

JOINT SEALANTS

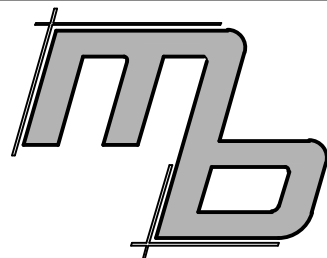
- A. **PERFORMANCE REQUIREMENTS:** Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.
- B. **SUBMITTALS:** Product Data: For each joint-sealant product indicated. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view. Samples for Verification: For each type and color of joint sealant required, provide Samples with joint sealants in 1/2 inch (13 mm) wide joints formed between two 6-inch (150 mm) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer. Qualification Data: For installer. Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following: Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion. Warranties: Special warranties specified in this Section.
- C. **QUALITY ASSURANCE:** Installer Qualifications: Manufacturer's authorized installer who is approved or licensed for installation of elastomeric sealants required for this Project. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."
- D. **PROJECT CONDITIONS:** Do not proceed with installation of joint sealants under the following conditions: When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer. When joint substrates are wet. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.
- E. **WARRANTY:** Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period. Warranty Period: Two years from date of Substantial Completion. Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following: Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction. Disintegration of joint substrates from natural causes exceeding design specifications. Mechanical damage caused by individuals, tools, or other outside agents. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.
- F. **MANUFACTURERS:** Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following: Any manufacturer providing products that conform to these specifications and drawings.
- G. **MATERIALS, GENERAL:** Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience. Colors of Exposed Joint Sealants: As selected by Owner from manufacturer's full range.
- H. **ELASTOMERIC JOINT SEALANTS:** Elastomeric Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates. Multicomponent Nonsag Urethane Sealant: Products: Pecora Corporation; Dynatrol II. Tremco; Dymeric 511. Tremco; Vulkem 922. ype and Grade: M (multicomponent) and NS (nonsag). Class: 50. Use Related to Exposure: NT (nontraffic). Multicomponent Nonsag Urethane Sealant: Products: Pacific Polymers, Inc.; Elasto-Thane 227 High Shore Type II (Gun Grade). Pacific Polymers, Inc.; Elasto-Thane 227 Type II (Gun Grade). Pecora Corporation; Dynatrol. Polymeric Systems Inc.; PSI-270. Type and Grade: M (multicomponent) and NS (nonsag). Class: 25. Use Related to Exposure: T (traffic). Uses Related to Joint Substrates: M, [a, JA, and, as applicable to joint substrates indicated.
- I. **JOINT-SEALANT BACKING:** Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- J. **MISCELLANEOUS MATERIALS:** Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- K. **EXAMINATION:** Examine joints indicated to receive joint sealants, with installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance. Proceed with installation only after unsatisfactory conditions have been corrected.
- L. **PREPARATION:** Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements: Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following: Concrete. Masonry. Remove laitance and form-release agents from concrete. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- M. **INSTALLATION OF JOINT SEALANTS:** Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability. Do not leave gaps between ends of sealant backings. Do not stretch, twist, puncture, or tear sealant backings. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials. Install sealants using proven techniques that comply with the following and at the same time backings are installed: Place sealants so they directly contact and fully wet joint substrates. Completely fill recesses in each joint configuration. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealant from surfaces adjacent to joints. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces. provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
- N. **PROTECTION:** Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.
- O. **JOINT-SEALANT SCHEDULE:** Joint-Sealant Application: Exterior vertical and horizontal nontraffic construction joints in cast-in-place concrete. Joint Sealant: Multicomponent nonsag urethane sealant. Joint-Sealant Color: As selected by Owner from manufacturer's full range.

WATER SERVICE

- A. Specification includes water systems piping for domestic service outside the building.
- B. Minimum Working Pressure Ratings: Underground Piping: 150 psig (1035 kPa).
- C. Submit product data, including pressure rating and rated capacity for the following: Piping. Valves. Curb stops.
- D. Comply with requirements of Local Water Division, including tapping of service lines and backflow prevention.
- E. Comply with standards of authorities having jurisdiction for potable water piping and plumbing systems. Include materials, installation, testing, and disinfection.
- F. Perform site survey, research public utility records, and verify existing utility locations. Contact utility-locating service for area where Project is located prior to excavation.
- G. Verify that water system piping may be installed in compliance with original design and referenced standards.
- H. Coordinate connection to water service line with the Owner.
- I. Coordinate with pipe materials, sizes, entry locations, and pressure requirements of building piping system.
- J. Coordinate with other utility work.
- K. Curb Stops: Bronze body, ground key plug or ball, and wide tee head, with inlet and outlet to match service piping material.
- L. Service Boxes for Curb Stops: Cast-iron box with telescoping top section of length required for depth of bury of valve. Include cover having lettering "WATER," and bottom section with base of size to fit over curb stop and barrel approximately 3 inches (75 mm) in diameter. Provide steel tee-handle shutoff rod with each service box. Shutoff rod shall have tee handle with 1 pointed end, stem of length to operate curb stop, and slotted end fitting curb stop head.
- M. Use pipe, tube, fittings, and joining methods according to following applications: Domestic Water Service: Ductile-Iron, Push-on-Joint Pipe, AWWA C151, with cement-mortar lining and seal coat according to AWWA C104. Include rubber compression gasket according to AWWA C111.
- N. Ductile-Iron Piping: Push-on Joints, AWWA C111 rubber gaskets and lubricant.
- O. Plastic Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.
- P. Nonrising-Stem, Resilient-Seated Gate Valves, 3-Inch NPS (DN80) and Larger: AWWA C509, gray- or ductile-iron body and bonnet; with bronze or gray- or ductile-iron gate, resilient seats, bronze stem, and stem nut. Include 200-psig (1380-kPa) minimum working-pressure design, interior coating according to AWWA C550, and push-on or mechanical-joint ends.
- Q. Install components having pressure rating equal to or greater than system operating pressure.
- R. Install fittings for changes in direction and branch connections.
- S. Install continuous plastic underground warning tape during back-filling of trench for underground water service piping. Locate 6 inches (150 mm) to 8 inches (200 mm) below finished grade, directly over piping.
- T. Hydrostatic Tests: Test at not less than 1-1/2 times working pressure for 2 hours. Increase pressure in 50-psig (350-kPa) increments and inspect each joint between increments. Hold at test pressure for 1 hour; decrease to 0 psig (0 kPa). Slowly increase again to test pressure and hold for 1 more hour. Maximum allowable leakage is 2 quarts (1.89 L) per hour per 100 joints. Remake leaking joints with new materials and repeat test until leakage is within above limits.
- U. Clean and disinfect water distribution piping as follows:
- V. Purge new water distribution piping systems and parts of existing systems that have been altered, extended, or repaired prior to use.
- W. Use purging and disinfecting procedure prescribed by authority having jurisdiction or, if method is not prescribed by that authority, use procedure described in AWWA C651
- X. Prepare reports for purging and disinfecting activities.

HOT-MIX ASPHALT PAVING

- A. Provide hot-mix asphalt pavement according to the materials, workmanship, and other applicable requirements of the standard specifications of the state or of authorities having jurisdiction.
1. Standard Specification: the current Missouri Standard Specifications for Highway Construction.
2. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.
- B. Job-Mix Designs: Provide certification, by authorities having jurisdiction, of approval of each job mix proposed for the Work.
- C. Material Certificates: Provide certificates signed by manufacturers certifying that each material complies with requirements.
- D. Installer Qualifications: Engage an experienced installer who has completed hot-mix asphalt paving similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
1. Firm shall be a registered and approved paving mix manufacturer with MoDOT.
- F. Asphalt-Paving Publication: Comply with AI's "The Asphalt Handbook," except where more stringent requirements are indicated.
- G. General: All materials shall conform to the current Missouri Standard Specifications for Highway Construction.
- H. Coarse Aggregate:
1. Asphaltic Concrete Pavement: This material shall conform to Section 1002.2 of the current Missouri Standard Specifications for Highway Construction.
- I. Fine Aggregate:
1. Asphaltic Concrete Pavement: This material shall conform to Section 1002.3 of the current Missouri Standard Specifications for Highway Construction.
- J. Asphalt Cement: This material shall conform to Section 1015.5 of the current Missouri Standard Specifications for Highway Construction. Penetration Grade 60 to 70 shall be used from approximately June 15 to September 20 or when the average ambient temperature is 70 degrees F. or higher. Penetration Grade 85 to 100 shall be used at other times during the year when the average ambient temperature ranges from 40 degrees to 70 degrees F.
- K. Prime Coat: The prime coat shall be Type MC Liquid Asphalt, Grade 30, and shall conform to Section 1015.20.4 of the current Missouri Standard Specifications for Highway Construction. Liquid asphalt may be changed one grade by the engineer during construction at no change in unit price.
- L. Tack Coat: The tack coat shall be Type SS-1H Emulsified Asphalt and shall conform to Section 1015.10 of the current Missouri Standard Specifications for Highway Construction.
- M. Water: Potable.
- N. Verify that subgrade is dry and in suitable condition to support paving and imposed loads.
- O. Proof-roll subbase using heavy, pneumatic-tired rollers to locate areas that are unstable or that require further compaction.
- P. Notify Engineer in writing of any unsatisfactory conditions. Do not begin paving installation until these conditions have been satisfactorily corrected.
- Q. Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.
1. Sweep loose granular particles from surface of unbound-aggregate base course. Do not dislodge or disturb aggregate embedded in compacted surface of base course.
- S. Prime Coat: Apply uniformly over surface of compacted-aggregate base at a rate of 0.15 to 0.50 gal./sq. yd.. Apply enough material to penetrate and seal, but not flood, surface. Allow prime coat to cure for 72 hours minimum.
1. If prime coat is not entirely absorbed within 24 hours after application, spread sand over surface to blot excess asphalt. Use just enough sand to prevent pickup under traffic. Remove loose sand by sweeping before pavement is placed and after volatiles have evaporated.
2. Protect primed substrate from damage until ready to receive paving.
- T. Complete compaction before mix temperature cools to 185 deg F.
- U. Thickness: Compact each course to produce the thickness indicated within the following tolerances:
1. Base Course: Plus or minus 1/2 inch.
2. Surface Course: Plus 1/4 inch, no minus.
- V. Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:
1. Base Course: 1/4 inch.
2. Surface Course: 1/8 inch.
3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.
- W. Testing Agency: Owner will engage a qualified independent testing agency to perform field inspections and tests and to prepare test reports.
1. Testing agency will conduct and interpret tests and state in each report whether tested Work complies with or deviates from specified requirements.



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The Professional Engineer's seal affixed to this sheet indicates that the named Engineer has prepared or directed the preparation of the material shown only on this sheet. Other drawings and documents not exhibiting this seal shall not be considered prepared by or the responsibility of the undersigned.

PROJECT REVISION:

NO.	DATE	DESCRIPTION:
1	11-21-22	FOR REVIEW
2	05-16-23	CITY COMMENTS

210 SW MO-150
Lee's Summit, MO 64082

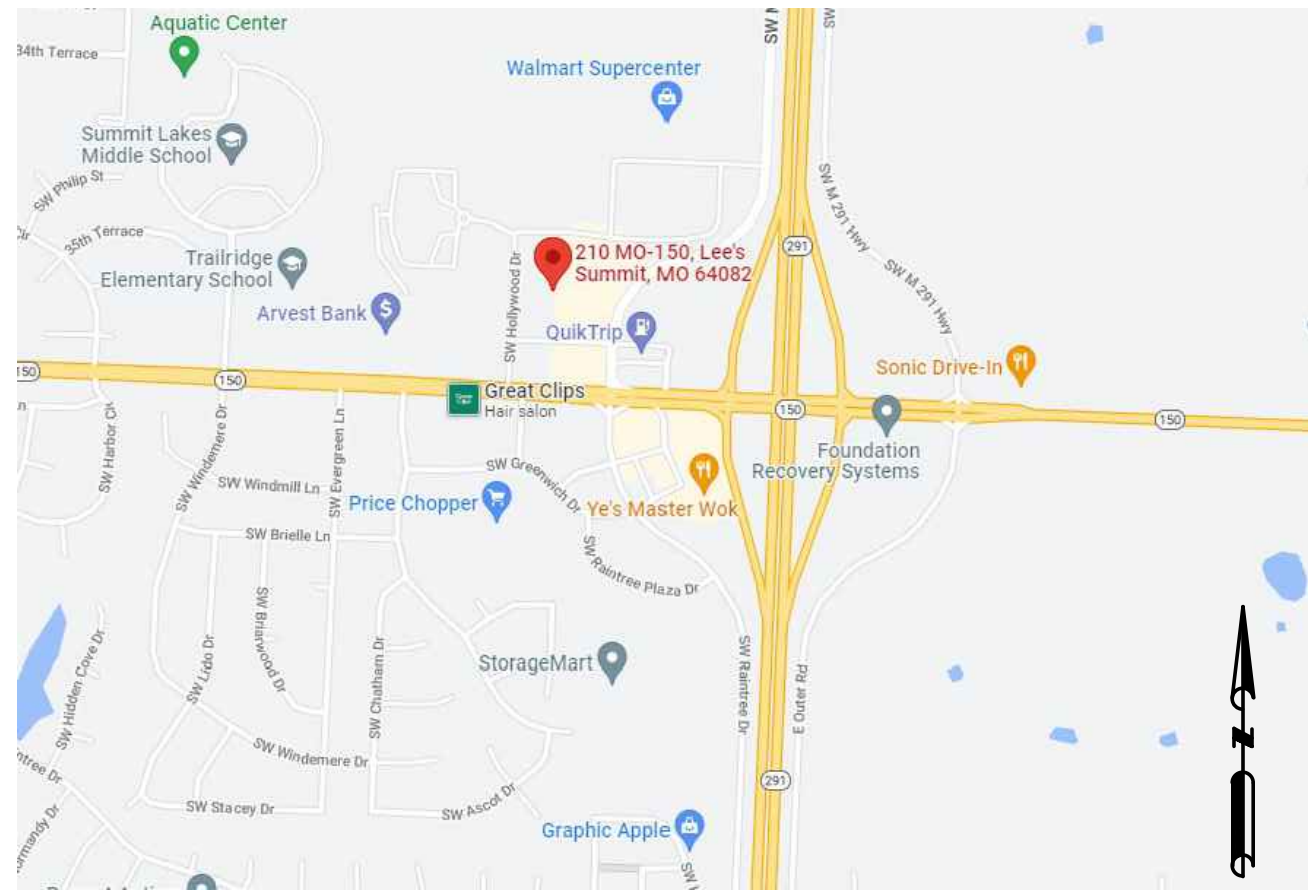
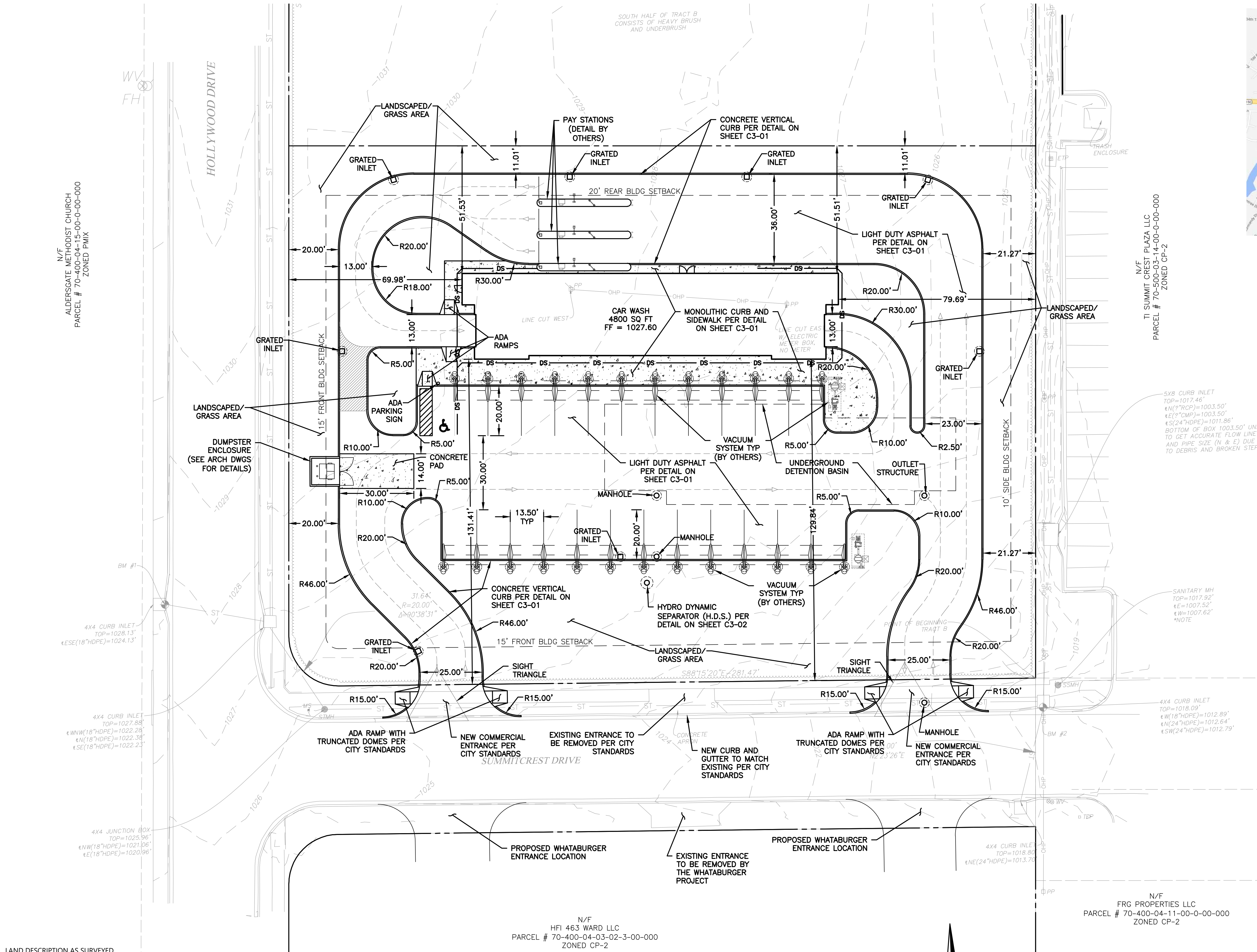
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APPRVD. BY: MB

SHEET TITLE:
Specifications

SHEET NUMBER:

C1-02

PROJECT NO: 22-752



NOTES:

- UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS AND THEREFORE THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. IT IS POSSIBLE THAT THERE MAY BE OTHER, THE EXISTENCE OF WHICH IS PRESENTLY NOT KNOWN OR SHOWN. IT IS THE CONTRACTORS RESPONSIBILITY TO DETERMINE THEIR EXISTENCE AND EXACT LOCATION BEFORE EXCAVATION OR TRENCHING TO AVOID DAMAGE THERETO.
- ALL DEMOLITION DEBRIS SHALL BE REMOVED FROM THE SITE AND PROPERLY DISPOSED OF ACCORDING TO ALL FEDERAL, STATE, AND LOCAL REGULATIONS.
- THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS NOT TO DAMAGE ANY EXISTING SITE FEATURES TO REMAIN. IF ANY DAMAGE OCCURS, THE CONTRACTOR SHALL CONTACT THE OWNERS REPRESENTATIVE IMMEDIATELY. THE CONTRACTOR SHALL REPAIR ALL DAMAGED ITEMS TO THE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST.
- CONTRACTOR SHALL CALL 1-800-DIG-RITE OR MO1CALL.COM 3 DAYS BEFORE ANY EXCAVATION WORK.
- SEE SHEET C2-03 FOR UTILITY PLAN

