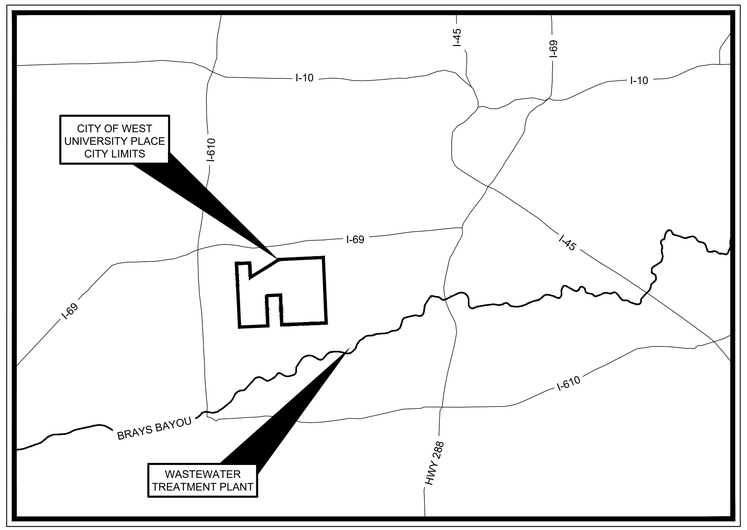
CITY OF WEST UNIVERSITY PLACE, TEXAS

WASTEWATER TREATMENT PLANT IMPROVEMENTS

JUNE 2022

PROJECT # PW21WWTPMP



VICINITY MAP

NTS

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

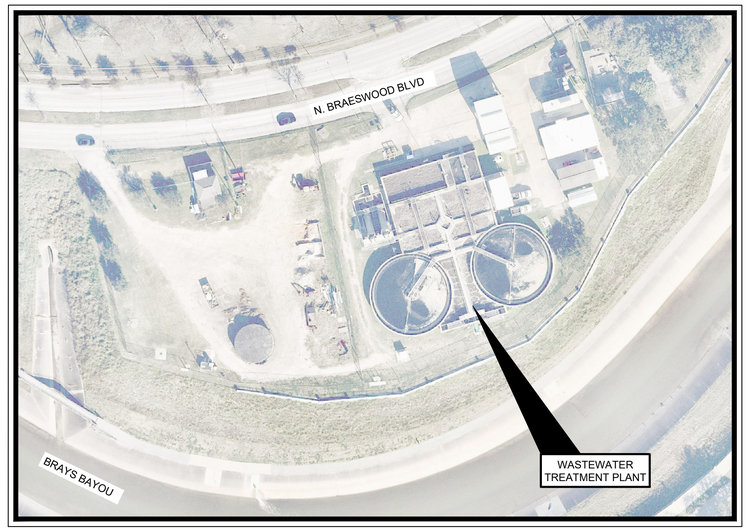
DAVID BEACH

PUBLIC WORKS DIRECTOR

GERARDO BARRERA

WWTP SUPERVISOR

MARK WAHLSTORM



PROJECT LOCATION

1" = 70'

PROJECT ADDRESS
2801 N BRAESWOOD BLVD,
HOUSTON, TX 77025

TPDES PERMIT: WQ0010058001

30% 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

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.

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

No.	Revision	By	Date

PRELIMINARY

FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.

Kimley»Horn

Engineer MICHAEL P. MORIARTY JR

P.E. No. 129086

Date JUNE 2022

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

SHEET INDEX

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

SHEET

G-101

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 COVERED BY STRUCTURES, A 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 OTHERWISE NOTED ON THE PLANS.
10. CONTRACTOR SHALL FIELD VERIFY THE SIZE, CONDITION, HORIZONTAL, AND VERTICAL LOCATIONS OF ALL EXISTING WATER AND WASTEWATER FACILITIES THAT ARE TO BE CONNECTED TO, PRIOR TO START OF CONSTRUCTION OF ANY WATER OR WASTEWATER CONSTRUCTION, AND SHALL NOTIFY THE ENGINEER OF ANY CONFLICTS DISCOVERED.
11. CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS SHOWN, INCLUDING THE HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITY SERVICES ENTERING THE BUILDING.
12. THE CONTRACTOR SHALL FIELD VERIFY THE ELEVATION OF ALL UTILITY CROSSINGS PRIOR TO THE INSTALLATION OF ANY PIPE.
13. CONTRACTOR SHALL INSTALL STANDARD BENDS AT LOCATIONS SHOWN. ALL NON-STANDARD VERTICAL AND HORIZONTAL BENDS SHALL BE INSTALLED USING STANDARD BENDS AND 75% OF THE MAXIMUM ALLOWABLE JOINT DEFLECTIONS AND MINIMUM RADIUS AS RECOMMENDED BY THE PIPE MANUFACTURER.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TRANSITION FROM ONE PIPE MATERIAL TO ANOTHER, WHERE INDICATED ON THE PLANS.
15. THE SITE UTILITY CONTRACTOR SHALL PROVIDE ALL MATERIALS AND APPURTENANCES NECESSARY FOR COMPLETE INSTALLATION OF THE WATER AND WASTEWATER IMPROVEMENTS.
16. ALL PUBLIC WATER AND WASTEWATER CONSTRUCTION, PIPE, STRUCTURES, AND FITTINGS SHALL ADHERE TO THE CITY OF WEST UNIVERSITY PLACE STANDARDS. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY OF WEST UNIVERSITY PLACE INSPECTIONS.
17. ALL PRIVATE WATER AND WASTEWATER CONSTRUCTION, PIPE, STRUCTURES, AND FITTINGS SHALL ADHERE TO THE APPLICABLE PLUMBING CODE. CONTRACTOR SHALL ARRANGE FOR REQUIRED CIT Y OF WEST UNIVERSITY PLACE INSPECTIONS.
18. FIRE SPRINKLER LINES SHALL BE DESIGNED AND INSTALLED BY A LICENSED FIRE SPRINKLER CONTRACTOR, AND COMPLY TO THE APPLICABLE CODES AND INSPECTIONS REQUIRED.
19. EMBEDMENT FOR ALL WATER AND WASTEWATER LINES, PUBLIC OR PRIVATE, SHALL BE PER THE CITY OF WEST UNIVERSITY PLACE STANDARDS.
20. CONTRACTOR SHALL TAKE REQUIRED SANITARY PRECAUTIONS, FOLLOWING ANY CITY, TCEQ, AND AWWA STANDARDS, TO KEEP WATER PIPE AND FITTINGS CLEAN AND CAPPED AT TIMES WHEN INSTALLATION IS NOT IN PROGRESS.
21. CONTRACTOR SHALL MAINTAIN WATER SERVICE AND WASTEWATER SERVICE TO ALL CUSTOMERS THROUGHOUT CONSTRUCTION (IF NECESSARY, BY USE OF TEMPORARY METHODS APPROVED BY THE CITY OF WEST UNIVERSITY PLACE AND OWNER).
22. THE CONTRACTOR IS RESPONSIBLE TO PROTECT ALL WATER AND WASTEWATER LINES CROSSING THE PROJECT. THE CONTRACTOR SHALL REPAIR ALL DAMAGED LINES IMMEDIATELY. ALL REPAIRS OF EXISTING WATER MAINS, WATER SERVICES, SEWER MAINS, AND SANITARY SEWER SERVICES ARE SUBSIDIARY TO THE WORK, AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED.
23. VALVE ADJUSTMENTS SHALL BE CONSTRUCTED SUCH THAT THE COVERS ARE AT FINISHED SURFACE GRADE OF THE PROPOSED PAVEMENT.
24. THE ENDS OF ALL EXISTING WATER MAINS THAT ARE CUT, BUT NOT REMOVED, SHALL BE PLUGGED AND ABANDONED IN PLACE.
25. ALL FIRE HYDRANTS, VALVES, TEES, BENDS, WYES, REDUCERS, FITTINGS, AND ENDS SHALL BE MECHANICALLY RESTRAINED OR THRUST BLOCKED TO THE CITY OF WEST UNIVERSITY PLACE STANDARDS.
26. CONTRACTOR SHALL INSTALL A FULL SEGMENT OF WATER OR WASTEWATER PIPE CENTERED AT ALL UTILITY CROSSINGS SO THAT THE JOINTS ARE GREATER THAN 9-FEET FROM THE CROSSING.
27. ALL CROSSINGS AND LOCATIONS WHERE WASTEWATER IS LESS THAN 9-FEET FROM WATER, WASTEWATER CONSTRUCTION AND MATERIALS SHALL COMPLY WITH TCEQ CHAPTER 217.53.
28. ALL CROSSING AND LOCATIONS WHERE WATER IS LESS THAN 9-FEET FROM WASTEWATER, WATER CONSTRUCTION AND MATERIALS SHALL COMPLY WITH TCEQ CHAPTER 290.44.
29. AT LOCATIONS WHERE THE PROPOSED SANITARY SEWER LINE WILL BE INSTALLED BENEATH WATER LINES THE SANITARY SEWER LINE SHALL BE EMBEDDED IN CEMENT STABILIZED SAND (TWO OR MORE BAGS OF CEMENT PER CUBIC YARD OF SAND) FOR THE TOTAL LENGTH ON ONE PIPE SEGMENT PLUS 12" BEYOND THE JOINT.
30. ALL WATER AND WASTEWATER SHALL BE TESTED IN ACCORDANCE WITH THE CITY OF WEST UNIVERSITY PLACE, AWWA, AND TCEQ STANDARDS AND SPECIFICATIONS. AT A MINIMUM, THIS SHALL CONSIST OF THE FOLLOWING:
    a. ALL WATERLINES SHALL BE HYDROSTATICALLY TESTED AND CHLORINATED BEFORE BEING PLACED INTO SERVICE. CONTRACTOR SHALL COORDINATE WITH THE CITY OF WEST UNIVERSITY PLACE FOR THEIR REQUIRED PROCEDURES AND SHALL ALSO COMPLY WITH TCEQ REGULATIONS. PROVIDE BACTERIOLOGICAL LAB REPORT TO THE CITY OF WEST UNIVERSITY PLACE PUBLIC WORKS.
    b. WASTEWATER LINES AND MANHOLES SHALL BE PRESSURE TESTED. CONTRACTOR SHALL COORDINATE WITH THE CITY FOR THEIR REQUIRED PROCEDURES AND SHALL ALSO COMPLY WITH TCEQ REGULATIONS. AFTER COMPLETION OF THESE TESTS, A CCTV TELEVISION INSPECTION SHALL BE PERFORMED AND PROVIDED TO THE CITY OF WEST UNIVERSITY PLACE ON A DVD.

29. CONTRACTOR SHALL INSTALL DETECTABLE WIRING OR MARKING TAPE A MINIMUM OF 12" ABOVE WATER AND WASTEWATER LINES. MARKER DECALS SHALL BE LABELED "CAUTION - WATER LINE", OR "CAUTION - SEWER LINE". DETECTABLE WIRING AND MARKING TAPE SHALL COMPLY WITH THE CITY OF WEST UNIVERSITY PLACE STANDARDS
30. WATERLINES SHALL BE INSTALLED AT NO LESS THAN THE MINIMUM 36-INCH COVER.
31. CONTRACTOR SHALL PROVIDE CLEAN-OUTS FOR PRIVATE SANITARY SEWER LINES AT ALL CHANGES IN DIRECTION AND 100-FOOT INTERVALS, OR AS REQUIRED BY THE APPLICABLE PLUMBING CODE. CLEAN-OUTS REQUIRED IN PAVEMENT OR SIDEWALKS SHALL HAVE CAST IRON COVERS FLUSH WITH FINISHED GRADE.
32. CONTRACTOR SHALL PROVIDE BACKWATER VALVES FOR PLUMBING FIXTURES AS REQUIRED BY THE APPLICABLE PLUMBING CODE (E.G. FLOOR ELEVATION OF FIXTURE UNIT IS BELOW THE ELEVATION OF THE MANHOLE COVER OF THE NEXT UPSTREAM MANHOLE IN THE PUBLIC SEWER).
33. THE CONTRACTOR SHALL KEEP TRENCHES FREE FROM WATER.

TRAFFIC CONTROL:

1. THE CONTRACTOR SHALL PREPARE A TRAFFIC CONTROL PLAN FOR THE ENTIRE PROJECT. THE CONTRACTOR WILL SUBMIT THE TRAFFIC CONTROL PLAN TO THE OWNER AND ENGINEER PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE CONTROLS IDENTIFIED IN THE PLAN AND CHANGES TO THE PLAN ONCE CONSTRUCTION BEGINS. NO ADDITIONAL PAYMENT WILL BE ALLOWED FOR COMPLIANCE WITH THE PROJECT TRAFFIC CONTROL PLAN. NO ADDITIONAL PAYMENT WILL BE ALLOWED FOR COMPLIANCE WITH REQUESTS FOR TXDOT INSPECTOR, IF APPLICABLE.
2. BARRICADES AND SIGNS SHALL BE PLACED IN SUCH A MANNER AS NOT TO INTERFERE WITH THE SIGHT DISTANCE OF DRIVERS ENTERING THE ROADWAYS OR SIDE STREETS. TO FACILITATE LANE SHIFTING, BARRICADES AND SIGNS USED IN LANE CLOSURES OR TRAFFIC STAGING MAY BE ERECTED AND MOUNTED ON PORTABLE SUPPORTS. THE DESIGN OF THESE SUPPORTS SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND ARE SUBJECT TO THE APPROVAL OF THE ENGINEER.
3. ALL TRAFFIC CONTROL DEVICES (SIGNS, MARKINGS. BARRICADES, ETC.) USED TO WARN MOTORIST OF THE CONSTRUCTION ACTIVITY MUST CONFORM TO THE LATEST VERSION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND ARE SUBJECT TO THE APPROVAL OF THE CITY OF WEST UNIVERSITY PLACE PUBLIC WORKS.
4. BARRICADES AND WARNING SIGNS, AS APPROPRIATE, ARE TO BE PLACED IN STOCKPILES TO ADEQUATELY WARN MOTORIST. AT ALL STOCKPILES THAT ARE LESS THAN 30 FEET FROM THE EDGE OF ANY TRAVEL LANE, A CLASS III BARRICADE SHALL BE ERECTED IMMEDIATELY IN FRONT OF OR AT EACH END IF REQUIRED. WHEN A STOCKPILE SITE EQUALS OR EXCEEDS 100 FEET IN LENGTH, ONE OBJECT MARKER (OM-HP) PER 100 FEET SHALL BE PLACED ALONGSIDE THE STOCKPILE.

LIFT STATION TESTING AND START UP

1. THE CONTRACTOR SHALL COORDINATE WITH THE CITY ON FILLING THE WET WELL FOR TESTING OF THE LIFT STATION.
2. THE LIFT STATION SHALL RUN A MINIMUM OF 30 MINUTES AND SUCCESSFULLY PUMP OUT THE WET WELL.

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Kimley»Horn
Engineer MICHAEL P. MORIARTY JR
P.E. No. 129086
Date JUNE 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

GENERAL NOTES (1 OF 2)

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

SHEET
G-102

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.

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Kimley»Horn

Engineer MICHAEL P. MORIARTY JR.

P.E. No. 129086

Date JUNE 2022

CITY OF WEST UNIVERSITY PLACE, TX

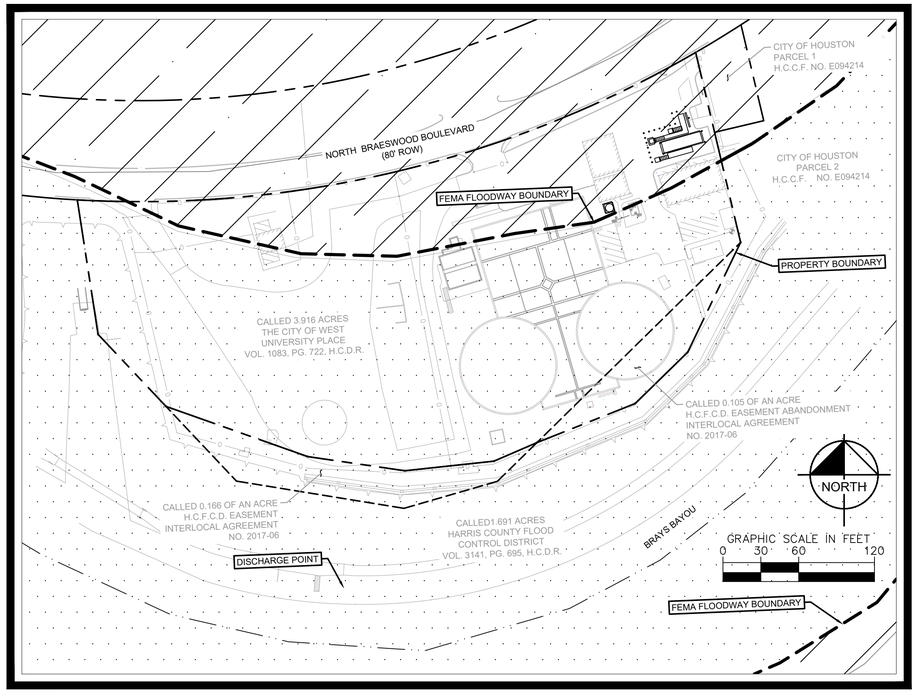
WASTEWATER TREATMENT PLANT IMPROVEMENTS

GENERAL NOTES (2 OF 2)

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

SHEET

G-103



VIEW B

LEGEND

- FLOODPLAIN SHADED ZONE AE
- FLOODWAY
- WWTP SERVICE AREA

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

DATE:	JUNE 2022
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SHEET

G-104

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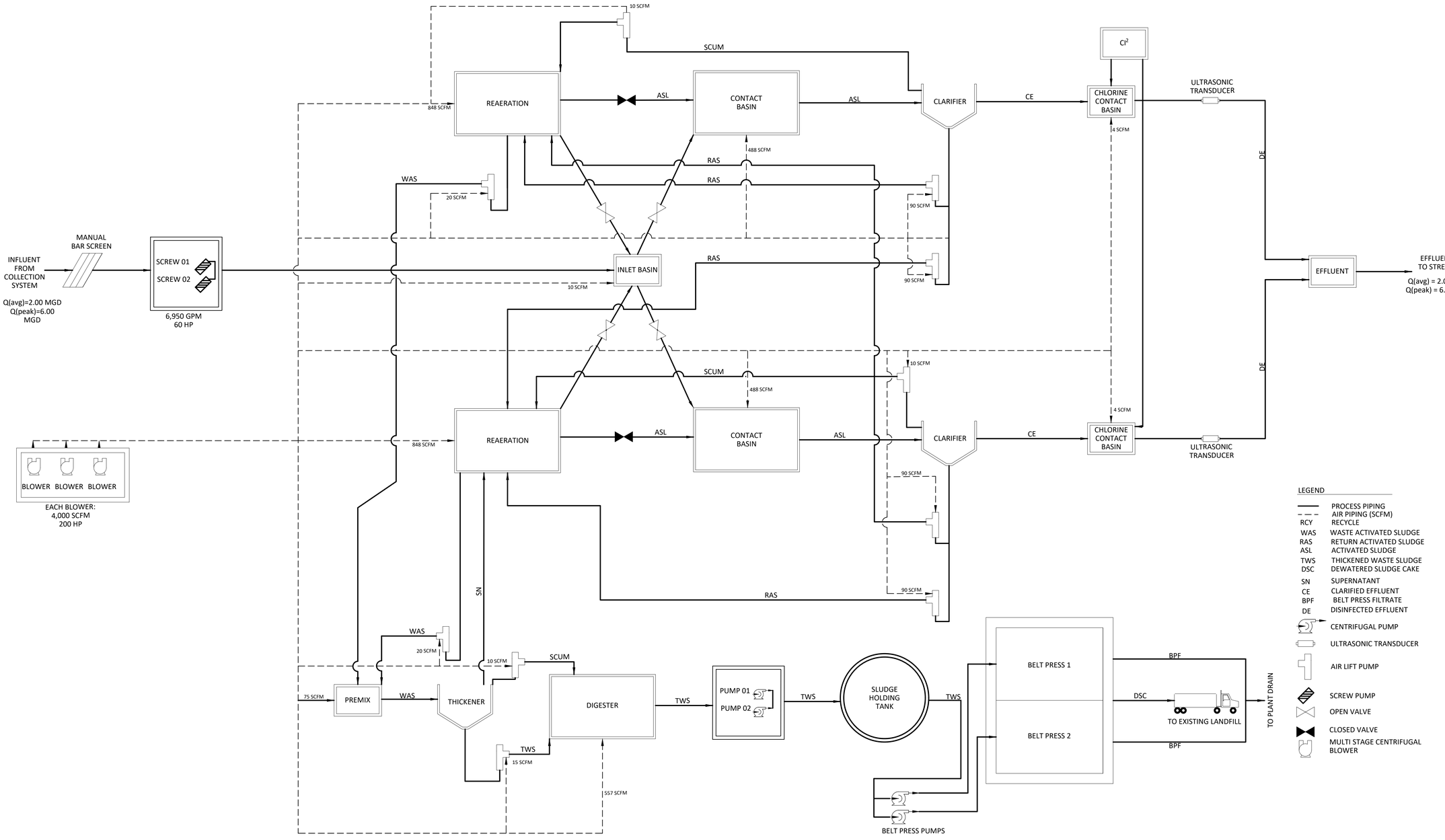
TOTAL
QAVG - 2 MGD
QPEAK - 6 MGD
RAS FLOW - 8 MGD



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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

EXISTING PROCESS FLOW DIAGRAM

DATE:	JUNE 2022
DESIGN:	MPM
DRAWN:	HLR
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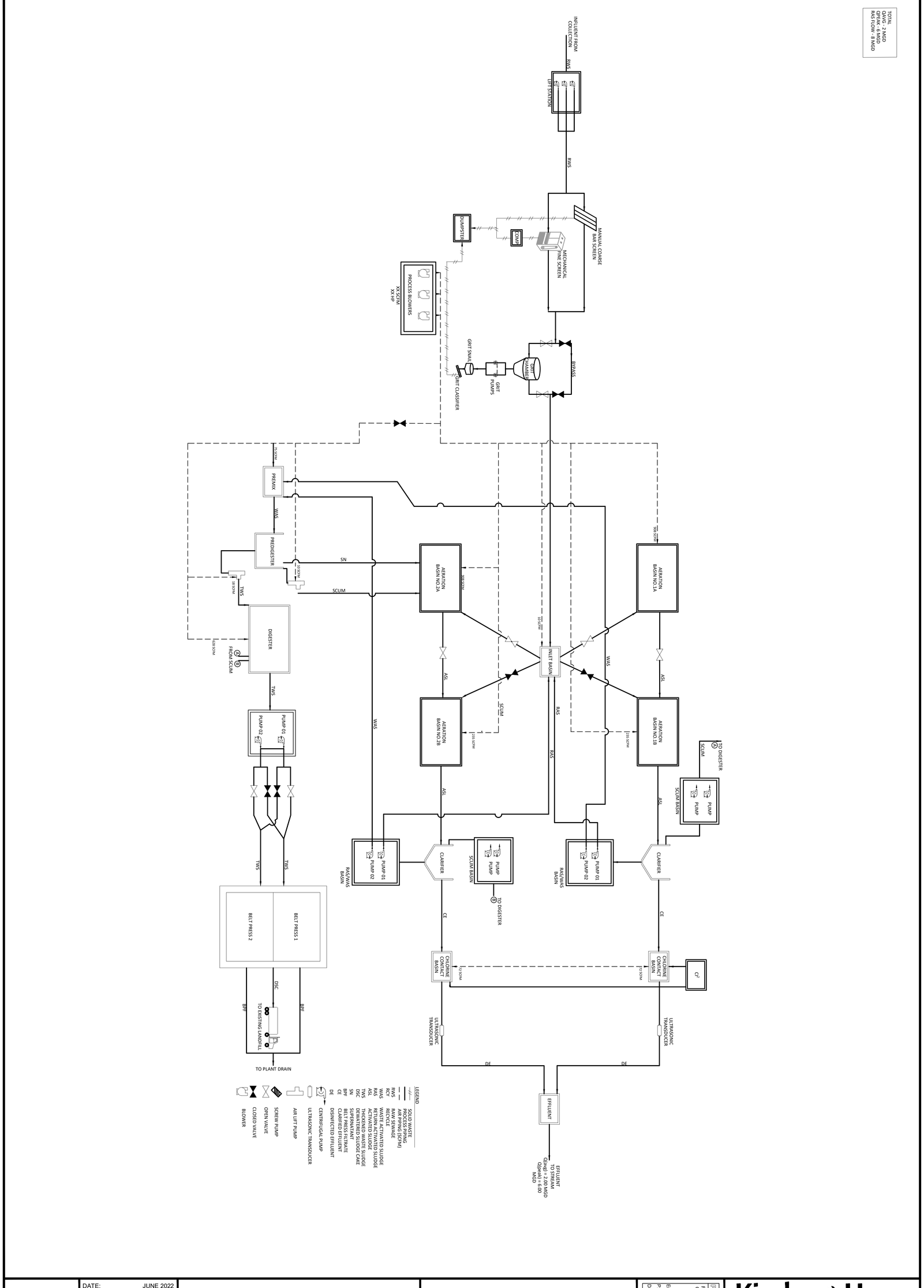

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PROPOSED PROCESS FLOW DIAGRAM

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

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Engineer MICHAEL P. MORIARTY
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Date JUNE 2022

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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	-----	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
SCUM PUMP	SPS - 1001	FLYGT CONCERTOR N100-500	RAS	SUBMERSIBLE, NON-CLOG	19.6 GPM	353	3	-----	4	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, 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

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

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 MICHAEL P. MORIARTY JR
P.E. No. 129086
Date JUNE 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

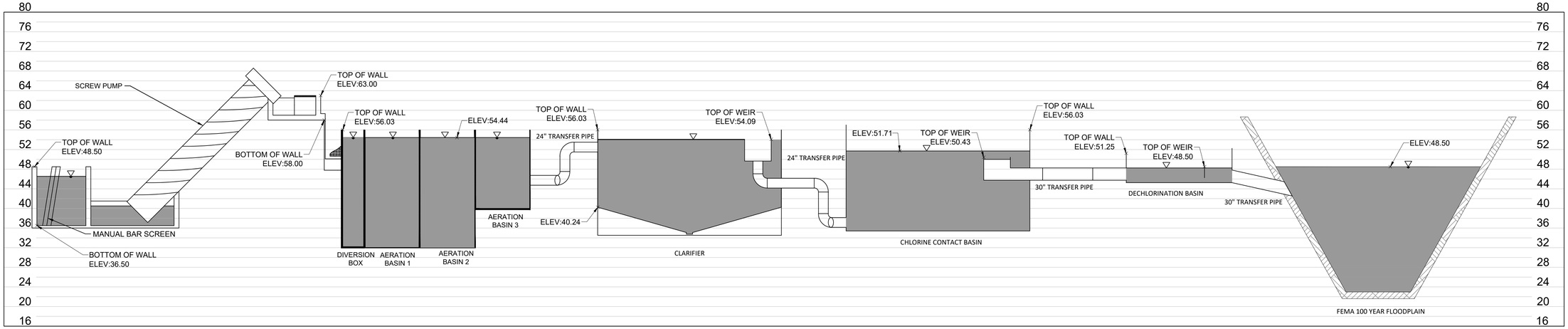
EQUIPMENT SCHEDULE

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

SHEET
G-107

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	200
RATED CAPACITY WITH LARGEST UNIT OUT OF SERVICE (S.C.F.M.)	8,200

PEAK FLOW = 6 MGD



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Engineer MICHAEL P. MORIARTY JR.

P.E. No. 129086

Date JUNE 2022

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

EXISTING HYDRAULIC PROFILE

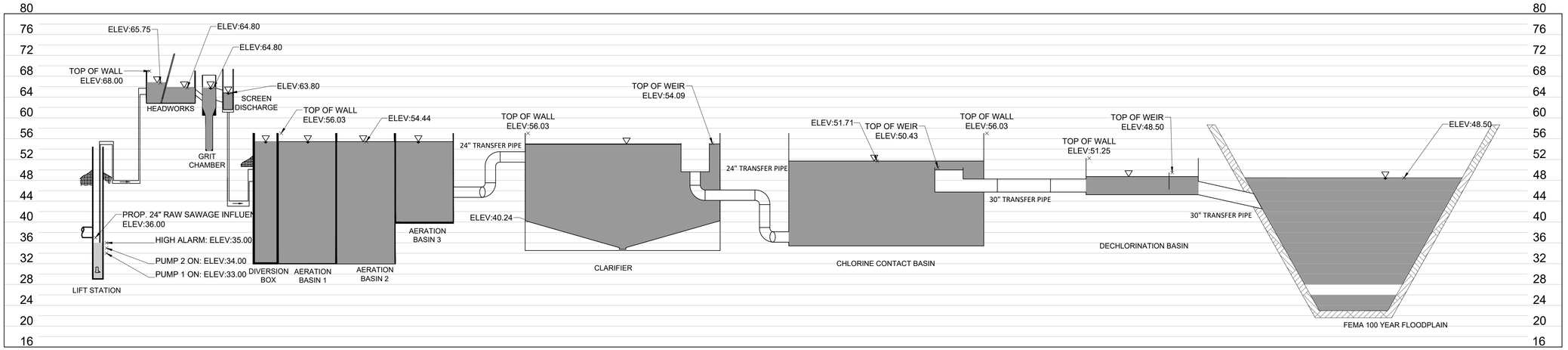
DATE:	JUNE 2022
DESIGN:	MPM
DRAWN:	HLR
CHECKED:	KPK
KHA NO.:	067812104

SHEET

G- 108

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.)	1,872
DIGESTION (S.C.F.M.)	628
CHLORINE CONTACT (S.C.F.M.)	144
AIR LIFT PUMPS & MISC. DROPS (S.C.F.M.)	28
NET TOTAL REQUIRED (S.C.F.M.)	2,672
AIR BLOWERS	
TOTAL NUMBER	3
TOTAL HORSEPOWER	100
RATED CAPACITY WITH LARGEST UNIT OUT OF SERVICE (S.C.F.M.)	2,768

PEAK FLOW = 6 MGD



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Kimley»Horn

Engineer MICHAEL P. MORIARTY JR.

P.E. No. 129086

Date JUNE 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT
PLANT IMPROVEMENTS

PROPOSED HYDRAULIC PROFILE

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

SHEET

G- 109

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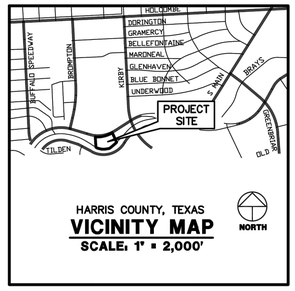


HARRIS COUNTY, TEXAS

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.

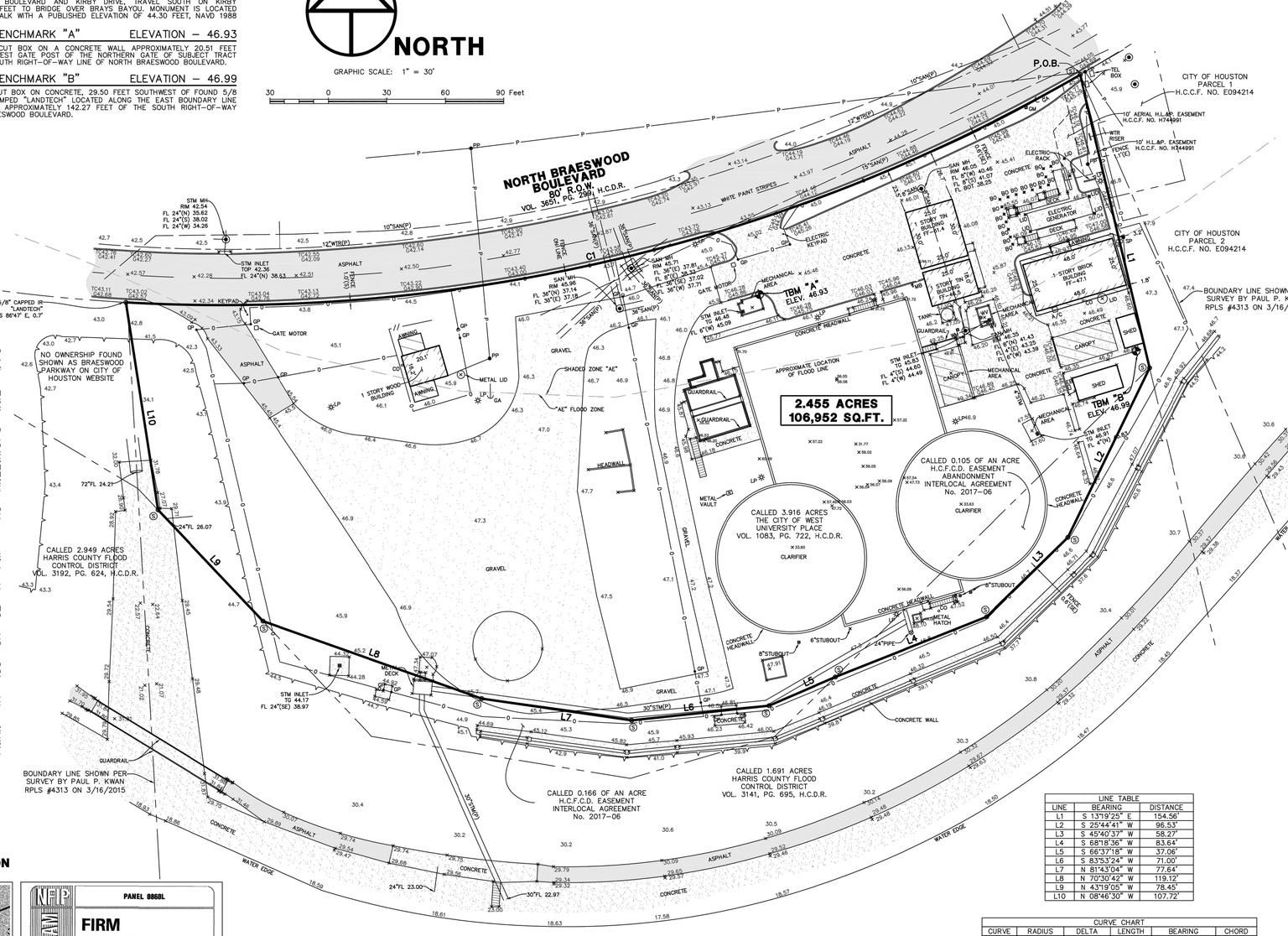
TEMPORARY BENCHMARK "B" — ELEVATION – 46.99

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'

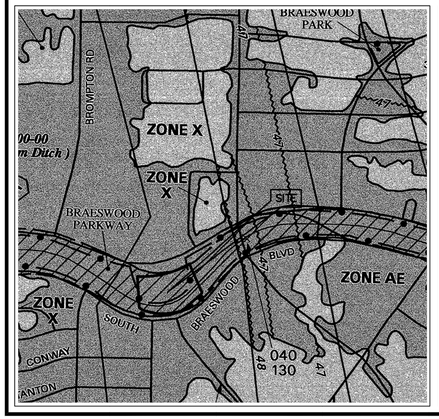
30 0 30 60 90 Feet

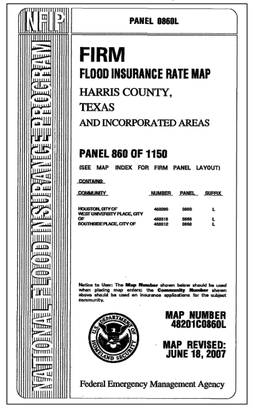


GENERAL NOTES

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
- SI – 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

7-09-2021
DATE

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

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

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

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

No.	Revision	By	Date

PRELIMINARY

FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.

Kimley»Horn

Engineer MICHAEL P. MORIARTY JR.

P.E. No. 129086

Date JUNE 2022

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

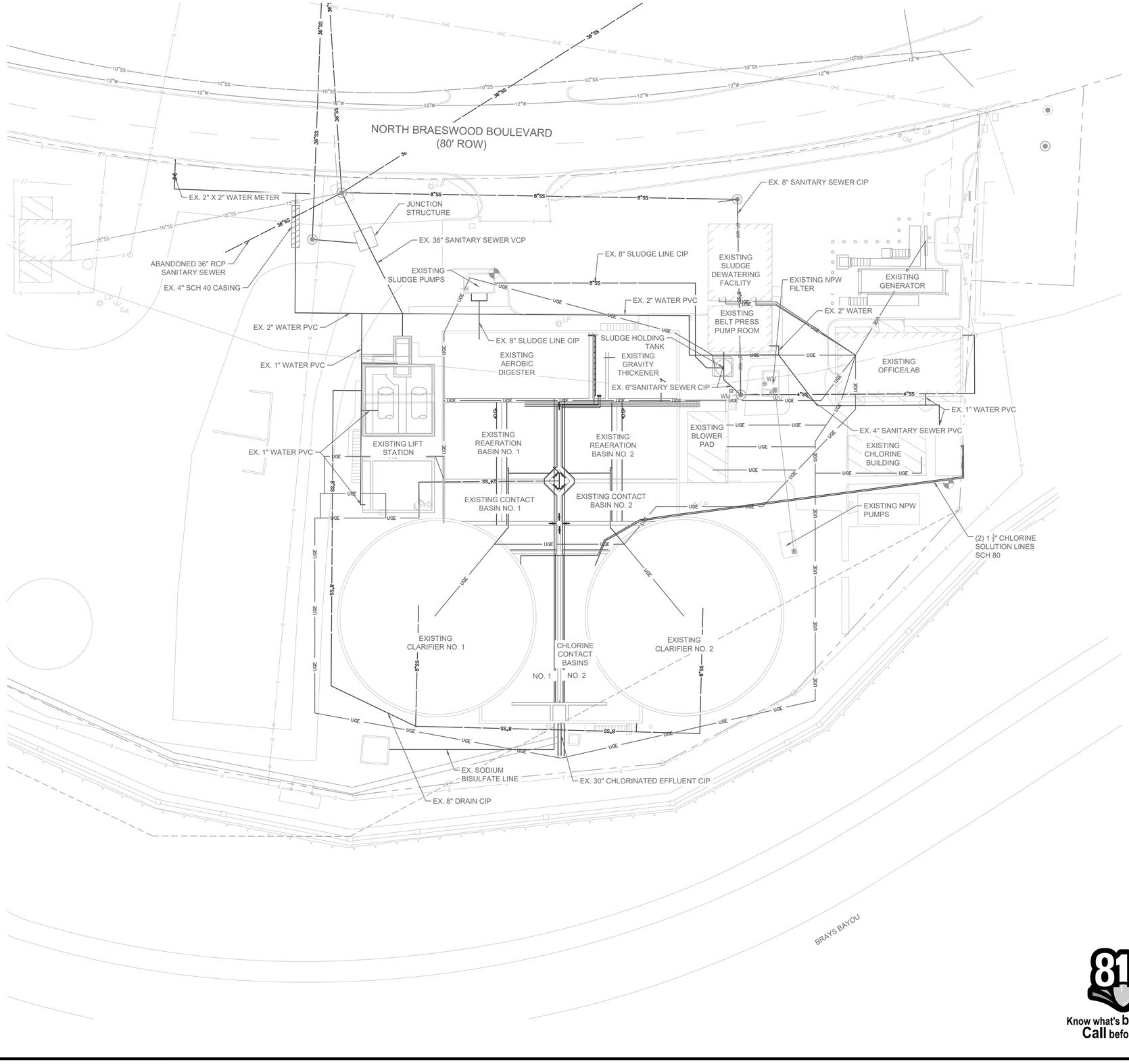
EXISTING OVERALL SITE LAYOUT

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

SHEET

C-100

K:\HOU_Utilities\067812104_West U WWTP\09_CAD\03_Plan Sheets\C - EXISTING SITE PLAN.dwg 5/7/2013 10:40 AM



NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

LEGEND

- EXISTING 4" SANITARY SEWER LINE
- EXISTING 6" SANITARY SEWER LINE
- EXISTING 8" SANITARY SEWER LINE
- EXISTING 10" SANITARY SEWER LINE
- EXISTING 15" SANITARY SEWER LINE
- EXISTING 30" SANITARY SEWER LINE
- EXISTING 36" SANITARY SEWER LINE
- EXISTING 12" WATER LINE
- OVERHEAD ELECTRIC LINE
- EXISTING SITE FENCE LINE
- EXISTING PROPERTY BOUNDARY LINE
- EXISTING ELECTRICAL LINE

Know what's below. Call before you dig.

CAUTION!!

