

MISCELLANEOUS NOTES

- CONTRACTOR SHALL NOTIFY THE "UNDERGROUND UTILITY COORDINATION COMMITTEE" (TELEPHONE NO. 713-223-4567) 48 HOURS BEFORE STARTING WORK IN STREET RIGHTS-OF-WAY OR EASEMENTS.
- CONTRACTOR SHALL VERIFY THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION AND SHALL REPORT DISCREPANCIES TO THE ENGINEER IMMEDIATELY.
- LOCATIONS OF EXISTING UTILITIES FOR WATERLINE, STORM SEWERS, SANITARY SEWERS, GAS LINES AND UNDERGROUND TELEPHONE CABLE AND POWER LINES ARE APPROXIMATE AND ARE BASED UPON INFORMATION OBTAINED FROM THE CITY OF HOUSTON, UTILITY COMPANIES, AND TOPOGRAPHIC SURVEY.
- 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 FINAL DRAFT OF STORM WATER MANAGEMENT HANDBOOK FOR CONSTRUCTION ACTIVITIES AS PREPARED BY HARRIS COUNTY/KC/CD, AND THE CITY OF HOUSTON ALL IN COMPLIANCE WITH THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) REQUIREMENTS.
- CONTRACTOR SHALL PROVIDE TEMPORARY DRAINAGE FACILITIES TO DIRECT SURFACE DRAINAGE AWAY FROM TRENCHES AND TOWARDS OFF SITE DRAINAGE FACILITIES. PREVENT WATER FROM PONDING ON SITE AND DO NOT BLOCK DRAINAGE FROM OR DIRECT EXCESS DRAINAGE TO ADJACENT PROPERTY.
- CONTRACTOR SHALL PROTECT ALL EXISTING FACILITIES, PROPERTY, AND UNDERGROUND UTILITIES, AND SHALL REPAIR ANY DAMAGE TO THE SATISFACTION OF THE INJURED PARTY AT NO ADDITIONAL COST TO THE OWNER AS A RESULT OF THIS WORK.
- THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE TO THE EXISTING PUBLIC OR PRIVATE UTILITY LINES, INCLUDING BUT NOT LIMITED TO WATER LINES, WASTEWATER COLLECTION SYSTEMS AND STORM SEWERS, DURING CONSTRUCTION. ALL DAMAGE SHALL BE REPAIRED IN ACCORDANCE WITH CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING "STANDARD CONSTRUCTION SPECIFICATIONS" WITH LATEST ADDENDA AND AMENDMENTS THERETO, WITH NO COST TO THE OWNER.
- EXISTING PAVEMENTS, CURBS, SIDEWALKS, AND DRIVEWAYS WITHIN PUBLIC RIGHTS-OF-WAY WHICH HAVE BEEN DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED TO THE STANDARDS OF THE APPROPRIATE REGULATORY AGENCY.
- CONTRACTOR SHALL CONSTRUCT ALL GRAVITY SEWER LINES COMMENCING AT THE LOWEST ELEVATION AND PROCEED IN THE UPSTREAM DIRECTION. CONTRACTOR SHALL VERIFY CLEARANCES WITH ALL UNDERGROUND OBSTRUCTIONS BEFORE LAYING PIPE.
- EXCAVATE ALL TRENCHES EVENLY TO LINE AND GRADE SHOWN.
- CONTRACTOR SHALL KEEP TRENCH DRY AT ALL TIMES AND SHALL PROVIDE AUTOMATIC OR CONTINUOUS TRENCH PUMPS, AND WELL POINTS, IF NECESSARY TO OBTAIN DRY BEDDING CONDITIONS.
- CONTRACTOR SHALL KEEP TRENCHES, PIPE BEDDING AND BACKFILL FREE OF DEBRIS.
- CONTRACTOR SHALL COMPLY WITH OSHA REGULATIONS AND STATE OF TEXAS LAW CONCERNING TRENCHING AND SHORING AS SPECIFIED IN CITY OF HOUSTON ORDINANCE NO. 87-1457.
- INCLUDE COST OF BEDDING AND BACKFILL OF TYPE REQUIRED FOR WATERLINES, SANITARY SEWERS, AND STORM SEWERS IN UNIT PRICE BID FOR PIPE, UNLESS OTHERWISE NOTED.
- ALL MATERIALS FOR PROPOSED CONSTRUCTION OR REPAIR OF EXISTING FACILITIES SHALL BE NEW PRODUCTS DIRECT FROM THE FACTORY AND FREE FROM DEFECTS.
- CONTRACTOR SHALL PROVIDE ALL TESTS, PLUGS, RISERS, GAUGES, GAUGE CALIBRATION DEVICES, TEST PUMPS AND COMPRESSORS AS NECESSARY TO MAKE TESTS.
- WASTE MATERIALS INCLUDING PAVEMENT REMOVED DURING CONSTRUCTION, WASTE PIPING AND SUPPLIES, CONSTRUCTION DEBRIS AND EXCESS EXCAVATED MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE PROJECT SITE AND DISPOSED OF PROPERLY BY THE CONTRACTOR.
- WATER LINES, WASTEWATER COLLECTION SYSTEMS, AND DRAINAGE SYSTEMS SHALL BE CONSTRUCTED AND TESTED IN ACCORDANCE WITH THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING'S "STANDARD CONSTRUCTION SPECIFICATIONS" DATED OCTOBER 2002, OR AS AMENDED, AND "STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING" DATED OCTOBER 2002 UNLESS OTHERWISE NOTED AND APPROVED ON THESE PLANS. THE DESIGN SHALL BE IN ACCORDANCE WITH THE CITY OF HOUSTON INFRASTRUCTURE MANUAL DATED JANUARY 2017, STREETS, DRIVEWAYS, SIDEWALKS, AND PUBLIC PAVING SHALL BE IN ACCORDANCE WITH THE "REGULATIONS OF HARRIS COUNTY, TX FOR THE APPROVAL AND ACCEPTANCE OF INFRASTRUCTURE" AND/OR AMENDMENTS OF SAME.
- CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO STARTING CONSTRUCTION.
- CONTRACTOR SHALL HAVE A COPY OF ALL DRIVEWAY PERMITS ON SITE AT ALL TIMES DURING CONSTRUCTION OF DRIVES AND DRIVEWAYS/CULVERTS.
- CONTRACTOR SHALL GIVE NOTICE TO ALL AUTHORIZED INSPECTORS, SUPERINTENDENTS, AND PERSONS IN CHARGE OF PUBLIC AND PRIVATE UTILITIES AFFECTED BY HIS OPERATIONS PRIOR TO STARTING WORK, INCLUDING:
 - THE CONTRACTOR SHALL NOTIFY CITY OF HOUSTON DEPARTMENTS OF PUBLIC WORKS & ENGINEERING CONSTRUCTION DIVISION AT 832-395-4424, VIA FAX, FORTY EIGHT (48) HOURS IN ADVANCE OF COMMENCING CONSTRUCTION.

