

A New Development for D-Bat – Town Centre Lot 1 Section 29, Township 48 North, Range 31 West City of Lee's Summit, Jackson County, Missouri

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Utility Notes

- Boundary information, existing utilities and topographic features shown are based on information supplied by owner, surveyor, and others.
- The existing utility locations shown on these plans are approximate and may not include all utility lines present. The contractor shall be responsible to make One Call and coordinate field location of all existing underground utilities prior to beginning excavation/construction activities.
- The contractor shall be responsible for any damage to any utilities or their structures during excavation/construction activities.
- The contractor shall coordinate and be responsible for connection fees, system development fees, taxes, etc. for all main connections and/or extensions with and from the city and/or respective utility unless otherwise coordinated with the Owner. All utility services for this project shall be coordinated with respective utility company by contractor.
- The contractor shall be responsible for adjusting all at-grade utilities such as manhole covers, valve box covers, etc. to finish grade, whether specifically indicated in these plans or not.
- Utilities shown on the plan with specific elevations and/or structure locations are SUE quality level "B", ie: storm sewer, sanitary sewer, water hydrants & valves, utility poles, etc. All other existing utility information shown is SUE quality level "D", primarily retracement of one-call and city records.

Americans with Disabilities Act (ADA) Notes:

- The running and cross slopes for all sidewalks, accessible paths, ramps, designated parking stalls, etc., shall be in compliance with latest Federal ADA guidelines, in addition to any accessibility standards adopted by the governing municipality. Prior to installation/construction, if any discrepancies are found within the plans, the Engineer shall be notified.
- All ADA parking areas shall have NO slopes greater than 2% in any direction. Sidewalk construction must not exceed a 2% cross-slope and an 8.33% running slope.

Legal description:

Lot 1, Lee's Summit Town Centre, Lot 1 & Lot 2, A Subdivision In Lee's Summit, Jackson County, Missouri. Containing 505,722.67 sq. ft. or 11.61 acres more or less.

Utility Contacts

Sanitary – City of Lee's Summit	(816) 969-1900
Water – City of Lee's Summit	(816) 969-1900
Storm Sewer – City of Lee's Summit	(816) 969-1800
Electric – Evergy	(888) 471-5275
Gas – Spire	(816) 756-5252
Telephone – AT&T	(800) 464-7928
Cable – Spectrum	(816) 358-8833

Local Benchmarks:

BM-1: (Sanitary Sewer Manhole, Center of Lid)
Elevation: 1006.88'
N: 1013449.78
E: 2826933.88
BM-2: (Storm Sewer Curb Inlet, Center of Lid)
Elevation: 994.34'
N: 1013518.71
E: 2826136.03

Floodplain Note:

The site lies entirely with "Zone X", areas determined to be outside the 0.2% annual chance floodplain as depicted on the FEMA Flood Insurance Rate Map (FIRM) no. 29095C0430G, Revision Date: January 20, 2017.

Property Legend

—	right of way
---	property lines
----	easements
----	setbacks




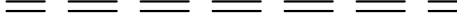



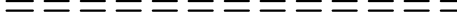
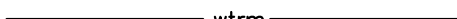












Grading Legend

---	existing minor contour
---	existing major contour
---	proposed minor contour
---	proposed major contour

Utility Legend

---	existing
---	proposed

Linetypes

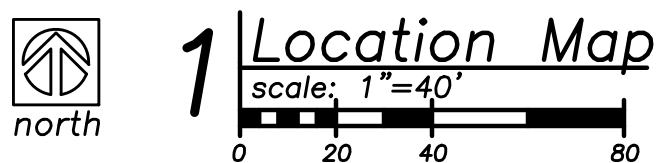
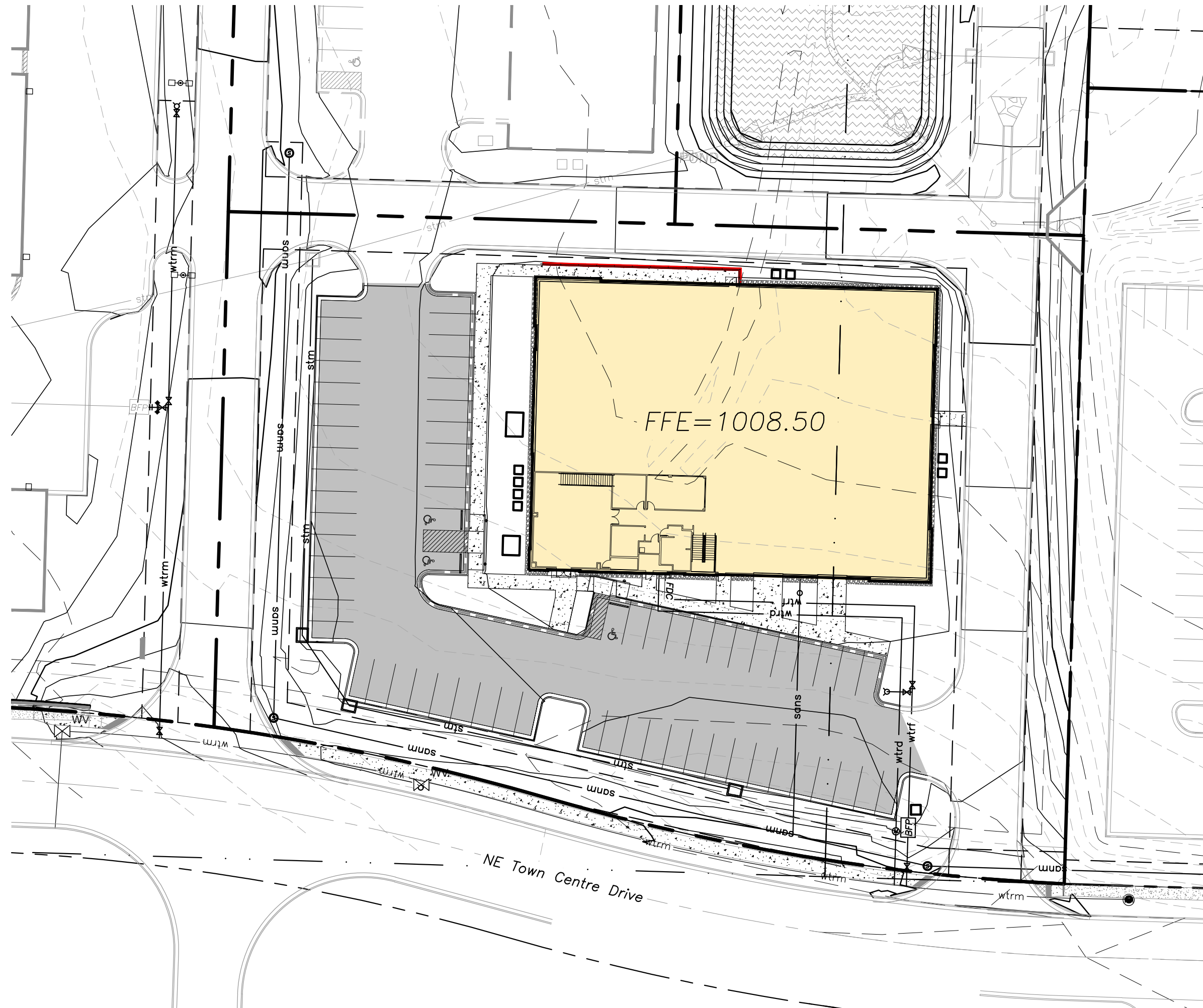
	sanm	sanitary main
	sans	sanitary service
		storm sewer (existing)
		storm sewer (solid wall, proposed)
	strm	storm sewer (solid wall, proposed)
		storm sewer (perforated, proposed)
	wtrm	water main
	wtrf	water service (fire)
	wtrd	water service (domestic)
	wtri	water service (irrigation)
	gasm	natural gas main
	goss	natural gas service schematic
	elpu	underground primary electric
	elsu	underground secondary electric
	elpo	overhead electric
	datu	underground cable/phone/data
	datasu	underground cable/phone/data service
		fence-chainlink
		fence-wood
		fence-barbed wire
		treeline

Symbols

⊙	sanitary manhole
⊙	service cleanout
⊙	force main release valve
⊙	rectangular structure
⊙	circular structure
⊙	fire hydrant
⊙	water valve
⊙	water meter
⊙	backflow preventer
⊙	natural gas meter
⊙	service transformer (pad mount)
⊙	primary switch gear
⊙	light pole
⊙	cable/phone/data junction box
⊙	street light
⊙	pedestrian street light
⊙	electric pole
⊙	guy wire
⊙	end section

General Notes

- All construction, including the work done in the right of way, shall follow the City of Lee's Summit Design & Construction Manual.
- Erosion Control shall be per the Erosion and Sediment Control Program Manual of the City of Lee's Summit, Missouri.
- All work and materials shall be subject to inspection and approval by the owner or the owner's representative. Any change or deviation from these plans must be authorized by the owner or the owner's representative.
- All traffic control in connection with construction in the right-of-way shall be in conformance with the Manual of Uniform Traffic Control Devices.
- The contractor shall be required to provide a stabilized construction entrance to prevent mud from being deposited onto adjacent roads.
- The contractor shall be responsible for obtaining all required permits, paying all fees, and otherwise complying with all applicable regulations governing the project.
- The contractor shall protect from damage or injury all property including survey monuments, property markers, benchmarks, etc. Items damaged shall be reset by a professional land surveyor licensed in the state of Missouri, at the contractor's expense.
- The contractor shall be responsible for the restoration of the right-of-way and for damaged improvements such as curbs, sidewalks, street light and traffic signal junction boxes, traffic signal loop lead-ins, signal poles, etc. Damaged improvements shall be repaired in conformance with the latest city standards and to the city's satisfaction.
- The contractor shall sod all disturbed areas within the public street right-of-way.
- Paving shall conform to the soils report, and these drawings, any identified discrepancies shall be brought to the attention of the engineer.
- The contractor shall contact the City's Development Services Engineering Inspection to schedule a pre-construction meeting with a field engineering inspector prior to any land disturbance work at (816) 969-1200.
- All concrete for public improvements shall comply with the Standards and Specifications of the Kansas City Metropolitan Materials Board (KCMMB). Structural concrete shall be 5,000 psi and nonstructural concrete shall be 4,000 psi.
- A right-of-way work permit and/or street excavations permit shall be obtained by the contractor to complete all utility work within the public street right-of-way.
- According to the MDNR Record Database and Field Survey, there is no evidence suggesting presence of any active, inactive or capped oil and/or gas wells on the property.



a new development for

D-BAT - Town Centre Lot 1

540 NE Town Centre Drive

Lee's Summit, Missouri

date
02.28.2022

drawn by
JMP
checked by
PAM

revisions
05.09.2022 01
05.19.2022 02

sheet number

C1.0

drawing type
FDP & Permit

project number
20231

General Notes:

- The Contractor shall be responsible for obtaining all required permits, paying all fees, and otherwise complying with all applicable regulations governing the project.
 - All materials, workmanship, and construction shall meet or exceed the city standards. Where there is conflict between these plans and standards, the higher quality standard as determined by the engineer shall apply. All work shall be inspected and approved by contractor.
 - All work and materials shall be subject to inspection and approval by the owner or the owner's representative. Any change or deviation from these plans must be authorized in writing by the owner or the owner's representative prior to work being completed.
- A**
- All construction shall follow the City of Lee's Summit Design & Construction Manual.
 - Lineal foot measurements shown on the plans are horizontal measurements, not slope measurements. All payments shall be made on horizontal measurements.
 - No geological information is shown in these plans.
 - Prior to commencement of work, the contractor shall notify all utility companies which have facilities in the near vicinity of the construction to be performed.
 - All waste material resulting from the project shall be disposed of off-site in an approved landfill. All excavation shall be unclassified. No separate payment will be made for rock excavation. Contractor is responsible for all haul off material.
 - The Contractor shall be required to provide a stabilized construction entrance to prevent mud from being deposited onto adjacent roads.
 - All mud, dirt, and debris tracked onto the parking lot or any roadway shall be removed immediately by the contractor.
 - The Contractor shall be responsible for keeping the public streets in the vicinity of the job site clean and free of rocks, soil and debris. Streets and/or parking areas will be scraped and swept on a daily basis by the general contractor.
 - The Contractor shall protect from damage all survey monuments, property markers, benchmarks, etc. Items damaged shall be reset by a professional land surveyor licensed in the state of Missouri, at the contractor's expense.
 - Paving shall conform to the minimum design standards as required by the city and these drawings. If a geotechnical report is provided for the project, the greater pavement requirement between the city's minimum design standards and the geotechnical report shall be used.

- A**
- The contractor shall contact the City's Development Services Engineering Inspection to schedule a pre-construction meeting with a field engineering inspector prior to any land disturbance work at (816) 969-1200.
 - All concrete for public improvements shall comply with the city standards and specifications. If no city standards and specifications are provided, then the contractor shall comply with the standards and specifications of the Kansas City Metropolitan Materials Board (KCMMB) unless otherwise noted. Structural concrete shall be 5,000 psi and nonstructural concrete shall be 4,000 psi.
 - The contractor shall be responsible for the restoration of the right-of-way and for damaged improvements such as curbs, sidewalks, street light and traffic signal junction boxes, traffic signal loop lead-ins, signal poles, etc (offsite and onsite). Damaged improvements shall be repaired in conformance with the latest city standards and to the city's satisfaction.
 - All work within the road right-of-way shall conform to the technical specifications and design criteria for public improvement projects of the city of Lee's Summit, Missouri A right-of-way work permit and/or street excavations permit shall be obtained by the contractor if required to complete all work within the public right-of-way.
 - All traffic control in connection with construction in the right-of-way shall be in conformance with the Manual of Uniform Traffic Control Devices and/or the jurisdictional authority. It is the contractor's responsibility to obtain a traffic control permit if required.
 - All waste materials, trash and construction debris shall be collected and stored in dumpsters. No construction waste shall be buried on site. All hazardous waste materials will be disposed of in the manner specified by local, state and federal regulations. Site personnel shall be instructed in these practices, and the construction manager shall be responsible for seeing that these practices are followed.
 - Recommendations made by the geotechnical engineer, to be retained by the owner, and contained in the geotechnical report shall govern project conditions unless noted otherwise. Paving shall conform to the the greater pavement requirement between the city's minimum design standards and the recommendations made in the geotechnical report.
 - The Contractor shall grade areas to provide positive drainage.
 - The contractor shall be responsible for the coordination of work between suppliers and subcontractors involved in the project, including staging of construction details.
 - All disturbed areas shall be maintained for dust control. Sprinkling tank trucks shall be available at all times & used on on-site disturbed areas, and other areas where dust becomes a problem as a result of construction activity.
 - Nothing indicated on these drawings shall relieve the contractor from complying with appropriate safety regulations.

Utility Notes:

- Boundary information, existing utilities and topographic features shown are based on information supplied by owner, surveyor, and others.
- The existing utility locations shown on these plans are approximate and may not include all utility lines present. The contractor shall be responsible to contract "One Call" and coordinate field location of all existing underground utilities prior to beginning excavation/construction activities.
- The contractor shall be responsible for any damage to any utilities or their structures during excavation/construction activities. Utilities include but are not limited to a service such as electricity, communication, water, public transportation (including traffic signals), storm systems, and items provided by a public utility.
- The contractor shall coordinate and be responsible for connection fees, system development fees, taxes, etc. for all main connections and/or extensions with and from the city and/or respective utility unless otherwise coordinated with the Owner. All utility services for this project shall be coordinated with respective utility company by contractor.
- The contractor shall be responsible for adjusting all at-grade utilities such as manhole covers, valve box covers, etc. to finish grade, whether specifically indicated in these plans or not.
- Utilities shown on the plan with specific elevations and/or structure locations are SUE quality level "B", ie: storm sewer, sanitary sewer, water hydrants & valves, utility poles, etc. All other existing utility information shown is SUE quality level "D", primarily retracement of one-call and city records.
- Refer to mechanical, electrical, and plumbing (MEP) plans for utility service sizes and exact locations. Refer to site electric plans for electric construction details.
- Provide temporary support for existing utility lines that are encountered during construction until backfilling is complete.
- Backfill all utility trenches according to the most recent edition of the jurisdictional standards.
- All utilities shall be brought within 5' of the building to connect to plumbing contractors work unless otherwise specified.
- The Contractor shall adjust all utility fixtures, manholes and inlets to finished grade as required.
- The Contractor shall maintain 18" minimum vertical clearance between storm sewer and sanitary sewer pipes and 18" minimum vertical clearance between sanitary sewer and water main unless otherwise specified.
- Contractor shall prevent entry of mud, dirt, debris, and other material into new and existing storm sewer systems. Should any contamination occur during construction, the contractor shall clean at contractor's expense. Upon completion of all storm sewer improvements, all new and existing pipe and structures shall be cleaned out.
- Electrical, lighting, and data conduit layout shown is for graphical purposes only. See MEP plans for more detail.
- The Contractor shall provide all temporary power, process, and utility service bypasses and connections as required.

Erosion Control Notes:

- The construction of the sediment basin, installation of the silt fencing, the maintenance of the drainage swales, and the construction of the stabilized entrance shall be completed first, prior to any clearing and grading of any portions of the site. The Disturbed portions of the site where construction activities have permanently ceased shall be stabilized with permanent seeding no later than 14 days after the last construction activity, refer to SWPPP. Roadway swales shall be stabilized with Erosion Control Devices. Once construction activity ceases permanently in an area, that area shall be stabilized with permanent seed and mulch. Only after the entire site has been stabilized, the silt fencing shall be removed.
- The general contractor, or designated Erosion Control Contractor, shall be responsible for construction and maintenance of erosion control devices and practices. The contractor shall be responsible for implementation of, and ensuring compliance of, the project Storm Water Pollution Prevention Plan (SWPPP), a copy of which shall be obtained from the Design Engineer. The SWPPP shall be maintained on site per NPDES requirements and shall be available for review at any time, by any authorized Federal, State, or local review official, as well as the Design Engineer. The general contractor, or designated Erosion Control Contractor, shall also be responsible for ensuring compliance with, and paying any fees associated with, the State of Missouri General Permit for Stormwater Runoff associated with construction activities, a copy of which shall be maintained in the aforementioned SWPPP.
- This project shall be constructed in compliance with the land disturbance permit, and conform to the standards and specifications of the city of Lee's Summit, Missouri, prior to any land disturbance changes.
- Erosion and any sedimentation from work on this site shall be contained on the site and not allowed to collect on any offsite areas or in waterways. Waterways include both natural and man-made open ditches, streams, storm drains, lakes and ponds. Refer to erosion control plans for more information.
- The contractor shall be responsible to control downstream erosion and siltation during all phases of construction. Erosion Control work and procedures shall be in place prior to beginning excavation/construction activities. To ensure progressive stabilization of disturbed earth, Erosion control devices shall be staged, installed and maintained throughout land disturbance activities as directed in the drawings, project manual and in accordance with all federal, state and local standards until the site is stabilized.
- The contractor shall implement and maintain Erosion Control Devices as shown in the drawings and project manual before, and at all times during the construction of this project. Any modifications to the devices due to construction or changed conditions shall be complied with as required or as directed by the city of Lee's Summit, Missouri.
- The contractor shall be responsible for installation and maintenance of all Erosion Control Devices. This includes providing berms, silt fence, or other means to prevent erosion from reaching the right of way and offsite boundaries. In the event the prevention measures are not effective, the contractor shall remove any debris and erosion, restoring the right of way to original or better condition.
- Contractor is to provide erosion protection for all storm sewer inlets.
- If any of the Erosion Control Devices on the site are deemed inadequate or ineffective, the city of Lee's Summit, Missouri has the right to require additional Erosion Control measures at the expense of the general contractor.
- If any pump-driven dewatering is needed, it shall be discharged through a filter bag over a well-vegetated area. The pump must discharge at a non-erosive velocity. If necessary, an approved energy dissipater may be used.
- Permanent BMP's for any disturbed land area shall be completed by the general contractor within 5 calendar days after final grading or the final earth change has been completed. When it is not possible to permanently stabilize a disturbed area after land disturbance activity ceases, temporary Erosion control devices shall be implemented immediately. All temporary Erosion Control Devices shall be maintained until permanent BMP devices are implemented. All permanent BMP's will be implemented and established before a certificate of compliance is issued.
- Strip topsoil only from those areas that will be disturbed by excavation, filling, road building, or compaction by equipment. Refer to the geotechnical report for depths of stripping. Put sediment basins, diversions, and other controls into place before stripping.
- When topsoiling, maintain needed erosion control practices such as diversions, grade stabilization structures, berm, dikes, level spreaders, waterways and sediment basins.
- Grades on the areas to be topsoiled which have been previously established shall be maintained.
- Bonding – Immediately prior to dumping and spreading of topsoil, loosen the subgrade by discing or scarifying to a depth of at least 4", to permit bonding of the topsoil and subsoil.
- The general contractor shall inspect the Erosion Control Devices once every 14 days under any circumstances, within 24 hours of rainfall, and daily during a prolonged rain event unless otherwise noted in the SWPPP or by the jurisdictional authority. A log of inspection report shall be maintained and accessible in accordance with National Pollution Discharge Elimination System (NPDES) requirements. Any required maintenance shall be provided within 72 hours.
- Install silt fence, inlet filters, and other Erosion Control Devices as indicated in the drawings, per APWA and authority regulations, and at additional affected areas as necessary. Build-up of sediment shall be removed promptly per authorities regulations. If silt fence decomposes or becomes ineffective prior to the end of expected usable life and the barrier is still required, the silt fence shall be replaced promptly. Sediment shall be removed from sediment traps or basins when design capacity has been reduced to 50%. Contractor shall flare the ends of the silt fence uphill in order to temporarily impound runoff.
- Earthen berms shall be regularly inspected, and inspected after each rainfall event. Repairs to earthen berms shall be made immediately. If the earthen berm shows signs of erosion, and it is determined that material must be added to fix the berm, the material shall be properly placed, compacted and reseeded. The berm shall be reseeded and stabilized, as needed, to maintain its soundness whether or not there has been any rainfall.
- Drainage swales shall be inspected regularly and after every rainfall event. Repairs to drainage swales shall be made immediately. If the flow channel and/or outlets show signs of deficiency, the damaged area(s) shall be restabilized and reseeded, as needed, to prevent further damage. If additional measures are needed to eliminate issues, contractor shall notify the engineer for possible modifications.
- Refer to the jurisdictional authority for temporary gravel construction entrance details. If not specified, refer to APWA standards. The entrance and exit areas of the project shall be cleared of all vegetation, roots, and other objectionable material. The gravel shall be placed to the proper dimensions and graded to a smooth and even slope. Construction entrance drainage shall be provided to carry water to a sediment trap or other suitable outlet.

Stockpiling Notes:

- Select stockpile location to avoid slopes and natural drainageways, avoiding traffic routes. On large sites, re-spreading is easier and more economical where topsoil is stockpiled in small piles located near areas where they will be used.
- Sediment Barriers – Use sediment fences or other barriers where necessary to retain sediment.
- Temporary Seeding – Protect topsoil stockpiles by temporarily seeding as soon as possible, not to exceed 14 days, weather permitting, after the formation of the stockpile.
- Permanent Vegetation – If stockpiles will not be used within 12 months, they must be stabilized with permanent vegetation to control erosion and weed growth.
- All stockpiled soils shall be maintained in such a way as to prevent erosion from leaving the site. Silt fence must be installed around the perimeter of the stockpile.

Seeding Notes:

- Seeding shall be as follows unless otherwise stated in the landscape plans.
- Annual rye grass, wheat, or oats should be used for temporary seeding. Apply rye grass at 120lbs. per acre, wheat or oats at 100lbs. per acre.
- A mixture of 65% kentucky bluegrass and 35% chewing fescue or creeping red fescue should be used for permanent seeding. Apply the mixture at 2lbs. per 1000ft².
- Seedbed preparation-Install necessary mechanical erosion and sedimentation control practices before seeding, and complete grading according to the approved plan. Lime and fertilizer needs should be determined by soil test. Apply the lime and fertilizer evenly and incorporate into the top 4"-6" of soil by discing or other suitable means.
- All seeding shall be performed during favorable weather conditions and only during normal and accepted planting seasons when satisfactory growing conditions exist. The planting operations shall not be performed during times of extreme drought, when ground is frozen or during times of other unfavorable climatic conditions unless otherwise approved by owner's representative. The contractor assumes full and complete responsibility for all such plantings and operations.
- Seed should be labeled in accordance with U.S. Department of Agriculture rules and regulations under the federal seed act and comply with the requirements of the Missouri seed law. Labels contain important information on seed purity, germination, and presence of weeds. Weed seed should not exceed 1.0% by weight of the mixture.
- Apply seed uniformly with a cyclone seeder, drill, cultipacker seeder, or hydroseeder. Small grains should be planted no more than 1" deep, and grasses and legumes no more than ½".
- Generally, a permanent stand of vegetation cannot be determined to be fully established until soil cover has been maintained for one full year from planting. Inspect seeded areas for failure and make necessary repairs and re-seedings within the same season, if possible.
- The Contractor shall seed all disturbed areas unless otherwise noted by landscape plans. Immediately after seeding, mulch all seeded areas with unweathered small grain straw, spread uniformly at the rate of 1-2 tons per acre or 100lbs (2-3 bales) per 1000ft². The mulch should be anchored with disc type mulch anchoring tool or other means as approved by the jurisdictional authority. Mulch matting may be used in lieu of loose mulch.
- The Contractor shall sod all disturbed areas within the public street right-of-way. Refer to city and state standards for proper installation.

Demolition Notes:

- At the site, the Contractor shall maintain the required documents for immediate review, included but not limited to: Site Safety Plan, Demolition Permits, Street Closure Permits, Contract Documents, Demolition Plans, Salvage Verification Forms, SWPPP Etc.
- The Contractor shall notify all utility companies for field verification and disconnection of utilities prior to any work. Coordination is required for both temporary and permanent utility services that serve the site including, but not limited to: water lines, power, telephone, cable, storm sewer, sanitary sewer with the city and/or respective utility.
- The Contractor is specifically cautioned that the locations and/or elevation of existing utilities as shown on these plans are based on records of the various utility companies, and where possible, measurements taken in the field. The information is not to be relied on as being exact or complete. Contractor shall contact One Call utility information service for utility locates. The Contractor must call the appropriate utility companies at least 72 hours before any excavation to request exact field location of utilities. The Contractor shall also coordinate and allow access for utility companies to perform any disconnection or relocation activities. It shall be the responsibility of the Contractor to relocate all existing utilities which conflict with the proposed improvements shown on the plans.
- Remaining building structures and remaining utility services shall be protected from damage. Damage to any existing features to remain will be replaced at the Contractor's expense.
- Areas disturbed during demolition shall be thoroughly evaluated by the geotechnical engineer responsible for site preparation prior to placement of structural fill. All disturbed soils shall be undercut prior to placement of structural fill, per the geotechnical recommendations. Contractor shall notify the geotechnical engineer at least 72 hours prior to placement of structural fill.
- Excavations created by the removal of any existing utility lines that extend below design grades shall be cut wide enough to allow use of heavy construction equipment to compact the fill. Base of the excavations shall be thoroughly evaluated by the geotechnical engineer prior to placement of fill. If existing utilities are to be left in-place, existing trench backfill shall be evaluated in accordance with the recommendations of evaluation of existing fill.
- The Contractor shall be responsible for obtaining all Federal, State, and local permits, obtaining all inspections, and shall conform to all governing codes and regulations required to perform necessary abatement during demolition, should hazardous materials be encountered.
- Contractor is responsible for legally disposing of all materials and associated cost of interim storage facilities.
- For tree & stump removal, the Contractor shall remove all root systems from the site not designated to be saved. Materials disturbed during removal of stumps shall be undercut and replaced with structural fill. A zone of desiccated soils may exist in the vicinity of the trees. The desiccated soils have a higher swell potential and shall be undercut and replaced with structural fill.
- No construction waste shall be buried on site. All hazardous waste materials will be disposed of in the manner specified by local, state and federal regulations.

