

# STORM SEWER IMPROVEMENTS AND MASS GRADING FOR PARAGON STAR DEVELOPMENT

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

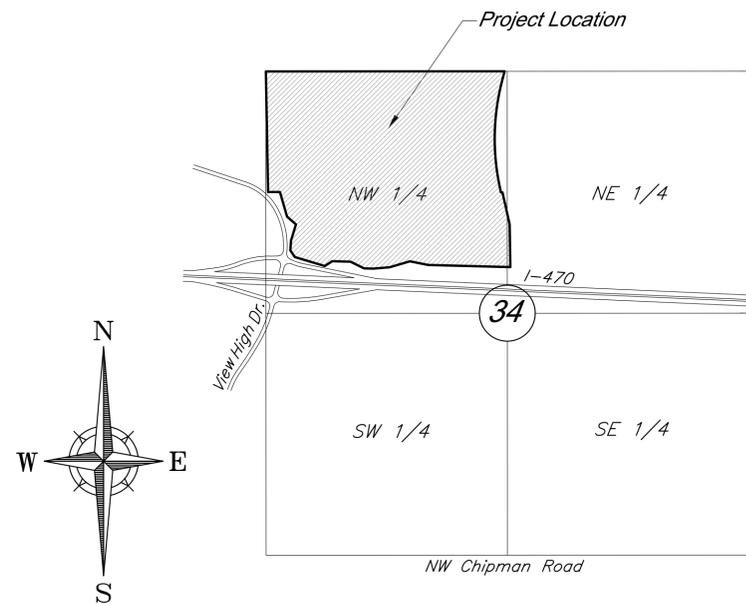
## SUMMARY OF QUANTITIES

No.	DESCRIPTION	UNIT	QUANTITY
1	Mobilization	LS	1
2	Fill	Ac.	N/A
3	Fill (Unadjusted) $\Delta$	C.Y.	459,133*
4	Cut (Unadjusted)	C.Y.	72,314
5	Sediment Fence	L.F.	5,895
6	Rock Check Dam	EA.	7
7	Straw Wattle	L.F.	2,713
8	Erosion Control Blanket (SC150)	S.Y.	15,691
9	Temporary Construction Entrance	EA.	3
10	5'x4' Curb Inlet	EA.	2
11	7'x4' Curb Inlet	EA.	1
12	8'x4' Curb Inlet	EA.	1
13	9'x4' Curb Inlet	EA.	1
14	7'x4' Junction Box	EA.	1
15	8'x4' Junction Box	EA.	1
16	30" RCP	L.F.	119.24
17	42" RCP	L.F.	102.95
18	48" RCP	L.F.	117.11
19	60" RCP	L.F.	212.54
20	72" RCP	L.F.	204.00
21	8'x8'x166' RCB	Ea.	1
22	30" RCP End Section w/ Conc. Toewall	Ea.	1
23	30" RCP Headwall w/ Conc. Toewall and Flapgate	Ea.	1
24	48" RCP End Section w/ Conc. Toewall	Ea.	1
25	60" RCP End Section w/ Conc. Toewall	Ea.	1
26	60" RCP Headwall w/ Conc. Toewall and Flapgate	Ea.	1
27	72" RCP End Section w/ Conc. Toewall	Ea.	2
28	Caged Reinforced Concrete Encasement	L.F.	110
29	Adjust Existing Sanitary Sewer Manhole	Ea.	5
30	Riprap (D50=12")	S.Y.	284
31	Riprap (Structure 300)	S.Y.	83
32	Riprap (Structure 500)	S.Y.	90
33	Seeding (Temporary)	LS	1
34	Seeding (Permanent)	Ac.	8.2
35	Retaining Wall	S.F.	1,225
36	12'x12'x134' RCB	Ea.	1

\* Base Earthwork: 459,133 CY Fill, 72,314 CY Cut  
 Topsoil Removed by Clearing Plan: 46,500 CY Fill  
 Total Fill Required: 340,319 CY

## INDEX OF SHEETS

Sht. No.	Description
1	Title Sheet
2	General Notes
3	General Layout
4-6	Grading Plan
$\Delta$ 7	Typical Fill Sections
8	Line 300 Channel Grading Plan
9	Utility Plan
$\Delta$ 10-13	Storm Sewer Enlargements
14	Storm Sewer Profiles
15	Drainage Map
16	Drainage Calculations
17-18	Construction Details
19	Headwall Details
20	Structural General Notes
21-23	RCB Details
24	Special Curb Inlet Details
25-26	Pre-Construction Erosion Control-Phase 1
27-28	Erosion Control-Phase 2
29-30	Erosion Control-Phase 3
31-32	Erosion Control Details
33	Seeding Plan
34	Stream Buffer
35	Typical Sections (for reference only)
36	Sanitary Sewer Details
$\Delta$ 37-40	View High Drive RCB Details
41	Traffic Control Detour
42-43	Traffic Control Details



VICINITY MAP  
Section 33 & 34-T48N-R32W

## UTILITY CONTACTS

Sanitary Sewers	Mr. Jeff Thorn, PE City of Lee's Summit Water Utilities 1200 SE Hamblen Road Lee's Summit, MO 64063 (816) 969-1922 email: jeff.thorn@cityofLS.net	Gas	Mr. Donnie Richards Missouri Gas Energy 7500 E 35th Terrace Kansas City, MO 64129 (816) 472-9484 Fax (816) 472-3488 email: donnie.richards@sug.com
	Mr. Jeff Shook Little Blue Valley Sewer District 21101 East 78 Highway Independence, MO 64057 (816) 285-1522 email: jshook@lbvnsd.net	Cable Television	Mr. Greg Thomas Time Warner Cable 8221 W. 119th Street Overland Park, KS 66213 (913) 643-1950 email: greg.thomas@twcable.com
	Kansas City, MO Public Works Department (816) 513-2600	Telephone	Ms. Glenda Charles AT&T 1425 Oak Street Kansas City, MO 64106 (816) 365-1669 Fax (816) 275-1109 email: gc6954@att.com
Water	Mr. Jeff Thorn, PE City of Lee's Summit Water Utilities 1200 SE Hamblen Road Lee's Summit, MO 64063 (816) 969-1922 email: jeff.thorn@cityofLS.net	Electric Service	Mr. Nathan Michael Kansas City Power & Light P.O. Box 418679 Kansas City, MO 64141 (816) 220-5210 Fax (816) 245-3623 email: Nathan.Michael@kcpl.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 1470 bridge  
spanning View High Drive.  
EL=833.80

PROJECT ENGINEER:

DATE:

APPROVED:

CITY ENGINEER:

DATE:

DEVELOPED AND OWNED BY:  
PARAGON STAR LLC  
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 RENNEN BOULEVARD  
LENEXA, KANSAS 66219  
PHONE: 913-492-0400  
FAX: 913-577-8312  
CONTACT: BRAD BURTON P.E.  
EMAIL: BBURTON@GBATEAM.COM

The information provided on this drawing conforms to construction records; it is not intended for construction, implementation or recording purposes; and it is solely based on information obtained by GBA.

Date: 4/11/23

Certified by:

Bradley D. Burton, PE

Title: Senior Associate  
Firm: GBA

"480-00 100.10", "4-00# 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

Record Drawings  
4/7/2023

**GBA**  
architects  
engineers

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

North slope grading revisions	12/1/20
$\Delta$ City Comments	3/10/18
Temporary River Crossing Repair	4/15/19
Temporary River Crossing Repair	4/11/19
Structure 700 removed from floodway	4/9/19
RFI 1	4/4/19
Removed Floodway Grading	11/29/18
City Comments	9/14/18
City Comments	8/28/18
City Comments	8/7/18
Revised Field Elevations	5/15/18
	1/10/17

## EROSION AND SEDIMENT CONTROL NOTES

The layout of erosion control best management practices (BMPs) shown on the engineering plans is intended to control erosion and minimize, if not eliminate, the transport of sediment from the disturbed areas. The Contractor shall be responsible for the evaluation of existing surface drainage patterns and for making adjustments to the BMP locations to best control erosion and minimize, if not eliminate, the transport of sediment from the disturbed areas. The following are measures to achieve the control of erosion and sediment.

1. **Stabilization Practices** – Stabilization practices are very effective at preventing erosion by shielding the soil surface from the impact of rain, slowing the velocity of runoff, holding soils in place, and increasing infiltration of runoff and allowing the soil to absorb more rainfall.
  - a. **Temporary Seeding Stabilization** – During acceptable growing periods (see Table 1 below); temporary seeding of annual vegetation with a straw mulch cover shall be used as a temporary cover until permanent vegetation is established. If there is a possibility that a vegetative cover will be required to control erosion for more than 1 year, then consider the addition of a perennial/permanent grass species as part of a seeding mixture.

Table 1. Temporary Seeding Dates and Minimum Application Rates

Seeding Dates	Temporary Seed Species	Minimum Application Rates (pure live seed lbs. per acre)	Straw Mulch (tons per acre)
Jan. 1 – Jan. 31	None	Not Applicable	2.5
Feb. 1 – May 31	Annual Ryegrass	120	1.5
June 1 – Aug. 4	None	Not Applicable	2.5
Aug. 15 – Nov. 15	Cereal/Winter Rye	120	1.5
Nov. 16 – Dec. 31	None	Not Applicable	2.5

**Seedbed Preparation** – For broadcast seeding or drilling, loosen soil to depth of 3 inches. For no till drilling, loosen soil if it is compacted. Loosen compacted, hard or crusted soil surfaces with a disk, ripper, chisel, harrow or other tillage equipment. Avoid preparing the seedbed under excessively wet conditions. For establishment and long-term growth, apply a complete fertilizer at rates recommended by soil tests or as specified in plans and specifications. If soil pH is less than 6.0, apply lime according to soil tests. Incorporate necessary lime and fertilizer to a depth of 3 to 6 inches of soil.

**Installation** – For the best results use certified seed. Apply seed uniformly using a cyclone seeder, drop-type spreader, drill, cultipacker seeder or hydroseeder. When using a drill seeder, plant rye or other grains about 1 inch deep and plant grasses no more than 1/2 inch. A vegetative straw mulch cover shall be applied over the seed mixture to help germinate and establish plant cover, control weeds, and protect seed mixture against temperature extremes. Follow straw mulch preparation and application procedures described herein.

- b. **Temporary Mulch Stabilization** – During non-growing periods, a straw mulch cover shall be applied in unseeded areas to protect against erosion until temporary or permanent vegetation is established.

**Site Preparation** – Divert runoff water from areas above the site that will be mulched. Remove stumps, roots and other debris from the construction area. Grade area as needed to permit the use of equipment for seeding, mulching and maintenance. Shape area so that it is relatively smooth.

**Application** – Spread straw mulch uniformly over the area with a power blower, hydroseeder, or by hand. No more than 25% of the ground surface should be visible after spreading. Apply straw mulch at a rate of 1.5 tons per acre as a seed cover or 2.5 tons per acre as a stand alone cover. The straw should be dry, unchopped, unweathered; free of weed seeds and rot. In areas of steep slopes or high winds, or in critical areas such as swales, mulching may need to be secured to the ground with a binder, netting, or tacking.

- c. **Permanent Seeding Stabilization** – All disturbed areas shall be permanently seeded with a cool season grass mixture as specified in the Standards and Specifications of the City of Lee's Summit, Missouri.

**Seedbed Preparation** – loosen soil to depth of 3 inches. For no till drilling, loosen soil if it is compacted. Loosen compacted, hard or crusted soil surfaces with a disk, ripper, chisel, harrow or other tillage equipment. Avoid preparing the seedbed under excessively wet conditions. For establishment and long-term growth, apply a complete fertilizer at rates recommended by soil tests or as specified in plans and specifications. If soil pH is less than 6.0, apply lime according to soil tests. Incorporate necessary lime and fertilizer to a depth of 3 to 6 inches of soil.

**Installation** – For the best results use certified seed. Apply seed uniformly using a hydroseeder. A vegetative straw mulch cover shall be applied over the seed mixture to help germinate and establish plant cover, control weeds, and protect seed mixture against temperature extremes. Follow straw mulch preparation and application procedures described in the Standards and Specifications of the City of Lee's Summit, Missouri.

### 2. Structural Practices

- a. **Silt Fence** – A temporary sediment barrier consisting of a geotextile fabric shall be installed as shown on the attached engineering plans and details. Silt fencing shall be installed to maintain sediment onsite.

#### Minimum Requirements:

**Location** – Fence should be built on a nearly level grade and at least 10 feet from the toe of the slope to provide a broad shallow sediment pool. Install on the contour, where fence can intercept runoff as a sheet flow; not located crossing channels, waterways or other concentrated flow paths; not attached to existing trees.

**Spacing of Support Posts** – 10 feet maximum for fence supported by wire; 6 feet maximum for high strength fabric without supportive wire backing. Support posts should be driven into the ground a minimum of 10 inches deep.

**Trench** – Bottom 1 foot of fence must be buried minimum of 4 inches deep.

- b. **Inlet Protection** – When installation of the storm drainage system is complete, gravel curb inlet sediment traps will be placed at the drainage system inlets. Construction shall be in accordance with attached engineering plans and details.
- c. **Stockpiles** – The toe of stockpiles shall be placed a minimum of 10 feet from erosion control measures. If stockpiles are to remain for more than 14 days, they shall be temporarily stabilized with vegetative mulch and temporary seeding.

3. **Maintenance** – The contractor shall repair all erosion control measures or re-seed areas that are disturbed or damaged as a result of weather or other situations, within 2 days after the occurrence. This will include all areas bare of vegetation.

## EROSION CONTROL GENERAL NOTES

1. The Contractor is responsible for erosion control during construction and until the Owner and City accepts the work as complete. The erosion control measures shown on this plan are a typical minimum installation. The Contractor shall be responsible for adjusting or adding to these measures as necessary during the phasing of the construction to assure adequate control.
2. Clearing and grubbing within 50' of a defined drainage course should be avoided when possible. Where changes to a defined drainage course occur, work should be delayed until all materials and equipment necessary to protect and complete the drainage change are on site. Changes shall be completed as quickly as possible once the work has been initiated. The area impacted by the construction activities shall be revegetated or protected from erosion as soon as possible, areas within 50' of a defined drainage ways should be recontoured as needed or otherwise protected within five (5) working days after grading has ceased.

3. Where soil disturbing activities cease in an area for more than 14 days, the disturbed areas shall be protected from erosion by stabilizing the area with mulch or other similarly effective erosion control measures. If the slope of the area is greater than 3:1 or if the slope is greater than 3% and greater than 150 feet in length, then the disturbed areas shall be protected from erosion by stabilizing the area with mulch or other similarly effective erosion control measures if activities cease for more than seven (7) days.

4. Existing vegetation shall be preserved to the extent and where practical. In no case shall disturbed areas remain without vegetative ground cover for a period in excess of 60 days.

5. Additional site management practices which shall be adhered to during the construction process shall include:
  - Solid and hazardous waste management including providing trash containers and regular site clean up for proper disposal of solid waste such as building and construction material, product/material shipping waste, food containers and cups, and providing containers for the proper disposal of waste paints solvents, and cleaning compounds.
  - Provisions of portable toilets for proper disposal of sanitary sewage.
  - Storage of construction materials away from drainage courses and low areas.
  - Installation of containment berms and use of drip pans at petroleum product and liquid storage tanks and containers.

6. All disturbed areas shall be seeded, fertilized and mulched, or sodded, in accordance with the Standards and Specifications adopted by the City of Lee's Summit, Missouri and good engineering practices. This shall be completed within fourteen (14) days after completing the work, in any area. If this is outside of the seeding period, silt barriers or other similarly effective measures shall be provided until such time that the areas can be seeded.
7. All erosion control measures, temporary or permanent, require maintenance to preserve their effectiveness. All erosion control devices shall be inspected immediately after each heavy rainstorm and at least daily during prolonged rainfall. Any required repairs should be made immediately. All costs associated with the repair work including related incidentals will be the contractor's responsibility and shall be included in the Contractor's bid for the proposed work. Only after the project is complete and accepted can the erosion control be removed.
8. Seeding shall be done before the proposed seedbed becomes eroded, crusted over, or dried out and shall not be done when the ground is frozen, or covered with snow. The seed shall comply with requirements of the Missouri Seed Law and the Federal Seed Act. Also, it shall contain no seed of any plant on the Federal Noxious Weed List. Other weed seed shall not exceed one percent by weight of mix.

9. During the dates Dec. 15 through May 30 ALL lime, fertilizer, seed, and mulch shall be applied to finished slopes of disturbed areas. During the months of June, July, October, and November 1st through December 15th, lime, fertilizer, seed, and mulch shall be applied at the following rates:
  - Lime – 100% of the specified quantity
  - Fertilizer – 75% of the specified quantity
  - Seed – 50% of the specified quantity
  - Mulch – 100% of the specified quantity
10. Mulch shall be Vegetative type, cereal straw form stalks of oats, rye, or barley, or approved equal. The straw shall be free of prohibited weed seed and relatively free of all other noxious and undesirable seed. Apply straw mulch at a rate of 1.5 tons per acre as a seed cover or 2.5 tons per acre as a stand alone cover. Mulch shall be embedded by a mulch anchoring tool or disk type roller having flat serrated disks spaced not more than 10 inches apart and cleaning scrapers shall be provided.

11. Contractor is responsible for obtaining all required permits, paying all fees, and for otherwise complying with all applicable regulations governing the work.
12. No work shall be completed within the existing floodway until the CLOMR has been issued.
13. 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.
14. All work within KCMO city limits shall adhere to KCMO Site disturbance requirements.

15. 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.
16. 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.
17. The Contractor shall sod all disturbed areas within the Public Street Right-of-Way unless otherwise noted in the plans.
18. No trees shall be damaged or removed without prior authorization from owner unless otherwise shown on this plan.

19. Slopes shall be constructed to a maximum slope of 3:1 (Horiz:Vert) unless specifically noted otherwise in the referenced Geotechnical reports.
20. Refer to "Geotechnical Engineering Report – Paragon Star Roadways and Borrow Site" Dated December 8, 2016 – along with Addendum #1 dated 1/4/17, and "Geotechnical Engineering Report – Soccer Fields" Dated July 27, 2016 prepared by Terracon Consultants, Inc. for grading recommendations and boring logs. All earthwork shall conform to the recommendations of the Reports.

21. Unless otherwise noted, all spot elevations and contours are shown to "finish" grade surface.
22. 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).
23. Existing contours depicted on plans do not reflect topsoil root zone stripping completed under tree clearing scope. Existing grade will be approximately 4.5" average depth lower than shown. Refer to "Tree Clearing Plans for Paragon Star Development" for details.
24. Earthwork Quantities shown on plans do not account for stripped topsoil from previously issued Tree Clearing Plans.
25. Earthwork for this phase of development is intended to balance. Contractor to cut only enough fill material from the borrow source at the north end of the project as required to accomplish the fills shown on this plan set.
26. All Permanent seeded shall be dressed with 12" topsoil and permanent seed. All other disturbed areas shall be seeded with the temporary seed mix.
27. Shale fill shall be capped with a minimum of 24" of clay material.
28. All Soccer fields shall be provided with a minimum 24" of clay above shale or 3" minus material.
29. Final tolerance for graded areas shall be +/- 0.2'.
30. The west borrow area at the NW portion of the site is considered the primary borrow area and shall be cut and graded to the contours shown. Cuts shown in this area must be performed to completion before utilizing the eastern borrow area for the balance of fill required on the project.
31. Earthwork quantities shown on the plans assume 15% shrinkage for all fill material. The Contractor shall perform the fill to achieve the grades shown on the drawings. The determination of the actual adjustment of fill required due to shrink/swell of various materials shall be the responsibility of the Contractor.

32. All Manholes, Catch Basins, Utility Valves, Meter Pits, and other utility equipment shall be adjusted or rebuilt to grade as required.
33. 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.

#### Storm Sewer:

34. All RCP shall be Class III.
35. Pipe Lengths are called out from center of structure to center of structure.
36. 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 the Contractor to make minor grading revisions along roads or between building pads to improve drainage during construction, with prior approval of the engineer.
37. Prior to ordering precast storm sewer structures, Contractor shall provide shop drawings to the Engineer for review and approval.

"100-00 100.10", "1-00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

The information provided on this drawing conforms to construction records; it is not intended for construction, implementation or recording purposes; and it is solely based on information obtained by GBA.

Date: 4/11/23

Certified by: Bradley D. Burton  
Title: Senior Associate  
Firm: GBA

**GBA**  
architects  
engineers

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

DATE: 4/15/19

DESIGN BY: CEL

DRAWN BY: DRV

PROJECT NO.: 12720

SHEET NO.

TOTAL SHEETS

2

43

Bradley D. Burton  
Professional Engineer  
License No. 25862

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
	5/15/18	Revised Field Elevations		
	8/7/18	City Comments		
	8/28/18	City Comments		
	9/14/18	City Comments		
	10/10/18	Removed Floodway Grading		
	11/29/18			
	4/11/19	Temporary River Crossing Repair		
	4/15/19	Temporary River Crossing Repair		
	3/10/20	City Comments		
	12/1/20	North slope grading revisions		
	2/4/21	Retaining Wall Station & Offsets		
	3/11/21	Line 300 Wingwall Revision		
	3/24/21	Headwall Detail		

#### General Notes:

1. All Construction shall conform to the City of Lee's Summit Technical Specifications 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. 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 City standards and to the City's satisfaction.
5. All work shall be confined within easements and/or construction limits as shown on the plans.
6. 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.
7. All trash and debris identified on site shall be properly handled and disposed of in accordance with state of Missouri regulations.
8. All measurements on these plans are horizontal distances, not slope distances.
9. This project will include numerous activities occurring on site including storm sewer, sanitary sewer, grading, erosion control, etc. Contractor shall coordinate his work with other contractors on site.
9. Initial construction staking will be performed by GBA – Refer to Bid Documents.
10. All concrete shall be KCMOB 4,000 psi.

#### Permitting:

11. Contractor is responsible for obtaining all required permits, paying all fees, and for otherwise complying with all applicable regulations governing the work.
12. No work shall be completed within the existing floodway until the CLOMR has been issued.
13. 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.
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#### Utility:

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33. 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.

#### Storm Sewer:

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35. Pipe Lengths are called out from center of structure to center of structure.
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**General Notes**

Architect: 00212, Professional Engineer: 000133, Professional Land Surveyor: 000059  
 Tuesday, May 09, 2023, 8:45am -- Copyright 2023, George Butler Associates, Inc.  
 C:\12720\Civil\_3D\Production Drawings\Mass Grading\Lee's Summit\127200200.dwg Layout: 3 General Layout

**PROJECT BENCHMARK:**

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

"±0.00 100.10", "±0.00% 1.15%  
 slope", or "8-inch HDPE PVC pipe"  
 are all typical examples of revisions  
 that indicate that design data has  
 been replaced with "as-built"  
 information. All other data is as  
 designed and has not been field  
 verified.

The information provided on this  
 drawing conforms to construction  
 records; it is not intended for  
 construction, implementation or  
 recording purposes; and it is solely  
 based on information obtained by  
 GBA.  
 Date: 4/11/23  
 Certified by: Bradley D. Burton  
 Title: Senior Associate  
 Firm: GBA

		DATE: 4/15/19 DESIGN BY: CEL DRAWN BY: DRV PROJECT NO.: 12720
9801 Renner Boulevard Lenexa, Kansas 66219 913.492.0400 www.gbateam.com		SHEET NO.: <b>3</b> TOTAL SHEETS: <b>43</b>

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
 Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
5/15/18		Revised Field Elevations		
8/7/18		City Comments		
8/28/18		City Comments		
9/14/18		City Comments		
10/10/18		Removed Floodway Grading		
11/29/18				
4/11/19		Temporary River Crossing Repair		
4/15/19		Temporary River Crossing Repair		
3/10/20		City Comments		
12/1/20		North slope grading revisions		
2/4/21		Retaining Wall Station & Offsets		
3/11/21		Line 300 Wingwall Revision		
3/24/21		Headwall Detail		

**Boundary Description:**

All that part of the Northwest Quarter of Section 34, Township 48 North, Range 32 West, of the 5th P.M., and all of GRAHAM COMMERCIAL CENTER, a subdivision in the in the City of Lee's Summit, Jackson County, Missouri, being more particularly described as follows:

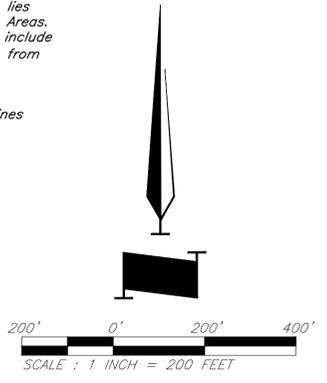
**BEGINNING** at the Northwest corner of said Northwest Quarter of Section 34; thence South 86°33'45" East, along the North line of said Northwest Quarter, a distance of 2611.91 feet, to a point on the Westerly Right-of-Way line of Union Pacific Railroad, as now established; thence South 18°46'13" West, departing said North line, along said Westerly Right-of-Way line, a distance of 76.95 feet, to a point of curvature; thence Southwesterly and Southeasterly, continuing along said Westerly Right-of-Way line, along a curve to the left, having a radius of 2508.01 feet, and a central angle of 28°06'45", a distance of 1230.57 feet, to a point of tangency; thence South 09°20'32" East, continuing along said Westerly Right-of-Way line, a distance of 30.31 feet, to a point on the South line of the North half of said Northwest Quarter; thence South 86°26'21" East, continuing along said Westerly Right-of-Way line, and along said South line of the North half of the Northwest Quarter, a distance of 16.41 feet; thence South 09°20'32" East, departing said South line of the North half of the Northwest Quarter, continuing along said Westerly Right-of-Way line, a distance of 354.98 feet, to a point on the East line of said Northwest Quarter; thence South 02°29'17" West, continuing along said Westerly Right-of-Way line, and along said East line of the Northwest Quarter, a distance of 468.48 feet, to a point on the North Right-of-Way line of Interstate 470, as now established; thence North 85°05'37" West, departing said Westerly Right-of-Way line, along said North Right-of-Way line of Interstate 470, a distance of 899.87 feet; thence North 75°10'03" West, continuing along said North Right-of-Way line, a distance of 203.04 feet; thence South 77°15'22" West, continuing along said North Right-of-Way line, a distance of 228.93 feet, to a point on the East line of the Southwest Quarter of said Northwest Quarter, said point also being the Southeast corner of said GRAHAM COMMERCIAL CENTER; thence continuing South 77°15'22" West, continuing along said North Right-of-Way line, and along the South line of said subdivision, a distance of 1.94 feet; thence South 88°33'58" West, continuing along said North Right-of-Way line, and along said South line of said subdivision, a distance of 181.11 feet; thence North 85°01'31" West, continuing along said North Right-of-Way line, and said South line of said subdivision, a distance of 100.18 feet; thence North 60°06'43" West, continuing along said North Right-of-Way line, and said South line of said subdivision, a distance of 165.44 feet; thence North 85°08'16" West, continuing along said North Right-of-Way line, and said South line of said subdivision, a distance of 199.96 feet; thence South 60°28'02" West, continuing along said North Right-of-Way line, and said South line of said subdivision, a distance of 97.23 feet; thence North 69°50'05" West, continuing along said North Right-of-Way line, and said South line of said subdivision, a distance of 342.03 feet, to the Southwest corner of said subdivision; thence North 30°28'52" West, continuing along said North Right-of-Way line, and along the West line of said subdivision, a distance of 87.88 feet; thence North 07°21'08" East, continuing along said North Right-of-Way line and it's transition to the East Right-of-Way line of View High Drive, as now established, and said West line of said subdivision, a distance of 106.53 feet; thence North 20°25'39" East, departing said West line of said subdivision, continuing along said East Right-of-Way line of View High Drive, a distance of 185.39 feet; thence North 45°30'34" West, continuing along said East Right-of-Way line, a distance of 129.40 feet; thence North 12°40'32" West, continuing along said East Right-of-Way line, a distance of 278.96 feet, to a point on said South line of the North half of the Northwest Quarter; thence North 86°26'21" West, continuing along said East Right-of-Way line, and along said South line of the North half of the Northwest Quarter, a distance of 130.00 feet, to the Southwest corner of said North half of the Northwest Quarter; thence North 02°25'47" East, along the West line of said Northwest Quarter, a distance of 1316.45 feet, to the POINT OF BEGINNING, containing 5,217,462.56 square feet or 119.78 acres, more or less.

**FLOODPLAIN NOTE:**

According to FEMA Flood Insurance Rate Map (FIRM) Community Panel No. 29095C0404G, effective Date 1/20/17, the tract lies partially within an area designated as Special Flood Hazard Areas. Special Flood Hazard Areas defined on portions of the site include regulatory floodway, Zone AE (with depths identified on site from 810 to 811), and 0.2% Annual Chance Flood Hazard Areas. Existing Floodway/Floodplain refers to lines established on 1/20/2017 maps, proposed Floodway/Floodplain refers to lines established by the FEMA CLOMR dated 2/14/2020, Case No. 20-70-0520R.

**Total Disturbed Area:**

61.10 Ac.



**General Layout**

**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

**Legend**

- Proposed Contour
- Existing Contour
- Proposed Spot Grade
- Drainage Flow Arrow
- Drainage Swale
- Geotechnical Boring Location
- Grading Limits
- Exist. Construction Fence for Tree Protection (to be maintained)
- Exist. Sediment Fence (to be maintained)

**Swale Note 1:**  
 Q=6.85 CFS  
 V=1.49 FT/S  
 Shear Stress=0.13 PSF  
 Acceptable for all forms of vegetation

**Swale Note 2:**  
 Q=5.86 CFS  
 V=1.07 FT/S  
 Shear Stress=0.07 PSF  
 Acceptable for all forms of vegetation

**CAUTION!**

Numerous Utilities on Site. Contractor to verify location and elevation of all utilities prior to commencing construction.

