GENERAL:

1. ALL WATER, SANITARY SEWER, STREET, LIGHTING, AND DRAINAGE IMPROVEMENTS WITHIN THE PUBLIC RIGHT-OF-WAY OR UTILITY EASEMENTS SHALL CONFORM TO THE REQUIREMENTS OF THE MOST CURRENT VERSION OF THE CITY OF ENNIS STANDARD CONSTRUCTION DETAILS & INFRASTRUCTURE DESIGN STANDARDS (IDS).
2. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THESE PLANS, CITY IDS, THE FINAL GEOTECHNICAL REPORT AND ALL ISSUED ADDENDA, CITY STANDARD CONSTRUCTION DETAILS, AND COMMONLY ACCEPTED CONSTRUCTION STANDARDS. THE CITY IDS SHALL GOVERN WHERE OTHER SPECIFICATIONS DO NOT EXIST. IN CASE OF CONFLICTING SPECIFICATIONS OR DETAILS, THE MORE RESTRICTIVE SPECIFICATION AND DETAIL SHALL BE FOLLOWED.
3. THE CONTRACTOR SHALL COMPLY WITH CITY "GENERAL CONSTRUCTION NOTES" FOR CONSTRUCTION.
4. THE CONTRACTOR SHALL FURNISH ALL MATERIAL AND LABOR TO CONSTRUCT THE FACILITY AS SHOWN AND DESCRIBED IN THE CONSTRUCTION DOCUMENTS IN ACCORDANCE WITH THE APPROPRIATE AUTHORITIES' SPECIFICATIONS AND REQUIREMENTS.
5. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING TO DETERMINE EXISTING CONDITIONS.
6. THE EXISTING CONDITIONS SHOWN ON THESE PLANS WERE PROVIDED BY THE TOPOGRAPHIC SURVEY PREPARED BY THE PROJECT SURVEYOR, AND ARE BASED ON THE BENCHMARKS SHOWN. THE CONTRACTOR SHALL REFERENCE THE SAME BENCHMARKS.
7. THE CONTRACTOR SHALL REVIEW AND VERIFY THAT THE EXISTING TOPOGRAPHIC SURVEY SHOWN ON THE PLANS REPRESENTS EXISTING FIELD CONDITIONS PRIOR TO CONSTRUCTION, AND SHALL REPORT ANY DISCREPANCIES FOUND TO THE DESIGN ENGINEER IMMEDIATELY.
8. IF THE CONTRACTOR DOES NOT ACCEPT THE EXISTING TOPOGRAPHIC SURVEY AS SHOWN ON THE PLANS, WITHOUT EXCEPTION, THEN THE CONTRACTOR SHALL SUPPLY AT THEIR OWN EXPENSE, A TOPOGRAPHIC SURVEY BY A REGISTERED PROFESSIONAL LAND SURVEYOR TO THE DESIGN ENGINEER AND CITY FOR REVIEW.
9. CONTRACTOR SHALL PROVIDE ALL CONSTRUCTION SURVEYING AND STAKING.
10. CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL CONTROL, INCLUDING BENCHMARKS PRIOR TO COMMENCING CONSTRUCTION OR STAKING OF IMPROVEMENTS. PROPERTY LINES AND CORNERS SHALL BE UTILIZED FOR HORIZONTAL CONTROL.
11. THE CONTRACTOR SHALL REVIEW AND VERIFY ALL DIMENSIONS, ELEVATIONS, AND FIELD CONDITIONS THAT MAY AFFECT CONSTRUCTION. ANY DISCREPANCIES ON THE DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER BEFORE COMMENCING WORK. NO FIELD CHANGES OR DEVIATIONS FROM DESIGN ARE TO BE MADE WITHOUT PRIOR APPROVAL OF THE ARCHITECT, DESIGN ENGINEER, AND THE CITY. NO CONSIDERATION WILL BE GIVEN TO CHANGE ORDERS FOR WHICH THE CITY AND DESIGN ENGINEER WERE NOT CONTACTED PRIOR TO CONSTRUCTION OF THE AFFECTED ITEM.
12. CONTRACTOR IS STRONGLY CAUTIONED TO REVIEW THE FOLLOWING REPORTS DESCRIBING SITE CONDITIONS PRIOR TO BIDDING AND BEGINNING CONSTRUCTION:
    a. ENVIRONMENTAL SITE ASSESSMENT PROVIDED BY THE OWNER,
    b. ASBESTOS BUILDING INSPECTION REPORT(S) PROVIDED BY THE OWNER,
    c. GEOTECHNICAL REPORT PROVIDED BY THE OWNER,
    d. OTHER REPORTS THAT ARE APPLICABLE AND AVAILABLE.
13. CONTRACTOR SHALL THOROUGHLY CHECK COORDINATION OF CIVIL, LANDSCAPE, MEP, ARCHITECTURAL, AND OTHER PLANS PRIOR TO COMMENCING CONSTRUCTION. DESIGN ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCY PRIOR TO COMMENCING WITH CONSTRUCTION.
14. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE VARIOUS UTILITY COMPANIES WHICH MAY HAVE BURIED OR AERIAL UTILITIES WITHIN OR NEAR THE CONSTRUCTION AREA BEFORE COMMENCING WORK TO HAVE THEM LOCATE THEIR EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE 48-HRS MINIMUM NOTICE TO ALL UTILITY COMPANIES PRIOR TO BEGINNING CONSTRUCTION.
15. CONTRACTOR SHALL USE EXTREME CAUTION AS THE SITE MAY CONTAIN VARIOUS KNOWN AND UNKNOWN PUBLIC AND PRIVATE UTILITIES.
16. THE LOCATIONS, ELEVATIONS, DEPTH, AND DIMENSIONS OF EXISTING UTILITIES SHOWN ON THE PLANS WERE OBTAINED FROM AVAILABLE UTILITY COMPANY MAPS AND PLANS TOPOGRAPHIC SURVEY OF LOCATE FLAGS, AND CONSTRUCTION AS-BUIT RECORDS, AND ARE CONSIDERED APPROXIMATE AND INCOMPLETE. IT SHALL BE THE CONTRACTORS' RESPONSIBILITY TO VERIFY THE PRESENCE, LOCATION, ELEVATION, DEPTH, AND DIMENSION OF EXISTING UTILITIES SUFFICIENTLY IN ADVANCE OF CONSTRUCTION SO THAT ADJUSTMENTS CAN BE MADE TO PROVIDE ADEQUATE CLEARANCES. THE DESIGN ENGINEER SHALL BE NOTIFIED WHEN A PROPOSED IMPROVEMENT CONFLICTS WITH AN EXISTING UTILITY.
17. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ANY ADJUSTMENTS AND RELOCATIONS OF EXISTING UTILITIES THAT CONFLICT WITH THE PROPOSED IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO, ADJUSTING EXISTING MANHOLES TO MATCH PROPOSED GRADE, RELOCATING EXISTING POLES AND GUY WIRES THAT ARE LOCATED IN PROPOSED DRIVEWAYS, ADJUSTING THE HORIZONTAL OR VERTICAL ALIGNMENT OF EXISTING UNDERGROUND UTILITIES TO ACCOMMODATE PROPOSED GRADE OR CROSSING WITH A PROPOSED UTILITY, AND ANY OTHERS THAT MAY BE ENCOUNTERED THAT ARE UNKNOWN AT THIS TIME AND NOT SHOWN ON THESE PLANS.
18. CONTRACTOR SHALL ARRANGE FOR OR PROVIDE, AT ITS EXPENSE, ALL GAS, TELECOMMUNICATIONS, CABLE, OVERHEAD AND UNDERGROUND POWER LINE, AND UTILITY POLE ADJUSTMENTS NEEDED.
19. CONTRACTOR IS RESPONSIBLE FOR COORDINATING INSTALLATION OF FRANCHISE UTILITIES THAT ARE NECESSARY FOR ON-SITE AND OFF-SITE CONSTRUCTION, AND SERVICE TO THE PROPOSED DEVELOPMENT.
20. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ALL DAMAGES DUE TO THE CONTRACTORS' FAILURE TO EXACTLY LOCATE AND PRESERVE ALL UTILITIES. THE OWNER OR ENGINEER WILL ASSUME NO LIABILITY FOR ANY DAMAGES SUSTAINED OR COST INCURRED BECAUSE OF THE CONTRACTOR'S OPERATIONS IN THE VICINITY OF EXISTING UTILITIES OR STRUCTURES. IF IT IS NECESSARY TO SHORE, BRACE, SWING OR RELOCATE A UTILITY, THE UTILITY COMPANY OR DEPARTMENT AFFECTED SHALL BE CONTACTED BY THE CONTRACTOR AND THEIR PERMISSION OBTAINED REGARDING THE METHOD TO USE FOR SUCH WORK.
21. BRACING OF UTILITY POLES MAY BE REQUIRED BY THE UTILITY COMPANIES WHEN TRENCHING OR EXCAVATING IN CLOSE PROXIMITY TO THE POLES. THE COST OF BRACING POLES WILL BE BORNE BY THE CONTRACTOR, WITH NO SEPARATE PAY ITEM FOR THIS WORK. THE COST IS INCIDENTAL TO THE VARIOUS UNIT BID PRICES OF THIS CONTRACT.
22. CONTRACTOR SHALL USE ALL NECESSARY SAFETY PRECAUTIONS TO AVOID CONTACT WITH OVERHEAD AND UNDERGROUND POWER LINES. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE, FEDERAL AND UTILITY OWNER REGULATIONS PERTAINING TO WORK SETBACKS FROM POWER LINES.
23. THE CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN ALL REQUIRED CONSTRUCTION PERMITS, APPROVALS, AND BONDS PRIOR TO CONSTRUCTION.
24. THE CONTRACTOR SHALL HAVE AVAILABLE AT THE JOB SITE AT ALL TIMES A COPY OF THE CONTRACT DOCUMENTS INCLUDING PLANS, GEOTECHNICAL REPORT AND ADDENDA, PROJECT AND CITY SPECIFICATIONS, AND SPECIAL CONDITIONS, COPIES OF ANY REQUIRED CONSTRUCTION PERMITS, EROSION CONTROL PLANS, SWPPP AND INSPECTION REPORTS.
25. ALL SHOP DRAWINGS AND OTHER DOCUMENTS THAT REQUIRE ENGINEER REVIEW SHALL BE SUBMITTED BY THE CONTRACTOR SUFFICIENTLY IN ADVANCE OF CONSTRUCTION OF THAT ITEM, SO THAT NO LESS THAN 10 BUSINESS DAYS FOR REVIEW AND RESPONSE IS AVAILABLE.
26. ALL NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES, JURISDICTIONAL AGENCIES, AND/OR UTILITY SERVICE COMPANIES SHALL BE PERFORMED PRIOR TO USE OF THE FACILITY AND THE FINAL CONNECTION OF SERVICES.
27. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS.
28. CONTRACTOR'S BID PRICE SHALL INCLUDE ALL INSPECTION FEES.
29. ALL SYMBOLS SHOWN ON THESE PLANS (E.G. FIRE HYDRANT, METERS, VALVES, INLETS, ETC….) ARE FOR PRESENTATION PURPOSES ONLY AND ARE NOT TO SCALE. CONTRACTOR SHALL COORDINATE FINAL SIZES AND LOCATIONS WITH APPROPRIATE CITY INSPECTOR.
30. ALL CONSTRUCTION SHALL COMPLY WITH THE PROJECT'S FINAL GEOTECHNICAL REPORT (OR LATEST EDITION), INCLUDING SUBSEQUENT ADDENDA.
31. CONTRACTOR IS RESPONSIBLE FOR ALL MATERIALS TESTING AND CERTIFICATION, UNLESS SPECIFIED OTHERWISE BY OWNER. ALL MATERIALS TESTING SHALL BE COORDINATED WITH THE APPROPRIATE CITY INSPECTOR AND COMPLY WITH CITY IDS AND GEOTECHNICAL REPORT. TESTING SHALL BE PERFORMED BY AN APPROVED INDEPENDENT AGENCY FOR TESTING MATERIALS. OWNER SHALL APPROVE THE AGENCY NOMINATED BY THE CONTRACTOR FOR MATERIALS TESTING.
32. ALL COPIES OF MATERIALS TEST RESULTS SHALL BE SENT TO THE OWNER, ENGINEER AND ARCHITECT DIRECTLY FROM THE TESTING AGENCY.
33. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO SHOW, BY THE STANDARD TESTING PROCEDURES OF THE MATERIALS, THAT THE WORK CONSTRUCTED MEETS THE PROJECT REQUIREMENTS AND CITY SPECIFICATIONS.
34. ALL CONTRACTORS MUST CONFINE THEIR ACTIVITIES TO THE WORK AREA. NO ENCROACHMENTS OUTSIDE OF THE WORK AREA WILL BE ALLOWED. ANY DAMAGE RESULTING THEREFROM SHALL BE CONTRACTOR'S SOLE RESPONSIBILITY TO REPAIR.
35. THE CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES, UTILITIES, MANHOLES, POLES, GUY WIRES, VALVE COVERS, VAULT LIDS, FIRE HYDRANTS, COMMUNICATION BOXES/PEDESTALS, AND OTHER FACILITIES TO REMAIN AND SHALL REPAIR ANY DAMAGES AT NO COST TO THE OWNER. REPAIRS SHALL BE TO THE SAME OR BETTER CONDITION.
36. THE CONTRACTOR SHALL IMMEDIATELY REPAIR OR REPLACE ANY PHYSICAL DAMAGE TO PRIVATE PROPERTY OR PUBLIC IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO: FENCES, WALLS, SIGNS, PAVEMENT, CURBS, UTILITIES, SIDEWALKS, GRASS, TREES, LANDSCAPING, AND IRRIGATION SYSTEMS, ETC…. TO ORIGINAL CONDITION OR BETTER AT NO COST TO THE OWNER.
37. ALL AREAS IN EXISTING RIGHT-OF-WAY DISTURBED BY SITE CONSTRUCTION SHALL BE REPAIRED TO ORIGINAL CONDITION OR BETTER, INCLUDING AS NECESSARY GRADING, LANDSCAPING, CULVERTS, AND PAVEMENT.
38. THE CONTRACTOR SHALL SALVAGE ALL EXISTING POWER POLES, SIGNS, WATER VALVES, FIRE HYDRANTS, METERS, ETC... THAT ARE TO BE RELOCATED DURING CONSTRUCTION.
39. CONTRACTOR SHALL MAINTAIN ADEQUATE SITE DRAINAGE DURING ALL PHASES OF CONSTRUCTION, INCLUDING MAINTAINING EXISTING DITCHES OR CULVERTS FREE OF OBSTRUCTIONS AT ALL TIMES.
40. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND SUBMITTING A TRENCH SAFETY PLAN, PREPARED BY A PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, TO THE CITY PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TRENCH SAFETY REQUIREMENTS IN ACCORDANCE WITH CITY, STATE, AND FEDERAL REQUIREMENTS, INCLUDING OSHA FOR ALL TRENCHES. NO OPEN TRENCHES SHALL BE ALLOWED OVERNIGHT WITHOUT PRIOR WRITTEN APPROVAL OF THE CITY.
41. THE CONTRACTOR SHALL KEEP TRENCHES FREE FROM WATER.
42. SITE SAFETY IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.
43. THESE PLANS DO NOT EXTEND TO OR INCLUDE DESIGNS OR SYSTEMS PERTAINING TO THE SAFETY OF THE CONTRACTOR OR ITS EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE ENGINEER'S SEAL HEREON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTATION OF ALL REQUIRED SAFETY PROCEDURES AND PROGRAMS.
44. CONTRACTOR OFFICE AND STAGING AREA SHALL BE AGREED ON BY THE OWNER, CONTRACTOR, AND THE CITY PRIOR TO BEGINNING OF CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR ALL PERMITTING REQUIREMENTS FOR THE CONSTRUCTION OFFICE, TRAILER, STORAGE, AND STAGING OPERATIONS AND LOCATIONS.
45. LIGHT POLES, SIGNS, AND OTHER OBSTRUCTIONS SHALL NOT BE PLACED IN ACCESSIBLE ROUTES.
46. ALL SIGNS, PAVEMENT MARKINGS, AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
47. TOP RIM ELEVATIONS OF ALL EXISTING AND PROPOSED MANHOLES SHALL BE COORDINATED WITH TOP OF PAVEMENT OR FINISHED GRADE AND SHALL BE ADJUSTED TO BE FLUSH WITH THE ACTUAL FINISHED GRADE AT THE TIME OF PAVING.
48. CONTRACTOR SHALL ADJUST ALL EXISTING AND PROPOSED VALVES, FIRE HYDRANTS, AND OTHER UTILITY APPURTENANCES TO MATCH ACTUAL FINISHED GRADES AT THE TIME OF PAVING.
49. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION SEQUENCING AND PHASING, AND SHALL CONTACT THE APPROPRIATE CITY OFFICIALS, INCLUDING BUILDING OFFICIAL, ENGINEERING INSPECTOR, AND FIRE MARSHALL TO LEARN OF ANY REQUIREMENTS.
50. CONTRACTOR IS RESPONSIBLE FOR PREPARATION, SUBMITTAL, AND APPROVAL BY THE CITY OF A TRAFFIC CONTROL PLAN (TCP) PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING AND IMPLEMENTING THE APPROVED TCP, MAINTAINING THROUGHOUT CONSTRUCTION, AND REMOVING UPON COMPLETION OF CONSTRUCTION.
51. CONTRACTOR SHALL KEEP A NEAT AND ACCURATE RECORD OF CONSTRUCTION, INCLUDING ANY DEVIATIONS OR VARIANCES FROM THE PLANS. (REDLINE DRAWINGS).
52. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AS-BUILT PLANS TO THE ENGINEER AND CITY IDENTIFYING ALL DEVIATIONS AND VARIATIONS FROM THESE PLANS MADE DURING CONSTRUCTION.

EROSION CONTROL AND STORM WATER DISCHARGE:

1. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL EROSION CONTROL AND WATER QUALITY REQUIREMENTS, LAWS, AND ORDINANCES THAT APPLY TO THE CONSTRUCTION SITE LAND DISTURBANCE.
2. CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE "TCEQ GENERAL PERMIT TO DISCHARGE UNDER THE TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM TXR 150000".
3. CONTRACTOR SHALL COMPLY WITH ALL TCEQ AND EPA STORM WATER POLLUTION PREVENTION REQUIREMENTS.
4. THE CONTRACTOR SHALL ENSURE THAT ALL PRIMARY OPERATORS SUBMIT A NOI, IF APPLICABLE, TO TCEQ AT LEAST SEVEN DAYS PRIOR TO COMMENCING CONSTRUCTION, OR IF UTILIZING ELECTRONIC SUBMITTAL, PRIOR TO COMMENCING CONSTRUCTION. ALL PRIMARY OPERATORS SHALL PROVIDE A COPY OF THE SIGNED NOI TO THE OPERATOR OF ANY MS4 (TYPICALLY THE CITY) RECEIVING DISCHARGE FROM THE SITE.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR THE IMPLEMENTATION OF THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP), IF APPLICABLE, INCLUDING POSTING SITE NOTICE, INSPECTIONS, DOCUMENTATION, AND SUBMISSION OF ANY INFORMATION REQUIRED BY THE TCEQ AND EPA (E.G. NOI).
6. ALL CONTRACTORS AND SUBCONTRACTORS PROVIDING SERVICES RELATED TO THE SWPPP SHALL SIGN THE REQUIRED CONTRACTOR CERTIFICATION STATEMENT ACKNOWLEDGING THEIR RESPONSIBILITIES AS SPECIFIED IN THE SWPPP.
7. A COPY OF THE SWPPP, INCLUDING NOI, SITE NOTICE, CONTRACTOR CERTIFICATIONS, AND ANY REVISIONS, SHALL BE SUBMITTED TO THE CITY BY THE CONTRACTOR AND SHALL BE RETAINED ON-SITE DURING CONSTRUCTION.
8. A NOTICE OF TERMINATION (NOT), IF APPLICABLE, SHALL BE SUBMITTED TO TCEQ BY ANY PRIMARY OPERATOR WITHIN 30 DAYS AFTER ALL SOIL DISTURBING ACTIVITIES AT THE SITE HAVE BEEN COMPLETED AND A UNIFORM VEGETATIVE COVER HAS BEEN ESTABLISHED ON ALL UNPAVED AREAS AND AREAS NOT COVERED BY STRUCTURES, A TRANSFER OF OPERATIONAL CONTROL HAS OCCURRED, OR THE OPERATOR HAS OBTAINED ALTERNATIVE AUTHORIZATION UNDER A DIFFERENT PERMIT. A COPY OF THE NOT SHALL BE PROVIDED TO THE OPERATOR OF ANY MS4 RECEIVING DISCHARGE FROM THE SITE.
9. EROSION CONTROL DEVICES SHOWN ON THE EROSION CONTROL PLAN FOR THE PROJECT SHALL BE INSTALLED PRIOR TO THE START OF LAND DISTURBANCE.
10. ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS FOR THE PROJECT.
11. CONTRACTOR IS SOLELY RESPONSIBLE FOR INSTALLATION, IMPLEMENTATION, MAINTENANCE, AND EFFECTIVENESS OF ALL EROSION CONTROL DEVICES, BEST MANAGEMENT PRACTICES (BMPS), AND FOR UPDATING THE EROSION CONTROL PLAN DURING CONSTRUCTION AS FIELD CONDITIONS CHANGE.
12. CONTRACTOR SHALL DOCUMENT THE DATES OF INSTALLATION, MAINTENANCE OR MODIFICATION, AND REMOVAL FOR EACH BMP EMPLOYED IN THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IF APPLICABLE.
13. AS STORM SEWER INLETS ARE INSTALLED ON-SITE, TEMPORARY EROSION CONTROL DEVICES SHALL BE INSTALLED AT EACH INLET PER APPROVED DETAILS.
14. THE EROSION CONTROL DEVICES SHALL REMAIN IN PLACE UNTIL THE AREA IT PROTECTS HAS BEEN PERMANENTLY STABILIZED.
15. CONTRACTOR SHALL PROVIDE ADEQUATE EROSION CONTROL DEVICES NEEDED DUE TO PROJECT PHASING.
16. CONTRACTOR SHALL OBSERVE THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES AND MAKE FIELD ADJUSTMENTS AND MODIFICATIONS AS NEEDED TO PREVENT SEDIMENT FROM LEAVING THE SITE. IF THE EROSION CONTROL DEVICES DO NOT EFFECTIVELY CONTROL EROSION AND PREVENT SEDIMENTATION FROM WASHING OFF THE SITE, THEN THE CONTRACTOR SHALL NOTIFY THE ENGINEER.
17. OFF-SITE SOIL BORROW, SPOIL, AND STORAGE AREAS (IF APPLICABLE) ARE CONSIDERED AS PART OF THE PROJECT SITE AND MUST ALSO COMPLY WITH THE EROSION CONTROL REQUIREMENTS FOR THIS PROJECT. THIS INCLUDES THE INSTALLATION OF BMP'S TO CONTROL EROSION AND SEDIMENTATION AND THE ESTABLISHMENT OF PERMANENT GROUND COVER ON DISTURBED AREAS PRIOR TO FINAL APPROVAL OF THE PROJECT. CONTRACTOR IS RESPONSIBLE FOR MODIFYING THE SWPPP AND EROSION CONTROL PLAN TO INCLUDE BMPS FOR ANY OFF-SITE THAT ARE NOT ANTICIPATED OR SHOWN ON THE EROSION CONTROL PLAN.
18. ALL STAGING, STOCKPILES, SPOIL, AND STORAGE SHALL BE LOCATED SUCH THAT THEY WILL NOT ADVERSELY AFFECT STORM WATER QUALITY. PROTECTIVE MEASURES SHALL BE PROVIDED IF NEEDED TO ACCOMPLISH THIS REQUIREMENT, SUCH AS COVERING OR ENCIRCLING THE AREA WITH AN APPROPRIATE BARRIER.
19. CONTRACTORS SHALL INSPECT ALL EROSION CONTROL DEVICES, BMPS, DISTURBED AREAS, AND VEHICLE ENTRY AND EXIT AREAS WEEKLY AND WITHIN 24 HOURS OF ALL RAINFALL EVENTS OF 0.5 INCHES OR GREATER, AND KEEP A RECORD OF THIS INSPECTION IN THE SWPPP BOOKLET IF APPLICABLE, TO VERIFY THAT THE DEVICES AND EROSION CONTROL PLAN ARE FUNCTIONING PROPERLY.
20. CONTRACTOR SHALL CONSTRUCT A STABILIZED CONSTRUCTION ENTRANCE AT ALL PRIMARY POINTS OF ACCESS IN ACCORDANCE WITH CITY SPECIFICATIONS. CONTRACTOR SHALL ENSURE THAT ALL CONSTRUCTION TRAFFIC USES THE STABILIZED ENTRANCE AT ALL TIMES FOR ALL INGRESS/EGRESS.
21. SITE ENTRY AND EXITS SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT THE TRACKING AND FLOWING OF SEDIMENT AND DIRT ONTO OFF-SITE ROADWAYS. ALL SEDIMENT AND DIRT FROM THE SITE THAT IS DEPOSITED ONTO AN OFF-SITE ROADWAY SHALL BE REMOVED IMMEDIATELY.
22. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL SILT AND DEBRIS FROM THE AFFECTED OFF-SITE ROADWAYS THAT ARE A RESULT OF THE CONSTRUCTION, AS REQUESTED BY OWNER AND CITY. AT A MINIMUM, THIS SHOULD OCCUR ONCE PER DAY FOR THE OFF-SITE ROADWAYS.
23. WHEN WASHING OF VEHICLES IS REQUIRED TO REMOVE SEDIMENT PRIOR TO EXITING THE SITE, IT SHALL BE DONE IN AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP BMP.
24. CONTRACTOR SHALL INSTALL A TEMPORARY SEDIMENT BASIN FOR ANY ON-SITE DRAINAGE AREAS THAT ARE GREATER THAN 10 ACRES, PER TCEQ AND CITY STANDARDS. IF NO ENGINEERING DESIGN HAS BEEN PROVIDED FOR A SEDIMENTATION BASIN ON THESE PLANS, THEN THE CONTRACTOR SHALL ARRANGE FOR AN APPROPRIATE DESIGN TO BE PROVIDED.
25. ALL FINES IMPOSED FOR SEDIMENT OR DIRT DISCHARGED FROM THE SITE SHALL BE PAID BY THE RESPONSIBLE CONTRACTOR.
26. WHEN SEDIMENT OR DIRT HAS CLOGGED THE CONSTRUCTION ENTRANCE VOID SPACES BETWEEN STONES OR DIRT IS BEING TRACKED ONTO A ROADWAY, THE AGGREGATE PAD MUST BE WASHED DOWN OR REPLACED. RUNOFF FROM THE WASH-DOWN OPERATION SHALL NOT BE ALLOWED TO DRAIN DIRECTLY OFF SITE WITHOUT FIRST FLOWING THROUGH ANOTHER BMP TO CONTROL SEDIMENTATION. PERIODIC RE-GRADING OR NEW STONE MAY BE REQUIRED TO MAINTAIN THE EFFECTIVENESS OF THE CONSTRUCTION ENTRANCE.
27. TEMPORARY SEEDING OR OTHER APPROVED STABILIZATION SHALL BE INITIATED WITHIN 14 DAYS OF THE LAST DISTURBANCE OF ANY AREA, UNLESS ADDITIONAL CONSTRUCTION IN THE AREA IS EXPECTED WITHIN 21 DAYS OF THE LAST DISTURBANCE.
28. CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING CONSTRUCTION, ALWAYS CLEANING UP DIRT, LOOSE MATERIAL, AND TRASH AS CONSTRUCTION PROGRESSES.
29. UPON COMPLETION OF FINE GRADING, ALL SURFACES OF DISTURBED AREAS SHALL BE PERMANENTLY STABILIZED. STABILIZATION IS ACHIEVED WHEN THE AREA IS EITHER COVERED BY PERMANENT IMPERVIOUS STRUCTURES, SUCH AS BUILDINGS, SIDEWALK, PAVEMENT, OR A UNIFORM PERENNIAL VEGETATIVE COVER.
30. AT THE CONCLUSION OF THE PROJECT, ALL INLETS, DRAIN PIPE, CHANNELS, DRAINAGEWAYS AND BORROW DITCHES AFFECTED BY THE CONSTRUCTION SHALL BE DREDGED, AND THE SEDIMENT GENERATED BY THE PROJECT SHALL BE REMOVED AND DISPOSED IN ACCORDANCE WITH APPLICABLE REGULATIONS.