Retaining Wall Notes:

- Site retaining wall improvements shall be designed by a licensed professional engineer retained by the contractor. The wall engineer and contractor shall satisfy themselves of the conditions of the surrounding site features and any interactions with the proposed improvements.
- Retaining wall design drawings and specifications shall be provided to the owner and owner's representative for review and approval. All retaining wall designs shall be signed and sealed by a registered Professional Engineer licensed in the state of Missouri. Design services shall be included in retaining wall pricing.
- Refer to Retaining Wall drawings for wall information. Civil plan set shall only be used for general location and spot elevations.
- The Contractor is responsible for coordinating all inspections, certifications, permits, fees and close out of the wall unless otherwise determined. Contractor shall notify wall design engineer for final inspection. Contractor shall include in construction cost for all of the above items related to the installation of the retaining wall.
- Any wall shown is a schematic representation of the proposed walls. The spot elevations denoting retaining walls are provided on the site grading plan.
- If the wall is greater than 30" and is in an accessible area, guard rails are required per code.

Local Benchmarks:

BM-1: (Sanitary Sewer Manhole, Center of Lid)
Elevation: 1006.88'
N: 1013449.78
E: 2826933.88

BM-2: (Storm Sewer Curb Inlet, Center of Lid)
Elevation: 994.34'
N: 1013518.71
E: 2826136.03

Floodplain Note:

The site lies entirely with "Zone X", areas determined to be outside the 0.2% annual chance floodplain as depicted on the FEMA Flood Insurance Rate Map (FIRM) no. 29095C0430G, Revision Date: January 20, 2017.

Fire Protection Notes:

- Plans and specifications, in accordance with NFPA 24, for the private fire line shall be submitted for review and approval prior to installation.
- Underground fire line installation including thrust blocks shall be inspected prior to being backfilled.
- Hydrostatic testing and flushes shall be completed with the fire department as a witness

Utility Legend

existing
proposed

Linetypes

sanm	sanitary main
sans	sanitary service
stms	storm sewer (existing)
stms	storm sewer (solid wall, proposed)
stms	storm sewer (solid wall, proposed)
stms	storm sewer (perforated, proposed)
wtrm	water main
wtrf	water service (fire)
wtrd	water service (domestic)
wtri	water service (irrigation)
gasm	natural gas main
gass	natural gas service schematic
elpu	underground primary electric
elsu	underground secondary electric
elpo	overhead electric
datu	underground cable/phone/data
datu	underground cable/phone/data service
fence-chainlink	fence-chainlink
fence-wood	fence-wood
fence-barbed wire	fence-barbed wire
treeline	treeline

Symbols

S	sanitary manhole
co	service cleanout
fmv	force main release valve
□	rectangular structure
○	circular structure
Y	fire hydrant
WV	water valve
M	water meter
BFP	backflow preventer
NG	natural gas meter
T	service transformer (pad mount)
S	primary switch gear
☆	light pole
C	cable/phone/data junction box
—○—	street light
—○—	pedestrian street light
⊘	electric pole
—	guy wire
⊢	end section

Property Legend

right of way
property lines
easements
setbacks

Grading Legend

existing minor contour
existing major contour
proposed minor contour
proposed major contour

Construction Legend

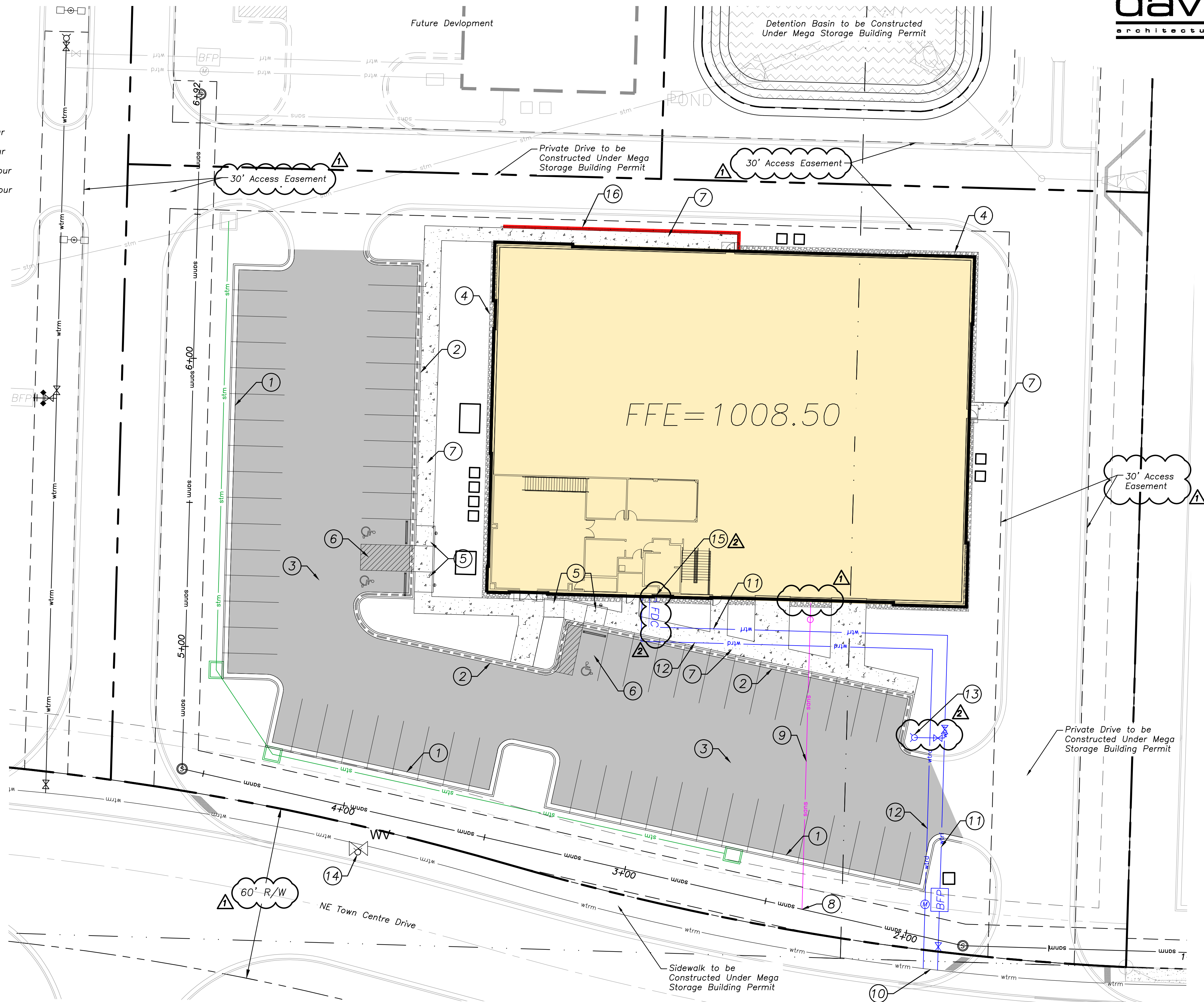
concrete pavement
concrete sidewalk
standard curb & gutter
standard dry curb & gutter
gravel

Utility Legend

sanm	existing sanitary main
wtrm	existing water main
stms	existing storm sewer
gasm	existing gas main
elpu	existing underground electric
elsu	existing overhead electric
elpo	existing underground data
datu	existing underground data
sanm	proposed sanitary main
sans	proposed sanitary service
stms	proposed storm sewer
wtrf	proposed fire line
wtrd	proposed water service
stms	proposed storm sewer
gasm	proposed gas main
gass	proposed gas service
elpu	proposed underground primary electric
elsu	proposed underground secondary electric
elpo	proposed overhead electric
datu	proposed underground data

Americans with Disabilities Act (ADA) Notes:

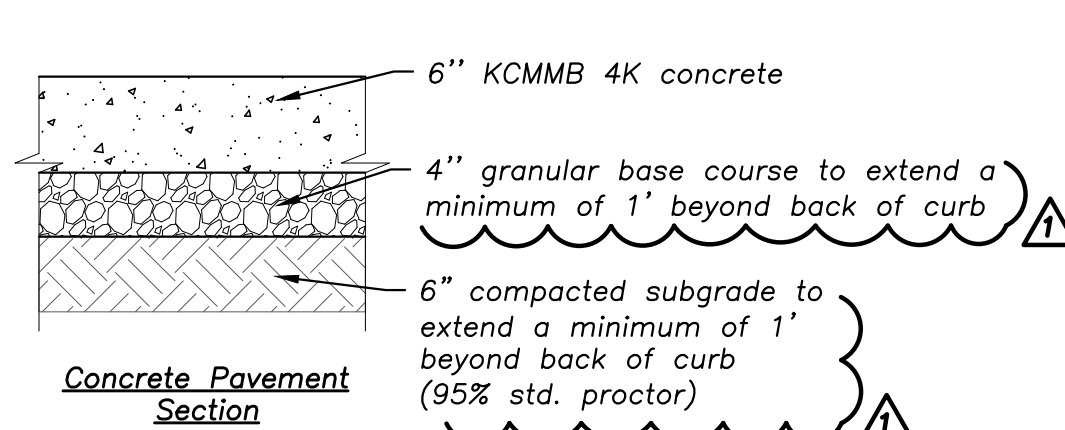
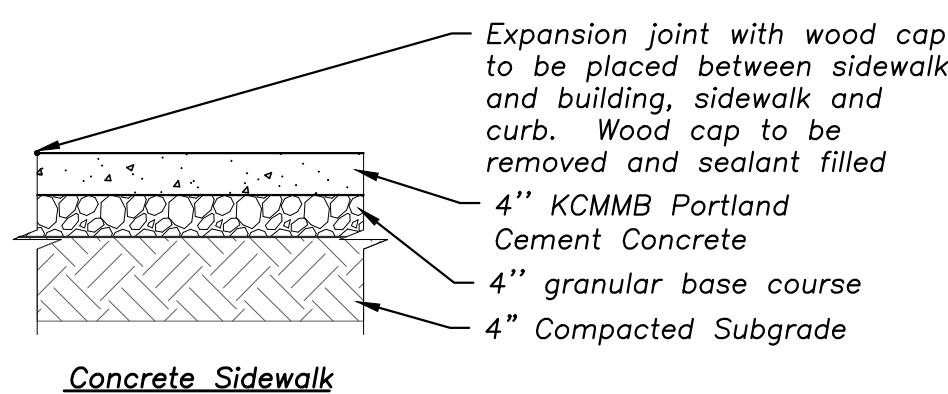
- The running and cross slopes for all sidewalks, accessible paths, ramps, designated parking stalls, etc., shall be in compliance with latest Federal ADA guidelines, in addition to any accessibility standards adopted by the governing municipality. Prior to installation/construction, if any discrepancies are found within the plans, the Engineer shall be notified.
- All ADA parking areas shall have NO slopes greater than 2% in any direction.
- Sidewalk construction must not exceed a 2% cross-slope and an 8.33% running slope.



1 Site Plan
scale: 1"=20'

Construction Notes:

- Construct type "CG-1" curb & gutter where indicated (see legend).
- Construct type "CG-1 DRY" curb & gutter where indicated (see legend).
- Construct concrete pavement where indicated (see legend).
- Perimeter stone around buildings, 2" below building slab. Refer to landscape plan.
- Construct ADA accessible ramp.
- Install concrete ADA stalls, signage and striping (see ADA signage detail on C4.2).
- Construct 4" thick concrete sidewalk where indicated (see legend).
- Sanitary service connection location (see C1.3).
- Install sanitary service (see C1.3).
- Water main connection location.
- Install 6" fire service water line.
- Install 2" domestic water line.
- Install private fire hydrant, to be painted red (see C1.3).
- Existing public fire hydrant.
- Fire Department connection location.
- Proposed retaining wall with handrail (Design by Others).



Local Benchmarks:

BM-1: (Sanitary Sewer Manhole, Center of Lid)
Elevation: 1006.88'
N: 1013449.78
E: 2826933.88

BM-2: (Storm Sewer Curb Inlet, Center of Lid)
Elevation: 994.34'
N: 1013518.71
E: 2826136.03

Floodplain Note:

The site lies entirely with "Zone X", areas determined to be outside the 0.2% annual chance floodplain as depicted on the FEMA Flood Insurance Rate Map (FIRM) no. 29095C0430G, Revision Date: January 20, 2017.

Utility Legend

existing
proposed

Linetypes

sanm	sanitary main
sans	sanitary service
ssm	storm sewer (existing)
ssm	storm sewer (solid wall, proposed)
ssm	storm sewer (solid wall, proposed)
ssm	storm sewer (perforated, proposed)
wtrm	water main
wtrf	water service (fire)
wtrd	water service (domestic)
wtri	water service (irrigation)
gasm	natural gas main
gass	natural gas service schematic
elpu	underground primary electric
elsu	underground secondary electric
elpo	overhead electric
datu	underground cable/phone/data
datu	underground cable/phone/data service
	fence-chainlink
	fence-wood
	fence-barbed wire
	treeline

Symbols

Ⓢ	sanitary manhole
co	service cleanout
fmv	force main release valve
□	rectangular structure
○	circular structure
⌘	fire hydrant
⊗	water valve
Ⓜ	water meter
BFP	backflow preventer
g	natural gas meter
T	service transformer (pad mount)
S	primary switch gear
⚡	light pole
C	cable/phone/data junction box
⦿	street light
⦿	pedestrian street light
⊗	electric pole
→	guy wire
D	end section

Property Legend

—	right of way
---	property lines
---	easements
---	setbacks

Grading Legend

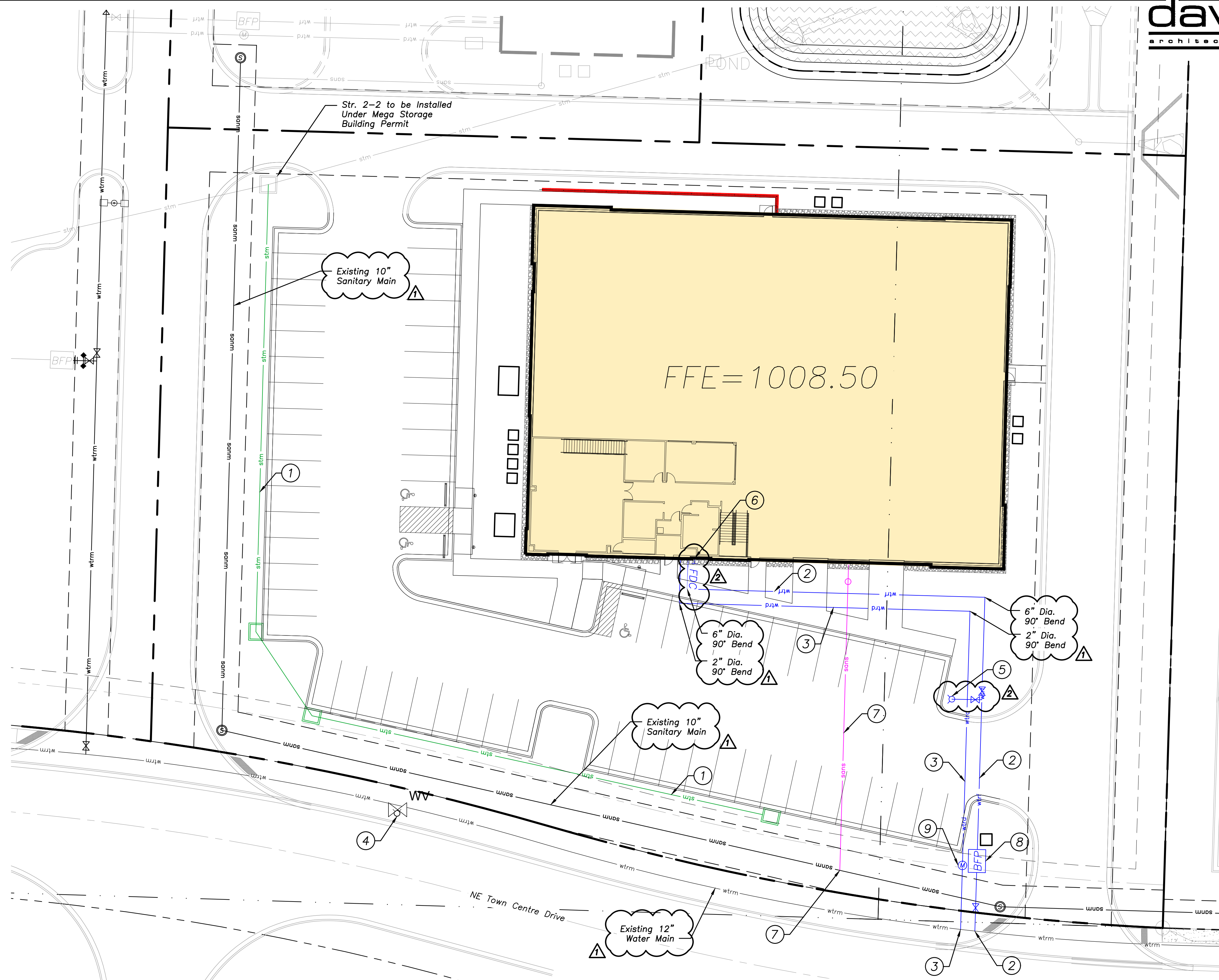
---	existing minor contour
---	existing major contour
---	proposed minor contour
---	proposed major contour

Utility Legend

sanm	existing sanitary main
wtrm	existing water main
ssm	existing storm sewer
gasm	existing gas main
elpu	existing underground electric
elpo	existing overhead electric
datu	existing underground data
sanm	proposed sanitary main
sans	proposed sanitary service
wtrm	proposed water main
wtrf	proposed fire line
wtrd	proposed water service
ssm	proposed storm sewer
gasm	proposed gas main
gass	proposed gas service
elpu	proposed underground primary electric
elsu	proposed underground secondary electric
elpo	proposed overhead electric
datu	proposed underground data

Americans with Disabilities Act (ADA) Notes:

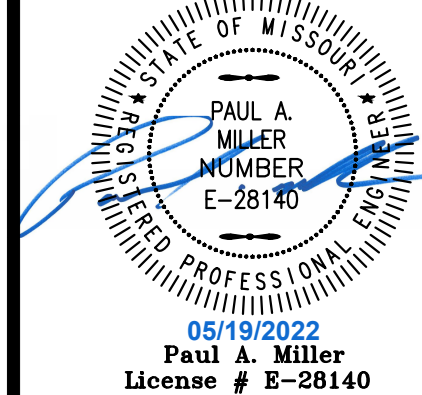
- The running and cross slopes for all sidewalks, accessible paths, ramps, designated parking stalls, etc., shall be in compliance with latest Federal ADA guidelines, in addition to any accessibility standards adopted by the governing municipality. Prior to installation/construction, if any discrepancies are found within the plans, the Engineer shall be notified.
- All ADA parking areas shall have NO slopes greater than 2% in any direction.
- ⚠ Sidewalk construction must not exceed a 2% cross-slope and an 8.33% running slope.



Utility Notes

- Proposed private storm line 3, see sheet C3.4 for details.
- Proposed 6" C900 private fire service line: Contractor to coordinate installation of new 6" fire service connection on existing water main north of NE Town Centre Drive. After testing & chlorination, coordinate with City of Lee's Summit Water Utilities for connection to ex. 12" main with 12"x6" Cut-In TEE with backing block & (1x) 6" gate valve. Install 6" full-flow fire meter, pit & concrete vault for backflow assembly per City of Lee's Summit specifications. Contractor to install 6" double check detector assembly & ±125 L.F. 6" C900 PVC private fire line with backing blocks to building riser room as shown. All joints to be mechanically restrained. Refer to MEP plans for continuation.
- Proposed domestic water service connection: Contractor to coordinate installation of new 1-1/2" domestic water service connection on existing 12" water main north of NE Town Centre Dr. with City of Lee's Summit Water Utilities. Utility to install 1-1/2" Type K soft copper (ASTM B 88) service line from meter pit to property line (approx. 10 L.F.). Install 1-1/2" HDPE CTS domestic water line from meter pit to building riser room as shown (approx. 125 L.F.). Refer to MEP plans for continuation. See Detail WAT-11 on Sheet C4.4 for connection detail.
- Existing public fire hydrant
- Proposed private fire hydrant assembly
- Fire department connection (FDC)
- Proposed sanitary sewer service connection: Contractor to coordinate installation of new 4" sanitary service connection on existing 10" sanitary main north of NE Town Centre Dr. with City of Lee's Summit Water Utilities. Install 10"x4" Cut-In WYE and approx. 118 L.F. 4" PVC SDR-26 sanitary sewer service pipe at 2.0% minimum slope and sampling cleanout.
F/L at Bldg = 1005.00
F/L at service connection = unknown, to be field verified by Contractor.
- Install backflow preventer device in vault with concrete bottom sloped for drainage. Sump shall be filled with clean rocks to promote infiltration for drainage (See detail WAT-12 on sheet C4.4).
- Install 1-1/2" water meter as shown in meter pit with gravel bottom for drainage (see detail on sheet C4.4).

Utility Plan
scale: 1"=20'
0 10 20 40



a new development for
D-BAT - Town Centre Lot 1
540 NE Town Centre Drive
Lee's Summit, Missouri

date
02.28.2022

drawn by
JMP

checked by
PAM

revisions

05.09.2022	01
05.19.2022	02

sheet number

C1.3

drawing type
FDP & Permit

project number
20231

a new development for
D-BAT - Town Centre Lot 1
540 NE Town Centre Drive
Lee's Summit, Missouri

date
02.18.2022
drawn by
JMP
checked by
PAM
revisions

sheet number

C2.1

drawing type
FDP & Permit

project number
20231

Local Benchmarks:

BM-1: (Sanitary Sewer Manhole, Center of Lid)
Elevation: 1006.88'
N: 1013449.78
E: 2826933.88

BM-2: (Storm Sewer Curb Inlet, Center of Lid)
Elevation: 994.34'
N: 1013518.71
E: 2826136.03

Grading Legend

existing minor contour
existing major contour
proposed minor contour
proposed major contour

Utility Legend

existing
proposed

Linetypes

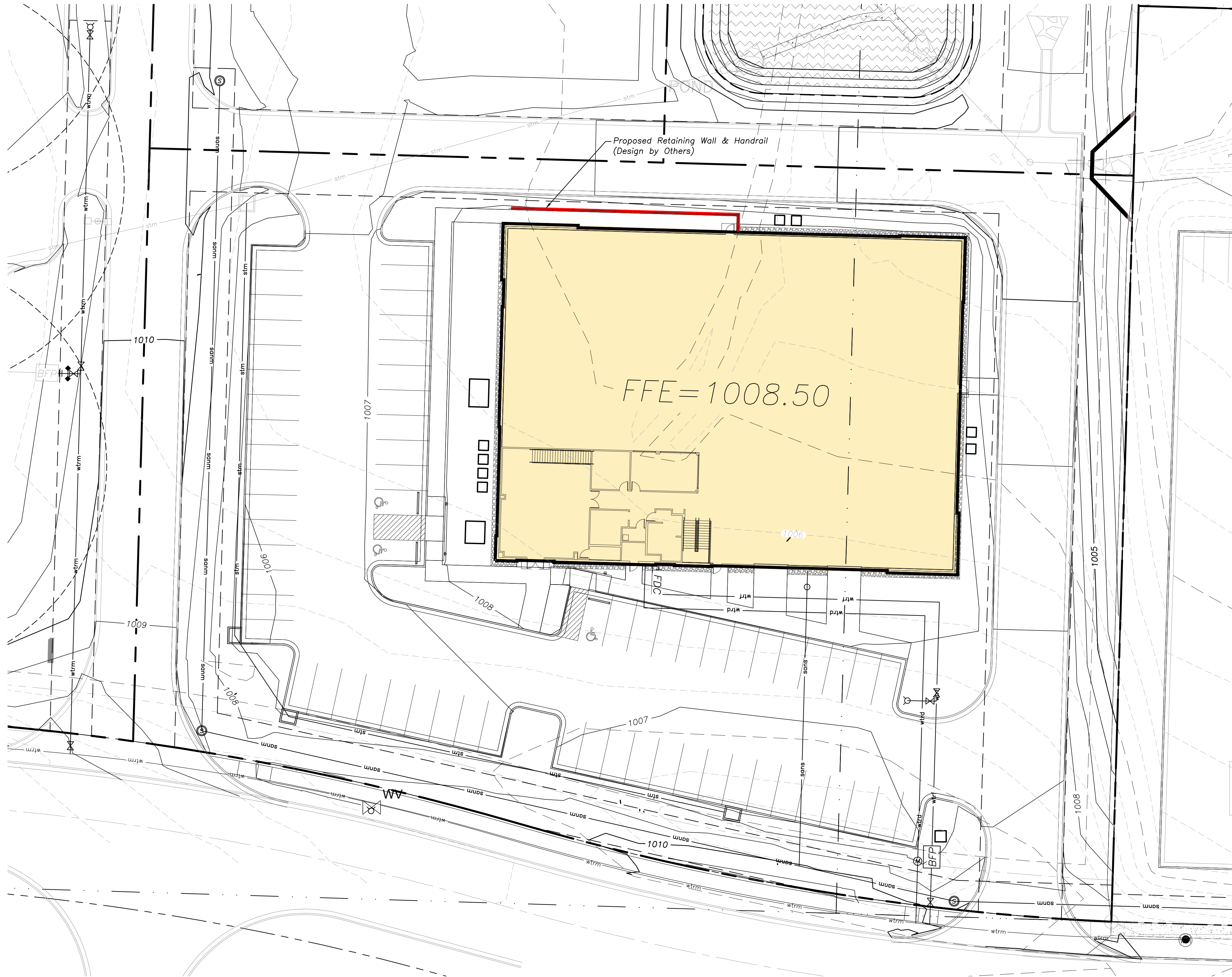
sanm sanitary main
sans sanitary service
ssm storm sewer (existing)
ssm storm sewer (solid wall, proposed)
ssm storm sewer (solid wall, proposed)
ssm storm sewer (perforated, proposed)
wtrm water main
wtrf water service (fire)
wtrd water service (domestic)
wtri water service (irrigation)
gasm natural gas main
gass natural gas service schematic
elpu underground primary electric
elsu underground secondary electric
elpo overhead electric
datu underground cable/phone/data
datsu underground cable/phone/data service
fence-chainlink
fence-wood
fence-barbed wire
treeline

Property Legend

right of way
property lines
easements
setbacks

Symbols

sanitary manhole
service cleanout
force main release valve
rectangular structure
circular structure
fire hydrant
water valve
water meter
backflow preventer
natural gas meter
service transformer (pad mount)
primary switch gear
light pole
cable/phone/data junction box
street light
pedestrian street light
electric pole
guy wire
end section



1 Grading Plan
scale: 1"=20'



Local Benchmarks:

BM-1: (Sanitary Sewer Manhole, Center of Lid)
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E: 2826933.88

BM-2: (Storm Sewer Curb Inlet, Center of Lid)
Elevation: 994.34'
N: 1013518.71
E: 2826136.03

Grading Legend

existing minor contour
existing major contour
proposed minor contour
proposed major contour

Utility Legend

existing
proposed

Linetypes

sanm sanitary main
sans sanitary service
storm sewer (existing)
storm sewer (solid wall, proposed)
stm storm sewer (solid wall, proposed)
storm sewer (perforated, proposed)
wtrm water main
wtrf water service (fire)
wtrd water service (domestic)
wtri water service (irrigation)
gasm natural gas main
gass natural gas service schematic
elpu underground primary electric
elsu underground secondary electric
elpo overhead electric
datu underground cable/phone/data
datsu underground cable/phone/data service
fence-chainlink
fence-wood
fence-barbed wire
treeline

Symbols

sanitary manhole
service cleanout
force main release valve
rectangular structure
circular structure
fire hydrant
water valve
water meter
backflow preventer
natural gas meter
service transformer (pad mount)
primary switch gear
light pole
cable/phone/data junction box
street light
pedestrian street light
electric pole
guy wire
end section

Erosion Control Legend

Phase I Silt fence
Phase I Inlet protection
limits of disturbance
construction entrance
rock check dam
topsoil stockpile area
concrete washout area

Property Legend

right of way
property lines
easements
setbacks

Note:

Contractor to construct stormwater management facilities, specifically those features related to detention, prior to any land disturbance of the site and prior to the construction of any other site development work as not to effect downstream neighbors with undetained stormwater discharge.

