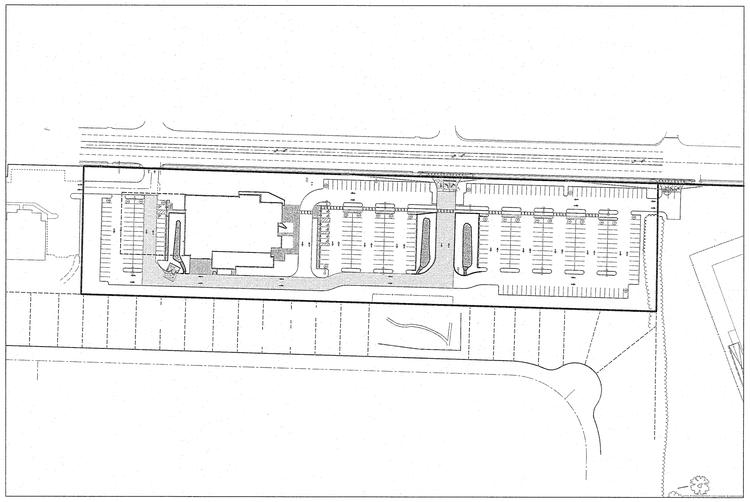
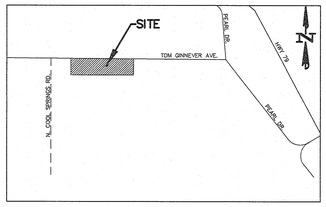
A SET OF AS-BUILT PLANS FOR
FORT ZUMWALT PROFESSIONAL DEVELOPMENT CENTER
A TRACT OF LAND BEING PART OF THE NORTH HALF OF THE SOUTHWEST QUARTER OF SECTION 24, TOWNSHIP 47 NORTH, RANGE 2 EAST OF THE FIFTH PRINCIPAL MERIDIAN
CITY OF O'FALLON
ST. CHARLES COUNTY, MISSOURI



Plan View



Locator Map
(NOT TO SCALE)

Drawing Index

Legend

600.00	EXISTING LABELS
600.00	PROPOSED LABELS
CI	SINGLE CURB INLET
DCI	DOUBLE CURB INLET
AI	AREA INLET
DAI	DOUBLE AREA INLET
GI	GRATE INLET
DGI	DOUBLE GRATE INLET
MH	MANHOLE
FE	FLARED END SECTION
EP	END PIPE
CP	CONCRETE PIPE
RCP	REINFORCED CONCRETE PIPE
CMP	CORRUGATED METAL PIPE
CPP	CORRUGATED PLASTIC PIPE
PVC	POLY VINYL CHLORIDE (PLASTIC)
CO	CLEAN OUT
	SLOPE LIMITS
	DRAINAGE SWALE
STM	EXISTING STORM SEWER
SAN	EXISTING SANITARY SEWER
W	EXISTING WATER LINE
FO	EXISTING FIBER OPTIC LINE
GAS	EXISTING GAS LINE
UGE	EXISTING UNDERGROUND ELECTRIC
OHW	EXISTING OVERHEAD ELECTRIC
CTV	EXISTING CABLE TV LINE
T	EXISTING TELEPHONE LINE
	PROPOSED STORM SEWER
	PROPOSED SANITARY SEWER
X	FENCE LINE
	SAWCUT LINE

	EXIST. SINGLE CURB INLET
	EXIST. AREA INLET
	PROPOSED SINGLE CURB INLET
	PROPOSED AREA INLET
	PROPOSED GRATE INLET
S	EXIST. SANITARY MANHOLE
D	EXIST. STORM MANHOLE
	PROPOSED MANHOLE
	POWER POLE
	GUY WIRE
	LIGHT STANDARD
	FIRE HYDRANT
WMTR	WATER METER
WV	WATER VALVE
	GAS VALVE
	TELEPHONE PEDESTAL
	SIGN
	TREE

AS-BUILT LEGEND

A.B.	AS-BUILT
	AS-BUILT STORM MANHOLE
	AS-BUILT CURB INLET
	AS-BUILT STORM FLARED END
	AS-BUILT SANITARY MANHOLE
	AS-BUILT FIRE HYDRANT
WV	AS-BUILT WATER VALVE
WMTR	AS-BUILT WATER METER
FHC	AS-BUILT FIRE HOSE CONNECTION
	AS-BUILT LIGHT STANDARD
CO	AS-BUILT CLEANOUT
ET	AS-BUILT ELECTRIC TRANSFORMER

Conditions of Approval From Planning and Zoning

1. The Construction Plans shall address the Municipal Code Requirements listed.
2. Per note 4 in the development notes, any further additions will require a separate site plan.
3. The passive trash enclosure is a requirement per Code Section 400.278 and the door may be locked.
4. Provide ten (10) bicycle parking spaces and provide a bick rack detail on the Construction Site Plans.

1. All mechanical units shall be screened according to Code Section 400.278.
2. A photometric lightin plan shall be provided before construction plan approval.

CITY OF O'FALLON
COMMUNITY DEVELOPMENT DEPARTMENT
ACCEPTED FOR CONSTRUCTION
BY: Jeannie Greenlee DATE 02/01/2022
PROFESSIONAL ENGINEER'S SEAL
INDICATES RESPONSIBILITY FOR DESIGN

City approval of any construction site plans does not mean that any building can be constructed on the lots without meeting the building setbacks as required by the zoning codes.

All installations and construction shall conform to the approved engineering drawings. However, if the developer chooses to make minor modifications in design and/or specifications during construction, they shall make such changes at their own risk, without any assurance that the City Engineer will approve the completed installation or construction. It shall be the responsibility of the developer to notify the City Engineer of any changes from the approved drawings. The developer may be required to correct the installed improvement so as to conform to the approved engineering drawings. The developer may request a letter from the Construction Inspection Division regarding any field changes approved by the City Inspector.

Lighting values will be reviewed on site prior to the final occupancy inspection.

* City of O'Fallon Construction work hours per City Ordinance 3429 as shown in section 500.420 of the Municipal Code of the City of O'Fallon are as follows:
  October 1 through May 31
  7:00 A.M. To 7:00 P.M. Monday Through Sunday
  June 1 Through September 30
  6:00 A.M. To 8:00 P.M. Monday Through Friday
  7:00 A.M. to 8:00 P.M. Saturday and Sunday
* The area of this phase of development is 6.43Ac.
  The area of land disturbance is 5.57Ac.
  Number of proposed lots is 1
  Building setback information. Front 25'
  Side 0'
  Rear 10'
* The estimated sanitary flow in gallons per day is 2,800

GRADING QUANTITY
7,700 cu.yds.
(INCLUDES 8% SHRINKAGE)

THE ABOVE YARDAGE IS AN APPROXIMATION ONLY, NOT FOR BIDDING PURPOSES. CONTRACTORS SHALL VERIFY QUANTITIES PRIOR TO CONSTRUCTION.

IT HAS BEEN ESTIMATED THAT 1,500 C.Y. OF HAUL OFF IS REQUIRED. CONTRACTOR SHALL PROVIDE CITY WITH HAUL ROUTE.

VEGETATION ESTABLISHMENT
For Urban Development Sites
APPENDIX A

SEEDING RATES:

PERMANENT:
Tall Fescue – 150 lbs./ac.
Smooth Brome – 100 lbs./ac.
Combined – Fescue @ 70 lbs./ac. AND Brome @ 50 lbs./ac.

TEMPORARY:
Wheat or Rye – 150 lbs./ac. (3.5 lbs. per 1,000 s.f.)
Oats – 120 lbs./ac. (2.75 lbs. per 1,000 s.f.)

SEEDING PERIODS:
Fescue or Brome – March 1 to June 1
August 1 to October 1
Wheat or Rye – March 15 to November 1
Oats – March 15 to September 15

MULCH RATES:
100 lbs. per 1000 sq. ft. (4,356 lbs. per ac.)

FERTILIZER RATES:

Nitrogen	30 lbs./ac.
Phosphate	30 lbs./ac.
Potassium	30 lbs./ac.
Lime	600 lbs./ac. ENM*

* ENM = effective neutralizing material as per State evaluation of quarried rock.

REFERENCE BENCHMARKS:

ALL AS-BUILT ITEMS HAVE BEEN LOCATED AND TIED TO THE MISSOURI COORDINATE SYSTEM OF 1983, EAST ZONE, (GRID NORTH), NAD83 FOR HORIZONTAL DATUM AND NAVD88 FOR VERTICAL DATUM.

REFERENCE BENCHMARK: THE OBSERVED VERTICAL CHECK STATION UTILIZED IS LISTED ON www.ngs.noaa.gov AS DESIGNATION "SC 06" WITH A PID OF AA8597 AND A PUBLISHED ELEVATION OF 529.0 (NAVD88).

DESCRIPTION BY MISSOURI DEPARTMENT OF NATURAL RESOURCES 1990:STATION, AZIMUTH MARKS AND REFERENCE TIES THE STATION IS LOCATED ON THE EAST SHOULDER OF THE NORTH BOUND LANE OF MISSOURI HIGHWAY 79 ABOUT 1/2 MILE NORTH OF I-70 IN ST CHARLES COUNTY. IT IS 280 FT NORTH OF THE NORTH END OF THE RAILROAD OVERPASS AT APPROXIMATE HIGHWAY 79 STATION 53782 AND ON A LINE EXTENDED FROM THE NORTHERLY FENCE ENCLOSING THE LOADING DOCKS OF WAINWRIGHT INDUSTRIES, INC., 14.82 FT (4.52 M) SE OF A COTTON PICKER SPINDLE IN THE JOINT OF THE PAVEMENT AND SHOULDER, 14.72 FT (4.49 M) NE OF ANOTHER, 12.40 FT (3.78 M) EASTERLY OF THE JOINT BETWEEN THE PAVEMENT AND SHOULDER AND 2.06 FT (0.63 M) SOUTH OF A CARSONITE WITNESS POST THE AZIMUTH MARK, SC-06 A 2, 1994 IS ABOUT 0.3 MILE (0.5 KM) SE OF THE STATION AND ON THE WEST RIGHT-OF-WAY FOR THE I-70 NORTH OUTER ROAD EAST IT IS 57.6 FT (17.6 M) WEST OF A TRAFFIC SIGN NEAR THE END OF THE CONCRETE MEDIAN, 41.6 FT (12.7 M) WEST OF THE WEST EDGE OF PAVEMENT, 1.6 FT (0.5 M) EAST OF A RIGHT-OF-WAY MARKER, AND 2 FT (0.6 M) NORTH OF A CARSONITE WITNESS POST STATION AND AZIMUTH MARK TO REACH TO REACH THE STATION FROM THE CENTER OF I-70 EXIT 220 (MISSOURI HWY 79 AND SALT LICK RD.) GO NORTH ON HWY 79 FOR 0.5 MILES (0.8 KM) TO THE STATION SITE ON RIGHT (EAST) AS DESCRIBED. TO REACH THE AZIMUTH MARK FROM THE CENTER OF I-70 EXIT 220, GO NORTH ON HWY 79 FOR 0.25 MILES (0.40 KM) TO THE I-70 NORTH OUTER ROAD EAST (TURNER AVE), TURN RIGHT AND GO EAST FOR 0.05 MILES (0.08 KM) TO POINT WHERE OUTER ROAD EAST TURNS SOUTH, TURN RIGHT AND GO SOUTH ON NORTH OUTER ROAD EAST FOR 0.05 MILES (0.08 KM) TO POINT WHERE ROAD MAINTENANCE CHANGES FROM STATE TO COUNTY AND AZIMUTH MARK ON RIGHT AS DESCRIBED. THE 1990 AZIMUTH IS STILL IN PLACE, BUT THE LINE OF SIGHT TO THE STATION IS BLOCKED BY A BUILDING. DATE OF REPORT 6-06-1995.

SITE BENCHMARK – ELEVATION=496.70 (NAVD 88)– CHISELED "U" ON LIGHT STANDARD. BASE LOCATED NEAR SOUTHWEST SIDE OF SUBJECT PROPERTY AND IS LOCATED AS SHOWN HEREON.

AS-BUILT PUBLIC UTILITY FINAL MEASUREMENTS

THE FOLLOWING UTILITIES HAVE BEEN LOCATED AND MEASURED AND THE RESULTS OF THOSE MEASUREMENTS ARE SHOWN ON THIS SET OF FINAL MEASUREMENT PLANS:

- STORM SEWERS, STORM SEWER LENGTHS, STORM SEWER PIPE SIZES, STORM SEWER FLOWLINES AND DEPTHS OF STORM SEWER STRUCTURES.
- SANITARY SEWERS, SANITARY SEWER LENGTHS, SANITARY SEWER PIPE SIZES, SANITARY SEWER FLOWLINES AND DEPTHS OF SANITARY SEWER STRUCTURES.
- FIRE HYDRANTS
- WATER VALVES
- LIGHT STANDARDS
- TOPOGRAPHY OF WATER QUALITY AREAS

ALL PUBLIC UTILITIES SHOWN HEREON AS BEING AS-BUILT ARE LOCATED WITHIN DESIGNATED EXISTING OR PROPOSED EASEMENTS.

