

# CITY OF HUNTSVILLE

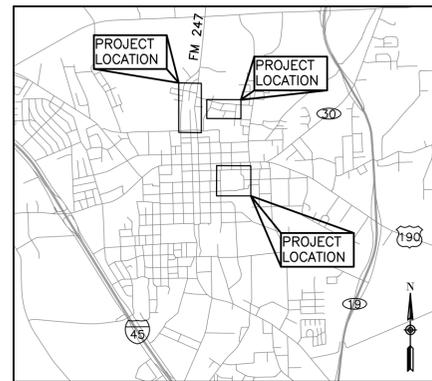
CITY PROJECT #22-10-01

14TH ST. (I TO G) & AVE I (12TH TO 14TH) WATERLINE REPLACEMENT

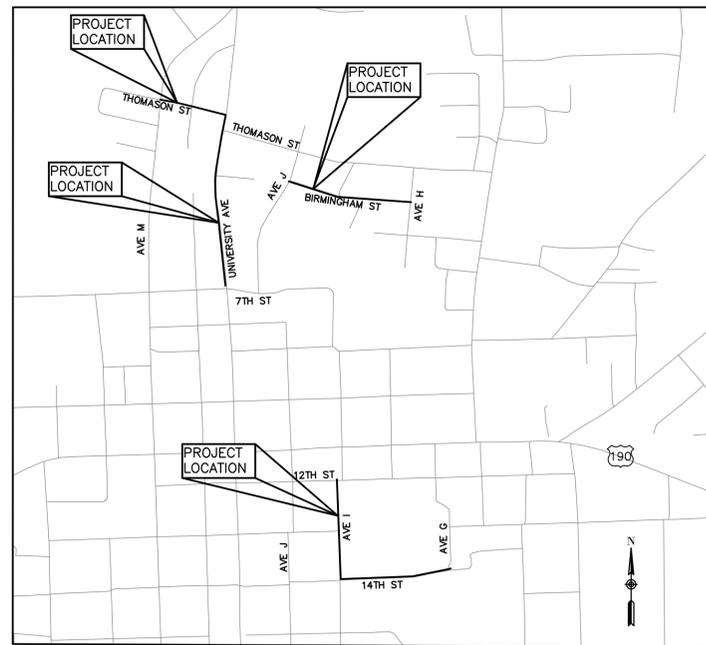
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CITY PROJECT #22-10-02

FY 2021/ 2022 MISC. WATERLINE REPLACEMENTS



LOCATION MAP



VICINITY MAP

MAYOR

ANDY BRAUNINGER

CITY MANAGER

ARON KULHAVY

COUNCIL MEMBERS

RUSSELL HUMPHREY  
 DAIQUIRI BEEBE  
 DELORIS MASSEY  
 JON STRONG  
 BERT LYLE  
 KAREN DENMAN  
 VICKI MCKENZIE  
 PAT GRAHAM

CITY ENGINEER

DR. KATHLIE JENG-BULLOCH, P.E., D.WRE, CFM

ISSUE DATE: MARCH 2023



AURORA TECHNICAL SERVICES, LLC  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-7700  
 TX FIRM NO.: F-2059



03/06/2023

CITY ENGINEER, DR. KATHLIE JENG-BULLOCH, P.E., D.WRE, CFM DATE

SHEET NO. 1 OF 62

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GENERAL CONSTRUCTION NOTES

LOCATES AND PERMITTING

1. THE LOCATION OF AT&T (COMMUNICATIONS), CENTERPOINT ENERGY (GAS), ENERGY (AKA GULF STATE UTILITIES - ELECTRIC), MID-SOUTH SYNERGY (ELECTRIC), WALLER COUNTY CABLEVISION, SUDDEN LINK CABLE, PHELPS WATER, WALKER COUNTY SUD, AND OTHER UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL REQUEST THE EXACT LOCATION OF THESE FACILITIES BY CALLING THE UTILITY COORDINATING COMMITTEE AT PHONE NUMBER 800-545-6005 OR 811, AT LEAST 48-HOURS BEFORE COMMENCING WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH OCCUR DUE TO HIS FAILURE TO REQUEST THE LOCATION AND PRESERVATION OF THESE UNDERGROUND FACILITIES.

2. CONTRACTOR SHALL CONTACT THE CITY OF HUNTSVILLE UTILITIES AT 936-294-5733 AND ENGINEERING DEPARTMENT AT 936-294-5789 A MINIMUM OF 48-HOURS PRIOR TO BEGINNING ANY WORK. WHEN APPLICABLE, CONTRACTOR SHALL NOTIFY TEXAS DEPARTMENT OF TRANSPORTATION AREA ENGINEER 48-HOURS PRIOR TO CONSTRUCTION IN THE STATE'S RIGHTS-OF-WAY AT 936-295-3462.

3. CONTRACTOR TO BE RESPONSIBLE TO OBTAIN ALL REQUIRED CONSTRUCTION PERMITS INCLUDING WALKER COUNTY, TXDOT AND CITY OF HUNTSVILLE

ENERGIZED OVERHEAD POWER LINES

1. CHAPTER 752 OF THE TEXAS HEALTH AND SAFETY CODE PROHIBITS ALL ACTIVITIES IN WHICH IT IS POSSIBLE FOR PERSONS, EQUIPMENT, OR MATERIALS TO COME WITHIN SIX FEET OF AN ENERGIZED OVERHEAD POWER LINE. FEDERAL REGULATION, TITLE 29, PART 1910.190(L) AND PART 1926.440(A)(15), ALSO CONTAIN MINIMUM CLEARANCE REQUIREMENTS FROM ANY ENERGIZED POWER LINE. INDIVIDUALS ARE RESPONSIBLE FOR THEIR OWN SAFETY AND CONTRACTORS AND OWNERS ARE LEGALLY RESPONSIBLE FOR THE SAFETY OF THEIR WORKERS UNDER THESE LAWS. IF YOU OR YOUR COMPANY MUST WORK NEAR OVERHEAD POWER LINES, CALL 1-800-ENTERGY TO BEGIN THE PROCESS OF DE-ENERGIZING OR RELOCATING THE POWER LINES AT YOUR EXPENSE. FAILURE TO DO SO COULD LEAD TO THE DEATH OR SERIOUS INJURY TO YOU OR SOMEONE ELSE AS WELL AS BE A VIOLATION OF THE ABOVE LAWS POTENTIALLY SUBJECTING YOU TO CRIMINAL AND CIVIL PENALTIES.

SURVEYING AND DIMENSIONAL CONTROL

1. ALL SURVEY CONTROL POINTS AND BENCHMARKS ARE REPORTED AS FOLLOWS: HORIZONTAL COORDINATES (EXPRESSED IN U. S. SURVEY FEET UNITS) AND BEARINGS HEREON ARE REFERRED TO THE TEXAS COORDINATE SYSTEM OF 1983, CENTRAL ZONE AND BASED ON THE POSITION OF THE NATIONAL GEODETIC SURVEY (NGS) PRIMARY AIRPORT CONTROL STATION "T39 A" HAVING PUBLISHED NAD 83 (1993) COORDINATES OF N=3,128,437.762 METERS AND E=1,154,289.433 METERS. LINEAR DIMENSIONS (EXPRESSED IN U.S. SURVEY FEET) ARE "NAD83 GRID" UNIT AND MAY BE CONVERTED TO "GEODETIC HORIZONTAL" UNITS BY DIVIDING BY A COMBINED SCALE FACTOR OF 0.99988. ELEVATIONS ARE EXPRESSED IN U.S. SURVEY FEET AND REFERRED TO THE (NGS) NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

2. CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATIONS OF ALL UTILITIES PRIOR TO CONSTRUCTION TO DETERMINE POTENTIAL CONFLICTS AND VERIFY THAT THE BORING OPERATION AND PIPE INSTALLATION CAN BE ACCOMPLISHED WITHOUT CONFLICTING WITH EXISTING UTILITIES.

3. CONTRACTOR IS RESPONSIBLE FOR HIS OWN HORIZONTAL AND VERTICAL CONTROL. REFERENCE POINTS AND CONSTRUCTION STAKING IS INCIDENTAL TO THE PROJECT.

4. ALIGNMENT, CENTERLINE CURVE DATA, AND STATIONING TO BE DETERMINED FROM APPROVED AND/OR RECORDED SUBDIVISION OR ROAD RIGHT-OF-WAY PLAT.

5. PUBLIC EASEMENTS DENOTED ON THIS PLAN ARE HEREBY DEDICATED TO THE PUBLIC FOREVER. ANY PUBLIC UTILITY, INCLUDING THE CITY OF HUNTSVILLE, SHALL HAVE THE RIGHT AT ALL TIMES, OF INGRESS AND EGRESS TO AND FROM AND UPON SAID EASEMENTS FOR THE PURPOSE OF CONSTRUCTION, RECONSTRUCTION, INSPECTION, PATROLLING, MAINTAINING AND ADDING TO OR REMOVING ALL OR PART OF ITS RESPECTIVE SYSTEMS WITHOUT THE NECESSITY OF ANY TIME OF PROCURING THE PERMISSION OF THE PROPERTY OWNER. ANY PUBLIC UTILITY, INCLUDING THE CITY OF HUNTSVILLE, SHALL HAVE THE RIGHT TO MOVE AND KEEP MOVED ALL OR PART OF ANY BUILDING, FENCES, TREES, SHRUBS, OTHER GROWTHS OR IMPROVEMENTS THAT IN ANY WAY ENDANGER OR INTERFERE WITH THE CONSTRUCTION, MAINTENANCE OR EFFICIENCY OF ITS RESPECTIVE SYSTEMS ON ANY OF THE EASEMENTS SHOWN ON THIS PLAT. NEITHER THE CITY OF HUNTSVILLE OR ANY PUBLIC UTILITY SHALL BE RESPONSIBLE FOR THE REPLACING OR REIMBURSING THE PROPERTY OWNER DUE TO REMOVAL OR RELOCATION OF ANY OBSTRUCTION ON THE PUBLIC EASEMENTS.

6. ALL DIMENSIONS SHOWN ARE APPROXIMATE AND NEED TO BE FIELD VERIFIED BY THE CONTRACTOR. HORIZONTAL AND VERTICAL ALIGNMENT CHANGES ARE TO BE APPROVED BY THE CITY.

7. ALL EXISTING UNDERGROUND UTILITIES ARE NOT GUARANTEED TO BE COMPLETED OR DEFINITE, BUT WERE OBTAINED FROM THE BEST INFORMATION AVAILABLE. CONTRACTOR HAS SOLE RESPONSIBILITY FOR FIELD VERIFICATION OF ALL EXISTING FACILITIES SHOWN ON DRAWINGS. CONTRACTOR SHALL COORDINATE ALL CONFLICTS WITH THE APPROPRIATE GOVERNING AGENCY.

OSHA - TRENCH SAFETY

1. CONTRACTOR SHALL IMPLEMENT THE TRENCH SAFETY SYSTEM REQUIREMENTS OF THE FEDERAL, STATE, AND LOCAL SAFETY AND HEALTH REGULATIONS AND THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), 29 CFR, PART 1926 SUBPART P, EXCAVATION AND THE TEXAS HEALTH AND SAFETY CODE, CHAPTER 756. MISCELLANEOUS HAZARDOUS CONDITIONS.

2. NO EXCAVATIONS SHALL BE LEFT OPEN OVERNIGHT. ALL EXCAVATIONS WHICH CANNOT BE BACKFILLED OVERNIGHT FOR THE INSTALLATION OF MANHOLES, SANITARY SEWER LINES, AND OTHER UTILITIES SHALL BE COVERED WITH STEEL SHEETING, WHEN IN PAVED AREAS, 3/4" PLYWOOD, WOOD PLANKS OR SOME OTHER MATERIAL APPROVED BY THE CITY IN OTHER AREAS. THE EXCAVATION AREA MUST BE WELL PROTECTED WITH TRAFFIC BARRICADES EQUIPPED WITH FLASHING YELLOW LIGHTS.

3. ALL EXCAVATION AREAS MUST BE COMPLETELY CORDONED OFF WITH A MINIMUM OF TWO STRANDS OF YELLOW PLASTIC CONSTRUCTION TAPE, ACCEPTABLE TO THE CITY. THE TAPE SHALL BE SUPPORTED WITH ENOUGH INTERMEDIATE SUPPORT TO AVOID EXCESSIVE SAGGING. THE TAPE MAY BE TIED TO TRAFFIC BARRICADES WITH FLASHING YELLOW LIGHTS AND WOODEN LATH FOR SUPPORT. WHERE EXCAVATIONS EXTEND BEYOND THE EXISTING BACK OF CURB OR EDGE OF PAVEMENT, ADEQUATE BARRICADES WITH FLASHING YELLOW LIGHTS SHALL BE INSTALLED TO PROTECT PEDESTRIAN TRAFFIC.

STREETS, TRAFFIC CONTROL

1. WHEN ANY STREET OR ANY SECTION OF A STREET IS CLOSED, THE CONTRACTOR SHALL FURNISH AND MAINTAIN ADEQUATE BARRICADES, WARNING AND DIRECTING SIGNS, RED FLAGS AND LIGHTS AT THE END OF EACH STREET AND AT ALL INTERSECTIONS ALONG THE STREET WITHIN THE LIMIT OF THE WORK AREA. ALL EXPENSE INCURRED FOR THE ABOVE REQUIREMENTS SHALL BE BORNE BY THE CONTRACTOR. ALL WARNING SIGNS AND BARRICADES SHALL CONFORM TO THE LATEST EDITION OF THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. CONTRACTOR TO NOTIFY PROPER AUTHORITIES PRIOR TO ANY STREET OR PARTIAL STREET CLOSING.

2. CONTRACTOR SHALL MAINTAIN AT LEAST ONE LANE OF TRAFFIC IN EACH DIRECTION DURING WORKING HOURS.

3. OFF-DUTY UNIFORMED POLICE OFFICER(S) ARE REQUIRED TO DIRECT TRAFFIC WHERE TRAFFIC LANES ARE BLOCKED.

4. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL PROPERTIES AFFECTED BY THIS CONSTRUCTION BY MEANS OF ANCHORED STEEL PLATES, BY BACKFILLING IMMEDIATELY AFTER CONSTRUCTION, AND/OR BY PLACING SHELL OR LIMESTONE SURFACES FOR TEMPORARY DRIVEWAY PURPOSES. CONTRACTOR'S ATTENTION IS DIRECTED TO HS-20 LOAD RATED ACCESS REQUIREMENTS FOR ALL SUCH AREA.

5. CONTRACTOR IS RESPONSIBLE FOR PROVIDING BARRICADES, FLAGMEN, ETC. TO CONFORM TO SAFETY REQUIREMENTS FOR THE CITY OF HUNTSVILLE AND TEXAS DEPARTMENT OF TRANSPORTATION.

CONTRACTOR ADDITIONAL RESPONSIBILITIES

1. EXISTING PAVEMENTS, CURBS, SIDEWALKS AND DRIVEWAYS DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED TO THE ORIGINAL OR BETTER CONDITIONS

2. CONTRACTOR IS RESPONSIBLE FOR EXAMINING ALL EXISTING FENCES AND REPAIRING THEM EQUAL TO OR BETTER THAN THEIR EXISTING CONDITION. THE COST FOR REPAIRING OR RESETTING EXISTING FENCES AND FENCE POST SHALL BE INCLUDED IN THE OTHER ITEMS OF WORK IN THE PROJECT.

3. CONTRACTOR SHALL CLEAN AND DRESS UP EACH DAY'S WORK AREA PRIOR TO PROCEEDING WITH THE NEXT DAY'S WORK. ADEQUATE POSITIVE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.

4. CONTRACTOR SHALL ADEQUATELY PROTECT EXISTING STRUCTURES, UTILITIES, TREES, SHRUBS AND OTHER PERMANENT OBJECTS

5. TREES WITHIN THE STREET RIGHT-OF-WAY SHALL NOT BE REMOVED OR DISTURBED, EXCEPT WHERE CALLED OUT TO BE REMOVED. WHERE TREE ROOTS MUST BE CUT, FOLLOW THE REPAIR METHODS DESCRIBED IN THE SPECIFICATIONS AND/OR DETAILED ON PLAN SHEETS.

6. THE CONTRACTOR SHALL CONDUCT THEIR OPERATIONS IN A MANNER SUCH THAT TRUCKS AND OTHER VEHICLES DO NOT CREATE A DIRT NUISANCE OR SAFETY HAZARD IN ANY STREETS, PUBLIC OR PRIVATE. CLEAN UP OF STREETS SHALL BE PERFORMED DAILY.

7. ANY AREA OF GRASS, WHICH IS DISTURBED OR DUG UP DURING THE CONSTRUCTION, SHALL BE REPLACED WITH ST. AUGUSTINE SOD OR GRASS THAT MATCHES THE GRASS REMOVED, REFERENCE SPECIFICATIONS AND/OR PLANS.

8. EXISTING PAVEMENTS, CURBS, SIDEWALKS, DRIVEWAYS AND LANDSCAPING DAMAGED OR REMOVED DURING CONSTRUCTION BY THE CONTRACTOR SHALL BE REPLACED BY THE CONTRACTOR AT THEIR EXPENSE.

9. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE OWNING AUTHORITY. ALL CONSTRUCTION STORM RUNOFF SHALL COMPLY WITH THE SWP3 DEVELOPED FOR THE SITE AND IN COMPLIANCE WITH THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) REQUIREMENTS.

10. EXISTING PAVEMENTS, CURBS, SIDEWALKS AND DRIVEWAYS DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED TO THE ORIGINAL OR BETTER CONDITIONS.

11. CONDITION OF THE FACILITIES, UPON COMPLETION OF JOB, SHALL BE AS GOOD OR BETTER THAN THE CONDITION PRIOR TO STARTING WORK. THE CONTRACTOR SHALL RESTORE ALL GRADES AND LANDSCAPING TO PRECONSTRUCTION CONDITIONS AND RE-ESTABLISH TURF AREAS DAMAGED BY THE CONSTRUCTION ACTIVITIES.

12. ALL EXCESS DIRT FROM EXCAVATION SHALL BE DISPOSED OF OFFSITE BY CONTRACTOR AT NO EXTRA PAY.

13. CONTRACTOR SHALL REMOVE ALL TRASH, EXCESS MATERIAL, DEBRIS, ETC. FROM THE SITE UPON COMPLETION OF THE PROJECT PRIOR TO INSPECTION AND APPROVAL BY THE APPROVING AGENCIES.

14. CONTRACTOR SHALL PROVIDE THE CITY OF HUNTSVILLE ONE SET OF (RECORD) DRAWINGS.

WATERLINE CONSTRUCTION NOTES

1. ALL WATERLINE CONSTRUCTION TO BE ACCOMPLISHED IN ACCORDANCE WITH THE LATEST EDITION OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS AS CODIFIED UNDER TITLE 30 TEXAS ADMINISTRATIVE CODE (30 TAC), CHAPTER 290.

2. ALL WATERLINES TO BE LOCATED INSIDE PUBLIC ROAD RIGHTS-OF-WAYS AND PUBLIC EASEMENTS. CITY REPRESENTATIVE TO INSPECT & APPROVE PRIOR TO BACKFILL.

3. ALL WATER MAINS 4" TO 16" SHALL BE C-909 (DR-18) AND ALL WATER MAINS 20" TO 24" SHALL BE C-900 (DR-18).

4. TWELVE (12) INCH OR SMALLER WATERMANS TO HAVE A MINIMUM COVER OF FOUR (4) FEET. VARY FLOW LINE UNIFORMLY FROM DEPTH AND LOCATION SHOWN IN PLANS.

5. WATERLINE FITTINGS TO BE CAST OR DUCTILE IRON WITH POLYETHYLENE WRAP AS SPECIFIED UNLESS OTHERWISE NOTED.

6. MAINTAIN 12-INCH MINIMUM CLEARANCE AT CROSSINGS BETWEEN ALL WATERLINES AND ALL UTILITIES INCLUDING STORM SEWERS AND CULVERTS UNLESS OTHERWISE NOTED.

7. WATERLINES SHALL BE BEDDED AS SHOWN IN THE CITY OF HUNTSVILLE DETAILS. ALL WATER LINES TO BE INSPECTED BY CITY OF HUNTSVILLE PRIOR TO BACKFILL.

8. WATERLINE TRENCHES UNDER OR WITHIN THREE (3) FEET OF PROPOSED OR FUTURE PAVEMENT SHALL BE BACKFILLED PER THE CITY OF HUNTSVILLE DETAILS.

9. ALL 2" THRU 12" GATE VALVES FOR THIS PROJECT SHALL BE IN ACCORDANCE WITH AWMA C509 AND BE MANUFACTURED BY MUELLER, AMERICAN-DARLING, OR APPROVED EQUAL RESILIENT SEAT GATE VALVES AND SHALL OPEN IN A COUNTER CLOCKWISE DIRECTION ONLY. VALVES ON ALL TAPPING SLEEVES ARE TO BE OF THE SAME TYPE.

10. VALVES TO BE LOCATED OPPOSITE PROPERTY CORNER WHERE APPROPRIATE.

11. ALL VALVE BOXES SHALL BE ADJUSTED TO FINISHED GRADE AFTER PAVING IS COMPLETE.

12. ALL FIRE HYDRANTS SHALL BE MANUFACTURED BY MUELLER OR AMERICAN-DARLING. EQUIP EACH FIRE HYDRANT WITH TWO (2) TWO AND ONE-HALF (2 1/2) INCH NOMINAL INSIDE DIAMETER HOSE NOZZLES AND ONE (1) FOUR AND ONE-HALF (4 1/2) INCH NOMINAL INSIDE DIAMETER PUMPER NOZZLE WITH NATIONAL STANDARD THREADS ON EACH NOZZLE.

13. CONTRACTOR SHALL PROVIDE ADEQUATE THRUST BLOCKING TO WITHSTAND TEST PRESSURES SPECIFIED BY THE TCEQ AND THE CITY OF HUNTSVILLE STANDARD DETAILS.

14. ALL WATERLINE TESTING SHALL BE WITNESSED AND APPROVED BY THE CITY OF HUNTSVILLE.

15. 12-GAUGE LOCATOR WIRE TO BE INSTALLED ON ALL WATER LINES & FORCE MAINS, TO BE ACCESSIBLE AT VALVE STACKS.

16. ALL TS&VS SHALL BE FULL BODY - STAINLESS STEEL.

17. 1 WATER SAMPLE PER 1000 FEET SHALL BE SUBMITTED TO A TEXAS DEPARTMENT OF HEALTH APPROVED LABORATORY AND SHALL BE FREE OF ANY CONTAMINATES, PRIOR TO BEING PUT IN SERVICE.

18. DISINFECTATION OF NEW AND REPAIRED WATER MAINS SHALL BE IN CONFORMANCE WITH AWMA C651. ALL NEW WATER MAINS SHALL BE DISINFECTED BEFORE THEY ARE PLACED IN SERVICE. ALL WATER MAINS TAKEN OUT OF SERVICE FOR INSPECTING, REPAIRING OR OTHER ACTIVITY, WHICH MIGHT LEAD TO CONTAMINATION OF WATER, SHALL BE DISINFECTED BEFORE THEY ARE RETURNED TO SERVICE. (NO SEPARATE PAY)

19. CONTRACTOR TO INSTALL RAY-O-LITE OR EQUAL 4' X 4' BLUE REFLECTORIZED PAVEMENT MARKERS 6' OFF CENTER OF ROADWAY ON FIRE HYDRANT SIDE OF STREET.

20. WATERLINE 8" OR GREATER SHALL BE CONSTRUCTED SUCH THAT ALL CROSSINGS WITH SANITARY SEWER OR SANITARY SEWER LEADS SHALL CENTER ONE FULL SECTION OF WATERLINE AT THE SANITARY SEWER CROSSING. WATERLINE SHALL BE AT LEAST 2 FEET ABOVE SANITARY LINE. WHERE WATERLINE CROSSES UNDER SANITARY SEWER LINES, WATERLINE SEGMENT SHALL BE ENCASED IN PIPE AT LEAST TWO NOMINAL PIPE DIAMETERS LARGER THAN WATERLINE AND MAINTAIN 1-FOOT VERTICAL CLEARANCE FROM SANITARY LINE.

21. WHERE WATERLINE CROSSES UNDER SANITARY SEWER LINE, BOTH SEGMENTS MUST PASS A PRESSURE AND LEAKAGE TEST AS SPECIFIED BY TCEQ UNDER 30 TAC, CHAPTER 290 AND IN AWMA C600 STANDARDS.

22. ALL VALVE BOXES SHALL BE ERECTED PLUMBED & BE FREE OF DEBRIS.

CONTRACTOR WORK ZONE NOTES

1. DRIVEWAY ACCESS WILL BE MAINTAINED OPEN AFTER WORKING HOURS. A MINIMUM OF ONE DRIVEWAY ACCESS WILL BE MAINTAINED OPEN AT ALL TIMES TO COMMERCIAL, APARTMENTS, AND/OR NON-RESIDENTIAL DEVELOPMENTS.

2. THE LENGTH OF THE WORK ZONE MUST BE RESTRICTED TO 1,000 LINEAR FEET WITHIN THE ROW OR EASEMENTS. THE CONSTRUCTION ZONE WILL BE A ROLLING CONSTRUCTION ZONE WITH APPROPRIATE TRANSITIONS ON EACH END UNLESS OTHERWISE SHOWN IN PLANS AND SPECIFICATIONS.

3. SIGNALIZED INTERSECTIONS: LANES WILL NOT BE CLOSED AT A SIGNALIZED INTERSECTION, UNLESS APPROVED BY THE CITY ENGINEER AND SHOWN IN THE PLANS AND SPECIFICATIONS.

4. TEMPORARY PAVEMENT MARKERS: TEMPORARY EPOXY-GLUED BOTTONS OR "CONSTRUCTION GRADE" TAPE PAVEMENT MARKERS SHOULD BE USED ON PERMANENT PAVEMENT TO ELIMINATE GRINDING AND SCARRING OF THE SURFACE.

5. PEDESTRIAN TRAFFIC: CARE SHALL BE TAKEN TO PROVIDE FOR TEMPORARY PEDESTRIAN TRAFFIC AND CROSSING AT AREAS SUCH AS SCHOOLS, PARKS, AND SHOPPING AREAS.

SANITARY SEWER CONSTRUCTION NOTES

1. ALL SANITARY SEWER MODIFICATION OR REPAIRS SHALL BE IN ACCORDANCE WITH TCEQ RULES AND REGULATIONS AS CURRENTLY AMENDED. CONTRACTOR SHALL NOTIFY PROJECT MANAGER OF ANY NEED FOR MODIFICATIONS OR REPAIRS TO EXISTING SANITARY SEWERS.

STORM WATER QUALITY PRE-CONSTRUCTION INSPECTION REQUIREMENTS

1. THE PROPERTY OWNER OR THE CONTRACTOR SHALL CONTACT CITY OF HUNTSVILLE FOR A PRE-CONSTRUCTION INSPECTION PRIOR TO COMMENCING ANY CLEARING OR CONSTRUCTION ACTIVITIES ON THE SITE.

STORM SEWER CONSTRUCTION NOTES

1. ALL STORM SEWERS SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF HUNTSVILLE RULES, REGULATIONS AND REQUIREMENTS, AS CURRENTLY AMENDED.

2. ALL STORM SEWER MANHOLE RIMS LOCATED OUTSIDE THE PAVED AREAS SHALL BE SET TO MATCH FINISHED GROUND ELEVATION.

3. ALL STORM SEWERS AND LEADS SHALL BE REINFORCED CONCRETE PIPE (RCP), CLASS III, (ASTM, C76), WITH RUBBER GASKET JOINTS (ASTM C443), UNLESS OTHERWISE NOTED ON PLANS.

4. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE OWNING AUTHORITY. ALL CONSTRUCTION STORM RUNOFF SHALL BE IN COMPLIANCE WITH THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) REQUIREMENTS.

PAVING CONSTRUCTION NOTES

1. CONCRETE PAVEMENT TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF HUNTSVILLE RULES, REGULATIONS AND REQUIREMENTS.

2. ALL ROAD WIDTHS, CURB RADII AND CURVE ALIGNMENT SHOWN INDICATE BACK OF CURB. T.C. INDICATES TOP OF CURB ELEVATION AND T.P. INDICATES TOP OF PAVEMENT ELEVATION.

3. CONTRACTOR SHALL USE CONTINUOUS LONGITUDINAL REINFORCING BAR FOR 6 INCH CURB.

4. SUBGRADE STABILIZATION SHALL BE PERFORMED AS PER STANDARD SPECIFICATIONS AS ESTABLISHED BY LABORATORY TESTING OF SUBGRADE MATERIAL.

5. WHERE PROPOSED PAVEMENT IS TO MATCH EXISTING PAVEMENT, EXISTING REBARS OR DOWELS PROJECTING FROM EXISTING PAVEMENT TO BE CLEANED AND TIED INTO PROPOSED PAVEMENT. IF NO REINFORCING STEEL EXISTS, USE HORIZONTAL DOWELS. HORIZONTAL DOWELS SHALL BE #6 BARS, 24 INCHES LONG, DRILLED AND EMBEDDED 8 INCHES INTO THE CENTER OF THE EXISTING SLAB WITH "PO ROC" OR EQUAL AT 18 INCHES CENTER TO CENTER.

STREET EXCAVATION, ALTERATION AND UTILITY CONSTRUCTION NOTES - PER PERMIT APPLICATION

1. CALL TEXAS 811 FOR UTILITY LOCATES A MINIMUM OF 48 HOURS IN ADVANCE PRIOR TO BEGINNING OF CONSTRUCTION TO GET THE CITY UTILITIES (WATER, SEWER AND FIBER LINES) LOCATED AMONG OTHERS.

2. NOTIFY CITY OF HUNTSVILLE ENGINEERING DEPARTMENT (936) 294-5760 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION.

3. STREET CROSSINGS MUST BE A MINIMUM OF FOUR (4) FEET DEEP. ANY CHANGES MUST BE AUTHORIZED BY THE CITY ENGINEER OR CITY INSPECTORS. DEPTH IS MEASURED FROM TOP OF CURB OR TOP OF CROWN FOR OPEN DITCH ROADS.

4. NO CITY STREET SHALL BE OPEN CUT WITHOUT PRIOR APPROVAL FROM THE CITY ENGINEER.

5. ALL BORES LARGER THAN FOUR (4) INCHES MUST BE STEEL ENCASED. IF BORE HOLE IS ONE (1) INCH LARGER IN DIAMETER THAN ENCASEMENT, THE HOLE MUST BE PRESSURE GROUTED. CONTRACTOR IS RESPONSIBLE FOR AVOIDING EXISTING UTILITIES WHEN BORING. FOUR (4) INCH BORES MUST BE ENCASED IN STEEL OR SCHEDULE 40 PVC PIPE.

6. ALL OPEN CUTS OF STREETS MUST BE SAW CUT 1' EACH SIDE OF THE TRENCH AND MUST BE BACKFILLED WITH TWO SACK CEMENT STABILIZED ROCK COMPACTED TO 95% MODIFIED PROCTOR DENSITY. MATCH ASPHALT DEPTH TO EXISTING, MINIMUM 2".

7. ALL EXCAVATION MUST BE A MINIMUM OF TWO AND ONE HALF (2 1/2) FEET FROM EXISTING CITY UTILITIES. IF EXCAVATION MUST BE CLOSER, APPROVAL OF CITY ENGINEER MUST BE OBTAINED.

8. PROPOSED LINE MUST BE STAKED PRIOR TO BEGINNING CONSTRUCTION.

9. PROPOSED LINE SHOULD BE PARALLEL TO CURB OR RIGHT OF WAY WHEN POSSIBLE.

10. BORES ON OPEN DITCH STREETS MUST BE A MINIMUM OF TWO (2) FEET BELOW FLOW LINE OF DITCH.

11. TRAFFIC CONTROL MUST BE PROVIDED, INCLUDING CONES, SIGNS, BARRICADES, AND FLAGMEN AS REQUIRED BY THE UNIFORM TRAFFIC CONTROL MANUAL.

12. WHEN NECESSARY ALL SHORING AND TRENCH PROTECTION MUST MEET OSHA STANDARDS.

13. STORING MATERIALS IN STREET IS PROHIBITED WITHOUT PRIOR APPROVAL OF CITY ENGINEER AND PROPER TRAFFIC CONTROL PRECAUTIONS.

14. ALL AREAS WITHIN THREE (3) FEET OF BACK OF CURB OR INSIDE THE DITCH LINE MUST BE BACKFILLED WITH TWO SACK CEMENT STABILIZED SAND COMPACTED TO 95% MODIFIED PROCTOR DENSITY.

15. CONTRACTOR MUST NOT LEAVE THE DITCH OPEN FOR LONG PERIODS NEXT TO A CITY STREET. IF IN THE OPINION OF THE ENGINEER, AND OPEN DITCH CONSTITUTES A DANGER TO THE MOTORING PUBLIC OR TO THE STRUCTURAL INTEGRITY OF THE STREET, THE DITCH WILL BE FILLED BY THE CITY AND CHARGED TO THE UTILITY COMPANY.

16. CONTRACTOR IS RESPONSIBLE FOR RESTORING WORK AREA TO THE ORIGINAL OR BETTER CONDITION INCLUDING ANY DAMAGE TO TREES OR SHRUBS. (SEE CITY TREE POLICY)

17. NO WORK SHALL BE DONE ON WEEKENDS OR HOLIDAYS WITHOUT PRIOR APPROVAL OF CITY ENGINEER.

18. UTILITY COMPANY SHALL ENSURE THAT CONTRACTOR HAS NECESSARY INSURANCE.

19. NO EQUIPMENT OR MATERIALS MAY ENTER OR BE STORED ON PRIVATE PROPERTY WITHOUT PRIOR PERMISSION, IN WRITING, OF THE LAND OWNER.

20. UTILITY COMPANY SHALL SUPPLY CONTRACTOR WITH A COPY OF THE PERMIT INCLUDING THE GENERAL UTILITY CONSTRUCTION NOTES WHICH MUST BE KEPT ON SITE.

21. ALL TRENCHES (IN PAVED AREA PARKING LOTS) MUST BE BACKFILLED WITH TWO SACKS PER YARD CEMENT STABILIZED SAND.

22. CITY OF HUNTSVILLE PERMITS ARE REQUIRED ON ALL UTILITY CONSTRUCTION WITHIN THE CITY LIMIT.

23. STATE PERMITS REQUIRED ON ALL STATE RIGHT OF WAYS.

24. PROPOSED ALIGNMENT MUST USE EDGE OF PAVEMENT OR BACK OF CURB AS BASIS FOR OFFSET DIMENSIONS.

25. IT IS UTILITY COMPANY'S RESPONSIBILITY TO DETERMINE RIGHT-OF-WAY AND EASEMENT LIMITS.

ADDITIONAL REQUIREMENTS NEAR TDCJ FACILITY - SUMMARY OF WORK 1.08

A. REQUIREMENTS AND EXPECTATIONS FOR WORKING IN AREA A NEAR THE FACILITY ARE NON-NEGOTIABLE. SEE THE FOLLOWING.

1. COORDINATE WITH CITY OF HUNTSVILLE AND TDCJ A MINIMUM OF TWO WEEKS PRIOR TO BEGINNING WORK NEAR THE FACILITY IN AREA A. SCHEDULED START DATE MUST BE APPROVED BY TDCJ.

2. NOTIFY CITY OF HUNTSVILLE AND TDCJ A MINIMUM OF 72 HOURS PRIOR TO BEGINNING WORK AND PRIOR TO ANY LANE OR ROAD CLOSURES, INCLUDING CHANGES TO THE TRAFFIC CONTROL PLAN.

3. NO WEEKEND WORK SHALL OCCUR ALONG BASELINE "AVENUE I", EXCEPT FOR THE FOLLOWING WITH APPROVAL:

a. STA 5+72 TO STA 6+37:

i. THE FACILITY ACCESS GATE AT APPROXIMATELY STA 6+00 IS USED FOR DELIVERIES, WHICH OCCUR FREQUENTLY MONDAY-FRIDAY, AND CONSIST OF 18-WHEELERS, BUSES, AND OTHER TRUCKS.

ii. CONSTRUCTION OF THE TRENCHES, BORE PITS, 12" WL APPURTENANCES, WET CONNECTION TO THE FACILITY, AND THE 8" WL CROSSING AVENUE I TO THE WEST, MAY IMPEDE ACCESS TO THE GATE.

iii. CONTRACTOR IS PERMITTED TO PERFORM WORK ON THE WEEKEND TO INSTALL THIS AREA AND RESTORE THE SITE. CONTRACTOR DOES NOT HAVE TO PERFORM ANY WL TESTING OR CHLORINATION AT THIS TIME, THIS CAN BE DONE DURING NORMAL OPERATING HOURS.

4. PLACES TO PARK NEAR AREA A ARE LIMITED. TDCJ HAS EXCLUSIVE PARKING ALONG 14TH STREET, DO NOT BLOCK, OR PARK IN DESIGNATED PARKING AREAS ALONG 14TH STREET. WORKERS TO AVOID PARKING IN VISITORS' PARKING LOT ON THE NORTHWEST CORNER OF AVENUE I AND 12TH STREET. CONTRACTOR MAY PARK IN AREAS THAT ARE CLOSED OFF DUE TO THE CONSTRUCTION ACTIVITIES. CONTRACTOR MAY PARK IN PARKING LOT AT 13TH STREET AND AVENUE I IF THERE ARE ANY SPOTS AVAILABLE, SPOTS ARE TYPICALLY LIMITED.

5. ENSURE ACCESS TO THE FACILITY IS MAINTAINED AT ALL TIMES.

a. GATES AND DRIVEWAYS INTO THE FACILITY NEED TO BE CLEAR OF MACHINERY, TOOLS, AND DEBRIS AT ALL TIMES. ACCESS TO DRIVEWAY ENTRANCES AND PARKING SPACES ALONG SOUTHSIDE OF 14TH STREET AND EASTSIDE OF AVENUE I NEED TO BE MAINTAINED AT ALL TIMES.

b. CONTRACTOR MAY OPEN CUT ACROSS DRIVEWAYS/GATES INTO THE FACILITY AS SHOWN ON DRAWINGS, BASELINE "14TH ST" STA 5+91 TO STA 6+36, STA 6+69 TO STA 7+22, STA 8+45 TO 9+13. HOWEVER, CONTRACTOR MUST COMPLY WITH FOLLOWING:

i. A MINIMUM OF 2 GATES MUST BE OPEN AT ALL TIMES. CONTRACTOR TO PHASE WORK TO ENSURE THIS IS MET.

ii. GATES ARE USED FOR DELIVERIES AND CONSIST OF 18-WHEELERS, BUSES, TRUCKS, LARGE VEHICLES, ETC. CONTRACTOR TO MAINTAIN STEEL PLATES WITH SUFFICIENT THICKNESS TO SECURELY COVER OPEN PITS WHEN NOT WORKING.

6. ALL WORKERS ARE SUBJECT TO RANDOM ID CHECKS BY THE FACILITY OFFICIALS.

7. TRUSTEES ARE ALLOWED TO WORK OUTSIDE OF THE UNIT UNDER SUPERVISION AND ARE NOT TO BE INTERFERED WITH.

8. CONTRACTOR WORKERS ARE PROHIBITED FROM WEARING ANY WHITE CLOTHING INCLUDING PAINTER CLOTHES.

9. DO NOT LEAVE ANY KEYS IN VEHICLES. DO NOT LEAVE UNATTENDED VEHICLES RUNNING. DO NOT LEAVE ANY UNOCCUPIED VEHICLES UNLOCKED. DO NOT LEAVE ANY CRACKED WINDOWS.

10. DO NOT LEAVE ANY TOOLS OR EQUIPMENT UNATTENDED OR LEFT AROUND SITE. ENSURE EQUIPMENT, MACHINERY, AND VEHICLES ARE STORED, SECURED, AND LOCKED WHEN NOT IN USE.

11. WHEN NOT WORKING, SECURELY COVER OPEN EXCAVATIONS.

12. NO HITCHHIKING IS ALLOWED.

13. NO WEAPONS ARE ALLOWED ON SITE.

14. NO ALCOHOL/TOBACCO PRODUCTS ARE TO BE CONSUMED ON SITE AND NO ALCOHOL/TOBACCO WASTE LEFT ON SITE.

B. TRAFFIC AND PEDESTRIAN CONTROL

1. ALONG BASELINE "AVENUE I":

a. PHASE I - STA 0+00 TO STA 9+00

i. CONTRACTOR SHALL UTILIZE AN OFF-DUTY UNIFORMED PEACE OFFICER, PER SECTION 01555 - "TRAFFIC CONTROL AND REGULATION".

ii. MAINTAIN TRAFFIC CONTROL SIGNS AT ALL TIMES AS SHOWN ON DRAWINGS.

b. PHASE II - STA 9+00 TO STA 10+25

i. CONTRACTOR SHALL UTILIZE AN OFF-DUTY UNIFORMED PEACE OFFICER, PER SECTION 01555 - "TRAFFIC CONTROL AND REGULATION".

ii. MAINTAIN TRAFFIC AND PEDESTRIAN CONTROL SIGNS AT ALL TIMES AS SHOWN ON DRAWINGS.

iii. MAINTAIN PEDESTRIAN WALK PATH CLEAN OF SOIL, DEBRIS, AND OTHER POTENTIAL TRIPPING HAZARDS.



Aurora Technical Services, LLC logo and contact information: 2121 SAGE ROAD, SUITE 150 HOUSTON, TX 77056 PHONE: 281-453-770 TX FIRM NO.: F-2059



Aurora Technical Services, LLC Texas Registered Engineering Firm F-2059 03/06/2023

FY 2021/2022 WATERLINE REPLACEMENT PROJECT GENERAL CONSTRUCTION NOTES

SURVEYED BY: LANDTECH, INC.

</

CENTERPOINT ENERGY (OVERHEAD ELECTRICAL FACILITIES)

- OVERHEAD LINES MAY EXIST ON THE PROPERTY. THE LOCATION OF OVERHEAD LINES HAS NOT BEEN SHOWN ON THESE DRAWINGS AS THE LINES ARE CLEARLY VISIBLE, BUT YOU SHOULD LOCATE THEM PRIOR TO BEGINNING ANY CONSTRUCTION. TEXAS LAW, SECTION 752, HEALTH & SAFETY CODE FORBIDS ACTIVITIES THAT OCCUR IN CLOSE PROXIMITY TO HIGH VOLTAGE LINES, SPECIFICALLY:
  - ANY ACTIVITY WHERE PERSON OR THINGS MAY COME WITHIN SIX (6) FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES; AND
  - OPERATING A CRANE, DERRICK, POWER SHOVEL, DRILLING RIG, PILE DRIVER, HOISTING EQUIPMENT, OR SIMILAR APPARATUS WITHIN 10 FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES.
- PARTIES RESPONSIBLE FOR THE WORK, INCLUDING CONTRACTORS ARE LEGALLY RESPONSIBLE FOR THE SAFETY OF CONSTRUCTION WORKERS UNDER THIS LAW. THE LAW CARRIES BOTH CRIMINAL AND CIVIL LIABILITY. TO ARRANGE FOR LINES TO BE TURNED OFF OR REMOVED CALL CENTERPOINT ENERGY AT (713) 207-2222.
- ACTIVITIES ON OR ACROSS CENTERPOINT ENERGY FEE OR EASEMENT PROPERTY
  - NO APPROVAL TO USE, CROSS OR OCCUPY CENTERPOINT FEE OR EASEMENT PROPERTY GIVEN. IF YOU NEED TO USE CENTERPOINT PROPERTY, PLEASE CONTACT OUR SURVEYING AND RIGHT-OF-WAY DIVISION AT (713) 207-6348 OR (713) 207-5769.

CENTERPOINT ENERGY (UNDERGROUND GAS FACILITIES)

- THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT 1-800-545-6005 OR 811 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.
  - WHEN CENTERPOINT ENERGY PIPE LINE MARKINGS ARE NOT VISIBLE, CALL (713) 207-5463 OR (713) 945-8037 (7:00 A.M. TO 4:30 P.M.) FOR STATUS OF LINE LOCATION REQUEST BEFORE EXCAVATION BEGINS.
  - WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF CENTERPOINT ENERGY FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES.
  - WHEN CENTERPOINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING.
  - FOR EMERGENCIES REGARDING GAS LINES CALL (713) 659-3552 OR (713) 207-4200.
- THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.

AT&T TEXAS/SWB T FACILITIES

- THE LOCATIONS OF AT&T TEXAS/SWB T FACILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.
- THE CONTRACTOR SHALL CALL 1-800-344-8377 (TEXAS 811) A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD LOCATED.
- WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF AT&T TEXAS/SWB T FACILITIES, ALL EXCAVATIONS MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES. WHEN BORING, THE CONTRACTOR SHALL EXPOSE THE AT&T TEXAS/SWB T FACILITIES.
- WHEN AT&T TEXAS/SWB T FACILITIES ARE EXPOSED, THE CONTRACTOR WILL PROVIDE SUPPORT TO PREVENT DAMAGES TO THE CONDUIT DUCTS OR CABLES. WHEN EXCAVATING NEAR TELEPHONE POLES, THE CONTRACTOR SHALL BRACE THE POLE FOR SUPPORT.
- THE PRESENCE OR ABSENCE OF AT&T TEXAS/SWB T UNDERGROUND CONDUIT FACILITIES OR BURIED CABLE FACILITIES SHOWN ON THESE PLANS DOES NOT MEAN THAT THERE ARE NO DIRECT BURIED CABLES OR OTHER CABLES IN CONDUIT AREA.
- PLEASE CONTACT THE AT&T TEXAS DAMAGE PREVENTION MANAGER ROOSEVELT LEE JR, AT 713-412-3990 OR EMAIL HIM AT RL7259@ATT.COM IF CABLE LOCATE REQUEST ARE NOT COMPLETED FOR OUR AT&T/SWB T FACILITIES.

ENTERGY (OVERHEAD ELECTRICAL FACILITIES)

- CHAPTER 752 OF THE TEXAS HEALTH AND SAFETY CODE PROHIBITS ALL ACTIVITIES IN WHICH IT IS POSSIBLE FOR PERSONS, EQUIPMENT, OR MATERIALS TO COME WITHIN SIX FEET OF AN ENERGIZED OVERHEAD POWER LINE. FEDERAL REGULATION, TITLE 29, PART 1910.190(L) AND PART 1926.440(A)(15), ALSO CONTAIN MINIMUM CLEARANCE REQUIREMENTS FROM ANY ENERGIZED POWER LINE. INDIVIDUALS ARE RESPONSIBLE FOR THEIR OWN SAFETY AND CONTRACTORS AND OWNERS ARE LEGALLY RESPONSIBLE FOR THE SAFETY OF THEIR WORKERS UNDER THESE LAWS. IF YOU OR YOUR COMPANY MUST WORK NEAR OVERHEAD POWER LINES, CALL 1-800-ENTERGY TO BEGIN THE PROCESS OF DE-ENERGIZING OR RELOCATING THE POWER LINES AT YOUR EXPENSE. FAILURE TO DO SO COULD LEAD TO THE DEATH OR SERIOUS INJURY TO YOU OR SOMEONE ELSE AS WELL BE A VIOLATION OF THE ABOVE LAWS POTENTIALLY SUBJECTING YOU TO CRIMINAL AND CIVIL PENALTIES.

LAST MODIFIED: Feb 07, 2023 - 4:00pm BY USER: esanchez23  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
 DWG. NAME: PRIVATE UTILITY NOTES.dwg

**NOTICE:**  
 FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

**VERIFICATION OF PRIVATE UTILITY LINES**

*Mike Brower* 02-09-23  
 Date  
 CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.  
 Signature valid for six months.

*Mike Brower* 02-09-23  
 Date  
 CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
 Signature valid for six months.

*Jesse Rodriguez* 02/09/2023  
 Date  
 Approved for AT&T underground conduit facilities only.  
 Signature valid for one year.

NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059

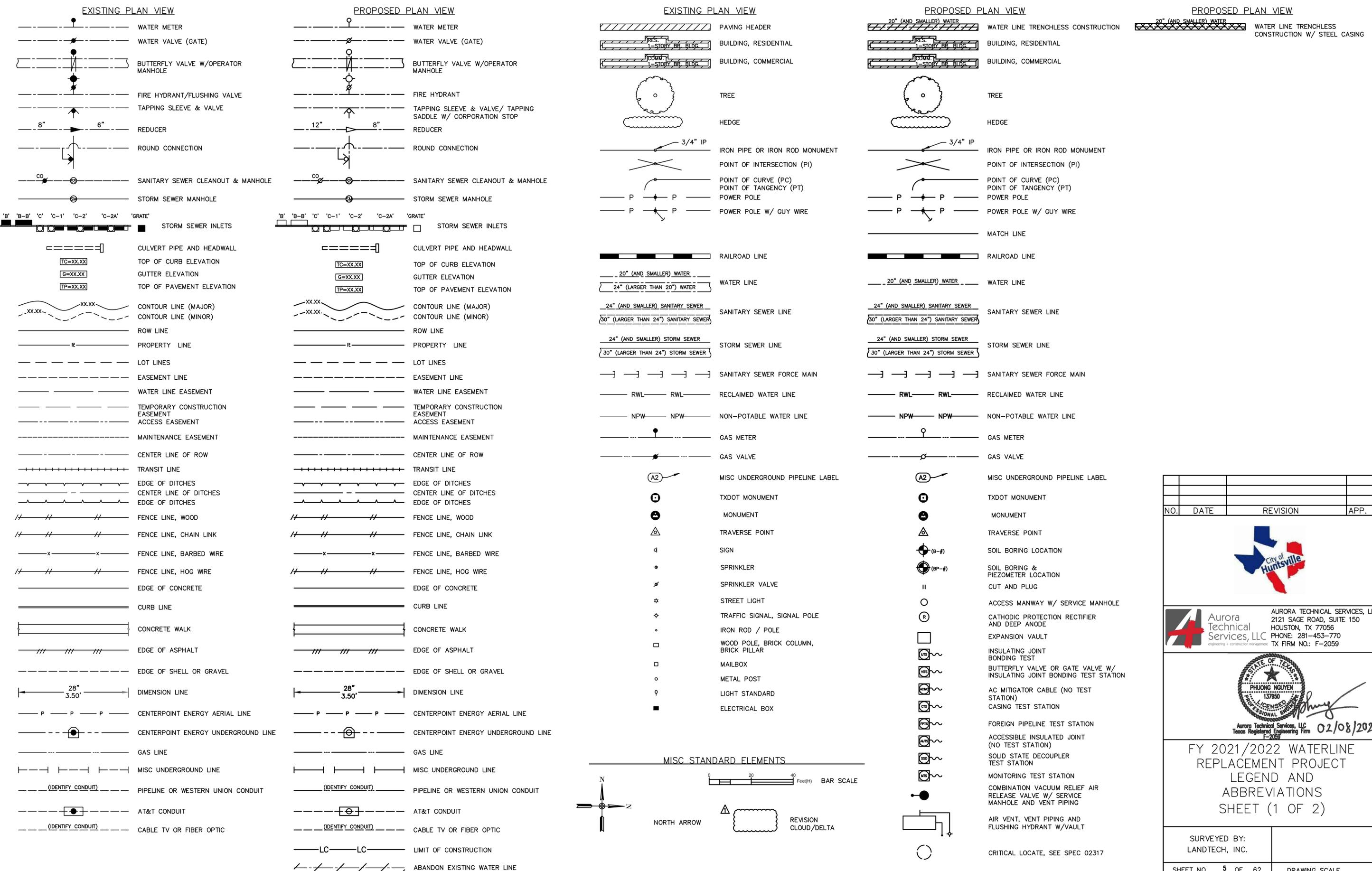
STATE OF TEXAS  
 PHUONG NGUYEN  
 157850  
 LICENSED PROFESSIONAL ENGINEER  
*Phuong*  
 Aurora Technical Services, LLC  
 Texas Registered Engineering Firm  
 F-2059  
 02/08/2023

FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 PRIVATE UTILITY NOTES

SURVEYED BY: LANDTECH, INC.	
SHEET NO. <u>4</u> OF 62	DRAWING SCALE

REVISION DATE: 2/1/2023

LAST MODIFIED: Feb 07, 2023 - 4:00pm BY USER: esanchez23  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
 DWG. NAME: LEGEND AND ABBREVIATIONS PLAN.dwg



NO.	DATE	REVISION	APP.