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Kimley»Horn
11700 KATY FREEWAY, SUITE 800, HOUSTON, TEXAS 77079
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TBPE NO. 928

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Engineer MICHAEL P. MORIARTY JR.
P.E. No. 129086
Date JUNE 2022

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

EXISTING YARD PIPING

DATE:	JUNE 2022
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CHECKED:	KPK
KHA NO.:	067812104

SHEET

C-101

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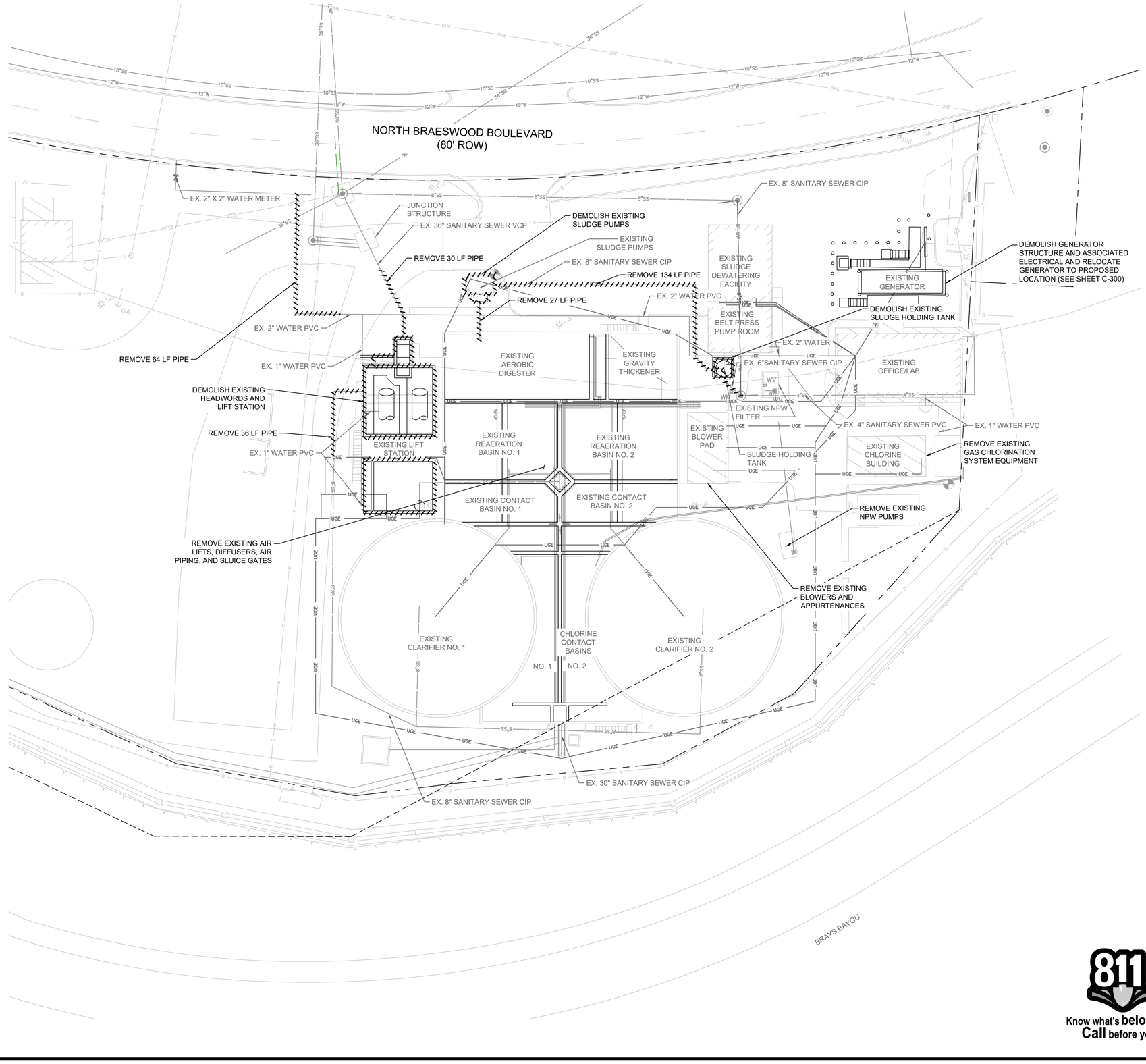

GRAPHIC SCALE IN FEET
0 10 20 40

LEGEND

- EXISTING 4" SANITARY SEWER LINE
- EXISTING 6" SANITARY SEWER LINE
- EXISTING 8" SANITARY SEWER LINE
- EXISTING 10" SANITARY SEWER LINE
- EXISTING 15" SANITARY SEWER LINE
- EXISTING 30" SANITARY SEWER LINE
- EXISTING 36" SANITARY SEWER LINE
- EXISTING 12" WATER LINE
- OVERHEAD ELECTRIC LINE
- EXISTING SITE FENCE LINE
- EXISTING PROPERTY BOUNDARY LINE
- EXISTING ELECTRICAL LINE
- PROPOSED DEMO

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEMOLITION PLAN

DATE:	JUNE 2022
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CHECKED:	KPK
KHA NO.:	067812104

SHEET

C-200

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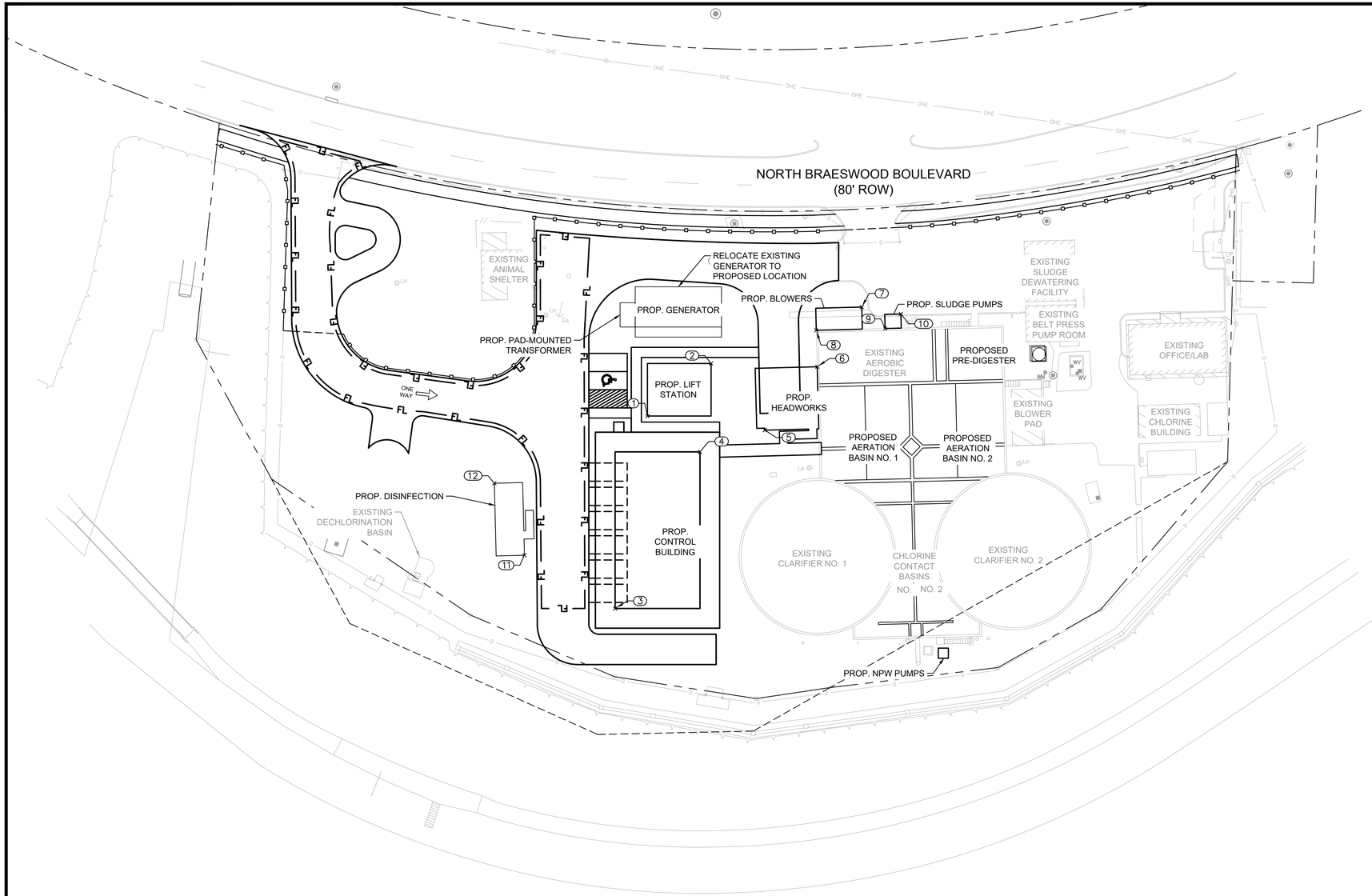

GRAPHIC SCALE IN FEET
0 15 30 60

POINT TABLE			
POINT #	NORTHING	EASTING	DESCRIPTION
1	13819735.34	3105087.95	LIFT STATION CORNER
2	13819768.56	3105111.71	LIFT STATION CORNER
3	13819639.17	3105096.95	PROPOSED BUILDING CORNER
4	13819724.86	3105117.63	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

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.

PARKING SUMMARY

PARKING REQUIRED			
USE	SQUARE FOOTAGE	RATIO REQUIRED	STALLS REQUIRED
OFFICE		2.5 : 1,000 SF	8
TOTAL			
PARKING PROVIDED			
STANDARD STALLS PROVIDED			7
ACCESSIBLE STALLS PROVIDED			1
TOTAL STALLS PROVIDED			8

FLOODPLAIN INFORMATION

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

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

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Kimley»Horn
Engineer MICHAEL P. MORIARTY JR
P.E. No. 129086
Date JUNE 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

PROPOSED SITE PLAN

DATE:	JUNE 2022
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DRAWN:	HLR
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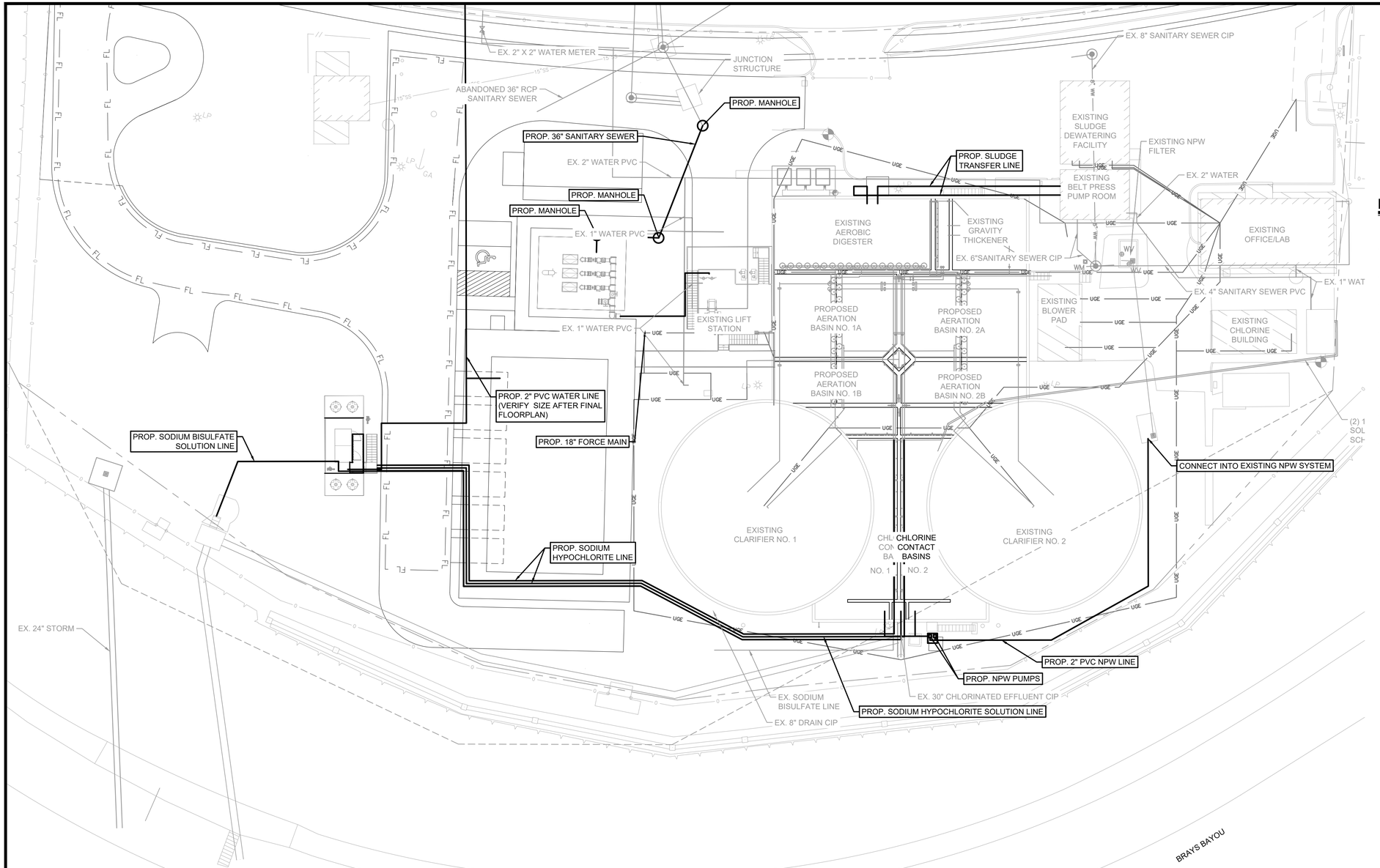
KHA NO.:	067812104

SHEET
C-300



NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

LEGEND

- 4"SS — EXISTING 4" SANITARY SEWER LINE
- 6"SS — EXISTING 6" SANITARY SEWER LINE
- 8"SS — EXISTING 8" SANITARY SEWER LINE
- 10"SS — EXISTING 10" SANITARY SEWER LINE
- 15"SS — EXISTING 15" SANITARY SEWER LINE
- 30"SS — EXISTING 30" SANITARY SEWER LINE
- 36"SS — EXISTING 36" SANITARY SEWER LINE
- 12"W — EXISTING 12" WATER LINE
- OHE — OVERHEAD ELECTRIC LINE
- O — EXISTING SITE FENCE LINE
- EXISTING PROPERTY BOUNDARY LINE
- UGE — EXISTING ELECTRICAL LINE
- FL FL — PROPOSED FIRE LANE

GENERAL NOTES

1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS ARE BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES.
2. CONTRACTOR SHALL FIELD VERIFY THE EXACT HORIZONTAL AND VERTICAL LOCATIONS OF ALL EXISTING UTILITIES IN FIELD PRIOR TO COMMENCING CONSTRUCTION. NOTIFY ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.
3. ALL WATER AND SEWER LINES AS WELL AS TAPS/CONNECTIONS TO EXISTING PUBLIC WATER LINES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LOCAL MUNICIPALITIES STANDARD SPECIFICATIONS AND DETAILS WITH ALL ADDENDA AND AMENDMENTS THERETO.
4. CONTRACTOR SHALL NOTIFY THE UTILITY AUTHORITY 72 HOURS BEFORE CONNECTING TO ANY EXISTING LINE.
5. WATER LINES SHALL BE AS FOLLOWS:
   - 5.1. 3" AND SMALLER = SCHEDULE 40 PVC
   - 5.2. 4" - 12" = PVC CLASS 150 DR 18, WITH BEDDING AND BACKFILL PER MANUFACTURER RECOMMENDATIONS.
6. SANITARY SEWER PIPES SHALL BE AS FOLLOWS:
   - 6.1. 4" - 12" = PVC SDR-26, WITH BEDDING AND BACKFILL PER MANUFACTURER RECOMMENDATIONS.
7. CONTRACTOR SHALL MAINTAIN A MINIMUM OF 4'-0" COVER ON ALL WATERLINES.
8. WATER LINES CROSSING AND RUNNING PARALLEL TO GRAVITY SEWER LINES AND FORCE MAINS SHALL CONFORM TO THE SEPARATION AND CROSSING REQUIREMENTS OF TEXAS ADMINISTRATIVE CODE § 290.44 PARAGRAPH (E).
9. LINES UNDERGROUND SHALL BE INSTALLED, INSPECTED AND APPROVED BEFORE BACKFILLING.
10. TOPS OF EXISTING MANHOLES SHALL BE RAISED AS NECESSARY TO BE FLUSH WITH PROPOSED PAVEMENT ELEVATIONS, OR TO BE 2-4" ABOVE THE PROPOSED GRADE ELEVATIONS IN LANDSCAPE AREAS.
11. CONTRACTOR IS RESPONSIBLE FOR ALL NECESSARY INSPECTIONS, TESTING AND/OR CERTIFICATIONS REQUIRED BY CODES AND/OR UTILITY SERVICE COMPANIES.
12. CONTRACTOR SHALL COORDINATE WITH ALL PRIVATE UTILITY COMPANIES FOR INSTALLATION REQUIREMENTS AND SPECIFICATIONS.
13. REFER TO ARCHITECTURAL PLANS FOR SITE LIGHTING ELECTRICAL PLAN.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRENCH SAFETY MEASURES IN ACCORDANCE WITH OSHA AND LOCAL AGENCY STANDARDS FOR ALL EXCAVATIONS.
15. THE SITE CONTRACTOR MUST COORDINATE THE TIMING AND INSTALLATION OF ALL NATURAL GAS LINES WITH THE GENERAL CONTRACTOR FOR THE BUILDING AND MAKE ALL NECESSARY SCHEDULE ARRANGEMENTS FOR TEMPORARY OR PERMANENT GAS LINES PER THE PROJECT SCHEDULE.
16. THE SCOPE OF UTILITIES STUBBED TO THE PROPOSED BUILDING(S) IN THIS PLAN SET SHALL TERMINATE 5' OUTSIDE OF THE BUILDING.
17. CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING WATER LINE SERVICE IS NOT DISRUPTED DURING CONSTRUCTION.
18. PUBLIC STORM LINES AS WELL AS CONNECTIONS TO EXISTING PUBLIC LINES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LOCAL MUNICIPALITIES STANDARD SPECIFICATIONS AND DETAILS WITH ALL ADDENDA AND AMENDMENTS THERETO.
19. STORM PIPE SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED:
   - 19.1. RCP = ASTM C-76 CLASS III - REQUIRED IN PUBLIC RIGHT OF WAY AND CONNECTION POINTS TO PUBLIC STORM SEWER.
   - 19.2. HDPE = N-12 DUAL WALL PIPE WITH BEDDING AND BACKFILL PER MANUFACTURER RECOMMENDATIONS.
   - 19.3. PVC = ASTM D 3034 SDR35.
20. ALL EXISTING AND PROPOSED PIPES AND STRUCTURES ARE TO BE CLEANED OUT AT THE COMPLETION OF CONSTRUCTION TO REMOVE ALL SILT AND DEBRIS.
21. ALL STORM PIPE ENTERING STRUCTURES SHALL BE GROUTED TO ASSURE CONNECTION AT STRUCTURE IS WATER TIGHT.
22. ALL STORM SEWER MANHOLES IN PAVED AREAS SHALL BE FLUSH WITH PAVEMENT, AND SHALL HAVE TRAFFIC BEARING RING & COVERS. LIDS SHALL BE LABELED "STORM SEWER".
23. TOPS OF EXISTING MANHOLES SHALL BE RAISED AS NECESSARY TO BE FLUSH WITH PROPOSED PAVEMENT ELEVATIONS, OR TO BE 2"-4" ABOVE THE PROPOSED GRADE ELEVATIONS IN LANDSCAPE AREAS.
24. ALL STORM STRUCTURES SHALL HAVE A SMOOTH UNIFORM POURED MORTAR FROM INVERT IN TO INVERT OUT.
25. ALL INLETS IN PAVED AREAS SHALL UTILIZE ADA PEDESTRIAN GRATES.
26. THERE WILL BE NO NET FILL WITHIN FLOODPLAIN. ANY FILL BELOW THE FLOODPLAIN WILL BE MITIGATED THROUGH CUT BELOW THE FLOODPLAIN ON SITE.
27. CUT BELOW FLOODPLAIN WILL MATCH FILL WITHIN FLOODPLAIN AND BE HYDRAULICALLY CONNECTED.

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Kimley»Horn
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TBPE NO. 928

No.	Revision	By	Date

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Kimley»Horn
Engineer MICHAEL P. MORIARTY JR
P.E. No. 129086
Date JUNE 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

PROPOSED YARD PIPING

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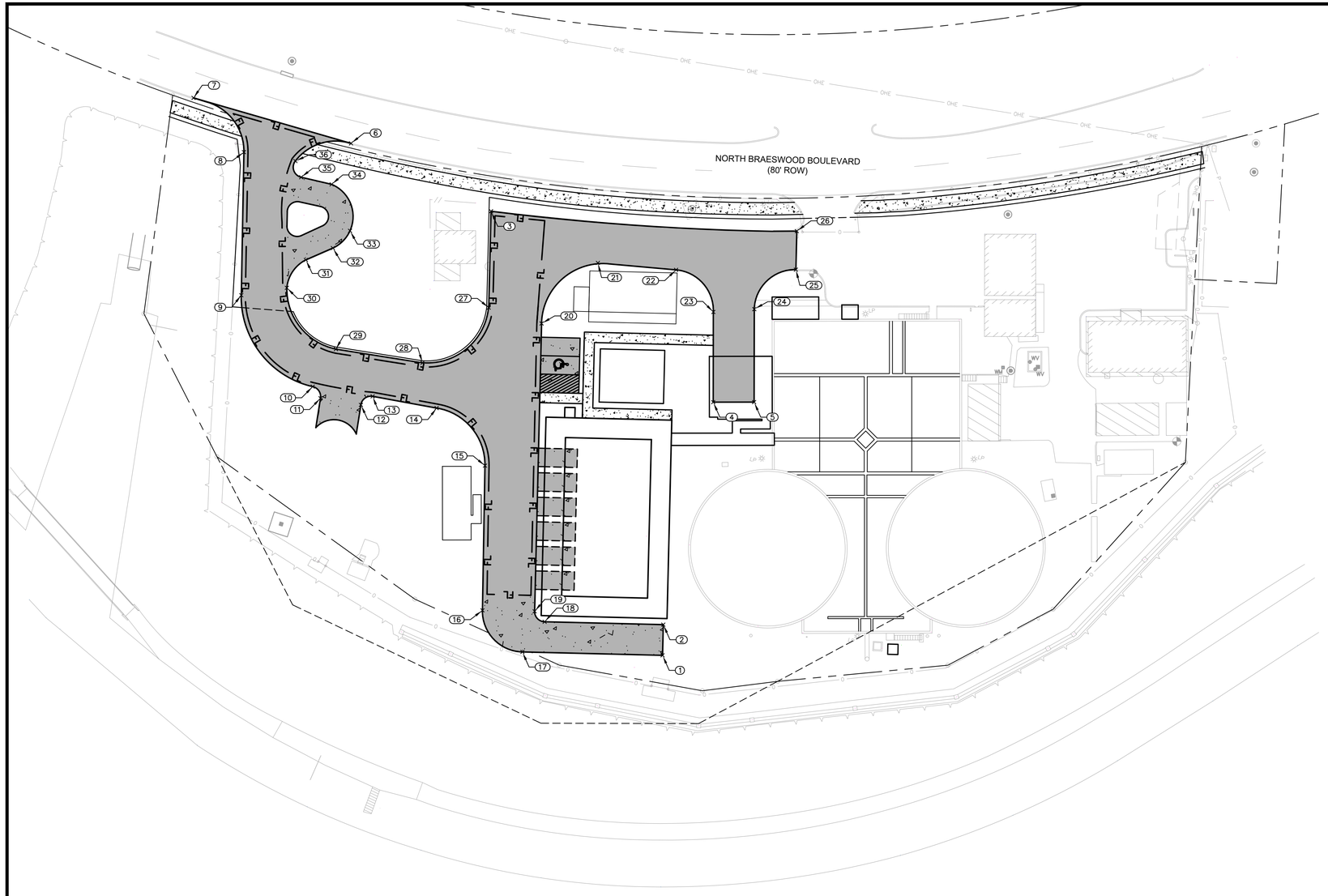
DRAWN:	HLR
CHECKED:	KPK
KHA NO.:	067812104

SHEET
C-301

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



GRAPHIC SCALE IN FEET
0 15 30 60

LEGEND

- EXISTING FENCE
- EXISTING PROPERTY BOUNDARY
- PROPOSED CONCRETE SIDEWALK
- PROPOSED DRIVEWAY PAVEMENT
- PROPOSED HEAVY DUTY PAVEMENT

GENREAL NOTES

1. ALL SPOT ELEVATIONS ARE TO TOP OF PAVEMENT UNLESS OTHERWISE NOTED.
2. ALL SIDEWALKS AND ACCESSIBLE ROUTES, INCLUDING DRIVEWAY CROSSWALKS SHALL CONFORM TO ALL APPLICABLE AMERICANS WITH DISABILITIES ACT STANDARDS AND THE TEXAS ACCESSIBILITY STANDARDS. IF ANY DISCREPANCY IS DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO POURING ANY PAVEMENT.
3. ALL SIDEWALKS AND ACCESSIBLE ROUTES, INCLUDING DRIVEWAY CROSSWALKS, SHALL NOT EXCEED A RUNNING SLOPE OF 5% (1:20) WITHOUT A RAMP, AND SHALL NOT EXCEED A 2% CROSS SLOPE (1:50).
4. THE ACCESSIBLE PARKING AND PASSENGER LOADING AREAS SHALL NOT EXCEED A SLOPE OF 2% (1:50) IN ANY DIRECTION.
5. ALL EXISTING APPURTENANCES ONSITE SHALL BE ADJUSTED TO PROPOSED GRADE AS APPLICABLE.
6. CONTRACTOR SHALL REFERENCE GEOTECHNICAL REPORT FOR BUILDING PAD LIMITS AND PREPARATION REQUIREMENTS.
7. CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE AWAY FROM BUILDING IN ALL AREAS. CONTRACTOR SHALL NOTIFY THE ENGINEER IN THE EVENT OF ANY DISCREPANCY PRIOR TO COMMENCEMENT OF CONSTRUCTION.
8. CONTRACTOR SHALL PROTECT ALL TREES TO REMAIN.
9. CONTRACTOR TO COORDINATE DITCH REVISIONS WITH CENTERPOINT ENERGY AND TEXAS NEW MEXICO POWER TO CONFRIM NO FIELD CONFLICTS WITH ROADSIDE DITCH EXCAVATION PRIOR TO CONSTRUCTION.

POINT TABLE			
POINT #	NORTHING	EASTING	DESCRIPTION
1	13819625.20	3105152.41	PAVEMENT CORNER
2	13819639.70	3105148.55	PAVEMENT CORNER
3	13819810.06	3105011.16	PT POINT
4	13819750.91	3105141.52	PT POINT
5	13819756.53	3105160.67	PT POINT
6	13819822.73	3104936.17	PC POINT
7	13819822.51	3104856.07	PC POINT
8	13819803.95	3104887.13	PT POINT
9	13819736.48	3104905.48	PC POINT
10	13819703.36	3104951.50	PCC POINT
11	13819699.00	3104956.75	PT POINT
12	13819701.41	3104976.60	PC POINT

POINT TABLE			
POINT #	NORTHING	EASTING	DESCRIPTION
13	13819707.00	3104980.93	PT POINT
14	13819710.26	3105012.57	PC POINT
15	13819689.87	3105043.12	PT POINT
16	13819621.65	3105061.77	PC POINT
17	13819607.60	3105086.20	PT POINT
18	13819624.80	3105092.50	PC POINT
19	13819628.34	3105086.38	PT POINT
20	13819764.31	3105050.23	PC POINT
21	13819800.45	3105068.34	PT POINT
22	13819807.88	3105105.98	PC POINT
23	13819793.23	3105129.23	PT POINT
24	13819800.15	3105148.05	PT POINT

POINT TABLE			
POINT #	NORTHING	EASTING	DESCRIPTION
25	13819824.41	3105162.16	PT POINT
26	13819842.57	3105157.33	PT POINT
27	13819764.53	3105023.26	PC POINT
28	13819729.56	3104999.74	PC POINT
29	13819724.15	3104957.25	PT POINT
30	13819746.17	3104925.85	PCC POINT
31	13819761.87	3104930.95	PC POINT
32	13819771.12	3104942.00	PT POINT
33	13819781.57	3104947.67	PCC POINT
34	13819800.84	3104932.68	PC POINT
35	13819800.02	3104917.42	PT POINT
36	13819806.83	3104912.50	PCC POINT

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

PROPOSED PAVING PLAN

DATE:	JUNE 2022
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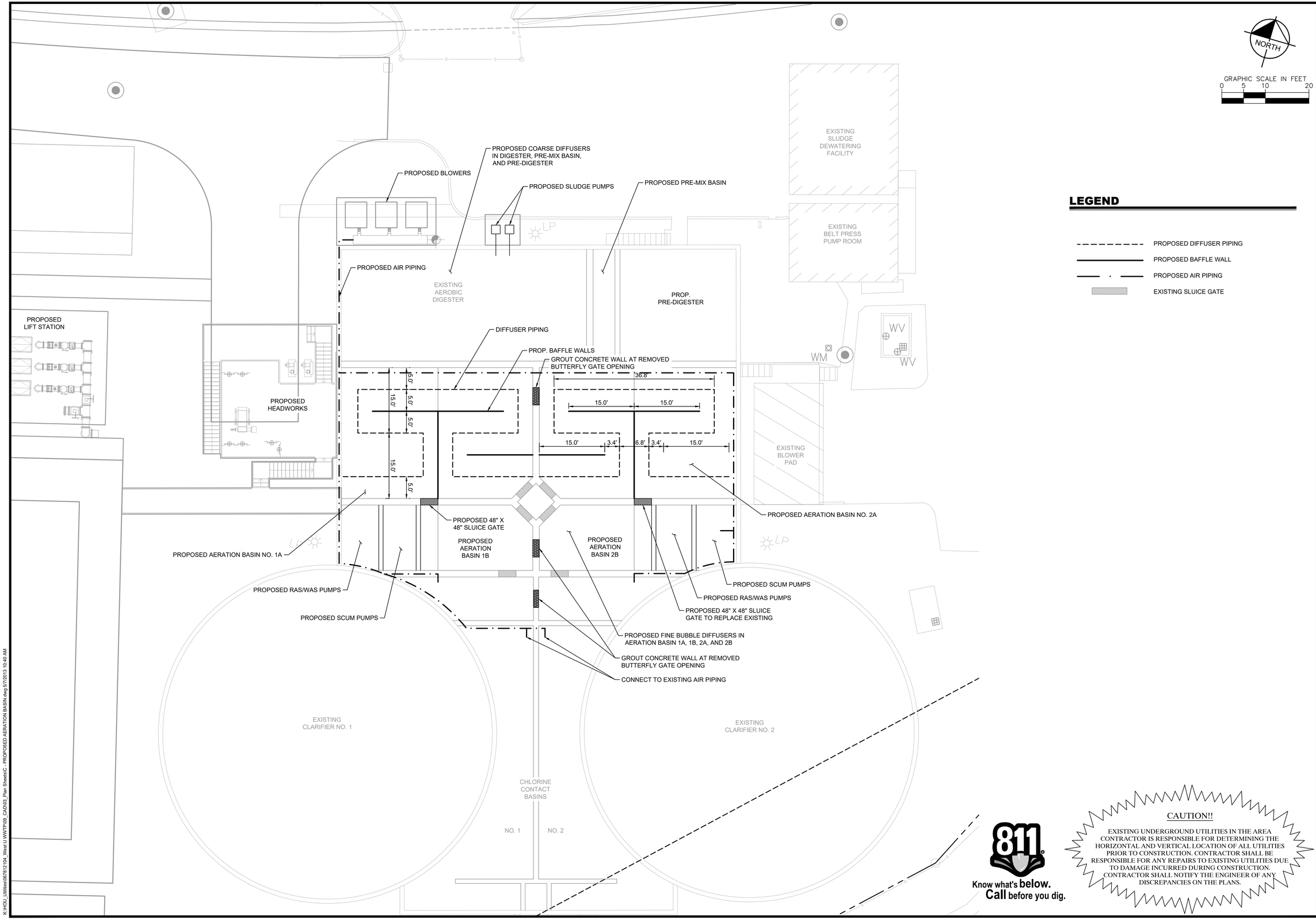
SHEET

C-302



NORTH

GRAPHIC SCALE IN FEET
0 5 10 20

LEGEND

- PROPOSED DIFFUSER PIPING
- PROPOSED BAFFLE WALL
- PROPOSED AIR PIPING
- EXISTING SLUICE GATE

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

PROPOSED AERATION BASIN

DATE:	JUNE 2022
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SHEET
C-303

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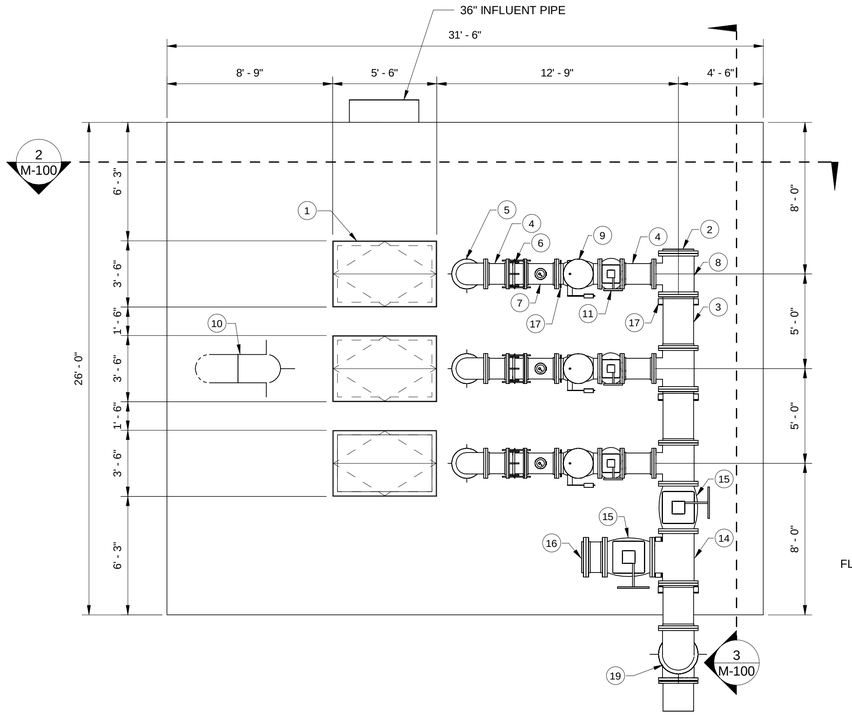
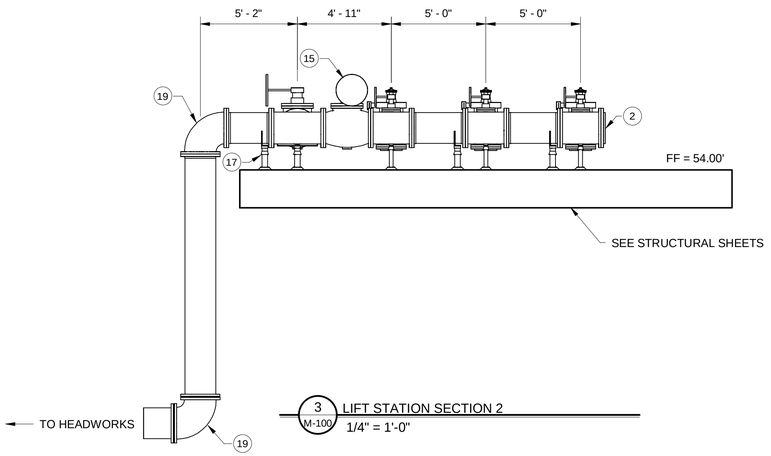
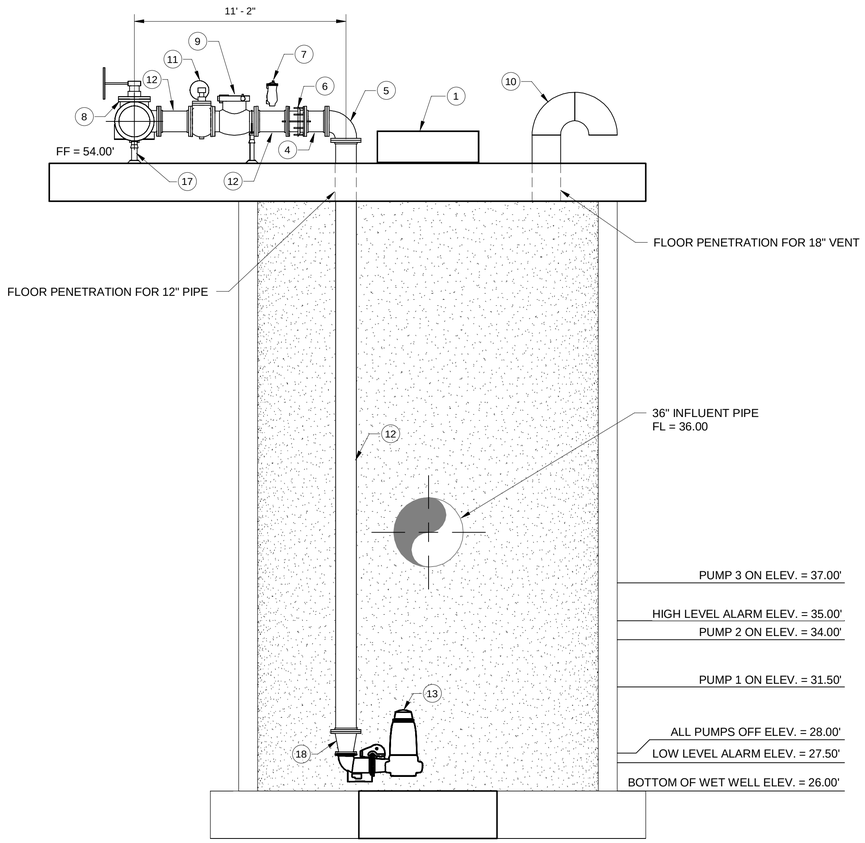


1 M-100 LIFT STATION PLAN
1/4" = 1'-0"



3 M-100 LIFT STATION SECTION 2
1/4" = 1'-0"



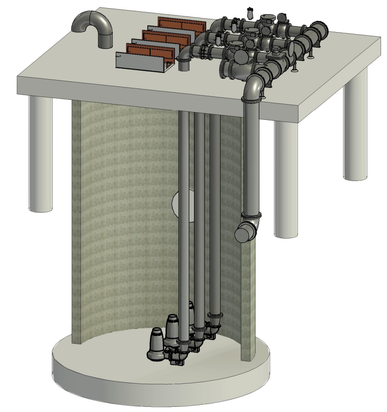
2 M-100 LIFT STATION SECTION 1
1/4" = 1'-0"

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-100 LIFT STATION 3D VIEW

EQUIPMENT LEGEND	
KEYNOTE	DESCRIPTION
1	ALUMINUM ACCESS HATCH (66"X42")
2	BLIND FLANGE
3	18" SPOOL PIECE (FLXFL)
4	12" SPOOL PIECE (FLXPE)
5	12" 90 DEG. BEND
6	12" RESTRAINED FLANGE COUPLING ADAPTOR SMITH BLAIR 912 WITH TIE RODS
7	2" AIR RELEASE VALVE WITH ISOLATION FLANGE
8	18" X 12" REDUCING TEE
9	12" SWING CHECK VALVE
10	18" GALVANIZED STEEL GOOSENECK VENT PIPE
11	12" PLUG VALVE
12	12" SPOOL PIECE (FLXFL)
13	SUBMERSIBLE PUMP (RE: SPECIFICATIONS)
14	18" TEE
15	18" PLUG VALVE
16	CAMLOCK QUICK CONNECT
17	ADJUSTABLE PIPE SUPPORT (ANVIL INTERNATIONAL INC. FIG. 264 WITH FIG. 63T OR APPROVED EQUAL)
18	12" X 8" ECCENTRIC REDUCER
19	18" 90 DEG. BEND

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.

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No.	Revisions	By	Date

P.E

SERIAL NO.