Erosion and Sediment Control Staging Chart

Project Stage	Description	Remove after Stage:	Note:
Phase I	Inlet Protection	E	Install inlet protection on existing area inlets. See detail ESC-06 on Sheet C4.1
	Temporary Construction Entrance and Staging Area	D	Install per ESC-01 detail on Sheet C4.1
	Perimeter Sediment Fence	E	Install per city of Lee's Summit standard. See detail ESC-03 on Sheet C4.1
	Construct Sediment Basin	N/A	At time of sediment basin construction, install stabilized buffer and utilize skimmer at sediment basin outlet structure. See detail ESC-12 on Sheet C4.1
Phase II	Concrete Washout	D	Remove only when graded areas have permanent stabilization established
	Stockpile Topsoil	D	Install sediment fence a minimum of 5' beyond toe of slope for all stockpile areas.
	Phase II Sediment Fence	E	Install as needed for intermediate sediment control during mass grading
	Remove Existing Pond	N/A	Reference Soil Stabilization notes on Sheet C2.2 for recommended stabilization procedures
C - Storm Sewer Installation	Phase II Area and Curb Inlets Protection	E	Install sediment fence around all area inlets and open junction boxes. Install excavated area and throat protection on all curb inlets. See detail ECS-07 on Sheet C4.1
	Temporary Stabilization	N/A	Seed and mulch future development area. Temporarily stabilize with hydromulch if out of seeding season.
	Convert Sediment Basin to Detention Pond	N/A	Install inlet/outlet storm structures. Grade Detention Area per Construction Drawings.
	Phase II Area and Curb Inlets Protection	E	Following installation of storm structures and curb and gutter, install inlet filter bag. See detail ECS-07 on Sheet C4.1
Building Phase	Sediment Log/Wattle	E	To be placed at back of curb and installed per manufacturer instructions.
	Establish Perennial Vegetation and landscaping per landscape plan. Install Native Vegetation in designated areas using approved seed mix.	N/A	Redistribute topsoil and seed and mulch all disturbed areas. Sod right-of-way. Stabilization complete when 100% of disturbed area is established with perennial vegetation with a density of 70%. All plantings shall be during approved planting season. Planting shall be per approved landscape plan.

Soil Stabilization Notes (From Geotechnical Report by PSI Project No. 03382230):

The presence of shallow groundwater and potentially moisture sensitive shallow soils will increase the difficulty of site grading. PSI has been involved with projects in this region where these soils can undergo a loss of stability during wetter portions of the year. PSI anticipates that the soils at their current moisture levels will become easily disturbed if subjected to conventional rubber tire or narrow track-type equipment resulting in a loss of strength and characteristic "pumping". Soils that become disturbed would need to be excavated and replaced; however, this remedial excavation may expose progressively wetter soils with depth, thus compounding the condition. Thus, a normal approach to subgrade preparation may not be possible. In the event these conditions are observed, PSI recommends that the following remediation procedures be considered to further stabilize wet/soft areas if typical surface moisture conditioning/disking/recompacting methods are not affective.

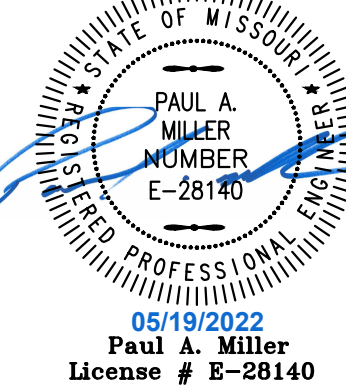
1. Track in 3 to 5-inch minus well-graded crushed limestone or similar material into the failing areas to attempt to bridge the soft zones. These materials should be placed in loose lifts of no more than 10 inches and tracked in with a loaded rubber tire truck or beat in with a backhoe bucket. Once the areas are stabilized onsite soils then be placed to the recommended low volume change material subgrade elevation for pavements. If for some reason areas do not stabilize with 1 to 2 lifts of stone, a layer of grid or fabric may need to be incorporated into those areas at that time, followed by additional lifts of stone consisting of ¾ inch minus materials (AB-3).

2. A second option would be to place geo grid similar to Tensar BX1100 and then place new granular fill similar to ¾-inch minus material in compacted lifts. The grid should extend at least 10 feet past the perimeter of the failing areas and should be overlapped according to the manufactures requirements. If the area does not stabilize by the second lift of ¾ inch minus material an additional layer of grid should then be placed and the process should be repeated until it is stabilized.

PSI recommends a test section be performed to verify the selected remediation method.

4301 Indian Creek Parkway
Overland Park, KS 66207
phone: 913.451.9390
fax: 913.451.9391
www.davidsonae.com

Davidson Architecture
& Engineering, LLC
License # 2010029713



a new development for
D-BAT - Town Centre Lot 1
540 NE Town Centre Drive
Lee's Summit, Missouri

date
02.18.2022
drawn by
JMP
checked by
PAM
revisions

03.18.2022

01

sheet number

C2.2

drawing type
FDP & Permit

project number
20231



Local Benchmarks:

BM-1: (Sanitary Sewer Manhole, Center of Lid)
Elevation: 1006.88'
N: 1013449.78
E: 2826933.88

BM-2: (Storm Sewer Curb Inlet, Center of Lid)
Elevation: 994.34'
N: 1013518.71
E: 2826136.03

Grading Legend

existing minor contour
existing major contour
proposed minor contour
proposed major contour

Utility Legend

existing
proposed

Linetypes

sanm sanitary main
sans sanitary service
stm storm sewer (existing)
stm storm sewer (solid wall, proposed)
stm storm sewer (solid wall, proposed)
stm storm sewer (perforated, proposed)
wtrm water main
wtrf water service (fire)
wtrd water service (domestic)
wtri water service (irrigation)
gasm natural gas main
gass natural gas service schematic
elpu underground primary electric
elsu underground secondary electric
elpo overhead electric
datu underground cable/phone/data
datsu underground cable/phone/data service
fence-chainlink
fence-wood
fence-barbed wire
treeline

Symbols

sanitary manhole
service cleanout
force main release valve
rectangular structure
circular structure
fire hydrant
water valve
water meter
backflow preventer
natural gas meter
service transformer (pad mount)
primary switch gear
light pole
cable/phone/data junction box
street light
pedestrian street light
electric pole
guy wire
end section

Erosion Control Legend

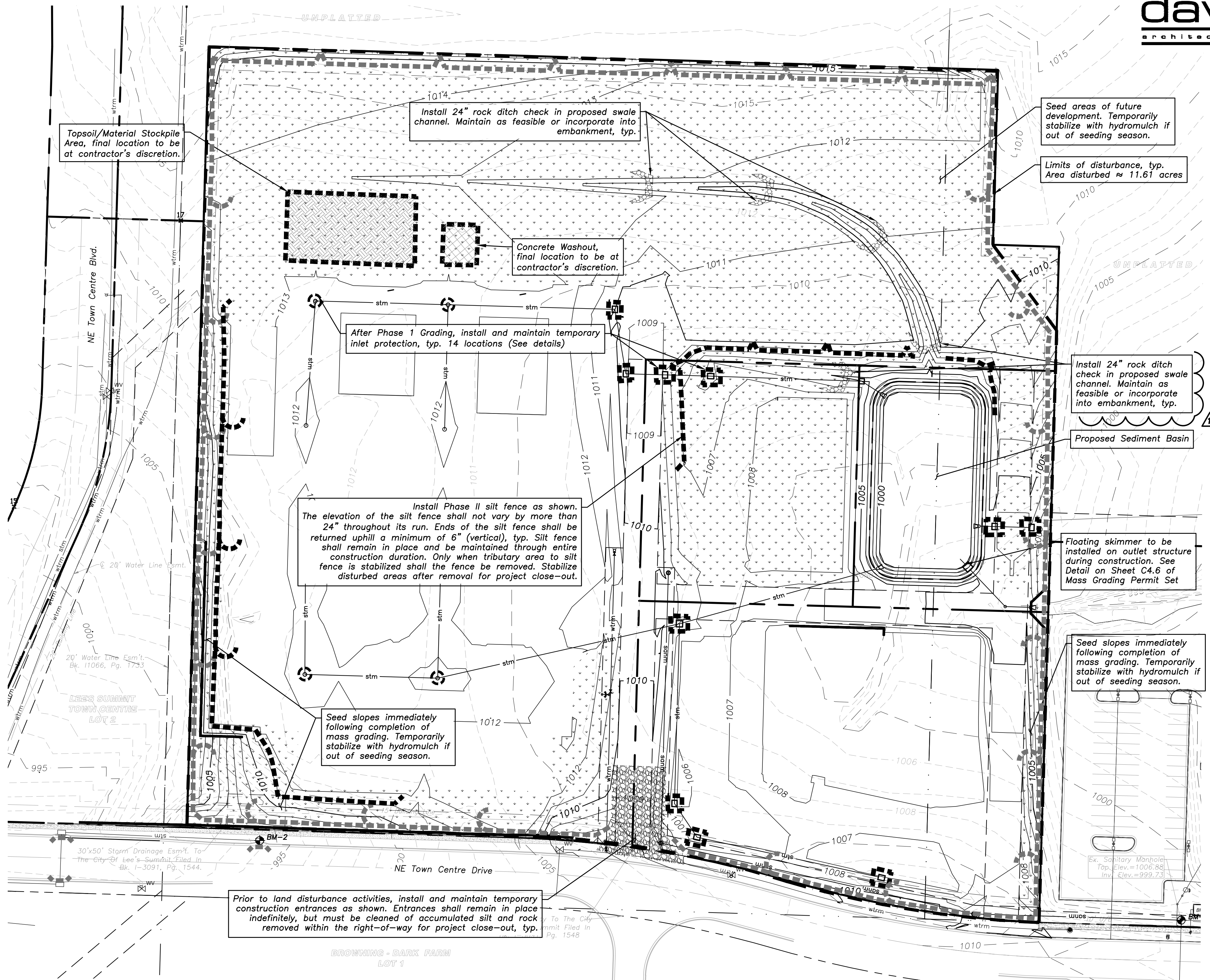
Phase I Silt fence
Phase I Inlet protection
Phase II Silt fence
Phase II Inlet protection
limits of disturbance
construction entrance
rock check dam
topsoil stockpile area
concrete washout area
temporary seeding

Property Legend

right of way
property lines
easements
setbacks

Note:

Contractor to construct stormwater management facilities, specifically those features related to detention, prior to any land disturbance of the site and prior to the construction of any other site development work as not to effect downstream neighbors with undetained stormwater discharge.

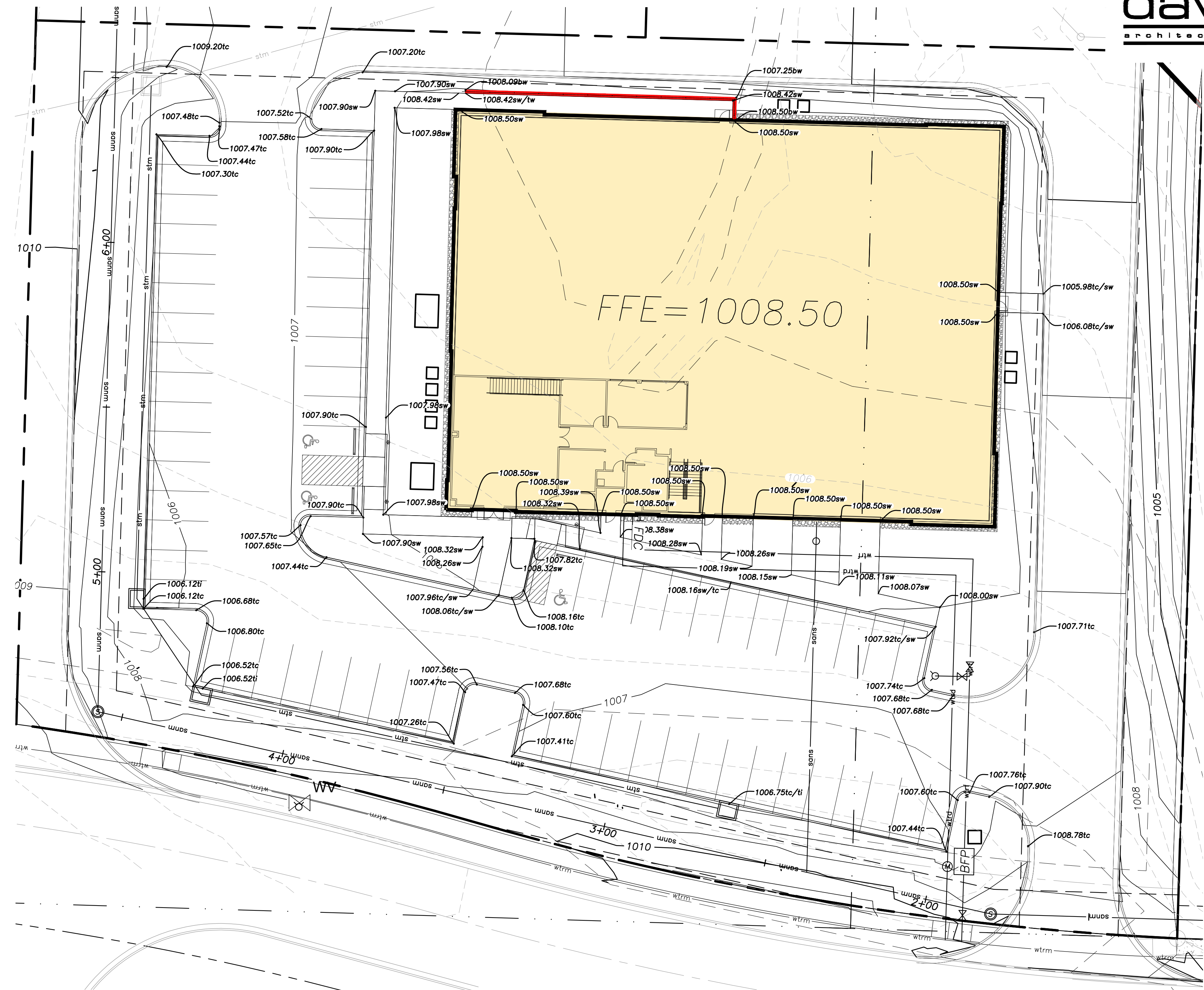


Erosion and Sediment Control Staging Chart				
	Project Stage	Description	Remove after Stage:	Notes:
Phase I	A - Prior to Land Disturbance	Inlet Protection	E	Install inlet protection on existing area inlets. See detail ESC-06 on Sheet C4.1.
		Temporary Construction Entrance and Staging Area	D	Install per ESC-01 detail on Sheet C4.1
		Perimeter Sediment Fence	E	Install per city of Lee's Summit standard. See detail ESC-03 on Sheet C4.1.
		Construct Sediment Basin	N/A	At time of sediment basin construction, install stabilized buffer and utilize skimmer at sediment basin outlet structure. See detail ESC-12 on Sheet C4.1.
Phase II	B - Mass Grading	Concrete Washout	D	Remove only when graded areas have permanent stabilization established.
		Stockpile Topsoil	D	Install sediment fence a minimum of 5' beyond toe of slope for all stockpile areas.
		Phase II Sediment Fence	E	Install as needed for intermediate sediment control during mass grading
		Remove Existing Pond	N/A	Reference Soil Stabilization notes on Sheet C2.2 for recommended stabilization procedures
Building Phase	C - Storm Sewer Installation	Phase II Area and Curb Inlets Protection	E	Install sediment fence around all area inlets and open junction boxes. Install excavated area and throat protection on all curb inlets. See detail ECS-07 on Sheet C4.1.
		Temporary Stabilization	N/A	Seed and mulch future development area. Temporarily stabilize with hydromulch if out of seeding season.
	D - Construction of Detention Pond, Building, and Pavements	Convert Sediment Basin to Detention Pond	N/A	Install inlet/outlet storm structures. Grade Detention Area per Construction Drawings.
		Phase II Area and Curb Inlets Protection	E	Following installation of storm structures and curb and gutter, install inlet filter bag. See detail ECS-07 on Sheet C4.1
	E - Final Grading & Stabilization	Establish Perennial Vegetation and landscaping per landscape plan. Install Native Vegetation in designated areas using approved seed mix.	N/A	Redistribute topsoil and seed and mulch all disturbed areas. Sod right-of-way. Stabilization complete when 100% of disturbed area is established with perennial vegetation with a density of 70%. All plantings shall be during approved planting season. Planting shall be per approved landscape plan.

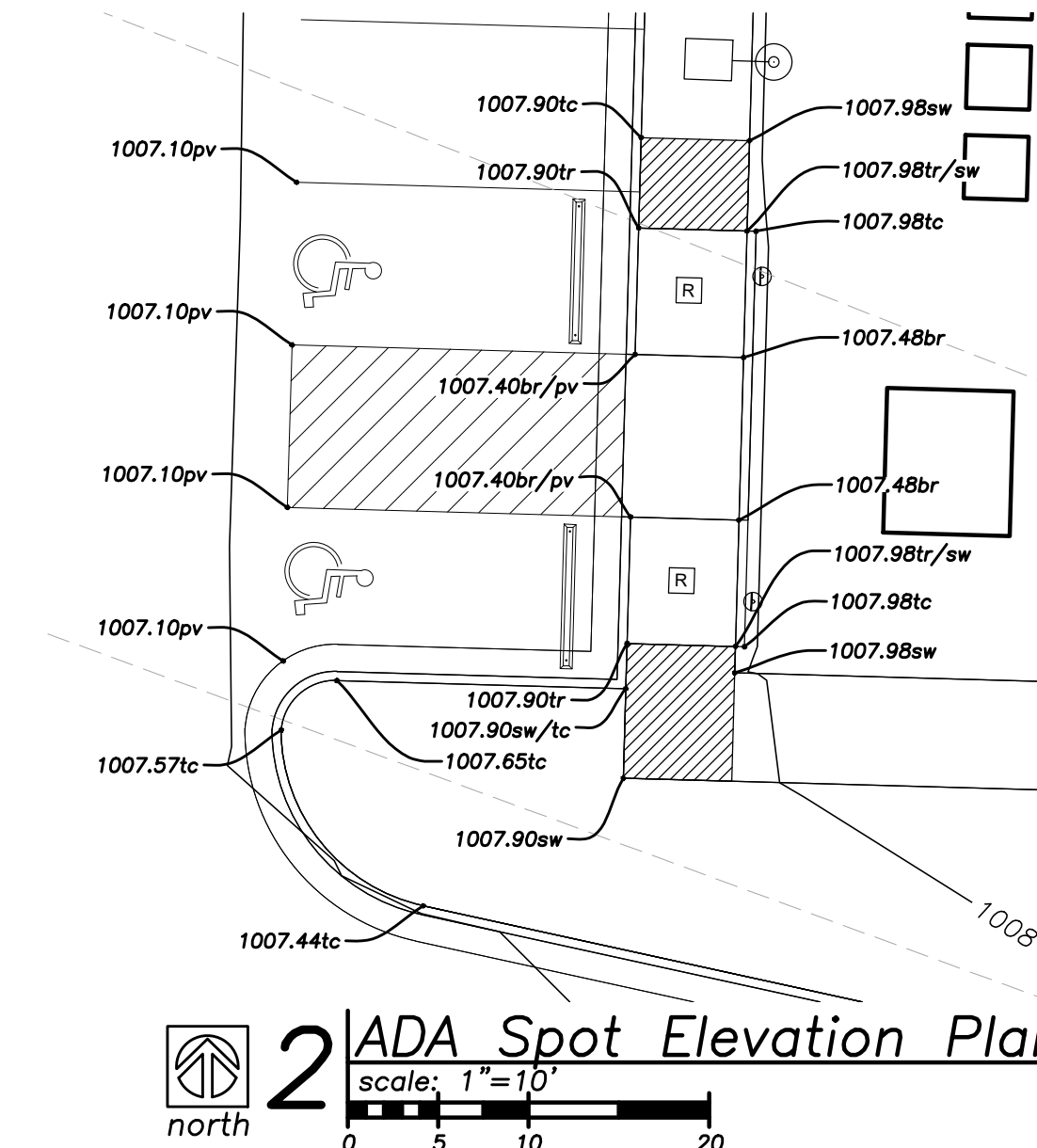


1 Phase II: Erosion Control Plan
scale: 1"=50'
0 25 50 100

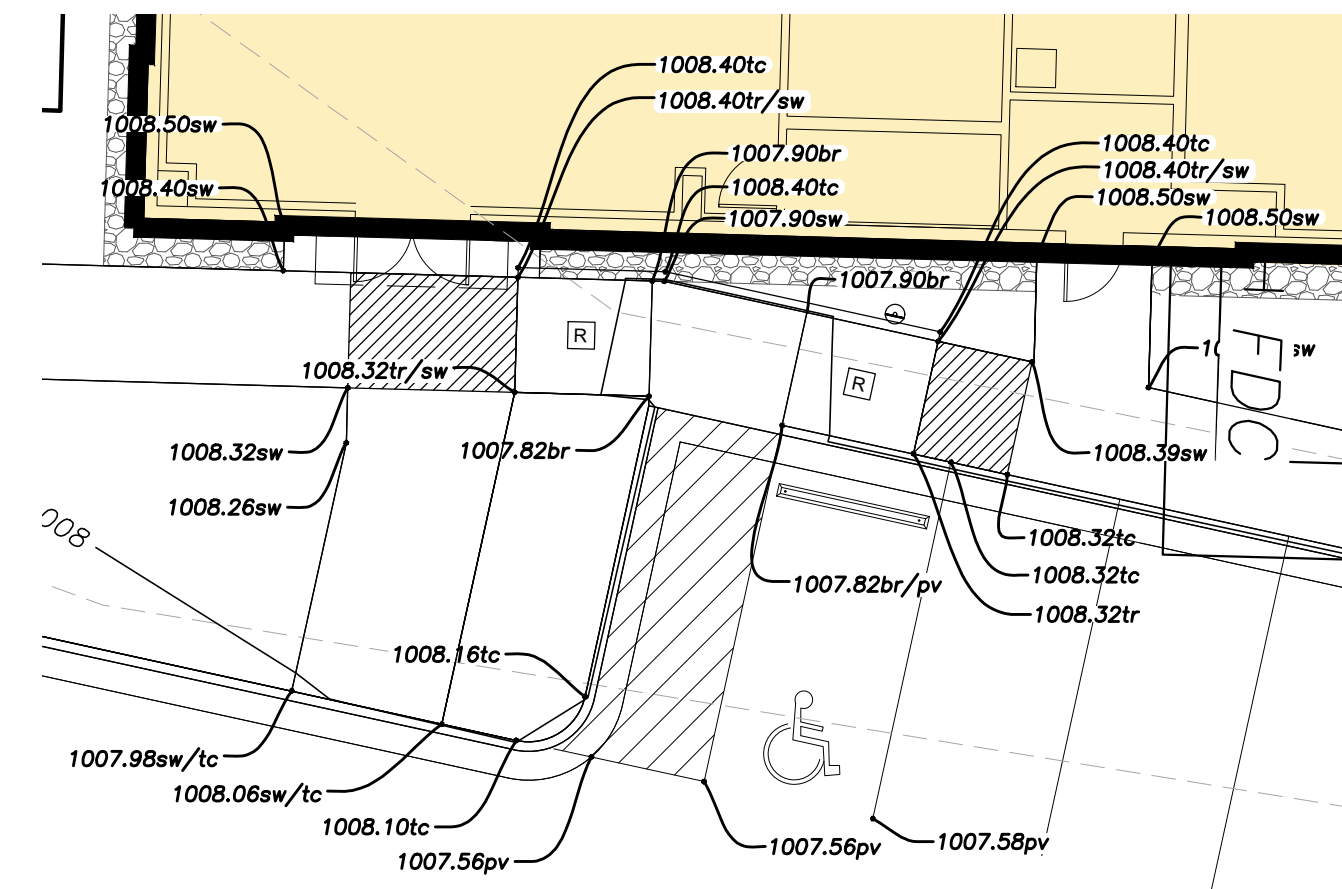




1 Spot Elevation Plan
scale: 1"=20'
0 10 20 40



2 ADA Spot Elevation Plan
scale: 1"=10'
0 5 10 20



3 ADA Spot Elevation Plan
scale: 1"=10'
0 5 10 20

Local Benchmarks: BM-#

BM-1: (Sanitary Sewer Manhole, Center of Lid)
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E: 2826933.88

BM-2: (Storm Sewer Curb Inlet, Center of Lid)
Elevation: 994.34'
N: 1013518.71
E: 2826136.03

Property Legend

- right of way
- property lines
- easements
- setbacks

Grading Legend

- existing minor contour
- existing major contour
- proposed minor contour
- proposed major contour

Utility Legend

- existing
- proposed

Linetypes

- sanm sanitary main
- sans sanitary service
- ssm storm sewer (existing)
- ssms storm sewer (solid wall, proposed)
- stms storm sewer (solid wall, proposed)
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- gasm natural gas main
- gass natural gas service schematic
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- elsu underground secondary electric
- elpo overhead electric
- datu underground cable/phone/data
- datsu underground cable/phone/data service
- fence-chainlink
- fence-wood
- fence-barbed wire
- treeline

Symbols

- sanitary manhole
- service cleanout
- force main release valve
- rectangular structure
- circular structure
- fire hydrant
- water valve
- water meter
- backflow preventer
- natural gas meter
- service transformer (pad mount)
- primary switch gear
- light pole
- cable/phone/data junction box
- street light
- pedestrian street light
- electric pole
- guy wire
- end section

Americans with Disabilities Act (ADA) Notes:

- The running and cross slopes for all sidewalks, accessible paths, ramps, designated parking stalls, etc., shall be in compliance with latest Federal ADA guidelines, in addition to any accessibility standards adopted by the governing municipality. Prior to installation/construction, if any discrepancies are found within the plans, the Engineer shall be notified.
- All ADA parking areas shall have NO slopes greater than 2% in any direction.
- Sidewalk construction must not exceed a 2% cross-slope and an 8.33% running slope.