**Aurora Technical Services, LLC**  
 engineering • construction management

AURORA TECHNICAL SERVICES, LLC  
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 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059

Phuong Nguyen  
 Licensed Professional Engineer  
 State of Texas  
 License No. 157850

02/08/2023

FY 2021/2022 WATERLINE  
 REPLACEMENT PROJECT  
 LEGEND AND  
 ABBREVIATIONS  
 SHEET (1 OF 2)

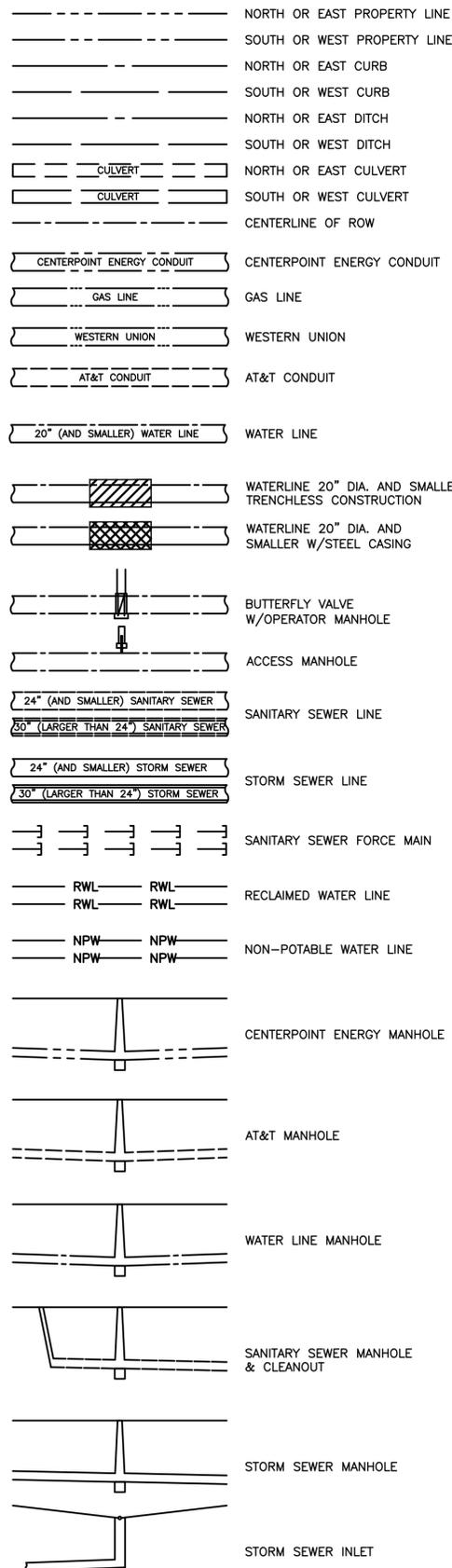
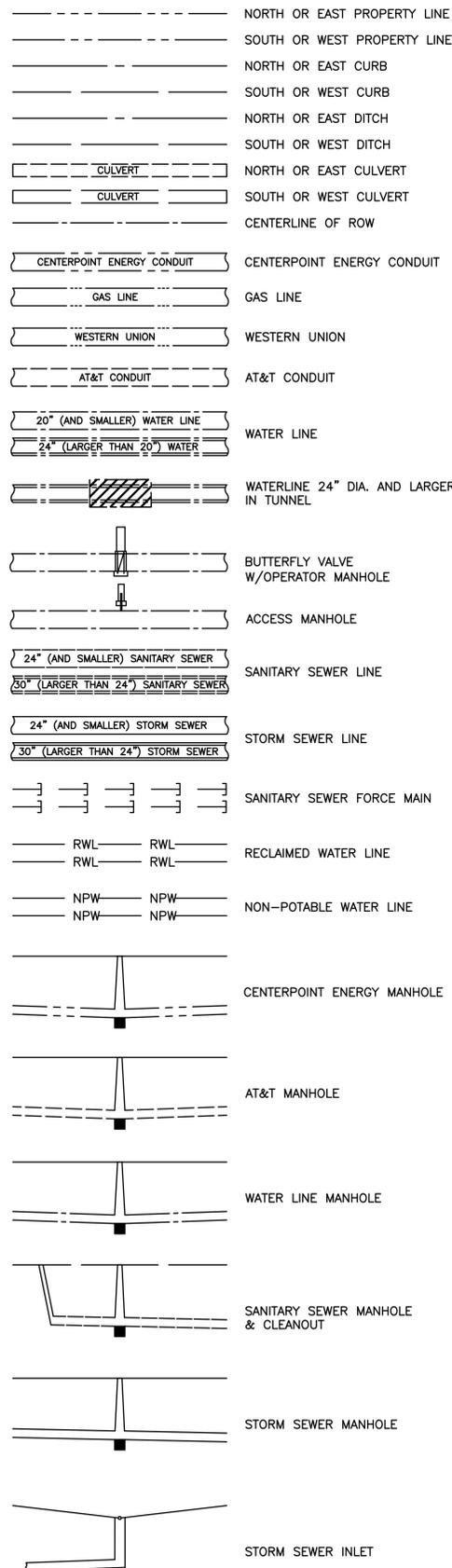
SURVEYED BY: LANDTECH, INC.	
SHEET NO. <u>5</u> OF 62	DRAWING SCALE
REVISION DATE: 2/1/2023	

LAST MODIFIED: Feb 07, 2023 - 4:00pm BY USER: esanchez23  
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 DWG. NAME: LEGEND AND ABBREVIATIONS PROF.dwg

EXISTING PROFILE VIEW

PROPOSED PROFILE VIEW

ABBREVIATIONS



ABS - ASBESTOS	GI - GRATE INLET	PVI - POINT OF VERTICAL INTERSECTION	UE - UTILITY EASEMENT
AC - ASBESTOS CEMENT	GIP - GALVANIZED IRON PIPE	PVT - POINT OF VERTICAL TANGENCY	UG - UNDERGROUND
ACMS - AC MITIGATION SYSTEM	GP - GUARD POST	PVMT - PAVEMENT	UPRR - UNION PACIFIC RAILROAD
AE - ACCESS EASEMENT	GPL - GAS PIPELINE MARKER	RCB - REINFORCED CONCRETE BLOCK	VERT - VERTICAL
AI/VR - AIR INLET / VACUUM RELIEF	GUT - GUTTER	PINE - PINE TREE	VPI - VERTICAL POINT OF INTERSECTION
& - AND	GV - GATE VALVE & ASSEMBLY	PLA - PLASTIC	W - WEST
⊙ - AT	GYA - GUYWIRE ANCHOR	PLM - PIPELINE MARKER	W/ - WITH
ASPH - ASPHALT	HMAC - HOT MIXED ASPHALT CONCRETE	PLYPH - POLYPHOSPHATE	W/O - WITHOUT
'B' - B-TYPE INLET	HP - HIGH PRESSURE	PM - PROGRAM MANAGER	WF - WOOD FENCE
BC - BACK OF CURB	HPS - HIGH-PRESSURE SODIUM	PP - POWER POLE	WI - WROUGHT IRON FENCE
ℓ - BASELINE	HORIZ - HORIZONTAL	PPC - POWER POLE WITH CONCRETE	WL - WATER LINE
BL - BUILDING LINE	HVTL - HIGH VOLTAGE TRANSMISSION LINE	PRES - PRESSURE	WLE - WATER LINE EASEMENT
BF - BRICK FENCE	HW - HOGWIRE FENCE	PROP - PROPOSED	WM - WATER METER
BFV - BUTTERFLY VALVE & ASSEMBLY	HWY - HIGHWAY	PSW - PLANT SURFACE WATER	WME - WATER METER EASEMENT
BS - BUSINESS SIGN	ICV - IRRIGATION CONTROL VALVE	PT - POINT	WMV - WATER METER VAULT
BW - BARB WIRE FENCE	ID - INSIDE DIAMETER	PTS - POTENTIAL TEST STATION	WS - WATER SPIGOT
'C-1' - C-1 TYPE INLET	INV - INVERT	PVC - POLYVINYL CHLORIDE	WV - WATER VALVE
℄ - CENTER LINE	INTP - INTERMEDIATE PRESSURE	RCP - REINFORCED CONCRETE PIPE	WVB - WATER WALL BARRIER
CCFTS - CASSED CROSSING AND FOREIGN LINE TEST STATION	IP - IRON PIPE	RD - ROAD	XP - EXPOSED PIPE
CD - CENTERLINE DITCH	IR - IRON ROD	REINF - REINFORCED	Ⓡ - INFORMATION OBTAINED FROM RECORD DRAWINGS, NOT FIELD VERIFIED
CHIN - CHINESE TALLOW TREE	ITS - ISOLATION TEST STATION	RIM - RIM ELEVATION OF INLET/MANHOLE	ⓃR - NO RECORD INFORMATION FOUND
CLF - CHAIN LINK FENCE	JT - JOINT	RJ - RESTRAINED JOINT	ⓈUE - INFORMATION OBTAINED FROM SUE
CLR - CLEARANCE	JUNCT - JUNCTION	RO - ROOF OVERHANG	
CLSM - CONTROLLED LOW STRENGTH MATERIAL	LC - LIMIT OF CONSTRUCTION	ROW - RIGHT OF WAY	
CMP - CORRUGATED METAL PIPE	LF - LINEAR FEET	RR - RAILROAD	
CO - SANITARY CLEANOUT	LN - LANE	RT - RIGHT	
COH - CITY OF HUNTSVILLE	LPCB - LOW PROFILE CONCRETE BARRIER	S - SLOPE	
COMM - COMMUNICATION	LT - LEFT	SAN - SANITARY	
CONC - CONCRETE	LS - LOW LIFT PUMP STATION	SCV - SPRINKLER CONTROL VALVE	
CNP - CENTERPOINT ENERGY POINT	MAX - MAXIMUM	SDWL - SMALL DIAMETER WATER LINE	
CPP - CONCRETE POWER POLE	METRO - METROPOLITAN TRANSIT AUTHORITY	SHT - SHEET	
CTB - CONCRETE TRAFFIC BARRIER	MIN - MINIMUM	SL - STREET LIGHT	
CTMS - COMPUTERIZED TRAFFIC MANAGEMENT SYSTEM	MH - MANHOLE	SN - SIGN	
DEF - DEFLECTION	MON - MONUMENT	SP - SERVICE POLE	
DI - DUCTILE IRON	MP - METER POLE	SPEC - SPECIFICATION	
DIA - DIAMETER	N - NORTH	STA - STATION	
DIP - DUCTILE IRON PIPE	N/A - NOT APPLICABLE	STL - STEEL	
DOC - DEPTH OF COVER	NG - NATURAL GROUND ELEVATION	STM - STORM	
DR - DRIVE	NO - NUMBER	SWBMH - SOUTHWESTERN BELL TELEPHONE MANHOLE	
DP AD - DEEP ANODE	NTS - NOT TO SCALE	SWR - SEWER	
DRWY - DRIVEWAY	OAK - OAK TREE	TB - TOP OF BANK	
E - EAST	OCEL - ON CURVE ELEVATION	TBM - TEMPORARY BENCHMARK	
ECB - ELECTRIC CONTROL BOX	OFS - OFFSET	TEMP - TEMPORARY	
ECD - ELECTRIC CONTROL CONDUIT	OH - OVERHEAD	TOC - TOP OF CURVE	
EJB - ELECTRICAL JUNCTION BOX	PA - PLANT AIR	TCE - TEMPORARY CONSTRUCTION EASEMENT	
EL/ELE - ELEVATION	PC - POINT OF CURVATURE	TCM - TELECOMMUNICATION CABLE MARKER	
ELEC - ELECTRIC	PCC - POINT OF COMPOUND CURVATURE	TEL/TELE - TELEPHONE	
ELM - ELM TREE	PCCP - PRE-STRESSED CONCRETE CYLINDER PIPE	THH - TELEPHONE HANDHOLE	
ELP - ELECTRIC LIGHT POLE	PEC - PECAN TREE	THK - THICKNESS	
ESMT - EASEMENT	PED - PEDESTAL	TLV - TELEPHONE VAULT	
ETJ - EXTRATERRITORIAL JURISDICTION	PERM - PERMANENT	TOE - TOP OF ELEVATION	
EXIST/EX - EXISTING	PGL - PROFILE GRADE LINE	TOP - TOP OF PAVEMENT	
FH - FIRE HYDRANT/FLUSHING HYDRANT	ℓ - PROPERTY LINE	TPD - TELEPHONE PEDESTAL	
FL - FLOW LINE	PI - POINT OF INTERSECTION	TS - TRAFFIC SIGN	
FO - FIBER OPTIC		TSB - TRAFFIC SIGNAL BOX	
FOC - FACE OF CURB		TSP - TRAFFIC SIGNAL POLE	
FP - FLAG POLE		TXDOT - TEXAS DEPARTMENT OF TRANSPORTATION	
FTS - FOREIGN LINE TEST STATION		TYP - TYPICAL	
GATE - GATE			
GEN - GENERATOR			

NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
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 HOUSTON, TX 77056  
 PHONE: 281-453-770  
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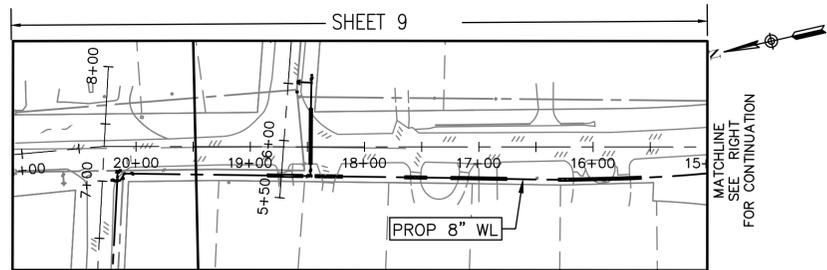
Phuong Nguyen  
 02/08/2023

**FY 2021/2022 WATERLINE REPLACEMENT PROJECT**  
**LEGEND AND ABBREVIATIONS SHEET (2 OF 2)**

SURVEYED BY: LANDTECH, INC.	
SHEET NO. <u>6</u> OF 62	DRAWING SCALE

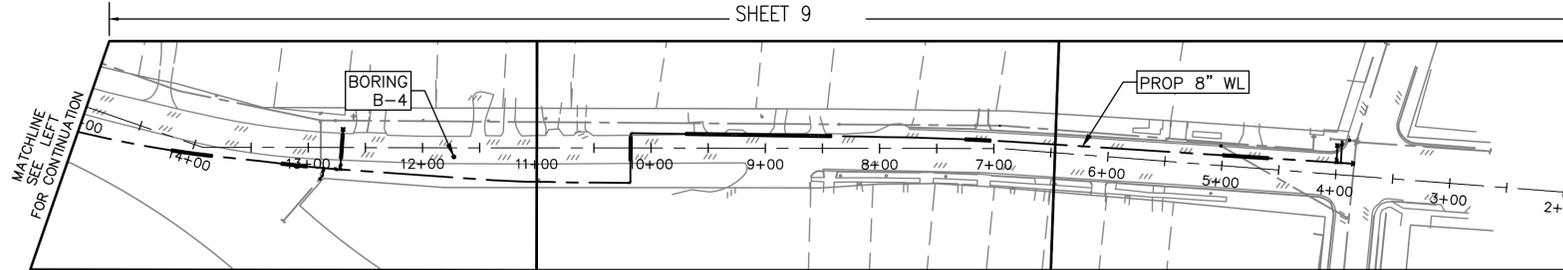
REVISION DATE: 2/1/2023

LAST MODIFIED: Feb 07, 2023 - 4:02pm BY USER: esanchez23  
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 DWG. NAME: SHEET LAYOUT AND BORE PLAN.dwg

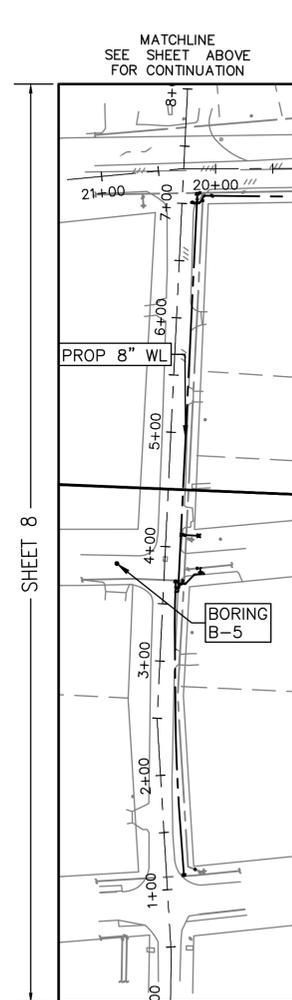
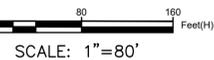


MATCHLINE  
SEE SHEET BELOW  
FOR CONTINUATION

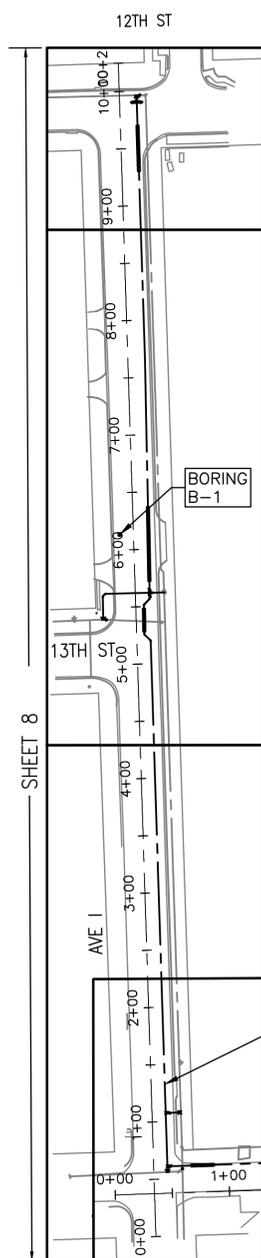
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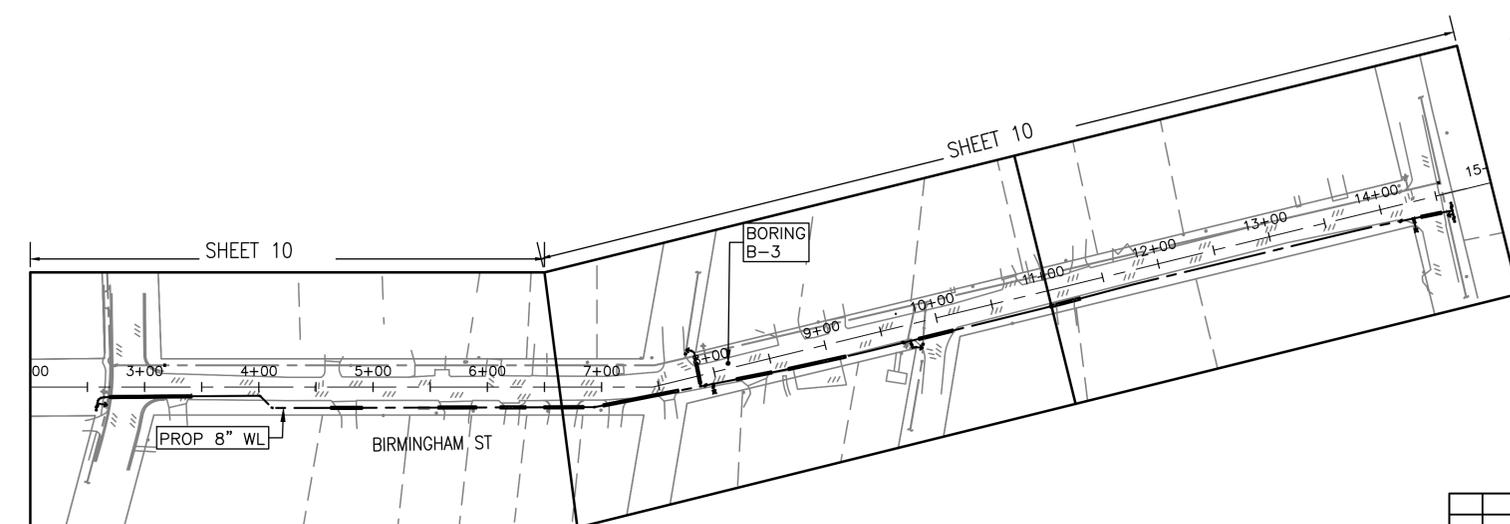
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THOMASON ST

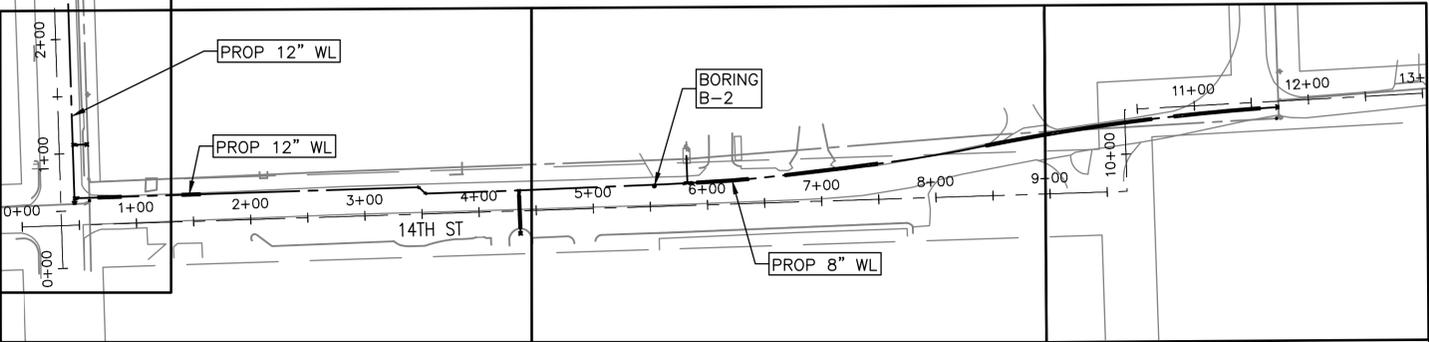


AVE I



BIRMINGHAM ST

BORING LOCATIONS AND ELEVATIONS				
BOREHOLE #	BASELINE	STATION	OFFSET	ELEV
B-1	AVE I	6+14	11.93 (LT)	391.52660'
B-2	14TH ST	5+54	17.91 (LT)	386.54690'
B-3	BIRMINGHAM ST	8+14	4.49 (LT)	385.17750'
B-4	UNIVERSITY AVE	11+73	7.82 (LT)	339.54030'
B-5	THOMASON ST	1+32	4.95 (LT)	345.28260'



14TH ST

SHEET 8

NO.	DATE	REVISION	APP.



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 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059

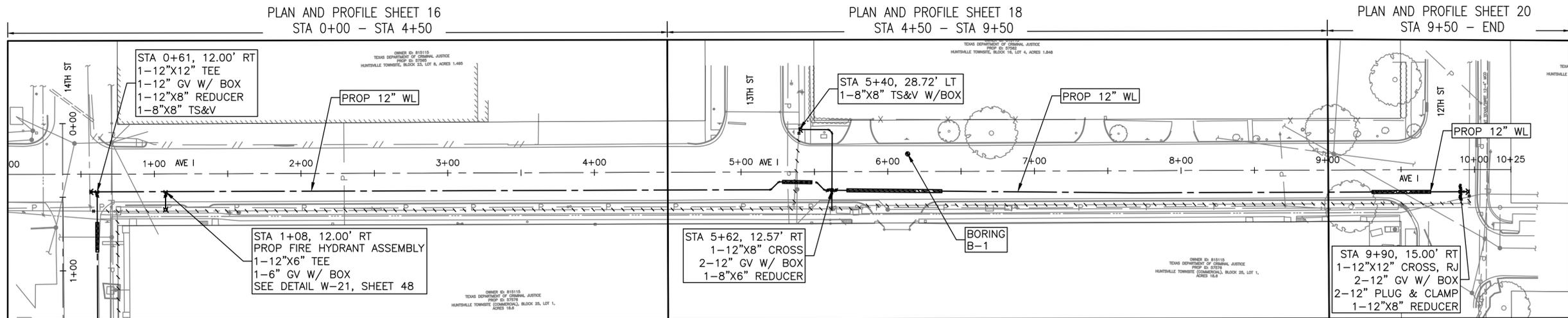


*Phuong*  
 02/08/2023

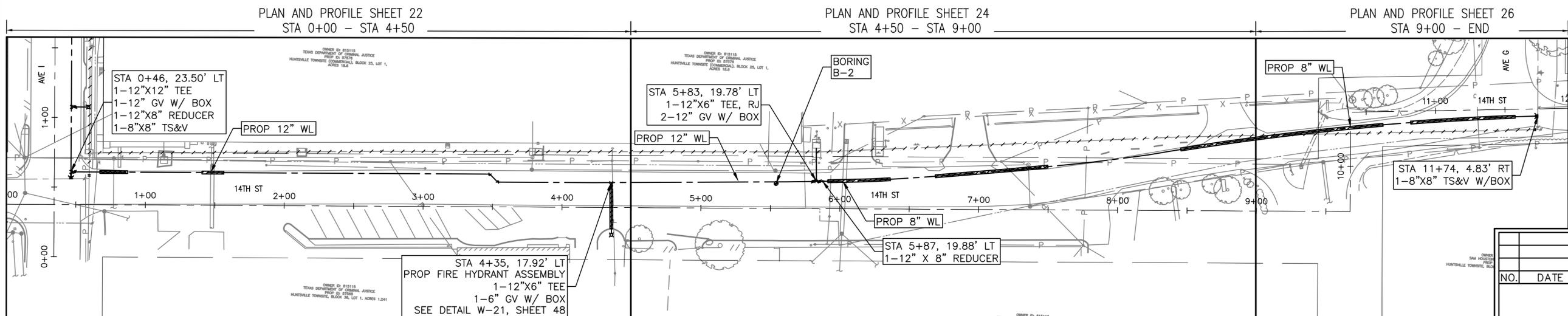
FY 2021/2022 WATERLINE  
 REPLACEMENT PROJECT  
 OVERALL LAYOUT PLAN  
 (SHEET 1 OF 1)

SURVEYED BY: LANDTECH, INC.	SCALE: 1" = 80'
SHEET NO. <u>7</u> OF 62	DRAWING SCALE
REVISION DATE: 2/1/2023	

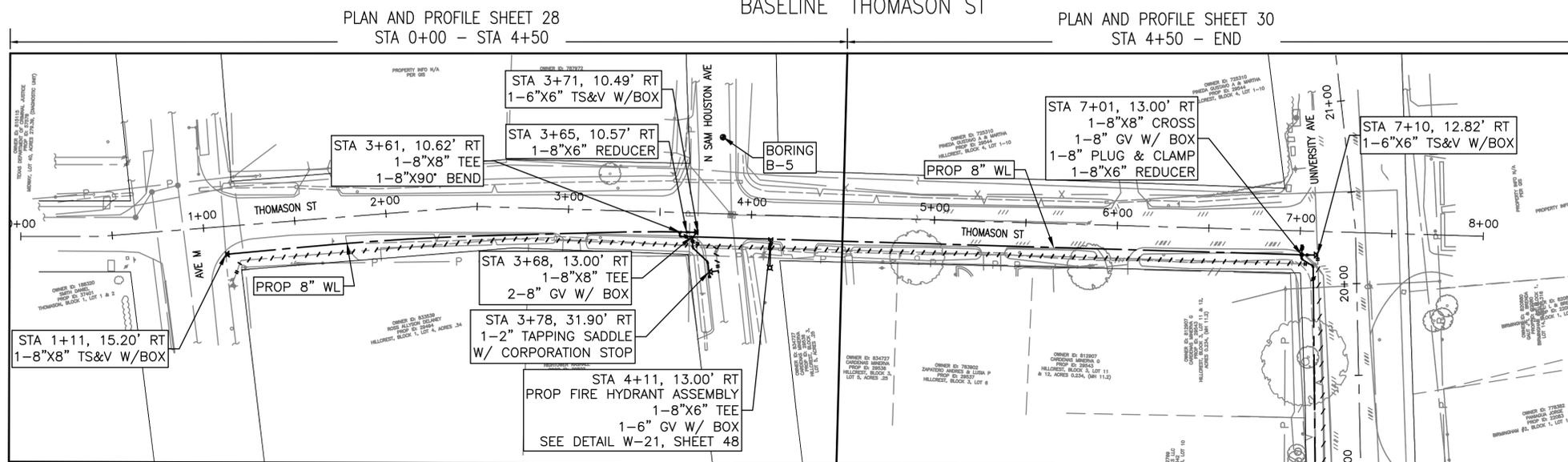
BASELINE "AVE I"



BASELINE "14TH STREET"



BASELINE "THOMASON ST"



NO.	DATE	REVISION	APP.



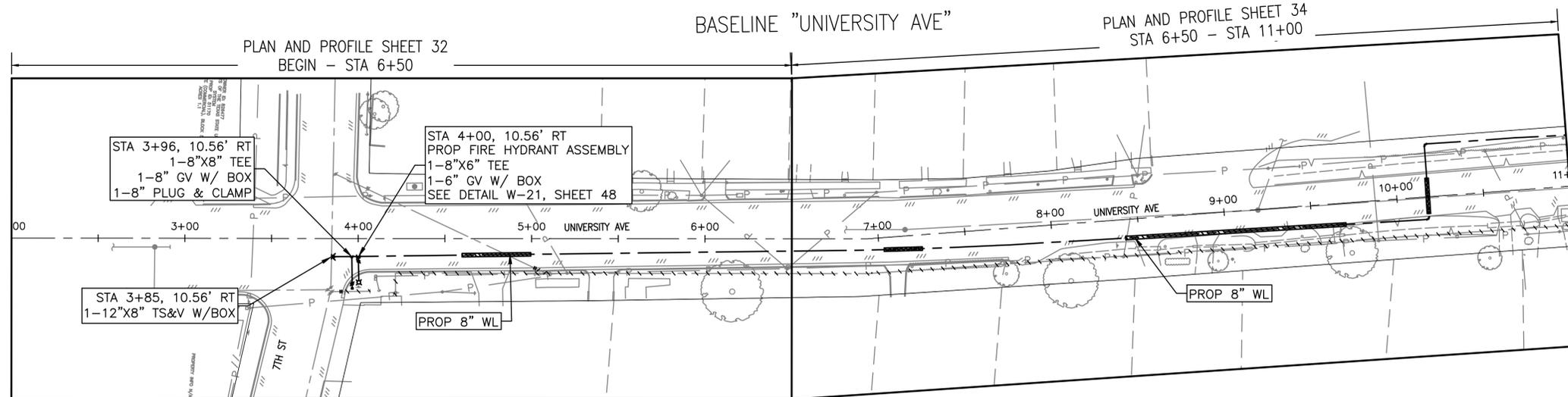
**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059

STATE OF TEXAS  
 PHUONG NGUYEN  
 157850  
 LICENSED PROFESSIONAL ENGINEER  
 02/08/2023

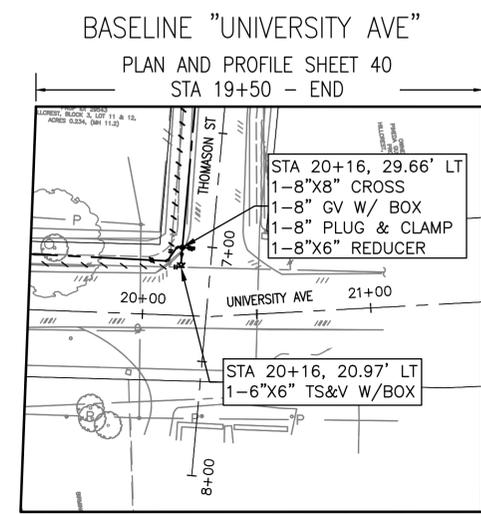
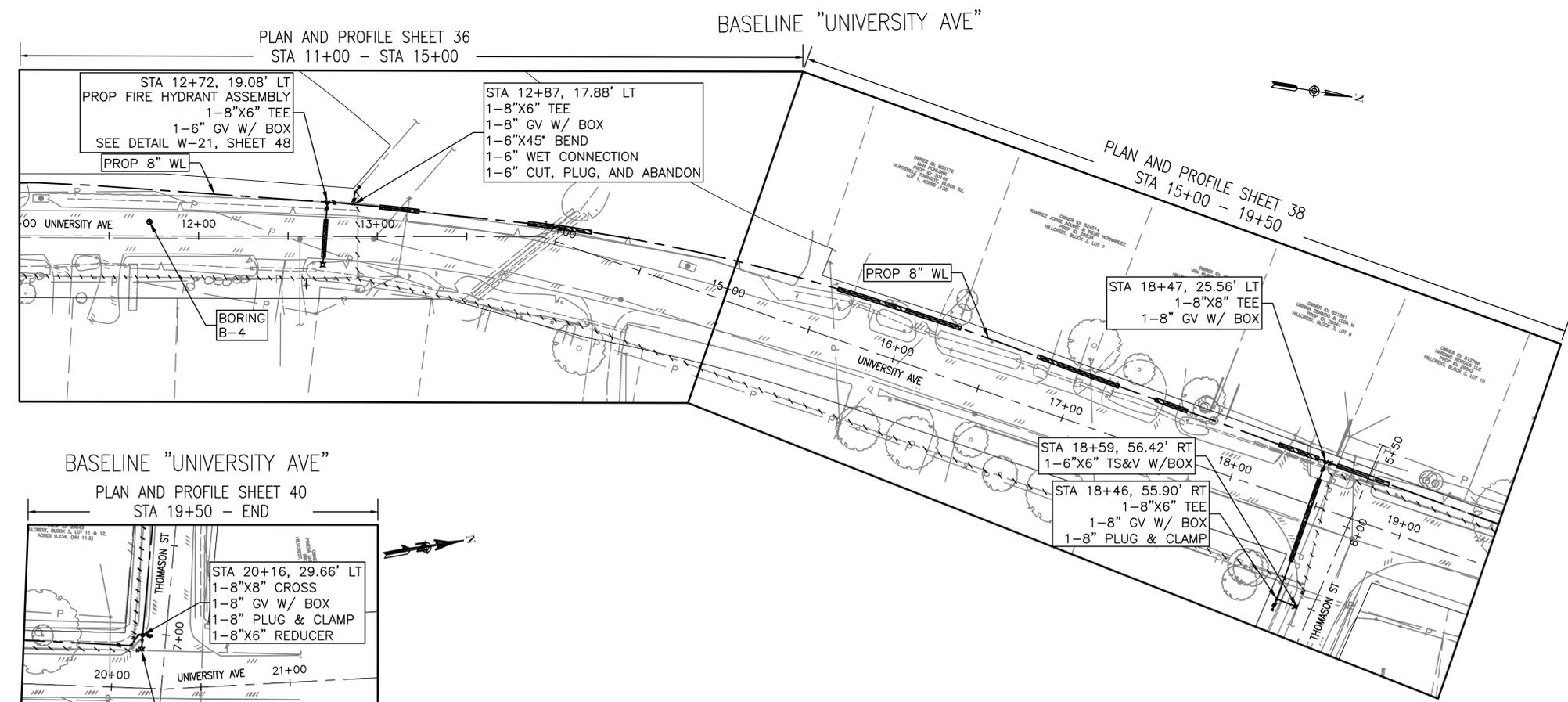
FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 OVERALL SHEET LAYOUT (SHEET 1 OF 3)

SURVEYED BY: LANDTECH, INC.	SCALE: 1" = 40'
SHEET NO. <u>8</u> OF 62	DRAWING SCALE
REVISION DATE: 2/1/2023	

LAST MODIFIED: Feb 07, 2023 - 4:03pm BY USER: esanchez23  
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 DWG. NAME: SHEET LAYOUT AND BORE PLAN.dwg



0 40 80 Feet(H)  
SCALE: 1"=40'



NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059

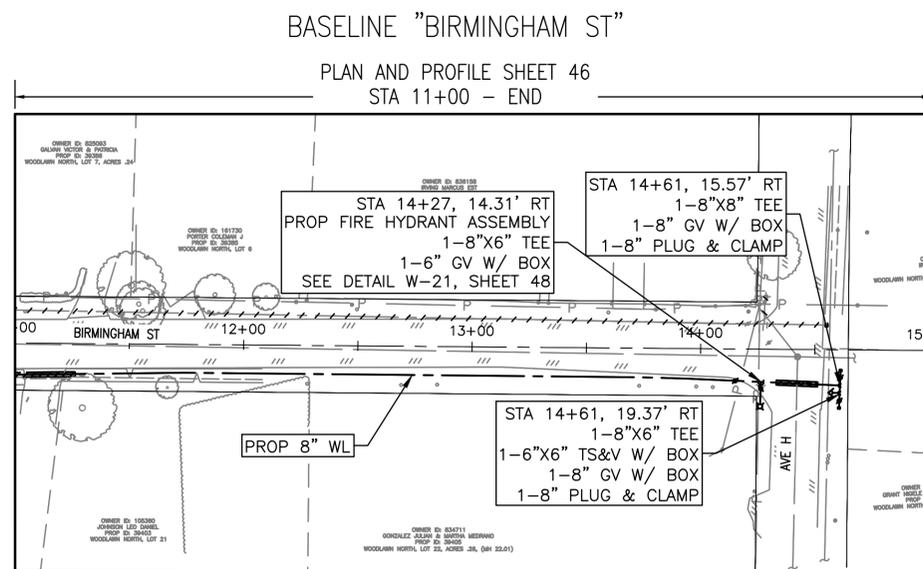
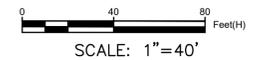
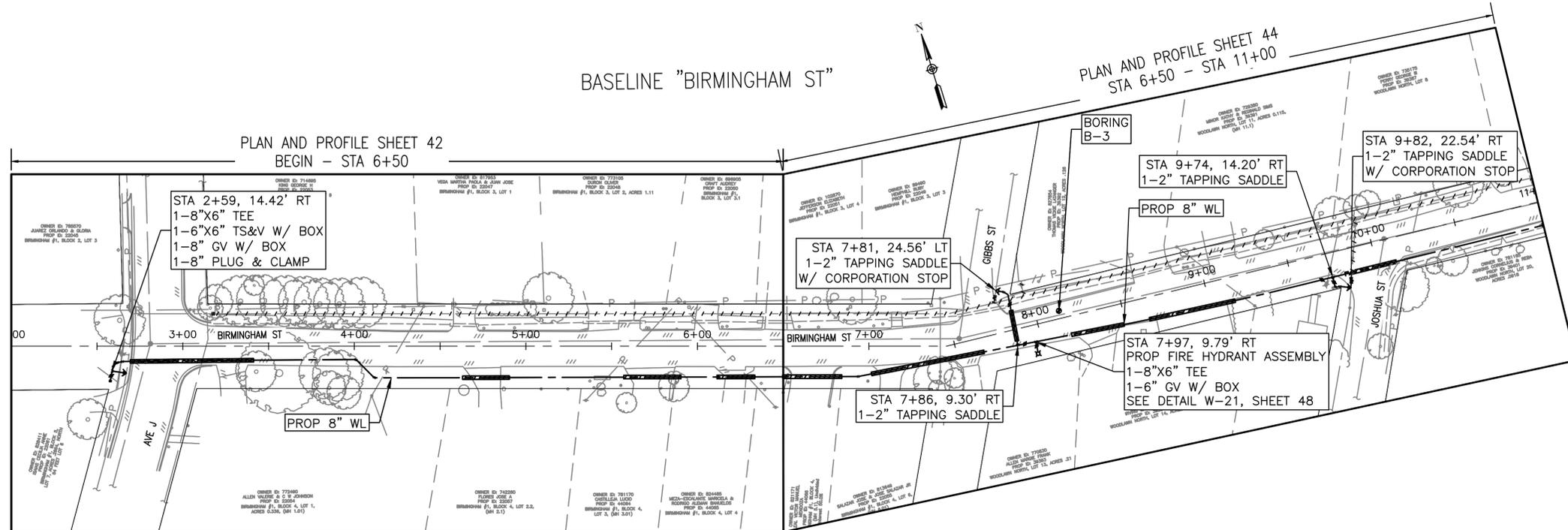
STATE OF TEXAS  
 PHUONG NGUYEN  
 137850  
 LICENSED PROFESSIONAL ENGINEER  
 02/08/2023

FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 OVERALL SHEET LAYOUT (SHEET 2 OF 3)

SURVEYED BY: LANDTECH, INC.	SCALE: 1" = 40'
SHEET NO. <u>9</u> OF 62	DRAWING SCALE
REVISION DATE: 2/1/2023	

LAST MODIFIED: Feb 07, 2023 - 4:03pm BY USER: esanchez23  
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LAST MODIFIED: Feb 07, 2023 - 4:03pm BY USER: esanchez23  
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NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
 engineering • construction management  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059

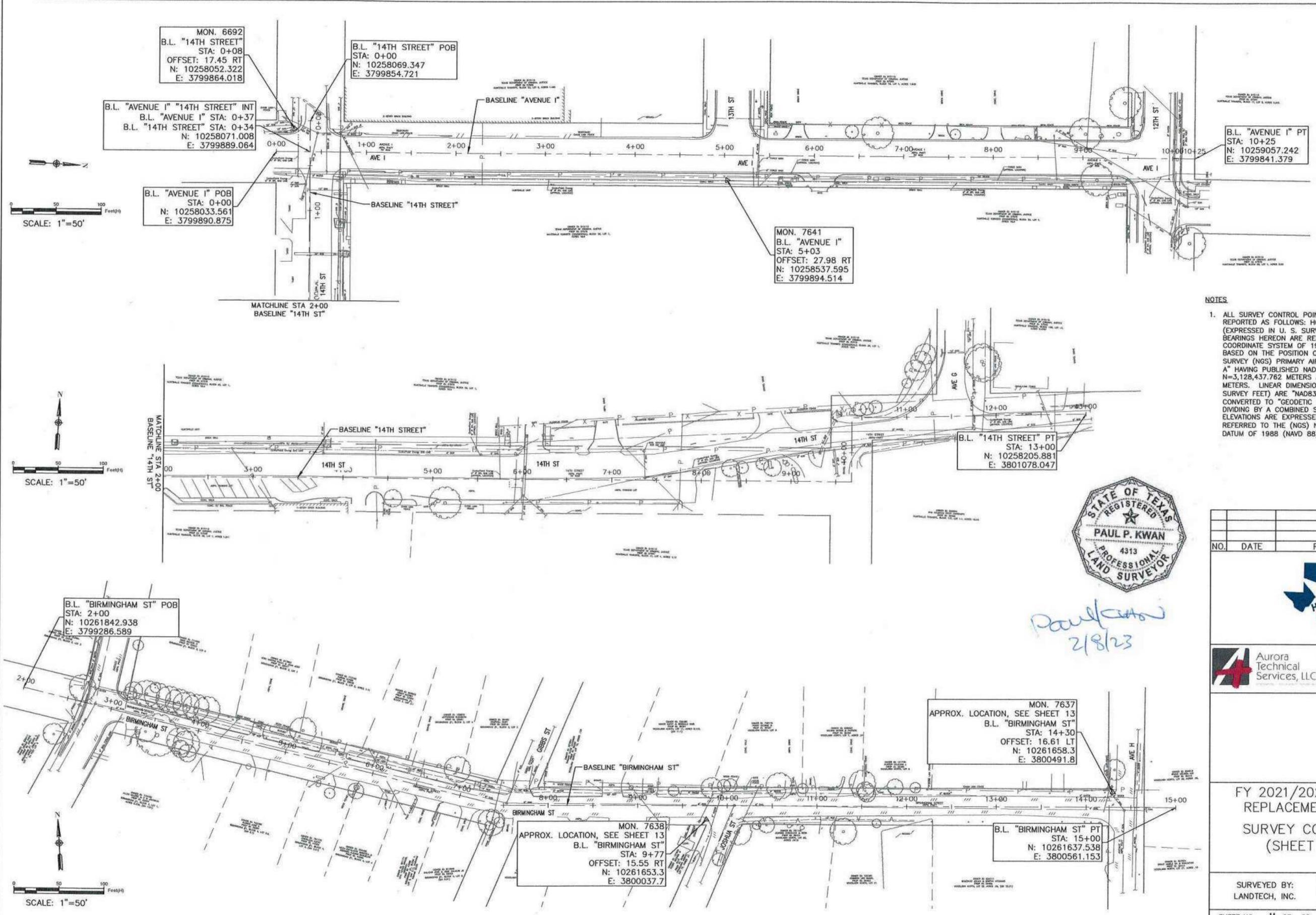
STATE OF TEXAS  
 PHUONG NGUYEN  
 137850  
 LICENSED PROFESSIONAL ENGINEER  
 02/08/2023

FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 OVERALL SHEET LAYOUT (SHEET 3 OF 3)

SURVEYED BY: LANDTECH, INC.	SCALE: 1" = 40'
SHEET NO. <u>10</u> OF 62	DRAWING SCALE

REVISION DATE: 2/1/2023

LAST MODIFIED: Feb 07, 2023 - 4:05pm BY USER: esanchez23  
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**NOTES**

1. ALL SURVEY CONTROL POINTS AND BENCHMARKS ARE REPORTED AS FOLLOWS: HORIZONTAL COORDINATES (EXPRESSED IN U. S. SURVEY FEET UNITS) AND BEARINGS HEREON ARE REFERRING TO THE TEXAS COORDINATE SYSTEM OF 1983, CENTRAL ZONE AND BASED ON THE POSITION OF THE NATIONAL GEODETIC SURVEY (NGS) PRIMARY AIRPORT CONTROL STATION "T39 A" HAVING PUBLISHED NAD 83 (1993) COORDINATES OF N=3,128,437.762 METERS AND E=1,154,289.433 METERS. LINEAR DIMENSIONS (EXPRESSED IN U.S. SURVEY FEET) ARE "NAD83 GRID" UNIT AND MAY BE CONVERTED TO "GEODETIC HORIZONTAL" UNITS BY DIVIDING BY A COMBINED SCALE FACTOR OF 0.99988. ELEVATIONS ARE EXPRESSED IN U.S. SURVEY FEET AND REFERRED TO THE (NGS) NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).



*Paul Kwan*  
2/8/23

NO.	DATE	REVISION	APP.

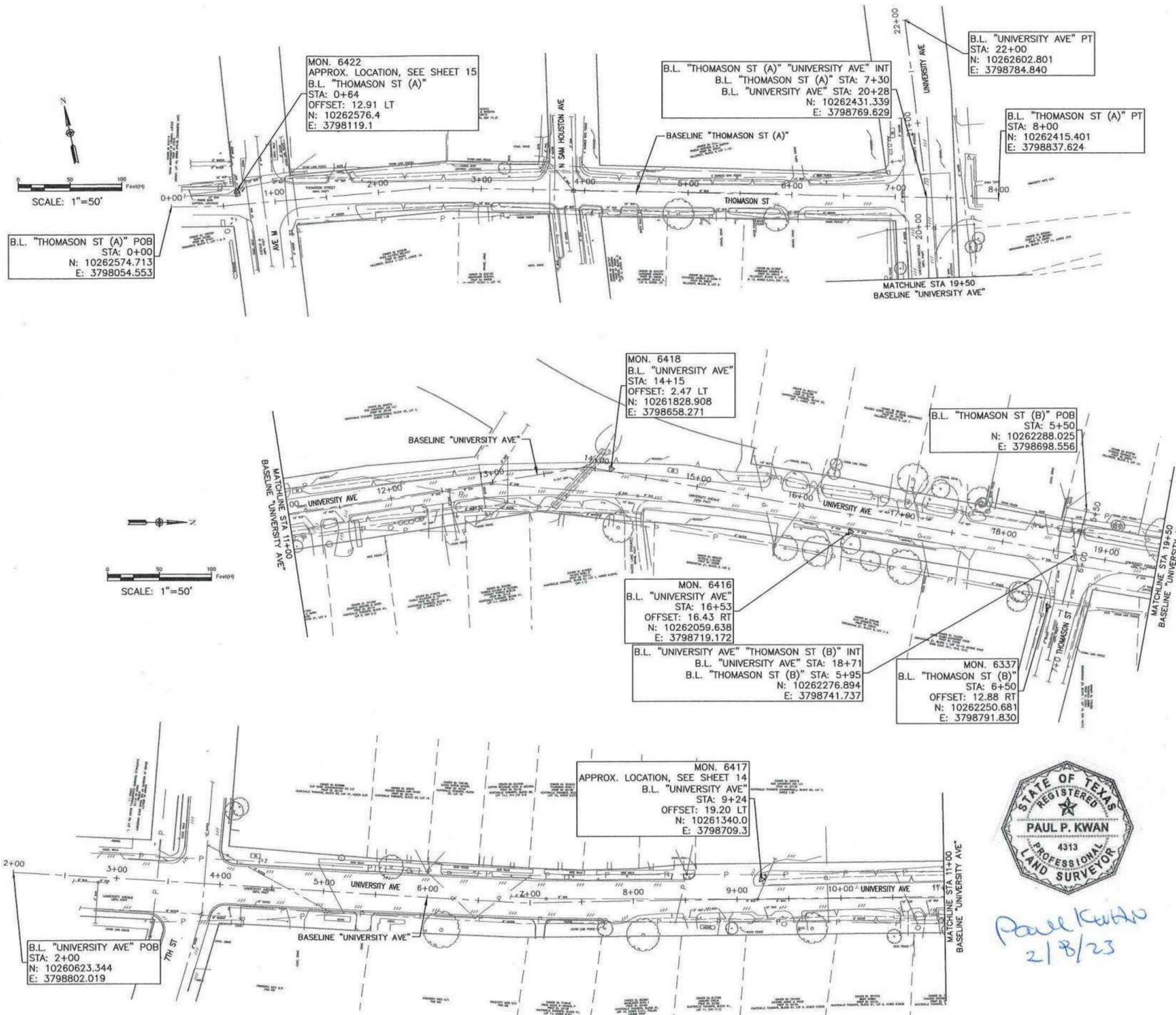


**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-7700  
 TX FIRM NO.: F-2059

FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 SURVEY CONTROL MAP  
 (SHEET 1 OF 5)

SURVEYED BY: LANDTECH, INC.	SCALE: 1" = 50'
SHEET NO. 11 OF 62	DRAWING SCALE
REVISION DATE: 2/7/2023	

LAST MODIFIED: Feb 07, 2023 - 4:06pm BY USER: esanchez23  
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 DWS NAME: SURVEY CONTROL MAP.dwg



*Paul Kwan*  
 2/8/23

**NOTES**

1. ALL SURVEY CONTROL POINTS AND BENCHMARKS ARE REPORTED AS FOLLOWS: HORIZONTAL COORDINATES (EXPRESSED IN U. S. SURVEY FEET UNITS) AND BEARINGS HEREON ARE REFERRING TO THE TEXAS COORDINATE SYSTEM OF 1983, CENTRAL ZONE AND BASED ON THE POSITION OF THE NATIONAL GEODETIC SURVEY (NGS) PRIMARY AIRPORT CONTROL STATION "T39 A" HAVING PUBLISHED NAD 83 (1993) COORDINATES OF N=3,128,437.762 METERS AND E=1,154,269.433 METERS. LINEAR DIMENSIONS (EXPRESSED IN U.S. SURVEY FEET) ARE "NAD83 GRID" UNIT AND MAY BE CONVERTED TO "GEODETIC HORIZONTAL" UNITS BY DIVIDING BY A COMBINED SCALE FACTOR OF 0.99988. ELEVATIONS ARE EXPRESSED IN U.S. SURVEY FEET AND REFERRED TO THE (NGS) NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77058  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059

FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 SURVEY CONTROL MAP  
 (SHEET 2 OF 5)

SURVEYED BY: LANDTECH, INC.	SCALE: 1" = 50'
SHEET NO. 12 OF 62	DRAWING SCALE
REVISION DATE: 2/7/2023	

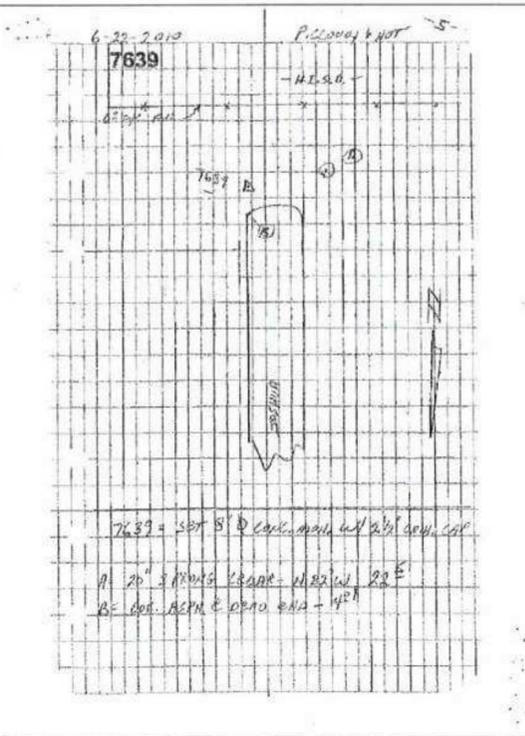
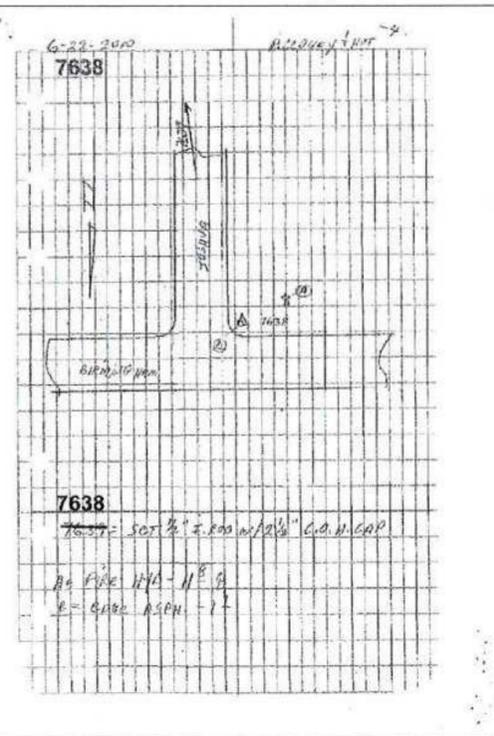
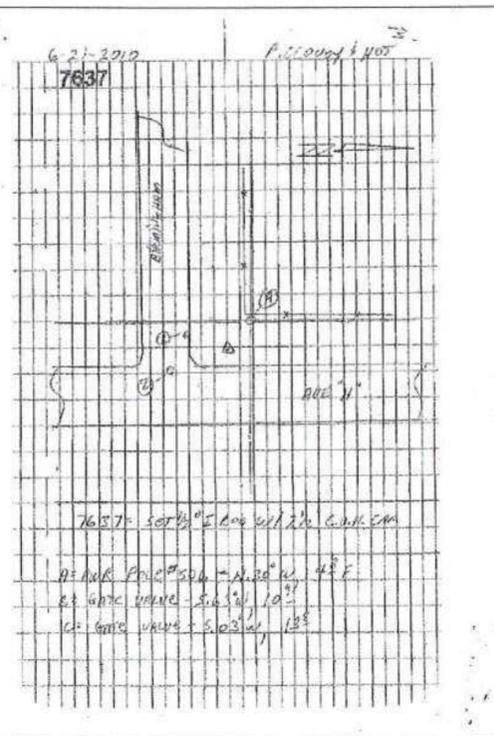
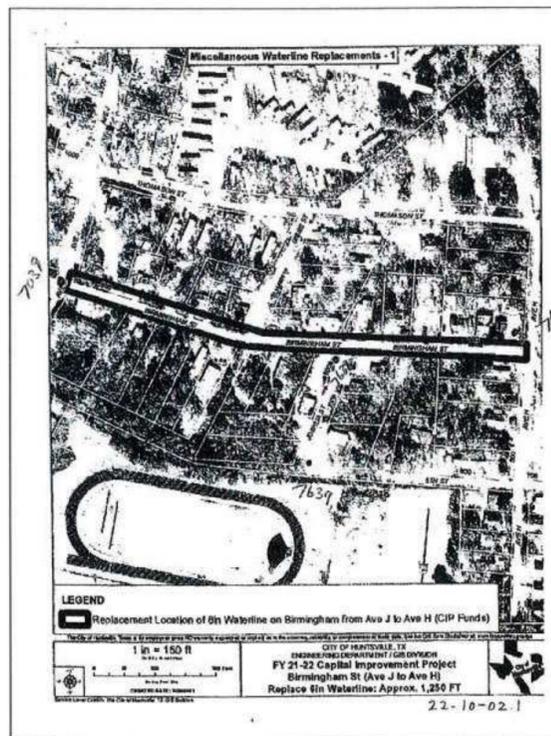
NAME	NORTHING	EASTING	ELEVATION	POINTCODE	REFERENCE
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66	10257054.000	3798665.000	381.965	CPKC*CLFT L4_66	http://www.huntsvillegis.com/referencesheets/Not Available - Contact City Surveyor.pdf
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7425	10262858.710	3794377.380	361.562	CPRR*RR SPIKE	http://www.huntsvillegis.com/referencesheets/7425.pdf
7428	10261400.191	3795138.369	401.384	CPIC*CONC MON	http://www.huntsvillegis.com/referencesheets/7428.pdf
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Use Control  
6/20/2024



Paul P. Kwan  
2/8/23

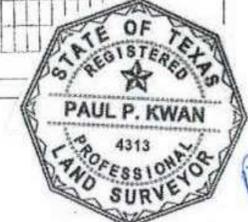
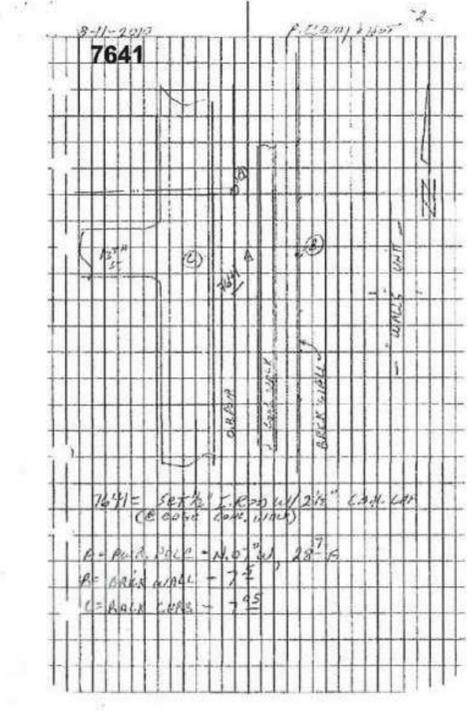
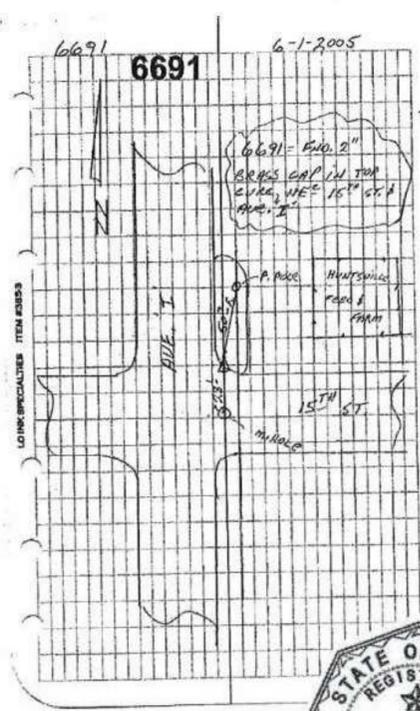
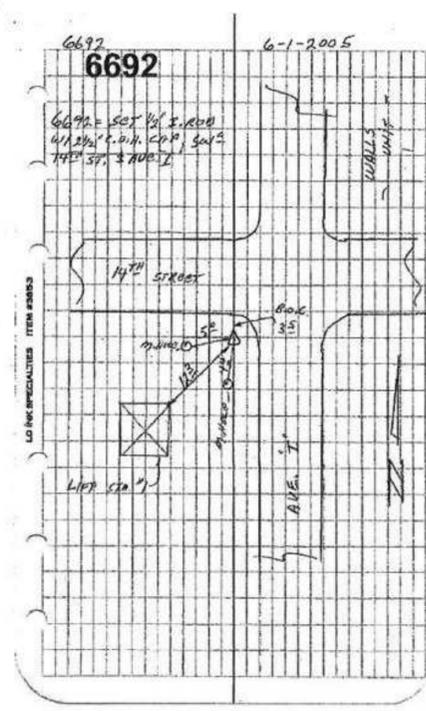
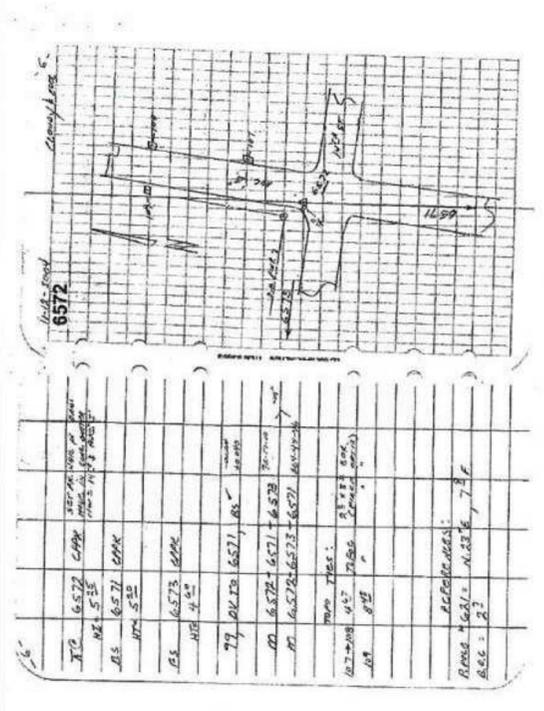
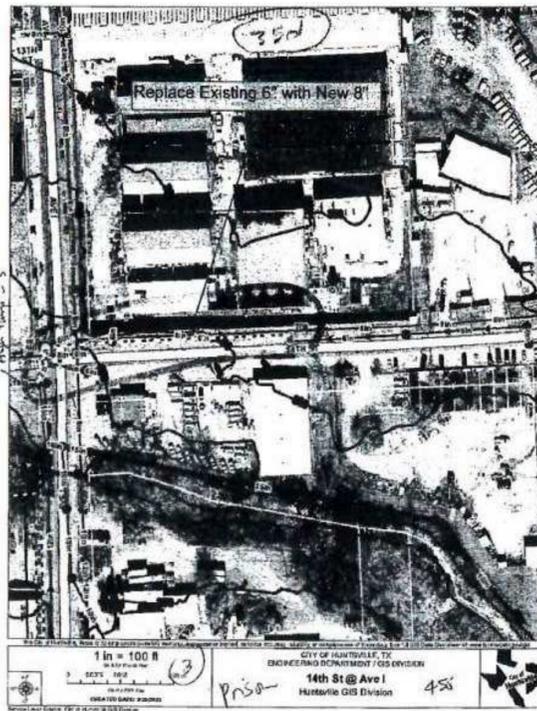
BIRMINGHAM STREET



NO.	DATE	REVISION	APP.
AURORA TECHNICAL SERVICES, LLC 2121 SAGE ROAD, SUITE 150 HOUSTON, TX 77056 PHONE: 281-453-770 TX FIRM NO.: F-2059			
FY 2021/2022 WATERLINE REPLACEMENT PROJECT SURVEY CONTROL MAP (SHEET 3 OF 5)			
SURVEYED BY: LANDTECH, INC.			
SHEET NO. 13 OF 62		DRAWING SCALE	
REVISION DATE: 2/7/2023			

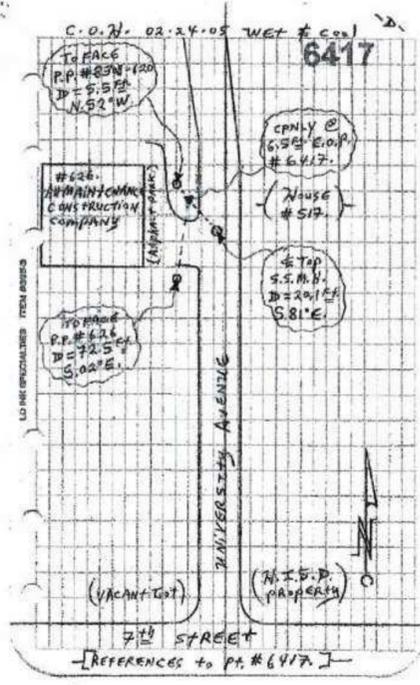
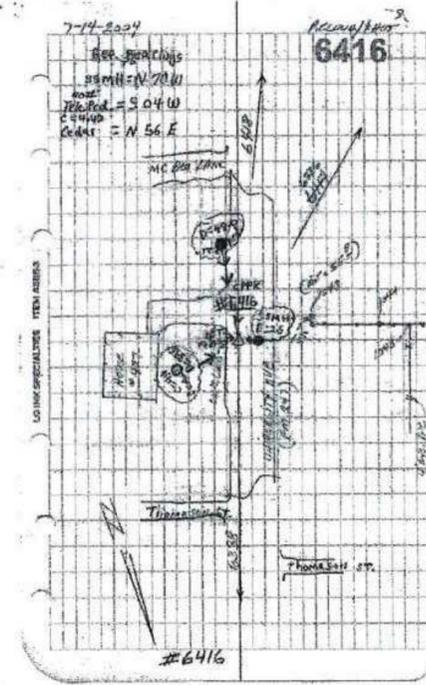
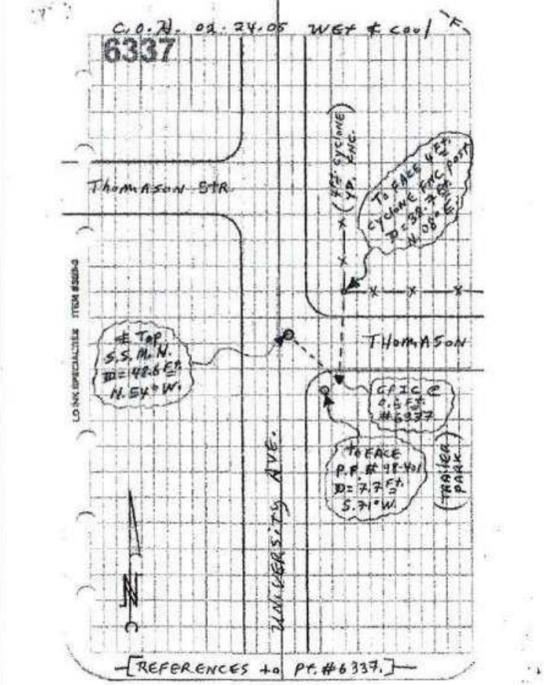
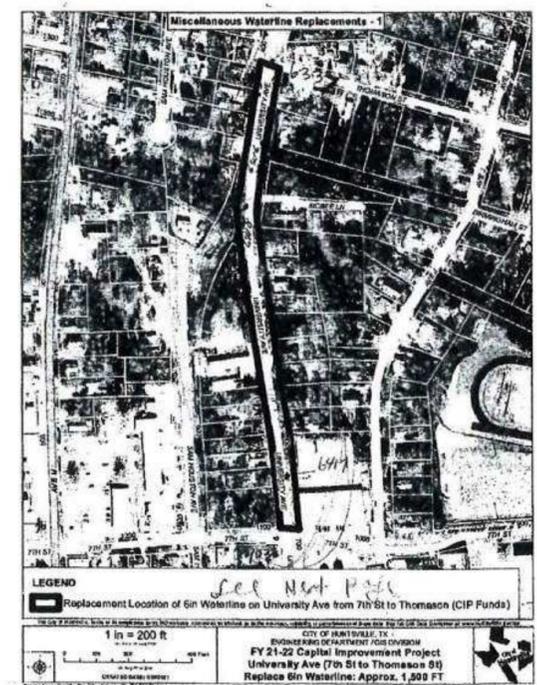
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 DWG. NAME: SURVEY CONTROL.dwg

AVENUE I AND 14TH STREET



Paul Kwan  
2/8/23

UNIVERSITY AVE



NO.	DATE	REVISION	APP.