DEMOLITION:

1. THIS PLAN IS INTENDED TO GIVE A GENERAL GUIDE TO THE CONTRACTOR, NOTHING MORE. THE GOAL OF THE DEMOLITION IS TO LEAVE THE SITE IN A STATE SUITABLE FOR THE CONSTRUCTION OF THE PROPOSED DEVELOPMENT. REMOVAL OR PRESERVATION OF IMPROVEMENTS, UTILITIES, ETC. TO ACCOMPLISH THIS GOAL ARE THE RESPONSIBILITY OF THE CONTRACTOR.
2. CONTRACTOR SHALL CONTACT THE OWNER TO VERIFY WHETHER ADDITIONAL REPORTS OR AMENDMENTS TO THE ABOVE CITED REPORTS HAVE BEEN PREPARED AND TO OBTAIN/REVIEW/AND COMPLY WITH THE RECOMMENDATION OF SUCH STUDIES PRIOR TO STARTING ANY WORK ON THE SITE.
3. CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS REGARDING THE DEMOLITION OF OBJECTS ON THE SITE AND THE DISPOSAL OF THE DEMOLISHED MATERIALS OFF-SITE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO REVIEW THE SITE, DETERMINE THE APPLICABLE REGULATIONS, OBTAIN THE REQUIRED PERMITS AND AUTHORIZATIONS, AND COMPLY.
4. SURFACE PAVEMENT INDICATED FOR REMOVAL MAY OVERLAY OTHER HIDDEN STRUCTURES, SUCH AS ADDITIONAL LAYERS OF PAVEMENT, FOUNDATIONS OR WALLS, THAT ARE ALSO TO BE REMOVED.

CITY OF ENNIS, TEXAS
PUBLIC WORKS

GENERAL CONSTRUCTION NOTES

NO:	REVISION:	DATE:	SHEET:
		05/08/2021	GN-1

GRADING:

1. THE CONTRACTOR SHALL VERIFY THE SUITABILITY OF EXISTING AND PROPOSED SITE CONDITIONS INCLUDING GRADES AND DIMENSIONS BEFORE START OF CONSTRUCTION. THE CIVIL ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES.
2. CONTRACTOR SHALL OBTAIN ANY REQUIRED GRADING PERMITS FROM THE CITY.
3. UNLESS OTHERWISE NOTED, PROPOSED CONTOURS AND SPOT ELEVATIONS SHOWN IN PAVED AREA REFLECT TOP OF PAVEMENT SURFACE. IN LOCATIONS ALONG A CURB LINE, ADD 6-INCHES (OR THE HEIGHT OF THE CURB) TO THE PAVING GRADE FOR TOP OF CURB ELEVATION.
4. PROPOSED SPOT ELEVATIONS AND CONTOURS OUTSIDE THE PAVEMENT ARE TO TOP OF FINISHED GRADE.
5. PROPOSED CONTOURS ARE APPROXIMATE. PROPOSED SPOT ELEVATIONS AND DESIGNATED GRADIENT ARE TO BE USED IN CASE OF DISCREPANCY.
6. ALL FINISHED GRADES SHALL TRANSITION UNIFORMLY BETWEEN THE FINISHED ELEVATIONS SHOWN.
7. CONTOURS AND SPOT GRADES TYPICALLY SHOWN ARE ELEVATIONS OF TOP OF THE FINISHED SURFACE. WHEN PERFORMING THE GRADING OPERATIONS, THE CONTRACTOR SHALL PROVIDE AN APPROPRIATE ELEVATION HOLD-DOWN ALLOWANCE FOR THE THICKNESS OF PAVEMENT, SIDEWALK, TOPSOIL, MULCH, STONE, LANDSCAPING, RIP-RAP AND ALL OTHER SURFACE MATERIALS THAT WILL CONTRIBUTE TO THE TOP OF FINISHED GRADE. FOR EXAMPLE, THE LIMITS OF EARTHWORK IN PAVED AREAS IS THE BOTTOM OF THE PAVEMENT SECTION.
8. UNLESS OTHERWISE SHOWN IN THE PLANS, NO REPRESENTATIONS OF EARTHWORK QUANTITIES OR SITE BALANCE ARE MADE BY THESE PLANS. THE CONTRACTOR SHALL PROVIDE THEIR OWN EARTHWORK CALCULATION TO DETERMINE THEIR CONTRACT QUANTITIES AND COST. ANY SIGNIFICANT VARIANCE FROM A BALANCED SITE SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CIVIL ENGINEER.
9. ALL GRADING AND EARTHWORK SHALL COMPLY WITH THE PROJECT'S FINAL GEOTECHNICAL REPORT (OR LATEST EDITION), INCLUDING SUBSEQUENT ADDENDA.
10. UNLESS OTHERWISE SHOWN IN PLANS, ALL EXCAVATION IS UNCLASSIFIED AND SHALL INCLUDE ALL MATERIALS ENCOUNTERED. UNUSABLE EXCAVATED MATERIAL AND ALL WASTE RESULTING FROM SITE CLEARING AND GRUBBING SHALL BE REMOVED FROM THE SITE AND APPROPRIATELY DISPOSED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE.
11. EROSION CONTROL DEVICES SHOWN ON THE EROSION CONTROL PLAN FOR THE PROJECT SHALL BE INSTALLED PRIOR TO THE START OF GRADING. REFERENCE EROSION CONTROL PLAN, DETAILS, GENERAL NOTES, AND SWPPP FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
12. BEFORE ANY EARTHWORK IS PERFORMED, THE CONTRACTOR SHALL STAKE OUT AND MARK THE LIMITS OF THE PROJECT'S PROPERTY LINE AND SITE IMPROVEMENTS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY ENGINEERING AND SURVEYING FOR LINE AND GRADE CONTROL POINTS RELATED TO EARTHWORK.
13. CONTRACTOR TO DISPOSE OF ALL EXCESS EXCAVATION MATERIALS IN A MANNER THAT ADHERES TO LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS. THE CONTRACTOR SHALL KEEP A RECORD OF WHERE EXCESS EXCAVATION WAS DISPOSED, ALONG WITH THE RECEIVING LANDOWNER'S APPROVAL TO DO SO.
14. CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF TOP SOIL AND REPLACEMENT AT THE COMPLETION OF FINE GRADING. UNLESS SPECIFIED OTHERWISE IN PLANS, 6" OF TOPSOIL IS TO BE REMOVED AND REPLACED.
15. CONTRACTOR SHALL MAINTAIN ADEQUATE SITE DRAINAGE DURING ALL PHASES OF CONSTRUCTION, INCLUDING MAINTAINING EXISTING DITCHES OR CULVERTS FREE OF OBSTRUCTIONS AT ALL TIMES.
16. NO EARTHWORK FILL SHALL BE PLACED IN ANY EXISTING DRAINAGE WAY, SWALE, CHANNEL, DITCH, CREEK, OR FLOODPLAIN FOR ANY REASON OR ANY LENGTH OF TIME, UNLESS THESE PLANS SPECIFICALLY INDICATE THIS IS REQUIRED.
17. TEMPORARY CULVERTS MAY BE REQUIRED IN SOME LOCATIONS TO CONVEY RUN-OFF. THE COST FOR FURNISHING, INSTALLING, MAINTAINING AND REMOVING TEMPORARY DRAINAGE IS THE RESPONSIBILITY OF THE CONTRACTOR AND NO SEPARATE PAYMENT SHALL BE PROVIDED.
18. THE CONTRACTOR SHALL CLEAR AND GRUB THE SITE AND PLACE, COMPACT, AND CONDITION FILL PER THE PROJECT GEOTECHNICAL ENGINEER'S SPECIFICATIONS. THE FILL MATERIAL TO BE USED SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT.
19. CONTRACTOR IS RESPONSIBLE FOR ALL SOILS TESTING AND CERTIFICATION, UNLESS SPECIFIED OTHERWISE BY OWNER. ALL SOILS TESTING SHALL BE COORDINATED WITH THE APPROPRIATE CITY INSPECTOR AND SHALL COMPLY WITH CITY IDS AND THE GEOTECHNICAL REPORT. SOILS TESTING SHALL BE PERFORMED BY AN APPROVED INDEPENDENT AGENCY FOR TESTING SOILS. THE OWNER SHALL APPROVE THE AGENCY NOMINATED BY THE CONTRACTOR FOR SOILS TESTING.
20. ALL COPIES OF SOILS TEST RESULTS SHALL BE SENT TO THE OWNER, ENGINEER AND ARCHITECT DIRECTLY FROM THE TESTING AGENCY.
21. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO SHOW, BY THE STANDARD TESTING PROCEDURES OF THE SOILS, THAT THE WORK CONSTRUCTED MEETS THE PROJECT REQUIREMENTS AND CITY SPECIFICATIONS.
22. CONTRACTOR SHALL ENSURE THAT SUFFICIENT POSITIVE SLOPE AWAY FROM THE BUILDING PAD IS ACHIEVED FOR ENTIRE PERIMETER OF THE PROPOSED BUILDING(S) DURING GRADING OPERATIONS AND IN THE FINAL CONDITION. IF THE CONTRACTOR OBSERVES THAT THIS WILL NOT BE ACHIEVED, THE CONTRACTOR SHALL CONTACT THE ENGINEER TO REVIEW THE LOCATION.
23. THE CONTRACTOR SHALL TAKE ALL AVAILABLE PRECAUTIONS TO CONTROL DUST. CONTRACTOR SHALL CONTROL DUST BY SPRINKLING WATER, OR BY OTHER MEANS APPROVED BY THE CITY, AT NO ADDITIONAL COST TO THE OWNER.
24. CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES FOR ANY REQUIRED UTILITY ADJUSTMENTS AND/OR RELOCATIONS NEEDED FOR GRADING OPERATIONS AND TO ACCOMMODATE PROPOSED GRADE, INCLUDING THE UNKNOWN UTILITIES NOT SHOWN ON THESE PLANS. CONTRACTOR SHALL REFER TO THE GENERAL NOTES "GENERAL" SECTION OF THESE PLANS FOR ADDITIONAL INFORMATION.
25. EXISTING TREE LOCATIONS SHOWN ON THESE PLANS ARE APPROXIMATE. CONTRACTOR SHALL REPORT ANY DISCREPANCIES FOUND IN THE FIELD THAT AFFECT THE GRADING PLAN TO THE CIVIL OWNER/ENGINEER/ARCHITECT.
26. CONTRACTOR SHALL FIELD VERIFY ALL PROTECTED TREE LOCATIONS, INDIVIDUAL PROTECTED TREE CRITICAL ROOT ZONES, AND PROPOSED SITE GRADING, AND NOTIFY THE ENGINEER/ARCHITECT OF ANY CONFLICTS WITH THE TREE PRESERVATION PLAN PRIOR TO COMMENCING THE WORK.
27. TREE PROTECTION MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE APPROVED TREE PRESERVATION PLANS.
28. CONTRACTOR SHALL REFER TO THE PLANS FOR ALL INFORMATION AND DETAILS REGARDING EXISTING TREES TO BE REMOVED AND PRESERVED.
29. NO TREE SHALL BE REMOVED UNLESS A TREE REMOVAL PERMIT HAS BEEN ISSUED BY THE CITY, OR CITY HAS OTHERWISE CONFIRMED IN WRITING THAT ONE IS NOT NEEDED FOR THE TREE(S).
30. NO TREE SHALL BE REMOVED OR DAMAGED WITHOUT PRIOR AUTHORIZATION OF THE OWNER OR OWNER'S REPRESENTATIVE. EXISTING TREES SHALL BE PRESERVED WHENEVER POSSIBLE AND GRADING IMPACT TO TREES HELD TO A MINIMUM.
31. AFTER PLACEMENT OF SUBGRADE AND PRIOR TO PLACEMENT OF PAVEMENT, CONTRACTOR SHALL TEST AND OBSERVE FINISHED SUBGRADE FOR EVIDENCE OF PONDING AND INADEQUATE SLOPE FOR DRAINAGE. ALL AREAS SHALL ADEQUATELY DRAIN TOWARDS THE INTENDED STRUCTURE TO CONVEY STORMWATER RUNOFF. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER IF ANY AREAS OF POOR DRAINAGE ARE DISCOVERED.
32. CONTRACTOR FIELD ADJUSTMENT OF PROPOSED SPOT GRADES IS ALLOWED, IF THE APPROVAL OF THE OWNER/ENGINEER IS OBTAINED.

PAVING:

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

STORM DRAINAGE:

1. ALL STORM SEWER MATERIALS AND CONSTRUCTION SHALL COMPLY WITH CITY STANDARD CONSTRUCTION DETAILS AND IDS.
2. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS AND APPURTENANCES NECESSARY FOR COMPLETE INSTALLATION OF THE STORM SEWER.
3. THE CONTRACTOR SHALL FIELD VERIFY THE SIZE, CONDITION, HORIZONTAL, AND VERTICAL LOCATIONS OF ALL EXISTING STORM SEWER FACILITIES THAT ARE TO BE CONNECTED TO, PRIOR TO START OF CONSTRUCTION OF ANY STORM SEWER, AND SHALL NOTIFY THE CITY OF ANY CONFLICTS DISCOVERED.
4. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS SHOWN, INCLUDING THE HORIZONTAL AND VERTICAL LOCATION OF CURB INLETS AND GRATE INLETS AND ALL UTILITIES CROSSING THE STORM SEWER.
5. FLOW LINE, TOP-OF-CURB, RIM, THROAT, AND GRATE ELEVATIONS OF PROPOSED INLETS SHALL BE VERIFIED WITH THE GRADING PLAN AND FIELD CONDITIONS PRIOR TO THEIR INSTALLATION.
6. ALL PUBLIC STORM SEWER CONSTRUCTION, PIPE, STRUCTURES, AND FITTINGS SHALL ADHERE TO CITY STANDARD CONSTRUCTION DETAILS AND IDS. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS.
7. ALL PVC TO RCP CONNECTIONS AND ALL STORM PIPE CONNECTIONS ENTERING STRUCTURES OR OTHER STORM PIPES SHALL HAVE A MANHOLE AND BE GROUTED TO ASSURE THE CONNECTION IS WATERTIGHT.
8. ALL STORM SEWER CONDUIT SHALL BE REINFORCED CONCRETE PIPE (RCP) UNLESS OTHERWISE APPROVED BY THE CITY. STORM SEWER INSTALLATION SHALL CONFORM TO CITY STANDARD CONSTRUCTION DETAILS AND IDS.
9. SMOOTH BORE, HIGH PERFORMANCE POLYPROPYLENE (HP) STORM PIPE BY ADS, OR APPROVED EQUAL, IF APPROVED BY THE CITY, SHALL REQUIRE BEDDING AND BACKFILL DESIGN DETAILS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER, LICENSED TO PRACTICE IN THE STATE OF TEXAS. SEE CITY IDS FOR FURTHER REQUIREMENTS.
10. IF CONTRACTOR PROPOSES TO USE HDPE OR PVC IN LIEU OF RCP FOR PRIVATE STORM SEWER, CONTRACTOR SHALL SUBMIT TECHNICAL DATA TO THE CITY ENGINEER/INSPECTOR FOR APPROVAL PRIOR TO ORDERING THE MATERIAL. ANY PROPOSED HDPE AND PVC SHALL BE WATERTIGHT.
11. THE CONTRACTOR SHALL PROVIDE CONSTRUCTION SURVEYING AND STAKING FOR ALL STORM SEWER LINES.
12. EMBEDMENT FOR ALL STORM SEWER LINES, PUBLIC OR PRIVATE, SHALL BE PER CITY STANDARD CONSTRUCTION DETAILS AND IDS.
13. ALL WYE CONNECTIONS AND PIPE BENDS ARE TO BE PREFABRICATED AND INSTALLED PER MANUFACTURERS SPECIFICATIONS.
14. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND SUBMITTING A TRENCH SAFETY PLAN, PREPARED BY A PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, TO THE CITY PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TRENCH SAFETY REQUIREMENTS IN ACCORDANCE WITH CITY, STATE, AND FEDERAL REQUIREMENTS, INCLUDING OSHA FOR ALL TRENCHES. NO OPEN TRENCHES SHALL BE ALLOWED OVERNIGHT WITHOUT PRIOR WRITTEN APPROVAL OF THE CITY.
15. THE CONTRACTOR SHALL KEEP TRENCHES FREE FROM WATER.

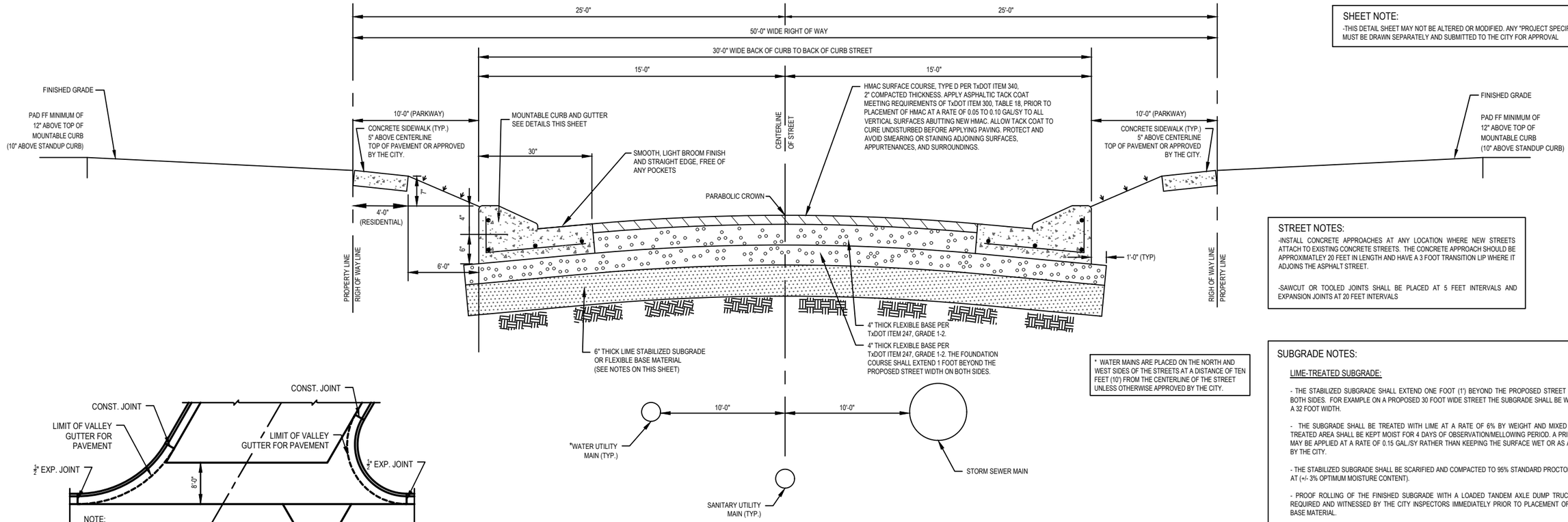
WATER AND WASTEWATER:

1. ALL WATER AND WASTEWATER MATERIALS AND CONSTRUCTION SHALL COMPLY WITH CITY STANDARD CONSTRUCTION DETAILS AND IDS.
2. CONTRACTOR SHALL FIELD VERIFY THE SIZE, CONDITION, HORIZONTAL, AND VERTICAL LOCATIONS OF ALL EXISTING WATER AND WASTEWATER FACILITIES THAT ARE TO BE CONNECTED TO, PRIOR TO START OF CONSTRUCTION OF ANY WATER OR WASTEWATER CONSTRUCTION, AND SHALL NOTIFY THE CITY OF ANY CONFLICTS DISCOVERED.
3. CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS SHOWN, INCLUDING THE HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITY SERVICES ENTERING THE BUILDING.
4. THE CONTRACTOR SHALL FIELD VERIFY THE ELEVATION OF ALL UTILITY CROSSINGS PRIOR TO THE INSTALLATION OF ANY PIPE.
5. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS AND APPURTENANCES NECESSARY FOR COMPLETE INSTALLATION OF THE WATER AND WASTEWATER IMPROVEMENTS.
6. ALL PUBLIC WATER AND WASTEWATER CONSTRUCTION, PIPE, STRUCTURES, AND FITTINGS SHALL ADHERE TO CITY STANDARD CONSTRUCTION DETAILS AND IDS. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS.
7. ALL PRIVATE WATER AND WASTEWATER CONSTRUCTION, PIPE, STRUCTURES, AND FITTINGS SHALL ADHERE TO THE APPLICABLE PLUMBING CODE. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS.
8. FIRE SPRINKLER LINES SHALL BE DESIGNED AND INSTALLED BY A LICENSED FIRE SPRINKLER CONTRACTOR, AND COMPLY TO THE APPLICABLE CODES AND INSPECTIONS REQUIRED.
9. EMBEDMENT FOR ALL WATER AND WASTEWATER LINES, PUBLIC OR PRIVATE, SHALL BE PER CITY STANDARD CONSTRUCTION DETAILS AND IDS.
10. CONTRACTOR SHALL TAKE REQUIRED SANITARY PRECAUTIONS, FOLLOWING ANY CITY, TCEQ, AND AWWA STANDARDS, TO KEEP WATER PIPE AND FITTINGS CLEAN AND CAPPED AT TIMES WHEN INSTALLATION IS NOT IN PROGRESS.
11. CONTRACTOR SHALL PROVIDE CONSTRUCTION SURVEYING AND STAKING FOR ALL WATER AND WASTEWATER LINES.
12. ALL WATER AND WASTEWATER SERVICES SHALL TERMINATE 5-FEET OUTSIDE THE BUILDING, UNLESS NOTED OTHERWISE.
13. CONTRACTOR SHALL COMPLY WITH CITY REQUIREMENTS FOR WATER AND WASTEWATER SERVICE DISRUPTIONS AND THE AMOUNT OF PRIOR NOTICE THAT IS REQUIRED, AND SHALL COORDINATE DIRECTLY WITH THE APPROPRIATE CITY DEPARTMENT.
14. CONTRACTOR SHALL SEQUENCE WATER AND WASTEWATER CONSTRUCTION TO AVOID OR MINIMIZE INTERRUPTION OF SERVICE TO SURROUNDING PROPERTIES.
15. CONTRACTOR SHALL MAINTAIN WATER SERVICE AND WASTEWATER SERVICE TO ALL CUSTOMERS THROUGHOUT CONSTRUCTION (IF NECESSARY, BY USE OF TEMPORARY METHODS APPROVED BY THE CITY). THIS WORK SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED.
16. THE CONTRACTOR IS RESPONSIBLE TO PROTECT ALL WATER AND WASTEWATER LINES CROSSING THE PROJECT. THE CONTRACTOR SHALL REPAIR ALL DAMAGED LINES IMMEDIATELY TO THE CITY STANDARDS AND SATISFACTION. ALL REPAIRS OF EXISTING WATER MAINS, WATER SERVICES, SEWER MAINS, AND SANITARY SEWER SERVICES ARE SUBSIDIARY TO THE WORK, AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED.
17. VALVE ADJUSTMENTS SHALL BE CONSTRUCTED SUCH THAT THE COVERS ARE AT FINISHED SURFACE ELEVATIONS OF THE PROPOSED PAVEMENT.
18. THE ENDS OF ALL EXISTING WATER MAINS THAT ARE CUT, BUT NOT REMOVED, SHALL BE PLUGGED AND ABANDONED IN PLACE. THIS WORK SHALL BE CONSIDERED AS A SUBSIDIARY COST TO THE PROJECT AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED.
19. ALL FIRE HYDRANTS, VALVES, TEES, BENDS, WYES, REDUCERS, FITTINGS, AND ENDS SHALL BE MECHANICALLY RESTRAINED AND/OR THRUST BLOCKED.
20. CONTRACTOR SHALL INSTALL A FULL SEGMENT OF WATER OR WASTEWATER PIPE CENTERED AT ALL UTILITY CROSSINGS SO THAT THE JOINTS ARE GREATER THAN 9-FEET FROM THE CROSSING.
21. ALL CROSSINGS AND LOCATIONS WHERE WASTEWATER IS LESS THAN 9-FEET FROM WATER, WASTEWATER CONSTRUCTION AND MATERIALS SHALL COMPLY WITH TCEQ CHAPTER 217.53.
22. ALL CROSSING AND LOCATIONS WHERE WATER IS LESS THAN 9-FEET FROM WASTEWATER, WATER CONSTRUCTION AND MATERIALS SHALL COMPLY WITH TCEQ CHAPTER 290.44.
23. ALL WATER AND WASTEWATER SHALL BE TESTED IN ACCORDANCE WITH THE CITY, AWWA, AND TCEQ STANDARDS AND SPECIFICATIONS. AT A MINIMUM, THIS SHALL CONSIST OF THE FOLLOWING:
    a. ALL WATERLINES SHALL BE HYDROSTATICALLY TESTED AND CHLORINATED BEFORE BEING PLACED INTO SERVICE. CONTRACTOR SHALL COORDINATE WITH THE CITY FOR THEIR REQUIRED PROCEDURES AND SHALL ALSO COMPLY WITH TCEQ REGULATIONS.
    b. WASTEWATER LINES AND MANHOLES SHALL BE VACUUM TESTED. CONTRACTOR SHALL COORDINATE WITH THE CITY FOR THEIR REQUIRED PROCEDURES AND SHALL ALSO COMPLY WITH TCEQ REGULATIONS. AFTER COMPLETION OF THESE TESTS, A TELEVISION INSPECTION SHALL BE PERFORMED AND PROVIDED TO THE CITY ON A DVD.
24. DUCTILE IRON PIPE SHALL BE PROTECTED FROM CORROSION BY A LOW-DENSITY POLYETHYLENE LINER WRAP THAT IS AT LEAST A SINGLE LAYER OF 8-MIL. ALL DUCTILE IRON JOINTS SHALL BE BONDED.
25. WATERLINES SHALL BE INSTALLED AT NO LESS THAN THE MINIMUM COVER REQUIRED BY THE CITY.
26. CONTRACTOR SHALL PROVIDE CLEAN-OUTS FOR PRIVATE SANITARY SEWER LINES AT ALL CHANGES IN DIRECTION AND 100-FOOT INTERVALS, OR AS REQUIRED BY THE APPLICABLE PLUMBING CODE.
27. CONTRACTOR SHALL PROVIDE BACKWATER VALVES FOR PLUMBING FIXTURES AS REQUIRED BY THE APPLICABLE PLUMBING CODE (E.G. FLOOR ELEVATION OF FIXTURE UNIT IS BELOW THE ELEVATION OF THE MANHOLE COVER OF THE NEXT UPSTREAM MANHOLE IN THE PUBLIC SEWER). CONTRACTOR SHALL REVIEW BOTH MEP AND CIVIL PLANS TO CONFIRM WHERE THESE ARE REQUIRED.
28. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND SUBMITTING A TRENCH SAFETY PLAN, PREPARED BY A PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, TO THE CITY PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TRENCH SAFETY REQUIREMENTS IN ACCORDANCE WITH CITY, STATE, AND FEDERAL REQUIREMENTS, INCLUDING OSHA FOR ALL TRENCHES. NO OPEN TRENCHES SHALL BE ALLOWED OVERNIGHT WITHOUT PRIOR WRITTEN APPROVAL OF THE CITY.
29. THE CONTRACTOR SHALL KEEP TRENCHES FREE FROM WATER.
30. THE CONTRACTOR SHALL BE RESPONSIBLE TO SEED ALL AREAS DISTURBED BY CONSTRUCTION AND WATER AND RESEED AS NECESSARY TO ESTABLISH VEGETATION.