CENTERPOINT ENERGY

- CAUTION: UNDERGROUND GAS FACILITIES
LOCATIONS OF CENTERPOINT ENERGY MAIN LINES (TO INCLUDE CENTERPOINT ENERGY, = CEP INTRASTATE PIPELINE LLC, WHERE APPLICABLE) ARE SHOWN IN AN APPROXIMATE LOCATION ONLY. SERVICE LINES ARE USUALLY NOT SHOWN. OUR SIGNATURE ON THESE PLANS ONLY INDICATES THAT OUR FACILITIES ARE SHOWN IN THE APPROXIMATE LOCATION. IT DOES NOT IMPLY THAT A CONFLICT ANALYSIS HAS BEEN MADE. THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT (713)-223-4567 OR 1-800-669-8344 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES LOCATED.
 - WHEN CENTERPOINT ENERGY PIPE LINE MARKINGS ARE NOT VISIBLE, CALL (713) 967-8037 (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 ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING.
 - WHEN CENTERPOINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING.
- THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.

WARNING: OVERHEAD ELECTRICAL LINES

- OVER HEAD 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 PERSONS 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. THIS LAW CARRIES BOTH CRIMINAL AND CIVIL LIABILITY. TO ARRANGE FOR LIENS 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 OCCUPY CENTERPOINT FEE OR EASEMENT PROPERTY IS GIVEN IF YOU NEED TO USE CENTERPOINT PROPERTY, PLEASE CONTACT OUR SURVEYING & RIGHT OF WAY DIVISION AT (713) 207-6248 OR (713) 207-5769.

GRADING NOTES

- GENERAL CONTRACTOR AND ALL SUBCONTRACTORS SHALL VERIFY THE SUITABILITY OF ALL EXISTING AND PROPOSED SITE CONDITIONS INCLUDING GRADES AND DIMENSIONS BEFORE START OF CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES.
- BEFORE STARTING CONSTRUCTION, CONTRACTOR SHALL VERIFY BENCHMARK ELEVATION AND NOTIFY ENGINEER IF ANY DISCREPANCY AND/OR CONFLICT IS FOUND.

- CONTRACTOR SHALL ENSURE THERE IS POSITIVE DRAINAGE FROM THE PROPOSED BUILDINGS AND NO PONDING IN PAVED AREAS, AND SHALL NOTIFY ENGINEER IF ANY GRADING DISCREPANCIES ARE FOUND IN THE EXISTING AND PROPOSED GRADES PRIOR TO PLACEMENT OF PAVEMENT OR UTILITIES.
- CONTRACTOR SHALL PROTECT ALL MANHOLE COVERS, VALVE COVERS, VAULT LIDS, FIRE HYDRANTS, POWER POLES, GUY WIRES, AND TELEPHONE BOXES THAT ARE TO REMAIN IN PLACE AND UNDISTURBED DURING CONSTRUCTION.
- ALL EXISTING CONCRETE PAVING, SIDEWALK, AND CURB DEMOLITION SHALL BE REMOVED AND DISPOSED OF BY CONTRACTOR. DISPOSAL SHALL BE AT AN APPROVED OFF-SITE, LAWFUL LOCATION, UNLESS DIRECTED OTHERWISE BY THE OWNER.