SITE DATA			
	SQ. FT	ACRES	PERCENT
TOTAL BUILDING FLOOR AREA	4,881	0.11	7.47
TOTAL SITE AREA	65,296	1.50	100.00
LIMITS OF DISTURBANCE	66,876	1.54	102.42
EXISTING PERVIOUS	65,296	1.50	100.00
EXISTING IMPERVIOUS	0	0.00	0.00
TOTAL PROPOSED PERVIOUS	18,949	0.44	29.02
TOTAL PROPOSED IMPERVIOUS	46,347	1.06	70.98
EXISTING ZONING IS AG-AGRICULTURAL			
PROPOSED ZONING IS CP-2 PLANNED COMMUNITY COMMERCIAL			
FLOOR AREA RATIO = 0.075			

PHASING PLAN		
PROJECT PHASE	BP DESCRIPTION	DATE
A - PRE CONSTRUCTION	PREPARE SITE FOR CONSTRUCTION INCLUDING ESTABLISHING E&S PERIMETER CONTROLS	UNKNOWN AT THIS TIME
B - PHASE I CONSTRUCTION	TOP SOIL STOCK PILE PROTECTION, SITE CLEARING, TEMPORARY SEEDING, GENERAL SITE PREP	UNKNOWN AT THIS TIME
C - PHSE II CONSTRUCTION	CONSTRUCT BUILDING ASPHALT PAVING, STORM STRUCTURES INSTALLATIONS	UNKNOWN AT THIS TIME
D - FINAL STABILIZATION	PERMANENT SEEDING	UNKNOWN AT THIS TIME

PARKING DATA		
	REQUIRED	PROVIDED
STANDARD	2	23
HANDICAP	1	1
TOTAL	3	24
1 PARKING SPACE REQUIRED FOR EACH EMPLOYEE ON MAXIMUM SHIFT		
1 ADA SPACE PER 25 STANDARD SPACES		

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MICHAEL A. BUESCHER
Professional Engineer
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5/30/23

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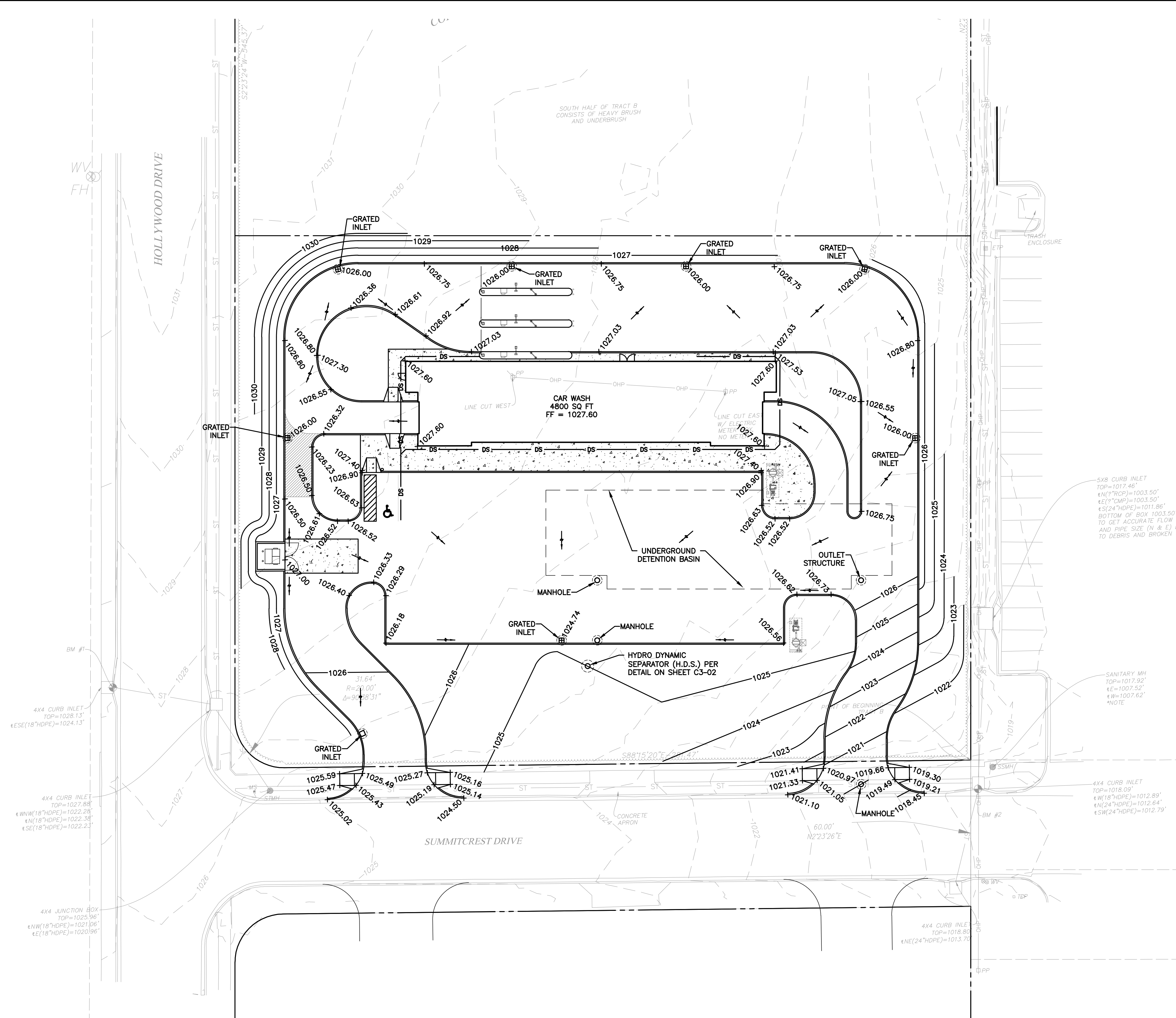
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Lee's Summit, MO 64082

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SHEET TITLE:
SITE PLAN

SHEET NUMBER:
C2-01

PROJECT NO: 22-752



+ 679.00 PROPOSED SPOT ELEVATION
— 679 — PROPOSED CONTOUR
— 679 — EXISTING CONTOUR

EARTHWORK QUANTITY ESTIMATE
TOTAL CUT REQUIRED = 3185 CY

EARTHWORK QUANTITY ESTIMATES ARE FOR REFERENCE ONLY. NO SHRINK OR FILL HAS BEEN INCORPORATED, NO UTILITY CUTS HAVE BEEN INCORPORATED. CONTRACTOR SHALL CALCULATE THEIR OWN EARTHWORK QUANTITIES. MB ENGINEERING, INC. ASSUMES NO LIABILITY FOR THESE ESTIMATES

GRADING NOTES:

1. TOP SOIL SHALL BE STRIPPED FROM ALL CUT AND FILL AREAS, STOCKPILED AND REDISTRIBUTED OVER GRADED AREAS. PROVIDE EROSION AND SEDIMENTATION CONTROLS AROUND STOCKPILES DURING CONSTRUCTION.
2. TILL SOIL TO A DEPTH OF 4" MINIMUM.
3. REMOVE ALL ROCKS LARGER THAN 1" MEASURED IN LARGEST DIRECTION.
4. GRADE ALL AREAS TO MAINTAIN POSITIVE SLOPE AWAY FROM BUILDING.
5. ALL GRADED AREAS TO RECEIVE SEED OR SOD, TOP SOIL, STRAW AND WATER UNTIL A HEALTHY STAND OF GRASS IS OBTAINED.

LAWN SEEDING & SODDING NOTES

1. ALL LAWNS FROM FACE OF THE BUILDING AND ON THE SIDE WHERE THERE IS PARKING OR A STREET ARE REQUIRED TO BE FULLY SODDED. ALL OTHER LANDSCAPE AREAS TO RECEIVE SEED.
2. AREAS TO RECEIVE SEED OR SOD SHALL BE CLEAN OF DEBRIS AND FREE OF WEEDS.
3. SEED MIX TO BE DROUGHT TOLERANCE FESCUE OR REGIONAL SPECIFIC BLEND. 1/4 TO 1/3 OF THE SEED MIXTURE TO BE ANNUAL RYE TO AIDE IN LIMITING EROSION OF PERENNIAL SEED DURING GERMINATION
4. STRAW SHALL BE THRESHED STRAW OF HAY, OATS, WHEAT, BARLEY, OR RYE. SPREAD AT A RATE OF 2 1/2 TONS PER ACRE. STRAW, NETTING, AND OTHER ANTI-EROSION MATERIALS TO BE REMOVED AFTER ESTABLISHED LAWN.
5. MAINTENANCE SHALL BEGIN IMMEDIATELY AFTER SEEDING. WATER REGULARLY TO KEEP LAWN AREAS MOIST TO MAXIMIZE GERMINATION AND MAINTAIN OPTIMUM GROWTH AND SURVIVAL TO ACHIEVE AN ACCEPTABLE STAND OF ESTABLISHED LAWN PRIOR TO THE STORE POSSESSION DATE, FREE OF ERODED OR BARE AREAS.

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2. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS NOT TO DAMAGE ANY EXISTING SITE FEATURES TO REMAIN. IF ANY DAMAGE OCCURS, THE CONTRACTOR SHALL CONTACT THE OWNERS REPRESENTATIVE IMMEDIATELY. THE CONTRACTOR SHALL REPAIR ALL DAMAGED ITEMS TO THE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST.
3. THE CONTRACTOR WILL PROVIDE SEDIMENTATION AND EROSION CONTROL DEVICES SUCH AS STRAW BALE, SILT FENCES, ETC. AT ALL DOWNSLOPE LOCATIONS AND AROUND ALL STORM WATER INLETS. CONTRACTOR SHALL INSPECT SUCH CONTROLS AFTER EACH RAINFALL EVENT AND REPLACED AS REQUIRED.
4. SILTATION CONTROL DEVICES TO REMAIN IN PLACE UNTIL ADEQUATE VEGETATIVE GROWTH INSURES NO FURTHER EROSION OF THE SOIL.
5. ALL ELEVATION ARE BASED ON U.S.G.S. DATUM
6. PROPOSED CONTOURS SHOWN ARE FINISHED ELEVATIONS ON PAVED AREAS.
7. SEE SHEET C2-03 FOR UTILITY PLAN

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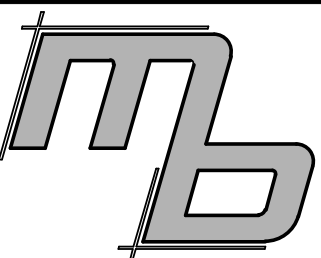
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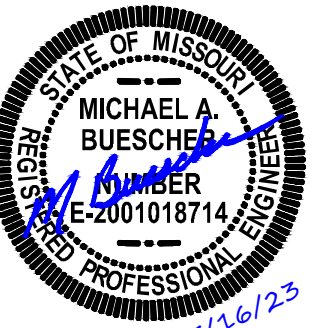
SHEET TITLE:
GRADING PLAN

SHEET NUMBER:
C2-02

PROJECT NO: 22-752



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4. SANITARY SEWER SERVICE: NEW SANITARY SEWER LATERAL SHALL BE A 6" PVC @ 2% MINIMUM SLOPE. CONTRACTOR SHALL COORDINATE WITH GOVERNING SEWER COMPANY ON CONNECTING TO SEWER MAIN.
5. THE CONTRACTOR SHALL COORDINATE WITH THE GOVERNING WATER COMPANY THE SIZE OF EXCAVATION NECESSARY FOR INSTALLATION OF THE WATER SERVICE LINE, VALVE AND TAP. THE CONTRACTOR IS RESPONSIBLE FOR ALL EXCAVATION, BACKFILL, AND SUPPLY AND INSTALLATION OF THE VALVE BOXES AND APPROPRIATE FRAME AND COVERS FOR THE SERVICE LINE VALVE.
6. ALL UTILITY CONNECTION TO THE BUILDING ARE APPROXIMATE.
7. CONTRACTOR SHALL CALL 1-800-DIG-RITE OR MO1CALL.COM 3 DAYS BEFORE ANY EXCAVATION WORK.

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EX WATER MAIN NOT SHOWN
ON SURVEY AT TIME OF
DESIGN. CONTRACTOR SHALL
VERIFY LOCATION PRIOR TO
START OF CONSTRUCTION

2" DOMESTIC
WATER SERVICE.
SEE NOTE 5

Grated Inlet (2)
TOP=1026.02
FL=1017.63

Grated Inlet (1)
TOP=1026.02
FL=1018.46

Grated Inlet (4)
TOP=1026.03
FL=1019.27

Grated Inlet (5)
TOP=1026.03
FL=1020.09

Grated Inlet (6)
TOP=1026.05
FL=1020.92

Grated Inlet (7)
TOP=1026.03
FL=1021.74

135.78' of
18" PVC Pipe
@ 1.00%

Manhole - (15)
TOP=1025.54
FL=1015.53

20.66' of
24" PVC Pipe
@ 1.00%

Manhole - (13)
TOP=1025.04
FL=1015.78

86.17' of
12" PVC Pipe
@ 1.07%

Grated Inlet - (14)
TOP=1025.66
FL=1021.37

10.51' of
12" PVC Pipe
@ 1.00%

Grated Inlet (8)
TOP=1024.77
FL=1016.14

6.79' of
12" PVC Pipe
@ 1.00%

H.D.S. - (12)
TOP=1025.00
FL=1015.99

79.69' of
15" PVC Pipe
@ 1.00%

6" PVC SANITARY SEWER
LATERAL @ 2.0% MIN SLOPE

Structure - (18)
TOP=1026.30
FL=1010.59

294.05' of
8" PVC Pipe
@ 1.00%

Manhole - (17)
TOP=1020.07
FL=1014.17

Structure - (19)
TOP=1017.92
FL=1007.52

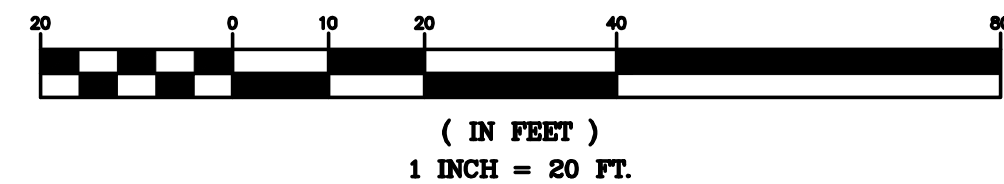
SUMMITCREST DRIVE

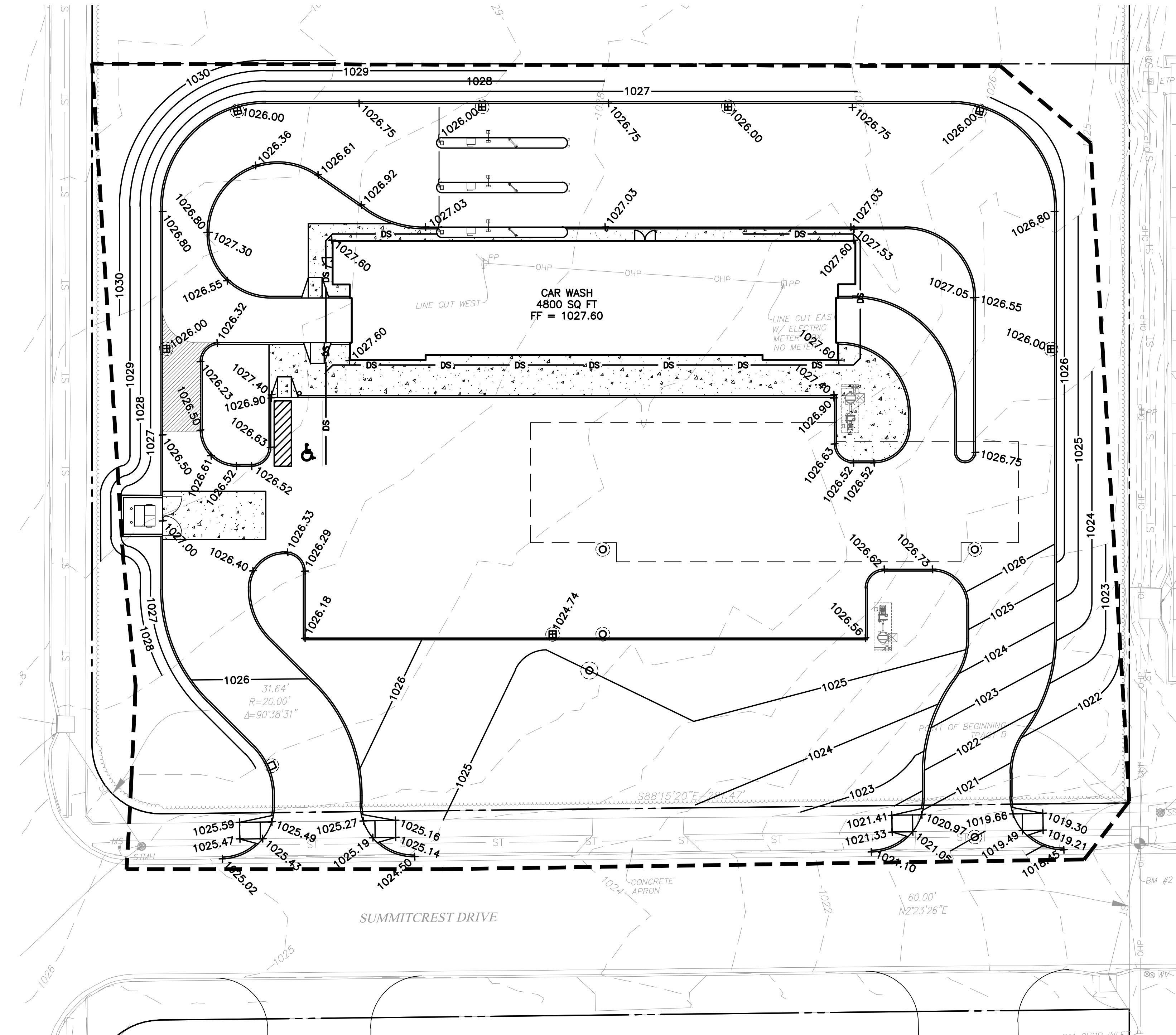
NEW FIRE HYDRANT BY THE
WHATABURGER PROJECT