"100:00 100.10", "±0.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

The information provided on this drawing conforms to construction records; it is not intended for construction, implementation or recording purposes; and it is solely based on information obtained by GBA.  
 Date: 4/11/23  
 Certified by: Bradley D. Burton  
 Title: Senior Associate  
 Firm: GBA



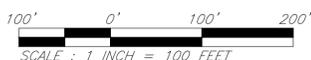
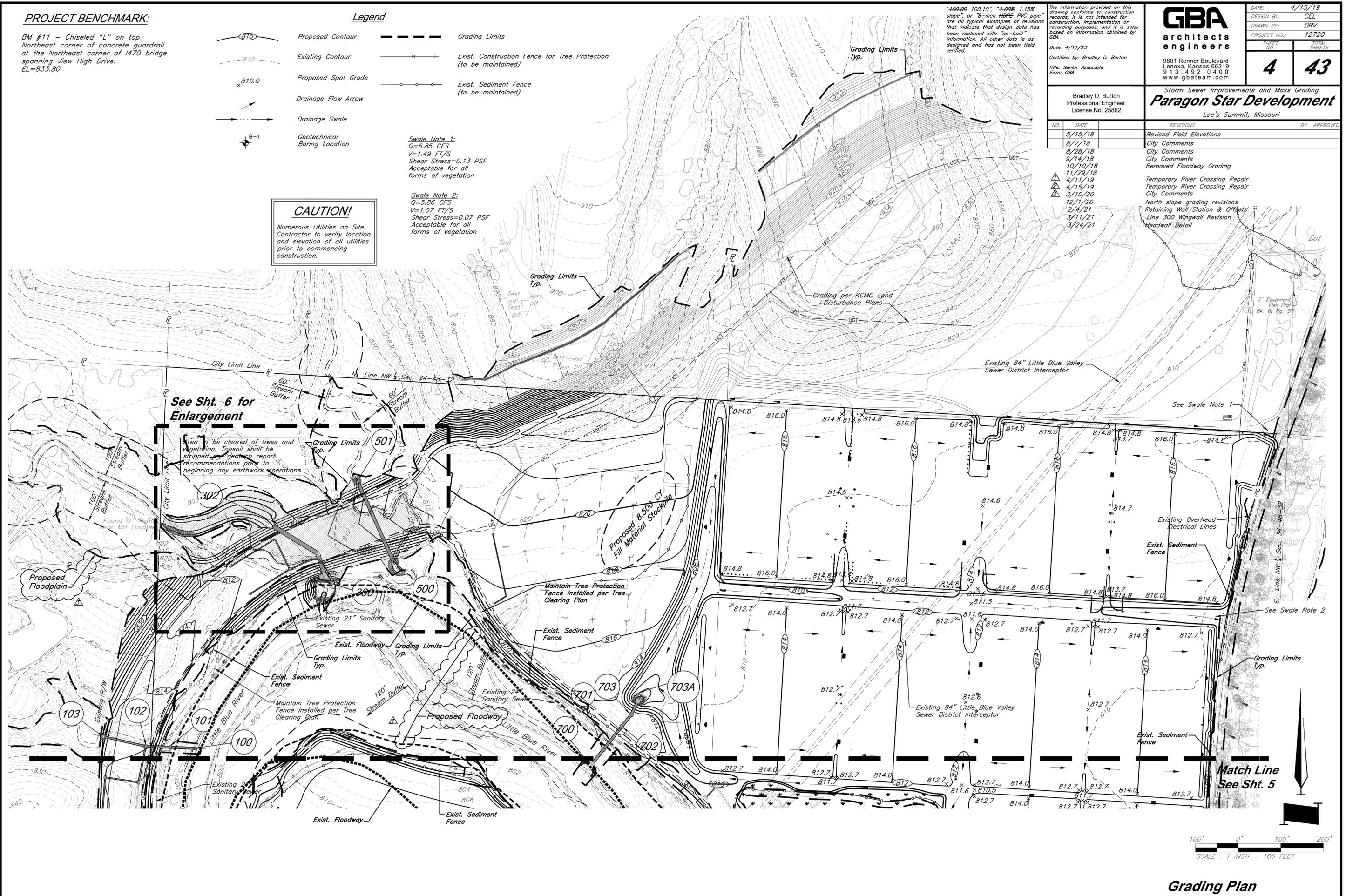
9801 Renner Boulevard  
 Lenexa, Kansas 66219  
 913.492.0400  
 www.gbateam.com

DATE:	4/15/19
DESIGN BY:	CEL
DRAWN BY:	DRV
PROJECT NO.:	12720
SHEET NO.:	4
TOTAL SHEETS:	43

Bradley D. Burton  
 Professional Engineer  
 License No. 25862

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
 Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
5/15/18		Revised Field Elevations		
8/7/18		City Comments		
8/28/18		City Comments		
9/14/18		City Comments		
10/10/18		Removed Floodway Grading		
11/29/18				
4/11/19		Temporary River Crossing Repair		
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12/1/20		North slope grading revisions		
2/4/21		Retaining Wall Station & Offsets		
3/11/21		Line 300 Wingwall Revision		
3/24/21		Headwall Detail		



**Grading Plan**

Architect: 00212, Professional Engineer: 000133, Professional Land Surveyor: 000059  
 C:\12720\Civil\_3D\Production Drawings\Mass Grading\Lee's Summit\12720-4000.dwg Layout: 4 Grading Plan -- Tuesday, May 09, 2023, 8:46am -- Copyright 2023, George Buller Associates, Inc.

**PROJECT BENCHMARK:**

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

**Legend**

- Proposed Contour
- Existing Contour
- Proposed Spot Grade
- Drainage Flow Arrow
- Drainage Swale
- Geotechnical Boring Location
- Grading Limits
- Exist. Construction Fence for Tree Protection (to be maintained)
- Exist. Sediment Fence (to be maintained)

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Certified by: Bradley D. Burton  
Title: Senior Associate  
Firm: GBA

**GBA**  
architects  
engineers

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Lenexa, Kansas 66219  
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www.gbateam.com

DATE:	4/15/19
DESIGN BY:	CEL
DRAWN BY:	DRV
PROJECT NO.:	12720
SHEET NO.:	5
TOTAL SHEETS:	43

Bradley D. Burton  
Professional Engineer  
License No. 25862

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
5/15/18		Revised Field Elevations		
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3/24/21		Headwall Detail		

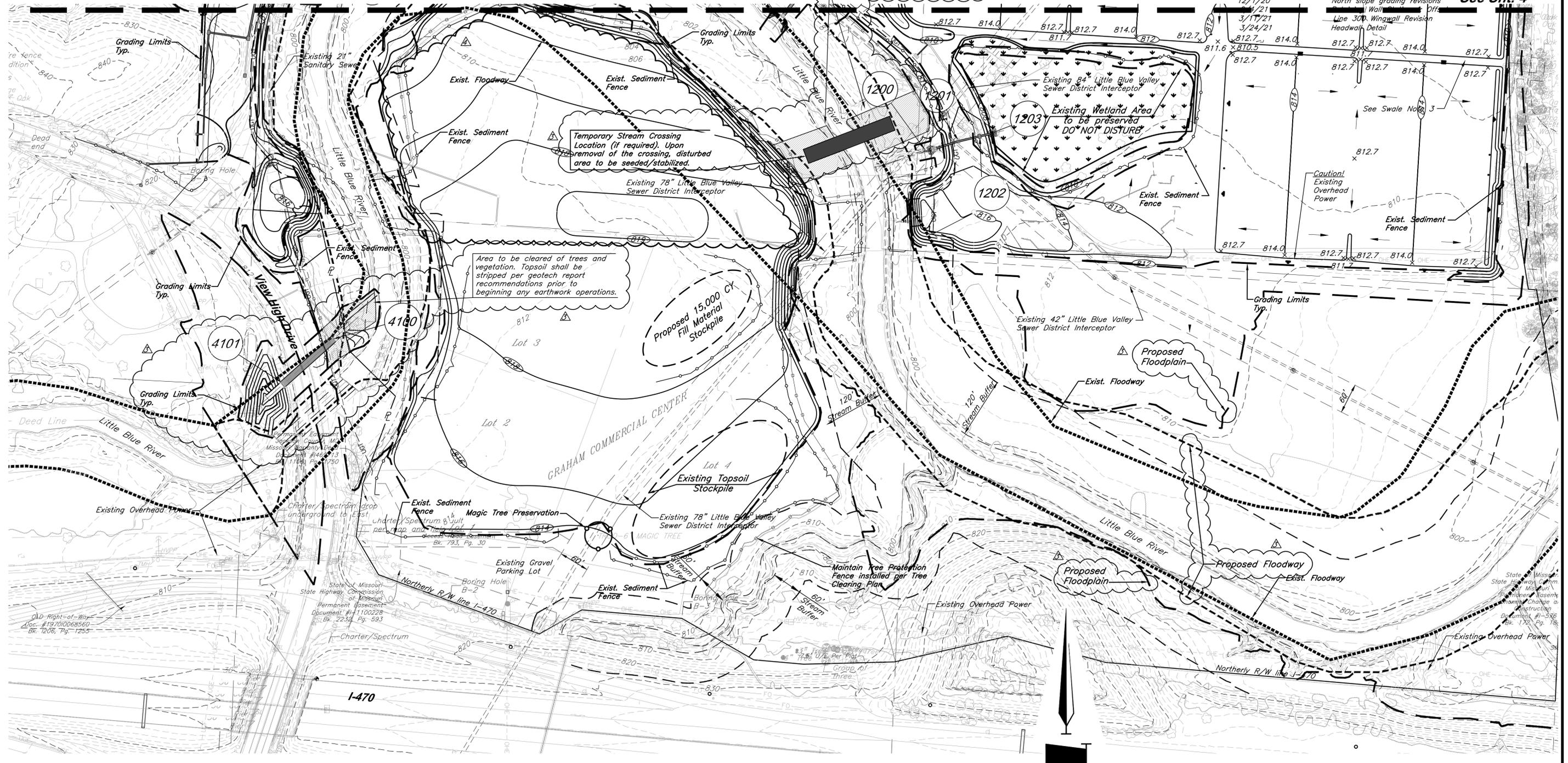
**NOTE:**  
No fill may be placed within the existing floodway until storm line 4100 is complete.

**CAUTION!**  
Numerous Utilities on Site. Contractor to verify location and elevation of all utilities prior to commencing construction.

Area to be cleared of trees and vegetation. Topsoil shall be stripped per geotech report recommendations prior to beginning any earthwork operations.

Area to be cleared of trees and vegetation. Topsoil shall be stripped per geotech report recommendations prior to beginning any earthwork operations.

**Swale Note 3:**  
Q=5.86 CFS  
V=1.07 FT/S  
Shear Stress=0.07 PSF  
Acceptable for all forms of vegetation



**Match Line**  
See Sht. 4

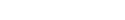
Architect: 00212, Professional Engineer: 000133, Professional Land Surveyor: 000059  
C:\12720\Civil\_3D\Production Drawings\Mass Grading\Lee's Summit\12720-4000.dwg Layout: 5 Grading Plan -- Tuesday May 09, 2023, 8:46am -- Copyright 2023, George Butler Associates, Inc.

**Grading Plan**

**PROJECT BENCHMARK:**

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

**Legend**

-  Proposed Contour
-  Existing Contour
-  Proposed Spot Grade
-  Drainage Flow Arrow
-  Drainage Swale
-  Geotechnical Boring Location
-  Grading Limits
-  Exist. Construction Fence for Tree Protection (to be maintained)
-  Exist. Sediment Fence (to be maintained)

"+0.00 100.10", "+.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

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Date: 4/11/23  
 Certified by: Bradley D. Burton  
 Title: Senior Associate  
 Firm: GBA

**GBA**  
 architects  
 engineers

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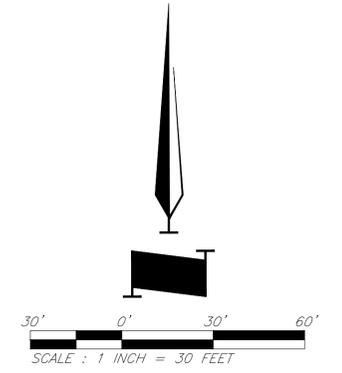
DATE: 4/15/19  
 DESIGN BY: CEL  
 DRAWN BY: DRV  
 PROJECT NO.: 12720

SHEET NO.	TOTAL SHEETS
6	43

Bradley D. Burton  
 Professional Engineer  
 License No. 25862

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
 Lee's Summit, Missouri

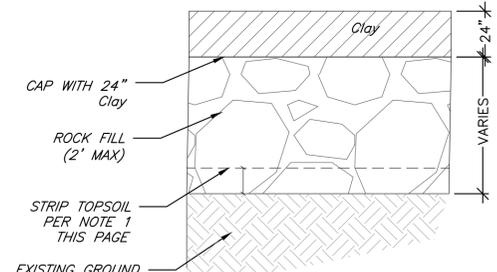
NO.	DATE	REVISIONS	BY	APPROVED
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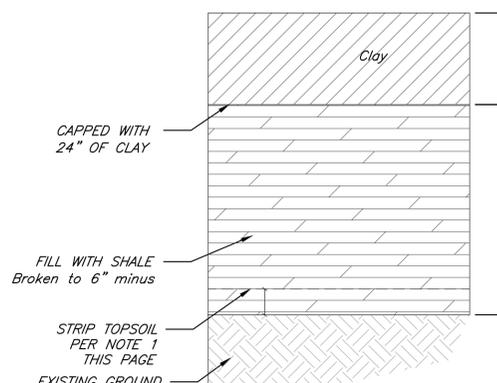
**Grading Plan**

Architect: 00212, Professional Engineer: 000133, Professional Land Surveyor: 000059  
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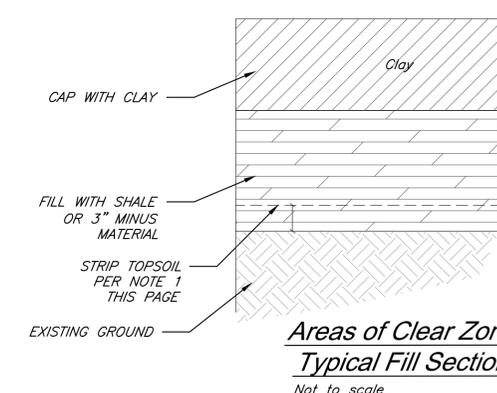
Architect 00212, Professional Engineer 000133, Professional Land Surveyor 000059  
 Architect 00212, Professional Engineer 000133, Professional Land Surveyor 000059  
 Copyright 2023, George Buller Associates, Inc.  
 Tuesday, May 09, 2023, 8:47am  
 Layout: 7 Typical Fill Sections  
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 G:\12720\Civil\_3D\Production Drawings\Mass Grading\Lee's Summit\12720C2500.dwg



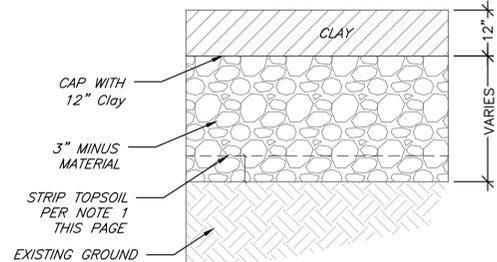
**Areas of Future Pavement  
Typical Rock Fill Section**  
Not to scale



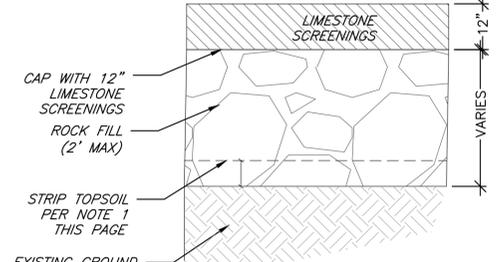
**Areas of Future Pavement  
Typical Shale Fill Section**  
Not to scale



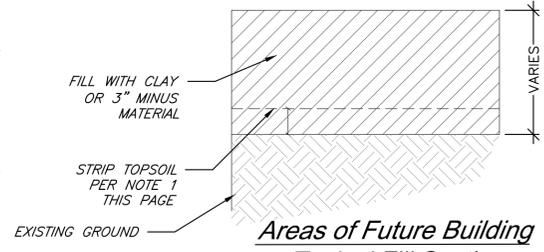
**Areas of Clear Zone  
Typical Fill Section**  
Not to scale



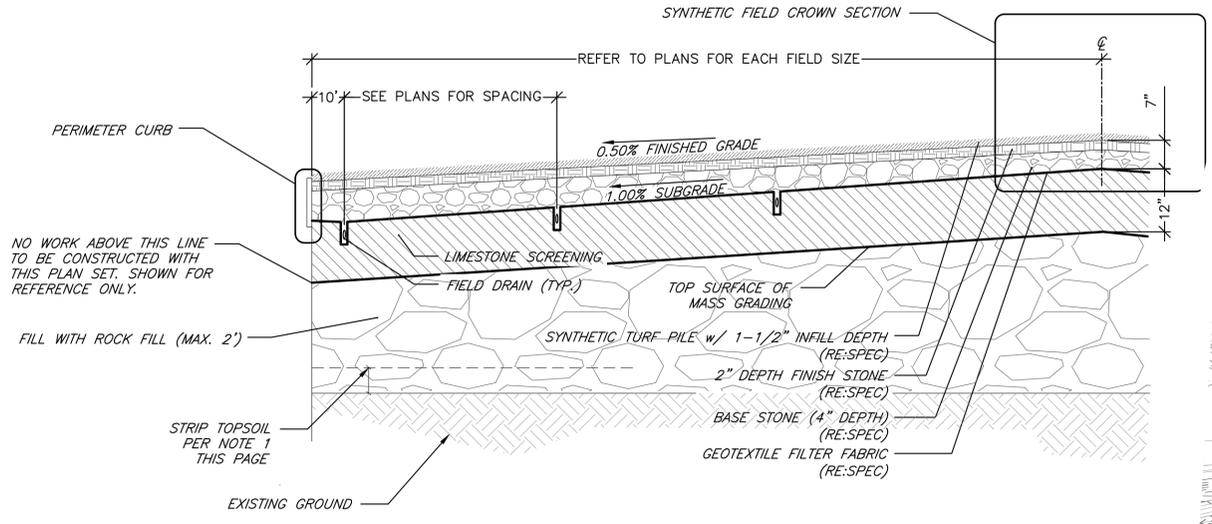
**Areas of Future Pavement  
Typical 3\"/>
 Not to scale**



**Areas of Future Pavement  
Typical Rock Fill Section**  
Not to scale



**Areas of Future Building  
Typical Fill Section**  
Not to scale



**Athletic Field Area - Typical Fill Section**  
Not to scale

**Notes:**

- All areas shall be stripped of topsoil and proofrolled prior to any fill placement
- Rock fill shall contain sufficient clay and finer material to completely fill voids in rock fragments.
- Rock fill shall contain no fragments grater than 2'
- Rock fill shall be capped with min 12" depth of limestone screenings. Rock fill areas outside fields may be capped with 12" depth, MODOT Type 5, or 3" minus material.
- Depth of screenings on shall be ajusted at the edge of the fields if the depth of the trenches for the drains installed in the field exceeds 12". Clarkson and the field installer should verify.
- Limestone screenings capping rock fill should not contain shall or clay.
- Subgrade consisting of limestone screenings shall be graded to drain. Any areas ponding water shall be addressed immediately.
- No construction traffic shall be allowed on subgrades constructed of limestone screenings until time of pavement or turf construction.
- Subgrade shall be proofrolled within 48 hours prior to pavement or field construction. Subgrades to be re-evaluated is weather affects subgrades prior to construction.
- Information shown on this sheet is based on Geotechnical reports provided by Terracon and Olsson Engineering.

**Legend**

- Areas of Future Pavement-Fill with Shale topped with 24" Clay, Rock Fill (2' max. capped with 12" Limestone screenings), or 3" Minus material topped with 12" Clay
- Clear Zone-Fill with Shale or 3" Minus material, top with 24" Clay
- Areas of Future Building-Fill with Clay or 3" Minus material
- Athletic of Field Area-Fill with Rock Fill (max. 2') cap with 12" Limestone Screenings

**NOTE:**  
Fill placement shall be placed in accordance with Fill Placement Testing Plan Narrative, Dated March 24, 2020.

**NOTE:**  
No fill may be placed within the existing floodway until storm line 4100 is complete.

"+00.00 100.10", "+.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

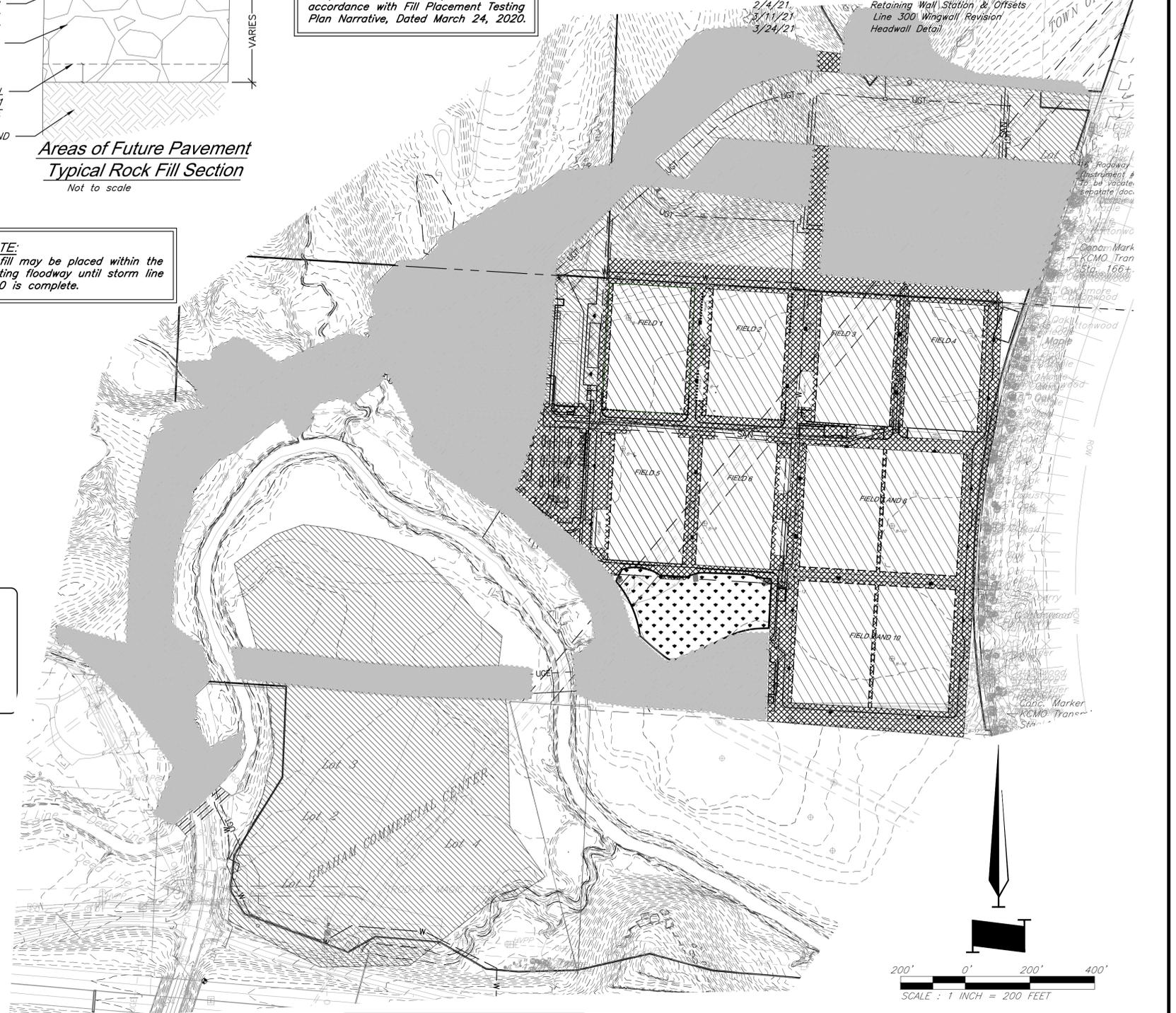
The information provided on this drawing conforms to construction records; it is not intended for construction, implementation or recording purposes; and it is solely based on information obtained by GBA.  
Date: 4/11/23  
Certified by: Bradley D. Burton  
Title: Senior Associate  
Firm: GBA

**GBA**  
architects  
engineers  
9801 Renner Boulevard  
Lenexa, Kansas 66219  
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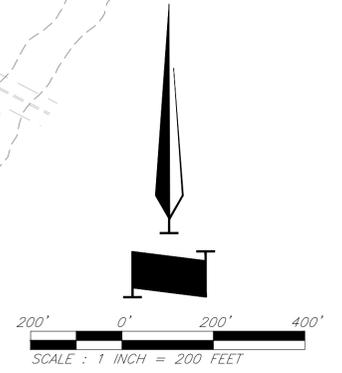
DATE: 4/15/19  
DESIGN BY: CEL  
DRAWN BY: JRH  
PROJECT NO.: 12720  
SHEET NO.: 7  
TOTAL SHEETS: 43

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
5/15/18		Revised Field Elevations		
8/7/18		City Comments		
8/28/18		City Comments		
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3/11/21		Line 300 Wingwall Revision		
3/24/21		Headwall Detail		



FOR INFORMATION ONLY



**Typical Fill Sections**

Architect: 00212, Professional Engineer: 000133, Professional Land Surveyor: 000059  
 C:\12720\Civil\_3D\Production Drawings\Mass Grading\Lee's Summit\12720-4001.dwg Layout: 8 Line 300 Channel Grading Plan -- Tuesday, May 09, 2023, 8:48am -- Copyright 2023, George Butler Associates, Inc.

"100.00 100.10", "±.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

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 Date: 4/11/23  
 Certified by: Bradley D. Burton  
 Title: Senior Associate  
 Firm: GBA

<b>GBA</b> architects engineers 9801 Renner Boulevard Lenexa, Kansas 66219 913.492.0400 www.gbateam.com		DATE: 4/15/19 DESIGN BY: CEL DRAWN BY: DRV PROJECT NO.: 12720 SHEET NO.: 8 TOTAL SHEETS: 43
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Bradley D. Burton  
 Professional Engineer  
 License No. 25862

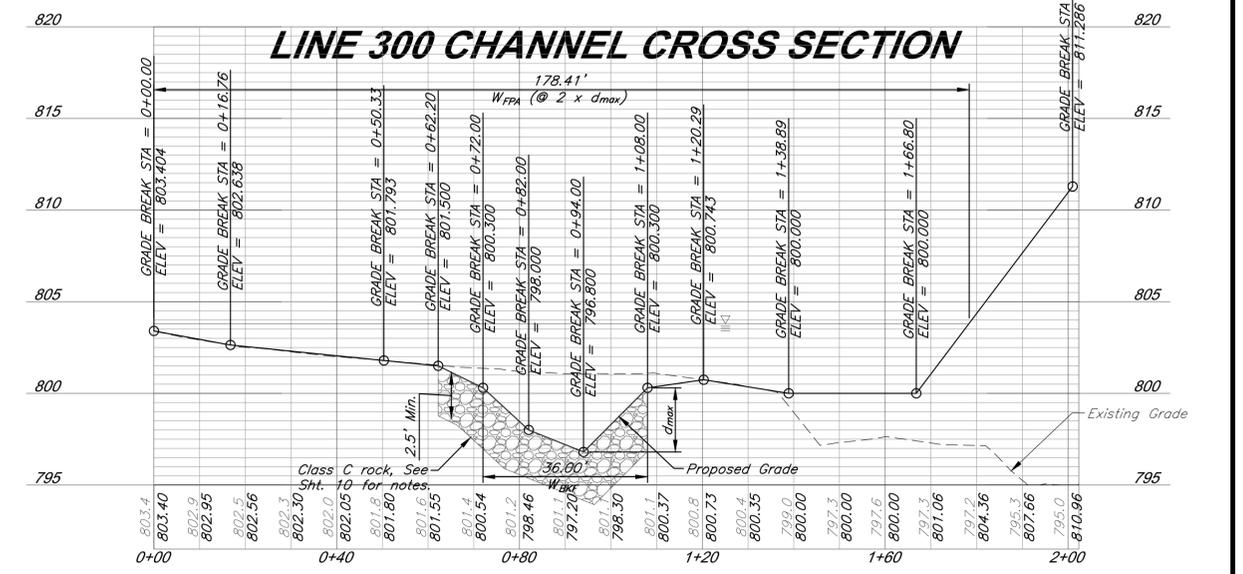
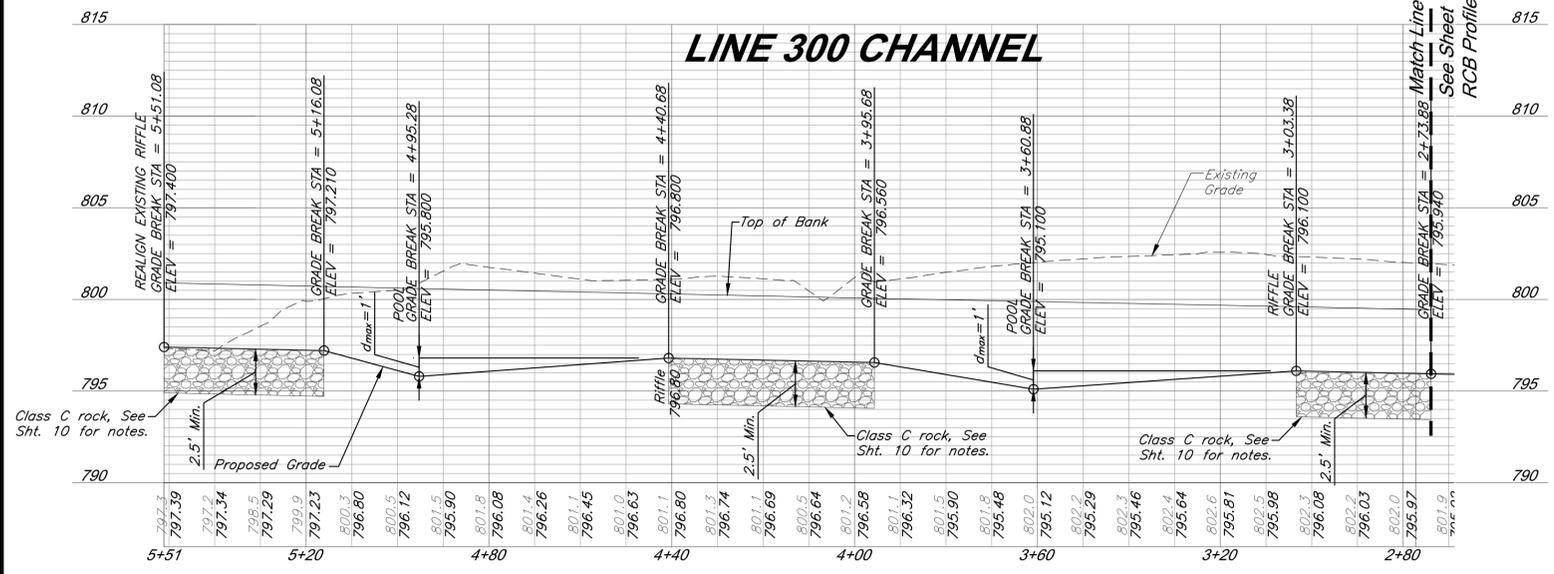
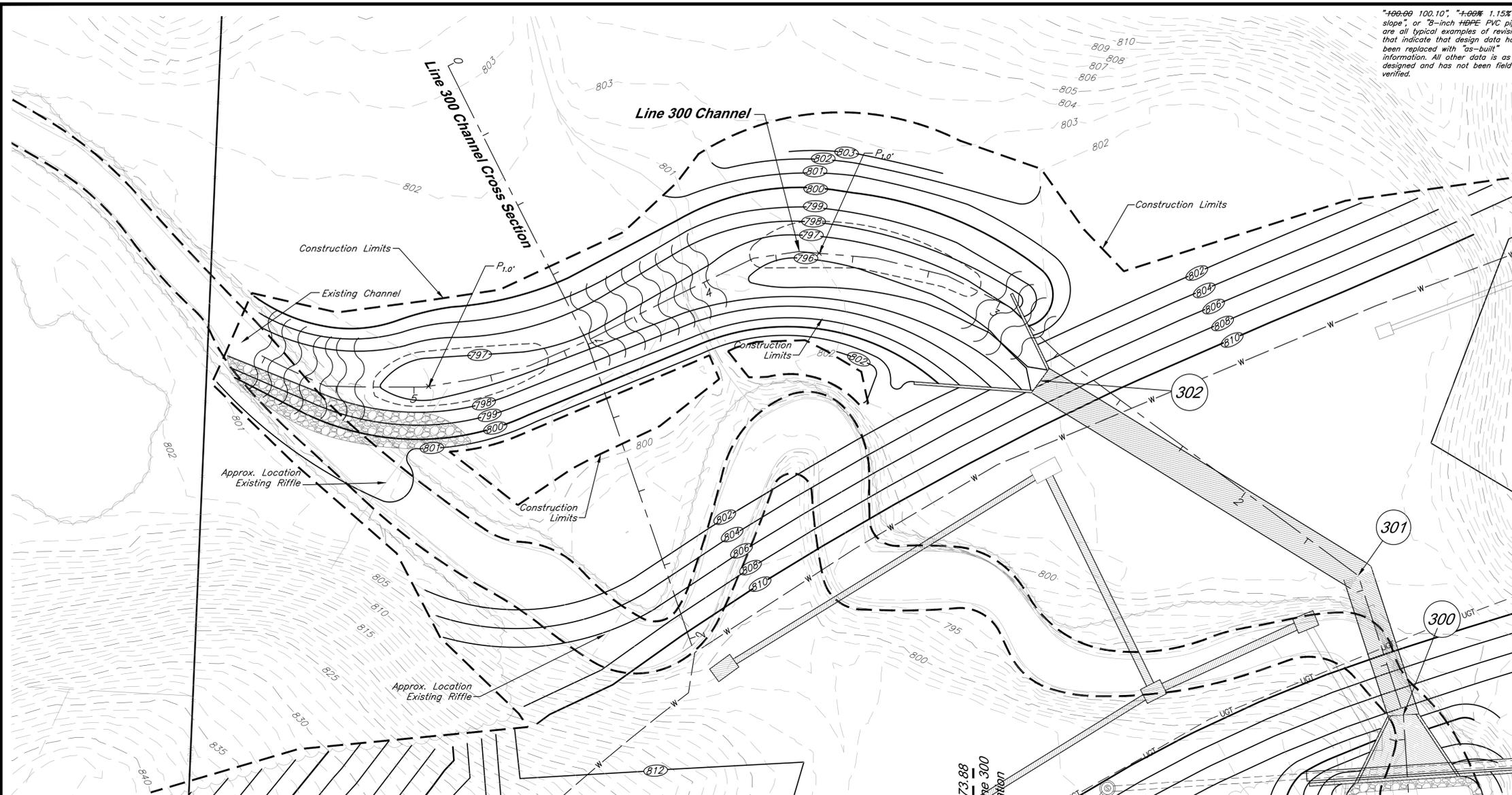
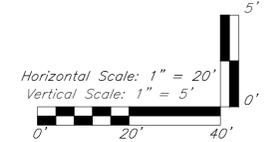
Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
 Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
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**Legend**