STORM SEWER NOTES

- STORM SEWER SHALL BE REINFORCED CONCRETE PIPE (C-76, CLASS III), AND SHALL BE INSTALLED, BEDDED, AND BACK FILLED IN ACCORDANCE WITH THE CITY OF HOUSTON DRAWING NOS. 02317-02, 02317-03, 02317-05, 02317-06, AND 02317-07 (OCT. 2002) AS APPLICABLE UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
- ALL STORM SEWER CONSTRUCTED IN SIDE LOT EASEMENT SHALL BE R.C.P. (C-76, CLASSIII) AND SHALL BE EMBEDDED IN ACCORDANCE WITH THE CITY OF HOUSTON DRAWING NOS. 02317-02, 02317-03, 02317-05, 02317-06, AND 02317-07 AS APPLICABLE.
- ALL SEWER UNDER PROPOSED OR FUTURE PAVEMENT AND TO A POINT ONE (1) FOOT BACK OF ALL PROPOSED OR FUTURE CURBS SHALL BE BACKFILLED WITH 1-1/2 SACK CEMENT/C.Y. STABILIZED SAND TO WITHIN ONE (1) FOOT OF SUBGRADE. THE REMAINING DEPTH OF TRENCH SHALL BE BACKFILLED WITH SUITABLE EARTH MATERIAL.
- ALL TRENCH BACKFILL SHALL BE IN 8' LIFTS, WITH TESTS TAKEN AT 100 FOOT INTERVALS IN THE TRENCH, AND MECHANICALLY COMPACTED TO A DENSITY OF NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR COMPACTION TEST (ASTM D-698/AASHTO 199).
- CIRCULAR AND ELLIPTICAL REINFORCED CONCRETE PIPE SHALL BE INSTALLED USING RUBBER GASKET JOINT CONFORMING TO ASTM C443 AND ASTM C872 RESPECTIVELY.
- ALL STORM SEWER PIPES AND INLET LEADS SHALL BE 24 AND LARGER R.C.P. (C-76, CLASSIII).
- ALL PROPOSED PIPE STUB-OUTS FROM MANHOLES AND INLET LEADS ARE TO BE PLUGGED WITH 8 BRICK WALLS UNLESS OTHERWISE NOTED.
- CONTRACTOR SHALL PROVIDE 12 MINIMUM CLEARANCE AT STORM SEWER AND WATER LINE CROSSINGS.
- ADJUST MANHOLE COVERS TO GRADE CONFORMING TO REQUIREMENTS OF SECTION 02086-ADJUSTING MANHOLES, INLETS, AND VALVE BOXES TO GRADE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING, MAINTAINING, AND RESTORING ANY BACK SLOPE DRAINAGE SYSTEM DISTURBED AS A RESULT OF THIS WORK.
- ALL DITCHES SHALL BE GRADED TO PROPOSED ELEVATIONS TO INSURE PROPER DRAINAGE. ALL OUTFALLS SHALL BE PROPERLY BACKFILLED AND COMPACTED. ALL DISTURBED AREA SHALL BE REGRADED, SEEDED, AND FERTILIZED.
- ALL DRIVEWAYS WILL BE LOCATED TO AVOID EXISTING CURB INLET STRUCTURES.

AT&T TEXAS/SWBT FACILITIES

- THE LOCATIONS OF AT&T TEXAS/SWBT 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 MAY BE OCCASIONED BY THIS 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/SWBT FACILITIES, ALL EXCAVATIONS MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES. WHEN BORING, THE CONTRACTOR SHALL EXPOSE THE AT&T TEXAS/SWBT FACILITIES.
- WHEN AT&T TEXAS/SWBT FACILITIES ARE EXPOSED, THE CONTRACTOR WILL PROVIDE SUPPORT TO PREVENT DAMAGE 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/SWBT UNDERGROUND CONDUIT FACILITIES OR CABLES AT FACILITIES SHOWN ON THESE PLANS DOES NOT MEAN THAT THERE ARE NO DIRECT BURIED CABLES OR OTHER CABLES IN CONDUIT IN THE AREA.
- PLEASE CONTACT THE AT&T TEXAS DAMAGE PREVENTION MANAGER ROOSEVELT LEE JR. AT (713)567-4552 OR E-MAIL HIM AT RL2759@ATT.COM, IF THERE ARE QUESTIONS ABOUT BORING OF EXCAVATING NEAR OUR AT&T TEXAS/SWBT FACILITIES.

