

### Plan View

### Drawing Index

**COVER SHEET** NOTES **DEMOLITION PLAN GRADING PLAN** WATER PLAN SWPP PLAN DRAINAGE AREA MAP 9 DETAILS

## 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
- WATER VALVES
- LIGHT STANDARDS

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

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

10-14 DETAILS



\* 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:

\* The area of this phase of development is 2.612 Acres The area of land disturbance is 1.13 Acres

Number of proposed attached units is 12 Building setback information. Front 30 feet

Side 20 feet Rear 35 feet

\* The estimated sanitary flow in gallons per day is 4,440 GPD

\* Tree preservation calculations Existing Trees = 0.84 Acres

2.61 Acres / 15 trees per acres = 0.174 Acres  $0.84 \times 20\% = 0.168 \text{ Acres}$ 0.174 > 0.168 = 0.174 Acres to be preserved

0.03 Acres To Be Removed 0.81 Acres Preserved

# A SET OF AS-BUILT PLANS FOR SHANE ESTATES PHASE TWO

A TRACT OF BEING PART OF U.S. SURVEY 2632 TOWNSHIP 47 NORTH, RANGE 3 EAST OF THE FIFTH PRINCIPAL MERIDIAN CITY OF O'FALLON CHARLES COUNTY, MISSOURI

### **Development Notes**

Locator Map

EXISTING LABELS

PROPOSED LABELS

SINGLE CURB INLET

DOUBLE CURB INLET

DOUBLE AREA INLET

DOUBLE GRATE INLET

FLARED END SECTION

REINFORCED CONCRETE PIPE

CORRUGATED PLASTIC PIPE

POLY VINYL CHLORIDE (PLASTIC)

CONCRETE PIPE

DRAINAGE SWALE

—— STM —— EXISTING STORM SEWER

—— GAS —— EXISTING GAS LINE

—x——x—— FENCE LINE

City approval of any construction site plan does not mean that any building can be constructed on the lots

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

or construction. It shall be the responsibility of the developer to notify the City Engineer of any changes from

changes at their own risk, without any assurance that the City Engineer will approve the completed installation

the approved drawings. The developer may be required to correct the installed improvements so as to

conform to the approved engineering drawings. The developer may request a letter from the Construction

without meeting the building setbacks as required by the zoning codes.

Inspection Division regarding any field changes approved by the City Inspector.

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

SAWCUT LINE

--- SAN ---- EXISTING SANITARY SEWER

----FO----- EXISTING FIBER OPTIC LINE

—— UGE —— EXISTING UNDERGROUND ELECTRIC

PROPOSED STORM SEWER

PROPOSED SANITARY SEWER

A.B. AS-BUILT

AS-BUILT LEGEND

AS-BUILT STORM MANHOLE

AS-BUILT STORM FLARED END

AS-BUILT SANITARY MANHOLE

AS-BUILT FIRE HOSE CONNECTION

AS-BUILT CURB INLET

X AS-BUILT FIRE HYDRANT

AS-BUILT WATER VALVE

**★** AS-BUILT LIGHT STANDARD

AS-BUILT CLEANOUT

AS-BUILT SPIGOT

---- OHW ---- EXISTING OVERHEAD ELECTRIC

—— CTV —— EXISTING CABLE TV LINE

T EXISTING TELEPHONE LINE

AREA INLET

GRATE INLET

MANHOLE

600.00

CP

RCP

Legend

EXIST. SINGLE CURB INLET

PROPOSED SINGLE CURB INLET

EXIST. AREA INLET

PROPOSED AREA INLET

PROPOSED GRATE INLET

EXIST. STORM MANHOLE

PROPOSED MANHOLE

POWER POLE

LIGHT STANDARD

FIRE HYDRANT

WATER METER

WATER VALVE

TELEPHONE PEDESTAL

GAS VALVE

EXIST. SANITARY MANHOLE

1. Site Area: "R-3", Garden Apartment District 2. Existing Zoning: 12 Attached Units Joseph & Paula Dames 2101 Flatwoods Road

5. Flood Plain Note: According to the Flood Insurance Rate Map of St. Charles, Missouri, Unincorporated Areas (Community - Panel Number 29183C0230G, dated January 20, 2016). This tract lies partially in Zone X (Areas determined to be outside the 0.2% annual chance floodplain.) and partially within Zone AE (Special flood hazard areas with base flood elevations determined).

10. 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

11. All new utilities are to be located underground.

One and one—half (1.5) spaces for efficiency and one (1) bedroom unit, plus one (1) additional space for each additional bedroom

14. Landscape Requirements:

Provided = 962 s.f.15. Differential Runoff Calculations: Site Area: 113,691.60 S.F. (2.61 Acres) Existing:
Ex. Building & Pavement: 0.04 Acres @ 4.77 = 0.19cfs
Ex. Grass: 2.57 Acres @ 2.29 = 5.88cfs Existing Total = 6.07cfs

1. The Applicant shall ensure that the existing metal silo on the subject site is structurally sound and access to it is restricted.

2. Work with staff to ensure the trash enclosure gate will not prevent access to parking spaces

4. Provide approval letters from MoDOT, the fire district, school district and USPS.

5. The Construction Plans shall address the Municipal Code Requirements listed.

### Municipal Code Requirements

for providing water quality.

CITY OF O'FALLON ENGINEERING DEPARTMENT ACCEPTED FOR CONSTRUCTION BY: \_\_\_\_ DATE \_\_\_\_ 04/07/2021 PROFESSIONAL ENGINEER'S SEAL INDICATES RESPONSIBILITY FOR DESIGN

O'Fallon, MO 63366

A letter of map revision to be filed with the Corp of Engineers for removal of the 100 year flood

6. Topographic & boundary information is per survey as compiled by Bax Engineering.

7. All existing creeks, streams, and drainage swales will have an associated storm water

8. All new lighting shall be downcast lights consistent with City of O'Fallon standards and specifications. A photometric plan shall be submitted with construction documents for review and

9. All mechanical equipment will be rooftop units and will be screened per City of O'Fallon Zoning

be located prior to any grading or construction of the improvements.

12. Site Coverage Calculations: Total Site = 2.61 Acres Buildings = 0.15 Acres (6%)Pavement = 0.37 Acres (14%)Greenspace = 2.09 Acres (80%)

12 Units  $\times$  2.5 spaces = 30 spaces required 34 spaces proposed (including 2 accessible spaces)

Not less than 6% of the interior parking lot shall be landscaped 34 spaces X 270 s.f. = 9,180 s.f. $9,180 \times 6\% = 551 \text{ s.f. Required}$ 

Proposed:
Building & Pavement: 0.44 Acres @ 4.77 = 2.09cfs Grass & Pervious Pavement: 2.17 Acres @ 2.29 = 4.96cfs 7.05cfs - 6.07cfs = 0.98cfs Increase in Runoff (No Detention Required)

## Conditions of Approval From Planning and Zoning

3. Work with staff to ensure the mailbox kiosk is ADA accessible.

1. Water meters are to be in the easement just behind the right-of-way. The water line from the connection to the meter is maintained by the City.

2. Detention and water quality are required per City Code 405.240 & 405.247. Use the 100 year PI Factors for the differential runoff calculations. There is no exception

<u>Utility Contacts</u>

Sanitary Sewers City of O'Fallon 100 N. Main St. O'Fallon, MO. 63366 Contact: 636-240-2000

<u>Water</u>

City of O'Fallon 100 N. Main St. O'Fallon, MO. 63366 Contact: 636-240-2000

Storm Sewer

Ameren Missouri

200 Callahan Road

Wentzville, MO. 63385

City of O'Fallon 100 N. Main St. O'Fallon, MO. 63366 636-240-2000

<u>Electric</u>

636-639-8312 <u>Gas</u>

Spire Gas 6400 Graham Road St. Louis, MO. 63134 314-522-2297

<u>Telephone</u>

CenturyLink 1151 Century Tel Dr. Wentzville, MO. 63385 636-332-7261 Fire District

O'Fallon Fire Protection District 111 Laura K Dr. O'Fallon, MO. 63366 636-272-3493

> P+Z No. #19-00965° Approval Date: 11/07/2019

Owner:
PROPERTY
AAIN STREE
O 63366

City No. #City number

DISCLAMER 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.