CITY OF ENNIS, TEXAS
PUBLIC WORKS

GENERAL CONSTRUCTION NOTES

NO:	REVISION:	DATE:	SHEET:
		05/08/2021	GN-2



RESIDENTIAL STREET TYPICAL SECTION

* WATER MAINS ARE PLACED ON THE NORTH AND WEST SIDES OF THE STREETS AT A DISTANCE OF TEN FEET (10') FROM THE CENTERLINE OF THE STREET UNLESS OTHERWISE APPROVED BY THE CITY.

SHEET NOTE:

-THIS DETAIL SHEET MAY NOT BE ALTERED OR MODIFIED. ANY "PROJECT SPECIFIC" DETAIL MUST BE DRAWN SEPARATELY AND SUBMITTED TO THE CITY FOR APPROVAL

STREET NOTES:

-INSTALL CONCRETE APPROACHES AT ANY LOCATION WHERE NEW STREETS ATTACH TO EXISTING CONCRETE STREETS. THE CONCRETE APPROACH SHOULD BE APPROXIMATLEY 20 FEET IN LENGTH AND HAVE A 3 FOOT TRANSITION LIP WHERE IT ADJOINS THE ASPHALT STREET.

-SAWCUT OR TOOLED JOINTS SHALL BE PLACED AT 5 FEET INTERVALS AND EXPANSION JOINTS AT 20 FEET INTERVALS

SUBGRADE NOTES:

LIME-TREATED SUBGRADE:

- THE STABILIZED SUBGRADE SHALL EXTEND ONE FOOT (1') BEYOND THE PROPOSED STREET WIDTH ON BOTH SIDES. FOR EXAMPLE ON A PROPOSED 30 FOOT WIDE STREET THE SUBGRADE SHALL BE WORKED AT A 32 FOOT WIDTH.

- THE SUBGRADE SHALL BE TREATED WITH LIME AT A RATE OF 6% BY WEIGHT AND MIXED WET. THE TREATED AREA SHALL BE KEPT MOIST FOR 4 DAYS OF OBSERVATION/MELLOWING PERIOD. A PRIME QUOTE MAY BE APPLIED AT A RATE OF 0.15 GAL./SY RATHER THAN KEEPING THE SURFACE WET OR AS APPROVED BY THE CITY.

- THE STABILIZED SUBGRADE SHALL BE SCARIFIED AND COMPACTED TO 95% STANDARD PROCTOR DENSITY AT (+/- 3% OPTIMUM MOISTURE CONTENT).

- PROOF ROLLING OF THE FINISHED SUBGRADE WITH A LOADED TANDEM AXLE DUMP TRUCK MAY BE REQUIRED AND WITNESSED BY THE CITY INSPECTORS IMMEDIATELY PRIOR TO PLACEMENT OF FLEXIBLE BASE MATERIAL.

- ALL TESTING SHALL BE AT THE DEVELOPER'S EXPENSE AND COMPLETED BY A TESTING LABORATORY APPROVED BY THE CITY AND WITH CURRENT AASHTO ACCREDITATION THAT DEMONSTRATES THE LABORATORY'S CAPABILITIES TO PERFORM APPLICABLE TEST PROCEDURES.

- THE CITY MAY PERIODICALLY REQUIRE ADDITIONAL TESTS TO ASSIST THEM IN EVALUATING THE QUALITY OF WORK AND CONTRACTOR'S PERFORMANCE.

FLEXIBLE BASE SUBGRADE

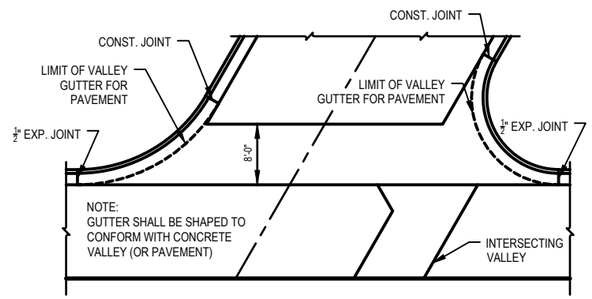
- FLEXIBLE BASE MATERIAL MAY BE USED IN LIEU OF LIME STABILIZED SUBGRADE.

- MATERIAL AND INSTALLATION SHALL COMPLY WIHT TxDOT ITEM 247, GRADE 1-2.

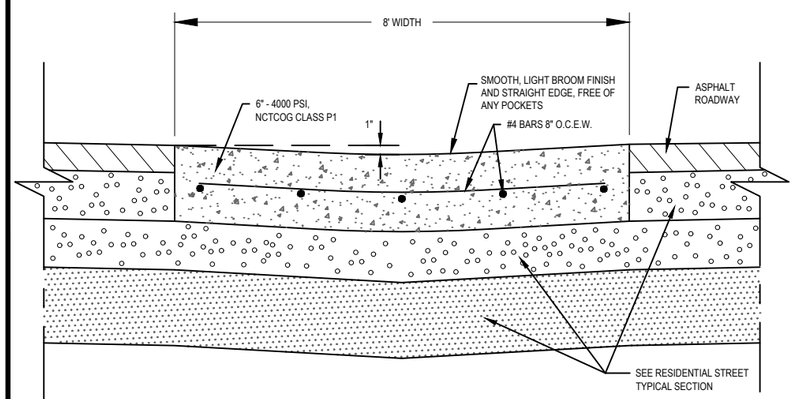
- IF USED IN LIEU OF STABILIZED SUBGRADE, FLEXIBLE MATERIAL SHALL BE PLACED AT A MINIMUM OF SIX (6) INCHES THICKNESS AND PLACED ON PROOF ROLLED SUBBASE.

- PROOF ROLLING OF THE FINISHED GRADE SUBBASE WITH A LOADED TANDEM AXLE DUMP TRUCK WILL BE REQUIRED AND WITNESSED BY CITY INSPECTORS.

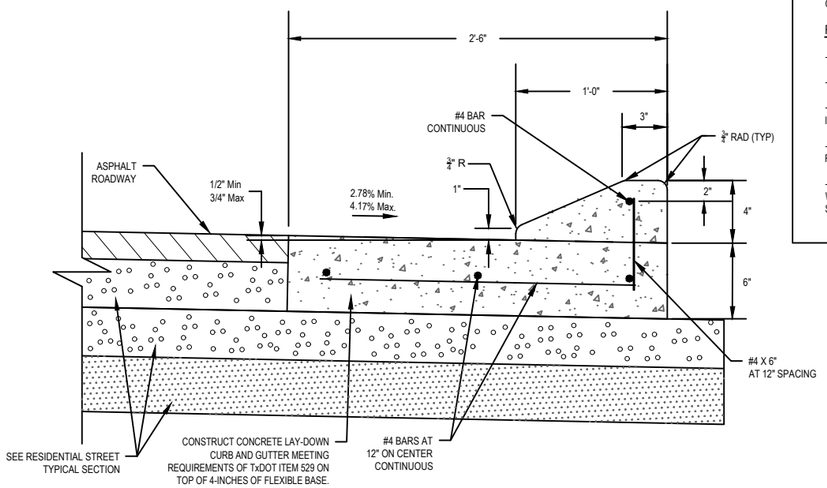
- FLEXIBLE BASE SHALL EXTEND A MINIMUM OF 1'-0" OUTSIDE OF THE PROPOSED BACK OF CURB FOR THE WIDTH OF THE STREET BEING INSTALLED. FOR EXAMPLE ON A PROPOSED 30 FOOT WIDE STREET THE SUBGRADE SHALL BE WORKED AT A 32 FOOT WIDTH.



THE REINFORCED CONCRETE VALLEY SHALL REPLACE THE TOP OF THE PAVEMENT WITH THE REMAINING PORTION OF THE PAVEMENT TO BE CONSTRUCTED INCLUDING SUBGRADE TREATMENT, IN ACCORDANCE WITH THE TYPICAL PAVING SECTION. THE CONCRETE VALLEY WILL BE GOVERNED ACCORDING TO CITY STANDARDS FOR CONCRETE CURB AND GUTTER



VALLEY GUTTER DETAIL



MOUNTABLE CURB & GUTTER DETAIL

DETAILS SHOWN NOT TO SCALE

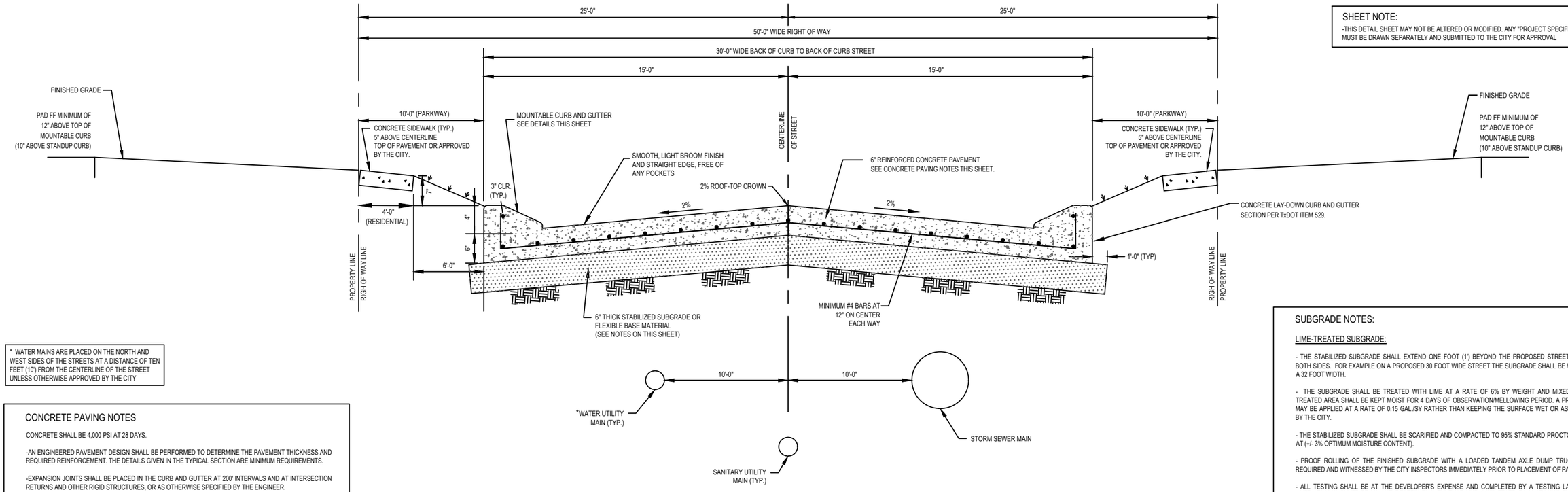
CITY OF ENNIS, TEXAS
PUBLIC WORKS

STREETS

RESIDENTIAL STREET DETAILS - HMAC

NO:	REVISION:	DATE:	SHEET:
		05/08/2021	ST-1

SHEET NOTE:
-THIS DETAIL SHEET MAY NOT BE ALTERED OR MODIFIED. ANY "PROJECT SPECIFIC" DETAIL MUST BE DRAWN SEPARATELY AND SUBMITTED TO THE CITY FOR APPROVAL



RESIDENTIAL STREET CONCRETE SECTION

* WATER MAINS ARE PLACED ON THE NORTH AND WEST SIDES OF THE STREETS AT A DISTANCE OF TEN FEET (10') FROM THE CENTERLINE OF THE STREET UNLESS OTHERWISE APPROVED BY THE CITY

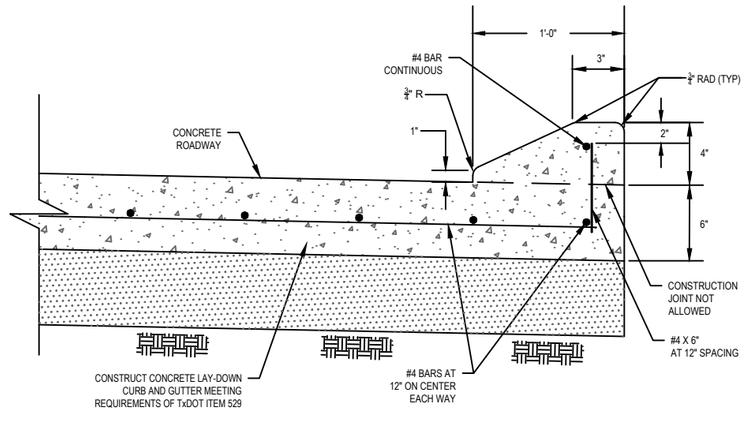
CONCRETE PAVING NOTES

CONCRETE SHALL BE 4,000 PSI AT 28 DAYS.

-AN ENGINEERED PAVEMENT DESIGN SHALL BE PERFORMED TO DETERMINE THE PAVEMENT THICKNESS AND REQUIRED REINFORCEMENT. THE DETAILS GIVEN IN THE TYPICAL SECTION ARE MINIMUM REQUIREMENTS.

-EXPANSION JOINTS SHALL BE PLACED IN THE CURB AND GUTTER AT 200' INTERVALS AND AT INTERSECTION RETURNS AND OTHER RIGID STRUCTURES, OR AS OTHERWISE SPECIFIED BY THE ENGINEER.

-CURB SAWED JOINTS SHALL BE PLACED TO MATCH THE PAVEMENT JOINTS. DEPTH OF SAWCUT SHALL BE $\frac{1}{4}$ THE THICKNESS OF THE CURB, AND EXTEND TO THE BACK OF THE CURB.



MOUNTABLE CURB & GUTTER DETAIL

SUBGRADE NOTES:

LIME-TREATED SUBGRADE:

- THE STABILIZED SUBGRADE SHALL EXTEND ONE FOOT (1') BEYOND THE PROPOSED STREET WIDTH ON BOTH SIDES. FOR EXAMPLE ON A PROPOSED 30 FOOT WIDE STREET THE SUBGRADE SHALL BE WORKED AT A 32 FOOT WIDTH.

- THE SUBGRADE SHALL BE TREATED WITH LIME AT A RATE OF 6% BY WEIGHT AND MIXED WET. THE TREATED AREA SHALL BE KEPT MOIST FOR 4 DAYS OF OBSERVATION/MELLOWING PERIOD. A PRIME QUOTE MAY BE APPLIED AT A RATE OF 0.15 GAL./SY RATHER THAN KEEPING THE SURFACE WET OR AS APPROVED BY THE CITY.

- THE STABILIZED SUBGRADE SHALL BE SCARIFIED AND COMPACTED TO 95% STANDARD PROCTOR DENSITY AT (+/- 3% OPTIMUM MOISTURE CONTENT).

- PROOF ROLLING OF THE FINISHED SUBGRADE WITH A LOADED TANDEM AXLE DUMP TRUCK MAY BE REQUIRED AND WITNESSED BY THE CITY INSPECTORS IMMEDIATELY PRIOR TO PLACEMENT OF PAVEMENT.

- ALL TESTING SHALL BE AT THE DEVELOPER'S EXPENSE AND COMPLETED BY A TESTING LABORATORY APPROVED BY THE CITY AND WITH CURRENT AASHTO ACCREDITATION THAT DEMONSTRATES THE LABORATORY'S CAPABILITIES TO PERFORM APPLICABLE TEST PROCEDURES.

- THE CITY MAY PERIODICALLY REQUIRE ADDITIONAL TESTS TO ASSIST THEM IN EVALUATING THE QUALITY OF WORK AND CONTRACTOR'S PERFORMANCE.

FLEXIBLE BASE SUBGRADE

- FLEXIBLE BASE MATERIAL MAY BE USED IN LIEU OF LIME STABILIZED SUBGRADE.

- MATERIAL AND INSTALLATION SHALL COMPLY WIHT TxDOT ITEM 247, GRADE 1-2.

- IF USED IN LIEU OF STABILIZED SUBGRADE, FLEXIBLE MATERIAL SHALL BE PLACED AT A MINIMUM OF SIX (6) INCHES THICKNESS AND PLACED ON PROOF ROLLED SUBBASE.

- PROOF ROLLING OF THE FINISHED GRADE SUBBASE WITH A LOADED TANDEM AXLE DUMP TRUCK WILL BE REQUIRED AND WITNESSED BY CITY INSPECTORS.

- FLEXIBLE BASE SHALL EXTEND A MINIMUM OF 1'-0" OUTSIDE OF THE PROPOSED BACK OF CURB FOR THE WIDTH OF THE STREET BEING INSTALLED. FOR EXAMPLE ON A PROPOSED 30 FOOT WIDE STREET THE SUBGRADE SHALL BE WORKED AT A 32 FOOT WIDTH.

DETAILS SHOWN NOT TO SCALE

CITY OF ENNIS, TEXAS
PUBLIC WORKS

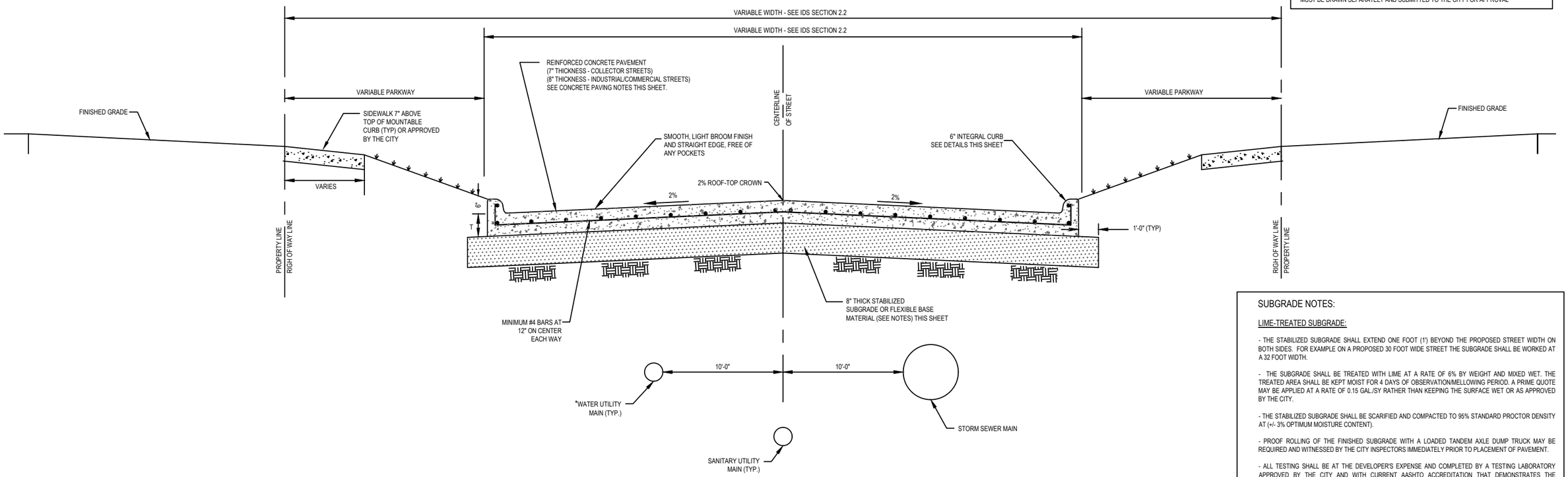
STREETS

RESIDENTIAL STREET DETAILS - CONCRETE

NO:	REVISION:	DATE:	SHEET:
		05/08/2021	ST-2

SHEET NOTE:

-THIS DETAIL SHEET MAY NOT BE ALTERED OR MODIFIED. ANY "PROJECT SPECIFIC" DETAIL MUST BE DRAWN SEPARATELY AND SUBMITTED TO THE CITY FOR APPROVAL



INDUSTRIAL/COMMERCIAL AND COLLECTOR STREET TYPICAL SECTION

* WATER MAINS ARE PLACED ON THE NORTH AND WEST SIDES OF THE STREETS AT A DISTANCE OF TEN FEET (10') FROM THE CENTERLINE OF THE STREET UNLESS OTHERWISE APPROVED BY THE CITY

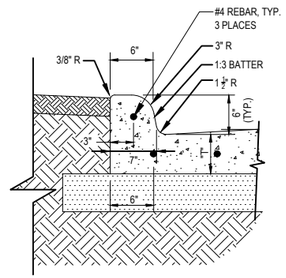
CONCRETE PAVING NOTES

CONCRETE SHALL BE 4,500 PSI AT 28 DAYS.

-AN ENGINEERED PAVEMENT DESIGN SHALL BE PERFORMED TO DETERMINE THE PAVEMENT THICKNESS AND REQUIRED REINFORCEMENT. THE DETAILS GIVEN IN THE TYPICAL SECTION ARE MINIMUM REQUIREMENTS.

-EXPANSION JOINTS SHALL BE PLACED IN THE CURB AND GUTTER AT 200' INTERVALS AND AT INTERSECTION RETURNS AND OTHER RIGID STRUCTURES, OR AS OTHERWISE SPECIFIED BY THE ENGINEER.

-CURB SAWED JOINTS SHALL BE PLACED TO MATCH THE PAVEMENT JOINTS. DEPTH OF SAWCUT SHALL BE ¼ THE THICKNESS OF THE CURB, AND EXTEND TO THE BACK OF THE CURB.



NOTES:

1. EXPANSION JOINTS SHALL BE CONSTRUCTED USING JOINT MATERIAL OF AN APPROVED TYPE.
2. T= CONCRETE SECTION DEPTH
3. SEE CONCRETE PAVEMENT NOTES FOR DETAILS

INTEGRAL CURB & GUTTER DETAIL

SUBGRADE NOTES:

LIME-TREATED SUBGRADE:

- THE STABILIZED SUBGRADE SHALL EXTEND ONE FOOT (1') BEYOND THE PROPOSED STREET WIDTH ON BOTH SIDES. FOR EXAMPLE ON A PROPOSED 30 FOOT WIDE STREET THE SUBGRADE SHALL BE WORKED AT A 32 FOOT WIDTH.

- THE SUBGRADE SHALL BE TREATED WITH LIME AT A RATE OF 6% BY WEIGHT AND MIXED WET. THE TREATED AREA SHALL BE KEPT MOIST FOR 4 DAYS OF OBSERVATION/MELLOWING PERIOD. A PRIME QUOTE MAY BE APPLIED AT A RATE OF 0.15 GAL/SY RATHER THAN KEEPING THE SURFACE WET OR AS APPROVED BY THE CITY.

- THE STABILIZED SUBGRADE SHALL BE SCARIFIED AND COMPACTED TO 95% STANDARD PROCTOR DENSITY AT (+/- 3% OPTIMUM MOISTURE CONTENT).

- PROOF ROLLING OF THE FINISHED SUBGRADE WITH A LOADED TANDEM AXLE DUMP TRUCK MAY BE REQUIRED AND WITNESSED BY THE CITY INSPECTORS IMMEDIATELY PRIOR TO PLACEMENT OF PAVEMENT.

- ALL TESTING SHALL BE AT THE DEVELOPER'S EXPENSE AND COMPLETED BY A TESTING LABORATORY APPROVED BY THE CITY AND WITH CURRENT AASHTO ACCREDITATION THAT DEMONSTRATES THE LABORATORY'S CAPABILITIES TO PERFORM APPLICABLE TEST PROCEDURES.

- THE CITY MAY PERIODICALLY REQUIRE ADDITIONAL TESTS TO ASSIST THEM IN EVALUATING THE QUALITY OF WORK AND CONTRACTOR'S PERFORMANCE.

FLEXIBLE BASE SUBGRADE

- FLEXIBLE BASE MATERIAL MAY BE USED IN LIEU OF LIME STABILIZED SUBGRADE.

- MATERIAL AND INSTALLATION SHALL COMPLY WIHT TxDOT ITEM 247, GRADE 1-2.

- IF USED IN LIEU OF STABILIZED SUBGRADE, FLEXIBLE MATERIAL SHALL BE PLACED AT A MINIMUM OF EIGHT (8) INCHES THICKNESS AND PLACED ON PROOF ROLLED SUBBASE.

- PROOF ROLLING OF THE FINISHED GRADE SUBBASE WITH A LOADED TANDEM AXLE DUMP TRUCK WILL BE REQUIRED AND WITNESSED BY CITY INSPECTORS.

- FLEXIBLE BASE SHALL EXTEND A MINIMUM OF 1'-0" OUTSIDE OF THE PROPOSED BACK OF CURB FOR THE WIDTH OF THE STREET BEING INSTALLED. FOR EXAMPLE ON A PROPOSED 30 FOOT WIDE STREET THE SUBGRADE SHALL BE WORKED AT A 32 FOOT WIDTH.

DETAILS SHOWN NOT TO SCALE

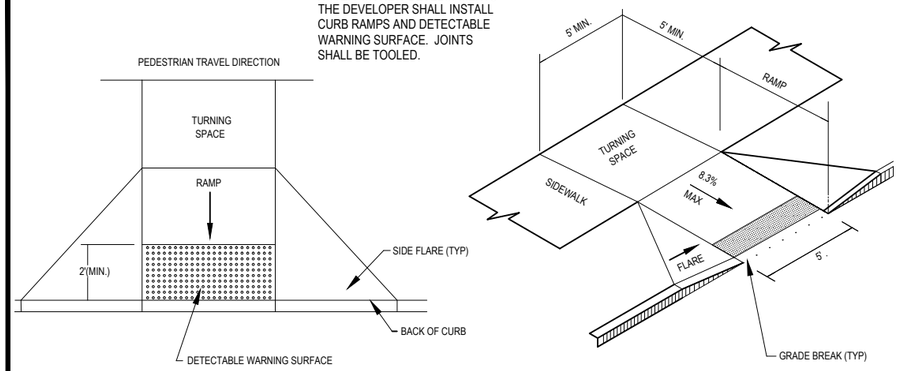
CITY OF ENNIS, TEXAS
PUBLIC WORKS

STREETS

INDUSTRIAL/COMMERCIAL AND COLLECTOR STREET DETAILS

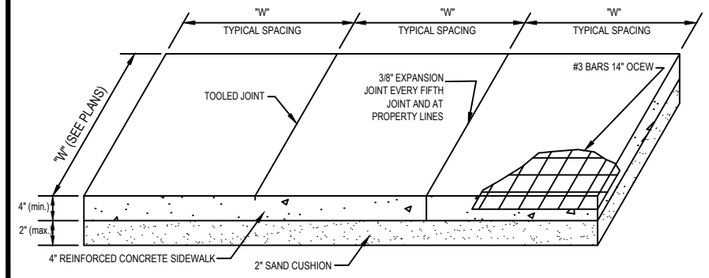
NO:	REVISION:	DATE:	SHEET:
		05/08/2021	ST-3

NOTE: FOR NEW DEVELOPMENTS THE DEVELOPER SHALL INSTALL CURB RAMPS AND DETECTABLE WARNING SURFACE. JOINTS SHALL BE TOOLED.