WATER LINE EXTENSION BY
THE WHATABURGER PROJECT

NEW SEWER LATERAL BY THE
WHATABURGER PROJECT

GRAPHIC SCALE





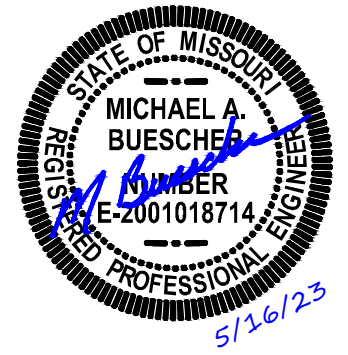
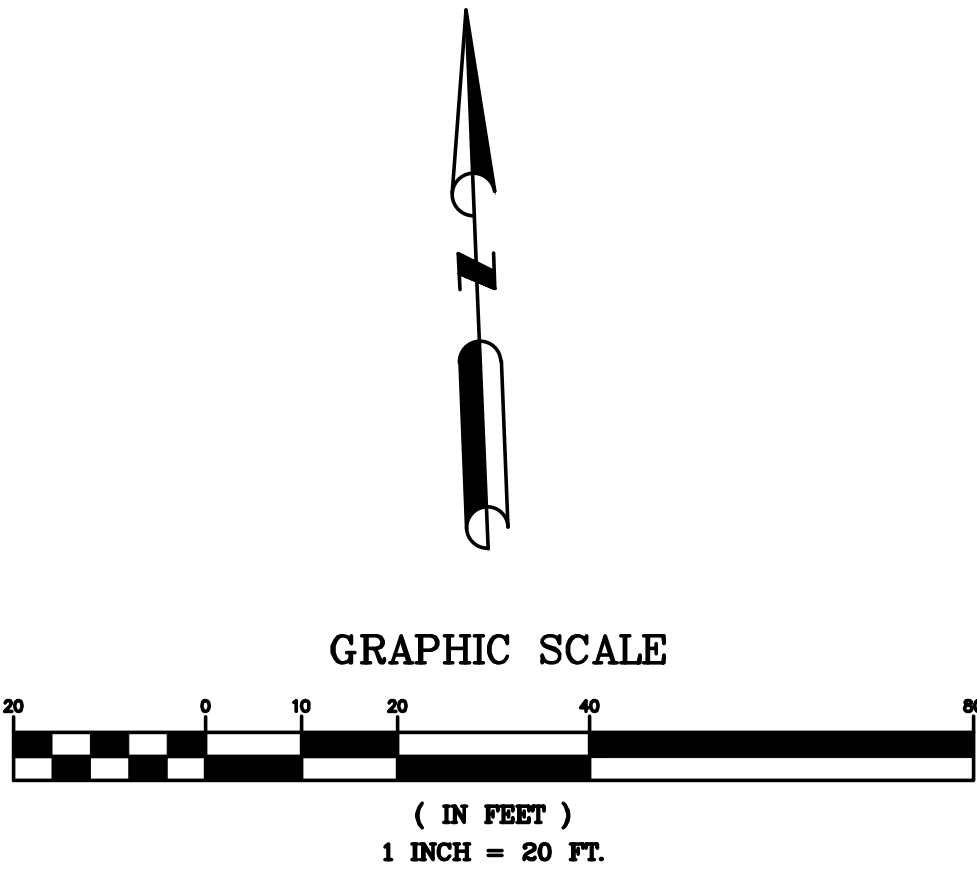
SWPPP NOTES

- SITE OWNER:
KC COWBOY PROPERTIES, LLC
4640 E FM 1187
BURLESON, TX 76028
CONTACT: JIMMY PURSELLEY
PH: (817) 205-8676
- TOTAL LAND ESTIMATED TO BE DISTURBED = 1.54 ACRES ±
- THE PERMIT HOLDER SHALL ENSURE AND/OR CONDUCT REGULAR INSPECTIONS OF LAND DISTURBANCE SITES, INCLUDING ALL EROSION AND SEDIMENT AND OTHER POLLUTANT CONTROL MEASURES, OUTFALL, AND OFFSITE RECEIVING WATERS OR SEWER SYSTEMS.
- REGULAR INSPECTIONS MUST BE CONDUCTED AT LEAST ONCE PER WEEK. IN ADDITION, INSPECTIONS MUST BE CONDUCTED AND REPORTED WITHIN 24 HOURS OF A 1/2" RAINFALL EVENT THAT CAUSES STORM WATER RUNOFF ON SITE, AND AS RELATED TO OTHER SPECIAL LAND DISTURBANCE CONCERNS. THE PERMIT HOLDER / SITE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY BMP DEFICIENCIES. BMP DEFICIENCIES MUST BE CORRECTED WITHIN SEVEN (7) CALENDAR DAYS.
- LOCATE STATE AND COUNTY LAND DISTURBANCE PERMITS, BMP INSPECTION REPORTS, ETC. WITH THE ONSITE WITH THE SWPPP.
- ANY LAND CLEARING, CONSTRUCTION, OR DEVELOPMENT INVOLVING THE MOVEMENT OF EARTH SHALL BE IN ACCORDANCE WITH THE STORM WATER POLLUTION PREVENTION PLAN, AND THE PERSON ISSUED A LAND DISTURBANCE PERMIT ASSUMES AND ACKNOWLEDGES RESPONSIBILITY FOR COMPLIANCE WITH THE LOCAL LAND DISTURBANCE CODE AND THE APPROVED STORM WATER POLLUTION PLAN AT THE SITE OF THE PERMITTED ACTIVITY.
- PRIOR TO ANY MAJOR LAND DISTURBANCE ACTIVITY, A LAND DISTURBANCE PERMIT FROM THE STATE OF MISSOURI DEPARTMENT OF NATURAL RESOURCES IS REQUIRED.
- SEDIMENT SHALL BE WASHED FROM ALL VEHICLES AT WASH DOWN STATION PRIOR TO LEAVING THE SITE. NOT TRACKING OF MUD ONTO ANY ROADS SHALL BE ALLOWED.
- DESCRIPTION OF BMP'S (INTERIM AND PERMANENT STABILIZATION PRACTICES/SCHEDULE)
 - CONTRACTOR SHALL ESTABLISH PERIMETER SILTATION CONTROL PRIOR TO ANY CONSTRUCTION ACTIVITIES. AREAS REQUIRING MINOR CLEARING AND/OR GRADING PRIOR TO INSTALLATION OF SILTATION CONTROL SHALL BE COMPLETED IN A TIMELY MANNER AND SILTATION CONTROL ESTABLISHED IMMEDIATELY FOLLOWING.
 - TEMPORARY CONSTRUCTION ENTRANCE SHALL BE INSTALLED WHERE THE ACCESS AREAS INTERSECT WITH PUBLIC ACCESS WAYS. DRIVERS OF VEHICLES WILL BE REQUIRED TO WASH THEIR WHEELS BEFORE ENTERING THE ROADWAY. WHERE SEDIMENT IS TRANSPORTED ONTO PUBLIC ACCESS WAYS, THE ROAD SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROAD BY SHOVELING OR SWEEPING, OR OTHER APPROVED MEASURES. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER.
 - UPON COMMENCEMENT OF INITIAL CLEARING AND GRUBBING OPERATIONS, AS WELL AS FUTURE GRADING OPERATIONS, TOPSOIL MUST BE STRIPPED FROM GRADED AREAS AND STOCKPILED FOR USE IN FINAL GRADING AND/OR EXCESS REMOVAL. THE STOCKPILES WILL BE KEPT ON SITE BUT MUST STAY CLEAR OF ALL CONSTRUCTION ACTIVITY. THE STOCKPILES WILL BE STABILIZED WITH TEMPORARY VEGETATION TO PREVENT SOIL LOSS AND SEDIMENT TRANSPORT FROM THE STOCKPILE ITSELF UNTIL NEEDED. KDOT REQUIRES THAT ONE THE SITE OR A STOCKPILE IS "INACTIVE", THE SITE OR STOCKPILE WILL BE STABILIZED WITHIN 7 CALENDAR DAYS FROM DEEMING SITE OR STOCKPILE "INACTIVE".
 - TEMPORARY ROADS SHALL FOLLOW THE CONTOUR OF THE NATURAL TERRAIN TO THE EXTENT POSSIBLE. SLOPES SHALL NOT EXCEED 10 PERCENT SLOPE.
 - CONTRACTOR SHALL CLEAR AND GRUB THOSE AREAS OF THE SITE SCHEDULED FOR CONSTRUCTION. AREAS NOT SCHEDULED FOR IMMEDIATE CONSTRUCTION SHALL NOT BE CLEARED OF ESTABLISHED VEGETATION UNTIL REQUIRED. REMAINDER OF SITE SHALL BE GRADED, AS REQUIRED. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION AND MAINTENANCE OF SILTATION CONTROL THROUGHOUT THE DURATION OF THE PROJECT.
 - ALL PROPOSED TURF AREAS, ONCE CONSTRUCTED TO FINAL GRADES SHALL BE SEEDDED/SODDED WITHIN FIVE (5) DAYS AFTER FINAL GRADING. SHOULD WEATHER CAUSE DELAYS IN EARTHWORK OPERATIONS, ADDITIONAL SILTATION CONTROL MEASURES MAY BE REQUIRED.
 - ANY DISTURBED AREAS WHICH WILL REMAIN UNWORKED FOR 30 DAYS OR MORE SHALL BE STABILIZED WITH SEEDING AND MULCHING PER SPECIFICATIONS WITHIN FIVE (5) DAYS. IF SEASONAL CONDITIONS PROHIBIT SEEDING, MULCHING OR MATTING SHALL BE USED.
 - INSPECTION OF SILTATION CONTROL DEVICES SHALL TAKE PLACE EVERY SEVEN DAYS AND WITHIN 24 HOURS OF ANY HEAVY RAIN EVENT. ANY SILTATION CONTROL IN NEED OF REPAIR OR REPLACEMENT SHALL OCCUR IMMEDIATELY.
 - ALL GRADING OPERATIONS ARE SUBJECT TO THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEERING REPORT IF ONE HAS BEEN PREPARED.
 - SEDIMENTATION CONTROLS SHALL ONLY BE REMOVED AFTER THE SITE IS COMPLETELY STABILIZED, VEGETATION IS WELL ESTABLISHED, AND ALL PAVEMENT AREAS ARE INSTALLED.
- PLANNED RESPONSE TO LOSS OF CONTAINED SEDIMENT
 - BMP'S SHALL BE REPAIRED AND/OR REPLACED IMMEDIATELY, AS REQUIRED, TO STABILIZE SITE AND CONTAIN SEDIMENT LADEN RUNOFF. OFFSITE AREAS SHALL BE REVIEWED FOR EXTENT OF IMPACT FROM BMP FAILURE. PERMIT HOLDER SHALL BE REQUIRED TO PROVIDE DOCUMENTATION OF THE BMP MEASURES INSTALLED AND SCHEDULED MAINTENANCE AND REPAIRS. DOCUMENTATION OF ACTIONS AND REPORTING ARE REQUIRED TO BE PROVIDED TO THE CITY IF REQUESTED.
 - CONTRACTOR IS RESPONSIBLE FOR INSTALLING ADDITIONAL BMP MEASURES BEYOND THOSE SHOWN IF CONDITIONS DICTATE OR CURRENT MEASURES ARE INSUFFICIENT.
- DESCRIPTION OF PERMANENT BMP'S TO REMAIN AFTER CONSTRUCTION
 - STORM DRAINS - THE FACILITY WILL BE SERVED BY A STORM WATER SYSTEM CONSISTING OF INLETS, MANHOLES, AND PVC PIPE. THE STORM SYSTEM WILL CONVEY STORM WATER TO AN EXISTING STORM WATER SYSTEM LOCATED AT THE NORTH OF THE PROPERTY WITHIN KDOT RIGHT-OF-WAY. THE STORM WATER SYSTEM DESIGNATED AS "PRIVATE" SHALL BE OPERATED AND MAINTAINED BY THE OWNER.
 - TURF AREAS - TURF AREAS SHALL BE MAINTAINED TO INSURE SITE AREAS REMAIN STABILIZED UPON COMPLETION OF CONSTRUCTION ACTIVITIES.
 - PAVED AREAS - AREAS SUBJECT TO VEHICULAR AND PEDESTRIAN TRAFFIC SHALL BE PAVED AND KEPT IN GOOD REPAIR FOLLOWING COMPLETION OF CONSTRUCTION ACTIVITIES. MAINTENANCE SHALL BE THE OWNER'S RESPONSIBILITY.
- DESCRIPTION OF BMP'S TO PREVENT POTENTIAL POLLUTANTS (CONSTRUCTION WASTES, TOXIC OR HAZARDOUS SUBSTANCES, PETROLEUM PRODUCTS, PESTICIDES, HERBICIDES, SITE LITTER, SANITARY WASTES, ETC.)
 - SOLID NON-HAZARDOUS CONSTRUCTION WASTE - DISPOSE OF IN TRASH DUMPSTERS OR APPROVED EQUIVALENT IN A LOCATION APPROVED BY THE OWNER. POTENTIALLY SOLUBLE OR LEACHABLE SOLID WASTE SHALL BE STORED OFF THE GROUND AND IN COVERED LEAK-PROOF CONTAINERS. SOLID WASTE SHALL BE PROPERLY DISPOSED OF OFF-SITE ON A REGULAR BASIS.
 - HAZARDOUS WASTE - HAZARDOUS WASTE SHALL BE SEGREGATED FROM NON-HAZARDOUS CONSTRUCTION SITE DEBRIS. LIQUID OR SEMI-LIQUID HAZARDOUS WASTE SHALL BE STORED IN APPROPRIATE CONTAINERS (CLOSED DRUMS OR SIMILAR) AND SHALL BE KEPT UNDER COVER, GRANULAR, SOLUBLE OR LEACHABLE HAZARDOUS WASTE MATERIALS SHALL BE STORED OFF THE GROUND AND IN COVERED LEAK-PROOF CONTAINERS. THE OWNER SHALL APPROVE ANY HAZARDOUS WASTE STORAGE AREAS.
 - HAZARDOUS WASTE SHALL BE PROPERLY DISPOSED OF OFFSITE ON A REGULAR BASIS BY A REPUTABLE, LICENSED HAZARDOUS WASTE HAULER.
 - IT IS NOT THE INTENT OF THIS SWPPP TO SUPERSEDE OR REPLACE NORMAL SITE ASSESSMENT AND REMEDIATION PROCEDURES CONCERNING HAZARDOUS MATERIALS. SIGNIFICANT SPILLS AND/OR CONTAMINATION WARRANT AN IMMEDIATE RESPONSE BY TRAINED PROFESSIONALS. SUSPECTED JOB SITE CONTAMINATION SHOULD IMMEDIATELY BE REPORTED TO REGULATORY AUTHORITIES AND PROTECTIVE MEASURES TAKEN.
 - FRESH CONCRETE WASTE AND CONCRETE EQUIPMENT WASHDOWNS SHALL BE CONTAINED AND SHALL BE STORED AWAY FROM DRAINAGE DITCHES, SWALES AND DRAINAGE STRUCTURES. WHERE APPROPRIATE, CONTAINMENT BERMS SHALL BE PLACED AROUND WASTE STORAGE AREAS.
 - ONSITE FUELING FACILITIES ARE REQUIRED TO ADHERE TO ALL APPLICABLE FEDERAL AND STATE REGULATIONS CONCERNING STORAGE AND DISPENSERS.
 - PROVISIONS SHALL BE MADE SO THAT A SUFFICIENT NUMBER OF TEMPORARY TOILET FACILITIES ARE AVAILABLE TO SERVE THE NUMBER OF WORKERS ONSITE.
- THE FOLLOWING NON-STORM WATER DISCHARGES ARE AUTHORIZED BY THE EPA, PROVIDED IT HAS BEEN DETERMINED BY THE PERMITEE THAT THEY ARE NOT SIGNIFICANT CONTRIBUTORS OF POLLUTANTS TO THE MUNICIPAL SEPARATE STORM SEWER SYSTEM. IMPLEMENTATION OF POLLUTION PREVENTION MEASURES FOR NON-STORM DISCHARGES IS REQUIRED FOR SIGNIFICANT CONTRIBUTORS:
 - WATER LINE FLUSHING
 - LANDSCAPE IRRIGATION
 - DIVERTED STREAM FLOWS
 - RISING GROUND WATERS
 - UNCONTAMINATED GROUND WATER INFILTRATION (AS DEFINED AT 40CFR 35.2005(20))
 - UNCONTAMINATED PUMPED GROUND WATER
 - DISCHARGE FROM POTABLE WATER SOURCES
 - FOUNDATION DRAINS
 - AIR CONDITIONING CONDENSATION
 - WATER FROM CRAWL SPACE PUMPS
 - FOOTING DRAINS
 - LAWN WATERING
 - INDIVIDUAL RESIDENT CAR WASHING
 - FLOW FROM RIPARIAN HABITATS & WETLANDS
 - DECHLORINATED SWIMMING POOL DISCHARGE
 - STREET WASH WATER
 - RESIDENTIAL BUILDING WASH WATERS (WITHOUT DETERGENTS)
- ANTICIPATED DEWATERING METHODS, SUBJECT TO CONTRACTOR'S ANTICIPATED MEANS & METHODS:
 - CONTRACTOR TO USE CARE WHEN PUMPING WATER FROM CONSTRUCTION EXCAVATIONS AND ATTENTION MUST BE PAID TO THE FINAL DESTINATION OF THIS WATER. SEDIMENT CONTAINED IN THE WATER MUST FIRST BE REMOVED. ONCE IT IS PUMPED OUT OF THE EXCAVATION, THIS WATER MUST THEN BE PREVENTED FROM ERODING SOIL.
 - AN OIL/WATER SEPARATOR OR OTHER SUITABLE FILTRATION METHOD WILL BE REQUIRED PRIOR TO DISCHARGE IF THE COLLECTED WATER HAS BEEN CONTAMINATED WITH PETROLEUM PRODUCTS, OIL OR GREASE. A LICENSED TRANSPORTER WILL BE REQUIRED TO BOTH CONTAIN AND TO TRANSPORT THE COLLECTED WATER AWAY FROM THE CONSTRUCTION SITE IF IT HAS BEEN CONTAMINATED BY HAZARDOUS OR TOXIC CHEMICALS. IN THE CASE OF CONTAMINATED WATER BEING TRUCKED FROM THE CONSTRUCTION SITE, THE REQUIREMENTS OF FEDERAL, STATE AND LOCAL AGENCIES MUST BE ADHERED TO.
 - THE DEWATERING METHODS OF EXCAVATED AREAS ANTICIPATED TO BE USED TO REMOVE WATER FROM THE CONSTRUCTION SITE ARE THE FOLLOWING:
 - BUCKET CONNECTED TO SPECIFIC PIECES OF CONSTRUCTION EQUIPMENT TO MECHANICALLY SCOOP THE WATER FROM THE EXCAVATIONS
 - PUMPING OR SIPHONING WATER FROM THE COLLECTION SITES
 - THE USE OF A GRAVITY DRAIN THROUGH CHANNELS

SWPPP CERTIFICATION

I CERTIFY UNDER PENALTY OF LAW THAT THIS STORM WATER POLLUTION PREVENTION PLAN (SWPPP) HAS BEEN PREPARED IN ACCORDANCE WITH THE REQUIREMENTS AND REGULATIONS OF THE LOCAL GOVERNING AUTHORITY AND THE MISSOURI DEPARTMENT OF NATURAL RESOURCES. TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE INFORMATION CONTAINED IN THIS PLAN IS TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWN VIOLATIONS.