Bax Engineering Company, Inc. Missouri State Certificate of Authority

Engineering #000655

Missouri State Certificate of Authority

Surveying #000144

02/04/21 CITY COMMENT REVS.

04/05/21 CITY COMMENT REVS.

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PR 4- OS ZI NUMBER 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

PERMANENT:
Tall Fescue — 150 lbs./ac. Smooth Brome - 100 lbs./ac.
Combined - Fescue @ 75 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) <u>SEEDING PERIODS:</u> Fescue or Brome — March 1 to June 1 August 1 to October Wheat or Rye - March 15 to November 1 March 15 to September 15 MULCH RATES: 100 lbs. per 1000 sq. ft. (4,356 lbs. per ac.) FERTILIZER RATES: 30 lbs./ac. Phosphate 30 lbs./ac. Potassium 600 lbs./ac. ENM\* \* ENM = effective neutralizing material as per State evaluation of quarried rock

Benchmarks

**Project** 

(NAVD 88) - (ELEVATION=542.80) BENCHMARK DISK SET IN TOP OF CONCRETE MONUMENT

STAMPED "F 149 1935" IN THE CITY OF O'FALLON, ST. CHARLES COUNTY, ON THE WABASH

RAILROAD, IN THE SOUTHWEST CORNER OF THE O'FALLON CITY HALL PROPERTY (FORMERLY

(NAVD 88) - (ELEVATION=460.25) CUT SQUARE WITH "X" ON CONCRETE HEADWALL FOR METAL

CULVERT PIPE LOCATED ON NORTH SIDE OF HIGHWAY "P" ACROSS FROM SUBJECT PROPERTY

VEGETATION ESTABLISHMENT

<u>APPENDIX A</u>

For Urban Development Sites

ST. MARY INSTITUTE YARD), 40' EAST OF MAIN STREET (HIGHWAY M) AND 45' NORTH OF THE

BENCHMARK:

BENCHMARK:

CENTERLINE OF MAIN RAILROAD TRACK.

#### **GENERAL NOTES**

8. (INTENTIONALLY OMITTED)

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

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.

2.1. Truncated domes for curb ramps located in public right of way shall meet PROWAG requirements and shall be

constructed using red pre-cast truncated domes per pavement details. 3. Any proposed pavilions or playground areas will need a separate permit from the Building Division.

4. 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

5. All proposed utilities and/or utility relocations shall be located underground.

6. All proposed fencing requires a separate permit through the Building Safety Division. 7. 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.

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

10. 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. etc. 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

11. 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.

12. 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. 13. 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, he/she shall make such changes at his/her 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 improvements so as to confirm to the approved engineering drawings. The developer may request a letter from the Construction Inspection Division regarding any field changes approved by the City

14. City approval of the 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 code.

1. Developer must supply City Construction Inspectors with an Engineer's 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: 1.1. Maximum dry density

1.2. Optimum moisture content

1.3. Maximum and minimum allowable moisture content 1.4. 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. 1.5. Curve must have at least 5 density points with moisture content and sample locations listed on document

1.6. Specific gravity 1.7. Natural moisture content

1.8. Liquid limit 1.9. Plastic limit

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.

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.

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.

sediment and detention basins are to be constructed during the initial phase of the grading operation or in accordance

with the approved SWPPP.

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 Missouri Department of Natural Resources Protecting Water Quality — a field guide to erosion, sediment and stormwater best management practices for development sites in Missouri and Kansas. 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.

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

8. Any existing wells and/or springs which may exist on the property must be sealed in a manner acceptable to the City of O'Fallon Construction Inspection Department and following Missouri Department of Natural Resources standards and 9. (INTENTIONALLY OMITTED)

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 tamping 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.

10.1. 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

10.2. Equipment, The jetting probe shall be a metal pipe with an interior diameter of 1.5 to 2 inches. 10.3. 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.

10.4. 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 re-jetted. Compaction of the materials within the sunken/jetted area shall be compacted such that no further surface subsidence occurs.

11.1. 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.

11.2. 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.

12. Access to the site from any other location other than the proposed construction entrance is strictly prohibited!

#### **Erosion Control Notes**

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 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 cleaned to the satisfaction of the City of O'Fallon and as required by MoDOT."

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.

3. Erosion control devices (silt fence, sediment basin, etc.) shall be in accordance with Missouri Department of Natural Resources Protecting Water Quality — a field guide to erosion, sediment and stormwater best management practices for development sites in Missouri and Kansas.

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)

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. 6496, Section 405.095

#### <u>Sanitary Sewer Notes</u>

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

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.

3. Connections at all sanitary structures are to be made with A-Lock joint or equal

5. All sanitary mains shall be a minimum of 8" diameter pipe. 6. All sanitary sewer line with a slope greater than 20% will require concrete cradle or concrete collar at each pipe joint.

Sanitary line with a slope greater than 50% will require a special approved design as shown on detail sheet.

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

Installation Acceptance of Plastic Gravity Sewer Lines Using Low Pressure Air, Latest revision.

4. All sanitary laterals shall be a minimum of 4" residential, 6" commercial diameter pipe.

8. All sanitary sewer mains must have a minimum of 42" cover. 9. When sanitary mains cross over storm line the sanitary main must be ductile iron pipe for 10 feet on each side of the

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 flexible storm sewer when it is more than 18 inches above sanitary line. Show on profile sheet

11. The sanitary sewers should run diagonally through the side yards to minimize any additional utility easements required. 12. All sanitary sewer structures shall be waterproofed on the exterior in accordance to Missouri DNR specifications 10CSR-8.120

13. All sanitary sewer pipe shall be SDR35 or equal. All sanitary sewer laterals shall be Schedule 40. 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

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

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

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

. (INTENTIONALLY OMITTED)

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 flexible storm sewer when it is more than 18 inches above sanitary line. Show on profile sheet.

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

All concrete pipes will be installed with O-ring rubber type gaskets. Connections at all storm structures are to be made with A—lock joint or equal.

Pre cast concrete inlet covers are not to be used. 10. The swale in the detention basins shall have a minimum 2% longitudinal slope and be lined with a permanent erosion control

blanket that will allow infiltration of storm water. 11. All structures and flared end sections must be concrete. 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. 12. (INTENTIONALLY OMITTED)

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.

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

15. (INTENTIONALLY OMITTED)

#### Flood plain Information

1. Refer to Section 415 for Floodplain Development Information

#### Retaining Walls: Terraced and Vertical

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

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

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

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



#### Water Notes

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

2. Coordinate with the water company on the location of water meters. For meters in the City's district, meters shall be in the right-of-way, otherwise an access easement from the right-of-way shall be provided.

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

Provide water valves to isolate the system.

All water mains shall be class 200 SDR 21 or equal with locator/tracer wires If the excavations are made in the improved portion of the right—of—way, twelve inches of granular backfill will be placed over exposed facilities and controlled low strength material (CLSM) aka flowable fill will fill the hole with eight inches of the finished surface for concrete pavement. There will be a plastic membrane placed between the rock base and the CLSM to prevent the material from bleeding into the rock base. The remaining eight inches will be restored by placing a 28 day, 4,000 psd concrete

7. 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.

PRESSURE TESTING: Immediately following disinfection, the piping shall be pumped to a pressure (at the HIGHEST 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 50 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.

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.