BAX ENGINEERING COMPANY, INC.
MARK E. COLLINS
MISSOURI PROFESSIONAL LAND SURVEYOR #2006000173

STATE OF MISSOURI
MARK E. COLLINS
NUMBER PLS-2006000173
PROFESSIONAL LAND SURVEYOR

DEVELOPMENT NOTES

1. Area of Tract: 6.431 Acres
2. Existing Zoning: C-2(PUD) General Business
3. Proposed Use: Professional Development Center (City of O'Fallon)
4. Area of Proposed Buildings: 24,734 sq.ft. (includes 4,165 sq.ft. future addition)
5. The required height and building setbacks are as follows:
   Minimum Front Yard: 25 feet
   Minimum Side Yard: 0 feet
   Minimum Rear Yard: 10 feet
   Maximum Height of Building: 50 feet
6. Site is served by:

City of O'Fallon Sewer	636-281-2858
AmerenUE Company	636-639-8312
Laclede Gas Company	636-946-8937
City of O'Fallon Water	636-281-2858
Century Tel	636-332-3011
O'Fallon Fire Protection District	636-272-3493
Fort Zumwalt School District	636-272-6620

7. According to the Flood Insurance Rate Map of St. Charles County, (Community Panel number 29183C0235G dated January 20, 2016) this property lies within zone X and zone AE. Zone X is defined as an area outside the 500 year Flood Plain Limits. Zone AE is defined as area subject to inundation by the 1% annual chance flood.
8. Parking Required:
   Meeting Room: Per IBC required parking is 1 space per 3 seats
   7sq.ft. per seat
   4,712 / 7 = 673 seats
   673 seats / 3 = 225 spaces
   Office: 1 space per 300 sq.ft.
   15,857sq.ft./300 = 53 spaces
   Alternate Office area:
   4,165sq.ft./300 = 14 spaces
   Total Parking Required: 292 spaces
   Total Parking Provided: 344 total(inicuding 8 ADA spaces w/1 van accessible)
9. Landscape Requirements:
   Street Tree Requirements:
   1 tree for every 40' of frontage = 1,100/40 = 28 Trees Required
   32 Trees Provided
   Open Spaces:
   1 tree for every 4,000 s.f. landscaped area.
   28,640 s.f. / 4,000 s.f. = 8 Trees Required
   15 Trees Provided
   Total trees provided = 47
   For 20' buffer yard a 6' fence plus 2 plant units per 100' is required.
   1,123 / 100 = 22 plant units required.
   (See Buffer Detail)
   Interior Landscaping Required:
   Not less than 6% of interior parking lot shall be landscaped.
   345 spaces x 270 = 93,150 x 6% = 5,589 sq.ft. landscaping required
   Total 8,720 sq.ft landscaping provided
10. Site Coverage Calculations:

TOTAL LOT SQ. FT.	BUILDING SQ. FT.	% OF LOT	PAVEMENT SQ. FT.	% OF LOT	GREENSPACE SQ. FT.	% OF LOT
280,134	24,734	8.8%	165,528	59.10%	89,872	32.10%

11. Estimated sanitary flow contributed by this site is 2,800 g.p.d.
12. Property Owner: Fort Zumwalt School District
    555 E. Terra Lane
    O'fallon, MO 63367
13. All HVAC and mechanical units on site shall be properly screened as required by City Code. Rooftop units shall be screened by a parapet wall that extends around the entire perimeter of the building. the parapet shall have a minimum height that is at least as tall as the tallest unit mounted on the roof; ground mounted HVAC and mechanical units shall be screened by fencing, vegetation or some other means (approved by the Planning and Zoning Commission) that has a minimum height that is at least as tall as the tallest unit being screened.
14. Maximum slopes allowed are 3:1.
15. All utilities will be located underground.
16. All proposed fencing requires a separate permit through the Planning Department.
17. All sign locations and sizes must be approved separately through the Planning Dept.
18. All paving to be in accordance with St. Louis County standards and specifications except as modified by the City of O'Fallon ordinances.
19. All sidewalks, curb ramps, ramp and accessible parking spaces shall be constructed in accordance with the current approved "American with Disabilities Act Accessibility Guidelines" (ADAAG) along with the required grades, construction materials, specifications and signage.
20. Detention for this site will be for the 100 year storm and will be provided with the existing detention basin.
21. This site will be in compliance with Phase 2 Illicit Stormwater Discharge Guidelines per Ordinance 5082.
22. Per City Municipal Code Section 400.510, Item 3: The developer is requesting P&Z Approval for limited street or parking lot curbing to meet stormwater quality guidelines.
23. Prior to Construction Plan approval, a photometric lighting plan in accordance with the City's Exterior Lighting Standards shall be submitted for review and approval for all proposed exterior lighting.
24. The drainage to adjacent residential lots shall not be increased above the current existing conditions.
25. All construction methods and practices to conform with OSHA Standards.

Utility Contacts

Sanitary Sewer
City of O'Fallon
100 N. Main St.
O'Fallon, MO 63366
Contact: 636-281-2858

Water
City of O,Fallon
100 N. Main St.
O'Fallon, MO 63366
Contact: 636-281-2858

Storm Sewer
City of O'Fallon
100 N. Main St.
O'Fallon, MO 63366
636-281-2858

Ameren UE
200 Callahan Road
Wentzville, MO 63385
636-639-8312

Gas
Spire Energy
1999 Trade Center Drive
St. Peters, MO 63376
314-575-4831

Telephone
Century Link
2342 Technology Drive
O'Fallon, MO 63368
636-200-5726

Charter Communications
941 Charter Commons
Town & Country, MO 63017
1-888-438-2427

Fire Department
O'Fallon Fire Protection District
119 E. Elm St.
O'Fallon, MO 63366
636-272-3493

CALL BEFORE YOU DIG!
1-800-DIG-RITE

PROJECT TITLE:
As-Built Plans for:
Fort Zumwalt School District
Professional Development Center

Bax Project # 19-17514 | Issue Date: 12/30/2021

ENGINEERING
PLANNING
SURVEYING
221 Point West Blvd.
St. Charles, MO 63301
636-928-5552
FAX 928-1718

Box Engineering Company, Inc.
Missouri State Certificate of Authority
Engineering #000655
Missouri State Certificate of Authority
Surveying #000144

REVISIONS

Developer / Owner:
Fort Zumwalt School District
555 E. Terra Lane
O'Fallon, MO 63367

COVER SHEET

P+Z No. 19-009658
Approval Date: 11/07/19
City No. #

Page No.
C1

COMMERCIAL

GN # 1 Driveway locations shall not interfere with the sidewalk handicap ramps, or curb inlet sumps

GN # 2 Sidewalks, curb ramps, ramps and accessible parking spaces shall be constructed in accordance with the current approved "American with Disabilities Act Accessibility Guidelines" (ADAAG) along with the required grades, construction materials, specifications and signage. If any conflict occurs between the above information and the plans, the ADAAG guidelines shall take precedence and the contractor prior to any construction shall notify the Project Engineer.

GN # 3 Truncated domes for curb ramps located in public right of way shall meet ADA requirements and shall be constructed using red pre cast truncated domes per pavement details.

GN # 4 Any proposed pavilions or playground areas will need a separate permit from the Building Division.

GN # 5 The Contractor is responsible to call Missouri One Call and The City of O'Fallon for the location of utilities. Contact the City of O'Fallon (636) 379–3814 for the location of City maintained cable for street lights and traffic signals, all other utilities call Missouri One Call 1–800–DIG–RITE. 1–800–344–7483

GN # 6 All proposed utilities and/or utility relocations shall be located underground.

GN # 7 All proposed fencing requires a separate permit through the Planning and Development Division.

GN # 8 All construction operations and work zone traffic control within the right of way will follow MoDOT or M.U.T.C.D. standards whichever is more stringent.

GN # 9 All free standing signs shall be located a minimum of ten (10) feet away from any right of way line and/or property line and a minimum of three (3) feet from the back of curbing or sidewalk. All signs shall abide by the regulations for visibility at corners, including corners from driveways and the street it intersects per Section 400.260 of the O'Fallon Zoning Code.

GN #10 All subdivision identification or directional sign(s) must have the locations and sizes approved and permitted separately through the Planning and Development Division.

GN #11 Materials such as trees, organic debris, rubble, foundations, and other deleterious material shall be removed from the site and disposed of in compliance with all applicable laws and regulations. If the material listed previously are reused, a letter from a soil Engineer must clarify amount, location, depth, ect. and be approved with the construction plans. Landfill tickets for such disposal shall be maintained on file by the developer. Burning on site shall be allowed only by permit from the local fire district. if a burn pit is proposed the location and mitigation shall be shown on the grading plan and documented by the soils engineer.

GN #12 Twenty–four (24) hours prior to starting any of the work covered by the above plans and after approval thereof, the developer shall make arrangements with the Construction Inspection Office to provide for inspection of the work, sufficient in the opinion of the City Engineer, to assure compliance with the plans and specifications as approved.

GN #13 The City Engineer or their duly authorized representative shall make all necessary inspections of City infrastructure, escrow items or infrastructure located on the approved plans.

Erosion Control Notes

EN # 1 The Permittee shall assume complete responsibility for controlling all siltation and erosion of the project area. The Permittee shall use whatever means necessary to control erosion and siltation including, but not limited to, staked straw bales and/or siltation fabric fences (possible methods of control are detailed in the plan). Control shall commence with the clearing operations and be maintained throughout the project until acceptance of the work by City of O'Fallon and as needed by MoDOT. The Permittee's responsibilities include all design and implementation as required to prevent erosion and the depositing of silt. The City of O'Fallon and as required by MoDOT may at their option direct the Permittee in his methods as deemed fit to protect property and improvements. Any depositing of silt or mud on new or existing pavement shall be removed cleaned immediately. Any depositing of silts or mud in new or existing storm sewers and/or swales shall be removed after each rain and affected areas to the satisfaction of the City of O'Fallon and as required by MoDOT."

EN # 2 All erosion control systems are to be inspected and corrected weekly, especially within 48 hours of any rain storm resulting in one–quarter inch of rain or more. Any silt or debris leaving the site and affecting public right of way or storm water drainage facilities shall be cleaned up within 24 hours after the end of the storm.

EN # 3 Erosion control devices (silt fence, sediment basin, etc.) shall be in accordance with St. Charles County Soil and Water Conservation District Erosion and Sediment Control guidelines.

EN # 4 This development is required to provide long term post construction BMP's such as; low impact design, source control and treatment controls that protects water quality and controls run off to maximum extent practical in compliance with Phase II Illicit Storm Water Discharge Guidelines. (Ord. 5082, section 405.245)

EN #5 Graded areas shall be seeded and mulched (strawed) within 14 days of stopping land disturbance activities. Unless it can be shown to the City Engineer that weather conditions are not favorable, vegetative growth is to be established within 6 weeks of stopping grading work on the project. The vegetative growth established shall be sufficient to prevent erosion and the standard shall be as required by EPA and DNR. (70% coverage per square foot) Ord. 5242, Section 405.070

Grading Notes

GRN #1 Developer must supply City construction inspectors with soil reports prior to and during site grading. The soil report will be required to contain the following information on soil test curves (Proctor reports) for projects within the City:

1. Maximum dry density
2. Optimum moisture content
3. Maximum and minimum allowable moisture content
4. Curve must be plotted to show density from a minimum of 90% Compaction and above as determined by the "Modified AASHTO T–180 Compaction Test" (A.S.T.M.–D–1157) or from a minimum of 95% as determined by the "Standard Proctor Test ASSHTO T–99, Method C" (A.S.T.M.–D–698). Proctor type must be designated on document.
5. Curve must have at least 5 density points with moisture content and sample locations listed on document
6. Specific gravity
7. Natural moisture content

Be advised that If this information is not provided to the City's Construction Inspector the City will not allow grading or construction activities to proceed on any project site.

GRN #2 All fill placed in areas other than proposed storm sewers, sanitary sewers, proposed roads, and paved areas shall be compacted from the bottom of the fill up in 8" lifts and compacted to 90% maximum density as determined by Modified AASHTO T–180 compaction test or 95% of maximum density as determined by the Standard Proctor Test AASHTO T–99. Ensure the moisture content of the soil in fill areas corresponds to the compactive effort as defined by the Standard or Modified Proctor Test. Optimum moisture content shall be determined using the same test that was used for compaction. Soil compaction curves shall be submitted to the City of O'Fallon prior to the placement of fill.

GRN # 3 The surface of the fill shall be finished so it will not impound water. If at the end of a days work it would appear that there may be rain prior to the next working day, the surface shall be finished smooth. If the surface has been finished smooth for any reason, it shall be scarified before proceeding with the placement of succeeding lifts. Fill shall not be placed on frozen ground, nor shall filling operations continue when the temperature is such as to permit the layer under placement to freeze.

GRN # 4 All sediment and detention basins are to be constructed during the initial phase of the grading operation or in accordance with the approved SWPPP.

GRN # 5 When grading operations are complete or suspended for more than 14 days, permanent grass must be established at sufficient density to provide erosion control on site. Between permanent grass seeding periods, temporary cover shall be provided according to St. Charles Soil and Water Conservation District – Model Sediment and Erosion Control Regulations. All finished grades (areas not to be disturbed by improvements) in excess of 20% slopes (5:1) shall be mulched and tacked at a rate of 100 pounds per 1000 square feet when seeded.

GRN # 6 No slopes shall exceed 3 (horizontal): 1 (vertical) unless otherwise approved by the soils report and specifically located on the plans and approved by the City Engineer.

GRN # 7 All low places whether on site or off shall be graded to provide drainage with temporary ditches.

GRN # 8 All existing wells on site shall be capped per DNR standards.

Grading Notes Continued

GRN #10 All trench back fills under paved areas shall be granular back fill, and compacted mechanically. All other trench back fills may be earth material (free of large clods, or stones) and compacted using either mechanical or water jetting. Granular material and earth material associated with new construction outside of pavements may be jetted, taking care to avoid damage to newly laid sewers. The jetting shall be performed with a probe route on not greater than 7.5 foot centers with the jetting probe centered over and parallel with the direction of the pipe. Trench widths greater than 10 feet will require multiple probes every 7.5 foot centers.

a) Depth, Trench back fills less than 8 feet deep shall be probed to a depth extending half the depth of the trench back fill, but not less than 3 feet. Trench back fill greater than 8 feet in depth shall be probed to half the depth of the trench back fill but not greater than 8 feet.
b) Equipment, The jetting probe shall be a metal pipe with an interior diameter of 1.5 to 2 inches.
c) Method, Jetting shall be performed from the lowest surface topographic point and proceed toward the highest point, and from the bottom of the trench back fill toward the surface. The flooding of each jetting probe shall be started slowly allowing slow saturation of the soil. Water is not allowed to flow away from the trench without first saturating the trench.
d) Surface Bridging, The contractor shall identify the locations of the surface bridging (the tendency for the upper surface to crust and arch over the trench rather than collapse and consolidate during the jetting process). The contractor shall break down the bridged areas using an appropriate method such as wheels or bucket of a backhoe. When surface crust is collapsed, the void shall be back filled with the same material used as trench back fill and rejetted. Compaction of the materials within the sunken/jetted area shall be compacted such that no further surface subsidence occurs.

GRN #11 Site grading.

a. Within City right–of–way. Material is to be placed in eight (8) inch to twelve (12) inch loose lifts and compacted per the approved compaction requirements. One (1) compaction test will be performed every two hundred fifty (250) feet along the centerline for each lift.
b. Outside of City right–of–way. Material is to be placed in eight (8) inch to twelve (12) inch loose lifts and compacted per the approved compaction requirements. One (1) compaction test will be performed at two (2) foot vertical intervals and approximately every one thousand (1,000) cubic yards.