PAVING, GRADING, AND SIDEWALK NOTES

- CONTRACTOR PAVING IN ACCORDANCE WITH THE LATEST EDITION OF THE PUBLICATIONS STANDARD CONSTRUCTION SPECIFICATIONS FOR STREET PAVING AND CONSTRUCTION DETAILS PUBLISHED BY THE CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS & ENGINEERING.
- CONTRACTOR SHALL ADHERE TO SITE PREPARATION, SUBGRADE PREPARATION AND PAVEMENT INSTALLATION IN ACCORDANCE WITH GEOTECHNICAL REPORT PREPARED BY TEXAS GEOTECHNICAL CONSULTING LLC, TCG REPORT NO. 711303, DATED DECEMBER 22, 2017.
- SUBGRADE SHALL BE STABILIZED AND/OR COMPACTED PER THE SOIL REPORT. ALL REQUIRED FULL WALK STRUCTURAL MEETING THE P.I.I. REQUIREMENTS OF THE SOILS REPORT AND COMPACTED PER THE SOILS REPORT.
- ALL NEW FINISHED ELEVATIONS ARE TO TOP OF NEW PAVEMENT OR GUTTER GRADES, UNLESS SHOWN OR NOTED OTHERWISE.
- EXISTING PAVING DAMAGED AND/OR REMOVED DURING CONSTRUCTION, SHALL BE REPAIRED OR REPLACED IN ACCORDANCE WITH ALL APPLICABLE JURISDICTION SPECIFICATIONS WITH ALL AMENDMENTS THERETO.
- 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.
- HANDICAPPED ACCESS RAMPS, 12:1 SLOPE, SHALL HAVE A TEXTURED NON-SLIP BRUSH FINISH 90-DEGREES TO THE DIRECTION OF TRAVEL.
- THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE AT LEAST 48 HOURS PRIOR TO COMMENCEMENT OF ANY WORK, PRIOR TO TESTING OF CEMENT SUBGRADE, AND PRIOR TO PLACEMENT OF CONCRETE.
- CONCRETE PLACING, FINISHING AND TEXTURING, CURING AND WEATHER PROTECTION, JOINTING, AND STRIPING, SHALL BE AS SPECIFIED IN THE PAVING PLAN AND DETAILS.
- SLOPES AND ELEVATIONS SHALL BE AS SPECIFIED IN THE GRADING AND/OR DRAINAGE PLAN(S). ALL FINISHED GRADES SHALL VARY UNIFORMLY BETWEEN FINISHED ELEVATIONS SHOWN.
- THE CONTRACTOR SHALL CONSTRUCT BLOCKOUTS AT ALL LIGHT POLES, MANHOLES, GATE VALVES, INLETS AND PULL BOXES, FOR ALL UTILITIES WHETHER PUBLIC OR PRIVATE. THE CONTRACTOR SHALL ADJUST THE MANHOLE (SANITARY OR STORM ONLY) OR GATE VALVE TO CONFORM TO FINISHED TOP OF PAVEMENT. ALL ADJUSTMENTS TO SANITARY MANHOLES MUST BE COATED ON THE MANHOLE INTERIOR WITH EPOXY LINER (40 MIL. MINIMUM THICKNESS). APPROVED EPOXY LINER IS "FAGARD CHEMICAL RESISTANT COATING", "THANECOAT FE-10", OR "FOSROC W.B.S.". THE CONTRACTOR SHALL ALSO ADJUST ALL SANITARY AND STORM MANHOLE TOPS LOCATED IN LANDSCAPE OR GRASSED AREAS TO 4 INCHES ABOVE FINISHED GRADE. THE CONTRACTOR SHALL ADJUST ANY WATERLINE GATE VALVES IN LANDSCAPED OR GRASSED AREAS TO 1-INCH ABOVE FINISHED GRADE. THESE PLANS INDICATE ONLY THE WATER, SEWER AND DRAINAGE FACILITIES (MANHOLES AND GATE VALVES) TO BE ADJUSTED).

SWPPP NOTES

- CONTRACTOR SHALL IMPLEMENT INLET PROTECTION DEVICES AND REINFORCED FILTER FABRIC BARRIER ALONG ROAD AND SIDE DITCHES AT LOCATIONS SHOWN ON THE TYPICAL STORM WATER POLLUTION PREVENTION (SWPPP) PLANS TO KEEP SILT AND/OR EXCAVATED MATERIALS FROM ENTERING INTO THE STORM WATER INLETS AND DITCHES EVENTUALLY POLLUTING THE RECEIVING STORM WATER.
- DURING THE EXCAVATION PHASE OF THE PROJECT, CONTRACTOR SHALL SCHEDULE THE WORK IN SHORT SECTIONS SO THAT EXCAVATED MATERIAL CAN BE QUICKLY Hauled AWAY FROM THE SITE AND TO PREVENT IT FROM STAYING UNCOLLECTED ON THE EXISTING PAVEMENT. ANY LOOSE EXCAVATED MATERIAL WHICH FALLS ON PAVEMENT OR DRIVEWAYS SHALL BE SWEEP BACK INTO THE EXCAVATED AREA.
- CONTRACTOR SHALL CLEAN UP THE EXISTING STREET INTERSECTIONS AND DRIVEWAYS DAILY, AS NECESSARY, TO REMOVE ANY EXCESS MUD, SILT OR ROCK TRACKED FROM THE EXCAVATED AREA.
- CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT, ALWAYS CLEANING UP DIRT AND LOOSE MATERIAL AS CONSTRUCTION PROGRESSES.

- CONTRACTOR TO INSPECT AND MAINTAIN THE AREAS LISTED BELOW AT LEAST ONCE EVERY FOURTEEN (14) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT OF 0.5 INCHES OR GREATER.
 - DISTURBED AREAS OF THE CONSTRUCTION SITE THAT HAVE NOT BEEN FINALLY STABILIZED.
 - AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION.
 - STRUCTURAL CONTROL MEASURES.
 - LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE.
- CONTRACTOR TO BE RESPONSIBLE TO MAINTAIN EXISTING DITCHES AND/OR CULVERTS FOR UNOBTSTRUCTED DRAINAGE AT ALL TIMES. WHERE SODDING IS DISTURBED BY EXCAVATION AND BACKFILLING OPERATIONS, SUCH AREAS SHALL BE REPLACED BY SEEDING OR SODDING. SLOPES 4:1 OR STEEPER SHALL BE REPLACED BY BLOCK SODDING.

HARRIS COUNTY CONSTRUCTION NOTES:

APPENDIX D

- WATERLINES, WASTEWATER COLLECTION SYSTEMS, AND STORM DRAINAGE SYSTEMS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE CITY OF HOUSTON'S DEPARTMENT OF PUBLIC WORKS AND ENGINEERING "DESIGN MANUAL, STANDARD CONSTRUCTION SPECIFICATIONS, AND DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING."
- ALL STORM SEWERS WILL BE REINFORCED CONCRETE (C76 CLASS III) AND SHALL BE INSTALLED, BEDDED, AND BACKFILLED IN ACCORDANCE WITH THE CITY OF HOUSTON'S DRAWINGS 02317-02, 02317-03, 02317-05, 02317-06, AND 02317-07, AS APPLICABLE.
- ALL STORM SEWERS CONSTRUCTED IN SLIDE LOT EASEMENTS SHALL BE R.C.P., MINIMUM TWENTY (20) FOOT WIDE EASEMENTS SHALL BE PROVIDED.
- AN ALTERNATIVE TO CEMENT STABILIZED SAND MAY BE USED AS BACKFILL FOR PIPES FIFTY-FOUR (54) FROM 1-FOOT ABOVE THE TOP OF PIPE TO THE BOTTOM OF THE SUBGRADE. CONTRACTOR MAY BACKFILL WITH SUITABLE MATERIAL PROVIDED THE BACKFILL MATERIAL IS PLACED IN EIGHT (8) INCH LIFTS AND MECHANICALLY COMPACTED TO NINETY-FIVE (95)% STANDARD PROCTOR DENSITY. TESTS SHALL BE TAKEN AT ONE HUNDRED (100) FOOT INTERVALS ON EACH LIFT. BEDDING AND BACKFILL TO BE ONE (1) FOOT ABOVE THE TOP OF PIPE SHALL BE CEMENT STABILIZED SAND.
- ALL PROPOSED PIPE STUB-OUTS FROM MANHOLES OR INLETS ARE TO BE PLUGGED WITH EIGHT (8) INCH BRICK WALLS UNLESS OTHERWISE NOTED.
- THE CONTRACTOR(S) SHALL NOTIFY HARRIS COUNTY ENGINEERING DEPARTMENT - PERMIT OFFICE TWENTY-FOUR (24) HOURS IN ADVANCE OF COMMENCING UTILITY AND/OR PAVEMENT CONSTRUCTION AT (713) 274-3823 AND WRITTEN NOTIFICATION FORTY-EIGHT (48) HOURS IN ADVANCE OF COMMENCING CONSTRUCTION AT 10555 NORTHWEST FREeway, SUITE 144, HOUSTON, TX 77299.
- PAVING SHALL BE IN ACCORDANCE WITH THE REGULATIONS OF HARRIS COUNTY, TEXAS FOR THE APPROVAL AND ACCEPTANCE OF INFRASTRUCTURE AND/OR AMENDMENTS OF THE SAME.
- GUIDELINES SET FORTH IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES SHALL BE OBSERVED.
- OWNER OR OWNER'S AGENT TO OBTAIN ALL PERMITS REQUIRED BY THE "REGULATIONS OF HARRIS COUNTY, TEXAS FOR FLOODPLAIN MANAGEMENT" PRIOR TO STARTING CONSTRUCTION.
- OWNER OR OWNER'S AGENT TO OBTAIN ALL NOTIFICATIONS REQUIRED BY HARRIS COUNTY, TEXAS PRIOR TO STARTING CONSTRUCTION OF UTILITIES AND CULVERTS WITHIN HARRIS COUNTY AND HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY.

APPENDIX E

- NOTE: NOTIFICATIONS ISSUED BY HARRIS COUNTY ENGINEERING DEPARTMENT-PERMITS OFFICE - IS REQUIRED FOR PROPOSED WORK WITHIN HARRIS COUNTY RIGHT-OF-WAY. THE PROJECT MUST BE APPROVED PRIOR TO OBTAINING THE REQUIRED NOTIFICATION. BE ADVISED THAT A NOTIFICATION MUST BE OBTAINED SEPARATELY FROM SIRE DEVELOPMENT PERMIT PACKAGE. FOR ADDITION INFORMATION PLEASE VISIT [HTTP://HCOPI.D.ORG/PERMITS/PRE_NOTIFICATION_OF_CONSTRUCTION.HTML](http://hcopd.org/permits/pre_notification_of_construction.html) OR CONTRACT PUBLIC REVIEW INSPECTIONS DEPARTMENT (713) 956-3033.

TABLE 7.3
PROTECTION REQUIREMENTS AT
WATERLINE - SANITARY SEWER CROSSINGS

CITY OF HOUSTON
Department of Public Works and Engineering

DESIGN MANUAL
Water Line Design Requirements

Table 7.3
PROTECTION REQUIREMENTS AT
WATER LINE (W)- SANITARY SEWER (S) CROSSINGS

OVER	REINFORCED CONCRETE PIPE				PROPOSED SANITARY SEWER			
	EXISTING	PROP.	EXISTING	PROP.	EXISTING	PROP.	EXISTING	PROP.
Minimum 2' vertical clearance	√	√	√	√	√	√	√	√
Face 1' full section (min 18" RI) of man 150 psi SS centered at SS Crossing. Provide contained joints on W. line	√	√	√	√	√	√	√	√
Face 1' full section (min 18" RI) of man 150 psi SS centered at W. Crossing. Provide contained joints on S. line	√	√	√	√	√	√	√	√
Face 1' full section (min 18" RI) of man 150 psi SS centered at W. Crossing. Provide contained joints on S. line with pressure-rated DP or pressure-rated PVC pipe with adapters and restrained joints centered at W. Crossing	√	√	√	√	√	√	√	√
Face 1' full section (min 18" RI) of man 150 psi SS centered at W. Crossing. Provide contained joints on S. line with pressure-rated DP or pressure-rated PVC pipe with adapters and restrained joints centered at W. Crossing. Provide DP for small diameter W. line (less than 24 inches). PVC pipe is only allowed if approved per TAC 2.09.44, and use restrained joints for both DP and PVC pipe.	√	√	√	√	√	√	√	√
Embed SS with CSS for the total length of 1' per segment plus 1' foot between the joints on each end	√	√	√	√	√	√	√	√
Face 1' full section (min 18" RI) of man 150 psi SS centered at W. Crossing. Provide contained joints on S. line with pressure-rated DP or pressure-rated PVC pipe with adapters and restrained joints on S. line	√	√	√	√	√	√	√	√
Face 1' full section (min 18" RI) of man 150 psi SS centered at W. Crossing. Provide contained joints on S. line with pressure-rated DP or pressure-rated PVC pipe with adapters and restrained joints on S. line	√	√	√	√	√	√	√	√

