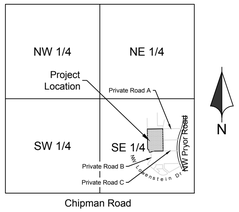


LOCATION MAP

SECTION 35-48-32
Scale 1" = 2000'

DATUM BENCHMARK:
VERTICAL DATUM IS NAVD 88 ESTABLISHED USING OPUS PROJECTS ON PROJECT CONTROL

BENCHMARKS:
BM #1: CHISELED "SQUARE " ON TOP OF CURB POINT OF INTERSECTION OF WEST PARK PARKING LOT AT EAST DRIVE ENTRANCE. ELEV= 985.05

BM #2: CHISELED "SQUARE" ON NORTHWEST CORNER AREA INLET. 25' +/- EAST OF CURB LINE AND ON - LINE WITH SOUTH CURBS OF NW LOWENSTEIN DRIVE AT 90° BEND IN ROAD. ELEV= 971.06

UTILITIES

WATER & SANITARY SEWER
City of Lee's Summit Water Utilities
1200 SE Hamblen Road i
Lee's Summit, MO
Phone:816.969.1900

ELECTRICITY
Kansas City Power and Light
Phone: 816.471.5275

GAS
Missouri Gas Energy
PO Box 219255
Kansas City, Missouri 64141
Phone: 816.756.5252

TELEPHONE
AT&T
Phone: 800.288.2020

Time Warner Cable
Phone: 816.222.5952

CABLE TV
Comcast
Phone: 816.795.1100

Time Warner Cable
Phone: 816.358.8833

Oil / Gas Well Note:
There is no visible evidence, this date, of abandoned oil or gas wells located within the property boundary, as identified in "Environmental Impact Study of Abandoned Oil and Gas Wells in Lee's Summit, Missouri", by Edward Alton May.

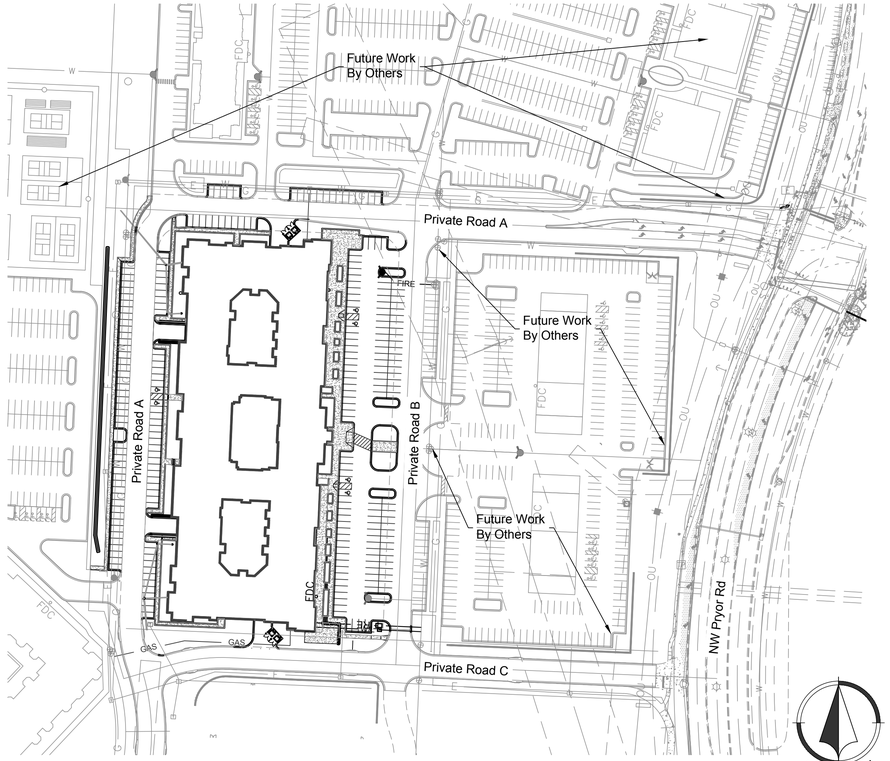
Flood Plain Note
We have reviewed the F.E.M.A. Flood Insurance Rate Map Number 29095C0417G, revised January 20, 2017, this tract graphically lies in OTHER AREAS, ZONE X, defined as areas determined to be outside the 0.2% annual chance floodplain.

811 Know what's below. Call before you dig.

Final Development Plans For

Summit At West Pryor

940 NW Pryor Road
Lee's Summit, Jackson County, Missouri



LEGEND

- Proposed (By Others) Section Line
- Proposed (By Others) Right-of-Way Line
- Proposed (By Others) Lot Line
- Proposed (By Others) Easement Line
- Proposed (By Others) Curb & Gutter
- Proposed (By Others) Sidewalk
- Proposed (By Others) Storm Sewer
- Proposed (By Others) Storm Structure
- Proposed (By Others) Waterline
- Proposed (By Others) Gas Main
- Proposed (By Others) Sanitary Sewer
- Proposed (By Others) Sanitary Manhole
- Proposed (By Others) Contour Major
- Proposed (By Others) Contour Minor
- Proposed Right-of-Way
- Proposed Property Line
- Proposed Lot Line
- Proposed Easement
- Proposed Curb & Gutter
- Proposed Sidewalk
- Proposed Storm Sewer
- Proposed Storm Structure
- Proposed Fire Hydrant
- Proposed Waterline
- Proposed Sanitary Sewer
- Proposed Sanitary Manhole
- Proposed Contour Major
- Proposed Contour Minor
- Future Curb and Gutter

Index of Sheets

OWNER/DEVELOPER

Pearl Real Estate
919 N. East Street
Indianapolis, IN. 46202

CONSULTANT/APPLICANT

Renaissance Infrastructure Consulting
1815 McGee Street, # 200
Kansas City, Missouri 64108

GENERAL NOTES

All construction shall be in accordance with the current City of Lee's Summit "Design and Construction Manual" as adopted by Ordinance 5813. Where discrepancies exist between the Final Development Plan and the Design and Construction Manual, the Design and Construction Manual shall govern.

1. The Contractor shall be responsible for obtaining insurance and securing all bonds, as required by the Contract Documents, the City of Lee's Summit, Mo., and all other governing agencies (including local, county, state, and federal authorities) having jurisdiction over the work proposed by these Construction Documents. The cost for all bonds, and insurance shall be the contractor's responsibility and shall be included in the bid for the work.
2. All Proposed (By Others) utilities indicated on the drawings are according to the best information available to the engineer; however, all utilities actually Proposed (By Others) may not be shown. The contractor shall be responsible for contacting all utility companies for an exact field location of each utility prior to any construction. All utilities, shown and not shown, damaged through the negligence of the contractor shall be repaired or replaced by the contractor at his/her expense.
3. The contractor shall be responsible for all damages to Proposed (By Others) utilities, pavement, fences, structures, and other features caused by construction activities not designated for removal. The contractor shall repair all damages at his/her expense.
4. The demolition of Proposed (By Others) pavement, curbs, structures, and all other features necessary to construct the proposed improvements, shall be performed by the contractor. All waste material removed during construction shall be disposed off the project site. The contractor shall be responsible for all permits for hauling and disposing of waste material. The disposal of waste material shall be in accordance with all local, state, and federal regulations.
5. By use of these construction documents the contractor hereby agrees that he shall be solely responsible for the safety of the construction workers and the public. The contractor agrees to hold the engineer and owner harmless for any and all injuries, claims, losses, or damages related to the project.
6. The contractor shall be responsible for providing all signage, barricades, lighting, etc., as required for temporary traffic control during the construction of this project. Maintenance of the temporary traffic control devices will be the contractor's responsibility. All traffic control in conduction with construction in the right-of-way shall be in conformance with the City Traffic Control Requirements.
7. Contractor shall furnish evidence that his/her insurance meets the requirements of the City of Lee's Summit, Missouri Municipal Code.
8. Prior to installing, constructing, or performing any work on the public storm sewer line (including connecting private drainage systems to the storm sewer), contact the City of Lee's Summit Development Engineering Inspections.
9. Connections to the public storm sewers between structures shall not be permitted.
10. Contractor shall verify and accept Proposed (By Others) topography shown herein. Contractor shall notify Engineer of any discrepancies found prior to any earthwork activities.
11. Development Services require retaining wall design by a registered engineer in the State of Missouri.
12. Geogrid, footings, or other elements of the retaining wall(s) shall not encroach into the right of way or public easements.
13. A Knox Box shall be provided for Each Building.
14. All building and life safety issues shall comply with the 2018 International Fire Code and local amendments as adopted by the City of Lee's Summit.

Sheet
C01

Final Developement Plans
19-0141
Summit At West Pryor
Lee's Summit, Jackson, MO

Title Sheet

NO.	BY	DATE	REVISION
1.	JSD	07/26/19	Original Submittal
2.	JSD	07/31/19	Issued For Bid
3.	JSD	09/10/19	Revised For FDP Submittal
4.	JSW	10/01/19	Revised For Resubmittal

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MO Certificate of Authority: E-2010033630

STATE OF MISSOURI
DUSTIN Y. BURTON
NUMBER PE-2011015709
PROFESSIONAL ENGINEER
12/11/19

Oct 04, 2019-11:33am
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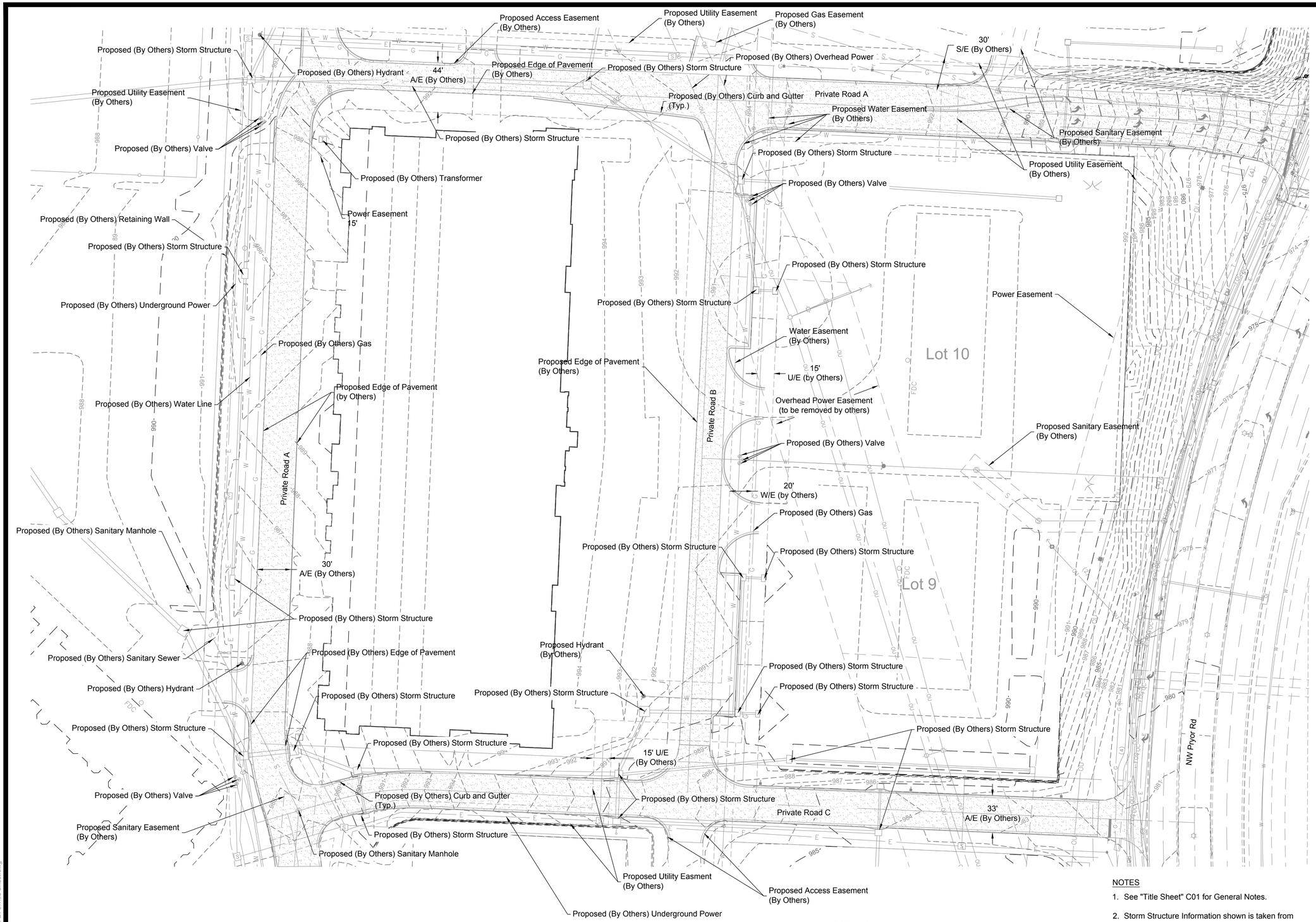

Legend

Road Work By Others

DESCRIPTION

LOT 8, PLAT OF STREETS OF WEST PRYOR, LOTS 1 THRU 14, TRACTS "A", "B", "C", & "D", IN THE CITY OF LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

NOTES

1. See "Title Sheet" C01 for General Notes.
2. Storm Structure Information shown is taken from the "Streets of West Pryor Final Dainage Study" Prepared by Kaw Valley Engineering, Inc., 2319 N. Jackson, Junction City, Kansas, 66441, (785)762-5040 . Renaissance Infrastucture Consulting is not responsible for the accuracy of the information shown hereon and the accompaning tables shown on sheet C09.
3. The Contractor shall verify Proposed (By Others) structures locations, sizes and descriptive type information prior to beginning construction activities.

NORTH

1"=40'

0 20' 40'

Sheet
C02

Final Developement Plans

19-0141
Summit At West Pryor
Lee's Summit, Jackson, MO

Proposed Conditions (By Others)

NO.	BY	DATE	REVISION
1.	JGD	07/26/19	Original Submittal
2.	JGD	08/13/19	Issued For Bid
3.	JGD	09/10/19	Revised For FDP Submittal
4.	JGW	10/01/19	Revised For Resubmittal

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MO Certificate of Authority: E-2010033630

STATE OF MISSOURI
DUSTIN J. BURTON
NUMBER PE-2010015709
10/1/19
PROFESSIONAL ENGINEER

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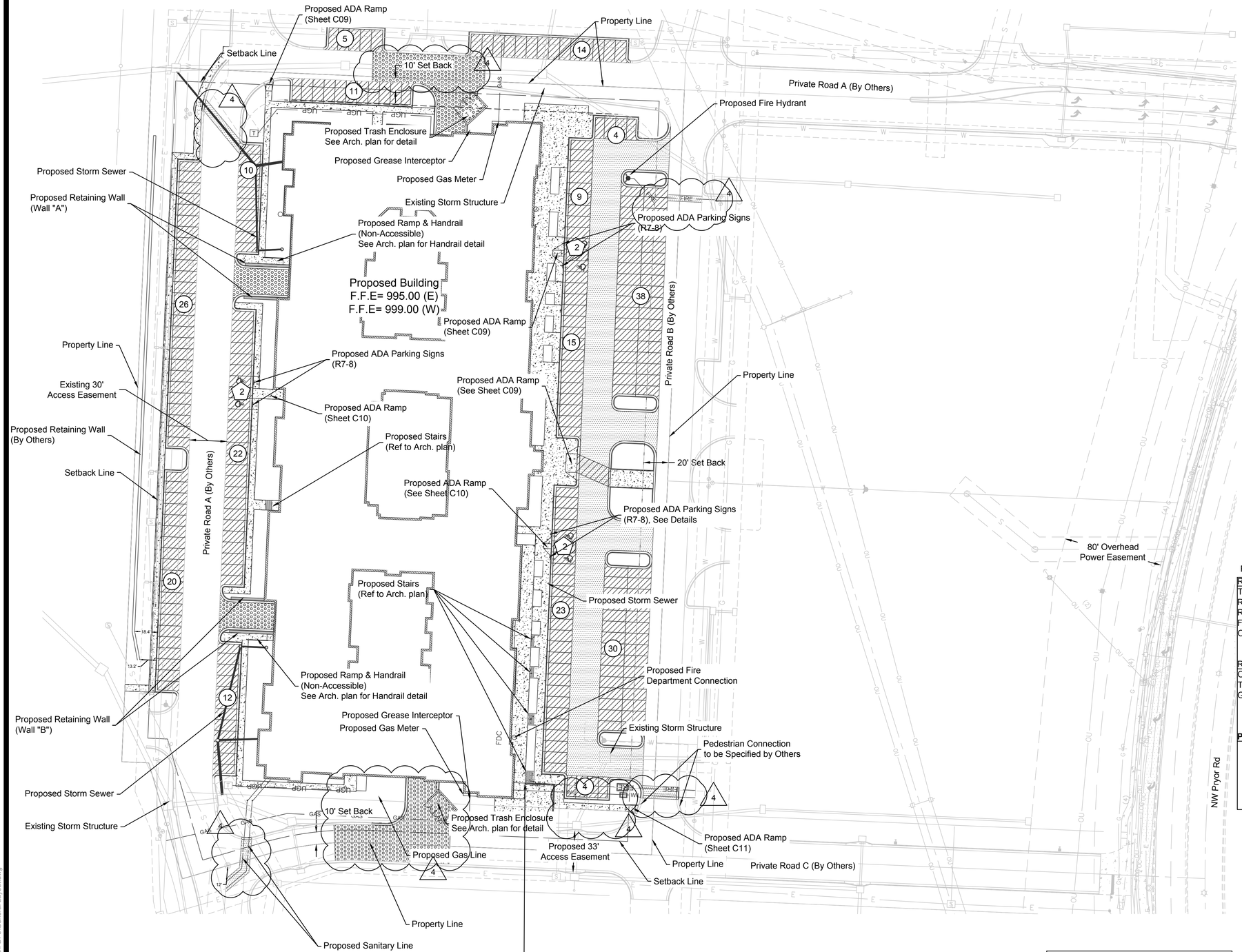

Notes:

1. Reference City of Lee's Summit Standard Details - GEN 4 Straight Back Dry Curb & Gutter (Type CG-1 Dry) for all proposed curb.
2. Reference City of Lee's Summit UDO Article 8, Section 8.620 Parking Lot Design for minimum standard pavement thickness.

Curb Legend

- Dry Curb
- Ribbon Curb
- Wet Curb

Parking Count Legend

- (XX) Typical Parking Spaces Count
- (XX) ADA Parking Spaces Count

PAVEMENT SECTION DETAILS

PC Concrete Pavement

- 7" PC Concrete Pavement (4000 PSI, Air Entrained) KCMMB 4K
- 4" Compacted Agg. MODOT TYPE 5
- 8" Compacted Subgrade (95% Std. Proctor Treated with Lime or Class "C" Flyash)

Heavy Duty Asphalt Pavement

- 1-½" AC Surface Course (APWA 3-01)
- 5" AC Base Course (APWA 1-01)
- 6" Compacted Agg. MODOT TYPE 5
- 6" Compacted Subgrade (95% Std. Proctor Treated with Lime or Class "C" Flyash)

Light Duty Asphalt Pavement

- 1-½" AC Surface Course (APWA 3-01)
- 4" AC Base Course (APWA 1-01)
- 6" Compacted Agg. MODOT TYPE 5
- 6" Compacted Subgrade (95% Std. Proctor Treated with Lime or Class "C" Flyash)

Concrete Sections are based on information from a Geotechnical Report, Dated 06/15/2018
Prepared By Cook, Flatt & Strobel Egineers, P.A.

Asphalt Sections taken from City of Lee's Summit UDO 8.620

4" PC Concrete Sidewalk

- 4" PC Concrete Pavement (4000 PSI, AE Concrete)
- 4" Rock

Required Parking

Retail Center			
Total	22,500 s.f.		
Restaurant	11,000 s.f. @ 14 spaces / 1,000 s.f.	=	154 spaces
Retail	6,000 s.f. @ 5 spaces / 1,000 s.f.	=	30 spaces
Fitness	3,500 s.f. @ 4.5 spaces / 1,000 s.f.	=	16 spaces
Office	2,000 s.f. @ 4 spaces / 1,000 s.f.	=	8 spaces
			Total 208 spaces

Residential Units			
One Bedroom	173 units @ 1.5 spaces / unit	=	260 spaces
Two Bedroom	64 units @ 1.5 spaces / unit	=	96 spaces
Guest Parking	237 unitis @ 0.5 spaces / unit	=	119 spaces
			Total 475 spaces

Total Spaces Per Code 683 spaces

Parking Provided

249 - Surface Stalls
6 - ADA Surface Stalls

280 - Garage Stalls
7 - ADA Garage Stalls

542 Total Stalls (See Parking Memo)

SITE DATA TABLE

Lot Area (sf):	268862 sf
Lot Area (ac):	6.17 ac
Total Building Area:	401,851 sf
FAR	1.495
Paved Area:	81,799 sf
Impervious Area:	189,570 sf (70%)
Pervious Area:	79,292 sf (30%)

Setbacks (Per Approved Preliminary Plans for Lot #8)

Front - 20'
Side - 10'
Rear - 20'

NORTH
1"=40'
0 20' 40'

Sheet
C03

Final Developement Plans

19-0141
Summit At West Pryor
Lee's Summit, Jackson, MO

General Layout

NO.	BY	DATE	REVISION
4.	JGW	DJB	10/01/19	Revised For Resubmittal
3.	JGD	DJB	09/10/19	Revised For FDP Submittal
2.	JGD	DJB	07/31/19	Issued For Bid
1.	JGD	DJB	07/26/19	Original Submittal

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DUSTIN J. BURTON
NUMBER PE-2010015709
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PROFESSIONAL ENGINEER

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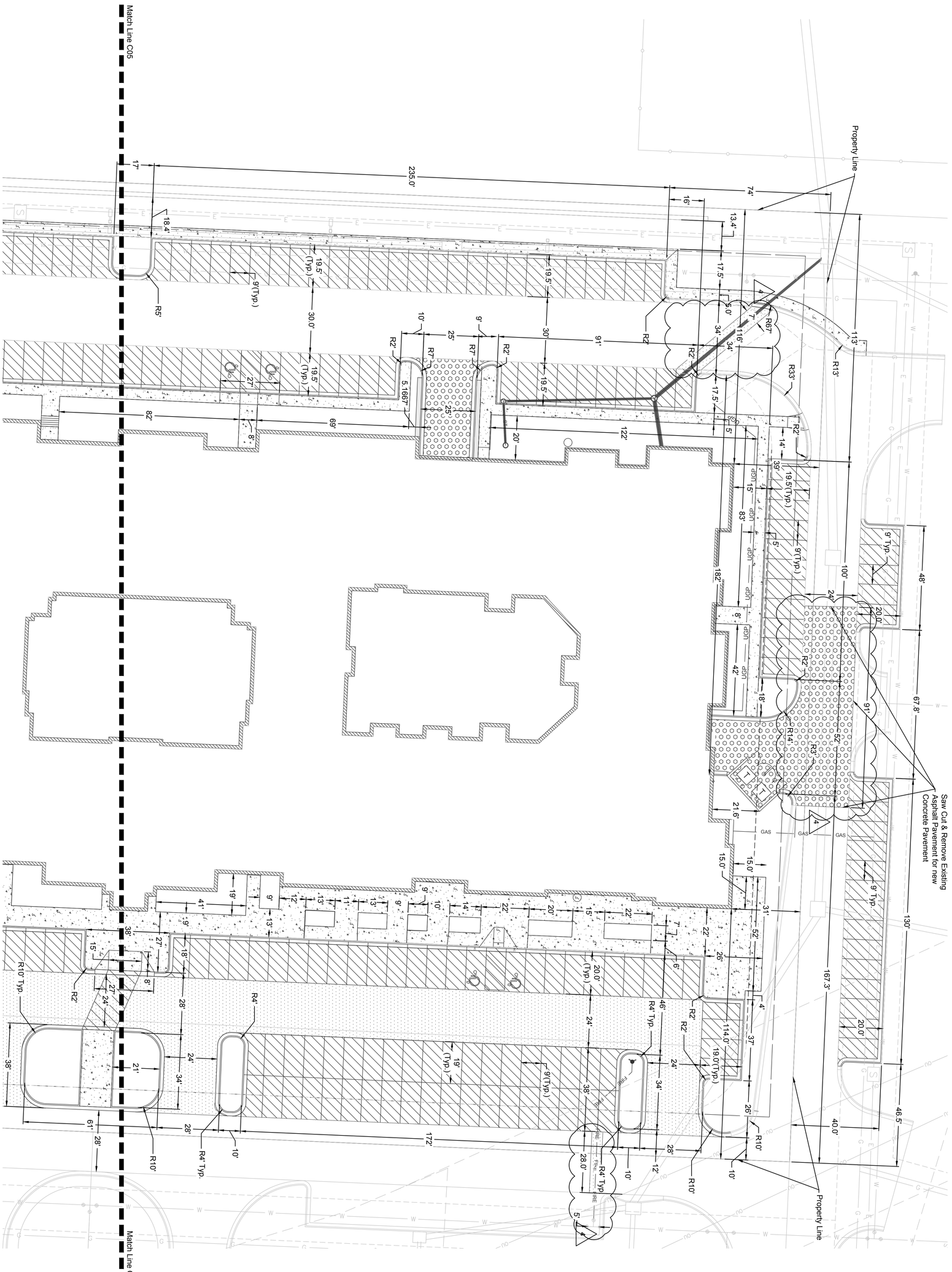

0 10' 20'
1"=20'

NORTH

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NO.	BY	QD	DATE	REVISION
4.	JGW	DJB	10/01/19	Revised For Resubmittal
3.	JGD	DJB	09/10/19	Revised For FDP Submittal
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Site Dimension Plan

Final Developement Plans

19-0141
Summit At West Pryor
Lee's Summit, Jackson, MO

Sheet C04

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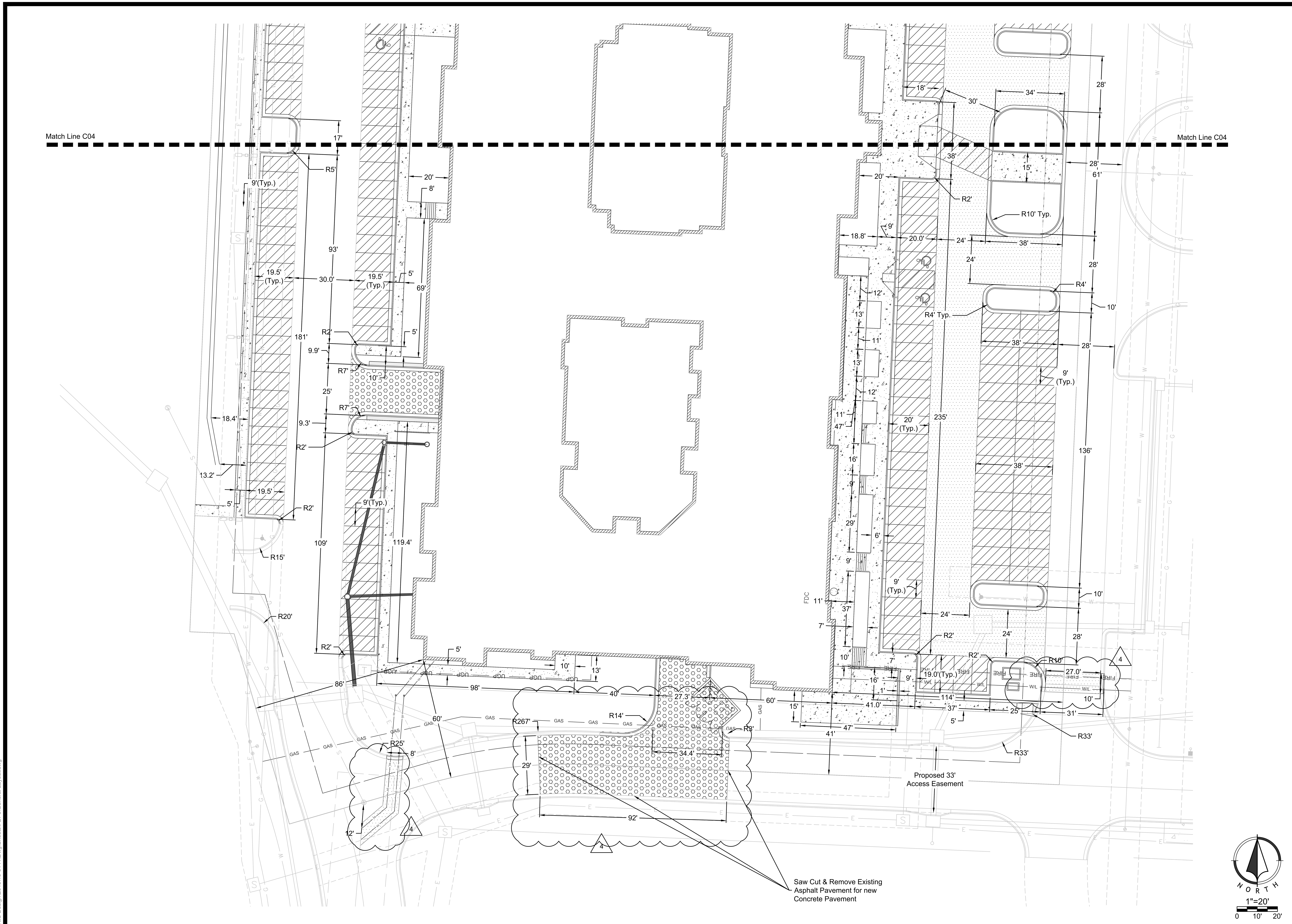

Sheet
C05

Final Developement Plans

19-0141
Summit At West Pryor
Lee's Summit, Jackson, MO

Site Dimension Plan

NO.	BY	QD	DATE	REVISION
4.	JGW	DJB	10/01/19	Revised For Resubmittal
3.	JGD	DJB	09/10/19	Revised For FDP Submittal
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State of Missouri
Dustin J. Burton
Number PE-2011015709
Professional Engineer

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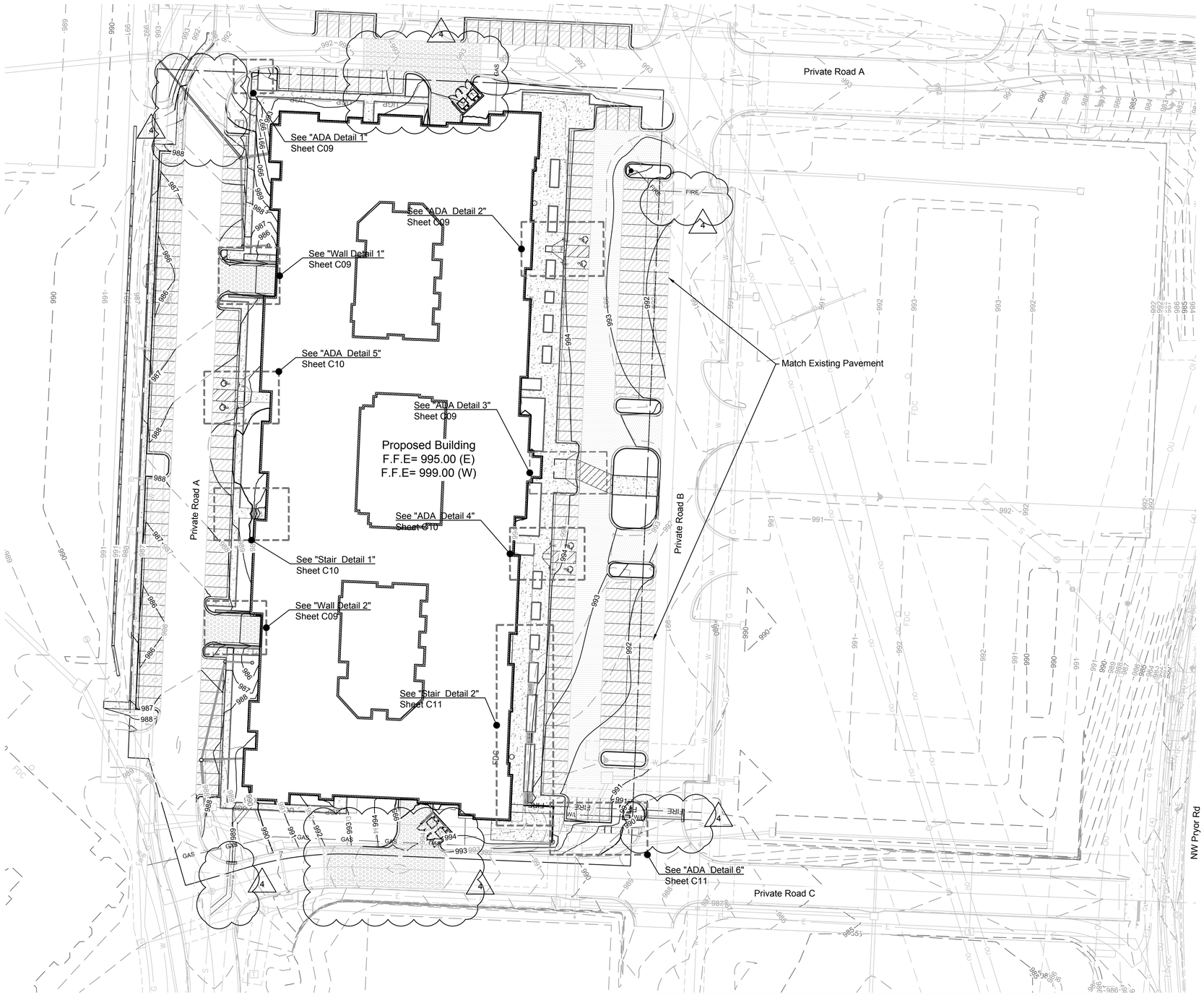

GRADING NOTES

1. All construction shall conform to the City's minimum design standards.
2. Spot Grades shown herein shall govern over finished grades.
3. The contractor shall provide evidence that his insurance meets the requirements of the Project.
4. All traffic control shall be in conformance with the Manual of Uniform Traffic Control Devices (MUTCD).
5. The contractor is responsible for the protection of all property corners and section corners. Any property corners and/or section corners disturbed or damaged by construction activities shall be reset by a Registered Land Surveyor licensed in the State of Missouri, at the contractor's expense.
6. The contractor shall be responsible for the restoration of the right-of-way and for damaged improvements such as curbs, driveways, sidewalks, street light and traffic signal junction boxes, traffic signal loop lead ins, signal poles, irrigation systems, etc. Damaged improvements shall be repaired in conformance with the latest City standards and to the City's satisfaction.
7. The contractor is responsible for providing erosion and sediment control BMPs to prevent sediment from reaching paved areas, storm sewer systems, drainage courses and adjacent properties. In the event the prevention measures are not effective, the contractor shall remove any debris, silt, or mud and restore the right-of-way, or adjacent properties to original or better condition.
8. The contractor shall sod all disturbed areas within the public street right-of-way unless otherwise noted on the plans or if specific written approval is granted by the City.
9. All work shall be confined within easements and/or construction limits as shown on the plans.
10. Curb stakes and hubs shall be provided at all high points, low points, ADA ramp openings, and on each side of all curb inlets when setting string line.
11. All National Pollution Discharge Elimination System(NPDES) standards shall be met.
12. Public and Private utility facilities shall be moved or adjusted as necessary by the owners to fit the new construction unless otherwise noted on the plans. The Contractor is responsible for the cost of utility relocations unless otherwise indicated on the plans.
13. Retaining wall elevation shown for reference only. Contractor is responsible for final design of wall, including engineering calculations by a professional structural engineer registered in the State of Missouri.