**Aurora Technical Services, LLC**  
2121 SAGE ROAD, SUITE 150  
HOUSTON, TX 77056  
PHONE: 281-453-770  
TX FIRM NO.: F-2059

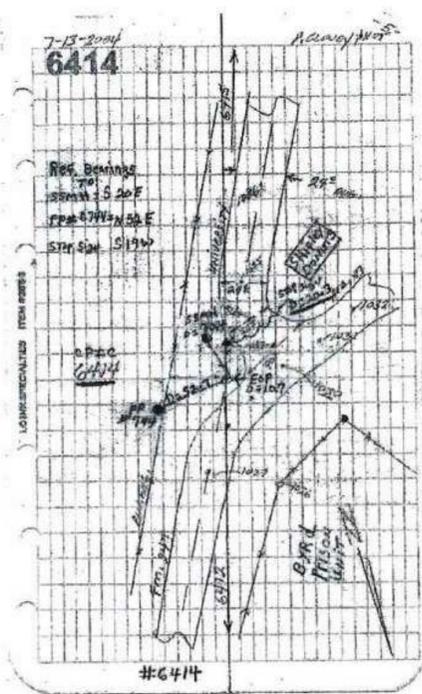
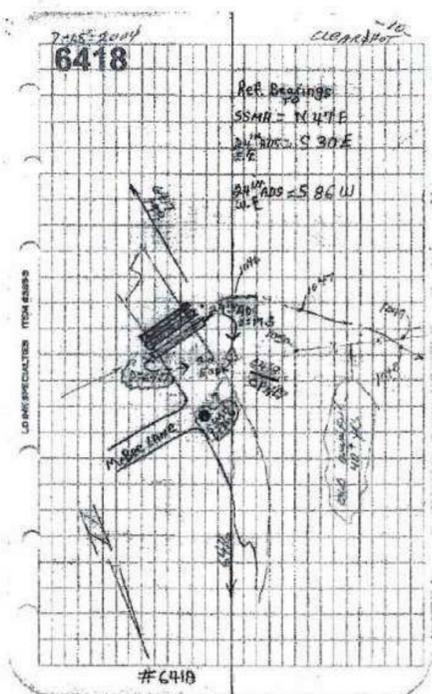
FY 2021/2022 WATERLINE REPLACEMENT PROJECT

SURVEY CONTROL MAP (SHEET 4 OF 5)

SURVEYED BY: LANDTECH, INC.	
SHEET NO. 14 OF 62	DRAWING SCALE
REVISION DATE: 2/7/2023	

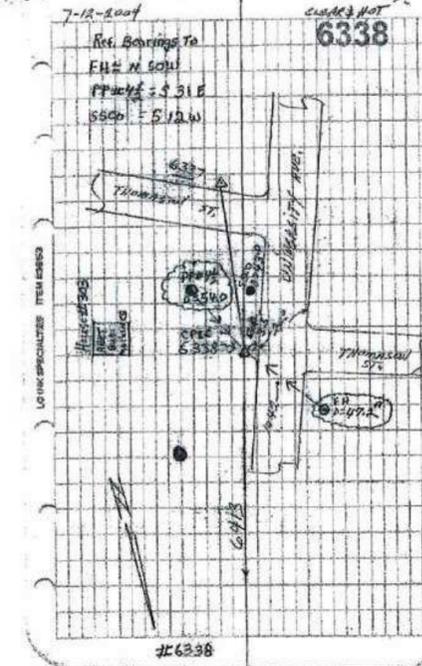
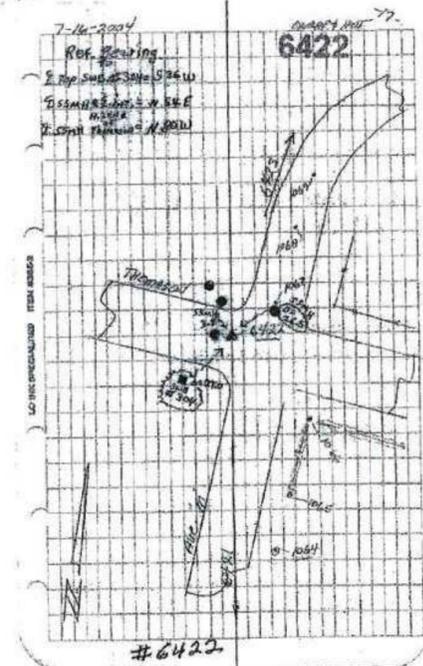
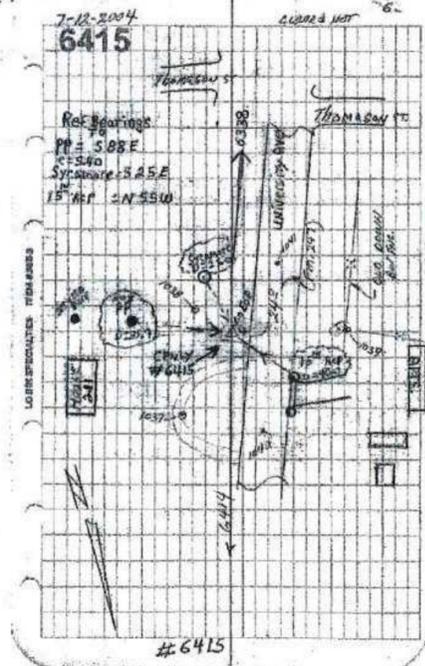
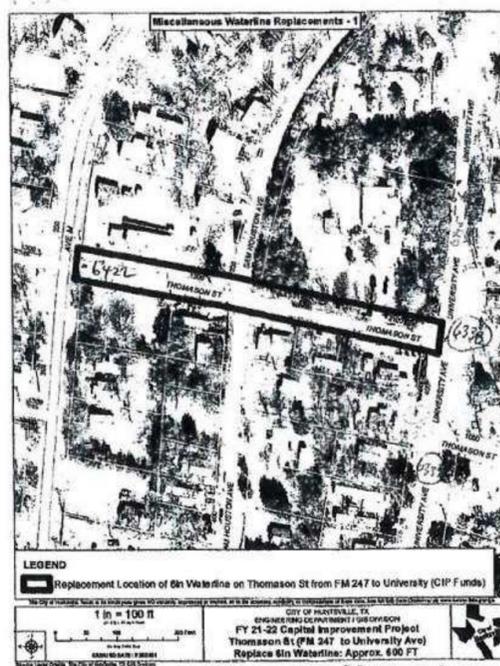
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DWG. NAME: SURVEY CONTROL.dwg

UNIVERSITY AVE



Paul P. Kwan  
2/8/23

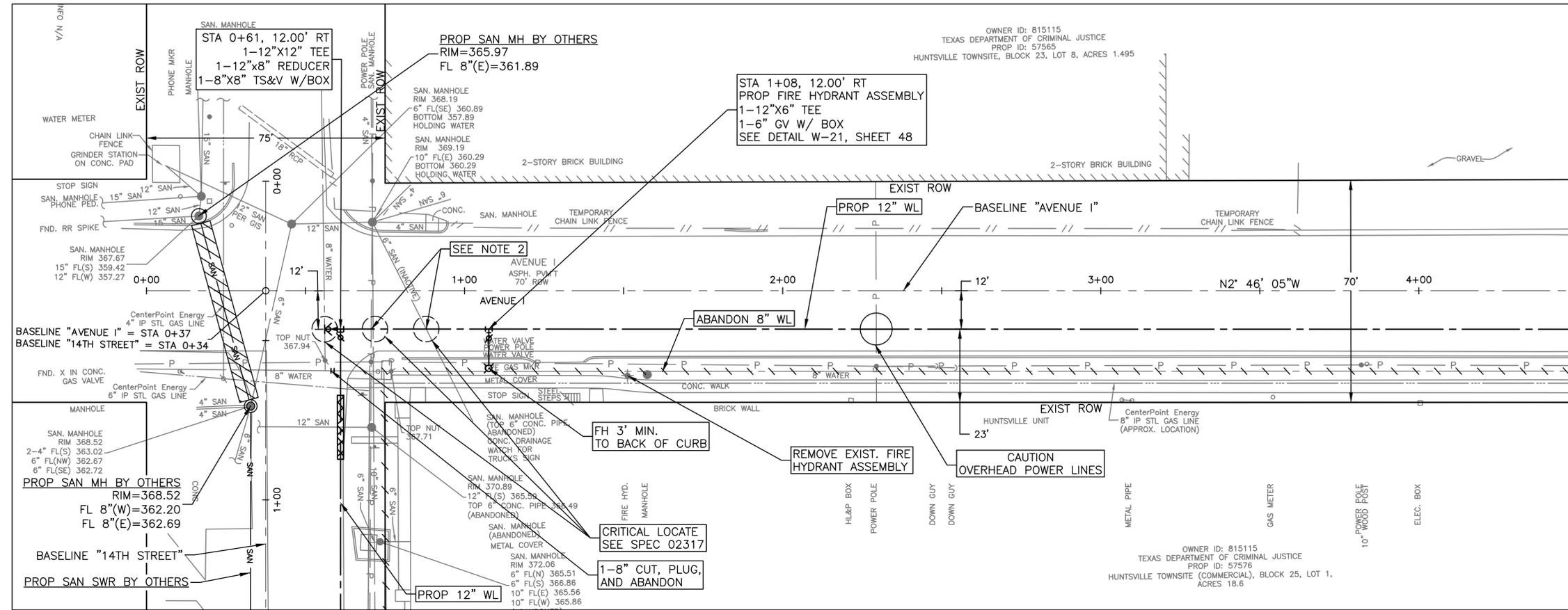
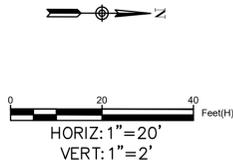
THOMASON STREET



NO.	DATE	REVISION	APP.
			
		AURORA TECHNICAL SERVICES, LLC 2121 SAGE ROAD, SUITE 150 HOUSTON, TX 77056 PHONE: 281-453-770 TX FIRM NO.: F-2059	
FY 2021/2022 WATERLINE REPLACEMENT PROJECT  SURVEY CONTROL MAP (SHEET 5 OF 5)			
SURVEYED BY: LANDTECH, INC.			
SHEET NO. 15 OF 62		DRAWING SCALE	
REVISION DATE: 2/7/2023			

LAST MODIFIED: Feb 07, 2023 - 4:06pm BY USER: esanchez23  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
 DWG. NAME: SURVEY CONTROL.dwg

**BENCHMARK:**  
 ALL SURVEY CONTROL POINTS AND BENCHMARKS ARE REPORTED AS FOLLOWS: HORIZONTAL COORDINATES (EXPRESSED IN U. S. SURVEY FEET UNITS) AND BEARINGS HEREON ARE REFERRING TO THE TEXAS COORDINATE SYSTEM OF 1983, CENTRAL ZONE AND BASED ON THE POSITION OF THE NATIONAL GEODETIC SURVEY (NGS) PRIMARY AIRPORT CONTROL STATION "T39 A" HAVING PUBLISHED NAD 83 (1993) COORDINATES OF N=3,128,437.762 METERS AND E=1,154,289.433 METERS. LINEAR DIMENSIONS (EXPRESSED IN U.S. SURVEY FEET) ARE "NAD83 GRID" UNIT AND MAY BE CONVERTED TO "GEODETTIC HORIZONTAL" UNITS BY DIVIDING BY A COMBINED SCALE FACTOR OF 0.99988. ELEVATIONS ARE EXPRESSED IN U.S. SURVEY FEET AND REFERRED TO THE (NGS) NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).



MATCHLINE STA 4+50  
SEE SHEET 18

MON. 6692  
 ELEV. 371.021 FT  
 LOCATED ON THE SOUTHEAST CORNER OF THE INTERSECTION OF 14TH STREET AND AVENUE I  
 N = 10258052.322  
 E = 3799864.018

**NOTICE:**  
 FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

**VERIFICATION OF PRIVATE UTILITY LINES**  
*Mike Brower* Date: 02-09-23  
 CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.  
 Signature valid for six months.

*Mike Brower* Date: 02-09-23  
 CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
 Signature valid for six months.

*Jesse Rodriguez* Date: 02/09/2023  
 Approved for AT&T underground conduit facilities only.  
 Signature valid for one year.

BASELINE 14TH STREET  
 FOR CONTINUATION  
 SEE SHEET 22

- NOTES:**
- ALL EXISTING WATER SERVICE CONNECTIONS ALONG PROJECT TO BE RECONNECTED. SEE DETAIL W-04, SHEET 48.
  - SEE DETAIL W-61, SHEET 49. PLACE 1 FULL SECTION (MIN 18FT) OF WATER LINE (WL) CENTERED AT SS CROSSING. PROVIDE RESTRAINED JOINTS ON WL, SPACED AT LEAST 9 FT HORIZONTALLY FROM CENTERLINE OF SS. WHEN A WL CROSSES UNDER AN EXISTING SS OR IS WITHIN 9 FT OF A SANITARY SEWER MANHOLE, REFER TO REQUIREMENTS OF TAC 217.53.d.3 AND TAC 290.44.e.4.B.iii.
  - CONTRACTOR TO MAINTAIN ACCESS THROUGH PRIVATE DRIVEWAYS AT ALL TIMES DURING CONSTRUCTION.
  - REFER TO ADDITIONAL TDCJ REQUIREMENTS UNDER SUMMARY OF WORK SECTION 1.08
  - CONTRACTOR TO MAINTAIN DRAINAGE AT ALL TIME. ROADSIDE DITCHES TO BE RESTORED TO EXISTING CONDITION OR BETTER. NO SEPARATE PAY.
  - PRIOR TO CONSTRUCTION, CONTRACTOR TO FIELD VERIFY THE SIZE OF THE EXISTING 8" WATER LINE PROPOSED TO BE PLUGGED, AND PROPOSED TO BE CONNECTED TO.

NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059

STATE OF TEXAS  
 PHUONG NGUYEN  
 157850  
 LICENSED PROFESSIONAL ENGINEER  
*Phuong Nguyen*  
 Aurora Technical Services, LLC  
 Texas Registered Engineering Firm  
 F-2059  
 02/08/2023

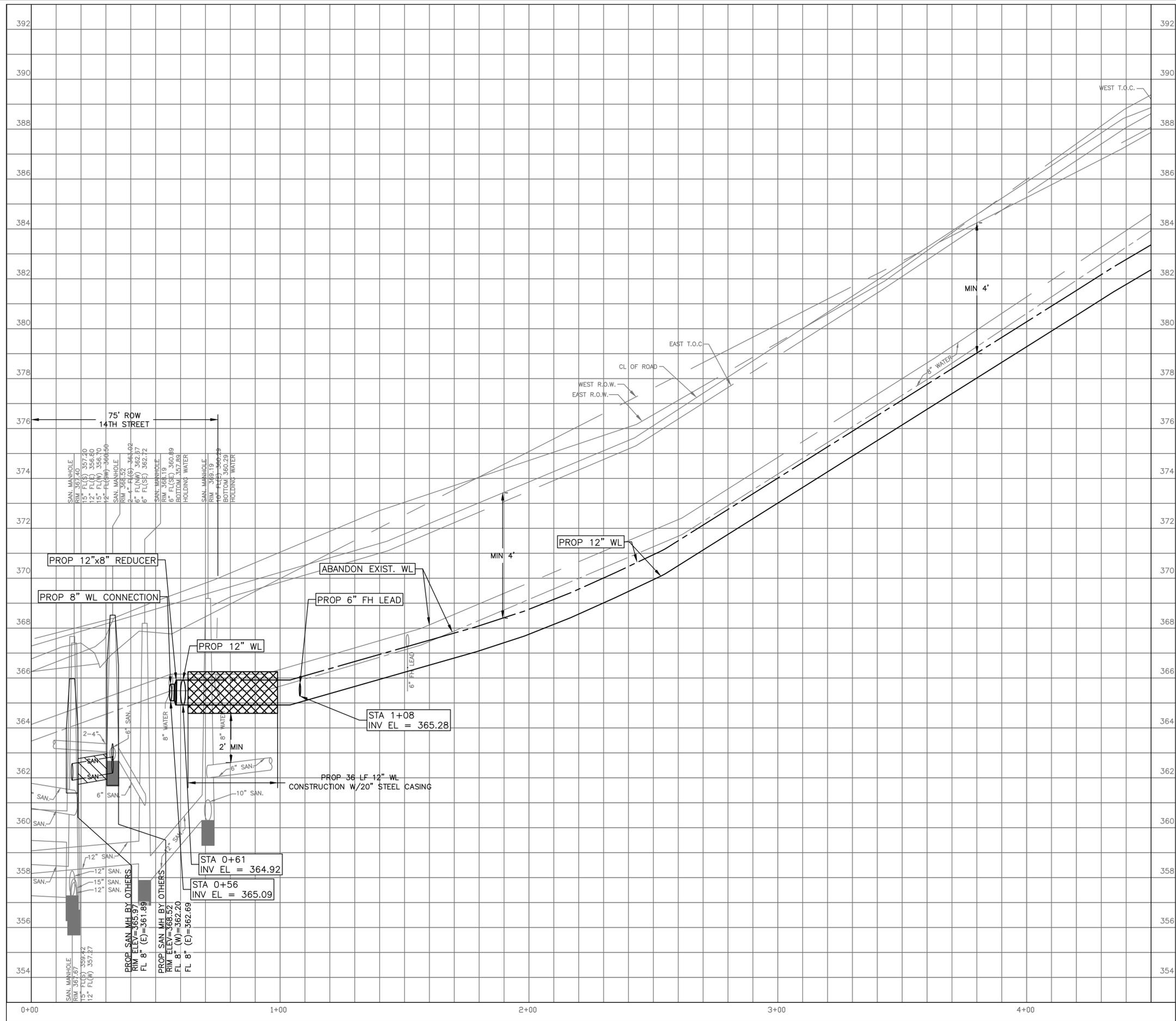
FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 PLAN  
 AVENUE I  
 BEGIN TO STA 4+50

SURVEYED BY: LANDTECH, INC.	HORIZ: 1" = 20' VERT: 1" = 2'
SHEET NO. 16 OF 62	DRAWING SCALE

REVISION DATE: 2/7/2023

LAST MODIFIED: Feb 08, 2023 - 11:35am BY USER: jrush06  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
 DWG. NAME: P&P SHEET XX.dwg

LAST MODIFIED: Feb 08, 2023 - 11:47am BY USER: jrush06  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
 DWG. NAME: P&P SHEET XX.dwg



MATCHLINE STA 4+50  
SEE SHEET 19

HORIZ: 1"=20'  
 VERT: 1"=2'

- NOTES:**
- ALL EXISTING WATER SERVICE CONNECTIONS ALONG PROJECT TO BE RECONNECTED. SEE DETAIL W-04, SHEET 48.
  - SEE DETAIL W-61, SHEET 49. PLACE 1 FULL SECTION (MIN 18FT) OF WATER LINE (WL) CENTERED AT SS CROSSING. PROVIDE RESTRAINED JOINTS ON WL, SPACED AT LEAST 9 FT HORIZONTALLY FROM CENTERLINE OF SS. WHEN A WL CROSSES UNDER AN EXISTING SS OR IS WITHIN 9 FT OF A SANITARY SEWER MANHOLE, REFER TO REQUIREMENTS OF TAC 217.53.d.3 AND TAC 290.44.e.4.B.iii.
  - CONTRACTOR TO MAINTAIN ACCESS THROUGH PRIVATE DRIVEWAYS AT ALL TIMES DURING CONSTRUCTION. REFER TO ADDITIONAL TDCJ REQUIREMENTS UNDER SUMMARY OF WORK SECTION 1.08

**BENCHMARK:**

ALL SURVEY CONTROL POINTS AND BENCHMARKS ARE REPORTED AS FOLLOWS: HORIZONTAL COORDINATES (EXPRESSED IN U.S. SURVEY FEET UNITS) AND BEARINGS HEREON ARE REFERRING TO THE TEXAS COORDINATE SYSTEM OF 1983, CENTRAL ZONE AND BASED ON THE POSITION OF THE NATIONAL GEODETIC SURVEY (NGS) PRIMARY AIRPORT CONTROL STATION "T39 A" HAVING PUBLISHED NAD 83 (1993) COORDINATES OF N=3,128,437.762 METERS AND E=1,154,289.433 METERS. LINEAR DIMENSIONS (EXPRESSED IN U.S. SURVEY FEET) ARE "NAD83 GRID" UNIT AND MAY BE CONVERTED TO "GEODETIC HORIZONTAL" UNITS BY DIVIDING BY A COMBINED SCALE FACTOR OF 0.99988. ELEVATIONS ARE EXPRESSED IN U.S. SURVEY FEET AND REFERRED TO THE (NGS) NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

MON. 6692  
 ELEV. 371.021 FT  
 LOCATED ON THE SOUTHEAST CORNER OF THE INTERSECTION OF 14TH STREET AND AVENUE I  
 N = 10258052.322  
 E = 3799864.018

**NOTICE:**  
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**VERIFICATION OF PRIVATE UTILITY LINES**

*Mike Brower* 02-09-23  
 Date  
 CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.  
 Signature valid for six months.

*Mike Brower* 02-09-23  
 Date  
 CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
 Signature valid for six months.

*Jesse Rodriguez* 02/09/2023  
 Date  
 Approved for AT&T underground conduit facilities only.  
 Signature valid for one year.

NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-7700  
 TX FIRM NO.: F-2059

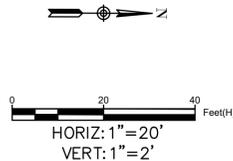
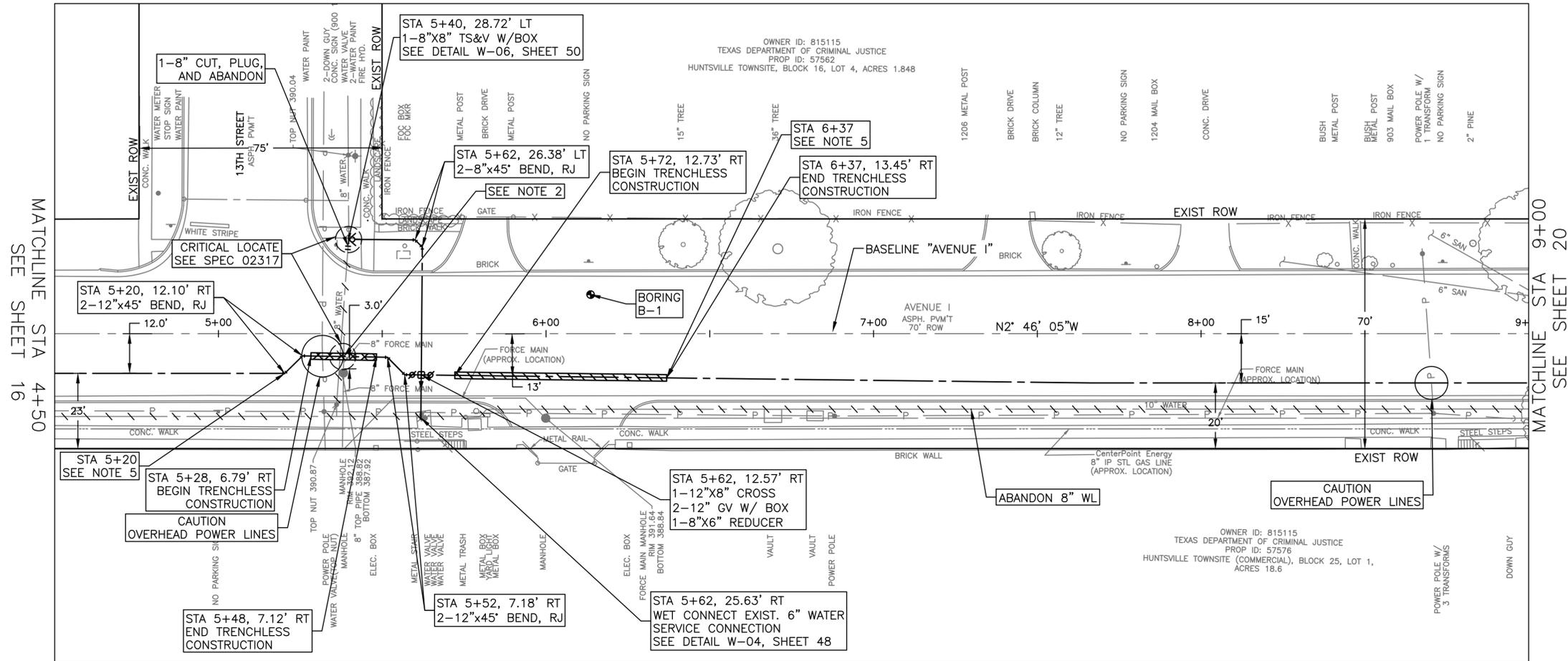
STATE OF TEXAS  
 PHUONG NGUYEN  
 137850  
 LICENSED PROFESSIONAL ENGINEER  
 02/08/2023

FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 PROFILE AVENUE I  
 BEGIN TO STA 4+50

SURVEYED BY: LANDTECH, INC.	HORIZ: 1" = 20' VERT: 1" = 2'
SHEET NO. 17 OF 62	DRAWING SCALE

REVISION DATE: 2/7/2023

LAST MODIFIED: Feb 08, 2023 - 11:35am BY USER: jrush06  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
 DWG. NAME: P&P SHEET XX.dwg



**BENCHMARK:**  
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MON. 7641  
 ELEV. 391.907 FT  
 LOCATED ON THE EAST SIDE OF AVENUE I BETWEEN THE CURB AND SIDEWALK, IN LINE WITH 13TH STREET.  
 N = 10258537.595  
 E = 3799894.514

**NOTICE:**  
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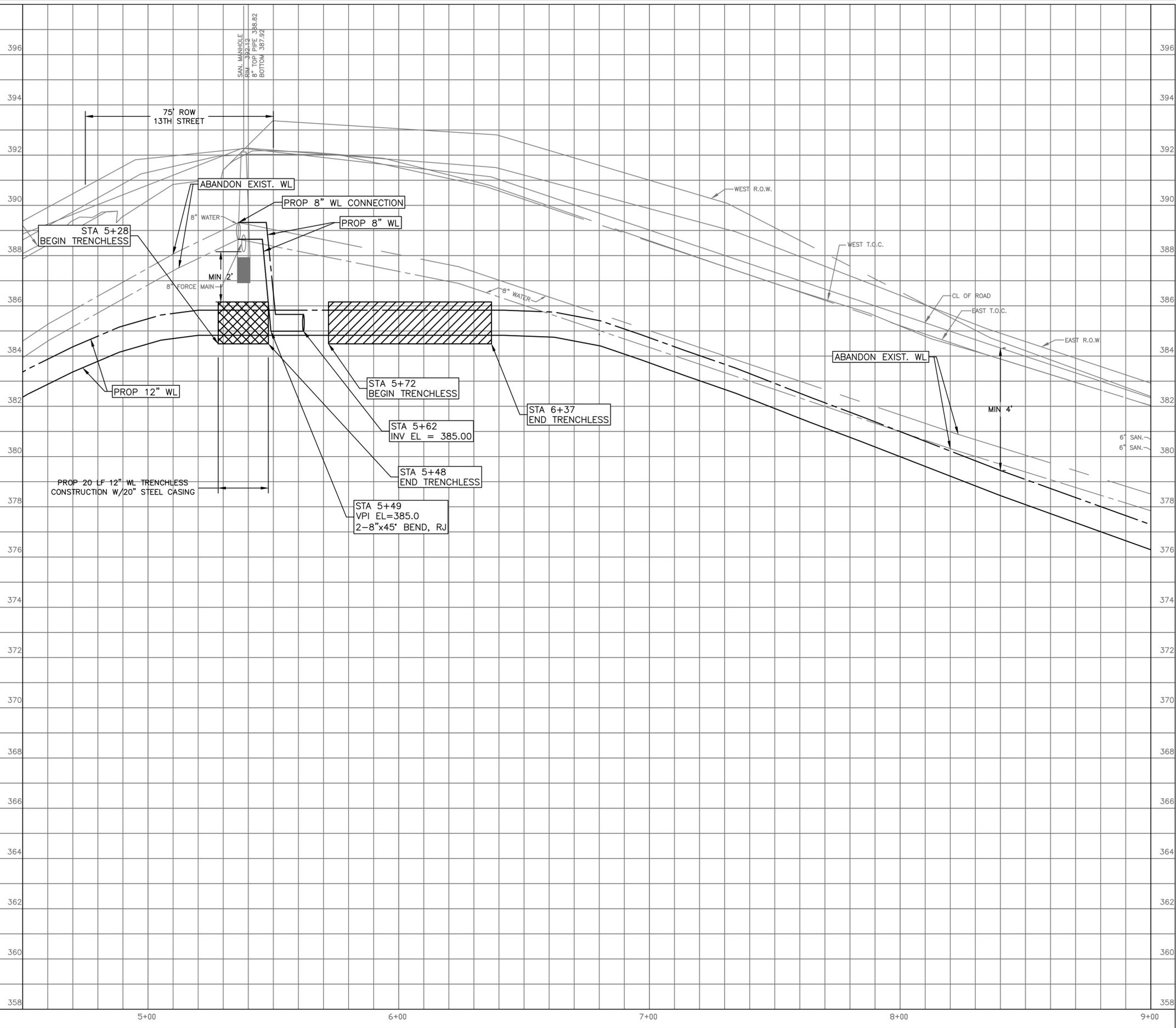
*Jesse Rodriguez* Date: 02/09/2023  
 Approved for AT&T underground conduit facilities only.  
 Signature valid for one year.

- NOTES:**
1. ALL EXISTING WATER SERVICE CONNECTIONS ALONG PROJECT TO BE RECONNECTED. SEE DETAIL W-04, SHEET 48.
  2. SEE DETAIL W-61, SHEET 49. PLACE 1 FULL SECTION (MIN 18FT) OF WATER LINE (WL) CENTERED AT SS CROSSING. PROVIDE RESTRAINED JOINTS ON WL, SPACED AT LEAST 9 FT HORIZONTALLY FROM CENTERLINE OF SS. WHEN A WL CROSSES UNDER AN EXISTING SS OR IS WITHIN 9 FT OF A SANITARY SEWER MANHOLE, REFER TO REQUIREMENTS OF TAC 217.53.d.3 AND TAC 290.44.e.4.B.iii.
  3. CONTRACTOR TO MAINTAIN ACCESS THROUGH PRIVATE DRIVEWAYS AT ALL TIMES DURING CONSTRUCTION.
  4. REFER TO ADDITIONAL TDCJ REQUIREMENTS UNDER SUMMARY OF WORK SECTION 1.08
  5. STA 5+20 TO STA 6+37: REFER TO REQUIREMENTS UNDER SUMMARY OF WORK SECTION 1.08.A.3.
  6. CONTRACTOR TO MAINTAIN DRAINAGE AT ALL TIME. ROADSIDE DITCHES TO BE RESTORED TO EXISTING CONDITION OR BETTER. NO SEPARATE PAY.
  7. CONTRACTOR TO FIELD VERIFY LOCATION OF EXISTING FORCE MAINS IN THIS AREA

NO.	DATE	REVISION	APP.
			
		AURORA TECHNICAL SERVICES, LLC 2121 SAGE ROAD, SUITE 150 HOUSTON, TX 77056 PHONE: 281-453-770 TX FIRM NO.: F-2059	
		<i>Phung</i> Date: 02/08/2023 Aurora Technical Services, LLC Texas Registered Engineering Firm F-2059	
FY 2021/2022 WATERLINE REPLACEMENT PROJECT PLAN AVENUE I STA 4+50 TO STA 9+00			
SURVEYED BY: LANDTECH, INC.		HORIZ: 1" = 20' VERT: 1" = 2'	
SHEET NO. 18 OF 62		DRAWING SCALE	
REVISION DATE: 2/7/2023			

LAST MODIFIED: Feb 08, 2023 - 11:35am BY USER: jrush06  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
 DWG. NAME: P&P SHEET XX.dwg

MATCHLINE STA 4+50  
 SEE SHEET 17



MATCHLINE STA 9+00  
 SEE SHEET 21

HORIZ: 1"=20'  
 VERT: 1"=2'

- NOTES:**
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  - SEE DETAIL W-61, SHEET 49. PLACE 1 FULL SECTION (MIN 18FT) OF WATER LINE (WL) CENTERED AT SS CROSSING. PROVIDE RESTRAINED JOINTS ON WL, SPACED AT LEAST 9 FT HORIZONTALLY FROM CENTERLINE OF SS. WHEN A WL CROSSES UNDER AN EXISTING SS OR IS WITHIN 9 FT OF A SANITARY SEWER MANHOLE, REFER TO REQUIREMENTS OF TAC 217.53.d.3 AND TAC 290.44.e.4.B.iii.
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  - CONTRACTOR TO MAINTAIN DRAINAGE AT ALL TIME. ROADSIDE DITCHES TO BE RESTORED TO EXISTING CONDITION OR BETTER. NO SEPARATE PAY. CONTRACTOR TO FIELD VERIFY LOCATION OF EXISTING FORCE MAINS IN THIS AREA

**BENCHMARK:**

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MON. 7641  
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 LOCATED ON THE EAST SIDE OF AVENUE I BETWEEN THE CURB AND SIDEWALK, IN LINE WITH 13TH STREET.

N = 10258537.595  
 E = 3799894.514

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**VERIFICATION OF PRIVATE UTILITY LINES**

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 Date  
 CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.  
 Signature valid for six months.

*Mike Brower* 02-09-23  
 Date  
 CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
 Signature valid for six months.

*Jesse Rodriguez* 02/09/2023  
 Date  
 Approved for AT&T underground conduit facilities only.  
 Signature valid for one year.

NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059

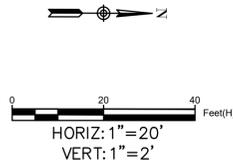
STATE OF TEXAS  
 PHUONG NGUYEN  
 137850  
 LICENSED PROFESSIONAL ENGINEER  
*Phuong*  
 Aurora Technical Services, LLC  
 Texas Registered Engineering Firm  
 F-2059  
 02/08/2023

FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 PROFILE  
 AVENUE I  
 STA 4+50 TO STA 9+00

SURVEYED BY: LANDTECH, INC.  
 HORIZ: 1" = 20'  
 VERT: 1" = 2'

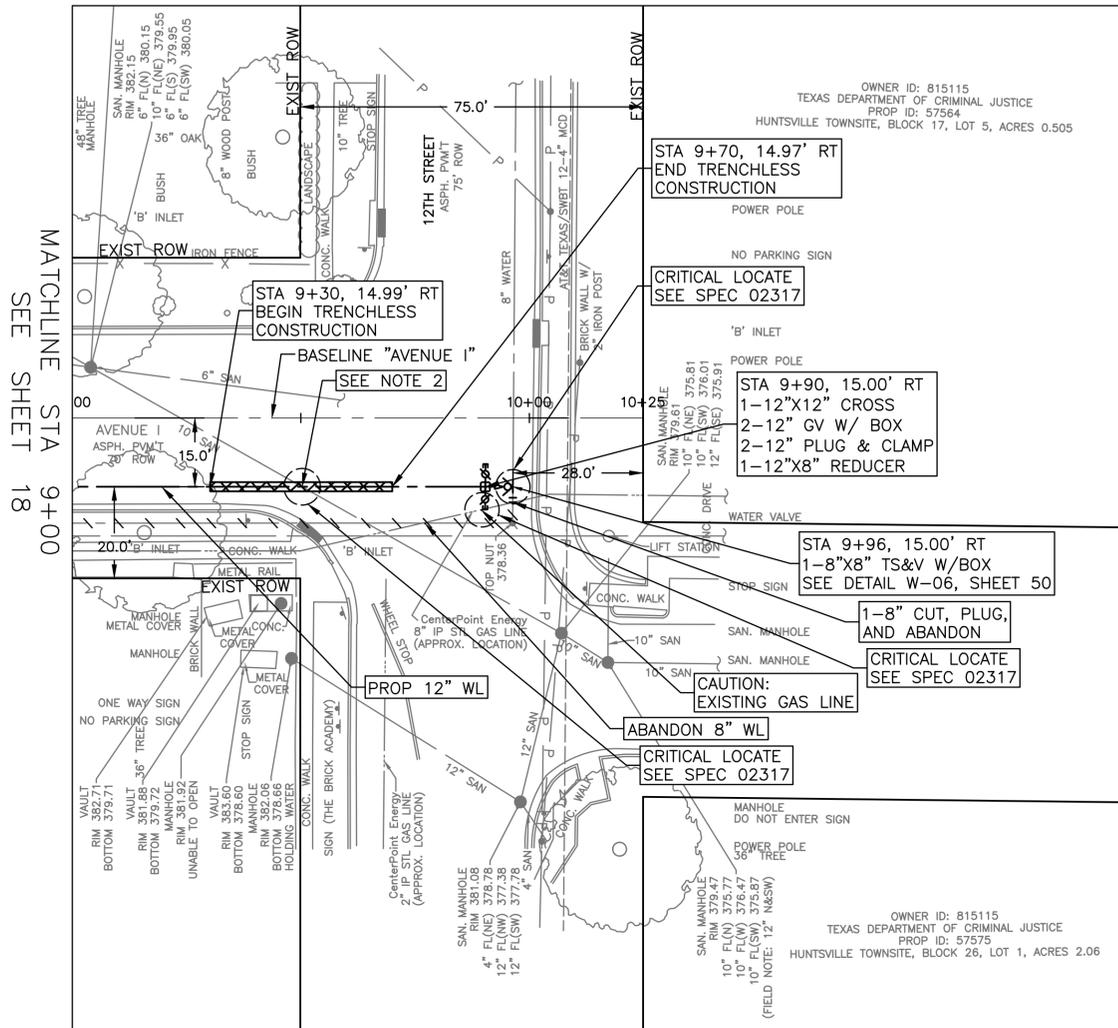
SHEET NO. 19 OF 62  
 DRAWING SCALE

REVISION DATE: 2/7/2023



**BENCHMARK:**  
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 ELEV. 391.907 FT  
 LOCATED ON THE EAST SIDE OF AVENUE I BETWEEN THE CURB AND SIDEWALK, IN LINE WITH 13TH STREET.  
 N = 10258537.595  
 E = 3799894.514



MATCHLINE STA 9+00  
SEE SHEET 18

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 Signature valid for six months.

*Jesse Rodriguez* Date: 02/09/2023  
 Approved for AT&T underground conduit facilities only.  
 Signature valid for one year.

NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
 engineering • construction management  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-7700  
 TX FIRM NO.: F-2059

Professional Engineer Seal for Phuong Nguyen, License No. 157850, State of Texas. Signature of Phuong Nguyen, dated 02/08/2023.

FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 PLAN  
 AVENUE I  
 STA 9+00 TO END

SURVEYED BY: LANDTECH, INC.	HORIZ: 1" = 20' VERT: 1" = 2'
SHEET NO. 20 OF 62	DRAWING SCALE

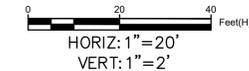
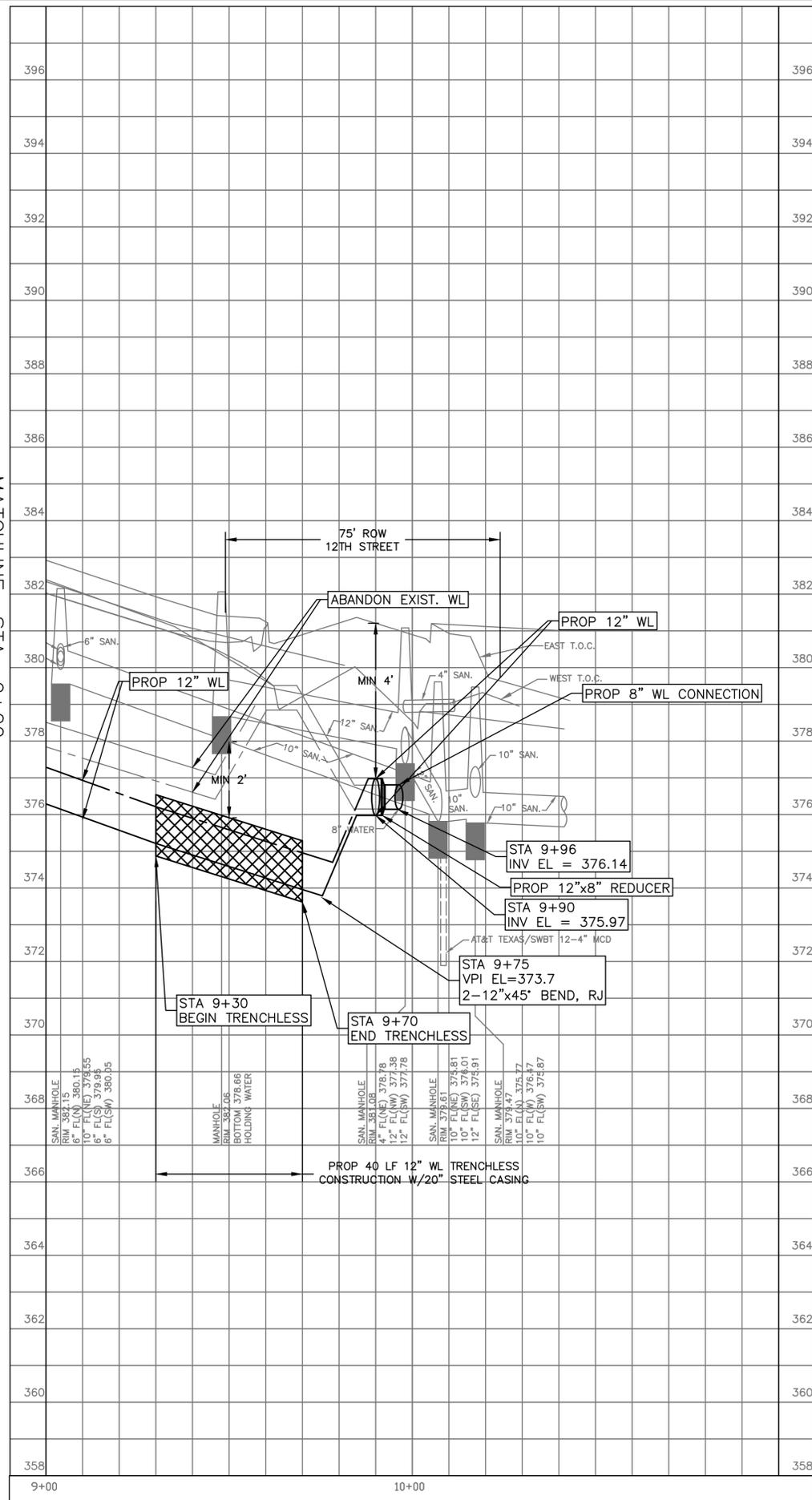
REVISION DATE: 2/7/2023

- NOTES:**
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  - SEE DETAIL W-61, SHEET 49. PLACE 1 FULL SECTION (MIN 18FT) OF WATER LINE (WL) CENTERED AT SS CROSSING. PROVIDE RESTRAINED JOINTS ON WL, SPACED AT LEAST 9 FT HORIZONTALLY FROM CENTERLINE OF SS. WHEN A WL CROSSES UNDER AN EXISTING SS OR IS WITHIN 9 FT OF A SANITARY SEWER MANHOLE, REFER TO REQUIREMENTS OF TAC 217.53.d.3 AND TAC 290.44.e.4.B.iii.
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  - CONTRACTOR TO MAINTAIN DRAINAGE AT ALL TIME. ROADSIDE DITCHES TO BE RESTORED TO EXISTING CONDITION OR BETTER. NO SEPARATE PAY.
  - CONTRACTOR TO FIELD ADJUST PROPOSED WATER LINE AS NECESSARY TO AVOID IMPACTING EXISTING AT&T CONDUIT AND CENTERPOINT 8" GAS LINE.

LAST MODIFIED: Feb 08, 2023 - 11:35am BY USER: jrush06  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
 DWG. NAME: P&P SHEET XX.dwg

LAST MODIFIED: Feb 08, 2023 - 11:36am BY USER: jrush06  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
 DWG. NAME: P&P SHEET XX.dwg

MATCHLINE STA 9+00  
 SEE SHEET 19



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 Signature valid for one year.

NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
 engineering + construction management

2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059

STATE OF TEXAS  
 PHUONG NGUYEN  
 157850  
 LICENSED PROFESSIONAL ENGINEER

*Phuong* Date: 02/08/2023  
 Aurora Technical Services, LLC  
 Texas Registered Engineering Firm F-2059

FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 PROFILE  
 AVENUE I  
 STA 9+00 TO END

SURVEYED BY: LANDTECH, INC.	HORIZ: 1" = 20' VERT: 1" = 2'
SHEET NO. 21 OF 62	DRAWING SCALE

REVISION DATE: 2/7/2023

BASELINE "AVENUE I"  
SEE SHEET 16 TO 21  
FOR CONTINUATION

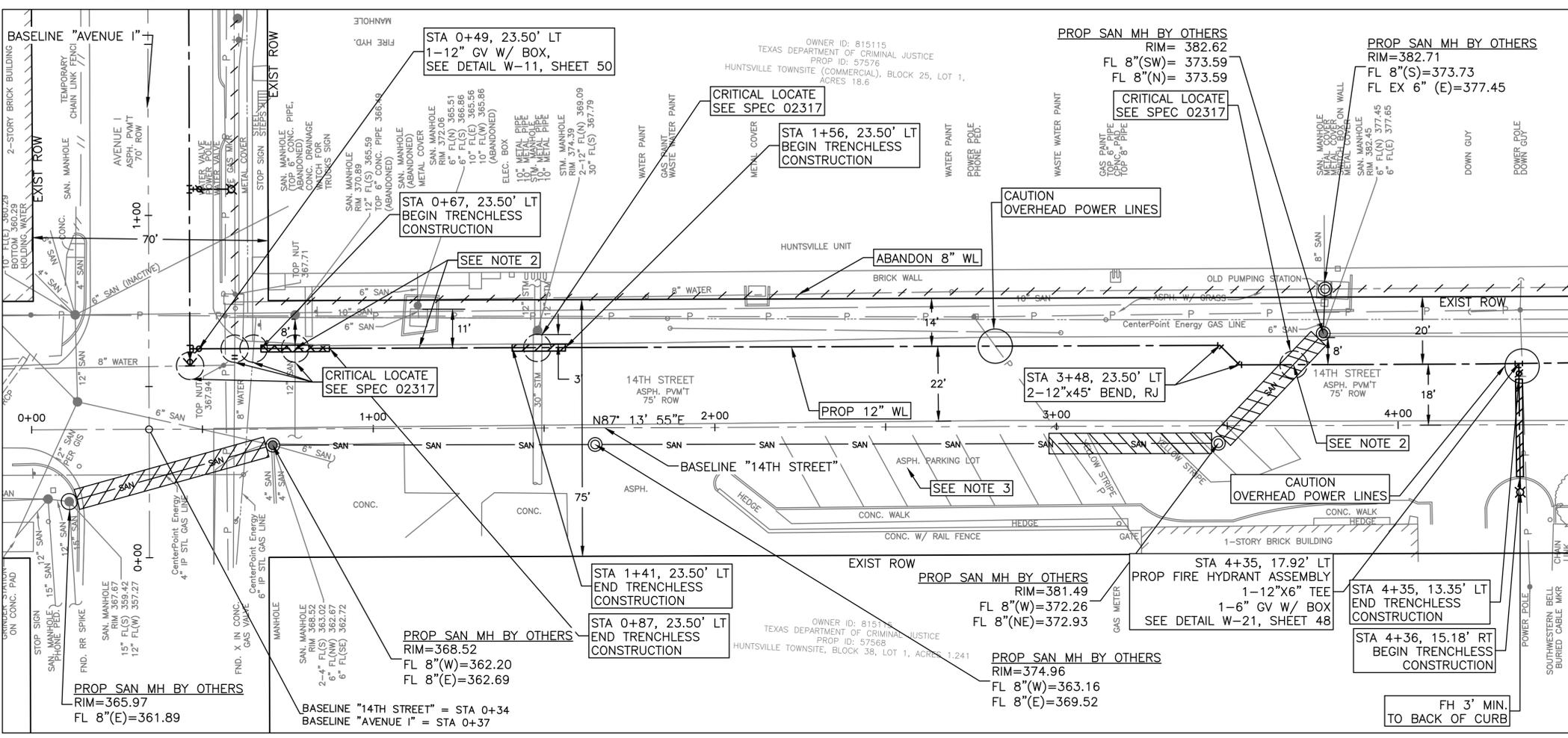


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MON. 6692  
ELEV. 371.021 FT  
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N = 10258052.322  
E = 3799864.018

MATCHLINE STA 4+50  
SEE SHEET 24



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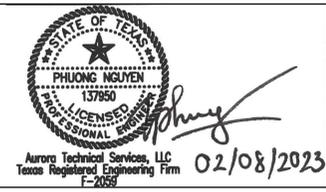
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NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059



FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 PLAN  
 14TH STREET  
 BEGIN TO STA 4+50

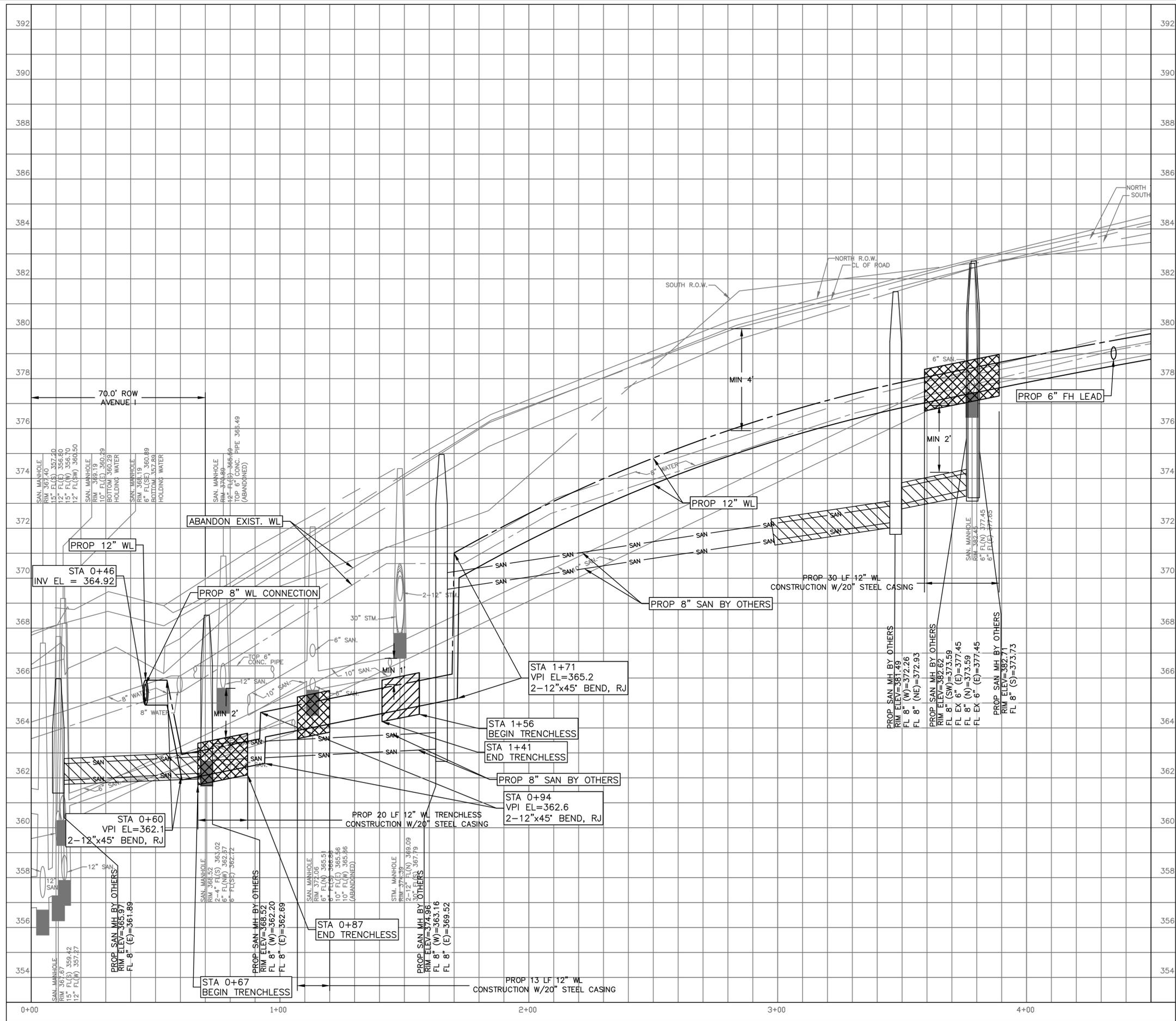
SURVEYED BY: LANDTECH, INC.  
 HORIZ: 1" = 20'  
 VERT: 1" = 2'

SHEET NO. 22 OF 62  
 DRAWING SCALE

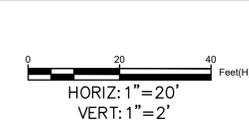
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  - REFER TO ADDITIONAL TDCJ REQUIREMENTS UNDER SUMMARY OF WORK SECTION 1.08

LAST MODIFIED: Feb 08, 2023 - 11:36am BY USER: jrush06  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
 DWG. NAME: P&P SHEET X4.dwg

REVISION DATE: 2/7/2023



MATCHLINE STA 4+50  
SEE SHEET 25



- NOTES:**
1. ALL EXISTING WATER SERVICE CONNECTIONS ALONG PROJECT TO BE RECONNECTED. SEE DETAIL W-04, SHEET 48.
  2. SEE DETAIL W-61, SHEET 49. PLACE 1 FULL SECTION (MIN 18FT) OF WATER LINE (WL) CENTERED AT SS CROSSING. PROVIDE RESTRAINED JOINTS ON WL, SPACED AT LEAST 9 FT HORIZONTALLY FROM CENTERLINE OF SS. WHEN A WL CROSSES UNDER AN EXISTING SS OR IS WITHIN 9 FT OF A SANITARY SEWER MANHOLE, REFER TO REQUIREMENTS OF TAC 217.53.d.3 AND TAC 290.44.e.4.B.iii. CONTRACTOR TO MAINTAIN ACCESS THROUGH PRIVATE DRIVEWAYS OR PARKING SPACES AT ALL TIME DURING CONSTRUCTION.
  3. REFER TO ADDITIONAL TDCJ REQUIREMENTS UNDER SUMMARY OF WORK SECTION 1.08

**BENCHMARK:**

ALL SURVEY CONTROL POINTS AND BENCHMARKS ARE REPORTED AS FOLLOWS: HORIZONTAL COORDINATES (EXPRESSED IN U. S. SURVEY FEET UNITS) AND BEARINGS HEREON ARE REFERRING TO THE TEXAS COORDINATE SYSTEM OF 1983, CENTRAL ZONE AND BASED ON THE POSITION OF THE NATIONAL GEODETIC SURVEY (NGS) PRIMARY AIRPORT CONTROL STATION "T39 A" HAVING PUBLISHED NAD 83 (1993) COORDINATES OF N=3,128,437.762 METERS AND E=1,154,289.433 METERS. LINEAR DIMENSIONS (EXPRESSED IN U.S. SURVEY FEET) ARE "NAD83 GRID" UNIT AND MAY BE CONVERTED TO "GEODETIC HORIZONTAL" UNITS BY DIVIDING BY A COMBINED SCALE FACTOR OF 0.99988. ELEVATIONS ARE EXPRESSED IN U.S. SURVEY FEET AND REFERRED TO THE (NGS) NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

MON. 6692  
 ELEV. 371.021 FT  
 LOCATED ON THE SOUTHEAST CORNER OF THE INTERSECTION OF 14TH STREET AND AVENUE I  
 N = 10258052.322  
 E = 3799864.018

**NOTICE:**  
 FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

**VERIFICATION OF PRIVATE UTILITY LINES**

*Mike Brower* Date: 02-09-23  
 CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.  
 Signature valid for six months.