Sanitary Sewer Notes

SAN # 1 All sanitary sewer installation is to be in accordance with current M.S.D. standards and specifications except as modified by the City of O'Fallon Ordinances.

SAN # 2 Brick shall not be used in the construction of sanitary sewer structures. Pre cast concrete structures are to be used unless otherwise approved by the City of O'Fallon.

SAN # 3 Connections at all sanitary structures are to be made with A–Lock joint or equal

SAN # 4 All sanitary laterals shall be a minimum of 6" diameter pipe with minimum 2% slopes.

SAN # 5 All sanitary mains shall be a minimum of 8" diameter pipe with minimum 1% slopes.

SAN # 6 All sanitary sewer line with a slope greater than 20% will require concrete cradle or concrete collar. Sanitary line with a slope greater than 50% will require a special approved design as shown on detail sheet.

SAN # 7 All manholes built within the 100 year flood plain must have lock type watertight manhole covers.

SAN # 8 All sanitary sewer mains must have a minimum of 42" cover.

SAN # 9 When sanitary mains cross over storm line the sanitary main must be ductile iron pipe for 10 feet on each side of the crossing.

SAN #10 Encase with concrete both sanitary and storm sewer at crossing when storm sewer is within 18 inches above sanitary sewer. Add concrete cradle to only RCP storm sewer and encase HDPE storm sewer when it is more than 18 inches above sanitary line. Show on profile sheet.

SAN #11 The sanitary sewers should run diagonally through the side yards to minimize any additional utility easements required.

SAN #12 All sanitary sewer structures shall be waterproofed on the exterior in accordance to Missouri DNR specifications 10CSR–8.120 (7)(E).

SAN #13 All sanitary sewer pipe shall be SDR35 or equal.

SAN #14 All sanitary sewer manholes and pipes will be tested to the following specifications. ASTM C1244, Standard testing method for Concrete Sewer Manhole by Negative Air Pressure (Vacuum), Latest revision ASTM F1417, Standard testing method for Installation Acceptance of Plastic Gravity Sewer Lines Using Low Pressure Air, Latest revision.

SAN #15 Add 1" minus rock back fill to all sanitary sewer and all other utilities that lie within the 1:1 shear plane of the road.

Storm Sewer Notes

STM # 1 All Storm Sewer installation is to be in accordance with current M.S.D. standards and specifications except as modified by the City of O'Fallon ordinances.

STM # 2 Brick shall not be used in the construction of storm sewer structures. Pre cast concrete structures are to be used unless otherwise approved by the City of O'Fallon.

STM # 3 A 5/8" trash bar shall be installed horizontally in the center of the opening(s) in all curb inlets and area inlets.

STM # 4 HDPE pipe is to be N–12WT or equal and to meet ASTM F1417 water tight field test.

STM # 5 Encase with concrete both sanitary and storm sewer at crossing when storm sewer is within 18 inches above sanitary sewer. Add concrete cradle to only RCP storm sewer and encase HDPE storm sewer when it is more than 18 inches above sanitary line. Show on profile sheet.

STM # 6 The storm sewers should run diagonally through the side yards to minimize any additional utility easements required.

STM # 7 All concrete pipes will be installed with O–ring rubber type gaskets.

STM # 8 Connections at all storm structures are to be made with A–lock joint or equal.

STM # 9 Pre cast concrete inlet covers are not to be used.

STM #10 The swale in the detention basins shall have a minimum 1% longitudinal slope and be lined with a permanent erosion control blanket that will allow infiltration of storm water.

STM #11 All storm sewer shall be reinforced concrete pipe or H.D.P.E. pipe. All structures and flared end sections must be concrete. Manufacturing specifications must be followed and details provided for the installation of H.D.P.E. pipe. H.D.P.E. pipe will not be allowed for detention basin outflows, final pipe run to detention basins, creek discharge or other approved means.

STM #12 The discharge point of all flared end sections shall be protected by rip rap or other approved means.

STM #13 Rip rap shown at flared end sections will be evaluated in the field by the Engineer, Contractor, and City Inspectors after installation for effectiveness and field modified, if necessary to reduce erosion on and off site.

STM #14 Add 1" minus rock back fill to all storm sewer that lie within the 1:1 shear plane of the road.

Water Notes

WN # 1 Fire hydrants shall be a maximum of 600' apart. Local fire district approval is required.

WN # 2 Coordinate with the water company on the location of water meters.

WN # 3 All water main must have a minimum of 42" of cover. (City water mains)

WN # 4 Provide water valves to isolate the system.

WN # 5 All water mains shall be class 200 SDR 21 or equal with locator/tracer wires

WN # 6 DISINFECTING:

Disinfecting shall be accomplished by placing sufficient hypo chlorite granule (HTH) in each section of pipe to achieve a chlorine residual in the pipeline, upon initial filling, of 50 mg/L (PPM). HT. tablets will not be allowed. Following completion of the pipeline, it shall be slowly filled with water and a sample will be taken immediately and the chlorine residual must be 50 mg/L or greater. The solution shall be allowed to stand for 24 hours and a sample shall then be taken. The chlorine residual after 24 hours shall be 30 mg/L or greater. If the piping shows insufficient chlorine residuals in either test, the piping shall be re–chlorinated by the injection of hypo chlorite solution until satisfactory results are achieved. All disinfecting shall be done by the contractor. Only the testing to determine the chlorine residual will be done by the City.

WN # 7 PRESSURE TESTING:

Immediately following disinfection, the piping shall be pumped to a pressure (at the lowest point in the project) of 150 psi or higher where the working pressure is higher than 150 PSI as determined by the City. In such cases, the pressure shall be as specified by the City and two pressure tests shall be conducted. The first test shall be with the fire hydrant auxiliary valve open and be to 150 PSI. The second test shall be with the fire hydrant auxiliary valve closed and be to the higher pressure as directed by the City. All pumping equipment and pressure gauges shall be provided by the contractor. After achieving the test pressure, the piping shall be left closed for a period of two (2) hours. At the end of this time the pressure drop shall not exceed 2 psi. In addition, if the pressure appears, in judgment of the City's representative, to be continuing to drop, the test shall be continued for another two (2) hours and if any further drops occur, the test shall be considered a failure. If the pressure test fails, the contractor will be required to find and correct the source of the leakage. If this requires draining of the pipeline, when the leakage is corrected, the pipeline must be re–disinfected and the pressure tested again until satisfactory result are achieved. Any MDNR required dechlorination will be performed by the contractor.

WN # 8 All tops for valves, meters, and manholes are to be constructed to within 1 inch (0.08') of finish grade. Grading around structure tops on slopes need to be accounted for.

Water Notes

WN #10 BACTERIOLOGICAL TESTING:

After satisfactory disinfection and pressure testing, a sample shall be taken by the contractor in the presence of a City representative and submitted to a laboratory approved by the Missouri Department of Natural Resources and the City for bacteriological analysis. After 24 hours, a second sample shall be taken in a like manner and submitted for analysis. The two samples taken on consecutive days ,a minimum of 24 hours apart, must be found to be "safe" by the testing laboratory, and copies of the test results must be supplied to the City. If the samples are not found to be "safe" further flushing and/or disinfection as directed by the City shall be conducted by the contractor until "safe" samples on two consecutive test days are achieved. Following successful bacteriological testing and a determination by the City that the samples are "safe", the mains may be placed into service.

Roadway Notes

RN # 1 All paving (public and private) to be in accordance with current St. Louis County Standards and Specifications except as modified by the City of O'Fallon ordinances.

RN # 2 If the intersecting road does not have a curb, then the curb on the new entrance shall begin 10' from the edge of the existing road.

RN # 3 Provide 6" of concrete over 4" of MoDot type 1 or type 5 aggregate rock or asphalt equivalent for minor residential streets per City Code 405.370.

RN # 4 Multi–use trail (when required) Shall have a minimum of 3" Type "C" Asphalt over 4" aggregate base per City requirements.

RN # 5 Type C (BP–1) Compaction requirements shall be 98% minimum density according to St. Charles Co. Standard Specifications.

RN # 6 Provide pavement striping at any point where the multi–use trail crosses existing or proposed pavement

RN # 7 All street stub–outs over 250' in length will require a temporary turnaround.

RN # 8 All sub grade in cut or fill will need to conform to the City of O'Fallon Compaction requirements

RN # 9 Material Testing And Frequency. Materials for construction shall be tested and inspected per the appropriate ASTM code or at the City Engineer's discretion. The developer's engineer shall perform the following quality control guidelines:

1. Concrete.
   a. Cylinders/compressive strength. One (1) set of four (4) cylinders within the first fifty (50) cubic yards and one (1) set per one hundred (100) cubic yards thereafter. One (1) cylinder must be tested at seven (7) days, one (1) at fourteen (14) days and two (2) at twenty–eight (28) days. If the first (1st) cylinder does not meet specifications at twenty–eight (28) days, then the second (2nd) cylinder must be held and tested at day fifty–six (56).
   b. Percent air and temperature. First (1st) truck batch each day and two (2) thereafter until a consistency is encountered. Once a consistency is encountered, then tests will be performed in conjunction with the concrete cylinders.
   c. Slump. First (1st) truck batch each day and two (2) thereafter until a consistency is encountered. Once a consistency is encountered, then tests will be performed in conjunction with the concrete cylinders.
   d. If concrete is batched from more than one (1) plant, then the aforementioned guidelines will be applicable to each plant.
2. Sub grade and base.
   a. Proof roll as described in Section 405.210(B).
   b. One (1) compaction test per two hundred fifty (250) feet of mainline paving, three (3) tests per intersection, five (5) tests within cul–de–sacs and one (1) test per repair slab.
   c. Gradation test for sub base material.
3. Asphalt.
   a. One (1) set of compaction tests per two hundred fifty (250) feet of mainline. One (1) set includes three (3) tests across the paved lane at the same station.
   b. One (1) bulk density test per paving operation.

RN #10 Approval Of Sub grade And Base (Sub base). The City Engineer or representative shall approve the sub grade before any base is placed thereon and shall approve the base before concrete or surface course is placed. The sub grade and base shall be so constructed that it will be uniform in density throughout.

RN #11 In all fill areas in the roadways, soil tests shall be submitted and approved by the City Engineer for each foot of fill and at least one (1) test and an average of one (1) test within every two hundred fifty (250) feet.

RN #12 No traffic will be allowed on new concrete pavement until it has cured for seven (7) days and it reaches three thousand five hundred (3,500) psi within 28 days. Concrete pavements shall not be approved unless it reaches a strength of four thousand (4,000) psi.Cylinders/compressive strength. One (1) set of four (4) cylinders within the first fifty (50) cubic yards and one (1) set per one hundred (100) cubic yards thereafter. One (1) cylinder must be tested at seven (7) days, one (1) at fourteen (14) days and two (2) at twenty–eight (28) days. If the first (1st) cylinder does not meet specifications at twenty–eight (28) days, then the second (2nd) cylinder must be held and tested at day fifty–six (56).

RN #13 Prior to placement of aggregate base material on sub grade and prior to placement of pavement on base material, the sub grade and base must be proof–rolled with a fully loaded (ten (10) ton load) tandem truck or equivalent tire vehicle with one (1) pass down each driving lane no faster than three (3) miles per hour. If soft spots are detected, or pumping, rutting or heaving occurs greater than one (1) inch at the sub grade, the roadbed shall be considered unsatisfactory and the soil in these areas shall be remediated to the depth indicated by the contractor's testing firm and approved by a representative of the City Engineer.

RN #14 Sub grade and base beneath pavements shall be compacted to St. Charles County Highway Department specifications. The moisture range shall be determined by the Standard or Modified Proctor Density Method AASHTO T–99 and within –2/+4 percentage points of the optimum moisture content.

RN #15 The entire width and length will conform to line, grade and cross section shown on the plans or as established by the engineer. If any settling or washing occurs, or where hauling results in ruts or other objectionable irregularities, the contractor shall improve the sub grade or base to the satisfaction of the City before the pavement is placed. Additional rolling or methods to verify compaction shall be at the discretion of the City Engineer. Tolerance allowed on all lines, grades and cross sections shall be plus or minus four–hundredths (+0.04) feet.

RN #16 Utility Work Prior To Base Construction. No base course work may proceed on any street until all utility excavations (storm and sanitary sewers, water, gas, electric, etc.) have been properly back filled with granular material, crushed stone or gravel mechanically tamped in ten (10) inch lifts. Utilities installed after sub grade preparation shall be bored. Compaction requirements shall follow St. Charles County standards (2006).

RN #17 Equipment calibration. The developer's contractors and subcontractors must have their equipment calibrated by the following minimum standards.
   a. Air meter––weekly.
   b. Cylinder compression––annually by independent calibration service.
   c. Batch scales––monthly.
   d. Nuclear testing devices––every six (6) months.
   e. Proctor equipment––every six (6) months.
   f. Slump cone––monthly.

RN #18 All permanent traffic control will be per M.U.T.C.D. or MoDot standards. S1–1 from the M.U.T.C.D. manual will be used at all crosswalk locations accompanied with either w16–9p or w16–7p signs

RN #19 All traffic signals, street signs, sign post, backs and bracket arms shall be painted black using Carboline Rust Bond Penetrating Sealer SG and Carboline 133 HB paint (or equivalent as approved by City of O'Fallon and MoDOT).

Flood plain Information

FP #1 A flood plain development application from the City is required for any work within the flood plain limits.

Retaining Walls: Terraced and Vertical

RW #1 A permit is required for all retaining walls that are 48 inches or taller in height, measured from the top of the footing to the top of the wall or for walls that support a surcharge load or that alters the channelized drainage of any lot or drainage area.

RW #2 Retaining walls will not be allowed in public right–of–way without written approval from the City Engineer.

RW #3 Any retaining wall more than thirty (30) inches tall which supports a walking surface that is within two (2) feet of the wall will require a guard on the retaining wall.

RW #4 Retaining walls that alter the channeled drainage of any lot or drainage area shall not be constructed without prior approval and permitting from the City of O'Fallon Engineering Department regardless of the height of the wall.

RW #5 See section 405.275 of the City code for additional design requirements.