EARTHWORK NOTES:

CONTOURS AND ELEVATIONS: Existing and proposed contours are shown on plans at one feet (1') contour intervals, unless otherwise noted. Proposed contours and elevations shown represent approximate finish grade.

1. CLEARING AND GRUBBING: Prior to the start of grading and earthwork, the areas to be graded shall be stripped of all vegetation, organic matter, and topsoil, to a minimum depth of four inches (4") or as otherwise directed by the Geotechnical Engineer. Stripping materials shall not be incorporated into structural fills. Topsoil materials shall not be used in building and pavement areas.
2. TOPSOIL: Prior to the start of grading, the contractor shall strip all topsoil from areas to be graded and stockpile at a location on or adjacent to the site as directed by the owner. At completion of grading operations and related construction, the contractor will be responsible for redistribution of topsoil over all areas disturbed by the construction activities. Topsoil shall be placed to a minimum depth of six inches (6") and in accordance with specifications for landscaping.
3. SUBGRADE PREPARATION: Prior to placement of new fill material, the existing subgrade shall be proofrolled and approved under the direction of the Geotechnical Engineer or his representative.
4. PROOFROLLING: Prior to the placement of new fill material, the existing subgrade shall be proofrolled and approved under the direction of the Geotechnical Engineer. Unsuitable areas identified by the proofrolling areas shall be undercut and replaced with controlled structural fill or treated with flyash per the Geotechnical report.
5. EARTHWORK:
   - A. GEOTECHNICAL: All earthwork shall conform to the recommendations of the Geotechnical report.
   - B. SURFACE WATER: Surface water shall be intercepted and diverted during the placement of fill.
   - C. FILLS: All fills shall be considered controlled or structural fill and shall be free of vegetation, organic matter, topsoil, and debris. All fill required for project shall be provided by the Contractor. Material Shall be pre-approved by the Geotechnical Engineer prior to placement.
   - D. EXISTING SLOPES: Where fill material is to be placed on existing slopes greater than 5:1 (horizontal to vertical), existing slope shall be benched providing a minimum vertical face of twelve inches (12"). Fill material shall be placed and compacted in horizontal lifts not exceeding nine inched (9") (loose fit measurement), unless otherwise approved by the Geotechnical Engineer.
   - E. COMPACTION REQUIREMENTS: Earth fill material shall be placed and compacted to a minimum density of ninety five percent (95%) of the material's maximum dry density as determined by ASTM D698 (standard proctor compaction). The moisture content at the time of placement and compaction shall be within a range of -2% to 3% off the optimum moisture content as defined by the standard proctor compaction procedure. The moisture contents shall be maintained within this range until completion of the work. Where compaction of earth fill by a large roller is impractical or undesirable, the earth fill shall be hand compacted with small vibrating rollers or mechanical tampers.
     The Geotechnical recommendations shall supersede any information in the above note.

CONTOUR LEGEND

- 985 — EXISTING MAJOR CONTOURS (PROPOSED BY OTHERS)
- 983 — EXISTING MINOR CONTOURS (PROPOSED BY OTHERS)
- 985 — FINISH MAJOR CONTOURS
- 983 — FINISH MINOR CONTOURS

NORTH
1"=40'
0 20' 40'

Sheet
C06

Final Developement Plans

19-0141
Summit At West Pryor
Lee's Summit, Jackson, MO

Overall Grading Plan

NO	BY	DATE	REVISION
4.	JGD	10/01/19	Revised For Resubmittal
3.	JGD	09/10/19	Revised For FDP Submittal
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STATE OF MISSOURI
DUSTIN J. BURTON
NUMBER PE-2011015709
PROFESSIONAL ENGINEER
12/17/19

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New Pavement to Match Existing in this Area

Private Drive

Proposed Building
F.F.E= 995.00 (E)
F.F.E= 999.00 (W)

Match Line C08

Match Line C08

LEGEND

TC:	Top of Curb
P:	Pavement
T/S:	Top of Structure
F/L:	Flowline of Pipe
G:	Ground
(HP)	High Point
(LP)	Low Point
TW:	Top of Wall
BW:	Bottom of Wall

Dry Curb
Ribbon Curb
Curb Transition
Existing Major Contour
Existing Minor Contour
Proposed Major Contour
Proposed Minor Contour

NORTH
1"=20'
0 10' 20'

Sheet
C07

Final Developement Plans

19-0141
Summit At West Pryor
Lee's Summit, Jackson, MO

Spot Elevation Plan

NO.	BY	DATE	REVISION
4.	JGW	DJB	10/01/19	Revised For Resubmittal
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STATE OF MISSOURI
DUSTIN T. BURTON
NUMBER PE-2010137709
PROFESSIONAL ENGINEER
12/11/19

Match Line C07

Match Line C07

Proposed Building
F.F.E= 995.00 (E)
F.F.E= 999.00 (W)

New Pavement to Match Existing in this Area

LEGEND

TC: Top of Curb
P: Pavement
T/S: Top of Structure
F/L: Flowline of Pipe
G: Ground
(HP) High Point
(LP) Low Point
TW: Top of Wall
BW: Bottom of Wall

Dry Curb
Ribbon Curb
Curb Transition
Existing Major Contour
Existing Minor Contour
Proposed Major Contour
Proposed Minor Contour

NORTH
1"=20'
0 10' 20'

Sheet
C08

Final Developement Plans

19-0141
Summit At West Pryor
Lee's Summit, Jackson, MO

Spot Elevation Plan

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NUMBER PE-2010015709
PROFESSIONAL ENGINEER
12/11/19

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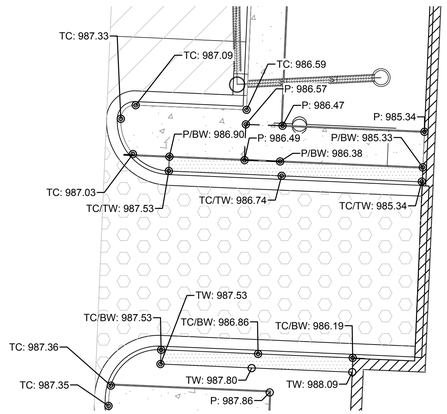

Wall Detail 1
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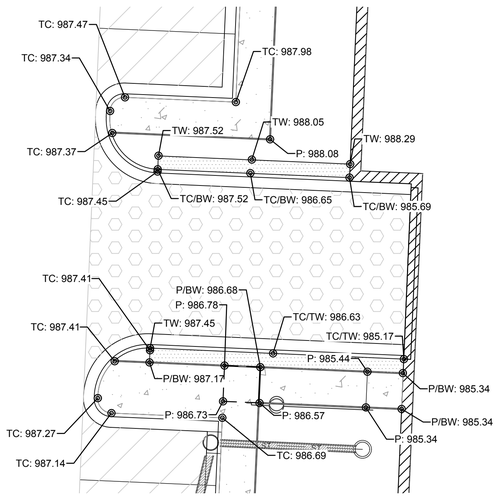

Wall Detail 2
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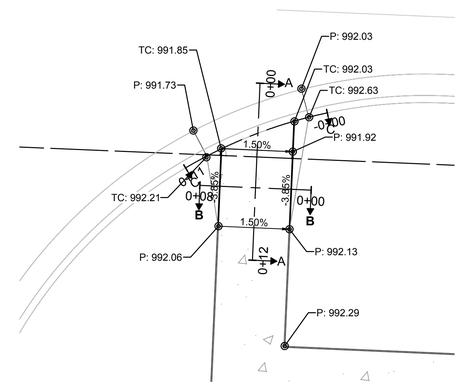

ADA Detail 1
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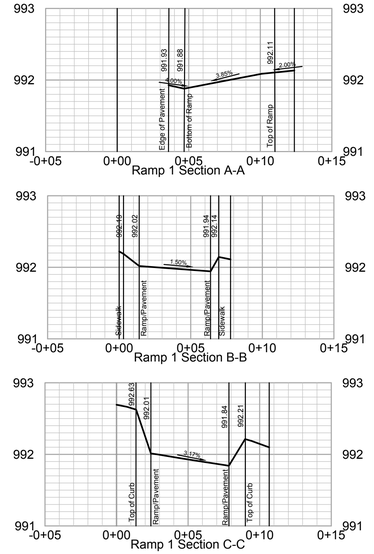
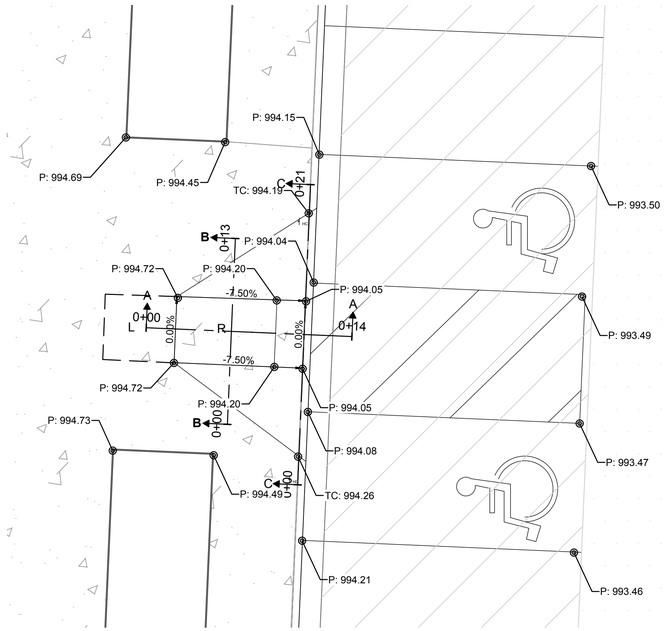
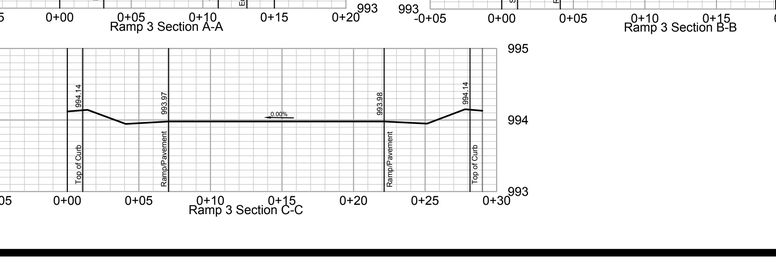


General Note

1. Proposed Wall Elevations Shown For Reference Only. Refer To Architect Plans For Detailed Design of All Walls.



ADA Detail 2
Scale: 1"= 5'



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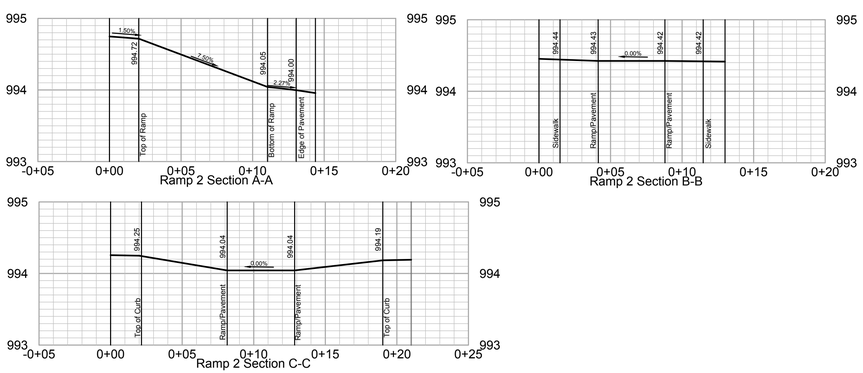
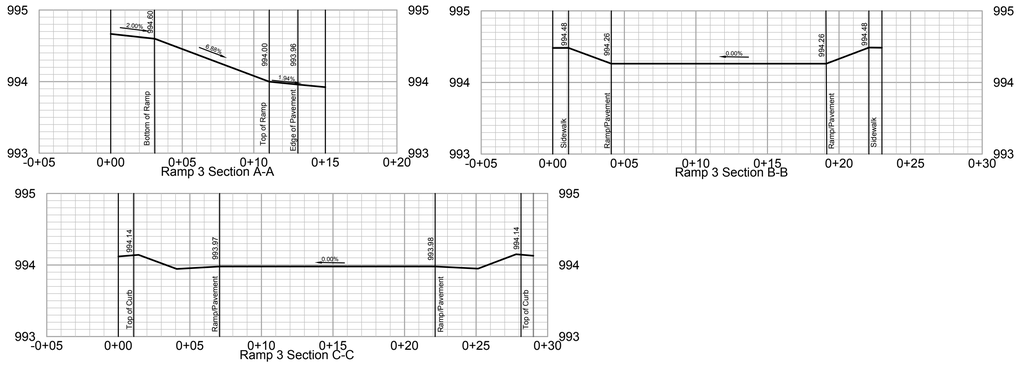
Scale: 1"= 10'





LEGEND

TC:	Top of Curb
P:	Pavement
T/S:	Top of Structure
F/L:	Flowline of Pipe
G:	Ground
(HP)	High Point
(LP)	Low Point
TW:	Top of Wall
BW:	Bottom of Wall

Dry Curb
Ribbon Curb
Curb Transition
Existing Major Contour
Existing Minor Contour
Proposed Major Contour
Proposed Minor Contour

Sheet
C09

Final Developement Plans

19-0141
Summit At West Pryor
Lee's Summit, Jackson, MO

Grading Details

NO.	BY	DATE	REVISION
4.	JGW	DJB	10/01/19	Revised For Resubmittal
3.	JGD	DJB	09/10/19	Revised For FDP Submittal
2.	JGD	DJB	07/31/19	Issued For Bid
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Renaissance Infrastructure Consulting
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www.ric-consult.com
MO Certificate of Authority: E-2010033630

STATE OF MISSOURI
DUSTIN T. BURTON
NUMBER PE-2011015709
PROFESSIONAL ENGINEER
10/1/19

Oct 04, 2019-11:34am
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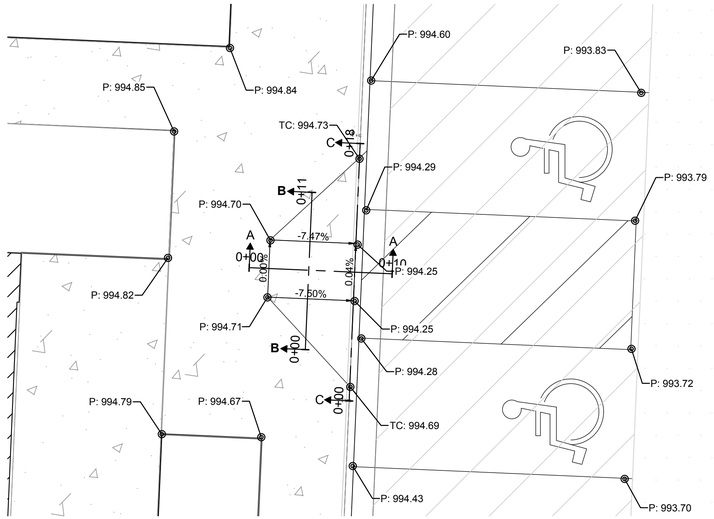

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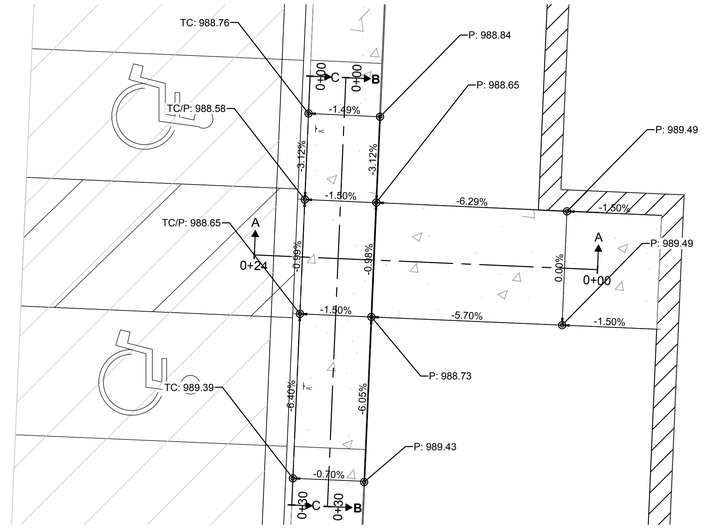
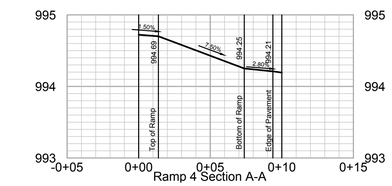
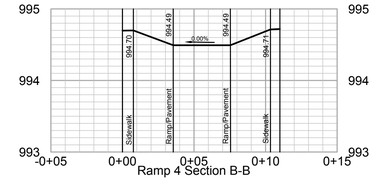
Scale: 1"= 5'



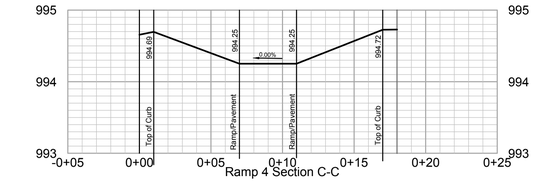
ADA Detail 5
Scale: 1"= 5'



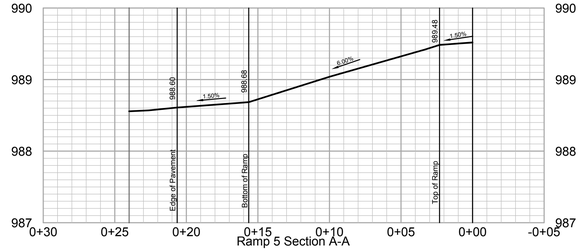
Ramp 4 Section A-A



Ramp 4 Section B-B



Ramp 4 Section C-C



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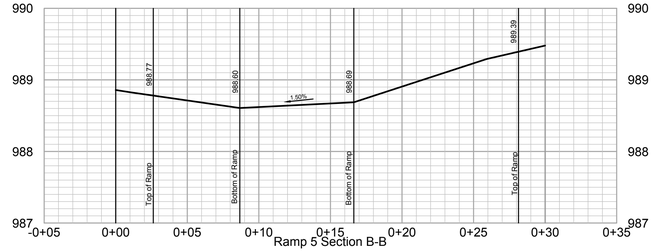

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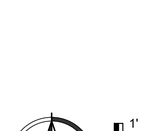
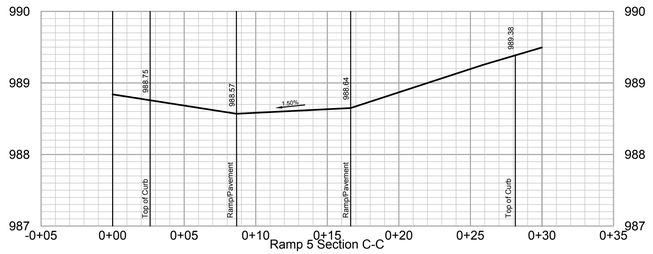
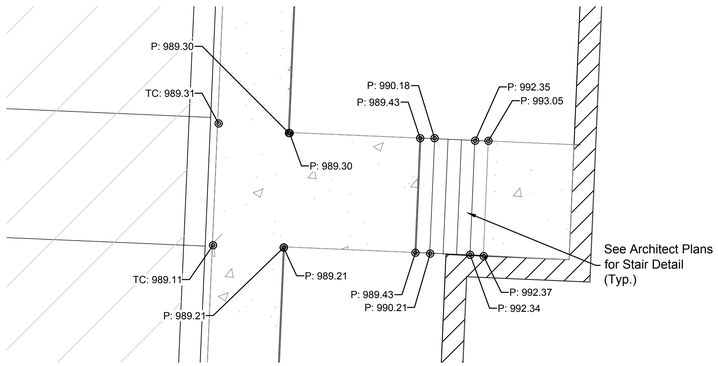




Ramp 5 Section C-C



Stair Detail 1
Scale: 1"= 5'

LEGEND

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Dry Curb
Ribbon Curb
Curb Transition

General Note

1. Proposed Wall Elevations Shown For Reference Only. Refer To Architect Plans For Detailed Design of All Walls.

Sheet
C10

Final Developement Plans

19-0141
Summit At West Pryor
Lee's Summit, Jackson, MO

Grading Details

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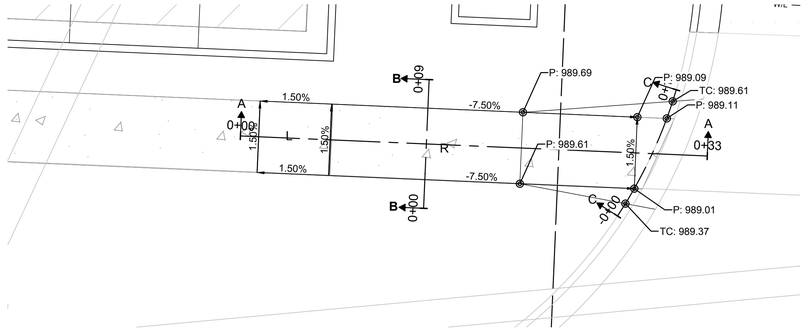
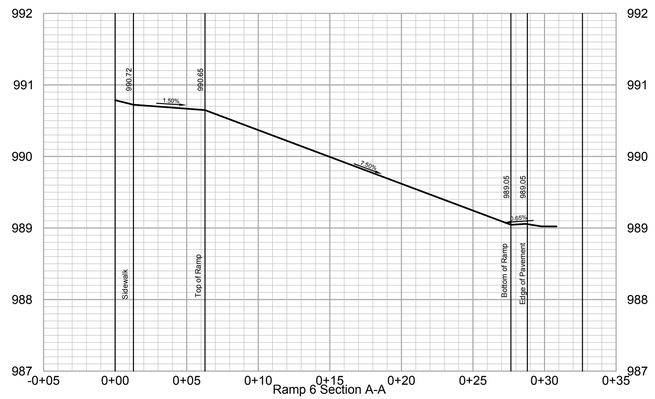
STATE OF MISSOURI
DUSTIN J. BURTON
NUMBER PE-2011015709
PROFESSIONAL ENGINEER
12/17/19



ADA Detail 6
Scale: 1"= 5'



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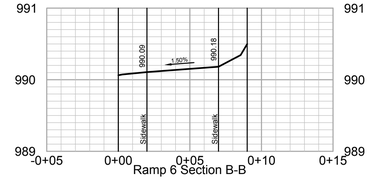

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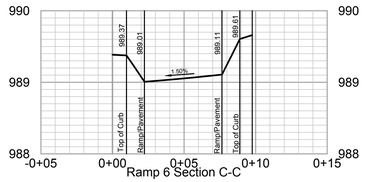

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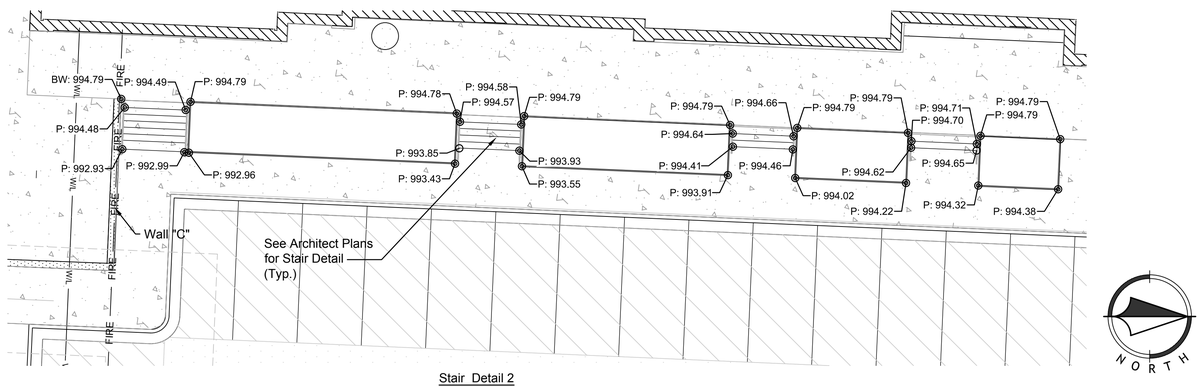

Stair Detail 2
Scale: 1"= 10'

General Note

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LEGEND

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Dry Curb
Ribbon Curb
Curb Transition

Sheet
C11

Final Developement Plans

19-0141
Summit At West Pryor
Lee's Summit, Jackson, MO

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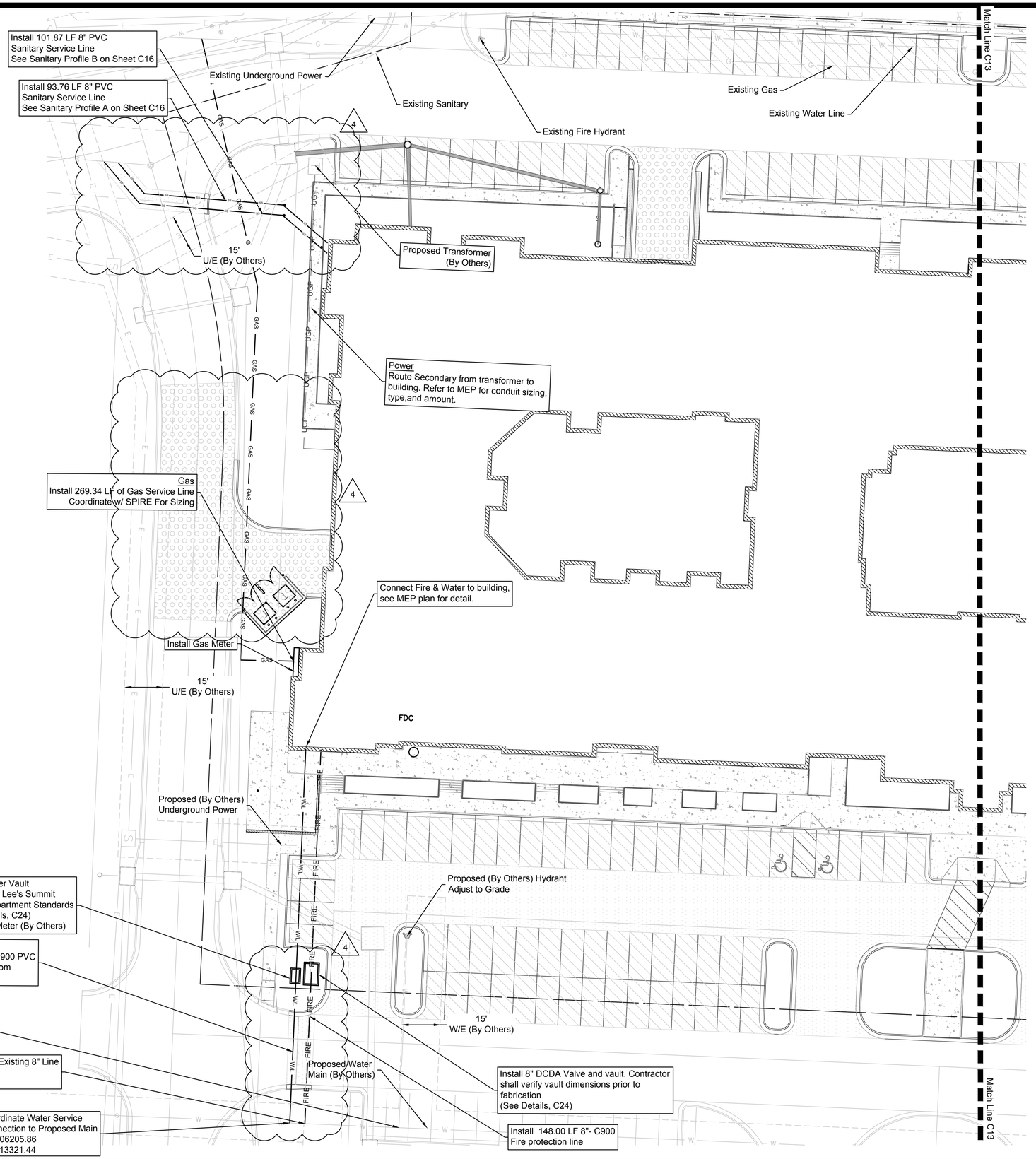

SITE UTILITY NOTES

1. The contractor is specifically cautioned that the location and/or elevation of existing utilities as Shown on these plans is based on records of the various utility Companies, and where possible, measurements taken in the field. The information is not to be relied on as being exact or complete. The contractor must call the appropriate utility companies at least 48 hours before any excavation to request exact field location of utilities. It shall be the responsibility of the contractor to coordinate with and relocate and/or remove all existing utilities which conflict with the proposed improvements shown on the plans.
2. The construction of storm sewers on this project shall conform to the requirements of the Technical Specifications for this Project.
3. The contractor shall field verify the exact location and elevation of the existing storm sewer locations and the existing elevations at locations where the proposed storm sewer collects or releases to existing ground. If discrepancies are encountered from the information shown on the plans. The contractor shall contact the design engineer. No pipes shall be laid until direction is received from the design engineer.
4. It is the contractors responsibility to field adjust the top of all manholes and boxes as necessary to match the finish grade of the adjacent area. Tops of existing manholes shall be raised as necessary to be flush with proposed pavement elevations, and to be 6-inches above finished ground elevations in non-paved areas. No separate or additional compensation will be made to the contractor for making final adjustments to the manholes and boxes.
5. Inlet locations, horizontal pipe information and vertical pipe information is shown to the center of the structure. Deflection angles shown for storm sewer pipes are measured from the center of the curb inlets and manholes. The contractor shall adjust the horizontal location of the pipes to go to the face of the boxes. All roof drains shall be connected to storm sewer structures. Provide cleanouts on roof drain lines at 100' max. spacing and at all bend points. Do not connect roof drains directly to storm sewer pipes.
6. The contractor shall be responsible for furnishing and installing all fire and domestic water lines, meters, back flow devices, pits, valves and all other incidentals required for a complete operable fire protection and domestic water system, if not furnished or installed by the Water Utility. The Contractor shall Coordinate with the Water Utility. All costs associated with the complete water system for the building shall be the responsibility of the contractor. All work shall conform to the requirements of the City of Lee's Summit's Design and Construction Manual.
7. The contractor shall be responsible for furnishing and installing all sanitary sewer service lines from the building to the public line. The contractor shall refer to the architectural plans for specific locations and elevations of the service lines of the building connection. All work shall conform to the requirements of the City of Lee's Summit's Design and Construction Manual.The contractor is responsible for securing all permits, bonds and insurance required by the contract documents, City of Lee's Summit, Missouri, and all other governing agencies (including local, county, state and federal authorities) having jurisdiction over the work proposed by the construction documents. The cost for all permit bonds and insurance shall be the contractors responsibility and shall be included in the bid for the work.
8. By the use of these construction documents the contractor hereby agrees that he/she shall be solely responsible for the safety of the construction workers and the public. The contractor agrees to hold the engineer and owner harmless for any and all injuries, claims, losses or damages related to the project.
9. The contractor shall be responsible for furnishing all materials, tools and equipment and installation of electrical power, telephone and gas service from a point of connection from the public utility lines to the building structure. This will include all conduits, service lines, meters, concrete pads and all other incidentals required for a complete and operational system as required by the owner and the public utilities. Refer to building plans for exact tie-in locations of all utilities. Contractor shall verify connection points prior to installation of utility line.
10. All fill material is to be in place, compacted, and consolidated before installation of proposed utilities. On-site geotechnical engineer shall provide written confirmation that this requirement has been met and that utilities may proceed in the fill areas. All utilities are to be placed in trench conditions.
11. Contractor shall notify the utility authorities inspectors 48 hours before connecting to any existing line.
12. Storm sewer roof drains(st) shall be as follows (unless otherwise shown on plans).
    -PVC SDR 35 per ASTM D3034, for pipes less than 12' deep.
    -PVC SDR 26 per ASTM D3034, for pipes 12' to 20' deep.
13. Waterlines shall be as follows (unless otherwise shown on plans):
    -for 10" and larger: ductile iron pipe per AWWA C150
    -between 3" and 8": DR14 PVC per AWWA C900
    -For smaller than 2":copper tube Type "K" per ANSI 816.22
14. Minimum trench width shall be 2 feet.
15. Contractor shall maintain a minimum of 42" of cover on all waterlines. All water line joints are to be mechanical joints with thrust blocking as called out in specifications and construction plans. Water mains and service lines shall be constructed in accordance to the Public Works, Engineering Division of the City of Lee's Summit, Missouri Standards and Specifications for commercial services.
16. All waterlines shall be kept ten feet (10') apart (parallel) from sanitary sewer lines or manholes. Or when crossing, an 18" vertical clearance (outside edge of pipe to outside edge of pipe) of the waterline above the sewer line is required.
17. Water meter provided by City of Lee's Summit, Water Services and Installed by The Contractor in Accordance with the Direction, Standards and Specifications of the City Water services Department.
18. In the event of a vertical conflict between waterlines, sanitary lines, storm lines and gas lines (existing and proposed), the sanitary line shall be ductile iron pipe with mechanical joints at least 10 feet on both sides of the crossing (or encased in concrete the same distance), the waterline shall have mechanical joints with appropriate thrust blocking as required to provide a minimum of 18" clearance. Meeting requirements ANSI A21.10 or ANSI 21.11 (AWWA C151)(Class 50).
19. All underground storm, sanitary, water and other utility lines shall be installed, inspected and approved before backfilling. Failure to have inspection approval prior to backfill will constitute rejection of work.
20. All necessary inspections and/or certifications required by codes and/or utility service companies shall be performed prior to announced building possession and the final connection of service. Contractor shall coordinate with all utility companies for installation requirements and specifications.
21. Refer to building plans for site lighting electrical plan, irrigation, parking lot security system and associated conduit requirements. Coordinate with Owner that all required conduits are in place and tested prior to paving.
22. When a building utility Connection from site utilities leading up to the building cannot be made immediately, temporarily mark all such utility terminations.
23. See Architectural and Structural Building Plans for Roof Drains. The Contractor Shall Verify/Coordinate Size and Location of Roof Drains As Required Prior to Beginning Construction and Report Any Descrepancies In the Plans to the Engineer for Resolution.
27. Contractor is Responsible for providing all necessary fittings, bends, and structures to connect roof drains to the stormwater system.
28. All Connections to Existing Storm Drainage Structures Shall Be Cored and Grouted in Accordance With City of Lee's Summit, Standards and Specifications.