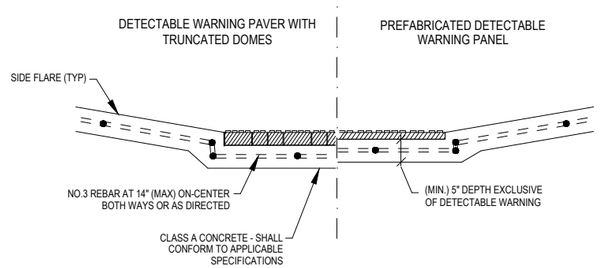


CURB RAMP DETAIL

W = SEE PLANS FOR SIDEWALK WIDTH.
RESIDENTIAL 4' MINIMUM
INDUSTRIAL/COMMERCIAL 5' MINIMUM

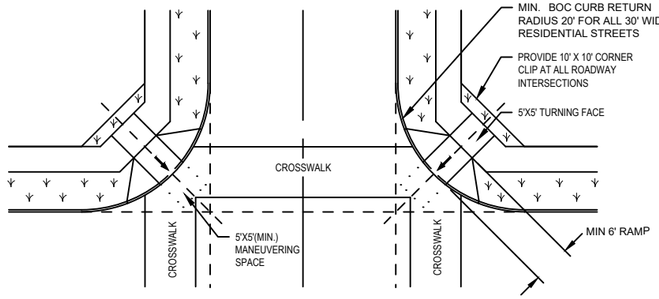


TYPICAL SIDEWALK DETAIL

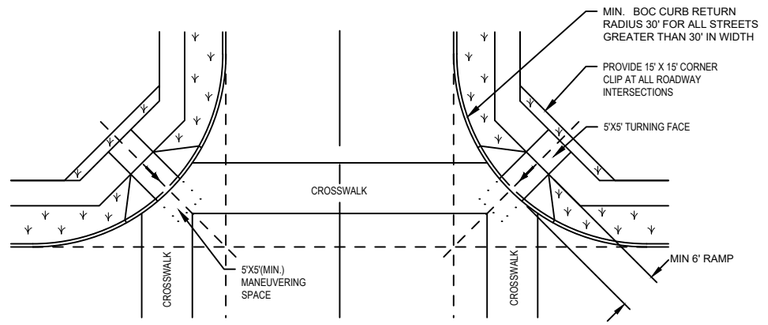


CURB RAMP DETECTIBLE WARNING DETAIL

NOTE: FOR NEW DEVELOPMENTS THE DEVELOPER SHALL INSTALL CURB RAMPS AND DETECTABLE WARNING SURFACE



TYPICAL RESIDENTIAL INTERSECTION RAMP LAYOUT



TYPICAL INDUSTRIAL/ COMMERCIAL AND COLLECTOR INTERSECTION RAMP LAYOUT

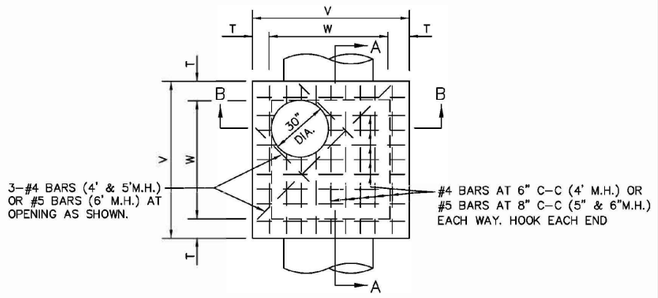
DETAILS SHOWN NOT TO SCALE

CITY OF ENNIS, TEXAS
PUBLIC WORKS

STREETS

SIDEWALK AND CURB RAMP DETAILS

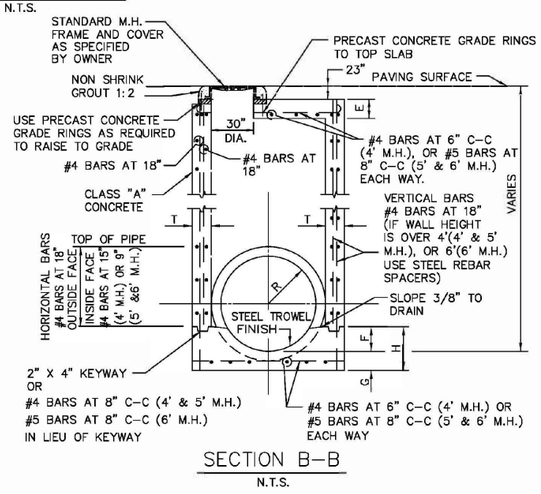
NO:	REVISION:	DATE:	SHEET:
		05/08/2021	ST-4



PLAN
N.T.S.

M.H. SIZE(W)	V	T	E	F	G	H
4'	5'-4"	8"	6"	9"	6"	1'-3"
5'	6'-4"	8"	6"	12"	8"	1'-8"
6'	7'-6"	9"	9"	16"	10"	2'-2"

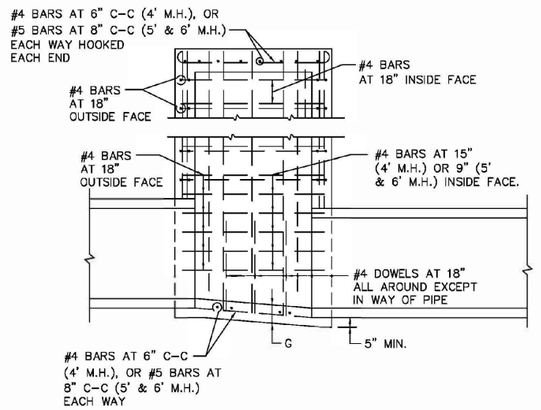
TABLE OF DIMENSIONS
N.T.S.



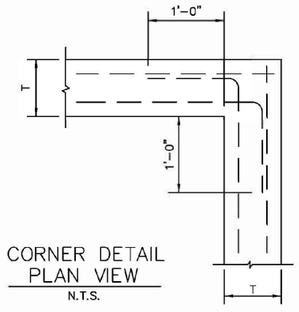
SECTION B-B
N.T.S.

STORM WATER MANHOLE	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 502.1.4.1*	
4', 5', OR 6' SQUARE		DATE OCT. '04	STANDARD DRAWING NO. 6010A

*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*



SECTION A-A
N.T.S.



CORNER DETAIL PLAN VIEW
N.T.S.

NOTES:

1. SLOPE INVERT OF MANHOLE AS INDICATED ON PLAN-PROFILE SHEET.
2. LAYERS OF REINFORCING STEEL NEAREST THE INTERIOR AND EXTERIOR SURFACE SHALL HAVE A COVER OF 2" TO THE CENTER OF BARS, UNLESS OTHERWISE NOTED.
3. CONCRETE SHALL BE CLASS "A".

STORM WATER MANHOLE	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 502.1.4.1*	
4', 5', OR 6' SQUARE		DATE OCT. '04	STANDARD DRAWING NO. 6010B

*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*

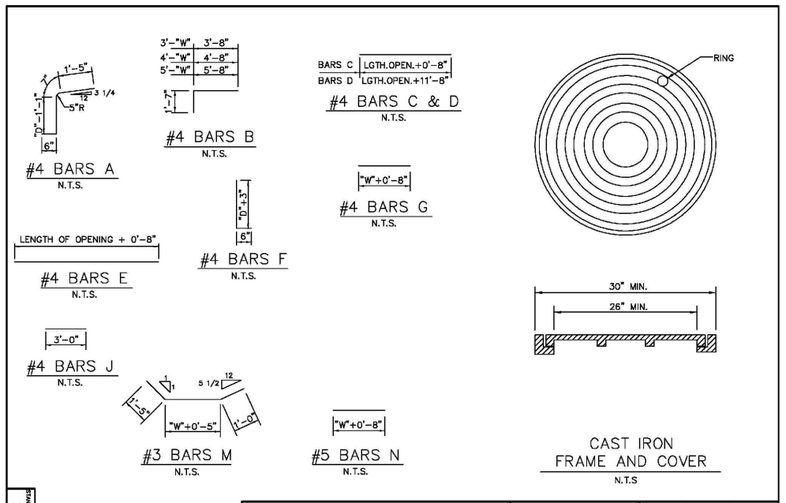
DETAILS SHOWN NOT TO SCALE

CITY OF ENNIS, TEXAS
PUBLIC WORKS

MISCELLANEOUS DRAINAGE AND STREET DETAILS

STORM WATER MANHOLE

NO:	REVISION:	DATE:	SHEET:
		05/08/2021	ST-5

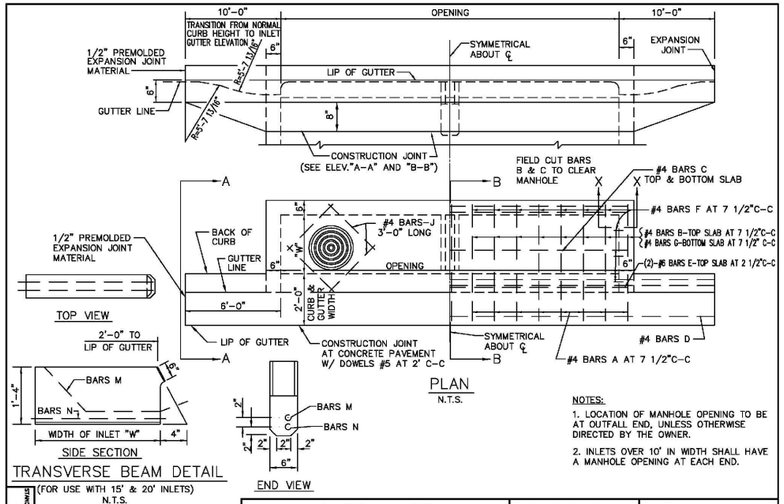


CURB INLET
REBAR & M.H. FRAME & COVER

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 702
DATE OCT. '04
STANDARD DRAWING NO. 6020C

STANDARD DRAWING NO. 6020C



NOTES:

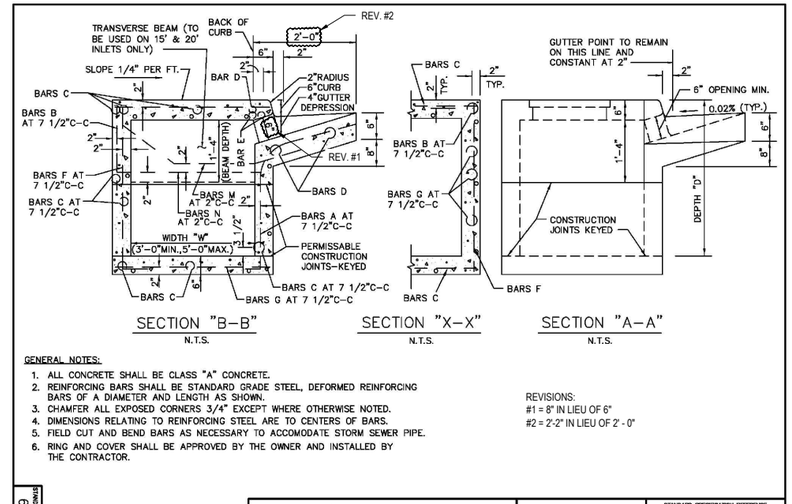
1. LOCATION OF MANHOLE OPENING TO BE AT OUTFALL END, UNLESS OTHERWISE DIRECTED BY THE OWNER.
2. INLETS OVER 10' IN WIDTH SHALL HAVE A MANHOLE OPENING AT EACH END.

CURB INLET
X 10', 15' OR 20' OPENING

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 702
DATE OCT. '04
STANDARD DRAWING NO. 6020A

STANDARD DRAWING NO. 6020A



GENERAL NOTES:

1. ALL CONCRETE SHALL BE CLASS "A" CONCRETE.
2. REINFORCING BARS SHALL BE STANDARD GRADE STEEL, DEFORMED REINFORCING BARS OF A DIAMETER AND LENGTH AS SHOWN.
3. CHAMFER ALL EXPOSED CORNERS 3/4" EXCEPT WHERE OTHERWISE NOTED.
4. DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTERS OF BARS.
5. FIELD CUT AND BEND BARS AS NECESSARY TO ACCOMODATE STORM SEWER PIPE.
6. RING AND COVER SHALL BE APPROVED BY THE OWNER AND INSTALLED BY THE CONTRACTOR.

REVISIONS:
#1 = 8" IN LIEU OF 6"
#2 = 2'-2" IN LIEU OF 2' - 0"

CURB INLET
CROSS SECTION & INLET THROAT

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 702
DATE OCT. '04
STANDARD DRAWING NO. 6020B

STANDARD DRAWING NO. 6020B

BILL OF REINFORCING STEEL

DEPTH "D"	ALL WIDTHS AND LENGTHS	OPENING LENGTH "L" = 5ft								OPENING LENGTH "L" = 10ft								OPENING LENGTH "L" = 15 ft								OPENING LENGTH "L" = 20 ft							
		Widths "W" 3ft	4ft	5ft						Widths "W" 3ft	4ft	5ft						Widths "W" 3ft	4ft	5ft						Widths "W" 3ft	4ft	5ft			
	BARS C	BARS D	BARS E	BARS J	BARS F	BARS A	BARS B	BARS G	BARS F	BARS A	BARS B	BARS G	BARS F	BARS A	BARS B	BARS G	BARS F	BARS F	BARS A	BARS B	BARS G	BARS M	BARS N	BARS F	BARS A	BARS B	BARS G	BARS M	BARS N
	C	D	E	J	F	A	B	G	F	A	B	G	F	A	B	G	M	N	F	A	B	G	M	N	F	A	B	G	M	N
3'-6"	17	3	2	4	20	28	10	20	28	32	36	18	18	28	36	40	44	26	26	36	2	2	44	48	52	34	34	44	2	2
3'-9"	18	"	"	"	"	"	"	"	20	"	"	"	"	"	"	"	28	"	"	"	"	"	36	"	"	"	"	"	"	"	44	"	"
4'-0"	19	"	"	"	"	"	"	"	24	"	"	"	"	"	"	"	32	"	"	"	"	"	40	"	"	"	"	"	"	"	48	"	"
4'-3"	19	"	"	"	"	"	"	"	24	"	"	"	"	"	"	"	32	"	"	"	"	"	40	"	"	"	"	"	"	"	48	"	"
4'-6"	21	"	"	"	"	"	"	"	26	"	"	"	"	"	"	"	34	"	"	"	"	"	42	"	"	"	"	"	"	"	50	"	"
4'-9"	21	"	"	"	"	"	"	"	26	"	"	"	"	"	"	"	34	"	"	"	"	"	42	"	"	"	"	"	"	"	50	"	"
5'-0"	21	"	"	"	"	"	"	"	26	"	"	"	"	"	"	"	34	"	"	"	"	"	42	"	"	"	"	"	"	"	50	"	"
5'-3"	23	"	"	"	"	"	"	"	28	"	"	"	"	"	"	"	36	"	"	"	"	"	44	"	"	"	"	"	"	"	52	"	"
5'-6"	23	"	"	"	"	"	"	"	28	"	"	"	"	"	"	"	36	"	"	"	"	"	44	"	"	"	"	"	"	"	52	"	"
5'-9"	25	"	"	"	"	"	"	"	30	"	"	"	"	"	"	"	38	"	"	"	"	"	46	"	"	"	"	"	"	"	54	"	"
6'-0"	25	"	"	"	"	"	"	"	30	"	"	"	"	"	"	"	38	"	"	"	"	"	46	"	"	"	"	"	"	"	54	"	"
6'-3"	26	"	"	"	"	"	"	"	30	"	"	"	"	"	"	"	38	"	"	"	"	"	46	"	"	"	"	"	"	"	54	"	"
6'-6"	27	"	"	"	"	"	"	"	32	"	"	"	"	"	"	"	40	"	"	"	"	"	48	"	"	"	"	"	"	"	56	"	"
6'-9"	27	"	"	"	"	"	"	"	32	"	"	"	"	"	"	"	40	"	"	"	"	"	48	"	"	"	"	"	"	"	56	"	"
7'-0"	29	"	"	"	"	"	"	"	34	"	"	"	"	"	"	"	42	"	"	"	"	"	50	"	"	"	"	"	"	"	58	"	"
7'-3"	29	"	"	"	"	"	"	"	34	"	"	"	"	"	"	"	42	"	"	"	"	"	50	"	"	"	"	"	"	"	58	"	"
7'-6"	30	"	"	"	"	"	"	"	34	"	"	"	"	"	"	"	42	"	"	"	"	"	50	"	"	"	"	"	"	"	58	"	"
7'-9"	31	"	"	"	"	"	"	"	36	"	"	"	"	"	"	"	44	"	"	"	"	"	52	"	"	"	"	"	"	"	60	"	"
8'-0"	31	"	"	"	"	"	"	"	36	"	"	"	"	"	"	"	44	"	"	"	"	"	52	"	"	"	"	"	"	"	60	"	"
8'-3"	32	"	"	"	"	"	"	"	36	"	"	"	"	"	"	"	44	"	"	"	"	"	52	"	"	"	"	"	"	"	60	"	"
8'-6"	33	"	"	"	"	"	"	"	38	"	"	"	"	"	"	"	46	"	"	"	"	"	54	"	"	"	"	"	"	"	62	"	"
8'-9"	34	"	"	"	"	"	"	"	38	"	"	"	"	"	"	"	46	"	"	"	"	"	54	"	"	"	"	"	"	"	62	"	"
9'-0"	35	"	"	"	"	"	"	"	40	"	"	"	"	"	"	"	48	"	"	"	"	"	56	"	"	"	"	"	"	"	64	"	"
9'-3"	36	"	"	"	"	"	"	"	40	"	"	"	"	"	"	"	48	"	"	"	"	"	56	"	"	"	"	"	"	"	64	"	"
9'-6"	37	"	"	"	"	"	"	"	42	"	"	"	"	"	"	"	50	"	"	"	"	"	58	"	"	"	"	"	"	"	66	"	"
10'-0"	38	"	"	"	"	"	"	"	42	"	"	"	"	"	"	"	50	"	"	"	"	"	58	"	"	"	"	"	"	"	66	"	"

NOTE:
FOR CONVENIENCE, DEPTHS OF INLETS SHOWN IN ABOVE TABLES ARE IN INCREMENTS OF 3 INCHES BUT ANY DEPTHS OTHER THAN THOSE SHOWN ABOVE MAY BE USED WHEREVER DEEMED NECESSARY. QUANTITIES FOR OTHER DEPTHS FALLING WITHIN THE LIMITS OF THE TABLE MAY BE FOUND BY INTERPOLATION.

CURB INLET
BILL OF REINFORCING STEEL

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 702
DATE OCT. '04
STANDARD DRAWING NO. 6020D

STANDARD DRAWING NO. 6020D

SUMMARY OF QUANTITIES FOR CURB INLETS

DEPTH "D"	5'-0" OPENING						10'-0" OPENING						15'-0" OPENING						20'-0" OPENING					
	WIDTH 3'-0"		WIDTH 4'-0"		WIDTH 5'-0"		WIDTH 3'-0"		WIDTH 4'-0"		WIDTH 5'-0"		WIDTH 3'-0"		WIDTH 4'-0"		WIDTH 5'-0"		WIDTH 3'-0"		WIDTH 4'-0"		WIDTH 5'-0"	
	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.
3'-6"	2.62	306	2.95	332	3.28	373	4.12	479	4.64	521	5.20	564	5.69	667	6.40	721	7.10	775	7.20	846	8.11	909	9.03	976
3'-9"	2.70	309	3.04	341	3.39	373	4.25	494	4.78	536	5.34	579	5.87	687	6.58	741	7.30	796	7.42	874	8.34	937	9.27	1010
4'-0"	2.78	328	3.14	364	3.49	399	4.38	518	4.92	565	5.49	610	6.05	718	6.77	776	7.49	835	7.64	909	8.58	976	9.51	1046
4'-3"	2.87	334	3.23	370	3.59	406	4.51	526	5.06	573	5.64	619	6.22	729	6.95	787	7.69	847	7.87	922	8.81	990	9.75	1061
4'-6"	2.95	356	3.32	394	3.69	431	4.64	558	5.20	607	5.79	656	6.40	770	7.14	830	7.88	891	8.09	973	9.04	1043	9.99	1115
4'-9"	3.03	361	3.41	410	3.79	438	4.77	566	5.34	616	5.94	665	6.57	780	7.32	841	8.07	903	8.31	986	9.27	1056	10.23	1129
5'-0"	3.12	367	3.51	416	3.90	445	4.90	574	5.47	624	6.09	674	6.75	791	7.51	853	8.27	915	8.53	999	9.50	1070	10.47	1144
5'-3"	3.20	383	3.60	424	4.00	465	5.03	600	5.61	652	6.23	704	6.93	827	7.69	890	8.46	955	8.76	1044	9.73	1118	10.71	1194
5'-6"	3.28	389	3.69	430	4.10	472	5.16	608	5.75	661	6.38	713	7.11	837	7.88	901	8.66	967	8.98	1057	9.97	1131	10.95	1208
5'-9"	3.37	405	3.78	451	4.20	495	5.29	635	5.89	690	6.53	744	7.28	874	8.07	940	8.85	1007	9.20	1102	10.20	1178	11.19	1258
6'-0"	3.45	415	3.88	460	4.30	504	5.42	646	6.03	702	6.68	757	7.45	888	8.25	954	9.05	1022	9.42	1119	10.43	1196	11.43	1276
6'-3"	3.53	425	3.97	470	4.41	515	5.55	661	6.17	718	6.83	773	7.63	908	8.44	975	9.24	1044	9.64	1147	10.66	1223	11.67	1305
6'-6"	3.62	437	4.06	486	4.51	532	5.68	681	6.31	739	6.97	797	7.81	935	8.62	1005	9.43	1057	9.87	1178	10.89	1258	11.92	1340
6'-9"	3.70	441	4.15	490	4.61	537	5.81	688	6.45	747	7.12	806	7.98	945	8.81	1015	9.63	1066	10.09	1191	11.12	1272	12.15	1355
7'-0"	3.78	460	4.25	510	4.71	560	5.94	716	6.59	777	7.27	837	8.16	981	8.99	1053	9.82	1126	10.31	1237	11.35	1319	12.40	1404
7'-3"	3.86	465	4.34	516	4.81	567	6.07	724	6.72	785	7.42	846	8.33	992	9.18	1065	10.02	1138	10.53	1249	11.59	1333	12.64	1418
7'-6"	3.95	477	4.43	529	4.91	570	6.20	742	6.86	804	7.57	866	8.51	1016	9.36	1089	10.21	1163	10.75	1290	11.82	1365	12.88	1451
7'-9"	4.03	491	4.53	544	5.02	597	6.33	762	7.00	826	7.71	890	8.67	1040	9.55	1116	10.41	1193	10.98	1313	12.05	1399	13.12	1498
8'-0"	4.12	496	4.62	550	5.12	604	6.46	770	7.14	834	7.86	899	8.86	1051	9.73	1129	10.60	1205	11.20	1325	12.28	1412	13.36	1510
8'-3"	4.20	504	4.71	559	5.22	613	6.59	784	7.28	849	8.01	915	9.04	1069	9.92	1149	10.80	1228	11.42	1353	12.51	1440	13.60	1529
8'-6"	4.28	519	4.80	576	5.32	632	6.71	804	7.42	871	8.16	938	9.21	1107	10.10	1176	10.99	1257	11.64	1385	12.74	1474	13.84	1565
8'-9"	4.37	528	4.90	586	5.42	643	6.84	819	7.56	886	8.31	954	9.39	1119	10.29	1199	11.18	1280	11.87	1410	12.97	1500	14.08	1592
9'-0"	4.45	545	4.99	605	5.53	664	6.97	842	7.70	912	8.46	982	9.55	1148	10.47	1231	11.38	1313	12.09	1447	13.21	1539	14.32	1631
9'-3"	4.53	554	5.08	614	5.63	674	7.10	858	7.84	929	8.60	999	9.74	1169	10.66	1252	11.57	1335	12.31	1474	13.44	1563	14.56	1660
9'-6"	4.62	568	5.17	630	5.73	692	7.23	878	7.97	950	8.75	1022	9.92	1195	10.84	1280	11.77	1365	12.53	1505	13.67	1600	14.80	1696
10'-0"	4.78	582	5.36	645	5.93	708	7.49	900	8.11	974	9.05	1048	10.27	1227	11.21	1312	12.16	1399	12.98	1546	14.13	1642	15.29	1739

NOTE:
FOR CONVENIENCE, DEPTHS OF INLETS SHOWN IN ABOVE TABLES ARE IN INCREMENTS OF 3 INCHES BUT ANY DEPTHS OTHER THAN THOSE SHOWN ABOVE MAY BE USED WHEREVER DEEMED NECESSARY. QUANTITIES FOR OTHER DEPTHS FALLING WITHIN THE LIMITS OF THE TABLE MAY BE FOUND BY INTERPOLATION.

CURB INLET
SUMMARY OF QUANTITIES

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 702
DATE OCT. '04
STANDARD DRAWING NO. 6020E

STANDARD DRAWING NO. 6020E

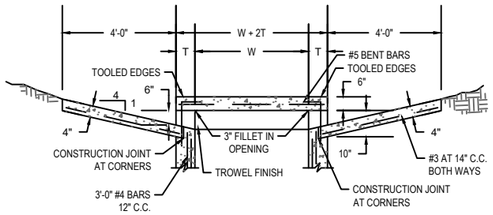
DETAILS SHOWN NOT TO SCALE

CITY OF ENNIS, TEXAS
PUBLIC WORKS

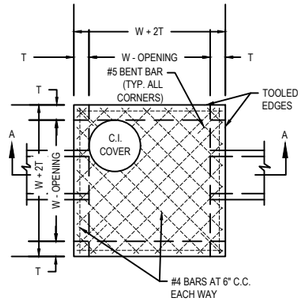
MISCELLANEOUS DRAINAGE AND STREET DETAILS

CURB INLET

NO:	REVISION:	DATE:	SHEET:
		05/08/2021	ST-6



SECTION "A-A"



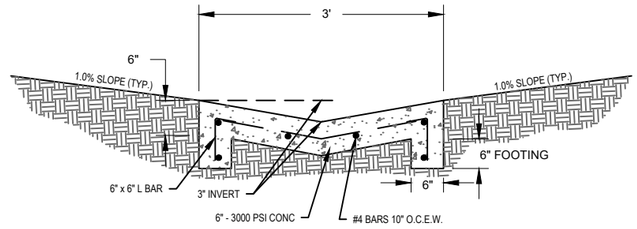
PLAN TOP SLAB

INLET SIZE	T	W
4' SQUARE	7"	4'-0"
5' SQUARE	8"	5'-0"
6' SQUARE	9"	6'-0"

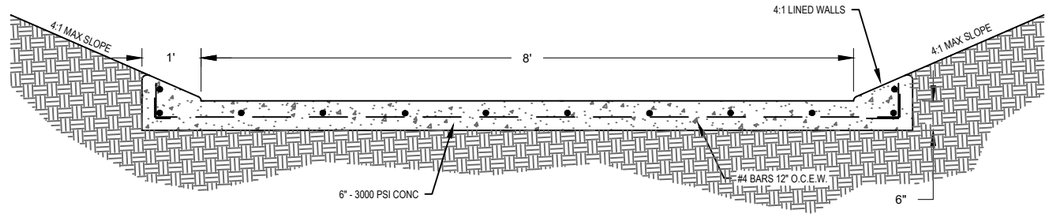
GENERAL NOTES:

1. MATERIAL AND WORKMANSHIP SHALL CONFORM WITH THE REQUIREMENTS OF NCTCOG STANDARD SPECIFICATIONS FOR STANDARD CONCRETE MANHOLES. MINIMUM CLASS "A" CONCRETE.
2. LAYERS OF REINFORCING STEEL NEAREST THE INTERIOR AND EXTERIOR SURFACES SHALL HAVE A COVER OF 2" TO THE CENTER OF BARS, UNLESS OTHERWISE NOTED.
3. FOR DETAILS OF REINFORCING OF LOWER PORTIONS OF INLET SEE APPROPRIATE SQUARE MANHOLE DETAILS.
4. DEPTH OF DROP INLET FROM FINISHED GRADE TO FLOW LINE OF INLET IS VARIABLE. APPROXIMATE DEPTH WILL BE SHOWN ON PLANS AT LOCATION OF INLET.
5. ALL STANDARD DROP INLETS SHALL HAVE ONE OPENING ON EACH SIDE UNLESS OTHERWISE SHOWN ON PLANS.
6. DECK MAY BE REINFORCED SAME AS 4' SQUARE MANHOLE.

