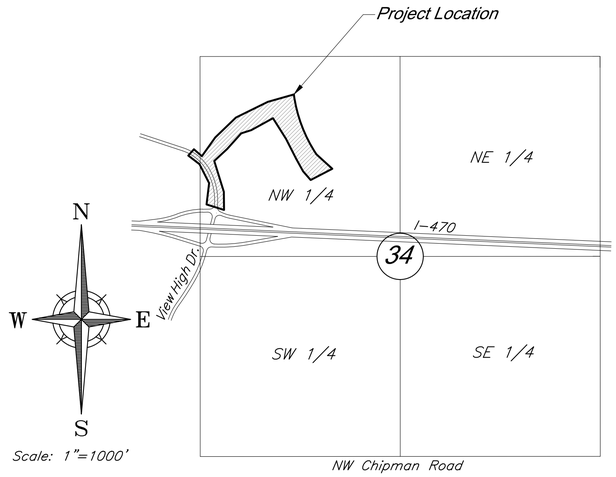
# PUBLIC STREET, STORM SEWER AND STREET LIGHTING PLANS
# FOR
# PARAGON STAR DEVELOPMENT

## Sections 33 & 34–Township 48–Range 32
## City of Lee's Summit
## Jackson County, Missouri

**Design Speed = 40 mph**




Scale: 1"=1000'

### VICINITY MAP

Section 33 & 34-T48N-R32W

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| 2 | General Layout |
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| 4 | Typical Sections |
| 5 | Demolition Plan |
| 6 | Plan & Profile (View High Dr) |
| 7-8 | Plan & Profile (View High Pkwy) |
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| 11 | Floodway & Floodplain Plan |
| 12-14 | Intersection Details |
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| 22 | Storm Drainage Map |
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| 49 | Street Lighting Wiring Diagram |
| 50-52 | Pavement Marking & Signing Plan View High Drive |
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| 57-59 | Pavement Marking & Signing Plan River Road |
| 60-64 | Pavement Marking & Signing Details |
| 65 | Construction Sequencing Plan |
| 66 | Traffic Control Detour |
| 67 | Traffic Control Plan |
| 68-69 | Temporary Traffic Control Details |


### UTILITY CONTACTS

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email: jeff.thorn@cityofLS.net

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Missouri Gas Energy
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**Telephone**
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AT&T
1425 Oak Street
Kansas City, MO 64106
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Fax (816) 275-1109
email: gc6954@att.com

Missouri One Call System 1-800-344-7483 (DIG-RITE)

### PROJECT BENCHMARK

BM #11 – Chiseled "L" on top Northeast corner of concrete guardrail at the Northeast corner of I470 bridge spanning View High Drive.
EL=833.80

DEVELOPED AND OWNED BY:
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801 NORTHWEST COMMERCE CENTER
LEE'S SUMMIT, MISSOURI 64086
PHONE: (816) 802-6801
CONTACT: Mr. Flip Short
EMAIL: fshort@legacytouch.com

PREPARED & SUBMITTED BY:
GEORGE BUTLER ASSOCIATES, INC.
9801 RENNER BOULEVARD
LENEXA, KANSAS 66219
PHONE: 913-492-0400
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CONTACT: BRAD BURTON P.E.
EMAIL: BBURTON@GBATEAM.COM

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-25982
REGISTERED PROFESSIONAL ENGINEER
1/7/19

PROJECT ENGINEER: DATE:

APPROVED:

CITY ENGINEER: DATE:

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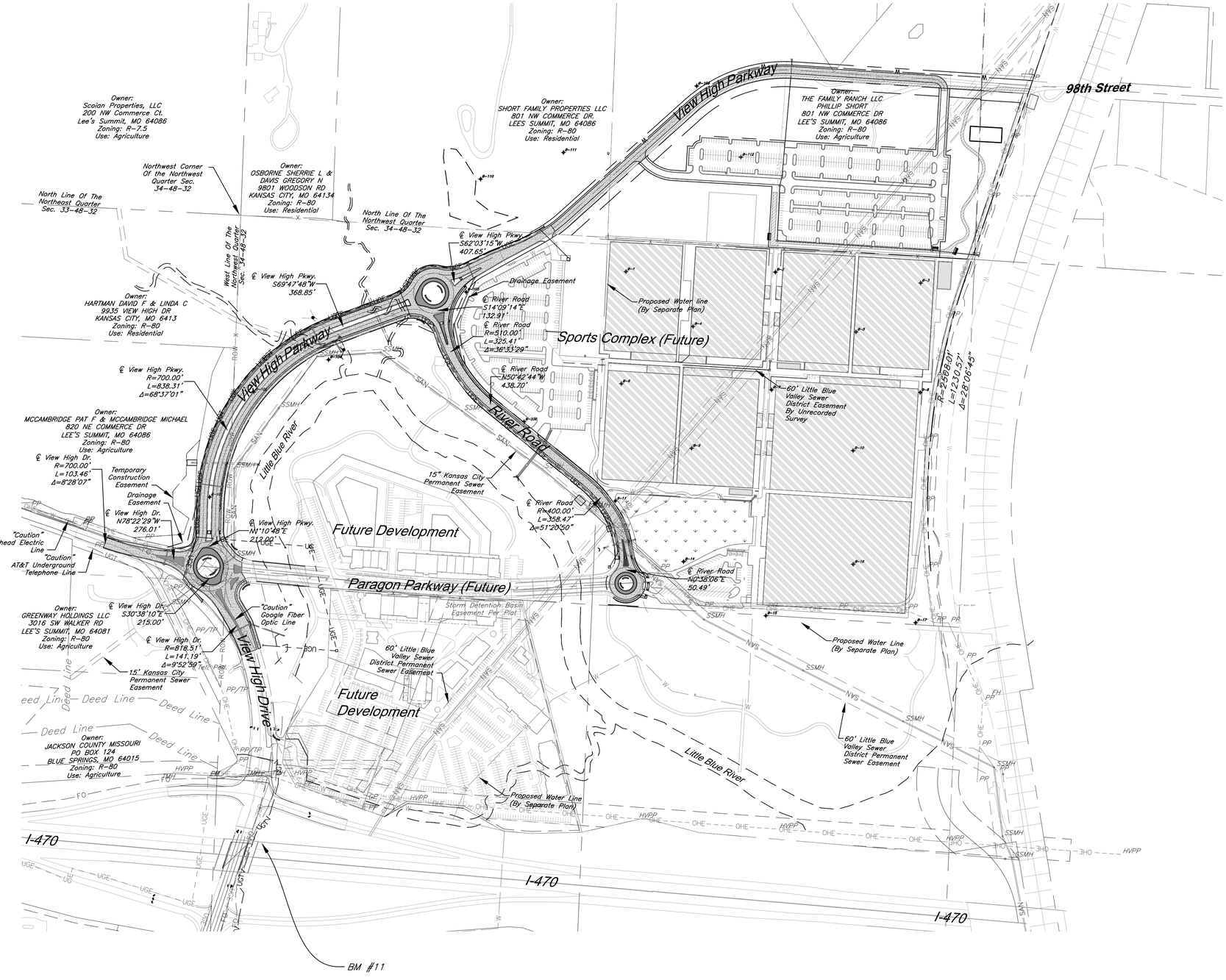
Bradley D. Burton
Professional Engineer
License No. 25862

Street and Storm Sewer Plans

# Paragon Star Development

Lee's Summit, Missouri

| NO. | DATE | REVISIONS | BY | APPROVED |
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## Legend

| | |
|---|---|
| CATV Ped. | Cable TV Pedestal |
| P.P. | Power Pole |
| G.A. | Guy Anchor |
| E.M.H. | Electrical Manhole |
| E.M. | Electric Meter |
| E.T. | Electrical Transformer |
| Elec. Ped. | Electric Pedestal |
| P.P./T.P. | Power Pole/Telephone Pole |
| P.P./L.P. | Power Pole/Light Pole |
| | Bollard/Guard Post |
| G.M. | Gas Meter |
| G.V. | Gas Valve |
| | Curb Inlet |
| | Junction Box |
| S.M. | Sanitary Sewer Manhole |
| S.C.O. | Sanitary Cleanout |
| L.P. | Light Pole |
| Y.L. | Yard Light |
| B-1 | Boring Hole |
| | Sign |
| P.C. | Property Corner |
| T.M.H. | Telephone Manhole |
| Tel. Ped. | Telephone Pedestal |
| T.P. | Telephone Pole |
| T.S.C.B. | Traffic Signal Controller Box |
| | Tree Coniferous |
| | Barbed Wire Fence |
| | Centerline |
| FO | Fiber Optic Line |
| G | Gas Line |
| | Guard Rail |
| OHE | Over Head Electric |
| OHT | Over Head Telephone |
| OHTV | Over Head Cable TV |
| P | Property Line |
| ROW | Right-of-Way Line |
| SAN | Sanitary Sewer Line |
| | Stream |
| | Tree Line |
| UGE | Underground Electric |
| UGT | Underground Telephone |
| UGTV | Underground Cable TV |
| W | Water Line |
| 1010 | Proposed Grades |
| | Proposed Storm Sewers |
| 1008 | Existing Grades |
| | Existing Storm Sewers |
| | Tree Deciduous |
| F.H. | Fire Hydrant |
| W.M. | Water Meter |

## PROJECT BENCHMARK

BM #11 – Chiseled "L" on top Northeast corner of concrete guardrail at the Northeast corner of the I470 bridge spanning View High Drive.
EL=833.80

**General Layout**

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Bradley D. Burton
Professional Engineer
License No. 25862

Street and Storm Sewer Plans
**Paragon Star Development**
Lee's Summit, Missouri

| NO. | DATE | REVISIONS | BY | APPROVED |
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# GENERAL NOTES

General Notes:

1. All Construction shall conform to the current City Standards and Specifications of Lee's Summit, MO in effect at the time of the City's approval date shown on the approved plans and incorporated herein by reference.
2. All traffic control shall be the responsibility of the Contractor and shall be in conformance with the Manual of Uniform Traffic Control Devices (MUTCD).
3. 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.
4. Construction Staking shall be the responsibility of the Contractor.
5. 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 equipment, irrigation systems, etc. Damaged improvements shall be repaired in conformance with the latest Lee's Summit, MO standards and to the City's satisfaction.
6. All work shall be confined within easements and/or construction limits as shown on the plans.
7. The Contractor shall, prior to the commencement of work, investigate surface and subsurface conditions to be encountered across the site and notify the Engineer if any discrepancies or changed conditions are noted.
8. This project will include numerous activities occurring on site including storm sewer, sanitary sewer, grading, utility etc. Contractor shall coordinate his work with other contractors on site.
9. All trash and debris identified on site shall be properly handled and disposed of in accordance with state of Missouri regulations.
10. All measurements on these plans are horizontal distances, not slope distances.
11. Items not listed separately in the Summary of Quantities are subsidiary to other items.
12. All site concrete shall be KCMMB - 4,000 PSI unless otherwise noted.
13. All Asphalt shall comply with the Kansas City Metropolitan Chapter of the American Public Works Association (APWA) Standard Specifications.

Permitting:

14. Excavation for Utility work within the Right of Way requires a Right of Way work permit from the Public Works Department, in addition to all other permits.
15. Contractor is responsible for obtaining all required permits, paying all fees, and for otherwise complying with all applicable regulations governing the work.
16. No work shall be completed within the existing floodway until the CLOMR has been issued.
17. No work shall be completed within the delineated wetland or regulatory stream channels until the U.S. Corps of Engineers Section 404 permit is issued. All work shall adhere to the terms and conditions of this permit.

Erosion Control:

18. The Contractor is responsible for providing erosion and sediment control BMP's 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.
19. Contractor shall ensure that all construction shall conform to the requirements of the Stormwater Pollution Prevention Plan (SWPPP) a copy of which shall be maintained and updated on site by the Contractor.
20. The Contractor shall seed all disturbed areas within the Public Street Right-of-Way unless otherwise noted in the plans.
21. No trees shall be damaged or removed without prior authorization from owner unless otherwise shown on this plan.
22. Inspection and maintenance of the sediment and erosion control BMPs shall be per the project SWPPP, but at a minimum shall be once every 7 days or within 24 hours of a precipitation event of 0.5 inches or greater. Records of inspections shall be kept with the project SWPPP.
23. Trees, where indicated to be removed, shall be completely removed, including root balls.
24. At the contractors option, removed trees may be mulched on site and used as mulch berms in lieu of sediment fence or straw wattles.

Earthwork:

25. The Contractor shall be responsible for removing and disposing of grass and vegetation that is found on site. Contractor shall strip site of organic material to a depth acceptable to the Geotechnical Engineer and prior to the placement of fill. Disposal of all debris shall be performed by the contractor in strict accordance with all applicable codes and ordinances. All clearing and grubbing, stripping, and grading operations shall be performed in accordance with the recommendations as found in the Geotechnical Report, and erosion control and grading plans for this site.
26. Slopes shall be constructed to a maximum slope of 3:1 (Horiz:Vert).
27. Refer to "Geotechnical Engineering Report: Paragon Star - Soccer Fields" by Terracon Consultants, Inc., dated 6/27/2016 (Terracon Project #02165149) for grading and pavement recommendations and boring logs. All earthwork shall conform to the recommendations of the Report. A copy of the final site soils report and all boring logs will be available for review prior to the commencement of construction. The soils information shown in this set of plans has been provided by Terracon. George Butler Associates, Inc. is not responsible for the adequacy or accuracy of the soils information shown or provided. It is provided for informational purposes only. The content of these plans may change based on recommendations found in the final geo-technical report.
28. Unless otherwise noted, all spot elevations and contours are shown to "finish" grade surface. Contractor shall adjust for any overcut required in paving, parking, landscape, or building pad areas as defined in the Geotechnical Report, these plans, or the project specifications.
29. All temporary slopes and excavations should conform to Occupational Safety and Health Administration (OSHA) standards for the Construction Industry (29 CFR part 1026, subpart P).
30. Cut/Fill - All fills are to be made with suitable structural fill material in accordance with the project's geotechnical report recommendations.

Utility:

31. All Manholes, Catch Basins, Utilty Valves, Meter Pits, and other utility equipment shall be adjusted or rebuilt to grade as required.
32. Prior to beginning work, the Contractor shall notify all utility companies who have facilities in the vicinity of the project area of the work to be performed.
33. All Utility extensions and construction shall conform to the Standards and Specifications of the applicable Utility Companies.

Storm Sewer:

34. All RCP shall be Class III.
35. All HDPE Pipe shall be ADS N-12. Pipe shall meet AASHTO M294.
36. Pipe Lengths are called out from center of structure to center of structure.
37. Drainage across the project site during construction shall be the Contractor's responsibility. Surface drainage shall be controlled to reduce or prevent the flow of surface water onto adjacent grounds. Contractor shall control downstream erosion and silting during construction. Flexibility is given to to the Contractor to make minor grading revisions along roads or between building pads to improve drainage during construction, with prior approval of the engineer.
38. Prior to ordering precast storm sewer structures, Contractor shall provide shop drawings to the Engineer for review and approval.

**General Notes**

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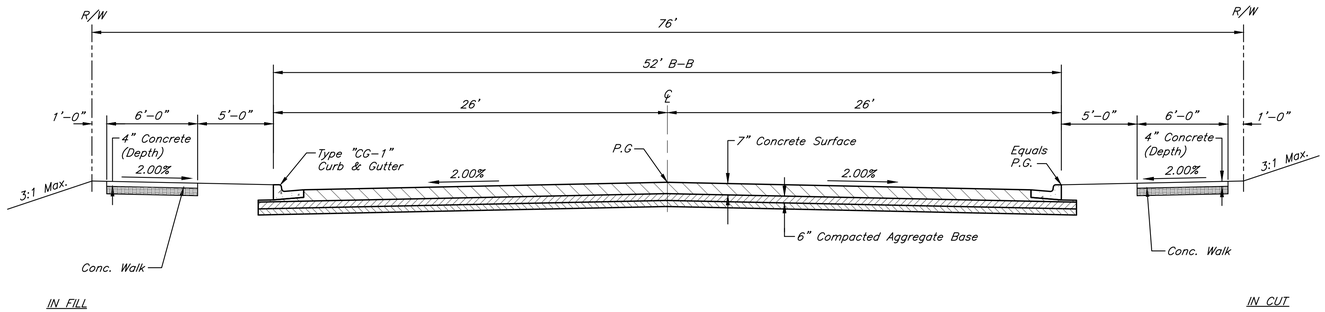
Bradley D. Burton
Professional Engineer
License No. 25862

Street and Storm Sewer Plans

**Paragon Star Development**

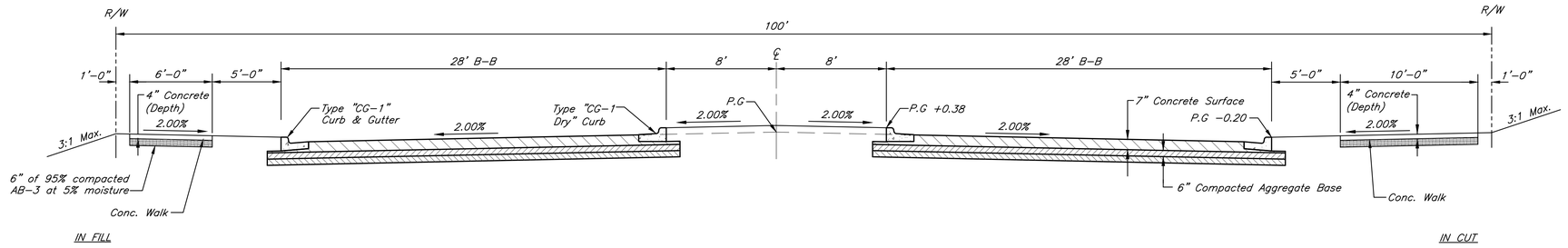
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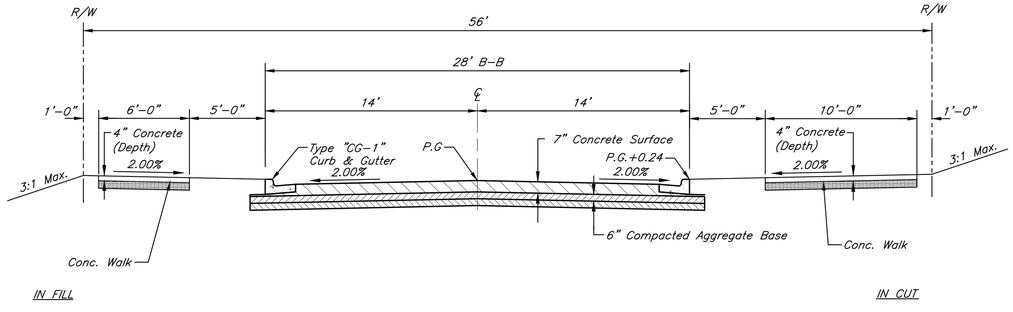

## TYPICAL SECTION
## VIEW HIGH DRIVE

Scale: 1" = 5'




## TYPICAL SECTION
## VIEW HIGH PARKWAY and PARAGON PARKWAY

Scale: 1" = 5'




## TYPICAL SECTION
## RIVER DRIVE

Scale: 1" = 5'

**Typical Sections**

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Professional Engineer
License No. 25862

Street and Storm Sewer Plans

# Paragon Star Development

Lee's Summit, Missouri

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## PROJECT BENCHMARKS

BM #11 – Chiseled "L" on top Northeast corner of concrete guardrail at the Northeast corner of I470 bridge spanning View High Drive.
EL=833.80

Notes:

1. All material to be removed shall be disposed of off site by contractor. All disposal shall meet all applicable local, state, and federal guidelines.
2. Trees marked for removal shall be completely removed, including root balls.
3. All pavement and concrete shall be cleanly sawcut prior to removal.
4. All demolition shall be as per these plans and shall adhere to all local, state, and federal laws, ordinances, codes, and statutes governing such demolition.
5. Contractor shall remove any existing facilities as required to complete the construction of all site improvements detailed on these plans.
6. Any Utility relocation shall be performed by respective Utility companies.
7. Stapling, nailing or otherwise attaching materials to trees to be preserved is not allowed.

TO BE REMOVED:

| | |
|---|---|
| Asphalt | 4810 SY |
| Curb and Gutter | 100 LF |
| Street Signs | 4 |
| Fence | 220 LF |
| Guardrail | 78 LF |
| 4'x2.5' FO Vault | 1 |
| 18" CMP | 34 LF |

## LEGEND

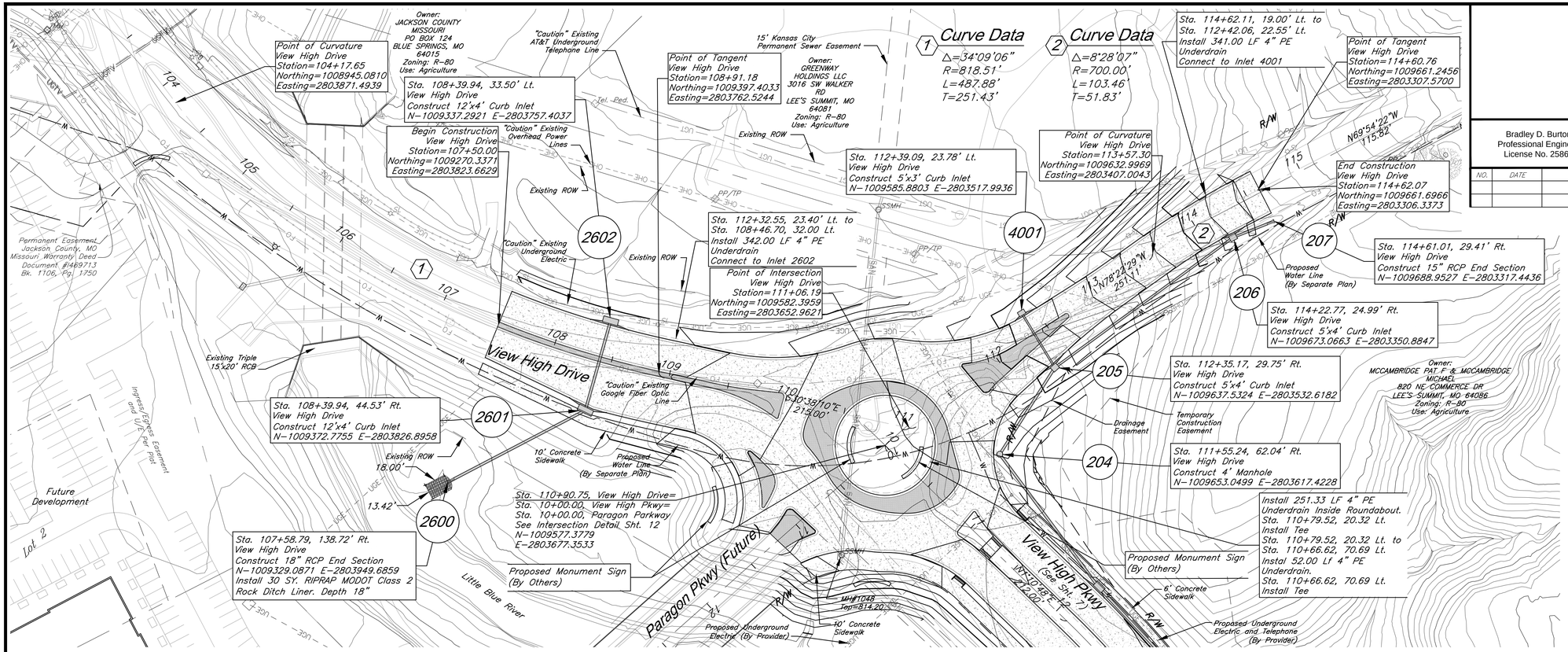
- Existing asphalt pavement to be removed
- Existing site features to be removed
- Limits of Disturbance

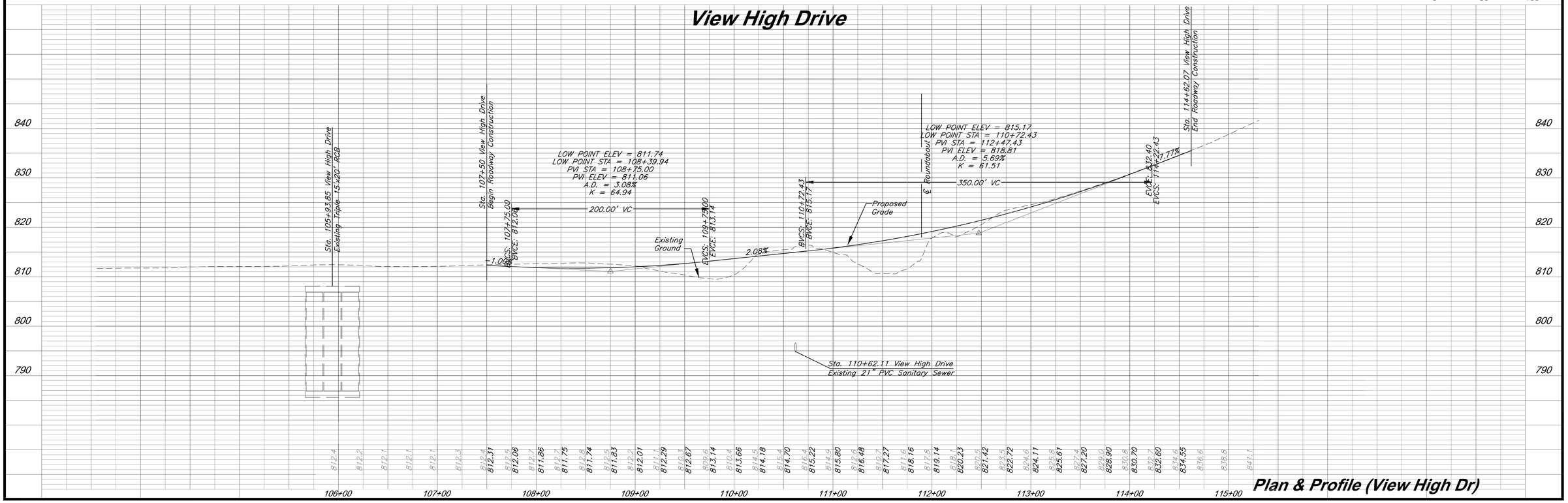
**CAUTION!**
Existing Utilities shown per the best information available to the Engineer. Contractor to locate existing utilities and irrigation system prior to construction

60' 0' 60' 120'
SCALE : 1 INCH = 60 FEET

# Demolition Plan

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Professional Engineer
License No. 25862

Street and Storm Sewer Plans

# Paragon Star Development

Lee's Summit, Missouri

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## PROJECT BENCHMARK

BM #11 – Chiseled "L" on top Northeast corner of concrete guardrail at the Northeast corner of I470 bridge spanning View High Drive.
EL=833.80

Notes:

1. Pipe length called out is from center of structure to center of structure.
2. Storm Sewer Structure Station offset and coordinates based on center of structure. Top elevations are top of casting.
3. Boring information based on original undisturbed earth – see Geotechnical report.

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Street and Storm Sewer Plans

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Lee's Summit, Missouri

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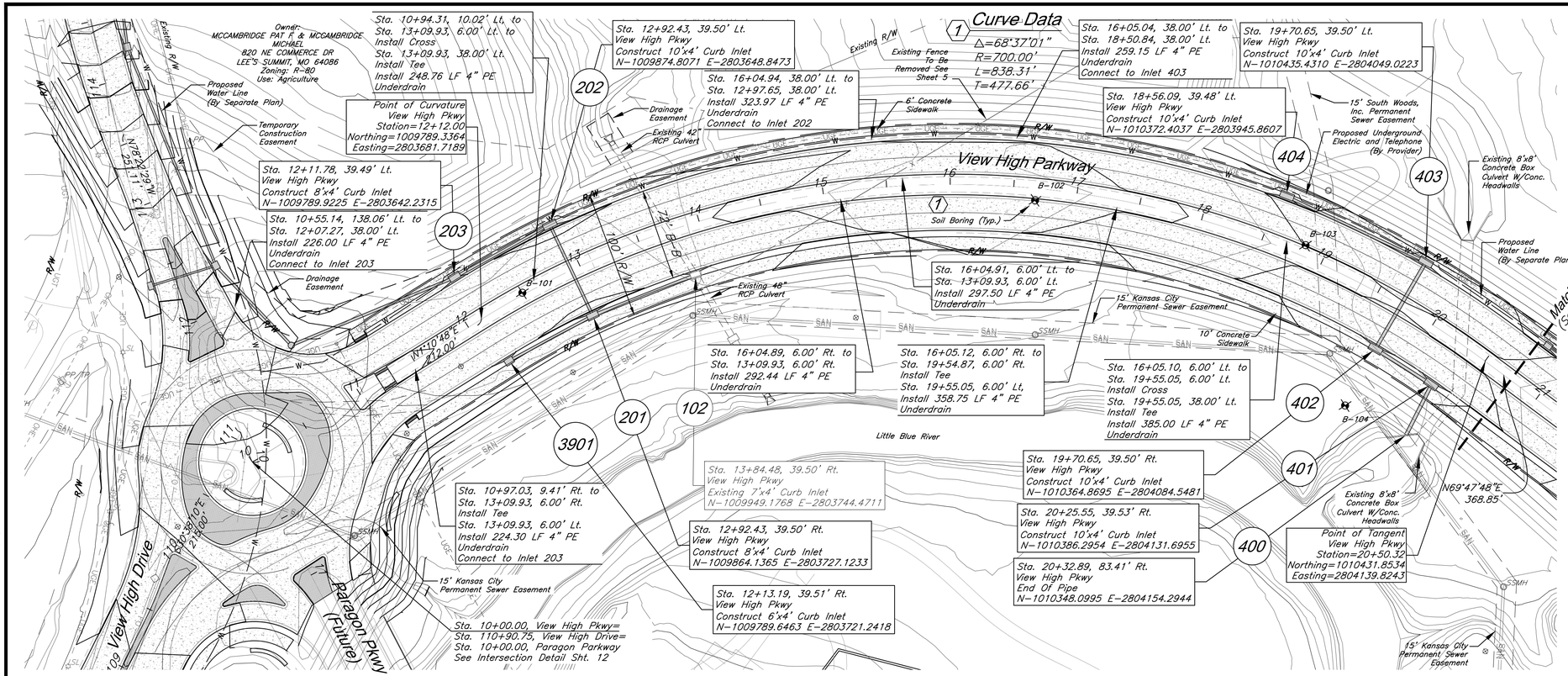
## PROJECT BENCHMARK

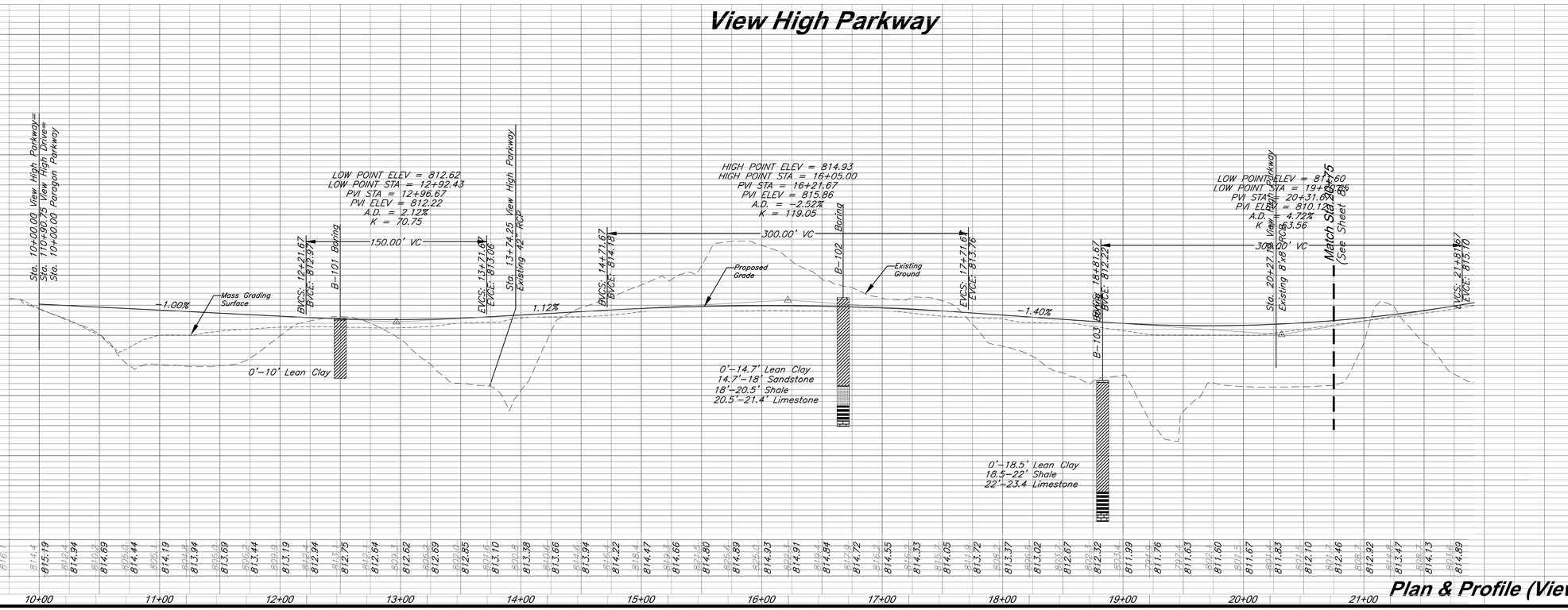
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Notes:

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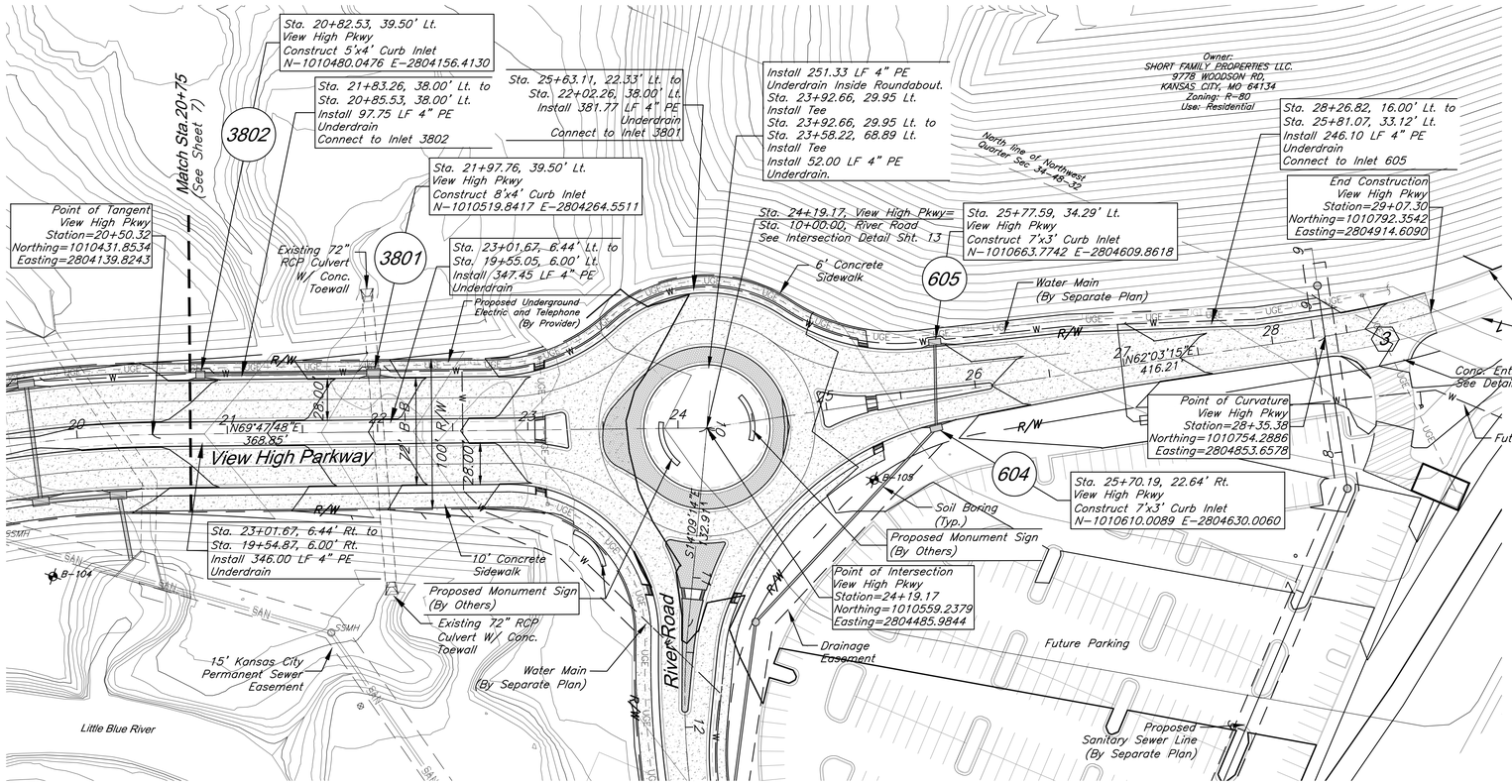
Horizontal Scale: 1" = 50'
Vertical Scale: 1" = 10'




## Plan & Profile (View High Pkwy)

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Street and Storm Sewer Plans

# Paragon Star Development

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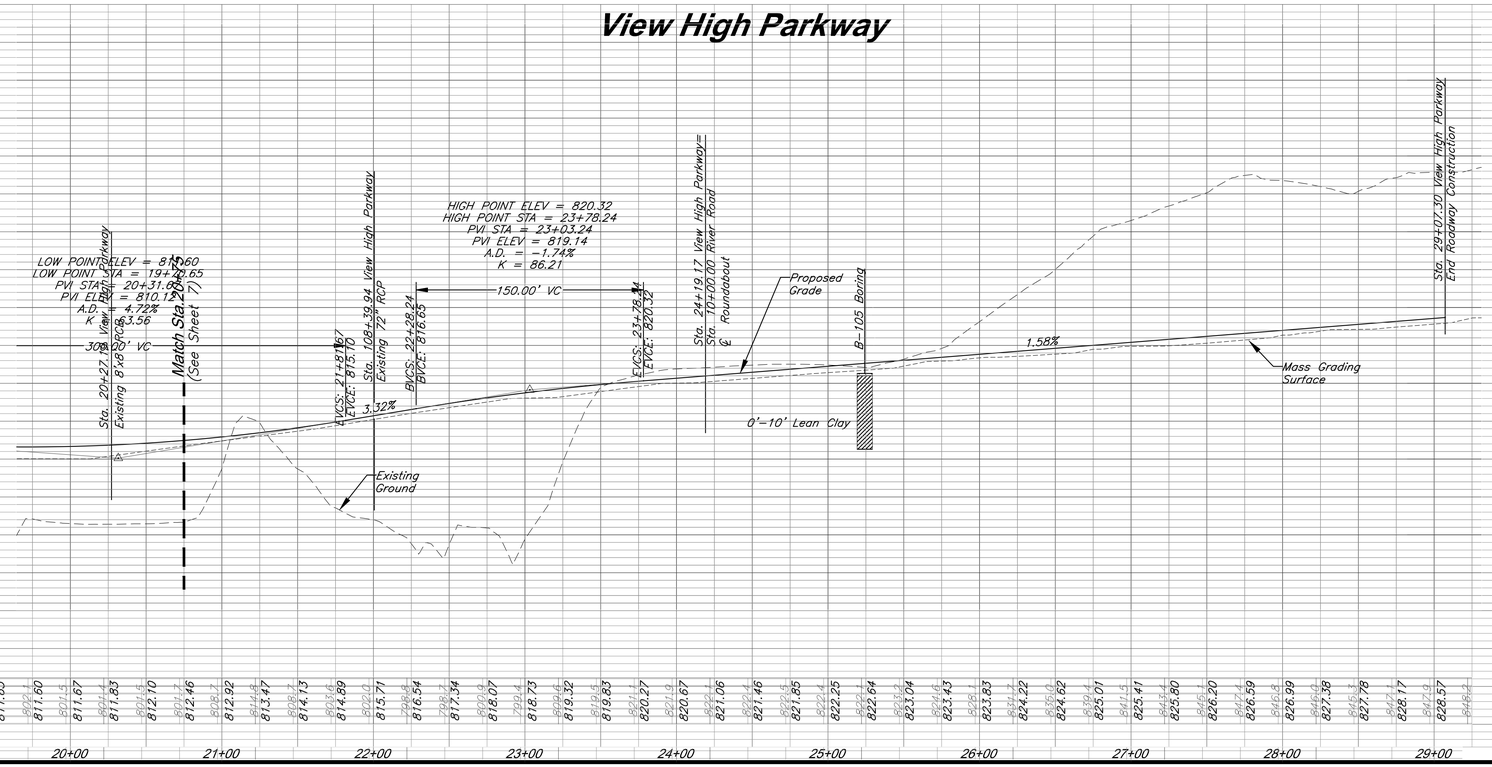
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EL=833.80

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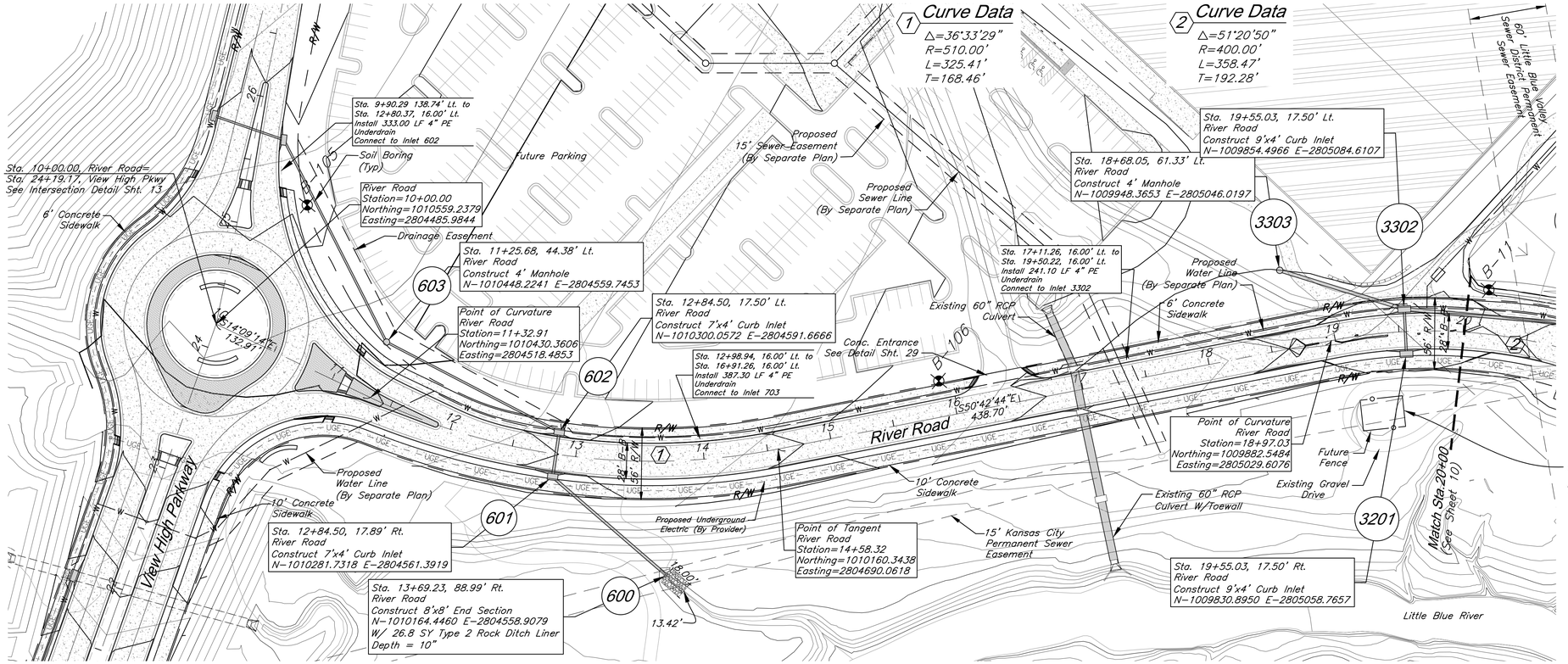
1. Pipe length called out is from center of structure to center of structure. Payment for pipe length is from inside face to inside face of structure.
2. Storm Sewer Structure Station offset and coordinates based on center of structure. Top elevations are top of casting.
3. Boring information based on original undisturbed earth – see Geotechnical report.

Horizontal Scale: 1" = 50'
Vertical Scale: 1" = 10'




## Plan & Profile (View High Pkwy)

G:\12720\Civil 3D\Production Drawings\Street & Storm Plans\12720C1300 (River Dr).dwg Layout: 9 Plan & Profile (River Dr) -- Thursday January 31, 2019, 9:32am -- Copyright 2019, George Butler Associates, Professional Engineer 000133, Landscape Architect 000025, Professional Land Surveyor 000059




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| SHEET NO. | 9 |
| TOTAL SHEETS | 69 |

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Street and Storm Sewer Plans
# Paragon Star Development
Lee's Summit, Missouri

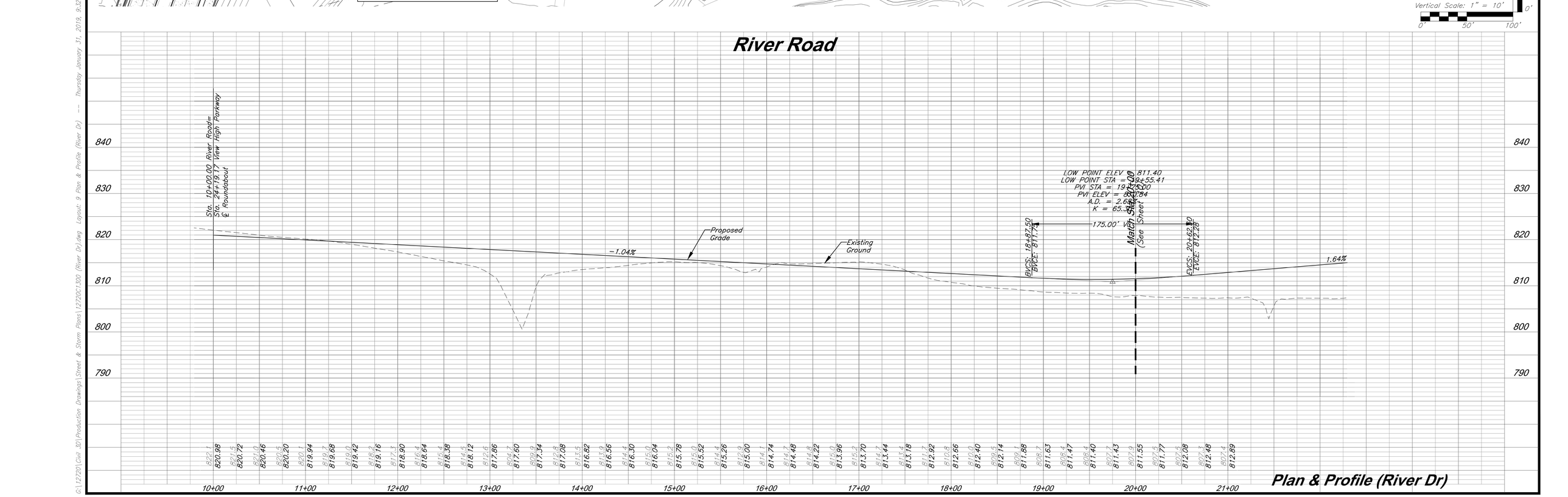
| NO. | DATE | REVISIONS | BY | APPROVED |
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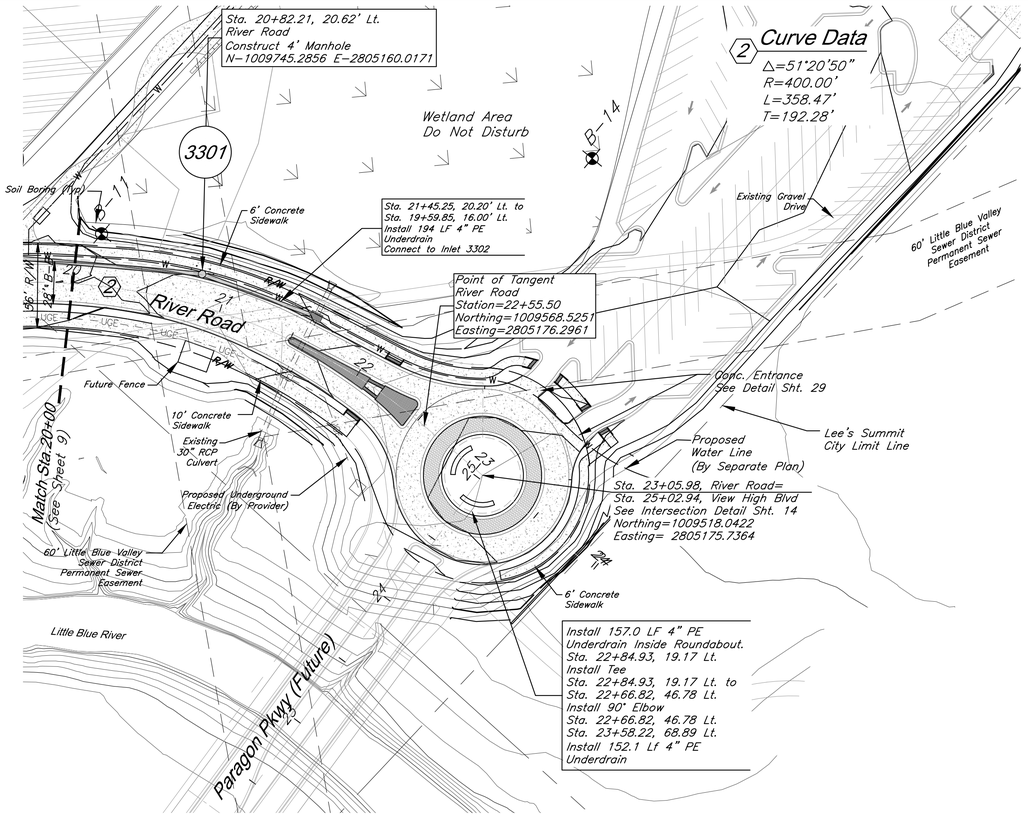
## PROJECT BENCHMARKS

BM #11 – Chiseled "L" on top Northeast corner of concrete guardrail at the Northeast corner of I470 bridge spanning View High Drive. EL=833.80

Notes:

1. Pipe length called out is from center of structure to center of structure. Payment for pipe length is from inside face to inside face of structure.
2. Storm Sewer Structure Station offset and coordinates based on center of structure. Top elevations are top of casting.
3. Boring information based on original undisturbed earth – see Geotechnical report.