*Mike Brower* Date: 02-09-23  
 CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
 Signature valid for six months.

*Jesse Rodriguez* Date: 02/09/2023  
 Approved for AT&T underground conduit facilities only.  
 Signature valid for one year.

NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059

STATE OF TEXAS  
 PHUONG NGUYEN  
 157850  
 LICENSED PROFESSIONAL ENGINEER  
 Signature: *Phuong Nguyen*  
 Date: 02/08/2023

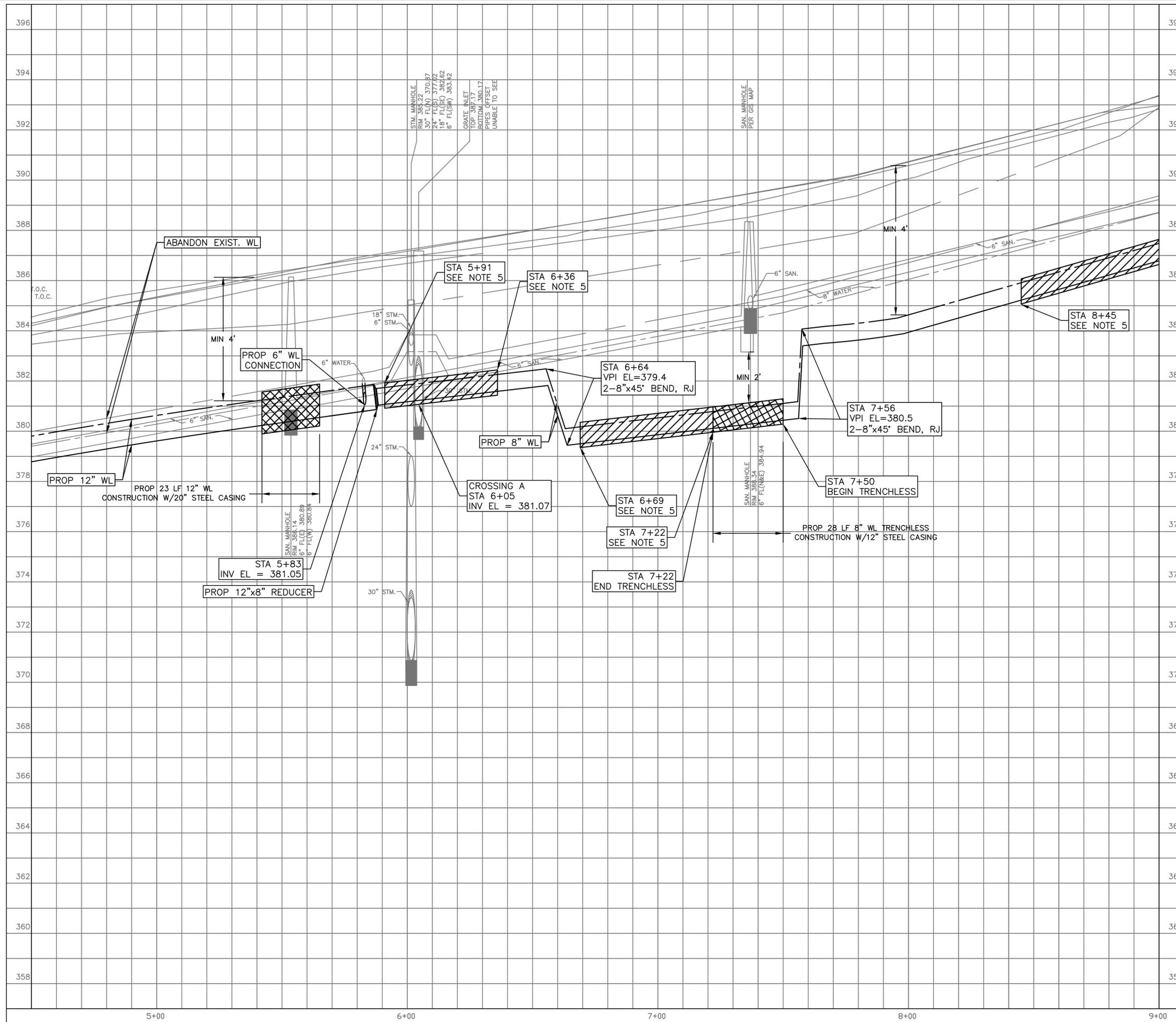
FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 PROFILE  
 14TH STREET  
 BEGIN TO STA 4+50

SURVEYED BY: LANDTECH, INC.	HORIZ: 1" = 20' VERT: 1" = 2'
SHEET NO. 23 OF 62	DRAWING SCALE

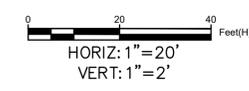


LAST MODIFIED: Feb 08, 2023 - 11:37am BY USER: jrush06  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
 DWG. NAME: P&P SHEET X4.dwg

MATCHLINE STA 4+50  
 SEE SHEET 23



MATCHLINE STA 9+00  
 SEE SHEET 27



NOTES:

1. ALL EXISTING WATER SERVICE CONNECTIONS ALONG PROJECT TO BE RECONNECTED. SEE DETAIL W-04, SHEET 48.
2. SEE DETAIL W-61, SHEET 49. PLACE 1 FULL SECTION (MIN 18FT) OF WATER LINE (WL) CENTERED AT SS CROSSING. PROVIDE RESTRAINED JOINTS ON WL, SPACED AT LEAST 9 FT HORIZONTALLY FROM CENTERLINE OF SS. WHEN A WL CROSSES UNDER AN EXISTING SS OR IS WITHIN 9 FT OF A SANITARY SEWER MANHOLE, REFER TO REQUIREMENTS OF TAC 217.53.d.3 AND TAC 290.44.e.4.B.iii.
3. CONTRACTOR TO MAINTAIN ACCESS THROUGH PRIVATE DRIVEWAYS OR PARKING SPACES AT ALL TIME DURING CONSTRUCTION.
4. REFER TO ADDITIONAL TDCJ REQUIREMENTS UNDER SUMMARY OF WORK SECTION 1.08
5. STA 5+91 TO STA 6+36, STA 6+69 TO STA 7+22, STA 8+45 TO STA 9+13: REFER TO ADDITIONAL REQUIREMENTS UNDER SUMMARY OF WORK SECTION 1.08.A.5.B.
6. FOR INSTALLATION OF CURVES, CONTRACTOR TO FOLLOW PROCEDURES UNDER SUMMARY OF WORK SECTION 1.01.A.1.a.viii.

BENCHMARK:

ALL SURVEY CONTROL POINTS AND BENCHMARKS ARE REPORTED AS FOLLOWS: HORIZONTAL COORDINATES (EXPRESSED IN U. S. SURVEY FEET UNITS) AND BEARINGS HEREON ARE REFERRING TO THE TEXAS COORDINATE SYSTEM OF 1983, CENTRAL ZONE AND BASED ON THE POSITION OF THE NATIONAL GEODETIC SURVEY (NGS) PRIMARY AIRPORT CONTROL STATION "T39 A" HAVING PUBLISHED NAD 83 (1993) COORDINATES OF N=3,128,437.762 METERS AND E=1,154,289.433 METERS. LINEAR DIMENSIONS (EXPRESSED IN U.S. SURVEY FEET) ARE "NAD83 GRID" UNIT AND MAY BE CONVERTED TO "GEODETIC HORIZONTAL" UNITS BY DIVIDING BY A COMBINED SCALE FACTOR OF 0.99988. ELEVATIONS ARE EXPRESSED IN U.S. SURVEY FEET AND REFERRED TO THE (NGS) NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

MON. 6692  
 ELEV. 371.021 FT  
 LOCATED ON THE SOUTHEAST CORNER OF THE INTERSECTION OF 14TH STREET AND AVENUE 1  
 N = 10258052.322  
 E = 3799864.018

NOTICE:  
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VERIFICATION OF PRIVATE UTILITY LINES

*Mike Brower* Date 02-09-23  
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 Signature valid for six months.

*Mike Brower* Date 02-09-23  
 CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
 Signature valid for six months.

*Jesse Rodriguez* Date 02/09/2023  
 Approved for AT&T underground conduit facilities only.  
 Signature valid for one year.

NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059

STATE OF TEXAS  
 PHUONG NGUYEN  
 137850  
 LICENSED PROFESSIONAL ENGINEER  
*Phuong*  
 Aurora Technical Services, LLC  
 Texas Registered Engineering Firm  
 F-2059  
 02/08/2023

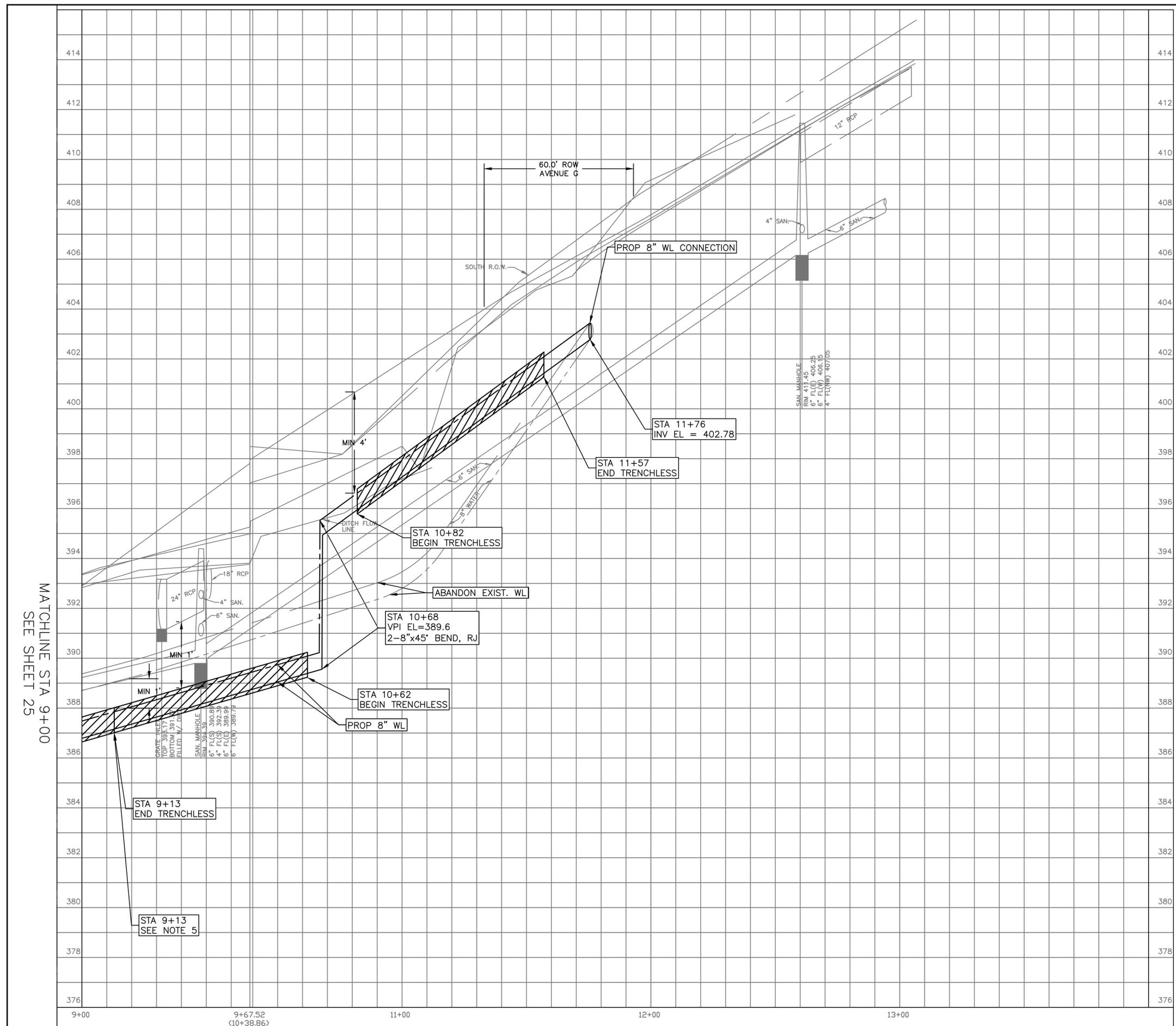
FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 PROFILE  
 14TH STREET  
 STA 4+50 TO STA 9+00

SURVEYED BY: LANDTECH, INC.	HORIZ: 1" = 20' VERT: 1" = 2'
SHEET NO. 25 OF 62	DRAWING SCALE

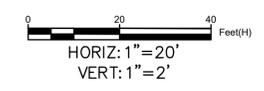
REVISION DATE: 2/7/2023



LAST MODIFIED: Feb 08, 2023 - 11:37am BY USER: jrush06  
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 DWG. NAME: P&P SHEET X4.dwg



MATCHLINE STA 9+00  
 SEE SHEET 25



**BENCHMARK:**  
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 MON. 6692  
 ELEV. 371.021 FT  
 LOCATED ON THE SOUTHEAST CORNER OF THE INTERSECTION OF 14TH STREET AND AVENUE 1  
 N = 10258052.322  
 E = 3799864.018

- NOTES:**
- ALL EXISTING WATER SERVICE CONNECTIONS ALONG PROJECT TO BE RECONNECTED. SEE DETAIL W-04, SHEET 48.
  - SEE DETAIL W-61, SHEET 49. PLACE 1 FULL SECTION (MIN 18FT) OF WATER LINE (WL) RESTRAINED JOINTS ON WL, SPACED AT LEAST 9 FT HORIZONTALLY FROM CENTERLINE OF SS. WHEN A WL CROSSES UNDER AN EXISTING SS OR IS WITHIN 9 FT OF A SANITARY SEWER MANHOLE, REFER TO REQUIREMENTS OF TAC 217.53.d.3 AND TAC 290.44 e.4.B.iii.
  - CONTRACTOR TO MAINTAIN ACCESS THROUGH PRIVATE DRIVEWAYS OR PARKING SPACES AT ALL TIME DURING CONSTRUCTION.
  - REFER TO ADDITIONAL TDCJ REQUIREMENTS UNDER SUMMARY OF WORK SECTION 1.08
  - STA 5+91 TO STA 6+36, STA 6+69 TO STA 7+22, STA 8+45 TO STA 9+13: REFER TO ADDITIONAL REQUIREMENTS UNDER SUMMARY OF WORK SECTION 1.08.A.5.B.
  - FOR INSTALLATION OF CURVES, CONTRACTOR TO FOLLOW PROCEDURES UNDER SUMMARY OF WORK SECTION 1.01.A.1.a.viii.
  - CONTRACTOR TO FIELD VERIFY LOCATION OF EXISTING GAS LINE. REFER TO SUMMARY OF WORK SECTION 1.01.A.1.d.vii.

**NOTICE:**  
 FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

**VERIFICATION OF PRIVATE UTILITY LINES**

*Mike Brower* Date: 02-09-23  
 CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.  
 Signature valid for six months.

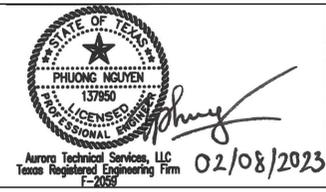
*Mike Brower* Date: 02-09-23  
 CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
 Signature valid for six months.

*Jesse Rodriguez* Date: 02/09/2023  
 Approved for AT&T underground conduit facilities only.  
 Signature valid for one year.

NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-7700  
 TX FIRM NO.: F-2059



FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 PROFILE  
 14TH STREET  
 STA 9+00 TO END

SURVEYED BY: LANDTECH, INC.	HORIZ: 1" = 20' VERT: 1" = 2'
SHEET NO. 27 OF 62	DRAWING SCALE

REVISION DATE: 2/7/2023



HORIZ: 1"=20'  
VERT: 1"=2'

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MON. 6422  
(APPROX. LOCATION SEE SHEET 12)  
ELEV. N/A  
LOCATED ON THE NORTHEAST CORNER OF THE INTERSECTION OF THOMASON STREET AND AVENUE M  
N = 10262576.4  
E = 3798119.1

**NOTICE:**  
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Jesse Rodriguez 02/09/2023  
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NO.	DATE	REVISION	APP.



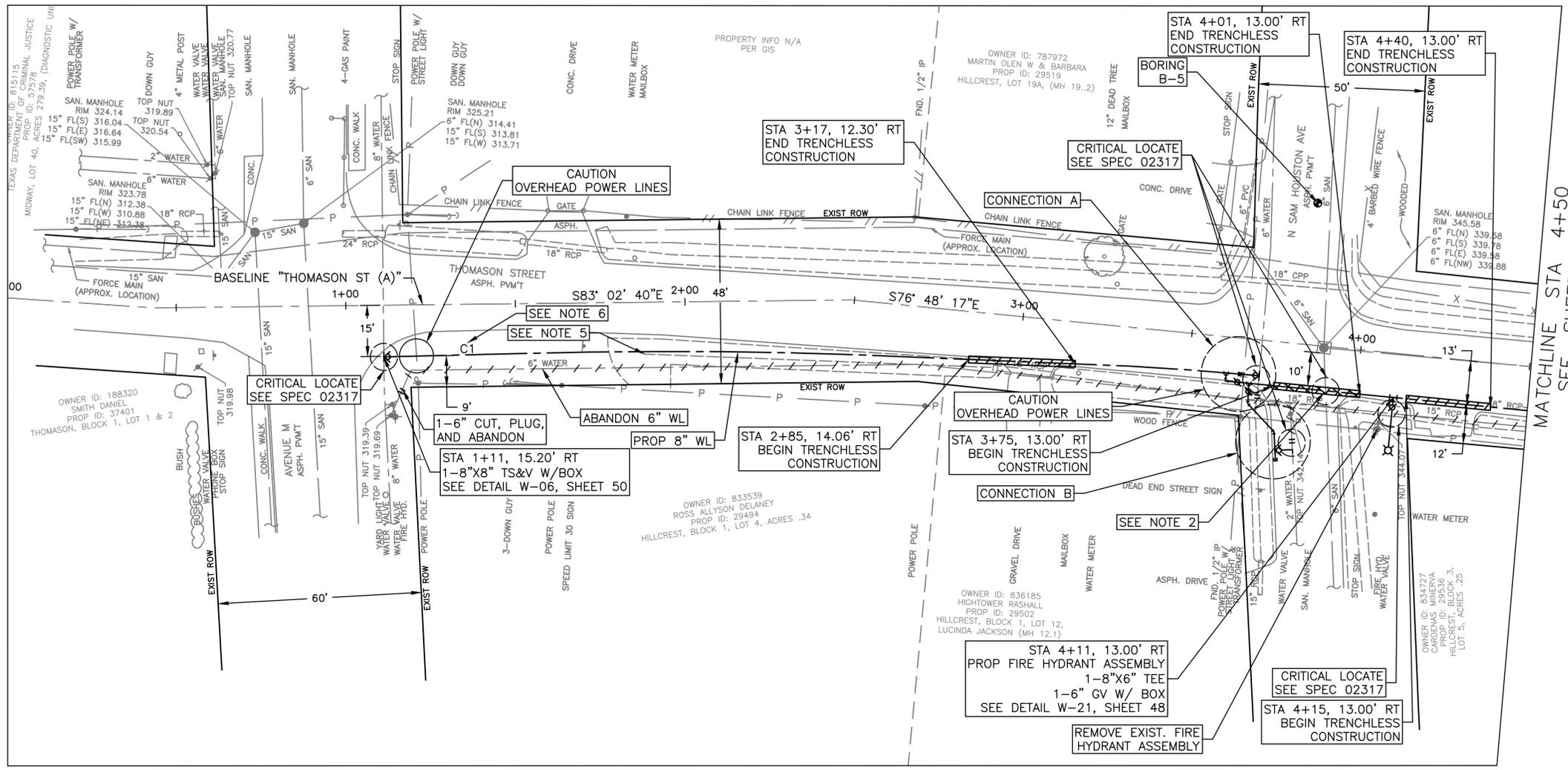
**Aurora Technical Services, LLC**  
2121 SAGE ROAD, SUITE 150  
HOUSTON, TX 77056  
PHONE: 281-453-770  
TX FIRM NO.: F-2059



FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
PLAN  
THOMASON ST  
BEGIN TO STA 4+50

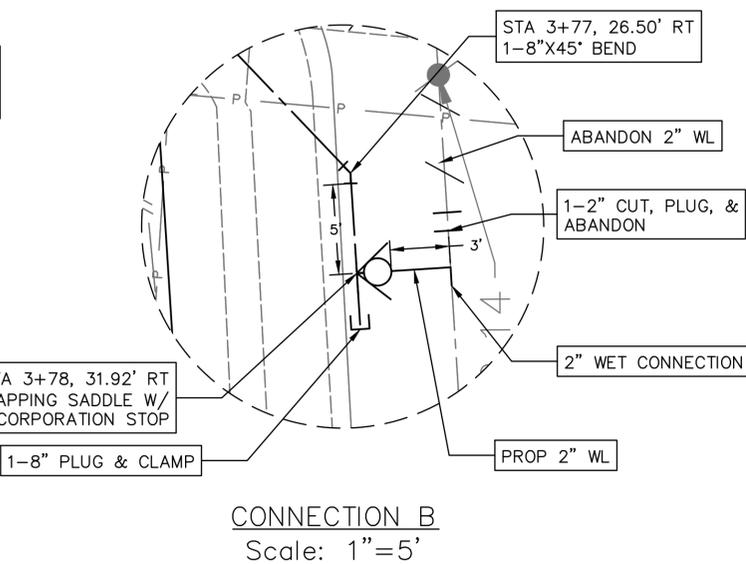
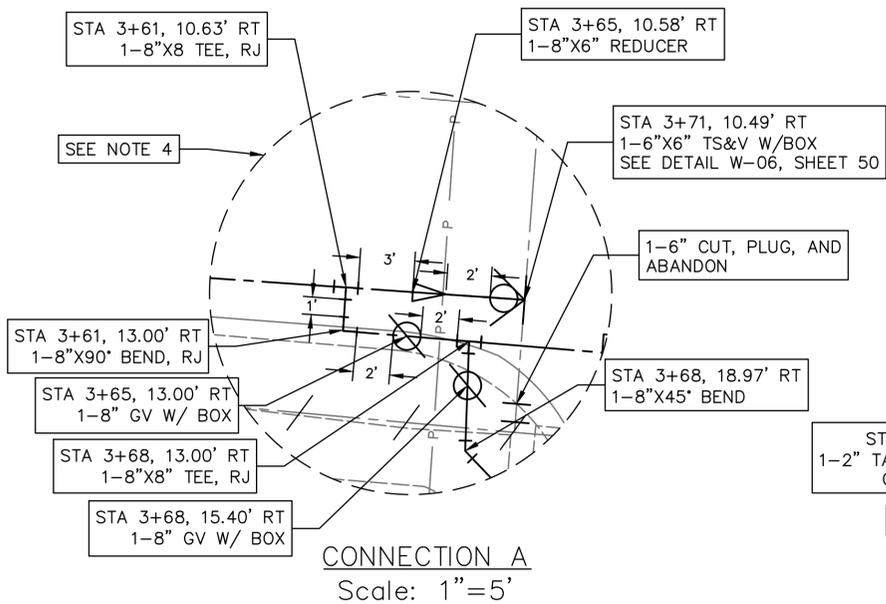
SURVEYED BY: LANDTECH, INC.  
HORIZ: 1" = 20'  
VERT: 1" = 2'

SHEET NO. 28 OF 62  
DRAWING SCALE  
REVISION DATE: 2/7/2023



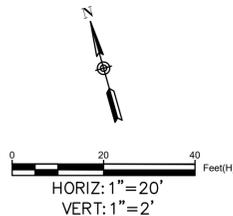
- NOTES:**
- ALL EXISTING WATER METERS ALONG PROJECT TO BE RECONNECTED. SEE DETAIL W-03, SHEET 48
  - SEE DETAIL W-61, SHEET 49. PLACE 1 FULL SECTION (MIN 18FT) OF WATER LINE (WL) CENTERED AT SS CROSSING. PROVIDE RESTRAINED JOINTS ON WL, SPACED AT LEAST 9 FT HORIZONTALLY FROM CENTERLINE OF SS. WHEN A WL CROSSES UNDER AN EXISTING SS OR IS WITHIN 9 FT OF A SANITARY SEWER MANHOLE, REFER TO REQUIREMENTS OF TAC 217.53.d.3 AND TAC 290.44.e.4.B.iii.
  - CONTRACTOR TO MAINTAIN ACCESS THROUGH PRIVATE DRIVEWAYS AT ALL TIME DURING CONSTRUCTION.
  - FOR ALL CONNECTIONS, SPOOL PIECES IN BETWEEN ALL FITTINGS TO BE A MIN. OF 2FT AND NO MORE THAN 4FT, UNLESS SPECIFIED OTHERWISE.
  - CONTRACTOR TO MAINTAIN DRAINAGE AT ALL TIME. ROADSIDE DITCHES TO BE RESTORED TO EXISTING CONDITION OR BETTER. NO SEPARATE PAY.
  - FOR INSTALLATION OF CURVES, CONTRACTOR TO FOLLOW PROCEDURES UNDER SUMMARY OF WORK SECTION 1.01.A.1.a.viii.

Curve	Radius (ft)	Arc Length (ft)	Chord Length (ft)	Chord Bearing	Delta Angle (deg)
C1	2253	258	258	S81°E	3.3



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DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
DWG. NAME: P&P SHEET\_X5.dwg





**BENCHMARK:**

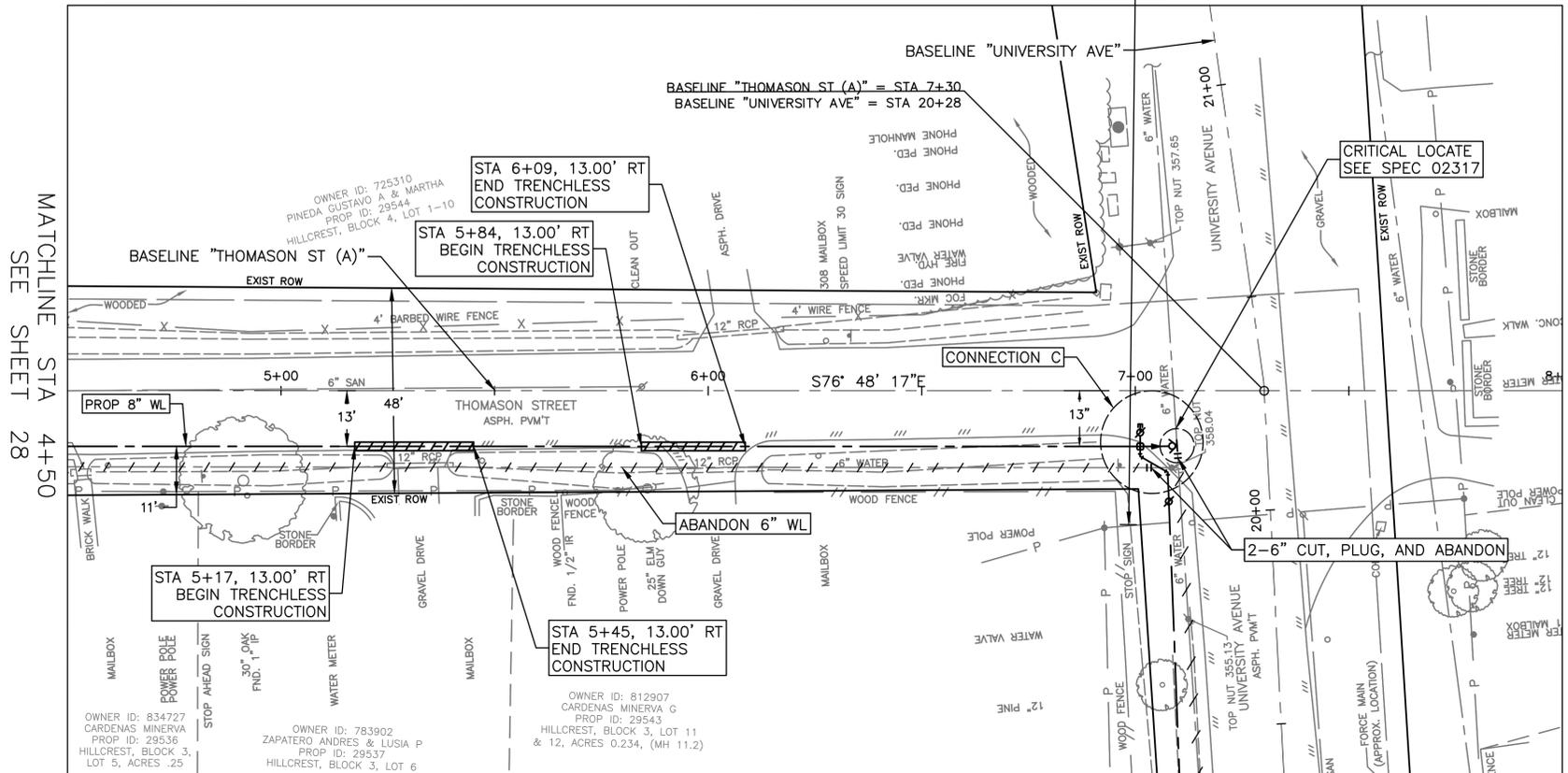
ALL SURVEY CONTROL POINTS AND BENCHMARKS ARE REPORTED AS FOLLOWS: HORIZONTAL COORDINATES (EXPRESSED IN U. S. SURVEY FEET UNITS) AND BEARINGS HEREON ARE REFERRING TO THE TEXAS COORDINATE SYSTEM OF 1983, CENTRAL ZONE AND BASED ON THE POSITION OF THE NATIONAL GEODETIC SURVEY (NGS) PRIMARY AIRPORT CONTROL STATION "T39 A" HAVING PUBLISHED NAD 83 (1993) COORDINATES OF N=3,128,437.762 METERS AND E=1,154,289.433 METERS. LINEAR DIMENSIONS (EXPRESSED IN U.S. SURVEY FEET) ARE "NAD83 GRID" UNIT AND MAY BE CONVERTED TO "GEODETIC HORIZONTAL" UNITS BY DIVIDING BY A COMBINED SCALE FACTOR OF 0.99988. ELEVATIONS ARE EXPRESSED IN U.S. SURVEY FEET AND REFERRED TO THE (NGS) NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

MON. 6422  
(APPROX. LOCATION SEE SHEET 12)

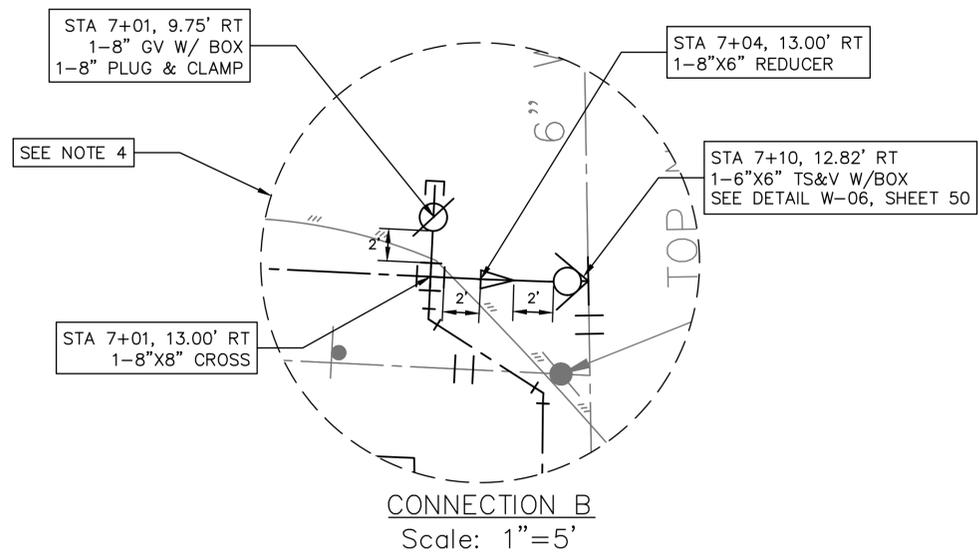
ELEV. N/A

LOCATED ON THE NORTHEAST CORNER OF THE INTERSECTION OF THOMASON STREET AND AVENUE M

N = 10262576.4  
E = 3798119.1



BASELINE "UNIVERSITY AVE"  
FOR CONTINUATION  
SEE SHEET 32 TO 41



CONNECTION B  
Scale: 1"=5'

- NOTES:**
- ALL EXISTING WATER METERS ALONG PROJECT TO BE RECONNECTED. SEE DETAIL W-03, SHEET 48
  - SEE DETAIL W-61, SHEET 49. PLACE 1 FULL SECTION (MIN 18FT) OF WATER LINE (WL) CENTERED AT SS CROSSING. PROVIDE RESTRAINED JOINTS ON WL, SPACED AT LEAST 9 FT HORIZONTALLY FROM CENTERLINE OF SS. WHEN A WL CROSSES UNDER AN EXISTING SS OR IS WITHIN 9 FT OF A SANITARY SEWER MANHOLE, REFER TO REQUIREMENTS OF TAC 217.53.d.3 AND TAC 290.44.e.4.B.iii.
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  - FOR ALL CONNECTIONS, SPOOL PIECES IN BETWEEN ALL FITTINGS TO BE A MIN. OF 2FT AND NO MORE THAN 4FT, UNLESS SPECIFIED OTHERWISE.
  - CONTRACTOR TO MAINTAIN DRAINAGE AT ALL TIME. ROADSIDE DITCHES TO BE RESTORED TO EXISTING CONDITION OR BETTER. NO SEPARATE PAY.
  - FOR INSTALLATION OF CURVES, CONTRACTOR TO FOLLOW PROCEDURES UNDER SUMMARY OF WORK SECTION 1.01.A.1.a.viii.

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Approved for AT&T underground conduit facilities only.  
Signature valid for one year.

NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
2121 SAGE ROAD, SUITE 150  
HOUSTON, TX 77056  
PHONE: 281-453-770  
TX FIRM NO.: F-2059

STATE OF TEXAS  
PHUONG NGUYEN  
157850  
LICENSED PROFESSIONAL ENGINEER  
*Phuong Nguyen*  
Aurora Technical Services, LLC  
Texas Registered Engineering Firm  
F-2059  
02/08/2023

FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
PLAN  
THOMASON ST  
STA 4+50 TO END

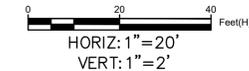
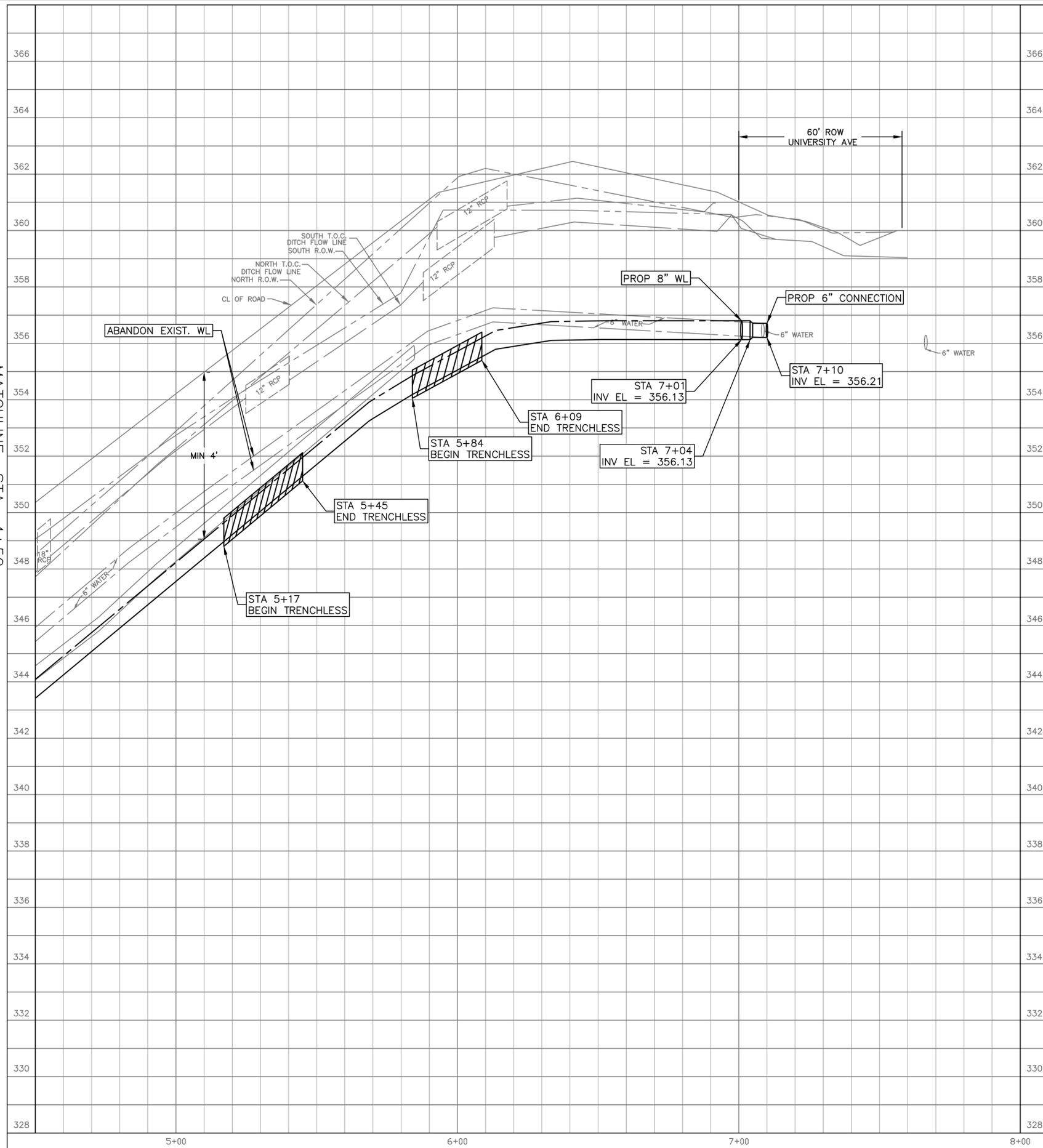
SURVEYED BY: LANDTECH, INC.	HORIZ: 1" = 20' VERT: 1" = 2'
SHEET NO. <u>30</u> OF <u>62</u>	DRAWING SCALE

REVISION DATE: 2/7/2023

LAST MODIFIED: Feb 08, 2023 - 11:38am BY USER: jrush06  
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 DWG. NAME: P&P SHEET X5.dwg

MATCHLINE STA 4+50  
 SEE SHEET 29



**NOTES:**

1. ALL EXISTING WATER METERS ALONG PROJECT TO BE RECONNECTED. SEE DETAIL W-03, SHEET 48
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4. MON. 6422 (APPROX. LOCATION SEE SHEET 12) ELEV. N/A LOCATED ON THE NORTHEAST CORNER OF THE INTERSECTION OF THOMASON STREET AND AVENUE M  
 N = 10262576.4  
 E = 3798119.1

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**VERIFICATION OF PRIVATE UTILITY LINES**  
 Mike Brower 02-09-23  
 Date  
 CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.  
 Signature valid for six months.

Mike Brower 02-09-23  
 Date  
 CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
 Signature valid for six months.

Jesse Rodriguez 02/09/2023  
 Date  
 Approved for AT&T underground conduit facilities only.  
 Signature valid for one year.

NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059

STATE OF TEXAS  
 PHUONG NGUYEN  
 137850  
 LICENSED PROFESSIONAL ENGINEER  
 Signature: *Phuong*  
 Aurora Technical Services, LLC  
 Texas Registered Engineering Firm  
 F-2059  
 02/08/2023

FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 PROFILE  
 THOMASON ST  
 STA 4+50 TO END

SURVEYED BY: LANDTECH, INC.	HORIZ: 1" = 20' VERT: 1" = 2'
SHEET NO. 31 OF 62	DRAWING SCALE

REVISION DATE: 2/7/2023

**BENCHMARK:**

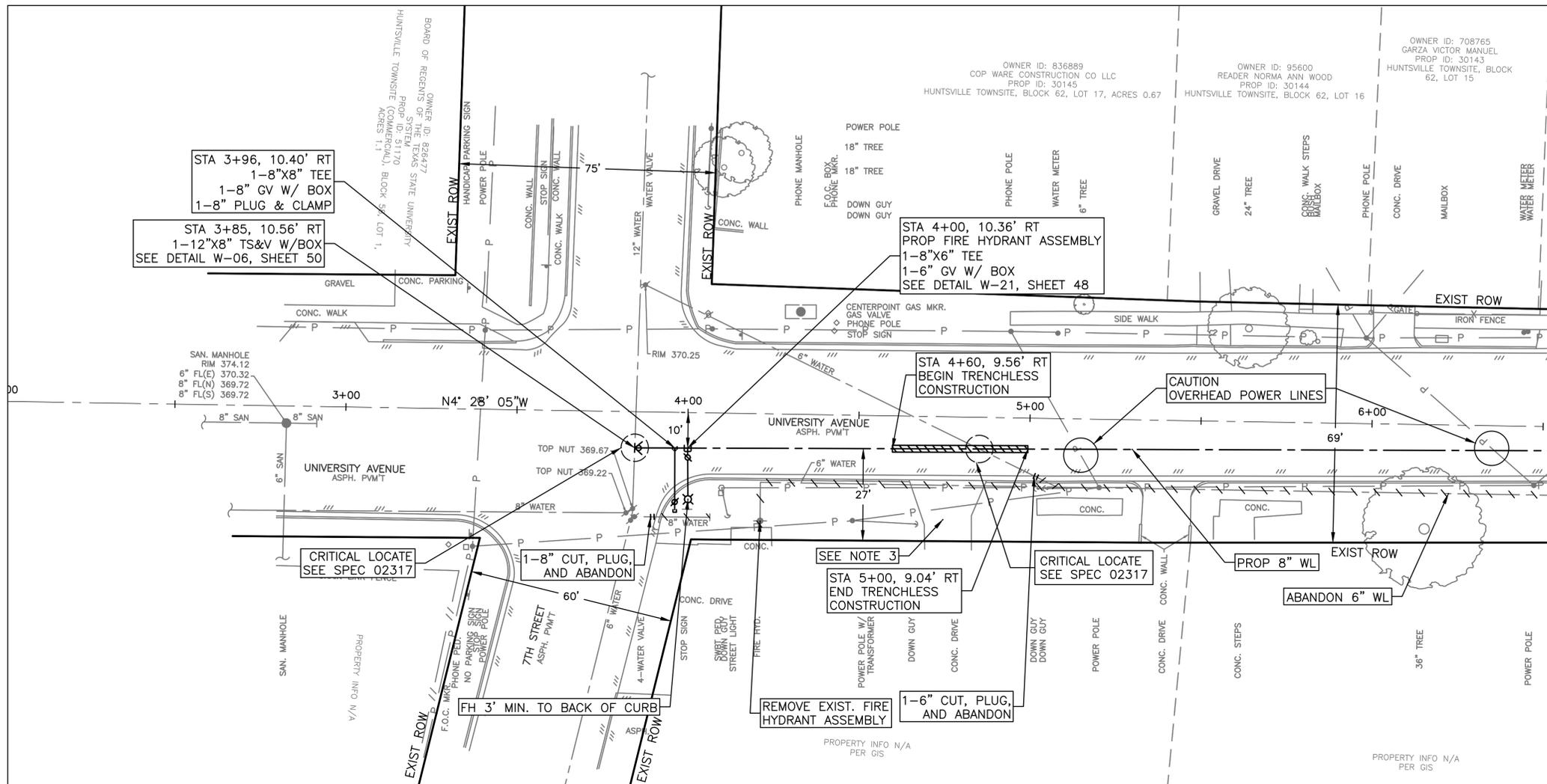
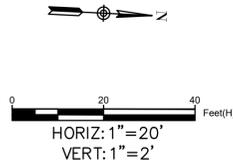
ALL SURVEY CONTROL POINTS AND BENCHMARKS ARE REPORTED AS FOLLOWS: HORIZONTAL COORDINATES (EXPRESSED IN U. S. SURVEY FEET UNITS) AND BEARINGS HEREON ARE REFERRING TO THE TEXAS COORDINATE SYSTEM OF 1983, CENTRAL ZONE AND BASED ON THE POSITION OF THE NATIONAL GEODETIC SURVEY (NGS) PRIMARY AIRPORT CONTROL STATION "T39 A" HAVING PUBLISHED NAD 83 (1993) COORDINATES OF N=3,128,437.762 METERS AND E=1,154,289.433 METERS. LINEAR DIMENSIONS (EXPRESSED IN U.S. SURVEY FEET) ARE "NAD83 GRID" UNIT AND MAY BE CONVERTED TO "GEODETIC HORIZONTAL" UNITS BY DIVIDING BY A COMBINED SCALE FACTOR OF 0.99988. ELEVATIONS ARE EXPRESSED IN U.S. SURVEY FEET AND REFERRED TO THE (NGS) NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

MON. 6417  
(APPROX. LOCATION, SEE SHEET 12)

ELEV. N/A

LOCATED ON THE WEST SIDE OF UNIVERSITY AVE, ON THE NORTH SIDE OF THE DRIVEWAY FOR 626 UNIVERSITY AVE LLC.

N = 10261340.0  
E = 3798709.3



MATCHLINE STA 6+50  
SEE SHEET 34

**NOTICE:**  
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

**VERIFICATION OF PRIVATE UTILITY LINES**  
*Mike Brower* 02-09-23  
CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.  
Signature valid for six months.

*Mike Brower* 02-09-23  
CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
Signature valid for six months.

*Jesse Rodriguez* 02/09/2023  
Approved for AT&T underground conduit facilities only.  
Signature valid for one year.

NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
2121 SAGE ROAD, SUITE 150  
HOUSTON, TX 77056  
PHONE: 281-453-770  
TX FIRM NO.: F-2059

STATE OF TEXAS  
PHUONG NGUYEN  
157850  
LICENSED PROFESSIONAL ENGINEER  
*Phuong*  
Aurora Technical Services, LLC  
Texas Registered Engineering Firm  
F-2059  
02/08/2023

FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
PLAN  
UNIVERSITY AVE  
BEGIN TO STA 6+50

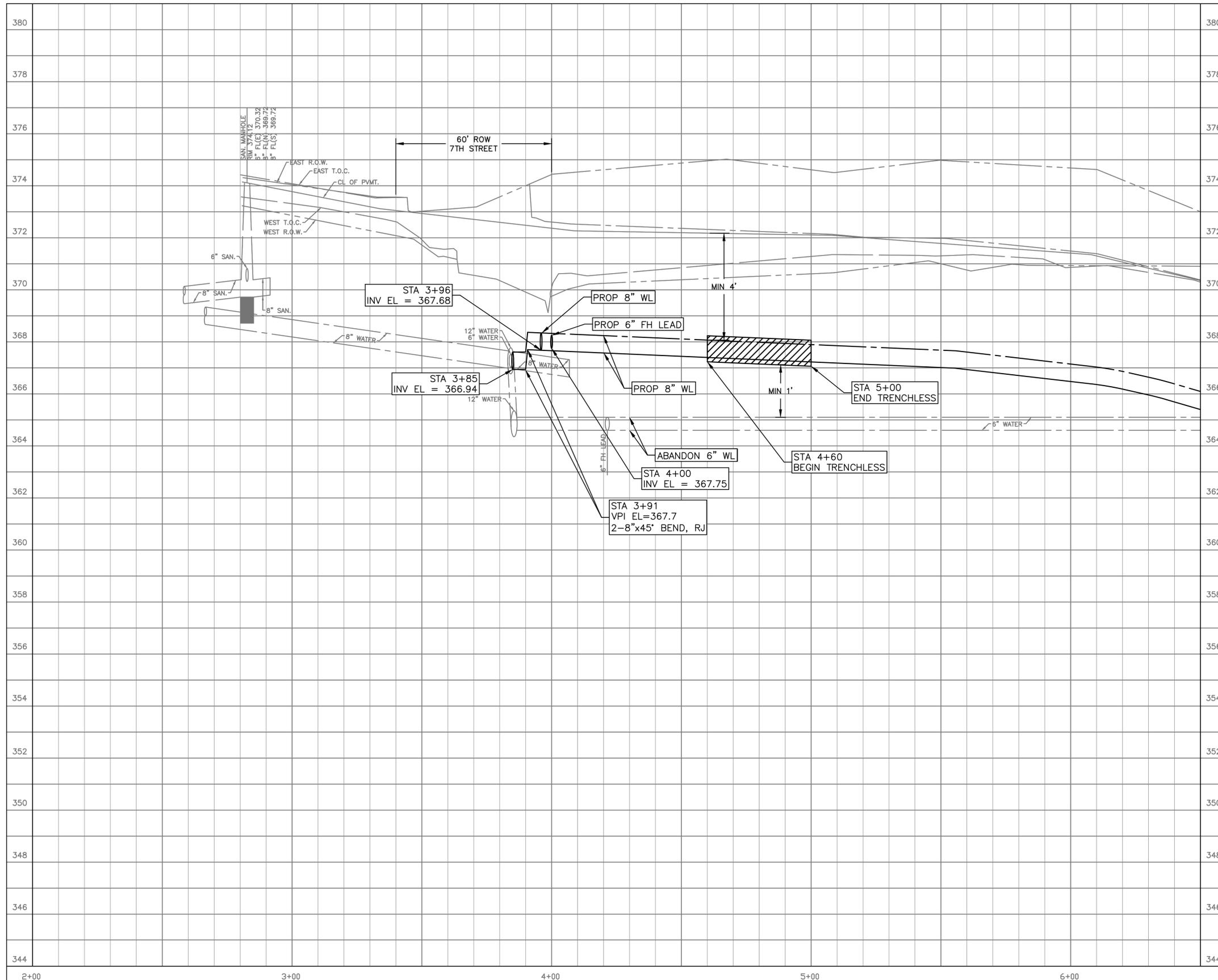
SURVEYED BY: LANDTECH, INC.	HORIZ: 1" = 20' VERT: 1" = 2'
SHEET NO. <u>32</u> OF 62	DRAWING SCALE

REVISION DATE: 2/7/2023

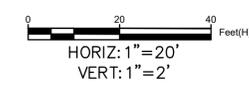
- NOTES:**
- ALL EXISTING WATER METERS ALONG PROJECT TO BE RECONNECTED. SEE DETAIL W-03, SHEET 48.
  - SEE DETAIL W-61, SHEET 49. PLACE 1 FULL SECTION (MIN 18FT) OF WATER LINE (WL) CENTERED AT SS CROSSING. PROVIDE RESTRAINED JOINTS ON WL, SPACED AT LEAST 9 FT HORIZONTALLY FROM CENTERLINE OF SS. WHEN A WL CROSSES UNDER AN EXISTING SS OR IS WITHIN 9 FT OF A SANITARY SEWER MANHOLE, REFER TO REQUIREMENTS OF TAC 217.53.d.3 AND TAC 290.44.e.4.B.iii.
  - CONTRACTOR TO MAINTAIN ACCESS THROUGH PRIVATE DRIVEWAYS AT ALL TIME DURING CONSTRUCTION.
  - FOR ALL CONNECTIONS, SPOOL PIECES IN BETWEEN ALL FITTINGS TO BE A MIN. OF 2FT AND NO MORE THAN 4FT, UNLESS SPECIFIED OTHERWISE.
  - CONTRACTOR TO MAINTAIN DRAINAGE AT ALL TIME. ROADSIDE DITCHES TO BE RESTORED TO EXISTING CONDITION OR BETTER. NO SEPARATE PAY.

LAST MODIFIED: Feb 08, 2023 - 11:38am BY USER: jrush06  
DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
DWG. NAME: P&P SHEET University.dwg

LAST MODIFIED: Feb 08, 2023 - 11:39am BY USER: jrush06  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
 DWG. NAME: P&P SHEET University.dwg



MATCHLINE STA 6+50  
SEE SHEET 35



- NOTES:**
- ALL EXISTING WATER METERS ALONG PROJECT TO BE RECONNECTED. SEE DETAIL W-03, SHEET 48.
  - SEE DETAIL W-61, SHEET 49. PLACE 1 FULL SECTION (MIN 18FT) OF WATER LINE (WL) CENTERED AT SS CROSSING. PROVIDE RESTRAINED JOINTS ON WL, SPACED AT LEAST 9 FT HORIZONTALLY FROM CENTERLINE OF SS. WHEN A WL CROSSES UNDER AN EXISTING SS OR IS WITHIN 9 FT OF A SANITARY SEWER MANHOLE, REFER TO REQUIREMENTS OF TAC 217.53.d.3 AND TAC 290.44.e.4.B.iii.
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  - FOR ALL CONNECTIONS, SPOOL PIECES IN BETWEEN ALL FITTINGS TO BE A MIN. OF 2FT AND NO MORE THAN 4FT, UNLESS SPECIFIED OTHERWISE
- BENCHMARK:**
- ALL SURVEY CONTROL POINTS AND BENCHMARKS ARE REPORTED AS FOLLOWS: HORIZONTAL COORDINATES (EXPRESSED IN U. S. SURVEY FEET UNITS) AND BEARINGS HEREON ARE REFERRING TO THE TEXAS COORDINATE SYSTEM OF 1983, CENTRAL ZONE AND BASED ON THE POSITION OF THE NATIONAL GEODETIC SURVEY (NGS) PRIMARY AIRPORT CONTROL STATION "T39 A" HAVING PUBLISHED NAD 83 (1993) COORDINATES OF N=3,128,437.762 METERS AND E=1,154,289.433 METERS. LINEAR DIMENSIONS (EXPRESSED IN U.S. SURVEY FEET) ARE "NAD83 GRID" UNIT AND MAY BE CONVERTED TO "GEODETIC HORIZONTAL" UNITS BY DIVIDING BY A COMBINED SCALE FACTOR OF 0.99988. ELEVATIONS ARE EXPRESSED IN U.S. SURVEY FEET AND REFERRED TO THE (NGS) NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
- MON. 6417  
(APPROX. LOCATION, SEE SHEET 12)
- ELEV. N/A
- LOCATED ON THE WEST SIDE OF UNIVERSITY AVE, ON THE NORTH SIDE OF THE DRIVEWAY FOR 626 UNIVERSITY AVE LLC.
- N = 10261340.0  
E = 3798709.3

**NOTICE:**  
 FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

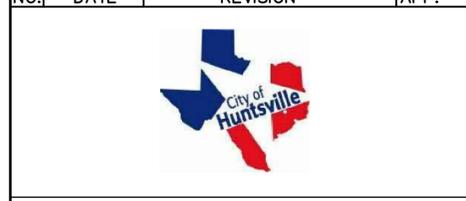
**VERIFICATION OF PRIVATE UTILITY LINES**

*Mike Brower* Date: 02-09-23  
 CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.  
 Signature valid for six months.

*Mike Brower* Date: 02-09-23  
 CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
 Signature valid for six months.

*Jesse Rodriguez* Date: 02/09/2023  
 Approved for AT&T underground conduit facilities only.  
 Signature valid for one year.

NO.	DATE	REVISION	APP.