Spot Elevation Legend

- br = bottom of ramp
- tr = top of ramp
- me = match existing
- pv = pavement
- bw = bottom of wall
- tw = top of wall
- tc = top of curb
- sw = sidewalk
- ti = top of inlet
- mi = mid-point
- hp = high-point
- lp = low-point
- pc = point of curvature
- pt = point of tangency
- bldg = building
- FFE = finished floor elevation
- ex = existing
- mp = match pavement
- gnd = ground
- ts = top of stair
- bs = bottom of stair

ADA Legend

- detectable warning strip
- turning space
- ADA ramp

a new development for

D-BAT - Town Centre Lot 1

540 NE Town Centre Drive

Lee's Summit, Missouri

date 02.18.2022
drawn by JMP
checked by PAM
revisions

05.09.2022

01

sheet number

C2.4

drawing type
FDP & Permit

project number
20231



Local Benchmarks:

BM-1: (Sanitary Sewer Manhole, Center of Lid)
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Elevation: 994.34'
N: 1013518.71
E: 2826136.03

Drainage Legend

drainage area

Property Legend

right of way
property lines
easements
setbacks

Grading Legend

existing minor contour
existing major contour
proposed minor contour
proposed major contour

Utility Legend

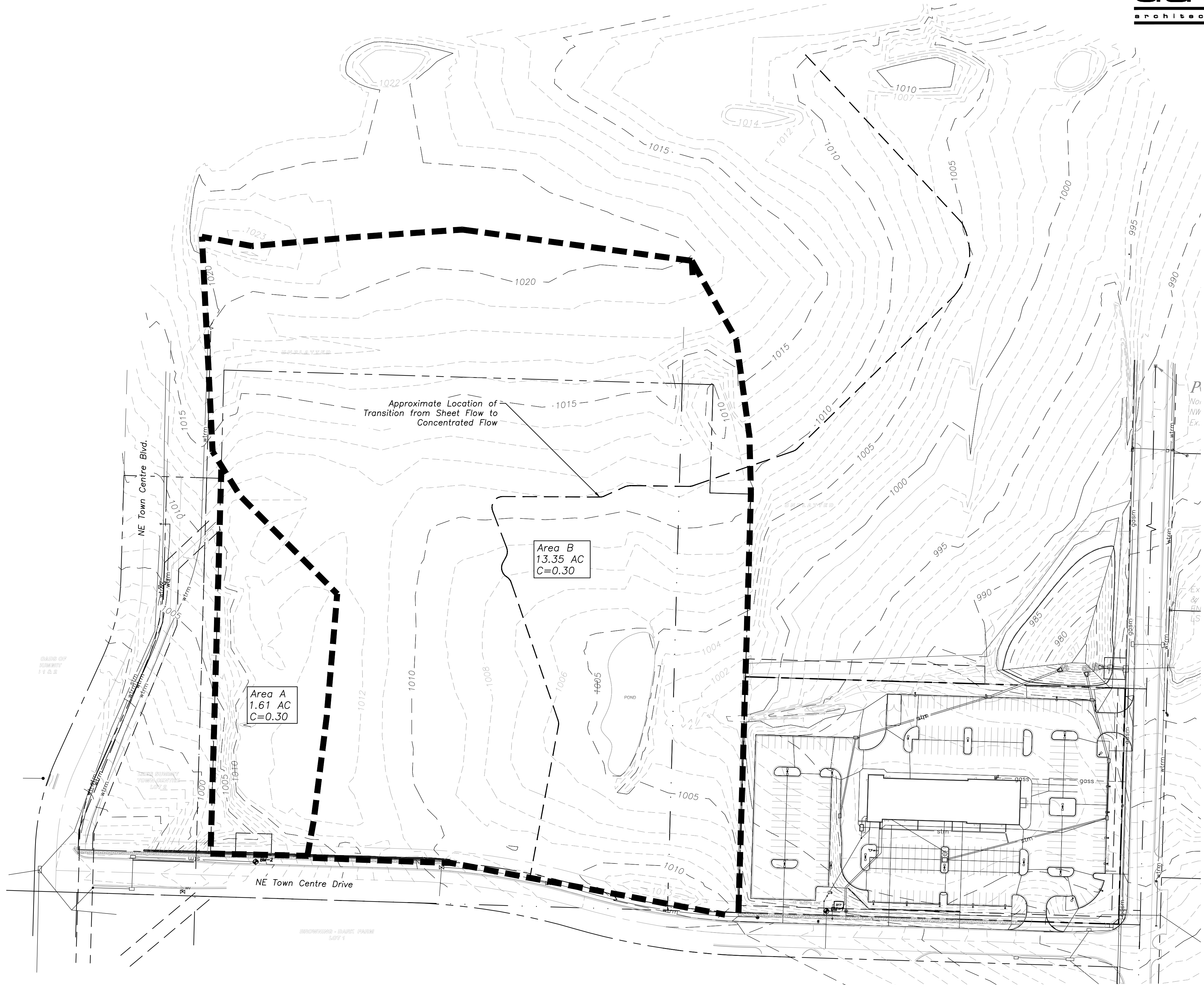
existing
proposed

Linetypes

sanm sanitary main
sans sanitary service
storm sewer (existing)
storm sewer (solid wall, proposed)
stm storm sewer (solid wall, proposed)
storm sewer (perforated, proposed)
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wtrf water service (fire)
wtrd water service (domestic)
wtri water service (irrigation)
gasm natural gas main
goss natural gas service schematic
elpu underground primary electric
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datu underground cable/phone/data
datasu underground cable/phone/data service
fence-chainlink
fence-wood
fence-barbed wire
treeline

Symbols

sanitary manhole
service cleanout
force main release valve
rectangular structure
circular structure
fire hydrant
water valve
water meter
backflow preventer
natural gas meter
service transformer (pad mount)
primary switch gear
light pole
cable/phone/data junction box
street light
pedestrian street light
electric pole
guy wire
end section



Pre-Construction Impervious Area Calculations

	Square Feet	Acres
Area of Site	505,732	11.61
Impervious Area	0	0
Pervious Area	505,732	11.61
Q: 10 year	23.26 cfs	
100 year	35.04 cfs	



1 Existing Drainage Area Map
scale: 1"=80'



Local Benchmarks:

BM-1: (Sanitary Sewer Manhole, Center of Lid)
Elevation: 1006.88'
N: 1013449.78
E: 2826933.88

BM-2: (Storm Sewer Curb Inlet, Center of Lid)
Elevation: 994.34'
N: 1013518.71
E: 2826136.03

Drainage Legend

drainage area

Property Legend

right of way
property lines
easements
setbacks

Grading Legend

existing minor contour
existing major contour
proposed minor contour
proposed major contour

Utility Legend

existing
proposed

Linetypes

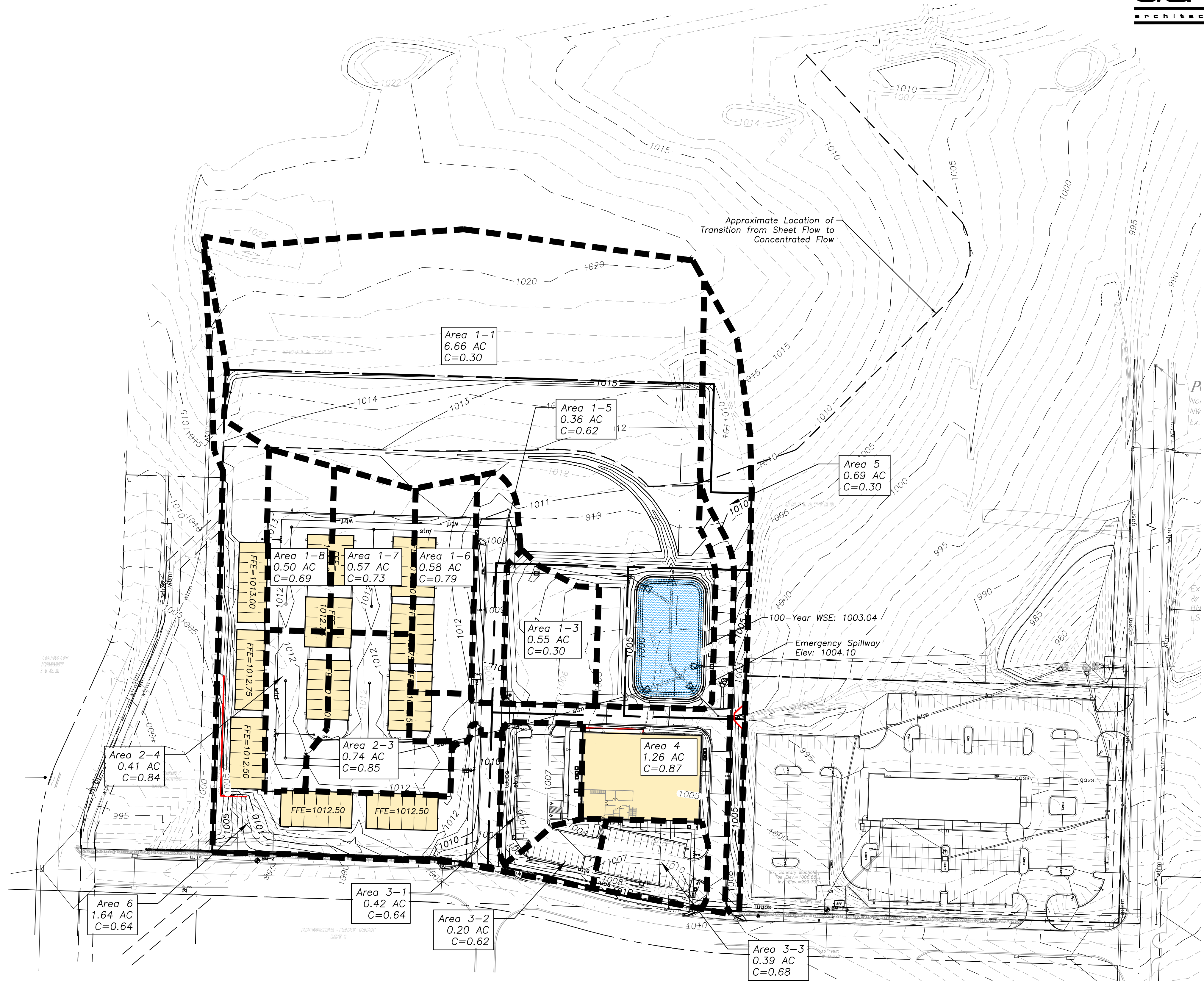
sanm sanitary main
sans sanitary service
ssm storm sewer (existing)
ssms storm sewer (solid wall, proposed)
stms storm sewer (solid wall, proposed)
stms storm sewer (perforated, proposed)
wtrm water main
wtrf water service (fire)
wtrd water service (domestic)
wtri water service (irrigation)
gasm natural gas main
gass natural gas service schematic
elpu underground primary electric
elsu underground secondary electric
elpo overhead electric
datu underground cable/phone/data
datsu underground cable/phone/data service
fence-chainlink
fence-wood
fence-barbed wire
treeline

Symbols

sanitary manhole
service cleanout
force main release valve
rectangular structure
circular structure
fire hydrant
water valve
water meter
backflow preventer
natural gas meter
service transformer (pad mount)
primary switch gear
light pole
cable/phone/data junction box
street light
pedestrian street light
electric pole
guy wire
end section

Post-Construction Impervious Area Calculations

	Square Feet	Acres
Area of Site	505,723	11.61
Impervious Area	255,706	5.18
Pervious Area	280,017	6.43
Q: 10 year	6.59 cfs	
100 year	19.91 cfs	

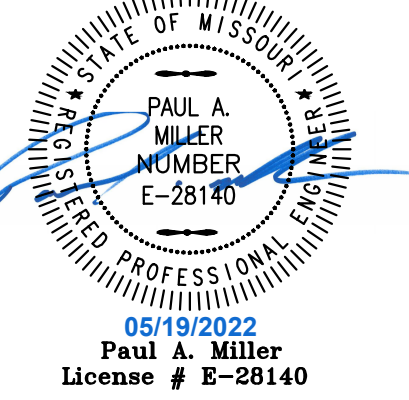


Proposed Drainage Area Map
scale: 1"=80'



4301 Indian Creek Parkway
Overland Park, KS 66207
phone: 913.451.9390
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www.davidsonae.com

Davidson Architecture
& Engineering, LLC
License # 2010029713



a new development for
D-BAT - Town Centre Lot 1
540 NE Town Centre Drive
Lee's Summit, Missouri

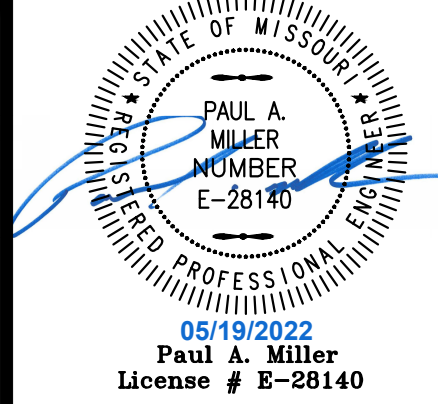
date 02.18.2022
drawn by JMP
checked by PAM
revisions

sheet number

C3.2

drawing type
FDP & Permit

project number
20231



a new development for

D-BAT - Town Centre Lot 1

540 NE Town Centre Drive
Lee's Summit, Missouri

date 02.18.2022
drawn by JMP
checked by PAM
revisions

03.18.2022 01
05.09.2022 02

sheet number

C3.3

drawing type
FDP & Permit

project number
20231



LineNo.	InletID	LineID	DrainageArea	RunoffCoeff	TotalRunoff	CapacityFull	DepthDn	DepthUp	CriticalDepth	EGLDn	EGLUp	HGLDn	HGLUp	InvertDn	InvertUp	LineLength	LineSlope	TotalArea	TotalCxA	VelAve	FlowRate
			(ac)	(C)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(%)	(ac)		(ft/s)	(cfs)
1	1-2	1-2 to 1-1	0	0	7.26	17.24	1.14	0.96**	0.96	1002.52	1002.45	1002.15	1002.08	1001.01	1001.12	22.228	0.49	2.56	1.61	4.41	7.26
2	1-3	1-3 to 1-2	0.55	0.3	7.41	17.4	0.91	0.97**	0.97	1002.61	1003.32	1002.23	1002.95	1001.32	1001.98	130.857	0.5	2.56	1.61	5.12	7.41
3	1-4	1-4 to 1-5	0	0	6.7	22.06	0.77	0.92**	0.92	1003.3	1003.77	1002.95	1003.42	1002.18	1002.5	39.492	0.81	2.01	1.44	5.41	6.7
4	1-5	1-5 to 1-4	0.36	0.62	6.74	22.23	0.76	0.92**	0.92	1003.8	1004.24	1003.45	1003.89	1002.69	1002.97	34.004	0.82	2.01	1.44	5.49	6.74
5	1-6	1-6 to 1-5	0.58	0.79	5.76	22.57	0.69	0.85**	0.85	1004.47	1005.11	1004.15	1004.79	1003.46	1003.94	56.578	0.85	1.65	1.22	5.28	5.76
6	1-7	1-7 to 1-6	0	0	3.7	11.16	0.59	0.73**	0.73	1005.31	1006.84	1005.03	1006.55	1004.43	1005.82	144.508	0.96	1.07	0.76	4.98	3.7
7	1-8	1-8 to 1-7	0	0	1.76	10.06	0.53	0.50**	0.5	1006.74	1007.6	1006.55	1007.42 j	1006.02	1006.92	114.98	0.78	0.5	0.35	3.27	1.76
8	8-1	8-1 to 1-8	0.5	0.69	1.8	2.7	0.6	0.6	0.57	1008.23	1008.76	1008.02	1008.55	1007.42	1007.95	108.116	0.49	0.5	0.35	3.68	1.8
9	9-1	9-1 to 1-7	0.57	0.73	2.17	3.68	0.55	0.63**	0.63	1007.34	1008.4	1007.07	1008.13	1006.52	1007.5	107.912	0.91	0.57	0.42	4.52	2.17
10	2-2	2-2 to 2-1	0	0	7.64	7.19	1.27	1.32	1.07	1002.63	1003.38	1002.27	1003.04	1001	1001.72	180.275	0.4	2.16	1.63	4.71	7.64
11	2-3	2-3 to 2-2	0	0	4.8	7.89	1.25	0.89**	0.89	1003.65	1006	1003.42	1005.59 j	1001.97	1004.7	214.634	1.27	1.15	0.97	4.53	4.8
12	2-4	2-4 to 2-3	0	0	1.76	8.25	0.64	0.53**	0.53	1005.79	1007.28	1005.59	1007.08 j	1004.95	1006.55	114.996	1.39	0.41	0.34	3.19	1.76
13	10-1	10-1 to 2-4	0.41	0.84	1.79	2.73	0.59	0.59	0.57	1007.61	1008.15	1007.39	1007.93	1006.8	1007.34	108.098	0.5	0.41	0.34	3.71	1.79
14	11-1	11-1 to 2-3	0.74	0.85	3.28	5.45	0.56	0.77**	0.77	1006.15	1008.53	1005.76	1008.13	1005.2	1007.36	108.051	2	0.74	0.63	6.14	3.28
15	3-1	3-1 to 2-2	0.42	0.64	3.19	8.05	1.39	0.68**	0.68	1003.63	1003.69	1003.36	1003.43 j	1001.97	1002.75	155.694	0.5	1.01	0.66	2.98	3.19
16	3-2	3-2 to 3-1	0.2	0.62	1.9	4.86	0.54	0.55**	0.55	1003.75	1003.93	1003.54	1003.72	1003	1003.17	35.163	0.48	0.59	0.39	3.7	1.9
17	3-3	3-3 to 3-2	0.39	0.68	1.38	4.92	0.45	0.46**	0.46	1004	1004.82	1003.82	1004.64	1003.37	1004.18	163.499	0.5	0.39	0.27	3.39	1.38
18	4-2	4-2 to 4-1	0	0	5.69	4.7	0.97	1.1	0.97	1001.83	1001.94	1001.35	1001.55	1000.38	1000.45	15.493	0.45	1.26	1.1	5.28	5.69
19	4-3	4-3 to 4-2	1.26	0.87	5.71	4.95	1.25	1.25	0.97	1002.24	1002.45	1001.9	1002.11	1000.65	1000.81	32.013	0.5	1.26	1.1	4.65	5.71
20	7-2	7-2 to 7-1	0	0	0	15.13	2	2	0.16	1002.85	1002.85	1002.85	1002.85	999.74	999.82	20.988	0.38	0	0	0.07	0.21
21	7-3	7-3 to 7-2	0	0	0	15.46	2	2	0.16	1002.85	1002.85	1002.85	1002.85	999.82	1000	45.234	0.4	0	0	0.07	0.21

10-Year Storm Calculations

LineNo.	InletID	LineID	DrainageArea	RunoffCoeff	TotalRunoff	CapacityFull	DepthDn	DepthUp	CriticalDepth	EGLDn	EGLUp	HGLDn	HGLUp	InvertDn	InvertUp	LineLength	LineSlope	TotalArea	TotalCxA	VelAve	FlowRate
			(ac)	(C)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(%)	(ac)		(ft/s)	(cfs)
1	1-2	1-2 to 1-1	0	0	10.66	17.24	1.14	1.17**	1.17	1002.64	1002.78	1002.15	1002.29	1001.01	1001.12	22.228	0.49	2.56	1.61	5.68	10.66
2	1-3	1-3 to 1-2	0.55	0.3	10.81	17.4	1.14	1.18**	1.18	1002.95	1003.65	1002.46	1003.16	1001.32	1001.98	130.857	0.5	2.56	1.61	5.73	10.81
3	1-4	1-4 to 1-5	0	0	9.75	22.06	0.98	1.12**	1.12	1003.61	1004.07	1003.16	1003.62	1002.18	1002.5	39.492	0.81	2.01	1.44	5.9	9.75
4	1-5	1-5 to 1-4	0.36	0.62	9.79	22.23	0.93	1.12**	1.12	1004.08	1004.55	1003.62	1004.09	1002.69	1002.97	34.004	0.82	2.01	1.44	6.13	9.79
5	1-6	1-6 to 1-5	0.58	0.79	8.34	22.57	0.84	1.03**	1.03	1004.71	1005.38	1004.3	1004.97	1003.46	1003.94	56.578	0.85	1.65	1.22	5.88	8.34
6	1-7	1-7 to 1-6	0	0	5.3	11.16	0.73	0.89**	0.89	1005.53	1007.08	1005.16	1006.71	1004.43	1005.82	144.508	0.96	1.07	0.76	5.56	5.3
7	1-8	1-8 to 1-7	0	0	2.48	10.06	0.69	0.60**	0.6	1006.93	1007.74	1006.71	1007.52 j	1006.02	1006.92	114.98	0.78	0.5	0.35	3.47	2.48
8	8-1	8-1 to 1-8	0.5	0.69	2.52	2.7	0.77	0.76	0.68	1008.42	1008.95	1008.19	1008.71	1007.42	1007.95	108.116	0.49	0.5	0.35	3.91	2.52
9	9-1	9-1 to 1-7	0.57	0.73	3.04	3.68	0.69	0.75**	0.75	1007.58	1008.61	1007.21	1008.25	1006.52	1007.5	107.912	0.91	0.57	0.42	5.03	3.04
10	2-2	2-2 to 2-1	0	0	11.1	7.19	1.27	1.5	1.27	1003.02	1004.69	1002.27	1004.08	1001	1001.72	180.275	0.4	2.16	1.63	6.61	11.1
11	2-3	2-3 to 2-2	0	0	6.85	7.89	1.25	1.25	1.05	1005.23	1007.29	1004.75	1006.8	1001.97	1004.7	214.634	1.27	1.15	0.97	5.58	6.85
12	2-4	2-4 to 2-3	0	0	2.48	8.25	1.25	0.86	0.63	1007.35	1007.53	1007.29	1007.41	1004.95	1006.55	114.996	1.39	0.41	0.34	2.38	2.48
13	10-1	10-1 to 2-4	0.41	0.84	2.51	2.73	0.76	0.76	0.68	1007.8	1008.34	1007.56	1008.1	1006.8	1007.34	108.098	0.5	0.41	0.34	3.94	2.51
14	11-1	11-1 to 2-3	0.74	0.85	4.59	5.45	1	1	0.89	1007.82	1009.35	1007.29	1008.82	1005.2	1007.36	108.051	2	0.74	0.63	5.85	4.59
15	3-1	3-1 to 2-2	0.42	0.64	4.58	8.05	1.5	1.5	0.82	1004.77	1005.02	1004.66	1004.92	1001.97	1002.75	155.694	0.5	1.01	0.66	2.59	4.58
16	3-2	3-2 to 3-1	0.2	0.62	2.72	4.86	1.25	1.25	0.66	1005.06	1005.11	1004.98	1005.04	1003	1003.17	35.163	0.48	0.59	0.39	2.22	2.72
17	3-3	3-3 to 3-2	0.39	0.68	1.94	4.92	1.25	1.03	0.55	1005.13	1005.26	1005.09	1005.21	1003.37	1004.18	163.499	0.5	0.39	0.27	1.69	1.94
18	4-2	4-2 to 4-1	0	0	7.99	4.7	1.11	1.25	1.11	1002.24	1002.43	1001.49	1001.77	1000.38	1000.45	15.493	0.45	1.26	1.1	6.71	7.99
19	4-3	4-3 to 4-2	1.26	0.87	8	4.95	1.25	1.25	1.11	1002.56	1002.98	1001.9	1002.32	1000.65	1000.81	32.013	0.5	1.26	1.1	6.52	8
20	7-2	7-2 to 7-1	0	0	0	15.13	2	2	0.28	1002.85	1002.85	1002.85	1002.85	999.74	999.82	20.988	0.38	0	0	0.21	0.66
21	7-3	7-3 to 7-2	0	0	0	15.46	2	2	0.28	1002.85	1002.85	1002.85	1002.85	999.82	1000	45.234	0.4	0	0	0.21	0.66

100-Year Storm Calculations

Utility Notes

- Boundary information, existing utilities and topographic features shown are based on information supplied by owner, surveyor, and others.
- The existing utility locations shown on these plans are approximate and may not include all utility lines present. The contractor shall be responsible to make One Call and coordinate field location of all existing underground utilities prior to beginning excavation/construction activities.
- The contractor shall be responsible for any damage to any utilities or their structures during excavation/construction activities.
- The contractor shall coordinate and be responsible for connection fees, system development fees, taxes, etc. for all main connections and/or extensions with and from the city and/or respective utility unless otherwise coordinated with the Owner. All utility services for this project shall be coordinated with respective utility company by contractor.
- The contractor shall be responsible for adjusting all at-grade utilities such as manhole covers, valve box covers, etc. to finish grade, whether specifically indicated in these plans or not.
- Utilities shown on the plan with specific elevations and/or structure locations are SUE quality level "B", ie: storm sewer, sanitary sewer, water hydrants & valves, utility poles, etc. All other existing utility information shown is SUE quality level "D", primarily retracement of one-call and city records.