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Street and Storm Sewer Plans

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## PROJECT BENCHMARKS

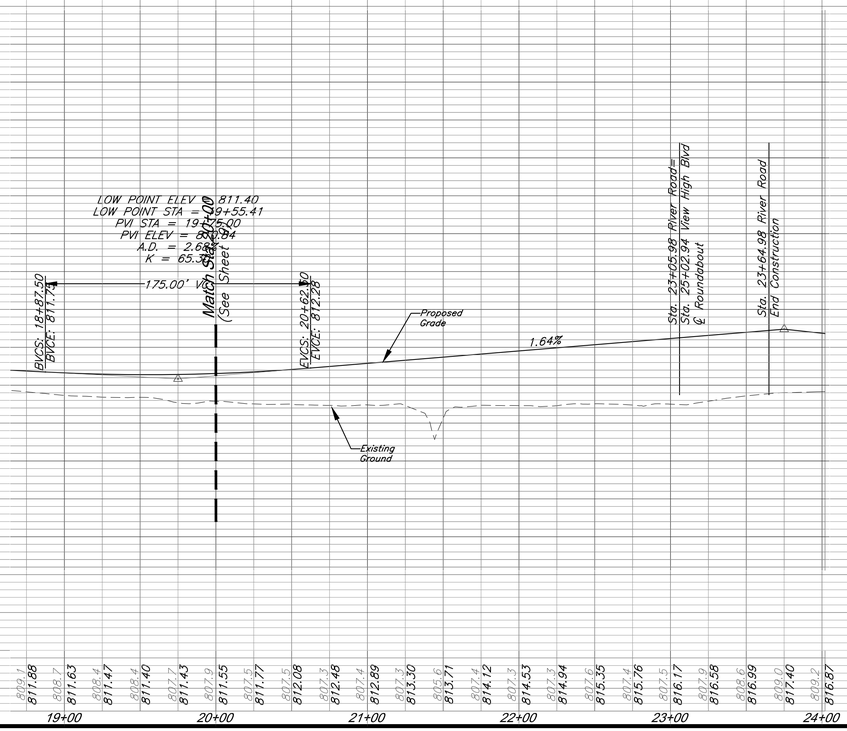
BM #11 – Chiseled "L" on top Northeast corner of concrete guardrail at the Northeast corner of I470 bridge spanning View High Drive.
EL=833.80

Notes:

1. Pipe length called out is from center of structure to center of structure. Payment for pipe length is from inside face to inside face of structure.
2. Storm Sewer Structure Station offset and coordinates based on center of structure. Top elevations are top of casting.
3. Boring information based on original undisturbed earth – see Geotechnical report.

Horizontal Scale: 1" = 50'
Vertical Scale: 1" = 10'
0' 50' 100'
10' 5' 0'

## River Road




## Plan & Profile (River Rd)

G:\12720\Civil 3D\Production Drawings\Street & Storm Plans\12720C1300 (River Dr).dwg Layout: 10 Plan & Profile (River Rd) -- Thursday January 31, 2019, 9:33am -- Copyright 2019, George Butler Associates, Professional Engineer 000133, Landscape Architect 000025, Professional Land Surveyor 000059

G:\12720\Civil 3D\Production Drawings\Street & Storm Plans\12720C2800.dwg Layout: 11 Floodway & Floodplain Plan — Thursday January 31, 2019, 9:34am — Copyright 2019, George Butler Associates, 08.12, Professional Engineer 000133, Landscape Architect 000025, Professional Land Surveyor 000039

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| DRAWN BY: | DRV |
| PROJECT NO.: | 12720 |
| SHEET NO. | 11 |
| TOTAL SHEETS | 69 |

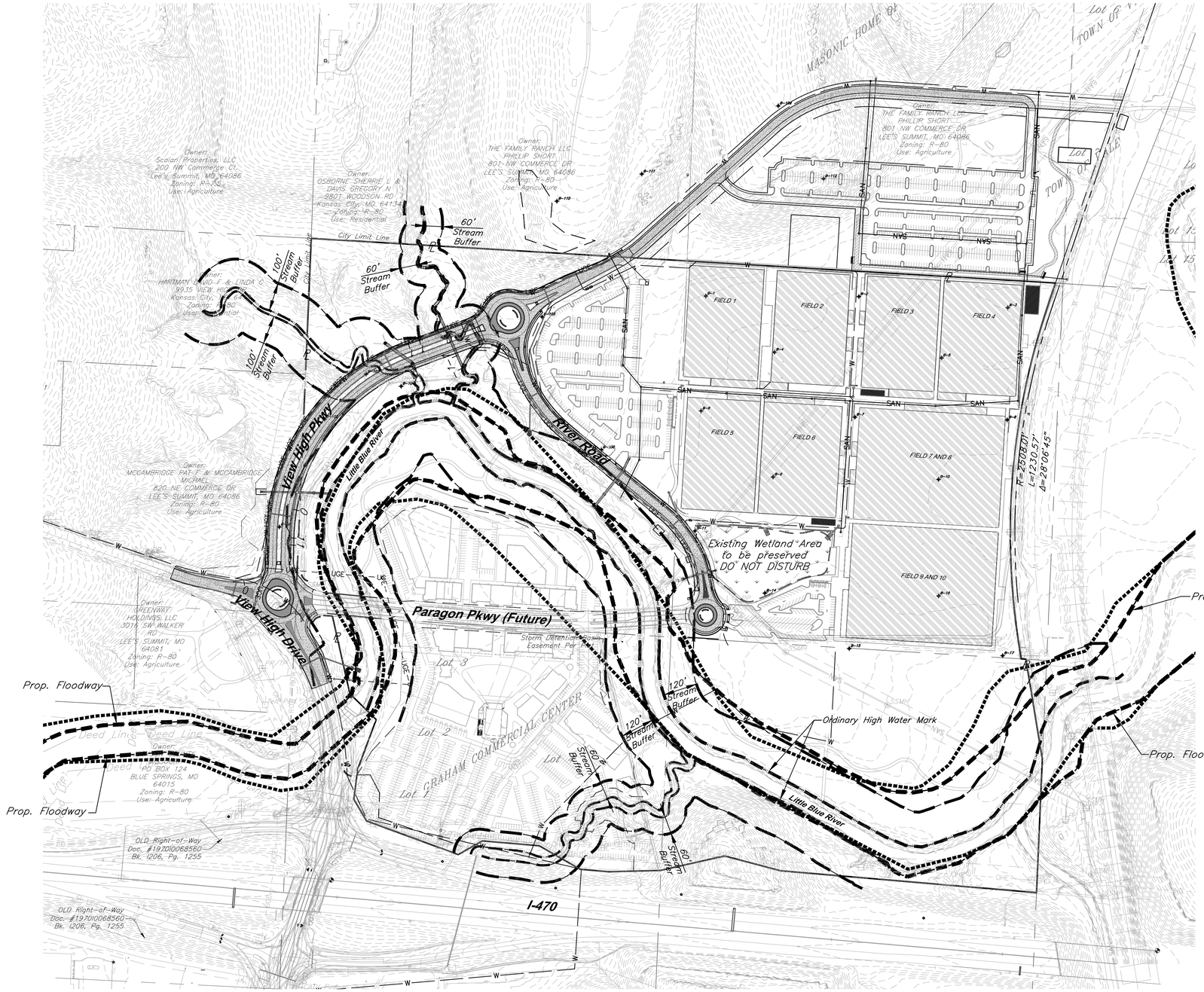
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## Legend

- Stream Buffer
- Existing Floodway
- Proposed Floodway
- Ordinary High Water Mark

200' 0' 200' 400'

SCALE : 1 INCH = 200 FEET

## Floodway & Floodplain Plan

G:\12720\Civil 3D\Production Drawings\Street & Storm Plans\12720C1700.dwg Layout: 12 Intersection Details -- Thursday January 31, 2019, 9:35am -- Copyright 2019, George Butler Associates, Architect 00212, Professional Engineer 000133, Landscape Architect 000025, Professional Land Surveyor 000059

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| SHEET NO.: | 12 |
| TOTAL SHEETS | 69 |

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## PROJECT BENCHMARKS

BM #11 – Chiseled "L" on top Northeast corner of concrete guardrail at the Northeast corner of the I470 bridge spanning View High Drive.
EL=833.80

## NOTE:

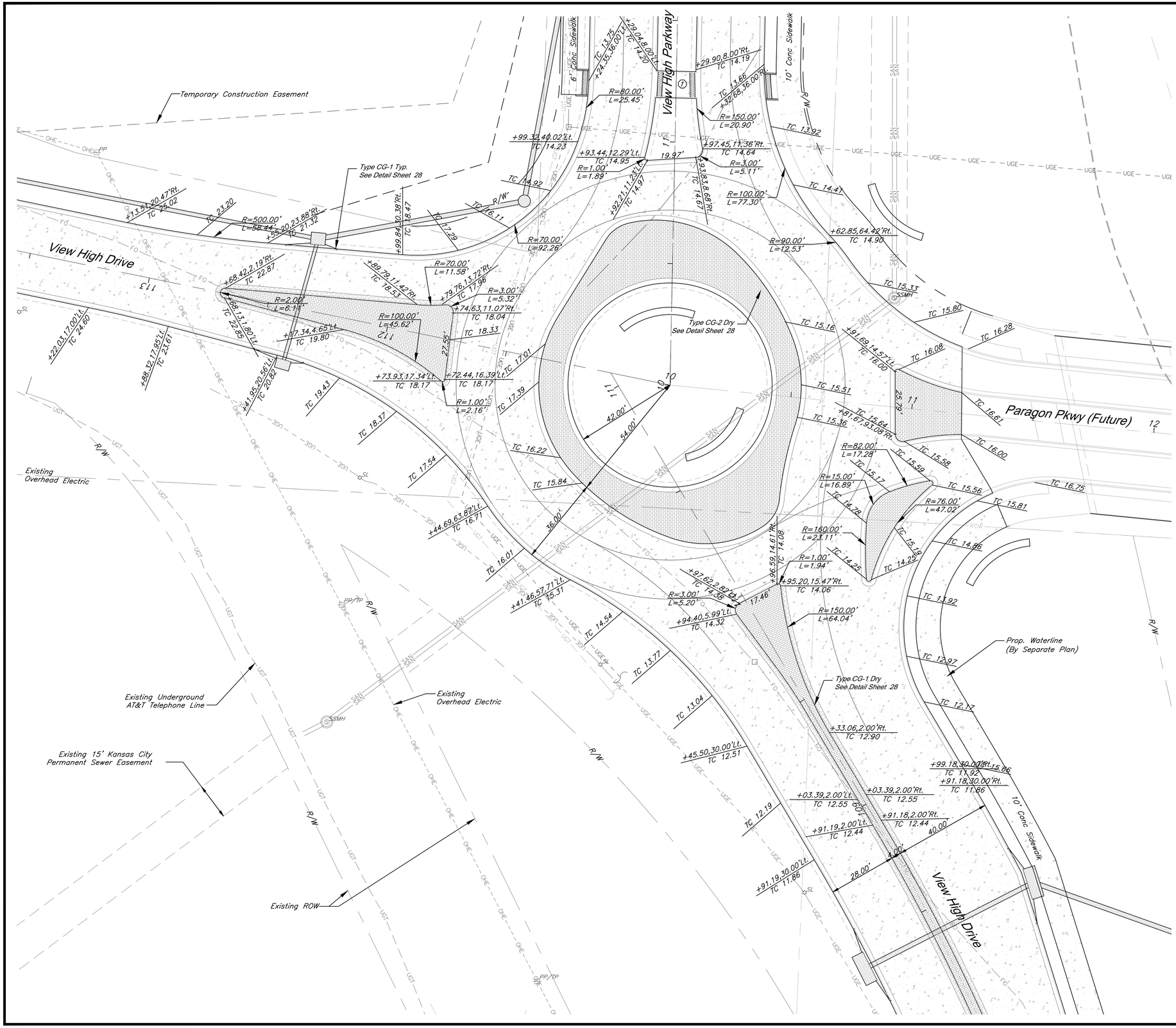
1. All Elevations are to Top of Curb unless otherwise noted.
2. See Sheet 31 for Curb & Gutter Detail.

## LEGEND

| | |
|---|---|
| R/W | Right of Way |
| PT | Point of Tangent |
| MP | Mid Point |
| PC | Point of Curvature |
| PCC | Point of Compound Curvature |
| PRC | Point of Reverse Curvature |
| TC | Top of Curb |
| | Dry Curb (CG-1 DRY) |

See Intersection Enlargement Sht. 15 For Crosswalk Detail

1. View High Pkwy–North
2. View High Pkwy–West
3. View High Pkwy–East
4. River Road–North
5. River Road–South




# Intersection Details

G:\12720\Civil 3D\Production Drawings\Street & Storm Plans\12720C1700.dwg Layout: 13 Intersection Details -- Thursday, January 31, 2019, 9:35am -- Copyright 2019, George Butler Associates, Inc. 00212, Professional Engineer 000133, Landscape Architect 000025, Professional Land Surveyor 000059

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| SHEET NO. | TOTAL SHEETS |
| 13 | 69 |

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Street and Storm Sewer Plans

# Paragon Star Development

Lee's Summit, Missouri

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## PROJECT BENCHMARKS

BM #11 – Chiseled "L" on top Northeast corner of concrete guardrail at the Northeast corner of the I470 bridge spanning View High Drive.
EL=833.80

## NOTE:

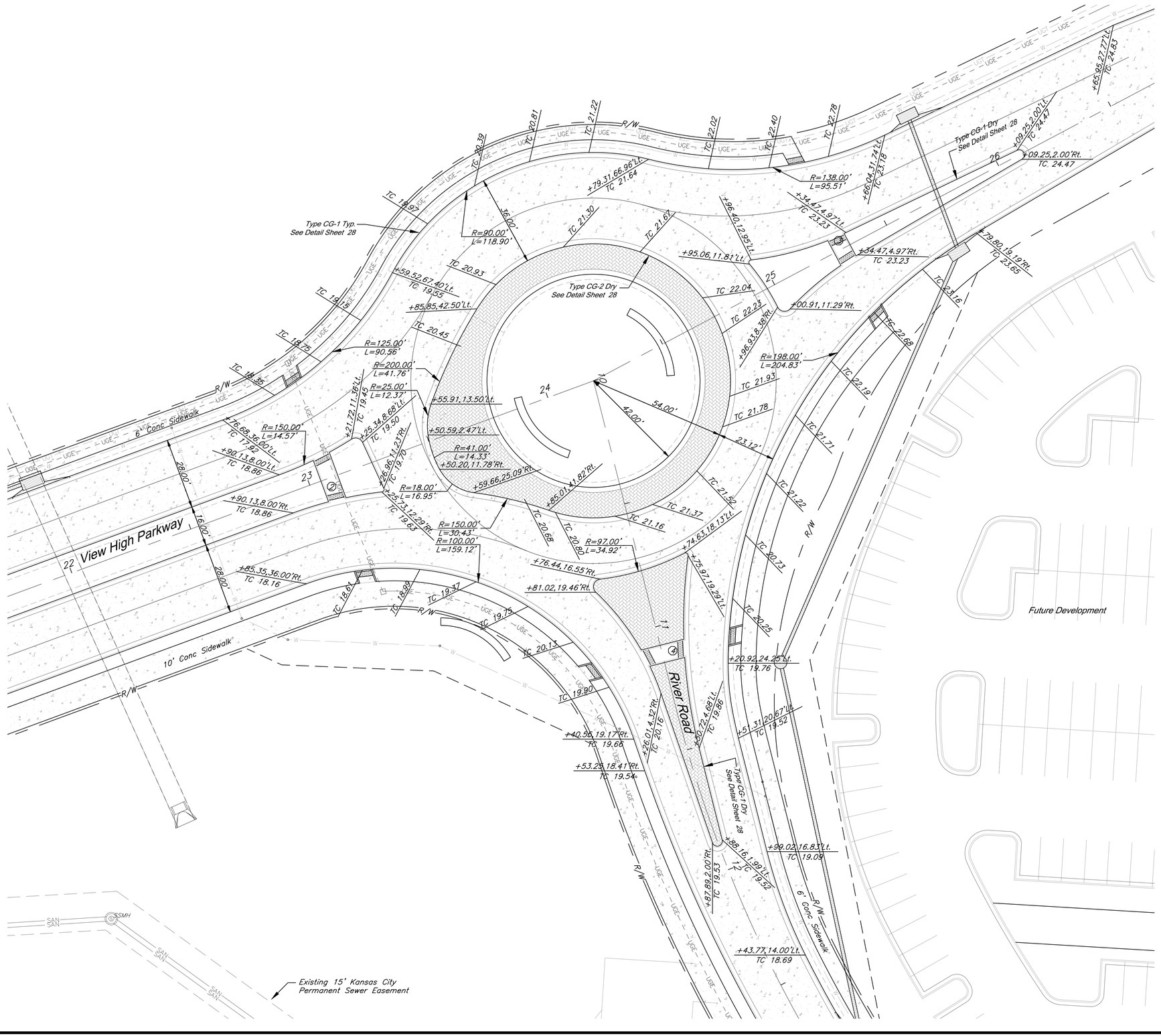
1. All Elevations are to Top of Curb unless otherwise noted.
2. See Sheet 31 for Curb & Gutter Detail.

## LEGEND

| | |
|---|---|
| R/W | Right of Way |
| PT | Point of Tangent |
| MP | Mid Point |
| PC | Point of Curvature |
| PCC | Point of Compound Curvature |
| PRC | Point of Reverse Curvature |
| TC | Top of Curb |
| | Dry Curb (CG-1 DRY) |

See Intersection Enlargement Sht. 15 For Crosswalk Details

1. View High Pkwy–North
2. View High Pkwy–West
3. View High Pkwy–East
4. River Road–North
5. River Road–South




SCALE : 1 INCH = 20 FEET

# Intersection Details

G:\12720\Civil 3D\Production Drawings\Street & Storm Plans\12720C1700.dwg Layout: 14 Intersection Details -- Thursday January 31, 2019, 9:35am -- Copyright 2019, George Butler Associates, Inc. 00212, Professional Engineer 000133, Landscape Architect 000025, Professional Land Surveyor 000059

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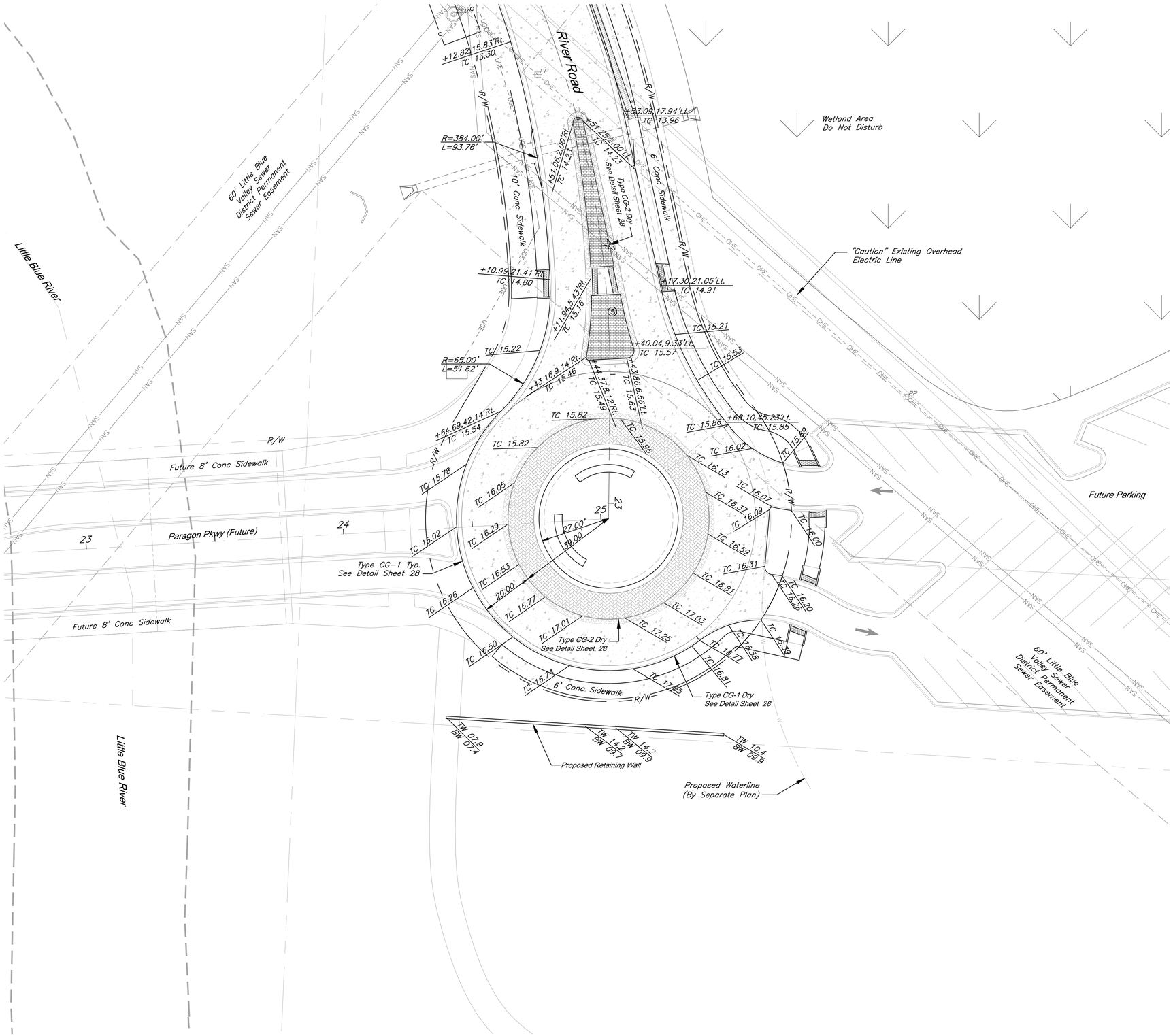
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## PROJECT BENCHMARKS

BM #11 – Chiseled "L" on top Northeast corner of concrete guardrail at the Northeast corner of the 1470 bridge spanning View High Drive.
EL=833.80

## NOTE:

1. All Elevations are to Top of Curb unless otherwise noted.
2. See Sheet 31 for Curb & Gutter Detail.

## LEGEND

| | |
|---|---|
| R/W | Right of Way |
| PT | Point of Tangent |
| MP | Mid Point |
| PC | Point of Curvature |
| PCC | Point of Compound Curvature |
| PRC | Point of Reverse Curvature |
| TC | Top of Curb |
| | Dry Curb (CG-1 DRY) |

See Intersection Enlargement
Sht. 15 For Crosswalk Details

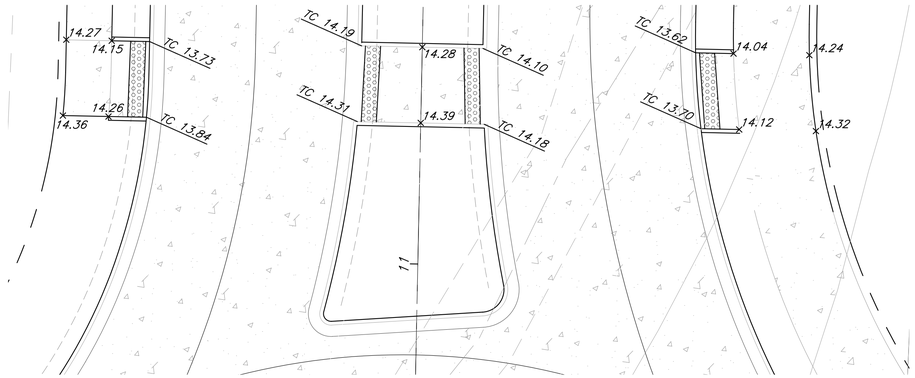
1. View High Pkwy–North
2. View High Pkwy–West
3. View High Pkwy–East
4. River Road–North
5. River Road–South

20' 0' 20' 40'
SCALE : 1 INCH = 20 FEET

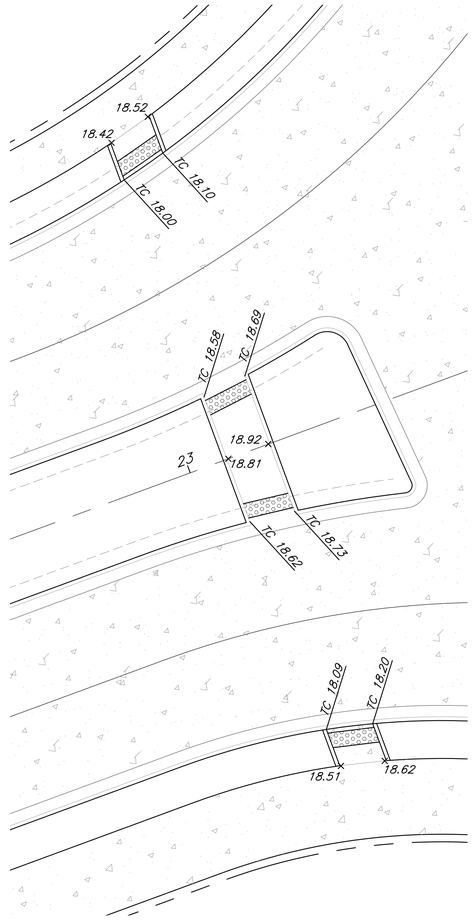
# Intersection Details

G:\12720\Civil 3D\Production Drawings\Street & Storm Plans\12720C1701.dwg Layout: 15 Intersection Enlargements -- Thursday January 31, 2019, 9:37am -- Copyright 2019, George Butler Associates, Inc. 000212, Professional Engineer 000133, Landscape Architect 000025, Professional Land Surveyor 000059

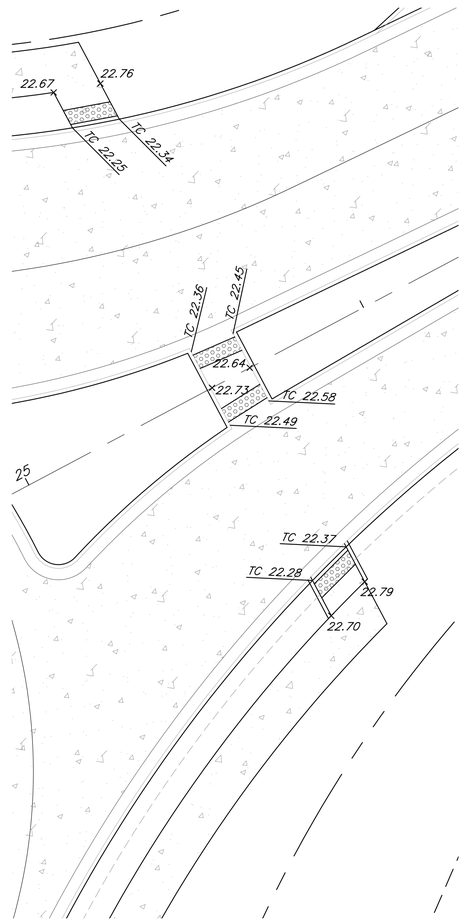
## VIEW HIGH PKWY-North



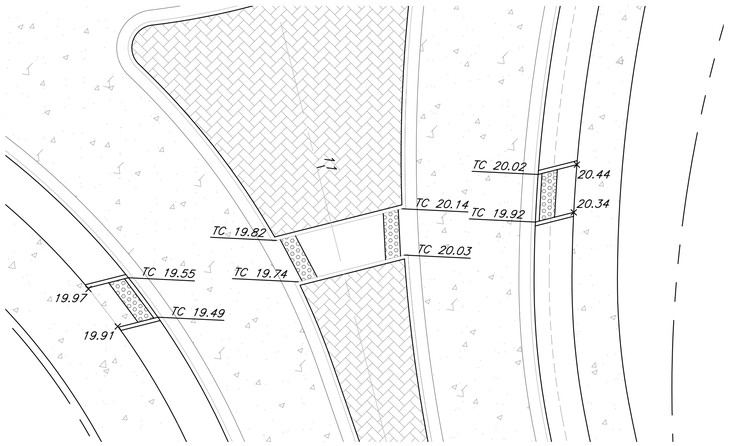

## VIEW HIGH PKWY-West



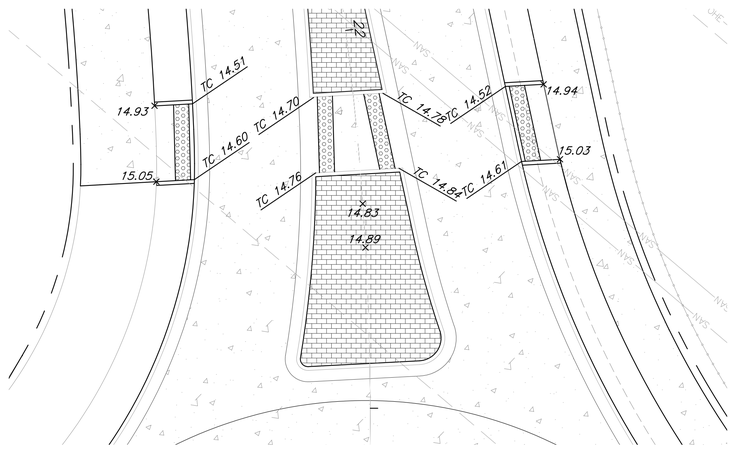

## VIEW HIGH PKWY-East




## RIVER ROAD-South




## RIVER ROAD-North




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Street and Storm Sewer Plans

# Paragon Star Development

Lee's Summit, Missouri

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## PROJECT BENCHMARKS

BM #11 – Chiseled "L" on top Northeast corner of concrete guardrail at the Northeast corner of I470 bridge spanning View High Drive.
EL=833.80

## NOTE:

1. All Elevations are to Top of Curb unless otherwise noted.
2. See Sheet 28 for Curb & Gutter Detail.
3. See Sheet 28 for Sidewalk Ramp Details.
4. Install Type "A" S/W Ramp unless otherwise noted.

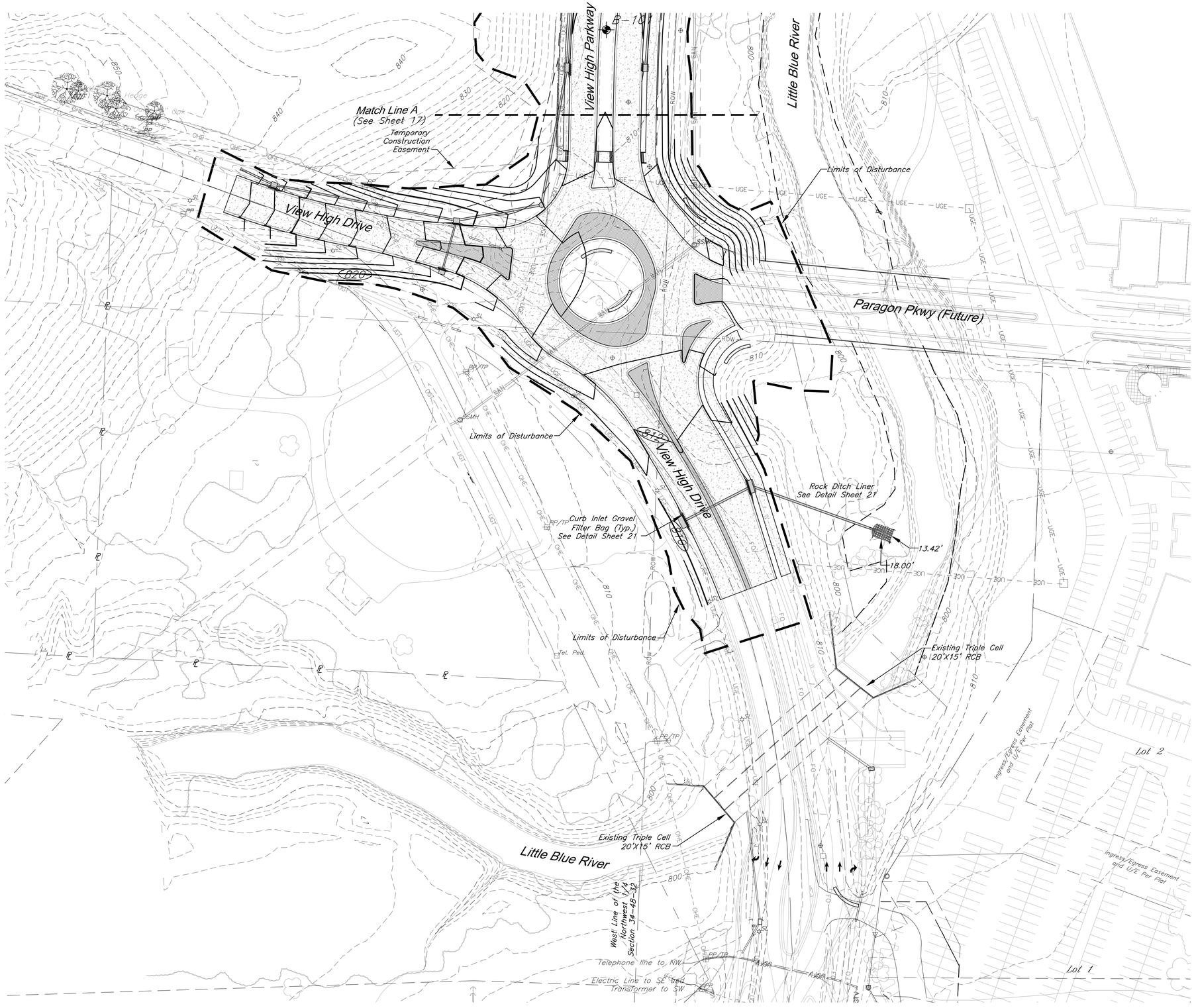
## LEGEND

| | |
|---|---|
| R/W | Right of Way |
| TC | Top of Curb |
| | Dry Curb |

10' 0' 10' 20'
SCALE : 1 INCH = 10 FEET

# Intersection Enlargements

C:\12720\Civil 3D\Production Drawings\Street & Storm Plans\12720Grading16.dwg -- Layout: 16 Grading & Erosion Control Plan -- Thursday, January 31, 2019, 9:38am -- Copyright 2019, George Butler Associates, Inc. Professional Engineer 000133, Landscape Architect 000025, Professional Land Surveyor 000059




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## Erosion Control Legend

- Silt Fence
- Gravel Filter Bags
- Temporary Gravel Construction Entrance
- 800 — Proposed Contours
- 800 — Existing Contours
- Limits of Disturbance

Total Disturbed Area = 13.04 Acres

Concrete Washout Area

Temporary Construction Entrance

50' 0' 50' 100'
SCALE : 1 INCH = 50 FEET

**Grading & Erosion Control Plan**

G:\12720\Civil 3D\Production Drawings\Street & Storm Plans\12720C4000.dwg Layout: 17 Grading & Erosion Control Plan -- Thursday, January 31, 2019, 9:39am -- Copyright 2019, George Butler Associates, Inc. Professional Engineer 000133, Landscape Architect 000025, Professional Land Surveyor 000039




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| NO. | DATE | REVISIONS | BY | APPROVED |
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## Erosion Control Legend

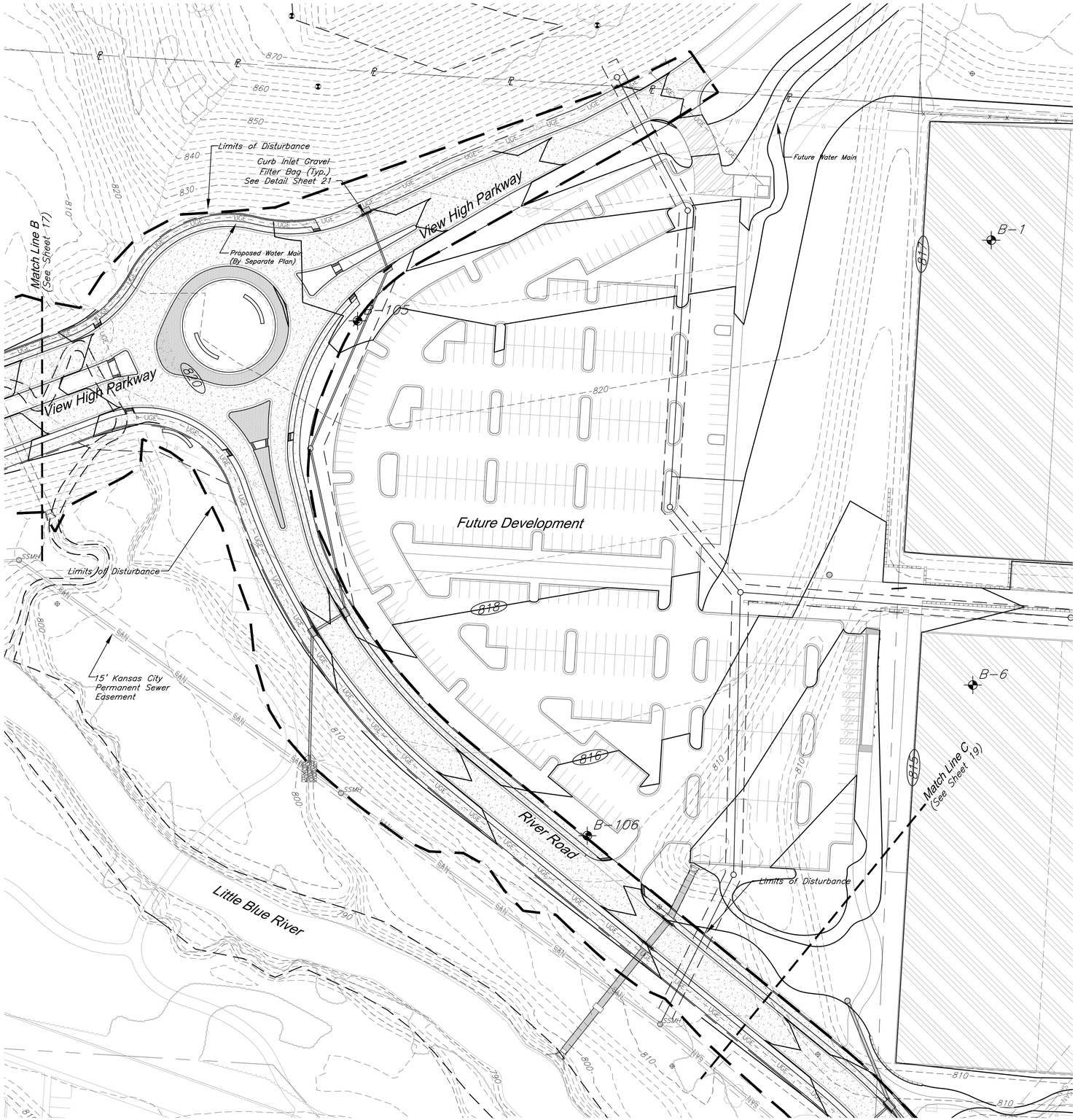
- Silt Fence
- Gravel Bags
- Temporary Gravel Construction Entrance
- 800 — Proposed Contours
- 800 — Existing Contours
- Limits of Disturbance

50' 0' 50' 100'

SCALE : 1 INCH = 50 FEET

# Grading & Erosion Control Plan

G:\12720\Civil 3D\Production Drawings\Street & Storm Plans\12720C4000.dwg Layout: 18 Grading & Erosion Control Plan -- Thursday January 31, 2019, 9:39am -- Copyright 2019, George Butler Associates, Inc. Professional Engineer 000133, Landscape Architect 000025, Professional Land Surveyor 000059




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## Erosion Control Legend

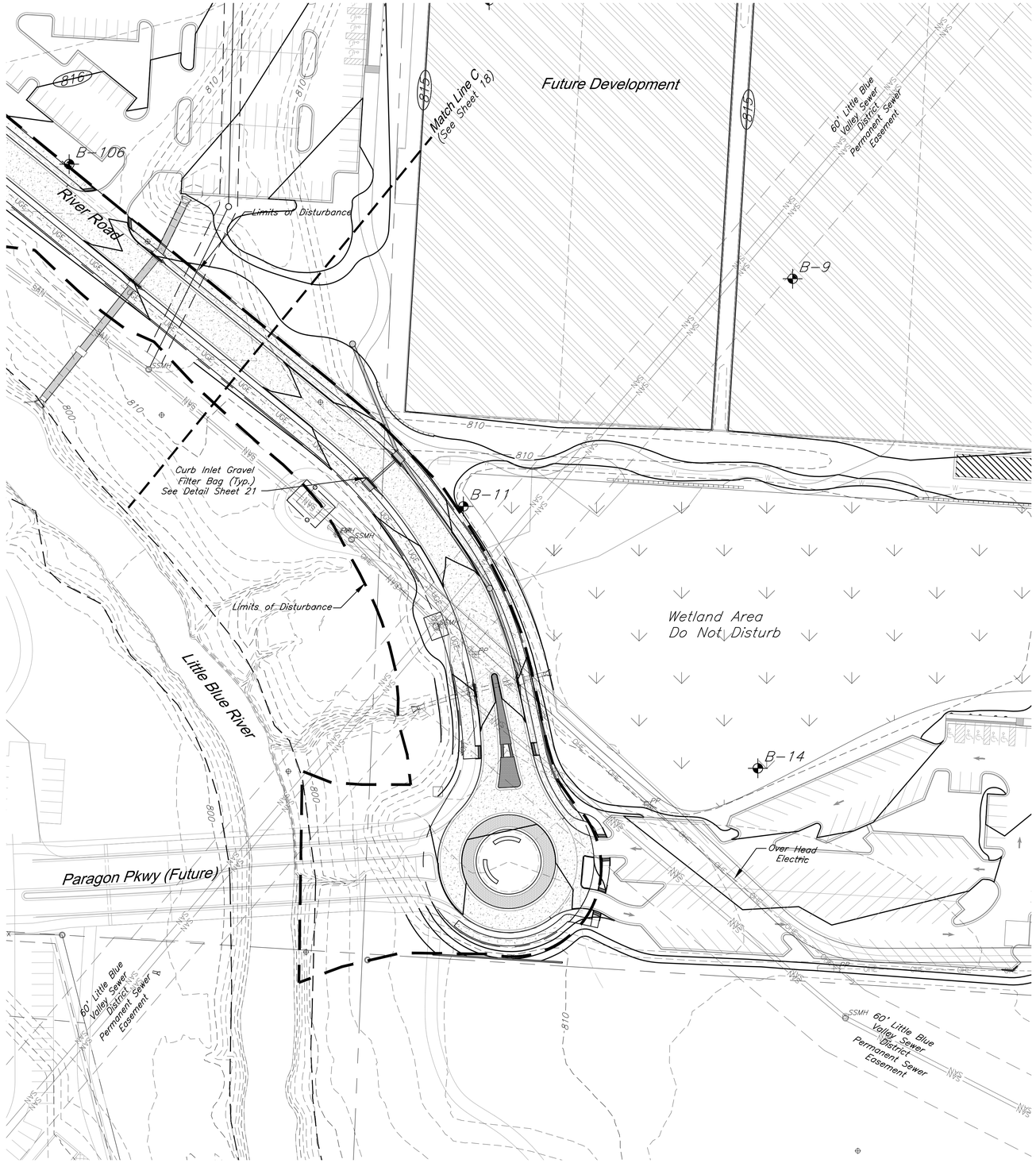
- Silt Fence
- Gravel Bags
- Temporary Gravel Construction Entrance
- 800 — Proposed Contours
- 800 — Existing Contours
- Limits of Disturbance

50' 0' 50' 100'

SCALE : 1 INCH = 50 FEET

## Grading & Erosion Control Plan

G:\12720\Civil 3D\Production Drawings\Street & Storm Plans\12720C4000.dwg Layout: 19 Grading & Erosion Control Plan -- Thursday, January 31, 2019, 9:39am -- Copyright 2019, George Butler Associates, Inc. Professional Engineer 000133, Landscape Architect 000025, Professional Land Surveyor 000039




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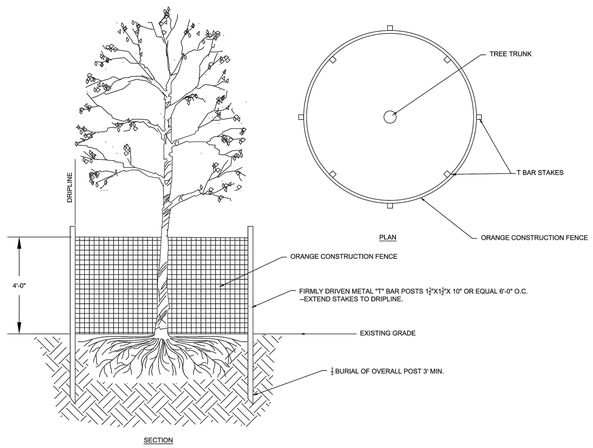
## Erosion Control Legend

- Silt Fence
- Gravel Bags
- Temporary Gravel Construction Entrance
- 800 — Proposed Contours
- 800 — Existing Contours
- Limits of Disturbance

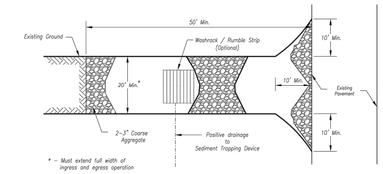
50' 0' 50' 100'
SCALE : 1 INCH = 50 FEET

## Grading & Erosion Control Plan

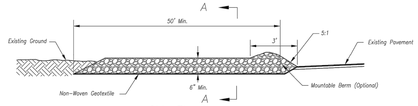
C:\12720\Civil 3D\Production Drawings\Street & Storm Plans\12720C4600.dwg Layout: 20 Erosion Control Details -- Thursday January 31, 2019, 9:40am -- Copyright 2019, George Butler Associates, Inc. 00212, Professional Engineer 000133, Landscape Architect 000025, Professional Land Surveyor 000059



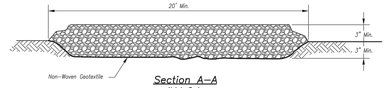

TREE PRESERVATION




Plan View
Not to Scale




Side Elevation
Not to Scale




Section A-A
Not to Scale

Notes for Construction Entrance:

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

Maintenance for Construction Entrance:

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

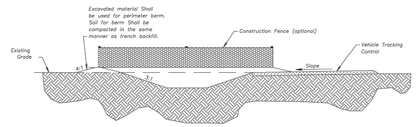
CONSTRUCTION ENTRANCE

Notes for Concrete Washout:

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

Maintenance for Concrete Washout:

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




CONCRETE WASHOUT

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

AMERICAN PUBLIC WORKS ASSOCIATION
Kansas City Metro Chapter
KANSAS CITY METRO CHAPTER

CONSTRUCTION ENTRANCE AND CONCRETE WASHOUT

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

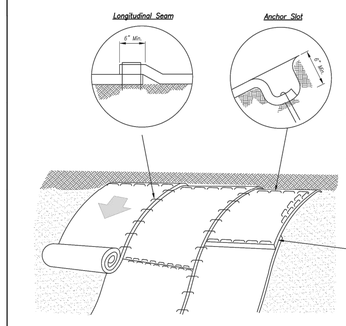
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| | |
|---|---|
| DATE: | 1-18-19 |
| DESIGN BY: | CEL |
| DRAWN BY: | DRV |
| PROJECT NO.: | 12720 |
| SHEET NO. | 20 |
| TOTAL SHEETS | 69 |

Bradley D. Burton
Professional Engineer
License No. 25862

Street and Storm Sewer Plans
**Paragon Star Development**
Lee's Summit, Missouri

| NO. | DATE | REVISIONS | BY | APPROVED |
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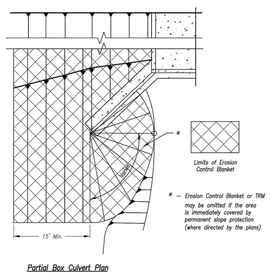



General Notes:

1. APWA Specifications 2150 and Design Guidance 5100 shall be referenced to select type of blanket or mat to be used.
2. Typical anchors and pattern/spacing shall be installed according to the manufacturers instructions.
3. LONGITUDINAL SEAMS: The edges of the blanket or mat should overlap each other a minimum of 6 inches, with anchors catching the edges of both blankets.

Maintenance:

1. Torn or degraded product shall be repaired or replaced, unless such degradation is within the functional longevity specified by the manufacturer.
2. Edges or seams that are loose or frayed shall be secured.