SIGNATURE: M. Buescher DATE: 1/24/23



Michael A. Buescher, P.E. Civil Engineering
Missouri P.E. E-2001018714
MB Engineering, Inc. Missouri Authority No. E-201504168
The Professional Engineer's seal affixed to this sheet indicates that the named Engineer has prepared or directed the preparation of the material shown only on this sheet. Other drawings and documents not exhibiting this seal shall not be considered prepared by or the responsibility of the undersigned.

PROJECT REVISION:

NO.	DATE	DESCRIPTION
1	11-21-22	FOR REVIEW
2	05-16-23	CITY COMMENTS

N/F
ALDERSGATE METHODIST CHURCH
PARCEL # 70-400-04-15-00-0-00-000
ZONED PMX

4x4 CURB INLET
TOP=1028.13'
E(18"HDPE)=1024.13'

4x4 CURB INLET
TOP=1027.88'
NNW(18"HDPE)=1022.28'
E(18"HDPE)=1022.38'
SE(18"HDPE)=1022.23'

4x4 JUNCTION BOX
TOP=1025.96'
E(18"HDPE)=1021.06'
SE(18"HDPE)=1020.96'

HOLLYWOOD DRIVE

N/F
CBK LAND HOLDINGS LLC
PARCEL # 70-400-04-03-02-2-00-000
EXISTING ZINING = AG-AGRICULTURAL
PROPOSED ZONING = CP-2

N/F
HFI 463 WARD LLC
PARCEL # 70-400-04-03-02-3-00-000
ZONED CP-2

N/F
FRG PROPERTIES LLC
PARCEL # 70-400-04-11-00-0-00-000
ZONED CP-2

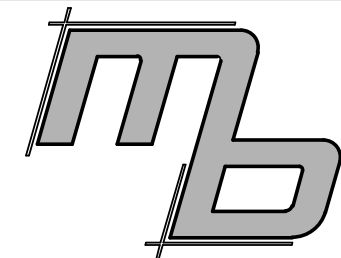
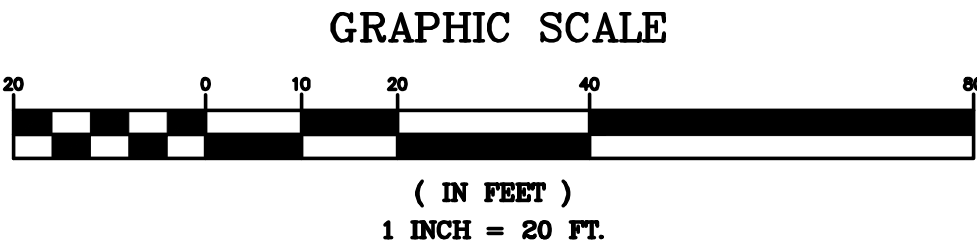
N/F
TI SUMMIT CREST PLAZA LLC
PARCEL # 70-500-03-14-00-0-00-000
ZONED CP-2

LAND DESCRIPTION AS SURVEYED

TRACT B:
PART OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 30, TOWNSHIP 47, RANGE 31, LEE'S SUMMIT, JACKSON COUNTY, MISSOURI, DESCRIBED AS FOLLOWS:
COMMENCING AT THE SOUTHWEST CORNER OF HAWKINS' COMMERCIAL LOT 1, RECORDED AS DOCUMENT NO. 2000I0062550, BEING ALSO THE INTERSECTION OF THE NORTH RIGHT OF WAY LINE OF MISSOURI 150 HIGHWAY AS SHOWN IN RIGHT OF WAY DEED DOCUMENT NO. 2014E0080868 AND THE EASTERLY LINE OF THE DOCUMENT RECORDED AS 1988I0875030; THENCE NORTH 02°23'26" EAST, ALONG THE WEST LINE OF SAID HAWKINS' COMMERCIAL LOT 1, A DISTANCE OF 208.16 FEET, TO THE SOUTHEAST CORNER OF RIGHT OF WAY TAKEN OF SUMMITCREST DRIVE AS ESTABLISHED BY SAID RIGHT OF WAY DOCUMENT NO. 2014E0080868 AND PROLONGATION OF THE WEST LINE OF SAID HAWKINS' COMMERCIAL LOT 1; THENCE NORTH 02°23'26" EAST, A DISTANCE OF 60.00 FEET, TO THE INTERSECTION OF THE NORTH RIGHT OF WAY LINE OF SAID SUMMITCREST DRIVE AND THE EASTERLY LINE OF THE DOCUMENT RECORDED AS 1988I0875030 AND THE WEST LINE OF SUMMITCREST PLAZA LOT 1 RECORDED AS DOCUMENT NO. 2001I0010320, BEING ALSO THE TRUE POINT OF BEGINNING OF TRACT B; THENCE ALONG THE WEST LINE OF SAID SUMMITCREST PLAZA, NORTH 2°23'26" EAST, A DISTANCE OF 583.70 FEET, TO THE POINT OF INTERSECTION OF KENBRIDGECROSSING AS ESTABLISHED IN SAID RIGHT OF WAY DEED IN DOCUMENT NUMBER 2014E0080868 AND THE EASTERLY LINE OF THE SAID DOCUMENT NO. 1988I0875030, BEING ALSO SAID WEST LINE OF SUMMITCREST PLAZA; THENCE ALONG SAID RIGHT OF WAY THE FOLLOWING FIVE (5) COURSES: NORTH 87°54'56" WEST, A DISTANCE OF 281.79; THENCE ALONG A CURVE TO THE LEFT, HAVING A RADIUS OF 20.00 FEET, AN ARC LENGTH OF 31.31 FEET, AND A DELTA OF 89°41'48"; THENCE SOUTH 2°23'24" WEST, A DISTANCE OF 545.37 FEET; THENCE ALONG A CURVE TO THE LEFT, WITH A RADIUS OF 20.00 FEET, AN ARC LENGTH OF 31.64 FEET, AND A DELTA OF 90°38'31"; THENCE SOUTH 88°15'20" EAST, A DISTANCE OF 281.47 FEET, TO THE POINT OF BEGINNING. ALSO KNOWN AS TRACT B, AS SHOWN ON THE CERTIFICATE OF SURVEY RECORDED 7/27/2021 AS DOCUMENT NO. 2021E0081920 IN SURVEY BOOK 51 AT PAGE 95, AND CORRECTED BY THE AFFIDAVIT RECORDED 1/10/2022 AS DOCUMENT NO. 2022E0002897.



ZONING MAP
NTS



MB Engineering, Inc.
606 Ryan Drive
Energy, IL 62933
(314) 368-3040



Michael A. Buescher, P.E. Civil Engineering
Missouri P.E. E-2001018714
MB Engineering, Inc. Missouri Authority No. E-2015041648

The Professional Engineer's seal affixed to this sheet indicates that the named Engineer has prepared or directed the preparation of the material shown only on this sheet. Other drawings and documents not exhibiting this seal shall not be considered prepared by or the responsibility of the undersigned.

PROJECT REVISION:

NO.	DATE	DESCRIPTION	FOR REVIEW	CITY COMMENTS
1	11-21-22			
2	05-16-23			

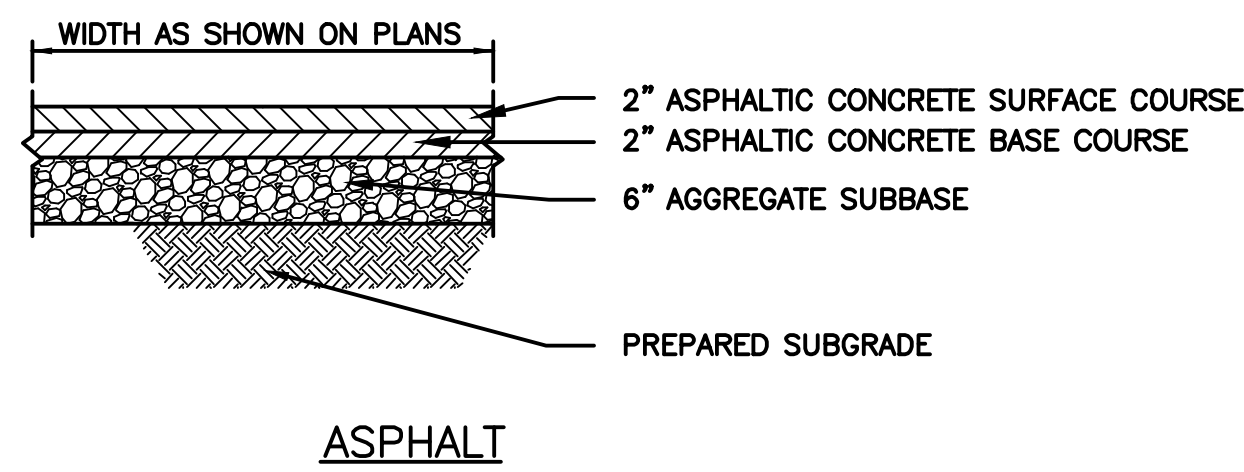
210 SW MO-150
Lee's Summit, MO 64082

DATE: 11-21-22
DRAFTED BY: KB
APPRVD. BY: MB

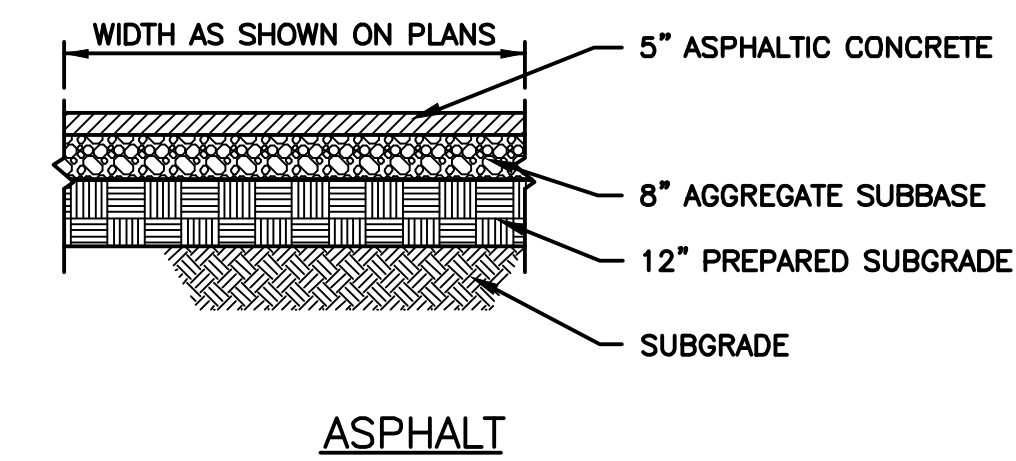
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SITE ZONING PLAN

SHEET NUMBER:
C2-05

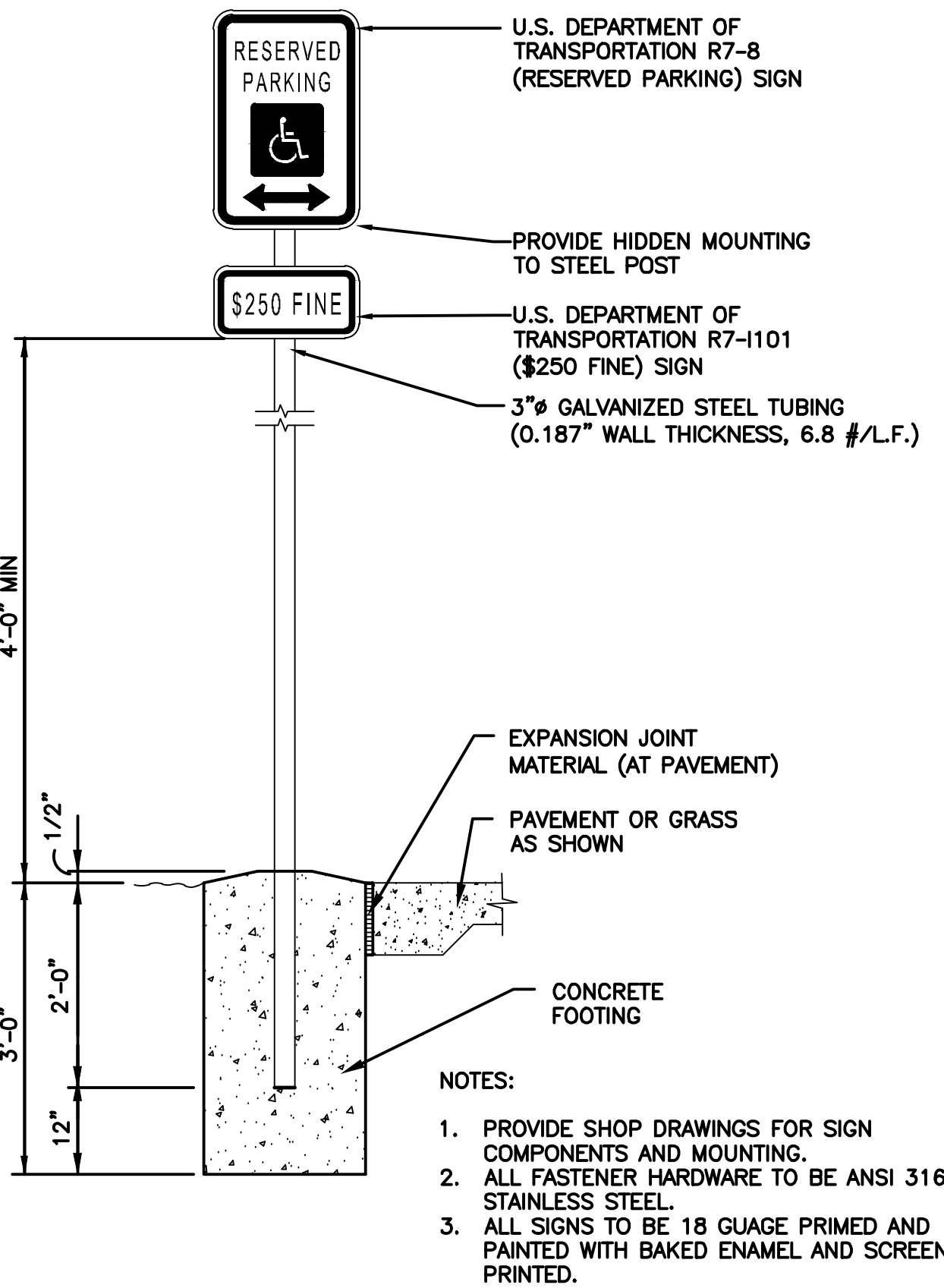
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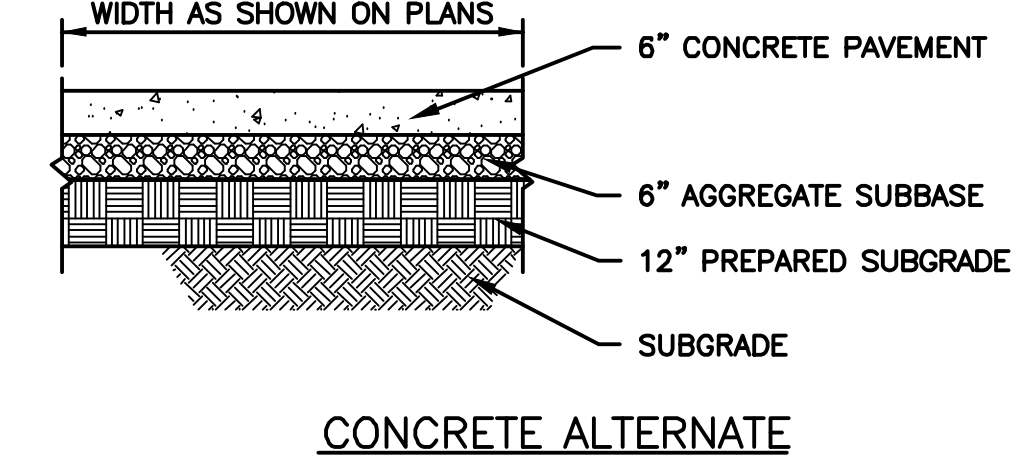
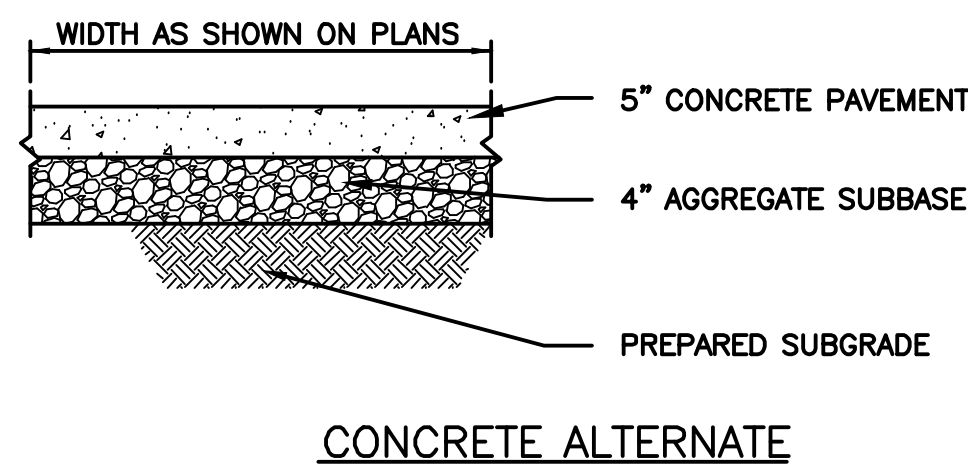
A LIGHT DUTY PAVEMENT
NOT TO SCALE