Sheet
C12

Final Developement Plans

19-0141
Summit At West Pryor
Lee's Summit, Jackson, MO

Utility Plan

NO.	BY	DATE	REVISION
4.	JGW	DJB	10/01/19	Revised For Resubmittal
3.	JGD	DJB	09/10/19	Revised For FDP Submittal
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STATE OF MISSOURI
DUSTIN J. BURTON
NUMBER PE-2010115709
PROFESSIONAL ENGINEER
10/01/19

Match Line C12

Proposed Water Line
(By Others)

Proposed Hydrant
(By Others)

4

Proposed Transformer
(By Others)

1

UGP

UGP

UGP

UGP

UGP

UGP

4

Power
Route Secondary from transformer to building. Refer to MEP for conduit sizing, type,and amount.

Install Gas Meter

GAS GAS GAS

Gas
Install 64.15 LF of Gas Service Line
Coordinate w/ SPIRE For Sizing

Fire Line
Install Hydrant Assembly
(See Details C24)

4

FIRE

FIRE

FIRE

FIRE

Coordinate Water Service Connection
to Proposed Main at gate valve
N: 1006690.75
E: 2813296.86

Fire Line
Install 78.70 LF of 6"- C900
from Main to Fire Hydrant

Match Line C12

NORTH

1"=20'

0 10' 20'

Sheet
C13

Final Developement Plans

19-0141
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Lee's Summit, Jackson, MO

Utility Plan

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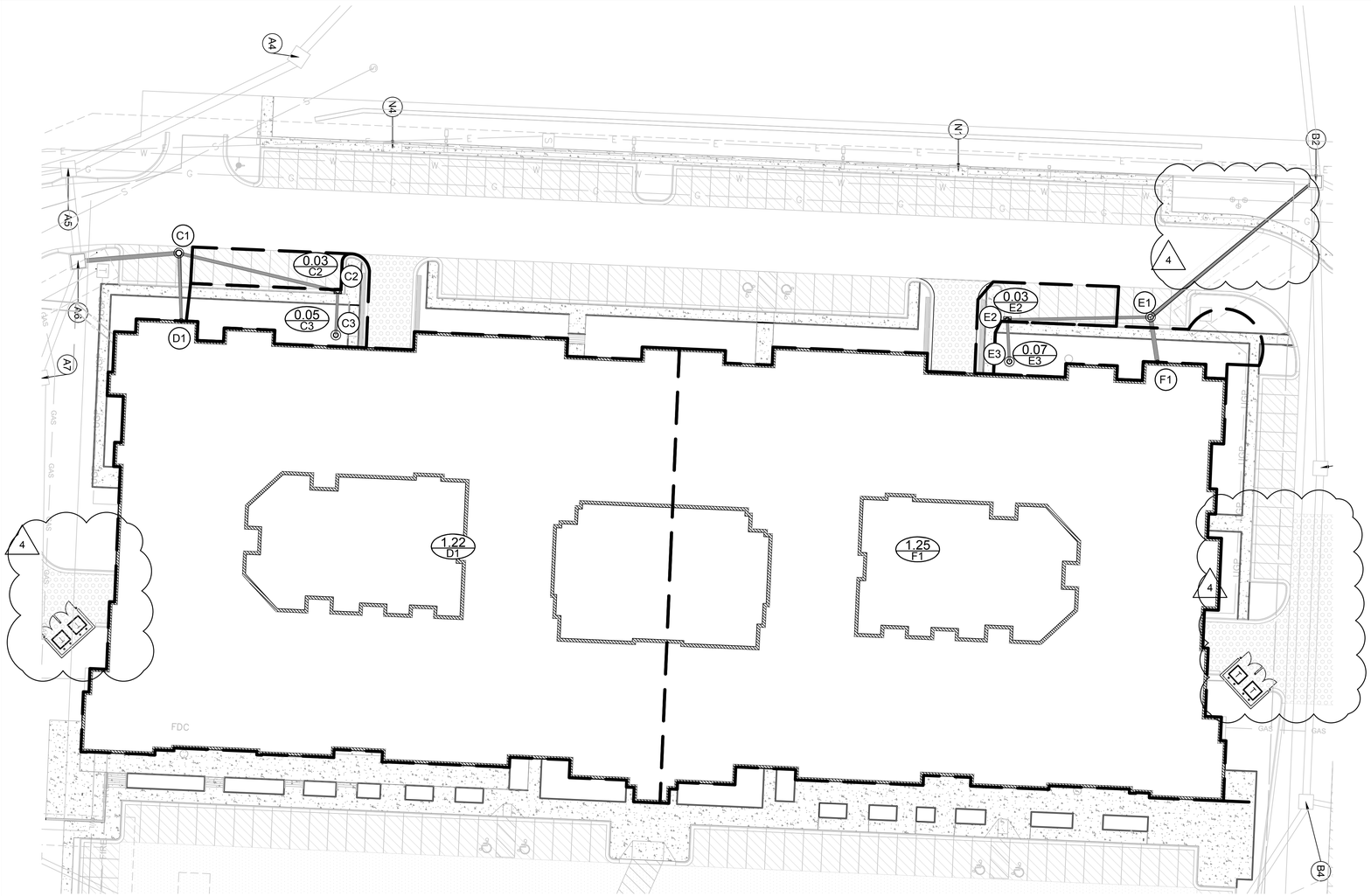

LEGEND

XX — Inlet ID

XXX / XX — Drainage Area (ac) / Inlet ID

Grading Legend

- Existing Major Contour
- Existing Minor Contour
- Proposed Major Contour
- Proposed Minor Contour

NOTE

Information shown is taken from the "Streets of West Pryor Final Dainage Study" Prepared by Kaw Valley Engineering, Inc., 2319 N. Jackson, Junction City, Kansas, 66441, (785)762-5040 . Renaissance Infrastucture Consulting is not responsible for the accuracy of the information shown hereon and the accompaning tables shown.

25-Year Calculations

LineNo.	InletID	Drainage Area (ac)	InletTime (min)	iInlet (in/hr)	Runoff Coeff (C)	IncrQ (cfs)	QCaptured (cfs)	QBypass (cfs)	JunctType	ThroatHt (in)	StructLength (ft)	InletDepth (ft)	GutterDepth (ft)	GutterSpread (ft)	DnStrmLine No.	LineSize (in)	LineLength (ft)	FlowRate (cfs)	InvertDn (ft)	InvertUp (ft)	LineSlope (%)	n-valuePipe	Capacity Full (cfs)	HGLDn (ft)	HGLUp (ft)	HGLJnct (ft)	DepthDn (ft)	DepthUp (ft)	VelAve (ft/s)	Hw (ft)	J-LossCoeff
1	C1	0.00	5	0.00	0.9	0	....	....	MH	....	4	....	....	....	Outfall	18	48.417	9.06	973.76	974.73	2.00	0.012	16.10	975.26	975.89 j	975.89	1.50	1.16**	5.65	1.16	1.00 z
2	C2	0.03	5	8.53	0.90	0.23	0.23	0.00	Comb.	6.00	2.00	0.10	0.10	2.14	1	12	78.36	0.60	979.41	980.980	2.00	0.012	5.46	979.63	981.3	981.3	0.22	0.32**	3.65	0.32	1.48 z
3	C3	0.05	5	8.53	0.90	0.38	....	....	MH	....	3.00	....	....	....	2	12	21.23	0.38	981.18	981.610	2.03	0.012	5.49	981.36	981.87	981.87	0.18	0.26**	3.22	0.26	1.00 z
4	E1	0.00	5	0.00	0.90	0.00	....	....	MH	....	4.00	....	....	....	4	18	20.88	9.68	974.83	975.250	2.01	0.012	16.14	976.03	976.45	976.45	1.20	1.20**	6.39	1.20	0.88 z
5	E2	0.03	5	8.53	0.90	0.23	0.23	0.00	Comb.	6.00	2.00	0.10	0.10	2.14	5	12	68.65	0.75	979.53	980.900	2.00	0.012	5.45	979.78	981.26	981.26	0.25	0.36**	3.90	0.36	1.50 z
6	E3	0.07	5	8.53	0.90	0.54	....	....	MH	....	3.00	....	....	....	6	12	20.15	0.54	981.10	981.500	1.99	0.012	5.44	981.31	981.8	981.8	0.21	0.30**	3.54	0.30	1.00 z
7	F1	1.25	5	8.53	0.90	9.60	....	....	None	....	....	....	....	....	5	18	21.92	9.60	975.78	976.000	1.00	0.012	11.4	976.83	977.2	977.2	1.05	1.20**	6.79	1.20	1.00 z
8	D1	1.22	5	8.53	0.90	9.37	....	....	None	....	....	....	....	....	1	18	32.47	9.37	975.18	975.500	0.99	0.012	11.29	976.22	976.68	976.68	1.04	1.18**	6.71	1.18	1.00 z

100-Year Calculations

LineNo.	InletID	Drainage Area (ac)	InletTime (min)	iInlet (in/hr)	Runoff Coeff (C)	IncrQ (cfs)	QCaptured (cfs)	QBypass (cfs)	JunctType	ThroatHt (in)	StructLength (ft)	InletDepth (ft)	GutterDepth (ft)	GutterSpread (ft)	DnStrmLine No.	LineSize (in)	LineLength (ft)	FlowRate (cfs)	InvertDn (ft)	InvertUp (ft)	LineSlope (%)	n-valuePipe	Capacity Full (cfs)	HGLDn (ft)	HGLUp (ft)	HGLJnct (ft)	DepthDn (ft)	DepthUp (ft)	VelAve (ft/s)	Hw (ft)	J-LossCoeff
1	C1	0	5	0	0.9	0	....	....	MH	....	4	....	....	....	Outfall	18	48.417	12.08	973.76	974.73	2.00	0.012	16.1	975.26	976.05 j	976.05	1.5	1.32**	7.09	1.32	1.00 z
2	C2	0.03	5	10.32	0.90	0.28	0.28	0.00	Comb.	6.00	2.00	0.10	0.10	2.51	1	12	78.36	0.74	979.41	980.980	2.00	0.012	5.46	979.66	981.34	981.34	0.25	0.36**	3.89	0.36	1.48 z
3	C3	0.05	5	10.32	0.90	0.46	....	....	MH	....	3.00	....	....	....	2	12	21.23	0.46	981.18	981.610	2.03	0.012	5.49	981.38	981.89	981.89	0.20	0.28**	3.40	0.28	1.00 z
4	E1	0	5	0.00	0.90	0.00	....	....	MH	....	4.00	....	....	....	4	18	20.88	12.54	974.83	975.250	2.01	0.012	16.14	976.16	976.58	976.58	1.33	1.33**	7.55	1.33	0.88 z
5	E2	0.03	5	10.32	0.90	0.28	0.28	0.00	Comb.	6.00	2.00	0.10	0.10	2.51	5	12	68.65	0.93	979.53	980.900	2.00	0.012	5.45	979.81	981.3	981.3	0.28	0.40**	4.15	0.40	1.50 z
6	E3	0.07	5	10.32	0.90	0.65	....	....	MH	....	3.00	....	....	....	6	12	20.15	0.65	981.10	981.500	1.99	0.012	5.44	981.33	981.84	981.84	0.23	0.34**	3.74	0.34	1.00 z
7	F1	1.25	5	10.32	0.90	11.61	....	....	None	....	....	....	....	....	5	18	21.92	11.61	975.78	976.000	1.00	0.012	11.4	977.04	977.3	977.3	1.26	1.30**	7.25	1.30	1.00 z
8	D1	1.22	5	10.32	0.90	11.33	....	....	None	....	....	....	....	....	1	18	32.47	11.33	975.18	975.500	0.99	0.012	11.29	976.41	976.78	976.78	1.23	1.28**	7.16	1.28	1.00 z

NORTH

1"=30'

0 15' 30'

Sheet C14

Final Developement Plans

19-0141
Summit At West Pryor
Lee's Summit, Jackson, MO

Drainage Area Map

NO	BY	DATE	REVISION
4.	JGW	DJB	10/01/19	Revised For Resubmittal
3.	JGD	DJB	09/10/19	Revised For FDP Submittal
2.	JGD	DJB	07/31/19	Issued For Bid
1.	JGD	DJB	07/26/19	Original Submittal

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12/17/19

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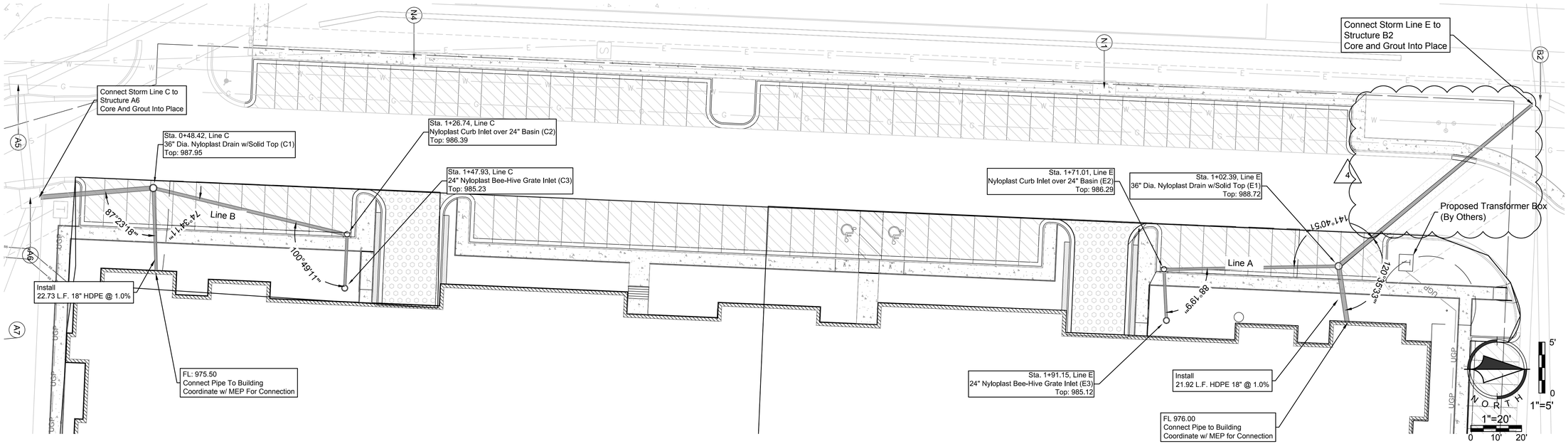

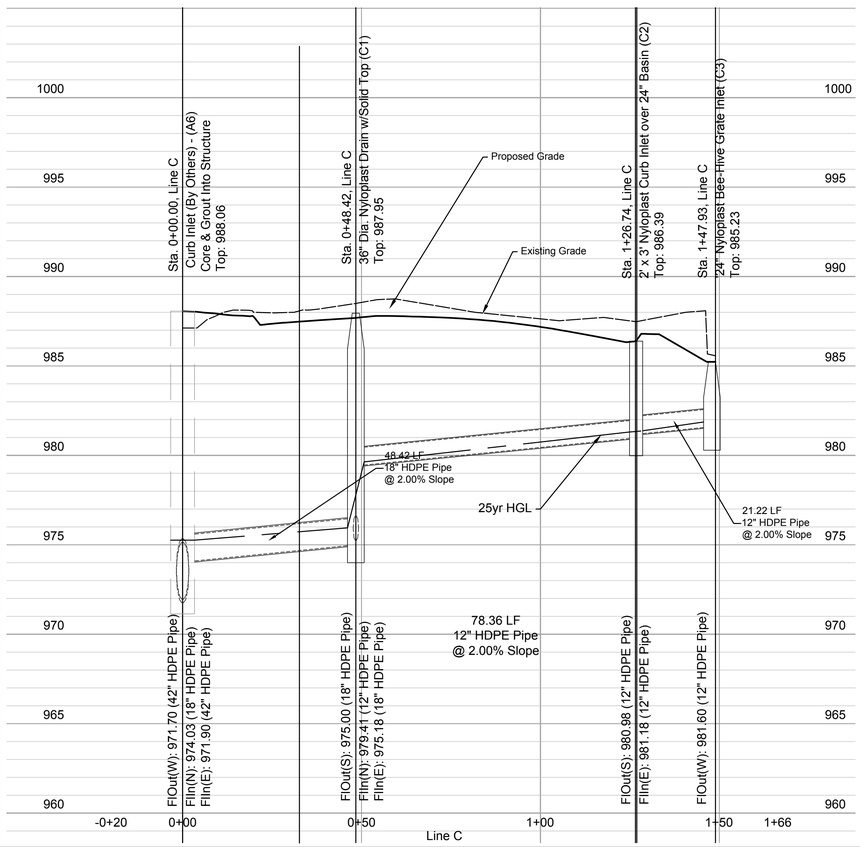

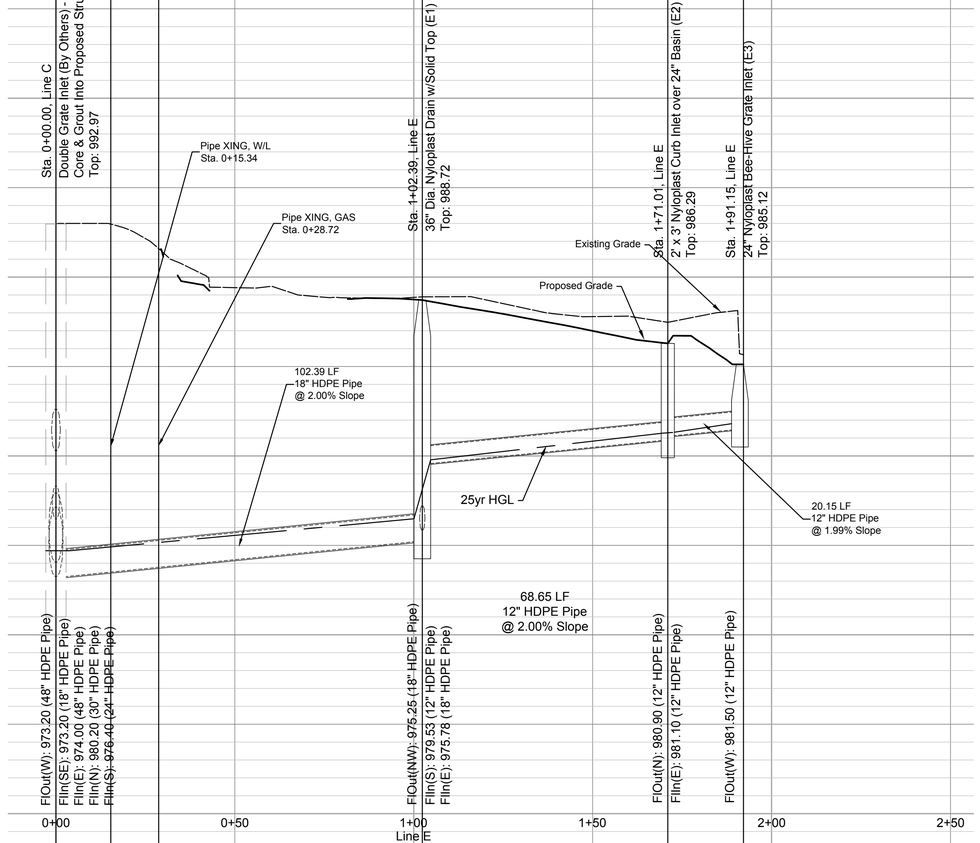

Sheet
C15

Final Developement Plans

19-0141
Summit At West Pryor
Lee's Summit, Jackson, MO

Storm P&P

NO	BY	DD	DATE	REVISION
1.	JGD	DJB	7/26/19	Original Submittal
2.	JGD	DJB	7/31/19	Issued For Bid
3.	KGD	DJB	08/16/19	Revised For FDP Submittal
4.	JGW	DJB	10/01/19	Revised For Resubmittal

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PROFESSIONAL ENGINEER

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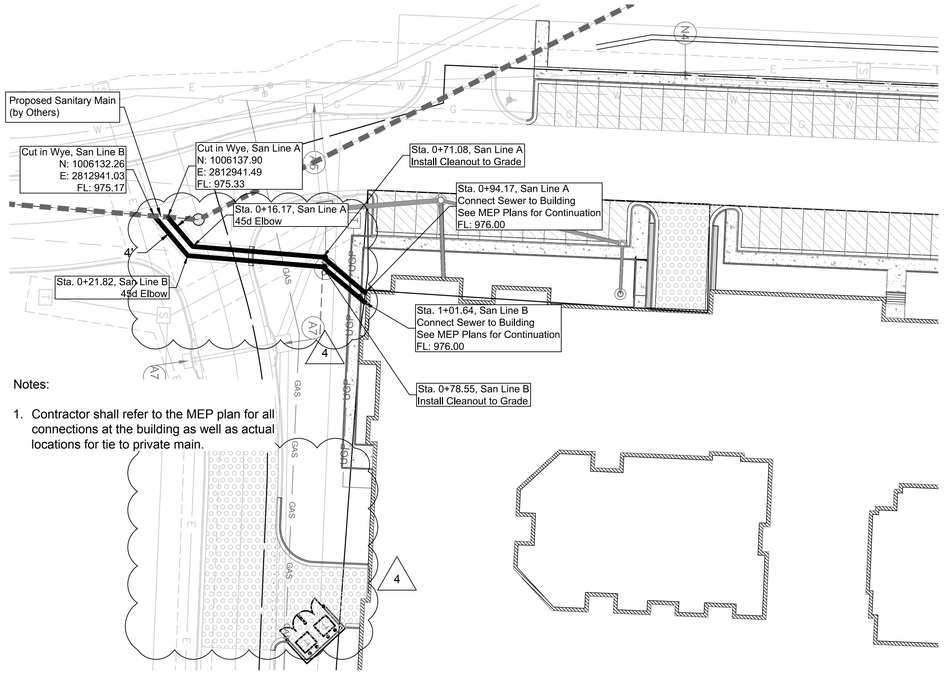
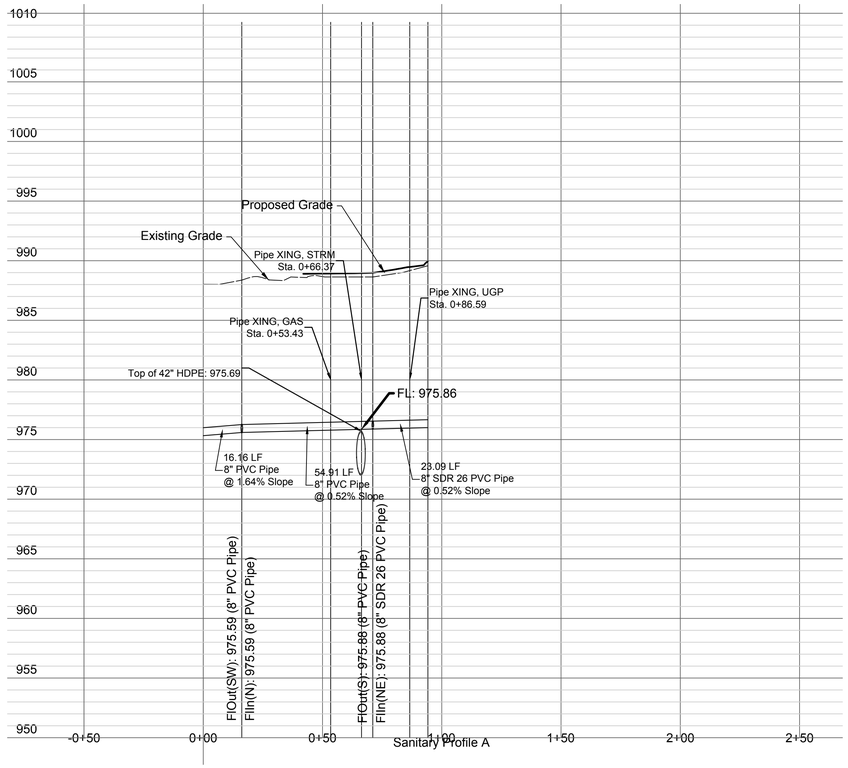
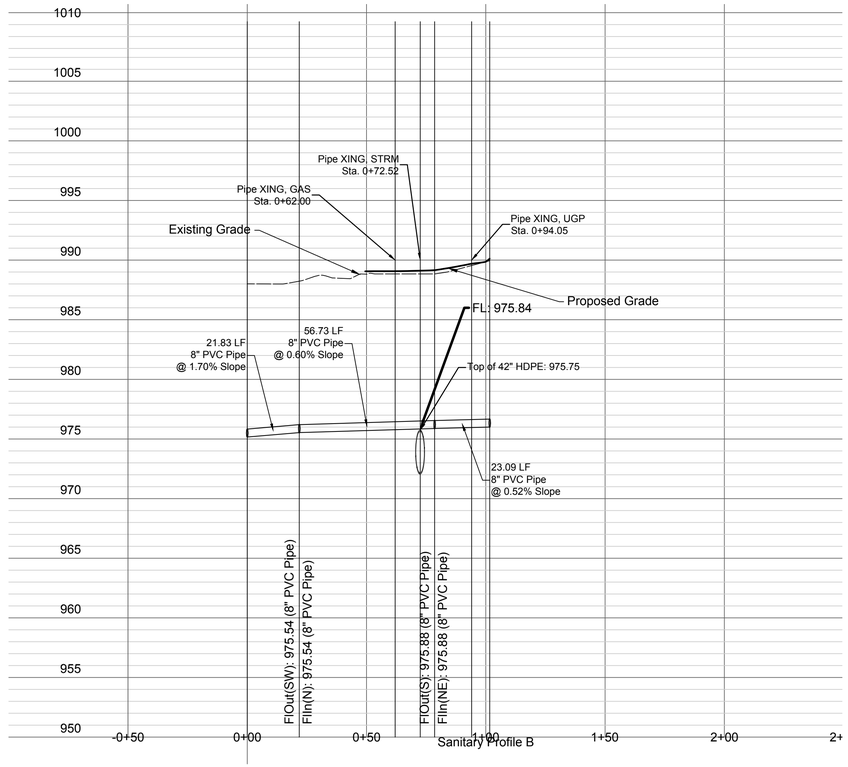
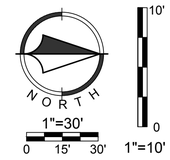


Notes:

1. Contractor shall refer to the MEP plan for all connections at the building as well as actual locations for tie to private main.







6'
0
1"=6'

Sheet
C16

Final Developement Plans

19-0141
Summit At West Pryor
Lee's Summit, Jackson, MO

Sanitary P&P

####

NO.	BY	DATE	REVISION
4.	GW	DJB	10/01/19	Revised For Resubmittal
3.	JGD	DJB	09/16/19	Revised For FDP Submittal
2.	JGD	DJB	07/31/19	Issued For Bid
1.	JGD	DJB	07/26/19	Original Submittal

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NUMBER PE-2010137709
PROFESSIONAL ENGINEER
12/11/19

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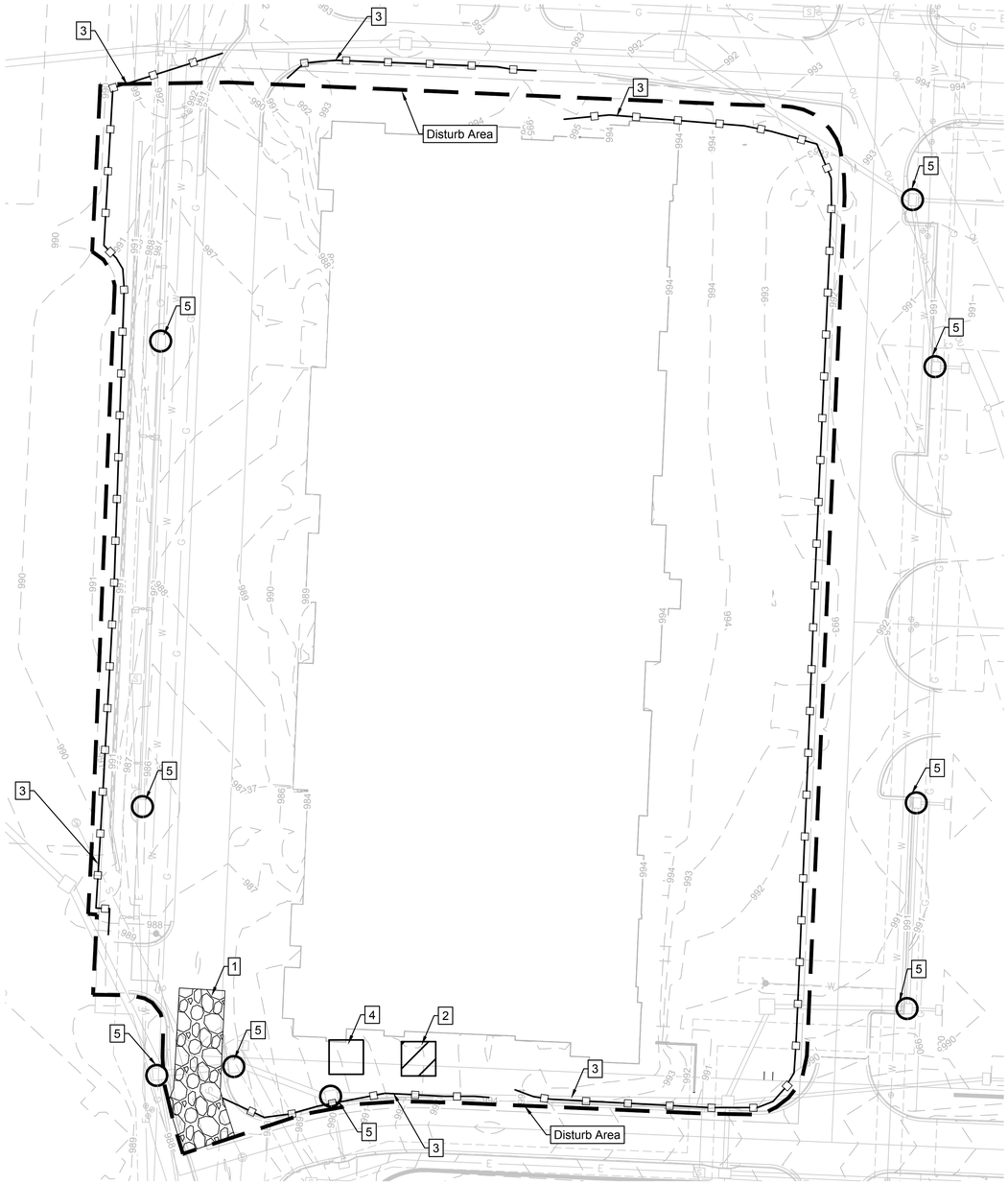

	PROJECT STAGE	PLAN REFERENCE NUMBER	BMP DESCRIPTION	REMOVE AFTER PHASE	NOTES
Phase I	A-Prior to Construction	1	Construction Entrance	II	Install Construction Entrance in accordance with APWA Standard Detail ESC-01
		2	Staging Area	II	Install Staging Area
		3	Perimeter Silt Fence	III	Install Silt Fence in accordance with APWA Standard Detail ESC-03
		4	Concrete Washout	II	Install Concrete Washout as Shown on Plans Prior to Pouring Any Concrete in accordance with APWA Standard Detail ESC-01
		5	Inlet Protection	III	Install Filter Bags Prior to Construction, Maintain Until All Area is Stabilized.
Phase II	B-During Land Disturbance and Storm Infrastructure Installation	6	Inlet Protection	III	Install Filter Bags Prior to Construction, Maintain Until All Area is Stabilized.
Phase III	C-Final Stabilization	7	Establish Perennial Vegetation	N/A	Redistribute Topsoil and Seed and Mulch all Disturbed Area. Stabilization Complete when 100% of Disturbed Area is Established with Perennial Vegetation with a Density of 70%

Disturbed Area for Site Improvements : 6.14 Acres

EROSION CONTROL LEGEND

- Stabilized Construction Entrance
- Staging Area
- Concrete Washout
- Limits of Disturbance
- Perimeter Silt Fence
- Inlet Protection

EROSION CONTROL NOTES

1. All work in public easements and right-of-way and all erosion control work must comply with the latest specifications set forth by the City of Lee's Summit, MO, the Kansas City Chapter of American Public Works Association (APWA). If any of the specification and/or general notes conflict with the requirements provided by the City of Lee's Summit, the City of Lee's Summit's standards shall override.
2. The contractor shall provide all materials, tools, equipment, and labor as necessary to install and maintain adequate erosion control, keep the streets clean of mud and debris, and prevent soil from leaving the project site. The contractor's erosion control measures shall conform to the City of Lee's Summit, MO, the Kansas City Chapter of American Public Works Association (APWA), Standards and Specifications.
3. Erosion control plan modifications shall be required if the plan fails to substantially control erosion and offsite sedimentation.
4. The contractor shall be responsible for maintaining erosion control devices and removing sediment until a minimum of 70% of permanent vegetation has become stabilized and established. Erosion control devices shall remain in place until the 70% established vegetation is met, or the duration of the project, whichever is the later date.
5. The contractor shall temporarily seed and mulch all disturbed areas if there is to be no construction activity on them for a period of fourteen (14) calendar days.
6. Install "J' Hooks on silt fence every 100 LF
7. Contractor to install all Phase I erosion control devices prior to construction.
8. Contractor shall replace disturbed area with seed or sod, as indicated on the plans, and shall be installed within 14 days after paving completion and final topsoil grading.
9. Topsoil replacement shall be 6" thick.
10. Silt fence to be installed in accordance with the City of Lee's Summit, MO.
11. Contractor shall remove mud and debris from City Streets and Outer Roadway within 4 hours of notification by City staff that it is a nuisance.