- Proposed Contour (within Floodway)
- Proposed Contour
- Existing Contour
- Riffle
- Pool
- Construction Limits

**Channel Design Parameters:**  
 Area = 71 SF  
 $d_{mean} (d_{max}) = 2.0' (3.5')$   
 $W_{BKF} = 36'$   
 $ER (W_{FPA}/W_{BKF}) = 5.0 (min.=2.2)$   
 $S = 0.5\%$   
 $W/d_{mean} = 18.3$



**Line 300 Channel Grading Plan**

Architect: 00212, Professional Engineer: 000133, Professional Land Surveyor: 000059  
 Tuesday, May 09, 2023, 8:58am -- Copyright 2023, George Butler Associates, Inc.  
 C:\12720\Civil\_3D\Production Drawings\Mass Grading\Lee's Summit\127200000.dwg Layout: 9 Utility Plan -- Tuesday, May 09, 2023, 8:58am

DATE:	4/15/19
DESIGN BY:	CEL
DRAWN BY:	DRV
PROJECT NO.:	12720
SHEET NO.:	9
TOTAL SHEETS:	43

**GBA**  
**architects**  
**engineers**  
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 Professional Engineer  
 License No. 25862

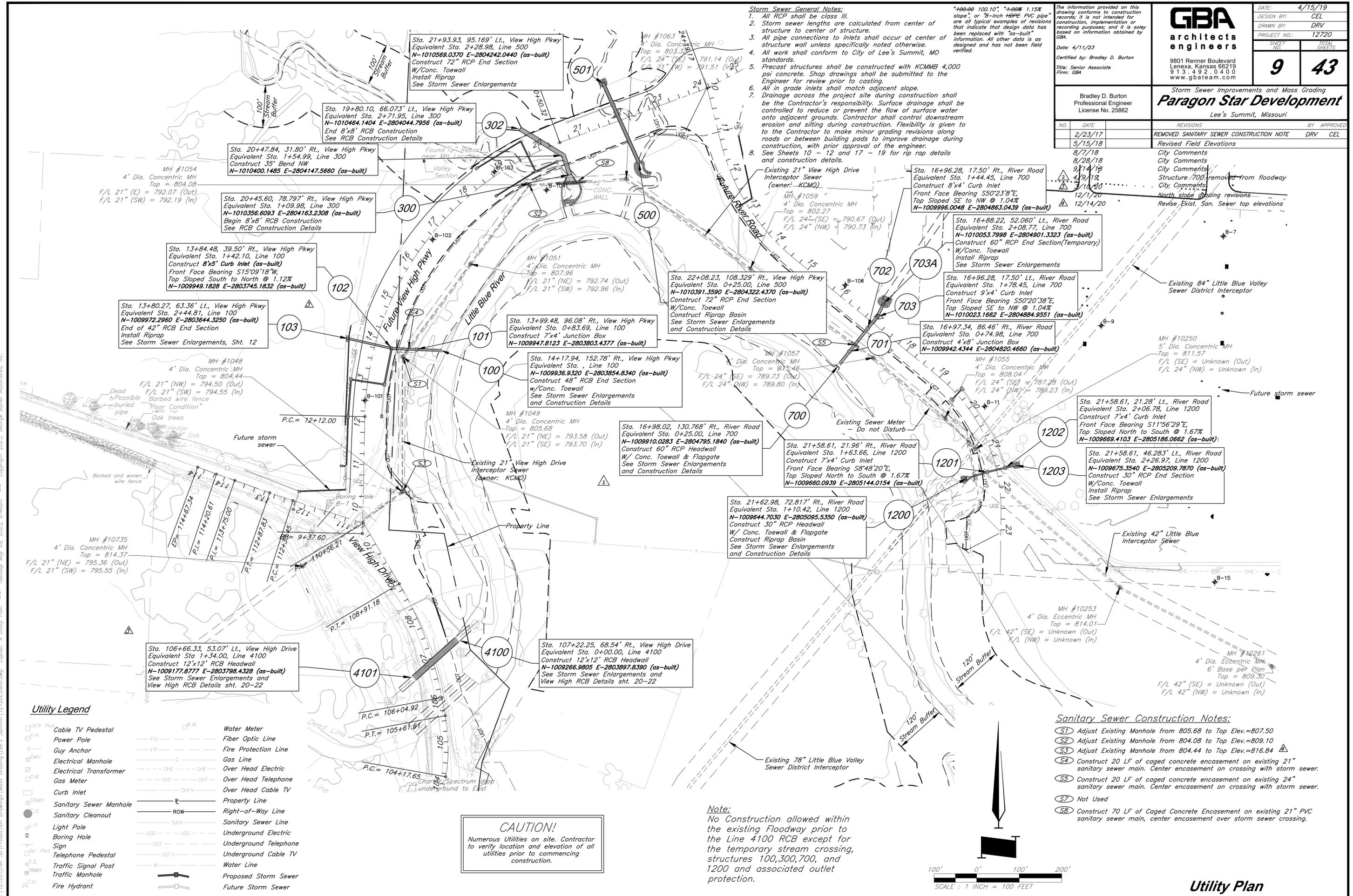
Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
 Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
2/23/17		REMOVED SANITARY SEWER CONSTRUCTION NOTE	DRV	CEL
5/15/18		Revised Field Elevations		

City Comments  
 City Comments  
 City Comments  
 Structure 700 removed from floodway  
 City Comments  
 North slope grading revisions  
 Revise Exist. San. Sewer top elevations

- Storm Sewer General Notes:**
- All RCP shall be class III.
  - Storm sewer lengths are calculated from center of structure to center of structure.
  - All pipe connections to inlets shall occur at center of structure wall unless specifically noted otherwise.
  - All work shall conform to City of Lee's Summit, MO standards.
  - Precast structures shall be constructed with KCMMB 4,000 psi concrete. Shop drawings shall be submitted to the Engineer for review prior to casting.
  - All in grade inlets shall match adjacent slope.
  - 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 silt during construction. Flexibility is given 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.
  - See Sheets 10 - 12 and 17 - 19 for rip rap details and construction details.

"+0.00 100.10", "+0.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.



Sta. 21+93.93, 95.169' Lt., View High Pkwy  
 Equivalent Sta. 2+28.98, Line 500  
 N-1010569.0370 E-2804242.0440 (as-built)  
 Construct 72" RCP End Section  
 W/Conc. Toewall  
 Install Riprap  
 See Storm Sewer Enlargements

Sta. 19+80.10, 66.073' Lt., View High Pkwy  
 Equivalent Sta. 2+71.95, Line 300  
 N-1010464.1404 E-2804044.7956 (as-built)  
 End 8'x8' RCB Construction  
 See RCB Construction Details

Sta. 20+47.84, 31.80' Rt., View High Pkwy  
 Equivalent Sta. 1+54.99, Line 300  
 Construct 35" Bend NW  
 N-1010400.1485 E-2804147.5660 (as-built)

Sta. 20+45.60, 78.797' Rt., View High Pkwy  
 Equivalent Sta. 1+09.98, Line 300  
 N-1010356.6093 E-2804163.2308 (as-built)  
 Begin 8'x8' RCB Construction  
 See RCB Construction Details

Sta. 13+84.48, 39.50' Rt., View High Pkwy  
 Equivalent Sta. 1+42.10, Line 100  
 Construct 8'x5' Curb Inlet (as-built)  
 Front Face Bearing S15°09'18"W,  
 Top Sloped South to North @ 1.12%  
 N-1009949.1828 E-2803745.1832 (as-built)

Sta. 13+80.27, 63.36' Lt., View High Pkwy  
 Equivalent Sta. 2+44.81, Line 100  
 N-1009972.2960 E-2803644.3250 (as-built)  
 End of 42" RCB End Section  
 Install Riprap  
 See Storm Sewer Enlargements, Sht. 12

Sta. 13+99.48, 96.08' Rt., View High Pkwy  
 Equivalent Sta. 0+83.69, Line 100  
 Construct 7'x4' Junction Box  
 N-1009947.8123 E-2803803.4377 (as-built)

Sta. 14+17.94, 152.78' Rt., View High Pkwy  
 Equivalent Sta. , Line 100  
 N-1009936.9320 E-2803854.8340 (as-built)  
 Construct 48" RCB End Section  
 W/Conc. Toewall  
 See Storm Sewer Enlargements  
 and Construction Details

Sta. 16+98.02, 130.768' Rt., River Road  
 Equivalent Sta. 0+25.00, Line 700  
 N-1009910.0283 E-2804795.1840 (as-built)  
 Construct 60" RCP Headwall  
 W/Conc. Toewall & Flaggate  
 See Storm Sewer Enlargements  
 and Construction Details

Sta. 21+62.98, 72.817' Rt., River Road  
 Equivalent Sta. 1+10.42, Line 1200  
 N-1009644.7030 E-2805095.5350 (as-built)  
 Construct 30" RCP Headwall  
 W/Conc. Toewall & Flaggate  
 Construct Riprap Basin  
 See Storm Sewer Enlargements  
 and Construction Details

Sta. 21+58.61, 21.96' Rt., River Road  
 Equivalent Sta. 1+63.66, Line 1200  
 Construct 7'x4' Curb Inlet  
 Front Face Bearing S8°48'20"E,  
 Top Sloped North to South @ 1.67%  
 N-1009660.0939 E-2805144.0154 (as-built)

Sta. 21+58.61, 21.28' Lt., River Road  
 Equivalent Sta. 2+06.78, Line 1200  
 Construct 7'x4' Curb Inlet  
 Front Face Bearing S11°56'29"E,  
 Top Sloped North to South @ 1.67%  
 N-1009669.4103 E-2805186.0662 (as-built)

Sta. 21+58.61, 46.283' Lt., River Road  
 Equivalent Sta. 2+26.97, Line 1200  
 N-1009675.3540 E-2805209.7870 (as-built)  
 Construct 30" RCP End Section  
 W/Conc. Toewall  
 Install Riprap  
 See Storm Sewer Enlargements

Sta. 16+96.28, 17.50' Rt., River Road  
 Equivalent Sta. 1+44.45, Line 700  
 Construct 8'x4' Curb Inlet  
 Front Face Bearing S50°23'8"E,  
 Top Sloped SE to NW @ 1.04%  
 N-1009996.0048 E-2804863.0439 (as-built)

Sta. 16+88.22, 52.060' Lt., River Road  
 Equivalent Sta. 2+08.77, Line 700  
 N-1010053.7998 E-2804901.3323 (as-built)  
 Construct 60" RCP End Section(Temporary)  
 W/Conc. Toewall  
 Install Riprap  
 See Storm Sewer Enlargements

Sta. 16+96.28, 17.50' Lt., River Road  
 Equivalent Sta. 1+78.45, Line 700  
 Construct 9'x4' Curb Inlet  
 Front Face Bearing S50°20'38"E,  
 Top Sloped SE to NW @ 1.04%  
 N-1010023.1662 E-2804884.9551 (as-built)

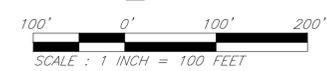
Sta. 16+97.34, 86.46' Rt., River Road  
 Equivalent Sta. 0+74.98, Line 700  
 Construct 4'x8' Junction Box  
 N-1009942.4344 E-2804820.4660 (as-built)

**Utility Legend**

	Cable TV Pedestal		Water Meter
	Power Pole		Fiber Optic Line
	Guy Anchor		Fire Protection Line
	Electrical Manhole		Gas Line
	Electrical Transformer		Over Head Electric
	Gas Meter		Over Head Telephone
	Curb Inlet		Over Head Cable TV
	Sanitary Sewer Manhole		Property Line
	Sanitary Cleanout		Right-of-Way Line
	Light Pole		Sanitary Sewer Line
	Boring Hole		Underground Electric
	Sign		Underground Telephone
	Telephone Pedestal		Underground Cable TV
	Traffic Signal Post		Water Line
	Traffic Manhole		Proposed Storm Sewer
	Fire Hydrant		Future Storm Sewer

**CAUTION!**  
 Numerous Utilities on site. Contractor to verify location and elevation of all utilities prior to commencing construction.

**Note:**  
 No Construction allowed within the existing Floodway prior to the Line 4100 RCB except for the temporary stream crossing, structures 100,300,700, and 1200 and associated outlet protection.

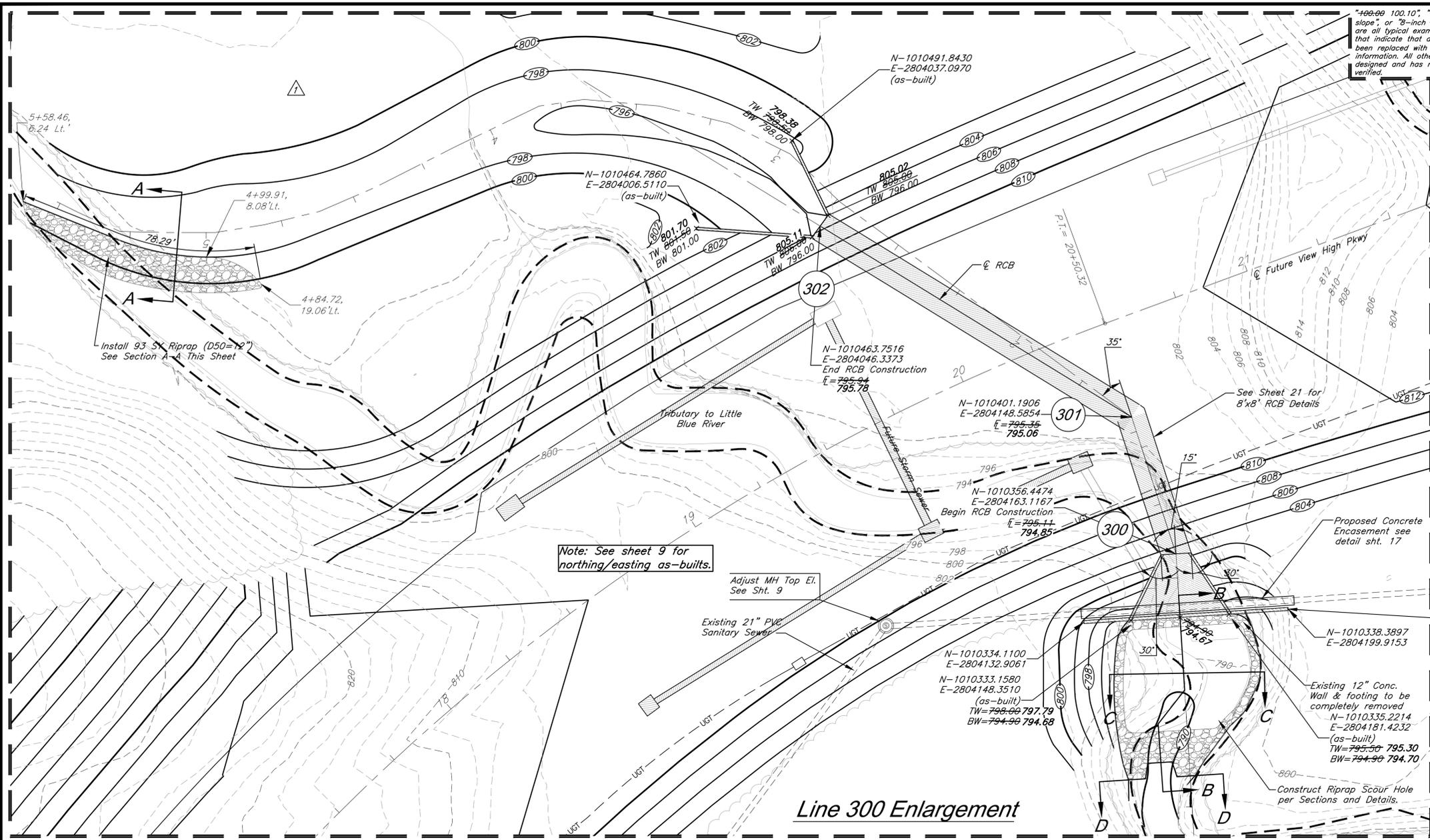


**Utility Plan**

Architect: 00212, Professional Engineer: 000133, Professional Land Surveyor: 000059  
 C:\12720\Civil\_3D\Production Drawings\Mass Grading\Lee's Summit\1272000001.dwg Layout: 10 Storm Sewer Enlargements -- Tuesday, May 09, 2023, 8:49am -- Copyright 2023, George Buller Associates, Inc.

"100.00 100.10", "+.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

<b>GBA</b> architects engineers 9801 Renner Boulevard Lenexa, Kansas 66219 913.492.0400 www.gbateam.com		DATE: 4/15/19 DESIGN BY: CEL DRAWN BY: DRV PROJECT NO.: 12720 SHEET NO.: 10 TOTAL SHEETS: 43
Certified by: Bradley D. Burton Title: Senior Associate Firm: GBA		Storm Sewer Improvements and Mass Grading <b>Paragon Star Development</b> Lee's Summit, Missouri



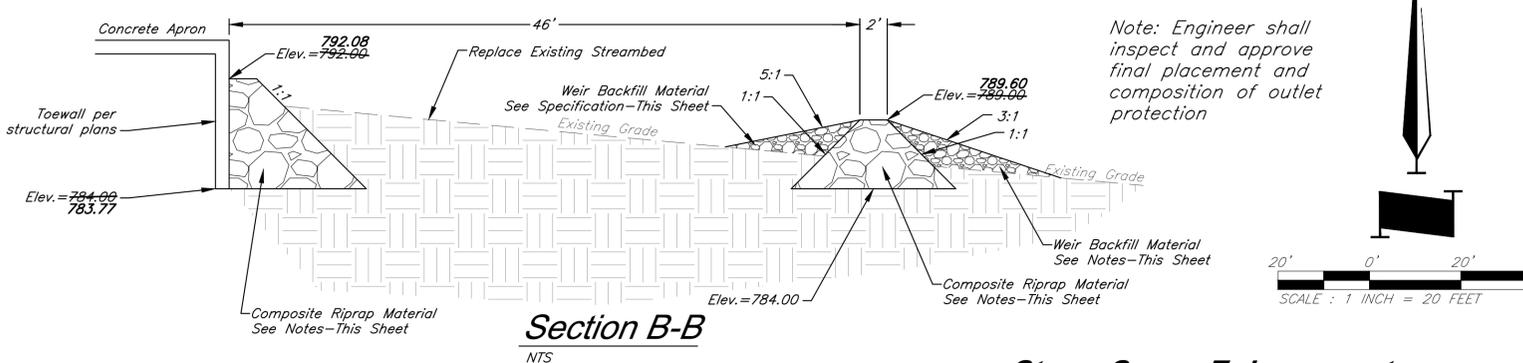
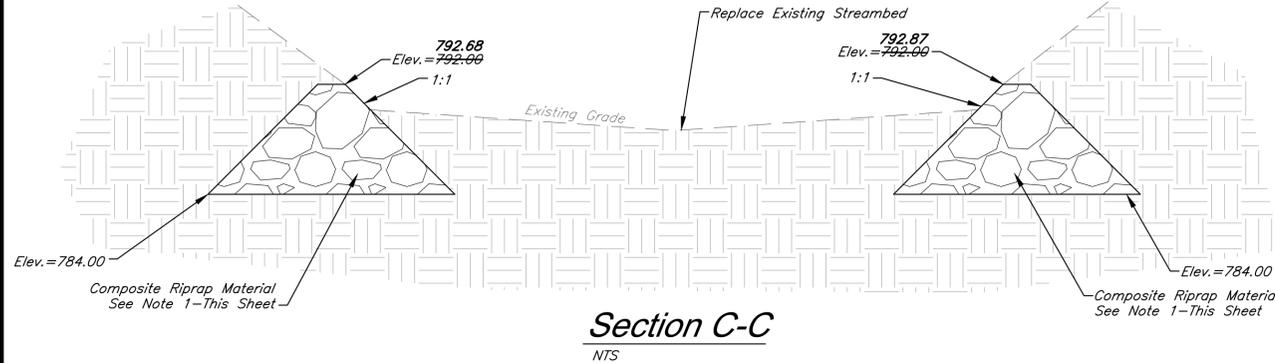
NO.	DATE	REVISIONS	BY	APPROVED
5/15/18		Revised Field Elevations		
8/7/18		City Comments		
8/28/18		City Comments		
9/14/18		City Comments		
10/10/18		Removed Floodway Grading		
11/29/18		Temporary River Crossing Repair		
4/11/19		Temporary River Crossing Repair		
4/15/19		City Comments		
3/10/20		North slope grading revisions		
12/1/20		Retaining Wall Station & Offsets		
2/4/21		Line 300 Wingwall Revision		
3/11/21		Headwall Detail		
3/24/21				

**Legend**

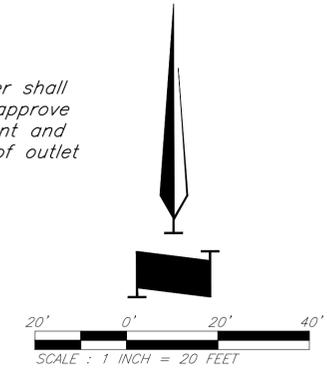
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- Riprap Material Notes:**
- Line 300 Composite Riprap Materials shall consist of the following properties:  
 75% Boulders with D50=2' and D100=3'  
 20% Class B Rock  
 5% Class C Rock
  - Weir Backfill Materials shall consist of the following properties:  
 65% Class B Rock  
 35% Class C Rock

Class B Gradation		Class C Gradation	
Size	Rock Spec	Size	Rock Spec
14"	D100	8"	D100
9"	D85	3"	D85
7"	D60	2"	D65
6"	D50	1.5"	D50
3"	D15	1/4"	D15
2.5"	D10	1/8"	D10



Note: Engineer shall inspect and approve final placement and composition of outlet protection



**Storm Sewer Enlargements**

Architect: 00212, Professional Engineer: 000133, Professional Land Surveyor: 000059  
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 Layout: 11 Storm Sewer Enlargements  
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"100.00 100.10", "1.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

The information provided on this drawing conforms to construction records; it is not intended for construction, implementation or recording purposes; and it is solely based on information obtained by GBA.  
 Date: 4/11/23  
 Certified by: Bradley D. Burton  
 Title: Senior Associate  
 Firm: GBA

<b>GBA</b> architects engineers		DATE: 4/15/19
9801 Renner Boulevard Lenexa, Kansas 66219 913.492.0400 www.gbateam.com		DESIGN BY: CEL
		DRAWN BY: DRV
		PROJECT NO.: 12720
SHEET NO.	TOTAL SHEETS	
<b>11</b>	<b>43</b>	

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
 Lee's Summit, Missouri

Bradley D. Burton  
 Professional Engineer  
 License No. 25862

NO.	DATE	REVISIONS	BY	APPROVED
5/15/18		Revised Field Elevations		
8/7/18		City Comments		
8/28/18		City Comments		
9/14/18		City Comments		
10/10/18		Removed Floodway Grading		
11/29/18				
4/11/19		Temporary River Crossing Repair		
4/15/19		Temporary River Crossing Repair		
3/10/20		City Comments		
12/1/20		North slope grading revisions		
3/17/21		Retaining Wall Station & Offsets		
3/24/21		Line 300 Wingwall Revision		
		Headwall Detail		

**Legend**

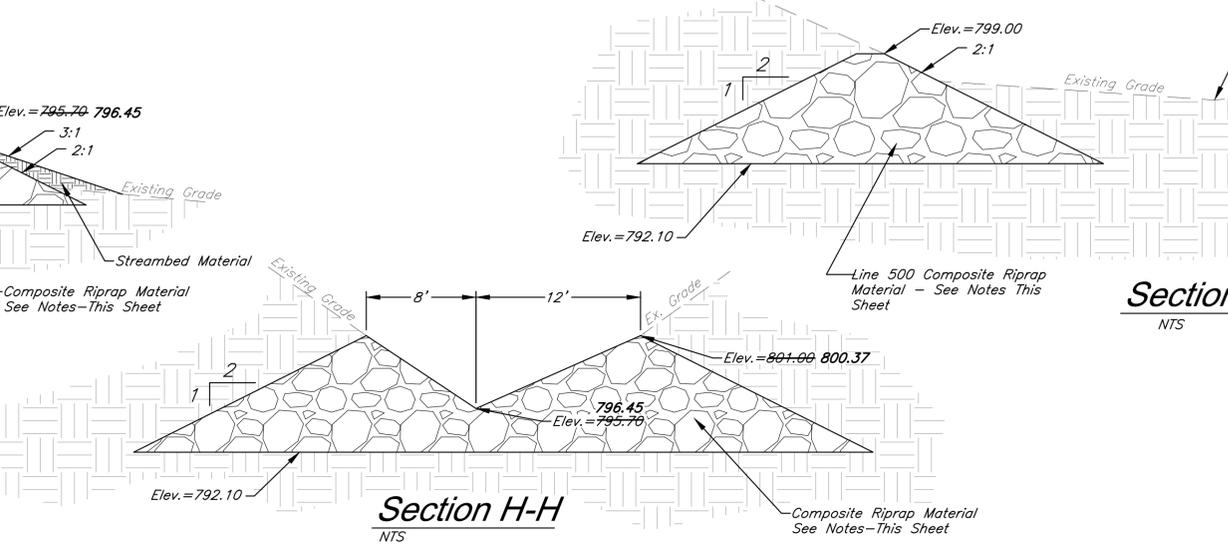
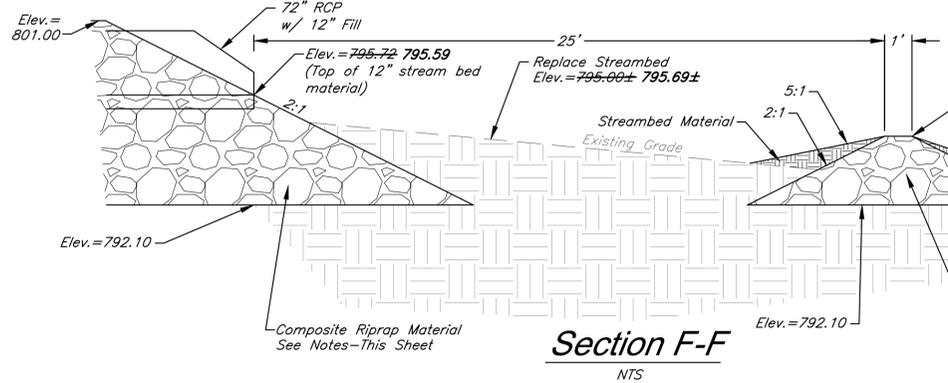
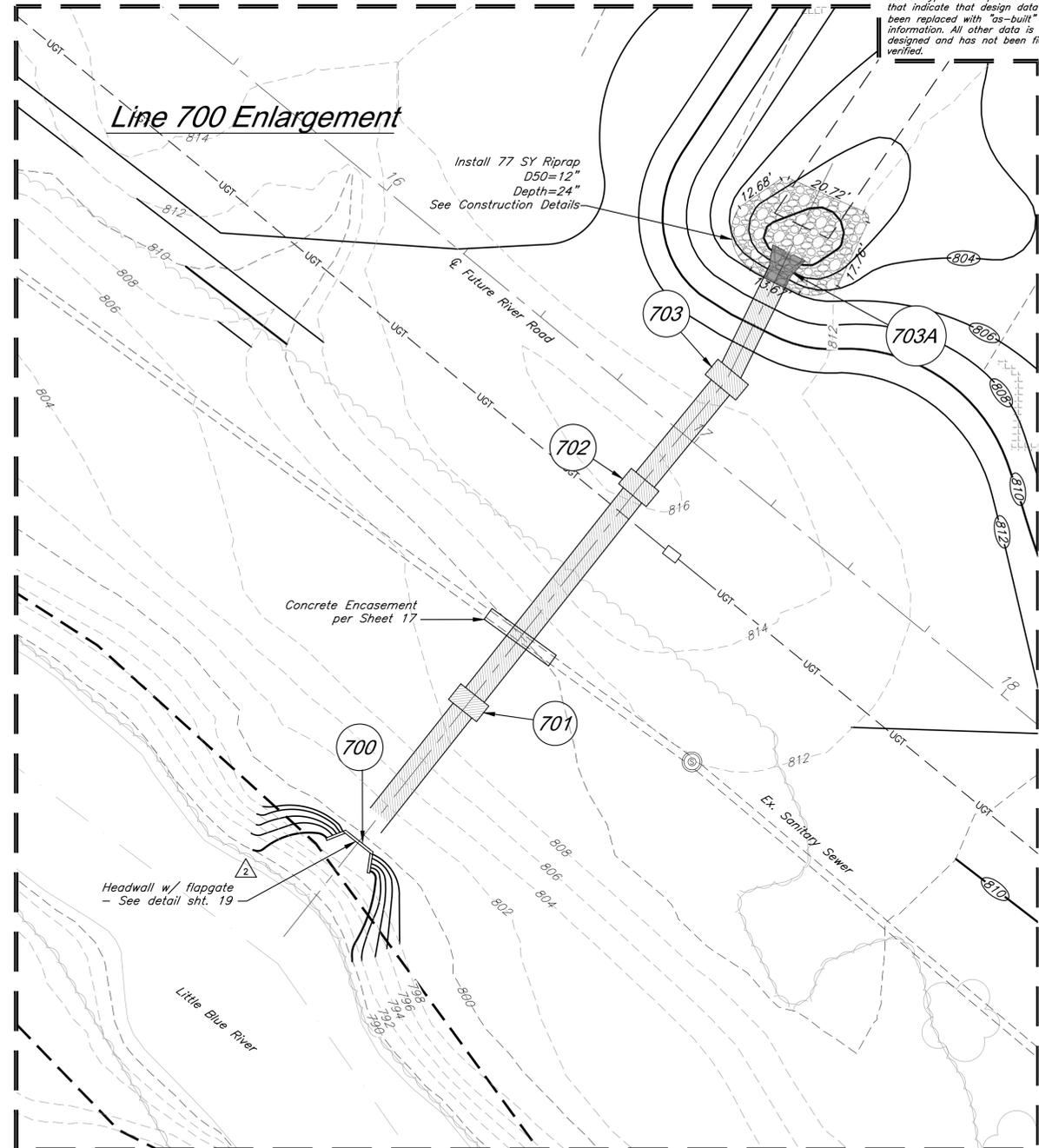
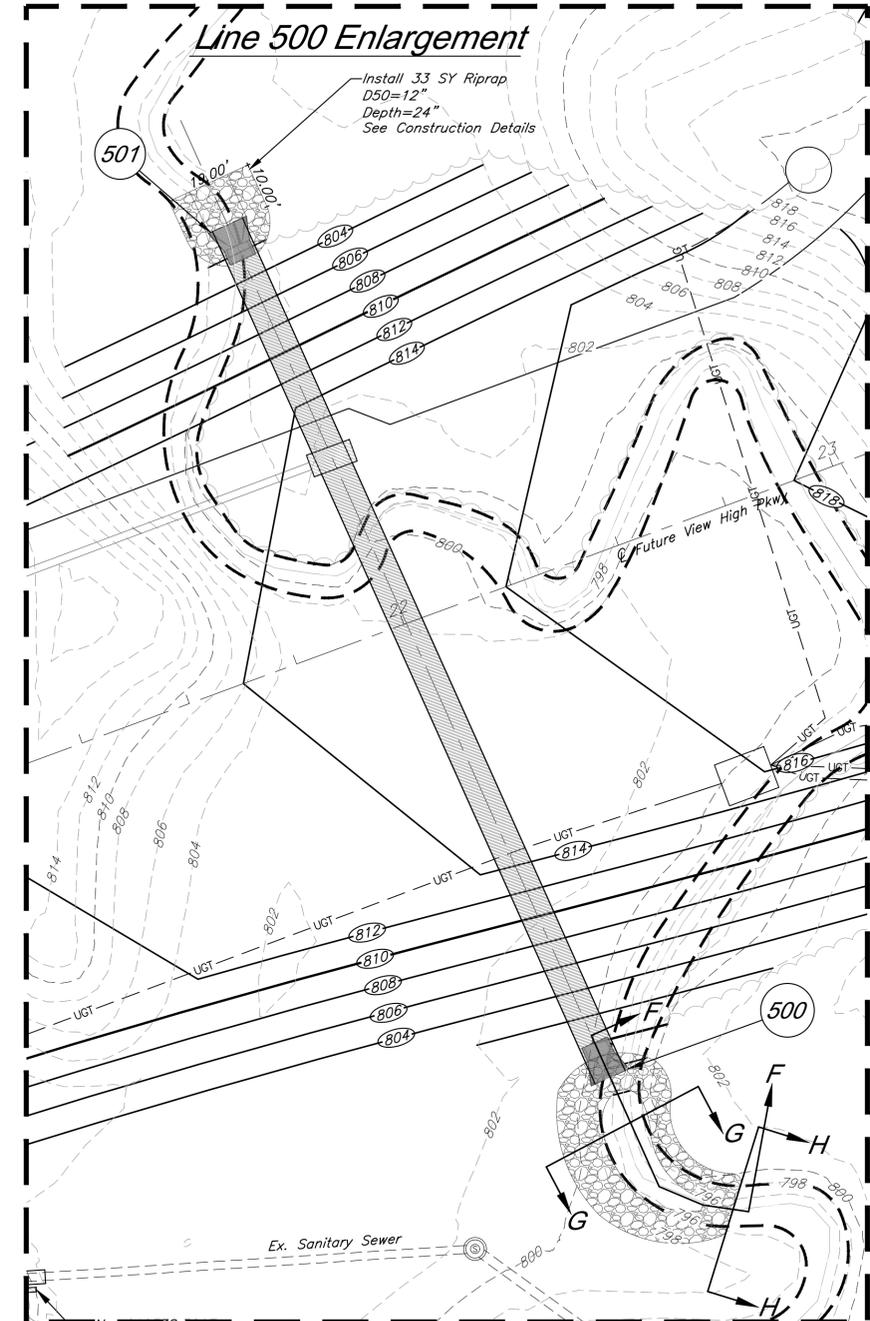
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**Class A Gradation**