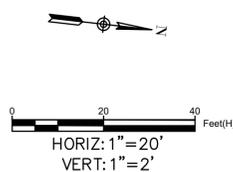
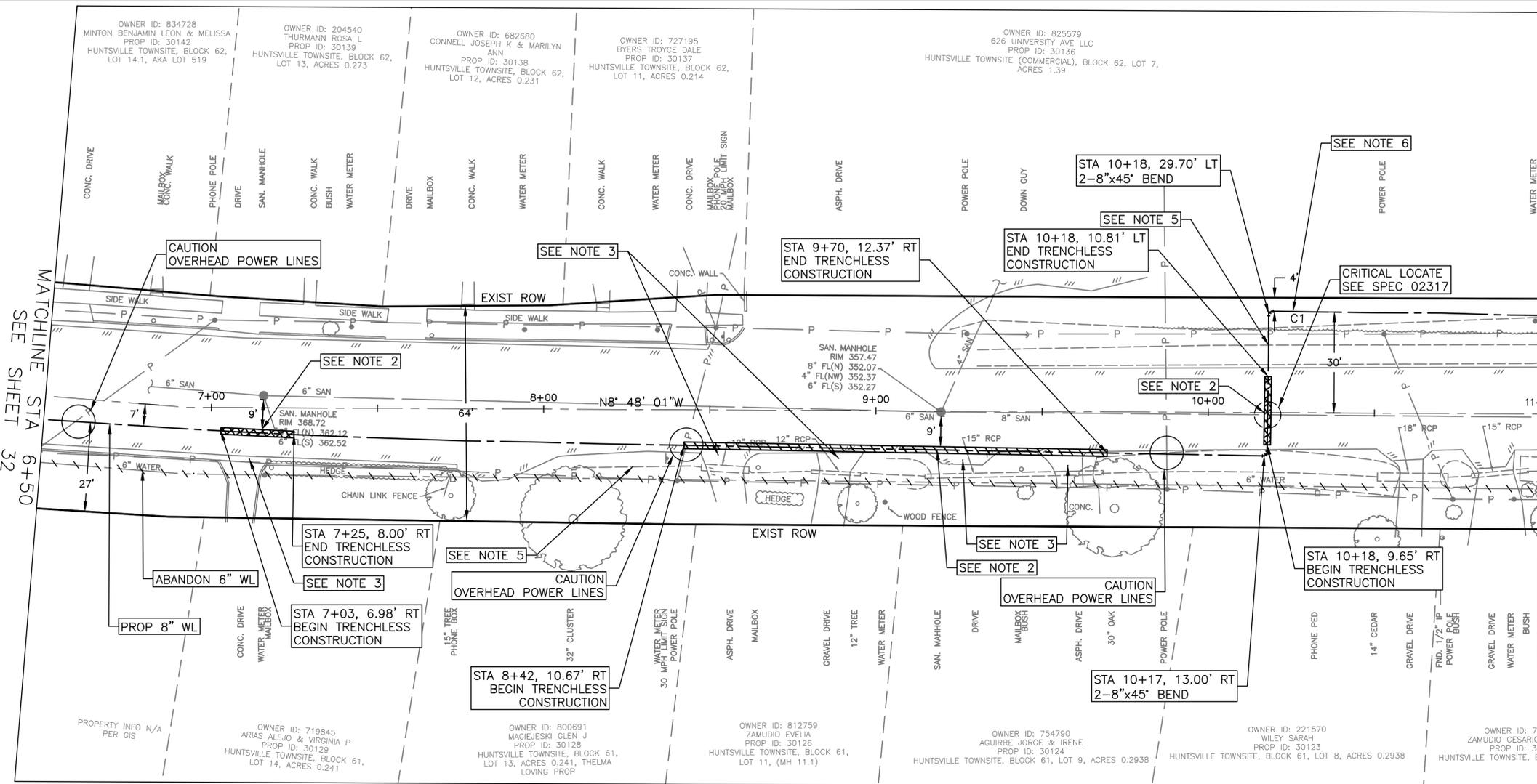
**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059

STATE OF TEXAS  
 PHUONG NGUYEN  
 137850  
 LICENSED PROFESSIONAL ENGINEER  
*Phuong Nguyen*  
 Aurora Technical Services, LLC  
 Texas Registered Engineering Firm  
 F-2059  
 02/08/2023

FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 PROFILE  
 UNIVERSITY AVE  
 BEGIN TO STA 6+50

SURVEYED BY: LANDTECH, INC.	HORIZ: 1" = 20' VERT: 1" = 2'
SHEET NO. 33 OF 62	DRAWING SCALE

REVISION DATE: 2/7/2023



**BENCHMARK:**  
 ALL SURVEY CONTROL POINTS AND BENCHMARKS ARE REPORTED AS FOLLOWS: HORIZONTAL COORDINATES (EXPRESSED IN U. S. SURVEY FEET UNITS) AND BEARINGS HEREON ARE REFERRING TO THE TEXAS COORDINATE SYSTEM OF 1983, CENTRAL ZONE AND BASED ON THE POSITION OF THE NATIONAL GEODETIC SURVEY (NGS) PRIMARY AIRPORT CONTROL STATION "T39 A" HAVING PUBLISHED NAD 83 (1993) COORDINATES OF N=3,128,437.762 METERS AND E=1,154,289.433 METERS. LINEAR DIMENSIONS (EXPRESSED IN U.S. SURVEY FEET) ARE "NAD83 GRID" UNIT AND MAY BE CONVERTED TO "GEODETIC HORIZONTAL" UNITS BY DIVIDING BY A COMBINED SCALE FACTOR OF 0.99988. ELEVATIONS ARE EXPRESSED IN U.S. SURVEY FEET AND REFERRED TO THE (NGS) NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

MON. 6417  
 (APPROX. LOCATION, SEE SHEET 12)  
 ELEV. N/A  
 LOCATED ON THE WEST SIDE OF UNIVERSITY AVE, ON THE NORTH SIDE OF THE DRIVEWAY FOR 626 UNIVERSITY AVE LLC.  
 N = 10261340.0  
 E = 3798709.3

**NOTICE:**  
 FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES	
<i>Mike Brower</i>	02-09-23 Date
CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification. Signature valid for six months.	
<i>Mike Brower</i>	02-09-23 Date
CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification) Signature valid for six months.	
<i>Jesse Rodriguez</i>	02/09/2023 Date
Approved for AT&T underground conduit facilities only. Signature valid for one year.	

- NOTES:**
- ALL EXISTING WATER METERS ALONG PROJECT TO BE RECONNECTED. SEE DETAIL W-03, SHEET 48.
  - SEE DETAIL W-61, SHEET 49. PLACE 1 FULL SECTION (MIN 18FT) OF WATER LINE (WL) CENTERED AT SS CROSSING. PROVIDE RESTRAINED JOINTS ON WL, SPACED AT LEAST 9 FT HORIZONTALLY FROM CENTERLINE OF SS. WHEN A WL CROSSES UNDER AN EXISTING SS OR IS WITHIN 9 FT OF A SANITARY SEWER MANHOLE, REFER TO REQUIREMENTS OF TAC 217.53.d.3 AND TAC 290.44.e.4.B.iii.
  - CONTRACTOR TO MAINTAIN ACCESS THROUGH PRIVATE DRIVEWAYS AT ALL TIME DURING CONSTRUCTION.
  - FOR ALL CONNECTIONS, SPOOL PIECES IN BETWEEN ALL FITTINGS TO BE A MIN. OF 2FT AND NO MORE THAN 4FT, UNLESS SPECIFIED OTHERWISE.
  - CONTRACTOR TO MAINTAIN DRAINAGE AT ALL TIME. ROADSIDE DITCHES TO BE RESTORED TO EXISTING CONDITION OR BETTER. NO SEPARATE PAY.
  - FOR INSTALLATION OF CURVES, CONTRACTOR TO FOLLOW PROCEDURES UNDER SUMMARY OF WORK SECTION 1.01.A.1.a.viii.

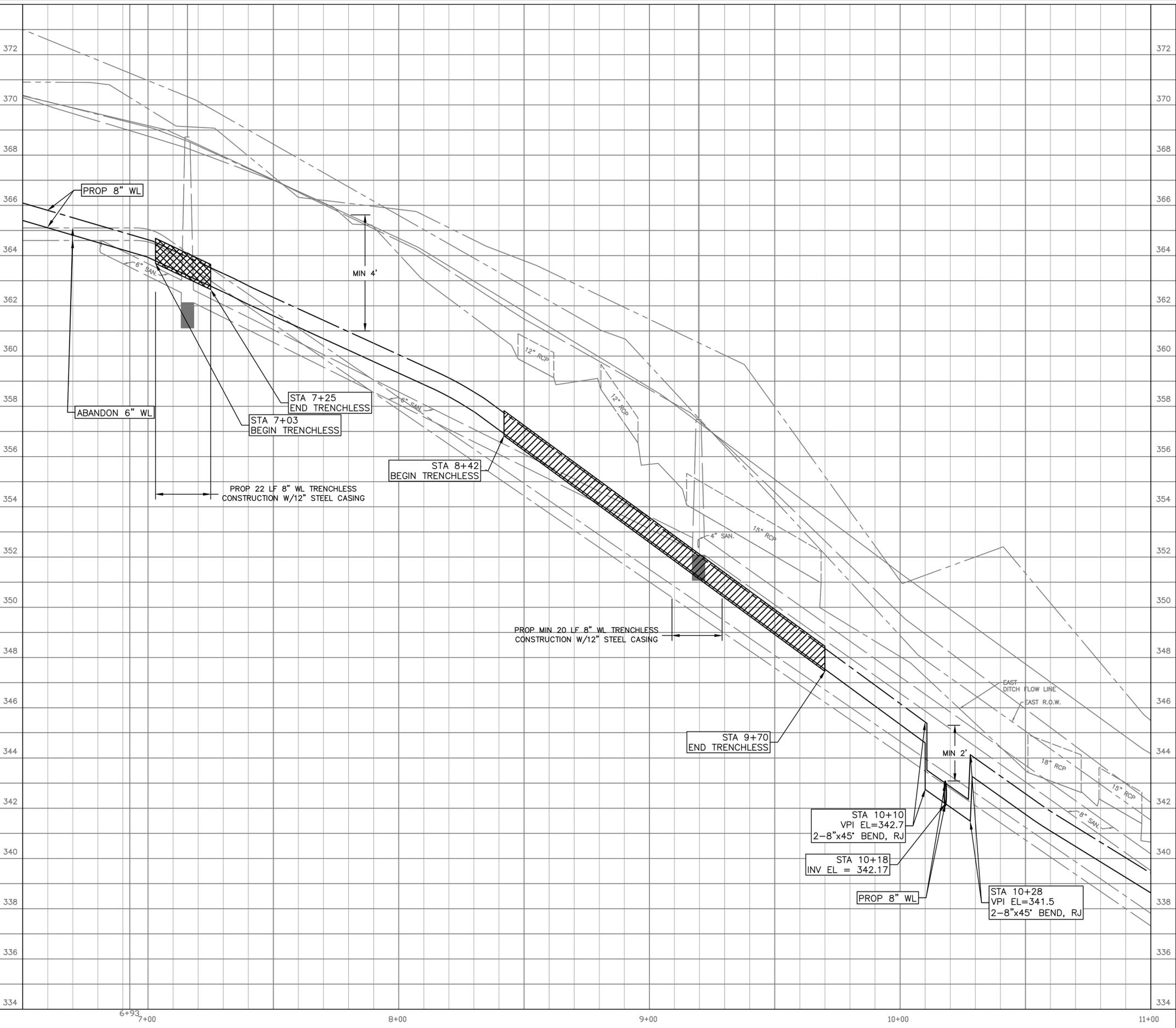
Curve	Radius (ft)	Arc Length (ft)	Chord Length (ft)	Chord Bearing	Delta Angle (deg)
C1	3058	280	280	N6°W	2.6

LAST MODIFIED: Feb 08, 2023 - 11:39am BY USER: jrush06  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
 DWG. NAME: P&P SHEET University.dwg

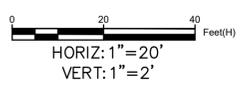
NO.	DATE	REVISION	APP.
		AURORA TECHNICAL SERVICES, LLC 2121 SAGE ROAD, SUITE 150 HOUSTON, TX 77056 PHONE: 281-453-770 TX FIRM NO.: F-2059	
		<i>Phung</i> 02/08/2023	
FY 2021/2022 WATERLINE REPLACEMENT PROJECT PLAN UNIVERSITY AVE STA 6+50 TO STA 11+00			
SURVEYED BY: LANDTECH, INC.		HORIZ: 1" = 20' VERT: 1" = 2'	
SHEET NO. <u>34</u> OF 62		DRAWING SCALE	
REVISION DATE: 2/7/2023			

LAST MODIFIED: Feb 08, 2023 - 11:39am BY USER: jrush06  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
 DWG. NAME: P&P SHEET University.dwg

MATCHLINE STA 11+00  
 SEE SHEET 37



MATCHLINE STA 11+00  
 SEE SHEET 37



- NOTES:**
1. ALL EXISTING WATER METERS ALONG PROJECT TO BE RECONNECTED. SEE DETAIL W-03, SHEET 48.
  2. SEE DETAIL W-61, SHEET 49. PLACE 1 FULL SECTION (MIN 18FT) OF WATER LINE (WL) CENTERED AT SS CROSSING. PROVIDE RESTRAINED JOINTS ON WL, SPACED AT LEAST 9 FT HORIZONTALLY FROM CENTERLINE OF SS. WHEN A WL CROSSES UNDER AN EXISTING SS OR IS WITHIN 9 FT OF A SANITARY SEWER MANHOLE, REFER TO REQUIREMENTS OF TAC 217.53.d.3 AND TAC 290.44.e.4.B.ii.
  3. CONTRACTOR TO MAINTAIN ACCESS THROUGH PRIVATE DRIVEWAYS AT ALL TIME DURING CONSTRUCTION.
  4. FOR ALL CONNECTIONS, SPOOL PIECES IN BETWEEN ALL FITTINGS TO BE A MIN. OF 2FT AND NO MORE THAN 4FT, UNLESS SPECIFIED OTHERWISE

**BENCHMARK:**

ALL SURVEY CONTROL POINTS AND BENCHMARKS ARE REPORTED AS FOLLOWS: HORIZONTAL COORDINATES (EXPRESSED IN U. S. SURVEY FEET UNITS) AND BEARINGS HEREON ARE REFERRING TO THE TEXAS COORDINATE SYSTEM OF 1983, CENTRAL ZONE AND BASED ON THE POSITION OF THE NATIONAL GEODETIC SURVEY (NGS) PRIMARY AIRPORT CONTROL STATION "T39 A" HAVING PUBLISHED NAD 83 (1993) COORDINATES OF N=3,128,437.762 METERS AND E=1,154,289.433 METERS. LINEAR DIMENSIONS (EXPRESSED IN U.S. SURVEY FEET) ARE "NAD83 GRID" UNIT AND MAY BE CONVERTED TO "GEODETTIC HORIZONTAL" UNITS BY DIVIDING BY A COMBINED SCALE FACTOR OF 0.99988. ELEVATIONS ARE EXPRESSED IN U.S. SURVEY FEET AND REFERRED TO THE (NGS) NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

MON. 6417  
 (APPROX. LOCATION, SEE SHEET 12)

ELEV. N/A

LOCATED ON THE WEST SIDE OF UNIVERSITY AVE, ON THE NORTH SIDE OF THE DRIVEWAY FOR 626 UNIVERSITY AVE LLC.

N = 10261340.0  
 E = 3798709.3

**NOTICE:**  
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**VERIFICATION OF PRIVATE UTILITY LINES**

*Mike Brower* Date: 02-09-23  
 CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.  
 Signature valid for six months.

*Mike Brower* Date: 02-09-23  
 CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
 Signature valid for six months.

*Jesse Rodriguez* Date: 02/09/2023  
 Approved for AT&T underground conduit facilities only.  
 Signature valid for one year.

NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059

STATE OF TEXAS  
 PHUONG NGUYEN  
 137850  
 LICENSED PROFESSIONAL ENGINEER  
 Aurora Technical Services, LLC  
 Texas Registered Engineering Firm  
 F-2059  
 02/08/2023

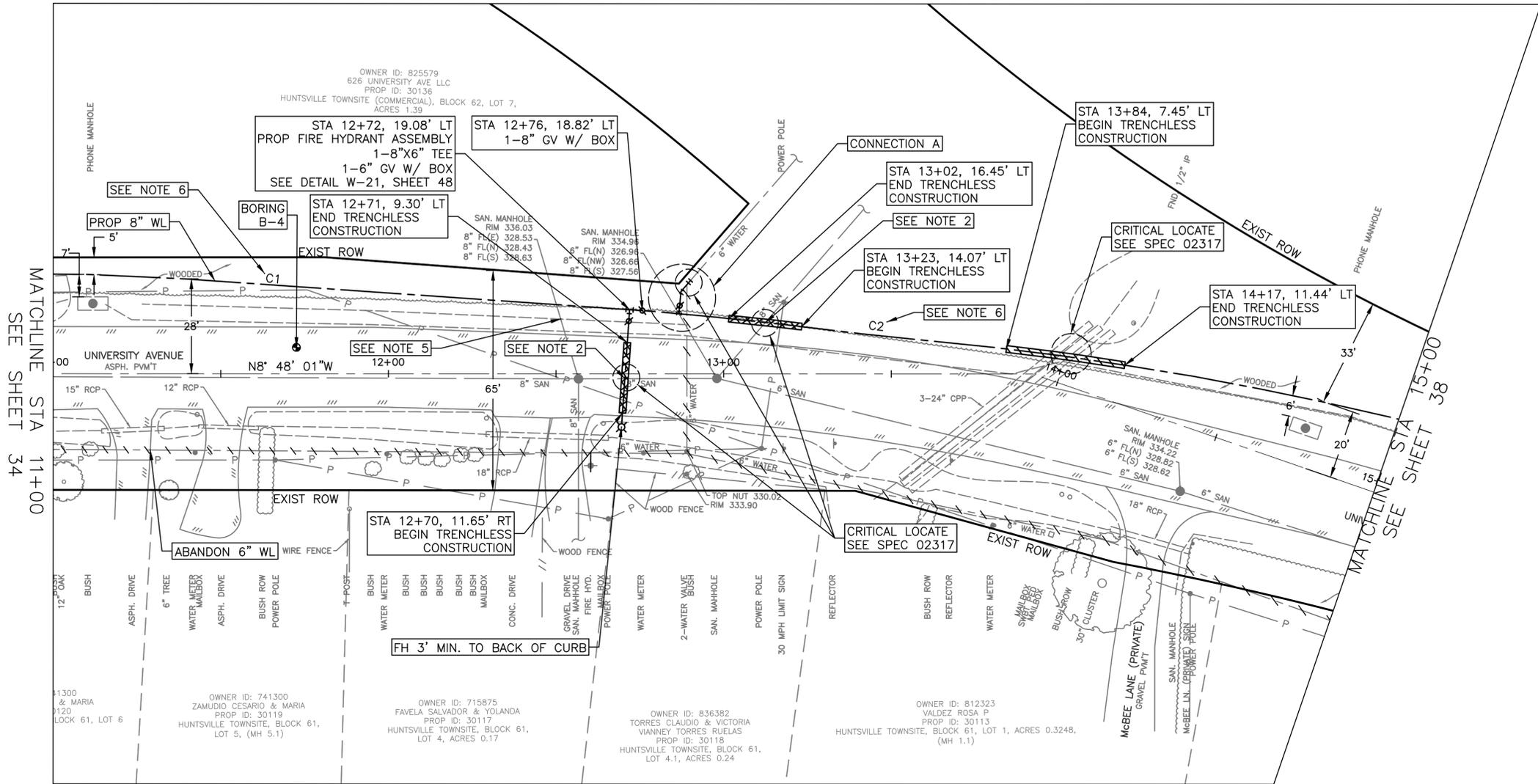
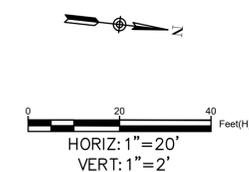
FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 PROFILE  
 UNIVERSITY AVE  
 STA 6+50 TO STA 11+00

SURVEYED BY: LANDTECH, INC.	HORIZ: 1" = 20' VERT: 1" = 2'
SHEET NO. 35 OF 62	DRAWING SCALE

REVISION DATE: 2/7/2023

**BENCHMARK:**  
 ALL SURVEY CONTROL POINTS AND BENCHMARKS ARE REPORTED AS FOLLOWS: HORIZONTAL COORDINATES (EXPRESSED IN U. S. SURVEY FEET UNITS) AND BEARINGS HEREON ARE REFERRING TO THE TEXAS COORDINATE SYSTEM OF 1983, CENTRAL ZONE AND BASED ON THE POSITION OF THE NATIONAL GEODETIC SURVEY (NGS) PRIMARY AIRPORT CONTROL STATION "T39 A" HAVING PUBLISHED NAD 83 (1993) COORDINATES OF N=3,128,437.762 METERS AND E=1,154,289.433 METERS. LINEAR DIMENSIONS (EXPRESSED IN U.S. SURVEY FEET) ARE "NAD83 GRID" UNIT AND MAY BE CONVERTED TO "GEODETTIC HORIZONTAL" UNITS BY DIVIDING BY A COMBINED SCALE FACTOR OF 0.99988. ELEVATIONS ARE EXPRESSED IN U.S. SURVEY FEET AND REFERRED TO THE (NGS) NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

MON. 6418  
 ELEV. 333.060  
 LOCATED ON THE WEST SIDE OF UNIVERSITY AVENUE, SOUTH OF MCBEE LANE (PRIVATE) AND JUST NORTH OF THE 3-24" CPP UNDER THE ROADWAY  
 N = 10261828.908  
 E = 3798658.271



**NOTICE:**  
 FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

**VERIFICATION OF PRIVATE UTILITY LINES**  
 Mike Brower 02-09-23  
 CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.  
 Signature valid for six months.

Mike Brower 02-09-23  
 CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
 Signature valid for six months.

Jesse Rodriguez 02/09/2023  
 Approved for AT&T underground conduit facilities only.  
 Signature valid for one year.

NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059

STATE OF TEXAS  
 PHUONG NGUYEN  
 LICENSED PROFESSIONAL ENGINEER  
 17850  
 02/08/2023

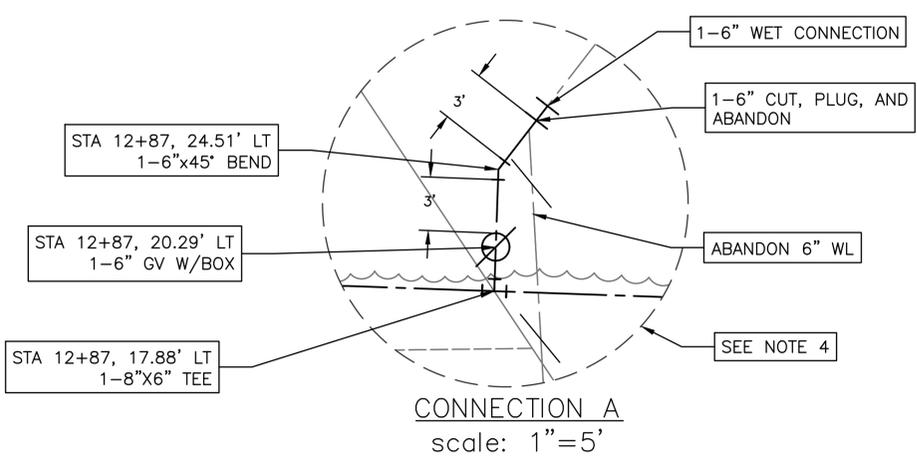
FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 PLAN  
 UNIVERSITY AVENUE  
 STA 11+00 TO STA 15+00

SURVEYED BY: LANDTECH, INC.	HORIZ: 1" = 20' VERT: 1" = 2'
SHEET NO. 36 OF 62	DRAWING SCALE

REVISION DATE: 2/7/2023

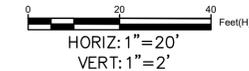
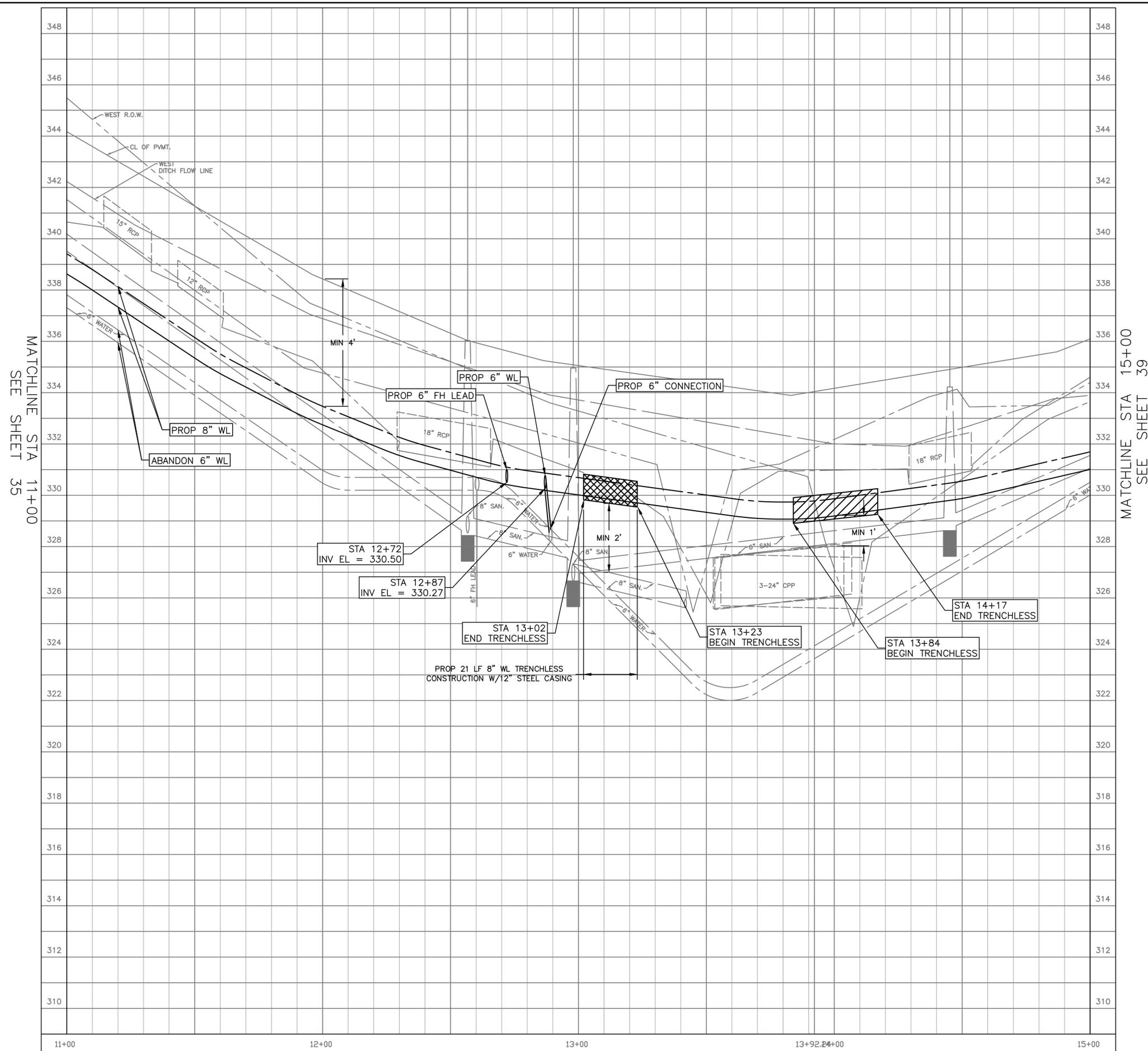
- NOTES:**
- ALL EXISTING WATER METERS ALONG PROJECT TO BE RECONNECTED. SEE DETAIL W-03, SHEET 48.
  - SEE DETAIL W-61, SHEET 49. PLACE 1 FULL SECTION (MIN 18FT) OF WATER LINE (WL) CENTERED AT SS CROSSING. PROVIDE RESTRAINED JOINTS ON WL, SPACED AT LEAST 9 FT HORIZONTALLY FROM CENTERLINE OF SS. WHEN A WL CROSSES UNDER AN EXISTING SS OR IS WITHIN 9 FT OF A SANITARY SEWER MANHOLE, REFER TO REQUIREMENTS OF TAC 217.53.d.3 AND TAC 290.44.e.4.B.iii.
  - CONTRACTOR TO MAINTAIN ACCESS THROUGH PRIVATE DRIVEWAYS AT ALL TIME DURING CONSTRUCTION.
  - FOR ALL CONNECTIONS, SPOOL PIECES IN BETWEEN ALL FITTINGS TO BE A MIN. OF 2FT AND NO MORE THAN 4FT, UNLESS SPECIFIED OTHERWISE.
  - CONTRACTOR TO MAINTAIN DRAINAGE AT ALL TIME. ROADSIDE DITCHES TO BE RESTORED TO EXISTING CONDITION OR BETTER. NO SEPARATE PAY.
  - FOR INSTALLATION OF CURVES, CONTRACTOR TO FOLLOW PROCEDURES UNDER SUMMARY OF WORK SECTION 1.01.A.1.a.viii.

Curve	Radius (ft)	Arc Length (ft)	Chord Length (ft)	Chord Bearing	Delta Angle (deg)
C1	3058	280	280	N6°W	2.6
C2	1263	412	410	S4°W	9.3



LAST MODIFIED: Feb 08, 2023 - 11:39am BY USER: jrush06  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
 DWG. NAME: P&P SHEET University.dwg

LAST MODIFIED: Feb 08, 2023 - 11:39am BY USER: jrush06  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
 DWG. NAME: P&P SHEET University.dwg



- NOTES:**
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  - SEE DETAIL W-61, SHEET 49. PLACE 1 FULL SECTION (MIN 18FT) OF WATER LINE (WL) CENTERED AT SS CROSSING. PROVIDE RESTRAINED JOINTS ON WL, SPACED AT LEAST 9 FT HORIZONTALLY FROM CENTERLINE OF SS. WHEN A WL CROSSES UNDER AN EXISTING SS OR IS WITHIN 9 FT OF A SANITARY SEWER MANHOLE, REFER TO REQUIREMENTS OF TAC 217.53.d.3 AND TAC 290.44.e.4.B.iii.
  - CONTRACTOR TO MAINTAIN ACCESS THROUGH PRIVATE DRIVEWAYS AT ALL TIME DURING CONSTRUCTION.
  - FOR ALL CONNECTIONS, SPOOL PIECES IN BETWEEN ALL FITTINGS TO BE A MIN. OF 2FT AND NO MORE THAN 4FT, UNLESS SPECIFIED OTHERWISE
- BENCHMARK:**
- ALL SURVEY CONTROL POINTS AND BENCHMARKS ARE REPORTED AS FOLLOWS: HORIZONTAL COORDINATES (EXPRESSED IN U. S. SURVEY FEET UNITS) AND BEARINGS HEREON ARE REFERRING TO THE TEXAS COORDINATE SYSTEM OF 1983, CENTRAL ZONE AND BASED ON THE POSITION OF THE NATIONAL GEODETIC SURVEY (NGS) PRIMARY AIRPORT CONTROL STATION "T39 A" HAVING PUBLISHED NAD 83 (1993) COORDINATES OF N=3,128,437.762 METERS AND E=1,154,289.433 METERS. LINEAR DIMENSIONS (EXPRESSED IN U.S. SURVEY FEET) ARE "NAD83 GRID" UNIT AND MAY BE CONVERTED TO "GEODETTIC HORIZONTAL" UNITS BY DIVIDING BY A COMBINED SCALE FACTOR OF 0.99988. ELEVATIONS ARE EXPRESSED IN U.S. SURVEY FEET AND REFERRED TO THE (NGS) NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
- MON. 6418  
 ELEV. 333.060
- LOCATED ON THE WEST SIDE OF UNIVERSITY AVE, SOUTH OF MCBEE LANE (PRIVATE) AND JUST NORTH OF THE 3-24" CPP UNDER THE ROADWAY
- N = 10261828.908  
 E = 3798658.271

**NOTICE:**  
 FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

**VERIFICATION OF PRIVATE UTILITY LINES**

*Mike Brower* Date: 02-09-23  
 CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.  
 Signature valid for six months.

*Mike Brower* Date: 02-09-23  
 CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
 Signature valid for six months.

*Jesse Rodriguez* Date: 02/09/2023  
 Approved for KT&T underground conduit facilities only.  
 Signature valid for one year.

NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059

STATE OF TEXAS  
 PHUONG NGUYEN  
 137850  
 LICENSED PROFESSIONAL ENGINEER  
*Phuong*  
 Aurora Technical Services, LLC  
 Texas Registered Engineering Firm  
 F-2059  
 02/08/2023

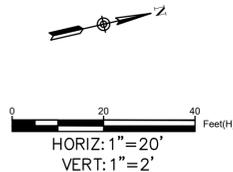
FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 PROFILE  
 UNIVERSITY AVE  
 STA 11+00 TO STA 15+00

SURVEYED BY: LANDTECH, INC.	HORIZ: 1" = 20' VERT: 1" = 2'
SHEET NO. 37 OF 62	DRAWING SCALE

REVISION DATE: 2/7/2023

**BENCHMARK:**

ALL SURVEY CONTROL POINTS AND BENCHMARKS ARE REPORTED AS FOLLOWS: HORIZONTAL COORDINATES (EXPRESSED IN U. S. SURVEY FEET UNITS) AND BEARINGS HEREON ARE REFERRING TO THE TEXAS COORDINATE SYSTEM OF 1983, CENTRAL ZONE AND BASED ON THE POSITION OF THE NATIONAL GEODETIC SURVEY (NGS) PRIMARY AIRPORT CONTROL STATION "T39 A" HAVING PUBLISHED NAD 83 (1993) COORDINATES OF N=3,128,437.762 METERS AND E=1,154,289.433 METERS. LINEAR DIMENSIONS (EXPRESSED IN U.S. SURVEY FEET) ARE "NAD83 GRID" UNIT AND MAY BE CONVERTED TO "GEODETIC HORIZONTAL" UNITS BY DIVIDING BY A COMBINED SCALE FACTOR OF 0.99988. ELEVATIONS ARE EXPRESSED IN U.S. SURVEY FEET AND REFERRED TO THE (NGS) NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).



MON. 6416  
ELEV. 341.955

LOCATED ON THE EAST SIDE OF UNIVERSITY AVE, NORTH OF THE PRIVATE CONCRETE DRIVEWAY AND NEXT TO THE SAN MANHOLE.

N = 10262059.638  
E = 3798719.172

**NOTICE:**  
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

**VERIFICATION OF PRIVATE UTILITY LINES**

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CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.  
Signature valid for six months.

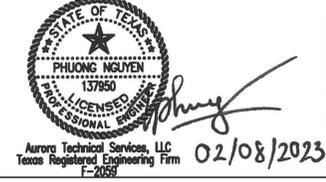
*Mike Brower* Date: 02-09-23  
CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
Signature valid for six months.

*Jesse Rodriguez* Date: 02/09/2023  
Approved for AT&T underground conduit facilities only.  
Signature valid for one year.

NO.	DATE	REVISION	APP.

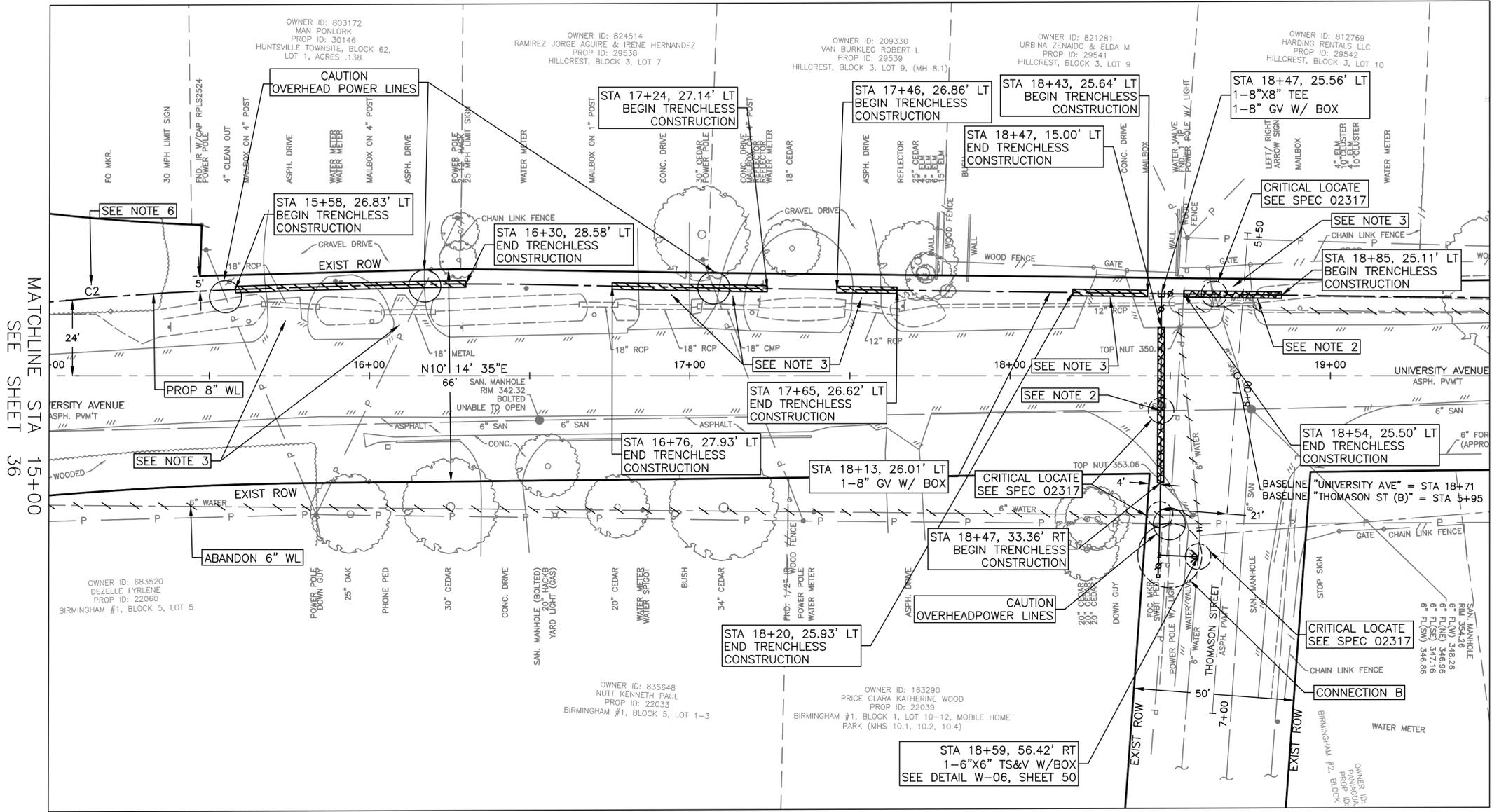


**Aurora Technical Services, LLC**  
2121 SAGE ROAD, SUITE 150  
HOUSTON, TX 77056  
PHONE: 281-453-770  
TX FIRM NO.: F-2059



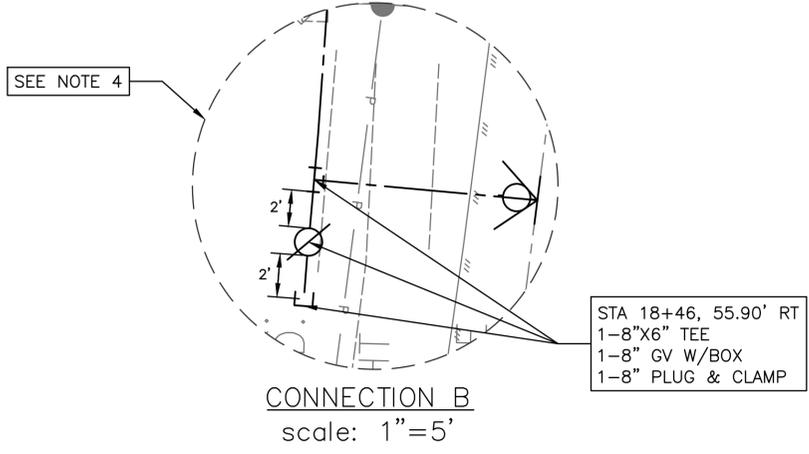
FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
PLAN  
UNIVERSITY AVE  
STA 15+00 TO STA 19+50

SURVEYED BY: LANDTECH, INC.	HORIZ: 1" = 20' VERT: 1" = 2'
SHEET NO. <u>38</u> OF 62	DRAWING SCALE
REVISION DATE: 2/7/2023	



- NOTES:**
- ALL EXISTING WATER METERS ALONG PROJECT TO BE RECONNECTED. SEE DETAIL W-03, SHEET 48.
  - SEE DETAIL W-61, SHEET 49. PLACE 1 FULL SECTION (MIN 18FT) OF WATER LINE (WL) CENTERED AT SS CROSSING. PROVIDE RESTRAINED JOINTS ON WL, SPACED AT LEAST 9 FT HORIZONTALLY FROM CENTERLINE OF SS. WHEN A WL CROSSES UNDER AN EXISTING SS OR IS WITHIN 9 FT OF A SANITARY SEWER MANHOLE, REFER TO REQUIREMENTS OF TAC 217.53.d.3 AND TAC 290.44.e.4.B.iii.
  - CONTRACTOR TO MAINTAIN ACCESS THROUGH PRIVATE DRIVEWAYS AT ALL TIME DURING CONSTRUCTION.
  - FOR ALL CONNECTIONS, SPOOL PIECES IN BETWEEN ALL FITTINGS TO BE A MIN. OF 2FT AND NO MORE THAN 4FT, UNLESS SPECIFIED OTHERWISE.
  - CONTRACTOR TO MAINTAIN DRAINAGE AT ALL TIME. ROADSIDE DITCHES TO BE RESTORED TO EXISTING CONDITION OR BETTER. NO SEPARATE PAY.
  - FOR INSTALLATION OF CURVES, CONTRACTOR TO FOLLOW PROCEDURES UNDER SUMMARY OF WORK SECTION 1.01.A.1.a.viii.

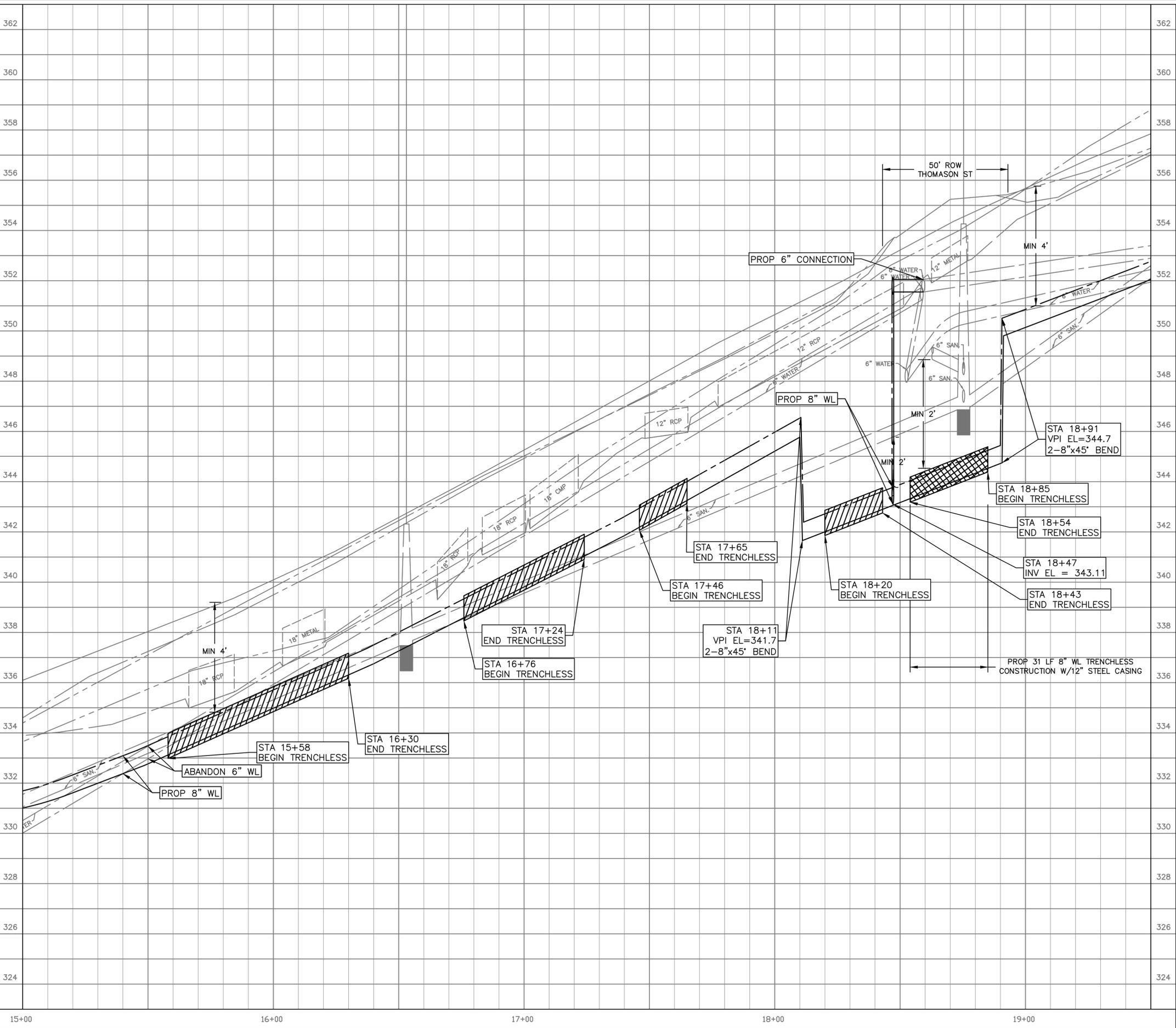
Curve	Radius (ft)	Arc Length (ft)	Chord Length (ft)	Chord Bearing	Delta Angle (deg)
C2	1263	412	410	S4°W	9.3



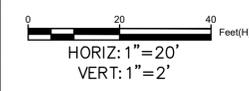
LAST MODIFIED: Feb 08, 2023 - 11:39am BY USER: jrush06  
DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
DWG. NAME: P&P SHEET University.dwg

LAST MODIFIED: Feb 08, 2023 - 11:40am BY USER: jrush06  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
 DWG. NAME: P&P SHEET University.dwg

MATCHLINE STA 15+00  
 SEE SHEET 37



MATCHLINE STA 19+50  
 SEE SHEET 41



- NOTES:**
1. ALL EXISTING WATER METERS ALONG PROJECT TO BE RECONNECTED. SEE DETAIL W-03, SHEET 48.
  2. SEE DETAIL W-61, SHEET 49. PLACE 1 FULL SECTION (MIN 18FT) OF WATER LINE (WL) CENTERED AT SS CROSSING. PROVIDE RESTRAINED JOINTS ON WL SPACED AT LEAST 9 FT HORIZONTALLY FROM CENTERLINE OF SS. WHEN A WL CROSSES UNDER AN EXISTING SS OR IS WITHIN 9 FT OF A SANITARY SEWER MANHOLE, REFER TO REQUIREMENTS OF TAC 217.53.d.3 AND TAC 290.44.e.4.B.iii.
  3. CONTRACTOR TO MAINTAIN ACCESS THROUGH PRIVATE DRIVEWAYS AT ALL TIME DURING CONSTRUCTION.
  4. FOR ALL CONNECTIONS, SPOOL PIECES IN BETWEEN ALL FITTINGS TO BE A MIN. OF 2FT AND NO MORE THAN 4FT, UNLESS SPECIFIED OTHERWISE

**BENCHMARK:**

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MON. 6416  
 ELEV. 341.955

LOCATED ON THE EAST SIDE OF UNIVERSITY AVE, NORTH OF THE PRIVATE CONCRETE DRIVEWAY AND NEXT TO THE SAN MANHOLE.

N = 10262059.638  
 E = 3798719.172

**NOTICE:**  
 FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

**VERIFICATION OF PRIVATE UTILITY LINES**

*Mike Brower* Date: 02-09-23  
 CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.  
 Signature valid for six months.

*Mike Brower* Date: 02-09-23  
 CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
 Signature valid for six months.

*Jesse Rodriguez* Date: 02/09/2023  
 Approved for AT&T underground conduit facilities only.  
 Signature valid for one year.

NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-7700  
 TX FIRM NO.: F-2059

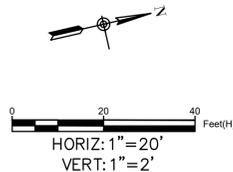
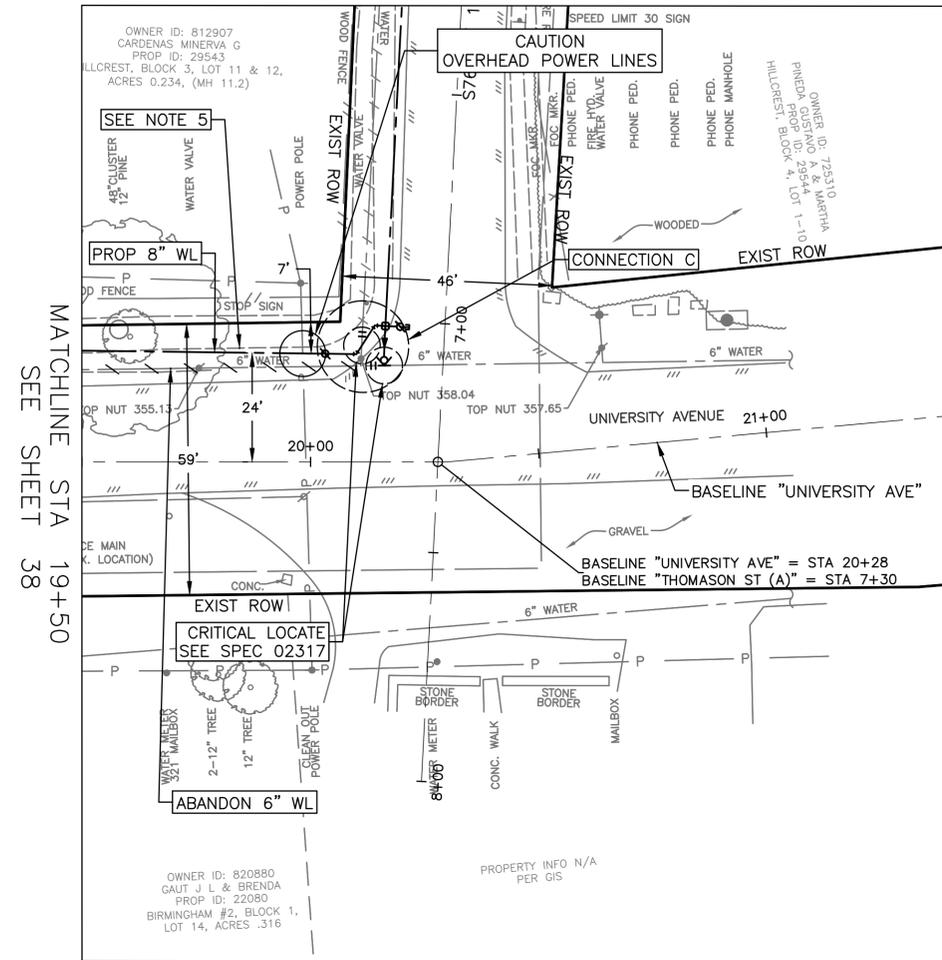
STATE OF TEXAS  
 PHUONG NGUYEN  
 137850  
 LICENSED PROFESSIONAL ENGINEER  
*Phuong*  
 Aurora Technical Services, LLC  
 Texas Registered Engineering Firm  
 F-2059  
 02/08/2023

FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 PROFILE  
 UNIVERSITY AVE  
 STA 15+00 TO STA 19+50

SURVEYED BY: LANDTECH, INC.	HORIZ: 1" = 20' VERT: 1" = 2'
SHEET NO. 39 OF 62	DRAWING SCALE

REVISION DATE: 2/7/2023

BASELINE "THOMASON ST (A)"  
FOR CONTINUATION  
SEE SHEET 28 TO 31



**BENCHMARK:**  
ALL SURVEY CONTROL POINTS AND BENCHMARKS ARE REPORTED AS FOLLOWS: HORIZONTAL COORDINATES (EXPRESSED IN U. S. SURVEY FEET UNITS) AND BEARINGS HEREON ARE REFERRING TO THE TEXAS COORDINATE SYSTEM OF 1983, CENTRAL ZONE AND BASED ON THE POSITION OF THE NATIONAL GEODETIC SURVEY (NGS) PRIMARY AIRPORT CONTROL STATION "T39 A" HAVING PUBLISHED NAD 83 (1993) COORDINATES OF N=3,128,437.762 METERS AND E=1,154,289.433 METERS. LINEAR DIMENSIONS (EXPRESSED IN U.S. SURVEY FEET) ARE "NAD83 GRID" UNIT AND MAY BE CONVERTED TO "GEODETIC HORIZONTAL" UNITS BY DIVIDING BY A COMBINED SCALE FACTOR OF 0.99988. ELEVATIONS ARE EXPRESSED IN U.S. SURVEY FEET AND REFERRED TO THE (NGS) NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).  
MON. 6416  
ELEV. 341.955  
LOCATED ON THE EAST SIDE OF UNIVERSITY AVE, NORTH OF THE PRIVATE CONCRETE DRIVEWAY AND NEXT TO THE SAN MANHOLE.  
N = 10262059.638  
E = 3798719.172

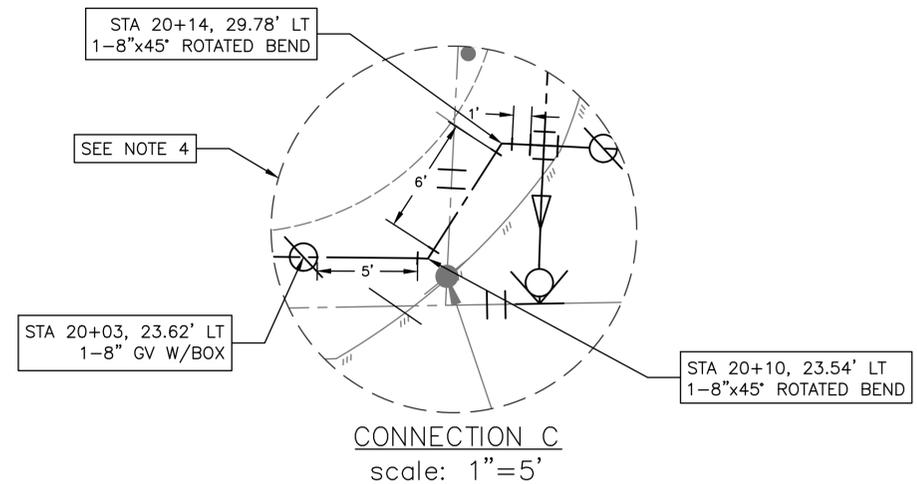
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**VERIFICATION OF PRIVATE UTILITY LINES**  
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Signature valid for six months.

*Jesse Rodriguez* 02/09/2023  
Approved for AT&T underground conduit facilities only.  
Signature valid for one year.

- NOTES:**
- ALL EXISTING WATER METERS ALONG PROJECT TO BE RECONNECTED. SEE DETAIL W-03, SHEET 48.
  - SEE DETAIL W-61, SHEET 49. PLACE 1 FULL SECTION (MIN 18FT) OF WATER LINE (WL) CENTERED AT SS CROSSING. PROVIDE RESTRAINED JOINTS ON WL, SPACED AT LEAST 9 FT HORIZONTALLY FROM CENTERLINE OF SS. WHEN A WL CROSSES UNDER AN EXISTING SS OR IS WITHIN 9 FT OF A SANITARY SEWER MANHOLE, REFER TO REQUIREMENTS OF TAC 217.53.d.3 AND TAC 290.44.e.4.B.iii.
  - CONTRACTOR TO MAINTAIN ACCESS THROUGH PRIVATE DRIVEWAYS AT ALL TIME DURING CONSTRUCTION.
  - FOR ALL CONNECTIONS, SPOOL PIECES IN BETWEEN ALL FITTINGS TO BE A MIN. OF 2FT AND NO MORE THAN 4FT, UNLESS SPECIFIED OTHERWISE.
  - CONTRACTOR TO MAINTAIN DRAINAGE AT ALL TIME. ROADSIDE DITCHES TO BE RESTORED TO EXISTING CONDITION OR BETTER. NO SEPARATE PAY.



NO.	DATE	REVISION	APP.