WRITTEN SEQUENCING

1. Implement Pre-Construction Plan:
   All temporary structural BMP's shown on the BMP plan must be in place before any site disturbance. Clearing necessary to place temporary structural BMP's is the minimum required for installation. Coordinate clearing necessary to place temporary structural BMP's with local weather forecast so that clearing and placement may be completed within a forecast dry period. Stabilize all erosion control measures after installation. Temporary Barrier Fence shall be in Place, around areas not to be disturbed, prior to any construction activities. This area includes Stream Corridor.
2. Clear and Stabilize Work Areas:
   Grade contractor areas and place all-weather surface on contractor areas.
3. Clearing and Grubbing:
   After Phase I BMP's are installed, contractor may clear, grub, and demo required areas as necessary.

NORTH
1"=40'
0 20' 40'

Sheet
C17

Final Developement Plans
19-0141
Summit At West Pryor
Lee's Summit, Jackson, MO

Erosion Control I

NO	BY	DATE	REVISION
4.	JGH	DJB	10/01/19	Revised For Resubmittal
3.	JGD	DJB	09/10/19	Revised For FDP Submittal
2.	JGD	DJB	07/31/19	Issued For Bid
1.	JGD	DJB	07/26/19	Original Submittal

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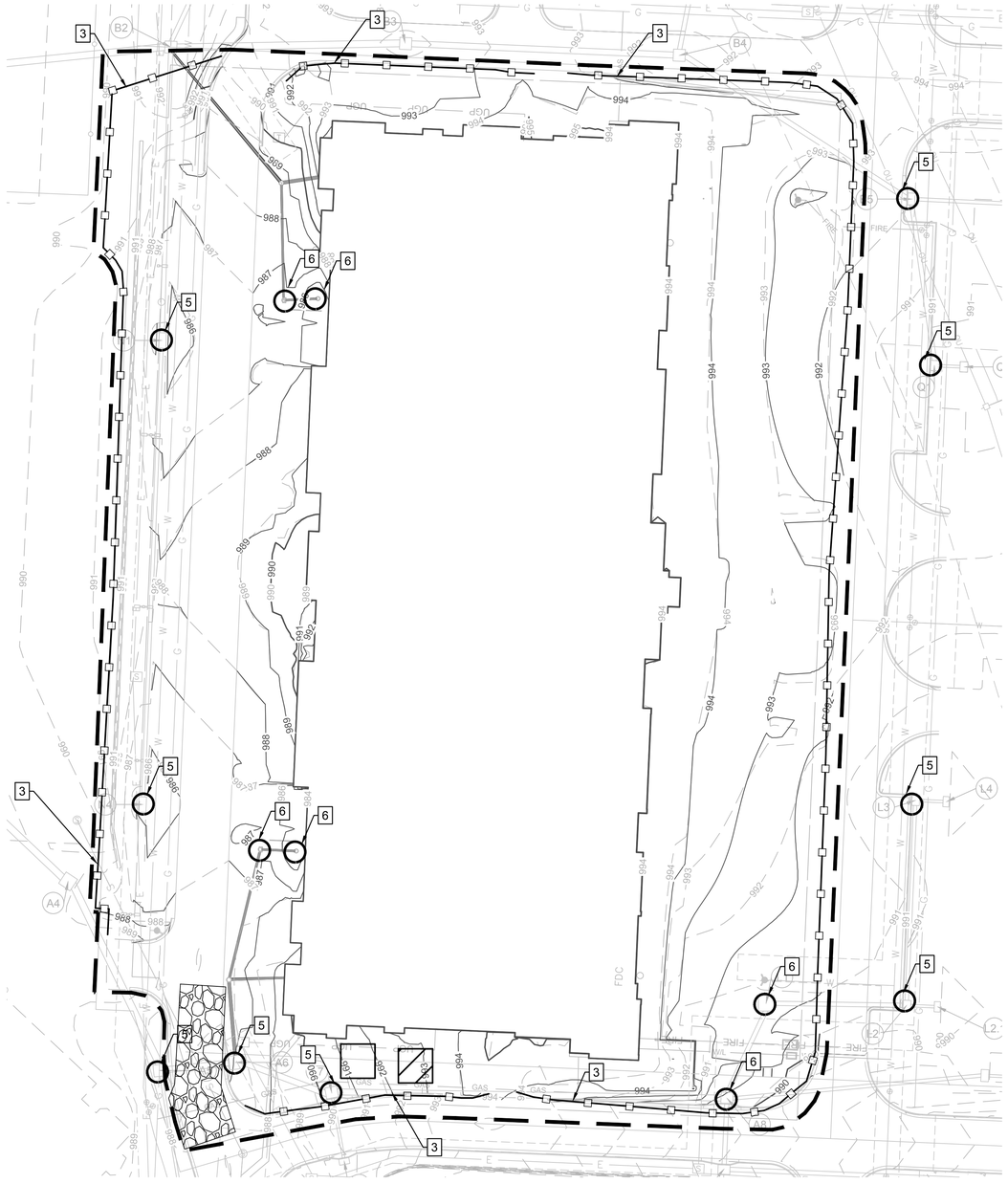
MO Certificate of Authority: E-2010033630

STATE OF MISSOURI
DUSTIN J. BURTON
NUMBER PE-2011015709
PROFESSIONAL ENGINEER
10/7/19



EROSION CONTROL LEGEND

- Stabilized Construction Entrance
- Staging Area
- Concrete Washout
- Limits of Disturbance
- Perimeter Silt Fence
- Inlet Protection

EROSION CONTROL NOTES

1. All work in public easements and right-of-way and all erosion control work must comply with the latest specifications set forth by the City of Lee's Summit, MO. and the Kansas City Chapter of American Public Works Association (APWA). If any of the specification and/or general notes conflict with the requirements provided by the City of Lee's Summit, the City of Lee's Summit's standards shall override.
2. The contractor shall provide all materials, tools, equipment, and labor as necessary to install and maintain adequate erosion control, keep the streets clean of mud and debris, and prevent soil from leaving the project site. The contractor's erosion control measures shall conform to the City of Lee's Summit, MO. and the Kansas City Chapter of American Public Works Association (APWA).
3. Erosion control plan modifications shall be required if the plan fails to substantially control erosion and offsite sedimentation.
4. The contractor shall be responsible for maintaining erosion control devices and removing sediment until a minimum of 70% of permanent vegetation has become stabilized and established. Erosion control devices shall remain in place until the 70% established vegetation is met, or the duration of the project, whichever is the later date.
5. The contractor shall temporarily seed and mulch all disturbed areas if there is to be no construction activity on them for a period of fourteen (14) calendar days.
6. Install "J' Hooks on silt fence every 100 LF
7. Contractor to install all Phase I erosion control devices prior to construction.
8. Contractor shall replace disturbed area with seed or sod, as indicated on the plans, and shall be installed within 14 days after paving completion and final topsoil grading.
9. Topsoil replacement shall be 6" thick.
10. Silt fence to be installed in accordance with the City of Lee's Summit, MO.
11. Contractor shall remove mud and debris from City Streets and Outer Roadway within 4 hours of notification by City staff that it is a nuisance.

WRITTEN SEQUENCING

1. Implement Pre-Construction Plan:
   All temporary structural BMP's shown on the BMP plan must be in place before any site disturbance. Clearing necessary to place temporary structural BMP's is the minimum required for installation. Coordinate clearing necessary to place temporary structural BMP's with local weather forecast so that clearing and placement may be completed within a forecast dry period. Stabilize all erosion control measures after installation. Temporary Barrier Fence shall be in Place, around areas not to be disturbed, prior to any construction activities. This area includes Stream Corridor.
2. Clear and Stabilize Work Areas:
   Grade contractor areas and place all-weather surface on contractor areas.
3. Clearing and Grubbing:
   After Phase I BMP's are installed, contractor may clear, grub, and demo required areas as necessary.

	PROJECT STAGE	PLAN REFERENCE NUMBER	BMP DESCRIPTION	REMOVE AFTER PHASE	NOTES
Phase I	A-Prior to Construction	1	Construction Entrance	II	Install Construction Entrance in accordance with APWA Standard Detail ESC-01
		2	Staging Area	II	Install Staging Area
		3	Perimeter Silt Fence	III	Install Silt Fence in accordance with APWA Standard Detail ESC-03
		4	Concrete Washout	II	Install Concrete Washout as Shown on Plans Prior to Pouring Any Concrete in accordance with APWA Standard Detail ESC-01
		5	Inlet Protection	III	Install Filter Bags Prior to Construction, Maintain Until All Area is Stabilized.
Phase II	B-During Land Disturbance and Storm Infrastructure Installation	6	Inlet Protection	III	Install Filter Bags Prior to Construction, Maintain Until All Area is Stabilized.
Phase III	C-Final Stabilization	7	Establish Perennial Vegetation	N/A	Redistribute Topsoil and Seed and Mulch all Disturbed Area. Stabilization Complete when 100% of Disturbed Area is Established with Perennial Vegetation with a Density of 70%

Disturbed Area for Site Improvements : 6.14 Acres

NORTH
1"=40'
0 20' 40'

Sheet
C18

Final Developement Plans

19-0141
Summit At West Pryor
Lee's Summit, Jackson, MO

Erosion Control II

NO.	BY	DATE	REVISION
4.	JDW	DJB	10/01/19	Revised For Resubmittal
3.	JGD	DJB	09/10/19	Revised For FDP Submittal
2.	JGD	DJB	07/31/19	Issued For Bid
1.	JGD	DJB	07/26/19	Original Submittal

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MO Certificate of Authority: E-2010033630

STATE OF MISSOURI
DUSTIN J. BURTON
NUMBER PE-2011015709
10/11/19
PROFESSIONAL ENGINEER

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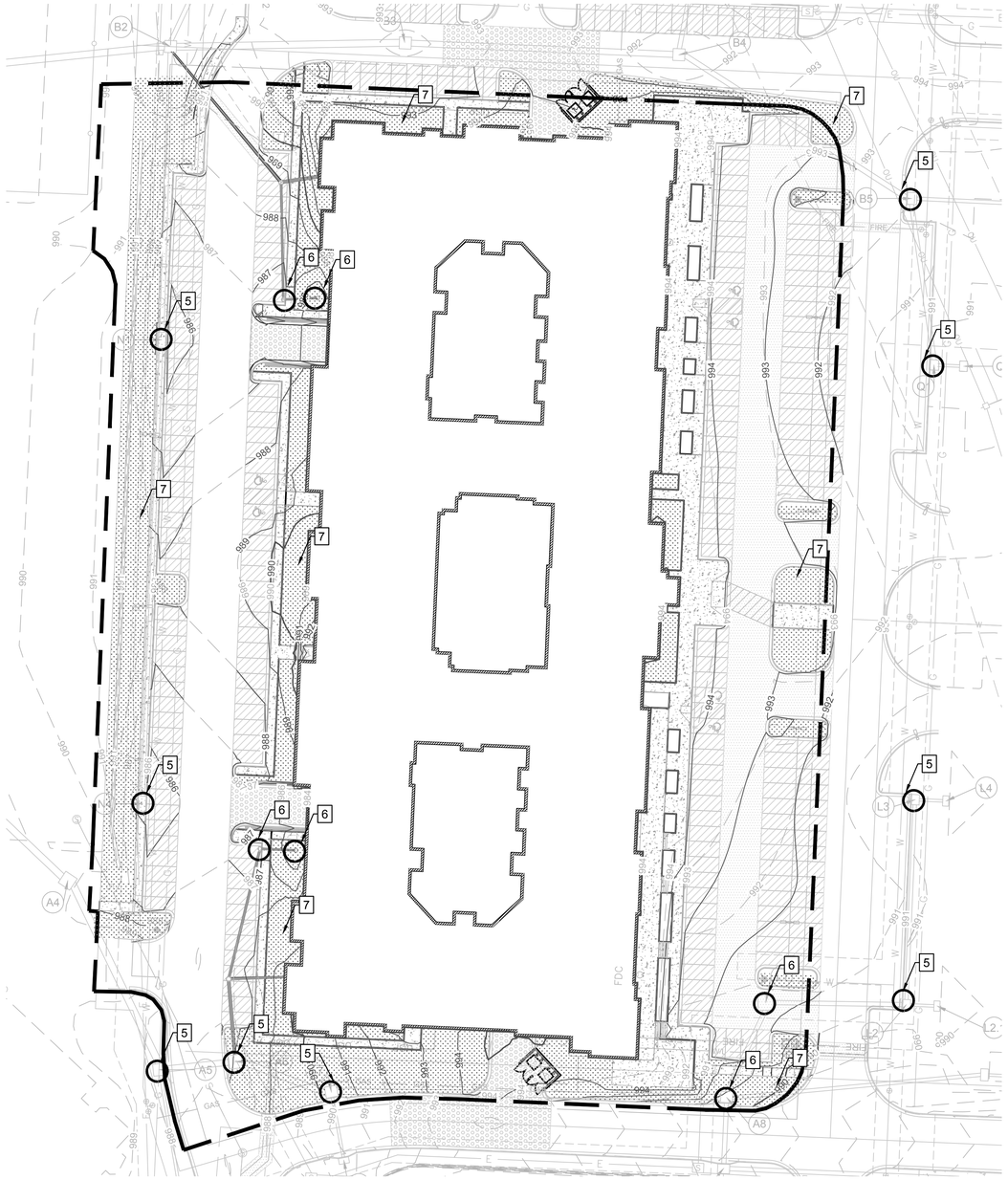

EROSION CONTROL LEGEND

- Stabilized Construction Entrance
- Staging Area
- Concrete Washout
- Limits of Disturbance
- Perimeter Silt Fence
- Inlet Protection

LEGEND

- Landscape Areas (See LA Plan)

	PROJECT STAGE	PLAN REFERENCE NUMBER	BMP DESCRIPTION	REMOVE AFTER PHASE	NOTES
Phase I	A-Prior to Construction	1	Construction Entrance	II	Install Construction Entrance in accordance with APWA Standard Detail ESC-01
		2	Staging Area	II	Install Staging Area
		3	Perimeter Silt Fence	III	Install Silt Fence in accordance with APWA Standard Detail ESC-03
		4	Concrete Washout	II	Install Concrete Washout as Shown on Plans Prior to Pouring Any Concrete in accordance with APWA Standard Detail ESC-01
		5	Inlet Protection	III	Install Filter Bags Prior to Construction, Maintain Until All Area is Stabilized.
Phase II	B-During Land Disturbance and Storm Infrastructure Installation	6	Inlet Protection	III	Install Filter Bags Prior to Construction, Maintain Until All Area is Stabilized.
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Disturbed Area for Site Improvements : 6.14 Acres

NORTH
1"=40'
0 20' 40'

Sheet
C19

Final Developement Plans

19-0141
Summit At West Pryor
Lee's Summit, Jackson, MO

Erosion Control III

NO.	BY	DATE	REVISION
4.	JGW	10/01/19	Revised For Resubmittal
3.	JGD	09/10/19	Revised For FDP Submittal
2.	JGD	07/31/19	Issued For Bid
1.	JGD	07/26/19	Original Submittal

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DUSTIN J BURTON
NUMBER PE-2011015709
PROFESSIONAL ENGINEER
12/11/19

Oct 04, 2019-11:36am
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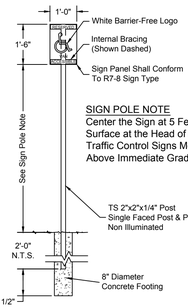
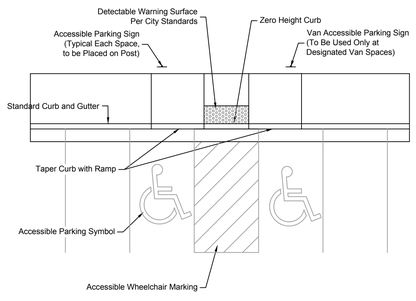


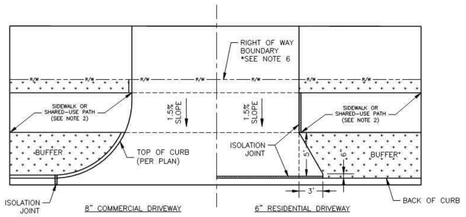
SIGN POLE NOTE
Center the Sign at 5 Feet Above the Parking Surface at the Head of the Parking Space Traffic Control Signs Mounted a Min. of 60" Above Immediate Grades

HANDICAP SIGNAGE
Not to Scale

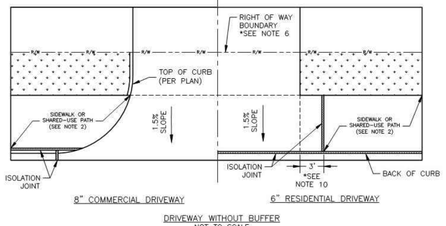


Note:
Accessible Parking Symbol and Signage Shall Comply with the Applicable Recommendations of the Manual of Uniform Traffic Control Devices (MUTCD)

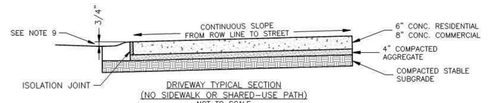
ACCESSIBLE PARKING DETAIL (90°)
Not to Scale



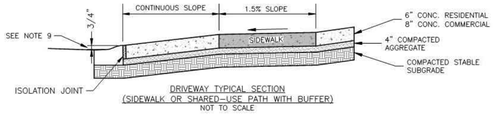
DRIVEWAY WITH BUFFER
NOT TO SCALE



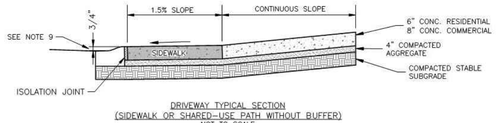
DRIVEWAY WITHOUT BUFFER
NOT TO SCALE



DRIVEWAY TYPICAL SECTION
(NO SIDEWALK OR SHARED-USE PATH)
NOT TO SCALE



DRIVEWAY TYPICAL SECTION
(SIDEWALK OR SHARED-USE PATH WITH BUFFER)
NOT TO SCALE



DRIVEWAY TYPICAL SECTION
(SIDEWALK OR SHARED-USE PATH WITHOUT BUFFER)
NOT TO SCALE

GENERAL NOTES
1. SUBGRADE SHALL BE STABLE, COMPACTED EARTH AND SHALL BE OVERLAYED WITH 4" COMPACTED DENSE GRADED AGGREGATE BASE.
2. ALL DRIVE APPROACHES SHALL MEET CURRENT PUBLIC RIGHT OF WAY ACCESSIBILITY GUIDELINES (PROWAG) FOR SLOPE REQUIREMENTS WHEN SIDEWALK IS REQUIRED (SEE ADA RAMP RETROFIT DETAIL GEN-3B, SIDEWALK/SHARED USE PATH RAMP AT DRIVEWAY DETAIL).
3. JOINT AT BACK OF CURB LINE SHALL BE AN ISOLATION JOINT FOR RESIDENTIAL DRIVEWAYS.
4. KCMMB 4K CONCRETE MIX IS REQUIRED FOR ALL CURBS.
5. COMMERCIAL DRIVEWAYS, IN THE PUBLIC RIGHT OF WAY, SHALL BE KCMMB 4K CONCRETE MIX.
6. RESIDENTIAL DRIVEWAYS, IN THE PUBLIC RIGHT OF WAY, KCMMB 4K CONCRETE MIX IS RECOMMENDED. OTHER CONCRETE MIXES NEEDS TO BE APPROVED BY CITY INSPECTOR.
7. A JOINT MUST BE INSTALLED AT THE RIGHT OF WAY BOUNDARY FOR PROPERTY DELINEATION.
8. WHITE CURING COMPOUND MUST BE APPLIED UNIFORMLY TO THE CONCRETE SURFACE IMMEDIATELY AFTER FINAL FINISHING.
9. ¾" FROM TOP OF CURB TO FLOWLINE AT DRIVEWAY (TYPE CC-1 CURB ONLY). MUST MAINTAIN ORIGINAL FLOWLINE OF CURB.
10. SIDEWALK ADJOINING CURB SHALL BE 6" THICK, EXTENDING 3' FROM THE DRIVEWAY.
11. THE MAXIMUM WIDTH OF A RESIDENTIAL DRIVEWAY IS 36 FEET WITHIN THE RIGHT OF WAY.

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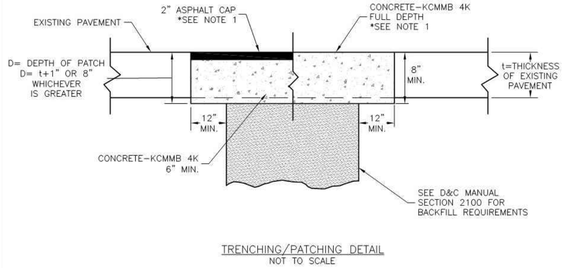
STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO
DRIVEWAY DETAIL

Project:
Sheet Name:

Drawn By: MJF
Checked By: DL
Date: 04/17
Proj. #:

GEN-1



TRENCHING/PATCHING DETAIL
NOT TO SCALE

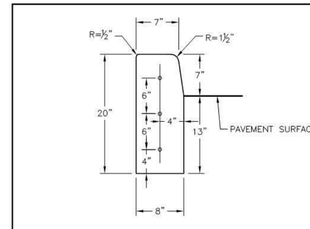
NOTE:
1. ASPHALT CAP OR FULL DEPTH CONCRETE SHALL BE DETERMINED BY CITY INSPECTOR.

LEE'S SUMMIT
MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

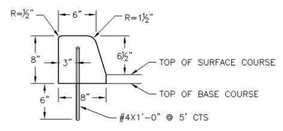
TRENCHING/PATCHING ROADWAYS DETAIL

Date: 04/17
Drawn By: MJF
Checked By: DL

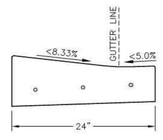
GEN-5



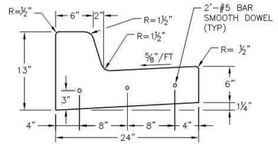
STRAIGHT CURB
(TYPE C-1)



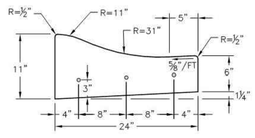
DOWELLED CURB
(TYPE DC)



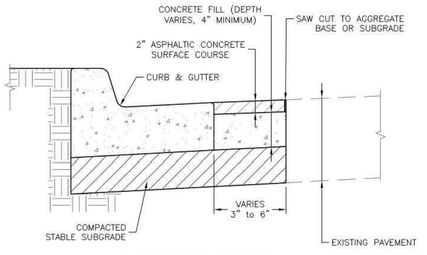
CURB & GUTTER DETAIL AT RAMP
(ADA SLOPE REQUIREMENTS)



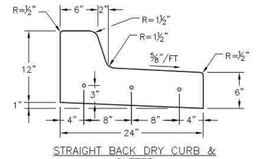
STRAIGHT BACK CURB &
GUTTER
(TYPE CG-1)



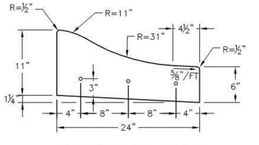
ROLL BACK CURB &
GUTTER
(TYPE CG-2)



CURB REPLACEMENT DETAIL



STRAIGHT BACK DRY CURB &
GUTTER
(TYPE CG-1 DRY)



ROLL BACK DRY CURB &
GUTTER
(TYPE CG-2 DRY)

GENERAL NOTES
1. ¾" ISOLATION JOINTS WITH 3 (2'-#5 BAR) SMOOTH DOWELS SHALL BE PLACED AT RADIUS POINTS AND AT 150' INTERVALS. THESE DOWEL BARS SHALL BE GREASED AND WRAPPED ON ONE END WITH EXPANSION TUBES.
2. 3" DEEP CONTRACTION JOINTS SHALL BE INSTALLED AT APROXIMATELY 10' INTERVALS. THESE JOINTS SHALL PASS ACROSS THE ENTIRE CURB SECTION.
3. CONCRETE FILL SHALL HAVE UNIFORM AND SMOOTH FINISH
4. KCMMB 4K CONCRETE SHALL BE USED FOR ALL CURB.
5. ASPHALTIC CONCRETE SURFACE COURSE SHALL CONFORM TO STANDARD SPECIFICATIONS SECTION 2205.2.
6. CURBS FOR NEW STREETS SHALL BE BUILT ON ASPHALT OR AGGREGATE BASE AS SHOWN IN TYPICAL SECTION DETAIL.
7. WHITE CURING COMPOUND MUST BE APPLIED UNIFORMLY TO THE CONCRETE SURFACE IMMEDIATELY AFTER FINAL FINISHING.

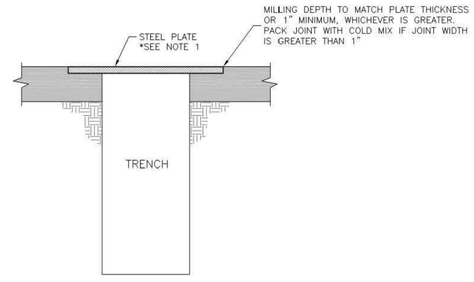
LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO
CURB & GUTTER DETAIL

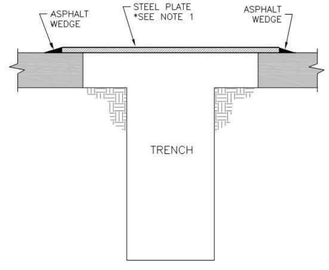
Project:
Sheet Name:

Drawn By: MJF
Checked By: DL
Date: 04/17
Proj. #:

GEN-4



TYPE "A" PLATING
NOT TO SCALE
(CITY POSTED SPEEDS OF
35 MPH AND GREATER)



TYPE "B" PLATING
NOT TO SCALE
(CITY POSTED SPEEDS OF
30 MPH OR LESS)

GENERAL NOTES:
1. THE CONTRACTOR SHALL PROVIDE ADEQUATE OVERLAP OF PLATE ON ASPHALT TO ASSURE NO SLIPPAGE OF PLATE AND NO COLLAPSING OF TRENCH.
2. ALL PLATES SHALL BE ANCHORED SO PLATES DO NOT MOVE OR SHIFT UNDER TRAFFIC.

LEE'S SUMMIT
MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

TRENCHING PLATE DETAIL

Date: 04/17
Drawn By: MJF
Checked By: DL

GEN-6

Sheet
C20

Final Developement Plans

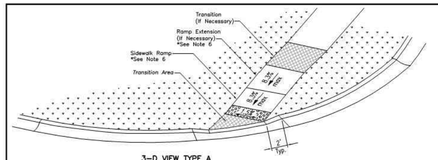
19-0141
Summit At West Pryor
Lee's Summit, Jackson, MO

Typical
Details-General

NO.	BY	DATE	REVISION
4.	JGW	DJB	10/01/19	Revised For Resubmittal
3.	JGD	DJB	09/10/19	Revised For FDP Submittal
2.	JGD	DJB	07/31/19	Issued For Bid
1.	JGD	DJB	07/26/19	Original Submittal

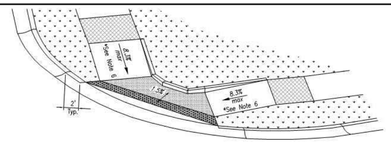
Renaissance Infrastructure Consulting
132 ABBIE AVENUE
KANSAS CITY, KANSAS 66103
913.317.9500
WWW.RIC-CONSULT.COM
MO Certificate of Authority: E-2010033630

STATE OF MISSOURI
DUSTIN J. BURTON
NUMBER PE-2010015709
PROFESSIONAL ENGINEER
12/11/19

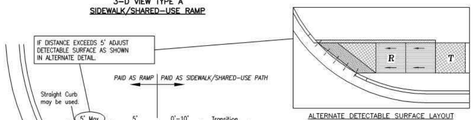


3-D VIEW TYPE A
SIDEWALK/SHARED-USE RAMP

LEGEND
- R — SIDEWALK RAMP
- TS — TURNING SPACE
- DETECTABLE WARNING SURFACE
- T — TRANSITION



3-D VIEW TYPE B
SIDEWALK/SHARED-USE RAMP

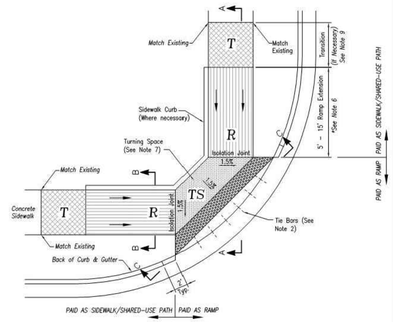


TYPE A SIDEWALK/SHARED-USE RAMP
Not to Scale

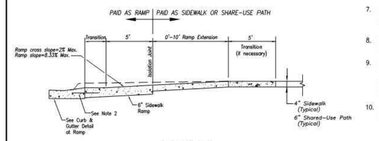
ALTERNATE DETECTABLE SURFACE LAYOUT

SIDEWALK/SHARED-USE PATH & SIDEWALK/SHARED-USE RAMP NOTES:

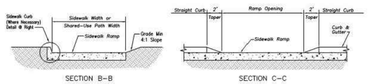
1. CURB RAMP OPENING, NOT INCLUDING FLARES, SHALL MATCH EXISTING SIDEWALK WIDTH AND OPENING SHALL BE AT LEAST 48" WIDE.
2. USE 18" LONG #4 EPOXY COATED TIE BARS @ 24" O.C. EMBED TIE BARS 9" IN EACH DIRECTION.
3. ALL RAMPS, SIDEWALKS, SHARED-USE PATHS SUBGRADE MUST BE OF STABLE, COMPACTED EARTH AND SHALL BE OVERLAYED WITH 4" COMPACTED DENSE GRADED AGGREGATE BASE.
4. LONGITUDINAL JOINT SPACING TO MATCH WIDTH OF SIDEWALK.
5. ISOLATION JOINTS SHALL BE PLACED WHERE WALK ABUTS DRIVEWAYS AND SIMILAR STRUCTURES, AND 150' CENTERS MAX.
6. ADA MAXIMUM RAMP SLOPE = 8.33%
   ADA MAXIMUM CROSS SLOPE = 2.0%
   *ROADWAY EXCEPTION: WHERE EXISTING ROAD PROFILE GRADE DOES NOT ALLOW RAMP TO MEET RAMP SLOPE REQUIREMENT OF 8.33% OR LESS, THE RAMP SHALL BE EXTENDED TO A LENGTH OF 15 FEET TO MATCH EXISTING SIDEWALK. CROSS SLOPE OF RAMP SHALL BE 1.5%, ±0.5%.
7. TURNING SPACES SHALL BE 1.5%, ±0.5% SLOPE IN ANY DIRECTION. TURNING SPACES SHALL HAVE A MINIMUM 4'x4' TURNING AREA. TURNING SPACES, WITH A SIDEWALK CURB, SHALL HAVE A 5' TURNING AREA PERPENDICULAR TO THE SIDEWALK CURB.
8. FOR RETROFIT WORK, SLOPES TO BE DETERMINED IN FIELD BY CONTRACTOR AND APPROVED BY CITY INSPECTOR
9. RAMP EXTENSION AREA SHALL NOT BE USED AS TRANSITION TO EXISTING SIDEWALK. ANY TRANSITIONS REQUIRED TO MATCH RAMPS TO EXISTING SIDEWALK SHALL REQUIRE REMOVAL AND REPLACEMENT OF ADDITIONAL SIDEWALK BEYOND THE RAMP AREA. SIDEWALK TRANSITION LENGTH SHALL BE EQUAL TO OR GREATER THAN THE WIDTH OF THE EXISTING SIDEWALK. RAMP EXTENSIONS SHALL BE A CONTINUOUS SLOPE.
10. ALL SIDEWALK AND RAMP CONSTRUCTION SHALL MEET CURRENT PUBLIC RIGHT OF WAY ACCESSIBILITY GUIDELINES (PROWAG).