Size	Rock Spec
20"	D100
16"	D85
13"	D65
12"	D50
5"	D15
4"	D10

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

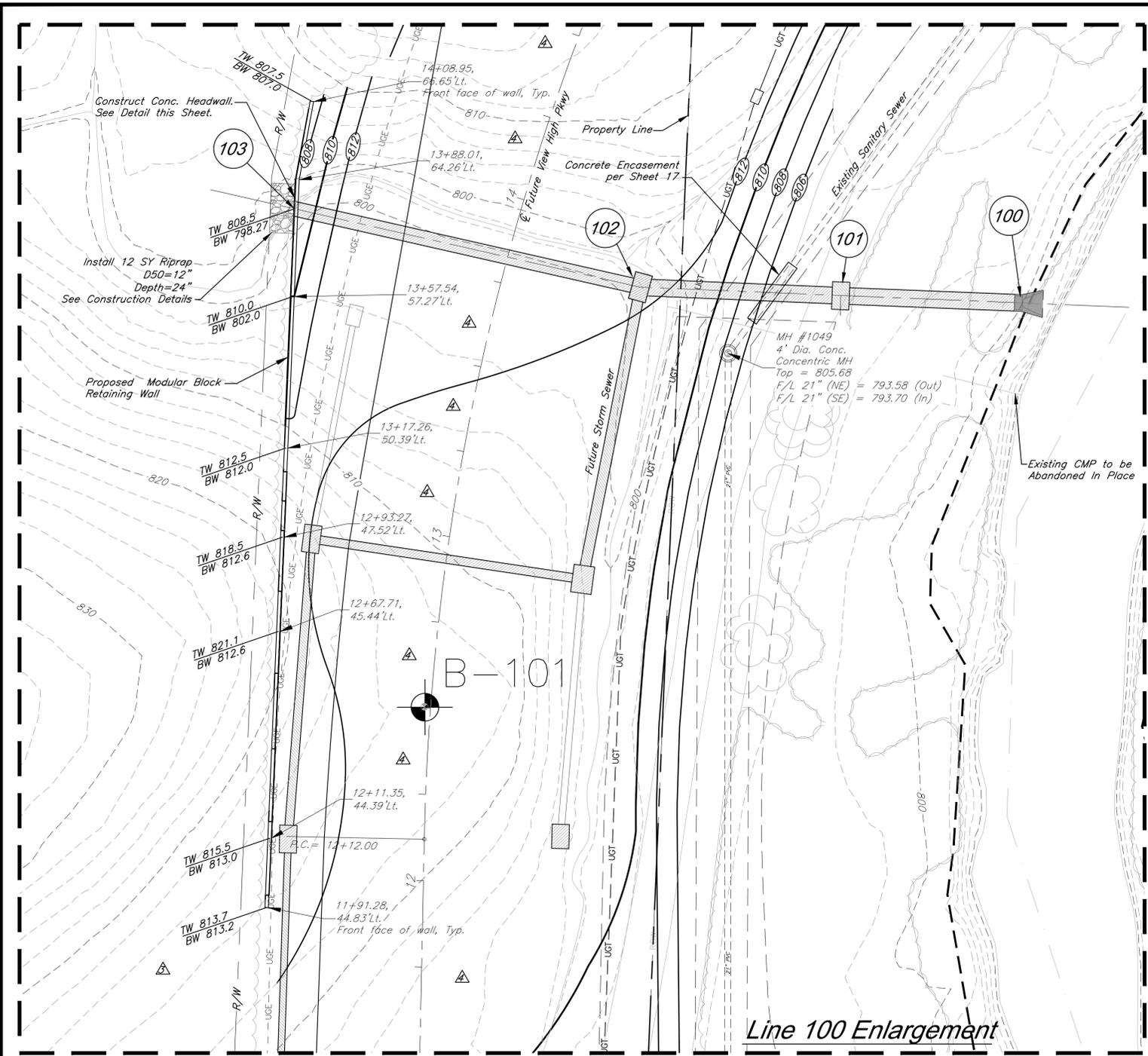
**Riprap Material Notes:**  
 1. Line 500 Composite Riprap Materials shall consist of the following properties:  
 20% Class A Rock  
 60% Class B Rock  
 20% Class C Rock  
 2. See Sheet 10 for Class B and Class C Rock Gradations.



Note: Engineer shall inspect and approve final placement and composition of outlet protection

**Storm Sewer Enlargements**

Architect: 00212, Professional Engineer: 000133, Professional Land Surveyor: 000059  
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**Legend**

- CATV Pedestal
- Power Pole
- Guy Anchor
- ⊕ Electrical Manhole
- ⊕ Electrical Transformer
- ⊕ Gas Meter
- Curb Inlet
- ⊕ Sanitary Sewer Manhole
- ⊕ Sanitary Cleanout
- ⊕ Light Pole
- ⊕ Boring Hole
- ⊕ Sign
- ⊕ Telephone Pedestal
- ⊕ Traffic Signal Post
- ⊕ Traffic Manhole
- Proposed Storm Sewer
- Future Storm Sewer
- Water Meter
- Fiber Optic Line
- Fire Protection Line
- Gas Line
- Over Head Electric
- Over Head Telephone
- Over Head Cable TV
- Property Line
- Right-of-Way Line
- Sanitary Sewer Line
- Underground Electric
- Underground Telephone
- Underground Cable TV
- Water Line
- Proposed Contours
- Existing Contour

"100.00 100.10", "1.00% 1.15%  
 slope", or "8-inch HDPE PVC pipe"  
 are all typical examples of revisions  
 that indicate that design data has  
 been replaced with "as-built"  
 information. All other data is as  
 designed and has not been field  
 verified.

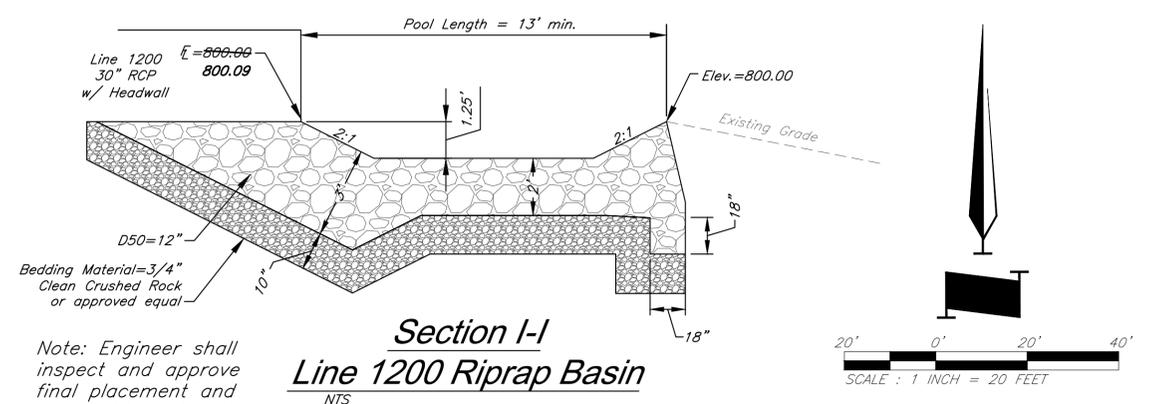
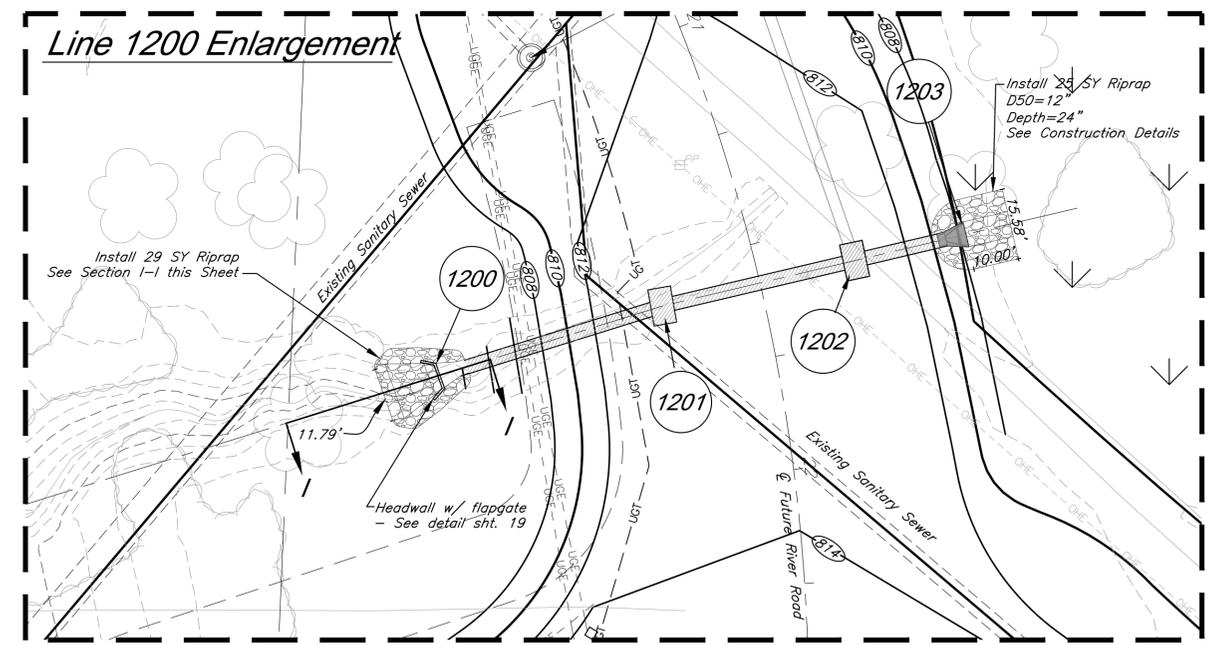
The information provided on this  
 drawing conforms to construction  
 records; it is not intended for  
 construction, implementation or  
 recording purposes; and it is solely  
 based on information obtained by  
 GBA.  
 Date: 4/11/23  
 Certified by: Bradley D. Burton  
 Title: Senior Associate  
 Firm: GBA

<b>GBA</b> architects engineers 9801 Renner Boulevard Lenexa, Kansas 66219 913.492.0400 www.gbateam.com		DATE: 4/15/19
		DESIGN BY: CEL
		DRAWN BY: DRV
		PROJECT NO.: 12720
SHEET NO.	TOTAL SHEETS	
12	43	

Bradley D. Burton  
 Professional Engineer  
 License No. 25862

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
 Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
5/15/18		Revised Field Elevations		
8/7/18		City Comments		
8/28/18		City Comments		
9/14/18		City Comments		
10/10/18		Removed Floodway Grading		
11/29/18		Temporary River Crossing Repair		
4/11/19		Temporary River Crossing Repair		
4/15/19		City Comments		
3/10/20		City Comments		
12/1/20		North slope grading revisions		
2/4/21		Retaining Wall Station & Offsets		
3/11/21		Line 300 Wingwall Revision		
3/24/21		Headwall Detail		



**CONCRETE HEADWALL DETAIL**  
NTS

Note: Engineer shall  
 inspect and approve  
 final placement and  
 composition of outlet  
 protection

**Section I-I**  
**Line 1200 Riprap Basin**  
NTS

**Storm Sewer Enlargements**

Architect 00212, Professional Engineer 000133, Professional Land Surveyor 000059  
 C:\12720\Civil 3D\Production Drawings\Mass Grading\Lee's Summit\1272000901.dwg Layout: 1.5 Storm Sewer Enlargements -- Tuesday, May 09, 2023, 8:50am -- Copyright 2023, George Buller Associates, Inc.

**Legend**

- Cable TV Pedestal
- Power Pole
- Guy Anchor
- Electrical Manhole
- Electrical Transformer
- Gas Meter
- Curb Inlet
- Sanitary Sewer Manhole
- Sanitary Cleanout
- Light Pole
- Boring Hole
- Sign
- Telephone Pedestal
- Traffic Signal Post
- Traffic Manhole
- Proposed Storm Sewer
- Future Storm Sewer
- Water Meter
- Fiber Optic Line
- Fire Protection Line
- Gas Line
- Over Head Electric
- Over Head Telephone
- Over Head Cable TV
- Property Line
- Right-of-Way Line
- Sanitary Sewer Line
- Underground Electric
- Underground Telephone
- Underground Cable TV
- Water Line
- Proposed Contours
- Existing Contour

"+00.00 100.10", "+.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

The information provided on this drawing conforms to construction records; it is not intended for construction, implementation or recording purposes; and it is solely based on information obtained by GBA.

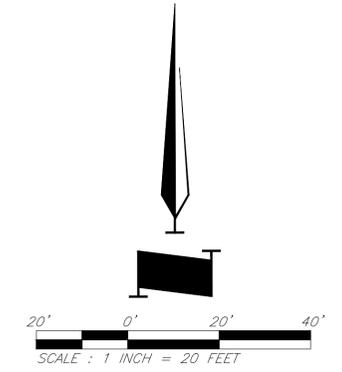
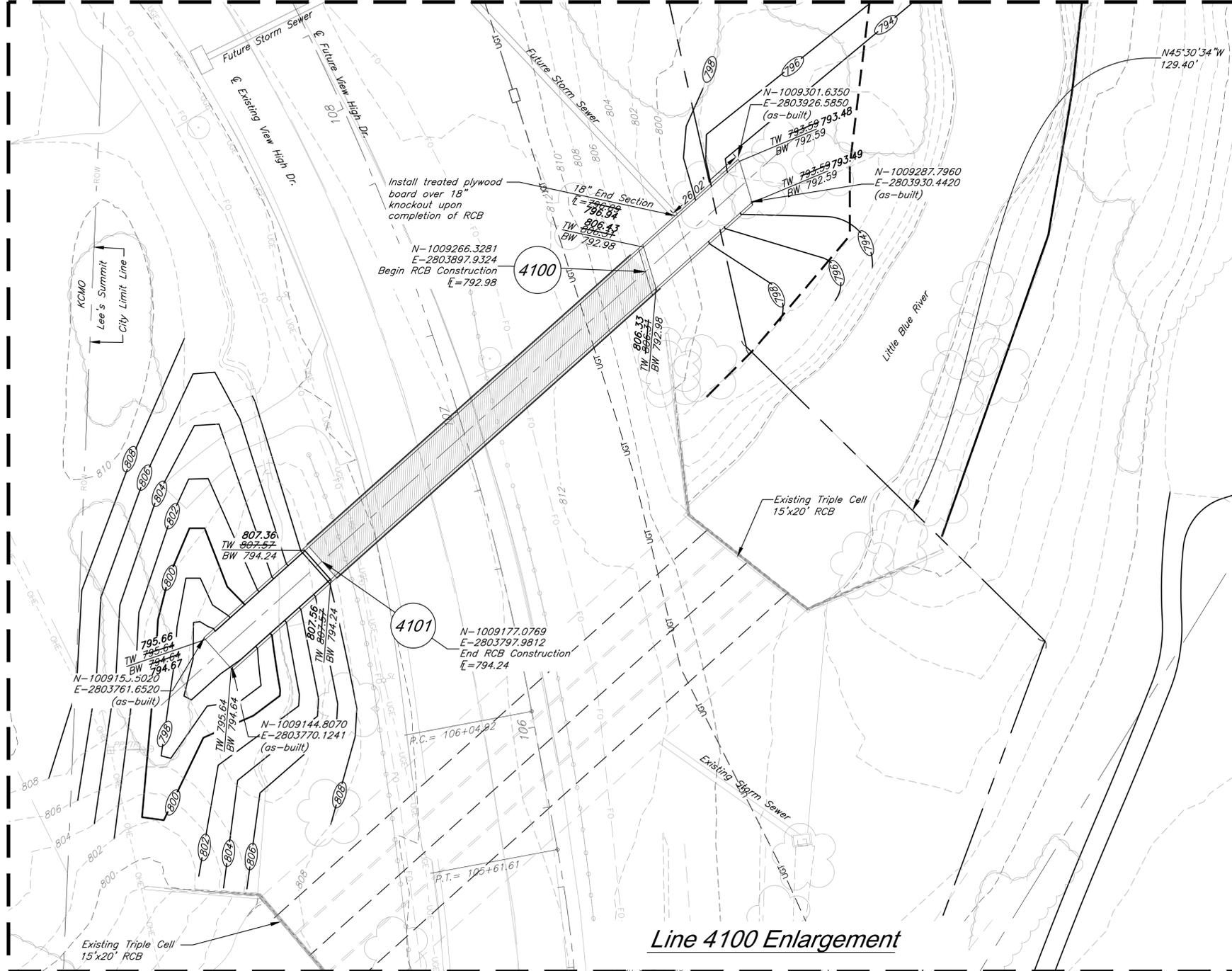
Date: 4/11/23  
 Certified by: Bradley D. Burton  
 Title: Senior Associate  
 Firm: GBA

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

DATE: 4/15/19	
DESIGN BY: CEL	
DRAWN BY: DRV	
PROJECT NO.: 12720	
SHEET NO.	TOTAL SHEETS
<b>13</b>	<b>43</b>

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
 Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
	5/15/18	Revised Field Elevations		
	8/7/18	City Comments		
	8/28/18	City Comments		
	9/14/18	City Comments		
	10/10/18	Removed Floodway Grading		
	11/29/18			
	4/11/19	Temporary River Crossing Repair		
	4/15/19	Temporary River Crossing Repair		
	3/10/20	City Comments		
	12/1/20	North slope grading revisions		
	2/4/21	Retaining Wall Station & Offsets		
	3/11/21	Line 300 Wingwall Revision		
	3/24/21	Headwall Detail		



**Storm Sewer Enlargements**

Architect 00212, Professional Engineer 000133, Professional Land Surveyor 000059  
 Copyright 2023, George Butler Associates, Inc.  
 Tuesday May 09, 2023, 9:55am  
 Layout: 14 Storm Sewer Profiles  
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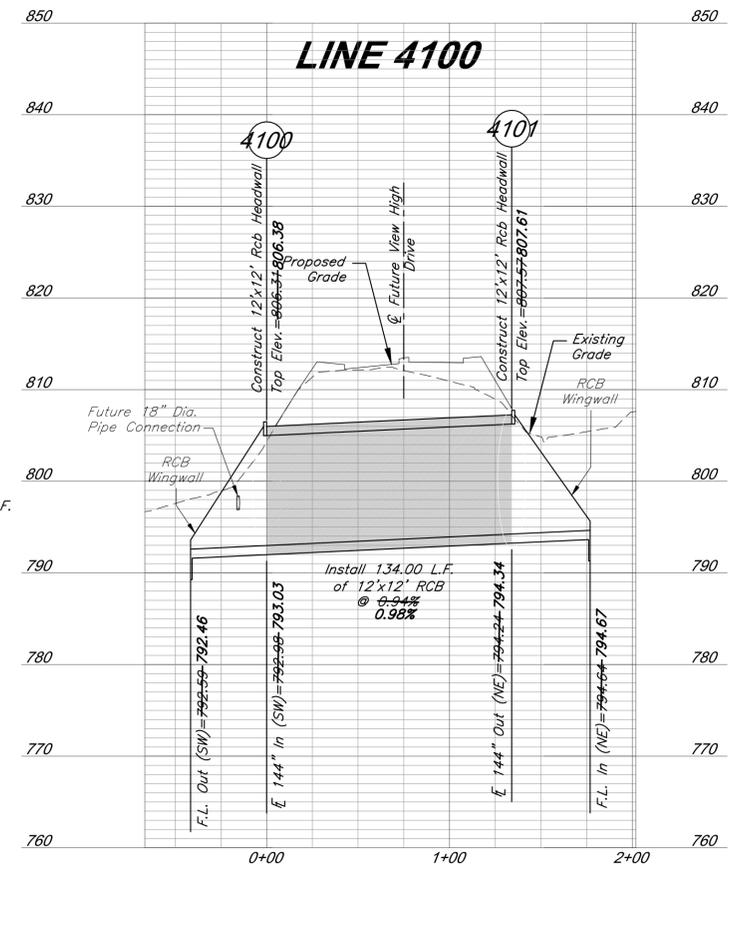
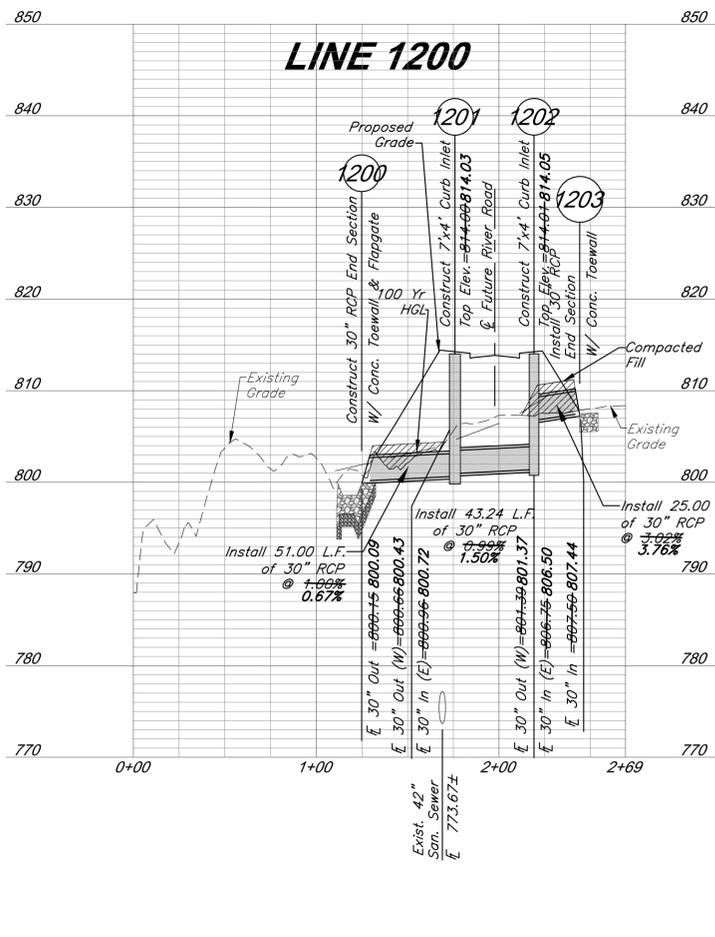
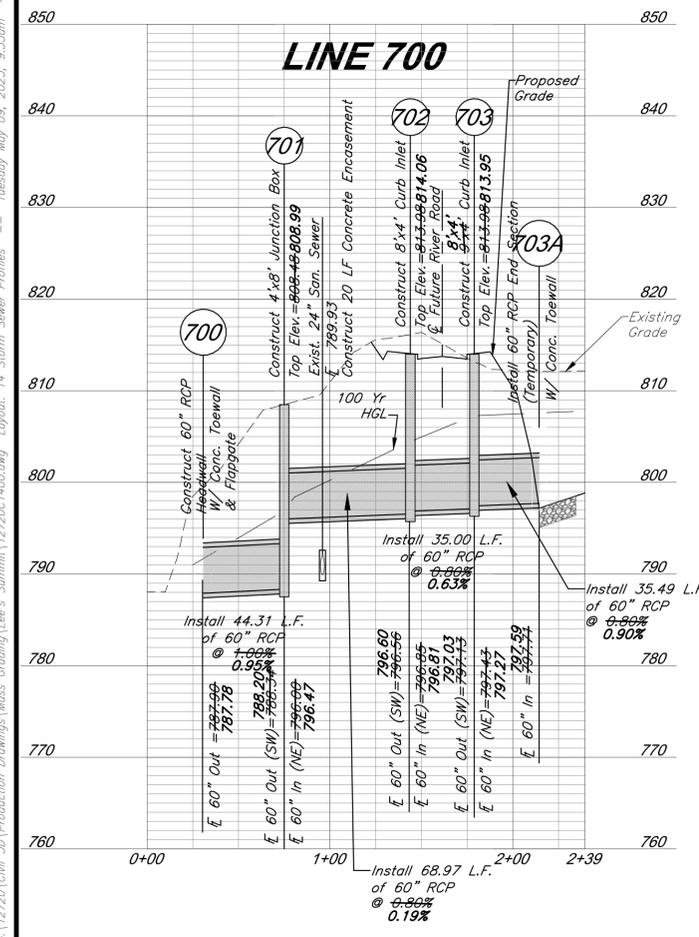
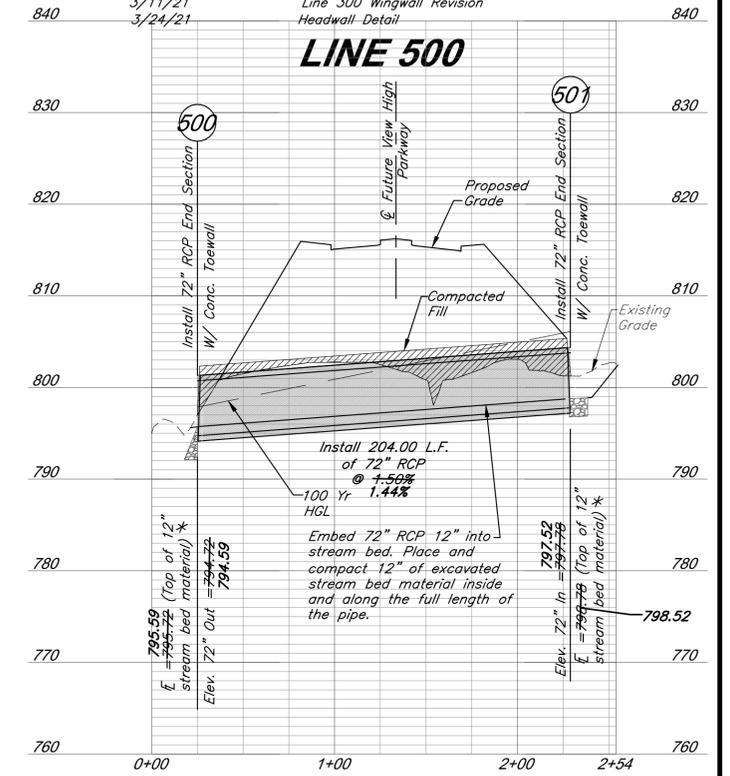
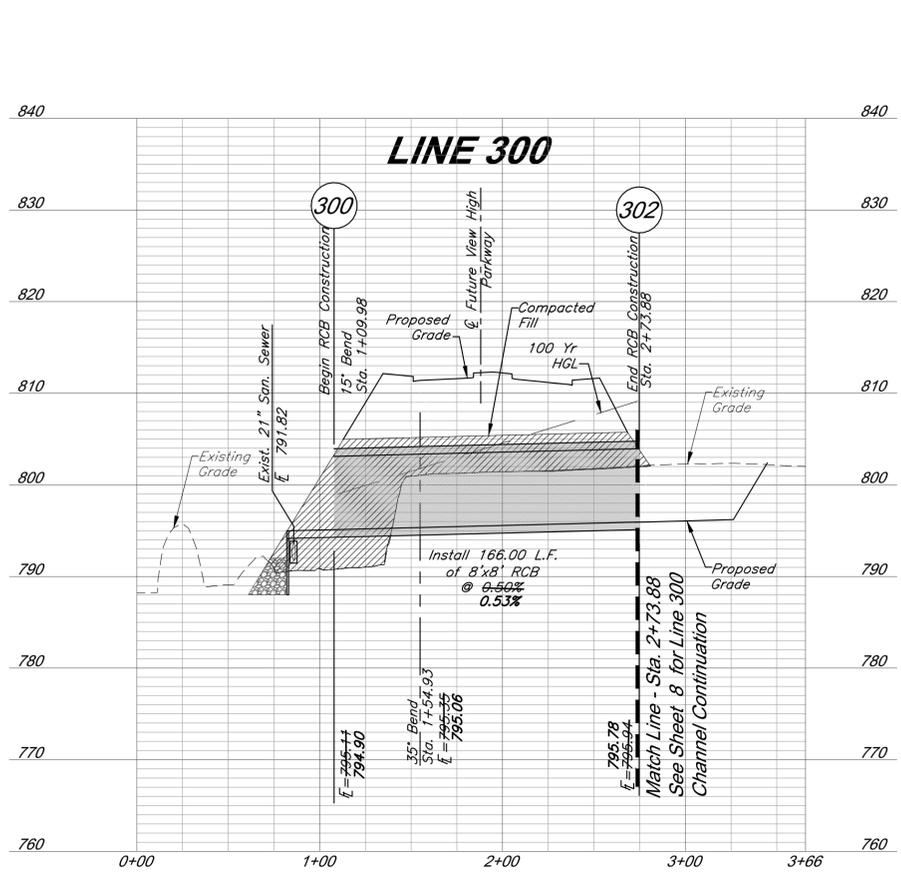
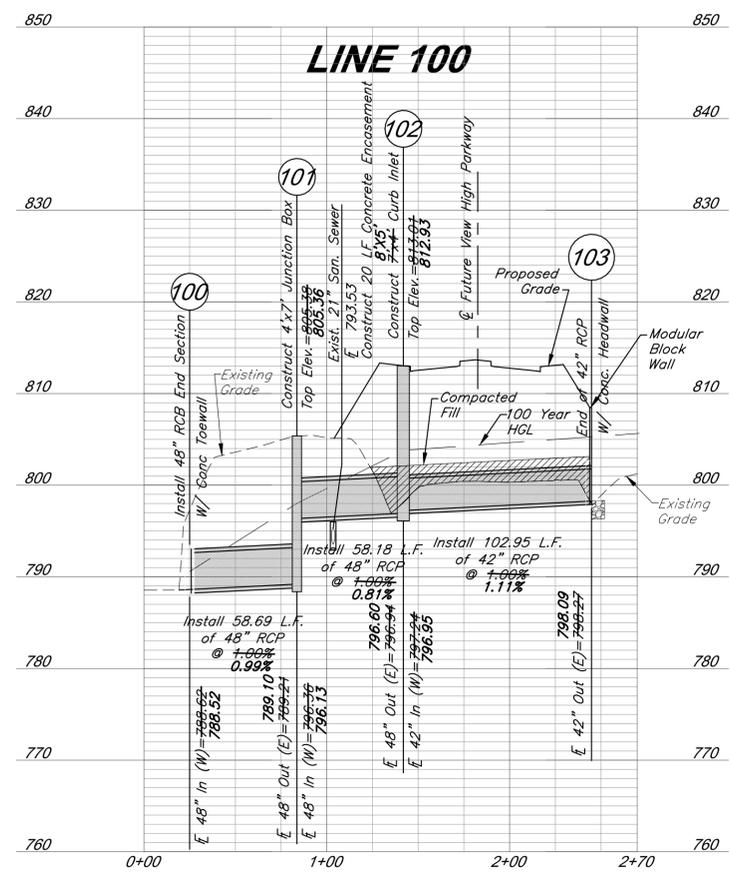
"+00-00 100.10", "+.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

The information provided on this drawing conforms to construction records; it is not intended for construction, implementation or recording purposes; and it is solely based on information obtained by GBA.  
 Date: 4/11/23  
 Certified by: Bradley D. Burton  
 Title: Senior Associate  
 Firm: GBA

<b>GBA</b> architects engineers		DATE: 4/15/19
9801 Renner Boulevard Lenexa, Kansas 66219 913.492.0400 www.gbateam.com		DESIGN BY: CEL
		DRAWN BY: DRV
		PROJECT NO.: 12720
SHEET NO.	TOTAL SHEETS	
<b>14</b>	<b>43</b>	

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
 Lee's Summit, Missouri

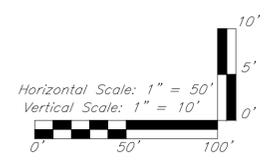
NO.	DATE	REVISIONS	BY	APPROVED
	5/15/18	Revised Field Elevations		
	8/7/18	City Comments		
	8/28/18	City Comments		
	9/14/18	City Comments		
	10/10/18	Removed Floodway Grading		
	4/23/18	Structure 700 removed from floodway		
	4/11/19	Temporary River Crossing Repair		
	4/15/19	Temporary River Crossing Repair		
	3/10/20	City Comments		
	12/1/20	North slope grading revisions		
	2/1/21	Retaining Wall Station & Offsets		
	3/11/21	Line 300 Wingwall Revision		
	3/24/21	Headwall-Detail		



**Legend**

Compacted Fill to be placed prior to excavation

\* See "Riprap Material Notes" on Sheet 11.