AS–BUILT PUBLIC UTILITY FINAL MEASUREMENTS

THE FOLLOWING UTILITIES HAVE BEEN LOCATED AND MEASURED AND THE RESULTS OF THOSE MEASUREMENTS ARE SHOWN ON THIS SET OF FINAL MEASUREMENT PLANS:

- STORM SEWERS, STORM SEWER LENGTHS, STORM SEWER PIPE SIZES, STORM SEWER FLOWLINES AND DEPTHS OF STORM SEWER STRUCTURES.
- SANITARY SEWERS, SANITARY SEWER LENGTHS, SANITARY SEWER PIPE SIZES, SANITARY SEWER FLOWLINES AND DEPTHS OF SANITARY SEWER STRUCTURES.
- FIRE HYDRANTS
- WATER VALVES
- LIGHT STANDARDS
- TOPOGRAPHY OF WATER QUALITY AREAS

ALL PUBLIC UTILITIES SHOWN HEREON AS BEING AS–BUILT ARE LOCATED WITHIN DESIGNATED EXISTING OR PROPOSED EASEMENTS.

BAX ENGINEERING COMPANY, INC.
MARK E. COLLINS
MISSOURI PROFESSIONAL LAND SURVEYOR #2006000173

STATE OF MISSOURI
MARK E. COLLINS
2–3–21
NUMBER PLS–2006000173
PROFESSIONAL LAND SURVEYOR

PROJECT TITLE:
As-Built Plans for:
Fort Zumwalt School District
Professional Development Center

Bax Project #19–7514 | Issue Date: 12/30/2021

ENGINEERING
PLANNING
SURVEYING
221 Point Test Blvd.
St. Charles, MO 63301
636–928–4552
FAX 928–1718

Bax Engineering Company, Inc.
Missouri State Certificate of Authority
Engineering #000855
Missouri State Certificate of Authority
Surveying #000144

REVISIONS

Developer / Owner:
Fort Zumwalt School District
555 E. Terra Lane
O'Fallon, MO 63367

CITY OF O'FALLON NOTES

P+Z No. 19-009658
Approval Date: 11/07/19
City No. #

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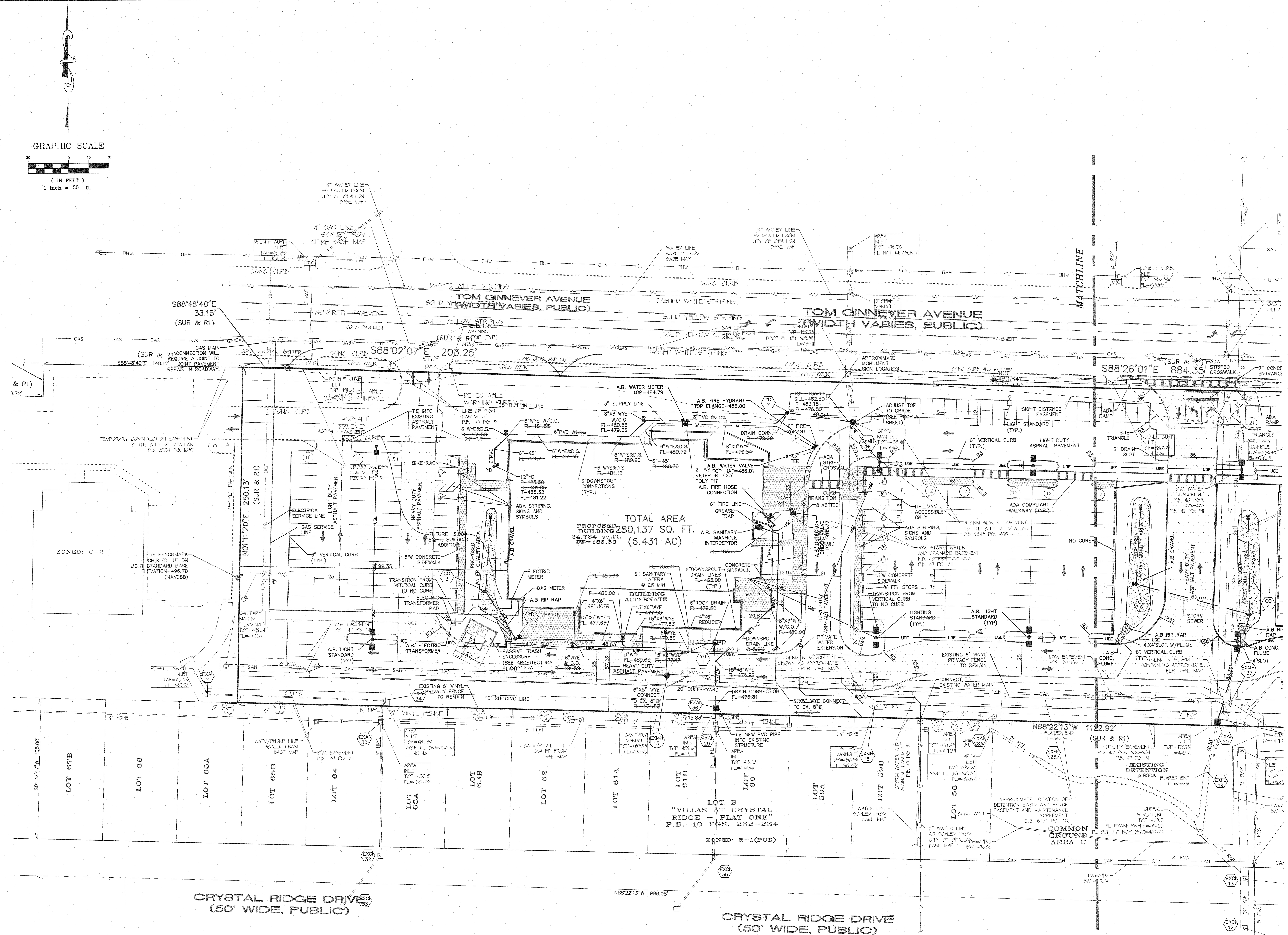

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BAX ENGINEERING COMPANY, INC.
MARK E. COLLINS
MISSOURI PROFESSIONAL LAND SURVEYOR #2006000173

STATE OF MISSOURI — MARK E. COLLINS — NUMBER PLS-2006000173 — PROFESSIONAL LAND SURVEYOR — 12-30-21

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE INFORMATION AND THEREFORE THEIR LOCATIONS SHALL BE CONSIDERED APPROXIMATE ONLY. THE VERIFICATION OF THE LOCATION OF ALL UNDERGROUND UTILITIES, EITHER SHOWN OR NOT SHOWN ON THESE PLANS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, AND SHALL BE LOCATED PRIOR TO ANY GRADING OR CONSTRUCTION OF THE IMPROVEMENTS.

PROJECT TITLE:
As-Built Plans for:
Fort Zumwalt School District
Professional Development Center

Bax Project #19-17514 | Issue Date: 12/30/2021

ENGINEERING
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SURVEYING
221 Point West Blvd.
St. Charles, MO 63301
636-928-5552
FAX 928-1718

DISCLAIMER OF RESPONSIBILITY
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Missouri State Certificate of Authority
Engineering #000655
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Surveying #000144

REVISIONS

Developer / Owner:
Fort Zumwalt School District
555 E. Terra Lane
O'Fallon, MO 63367

SITE PLAN

P+Z No.	19-009658
Approval Date:	11/07/19
City No.	#

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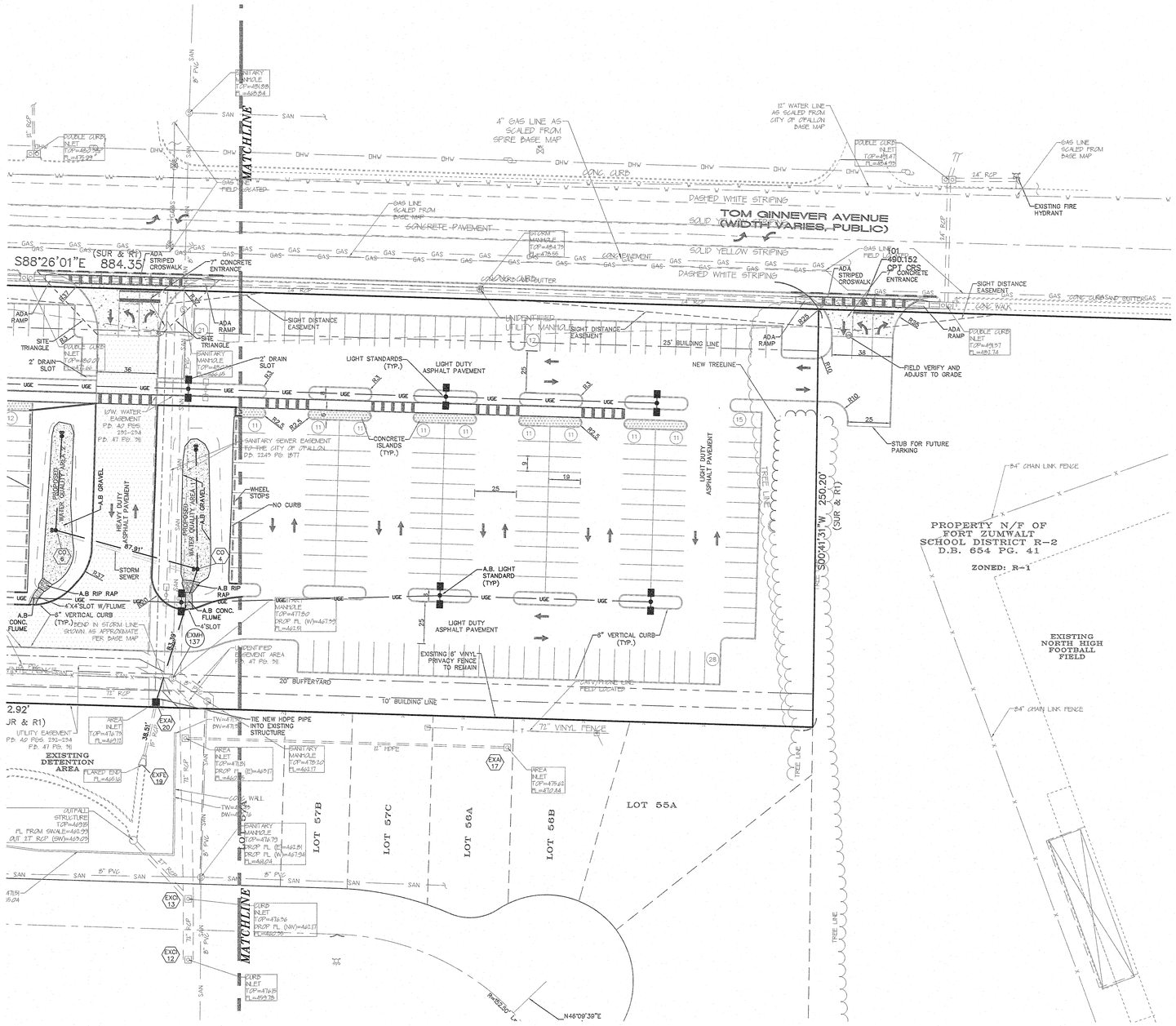

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MARK E. COLLINS
MISSOURI PROFESSIONAL LAND SURVEYOR #2006000173

STATE OF MISSOURI
MARK E. COLLINS
NUMBER PLS-2006000173
12-4-20
PROFESSIONAL LAND SURVEYOR

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PROJECT TITLE:
As-Built Plans for:
Fort Zumwalt School District
Professional Development Center

Bax Project # 19-17594 | Issue Date: 12/30/2021

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221 Point Test Blvd.
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REVISIONS

Developer / Owner:
Fort Zumwalt School District
555 E. Terra Lane
O'Fallon, MO 63367

SITE PLAN

P+Z No. 19-009658
Approval Date: 11/07/19
City No. #

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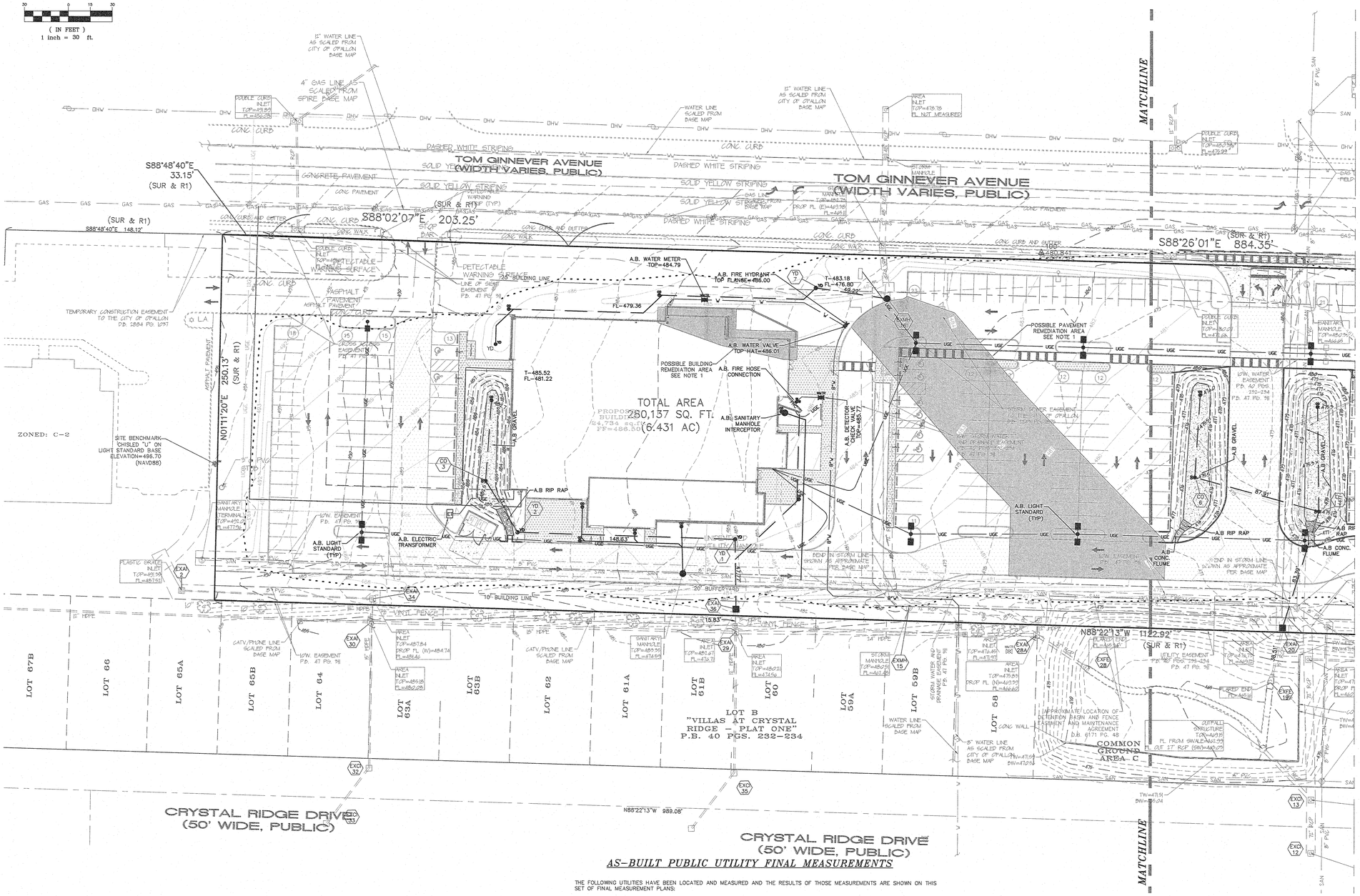
GRAPHIC SCALE

30 0 15 30

(IN FEET)
1 inch = 30 ft.