**Aurora Technical Services, LLC**  
2121 SAGE ROAD, SUITE 150  
HOUSTON, TX 77056  
PHONE: 281-453-770  
TX FIRM NO.: F-2059

Aurora Technical Services, LLC  
Texas Registered Engineering Firm  
F-2059  
02/08/2023

FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
PLAN  
UNIVERSITY AVE  
STA 19+50 TO END

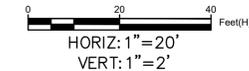
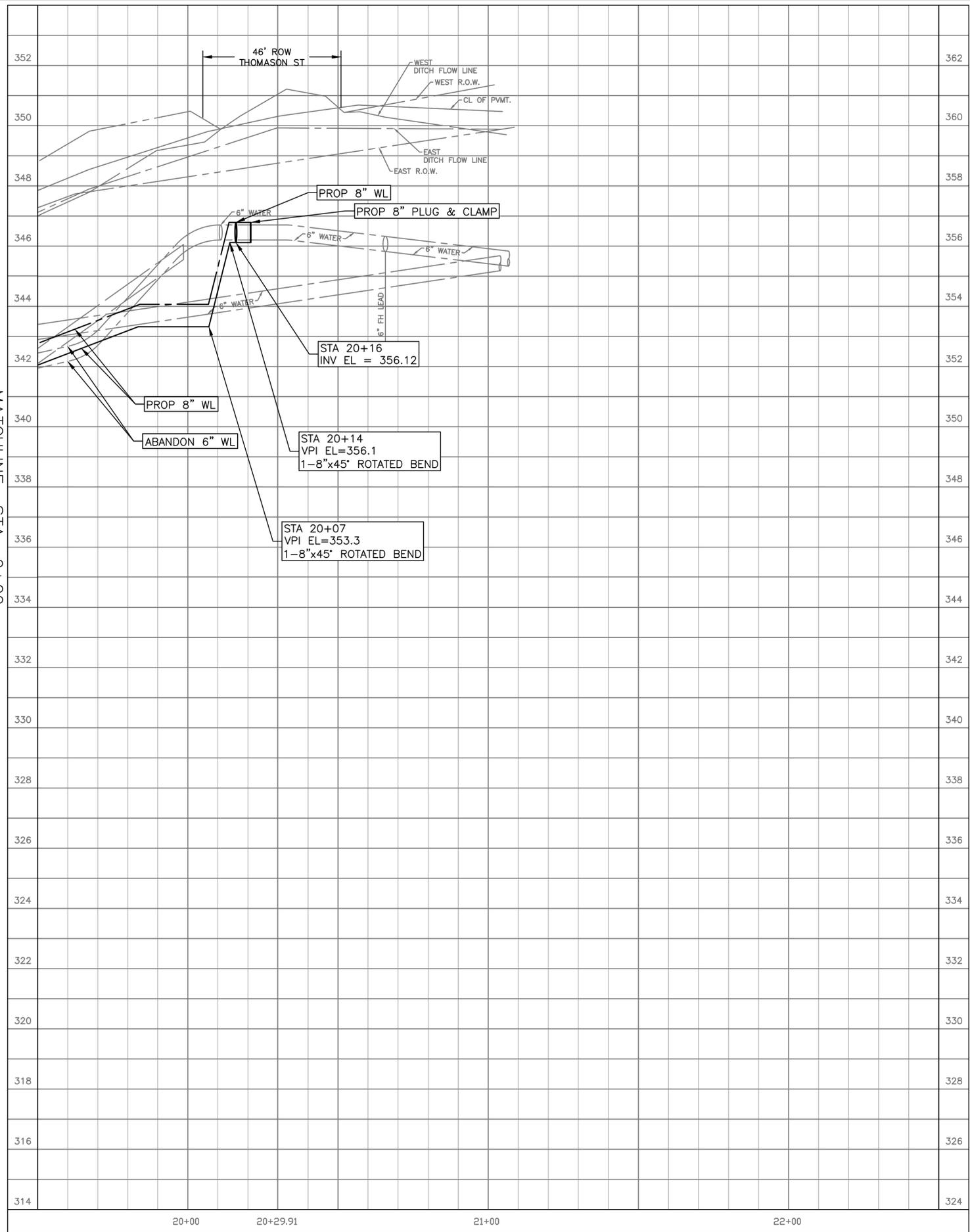
SURVEYED BY: LANDTECH, INC.	HORIZ: 1" = 20' VERT: 1" = 2'
SHEET NO. 40 OF 62	DRAWING SCALE

REVISION DATE: 2/7/2023

LAST MODIFIED: Feb 08, 2023 - 11:40am BY USER: jrush06  
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DWG. NAME: P&P SHEET University.dwg

LAST MODIFIED: Feb 08, 2023 - 11:40am BY USER: jrush06  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
 DWG. NAME: P&P SHEET University.dwg

MATCHLINE STA 9+00  
 SEE SHEET 39



**NOTES:**

1. ALL EXISTING WATER METERS ALONG PROJECT TO BE RECONNECTED. SEE DETAIL W-03, SHEET 48.
2. SEE DETAIL W-61, SHEET 49. PLACE 1 FULL SECTION (MIN 18FT) OF WATER LINE (WL) CENTERED AT SS CROSSING. PROVIDE RESTRAINED JOINTS ON WL, SPACED AT LEAST 9 FT HORIZONTALLY FROM CENTERLINE OF SS. WHEN A WL CROSSES UNDER AN EXISTING SS OR IS WITHIN 9 FT OF A SANITARY SEWER MANHOLE, REFER TO REQUIREMENTS OF TAC 217.53.d.3 AND TAC 290.44.e.4.B.iii.
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 MON. 6416  
 ELEV. 341.955  
 LOCATED ON THE EAST SIDE OF UNIVERSITY AVE, NORTH OF THE PRIVATE CONCRETE DRIVEWAY AND NEXT TO THE SAN MANHOLE.  
 N = 10262059.638

**NOTICE:**  
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**VERIFICATION OF PRIVATE UTILITY LINES**

*Mike Brower* Date: 02-09-23  
 CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.  
 Signature valid for six months.

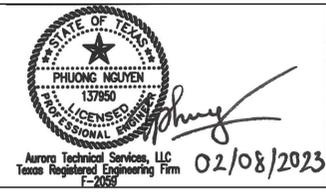
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 Signature valid for six months.

*Jesse Rodriguez* Date: 02/09/2023  
 Approved for AT&T underground conduit facilities only.  
 Signature valid for one year.

NO.	DATE	REVISION	APP.



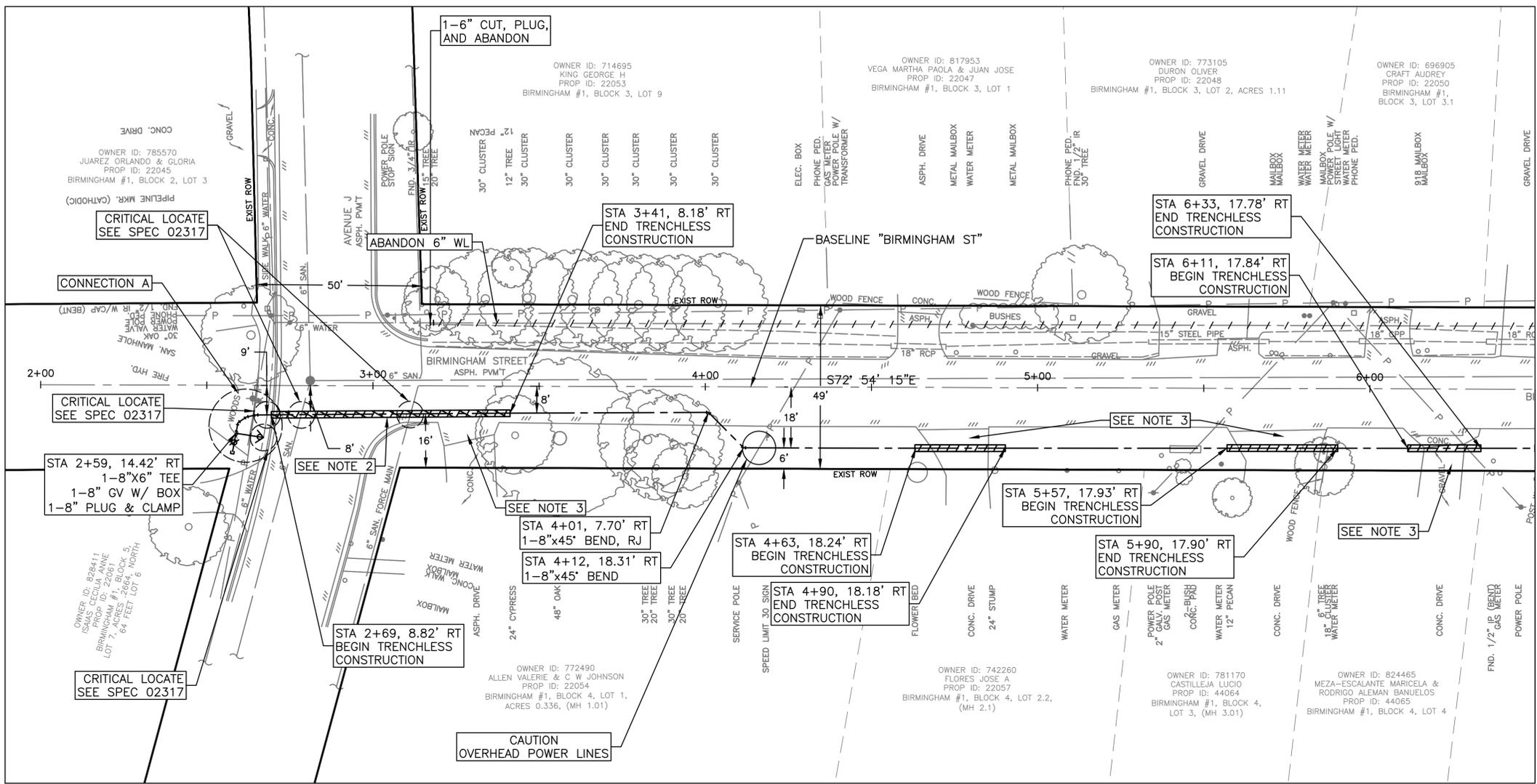
**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059



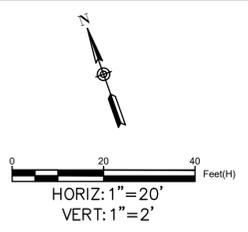
FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 PROFILE  
 UNIVERSITY AVE  
 STA 19+50 TO END

SURVEYED BY: LANDTECH, INC.	HORIZ: 1" = 20' VERT: 1" = 2'
SHEET NO. 41 OF 62	DRAWING SCALE

REVISION DATE: 2/7/2023



MATCHLINE STA 6+50  
SEE SHEET 44



**BENCHMARK:**

ALL SURVEY CONTROL POINTS AND BENCHMARKS ARE REPORTED AS FOLLOWS: HORIZONTAL COORDINATES (EXPRESSED IN U. S. SURVEY FEET UNITS) AND BEARINGS HEREON ARE REFERRING TO THE TEXAS COORDINATE SYSTEM OF 1983, CENTRAL ZONE AND BASED ON THE POSITION OF THE NATIONAL GEODETIC SURVEY (NGS) PRIMARY AIRPORT CONTROL STATION "T39 A" HAVING PUBLISHED NAD 83 (1993) COORDINATES OF N=3,128,437.762 METERS AND E=1,154,289.433 METERS. LINEAR DIMENSIONS (EXPRESSED IN U.S. SURVEY FEET) ARE "GEODETIC HORIZONTAL" UNITS BY DIVIDING BY A COMBINED SCALE FACTOR OF 0.99988. ELEVATIONS ARE EXPRESSED IN U.S. SURVEY FEET AND REFERRED TO THE (NGS) NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

MON. 7638  
ELEV. N/A

LOCATED ON THE SOUTH SIDE OF BIRMINGHAM ST APPROXIMATELY 8 FT FROM THE FIRE HYDRANT.

N = 10261653.3  
E = 3800037.7

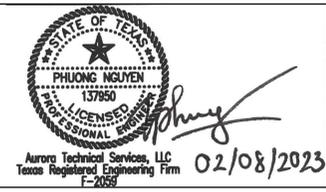
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VERIFICATION OF PRIVATE UTILITY LINES	
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<i>Jesse Rodriguez</i>	02/09/2023 Date
Approved for AT&T underground conduit facilities only. Signature valid for one year.	

NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
2121 SAGE ROAD, SUITE 150  
HOUSTON, TX 77056  
PHONE: 281-453-770  
TX FIRM NO.: F-2059

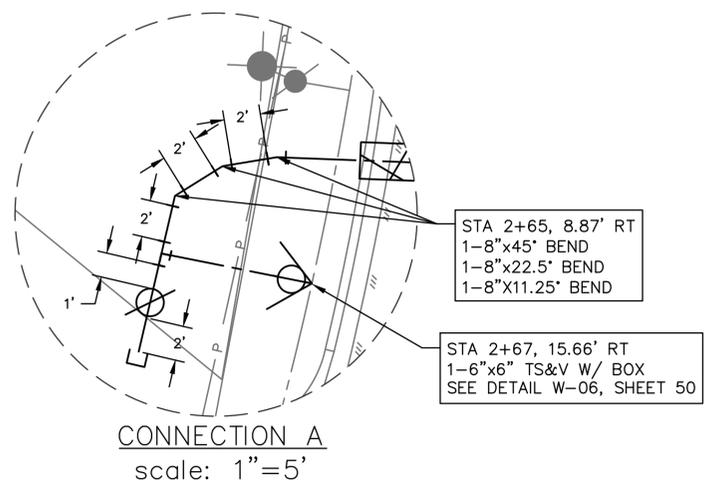


FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
PLAN  
BIRMINGHAM ST  
BEGIN TO STA 6+50

SURVEYED BY: LANDTECH, INC.	HORIZ: 1" = 20' VERT: 1" = 2'
SHEET NO. 42 OF 62	DRAWING SCALE
REVISION DATE: 2/7/2023	

**NOTES:**

- ALL EXISTING WATER METERS ALONG PROJECT TO BE RECONNECTED. SEE DETAIL W-03, SHEET 48.
- SEE DETAIL W-61, SHEET 49. PLACE 1 FULL SECTION (MIN 18FT) OF WATER LINE (WL) CENTERED AT SS CROSSING. PROVIDE RESTRAINED JOINTS ON WL, SPACED AT LEAST 9 FT HORIZONTALLY FROM CENTERLINE OF SS. WHEN A WL CROSSES UNDER AN EXISTING SS OR IS WITHIN 9 FT OF A SANITARY SEWER MANHOLE, REFER TO REQUIREMENTS OF TAC 217.53.d.3 AND TAC 290.44.e.4.B.iii.
- CONTRACTOR TO MAINTAIN ACCESS THROUGH PRIVATE DRIVEWAYS AT ALL TIME DURING CONSTRUCTION.
- FOR ALL CONNECTIONS, SPOOL PIECES IN BETWEEN ALL FITTINGS TO BE A MIN. OF 2FT AND NO MORE THAN 4FT, UNLESS SPECIFIED OTHERWISE.
- CONTRACTOR TO MAINTAIN DRAINAGE AT ALL TIME. ROADSIDE DITCHES TO BE RESTORED TO EXISTING CONDITION OR BETTER. NO SEPARATE PAY.



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DWG. NAME: P&P SHEET Birmingham.dwg

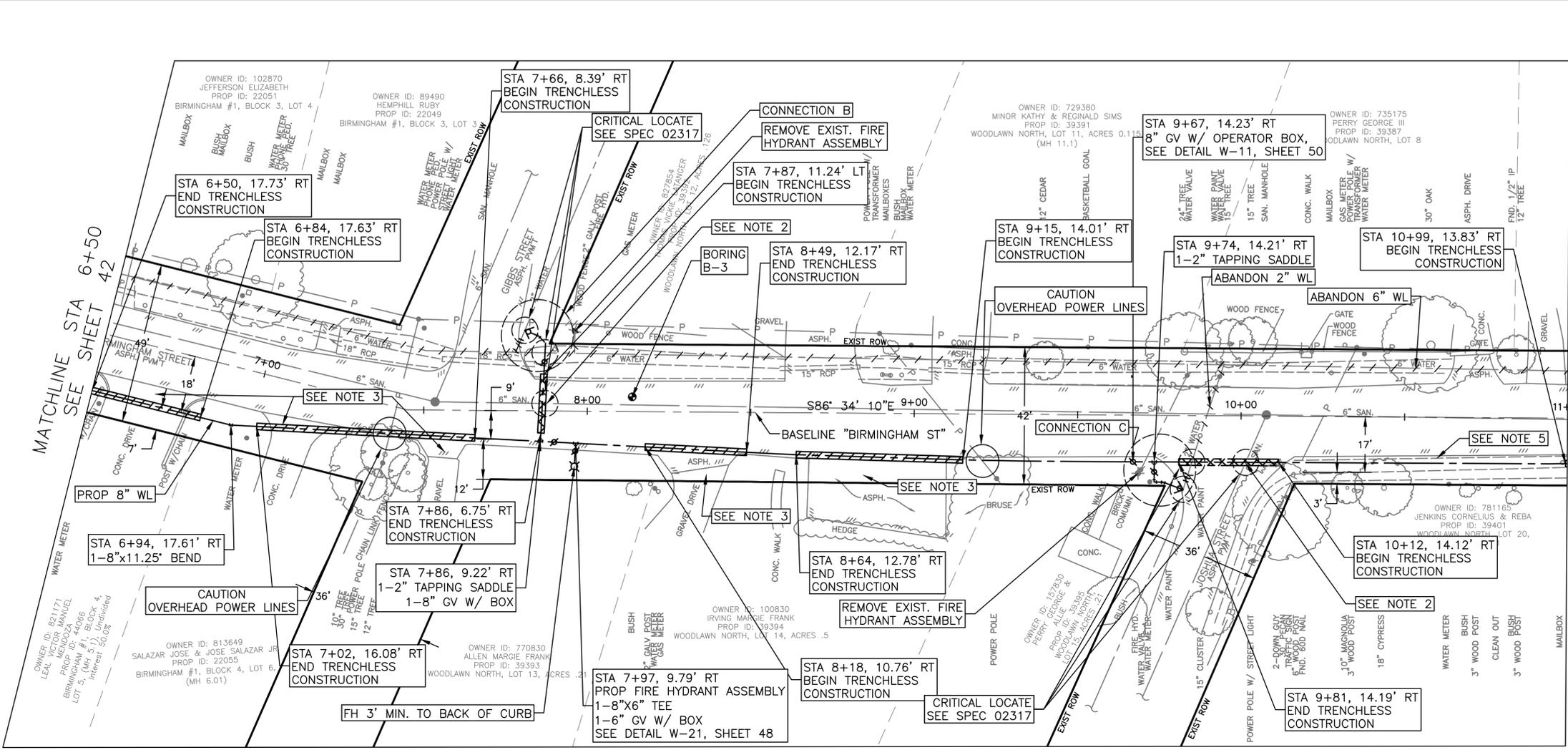




HORIZ: 1"=20'  
VERT: 1"=2'

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MON. 7638  
ELEV. N/A  
LOCATED ON THE SOUTH SIDE OF BIRMINGHAM ST APPROXIMATELY 8 FT FROM THE FIRE HYDRANT.  
N = 10261653.3  
E = 3800037.7



MATCHLINE STA 11+00  
SEE SHEET 46

MATCHLINE STA 6+50  
SEE SHEET 42

**NOTICE:**  
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

**VERIFICATION OF PRIVATE UTILITY LINES**  
Mike Brower 02-09-23  
CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.  
Signature valid for six months.

Mike Brower 02-09-23  
CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
Signature valid for six months.

Jesse Rodriguez 02/09/2023  
Approved for AT&T underground conduit facilities only.  
Signature valid for one year.

NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
2121 SAGE ROAD, SUITE 150  
HOUSTON, TX 77056  
PHONE: 281-453-770  
TX FIRM NO.: F-2059

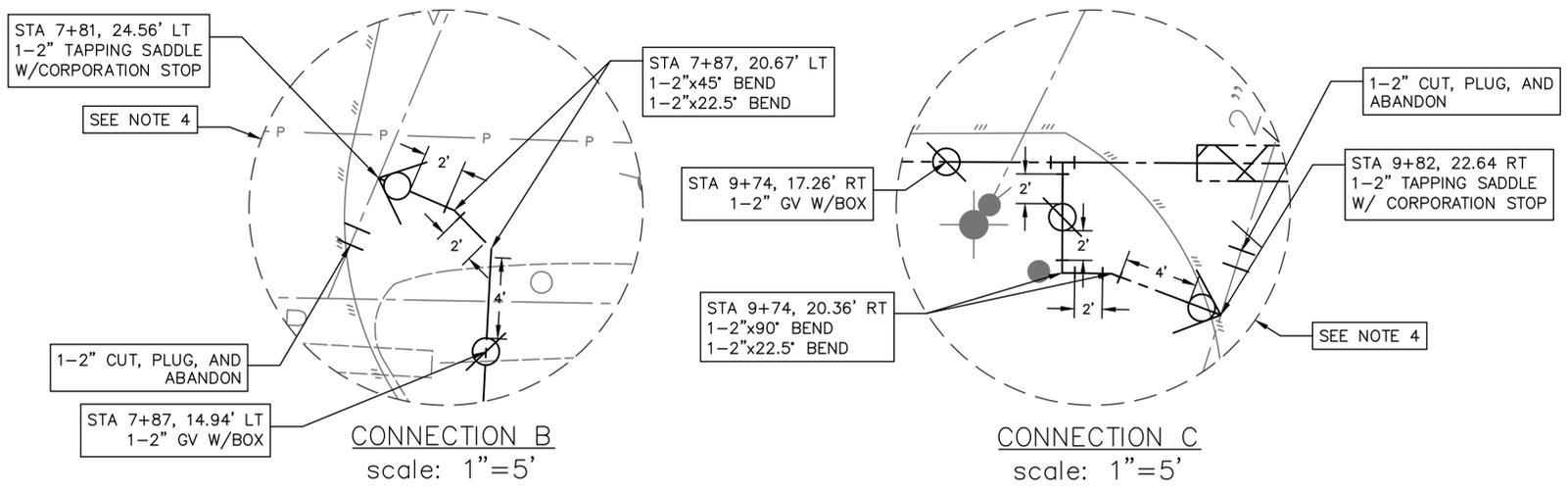
PHUONG NGUYEN  
LICENSED PROFESSIONAL ENGINEER  
02/08/2023

FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
PLAN  
BIRMINGHAM ST  
STA 6+50 TO STA 11+00

SURVEYED BY: LANDTECH, INC.	HORIZ: 1" = 20' VERT: 1" = 2'
SHEET NO. 44 OF 62	DRAWING SCALE

REVISION DATE: 2/7/2023

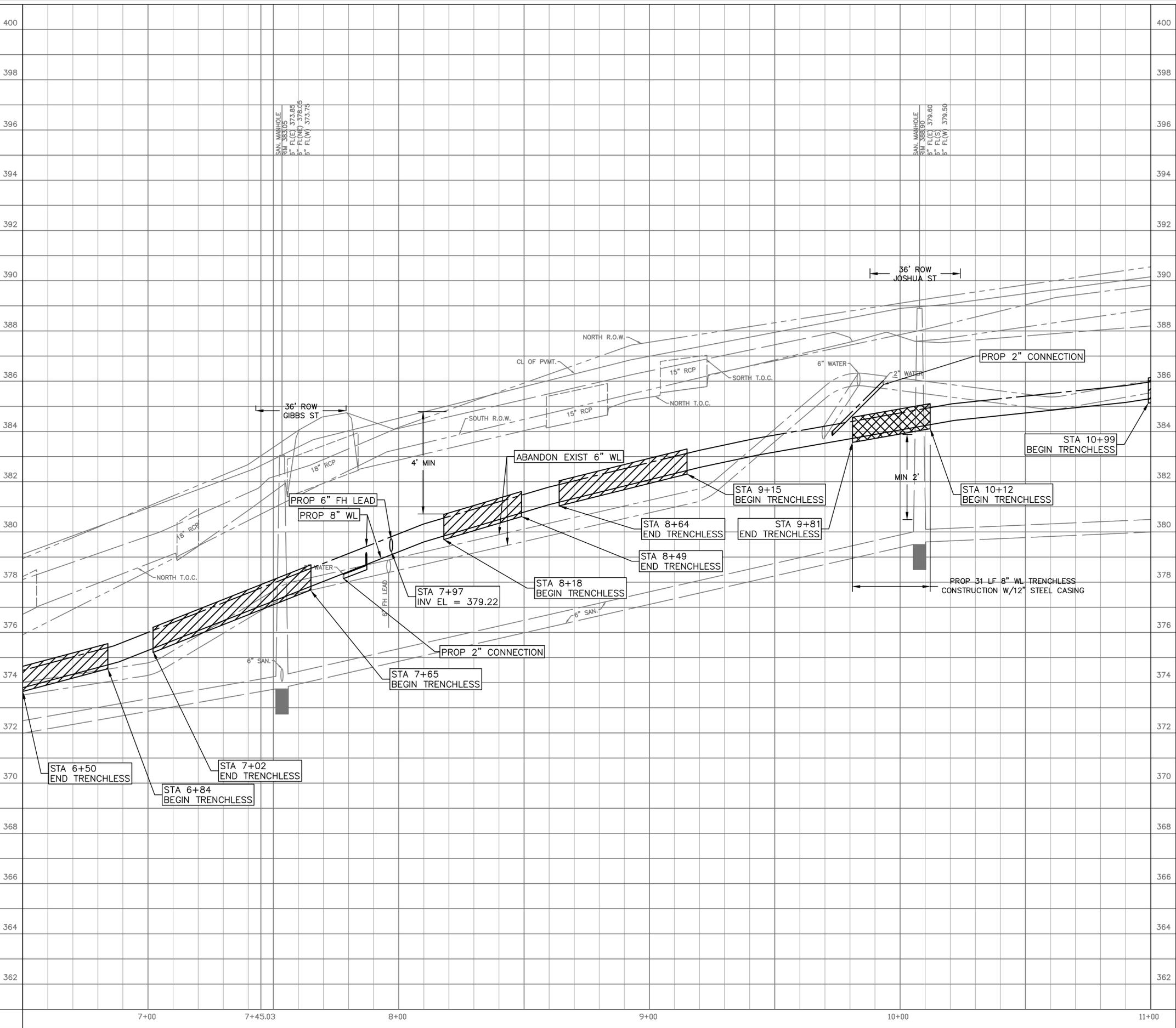
- NOTES:**
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  - SEE DETAIL W-61, SHEET 49. PLACE 1 FULL SECTION (MIN 18FT) OF WATER LINE (WL) CENTERED AT SS CROSSING. PROVIDE RESTRAINED JOINTS ON WL, SPACED AT LEAST 9 FT HORIZONTALLY FROM CENTERLINE OF SS. WHEN A WL CROSSES UNDER AN EXISTING SS OR IS WITHIN 9 FT OF A SANITARY SEWER MANHOLE, REFER TO REQUIREMENTS OF TAC 217.53.d.3 AND TAC 290.44.e.4.B.iii.
  - CONTRACTOR TO MAINTAIN ACCESS THROUGH PRIVATE DRIVEWAYS AT ALL TIME DURING CONSTRUCTION.
  - FOR ALL CONNECTIONS, SPOOL PIECES IN BETWEEN ALL FITTINGS TO BE A MIN. OF 2FT AND NO MORE THAN 4FT, UNLESS SPECIFIED OTHERWISE.
  - CONTRACTOR TO MAINTAIN DRAINAGE AT ALL TIME. ROADSIDE DITCHES TO BE RESTORED TO EXISTING CONDITION OR BETTER. NO SEPARATE PAY.



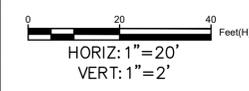
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 DWG. NAME: P&P SHEET Birmingham.dwg

LAST MODIFIED: Feb 08, 2023 - 11:41am BY USER: jrush06  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
 DWG. NAME: P&P SHEET Birmingham.dwg

MATCHLINE STA 6+50  
 SEE SHEET 43



MATCHLINE STA 11+00  
 SEE SHEET 47



- NOTES:**
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MON. 7638  
 ELEV. N/A

LOCATED ON THE SOUTH SIDE OF BIRMINGHAM ST APPROXIMATELY 8 FT FROM THE FIRE HYDRANT.

N = 10261653.3  
 E = 3800037.7

**NOTICE:**  
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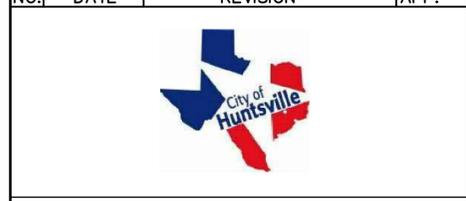
**VERIFICATION OF PRIVATE UTILITY LINES**

*Mike Brower* Date: 02-09-23  
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 Signature valid for six months.

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NO.	DATE	REVISION	APP.



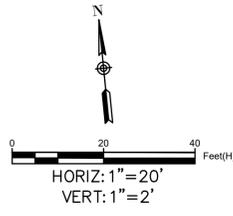
**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059

STATE OF TEXAS  
 PHUONG NGUYEN  
 137850  
 LICENSED PROFESSIONAL ENGINEER  
*Phuong*  
 Aurora Technical Services, LLC  
 Texas Registered Engineering Firm  
 F-2059  
 02/08/2023

FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 PROFILE  
 BIRMINGHAM ST  
 STA 6+50 TO STA 11+00

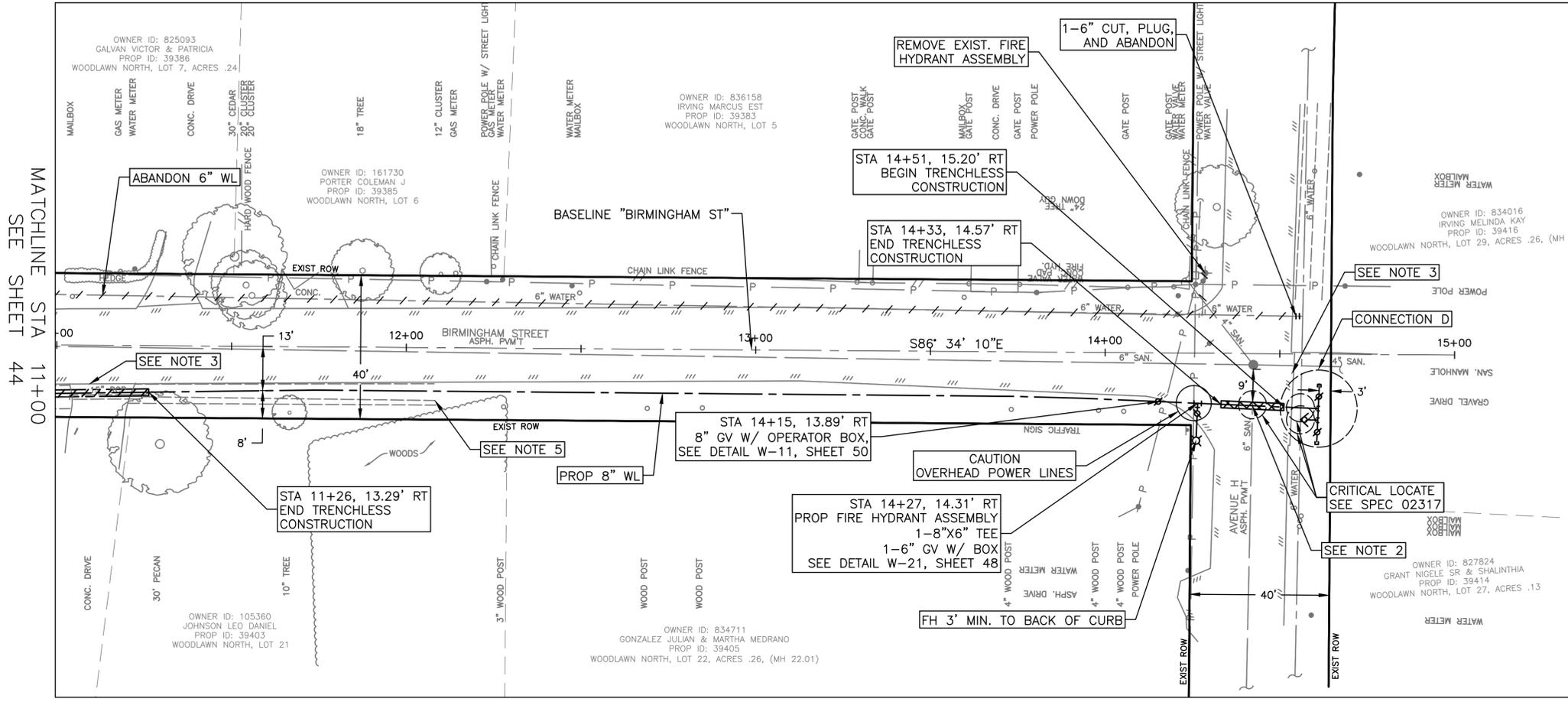
SURVEYED BY: LANDTECH, INC.	HORIZ: 1" = 20' VERT: 1" = 2'
SHEET NO. 45 OF 62	DRAWING SCALE

REVISION DATE: 2/7/2023



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MON. 7637  
 ELEV. N/A  
 LOCATED ON THE NORTH SIDE OF BIRMINGHAM ST APPROXIMATELY 6 FT FROM THE FIRE HYDRANT.  
 N = 10261658.3  
 E = 3800491.8



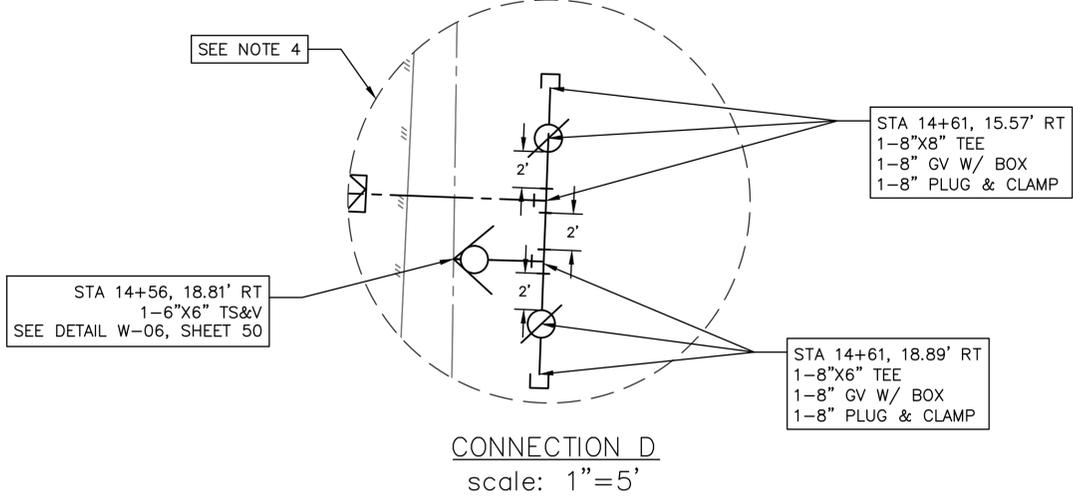
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Jesse Rodriguez 02/09/2023  
 Date  
 Approved for AT&T underground conduit facilities only.  
 Signature valid for one year.

- NOTES:**
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  - SEE DETAIL W-61, SHEET 49. PLACE 1 FULL SECTION (MIN 18FT) OF WATER LINE (WL) CENTERED AT SS CROSSING. PROVIDE RESTRAINED JOINTS ON WL, SPACED AT LEAST 9 FT HORIZONTALLY FROM CENTERLINE OF SS. WHEN A WL CROSSES UNDER AN EXISTING SS OR IS WITHIN 9 FT OF A SANITARY SEWER MANHOLE, REFER TO REQUIREMENTS OF TAC 217.53.d.3 AND TAC 290.44.e.4.B.iii.
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LAST MODIFIED: Feb 08, 2023 - 11:41am BY USER: jrush06  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
 DWG. NAME: P&P SHEET Birmingham.dwg

NO.	DATE	REVISION	APP.

**Aurora Technical Services, LLC**  
 engineering • construction management

**AURORA TECHNICAL SERVICES, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-7770  
 TX FIRM NO.: F-2059

Phuong Nguyen  
 02/08/2023

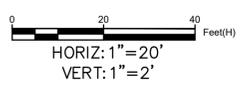
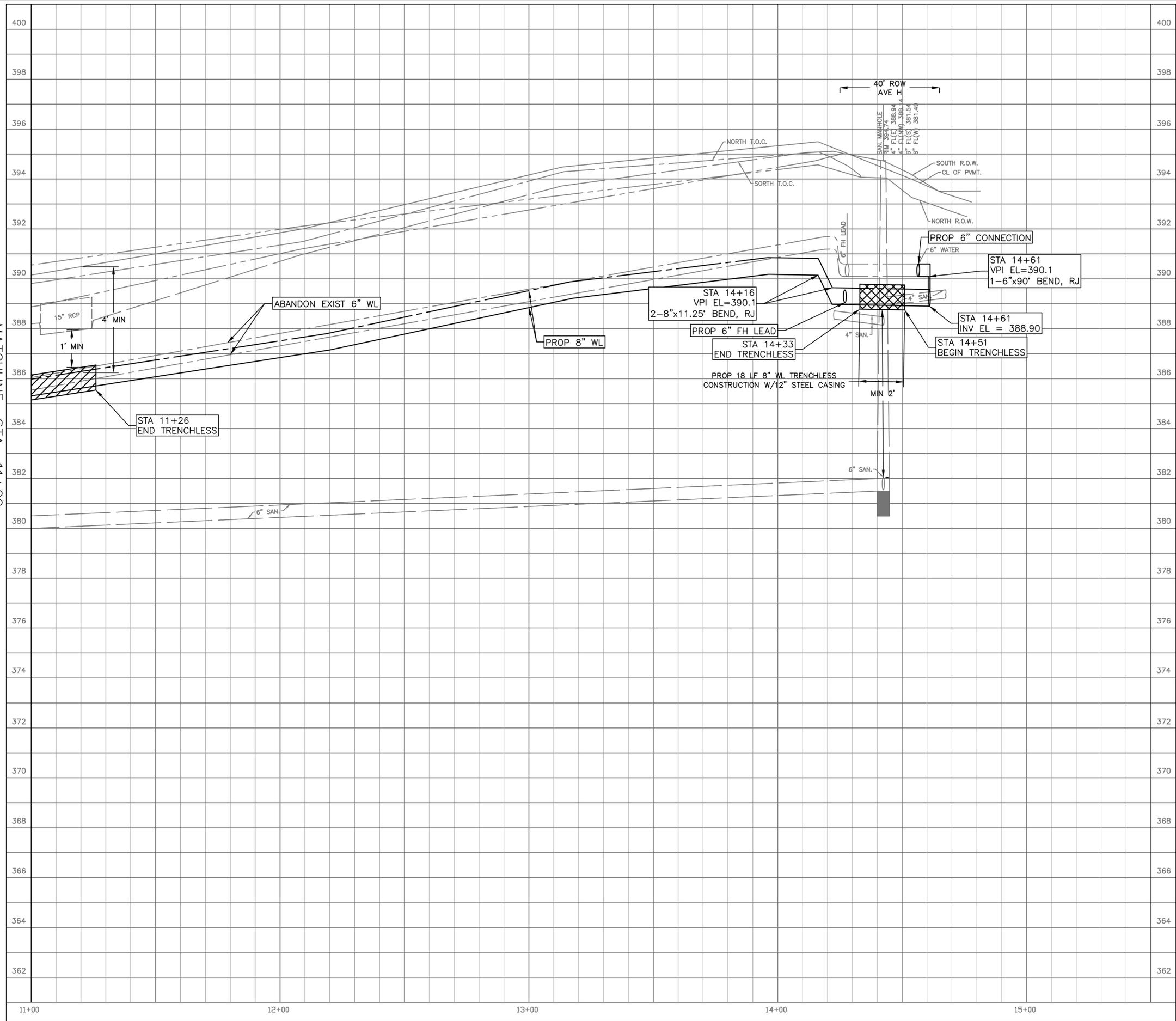
**FY 2021/2022 WATERLINE REPLACEMENT PROJECT PLAN**  
**BIRMINGHAM ST**  
**STA 11+00 TO END**

SURVEYED BY: LANDTECH, INC.	HORIZ: 1" = 20' VERT: 1" = 2'
SHEET NO. <u>46</u> OF <u>62</u>	DRAWING SCALE

REVISION DATE: 2/7/2023

LAST MODIFIED: Feb 08, 2023 - 11:41am BY USER: jrush06  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
 DWG. NAME: P&P SHEET Birmingham.dwg

MATCHLINE STA 11+00  
 SEE SHEET 45



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**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059

STATE OF TEXAS  
 PHUONG NGUYEN  
 137850  
 LICENSED PROFESSIONAL ENGINEER  
 Aurora Technical Services, LLC  
 Texas Registered Engineering Firm  
 F-2059  
 02/08/2023

FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 PROFILE  
 BIRMINGHAM ST  
 STA 11+00 TO END

SURVEYED BY: LANDTECH, INC.	HORIZ: 1" = 20' VERT: 1" = 2'
SHEET NO. 47 OF 62	DRAWING SCALE

REVISION DATE: 2/7/2023

LAST MODIFIED: Feb 08, 2023 - 9:17am BY USER: fush06  
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**PLAN - SINGLE SERVICE**

**TYPICAL SECTION**

**NOTES:**

- CUSTOMER POINT OF SERVICE IS TYPICALLY AT THE LOCATION WHERE CUSTOMER PLUMBING IS ATTACHED TO THE YOKE NUT.
- 3/4" COPPER TUBING FOR 3/4" X 3/4" METER INSTALLATION. 1" COPPER TUBING FOR 1" METER INSTALLATION. HDPE SHALL BE 200 PSI, NSF APPROVED, SDR 9, MEETING ASTM D1248. TUBING SHALL BE ENDOT ENDOTRACE (OR APPROVED EQUAL).
- REDUCED PRESSURE BACKFLOW PREVENTERS ARE REQUIRED FOR ALL COMMERCIAL SERVICES AND SHALL BE INSTALLED BY A CERTIFIED TECHNICIAN AT OWNERS EXPENSE.
- ALL SERVICE TAPS SHALL BE NO CLOSER THAN 2'-0" STAGGERED INTERVAL OR WITHIN 2'-0" OF BELL OR SPIGOT ENDS. IN AREAS TO BE PAVED PROVIDE A 2" MIN. PVC SCHEDULE 40 SLEEVE FOR PE-TUBING. SLEEVE SHALL EXTEND A MIN. OF 2' BEHIND BACK OF CURB AT EACH SIDE OF ROAD.
- WATER METERS INSTALLED IN AREAS SERVED BY RECLAIMED WATER SHALL BE EQUIPPED WITH A DUAL CHECK BACKFLOW PREVENTER.
- WATER METERS IN AREA SERVED WITH AN ALTERNATE IRRIGATION SUPPLY SHALL BE EQUIPPED WITH BACKFLOW PREVENTION TO BE APPROVED FOR USE BY CITY OF HUNTSVILLE.
- THE CITY OF HUNTSVILLE WILL MAKE ALL STANDARD RESIDENTIAL WATER SERVICE CONNECTIONS, UNLESS WRITTEN APPROVAL TO DO OTHERWISE HAS BEEN GRANTED BY THE CITY.

**DEPARTMENT OF ENGINEERING & MAPPING/ENGINEERING DIVISION CITY OF HUNTSVILLE, TEXAS**

**CITY OF HUNTSVILLE STANDARD DETAILS WATER SERVICE CONNECTION 5/8", 3/4", 1-1/2", AND 2" METERS**

REV#	ISSUER	DATE	APPROVER	SHEET
0	MAM	07/31/2018		1 OF 2

NAME: WATER SERVICE CONNECTION  
 CATEGORY: WATER  
 DRAWN DATE: 10/26/2016  
 DRAWN BY: WLSIII  
 SCALE: N.T.S.  
 APPROVED BY: YSR

City Service Center  
 448 State Highway 75  
 Huntsville, TX 77320

W-03

**TYPICAL 1" THROUGH 2" SERVICE ARRANGEMENTS**

**NOTE:**

- TWO SERVICE LINES MAY BE INSTALLED IN SAME TRENCH PROVIDING 4" CLEARANCE IS MAINTAINED

**DEPARTMENT OF ENGINEERING & MAPPING/ENGINEERING DIVISION CITY OF HUNTSVILLE, TEXAS**

**CITY OF HUNTSVILLE STANDARD DETAILS TYPICAL 1" THROUGH 2" SERVICE ARRANGEMENTS**

REV#	ISSUER	DATE	APPROVER	SHEET
0	MAM	07/31/2018		1 OF 1

NAME: TYP 1"-2" SERVICE  
 CATEGORY: WATER  
 DRAWN DATE: 10/26/2016  
 DRAWN BY: WLSIII  
 SCALE: N.T.S.  
 APPROVED BY: YSR

City Service Center  
 448 State Highway 75  
 Huntsville, TX 77320

W-62

**CONSTRUCTION KEY NOTES:**

- 4" TAPPING SLEEVE AND VALVE.
- 4" P.V.C.
- 4"x3" REDUCER.
- 3"x2" TEE.
- 3" GATE VALVE.
- 3" METER.
- 3" TEST PLUG D.I.P.
- 2" GATE VALVE.
- 2" BY-PASS METER.
- 3" SPOOL D.I.P.
- 3" BEND 90°
- 3" BACKFLOW PREVENTER.
- METER BOX TYPE "E".
- THRUST BLOCKING AS REQUIRED
- 3" FLANGED D.I.P. - LENGTH AS REQUIRED
- BONNET BOX AND COVER, SET FRAME AND COVER FLUSH WITH ROADWAY SURFACE OR FINISHED GRADE.
- 8" PIPE RISER.
- D.I. FLANGED COUPLING ADAPTER PER REQUIRED METER SIZE ON INFLOW SIDE OF METER.

**NOTES:**

- DETAIL SHOWN FOR 3" SERVICE WITH A TAPPING SLEEVE & VALVE CONNECTION TO AN EXISTING LINE (CONNECTION TO A NEW MAINLINE USUALLY WITH GATE VALVE & TEE). INSTALLATION IS SIMILAR FOR LARGER SERVICES EXCEPT FOR SIZE OF PIPE, FITTINGS AND METER.
- WHERE NO CURB EXISTS, METER IS TO BE SET NEAR PROPERTY LINE OR AT DESIGNATED LOCATION.
- FOR GREATER THAN 2" WATER SERVICE CONNECTION, THE OWNER/CONTRACTOR WILL FURNISH AND INSTALL ALL NECESSARY PIPE, FITTINGS, METER BOXES, AND METER REQUIRED. IT SHALL BE THE RESPONSIBILITY OF THE PRIVATE OWNER TO HAVE A CERTIFIED PLUMBER INSTALL A BACKFLOW PREVENTER AND EXTEND SERVICE LINE ON DISCHARGE SIDE OF METER.
- FOOTING REQUIRED.
- TYPICAL WATER METER SERVICE. 2" OR LARGER METER INSTALLATION WILL REQUIRE CONCRETE VAULT AND A BY-PASS ASSEMBLY.

**DEPARTMENT OF ENGINEERING & MAPPING/ENGINEERING DIVISION CITY OF HUNTSVILLE, TEXAS**

**CITY OF HUNTSVILLE STANDARD DETAILS WATER SERVICE CONNECTION 3" AND LARGER**

REV#	ISSUER	DATE	APPROVER	SHEET
0	MAM	07/31/2018		1 OF 1
1	MAM	04/02/2019		

NAME: WATER SERVICE CONNECTION  
 CATEGORY: WATER  
 DRAWN DATE: 10/26/2016  
 DRAWN BY: WLSIII  
 SCALE: N.T.S.  
 APPROVED BY: YSR

City Service Center  
 448 State Highway 75  
 Huntsville, TX 77320

W-04

**ALTERNATE FIRE HYDRANT PLAN**

**THRUST ANCHOR DETAIL**

**NOTES:**

- DEVELOPER SHALL INSTALL FIRE HYDRANTS AS PART OF WATER DISTRIBUTION SYSTEM. THE DEVELOPER SHALL LOCATE A FIRE HYDRANT WITHIN 500 FEET OF ALL PORTIONS OF BUILDING SITES, BASED UPON A CLEAR PATH OF TRAVEL. FIRE HYDRANTS SHALL BE SERVED BY SUPPLY LINES OF AT LEAST 6 INCHES IN SIZE.
- BRANCH PIPE SHALL BE DUCTILE IRON AWWA C150-96
- 6" GATE VALVE SHALL BE AWWA C500-96 OPEN LEFT
- STEEL RODS AND BOLTS SHALL BE 3/8" HOT DIPPED GALVANIZED
- FIRE HYDRANTS WILL BE INSTALLED IN TRUE VERTICAL POSITION
- RODS SHALL NOT BE COUPLED MORE THAN ONCE. IF THE LENGTH FROM THE VALVE TO THE HYDRANT EXCEEDS 20' THEN A MECHANICAL RESTRAINING GLAND WITH A REBAR CAGE SHALL BE INSTALLED NO MORE THAN 10' FROM HYDRANT AND POURED IN CONCRETE.
- FIRE HYDRANTS TO BE LOCATED IN ROW OR 2 FOOT EASEMENT ADJACENT TO ROW
- ALL GATE VALVES ARE TO BE OF "O" RING TYPE WITH NON-RISING STEMS. SHALL OPEN COUNTER-CLOCKWISE (MUELLER A-2380-20 OR EQUIVALENT).
- FIRE HYDRANT TO BE MUELLER "IMPROVED", BREAK-AWAY, OR APPROVED EQUAL
- WATER MAINS SHALL NOT BE FULLY PRESSURIZED UNTIL CONCRETE HAS REACHED 15 DAY STRENGTH.

**DEPARTMENT OF ENGINEERING & MAPPING/ENGINEERING DIVISION CITY OF HUNTSVILLE, TEXAS**

**CITY OF HUNTSVILLE STANDARD DETAILS FIRE HYDRANT INSTALLATION**

REV#	ISSUER	DATE	APPROVER	SHEET
0	MAM	07/31/2018		1 OF 4

NAME: FIRE HYDRANT  
 CATEGORY: WATER  
 DRAWN DATE: 10/24/2016  
 DRAWN BY: WLSIII  
 SCALE: N.T.S.  
 APPROVED BY: YSR

City Service Center  
 448 State Highway 75  
 Huntsville, TX 77320

W-21

**ALTERNATE HYDRANT PLAN**

**THRUST ANCHOR DETAIL**

**NOTES:**

- DEVELOPER SHALL INSTALL FIRE HYDRANTS AS PART OF WATER DISTRIBUTION SYSTEM. THE DEVELOPER SHALL LOCATE A FIRE HYDRANT WITHIN 500 FEET OF ALL PORTIONS OF BUILDING SITES, BASED UPON A CLEAR PATH OF TRAVEL. FIRE HYDRANTS SHALL BE SERVED BY SUPPLY LINES OF AT LEAST 6 INCHES IN SIZE.
- BRANCH PIPE SHALL BE DUCTILE IRON AWWA C150-96
- 6" GATE VALVE SHALL BE AWWA C500-96 OPEN LEFT
- STEEL RODS AND BOLTS SHALL BE 3/8" HOT DIPPED GALVANIZED
- FIRE HYDRANTS WILL BE INSTALLED IN TRUE VERTICAL POSITION
- RODS SHALL NOT BE COUPLED MORE THAN ONCE. IF THE LENGTH FROM THE VALVE TO THE HYDRANT EXCEEDS 20' THEN A MECHANICAL RESTRAINING GLAND WITH A REBAR CAGE SHALL BE INSTALLED NO MORE THAN 10' FROM HYDRANT AND POURED IN CONCRETE.
- FIRE HYDRANTS TO BE LOCATED IN ROW OR 2 FOOT EASEMENT ADJACENT TO ROW
- ALL GATE VALVES ARE TO BE OF "O" RING TYPE WITH NON-RISING STEMS. SHALL OPEN COUNTER-CLOCKWISE (MUELLER A-2380-20 OR EQUIVALENT).
- FIRE HYDRANT TO BE MUELLER "IMPROVED", BREAK-AWAY, OR APPROVED EQUAL
- WATER MAINS SHALL NOT BE FULLY PRESSURIZED UNTIL CONCRETE HAS REACHED 15 DAY STRENGTH.

**DEPARTMENT OF ENGINEERING & MAPPING/ENGINEERING DIVISION CITY OF HUNTSVILLE, TEXAS**

**CITY OF HUNTSVILLE STANDARD DETAILS ALTERNATE HYDRANT PLAN**

REV#	ISSUER	DATE	APPROVER	SHEET
0	MAM	07/31/2018		2 OF 4

NAME: FIRE HYDRANT  
 CATEGORY: WATER  
 DRAWN DATE: 10/24/2016  
 DRAWN BY: WLSIII  
 SCALE: N.T.S.  
 APPROVED BY: YSR

City Service Center  
 448 State Highway 75  
 Huntsville, TX 77320

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**FIRE HYDRANT INSTALLATION**

**FIRE HYDRANT OPERATION NUT & THREADS**

**NOTES:**

- DEVELOPER SHALL INSTALL FIRE HYDRANTS AS PART OF WATER DISTRIBUTION SYSTEM. THE DEVELOPER SHALL LOCATE A FIRE HYDRANT WITHIN 500 FEET OF ALL PORTIONS OF BUILDING SITES, BASED UPON A CLEAR PATH OF TRAVEL. FIRE HYDRANTS SHALL BE SERVED BY SUPPLY LINES OF AT LEAST 6 INCHES IN SIZE.
- BRANCH PIPE SHALL BE DUCTILE IRON AWWA C150-96
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- STEEL RODS AND BOLTS SHALL BE 3/8" HOT DIPPED GALVANIZED
- FIRE HYDRANTS WILL BE INSTALLED IN TRUE VERTICAL POSITION
- RODS SHALL NOT BE COUPLED MORE THAN ONCE. IF THE LENGTH FROM THE VALVE TO THE HYDRANT EXCEEDS 20' THEN A MECHANICAL RESTRAINING GLAND WITH A REBAR CAGE SHALL BE INSTALLED NO MORE THAN 10' FROM HYDRANT AND POURED IN CONCRETE.
- FIRE HYDRANTS TO BE LOCATED IN ROW OR 2 FOOT EASEMENT ADJACENT TO ROW
- ALL GATE VALVES ARE TO BE OF "O" RING TYPE WITH NON-RISING STEMS. SHALL OPEN COUNTER-CLOCKWISE (MUELLER A-2380-20 OR EQUIVALENT).
- FIRE HYDRANT TO BE MUELLER "IMPROVED", BREAK-AWAY, OR APPROVED EQUAL
- WATER MAINS SHALL NOT BE FULLY PRESSURIZED UNTIL CONCRETE HAS REACHED 15 DAY STRENGTH.

**DEPARTMENT OF ENGINEERING & MAPPING/ENGINEERING DIVISION CITY OF HUNTSVILLE, TEXAS**

**CITY OF HUNTSVILLE STANDARD DETAILS FIRE HYDRANT INSTALLATION**

REV#	ISSUER	DATE	APPROVER	SHEET
0	MAM	07/31/2018		3 OF 4

NAME: FIRE HYDRANT  
 CATEGORY: WATER  
 DRAWN DATE: 10/24/2016  
 DRAWN BY: WLSIII  
 SCALE: N.T.S.  
 APPROVED BY: YSR

City Service Center  
 448 State Highway 75  
 Huntsville, TX 77320

W-23

NO.	DATE	REVISION	APP.

**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059

Phuong Nguyen  
 02/08/2023

**FY 2021/2022 WATERLINE REPLACEMENT PROJECT**  
**WATER LINE DETAILS**  
 (SHEET 1 OF 2)

SURVEYED BY: LANDTECH, INC.	SHEET NO. <u>48</u> OF 62	DRAWING SCALE
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REVISION DATE: 2/1/2023

**NOTES:**  
**POLYETHYLENE WRAP FOR IRON PIPE**

- NOTE:  
1. POLYETHYLENE FILM SHALL BE USED AS A WRAP TO PROTECT CAST IRON AND OTHER METALS IN A CORROSIVE SOIL ENVIRONMENT.  
2. AN 8 MIL POLYETHYLENE FILM WRAP SHALL BE REQUIRED AROUND ALL METAL PIPE AND APPURTENANCES (EXCEPT FIRE HYDRANTS).  
3. POLYETHYLENE FILM SHALL BE FURNISHED AND INSTALLED EITHER IN TUBULAR FORM PRIOR TO LOWERING THE PIPE IN TRENCH OR IN SHEET FORM.  
4. POLYETHYLENE TUBE ENCASUREMENT, IF REQUIRED, SHALL CONFORM WITH THE MINIMUM REQUIREMENTS OF "POLYETHYLENE ENCASUREMENT FOR GRAY AND DUCTILE CAST-IRON PIPING FOR WATER AND OTHER LIQUIDS", ANSI/AWWA C105, CURRENT REVISION. SOILS WITHIN A PROJECT SHALL BE TESTED IN ACCORDANCE WITH APPENDIX A OF ANSI/AWWA C105 TO ADEQUATELY DETERMINE THE REQUIREMENTS FOR ENCASUREMENT.

**BENDS, TEES & PLUGS FOR PIPE OF VARIOUS SIZES**

SIZE	90° BEND		45° BEND		22 1/2° BEND		TEES		PLUGS	
	A	B	A	B	A	B	A	B	A	B
2 1/2"	12"	7"	6"	7"	6"	7"	8"	8"	8"	14"
6"	16"	10"	9"	10"	6"	12"	10"	10"	10"	21"
8"	22"	13"	12"	13"	8"	10"	13"	16"	12"	29"
10"	26"	17"	14"	17"	10"	13"	16"	20"	14"	36"
12"	29"	21"	16"	21"	11"	16"	18"	24"	16"	41"
14"	35"	24"	19"	24"	12"	20"	22"	27"	18"	48"
16"	38"	27"	21"	27"	12"	24"	24"	30"	20"	54"

**CONSTRUCTION NOTES:**

- ALL WATER MAIN LINES 4" TO 16" SHALL BE C-909 (DR-13). ALL WATER MAIN LINES 20" THROUGH 24" SHALL BE C-900 (DR-18).
- ALL FLUSHING VALVES AND GATE VALVES TO BE AMERICAN WATER WORKS ASSOC. (AWWA) STANDARD COUNTERCLOCKWISE OPENING WITH NON-RISING STEM DESIGN.
- THE MAXIMUM ALLOWABLE SIZE OF A TAPPING SLEEVE AND VALVE ON AN EXISTING PIPE IS ONE SIZE SMALLER THAN THE PIPE DIAMETER OF THE MAIN TO BE TAPPED.
- ALL DUCTILE IRON PIPE SHALL BE CLASS 50 MORTAR LINED. NO A.C. PIPE WILL BE ALLOWED AND ALL DUCTILE IRON FITTINGS SHALL BE MORTAR LINED PUSH ON OR MECHANICAL JOINTS.
- ALL BACKFILL WITHIN THE R.O.W. SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY.

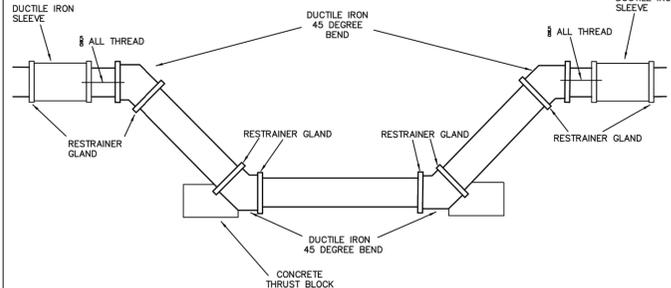
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CITY OF HUNTSVILLE, TEXAS



CITY OF HUNTSVILLE STANDARD DETAILS  
POLYETHYLENE WRAP DETAIL & TABLE FOR BENDS, TEES, AND PLUGS

REV#	ISSUER	DATE	APPROVER	SHEET
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MIN. PIPE WALL THICKNESS	MIN. PIPE WALL THICKNESS
4"	0.250"
6"	0.280"
8"	0.322"
12" AND LARGER	0.375"

**C-900 WATER LINE OFFSET ASSEMBLY**

FOR A LINE TO PASS OVER AN OBSTRUCTION RATHER THAN UNDER, IT MUST HAVE ADEQUATE COVER AND BE APPROVED BY ENGINEERING & PLANNING DEPARTMENT.

