GENERAL NOTES

A. Design data provided in electronic format is for information purposes only and should be used at your own risk, and is provided without representations and warranties. Any conflict between the information reflected on the latest revision of the sealed plan sheets and that provided via electronic format shall be resolved in favor of the sealed plan sheets.
B. Utilities: There may be additional existing utilities not shown on these plans. Existing utilities are shown in an approximate manner only and the Engineer assumes no responsibility for locations shown. Field verify the location of all existing utilities within the limits of construction. Notify the Owner and Engineer if discrepancies are found that will affect the construction project. Protect all existing utilities.
C. Temporary Provisions: Sequence the work and provide temporary measures as needed to maintain acess to the site through all entrances at all times during construction. Temporary provisions may include, but are not limited to: barricades, flashing lights, flagman, temporary pavement, and directional signage.
D. Equipment Storage: Do not park equipment or store materials in state, county, or city right-of-way.
E. Notify the Engineer in writing of any discrepancies between the existing conditions in the field and the survey shown on the plans before proceeding with any new construction.
F. Obtain all required construction related permits, including demolition permit, before starting work. Retain copies of all permits at the project site at all times.
G. Approval of these plans does not constitute approval of any land disturbing activities within wetland areas. Contact the appropriate regulatory agency for approval of any wetland area disturbance.
H. Signs (location, number, and size) are not approved under the general development permit. A separate permit is required for onsite signage.
I. No certificate of occupancy will be issued until all site improvements have been completed on the site.
J. Comply with all applicable state, federal, and local building and utility installation codes. All materials and construction methods shall be in accordance with these plans and specifications unless Department of Transportation Standards or local municipal standards are more stringent.
K. Do not deviate from these plans and specifications without prior written approval from the Engineer of record.
L. Work within D.O.T. right-of-way:
   1. All pavement markings within D.O.T. right-of-way shall be thermoplastic and in accordance with D.O.T. specifications.
   2. Re-establish all right-of-way area, which is damaged or disturbed, to original condition or better.
   3. All work in D.O.T. right-of-way shall comply with D.O.T. specifications.
M. Arrange high intensity lighting to conceal the source of light from public view and prevent interference with traffic.
N. Ensure correct horizontal and vertical alignment of all ties between proposed and existing pavements, curb and gutter, sidewalks, walls, and utilities before beginning work. Notify Engineer if discrepancies exist.

TRAFFIC CONTROL

A. If Drawings do not indicate site specific traffic control measures, Contractor shall be responsible for providing a temporary traffic control plan in accordance with the Manual on Uniform Traffic Control Devices (MUTCD), latest edition.
B. All temporary traffic control signage and markings shall be installed prior to construction and maintained during construction in accordance with the MUTCD, latest edition.
C. Contact property owners to be affected by construction and coordinate temporary driveway closures and sequencing. Maintain access for all property owners during construction.
D. Control dust as necessary to prevent interference with traffic.
E. Inspect traffic control devices on a daily basis to ensure placement of barricades and function of lights is maintained throughout construction.
F. Coordinate all lane closures with the local jurisdiction having authority.