Note: Not Allowed

- Minimum clearance is 2' for non-pressure rated SS and 1' for pressure rated SS
 - Required if existing SS is disturbed and/or there is evidence of leakage
 - Not required for segment SS, unless there is evidence of leakage; completely fill augured hole with benzoinite clay mixture
 - Not required for augured SS, completely fill augured hole with benzoinite clay mixture
- Note:
- Both water lines and wastewater main lateral must pass a pressure and leakage test as specified in AWWA C600 standards
 - Sanitary sewers (SS) is applicable to both gravity sanitary sewers and force mains.

GENERAL CONSTRUCTION NOTES FOR STORM WATER POLLUTION PREVENTION PLAN

STORM WATER POLLUTION PLAN (SWPPP) AND STORM WATER QUALITY MANAGEMENT PLAN (SWQMP) COMPLIANCE NOTES:

- <1.0 ACRES
 - IF AREA IS DISTURBED, (CLEARING AND GRUBBING AND/OR EXCAVATION INVOLVED)
 - PROVIDE BMP'S TO PREVENT ANY RUNOFF INTO THE CITY'S MSA
 - PROVIDE SWPPP NOTES FOR CONSTRUCTION PLANS
 - ANY CONSTRUCTION SITE RUNOFF INTO THE CITY'S MSA IS A VIOLATION OF THE CITY STORM WATER ORDINANCE.
- >1.0<5.0 ACRES
 - CONSIDERED SMALL CONSTRUCTION ACTIVITIES
 - SUBMIT A CONSTRUCTION SITE NOTICE (CSN) TO THE CITY AND TCEQ.
 - POST A CONSTRUCTION SITE NOTICE AT THE CONSTRUCTION SITE
 - REQUIRED TO DEVELOP A SWP3
 - NOT REQUIRED TO SUBMIT A NOI OR NOT
 - ANY SUPPORTING CONCRETE OR ASPHALT PLANT IS SEPARATELY AUTHORIZED TO DISCHARGE UNDER AN INDIVIDUAL TYPES PERMIT.
- <5.0 ACRES AND PART OF LARGER COMMON PLAN OF DEVELOPMENT THAT WILL EQUALLY DISTURB AREA THAT IS EQUAL TO OR GREATER (X) 5.0 ACRES
 - CONSIDERED LARGE CONSTRUCTION ACTIVITIES
 - CONTRACTOR IS REQUIRED TO SUBMIT AN NOI TO COH AND TCEQ.
 - SUBMIT A STORM WATER QUALITY MANAGEMENT PLAN (SWQMP) FOR DESIGNED STRUCTURAL AND NON-STRUCTURAL CONTROL FEATURES
 - DEVELOP A SWP3 (SWPPP). STORM WATER POLLUTION PREVENTION PLAN TO BE RETAINED ON SITE DURING CONSTRUCTION OF PROJECTS FROM BEGINNING TO END
 - SUBMIT A NOT (NOTICE OF TERMINATION) WITHIN 30 DAYS AFTER FINAL STABILIZATION HAS BEEN ACHIEVED ON ALL PORTIONS OF THE SITE. ALL SILT FENCES OR TEMPORARY EROSION CONTROL FEATURES MUST BE REMOVED OR SCHEDULED FOR REMOVAL AS DEFINED UNDER THE SWP3.
- >5.0 ACRES
SAME AS ABOVE