**Storm Sewer Profiles**

Architect: 00212, Professional Engineer: 000133, Professional Land Surveyor: 000059  
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 C:\12720\Civil\_3D\Production Drawings\Mass Grading\Lee's Summit\12720\2000.dwg Layout: 15 Drainage Map

**Legend**

-  Proposed Contours
-  Existing Contour
-  Proposed Drainage Area
-  0.28 Acres Drainage Area
-  Proposed Storm Sewer
-  Future Storm Sewer
-  Proposed Storm Sewer Structure Label
-  Future Storm Sewer Structure Label

"100-00 100.10", "±.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

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 Date: 4/11/23  
 Certified by: Bradley D. Burton  
 Title: Senior Associate  
 Firm: GBA

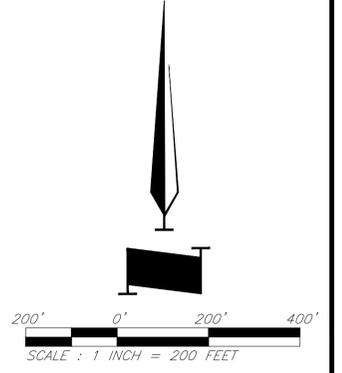
**GBA**  
**architects**  
**engineers**  
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DATE:	4/15/19
DESIGN BY:	CEL
DRAWN BY:	JRH
PROJECT NO.:	12720
SHEET NO.:	15
TOTAL SHEETS:	43

Bradley D. Burton  
 Professional Engineer  
 License No. 25862

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
 Lee's Summit, Missouri

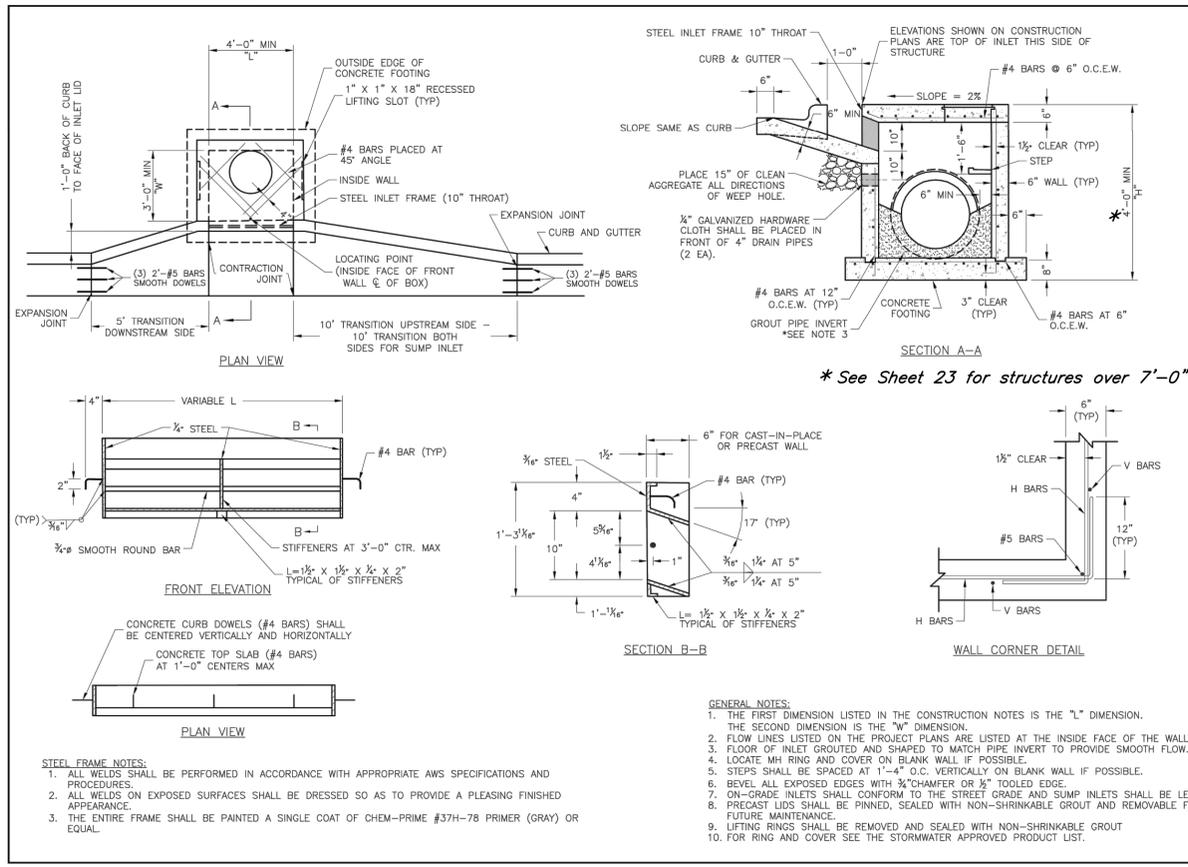
NO.	DATE	REVISIONS	BY	APPROVED
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8/7/18		City Comments		
8/28/18		City Comments		
9/14/18		City Comments		
10/10/18		Removed Floodway Grading		
11/29/18				
4/11/19		Temporary River Crossing Repair		
4/15/19		Temporary River Crossing Repair		
3/10/20		City Comments		
12/1/20		North slope grading revisions		
2/4/21		Retaining Wall Station & Offsets		
3/11/21		Line 300 Wingwall Revision		
3/24/21		Headwall Detail		



**Drainage Map**



Architect: 00212, Professional Engineer: 000133, Professional Land Surveyor: 000059  
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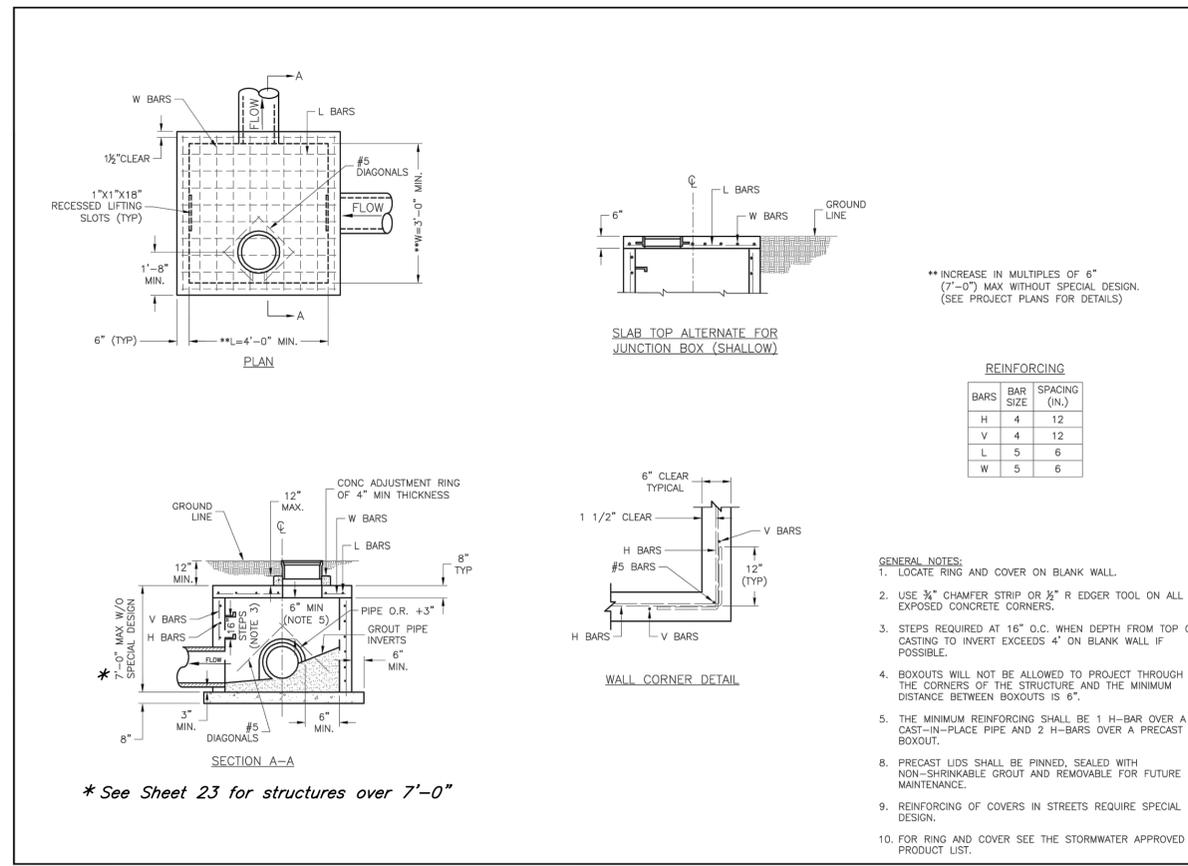


**LEE'S SUMMIT MISSOURI**  
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

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

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

**STM-1**

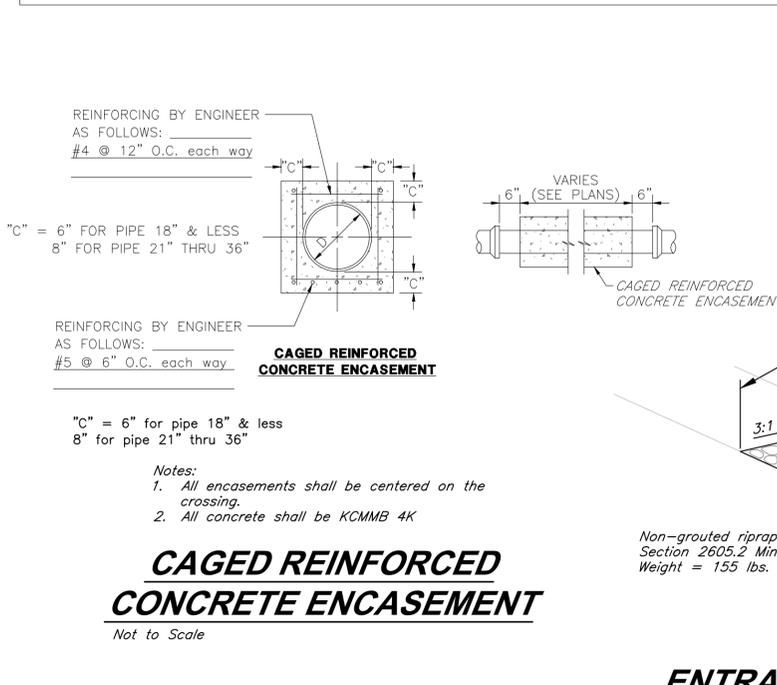
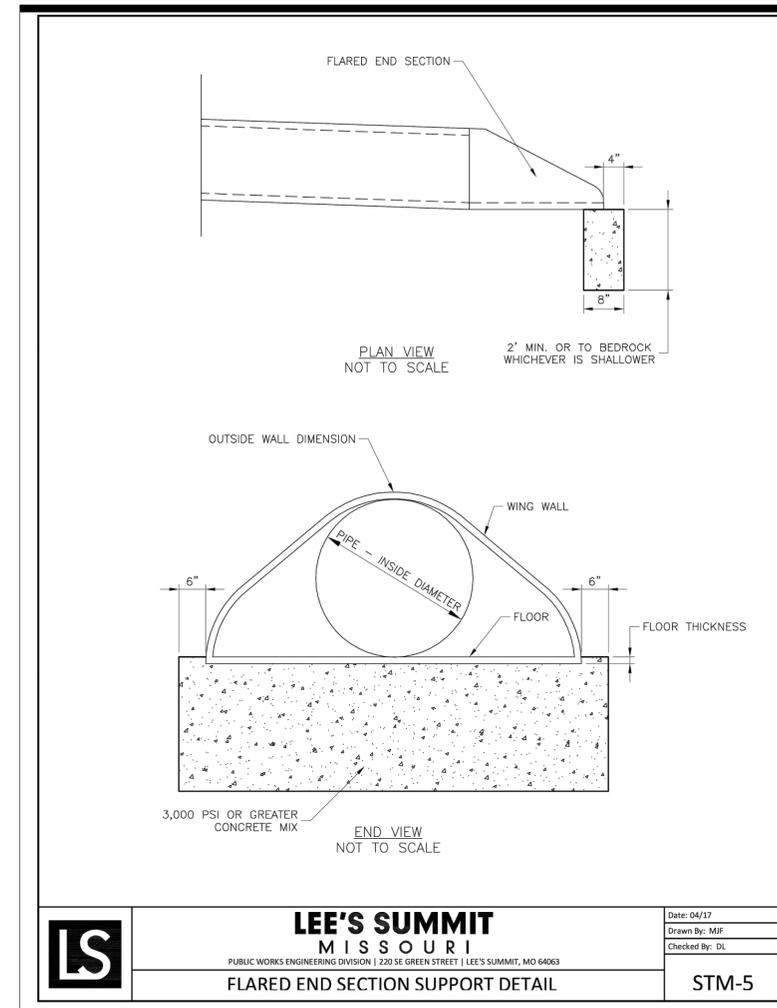


**LEE'S SUMMIT MISSOURI**  
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

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

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

**STM-3**



**GBA architects engineers**  
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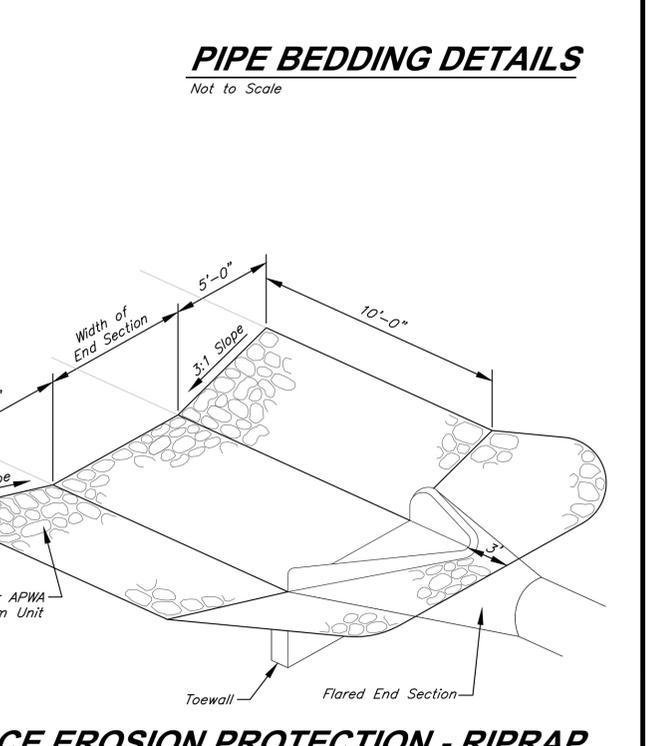
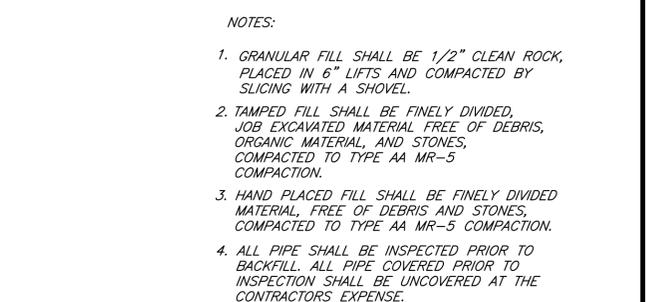
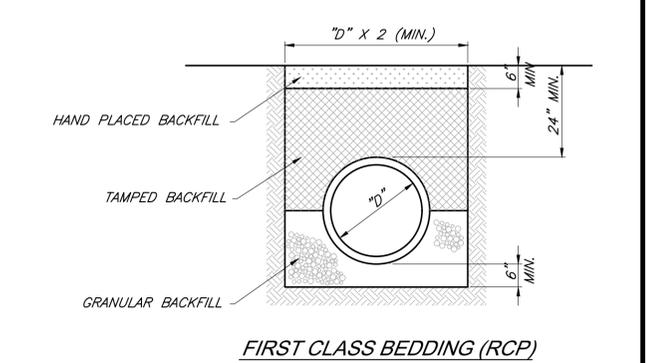
DATE: 4/15/19  
DESIGN BY: CEL  
DRAWN BY: DRV  
PROJECT NO.: 12720  
SHEET NO. 17  
TOTAL SHEETS 43

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
Lee's Summit, Missouri

Bradley D. Burton  
Professional Engineer  
License No. 25862

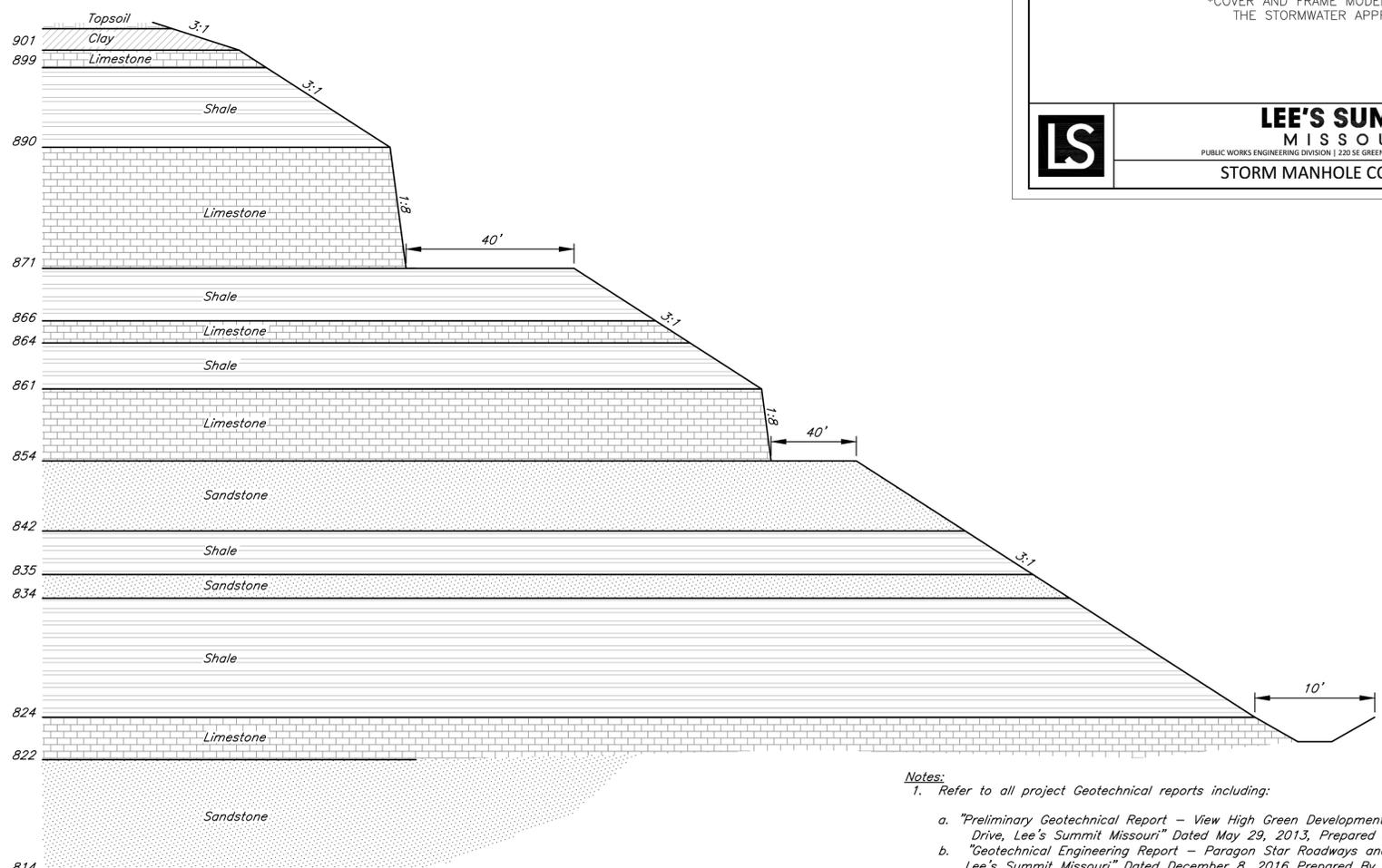
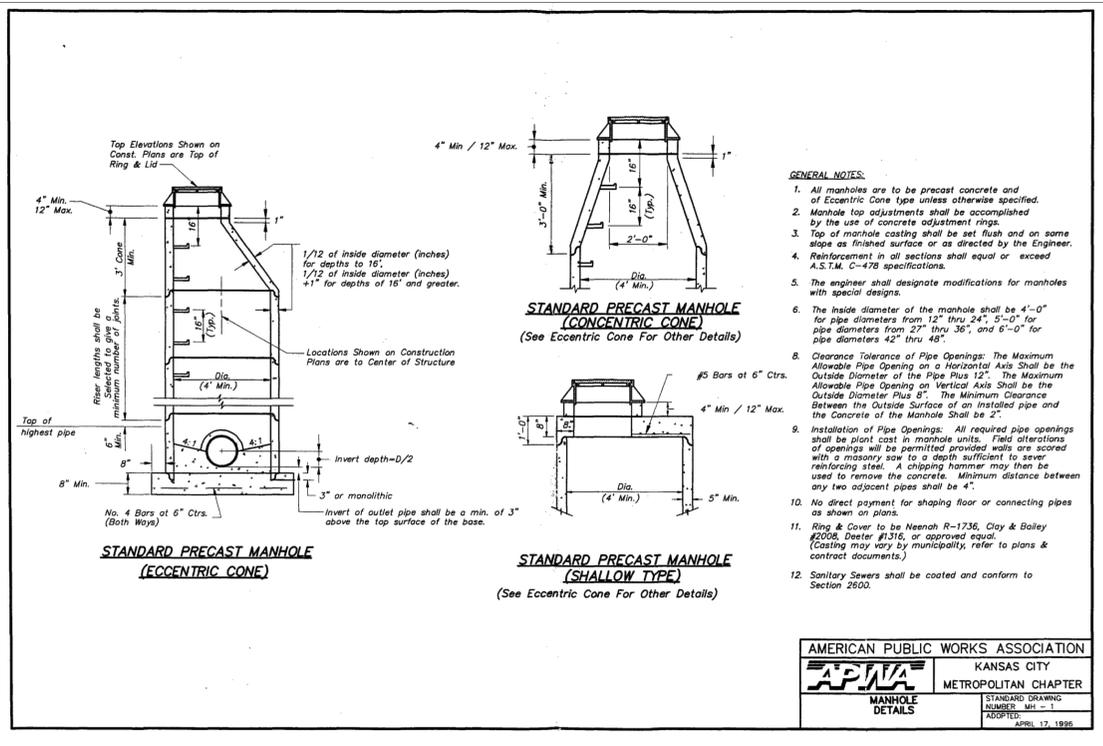
Revisions:

NO.	DATE	REVISIONS	BY	APPROVED
5/15/18		Revised Field Elevations		
8/7/18		City Comments		
8/28/18		City Comments		
9/14/18		City Comments		
10/10/18		Removed Floodway Grading		
3/10/20		City Comments		
12/1/20		North slope grading revisions		

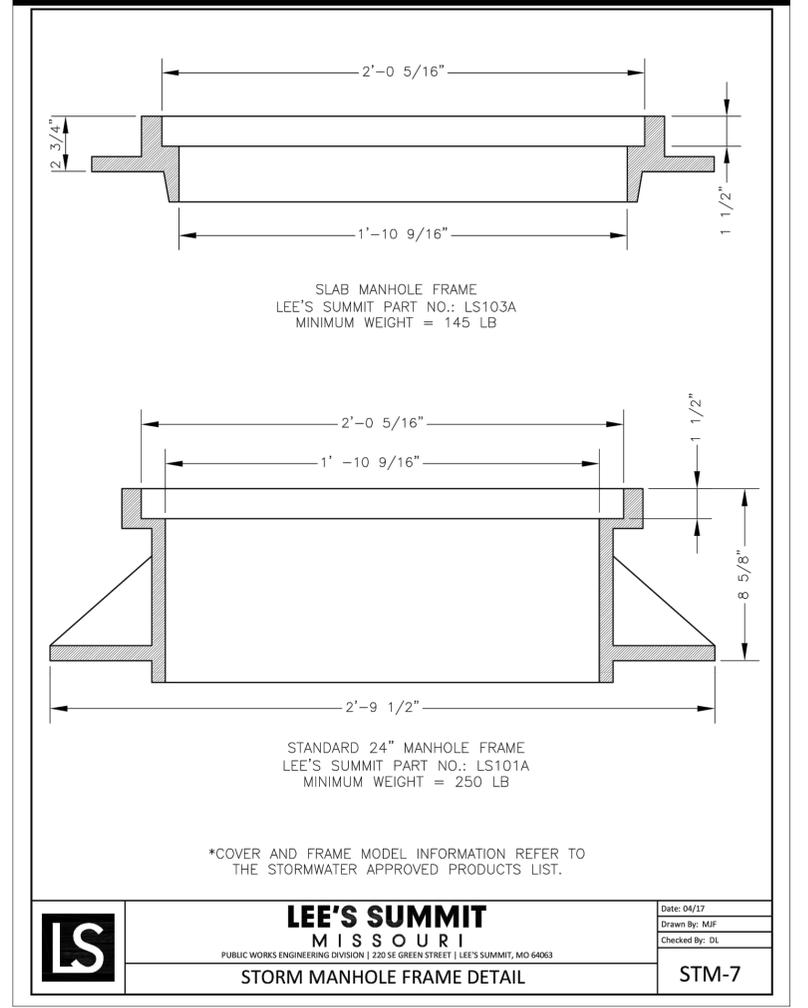
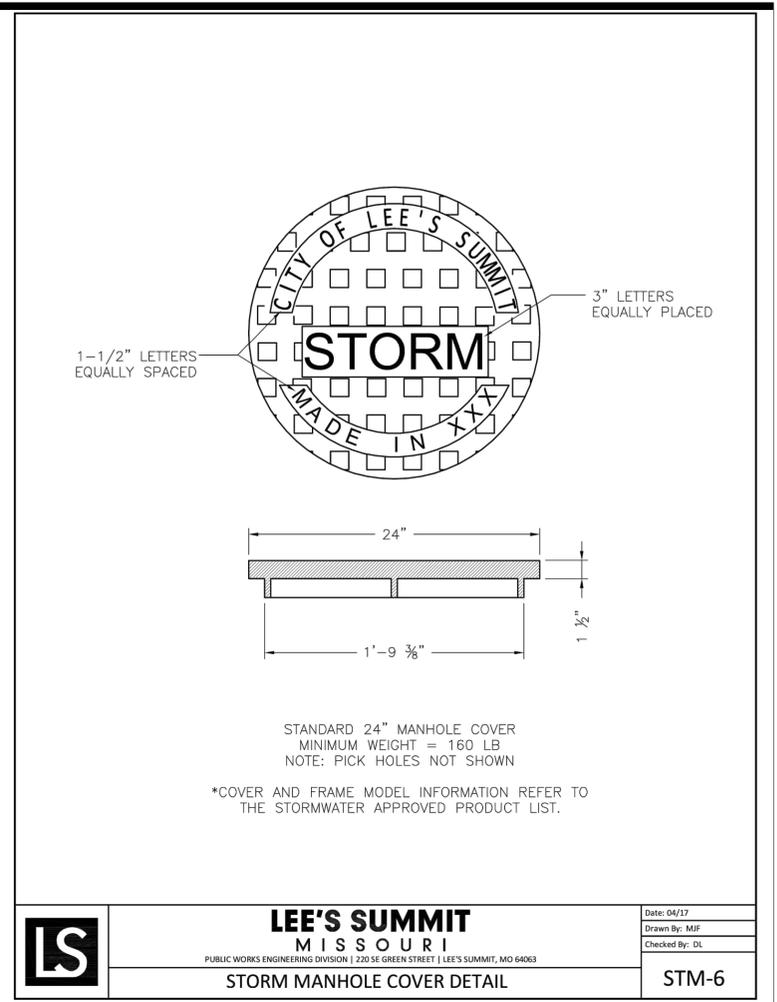


**Construction Details**

Architect: 00212, Professional Engineer: 000133, Professional Land Surveyor: 000059  
 Tuesday May 09, 2023, 8:50am  
 Layout: 18 Construction Details  
 C:\12720\Civil\_3D\Production Drawings\Mass Grading\Lee's Summit\12720C-4600.dwg



- Notes:**
- Refer to all project Geotechnical reports including:
    - "Preliminary Geotechnical Report - View High Green Development, I-470 & View High Drive, Lee's Summit Missouri" Dated May 29, 2013, Prepared By Terracon Consultants, Inc.
    - "Geotechnical Engineering Report - Paragon Star Roadways and Borrow Source, Lee's Summit Missouri" Dated December 8, 2016 Prepared By Terracon Consultants, Inc.
    - "Geotechnical Engineering Report Addendum #1 Paragon Star Roadways and Borrow Source - Rock Slopes" Dated January 4, 2017 Prepared By Terracon Consultants, Inc.
  - Section Based off of Boring B-109, Actual elevations of each geological strata may vary on site.
  - On-Site Geotechnical Engineer will identify limits of each strata, and resulting slope recommendations.



