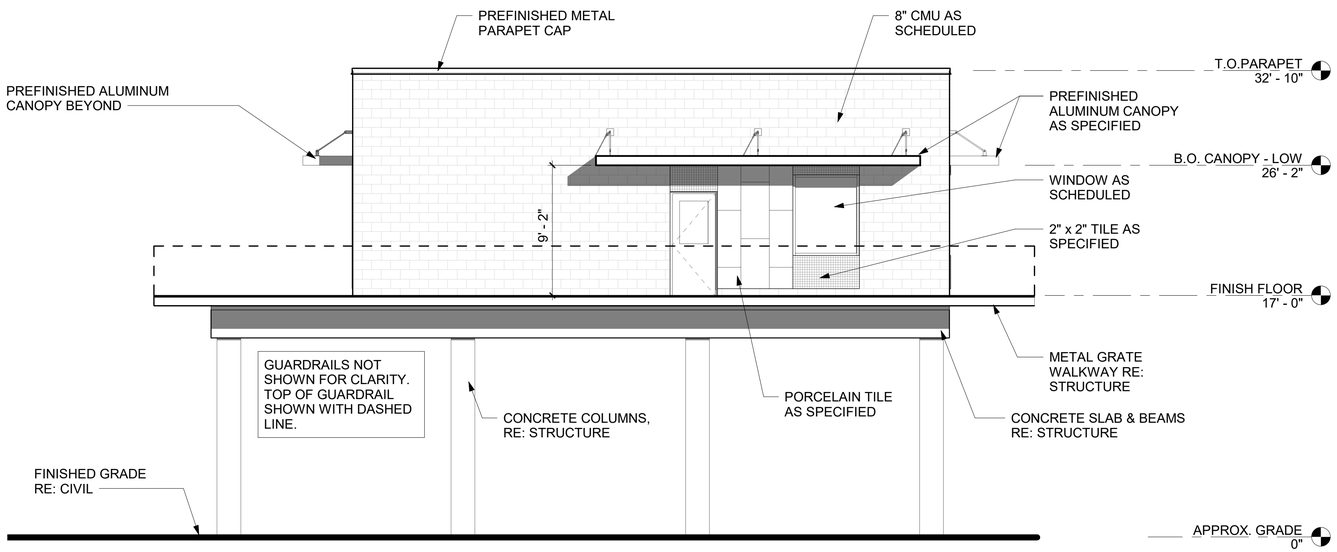
CONTROL BUILDING EXTERIOR ELEVATIONS

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
SEPTEMBER 1, 2022	DGD	TAJ	WRM	067812104

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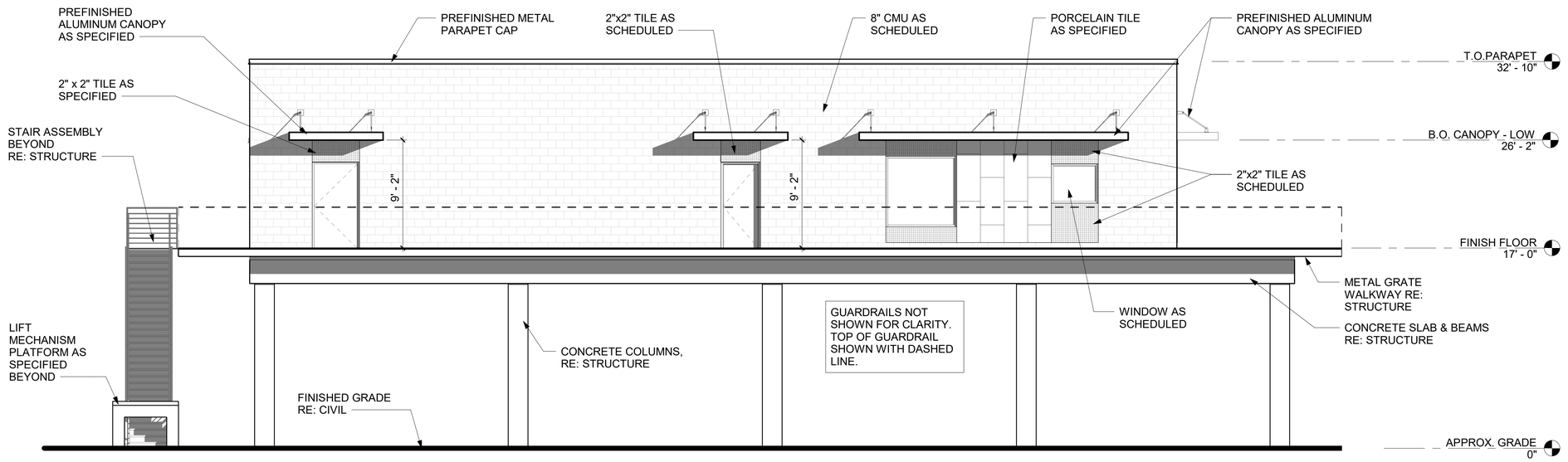
A-920

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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

2" x 2" TILE
MANUF.: DALTILE KEYSTONE
COLOR: TBD

24" x 48" PORCELAIN TILE
MANUF.: PORCELANOSA
COLOR: IMAGE DARK

OTHER MATERIALS:

MATERIAL	MANUFACTURER	COLOR
CANOPIES	ARCH FAB	DARK BRONZE
WINDOW FRAMES	KAWNEER	TBD
HOLLOW METAL DOORS & FRAMES	TBD	TBD
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.

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

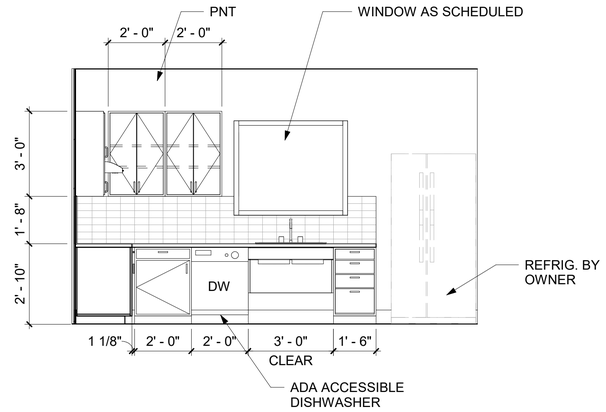
CONTROL BUILDING EXTERIOR ELEVATIONS

DATE:	SEPTEMBER 1, 2022
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DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

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A-921

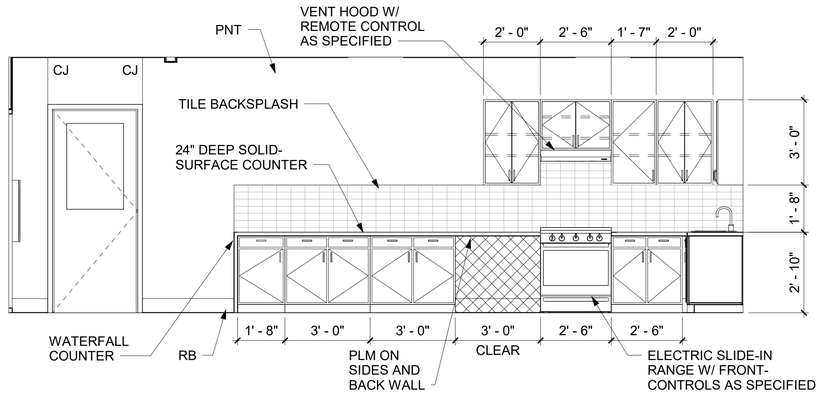
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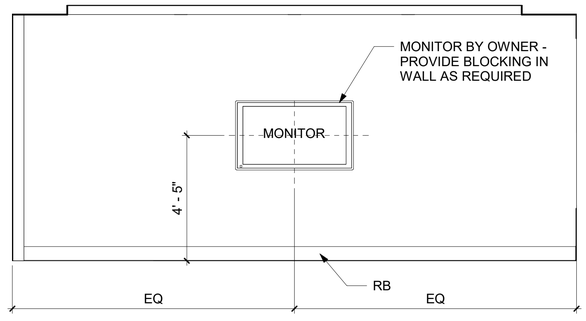
6 BREAKROOM 104 W

