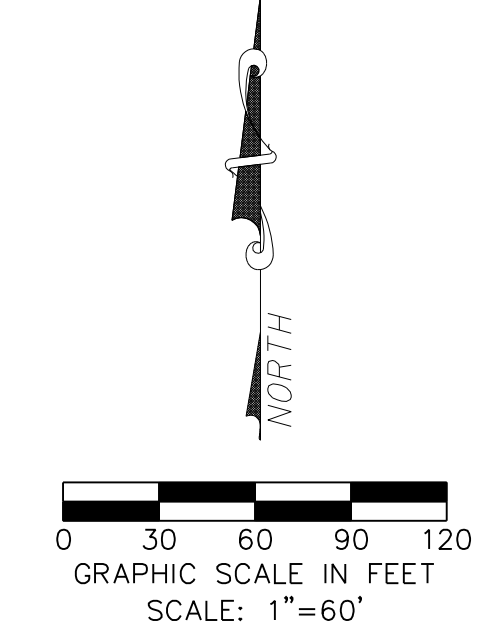


**DUCT BANK GENERAL AND ELECTRICAL NOTES**

- REFER TO CIVIL SHEET 3 GENERAL CONSTRUCTION NOTES, LEGEND AND ABBREVIATIONS FOR THE GENERAL CONSTRUCTION NOTES FOR THIS PROJECT.
- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MANHOLE AND DUCT STRUCTURE FACILITIES AS ESTABLISHED BY ONCOR ELECTRIC DELIVERY, LATEST EDITION, AND ANY AND ALL APPLICABLE SPECIFICATIONS AND REQUIREMENTS BY THE TOWN OF ADDISON. ONCOR SPECIFICATIONS INCLUDE THE FOLLOWING: DDS4 "SPECIFICATIONS FOR ELECTRICAL UNDERGROUND DISTRIBUTION SYSTEMS FROM PADMOUNTED TRANSFORMATION SECONDARY SERVICE ACCOUNTS", MMD5 "SPECIFICATIONS FOR MANHOLE AND DUCT STRUCTURE FACILITIES", AND ONCOR UNDERGROUND DISTRIBUTION CONSTRUCTION STANDARD DRAWINGS 205-465, 205-470, 205-475, 205-480, 205-485, AND 205-490. THE ONCOR STANDARD DRAWINGS SHALL TAKE PRECEDENCE OVER THE OMISSION OF OR CONFLICT WITH INFORMATION IN THE DDS-4 OR MMD-5 SHEETS.
- PRIOR TO COMMENCING CONSTRUCTION, THE TOWN OF ADDISON, THE CONSULTING ENGINEERS, THE SUCCESSFUL CONTRACTOR, UTILITY COMPANIES, AND ANY OTHER AFFECTED PARTIES SHALL CONVEY FOR A PRE-CONSTRUCTION CONFERENCE AT LEAST 48 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION. THE APPLICABLE ONCOR STANDARD DRAWINGS, MMD-5 SHEETS, AND DDS-4 SHEETS SHALL BE PROVIDED TO THE CONTRACTOR AT THE PRE-CONSTRUCTION CONFERENCE BY THE ONCOR REPRESENTATIVE.
- THE CONTRACTOR SHALL OBTAIN A RIGHT-OF-WAY PERMIT FROM THE TOWN OF ADDISON PRIOR TO WORKING WITHIN THE PUBLIC RIGHT-OF-WAY.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT ANY PUBLIC UTILITY COMPANIES FOR LOCATION OF EXISTING FACILITIES IN OR NEAR THE WORK AREAS. THESE INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:
  - TOWN OF ADDISON WATER, SEWER, SIGNALS
  - AT&T (SOUTHWESTERN BELL)
  - ATMOS ENERGY (GAS)
  - VERIZON / MCI
  - TIME-WARNER CABLE
- THE CONTRACTOR SHALL PROVIDE SUBMITTALS TO THE ENGINEER (SIX SETS EACH), FOR APPROVAL OF ALL MATERIALS TO BE ADDED TO THE PUBLIC INFRASTRUCTURE, PRIOR TO INCORPORATING MATERIALS INTO THE JOB.
- THE CONTRACTOR SHALL PROVIDE A MAINTENANCE BOND FOR PUBLIC INFRASTRUCTURE WORK IN THE FOLLOWING AMOUNTS:
  - 100% FOR VALUATIONS LESS THAN OR EQUAL TO \$5,000
  - \$5,000 FOR VALUATION GREATER THAN \$5,000, AND LESS THAN \$50,000
  - 10% FOR VALUATIONS GREATER THAN \$50,000
 BONDS SHALL BE FOR A PERIOD OF TWO YEARS BEGINNING WITH THE DATE OF FINAL ACCEPTANCE BY THE TOWN.
- THE CONTRACTOR SHALL FULLY COMPLY WITH, AND SUPPLEMENT AS NECESSARY, THE CONDITIONS OF THE STORM WATER POLLUTION PREVENTION PLAN WHILE CONDUCTING HIS ACTIVITIES ON THIS PROJECT.