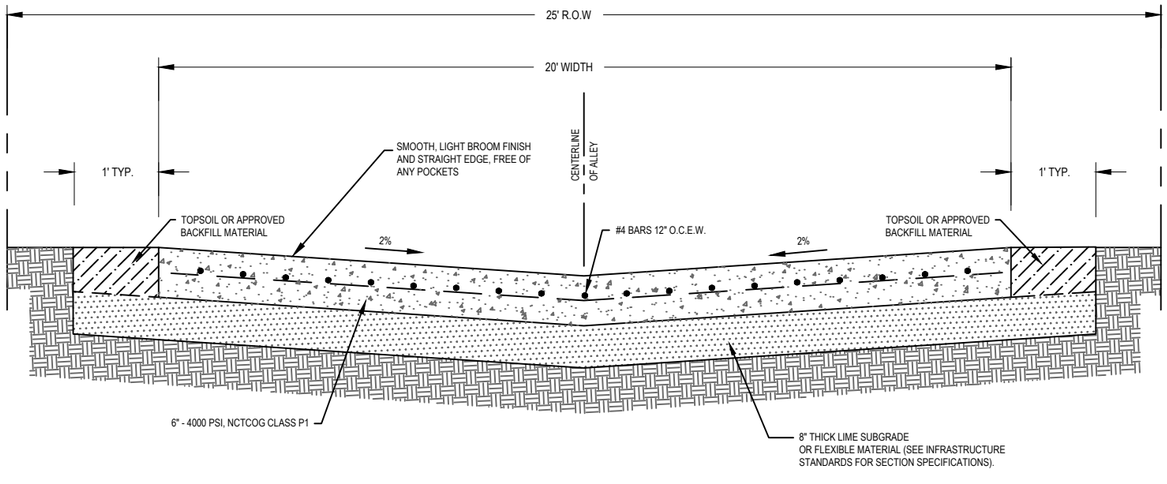
DROP INLET DETAIL- 4',5', OR 6' SQUARE



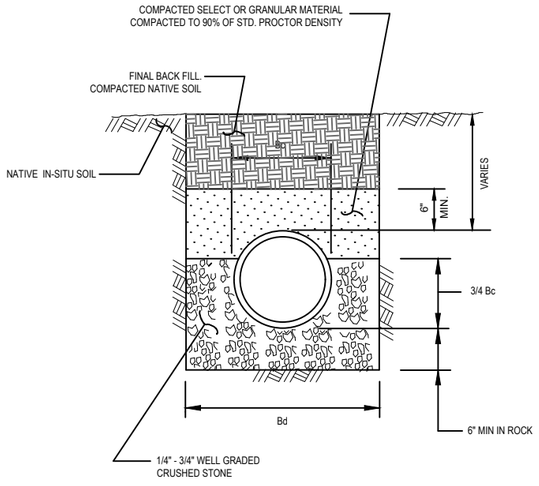
DETENTION POND
CONCRETE FLUME DETAIL



CONCRETE PILOT CHANNEL DETAIL



ALLEY TYPICAL SECTION DETAIL



STORM SEWER PIPE EMBEDMENT DETAIL

NOTES:

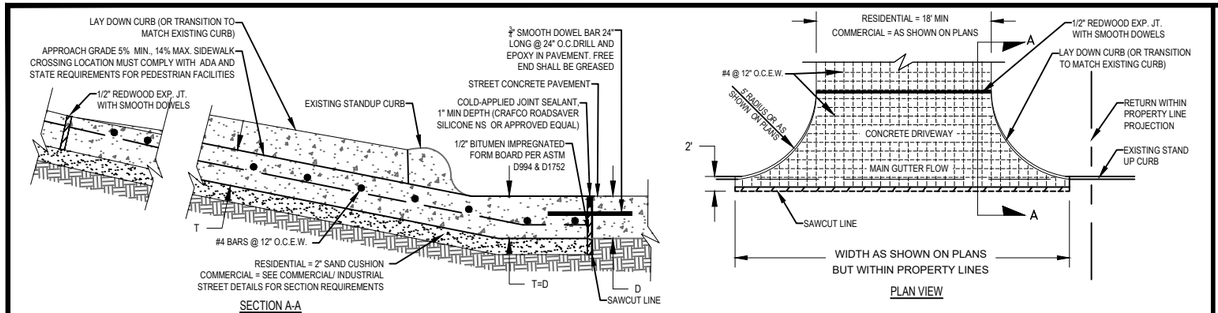
1. Bc = OUTSIDE DIAMETER OF STORM CONDUIT
2. Bd = TRENCH WIDTH = Bc + 2 FEET
3. WHEN AN UNSTABLE TRENCH BOTTOM IS ENCOUNTERED, CONTRACTOR SHALL OVER EXCAVATE TRENCH AND PLACE 6" OF FINALLY GRADED ROCK.
4. ALL BACKFILL SHALL BE PLACED IN 6" MAX. LIFTS. BACKFILL SHALL BE COMPACTED TO 90% MAXIMUM DENSITY, STANDARD PROCTOR. MAINTAIN MOISTURE AT (+) 2% OPTIMUM.

DETAILS SHOWN NOT TO SCALE

CITY OF ENNIS, TEXAS
PUBLIC WORKS

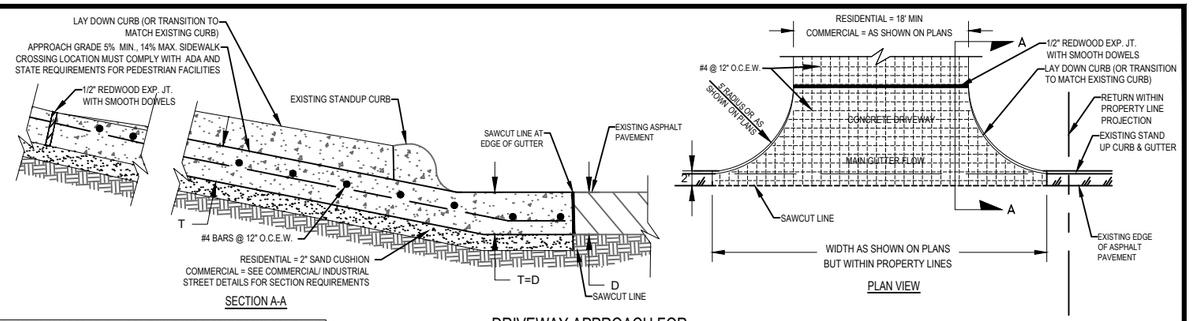
MISCELLANEOUS DRAINAGE AND STREET DETAILS

NO:	REVISION:	DATE:	SHEET:
		05/08/2021	ST-7



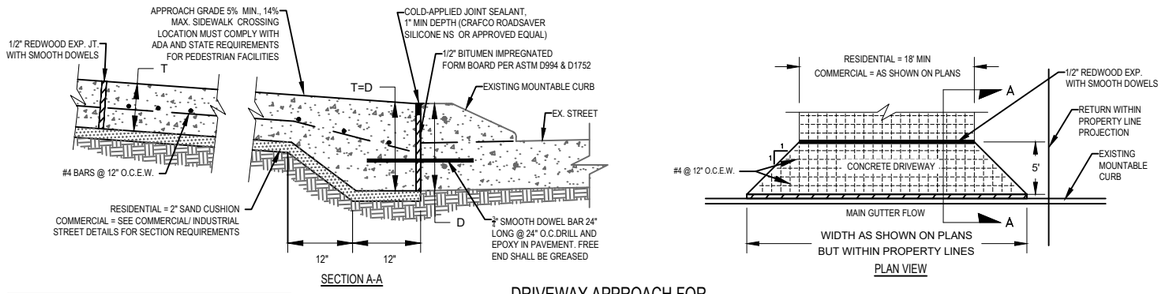
T = PROPOSED PAVEMENT THICKNESS. MINIMUM 6" RESIDENTIAL DRIVEWAYS AND 8" COMMERCIAL DRIVEWAYS
D = CONNECTING PAVEMENT THICKNESS

DRIVEWAY APPROACH FOR CONCRETE STREETS WITH STAND UP CURB



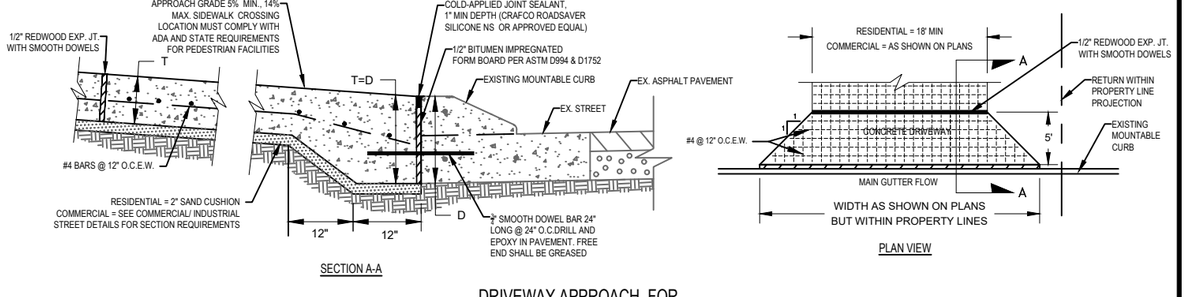
T = MINIMUM 6" RESIDENTIAL DRIVEWAYS AND 8" COMMERCIAL DRIVEWAYS
D = CONNECTING PAVEMENT THICKNESS

DRIVEWAY APPROACH FOR ASPHALT STREETS WITH STAND UP CURB



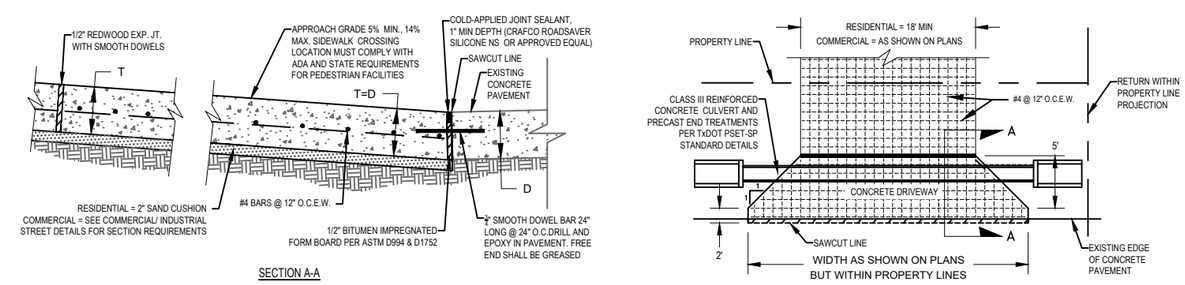
T = PROPOSED PAVEMENT THICKNESS. MINIMUM 6" RESIDENTIAL DRIVEWAYS AND 8" COMMERCIAL DRIVEWAYS
D = CONNECTING PAVEMENT THICKNESS

DRIVEWAY APPROACH FOR CONCRETE STREETS WITH MOUNTABLE CURB



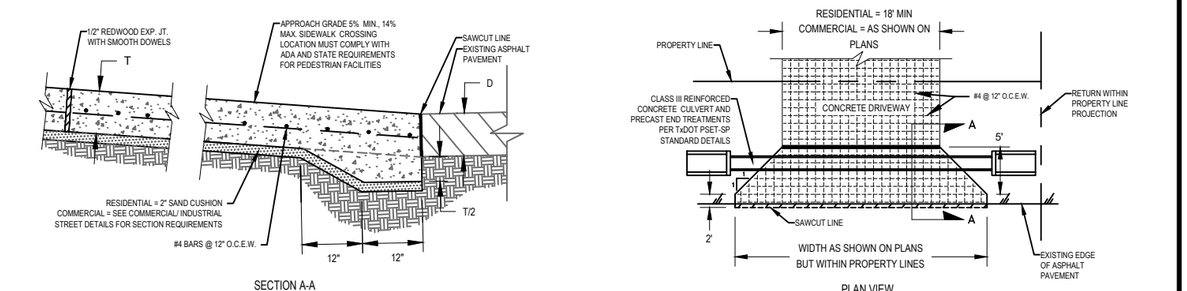
T = MINIMUM 6" RESIDENTIAL DRIVEWAYS AND 8" COMMERCIAL DRIVEWAYS
D = CONNECTING PAVEMENT THICKNESS

DRIVEWAY APPROACH FOR ASPHALT STREETS WITH MOUNTABLE CURB



T = MINIMUM 6" RESIDENTIAL DRIVEWAYS AND 8" COMMERCIAL DRIVEWAYS
D = CONNECTING PAVEMENT THICKNESS

DRIVEWAY APPROACH FOR CONCRETE STREETS WITHOUT CURB



T = PROPOSED PAVEMENT THICKNESS. MINIMUM 6" RESIDENTIAL DRIVEWAYS AND 8" COMMERCIAL DRIVEWAYS
D = CONNECTING PAVEMENT THICKNESS

DRIVEWAY APPROACH FOR ASPHALT STREETS WITHOUT CURB

DRIVEWAY AND DRIVEWAY CULVERT PIPE NOTES:

1. ENTIRE DRIVEWAY SHALL BE LAID AS ONE CONTINUOUS CONCRETE POUR UNLESS OTHERWISE APPROVED BY THE CITY.
2. DRIVEWAYS SHALL BE JOINTED AT 15' MAXIMUM INTERVALS IN BOTH DIRECTIONS.
3. LIMITS OF SAWCUT LINE SHALL EXTEND INTO EXISTING PAVEMENT TO OBTAIN A GOOD AND CLEAN ABUTTING FACE ON EXISTING PAVEMENT.
4. DRIVEWAY CULVERTS SHALL BE SIZED TO CONVEY THE RUNOFF FROM A 25-YEAR STORM EVENT WITH THE HGL NOT EXCEEDING THE ADJACENT STREET GUTTER LINE ELEVATION. FOR MAINTENANCE PURPOSED THE MINIMUM CULVERT SIZE FOR DRIVEWAY CULVERTS SHALL BE 12-INCH DIAMETER.
5. DRIVEWAY CULVERTS SHALL BE CONSTRUCTED OF REINFORCED CONCRETE PIPE OR ADS HP STORM OR APPROVED EQUAL. HDPE PIPE OR CMP SHALL NOT BE ALLOWED.
6. THIS DETAIL SHEET SHALL NOT BE ALTERED OR MODIFIED. ANY "PROJECT SPECIFIC" DETAIL MUST BE DRAWN SEPARATELY AND SUBMITTED TO THE CITY FOR APPROVAL.

DETAILS SHOWN NOT TO SCALE

CITY OF ENNIS, TEXAS
PUBLIC WORKS

MISCELLANEOUS DRAINAGE AND STREET DETAILS

CONCRETE DRIVEWAY APPROACH DETAILS

NO:	REVISION:	DATE:	SHEET:
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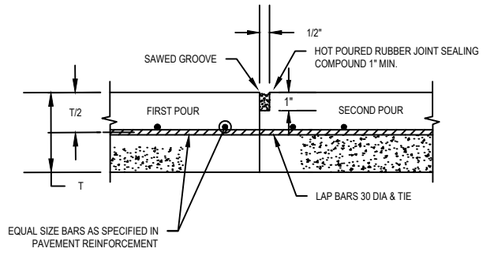
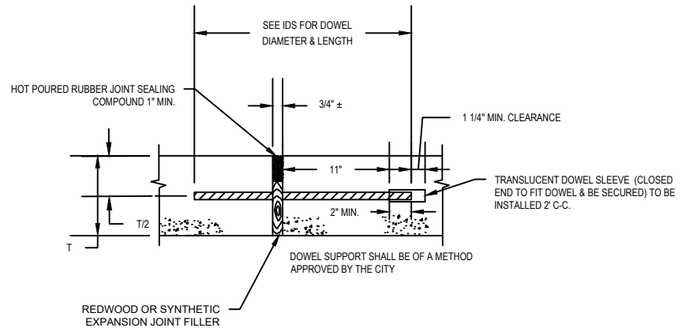
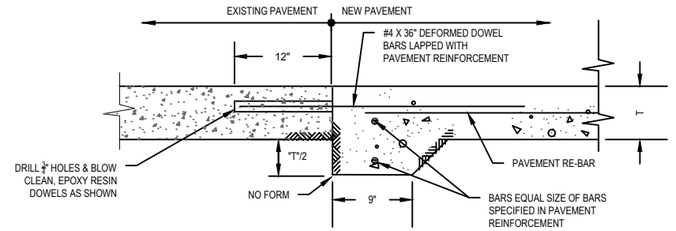


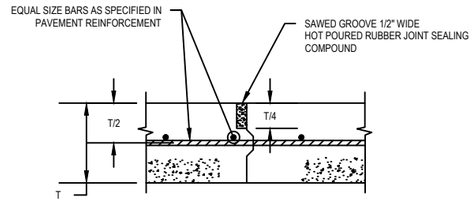
CONSTRUCTION JOINT DETAIL



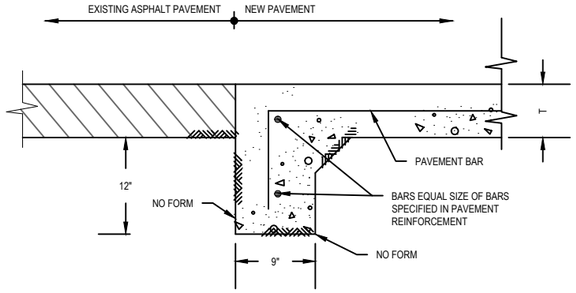
EXPANSION JOINT DETAIL
SPACED 600 FT. MAXIMUM; LOCATE AT STRUCTURES AND AT INTERSECTIONS P.C.'S & P.T.'S



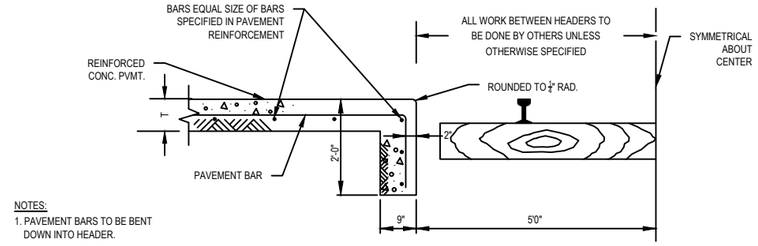
CONCRETE PAVEMENT CONNECTION TO EXISTING CONCRETE PAVEMENT DETAIL



KEY JOINT DETAIL
FOR PAVEMENT THIXKNESS GREATER THAN 6 INCHES

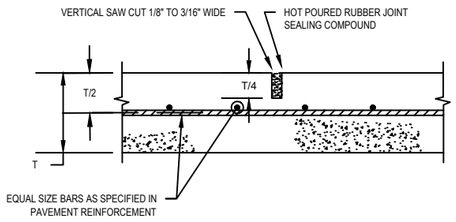


CONCRETE PAVEMENT CONNECTION TO EXISTING ASPHALT PAVEMENT DETAIL

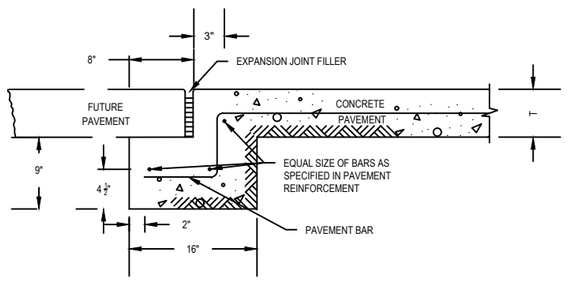


NOTES:
1. PAVEMENT BARS TO BE BENT DOWN INTO HEADER.
2. HEADER AND PAVEMENT TO BE MONOLITHIC.

STREET HEADER AT RAILROAD DETAIL



SAWED CONTRACTION JOINT DETAIL



STREET HEADER FOR FUTURE PAVEMENT DETAIL

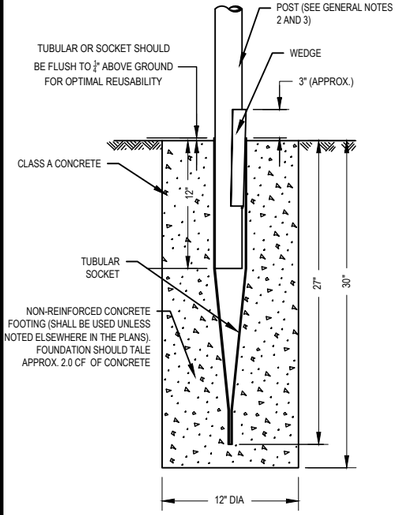
DETAILS SHOWN NOT TO SCALE

CITY OF ENNIS, TEXAS
PUBLIC WORKS

MISCELLANEOUS DRAINAGE AND STREET DETAILS

REINFORCED CONCRETE PAVEMENT JOINT & STREET HEADER DETAILS

NO:	REVISION:	DATE:	SHEET:
		05/08/2021	ST-9



THIS DETAIL IS PART OF TxDOT SMD (TWT) - 08 DETAIL

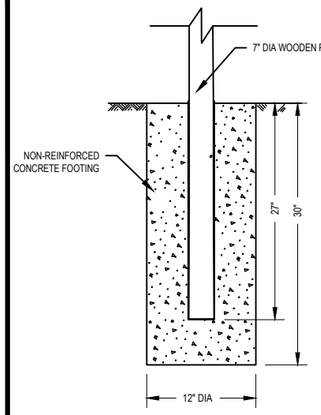
GENERAL NOTES:

1. THE WEDGE ANCHOR SYSTEM WITH THIN WALL TUBING POST MAY BE USED TO SUPPORT UP TO 10 SQUARE FEET OF SIGN AREA.
2. MATERIAL USED AS POST WITH THIS SYSTEM SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS:
   13 BMG TUBING (2.375" OUTSIDE DIAMETER) (TWT)
   0.095" NOMINAL WALL THICKNESS
   SEAMLESS OR ELECTRIC-RESISTANCE WELDED STEEL TUBING
   STEEL SHALL BE HSLAS GR 55 PER ASTM A1011 OR ASTM A1008
   OTHER STEELS MAY BE USED IF THEY MEET THE FOLLOWING:
   55,000 psi MINIMUM YIELD STRENGTH
   70,000 PSI MINIMUM TENSILE STRENGTH
   18% MINIMUM ELONGATION IN 2"
   WALL THICKNESS (UNCOATED) SHALL BE WITHIN THE RANGE OF 0.083" TO 0.099"
   OUTSIDE DIAMETER (UNCOATED) SHALL BE WITHIN THE RANGE OF 2.369" TO 2.381"
   GALVANIZATION PER ASTM 123 OR ASTM A653 G210. FOR PRECOATED STEEL TUBING (ASTM A653), RECOAT TUBE OUTSIDE DIAMETER WELD SEAM BY METALLIZING WITH ZINC WIRE PER ASTM B833.
3. STOP SIGN POSTS SHALL BE A YELLOW COLOR AS PROVIDED OR APPROVED BY CITY OF ENNIS
4. SIGN SUPPORTS SHALL NOT BE SPLICED EXCEPT WHERE SHOWN. SIGN SUPPORT POSTS SHALL NOT BE SPLICED.

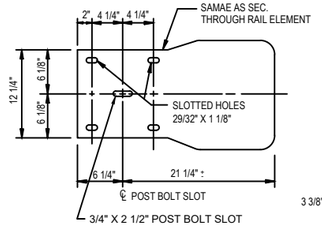
WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE:

1. DIG FOUNDATION HOLE. WHERE SOLID ROCK IS ENCOUNTERED AT GROUND LEVEL, THE FOUNDATION SHALL BE A MINIMUM DEPTH OF 18". WHEN SOLID ROCK IS ENCOUNTERED BELOW GROUND LEVEL, THE FOUNDATION SHALL BE EXTENDED IN THE SOLID ROCK A MINIMUM DEPTH OF 18" OR PROVIDE A MINIMUM FOUNDATION DEPTH OF 30". IF SOLID ROCK IS ENCOUNTERED, THE SOCKET/STUB MAY BE REDUCED IN LENGTH AS REQUIRED TO A MINIMUM LENGTH OF 18". ANY MATERIAL REMOVED FROM THE SOCKET/STUB SHALL BE FROM THE BOTTOM AND THE CLEARANCE REQUIREMENTS GIVEN ON SMD (GEN) MUST BE FOLLOWED. THE INNER SURFACES OF THE SOCKET/STUB MUST REMAIN FREE OF CONCRETE OR OTHER DEBRIS.
2. THE CITY MAY PERMIT BATCHES OF CONCRETE LESS THAN 2 CUBIC YARDS TO BE MIXED WITH A PORTABLE, MOTOR DRIVEN CONCRETE MIXER. FOR SMALL PLACEMENTS OF LESS THAN 0.5 CUBIC YARDS, HAND MIXING IN A SUITABLE CONTAINER MAY BE ALLOWED BY THE CITY. PLACE CONCRETE INTO HOLE UNTIL IT IS APPROXIMATELY FLUSH WITH THE GROUND. CONCRETE SHALL BE CLASS A.
3. INSERT TUBULAR SOCKET INTO CONCRETE UNTIL TOP OF THE SOCKET IS APPROXIMATELY 1/4" ABOVE CONCRETE FOOTING.
4. PLUMB THE SOCKET. ALLOW A MINIMUM 4 DAYS FOR CONCRETE TO SET.
5. ATTACH THE SIGN TO THE SIGN POST.
6. INSERT THE SIGN POST INTO SOCKET AND ALIGN SIGN FACE WITH THE ROADWAY.
7. DRIVE THE WEDGE INTO THE SOCKET TO SECURE POST. THIS WILL LEAVE APPROXIMATELY 3 INCHES OF THE WEDGE EXPOSED.