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MARK E. COLLINS
MISSOURI PROFESSIONAL LAND SURVEYOR #2006000173

STATE OF MISSOURI
MARK E. COLLINS
12-30-21
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PROFESSIONAL LAND SURVEYOR

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PROJECT TITLE:
As-Built Plans for:
Fort Zumwalt School District
Professional Development Center

Bax Project #19-7594 | Issue Date: 12/30/2021

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Missouri State Certificate of Authority
Surveying #000144

REVISIONS

Developer / Owner:
Fort Zumwalt School District
555 E. Terra Lane
O'Fallon, MO 63367

GRADING PLAN

P+Z No. 19-009658
Approval Date: 11/07/19
City No. #

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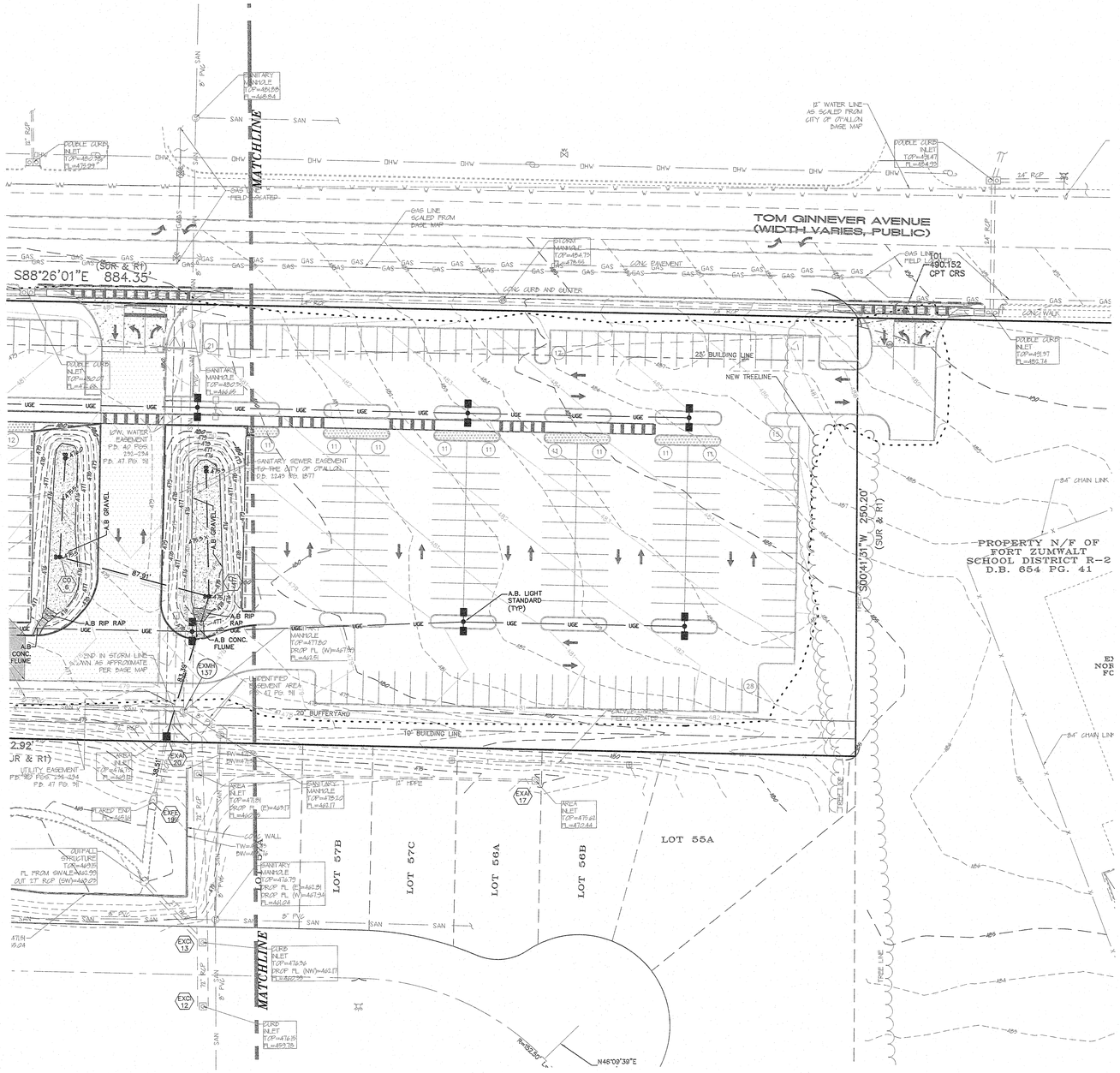

GRAPHIC SCALE

30 0 15 30

(IN FEET)

1 inch = 30 ft.

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PROJECT TITLE:
As-Built Plans for:
Fort Zumwalt School District
Professional Development Center

Bax Project # 19-17514 | Issue Date: 12/30/2021

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Surveying #000144

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GRADING PLAN

P+Z No. 19-009658
Approval Date: 11/07/19
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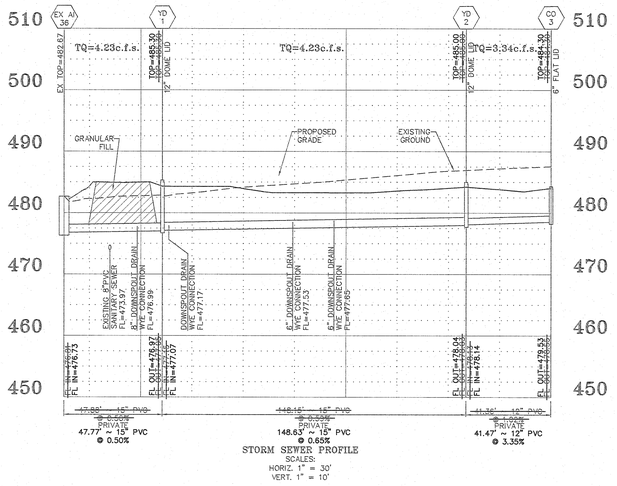
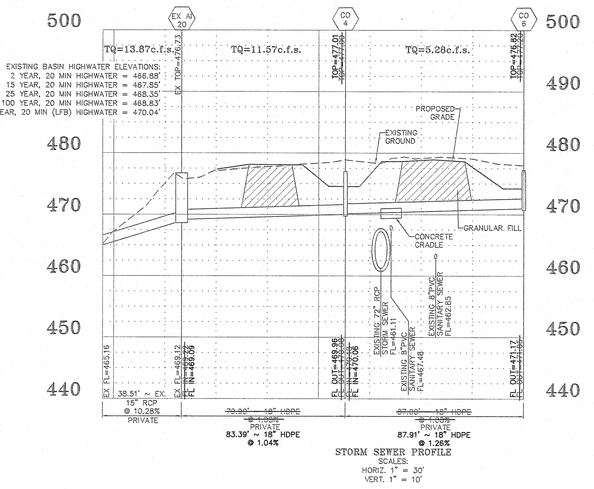
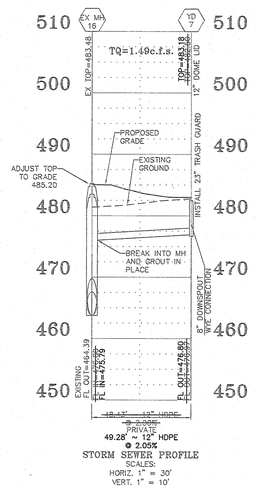
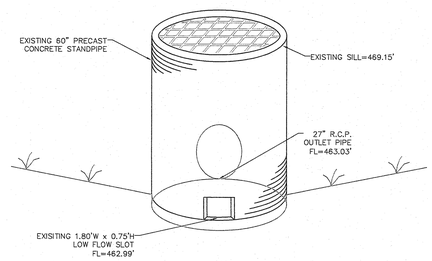




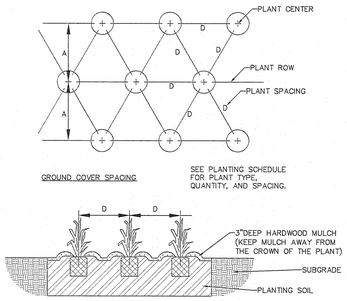




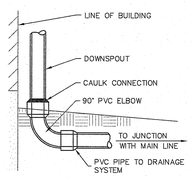
EXISTING OVERFLOW STRUCTURE DETAIL
NOT TO SCALE

2 YEAR, 20 MIN HIGHWATER = ~~466.88'~~
15 YEAR, 20 MIN HIGHWATER = ~~467.85'~~
25 YEAR, 20 MIN HIGHWATER = ~~468.35'~~
100 YEAR, 20 MIN HIGHWATER = ~~468.83'~~
100 YEAR, 20 MIN (LFB) HIGHWATER = ~~470.04'~~

PLANT SPACING 'D'	ROW SPACING 'A'	NUMBER OF PLANTS/SQFT
60"	52.0"	0.045
48"	41.5"	0.062



PLANT SPACING GUIDE
NOT TO SCALE



DOWNSPOUT DETAIL
NOT TO SCALE

AS-BUILT PUBLIC UTILITY FINAL MEASUREMENTS

THE FOLLOWING UTILITIES HAVE BEEN LOCATED AND MEASURED AND THE RESULTS OF THOSE MEASUREMENTS ARE SHOWN ON THIS SET OF FINAL MEASUREMENT PLANS:

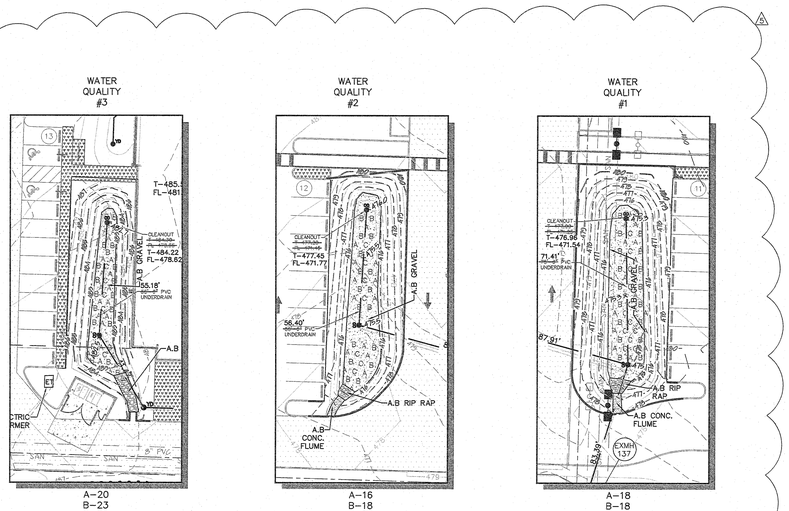
- STORM SEWERS, STORM SEWER LENGTHS, STORM SEWER PIPE SIZES, STORM SEWER FLOWLINES AND DEPTHS OF STORM SEWER STRUCTURES.
- SANITARY SEWERS, SANITARY SEWER LENGTHS, SANITARY SEWER PIPE SIZES, SANITARY SEWER FLOWLINES AND DEPTHS OF SANITARY SEWER STRUCTURES.
- FIRE HYDRANTS
- WATER VALVES
- LIGHT STANDARDS
- TOPOGRAPHY OF WATER QUALITY AREAS

ALL PUBLIC UTILITIES SHOWN HEREON AS BEING AS-BUILT ARE LOCATED WITHIN DESIGNATED EXISTING OR PROPOSED EASEMENTS.

BAX ENGINEERING COMPANY, INC.
MARK E. COLLINS
MISSOURI PROFESSIONAL LAND SURVEYOR #2006000173

BIO-RETENTION TABLE

BASIN	GRADE	CLEANOUT	UNDERDRAIN
1	~~475.50~~ 475.3	~~477.00~~ 476.96	~~471.25~~ 471.54
2	~~475.30~~ 476.0	~~477.20~~ 477.45	~~471.45~~ 471.77
3	~~482.80~~ 472.7	~~484.30~~ 484.22	~~478.55~~ 478.62



BIO-RETENTION PLANTING LOCATIONS

CONTRACTOR INSTALLATION NOTES:

1. DURING CONSTRUCTION CONTRACTOR TO PROVIDE ANY TEMPORARY DITCHES OR PIPING IN AN EFFORT TO DIVERT UNWANTED WATERS TO ENTER BIOBASIN DURING THE INSTALLATION. PROVIDE ANY ADDITIONAL SILTATION CONTROL AS REQUIRED BY CITY.
2. ONCE BASIN IS DUG OUT, TILL OR "RIP" BOTTOM OF BASIN, INSTALL FILTER FABRIC ON SLOPES OF TRENCH AND TACK IN PLACE.
3. BEGIN INSTALLING 6" OF 3/4" CLEAN GRAVEL IN LOOSE LIFT, DO NOT COMPACT.
4. LAY PERFORATED DRAINAGE PIPING AND OVERFLOW PIPING.
5. BEGIN PLACING 6" OF 3/4" CLEAN GRAVEL IN LOOSE LIFT, DO NOT COMPACT.
6. BEGIN PLACING 6" OF 3/8" CLEAN PEA GRAVEL IN LOOSE LIFT, DO NOT COMPACT.
7. BEGIN PLACING 6" OF ASTM C-33 SAND IN LOOSE LIFT, DO NOT COMPACT.
8. BEGIN PLACING PLANTING SOIL AT THE REQUIRED DEPTHS FOR EACH BASIN IN LIFTS OF 12"-18" LOOSELY, DO NOT COMPACT.
9. FINISH GRADE BASIN SIDE SLOPES AND PLACE PLANTINGS.
10. BASIN PLANTINGS TO BE WATERED AND MAINTAINED FOR 60 DAYS BY CONTRACTOR.