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

1. All paving (public and private) to be in accordance with St. Louis County Standards and Specifications except as modified by the City

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

3. Provide 6" of concrete over 5" of aggregate base rock or asphalt equivalent for minor residential streets per City Code 405.370. 3.1. Rock to meet the all the requirements of MoDOT type 5 rock with a tighter restriction on the fines being that no more than ten percent (10%) fines shall pass a no. 200 sieve. (City Code 405.210.B.1) The gradation of this rock needs to be submitted to the City for approval. Any deliveries made without the proper delivery ticket, including signature, will not be accepted. The delivery ticket must list the project name or jobsite location. A separate certification sheet may be provided attached to the delivery ticket with a signature of the company's quality control manager. The quality control certification must be current and dated within 4 weeks of the delivery. (City Code 405.210.A.2.k)

4. Multi-use trail (when required) Shall have a minimum of 3" Type "C" Asphalt over 4" aggregate base per City requirements. 5. Type C (BP—1) Compaction requirements shall be 98% minimum density according to St. Louis Co. Standard Specifications.

6. Provide pavement striping at any point where the multi—use trail crosses existing or proposed pavement 7. All street stub—outs over 250' in length will require a temporary turnaround.

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

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 quality control quidelines, in accordance with St. Louis County

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.

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.

2. 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.

12.1. 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 (5) 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, three (3) at twenty—eight (28) days, and one (1) held in 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 greas shall be remediated to the depth indicated by the contractor's testing firm and approved by a representative of the City Engineer.

14. Sub grade and base beneath pavements shall be compacted to St. Louis 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. 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. 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. Louis County standards 17. Equipment calibration. The developer's contractors and subcontractors must have their equipment calibrated by the following minimum standards.

17.1. Air meter--weekly. 17.2. Cylinder compression—annually by independent calibration service.

17.3. Batch scales—monthly.

17.4. Nuclear testing devices—every six (6) months.

17.5. Proctor equipment—every six (6) months. 17.6. Slump cone—monthly

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 ether w16-9p or w16-7p signs. 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) 20. If the excavations are made in the improved portion of the right-of-way, twelve inches of granular backfill will be placed over exposed facilities and controlled low strength material (CLSM) aka flowable fill will fill the hole with eight inches of the finished surface for concrete pavement. There will be a plastic membrane placed between the rock base and the CLSM to prevent the material from bleeding into the rock base. The remaining eight inches will be restored by placing a 28 day, 4,000 psi concrete mix.

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02/04/21 CITY COMMENT REVS. 04/05/21 CITY COMMENT REVS.