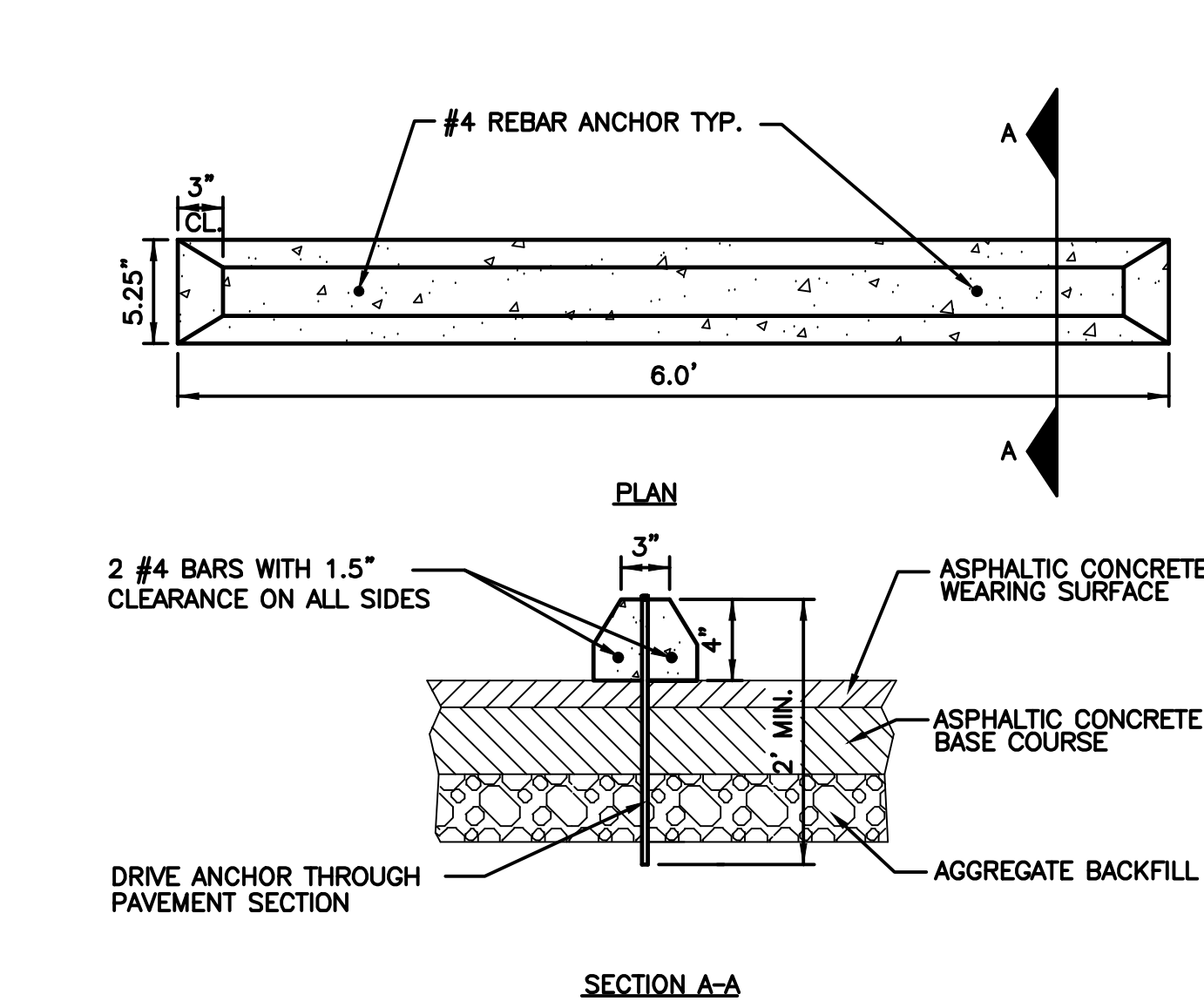
B HEAVY DUTY PAVEMENT
NOT TO SCALE



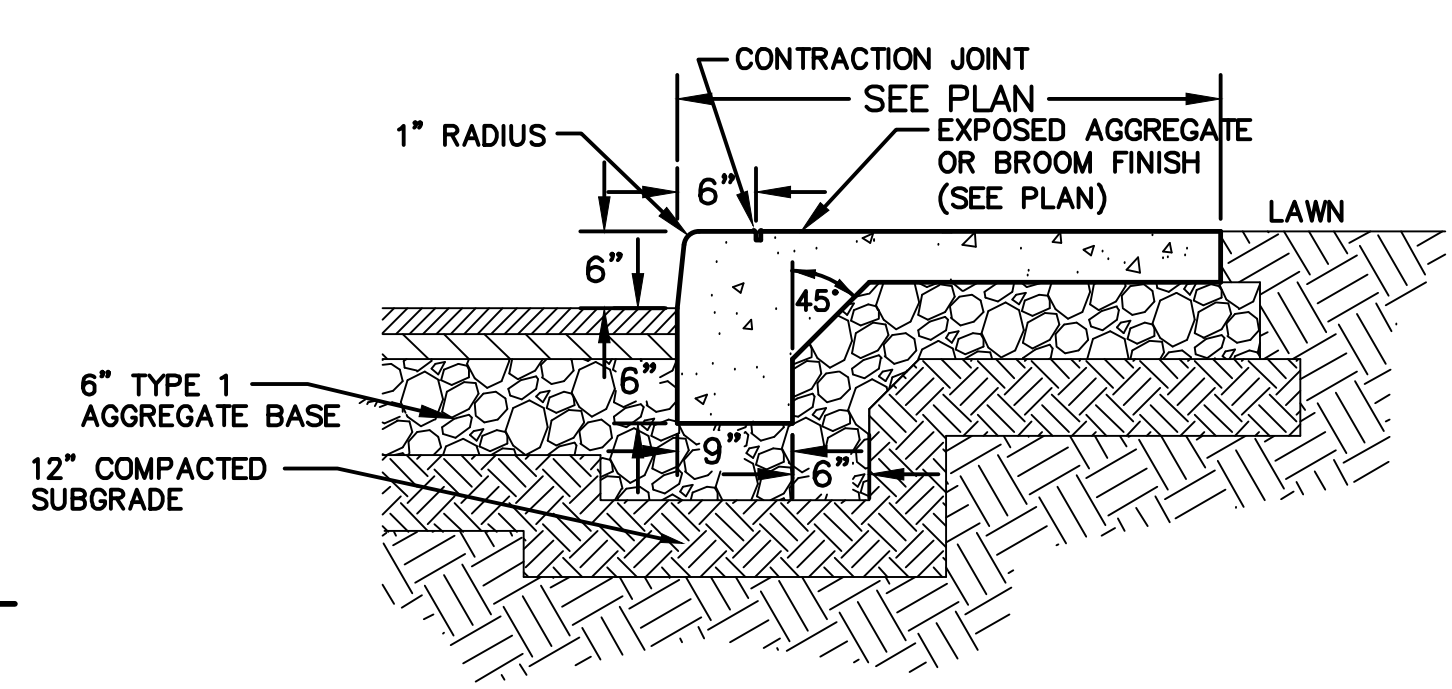
F ACCESSIBLE PARKING SIGN
NOT TO SCALE



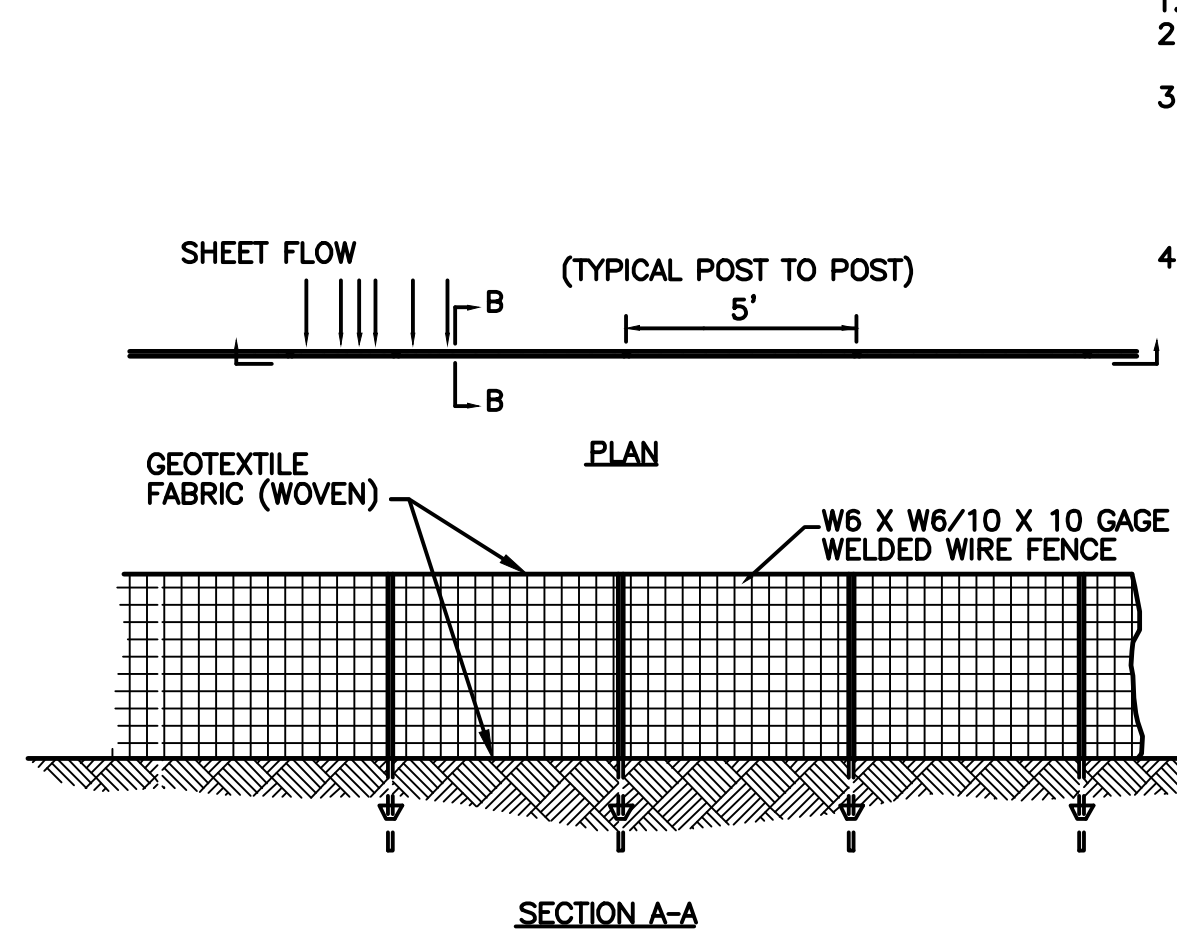
C MONOLITHIC CURB AND SIDEWALK DETAIL
NOT TO SCALE



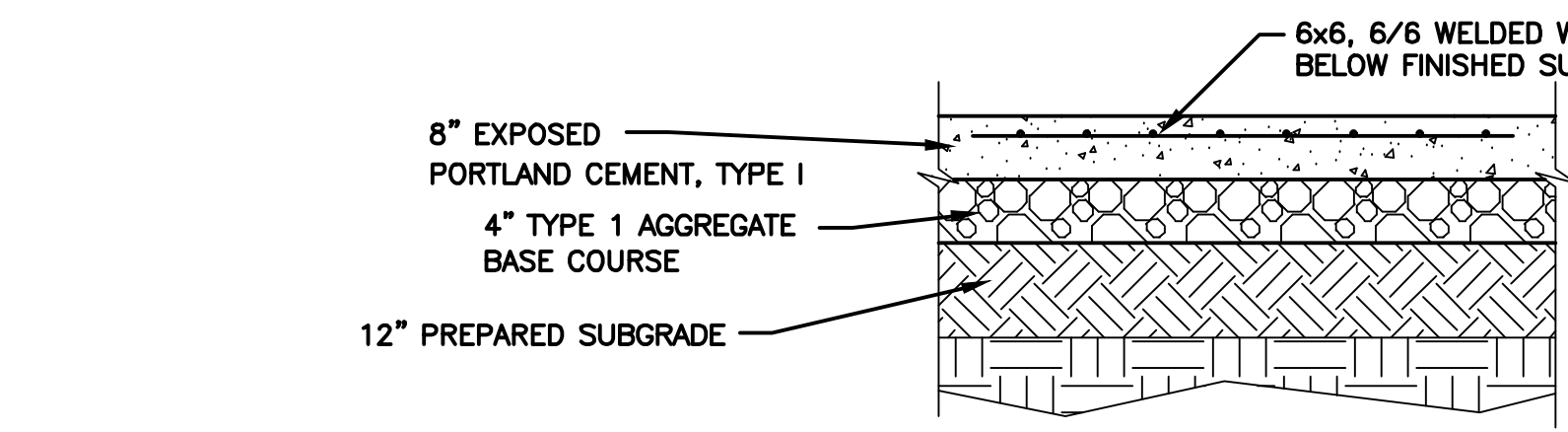
G WHEEL STOP DETAIL
NOT TO SCALE



H CONCRETE VERTICAL CURB
NOT TO SCALE



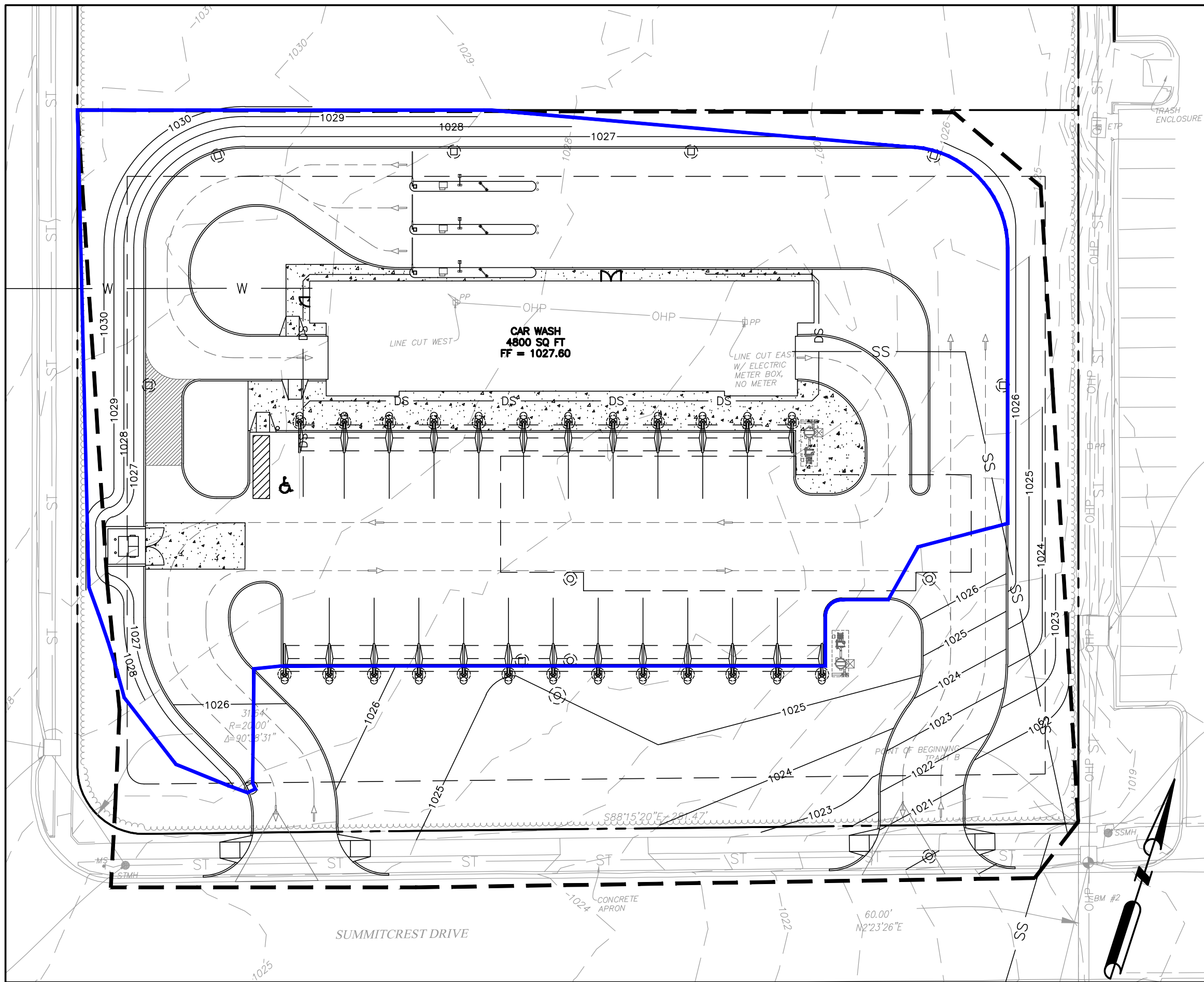
D SILTATION FENCE
NOT TO SCALE



E CONCRETE PAD DETAIL
NOT TO SCALE

- GENERAL NOTES**
- DO NOT SCALE DRAWING. FOLLOW DIMENSIONS.
 - SILTATION CONTROL DEVICES TO REMAIN IN PLACE FURTHER EROSION OF THE SOIL.
 - SILTATION FENCES SHALL BE INSPECTED PERIODICALLY FOR DAMAGE AND FOR THE AMOUNT OF SEDIMENTATION WHICH HAS ACCUMULATED. REMOVAL OF SEDIMENT WILL BE REQUIRED WHEN IT REACHES 1/2 OF THE HEIGHT OF THE SILTATION FENCE.
 - ATTACHMENT OF WELDED WIRE FENCE AND GEOTEXTILE FABRIC TO BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.

NO.	DATE	DESCRIPTION
1	11-21-22	FOR REVIEW
2	05-16-23	CITY COMMENTS



SCALE: 1" = 30'

TOTAL AREA TO BE TREATED BY HYDRO-DYNAMIC SEPARATOR

37,832.58 SQ FT (0.869 ACRES) OF IMPERVIOUS AREA
6,939.20 SQ FT (0.159 ACRES) OF PERVIOUS AREA
44,771.78 SQ FT (1.028 ACRES) OF TOTAL AREA
0.869 / 1.028 = 84.5% IMPERVIOUS

HYDRO-DYNAMIC SEPARATOR

WATER QUALITY VOLUME $WQ_v = (P R_v A) / 12$

P = 1.14 INCHES
A = 1.03 ACRES
I = 84.5 PERCENT
 $R_v = .05 + 0.009(I)$
= 0.811
 $WQ_v = 0.079 \text{ ACRE-FT} = 3448 \text{ FT}^3$

RUNOFF VOLUME

$Q_a = 0.92 \text{ WATERSHED INCHES}$
 $CN = \frac{1000}{10 + 5P + 10Q_a - 10 * (SQRT(Q_a + 1.25 * Q_a * P))}$
= 97.97