TYPE B SIDEWALK/SHARED-USE RAMP
Not to Scale

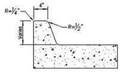


SECTION A–A

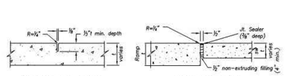


SECTION B–B SECTION C–C

TYPE A & B SIDEWALK RAMP
Not to Scale



SIDEWALK CURB DETAIL
Not to Scale



CONTRACTION JOINT ISOLATION JOINT

JOINT DETAILS
Not to Scale

CURB & GUTTER DETAIL AT RAMP
Not to Scale

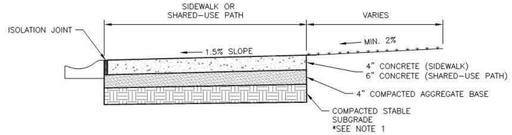
LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

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

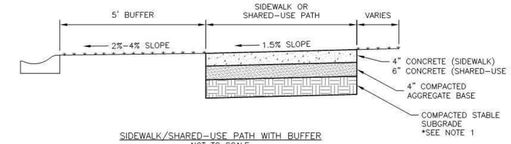
Sheet Name: ADA RAMP RETROFIT DETAIL

Drawn By: MJF
Checked By: DL
Date: 04/17
Proj. #:

GEN-3A



SIDEWALK/SHARED-USE PATH WITHOUT BUFFER
NOT TO SCALE



SIDEWALK/SHARED-USE PATH WITH BUFFER
NOT TO SCALE

GENERAL NOTES:

1. SUBGRADE MUST BE OF STABLE, COMPACTED EARTH AND SHALL BE OVERLAYED WITH 4" COMPACTED DENSE GRADED AGGREGATE BASE.
2. 1.5% CROSS SLOPE MUST BE MAINTAINED THROUGH DRIVEWAYS.
3. KCMMB 4K CONCRETE MIX SHALL BE REQUIRED FOR ALL SIDEWALKS/SHARED-USE PATHS OR AS APPROVED BY THE CITY INSPECTOR.
4. ALL SIDEWALK/SHARED-USE PATHS SHALL MEET CURRENT PUBLIC RIGHT OF WAY ACCESSIBILITY GUIDELINES (PROWAG).
5. AN ISOLATION JOINT SHALL BE PLACED AT A MAXIMUM OF 150 FT. CONSTRUCTION JOINTS SHALL BE PLACED THE SAME WIDTH OF SIDEWALK/SHARED-USE PATHS, BUT NO GREATER THAN 10 FT.
6. AN ISOLATION JOINT SHALL BE PLACED WHERE THE SIDEWALK/SHARED-USE PATHS MEETS A RESIDENTIAL DRIVEWAY.
7. SHARED-USE PATHS WIDTH SHALL BE 10 FT. WIDE.
8. SIDEWALK/SHARED-USE PATHS FINISHING SHALL BE FULL BROOM FINISH OR AS DIRECTED BY CITY INSPECTOR.
9. WHITE CURING COMPOUND MUST BE APPLIED UNIFORMLY TO THE CONCRETE SURFACE IMMEDIATELY AFTER FINAL FINISHING.

LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

SIDEWALK/SHARED-USE PATH DETAIL

Date: 04/17
Drawn By: MJF
Checked By: DL

GEN-2

Sheet
C21

Final Developement Plans

19-0141
Summit At West Pryor
Lee's Summit, Jackson, MO

Typical
Details-General

NO.	BY	CJD	DATE	REVISION
4.	JGW	DJB	10/01/19	Revised For Resubmittal
3.	JGD	DJB	09/10/19	Revised For FDP Submittal
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Renaissance Infrastructure Consulting
132 ABBIE AVENUE
KANSAS CITY, KANSAS 66103
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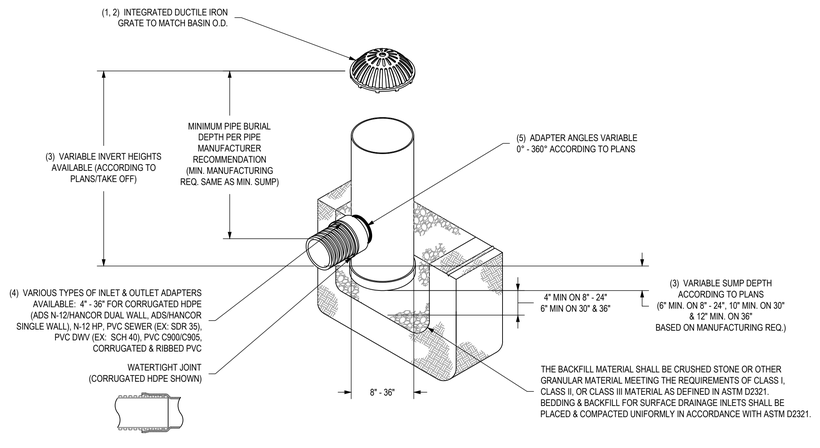
MO Certificate of Authority: E-2010033630

STATE OF MISSOURI
DUSTIN I. BURTON
NUMBER PE-2011013709
PROFESSIONAL ENGINEER
10/4/19

NYLOPLAST DRAIN BASIN WITH DOME GRATE



1 - 8" - 30" DOME GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - 8" & 10" DOME GRATES FIT ONTO THE DRAIN BASINS WITH THE USE OF A PVC BODY TOP. SEE DRAWING NO. 7001-110-045.
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065.
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER (4" - 36").
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
6 - 8" - 30" DOME GRATES HAVE NO LOAD RATING.

DRAWN BY EBC	MATERIAL	Nyloplast	3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com
DATE 03-25-10			
REVISED BY NMH	PROJECT NO./NAME	TITLE	DRAIN BASIN WITH DOME GRATE QUICK SPEC INSTALLATION DETAIL
DATE 06-12-18			
DWG SIZE A	SCALE 1:40 SHEET 1 OF 1	DWG NO. 7001-110-397	REV E

Section 2721

Engineered Surface Drainage Products

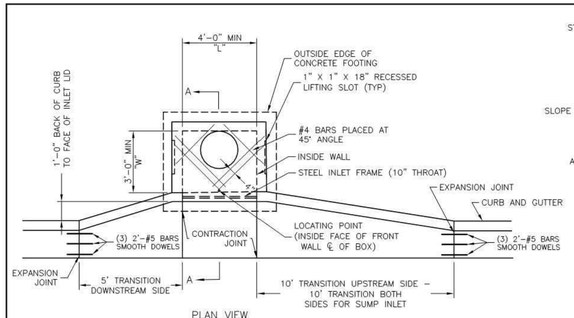
GENERAL
PVC surface drainage inlets shall include the drain basin type as indicated on the contract drawing and referenced within the contract specifications. The ductile iron grates for each of these fittings are to be considered an integral part of the surface drainage inlet and shall be furnished by the same manufacturer. The surface drainage inlets shall be as manufactured by Nyloplast a division of Advanced Drainage Systems, Inc., or prior approved equal.

MATERIALS
The drain basins required for this contract shall be manufactured from PVC pipe stock, utilizing a thermoforming process to reform the pipe stock to the specified configuration. The drainage pipe connection stubs shall be manufactured from PVC pipe stock and formed to provide a watertight connection with the specified pipe system. This joint tightness shall conform to ASTM D3212 for joints for drain and sewer plastic pipe using flexible elastomeric seals. The flexible elastomeric seals shall conform to ASTM F477. The pipe bell spigot shall be joined to the main body of the drain basin or catch basin. The raw material used to manufacture the pipe stock that is used to manufacture the main body and pipe stubs of the surface drainage inlets shall conform to ASTM D1784 cell class 12454.

The grates and frames furnished for all surface drainage inlets shall be ductile iron for structure sizes 8", 10", 12", 15", 18", 24", 30" and 36" and shall be made specifically for each basin so as to provide a round bottom flange that closely matches the diameter of the surface drainage inlet. Grates for drain basins shall be capable of supporting various wheel loads as specified by Nyloplast. 12" and 15" square grates will be hinged to the frame using pins. Ductile iron used in the manufacture of the castings shall conform to ASTM A536 grade 70-50-05. Grates and covers shall be provided painted black.

INSTALLATION
The specified PVC surface drainage inlet shall be installed using conventional flexible pipe backfill materials and procedures. The backfill material shall be crushed stone or other granular material meeting the requirements of class 1, class 2, or class 3 material as defined in ASTM D2321. Bedding and backfill for surface drainage inlets shall be well placed and compacted uniformly in accordance with ASTM D2321. The drain basin body will be cut at the time of the final grade. No brick, stone or concrete block will be required to set the grate to the final grade height. For load rated installations, a concrete slab shall be poured under and around the grate and frame. The concrete slab must be designed taking into consideration local soil conditions, traffic loading, and other applicable design factors. For other installation considerations such as migration of fines, ground water, and soft foundations refer to ASTM D2321 guidelines.

DRAWN BY CJA	MATERIAL	Nyloplast	3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com
DATE 3-10-00			
REVISED BY NMH	PROJECT NO./NAME	TITLE	8 IN - 36 IN DRAIN BASIN SPECIFICATIONS
DATE 02-21-18			
DWG SIZE A	SCALE 1:1 SHEET 1 OF 1	DWG NO. 7001-110-011	REV J



STEEL FRAME NOTES:
1. ALL WELDS SHALL BE PERFORMED IN ACCORDANCE WITH APPROPRIATE AWS SPECIFICATIONS AND PROCEDURES.
2. ALL WELDS ON EXPOSED SURFACES SHALL BE DRESSED SO AS TO PROVIDE A PLEASING FINISHED APPEARANCE.
3. THE ENTIRE FRAME SHALL BE PAINTED A SINGLE COAT OF CHEM–PRIME #37H–78 PRIMER (GRAY) OR EQUAL.

GENERAL NOTES:
1. THE FIRST DIMENSION LISTED IN THE CONSTRUCTION NOTES IS THE "L" DIMENSION. THE SECOND DIMENSION IS THE "W" DIMENSION.
2. FLOW LINES LISTED ON THE PROJECT PLANS ARE LISTED AT THE INSIDE FACE OF THE WALL.
3. FLOOR OF INLET GROUTED AND SHAPED TO MATCH PIPE INVERT TO PROVIDE SMOOTH FLOW.
4. LOCATE MH RING AND COVER ON BLANK WALL IF POSSIBLE.
5. STEPS SHALL BE SPACED AT 1'–4" O.C. VERTICALLY ON BLANK WALL IF POSSIBLE.
6. BEVEL ALL EXPOSED EDGES WITH ¾"CHAMFER OR ¾" TOOLED EDGE.
7. ON–GRADE INLETS SHALL CONFORM TO THE STREET GRADE AND SUMP INLETS SHALL BE LEVEL.
8. PRECAST LIDS SHALL BE PINNED, SEALED WITH NON–SHRINKABLE GROUT AND REMOVABLE FOR FUTURE MAINTENANCE.
9. LIFTING RINGS SHALL BE REMOVED AND SEALED WITH NON–SHRINKABLE GROUT
10. FOR RING AND COVER SEE THE STORMWATER APPROVED PRODUCT LIST.

LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

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

Project:
Sheet Name: CURB INLET DETAIL

Drawn By: MJF
Checked By: DL
Date: 04/17
Proj. #:

STM-1

STANDARD 24" MANHOLE COVER
MINIMUM WEIGHT = 160 LB
NOTE: PICK HOLES NOT SHOWN

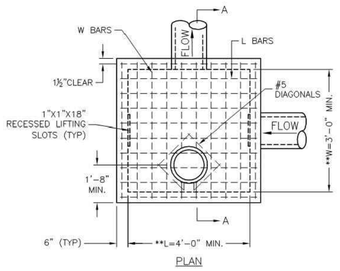
*COVER AND FRAME MODEL INFORMATION REFER TO THE STORMWATER APPROVED PRODUCT LIST.

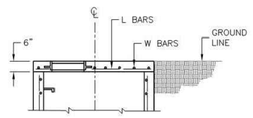
LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

STORM MANHOLE COVER DETAIL

Date: 04/17
Drawn By: MJF
Checked By: DL

STM-6

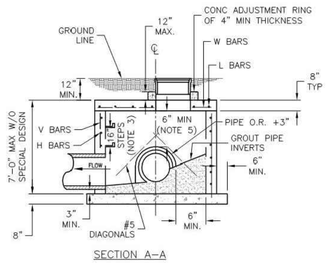


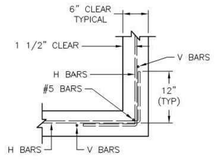


** INCREASE IN MULTIPLES OF 6" (7'–0") MAX WITHOUT SPECIAL DESIGN. (SEE PROJECT PLANS FOR DETAILS)

REINFORCING

BARS	BAR SIZE	SPACING (IN.)
H	4	12
V	4	12
L	5	6
W	5	6





GENERAL NOTES:
1. LOCATE RING AND COVER ON BLANK WALL.
2. USE ¾" CHAMFER STRIP OR ½" R EDGER TOOL ON ALL EXPOSED CONCRETE CORNERS.
3. STEPS REQUIRED AT 16" O.C. WHEN DEPTH FROM TOP OF CASTING TO INVERT EXCEEDS 4' ON BLANK WALL IF POSSIBLE.
4. BOXOUTS WILL NOT BE ALLOWED TO PROJECT THROUGH THE CORNERS OF THE STRUCTURE AND THE MINIMUM DISTANCE BETWEEN BOXOUTS IS 6".
5. THE MINIMUM REINFORCING SHALL BE 1 H–BAR OVER A CAST–IN–PLACE PIPE AND 2 H–BARS OVER A PRECAST BOXOUT.
8. PRECAST LIDS SHALL BE PINNED, SEALED WITH NON–SHRINKABLE GROUT AND REMOVABLE FOR FUTURE MAINTENANCE.
9. REINFORCING OF COVERS IN STREETS REQUIRE SPECIAL DESIGN.
10. FOR RING AND COVER SEE THE STORMWATER APPROVED PRODUCT LIST.

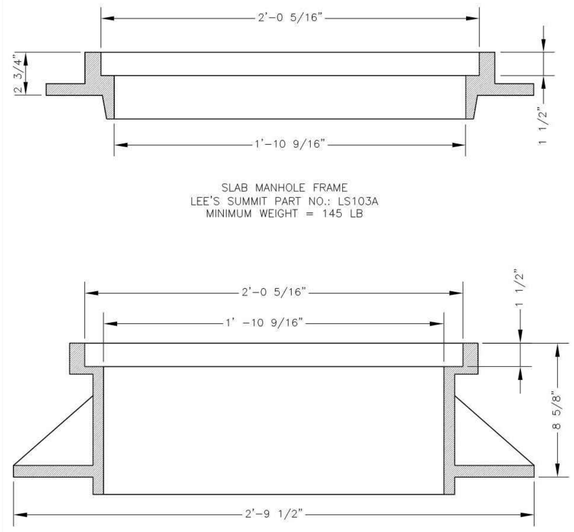
LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

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

Project:
Sheet Name: JUNCTION BOX DETAIL

Drawn By: MJF
Checked By: DL
Date: 04/17
Proj. #:

STM-3



*COVER AND FRAME MODEL INFORMATION REFER TO THE STORMWATER APPROVED PRODUCTS LIST.

LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

STORM MANHOLE FRAME DETAIL

Date: 04/17
Drawn By: MJF
Checked By: DL

STM-7

Sheet
C22

Final Developement Plans

19-0141
Summit At West Pryor
Lee's Summit, Jackson, MO

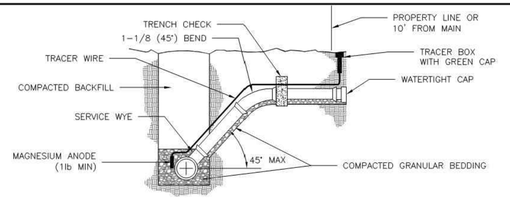
Typical
Details-Storm

NO.	BY	DATE	REVISION
4.	JGW	DJB	10/01/19	Revised For Resubmittal
3.	JGD	DJB	09/10/19	
2.	JGD	DJB	07/31/19	Revised For FDP Submittal
1.	JGD	DJB	07/26/19	Issued For Bid
				Original Submittal

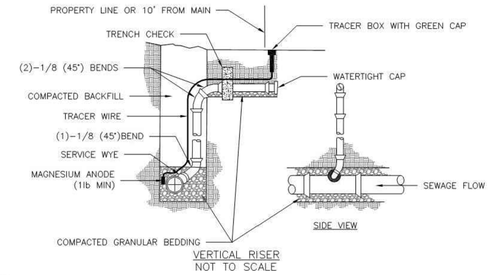
Renaissance Infrastructure Consulting
132 ABBIE AVENUE
KANSAS CITY, KANSAS 66103
913.317.9500
WWW.RIC-CONSULT.COM

MO Certificate of Authority: E-2010033630

STATE OF MISSOURI
DUSTIN J. BURTON
NUMBER PE-2011015709
PROFESSIONAL ENGINEER
12/7/19



STANDARD INSTALLATION
NOT TO SCALE



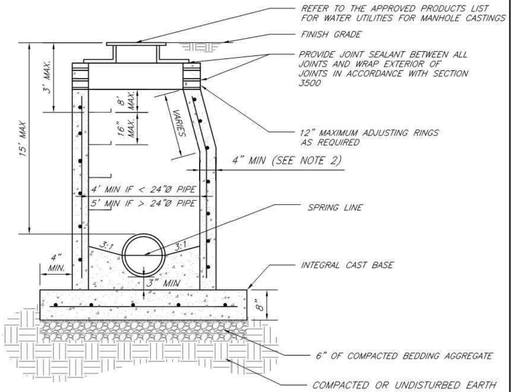
VERTICAL RISER
NOT TO SCALE

NOTES:
1. ALL SEWER STUBS SHALL BE CONSTRUCTED TO PROPERTY LINE OR 10' MINIMUM FROM THE MAIN. WHERE SIDEWALKS ARE PRESENT, CONTRACTOR SHALL EXTEND SERVICE LINE UNDER EXISTING SIDEWALK TO TWO FEET BEYOND.
2. ALL NEW CONSTRUCTION OFF SEWER STUBS SHALL BE TEMPORARILY MARKED WITH A MARKING STAKE, 36" ABOVE GROUND AND PAINTED GREEN.
3. IMPERVIOUS TRENCH CHECKS SHALL BE PLACED ON BUILDING SEWER STUBS (AT LEAST 5' AWAY FROM THE SANITARY SEWER MAIN).
4. TRENCH CHECKS ON THE BUILDING SEWER STUBS SHALL EXTEND 6" BELOW THE BOTTOM OF THE PIPE. LENGTH SHALL BE A MINIMUM OF 12". THE HEIGHT OF THE TRENCH CHECK SHALL EXTEND 12" ABOVE THE TOP OF THE PIPE. THE WIDTH OF THE TRENCH CHECK SHALL BE THE WIDTH OF THE TRENCH.
5. SEE SPECIFICATION SECTION 2100 FOR SEWER MAIN BEDDING AND BACKFILL.
6. #12 GAUGE GREEN INSULATED COPPER TRACER WIRE SHALL BE INSTALLED. TRACER WIRE TERMINAL BOXES SHALL BE INSTALLED DIRECTLY ABOVE THE SEWER SERVICE OR AS DETERMINED BY THE ENGINEER.
7. FOR SERVICES, TRACER WIRE SHALL RUN FROM THE WYE AND TERMINATE IN A FLUSH MOUNTED TRACER BOX WITH A GREEN CAST IRON LOCKABLE TOP. WIRE SHALL BE TAPED OR TIED TO THE PIPE AT 5' INTERVALS.
8. TRACER WIRE BOX SHALL BE INSTALLED WITHIN 1.0' OF PROPERTY LINE.
9. THE TRACER WIRE SHALL REMAIN CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. SPLICES IN THE TRACER WIRE SHOULD BE MADE WITH SPLIT BOLT CONNECTORS. WIRE NUTS SHALL NOT BE USED. A WATER-PROOF CONNECTION IS NECESSARY TO PREVENT CORROSION.

LEE'S SUMMIT
MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

BUILDING SEWER STUB AND RISER

Date: 04/17
Drawn By: MJF
Checked By: DL
SAN-1

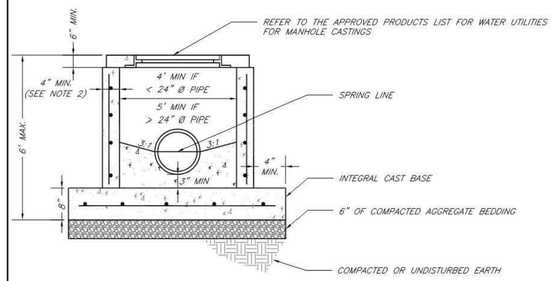


NOTES:
1. PRECAST CONCRETE MANHOLES SHALL CONFORM TO ASTM C478 EXCEPT AS MODIFIED BY THE SPECIFICATIONS.
2. A WALL THICKNESS NOT LESS THAN ONE-TWELFTH (1/12) OF THE INSIDE DIAMETER OR 4", WHICHEVER IS GREATER, SHALL BE USED WHEN THE MANHOLE DEPTH IS LESS THEN 15'.
3. WATERPROOFING SHALL BE REQUIRED ON THE OUTSIDE OF MANHOLES. THE WATERPROOFING SHALL CONSIST OF A TOTAL DRY FILM THICKNESS OF NOT LESS THAN 14 MILS OF BITUMINOUS COATING.
4. ONLY ECCENTRIC MANHOLE CONES WILL BE ALLOWED UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
5. THE FILL CONCRETE FLOW CHANNEL FOR SIDE BRANCHES SHALL BE PLACED TO PROVIDE A SMOOTH TRANSITION INTO THE FLOW LINE.
6. REFER TO THE APPROVED PRODUCTS LIST FOR WATER UTILITIES FOR APPROVED MANHOLE GASKET MODELS.
7. REFER TO THE APPROVED PRODUCTS LIST FOR APPROVED STEPS.

LEE'S SUMMIT
MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

STANDARD PRECAST MANHOLE – SANITARY SEWER

Date: 02/13
Drawn By: JN
Checked By: DL
FILE: SAN-2
Rev: 1/14
Rev:



ELEVATION

NOTES:
1. PRECAST CONCRETE MANHOLES SHALL CONFORM TO ASTM C478 EXCEPT AS MODIFIED BY THE SPECIFICATIONS.
2. A WALL THICKNESS NOT LESS THAN ONE-TWELFTH (1/12) OF THE INSIDE DIAMETER OR 4", WHICHEVER IS GREATER SHALL BE USED.
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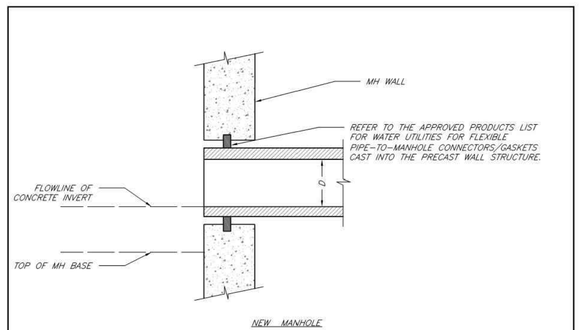
4. THE FILL CONCRETE FLOW CHANNEL FOR SIDE BRANCHES SHALL BE PLACED TO PROVIDE A SMOOTH TRANSITION INTO THE FLOW LINE.
5. REFER TO THE APPROVED PRODUCTS LIST FOR WATER UTILITIES FOR MANHOLE GASKET MODELS.
6. PROVIDE STEPS AS SHOWN ON THE APPROVED PRODUCTS LIST FOR MANHOLE DEPTHS GREATER THAN 4'.

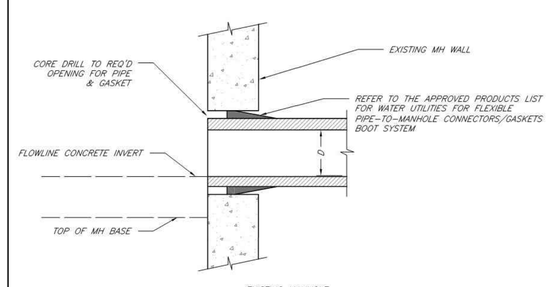
LEE'S SUMMIT
MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

SHALLOW PRECAST MANHOLE – SANITARY SEWER

Date: 02/13
Drawn By: JN
Checked By: DL
FILE: SAN-3
Rev: 1/14
Rev:



NEW MANHOLE



EXISTING MANHOLE

LEE'S SUMMIT
MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

MANHOLE WALL CONNECTIONS

Date: 02/13
Drawn By: JN
Checked By: DL
FILE: SAN-5
Rev: 1/14
Rev:

Sheet
C23

Final Developement Plans

19-0141
Summit At West Pryor
Lee's Summit, Jackson, MO

Typical
Details-Sanitary

NO.	BY	CD	DATE	REVISION
4.	JGW	DJB	10/01/19	Revised For Resubmittal
3.	JGD	DJB	09/10/19	Revised For FDP Submittal
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1.	JGD	DJB	07/26/19	Original Submittal

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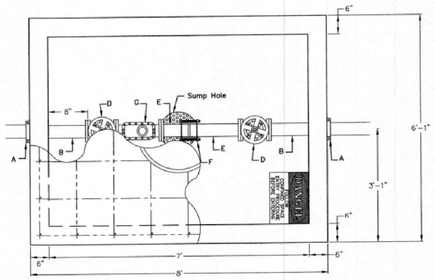
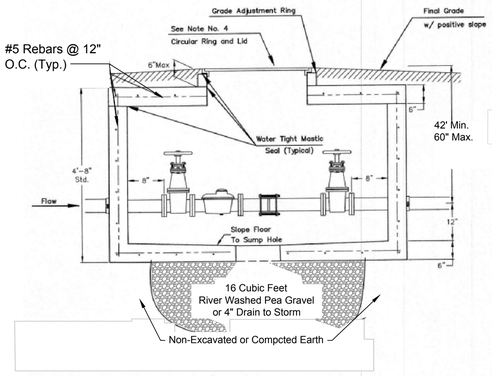
www.RIC-CONSULT.COM
MO Certificate of Authority: E-2010033630

STATE OF MISSOURI
DUSTIN J. BURTON
NUMBER PE-2010137709
PROFESSIONAL ENGINEER
12/11/19





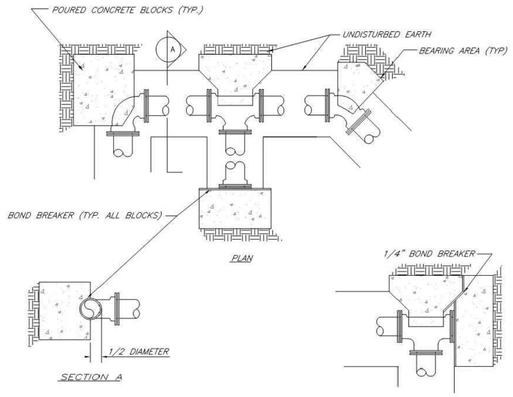
A. - 6" Mega Lug (See Note 7)
B. - Min. 3' Piece of 6" DIP
C. - (Not Used)
D. - 4" Flange Non-rising Stem Gate Wheel Valve*
E. - 4" DIP
F. - 4" Flex Coupling**
G. - 4" Lee's Summit Meter
H. - 6"x4" fl Reducer**

4" Domestic Service and Vault Detail

REQUIRED CONCRETE BEARING AREA (SQUARE FEET - SF)

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

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

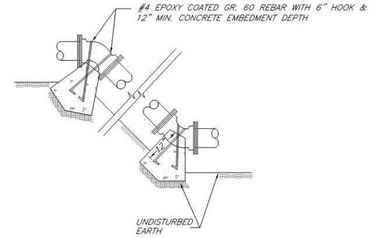


	LEE'S SUMMIT MISSOURI	Date: 02/13
LS	PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063	Drawn By: JN
	HORIZONTAL THRUST BLOCKS	Checked By: DL
		FILE: WAT-1
		Rev: 1/14
		Rev:

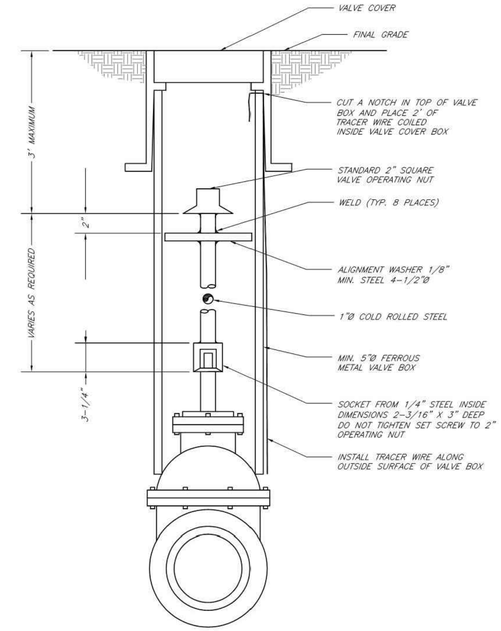
REQUIRED CONCRETE VOLUME (CUBIC FEET - CF)

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

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



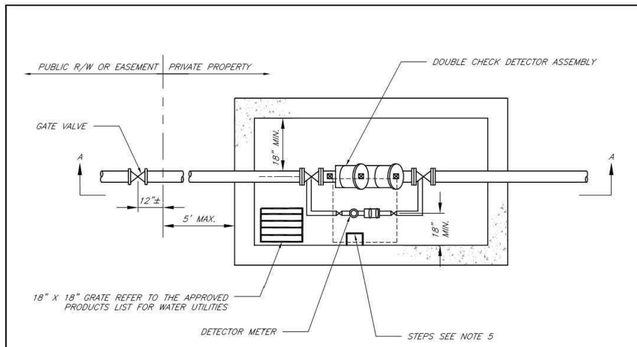
	LEE'S SUMMIT MISSOURI	Date: 02/13
LS	PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063	Drawn By: JN
	VERTICAL THRUST BLOCKS	Checked By: DL
		FILE: WAT-2
		Rev: 1/14
		Rev:

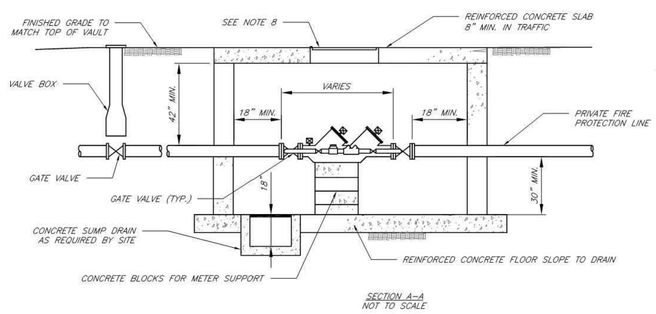


	LEE'S SUMMIT MISSOURI	Date: 02/13
LS	PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063	Drawn By: JN
	VALVE STEM EXTENSION AND VALVE BOX	Checked By: DL
		FILE: WAT-9
		Rev: 1/14
		Rev:

NOTES FOR WATER SERVICE

1. When the standard vault dimensions are not aplicable, such as when additional space is required for special pipe , fittings, additional meters, etc. the Contractor shall design a vault with the required dimensions for Lee's Summit Water Service approval.
2. The vault shall be poured concrete, cement blocks (voids to be copletely filled with 4k KCMMB concrete), or approved precast structure. the intent of these details shall not be limited by drawings or standardsof precast structures.
3. Any vault located in pavement areas must be traffic rated.
4. The manhole ring and lid shall be Neenah R-6034 fraame with type "C" solid lid and Drop Down Handle or US Foundry APS-30x30 (Aluminum) or Deeter 1261 of EJ 1936z1. Where applicable the standard meter reading lid and ring shall be located directly above water meter register. All joints of concrete to concrete or metal to concrete in the constructionof the vault shall have an approved water mastic joint seal.
5. Any fittings or apputenances required to achieve proper elevation of pipe through the vault shall be provide by the Contractor, such fittings shall be a minimum of 2' from the exterior wall of vault.
6. For all domestic sservices larger than 3" the Contractor shal provide an outlet flange connection as shown8" from the inside wall. Inlet and outlet sleeves shall be provided and installed by the Contractor and shall be in alignment with one another. the inlet and outlet pipe shall be continuous through vault and joint no less than 2' from the exterior wall of vault. Flanges of inlet and outlet pipe shall be in proper alignment and bolt pattern shall be rotated in such a way tha valvess and other fittings shall be in their proper vertical alignmentwhen installed.
7. For all services 4" and larger the Contractor shall install a mega lug, restrained joint, or approvedd equal on the exterior walls of the vault, which shall be manufactured of ductile iron conforming ASTM A 536-80, heat treate to a minimum hardness of 370BHN and have a working pressure of at least 250 P.S.I. For a service smaller than 4" the contractor shall install an approved vault clamp on the exterior walls of the vault.
8. All valves, meters, assemblies and fittings shall be provided with sufficient concrete or other approved supports to the vault floor.
9. The "Confined Space Warning" sign shall be fastened to thr top of all vaults. If necessary for landscaping or site consideration, the sign may be fastened to the vault lid if it does not impede access to the handle. Accetable materials : Aluminum 73415HH , Plastic 73415HH or S.A. Vinyl 73463HH.
10. All meters shall have an electric read register compatible with the current City of Lee's Summit meter reading system.