**NOTES:**

- ALL MATERIALS AND COATINGS TO BE IN ACCORDANCE WITH ENGINEERING & PLANNING DEPARTMENT SPECIFICATIONS
- OFFSET SECTIONS SHALL BE THRUST-BLOCKED IN ACCORDANCE WITH DWG NO COT-WA-07, IF NECESSARY ALL THREAD RODS SHALL BE USED TO RESTRAIN THE JOINTS.
- ALL WATER MAINS LESS THAN OR EQUAL TO 12" DIAMETER SHALL BE PVC C-900 (DR-18). ALL PROPOSED WATER MAINS GREATER THAN OR EQUAL TO 14" DIAMETER SHALL BE PVC C-905 (DR-18).
- DUCTILE IRON FITTING SHALL BE FULL BODY PER AWWA C110.

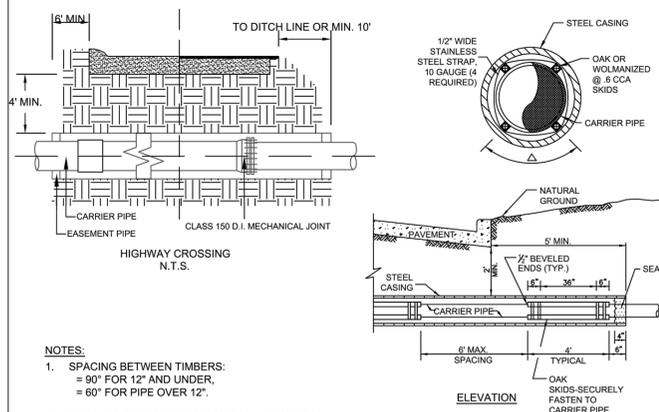
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CITY OF HUNTSVILLE, TEXAS



CITY OF HUNTSVILLE STANDARD DETAILS  
PVC WATER LINE OFFSET ASSEMBLY

REV#	ISSUER	DATE	APPROVER	SHEET
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**NOTES:**

- SPACING BETWEEN TIMBERS: = 90" FOR 12" AND UNDER, = 60" FOR PIPE OVER 12".
- CASING SIZE AND THICKNESS SHALL CONFORM TO THE MINIMUM REQUIREMENTS AS SHOWN ON CASING SCHEDULE. OTHER PERMITS AS REQUIRED.
- MAINTAIN 3" MINIMUM CLEARANCE BETWEEN THE MAXIMUM OUTSIDE DIAMETER OF CARRIER PIPE AND CASING AT ALL LOCATIONS.
- DIMENSIONS ARE APPROXIMATE ONLY. CONTRACTOR SHALL INSTALL ADEQUATELY SIZED CASING TO ACCOMMODATE THE CARRIER PIPE.

Carrier Size	Minimum Encasement		
	Corrugated Pipe	Concrete Pipe	Steel Pipe
4" C.I.	12" - 14GA	12" Class 3	10" - 250 Wall
6" C.I.	15" - 14GA	15" Class 3	14" - 250 Wall
8" C.I.	18" - 14GA	18" Class 3	16" - 250 Wall
10" C.I.	21" - 14GA	18" Class 3	18" - 250 Wall
12" C.I.	24" - 14GA	21" Class 3	20" - 250 Wall
14" C.I.	24" - 14GA	24" Class 3	24" - 250 Wall
16" C.I.	27" - 14GA	27" Class 3	28" - 250 Wall
18" C.I.	30" - 14GA	30" Class 3	30" - 250 Wall
20" C.I.	33" - 14GA	33" Class 3	36" - 375 Wall
24" C.I.	36" - 14GA	36" Class 3	42" - 375 Wall

**NOTES:**

- STEEL CASING SHALL HAVE COMPLETE WELDED JOINTS.
- STEEL CASING SHALL BE USED IN ALL BOXES.
- CORRUGATED METAL PIPE (C.M.P.) SHALL BE USED ONLY AS CASING WHEN BORING DRIVEWAYS AND WHEN LAID IN OPEN-CUT TRENCH INSTALLATION.

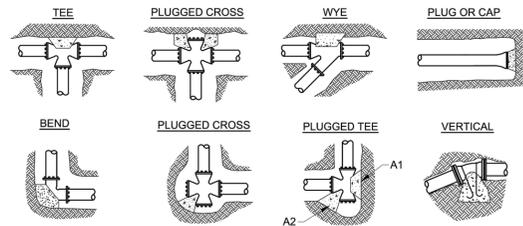
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CITY OF HUNTSVILLE, TEXAS



CITY OF HUNTSVILLE STANDARD DETAILS  
STANDARD BORE CROSSING HIGHWAY

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**CONCRETE THRUST BLOCK SCHEDULE**  
(BEARING AREA OF THRUST BLOCKS IN SQUARE FEET)

FITTING SIZE (INCHES)	TEE OR PLUG OR CROSS	90° BEND OR PLUGGED CROSS		TEE PLUGGED ON RUN BEND		45° BEND		22 1/2° BEND		11 1/4° BEND		VERTICAL VOLUME OF THRUST BLOCK IN CUBIC YARDS
		A1	A2	A1	A2	A1	A2	A1	A2	A1	A2	
04	1.3	1.9	2.5	1.9	1.3	1.3						
06	2.8	4.0	5.7	4.0	2.1	1.3	4"	1.1	0.4	0.2		
08	5.1	7.1	10.1	7.1	3.9	2.0	1.3	6"	2.7	1.0	0.4	
10	7.9	11.2	15.7	11.2	6.1	3.2	1.6	8"	4.0	1.5	0.6	
12	11.3	16.0	22.7	16.0	8.8	4.5	2.3	12"	8.5	3.2	1.3	
14	15.3	21.7	30.7	21.7	11.9	6.1	3.1	16"	14.8	5.6	2.3	
16	20.0	28.4	40.0	28.4	15.5	8.0	4.0					
18	25.3	36.0	50.7	36.0	19.5	10.1	5.1					
20	31.3	44.4	62.7	44.4	24.1	12.5	6.3	4" - 12"	#6	30		
24	45.3	64.0	90.7	64.0	34.9	18.1	9.1	14" - 16"	#8	36		

Above bearing areas based on test pressure of 150 psi and an allowable soil bearing strength of 1,500 pounds per square foot. To compute bearing areas for different test pressures and soil bearing stresses, use the following equation:  
**BEARING AREA = (TEST PRESSURE / 150) x (1,500 / SOIL BEARING STRESS) x (TABLE VALUE)**

**NOTES:**

- Concrete thrust blocking to be poured against undisturbed earth. (Min. strength of concrete 3000 psi)
- Keep concrete clear of joint and accessories. Install 12 mil total thickness polyethylene sheet around fitting. Secure sheet ends to prevent infiltration of dirt between sheet and pipe fitting prior to pouring thrust blocking. Protect mechanical joint followers and bolts from concrete with temporary forms and 12 mil polyethylene sheeting.
- The required thrust bearing areas for special connections are shown.
- If not shown on plans, required bearing areas at fitting shall be as indicated above, adjust if necessary, to conform to the test pressure(s) and allowable soil bearing stress(es) stated in the Special Specifications.
- Bearing areas and special blocking details shown on plans take precedence over bearing areas and blocking details shown on this Standard Dwg. Bearing area of thrust blocks is in square feet.
- Vertical changes in direction require specific designs for thrust blocks.

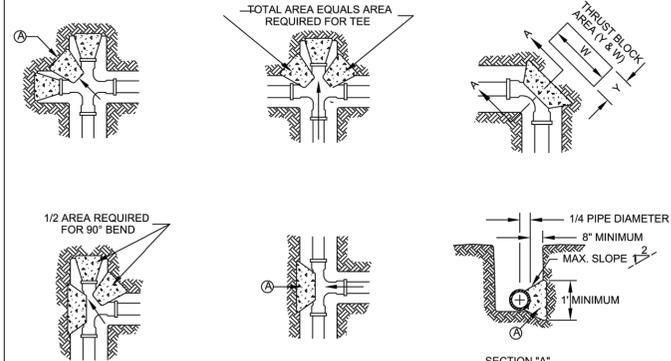
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CITY OF HUNTSVILLE, TEXAS



CITY OF HUNTSVILLE STANDARD DETAILS  
HORIZONTAL BLOCKING CONCRETE CRADLE VERTICAL BENDS

REV#	ISSUER	DATE	APPROVER	SHEET
0	MAM	07/31/2018		1 OF 3

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**CONSTRUCTION KEY NOTES:**

- LENGTH "Y" & "W" AS REQUIRED TO OBTAIN BEARING AREA AGAINST UNDISTURBED SOIL.
- ADDITIONAL EXCAVATION IF NECESSARY TO OBTAIN REQUIRED BEARING AREA.
- MINIMUM THRUST BLOCK AREA REQUIREMENTS FOR (Y & W) AS FOLLOWS:

PIPE SIZE	WATER PIPE	
	TEE, DEAD END 90° BEND	45° AND 22 1/2° BENDS
4" & LESS	3 SQ. FEET	3 SQ. FEET
6"	4 SQ. FEET	3 SQ. FEET
8"	6 SQ. FEET	3 SQ. FEET
10"	9 SQ. FEET	5 SQ. FEET
12"	13 SQ. FEET	7 SQ. FEET
16"	23 SQ. FEET	12 SQ. FEET
18"	29 SQ. FEET	15 SQ. FEET

**NOTES:**

- TABLE IS BASED ON 2000#/SQ. FT. SOIL. IF CONDITIONS ARE FOUND TO INDICATE SOIL BEARING IS LESS, THE AREAS SHALL BE INCREASED ACCORDINGLY.
- AREAS FOR PIPE LARGER THAN 18" SHALL BE CALCULATED.
- CONCRETE SHALL HAVE A MINIMUM COMPRESSION STRENGTH OF 2500 PSI.
- THRUST BLOCK IS TO EXTEND TO UNDISTURBED SOIL.
- SIZE MAY BE DECREASED FOR LESSER DEGREE BENDS AS DETERMINED BY ENGINEER.
- KEEP CONCRETE CLEAR OF M.J. OR BELL AND SPIGOT JOINTS.
- BLOCK IN A SIMILAR MANNER AT TEES, HYDRANTS, PLUG OR OTHER LOCATIONS AS REQUIRED.
- WHEN NECESSARY ADDITIONAL THRUST RESTRAINT METHODS MAY BE USED, SUCH AS MECHANICAL JOINT RESTRAINTS, TIE-RODS (INSTALLED PER MANUFACTURERS' RECOMMENDATIONS) OR OTHER APPROVED METHODS.

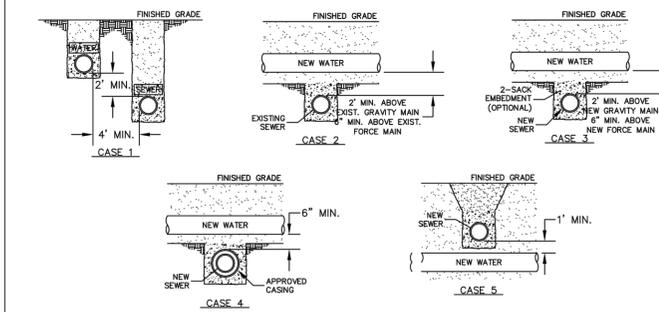
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CITY OF HUNTSVILLE, TEXAS



CITY OF HUNTSVILLE STANDARD DETAILS  
CONCRETE THRUST BLOCKING

REV#	ISSUER	DATE	APPROVER	SHEET
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**GENERAL NOTES:**

- NEW OR EXISTING POTABLE WATER AND SANITARY SEWER MAINS.
- SEPARATION DISTANCES SHALL FOLLOW TEXAS COMMISSION ON ENVIRONMENTAL QUALITY STANDARD REQUIREMENTS.

**CONSTRUCTION KEY NOTES**

- NEW POTABLE WATER MAIN CROSSING EXISTING GRAVITY SANITARY SEWER MAIN OR EXISTING FORCE MAIN (PER TCEQ §290.44(e)(4)(B)(i) AND §290.44(e)(4)(B)(ii)).
- NEW POTABLE WATER MAIN CROSSING NEW GRAVITY SANITARY SEWER MAIN OR NEW FORCE MAIN (PER TCEQ §290.44(e)(4)(B)(i)(I), §290.44(e)(4)(B)(i)(II), §290.44(e)(4)(B)(ii)(I), §290.44(e)(4)(B)(ii)(II)).
- NEW POTABLE WATER MAIN CROSSING EXISTING GRAVITY SANITARY SEWER MAIN OR EXISTING FORCE MAIN (PER TCEQ §290.44(e)(4)(B)(i) AND §290.44(e)(4)(B)(ii)).
- NEW POTABLE WATER MAIN CROSSING NEW GRAVITY SANITARY SEWER MAIN OR NEW FORCE MAIN (PER TCEQ §290.44(e)(4)(B)(i)(I), §290.44(e)(4)(B)(i)(II), §290.44(e)(4)(B)(ii)(I), §290.44(e)(4)(B)(ii)(II)).

DEPARTMENT OF ENGINEERING & MAPPING/ENGINEERING DIVISION  
CITY OF HUNTSVILLE, TEXAS



CITY OF HUNTSVILLE STANDARD DETAILS  
SEPARATION DISTANCE SANITARY SEWER AND POTABLE WATER

REV#	ISSUER	DATE	APPROVER	SHEET
0	MAM	07/31/2018		1 OF 1

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NO.	DATE	REVISION	APP.



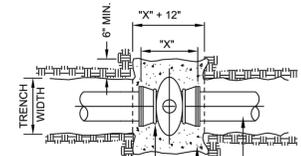
**Aurora Technical Services, LLC**  
2121 SAGE ROAD, SUITE 150  
HOUSTON, TX 77056  
PHONE: 281-453-770  
TX FIRM NO.: F-2059



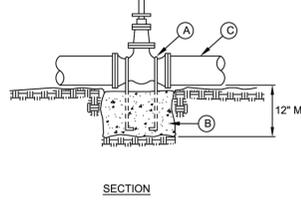
**FY 2021/2022 WATERLINE REPLACEMENT PROJECT**  
WATER LINE DETAILS  
(SHEET 2 OF 2)

SURVEYED BY: LANDTECH, INC.

LAST MODIFIED: Feb 08, 2023 9:17am BY USER: fush06  
DWG. LOCATION: K:\City of Huntsville\4-0 Drawings\Sheet Set\Standard Details\ DWG. NAME: WATER LINE DETAILS.dwg

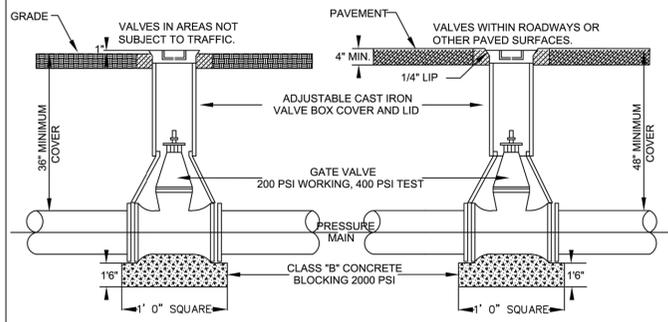


**CONSTRUCTION KEY NOTES:**  
 A. TWO No. 5 REBAR HAIR PINS, PAINT UNEMBEDDED PORTION OF REBARS WITH TWO COATS OF COAL TAR EPOXY.  
 B. CONCRETE VALVE SUPPORT, 2500 PSI. CONCRETE.  
 C. APPROVED PIPE.



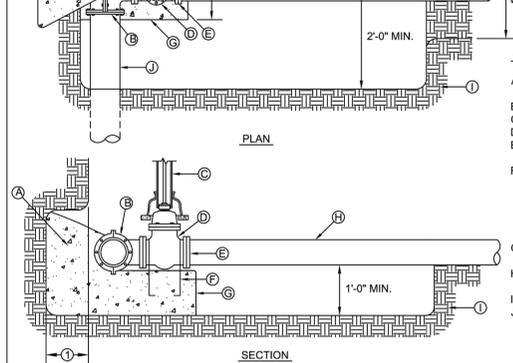
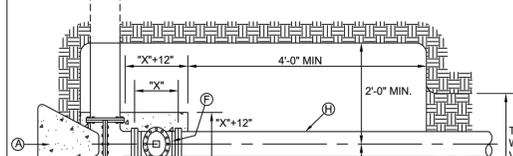
- NOTES:**
1. THE ENGINEER SHALL PROVIDE DESIGN FOR ALL VALVES GREATER THAN 12\".
  2. COMPLY WITH CITY OF HUNTSVILLE REQUIREMENTS.
  3. PROTECTIVE EPOXY INTERIOR COATINGS FOR VALVES.

DEPARTMENT OF ENGINEERING & MAPPING/ENGINEERING DIVISION CITY OF HUNTSVILLE, TEXAS		CITY OF HUNTSVILLE STANDARD DETAILS VALVE ANCHOR										
NAME: VALVE ANCHOR CATEGORY: WATER DRAWN DATE: 11/01/2016 DRAWN BY: WLSIII SCALE: N.T.S. APPROVED BY: YSR	City Service Center 448 State Highway 75 Huntsville, TX 77320	<table border="1"> <thead> <tr> <th>REV#</th> <th>ISSUER</th> <th>DATE</th> <th>APPROVER</th> <th>SHEET</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>MAM</td> <td>07/31/2018</td> <td></td> <td>1 OF 1</td> </tr> </tbody> </table>	REV#	ISSUER	DATE	APPROVER	SHEET	0	MAM	07/31/2018		1 OF 1
REV#	ISSUER	DATE	APPROVER	SHEET								
0	MAM	07/31/2018		1 OF 1								



- NOTES:**
1. All water systems must be designed and constructed in accordance with the City's Standards, Specifications, and Design Criteria and applicable design criteria of the Texas Commission on Environmental Quality.
  2. Block Gate Valves with Compression Joint Fittings on 8" and larger lines.
  3. Place 12" expansion joint material around water pipe where it passes through concrete vault.
  4. Valves 18" or larger shall have spur gearing with grease case.
  5. Larger diameter R.C.P. may be required dependent upon manufacturer's standard size for gate valve.
  6. Provide corporation with copper riser and curb stop at a maximum of 12" from each end of gate valve. Corporation and curb stop sizes shall be 1". Extend riser to within 24" of top of manhole.
  7. Valves, bypass, corporation stop and piping shall be designed to operate at the maximum pressures as described in the specifications.
  8. The developer shall install valves at the intersections of all main waterlines and shall install inline valves at approximately one thousand (1,000) foot intervals.

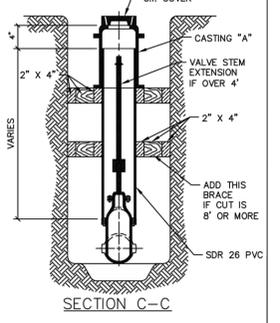
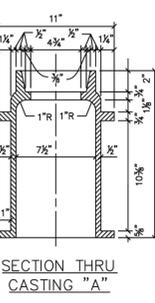
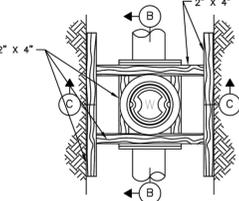
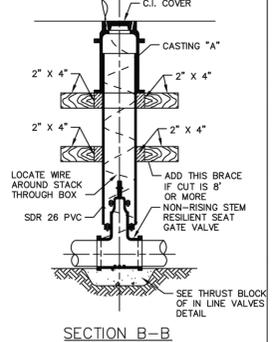
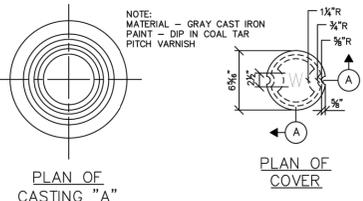
DEPARTMENT OF ENGINEERING & MAPPING/ENGINEERING DIVISION CITY OF HUNTSVILLE, TEXAS		CITY OF HUNTSVILLE STANDARD DETAILS GATE VALVE AND VAULT INSTALLATION 14 INCH AND SMALLER										
NAME: GATE VALVE & VAULT CATEGORY: WATER DRAWN DATE: 10/21/2016 DRAWN BY: WLSIII SCALE: N.T.S. APPROVED BY: YSR	City Service Center 448 State Highway 75 Huntsville, TX 77320	<table border="1"> <thead> <tr> <th>REV#</th> <th>ISSUER</th> <th>DATE</th> <th>APPROVER</th> <th>SHEET</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>MAM</td> <td>07/31/2018</td> <td></td> <td>1 OF 2</td> </tr> </tbody> </table>	REV#	ISSUER	DATE	APPROVER	SHEET	0	MAM	07/31/2018		1 OF 2
REV#	ISSUER	DATE	APPROVER	SHEET								
0	MAM	07/31/2018		1 OF 2								



- CONSTRUCTION KEY NOTES:**
- A. CONCRETE THRUST BLOCKING.
  - B. TAPPING SLEEVE.
  - C. RISER INSTALLATION.
  - D. TAPPING VALVE.
  - E. VALVE ENDS FOR TYPE OF PIPE INSTALLED.
  - F. 2-#5 REBAR HAIRPINS, PAINT UNEMBEDDED PORTION OF BARS WITH 2-COATS OF COAL TAR EPOXY, THEN COVER WITH 2" MINIMUM OF CEMENT MORTAR.
  - G. CONCRETE VALVE SUPPORT.
  - H. NEW WATER LINE TO BE INSTALLED.
  - I. UNDISTURBED EARTH.
  - J. EXISTING WATER MAIN TO BE TAPPED.

- NOTES:**
1. THRUST BLOCKING SHALL EXTEND TO UNDISTURBED EARTH.
  2. TAPPING SLEEVE SHALL BE 18" MINIMUM FROM ANY BELL, COUPLING, VALVE OR FITTING LOCATED ALONG EXISTING WATER LINE TO BE TAPPED.
  3. REPLACE EXCAVATED MATERIAL WITH CEMENT STABILIZED BACKFILL PRIOR TO PAVING.
  4. JOINTS AND BOLTS SHALL BE CLEAR OF CONCRETE.
  5. INSTALL PERMANENT THRUST BLOCKING UNDER VALVE BEFORE TAP IS MADE. JOINTS AND BOLTS TO BE CLEAR OF CONCRETE.
  6. 3" TAPS AND LARGER SHALL BE SMITH-BLAIR STAINLESS STEEL TAPPING SLEEVE AND BOLTS.

DEPARTMENT OF ENGINEERING & MAPPING/ENGINEERING DIVISION CITY OF HUNTSVILLE, TEXAS		CITY OF HUNTSVILLE STANDARD DETAILS TAPPING SLEEVE AND VALVE INSTALLATION										
NAME: TAPPING SLEEVE AND VALVE CATEGORY: WATER DRAWN DATE: 10/31/2016 DRAWN BY: WLSIII SCALE: N.T.S. APPROVED BY: YSR	City Service Center 448 State Highway 75 Huntsville, TX 77320	<table border="1"> <thead> <tr> <th>REV#</th> <th>ISSUER</th> <th>DATE</th> <th>APPROVER</th> <th>SHEET</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>MAM</td> <td>07/31/2018</td> <td></td> <td>1 OF 1</td> </tr> </tbody> </table>	REV#	ISSUER	DATE	APPROVER	SHEET	0	MAM	07/31/2018		1 OF 1
REV#	ISSUER	DATE	APPROVER	SHEET								
0	MAM	07/31/2018		1 OF 1								



DEPARTMENT OF ENGINEERING & MAPPING/ENGINEERING DIVISION CITY OF HUNTSVILLE, TEXAS		CITY OF HUNTSVILLE STANDARD DETAILS VALVE BOX DETAIL										
NAME: VALVE BOX DETAIL CATEGORY: WATER DRAWN DATE: 10/21/2016 DRAWN BY: WLSIII SCALE: N.T.S. APPROVED BY: YSR	City Service Center 448 State Highway 75 Huntsville, TX 77320	<table border="1"> <thead> <tr> <th>REV#</th> <th>ISSUER</th> <th>DATE</th> <th>APPROVER</th> <th>SHEET</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>MAM</td> <td>07/31/2018</td> <td></td> <td>1 OF 1</td> </tr> </tbody> </table>	REV#	ISSUER	DATE	APPROVER	SHEET	0	MAM	07/31/2018		1 OF 1
REV#	ISSUER	DATE	APPROVER	SHEET								
0	MAM	07/31/2018		1 OF 1								

LAST MODIFIED: Feb 08, 2023 - 9:17am BY USER: fush06  
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 DWG. NAME: VALVE DETAILS.dwg

NO.	DATE	REVISION	APP.

	<b>Aurora Technical Services, LLC</b> 2121 SAGE ROAD, SUITE 150 HOUSTON, TX 77056 PHONE: 281-453-770 TX FIRM NO.: F-2059
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02/08/2023

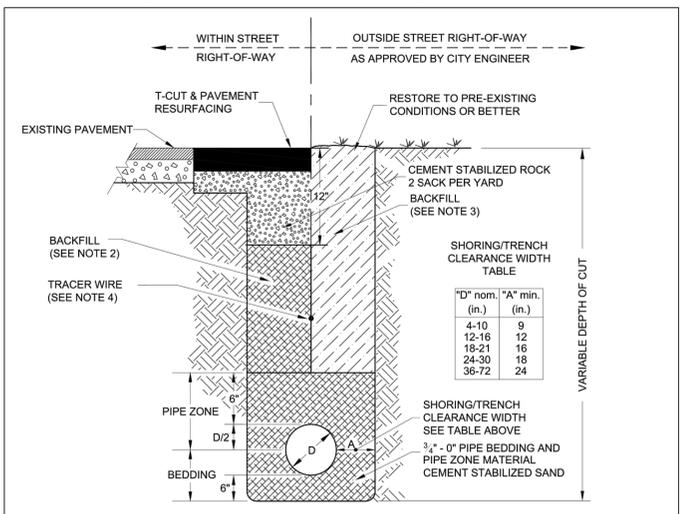
**FY 2021/2022 WATERLINE REPLACEMENT PROJECT**

**VALVE DETAILS**

SURVEYED BY: LANDTECH, INC.	
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SHEET NO. <u>50</u> OF 62	DRAWING SCALE
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REVISION DATE: 2/1/2023



- NOTES:
- THESE TRENCH BACKFILL REQUIREMENTS APPLY TO ALL PUBLIC UTILITY PIPES.
  - FOR TRENCHES 12" WIDE OR LESS IN STREETS WITH CLASSIFICATIONS HIGHER THAN RESIDENTIAL, USE SELECT FILL. FOR ALL OTHER TRENCHES, USE 3/4" - 0" AGGREGATE COMPACTED TO 95% OF MAX DENSITY.
  - USE SELECT BACKFILL COMPACTED TO 90% OF MAX DENSITY.
  - TRACER WIRE SHALL BE PLACED ABOVE NON-METALLIC PIPE AND 2 FEET BELOW FINISHED GRADE.
  - RESTORE TO ORIGINAL CONDITIONS OR BETTER.

ENGINEERING DEPARTMENT  
CITY OF HUNTSVILLE, TEXAS

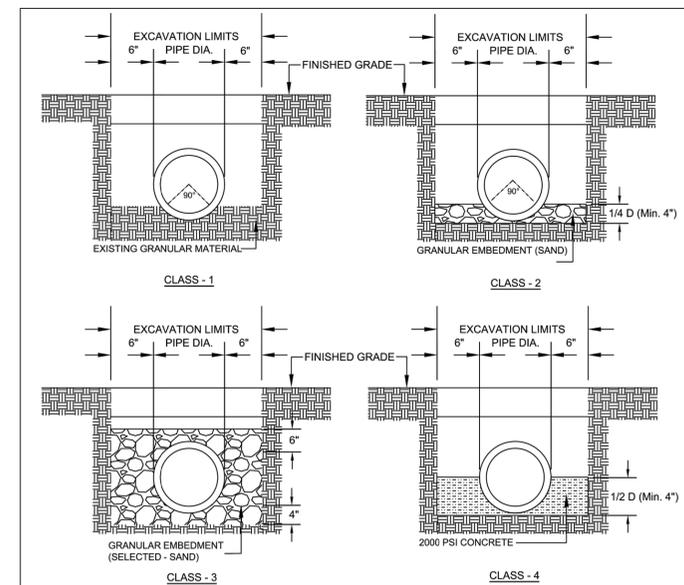
CITY OF HUNTSVILLE STANDARD DETAILS  
PIPE TRENCH BACKFILL

REV#	ISSUER	DATE	APPROVER	SHEET
0	MAM	07/31/2018	RAM	1 OF 1
1	MAM	10/16/2019	RAM	1 OF 1

NAME: PIPE TRENCH BACKFILL  
CATEGORY: WATER  
DRAWN DATE: 10/28/2016  
DRAWN BY: WLSIII  
SCALE: N.T.S.  
APPROVED BY: YSR

City Service Center  
448 State Highway 75  
Huntsville, TX 77320

W-54



- NOTES:
- CLASS OF BEDDING REQUIRED SHALL BE BASED ON THE TYPE OF SOIL ENCOUNTERED IN EXCAVATION.
  - MINIMUM TRENCH WIDTH SHALL BE PIPE OUTSIDE DIAMETER (O.D.) + 12 INCHES.
  - BACKFILL ABOVE THE BEDDING SHALL CONFORM TO "UTILITY TRENCH REPAIR" STANDARD DRAWING, SHEET 2 OF 2.
  - REFER TO STANDARD SPECIFICATION ITEMS FOR MATERIAL AND CONSTRUCTION REQUIREMENTS.
  - ALL TRENCHES WITHIN 3 FEET OF EXISTING CURB MUST BE BACKFILLED WITH 2 SACK PER CUBIC YARD CEMENT STABILIZED SAND.

ENGINEERING DEPARTMENT  
CITY OF HUNTSVILLE, TEXAS

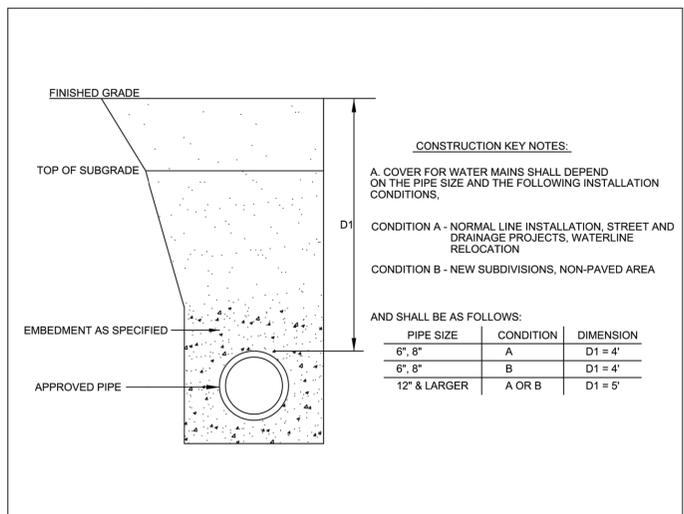
CITY OF HUNTSVILLE STANDARD DETAILS  
PIPE BEDDING CLASSES I - IV

REV#	ISSUER	DATE	APPROVER	SHEET
0	MAM	07/31/2018	RAM	1 OF 2
1	MAM	10/21/2019	RAM	1 OF 2

NAME: PIPE BEDDING  
CATEGORY: UTILITIES-WATER/SEWER  
DRAWN DATE: 10/18/2016  
DRAWN BY: WLSIII  
SCALE: N.T.S.  
APPROVED BY: YSR

City Service Center  
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W-55



- CONSTRUCTION KEY NOTES:
- A. COVER FOR WATER MAINS SHALL DEPEND ON THE PIPE SIZE AND THE FOLLOWING INSTALLATION CONDITIONS.
- CONDITION A - NORMAL LINE INSTALLATION, STREET AND DRAINAGE PROJECTS, WATERLINE RELOCATION
- CONDITION B - NEW SUBDIVISIONS, NON-PAVED AREA
- AND SHALL BE AS FOLLOWS:

DEPARTMENT OF ENGINEERING & MAPPING/ENGINEERING DIVISION  
CITY OF HUNTSVILLE, TEXAS

CITY OF HUNTSVILLE STANDARD DETAILS  
COVER FOR WATER MAINS

REV#	ISSUER	DATE	APPROVER	SHEET
0	MAM	07/31/2018		1 OF 1

NAME: COVER FOR WATER MAINS  
CATEGORY: WATER  
DRAWN DATE: 10/16/2016  
DRAWN BY: WLSIII  
SCALE: N.T.S.  
APPROVED BY: YSR

City Service Center  
448 State Highway 75  
Huntsville, TX 77320

W-60

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DWG. NAME: EXCAVATION, BEDDING, BACKFILL.dwg

NO.	DATE	REVISION	APP.

AURORA TECHNICAL SERVICES, LLC  
2121 SAGE ROAD, SUITE 150  
HOUSTON, TX 77056  
PHONE: 281-453-770  
TX FIRM NO.: F-2059

Phuong Nguyen  
Aurora Technical Services, LLC  
Texas Registered Engineering Firm  
F-2059  
02/08/2023

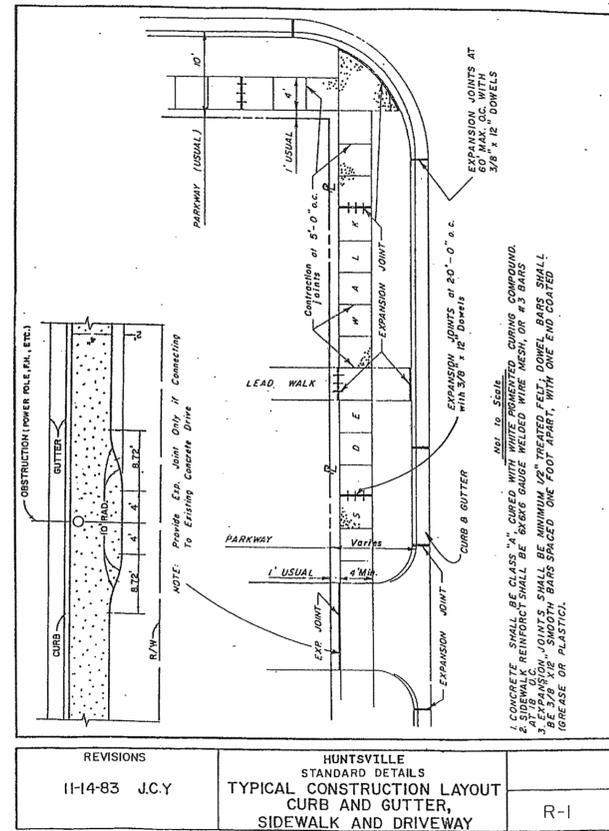
FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
EXCAVATION, BEDDING, AND BACKFILL

SURVEYED BY:  
LANDTECH, INC.

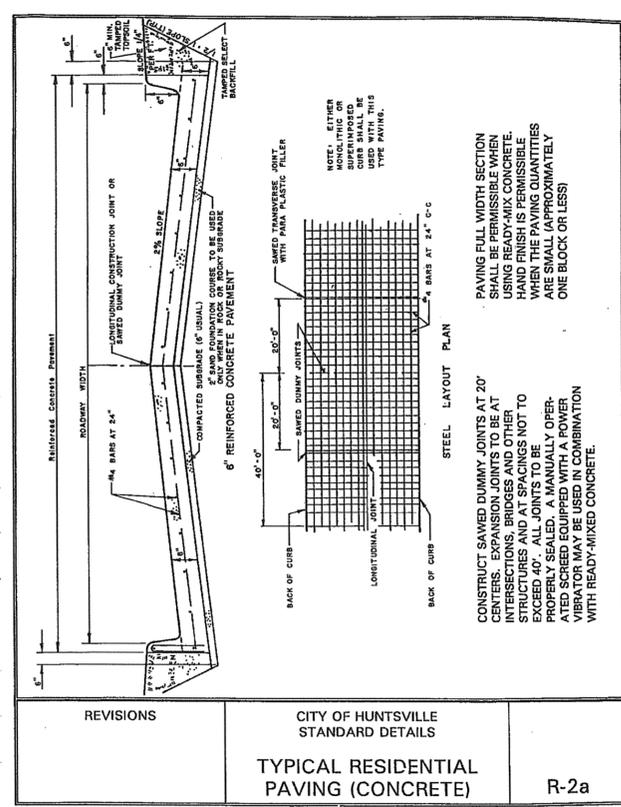
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REVISION DATE: 2/1/2023

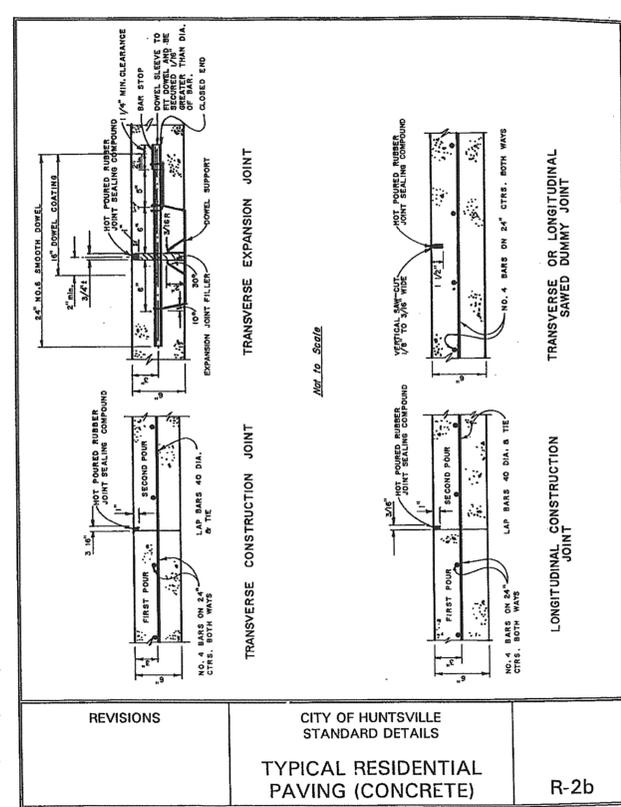
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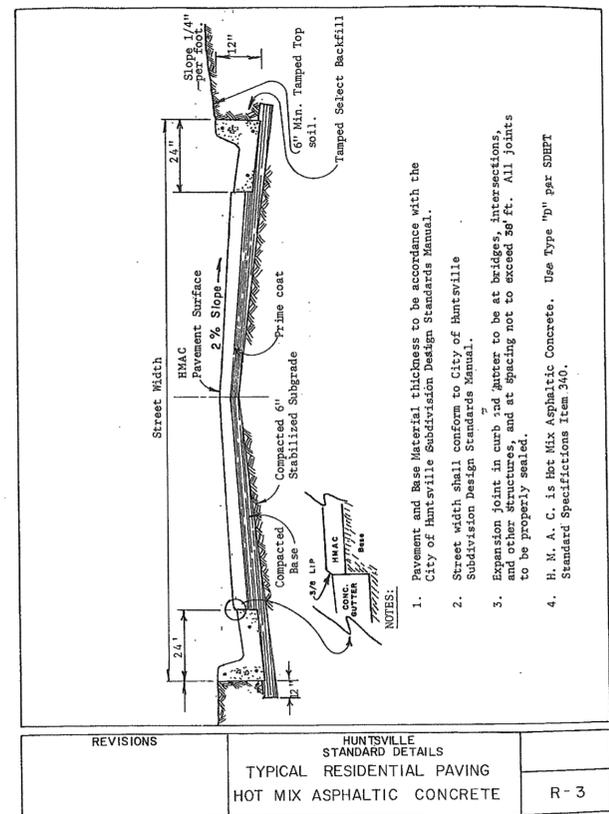
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11-14-83 J.C.Y.	TYPICAL CONSTRUCTION LAYOUT CURB AND GUTTER, SIDEWALK AND DRIVEWAY	R-1



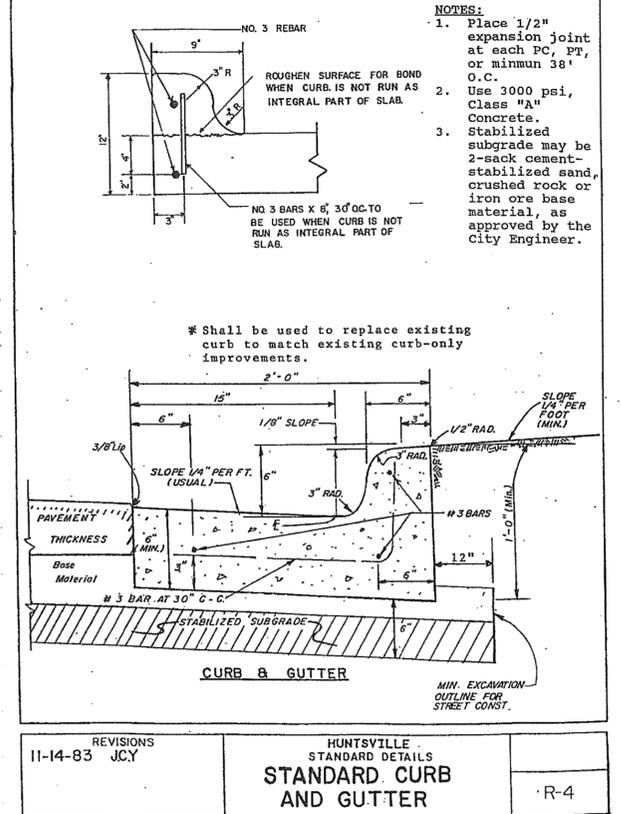
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	TYPICAL RESIDENTIAL PAVING (CONCRETE)	R-2a



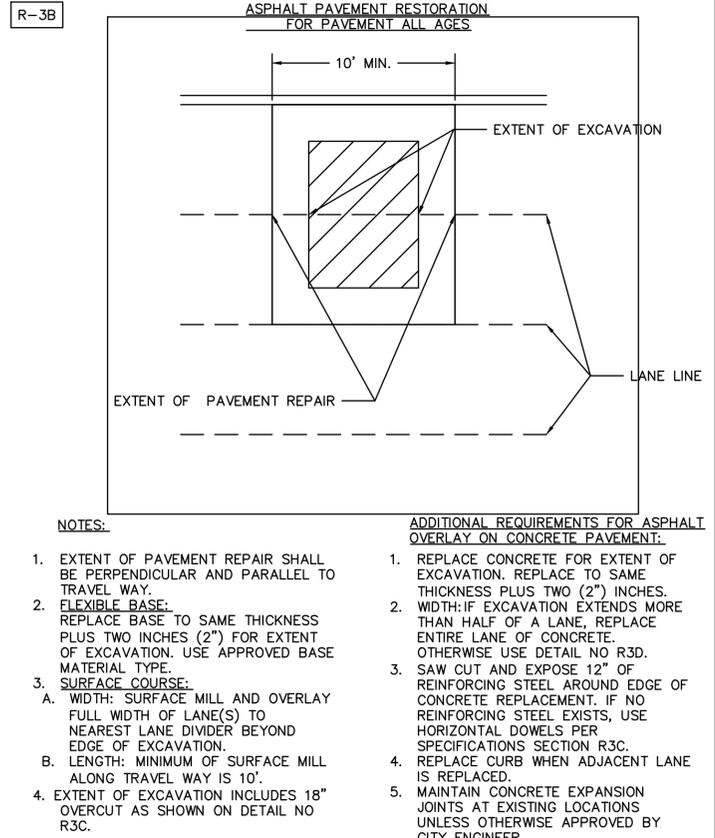
REVISIONS	CITY OF HUNTSVILLE STANDARD DETAILS	
	TYPICAL RESIDENTIAL PAVING (CONCRETE)	R-2b



REVISIONS	HUNTSVILLE STANDARD DETAILS	
	TYPICAL RESIDENTIAL PAVING HOT MIX ASPHALTIC CONCRETE	R-3



REVISIONS	HUNTSVILLE STANDARD DETAILS	
11-14-83 J.C.Y.	STANDARD CURB AND GUTTER	R-4



REVISIONS	HUNTSVILLE STANDARD DETAILS	
	ASPHALT PAVEMENT RESTORATION FOR PAVEMENT ALL AGES	R-3B

NO.	DATE	REVISION	APP.

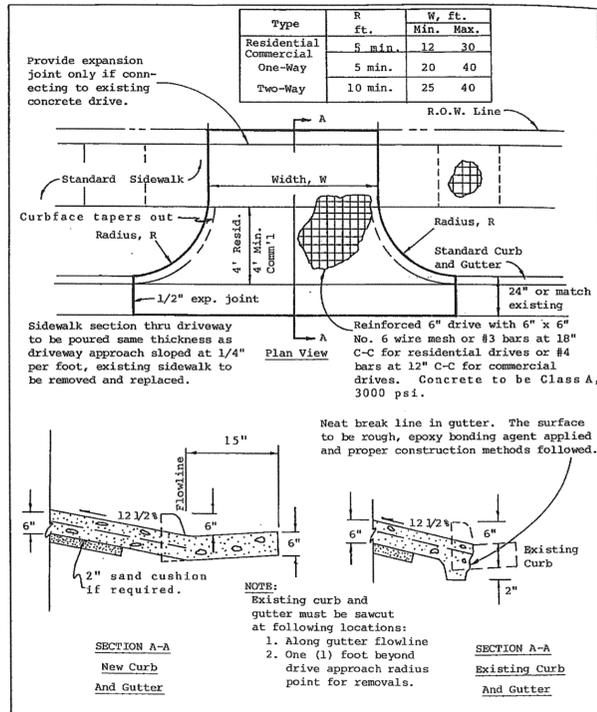
**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059

Phuong Nguyen  
 02/08/2023

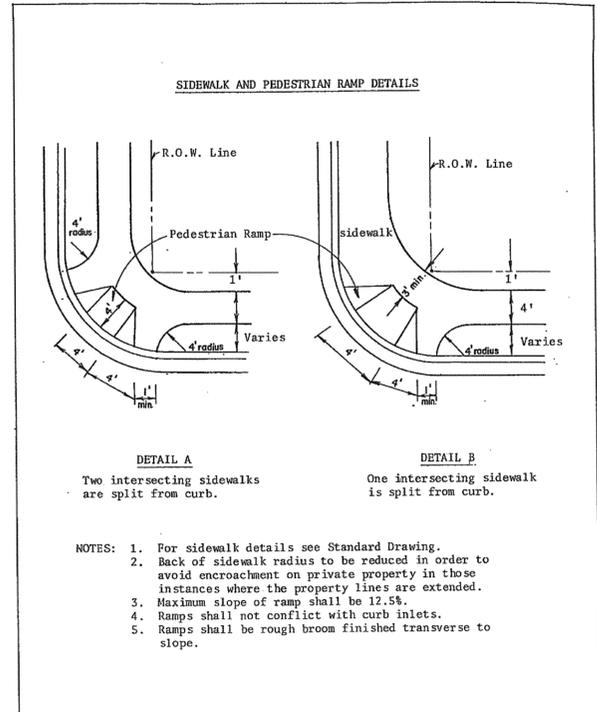
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**PAVEMENT DETAILS**

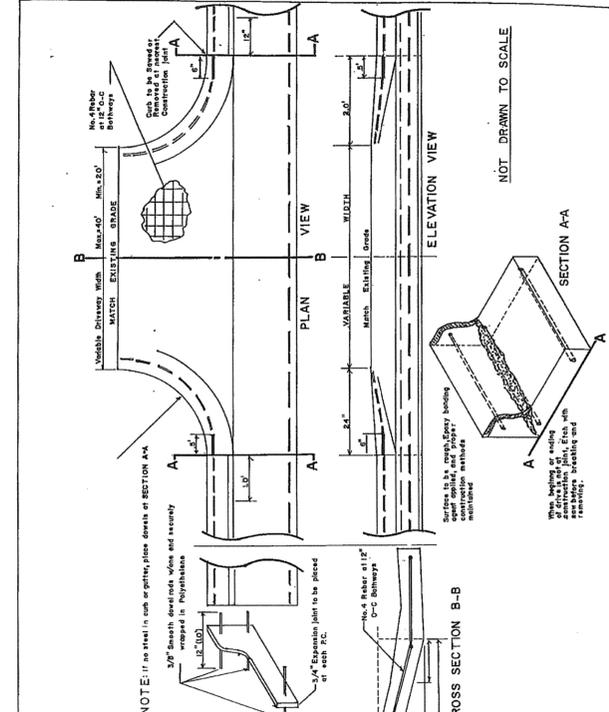
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SHEET NO. <u>52</u> OF 62	DRAWING SCALE
REVISION DATE: 2/1/2023	



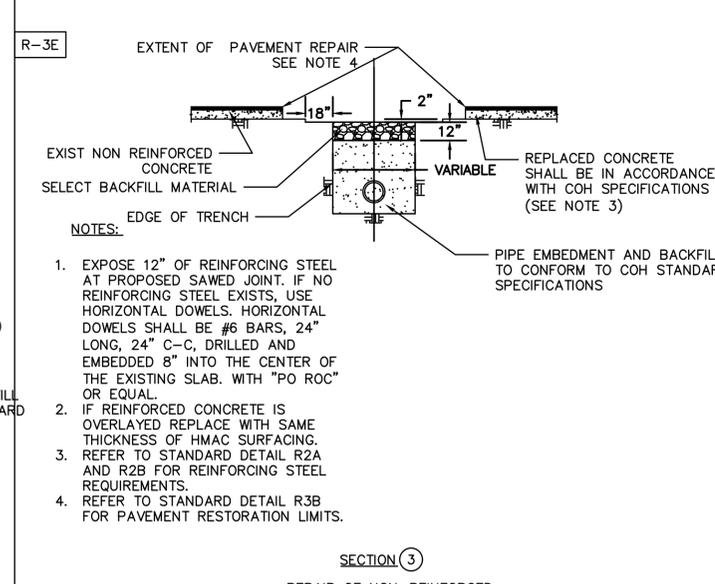
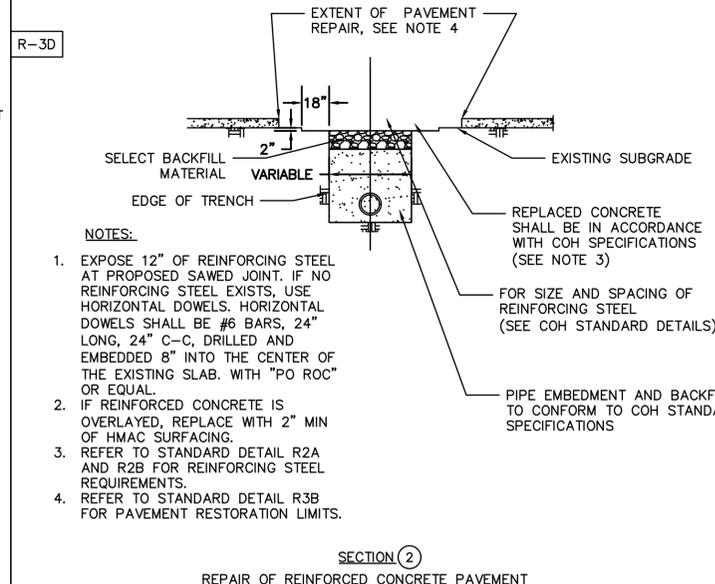
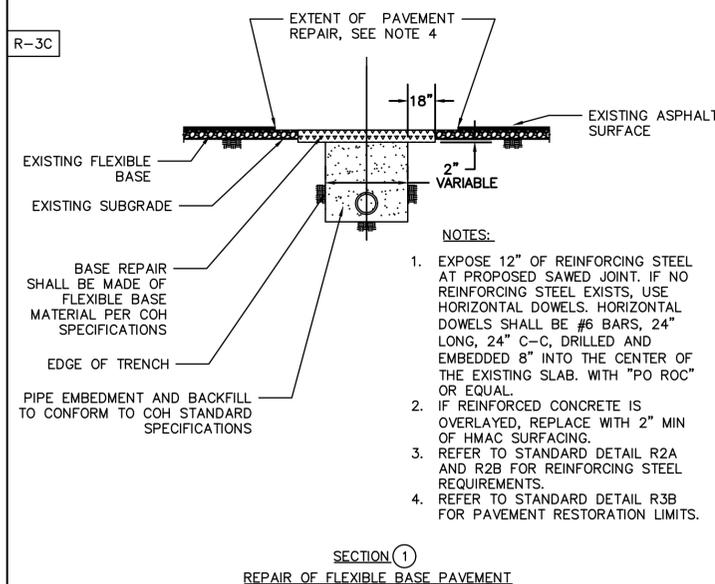
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REVISIONS	HUNTSVILLE STANDARD DETAILS SIDEWALK AND PEDESTRIAN RAMP TREATMENT	R-6
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REVISIONS	HUNTSVILLE STANDARD DETAILS STANDARD COMMERCIAL DRIVEWAY DETAIL	SHEET of R-10
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NO.	DATE	REVISION	APP.

  
**City of Huntsville**


**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059

  
**PHUONG NGUYEN**  
 LICENSED PROFESSIONAL ENGINEER  
 STATE OF TEXAS  
 157850  
 02/08/2023

FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 DRIVEWAY AND RAMP DETAILS

SURVEYED BY: LANDTECH, INC.	
SHEET NO. <u>53</u> OF 62	DRAWING SCALE
REVISION DATE: 2/1/2023	

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### STABILIZED CONSTRUCTION ENTRANCE

**NOTES:**

- PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
- PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
- PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
- PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
- MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE. MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

DEPARTMENT OF ENGINEERING & MAPPING/ENGINEERING DIVISION CITY OF HUNTSVILLE, TEXAS

CITY OF HUNTSVILLE STANDARD DETAILS  
STABILIZED CONSTRUCTION ENTRANCE

REV#	ISSUER	DATE	APPROVER	SHEET
0	MAM	08/10/2018		1 OF 1

NAME: STABILIZED CONST. ENTRANCE  
 CATEGORY: STORM WATER CONTROL  
 DRAWN DATE: 11/22/2016  
 DRAWN BY: WLSIII  
 SCALE: N.T.S.  
 APPROVED BY: YSR

City Service Center  
 448 State Highway 75  
 Huntsville, TX 77320

SWC-14

### FILTER FABRIC FENCE

**NOTES:**

- POSTS TO BE SET AT 3-FOOT MAXIMUM SPACING. IF FACTORY REASSEMBLED FENCE WITH SUPPORT NETTING IS USED, SPACING OF POST MAY BE INCREASED TO 6 FEET MAXIMUM.
- WHEN 2 SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHOULD BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.

DEPARTMENT OF ENGINEERING & MAPPING/ENGINEERING DIVISION CITY OF HUNTSVILLE, TEXAS

CITY OF HUNTSVILLE STANDARD DETAILS  
FILTER FABRIC FENCE

REV#	ISSUER	DATE	APPROVER	SHEET
0	MAM	08/10/2018		1 OF 1

NAME: FILTER FABRIC FENCE  
 CATEGORY: STORM WATER CONTROL  
 DRAWN DATE: 11/22/2016  
 DRAWN BY: WLSIII  
 SCALE: N.T.S.  
 APPROVED BY: YSR

City Service Center  
 448 State Highway 75  
 Huntsville, TX 77320

SWC-30

### REINFORCED FILTER FABRIC BARRIER

**NOTES:**

- WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH STAPLES OR WITH WIRE TIES.
- FILTER FABRIC TO BE FASTENED SECURELY TO WOVEN WIRE FENCE, WITH TIES SPACED EVERY 24 INCHES AT TOP AND MIDSECTION.
- WHEN 2 SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.
- IF HOT ROLLED STEEL POSTS ARE USED, MAXIMUM POST SPACING CAN BE 6 FEET.

DEPARTMENT OF ENGINEERING & MAPPING/ENGINEERING DIVISION CITY OF HUNTSVILLE, TEXAS

CITY OF HUNTSVILLE STANDARD DETAILS  
REINFORCED FILTER FABRIC BARRIER

REV#	ISSUER	DATE	APPROVER	SHEET
0	MAM	08/10/2018		1 OF 1

NAME: REINFORCED FILTER FABRIC BARRIER  
 CATEGORY: STORM WATER CONTROL  
 DRAWN DATE: 11/22/2016  
 DRAWN BY: WLSIII  
 SCALE: N.T.S.  
 APPROVED BY: YSR

City Service Center  
 448 State Highway 75  
 Huntsville, TX 77320

SWC-33

### STONE OUTLET SEDIMENT TRAP

**NOTES:**

- ROCK AND GEOTEXTILE FABRIC SHALL BE AS INDICATED BY THIS SPECIFICATION.
- DIMENSION - LIMIT OF EXCAVATION AND OUTLET LENGTH AND HEIGHT SHALL BE AS INDICATED ON THE CONSTRUCTION DRAWING.
- SIDE SLOPE SHALL BE 2:1 OR FLATTER.
- MAINTAIN A MINIMUM OF 6 INCHES BETWEEN TOP OF CORE MATERIAL AND TOP OF STONE OUTLET. A MINIMUM OF 4 INCHES BETWEEN BOTTOM OF CORE MATERIAL AND EXISTING GROUND A MINIMUM OF 1 FOOT BETWEEN TOP OF STONE OUTLET AND TOP OF EMBANKMENT.
- ROCK SHALL BE EMBEDDED A MINIMUM OF 4 INCHES INTO EXISTING GROUND.
- CORE SHALL BE A MINIMUM OF 1 FOOT IN HEIGHT AND IN WIDTH AND SHALL BE WRAPPED IN GEOTEXTILE FABRIC.
- PONDING ON SEDIMENT LADEN RUNOFF IN SEDIMENT TRAP ACCOMPLISHED BY EMBANKMENT OR EXCAVATION DEPENDING ON TERRAIN. REFERENCE CONSTRUCTION DRAWING FOR TRAP TYPE AND DIMENSIONS.
- OUTLET INTO STABILIZED AREA.

DEPARTMENT OF ENGINEERING & MAPPING/ENGINEERING DIVISION CITY OF HUNTSVILLE, TEXAS

CITY OF HUNTSVILLE STANDARD DETAILS  
STONE OUTLET SEDIMENT TRAP

REV#	ISSUER	DATE	APPROVER	SHEET
0	MAM	08/10/2018		1 OF 1

NAME: STONE OUTLET SED TRAP  
 CATEGORY: STORM WATER CONTROL  
 DRAWN DATE: 11/22/2016  
 DRAWN BY: WLSIII  
 SCALE: N.T.S.  
 APPROVED BY: YSR

City Service Center  
 448 State Highway 75  
 Huntsville, TX 77320

SWC-34

NO.	DATE	REVISION	APP.