JUNE 2022

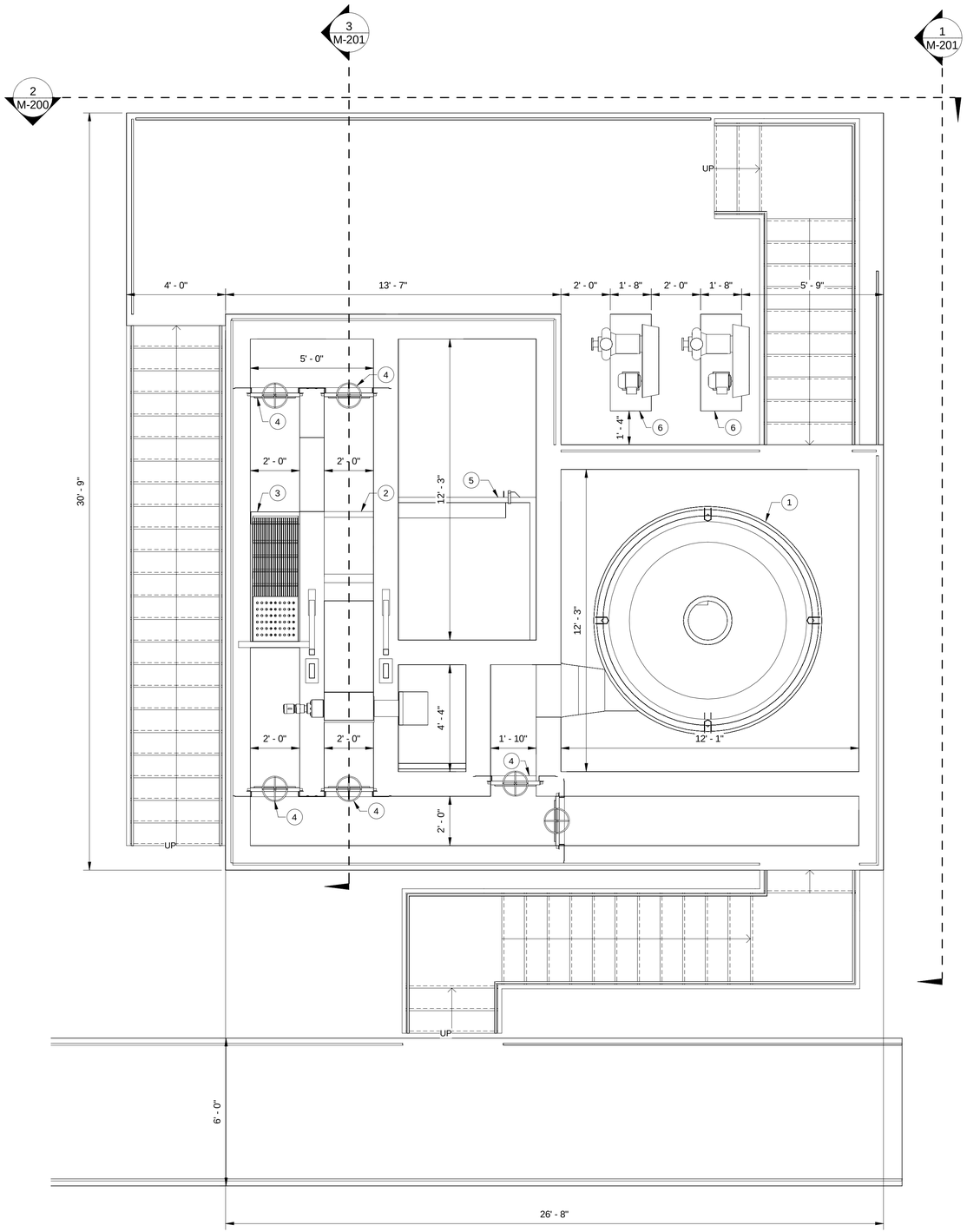
CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

LIFT STATION PLAN, SECTIONS, AND 3D VIEW

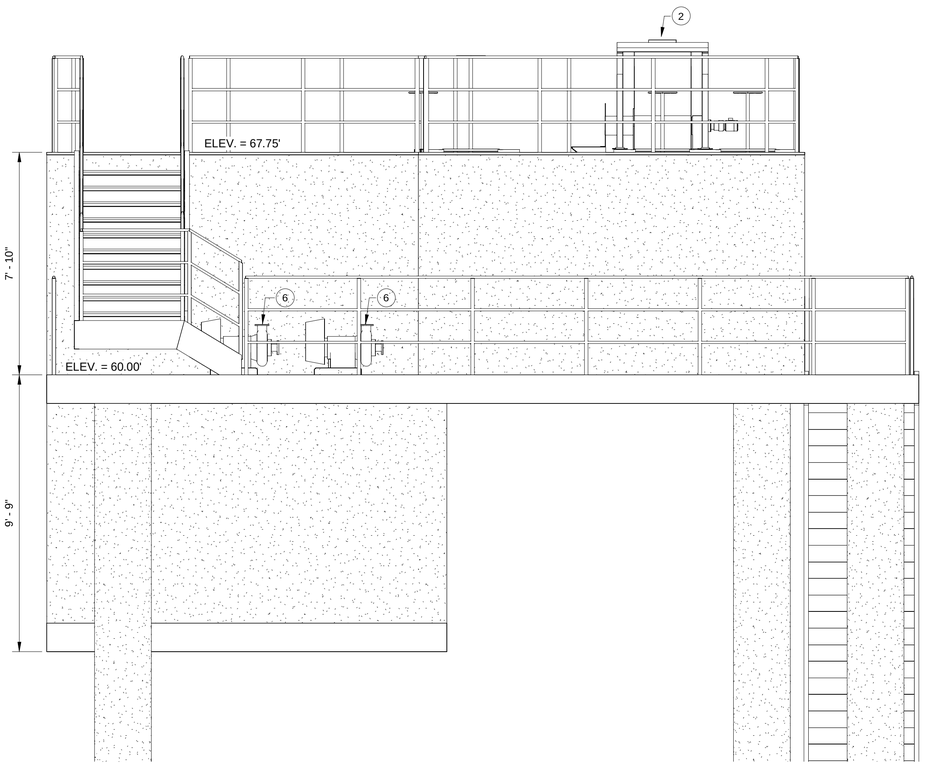
DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
JUNE 2022	MPM	HLR	KPK	067812104

SHEET

M-100



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	MANUAL BAR SCREEN
4	CHANNEL-MOUNTED SLIDE GATE
5	ROLL-OFF DUMPSTER BIN
6	GRIT PUMP

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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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

HEADWORKS PLAN AND SECTIONS

DATE:	JUNE 2022
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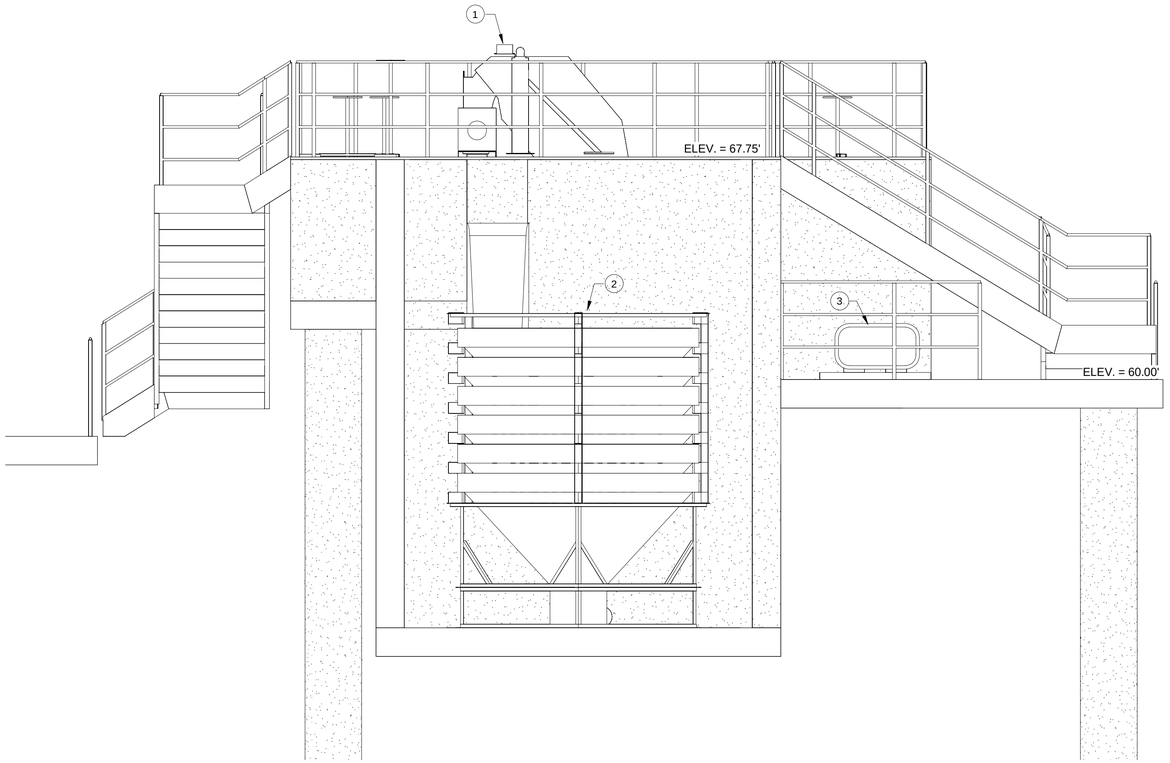
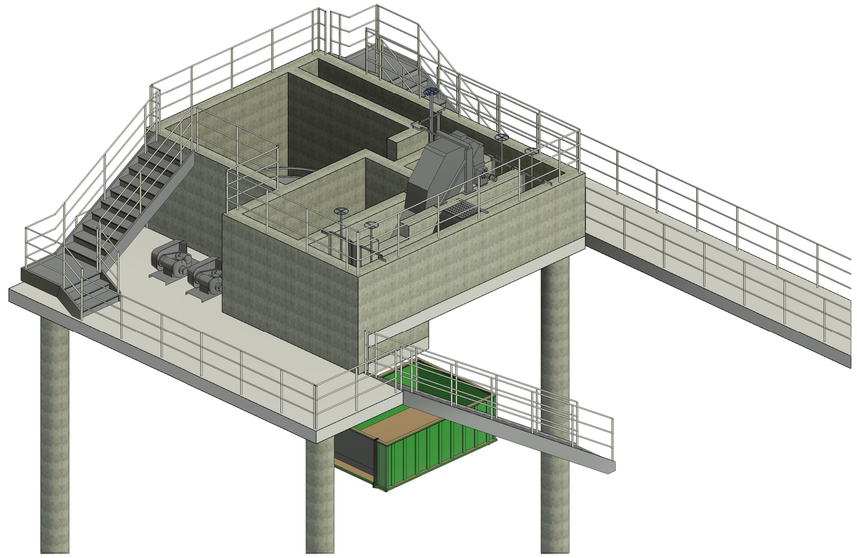
KHA NO.:	067812104

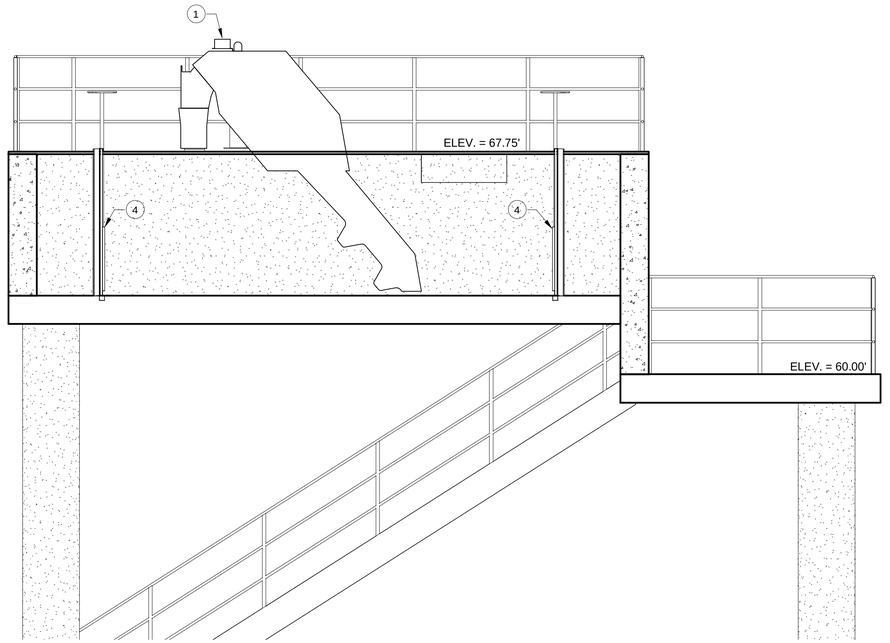
SHEET
M-200



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	GRIT PUMP
4	CHANNEL-MOUNTED SLIDE GATE

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

HEADWORKS SECTIONS AND 3D VIEW

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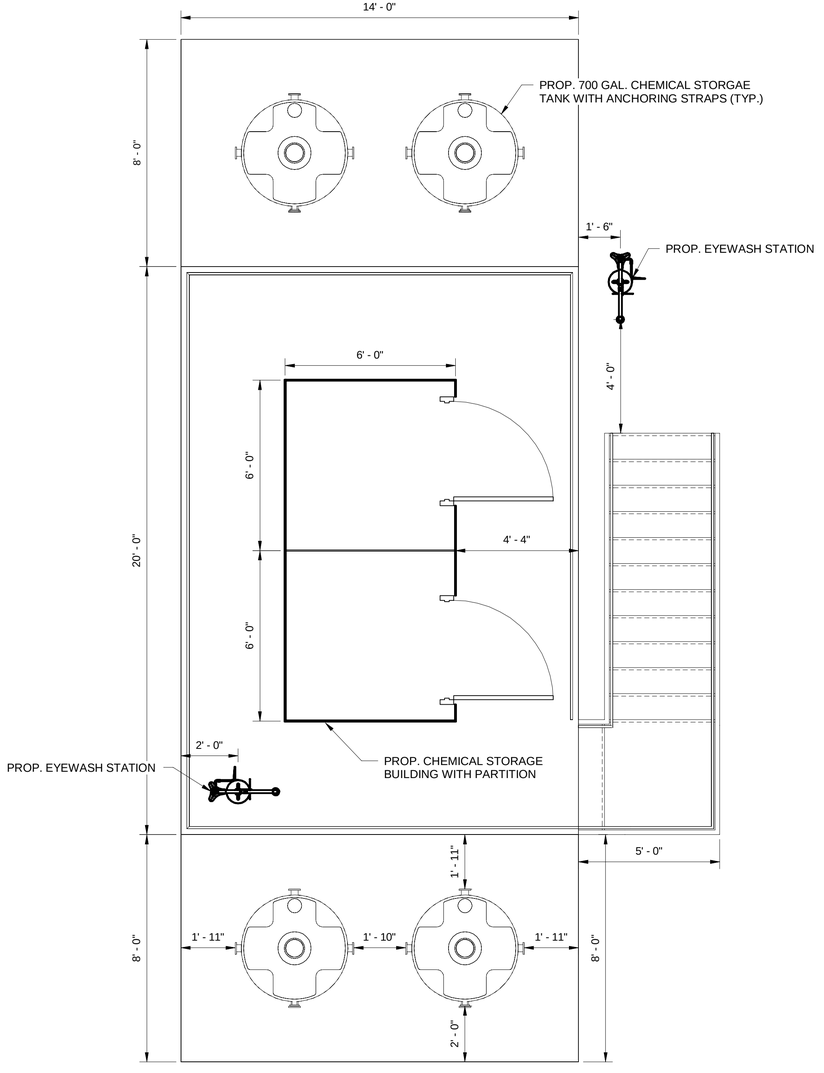
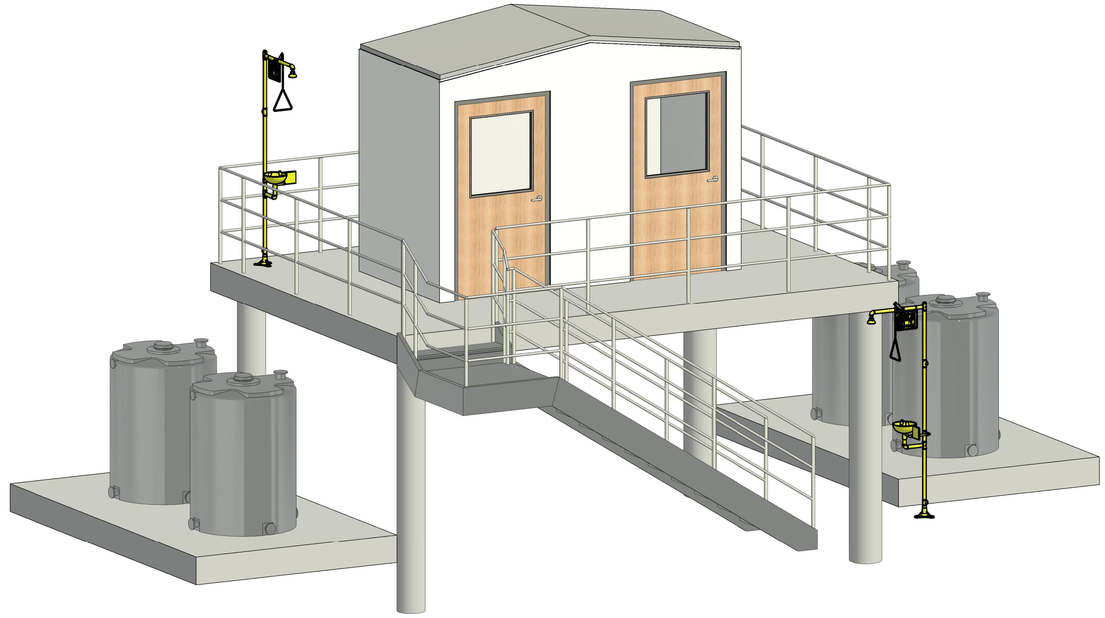
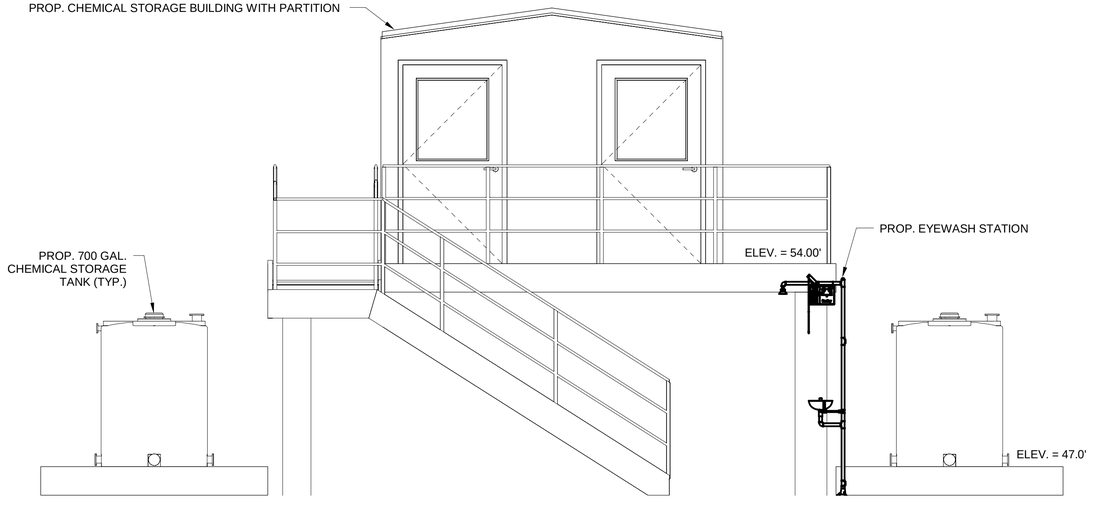
SHEET
M-201



1 M-500 DISINFECTION PLAN VIEW
3/8" = 1'-0"



2 M-500 DISINFECTION 3D VIEW



3 M-500 DISINFECTION SECTION 1
3/8" = 1'-0"

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M-500

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 INDICATES CAST WEATHER PROOF OUTLET BOX & COVER)
A	SINGLE SPECIAL PURPOSE RECEPTACLE (LETTER INDICATES TYPE PER SCHEDULE)
	240V AC, 20 AMP RECEPTACLE
	TELEPHONE UTILITY SYSTEM 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
	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

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

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.

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. MEDIUM VOLTAGE CABLE FOR THIS PROJECT SHALL BE EPR, MV–105, 15KV RATED. ALL 600V RATED POWER AND CONTROL CONDUCTORS, ROUTED IN CONDUIT, SHALL BE DESIGNATED XHHW–2 TYPE. ALL CONTROL WIRING, ROUTED WITHIN CABINETS, SHALL BE MTW TYPE.

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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No.	Revision	By	Date

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT
PLANT IMPROVEMENTS

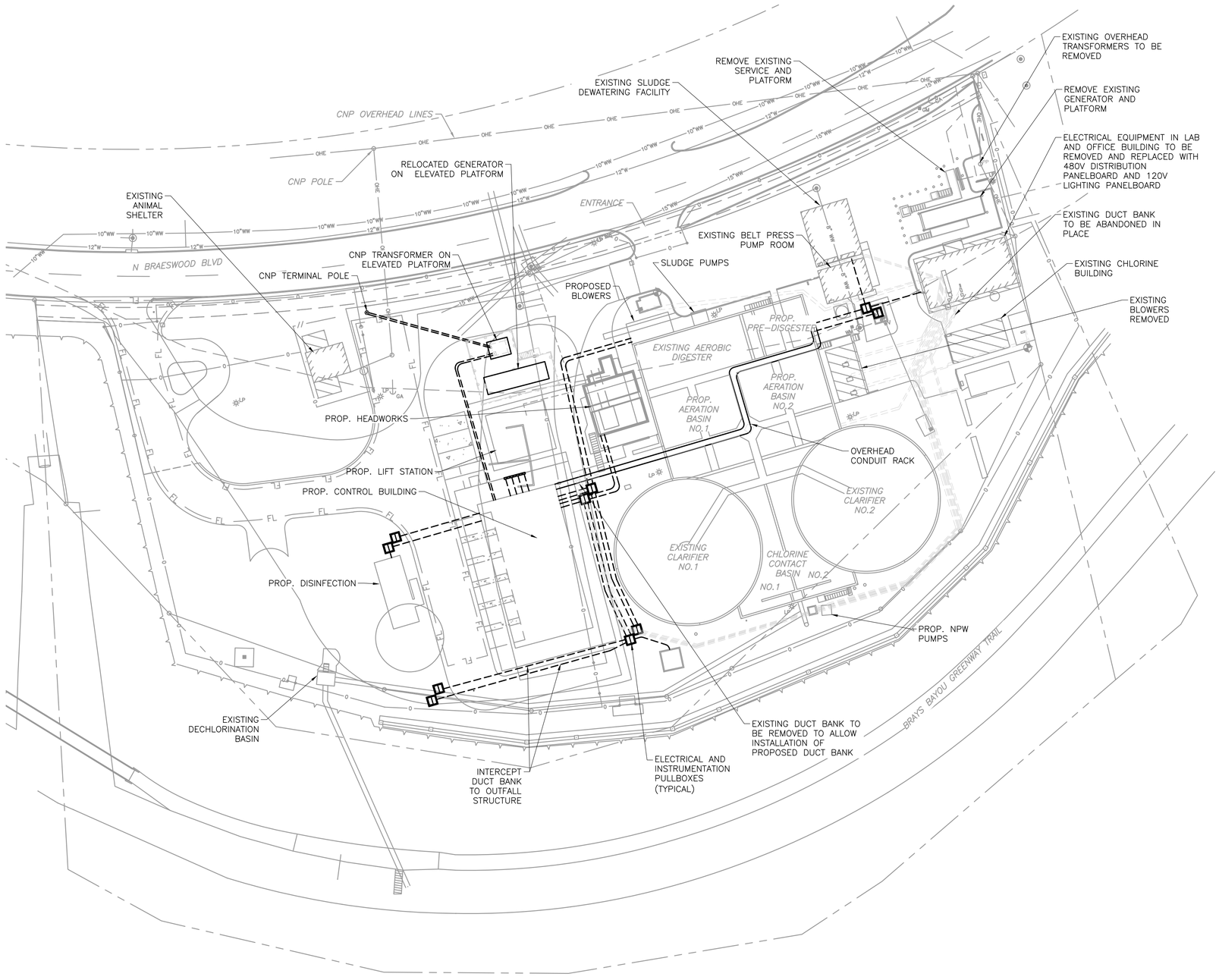
ELECTRICAL

SYMBOLS, ABBREVIATIONS AND NOTES

DATE:	06/03/2022	DESIGN:	RK	DRAWN:	AP
CHECKED:	WH	KHA NO.:	067812104		

SHEET

E-001



WEST BUILDING SITE

PLAN

1"=30'-0"

C:\Users\KGI-HVT Computer1\Kalluri Group, Inc\KGI - Documents\41384KH (West U - WWTP Imp)\Drawings\E-002 (Overall Site Plan).dwg 5/7/2013 10:40 AM

Kimley»Horn

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TBPE NO. 928

No.	Revision	By	Date

RAMESH KALLURI
SERIAL NO. 68078
DATE: JUNE, 2022

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

ELECTRICAL SITE PLAN

DATE:	06/03/2022
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KHA NO.:	067812104

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E-002

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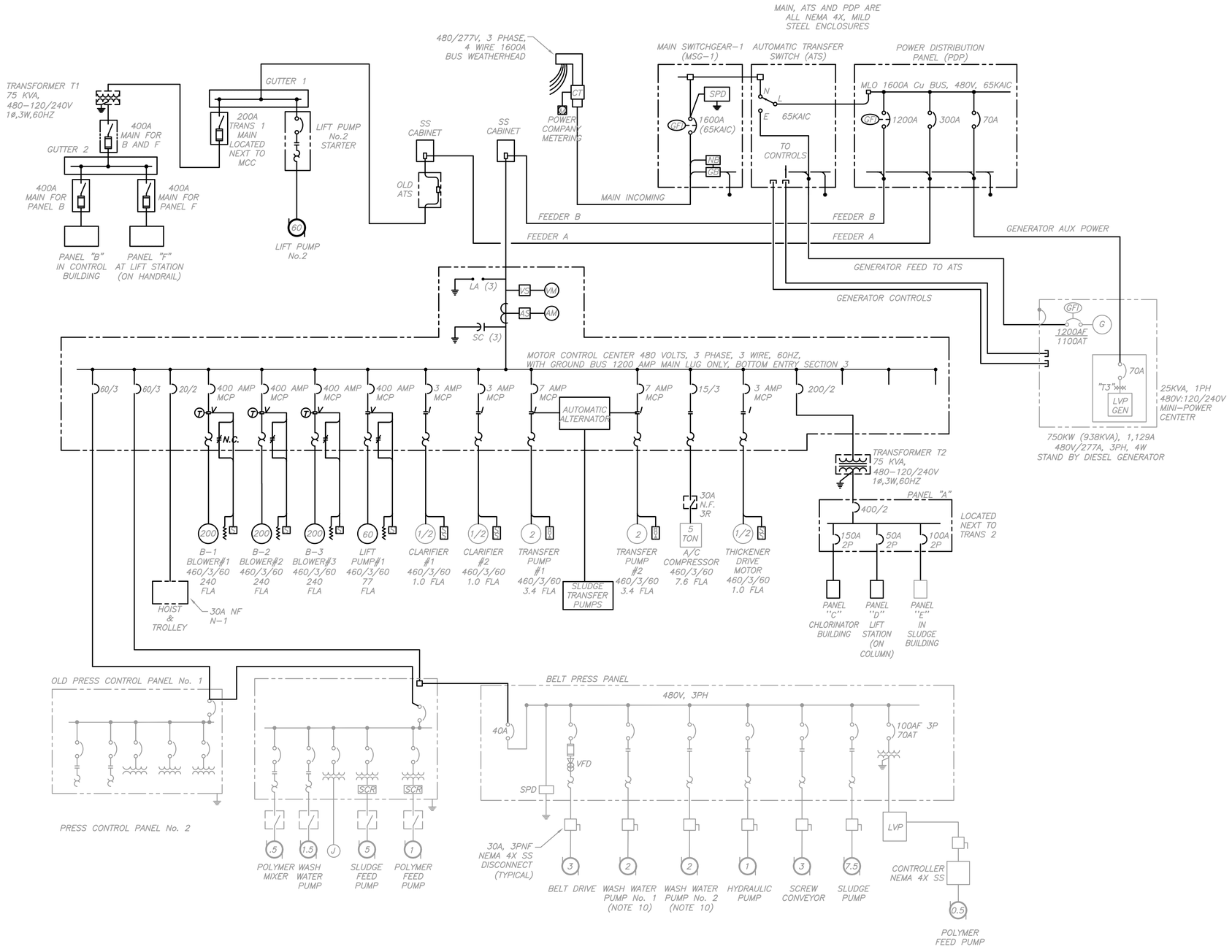

EXISTING OVERALL

ONE LINE DIAGRAM

NONE

GENERAL NOTES:

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

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TBPE NO. 928

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SERIAL NO. 68078
DATE: JUNE, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

ONE LINE DIAGRAM
EXISTING SERVICE

DATE:	06/03/2022	
DESIGN:	RK	
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KHA NO.:	067812104	

SHEET
E-003

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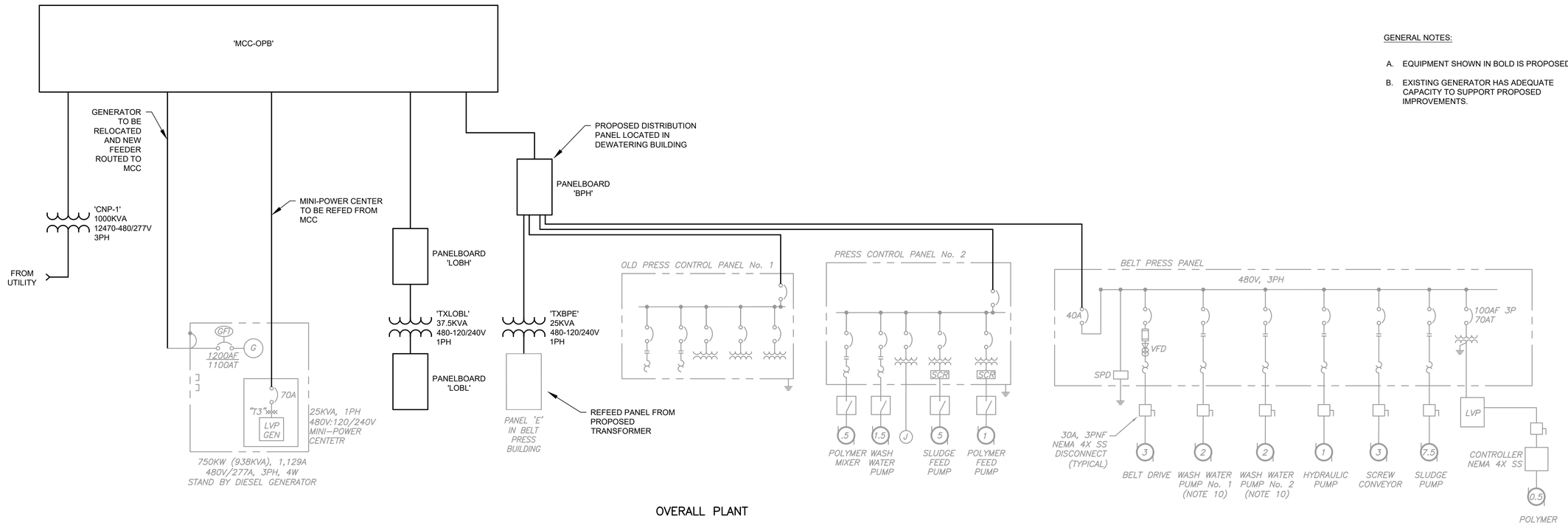

OVERALL PLANT

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

DATE:	06/03/2022	
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CHECKED:	WH	
KHA NO.:	067812104	

SHEET

E-004

KGL
Kalluri Group, Inc.
TBPE Registration No. F-565
16300 Katy Freeway, Suite 172
Houston, Texas 77094
Phone: (713)-360-9288

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 'OPBH'	PANELBOARD 'OPBH'	125	FLA	480	3	FEEDER	EXCESS CAPACITY ALLOWANCE	1	Other	125	104	125	104	Y
-	✓	LAB & OFFICE BUILDING	PNL 'OPBL'	PANELBOARD 'OPBL'	37.5	kVA	480	1	FEEDER	FED FROM 'OPBH'	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
-	✓	OPERATIONS BUILDING	PNL 'OPBH'	PANELBOARD 'OPBH'	200	FLA	480	3	FEEDER	MISC. BLDG 480V LOADS	0.5	Other	200	166	100	83	Y
-	✓	OPERATIONS BUILDING	PNL 'OPBL'	PANELBOARD 'OPBL	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
-	✓	PROCESS AREA	B-1	BLOWER 1	100	HP	480	3	FVNR		1	Motor	124	103	124	103	Y
-	✓	PROCESS AREA	B-2	BLOWER 2	100	HP	480	3	FVNR		1	Motor	124	103	124	103	Y
-	✓	PROCESS AREA	B-3	BLOWER 3	100	HP	480	3	FVNR		1	Motor	124	103	124	103	N
-	✓	PROCESS AREA	BS-1	BAR SCREEN	2	HP	480	3	FVNR		0	Motor	3	3	0	0	Y
-	✓	PROCESS AREA	BSPR-1	BAR SCREEN PRESS	5	HP	480	3	FVNR		1	Motor	8	6	8	6	Y
-	✓	PROCESS AREA	GP-1	GRIT PUMP	7.5	HP	480	3	FVNR		1	Motor	11	9	11	9	Y
-	✓	PROCESS AREA	GPR-1	GRIT PRESS	2	HP	480	3	FVNR		1	Motor	3	3	3	3	Y
-	✓	PROCESS AREA	NPWP-1	NPW PUMP 1	7.5	HP	480	3	FVNR		1	Motor	11	9	11	9	Y
-	✓	PROCESS AREA	NPWP-2	NPW PUMP 2	7.5	HP	480	3	FVNR		1	Motor	11	9	11	9	Y
-	✓	PROCESS AREA	NPWP-3	NPW PUMP 3	7.5	HP	480	3	FVNR		1	Motor	11	9	11	9	N
-	✓	PROCESS AREA	RASP-1	RAS PUMP 1	10	HP	480	3	FVNR		1	Motor	14	12	14	12	Y
-	✓	PROCESS AREA	RASP-2	RAS PUMP 2	10	HP	480	3	FVNR		1	Motor	14	12	14	12	Y
-	✓	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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TBPE NO. 928

No.	Revision	By	Date

SERIAL NO. 68078
DATE: JUNE, 2022

RAMESH KALLURI

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

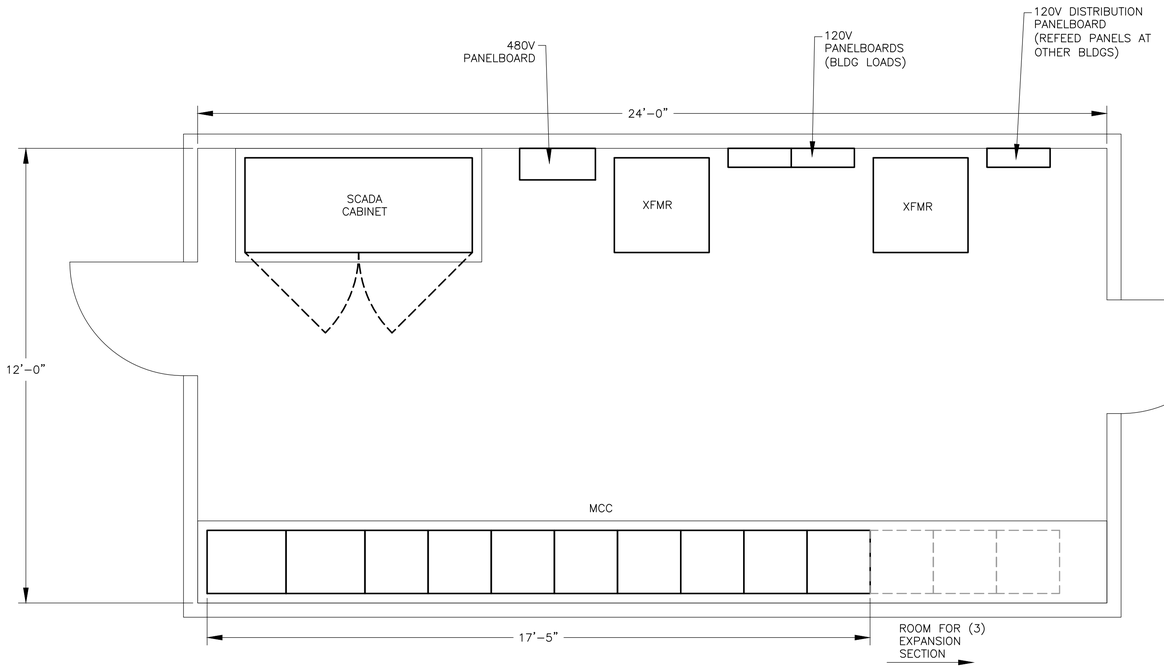
ELECTRICAL

PROPOSED SERVICE LOAD ANALYSIS

DATE:	06/03/2022
DESIGN:	RK
DRAWN:	AP
CHECKED:	WH
KHA NO.:	067812104

SHEET

E-005



ELECTRICAL ROOM ENLARGED SITE

PLAN

1/2" = 1'-0"

C:\Users\KGI-HWT Computer1\Kalluri Group, Inc\KGI - Documents\4138-KH (West U - WWTP Imp)\Drawings\E-901 (Enlarged Plant Control Building Electrical Room).dwg 5/7/2013 10:40 AM

Kimley»Horn
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TBPE NO. 928

No.	Revision	By	Date

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SERIAL NO. 68078
DATE: JUNE, 2022

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

ENLARGED PLANT CONTROL BUILDING ELECTRICAL ROOM

DATE:	06/03/2022
DESIGN:	RK
DRAWN:	AP
CHECKED:	WH
KHA NO.:	067812104

SHEET

E-901

KGI
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'MCC-OPB'

2000A CU BUS, 3PH, 4W, 480V, 65KAIC

SPD

METER

2000/2000 LSIG	2000/2000 LSIG		225/250	100/250	250/400	150/250		70/100
PLC								
FROM UTILITY TRANSFORMER CNP-1	FROM GENERATOR GEN-1		TO BELT PRESS BLDG	TO LAB & OFFICE BLDG	OPERATIONS BLDG PANELBOARD 'OPBH'	TO OPERATIONS BLDG PANELBOARD 'OPBL'	'TXOPBL' 75KVA 480-120/208V 3PH	TO GENERATOR MINIPOWER CENTER

'MCC-OPB'

80/100	80/100	80/100	30/MCP	30/MCP	30/MCP	300/400	300/400	300/400	7/MCP	15/MCP	7/MCP	20/MCP	3/MCP	20/MCP	20/MCP	20/MCP	30/MCP	30/MCP				
VFD	VFD	VFD	FVNR 1	FVNR 1	FVNR 1	VFD	VFD	VFD	FVNR 1	FVNR 1	FVNR 1	FVNR 1	FVNR 1	FVNR 1	FVNR 1	FVNR 1	FVNR 2	FVNR 2				
25	25	25	10	10	10	100	100	100	2	5	2	6	1/2	7.5	7.5	7.5	12	12				
LIFT STATION PUMP LS-1	LIFT STATION PUMP LS-2	LIFT STATION PUMP LS-3	SLUDGE PUMP SP-1	SLUDGE PUMP SP-2	SLUDGE PUMP SP-3	BLOWER B-1	BLOWER B-2	BLOWER B-3	BAR SCREEN BS-1	BAR SCREEN PRESS BSPR-1	GRIT PUMP PRESS GPR-1	GRIT PUMP GP-1	*THICKENER TH-1*	NPW PUMP NPWP-1	NPW PUMP NPWP-2	NPW PUMP NPWP-3	FILTER PUMP FLTRP-1	FILTER PUMP FLTRP-2				

'MCC-OPB'

3/MCP	20/MCP	20/MCP	30/MCP	30/MCP	30/MCP	3/MCP	20/MCP	20/MCP	30/MCP	30/MCP	30/MCP	100/250	
FVNR 1	FVNR 1	FVNR 1	FVNR 1	FVNR 1	FVNR 1	FVNR 1	FVNR 1	FVNR 1	FVNR 1	FVNR 1	FVNR 1		
1/2	3	3	10	10	10	*1/2*	3	3	10	10	10		
CLARIFIER CL-1	SCUM PUMP SCP-1	SCUM PUMP SCP-2	RAS PUMP RASP-1	RAS PUMP RASP-2	RAS PUMP RASP-3	*CLARIFIER CL-2*	SCUM PUMP SCP-3	SCUM PUMP SCP-4	RAS PUMP RASP-4	RAS PUMP RASP-5	RAS PUMP RASP-6	TO CHLORINE BUILDING	

OPERATIONS BUILDING MCC

ONE LINE DIAGRAM

NONE

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RAMESH KALLURI

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT
PLANT IMPROVEMENTS

ELECTRICAL

ONE LINE DIAGRAM
MCC-OPB

DATE:	06/03/2022	DESIGN:	RK	CHECKED:	WH
DRAWN:	AP	KHA NO.:	067812104		

SHEET
E-902

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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

M — VARIABLE FREQUENCY DRIVE

MCC — INDICATES INTERLOCK OR LOGIC IN A MOTOR CONTROL CENTER

I — INDICATES GENERAL OR MISCELLANEOUS HARDWIRED INTERLOCK

MS — MOTOR STARTER

SCR — SILICONE CONTROL RECTIFIER

VFD — VARIABLE FREQUENCY DRIVE

P — PURGE OR FLUSHING DEVICE

TYPICAL TAG NUMBERS & DESIGNATION

HS 1000 1A — HOA — 16

- INSTRUMENT TYPE SEE "INSTRUMENTATION FUNCTION CODE" TABLE
- ADDITIONAL INSTRUMENT IDENTIFICATION SEE "HAND SWITCH ABBREVIATIONS"
- INSTRUMENT IDENTIFICATION (FIRST TWO DIGITS DENOTE ASSOCIATED AREA)
- USED TO DENOTE THE DIVISION THE INSTRUMENT IS SUPPLIED UNDER OR IF THE INSTRUMENT IS EXISTING OR FUTURE.
- WHEN USED, LETTER DISTINGUISHES BETWEEN MULTIPLE, SIMILAR DEVICES.
- USED WHEN MULTIPLE TRAINS ARE USED AND REPRESENTS THE TRAIN NUMBER.