SANITARY SEWER NOTES

- ALL SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF HOUSTON'S STANDARD CONSTRUCTION SPECIFICATION FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, STREET PAVING, AND TRAFFIC CONTROL. ALL CURRENT ANCHORS THERETO AND BE SUBJECT TO A STANDARD INFILTRATION TEST. TESTS ARE TO BE PERFORMED ON THE TOTAL FOOTAGE OF SEWER LINE INCLUDED IN THE PROJECT. REQUIREMENTS OF TEXAS ADMINISTRATIVE CODE, TITLE 30 CHAPTER 317, DESIGN CRITERIA FOR SEWERAGE SYSTEMS SHALL GOVERN WHERE CONFLICTS EXIST EXCEPT WHERE CITY REQUIREMENTS ARE OF HIGHER STANDARDS.
- ALL MANHOLES ARE TO BE PER CITY OF HOUSTON DRAWING NUMBERS 02082-01, 02082N-02, 02082-03, AND 02082N-02 UNLESS OTHERWISE NOTED. USE 2010 VERSION AS APPLICABLE.
- SANITARY SEWERS MANHOLE WILL HAVE BEDDING AND BACKFILL PER CITY OF HOUSTON DRAWING NO. 02317-08 UNLESS OTHERWISE NOTED.
- SANITARY SEWER PIPE 6" AND LARGER SHALL BE SDR-26 PVC.
- ALL SDR-26 PVC PIPE SHALL MEET ASTM SPECIFICATION D3034 AND USE "FULL BODIED" SDR-26 PVC FITTINGS WITH APPROPRIATE ADAPTERS AND SHALL HAVE A CELL CLASSIFICATION OF 12364-8 AS DEFINED IN ASTM D-1784 AND SHALL HAVE DIP SIZE OO AND RUBBER GASKET BELL-AND-SPIGOT TYPE JOINT ENDS, UNLESS OTHERWISE NOTED.
- AWWA C-900 DR-18 PVC PIPE USES EITHER AWWA C-900 DR-18 PVC FITTINGS OR DIP FITTINGS.
- ALL SANITARY SEWER LINES UNDER PROPOSED OR FUTURE PAVEMENT AND TO A POINT ONE (1) FOOT BACK OF ALL PROPOSED OR FUTURE CURBS SHALL HAVE BEDDING PER CITY OF HOUSTON DRAWING NUMBERS 02317-01, 02317-023, OR 02317-02, OR 02317-03 AS APPLICABLE. WITH 1 1/2 SACK CEMENT/0Y STABILIZED SAND BACKFILL UP TO THE BOTTOM OF THE PAVEMENT SUBGRADE. 100 PSI PERFORMANCE RESULTS ARE STILL REQUIRED.
- ALL SANITARY SEWERS CROSSING WATER LINES WITH A CLEARANCE BETWEEN 12 INCHES AND 9 FEET SHALL HAVE A MINIMUM OF ONE 18" JOINT OF 150 PSI DUCTILE IRON (GREEN) C900 PVC PIPE MEETING ASTM SPECIFICATION D2241 CENTERED ON WATER LINE. WHEN WATER LINE IS BELOW SANITARY SEWER PROVIDE MINIMUM 2 FOOT SEPARATION.
- CONTRACTOR SHALL PROVIDE FOR A MINIMUM HORIZONTAL CLEARANCE OF 9' FEET BETWEEN WATER LINES AND SANITARY SEWER MANHOLES AND LINES.
- SANITARY SEWER MANHOLE RIMS OUTSIDE OF PROPOSED PAVING WILL BE SET 3"-6" ABOVE THE SURROUNDING LEVEL FINISHED GRADE AFTER PAVING WITH SLOPED BACKFILL ADDED FOR STORM WATER DRAINAGE AWAY FROM MANHOLE RIM.
- IN WET STABLE TRENCH AREA USE BEDDING PER CITY OF HOUSTON DRAWING NUMBER 02317-02 (02/2002).
- DEFLECTION TEST: DEFLECTION TESTS SHALL BE PERFORMED ON THE FLEXIBLE AND SEMI-RIGID SEWER PIPE, THE TEST SHALL BE CONDUCTED AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS. NO PIPE SHALL EXCEED A DEFLECTION OF 5% IF THE DEFLECTION TEST IS TO BE PERFORMED USING A RIGID MATERIAL. IT SHALL HAVE A DIAMETER EQUAL TO 95% OF THE INSIDE DIAMETER OF THE PIPE. THE TEST SHALL BE PERFORMED AS PER 30 TAC 317.2 LATEST AMENDMENT AND WITHOUT MECHANICAL PULLING DEVICES. NO BALL-TYPE MANDRELS ALLOWED.
- INFILTRATION, EXFILTRATION OR LOW-PRESSURE AIR TEST: EITHER OF THE FOLLOWING TESTS SHALL BE PERFORMED AS PER TAC, TITLE 30 317.2 WITHIN THE SPECIFIED TOLERANCES ON ALL GRAVITY SEWERS.
 - INFILTRATION OR EXFILTRATION TEST: PERFORM TEST ACCORDING TO UNI-B-6-90 OR OTHER APPROPRIATE PROCEDURES. FOR SECTIONS OF PIPE LESS THAN 36" (INCH) AVERAGE INSIDE DIAMETER, THE MINIMUM ALLOWABLE TIME FOR PRESSURE DROP FROM 3.5 P.S.I.G. TO 2.5 P.S.I.G. SHALL BE AS FOLLOWS:
 - 6" 340 SECONDS OR 0.855(L) FOR TEST LENGTHS GREATER THAN 398'
 - 8" 454 SECONDS OR 1.1520(L) FOR TEST LENGTHS GREATER THAN 298'
 - 10" 567 SECONDS OR 1.374(L) FOR TEST LENGTHS GREATER THAN 238'
 - 15" 850 SECONDS OR 2.34(L) FOR TEST LENGTHS GREATER THAN 158'
 - 18" 1020 SECONDS OR 7.693(L) FOR TEST LENGTHS GREATER THAN 133'
 - LOW-PRESSURE AIR TEST: PERFORM TEST ACCORDING TO UNI-B-6-90 OR OTHER APPROPRIATE PROCEDURES. FOR SECTIONS OF PIPE LESS THAN 36" (INCH) AVERAGE INSIDE DIAMETER, THE MINIMUM ALLOWABLE TIME FOR PRESSURE DROP FROM 3.5 P.S.I.G. TO 2.5 P.S.I.G. SHALL BE AS FOLLOWS:
 - 6" 340 SECONDS OR 0.855(L) FOR TEST LENGTHS GREATER THAN 398'
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 - 15" 850 SECONDS OR 2.34(L) FOR TEST LENGTHS GREATER THAN 158'
 - 18" 1020 SECONDS OR 7.693(L) FOR TEST LENGTHS GREATER THAN 133'
- WHERE L = LENGTH OF LINE OF SAME PIPE SIZE IN FEET.
- "SAN. SE." INDICATED "SANITARY SEWER EASEMENT"
- FOR SANITARY MANHOLES (MH) RIMS ET INSIDE OF OR CURB & GUTTER PAVEMENT AND/OR BELOW T.C., MH RIMS WILL BE SET FLUSHED WITH AN ABUTTING/CONTAINING PAVED SURFACE. THE (VULCAN, NEOPRENE OR EQUAL) HEAVY DUTY BOLTED SOLID MH COVER WILL BE PROPERLY (AND SECURELY) ATTACHED AND SEALED TO ITS COMPATIBLE GASKETED FRAME BY USING BOTH: A NEOPRENE GASKET; AND (AT LEAST) 4 COUNTER-SUNK HEX-HEAD COVER THREADED 1"-13 UNC STAINLESS STEEL BOLTS. THE HEAVY DUTY FRAME MH COVER WILL BE SOLID (NO AIR HOLES) AND SHALL BE BOTH EMBEDDED INTO THE MSA TOP ALSO SECURELY ANCHORED TO THE UNDERLYING MH STRUCTURE, WITH EITHER SECURELY ATTACHED EMBEDDED ANCHOR BOLTS; OR THE CONCRETE MH'S EXPOSED REBARS WELDED TO THE FRAME; OR OTHER EQUALLY SECURED METHODS TO PREVENT MH COVER/FRAME BLOW-OFFS/EJECTIONS.
- USE THE SAME TYPE OF SEWER PIPE [OR PIPE JOINT ENDS] FROM MH TO MH WITH NO PIPE TYPE OR THEIR JOINTS CHANGING BETWEEN THE PAIR OF MH'S. IDENTICAL DIP-SIZED SEWER PIPE BELL & SPIGOT ENDS ARE REQUIRED FOR ALL SEWER PIPE USED FROM MH TO MH WHEREVER DIP OR GREEN C-900 (DR-18) PVC PIPE OR POLYETHYLENE-ENCASD DIP SECTIONS (18"-20"+)) ARE USED WITH MH CROSSING(S) AND/OR SEWER AUGERING AND/OR JACKING AND/OR SHALLOW BURIAL.