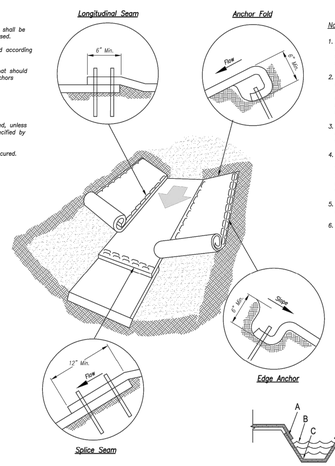

* - Erosion Control Blanket or TRM may be omitted if the area is immediately covered by permanent slope protection (where directed by the plans)

Partial Box Culvert Plan
Not to Scale

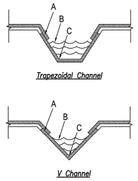
Installation Around Culvert Slope

Notes for Installation on Slopes:

1. Erosion Control Blankets and TRMs shall be laid in the direction of the slope. In order for blanket to be in contact with the soil, lay blanket loosely, avoiding stretching.
2. ANCHOR SLOTS: The top of the blanket should be "slotted in" at the top of the slope and anchored in place with anchors 6 inches apart. The slots should be 6 inches wide x 6 inches deep with the blanket anchored in the bottom of the slot, then backfilled, tamped and seeded.
3. SPLICE SEAM: When splices are necessary, overlap end a minimum of 8 inches in direction of water flow. Stagger splice seams.
4. TERMINAL FOLD: The bottom edge of the blanket shall be turned under a minimum of 4 inches, then anchored in place with anchors 9 inches apart.




Installation in Channels




Critical Points:

A - Overlaps and seams;

B - Projected water line;

C - Channel bottom / side slope vertices;

Notes for Installation in Channels:

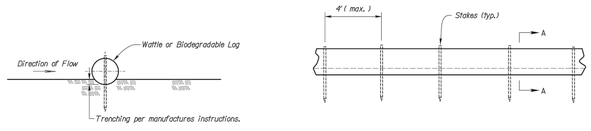
1. Erosion Control Blankets and TRMs shall be laid in the direction of the flow, with the first course at the centerline of channel, where applicable. In order for the mat to be in contact with the soil, lay the mat loosely, avoiding stretching.
2. ANCHOR FOLD: The top of the mat should be folded under, buried and secured with wood or other approved anchors placed 6 inches apart. The top edge of the mat should be buried in a slot 6 inches wide x 6 inches deep, anchored in the bottom of the slot, backfilled, and the mat folded over the top as shown in detail.
3. SPLICE SEAM: When splices are necessary, overlap end a minimum of 12 inches in direction of water flow. Stagger splice seams.
4. CHECK SLOTS: Establish check slots transverse to slope every 30 feet. The slots should be 6 inches wide x 6 inches deep. The mat shall be cut to a length 12 inches beyond the slot. The top of the downstream mat shall be slotted in, secured and buried similar to the edge anchor fold. The upstream mat shall then cover the slot and be anchored as shown.
5. EDGE ANCHORS: Lay outside edge of mat into trench at top of the slope and anchor.
6. TERMINUS: The bottom edge of the mat shall be anchored.

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

AMERICAN PUBLIC WORKS ASSOCIATION
Kansas City Metro Chapter
KANSAS CITY METRO CHAPTER

EROSION CONTROL BLANKETS AND TURF REINFORMENT MATS

STANDARD DRAWING NUMBER ESC-02
ADOPTED: 10/24/2016




Section A-A

Typical Elevation

WATTLES AND BIODEGRADABLE LOG

Notes for Wattles and Biodegradable Log Slope Protection:

1. The Slope barriers shall be placed along contour lines, with a short section turned upslope at each end of the barrier. The maximum length of the slope barrier shall not exceed 250 feet, and the barrier ends need to be staggered.
2. Install wattles and biodegradable logs per manufacturer's instructions.
3. Spacing of stakes per manufacturer's instructions with 4' max. spacing. Length of stakes shall be a minimum of 2 times the diameter of the log with minimum of 24".

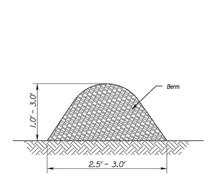



Figure 1
(Perimeter Control)

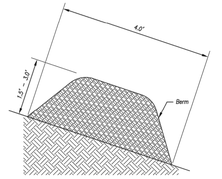



Figure 2
(Steep Slopes)

MULCH OR COMPOST FILTER BERMS

Notes for Mulch and Compost Filter Beam:

1. The sediment control berm shall be placed uncompacted in a windrow at locations shown on the plans or as directed by the engineer.
2. Parallel to the base of the slope, or around the perimeter of other affected areas, construct a 1 to 3 foot high by 2.5 to 3 foot wide berm (see Figure 1). For maximum water treatment ability or for steep slopes, construct a 1.5 to 3 foot high trapezoidal berm that is a minimum of 4 feet wide at the base (see Figure 2). In extreme conditions, or where specified by the engineer, a second berm shall be constructed at the top of the slope. Engineer will specify berm requirements.
3. If berm is to be left as permanent or part of the natural landscape, the compost berm may be seeded during application for permanent vegetation.
4. Do not use compost or wood mulch berms in any runoff channels or concentrated flow areas.
5. Wood mulch shall consist of tree and shrub debris resulting from clearing and grubbing and shall be ground by the mechanical means such as a chipper, hammermill, tub grinder or other approved method. Mulch sizing varies with a maximum width of 2" and a maximum length of 10".

Maintenance for Mulch and Compost Filter Beam:

1. Berm shall be reshaped and material added as necessary to maintain function and dimensions.
2. Breaches in the berm shall be repaired promptly.

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

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Kansas City Metro Chapter
KANSAS CITY METRO CHAPTER

WATTLES/BIODEGRADABLE LOG AND MULCH/COMPOST FILTER BERM

STANDARD DRAWING NUMBER ESC-04
ADOPTED: 10/24/2016

**Erosion Control Details**

C:\12720\Civil 3D\Production Drawings\Street & Storm Plans\12720C4600.dwg Layout: 21 Erosion Control Details -- Thursday, January 31, 2019, 9:40am -- Copyright 2019, George Butler Associates, Inc. 00212, Professional Engineer 000133, Landscape Architect 000025, Professional Land Surveyor 000059

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| DESIGN BY: | CEL |
| DRAWN BY: | DRV |
| PROJECT NO.: | 12720 |
| SHEET NO. | 21 |
| TOTAL SHEETS | 69 |

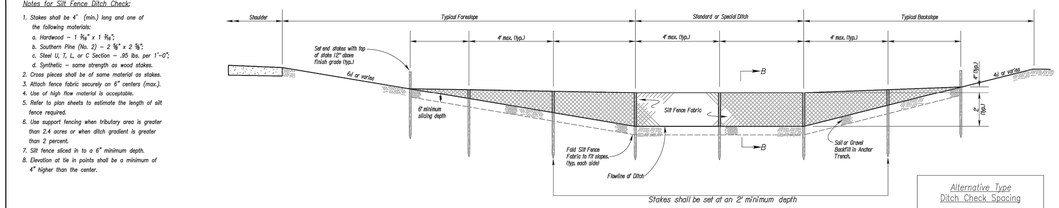
Bradley D. Burton
Professional Engineer
License No. 25862

Street and Storm Sewer Plans
**Paragon Star Development**
Lee's Summit, Missouri

| NO. | DATE | REVISIONS | BY | APPROVED |
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Notes for Silt Fence Ditch Check:

1. Stakes shall be 4' (min.) long and one of the following materials:
   a. Hardwood – 1 ¾" x 1 ¾";
   b. Southern Pine (No. 2) – 2 ¾" x 2 ¾";
   c. Steel U, T, L, or C Section – .95 lbs. per 1'-0";
   d. Synthetic – same strength as wood stakes.
2. Cross pieces shall be of same material as stakes.
3. Attach fence fabric securely on 6" centers (max.).
4. Use of high flow material is acceptable.
5. Refer to plan sheets to estimate the length of silt fence required.
6. Use support fencing when tributary area is greater than 2.4 acres or when ditch gradient is greater than 2 percent.
7. Silt fence sliced in to a 6" minimum depth.
8. Elevation at tie in points shall be a minimum of 4" higher than the center.

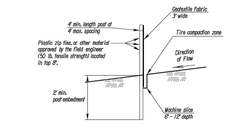



Stakes shall be set at an 2' minimum depth

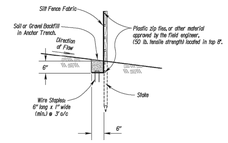
TYPICAL ELEVATION

| Alternative Type Ditch Check Spacing | |
|---|---|
| Ditch Centerline Slope ( % ) | Spacing Interval (Feet) |
| 1.0 | 200 |
| 2.0 | 100 |
| 3.0 | 65 |
| 4.0 | 50 |
| 5.0 | 40 |
| 6.0 | 33 |

Note: Use this spacing for all except Rock Ditch Checks.




SECTION B-B

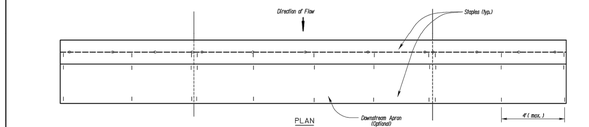



## SILT FENCE DITCH CHECK

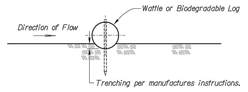
NO SCALE

Notes for Wattles and Biodegradable Log Ditch Check:

1. Use as many biodegradable log sections as necessary to ensure water does not flow around end of ditch check.
2. Overlap sections a minimum of 18"
3. Stakes shall be per manufacturer's instructions. Length of stakes shall be a minimum of 2 times the diameter of the log or 24" minimum.
4. Use Erosion Control (Class 1) (Type C) as the downstream apron when directed by the Engineer.
5. Use 9" diameter logs when used with Erosion Control (Class 2) (Any Type) channel lining. Smaller diameter logs may be used with Erosion Control (Class 2) (Any Type) channel lining as directed by the Engineer.




TYPICAL ELEVATION




SECTION B - B

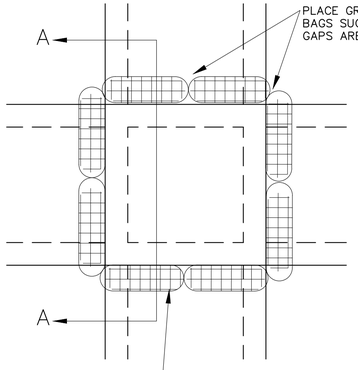
## WATTLES OR BIODEGRADABLE LOG DITCH CHECKS

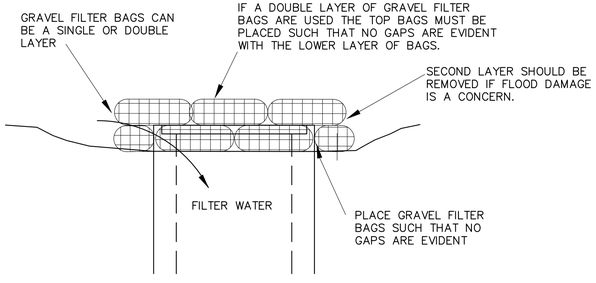
OR Filter Sock Ditch Check

NO SCALE

Modified from Kansas Department of Transportation Standard Details for Erosion Control and Sediment Control.

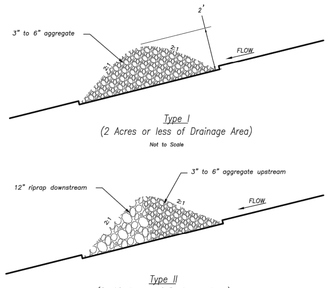
| AMERICAN PUBLIC WORKS ASSOCIATION | |
|---|---|
| | KANSAS CITY METRO CHAPTER |
| SILT FENCE AND WATTLE/ BIODEGRADABLE LOG DITCH CHECKS | STANDARD DRAWING NUMBER ESC-09 |
| | ADOPTED: 10/24/2016 |




CROSS-SECTION AA

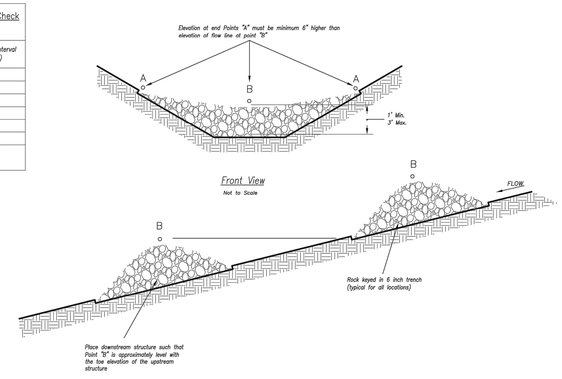
## GRAVEL INLET PROTECTION DETAIL




ROCK DITCH CHECK

| Temporary Rock Ditch Check Spacing | |
|---|---|
| Ditch Centerline Slope ( % ) | Spacing Interval (Feet) |
| 5.0 | 60 |
| 6.0 | 50 |
| 7.0 | 43 |
| 8.0 | 36 |
| 9.0 | 33 |
| 10.0 | 29 |

Note: Use this spacing only for Rock Ditch Checks.




Spacing Between Check Dams (all types)

Not to Scale

Notes:

1. Rock check dams shall be used only for drainage areas less that 10 acres unless approved by the City Engineer.
2. Use rock checks only in situations where the ditch slope exceeds 6%.

Maintenance:

1. Remove and dispose of sediment deposits when the deposit approaches ½ the height of the ditch check.
2. Replace and reshape as necessary to maintain function and integrity of installation.

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

| AMERICAN PUBLIC WORKS ASSOCIATION | |
|---|---|
| | KANSAS CITY METRO CHAPTER |
| ROCK DITCH CHECKS | STANDARD DRAWING NUMBER ESC-10 |
| | ADOPTED: 10/24/2016 |

# Erosion Control Details

G:\12720\Civil 3D\Production Drawings\Street & Storm Plans\12720C2000.dwg Layout: 22 Storm Drainage Map -- Thursday, January 31, 2019, 9:40am -- Copyright 2019, George Butler Associates, Inc. 00212, Professional Engineer 000133, Landscape Architect 000025, Professional Land Surveyor 000059

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| DATE: | 1-18-19 |
| DESIGN BY: | CEL |
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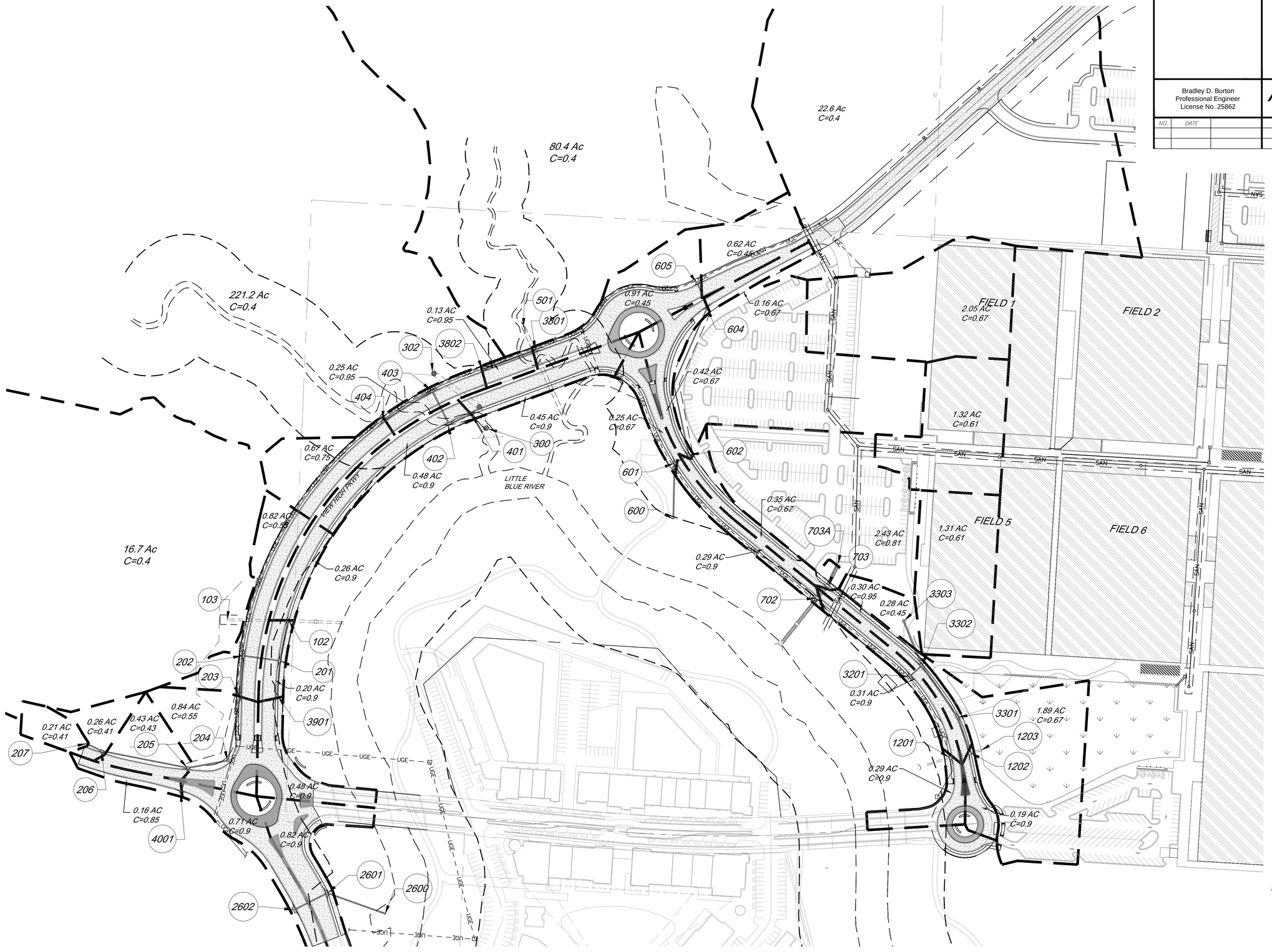
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Professional Engineer
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Street and Storm Sewer Plans

# Paragon Star Development

Lee's Summit, Missouri

| NO. | DATE | REVISIONS | BY | APPROVED |
|---|---|---|---|---|
| | | | | |
| | | | | |




## Legend

- 800 — Proposed Contours
- 800 — Existing Contours
- Drainage Area Boundary

100' 0' 100' 200'
SCALE : 1 INCH = 100 FEET

**Storm Drainage Map**

G:\12720\Civil 3D\Production Drawings\Street & Storm Plans\12720c2000.dwg Layout: 23 Storm Drainage Calculations -- Thursday January 31, 2019, 9:40am -- Copyright 2019, George Butler Associates, Inc. Professional Engineer 000133, Landscape Architect 000025, Professional Land Surveyor 000059

Indicates Future Storm Sewer — Indicates Storm for Fields

10 Year Storm — Preliminary - Subject to Change Upon Final Design — Culverts have been designed to the 100 year Storm

| | Structures | | Runoff Calculations | | | | | | | | | Pipe Design | | | | | | | | Design Checks | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | From | To | Direct Area (acre) | Line In (acre) | Total Area (acre) | C | K | Tc (min) | Flow Time (min) | Intensity (in/hr) | Design Q (cfs) | Description | Pipe length (lin ft) | Pipe Slope Slope, % | Pipe dia (in) | Manning's n Value | Q full (cfs) | Pipe Area, sf | V full fps | Design V fps | Hw/D | outlet head, H | HW, Inlet Control, (ft) | HW, Outlet Control, (ft) | Inlet Top Elevation | upstream flowline | downstream flowline | Invert Drop (ft) | Downstream water elevation | Hydraulic Grade Elev. (Calculated) | Hydraulic Grade (allowable) | Comments |
| Line 100 (100 Yr) | 103 | | 16.70 | | | 0.40 | 1.25 | 5.90 | | 9.96 | 83.2 | End Section | | | | | | | | | | | | | N/A | | | | | 803.85 | 813.50 | |
| | | 102 | | | 16.70 | 0.40 | 1.25 | 5.90 | 0.18 | 9.96 | 83.2 | RCP | 129.01 | 1.00 | 42 | 0.013 | 100.88 | 9.62 | 10.49 | 11.83 | 1.5 | 3.34 | 803.85 | 798.21 | | 798.53 | 797.24 | | 794.87 | | | |
| | 102 | | 0.26 | 2.40 | | 0.90 | 1.25 | 5.90 | | 9.96 | 2.9 | Curb Inlet | | | | | | | | | | | | | 813.01 | | | 0.3 | | 802.62 | 811.18 | Tie in from Line 200 |
| | | 101 | | | 19.36 | 0.46 | 1.25 | 6.08 | 0.07 | 9.89 | 109.0 | RCP | 58.18 | 1.00 | 48 | 0.013 | 144.03 | 12.57 | 11.46 | 12.95 | 1.4 | 2.14 | 802.62 | 790.14 | | 796.94 | 796.36 | | 788.00 | | | |
| | 101 | | 0.00 | | | 0.67 | 1.25 | 5.00 | | 10.32 | 0.0 | Junction Box | | | | | | | | | | | | | 805.38 | | | 7.15 | | 794.87 | 804.05 | |
| | | 100 | | | 19.36 | 0.46 | 1.25 | 6.16 | 0.08 | 9.86 | 108.7 | RCP | 58.69 | 1.00 | 48 | 0.013 | 144.03 | 12.57 | 11.46 | 12.77 | 1.4 | 2.14 | 794.87 | 790.14 | | 789.21 | 788.62 | | 788.00 | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 788.00 | | |
| Line 200 | 207 | | 0.21 | | | 0.41 | 1.00 | 6.00 | | 7.06 | 0.6 | Flared End Section | | | | | | | | | | | | | 834.75 | | | | | 834.08 | 834.75 | |
| | | 206 | | | 0.21 | 0.41 | 1.00 | 5.00 | 0.08 | 7.35 | 0.6 | HDPE | 37.02 | 20.00 | 15 | 0.01 | 37.66 | 1.23 | 30.69 | 7.29 | 0.7 | 0.01 | 834.08 | 823.86 | | 833.23 | 825.83 | | 823.85 | | | |
| | 206 | | 0.26 | | | 0.41 | 1.00 | 6.00 | | 7.06 | 0.8 | Curb Inlet | | | | | | | | | | | | | 832.43 | | | 2.87 | | 823.85 | 830.60 | |
| | | 205 | | | 0.47 | 0.41 | 1.00 | 5.00 | 0.42 | 7.35 | 1.4 | HDPE | 185.17 | 3.99 | 15 | 0.01 | 16.82 | 1.23 | 13.71 | 7.29 | 0.7 | 0.22 | 823.85 | 809.00 | | 822.96 | 815.57 | | 808.78 | | | |
| | 205 | | 0.43 | | | 0.43 | 1.00 | 5.00 | | 7.35 | 1.4 | Curb Inlet | | | | | | | | | | | | | 820.70 | | | 8.81 | | 808.78 | 818.87 | |
| | | 204 | | | 0.90 | 0.42 | 1.00 | 5.42 | 0.16 | 7.22 | 2.7 | HDPE | 81.84 | 2.00 | 18 | 0.01 | 19.36 | 1.77 | 10.96 | 8.67 | 0.7 | 0.17 | 807.86 | 808.78 | | 806.76 | 805.12 | | 808.62 | | | |
| | 204 | | 0.00 | | | 0.55 | 1.00 | 5.00 | | 7.35 | 0.0 | Manhole | | | | | | | | | | | | | 815.00 | | | 0.5 | | 808.62 | 813.67 | |
| | | 203 | | | 0.90 | 0.42 | 1.00 | 5.58 | 0.26 | 7.18 | 2.7 | HDPE | 132.75 | 1.00 | 18 | 0.01 | 13.69 | 1.77 | 7.75 | 8.67 | 0.7 | 0.24 | 805.72 | 808.86 | | 804.62 | 803.29 | | 808.62 | | | |
| | 203 | | 0.84 | | | 0.55 | 1.00 | 5.00 | | 7.35 | 3.4 | Curb Inlet | | | | | | | | | | | | | 812.91 | | | 0.5 | | 808.62 | 811.08 | |
| | | 202 | | | 0.90 | 0.93 | 1.00 | 5.58 | 0.21 | 7.18 | 6.0 | HDPE | 85.12 | 1.00 | 18 | 0.01 | 13.69 | 1.77 | 7.75 | 6.76 | 1.0 | 0.84 | 804.26 | 808.62 | | 802.79 | 801.94 | | 807.78 | | | |
| | 202 | | 0.82 | | | 0.55 | 1.00 | 8.24 | | 6.47 | 2.9 | Curb Inlet | | | | | | | | | | | | | 812.48 | | | 0.5 | | 807.78 | 810.65 | |
| | | 201 | | | 1.72 | 0.75 | 1.00 | 5.79 | 0.14 | 7.12 | 9.2 | RCP | 79.00 | 2.62 | 18 | 0.013 | 17.05 | 1.77 | 9.65 | 9.25 | 1.4 | 1.84 | 803.52 | 807.78 | | 801.44 | 799.37 | | 805.94 | | | |
| | 201 | | 0.20 | 0.48 | | 0.90 | 1.00 | 5.00 | | 7.35 | 1.3 | Curb Inlet | | | | | | | | | | | | | 812.48 | | | 0.5 | | 805.94 | 810.65 | Tie in from Line 3900 |
| | | 102 | | | 2.40 | 0.79 | 1.00 | 5.93 | 0.15 | 7.08 | 13.5 | RCP | 86.79 | 1.88 | 24 | 0.013 | 31.10 | 3.14 | 9.90 | 9.92 | 1.0 | 1.02 | 800.94 | 805.94 | | 798.87 | 797.24 | | 804.92 | | | Connect to Line 100 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 804.92 | | |
| Line 300 (100 Yr) | 302 | | 221.20 | | | 0.40 | 1.25 | 17.10 | | 6.94 | 767.3 | RCB Headwall | | | | | | | | | | | | | N/A | | | | | 809.03 | 811.00 | |
| | | 301 | | | 221.20 | 0.40 | 1.25 | 17.10 | 0.13 | 6.94 | 767.3 | RCB | 118.95 | 0.50 | 8'x8' RCB | 0.013 | 767.31 | 49.00 | 24.73 | 15.50 | 1.8 | 4.49 | 810.58 | 813.52 | | 795.94 | 795.35 | | 809.03 | | | |
| | 301 | | 0.00 | | | 0.67 | 1.25 | 5.00 | | 10.32 | 0.0 | 35° Bend | | | | | | | | | | | | | N/A | | | 0 | | 809.03 | 811.00 | 35 degree bend South |
| | | 300 | | | 221.20 | 0.40 | 1.25 | 17.23 | 0.05 | 6.91 | 764.7 | RCB | 47.05 | 0.50 | 8'x8' RCB | 0.013 | 767.31 | 49.00 | 24.73 | 15.50 | 1.8 | 4.49 | 809.92 | 793.82 | | 795.35 | 795.11 | | 789.33 | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 789.33 | | Tie in from Line 400 |
| Line 400 | 404 | | 0.67 | | | 0.75 | 1.00 | 5.00 | | 7.35 | 3.7 | Curb Inlet | | | | | | | | | | | | | 812.38 | | | | | 808.29 | 810.55 | |
| | | 403 | | | 0.67 | 0.75 | 1.00 | 5.00 | 0.19 | 7.35 | 3.7 | HDPE | 122.00 | 1.25 | 18 | 0.01 | 15.31 | 1.77 | 8.66 | 10.73 | 0.8 | 0.41 | 808.29 | 806.96 | | 807.11 | 805.58 | | 806.54 | | | |
| | 403 | | 0.25 | | | 0.95 | 1.00 | 5.00 | | 7.35 | 1.7 | Curb Inlet | | | | | | | | | | | | | 811.40 | | | 0.5 | | 806.54 | 809.57 | |
| | | 402 | | | 0.92 | 0.80 | 1.00 | 5.00 | 0.12 | 7.35 | 5.4 | RCP | 79.00 | 2.00 | 24 | 0.013 | 32.08 | 3.14 | 10.21 | 10.73 | 0.7 | 0.16 | 806.54 | 804.80 | | 805.08 | 803.50 | | 804.64 | | | |
| | 402 | | 0.48 | | | 0.90 | 1.00 | 5.00 | | 7.35 | 3.2 | Curb Inlet | | | | | | | | | | | | | 811.40 | | | 0.5 | | 804.64 | 809.57 | |
| | | 401 | | | 1.40 | 0.84 | 1.00 | 5.12 | 0.07 | 7.32 | 8.6 | HDPE | 52.24 | 2.00 | 24 | 0.01 | 41.70 | 3.14 | 13.27 | 11.78 | 0.8 | 0.30 | 804.64 | 803.65 | | 803.00 | 801.96 | | 803.34 | | | |
| | 401 | | 0.45 | | | 0.90 | 1.00 | 5.00 | | 7.35 | 3.0 | Curb Inlet | | | | | | | | | | | | | 811.65 | | | 0.5 | | 803.34 | 809.82 | |
| | | 400 | | | 1.85 | 0.85 | 1.00 | 5.00 | 0.07 | 7.35 | 11.6 | HDPE | 44.26 | 14.37 | 24 | 0.01 | 111.78 | 3.14 | 35.58 | 10.73 | 0.9 | 0.51 | 803.34 | 795.61 | | 801.46 | 795.10 | | 795.10 | | | Connect to RCB Wall |
| Line 500 (100 Yr) | 501 | | 80.40 | 1.04 | | 0.40 | 1.25 | 25.00 | | 5.71 | 229.7 | End Section | | | | | | | | | | | | | N/A | | | | | 804.52 | 815.50 | Tie in From Line 3800 |
| | | 500 | | | 81.44 | 0.40 | 1.25 | 25.00 | 0.18 | 5.71 | 233.5 | RCP | 204.00 | 1.50 | 72 | 0.013 | 520.09 | 28.27 | 18.39 | 18.90 | 1.1 | 2.64 | 804.52 | 800.36 | | 797.78 | 794.72 | | 797.72 | | | |
| | 500 | | | | | 2.25 | 25.00 | | | 5.71 | 0.0 | End Section | | | | | | | | | | | | | | | | | | 797.72 | | |
| Line 600 | 605 | | 0.62 | | | 0.45 | 1.00 | 6.43 | | 6.94 | 1.9 | Curb Inlet | | | | | | | | | | | | | 823.27 | | | | | 817.30 | 821.94 | |
| | | 604 | | | 0.62 | 0.45 | 1.00 | 6.43 | 0.10 | 6.94 | 1.9 | RCP | 57.42 | 1.00 | 12 | 0.013 | 3.57 | 0.79 | 4.55 | 9.58 | 0.9 | 0.49 | 818.15 | 817.78 | | 817.24 | 816.66 | | 817.30 | | | |
| | 604 | | 0.16 | | | 0.67 | 1.00 | 6.43 | | 6.94 | 0.7 | Curb Inlet | | | | | | | | | | | | | 823.37 | | | 0.5 | | 817.30 | 822.04 | |
| | | 603 | | | 0.78 | 0.50 | 1.00 | 6.43 | 0.31 | 6.94 | 2.7 | HDPE | 176.38 | 1.30 | 12 | 0.01 | 5.30 | 0.79 | 6.74 | 9.58 | 1.1 | 2.42 | 817.30 | 817.16 | | 816.16 | 813.87 | | 814.74 | | | |
| | 603 | | 0.00 | | | 0.00 | 1.00 | 6.43 | | 6.94 | 0.0 | Man Hole | | | | | | | | | | | | | 818.50 | | | 0.5 | | 814.74 | 817.17 | |
| | | 602 | | | 0.78 | 0.50 | 1.00 | 6.43 | 0.26 | 6.94 | 2.7 | HDPE | 151.57 | 1.00 | 12 | 0.01 | 4.64 | 0.79 | 5.91 | 9.58 | 1.1 | 2.11 | 814.50 | 814.74 | | 813.37 | 811.86 | | 812.63 | | | |
| | 602 | | 0.42 | | | 0.67 | 1.00 | 6.43 | | 6.94 | 2.0 | Curb Inlet | | | | | | | | | | | | | 818.26 | | | 0.5 | | 812.63 | 816.93 | |
| | | 601 | | | 1.20 | 0.56 | 1.00 | 6.43 | 0.06 | 6.94 | 4.6 | RCP | 35.39 | 1.00 | 18 | 0.013 | 10.53 | 1.77 | 5.96 | 9.58 | 0.9 | 0.28 | 812.63 | 810.43 | | 811.36 | 811.00 | | 810.15 | | | |
| | 601 | | 0.25 | | | 0.67 | 1.00 | 6.24 | | 6.99 | 1.2 | Curb Inlet | | | | | | | | | | | | | 818.25 | | | 2.28 | | 810.15 | 816.92 | |
| | | 600 | | | 1.45 | 0.58 | 1.00 | 6.49 | 0.13 | 6.92 | 5.8 | HDPE | 117.31 | 8.50 | 18 | 0.01 | 39.92 | 1.77 | 22.59 | 14.67 | 1.0 | 0.98 | 810.15 | 799.73 | | 808.72 | 798.75 | | 798.75 | | | |
| Line 700 (100 Yr) | 709 | | 17.12 | | | 0.51 | 1.25 | 18.92 | | 6.61 | 72.2 | End Section | | | | | | | | | | | | | N/A | | | | | 835.49 | 836.00 | |
| | | 708 | | | 17.12 | 0.51 | 1.25 | 18.92 | 0.07 | 6.61 | 72.2 | RCP | 90.20 | 6.08 | 48 | 0.013 | 355.14 | 12.57 | 28.26 | 20.62 | 1.0 | 1.12 | 835.49 | 830.72 | | 831.50 | 826.01 | | 829.60 | | | |
| | 708 | | 0.42 | | | 0.80 | 1.25 | 5.50 | | 10.12 | 4.2 | Curb Inlet | | | | | | | | | | | | | 834.22 | | | 0.5 | | 829.60 | 832.39 | |
| | | 707 | | | 17.54 | 0.52 | 1.25 | 18.99 | 0.03 | 6.60 | 74.8 | RCP | 36.50 | 5.00 | 48 | 0.013 | 322.06 | 12.57 | 25.63 | 20.84 | 1.0 | 0.88 | 829.60 | 824.05 | | 825.51 | 823.69 | | 823.17 | | | |
| | 707 | | 0.22 | | | 0.90 | 1.25 | 6.21 | | 9.84 | 2.4 | Curb Inlet | | | | | | | | | | | | | 834.16 | | | 4.67 | | 823.17 | 832.33 | |
| | | 706 | | | 17.76 | 0.52 | 1.25 | 19.02 | 0.16 | 6.59 | 76.4 | RCP | 199.94 | 5.00 | 48 | 0.013 | 322.06 | 12.57 | 25.63 | 20.84 | 1.0 | 1.94 | 823.17 | 813.91 | | 819.02 | 809.02 | | 811.97 | | | |
| | 706 | | 0.00 | | | 0.80 | 1.25 | 5.00 | | 10.32 | 0.0 | Junction Box | | | | | | | | | | | | | 817.47 | | | 1 | | 811.97 | 815.64 | |
| | | 705 | | | 17.76 | 0.52 | 1.25 | 19.18 | 0.62 | 6.57 | 76.1 | RCP | 430.13 | 1.00 | 60 | 0.013 | 261.14 | 19.63 | 13.30 | 11.60 | 0.8 | 1.09 | 811.97 | 810.90 | | 808.02 | 803.72 | | 809.81 | | | |
| | 705 | | 0.00 | 10.91 | | 0.67 | 1.25 | 5.85 | | 9.98 | 0.0 | Curb Inlet | | | | | | | | | | | | | 814.78 | | | 0.5 | | 809.81 | 813.45 | |
| | | 704 | | | 28.67 | 0.64 | 1.25 | 19.80 | 0.35 | 6.46 | 149.1 | RCP | 304.65 | 1.00 | 60 | 0.013 | 261.14 | 19.63 | 13.30 | 14.43 | 1.1 | 3.28 | 808.87 | 809.81 | | 803.22 | 800.17 | | 806.53 | | | |
| | 704 | | 0.66 | 2.49 | | 0.86 | 1.25 | 5.00 | | 10.32 | 7.3 | Curb Inlet | | | | | | | | | | | | | 814.1 | | | 2.3 | | 806.53 | 812.77 | |
| | | 703 | | | 31.82 | 0.66 | 1.25 | 20.15 | 0.06 | 6.41 | 168.3 | RCP | 51.87 | 0.80 | 60 | 0.013 | 233.57 | 19.63 | 11.90 | 14.78 | 1.3 | 1.85 | 804.13 | 806.53 | | 797.85 | 797.44 | | 804.68 | | | |
| | 703 | | 0.25 | | | 0.90 | 1.25 | 5.00 | | 10.32 | 2.9 | Curb Inlet | | | | | | | | | | | | | 813.98 | | | 0.3 | | 804.68 | 812.15 | |
| | | 702 | | | 32.07 | 0.66 | 1.25 | 20.21 | 0.04 | 6.40 | 169.8 | RCP | 35.00 | 0.80 | 60 | 0.013 | 233.57 | 19.63 | 11.90 | 14.80 | 1.3 | 1.72 | 803.47 | 804.68 | | 797.14 | 796.86 | | 802.96 | | | |
| | 702 | | 0.29 | | | 0.90 | 1.25 | 5.00 | | 10.32 | 3.4 | Curb Inlet | | | | | | | | | | | | | 813.98 | | | 0.3 | | 802.96 | 812.15 | |
| | | 701 | | | 32.36 | 0.66 | 1.25 | 20.25 | 0.08 | 6.39 | 171.7 | RCP | 68.97 | 0.80 | 60 | 0.013 | 233.57 | 19.63 | 11.90 | 14.84 | 1.3 | 2.09 | 802.96 | 795.86 | | 796.56 | 796.01 | | 793.77 | | | |
| | 701 | | 0.00 | | | 0.90 | 1.25 | 5.00 | | 10.32 | 0.0 | Junction Box | | | | | | | | | | | | | 808.48 | | | 8.63 | | 793.77 | 807.15 | |
| | | 700 | | | 32.07 | 0.67 | 1.25 | 20.25 | 0.06 | 6.39 | 171.7 | RCP | 56.70 | 1.00 | 60 | 0.013 | 261.14 | 19.63 | 13.30 | 14.84 | 1.3 | 1.97 | 793.77 | 791.28 | | 787.38 | 786.81 | | 789.31 | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 789.31 | | |
| Line 800 | 804 | | 0.52 | | | 0.90 | 1.00 | 5.00 | | 7.35 | 3.4 | Area Inlet | | | | | | | | | | | | | 816.06 | | | | | 811.83 | 814.73 | |
| | | 801 | | | 0.52 | 0.90 | 1.00 | 5.00 | 0.16 | 7.35 | 3.4 | HDPE | 86.14 | 2.00 | 18 | 0.01 | 19.36 | 1.77 | 10.96 | 9.07 | 0.8 | 0.27 | 811.83 | 810.53 | | 810.67 | 808.95 | | 810.25 | | | |
| | 801 | | 0.68 | | | 0.90 | 1.00 | 5.50 | | 7.20 | 4.4 | Curb Inlet | | | | | | | | | | | | | 815.12 | | | 0.5 | | 810.25 | 813.79 | |
| | | 705 | | | 1.20 | 0.90 | 1.00 | 5.16 | 0.12 | 7.30 | 7.9 | HDPE | 79.58 | 2.00 | 18 | 0.01 | 19.36 | 1.77 | 10.96 | 10.64 | 1.2 | 1.36 | 810.25 | 808.97 | | 808.45 | 806.86 | | 807.61 | | | Connect to Line 700 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 807.61 | | |
| Line 900 | 904 | | 0.74 | | | 0.74 | 1.00 | 5.00 | | 7.35 | 4.0 | Area Inlet | | | | | | | | | | | | | 819.11 | | | | | 815.57 | 817.78 | |
| | | 903 | | | 0.74 | 0.74 | 1.00 | 5.00 | 0.24 | 7.35 | 4.0 | HDPE | 117.00 | 2.00 | 18 | 0.01 | 19.36 | 1.77 | 10.96 | 8.02 | 0.8 | 0.48 | 815.22 | 815.57 | | 814.00 | 811.66 | | 815.09 | | | |
| | 903 | | 0.86 | 0.32 | | 0.80 | 1.00 | 5.00 | | 7.35 | 5.1 | Area Inlet | | | | | | | | | | | | | 818.77 | | | 0.5 | | 815.09 | 817.44 | |
| | | 902 | | | 1.92 | 0.78 | 1.00 | 5.24 | 0.09 | 7.28 | 10.9 | HDPE | 55.14 | 1.00 | 24 | 0.01 | 29.49 | 3.14 | 9.39 | 10.17 | 0.9 | 0.50 | 812.98 | 815.09 | | 811.16 | 810.61 | | 814.59 | | | |
| | 902 | | 0.89 | | | 0.80 | 1.00 | 5.50 | | 7.20 | 5.1 | Area Inlet | | | | | | | | | | | | | 818.73 | | | 0.5 | | 814.59 | 817.40 | |
| | | 901 | | | 2.81 | 0.78 | 1.00 | 5.33 | 0.15 | 7.25 | 16.0 | HDPE | 104.77 | 1.00 | 24 | 0.01 | 29.49 | 3.14 | 9.39 | 11.52 | 1.2 | 1.64 | 812.48 | 814.59 | | 810.11 | 809.06 | | 812.95 | | | |
| | 901 | | 0.00 | 2.01 | | 0.80 | 1.00 | 5.50 | | 7.20 | 0.0 | Manhole | | | | | | | | | | | | | 816.35 | | | 0.5 | | 812.95 | 815.02 | |
| | | 802 | | | 4.82 | 0.79 | 1.00 | 5.49 | 0.07 | 7.21 | 27.5 | HDPE | 52.42 | 1.00 | 24 | 0.01 | 29.49 | 3.14 | 9.39 | 11.78 | 2.2 | 3.13 | 812.95 | 812.17 | | 808.56 | 808.04 | | 809.04 | | | Connect to Line 700 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 809.04 | | |
| Line 1200 | 1203 | | 4.52 | | | 0.51 | 1.00 | 8.33 | | 6.45 | 14.9 | End Section | | | | | | | | | | | | | N/A | | | | | 809.54 | 810.00 | |
| | | 1202 | | | 4.52 | 0.51 | 1.00 | 8.33 | 0.04 | 6.45 | 14.9 | RCP | 25.00 | 3.02 | 30 | 0.013 | 71.47 | 4.91 | 14.56 | 11.45 | 0.8 | 0.24 | 809.54 | 803.95 | | 807.50 | 806.75 | | 803.70 | | | |
| | 1202 | | 0.19 | 0.61 | | 0.90 | 1.00 | 6.35 | | 6.96 | 1.2 | Curb Inlet | | | | | | | | | | | | | 814.01 | | | 5.36 | | 803.70 | 812.18 | Tie in from Line 3300 |
| | | 1201 | | | 5.32 | 0.57 | 1.00 | 8.37 | 0.06 | 6.44 | 19.6 | RCP | 43.24 | 1.00 | 30 | 0.013 | 41.13 | 4.91 | 8.38 | 11.62 | 0.9 | 0.51 | 803.70 | 803.59 | | 801.39 | 800.96 | | 803.08 | | | |
| | 1201 | | 0.29 | | | 0.90 | 1.00 | 5.00 | | 7.35 | 1.9 | Curb Inlet | | | | | | | | | | | | | 814.00 | | | 0.3 | | 803.08 | 812.17 | |
| | | 1200 | | | 5.61 | 0.59 | 1.00 | 8.43 | 0.07 | 6.43 | 21.2 | RCP | 51.00 | 1.00 | 30 | 0.013 | 41.13 | 4.91 | 8.38 | 11.79 | 1.0 | 0.65 | 803.08 | 800.65 | | 800.66 | 800.15 | | 800.00 | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 800.00 | | |
| Line 2600 | 2602 | | 0.71 | | | 0.90 | 1.00 | 9.10 | | 6.54 | 4.2 | Curb Inlet | | | | | | | | | | | | | 811.66 | | | | | 808.05 | 810.33 | |
| | | 2601 | | | 0.71 | 0.90 | 1.00 | 9.10 | 0.15 | 6.54 | 4.2 | RCP | 58.43 | 2.00 | 18 | 0.013 | 14.90 | 1.77 | 8.43 | 6.51 | 0.8 | 0.31 | 807.53 | 808.05 | | 806.31 | 805.14 | | 807.74 | | | |
| | 2601 | | 0.82 | | | 0.90 | 1.00 | 8.76 | | 9.31 | 6.9 | Curb Inlet | | | | | | | | | | | | | 811.44 | | | 0.5 | | 807.74 | 810.11 | |
| | | 2600 | | | 1.53 | 0.90 | 1.00 | 9.25 | 0.17 | 9.31 | 12.8 | RCP | 81.84 | 2.00 | 18 | 0.013 | 14.90 | 1.77 | 8.43 | 7.96 | 2.1 | 3.67 | 807.74 | 806.67 | | 804.64 | 803.00 | | 803.00 | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 803.00 | | Tie into Existing Line |
| Line 3200 | 3201 | | 0.31 | | | 0.90 | 1.00 | 5.00 | | 7.35 | 2.1 | Curb Inlet | | | | | | | | | | | | | 811.65 | | | | | 805.59 | 810.32 | |
| | | 3302 | | | 0.31 | 0.90 | 1.00 | 5.00 | 0.16 | 7.35 | 2.1 | RCP | 35.00 | 1.00 | 15 | 0.013 | 6.48 | 1.23 | 5.28 | 3.63 | 0.8 | 0.13 | 805.59 | 805.05 | | 804.64 | 804.29 | | 804.92 | | | Connect to Line 3300 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 804.92 | | |
| Line 3300 | 3303 | | 0.00 | | | 0.00 | 1.00 | 8.11 | | 6.50 | 0.0 | Manhole | | | | | | | | | | | | | 811.58 | | | 0.5 | | 805.98 | 810.25 | |
| | | 3302 | | | 0.00 | 0.00 | 1.00 | 8.11 | 0.16 | 6.50 | 0.0 | HDPE | 68.49 | 0.50 | 24 | 0.01 | 20.85 | 3.14 | 6.64 | 7.31 | 0.7 | 0.00 | 805.98 | 805.19 | | 804.64 | 804.29 | | 805.19 | | | |
| | 3302 | | 0.30 | 0.31 | | 0.95 | 1.00 | 6.66 | | 6.87 | 2.0 | Curb Inlet | | | | | | | | | | | | | 811.65 | | | 0.5 | | 805.19 | 809.82 | Tie in from Line 3200 |
| | | 3301 | | | 0.61 | 0.92 | 1.00 | 8.27 | 0.30 | 6.47 | 3.6 | HDPE | 132.71 | 0.50 | 24 | 0.01 | 20.85 | 3.14 | 6.64 | 7.40 | 0.7 | 0.10 | 805.19 | 804.12 | | 803.79 | 803.13 | | 804.02 | | | |
| | 3301 | | 0.00 | | | 0.66 | 1.00 | 6.66 | | 6.87 | 0.0 | Manhole | | | | | | | | | | | | | 814.14 | | | 0.5 | | 804.02 | 812.81 | |
| | | 1202 | | | 0.61 | 0.92 | 1.00 | 8.57 | 0.18 | 6.40 | 3.6 | HDPE | 80.28 | 0.92 | 24 | 0.01 | 28.28 | 3.14 | 9.00 | 7.38 | 0.7 | 0.07 | 804.02 | 802.96 | | 802.63 | 801.89 | | 802.89 | | | Connect to Line 1200 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 802.89 | | |
| **Line 3800** | 3802 | | 0.13 | | | 0.95 | 1.25 | 25.00 | | 5.71 | 0.9 | Curb Inlet | | | | | | | | | | | | | 812.39 | | | 2.5 | | 804.52 | 811.06 | |
| | | 3801 | | | 0.13 | 0.95 | 1.25 | 25.00 | 0.20 | 5.71 | 0.9 | HDPE | 115.01 | 1.00 | 18 | 0.01 | 13.69 | 1.77 | 7.75 | 9.58 | 0.7 | 0.02 | 809.24 | 803.17 | | 808.22 | 807.07 | | 803.14 | | | |
| | 3801 | | 0.91 | | | 0.45 | 1.25 | 25.00 | | 5.71 | 2.9 | Curb Inlet | | | | | | | | | | | | | 815.44 | | | 7.95 | | 803.14 | 814.11 | Conect to Line 500 |
| | | 500 | | | 1.04 | 0.51 | 1.25 | 25.00 | 0.26 | 5.71 | 3.8 | RCP | 148.12 | 1.50 | 72 | 0.013 | 520.09 | 28.27 | 18.39 | 9.58 | 0.7 | 0.00 | 803.14 | 0.00 | | 799.12 | 796.90 | | | | | |
| Line 3900 | 3900 | | 0.48 | | | 0.90 | 1.00 | 5.00 | | 7.35 | 3.2 | Curb Inlet | | | | | | | | | | | | | 812.86 | | | | | 805.13 | 811.03 | |
| | | 201 | | | 0.48 | 0.90 | 1.00 | 5.00 | 0.12 | 7.35 | 3.2 | HDPE | 74.75 | 1.00 | 18 | 0.01 | 13.69 | 1.77 | 7.75 | 10.73 | 0.8 | 0.21 | 801.25 | 805.13 | | 800.12 | 799.37 | | 804.92 | | | Conect to Line 200 |
| Line 4000 | 4001 | | 0.16 | | | 0.85 | 1.00 | 5.00 | | 7.35 | 1.0 | Curb Inlet | | | | | | | | | | | | | 820.93 | | | 0.5 | | 812.85 | 819.10 | |
| | | 205 | | | 0.16 | 0.85 | 1.00 | 5.00 | 0.09 | 7.35 | 1.0 | RCP | 55.65 | 1.00 | 12 | 0.013 | 3.57 | 0.79 | 4.55 | 10.73 | 0.7 | 0.13 | 812.85 | 808.91 | | 812.12 | 811.56 | | 808.78 | | | Conect to Line 200 |

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Lenexa, Kansas 66219
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DATE: 1-18-19
DESIGN BY: CEL
DRAWN BY: DRV
PROJECT NO.: 12720
SHEET NO.: 23
TOTAL SHEETS: 69