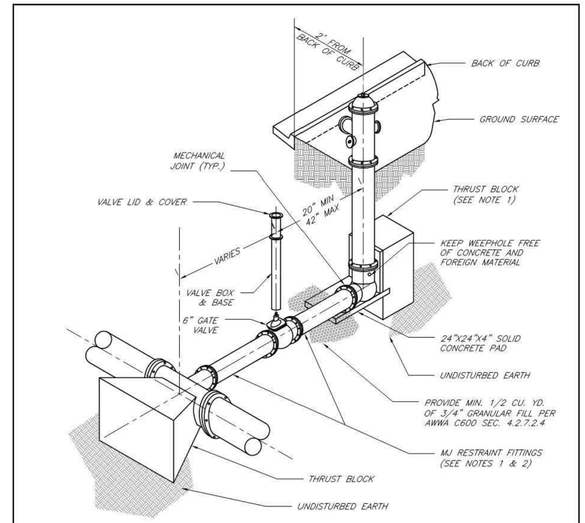


GENERAL NOTES:
1. METER VAULT WALLS TO BE POURED OR PRECAST CONCRETE. METER VAULT ROOF TO BE REINFORCED CONCRETE WITH OPENING CENTERED OVER DETECTOR METER. REINFORCED WALLS AND SLABS ARE TO BE DESIGNED BY THE OWNER'S ENGINEER OR PRECAST ENGINEER.
2. METER VAULT TO BE LOCATED, WHEN POSSIBLE, OUTSIDE TRAFFIC AREA AND WHERE SURFACE WATER WILL NOT DRAIN INTO IT. PROVIDE CONCRETE SUMP TO DRAIN TO AN ABOVE GROUND DISCHARGE POINT.
3. ALL PIPE AND FITTINGS FROM THE CITY WATER MAIN THROUGH THE VAULT SHALL BE PROVIDED WITH RESTRAINED JOINT FITTINGS.
4. ALL FITTINGS FOR THE DETECTOR METER TO BE BRASS.
5. STEPS SHALL BE IN ACCORDANCE WITH THE APPROVED PRODUCTS LIST FOR WATER UTILITIES AND SHALL BE ON 16" CENTERS.
6. A DEPARTMENT OF NATURAL RESOURCES APPROVED DOUBLE CHECK DETECTOR ASSEMBLY BACKFLOW PREVENTER MUST BE USED. FOR A COPY OF THE MISSOURI DEPARTMENT OF NATURAL RESOURCES APPROVED BACKFLOW PREVENTION ASSEMBLIES, CONTACT WATER UTILITIES AT 816-969-1900.
7. ALL VALVES SHALL HAVE RISING STEMS.
8. MANHOLE COVER SHALL BE A BILCO K-1 MODEL UNLESS IN A VEHICLE TRAFFIC AREA. SEE THE APPROVED PRODUCTS LIST FOR WATER UTILITIES FOR TRAFFIC CONDITIONS. THE COVER SHALL HAVE A 1-3/4" ø HOLE DRILLED FOR A TOUCH/READ DEVICE.
9. A MINIMUM OF 18" CLEARANCE SHALL BE PROVIDED AROUND ALL PIPING, VALVES, APPURTENANCES, ETC.
10. CONTACT PUBLIC WORKS ENGINEERING FOR VAULTS THAT INCLUDE A FIRE DEPARTMENT CONNECTION OR A 3" OR LARGER METER.

CITY OF LEE'S SUMMIT, MO
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
220 SE GREEN STREET
LEE'S SUMMIT, MO 64063

Project: STANDARD DRAWINGS
Sheet Name: VAULT FOR DOUBLE CHECK DETECTOR CHECK

Drawn By: AS
Checked By: DL
Date: 1/14
Rev: 1/14
of
WAT-12



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

	LEE'S SUMMIT MISSOURI	Date: 02/13
LS	PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063	Drawn By: JN
	HYDRANT INSTALLATION - STRAIGHT SET	Checked By: DL
		FILE: WAT-7
		Rev: 1/14
		Rev:

Sheet
C24

Final Developement Plans

19-0141
Summit At West Pryor
Lee's Summit, Jackson, MO

Typical
Details-Water

NO.	BY	DATE	REVISION
4.	JGW	10/01/19	Revised For Resubmittal
3.	JGD	09/10/19	Revised For FDP Submittal
2.	JGD	07/31/19	Issued For Bid
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STATE OF MISSOURI
DUSTIN L. BURTON
NUMBER PE-2010137709
PROFESSIONAL ENGINEER
12/1/19

Stripe Curb
"Fire Lane No Parking"
Per Lee's Summit Fire Code

B2 B3 B4 B5 B6 N1 N2 Q1 Q2 L1 L2 L2.1 L3 L4 A5 A6 A7 A7.1 A8 A9

30'

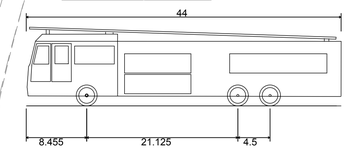
38'

Proposed FDC
Location

FDC

Stripe Curb
"Fire Lane No Parking"
Per Lee's Summit Fire Code

Truck Model Specifications



44' Aerial Apparatus	
Overall Length	44.000ft
Overall Width	8.000ft
Overall Body Height	11.000 ft
Min Body Ground Clearance	1.400ft
Track Width	8.000ft
Lock-to-lock time	4.00s
Max Wheel Angle	45.00°

FT Scale
1" = 10'

Legend
Apparatus Road
Hydrant

NORTH
1"=40'
0 20' 40'

Sheet
C25

Final Developement Plans
19-0141
Summit At West Pryor
Lee's Summit, Jackson, MO

Fire Truck Turning Plan

NO	BY	DATE	REVISION
4.	JGW	DJB	10/01/19	Revised For Resubmittal
3.	JGD	DJB	09/10/19	Revised For FDP Submittal
2.	JGD	DJB	07/31/19	Issued For Bid
1.	JGD	DJB	07/26/19	Original Submittal

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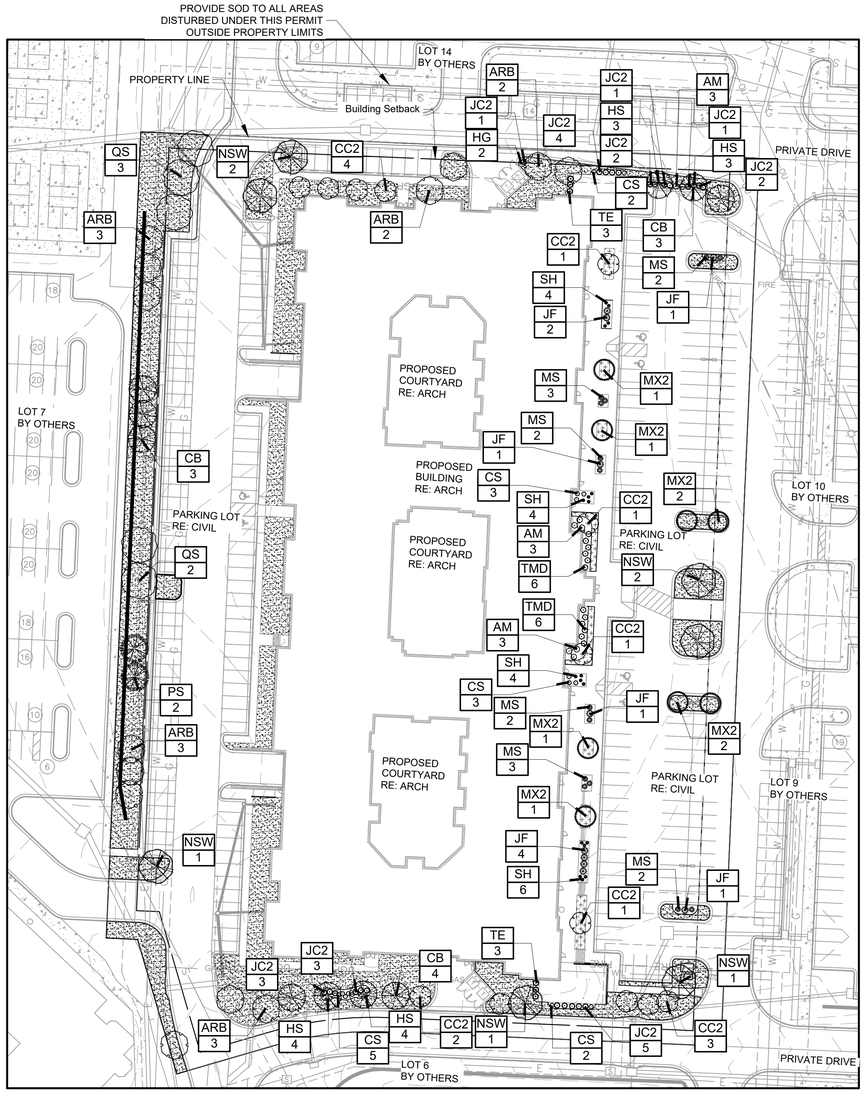
KS Certificate of Authority: E-1814

STATE OF MISSOURI
DUSTIN J. BURTON
NUMBER PE-2011015709
PROFESSIONAL ENGINEER
10/7/19

Oct 04, 2019-11:37am
Z:\RIC Design\2019\19-0141\Dwg\Sheets\FDPs\C25 We Will Name it Fire, Fire, something.dwg



PLANT SCHEDULE

TREES	BOTANICAL / COMMON NAME	CONT	CAL	SIZE	QTY
ARB	Acer rubrum `Autumn Blaze` / Autumn Blaze Red Maple	B&B	3" Cal.		13
CB	Carpinus betulus `Fastigiata` / Pyramidal European Hornbean	B&B	3" Cal.		10
CC2	Cercis canadensis `Forest Pansy` TM / Forest Pansy Redbud	B&B	3" Cal.		13
MX2	Malus x `Spring Snow` / Spring Snow Crab Apple	B&B	3" Cal.		8
NSW	Nyssa sylvatica `Wildfire` / Black Gum	B&B	3" Cal.		7
PS	Pinus strobus / White Pine	B&B		6` Ht. Min.	2
QS	Quercus shumardii / Shumard Red Oak	B&B	3" Cal.		5

SHRUBS	BOTANICAL / COMMON NAME	CONT	.	.	QTY
AM	Aronia melanocarpa `Morton` TM / Iroquis Beauty Black Chokeberry	5 Gal.			9
CS	Cornus stolonifera `Arctic Fire` / Arctic Fire Dogwood	5 Gal.			15
HS	Hemerocallis x `Stella de Oro` / Stella de Oro Daylily	1 Gal.			14
HG	Hypericum frondosum / Golden St. John`s Wort	3 Gal.			2
JC2	Juniperus chinensis `Gold Lace` / Gold Lace Juniper	5 Gal.			22
JF	Juniperus chinensis `Sea Green` / Sea Green Juniper	5 Gal.			10
MS	Miscanthus sinensis `Gracillimus` / Maiden Grass	5 Gal.			14
SH	Sporobolus heterolepis / Prairie Dropseed	3 Gal.			18
TMD	Taxus x media `Densiformis` / Dense Yew	5 Gal.			12
TE	Thuja occidentalis `Emerald` / Emerald Arborvitae	5 Gal.			6

GROUND COVERS	BOTANICAL / COMMON NAME	CONT	SPACING	QTY
	Liriope muscari `Big Blue` / Creeping Lily Turf	1 Gal.	24" o.c.	352
	Turfgrass Sod Fescue Mix; RE: Notes / Fescue Sod	SOD		34,567 sf

LANDSCAPE DATA - LOT 8

Open Yard Area - 161,502sf Total Lot Area - 268,862sf Building Area - 107,360sf
Required Trees: 1 / 5,000sf Open Yard Area = 32.30 Provided Trees: 33
Required Shrubs: 2 / 5,000sf Total Lot Area = 64.6 Provided Shrubs: 85

Parking Lot Screening - no street frontage
Required Hedge: N/A Provided Hedge: N/A

Parking Lot Interior - 103,132sf
Island Area: minimum 5% of lot = 5,156.6sf Provided: 5,225sf

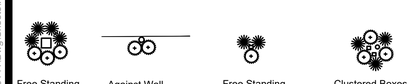
Street Trees - Private Drives
North Drive - 355'
Required Trees: 1 / 30' = 11.83 Provided: 12 Trees
Required Shrubs: 1 / 20' = 17.75 Provided: 18 Shrubs

South Drive - 375'
Required Trees: 1 / 30' = 12.5 Provided: 13 Trees
Required Shrubs: 1 / 20' = 18.75 Provided 19 Shrubs

LANDSCAPE NOTES

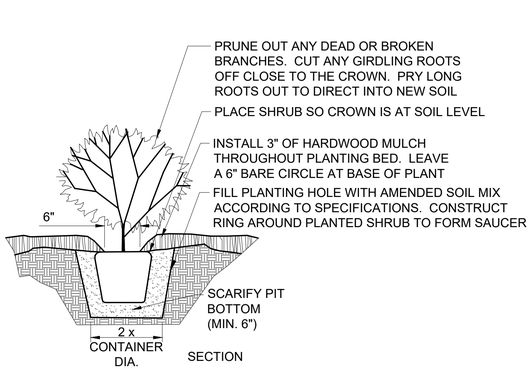
1. LOCATE UTILITIES PRIOR TO COMMENCING LANDSCAPE OPERATIONS. ALL TREES SHALL BE FIELD POSITIONED AS TO AVOID CONFLICTS WITH EXISTING AND PROPOSED UTILITIES. NOTIFY LANDSCAPE ARCHITECT OF ANY CONFLICTS OR OBSTRUCTIONS.
2. CONTRACTOR SHALL STAKE ALL PLANTING AREAS IN THE FIELD PRIOR TO PLANTING FOR APPROVAL OF THE OWNER OR THEIR REPRESENTATIVE.
3. CONTRACTOR SHALL VERIFY ALL PLANT QUANTITIES PRIOR TO PLANTING. ANY DISCREPANCIES WITH THE PLAN SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT. THE PLAN QUANTITIES SHALL SUPERCEDE SCHEDULED QUANTITIES.
4. ALL PLANT MATERIAL SHALL BE SPECIMEN QUALITY AND SHALL COMPLY WITH RECOMMENDATIONS AND REQUIREMENTS OF ANSI Z60.1 THE 'AMERICAN STANDARD FOR NURSERY STOCK'.
5. ALL PLANTING BEDS & NATIVE GRASS STANDS SHALL BE EDGED AS SHOWN IN PLAN.
6. PREPARE PLANTING BEDS AND INCORPORATE AMENDMENTS ACCORDING TO PLANS.
7. SHREDDED HARDWOOD MULCH, PER SPECIFICATIONS SHALL BE USED AS A THREE INCH (3") TOP DRESSING IN ALL PLANTING BEDS AND AROUND ALL TREES. SINGLE TREES AND SHRUBS SHALL BE MULCHED TO THE OUTSIDE EDGE OF THE SAUCER OR LANDSCAPE ISLAND.
8. ALL TREES SHALL BE STAKED PER DETAIL.
9. ALL PLANT MATERIAL SHALL BE INSTALLED TO ALLOW A ONE FOOT (1') CLEARANCE BETWEEN PLANT AND ADJACENT PAVEMENT.
10. THE LANDSCAPE CONTRACTOR SHALL NOT COMMENCE WORK UNTIL THE SITE IS FREE OF DEBRIS CAUSED BY ON-GOING CONSTRUCTION OPERATIONS. REMOVAL OF DEBRIS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. LANDSCAPE WORK SHALL NOT BEGIN UNTIL THE LANDSCAPE ARCHITECT AND OWNER HAVE GIVEN WRITTEN APPROVAL FOR SUCH. THERE SHALL BE NO DELAYS DUE TO LACK OF COORDINATION FOR THIS ACTIVITY.
11. THE LANDSCAPE ARCHITECT AND OWNER SHALL APPROVE GRADES AND CONDITION OF SITE PRIOR TO SODDING/SEEDING OPERATIONS.
12. ALL AREAS DISTURBED DURING THIS CONSTRUCTION AND NOT DESIGNATED FOR OTHER PLANTINGS OR HARDSCAPE SHALL BE SODDED WITH TURF TYPE FESCUE.
15. ALL LANDSCAPE AREAS SHALL BE IRRIGATED. TURF AREAS SHALL BE IRRIGATED BY SPRAY OR ROTOR. PLANT BEDS SHALL BE IRRIGATED BY DRIP IRRIGATION. IRRIGATION SYSTEM SHALL INCLUDE AUTOMATIC RAIN-SENSOR DEVICE. IRRIGATION SHOP DRAWINGS SHALL BE PROVIDED BY THE CONTRACTOR FOR APPROVAL PRIOR TO CONSTRUCTION.

NOTES:
1. TREES THAT DO NOT MEET THE SIZE REQUIREMENT WILL BE REJECTED
2. TREES SHALL BE INSPECTED BY OWNERS REPRESENTATIVE PRIOR TO INSTALLATION.



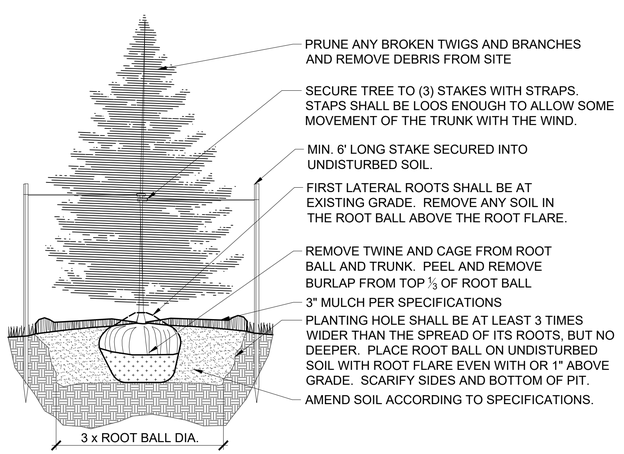
UTILITY BOXES SHALL BE CLUSTERED AS MUCH AS POSSIBLE

TYPICAL UTILITY BOX SCREENING DETAILS - NTS

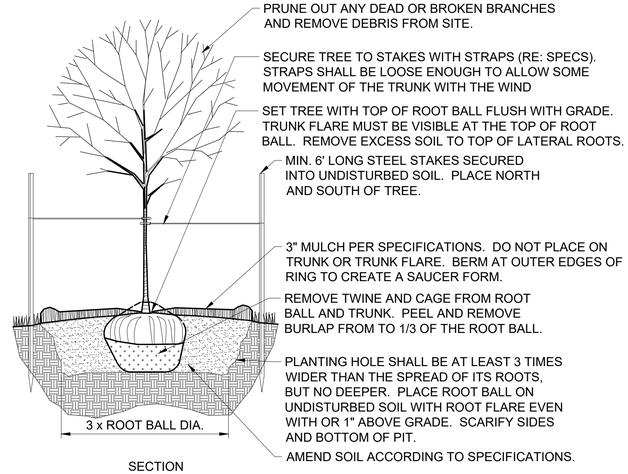


NOTES:
1. REFER TO SPECIFICATIONS FOR TOPSOIL BACKFILL MIX.
2. CONTRACTOR TO WATER THOROUGHLY AFTER PLANTING
3. INSTALLATION TO BE IN ACCORDANCE WITH PLANTING SPECIFICATIONS

SHRUB PLANTING DETAIL - NTS



EVERGREEN TREE PLANTING DETAIL - NTS



DECIDUOUS TREE PLANTING DETAIL - NTS

Sheet
L01

Final Development Plans

19-0141
Summit at West Bryor
Lee's Summit, Jackson, Missouri

Landscape Plan

NO	BY	CD	DATE	REVISION
4.	JMM	AG	10/02/19	REVISED FDP SUBMITTAL
3.	JMM	AG	08/11/19	REVISED FDP SUBMITTAL
2.	JMM	AG	07/31/19	REVISED FDP SUBMITTAL
1.	JMM	AG	07/26/19	ORIGINAL SUBMITTAL

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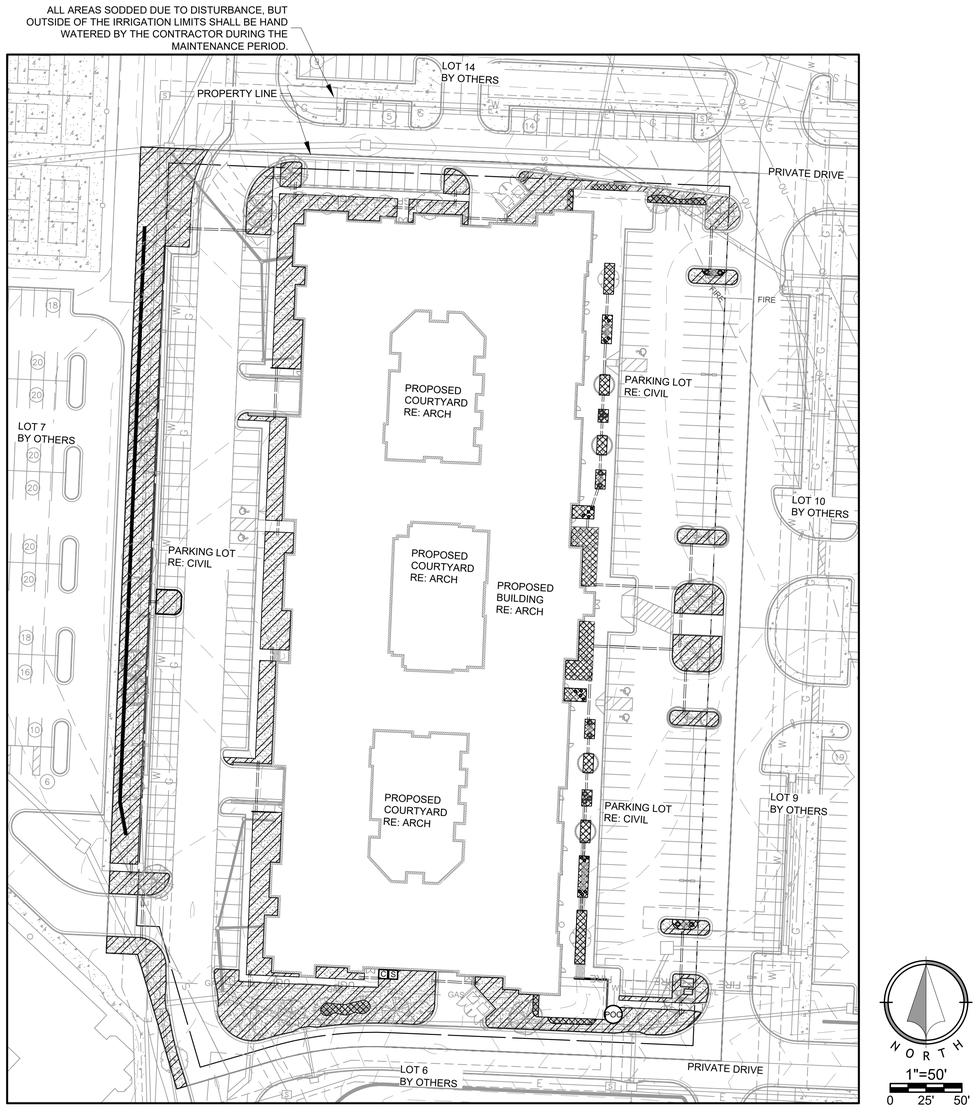
Kansas City, Kansas 66103
KS Certificate of Authority: E-1814

STATE OF MISSOURI
T. ANDREW GAMBERT
NUMBER LA-2007013278
LANDSCAPE ARCHITECT
10-02-19



LEGEND

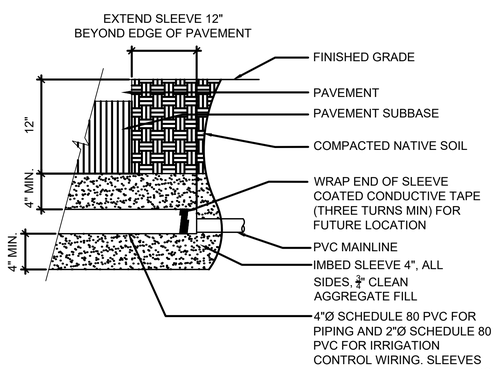
- Drip Irrigation Area
- Spray/Rotor Irrigation Area
- Irrigation Sleeve
- POC — Point of Connection
- WS — Weather Sensor
- IC — Controller

IRRIGATION NOTES:

1. THIS PLAN IS GRAPHICAL IN NATURE AND ONLY REPRESENTS THE IRRIGATION COVERAGE AND TYPE. THE IRRIGATION CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AN IRRIGATION SHOP DRAWING FOR APPROVAL PRIOR TO CONSTRUCTION. THE IRRIGATION CONTRACTOR SHALL BE RESPONSIBLE FOR ALL IRRIGATION TAPS, CONNECTIONS, ROUTING AND ELECTRICAL SUPPLY. REFER TO IRRIGATION SPECIFICATIONS, SHEET L05.

2. REFER TO SHEET L01 FOR GENERAL NOTES & DETAILS.

3. REFER TO SHEETS L03-L05 FOR SPECIFICATIONS.



SLEEVE NOTES

1. IRRIGATION SLEEVES SHALL BE INSTALLED AS A PAIR OF SLEEVES AT EACH LOCATION AND SHALL BE INSTALLED BENEATH PROPOSED ROADWAY AND PARKING AREAS PRIOR TO BEGINNING SURFACE CONSTRUCTION.

2. PIPE SLEEVE TO BE 4"Ø SCHEDULE 80 PVC FOR PIPING AND 2"Ø SCHEDULE 80 PVC FOR IRRIGATION CONTROL WIRING.

3. IMBED PIPE 4", ALL SIDES, WITH ¾" CLEAN AGGREGATE FILL. ALLOW 48 HOURS TO SETTLE; BACKFILL & COMPACT WITH NATIVE SOIL.

4. MINIMUM TRENCH WIDTH TO BE 12".

5. CONTRACTOR SHALL INSTALL IRRIGATION SLEEVES IN ACCORDANCE WITH APPLICABLE MISSOURI PLUMBING CODES AND JOPLIN LOCAL UTILITY AND WATER MANAGEMENT DISTRICT REGULATIONS.

6. CONTRACTOR SHALL MARK ALL SLEEVE LOCATIONS AT EACH END TO AID FUTURE IRRIGATION INSTALLATION. CONTRACTOR SHALL BE RESPONSIBLE FOR DOCUMENTING AND MAINTAINING ALL SLEEVE LOCATIONS AND MARKERS DURING THE CONSTRUCTION PERIOD.

7. COATED CONDUCTIVE TAPE SHALL BE INSTALLED DIRECTLY ABOVE THE SLEEVE AND SHALL BE PRE-PRINTED WITH REPEATED WARNINGS: "CAUTION WATER LINE BURIED BELOW", OR AS OTHERWISE APPROVED BY THE PROJECT ENGINEER.

8. SLEEVES ARE ALWAYS INSTALLED AS A PAIR.

9. CONTRACTOR SHALL COORDINATE WITH EXISTING IRRIGATIONS SYSTEM AND NEW CONSTRUCTION AREAS TO ENSURE ALL LANDSCAPE AREAS ARE COVERED WITH IRRIGATION.

Sheet
L02

Final Development Plans

19-0141
Summit at West Bryor
Lee's Summit, Jackson, Missouri

Irrigation Coverage Plan

NO	BY	CD	DATE	REVISION
4.	JMM	AG	10/02/19	REVISED FDP SUBMITTAL
3.	JMM	AG	09/11/19	REVISED FDP SUBMITTAL
2.	JMM	AG	07/31/19	REVISED FDP SUBMITTAL
1.	JMM	AG	07/26/19	ORIGINAL SUBMITTAL

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T. ANDREW GABBERT
NUMBER LA-2007013278
LANDSCAPE ARCHITECT
10-02-19

SECTION 329300 LANDSCAPING - PLANTS

PART 1 - GENERAL

1.01 SUMMARY:

A. This Section includes the following:
1. Furnishing trees, shrubs & plants.
2. Preparation of planting pits and beds, including excavation, backfilling, and disposal of surplus and unsuitable excavated material.
3. Planting of plants (trees, shrubs, groundcovers, vines & perennials), including fertilizing, mulching, trimming, guying, and wrapping.
4. Maintenance of plants.

1.02 REFERENCE:

B. Applicable Standards:
1. American National Standards Institute (ANSI):
a. Z60.1 _ Nursery Stock.

1.03 SUBMITTALS:

A. General: Upon completion of the installation, deliver to Landscape Architect the following in accordance with the Conditions of the Contract and Division I Specification Sections.

B. Include, but not limited to, the following:
1. Product Certification: Certificate of inspection as may be required by governing authorities. For standard products, submit manufacturer's certified analysis. For other materials, submit analysis by a recognized laboratory made in accordance with methods established by Association of Official Agricultural Chemists, wherever applicable.
2. Manufacturers Literature: Submit three (3) copies of fertilizer manufacturer's literature along with schedule of maintenance program spanning the life of the guarantee and three (3) copies of a recommended post guarantee maintenance program.
3. Label data substantiating that trees and shrubs comply with specified requirements.
4. Materials List: Within 15 days after award of contract, and before any materials are delivered to the job site, submit to Landscape Architect a complete list of all plants including the sizes ordered and the type of equipment to be used on this project.
5. As-Built Drawings: During course of installation, carefully record in red line on a print of the planting drawings all changes made to the planting system layout during installations; approved by the Landscape architect.
6. Planting Schedule: Proposed planting schedule, indicating dates for each type of landscape work during normal seasons for such work in area of site. Correlate with specified maintenance periods to provide maintenance from date of Substantial Completion. Once accepted, revise dates only as approved in writing, after documentation of reasons for delays.
7. Maintenance Instructions: Typewritten instructions recommending procedures to be established by Owner for maintenance of landscape work for one full year. Submit prior to expiration of required maintenance period(s).

D. Product Data: Submit product data, supplier sources and small sample of the following:
1. Shredded Hardwood Mulch
2. Fertilizer Planting Tablets
3. Steel Edging
4. Filter Fabric
5. Herbicide and Pre-emergent
6. Imported Topsoil & Analysis
7. Decorative Gravel

1.04 QUALITY ASSURANCE:

A. Installers Qualifications: Engage a single firm specializing in landscape work with a minimum of 5 years experience who has completed landscaping work similar in material, design, and extent to that indicated for this project and with a record of successful landscape establishment.
1. Installers Field Supervision: Require installers to maintain an experienced full-time Supervisor on the project site during times that landscaping is in progress.

B. Source Quality Control.
1. General: ship landscape materials with certificates of inspection required by governing authorities. Comply with regulations applicable to landscape materials.
2. Do not make substitutions. If specified landscape material is not obtainable, submit proof of non-availability to Landscape Architect, together with proposal for use of equivalent material.
3. Topsoil: ASTM S268, pH range 5.5 to 7. Free of stones 1-inch or larger in any dimension and other extraneous materials harmful to plant growth. All topsoil used in planting operations shall meet standards as defined in this specification.
3.1. Before delivery of topsoil, furnish Landscape Architect with written statement giving location of properties from which the topsoil is to be obtained, names and addresses of owners, depth to be stripped and crops grown during the past 2 years.
4. Plant Material: Provide plant material of quantity, size, genus, species, and variety shown and scheduled for landscape work and complying with recommendations and requirements of (ANSI Z60.1-1986) "American Standard for Nursery Stock" for number one grade nursery stock as adopted by the American Association of Nurserymen. Provide healthy, vigorous stock, grown in recognized nursery in accordance with good horticultural practice and free of disease, insects, eggs, larvae, and defects such as knots, sun-scald, injuries, abrasions, and disfigurement.
a. Measurements: Measure trees and shrubs according to ANSI Z60.1 with branches and trunks or canes in their normal position. Do not prune to obtain required sizes. Take caliper measurements 6 inches above ground for trees up to 4-inch caliper size. Measure main body of tree or shrub for height and spread; do no measure branches or roots tip-to-tip.
b. Plants shall be true to species and variety and shall conform to measurements specified in the plant schedule. Larger plants may be used if approved by the landscape architect, however, if approved shall not increase the contract price.
5. Label at least one tree and one shrub of each variety with a securely attached waterproof tag bearing legible designation of botanical and common name.

C. Inspection: The Subcontractor shall notify the Landscape Architect of the location of plant materials to be used and allow the Landscape Architect the opportunity to inspect them either at the place of growth or at the site before planting, for compliance with requirements for genus, species, variety, size, and quality. The Owner retains the right to further inspect trees and shrubs for size and condition of root balls and root systems, insects, injuries and latent defects, and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from the project site.
C.1. Landscape Contractor shall provide a minimum of 72 hours prior notice of readiness for landscape material inspection.

D. Preinstallation Conference: Subcontractor to conduct conference at Project Site prior to installation.

1.05 OBSERVATIONS:

A. In addition to normal progress observations, schedule, and conduct the following formal observations to verify compliance with the specifications, giving the Landscape Architect at least 24 hours prior notice of readiness for observation.

B. Plant Material: The Landscape Architect shall observe the plant material at site before planting for compliance with requirements for genus, species, variety, size, and quality.
1. If the Subcontractor requests, the Landscape Architect may observe plant materials at place of growth or storage.
2. The Subcontractor shall notify the Landscape Architect 72 hours in advance of when plant material is to be delivered and shall furnish an itemized listing of the actual quantities and size of plant materials to be observed at the point of delivery.
3. Landscape Architect retains the right to further observe plant material for size and conditions of balls and root systems, insects, injuries, and latent defects, and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected plants immediately from project site and replace at the Subcontractor's expense with approved materials.
4. Landscape Architect further retains the right for:
a. Observation of labels and the condition of all items delivered to the site.
b. Observation of any repairs or replacements necessary.
c. Observe the staking for all trees and shrubs prior to planting.
d. Observation of bed preparation prior to planting of trees and shrubs.
e. Observation of plant material at end of plant warranty period.

1.06 DELIVERY, STORAGE, AND HANDLING:

A. Provide freshly dug trees and shrubs. Do not prune prior to delivery. Provide adequate protection of root systems and balls from drying winds and sun. Do not bend or bind-tie trees or shrubs in such a manner as to damage bark, break branches, or destroy natural shape. Provide protective covering during delivery. Do not drop balled and burlapped stock during delivery.

B. Packaged Material: Deliver packaged materials to the site in their original container with all labels showing weight, analysis, and name of manufacturer intact and legible. Use all means necessary to protect all materials from deterioration before and during deliver, and while stored on site. Protect the installed work and materials of all other trades.

C. Deliver plant material after preparations for planting have been completed, and plant immediately. If planting is delayed more than 6 hours after delivery, set trees and shrubs in shade, protect from weather and mechanical damage, and keep roots moist as follows:
1. Heel-in bare root stock. Soak roots in water for 2 hours if dried out.
2. Set balled stock on ground and cover ball with soil, peat moss, sawdust or other acceptable material.
3. Do not remove container-grown stock from containers until planting time.
4. Periodically water root systems of trees and shrubs stored on site using a fine mist spray. Water as often as necessary to maintain root systems in a moist condition.