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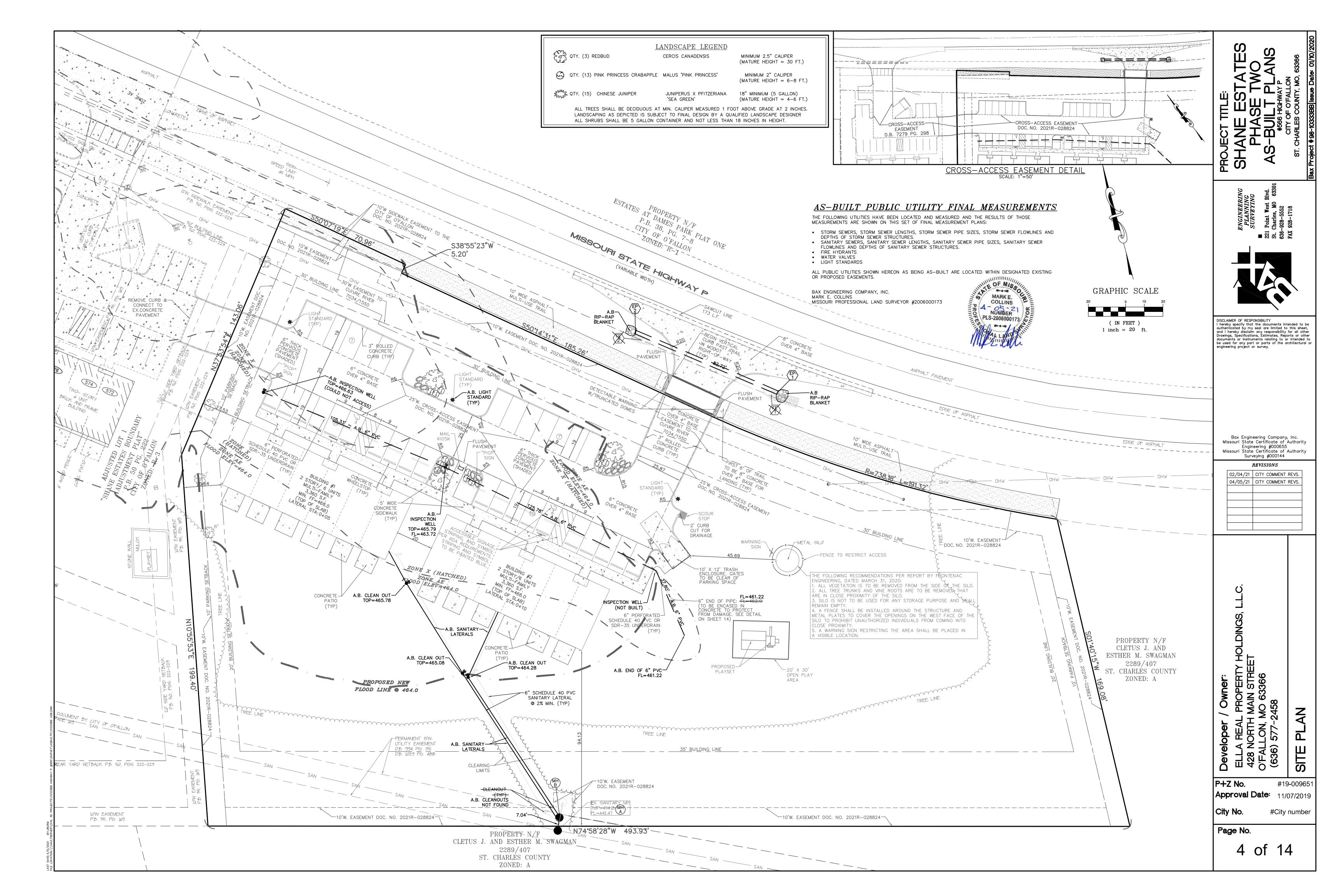
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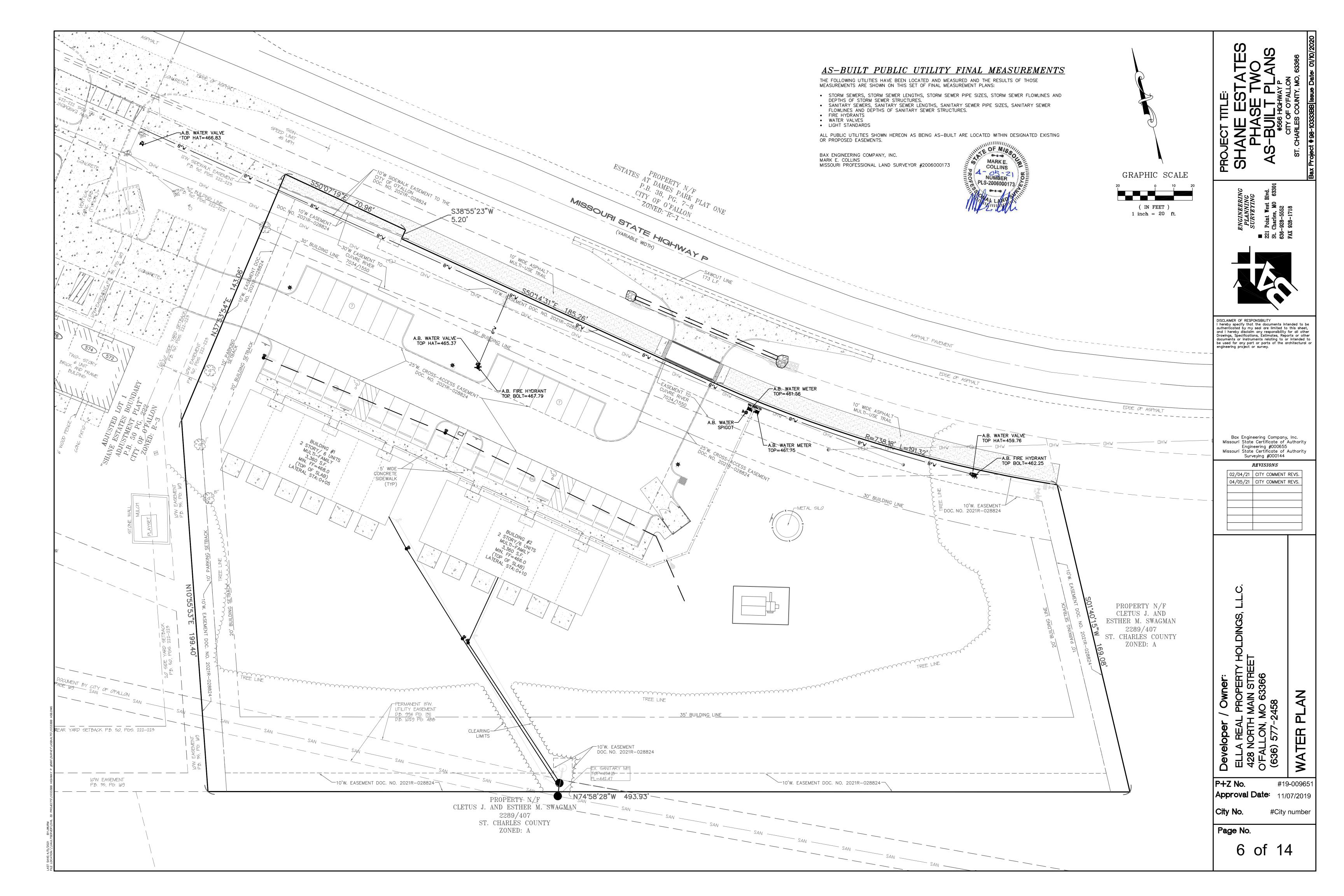
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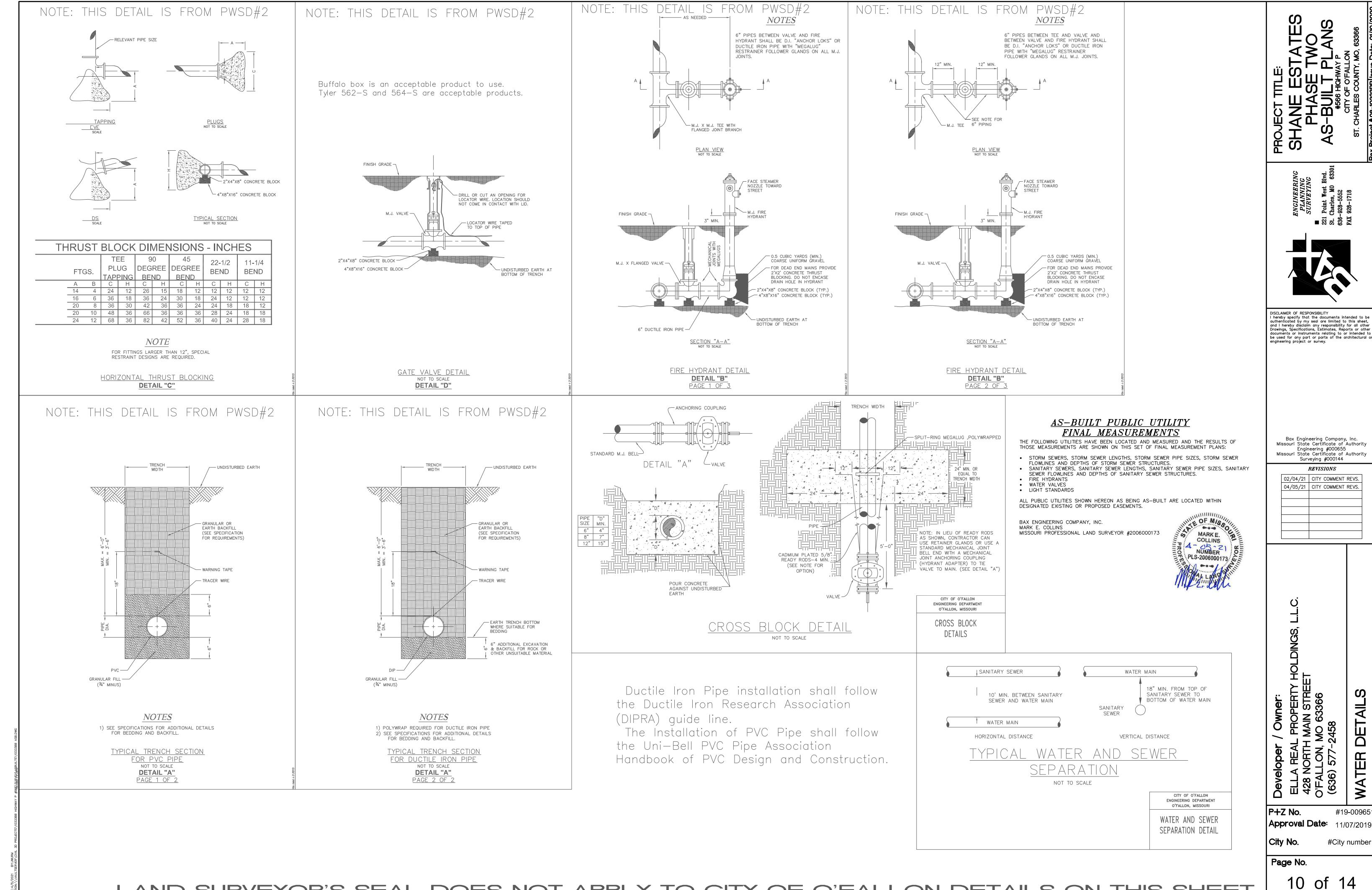
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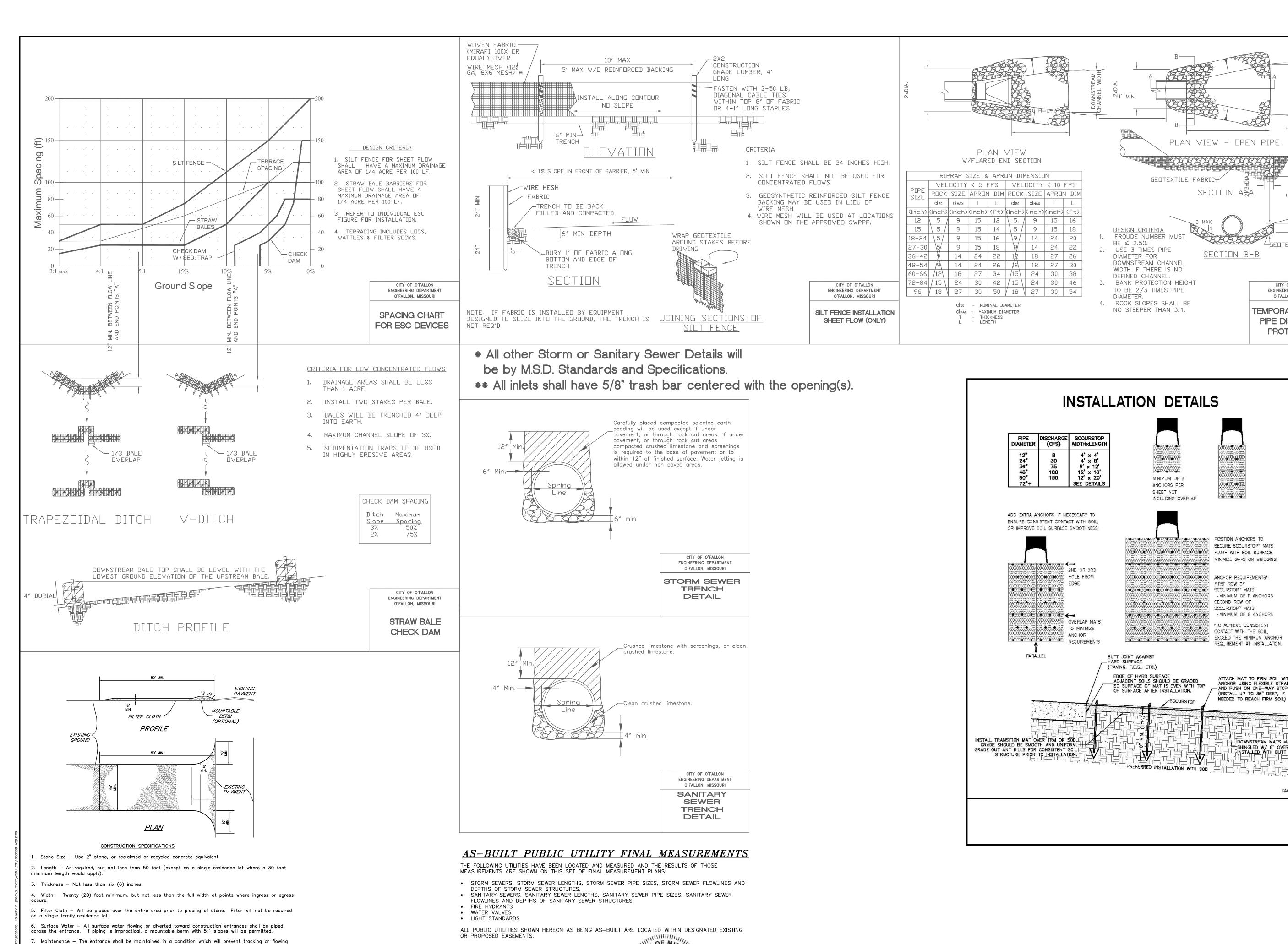
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LAND SURVEYOR'S SEAL DOES NOT APPLY TO CITY OF O'FALLON DETAILS ON THIS SHEET.