Bradley D. Burton
Professional Engineer
License No. 25862

Street and Storm Sewer Plans
# Paragon Star Development
Lee's Summit, Missouri

| NO. | DATE | REVISIONS | BY | APPROVED |
|---|---|---|---|---|
| | | | | |
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## Storm Drainage Calculations

G:\12720\Civil 3D\Production Drawings\Street & Storm Plans\12720C1400.dwg Layout: 24 Storm Sewer Profiles -- Thursday, January 31, 2019, 9:41am -- Copyright 2019, George Butler Associates, Inc. 00212, Professional Engineer 000133, Landscape Architect 000025, Professional Land Surveyor 000039

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| DRAWN BY: | DRV |
| PROJECT NO.: | 12720 |
| SHEET NO. | 24 |
| TOTAL SHEETS | 69 |

Bradley D. Burton
Professional Engineer
License No. 25862

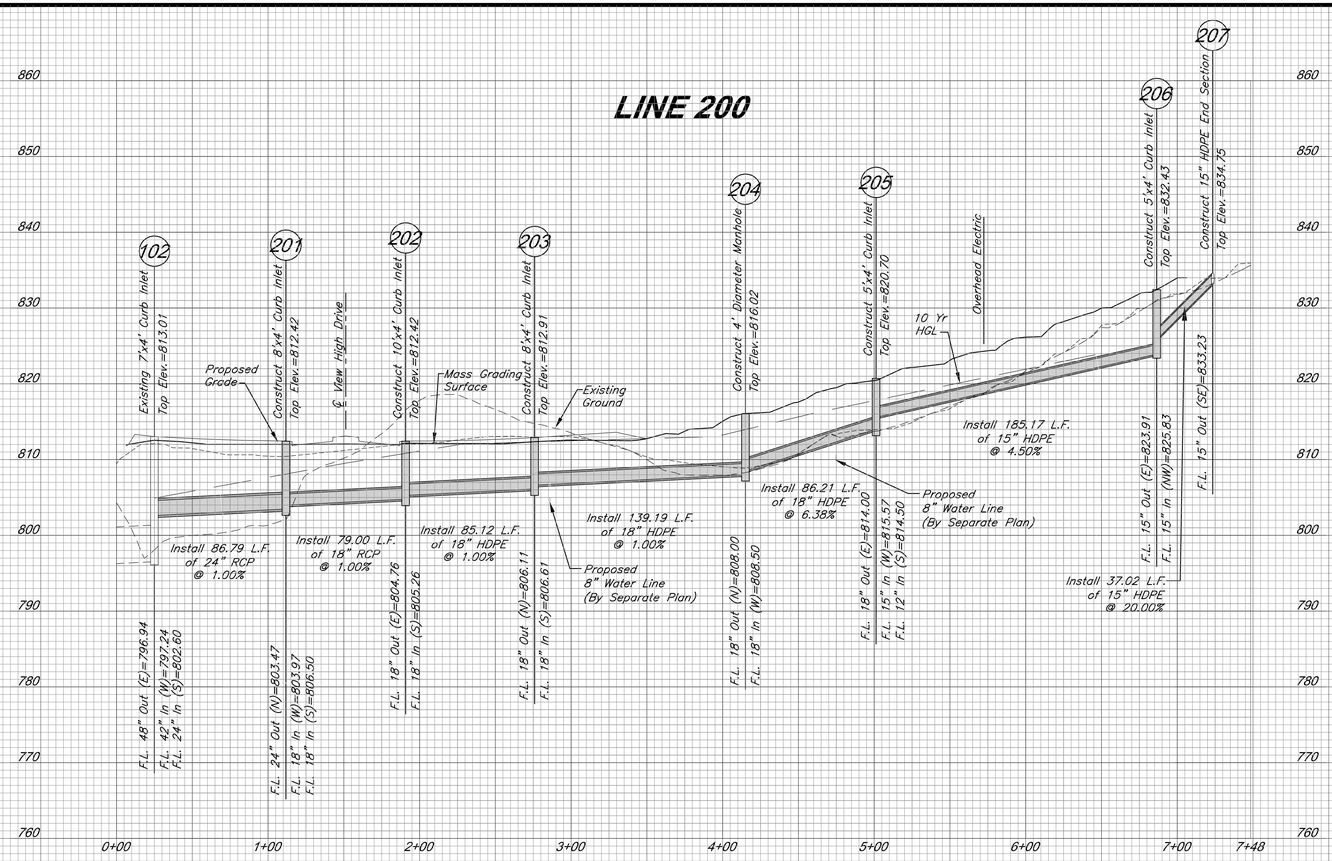
Street and Storm Sewer Plans

# Paragon Star Development

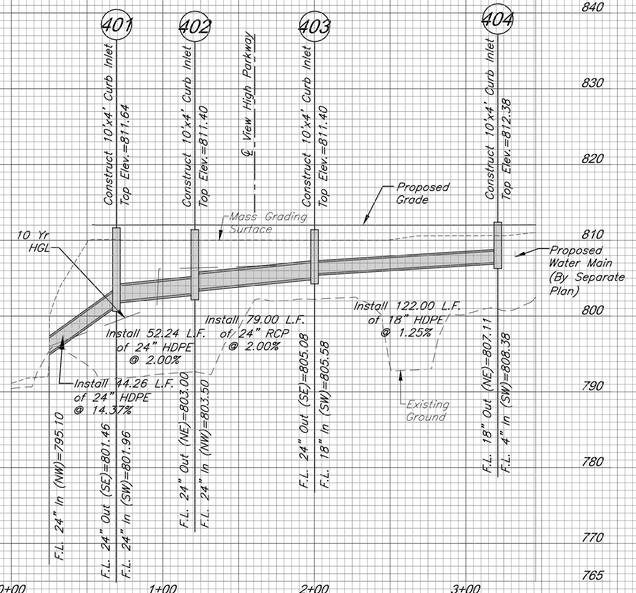
Lee's Summit, Missouri

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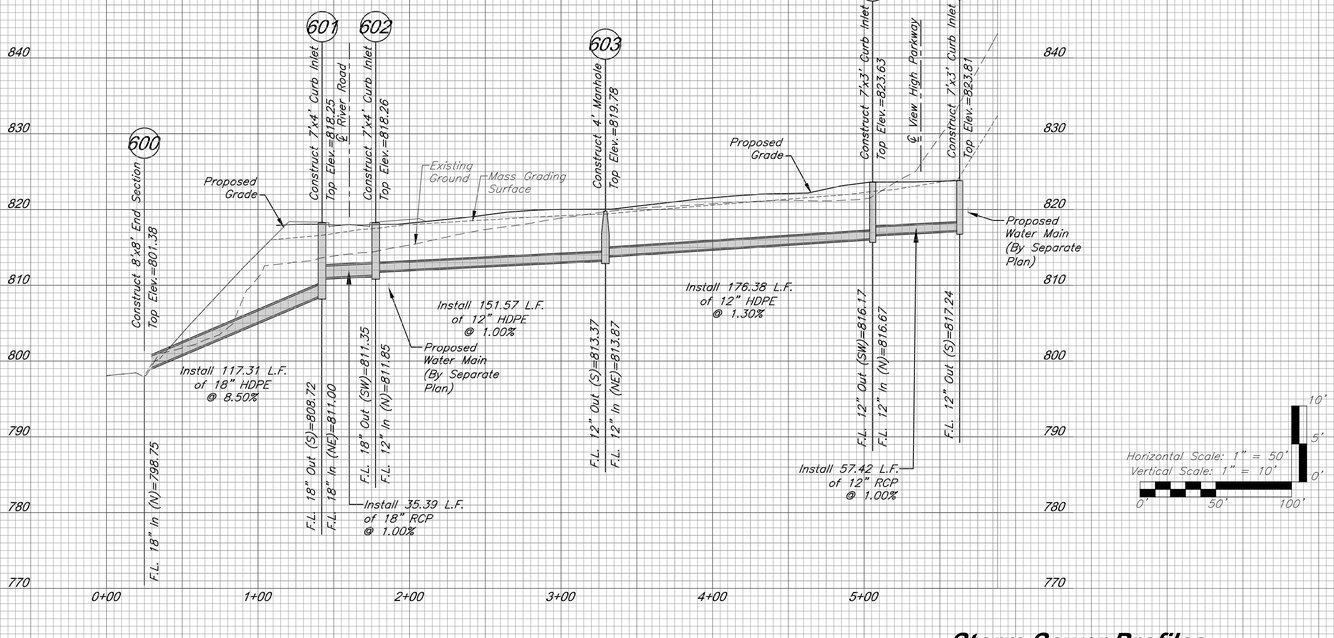
## LINE 200




## LINE 400




## LINE 600




Horizontal Scale: 1" = 50'
Vertical Scale: 1" = 10'

## Storm Sewer Profiles

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| DRAWN BY: | DRV |
| PROJECT NO.: | 12720 |
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| TOTAL SHEETS | 69 |

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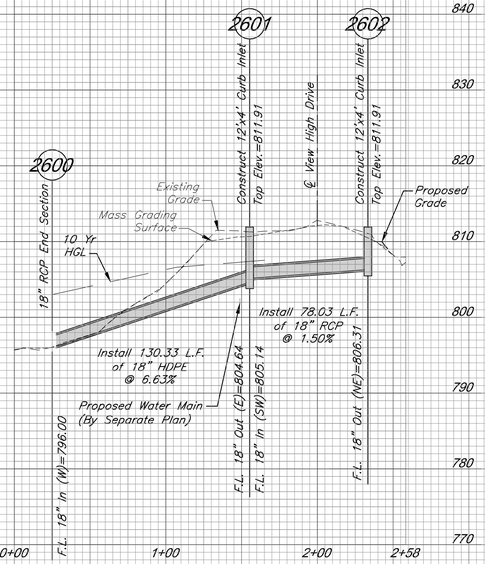
Street and Storm Sewer Plans

# Paragon Star Development

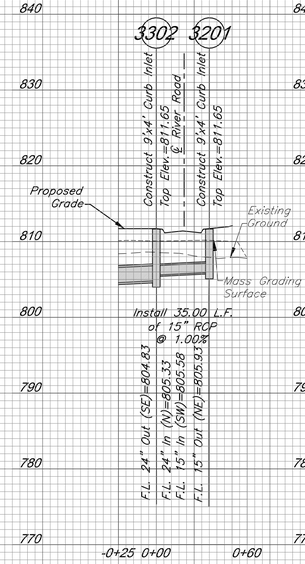
Lee's Summit, Missouri

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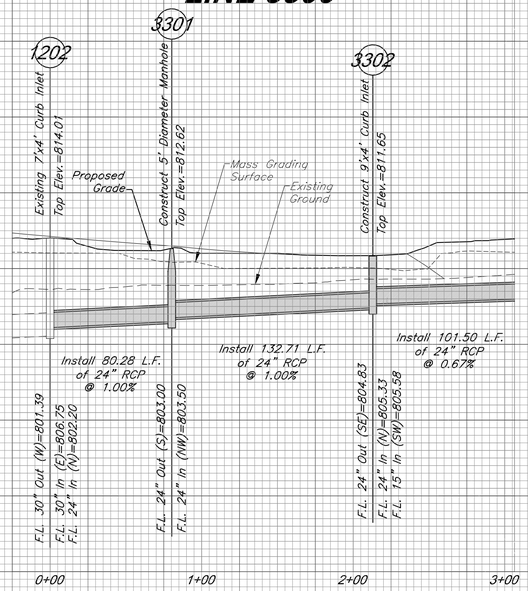
## LINE 2600



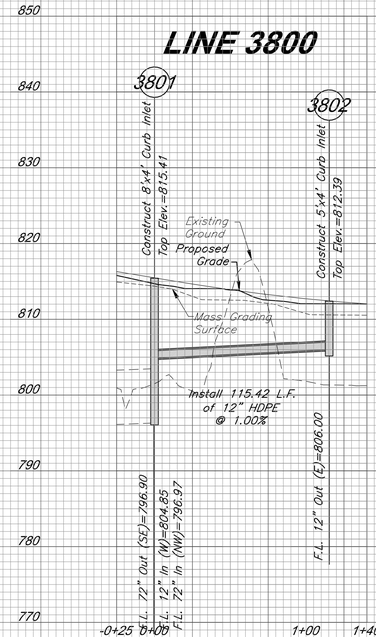

## LINE 3200



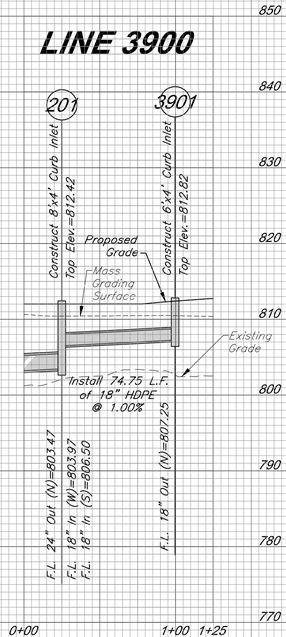

## LINE 3300



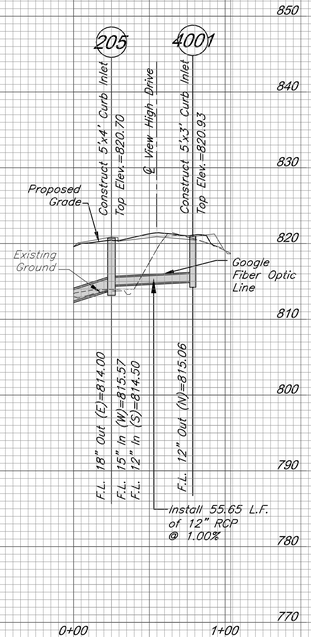

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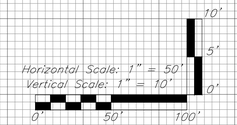



## LINE 3900




## LINE 4000




# Storm Sewer Profiles

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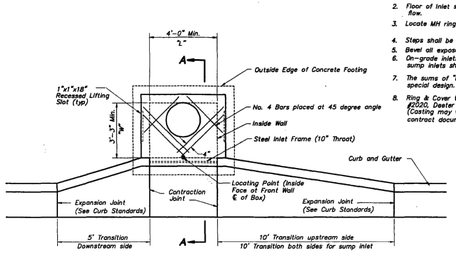
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| DRAWN BY: | DRV |
| PROJECT NO.: | 12720 |
| SHEET NO. | 26 |
| TOTAL SHEETS | 69 |

Bradley D. Burton
Professional Engineer
License No. 25862

Street and Storm Sewer Plans
**Paragon Star Development**
Lee's Summit, Missouri

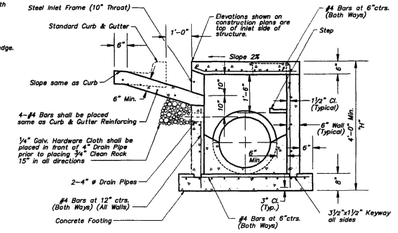
| NO. | DATE | REVISIONS | BY | APPROVED |
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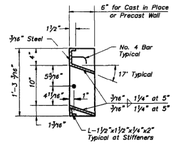

PLAN

GENERAL NOTES:

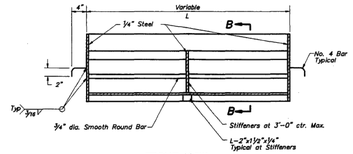
1. The first dimension listed in the Construction Notes is the "L" dimension. The second dimension is the "W" dimension. L's listed on the project plans are listed at the inside face of the wall.
2. Floor of inlet shall be shaped with invert to provide smooth flow.
3. Locate MH ring and cover over outlet.
4. Steps shall be spaced at 1'-4" O.C. vertically.
5. Bevel all exposed edges with 3/4" chamfer or 1/2" tooled edge.
6. On-grade inlets shall conform to the street grade and sump inlets shall be level.
7. The sums of "L" & "W" shall not exceed 14' without special design. (See project plans for details.)
8. Ring & Cover to be Neenah R-1537, Clay & Bailey #2020, Dester #2016, or approved equal. (Casting may vary by municipality, refer to plans & contract documents.)



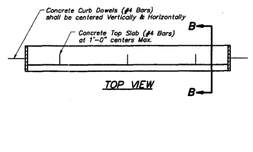

SECTION A-A




SECTION B-B




FRONT VIEW




TOP VIEW

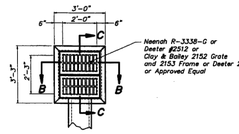
Notes:

1. All welds shall be preformed in accordance with appropriate AWS Specifications & 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 #37-77 primer (Red) or equal.

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CURB INLET – TYPE 2 DETAILS

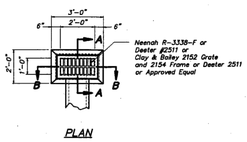
STANDARD DRAWING NUMBER CI – 2
ADOPTED: APRIL 17, 1996



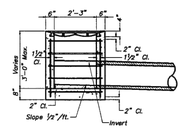

PLAN

NOTE:

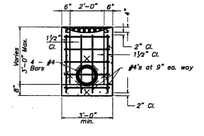
1. Location point at center of inlet.
2. A separate top slab may be utilized.
3. Not recommended for use in areas with bicycle traffic.



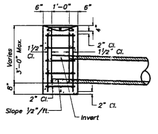

PLAN




SECTION C-C




SECTION B-B




SECTION A-A

DOUBLE GRATE INLET DETAILS

SINGLE GRATE INLET DETAILS

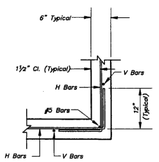
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GRATE INLET DETAILS

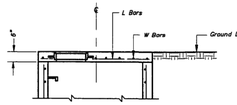
STANDARD DRAWING NUMBER GI-1
ADOPTED: APRIL 17, 1996

**Storm Sewer Details**

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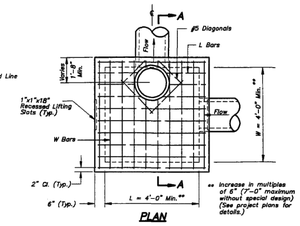



CORNER DETAIL




## SLAB TOP ALTERNATE FOR JUNCTION BOX (SHALLOW)

NOTE: Ring & Cover to be Neenah R-1537, Clay & Bailey #2020, Deeter #2016, or approved equal. (Casting may vary by municipality, refer to plans & contract documents.)

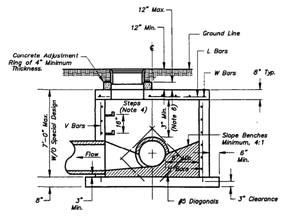



PLAN

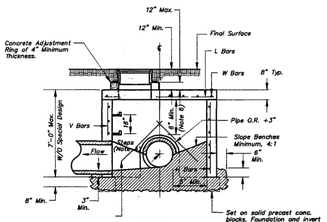
** Increase in multiples of 6" (7'-0" maximum without special design) (See project plans for details.)

GENERAL NOTES:

1. Locate ring and cover over outlet.
2. All work and materials shall conform to Section 2600 APWA.
3. Use ¾" Chamfer strip or ¾" R edger tool on all exposed concrete corners.
4. Steps required at 16" O.C. when depth from top of casting to invert exceeds 4'.
5. Boxouts will not be allowed to project through the Corners of the structure and the minimum distance between boxouts is 6" with 1 corner bar.
6. The minimum reinforcing shall be 1 H-Bar over a cast-in place pipe and 2 H-Bars over a precast boxout.
7. Limit opening height to 6" with No. 5 galvanized bars extending to corner rebars.
8. Show field inlet orientation on plans plus number and size of openings locating point at center of structure.
9. O.R. = one half outside pipe diameter (O.D.).
10. Reinforcing of covers in streets require special design.
11. Ring & Cover to be Neenah R-1736, Clay & Bailey #2006, Deeter #1315, or approved equal. (Casting may vary by municipality, refer to plans & contract documents.)




SECTION A-A
(Cast In Place)



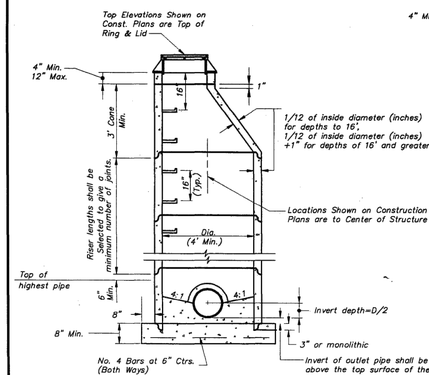

SECTION A-A
(Precast)

Set on solid precast conc. blocks. Foundation and invert shall be poured monolithic, unless soil conditions require pouring base slab before setting structure.

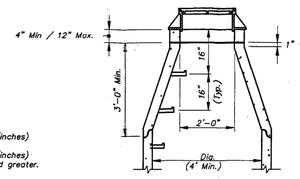
REINFORCING

| BARS | BAR SIZE | SPACING (in.) |
|---|---|---|
| H | 4 | 12 |
| V | 4 | 12 |
| L | 5 | 6 |
| W | 5 | 6 |

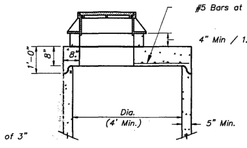
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APWA KANSAS CITY METROPOLITAN CHAPTER
JUNCTION BOX DETAILS
STANDARD DRAWING NUMBER 15 - 1
ADOPTED: APRIL 17, 1996




STANDARD PRECAST MANHOLE
(ECCENTRIC CONE)




STANDARD PRECAST MANHOLE
(CONCENTRIC CONE)
(See Eccentric Cone For Other Details)




STANDARD PRECAST MANHOLE
(SHALLOW TYPE)
(See Eccentric Cone For Other Details)

GENERAL NOTES:

1. All manholes are to be precast concrete and of Eccentric Cone type unless otherwise specified.
2. Manhole top adjustments shall be accomplished by the use of concrete adjustment rings.
3. Top of manhole casting shall be set flush and on same slope as finished surface or as directed by the Engineer.
4. Reinforcement in all sections shall equal or exceed A.S.T.M. C-478 specifications.
5. The engineer shall designate modifications for manholes with special designs.
6. The inside diameter of the manhole shall be 4'-0" for pipe diameters from 12" thru 24", 5'-0" for pipe diameters from 27" thru 36", and 6'-0" for pipe diameters 42" thru 48".
8. Clearance Tolerance of Pipe Openings: The Maximum Allowable Pipe Opening on a Horizontal Axis Shall be the Outside Diameter of the Pipe Plus 12". The Maximum Allowable Pipe Opening on Vertical Axis Shall be the Outside Diameter Plus 8". The Minimum Clearance Between the Outside Surface of an Installed pipe and the Concrete of the Manhole Shall be 2".
9. Installation of Pipe Openings: All required pipe openings shall be plant cast in manhole units. Field alterations of openings will be permitted provided walls are scored with a masonry saw to a depth sufficient to sever reinforcing steel. A chipping hammer may then be used to remove the concrete. Minimum distance between any two adjacent pipes shall be 4".
10. No direct payment for shaping floor or connecting pipes as shown on plans.
11. Ring & Cover to be Neenah R-1736, Clay & Bailey #2008, Deeter #1316, or approved equal. (Casting may vary by municipality, refer to plans & contract documents.)
12. Sanitary Sewers shall be coated and conform to Section 2600.

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APWA KANSAS CITY METROPOLITAN CHAPTER
MANHOLE DETAILS
STANDARD DRAWING NUMBER MH - 1
ADOPTED: APRIL 17, 1996

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| DRAWN BY: | DRV |
| PROJECT NO.: | 12720 |
| SHEET NO.: | 27 |
| TOTAL SHEETS: | 69 |

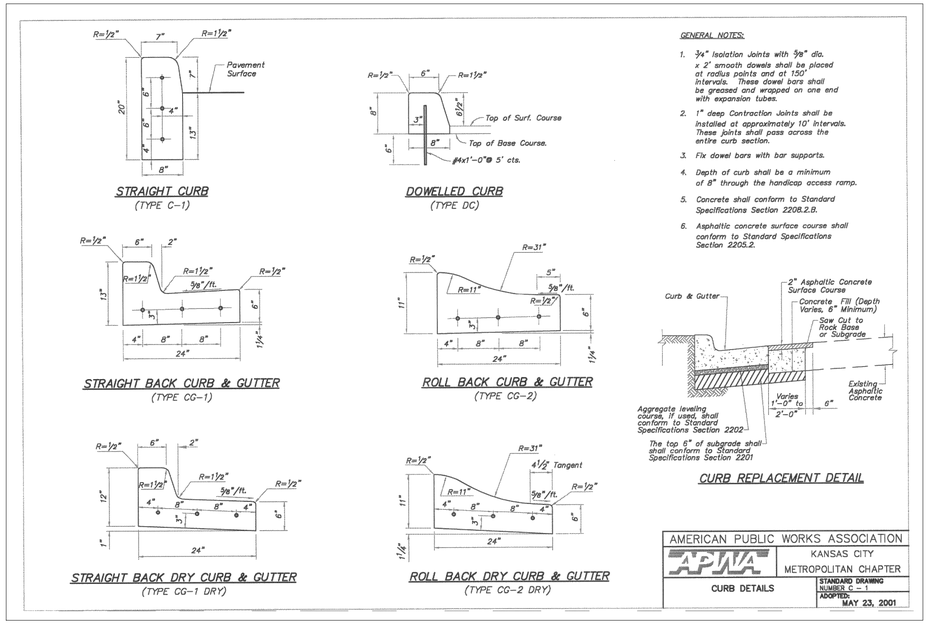
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Professional Engineer
License No. 25862

Street and Storm Sewer Plans
# Paragon Star Development
Lee's Summit, Missouri

| NO. | DATE | REVISIONS | BY | APPROVED |
|---|---|---|---|---|
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# Storm Sewer Details

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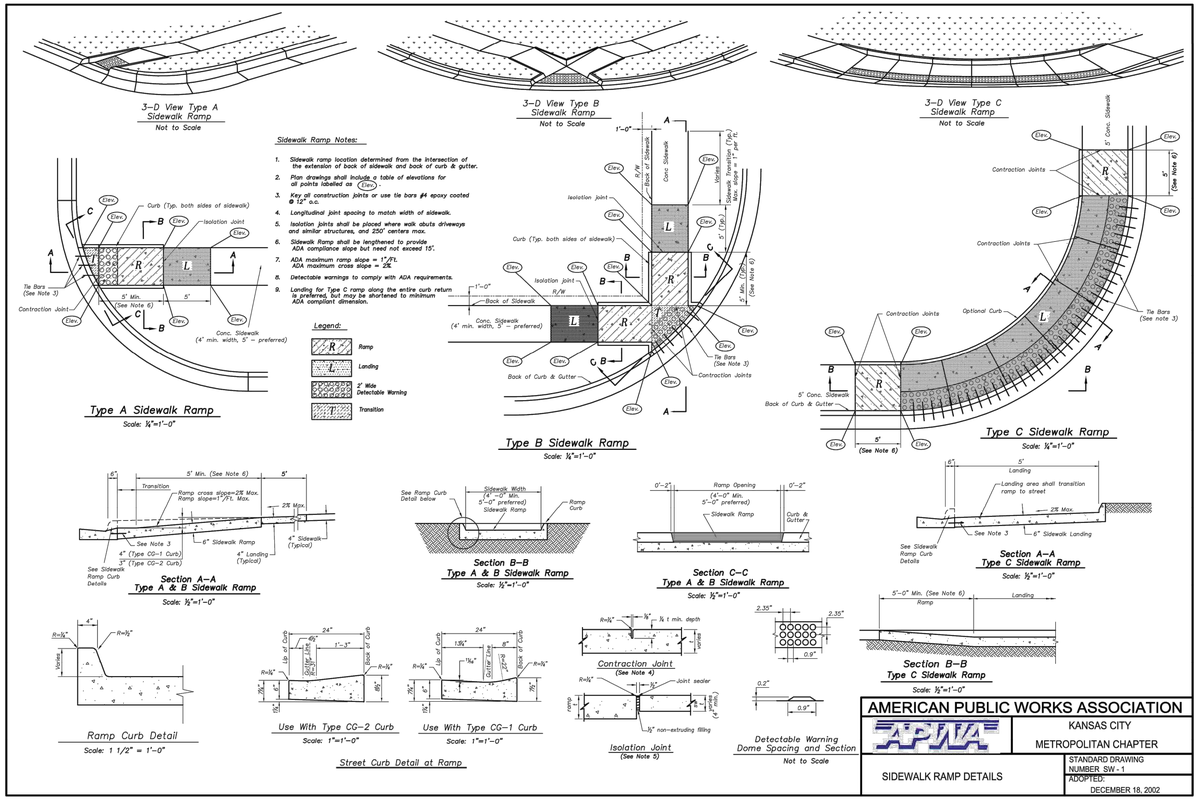
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Professional Engineer
License No. 25862

Street and Storm Sewer Plans

# Paragon Star Development

Lee's Summit, Missouri

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KANSAS CITY
METROPOLITAN CHAPTER
SIDEWALK RAMP DETAILS
STANDARD DRAWING NUMBER SW-1
ADOPTED: DECEMBER 18, 2002

# Construction Details

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| DRAWN BY: | DRV |
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| SHEET NO. | 29 |
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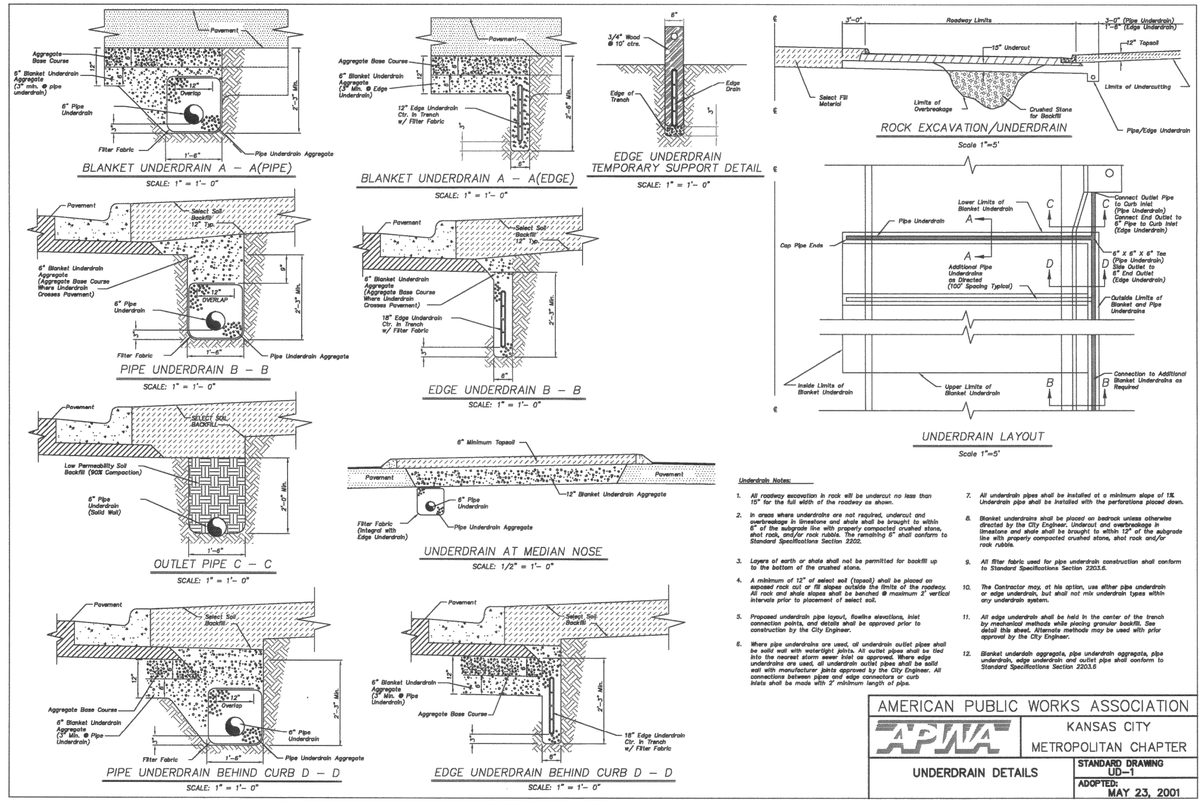
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Street and Storm Sewer Plans

# Paragon Star Development

Lee's Summit, Missouri

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**Underdrain Notes:**

1. All roadway excavation in rock will be undercut no less than 15" for the full width of the roadway as shown.
2. In areas where underdrains are not required, undercut and overbreakage in limestone and shale shall be brought to within 6" of the subgrade line with properly compacted crushed stone, shot rock, and/or rock rubble. The remaining 6" shall conform to Standard Specifications Section 2202.
3. Layers of earth or shale shall not be permitted for backfill up to the bottom of the crushed stone.
4. A minimum of 12" of select soil (topsoil) shall be placed on exposed rock cut or fill slopes outside the limits of the roadway. All rock and shale slopes shall be benched @ maximum 2' vertical intervals prior to placement of select soil.
5. Proposed underdrain pipe layout, flowline elevations, inlet connection points, and details shall be approved prior to construction by the City Engineer.
6. Where pipe underdrains are used, all underdrain outlet pipes shall be solid wall with watertight joints. All outlet pipes shall be tied into the nearest storm sewer inlet as approved. Where edge underdrains are used, all underdrain outlet pipes shall be solid wall with manufacturer joints approved by the City Engineer. All connections between pipes and edge connectors or curb inlets shall be made with 2' minimum length of pipe.
7. All underdrain pipes shall be installed at a minimum slope of 1% Underdrain pipe shall be installed with the perforations placed down.
8. Blanket underdrains shall be placed on bedrock unless otherwise directed by the City Engineer. Undercut and overbreakage in limestone and shale shall be brought to within 12" of the subgrade line with properly compacted crushed stone, shot rock and/or rock rubble.
9. All filter fabric used for pipe underdrain construction shall conform to Standard Specifications Section 2203.6.
10. The Contractor may, at his option, use either pipe underdrain or edge underdrain, but shall not mix underdrain types within any underdrain system.
11. All edge underdrain shall be held in the center of the trench by mechanical methods while placing granular backfill. See detail this sheet. Alternate methods may be used with prior approval by the City Engineer.
12. Blanket underdrain aggregate, pipe underdrain aggregate, pipe underdrain, edge underdrain and outlet pipe shall conform to Standard Specifications Section 2203.6

AMERICAN PUBLIC WORKS ASSOCIATION
APWA KANSAS CITY METROPOLITAN CHAPTER

| UNDERDRAIN DETAILS | STANDARD DRAWING UD-1 |
|---|---|
| | ADOPTED: MAY 23, 2001 |

**Construction Details**

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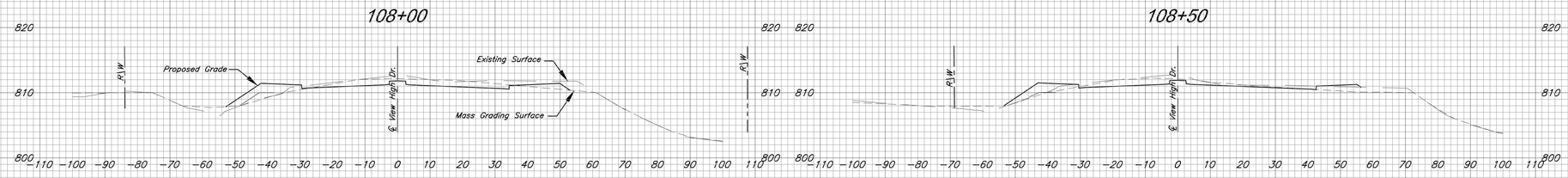
Bradley D. Burton
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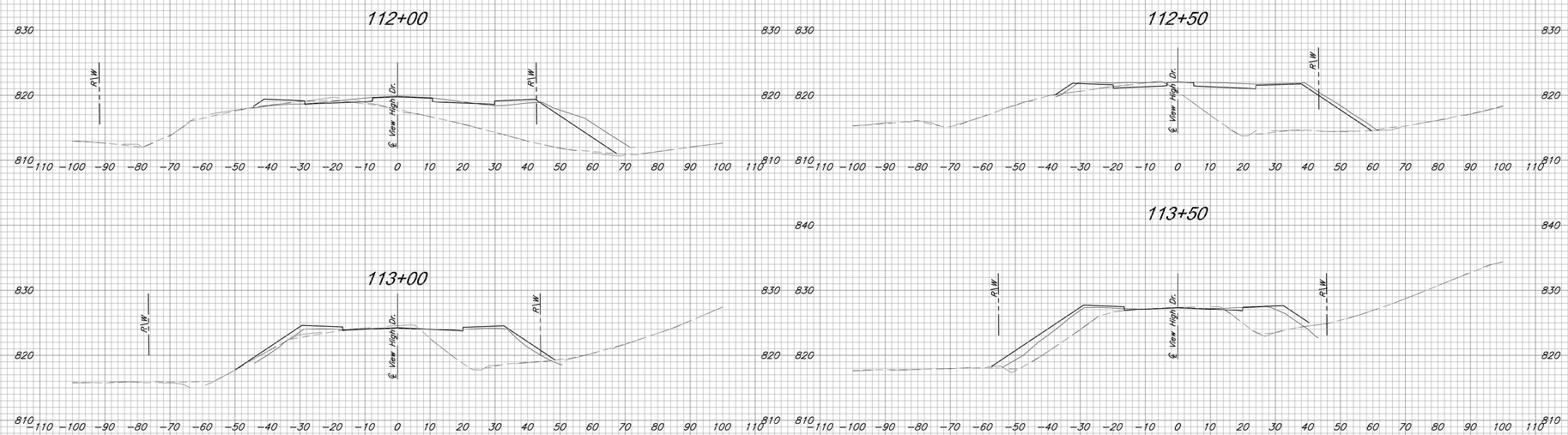
Street and Storm Sewer Plans

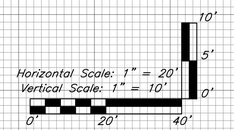
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## View High Drive Cross Sections

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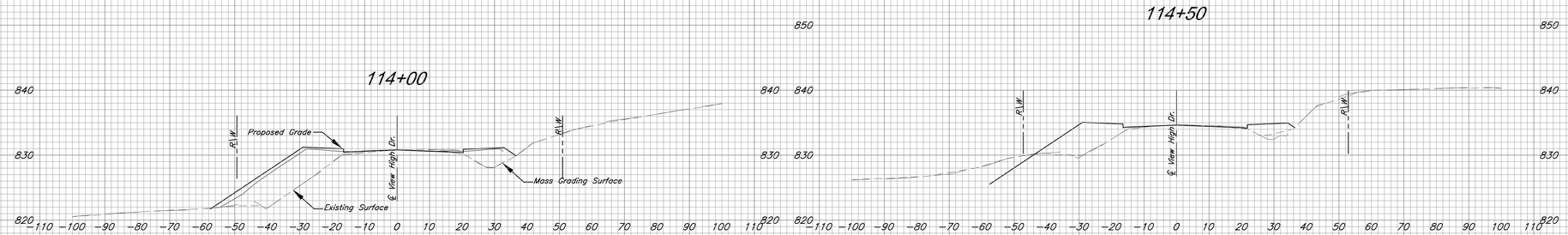
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Street and Storm Sewer Plans

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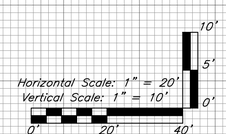
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## View High Drive Cross Sections

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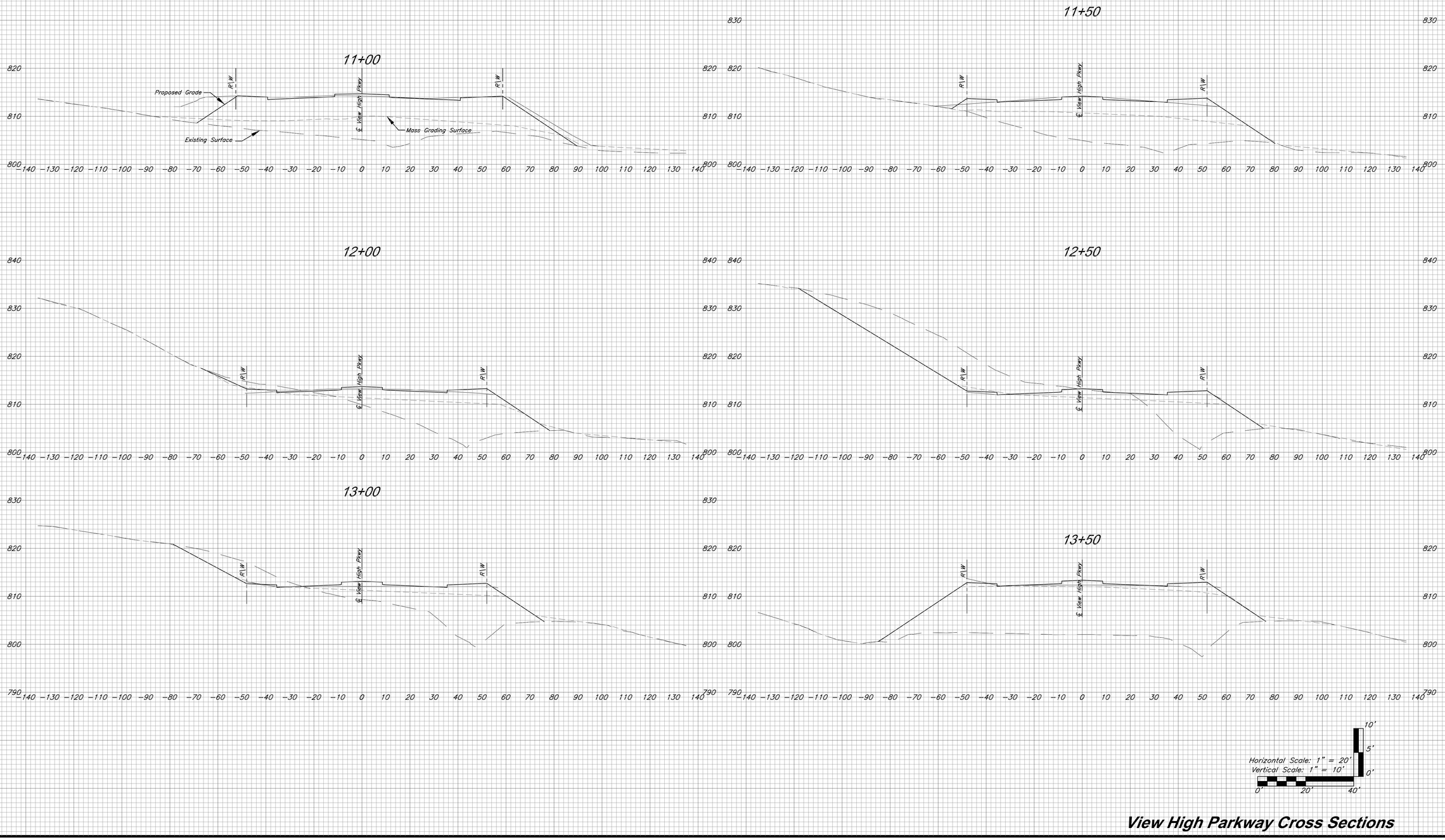
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Street and Storm Sewer Plans

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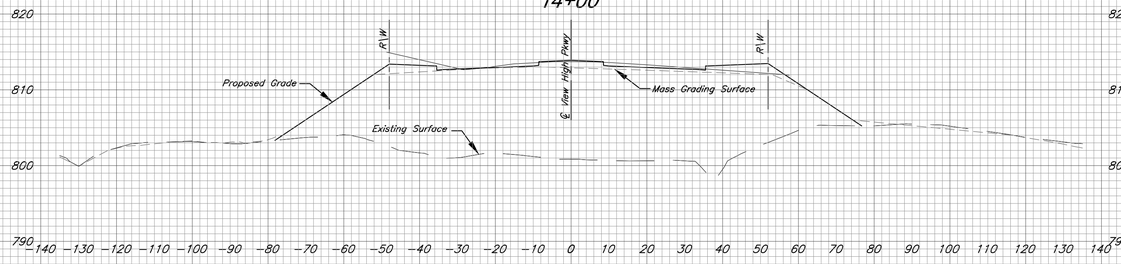
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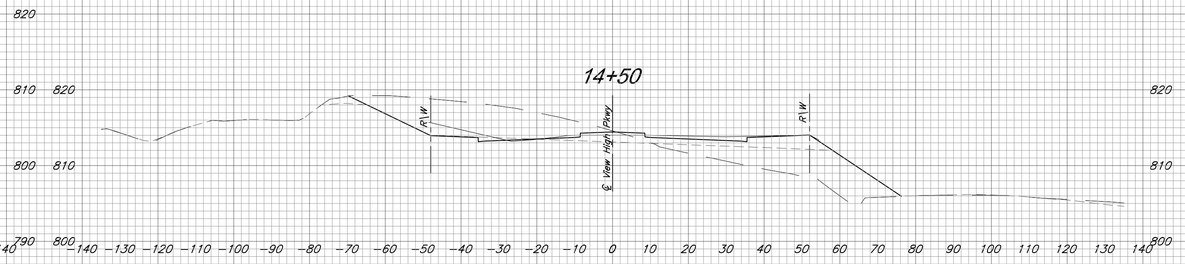
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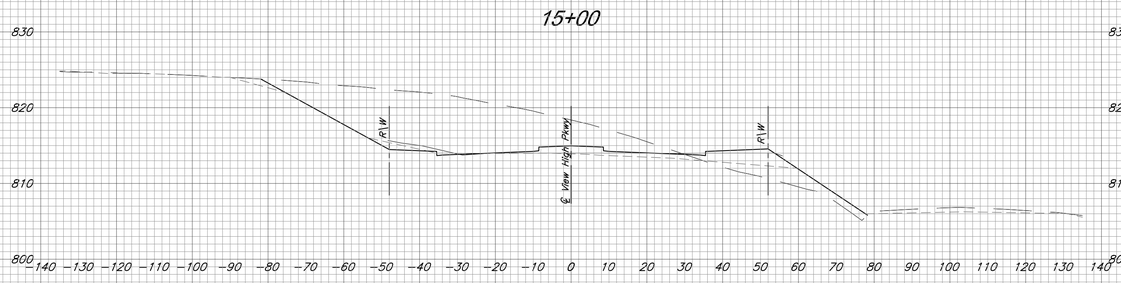
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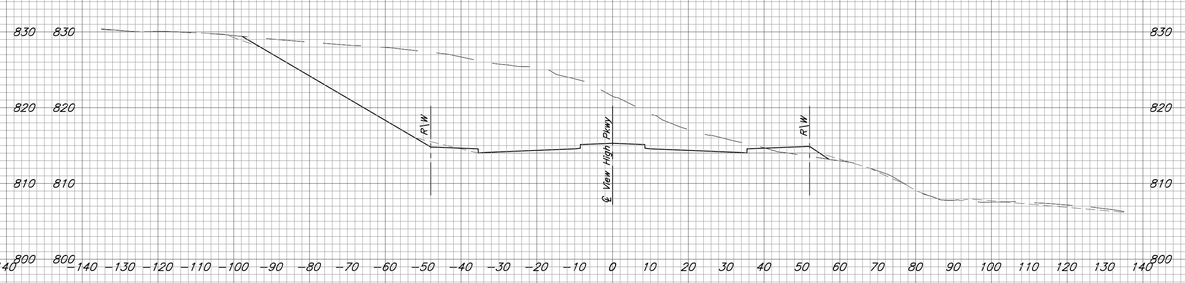

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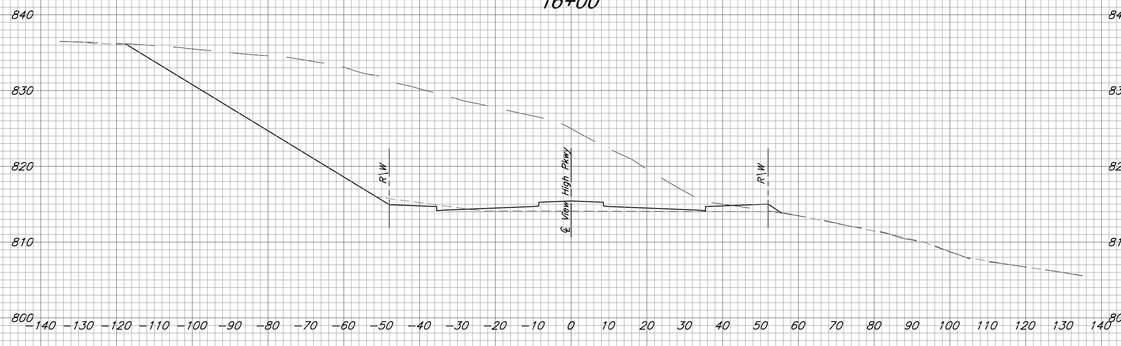

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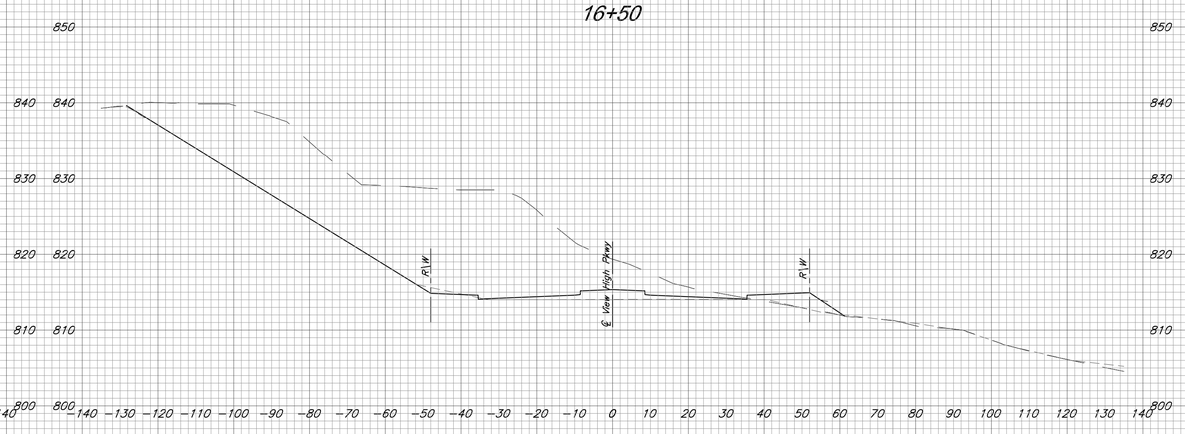