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 SIGNAL
- TELEPHONE SIGNAL
- ELECTROMAGNETIC OR SONIC SIGNAL (GUIDED)
- ELECTROMAGNETIC OR SONIC SIGNAL (UNGUIDED)
- PNEUMATIC SIGNAL
- CAPILLARY TUBE
- HYDRAULIC SUPPLY
- VENDOR SUPPLIED CABLE
- COMMUNICATION LINK – COPPER (HARDWIRED)
- COMMUNICATION LINK – FIBER OPTICS
- COMMUNICATION LINK – SERIAL

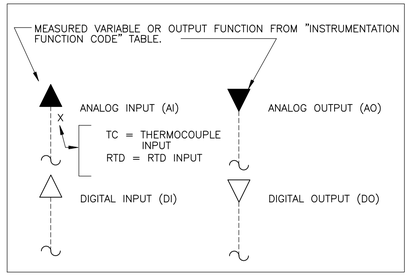
ELECTRICAL / AIR SOURCES

- UPS – – – ► UPS POWERED ELECTRICAL SOURCE
- ES – – – – ► ELECTRICAL SOURCE
- IA ——► INSTRUMENT AIR SOURCE

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

PRIMARY ELEMENTS

FE (M) — MAGNETIC FLOW METER

FE — TURBINE OR PROPELLER FLOW METER

FE — AVERAGING PITOT TUBE

FE — ULTRASONIC FLOW METER

FE — ROTAMETER

FE — WEIR

FE — ORIFICE PLATE

FE — VENTURI TUBE

FE — FLUME

FE X — GENERAL INSERTION FLOW METER
IM=INSERT MAG

FE — THERMAL MASS FLOW METER

LE — FLOAT SWITCH

LE — ULTRASONIC LEVEL SENSOR

LE — RADAR LEVEL SENSOR

LE — CAPACITANCE LEVEL SENSOR

PE — PRESSURE SENSOR

PI — PRESSURE GAUGE

PDI — DIFFERENTIAL PRESSURE GAUGE

TI — TEMPERATURE GAUGE

AE X — GENERAL ANALYZER
pH=pH
DO=DISSOLVED OXYGEN
H2S=HYDROGEN SULFIDE
LEL=% LOWER EXPLOSIVE LIMIT
O2=OXYGEN
O3=OZONE
NH3=NITRATE
TURB=TURBIDITY
FL=FLUORIDE
CL2=CHLORINE
UVT=ULTRAVIOLET TRANSMITTANCE
UVI= ULTRAVIOLET INTENSITY

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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No.	Revision	By	Date

SERIAL NO. 68078
DATE: JUNE, 2022
RAMESH KALLURI

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

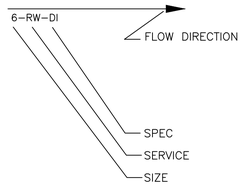
INSTRUMENTATION

SYMBOLS AND ABBREVIATIONS
SHEET 1 OF 2

DATE:	06/03/2022	DESIGN:	RK	DRAWN:	AP
CHECKED:	WH	KHA NO.:	067812104		

SHEET
I-001

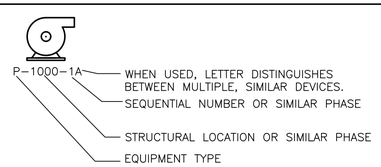
TYPICAL PIPE TAG NUMBERS & DESIGNATION



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
- E/H — 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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No.	Revision	By	Date

RAMESH KALLURI
SERIAL NO. 68078
DATE: JUNE, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION

SYMBOLS AND ABBREVIATIONS
SHEET 2 OF 2

DATE:	06/03/2022	
DESIGN:	RK	
DRAWN:	AP	
CHECKED:	WH	
KHA NO.:	067812104	

SHEET
I-002

KGI
Kalluri Group, Inc.
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WWTP CONTROL PANEL

LEVEL | COMBUSTIBLE GAS | LOW LOW LEVEL ALARM | LOW LEVEL ALARM | HIGH LEVEL ALARM | HIGH HIGH LEVEL ALARM

TYPICAL FOR INFP-1001 TO INFP-1003: LOCAL/REMOTE | RUNNING | VFD FAULT | START/STOP | SPEED | SPEED SP | COMMON ALARM | HIGH PRESSURE

WWTP CONTROL PANEL

COMBUSTIBLE_GAS
LEVEL
LOW_LOW_LEVEL_ALARM
LOW_LEVEL_ALARM
HIGH_LEVEL_ALARM
HIGH_HIGH_LEVEL_ALARM

IN_REMOTE
RUNNING
FAULT
START/STOP
SPEED_FEEDBACK
SPEED_SETPOINT
COMMON_ALARM
PRESSURE_HIGH_ALARM

VFD-1001
VFD-1002
VFD-1003

HS 1012 RESET
LCP-1012
LEVEL SWITCH RELAY PANEL

LCP-1001

INFP-1001 | INFP-1002 | INFP-1003

HS-A 1001/1002/1003 L/O/R
HS-B 1001/1002/1003 START
HS-C 1001/1002/1003 STOP
RL 1001/1002/1003 RUN
XA-A 1001/1002/1003 FAULT
XA-B 1001/1002/1003 TEMP
XA-C 1001/1002/1003 MOIST

H/O/A

AIT 1001
AE 1001
COMBUSTIBLE GAS DETECTOR
LIT 1001
LE 1001
LSLL 1001
LSL 1001
LSH 1001
LSHH 1001

TIE 001

FROM SANITARY SEWER
N/A
36-RS-DI
36-RS-DI

INFP-1001
INFLUENT PUMP NO.1
TSH 1001A | TSH 1001B | MSH 1001 | TSH 1001C
8"x12"
12"-RS-D/F

INFP-1002
INFLUENT PUMP NO.2
TSH 1002A | TSH 1002B | MSH 1002 | TSH 1002C
8"x12"
12"-RS-D/F

INFP-1003
INFLUENT PUMP NO.3
TSH 1003A | TSH 1003B | MSH 1003 | TSH 1003C
8"x12"
12"-RS-D/F

PE 1001 | PSH 1001 | PI 1001
PE 1002 | PSH 1002 | PI 1002
PE 1003 | PSH 1003 | PI 1003
2" AVRV

12"x18"
4" AVRV
18-RS-DI
TO HEADWORKS I-4

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION

LIFT STATION P&ID

DATE:	06/03/2022		
DESIGN:	RK		
DRAWN:	AP		
CHECKED:	WH		
KHA NO.:	067812104		

SHEET
I-003

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION

HEADWORKS P&ID

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I-004

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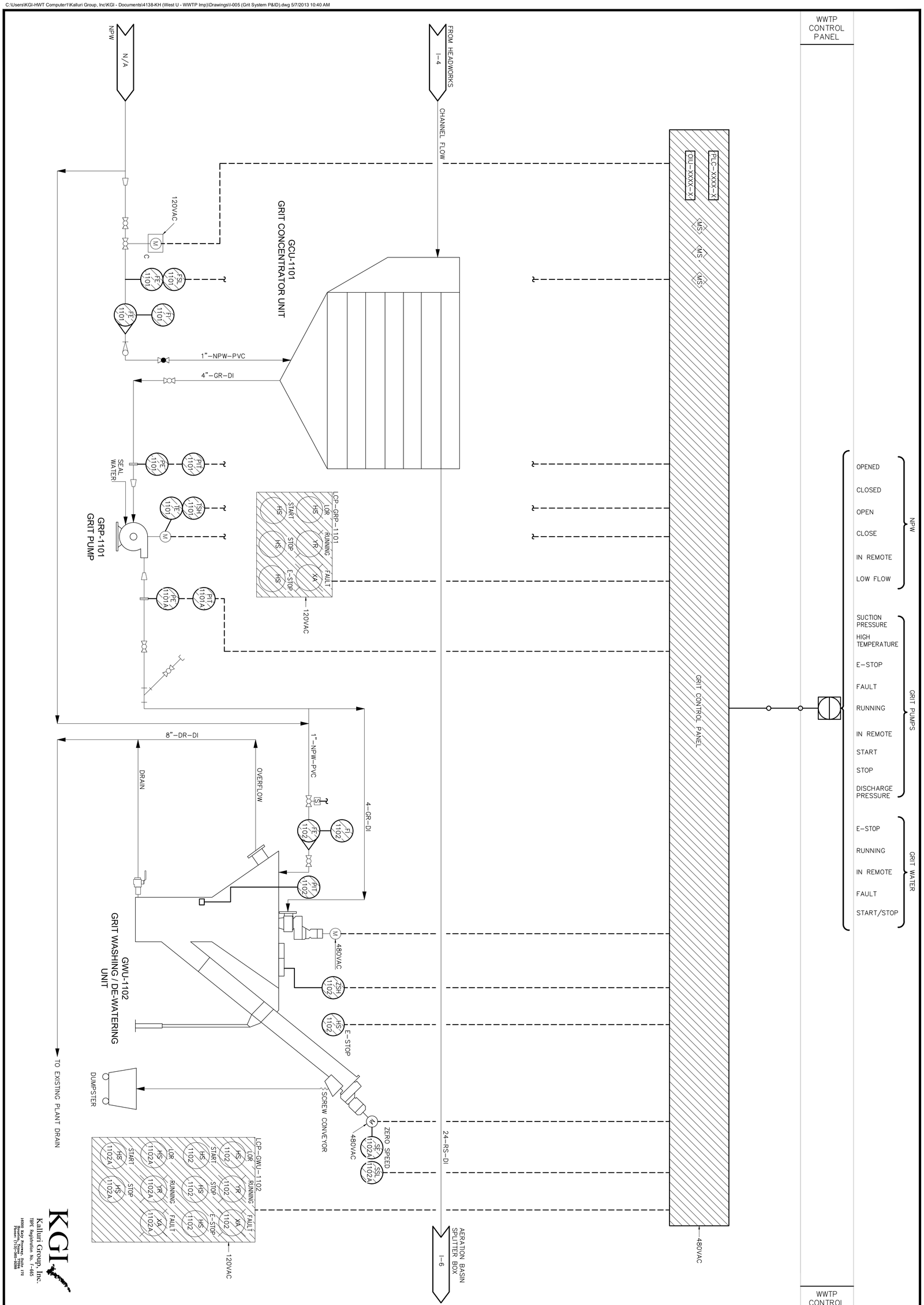

KGI
Kalluri Group, Inc.
TBPE Registration No. F-455
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Stafford, Texas 77477
Phone: 713/781-0629

SHEET	I-005
DATE:	06/03/2022
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INSTRUMENTATION

GRIT SYSTEM P&ID

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

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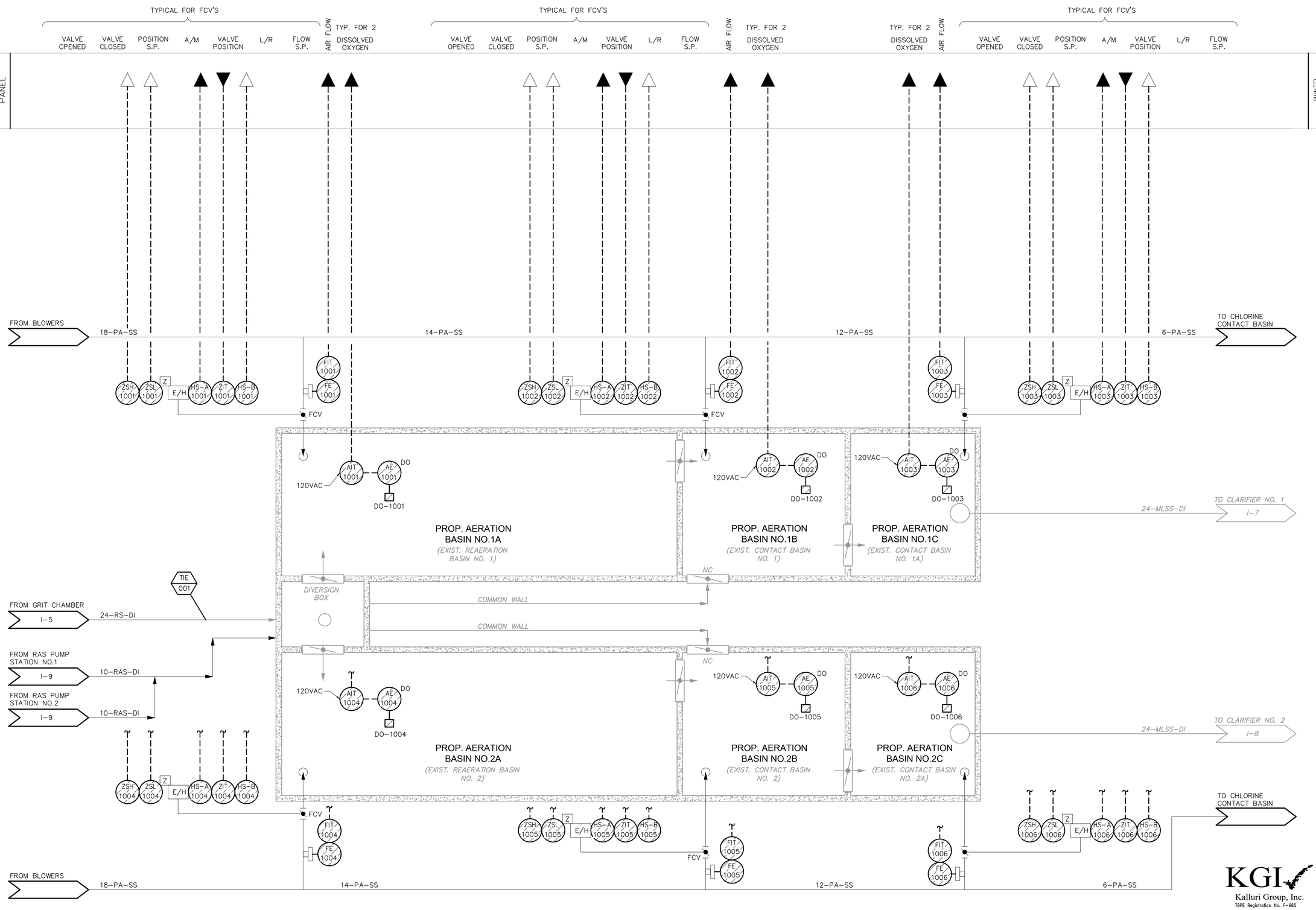

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION

AERATION BASIN P&ID

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SHEET

I-006

KGI
Kalluri Group, Inc.
TBPE Registration No. F-665
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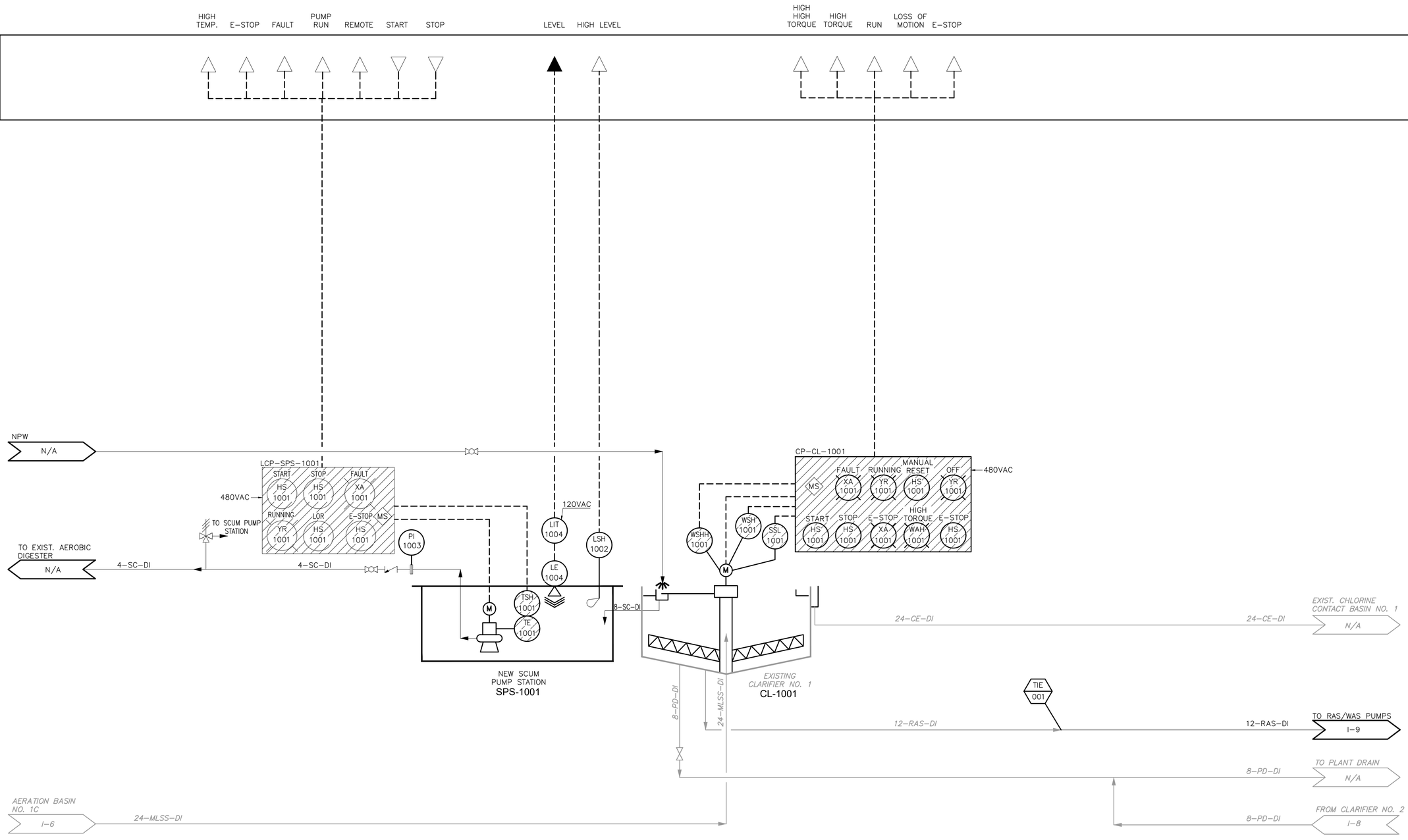

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION

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

DATE:	06/03/2022
DESIGN:	RK
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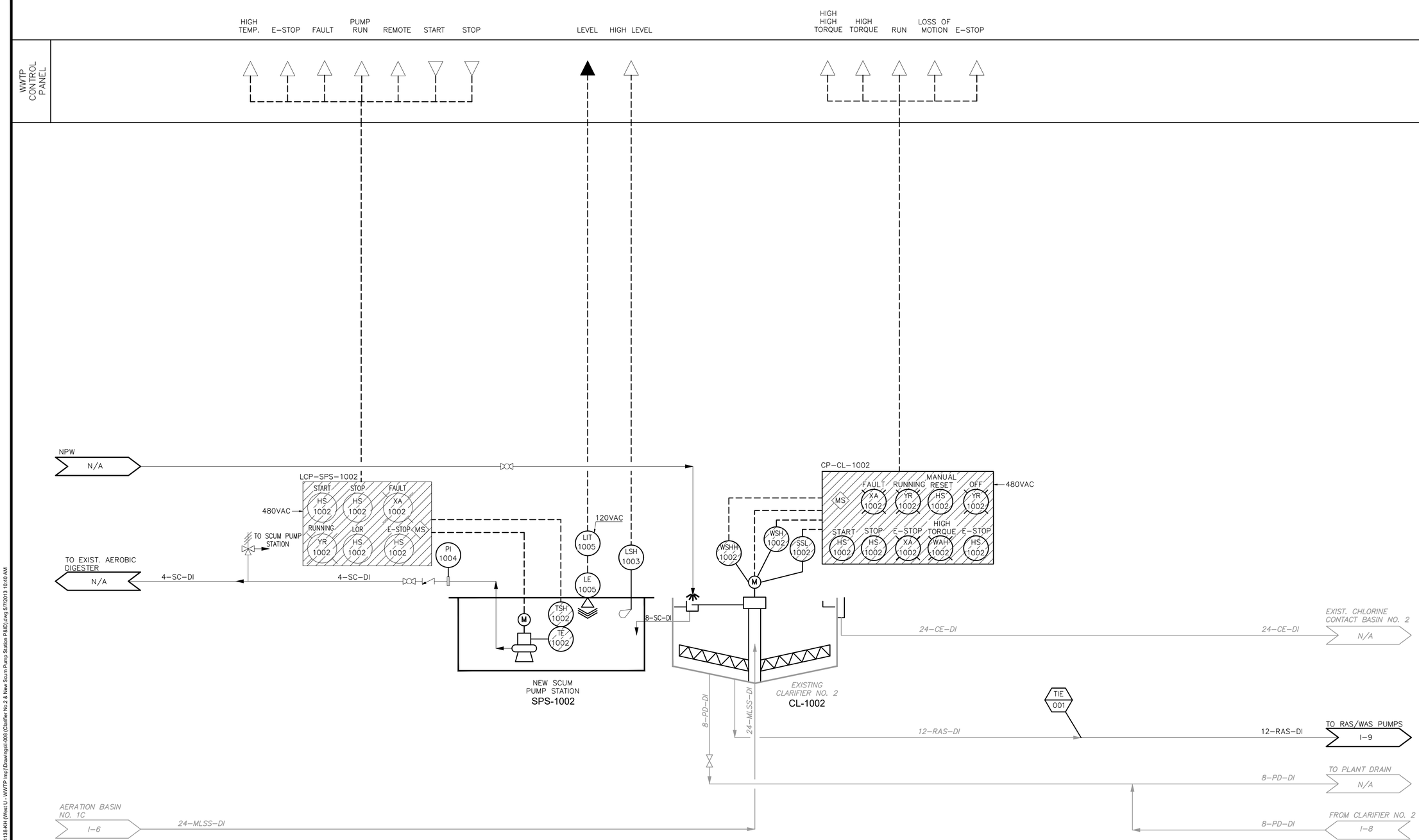
KHA NO.:	067812104

SHEET

I-007



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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION

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

DATE:	06/03/2022	
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SHEET
I-008

KGL
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Phone: (713)-365-9288

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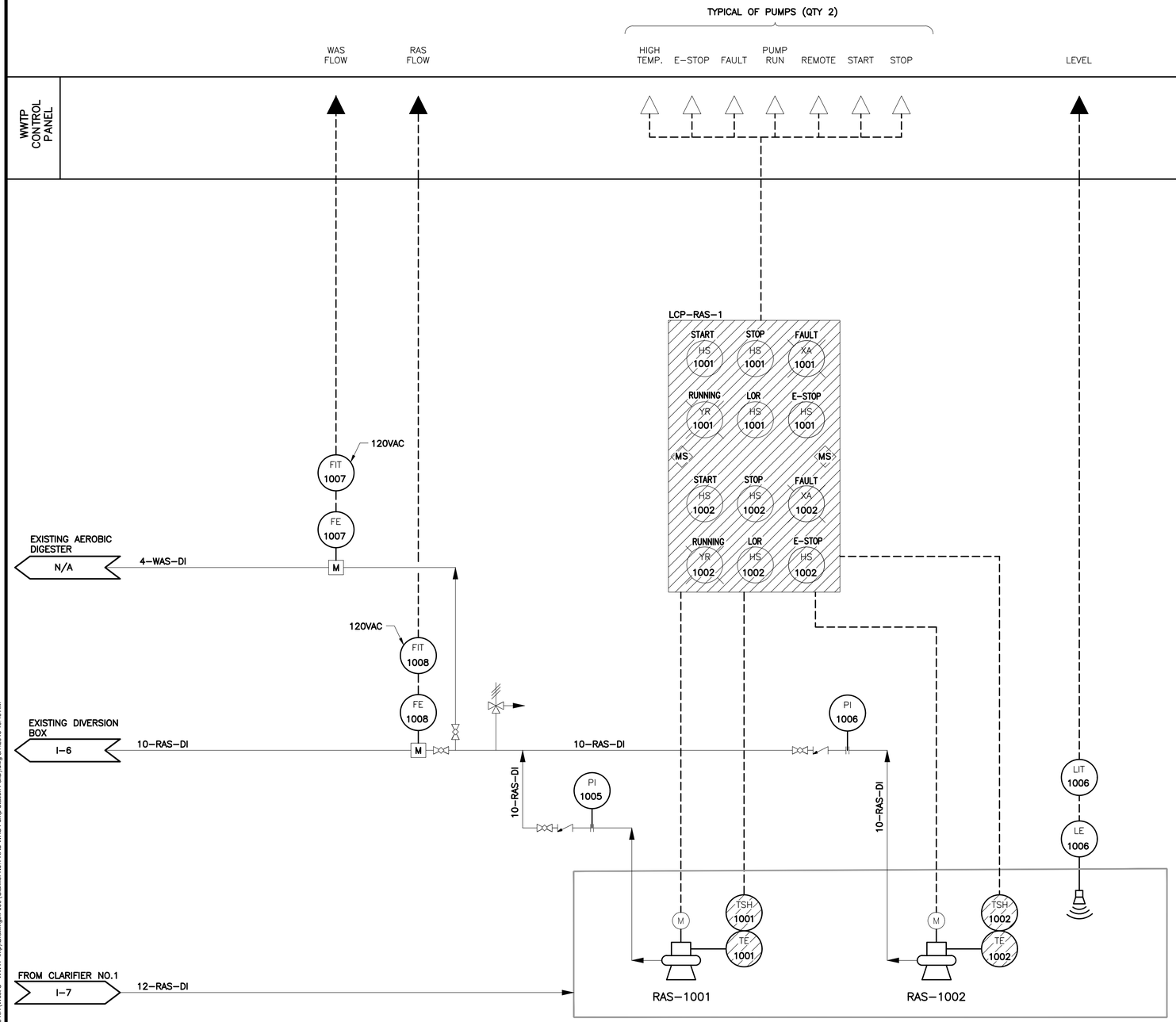

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION

CLARIFIER NO.1 RAS/WAS PUMP STATION P&ID

DATE:	06/03/2022		
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SHEET

I-009

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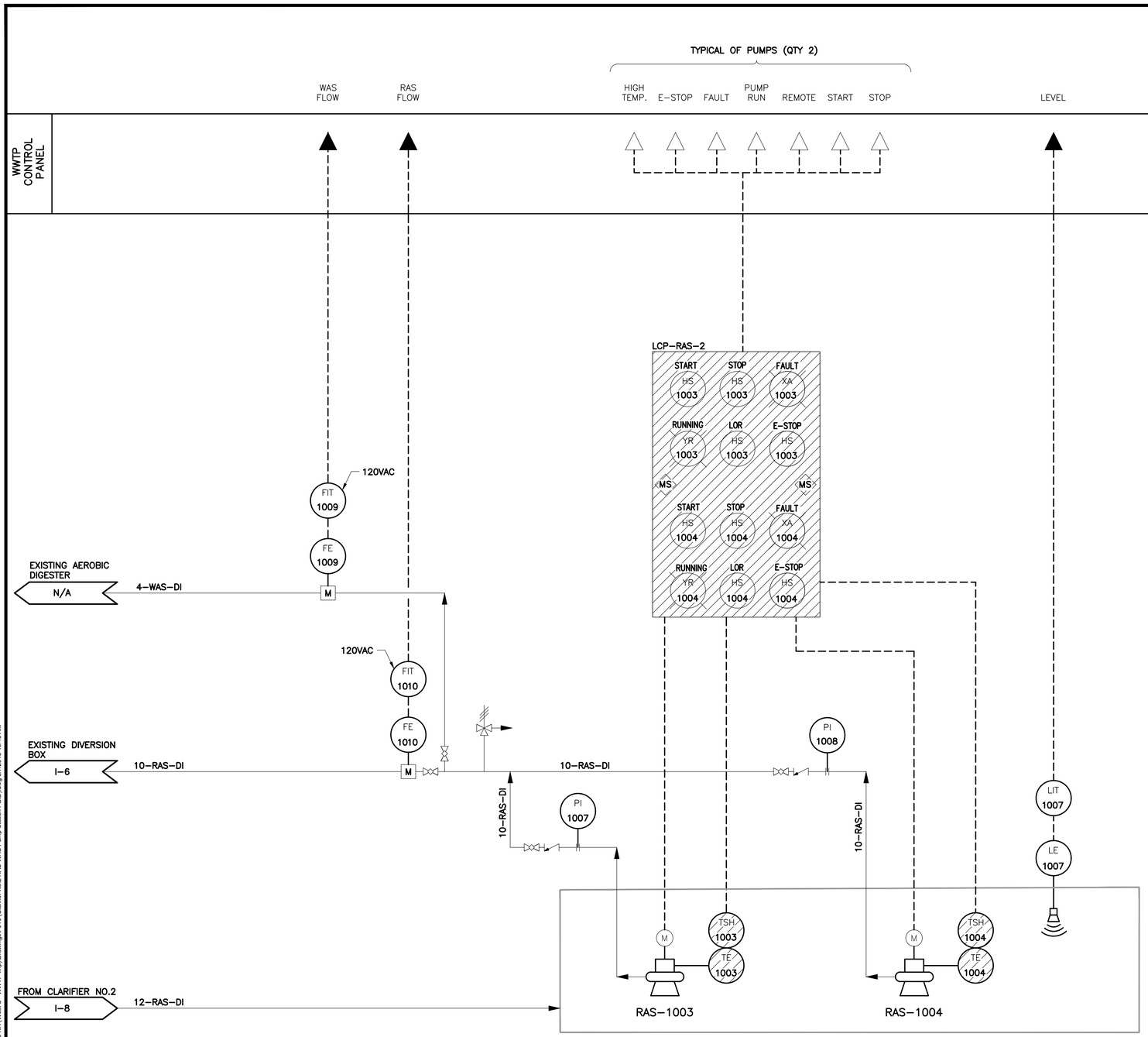

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION

CLARIFIER NO.2 RAS/WAS PUMP STATION P&ID

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SHEET

I-010

KGI
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TYPICAL FOR PUMPS (QTY 3)

SPEED | SPEED SP | START/STOP | RUN | REMOTE | FAIL | TEMP. HIGH

WWTP CONTROL PANEL

WWTP CONTROL PANEL

FLOW

PRESSURE

DISTRIBUTION FLOW

DISCHARGE HEADER PRESSURE

LCP-NPW

480VAC

VFD | PLC– | OIT

HYDRO–PNEUMATIC PRESSURE TANK

CHLORINE CONTACT BASIN

PI 1009

HS 1001 HOA

M

TSH 1001

PI 1012

PSH 1012

NPW-1001
NON–POTABLE WATER PUMP NO.1

PI 1010

HS 1002 HOA

TSH 1002

PI 1013

PSH 1013

NPW-1002
NON–POTABLE WATER PUMP NO.2

PI 1011

HS 1003 HOA

TSH 1003

PI 1014

PSH 1014

NPW-1003
NON–POTABLE WATER PUMP NO.3

120VAC

FIT 1011

PIT 1015

M

FE 1011

N/A
TO NPW SYSTEM

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION

NPW SYSTEM P&ID

DATE:	06/03/2022	
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I-011

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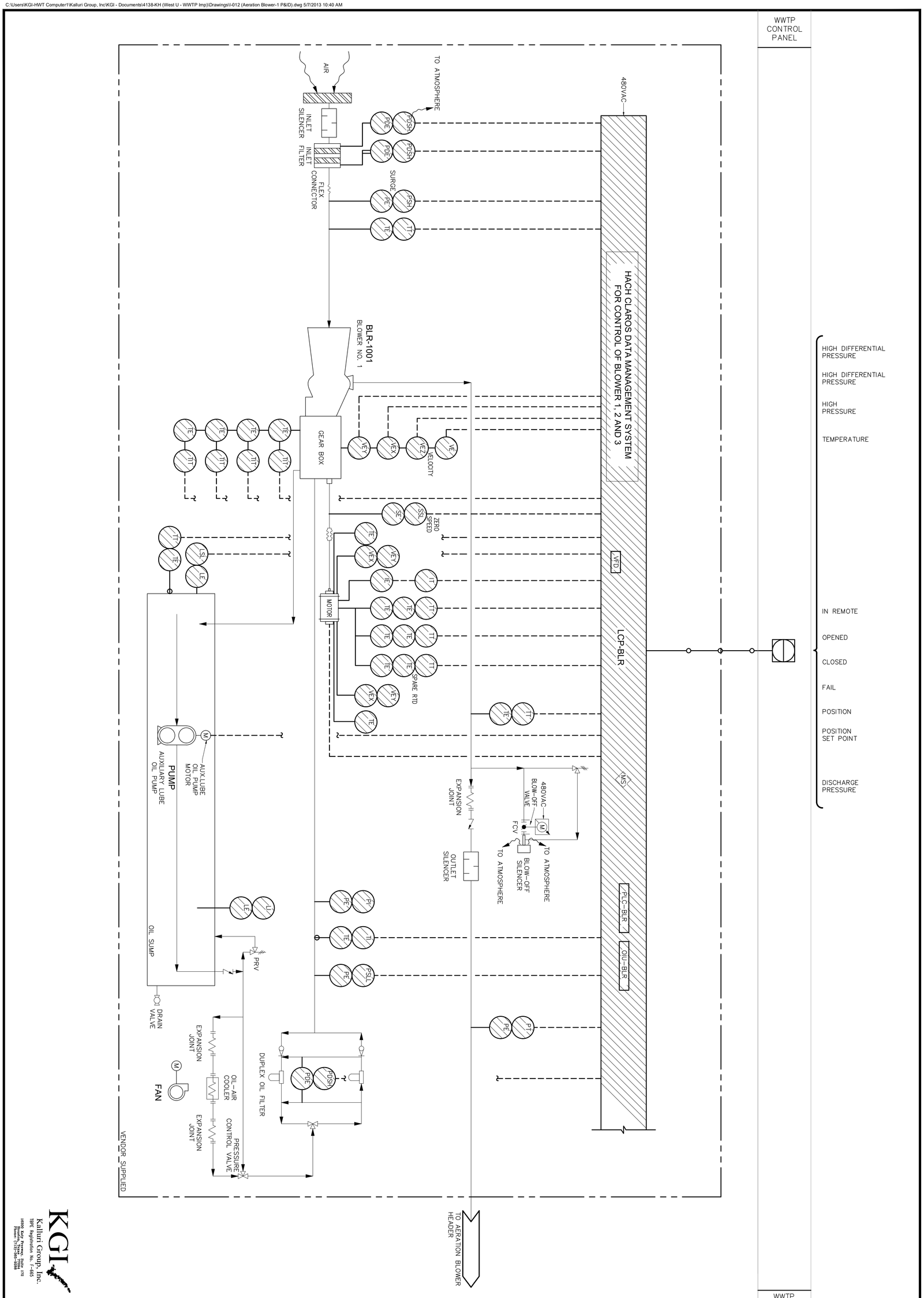

KGI
Kalluri Group, Inc.
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10000 Memorial Drive, Suite 178
Houston, Texas 77024
Phone: (713)290-0038

DATE:	06/03/2022
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SHEET I-012

INSTRUMENTATION

AERATION BLOWER-1 P&ID

INSTRUMENTATION

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

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No.	Revision	By	Date

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

WWTP CONTROL PANEL

WWTP CONTROL PANEL

480VAC

HACH CLAROS DATA MANAGEMENT SYSTEM FOR CONTROL OF BLOWER 1, 2 AND 3

VFD

LCP-BLR

MS

PLC-BLR

OIU-BLR

480VAC
BLOW-OFF VALVE
TO ATMOSPHERE
BLOW-OFF SILENCER
FCV
TO ATMOSPHERE

TT
TE

PT
PE

EXPANSION JOINT

OUTLET SILENCER

TO AERATION BLOWER HEADER

TO ATMOSPHERE

PDSH
PDE

PSH
PE

TT
TE

SURGE

AIR

INLET SILENCER

INLET FILTER

FLEX CONNECTOR

BLR-1002
BLOWER NO. 2

VE
VELOCITY
VEZ
VEX
VEY

SSL
SE
ZERO SPEED

IT
TT
XXX
TE
SPARE RTD
VEY
IE
VEX

MOTOR

GEAR BOX

TE
TIT

LSL
LE
TT
TE

M
AUX.LUBE OIL PUMP MOTOR
PUMP
AUXILIARY LUBE OIL PUMP

OIL SUMP

DRAIN VALVE

LI
LE

PRV

PI
PE
TI
TE
PSLL
PE

PDSH
PDE
DUPLEX OIL FILTER

OIL-AIR COOLER

PRESSURE CONTROL VALVE

EXPANSION JOINT
EXPANSION JOINT

M
FAN

VENDOR SUPPLIED

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No.	Revision	By	Date

SERIAL NO. 68078
DATE: JUNE, 2022

INSTRUMENTATION

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION

AERATION BLOWER-2 P&ID

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SHEET

I-013

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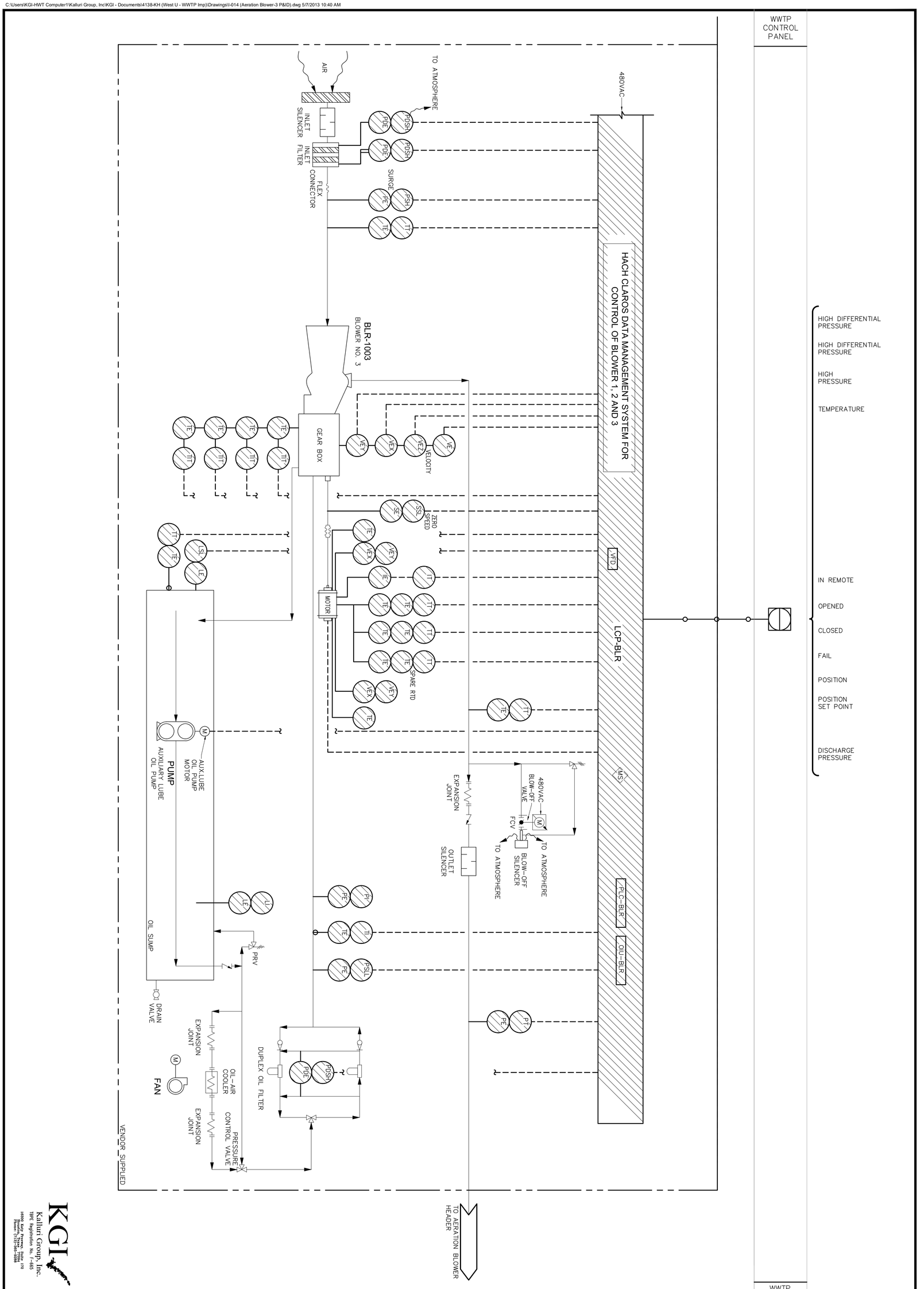

Kalluri Group, Inc.
TBPE Registration No. F-485
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Houston, Texas 77024
Phone: (713)780-0808

SHEET	I-014
DATE:	06/03/2022
DESIGN:	RK
DRAWN:	AP
CHECKED:	WH
KHA NO.:	067812104

INSTRUMENTATION

AERATION BLOWER-3 P&ID

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

THIS DOCUMENT IS INCOMPLETE AND IS RELEASED TEMPORARILY FOR INTERIM REVIEW ONLY. IT IS NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

RAMESH KALLURI

SERIAL NO. 68078

DATE: JUNE, 2022

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

No.	Revision	By	Date

NOTE:

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

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RAMESH KALLURI
SERIAL NO. 68078
DATE: JUNE, 2022

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION

NEW SODIUM HYPOCHLORITE P&ID

DATE:	06/03/2022
DESIGN:	RK
DRAWN:	AP
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KHA NO.:	067812104

SHEET

I-015

KGI
Kalluri Group, Inc.
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Houston, Texas 77094
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HIGH HIGH LEVEL

LEVEL

HIGH DISCHARGE PRESSURE

IN REMOTE

RUNNING

ALARM

START/STOP

SPEED INDICATION

SPEED SETPOINT

WWTP CONTROL PANEL

WWTP CONTROL PANEL

NOTE:

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

TYPICAL FOR CP-1003, CP-1004

120VAC

LOR HS

START HS

STOP HS

FAULT XA

RUNNING YR

SPEED IND SI

SPEED POT SC

LSHH 1009

FROM TRUCK UNLOADING STATION

N/A

LIT 1009

LSH 1009

0-14FT

120VAC NOTE 1

HHLL:

HLL:

T-1002

LLL: 4'-0"

LLLL: 2'-0"

0'-0" (REF.)