STRUCTURE & SITE DEMOLITION

A. Verify that utilities have been disconnected and capped before starting demolition operations.
B. Verify that hazardous materials have been remediated before proceeding with building demolition operations.
C. Environmental & Geotechnical: Review all project environmental and geotechnical reports and become familiar with all issues before demolition.
D. Existing Utilities: Locate, identify, disconnect, and seal or cap off indicated utilities serving buildings and structures to be demolished.
   1. Arrange to shut off indicated utilities with utility companies.
   2. If removal, relocation, or abandonment of utility services will affect adjacent occupied buildings, then provide temporary utilities that bypass buildings and structures to be demolished and that maintain continuity of service to other buildings and structures.
E. Do not commence demolition operations until temporary erosion and sediment control and plant-protection measures are in place.
F. Obtain the Demolition Permit from the local authority prior to starting demolition activities.
G. Existing Facilities: Protect adjacent walkways, loading docks, building entries, and other building facilities during demolition operations. Maintain exits from existing buildings. Promptly repair any facilities damaged by construction operations to owner's satisfaction at no additional cost to the owner.
H. Existing Utilities: Maintain utility services to remain and protect from damage during demolition operations.
I. Temporary Protection: Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction and as indicated.
J. Remove temporary barriers and protections where hazards no longer exist. Where open excavations or other hazardous conditions remain, leave temporary barriers and protections in place.
K. Remove demolition waste materials from Project site and legally dispose of them in an EPA-approved landfill acceptable to authorities having jurisdiction
L. Do not burn demolished materials unless special written permission is obtained from Owner and Engineer.
M. Clean adjacent structures and improvements of dust, dirt, and debris caused by building demolition operations. Return adjacent areas to condition existing before building demolition operations began.

SITE CLEARING

1.1 PROJECT CONDITIONS
   A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
   B. Environmental & Geotechnical: Review all project environmental and geotechnical reports and become familiar with all issues before site clearing.
   C. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.
   D. Do not commence site clearing operations until temporary erosion- and sedimentation-control and plant-protection measures are in place.
1.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL
   A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.
   B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
   C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
   D. Remove erosion and sedimentation controls when site is stabilized and restore and stabilize areas disturbed during removal.
1.3 TREE AND PLANT PROTECTION
   Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Engineer.
1.4 EXISTING UTILITIES
   A. Locate, identify, disconnect, and seal or cap utilities indicated to be removed or abandoned in place. Arrange with utility companies to shut off indicated utilities.
   B. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
      1. Notify utility owner not less than two days in advance of proposed utility interruptions.
      2. Do not proceed with utility interruptions without utility owner's written permission.
   C. Pothole existing water lines, underground electrical lines, gas lines, underground telephone lines, fiber optic, and any other existing utility lines within the project limits during site clearing and demolition activities. Survey the existing utility elevations and provide the surveyed field locations and depths to the Engineer for review. These existing utilities may require relocation.
1.5 CLEARING AND GRUBBING
   Remove obstructions, concrete, asphalt, trees, shrubs, and other vegetation to permit installation of new construction.
   1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
   2. Grind down stumps and remove roots, obstructions, and debris to a depth of 12 inches below exposed subgrade.
   3. Use only hand methods for grubbing within protection zones.
   4. The subgrade to remain shall be compacted to 95% Standard Proctor maximum dry density following clearing and grubbing activities.
1.6 TOPSOIL STRIPPING
   A. Remove sod and grass before stripping topsoil.
   B. Strip topsoil in a manner to prevent intermingling with underlying subsoil or other waste materials.
   C. Stockpile topsoil away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.
   D. Dispose of surplus topsoil. Surplus topsoil is that which exceeds quantity indicated to be stockpiled or reused.

SITE WATER DISTRIBUTION

(See also City of O'Fallon General Notes)