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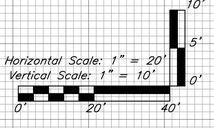



## 16+00




## 16+50




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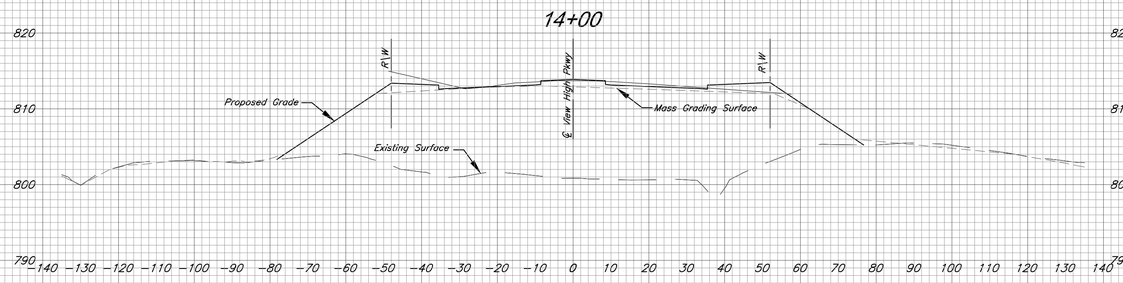
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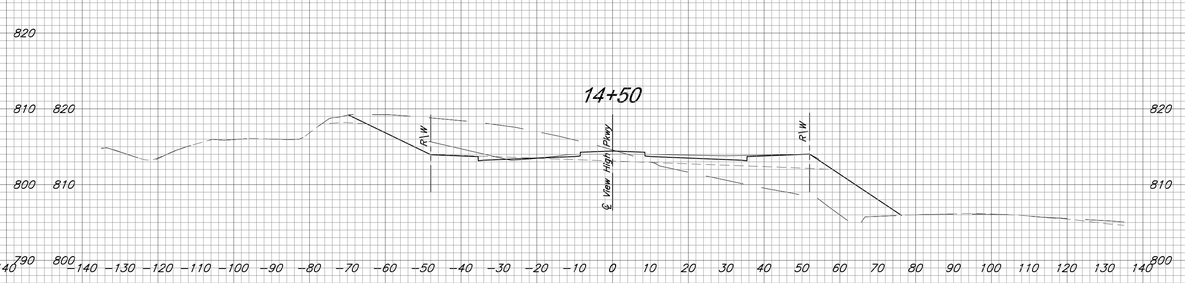
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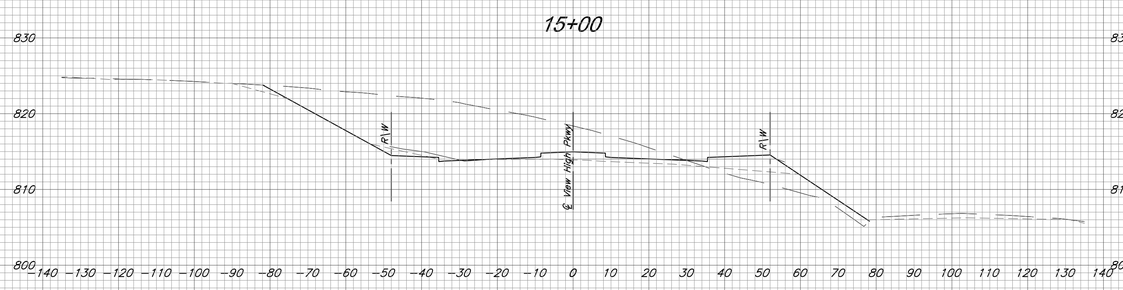
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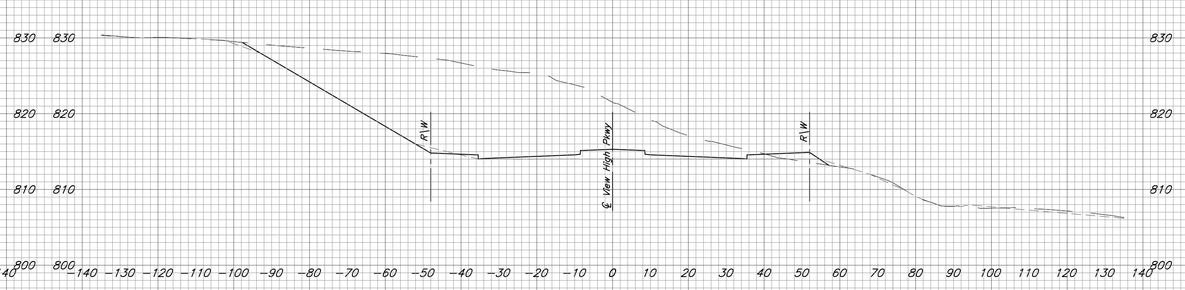
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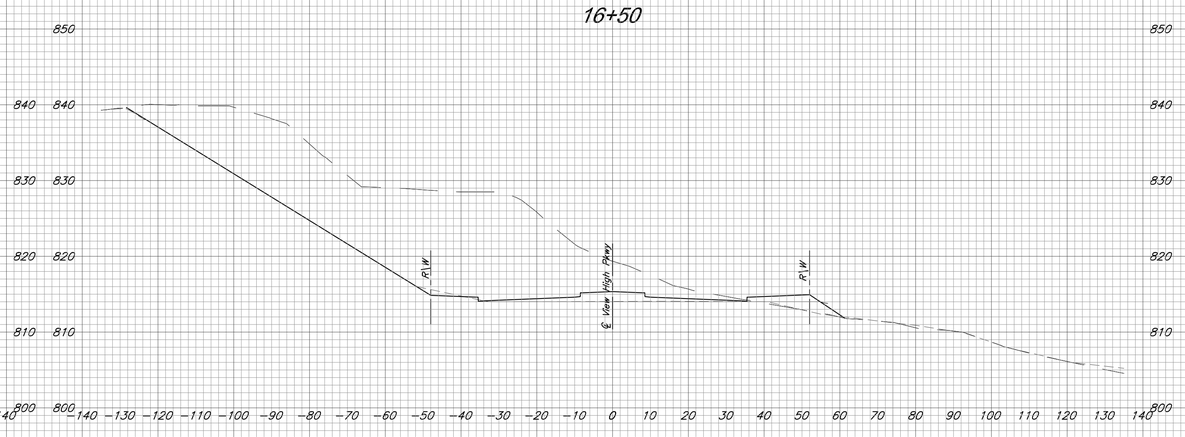



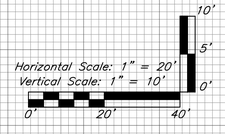










## View High Parkway Cross Sections

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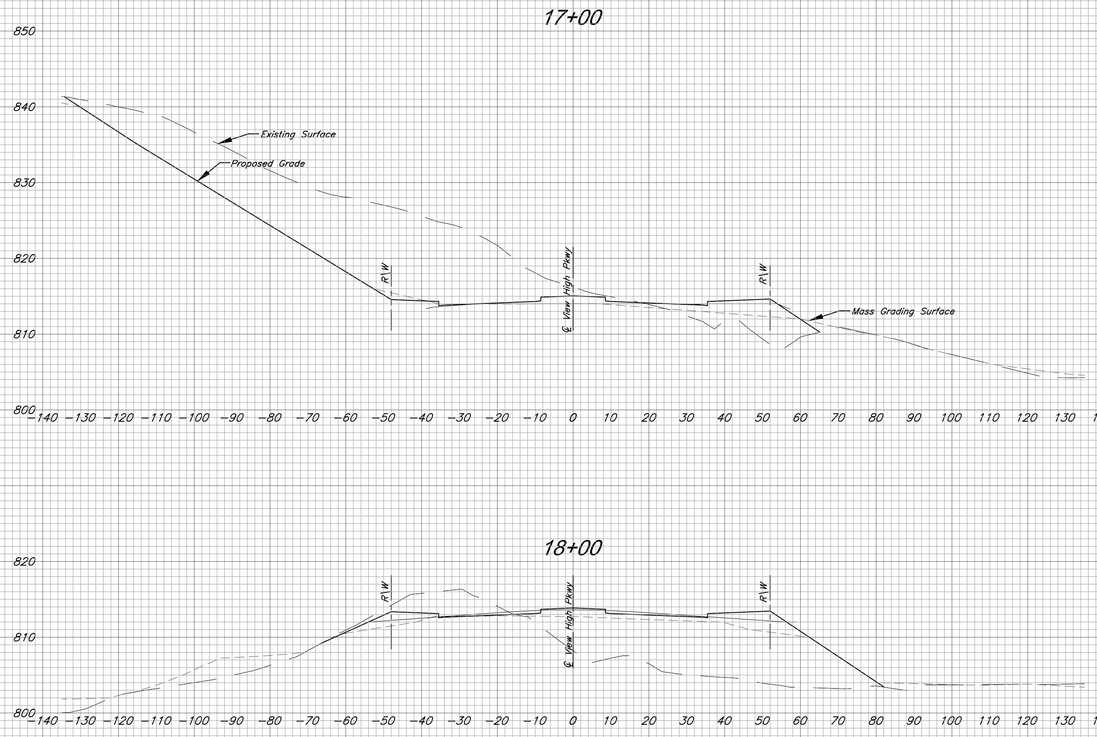
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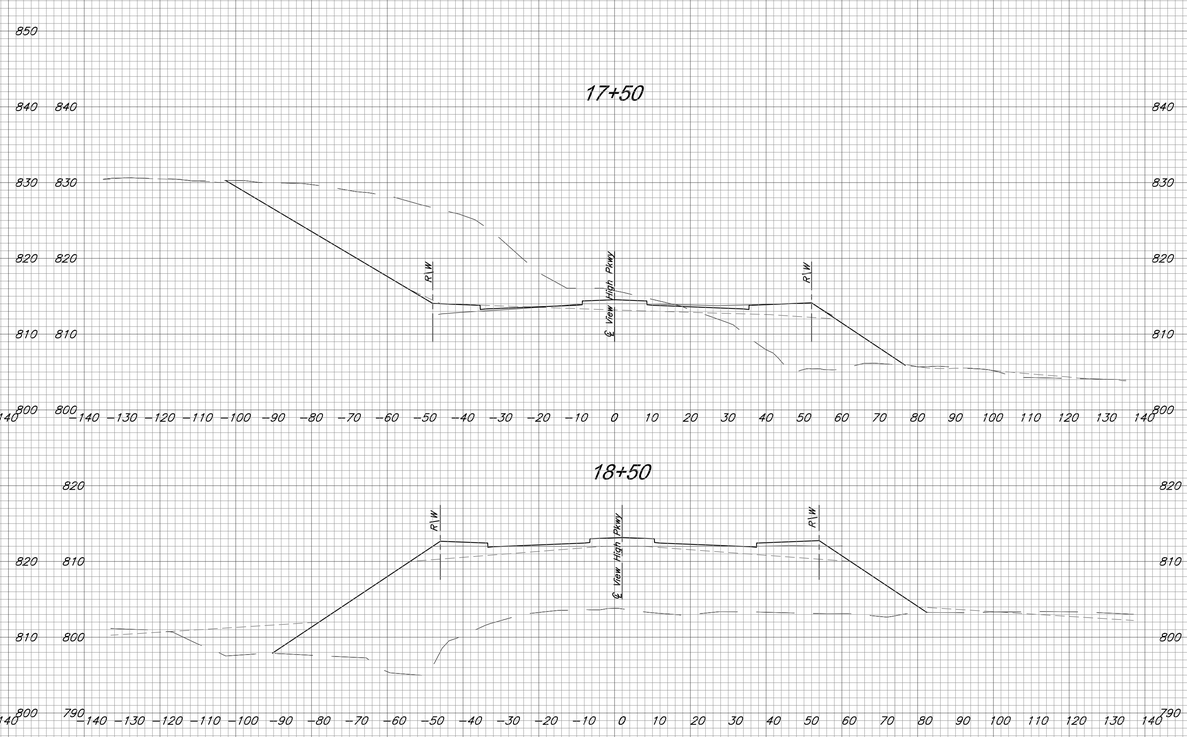
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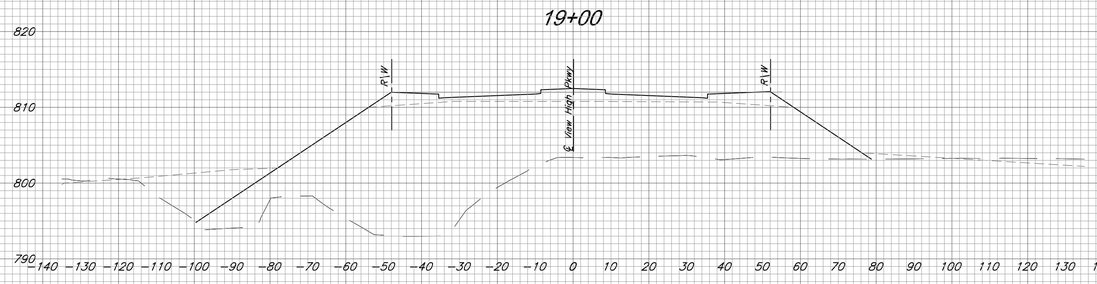


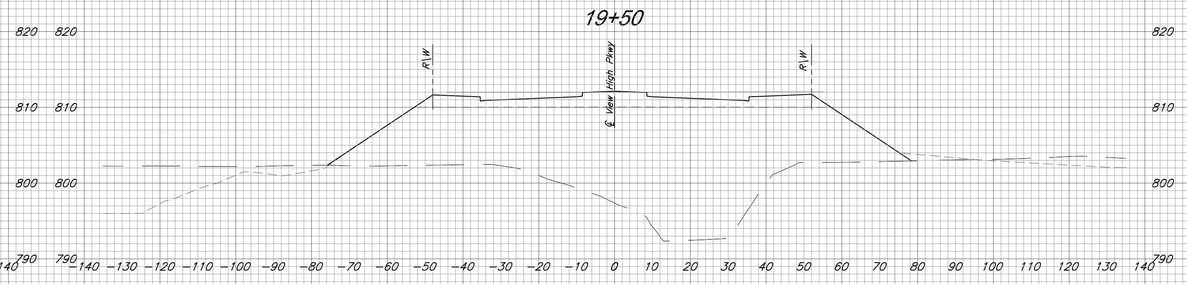



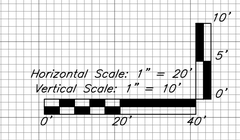







## View High Parkway Cross Sections

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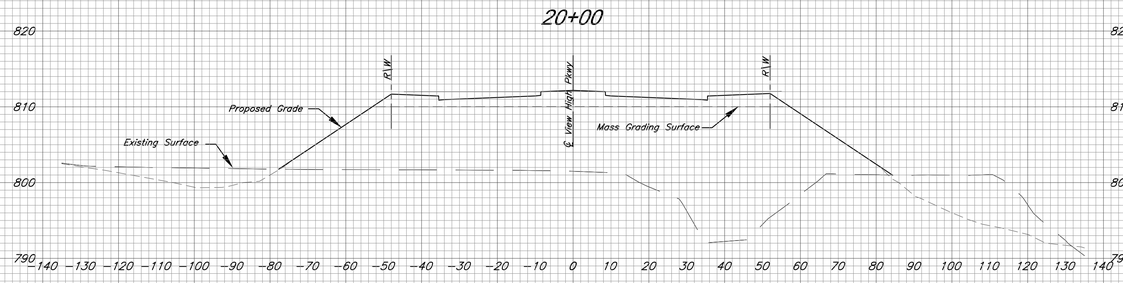
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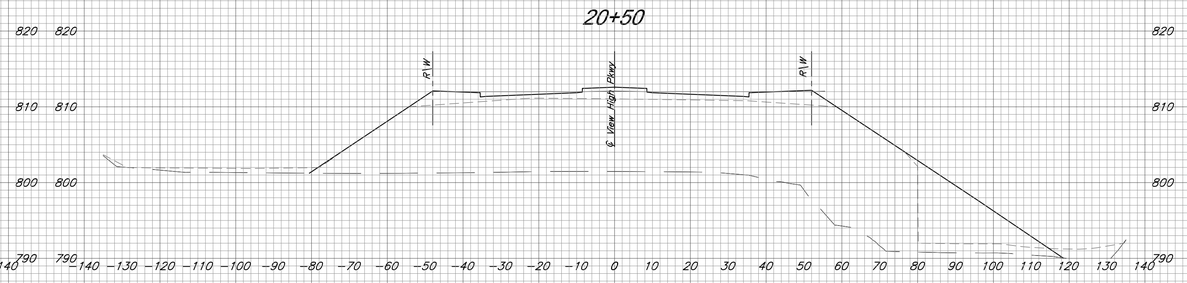
Street and Storm Sewer Plans

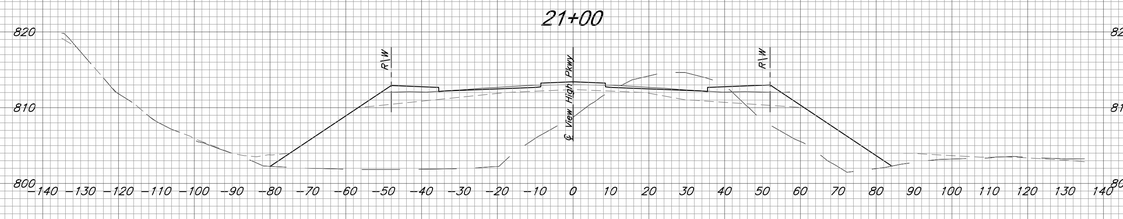
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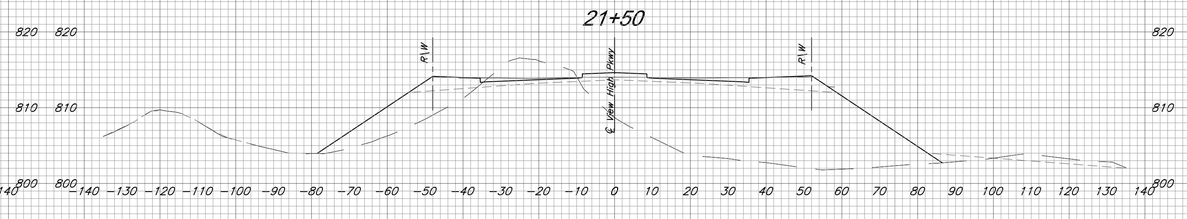
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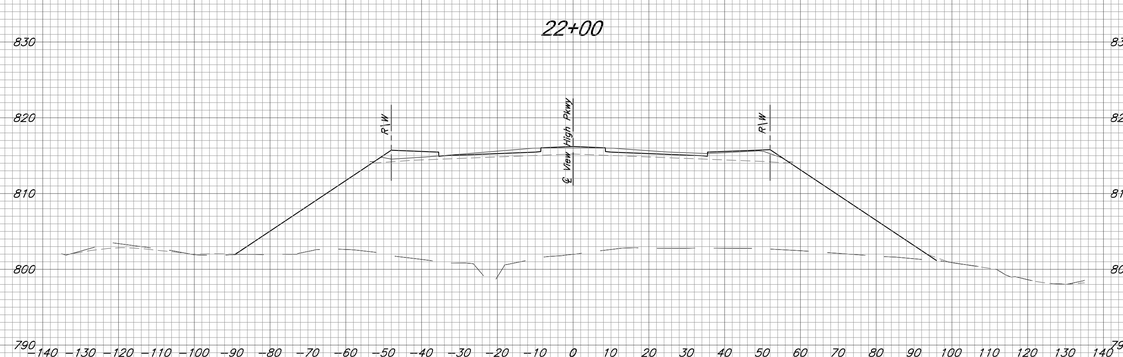
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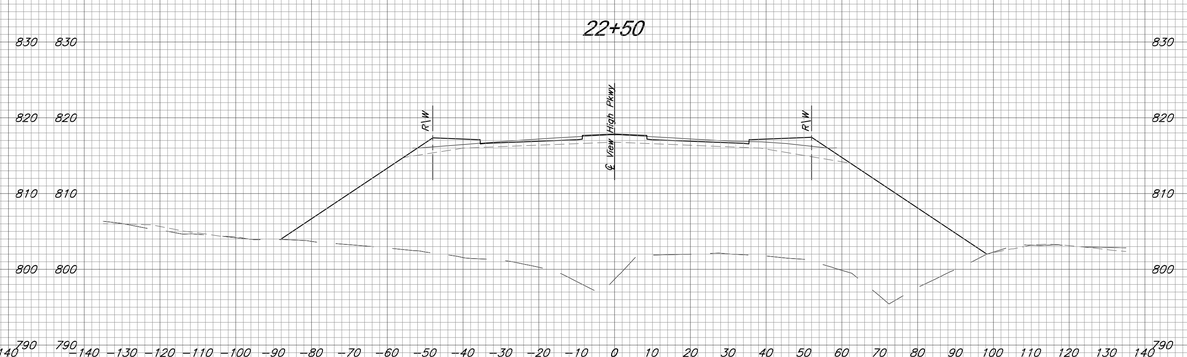


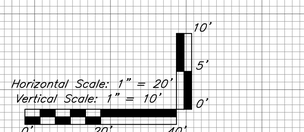




## View High Parkway Cross Sections

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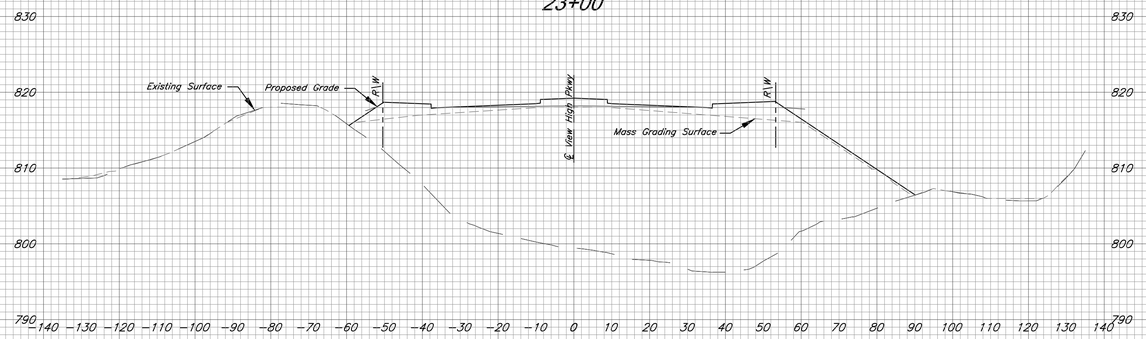
Bradley D. Burton
Professional Engineer
License No. 25862

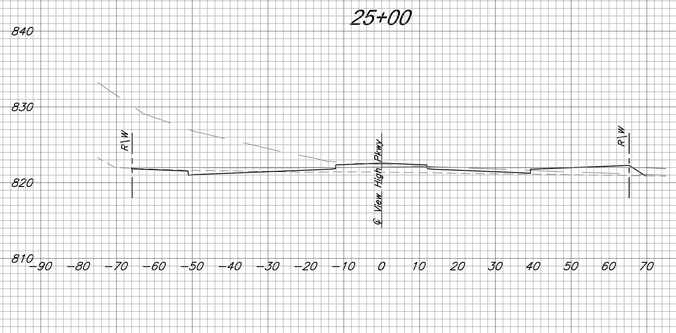
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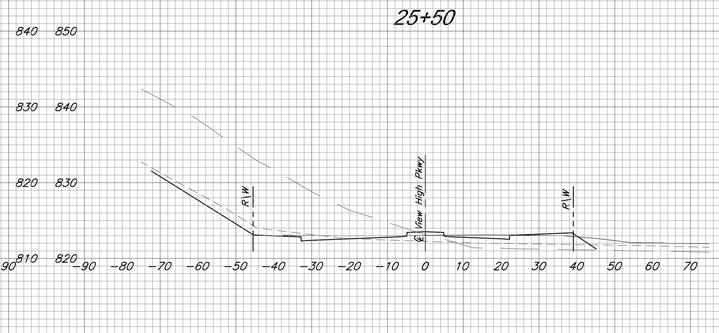
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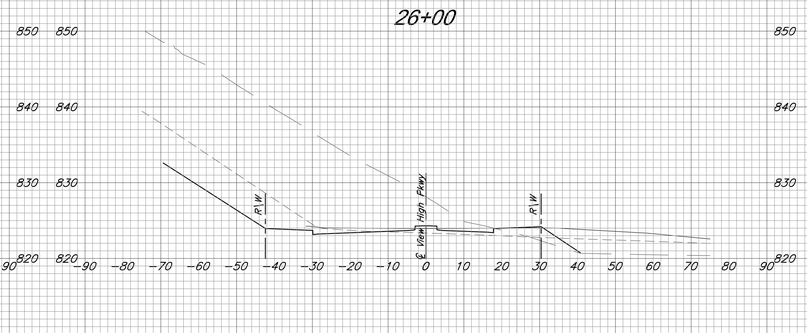
Lee's Summit, Missouri

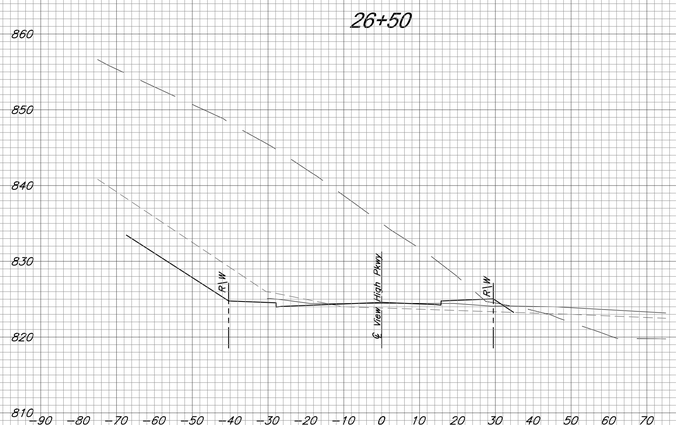
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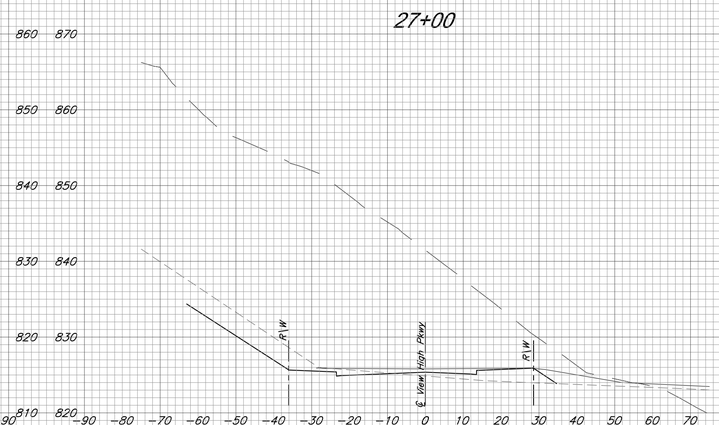


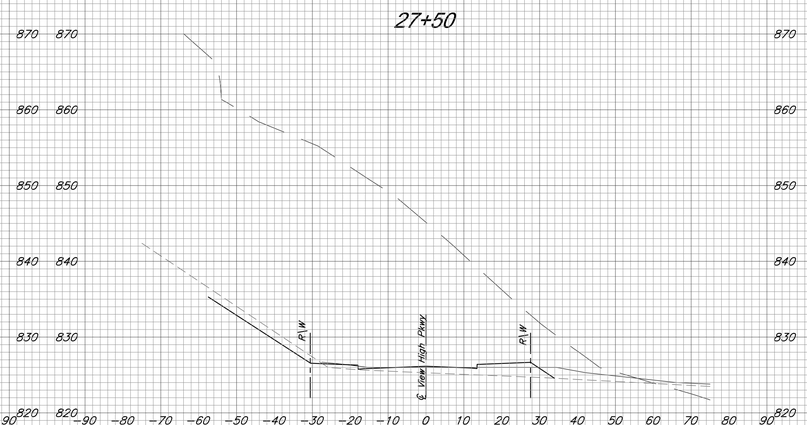



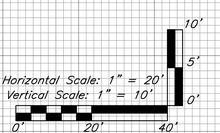




## View High Parkway Cross Sections

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| PROJECT NO.: | 12720 |
| SHEET NO. | 38 |
| TOTAL SHEETS | 69 |

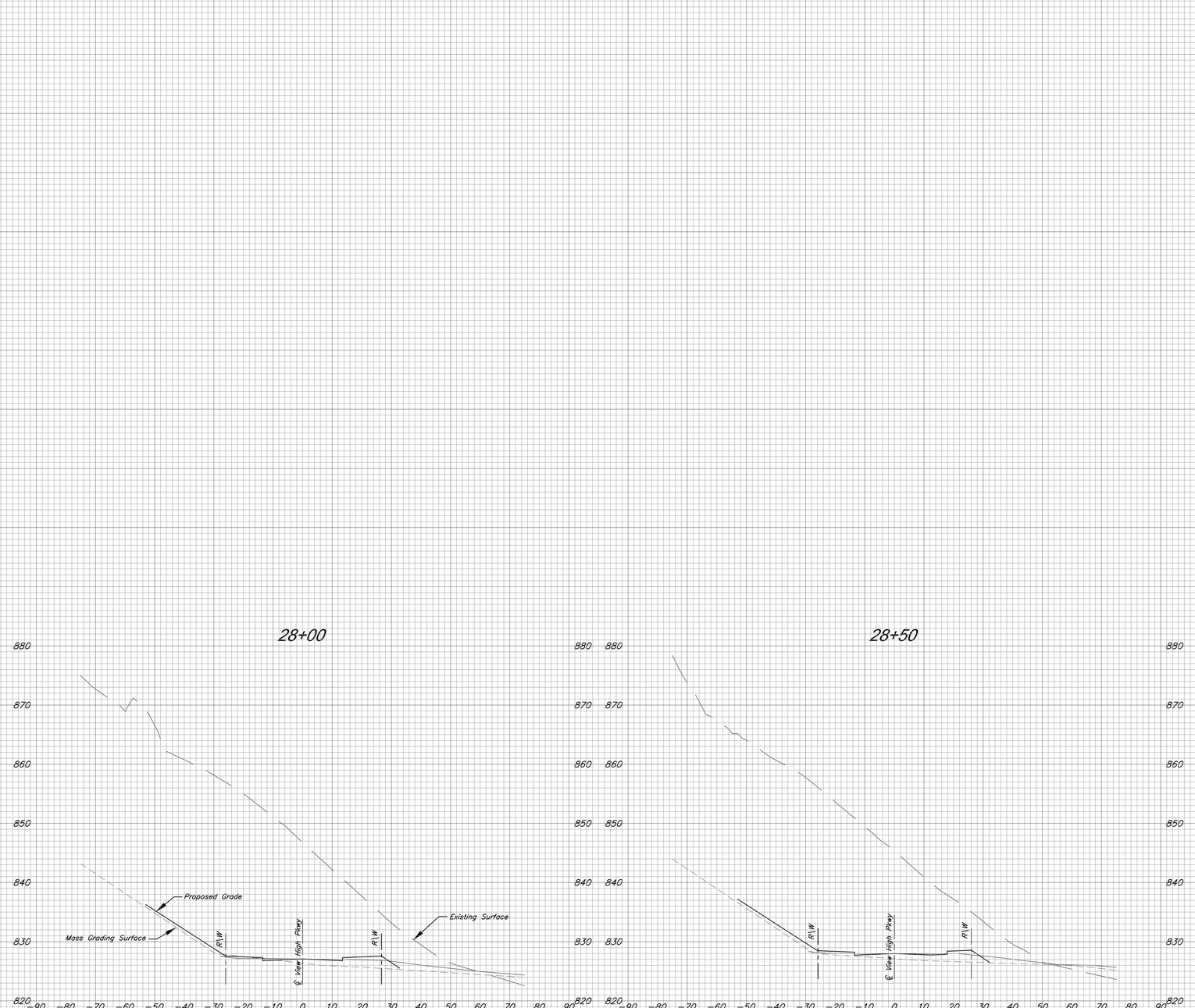
Bradley D. Burton
Professional Engineer
License No. 25862

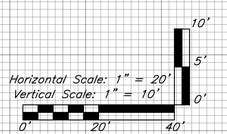
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# Paragon Star Development

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## View High Parkway Cross Sections

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| DRAWN BY: | DRV |
| PROJECT NO.: | 12720 |
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| TOTAL SHEETS | 69 |

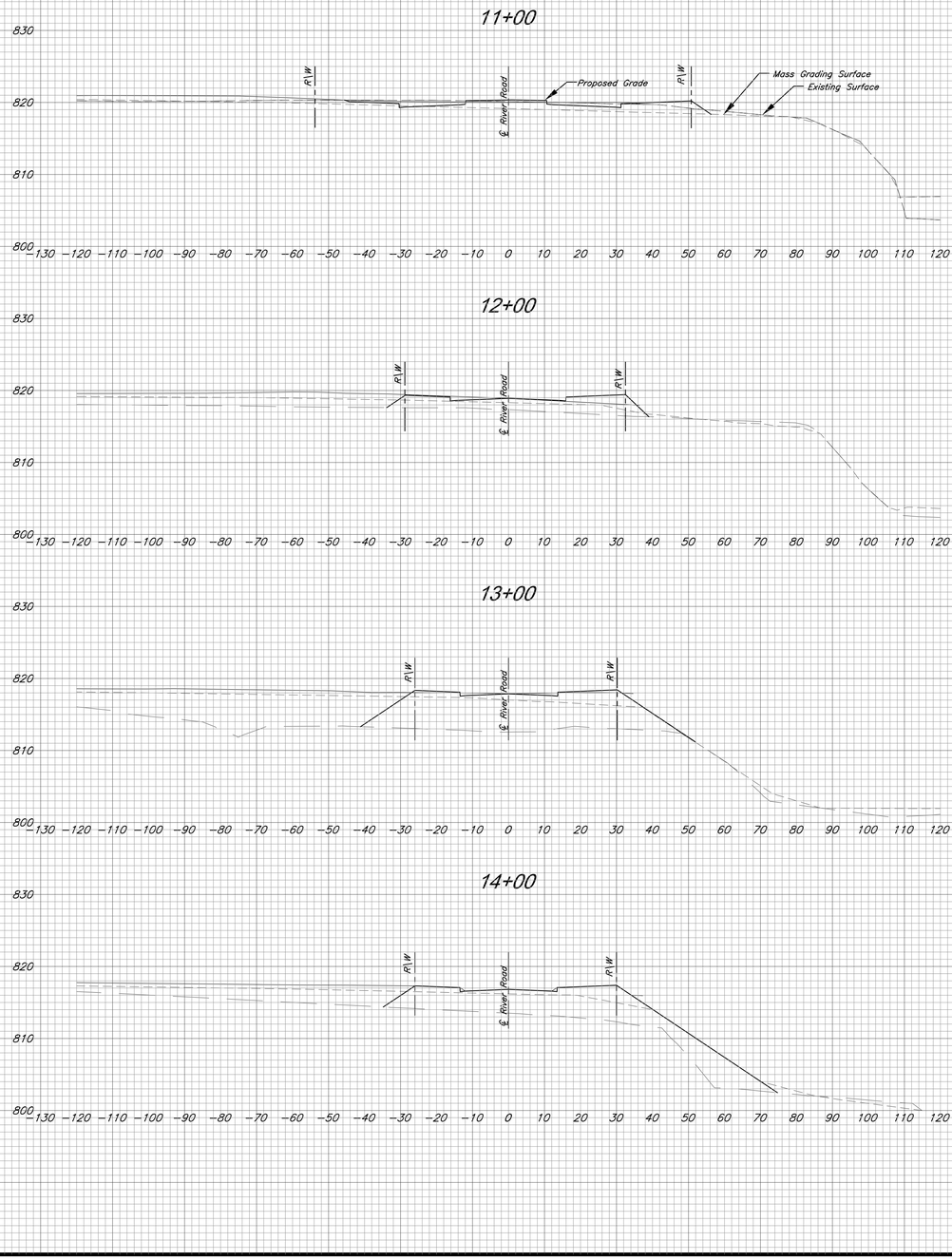
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Street and Storm Sewer Plans

# Paragon Star Development

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Horizontal Scale: 1" = 20'
Vertical Scale: 1" = 10'

10' 5' 0'
0' 20' 40'

## River Road Cross Sections

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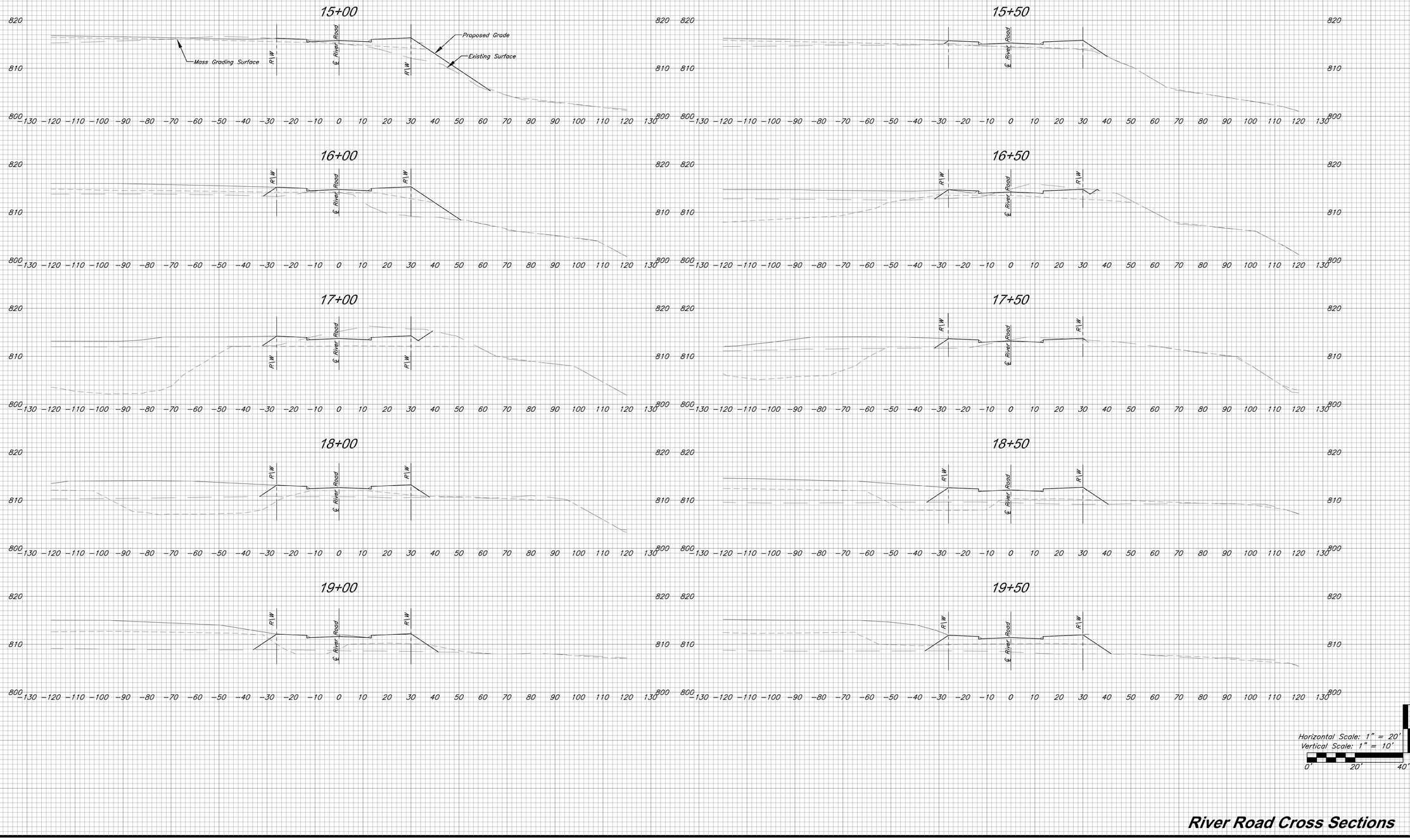
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# River Road Cross Sections

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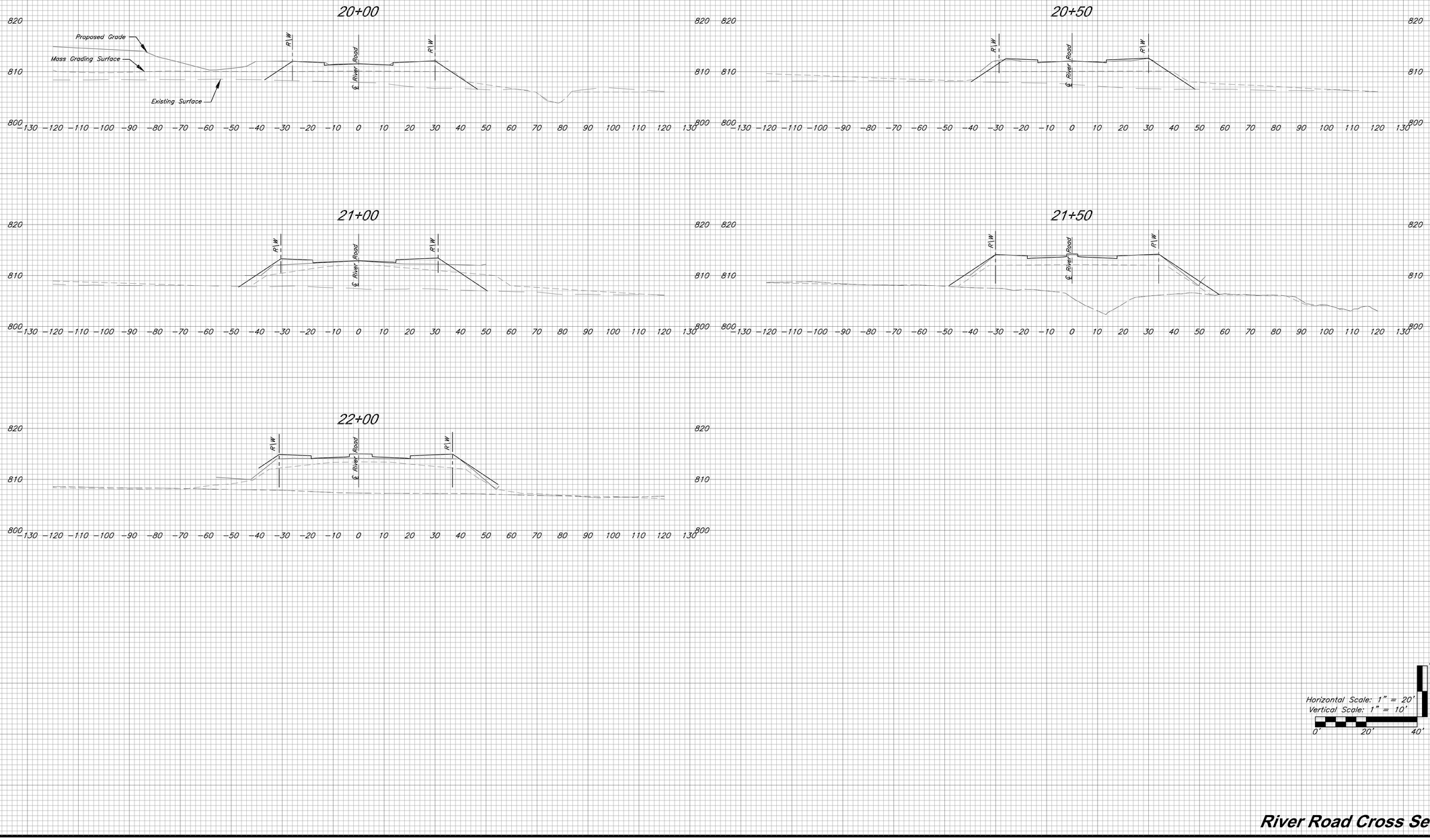
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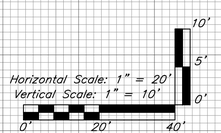
Street and Storm Sewer Plans

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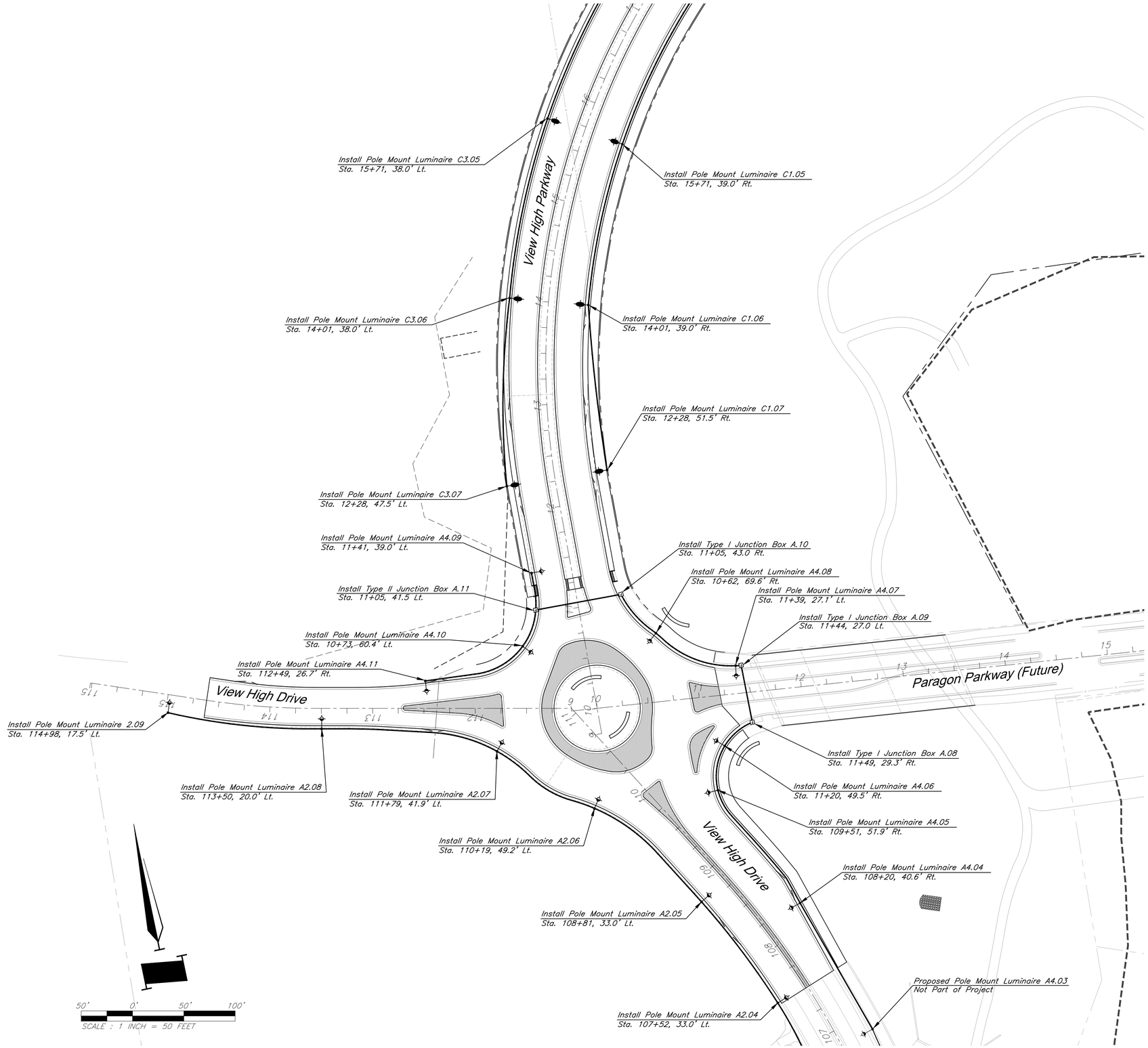
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## River Road Cross Sections

G:\12720\Civil 3D\Production Drawings\Street & Storm Plans\12720ST5100.dwg Layout: 42 Street and Lighting Plan -- Thursday January 31, 2019, 9:45am -- Copyright 2019, George Butler Associates, Inc.00212, Professional Engineer 000133, Landscape Architect 000025, Professional Land Surveyor 000059




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| DESIGN BY: | CEL |
| DRAWN BY: | DRV |
| PROJECT NO.: | 12720 |
| SHEET NO. | 42 |
| TOTAL SHEETS | 69 |

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Street and Storm Sewer Plans