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



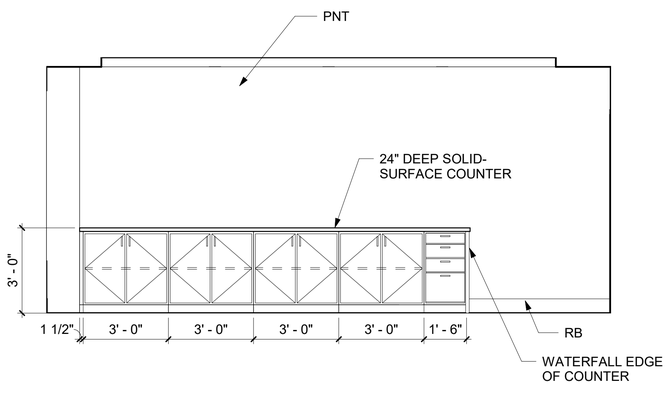
5 BREAKROOM 104 S

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



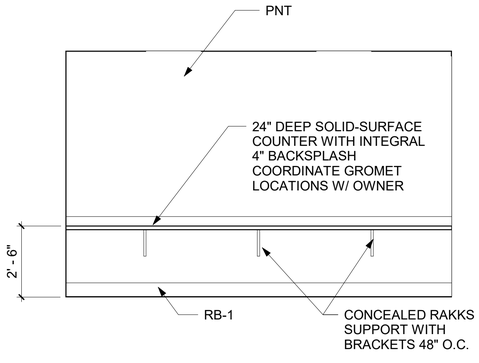
4 CONFERENCE 105 S

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



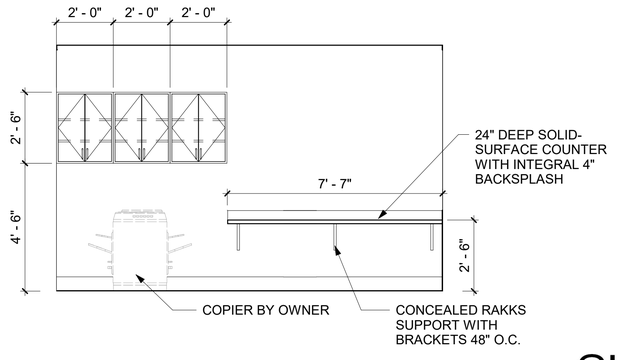
3 CONFERENCE 105 N

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



2 WORK AREA 101 S

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



1 WORK AREA 101 N

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

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

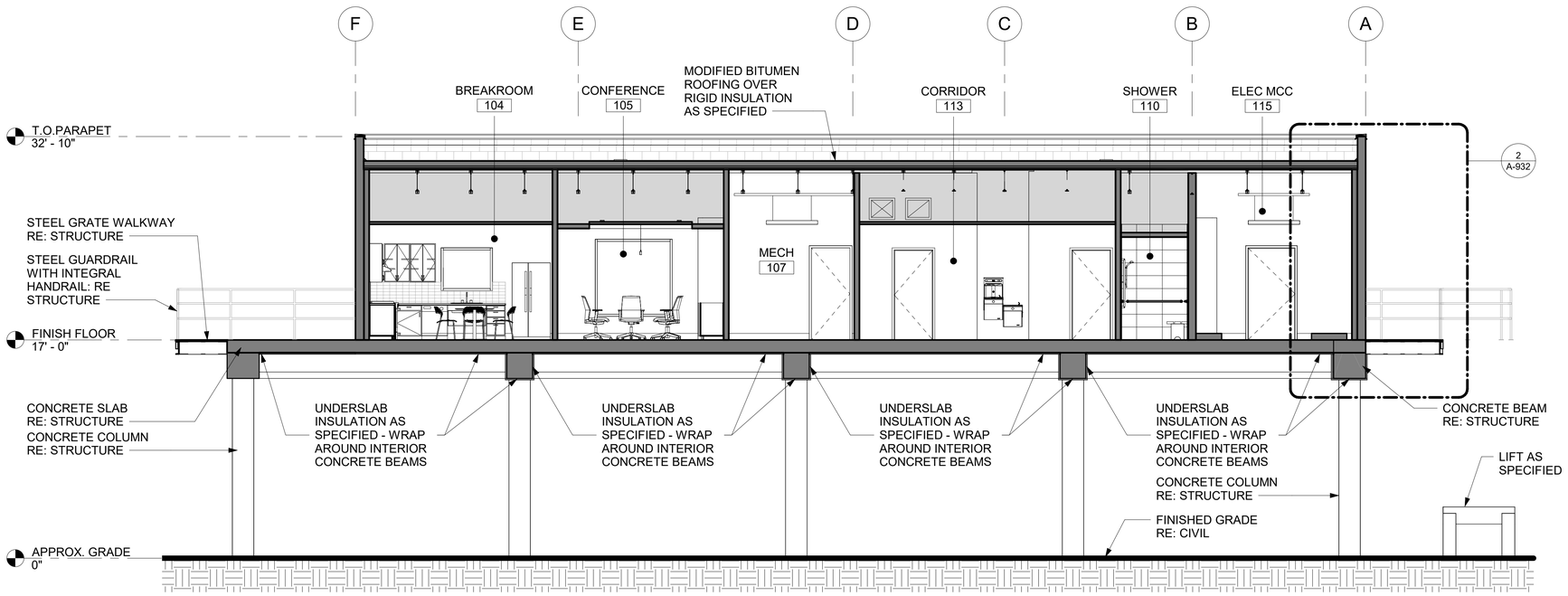
CONTROL BUILDING INTERIOR ELEVATIONS

DATE:	SEPTEMBER 1, 2022
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

SHEET

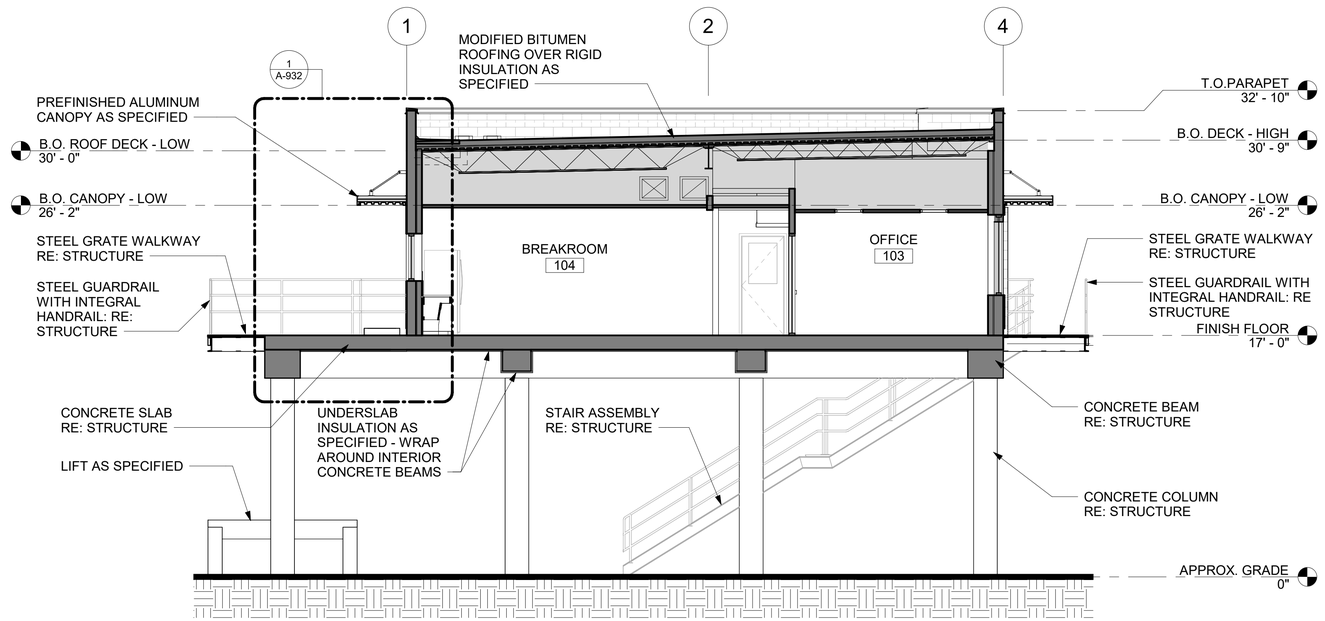
A-922

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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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WASTEWATER TREATMENT
PLANT IMPROVEMENTS

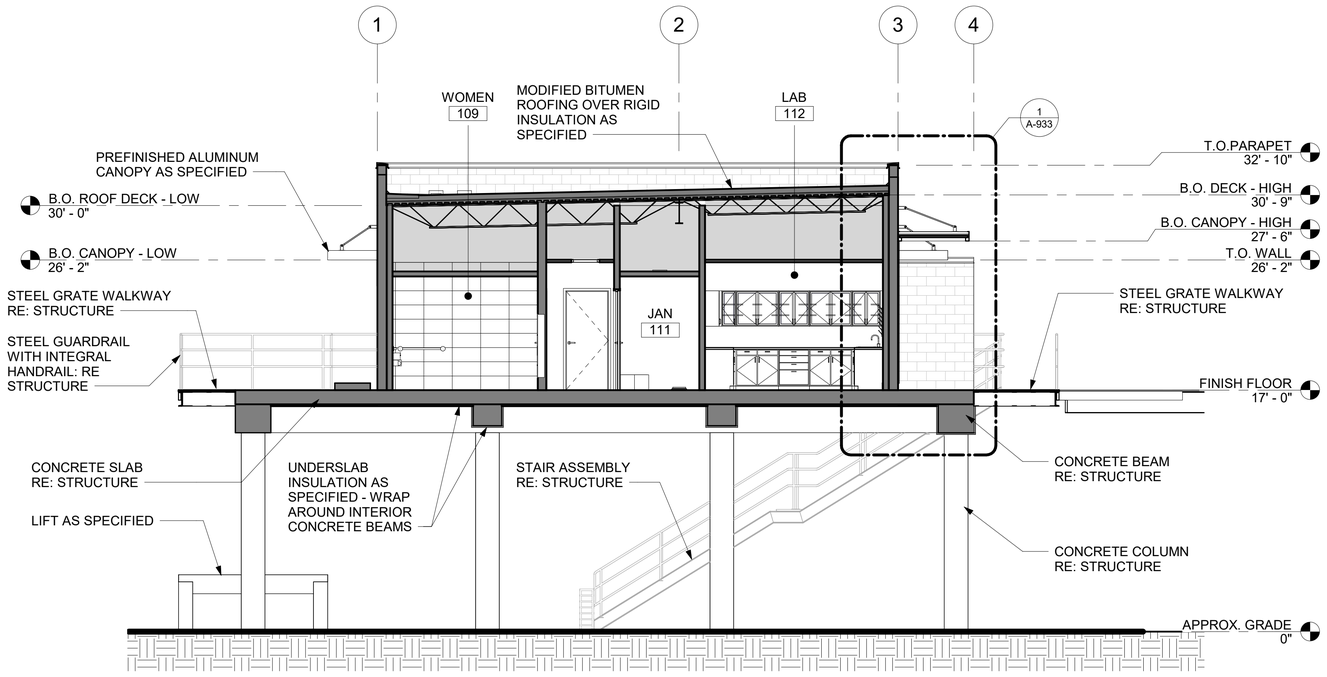
CONTROL BUILDING SECTIONS

DATE:	SEPTEMBER 1, 2022
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

SHEET

A-930

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1 BUILDING SECTION

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

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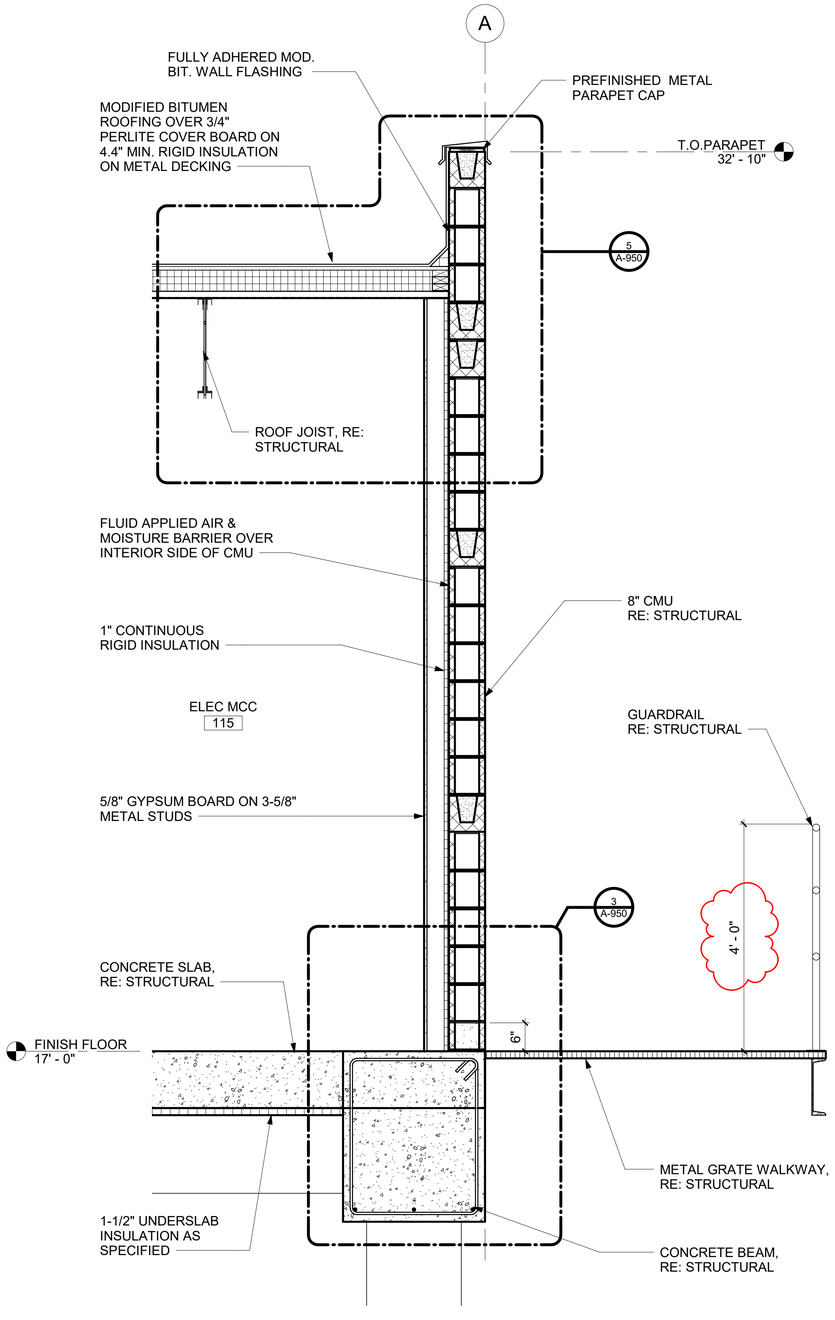
CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT
PLANT IMPROVEMENTS

CONTROL BUILDING SECTIONS

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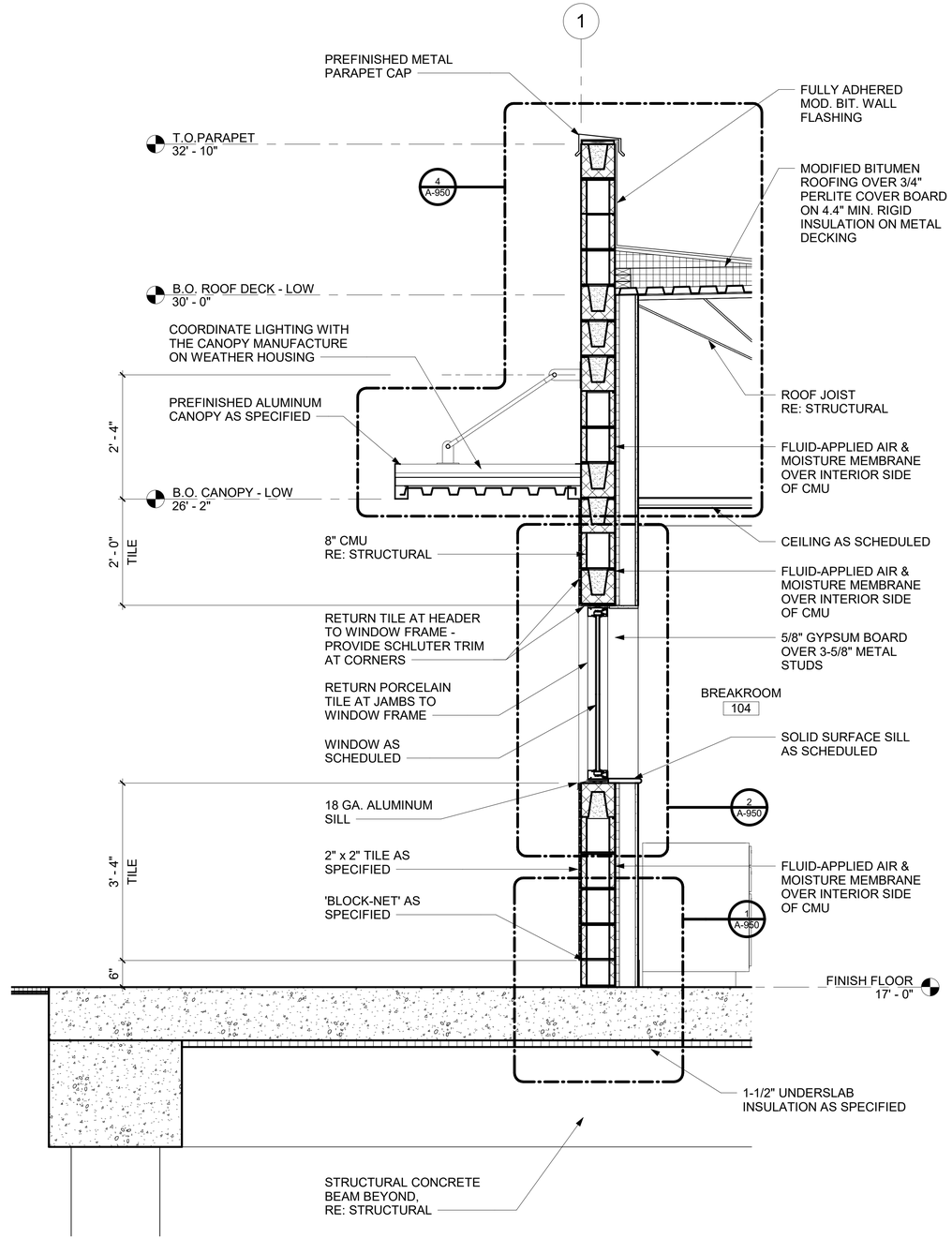
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A-931