WATER LINE NOTES

- WATER LINES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST CITY OF HOUSTON INFRASTRUCTURE DESIGN MANUAL, STANDARD SPECIFICATION, AND CONSTRUCTION DETAILS.
- 4 THRU 12" WATER LINES SHALL BE P.V.C. CLASS 150, DR-18, AWWA C-900 AND 1 THRU 3" WATER LINES SHALL BE PVC SCHEDULE 40. 4 THRU 54" D.I.P. WATER LINES SHALL BE AWWA C151 (ANSI A21.51) AND DOUBLE WRAPPED IN 8-MIL POLYETHYLENE. PIPE SHALL BE LINED IN ACCORDANCE WITH AWWA C104 (ANSI A21.4).
- CONCRETE THRUST BLOCKS SHALL BE PROVIDED AS NECESSARY TO PREVENT PIPE MOVEMENT, WHERE PREVENTING MOVEMENT OF 16" OF GREATER PIPE NECESSARY DUE TO THRUST. USE RESTRAINED JOINTS.
- ALL WATER LINES UNDER PROPOSED OR FUTURE PAVING AND TO A POINT ONE (1) FOOT BACK OF ALL PROPOSED OR FUTURE CURBS SHALL BE ENCASED IN BANK SAND TO 12" OVER PIPE AND BACKFILLED WITH CEMENT STABILIZED SAND TO WITHIN ONE (1) FOOT OF SUBGRADE.
- ALL WATER LINE AND SEWER LINE CROSSINGS SHALL BE CONSTRUCTED PER CITY OF HOUSTON AND TCEQ REGULATIONS.
- ALL WATER LINES SHALL BE SUPPLIED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF AWWA C-500 AND SHALL BE OF THE RESILIENT SEAT TYPE.
- ALL WATER LINES TO BE DISINFECTED IN CONFORMANCE WITH AWWA C-651 AND THE TEXAS STATE DEPARTMENT OF HEALTH. AT LEAST ONE BACTERIOLOGICAL SAMPLE SHALL BE COLLECTED FOR EACH 1,000 LINEAR FEET OF WATER LINE AND SHALL BE REPEATED IF CONTAMINATION PERSISTS.
- ALL BELOW GRADE VALVES SHALL BE GASKETED, HUB-END GATE VALVES WITH A CAST IRON BOX, EXCEPT WHERE FLANGES ARE CALLED OUT ON THE PLANS.
- 4 THRU 12" FITTINGS SHALL BE CEMENT MORTAR LINED COMPACT DUCTILE IRON PRESSURE FITTINGS PER ANSI A21.53. OR PUSH ON FITTINGS PER ANSI A21.10 PRESSURE RATED AT 250 PSIG.
- HYDROSTATIC TESTING: ALL WATER PIPE SHALL BE TESTED FOR LEAKAGE IN ACCORDANCE WITH THE LATEST CITY OF HOUSTON STANDARD CONSTRUCTION SPECIFICATIONS. TESTS ARE TO BE PERFORMED ON THE TOTAL FOOTAGE OF WATER PIPE LINE INCLUDED IN THE PROJECT.
- ALL WATER LINES TO HAVE 4" MINIMUM COVER TO FINISHED GRADE AND MINIMUM 12" CLEAR TO OTHER UTILITIES AT CROSSING UNLESS OTHERWISE NOTED ON PLANS. ALL WATER LINE INSTALLED OVER 8" DEEP SHALL UTILIZE RESTRAINED JOINT FITTINGS.
- CONTRACTOR SHALL KEEP WATER PIPE CLEAN AND CAP (OR OTHERWISE EFFECTIVELY COVER) OPEN PIPE ENDS TO EXCLUDE INSECTS, ANIMALS OR OTHER SOURCES OF CONTAMINATION FROM UNFINISHED PIPE LINES AT TIMES WHEN CONSTRUCTION IS NOT IN PROGRESS.