# Paragon Star Development

Lee's Summit, Missouri

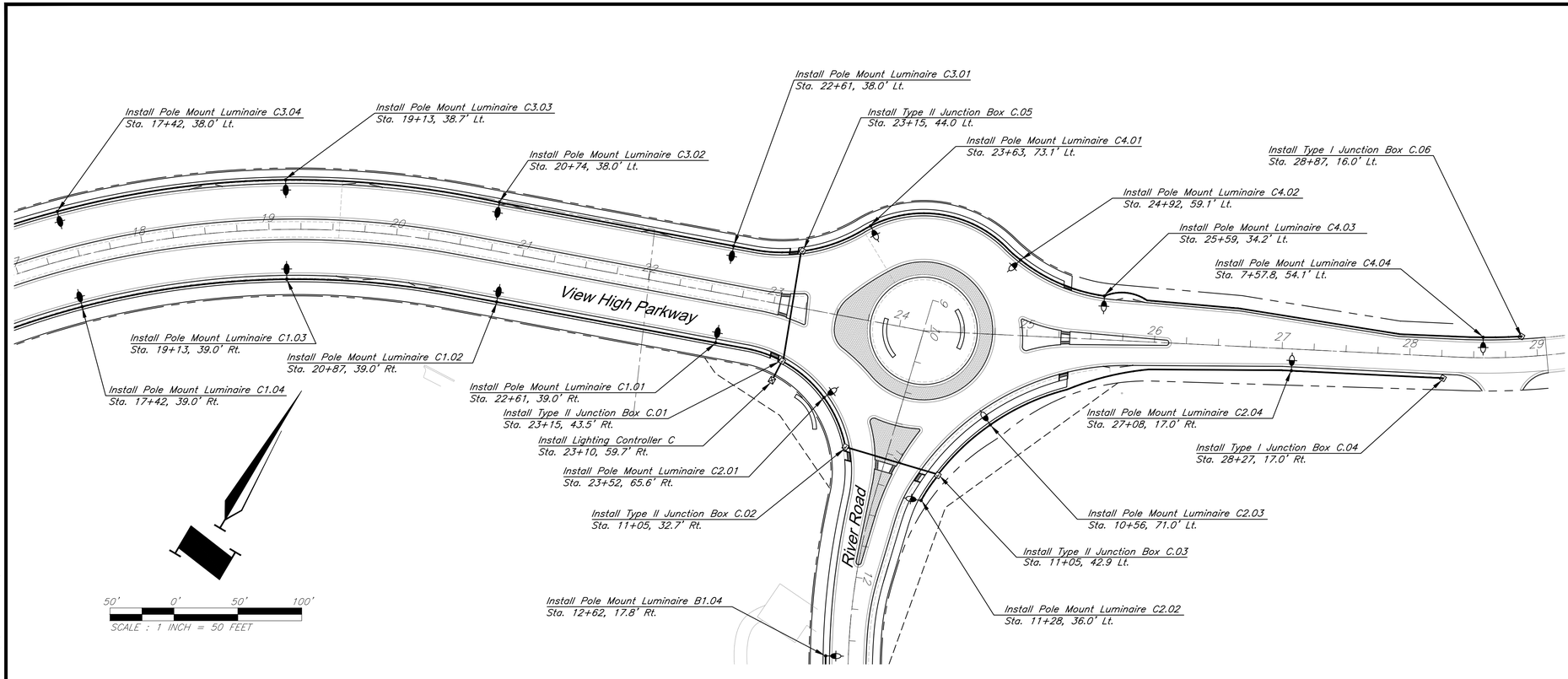
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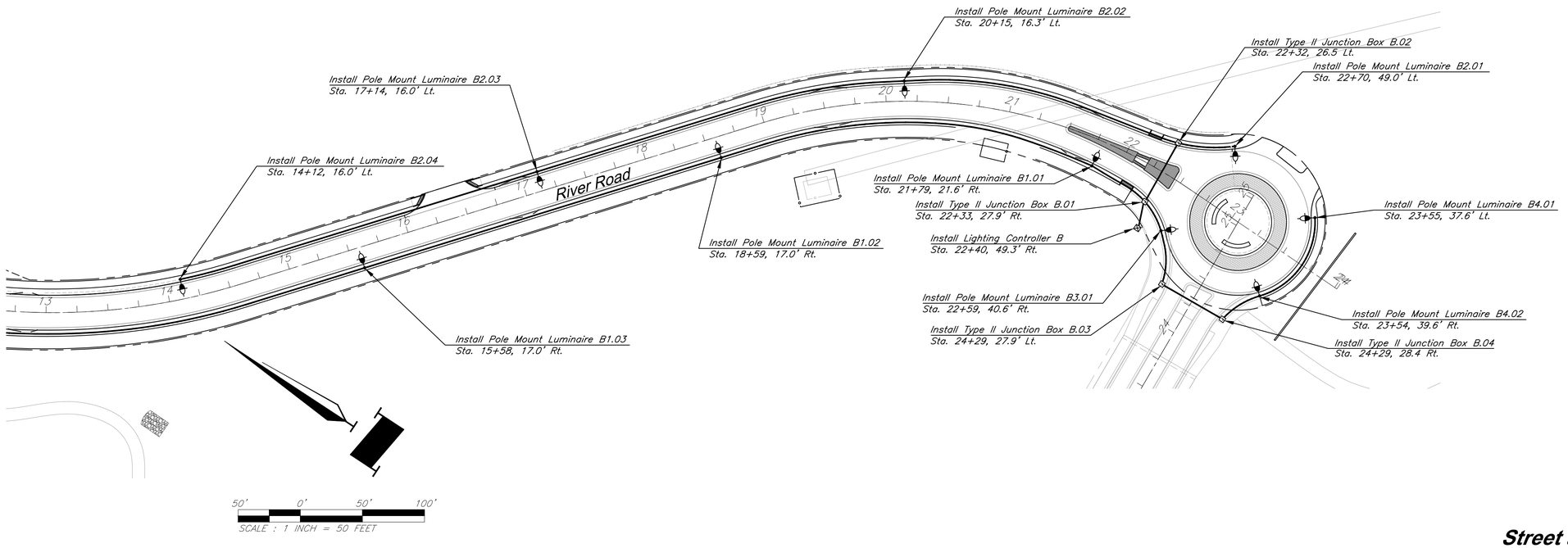
## LEGEND

- Pole Mount Luminaire (35' Mt. Ht., 8' Arm Length, 250W LED Equivalent, Type 2 Distribution)
- Pole Mount Luminaire (30' Mt. Ht., 6' Arm Length, LED2-ARW-150W-T2M, Type 2 Distribution)
- Pole Mount Luminaire (30' Mt. Ht., 6' Arm Length, LED2-ARW-150W-T3M, Type 3 Distribution)
- Pole Mount Luminaire (Not Part of Project)
- Secondary Service Point
- Street Light Control Center
- Existing Street Light Control Center
- Junction Box
- Existing Junction Box
- HDPE Conduit
- Existing HDPE Conduit

**Street and Lighting Plan**

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## LEGEND

- Pole Mount Luminaire (35' Mt. Ht., 8' Arm Length, 250W LED Equivalent, Type 2 Distribution)
- Pole Mount Luminaire (30' Mt. Ht., 6' Arm Length, LED2-ARW-150W-T2M, Type 2 Distribution)
- Pole Mount Luminaire (30' Mt. Ht., 6' Arm Length, LED2-ARW-150W-T3M, Type 3 Distribution)
- Pole Mount Luminaire (Not Part of Project)
- Secondary Service Point
- Street Light Control Center
- Existing Street Light Control Center
- Junction Box
- Existing Junction Box
- HDPE Conduit
- Existing HDPE Conduit

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| SHEET NO. | 43 |
| TOTAL SHEETS | 69 |

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Street and Storm Sewer Plans

# Paragon Star Development

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## Street and Lighting Plan

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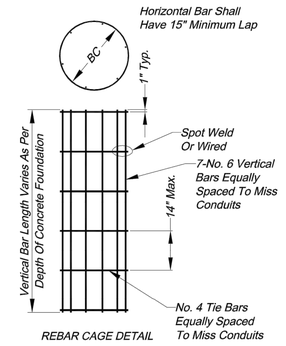
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| DATE: | 1-18-19 |
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| PROJECT NO.: | 12720 |
| SHEET NO. | 44 |
| TOTAL SHEETS | 69 |

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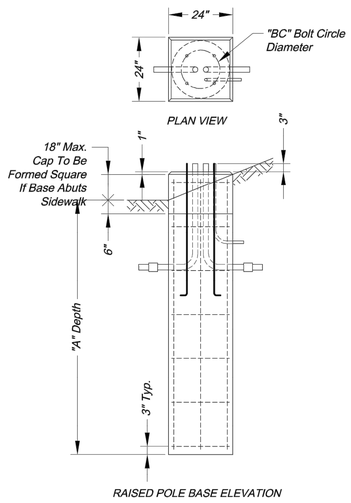
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**Paragon Star Development**
Lee's Summit, Missouri

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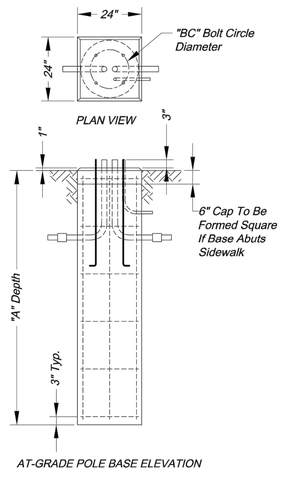
| POLE TYPE | BRACKET ARM | DEPTH (A) | BOLT CIRCLE (BC) |
|---|---|---|---|
| P14 | --- | 48" | 9.5" |
| P30S or P30D | Single or Dual | 72" | 11.0" |
| P40S | Single | 94" | 11.5" |
| P40D | Dual | 94" | 14.5" |



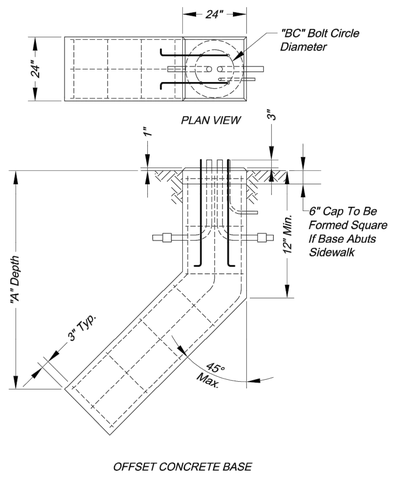

REBAR CAGE DETAIL



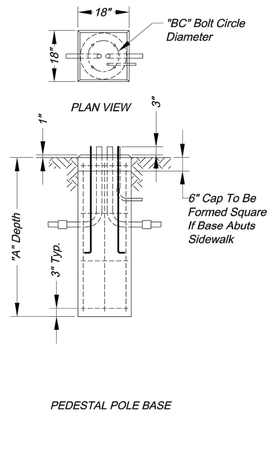

RAISED POLE BASE ELEVATION




AT-GRADE POLE BASE ELEVATION



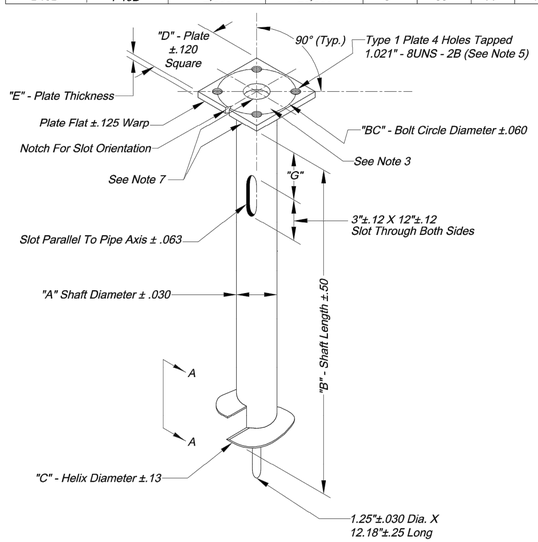

OFFSET CONCRETE BASE



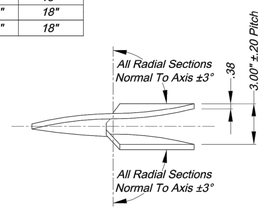

PEDESTAL POLE BASE

## CONCRETE BASE DETAILS

| BASE TYPE | POLE TYPE | MINIMUM TORQUE RATING (lbs. ft.) | MAXMUM TORQUE RATING (lbs. ft.) | SHAFT DIA. (A) | SHAFT LENGTH (B) | HELIX DIA. (C) | PLATE SIZE (D) | PLATE THICKNESS (E) | BOLT CIRCLE (BC) | SLOT LOCATION (G) |
|---|---|---|---|---|---|---|---|---|---|---|
| B14 | P14 | 2,000 | 15,000 | 6" | 48" | 12" | 10" | 0.75" | 9.5" | 12" |
| B30 | P30S & P30D | 2,000 | 15,000 | 6" | 60" | 12" | 12" | 1.0" | 11.0" | 18" |
| B40S | P40S | 2,000 | 20,000 | 8" | 60" | 14" | 12" | 1.0" | 11.5" | 18" |
| B40D | P40D | 2,000 | 20,000 | 8" | 60" | 14" | 15" | 1.25" | 14.5" | 18" |



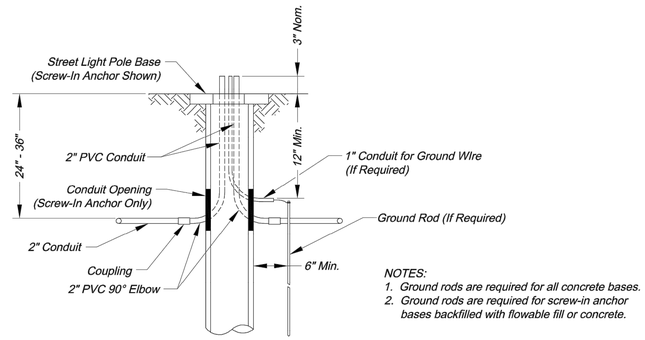

## SCREW-IN ANCHOR BASE DETAILS




Helix Must Be Formed By Matching Metal Die

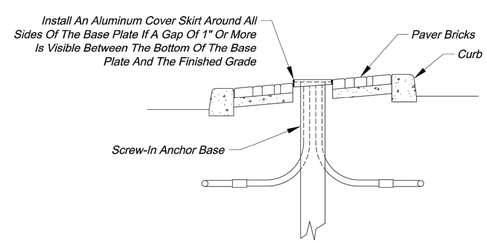
SECTION A-A

NOTES:
1. Finish: Hot dip galvanize per ASTM-A153 (latest revision).
2. Baseplate to be perpendicular to shaft axis (±1°) and hole and concentric (±.188 I.D. Fim) to shaft axis.
3. All bases shall be identified by the manufacturer's initials and the anchor type (1 or 2) permanently stamped into the top plate with 1/2" letters., the Julian date of manufacture shall be permanently stamped in 1/4" numerals.
4. Pilot point and shaft axes to be concentric (±.125 Fim) and in line (±2°).
5. Tap 1" holes on the specified bolt circle perpendicular to the baseplate. Clean and chase the threads after hot-dip galvanizing so that a bolt may be installed.
6. Preheat (room temperature 70°F), tumbleblast, handgrind, and clean baseplate, helix, and core on all weld areas.
7. Flame cut irregularities permissible:
   (1) Valleys not to exceed 3/32 in. below nominal surface level.
   (2) Peaks or positive irregularities not to exceed 1/32 in. above nominal surface level or intersections of nominal surfaces.
8. Manufacturer to have in effect industry recognized written quality control for all materials and manufacturing processes.
9. All material is to be new, unused and mill traceable meeting the following specifications:
   - Baseplate: ASTM A36-(latest revision) hot rolled steel plate (conform to AASHTO technical bul. #270).
   - Shaft: Steel pipe piles, seemless or straight welded, grade 2 per ASTM A252. Alternate material: pipe type E or S, grade B per ASTM A53.
   - Helix: ASTM A635-(latest revision) hot rolled steel plate
   - Pilot Point: ASTM A575-(latest revision) hot rolled steel
   - Bolt: ASTM A325 or Grade 5 SAE J429 - 1" diameter hot dip galvanized hex head bolt. Bolt shall include one each lock and flat washer.
10. The design and performance integrity of the foundation shall be verified by full-scale tests by qualified engineers independent of the manufacturer. Certified test reports shall be provided upon request.
11. Flame cut notch or projection will be on the base plate to indicate slot orientation.




NOTES:
1. Ground rods are required for all concrete bases.
2. Ground rods are required for screw-in anchor bases backfilled with flowable fill or concrete.

## CONDUIT ENTRANCE AND GROUNDING




## COVERSKIRT REQUIREMENTS

CITY OF LEE'S SUMMIT
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
220 SE GREEN STREET
LEE'S SUMMIT, MISSOURI 64063
PHONE: (816) 969-1800 FAX: (816) 969-1809

Project:

POLE BASE DETAILS

Sheet Name: STANDARD DRAWING SL-2

Drawn By: JH
Checked By: JW
Date: 08/21/2009

2 OF 5

**2**

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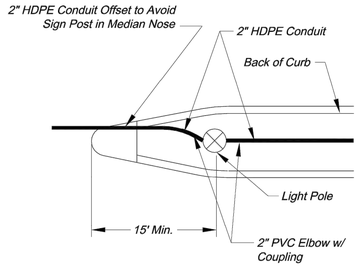
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| SHEET NO.: | 45 |
| TOTAL SHEETS | 69 |

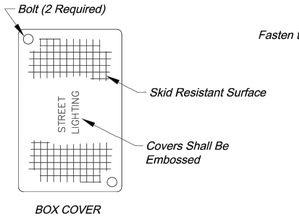
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License No. 25862

Street and Storm Sewer Plans
**Paragon Star Development**
Lee's Summit, Missouri

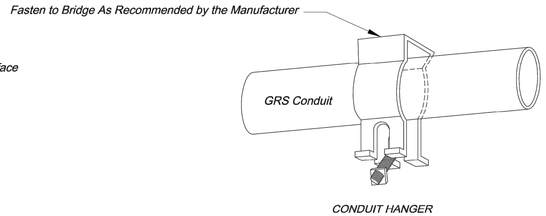
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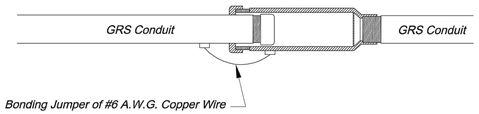

## STREET LIGHT POLE IN MEDIAN



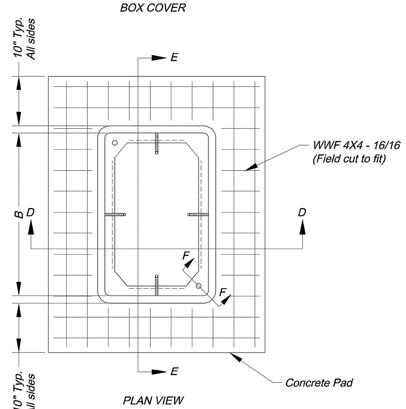

BOX COVER




CONDUIT HANGER



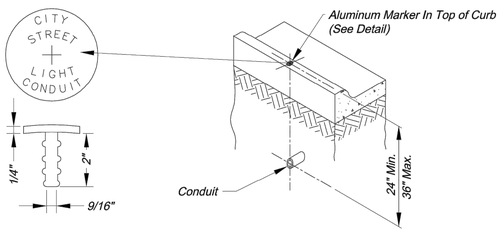

EXPANSION FITTING




PLAN VIEW

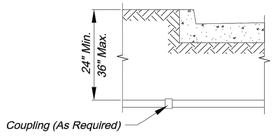
## GRS CONDUIT DETAILS

NOTES:
1. All conduits installed above ground shall be GRS.
2. Conduit attached to bridges shall have expansion fittings installed at each end of the bridge and at each expansion joint on the bridge.
3. All GRS conduits shall be electrically bonded by a grounding bushing and ground wire as detailed.
4. Install the conduit and connector assembly to permit a 1/2" minimum longitudinal travel in either direction.

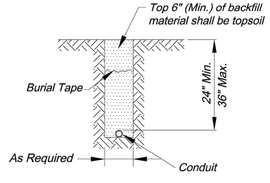



## CONDUIT MARKING DETAIL

NOTES:
1. An aluminum marker shall be placed in the top of the curb directly over the conduit.
2. Markers shall be installed by drilling the curb and expoxying the marker in place. If installed in a sidewalk or curb ramp, the top of the marker shall be flush with the concrete surface.
3. No direct payment shall be made for conduit markers; they are subsidiary to the installation of conduit.



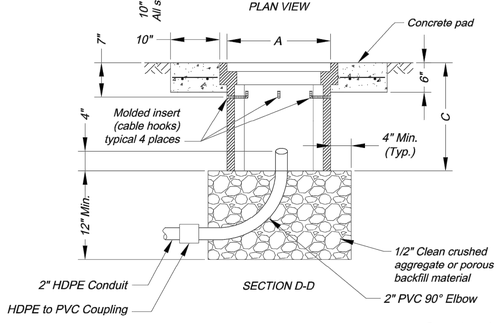

BORED CONDUIT



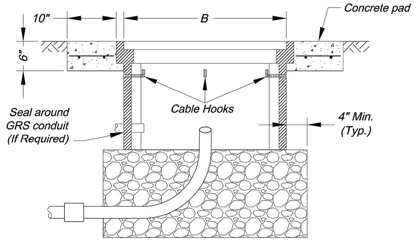

TRENCHED OR PLOWED CONDUIT

## CONDUIT LOCATIONS

NOTES:
1. Backfill under paved surfaces shall be flowable fill.
2. The conduit shall not be covered unless inspected and approved by the City Engineer, so as to ensure proper depth, correct conduit material, and proper conduit end treatment.




SECTION D-D

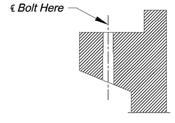



SECTION E-E

## PULL OR JUNCTION BOX DETAILS

| Number of Entering/Exiting Conduits | Box Type | Minimum Box Dimensions | | |
|---|---|---|---|---|
| | | A | B | C |
| 1 - 2 | Type 1 Junction Box | 12" | 12" | 12" |
| 3 - 4 | Type 2 Junction Box | 12" | 18" | 12" |
| > 4 | Class 1 Pull Box | 17" | 30" | 22" |

All dimensions shown are nominal




SECTION F-F

NOTES:
1. Lift opening required on all covers.
2. Preformed box walls may be either flared or vertical. The bottom of boxes shall be open to below.
3. If an extension is used with a preformed box, the lip of the extension may be interior or exterior. The extension shall be compatible and from the same manufacturer.
4. Cable hooks are to be included with Class 1 Pull Boxes only.
5. A Class 1 Pull Box shall be installed adjacent to each 4-Circuit Power Supply.

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ENGINEERING DIVISION
220 SE GREEN STREET
LEE'S SUMMIT, MISSOURI 64063
PHONE: (816) 969-1800 FAX: (816) 969-1809

Project:

BOX AND CONDUIT DETAILS

Sheet Name: STANDARD DRAWING SL-3

Drawn By: JH
Checked By: JW
Date: 08/21/2009

3 OF 5

**3**

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# Street and Lighting Details

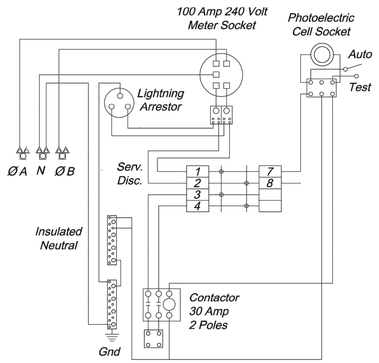
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| DESIGN BY: | DJM |
| DRAWN BY: | CMN |
| PROJECT NO.: | 12720 |
| SHEET NO. | 46 |
| TOTAL SHEETS | 69 |

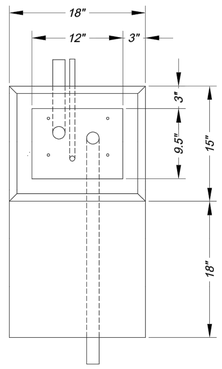
Bradley D. Burton
Professional Engineer
License No. 25862

Street and Storm Sewer Plans
**Paragon Star Development**
Lee's Summit, Missouri

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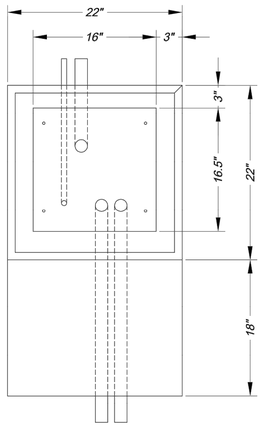



WIRING SCHEMATIC

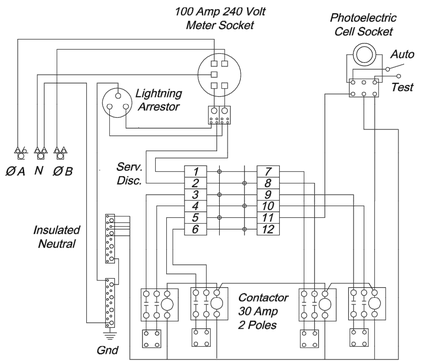



PLAN VIEW

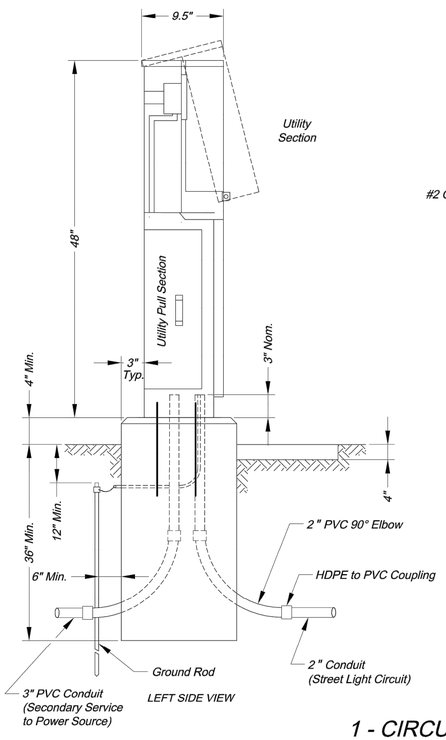
FUSED CONTACTORS
ARE NOT PERMITTED



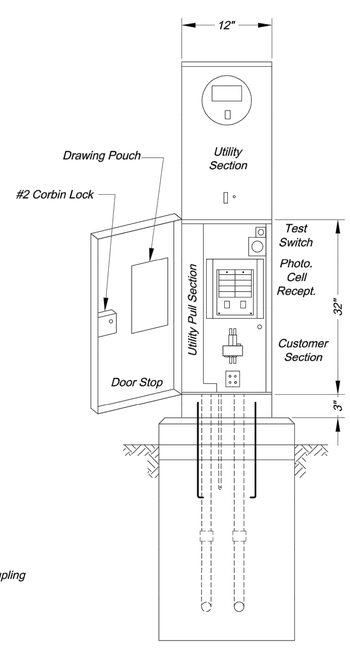

PLAN VIEW



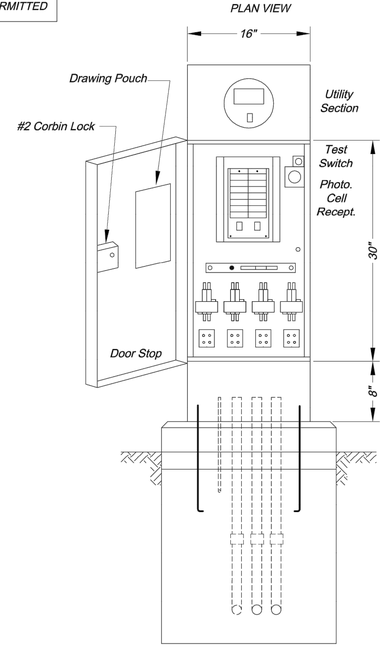

WIRING SCHEMATIC



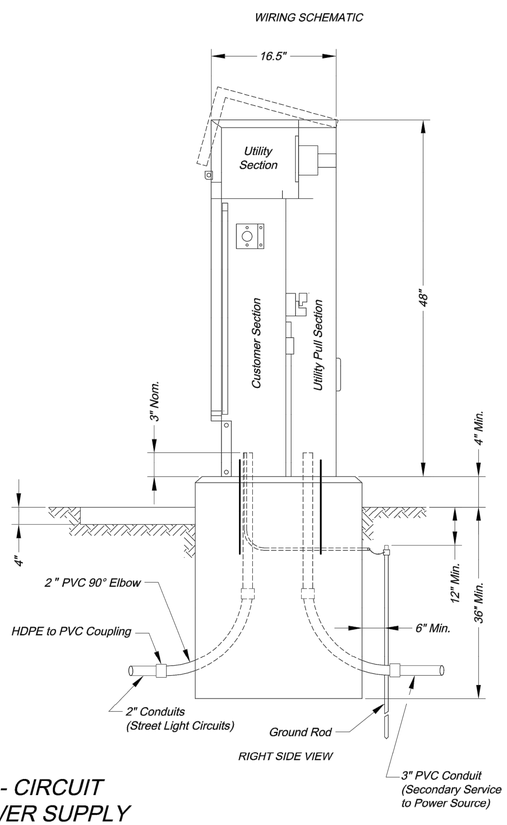

LEFT SIDE VIEW




FRONT VIEW




FRONT VIEW




RIGHT SIDE VIEW

## 1 - CIRCUIT POWER SUPPLY

## 4 - CIRCUIT POWER SUPPLY

NOTES:
1. Photoelectric cell should be oriented to the north or east.
2. Seal around joint between cabinet and base with lifetime silicone caulk.
3. All exposed edges of the base should have a 1" chamfer
4. If base is adjacent to a traffic signal controller, raised portion of base (above finished grade) should be constructed to the same height as the signal controller base.
5. The street address with the power supply number below it should be labeled on the upper portion of the cabinet facing the street. The City will supply stickers for the Contractor to install.

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PUBLIC WORKS DEPARTMENT
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220 SE GREEN STREET
LEE'S SUMMIT, MISSOURI 64063
PHONE: (816) 969-1800 FAX: (816) 969-1809

Project:

POWER SUPPLY DETAILS

Street Name: STANDARD DRAWING SL-4

Drawn By: JH
Checked By: JW
Date: 08/21/2009

4 OF 5

**4**

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# Street and Lighting Details

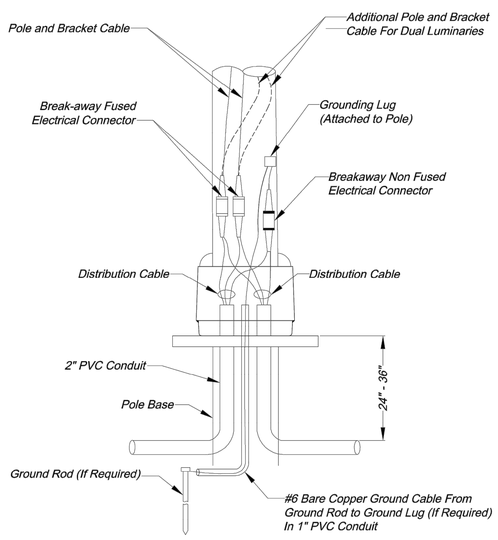
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| DRAWN BY: | CMN |
| PROJECT NO.: | 12720 |
| SHEET NO.: | 47 |
| TOTAL SHEETS | 69 |

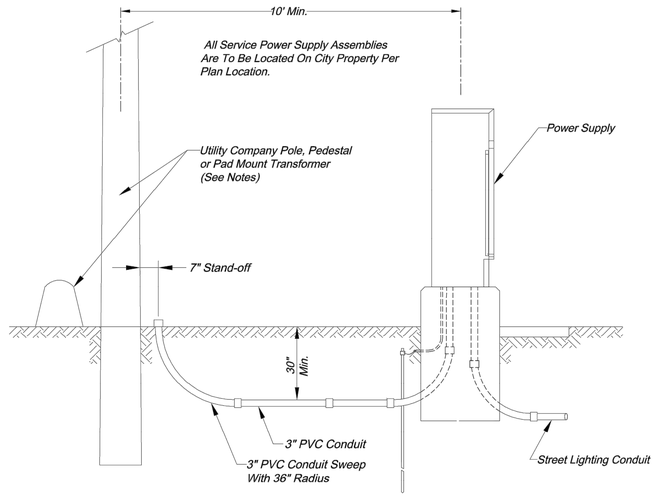
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Professional Engineer
License No. 25862

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Lee's Summit, Missouri

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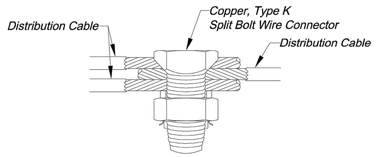



## POLE WIRING DETAILS



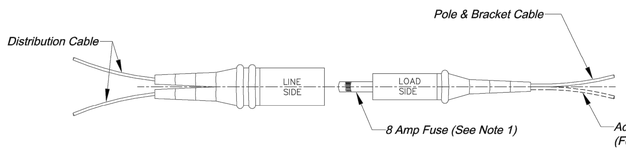

## SECONDARY SERVICE CONNECTION DETAILS

NOTES:
1. Contractor shall install a conduit stub 24" to 6" above ground at utility poles. Conduit shall be stubbed to the side of the pole that will allow a direct run up the pole to the transformer without crossing other utility lines or cables. The end of the conduit shall be capped.
2. Contractor shall install conduit in a trench to within 24" of pedestals or pad mount transformers and leave a 36" x 36" x 36" access hole in the ground. Contractor shall keep open trench covered and promptly backfill access hole when service is completed.

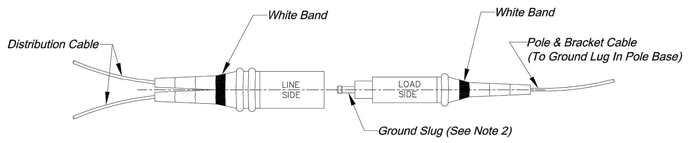



## SPLICE KIT DETAILS

NOTES:
1. To be used only in junction or pull boxes where circuits branch or "tee".
2. All splices shall be protected with a resin splice kit (not shown) installed in accordance with the manufacturer's recommendations.

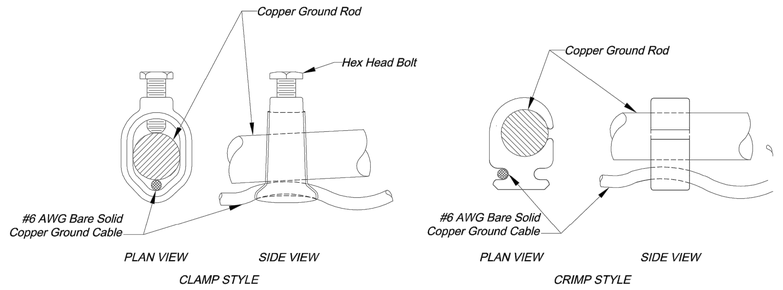



## BREAK-AWAY FUSED ELECTRICAL CONNECTORS




## BREAK-AWAY NON FUSED ELECTRICAL CONNECTOR

NOTES:
1. Fuse remains in "Load Side" after break-away.
2. Ground "Slug" remains in "Load Side" after break-way.
3. Connectors shall have set screw type terminals to attach cables.




## GROUND ROD CONNECTION DETAILS

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PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
220 SE GREEN STREET
LEE'S SUMMIT, MISSOURI 64063
PHONE: (816) 969-1800 FAX: (816) 969-1809

Project:

ELECTRICAL DETAILS

Sheet Name: STANDARD DRAWING SL-5

Drawn By: JH
Checked By: JW
Date: 08/21/2009

5 OF 5

**5**

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# Street and Lighting Details

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| PROJECT NO.: | 12720 |
| SHEET NO. | TOTAL SHEETS |
| 48 | 69 |

Bradley D. Burton
Professional Engineer
License No. 25862

Street and Storm Sewer Plans
**Paragon Star Development**
Lee's Summit, Missouri

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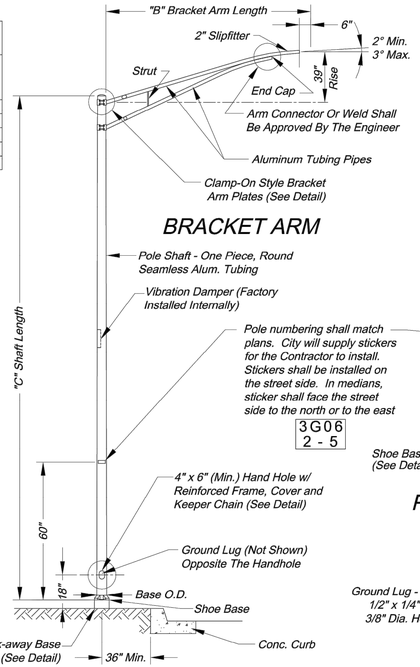
## STREET LIGHT POLE, BRACKET ARM, AND BREAK-AWAY BASE

| POLE TYPE | MOUNTING HEIGHT (A) | BRACKET ARMS | | POLE SHAFT | | | | SHOE BASE | ANCHOR BOLTS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LENGTH (B) | | BASE O.D. | TOP O.D. | MIN. WALL THICKNESS | SHAFT LENGTH (C) | BOLT CIRCLE (BC) | DIAMETER | LENGTH | HOOK |
| | | ARM 1 | ARM 2 | | | | | | | | |
| P14 | 14' | - | - | 6" | 3" | 0.156" | 14'-0" | 9.5" | 0.75" 10NC | 25" | 3" |
| P30S | 30' | 6' or 10' | - | 8" | 6" | 0.188" | 26'-6" ±2" | 11.0" | 1.00" 8NC | 36" | 4" |
| P30D | 30' | 6' or 10' | 6' or 10' | 8" | 6" | 0.219" | 26'-6" ±2" | 11.0" | 1.00" 8NC | 36" | 4" |
| P40S | 40' | 6', 10' or 15' | - | 8" | 6" | 0.219" | 36'-6" ±2" | 11.5" | 1.00" 8NC | 36" | 4" |
| P40D | 40' | 6', 10' or 15' | 6', 10' or 15' | 10" | 6" | 0.219" | 36'-6" ±2" | 14.5" | 1.00" 8NC | 48" | 4" |

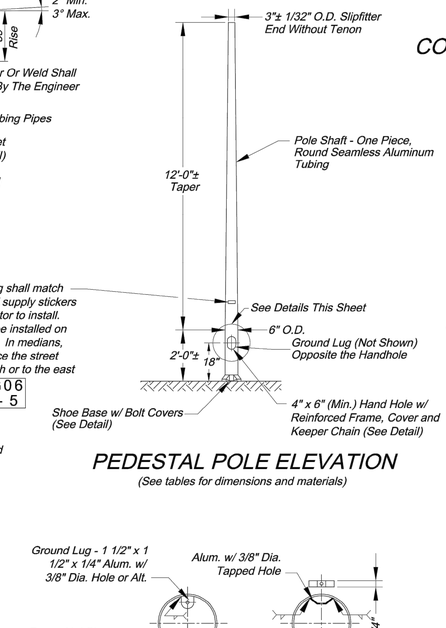
NOTES:
1. All poles, arms, and miscellaneous equipment shall conform to these details and as specified by the latest city standard specifications.
2. Pole shaft shall have a satin ground finish.
3. All hardware (bolts, nuts, washers but not including anchor bolts) not otherwise specifically designated in the specifications or details shall be 300-series stainless steel conforming to ASTM A193 or A194.
4. Anchor bolts shall be used with concrete bases. Anchor bolts shall be steel with 50,000 PSI minimum yield; top 10" min. galvanized; including 8 nuts and 8 flat washers galvanized to ASTM A153 standards. Galvanized hex head bolts (see pole foundation sheet) shall be used with screw-in anchor bases. 4 bolts, 4 nuts and 8 flat washers to provided with each anchor.
5. All welding is to be done with 4043 weld wire. All arms and shafts are to be heat-treated to T6 temper after welding.
6. Anchor bolts shall project above the concrete base as per manufacturer's recommended practices, 2 ½ " to 3".
7. The aluminum street light pole assembly, including anchorage and luminaire, shall comply with the latest city standard specifications and the American Association of State Highway and Transportation Officials (AASHTO) load wind loading.
8. All poles and arms shall be clearly identified by the manufacturer's name, abbreviation, or symbol engraved on the shaft, shoe base, hand hole, or other means such as to be readily visible after installation.

## MATERIAL DATA

| COMPONENT | ALUMINUM ALLOY DESIGNATION | SPECIFICATION |
|---|---|---|
| Shoe Base | 356-T6, Cast | ASTM B26 or B108 |
| Breakaway Base | 356-T6, Cast | ASTM B108 |
| Bolt Covers | 356 or 360, Cast | ASTM B26 or B108 |
| Pole Shaft | 6063-T6, Extruded | ASTM B221 or B241 |
| Ground Lug | 6061-T5 or 6063-T6, Plate | ASTM B221 |
| Reinforced Handhole Frame | 356-T6 or 6061-T6 | ASTM B26, B108 or B221 |
| Handhole Cover | 6063-T6 | ASTM B209, B221 or B241 |
| Bracket Arm & Tubing Pipes | 6063-T6 | ASTM B221, B241 or B249 |
| Bracket Arm Mounting Plates | 6061-T6 or 6063-T6 Extruded | ASTM B221 |
| Bracket Arm Strut & Arm Connector | 6061-T6 or 6063-T6 Extruded | ASTM B221, B241 or B249 |
| Pole Cap | 356, Cast | ASTM B26 or B108 |
| Anchor Bolts | N/A | Galvanized per ASTM A153 |

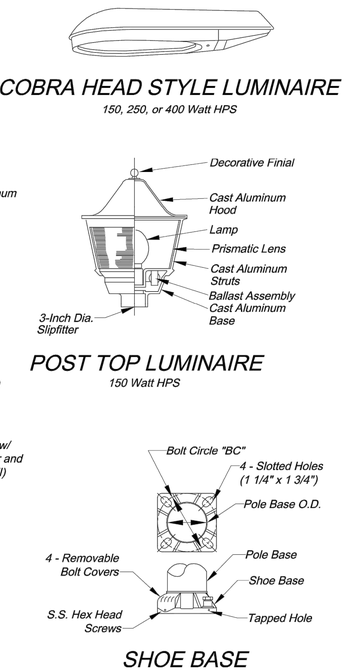



### BRACKET ARM




### PEDESTAL POLE ELEVATION

(See tables for dimensions and materials)




### COBRA HEAD STYLE LUMINAIRE

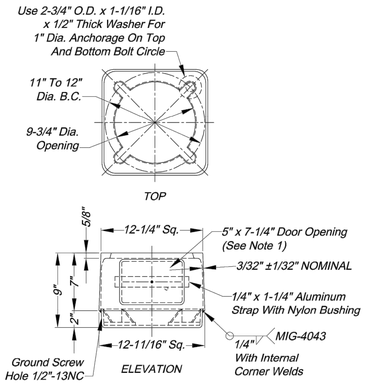
150, 250, or 400 Watt HPS

### POST TOP LUMINAIRE

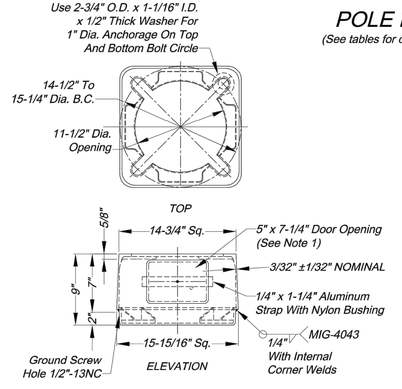
150 Watt HPS




### SHOE BASE

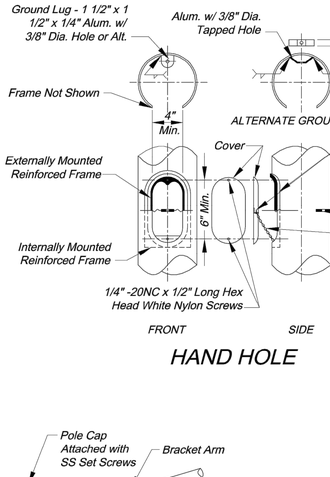



### 11" BREAK-AWAY BASE

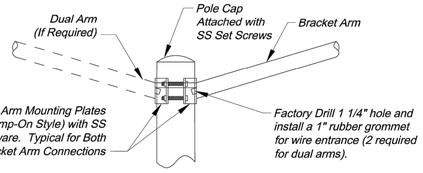



NOTES:
1. Door shall be on the same side of the pole as the hand hole.
2. Base Conforms to Breakaway Criteria Of AASHTO Standard Specifications For Structural Supports For Highway Signs, Luminaires And Traffic Signals (1994).