LIMITS OF LAND DISTURBANCE:

THE CONTRACTOR SHALL STAY WITHIN THE LIMITS OF DISTURBANCE AS SHOWN ON THE PLANS AND MINIMIZE DISTURBANCE WITHIN THE WORK AREA WHEREVER POSSIBLE.

DETENTION BASIN TO BE SODDED TO THE 100 YR LOW FLOW BLOCKED ELEVATION.

CONSTRUCTION SITE RUNOFF SHALL NOT FLOW INTO THE BIORETENTION AREA. ALL STORMWATER FLOW TO THE BMP AREA SHALL BE DIVERTED, PLUGGED, OR DISCONNECTED UNTIL THE CONSTRUCTION SITE IS STABLE.

Sand Gradations per ASTM C-33 Sieve Specifications	Percent Passing
9.5-mm (3/8-in.)	100
4.75-mm (No. 4)	95 to 100
2.36-mm (No. 8)	80 to 100
1.18-mm (No. 16)	50 to 85
600-um (No. 30)	25 to 60
300-um (No. 50)	5 to 30
150-um (No. 100)	0 to 10

SAND SPECIFICATIONS:

Washed ASTM C33 Fine Aggregate Concrete Sand is utilized for stormwater management applications. In addition to the ASTM C-33 specification, sand must meet ALL of the following conditions:

1. Sand must meet gradation requirements for ASTM C-33 Fine Aggregate Concrete Sand. AASHTO M-6 gradation is also applicable. (Known as Natural washed concrete sand)

2. Sand must be silicabased...no limestone based products may be used. If the material is white or gray in color it is probably not acceptable.

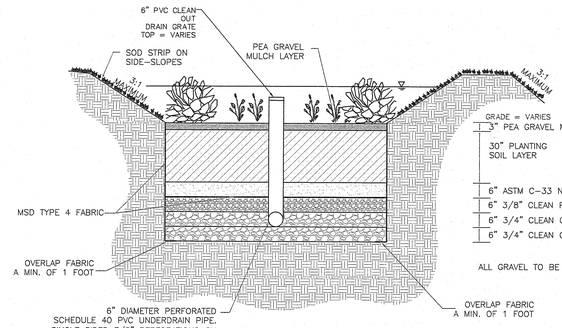
3. Sand must be clean. Natural, unwashed sand deposits may not be used. Likewise, sand that has been contaminated by improper storage or installation practices will be rejected.

4. Manufactured sand or stone dust is not acceptable under any circumstances.

Planting Soil Specifications:
Sandy Loam or Loamy Sand should contain a minimum of 35 to 60 percent sand, by volume. The clay content for these soils should be less than 10 percent by volume. The soils shall be free of stones, stumps, roots, or other woody material over 1 inch in diameter. Placement of the planting soil should be in lifts of 12 to 18 inches and be placed loosely with no compaction.

MAINTENANCE SCHEDULE:

1. THE PROPERTY OWNER WILL MAINTAIN THE BIORETENTION IN GOOD WORKING ORDER AND WILL BE INSPECTED EVERY 6 MONTHS FOR THE FOLLOWING:
   A. SAID AREA SHALL BE CLEANED SHORTLY AFTER THE PROJECT IS COMPLETED AND EROSION CONTROL HAS BEEN REMOVED AND VEGETATION HAS BEEN ESTABLISHED.
   B. AREA SHALL BE CLEANED OF ANY WEEDS, UNDERBRUSH, WILD GROWTH, DEBRIS OR LITTER.
   C. PLANTINGS WILL BE EVALUATED AND ANY DEAD PLANT SHALL BE REPLACED.
   D. IF ACCUMULATED SEDIMENT HAS CLOGGED THE SURFACE PORES OF THE RAIN GARDEN, THEN DRILLING OR PUNCHING SMALL HOLES INTO THE SURFACE LAYER SHALL BE DONE TO RESTORE INFILTRATION CAPACITY OF THE SOIL.



BIO-RETENTION CROSS-SECTION
NOT TO SCALE

ITEM	LATIN NAME	COMMON NAME	BASIN 1	SPACING	BASIN 2	SPACING	BASIN 3	SPACING
A	Carex grayi	Bur sedge	18	60"	16	60"	20	48"
B	Carex vulpinoidea	Fox sedge	5	60"	18	60"	23	48"
C	Chasmanthium latifolium	River oats	4	60"	7	60"	6	48"

BIO-RETENTION PLANTING SCHEDULE

Planting, Water and Mulch Requirements for Stormwater BMPs

Water Availability	Required Planting Period	Minimum Container Size	Water Requirement First 3 Weeks*	Water Requirement After 3 Weeks*	Maximum Mulch Depth****
No ability to water after	Late Feb. – April only	2.25" x 3.75" or larger	Water each plug immediately		1.5 for plugs
Manual watering with standard sprinkler	Late Feb. – Early June Sept. – October	4.5" x 5" (quart) or larger in summer & fall	1" (60 min) every 4 days	1" (60 min) every 7 days until plants established***	1.5" for plugs 2.5" for quarts
Automatic irrigation (set to water more frequently than normal during first two months after planting)	Late Feb. – Early Oct.	2.25" x 3.75" (plug) or larger in spring 4.5" x 5" (quart) or larger in summer & fall	1" (60 min) every 4 days in spring and fall 1" (60 min) every 3 days in summer*	1" (60 min) every 7 days until plants established***	1.5" for plugs 2.5" for quarts

*This water amount includes natural rainfall. If you get a ½ inch of natural rain then you will need to add a ½ inch of water to meet the 1 inch requirement.
**Requires transport of water to the planting site in large containers and pouring enough water onto each plant (after planting) to moisten the entire planting pit.
***Plants are established when roots have grown out of the container soil and into the native soil by 3-5 inches. This normally takes 3-4 months for most perennials and grasses and up to 6-7 months for trees and shrubs.
****Shredded leaf compost is recommended for use with perennials and grasses. Shredded bark mulch is recommended for tree and shrub plantings at a depth of 3 inches.

PLANTING, WATER, AND MULCH REQUIREMENTS

PROJECT TITLE:
As-Built Plans for:
Fort Zumwalt School District
Professional Development Center

Bax Project # 19-17594 | Issue Date: 12/30/2021

ENGINEERING
PLANNING
SURVEYING
221 Point West Blvd.
St. Charles, MO 63301
636-928-5662
FAX 928-1718

Bax Engineering Company, Inc.
Missouri State Certificate of Authority
Engineering #000655
Missouri State Certificate of Authority
Surveying #000144

REVISIONS

1		
2		
3		
4		
5		

Developer / Owner:
Fort Zumwalt School District
555 E. Terra Lane
O'Fallon, MO 63367