Property Legend

- right of way
- property lines
- easements
- setbacks

Grading Legend

- existing minor contour
- existing major contour
- proposed minor contour
- proposed major contour

Utility Legend

- existing
- proposed

Linetypes

- sanm sanitary main
- sons sanitary service
- ssm storm sewer (existing)
- ssm storm sewer (solid wall, proposed)
- ssm storm sewer (solid wall, proposed)
- ssm storm sewer (perforated, proposed)
- wtrm water main
- wtrf water service (fire)
- wtrd water service (domestic)
- wtri water service (irrigation)
- gasn natural gas main
- gass natural gas service schematic
- elpu underground primary electric
- elsu underground secondary electric
- elpo overhead electric
- datu underground cable/phone/data
- datasu underground cable/phone/data service
- fence-chainlink
- fence-wood
- fence-barbed wire
- treeline

Symbols

- sanitary manhole
- service cleanout
- force main release valve
- rectangular structure
- circular structure
- fire hydrant
- water valve
- water meter
- backflow preventer
- natural gas meter
- service transformer (pad mount)
- primary switch gear
- light pole
- cable/phone/data junction box
- street light
- pedestrian street light
- electric pole
- guy wire
- end section

Local Benchmarks:

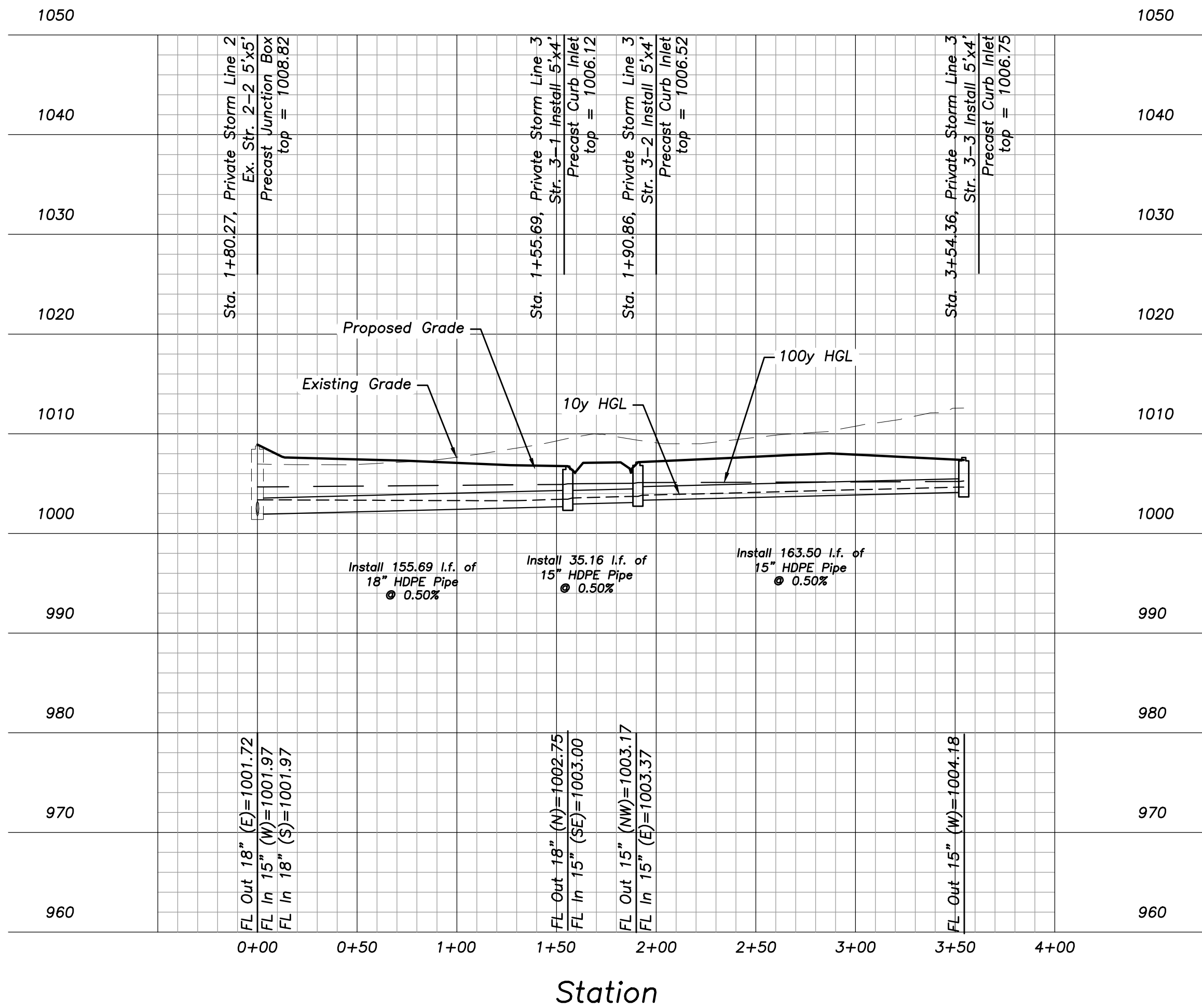
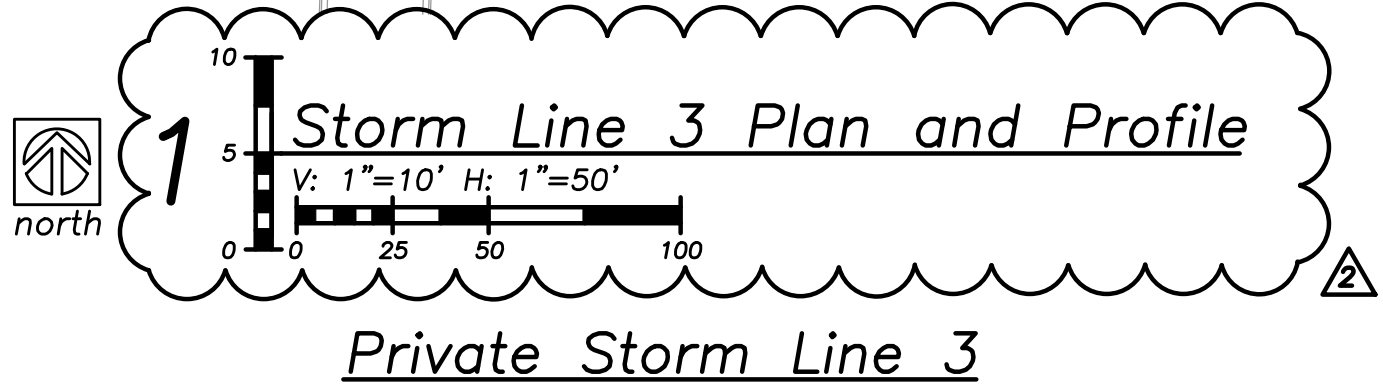
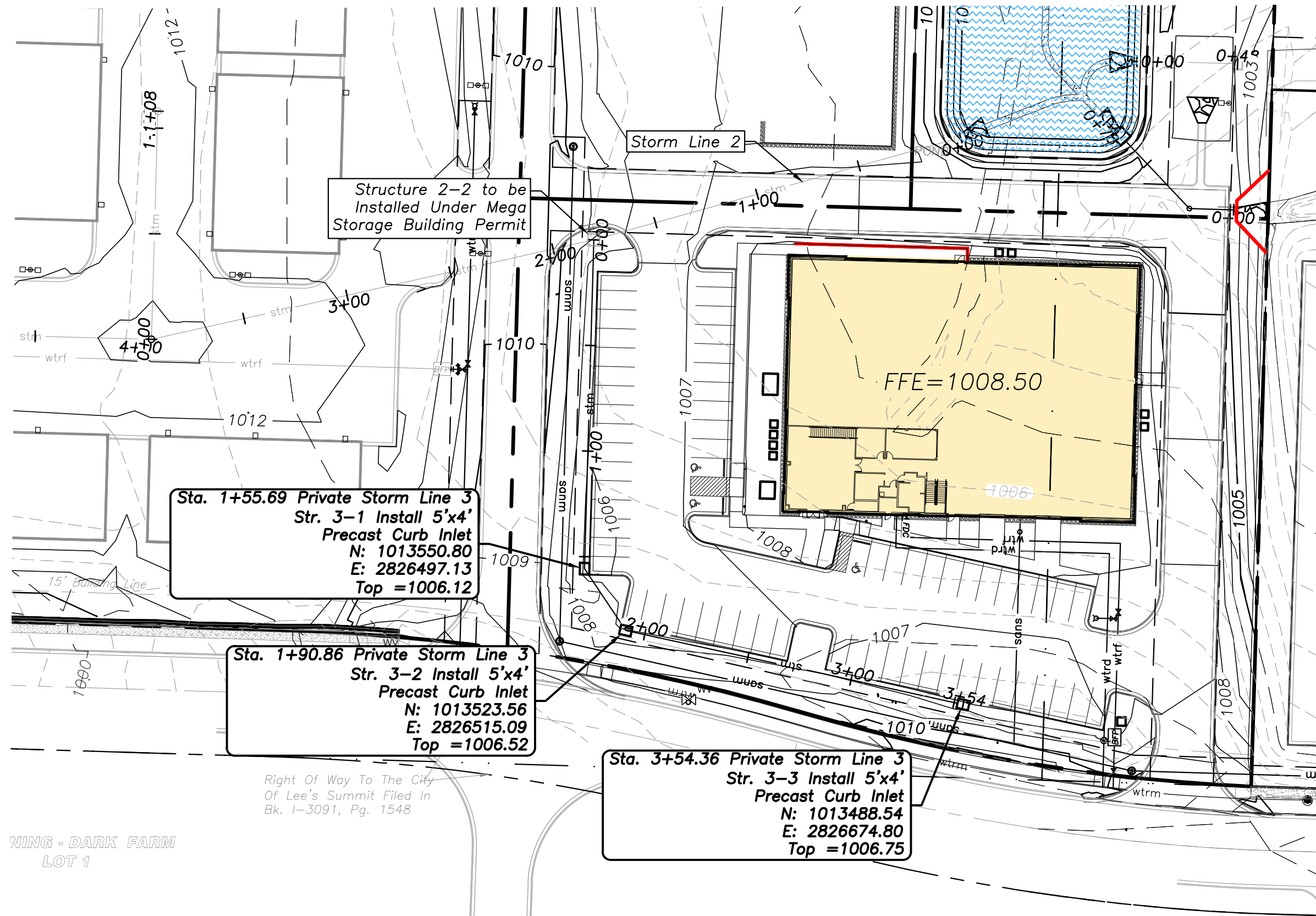
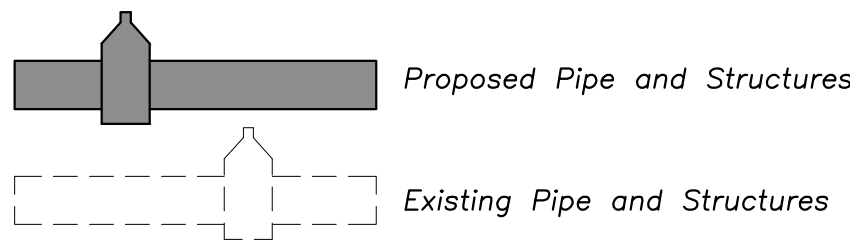
- BM-1: (Sanitary Sewer Manhole, Center of Lid)
Elevation: 1006.88'
N: 1013449.78
E: 2826933.88
- BM-2: (Storm Sewer Curb Inlet, Center of Lid)
Elevation: 994.34'
N: 1013518.71
E: 2826136.03

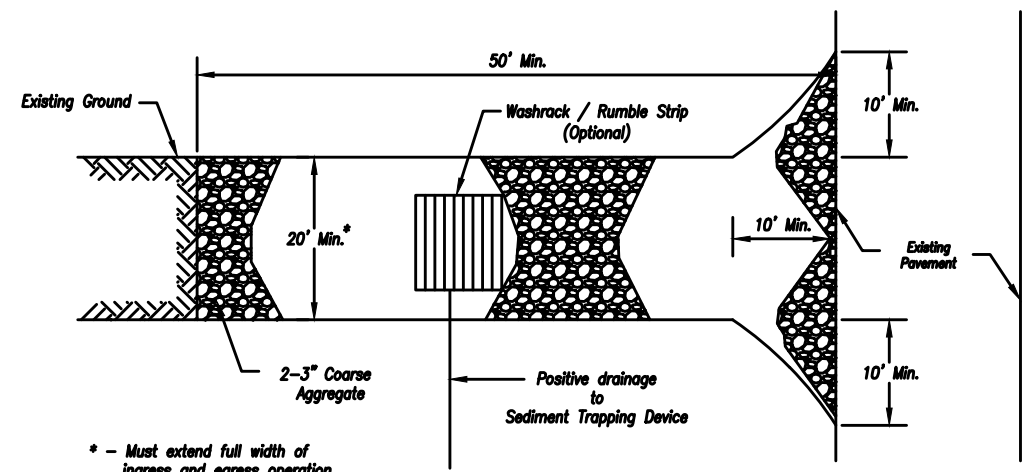


*NOTE:

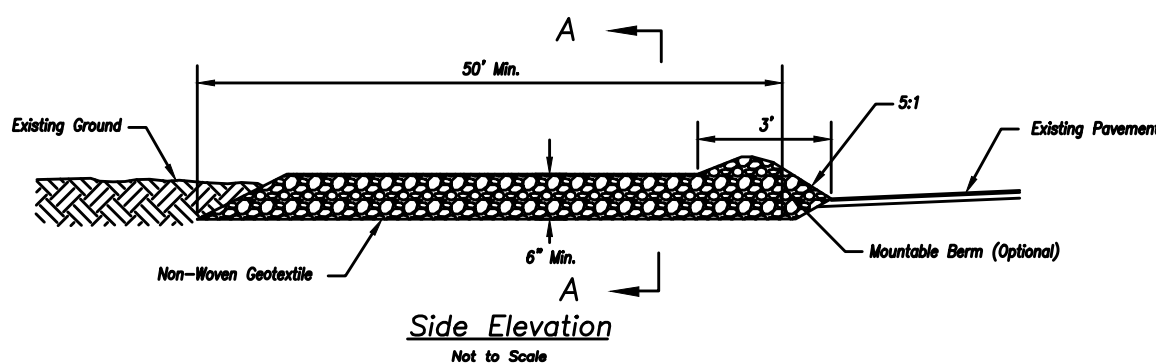
Curb Inlet Coordinates are for Center Back of Curb

Grate Inlet, Junction Boxes, & Manhole Coordinates are to Center of Structure

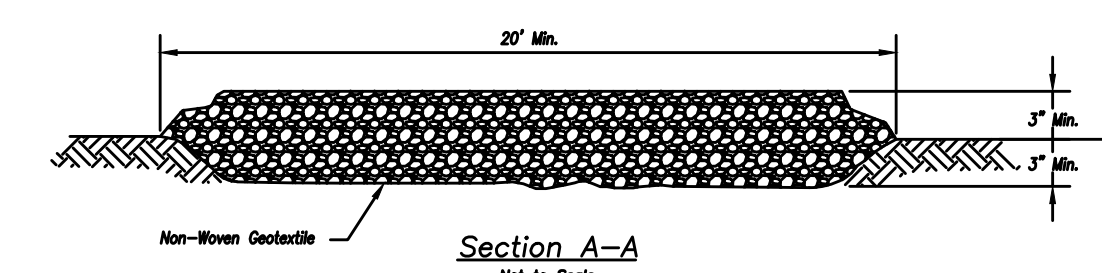




Plan View
Not to Scale



Side Elevation
Not to Scale



Section A-A
Not to Scale

Notes for Construction Entrance:

1. Avoid locating on steep slopes, at curves on public roads, or downhill of disturbed area.
2. Remove all vegetation and other unsuitable material from the foundation area, grade, and crown for positive drainage.
3. If slope towards the public road exceeds 2%, construct a 6- to 8-inch high ridge with 30:1V side slopes across the foundation approximately 15 feet from the edge of the public road to divert runoff from it.
4. Install pipe under the entrance if needed to maintain drainage ditches along public roads.
5. Place stone to dimensions and grade as shown on plans. Leave surface sloped for drainage.
6. Divert all surface runoff and drainage from the entrance to a sediment control device.
7. If conditions warrant, place geotextile fabric on the graded foundation to improve stability.

Maintenance for Construction Entrance:

1. Reshape entrance as needed to maintain function and integrity of installation. Top dress with clean aggregate as needed.

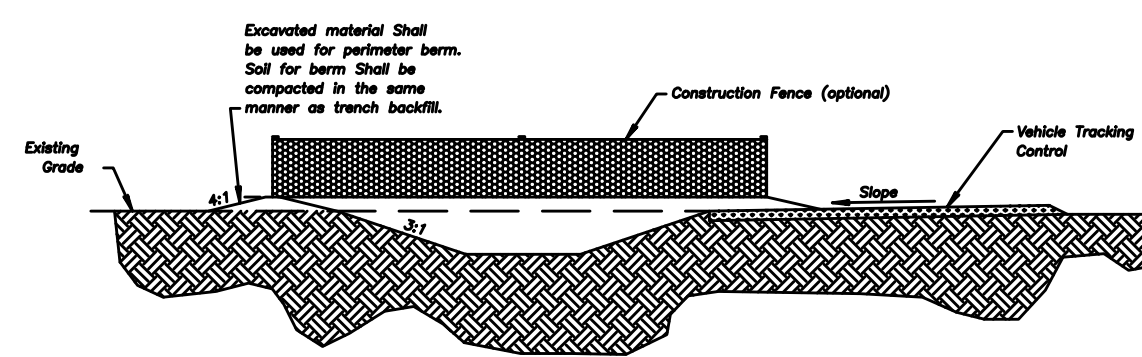
CONSTRUCTION ENTRANCE

Notes for Concrete Washout:

1. Concrete washout areas shall be installed prior to any concrete placement on site.
2. Concrete washout areas shall include a flat subsurface pit sized relative to the amount of concrete to be placed on site. The slope leading out of the subsurface pit shall be 3:1. The vehicle tracking post shall be placed towards the concrete washout area.
3. Vehicle tracking control is required at the access point to all concrete washout areas.
4. Stone shall be placed at the construction site entrance, washout area, and elsewhere as necessary to clearly indicate the location(s) of the concrete washout area(s) to operators of concrete truck and pump rigs.
5. A one-piece impervious liner may be required along the bottom and sides of the subsurface pit in sandy or gravelly soils.

Maintenance for Concrete Washout:

1. Concrete washout materials shall be removed once the materials have filled the washout to approximately 75% full.
2. Concrete washout areas shall be enlarged as necessary to maintain capacity for washed concrete.
3. Concrete washout water, spilled pieces of concrete and all other debris in the subsurface pit shall be transported from the job site in a water-tight container and disposed of properly.
4. Concrete washout areas shall remain in place until all concrete for the project is placed.
5. When concrete washout areas are removed, excavations shall be filled with suitable compacted backfill and topped, any disturbed areas associated with the installation, maintenance, and/or removal of the concrete washout areas shall be stabilized.



CONCRETE WASHOUT

AMERICAN PUBLIC WORKS ASSOCIATION

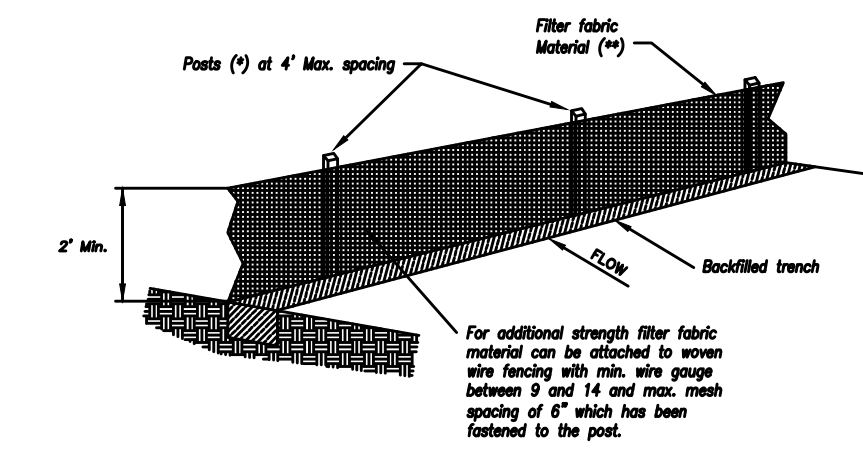


KANSAS CITY
METRO CHAPTER

CONSTRUCTION ENTRANCE
AND CONCRETE WASHOUT

STANDARD DRAWING
NUMBER ESC-01
ADOPTED:
10/24/2016

Construction Entrance modified from 2015 Overland Park Standard Details for Erosion and Sediment Control; Concrete Washout modified from 2009 City of Great Bend Standard Drawings.



- (*) POSTS
- MIN. LENGTH 4'
 - HARDWOOD 1 1/2" x 1 3/4"
 - NO.2 SOUTHERN PINE 2 3/8" x 2 3/8"
 - STEEL 1.33 LB/FT

(**) - Geotextile Fabric shall meet the requirements of AASHTO M288

SILT FENCE DETAILS

Not to Scale

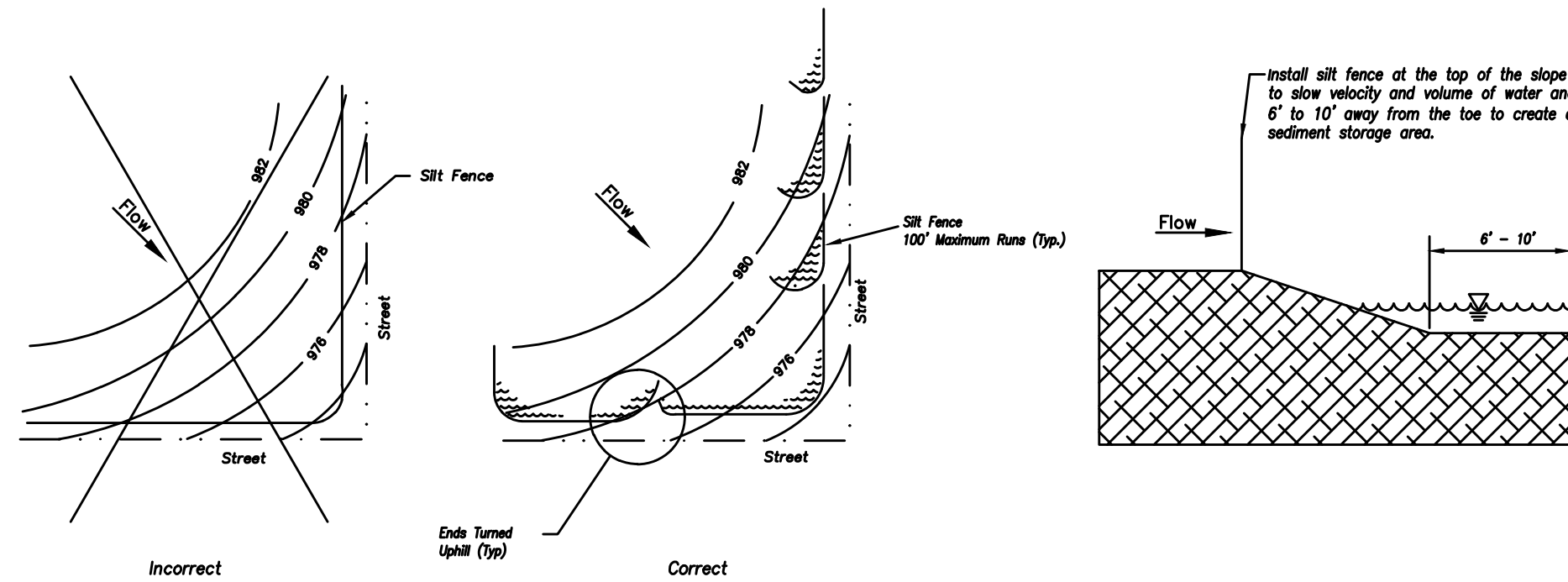
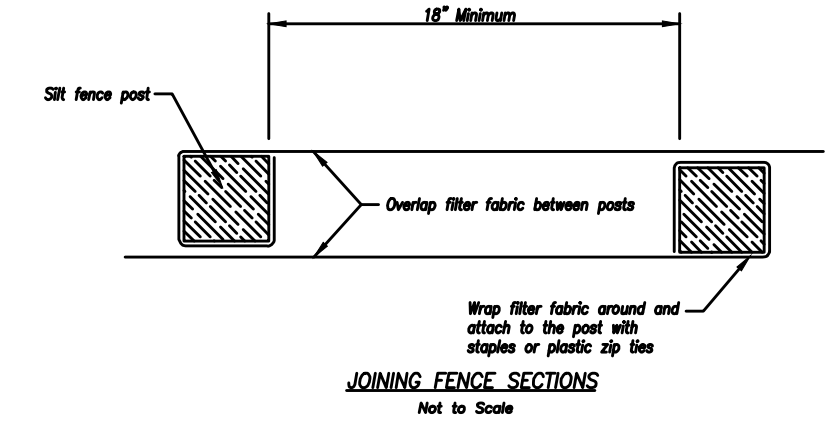


Figure A

SILT FENCE LAYOUT

Not to Scale



JOINING FENCE SECTIONS
Not to Scale

AMERICAN PUBLIC WORKS ASSOCIATION

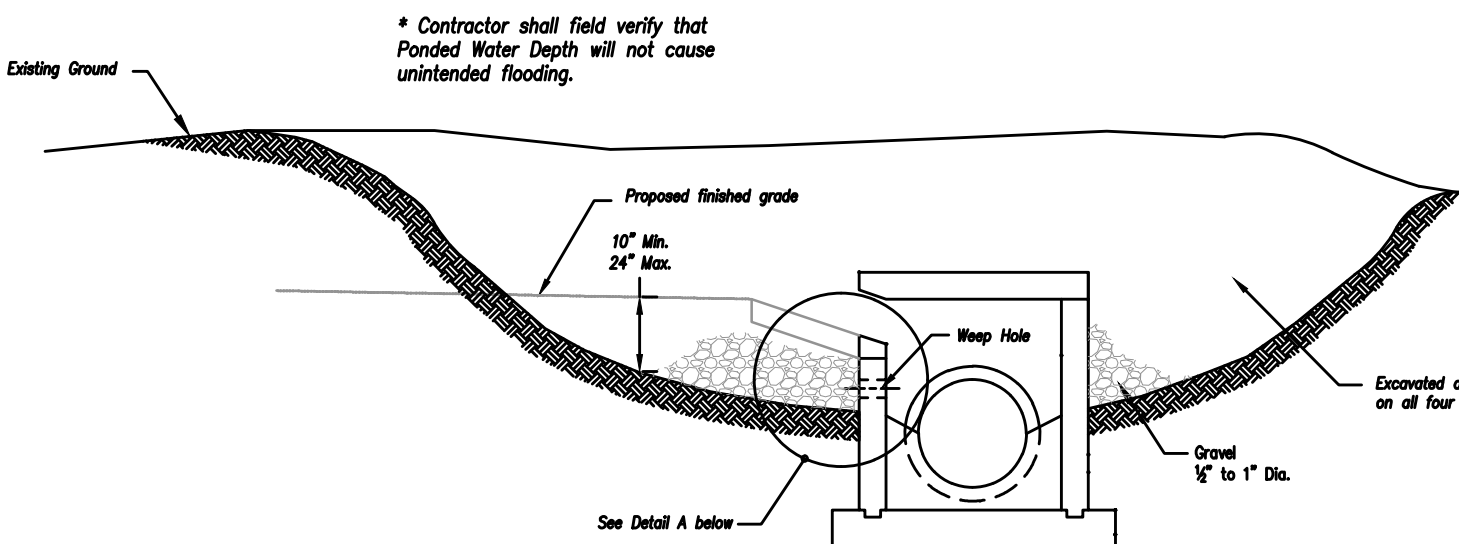


KANSAS CITY
METRO CHAPTER

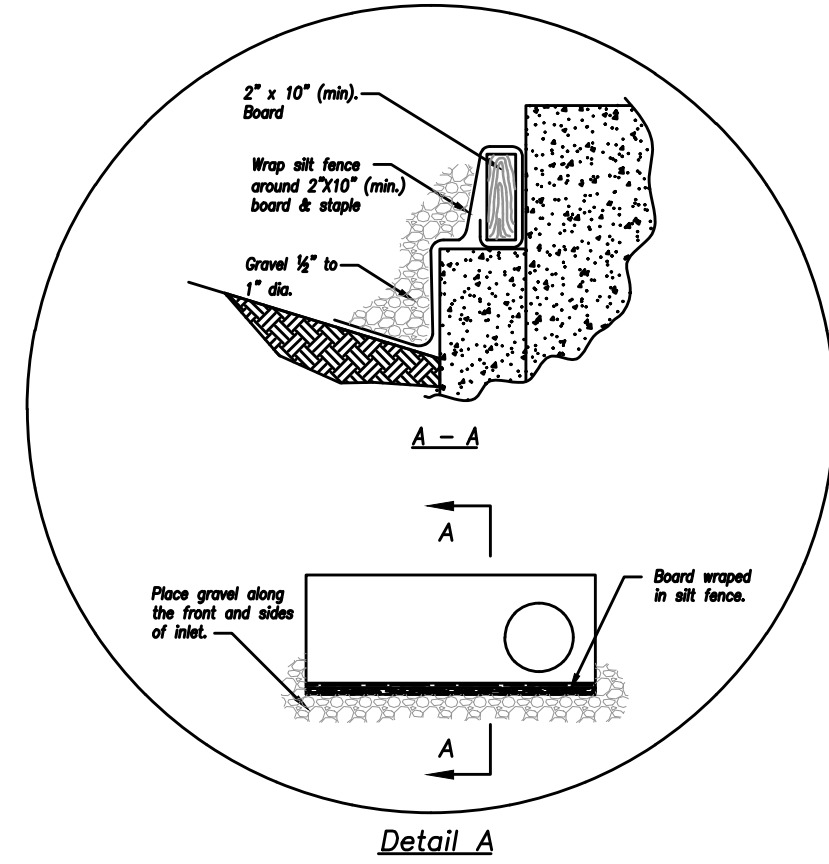
SILT FENCE

STANDARD DRAWING
NUMBER ESC-03
ADOPTED:
10/24/2016

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.