C. Replacements: In the event of damage or rejection, immediately make all repairs and replacements necessary to the approval of the Landscape Architect and at no additional cost to the Owner.

1.07 JOB CONDITIONS:

A. Utilities: determine location of underground utilities and perform work in a manner which will avoid possible damage. Hand excavate, as required. Maintain grade stakes set by others until removal is mutually agreed upon by parties concerned.

B. Excavation: When conditions detrimental to plant growth are encountered, such as pebble fill, adverse drainage conditions, or obstructions, notify Landscape Architect before planting.

C. Sequencing an Scheduling:
1. Planting Time: Proceed with, and complete landscape work as rapidly as portions of site become available, working within seasonal limitations for each kind of landscape work required.
2. All planting shall be performed during favorable weather conditions. The planting operations shall not be performed during times of extreme drought, when ground is frozen, or during times of other unfavorable climatic conditions unless otherwise approved by the Landscape Architect. The Subcontractor assumes full and complete responsibility for all such plantings and operations.
3. Dig, ball and burlap deciduous plants only when dormant (before March 15 and after October 15). Such plants may be planted at any time during the same year, subject to the other requirements of the specification.
4. Recommended dates for tree and shrub planting shall be March 15 - May 31 and September 15 - October 31st or as approved by the Landscape Architect.

D. Plant trees and shrubs after final grades are established and prior to planting of lawns, unless otherwise acceptable to the Landscape Architect. If planting of trees and shrubs occur after lawn Work, protect lawn areas and promptly repair damage to lawns resulting from planting operations.

E. Correlate planting with specified maintenance periods to provide maintenance from date of Substantial Completion.

F. Coordination: All planting work shall be coordinated with all other work included in this contract and with work being done by others.

1.08 PROJECT WARRANTY:

A. General Warranty: Warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Subcontractor under requirements of the Contract Documents.

B. Special Warranty: Warrant the following living planting materials for a period of one (1) year after date of Substantial Completion, against defects including death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect, or abuse by the Owner, abnormal weather conditions unusual for warranty period, or incidents that are beyond the Subcontractor's control.
1. Trees
2. Shrubs/Grasses/Vines
3. Perennials

C. Immediately prior to plant warranty observation, the Subcontractor will be responsible for the removal of all staking material on site.

D. Replacement Plants: The Subontractor shall replace once, without cost to Owner, and as soon as weather conditions permit, and within a specified planting period, all dead plants and all plants not in a vigorous, thriving condition as determined by the Landscape Architect during and at the end of the warranty period. The plants shall be free of dead or dying branches and branch tips, and shall bear foliage of a normal density, size, and color.

E. Replacements shall closely match adjacent specimens of the same species. Replacements shall be subject to all requirements stated in the Specifications.

F. The Subcontractor shall make all necessary repairs to other site and project features due to plant replacements. Such repairs shall be done at no cost to the Owner.

G. Materials and Operations: All replacements shall be plants of the same kind and size specified in the plant schedule. They shall be furnished and planted as specified. The cost shall be borne by the Subcontractor. After Substantial Completion replacements resulting from the removal, loss, or damage due to occupancy of the project site by others, vandalism, or acts or neglect on the part of others, or physical damage by animals, may be approved and paid for by the Owner.

PART 2 - PRODUCTS

2.01 GENERAL:

A. Provide nursery-grown trees and shrubs, grown in a recognized nursery in accordance with good horticultural practice, with healthy root systems developed by transplanting or root pruning. Provide only healthy, vigorous stock grown under climatic conditions similar to conditions in the locality of the Project and free of disease, insects, eggs, larva, and defects such as knots, sun scald, injuries, abrasions, or disfigurement.

B. Provide trees and shrubs of the sizes indicated in planting list and in accordance with dimensional requirements of ANSI Z60.1 for kind and size of trees and shrubs required. Trees and shrubs of larger size than indicated may be used if acceptable to Landscape Architect.

C. Label each tree and shrub with a securely attached waterproof tag bearing legible designation of botanical and common name.

D. Nomenclature: Scientific and common names used for plants are generally in conformity with "Standardized Plant Names." The names of varieties are generally in conformity with the names accepted in nursery trade.

E. Plant material size and measurements shall conform to the "American Standard for Nursery Stock", ANSI Z60.1-1986.

F. Digging, wrapping, and shipping:
1. Plants shall be dug up and prepared for shipment in a manner that will not cause damage to the branches, shape and future development of the plants after replanting. All plant material being transferred more than two miles shall be covered.

2.02 TREES:

A. Trees shall not be pruned before delivery. Trees, which have a damaged or crooked leader or multiple leaders, unless otherwise specified, will be rejected. Trees with abrasion of bark, sunscalds, disfiguring knots, or fresh cuts of limbs over 1 inch in diameter which have not completely calloused will be rejected.
1. Plants shall be measured when branches are in a normal position. If a range of size is given, no plants shall be less than the minimum size and not less than 50% of the plants shall be as large as the upper half of the range specified. The measurements specified are the minimum size acceptable and are the measurements after pruning where pruning is required. Plants that meet the measurements specified, but do not possess a normal balance between height and spread will be rejected.
2. Plants shall be true to species and variety and shall conform to measurements specified in the Plant Schedule except that plants larger than specified may be used if approved by the Landscape Architect. Use of such plants shall not increase the contract price. If larger plants are approved, the ball of earth shall be increased in proportion to the size of the plant according to ANSI Z60.1-1986.

B. Balled and Burlapped Plants:
1. All plants designated "B&B" in the Plant Schedule shall be adequately balled with firm natural balls of earth of a diameter and depth no less than that specified in ANSI 60.1-1986. Balls shall be firmly wrapped with burlap. All plants which are 2" in caliper or over shall be drum laced. No balled plants shall be planted if the ball is cracked or broken either before or during the process of planting.
2. Container grown plants will be acceptable in lieu of balled and burlapped deciduous plants subject to specified limitations of ANSI Z60.1 for container stock.

C. Protection against drying:
1. Root balls shall be adequately protected at all times from sun and from drying winds. All balled and burlapped plants which cannot be planted immediately upon delivery shall be set on the ground and well protected with soil or other acceptable material. Plants shall not remain unplanted for longer than 3 days after delivery.

D. Where shade trees are required, provide single stem trees with straight trunk and intact leader, free of branches to a point about 50% of their height for the size and kind of trees required.

E. Where small trees of upright or spreading type are required, provide trees with single stem, branched or pruned naturally according to species and type:
1. Where indicated as "multi-stem," provide trees with three canes starting from the ground.

F. Except as otherwise specified or indicated, provide bare root trees. Where indicated as "B&B," provide balled and burlapped trees:
1. Container-grown trees will be acceptable in lieu of balled and burlapped deciduous trees, subject to the specified limitations for container stock.

2.03 SHRUBS & GRASSES:

A. Provide shrubs of height and size indicated or specified.

B. Provide with not less than the minimum number of canes required by ANSI Z60.1 for the type and height of shrub required.

C. Except as otherwise specified or indicated, provide container grown shrubs.

2.04 CONTAINER PLANTS

A. Provide plants in containers as sized or specified.

B. Plants shall show a vigorous root system, visible when container is removed.

C. Root system shall not show excess signs of overgrowth.

D. Plants shall appear healthy, with no broken limbs. Leaves shall appear full with no apparent sun or wind scald.

2.05 TOPSOIL:

A. Soil Mix: ASTM D 5268, pH range of 5.5 to 7, 4 percent organic material minimum, free of stones 1/2 inch or larger in any dimension, subsoil, clay lumps, roots, brush, weeds, weed seed, and other extraneous or toxic materials harmful to plant growth. Contents of the soil should contain no more than 15% Silt and 15% clay. Soil should also contain no less than 40% sand. Mix shall contain maximum soluble salts of 500 PPM.

B. Soil Source: Reuse surface soil stockpiled on the site where available. Verify suitability of surface soil to produce topsoil meeting requirements and amend when necessary. Supplement with imported topsoil when quantities are insufficient. Clean topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful to plant growth.

2.06 SOIL AMENDMENTS:

A. Spaghnum Peat Moss: Peat moss shall be Canadian Sphagnum Peat Moss, which is a light brown, fluffy material. Do not use hypnum, Michigan, or reed sedge peats.

B. Commercial Fertilizer: Fertilizer shall be of the grade, type and form specified below and shall comply with the rules of the local governing authority and the following requirements:
1. The grade of fertilizer will be identified according to the percentage of nitrogen (N), percent available phosphoric acid (P2O5) and percent water soluble potassium (K2O), in that order and approval will be based on that identification.
2. Fertilizer shall be of a type that can be uniformly distributed either by hand or application equipment.
3. Fertilizer shall be furnished in dry form.
4. Fertilizer may be either homogenized or natural organic with at least 25 percent of the total nitrogen in a slow-release form.
5. Deliver fertilizer in original, unopened and undamaged containers showing weight, analysis and name of manufacturer. Store in manner to prevent wetting and deterioration.

D. Fertilizer applications shall be provided as follows:
1. For trees and shrubs: Fertilizer shall be Agriform 20-10-5 Planting Tablets or approved equal, and shall be incorporated according to the manufacturer's directions and at the following rates:
a. Trees: Use 1 21-gram tablet for each 1/2-inch of trunk diameter for each foot of height or spread. Insert 21-gram tablets around the dripline
b. Shrubs: Use 1 to 2 tablets for each 1 foot of height or spread of shrubs and large perennial grasses.

2.07 MISCELLANEOUS MATERIALS:

A. Steel Edging: Commercial steel edging fabricated in sections with loops pressed from or welded to face to receive stakes. Edging to be Col-Met Steel Landscape Edging (or approved equal), Collier Metal Specialties, Inc., Atlanta, GA., 1-800-829-8225; 1/8" thick x 4" wide x 10' lengths, hot rolled low carbon steel (ASTM-A-36, ASTM-A-283, ASTM-A-569), treated with rust preventative and factory finished, (submit sample). Provide minimum 12" integral anchor stakes.

B. Shredded hardwood mulch: Double ground aged brown hardwood mulch.

C. Tree Wrap: Material used in wrapping tree trunks shall be waterproof crepe paper or burlap strips as made and sold for this purpose and shall not be less than 4" or more than 8" wide having qualities to resist insect infestation. Twine for tying shall be a lightly tarred medium or coarse sisal yarn or approved equal.

D. Pre-Emergent Herbicide. Provide pre-emergent herbicide Pre M 60 DG (granular). The Landscape Architect will consider an "equivalent" of the brand name specified. Provide the Landscape Architect with a complete description, literature, test reports, etc. on the proposed "equivalent". The burden of proof regarding the "equivalent" is upon the Subcontractor. The Landscape Architect will accept the pre-emergent herbicide based on brand name and visual inspection for condition.

E. Tree Stakes and Guys:
1. All trees shall be staked with a minimum of 2 metal "T" posts. Stakes shall be approximately 2" wide and 6-6.5 feet long. Stakes are to be driven a minimum of 2 feet into undisturbed stable earth.
2. Tree Ties: An acceptable tree tie is one that is easily adjustable, strong in all weather, and is easily attached and removed. Hose and wire are not acceptable for staked trees. Provide the following or approved equal:
a. "Cinch Ties"
b. "Adj.-A-Tye". Heavy weight only, a plastic chain twist tie, OR "Plastic Binder Tye",tie with tapered beads that snap-lock.
c. Other tree tying materials may be accepted upon submitting a sample, product information, and plant tying methods to the Landscape Architect for approval.

F. Water: Upon request of the Subcontractor, the Owner may approve the use of water from existing hydrants or working irrigation system for this work. The Owner may pay for the cost of the water. The Subcontractor shall provide all needed hose, sprinkler heads and other appurtenances. If the Subcontractor provides his own water, it shall not contain material injurious to plant growth.

G. Anti-Erosion Mulch: Provide clean, dry straw of winter wheat, rye, oats, or barley.

H. Anti-Desiccant: Emulsion type, film-forming agent designed to permit transpiration, but retard excessive loss of moisture from plants. Deliver in manufacturer's fully identified containers and mix in accordance with manufacturer's instructions.

I. Biostimulant: The Subcontractor shall utilize an organic, biological fungi for soil prep. The material shall be granular and applied per manufacturer's recommendation. Myke Mycorrhizae or approved equal.

J. All other materials, not specifically described but required for a complete and proper installation or construction, shall be as selected by the Subcontractor subject to the approval of the Landscape Architect.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

A. Inspection:
1. Prior to all landscape installation, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
2. Weeds that have emerged or persisted shall be removed or eradicated.
3. Verify that planting may be completed in accordance with the original design and the referenced standards.

B. Discrepancies:
1. In the event of discrepancy, immediately notify the Landscape Architect.
2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.02 PREPARATION FOR PLANTING OF TREES, SHRUBS AND PLANT BEDS:

A. Planting Soil Preparation:
1. Before mixing, clean topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful to plant growth.
2. Loosen subgrade of planting areas to a minimum of 8 inches.
3. Mix soil amendments and fertilizers with topsoil at rates indicated. Delay mixing fertilizer if planting does not follow placing of planting soil within two (2) days.
4. Grade planting areas to a smooth, uniform surface place with loose, uniformly fine texture. Roll, rake and remove ridges/depressions to meet finish grades.
5. Schedule of Plantings Soil Mixture Requirements
a. For planting beds, provide not less than the following quantities of specified materials:
(1) Loose peat humus by volume: 1part
(2) Well-rotted composted manure by volume: 1 part
(3) Topsoil (as defined in this specification): 2 parts
(4) Fertilizer: Incorporate 3 lbs/100sf
b. For backfill for trees provide specified materials in not less than the following quantities:
(1) Loose peat humus by volume: 1 part
(2) Well-rotted cow manure by volume: 1 part
(3) Topsoil (as defined in this specification): 3 parts
(4) Place Agriform tablet (or approved equal) in bottom of tree pit.

B. Unless directed by the Landscape Architect, the indication of a plant on the Planting Plan is to be interpreted as including the prepping the landscape bed, digging of a hole, furnishing of a plant of the specified size, the work of planting, wrapping and other activities where called for.

C. Planting Coordination:
1. Consult the Plant Schedule for type and size of plants.
2. The Subcontractor shall be responsible for selection and tagging at nurseries stocking the specified materials.
3. Subcontractor shall inform the Landscape Architect three (3) days in advance of when planting will commence, and of anticipated delivery date of material and will furnish an itemized listing of actual quantities of plant materials to be delivered. Failure to notify the Landscape Architect in advance, in order to arrange proper scheduling, may result in loss of time or removal of any plant or plants not installed as specified or directed.

D. Plant Location Staking:
1. The Subcontractor shall stake on the ground the beginning and ending points of all straight rows of plant materials. Rows will be parallel to adjacent walks, walls, or curbs.
2. The Subcontractor will stake locations of each plant in all random arrangements of plant materials (with the exception of groundcovers, and annual and perennial flowers) or may set the plants in their intended location, according to the arrangements shown on the plans.
3. The Landscape Architect will observe all plant locations. The Subcontractor shall not begin excavating plant pits until plant locations have been approved.
4. In case underground obstruction or utilities are encountered, locations shall be changed under the direction of the Landscape Architect without extra charge to the Owner.

3.03 EXCAVATION FOR TREES AND SHRUBS

A. Holes for trees and shrubs shall be per the detail. Thoroughly spade slice the walls and the floor of all planting pits.

B. Testing Plant Materials Holes: If stone, underground construction work, tree roots, poor drainage or obstructions are encountered in the excavation of plant pits, alternate locations may be selected by the Landscape Architect. Where locations cannot be changed as determined by the Landscape Architect, submit cost required to remove the obstructions to a depth of not less than 6 inches below the required pit depth.

C. Excavate pits, beds, and trenches with vertical sides and with bottom of excavation slightly raised at center to provide proper drainage. Loosen hard subsoil in bottom of excavation:
1. For bare-root trees and shrubs, make excavations as detailed.
2. For balled and burlapped trees and shrubs, make excavations as detailed.
3. For container grown stock, excavate as specified for balled and burlapped stock, adjusted to size of container width and depth.
4. Obstructions: If rock, underground construction, or other obstructions are encountered in excavation for planting of trees or shrubs, notify Landscape Architect. New locations may be selected by Landscape Architect, or Change Order may be issued to direct removal of obstructions to depth of not less than 6 inches below required planting depth.

3.04 TREE, SHRUB & VINE PLANTING:

A. Before mixing, clean topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful or toxic to plant growth.

B. Mix soil amendments and fertilizers with topsoil. Delay mixing of fertilizer if planting will not follow placing of planting soil within a few days.

C. For pit- or trench-type backfill, mix planting soil prior to backfilling and stockpile at site.

D. Setting and Backfilling:
1. Set balled and burlapped stock on layer of compacted planting soil mixture, plumb and in center of pit or trench with top of ball at same elevation as adjacent finished landscape grades. Remove burlap from sides and tops of balls, but do not remove from under balls. When set, place additional backfill around base and sides of ball, and work each layer to settle backfill to eliminate voids and air pockets. When excavation is approximately two-thirds full, water thoroughly before placing remainder of backfill. Repeat watering until no more is absorbed. Water again after placing final layer of backfill.
2. Set container grown stock as specified for balled and burlapped stock, except cut cans on two sides. Carefully remove containers so as not to damage root balls.
3. Train vines to climbing surface.
4. Move or set large specimen trees with crane or other recognized tree moving equipment.
5. Plant Pits
a. Around the perimeter of the plant pit, build a watering saucer 4 inches above the crown of the plant and shape and slope the surface away from the top of the saucer, approximately 18 inches wide down to existing grade.
b. Treat entire plant pit or bed with Treflan in accordance with manufacturer's recommendations.
6. Mulching: Apply the specified mulch to a depth as shown on plans, evenly spread over the entire area of each soil basin or plant bed area.
7. Apply antidesiccant using power spray to provide an adequate film over trunks, branches, stems, and twigs for foliage. If deciduous trees or shrubs are moved in full-leaf, spray with antidesiccant at nursery before moving and again 2 weeks after planting.
8. Prune, thin out, and shape trees and shrubs in accordance with standard horticultural practice. Prune shrubs to retain natural character and accomplish their use in the landscape design. Required shrub sizes indicated or specified are the size after pruning.
9. Remove and replace excessively pruned or misformed stock resulting from improper pruning.
10. Paint cuts over 13 mm (1/2 inch) in size with standard tree paint or compound, covering all exposed, living tissue. Use paint which is waterproof, antiseptic, adhesive, elastic, and free of kerosene, coal tar, creosote, and other substances harmful to plants. Do not use shellac.
11. Guy and stake trees immediately after planting and as indicated.
12. Wrap tree trunks of 50-mm (2-inch) caliper and larger. Start at ground and cover trunk to height of first branches and securely attach. Inspect tree trunks for injury, improper pruning, and insect infestation. Take corrective measures required before wrapping.

3.05 PERENNIALS/ANNUAL PLANTING:

A. Prepare soil as stated in section 3.02

B. Set out and space plants in triangular spacing as shown in plan

C. Dig holes large enough to allow for spreading of roots

D. Work soil around roots to eliminate air pockets

E. Water thoroughly after planting

F. Apply shredded hardwood mulch over the entire area of each plant bed location using caution to not cover, bend, break or smother newly installed plants.

3.06 INSTALLATION OF MISCELLANEOUS MATERIALS:

A. Shredded Hardwood Mulch:
1. Apply shredded hardwood mulch over the entire area of each soil basin, on all exposed soil surfaces within the perimeter of groupings or rows of trees or shrubs.
2. The Subcontractor shall determine his own quantities based on the area, the work and site investigations.
3. Provide a minimum depth per plans for all trees and shrubs.

B. Edging: Install specified edging at the locations indicated on the plans.
1. Trenched Edge shall be dug to 8" Depth and 8" Width.
2. Backfill Trenched Edge with shredded hardwood mulch to grade.
3. Steel Edging per manufacture's recommendations.

3.07 MAINTENANCE:

A. Begin maintenance immediately after planting. Maintenance shall continue until time of Substantial Completion, but in no case for less than a period of 90 days after Substantial Completion.

B. Maintain trees and shrubs by pruning, watering, cultivating, mulching, and weeding as required for healthy growth. Restore planting saucers. Tighten and repair stake and guy supports and reset trees and shrubs to proper grades or vertical position as required. Restore or replace damaged wrappings. Spray as required to keep trees and shrubs free from disease and insects. Plants shall be inspected at least once per week by the Subcontractor and needed maintenance performed promptly.

C. Remove and replace trees and shrubs found to be dying, dead, or in unhealthy condition during the warranty period. Make replacements during the growth season following end of warranty period. Replace trees and shrubs which are in doubtful condition at end of warranty period.

3.08 CLEAN-UP AND PROTECTION

A. During landscape work, keep pavements clean and work area in an orderly condition. Properly dispose of all resultant dirt, debris, and other waste material.

B. Protect landscape work and materials from damage due to landscape operations, operations by other subcontractors and trades, and trespassers. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged landscape work as directed by the Landscape Architect at no additional cost, unless damage is the result of vandalism.

C. Disposal of Surplus and Waste Materials: Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of it off the Owner's property.

3.09 OBSERVATION AND ACCEPTANCE

A. When landscape work is completed, including maintenance, Landscape Architect will, upon request, make an observation to determine acceptability.
1. Landscape work may be observed for acceptance in portions as agreeable to Landscape Architect, provided each portion of work offered for observation is complete, including maintenance.

B. When observed landscape work does not comply with requirements, replace rejected work and continue specified maintenance until approved by Landscape Architect and found to be acceptable. Remove rejected plants and materials promptly from project site.

C. Trees, shrubs, groundcover, and all other specified plants are to be inspected to certify that all plants have been installed according to plans and are acceptable. Upon satisfactory completion of all replacements and repairs requested, Landscape Architect shall certify granting of Substantial Completion. The warranty will begin on the date of Substantial Completion. Subcontractor to continue maintenance of all plants for 90 days following Substantial Completion. Final Acceptance will be granted after all maintenance periods have ended. At end of twelve (12) month warranty period, Landscape Architect will inspect plants upon written request by Subontractor. Any plant that is dead, or not in satisfactory health as determined by the Landscape Architect will be replaced by the Subs at no cost to the Owner. The Subcontractor will not be responsible for vandalism or theft.

END OF SECTION 329300

Sheet
L03

Final Development Plans

19-0141
Summit at West Bryor
Lee's Summit, Jackson, Missouri

Planting Specifications

NO.	BY	DATE	REVISION
4.	JMM	10/02/19	REVISED FDP SUBMITTAL
3.	JMM	09/11/19	REVISED FDP SUBMITTAL
2.	JMM	07/31/19	REVISED FDP SUBMITTAL
1.	JMM	07/26/19	ORIGINAL SUBMITTAL

Renaissance Infrastructure Consulting
913.317.9500
www.ric-consult.com
32 ABBIE AVENUE
KANSAS CITY, KANSAS 66103
KS Certificate of Authority: E-1814

STATE OF MISSOURI
J. ANDREW GABBERT
NUMBER LA-2007013276
10-01-19
LANDSCAPE ARCHITECT

Oct 02, 2019-8:14am
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SECTION 329200 - LAWNS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following areas of Work:

1. Fine grading and preparing lawn areas.
2. Furnishing and applying topsoil.
3. Furnishing and applying limited soil amendments.
4. Sodding new lawn areas.
5. Reconditioning existing lawn areas.
6. Replanting unsatisfactory or damaged lawns.
7. Maintenance.

B. Related Work Specified Elsewhere:

1. Trees and Shrubs: SECTION 329300

1.2 REFERENCES

A. Applicable Standards:

1. American Society for Testing and Materials (ASTM) - Equivalent AASHTO standards may be substituted as approved.

1.3 SUBMITTALS

A. Certification of each seed mixture for sod, identifying the sod source, including name and telephone number of supplier. Seed for sod must be sod quality and is to be gold tag standards with 0% other crop seed and 0% weed seed.

B. Certification of each seed type for Native Grass mixture identifying the seed source, including name and telephone number of supplier.

C. Landscape Architect has final approval of sod grower, no exceptions.

D. Qualification data for firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and address of architects and owners, and other information specified.

E. Material test reports from qualified independent testing agency indicating and interpreting test results relative to compliance of the following materials with requirements indicated.

1. Agronomic and biological analysis of existing surface soil.
2. Agronomic and biological analysis of all imported topsoil.

F. Maintenance instructions recommending procedures to be performed by Owner for maintenance of landscaping during an entire year. Submit before expiration of required maintenance periods.

1.4 QUALITY ASSURANCE

A. Qualifications: A qualified subcontractor shall employ or provide a qualified installation manager who meets any or all of the required qualifications;

1. Bachelor of Science Degree in Horticulture, Botany, Soil Physics, Agronomy, General Agriculture, Agricultural or Biological Engineering, or a related field.
2. An individual with field experience as approved by the Landscape Architect or Registered Engineer.

B. Installer Qualifications: Engage an experienced Installer who has completed landscaping work similar in material, design, and extent to that indicated for this Project and with a record of successful turf establishment.

1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on the Project site during times that turf planting is in progress.

C. Testing Agency Qualifications: To qualify for acceptance, an independent testing agency must demonstrate to Landscape Architect's satisfaction, based on evaluation of agency-submitted criteria conforming to ASTM E 699, that it has the experience and capability to satisfactorily conduct the testing indicated without delaying the Work.

D. Topsoil Analysis: Furnish a soil analysis made by a qualified independent soil-testing agency stating percentages of organic matter by Loss on ignition, inorganic matter (proportion of silt, clay, and sand), deleterious material including biological contamination, pH, mineral and plant-nutrient content of topsoil, and cationic exchange capacity.

1. Report suitability of topsoil for grass growth from horticulturist. State recommended quantities of nitrogen, phosphorus, and potash nutrients and any limestone, aluminum sulfate, or other soil amendments to be added to produce satisfactory topsoil.

1.5 DELIVERY, STORAGE AND HANDLING

A. Sod: Harvest, deliver, store, and handle sod according to the requirements of the Turfgrass Producers International (TPI) "Specifications for Turfgrass Sod Materials and Transplanting/Installing."

B. Native Seed: Delilver packaged materials in containers showing weight, analysis and name of manufacturer. Protect materials from deterioration during delivery and while stored at site.

1.6 COORDINATION AND SCHEDULING

A. Planting Season: Install sod during normal planting seasons for type of lawn work required. Correlate planting with specified maintenance periods to provide required maintenance from date of Substantial Completion.

B. Native Seed Planting Season: Spring Planting Season: April 1st - June 1st; Dormant Planting Season: December 15th - March 31st. Planting at any other time will require the use of a cover crop to be approved by Owner or Landscape Architect.

C. Weather Limitations: Proceed with work only when existing and forecast weather conditions are suitable for work.

1.7 MAINTENANCE

A. Lawns/turf areas: Begin maintenance of turfgrass immediately after each area is planted and continue until acceptable establishment, but for no less than the following periods:

1. Sodded Lawns: 90 days after date of Substantial Completion.
2. Seeded Lawns: 90 days after date of Substantial Completion.
3. Native Grass Areas: 12 Months after date of Substantial Completion.

B. Maintain and establish lawns by watering, fertilizing, weeding, mowing, trimming, replanting and other operations per this Specification.

C. Watering- Subcontractor shall be responsible of watering the sod as required by this Specification. Subcontractor may use irrigation system to accomplish watering. Subcontractor shall be responsible for coordinating with irrigation contractor for scheduling of irrigation system to provide required water needs.

D. Post-fertilization: Apply fertilizer to lawn after first mowing and when grass is dry.

PART 2 - PRODUCTS

2.1 TOPSOIL

A. Standard Topsoil: ASTM 5268, pH range 5.5 to 7. Free of stones 1 inch or larger in any dimension, and other extraneous materials harmful to plant growth.

B. Compost Soil Blend: As located in plan, areas denoted as Compost Soil Blend shall be provided as 50% Standard Topsoil or Native Topsoil and 50% Compost for a depth of 12". pH range shall be 5.5 to 7.

1. Topsoil Source: Reuse surface soil stockpiled on the site where available. Verify suitability of surface soil to produce topsoil meeting requirements and amend when necessary. Supplement with imported topsoil when quantities are insufficient. Imported topsoil shall meet the requirements of this specification for composition. Clean all topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful to plant growth.
2. Compost Soil Blend shall have a minimum infiltration rate between 0.25" to 0.5" per hour.

2.2 LIMITED SOIL AMENDMENTS

A. Herbicides: EPA registered and approved, of type recommended by manufacturer and approved by the Landscape Architect.

B. Compost: Well-composted, stable and weed-free organic matter, pH range of 5.5-8; moisture content 35-55 percent by weight; 100 percent passing through 3/4-inch sieve; soluble salt content less than 4 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings.

C. Water: Potable.

2.3 SOD

A. Sod: Certified turfgrass sod complying with ASPA specifications for machine-cut thickness, size, strength, moisture content, and mowed height, and free of weeds and undesirable native grasses. Provide viable sod of uniform density, color, and texture of the following turfgrass species, strongly rooted, and capable of vigorous growth and development when planted.

1. Species: Provide sod of grass species and varieties, proportions by weight, and minimum percentages of purity, germination, and maximum percentage of weed seed as indicated on the following Schedule. The seed used will be of gold tag quality.
2. If gold tag is not available then seed must be of the highest quality blue tag certified available.
3. Landscape Architect has final approval, no exceptions.
4. All Turf-Type Fescues shall have a minimum 70% average endophyte level.
5. Sodded lawn areas to have a blend of 90% Turf-Type Tall Fescue and 10% Kentucky Bluegrass or approved equal.

B. Provide sod in uniform thickness of 16 mm (5/8-inch), plus or minus 6 mm (1/4-inch), measured at time of cutting and excluding top growth and thatch. Strips shall be of supplier's standard size of uniform length and width with maximum 5% allowable deviation in either length or width. Broken or torn pads, or pads with uneven ends are not acceptable.

C. Sod pads shall be capable of supporting their own weight and retaining size and shape when pad is suspended vertically from a firm grasp on upper 10% of pad.

D. Handle sod with care to prevent loss of native soil from roots.

2.4 GRASS SEED:

A. Provide fresh, clean, new crop seed complying with tolerance for purity and germination established by Official Seed Analysts of North America and as required below.

B. Be labeled according to the U.S. Department of Agriculture Federal Seed Act and shall be furnished in containers with tags showing seed mixture, purity, germination, weed content, name of seller, and date on which seed was tested.

C. Seed Mix: 10% Bluegrass & 90% Turf-Type Tall Fescue, composed of an equal mix of three or four compatible species of bluegrass and one or two species of fescue. The mixture shall not include any varieties of the slower growing "Dwarf" fescue types.

1. Fescue Varieties, or approved equal
Apache, Arid, Austin, Bonanza, Carefree, Cheiftan, Cimmaron, Cochise, Falcon, Guardian, Houndog, Jaguar II, Maverick II, Mustang, Olympic, Phoenix, Rebel II, Rebel 3D, Safari, Shenandoah, Thoroughbred, Titan, Tribute, Vegas

2. Bluegrass Varieties, or approved equal
Asset, Kenblue, Midnight, Nassau, Ruby II, Troy

3. Moldy seed or seed that has been damaged in storage shall not be used.
4. Engineer shall have final approval of all seed blends and mixtures.

D. Cover Crop: As approved by Landscape Architect, Contractor shall submit mix for approval.

2.5 NATIVE GRASSES (When Required by Plan)

D. Fresh, clean, dry, pure-live seed complying with Kansas Department of Agriculture laws for purity, germination, and noxious weed tolerances:

1. Seed Components: Provide seed of grass and forb species and varieties, proportions by weight, and minimum percentages of purity, germination, and maximum percentage of weed seed as indicated on Schedules at the end of this Section. Seed lots, unblended, shall be provided to horticulturist in original unopened containers for agro-histological determination and re-testing. The Master label shall be produced by the horticulturist, and shall be sealed according to the appropriate laws and regulations
2. All seed must be tested by a registered seed technologist per AOSA methods and meet all requirements established by the Missouri Department of Agriculture. The contractor will provide documentation with the seed shipment for the following information;
   a. State of Origin
   b. Year of Harvest
   c. Genus species Identification
   d. Seed Lot #
   e. Packaged Quantity
   f. Identification of Seed Supplier
   g. Supplier Certification Number
   h. State of Supplier Registration
   i. Percent PLS Per Seed Lot
   j. Percent Germination
   k. Percent Hard Seed
   l. Percent Foreign Matter
   m. Percent Weed Seed
   n. Identification of Noxious Weed Seed
   o. Date of Seed Testing
   p. Identification of Seed Testing Company
3. Landscape Architect has final approval, no exceptions.
4. Seed Source: Shall be submitted to Landscape Architect for approval.

B. Native Seed Mix (Or Approved Equal): 2 lbs / 1,000 Sf

Scientific Name	Common Name	% of Mix
1. Bouteloua gracilis	Blue Grama	20
2. Buchloe dactyloides	Buffalo Grass	20
3. Bouteloua curtipendula	Sideoats Grama	10
4. Schizachyrium scoparium	Little Bluestem	30
5. Sporobolus heterolepsis	Prairie Dropseed	20

C. Native Seed Cover Crop

1. The use of a Cover Crop to help with the establishment of Native Grasses shall be approved by the Landscape Architect prior to use. Contractor shall submit Cover Crop seed mixes prior to installation.