1.1 GENERAL
   A. Regulatory Requirements:
      1. Comply with requirements of utility company supplying water. Include tapping of water mains and backflow prevention.
      2. Comply with standards of authorities having jurisdiction for potable-water-service piping, including materials, installation, testing, and disinfection.
   B. Piping materials shall bear label, stamp, or other markings of specified testing agency.
   C. Interruption of Existing Water-Distribution Service: Notify Owner at least 2 days prior to interruption of existing water services.
   D. Coordinate with utility company for required inspections and for connection of water main and services before starting construction.
1.2 COPPER TUBE AND FITTINGS
   A. Soft Copper Tube: ASTM B 88, Type K , water tube, annealed temper.
      Copper, Pressure-Seal Fittings:
      1. NPS 2 and Smaller: Wrought-copper fitting with EPDM O-ring seal in each end.
      2. NPS 2-1/2 to NPS 4 : Bronze fitting with stainless-steel grip ring and EPDM O-ring seal in each end.
   B. Bronze Flanges: ASME B16.24, Class 150, with solder-joint end. Furnish Class 300 flanges if required to match piping.
   C. Copper Unions: MSS SP-123, cast-copper-alloy, hexagonal-stock body with ball-and-socket, metal-to-metal seating surfaces, and solder-joint or threaded ends.
1.3 DUCTILE-IRON PIPE AND FITTINGS
   A. Mechanical-Joint, Ductile-Iron Pipe: AWWA C151, with mechanical-joint bell and plain spigot end unless grooved or flanged ends are indicated.
      1. Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
      2. Glands, Gaskets, and Bolts: AWWA C111, ductile- or gray-iron glands, rubber gaskets, and steel bolts.
   B. Push-on-Joint, Ductile-Iron Pipe: AWWA C151, with push-on-joint bell and plain spigot end unless grooved or flanged ends are indicated.
   C. Flanges: ASME 16.1, Class 125, cast iron.
1.4 PVC PIPE AND FITTINGS
   A. PVC, Schedule 40 Pipe: ASTM D 1785. PVC, Schedule 40 Socket Fittings: ASTM D 2466.
   B. PVC, AWWA Pipe: AWWA C900, Class 200, with bell end with gasket, and with spigot end.
   C. Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
1.5 GATE VALVES
   AWWA, Cast-Iron Gate Valves: Nonrising-Stem, Resilient-Seated Gate Valves: Gray- or ductile-iron body and bonnet; with bronze or gray- or ductile-iron gate, resilient seats, bronze stem, and stem nut.
   1) Standard: AWWA C509.
   2) Minimum Pressure Rating: 200 psig .
   3) End Connections: Mechanical joint.
   4) Interior Coating: Complying with AWWA C550.
1.6 GATE VALVE ACCESSORIES AND SPECIALTIES
   A. Tapping-Sleeve Assemblies: Sleeve and valve compatible with drilling machine.
      1) Standard: MSS SP-60.
      2) Tapping Sleeve: Cast- or ductile-iron or stainless-steel, two-piece bolted sleeve with flanged outlet for new branch connection. Include sleeve matching size and type of pipe material being tapped and with recessed flange for branch valve.
      3) Valve: AWWA, cast-iron, nonrising-stem, resilient-seated gate valve with one raised face flange mating tapping-sleeve flange.
   B. Valve Boxes: Comply with AWWA M44 for cast-iron valve boxes. Include top section, adjustable extension of length required for depth of burial of valve, plug with lettering "WATER," and bottom section with base that fits over valve and with a barrel approximately 5 inches in diameter.
1.7 BACKFLOW PREVENTERS
   Double-Check, Detector-Assembly Backflow Preventers:
   1. Standards: ASSE 1048 and UL listed or FMG approved.
   2. Operation: Continuous-pressure applications.