- THE TOWN OF ADDISON PUBLIC WORKS DEPARTMENT WILL APPROVE AND/OR DETERMINE THE TRAFFIC CONTROL PLAN AND WORKING HOURS. CONTACT THE ASSISTANT CITY ENGINEER AT (972) 450-2857 OR THE PUBLIC WORKS INSPECTOR AT (972) 450-2871.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO IMPLEMENT, AND SUPPLEMENT AS NECESSARY, THE TRAFFIC CONTROL MEASURES ON THIS PROJECT, INCLUDING PROVIDING ADEQUATE FLAGMEN, SIGNAGE, STRIPINGS AND WARNING DEVICES, ETC. DURING CONSTRUCTION IN ACCORDANCE WITH THE TEXAS MANUAL OF UNIFORM CONTROL DEVICES. THE CONTRACTOR SHALL MAINTAIN AT LEAST ONE LANE OF TRAFFIC IN EACH DIRECTION DURING WORKING HOURS OR PROVIDE AN ALL-WEATHER DETOUR AROUND THE CONSTRUCTION SITE, INCLUDING PUBLIC NOTIFICATION AND SIGNING.
- TEMPORARY OR PERMANENT BARRICADES SHALL REMAIN AT ALL POINTS OF INGRESS OR EGRESS TO PREVENT PUBLIC USE UNTIL THE WORK RECEIVES FINAL ACCEPTANCE.
- THE CONTRACTOR SHALL COVER ALL OPEN EXCAVATIONS WITH ANCHORED STEEL PLATING, DURING NON-WORKING HOURS, ALONG EXISTING ROADWAYS AND TRAFFIC AREAS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ADEQUATE DRAINAGE AT ALL TIMES DURING CONSTRUCTION, INCLUDING PROVIDING ALL TEMPORARY STRUCTURES OR IMPROVEMENTS AS NECESSARY FOR THE SAFETY OF THE PUBLIC.
- THE TOWN OF ADDISON WILL PROVIDE A GEOTECHNICAL LABORATORY TO PERFORM APPROPRIATE TESTING DURING CONSTRUCTION ACTIVITIES. ANY TEST THAT FAILS TO MEET ONCOR AND/OR TOWN OF ADDISON REQUIREMENTS SHALL BE RETESTED AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS FOR THE SUPPORT AND PROTECTION OF ALL UTILITY POLES, FENCES, TREES, SHRUBS, UTILITY SERVICES, BUILDING FOUNDATIONS AND ALL OTHER UTILITIES AND STRUCTURES BOTH ABOVE AND BELOW THE GROUND, THE COST OF WHICH SHALL BE INCLUDED IN THE CONTRACT AMOUNT.
- ALL APPLICABLE CODES AND ORDINANCES SHALL BE FOLLOWED IN THE DESIGN AND CONSTRUCTION OF THE MANHOLE AND CONDUIT LINE SYSTEM. INCLUDED, BUT NOT LIMITED TO, ARE THE FOLLOWING:
  - A. LOCAL TOWN OF ADDISON BUILDING CODES
  - B. THE NATIONAL ELECTRIC SAFETY CODE (NEC)
  - C. THE CONTRACTOR SHALL BE FAMILIAR WITH AND SHALL COMPLY WITH ALL APPLICABLE REQUIREMENTS OF THESE SPECIFICATIONS AND WITH OSHA REQUIREMENTS. IF THERE ARE ANY CONFLICTS OR OMISSIONS, THE OSHA REQUIREMENTS SHALL BE MET. ANY CONFLICT OR OMISSION SHALL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY OF COMPLYING WITH OSHA REQUIREMENTS.
  - D. LOCAL TOWN OF ADDISON LOCATION AND COORDINATION POLICY (IF APPLICABLE).
  - E. THE AMERICAN CONCRETE INSTITUTE (ACI)
  - F. THE AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
  - G. TEXAS STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION - UTILITY ACCOMMODATION POLICY.
  - H. LOCAL, CITY, STATE AND FEDERAL ENVIRONMENTAL REGULATIONS.
- THE CONTRACTOR SHALL LOCATE AND PROTECT ALL EXISTING UTILITIES, WHETHER INDICATED ON THE DESIGN DRAWINGS OR DISCOVERED DURING THE WORK. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY ONCOR'S AUTHORIZED REPRESENTATIVE WHEN ANY UTILITY IS PREVIOUSLY INDICATED OR INACCURATELY INDICATED ON THE DESIGN DRAWING IS DISCOVERED.
- THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND IMPLEMENTING A TRENCH SAFETY PROGRAM. THREE COPIES OF A TRENCH SAFETY SPECIFICATION (PREPARED AND CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS) SHALL BE SUPPLIED TO ONCOR ELECTRIC DELIVERY BEFORE CONSTRUCTION BEGINS.
- THE CONTRACTOR SHALL SUPPLY ALL MATERIALS FOR THIS JOB INCLUDING MANHOLES, NECKS, FRAMES AND COVERS, CON-SEAL, GROUND RODS, PVC CONDUIT, PVC BENDS, PVC COUPLINGS, TIE-WRAPPS, CONDUIT SPACERS, PVC ADHESIVE, CONCRETE, SELECT BACKFILL, PULL BODIES, PRE-CAST SWITCHGEAR PADS, ELECTRONIC CABLE MARKERS, MANHOLE LADDER RUNGS, ETC. PER ONCOR ELECTRIC DELIVERY SPECIFICATIONS UNLESS OTHERWISE SPECIFIED, IN WRITING.
- CONCRETE ENCASED DUCT STRUCTURE INSTALLATION SHALL BE PERFORMED AS FOLLOWS:
  - ALL CONDUITS SHALL BE CONCRETE ENCASED WITH A MINIMUM OF 3" OF CONCRETE. THE TOP CONDUITS OF ANY DUCT STRUCTURE SHALL HAVE A 3" OR 6" MINIMUM COVER DEPENDING ON LOCATION SITE. REFER TO CONSTRUCTION DRAWINGS FOR DUCT SECTION. ALL CONCRETE ENCASEMENT SHALL HAVE A PATTERN FINISH.
  - CONCRETE SHOULD BE 3 SACK PORTLAND TYPE 1 CEMENT, 1/2" MAXIMUM SIZE AGGREGATE AND 300 PSI AT 28 DAYS. THE SLUMP OF THE CONCRETE MAY BE INCREASED BY THE CONTRACTOR, WITH THE APPROVAL BY THE ONCOR INSPECTOR, IN ORDER TO FACILITATE A WETTER MIX TO INSURE TOTAL ENCASEMENT OF THE DUCT. HOWEVER, THE SLUMP SHOULD NOT BE INCREASED TO THE POINT WHERE THE ULTIMATE YIELD STRENGTH OF THE CONCRETE IS JEOPARDIZED.
  - ALL CONCRETE SHALL BE INSTALLED BY THE USE OF A HOPPER, TRAMME CHUTE, OR OTHER TRUCK UNLESS OTHERWISE SPECIFIED BY ONCOR ELECTRIC DELIVERY INSPECTOR. AT NO TIME SHALL CONCRETE BE PLACED WITH A FRONT-END LOADER OR ANY OTHER SIMILAR TYPE OF MACHINERY.
  - THE DUCT LINE SHALL BE SECURED TO EARTH AT EACH SPACER LOCATION PRIOR TO POURING CONCRETE TO PREVENT FLOATING OR RACKING OF THE DUCT DURING PLACEMENT OF THE CONCRETE.
  - CONDUIT BENDS, ELBOWS AND COUPLINGS SHALL BE PVC CONDUIT, MINIMUM 6" TYPE DB, TC-6 DB-60/ASTM F-512, AND 90 DEGREES CENTIGRADE RATED OR GREATER UNLESS OTHERWISE SPECIFIED. ALL PVC 4" BENDS AND ELBOWS SHALL HAVE A 36" RADIUS.
  - SPACERS SHALL BE CARLON #288RLN (BASE) AND #289 RLN (INTERMEDIATE), SPACED AT 4 FOOT INTERVALS (MAX). SPACERS WILL BE REQUIRED AND TIED TOGETHER WITH NON-METALLIC TIE-WRAPPS. SPACERS SHALL ALSO BE USED TO "HOLD-DOWN" THE TOP ROW OF DUCTS.
  - FINISH BACKFILL SHOULD BE PLACED IN LEVEL, UNIFORM LIFTS, WITH EACH LIFT COMPACTED TO THE MINIMUM DRY DENSITY WITHIN THE COMPACTION SOIL MOISTURE RANGES RECOMMENDED. THE LOOSE LIFT THICKNESS SHOULD NOT EXCEED SIX (6) INCHES. EACH LAYER SHOULD BE PROPERLY PLACED, MIXED, SPREAD, AND COMPACTED TO BETWEEN NINETY-FIVE (95) AND ONE HUNDRED (100) PERCENT OF STANDARD PROCTOR DENSITY AT 0% TO 3% OF OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D 698.