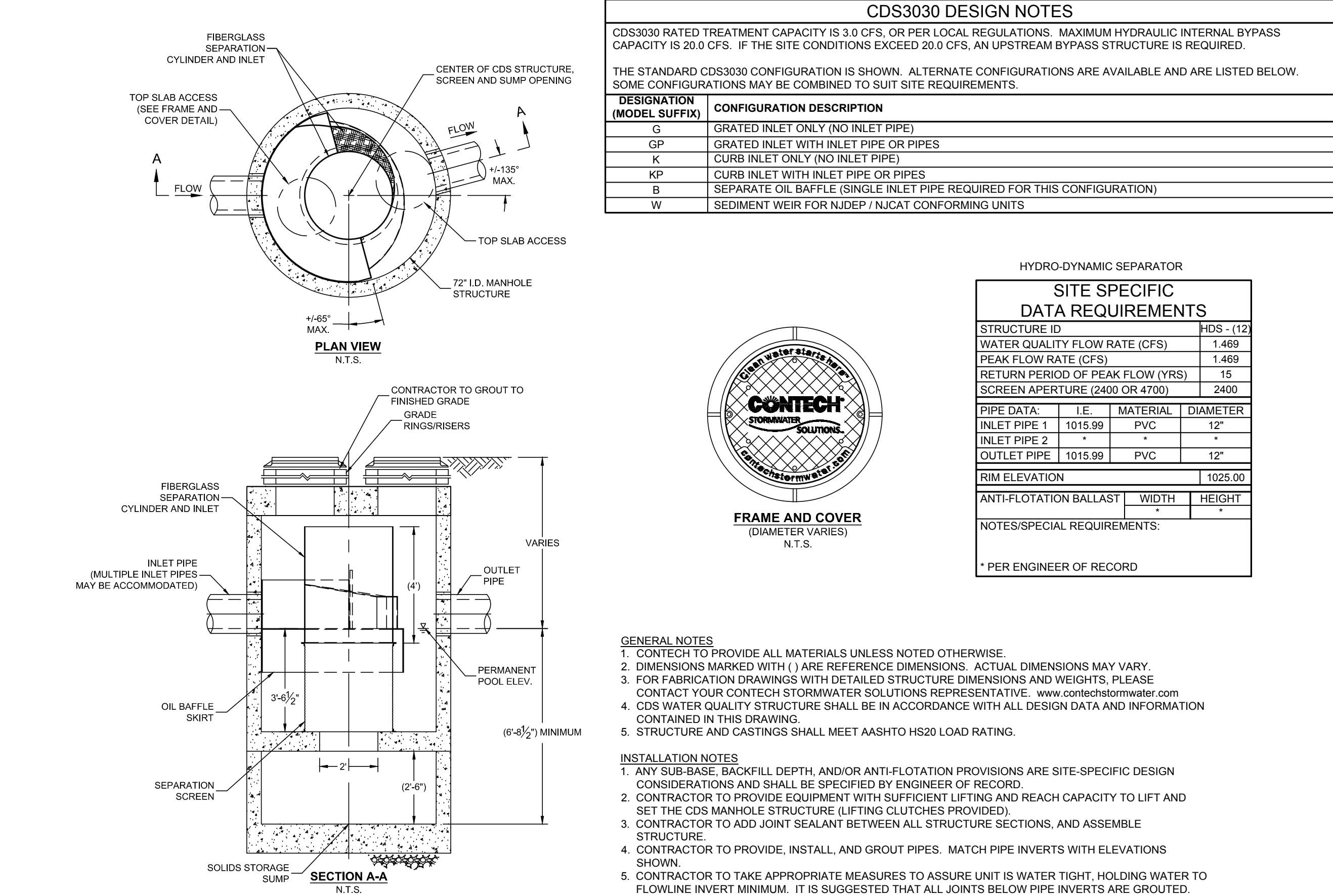
USING

$T_c = 6 \text{ MINUTES} = 0.1 \text{ HOURS}$
 $t_e = (200/CN) - 2$
= 0.041
 $W/P = 0.036$
 $q_u = 990 \text{ CSM/IN. (FROM TR-55 EXHIBIT 4-II)}$
 $Q_p = q_u * A * Q_a$
= 1,469 CFS
(MAX ALLOWABLE TREATMENT FLOW FOR A 6' CONTECH CDS = 3.0 CFS)

FLOW SPITTER DESIGN

$Q_p = c * A (SQRT(64.4 * H_o))$
 $H_o = (Q_p/c * A)^2 / 64.4$
c = 0.6
A = 0.785 12" PIPE
= 0.151
h = 0.15 + D/2
= 0.65 FEET

THEREFORE SET THE LINE OF THE BYPASS PIPE AT 1016.24 + 0.65 = 1016.89



PART 1 - GENERAL

1.1 DESCRIPTION

A. SCOPE

THE CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY TO INSTALL THE STORMWATER TREATMENT DEVICES(S) (SWTD) AND APPURTENANCES SPECIFIED IN THE DRAWINGS AND THESE SPECIFICATIONS.

1.2 QUALITY ASSURANCES

A. INSPECTION

ALL COMPONENTS SHALL BE SUBJECT TO INSPECTION BY THE ENGINEER AT THE PLACE OF MANUFACTURE AND/OR INSTALLATION. ALL COMPONENTS ARE SUBJECT TO BE REJECTED OR IDENTIFIED FOR REPAIR IF THE QUALITY OF MATERIALS AND MANUFACTURING DO NOT COMPLY WITH THE REQUIREMENTS OF THIS SPECIFICATION. COMPONENTS WHICH HAVE BEEN IDENTIFIED AS DEFECTIVE MAY BE SUBJECT FOR REPAIR. FINAL ACCEPTANCE OF THE COMPONENT IS CONTINGENT UPON THE DISCRETION OF THE ENGINEER.

B. WARRANTY

THE MANUFACTURER SHALL GUARANTEE THE SWTD COMPONENTS AGAINST ALL MANUFACTURER ORIGINATED DEFECTS IN MATERIALS OR WORKMANSHIP FOR A PERIOD OF TWELVE (12) MONTHS FROM THE DATE THE COMPONENTS ARE DELIVERED TO THE OWNER FOR INSTALLATION. THE MANUFACTURER SHALL BE NOTIFIED OF REPAIR/REPLACEMENT ISSUES IN WRITING WITHIN THE REFERENCED WARRANTY PERIOD. THE MANUFACTURER SHALL, UPON ITS DETERMINATION OF REPAIR, CORRECT OR REPLACE ANY MANUFACTURER ORIGINATED DEFECTS IDENTIFIED BY WRITTEN NOTICE WITHIN THE REFERENCED WARRANTY PERIOD. THE USE OF SWTD COMPONENTS SHALL BE LIMITED TO THE APPLICATION FOR WHICH IT WAS SPECIFICALLY DESIGNED.

C. MANUFACTURER'S PERFORMANCE CERTIFICATE

THE SWTD MANUFACTURER SHALL SUBMIT TO THE ENGINEER OF RECORD A "MANUFACTURER'S PERFORMANCE CERTIFICATION" CERTIFYING THAT EACH SWTD IS CAPABLE OF ACHIEVING THE SPECIFIED REMOVAL EFFICIENCIES AS LISTED IN THESE SPECIFICATIONS. THE CERTIFICATION SHALL BE SUPPORTED BY INDEPENDENT THIRD-PARTY RESEARCH.

1.3 SUBMITTALS

A. SHOP DRAWINGS

THE CONTRACTOR SHALL PREPARE AND SUBMIT SHOP DRAWINGS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE SHOP DRAWINGS SHALL DETAIL HORIZONTAL AND VERTICAL DIMENSIONING, REINFORCEMENT AND JOINT TYPE AND LOCATIONS.

PART 2 - PRODUCTS

2.1 MATERIALS AND DESIGN

A. PRECAST CONCRETE COMPONENTS

THE CONTRACTOR SHALL PREPARE AND SUBMIT SHOP DRAWINGS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE SHOP DRAWINGS SHALL DETAIL HORIZONTAL AND VERTICAL DIMENSIONING, REINFORCEMENT AND JOINT TYPE AND LOCATIONS.

- CONCRETE SHALL ACHIEVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,000 POUNDS PER SQUARE-INCH (PSI);
- UNLESS OTHERWISE NOTED, THE PRECAST CONCRETE SECTIONS SHALL BE DESIGNED TO WITHSTAND LATERAL EARTH AND AASHTO H-20 TRAFFIC LOADS;
- CEMENT SHALL CONFORM TO ASTM C 150;
- AGGREGATES SHALL CONFORM TO ASTM C 33;
- REINFORCING STEEL SHALL BE DEFORMED BILLET-STEEL BARS, WELDED STEEL WIRE OR DEFORMED WELDED STEEL WIRE CONFORMING TO ASTM A 615, A 185 OR A 497, RESPECTIVELY;
- JOINTS SHALL BE SEALED WITH PREFORMED JOINT SEALING COMPOUND CONFORMING TO ASTM C 990 AND
- SHIPPING OF COMPONENTS SHALL NOT BE INITIATED UNTIL A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI IS ATTAINED OR FIVE (5) CALENDAR DAYS AFTER FABRICATION HAS EXPIRED, WHICHEVER OCCURS FIRST.

B. INTERNAL COMPONENTS AND APPURTENANCES

INTERNAL COMPONENTS AND APPURTENANCES SHALL CONFORM TO THE FOLLOWING:

- SCREEN AND SUPPORT STRUCTURE SHALL BE MANUFACTURED OF TYPE 316 AND 316L STAINLESS STEEL CONFORMING TO ASTM F 1287-01;
- HARDWARE SHALL BE MANUFACTURED OF TYPE 316 STAINLESS STEEL CONFORMING TO ASTM A 320;
- FIBERGLASS COMPONENTS SHALL CONFORM TO THE NATIONAL BUREAU OF STANDARDS PS-15 AND COATED WITH AN ISOPHALIC POLYESTER GELCOAT AND
- ACCESS SYSTEM(S) CONFORM TO THE FOLLOWING:
 - MANHOLE CASTINGS SHALL BE DESIGNED TO WITHSTAND AASHTO H-20 LOADINGS AND MANUFACTURED OF CAST-IRON CONFORMING TO ASTM A 48 CLASS 30;
 - HATCH SYSTEMS SHALL BE DESIGNED TO WITHSTAND AASHTO H-20 LOADINGS. HATCH SYSTEMS NOT SUBJECT TO DIRECT TRAFFIC SHALL BE MANUFACTURED OF GRADE 5086 ALUMINUM. HATCH SYSTEMS SUBJECT TO DIRECT TRAFFIC LOADS SHALL BE MANUFACTURED OF STEEL CONFORMING TO ASTM A36-93A, SUPPLIED WITH A HOT-DIP GALVANIZED FINISH CONFORMING TO ASTM A 123 AND ACCESS DOORS BOLTED TO THE FRAME.

2.2 PERFORMANCE

A. REMOVAL EFFICIENCIES

- THE SWTD SHALL BE CAPABLE OF ACHIEVING AN 80 PERCENT AVERAGE ANNUAL REDUCTION IN THE TOTAL SUSPENDED SOLID LOAD;
- THE SWTD SHALL BE CAPABLE OF CAPTURING AND RETAINING 100 PERCENT OF POLLUTANTS GREATER THAN OR EQUAL TO [4.7 MILLIMETERS (MM) OR 2.4 MILLIMETERS (MM)] REGARDLESS OF THE POLLUTANT'S SPECIFIC GRAVITY (I.E.: FLOATABLE AND NEUTRALLY BUOYANT MATERIALS) FOR FLOWS UP TO THE DEVICE'S RATED-TREATMENT CAPACITY. THE SWTD SHALL BE DESIGNED TO RETAIN ALL PREVIOUSLY CAPTURED POLLUTANTS ADDRESSED BY THIS SUBSECTION UNDER ALL FLOW CONDITIONS;
- THE SWTD SHALL BE CAPABLE OF CAPTURING AND RETAINING TOTAL PETROLEUM HYDROCARBONS. THE SWTD SHALL BE CAPABLE OF ACHIEVING A REMOVAL EFFICIENCY OF 92 AND 78 PERCENT WHEN THE DEVICE IS OPERATING AT 25 AND 50 PERCENT OF ITS RATED-TREATMENT CAPACITY. THESE REMOVAL EFFICIENCIES SHALL BE BASED ON INDEPENDENT THIRD-PARTY RESEARCH FOR INFLUENT OIL CONCENTRATIONS REPRESENTATIVE OF STORM WATER RUNOFF ($20 \pm 5 \text{ MG/L}$). THE SWTD SHALL BE GREATER THAN 99 PERCENT EFFECTIVE IN CONTROLLING DRY-WEATHER ACCIDENTAL OIL SPILLS. THE SWTD SHALL BE CAPABLE OF UTILIZING SORBENT MEDIA TO ENHANCE REMOVAL AND RETENTION OF PETROLEUM BASED POLLUTANTS.

CDS3030 DESIGN NOTES

CDS3030 RATED TREATMENT CAPACITY IS 3.0 CFS. OR PER LOCAL REGULATIONS. MAXIMUM HYDRAULIC INTERNAL BYPASS CAPACITY IS 20.0 CFS. IF THE SITE CONDITIONS EXCEED 20.0 CFS, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

THE STANDARD CDS3030 CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

DESIGNATION (MODEL SUFFIX)	CONFIGURATION DESCRIPTION
GP	GRATED INLET ONLY (NO INLET PIPE)
K	GRATED INLET WITH INLET PIPE OR PIPES
KP	CURB INLET ONLY (NO INLET PIPE)
B	CURB INLET WITH INLET PIPE OR PIPES
W	SEPARATE OIL BAFFLE (SINGLE INLET PIPE REQUIRED FOR THIS CONFIGURATION)
W	SEDIMENT WEIR FOR NJDEP / NJCAT CONFORMING UNITS

HYDRO-DYNAMIC SEPARATOR

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	HDS-112
WATER QUALITY FLOW RATE (CFS)	1,469
PEAK FLOW RATE (CFS)	1,469
RETURN PERIOD OF PEAK FLOW (YRS)	15
SCREEN APERTURE (2400 OR 4700)	2400

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	1015.99	PVC	12"
INLET PIPE 2	-	-	-
OUTLET PIPE	1015.99	PVC	12"

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES

- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- DIMENSIONS MARKED WITH () ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
- FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH STORMWATER SOLUTIONS REPRESENTATIVE. www.contechstormwater.com
- CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
- STRUCTURE AND CASTINGS SHALL MEET AASHTO HS20 LOAD RATING.

INSTALLATION NOTES

- ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
- CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
- CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

B. HYDRAULIC CAPACITY

- THE SWTD SHALL PROVIDE A RATED-TREATMENT CAPACITY, WHICH IS CONSISTENT WITH GOVERNING WATER TREATMENT REGULATIONS. AT ITS RATED-TREATMENT CAPACITY, THE DEVICE SHALL BE CAPABLE OF ACHIEVING GREATER THAN 85 PERCENT REMOVAL OF PARTICLES TYPICALLY FOUND IN ROADSIDE SEDIMENTS. THIS REMOVAL EFFICIENCY SHALL BE SUPPORTED BY INDEPENDENT THIRD-PARTY RESEARCH UTILIZING SAMPLES CONSISTENT WITH THE NURP GRADATION OR FINER.
- THE SWTD SHALL MAINTAIN THE PEAK CONVEYANCE CAPACITY OF THE DRAINAGE NETWORK AS DEFINED BY THE ENGINEER.

C. STORAGE CAPACITY

1. THE SWTD SHALL BE DESIGNED WITH A SUMP CHAMBER FOR THE STORAGE OF CAPTURED SEDIMENTS AND OTHER NEGATIVELY BUOYANT POLLUTANTS IN BETWEEN MAINTENANCE CYCLES. THE MINIMUM STORAGE CAPACITY PROVIDED BY THE SUMP CHAMBER SHALL BE IN ACCORDANCE WITH THE VOLUME LISTED IN TABLE 1. THE BOUNDARIES OF THE SUMP CHAMBER SHALL BE LIMITED TO THAT WHICH DO NOT DEGRADE THE SWTD'S TREATMENT EFFICIENCY AS CAPTURED POLLUTANTS ACCUMULATE. THE SUMP CHAMBER SHALL BE SEPARATE FROM THE TREATMENT PROCESSING PORTION(S) OF THE SWTD TO MINIMIZE THE PROBABILITY OF FINE PARTICLE RE-SUSPENSION. IN ORDER TO NOT RESTRICT THE OWNER'S ABILITY TO MAINTAIN THE SWTD, THE MINIMUM DIMENSION PROVIDING ACCESS FROM THE GROUND SURFACE TO THE SUMP CHAMBER SHALL BE 20 INCHES IN DIAMETER.
2. THE SWTD SHALL BE DESIGNED TO CAPTURE AND RETAIN TOTAL PETROLEUM HYDROCARBONS GENERATED BY WET-WEATHER FLOW AND DRY-WEATHER GROSS SPILLS. THE MINIMUM STORAGE CAPACITY PROVIDED BY THE SWTD SHALL BE IN ACCORDANCE WITH THE VOLUME LISTED IN TABLE 1 BELOW.

CDS Model	Treatment Capacity (cfs)/(L/s)	Minimum Sump Storage Capacity (yd³)/(m³)	Minimum Oil Storage Capacity (gal)/(L)
CDS3040	3.0 (85.0)	2.1 (1.6)	205 (776)
CDS3030-D	3.0 (85.0)	2.1 (1.6)	205 (776)
CDS3030-DV	3.0 (85.0)	2.1 (1.6)	205 (776)

D. ALTERNATE TREATMENT TECHNOLOGIES AND SIZING CRITERIA

THE SIZING CRITERIA FOR TREATMENT SYSTEMS MUST CONFORM TO THE RECOMMENDED LOADING RATE AND 3_{mp} PARTY TESTING DATA REQUIREMENTS AS MENTIONED BELOW:

- CDS SCREENING SYSTEMS - DESIGNED FOR FULL TREATMENT OF THE RUNOFF RATE AT A LOADING RATE NOT TO EXCEED THE CRITICAL FLOW IN THE INLET, IN ORDER TO ACHIEVE 80% TSS REMOVAL EFFICIENCY. (80% TSS REMOVAL BASED ON AVERAGE PARTICLES SIZE OF 63 MICRON)
- VORTEX SEPARATION SYSTEMS - DESIGNED FOR FULL TREATMENT OF THE RUNOFF RATE AT A LOADING RATE NOT TO EXCEEDING 24 GPM/FT². IN ORDER TO ACHIEVE 80% TSS REMOVAL EFFICIENCY, THE HYDRAULIC CAPACITY SHOULD NOT EXCEED A LOADING RATE OF 100 GPM/FT² TO PREVENT SCOURING OF PREVIOUSLY CAPTURED PARTICLES. 80% TSS REMOVAL BASED ON AVERAGE PARTICLES SIZE OF 63 MICRON)
- GRAVITY SYSTEMS - DESIGNED FOR FULL TREATMENT OF THE RUNOFF RATE AT A LOADING RATE NOT TO EXCEEDING 10 GPM/FT². IN ORDER TO ACHIEVE 80% TSS REMOVAL EFFICIENCY, THE GRAVITY UNITS WILL NOT EXCEED LUNAR FLOW CONDITION PARAMETERS IN THE TREATMENT UNIT BUT WILL PROVIDE A BYPASS SYSTEM TO PREVENT TURBULENCE FROM ACCRUING IN THE SYSTEM. (SEE "STOKES LAW" FOR GRAVITY SETTLING REQUIREMENTS OF PARTICLES. 80% TSS REMOVAL BASED ON AVERAGE PARTICLES SIZE OF 63 MICRON)

ADDITIONALLY, THE PERFORMANCE OF THE UNIT MUST BE EVALUATED BY A THIRD PARTY AND VERIFIED IN A PROGRAM THAT ALLOCATES DURING THE IMPORTANT STAGES OF THE INSTALLATION AS IDENTIFIED BY THE MANUFACTURER AT NO ADDITIONAL EXPENSE. A MINIMUM OF 72 HOURS NOTICE SHALL BE PROVIDED TO THE MANUFACTURER PRIOR TO THEIR PERFORMANCE OF THE SERVICES INCLUDED UNDER THIS SUBSECTION.

REMOVAL EFFICIENCIES ACROSS THE SPECTRUM OF PARTICLE SIZES REPORTED, AT A RANGE OF HYDRAULIC LOADING RATES, VARYING OVER A RANGE OF AT LEAST 25 TO 125% OF THE MANUFACTURER'S ADVERTISED "WATER TREATMENT" LOADING RATE.