CALIBRATION COLUMN

PSL 1024

PI 1024

0-30 PSIG

PI 1025

XS 1003

CP-1003

0-100 PSIG

PI 1026

PSH 1026

SET @ 75 PSIG

SET @ 65 PSIG

PCV 1027

D/S OF CHLORINE CONTACT BASIN

N/A

CALIBRATION COLUMN

PSL 1028

PI 1028

0-30 PSIG

PI 1029

XS 1004

CP-1004

0-100 PSIG

PI 1030

PSH 1031

SET @ 75 PSIG

SET @ 65 PSIG

PCV 1032

VENDOR PROVIDED

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TBPE NO. 928

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SERIAL NO. 68078

DATE: JUNE, 2022

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION

NEW SODIUM BISULFITE P&ID

DATE:	06/03/2022
DESIGN:	RK
DRAWN:	AP
CHECKED:	WH
KHA NO.:	067812104

SHEET

I-016

KGI

Kalluri Group, Inc.

TBPE Registration No. F-665

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Houston, Texas 77094
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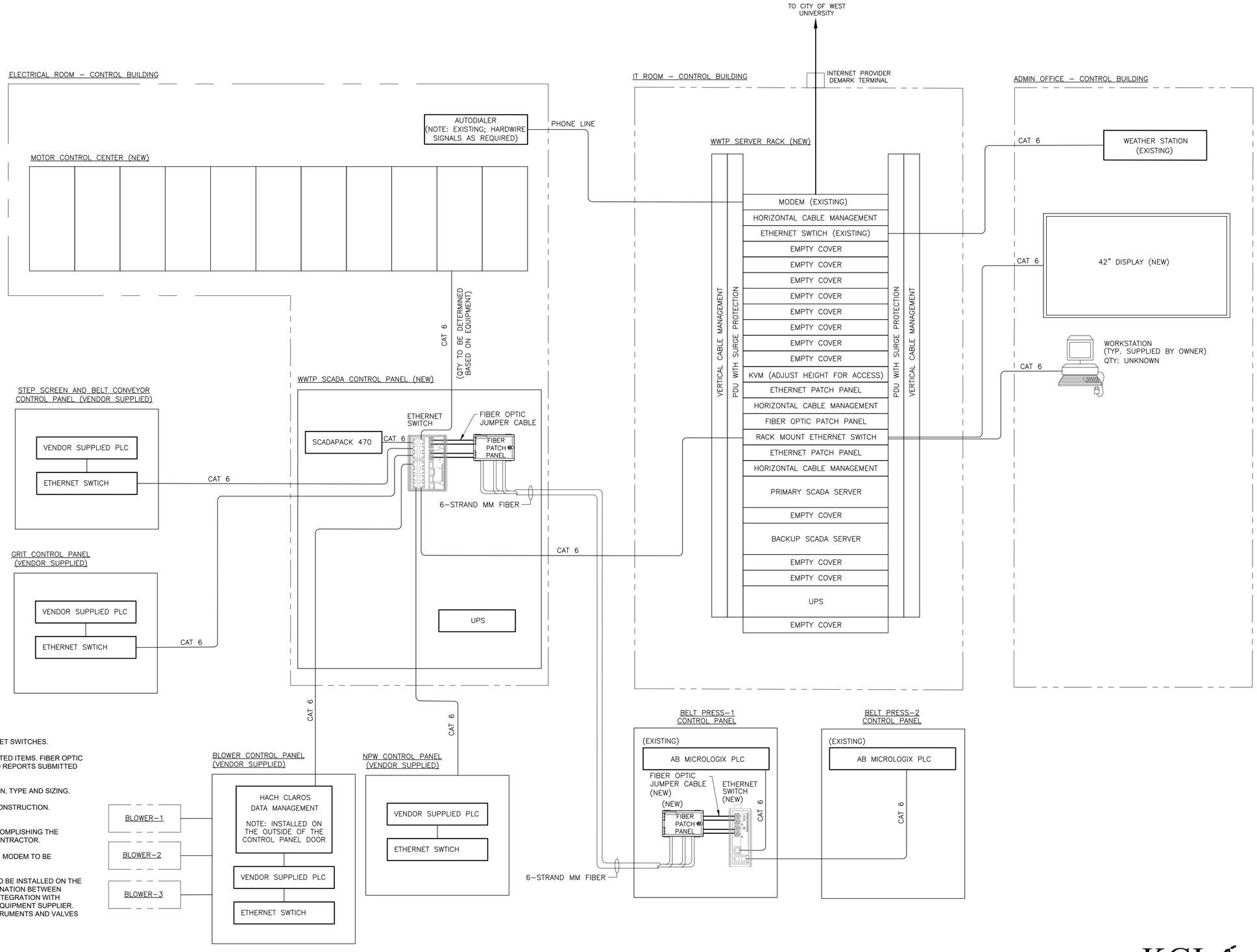
NOTES:

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 AS SHOWN ON I-6.
20. WORKSTATIONS TO BE SUPPLIED BY THE OWNER.
21. 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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No.	Revision	By	Date

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION

OVERALL PROPOSED SCADA NETWORK DIAGRAM

DATE:	06/03/2022			
DESIGN:	RK			
DRAWN:	AP			
CHECKED:	WH			
KHA NO.:	067812104			

SHEET

I-017

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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.

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TEXAS REGISTRATION No.137058
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WWTP IMPROVEMENTS

STRUCTURAL NOTES I

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

SHEET
S-001

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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: XX,000 PSF
   2. SIDE FRICTION: XX,000 PSF
   3. UPLIFT SIDE FRICTION: XX,000 PSF
   4. UPLIFT DESIGN DEPTH: XX,000 FEET
   5. SIDE FRICTION (UPLIFT RESISTANCE): XX,000 PSF
   6. MINIMUM PENETRATION INTO BEARING STRATUM: XX,000 FEET

B. PIER DESIGN IS IN ACCORDANCE WITH THE RECOMMENDATIONS IN THE REFERENCED GEOTECHNICAL REPORT.

C. BEARING STRATUM SHOWN ON THE PIER DETAILS IS [XX].

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	4,000 PSI	TYPICAL STRUCTURE, SEE SPEC 03 30 00
B	3,500 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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S-002

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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No.	Revisions	By	Date

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

WWTP IMPROVEMENTS

STRUCTURAL NOTES III

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

SHEET
S-003

shaping the built environment
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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 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
JOHN D. DEBOVOIT
TEXAS REGISTRATION No.107598
DATE: JUNE 2022

WWTP IMPROVEMENTS

SPECIAL INSPECTIONS I

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

SHEET
S-004

shaping the built environment
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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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JOHN D. MISHKOFF
TEXAS REGISTRATION No.107008
DATE: JUNE 2022

WWTP IMPROVEMENTS

SPECIAL INSPECTIONS II

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

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S-005

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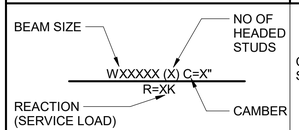
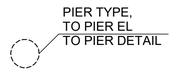
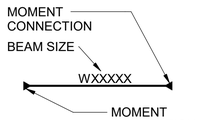
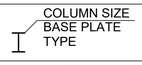
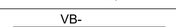
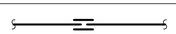
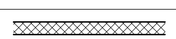
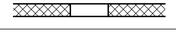
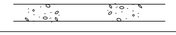
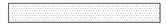
JQENG.COM
PROJECT NO: 4220079
TBPE FIRM F-7986

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	ENGINEER	ENGR	MOMENT	M	THICK	THK
ABOVE FINISHED FLOOR	AFF	EQUAL	EQ	MOMENT CONNECTION(S)	MC	THREAD(ED)	THRD
ADDITIONAL	ADDN'L	EQUIPMENT	EQUIP			TOP AND BOTTOM	T&B
ADHESIVE	ADH	EXHAUST FAN	EF	NEAR FACE	NF	TOP OF	TO
ADJACENT	ADJ	EXISTING	EX OR EXIST	NOMINAL	NOM	TOP OF BEAM	TOB
AGGREGATE	AGGR			NON-SHRINK	NS	TOP OF CONCRETE	TOC
AIR CONDITIONER	A/C	EXPANSION	EXP	NOT IN CONTRACT	NIC	TOP OF GRATING	TOG
AIR HANDLING UNIT	AHU	EXPANSION JOINT	EJ	NOT TO SCALE	NTS	TOP OF STEEL	TOS
ALTERNATE	ALT	EXTERIOR	EXT	NUMBER	NO OR #	TOP OF WALL	TOW
ALUMINUM	AL	EXTRA STRONG	X-STR			TRANSVERSE	TRANSV
AMERICAN CONCRETE INSTITUTE	ACI			ON CENTER	OC	TREAD	TR
AMERICAN INSTITUE OF STEEL CONSTRUCTION	AISC	FABRICATOR	FABR	OPENING(S)	OPNG(S)	TYPICAL	TYP
		FACE TO FACE	F TO F	OPPOSITE	OPP		
ANCHOR BOLT	AB	FAR SIDE	FS	OPPOSITE HAND	OH	UNLESS NOTED OTHERWISE	UNO
AND	&	FIELD VERIFY	FV	OUTSIDE DIAMATER	OD		
ANGLE	L	FINISH(ED)	FIN('D)	OUTSIDE FACE	OF	VERTICAL	VERT
APPROVED	APPD	FINISHED FLOOR	FIN FL	OVER-SIZED HOLE	OVS	VERTICAL BRACE	VB
APPROXIMATE	APPROX	FIREPROOF(ING)	FP				
ARCHITECT	ARCH	FLANGE	FLG	PAN	P	WATERSTOP	WS
ARCHITECTURAL	ARCH'L	FLOOR	FL	PANEL JOINT	PJ	WEIGHT	WT
AT	@	FLOOR DRAIN	FD	PARALLEL	PAR	WELDED WIRE MESH	WWM
		FOOT (OR) FEET	FT	PERPENDICULAR	PERP	WIDTH	W
BACK FACE	BF	FOUNDATION	FNDN	PIECE	PC	WIND LOAD	WL
BACK TO BACK	B TO B	FRAMING	FRMG	PLATE	PL	WINDOW	WDW
BASEMENT	BSMT			POINT	PT	WITH	W/
BEAM	BM	GAGE OR GAUGE	GA	POST-TENSION(ED)	P-T	WITHOUT	W/O
BEARING	BRG	GALVANIZED	GALV	POUNDS	# OR LBS	WORK POINT	WP
BELOW FINISH FLOOR	BFF	GENERAL CONTRACTOR	GC	POUNDS PER CUBIC FOOT	PCF		
BETWEEN	BTWN	GRADE	GR	POUNDS PER LINEAR FOOT	PLF		
BEVEL(ED)	BEV('D)	GRADE BEAM	GR BM	POUNDS PER SQUARE FOOT	PSF		
BLOCK	BLK	GRATING	GRTG	POUNDS PER SQUARE INCH	PSI		
BLOCK LINTEL	BL			PRE-ENGINEERED METAL BUILDING	PEMB		
BLOCKING	BLKG	HEADED STUD ANCHOR	HSA	PRECAST CONCRETE	P/C		
BOTTOM	BOT	HEIGHT	HT	PREFABRICATED	PREFAB		
BOTTOM OF	BO	HIGH POINT	HP	PRELIMINARY	PRELIM		
BOTTOM OF STEEL	BOS	HOLLOW STRUCTURAL SECTION	HSS	PRESSURE TREATED	PT		
BRACKET	BRKT	HOOK	HK	PROJECTION	PROJ		
BRICKLEDGE	BRL	HORIZONTAL	HORIZ				
BRIDGING	BRDG	HORIZONTAL BRACE	HB	QUANTITY	QTY		
BUILDING	BLDG	HOT-DIP	HD				
		HYDROPHILIC	HYD	RADIUS	R		
CAMBER	C			REINFORCE(D)(MENT)	REINF		
CAST-IN-PLACE	CIP	INCH	IN	REINFORCED CONCRETE PIPE	RCP		
CEILING	CLG	INFORMATION	INFO	REMAINDER	REM		
CENTER LINE	CL	INSIDE DIAMETER	ID	REQUIRE	REQ		
CENTER OF GRAVITY	CG	INSIDE FACE	IF	REQUIRED	REQ'D		
CENTER OF GRAVITY OR STRAND	CGS	INTERIOR	INT	RISER	RIS		
CLEAR OR CLEARANCE	CLR	INTERMEDIATE	INTERM	ROOF	RF		
COLD FORMED STEEL	CFS			ROOF DRAIN	RD		
COLUMN	COL	JOINT	JT	ROOF TOP UNIT	RTU		
COMPRESSION	C OR COMP	JOIST GIRDER	JG	ROOM	RM		
CONCRETE	CONC	JOIST(S)	JST(S)	ROUGH OPENING	RO		
CONCRETE MASONRY UNIT	CMU			ROUND	RND		
CONNECTION(S)	CONN(S)	KIP PER LINEAR FOOT	KLF				
CONSTRUCTION	CONST	KIP PER SQUARE FOOT	KSF	SCHEDULE(D)	SCHED		
CONSTRUCTION JOINT	CONST JT	KIP PER SQUARE INCH	KSI	SECTION	SECT		
CONTINUOUS	CONT	KIPS (1000 LBS)	K	SHEAR	V		
CONTRACTOR	CONTR			SHEET	SHT		
CONTROL JOINT	CJ	LENGTH	L	SHORT SLOTTED HOLE	SSL		
COORDINATE	COORD	LIGHTWEIGHT	LW	SIDEWALK	SW		
COVER PLATE	COV PL	LIGHTWEIGHT CONCRETE	LWC	SIMILAR	SIM		
		LIVE LOAD	LL	SLAB ON GRADE	SOG		
DEAD LOAD	DL	LOCATION(S)	LOC(S)	SPACE	SPA		
DEFORMED BAR ANCHOR	DBA	LONG LEG HORIZONTAL	LLH	SPECIFICATION(S)	SPEC(S)		
DEMOLISH	DEMO	LONG LEG VERTICAL	LLV	SPECIFIED	SPEC'D		
DETAIL	DTL	LONG SIDE HORIZONTAL	LSH	SQUARE	SQ		
DIAGONAL	DIAG	LONG SIDE VERTICAL	LSV	SQUARE FOOT	SF		
DIAMETER	DIA OR Ø	LONG SLOTTED HOLE	LSL	STAGGERED	STAGG		
DIMENSION(S)	DIM(S)	LONGITUDINAL	LONG	STAINLESS STEEL	SS		
DOUBLE	DBL	LOW POINT	LP	STANDARD	STD		
DOUBLE EXTRA STRONG	XX-STR			STEEL	STL		
DOVETAIL	DVTL	MANUFACTURE(R)	MFR	STEEL JOIST INSTITUE	SJI		
DOWEL(S)	DWL(S)	MASONRY	MAS	STIFFENER	STIFF		
DRAWING(S)	DWG(S)	MATERIAL	MAT	STIRRUPS	STIRR		
		MAXIMUM	MAX	STRAIGHT	STR		
EACH	EA	MECHANICAL	MECH	STRUCTURAL	STRUCT'L		
EACH FACE	EF	MECHANICAL, ELECTRICAL, PLUMBING	MEP	STRUCTURE	STRUCT		
EACH WAY	EW			SUBCONTRACTOR	SUBCONTR		
ELECTRICAL	ELEC	METAL	MTL	SUPPORT(S)	SUPT(S)		
ELEVATION	EL	MEZZANINE	MEZZ				
ELEVATOR	ELEV	MIDDLE	MID	TEMPERATURE	TEMP		
EMBEDMENT	EMBED	MINIMUM	MIN	TENSION	T		
		MISCELLANEOUS	MISC				

NOTE:

THIS IS A GENERAL LIST OF SYMBOLS AND ABBREVIATIONS. NOT ALL ITEMS SHOWN HERE APPEAR ON THE CONTRACT DRAWINGS.

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JOHN D. MEHAFFEY
TEXAS REGISTRATION No.107598
DATE: JUNE 2022

WWTP IMPROVEMENTS

PROJECT SYMBOLS & ABBREVIATIONS

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

SHEET
S-006

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15810 PARK TEN PLACE, SUITE 225
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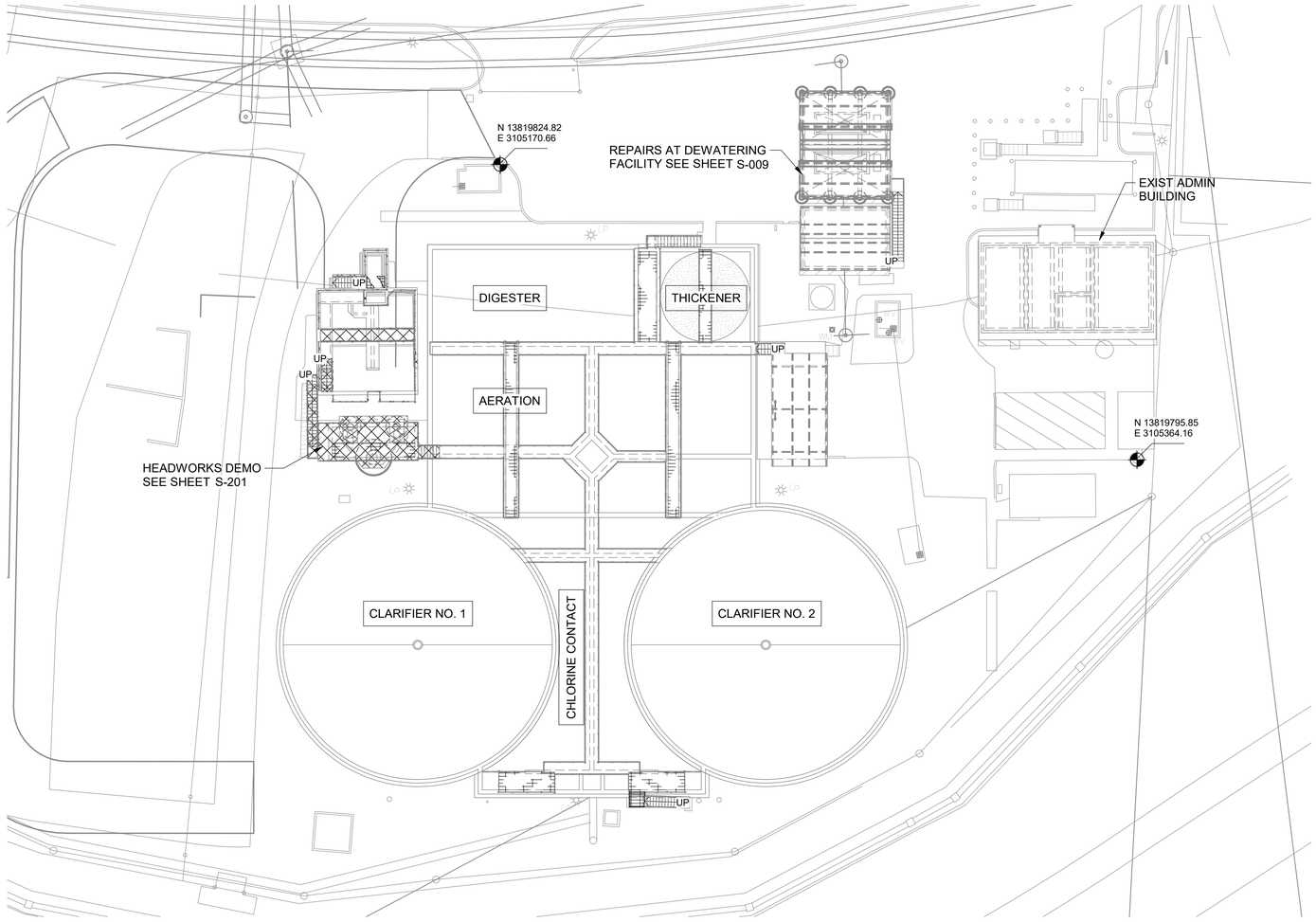
JQENG.COM
PROJECT NO: 4220079
TBPE FIRM F-7986



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

NORTH

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INTERIM REVIEW DOCUMENTS
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JOHN D. MEDHOST
TEXAS REGISTRATION No.107598
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OVERALL EXISTING & DEMOLITION SITE PLAN

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S-007

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JQIENG.COM
PROJECT NO: 4220079
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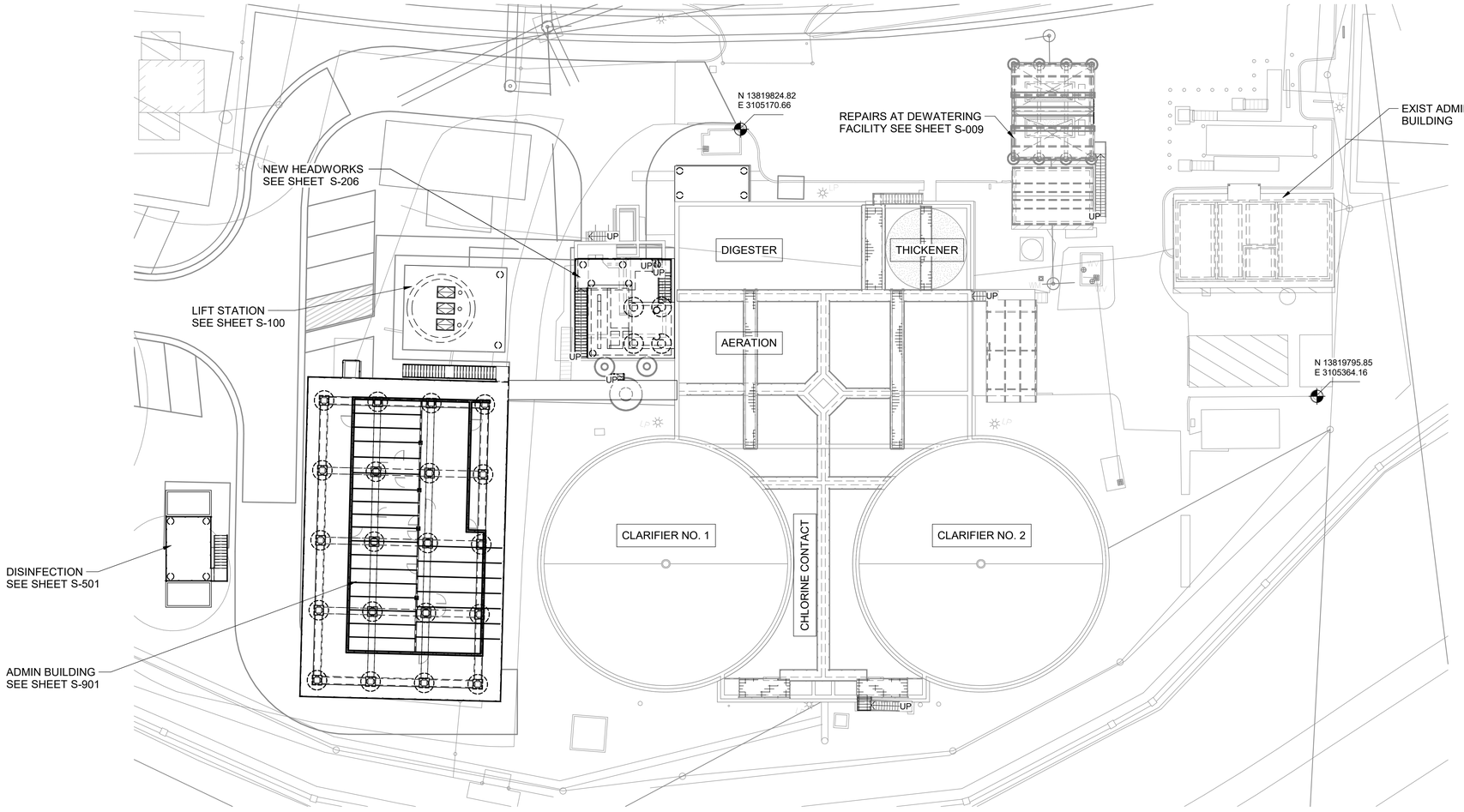

1 S-008 STRUCTURAL SITE PLAN
1" = 20'-0"

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TEXAS REGISTRATION No.137598
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STRUCTURAL SITE PLAN

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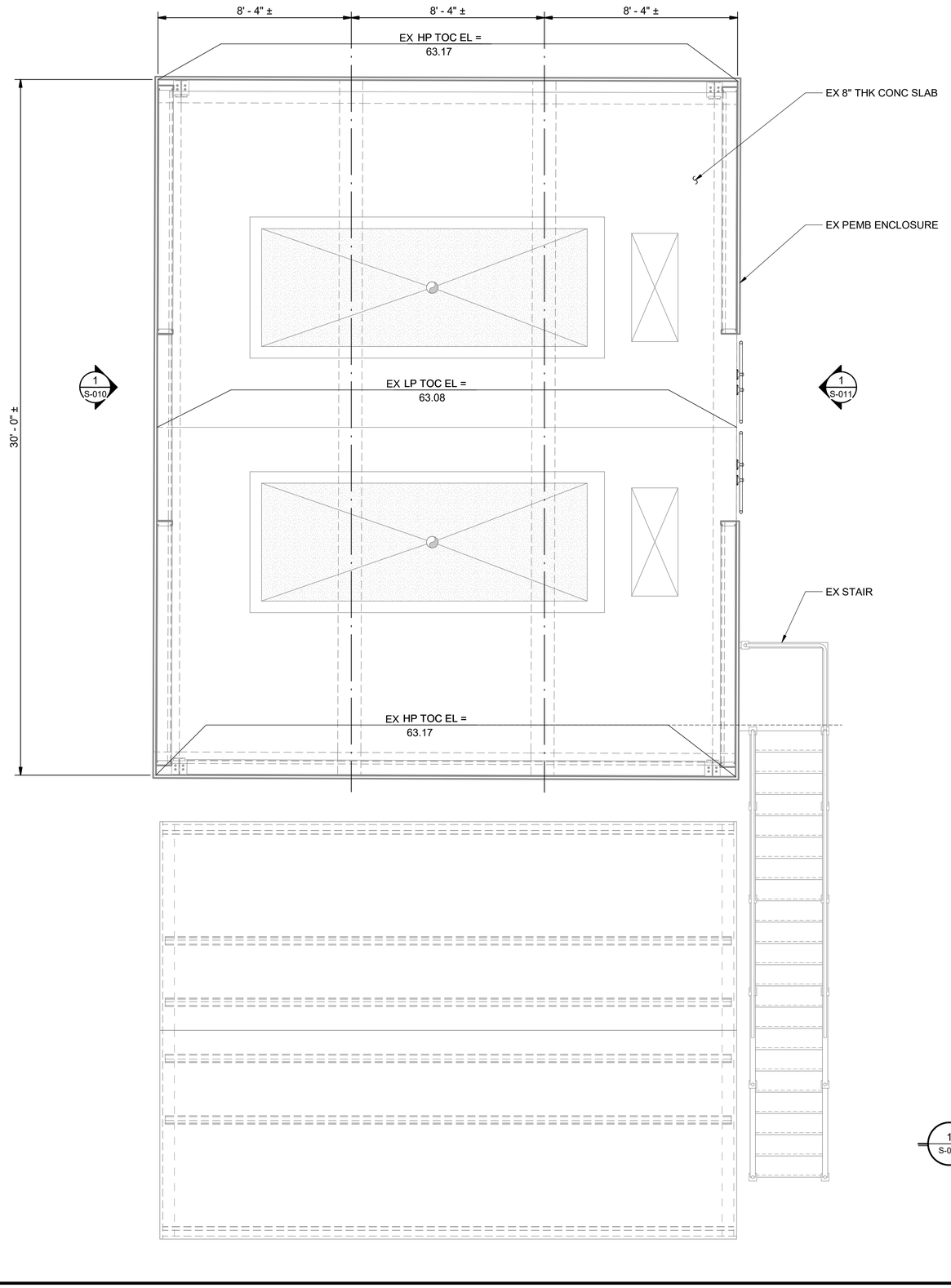

1 S-009 DEWATERING FACILITY REHAB PLAN
3/8" = 1'-0"

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

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TEXAS REGISTRATION No.137598
DATE: JUNE 2022

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DEWATERING FACILITY REHABILITATION PLANS

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

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S-009

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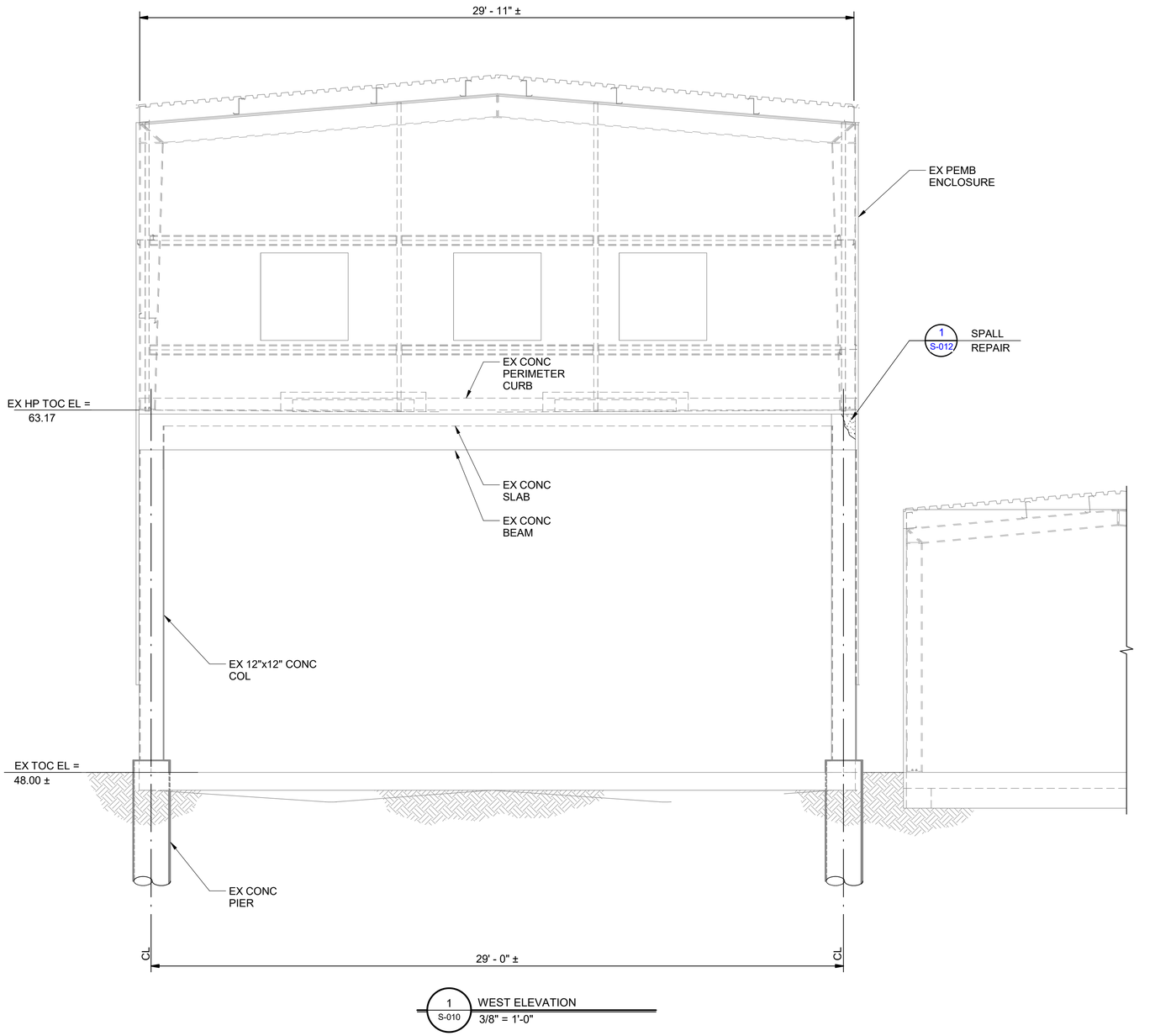

1 S-010 WEST ELEVATION

3/8" = 1'-0"

PHOTO 2

SCALE: NO SCALE

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DATE: JUNE 2022

WWTP IMPROVEMENTS

DEWATERING FACILITY REHABILITATION ELEVATION AND DETAILS II

DATE:	JUNE 2022
DESIGN:	Designer
DRAWN:	Author
CHECKED:	Checker
KHA NO.:	067812104

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S-010

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JQ Infrastructure
JQ INFRASTRUCTURE, LLC
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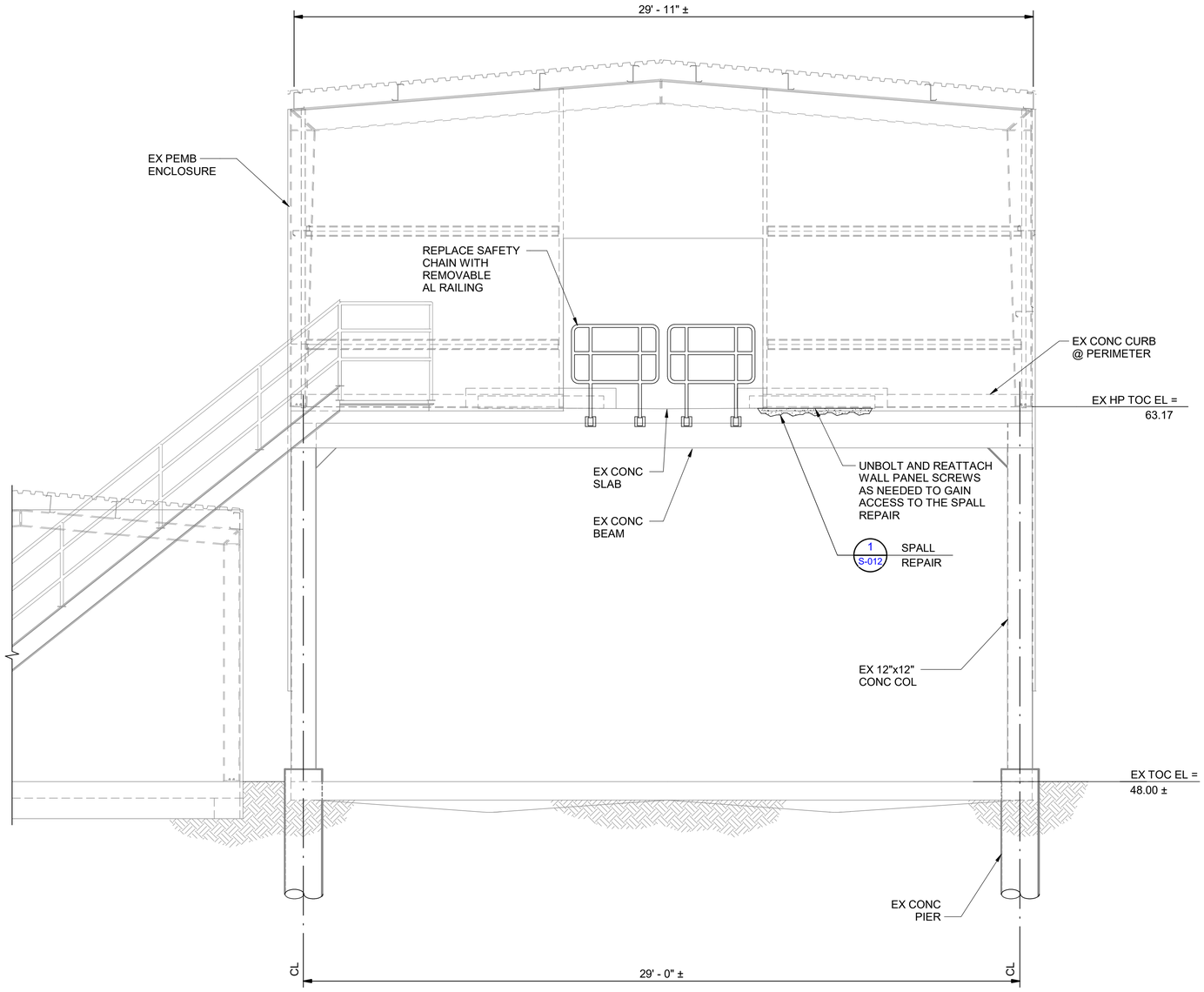

1 S-011 EAST ELEVATION
3/8" = 1'-0"

PHOTO 2
SCALE: NO SCALE

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DATE: JUNE 2022

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DEWATERING FACILITY REHABILITATION ELEVATION AND DETAILS I

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S-011

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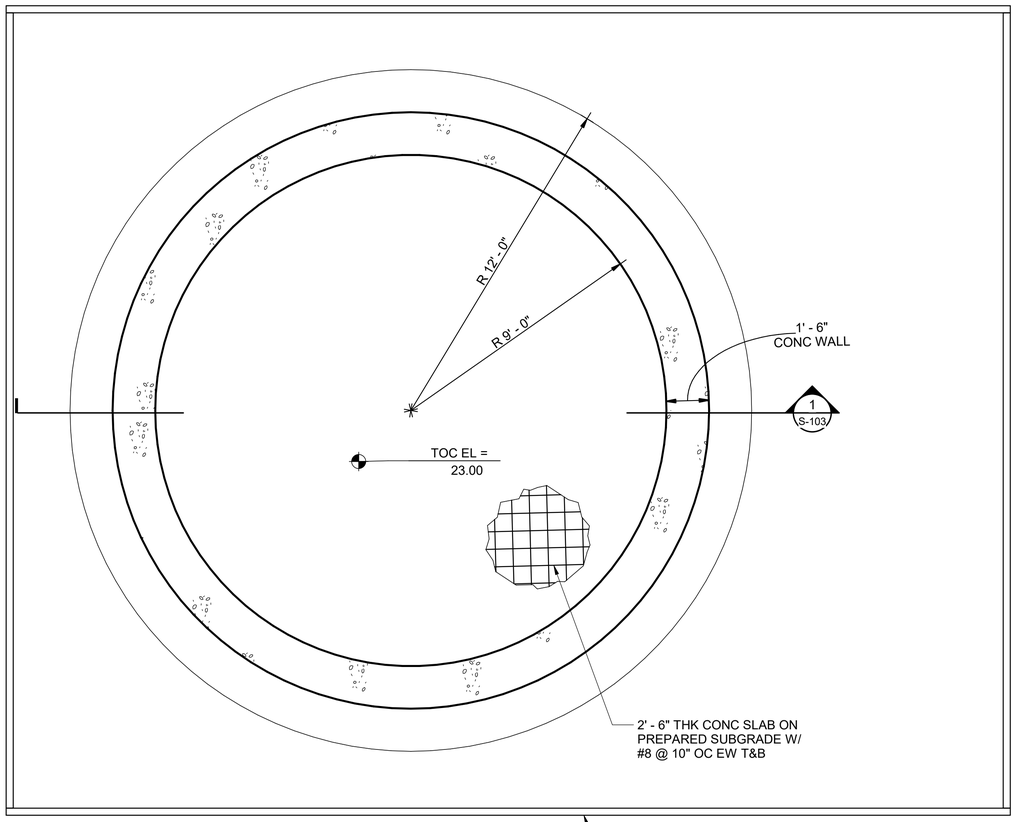

1 S-100 LIFT STATION FOUNDATION PLAN

3/8" = 1'-0"