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2 WALL SECTION

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



1 WALL SECTION

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

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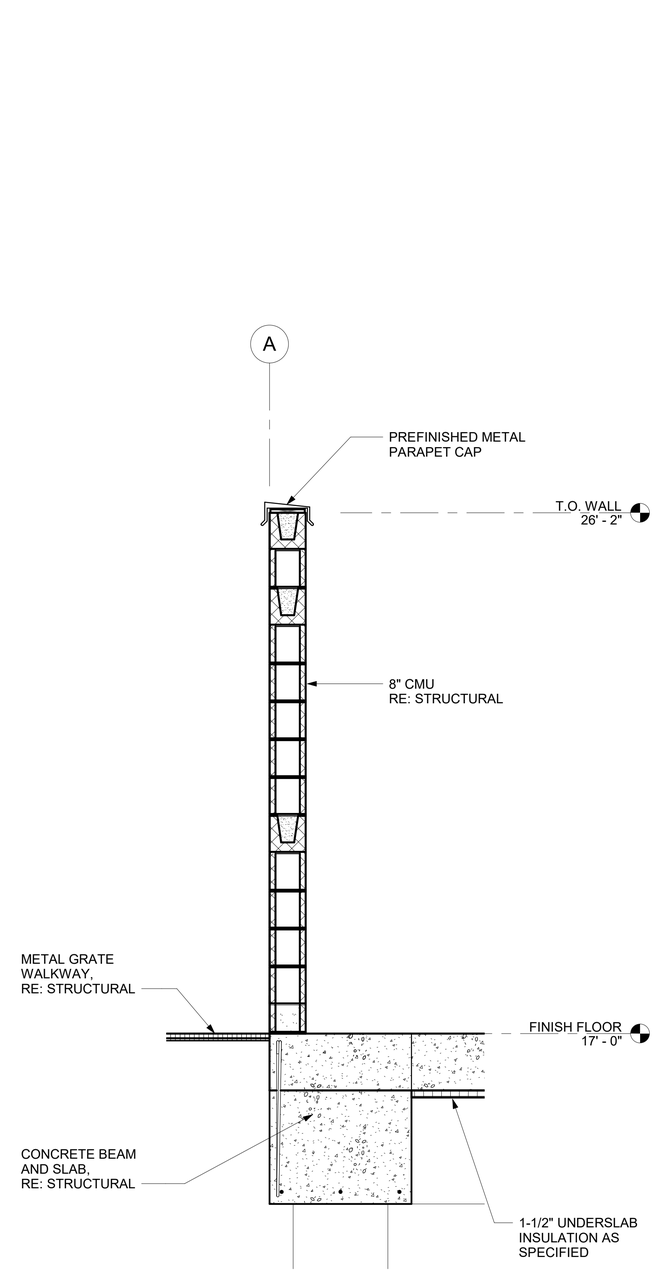
CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING WALL SECTIONS

DATE:	SEPTEMBER 1, 2022
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

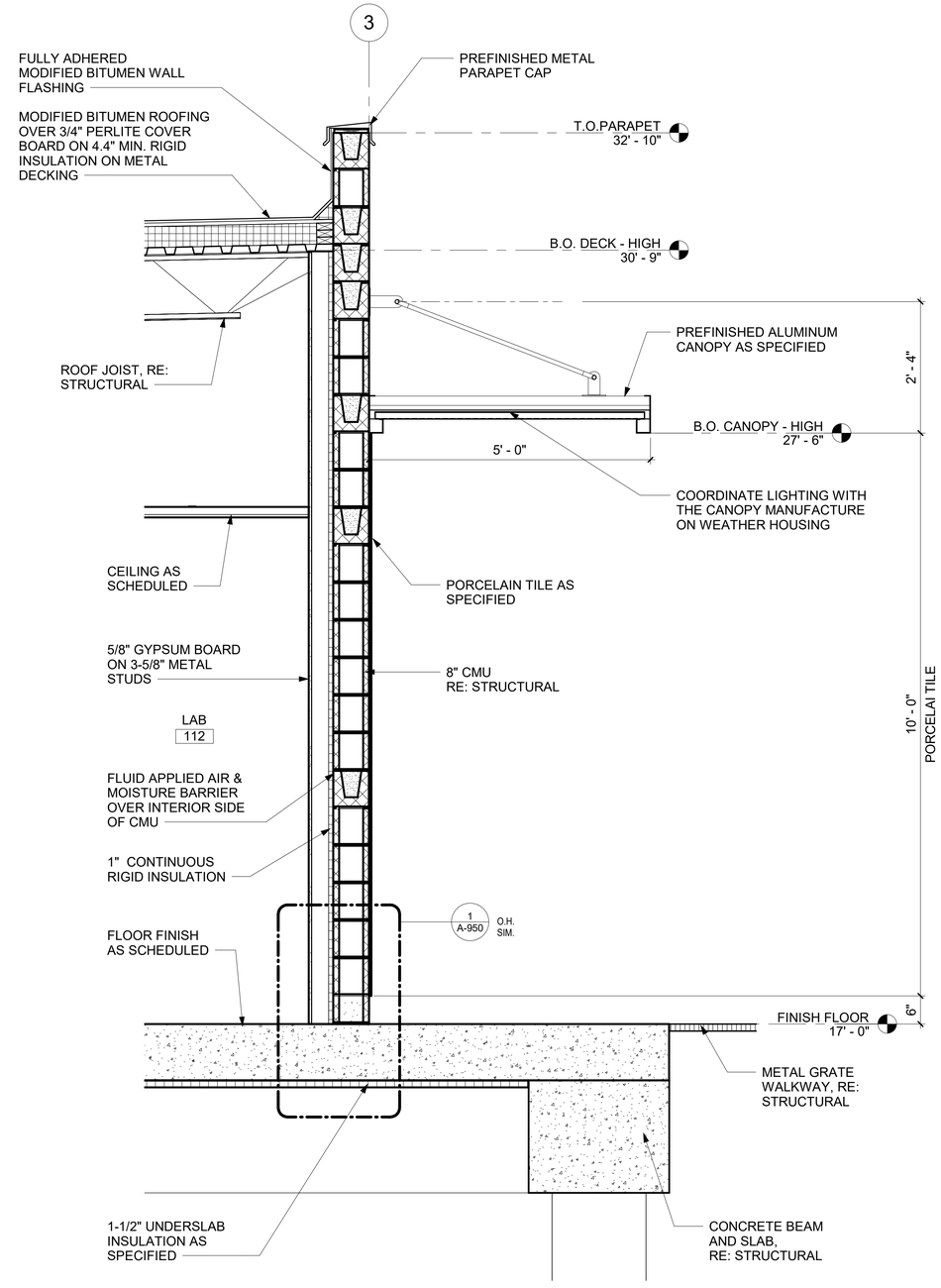
SHEET
A-932

C:\Users\trevor\Documents\21051.01 West University WWTP_CENTRAL_trevorANKBG.rvt



2 WALL SECTION

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



1 WALL SECTION

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

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825 W Vickery Blvd, Suite 100
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(817) 738-8095

Kimley»Horn
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P: 281 597 9300
TBPE No. 928

No.	Revisions	By	Date

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING WALL SECTIONS

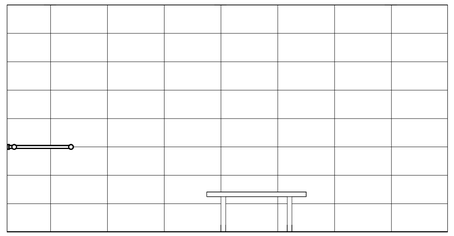
DATE:	SEPTEMBER 1, 2022
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

SHEET
A-933

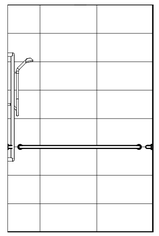
C:\Users\trevor\Documents\21051.01 West University WWTP_CENTRAL_trevorANKBG.rvt

ENLARGED FLOOR PLAN NOTES

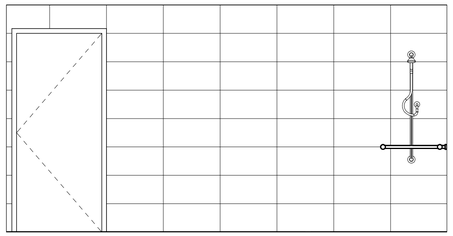
1 MOP SINK AS SPECIFIED
2 BENCH AS SPECIFIED.
3 ADA SHOWER - PROVIDE SHOWER ACCESSORIES AS SPECIFIED.
4 SHOWER ROD AND CURTAIN AS SPECIFIED. ENSURE SHOWER CURTAIN WALL IS AT LEAST 80" AFF.
5 GRAB BARS; TYPICAL.
6 PROVIDE SOAP DISH AND BAR AS SPECIFIED.
7 LINEAR SHOWER DRAIN, RE: PLUMBING
8 SLOPING EDGE 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



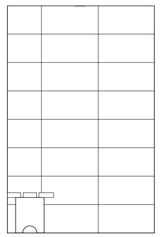
4 SHOWER 110 N
A-940 SCALE: 3/8" = 1'-0"



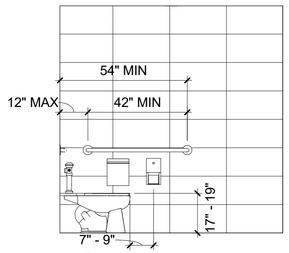
3 SHOWER 110 W
A-940 SCALE: 3/8" = 1'-0"



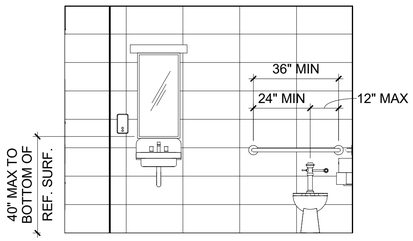
2 SHOWER 110 S
A-940 SCALE: 3/8" = 1'-0"



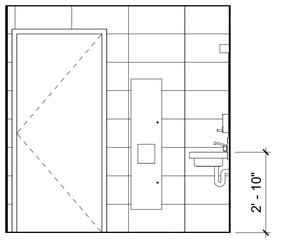
13 SHOWER 110 E
A-940 SCALE: 3/8" = 1'-0"



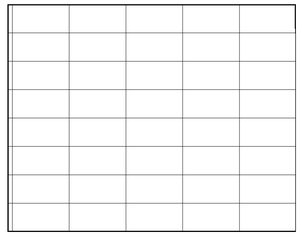
8 WOMEN 109 W
A-940 SCALE: 3/8" = 1'-0"



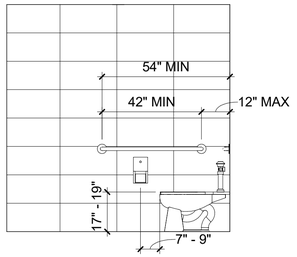
7 WOMEN 109 S
A-940 SCALE: 3/8" = 1'-0"



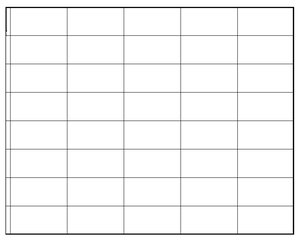
6 WOMEN 109 E
A-940 SCALE: 3/8" = 1'-0"



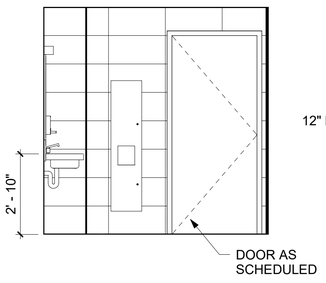
5 WOMEN 109 N
A-940 SCALE: 3/8" = 1'-0"