**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059

*Leo A. Bartos*  
 02/10/2023

Aurora Technical Services, LLC  
 Texas Registered Engineering Firm  
 F-2059

## FY 2021/2022 WATERLINE REPLACEMENT PROJECT

### SWPPP DETAILS (SHEET 1 OF 2)

SURVEYED BY:  
 LANDTECH, INC.

SHEET NO. 54 OF 62      DRAWING SCALE

REVISION DATE: 2/8/2023

LAST MODIFIED: Feb 08, 2023 - 9:13am BY USER: jrush06  
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### STORM INLET SEDIMENT TRAPS

**AREA GRATE INLET**  
**CURB INLET**

NOTE: WHERE CURB IS IN PLACE, PROVIDE A 1' WIDE OPENING IN THE CURB, OR USE A SANDBAG DAM TO FORCE WATER OVER THE CURB TO THE TRAP.

**NOTES:**

- INSTALL EITHER A GRATE INLET OR CURB INLET SEDIMENT TRAP AS SHOWN BY THE CONSTRUCTION DRAWINGS.
- THE LIMITS OF EXCAVATION SHALL BE AS SHOWN BY THE CONSTRUCTION DRAWINGS.
- SIDE SLOPE SHALL BE 2:1 OR FLATTER.
- MAINTAIN A MINIMUM OF 1 FOOT MEASURED VERTICALLY FROM THE BOTTOM OF EXCAVATION FOR INLET OPENING.
- WHEN THE INLET IS IN A ROADWAY, INSTALL THE TRAP ON THE OPPOSITE SIDE OF THE OPENING AND DIVERT WATER FROM THE ROADWAY TO THE TRAP.

DEPARTMENT OF ENGINEERING & MAPPING/ENGINEERING DIVISION CITY OF HUNTSVILLE, TEXAS		CITY OF HUNTSVILLE STANDARD DETAILS STONE INLET SEDIMENT TRAP											
NAME: STONE INLET SEDIMENT TRAP CATEGORY: STORM WATER CONTROL DRAWN DATE: 11/22/2016 DRAWN BY: WLSIII SCALE: N.T.S. APPROVED BY: YSR	City Service Center 448 State Highway 75 Huntsville, TX 77320	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>REV#</th> <th>ISSUER</th> <th>DATE</th> <th>APPROVER</th> <th>SHEET</th> </tr> <tr> <td>0</td> <td>MAM</td> <td>08/10/2018</td> <td></td> <td>1 OF 1</td> </tr> </table>	REV#	ISSUER	DATE	APPROVER	SHEET	0	MAM	08/10/2018		1 OF 1	<b>SWC-35</b>
REV#	ISSUER	DATE	APPROVER	SHEET									
0	MAM	08/10/2018		1 OF 1									

### INLET PROTECTION BARRIER (FOR STAGE I INLETS) REINFORCED FILTER FABRIC BARRIER

**SECTION A-A**  
**PLAN**

**NOTES:**

- WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH STAPLES OR WITH WIRE TIES.
- FILTER FABRIC TO BE FASTENED SECURELY TO WOVEN WIRE FENCE, WITH TIES SPACED EVERY 24 INCHES AT TOP AND MIDSECTION.
- WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.
- IF HOT ROLLED STEEL POSTS ARE USED, MAXIMUM POST SPACING CAN BE 6 FEET.

DEPARTMENT OF ENGINEERING & MAPPING/ENGINEERING DIVISION CITY OF HUNTSVILLE, TEXAS		CITY OF HUNTSVILLE STANDARD DETAILS INLET PROTECTION BARRIERS FOR STAGE I INLETS											
NAME: INLET PROTECTION BARRIERS CATEGORY: STORM WATER CONTROL DRAWN DATE: 11/22/2016 DRAWN BY: WLSIII SCALE: N.T.S. APPROVED BY: YSR	City Service Center 448 State Highway 75 Huntsville, TX 77320	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>REV#</th> <th>ISSUER</th> <th>DATE</th> <th>APPROVER</th> <th>SHEET</th> </tr> <tr> <td>0</td> <td>MAM</td> <td>08/10/2018</td> <td></td> <td>1 OF 1</td> </tr> </table>	REV#	ISSUER	DATE	APPROVER	SHEET	0	MAM	08/10/2018		1 OF 1	<b>SWC-36</b>
REV#	ISSUER	DATE	APPROVER	SHEET									
0	MAM	08/10/2018		1 OF 1									

### INLET PROTECTION BARRIER (FOR STAGE II INLETS) BAGGED GRAVEL BARRIER

**NOTES:**

DEPARTMENT OF ENGINEERING & MAPPING/ENGINEERING DIVISION CITY OF HUNTSVILLE, TEXAS		CITY OF HUNTSVILLE STANDARD DETAILS INLET PROTECTION BARRIERS FOR STAGE II INLETS											
NAME: INLET PROTECTION BARRIERS II CATEGORY: STORM WATER CONTROL DRAWN DATE: 11/22/2016 DRAWN BY: WLSIII SCALE: N.T.S. APPROVED BY: YSR	City Service Center 448 State Highway 75 Huntsville, TX 77320	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>REV#</th> <th>ISSUER</th> <th>DATE</th> <th>APPROVER</th> <th>SHEET</th> </tr> <tr> <td>0</td> <td>MAM</td> <td>08/10/2018</td> <td></td> <td>1 OF 1</td> </tr> </table>	REV#	ISSUER	DATE	APPROVER	SHEET	0	MAM	08/10/2018		1 OF 1	<b>SWC-37</b>
REV#	ISSUER	DATE	APPROVER	SHEET									
0	MAM	08/10/2018		1 OF 1									

### STABILIZED CONSTRUCTION EXIT

**PROFILE**  
**PLAN VIEW**

**NOTES:**

- LENGTH SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS, BUT NOT LESS THAN 50 FEET.
- THICKNESS SHALL NOT BE LESS THAN 8 INCHES.
- WIDTH SHALL BE NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
- STABILIZATION FOR OTHER AREAS SHALL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTRUCTION EXIT, UNLESS OTHERWISE SHOWN ON THE CONSTRUCTION DRAWINGS.
- STABILIZED AREA MAY BE WIDENED OR LENGTHENED TO ACCOMMODATE A TRUCK WASHING AREA, WHEN SHOWN ON THE CONSTRUCTION PLANS. AN OUTLET SEDIMENT TRAP MUST BE PROVIDED FOR THE TRUCK WASHING AREA.

DEPARTMENT OF ENGINEERING & MAPPING/ENGINEERING DIVISION CITY OF HUNTSVILLE, TEXAS		CITY OF HUNTSVILLE STANDARD DETAILS STABILIZED CONSTRUCTION EXIT											
NAME: STABILIZED CONST EXIT CATEGORY: STORM WATER CONTROL DRAWN DATE: 11/22/2016 DRAWN BY: WLSIII SCALE: N.T.S. APPROVED BY: YSR	City Service Center 448 State Highway 75 Huntsville, TX 77320	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>REV#</th> <th>ISSUER</th> <th>DATE</th> <th>APPROVER</th> <th>SHEET</th> </tr> <tr> <td>0</td> <td>MAM</td> <td>08/10/2018</td> <td></td> <td>1 OF 1</td> </tr> </table>	REV#	ISSUER	DATE	APPROVER	SHEET	0	MAM	08/10/2018		1 OF 1	<b>SWC-38</b>
REV#	ISSUER	DATE	APPROVER	SHEET									
0	MAM	08/10/2018		1 OF 1									

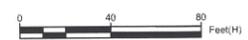
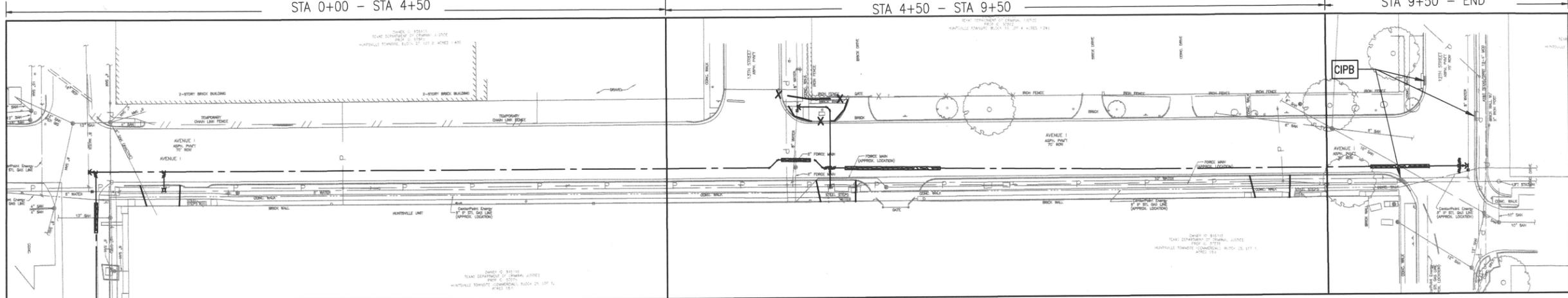
NO.	DATE	REVISION	APP.							
		AURORA TECHNICAL SERVICES, LLC 2121 SAGE ROAD, SUITE 150 HOUSTON, TX 77056 PHONE: 281-453-770 TX FIRM NO.: F-2059								
FY 2021/2022 WATERLINE REPLACEMENT PROJECT SWPPP DETAILS (SHEET 2 OF 2)										
SURVEYED BY: LANDTECH, INC.										
SHEET NO. <u>55</u> OF 62					DRAWING SCALE					
REVISION DATE: 2/8/2023										

BASELINE "AVE 1"

PLAN AND PROFILE SHEET 16  
STA 0+00 - STA 4+50

PLAN AND PROFILE SHEET 18  
STA 4+50 - STA 9+50

PLAN AND PROFILE SHEET 20  
STA 9+50 - END

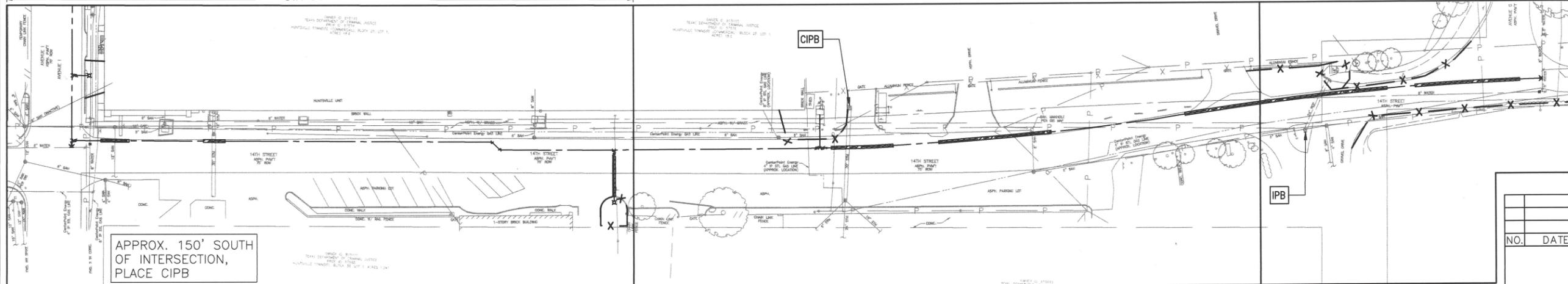


BASELINE "14TH STREET"

PLAN AND PROFILE SHEET 22  
STA 0+00 - STA 4+50

PLAN AND PROFILE SHEET 24  
STA 4+50 - STA 9+00

PLAN AND PROFILE SHEET 26  
STA 9+00 - END

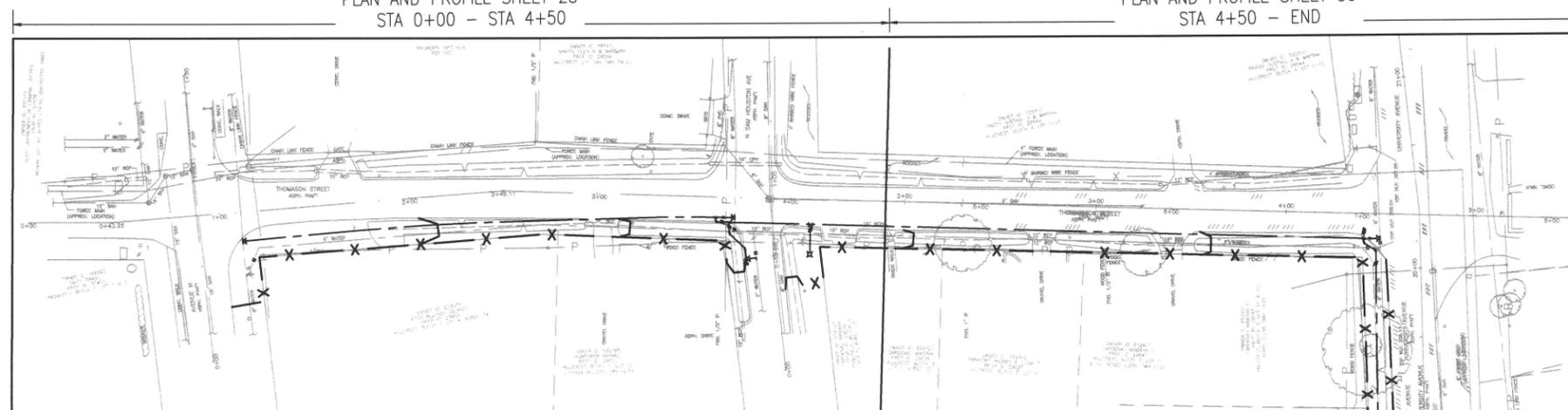


APPROX. 150' SOUTH  
OF INTERSECTION,  
PLACE CIPB

BASELINE "THOMASON ST"

PLAN AND PROFILE SHEET 28  
STA 0+00 - STA 4+50

PLAN AND PROFILE SHEET 30  
STA 4+50 - END



- LEGEND:**
- STABILIZED CONSTRUCTION ACCESS
  - REINFORCED FILTER FABRIC BARRIER
  - CURB INLET PROTECTION BARRIER
  - INLET PROTECTION BARRIER
  - STORM INLET SEDIMENT TRAPS
  - TUNNEL CONSTRUCTION

NO.	DATE	REVISION	APP.

**Aurora Technical Services, LLC**  
2121 SAGE ROAD, SUITE 150  
HOUSTON, TX 77056  
PHONE: 281-453-770  
TX FIRM NO.: F-2059

*Leo A. Bartos*  
02/10/2023

**FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
STORM WATER POLLUTION PREVENTION PLAN  
(SHEET 1 OF 3)**

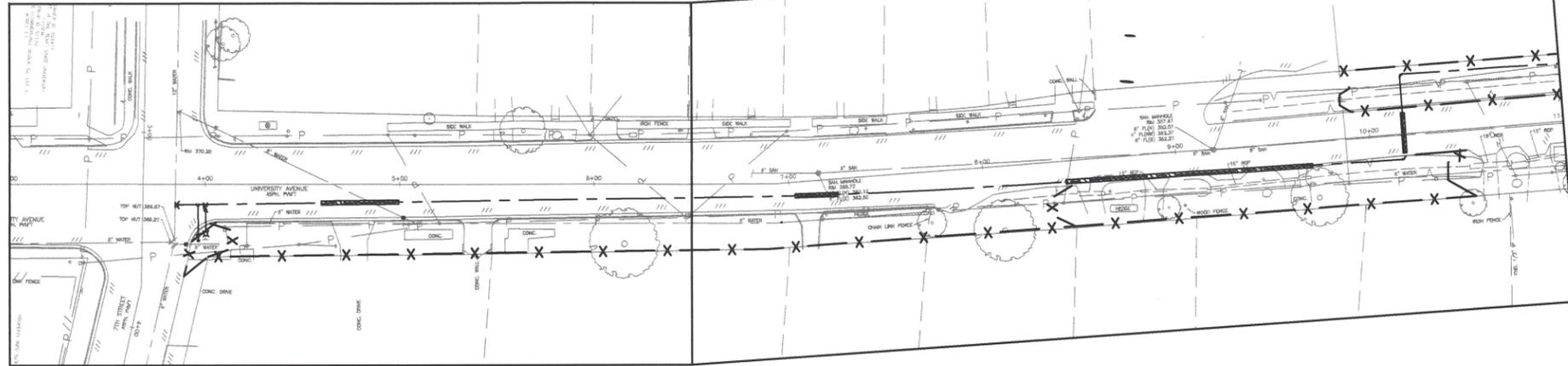
SURVEYED BY: LANDTECH, INC.	SCALE: 1"=40'
SHEET NO. <u>56</u> OF 62	DRAWING SCALE

LAST MODIFIED: Feb 08, 2023 - 9:13am BY USER: Jush06  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
 DWG. NAME: SWPPP layouts.dwg

BASELINE "UNIVERSITY AVE"

PLAN AND PROFILE SHEET 34  
STA 6+50 - STA 11+00

PLAN AND PROFILE SHEET 32  
BEGIN - STA 6+50



LEGEND:

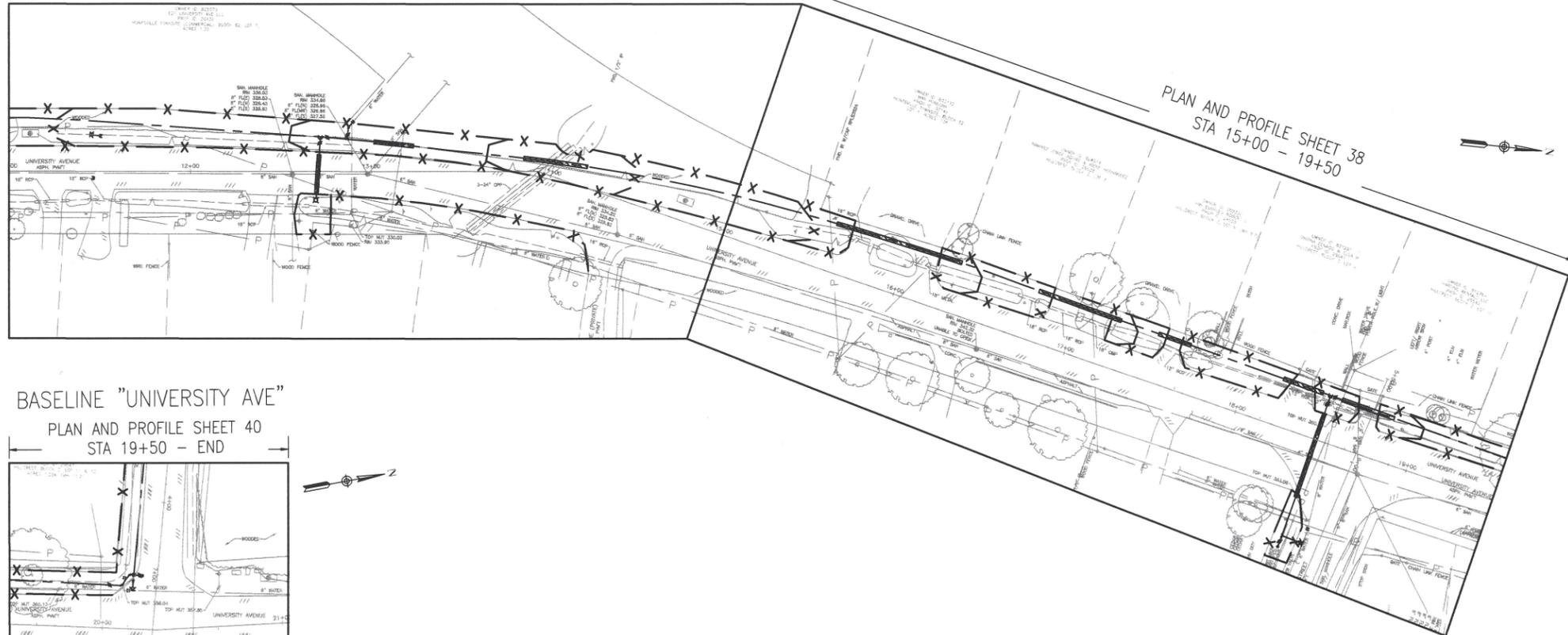
- STABILIZED CONSTRUCTION ACCESS
- REINFORCED FILTER FABRIC BARRIER
- CURB INLET PROTECTION BARRIER
- INLET PROTECTION BARRIER
- STORM INLET SEDIMENT TRAPS
- TUNNEL CONSTRUCTION



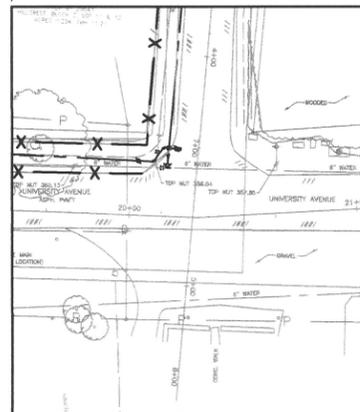
PLAN AND PROFILE SHEET 36  
STA 11+00 - STA 15+00

BASELINE "UNIVERSITY AVE"

PLAN AND PROFILE SHEET 38  
STA 15+00 - 19+50



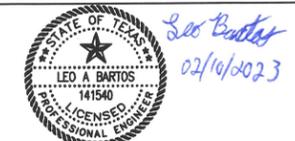
BASELINE "UNIVERSITY AVE"  
PLAN AND PROFILE SHEET 40  
STA 19+50 - END



NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
2121 SAGE ROAD, SUITE 150  
HOUSTON, TX 77056  
PHONE: 281-453-770  
TX FIRM NO.: F-2059



FY 2021/2022 WATERLINE  
REPLACEMENT PROJECT  
STORM WATER POLLUTION  
PREVENTION PLAN  
(SHEET 2 OF 3)

SURVEYED BY:  
LANDTECH, INC. SCALE: 1"=40'

SHEET NO. 57 OF 62 DRAWING SCALE

REVISION DATE: 2/8/2023

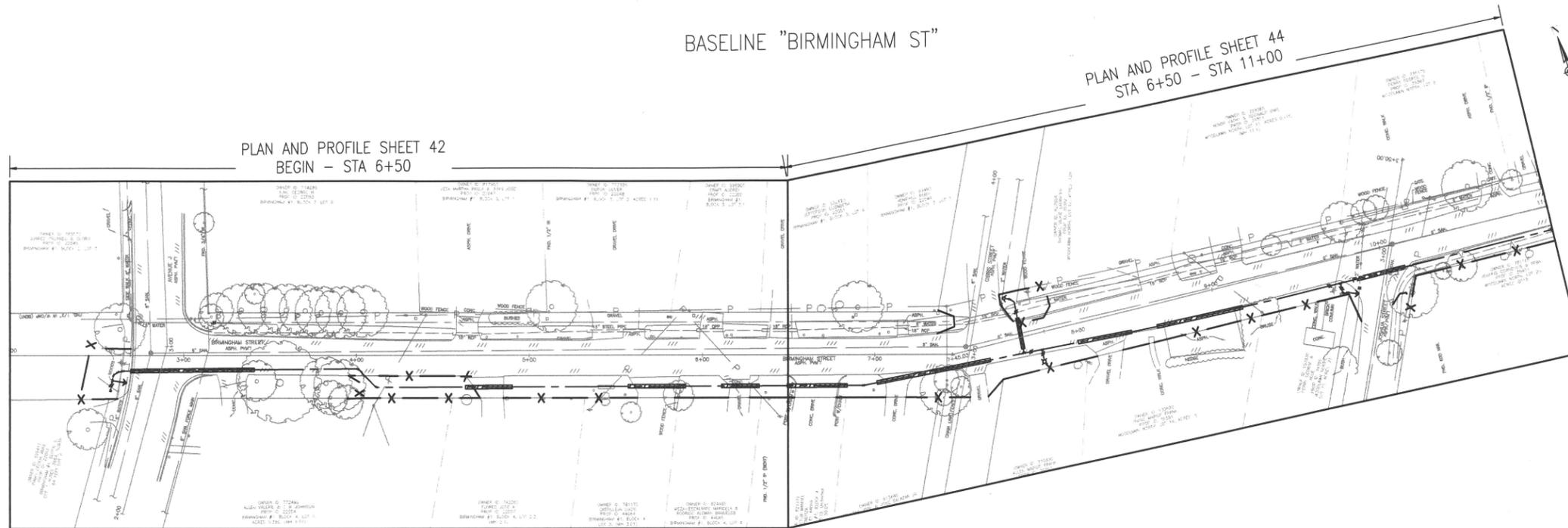
LAST MODIFIED: Feb 08, 2023 - 9:13am BY USER: Jush06  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
 DWG. NAME: SWPPP layouts.dwg

LAST MODIFIED: Feb 08, 2023 - 9:14am BY USER: jush06  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\Sheet Set\  
 DWG. NAME: SWPPP layouts.dwg

BASELINE "BIRMINGHAM ST"

PLAN AND PROFILE SHEET 44  
 STA 6+50 - STA 11+00

PLAN AND PROFILE SHEET 42  
 BEGIN - STA 6+50

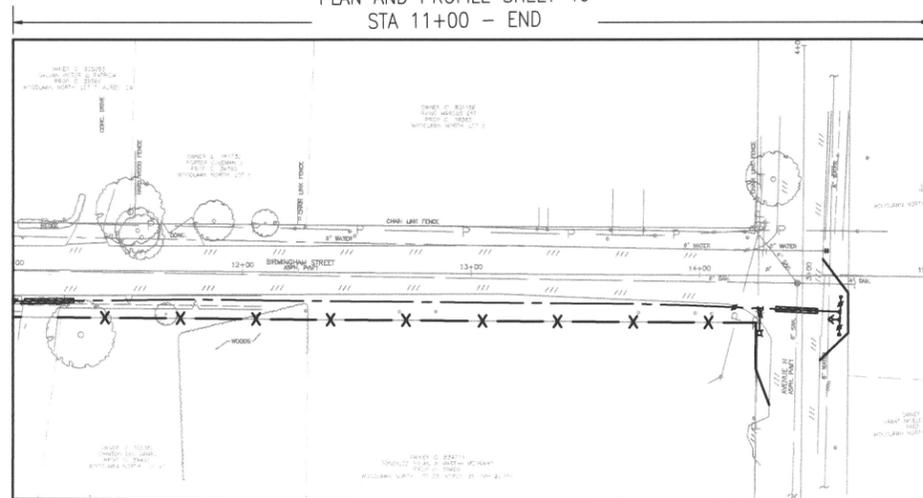


- LEGEND:**
- STABILIZED CONSTRUCTION ACCESS
  - REINFORCED FILTER FABRIC BARRIER
  - CURB INLET PROTECTION BARRIER
  - INLET PROTECTION BARRIER
  - STORM INLET SEDIMENT TRAPS
  - TUNNEL CONSTRUCTION



BASELINE "BIRMINGHAM ST"

PLAN AND PROFILE SHEET 46  
 STA 11+00 - END



NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059



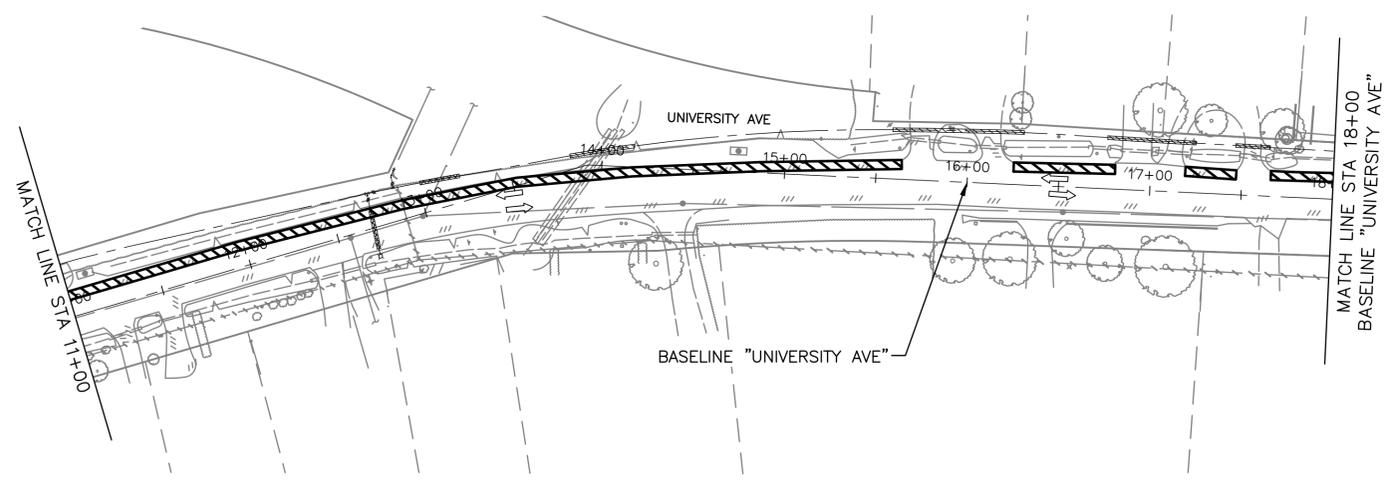
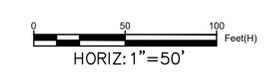
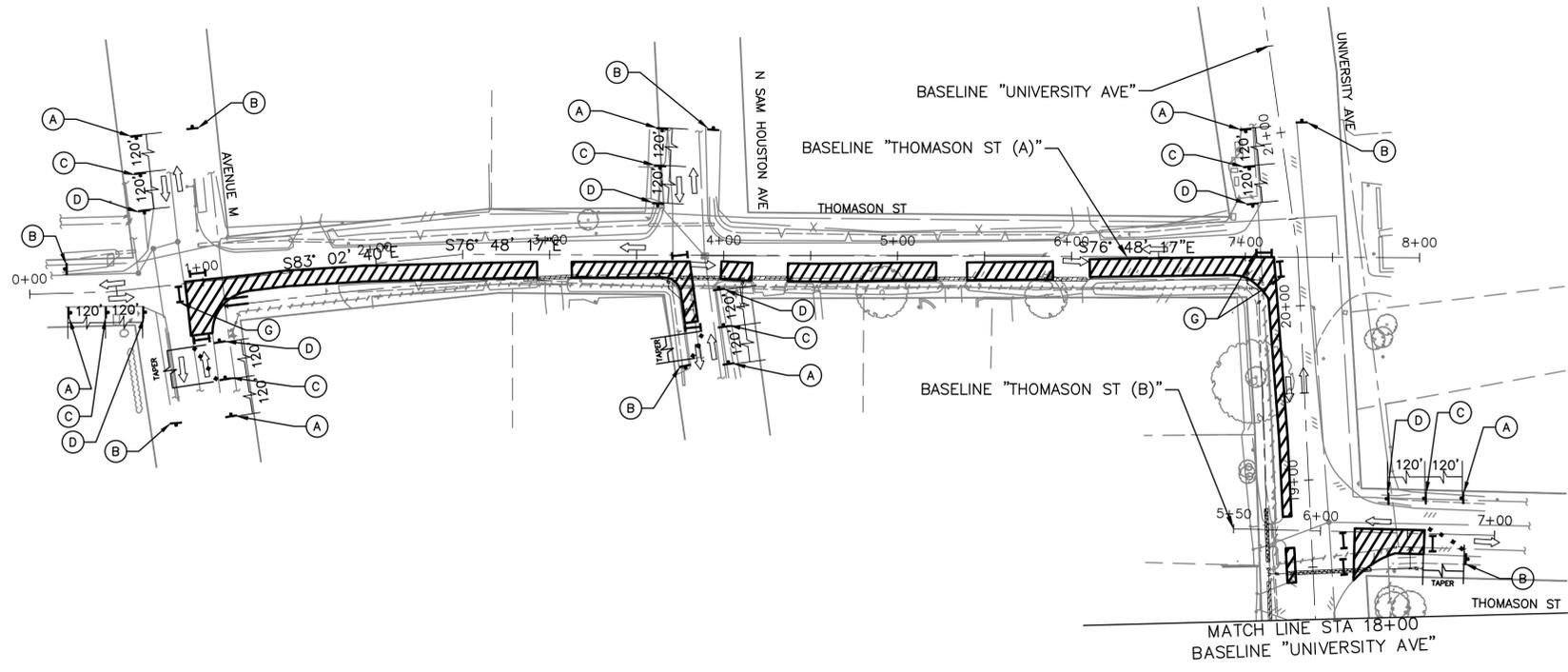
*Led A. Bartos*  
 02/10/2023

Aurora Technical Services, LLC  
 Texas Registered Engineering Firm  
 F-2059

FY 2021/2022 WATERLINE  
 REPLACEMENT PROJECT  
 STORM WATER POLLUTION  
 PREVENTION PLAN  
 (SHEET 3 OF 3)

SURVEYED BY: LANDTECH, INC.	SCALE: 1"=40'
SHEET NO. <u>58</u> OF 62	DRAWING SCALE

REVISION DATE: 2/8/2023



THOMASON ST	30 MPH
STREET NAME	SPEED LIMIT
UNIVERSITY AVE	30 MPH
STREET NAME	SPEED LIMIT

- LEGEND:**
- FLAGGER
  - CHANNELIZING DEVICES
  - TYPE III BARRICADE
  - PROP SIGN
  - EXIST DIRECTION OF TRAFFIC
  - CONSTRUCTION WORK ZONE

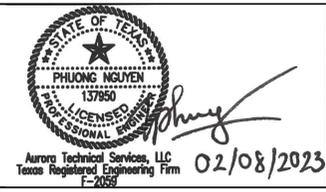
(A)  ROAD WORK AHEAD CW20-1D 48"X48"	(B)  END ROAD WORK C20-2 48"X24"	(G)  ROAD CLOSED TYPE III BARRICADES MOUNTED WITH R11-2 48" X 18"
(C)  BE PREPARED TO STOP CW3-4 48"X48"	(D)  CW20-7 48" X 48"	

- NOTES:**
1. CONTRACTOR TO WORK DAYTIME, PLATE-COVER AT NIGHT.
  2. CONSTRUCTION SHALL BE DONE WAS A ROLLING CONSTRUCTION NOT TO EXCEED 200-FT AT A TIME
  3. FOR TYPICAL ONE LANE CLOSURE, SEE HC STANDARD TCP-12.
  4. CONTRACTOR SHALL PROVIDE CONTINUED ACCESS TO DRIVEWAYS. PHASE CONSTRUCTION AS NEEDED TO COMPLY WITH THIS REQUIREMENT.
  5. CONTRACTOR TO MAINTAIN DRAINAGE DURING CONSTRUCTION. CONTRACTOR SHALL RESTORE TO EXISTING CONDITIONS OR BETTER AS APPROVED BY PROJECT MANAGER.
  6. SEE WATERLINE PLAN & PROFILE FOR PAVEMENT RECONSTRUCTION LIMITS

NO.	DATE	REVISION	APP.



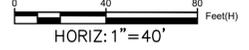
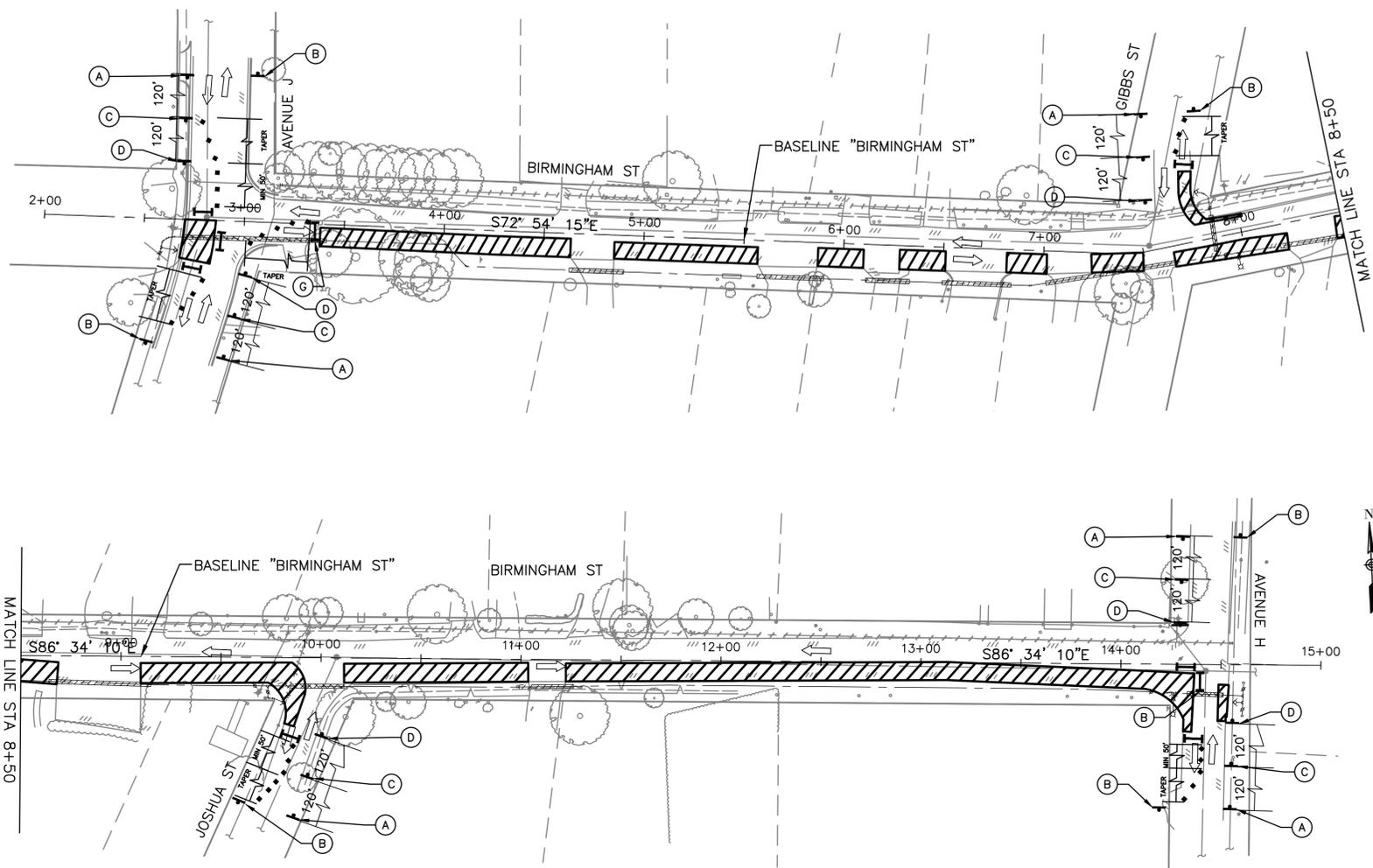
**Aurora Technical Services, LLC**  
 engineering • construction management  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059



FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 TRAFFIC CONTROL PLAN  
 (SHEET 1 OF 4 )

SURVEYED BY: LANDTECH, INC.	
SHEET NO. <u>59</u> OF 62	DRAWING SCALE
REVISION DATE: 2/1/2023	

LAST MODIFIED: Feb 07, 2023 - 4:26pm BY USER: esanchez23  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\TCP\  
 DWG. NAME: TCP.dwg



**LEGEND:**

- FLAGGER
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- PROP SIGN
- EXIST DIRECTION OF TRAFFIC
- CONSTRUCTION WORK ZONE

BIRMINGHAM ST 30 MPH  
STREET NAME SPEED LIMIT

<p>(A)</p> <p>ROAD WORK AHEAD</p> <p>CW20-1D 48"X48"</p>	<p>(B)</p> <p>END ROAD WORK</p> <p>C20-2 48"X24"</p>	<p>(G)</p> <p>ROAD CLOSED</p> <p>TYPE III BARRICADES MOUNTED WITH R11-2 48" X 18"</p>
<p>(C)</p> <p>BE PREPARED TO STOP</p> <p>CW3-4 48"X48"</p>	<p>(D)</p> <p>WORKER</p> <p>CW20-7 48" X 48"</p>	

**NOTES:**

1. CONTRACTOR TO WORK DAYTIME, PLATE-COVER AT NIGHT.
2. CONSTRUCTION SHALL BE DONE WAS A ROLLING CONSTRUCTION NOT TO EXCEED 200-FT AT A TIME
3. FOR TYPICAL ONE LANE CLOSURE, SEE HC STANDARD TCP-12.
4. CONTRACTOR SHALL PROVIDE CONTINUED ACCESS TO DRIVEWAYS. PHASE CONSTRUCTION AS NEEDED TO COMPLY WITH THIS REQUIREMENT.
5. CONTRACTOR TO MAINTAIN DRAINAGE DURING CONSTRUCTION. CONTRACTOR SHALL RESTORE TO EXISTING CONDITIONS OR BETTER AS APPROVED BY PROJECT MANAGER.
6. SEE WATERLINE PLAN & PROFILE FOR PAVEMENT RECONSTRUCTION LIMITS

NO.	DATE	REVISION	APP.



**Aurora Technical Services, LLC**  
 engineering • construction management  
 AURORA TECHNICAL SERVICES, LLC  
 2121 SAGE ROAD, SUITE 150  
 HOUSTON, TX 77056  
 PHONE: 281-453-770  
 TX FIRM NO.: F-2059



Aurora Technical Services, LLC  
 Texas Registered Engineering Firm  
 F-2059  
 02/08/2023

FY 2021/2022 WATERLINE REPLACEMENT PROJECT  
 TRAFFIC CONTROL PLAN  
 (SHEET 2 OF 4 )

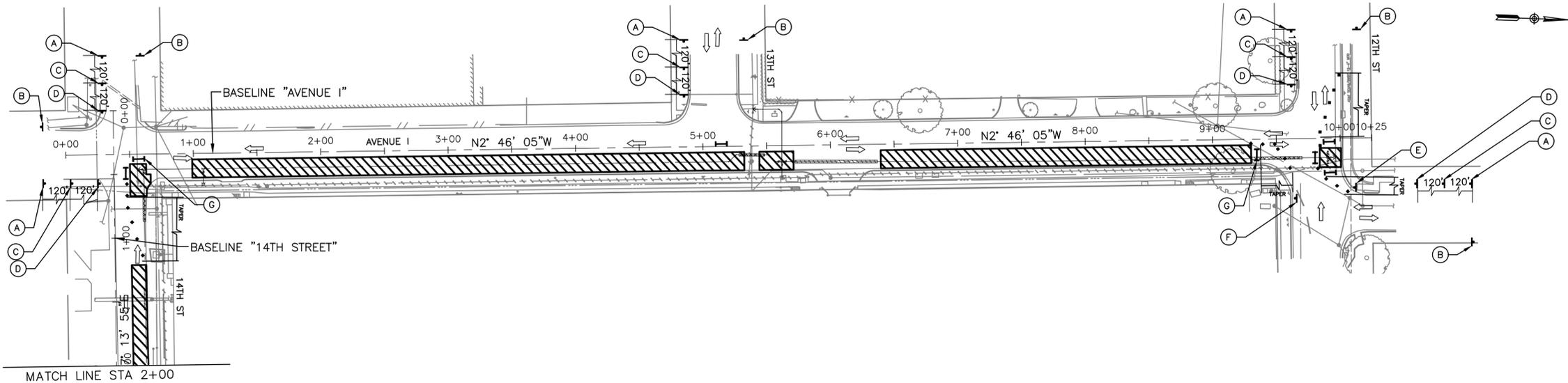
SURVEYED BY:  
 LANDTECH, INC.

SHEET NO. 60 OF 62

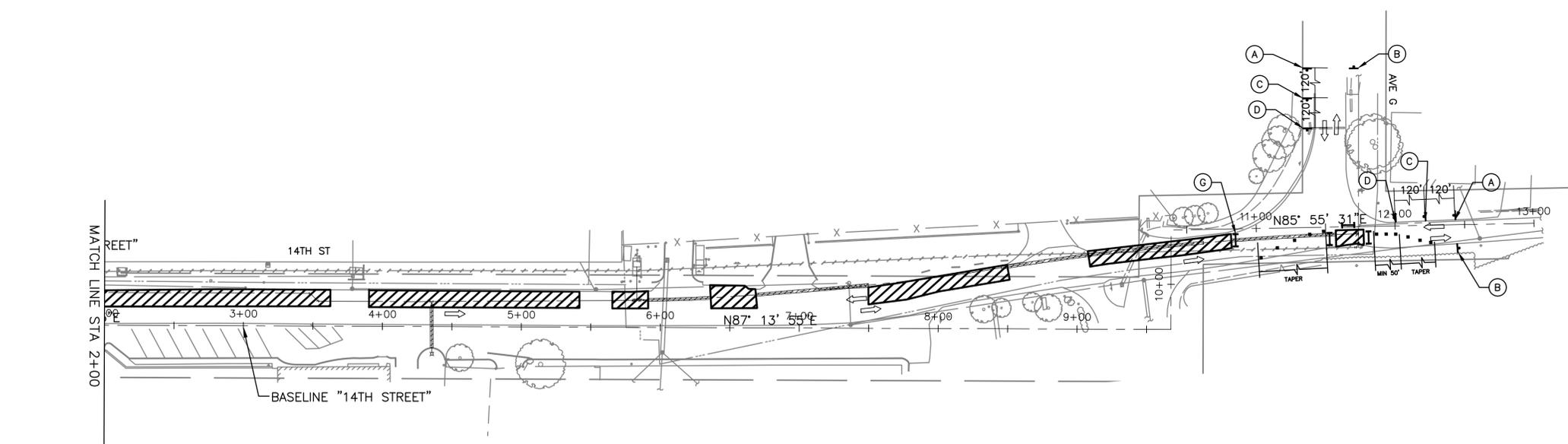
DRAWING SCALE

REVISION DATE: 2/1/2023

LAST MODIFIED: Feb 07, 2023 - 4:26pm BY USER: esanchez23  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\TCP\  
 DWG. NAME: TCP.dwg



- NOTES:**
1. CONTRACTOR TO WORK DAYTIME, PLATE-COVER AT NIGHT.
  2. CONSTRUCTION SHALL BE DONE WAS A ROLLING CONSTRUCTION NOT TO EXCEED 200-FT AT A TIME
  3. FOR TYPICAL ONE LANE CLOSURE, SEE HC STANDARD TCP-12.
  4. CONTRACTOR SHALL PROVIDE CONTINUED ACCESS TO DRIVEWAYS. PHASE CONSTRUCTION AS NEEDED TO COMPLY WITH THIS REQUIREMENT.
  5. CONTRACTOR TO MAINTAIN DRAINAGE DURING CONSTRUCTION. CONTRACTOR SHALL RESTORE TO EXISTING CONDITIONS OR BETTER AS APPROVED BY PROJECT MANAGER.
  6. SEE WATERLINE PLAN & PROFILE FOR PAVEMENT RECONSTRUCTION LIMITS



- LEGEND:**
- FLAGGER
  - CHANNELIZING DEVICES
  - TYPE III BARRICADE
  - PROP SIGN
  - EXIST DIRECTION OF TRAFFIC
  - CONSTRUCTION WORK ZONE

14TH ST	30 MPH
STREET MAME	SPEED LIMIT
AVE I	30 MPH
STREET MAME	SPEED LIMIT

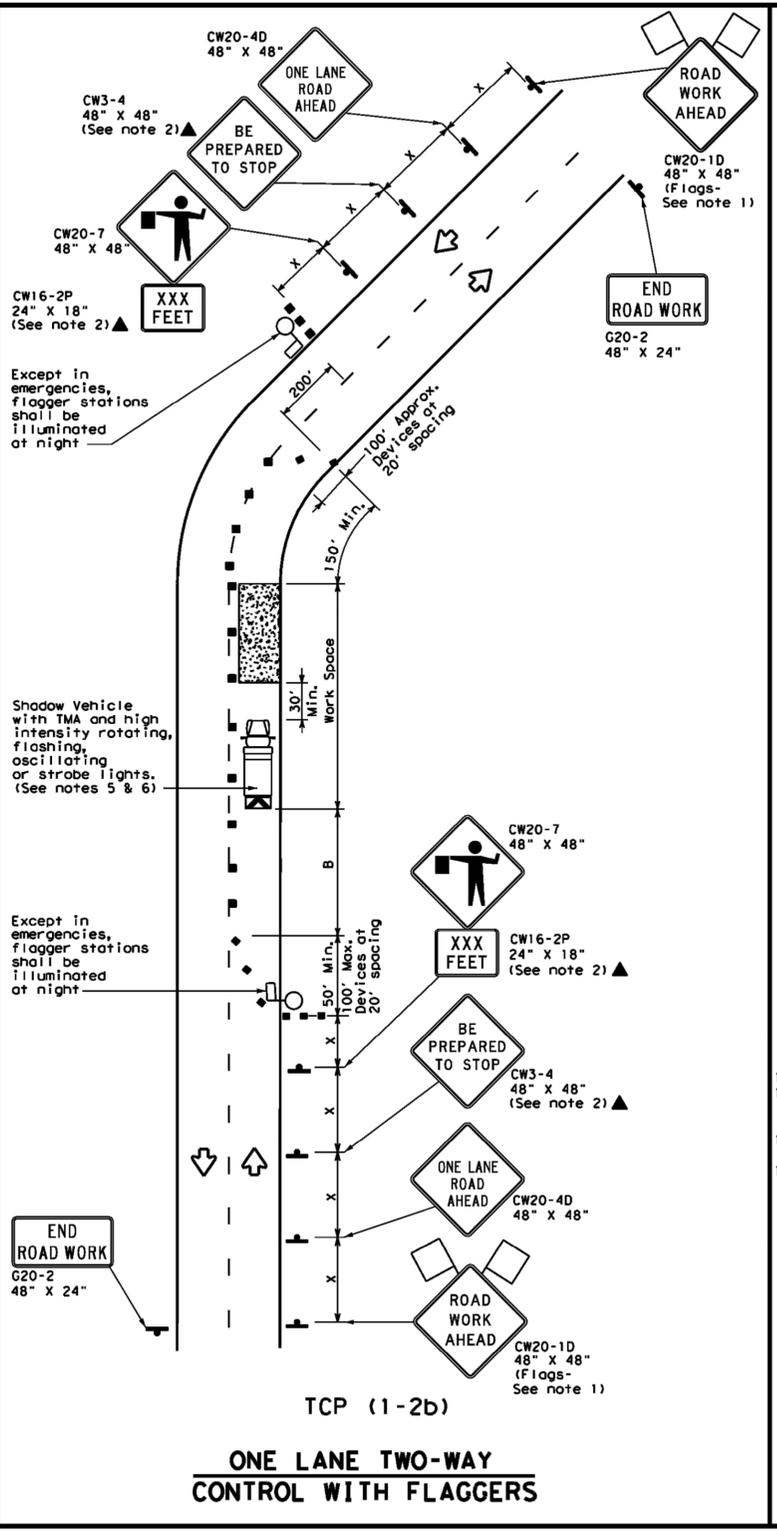
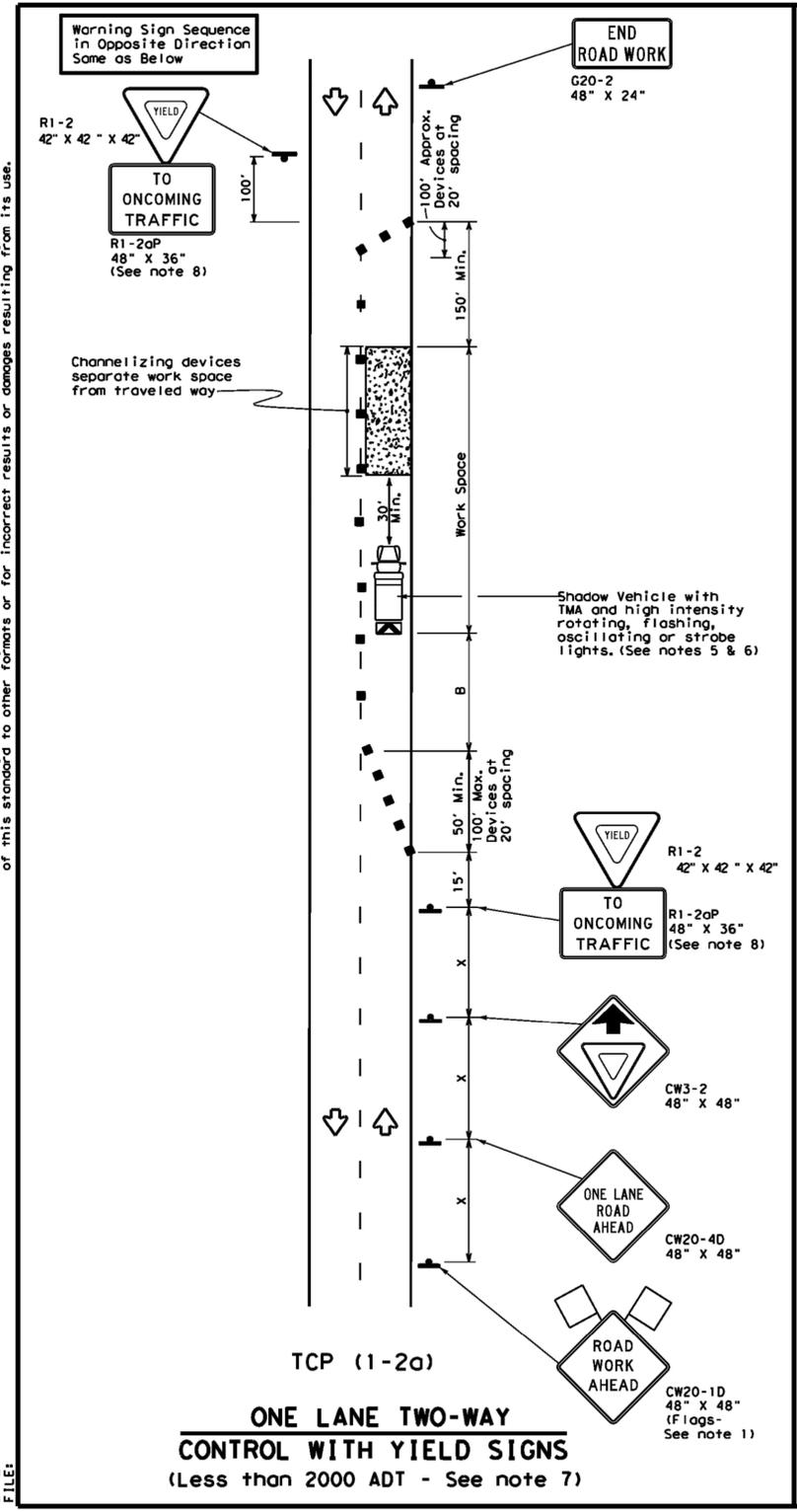
(A) ROAD WORK AHEAD CW21-7D 36" X 36"	(B) END UTILITY WORK SPECIAL SIGN 36" X 18"	(E) DETOUR M4-9bL 30" X 24"	(G) ROAD CLOSED TYPE III BARRICADES MOUNTED WITH R11-2 48" X 18"
(C) BE PREPARED TO STOP CW20-7D 36" X 36"	(D) NO PEDESTRIAN CROSSING CW20-7a 36" X 36"	(F) NO PEDESTRIAN CROSSING R9-3a 12" X 18"	

NO.	DATE	REVISION	APP.
		AURORA TECHNICAL SERVICES, LLC 2121 SAGE ROAD, SUITE 150 HOUSTON, TX 77056 PHONE: 281-453-770 TX FIRM NO.: F-2059	
<b>FY 2021/2022 WATERLINE REPLACEMENT PROJECT</b> <b>TRAFFIC CONTROL PLAN</b> <b>(SHEET 3 OF 4)</b>			
SURVEYED BY: LANDTECH, INC.			
SHEET NO. <u>61</u> OF 62		DRAWING SCALE	
REVISION DATE: 2/1/2023			

LAST MODIFIED: Feb 07, 2023 - 4:26pm BY USER: esanchez23  
 DWG. LOCATION: K:\City of Huntsville\4-0 Production\4-1 Drawings\TCP\  
 DWG. NAME: TCP.dwg

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by the Board of Professional Engineers, Architects, Surveyors and Constructors, or by any other entity, for the results of any construction or other work resulting from its use.

DATE: \_\_\_\_\_  
 FILE: \_\_\_\_\_



**LEGEND**

	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "x" Distance	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent			
30	L = WS <sup>2</sup> / 60	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L = WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60	L = WS	600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75	L = WS	750'	825'	900'	75'	150'	900'	540'	820'
80		800'	880'	960'	80'	160'	1000'	610'	900'

\* Conventional Roads Only  
 \*\* Taper lengths have been rounded off.  
 L=Length of Taper (FT) W=Width of Offset (FT) S=Posted Speed (MPH)

**TYPICAL USAGE**

	MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
		✓	✓		

- GENERAL NOTES**
- Flags attached to signs where shown are REQUIRED.
  - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
  - The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
  - Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet.
  - A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
  - Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
- TCP (1-2a)**
- R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work spaces should be no longer than one half city block. In rural areas on roadways with less than 2000 ADT, work spaces should be no longer than 400 feet.
  - R1-2 "YIELD" sign with R1-2aP "TO ONCOMING TRAFFIC" plaque shall be placed on a support at a 7 foot minimum mounting height.
- TCP (1-2b)**
- Flaggers should use two-way radios or other methods of communication to control traffic.
  - Length of work space should be based on the ability of flaggers to communicate.
  - If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
  - Channelizing devices on the center-line may be omitted when a pilot car is leading traffic and approved by the Engineer.
  - Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

Texas Department of Transportation  
 Traffic Operations Division Standard

**TRAFFIC CONTROL PLAN**  
**ONE-LANE TWO-WAY**  
**TRAFFIC CONTROL**

**TCP (1-2) - 18**

FILE: tcp1-2-18.dgn	DN:	CK:	DN:	CK:
© TxDOT December 1985	CONT:	SECT:	JOB:	HIGHWAY:
REVISIONS	DIST:	COUNTY:	SHEET NO.:	
4-90 4-98				
2-94 2-12				
1-97 2-18				

NO.	DATE	REVISION	APP.

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**TRAFFIC CONTROL PLAN**  
**STANDARD DETAIL**  
**(SHEET 4 OF 4)**

02/08/2023

FY 2021/2022 WATERLINE REPLACEMENT PROJECT

SURVEYED BY:  
 LANDTECH, INC.

SHEET NO. 62 OF 62  
 DRAWING SCALE

REVISION DATE: 2/1/2023