COLLINS

BAX ENGINEERING COMPANY, INC.

MISSOURI PROFESSIONAL LAND SURVEYOR #2006000173

of sediment onto public rights—of—way. This may require periodic top dressing with additional stone as

8. Washing — Wheels shall be cleaned to remove sediment prior to entrance onto public rights—of—way. When washing is required, it shall be done on an area stabilized with stone and which drains into an

conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment

STABILIZED CONSTRUCTION ENTRANCE/WASHDOWN AREA

spilled, dropped, washed or tracked onto public rights-of-way must be removed immediately.

9. Periodic inspection and needed maintenance shall be provided after each rain.

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PROJECT TITLE:

SHANING SURVEYING
SU

24" MIN

∕<del>'</del>GEOTEXTILE FABRIC

CITY OF O'FALLON

O'FALLON, MISSOURI

TEMPORARY OUTLET

PIPE DISCHARGE

PROTECTION

PAGE 2 OF 3

ENGINEERING DEPARTMENT



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Engineering #000655
Missouri State Certificate of Authority
Engineering #000655
Missouri State Certificate of Authority
Surveying #000144

REVISIONS

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04/05/21 CITY COMMENT REVS.

02/04/21 CITY COMMENT REVS.
04/05/21 CITY COMMENT REVS.

· REET 6

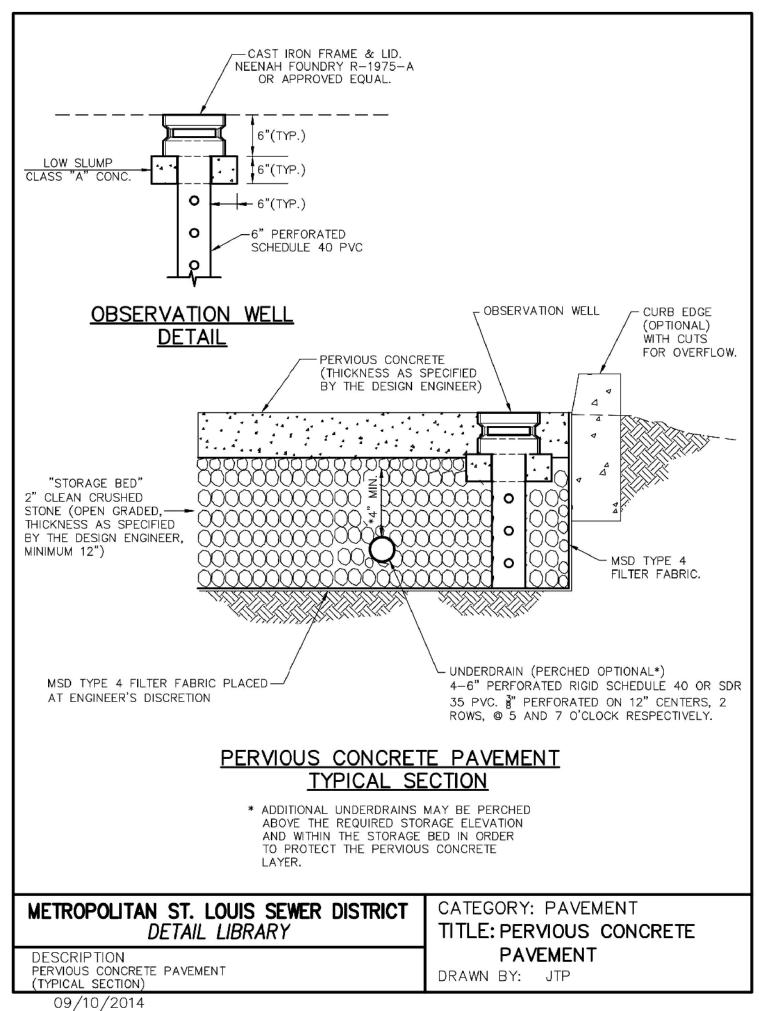
ELLA REAL PROPERTY HOL 428 NORTH MAIN STREET O'FALLON, MO 63366 (636) 577-2458

P+Z No. #19-00965 Approval Date: 11/07/2019

/ No. #City number

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CLUSTER BOX UNIT (CBU)

-ANCHORING METHODS-

CBU's must be level and mounted firmly in concrete, using one of the following

1. The J-bolt method is the preferred method of installation of CBU's on concrete pads;

2. The use of anchor bolts for the installation of CBU's on concrete pads is also

b. ITW Ramset Redhead Trublot, galvanized, 1/2" diameter X 7" overall length

acceptable as long as the methods described below are followed.

Minimum embedment in concrete must be no less than 3-1/2"

c. Rawl Stud, 1/2" diameter X 5 1/2" overall length, galvanized.

Minimum embedment in concrete must be no less than 4"

SINGLE PAD

TRIPLE PAD

QUAD PAD

**D**OUBLE PAD

CLUSTER BOX UNIT (CBU)

-CONCRETE PAD REQUIREMENTS-

- ALL FREE STANDING PADS MUST BE 8" THICK -

\*\*\* WHEN PLACING A PARCEL LOCKER AT ANY CBU LOCATION,

INCREASE THE PAD SIZE BY AN ADDITIONAL 4' X 4'\*\*\*

4' X 4'

4' X 7'

4' X 10'