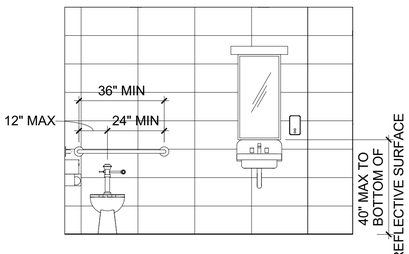
10 MEN 108 W
A-940 SCALE: 3/8" = 1'-0"



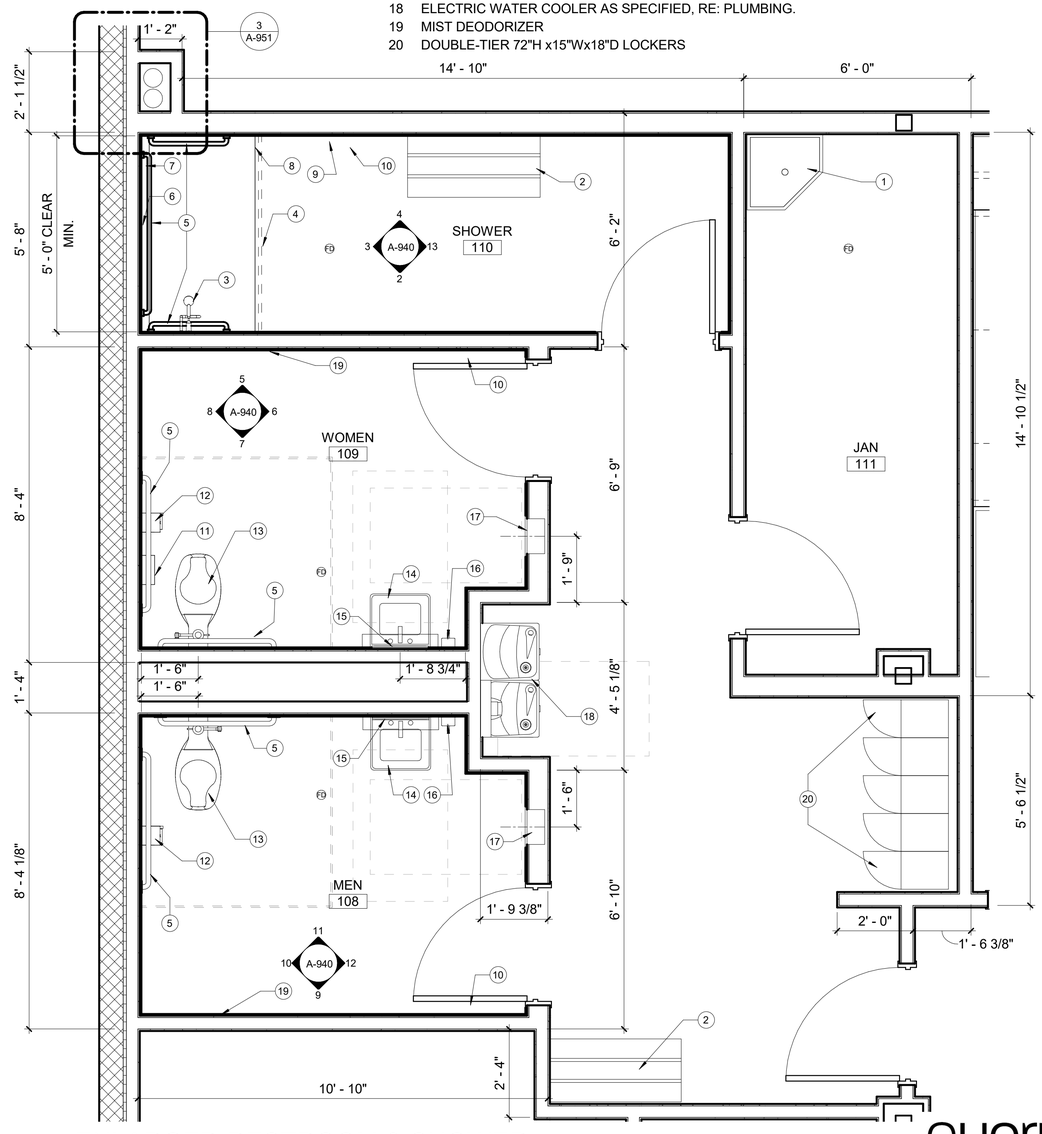
9 MEN 108 S
A-940 SCALE: 3/8" = 1'-0"



12 MEN 108 E
A-940 SCALE: 3/8" = 1'-0"



11 MEN 108 N
A-940 SCALE: 3/8" = 1'-0"



ENLARGED RESTROOM & SHOWER PLAN
1
A-940 SCALE: 1/2" = 1'-0"

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TBPE No. 928

No.	Revisions	By	Date

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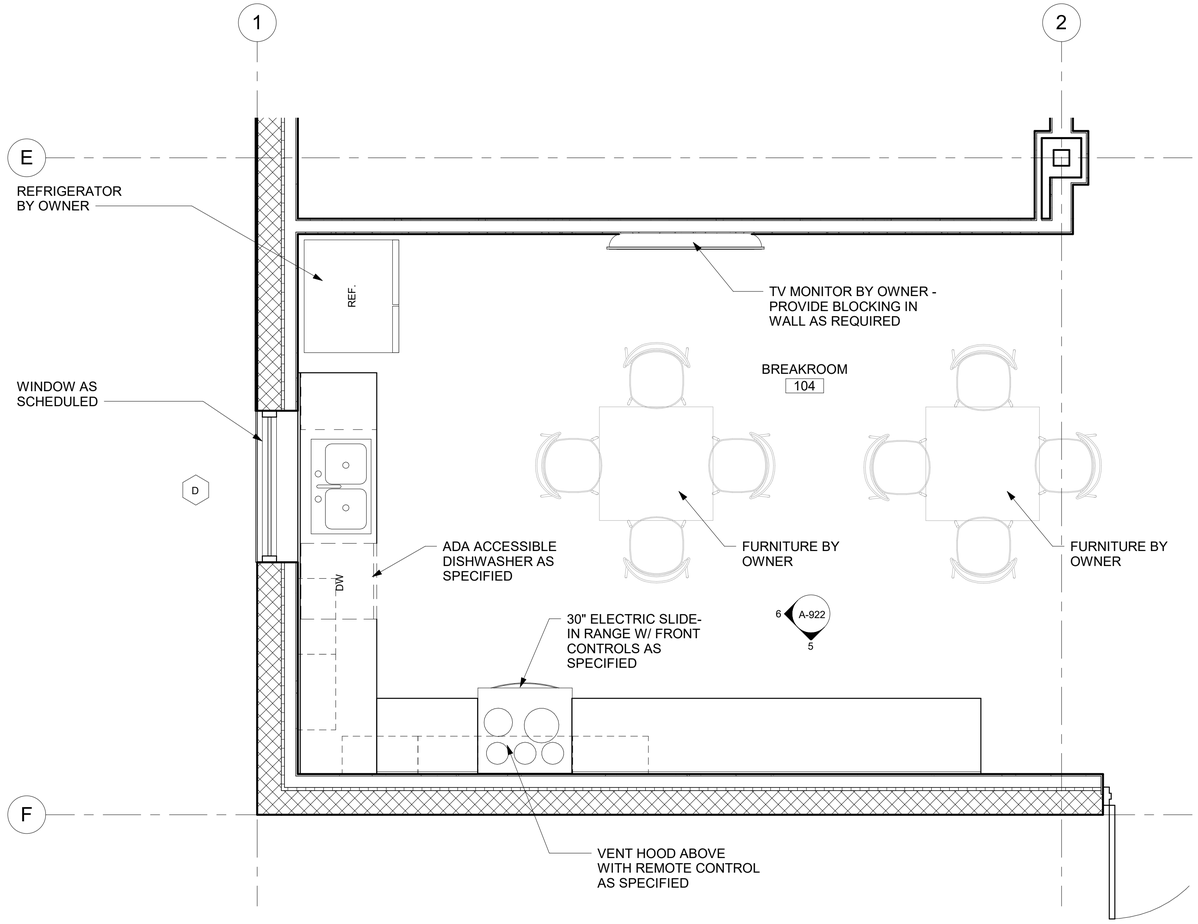
CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING ENLARGED RESTROOM PLAN

DATE:	SEPTEMBER 1, 2022
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

SHEET
A-940

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1 BREAK ROOM ENLARGED PLAN

A-941 SCALE: 1/2" = 1'-0"

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT
PLANT IMPROVEMENTS

CONTROL BUILDING ENLARGED
PLAN

DATE:	SEPTEMBER 1, 2022
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

SHEET
A-941

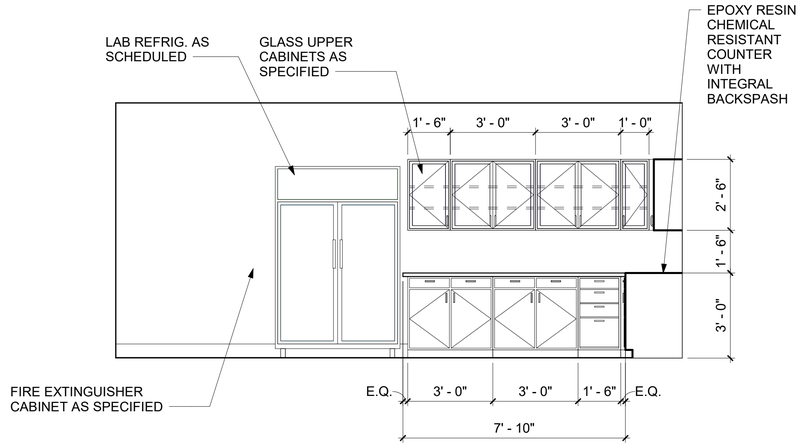
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LAB EQUIPMENT TO INCLUDE:

1. ANALYTIC BALANCE
2. LAB OVEN
3. DESSICATOR
4. FURNACE
5. CENTRIFUGE
6. MICROSCOPE
7. VACUUM FILTRATION KIT

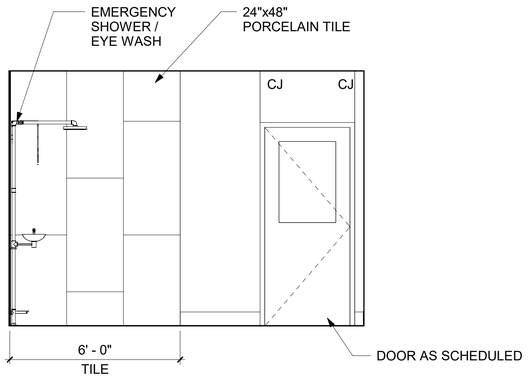
36" HEIGHT COUNTERTOP- 27'-4" LF

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" #10040000	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	SEMI-MICRO BALANCE	OF / OI	PRIONEER PX224	CAPACITY 220 G
8	DRYING RACK	CF / CI	FISHERBRAND (HIPS) S29129	APPROX 25" H x 18" W
9	VACUUM FILTRATION KIT	CF / CI	ROCKER / SOUTHER 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 CABINET ICE MAKER	CF / CI	PERLICK CUBLET ICE MAKER H80CIMS (SIGNATURE SERIES)	14 7/8" W x 33 1/2" H x 22 9/16" D