   3. Pressure Loss: 5 psig maximum, through middle 1/3 of flow range.
   4. Body: Cast iron with interior lining complying with AWWA C550 or that is FDA approved.
   5. End Connections: Flanged.
   6. Configuration: Designed for horizontal, straight through flow.
1.8 WATER METER BOXES
   Description: Cast-iron body and cover for disc-type water meter, with lettering "WATER METER" in cover; and with slotted, open-bottom base section of length to fit over service piping.
1.9 CONCRETE VAULTS
   Description: Precast, reinforced-concrete vault, designed for A-16 load designation according to ASTM C 857 and made according to ASTM C 858.
   1. Ladder: ASTM A 36/A 36M, steel or polyethylene-encased steel steps.
   2. Manhole: ASTM A 48/A 48M Class No. 35A minimum tensile strength, gray-iron traffic frame and cover.
      a. Dimension: 24-inch minimum diameter, unless otherwise indicated.
   3. Drain: ASME A112.6.3, cast-iron floor drain with outlet of size indicated. Include body anchor flange, light-duty cast-iron grate, bottom outlet, and integral or field-installed bronze ball or clapper-type backwater valve.
1.10 FIRE HYDRANTS
   Dry-Barrel Fire Hydrants: Freestanding, with one NPS 4-1/2 and two NPS 2-1/2 outlets, 5-1/4-inch main valve, drain valve, and NPS 6 mechanical-joint inlet. Include interior coating according to AWWA C550. Hydrant shall have cast-iron body, compression-type valve opening against pressure and closing with pressure.
   1. Standard: AWWA C502.
   2. Pressure Rating: 250 psig .
1.11 FIRE DEPARTMENT CONNECTIONS
   Fire Department Connections: Freestanding, with cast-bronze body, thread inlets according to NFPA 1963 and matching local fire department hose threads, and threaded bottom outlet. Include lugged caps, gaskets, and chains; lugged swivel connection and drop clapper for each hose-connection inlet; 18-inch- high brass sleeve; and round escutcheon plate.
1.12 VALVE APPLICATIONS
   Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:
   1. Underground Valves, NPS 3 and Larger: AWWA, cast-iron, nonrising-stem, resilient-seated gate valves with valve box.
   2. Use the following for valves in vaults and aboveground:
      a. Gate Valves, NPS 2 and Smaller: Bronze, nonrising stem.
      b. Gate Valves, NPS 3 and Larger: AWWA, cast iron, OS&Y rising stem, resilient seated.
      c. Check Valves: AWWA C508, swing type.
1.13 FIELD QUALITY CONTROL
   A. Piping Tests: Conduct piping tests before joints are covered and after concrete thrust blocks have hardened sufficiently. Fill pipeline 24 hours before testing and apply test pressure to stabilize system. Use only potable water.
   B. Hydrostatic Tests: Test at not less than one-and-one-half times working pressure for two hours. Increase pressure in 50-psig increments and inspect each joint between increments. Hold at test pressure for 1 hour; decrease to 0 psig . Slowly increase again to test pressure and hold for 1 more hour. Maximum allowable leakage is 2 quarts per hour per 100 joints. Remake leaking joints with new materials and repeat test until leakage is within allowed limits.
   C. Disinfection: Clean and disinfect potable water mains as directed by the local authority, or, if method is not prescribed by the local authority, use procedure described in AWWA C651.
   D. Prepare reports of testing activities and submit to the Engineer for approval.
1.14 IDENTIFICATION
   Install continuous underground detectable warning tape during backfilling of trench for underground water-distribution piping. Locate below finished grade, directly over piping.