4' X 13'

a. Hilti Kwik bolt II, 1/2" diameter X 5-1/2" overall length

Catalog Number: 000-453-696, KB II 12-512

Catalog Number: 7324

2 UNITS

3 UNITS

4 UNITS

Stainless Steel Catalog Number: 000-454-744

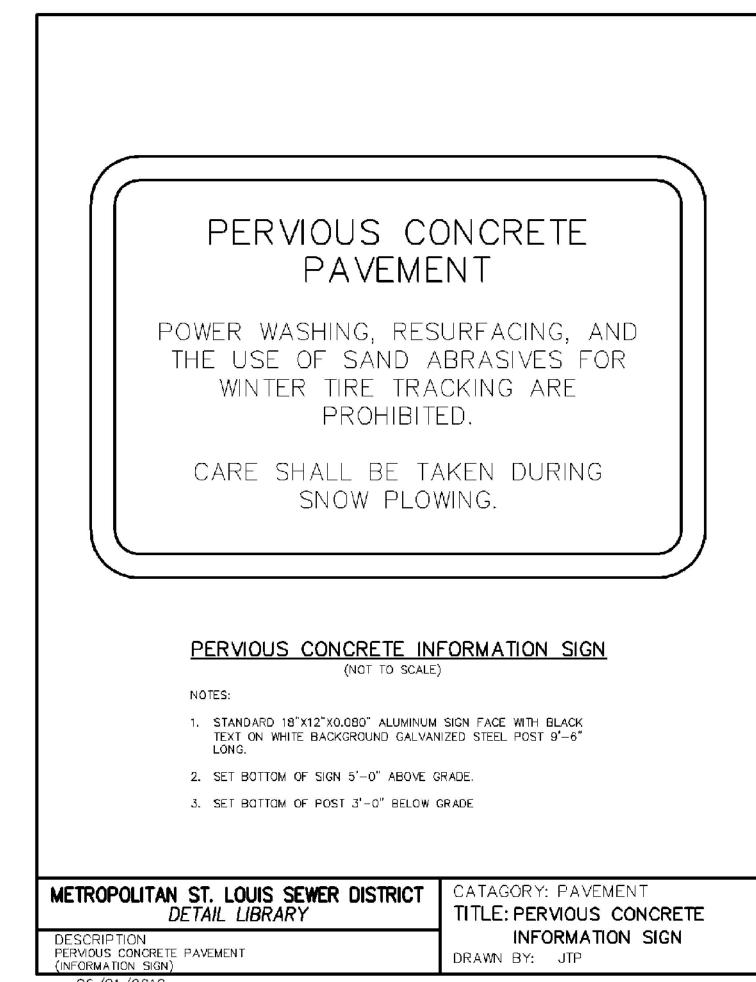
accordance with the manufacturer's instructions.

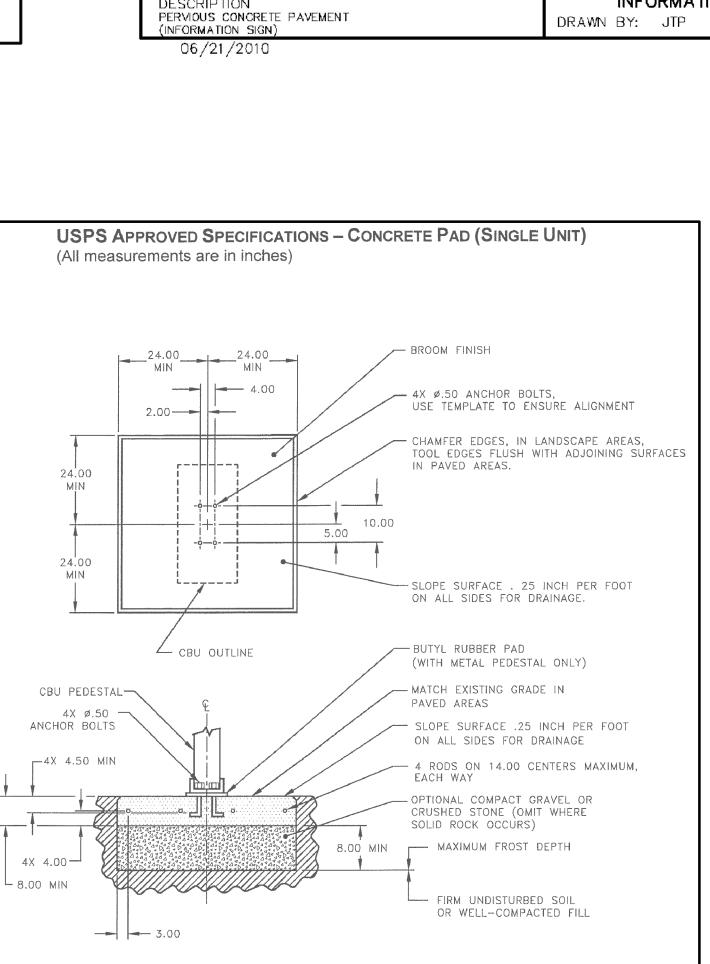
however, the J-bolt pattern must be accurate with the CBU pedestal plate. When

using J-bolts, in order to prevent any damage or accidents that could result from the

exposed bolts, consideration should be given as to the time lapse between pouring

the concrete and the actual installation. Expansion anchors must be installed in



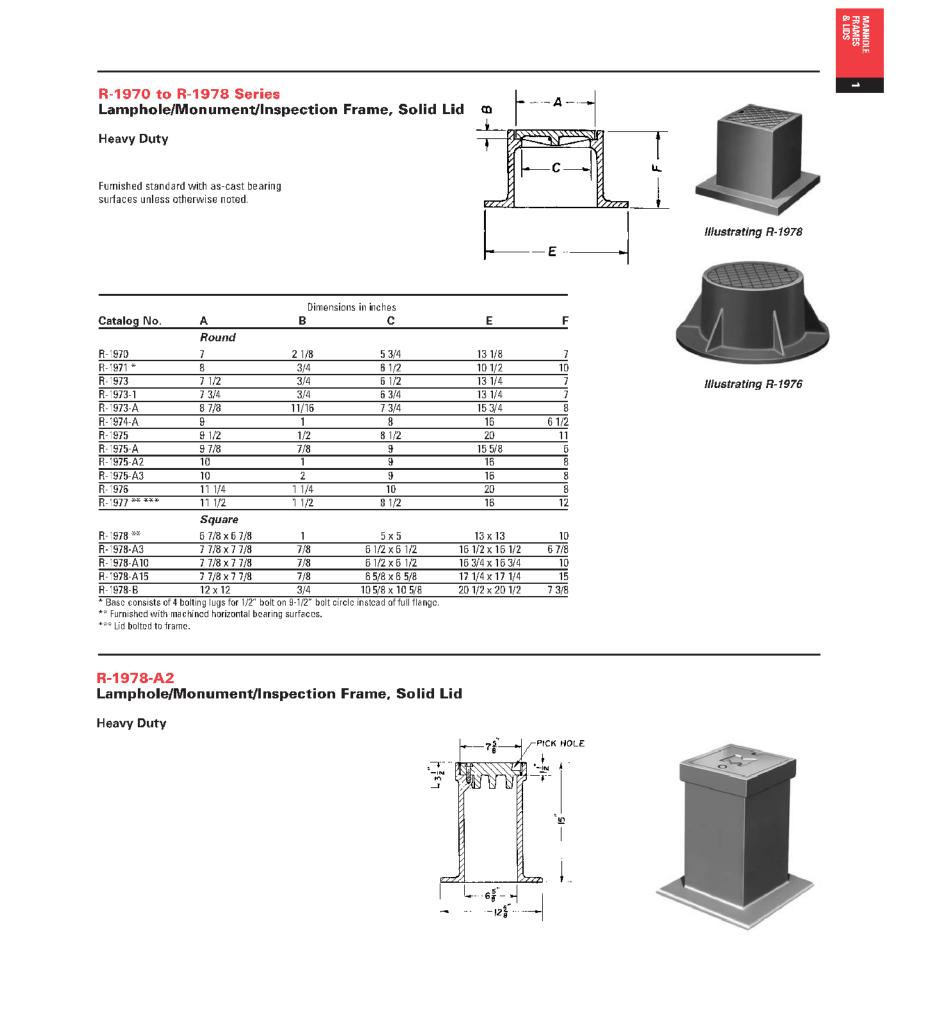


1. CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 3000 PSI @ 28 DAYS, CONTAIN 4% MIN - 6% MAX

AIR ENTRAINMENT AND BE PLACED WITH A 3.50 - 4.50 SLUMP IN ACCORDANCE WITH ACI 301.