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LIFT STATION - FOUNDATION

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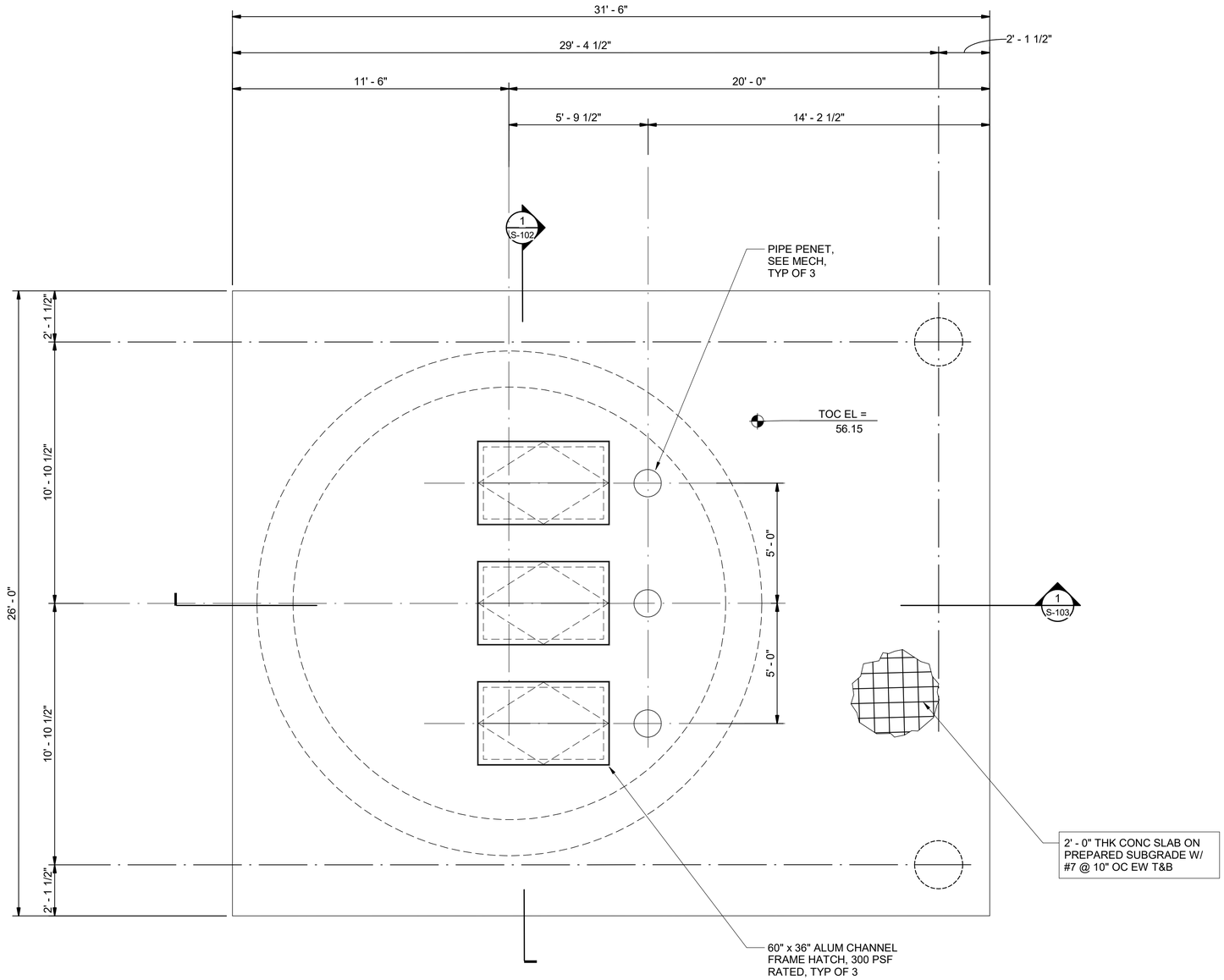

1 S-101 LIFT STATION UPPER PLAN
3/8" = 1'-0"

NORTH

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LIFT STATION UPPER PLAN

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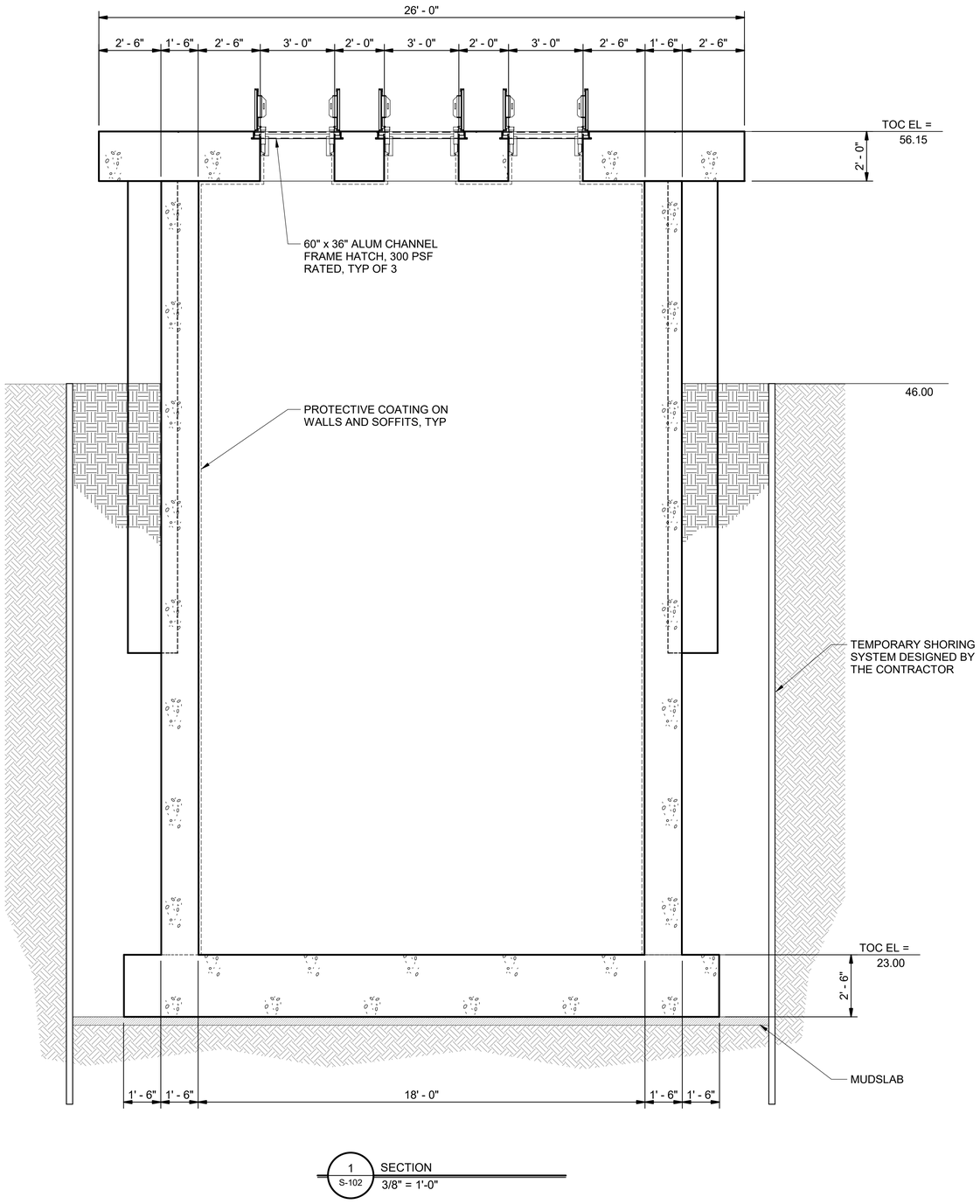

1 S-102 SECTION
3/8" = 1'-0"

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TEXAS REGISTRATION No.137598
DATE: JUNE 2022

WWTP IMPROVEMENTS

LIFT STATION SECTIONS I

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SHEET
S-102

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JQENG.COM
PROJECT NO: 4220079
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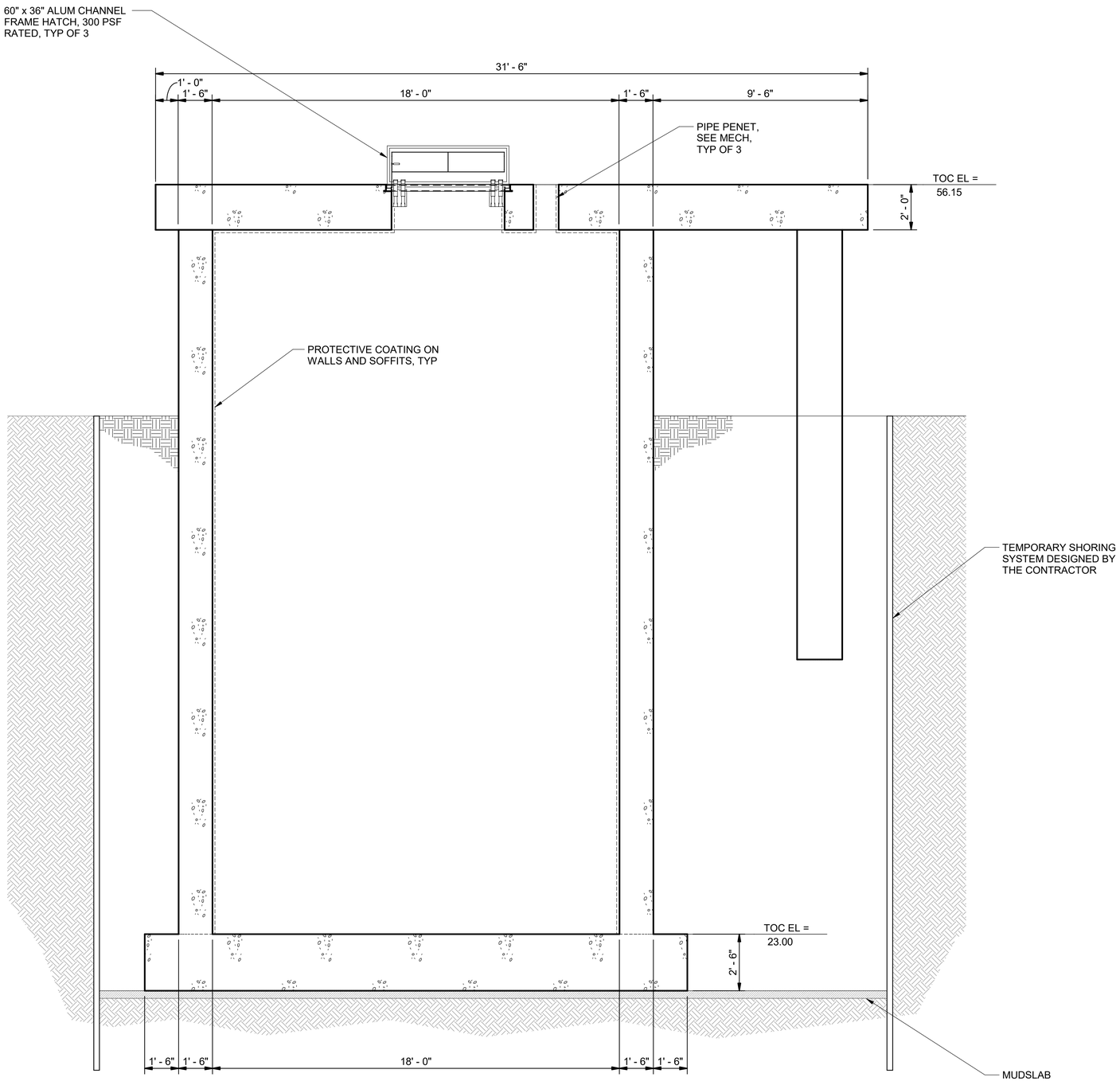

1 S-103 SECTION
3/8" = 1'-0"

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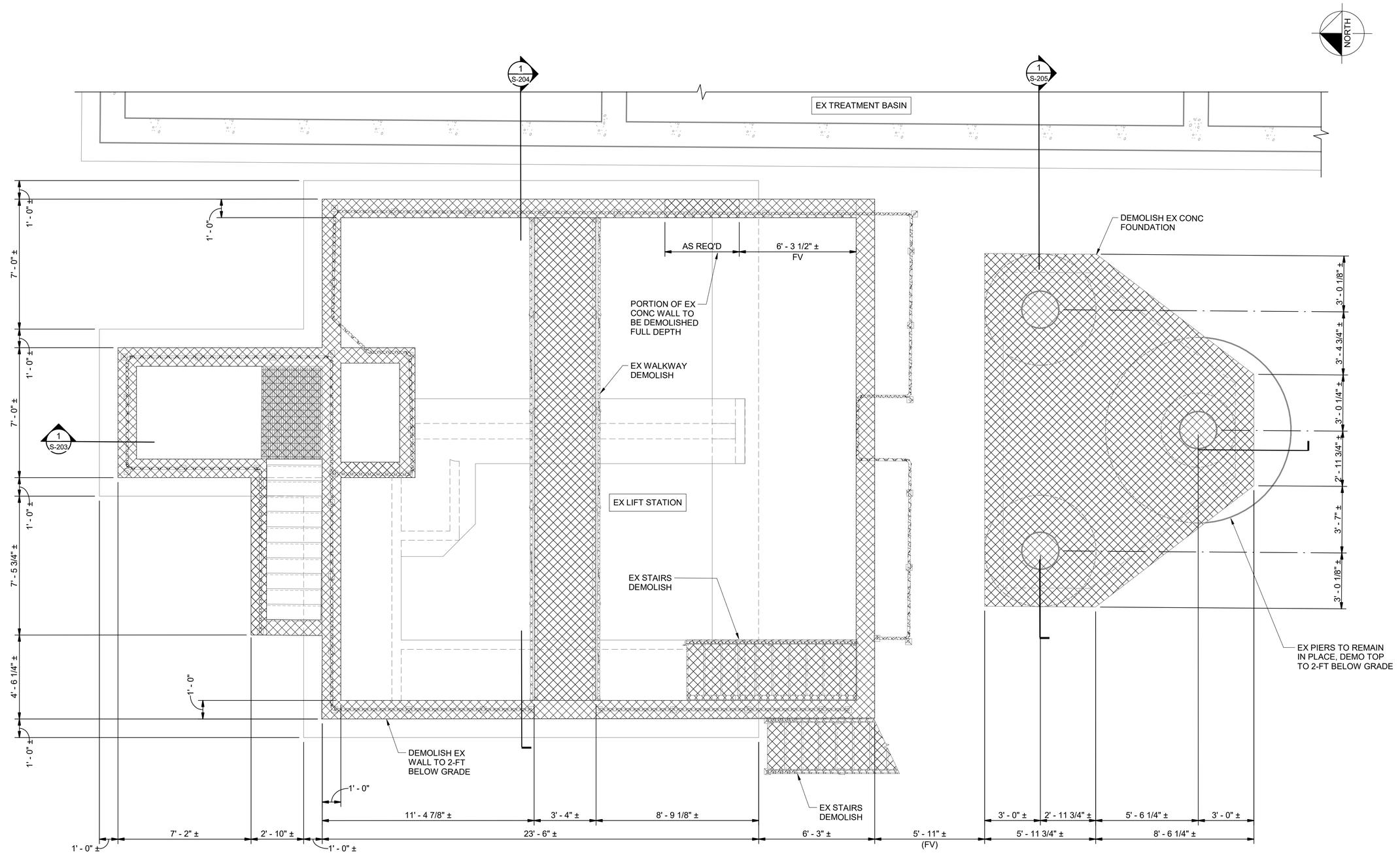
SHEET
S-103



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

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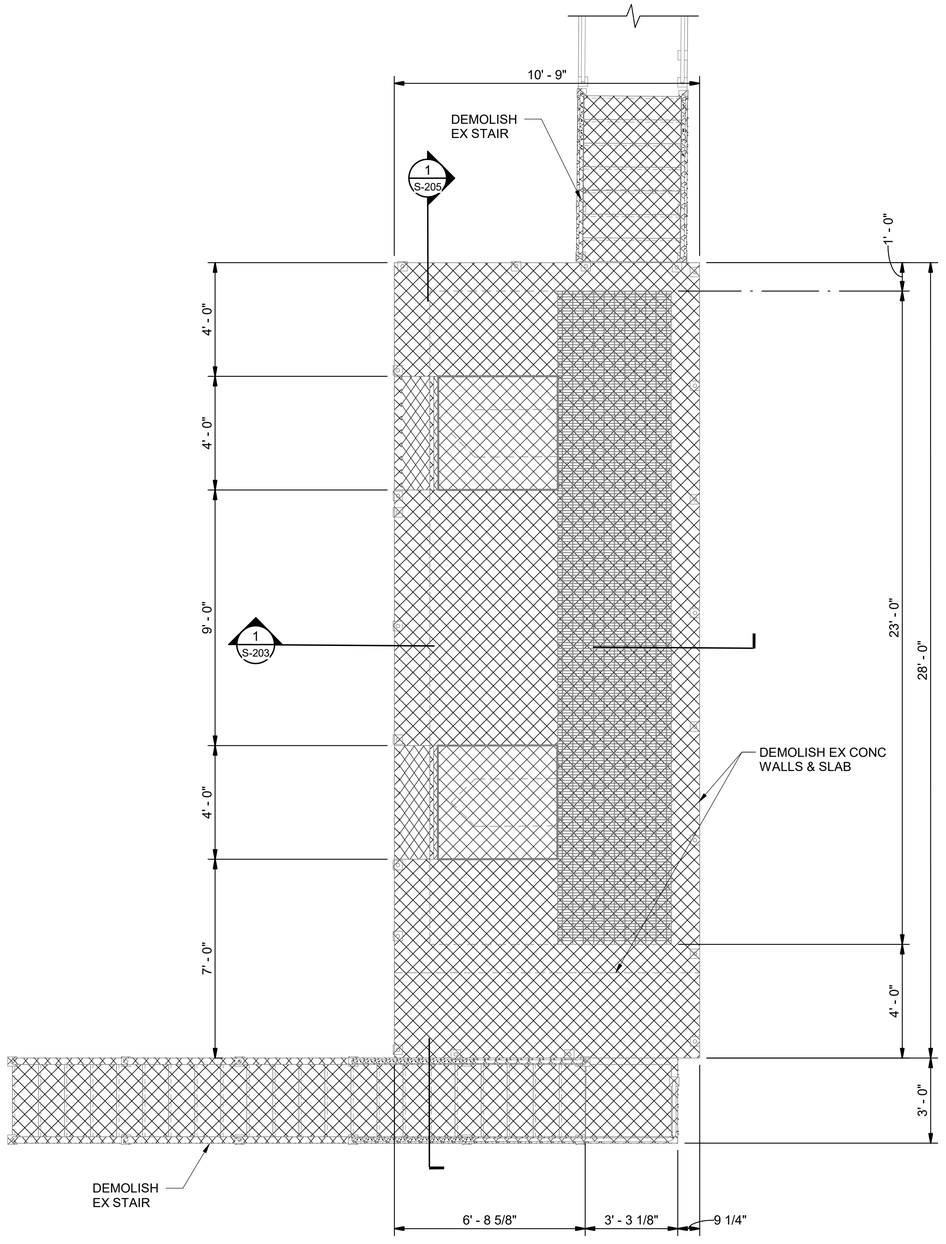

1 S-202 HEADWORKS DEMOLITION UPPER PLAN
3/8" = 1'-0"

NORTH

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HEADWORKS DEMOLITION UPPER PLAN

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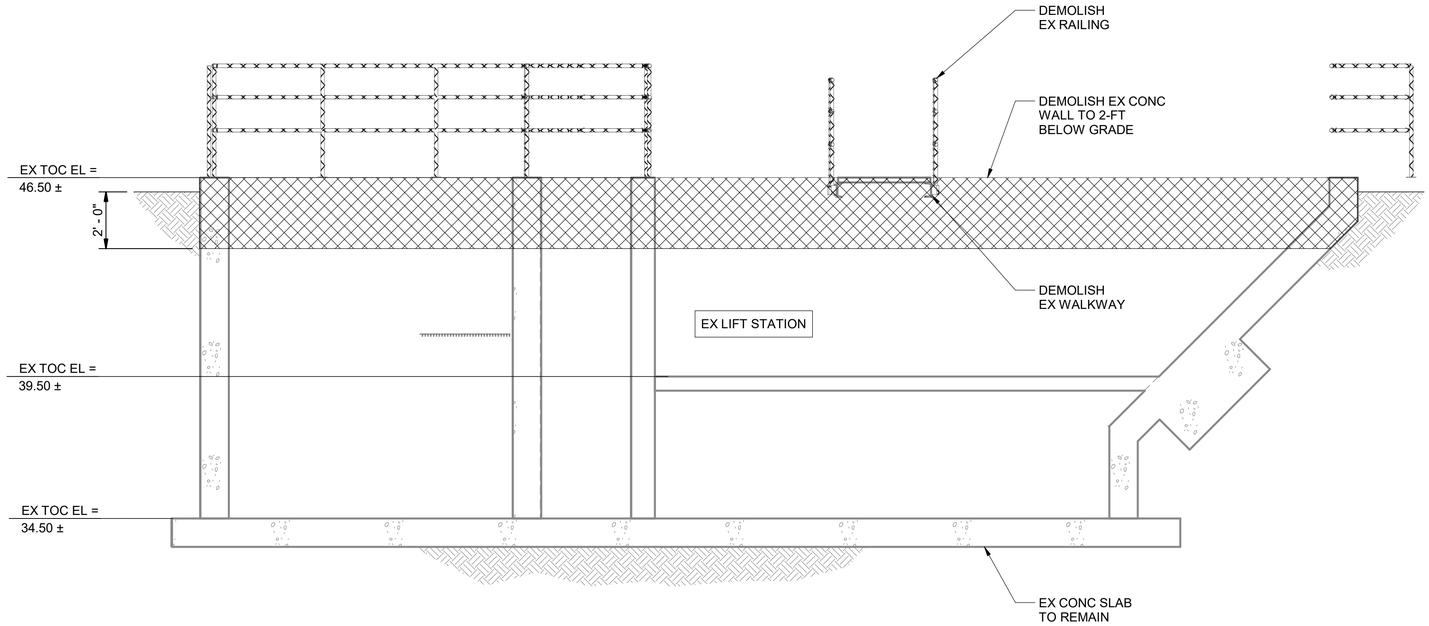
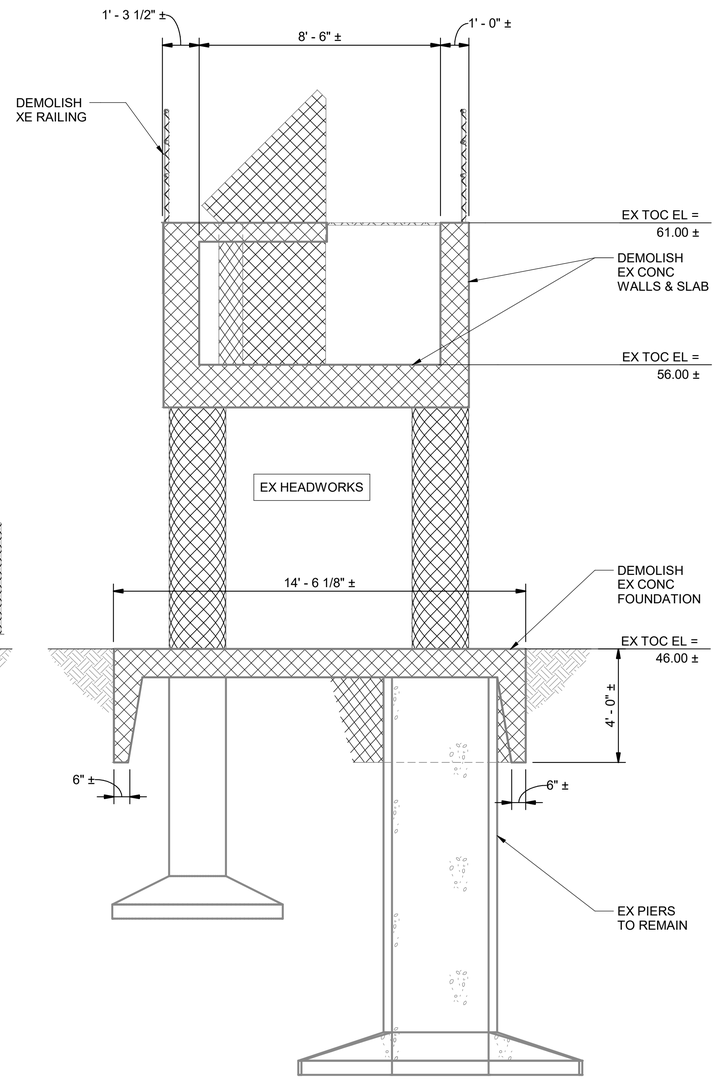


1 S-203 DEMOLITION SECTION
3/8" = 1'-0"



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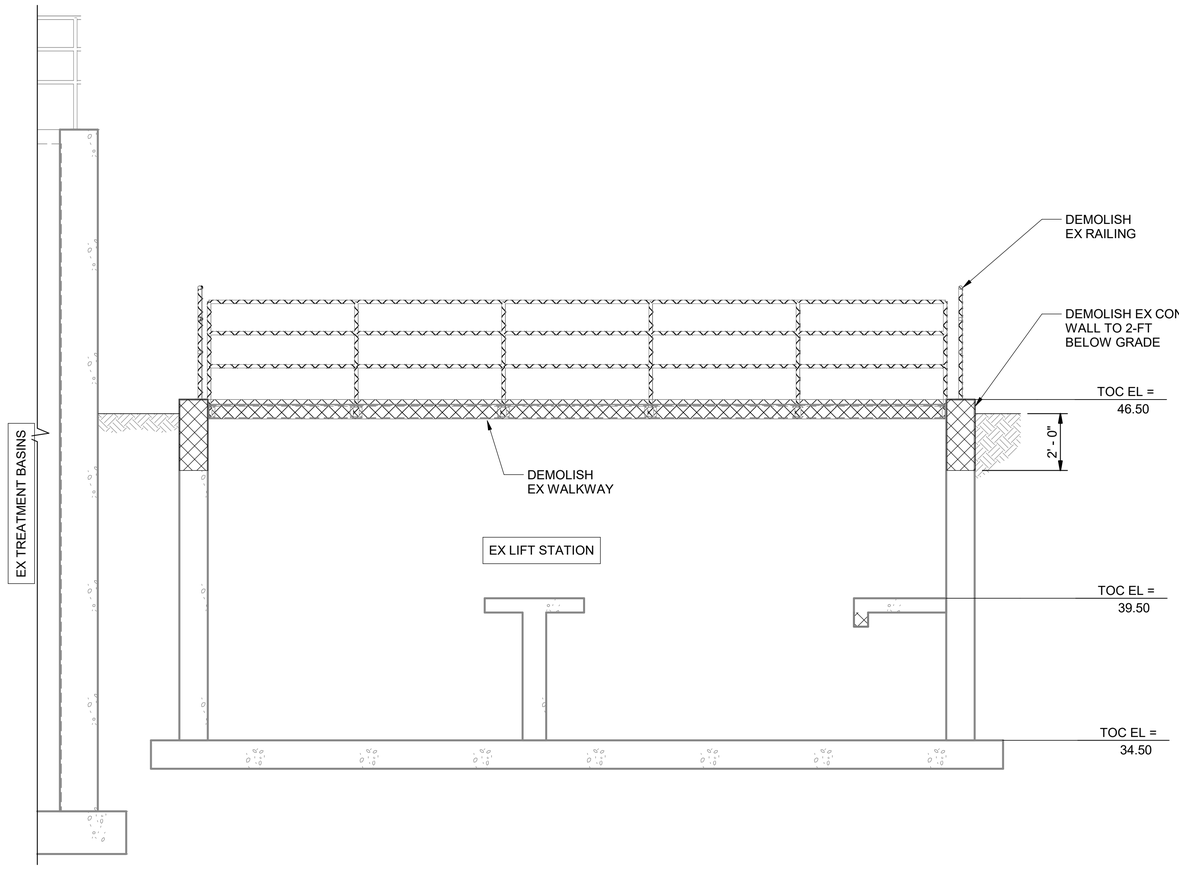

1 S-204 DEMOLITION SECTION
3/8" = 1'-0"

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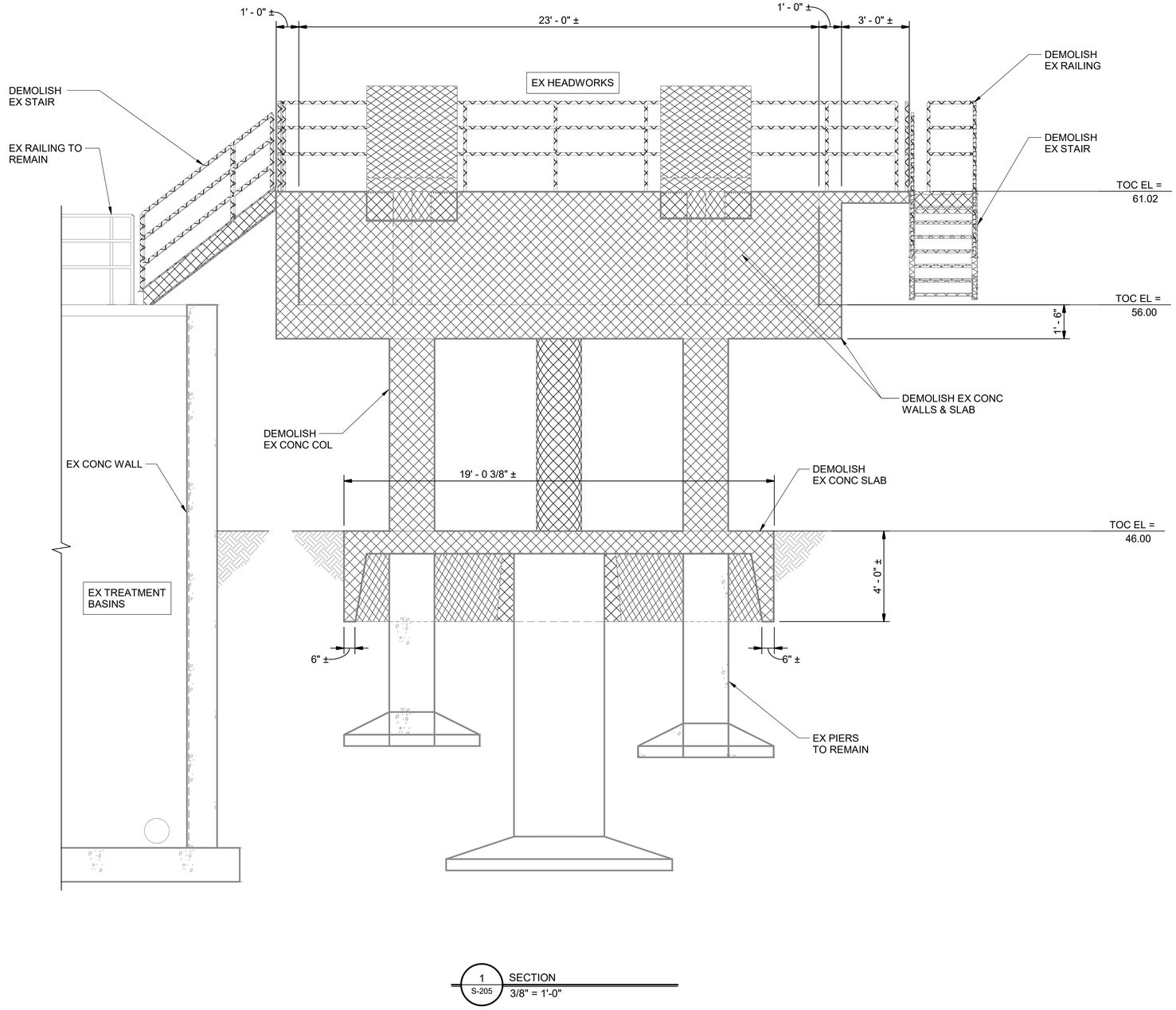

1 S-205 SECTION
3/8" = 1'-0"

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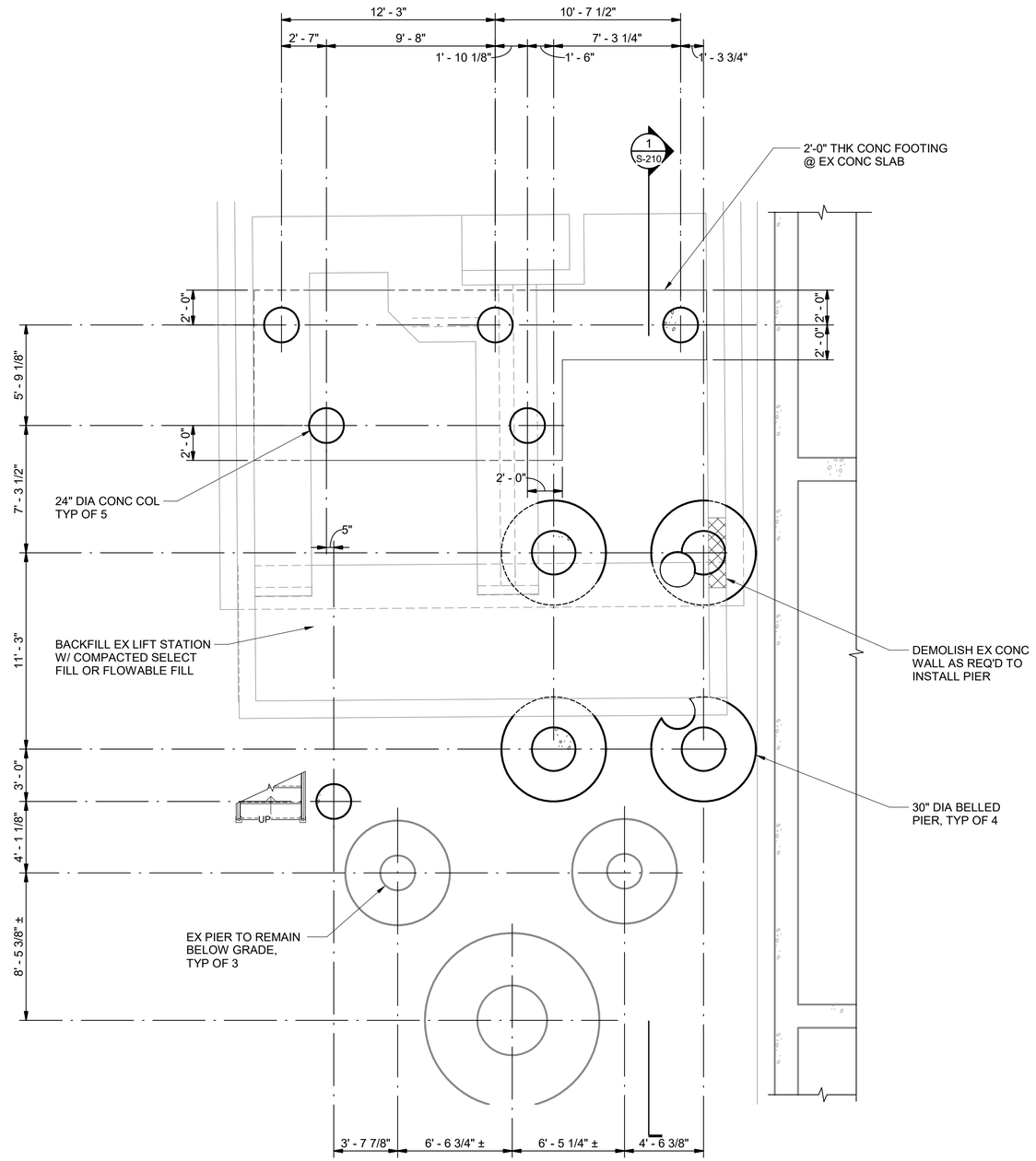

1 S-206 FOUNDATION PLAN
1/4" = 1'-0"

NORTH

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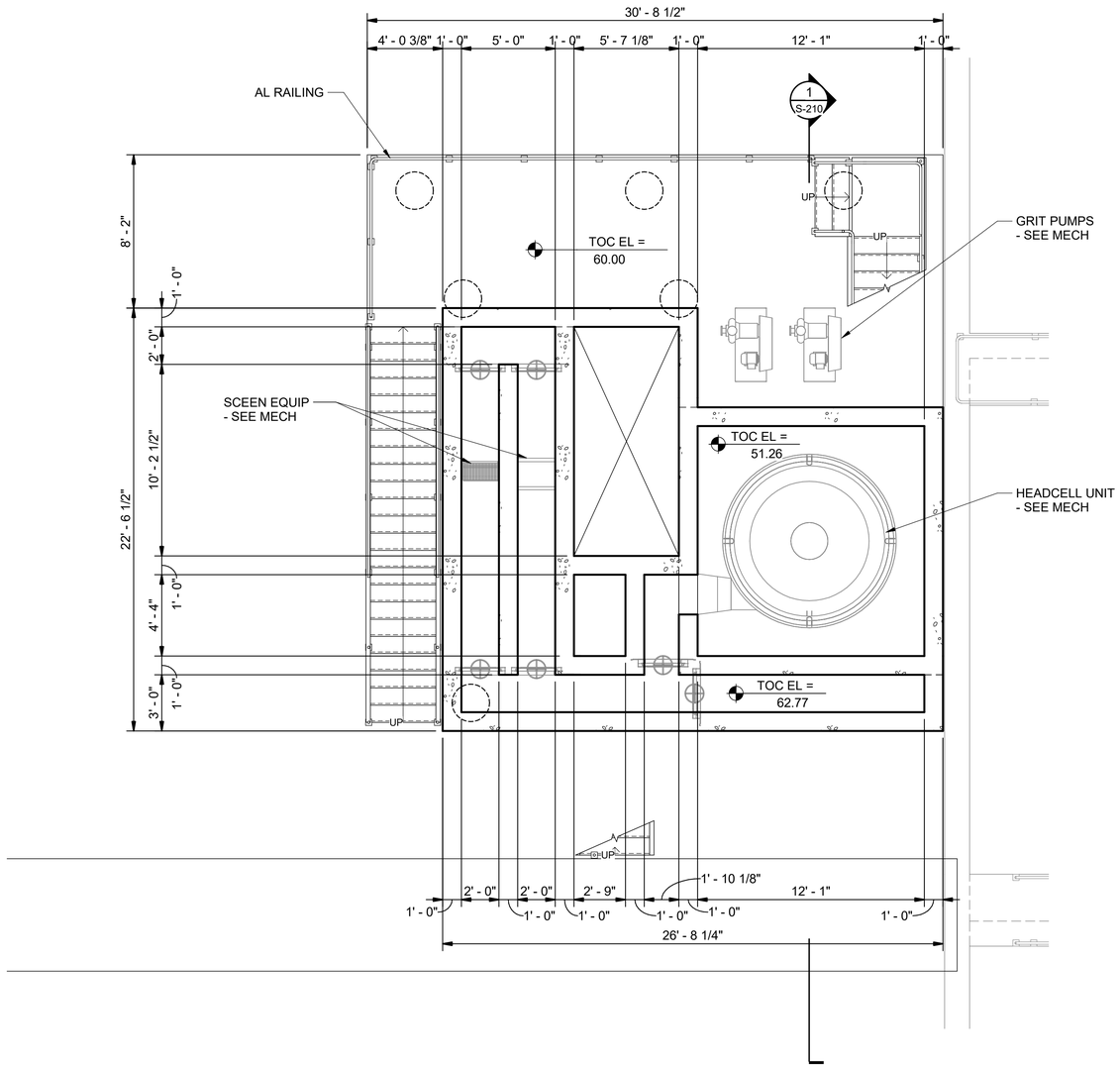

1 S-207 HEADWORKS INTERMEDIATE PLAN

1/4" = 1'-0"

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HEADWORKS INTERMEDIATE PLAN

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1 S-208 HEADWORKS UPPER PLAN
1/4" = 1'-0"

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HEADWORKS UPPER PLAN

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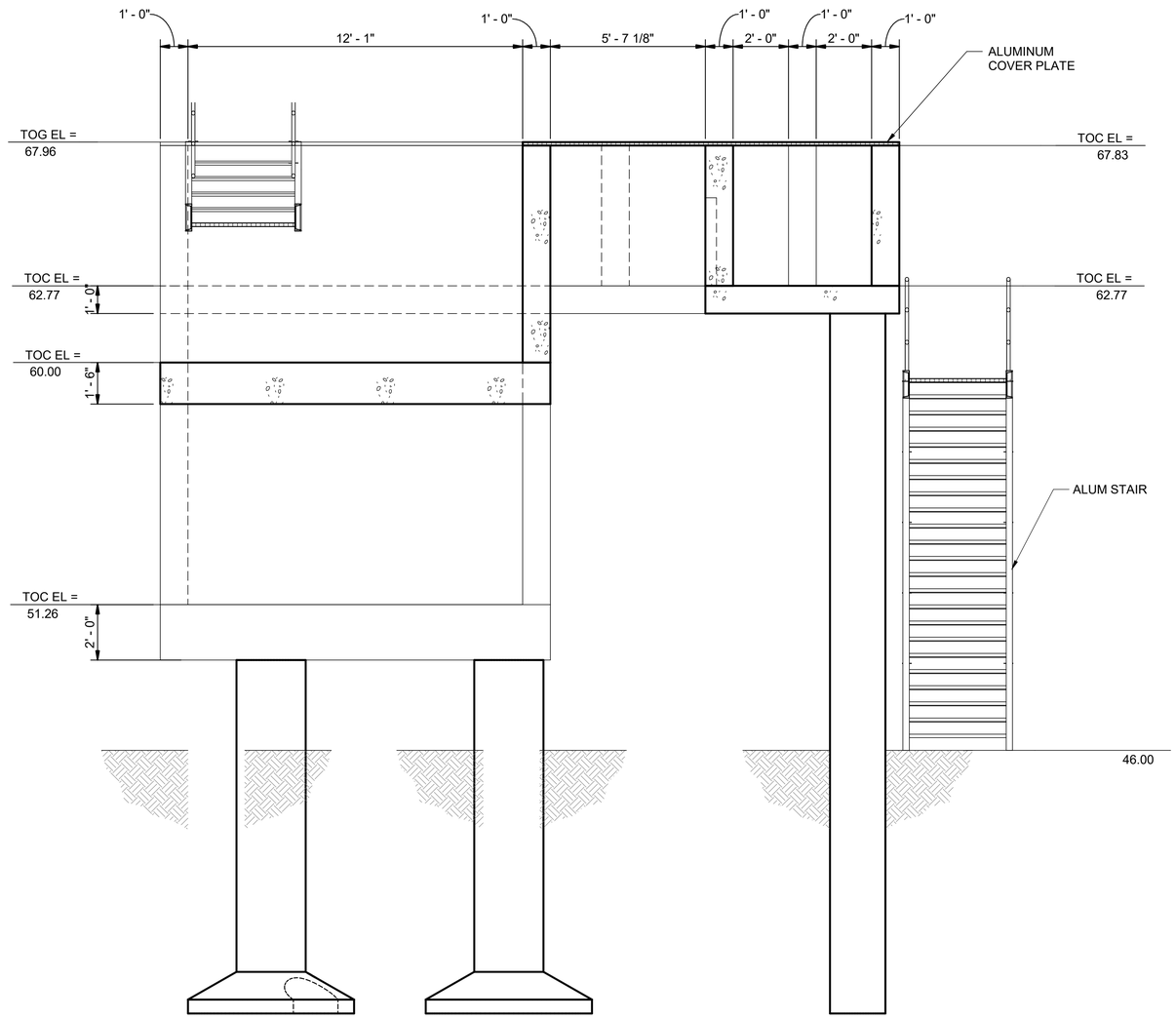