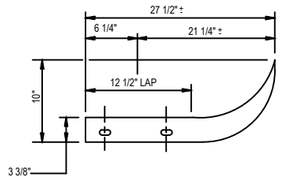
SIGN MOUNTING DETAIL FOR SMALL ROADSIDE SIGNS - WEDGE ANCHOR STEEL SYSTEM DETAIL

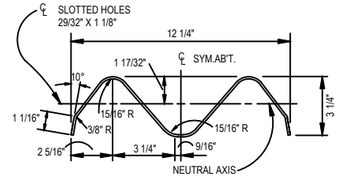


FOOTING DETAIL

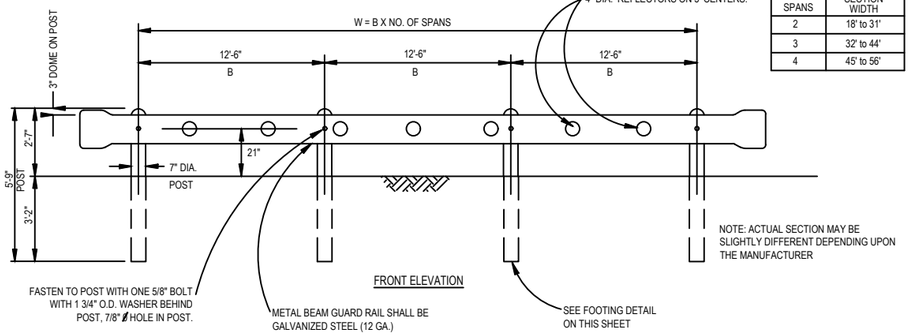


TERMINAL SECTION





SECTION THRU RAIL ELEMENT



FRONT ELEVATION

NO. OF SPANS	ROADWAY SECTION WIDTH
2	18' to 31'
3	32' to 44'
4	45' to 56'

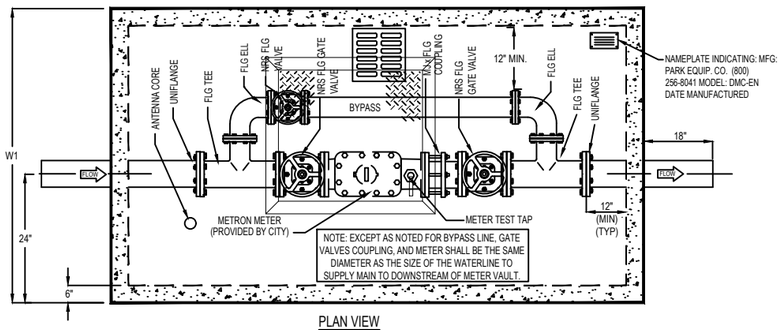
METAL BEAM BARRICADE - END OF ROAD

DETAILS SHOWN NOT TO SCALE

CITY OF ENNIS, TEXAS
PUBLIC WORKS

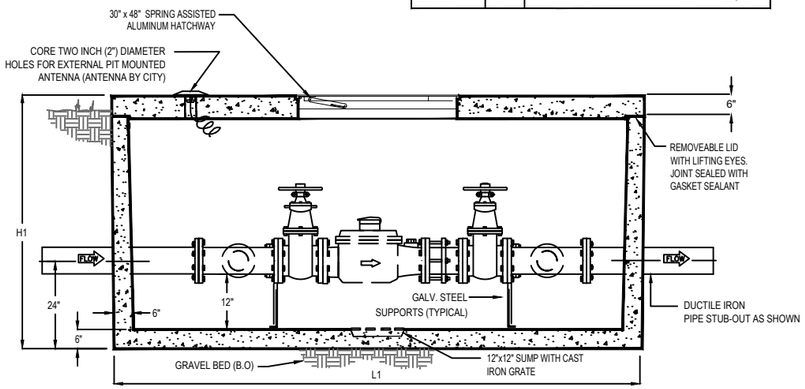
STREET SIGNAGE

NO:	REVISION:	DATE:	SHEET:
		05/08/2021	SS-1



PLAN VIEW

DIMENSIONS						
MODEL	SIZE	BY PASS	L1	W1	H1	WEIGHT LBS
DMC-EN4	4"	4"	8'-8"	5'-0"	5'-0"	15,000
DMC-EN4	6"	6"	11'-0"	6'-0"	5'-0"	19,500
DMC-EN8	8	8"	13'-0"	7'-0"	6'-0"	28,000



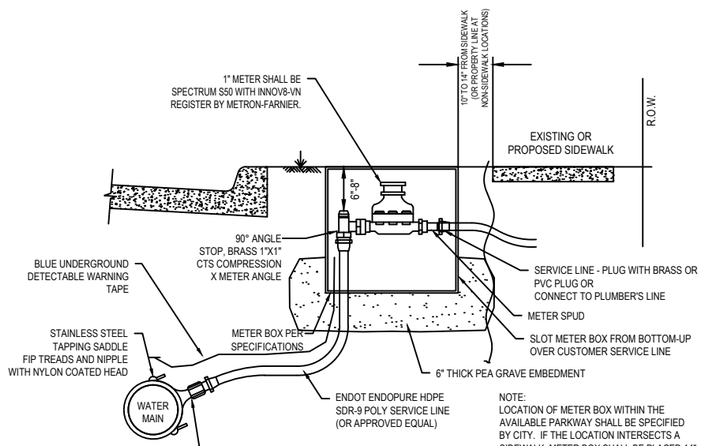
ELEVATION

SPECIFICATIONS:

1. CONCRETE: CLASS I/II CONCRETE WITH DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH.
2. REINFORCEMENT: GRADE 60 REINFORCED. STEEL REBAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.
3. HATCHWAY: HINGED 1/4" ALUMINUM DIAMOND PLATE COVER, WITH 1/4" EXTRUDED ALUMINUM FRAME. HATCH TO BE FURNISHED WITH STAINLESS ALUMINUM HARDWARE.
4. FIELD EXCAVATION AND PREPARATION SHALL BE COMPLETED PRIOR TO DELIVERY OF ASSEMBLY. USE DIMENSIONAL DATA AS SHOWN. PIPE, VALVES AND FITTINGS OF THE ASSEMBLY ARE APPROVED BY ONE OR MORE OF THE FOLLOWING ASSOCIATIONS:

AWWA

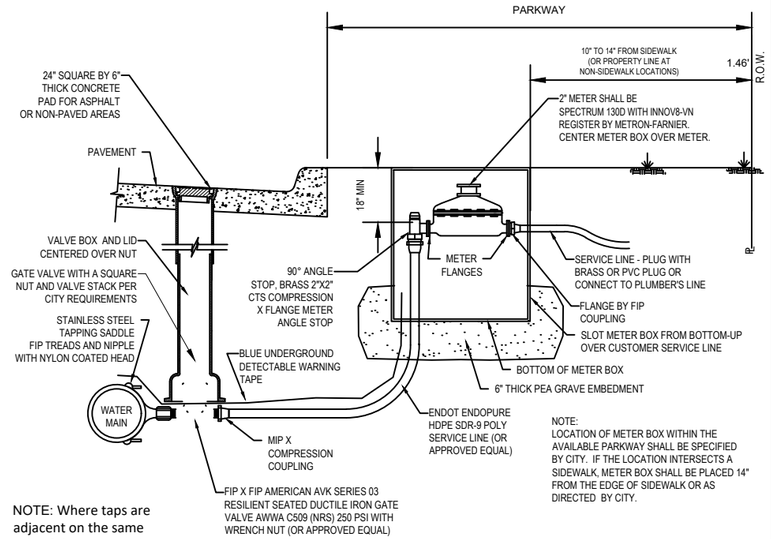
4" THRU 8" DOMESTIC SINGLE-JET WATER METER ASSEMBLY



NOTE: Where taps are adjacent on the same side of the water main, or taps are adjacent but on opposite sides of the water main, place taps no closer than 12" on center

NOTE: Water services greater than 100' long from Meter to primary site structure shall require the installation of a testable double check valve immediately downstream of the water meter.

WATER SERVICE INSTALLATION - 1"



NOTE: Where taps are adjacent on the same side of the water main, or taps are adjacent but on opposite sides of the water main, place taps no closer than 12" on center

NOTE: Water services greater than 100' long from Meter to primary site structure shall require the installation of a testable double check valve immediately downstream of the water meter.

WATER SERVICE INSTALLATION - 2"

DETAILS SHOWN NOT TO SCALE

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PUBLIC WORKS

UTILITY DETAILS

WATER METER DETAILS

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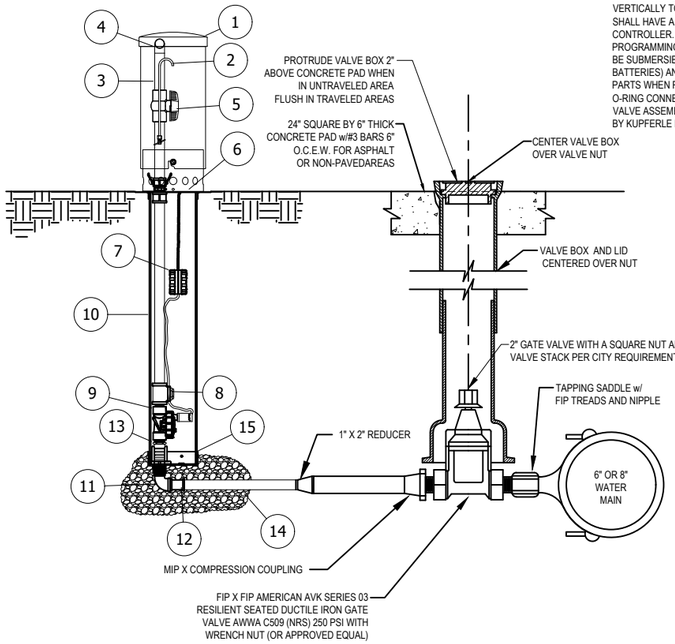
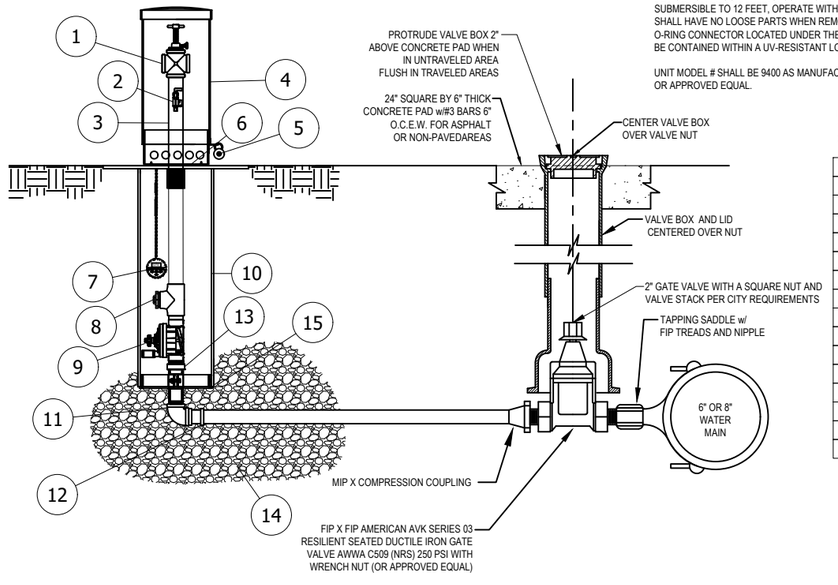


AUTOMATIC FLUSHING DEVICE SHALL HAVE A 1" STAINLESS STEEL MIP INLET, THAT WILL LEAD VERTICALLY TO THE BOTTOM INTO A 1" AUTOMATIC FLUSHING VALVE. AUTOMATIC SOLENOID VALVE SHALL HAVE A 150 PSI RATING. EACH UNIT SHALL BE FURNISHED WITH A STAND-ALONE VALVE CONTROLLER. VALVE CONTROLLER WILL NOT REQUIRE A SECOND HAND-HELD DEVICE FOR PROGRAMMING. CONTROLLER MUST HAVE MINIMUM OF 12 POSSIBLE FLUSHING CYCLES PER DAY. SHALL BE SUBMERSIBLE TO 12 FEET, OPERATE WITH A 9 VOLT BATTERY (COMPARTMENT HOLDS TWO BATTERIES) AND HAVE RESIN-SEATED ELECTRICAL COMPONENTS. SOLENOID SHALL HAVE NO LOOSE PARTS WHEN REMOVED FROM VALVE. REMOVAL OF 1" AUTOMATIC VALVE SHALL BE POSSIBLE VIA AN O-RING CONNECTOR LOCATED UNDER THE VALVE AFTER REMOVAL OF STAINLESS STEEL ACCESS PLATE. VALVE ASSEMBLY SHALL BE CONTAINED WITHIN A UV-RESISTANT LOCKING COVER, AS MANUFACTURED BY KUPFERLE FOUNDRY COMPANY. MODEL #9400A ST. LOUIS, MO. 1-800-231-3990, OR APPROVED EQUAL.

NOTE:
1. FLUSH WATER LINES FREE OF DEBRIS BEFORE INSTALLATION
2. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS

ITEM	ITEM / DESCRIPTION
1	UV RESISTANT LOCKABLE DOME ELNCLOSURE
2	SAMPLING POINT
3	1" PVC PIPE
4	UV RESISTANT LOCKABLE DOME ENCLOSURE
5	1" PVC BALL VALVE
6	REMOVABLE ACCESS PLATE
7	CONTROLLER
8	AUTOMATIC DRAIN
9	1" AUTOMATIC VALVE
10	SDR 35 SEWER PIPE
11	1" S.S. FIP INLET
12	1" MIP x COMPRESSION ADAPTER
13	O-RING CONNECTOR
14	1" CLEAN ROCK
15	DEBRIS PLATE

1" AUTOMATIC FLUSHING DEVICE #9400A
FLUSHING LENGTH LESS THAN 500 FEET



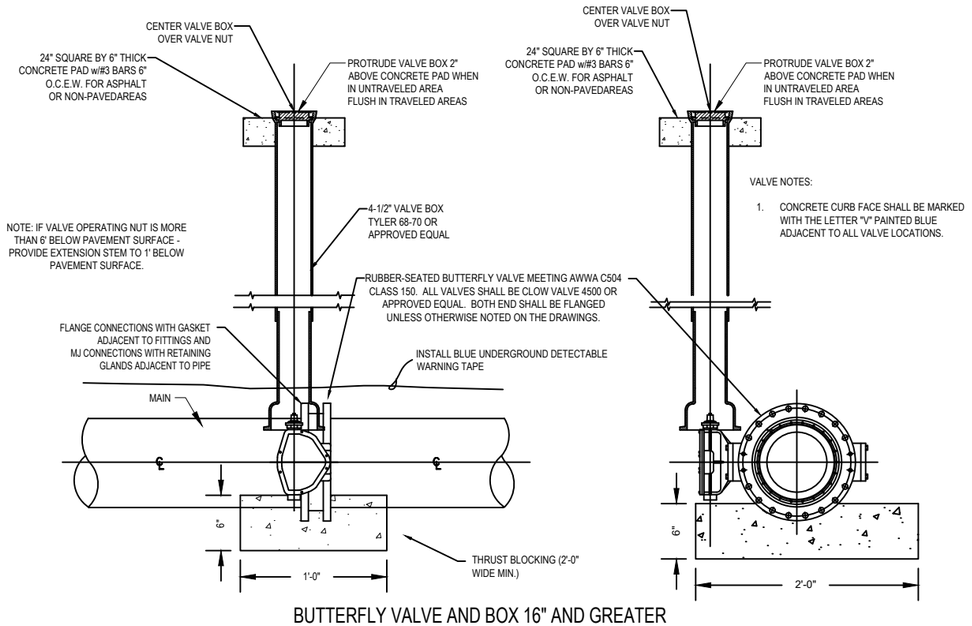
AUTOMATIC FLUSHING DEVICE SHALL HAVE A 2" STAINLESS STEEL MIP INLET, THAT WILL LEAD VERTICALLY TO THE BOTTOM INTO A 2" AUTOMATIC FLUSHING VALVE. THE FLUSHING VALVE SHALL CONTROL THE FLOW OF WATER THROUGH THE HYDRANT AND ITS DIAPHRAGM WITH THE EXTENSION AND RETRACTION OF A DC LATCHING SOLENOID AND HAVE A 220 PSI RATING. EACH UNIT SHALL BE FURNISHED WITH A STAND-ALONE VALVE CONTROLLER. VALVE CONTROLLER WILL NOT REQUIRE A SECOND HAND-HELD DEVICE FOR PROGRAMMING. CONTROLLER MUST HAVE MINIMUM OF 12 POSSIBLE FLUSHING CYCLES PER DAY. SHALL BE SUBMERSIBLE TO 12 FEET, OPERATE WITH A 9 VOLT BATTERY AND HAVE RESIN-SEATED ELECTRICAL COMPONENTS. SOLENOID SHALL HAVE NO LOOSE PARTS WHEN REMOVED FROM VALVE. REMOVAL OF 2" SOLENOID VALVE SHALL BE POSSIBLE VIA AN O-RING CONNECTOR LOCATED UNDER THE VALVE AFTER REMOVAL OF STAINLESS STEEL ACCESS PLATE. VALVE ASSEMBLY SHALL BE CONTAINED WITHIN A UV-RESISTANT LOCKING COVER.

UNIT MODEL # SHALL BE 9400 AS MANUFACTURED BY KUPFERLE FOUNDRY COMPANY. MODEL #9400 ST. LOUIS, MO. 1-800-231-3990, OR APPROVED EQUAL.

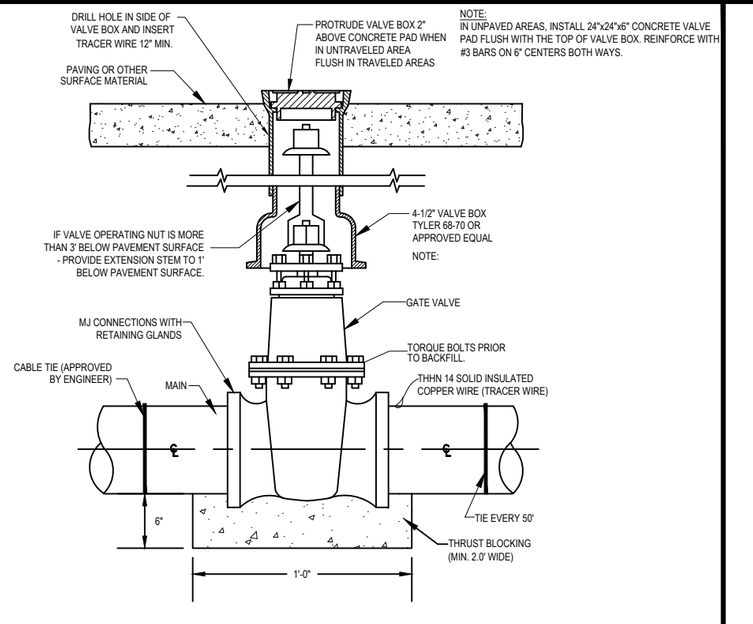
NOTE:
1. FLUSH WATER LINES FREE OF DEBRIS BEFORE INSTALLATION
2. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS

ITEM	ITEM / DESCRIPTION
1	2" WATER FLOW RESTRICTOR
2	SAMPLING POINT
3	2" PVC PIPE
4	UV RESISTANT LOCKABLE DOME ENCLOSURE
5	LOCKING POINT
6	REMOVABLE ACCESS PLATE
7	CONTROLLER
8	AUTOMATIC DRAIN
9	2" AUTOMATIC VALVE
10	SDR 35 SEWER PIPE
11	2" SS MIP INLET
12	2" MIP x COMPRESSION ADAPTER
13	O-RING CONNECTOR
14	1" CLEAN ROCK
15	DEBRIS PLATE

2" AUTOMATIC FLUSHING DEVICE #9400
FLUSHING LENGTH EQUAL OR GREATER THAN 500 FEET



BUTTERFLY VALVE AND BOX 16" AND GREATER



GATE VALVE BOX AND EXTENSION STEM

DETAILS SHOWN NOT TO SCALE

CITY OF ENNIS, TEXAS
PUBLIC WORKS

UTILITIES

WATER VALVE DETAILS

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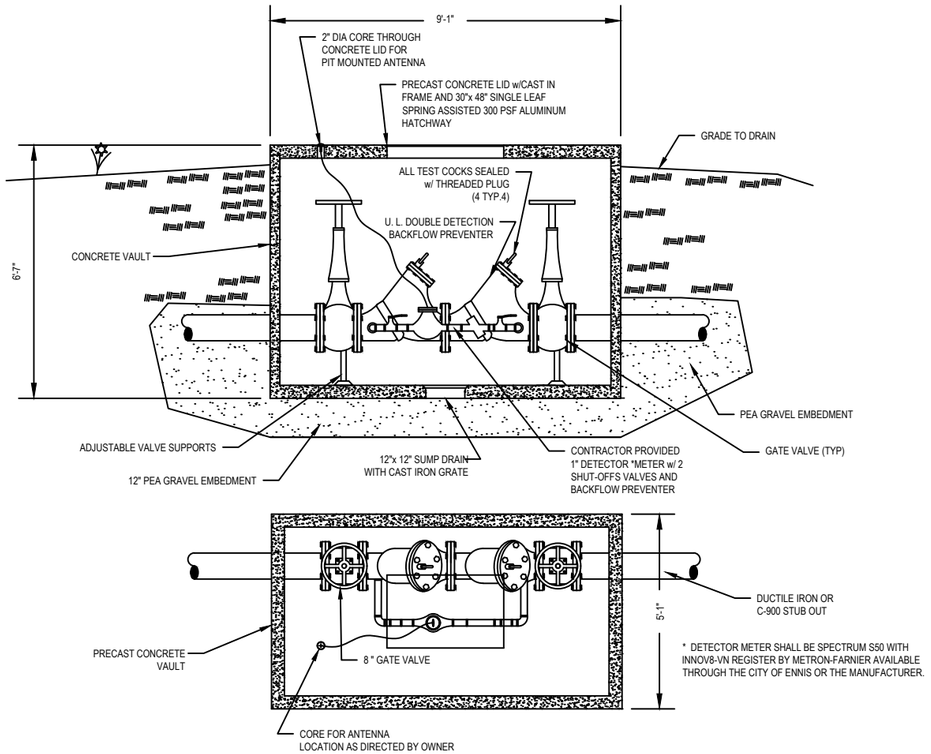
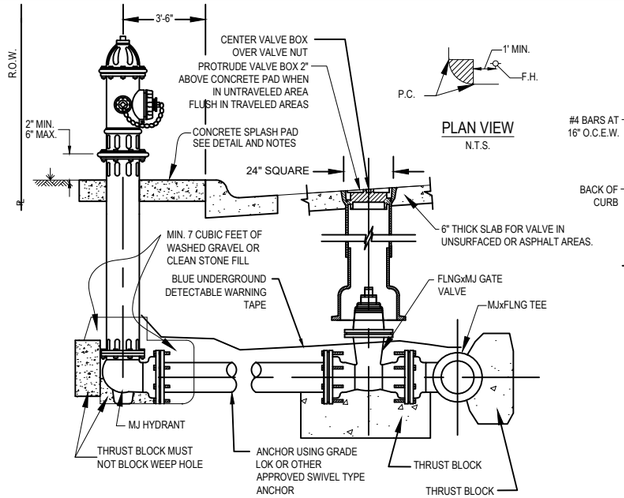
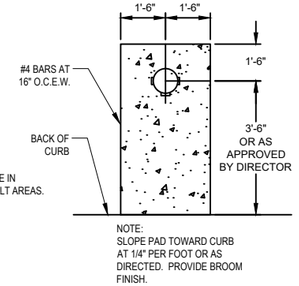


FIRE PROTECTION SYSTEM BACKFLOW PREVENTER



PLAN VIEW
N.T.S.



CONCRETE SPLASH PAD
N.T.S.

FIRE HYDRANT NOTES:

1. FIRE HYDRANTS SHALL CONFORM TO AWWA STANDARD SPECIFICATIONS FOR FIRE HYDRANTS FOR ORDINARY WATER WORKS SERVICE, C-502. ALL FIRE HYDRANTS SHALL BE IMPROVED STYLE OF MUELLER SUPER CENTURION MODEL A423. UPPER BARREL, BONNET AND CAPS SHALL BE PAINTED FLYNT SILVER BY THE MANUFACTURE. BARRELS SHALL BE 5.5" - 3 WAY HYDRANTS WITH ONE 4.5" STEAMER AND TWO 2.5" OUTLETS X NATIONAL STANDARD THREAD.
2. VALVE LOCATION WILL DEPEND ON LOCATION OF WATER MAIN BUT SHALL NORMALLY BE BOLTED DIRECTLY TO A FLANGED TEE ON THE MAIN. ANCHOR VALVE TO HYDRANT USING GRADE LOK OR OTHER APPROVED SWIVEL TYPE ANCHOR. FIRE HYDRANT SHALL BE NO CLOSER THAN 18" TO EXISTING OR PROPOSED SIDEWALKS. (USUAL) SET ON AN EXTENSION OF THE LOT LINE IF POSSIBLE AND IN THE PARKWAY NOT ENCROACHING ON SIDEWALK OR CURBS. LOCATE FIRE HYDRANT MINIMUM 1 FT. OUTSIDE OF THE AREA BETWEEN THE P.C.'S OF THE CORNER TURNING RADII AT INTERSECTIONS. (SEE PLAN VIEW THIS DETAIL)
3. STANDARD BURY DEPTH 4' FEET AND FIRE HYDRANTS SHALL BE PLUMB.
4. DRAINAGE BED SHALL CONSIST OF AGGREGATE TYPE A1 - DRAIN ROCK WITH A MIN. VOLUME OF 7 CU. FT. DRAIN BED SHALL EXTEND A MIN. 6" ABOVE DRAIN OUTLET. FIRE HYDRANT TO BE BLOCKED AGAINST FIRM SOIL AS SHOWN.
5. STEAMER NOZZLE SHALL BE ROTATED TO FACE ROAD UNLESS OTHERWISE NOTED AND CENTER NUT OF THE STEAMER CAP SHALL BE 18" ABOVE FINAL GRADE. HYDRANT SHOULD NOT BE SET CLOSER THAN 4' TO OBSTRUCTIONS THAT ARE IN LINE WITH NOZZLE.
6. PROVIDE 30" WIDE, 5" THICK, CONCRETE APRON FROM FIRE HYDRANT TO BACK OF CURB. APRON SHALL BE CONSTRUCTED OF CLASS B CONCRETE #3 BARS 12" O.C.
7. INSTALL BLUE RAISED REFLECTIVE PAVEMENT MARKERS IN THE CENTERLINE OF THE ROADWAY ON THE SIDE OF ALL FIRE HYDRANT LOCATIONS.

FIRE HYDRANT ASSEMBLY

DETAILS SHOWN NOT TO SCALE

CITY OF ENNIS, TEXAS
PUBLIC WORKS

UTILITY DETAILS

FIRE HYDRANT/PROTECTION DETAILS

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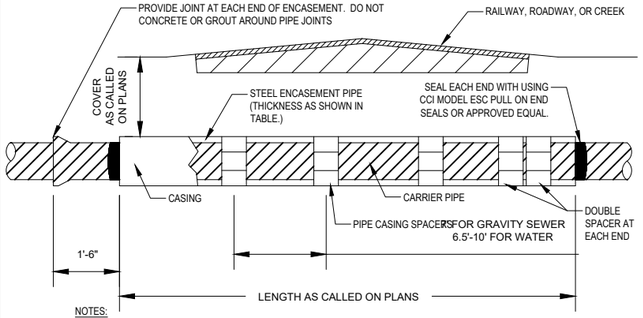
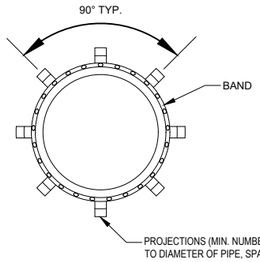
		05/08/2021	UT-3



NOTES:

1. ALL CASINGS SHALL BE NEW STEEL PIPE HAVING A MINIMUM YIELD STRENGTH OF 35,000 PSI.
2. CASING SHALL MEET ASTM A36, ASTM A570, ASTM A135, ASTM A139 OR ENGINEER APPROVED EQUAL.
3. ALL CASING JOINTS SHALL BE WELDED IN ACCORDANCE WITH AWWA C206.
4. PIPE WITHIN THE CASING SHALL BE AN UNBROKEN RUN, AND THIS SHALL BE ACCOMPLISHED BY USING AN APPROVED FUSIBLE PIPE, A PIPE WITH INTERLOCKING JOINTS, OR JOINT RESTRAINTS.
5. THE ENDS OF THE CASING SHALL BE SEALED USING CCI MODEL ESC PULL ON END SEALS OR APPROVED EQUAL. END SEALS SHALL BE INSTALLED AS RECOMMENDED BY THE MANUFACTURER. IN ALL CASES, BANDS AND CLAMPS SHALL BE STAINLESS STEEL AND THE SEALS SHALL BE OF THE HIGHEST QUALITY AND MEET OR EXCEED INDUSTRY STANDARDS.