The information provided on this drawing conforms to construction records; it is not intended for construction, implementation or recording purposes; and it is solely based on information obtained by GBA.

Date: 4/11/23  
Certified by: Bradley D. Burton  
Title: Senior Associate  
Firm: GBA

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Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
5/15/18		Revised Field Elevations		
8/7/18		City Comments		
8/28/18		City Comments		
9/14/18		City Comments		
10/10/18		Removed Floodway Grading		
3/10/20		City Comments		
12/1/20		North slope grading revisions		

DATE: 4/15/19  
DESIGN BY: CEL  
DRAWN BY: DRV  
PROJECT NO.: 12720  
SHEET NO.: 18  
TOTAL SHEETS: 43

Architect 00212, Professional Engineer 000133, Professional Land Surveyor 000059  
 Tuesday, May 09, 2023, 8:52am -- Copyright 2023, George Butler Associates, Inc.  
 C:\12720\Civil\_3D\Production Drawings\Mass Grading\Lee's Summit\12720-4600.dwg Layout: 19 Headwall Details

"+00.00 100.10", "-1.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

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 Date: 4/11/23  
 Certified by: Bradley D. Burton  
 Title: Senior Associate  
 Firm: GBA

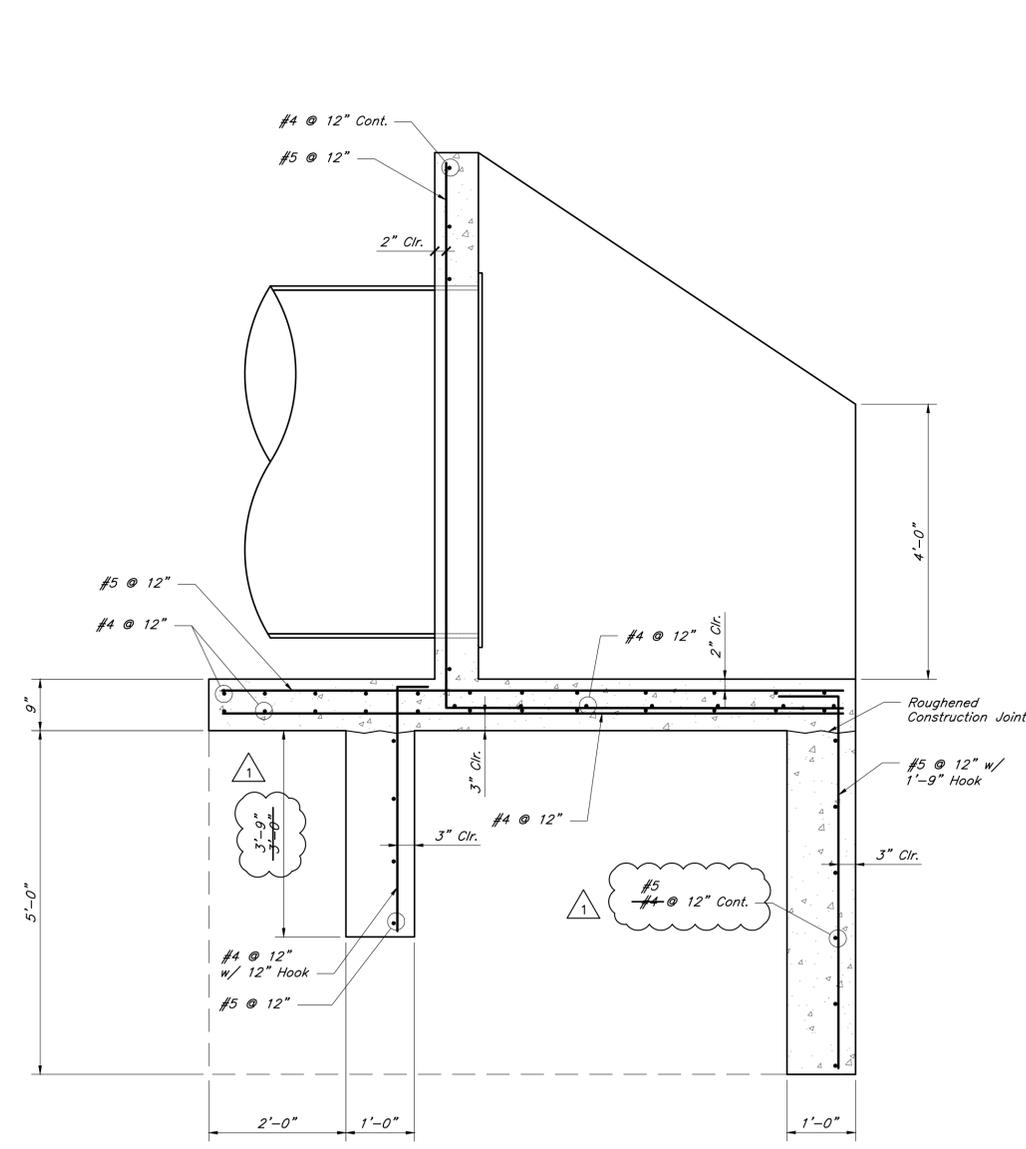
**GBA**  
**architects**  
**engineers**  
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 Lenexa, Kansas 66219  
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DATE:	4/15/19
DESIGN BY:	CEL
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PROJECT NO.:	12720
SHEET NO.:	19
TOTAL SHEETS:	43

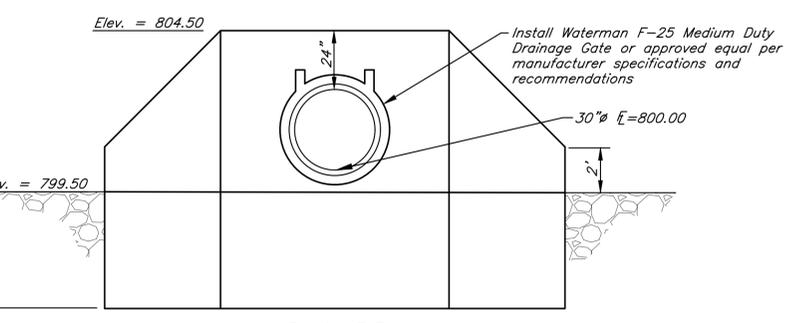
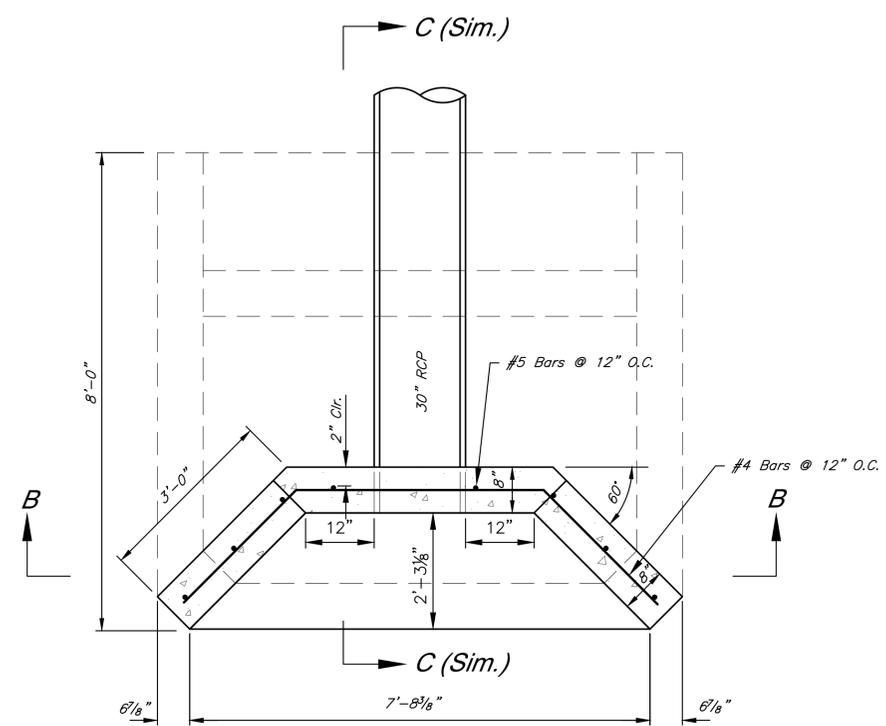
Bradley D. Burton  
 Professional Engineer  
 License No. 25862

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
 Lee's Summit, Missouri

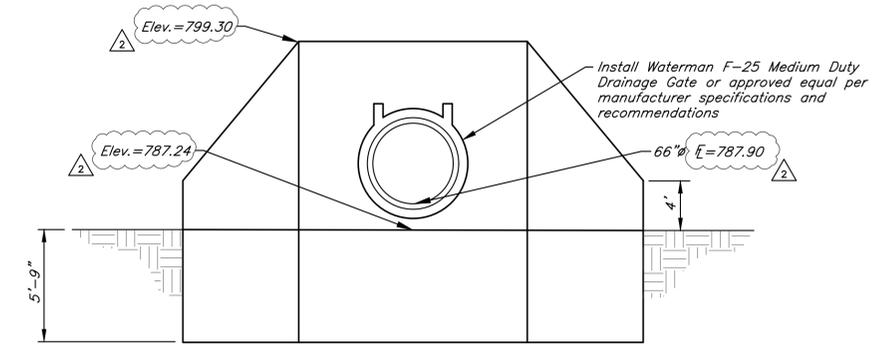
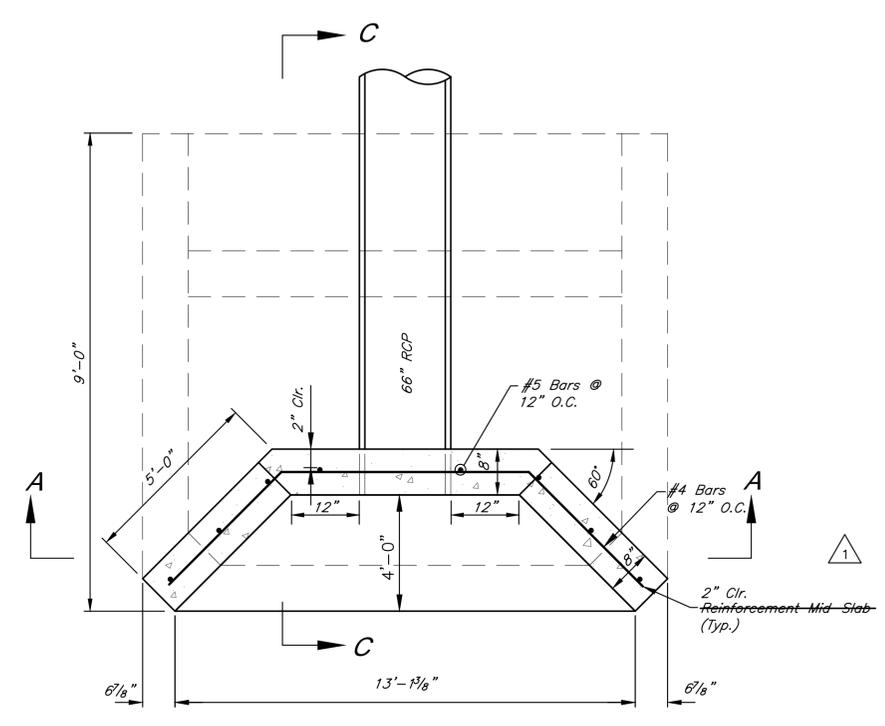
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△	5/15/18	Revised Field Elevations		
	8/7/18	City Comments		
	8/28/18	City Comments		
	9/14/18	City Comments		
△	10/10/18	Removed Floodway Grading		
△	4/9/19	Structure 700 removed from floodway		
△	3/10/20	City Comments		
	12/1/20	North slope grading revisions		



**SECTION C-C - STRUCTURE 700**  
 Not to Scale



**HEADWALL DETAIL - STRUCTURE 1200**  
 Not to Scale



**HEADWALL DETAIL - STRUCTURE 700**  
 Not to Scale

GENERAL NOTES – STRUCTURAL

DESIGN SPECIFICATIONS: ACI 318R-11, AISC 14TH EDITION

GENERAL:

- THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY OBSERVED DISCREPANCIES IN DIMENSIONS, DETAILING, OR OTHER ITEMS AS SHOWN ON THE PLANS OR SPECIFIED PRIOR TO PROCEEDING WITH WORK RELATING TO SAID DISCREPANCIES.
- THE CONTRACTOR SHALL NOT ALTER OR MODIFY WORK SHOWN ON THE STRUCTURAL DRAWINGS WITHOUT RECEIVING WRITTEN APPROVAL FROM THE ENGINEER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPLYING SHOP DRAWINGS REINFORCING STEEL, HANDRAILS AND POST-INSTALLED ANCHORS. SHOP DRAWINGS MUST BE REVIEWED FOR CONFORMANCE WITH THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND OPERATIONS OF CONSTRUCTION, AND SAFETY PRECAUTIONS AND PROGRAMS INCIDENTAL THERETO, ALL OF WHICH ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR, AND SHALL BE STAMPED "APPROVED" BY THE CONTRACTOR PRIOR TO SUBMITTAL. SHOP DRAWINGS SUBMITTED WITHOUT THE CONTRACTOR'S STAMPED APPROVAL WILL BE RETURNED REJECTED. ALL SHOP DRAWINGS SHALL BE REVIEWED BY THE STRUCTURAL ENGINEER PRIOR TO CONSTRUCTION.
- THE STRUCTURAL SYSTEMS SHOWN ON THESE DOCUMENTS HAVE BEEN DESIGNED FOR THE FINAL IN PLACE USAGE OF THE STRUCTURE BASED ON THE INTENDED OCCUPANCY AND CODE REQUIREMENTS. WHILE GENERAL CONSTRUCTABILITY HAS BEEN CONSIDERED, THE STRUCTURAL SYSTEMS HAVE NOT BEEN DESIGNED TO ACCOMMODATE SPECIFIC CONSTRUCTION MEANS AND METHODS THAT MIGHT BE UTILIZED BY THE CONTRACTOR.
- THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE, AND EXCEPT WHERE SPECIFICALLY SHOWN, DO NOT INDICATE THE METHOD OR MEANS OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, PROCEDURES, TECHNIQUES, SEQUENCE, AND SAFETY PRECAUTIONS AND PROGRAMS. THE ENGINEER WILL NOT BE RESPONSIBLE FOR THE ACTS OR OMISSION OF THE CONTRACTOR, SUBCONTRACTOR, OR ANY OTHER PERSONS PERFORMING ANY OF THE WORK, OR FOR THE FAILURE OF ANY OF THEM TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- PERIODIC SITE OBSERVATION BY FIELD REPRESENTATIVES OF GBA, IF PROVIDED, IS SOLELY FOR THE PURPOSE OF DETERMINING IF THE WORK OF THE CONTRACTOR IS PROCEEDING IN GENERAL ACCORDANCE WITH THE STRUCTURAL CONTRACT DOCUMENTS. THIS LIMITED SITE OBSERVATION SHOULD NOT BE CONSTRUED AS EXHAUSTIVE OR CONTINUOUS TO CHECK THE QUALITY OR QUANTITY OF THE WORK, BUT RATHER PERIODIC IN AN EFFORT TO GUARD THE OWNER AGAINST DEFECTS OR DEFICIENCIES IN THE WORK OF THE CONTRACTOR.
- MODOT SPECIFICATIONS SHALL APPLY TO ALL ITEMS NOT SPECIFICALLY ADDRESSED IN THESE PLANS.

FOUNDATIONS:

- FOUNDATIONS FOR THIS PROJECT HAVE BEEN DESIGNED IN ACCORDANCE WITH REQUIREMENTS SET FORTH IN A SOILS REPORT PREPARED BY TERRACON CONSULTANTS, INC. DEC. 8, 2016 (TERRACON PROJ. NO. 02165208). WALLS HAVE BEEN DESIGNED FOR AN ALLOWABLE SOIL BEARING VALUE OF 1500 PSF. THE CONTRACTOR SHALL REFER TO SOIL REPORT FOR ALL REQUIREMENTS AND RECOMMENDATIONS PERTINENT TO THIS PROJECT.

CONCRETE AND REINFORCING STEEL:

- CONCRETE MIX DESIGNS SHALL MEET THE FOLLOWING REQUIREMENTS: (TAKEN FROM ACI 211.1)

MINIMUM COMPRESSIVE STRENGTH (psi)	MAXIMUM AGGREGATE SIZE (IN.)	MIN. CEMENT (LBS.)	MAXIMUM WATER/CEMENT RATIO	MAXIMUM SLUMP (IN.)	AIR ENTRAINMENT PERCENT (%)
4000	¾	611	.48	4	6±1

NOTE: DO NOT ADD WATER TO CONCRETE DURING DELIVERY, AT PROJECT SITE, OR DURING PLACEMENT. THE INTENT OF THESE SPECIFICATIONS IS THAT THE CONTRACTOR SUPPLY CONCRETE MIXES WITH A MINIMUM AMOUNT OF MIX WATER IN ORDER TO LIMIT PLASTIC SHRINKAGE CRACKING. IT IS EXPECTED THAT WORKABILITY FOR CONCRETE MIXES WILL REQUIRE THE ADDITION OF WATER-REDUCING AND/OR SUPER-PLASTICIZING ADMIXTURES.

- LAP SPlice LENGTHS FOR HORIZONTAL #4 AND #5 BARS ARE 2'-0" AND 2'-6" RESPECTIVELY.
- ALL CONCRETE IS REINFORCED UNLESS SPECIFICALLY CALLED OUT AS UN-REINFORCED. REINFORCE ALL CONCRETE NOT OTHERWISE SHOWN WITH SAME STEEL AS IN SIMILAR SECTIONS OR AREAS.
- NO ALUMINUM ITEMS SHALL BE EMBEDDED IN ANY CONCRETE OR PLACED IN CONTACT WITH CONCRETE.
- CAST-IN-PLACE CONCRETE CONSTRUCTION SHALL CONFORM TO THE LATEST AMERICAN CONCRETE INSTITUTE DOCUMENTS. ACI301, 305, 306, 315, 318, AND 347 UNLESS OTHERWISE NOTED IN THESE CONTRACT DOCUMENTS.
- PRIOR TO PLACING CONCRETE IN ANY LOCATION, IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO HAVE THOROUGHLY CHECKED AND COORDINATED ALL DIMENSIONS, ELEVATIONS, OPENINGS, RECESSES, AND BLOCKOUTS SHOWN ON THE ARCHITECTURAL, STRUCTURAL AND MECHANICAL/ELECTRICAL/PLUMBING DRAWINGS. IN THE EVENT ERRORS, CONFLICTS, OR OMISSIONS EXIST, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE ARCHITECT OR ENGINEER FOR NECESSARY CORRECTIVE ACTION.
- REINFORCING BARS #4 AND LARGER (EXCEPT TIES AND STIRRUPS) SHALL MEET ASTM A615 WITH SUPPLEMENTARY REQUIREMENTS (S1), GRADE 60. SMALLER BARS SHALL BE GRADE 40.
- CONCRETE COVERAGE OF REINFORCEMENT SHALL HAVE THE FOLLOWING CLEAR DISTANCES UNLESS NOTED OTHERWISE ON THE DRAWINGS:
  - CAST AGAINST EARTH \_\_\_\_\_3"
  - FORMED CONCRETE EXPOSED TO EARTH OR WEATHER \_\_\_\_\_2"
  - NOT EXPOSED TO EARTH OR WEATHER \_\_\_\_\_1" SLABS, 1-½" BEAMS AND COLUMNS
- EMBEDDED AND ALL REINFORCING BARS MARKED CONTINUOUS SHALL BE EMBEDDED TO DEVELOP THE FULL TENSION CAPACITY OF THE BAR. LAPS SHALL BE CLASS B TENSION LAPS UNLESS SPECIFIED OTHERWISE ON THE DRAWINGS.
- ALL BARS ARE TO BE SUPPORTED IN FORMS AND SPACED WITH WIRE BAR SUPPORTS PER ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING CONCRETE STRUCTURES" (LATEST EDITION). BARS SHALL BE SECURELY WIRED PER LATEST EDITION OF CRSI'S "RECOMMENDED PRACTICE FOR PLACING REINFORCING BARS." ACCESSORIES FOR EXPOSED CONCRETE SHALL BE PLASTIC OR HAVE PLASTIC-TIPPED FEET.
- CONCRETE PLACED DURING COLD WEATHER SHALL CONFORM TO THE REQUIREMENTS OF ACI 306R-88. COLD WEATHER IS DEFINED AS A PERIOD WHEN, FOR MORE THAN 3 SUCCESSIVE DAYS, THE MEAN DAILY TEMPERATURE DROPS BELOW 40°F.
- CONCRETE PLACED DURING HOT WEATHER SHALL CONFORM TO THE REQUIREMENTS OF ACI 305R-99. HOT WEATHER IS DEFINED AS THAT COMBINATION OF AIR TEMPERATURE, RELATIVE HUMIDITY AND WIND SPEED THAT WILL CAUSE A RATE OF EVAPORATION OF 0.2 LB/SQ.FT./HR. OR MORE AS DEFINED BY FIGURE 2.1.5 OF ACI 305R-99.
- CHAMFER ALL EXPOSED CORNERS OF CONCRETE SLABS, WALLS, BEAMS AND COLUMNS ¾", UNLESS NOTED OTHERWISE ON DETAILS.

POST-INSTALLED ANCHORS AND REBAR:

- POST-INSTALLED ANCHORS AND REBAR SHALL BE INSTALLED USING AN ADHESIVE UNLESS SPECIFICALLY NOTED OTHERWISE. ANCHORS SHALL CONSIST OF THE FOLLOWING ANCHOR TYPES, AS PROVIDED BY HILTI, INC.:
  - ANCHORAGE TO CONCRETE
    - HILTI HIT-HY 200 SAFE SET SYSTEM WITH HILTI HOLLOW DRILL BIT (TE-CD OR TE-YD)
    - STEEL ANCHOR ELEMENT SHALL BE HILTI HAS-E THREADED ROD PER ICC ESR-3187.
  - REBAR DOWELING INTO CONCRETE
    - HILTI HIT-HY 200 SAFE SET SYSTEM WITH HILTI HOLLOW DRILL BIT (TE-CD OR TE-YD) AND CONTINUOUSLY DEFORMED REBAR PER ICC ESR-3187.
- CONTACT HILTI AT (800) 879-8000 FOR PRODUCT RELATED QUESTIONS.
- IF THE CONTRACTOR CHOOSES TO SUBMIT A SUBSTITUTION FOR APPROVAL, THEY MUST ATTACH CALCULATIONS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE JURISDICTION WHERE THE PROJECT IS LOCATED SHOWING THAT THE SUBSTITUTION IS "EQUAL". THE ICC-ES EVALUATION REPORT FOR THE "EQUAL" PRODUCT MUST ALSO BE SUBMITTED FOR REVIEW. THE CONTRACTOR SHALL NOTE THAT THE ICC-REPORT MAY INDICATE ADDITIONAL SPECIAL INSPECTION REQUIREMENTS. ANY ADDITIONAL SPECIAL INSPECTION REQUIREMENTS MUST BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER.
- INSTALL ANCHORS PER THE MANUFACTURER INSTRUCTIONS, AS INCLUDED IN THE ANCHOR PACKAGING.
- THE CONTRACTOR SHALL ARRANGE AN ANCHOR MANUFACTURER'S REPRESENTATIVE TO PROVIDE ONSITE INSTALLATION TRAINING FOR ALL OF THEIR ANCHORING PRODUCTS SPECIFIED. THE STRUCTURAL ENGINEER OF RECORD MUST RECEIVE DOCUMENTED CONFIRMATION THAT ALL OF THE CONTRACTOR'S PERSONNEL WHO INSTALL ANCHORS ARE TRAINED PRIOR TO THE COMMENCEMENT OF INSTALLING ANCHORS.
- OVERHEAD ADHESIVE ANCHORS MUST BE INSTALLED USING THE HILTI PROFI SYSTEM.
- ANCHOR CAPACITY IS DEPENDANT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO EDGE OF CONCRETE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON THE DRAWINGS.
- EXISTING REINFORCING BARS IN THE CONCRETE STRUCTURE MAY CONFLICT WITH SPECIFIC ANCHOR LOCATIONS. UNLESS NOTED ON THE DRAWINGS THAT THE BARS CAN BE CUT, THE CONTRACTOR SHALL REVIEW THE EXISTING STRUCTURAL DRAWINGS AND SHALL UNDERTAKE MEASURES TO LOCATE THE POSITION OF THE EXISTING REINFORCING BARS AT THE LOCATIONS OF THE CONCRETE ANCHORS, BY HILTI FERROSCAN, GPR, X-RAY, OR OTHER MEANS.

"100-00 100.10", "±.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

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Date: 4/11/23  
 Certified by: Bradley D. Burton  
 Title: Senior Associate  
 Firm: GBA



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 Lenexa, Kansas 66219  
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DATE:	4/15/19
DESIGN BY:	CEL
DRAWN BY:	DRV
PROJECT NO.:	12720
SHEET NO.	TOTAL SHEETS
20	43

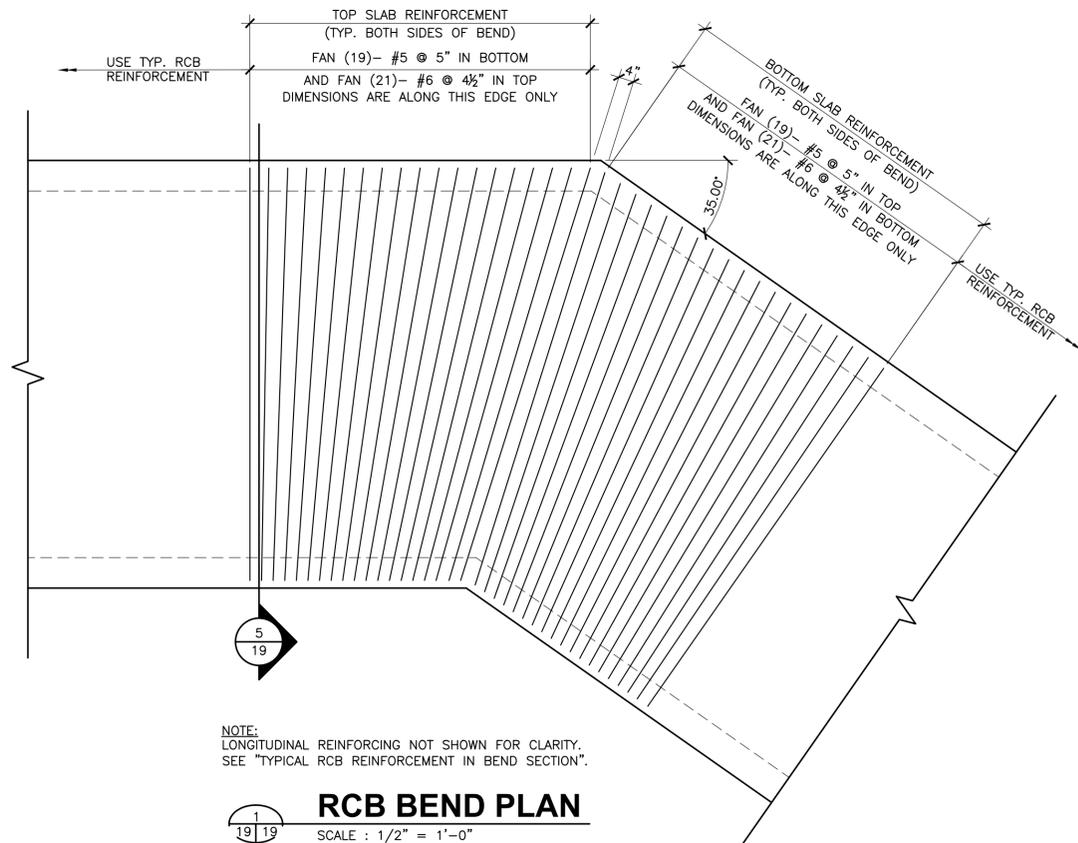
Bradley D. Burton  
 Professional Engineer  
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Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
 Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
	5/15/18	Revised Field Elevations		
	8/7/18	City Comments		
	8/28/18	City Comments		
	9/14/18	City Comments		
	10/10/18	Removed Floodway Grading		
	11/29/18			
	4/11/19	Temporary River Crossing Repair		
	4/15/19	Temporary River Crossing Repair		
	3/10/20	City Comments		
	12/1/20	North slope grading revisions		
	2/4/21	Retaining Wall Station & Offsets		
	3/11/21	Line 300 Wingwall Revision		
	3/24/21	Headwall Detail		

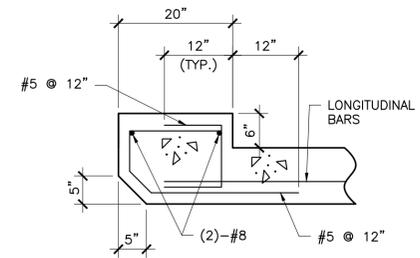
Architect 00212, Professional Engineer 000133, Professional Land Surveyor 000059  
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 Layout: 20 Structural General Notes  
 Tuesday, May 09, 2023, 8:52am

Architect: 00212, Professional Engineer: 000133, Professional Land Surveyor: 000059  
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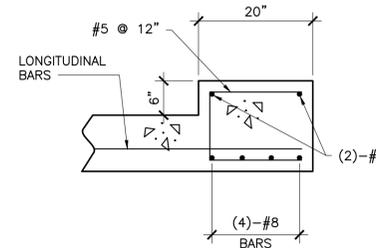


NOTE:  
LONGITUDINAL REINFORCING NOT SHOWN FOR CLARITY.  
SEE "TYPICAL RCB REINFORCEMENT IN BEND SECTION".