### 15" BREAK-AWAY BASE

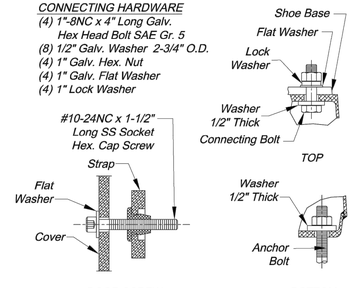



### HAND HOLE




### BRACKET ARM MOUNTING

CONNECTING HARDWARE
(4) 1"-8NC x 4" Long Galv. Hex Head Bolt SAE Gr. 5
(8) 1/2" Galv. Washer 2-3/4" O.D.
(4) 1" Galv. Hex. Nut
(4) 1" Galv. Flat Washer
(4) 1" Lock Washer




### BREAK-AWAY BASE ANCHORAGE

CITY OF LEE'S SUMMIT
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
220 SE GREEN STREET
LEE'S SUMMIT, MISSOURI 64063
PHONE: (816) 969-1800 FAX: (816) 969-1809

Project:

POLE AND LUMINAIRE DETAILS

Sheet Name: STANDARD DRAWING SL-1

Drawn By: JH
Checked By: JW
Date: 08/21/2009

1 OF 5

**1**

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| DESIGN BY: | CEL |
| DRAWN BY: | DRV |
| PROJECT NO.: | 12720 |
| SHEET NO. | 49 |
| TOTAL SHEETS | 69 |

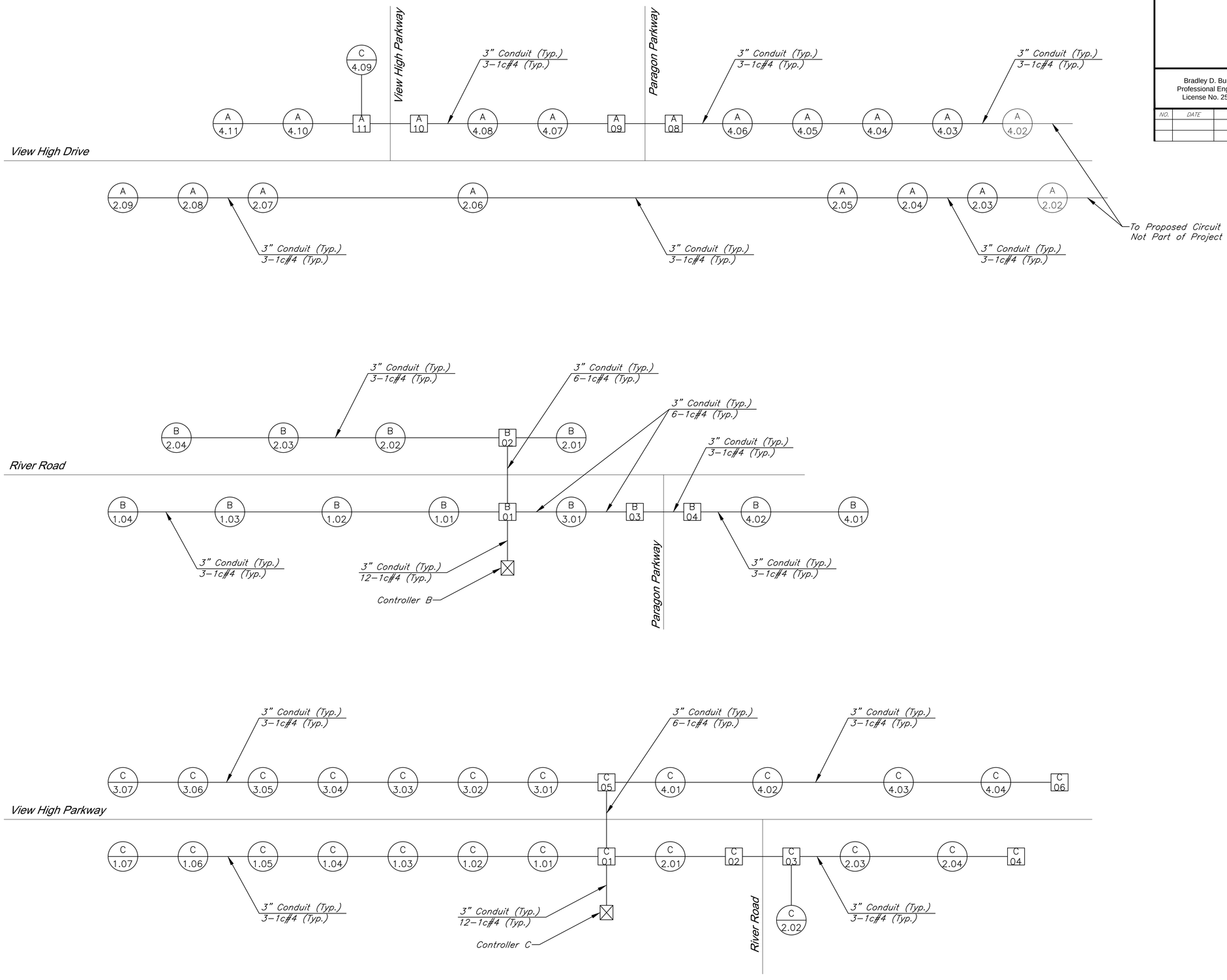
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Street and Storm Sewer Plans

# Paragon Star Development

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## LEGEND

- A 2.01 — Controller / Circuit/Luminaire Number
- 01 — Junction Box
- Secondary Service Point
- Control Center
- 01 — Existing Junction Box
- Existing Secondary Service Point
- Existing Control Center
- A 2.01 — Existing Luminaire

**Street Lighting Wiring Diagram**

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| DRAWN BY: | EGK |
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| SHEET NO. | 50 |
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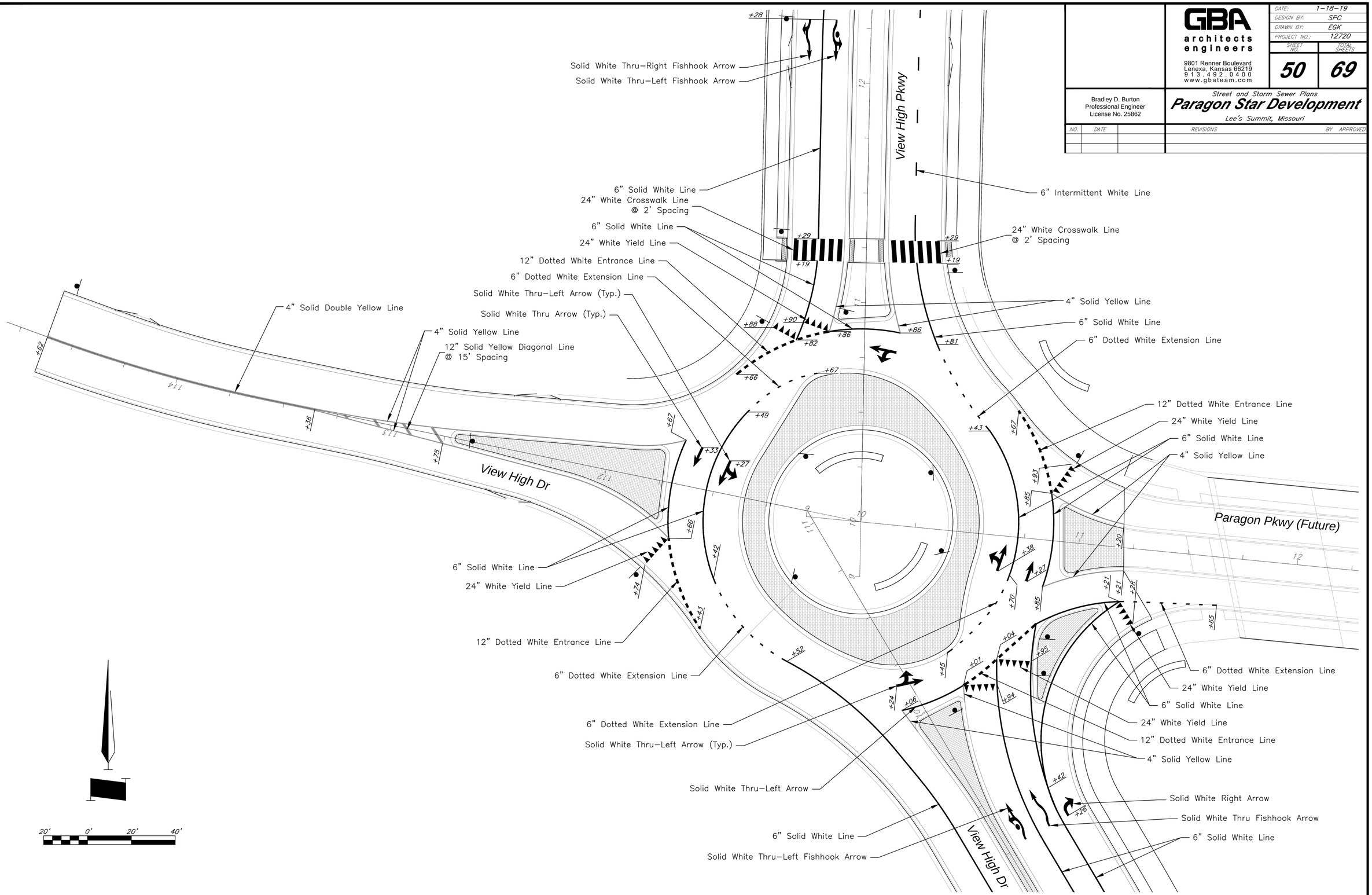
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Street and Storm Sewer Plans

**Paragon Star Development**

Lee's Summit, Missouri

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| DRAWN BY: | EGK | |
| PROJECT NO.: | 12720 | |
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| TOTAL SHEETS | 69 | |

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# Paragon Star Development

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| | | | | |
| | | | | |

Sta. 12+28, 38.8' Lt.
R3-8 30"x30"

Sta. 114+57, 26.4' Rt.
R2-1 (35) 24"x30"

SPEED LIMIT 35

Sta. 11+32, 39.0' Lt.
W11-2 36"x36"
W16-7pL 24"x12"

Sta. 10+95, 8.7' Lt.
R1-2 48"x48"x48"

Sta. 11+16, 40.5' Rt.
W11-2 36"x36"
W16-7pL 24"x12"

Sta. 112+62, 0.4' Rt.
R4-7 24"x30"
OM1-3 18"x18"

Sta. 10+90, 47.0' Lt.
R1-2 48"x48"x48"

Sta. 10+29, 25.7' Lt.
R6-4 30"x24"

Sta. 10+30, 25.5' Lt. (Paragon Pkwy)
R6-4 30"x24"

Sta. 10+96, 39.8' Lt. (Paragon Pkwy)
R1-2 48"x48"x48"

Sta. 110+59, 43.3' Rt.
R6-4 30"x24"

Sta. 111+77, 44.2' Lt.
R1-2 48"x48"x48"

Sta. 110+83, 20.1' Lt.
R6-4 30"x24"

Sta. 109+94, 11.6' Rt.
R1-2 48"x48"x48"

Sta. 11+31, 38.3' Rt.
R1-2 48"x48"x48"

Sta. 110+01, 65.0' Rt.
R1-2 48"x48"x48"

Sta. 109+88, 55.1' Rt.
W12-1 36"x36"

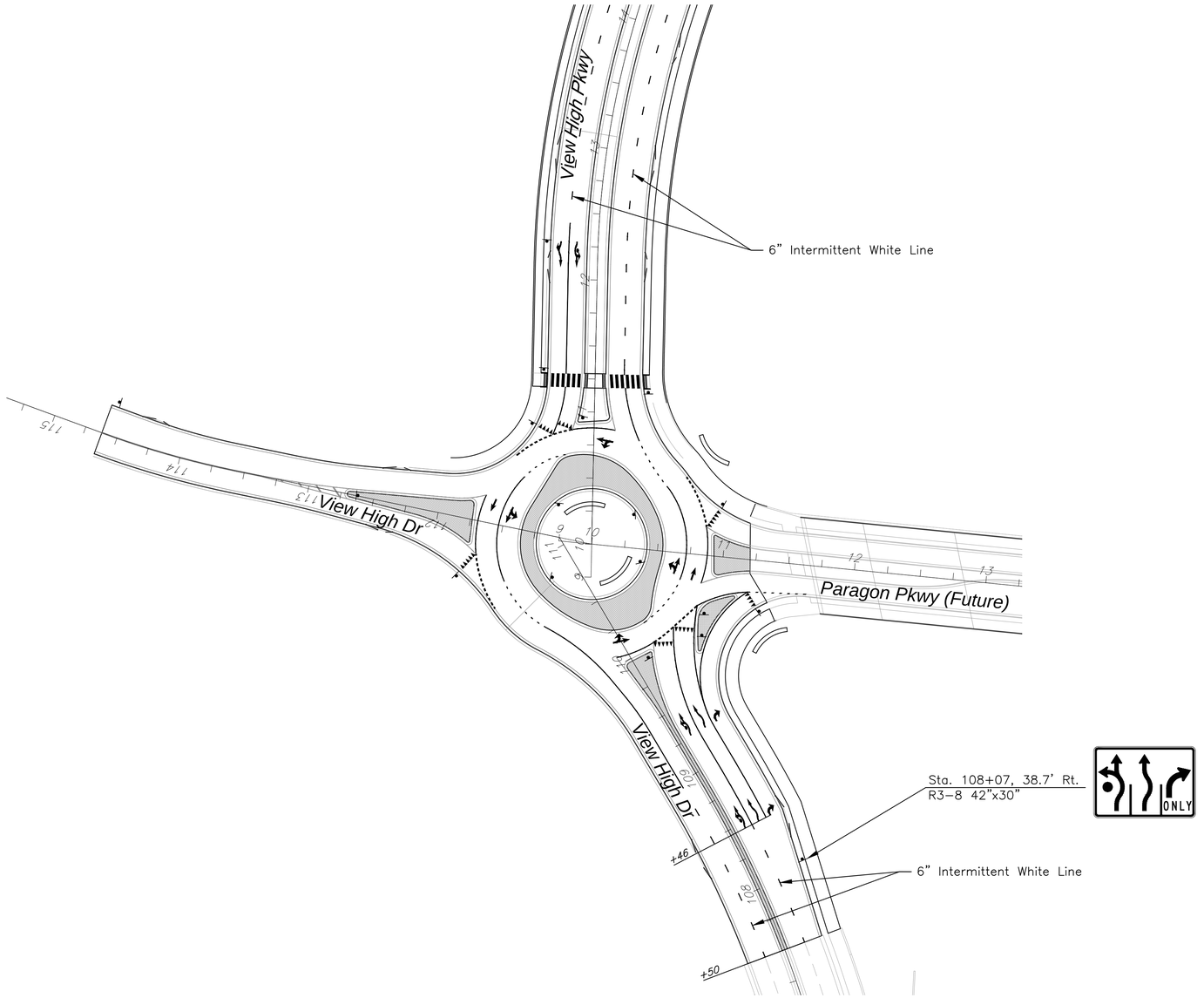
View High Pkwy

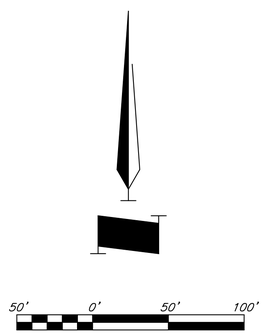
View High Dr

Paragon Pkwy (Future)

20' 0' 20' 40'

## Pavement Marking & Signing View High Drive




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| TOTAL SHEETS | 69 |

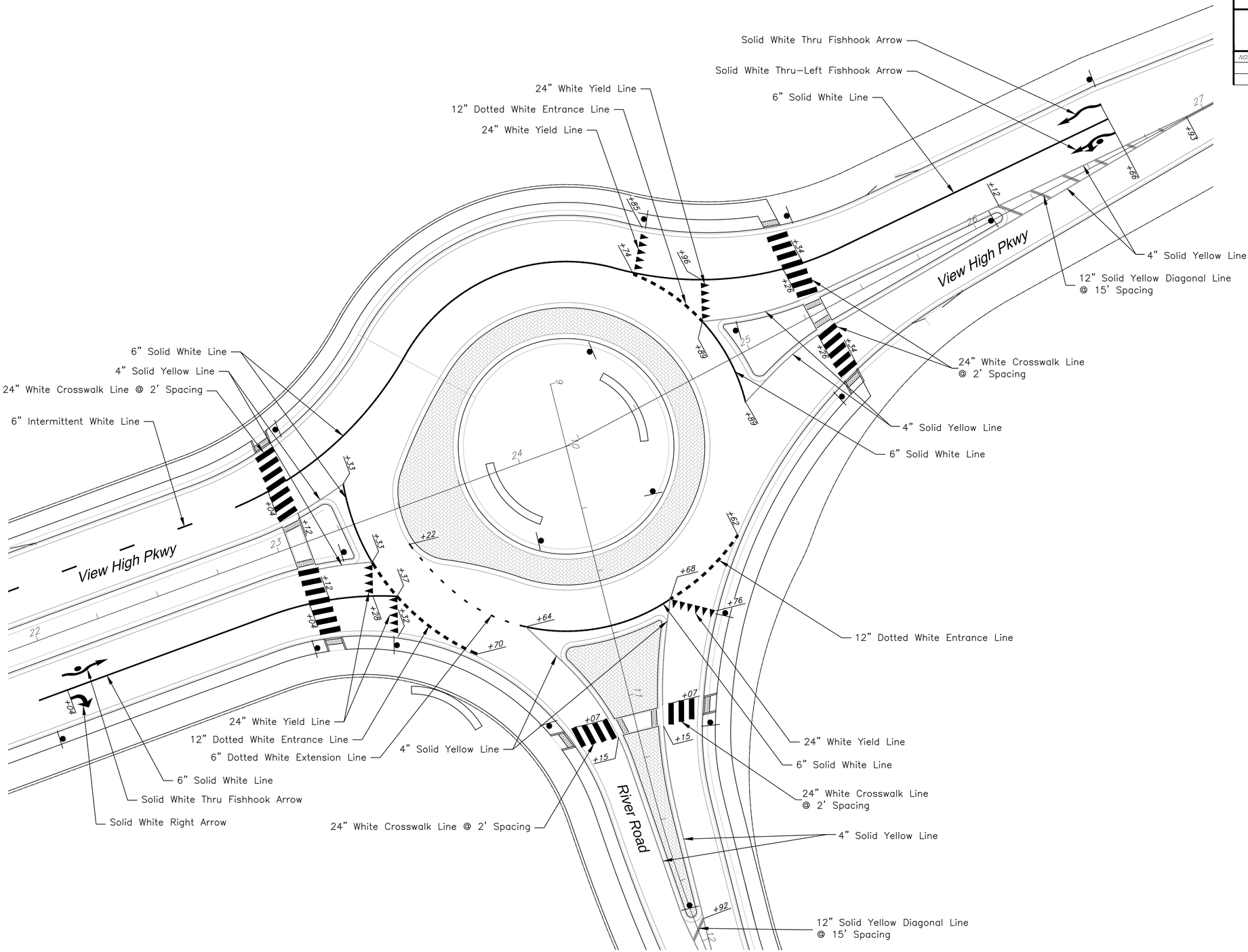
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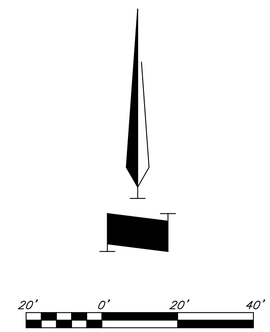
Street and Storm Sewer Plans

# Paragon Star Development

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## Pavement Marking & Signing Plan View High Parkway

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| PROJECT NO.: | 12720 |
| SHEET NO.: | 54 |
| TOTAL SHEETS: | 69 |

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*Street and Storm Sewer Plans*

# *Paragon Star Development*

*Lee's Summit, Missouri*

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Sta. 26+66, 30.8' Lt.
R3-8 30"x30"

Sta. 25+37, 39.1' Lt.
W11-2 36"x36"
W16-7pL 24"x12"

Sta. 24+99, 8.9' Lt.
R1-2 48"x48"x48"

Sta. 24+87, 64.0' Lt.
R1-2 48"x48"x48"

Sta. 24+45, 28.3' Lt.
R6-4 30"x24"

Sta. 23+97, 31.1' Rt.
R6-4 30"x24"

Sta. 23+15, 45.2' Lt.
W11-2 36"x36"
W16-7pL 24"x12"

Sta. 23+24, 8.7' Rt.
R1-2 48"x48"x48"

Sta. 26+07, 0.1' Lt.
R4-7 24"x30"
OM1-3 18"x18"

Sta. 25+23, 33.2' Rt.
W11-2 36"x36"
W16-7pL 24"x12"

Sta. 10+25, 28.5' Lt.
R6-4 30"x24"

Sta. 10+48, 44.2' Lt.
R1-2 48"x48"x48"

Sta. 11+18, 28.1' Lt.
W11-2 36"x36"
W16-7pL 24"x12"

Sta. 23+01, 40.3' Rt.
W11-2 36"x36"
W16-7pL 24"x12"

Sta. 23+31, 49.9' Rt.
R1-2 48"x48"x48"

Sta. 21+96, 39.2' Rt.
R3-8 30"x30"

Sta. 11+04, 33.0' Rt.
W11-2 36"x36"
W16-7pL 24"x12"

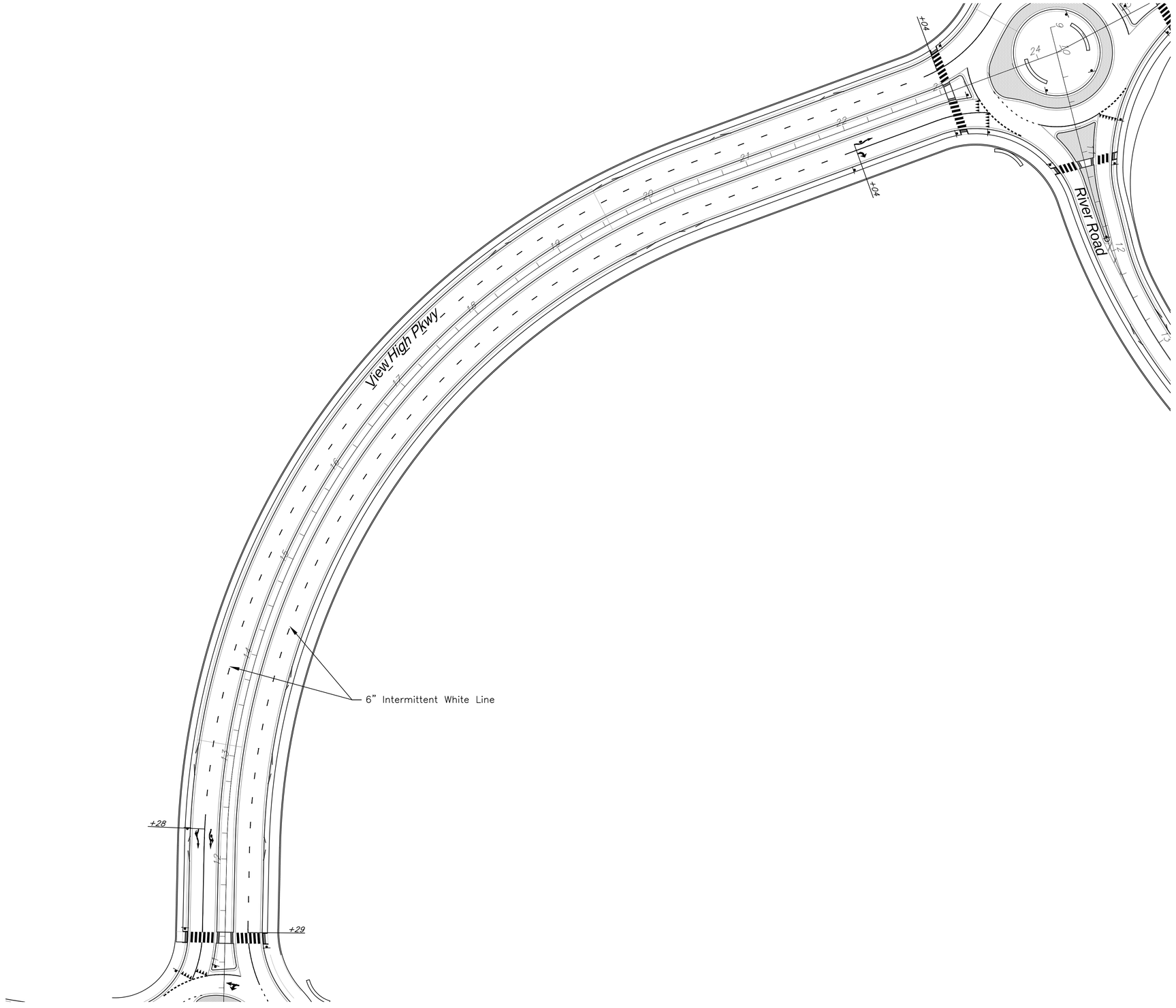
Sta. 11+85, 0.2' Lt.
R4-7 24"x30"
OM1-3 18"x18"

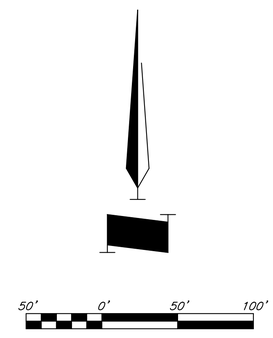
View High Pkwy

River Road

20' 0' 20' 40'

***Pavement Marking & Signing Plan View High Parkway***




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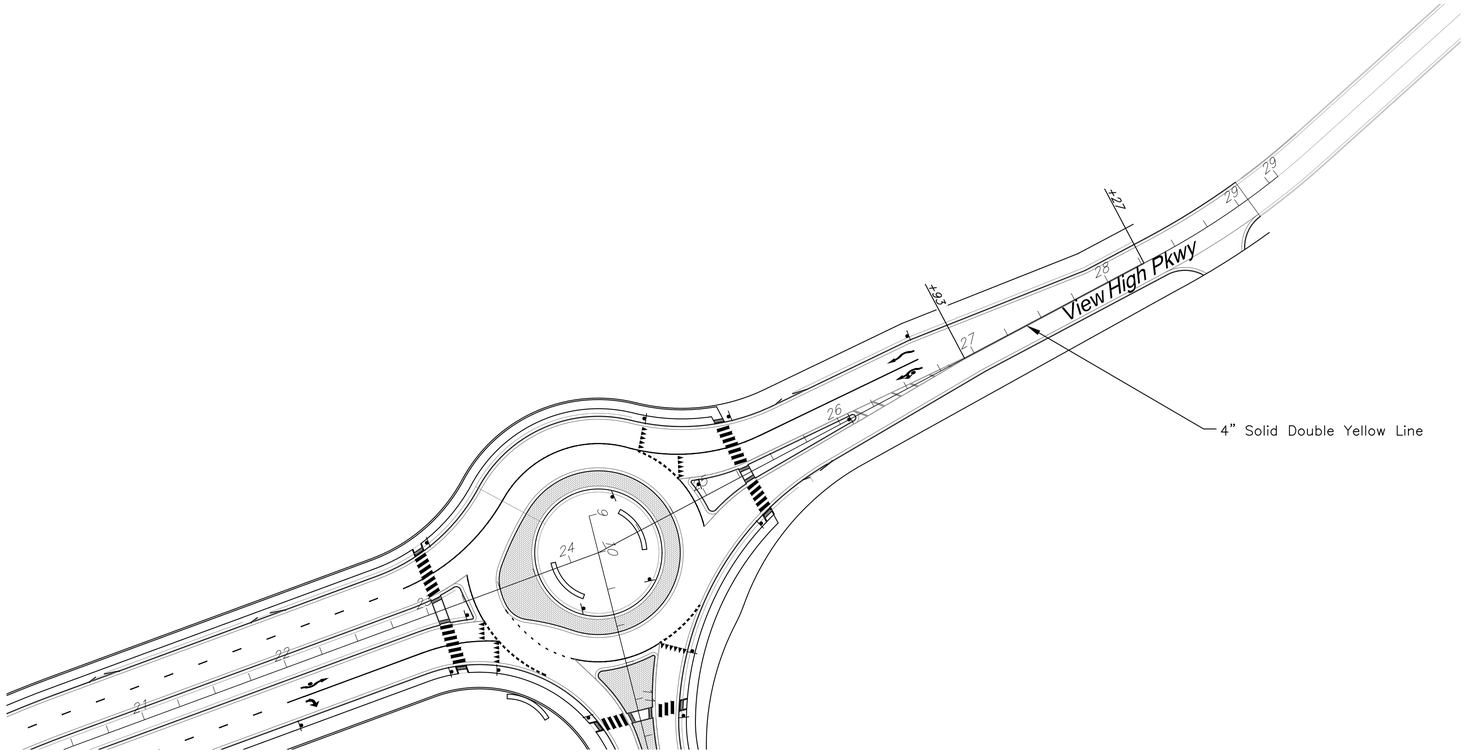
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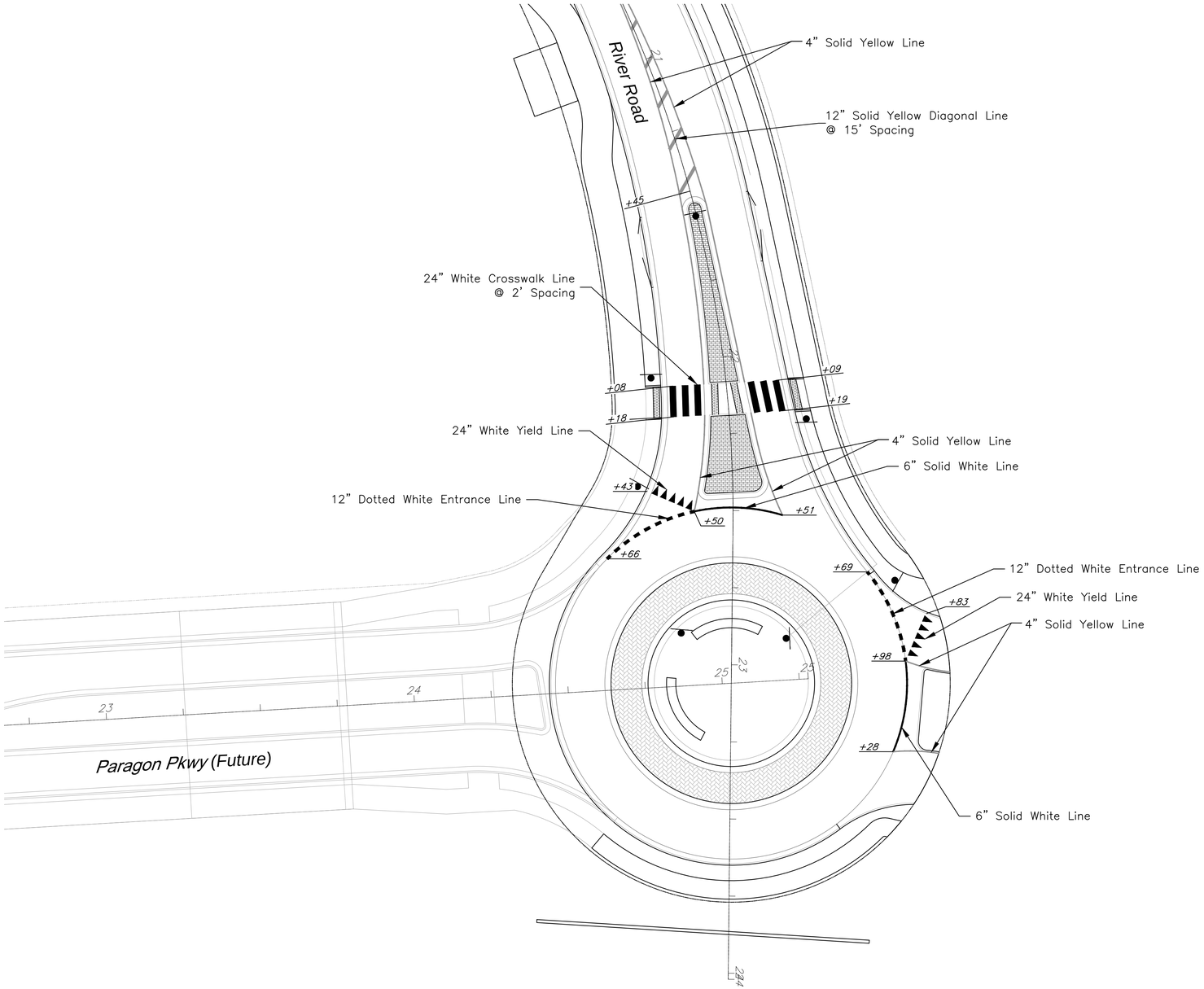
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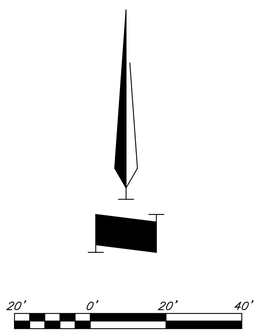
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**Pavement Marking & Signing Plan View High Parkway**

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| SHEET NO. | 58 |
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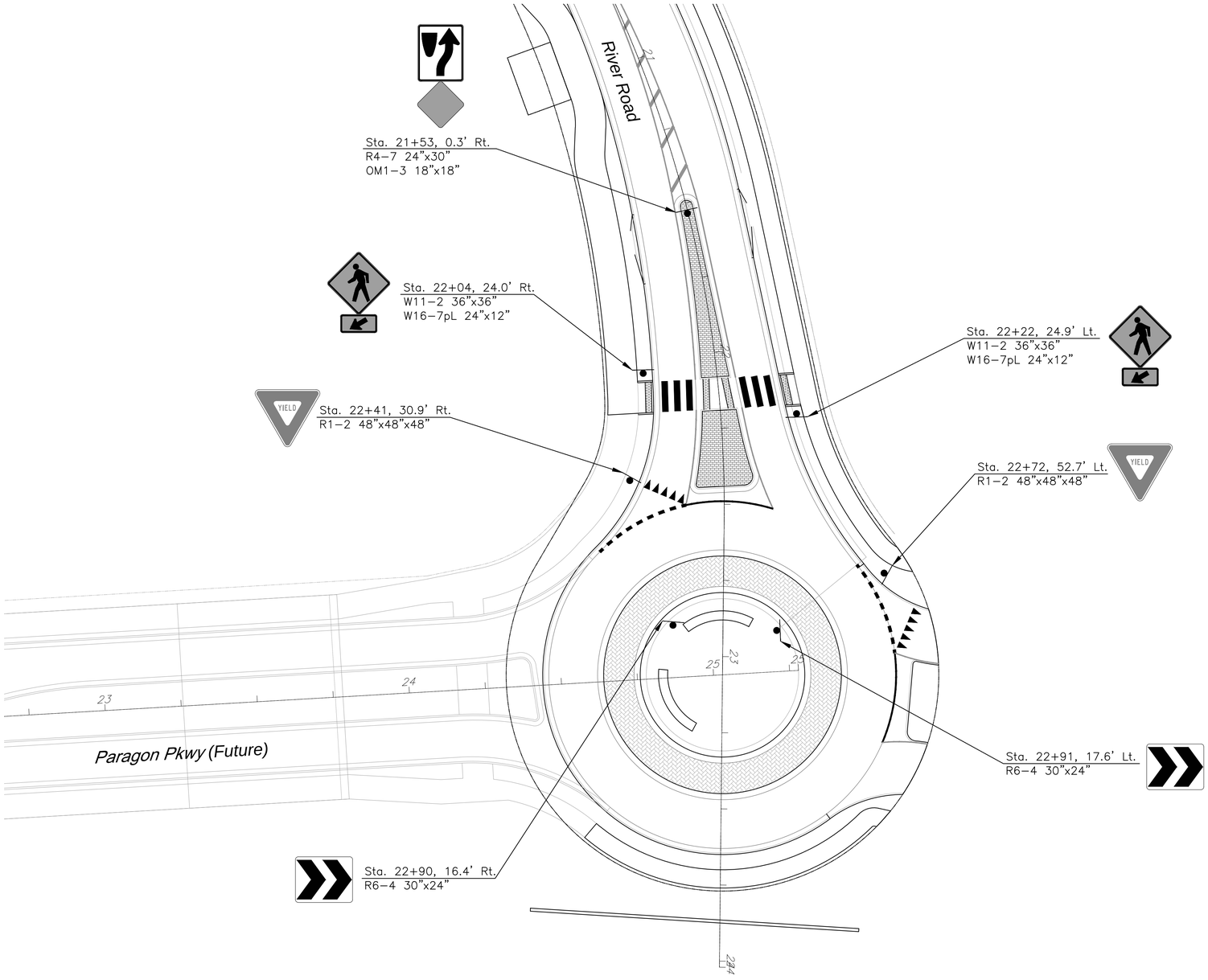
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Street and Storm Sewer Plans

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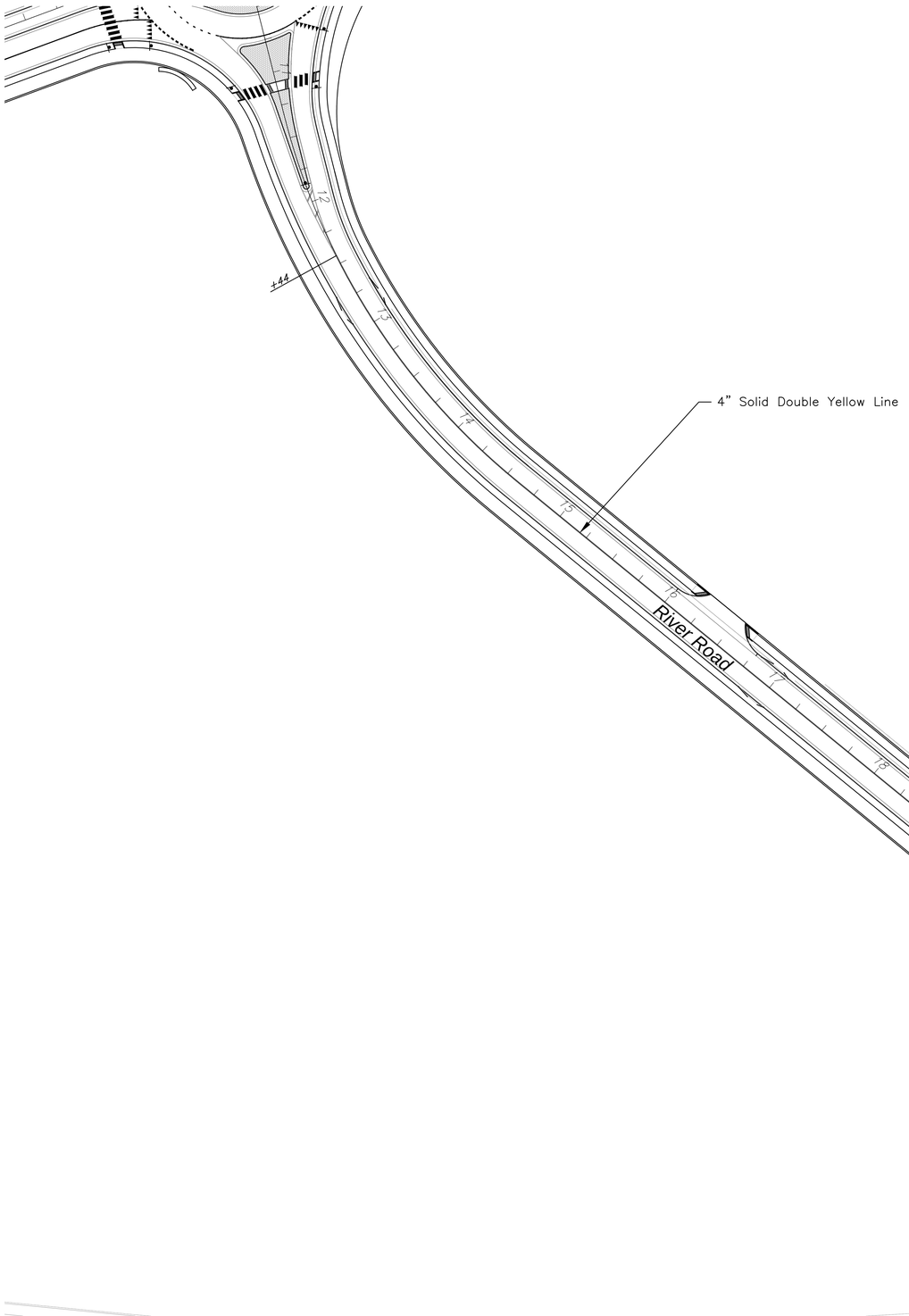
Lee's Summit, Missouri

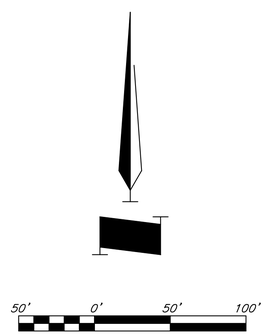
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## Pavement Marking & Signing Plan River Road

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*Lee's Summit, Missouri*

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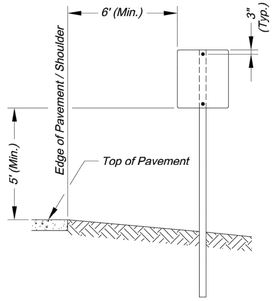
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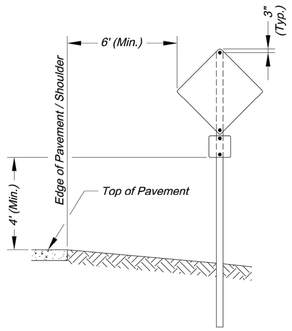
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**Paragon Star Development**
Lee's Summit, Missouri

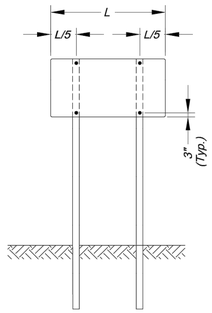
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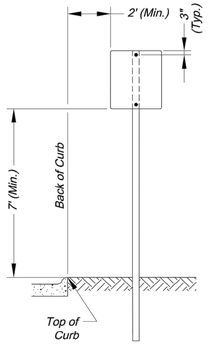

SIGN INSTALLATION FOR NON-CURBED STREET



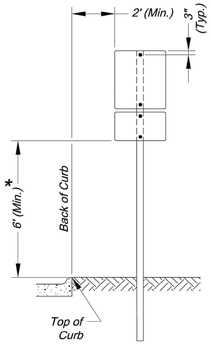

SIGN INSTALLATION WITH AUXILARY SIGN FOR NON-CURBED STREET



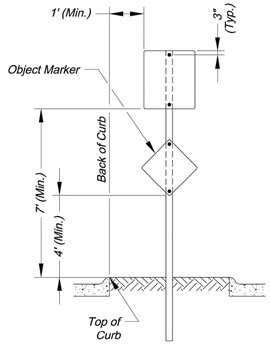

SIGN INSTALLATION WITH TWO SIGN POSTS




SIGN INSTALLATION FOR CURBED STREET




SIGN INSTALLATION WITH AUXILARY SIGN FOR CURBED STREET

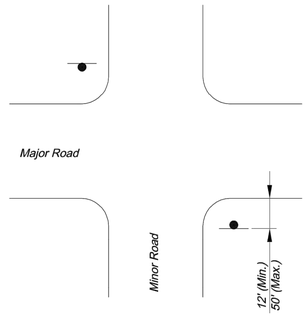



SIGN INSTALLATION FOR RAISED MEDIANS

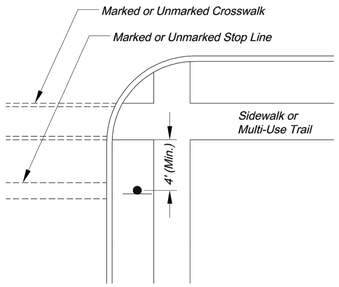
## SIGN MOUNTING DETAILS

* The height to the bottom of a sign when it is located in a pedestrian walkway or extends into a walkway shall be a minimum of 80 inches above the walkway.

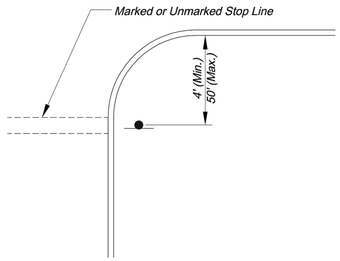
NOTE:
1. Generally, the sign mounting height should not be more than 1' greater than the minimum mounting height.




NON-CURBED INTERSECTION INSTALLATION

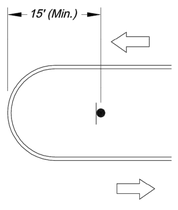



INTERSECTION WITH SIDEWALK / MULTI-USE TRAIL INSTALLATION




CURBED INTERSECTION INSTALLATION

## CONTROL SIGN LOCATION




TYPICAL MEDIAN SIGN LOCATION

## MEDIAN SIGN LOCATION

NOTES:
1. A 4" P.V.C. sleeve shall be installed in new concrete medians at each location where a sign is to be installed.
2. For existing concrete medians, a 4" hole shall be cored into the concrete.

CITY OF LEE'S SUMMIT
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
220 SE GREEN STREET
LEE'S SUMMIT, MISSOURI 64063
PHONE: (816) 969-1800 FAX: (816) 969-1809

Project:
SIGN MOUNTING DETAILS
Sheet Name: STANDARD DRAWING SN-1

Drawn By: AS
Checked By: JW
Date: 08/26/2009
Project#

1 OF 3
**1**

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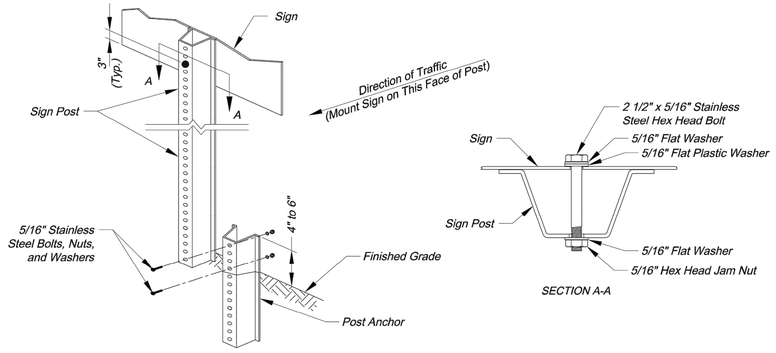
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| DRAWN BY: | CMN |
| PROJECT NO.: | 12720 |
| SHEET NO.: | 61 |
| TOTAL SHEETS | 69 |

Bradley D. Burton
Professional Engineer
License No. 25862

Street and Storm Sewer Plans
**Paragon Star Development**
Lee's Summit, Missouri

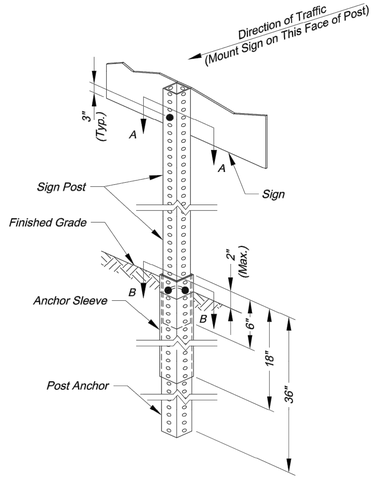
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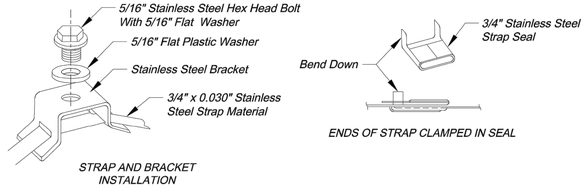

## U-STEEL POST DETAILS

*U-STEEL POST NOTES:*
1. *Splice shall be positioned entirely between finished grade line and 18" above finished grade line. Only one splice will be allowed per post.*
2. *U-Steel post shall be 3 lb./ft., galvanized according to ASTM A123.*
3. *U-Steel post can be used for installation of signs with an area of less than 2.5 square feet.*
4. *All posts shall be embedded a minimum of 3 feet.*

*PERMANENT SIGNING GENERAL NOTES:*
1. *All signing shall be in accordance with the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD).*
2. *The Contractor is responsible for avoiding any and all utilities when installing sign posts, whether the utility is indicated on the plans or not.*
3. *All workmanship and materials shall be subject to the inspection and approval of the Public Works Department of the City of Lee's Summit.*
4. *The Contractor shall stake the location of all sign posts to be installed. The City Inspector shall inspect the staking prior to installation. Minor relocation to avoid conflicts may be allowed with the approval of the City Traffic Engineer or designee.*
5. *Signs shown to be installed on the side of metal poles shall be mounted with stainless steel straps or wing brackets as detailed. No signs are to be installed on wood poles. See Traffic Signal Standard Drawings for the installation of signs on mast arms.*
6. *All post mounted signs shall be installed with breakaway anchors according to the Standard Drawings.*
7. *All existing signs will be used in place during construction and protected from damage unless otherwise indicated in the plans. If the Contractor damages any existing sign or posts during construction, the Contractor will be required to replace the damaged materials with new signs or posts of the same type and size at the Contractor's expense. The Contractor shall be responsible for removing and storing any signs that are to be reinstalled on the project. All equipment shall be reinstalled in good condition.*
8. *Existing permanent signs and posts removed by the Contractor for construction purposes which are not to be reinstalled shall be delivered to the City's Public Works Maintenance Facility (1971 SE Hamblen Road). The Contractor shall be responsible for removing and storing equipment in good condition and is fully responsible for the equipment until it is delivered.*
9. *All Stop, Yield, or street name signs shall be maintained in a conspicuous location for the driving public. All Stop and Yield signs removed for construction purposes can be temporarily erected in reflectorized drums (no less than 7 feet above the pavement surface) until they can be reinstalled. Any temporary Stop or Yield sign installation to be left in place overnight will require prior approval from the City Inspector.*

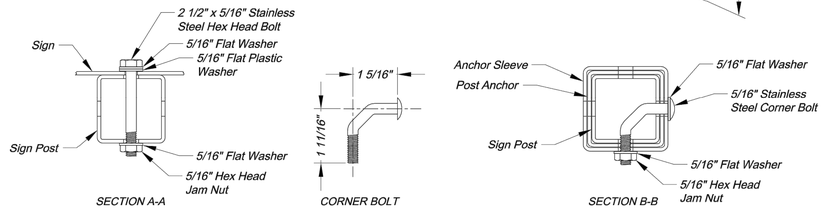



*SQUARE STEEL POST INSTALLATION SEQUENCE:*
1. *Sign post anchor driven partially into the ground using a drive cap with a sledge or power equipment.*
2. *Anchor sleeve slipped over anchor and drive into the ground together with the sign post anchor.*
3. *Insert sign post into the post anchor and bolt in place.*




## STRAP TYPE SIGN SUPPORT DETAILS

*METAL POLE SIGN MOUNTING NOTES:*
1. *Signs on metal poles shall be attached with two brackets and stainless steel bands.*
2. *Holes in sign for attachment to the mounting brackets shall be offset a minimum of 2 inches from the edge of the sign.*
3. *Holes in sign shall be located such that the sign is level.*
4. *All strap, bracket, and seal materials should be Type 201 stainless steel.*




## SQUARE STEEL POST DETAILS

*SQUARE STEEL POST NOTES:*
1. *Square steel sign posts and break-away anchor shall consist of the following materials:*
   *Sign Post - 14 Ga. 2" x 2" Square Steel Post*
   *Post Anchor - 12 Ga. 2 ¼" x 2 ¼" x 36" Square Steel Post*
   *Anchor Sleeve - 12 Ga. 2 ½" x 2 ½" x 18" Square Steel Post*
2. *14 Gauge posts must meet a certified minimum yield strength of 60,000 psi.*
3. *In all installations the first hole above the finished grade line on the sign post, anchor, and anchor sleeve must be in line for the insertion of the corner bolt.*
4. *The maximum area for one sign post is 9.0 square feet. A sign or combination of signs with an area greater than 9.0 square feet will require two posts. Also, signs with a width greater than 36" (not including 36" x 36" diamond shaped signs) will require two posts.*

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ENGINEERING DIVISION
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Project:
SIGN POST DETAILS
Sheet Name: STANDARD DRAWING SN-2

Drawn By: AS
Checked By: JW
Date: 08/26/2009
Project#



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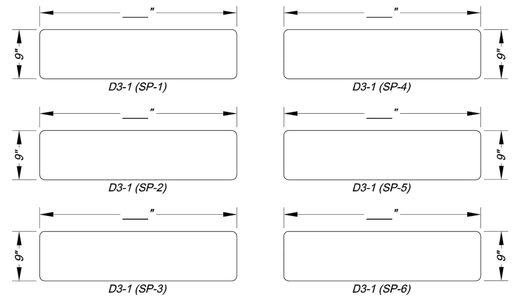
## STANDARD ABBREVIATION LISTS

| Named Streets | |
|---|---|
| Avenue | AVE |
| Boulevard | BLVD |
| Circle | CIR |
| Creek | CR |
| Court | CT |
| Crossing | XING |
| Drive | DR |
| Highway | HWY |
| Lane | LN |
| Parkway | PKWY |
| Place | PL |
| Road | RD |
| Street | ST |
| Terrace | TER |
| Trail | TRL |
| Way | WAY |

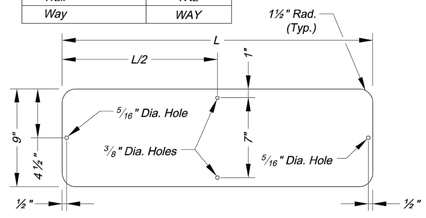
| Numbered Streets | |
|---|---|
| First | ST |
| Second | ND |
| Third | RD |
| Fourth to Tenth | TH |

## STREET NAME SIGN QUANTITIES

| Sign Designation | Sign Size | Sign Area (Sq. Ft.) | Number | Quantity (Sq. Ft.) |
|---|---|---|---|---|
| D3-1 (SP-1) | 9" x | Sq. Ft. | 1 | 1 |
| D3-1 (SP-2) | 9" x | | | |
| D3-1 (SP-3) | 9" x | | | |
| D3-1 (SP-4) | 9" x | | | |
| D3-1 (SP-5) | 9" x | | | |
| D3-1 (SP-6) | 9" x | | | |

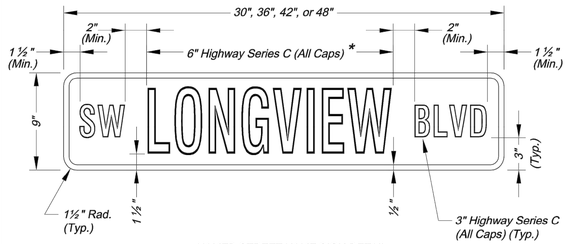



## PROJECT SIGN DETAILS



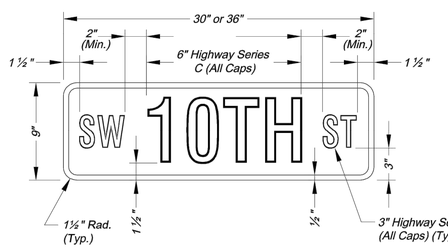

## STREET NAME SIGN BLANK DETAILS

For Mounting on Square Steel Posts

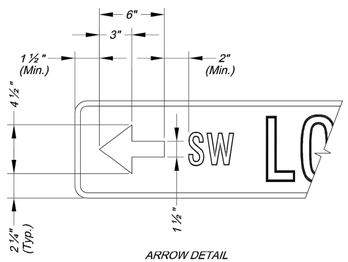



NAMED STREET NAME SIGN DETAIL

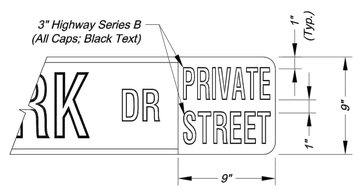
* Use Highway Series B (All Caps) in lieu of series C if necesary to fit text on a 36" sign blank.