Detail A



EARLY STAGE CURB INLET
(Open Box and Prior to Pouring
Curb and Inlet Throat)

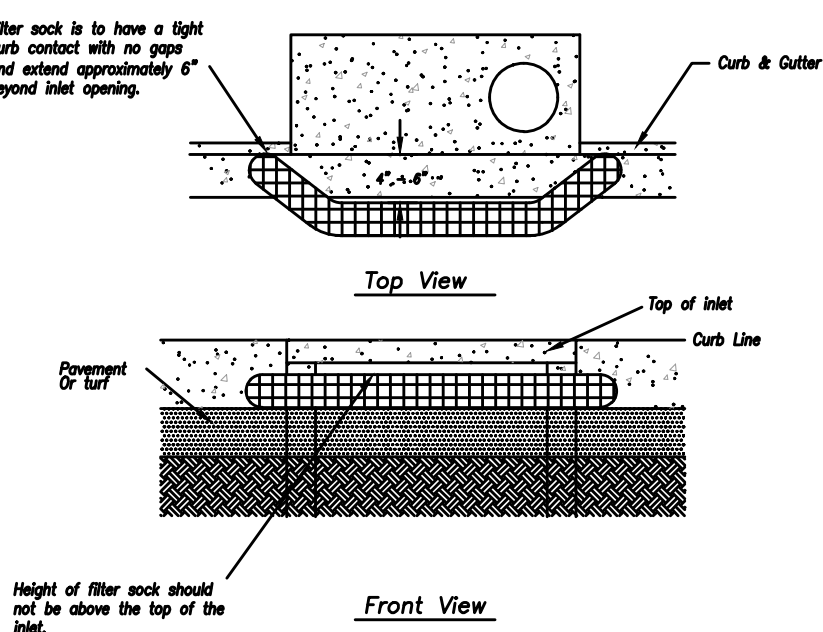
Notes:

1. Immediately following inlet construction and prior to construction of curb and inlet throat, protect inlet opening by installing 2" x 10" (min.) board wrapped in silt fence. Structures shall have excavated storage areas on all four sides to allow settling of sediment (Early Stage Curb Inlet).
2. When inlet is completed and curb poured, filter socks or approved equal should be used (Late Stage Curb Inlet). Straw wattles are not approved for curb inlet use.
3. Contractor to field verify ponding water shall not create a traffic hazard.

Maintenance:

1. Remove deposited sediment from excavated storage areas when available storage has been reduced by 20%.
2. Remove deposited sediment from filter socks or similar when any accumulation of sediment is visible.
3. Repair or replace as necessary to maintain function and integrity of installation.

Sump Inlet Sediment Filter



Sump Inlet Sediment Filter

LATE STAGE CURB INLET (After Pouring Curb and Inlet Throat)

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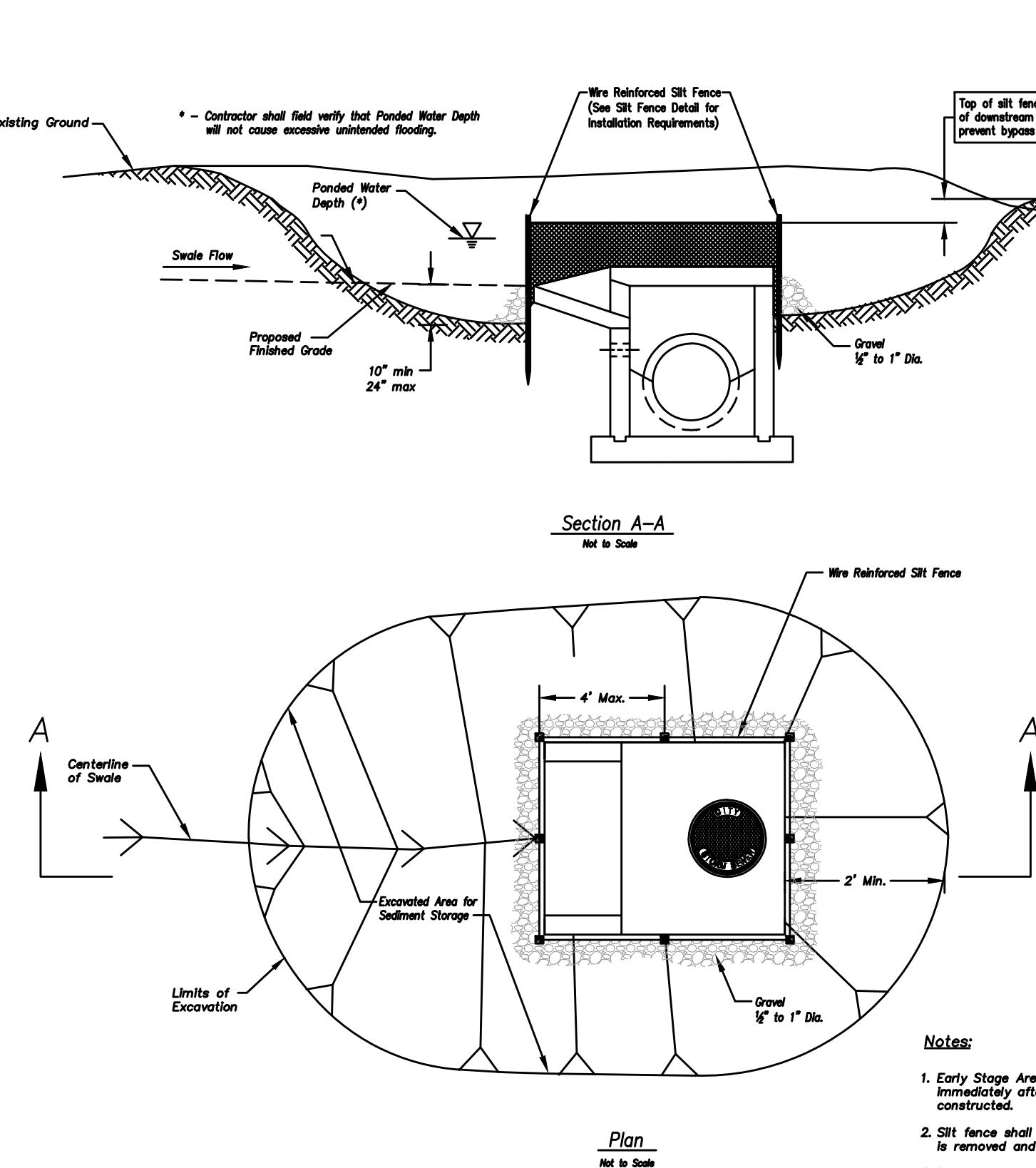


KANSAS CITY
METRO CHAPTER

CURB INLET PROTECTION

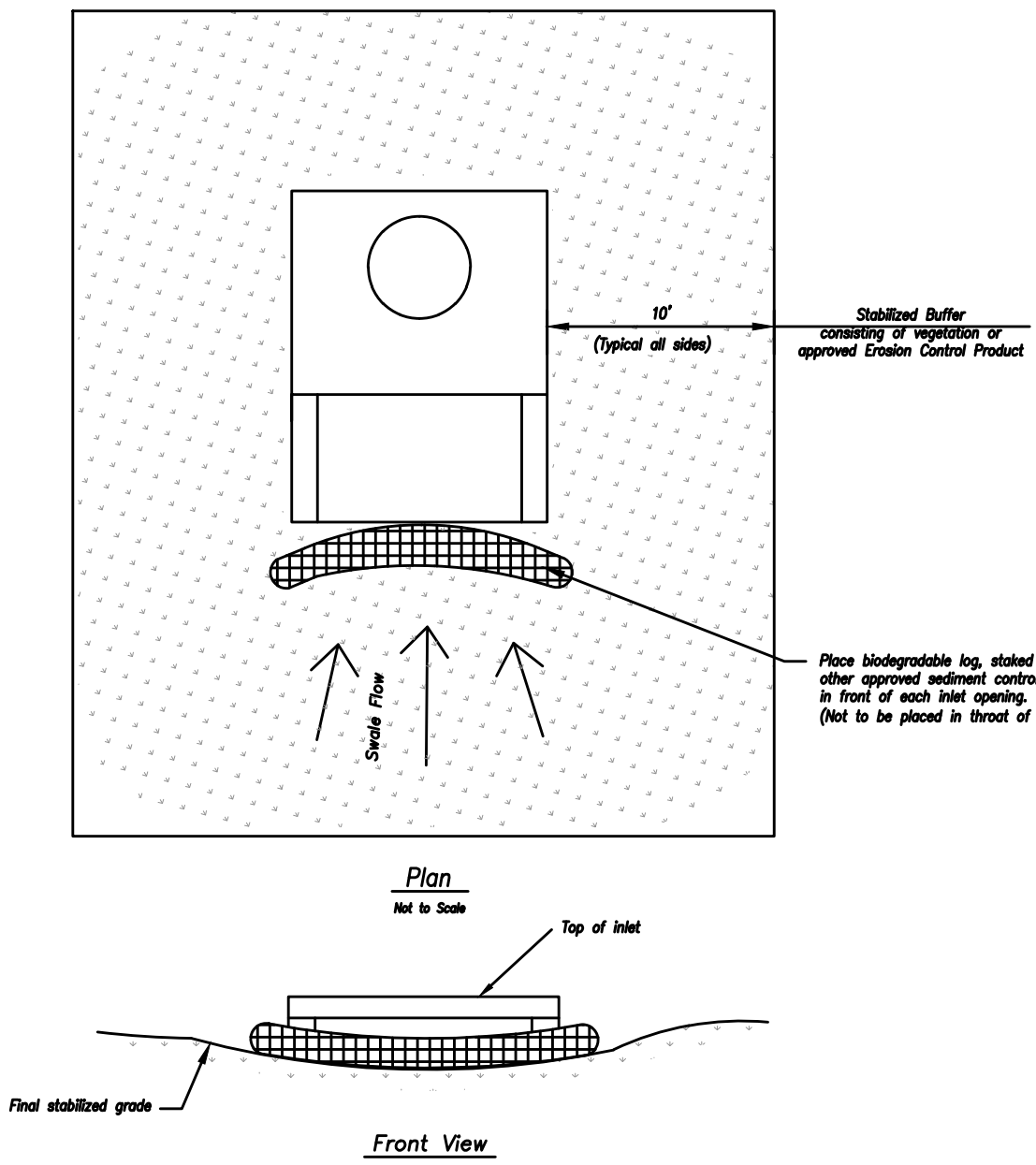
STANDARD DRAWING
NUMBER ESC-06
ADOPTED:
10/24/2016

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.



EARLY STAGE AREA INLET

(All open boxes and inlets not at final grade)



LATE STAGE AREA INLET
(Area inlets at final grade and existing inlets)

Maintenance:

1. Remove deposited sediment from excavated storage areas when available storage has been reduced by 20%.
2. Silt fence shall remain in place until excavated area is removed and Late Stage Area Inlet is being installed.
3. Backfill excavated area ONLY after final grading of the site. Stabilization of the site is to immediately follow.
4. Wire reinforced silt fence may be used in place of silt fence attached to wood frame.

1. Remove deposited sediment from excavated storage areas when available storage has been reduced by 20%.
2. Remove deposited sediment from filter socks or similar when any accumulation of sediment is visible.
3. Repair or replace as necessary to maintain function and integrity of installation.

AMERICAN PUBLIC WORKS ASSOCIATION

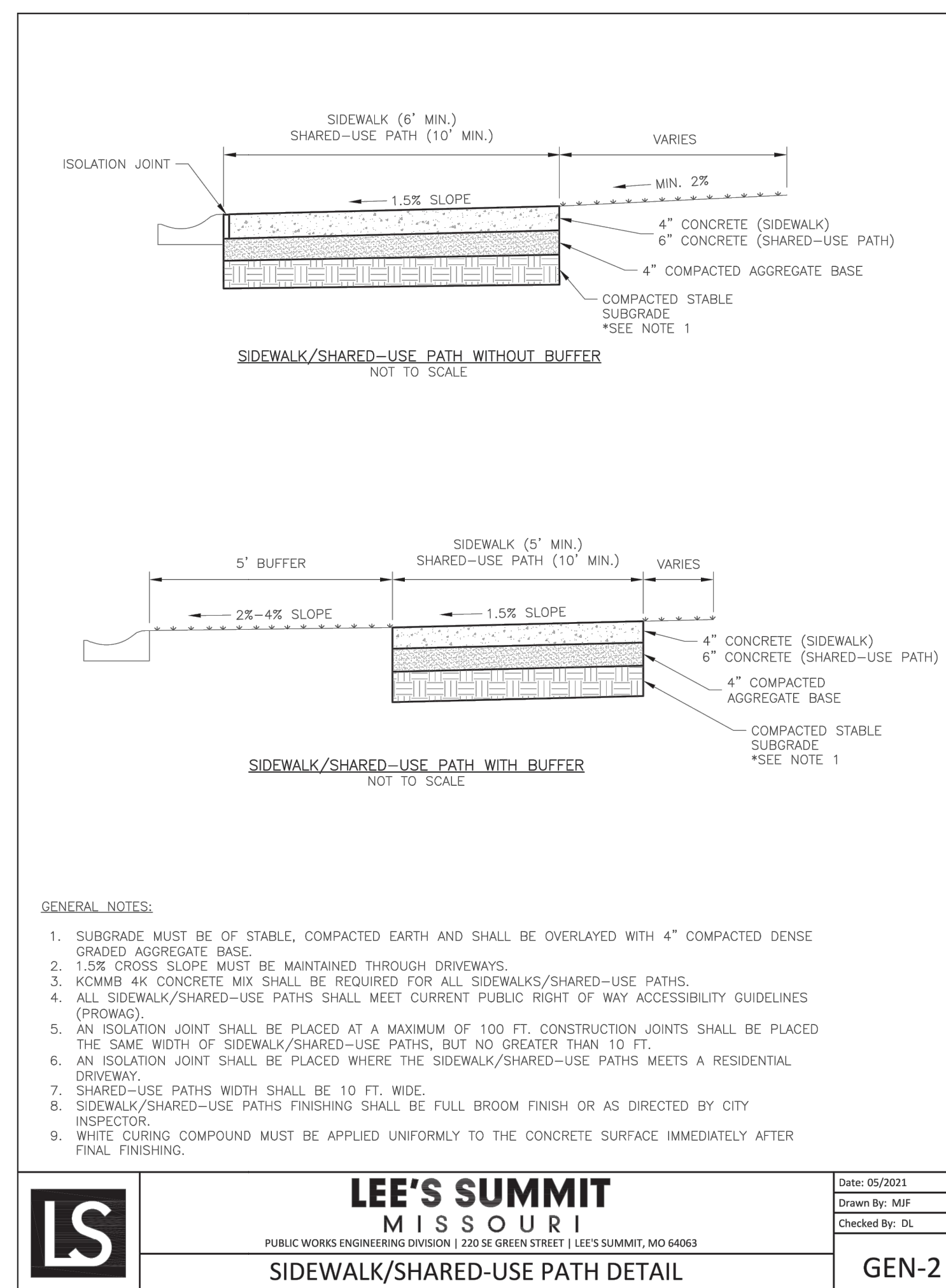
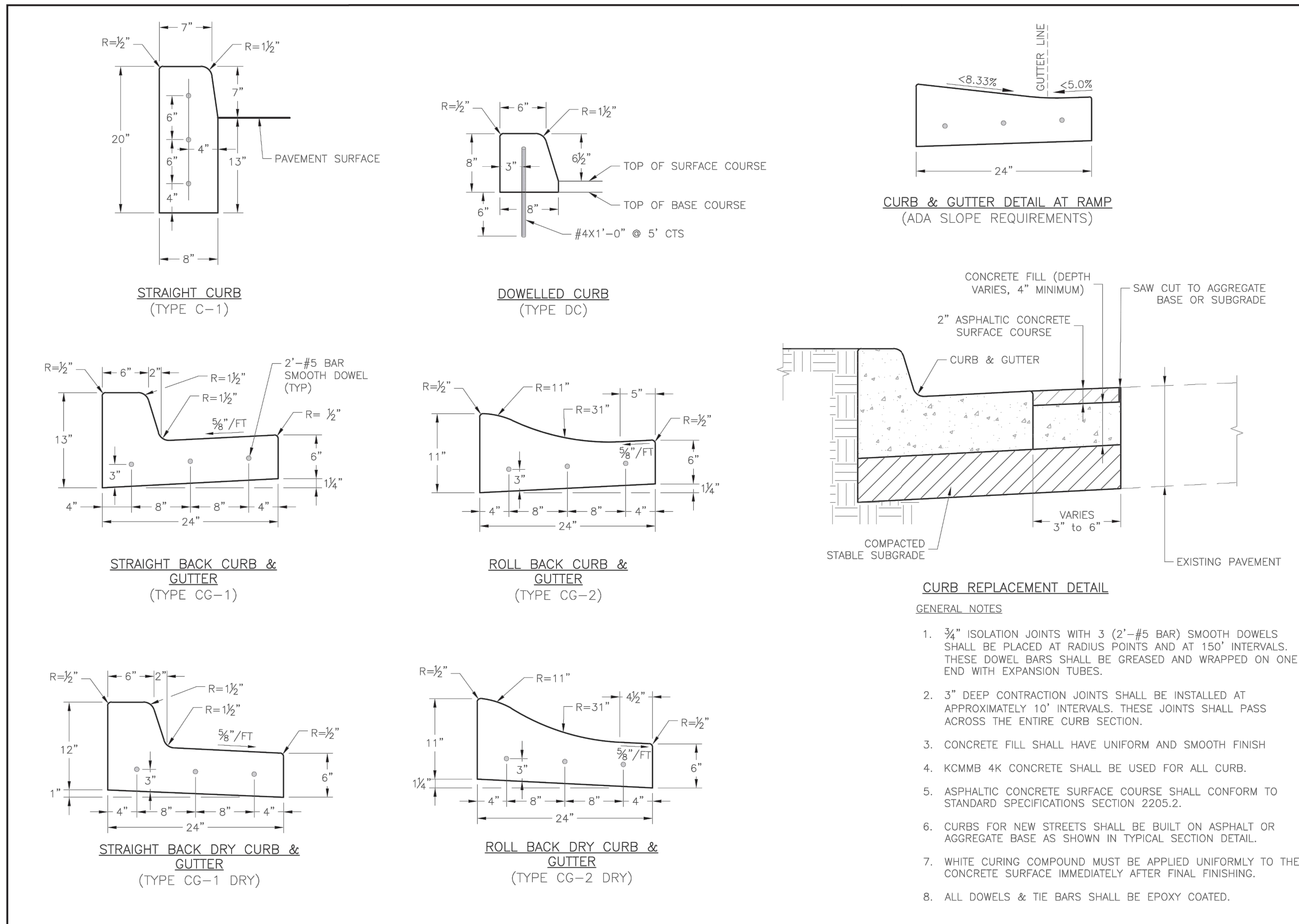
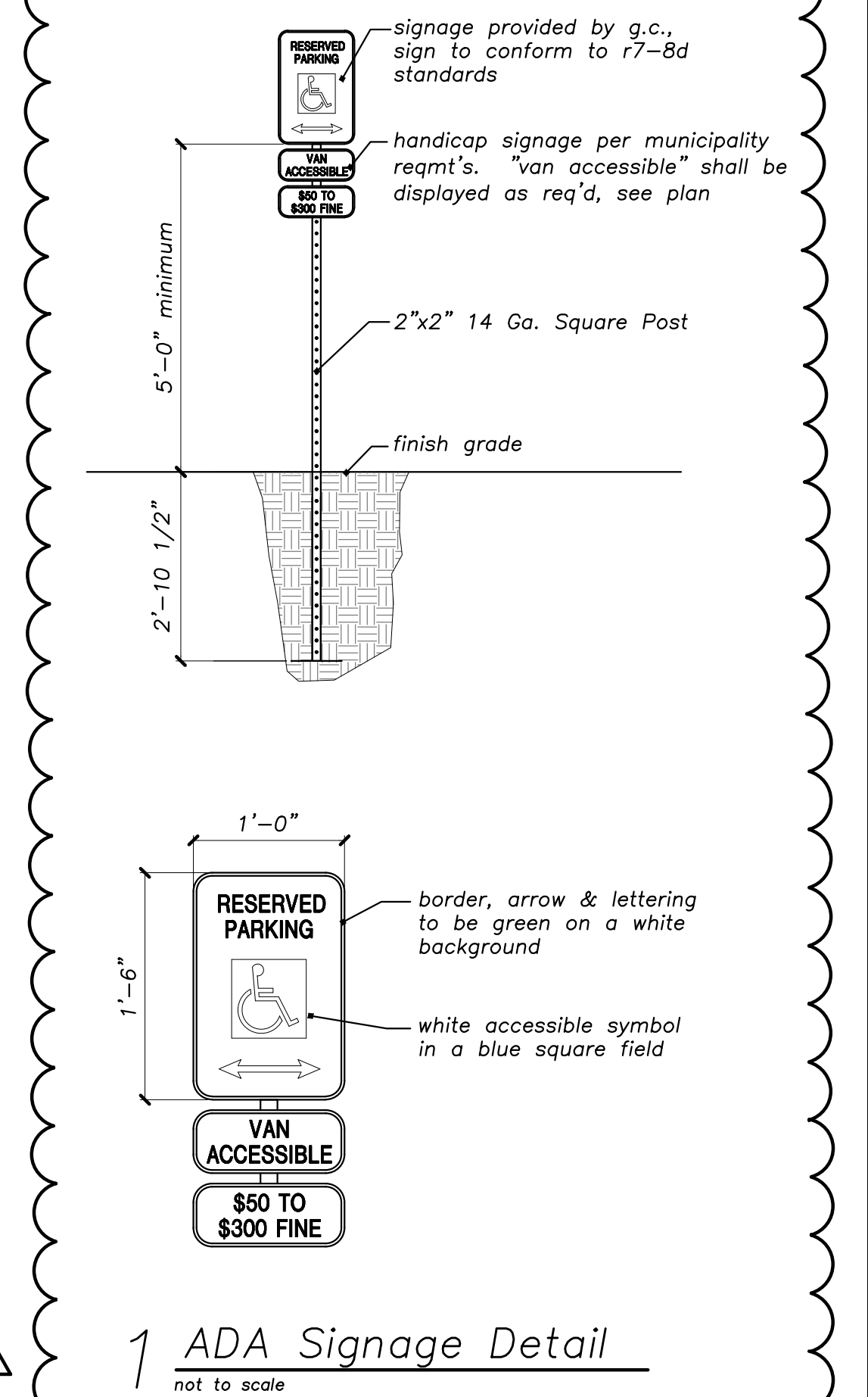
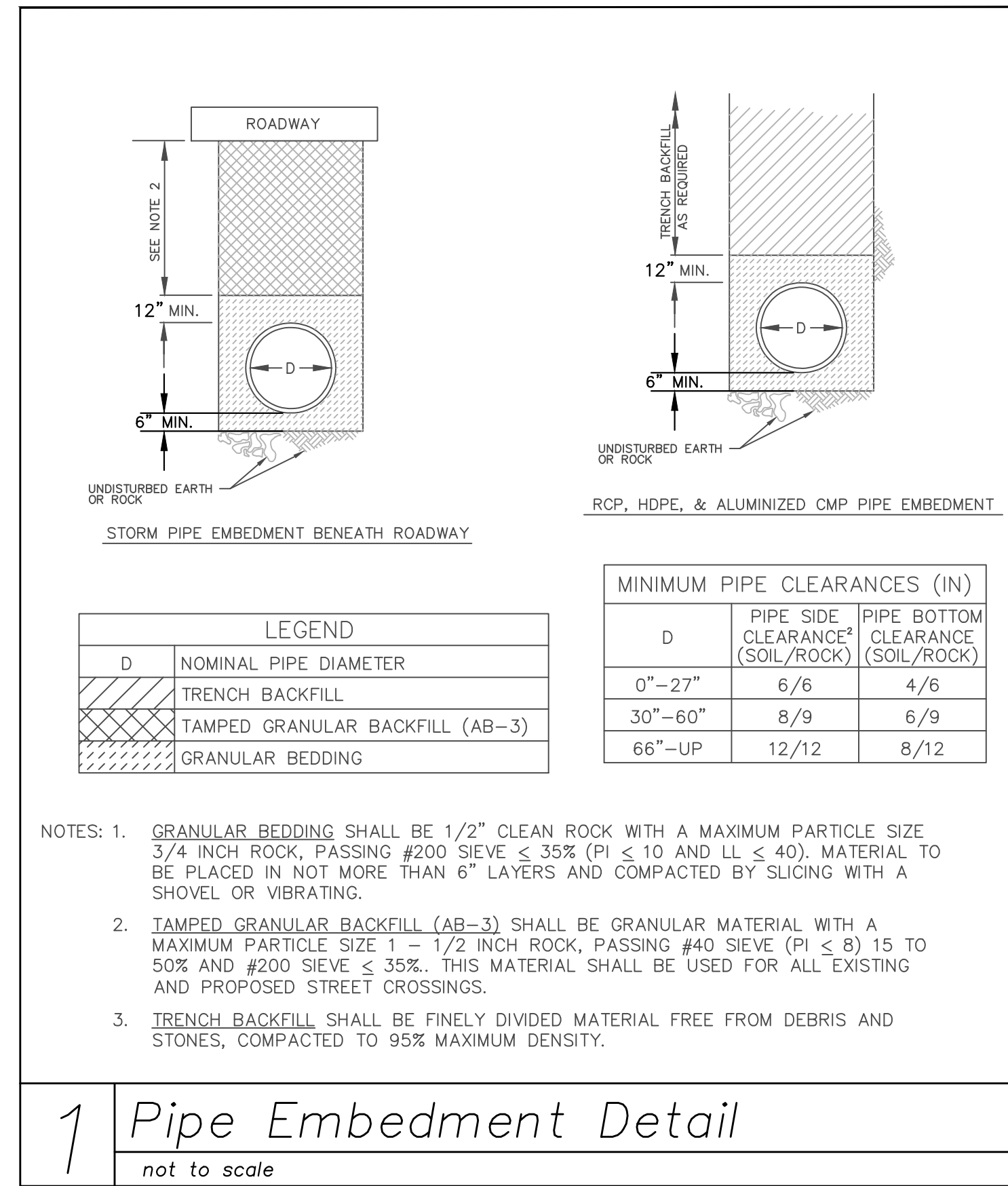
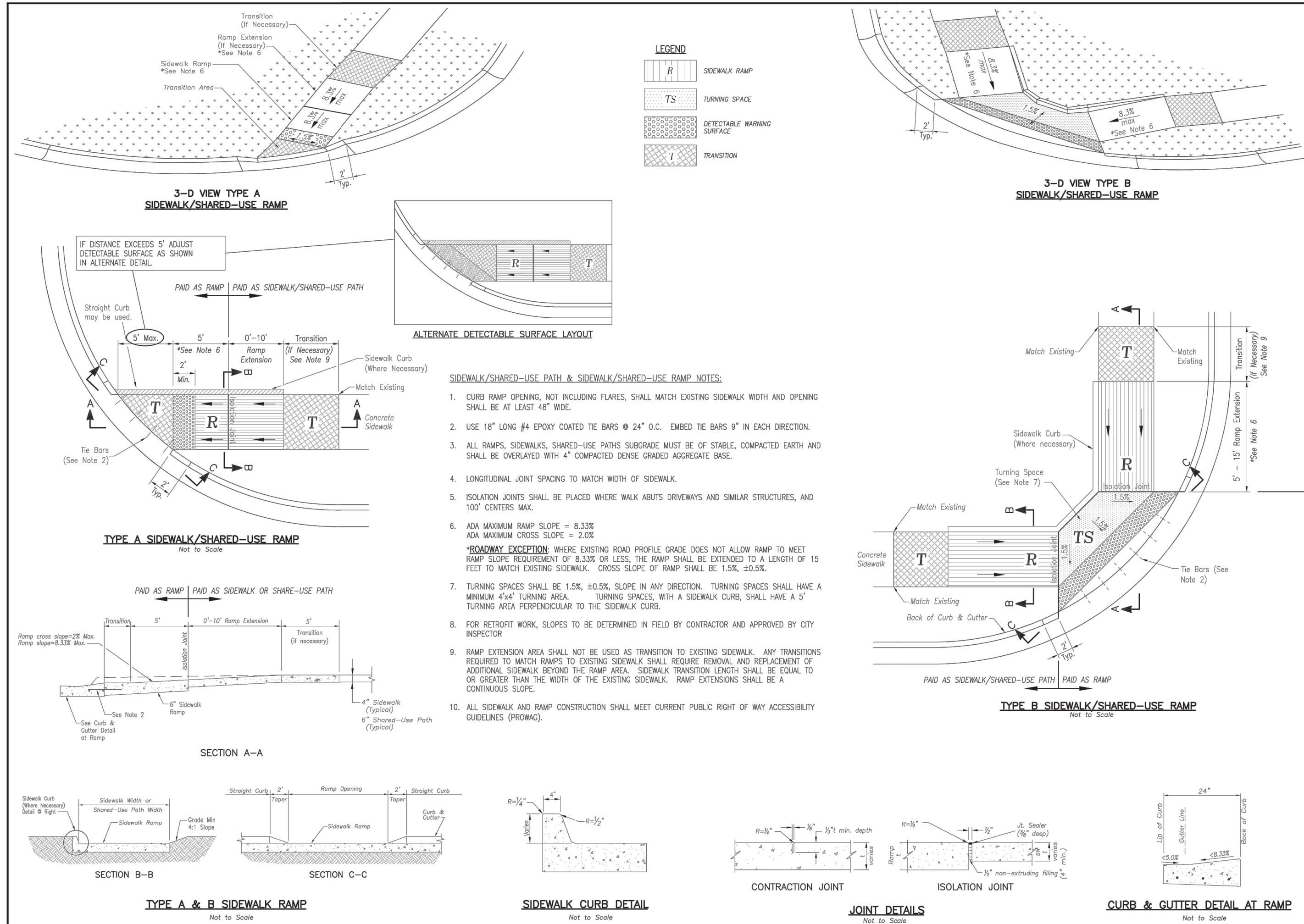