**RCB BEND PLAN**  
SCALE : 1/2" = 1'-0"



**UPSTREAM HEADWALL REINFORCEMENT**  
SCALE : 3/4" = 1'-0"



**DOWNSTREAM HEADWALL REINFORCEMENT**  
SCALE : 3/4" = 1'-0"

"+00.00 100.10", "-1.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

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Certified by: Bradley D. Burton  
Title: Senior Associate  
Firm: GBA

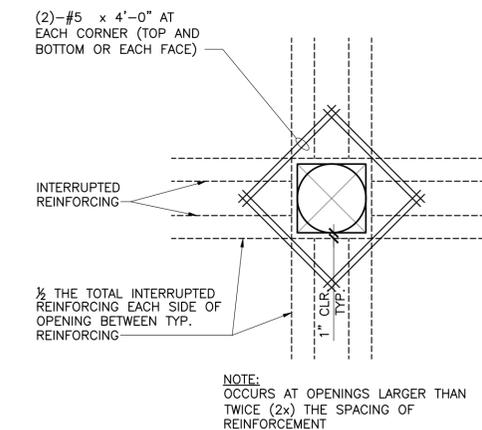
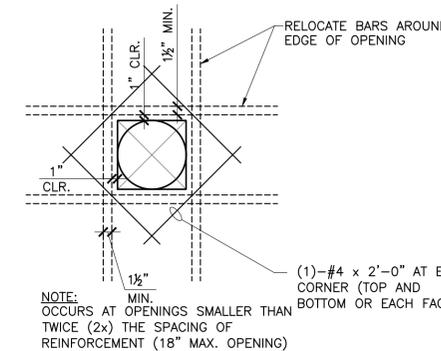
**GBA**  
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engineers  
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DATE: 4/15/19  
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DRAWN BY: DRV  
PROJECT NO.: 12720  
SHEET NO. 21  
TOTAL SHEETS 43

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Professional Engineer  
License No. 25862

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
5	5/15/18	Revised Field Elevations		
8	8/7/18	City Comments		
8	8/28/18	City Comments		
9	9/14/18	City Comments		
10	10/10/18	Removed Floodway Grading		
11	11/29/18	Temporary River Crossing Repair		
12	4/11/19	Temporary River Crossing Repair		
13	4/15/19	City Comments		
14	3/10/20	North slope grading revisions		
15	12/1/20	Retaining Wall Station & Offsets		
16	2/4/21	Line 300 Wingwall Revision		
17	3/11/21	Headwall Detail		
18	3/24/21			

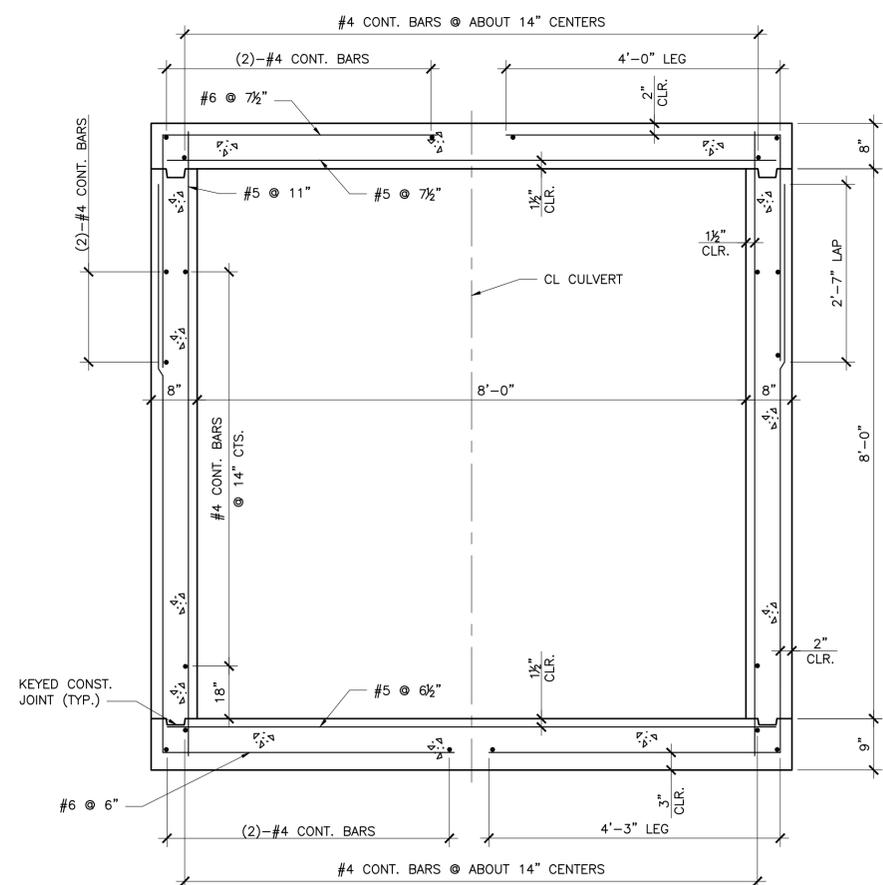


**ADDITIONAL REINF. AT OPENINGS IN WALLS AND SLABS**  
SCALE : N.T.S.

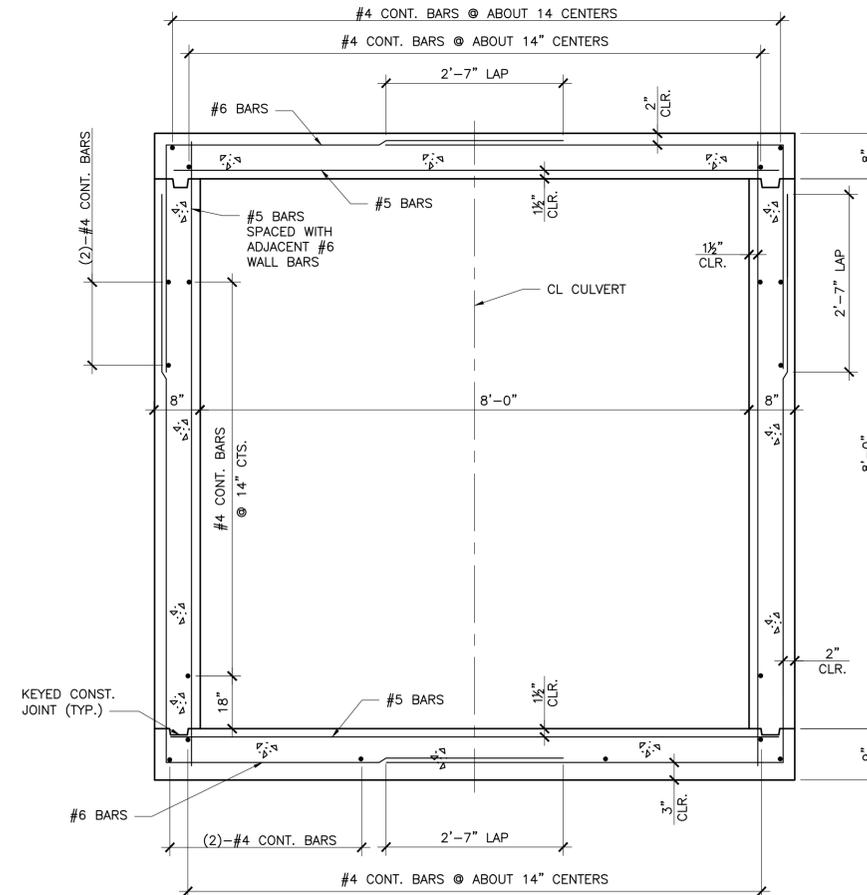
6  
19 | 19

**GENERAL NOTES:**

1. MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1/2".
2. MODOT SPECIFICATIONS SHALL APPLY TO ALL ITEMS NOT SPECIFICALLY ADDRESSED IN THESE PLANS.
3. SPLICE LENGTHS FOR #4 BARS SHALL BE 2'-0", UNLESS SPECIFICALLY SHOWN OTHERWISE.
4. CULVERT IS DESIGNED FOR HL-93 LOADING



**TYPICAL RCB REINFORCEMENT**  
SCALE : 3/4" = 1'-0"



**TYPICAL RCB REINFORCEMENT IN BEND SECTION**  
SCALE : 3/4" = 1'-0"

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"+00.00 100.10", "-1.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

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 Firm: GBA

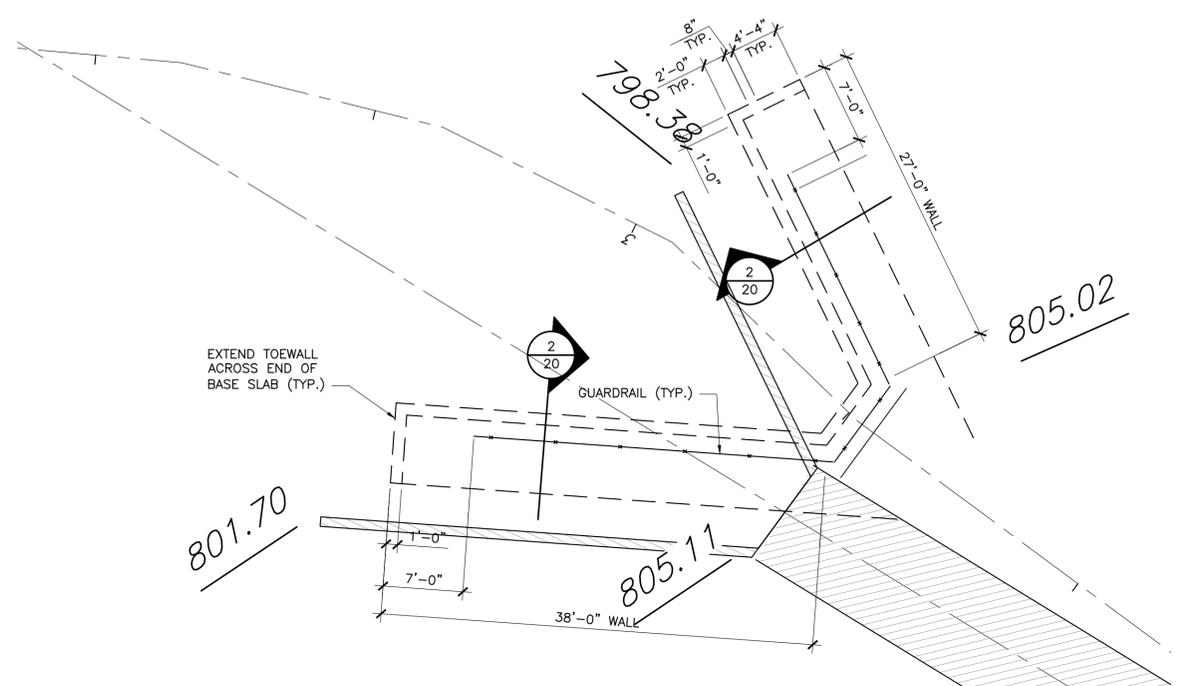
<b>GBA</b> architects engineers		DATE: 4/15/19
9801 Renner Boulevard Lenexa, Kansas 66219 913.492.0400 www.gbateam.com		DESIGN BY: CEL
		DRAWN BY: DRV
		PROJECT NO.: 12720
SHEET NO.	TOTAL SHEETS	
<b>22</b>	<b>43</b>	

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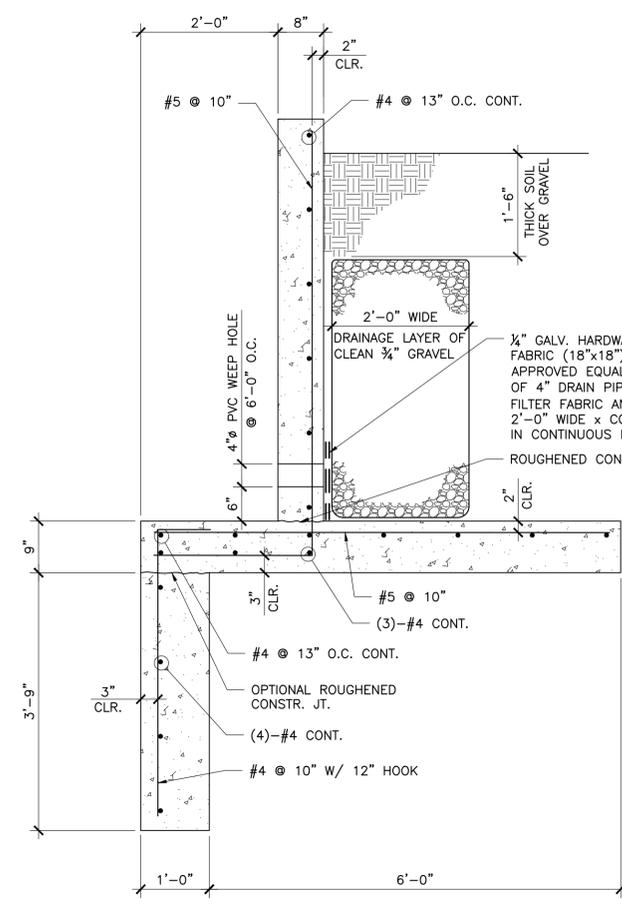
Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
 Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
	5/15/18	Revised Field Elevations		
	8/7/18	City Comments		
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	12/1/20	Retaining Wall Station & Offsets		
	2/4/21	Line 300 Wingwall Revision		
	3/11/21	Headwall Detail		
	3/24/21			

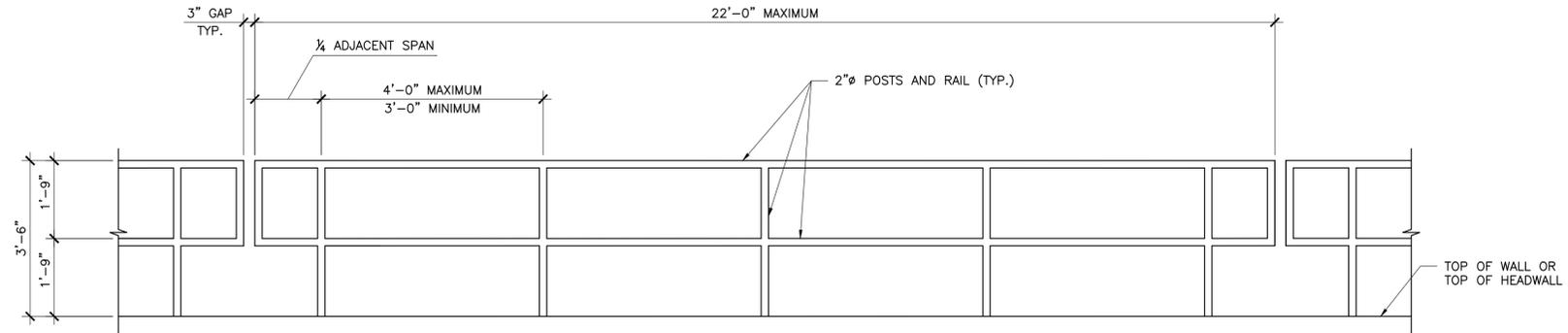
Bar Size	Length
HORIZ. #4	24"
VERT. #4	17"



**PLAN OF UPSTREAM WINGWALLS**  
 SCALE: 1/8" = 1'-0"

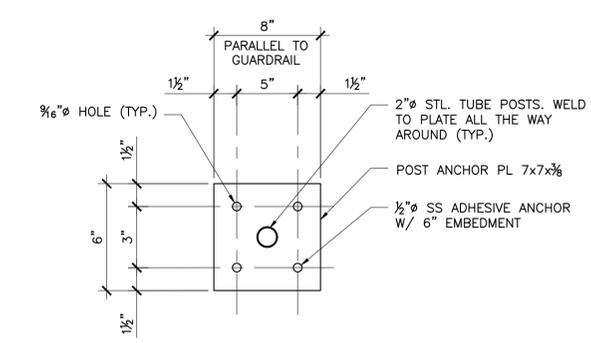


**SECTION**  
 SCALE: 3/4" = 1'-0"



**GUARDRAIL DETAIL**  
 SCALE: N.T.S.

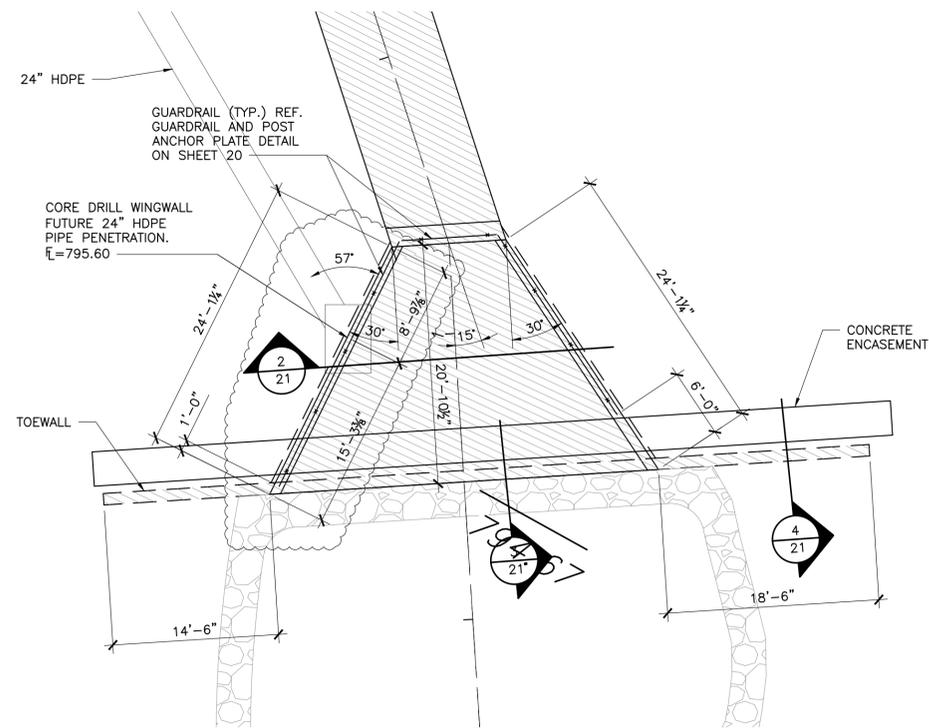
- NOTES:**
1. WINGWALLS AND HEADWALL TO BE COMPLETED BEFORE FABRICATION OF GUARDRAIL. GUARDRAIL IS TO BE INSTALLED WITH MEMBERS VERTICAL. HANDRAIL SHALL BE CONSTRUCTED IN PANELS THAT HAVE MAX. LENGTH OF 22'-0".
  2. GUARDRAIL AND ANCHOR PLATES TO BE POWDER COATED BLACK.
  3. ALL PIPES SHALL BE A53 GRADE B (EXTRA STRONG) AND PLATES SHALL BE A36.



**POST ANCHOR PLATE**  
 SCALE: N.T.S.

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 C:\12720\Civil 3D\Production Drawings\Mass Grading\Lee's Summit\12720\_S113.dwg Layout: 23 RCB Details -- Tuesday May 09, 2023, 8:53am -- Copyright 2023, George Buller Associates, Inc.

794.85



**1**  
 21 | 21  
**PLAN OF DOWNSTREAM WINGWALLS**  
 SCALE : 1/8" = 1'-0"

"+00.00 100.10", "-1.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

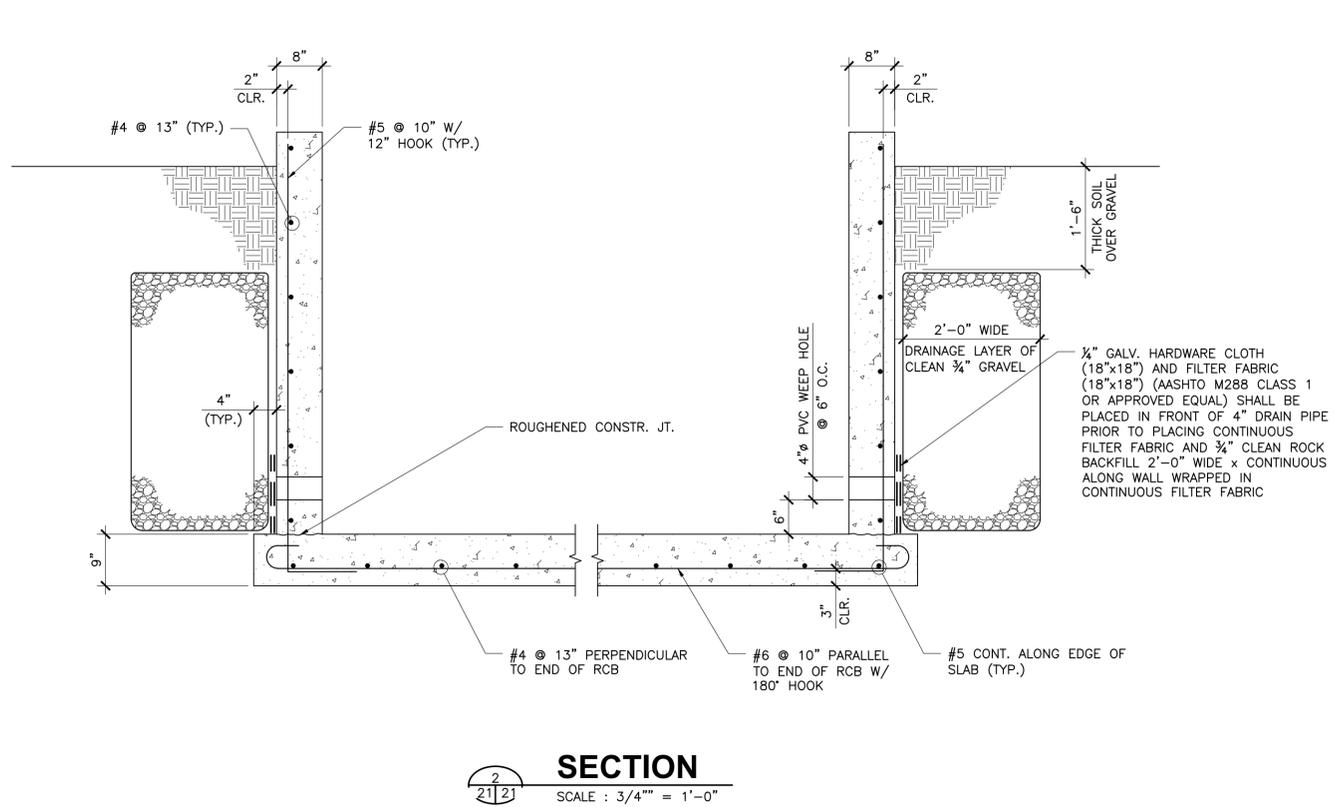
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 Certified by: Bradley D. Burton  
 Title: Senior Associate  
 Firm: GBA

<b>GBA</b> architects engineers		DATE: 4/15/19
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		DRAWN BY: DRV
		PROJECT NO.: 12720
SHEET NO.	TOTAL SHEETS	
<b>23</b>	<b>43</b>	

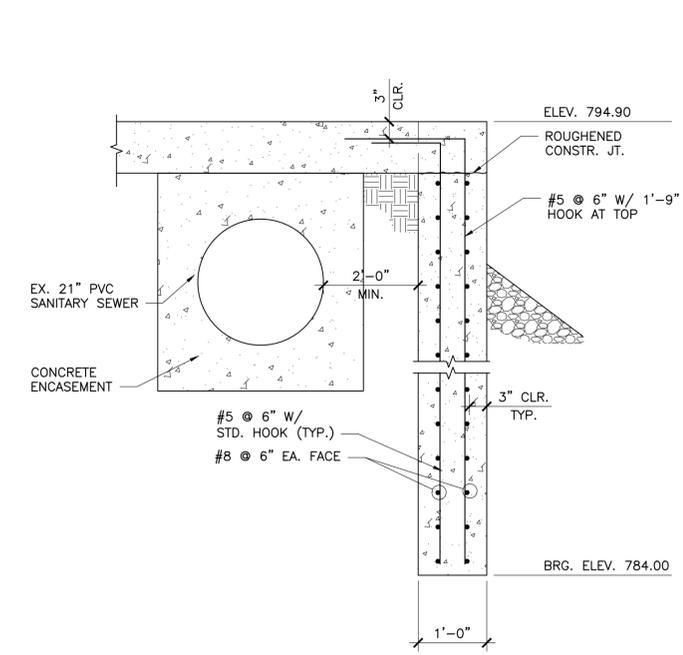
Bradley D. Burton  
 Professional Engineer  
 License No. 25862

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
 Lee's Summit, Missouri

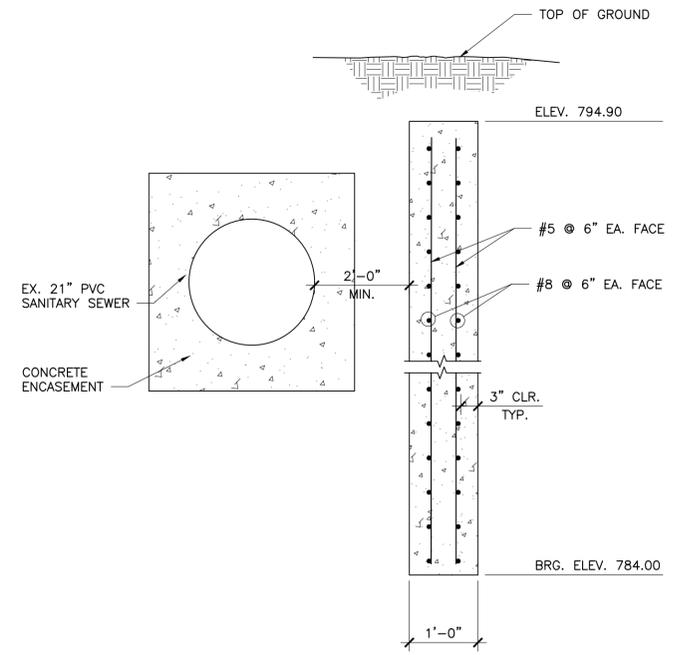
NO.	DATE	REVISIONS	BY	APPROVED
	5/15/18	Revised Field Elevations		
	8/7/18	City Comments		
	8/28/18	City Comments		
	9/14/18	City Comments		
	10/10/18	Removed Floodway Grading		
	11/29/18			
	4/11/19	Temporary River Crossing Repair		
	4/15/19	Temporary River Crossing Repair		
	3/10/20	City Comments		
	12/1/20	North slope grading revisions		
	2/4/21	Retaining Wall Station & Offsets		
	3/11/21	Line 300 Wingwall Revision		
	3/24/21	Headwall Detail		



**2**  
 21 | 21  
**SECTION**  
 SCALE : 3/4" = 1'-0"



**3**  
 21 | 21  
**SECTION**  
 SCALE : 3/4" = 1'-0"



**4**  
 21 | 21  
**SECTION**  
 SCALE : 3/4" = 1'-0"

**RCB Details**

Architect 00212, Professional Engineer 000133, Professional Land Surveyor 000059  
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 C:\12720\Civil 3D\Production Drawings\Mass Grading\Lee's Summit\12720\_S111.dwg Layout: 24 Special Curb Inlet Details

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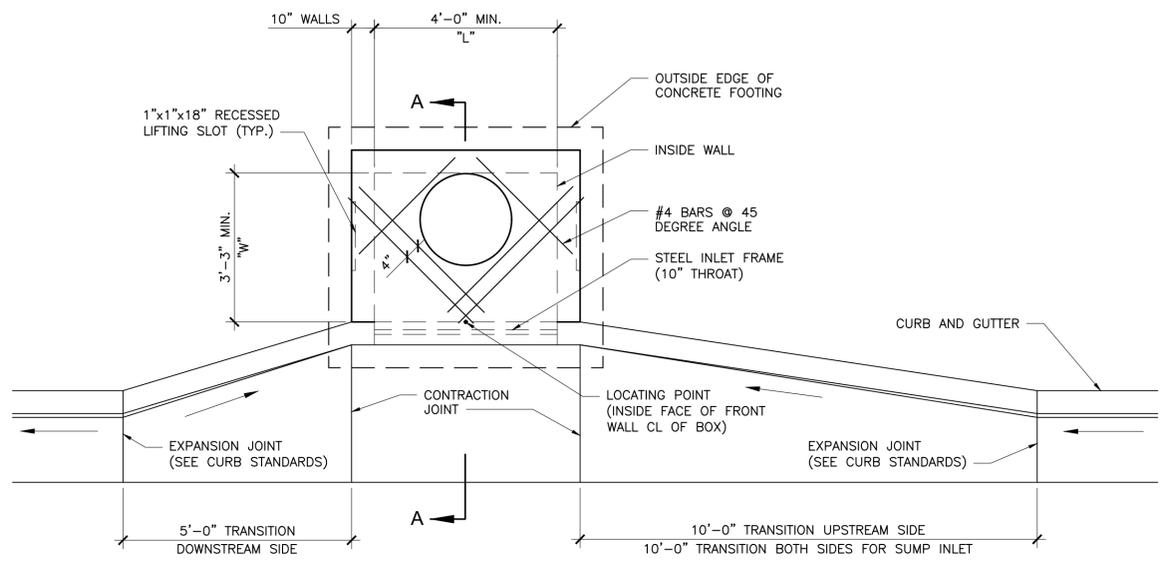
The information provided on this drawing conforms to construction records; it is not intended for construction, implementation or recording purposes; and it is solely based on information obtained by GBA.  
 Date: 4/11/23  
 Certified by: Bradley D. Burton  
 Title: Senior Associate  
 Firm: GBA

<b>GBA</b> architects engineers	
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DATE: 4/15/19	DESIGN BY: CEL
DRAWN BY: DRV	PROJECT NO.: 12720
SHEET NO. <b>24</b>	TOTAL SHEETS <b>43</b>

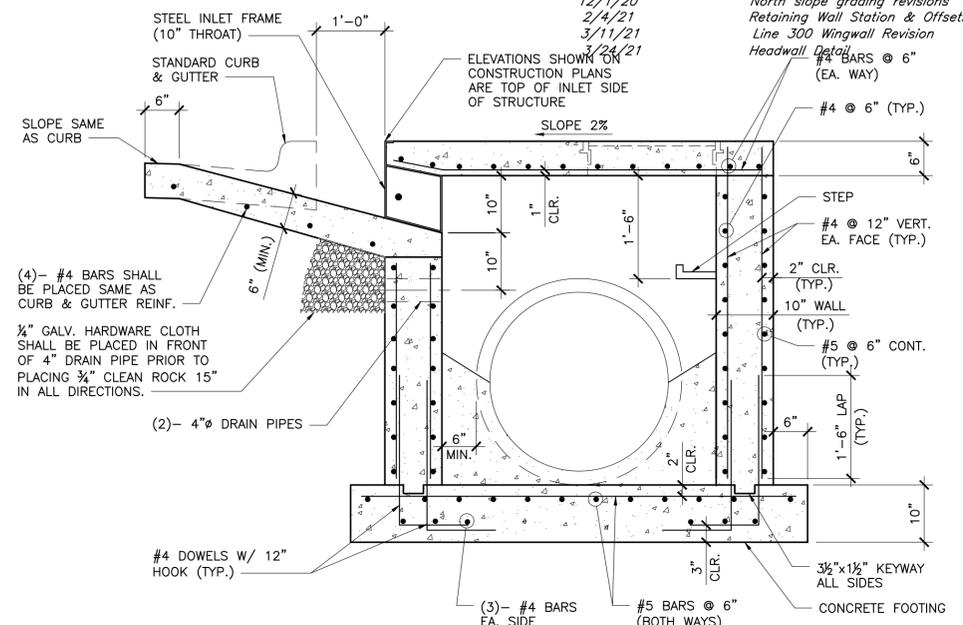
- GENERAL NOTES:**
1. THE FIRST DIMENSION LISTED IN THE CONSTRUCTION NOTES IS THE "L" DIMENSION.
  2. THE SECOND DIMENSION IS THE "W" DIMENSION.
  3. FLOW LINES LISTED ON THE PROJECT PLANS ARE LISTED AT THE INSIDE FACE OF THE WALL.
  4. FLOOR OF INLET GROUTED AND SHAPED TO MATCH PIPE INVERT TO PROVIDE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

Bradley D. Burton  
 Professional Engineer  
 License No. 25862

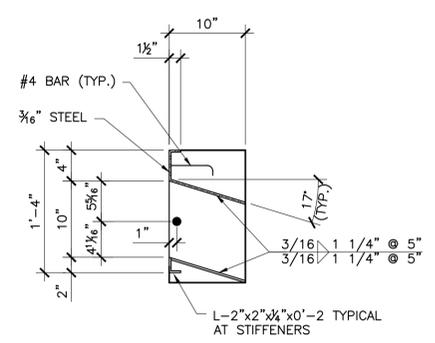
NO.		DATE	REVISIONS	BY	APPROVED
	5/15/18		Revised Field Elevations		
	8/7/18		City Comments		
	8/28/18		City Comments		
	9/14/18		City Comments		
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	3/11/21		Line 300 Wingwall Revision		
	3/24/21		Headwall Detail		



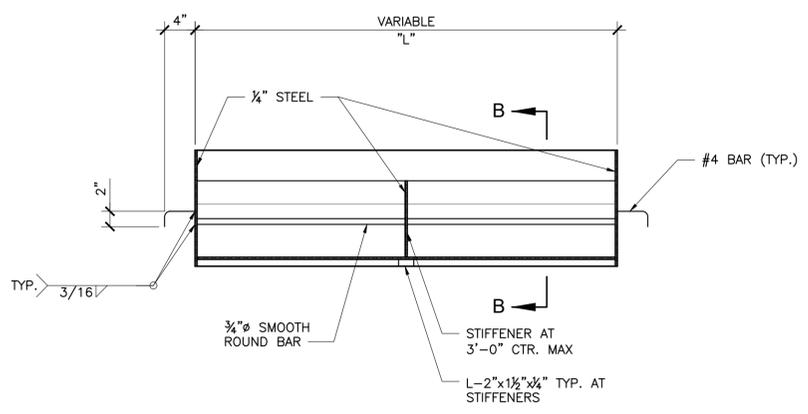
**CURB INLET OR JUNCTION BOX PLAN**



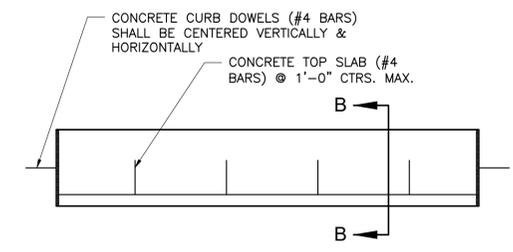
**SECTION A-A**



**SECTION B-B**



**CURB INLET THROAT FRONT VIEW**



**TOP VIEW**

**PROJECT BENCHMARK:**

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

**Legend**

- Proposed Contour
- Existing Contour
- Drainage Swale
- Geotechnical Boring Location
- Erosion Control Blanket
- BMP Plan Reference Number
- Straw Wattles
- Grading Limits
- Exist. Construction Fence for Tree Protection (to be maintained)
- Tree to be saved
- Sediment Fence
- Exist. Sediment Fence (to be maintained)
- Temporary Construction Entrance
- Rock Check Dam

**CAUTION!**

Numerous Utilities on Site. Contractor to verify location and elevation of all utilities prior to commencing construction.