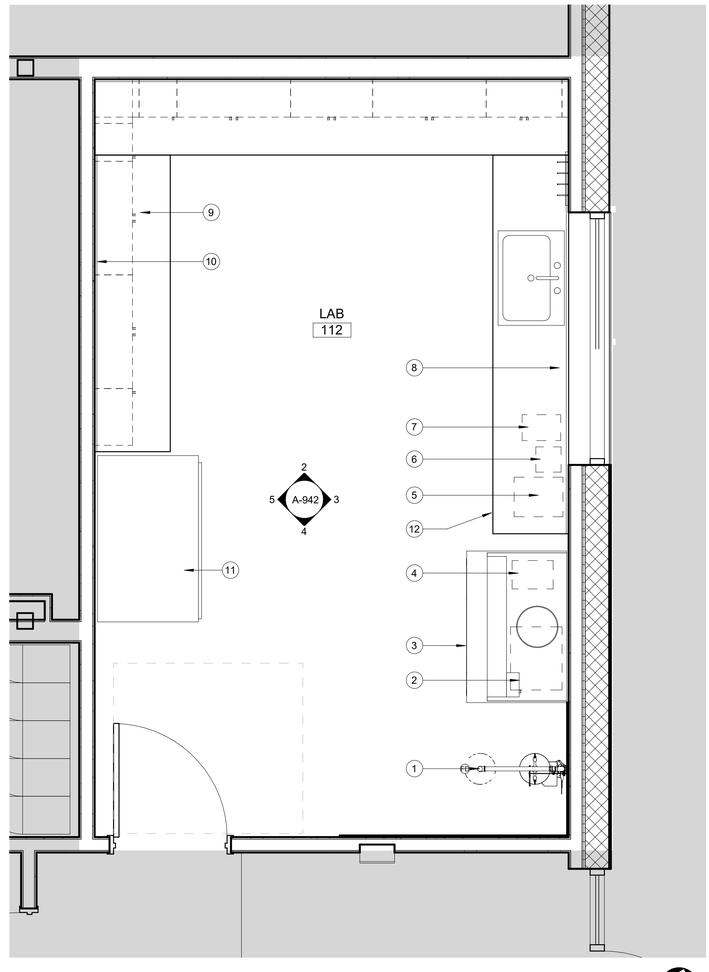
5 LAB 112 W

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



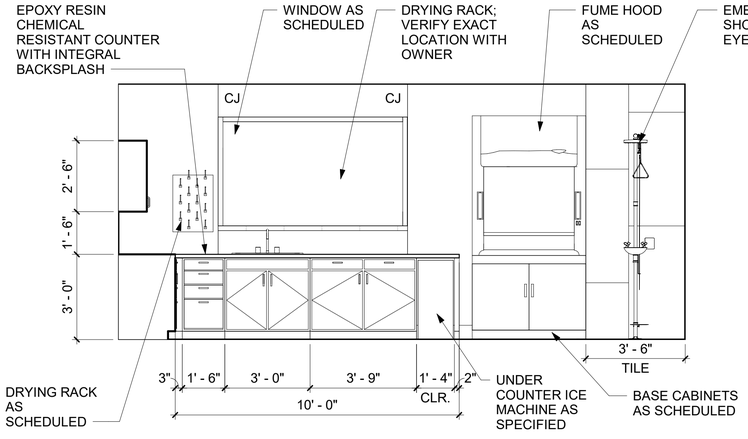
4 LAB 112 S

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



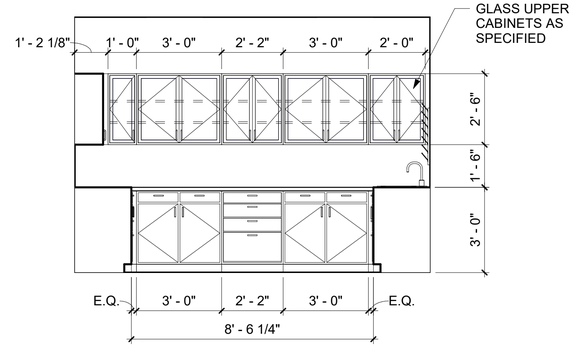
1 LAB EQUIPMENT PLAN

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



3 LAB 112 E

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



2 LAB 112 N

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

Kimley»Horn
11700 Katy Freeway, Suite 800, Houston, TX 77079
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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING EQUIPMENT PLAN

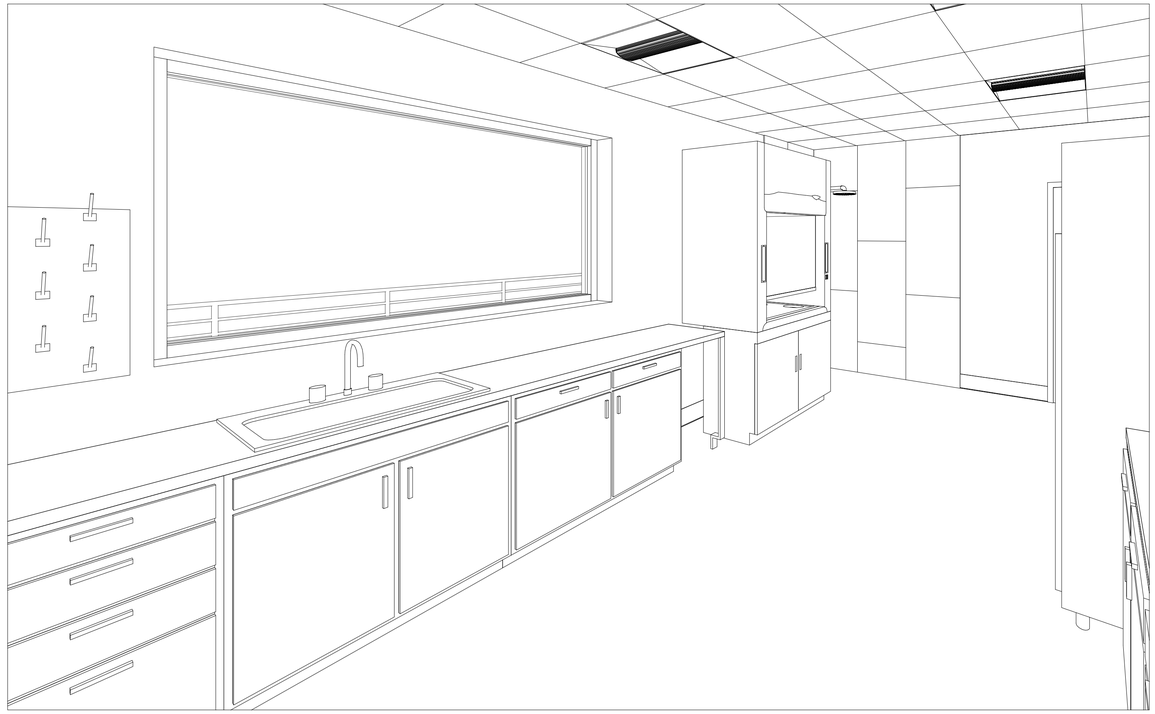
DATE:	SEPTEMBER 1, 2022
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

SHEET

A-942

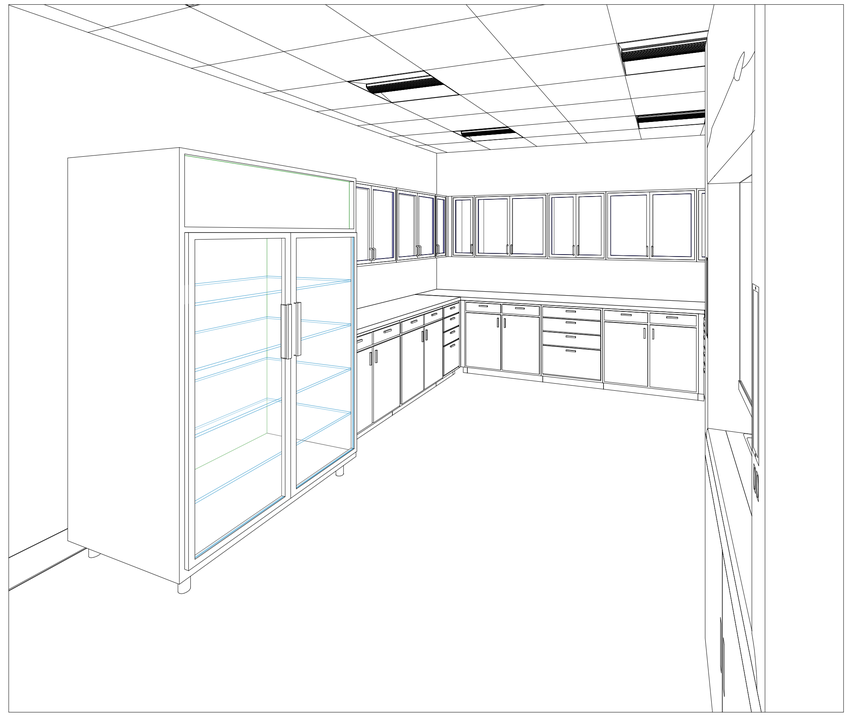
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4 LAB VIEW 4

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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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT
PLANT IMPROVEMENTS

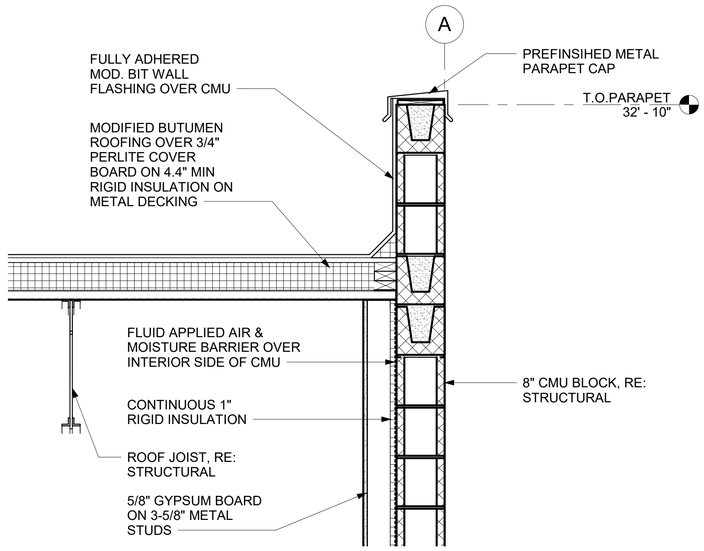
CONTROL BUILDING LAB VIEWS

DATE:	SEPTEMBER 1, 2022
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

SHEET

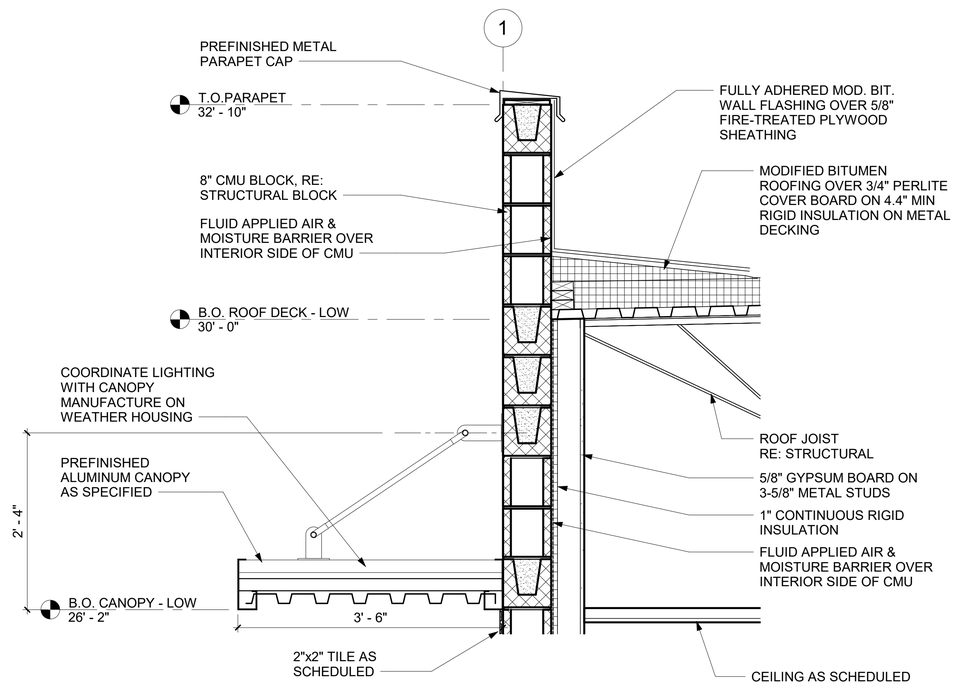
A-943

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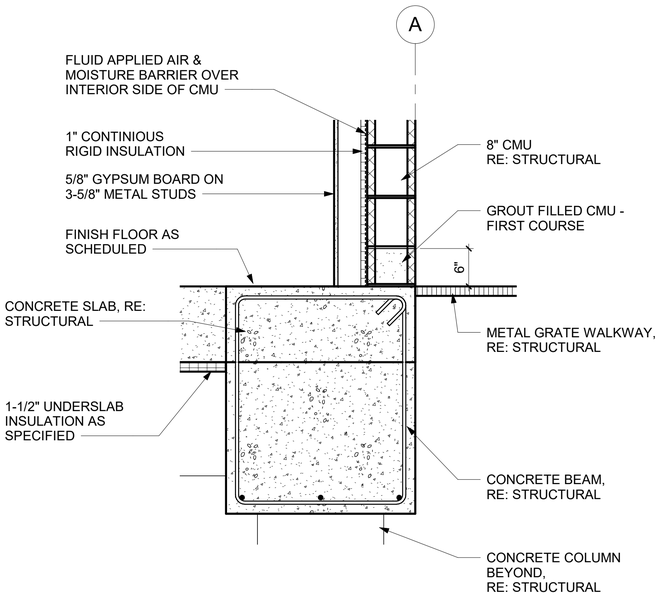
5 SECTION DETAIL