KANSAS CITY
METRO CHAPTER

AREA INLET AND
JUNCTION BOX PROTECTION

STANDARD DRAWING
NUMBER ESC-07
ADOPTED:
10/24/2016

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.



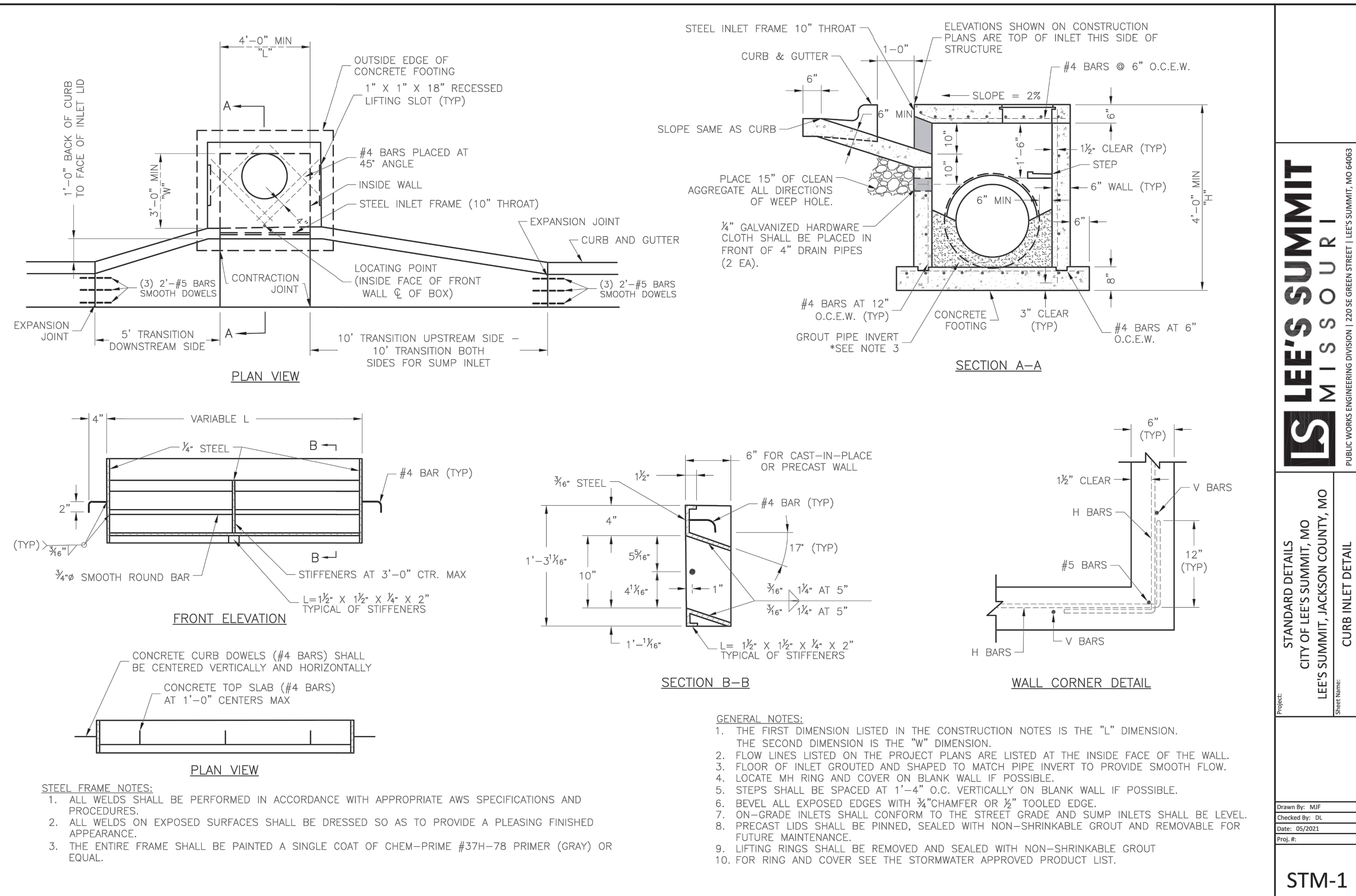
a new development for
D-BAT - Town Centre Lot 1
540 NE Town Centre Drive
Lee's Summit, Missouri

date
02.18.2022
drawn by
JMP
checked by
PAM
revisions

sheet number

C4.3

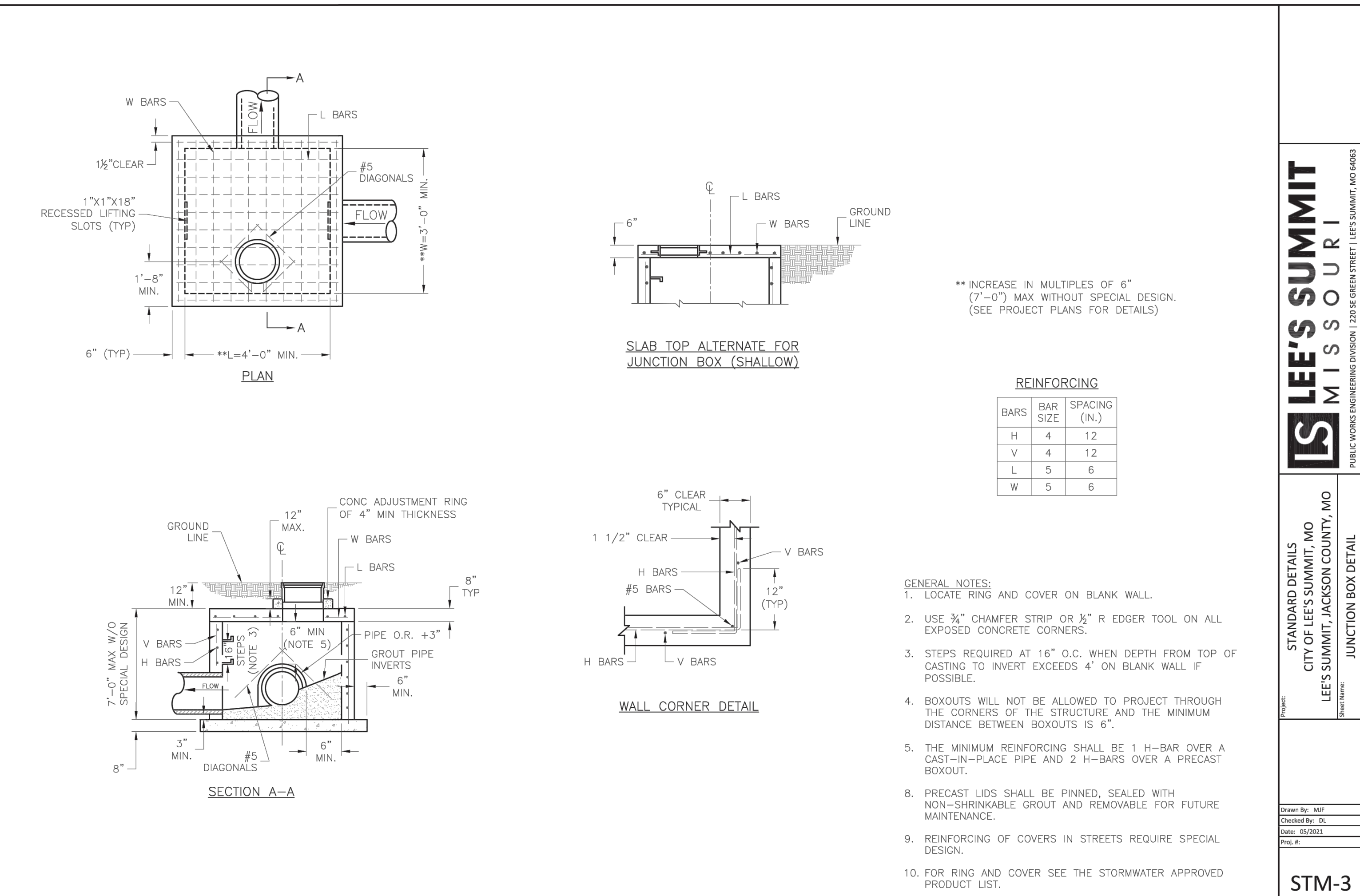
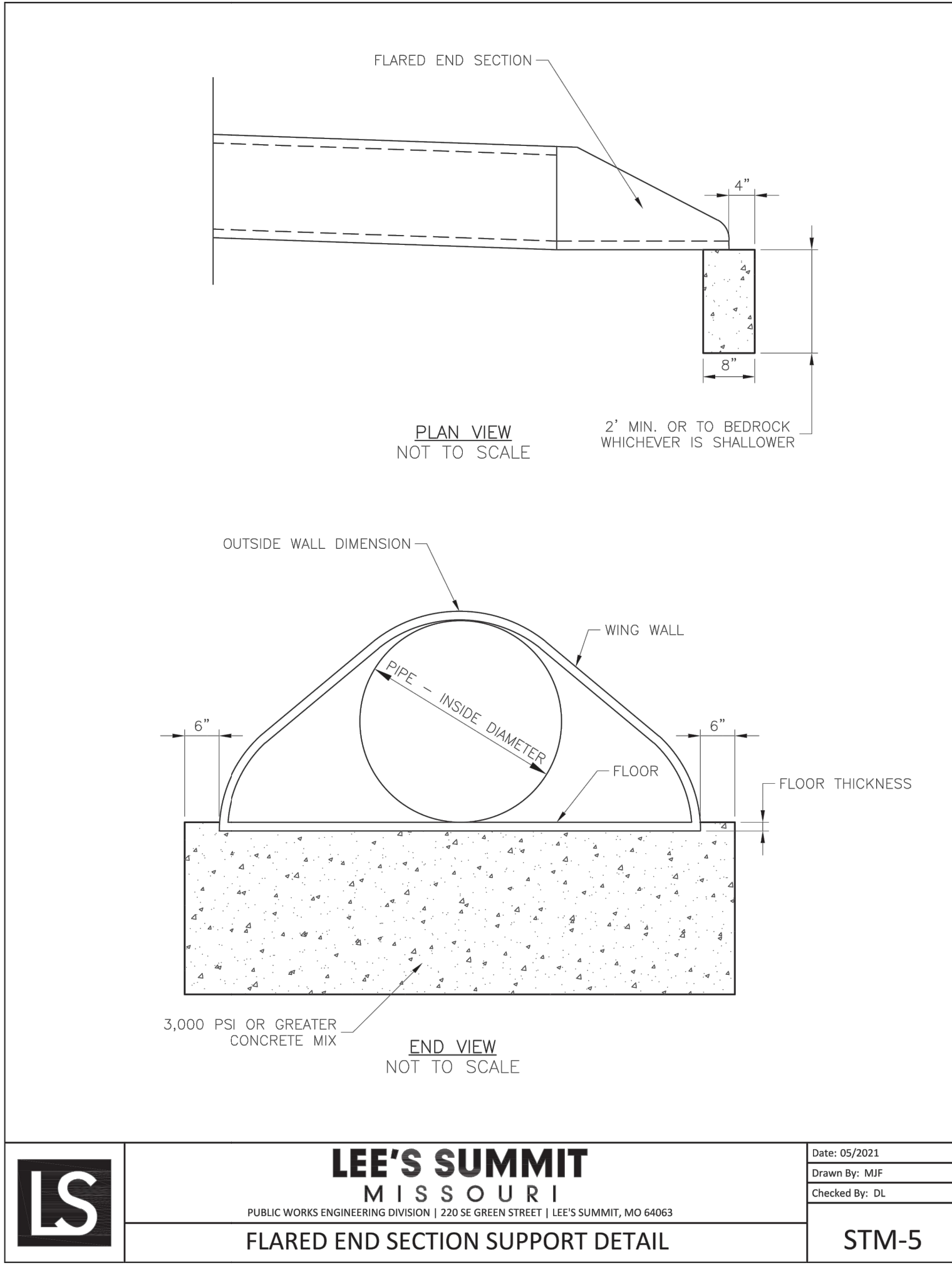
drawing type
FDP & Permit
project number
20231



LEE'S SUMMIT
MISSOURI

STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO

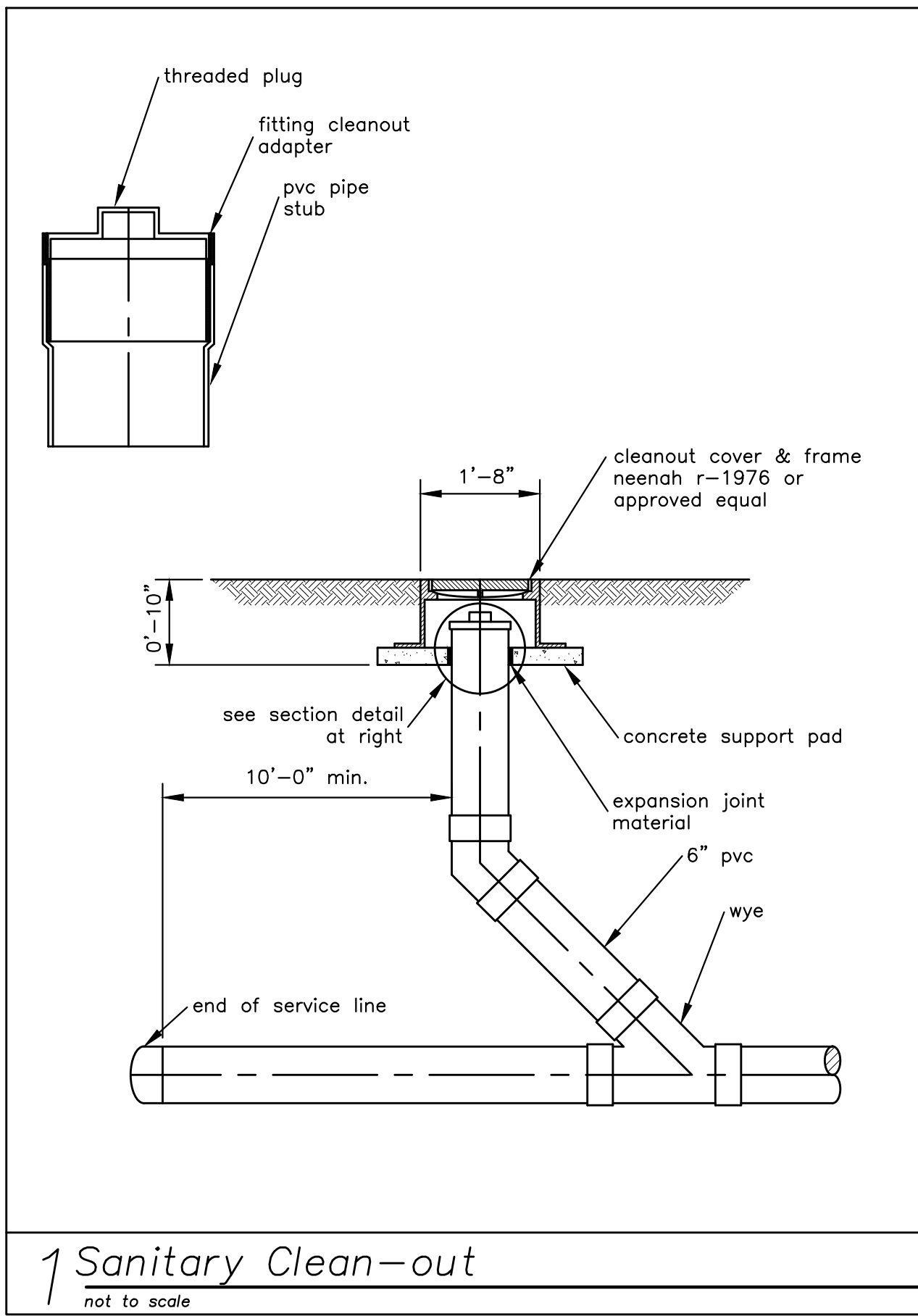
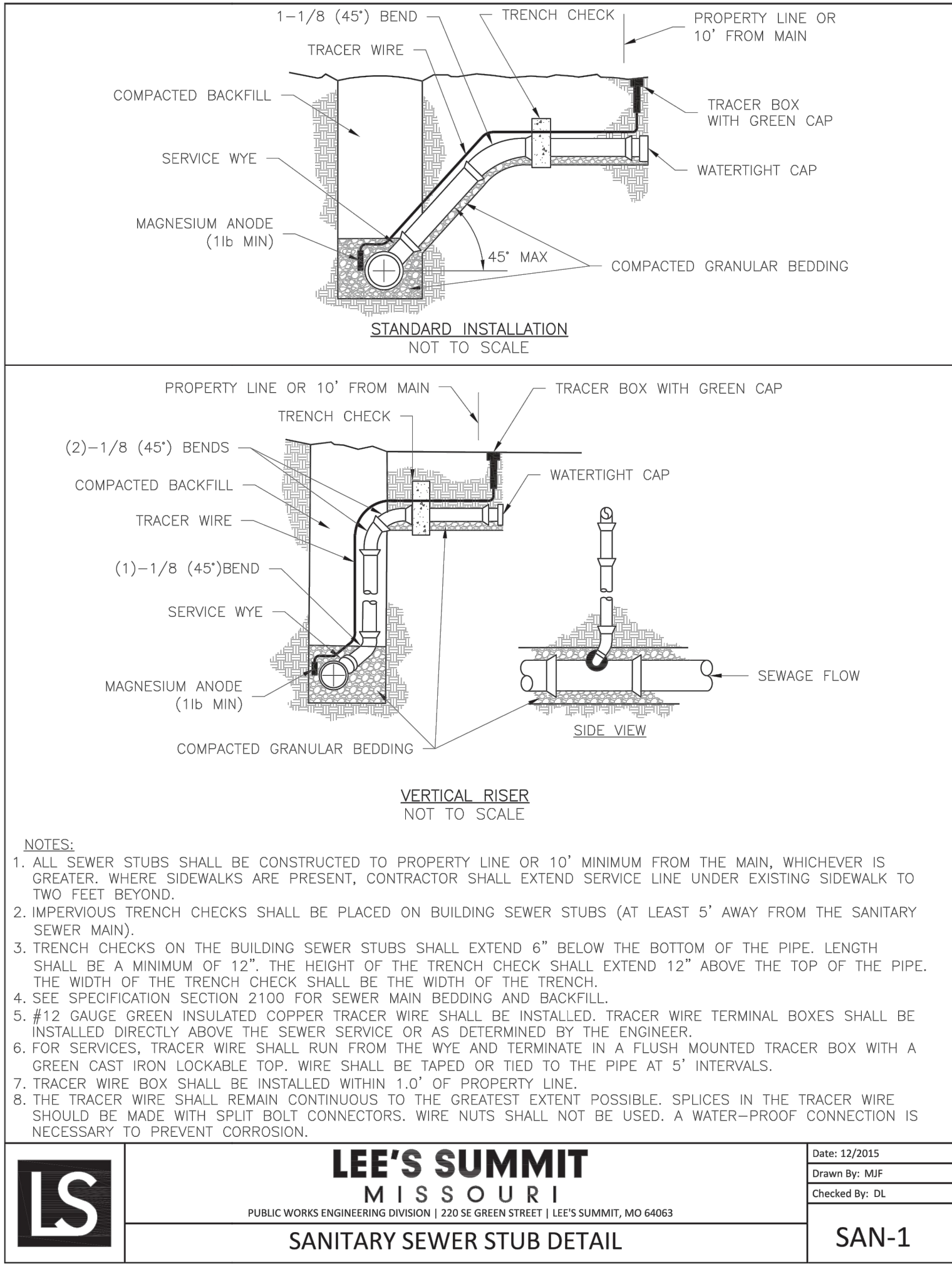
STM-1



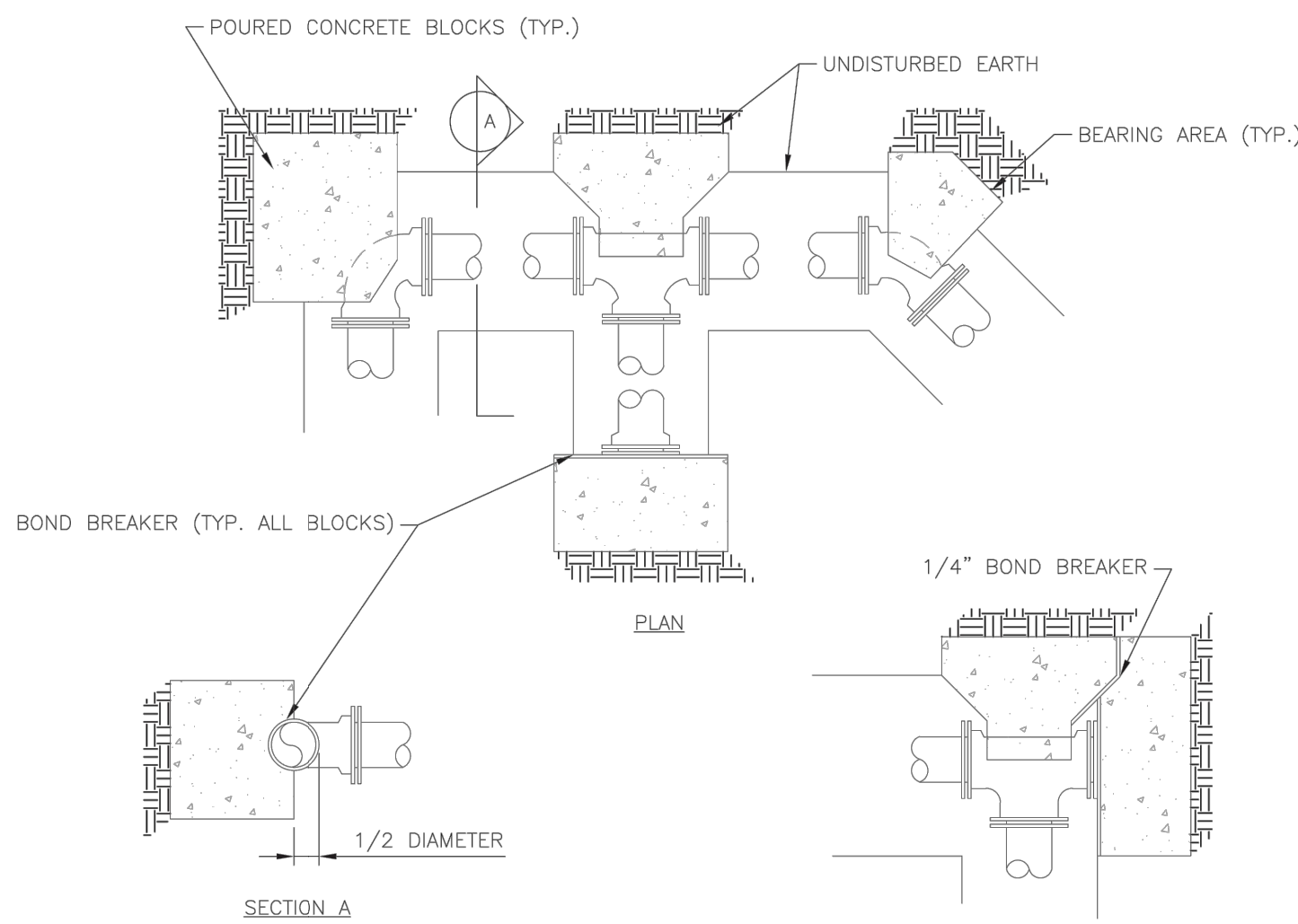
LEE'S SUMMIT
MISSOURI

STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO

STM-3



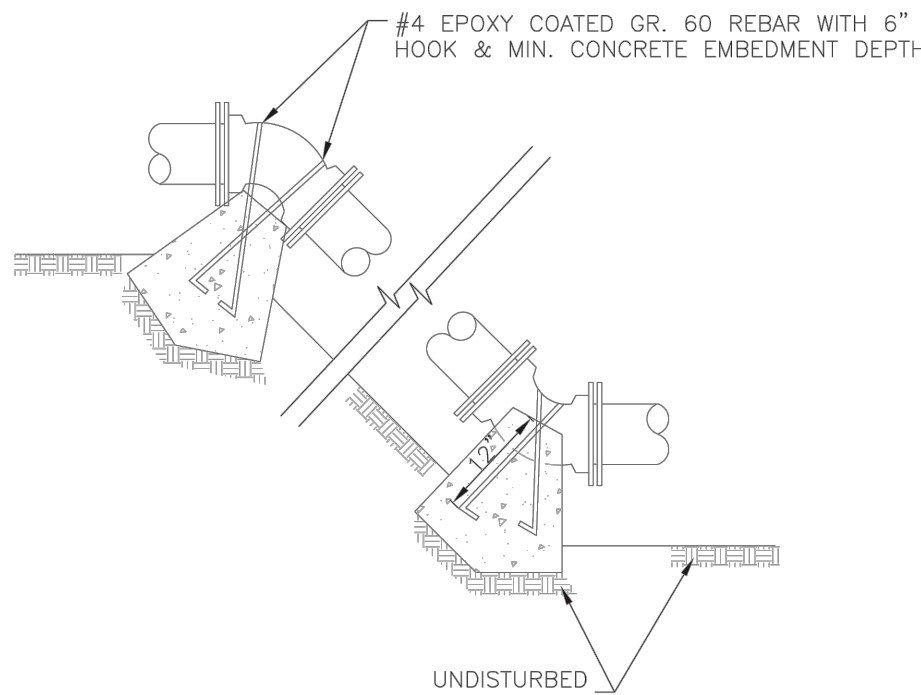
REQUIRED CONCRETE BEARING AREA (SQUARE FEET - SF)					
NOM. DIA. (INCHES)	180 TEE, PLUG	90 BEND	45 BEND	22.5 BEND	11.25 BEND
6	4.7	6.7	4.0	4.0	4.0
8	8.4	11.8	6.4	4.0	4.0
10	13.1	18.5	10.0	5.1	4.0
12	18.8	26.7	14.4	7.4	4.0
14	25.7	36.3	19.6	10.0	5.0
16	33.5	47.4	25.6	13.1	6.6
18	42.4	REST. JT.	32.5	16.5	8.3
20	REST. JT.	REST. JT.	40.1	20.4	10.3
24	REST. JT.	REST. JT.	REST. JT.	29.4	14.8



- NOTES:
1. ALL BENDS WITHOUT RESTRAINED JOINTS SHALL HAVE CONCRETE THRUST BLOCKS INSTALLED FOR RESTRAINT.
 2. MEGA LUGS MAY BE USED ONLY IN CONJUNCTION WITH CONCRETE THRUST BLOCKING.
 3. BEARING AREA MUST BE AGAINST UNDISTURBED SOIL.
 4. DO NOT COVER JOINTS OR BOLTS (WHERE APPLICABLE) WITH CONCRETE.