3. ANCHOR BOLTS SHALL CONFORM TO ASTM A193, GRADE B8M, TYPE 316 STAINLESS STEEL.

2. REINFORCING STEEL RODS SHALL CONFORM TO ASTM A615, GRADE 60.



CLICK HERE to return to the Table of Contents



#### 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
- FIRE HIDRANIS WATER VALVES LIGHT STANDARDS
- 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



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SCT TITLE

NE ESTATE

PHASE TWO

ENGINEERING
PLANNING
SURVEYING
SURVEYING
221 Point West Blvd.
St. Charles, MO 63301
536-928-5552
FAX 928-1718



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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.

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Engineering #000655
Missouri State Certificate of Authority
Surveying #000144

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04/05/21 CITY COMMENT REVS.

A REAL PROPERTY HOLDINGS, L.L.C.
NORTH MAIN STREET
LON, MO 63366
) 577-2458

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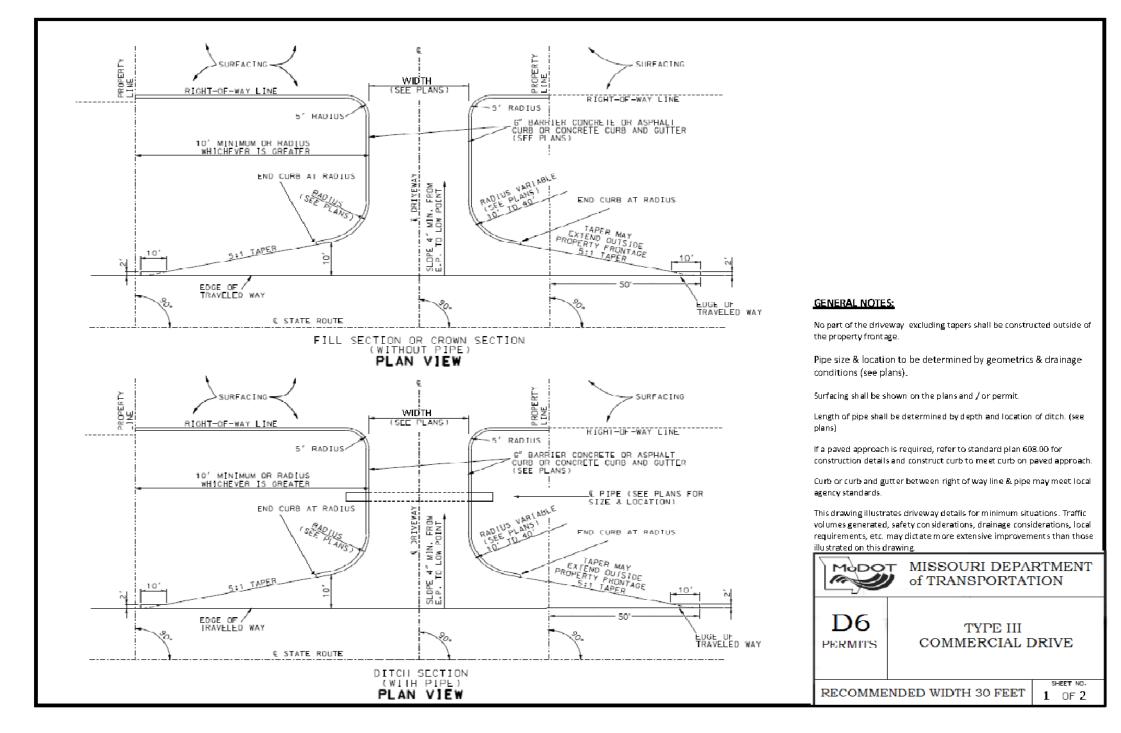
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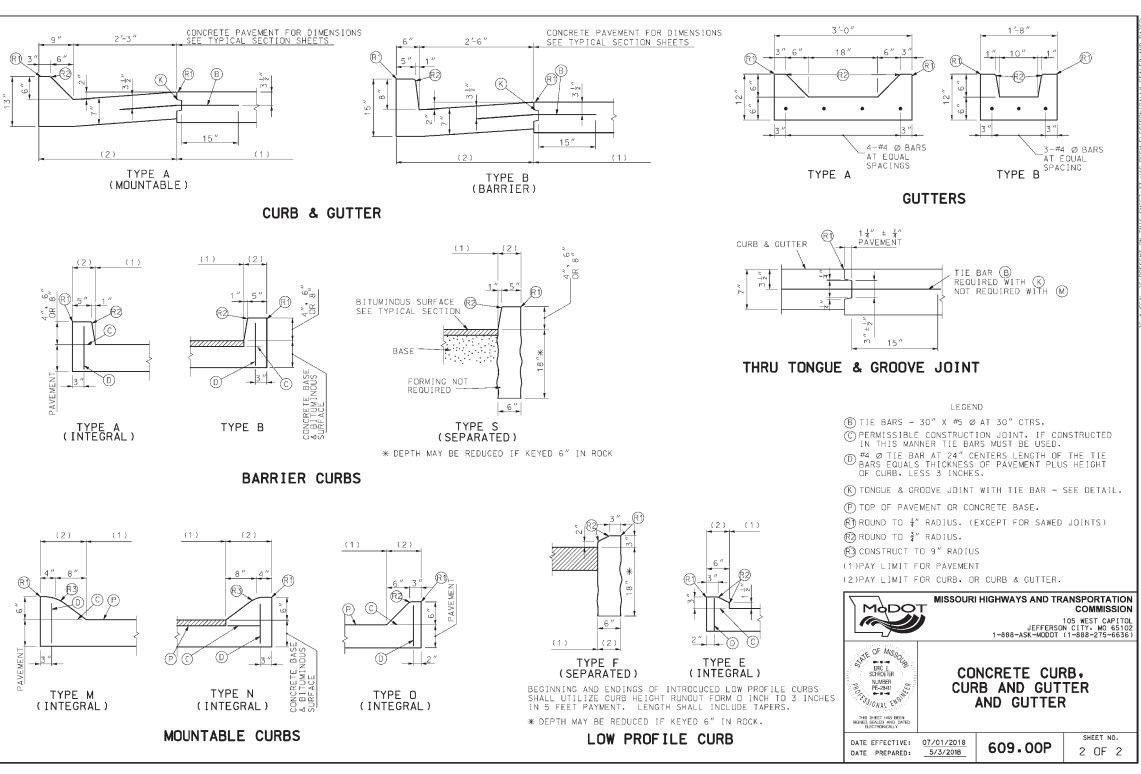
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AS-BUILT PUBLIC UTILITY FINAL MEASUREMENTS

STORM SEWERS, STORM SEWER LENGTHS, STORM SEWER PIPE SIZES, STORM SEWER FLOWLINES AND

ALL PUBLIC UTILITIES SHOWN HEREON AS BEING AS-BUILT ARE LOCATED WITHIN DESIGNATED EXISTING

MARK E.

COLLINS NUMBER NUMBER

PLS-2006000173/4

SANITARY SEWERS, SANITARY SEWER LENGTHS, SANITARY SEWER PIPE SIZES, SANITARY SEWER

THE FOLLOWING UTILITIES HAVE BEEN LOCATED AND MEASURED AND THE RESULTS OF THOSE

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DEPTHS OF STORM SEWER STRUCTURES.