STEEL CASING WALL THICKNESS CHART		
MINIMUM THICKNESS		DIAMTER OF CASING PIPE
0.2500"	1/4"	12" OR LESS
0.3125"	5/16"	OVER 12"-18"
0.3750"	3/8"	OVER 18"-22"
0.4375"	7/16"	OVER 22"-28"
0.5000"	1/2"	OVER 28"-34"
0.5625"	9/16"	OVER 34"-42"
0.6250"	5/8"	OVER 42"-48"

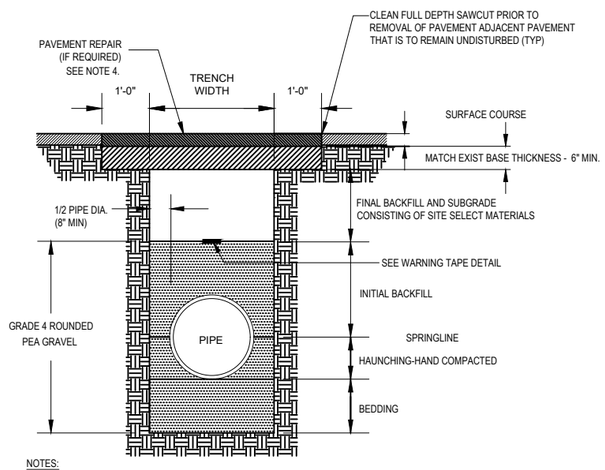
OVER 48" MUST BE APPROVED BY CITY

NOTE:THIS CHART IS ONLY FOR SMOOTH STEEL CASING PIPES WITH MINIMUM YIELD STRENGTH OF 35,000 PSI

NOTES:

1. CASING SPACERS SHALL BE USED TO INSTALL CARRIER PIPE INSIDE THE ENCASEMENT PIPE. THE SPACERS SHALL BE OF A PROJECTION TYPE THAT HAS A MINIMUM NUMBER OF PROJECTIONS AROUND THE CIRCUMFERENCE TOTALING THE NUMBER OF DIAMETER INCHES. FOR EXAMPLE, 8" PIPE SHALL HAVE A MINIMUM OF 8 PROJECTIONS AND 18" PIPE SHALL HAVE A MINIMUM OF 18 PROJECTIONS.
2. CASING SPACERS SHALL FASTEN TIGHTLY ONTO THE CARRIER PIPE SO THAT THE SPACERS DO NOT MOVE DURING INSTALLATION. CASING SPACERS SHALL HAVE A SPAN OF 10 FEET TO 6-1/2 FEET DEPENDENT ON THE TOTAL LOAD ANTICIPATED WITH THE PIPE FULL OF LIQUID. ON SEWER PIPE, THE MAXIMUM SPAN SHOULD BE 7 FEET TO PREVENT SAGGING OF THE CARRIER PIPE. THE MAXIMUM LOAD SHALL NOT EXCEED THE LOAD LIMITS PER SPACER PER THE MANUFACTURER'S RECOMMENDATION.
3. CASING SPACERS SHALL BE TOTALLY NON-METALLIC AND CONSTRUCTED OF PREFORMED SECTIONS OF HIGH-DENSITY POLYETHYLENE. SPACERS SHALL BE CERTIFIED FOR STRENGTH AND QUALITY. RACI TYPE SPACERS OR AN APPROVED EQUIVALENT SHALL BE USED.

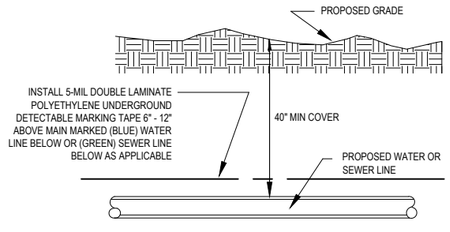
ENCASEMENT PIPE & SPACERS DETAIL



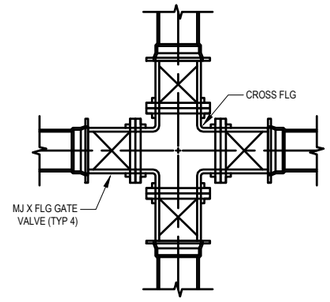
NOTES:

1. SAWCUT EXISTING PAVEMENT AT FULL PAVEMENT DEPTH ALONG PERIMETER OF PAVEMENT REPAIR. FOR CONCRETE PAVEMENT - WHERE WITHIN 12" OF AN EXISTING JOINT EXTEND THE PAVEMENT REMOVAL AND REPLACEMENT TO THE JOINT.
2. THE FOLLOWING MATERIALS SHALL BE USED:
   a. BEDDING, HAUNCHING, AND INITIAL BACKFILL: GRADE 4 ROUNDED PEA GRAVEL SHALL BE USED FROM 6" BELOW PIPE TO 6" ABOVE TOP OF PIPE.
   b. FINAL BACKFILL: SELECT SITE MATERIALS, FREE FROM LUMPS OR CLODS >6" DIA. PI<20, LL<45
3. WHEN AN UNSTABLE TRENCH BOTTOM IS ENCOUNTERED, CONTRACTOR SHALL OVER EXCAVATE TRENCH AND PLACE 6" OF CLASS I MATERIAL FOR FOUNDATION.
4. ALL BACKFILL SHALL BE PLACED IN 8" MAX. LIFTS AND BE COMPACTED TO 90% STANDARD PROCTOR. BACKFILL UNDERNEATH ASPHALT, CONCRETE, DRIVES, OR FUTURE STRUCTURES SHALL BE COMPACTED TO 95% STANDARD PROCTOR.
5. PAVEMENT REPAIRS SHALL MATCH EXISTING PAVEMENT PROFILES, HOWEVER, THE FOLLOWING MINIMUM CRITERIA SHALL APPLY.
   a. SUBGRADE SHALL BE COMPACTED TO 95% STD. PROCTOR.
   b. MINIMUM 6" FLEXIBLE BASE SHALL BE TXDOT TYPE A CRUSHED STONE, GRADE 1 COMPACTED TO 95% STANDARD PROCTOR FOR ASPHALT PAVEMENT
   c. 2" MIN. HMAC TYPE D SURFACE PER TXDOT ITEM 341 OR 4" MIN. REINFORCED CONCRETE PAVEMENT PER TXDOT ITEM 360 AND ITEM 440.
   d. PRIME AND/OR TACK COATS WILL BE REQUIRED AS APPLICABLE
   e. FOR INSTALLATION REQUIREMENTS, SEE TXDOT STANDARDS AS REFERENCED IN THE TECHNICAL SPECIFICATIONS.

PIPE EMBEDMENT AND PAVEMENT REPAIR DETAIL

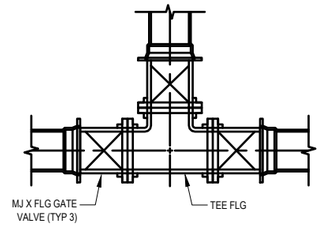


WARNING TAPE DETAIL



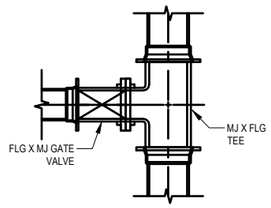
NOTE: ALL CROSSES SHALL HAVE 4 FLANGED GATE VALVES

CROSS FITTINGS



NOTE: ALL TEES SHALL HAVE 3 FLANGED GATE VALVES

TEE FITTINGS



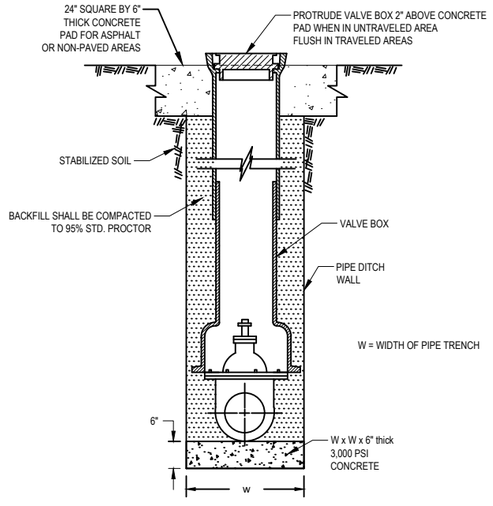
PLAN

FIRE HYDRANT FITTINGS

NOTES:

1. ALL CROSSES, TEES, VALVES AND FIRE HYDRANTS SHALL HAVE FLANGED CONNECTIONS.
2. REFER TO BLOCKING DETAILS FOR BLOCK DESIGN AND INSTALLATION .

FITTINGS (WATER)



VALVE BLOCKING DETAIL

DETAILS SHOWN NOT TO SCALE

CITY OF ENNIS, TEXAS
PUBLIC WORKS

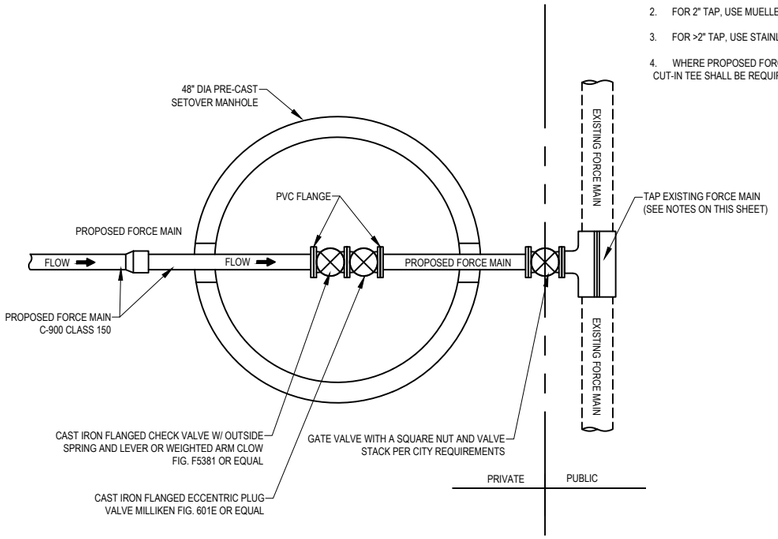
UTILITY DETAILS

MISCELLANEOUS

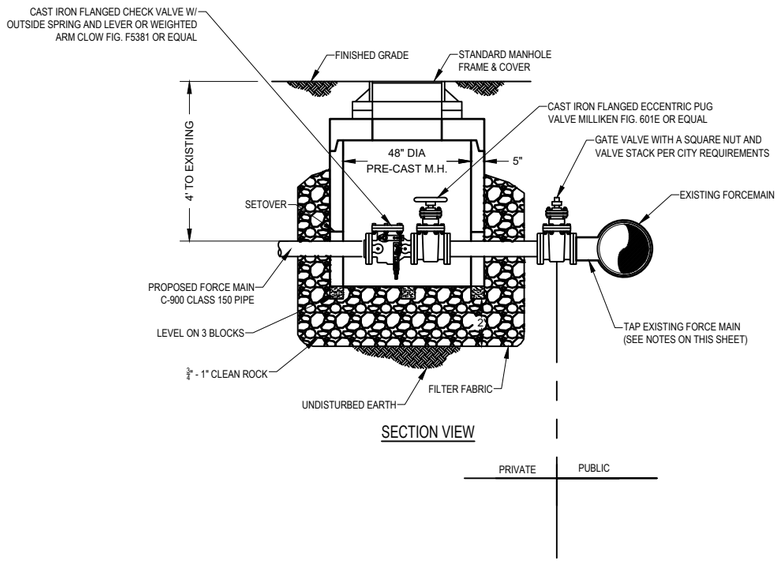
NO:	REVISION:	DATE:	SHEET:
		05/08/2021	UT-4

NOTES:

1. SEE CITY OF ENNIS IDS FOR ADDITIONAL FORCEMAIN DESIGN AND CONSTRUCTION REQUIREMENTS.
2. FOR 2" TAP, USE MUELLER STAINLESS STEEL DOUBLE STRAP.
3. FOR >2" TAP, USE STAINLESS STEEL TAPPING SLEEVE .
4. WHERE PROPOSED FORCE MAIN IS ONE PIPE SIZE SMALLER THAN THE EXISTING FORCE MAIN, A CUT-IN TEE SHALL BE REQUIRED UNLESS APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

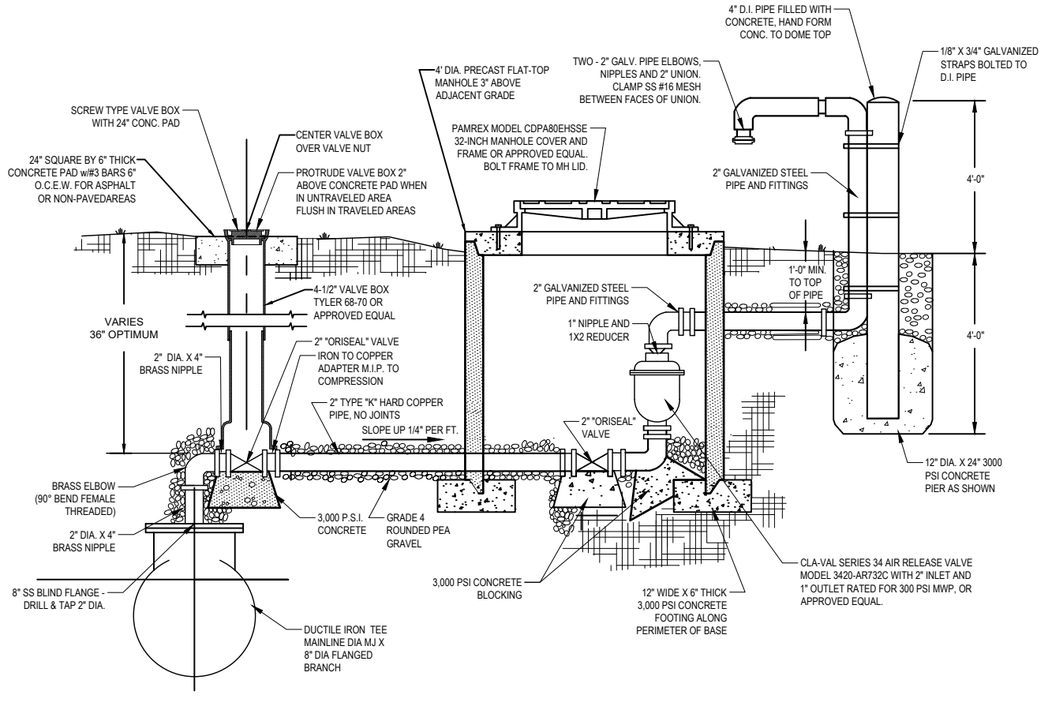


PLAN VIEW

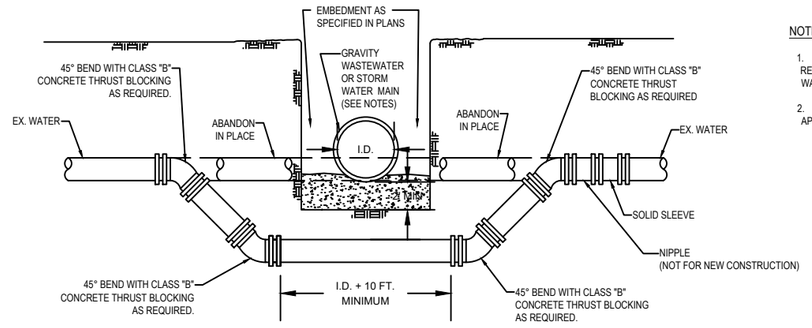


SECTION VIEW

FORCEMAIN TAP DETAIL



AIR RELEASE VALVE



WATER MAIN LOWERING BELOW WASTEWATER OR STORMWATER MAIN

NOTES:

1. WASTEWATER PIPE AND INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF TCEQ CHAPTER 217 - DESIGN CRITERIA FOR DOMESTIC WASTEWATER SYSTEMS.
2. PVC SEWER PIPE WITH AT LEAST A 150 PSI PRESSURE RATING USING APPROPRIATE ADAPTERS.

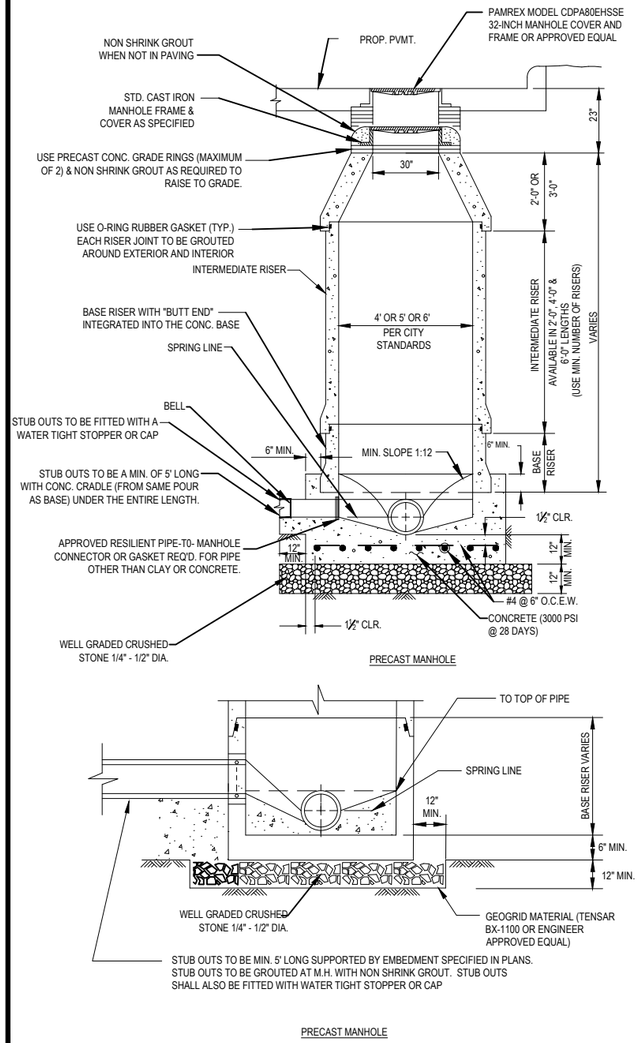
DETAILS SHOWN NOT TO SCALE

CITY OF ENNIS, TEXAS
PUBLIC WORKS

UTILITY DETAILS

MISCELLANEOUS

NO:	REVISION:	DATE:	SHEET:
		05/08/2021	UT-5



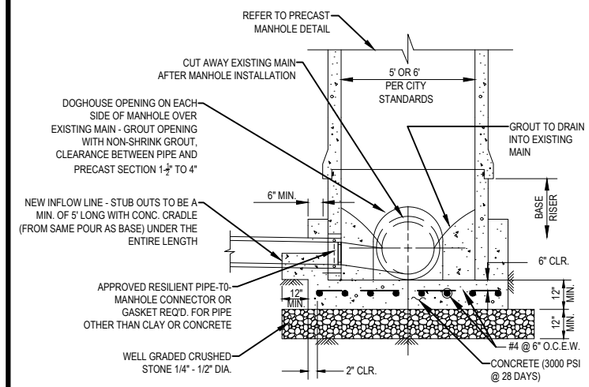
PRECAST MANHOLE

PRECAST MANHOLE

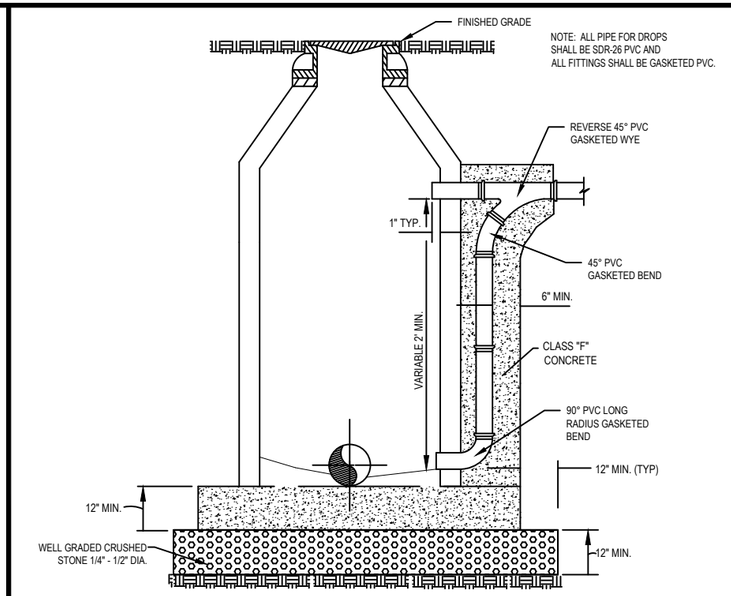
NOTES:

1. MANHOLES PLACED AT THE END OF A WASTEWATER COLLECTION SYSTEM PIPE THAT MAY BE EXTENDED IN THE FUTURE MUST INCLUDE PIPE STUB OUTS WITH PLUGS. THE LENGTH OF THE STUB OUT SHALL BE DECIDED BY THE DIRECTOR OF UTILITIES.
2. A MANHOLE MUST BE MADE OF MONOLITHIC, CAST-IN-PLACE CONCRETE, OR PRE-CAST CONCRETE. THE USE OF BRICKS TO ADJUST A MANHOLE COVER TO GRADE OR CONSTRUCT A MANHOLE IS PROHIBITED.
3. THE INSIDE DIAMETER OF A MANHOLE MUST BE NO LESS THAN 60-INCHES. A MANHOLE DIAMETER MUST BE SUFFICIENT TO ALLOW PERSONNEL AND EQUIPMENT TO ENTER, EXIT, AND WORK IN THE MANHOLE AND TO ALLOW PROPER JOINING OF THE COLLECTION SYSTEM PIPES IN THE MANHOLE WALL.
4. TOP OF MANHOLE TO BE 2'-0" (±2") ABOVE EXISTING GROUND IN UNDEVELOPED AREAS UNLESS OTHERWISE DIRECTED BY THE ENGINEER. MOUND DIRT AROUND MANHOLE @ 6:1 SLOPE.
5. TOP OF MANHOLE TO BE 6" (±1") ABOVE EXISTING GROUND IN DEVELOPED AREAS AND ON STREET RIGHT-OF-WAYS UNLESS OTHERWISE DIRECTED BY THE ENGINEER. MOUND DIRT AROUND MANHOLE @ 6:1 SLOPE.
6. ALL MANHOLES IN PUBLIC R.O.W. SHALL HAVE PROVISIONS TO FACILITATE ANY NECESSARY ADJUSTMENT IN HEIGHT.
7. PRE CAST RISERS, CONES, FLAT TOP SLABS, REDUCING FLAT SLABS, FLOORS, GRADE RINGS & RINGS AND COVERS SHALL BE MANUFACTURED ACCORDING TO THE MOST RECENT ASTM C-478 SPECIFICATIONS.
8. MANHOLE WATERPROOFING SHALL BE ONE HEAVY EXTERIOR COAT OF TAR PAINT SUCH AS KOPPERS "BITUMASTIC SUPER-SERVICE BLACK", TNEMEC "46-449 HEAVY DUTY BLACK", VALSPAR "35-J-10", OR APPROVED EQUIVALENT.
9. EACH RISER JOINT TO BE GROUTED AROUND EXTERIOR AND INTERIOR.
10. MANHOLES MUST MEET THE FOLLOWING REQUIREMENTS FOR COVERS, INLETS, AND BASES:
    a. MANHOLE COVERS AND FRAMES MUST BE PAM REX AND MUST BE GROUTED TO THE MANHOLE.
    b. A MANHOLE WHERE PERSONNEL ENTRY IS ANTICIPATED REQUIRES AT LEAST A 30 INCH DIAMETER CLEAR OPENING.
    c. A MANHOLE LOCATED WITHIN A 100-YEAR FLOOD PLAIN MUST HAVE A MEANS OF PREVENTING INFLOW.
    d. A MANHOLE COVER THAT IS LOCATED IN A ROADWAY MUST MEET OR EXCEED THE AMERICAN ASSOCIATION OF STATE HIGHWAYS AND TRANSPORTATION OFFICIALS STANDARD M-306 FOR LOAD BEARING.

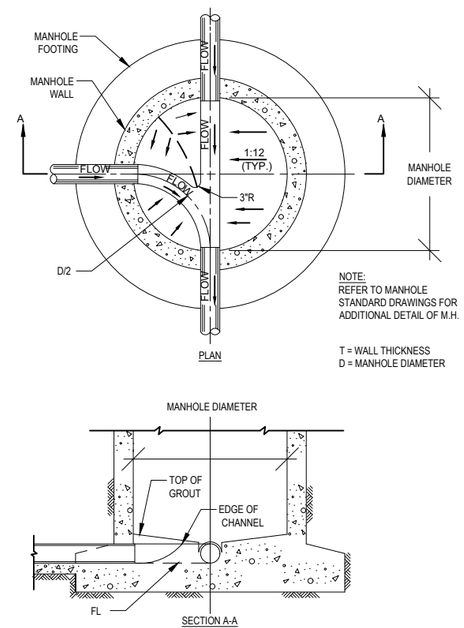
PRECAST WASTEWATER MANHOLE AND BASE



DOGHOUSE MANHOLE INSTALLED ON EXISTING MAIN



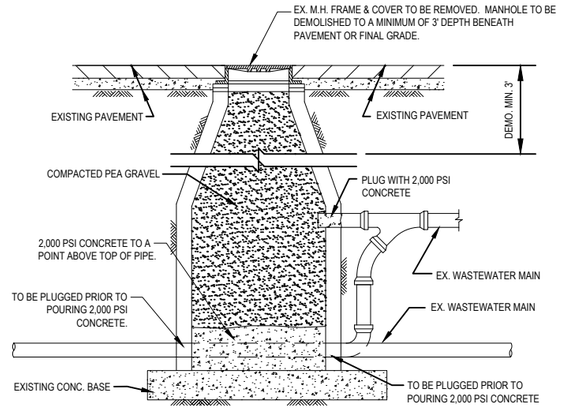
STANDARD DROP MANHOLE



MANHOLE INVERTS

1. THE BOTTOM OF A MANHOLE MUST CONTAIN A U-SHAPED CHANNEL THAT IS A SMOOTH CONTINUATION OF THE INLET AND OUTLET PIPES.
2. A MANHOLE CONNECTED TO A PIPE LESS THAN 15 INCHES IN DIAMETER MUST HAVE A CHANNEL DEPTH EQUAL TO AT LEAST HALF THE LARGEST PIPE'S DIAMETER.
3. A MANHOLE CONNECTED TO A PIPE AT LEAST 15 INCHES IN DIAMETER BUT NOT MORE THAN 24 INCHES IN DIAMETER MUST HAVE A CHANNEL DEPTH EQUAL TO AT LEAST THREE-FOURTHS OF THE LARGEST PIPE'S DIAMETER.
4. A MANHOLE CONNECTED TO A PIPE GREATER THAN 24 INCHES IN DIAMETER MUST HAVE A CHANNEL DEPTH EQUAL TO AT LEAST THE LARGEST PIPE'S DIAMETER.
5. A MANHOLE WITH PIPES OF DIFFERENT SIZES MUST HAVE THE TOPS OF THE PIPES AT THE SAME ELEVATION AND FLOW CHANNELS IN THE INVERT SLOPED ON AN EVEN SLOPE FROM PIPE TO PIPE.
6. A BENCH PROVIDED ABOVE A CHANNEL MUST SLOPE AT A MINIMUM OF 0.5 INCH PER FOOT.
7. A WASTEWATER COLLECTION SYSTEM PIPE ENTERING A MANHOLE MORE THAN 6 INCHES ABOVE AN INVERT MUST HAVE A DROP PIPE.
8. THE INCLUSION OF STEPS IN A MANHOLE IS PROHIBITED.