SITE SANITARY SEWERS

(See also City of O'Fallon General Notes)

1.1 PROJECT CONDITIONS
   A. Interruption of Existing Sanitary Sewerage Service: Coordinate as required with the local sanitary sewer authority before starting construction.
   B. Utility Locator Service: Notify utility locator service for area where Project is located before beginning sanitary sewer installation operations. Field verify all existing utilities shown on the Drawings by pot-holing the lines. Survey existing utilities and provide horizontal and vertical location information to the Engineer to determine of any utilities will conflict with the proposed design.
1.2 DUCTILE-IRON, GRAVITY SEWER PIPE AND FITTINGS
   A. Pipe: ASTM A 746, for push-on joints.
   B. Compact Fittings: AWWA C153, ductile iron, for push-on joints.
   C. Gaskets: AWWA C111, rubber.
1.3 PVC PIPE AND FITTINGS
   PVC Gravity Sewer Piping: ASTM F 679, T-1 wall thickness, PVC gravity sewer pipe with bell-and-spigot ends and with integral ASTM F 477, elastomeric seals for gasketed joints.
1.4 CLEANOUTS
   A. Cast-Iron Cleanouts:
      1. Description: ASME A112.36.2M, round, gray-iron housing with clamping device and round, secured, scoriated, gray-iron cover. Include gray-iron ferrule with inside calk or spigot connection and countersunk, tapered-thread, brass closure plug.
      2. Top-Loading Classification: Traffic rated, Heavy Duty, in all paved areas and areas subject to vehicular traffic.
      3. Sewer Pipe Fitting and Riser to Cleanout: ASTM A 74, Service class, cast-iron soil pipe and fittings.
   B. PVC Cleanouts: PVC body with PVC threaded plug. Include PVC sewer pipe fitting and riser to cleanout of same material as sewer piping. Use in Light Duty applications where there is pedestrian traffic only or in landscaped areas.
1.5 MANHOLES
   A. Standard Precast Concrete Manholes:
      1. Description: ASTM C 478 , precast, reinforced concrete, of depth indicated, with provision for sealant joints.
      2. Diameter: 48 inches minimum unless otherwise indicated.
      3. Ballast: Increase thickness of precast concrete sections or add concrete to base section, as required to prevent flotation.
      4. Base Section: 6-inch minimum thickness for floor slab and 4-inch minimum thickness for walls and base riser section; with separate base slab or base section with integral floor.
      5. Riser Sections: 4-inch minimum thickness, of length to provide depth indicated.
      6. Top Section: Eccentric-cone type unless concentric-cone or flat-slab-top type is indicated; with top of cone of size that matches grade rings.
      7. Joint Sealant: ASTM C 990 , bitumen or butyl rubber.
      8. Resilient Pipe Connectors: ASTM C 923 , cast or fitted into manhole walls, for each pipe connection.
      9. Steps: Individual FRP steps or FRP ladder; wide enough to allow worker to place both feet on one step and designed to prevent lateral slippage off step. Cast or anchor steps into sidewalls at 12- to 16-inch intervals. Omit steps if total depth from floor of manhole to finished grade is less than 48 inches.
      10. Adjusting Rings: Interlocking HDPE rings, with level or sloped edge in thickness and diameter matching manhole frame and cover, and with height as required to adjust manhole frame and cover to indicated elevation and slope. Include sealant recommended by ring manufacturer.
      11. Grade Rings: Reinforced-concrete rings, 6- to 9-inch total thickness, with diameter matching manhole frame and cover, and with height as required to adjust manhole frame and cover to indicated elevation and slope.
   B. Manhole Frames and Covers:
      1. Description: Ferrous, 24-inch ID by 7- to 9-inch riser, with 4-inch minimum width flange and 26-inch diameter cover. Include indented top design with lettering cast into cover, using wording equivalent to "SANITARY SEWER."
      2. Material: ASTM A 536, Grade 60-40-18 ductile iron unless otherwise indicated.
1.6 IDENTIFICATION
   Arrange for installation of green warning tapes directly over piping and at outside edges of underground manholes.
   1. Use warning tape or detectable warning tape over ferrous piping.
   2. Use detectable warning tape over nonferrous piping and over edges of underground manholes.
1.7 FIELD QUALITY CONTROL
   A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.
      1. Defects requiring correction include the following:
         a. Alignment: Less than full diameter of inside of pipe is visible between structures.
         b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
         c. Damage: Crushed, broken, cracked, or otherwise damaged piping.
         d. Infiltration: Water leakage into piping.
         e. Exfiltration: Water leakage from or around piping.
      2. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
      3. Reinspect and repeat procedure until results are satisfactory.
   B. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.
      1. Do not enclose, cover, or put into service before inspection and approval.
      2. Test completed piping systems according to requirements of authorities having jurisdiction.
      3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours advance notice.
      4. Submit a separate report for each test to the Engineer for approval.
      5. Air Tests: Test sanitary sewerage according to requirements of authorities having jurisdiction, UNI-B-6, and the following:
         a. Test plastic gravity sewer piping according to ASTM F 1417.
      6. Manholes: Perform hydraulic test according to ASTM C 969 .
   C. Leaks and loss in test pressure constitute defects that must be repaired.
   D. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

SITE STORM UTILITY DRAINAGE PIPING

(See also City of O'Fallon General Notes)