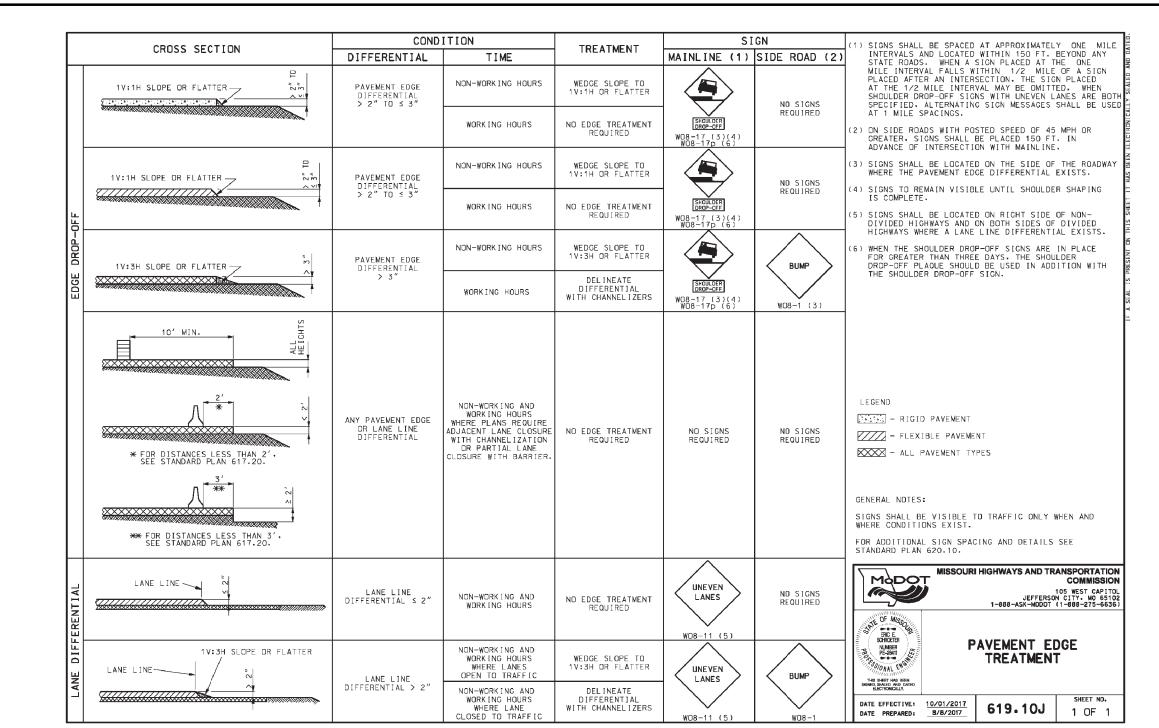
MISSOURI PROFESSIONAL LAND SURVEYOR #2006000173

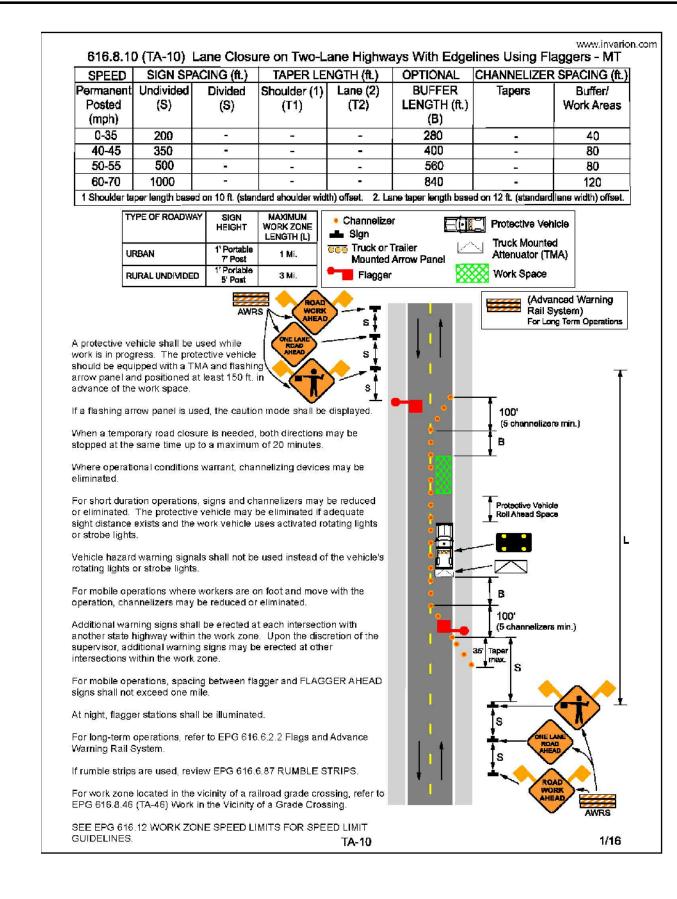
 FIRE HYDRANTS WATER VALVES LIGHT STANDARDS

MARK E. COLLINS

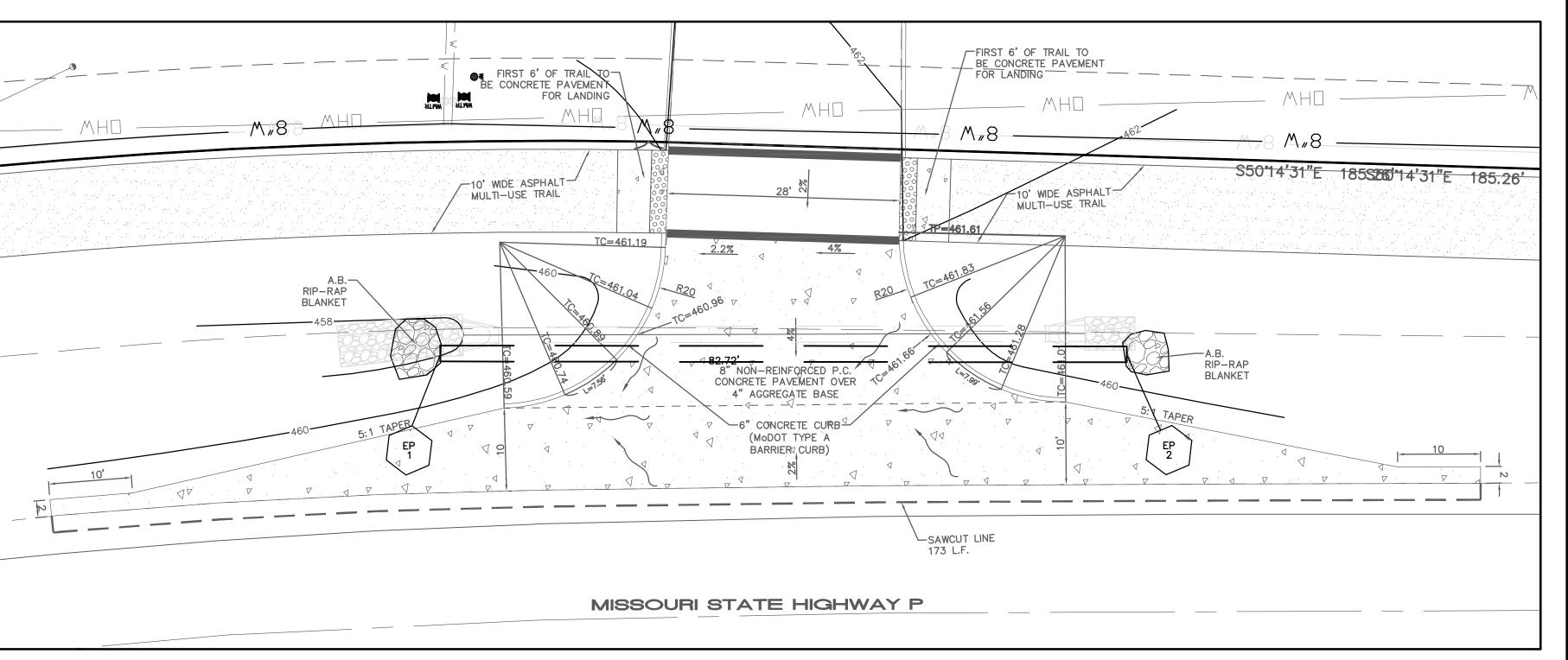
OR PROPOSED EASEMENTS.

BAX ENGINEERING COMPANY, INC.





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ENTRANCE DETAIL SCALE: 1" = 10'

NOTE:
ALL ELEVATIONS ARE TO TOP OF CURB UNLESS OTHERWISE NOTED.

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P+Z No. #19-00965 **Approval Date:** 11/07/2019

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