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



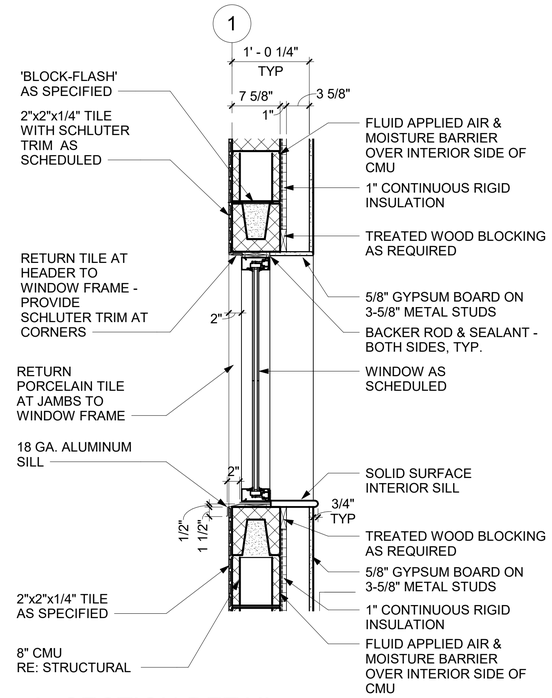
4 SECTION DETAIL

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



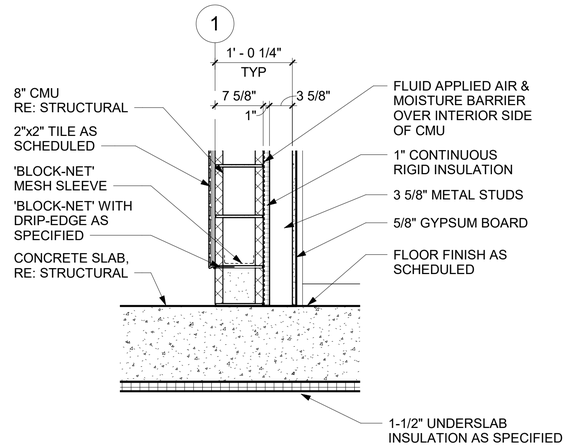
3 SECTION DETAIL

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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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT
PLANT IMPROVEMENTS

CONTROL BUILDING DETAILS

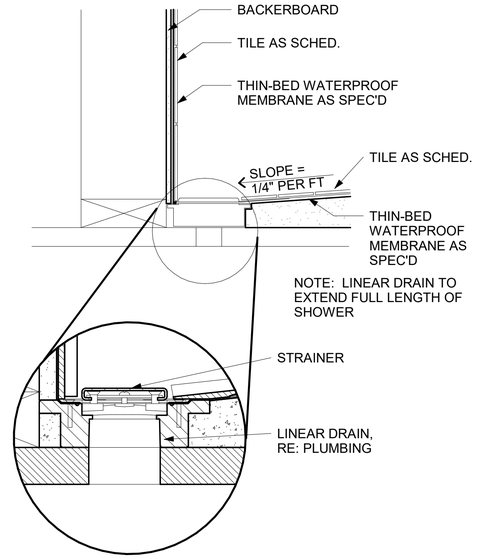
DATE:	SEPTEMBER 1, 2022
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

SHEET

A-950

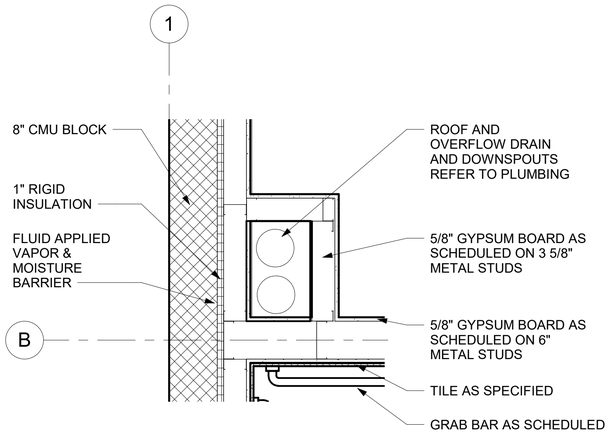
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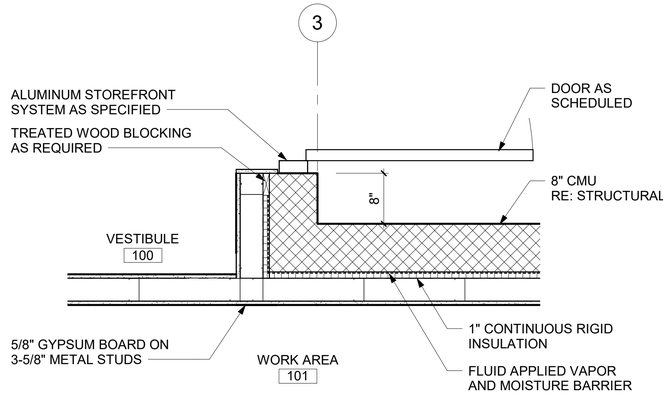
4 SHOWER DRAIN DETAIL

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



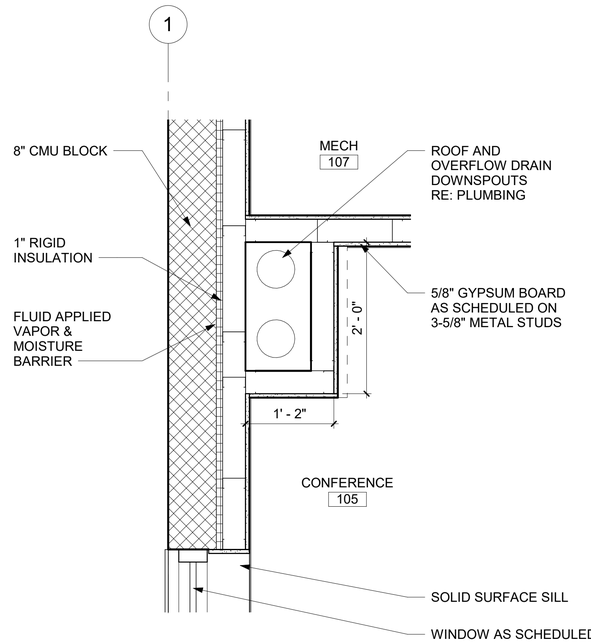
3 PLAN DETAIL

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



2 PLAN DETAIL

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



1 PLAN DETAIL

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

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

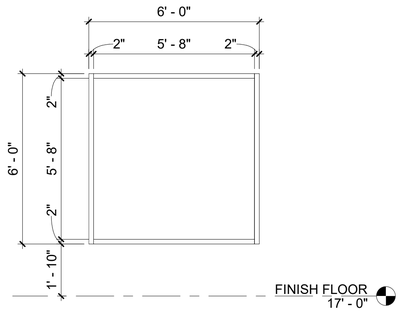
CONTROL BUILDING DETAILS

DATE:	SEPTEMBER 1, 2022
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

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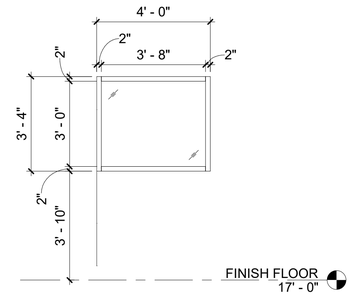
A-951

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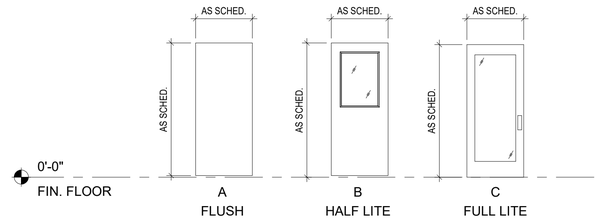
E FRAME TYPE E

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



D FRAME TYPE D

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

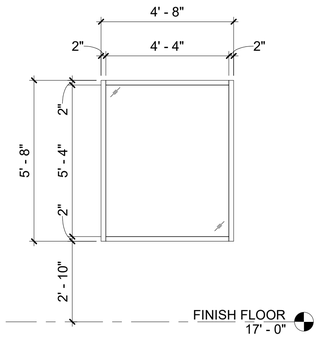


NOTE: ALL GLASS 1/4" TEMPERED

DOOR TYPE LEGEND

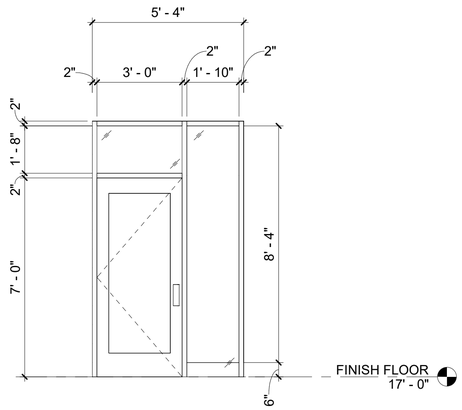
DOOR SCHEDULE

MARK	DOOR WIDTH	DOOR HEIGHT	DOOR TYPE	DOOR MATERIAL	FRAME MATERIAL	Hardware	NOTES
100	3' - 0"	7' - 0"	C	AL/ GLASS	AL		
102	3' - 0"	7' - 0"	A	LAM	HM		
103	3' - 0"	7' - 0"	A	LAM	HM		WITH SIDELIGHT REF: INTERIOR FRAME 1
105	3' - 0"	7' - 0"	B	LAM	HM		
106	3' - 0"	7' - 0"	A	LAM	HM		KICK PLATE
107	3' - 0"	7' - 2"	A	HM	HM		KICK PLATE
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
113	3' - 0"	7' - 0"	A	LAM	HM		
114	3' - 0"	7' - 2"	B	HM	HM		
115A	3' - 8"	7' - 2"	A	HM	HM		KICK PLATE; INCLUDE PANIC HARDWARE
115B	3' - 8"	7' - 2"	A	HM	HM		KICK PLATE; INCLUDE PANIC HARDWARE



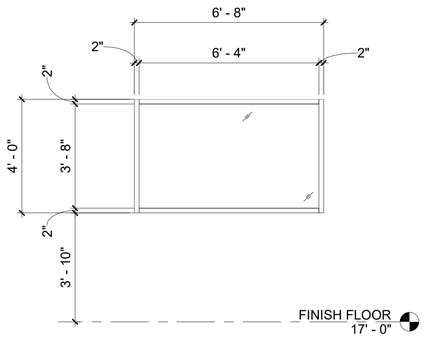
C FRAME TYPE C

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



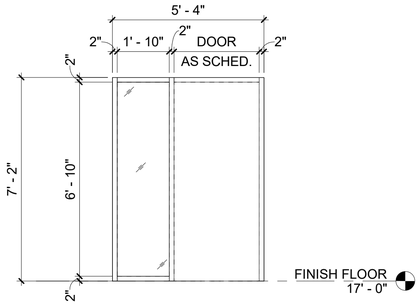
B FRAME TYPE B

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



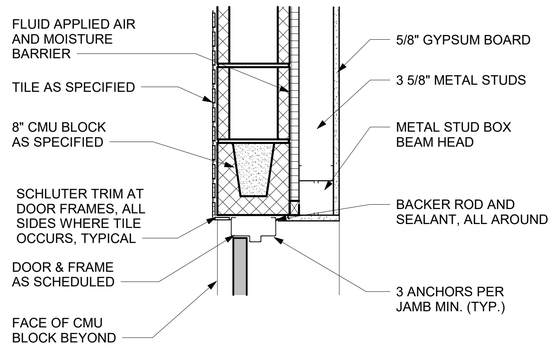
A FRAME TYPE A

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



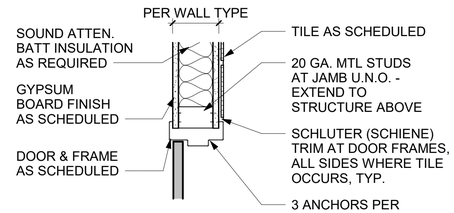
4 INTERIOR FRAME TYPE 1

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



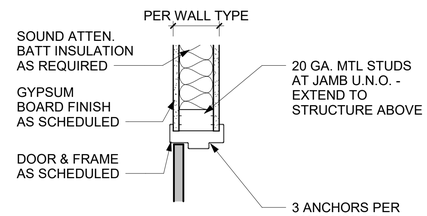
3 DOOR HEAD/JAMB - EXTERIOR

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

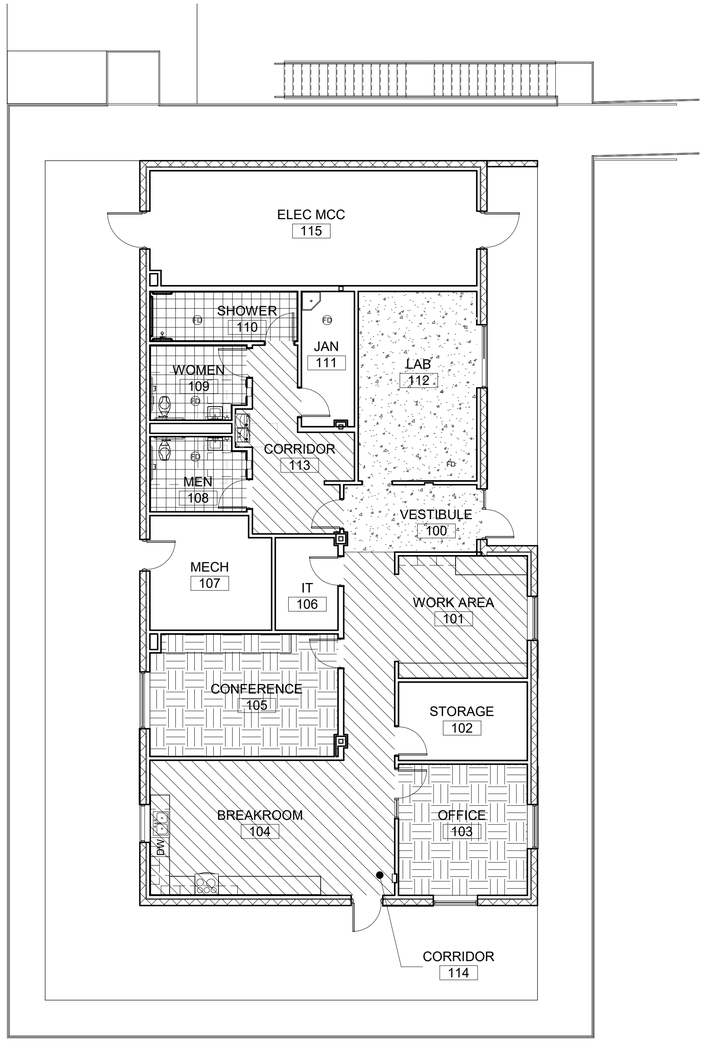
DATE:	SEPTEMBER 1, 2022
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CHECKED:	WRM
KHA NO.:	067812104