1.1 PIPE AND FITTINGS- GENERAL
   1. All stormwater pipe, inlets, headwalls, and related appurtenances shall meet local D.O.T. standards.
   2. All stormwater pipe shall be installed in accordance with pipe manufacturers instructions.
1.2 STEEL PIPE AND FITTINGS
   Corrugated-Steel Pipe and Fittings: ASTM A 760/A 760M, Type I with fittings of similar form and construction as pipe.
   1. Standard-Joint Bands: Corrugated steel.
   2. Coating: Aluminum or Bituminous
1.3 PE PIPE AND FITTINGS
   1. Corrugated PE Drainage Pipe and Fittings NPS 3 to NPS 10 : AASHTO M 252M; NPS 12 to NPS 48 : AASHTO M 294M Type S, with smooth waterway for coupling joints.
   2. Siltight Couplings: PE sleeve with ASTM D 1056, Type 2, Class A, Grade 2 gasket material that mates with tube and fittings.
1.4 PVC CORRUGATED PIPE AND FITTINGS
   Corrugated PVC Drainage Pipe and Fittings NPS 4 to NPS 36: Smooth interior, ASTM F949, 46 PSI stiffness when tested in accordance with ASTM D2412. PVC compound having a minimum cell classification of 12454 as defined in ASTM D1784. Fittings: Smooth interior, ASTM F949, Section 5.2.3 or F794, Section 7.2.4. Joints shall be made with integrally formed bell and spigot gasketed connections. Manufacturer shall provide documentation showing no leakage when gasketed pipe joints are tested in accordance with ASTM D3212. Elastomeric seals (gaskets) shall meet ASTM F477.
1.5 CONCRETE PIPE AND FITTINGS
   1. Reinforced-Concrete Sewer Pipe and Fittings: ASTM C 76 . Bell-and-spigot or tongue-and-groove ends and gasketed joints with ASTM C 443 , rubber gaskets or sealant joints with ASTM C 990 , bitumen or butyl rubber sealant. Class III, Wall B.
   2. Cast-Iron Area Drains: ASME A112.6.3 gray-iron round body with anchor flange and round grate. Include bottom outlet with inside calk or spigot connection, of sizes indicated.
1.6 MANHOLES
   A. Standard Precast Concrete Manholes:
      1. Description: ASTM C 478 , precast, reinforced concrete, of depth indicated, with provision for sealant joints.
      2. Diameter: 48 inches minimum unless otherwise indicated.
      3. Ballast: Increase thickness of precast concrete sections or add concrete to base section as required to prevent flotation.
      4. Base Section: 6-inch minimum thickness for floor slab and 4-inch minimum thickness for walls and base riser section, and separate base slab or base section with integral floor.
      5. Riser Sections: 4-inch minimum thickness, and lengths to provide depth indicated.
      6. Top Section: Eccentric-cone type unless concentric-cone or flat-slab-top type is indicated, and top of cone of size that matches grade rings.
      7. Joint Sealant: ASTM C 990 , bitumen or butyl rubber.
      8. Steps: Individual FRP steps or FRP ladder, wide enough to allow worker to place both feet on one step and designed to prevent lateral slippage off step. Cast or anchor steps into sidewalls at 12- to 16-inch intervals. Omit steps if total depth from floor of manhole to finished grade is less than 48 inches.
   B. Manhole Frames and Covers:
      1. Description: Ferrous, 24-inch ID by 7- to 9-inch riser with 4-inch minimum width flange and 26-inch diameter cover. Include indented top design with lettering cast into cover, using wording equivalent to "STORM SEWER."
      2. Material: ASTM A 536, Grade 60-40-18 ductile iron unless otherwise indicated.
1.7 INLET & JUNCTION BOXES
   Standard Precast Concrete:
   1. Description: ASTM C 478 , precast, reinforced concrete, of depth indicated, with provision for sealant joints.
   2. Base Section: 6-inch minimum thickness for floor slab and 4-inch minimum thickness for walls and base riser section, and separate base slab or base section with integral floor.