WASTEWATER MANHOLE LINE INTERSECTION



ABANDONMENT OF MANHOLE DETAIL

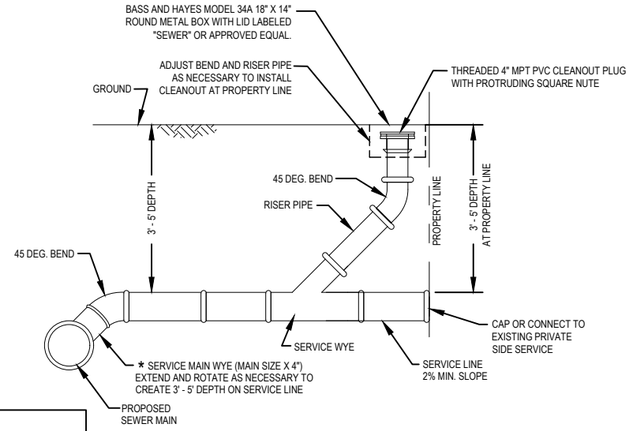
DETAILS SHOWN NOT TO SCALE

CITY OF ENNIS, TEXAS
PUBLIC WORKS

UTILITY DETAILS

WASTEWATER DETAILS

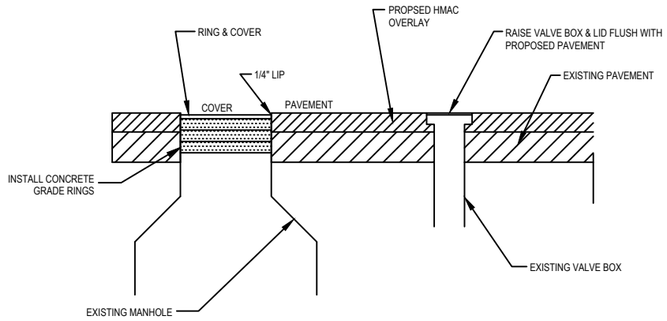
NO:	REVISION:	DATE:	SHEET:
		05/08/2021	UT-6



NOTES:

1. MANHOLE REQUIRED FOR 6"TAP OR LARGER
2. ALL PIPING SHALL BE ASTM D2241 PR 160 SDR 26 PVC UNLESS OTHERWISE NOTED ON PLANS
3. * FOR EXISTING MAIN USE TAPPING SADDLE

WASTEWATER SERVICE LATERAL DETAIL



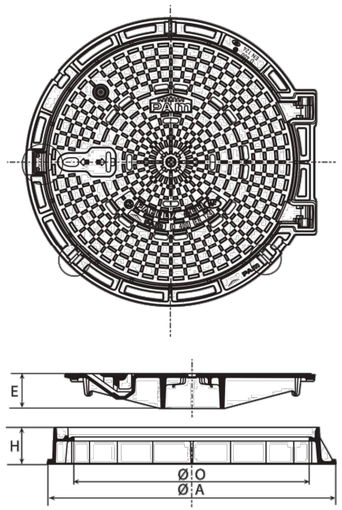
UTILITY ADJUSTMENT

TECHNICAL SPECIFICATION INFORMATION

PAMREX 32-inch Manhole Cover and Frame

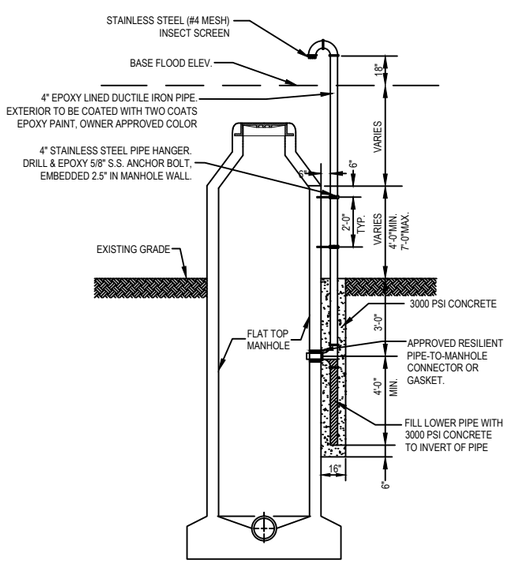
PAM SAINT-GOBAIN MANHOLE COVERS

Manhole cover and frame shall be called PAMREX or approved equal. Covers and frames shall be manufactured from ductile iron in a foundry certified under the requirements of ISO9000-2000. Covers shall be dually hinged and incorporate a 90-degree blocking system to prevent accidental closure and come complete with hinge infiltration plugs. Covers shall be one-man operable using standard tools and shall be capable of withstanding a test load of 120,000 lbs. Frames shall be circular, incorporate a seating ring and be available in a nominal 32-inch clear opening. The frame depth shall not exceed 5 inches and the flange shall incorporate bedding slots and bolt holes. All unites will meet the requirements of EN124-1994. All components shall be black coated. Frame weight: 107 lbs. Cover weight: 162 lbs. Total weight: 269 lbs.

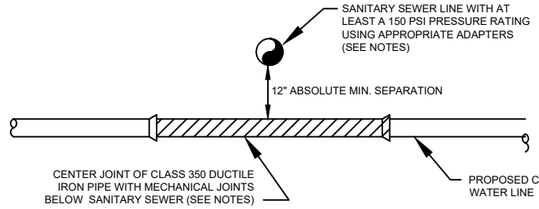


BADGINGS	REFERENCES	MASS (LBS.)		DIMENSIONS (IN.)		
		COVER	TOTAL	A	O	H
BLANK	CDPA80EH	162	269	39-1/2	31-1/2	5
STORM SEWER	CDPA80EHSTSE	162	269	39-1/2	31-1/2	5
SANITARY SEWER	CDPA80EHSSE	162	269	39-1/2	31-1/2	5
WATER	CDPA80EHWAT	162	269	39-1/2	31-1/2	5

STANDARD MANHOLE RING AND COVER



MANHOLE VENTED IN FLOOD PLAIN

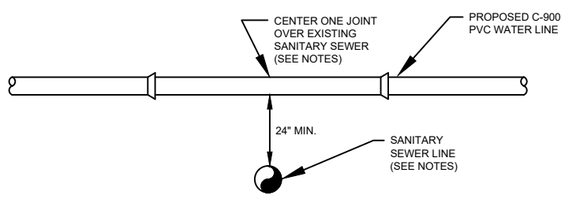


NOTES:
WATER LINE AND INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF TCEQ CHAPTER 290 - PUBLIC DRINKING WATER, RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS.

NOTES:
WASTEWATER PIPE AND INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF TCEQ CHAPTER 217 - DESIGN CRITERIA FOR DOMESTIC WASTEWATER SYSTEMS.

WATER LINE CROSSING UNDER SANITARY SEWER LINE*

* REQUIRES SPECIFIC WRITTEN APPROVAL OF PUBLIC WORKS DIRECTOR.



NOTES:
WATER LINE AND INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF TCEQ CHAPTER 290 - PUBLIC DRINKING WATER, RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS.

NOTES:
WASTEWATER PIPE AND INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF TCEQ CHAPTER 217 - DESIGN CRITERIA FOR DOMESTIC WASTEWATER SYSTEMS.

WATER LINE CROSSING OVER SANITARY SEWER LINE

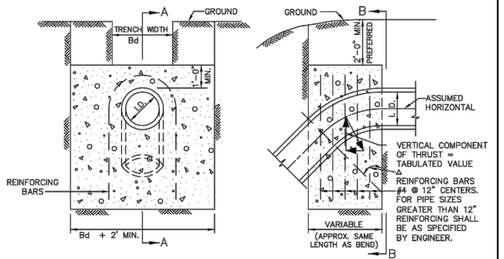
DETAILS SHOWN NOT TO SCALE

CITY OF ENNIS, TEXAS
PUBLIC WORKS

UTILITY DETAILS

WASTEWATER DETAILS

NO:	REVISION:	DATE:	SHEET:
		05/08/2021	UT-7



REFER TO
STD. DWG. No. 4040
FOR GENERAL NOTES.

Δ →	11.25°		22.50°		30°		45°		67.50°		90°		← Δ
I.D. (IN.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	I.D. (IN.)
4,6,8	1.0	0.5	2.0	1.0	2.5	1.3	3.6	1.8	4.6	2.3	5.0	2.5	4,6,8
10,12	2.2	1.1	4.3	2.2	5.7	2.8	8.0	4.0	10.5	5.2	11.3	5.7	10,12
16,18	5.0	2.5	9.7	4.9	12.7	6.4	18.0	9.0	23.5	11.8	25.5	12.7	16,18
20	6.1	3.1	12.0	6.0	15.7	7.9	22.2	11.1	29.2	14.5	31.4	15.7	20
24	8.2	4.4	17.3	8.7	22.6	11.3	32.0	16.0	41.8	20.9	45.2	22.6	24
30	10.5	5.2	20.3	10.1	26.5	13.3	37.5	18.8	49.0	24.5	53.1	26.5	30
36	14.9	7.5	29.2	14.6	38.2	19.1	54.0	27.0	70.5	35.3	76.4	38.2	36
42	20.3	10.1	39.8	19.9	52.0	26.0	73.5	36.7	96.0	48.0	104.0	52.0	42
48	26.5	13.2	51.9	26.0	67.9	33.9	96.0	48.0	126.0	62.7	136.0	67.9	48
54	33.5	16.8	65.7	32.9	85.9	42.9	122.0	60.7	159.0	79.4	172.0	85.9	54
60	41.4	20.7	81.2	40.6	106.0	53.0	150.0	75.0	196.0	98.0	212.0	106.0	60
66	50.1	25.0	98.2	49.1	128.0	64.2	182.0	90.7	237.0	119.0	257.0	128.0	66
72	59.6	29.8	117.0	58.4	153.0	76.3	216.0	108.0	282.0	141.0	305.0	153.0	72
78	69.9	35.0	137.0	68.6	179.0	90.0	254.0	127.0	331.0	166.0	358.0	179.0	78
84	81.1	40.5	159.0	79.5	208.0	104.0	294.0	147.0	384.0	192.0	416.0	208.0	84
90	93.1	46.5	183.0	91.3	239.0	119.0	337.0	169.0	441.0	221.0	477.0	239.0	90
96	106.0	53.0	208.0	104.0	272.0	136.0	384.0	192.0	502.0	251.0	543.0	272.0	96

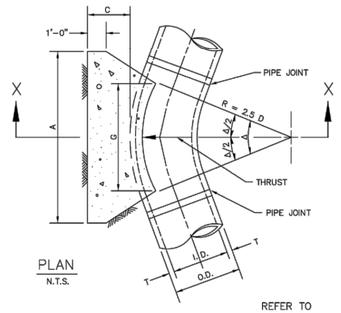
VERTICAL THRUST BLOCK
AT PIPE BEND

North Central Texas Council of Governments

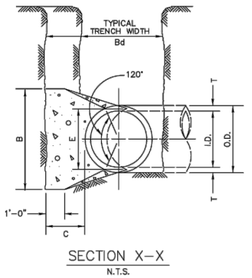
STANDARD SPECIFICATION REFERENCE
502.4

DATE: OCT. '04

STANDARD DRAWING NO.: 4030



REFER TO
STD. DWG. No. 4040
FOR GENERAL NOTES.



HORIZONTAL THRUST BLOCK
AT PIPE BEND

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE
502.4

DATE: OCT. '04

STANDARD DRAWING NO.: 4010A

I.D. (IN.)	T (IN.)	Δ = 11.25° C (FT.)	Δ = 22.50° C (FT.)	E (FT.)
4,6,8	0.4	1.5	1.5	0.9
10,12	0.5	1.5	1.5	1.2
16,18	0.6	1.5	1.5	1.6
20	0.7	1.5	1.5	1.8
24	0.9	1.5	1.5	2.1
30	2.9	1.5	1.9	2.6
36	4.5	1.5	2.3	3.3
42	5.0	1.8	2.6	3.8
48	5.5	2.0	3.0	4.3
54	6.0	2.3	3.4	4.8
60	6.5	2.5	3.8	5.3
66	6.8	2.8	4.1	5.7
72	7.5	3.0	4.5	6.3
78	7.5	3.3	4.9	6.7
84	8.0	3.5	5.3	7.2
90	8.5	3.8	5.6	7.7
96	9.0	4.0	6.0	8.2

I.D. (IN.)	Δ = 11.25°						Δ = 22.50°					
	G (FT.)	THRUST (TONS)	EARTH A (FT.)	EARTH B (FT.)	EARTH VOL. (C.Y.)	ROCK A (FT.)	ROCK B (FT.)	ROCK VOL. (C.Y.)	G (FT.)	THRUST (TONS)	EARTH A (FT.)	EARTH B (FT.)	EARTH VOL. (C.Y.)	ROCK A (FT.)	ROCK B (FT.)	ROCK VOL. (C.Y.)
4,6,8	0.4	1.0	1.0	1.5	0.1	1.0	1.0	0.1	0.8	2.0	1.5	1.5	0.1	1.0	1.0	0.1
10,12	0.6	2.2	1.5	1.5	0.1	1.0	1.5	0.1	1.1	4.4	2.0	2.5	0.3	1.5	1.5	0.1
16,18	0.8	5.0	2.0	2.5	0.3	1.5	2.0	0.2	1.6	9.9	3.0	3.5	0.6	2.0	2.5	0.3
20	0.9	6.2	2.0	3.5	0.4	1.5	3.0	0.3	1.8	12.3	3.5	3.5	0.7	2.0	3.0	0.4
24	1.1	8.9	3.0	3.5	0.5	1.5	3.0	0.3	2.2	17.7	4.0	4.5	1.0	3.0	3.5	0.5
30	1.4	10.4	3.0	3.5	0.6	2.0	3.5	0.4	2.7	20.7	5.0	4.5	1.5	3.0	4.0	0.8
36	1.7	15.0	3.5	4.5	0.9	2.0	4.0	0.5	3.6	29.8	5.5	5.5	2.3	4.0	4.0	1.3
42	1.9	20.4	4.5	5.0	1.5	2.5	5.0	0.8	3.8	40.5	7.0	6.0	3.9	4.5	5.0	2.1
48	2.2	26.6	4.5	6.0	2.0	2.5	6.0	1.1	4.4	52.9	8.0	7.0	5.7	4.5	6.0	2.8
54	2.5	33.7	6.0	6.0	3.0	3.0	6.0	1.4	5.4	67.0	9.0	8.0	8.0	6.0	6.0	4.1
60	2.7	41.6	6.0	7.0	3.8	3.0	7.0	1.8	6.0	82.7	9.5	9.0	10.6	6.0	7.0	5.3
66	3.0	50.3	6.5	8.0	5.1	3.5	8.0	2.7	6.6	100.1	10.5	10.0	14.1	6.5	8.0	7.2
72	3.3	59.9	7.5	8.0	6.3	4.0	8.0	3.3	7.2	119.1	11.0	11.0	17.6	7.5	8.0	9.1
78	3.6	70.2	8.0	9.0	8.1	4.0	9.0	3.9	7.8	139.8	12.0	12.0	22.5	8.0	9.0	11.7
84	3.8	81.5	8.5	10.0	10.3	4.5	10.0	5.3	8.4	162.1	13.0	12.5	27.2	8.5	10.0	14.8
90	4.1	93.5	9.5	10.0	12.2	5.0	10.0	6.3	9.0	186.1	14.0	13.5	33.7	9.5	10.0	17.7
96	4.4	106.4	10.0	11.0	15.0	5.0	11.0	7.4	9.6	211.7	15.0	14.5	41.2	10.0	11.0	21.8

TABLES OF DIMENSIONS AND QUANTITIES

HORIZONTAL THRUST BLOCK
AT PIPE BEND

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE
502.4

DATE: OCT. '04

STANDARD DRAWING NO.: 4010B

I.D. (IN.)	Δ = 30°						Δ = 45°					
	G (FT.)	THRUST (TONS)	EARTH A (FT.)	EARTH B (FT.)	EARTH VOL. (C.Y.)	ROCK A (FT.)	ROCK B (FT.)	ROCK VOL. (C.Y.)	G (FT.)	THRUST (TONS)	EARTH A (FT.)	EARTH B (FT.)	EARTH VOL. (C.Y.)	ROCK A (FT.)	ROCK B (FT.)	ROCK VOL. (C.Y.)
4,6,8	1.0	2.6	2.0	1.5	0.2	1.0	1.5	0.1	4,6,8	1.5	3.9	2.0	2.0	0.2	1.5	1.5	0.1
10,12	1.5	5.9	2.5	2.5	0.3	2.0	1.5	0.2	10,12	2.2	8.7	3.5	2.5	0.5	2.0	2.5	0.3
16,18	2.2	13.2	3.5	4.0	0.8	2.5	3.0	0.4	16,18	3.2	19.5	4.5	4.5	1.2	3.0	3.5	0.6
20	2.4	16.3	4.5	4.0	1.0	3.0	3.0	0.5	20	3.6	24.1	5.5	4.5	1.5	3.5	3.5	0.7
24	2.9	23.4	6.0	4.0	1.4	3.5	3.5	0.7	24	4.3	34.6	8.0	4.5	2.3	4.5	4.0	1.1
30	3.6	27.5	6.5	5.0	1.9	3.5	4.0	0.9	30	5.4	40.6	8.5	5.0	3.2	5.5	4.0	1.6
36	4.4	39.5	7.0	6.0	3.4	4.5	4.5	1.6	36	6.5	58.5	10.0	6.0	5.3	6.5	4.5	2.6
42	5.1	53.8	8.0	7.0	5.1	5.5	5.0	2.5	42	7.5	79.6	11.5	7.0	8.1	8.0	5.0	4.2
48	5.8	70.3	9.0	8.0	7.4	6.0	6.0	3.7	48	8.6	104.0	13.0	8.0	11.9	9.0	6.0	6.3
54	6.5	89.0	10.0	9.0	10.3	7.0	6.5	5.3	54	9.7	131.5	15.0	9.0	17.1	10.5	6.5	8.9
60	7.3	110.0	11.0	10.0	13.9	7.5	7.5	7.3	60	10.7	162.4	16.5	10.0	23.1	11.0	7.5	12.0
66	8.0	132.9	12.5	11.0	18.9	8.5	8.0	9.6	66	11.8	196.5	18.0	11.0	30.1	12.0	8.5	16.2
72	8.7	158.2	13.5	12.0	24.0	9.0	9.0	12.3	72	12.9	233.9	19.5	12.0	38.6	14.0	8.5	20.7
78	9.4	185.6	14.5	13.0	30.0	10.0	9.5	15.6	78	13.9	274.5	21.5	13.0	49.8	14.5	9.5	25.9
84	10.1	215.3	15.5	14.0	37.1	10.5	10.5	19.5	84	15.0	318.4	23.0	14.0	61.2	15.5	10.5	32.6
90	10.9	247.1	16.5	15.0	45.0	11.5	11.0	23.9	90	16.1	365.5	24.5	15.0	74.5	17.5	10.5	39.6
96	11.6	281.2	18.0	16.0	55.5	12.5	11.5	28.9	96	17.1	415.6	26.0	16.0	89.5	18.5	11.5	48.5

I.D. (IN.)	Δ = 67.50°						Δ = 90°					
	G (FT.)	THRUST (TONS)	EARTH A (FT.)	EARTH B (FT.)	EARTH VOL. (C.Y.)	ROCK A (FT.)	ROCK B (FT.)	ROCK VOL. (C.Y.)	G (FT.)	THRUST (TONS)	EARTH A (FT.)	EARTH B (FT.)	EARTH VOL. (C.Y.)	ROCK A (FT.)	ROCK B (FT.)	ROCK VOL. (C.Y.)
4,6,8	2.1	5.6	3.0	2.0	0.3	2.0	1.5	0.2	4,6,8	2.7	7.1	5.0	1.5	0.4	2.0	2.0	0.2
10,12	3.1	12.6	5.5	2.5	0.8	3.5	2.0	0.4	10,12	4.0	16.0	6.5	2.5	1.0	3.5	2.5	0.5
16,18	4.7	28.3	7.5	4.0	1.9	5.5	3.0	0.9	16,18	6.0	36.0	9.0	4.0	2.4	4.5	4.0	1.0
20	5.2	34.9	9.0	4.0	2.3	5.5	3.5	1.2	20	6.8	44.4	10.0	4.5	3.1	6.0	4.0	1.5
24	6.2	50.3	11.5	4.5	3.5	6.5	4.0	1.6	24	7.9	64.0	14.5	4.5	5.0	8.0	4.0	2.1
30	7.8	58.9	12.0	5.0	4.8	7.5	4.0	2.2	30	9.9	75.0	15.0	5.0	6.7	10.0	4.0	3.3
36	9.4	84.9	14.5	6.0	8.2	9.5	4.5	3.8	36	11.9	108.0	18.0	6.0	11.4	12.0	4.5	5.3
42	10.9	115.5	17.0	7.0	12.8	11.0	5.5	6.3	42	13.9	147.0	21.0	7.0	17.8	14.0	5.5	8.7
48	12.5	150.9	19.0	8.0	18.4	13.0	6.0	9.2	48	15.9	192.0	24.0	8.0	26.2	16.0	6.0	12.4
54	14.0	191.0	21.5	9.0	26.0	15.0	6.5	12.9	54	17.9	243.0	27.0	9.0	36.9	18.0	7.0	18.1
60	15.6	235.8	24.0	10.0	35.6	16.0	7.5	17.6	60	19.9	299.8	30.0	10.0	50.3	20.0	7.5	24.0
66	17.1	285.3	26.0	11.0	46.0	18.0	8.0	23.0	66	21.8	362.8	33.0	11.0	66.2	22.0	8.5	32.5
72	18.7	339.5	28.5	12.0	57.8	19.0	9.0	28.4	72	23.8	431.8	36.0	12.0	85.6	24.0	9.0	41.0
78	20.2	398.5	31.0	13.0	75.7	21.0	9.5	37.4	78	25.7	506.7	39.0	13.0	108.2	26.0	10.0	53.2
84	21.8	462.1	33.5	14.0	94.7	22.0	10.5	46.5	84	27.7	587.7	42.0	14.0	134.4	28.0	10.5	64.8
90	23.3	530.5	35.5	15.0	114.4	24.5	11.0	58.2	90	29.0	674.6	45.0	15.0	164.9	30.0	11.5	81.2
96	24.9	603.6	38.0	16.0	138.9	25.5	12.0	70.0	96	31.6	767.5	48.0	16.0	199.0	32.0	12.0	95.1

TABLES OF DIMENSIONS AND QUANTITIES

HORIZONTAL THRUST BLOCK
AT PIPE BEND

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE
502.4

DATE: OCT. '04

STANDARD DRAWING NO.: 4010C

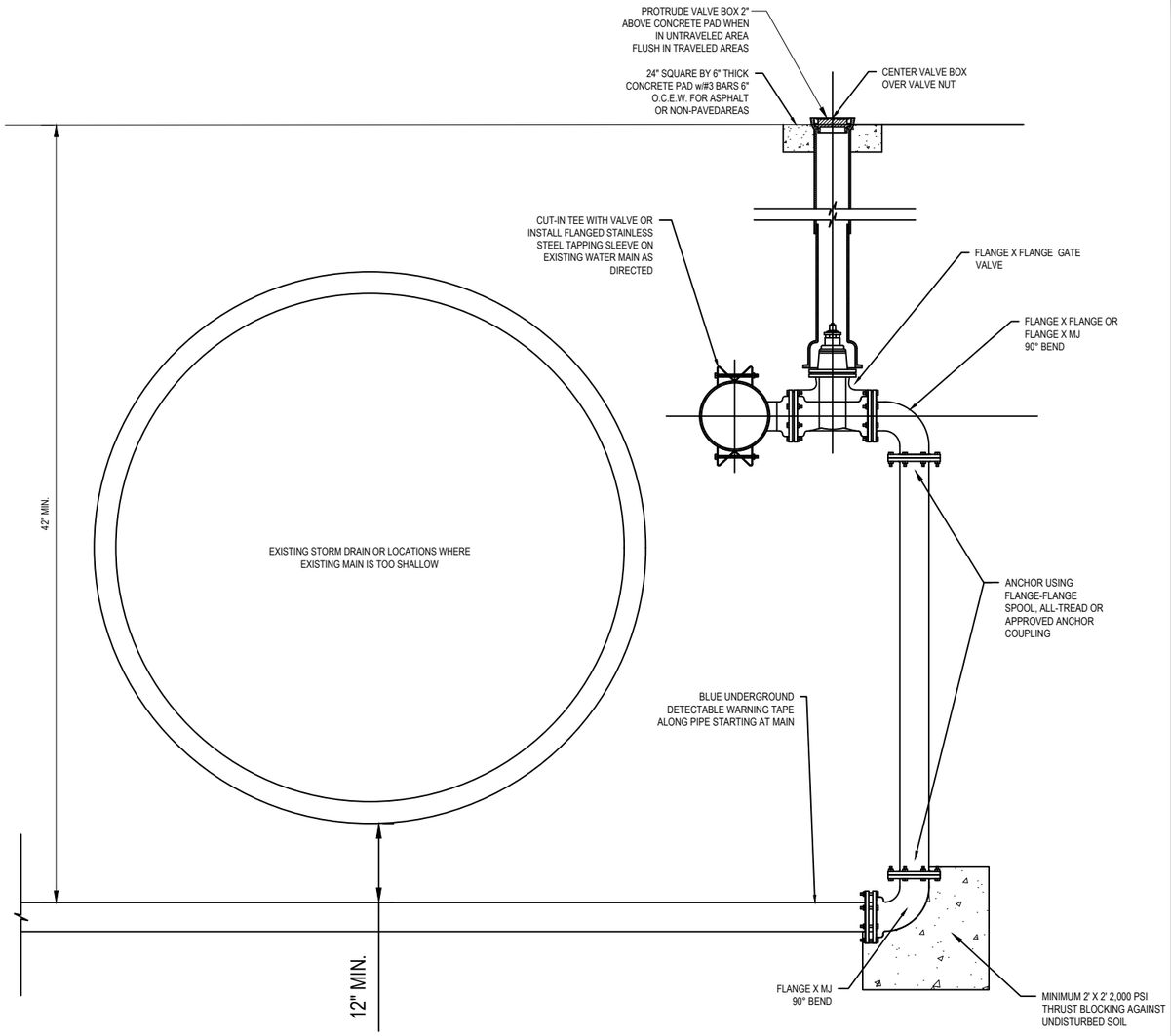
DETAILS SHOWN NOT TO SCALE

CITY OF ENNIS, TEXAS
PUBLIC WORKS

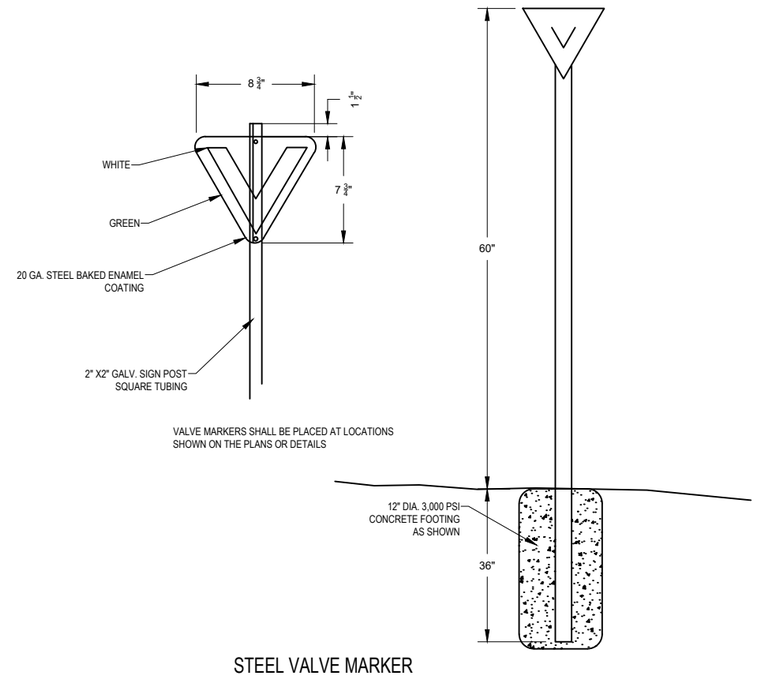
UTILITY DETAILS

WATER MAIN BLOCKING DETAILS

NO:	REVISION:	DATE:	SHEET:
		05/08/2021	UT-8



WATER MAIN TAP
ADJACENT TO OBSTRUCTION



VALVE MARKERS SHALL BE PLACED AT LOCATIONS SHOWN ON THE PLANS OR DETAILS

STEEL VALVE MARKER

DETAILS SHOWN NOT TO SCALE

CITY OF ENNIS, TEXAS
PUBLIC WORKS

SPECIAL DETAILS

FOR USE AS DIRECTED

NO:	REVISION:	DATE:	SHEET:
		05/08/2021	SP-1