  - WHEN COMPLETE, EACH CONDUIT INSTALLED WILL BE CHECKED BY PULLING BOTH A MANHOLE AND A SWAB THROUGH THE ENTIRE LENGTH OF CONDUIT.
  - DUCT SPACERS ARE TO PROVIDE 3 INCHES OF VERTICAL AND HORIZONTAL SEPARATION BETWEEN CONDUITS.
  - RED POWDER CONCRETE DYE IS TO BE PLACED ON THE DUCT ENCASEMENT CAP IMMEDIATELY AFTER THE CONCRETE POUR HAS TAKEN PLACE TO AID WITH FUTURE LOCATION OF PRIMARY DUCT.
  - CONDUITS FOR INCOMPLETE DUCT LINES (STUBS) ARE TO REMAIN EXPOSED FROM THE ENCASEMENT FOR FUTURE RETRIEVAL, BE CAPPED WATER TIGHT AND HAVE AN ELECTRONIC MARKER INSTALLED.
  - EACH CONDUIT OF AN ENCASED DUCT IS TO HAVE A 6000 POUND PULL TAPE INSTALLED FOR FUTURE CABLE PULLING.
- CONCRETE MANHOLE INSTALLATION SHALL BE PERFORMED AS FOLLOWS:
  - PRECAST TYPE, UNLESS OTHERWISE NOTED, SHOULD BE SUPPLIED BY BROOKS/OLD CASTLE (OR OTHER APPROVED SUPPLIER) AND BE OCTAGONAL SHAPE, 3-SECTIONS 15,000 LBS/SECTION UNLESS OTHERWISE SPECIFIED.
  - 6 INCHES MINIMUM PEA GRAVEL OF CUSHION SHOULD BE INSTALLED IN THE BOTTOM OF THE EXCAVATED AREA PRIOR TO THE MANHOLE INSTALLATION. SAND BASE MAY BE USED WITH PRIOR ONCOR APPROVAL.
  - SELECT BACKFILL SHOULD BE INSTALLED AROUND ALL MANHOLES AND COMPACTED TO 95% MINIMUM. FLOWABLE MATERIAL MAY BE USED AS SELECT BACKFILL WHEN REQUESTED.
  - CONTRACTOR SHALL INSTALL THE FRAME/COVER AND NECK. ONCOR ELECTRIC DELIVERY CONSTRUCTION PLANS SHOW THE APPROXIMATE ENTRANCE ELEVATION. HOWEVER, IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL THE NECESSARY AMOUNT OF NECK TO BRING THE TOP OF THE COVER 2" ABOVE FINISHED GRADE (OR FLUSH WITH STREET GRADE WHEN COVER IS IN STREET). SAW CUTTING OR GROUT-FILL MAY BE REQUIRED TO OBTAIN THE APPROPRIATE ENTRANCE ELEVATION.
  - THE CONTRACTOR SHALL SUPPLY FOUR (4) 8" X 58" COPPER CLAD GROUND ROD, WELD TYPE, IN EACH MANHOLE. GROUND ROD SHALL BE VERTICALLY DRIVEN INTO UNDISTURBED SOIL. IF ROCK IS ENCOUNTERED, GROUNDING SHALL BE AS DIRECTED BY ONCOR ELECTRIC DELIVERY INSPECTOR.
  - THE CONTRACTOR SHALL INSTALL A 4" X 5' X 6" CONCRETE PAD AROUND ALL MANHOLE ENTRANCES IN ALL NON-PAVED AREAS. SEE STANDARD DETAIL DRAWINGS FOR REINFORCED STEEL REQUIREMENTS.
  - ALL JOINTS BETWEEN MANHOLE SECTIONS SHALL BE MADE WATER TIGHT AT THE TIME OF INITIAL INSTALLATION.
  - DO NOT REMOVE THE "KNOCK OUT" MEMBRANES OF ANY UNUSED TERMINATOR POSITION. DUCT PLUGS SHOULD BE INSTALLED IN ALL CONDUITS THAT ARE UNOCCUPIED BY CABLE.
  - FINAL SLOPE OF TOP OF MANHOLE SHALL BE 2" MINIMUM TO DRAIN WATER FROM TOP OF MANHOLE.