STORM SEWER PROFILES, HYDRAULICS AND DETAILS

P+Z No. 19-009658
Approval Date: 11/07/19
City No. #

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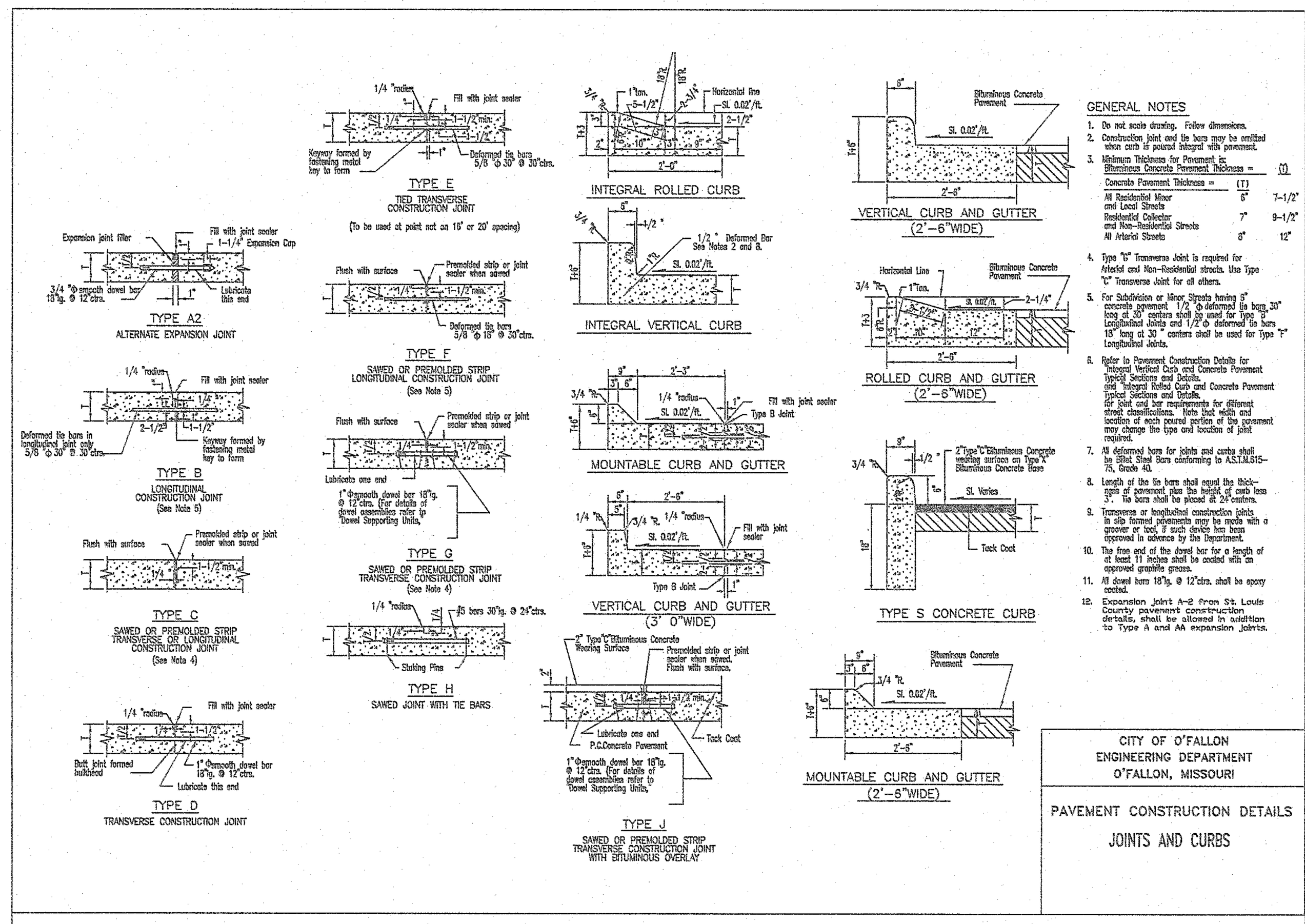
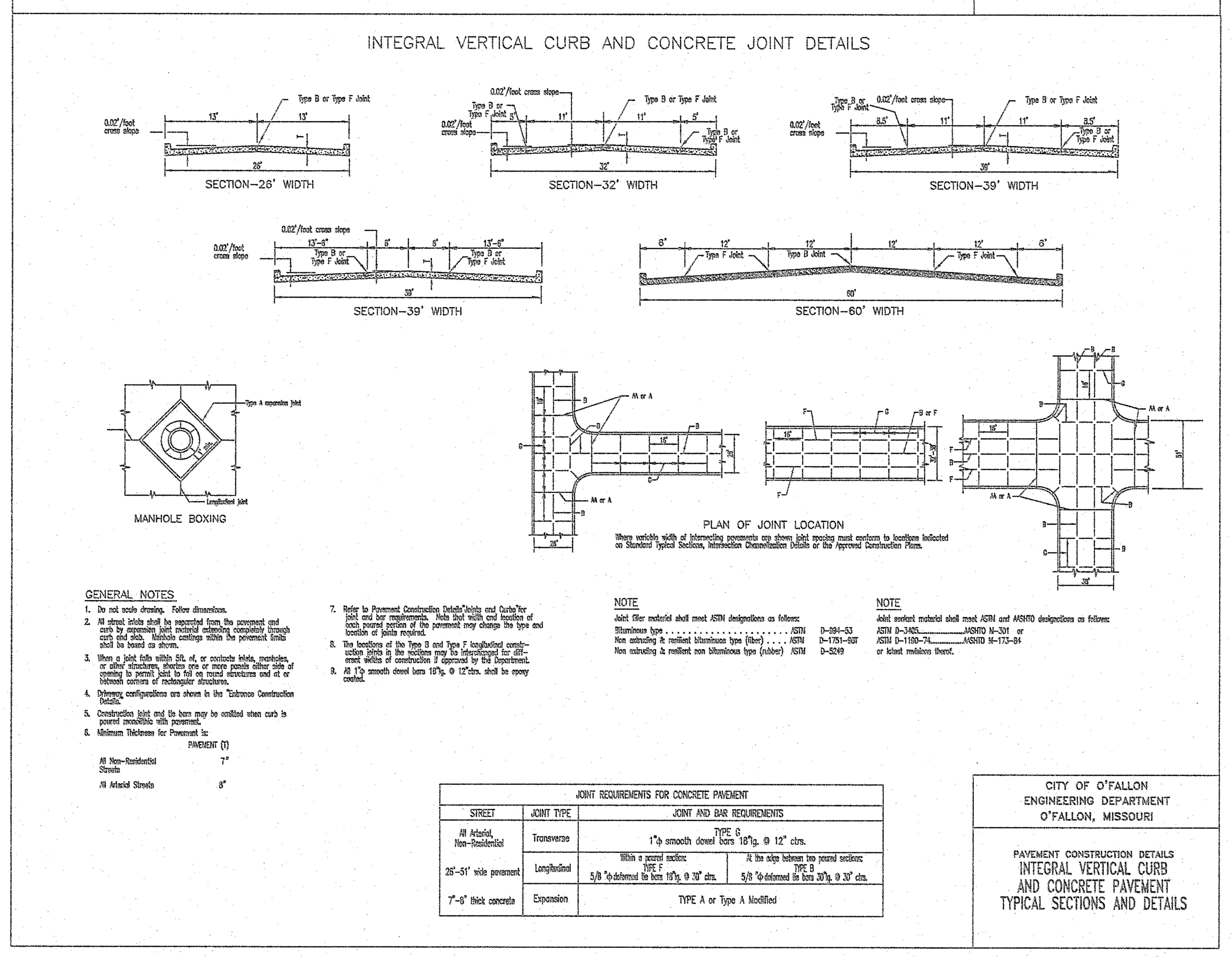
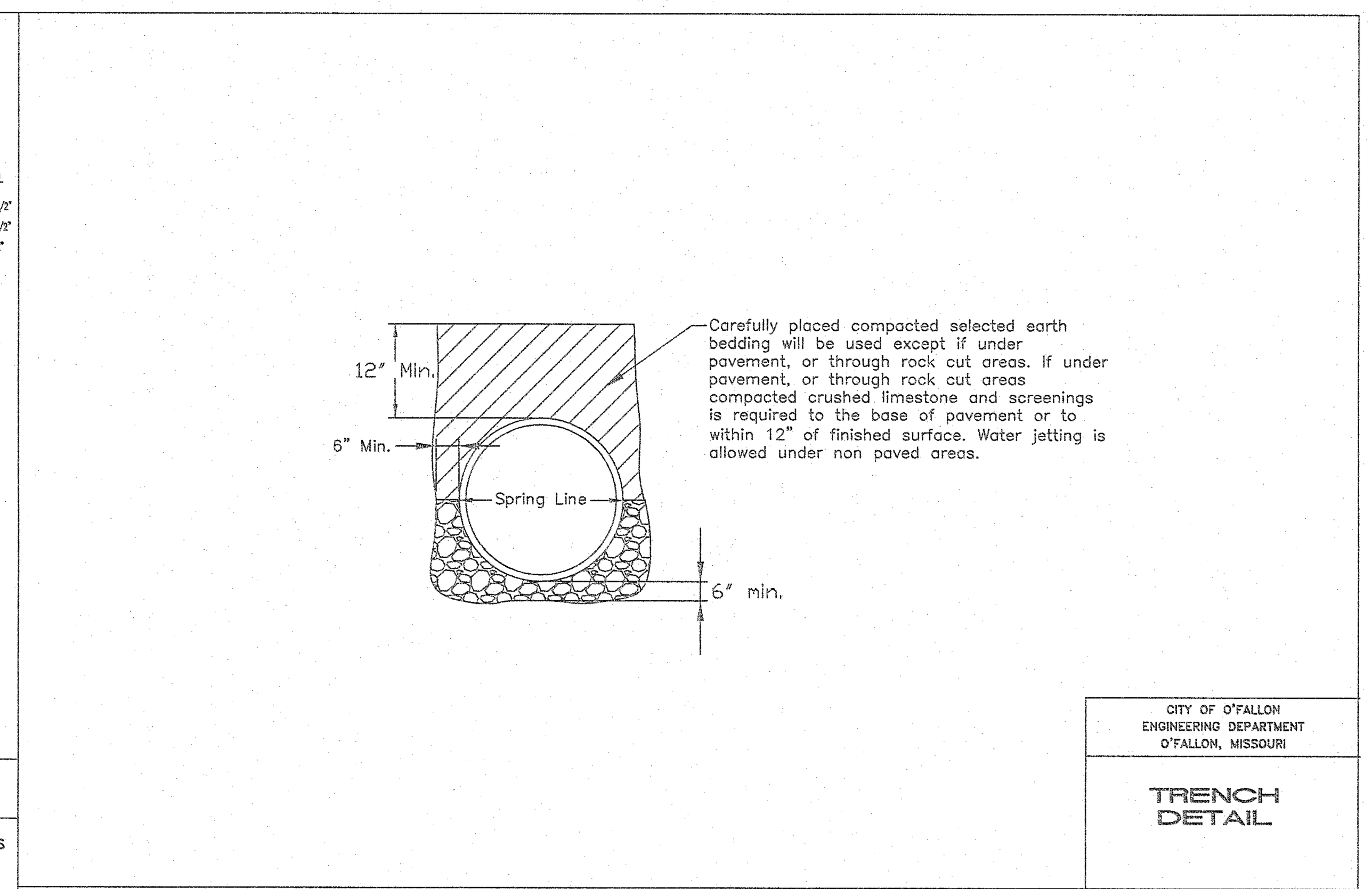
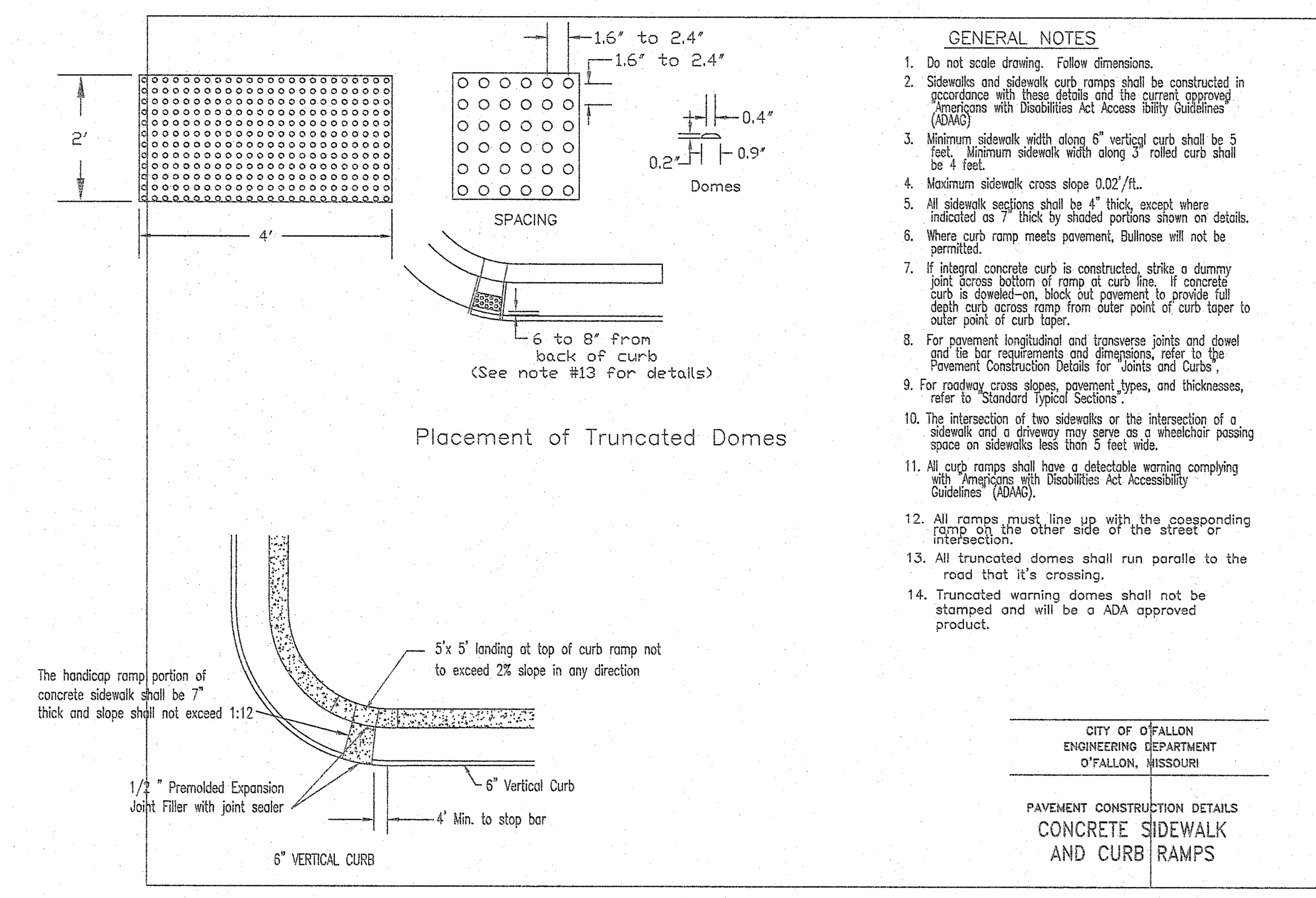






* All other Storm Details will be by M.S.D. 2007 Standards and Specifications.



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BAX ENGINEERING COMPANY, INC.
MARK E. COLLINS
MISSOURI PROFESSIONAL LAND SURVEYOR #2006000173

STATE OF MISSOURI — MARK E. COLLINS — 12-30-21 — NUMBER PLS-2006000173 — PROFESSIONAL LAND SURVEYOR

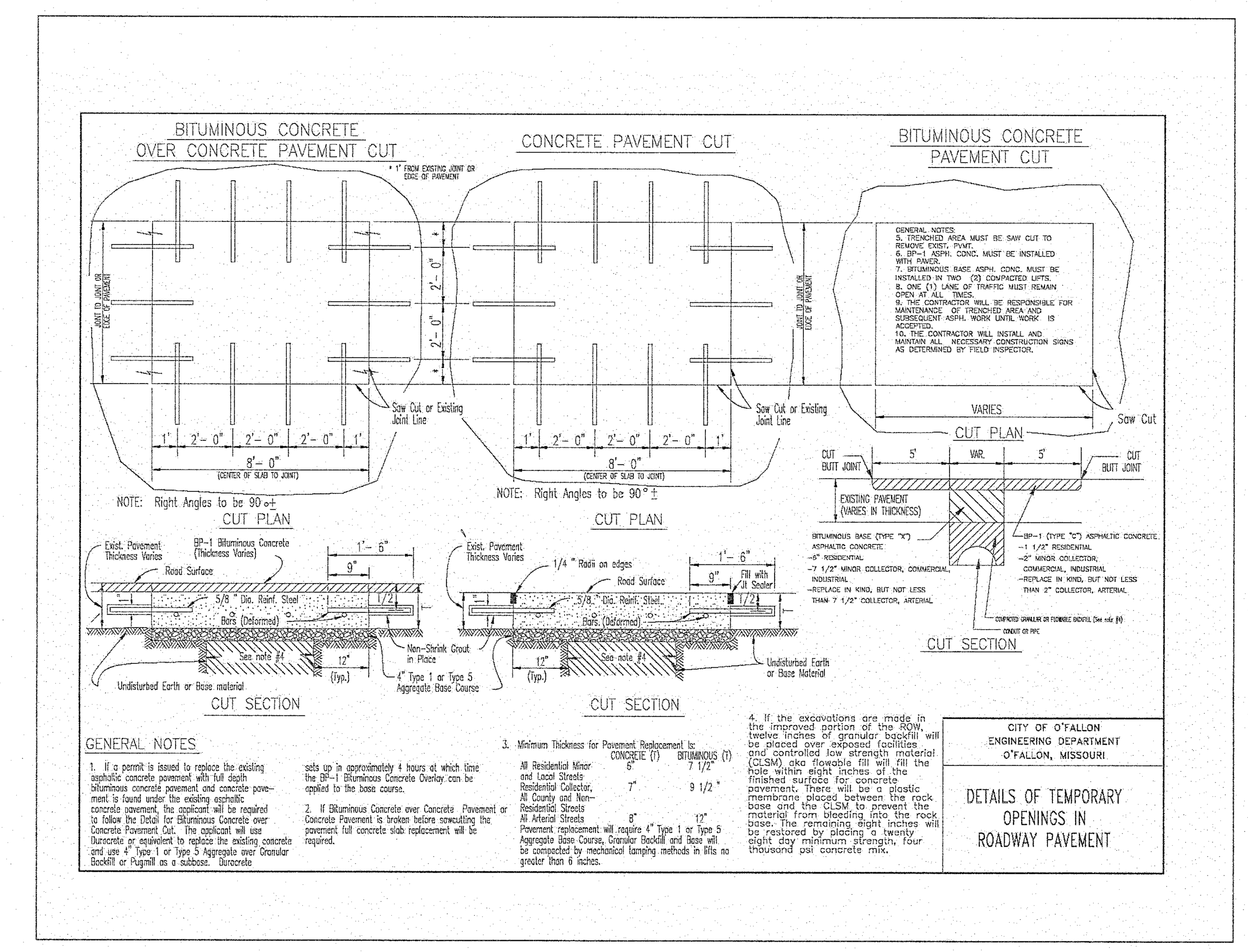

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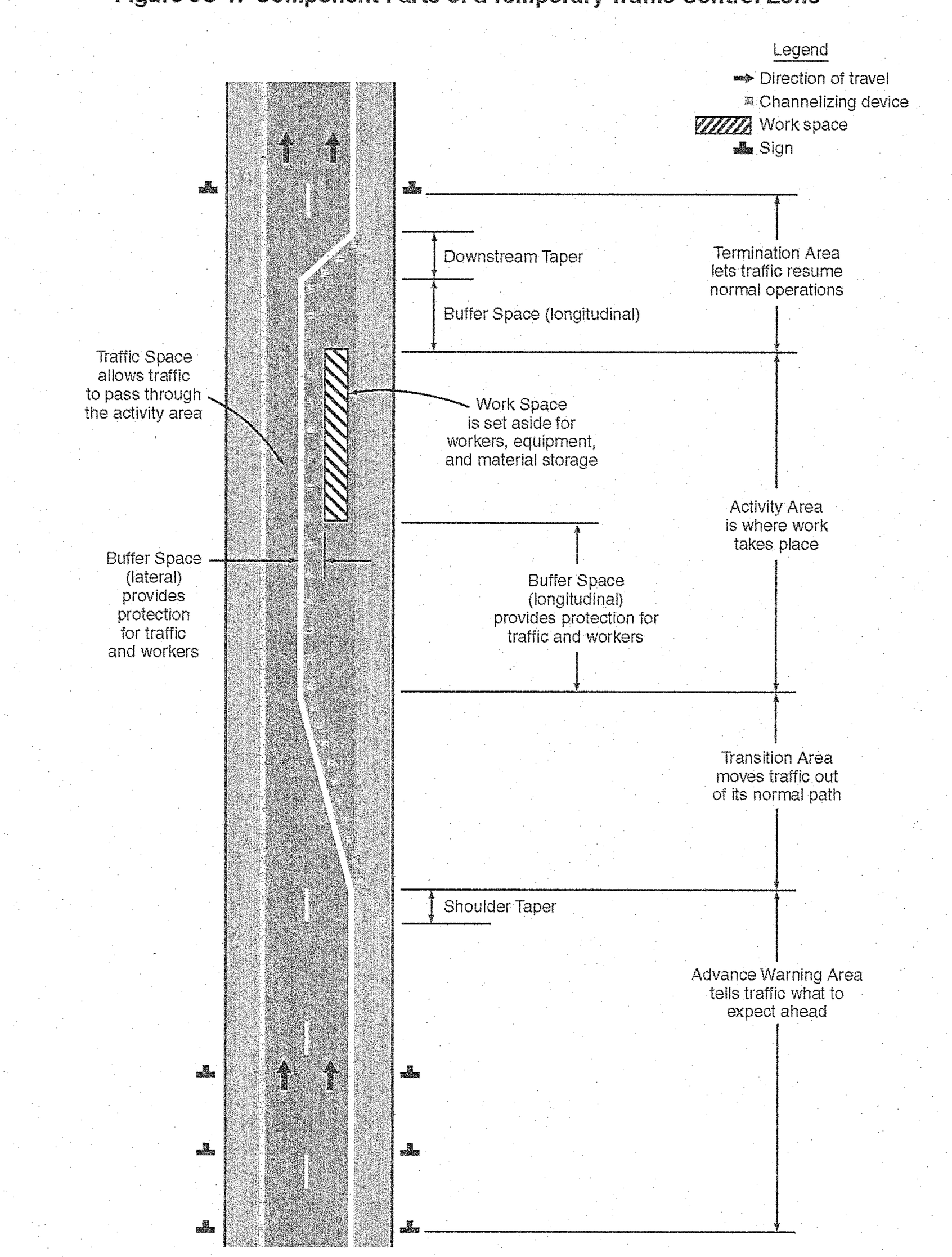
Figure 6C-1. Component Parts of a Temporary Traffic Control Zone