2.6 FERTILIZER (Turfgrass only, do not fertilize Native Seed areas)

A. Commercial fertilizer of neutral character, with some elements derived from organic sources, containing not less than 4 lbs. of actual nitrogen per 1,000 square feet of lawn area. Provide nitrogen in form that will be available to the lawn under the following products or approved equal. During the maintenance period the following fertilizers shall be used or approved equal:

1. Starter Fertilizer: Dyna Green Starter 12-20-06 with Fertil Blend. Total nitrogen: 7.83% ammoniacal, 4.17% urea; Phosphate: Ammonium phosphate 20%; Potash MOP: 6%; Iron: 1%; SGN 200
2. Spring Fertilizer Dyna Green Long Lasting 22-0-8 with 50% UMAXX, 1,757% Viper & Fertil Blend. Total nitrogen: 22% urea with slowly available nitrogen from 50% UMAXX®; Potash MOP: 8%; Iron: 1%; SGN 200. Apply March to June.
3. Fall Fertilizer: Dyna Green Winterizer 18-0-9 with 1.434% Surge & Fertil Blend. Total nitrogen: 18% urea; Potash MOP: 8%; Iron: 1%; SGN 200. Apply September to October.

B. Deliver to site in labeled bags or containers.

2.7 MYCORRHIZAL INOCULANT

A. The Subcontractor shall utilize an organic, mycorrhizal inoculant for soil prep. The material shall be granular and applied per manufacturer's recommendation. M-Roots w/ Mycorrhiza or approved equal. For exact finish, insert names of coating manufacturers and products.

2.8 STRAW MAT

A. Provide a biodegradable single net, two sided organic straw mat with functional longevity of 10-12 months by Greenfix Amerca, Product WS072 Double Net Straw or Approved Equal.

B. Utilize Straw Mat within Native Seed areas on slopes greater than 4:1.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive lawns for compliance with requirements and for conditions affecting performance of work of this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.

B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 SOIL PREPARATION

A. Dispose of any growth, rocks, or other obstructions which might interfere with tilling, seeding, sodding, or later maintenance operations. Remove stones over 38 mm (1_1/2 inches) in any dimension and sticks, roots, rubbish, and other extraneous matter.

B. Thoroughly loosen and pulverize topsoil to a depth of at least 100 mm (4 inches) for all standard turfgrass areas. Areas denoted as "Compost Soil Blend", shall be loosened and amended to a depth of 12 inches

C. Grade lawn areas to a smooth, even surface with loose, uniformly fine texture. Roll and rake, remove ridges and fill depressions to meet finish grades. Limit fine grading to areas which can be planted within immediate future.

D. Moisten prepared lawn areas before planting if soil is dry. Water thoroughly and allow surface to dry off before planting of lawns. Do not create a muddy soil condition.

E. Restore prepared areas to specified condition if eroded or otherwise disturbed after fine grading and prior to planting.

F. Spread top soil mixture to depth required to meet thickness, grades, and elevations indicated after light rolling and natural settlement.

G. Allow for sod thickness in areas to be sodded.

H. Preparation of Unchanged Grades: Where lawns are to be planted in areas that have not been altered or disturbed by excavation, grading, or stripping operations, prepare soil for lawn planting as follows:

1. Remove and dispose of existing grass, vegetation, and turf. Do not turn over into soil being prepared for lawns.
2. Till surface soil to a depth of at least 6 inches. Apply required soil amendments and initial fertilizers and mix thoroughly into top 4 inches of soil. Trim high areas and fill in depressions. Till soil to a homogenous mixture of fine texture.
3. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
4. Remove waste material, including grass, vegetation, and turf, and legally dispose of it off the Owner's property.

3.4 SEEDING NEW LAWNS:

A. Do not use wet seed or seed which is moldy or otherwise damaged in transit or storage.

B. Sow seed with a Brillion type seeding machine or where applicable and restricted by steep slopes or other areas not accessible to the seeding machine, broadcast or drop seed methods may be used. Do not broadcast or drop seed when wind velocity exceeds 5 mph. Evenly distribute seed by sowing equal quantities in 2 directions at right angles to each other, and 3 directions in high maintenance areas, as directed by the Engineer.

C. Sow not less than rate of 4 pounds per 1,000 square feet.

D. Rake seed lightly into top 1/8_inch of soil, roll lightly, and water with fine spray.

E. Rake seed lightly into top 1/8 inch of topsoil, roll lightly, and water with fine spray.

F. Protect seeded slopes exceeding 1:6 against erosion with erosion-control blankets installed and stapled according to manufacturer's recommendations.

G. Protect seeded areas with slopes less than 1:6 against erosion by spreading mulch as specified after completion of seeding operations. Spread uniformly to form a continuous blanket over seeded areas. Spread by hand, blower, or other suitable equipment.

H. Protect seeded areas against hot, dry weather or drying winds by applying peat mulch within 24 hours after completion of seeding operations. Soak and scatter uniformly to a depth of 3/16 inch thick and roll to a smooth surface.

I. Seasonal Limitations:

1. Perform seeding only during the following seasons:
   a. Fall Seeding: August 15th to October 1st.
   b. Spring Seeding: March 15th to May 15th
   c. Recommend seeding when temperatures ranging from 50 degrees Fahrenheit to 70 degrees Fahrenheit for a minimum 6 week period.

J. Methods of Application:

1. Dry Seeding: Spreader or seeding machine.
2. Hydroseeding: Mix seed, fertilizer and pulverized mulch with water and constantly agitate. Do not add seed to water more than 4 hours before application:
   a. On slopes of 2 horizontal to 1 vertical or flatter, apply seed separately from fertilizer. Cover seed with soil to an average depth of 13 mm (1/2_inch) by raking or other approved methods.
   b. On slopes steeper than 2 horizontal to 1 vertical, seed and fertilizer may be applied in a single operation. Incorporation into the soil will not be required.

3.5 SODDING NEW LAWNS

A. Do not place sod during a drought or during the period from June 15 to September 15, except as authorized by the Landscape Architect.

B. Lay sod within 24 hours from time of stripping. Do not lay dormant sod or if ground is frozen.

C. Sod shall be moist at the time it is placed.

D. Lay sod strips along contour lines, by hand, commencing at the base of the area to be sodded and working upward:

1. Carefully lay sod to produce tight joints. Butt ends and sides of sod strips; do not overlap.
2. Stagger transverse joints of sod strips.
3. Work from boards to avoid damage to subgrade or sod.
4. Tamp or roll lightly to ensure contact with subgrade. Work sifted soil into minor cracks between pieces of sod, removing excess to avoid smothering adjacent grass.

E. Water sod with fine spray immediately after planting. During first week, water daily or more frequently as necessary to maintain moist soil to depth of 100 mm (4 inches).

3.6 RECONDITIONING LAWNS:

A. Recondition lawn areas damaged by construction operations, including storage of materials or equipment and movement of vehicles. Also recondition lawn areas where settlement or washouts occur or where minor regrading is required. Recondition other existing lawn areas where indicated.

B. Provide fertilizer, sod, and soil amendments as specified for new lawns and as required to provide satisfactorily reconditioned lawn. Provide new planting soil as required to fill low spots and meet new finish grades.

C. Cultivate bare and compacted areas thoroughly to provide a good, deep planting bed.

D. Remove diseased or unsatisfactory lawn areas; do not bury into soil. Remove topsoil containing foreign materials resulting from Subcontractor's operations including oil drippings, stone, gravel, and other construction materials. Replace with new topsoil.

E. Where substantial lawn remains (but is thin), mow, rake, aerate if compacted, fill low spots, remove humps and cultivate soil, fertilize, and seed. Remove weeds before seeding or, if extensive, apply selective chemical weed killers as required. Apply a seed-bed mulch, if required, to maintain moist condition.

F. Water newly planted areas and keep moist until new grass is established.

3.7 SEEDING COVER CROP & NATIVE GRASSES:

A. Sow seeds using seed drill (Truax-type) that accurately meters the seed types and mixes all seeds uniformly during seeding. It should have, at the minimum, two seed boxes to separate fine seeds from large/fluffy seeds. This seed drill should also be equipped with disc furrow openers and a no-till trash plow assembly, which will compact the soil directly over the drill rows. The maximum row spacing for drill seeding should be 8 inches. Fine seeds shall be dropped onto the ground from the fine seed box, while large/fluffy seed should be placed to obtain final planting depth of 1/4-1/2". The path of the drill seeding shall be done at a right angle to that of the drainage patterns.

1. Do not use wet seed or seed that is moldy or otherwise damaged in transit or storage.

B. Protect all native grass areas on slopes 4:1 and greater using straw mat erosion control blanket installed and stapled according to manufacturer's recommendations

3.8 PROTECTION:

A. Erect barricades and warning signs as required to protect newly planted areas from traffic. Maintain barricades throughout maintenance period until lawn is established.

3.9 MAINTENANCE (SEED & SOD):

A. Mow grass to a height of 3 inches as soon as there is enough top growth to cut with mower. Remove no more than 30% of grass leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted.

B. Remove weeds by pulling or chemical treatment.

C. Perform maintenance throughout the 90 day maintenance period.

D. Sodded Areas:

1. Thoroughly water daily for a period of 15 days after placing and to a minimum of 1-inch per week thereafter.
2. Maintain sod in good live condition. Replace any sod not in good growing condition with fresh live sod.
3. Water thoroughly whenever sod evidences excessive drying.

E. Seeded Areas:

1. Thoroughly water seeded areas daily to keep seeds moist until germination. After seeds have germinated, continue watering daily until the first mowing. Watering shall be in amounts enough to wet seeds and surrounding soil, but not cause erosion or disposition of seeds.
2. Repair any portion of the seeded surface which becomes gullied or otherwise damaged. Reseed as required.

F. Apply second fertilizer application after first mowing and when grass is dry. Use fertilizer which will provide not less than 1 lbs of actual nitrogen per 1,000 square feet of lawn area.

3.10 MAINTENANCE (NATIVE GRASSES) (When Required by Plan)

A. Begin maintenance of native grass areas immediately after each area is planted and continue until established and accepted, but for not less than the following periods:

B. Native grass: 12 MONTHS after date of Substantial Completion

1. The Installer shall be responsible for the proper care until verification that all plant materials are present in the density and health to ensure self-maintenance.
2. Maintain and establish native grasses by mowing, weeding, trimming, replanting, and other operations as stated below. Re-grade erosion rills, replant bare or eroded areas, and re-mulch to produce a uniform prairie

3.11 ACCEPTANCE OF LAWNS:

A. When lawn Work is Substantially Complete, including maintenance, Landscape Architect and Owner will, upon request, make an inspection to determine acceptability:

1. Lawn Work may be inspected for acceptance in parts agreeable to Owner, provided Work offered for inspection is complete, including maintenance.

B. Replant rejected work and continue specified maintenance until re-inspected by Landscape Architect and Owner and found to be acceptable.

C. Sodded lawns will be acceptable provided requirements, including maintenance, have been complied with and healthy, well-rooted, even-colored, viable lawn is established free of weeds, open joints, bare areas, and surface irregularities.

D. Native Grass Stands (When Required by Plan)

1. An acceptable native grass stand will contain no less than 5 healthy mature or developing plants per square foot with a population distribution per 10,000 square feet representative of ratios in the original blend. The result of maintenance shall be that weeds are being controlled through competition with the desired plants, and that mowed bio-mass is not accumulating in such a manner to be detrimental to existing plant materials as determined by the Landscape Architect.
2. An acceptable native grass stand shall control erosion through root mass development. The occurrence of rills and gullies shall be unacceptable.

3.11 CLEANUP:

A. Promptly remove soil and debris created by lawn Work from paved areas. Clean wheels of vehicles prior to leaving Site to avoid tracking soil onto surfacing of roads, walks, or other paved areas.

END OF SECTION 329200

Sheet
L04

Final Development Plans

19-0141
Summit at West Bryor
Lee's Summit, Jackson, Missouri

Lawn Specifications

NO.	BY	DATE	REVISION
4.	JMM	AG	10/02/19	REVISED FDP SUBMITTAL
3.	JMM	AG	09/11/19	REVISED FDP SUBMITTAL
2.	JMM	AG	07/31/19	REVISED FDP SUBMITTAL
1.	JMM	AG	07/26/19	ORIGINAL SUBMITTAL

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KS Certificate of Authority: E-1814

STATE OF MISSOURI
J. ANDREW GABBERT
NUMBER LA-2007013278
LANDSCAPE ARCHITECT
10-01-19

SECTION 328400 - IRRIGATION SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY:

A. This Section includes piping, valves, sprinklers, specialties, and wiring for automatic-control irrigation systems.

1.02 REFERENCE STANDARDS

A. ASTM B32 - Standard Specification for Solder Metal; 2008.

B. ASTM B42 - Standard Specification for Seamless Copper Pipe, Standard Sizes; 2010.

C. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2009.

D. ASTM D2235 - Standard Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings; 2004 (Reapproved 2011).

E. ASTM D2241 - Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series); 2009.

F. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems; 2004 (Reapproved 2009).

G. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); National Electrical Manufacturers Association; 2008.

1.03 DEFINITIONS:

A. Circuit Piping: Downstream from control valves to sprinklers, specialties, and drain valves. Piping is under pressure during flow.

B. Irrigation Main Piping: Downstream from backflow preventer to water distribution piping to, and including, control valves. Piping is under water-distribution-system pressure.

C. Service Line Piping: Downstream from point of connection to backflow preventer.

D. The following are industry abbreviations for plastic materials:

1. ABS: Acrylonitrile-butadiene-styrene plastic.
2. FRP: Fiberglass-reinforced plastic.
3. PE: Polyethylene plastic.
4. PP: Polypropylene plastic.
5. PVC: Polyvinyl chloride plastic.
6. HDPE: High Density Polyethylene plastic

1.04 SYSTEM REQUIREMENTS:

A. Location of Watering System and Specialties: Irrigation Contractor to provide shop drawings showing the minimum coverage per layout. Actual locations may vary per field installation, it shall be the responsibility of the irrigation contractor to provide water coverage of areas indicated on the plans.

B. Minimum Working Pressures: The following are minimum pressure requirements for piping, valves, and specialties, unless otherwise indicated:

1. Irrigation Main Piping: 200 psig.
2. Circuit Piping: 200 psig.

1.05 SUBMITTALS:

A. Product Data: Include pressure ratings, rated capacities, and settings of selected models for the following:

1. General-duty valves, Specialty valves, Control-valve boxes, Irrigation specialties.
2. Controllers. Include wiring diagrams.
3. Control wiring. Include splice kits.

B. Shop Drawings: Irrigation Contractor shall provide design documentation for approval prior to installation. Shop drawings shall include but not be limited to the following information: Indicate piping layout to water source and tap (including coordination & reuse of existing system), coordinate location of sleeves under pavement, electrical routing and wire diagrams, plant and landscaping features, site structures, schedule of fittings, zone and system calculations, drawing scale & north arrow and all component details.

C. Field quality-control test reports. Irrigation contractor should perform flow test to verify available pressure.

D. Operation and Maintenance Data: For irrigation systems, to include in emergency shut down, operation, and maintenance manuals. Include data for the following:

1. Automatic-control valves.
2. Controllers (if required).
3. Winterization procedures.
4. System start-up, shut-down, winterization, operation and maintenance.
5. Final Valve Schedule List.

E. As-Built Drawings: Irrigation Contractor shall submit as-built drawing showing valves, quick coupler & main line routing with coordinate locations & depth.

F. Extra Materials: Provide the following for Owner's use in maintenance of project.

1. Extra Spray/Rotary Heads: Two each type & size.
2. Extra Drip Line: Furnish an extra 100 LF dripline tubing to match type installed on Project.
3. Extra Valve Keys for Manual Valves: Two.
4. Extra Valve Box Keys: Two.
5. Extra Valve Marker Keys: Two
6. Wrenches: One for each type head core and for removing and installing each type head.
7. Valves: Furnish two extra valves of each type and size installed on the project.

1.06 QUALITY ASSURANCE:

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

1. Approved Manufacturer: Rainbird, Toro, Hunter, Netafim, and as listed in this specification.
2. Contractors shall submit documentation for Manufacturers not listed above
3. All like products shall be from a single supplier as listed, for example, if netafim dripline is used, all dripline in project shall be netafim.

C. Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years of expierence.

1.07 DELIVERY, STORAGE, AND HANDLING:

A. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.

B. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

1.08 PROJECT CONDITIONS:

A. Interruption of Existing Water Service: Do not interrupt water service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water service according to requirements indicated:

1. Notify Owner and/or General Contractor no fewer than two days in advance of proposed interruption of water service.
2. Disruption of services shall be by owner's written permission only.

B. If Existing irrigation system is present. Contractor shall be responsible for tapping into existing system, capping off existing system where needed and verifying condition of existing system.

1.09 COORDINATION:

A. Coordinate timing of installation, location and installation of all sleeves under sidewalks or drives. Owner shall not be responsible for boring due to lack of coordination of this requirement.

B. Coordinate power requirements and connection of controller as required.

C. Coordinate existing water supply requirements.

D. Coordinate with landscape installation

E. Irrigation Contractor to attend on-site meeting at both project kick-off and prior to installation after approved shop drawings.

PART 2 - PRODUCTS

2.01 MANUFACTURERS:

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified. All products of type shall be from a single manufacturer as listed.

2.02 PIPES, TUBES, AND FITTINGS:

A. Refer to Part 3 "Piping Applications" Article for installation of pipe, fitting, and joining materials.

B. PVC, Pressure-Rated Pipe:

1. ASTM D2241, CL 200 SDR-21.

C. Pipe Risers at Valves: 160 psi PVC pipe.

D. PVC Socket fittings, CL 200, ASTM D2467.

E. Sleeve Material: PVC - Schedule 80, Minimum size shall be 2 times the irrigation pipe diameter with a minimum size 2.5" diameter

2.03 JOINING MATERIALS:

A. Solvent Cement (PVC Piping):

1. Primer and solvent conforming to ASTM D2564-02.

2.04 OUTLETS

A. Rotary Type Sprinkler Head: Pop-up type with screens; fully adjustable for flow and pressure; size as indicated; with letter or symbol designating degree of arc and arrow indicating center of spray pattern. Provide Head to Head coverage

B. Spray Type Sprinkler head: Pop-up type with in-stem pressure regulator system. Pop-up height shall vary with location. Provide nozzel with spray pattern as required to minimize waste. Adjustable patterned nozzels shall be set by the contractor for optimum throw. Provide Head to Head coverage

C. Drip Specialties

1. Drip Zone Control Kit:
   a. Factory assembled kit for controlling low-flow irrigation zones comprised of the following components:
      1) Medium-flow remote control valve with 'double knife' diaphragm (1/2-inch diameter seat), double-filtered pilot flow, external bleed and internal bleed for manual operation.
      1) Pressure regulator with plastic body capable of maintaining outlet pressure of 30 psi.
      2) Filtration provided by either:
         2)a. Inline Wye Filter of heavy-duty glass-filled nylon material with 150-mesh filter screen (factory-installed).
         2)b. Inline Basket filter with threaded top section containing an indicator changing from green to red to indicate when the filter is full. Provide with factory-installed 150 mesh filter minimum.
2. Manufacturers
   a. Rainbird, Toro, Hunter, Netafim, Approved Equal

3. Landscape Dripline
   a. Flexible PE tubing with pre-installed pressure-compensating emitters with dual outlet ports, 16 mm (0.630 inch) outside diameter. Flow rate shall be 0.6 gallons-per-hour.
   b. Manufactures: As listed above
   c. Warranty: 5 years free from original defects in materials and workmanship and 7 years for environmental stress cracking.
4. Compression Fittings:
   a. UV-resistant ABS fittings with Buna rubber seal capable of accepting 1/2-inch poly tubing from 16 to 18 mm outside diameter.
   b. Manufacturers: As listed above
5. Air Vacuum Relief Valve:
   a. Plastic housing with rustproof materials designed for use with dripline tubing.
   b. Manufactures: As listed above
6. Flush Valve:
   a. Plastic ball valve featuring PVC body and ball construction, EPDM Seat Seals and O ring, rated to 150 psi at 73°F.
   b. Manufacturers: As listed Above

2.05 SHUTOFF & GENERAL-DUTY VALVES:

A. Cast Brass Gate Valves: Resilient-seated, nonrising-stem, cast brass body and bonnet (ASTM B584) gate valve; with brass stem and stem nut.
1. Maximum Working Pressure: 200 psig.
2. End Connections: Threaded ends.
3. Handle: Brass cross.
4. Manufacturers:
   a. Matco-Norca 514.
   b. Approved Equal.
5. Operating Wrenches: Furnish total of two (2) steel, tee-handle operating wrench(es) with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut.

B. Plastic Automatic Control Valves: The electric remote control valve shall be a normally closed 24 VAC 50/60 Hz (cycles/second) solenoid actuated globe/angle. The valve pressure rating shall not be less than 150 PSI. The valve body and bonnet shall be constructed of high impact, weather resistant PVC with stainless steel screws. The valve shall have manual open/close control (internal bleed) for manually opening and closing the valve without electrically energizing the solenoid. The valve's internal bleed shall prevent flooding of the valve box. The valve shall house a fully-encapsulated, one-piece solenoid. The solenoid shall have a captured plunger with a removable retainer for easy servicing, and a leverage handle for easy turning. This 24 VAC 50/60 Hz solenoid shall open with 19.6 VAC minimum at 150 psi. At 24 VAC, average inrush current shall not exceed 0.41 amps. Average holding current shall not exceed 0.28 amps. The valve shall have a flow control stem for accurate manual regulation and/or shut off of outlet flow. The valve must open or close in less than 1 minute at 150 PSI, and less than 30 seconds at 20 PSI. The valve must match the demand required by the proposed zone.
1. Manufacturers: PGA Series by Rain Bird Sprinkler Mfg. Corp., Approved Equal

C. Valve Box and Cover: Box and cover, with open bottom and openings for piping; designed for installing flush with grade. Include size as required for valves and service.
1. General Duty Valves
   a. Shape: Round
   b. Sidewall: PE, ABS, or FRP
   c. Cover Material: PE, ABS, FRP, Green in color
2. Remote Control Valves
   a. Shape: Rectangular
   b. Sidewall: PE, ABS or FRP
   c. Cover Material: PE, ABS or FRP, Green in color
3. Speciality Valve Boxes
   a. Shape: Box and cover, with open bottom and openings for piping; designed for installing flush with grade. Include size as required for valves and service
   b. Sidewall: PE, ABS or FRP
   c. Cover Material: PE, ABS or FRP, Green in color
4. Drainage Backfill: Cleaned gravel or crushed stone, graded from 3/4"-inch minimum to 1 inch maximum.

2.06 SPECIALTY VALVES:

A. Quick-Couplers: Factory-fabricated, brass, two-piece assembly. Include coupler water-seal valve; removable upper body with spring-loaded or weighted, locking rubber-covered cap; hose swivel with ASME B1.20.7, 3/4-11.5NH threads for garden hose on outlet; and operating key.
1. Locking-Top Option: Vandal-resistant, single-lug locking feature. Include two matching keys.
2. Manufacturers:
   a. 33DLRC by Rain Bird Sprinkler Mfg. Corp.
   b. 075-SLVC by The Toro Company
   c. Approved equal.

2.07 CONTROLLER

A. Existing controller may be used if space and functions allow. Irrigation contractor shall verify the existing controller for location, space and scheduling requirements prior to shop drawing approval

B. If required, Controller shall be provided meeting the following requirements. .
1. Shall include a base unit with expansions slots to accommodate zones required for working system.
2. Shall be capable of operating two 24 VAC solenoid valves per zone plus a mater valve.
3. Shall operate on 120VAC +/- 10% at 60Hz
4. Shall be capable of providing watering cycles by day of week, odd, even and cyclic.
5. Shall have a display capable of displaying each zones schedule start days and watering windows in the same screen with active watering schedule notification
6. Shall have 12-hour AM/PM or 24 hour clock with a midnight day change over
7. Shall have 365 day calendar backed up against power interruptions by an internal lithium battery that will maintain date and time for 10 years. Shall provide notification of lost power.
8. Shall be capable of communicating with the existing on-site weather sensor that measure site temperature and rainfall.
9. Controller shall have programmable rain shut off threshold
10. Shall be capable in running off time based program or ET based programming
11. The controller shall be EPA WaterSense labeled
12. Shall offer manual watering of all zones
13. Controller shall be capable of being located in the same location as the existing location.
14. Manufacturer's
   a. Rainbird
   b. Approved Equal

2.08 CONTROL WIRE (REMOTE VALVE TO CONTROLLER)

A. General: UL 493, Type UF, single conductor, with solid-copper conductor and PE insulation; suitable for direct burial
1. Low-Voltage, Branch-Circuit Cables: No. 14 AWG minimum, between controllers and automatic control valves; color coded per the following
   a. Common Wire - White
   b. Control Wire - Red
   c. Spare Common Wire - Green
   d. Spare Control Wire - Blue
2. Splicing Materials: Manufacturer's packaged kit consisting of insulating, spring-type connector or crimped joint and epoxy resin moisture seal; suitable for direct burial
3. Each wire path shall be grounded using a Rain Bird MSP-1 surge protector, or approved equal
4. All connectors shall be 3M DBR connectors only

2.09 RAIN/TEMPERTURE SENSOR

A. Automatic rain shutoff sensor shall be capable of sensing precipitation/temperature and interrupting irrigation during rain and low temperature events.

B. All sensors shall be capable of interfacing with approved controller.

C. Contractor shall field locate for optimum performance. Location shall be approved prior to installation.

2.10 MISCELLANEOUS SPRINKLER EQUIPMENT:

A. Valve Identification Tags: Pre-printed plastic tags with minimum text height of 1 inch, capable of being attached to valve stem or valve wire within valve box.

B. Gravel: Clean washed gravel ¾" nominal diameter.

2.11 POINT OF CONNECTION

A. Irrigation Contractor shall be responsible for providing all point of connection taps, back flow devices, valves, vaults & covers.

B. Irrigation Contractor shall show in the provided shop drawings the point of connection for approval.

C. Irrigation Contractor shall provide a Master Valve for the proposed irrigation system.

PART 3 - EXECUTION

3.01 GENERAL:

A. Install piping and wiring in sleeves under sidewalks, roadways, and parking lots.
1. Install piping sleeves by boring or jacking under existing paving if possible. No open cutting of pavement shall be allowed.
2. Irrigation Contractor shall coordinate sleeve locations under new construction during early construction stages to avoid boring where possible; Refer to Sheet LS200 for sleeve locations.

B. Provide minimum cover over top of underground piping according to the following:
1. Irrigation Main Piping: Minimum depth of 18 inches below finished grade to top of pipe.
2. Circuit (Lateral) Piping: Minimum depth of 12 inches below finished grade to top of pipe.
3. Sleeves: 18 inches Minimum.

3.02 PREPARATION:

A. Set stakes to identify locations proposed irrigation system. Obtain owners approval before excavation. Locate all utilities prior to excavation.

B. Route piping to avoid conflicts with other work

C. Unless otherwise installed, bore for sleeves under existing pavement as indicated on plans. Employ equipment and methods designed for horizontal boring.
1. Sleeves shall be installed prior to pavement installation. All additional costs for boring sleeves shown in the plan shall be the responsibility of the contractor.

3.03 TRENCHING

A. Trench and backfill with subsoil excavated on-site. Fill material shall be free of lumps larger than 3-inches, rocks larger than 2-inches and debris. Topsoil shall be placed as noted on the plans.

B. Trench shall accommodate grade changes

C. Maintain trenches free of debris, material or obstructions that may damage pipe.

3.04 PIPING APPLICATIONS:

A. Install components having pressure rating equal to or greater than system operating pressure.

3.05 PIPING INSTALLATION:

A. Location and Arrangement: To be determined by shop drawing approval. Drawings shall indicate irrigation type to be installed.

B. Install piping free of sags and bends.

C. Install groups of pipes parallel to each other spaced to permit valve servicing.

D. Install fittings for changes in direction and branch connections.

E. Install dielectric fittings to connect piping of dissimilar metals.

F. Install underground thermoplastic piping according to ASTM D2774.

G. Lay piping on solid subbase, uniformly sloped without humps or depressions.

H. Install PVC piping in dry weather when temperature is above 40°F (5°C). Allow joints to cure at least 24 hours at temperatures above 40°F (5°C) before testing unless otherwise recommended by manufacturer.

3.06 JOINT CONSTRUCTION:

A. Construct solvent-weld joints per ASTM D2855 and Butt Heat Fusion (HDPE Piping) per ASTM D3261 & ASTM D2657

B. Construct mechanical joints per manufacturer's recommendations:
1. Provide adequate joint restraint at all mechanical joints through thrust blocking or mechanical restraints.

3.07 VALVE INSTALLATION:

A. Underground Gate Valves: Install in round valve box with top flush with grade.

B. Control Valves/Master Valves: Install in rectangular control-valve box.

C. Quick Couple Valves: Install in round valve box.

3.08 OUTLET INSTALLATION:

A. Drip line Installation: Install drip lines per manufacturer's recommendations in areas shown on the plans and the approved shop drawings. Flush all lines prior to installation of drip lines.

B. Rotary/Spray Head Installation: Install rotary/spray heads per manufacturer's recommendations in areas shown on the plans and approved shop drawings. Heads shall be installed flush with finish grade. Flush all lines prior to installation of irrigation heads.

3.09 AUTOMATIC-CONTROL SYSTEM INSTALLATION:

A. Install control wire in same trench as irrigation piping as approved with shop drawings. Provide conductors of size not smaller than recommended by controller manufacturer. Install wire in separate sleeve under paved areas if irrigation piping is installed in sleeve.

B. Connect to Controller and accessories per manufacturers recommendations

3.10 CONNECTIONS:

A. Make all electrical connections in conformance with local code requirements. Provide waterproof connectors for all underground electrical connections.

B. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.11 LABELING AND IDENTIFYING:

A. Provide valve tags at each remote control valve as shown on the approved shop drawings.

B. Install Warning Stakes per detail

3.12 FIELD QUALITY CONTROL:

A. Perform the following field tests and inspections and prepare test reports:
1. Hydrostatic Test: After installation and prior to backfillling, utilize quick-couple valves to charge mainline with pressurized air to 100 psi. System will be able to maintain pressure with no more than 5 psi loss in one hour.
   a. Owner's representative must be in attendance during test.
   b. Provide a minimum of 48 hours notice prior to scheduled test.
   c. Hydrostatic test results obtained without Owner's representative present will be rejected and Contractor will be required to re-test with representative in attendance.
2. Operational Test: After electrical circuitry has been energized, operate controllers and automatic control valves to confirm proper system operation.
3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

B. Remove and replace defective units and retest as specified above until all requirements are met.

3.13 STARTUP SERVICE:

A. Verify that controller is installed and connected according to the Owners direction.

B. Verify that electrical wiring installation complies with manufacturer's submittal and installation requirements.

C. Complete startup checks according to manufacturer's written instructions.

3.14 ADJUSTING:

A. Adjust settings of controller and provide initial watering schedule per Owner's requirements.

B. Adjust automatic control valves to provide flow rate of rated operating pressure required for each sprinkler circuit.

3.15 CLEANING:

A. Flush dirt and debris from piping before installing sprinklers and other devices.

3.16 DEMONSTRATION:

A. Schedule a complete demonstration and system walk-through with the Owner's representative. Final Payment will not be made until all items noted during demonstration and walk-through have been made by Irrigation Contractor and verified by Owner's staff.
1. Irrigation Contractor, Owner and Landscape Architect shall each certify that the system performs as designed and there are no unacceptable areas of overspray on adjacent pavements, buildings or other site elements or fixtures.

3.17 MAINTENANCE

A. Irrigation Contractor shall maintain and coordinate system for plant establishment throughout 90 day maintenance period. At end of maintenance period, contractor shall set system for standard operation based on zone requirements. Any continued plant establishment or over watering necessary for continued plant establishment shall be given to the owner as a written notice.

B. Provide one complete spring start-up and a fall shutdown by installer, at no extra cost to Owner. The Contractor shall provide this schedule at the end of the maintenance period.

3.18 WARRANTY:

A. Irrigation Contractor shall warranty irrigation system for a minimum of 12 months starting from the date of Substantial Completion. Warranty shall be for all installed equipment and workmanship of installation.

B. Irrigation Contractor shall be responsible for all system leaks due to quality of installation.

3.19 DOCUMENTATION:

A. Provide a complete operations and maintenance manual to the Owner in a three-ring binder with the following items, separated by tabbed dividers for clear organization.
1. Provide a label on the spine of the binder clearly stating "IRRIGATION SYSTEM OPERATION AND MAINTENANCE".
2. Table of Contents.
3. Cut-sheets or manufacturer's data for all installed equipment including:
   a. Remote Control Valves.
   b. Quick Couple Valves.
   c. Controller.
4. Operations Data from manufacturers documenting diagnostic, repair and replacement procedures for all items "a" through "c" identified above.
5. Complete description of spring start-up operations including:
   a. Valve inspection.
   b. Controller programming guidelines for spring, summer and fall watering schedules.
   c. Controller battery replacement (As Required).
   d. Rain Sensor Battery replacement (As Required)

B. Provide an as-built drawing at the same size and scale as the design drawings with the following information clearly shown:
1. Location of all sleeves with coordinates.
2. Location of mainline and lateral pipe runs with sizes clearly indicated with coordinates.
3. Location of all valves with coordinates.
4. Location of controller and rain sensor (As Required)
5. Utilize standard industry symbols and notations for all equipment.

C. Provide a copy of the Maintenance/Operations Manual and As-Built Drawing to the owner for review and approval.
1. Contractor shall make all revisions noted and required by the owner.
2. Contractor is required to demonstrate completion of all revisions, which may include providing a revised copy for additional review at the discretion of the owner.

D. Maintenance/Operations Manual and As-Built Drawing shall be completed and turned over to the owner before Final Payment will be made to the Irrigation Contractor.

END OF SECTION 328400

Sheet
L05

Final Development Plans

19-0141
Summit at West Bryor
Lee's Summit, Jackson, Missouri

Irrigation Specifications

NO	BY	DATE	REVISION
1.	JMM	AG	07/26/19	ORIGINAL SUBMITTAL
2.	JMM	AG	07/31/19	REVISED FDP SUBMITTAL
3.	JMM	AG	09/11/19	REVISED FDP SUBMITTAL
4.	JMM	AG	10/02/19	REVISED FDP SUBMITTAL

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10-02-19