   3. Riser Sections: 4-inch minimum thickness, 48-inch diameter, and lengths to provide depth indicated.
   4. Top Section: Eccentric-cone type unless concentric-cone or flat-slab-top type is indicated. Top of cone of size that matches grade rings.
   5. Joint Sealant: ASTM C 990 , bitumen or butyl rubber.
   6. Steps: Individual FRP steps or FRP ladder, wide enough to allow worker to place both feet on one step and designed to prevent lateral slippage off step. Cast or anchor steps into sidewalls at 12- to 16-inch intervals. Omit steps if total depth from floor of catch basin to finished grade is less than 48 inches.
   7. Pipe Connectors: ASTM C 923 , resilient, of size required, for each pipe connecting to base section.
1.8 STORMWATER DETENTION STRUCTURES
   A. Cast-in-Place Concrete, Stormwater Detention Structures: Constructed of reinforced-concrete bottom, walls, and top; designed according to ASTM C 890 for A-16 (AASHTO HS20-44), heavy-traffic, structural loading; of depth, shape, dimensions, and appurtenances indicated.
      1. Ballast: Increase thickness of concrete as required to prevent flotation.
      2. Grade Rings: Include two or three reinforced-concrete rings, of 6- to 9-inch total thickness, that match 24-inch- diameter frame and cover.
      3. Steps: Individual FRP steps or FRP ladder, wide enough to allow worker to place both feet on one step and designed to prevent lateral slippage off step. Cast or anchor steps into sidewalls at 12- to 16-inch intervals. Omit steps if total depth from floor of structure to finished grade is less than 48 inches.
      4. Form and cast wiers and pipe openings as indicated on Drawings.
   B. Manhole Frames and Covers: ASTM A 536, Grade 60-40-18, ductile iron castings designed for heavy-duty service.
1.9 PIPE OUTLETS
   A. Pre-Cast Head Walls: Pre-Cast reinforced concrete, with apron and tapered sides.
   B. Slope Paved Head Walls: Cast-in-place reinforced concrete as shown on Drawings.
   C. Riprap Basins: Broken, irregularly sized and shaped, graded stone according to NSSGA's "Quarried Stone for Erosion and Sediment Control." Minimum stone size and dimensions as shown on Drawings.
1.10 PIPING INSTALLATION
   A. Install locator wire or tape 6-inches above all non-metallic piping.
   B. Install bedding and backfill in accordance with pipe manufacturers instructions.
   C. Begin installation at downstream piping connection to outfall point.
   D. Construct all headwalls flush with existing and proposed embankment slopes.
1.11 CLEANING
   A. Clean interior of piping of dirt and superfluous materials. Flush with potable water.
   B. Clean accumulated sediment from stormwater pipes, conveyance channels, and pond once site is stabilized with vegetation.

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Missouri State Certificate of Authority #LC0951128

ENGINEERS AUTHENTICATION
The responsibility for professional engineering liability on this project is hereby limited to the set of plans authenticated by the seal, signature, and date hereunder attached. Responsibility is disclaimed for all other engineering plans involved in this project and specifically excludes revisions after this date unless resubmitted.

STATE OF MISSOURI
STEVE MARION
NUMBER PE2006007185
PROFESSIONAL ENGINEER
STEVE MARION P.E.
ENGINEER
PE2006007185

CVS pharmacy®

PROJECT TITLE
NORTHERN 13,225-LEFT CHAMFER DRIVE-THRU
STORE NUMBER: 6477
SEC HIGHWAY N AND HIGHWAY K
O'FALLON, MO
PROJECT TYPE: NEW CONSTRUCTION
DEAL TYPE FEE FOR SERVICE
CS PROJECT NUMBER: 57110

Developer / Owner Information
CEDARWOOD DEVELOPMENT, INC
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CVS Civil Specifications

P+Z No. 26-11
APPROVED 12.1.11
City No.

Sheet Number:
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