NUMBERED STREET NAME SIGN DETAIL



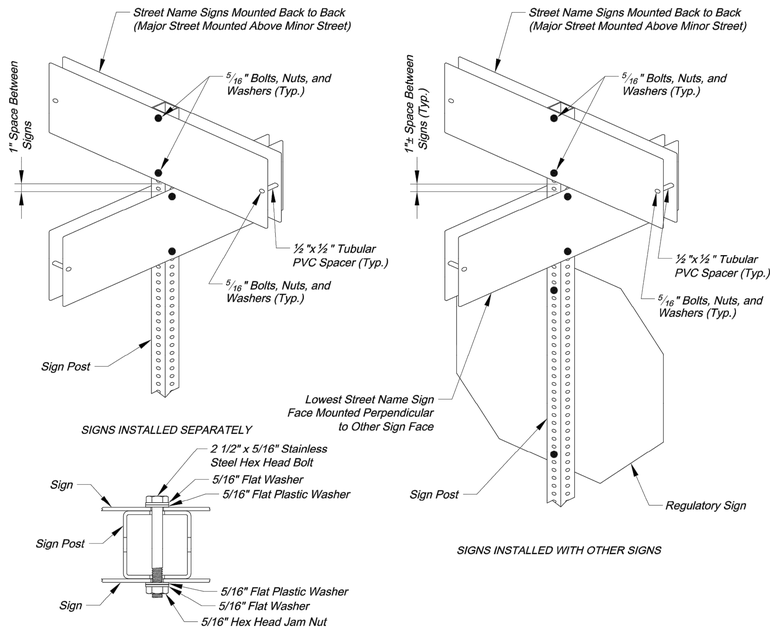

ARROW DETAIL



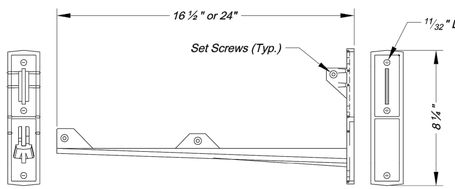

PRIVATE STREET TAG DETAIL

NOTES:
1. For all street name signs, the legend shall be white and the background shall be green.
2. Arrows shall be added to street name signs where the name of a street changes at an intersection. Street name signs with arrows are to be installed on each side of the intersection to indicate the change in names. Arrows shall be white.
3. The "PRIVATE STREET" tag should be added to the end of street name signs to indicate where a street that is outside the right-of-way intersects a public street. The background for the "PRIVATE STREET" tag shall be yellow.

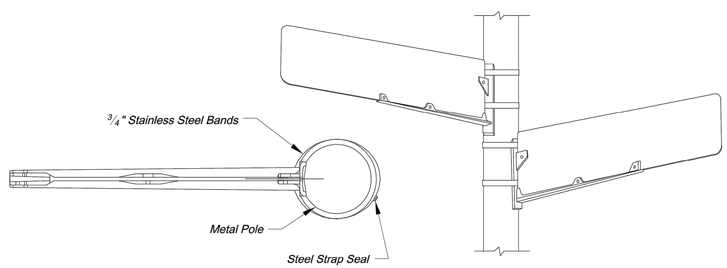
## STREET NAME SIGN FACE DETAILS




## SQUARE STEEL POST MOUNTING DETAILS




NOTES:
1. Wing bracket shall be an L-shaped cantilever of T-beam rigid frame 380-3 aluminum alloy construction.
2. Mount each wing bracket to metal pole using two ¾" wide stainless steel straps.
3. One wing bracket shall be installed per each sign. Cross brackets are not allowed.




## WING BRACKET MOUNTING DETAILS

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Project: STREET NAME SIGN DETAILS
Sheet Name: STANDARD DRAWING SN-3

Drawn By: AS
Checked By: JW
Date: 08/26/2009
Project#

3 OF 3

**3**

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# Pavement Marking & Signing Details

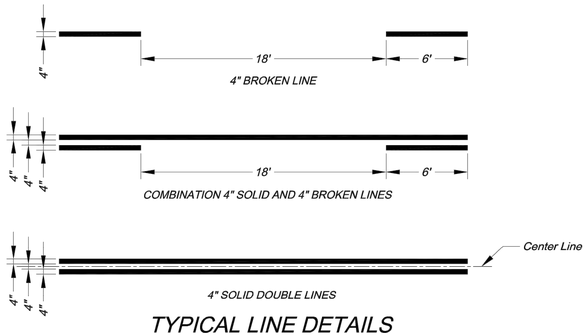
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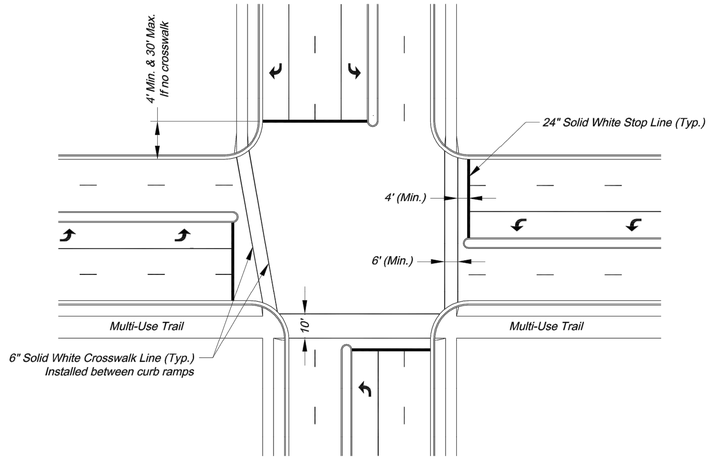
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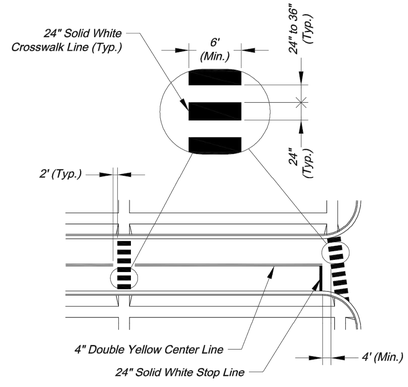

## TYPICAL LINE DETAILS

NOTES:
1. All edge line, center line, and lane line pavement markings shall be 4" wide unless otherwise noted.
2. Edge lines shall be continuous solid white or yellow lines. Right side edge lines shall be solid white. Median or left side edge lines on divided roadways are to be solid yellow. Edge lines and center lines shall be continuous across driveways.

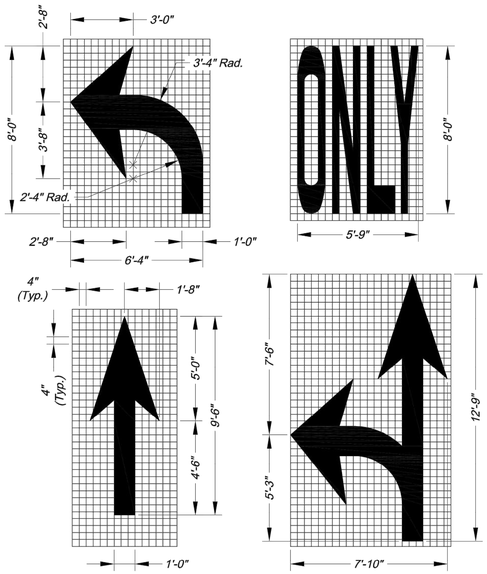



## TYPICAL INTERSECTION MARKINGS

NOTES:
1. Transverse crosswalk lines shall be installed such that the distance between lines is at least 6 or 10 feet.
2. Stop lines are required at signalized intersections, on multi-lane stop controlled approaches, or in front of crosswalks at controlled intersections.

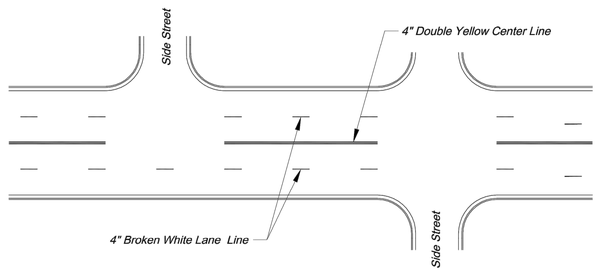



## TYPICAL MIDBLOCK OR SCHOOL CROSS WALK

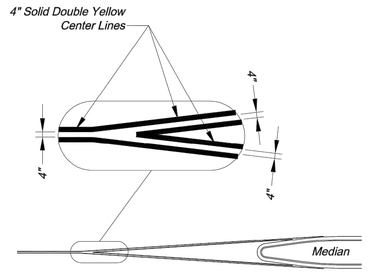



## ARROW AND SYMBOL DETAILS

NOTES:
1. All arrow and symbol markings shall be white, and shall be centered in their respective traffic lanes.
2. Right-turn and combination right-turn/straight arrows are reverse of arrows shown.




## TYPICAL MARKINGS FOR FOUR-LANE UNDIVIDED ROADWAY




## TYPICAL MEDIAN NOSE CENTER LINE DETAIL

PAVEMENT MARKING GENERAL NOTES:
1. All pavement markings shall be in accordance with the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD).
2. All words and symbols shall conform to the latest edition of Standard Alphabets for Highway Signs and Pavement Markings printed by the U.S. Department of Transportation, Federal Highway Administration.
3. Pavement markings, either temporary or permanent are required at all times if the roadway is open to traffic.
4. All pavement markings that conflict with the desired markings shall be completely removed. Removals shall not leave the road surface scarred with an image that misleads traffic. Any excess damage or scarring of pavement shall be repaired at the Contractor's expense.
5. The proposed permanent markings shall be laid out by the Contractor in advance of the marking installation. Markings shall not be applied until the layout has been approved by the City Traffic Engineer.
6. Center lines shall be marked on all undivided arterial streets, and any other undivided street with more than two lanes and/or a speed limit of 30 mph or more.
7. Edge lines shall be marked on all non-curbed streets.

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Project: ROADWAY MARKING DETAILS
Sheet Name: STANDARD DRAWING PM-1

Drawn By: AS
Checked By: JW
Date: 09/09/2009
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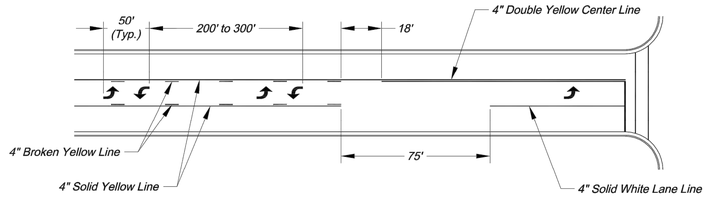
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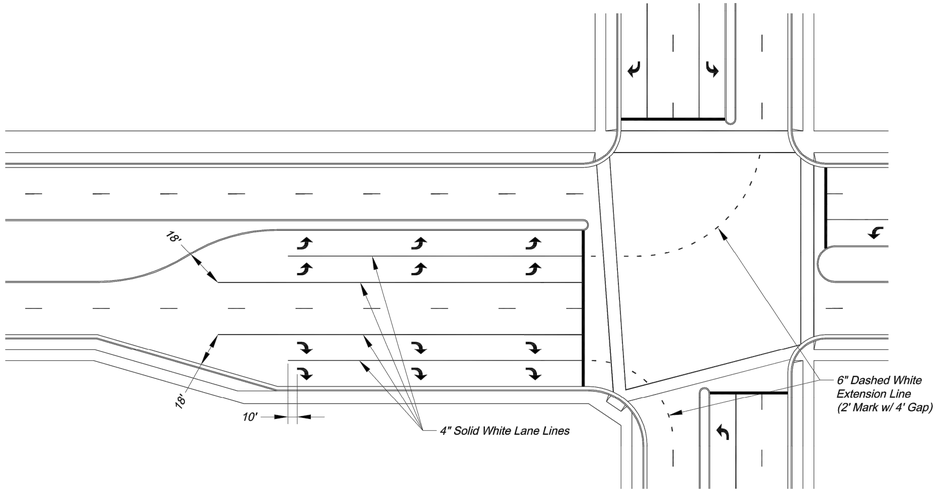
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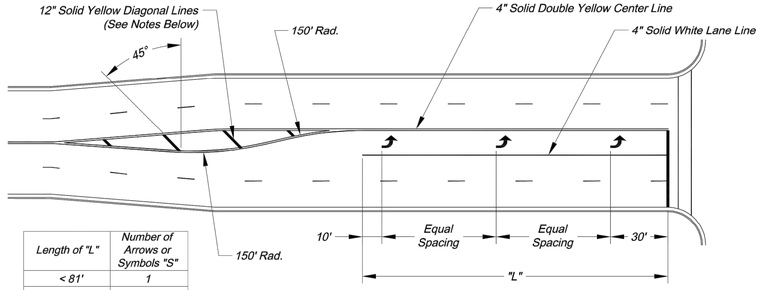



## TYPICAL MARKINGS FOR TWO-WAY LEFT-TURN LANE




## TYPICAL DUAL TURN LANE MARKINGS

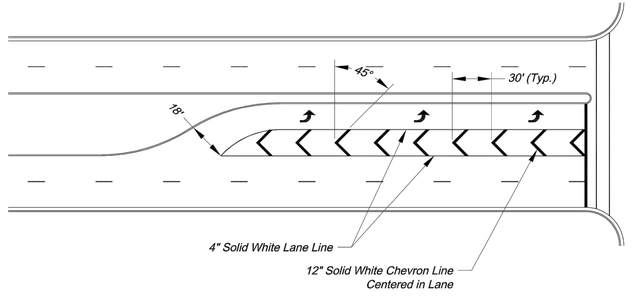
NOTE:
1. Dashed extension lines shall not extend through crosswalks.




| Length of "L" | Number of Arrows or Symbols "S" |
|---|---|
| < 81' | 1 |
| 81' - 120' | 2 |
| 121' - 200' | 3 |
| 201' - 280' | 4 |
| 281' - 360' | 5 |
| 361' - 440' | 6 |

## TYPICAL TURN LANE MARKINGS

NOTES:
1. Diagonal lines are required between centerlines if the width of the area between the center lines is greater than 12' and/or the length of the area between center lines is greater than 250'.
2. Diagonal lines should be spaced at 5' increments, equal to the posted speed limit.
3. Equal Spacing is calculated as (L - 40) / (S - 1).
4. When a through lane of traffic terminates as a mandatory turn lane, Arrow and "ONLY" symbols should be marked in the turn lane, in alternating order. The first and last symbols should be Arrows.




## TYPICAL STRIPED OUT TURN LANE MARKINGS

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Project: INTERSECTION MARKING DETAILS

Sheet Name: STANDARD DRAWING PM-2

Drawn By: AS
Checked By: JW
Date: 09/09/2009
Project#

2 OF 2

**2**

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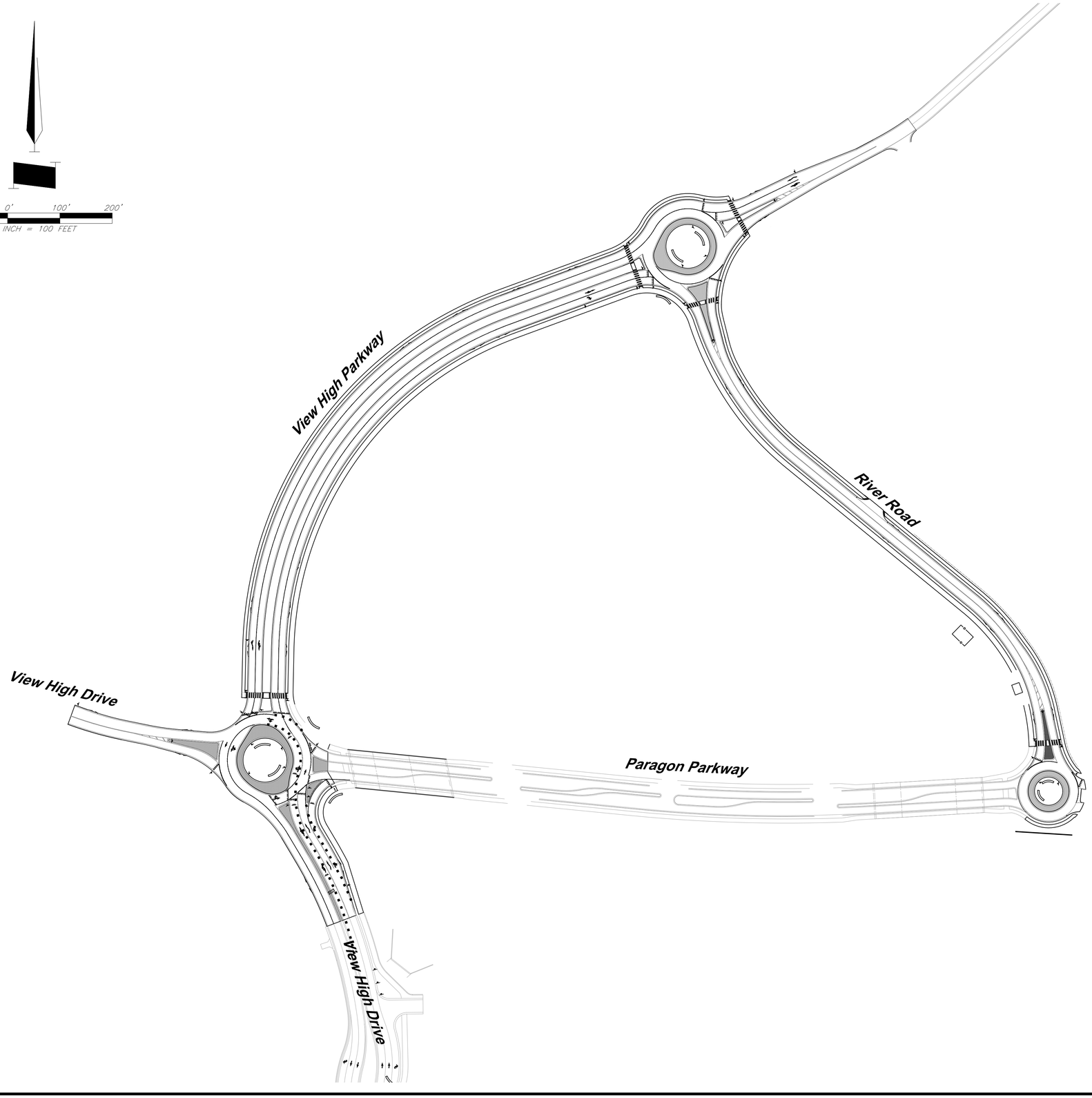
# *Paragon Star Development*

*Lee's Summit, Missouri*

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100' 0' 100' 200'

SCALE : 1 INCH = 100 FEET




Phase 1 Work Area

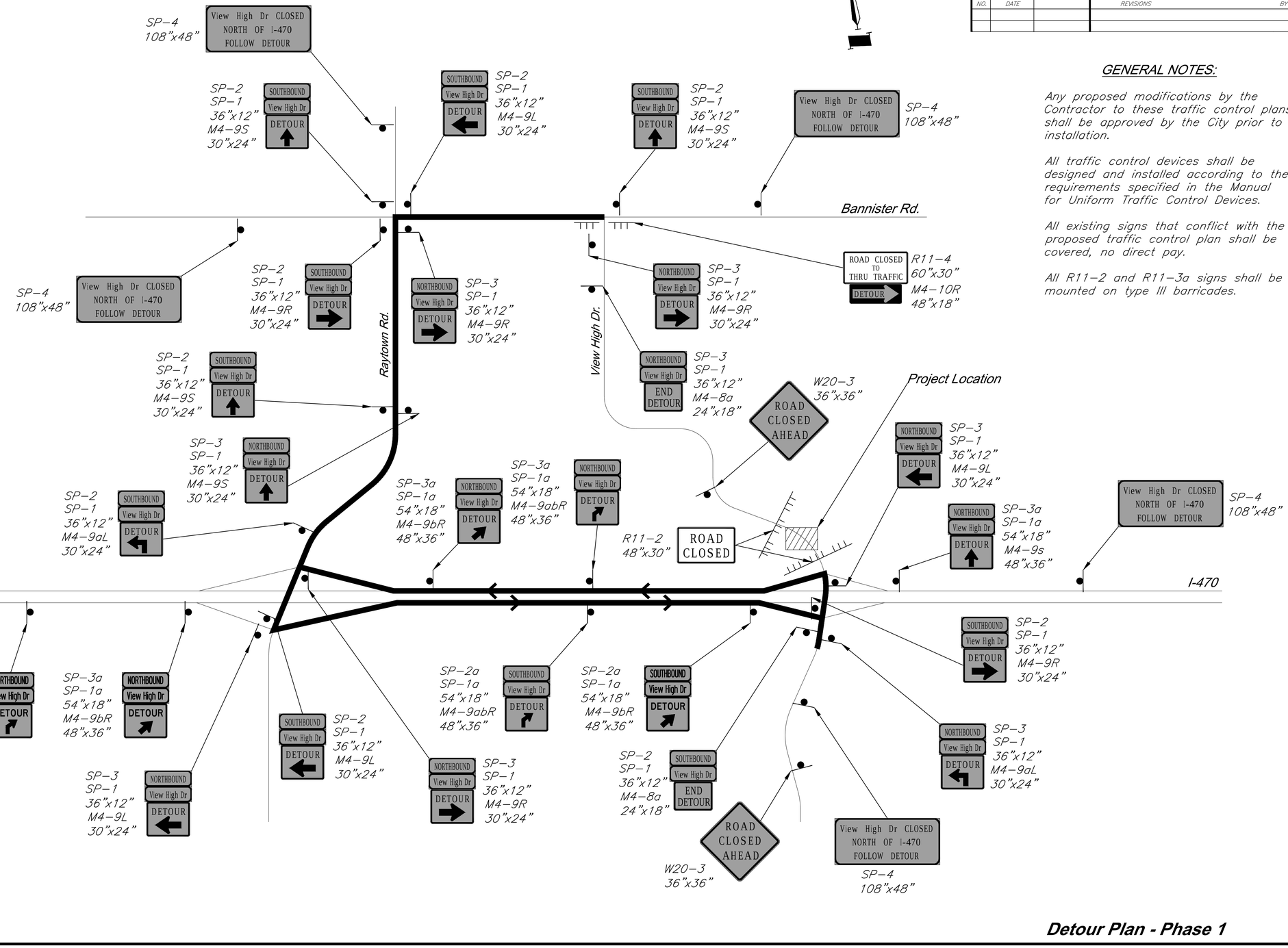
Phase 2 Work Area

##########

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## LEGEND

- Construction Area
- Temporary Construction Sign
- Type III Barricade
- ADA–Compliant Type II Barricade
- Channelizer
- Arrow Display




**Detour Plan - Phase 1**

GBA architects engineers
9801 Renner Boulevard
Lenexa, Kansas 66219
913.492.0400
www.gbateam.com

| | |
|---|---|
| DATE: | 1–18–19 |
| DESIGN BY: | ### |
| DRAWN BY: | ### |
| PROJECT NO.: | 12720 |
| SHEET NO. | 66 |
| TOTAL SHEETS | 69 |

Bradley D. Burton
Professional Engineer
License No. 25862

Street and Storm Sewer Plans
**Paragon Star Development**
Lee's Summit, Missouri

| NO. | DATE | REVISIONS | BY | APPROVED |
|---|---|---|---|---|
| | | | | |
| | | | | |

## GENERAL NOTES:

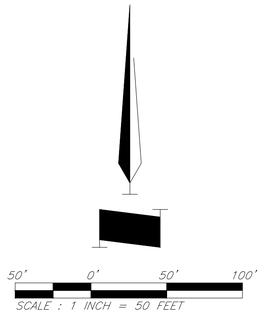
Any proposed modifications by the Contractor to these traffic control plans shall be approved by the City prior to installation.

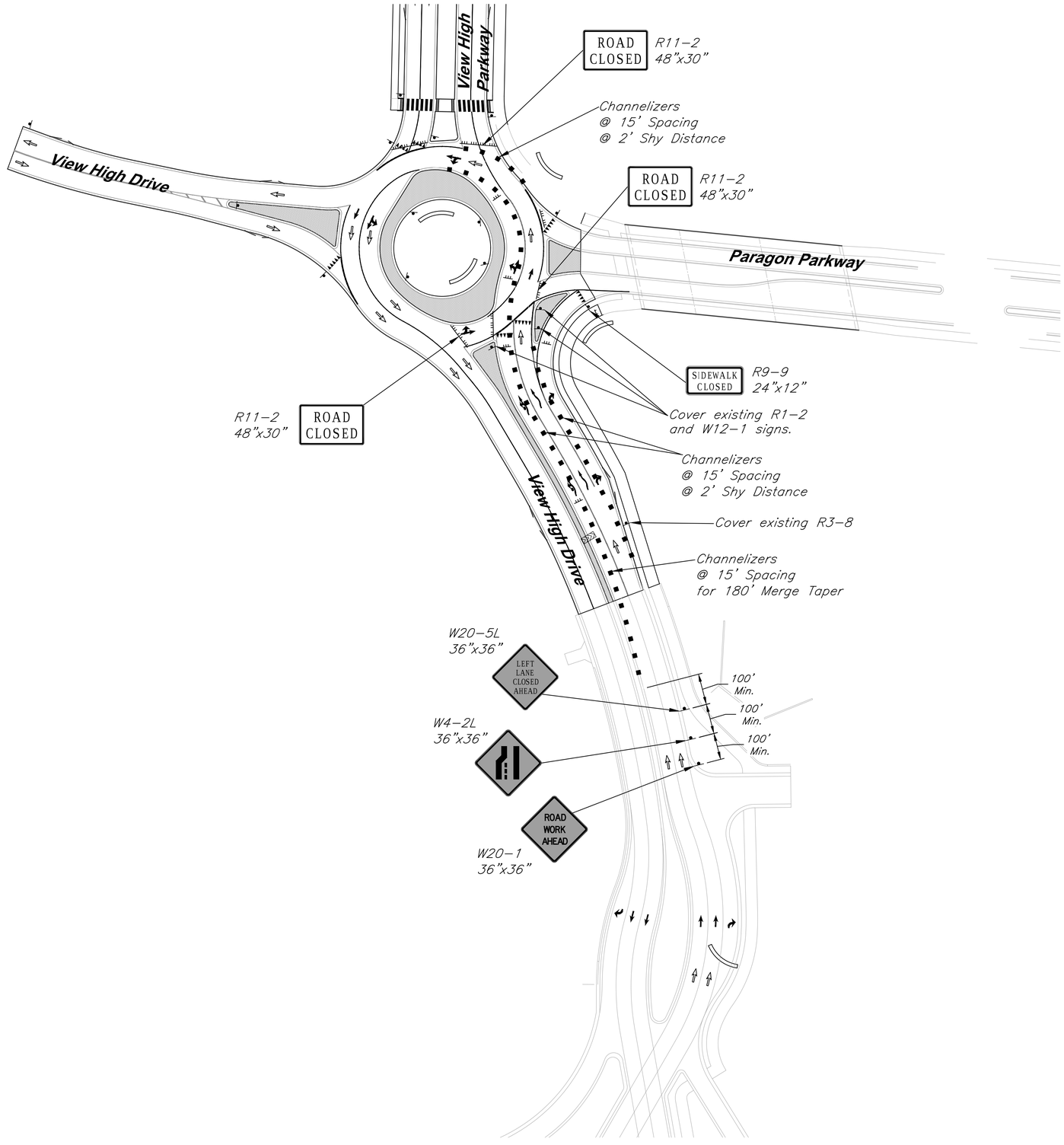
All traffic control devices shall be designed and installed according to the requirements specified in the Manual for Uniform Traffic Control Devices.

All existing signs that conflict with the proposed traffic control plan shall be covered, no direct pay.

All R11–2 and R11–3a signs shall be mounted on type III barricades.

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Bradley D. Burton
Professional Engineer
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Street and Storm Sewer Plans
**Paragon Star Development**
Lee's Summit, Missouri

| NO. | DATE | REVISIONS | BY | APPROVED |
|---|---|---|---|---|
| | | | | |
| | | | | |

## LEGEND

- Construction Area
- Temporary Construction Sign
- Type III Barricade
- ADA-Compliant Type II Barricade
- Channelizer
- Arrow Display
- Direction of Travel

## GENERAL NOTES:

Any proposed modifications by the Contractor to these traffic control plans shall be approved by the City prior to installation.

All traffic control devices shall be designed and installed according to the requirements specified in the Manual for Uniform Traffic Control Devices.

All existing signs that conflict with the proposed traffic control plan shall be covered, no direct pay.

All R11-2 and R11-3a signs shall be mounted on type III barricades.

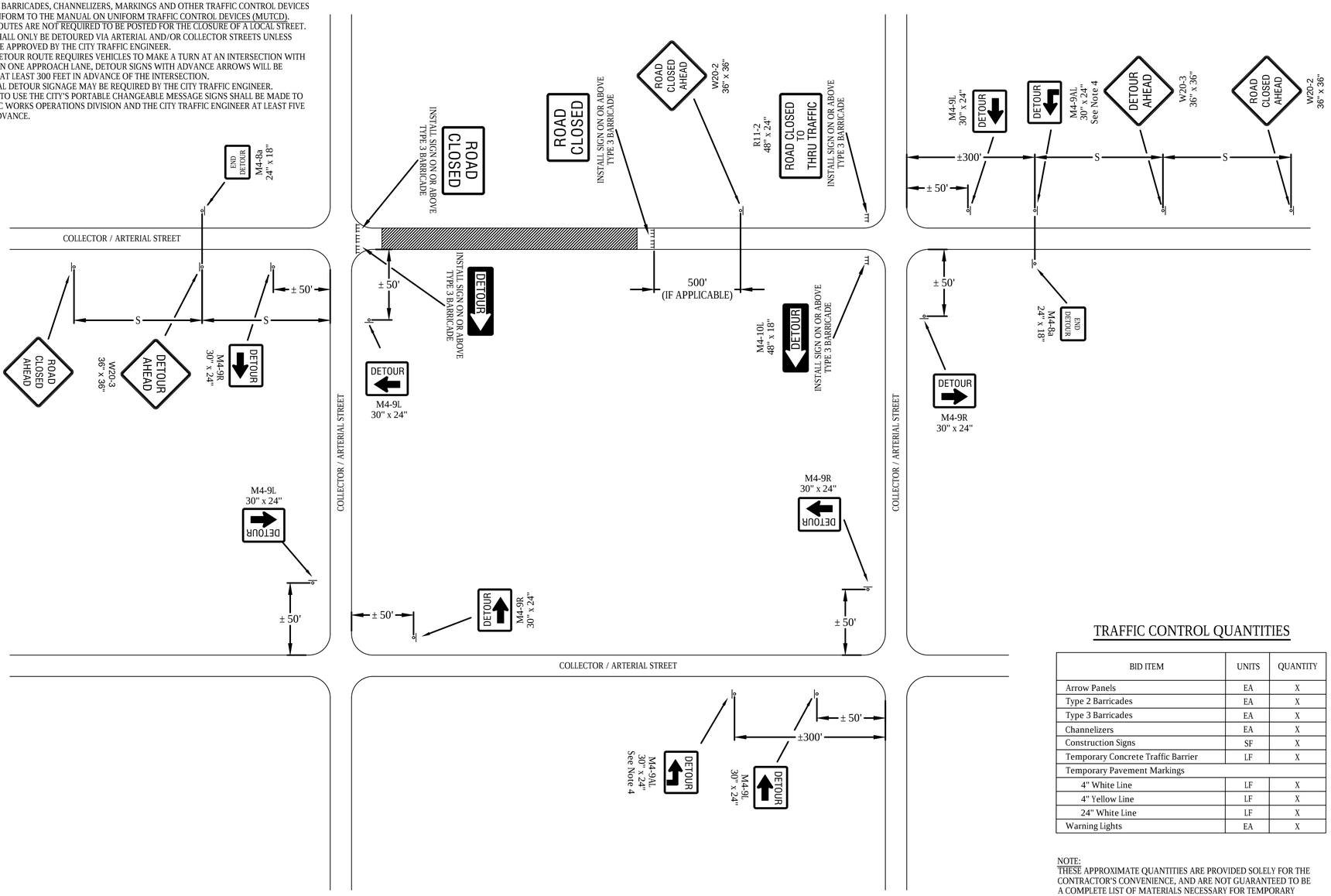
**Traffic Control Plan**

G:\12720\Civil 3D\Production Drawings\Street & Storm Plans\12720TS400.dwg Layout: 62 Temporary Traffic Control Details -- Thursday January 31, 2019, 10:02am -- Copyright 2019, George Butler Associates, Inc.

# Temporary Traffic Control Details

DETOUR GENERAL NOTES:

1. ALL SIGNS, BARRICADES, CHANNELIZERS, MARKINGS AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
2. DETOUR ROUTES ARE NOT REQUIRED TO BE POSTED FOR THE CLOSURE OF A LOCAL STREET.
3. TRAFFIC SHALL ONLY BE DETOURED VIA ARTERIAL AND/OR COLLECTOR STREETS UNLESS OTHERWISE APPROVED BY THE CITY TRAFFIC ENGINEER.
4. WHEN A DETOUR ROUTE REQUIRES VEHICLES TO MAKE A TURN AT AN INTERSECTION WITH MORE THAN ONE APPROACH LANE, DETOUR SIGNS WITH ADVANCE ARROWS WILL BE REQUIRED AT LEAST 300 FEET IN ADVANCE OF THE INTERSECTION.
5. ADDITIONAL DETOUR SIGNAGE MAY BE REQUIRED BY THE CITY TRAFFIC ENGINEER.
6. REQUESTS TO USE THE CITY'S PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE MADE TO THE PUBLIC WORKS OPERATIONS DIVISION AND THE CITY TRAFFIC ENGINEER AT LEAST FIVE DAYS IN ADVANCE.




## TRAFFIC CONTROL QUANTITIES

| BID ITEM | UNITS | QUANTITY |
|---|---|---|
| Arrow Panels | EA | X |
| Type 2 Barricades | EA | X |
| Type 3 Barricades | EA | X |
| Channelizers | EA | X |
| Construction Signs | SF | X |
| Temporary Concrete Traffic Barrier | LF | X |
| Temporary Pavement Markings | | |
| 4" White Line | LF | X |
| 4" Yellow Line | LF | X |
| 24" White Line | LF | X |
| Warning Lights | EA | X |

NOTE:
THESE APPROXIMATE QUANTITIES ARE PROVIDED SOLELY FOR THE CONTRACTOR'S CONVENIENCE, AND ARE NOT GUARANTEED TO BE A COMPLETE LIST OF MATERIALS NECESSARY FOR TEMPORARY TRAFFIC CONTROL DURING ALL CONSTRUCTION ACTIVITIES.

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DATE: 1-18-19
DESIGN BY: ###
DRAWN BY: ###
PROJECT NO.: 12720
SHEET NO.: 68
TOTAL SHEETS: 69

Bradley D. Burton
Professional Engineer
License No. 25862

Street and Storm Sewer Plans
**Paragon Star Development**
Lee's Summit, Missouri

| NO. | DATE | REVISIONS | BY | APPROVED |
|---|---|---|---|---|
| | | | | |

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

Project: . . CITY OF LEE'S SUMMIT, JACKSON COUNTY, MO
Sheet Name: TRF-2 TYPICAL DETOUR DETAIL

Drawn By: TWS
Checked By: .
Date: 6/2016
Proj. #: .

TRF-2

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# Temporary Traffic Control Details

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9801 Renner Boulevard
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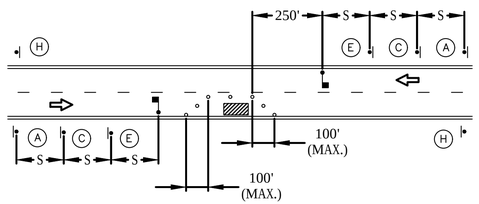
Bradley D. Burton
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Street and Storm Sewer Plans
**Paragon Star Development**
Lee's Summit, Missouri

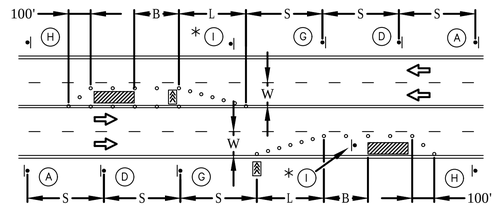
| NO. | DATE | REVISIONS | BY | APPROVED |
|---|---|---|---|---|
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## SYMBOL LEGEND

- WORK AREA
- SIGN
- BARRICADE
- DIRECTION OF TRAVEL
- CHANNELIZER
- ARROW PANEL
- FLAGGER

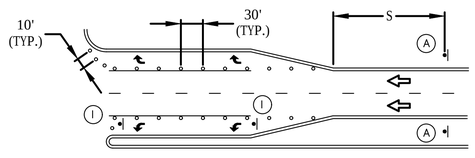



## LANE CLOSURE - TWO LANE STREET



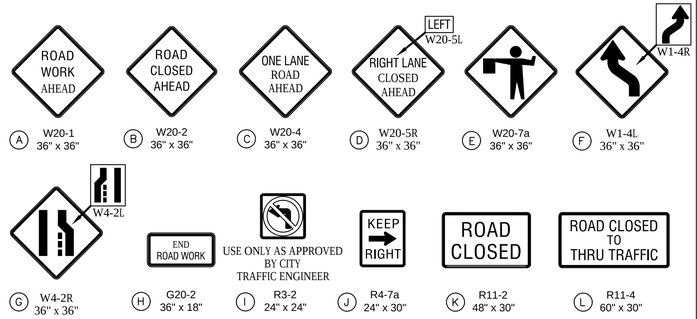

## LANE CLOSURE - FOUR LANE STREET

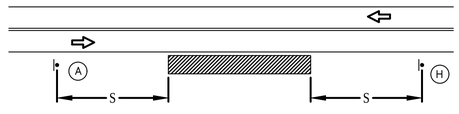
∗ INSTALL SIGNS EVERY 200 FEET THROUGHOUT THE CLOSED LANE OR AS NEEDED



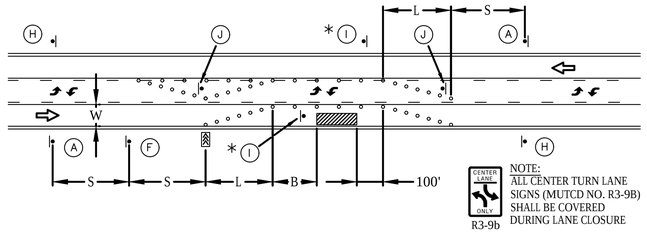

## TURN LANE CLOSURE

## SIGN LEGEND




## TYPICAL SIGNING FOR WORK ADJACENT TO THE STREET




NOTE:
ALL CENTER TURN LANE SIGNS (MUTCD NO. R3-9B) SHALL BE COVERED DURING LANE CLOSURE

## LANE CLOSURE - THREE LANE STREET

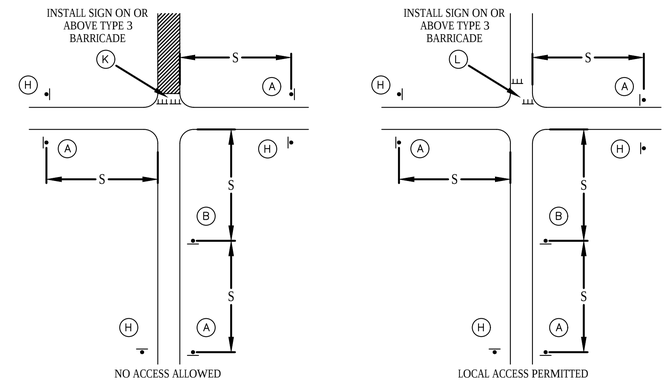
∗ INSTALL SIGNS EVERY 200 FEET THROUGHOUT THE CLOSED LANE OR AS NEEDED

| SIGN SPACING "S" | |
|---|---|
| SPEED LIMIT (MPH) | SPACING (FEET) |
| 25 | 100 |
| 30-35 | 250 |
| ≥ 40 | 350 |

| TAPER DIMENSIONS (FEET) | | | | |
|---|---|---|---|---|
| SPEED LIMIT (MPH) | MINIMUM TAPER LENGTH "L", PER LANE WIDTH "W" | | | MINIMUM NUMBER OF CHANNELIZERS |
| | 10 | 11 | 12 | |
| 25 | 105 | 115 | 125 | 6 |
| 30 | 150 | 165 | 180 | 7 |
| 35 | 205 | 225 | 245 | 8 |
| 40 | 270 | 295 | 320 | 9 |
| 45 | 450 | 495 | 540 | 13 |

| GUIDELINES FOR LENGTH OF LONGITUDINAL BUFFER SPACE "B" | |
|---|---|
| SPEED LIMIT (MPH) | LENGTH (FEET) |
| 25 | 35 |
| 30 | 55 |
| 35 | 85 |
| 40 | 120 |
| 45 | 170 |

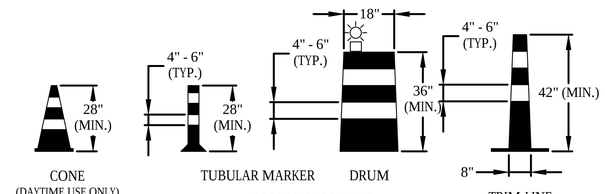
| MAXIMUM CHANNELIZER SPACING | | |
|---|---|---|
| SPEED LIMIT (MPH) | WITHIN TAPER (FEET) | OUTSIDE TAPER (FEET) |
| 25 | 25 | 50 |
| 30 | 30 | 60 |
| 35 | 35 | 70 |
| 40 | 40 | 80 |
| 45 | 45 | 90 |




## TYPICAL STREET CLOSURE

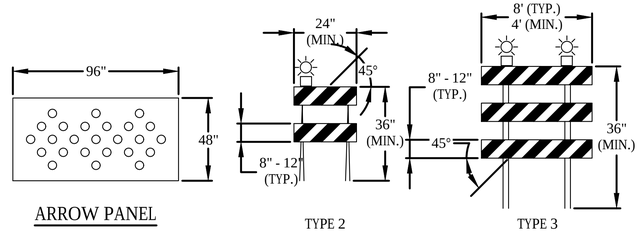
## GENERAL NOTES:

1. ALL SIGNS, BARRICADES, CHANNELIZERS, MARKINGS AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
2. ALL TRAFFIC CONTROL DEVICES SHALL BE STANDARD IN SIZE, SHAPE, COLOR, AND MESSAGE, IN GOOD CONDITION, AND RETRO-REFLECTORIZED. ALL SIGNS SHALL BE SECURELY MOUNTED WITH HEIGHT AND LATERAL LOCATION AS DESCRIBED IN THE MUTCD.
3. WARNING LIGHTS SHALL BE USED ON BARRICADES IN PLACE AT NIGHT AND ON WARNING SIGNS WHICH ALERT DRIVERS ABOUT A CHANGE IN ALIGNMENT, TRAFFIC CONTROL, LANE CLOSURE, OR ROAD CLOSURE.
4. FLAGGERS SHALL BE USED WHERE INDICATED ON THE PLANS, WHERE CONSTRUCTION VEHICLES INTERACT WITH NORMAL TRAFFIC, OR WHERE CONSTRUCTION ACTIVITIES IMPOSE A RESTRICTION ON TRAFFIC, AS DIRECTED BY THE CITY TRAFFIC ENGINEER. WHERE FLAGGERS ARE USED, ADVANCE SIGNING SHALL BE ERECTED AS SHOWN IN THE DETAILS OR AS SPECIFIED IN THE MUTCD. FLAGGERS SHALL MEET THE REQUIREMENTS IN THE MUTCD IN REGARD TO CHARACTER, TRAINING, ATTIRE, AND BEHAVIOR.
5. TRIM-LINES ARE THE CITY'S PREFERRED CHANNELIZING DEVICE. CONES MAY NOT BE USED AT NIGHTTIME.
6. TRAFFIC CONTROL DEVICES NOT IN USE OR NOT APPLICABLE SHALL BE EITHER COVERED OR REMOVED FROM THE WORK AREA.
7. THE CONTRACTOR SHALL USE BARRICADES, STREET PLATES, OR FENCING AS NEEDED TO EFFECTIVELY SHIELD PEDESTRIAN AND VEHICULAR TRAFFIC FROM EXPOSED OBJECTS, EXCAVATIONS, AND CONSTRUCTION ACTIVITIES.
8. ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS AND SIDE STREETS UNLESS NOTED OTHERWISE ON THE PLANS.
9. NO STREET SHALL BE CLOSED WITHOUT THE APPROVAL OF THE CITY TRAFFIC ENGINEER. THE CONTRACTOR SHALL NOTIFY THE CITY TRAFFIC ENGINEER AT LEAST 7 DAYS IN ADVANCE OF ANY STREET CLOSURE. IF A DETOUR ROUTE AROUND THE CLOSURE IS TO BE PROVIDED, ALL DETOUR SIGNING SHALL BE AS SHOWN ON A PLAN APPROVED BY THE CITY TRAFFIC ENGINEER.
10. CONSTRUCTION VEHICLES PARKED ALONG STREETS SHALL BE LOCATED WITHIN THE WORK AREA (TRAFFIC CONTROL) OR WHERE OTHERWISE NORMALLY PERMITTED. CONSTRUCTION MATERIALS, INCLUDING TRAFFIC CONTROL AND VEHICLES SHALL NOT RESTRICT SIGHT DISTANCE FOR VEHICLES EXITING AT STREETS OR DRIVES.
11. CONSTRUCTION MATERIALS SHALL BE KEPT OFF OF SIDEWALKS, CONSOLIDATED IN ONE LOCATION WITHIN CITY RIGHT-OF-WAY, AND REMOVED DAILY UNLESS OTHERWISE APPROVED BY THE INSPECTOR. DIRT, MUD, AND OTHER CONSTRUCTION DEBRIS ON STREETS AND SIDEWALKS SHALL BE REMOVED IMMEDIATELY.
12. THE CONTRACTOR SHALL NOT PERFORM ANY WORK THAT WILL RESTRICT VEHICULAR TRAFFIC IN ANY WAY BETWEEN THE HOURS OF 7:00 A.M. AND 9:00 A.M. OR 4:00 P.M. AND 6:00 P.M. MONDAY THROUGH FRIDAY UNLESS OTHERWISE INDICATED IN THE SPECIFICATIONS.
13. ALL TRAVEL LANES SHOULD BE AT LEAST 11 FEET WIDE UNLESS OTHERWISE AUTHORIZED BY THE CITY TRAFFIC ENGINEER. A "NARROW LANES" SIGN SHALL BE INSTALLED IN ADVANCE OF A LANE WIDTH REDUCTION TO LESS THAN 11 FEET.
14. ALL EDGE DROP-OFFS OF MORE THAN 2 INCHES AND LESS THAN 4 INCHES SHOULD BE PROTECTED BY A WEDGE OR BARRIER AND ALL EDGE DROP-OFFS GREATER THAN 4 INCHES SHALL HAVE EDGE PROTECTION (SEE TRAFFIC CONTROL SPECIFICATIONS FOR EDGE TREATMENT REQUIREMENTS).
15. THE "WORKERS" SYMBOLIC SIGN (MUTCD NO. W21-1A) MAY BE USED INSTEAD OF THE "ROAD WORK AHEAD" SIGN FOR WORK WITH A DURATION OF 12 HOURS OR LESS. THE "END ROAD WORK" SIGN IS NOT REQUIRED TO BE INSTALLED AFTER THE "WORKERS" SIGN.
16. NO TRAFFIC SIGNAL SHALL BE ALTERED OR MODIFIED IN ANY WAY WITHOUT A PLAN APPROVED BY THE CITY TRAFFIC ENGINEER.
17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TRAFFIC CONTROL DEVICES ON AN AROUND-THE-CLOCK BASIS, WHETHER OR NOT WORK IS ACTIVELY BEING PURSUED AND ANY DEFICIENCIES NOTED SHALL BE CORRECTED IMMEDIATELY.
18. THE TRAFFIC CONTROL REQUIREMENTS SHOWN ON THESE PLANS ARE MINIMUM REQUIREMENTS ONLY AND DO NOT ATTEMPT TO ADDRESS IN DEPTH THE VARIETY OF SITUATIONS THAT MAY OCCUR ONCE CONSTRUCTION HAS STARTED. IN NO WAY DO THE REQUIREMENTS SHOWN ON THESE PLANS RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY FOR SELECTING THE PROPER TRAFFIC CONTROL DEVICES AND IMPLEMENTATION PROCEDURES THAT WILL ASSURE THE SAFETY OF DRIVERS, PEDESTRIANS, AND WORKERS AT ALL TIMES.
19. SHOULD THE CONTRACTOR FAIL TO ENFORCE THE TRAFFIC CONTROL PLAN OR FAIL TO CLEAN, REPLACE OR OTHERWISE MAINTAIN THE TRAFFIC CONTROL DEVICES WHEN DIRECTED TO DO SO BY THE CITY TRAFFIC ENGINEER OR REPRESENTATIVE, THE CITY MAY TAKE ONE OR MORE OF THE FOLLOWING ACTIONS:
    - A. EMPLOY ANOTHER AGENCY TO CORRECT DEFICIENCIES IN TRAFFIC CONTROL DEVICES AND DEDUCT THE COST FROM THE CONTRACTOR'S PAY ESTIMATE.
    - B. STOP THE WORK UNTIL DEFICIENCIES ARE CORRECTED.
    - C. SUSPEND ALL PAY ESTIMATES UNTIL DEFICIENCIES ARE CORRECTED, OR
    - D. PLACE THE CONTRACTOR IN DEFAULT.




## CHANNELIZERS

NOTE:
WHITE BANDS ON BARRICADES AND CHANNELIZERS SHALL BE MADE FROM HIGH INTENSITY SHEETING MATERIAL.




## BARRICADES

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

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

Sheet Name: TRF – 1 TRAFFIC CONTROL DETAILS

Drawn By: TWS
Checked By: .
Date: 6/2016
Proj. #: .

TRF-1