SHEET
A-960

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FINISH LEGEND

- EPOXY FLOOR SYSTEM (EFS-1)
- LUXURY VINY TILE (LVT-1)
- CERAMIC TILE (CT-1)
- CONCRETE - SEALED (CS-1)
- CARPET TILE (CPT-1)



1 FINISH PLAN

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

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P: 281 597 9300

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING FINISH PLAN

DATE:	SEPTEMBER 1, 2022
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ABV.	MATERIAL	MANUFACTURER	NAME	COLOR	SIZE	REMARKS
APC - 1	ACOUSTICAL PANEL CEILING	ARMSTRONG COMMERCIAL	ARMSTRONG COMMERCIAL	WHITE	24" x 24" x 7/8"	15/16" PRELUDE GRID. WHITE
CPT - 1	CARPET (KINETEX)	EF CONTRACT	VESTIGE	- - -	- - -	- - -
CS - 1	CONCRETE SEALED	- - -	- - -	- - -	- - -	REF. ARCHITECTURAL SPECIFICATIONS
CT - 1	CERAMIC TILE (PORCELAIN TILE)	PROCELONSA	- - -	DARK IMAGE	24" x 48"	ON EXTERIOR AND INTERIOR LAB SHOWER
CT - 2	CERAMIC TILE (PORCELAIN TILE)	- - -	- - -	- - -	12" x 24"	FLOOR TILE (USE GT - 1)
CT - 3	CERAMIC TILE (PORCELAIN TILE)	- - -	- - -	- - -	12" x 24"	WALL TILE (USE GT-2)
CT - 4	CERAMIC TILE (PORCELAIN TILE)	- - -	- - -	- - -	- - -	SHOWER FLOOR TILE (USE GT - 1)
CT - 5	CERAMIC TILE	- - -	- - -	- - -	- - -	BACKSPLASH (USE GT - 3)
EFS - 1	EPOXY FLOOR SYSTEM	TENNANT OR TNEMEC	EXO-DQA-TROWELED FLOOR	TBD	- - -	SEALED WITH ONE COAT OF ECO-TCU AS SPECIFIED IN ARCHITECTURAL SPECIFICATIONS
GT - 1	GROUT	LATICRETE	INDUSTRIAL GRADE EPOXY GROUT	TBD	- - -	SANDED
GT - 2	GROUT	LATICRETE	PRO LOCK EPOXY GROUT	TBD	- - -	UNSANDED, WALL
GT - 3	GROUT	LATICRETE	PRO LOCK EPOXY GROUT	TBD	- - -	UNSANDED, WALL
LVT - 1	LUXURY VINYL TILE	WILSONART	STANDARD LAMINATE	TBD	- - -	INSTALLATION METHOD TBD
PNT - 1	PAINT	TBD	TBD	TBD	- - -	THROUGHOUT PAINT
PNT - 2	PAINT	TBD	TBD	TBD	- - -	CEILING PAINT
PNT - 3	PAINT	TBD	EPOXY PAINT	TBD	- - -	EPOXY WALL PAINT
PNT - 4	PAINT	TBD	EPOXY PAINT	TBD	- - -	EPOXY CEILING PAINT
PNT - 5	PAINT	TBD	TBD	TBD	- - -	ACCENT PAINT
RB - 1	RUBBER BASE	TARKETT / JOHNSONITE	TRADITIONAL DURACOVE RUBBER BASE	TBD	6" H	CONTINUOUS ROLLED PRODUCT. TYPICAL THROUGHOUT
WPS - 1	WALL PROTECTION SHEET	INPRO	INPRO WALL PROTECTION SHEET	TBD	PANEL SIZE TBD	INSTALLED FULL HEIGHT, BUTT JOINTED WITH SEALANT

ROOM FINISH SCHEDULE

NO.	NAME	FLOOR	BASE	WALL				CEILING	CASEWORK			
				EAST	NORTH	SOUTH	WEST		VERT.	SPLASH	HORIZ.	TRIM
100	VESTIBULE											
101	WORK AREA											
102	STORAGE											
103	OFFICE											
104	BREAKROOM											
105	CONFERENCE											
106	IT											
107	MECH											
108	MEN											
109	WOMEN											
110	SHOWER											
111	JAN											
112	LAB											
113	CORRIDOR											
114	CORRIDOR											
115	ELEC MCC											

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No.	Revisions	By	Date

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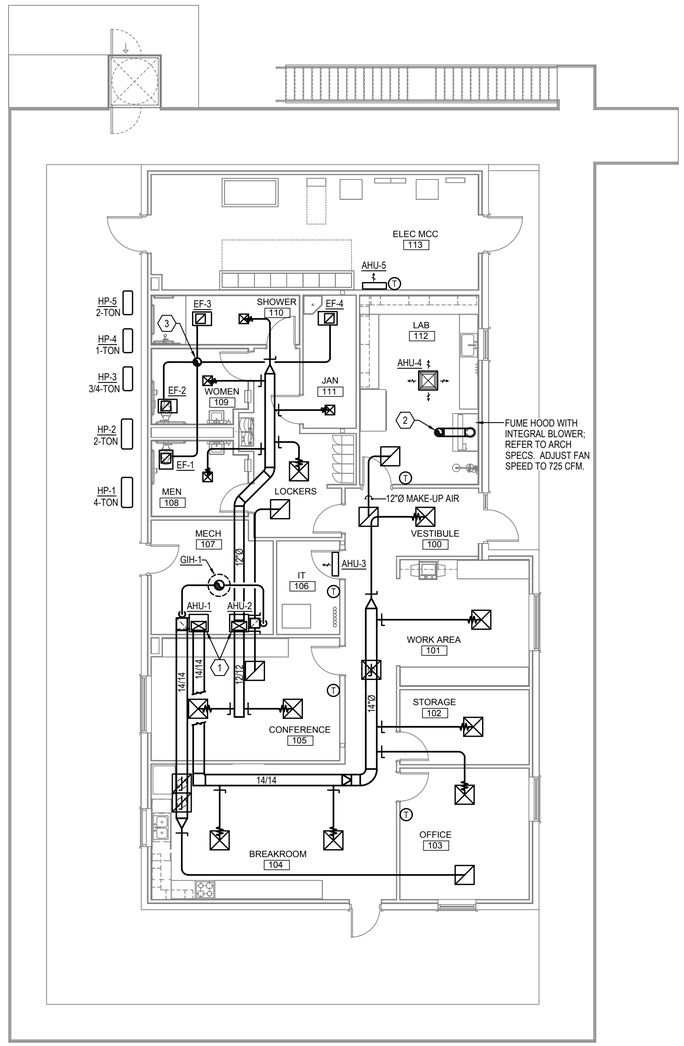
CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING FINISH SCHEDULE

DATE:	SEPTEMBER 1, 2022
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

SHEET
A-971

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1 MECHANICAL FLOOR PLAN

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

NOTES BY SYMBOL "(X)"

1. VERTICAL AIR HANDLING UNIT - SEE DETAIL 1/M-950.
2. 10"Ø EXHAUST DUCT UP THROUGH ROOF WITH RAIN CAP.
3. 8"Ø EXHAUST DUCT UP THROUGH ROOF WITH RAIN CAP.

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BHB PROJECT # 2021.184.000

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING MECHANICAL PLAN

DATE:	SEPTEMPBER 1, 2022
DESIGN:	SR
DRAWN:	SR
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M-910

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	MCA	MOCP	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	43,500	31,500	78/65	230/1	6.5	15	DAIKIN FXTQ42	HP-1	43,500	44,000	230/1	29.1	35	105	16.0	DAIKIN RXTQ42
AHU-2	2	800	100	23,000	16,500	78/65	230/1	4.9	15	DAIKIN FXTQ24	HP-2	23,000	25,800	230/1	16.5	20	105	16.0	DAIKIN RXTQ24

NOTES:

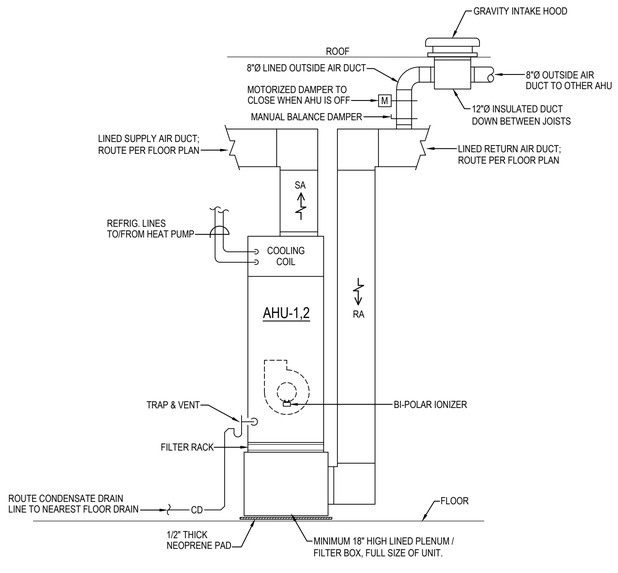
1. EXTERNAL STATIC PRESSURE (ESP) INCLUDED DUCTWORK AND AIR DEVICES ONLY.
2. PROVIDE A WALL MOUNTED, TOUCH SCREEN, 7-DAY PROGRAMMABLE THERMOSTAT FOR EACH UNIT.
3. CONTRACTOR SHALL FURNISH AND INSTALL UNITS WITH ALL NECESSARY CONTROLS, RELAYS, ETC. REQUIRED TO MAKE EACH SYSTEM OPERATE PROPERLY.
4. CONTRACTOR 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. 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.
6. 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.

MINI-SPLIT SYSTEM SCHEDULE

TAG	SYSTEM NOMINAL TONS	TYPE	DUCTLESS AIR HANDLING UNIT									OUTDOOR HEAT PUMP UNIT								
			FAN	COOLING			HEATING		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	HEAT BTUH	E.A.T.												
AHU-3	3/4	WALL MOUTED	410	8,900	8,040	78/65	10,000	75	230/1	NOTE 2	DAIKIN FTX09AXVJU	HP-3	8,900	10,000	230/1	8.7	15	105	19.0	DAIKIN RX09AXVJU
AHU-4	1	CASSETTE	405	10,800	8,430	78/65	13,500	75	230/1	NOTE 2	DAIKIN FFQ12Q2VJU	HP-4	10,800	13,500	230/1	9.1	15	105	20.2	DAIKIN RX12RMVJU
AHU-5	2	WALL MOUTED	715	21,200	15,670	78/65	23,600	75	230/1	NOTE 2	DAIKIN FTX24AXVJU	HP-5	21,200	23,600	230/1	16.4	20	105	19.0	DAIKIN RX24AXVJU

NOTES:

1. PROVIDE EACH INDOOR UNIT WITH MANUFACTURER'S INLINE CONDENSATE PUMP, AND EXTEND 3/4" CONDENSATE TUBING TO NEAREST APPROVED SANITARY SEWER RECEPTOR.
2. INDOOR UNIT IS POWERED FROM THE OUTDOOR UNIT (INDOOR FAN DRAW IS APPROX 35 WATTS).
3. PROVIDE A WALL MOUNTED, TOUCH SCREEN, 7-DAY PROGRAMMABLE THERMOSTAT FOR EACH UNIT.
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. 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.
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.