2.3 MANUFACTURER

THE MANUFACTURER OF THE SWTD SHALL BE ONE THAT IS REGULARLY ENGAGED IN THE ENGINEERING DESIGN AND PRODUCTION OF SYSTEMS DEPLOYED FOR THE TREATMENT OF STORM WATER RUNOFF FOR AT LEAST FIVE (5) YEARS AND WHICH HAVE A HISTORY OF SUCCESSFUL PRODUCTION, ACCEPTABLE TO THE ENGINEER. IN ACCORDANCE WITH THE DRAWINGS, THE SWTD(S) SHALL BE A CDS® DEVICE MANUFACTURED BY:

CONTECH ENGINEERED SOLUTIONS
9025 CENTRE POINTE DR., SUITE 400
WEST CHESTER, OH 45389
(800) 338-1122

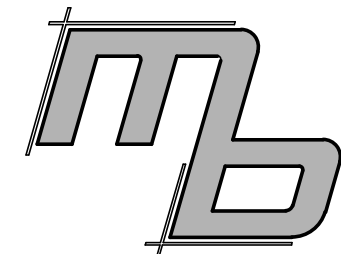
PART 3 - EXECUTION

3.1 HANDLING AND STORAGE

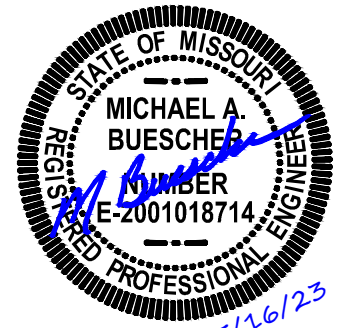
1. THE CONTRACTOR SHALL EXERCISE CARE IN THE STORAGE AND HANDLING OF THE SWTD COMPONENTS PRIOR TO AND DURING INSTALLATION. ANY REPAIR OR REPLACEMENT COSTS ASSOCIATED WITH EVENTS OCCURRING AFTER DELIVERY IS ACCEPTED AND UNLOADING HAS COMMENCED SHALL BE BORN BY THE CONTRACTOR.

3.2 INSTALLATION

1. THE SWTD SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND RELATED SECTIONS OF THE CONTRACT DOCUMENTS. THE MANUFACTURER SHALL PROVIDE THE CONTRACTOR INSTALLATION INSTRUCTIONS AND OFFER ON-SITE GUIDANCE DURING THE IMPORTANT STAGES OF THE INSTALLATION AS IDENTIFIED BY THE MANUFACTURER AT NO ADDITIONAL EXPENSE. A MINIMUM OF 72 HOURS NOTICE SHALL BE PROVIDED TO THE MANUFACTURER PRIOR TO THEIR PERFORMANCE OF THE SERVICES INCLUDED UNDER THIS SUBSECTION.
2. THE CONTRACTOR SHALL FILL ALL VOIDS ASSOCIATED WITH LIFTING PROVISIONS PROVIDED BY THE MANUFACTURER. THESE VOIDS SHALL BE FILLED WITH NON-SHRINKING GROUT PROVIDING A FINISHED SURFACE CONSISTENT WITH ADJACENT SURFACES. THE CONTRACTOR SHALL TRIM ALL PROTRUDING LIFTING PROVISIONS FLUSH WITH THE ADJACENT CONCRETE SURFACE IN A MANNER WHICH LEAVES NO SHARP POINTS OR EDGES.



MB Engineering, Inc.
606 Ryan Drive
Energy, IL 62933
(314) 368-3040



Michael A. Buescher, P.E. Civil Engineering
Missouri P.E. E-2001018714
MB Engineering, Inc. Missouri Authority No. E-201501468

The Professional Engineer's seal affixed to this sheet indicates that the named Engineer has prepared or directed the preparation of the material shown only on this sheet. Other drawings and documents not exhibiting this seal shall not be considered prepared by or the responsibility of the undersigned.

PROJECT REVISION:

NO.	DATE	DESCRIPTION	FOR REVIEW	CITY COMMENTS
1	11-21-22			
2	05-16-23			

210 SW MO-150
Lee's Summit, MO 64082

DATE: 11-21-22

DRAFTED BY: KB

APPRVD. BY: MB

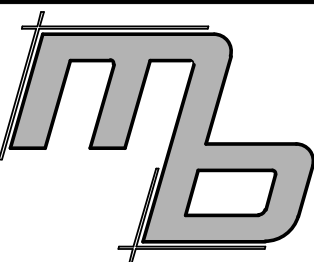
SHEET TITLE:
TYPICAL DETAILS

SHEET NUMBER:
C3-02

PROJECT NO: 22-752

1 CONTECH CDS3030 DETAIL & SPECIFICATIONS
NOT TO SCALE

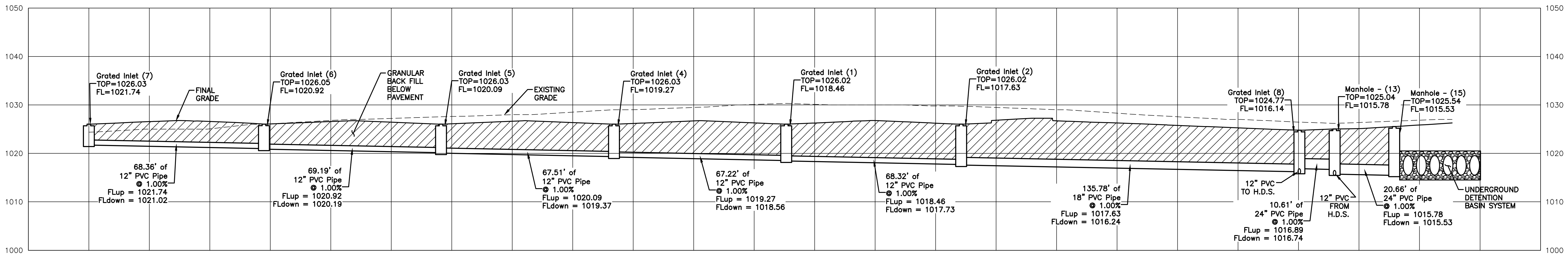
ENGINEER APPROVED SHOP DRAWINGS MUST BE SUBMITTED TO MSD PRIOR TO THE CONSTRUCTION OF THIS STRUCTURE. MSD CONTACT: BRIAN DUNN (314) 335-2072



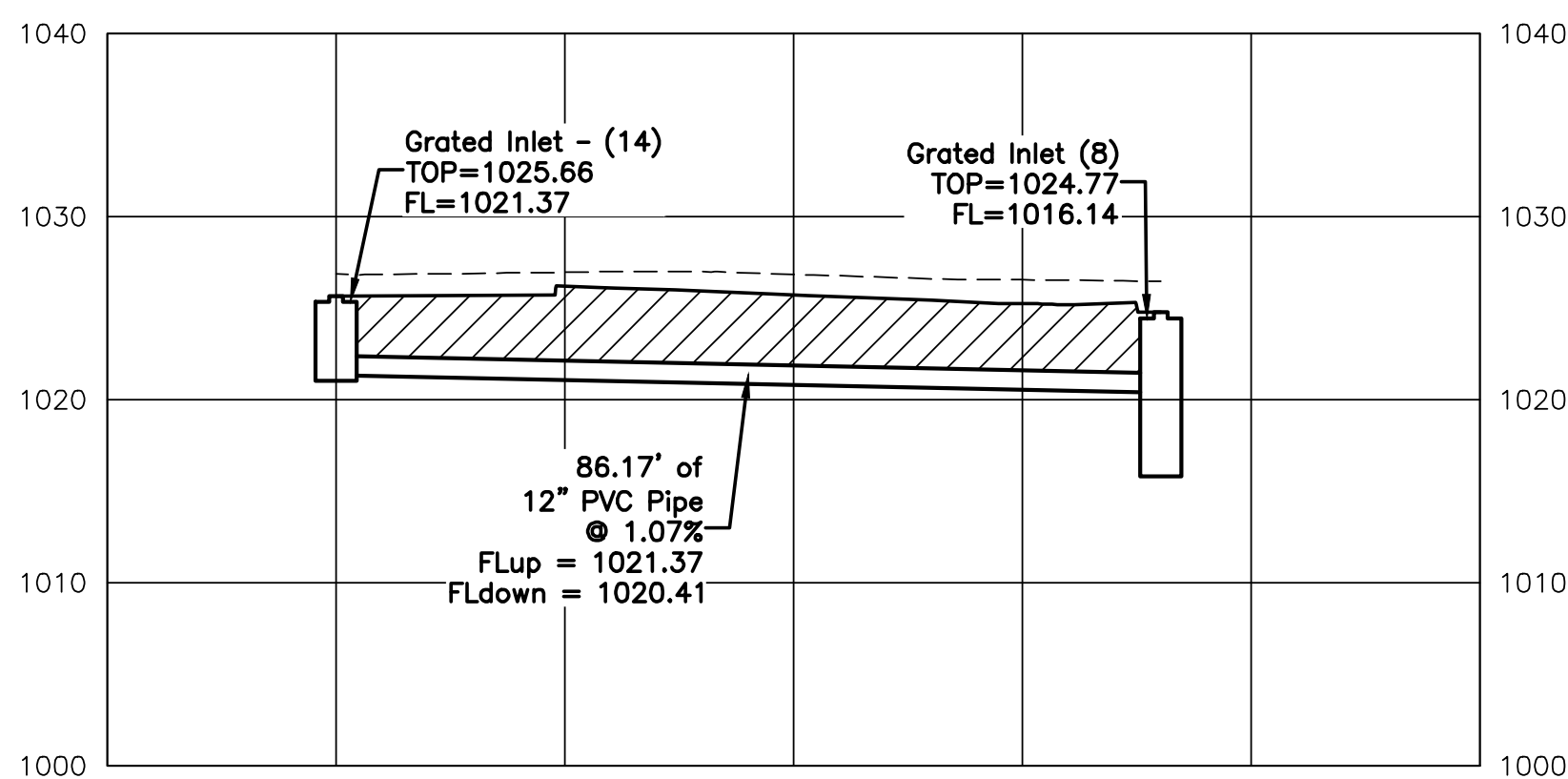
MB Engineering, Inc.
606 Ryan Drive
Energy, IL 62933
(314) 368-3040



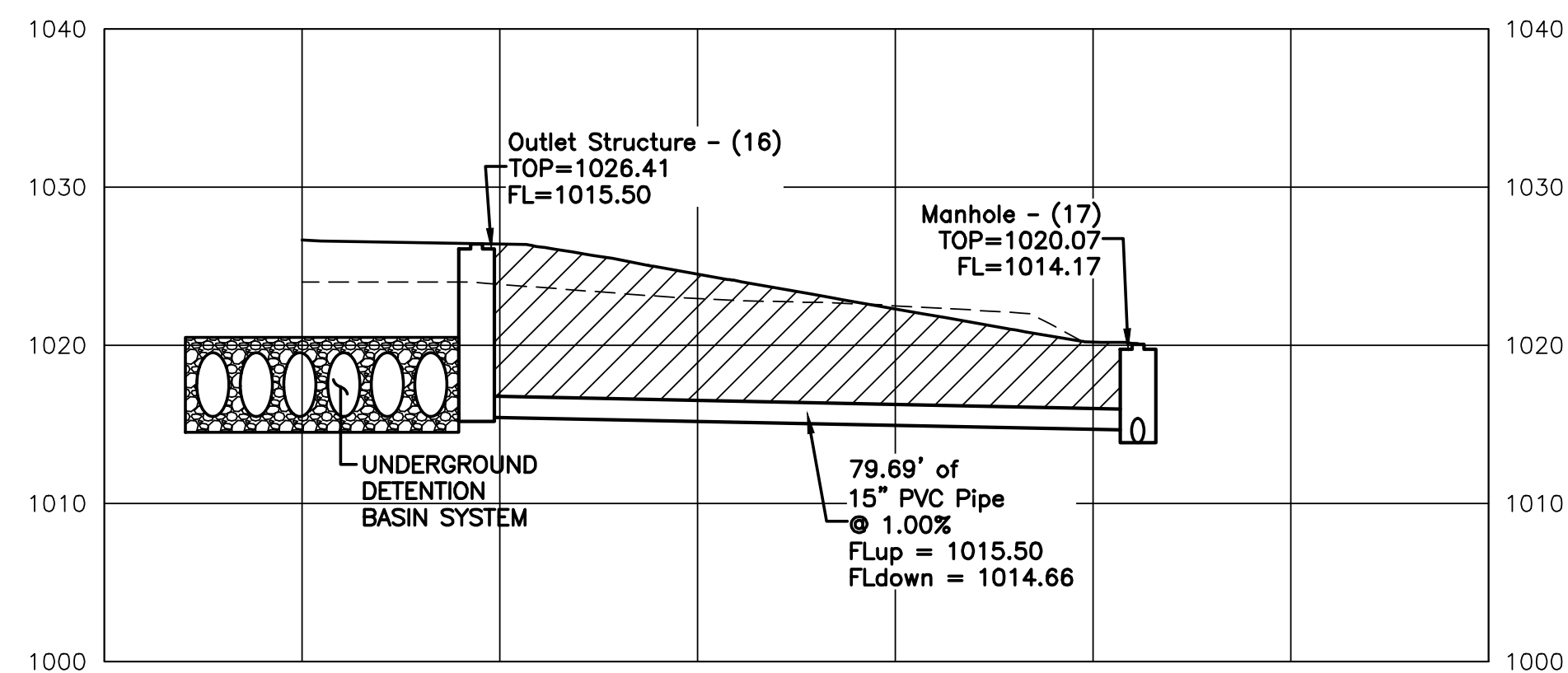
Michael A. Buescher, P.E., Civil Engineering
Missouri P.E. E-2001018714
MB Engineering, Inc. Missouri Authority No. E-2015041404
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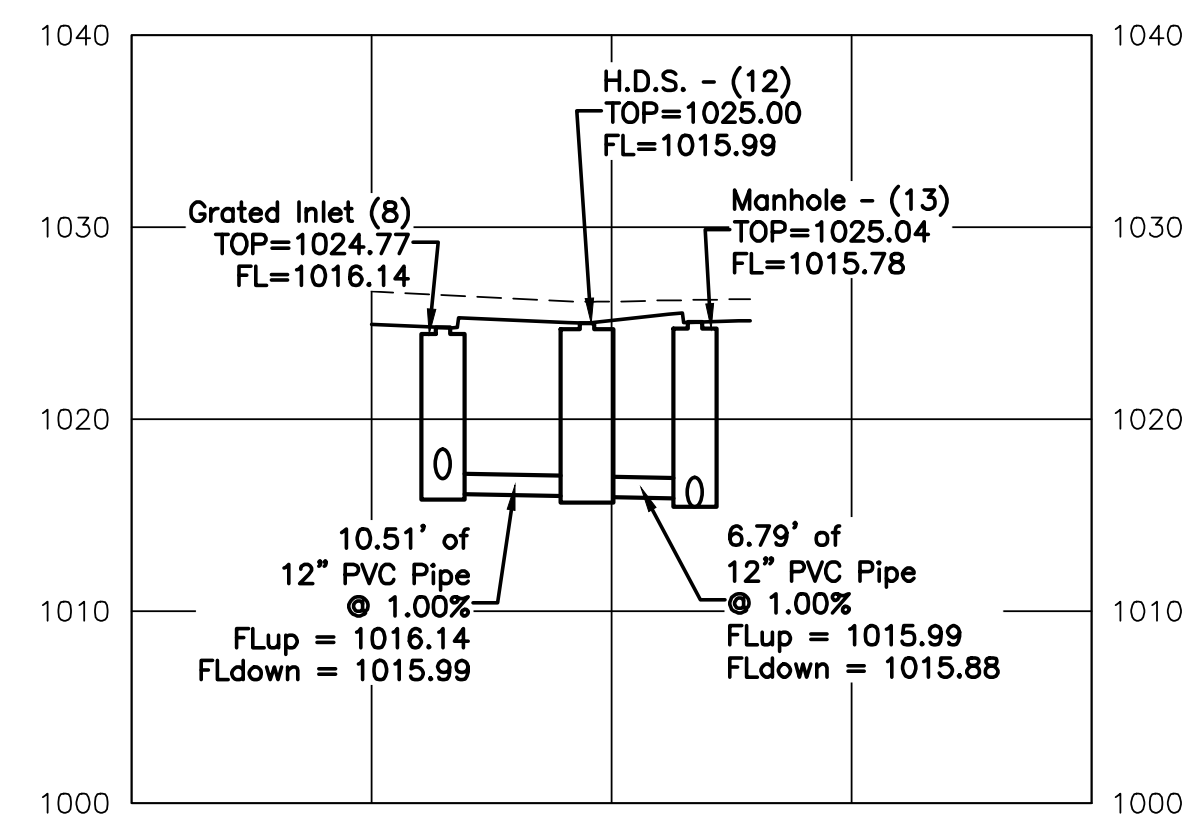
A STORM SEWER PROFILE
SCALE: 1" = 20' HORZ - 1" = 10' VERT



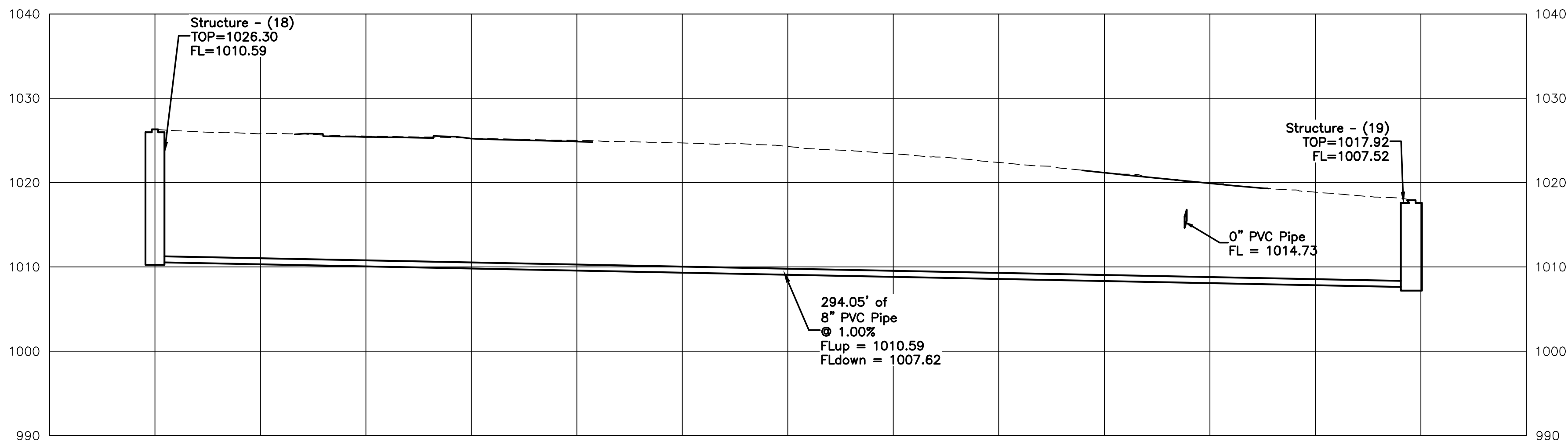
B STORM SEWER PROFILE
SCALE: 1" = 20' HORZ - 1" = 10' VERT



C STORM SEWER PROFILE
SCALE: 1" = 20' HORZ - 1" = 10' VERT



D STORM SEWER PROFILE
SCALE: 1" = 20' HORZ - 1" = 10' VERT



E SANITARY SEWER PROFILE
SCALE: 1" = 20' HORZ - 1" = 10' VERT

PROJECT REVISION:

NO.	DATE	DESCRIPTION
1	11-21-22	FOR REVIEW
2	05-16-23	CITY COMMENTS

210 SW MO-150
Lee's Summit, MO 64082

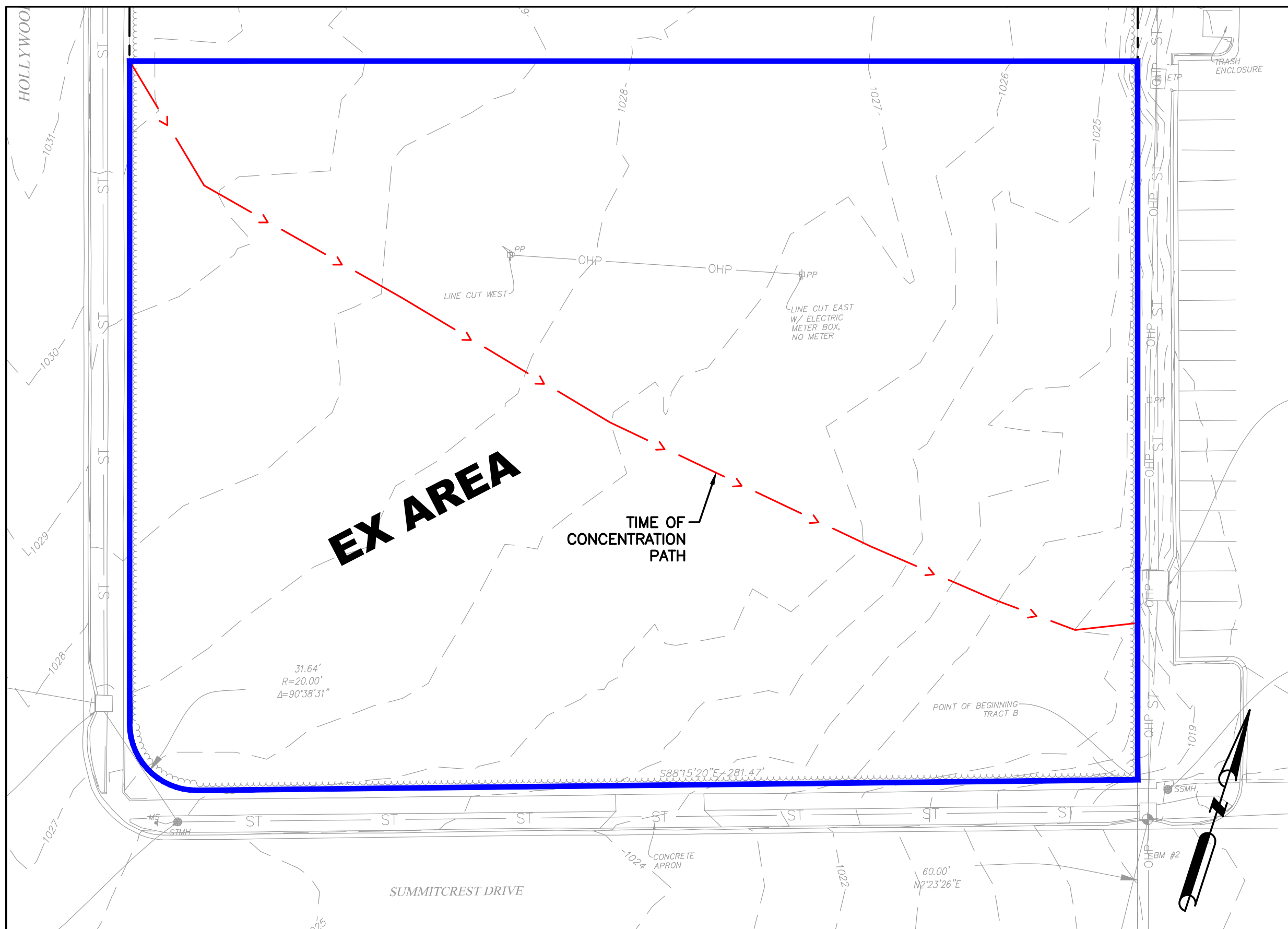
DATE: 11-21-22
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APPRVD. BY: MB

SHEET TITLE:
SEWER PROFILES

SHEET NUMBER:
C3-03

PROJECT NO: 22-752

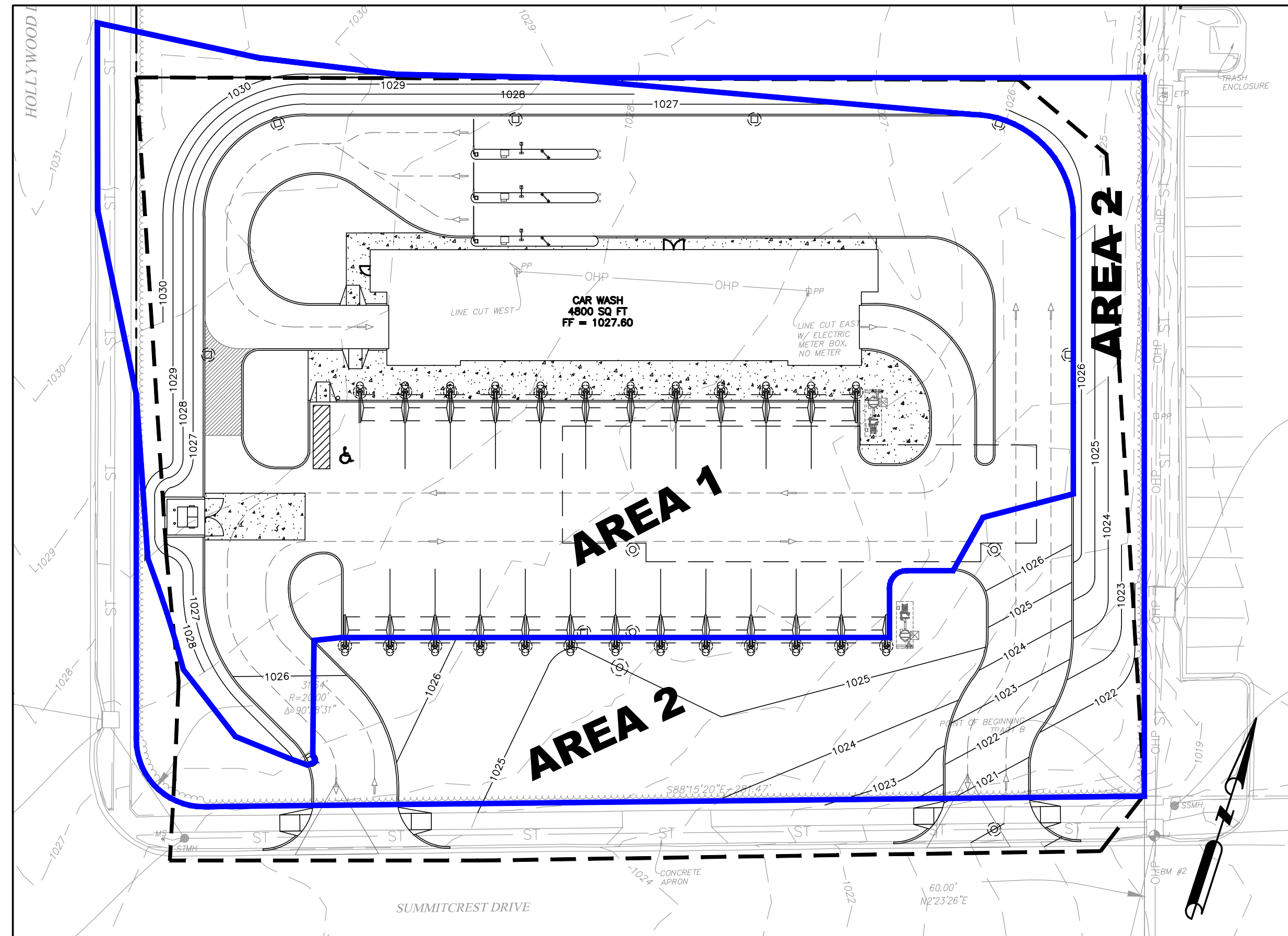




EXISTING AREA: 1.499 ACRES CN = 79

2 YR. = 3.05 CFS
10 YR. = 5.77 CFS
25 YR. = 7.57 CFS
100 YR = 10.45 CFS

A EXISTING DRAINAGE AREA
SCALE: 1" = 30'



PROPOSED AREA 1: 0.916 ACRES CN = 97

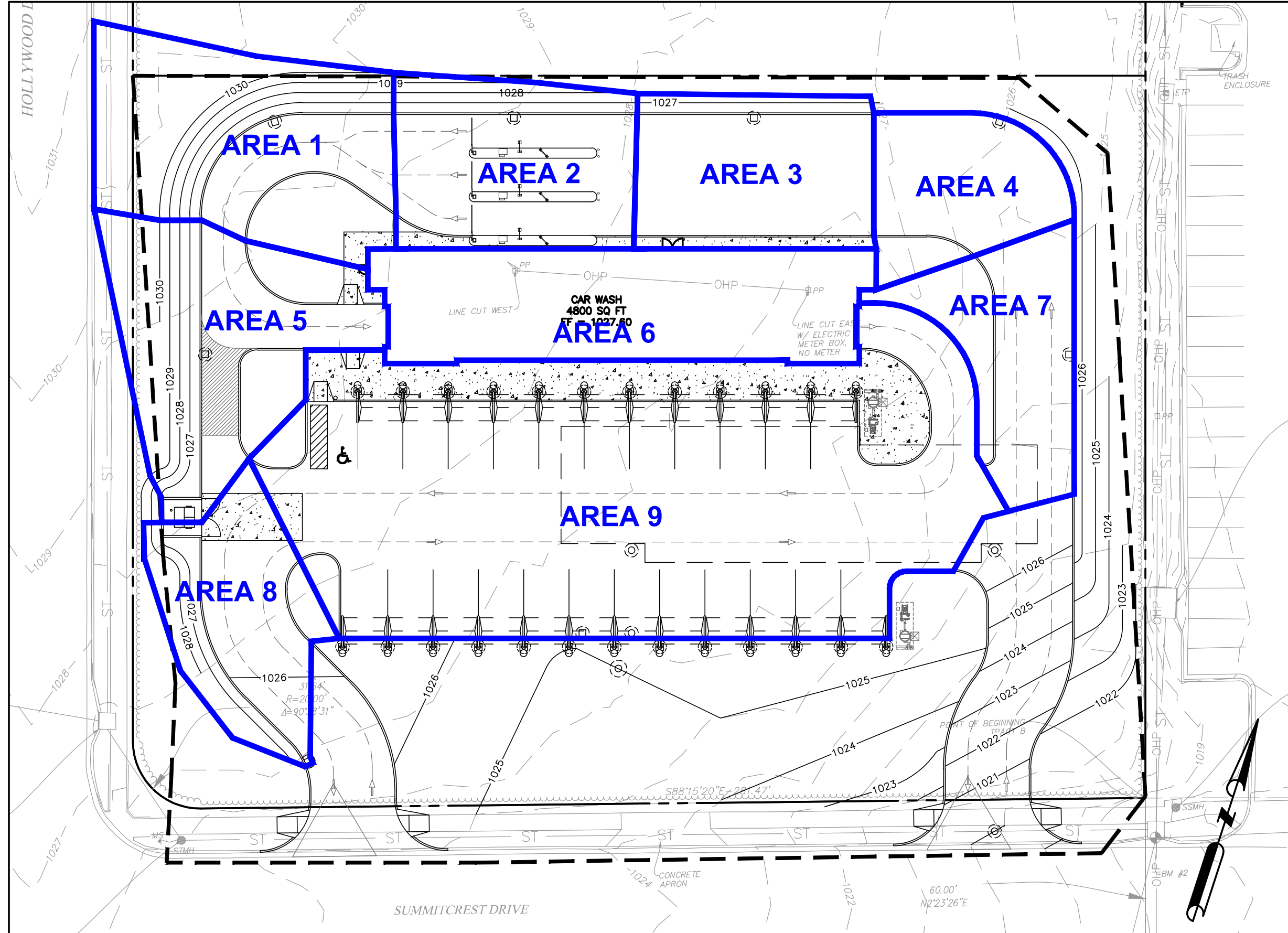
PROPOSED AREA 2: 0.471 ACRES CN = 78

PROPOSED AREA 2 BYPASSES THE DETENTION BASIN THEREFORE THE COMBINED ALLOWABLE RUNOFF OUT OF THE DETENTION BASINS WILL BE:
2 YR. = 3.05 - 1.17 = 1.88 CFS
10 YR. = 5.77 - 2.23 = 3.54 CFS
25 YR. = 7.57 - 2.94 = 4.63 CFS
100 YR. = 10.45 - 4.08 = 6.37 CFS

2 YR = 4.32 CFS
10 YR = 6.32 CFS
25 YR = 7.59 CFS
100 YR = 9.59 CFS

2 YR = 1.17 CFS
10 YR = 2.23 CFS
25 YR = 2.94 CFS
100 YR = 4.08 CFS

B PROPOSED DRAINAGE AREA
SCALE: 1" = 30'



C INLET DRAINAGE AREAS
SCALE: 1" = 30'

SCALE: 1" = 30'

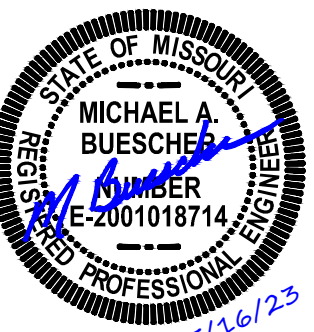
	2-YR (CFS)	10-YR (CFS)	25-YR (CFS)	100-YR (CFS)
AREA 1 IMPERVIOUS AREA = 1,667.89 SQ FT PERVIOUS AREA = 3,315.60 SQ FT TOTAL AREA = 4,983.49 SQ FT	0.34	0.60	0.78	1.05
AREA 2 IMPERVIOUS AREA = 2,900.14 SQ FT PERVIOUS AREA = 672.71 SQ FT TOTAL AREA = 3,572.85 SQ FT	0.36	0.55	0.67	0.85
AREA 3 IMPERVIOUS AREA = 2,878.23 SQ FT PERVIOUS AREA = 374.22 SQ FT TOTAL AREA = 3,252.44 SQ FT	0.34	0.51	0.61	0.78
AREA 4 IMPERVIOUS AREA = 2,043.79 SQ FT PERVIOUS AREA = 583.96 SQ FT TOTAL AREA = 2,327.75 SQ FT	0.26	0.40	0.48	0.62
AREA 5 IMPERVIOUS AREA = 2,054.63 SQ FT PERVIOUS AREA = 2,521.74 SQ FT TOTAL AREA = 4,576.36 SQ FT	0.35	0.60	0.76	1.00
AREA 6 IMPERVIOUS AREA = 4,828.88 SQ FT PERVIOUS AREA = 0.00 SQ FT TOTAL AREA = 4,828.88 SQ FT	0.53	0.77	0.92	1.17
AREA 7 IMPERVIOUS AREA = 1,958.76 SQ FT PERVIOUS AREA = 766.05 SQ FT TOTAL AREA = 2,724.77 SQ FT	0.26	0.40	0.50	0.64
AREA 8 IMPERVIOUS AREA = 1,876.62 SQ FT PERVIOUS AREA = 1,086.96 SQ FT TOTAL AREA = 2,963.58 SQ FT	0.26	0.42	0.52	0.68
AREA 9 IMPERVIOUS AREA = 16,567.27 SQ FT PERVIOUS AREA = 323.41 SQ FT TOTAL AREA = 16,890.68 SQ FT	1.85	2.69	3.22	4.06

Line No.	Line Size	Flow Rate	Invert Up	HGL Up	Depth Up	Area Up	Vel Up	Vel Hd Up	EGL Up	Line Slope	Line Length	Invert Dn	HGL Dn	Depth Dn	Area Dn	Vel Dn	Vel Hd Dn	EGL Dn	Sf Dn	Sf Ave	Energy Loss	J-Loss Coeff	Minor Loss	Line ID
(in)	(cfs)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)		(ft)	
1	24	10.85	1015.78	1019.49	2.00	3.14	3.45	0.19	1019.67	1.01	24.642	1015.53	1019.44	2.00	3.14	3.45	0.19	1019.63	0.196	0.196	0.048	1.00	0.19	MH (13) - MH (15)
2	24	10.85	1016.89	1019.70	2.00	3.14	3.45	0.19	1019.89	1.03	14.588	1016.74	1019.67	2.00	3.14	3.45	0.19	1019.86	0.196	0.196	0.029	0.65	0.12	GI (8) - MH (13)
3	18	6.11	1017.64	1020.23	1.50	1.77	3.46	0.19	1020.41	1.00	139.767	1016.24	1019.82	1.50	1.77	3.46	0.19	1020.01	0.289	0.289	0.403	0.95	0.18	GI (2) - GI (8)
4	12	3.94	1018.46	1021.16	1.00	0.79	5.02	0.39	1021.55	1.00	72.312	1017.74	1020.40	1.00	0.79	5.02	0.39	1020.79	1.043	1.043	0.754	0.96	0.38	GI (1) - GI (2)
5	12	2.89	1019.27	1021.93	1.00	0.79	3.68	0.21	1022.14	1.00	71.214	1018.56	1021.53	1.00	0.79	3.68	0.21	1021.74	0.561	0.561	0.400	0.15	0.03	GI (4) - GI (1)
6	12	2.04	1020.09	1022.16	1.00	0.79	2.60	0.10	1022.27	1.01	71.501	1019.37	1021.96	1.00	0.79	2.60	0.10	1022.07	0.280	0.280	0.200	0.15	0.02	GI (5) - GI (4)
7	12	1.26	1020.92	1022.26	1.00	0.79	1.60	0.04	1022.30	1.00	73.183	1020.19	1022.18	1.00	0.79	1.60	0.04	1022.22	0.107	0.107	0.078	0.96	0.04	GI (6) - GI (5)
8	12	0.64	1021.74	1022.31	0.57	0.46	1.38	0.03	1022.34	1.00	72.350	1021.02	1022.30	1.00	0.79	0.82	0.01	1022.31	0.028	0.049	0.036	1.00	0.03	GI (7) - GI (6)
9	12	0.68	1021.37	1021.71	0.34**	0.24	2.85	0.13	1021.84	1.11	86.170	1020.41	1020.69	0.28	0.18	3.84	0.13	1020.81	0.000	0.000	0.000	1.00 z	n/a	GI (14) - GI (8)

D 100-YR STORM SEWER HYDRAULICS
NO SCALE



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The Professional Engineer's seal affixed to this sheet indicates that the named Engineer has prepared or directed the preparation of the material shown only on this sheet. Other drawings and documents not exhibiting this seal shall not be considered prepared by or the responsibility of the undersigned.

PROJECT REVISION:

NO.	DATE	DESCRIPTION
1	11-21-22	FOR REVIEW
2	05-16-23	CITY COMMENTS

210 SW MO-150
Lee's Summit, MO 64082

DATE: 11-21-22
DRAFTED BY: KB
APPRVD. BY: MB

SHEET TITLE:
DRAINAGE AREA MAP

SHEET NUMBER:
C4-01

PROJECT NO: 22-752