1 S-209 SECTION
3/8" = 1'-0"

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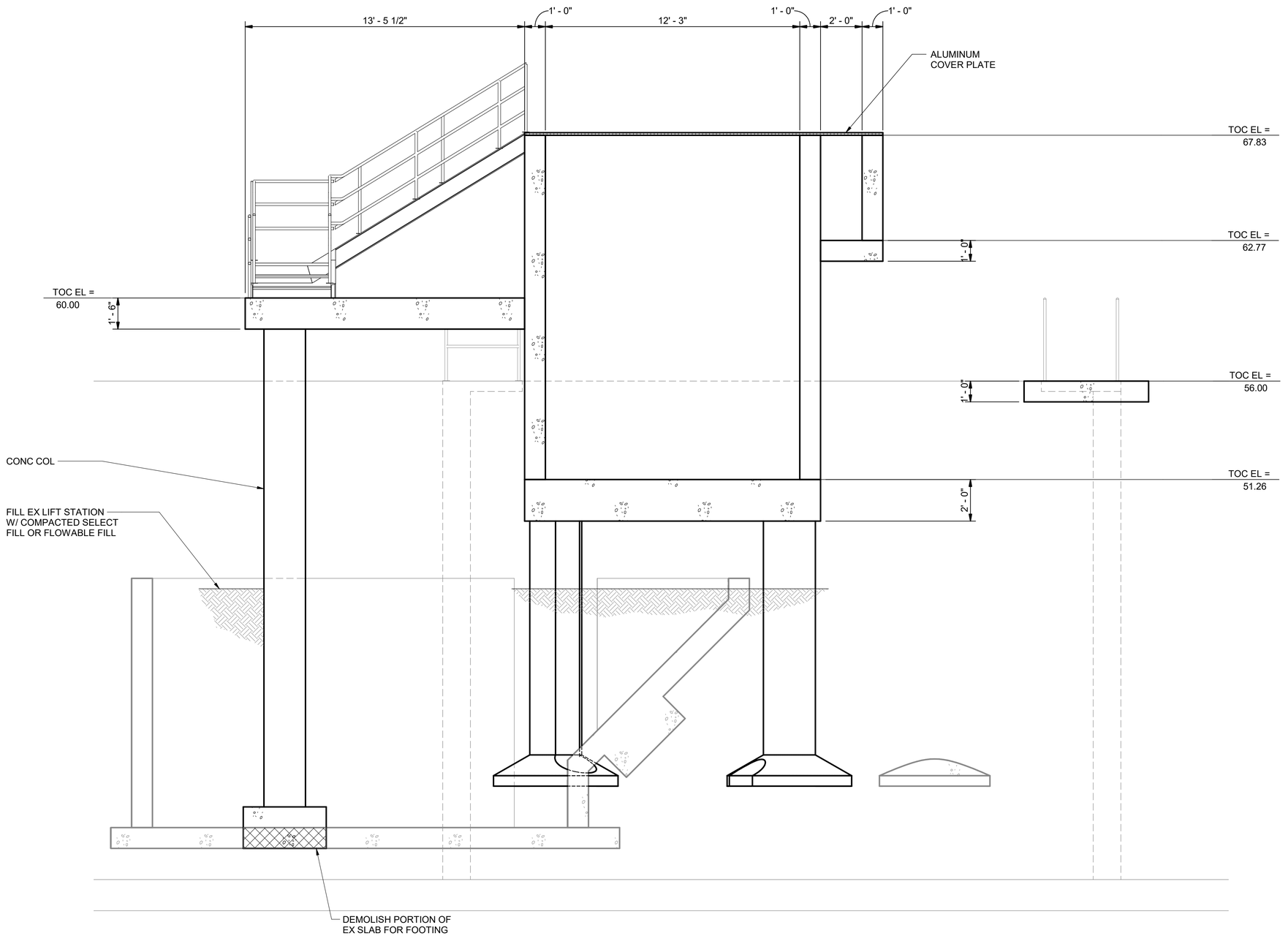

1 S-210 SECTION
3/8" = 1'-0"

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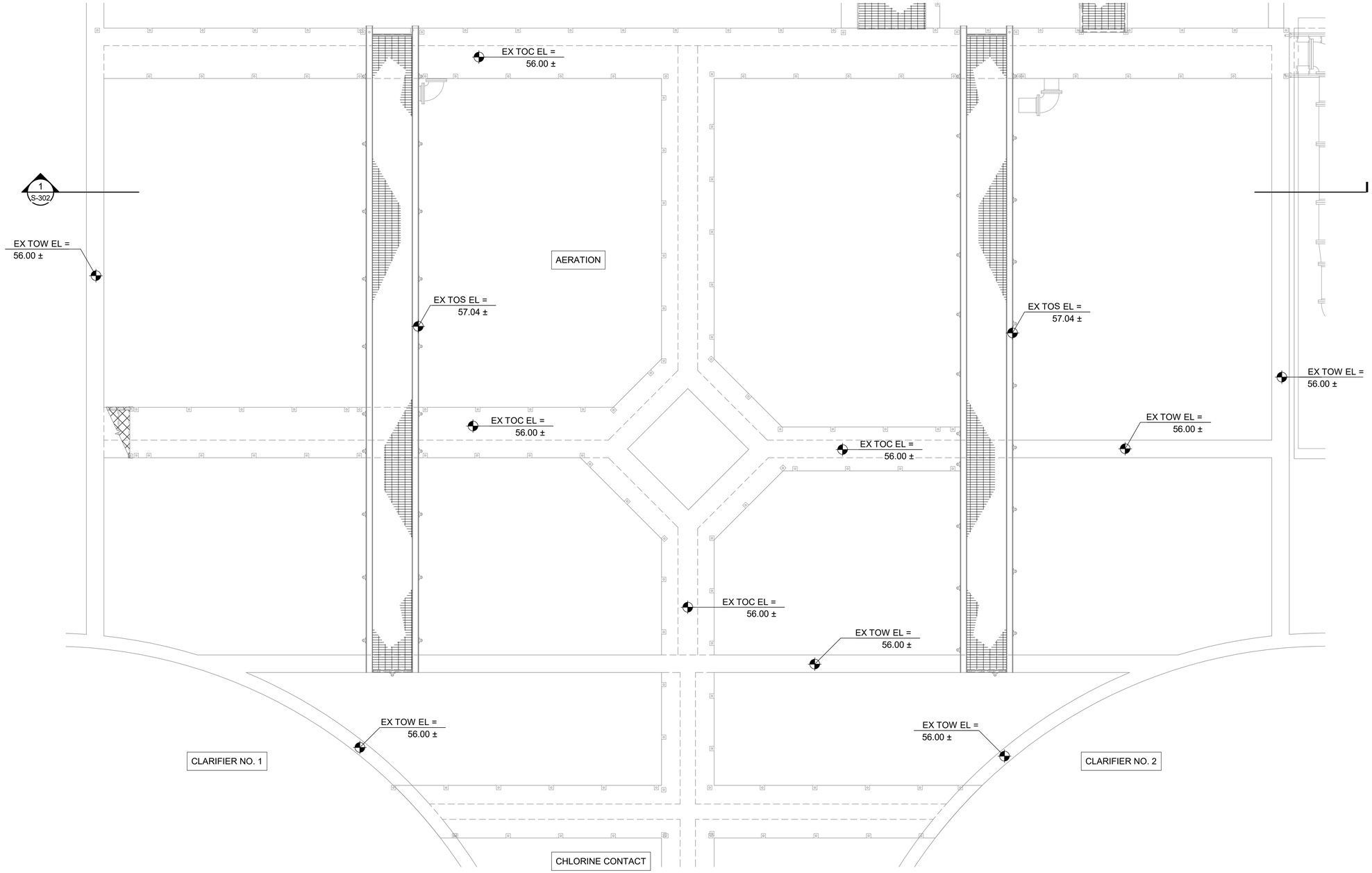

1 S-301 AERATION BASIN UPPER PLAN
1/4" = 1'-0"

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AERATION BASIN UPPER PLAN

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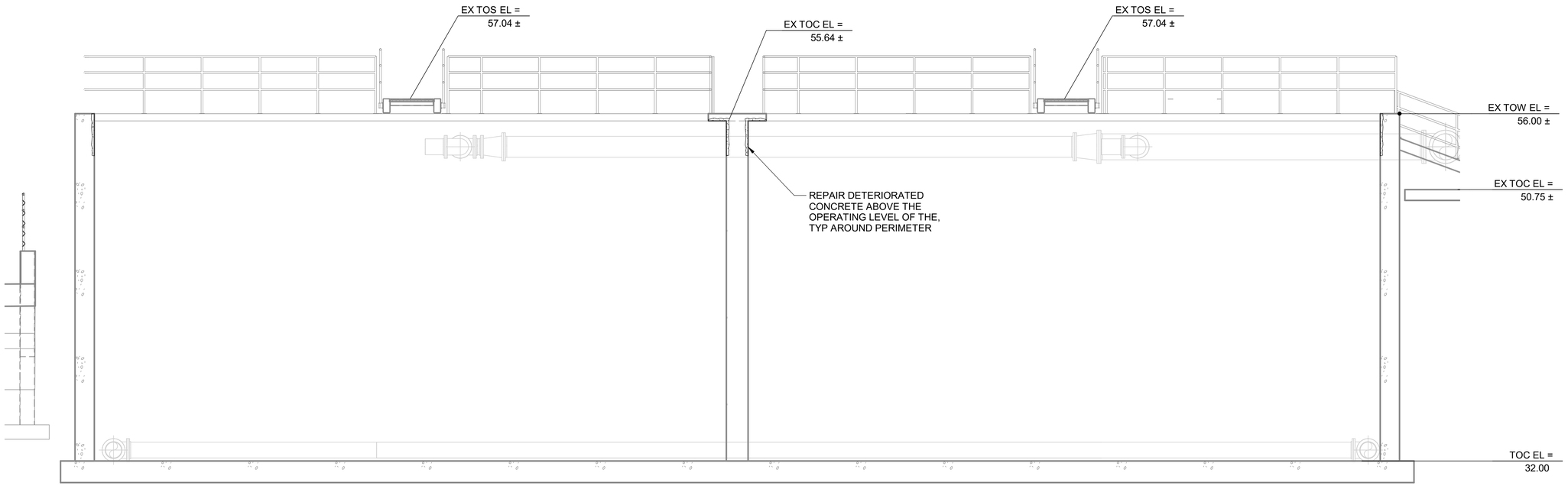

1 / S-302 OVERALL SECTION
1/4" = 1'-0"

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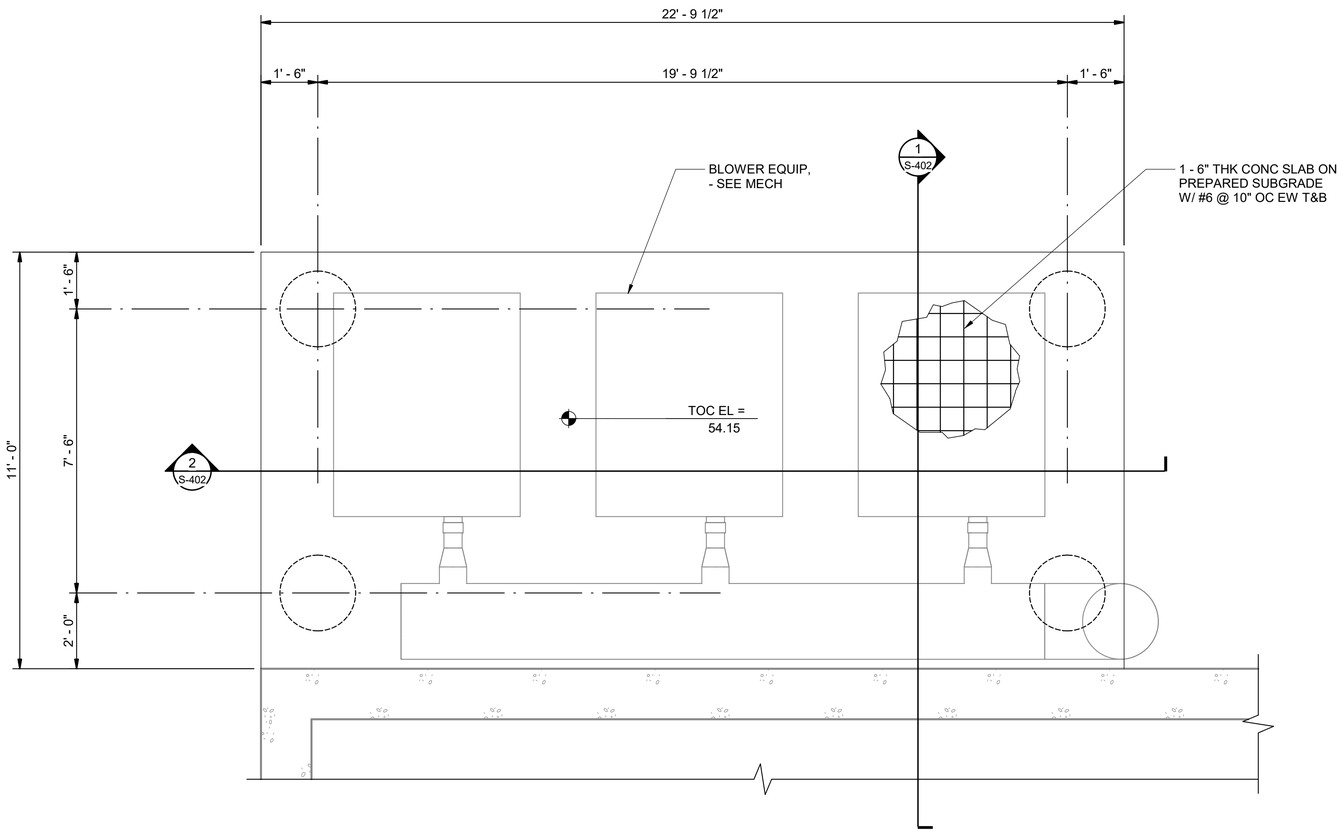

1 S-401 BLOWER PAD FOUNDATION PLAN
1/2" = 1'-0"

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BLOWER PAD FOUNDATION PLAN

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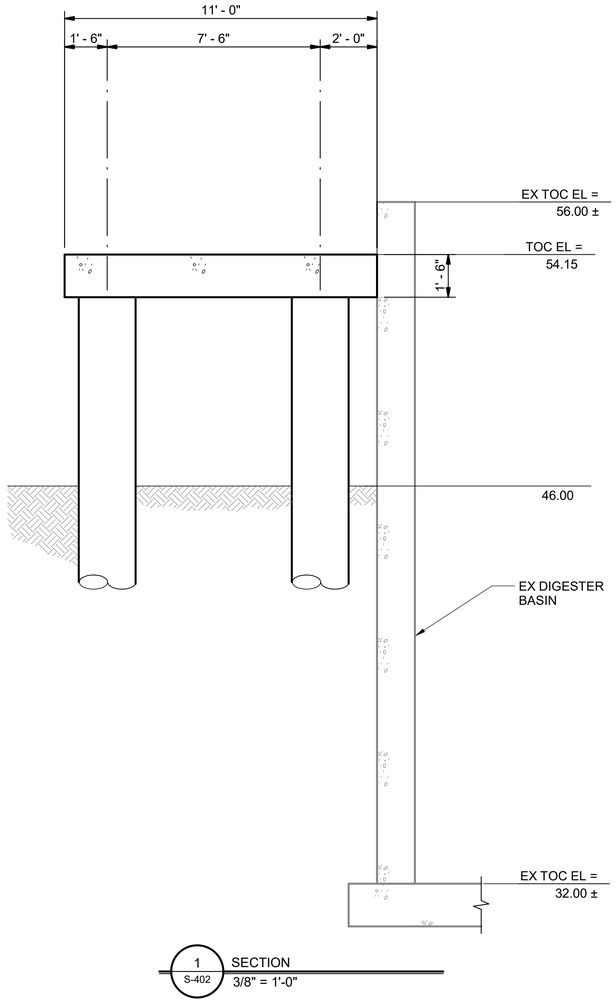
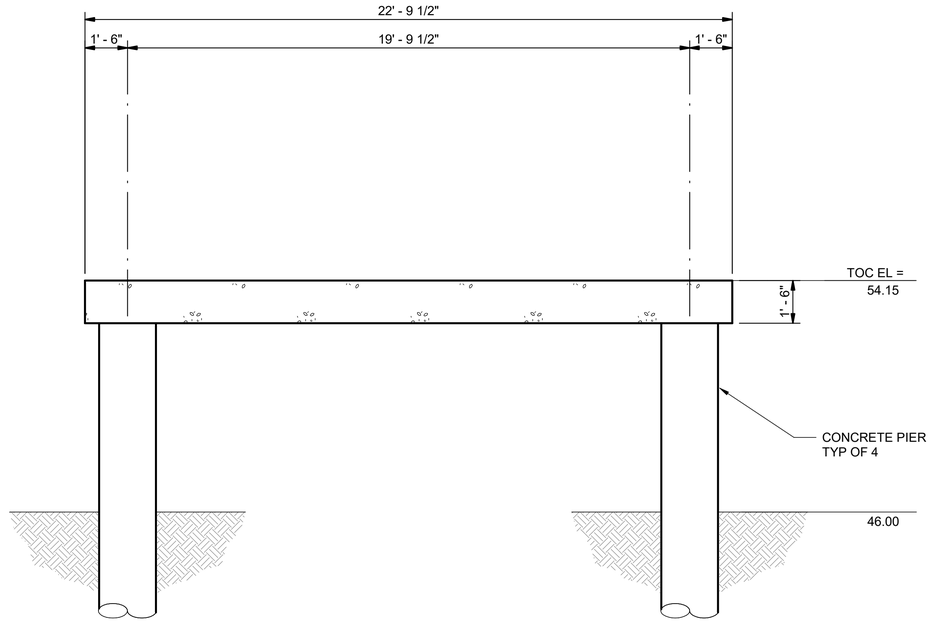


1 S-402 SECTION
3/8" = 1'-0"



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

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BLOWER PAD SECTIONS

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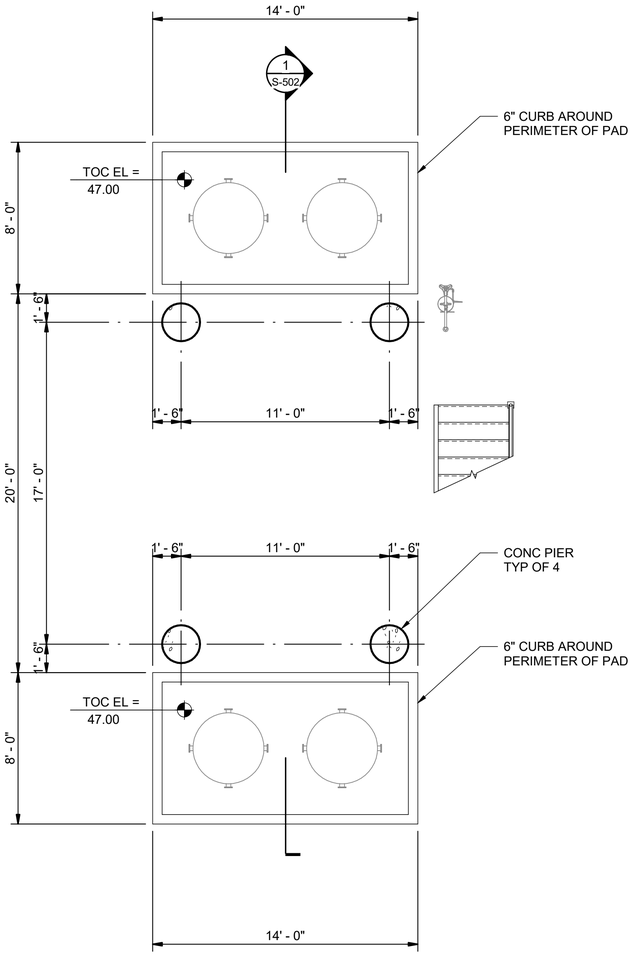
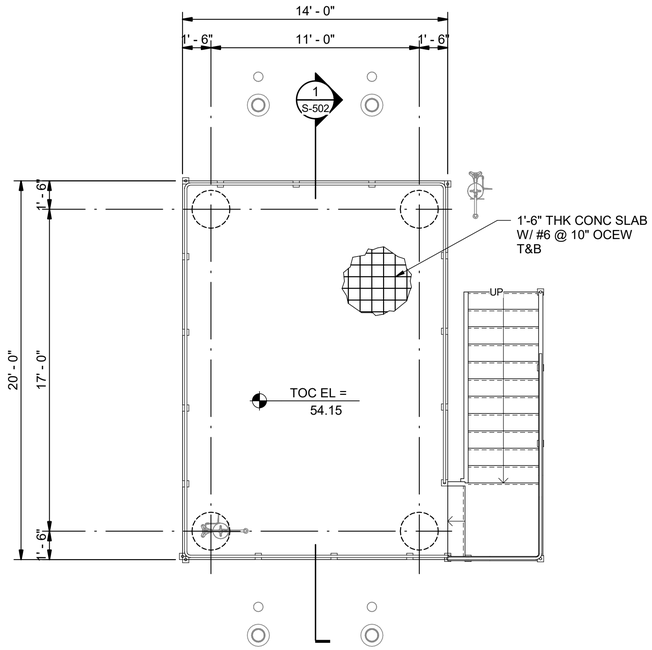


1 S-501 DISINFECTION PAD FOUNDATION PLAN
1/4" = 1'-0"



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

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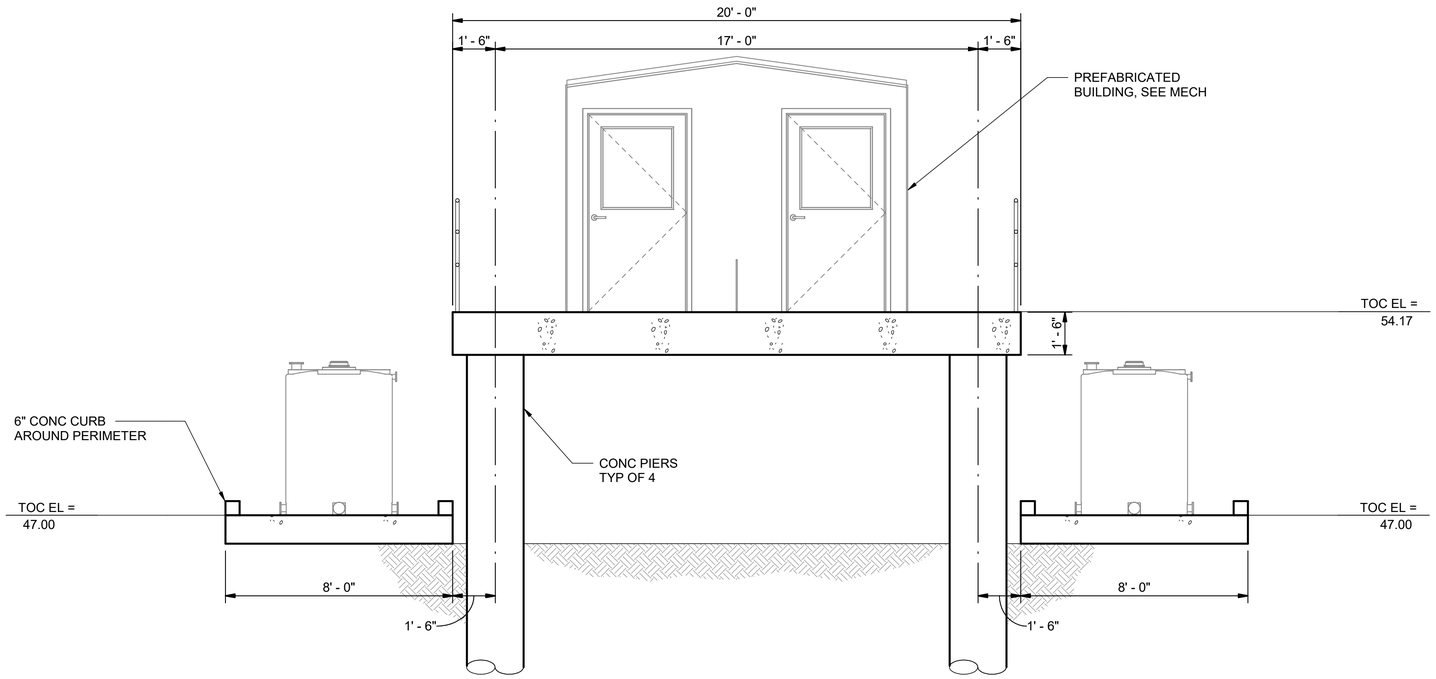

1 SECTION
S-502 3/8" = 1'-0"

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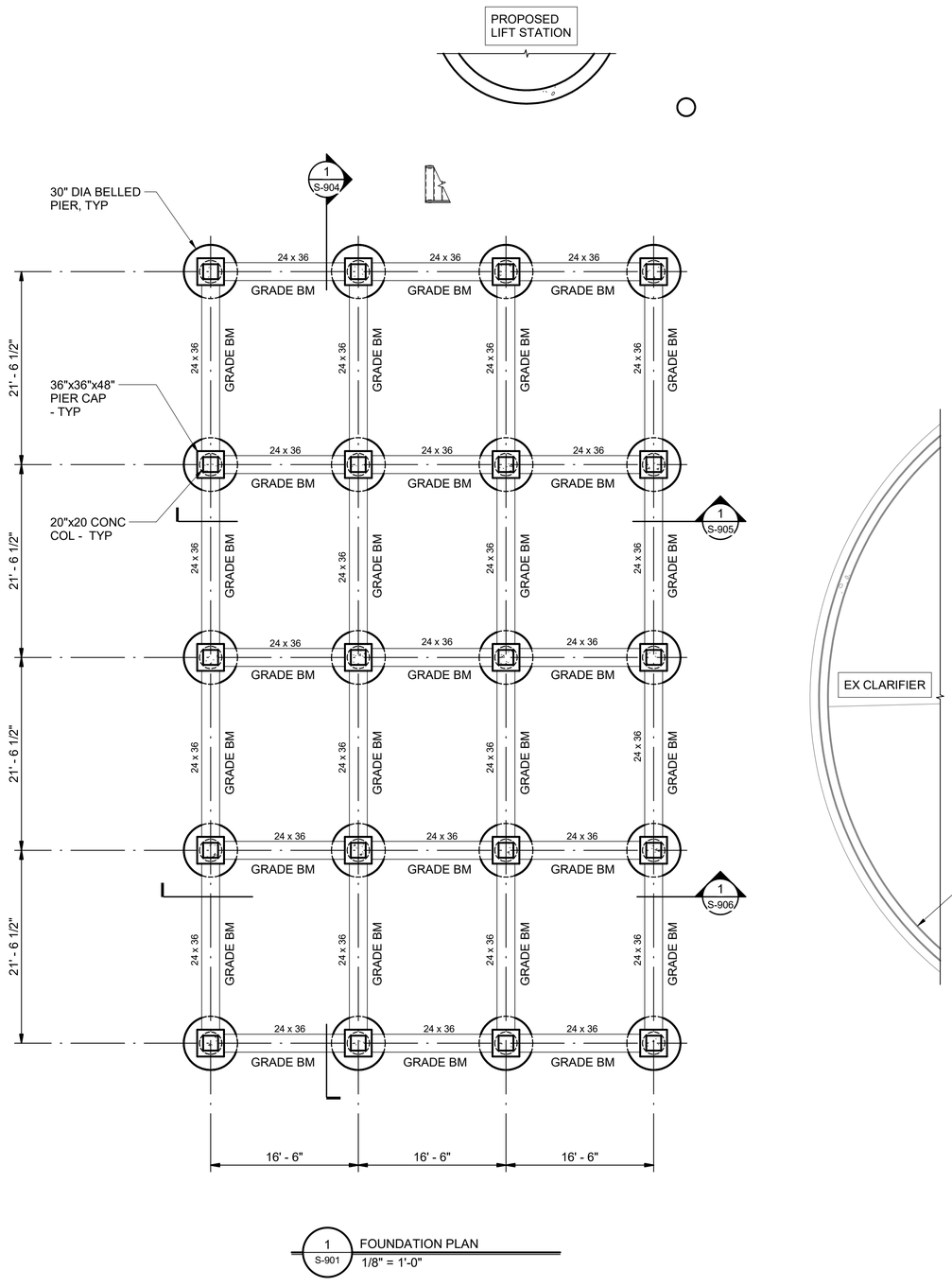

1 FOUNDATION PLAN
S-901 1/8" = 1'-0"

NORTH

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JOHN D. MEHNOTT
TEXAS REGISTRATION No.137598
DATE: JUNE 2022

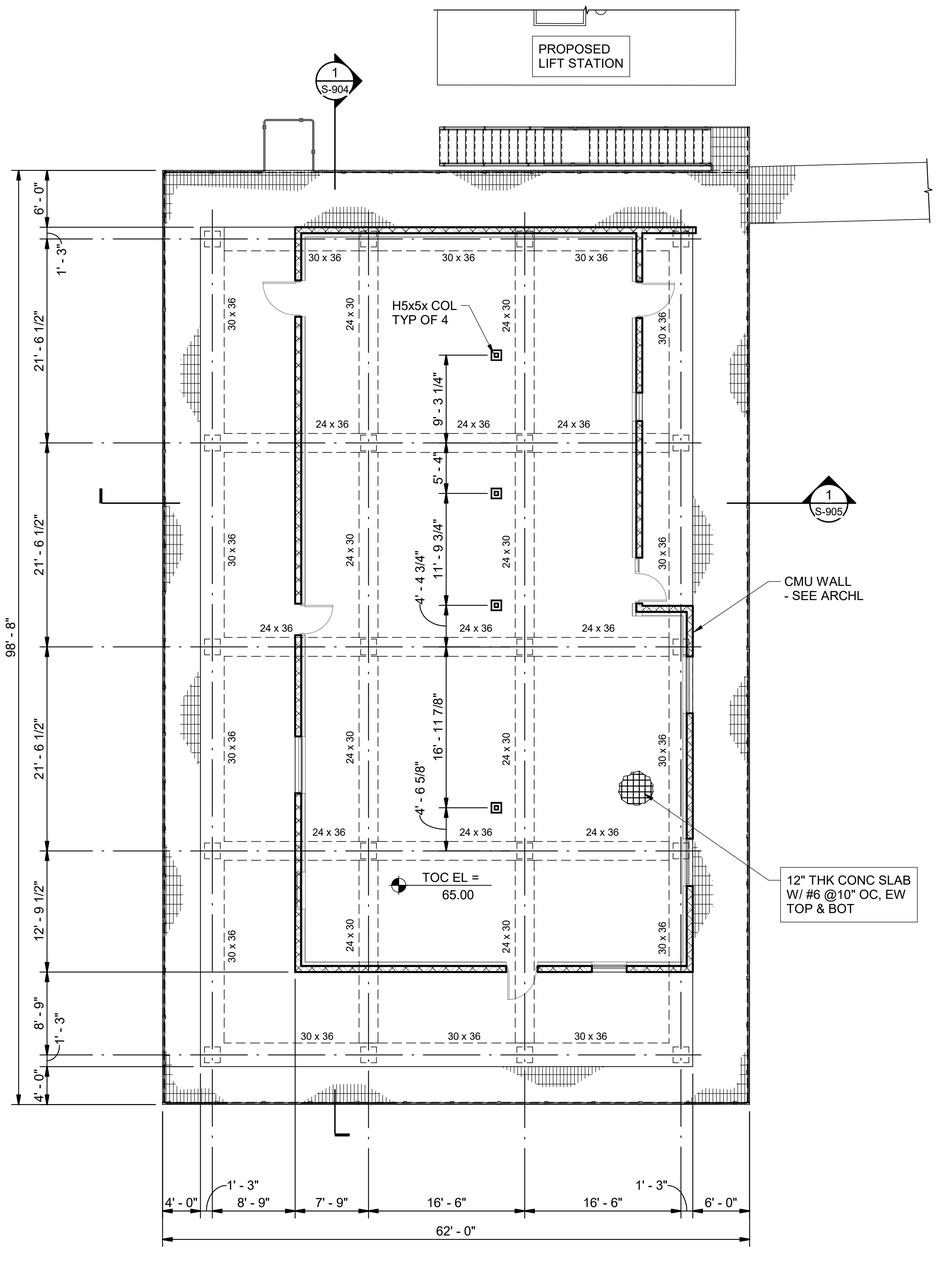
WWTP IMPROVEMENTS

CONTROL BUILDING FOUNDATION PLAN

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

SHEET
S-901

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-902 INTERMEDIA FLOOR PLAN
1/8" = 1'-0"

NORTH

Kimley»Horn
11700 Katy Freeway, Suite 800, Houston, TX 77079 P: 281 597 9300
TBPE No. 328

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TEXAS REGISTRATION No.137598
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CONTROL BUILDING
INTERMEDIATE PLAN

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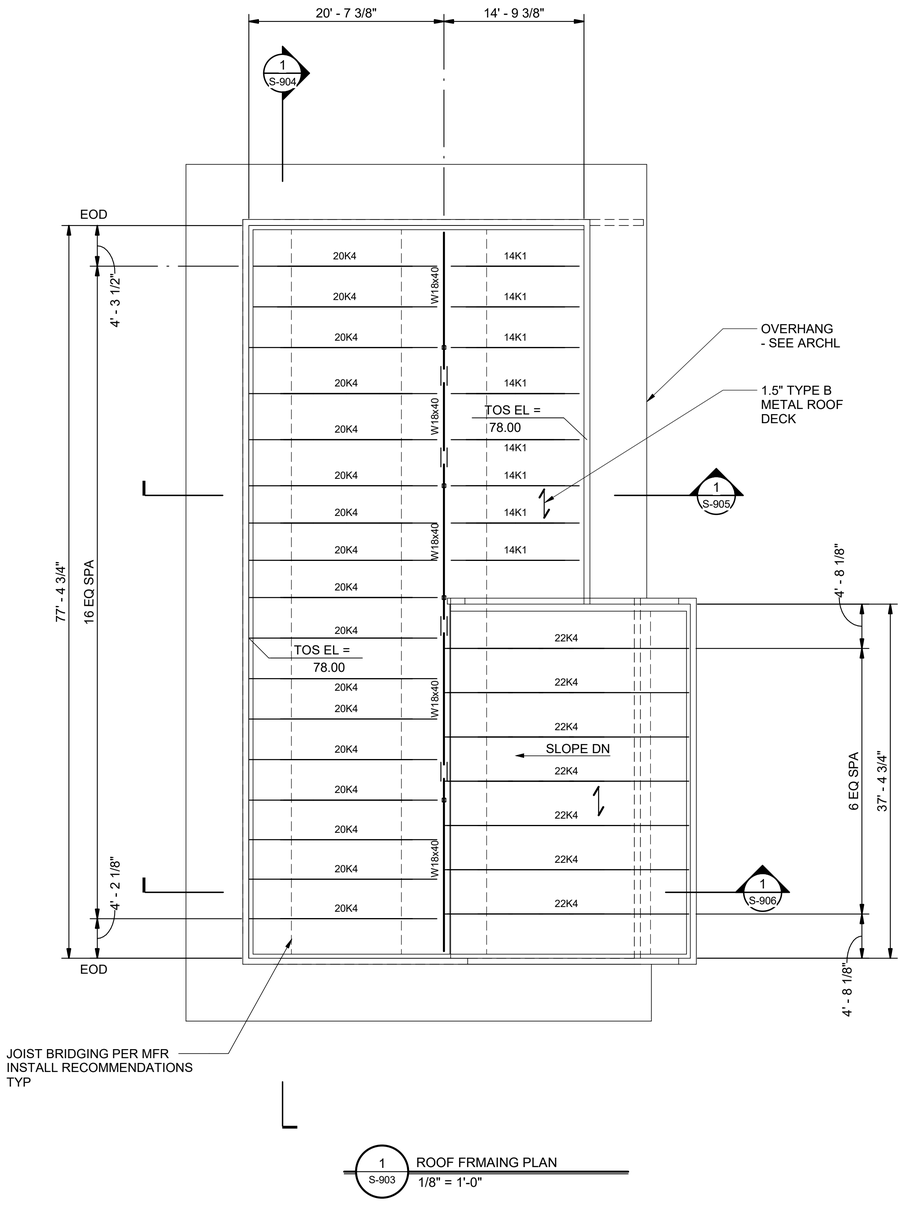
Autodesk Docs://067812104 West U WWTP/West U WWTP - Struct_R22.rvt



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

NORTH

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TEXAS REGISTRATION No.137098
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CONTROL BUILDING ROOF FRAMING PLAN

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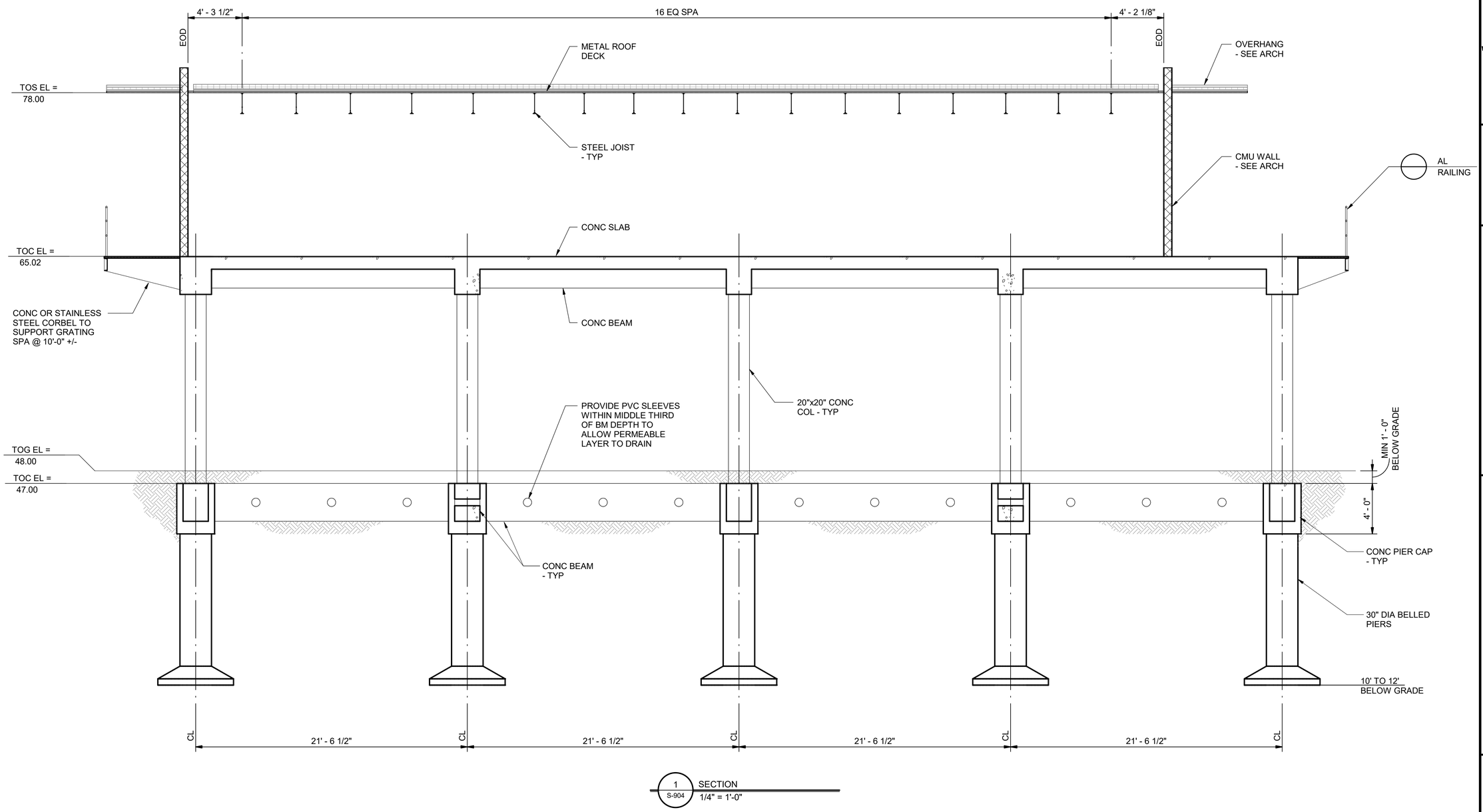