December 2009 Sect. 6C.04

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Table 6C-1. Recommended Advance Warning Sign Minimum Spacing

Road Type	Distance Between Signs**		
	A	B	C
Urban (low speed)*	100 feet	100 feet	100 feet
Urban (high speed)*	350 feet	350 feet	350 feet
Rural	500 feet	500 feet	500 feet
Expressway / Freeway	1,000 feet	1,500 feet	2,640 feet

* Speed category to be determined by the highway agency
** The column headings A, B, and C are the dimensions shown in Figures 6H-1 through 6H-46. The A dimension is the distance from the transition or point of restriction to the first sign. The B dimension is the distance between the first and second signs. The C dimension is the distance between the second and third signs. (The "first sign" is the sign in a three-sign series that is closest to the TTC zone. The "third sign" is the sign that is furthest upstream from the TTC zone.)

Support:

07 The need to provide additional reaction time for a condition is one example of justification for increasing the sign spacing. Conversely, decreasing the sign spacing might be justified in order to place a sign immediately downstream of an intersection or major driveway such that traffic turning onto the roadway in the direction of the TTC zone will be warned of the upcoming condition.

Option:

08 Advance warning may be eliminated when the activity area is sufficiently removed from the road users' path so that it does not interfere with the normal flow.

Section 6C.05 Transition Area

Support:

01 The transition area is that section of highway where road users are redirected out of their normal path. Transition areas usually involve strategic use of tapers, which because of their importance are discussed separately in detail.

Standard:

02 **When redirection of the road users' normal path is required, they shall be directed from the normal path to a new path.**

Option:

03 Because it is impractical in mobile operations to redirect the road user's normal path with stationary channelization, more dominant vehicle-mounted traffic control devices, such as arrow boards, portable changeable message signs, and high-intensity rotating, flashing, oscillating, or strobe lights, may be used instead of channelizing devices to establish a transition area.

Section 6C.06 Activity Area

Support:

01 The activity area is the section of the highway where the work activity takes place. It is comprised of the work space, the traffic space, and the buffer space.

02 The work space is that portion of the highway closed to road users and set aside for workers, equipment, and material, and a shadow vehicle if one is used upstream. Work spaces are usually delineated for road users by channelizing devices or, to exclude vehicles and pedestrians, by temporary barriers.

Option:

03 The work space may be stationary or may move as work progresses.

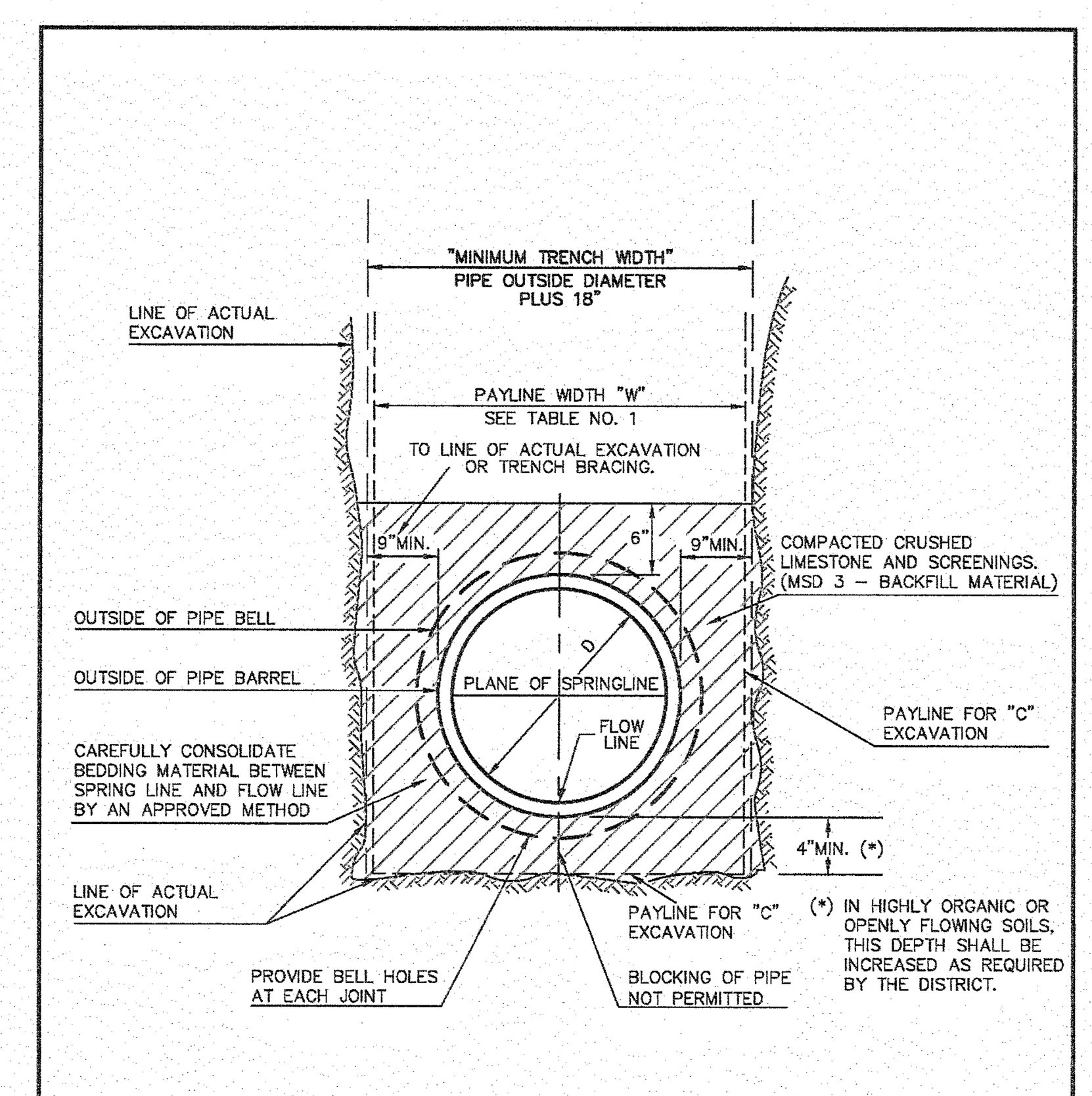
Guidance:

04 *Since there might be several work spaces (some even separated by several miles) within the project limits, each work space should be adequately signed to inform road users and reduce confusion.*

Support:

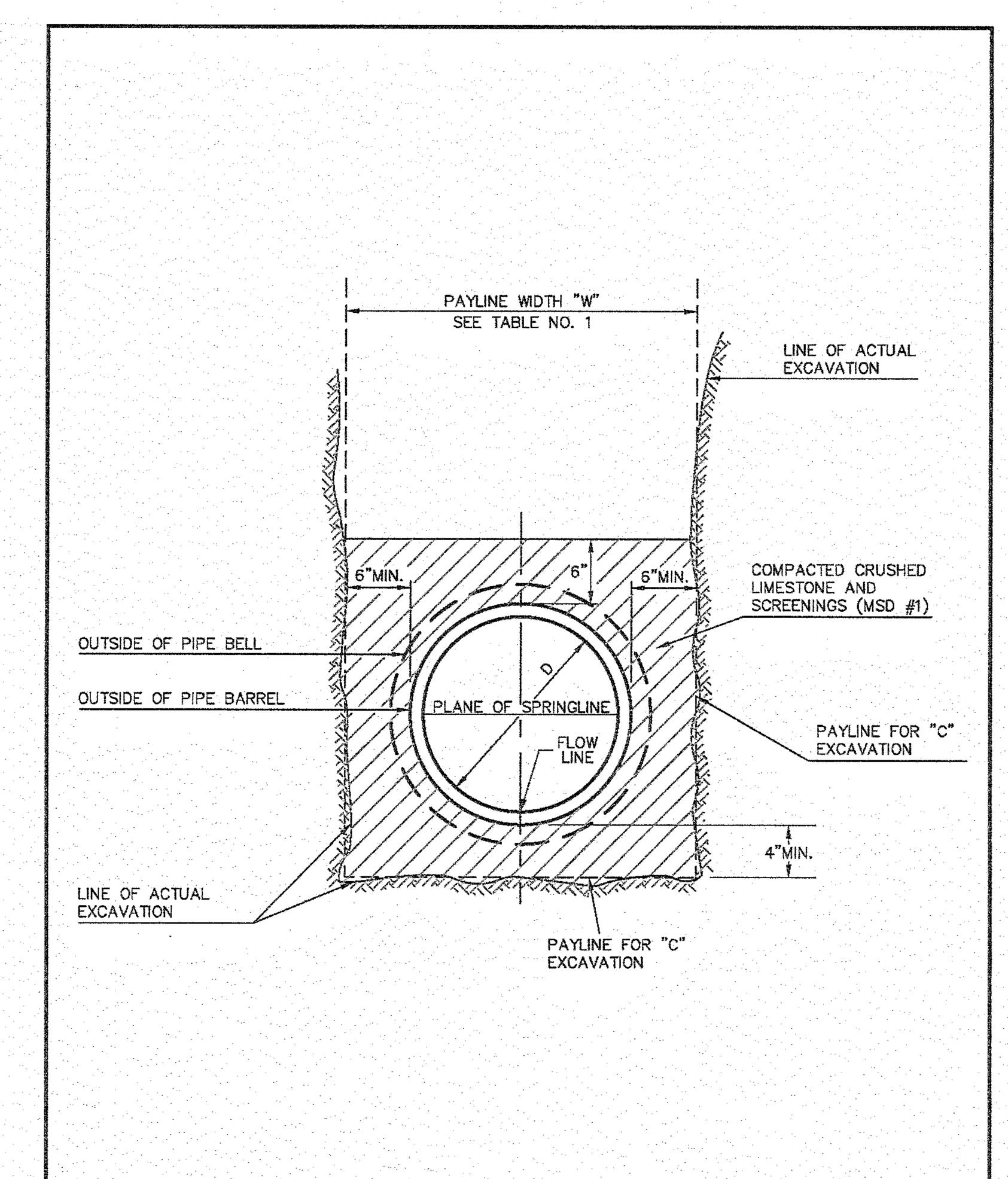
05 The traffic space is the portion of the highway in which road users are routed through the activity area.

Sect. 6C.04 to 6C.06 December 2009



NOTES:
1) CHECK GRADE OF PIPE AFTER COMPACTION TO INSURE THE DESIRED FLOWLINE HAS NOT CHANGED.
2) DURING JETTING PROCESS, NOZZLE SHALL NOT BE INSERTED CLOSER THAN TWO FEET FROM TOP OF PIPE.
3) ANY TRENCH BRACING USED BELOW THE TOP OF PIPE SHALL BE LEFT IN PLACE.
4) FOR INSTALLATIONS IN HIGHLY ORGANIC OR OPENLY FLOWING SOILS, THE ENTIRE PERIMETER OF THE PIPE BEDDING SHALL BE WRAPPED WITH AN APPROVED FILTER FABRIC OR THE "MINIMUM TRENCH WIDTH" SHALL BE EXPANDED BY INCREASING THE DISTANCE BETWEEN THE SIDE OF THE PIPE AND THE LINE OF ACTUAL EXCAVATION OR TRENCH BRACING TO A MINIMUM OF ONE PIPE DIAMETER.

PIPE BEDDING FOR FLEXIBLE PIPE 21" – 48" DIAMETER	METROPOLITAN ST. LOUIS SEWER DISTRICT *Standard Details of Sewer Construction*		
	Dr. P.T.K. Ch. D.R.M.	2009	SHEET 6



PIPE BEDDING CLASS "C" (FOR ALL 6" to 18" PIPE EXCEPT REINFORCED CONCRETE PIPE)	METROPOLITAN ST. LOUIS SEWER DISTRICT *Standard Details of Sewer Construction*		
	Dr. W.S.H. Ch. J.C.K.	2009	SHEET 4

LAND SURVEYOR'S SEAL DOES NOT APPLY TO CITY OF O'FALLON DETAILS ON THIS SHEET.

PROJECT TITLE:
As-Built Plans for:
Fort Zumwalt School District
Professional Development Center

Bax Project #19-17514 | Issue Date: 12/30/2021

ENGINEERING
PLANNING
SURVEYING
221 Point West Blvd.
St. Charles, MO 63301
636-928-5552
FAX 928-1718

DISCLAIMER OF RESPONSIBILITY
I hereby specify that the documents intended to be authenticated by my seal are limited to this sheet, and I hereby disclaim any responsibility for all other Drawings, Specifications, Estimates, Reports or other documents or instruments relating to or intended to be used for any part or parts of the architectural or engineering project or survey.

STATE OF MISSOURI — MARK E. COLLINS — 12-30-21 — NUMBER PLS-2006000173 — PROFESSIONAL LAND SURVEYOR

Bax Engineering Company, Inc.
Missouri State Certificate of Authority Engineering #000655
Missouri State Certificate of Authority Surveying #000144

REVISIONS

Developer / Owner:
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555 E. Terra Lane
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DETAILS

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