  - ANY MANHOLE WITH GREATER THAN 4" NECK SHALL HAVE LADDER RUNGS FIELD INSTALLED PER ONCOR STANDARD DRAWING 205-480. OLD CASTLE IS AN APPROVED SUPPLIER OF LADDER RUNGS.
- THE ONCOR ELECTRIC DELIVERY INSPECTOR IS TO INSPECT ALL MANHOLE INSTALLATIONS PRIOR TO THE PLACING OF BACKFILL AND ALL CONDUIT INSTALLATIONS PRIOR TO THE PLACEMENT OF CONCRETE.
- THE CONTRACTOR SHALL SCHEDULE AND COORDINATE HIS WORK WITH TRENCHING OPERATIONS FOR OTHER UTILITIES INCLUDING GAS AND TELECOMMUNICATION SERVICES, LANDSCAPE IRRIGATION CONDUITS, LIGHTING CONDUITS, STREETSCAPE IMPROVEMENTS, ETC.
- CONCRETE SHALL NOT BE PLACED WHEN THE TEMPERATURE IS BELOW 40 DEGREES FAHRENHEIT AND FALLING, BUT MAY BE PLACED WHEN THE TEMPERATURE IS ABOVE 35 DEGREES FAHRENHEIT AND RISING. THE TEMPERATURE READING SHALL BE TAKEN IN THE SHADE AND AWAY FROM ARTIFICIAL HEAT.
- THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR REPAIRS TO ALL EXISTING FACILITIES DAMAGED BY HIS ACTIVITIES.
- THE CONTRACTOR SHALL VERIFY VERIFICATION OF COMPLETION AND COMPLIANCE OF ANY AND ALL REQUIRED TESTS TO THE SATISFACTION OF ONCOR ELECTRIC DELIVERY.
- THE CONTRACTOR SHALL CONTACT ONCOR ELECTRIC DELIVERY TO REQUEST A FINAL WALK-THROUGH INSPECTION OF THE ELECTRIC DUCT BANK INFRASTRUCTURE WORK.
- ANY ADJACENT PROPERTIES AFFECTED BY THE CONSTRUCTION SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITIONS, OR BETTER.
- ONCOR ELECTRIC DELIVERY INSPECTOR SHALL BE NOTIFIED A MINIMUM OF 2 HOURS PRIOR TO THE DELIVERY OF CONCRETE AND SHALL BE PRESENT DURING PLACEMENT.
- CONTRACTOR SHALL SUBMIT A WRITTEN REQUEST TO THE APPROPRIATE ONCOR ELECTRIC DELIVERY AUTHORIZED PERSONNEL PRIOR TO ANY MODIFICATION TO THE ORIGINAL DESIGN DRAWINGS THAT WILL CHANGE THE NUMBER OF BENDS OR ADD 10 PERCENT OR MORE TO THE OVERALL CONDUIT LENGTH FOUND ON THE ORIGINAL DESIGN PLAN. THIS WRITTEN REQUEST MUST BE PROVIDED PRIOR TO IMPLEMENTATION OF CHANGES.
- EQUIPMENT PADS SHALL BE INSTALLED PER DDS-4 SPECIFICATIONS. PIERS AND BEAMS ARE REQUIRED ON ALL EQUIPMENT PADS UNLESS WAIVED BY COMPANY INSPECTOR. IF REQUIRED, STABILIZATION METHODS WILL BE DETERMINED BY THE COMPANY INSPECTOR. THE DEPTH SHALL EXTEND TO ROCK OR A CHANGE IN SOIL CONDITIONS SUFFICIENT TO BEAR THE LOAD OF PAD AND TRANSFORMER TO PREVENT SETTLEMENT DUE TO UNDERCUTTING FOR CONDUIT BEND INSTALLATION OR WASHING DUE TO DRAINAGE.



NO.	REVISION	BY	DATE

**TOWN OF ADDISON**  
DALLAS COUNTY, TEXAS

**PAVING, DRAINAGE & UTILITY IMPROVEMENTS**  
BELLA LANE

**OVERALL DUCT BANK LAYOUT & NOTES**

**icon Consulting Engineers, Inc.** 250 W. Southlake Blvd., Suite 117  
Civil Engineers - Designers - Planners Southlake, TX 76092 (817) 552-6210

PROJECT	DESIGN	DRAWN	DATE	FILE	SHEET
5029-03	ICE	ICE	FEB 01, 2011	PW # 2010-08	35

RECORD DRAWINGS 06/13/12

PAVING, DRAINAGE, & UTILITY IMPROVEMENTS - BELLA LANE