1 VERTICAL AIR HANDLING UNIT

M-950 SCALE: NONE

NOTES:

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

EXHAUST FAN SCHEDULE

FAN NUMBER	EF-1	EF-2	EF-3
SERVICE	RESTROOM	RESTROOM	SHOWER
TYPE	CEILING MOUNTED	CEILING MOUNTED	CEILING MOUNTED
ORIENTATION	HORIZONTAL	HORIZONTAL	HORIZONTAL
CFM	75	75	75
DESIGN SP. (IN.)	.40"	.40"	.40"
RPM	865	865	865
DRIVE TYPE	DIRECT	DIRECT	DIRECT
MAX. SONES	1.5	1.5	1.5
VOLTAGE/PHASE	120/1	120/1	120/1
MOTOR WATTS	35 W	35 W	35 W
MANUFACTURER	COOK	COOK	COOK
MODEL NUMBER	GC-148	GC-148	GC-148
CONTROLS	NOTE 5	NOTE 5	NOTE 5
BACKDRAFT DAMPER	YES	YES	YES
REMARKS	NOTE 2	NOTE 2	NOTE 2

NOTES:

1. STATIC PRESSURE INCLUDES DUCTWORK AND DAMPERS.
2. PROVIDE CEILING MOUNTED DIRECT DRIVE FANS 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	12"x12" SQ. PLAQUE FACE CEILING DIFFUSER, 6"Ø NECK	NO	WHITE ENAMEL	ASPD
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	THERMOSTAT OR ADJUSTABLE TEMPERATURE SENSOR (4'-0" AFF)
SD	SMOKE DETECTOR (DUCT MOUNTED)
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 #036. 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.

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No.	Revisions	By	Date

CITY OF WEST UNIVERSITY PLACE, TX

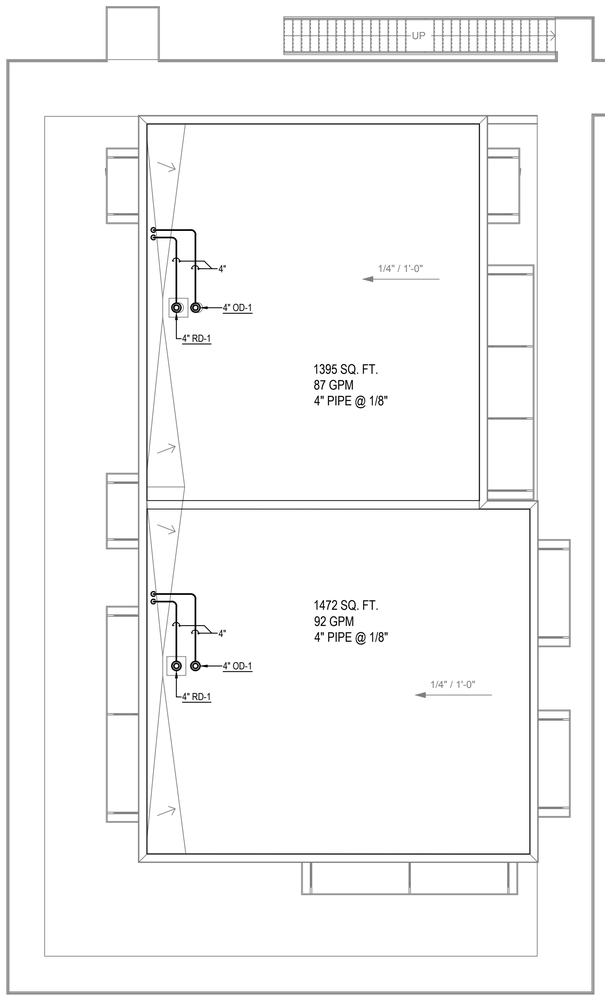
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING MECHANICAL DETAILS & SCHEDULES

DATE:	SEPTEMPBER 1, 2022
DESIGN:	SR
DRAWN:	SR
CHECKED:	LB
KHA NO.:	067812104

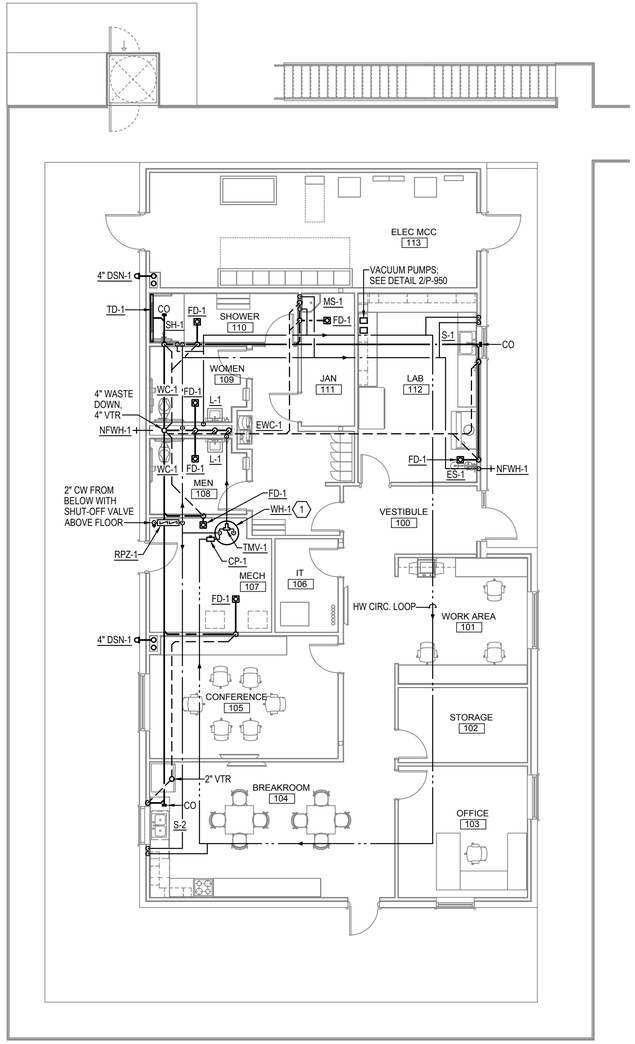
SHEET

M-950



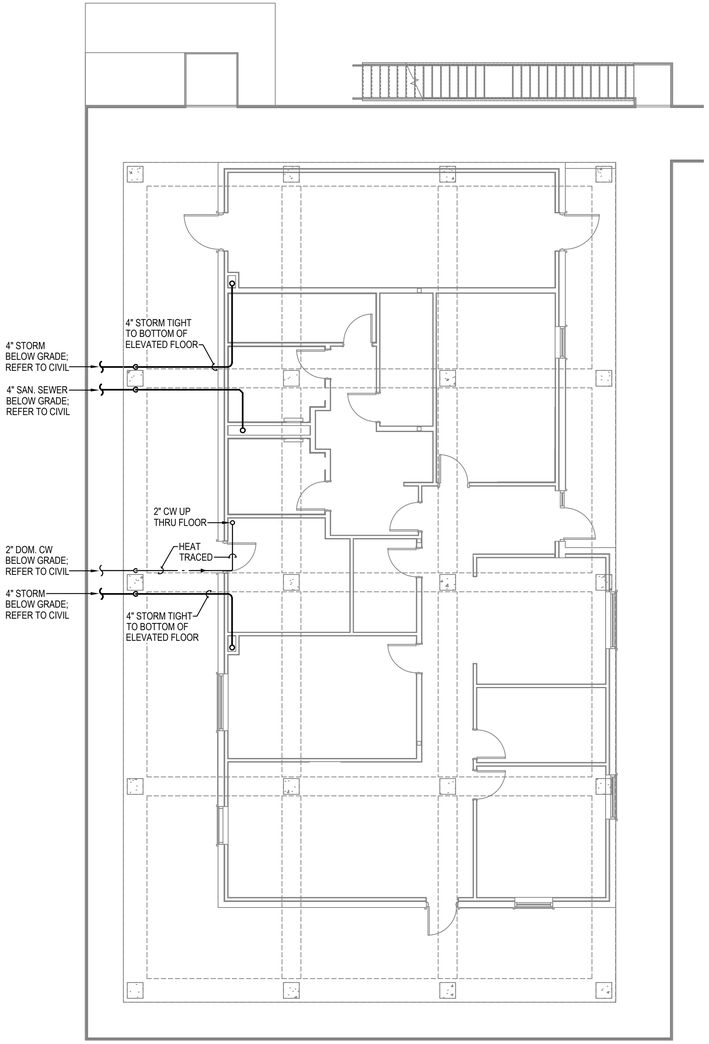
1 PLUMBING ROOF PLAN

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. ROUTE FULL SIZE CONDENSATE DRAIN LINE FROM AHU-1,2 TO NEAREST FLOOR DRAIN - SEE DETAIL 1/M-950.
   ROUTE 1/2" PUMPED CONDENSATE DRAIN FROM AHU-3,4,5 TO MOP SINK.

NOTES BY SYMBOL "⟨X⟩"

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

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CONTROL BUILDING PLUMBING PLAN

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SHEET

P-910

PLUMBING LEGEND

COLD WATER (CW)	
HOT WATER (110° HW)	
HOT WATER RETURN	
DIRECTION OF FLOW	
SS	WASTE (SANITARY SEWER)
	VENT (SANITARY SEWER)
CD	CONDENSATE DRAIN LINE
	FLOOR DRAIN
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	6.1 / 6.1	50	62	240/1	A.O. SMITH PNT-50	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 SIMULTANEOUSLY.

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.

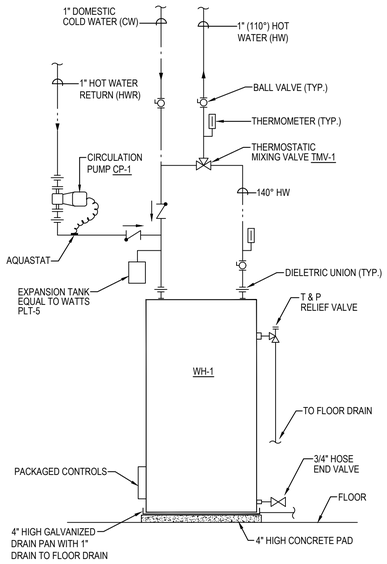
PLUMBING GENERAL NOTES

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. THIS PROJECT WILL UTILIZE A RETURN AIR PLENUM, THEREFORE NO COMBUSTIBLE MATERIALS SHALL BE INSTALLED ABOVE CEILING. PVC PIPING MAY BE USED ONLY IN CEILING SPACES NOT USED AS A RETURN AIR PLENUM.
11. REFER TO DIVISION 22 FOR COMPLETE PROJECT SPECIFICATIONS.
12. REFER TO SPECIFICATION SECTION 22 0010 FOR COMMISSIONING REQUIREMENTS.

PLUMBING FIXTURE SCHEDULE

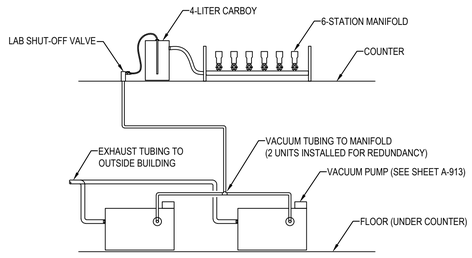
TAG	FIXTURE	H	C	W	V	DESCRIPTION
WC-1	WATER CLOSET, FLOOR SET FLUSH VALVE, ACCESSIBLE	-	1"	4"	2"	AMERICAN STANDARD #3461.128. VITREOUS CHINA, 1.28 GPF, ELONGATED TOILET. SLOAN ROYAL #113-1.28 FLUSH VALVE. CHURCH #9500CT OPEN FRONT SEAT WITH STA-TITE HINGES. TOP OF SEAT 17-1/2" AFF.
L-1	LAVATORY, WALL 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, ACCESSIBLE	1/2"	1/2"	2"	1-1/2"	ELKAY #LRAD-3321-65-2, 18 GA. STAINLESS STEEL 33" x 21" x 6-1/2" DEEP COUNTERTOP SINK WITH 2 FAUCET HOLES. DELTA #27C4924-R7 (9" GOOSE NECK) FAUCET WITH LEVER HANDLES, SWING SPOUT, AERATOR, STRAINER AND P-TRAP.
S-2	DOUBLE COMPARTMENT SINK COUNTERTOP, ACCESSIBLE WITH GARBAGE DISPOSER	1/2"	1/2"	2"	1-1/2"	ELKAY #LRAD-250-65-2, 18 GA. STAINLESS STEEL 33" x 22" x 6-1/2" DEEP COUNTERTOP SINK WITH OFFSET DRAIN AND 2 FAUCET HOLES. DELTA #27C4924-R7 (9" GOOSE NECK) FAUCET WITH LEVER HANDLES, SWING SPOUT, AERATOR, STRAINER AND P-TRAP. ADA INSULATION PACKAGE. 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"	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	-	-	4"	-	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	-	-	4"	-	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	-	-	4"	-	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.).

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



2 VACUUM PUMP DIAGRAM

P-950 SCALE: SCHEMATIC ONLY

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