1 S-904 SECTION
1/4" = 1'-0"

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CONTROL BUILDING SECTION I

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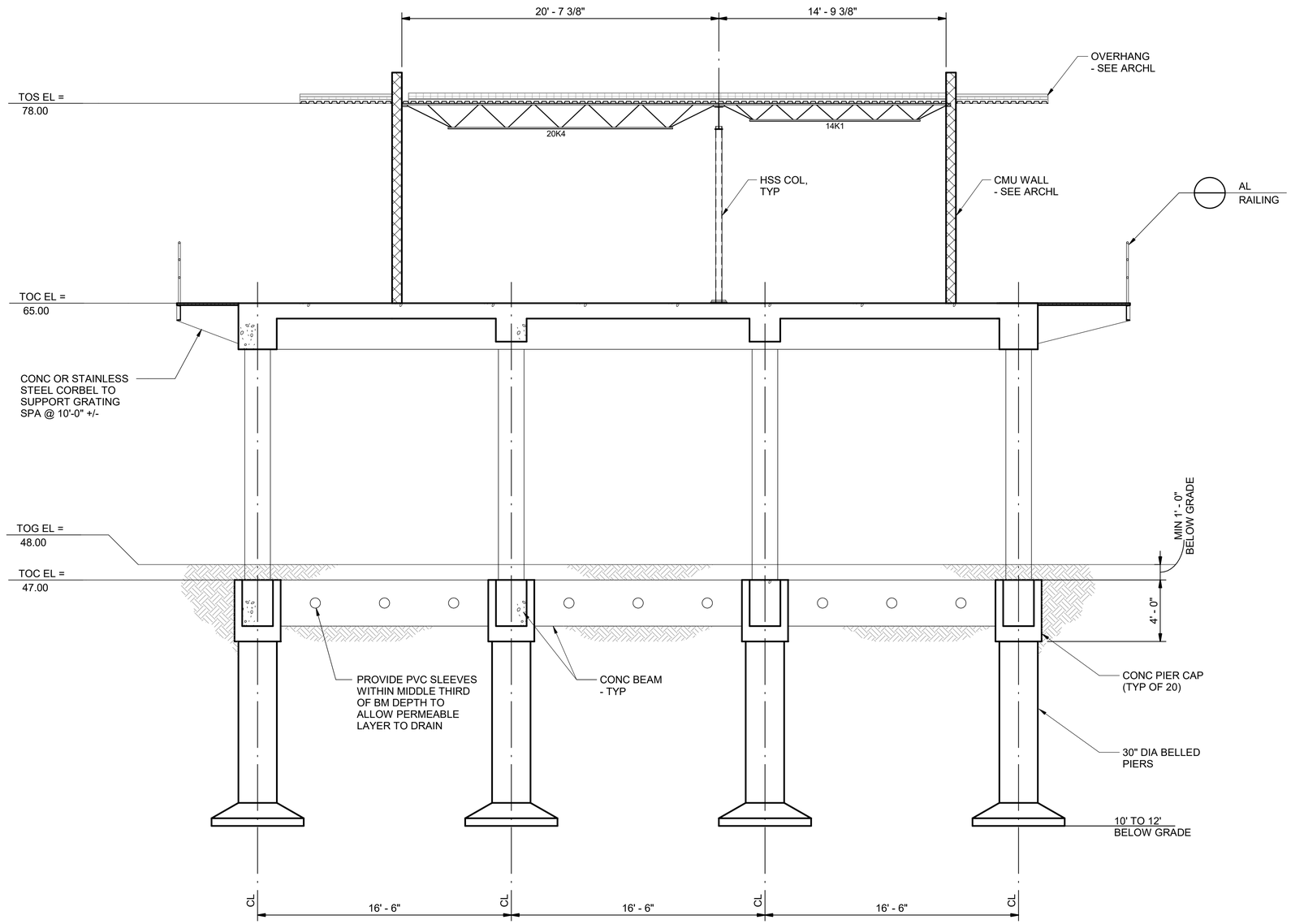

1 S-905 SECTION
1/4" = 1'-0"

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

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WWTP IMPROVEMENTS

CONTROL BUILDING SECTION II

DATE:	JUNE 2022
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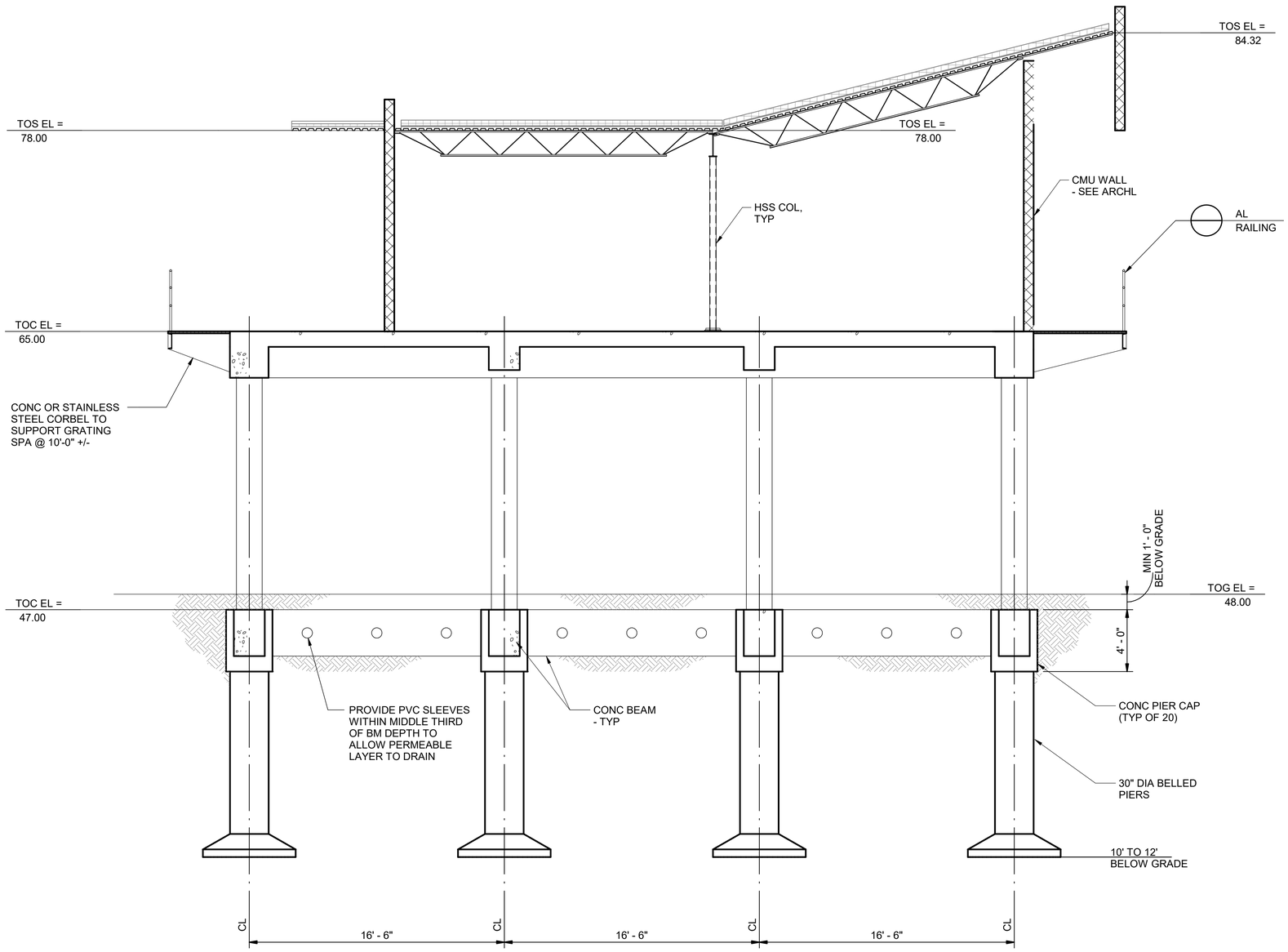

1 S-906 SECTION
1/4" = 1'-0"

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WWTP IMPROVEMENTS

CONTROL BUILDING SECTION III

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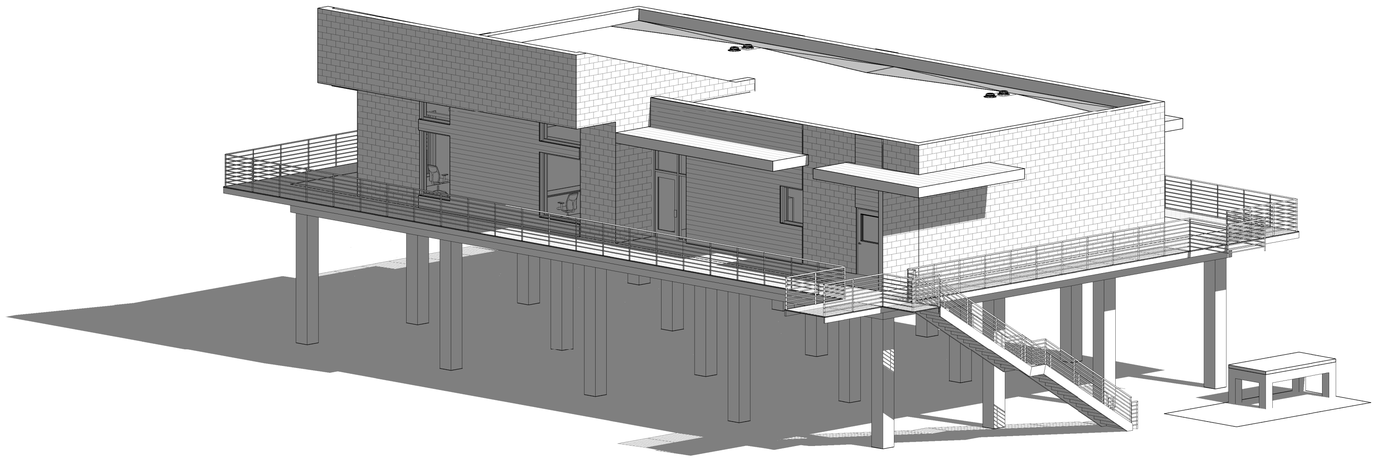
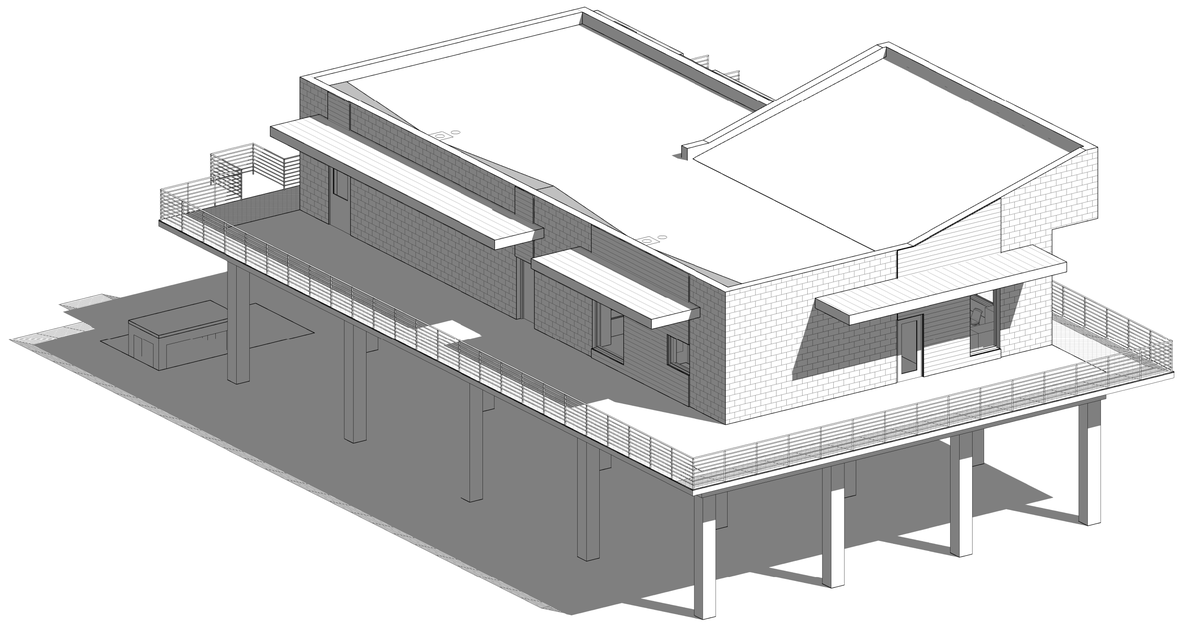


2 VIEW

A-901 SCALE: N.T.S.



1 VIEW

A-901 SCALE: N.T.S.

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING 3D MODEL VIEWS

DATE:	JUNE 23, 2022
DESIGN:	DGD
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KHA NO.:	067812104

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A-901

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(817) 738-8095

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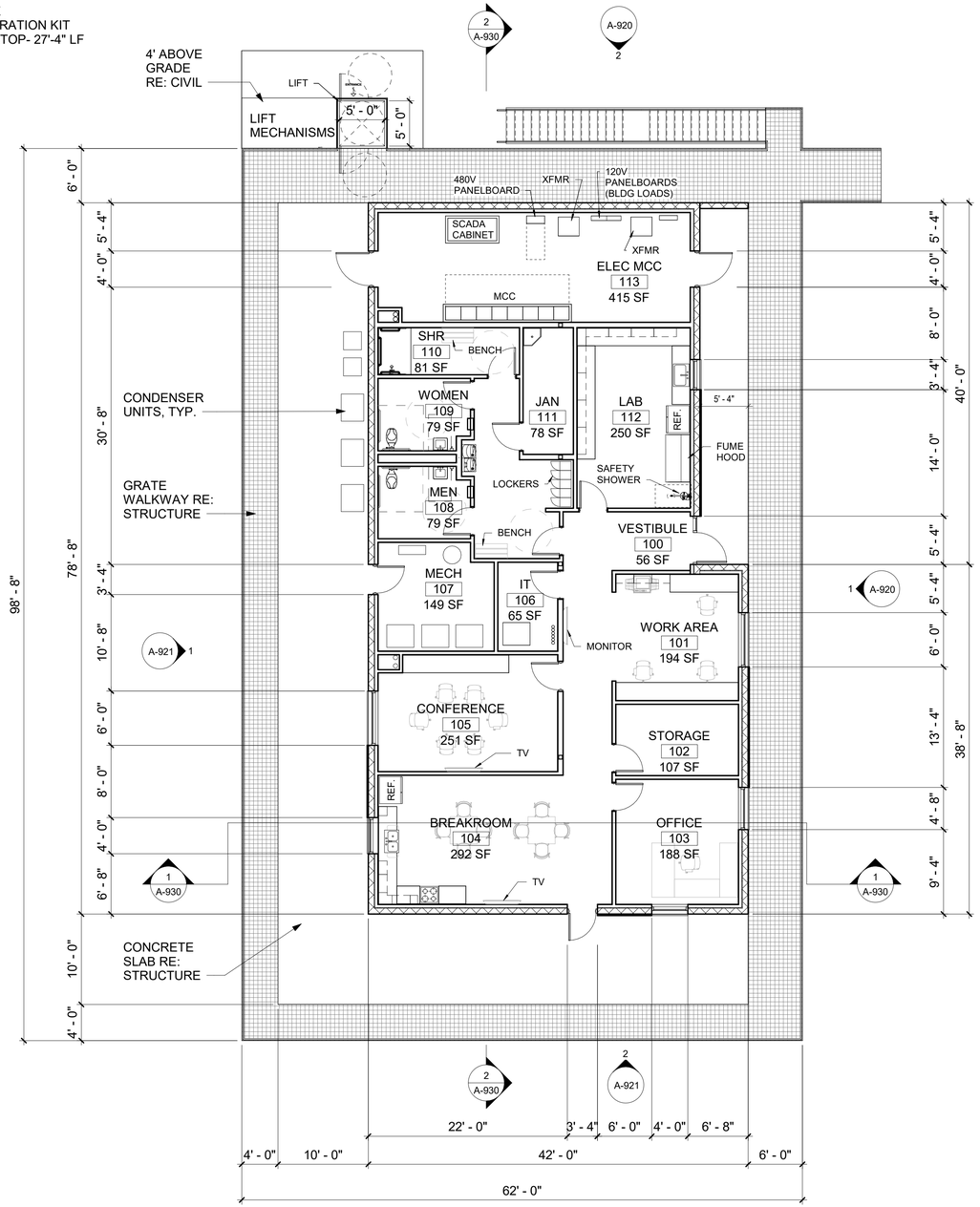
LAB EQUIPMENT TO INCLUDE:

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

36" HEIGHT COUNTERTOP- 27'-4" LF



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. WARP ALL EXTERIOR PAVEMENT AT DOORWAYS TO FINISHED FLOOR WITH SLOPE NOT EXCEEDING 1.5% FOR 5' IN EACH DIRECTION.

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

F. PROVIDE A RECESSED MOUNTED KNOX BOX WITH AN ALARM TIMER SWITCH. TAMPER SWITCH MUST BE WIRED INTO FIRE ALARM PANEL OR BURGLAR ALARM PANEL AS DIRECTED BY FIRE MARSHALL.

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

H. WHERE FLOOR DRAINS (FD) ARE SHOWN SLOPE FLOOR IN ROOM TO FLOOR DRAIN. COMPLY WITH TDLR FOR MAX SLOPES.

I. 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.

J. 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.

K. 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.

L. 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).

M. 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, E.I.F.S. AND PLASTER WORK WITH ALL TRADES.

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TBPE No. 928

No.	Revisions	By	Date

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING FLOOR PLAN

DATE:	JUNE 23, 2022
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WPM
KHA NO.:	067812104

SHEET

A-910

quorum
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Fort Worth, TX 76104
(817) 738-8095

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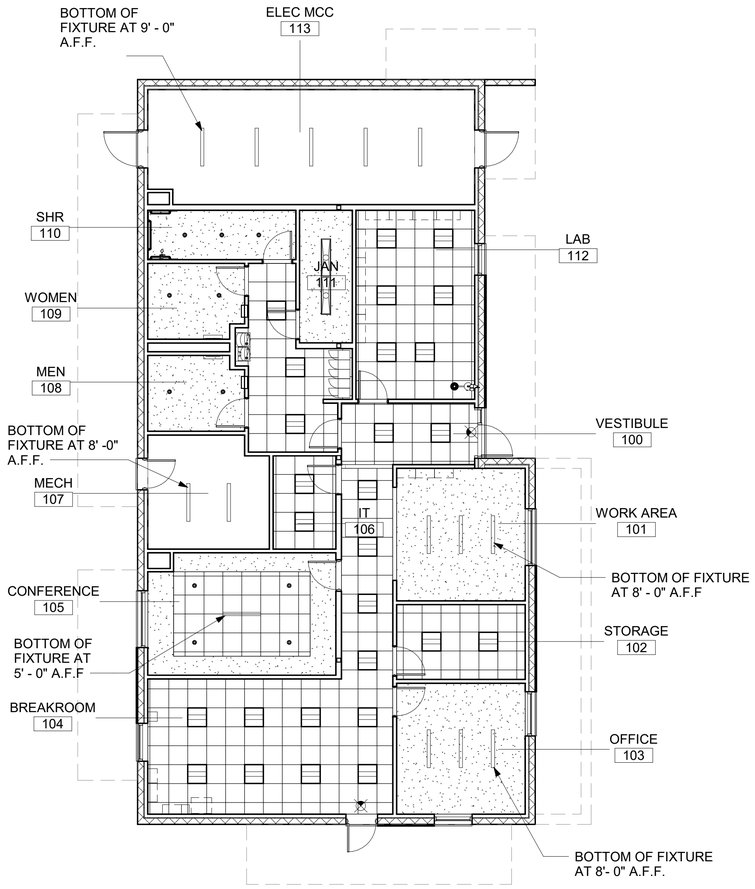

1 REFLECTED CEILING PLAN

A-911 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
- SOLATUBE DAYLIGHTING SYSTEM
- CJ — CONTROL JOINT (GENERAL NOTE D)
- EXIT SIGN
- HVAC SUPPLY DIFFUSER
- HVAC RETURN DIFFUSER
- 2' X 2' LIGHT FIXTURE
- 1' X 4' LIGHT FIXTURE
- SURFACE MOUNTED LIGHT FIXTURE
- RECESSED DOWN LIGHT
- EXTERIOR WALL SCONCE

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING REFLECTED CEILING PLAN

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
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GENERAL NOTES - ROOF PLAN

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

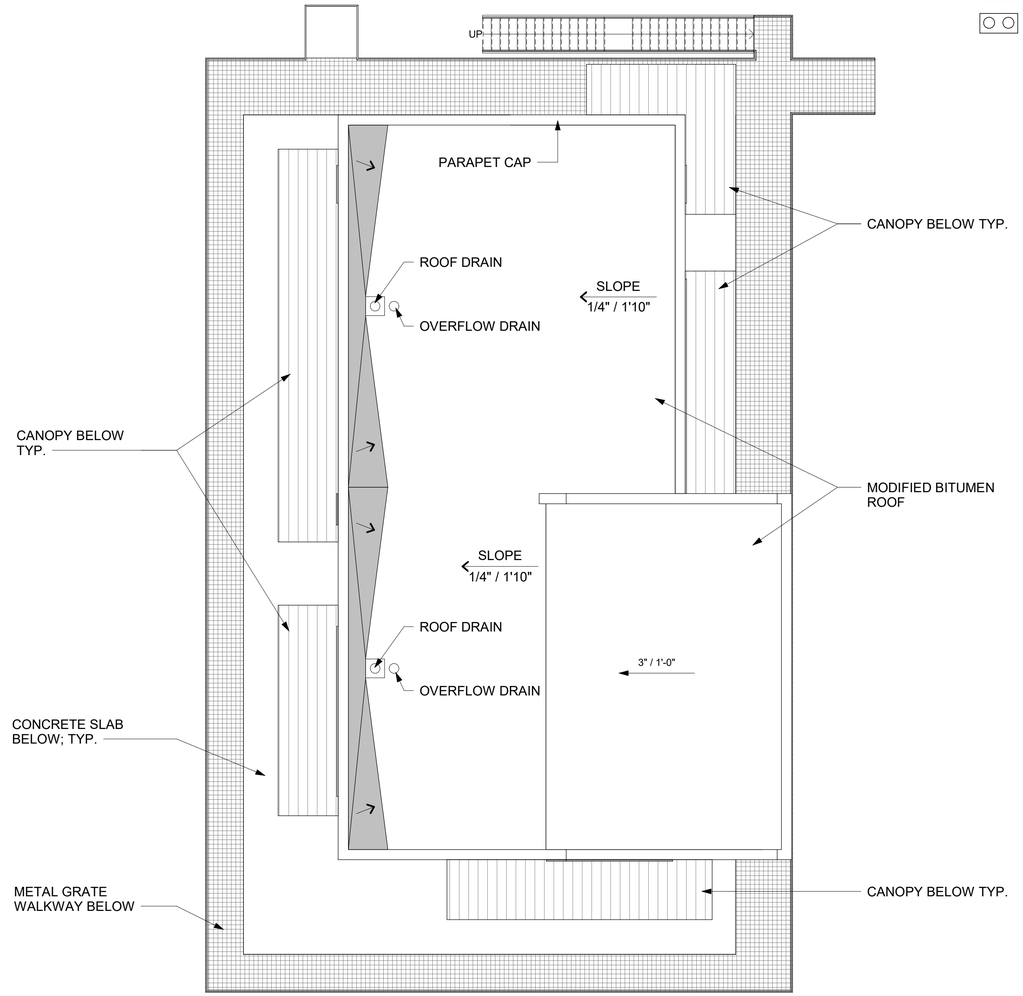
B. ENSURE ROOF DRAINS ARE MOUNTED AT AN INCH LOWER THAN THE SURROUNDING ROOF INSULATION TO CREATE A DRAINSUMP TO MOVE WATER TO THE DRAIN.

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-912 SCALE: 1/8" = 1'-0"

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING ROOF PLAN

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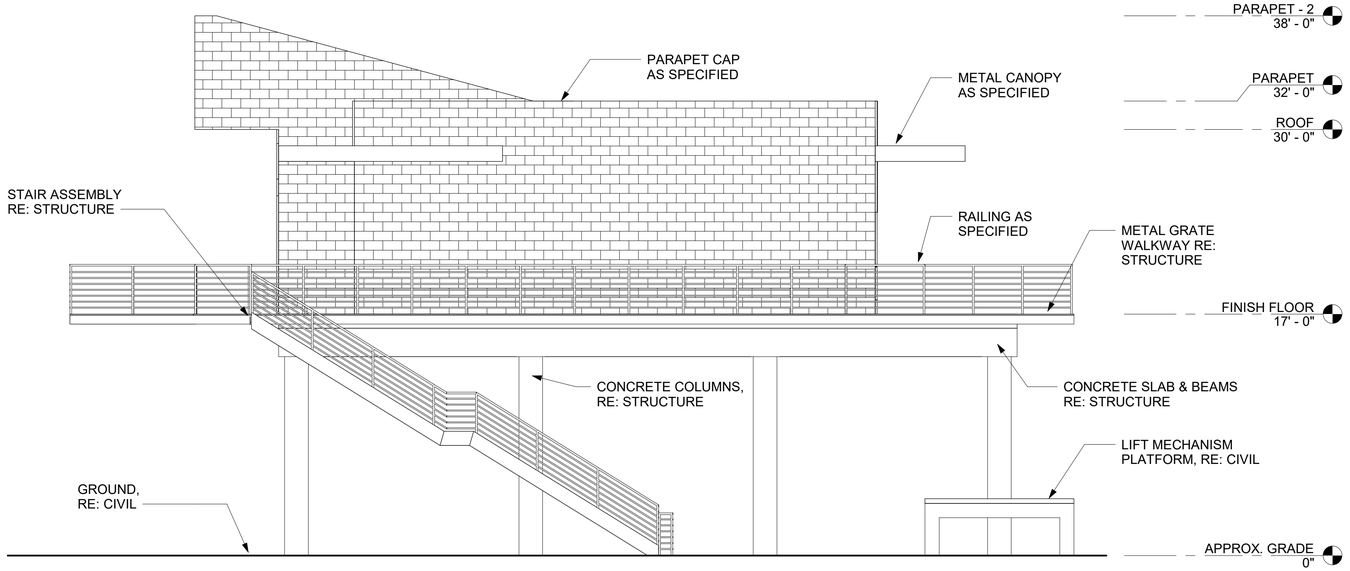
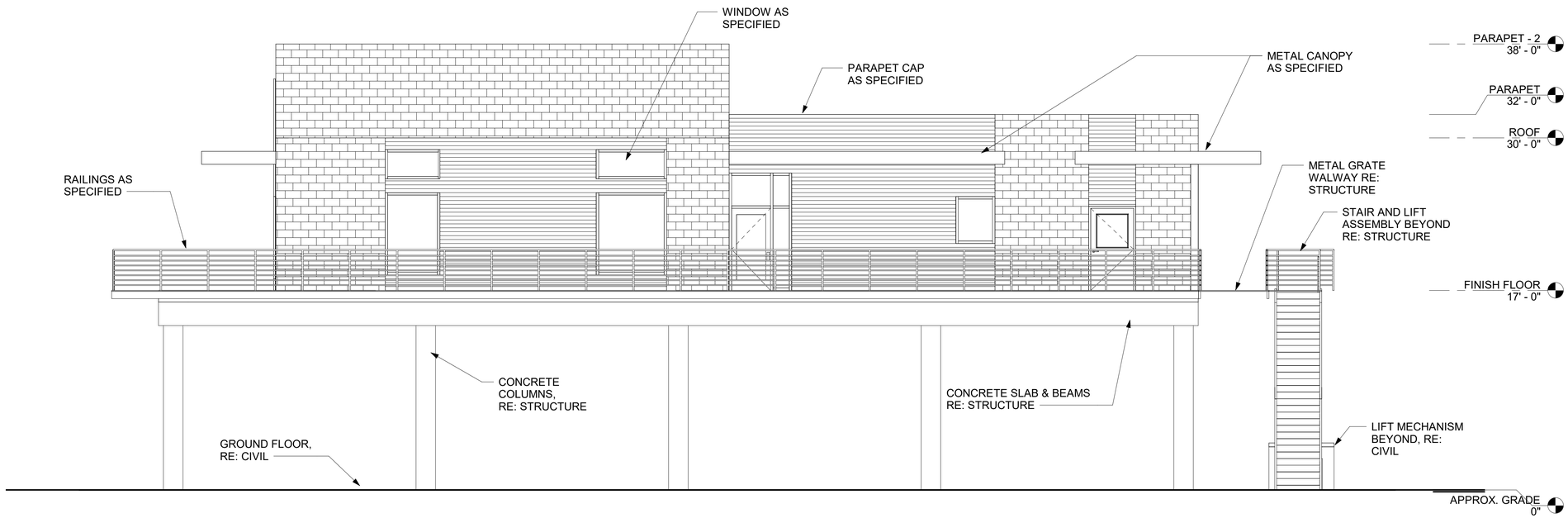


2 NORTH ELEVATION

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



1 EAST EXTERIOR ELEVATION

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

EXTERIOR FINISHES

CMU
MANUF.: TBD
COLOR: TBD

ACCENT MATERIAL
MANUF.: TBD
COLOR: TBD

OTHER MATERIALS:

MATERIAL	MANUFACTURER	COLOR
METAL WALKWAY	TBD	TBD
METAL CANOPY	TBD	TBD
ALUMING FRAMES	PER SPEC	TBD
HOLLOW METAL DOORS & FRAMES	TBD	TBD

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
ELEVATIONS

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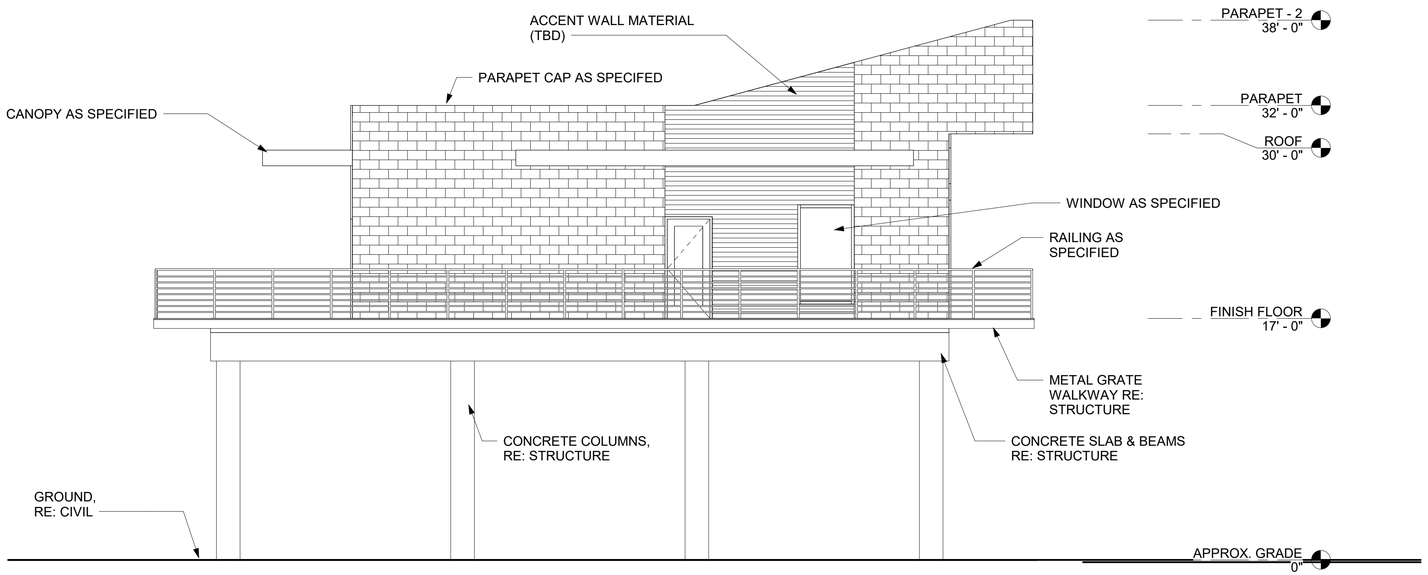
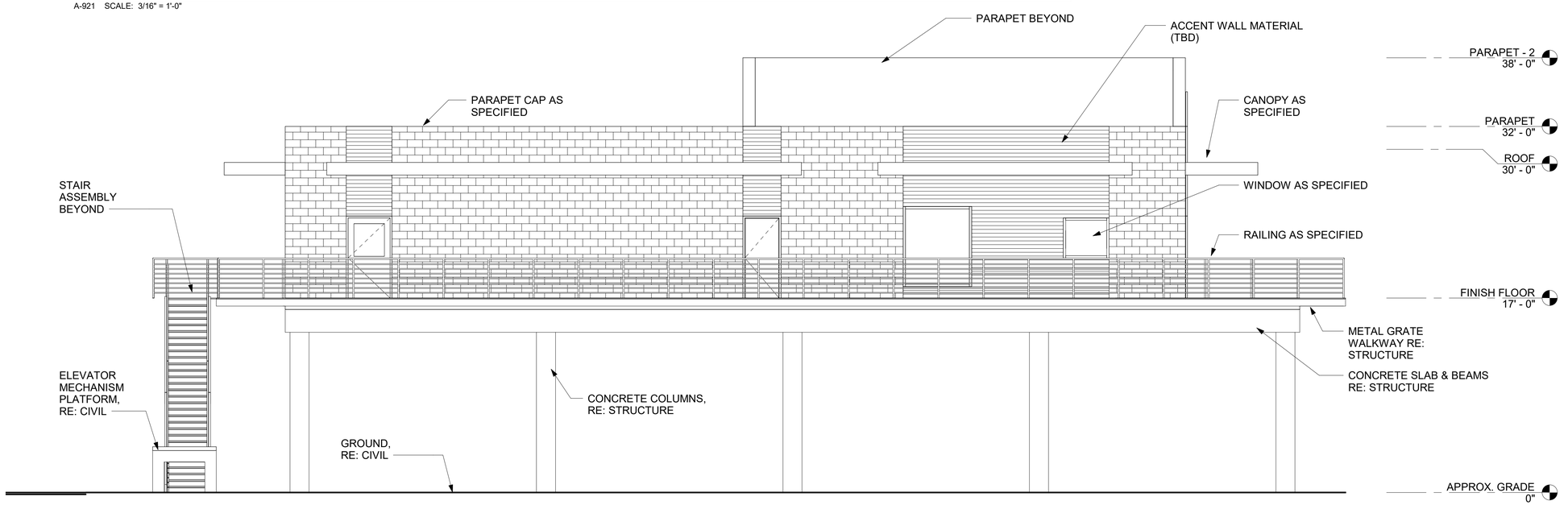


2 SOUTH EXTERIOR ELEVATION

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



1 WEST EXTERIOR ELEVATION

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

EXTERIOR FINISHES

CMU
MANUF.: TBD
COLOR: TBD

ACCENT MATERIAL
MANUF.: TBD
COLOR: TBD

OTHER MATERIALS:

MATERIAL	MANUFACTURER	COLOR
METAL WALKWAY	TBD	TBD
METAL CANOPY	TBD	TBD
ALUMING FRAMES	PER SPEC	TBD
HOLLOW METAL DOORS & FRAMES	TBD	TBD

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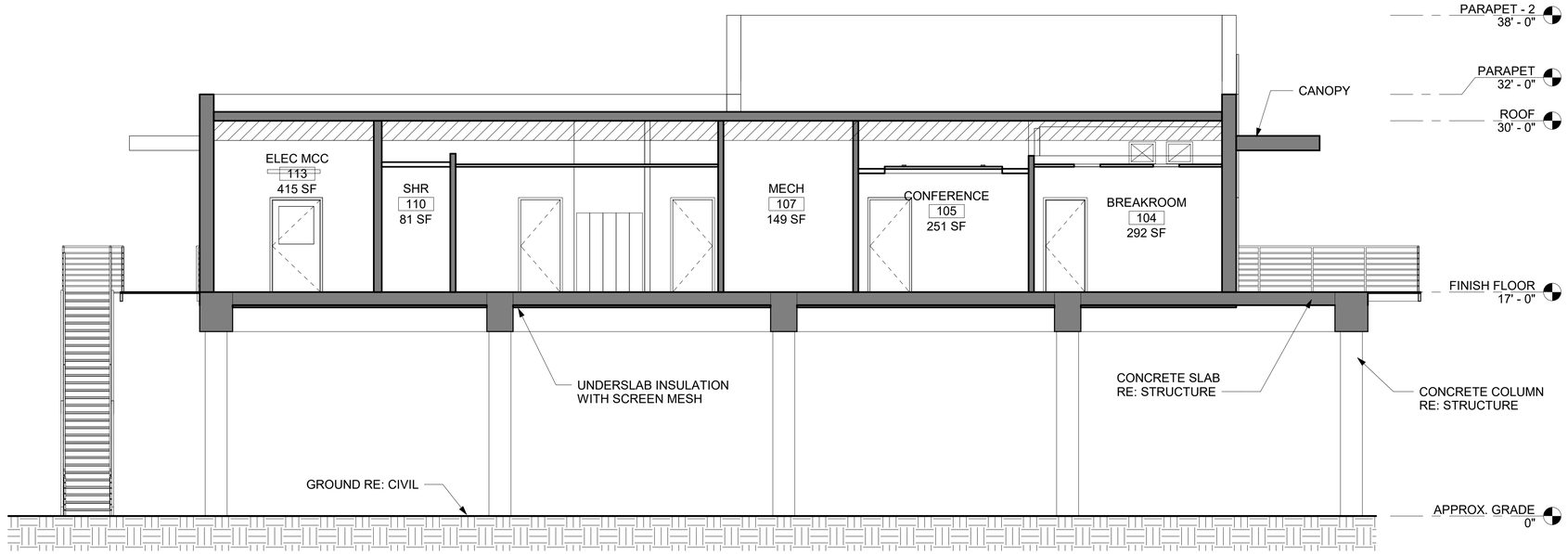
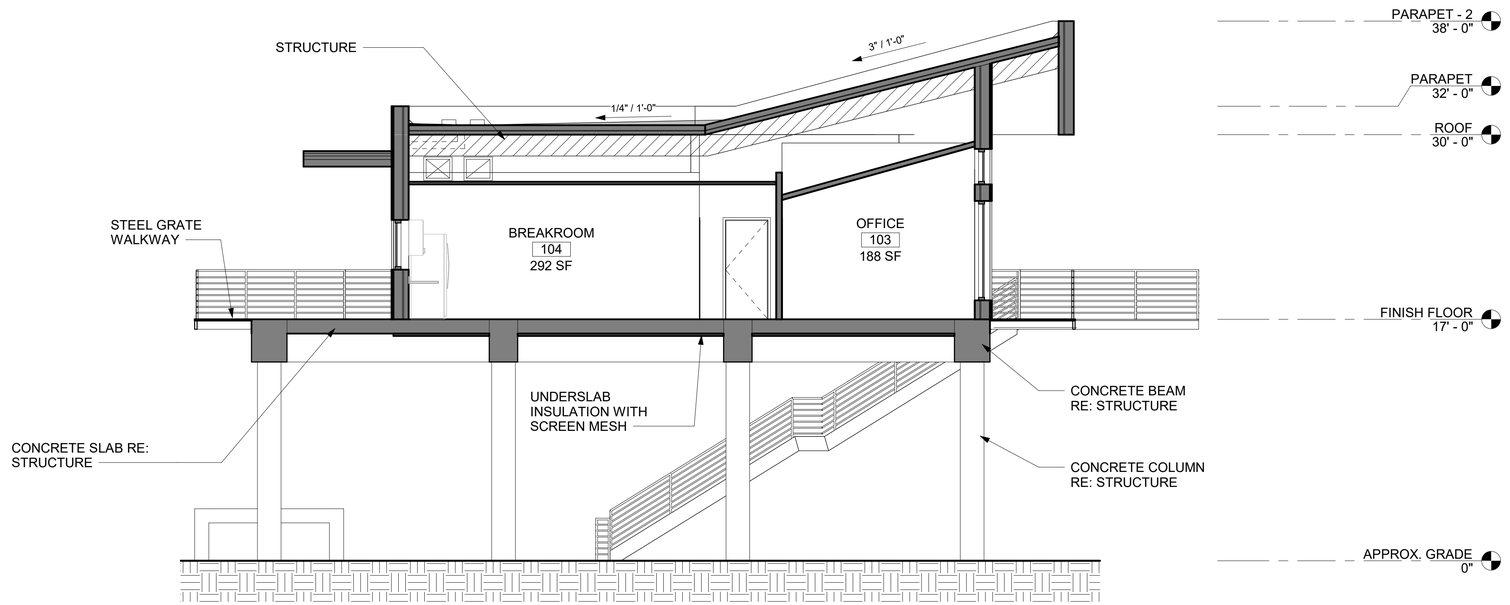


2 BUILDING SECTION

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

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