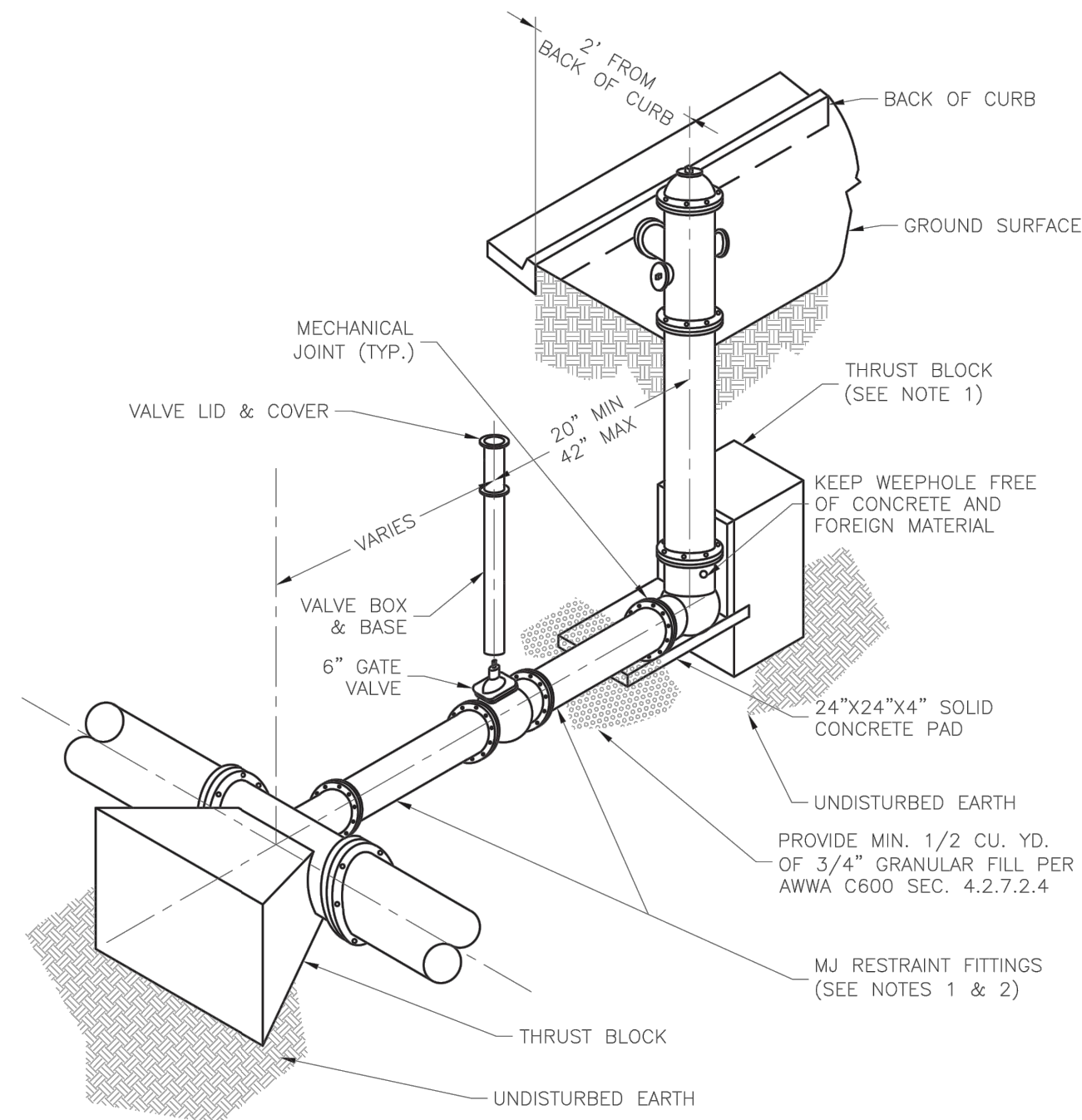
LS	LEE'S SUMMIT MISSOURI <small>PUBLIC WORKS ENGINEERING DIVISION 220 SE GREEN STREET LEE'S SUMMIT, MO 64063</small>	Date: 01/2016
		Drawn By: JN
		Checked By: DL
HORIZONTAL THRUST BLOCK		WAT-1

REQUIRED CONCRETE VOLUME (CUBIC FEET - CF)					
NOM. DIA. (INCHES)	180 TEE, PLUG	90 BEND	45 BEND	22.5 BEND	11.25 BEND
6	50.5	71.4	38.6	19.7	9.9
8	89.8	126.9	68.7	35.0	17.6
10	140.2	198.3	107.3	54.7	27.5
12	202.0	REST. JT.	154.6	78.8	39.6
14	REST. JT.	REST. JT.	210.4	107.3	53.9
16	REST. JT.	REST. JT.	REST. JT.	140.1	70.4
18	REST. JT.	REST. JT.	REST. JT.	177.3	89.1
20	REST. JT.	REST. JT.	REST. JT.	REST. JT.	110.0
24	REST. JT.	REST. JT.	REST. JT.	REST. JT.	158.4



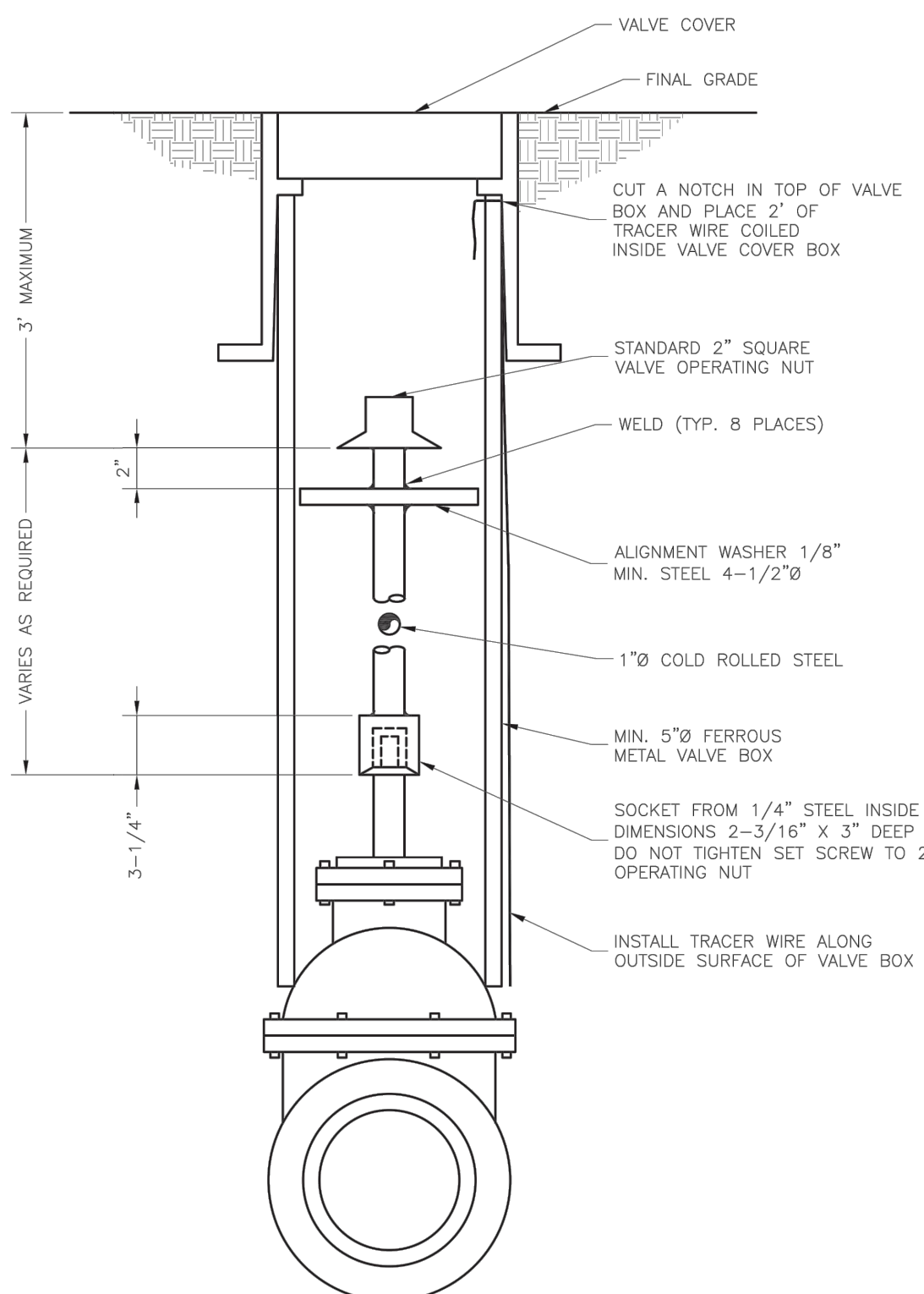
- NOTES:
1. ALL BENDS WITHOUT RESTRAINED JOINTS SHALL HAVE CONCRETE THRUST BLOCKS INSTALLED FOR RESTRAINT.
 2. MEGA LUGS MAY BE USED ONLY IN CONJUNCTION WITH CONCRETE THRUST BLOCKING.
 3. BEARING MUST BE AGAINST UNDISTURBED SOIL.
 4. DO NOT COVER JOINTS OR BOLTS (WHERE APPLICABLE) WITH CONCRETE.

LS	LEE'S SUMMIT MISSOURI <small>PUBLIC WORKS ENGINEERING DIVISION 220 SE GREEN STREET LEE'S SUMMIT, MO 64063</small>	Date: WAT-2
		Drawn By: JN
		Checked By: DL
VERTICAL THRUST BLOCK		WAT-2

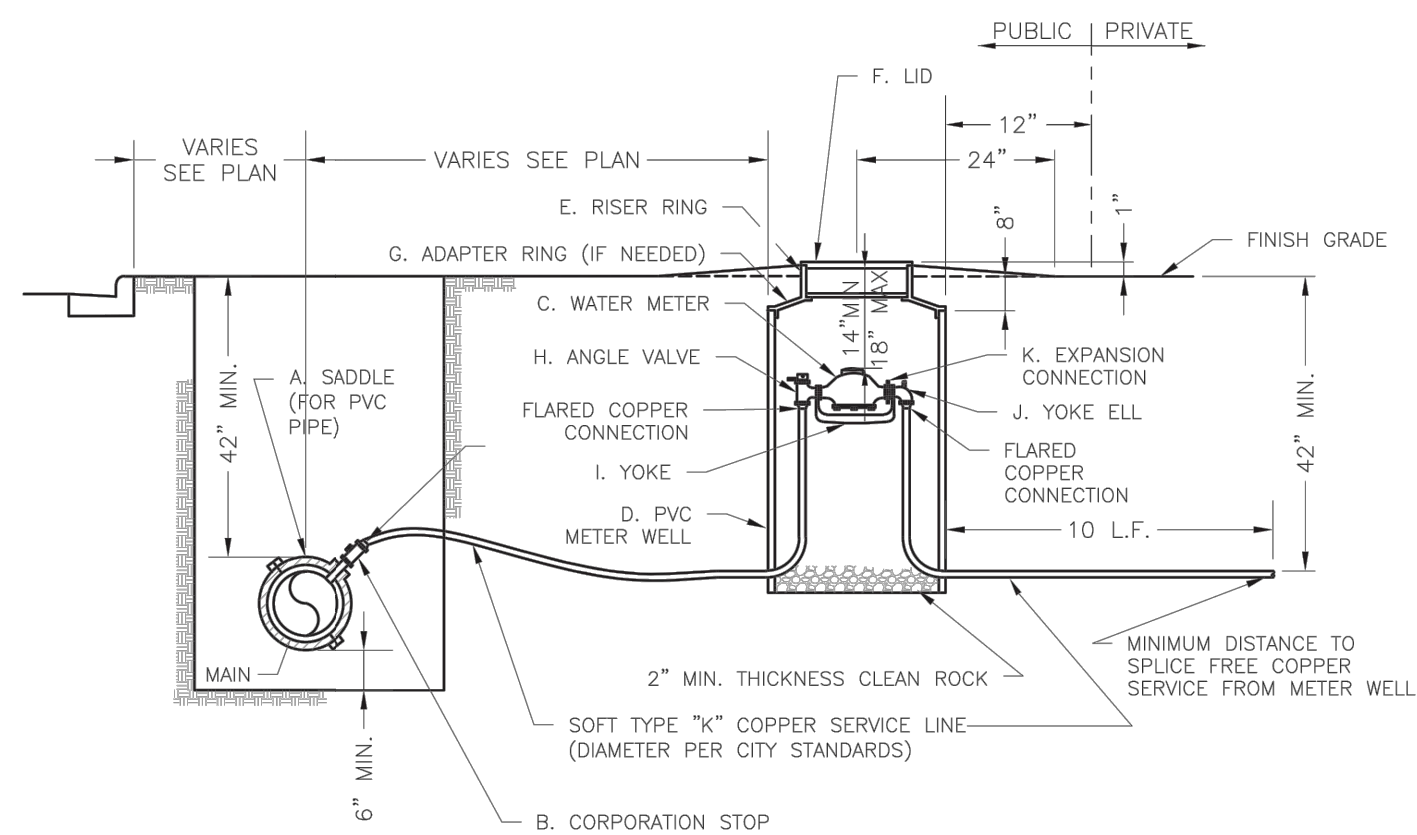


- NOTES:
1. WHEN RETAINER GLANDS ARE USED IN LIEU OF MECHANICAL JOINT (MJ) RESTRAINT FITTINGS, HORIZONTAL THRUST BLOCKS ARE REQUIRED.
 2. GATE VALVE MAY BE BOLTED DIRECTLY TO MJ RESTRAINT TEE.
 3. SEE APPROVED PRODUCTS LIST FOR WATER UTILITIES FOR FIRE HYDRANT, VALVES, VALVE BOX LID, AND COVER.
 4. BOTTOM HYDRANT FLANGE SHALL BE 2" TO 6" ABOVE FINISHED GRADE.
 5. FOR STREETS WITHOUT CURBS FIRE HYDRANTS SHALL BE PLACED WITHIN 1 FOOT OF THE R/W LINE, BUT NOT MORE THAN 10' FROM EDGE OF PAVEMENT. FIRE HYDRANT SHALL NOT BE PLACED IN BOTTOM OF DITCH.
 6. HYDRANT SHALL BE ROTATED AS DIRECTED BY INSPECTOR.

LS	LEE'S SUMMIT MISSOURI <small>PUBLIC WORKS ENGINEERING DIVISION 220 SE GREEN STREET LEE'S SUMMIT, MO 64063</small>	Date: 01/2016
		Drawn By: JN
		Checked By: DL
HYDRANT - STRAIGHT SET		WAT-7

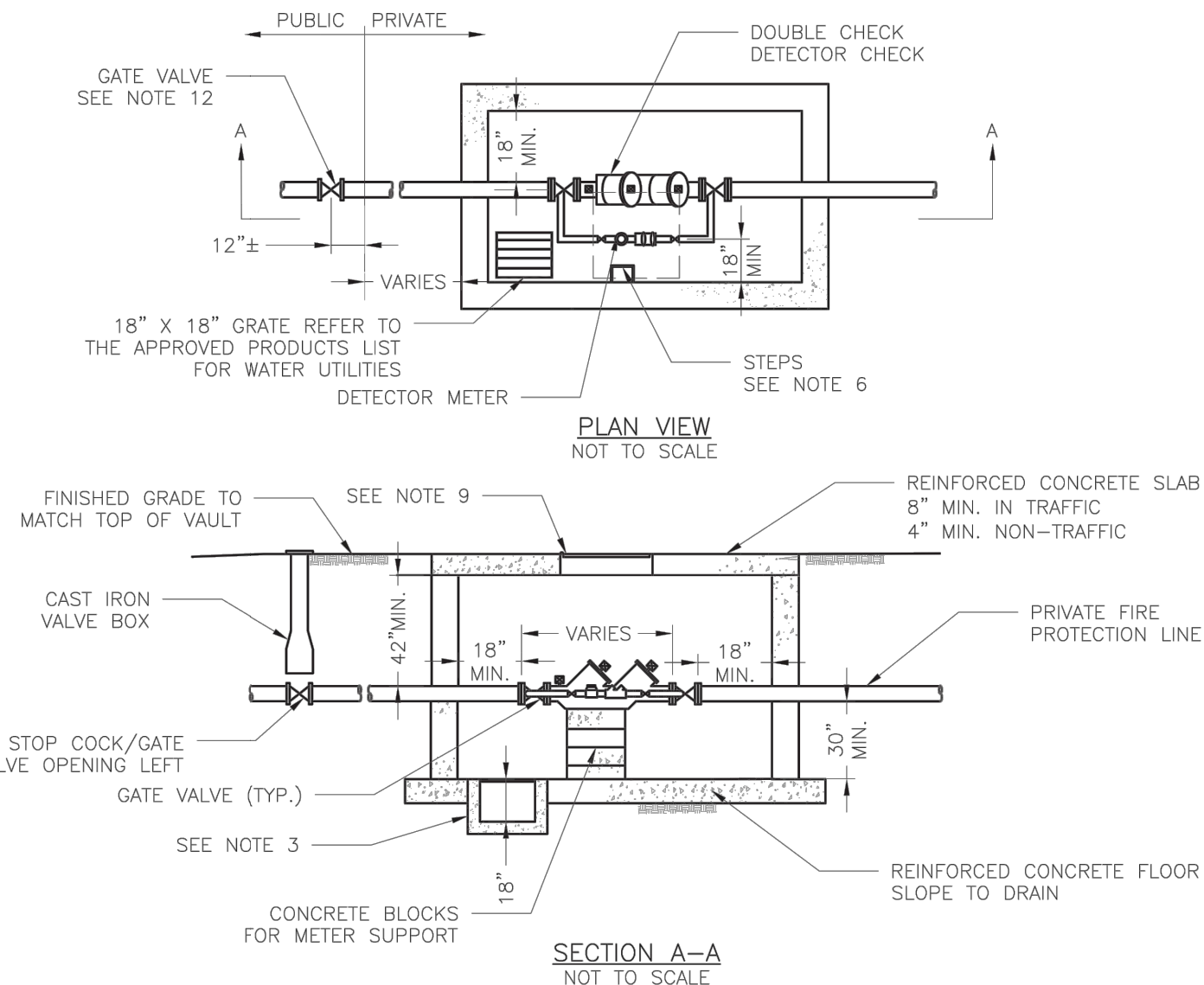


LS	LEE'S SUMMIT MISSOURI <small>PUBLIC WORKS ENGINEERING DIVISION 220 SE GREEN STREET LEE'S SUMMIT, MO 64063</small>	Date: 01/2016
		Drawn By: JN
		Checked By: DL
VALVE STEM EXTENSION AND VALVE BOX		WAT-9



- NOTES:
1. METER INSTALLATION SHALL NOT BE LOCATED IN AREAS SUBJECT TO VEHICULAR TRAFFIC OR IN CONCRETE PAVEMENT WITHOUT CITY APPROVAL.
 2. IF METER IS TO BE LOCATED OTHER THAN IN FRONT OF PROPERTY LINE, CITY APPROVAL SHALL BE OBTAINED.
 3. CITY TO FURNISH ITEMS A-K.
 4. NO OTHER EQUIPMENT SHALL BE INSTALLED IN THIS PIT.
 5. 42" MINIMUM BURY DEPTH FOR ALL SERVICE LINES.
 6. EXCAVATION FOR TAP TO EXPOSE 4 LINEAR FEET OF MAIN.
 7. NO SPLICES ALLOWED BETWEEN METER AND MAIN.
 8. SERVICE CONNECTION TAP AT APPROXIMATELY 45 DEGREES.
 9. LID AND RISER RING SHALL BE SET SO THAT GROUND WATER WILL DRAIN AWAY FROM THE WELL.
 10. CONTACT WATER UTILITIES, 816-969-1900, FOR REQUIREMENTS OF A METER LARGER THAN 2"

LS	LEE'S SUMMIT MISSOURI <small>PUBLIC WORKS ENGINEERING DIVISION 220 SE GREEN STREET LEE'S SUMMIT, MO 64063</small>	Date: 06/2015
		Drawn By: JN
		Checked By: DL
SERVICE CONNECTION WITH METER WELL		WAT-11



- GENERAL NOTES:
1. METER VAULT WALLS TO BE POURED OR PRECAST CONCRETE.
 2. METER VAULT ROOF TO BE REINFORCED CONCRETE OPENING CENTERED OVER DETECTOR METER.
 3. METER VAULT TO BE LOCATED, WHEN POSSIBLE, OUTSIDE TRAFFIC AREA WHERE SURFACE WATER WILL NOT DRAIN INTO IT. VAULT MUST BE KEPT FREE OF WATER. PROVIDE CONCRETE SUMP AS A MINIMUM. WHERE PRACTICAL, PROVIDE A 2" PIPE DRAIN WITH AN ABOVE-GROUND DISCHARGE POINT. PROJECT OWNER MAY DESIRE A PERMANENTLY INSTALLED SUMP PUMP.
 4. ALL PIPE SHALL BE DUCTILE IRON CLASS 50. ALL PIPE FITTINGS FROM THE CITY WATER MAIN THROUGH THE VAULT SHALL BE PROVIDED WITH RESTRAINED JOINT FITTINGS.
 5. ALL FITTINGS TO BE BRASS.
 6. STEPS SHALL BE IN ACCORDANCE WITH THE APPROVED PRODUCTS LIST FOR WATER UTILITIES AND SHALL BE ON 16" CENTERS.
 7. A DEPARTMENT OF NATURAL RESOURCES APPROVED DOUBLE CHECK DETECTOR CHECK BACKFLOW PREVENTER MUST BE USED. FOR A COPY OF THE MISSOURI DEPARTMENT OF NATURAL RESOURCES APPROVED BACKFLOW PREVENTION ASSEMBLIES, CONTACT THE WATER UTILITIES OPERATIONS DIVISION AT 816-969-1940. AS OF JANUARY 1, 1987, THE DNR REQUIRES FIRE SPRINKLER SYSTEMS USING CHEMICALS TO HAVE A DNR APPROVED PRESSURE BACKFLOW PREVENTER INSTALLED, PRIOR TO THE MIXING POINT.
 8. ALL VALVES SHALL HAVE RISING STEMS.
 9. FOR MANHOLE COVERS, SELECT A MANHOLE FOUND ON THE APPROVED PRODUCTS LIST FOR WATER UTILITIES SUITABLE FOR EITHER TRAFFIC OR NON-TRAFFIC CONDITIONS.
 10. A MINIMUM OF 18" CLEARANCE SHALL BE PROVIDED AROUND ALL PIPING, VALVES, APPURTENANCES, ETC.
 11. METER SHALL BE OWNED AND MAINTAINED BY THE WATER UTILITIES DEPARTMENT.
 12. IF PUBLIC WATER IS LOCATED ON THE OPPOSITE SIDE OF THE STREET, THEN THE PUBLIC WATER MAIN RESPONSIBILITY OF THE WATER UTILITIES DEPARTMENT ENDS AT THE GATE VALVE NEAREST THE VAULT.

LS	LEE'S SUMMIT MISSOURI <small>PUBLIC WORKS ENGINEERING DIVISION 220 SE GREEN STREET LEE'S SUMMIT, MO 64063</small>	Date: 02/2016
		Drawn By: JN
		Checked By: DL
VAULT FOR DOUBLE CHECK DETECTOR CHECK		WAT-12