"100.00 100.10", "±.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

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Date: 4/11/23  
 Certified by: Bradley D. Burton  
 Title: Senior Associate  
 Firm: GBA

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

DATE: 4/15/19  
 DESIGN BY: CEL  
 DRAWN BY: DRV  
 PROJECT NO.: 12720  
 SHEET NO.: 25  
 TOTAL SHEETS: 43

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
 Lee's Summit, Missouri

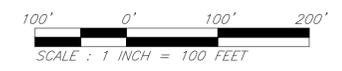
NO.	DATE	REVISIONS	BY	APPROVED
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8/7/18		City Comments		
8/28/18		City Comments		
9/14/18		City Comments		
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12/1/20		Retaining Wall Station & Offsets		
8/2/21		Line 300 Wingwall Revision		
2/11/21		Headwall Detail		
3/24/21				



**EROSION & SEDIMENT CONTROL STAGING CHART** (See Sheets 25 thru 30)

Project Stage	BMP Plan Ref. No.	BMP Description	May Remove after Stage	Notes
A. Prior to Mass Grading	1	Const. Entrance & Staging Area	C	
	2	Install Orange Construction Fence	C	
	3	Perimeter Silt Fence	C	
B. Mass Grading	4	Silt Fence	C	
	5	Ditch Check	C	
	6	Straw Wattles	C	Wattles to be kept on hand for perimeter control where needed.
C. Permanent Stabilization*	7	Seed & Mulch or Blanket or Sod		Erosion control blanket to be installed w/ seed. Check approved seeding dates and install temporary stabilization if out of seeding season. Install blanket according to manufacturer's instructions and stapling pattern.

\* Permanent Stabilization will be considered stabilized when 100% of disturbed area is established with perennial vegetation with a density of 70%.



**Pre-Construction Erosion Control-Phase 1**

Architect: 00212, Professional Engineer: 000133, Professional Land Surveyor: 000059  
 C:\12720\Civil\_3D\Production Drawings\Mass Grading\Lee's Summit\12720-4050.dwg Layout: 25 Pre-Construction -- Tuesday May 09, 2023, 8:54am -- Copyright 2023, George Buller Associates, Inc.

**PROJECT BENCHMARK:**

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

**CAUTION!**

Numerous Utilities on Site.  
Contractor to verify location  
and elevation of all utilities  
prior to commencing  
construction.

**Legend**

- Proposed Contour
- Existing Contour
- Drainage Swale
- Geotechnical Boring Location
- Erosion Control Blanket
- BMP Plan Reference Number
- Straw Wattles
- Grading Limits
- Exist. Construction Fence for Tree Protection (to be maintained)
- Tree to be saved
- Sediment Fence
- Exist. Sediment Fence (to be maintained)
- Temporary Construction Entrance
- Rock Check Dam

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Firm: GBA

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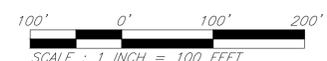
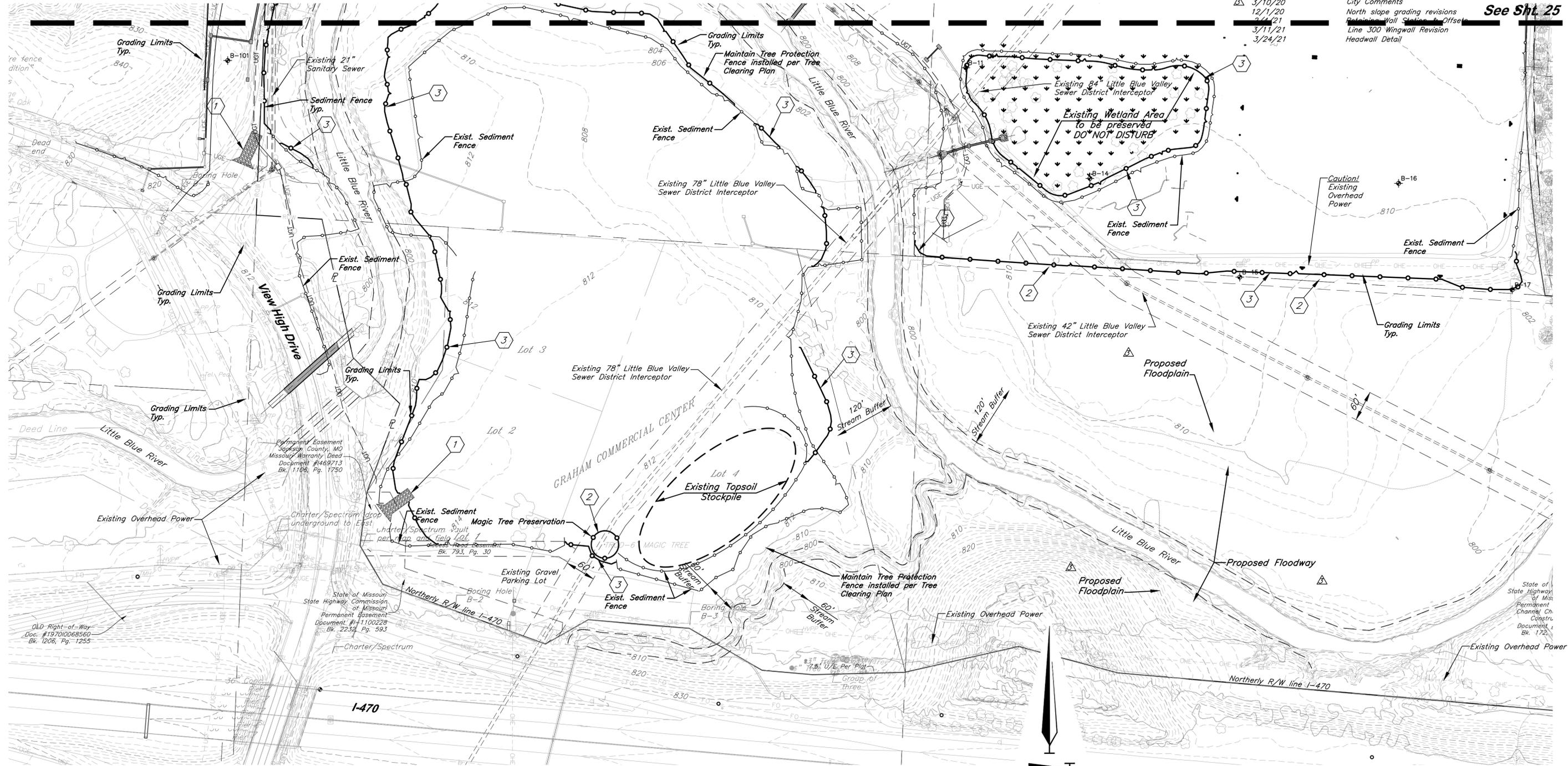
DATE:	4/15/19
DESIGN BY:	CEL
DRAWN BY:	DRV
PROJECT NO.:	12720
SHEET NO.:	TOTAL SHEETS:
<b>26</b>	<b>43</b>

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Professional Engineer  
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Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
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3/24/21		Headwall Detail		

**Match Line**  
See Sht. 25



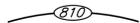
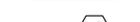
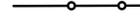
**Pre-Construction Erosion Control-Phase 1**

Architect: 00212, Professional Engineer: 000133, Professional Land Surveyor: 000059  
C:\12720\Civil\_3D\Production Drawings\Mass Grading\Lee's Summit\12720-4050.dwg Layout: 26 Pre-Construction -- Tuesday May 09, 2023, 8:54am -- Copyright 2023, George Buller Associates, Inc.

**PROJECT BENCHMARK:**

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

**Legend**

-  Proposed Contour
-  Existing Contour
-  Drainage Swale
-  Geotechnical Boring Location
-  Erosion Control Blanket
-  BMP Plan Reference Number
-  Straw Wattles
-  Grading Limits
-  Exist. Construction Fence for Tree Protection (to be maintained)
-  Tree to be saved
-  Sediment Fence
-  Exist. Sediment Fence (to be maintained)
-  Temporary Construction Entrance
-  Rock Check Dam

**CAUTION!**

Numerous Utilities on Site. Contractor to verify location and elevation of all utilities prior to commencing construction.

"100-00 100.10", "±.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

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 Date: 4/11/23  
 Certified by: Bradley D. Burton  
 Title: Senior Associate  
 Firm: GBA

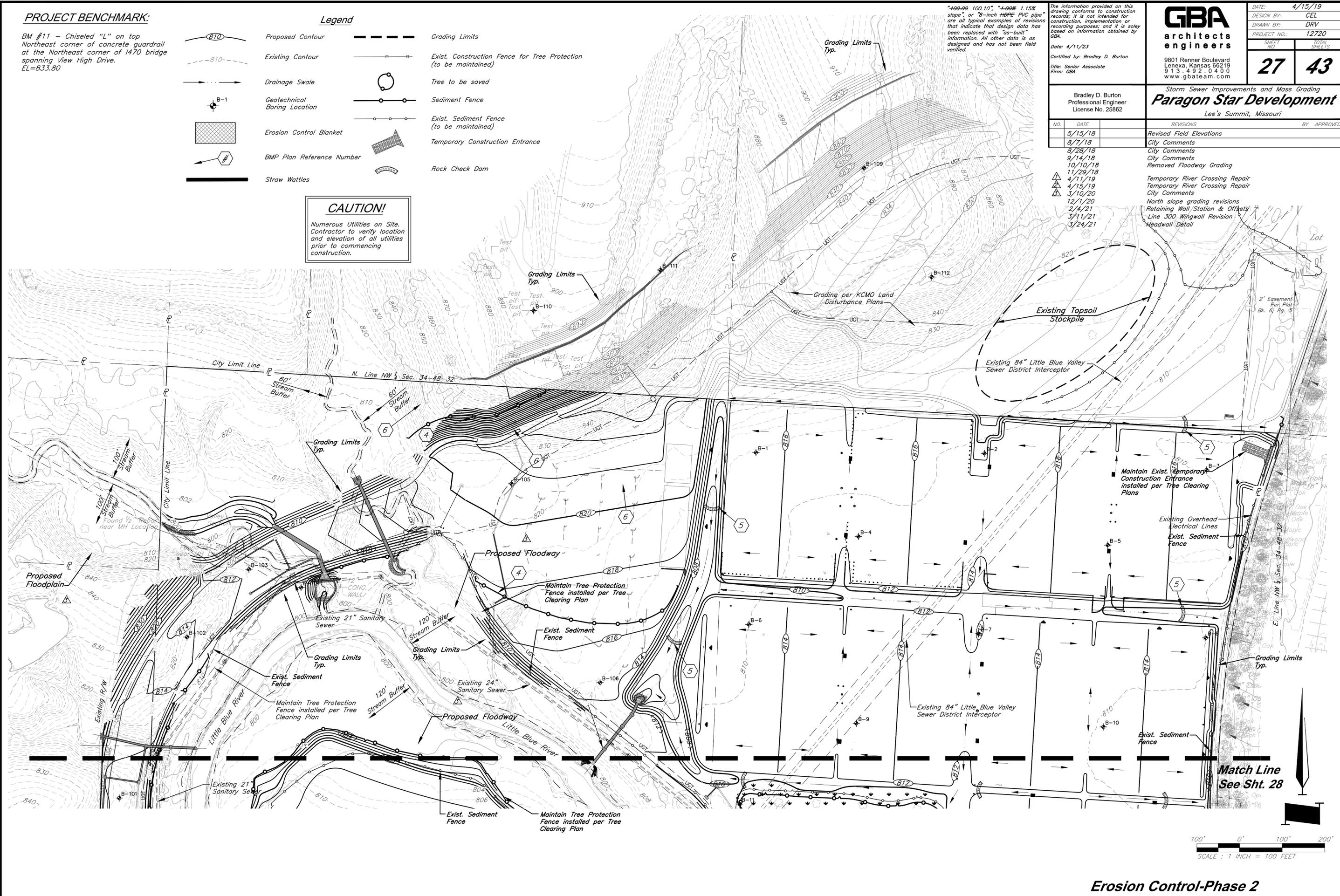
**GBA**  
 architects  
 engineers  
 9801 Renner Boulevard  
 Lenexa, Kansas 66219  
 913.492.0400  
 www.gbateam.com

DATE:	4/15/19
DESIGN BY:	CEL
DRAWN BY:	DRV
PROJECT NO.:	12720
SHEET NO.:	27
TOTAL SHEETS:	43

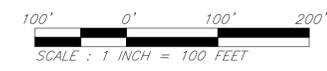
Bradley D. Burton  
 Professional Engineer  
 License No. 25862

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
 Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
5/15/18		Revised Field Elevations		
8/7/18		City Comments		
8/28/18		City Comments		
9/14/18		City Comments		
10/10/18		Removed Floodway Grading		
11/29/18		Temporary River Crossing Repair		
4/11/19		Temporary River Crossing Repair		
4/15/19		City Comments		
3/10/20		North slope grading revisions		
12/1/20		Retaining Wall Station & Offsets		
2/4/21		Line 300 Wingwall Revision		
3/11/21		Headwall Detail		
3/24/21				



Match Line  
 See Sht. 28



**Erosion Control-Phase 2**

Architect: 00212, Professional Engineer: 000133, Professional Land Surveyor: 000059  
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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

**Legend**

- Proposed Contour
- Existing Contour
- Drainage Swale
- Geotechnical Boring Location
- Erosion Control Blanket
- BMP Plan Reference Number
- Straw Wattles
- Grading Limits
- Exist. Construction Fence for Tree Protection (to be maintained)
- Tree to be saved
- Sediment Fence
- Exist. Sediment Fence (to be maintained)
- Temporary Construction Entrance
- Rock Check Dam

"100-00 100.10", "±.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

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Date: 4/11/23  
Certified by: Bradley D. Burton  
Title: Senior Associate  
Firm: GBA

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

DATE:	4/15/19
DESIGN BY:	CEL
DRAWN BY:	DRV
PROJECT NO.:	12720
SHEET NO.:	28
TOTAL SHEETS:	43

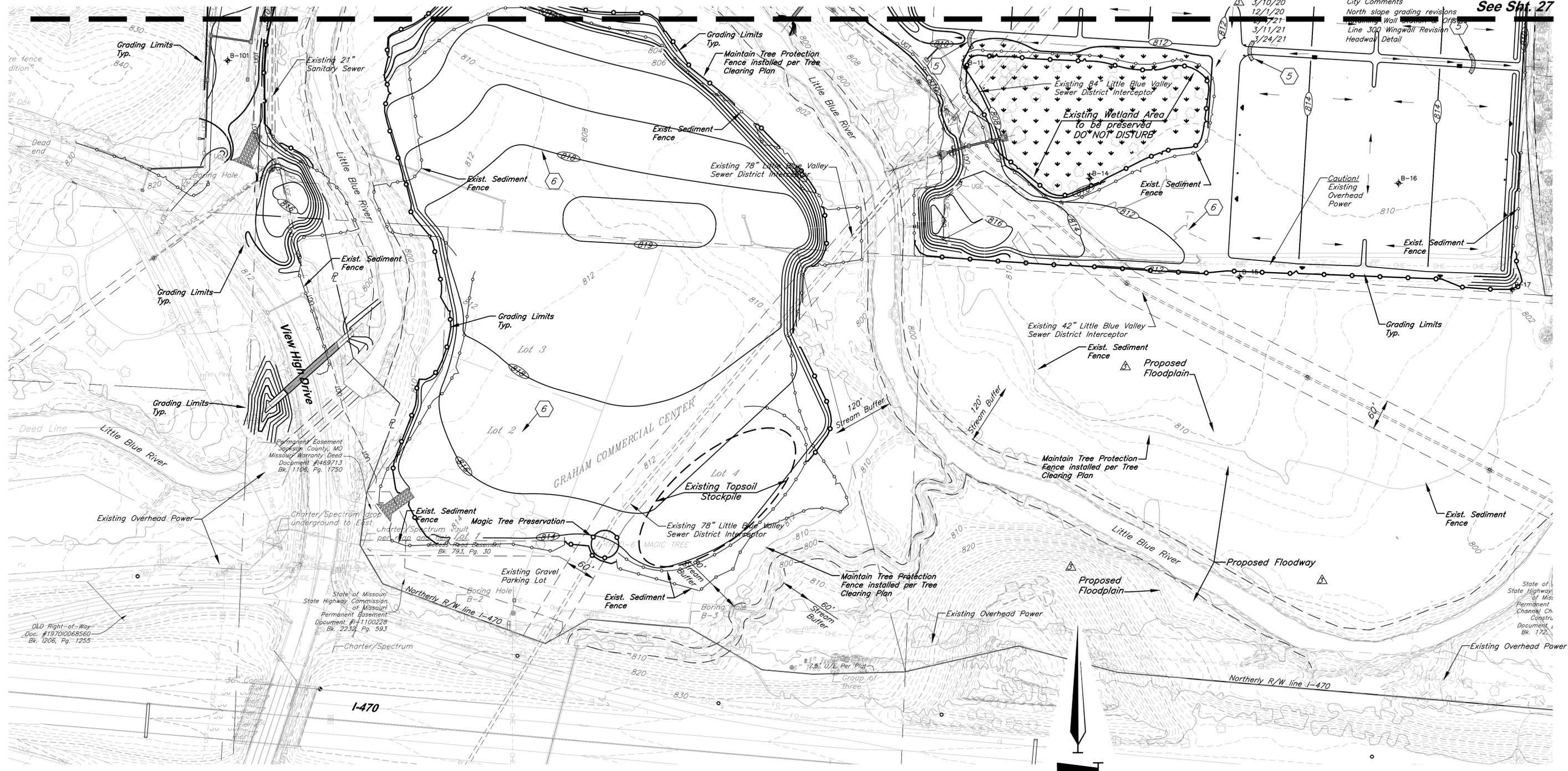
Bradley D. Burton  
Professional Engineer  
License No. 25862

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
Lee's Summit, Missouri

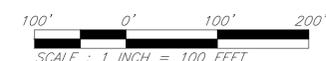
NO.	DATE	REVISIONS	BY	APPROVED
5/15/18		Revised Field Elevations		
8/7/18		City Comments		
8/28/18		City Comments		
9/14/18		City Comments		
10/10/18		Removed Floodway Grading		
11/29/18		Temporary River Crossing Repair		
4/11/19		Temporary River Crossing Repair		
4/15/19		City Comments		
3/10/20		North slope grading revisions		
12/1/20		Existing Wall Section Offset		
2/7/21		Line 300 Wingwall Revision		
3/11/21		Headway Detail		
3/24/21				

**NOTE:**  
No fill may be placed within the existing floodway until storm line 4100 is complete.

**CAUTION!**  
Numerous Utilities on Site. Contractor to verify location and elevation of all utilities prior to commencing construction.



**Match Line**  
See Sht. 27



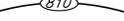
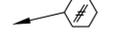
**Erosion Control-Phase 2**

Architect: 00212, Professional Engineer: 000133, Professional Land Surveyor: 000059  
C:\12720\Civil\_3D\Production Drawings\Mass Grading\Lee's Summit\12720-4050.dwg Layout: 28 Erosion Control -- Tuesday May 09, 2023, 8:55am -- Copyright 2023, George Butler Associates, Inc.

**PROJECT BENCHMARK:**

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

**Legend**

-  Proposed Contour
-  Existing Contour
-  Drainage Swale
-  Geotechnical Boring Location
-  Erosion Control Blanket
-  BMP Plan Reference Number
-  Straw Wattles
-  Grading Limits
-  Exist. Construction Fence for Tree Protection (to be maintained)
-  Tree to be saved
-  Sediment Fence
-  Exist. Sediment Fence (to be maintained)
-  Temporary Construction Entrance
-  Rock Check Dam

**CAUTION!**

Numerous Utilities on Site. Contractor to verify location and elevation of all utilities prior to commencing construction.

"100:00 100.10", "±.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

The information provided on this drawing conforms to construction records; it is not intended for construction, implementation or recording purposes; and it is solely based on information obtained by GBA.  
Date: 4/11/23  
Certified by: Bradley D. Burton  
Title: Senior Associate  
Firm: GBA

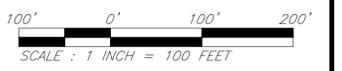
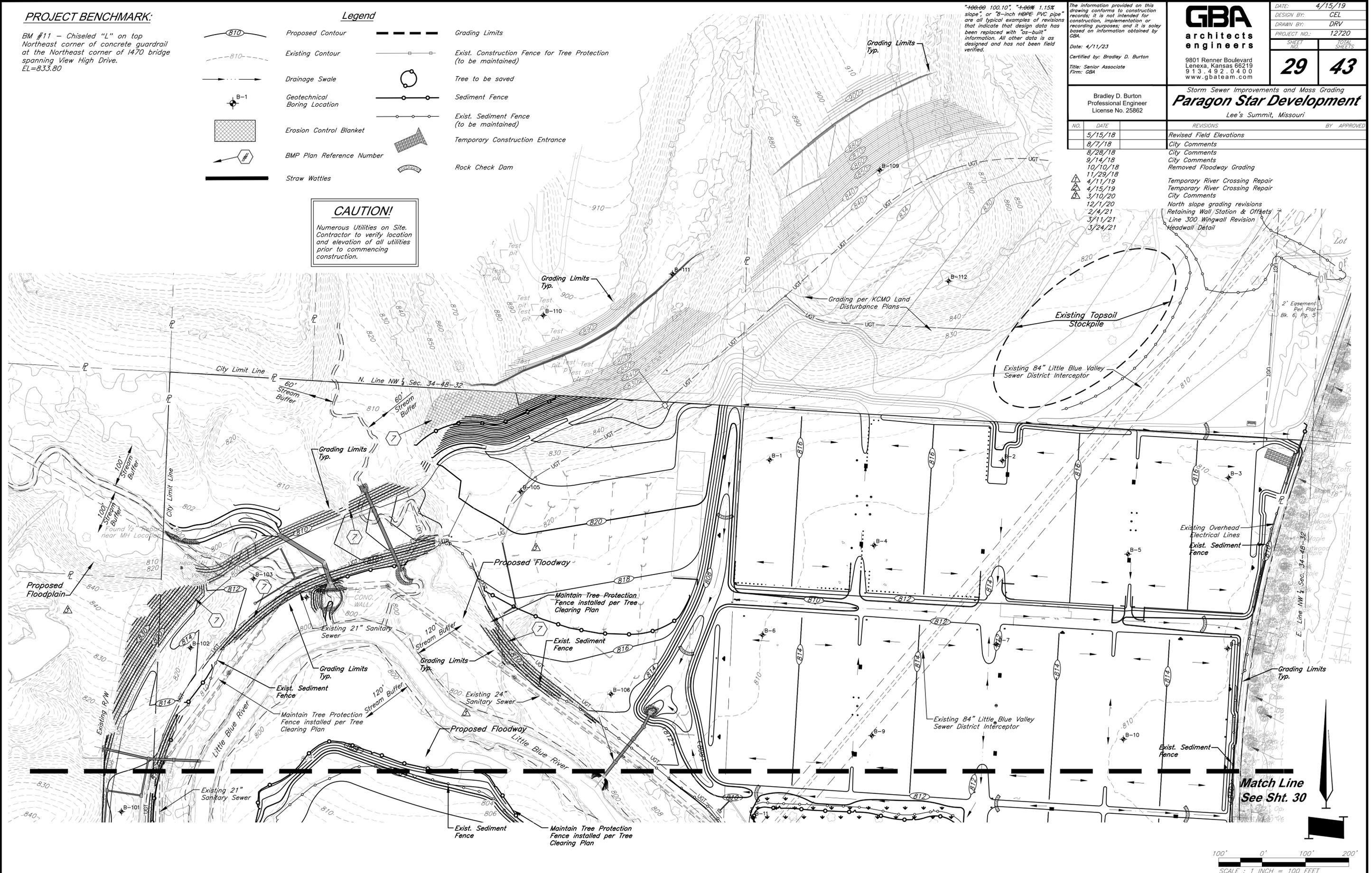
**GBA**  
architects  
engineers  
9801 Renner Boulevard  
Lenexa, Kansas 66219  
913.492.0400  
www.gbateam.com

DATE:	4/15/19
DESIGN BY:	CEL
DRAWN BY:	DRV
PROJECT NO.:	12720
SHEET NO.:	29
TOTAL SHEETS:	43

Bradley D. Burton  
Professional Engineer  
License No. 25862

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
5/15/18		Revised Field Elevations		
8/7/18		City Comments		
8/28/18		City Comments		
9/14/18		City Comments		
10/10/18		Removed Floodway Grading		
11/29/18		Temporary River Crossing Repair		
4/11/19		Temporary River Crossing Repair		
4/15/19		City Comments		
3/10/20		North slope grading revisions		
12/1/20		Retaining Wall Station & Offsets		
2/4/21		Line 300 Wingwall Revision		
3/11/21		Headwall Detail		
3/24/21				



**Erosion Control-Phase 3**

Architect 00212, Professional Engineer 000133, Professional Land Surveyor 000059  
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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

**CAUTION!**

Numerous Utilities on Site.  
Contractor to verify location  
and elevation of all utilities  
prior to commencing  
construction.

**NOTE:**  
No fill may be placed within the  
existing floodway until storm line  
4100 is complete.

**Legend**

- Proposed Contour
- Existing Contour
- Drainage Swale
- Geotechnical Boring Location
- Erosion Control Blanket
- BMP Plan Reference Number
- Straw Wattles
- Grading Limits
- Exist. Construction Fence for Tree Protection (to be maintained)
- Tree to be saved
- Sediment Fence
- Exist. Sediment Fence (to be maintained)
- Temporary Construction Entrance
- Rock Check Dam

"100-00 100.10", "+.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

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Date: 4/11/23  
Certified by: Bradley D. Burton  
Title: Senior Associate  
Firm: GBA

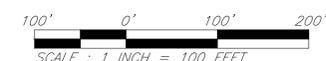
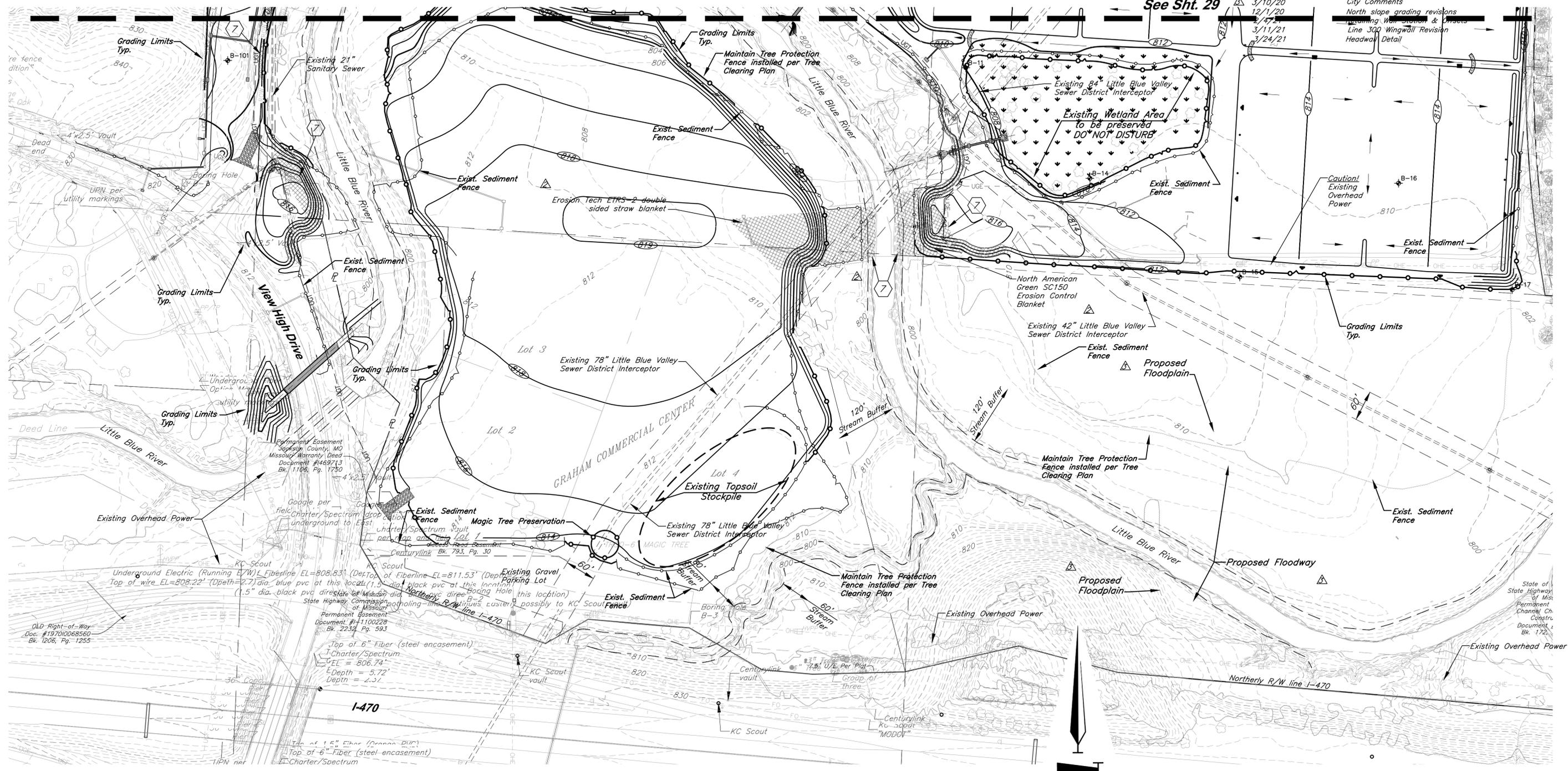
**GBA**  
architects  
engineers  
9801 Renner Boulevard  
Lenexa, Kansas 66219  
913.492.0400  
www.gbateam.com

DATE: 4/15/19  
DESIGN BY: CEL  
DRAWN BY: DRV  
PROJECT NO.: 12720  
SHEET NO.: 30  
TOTAL SHEETS: 43

Bradley D. Burton  
Professional Engineer  
License No. 25862

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
Lee's Summit, Missouri

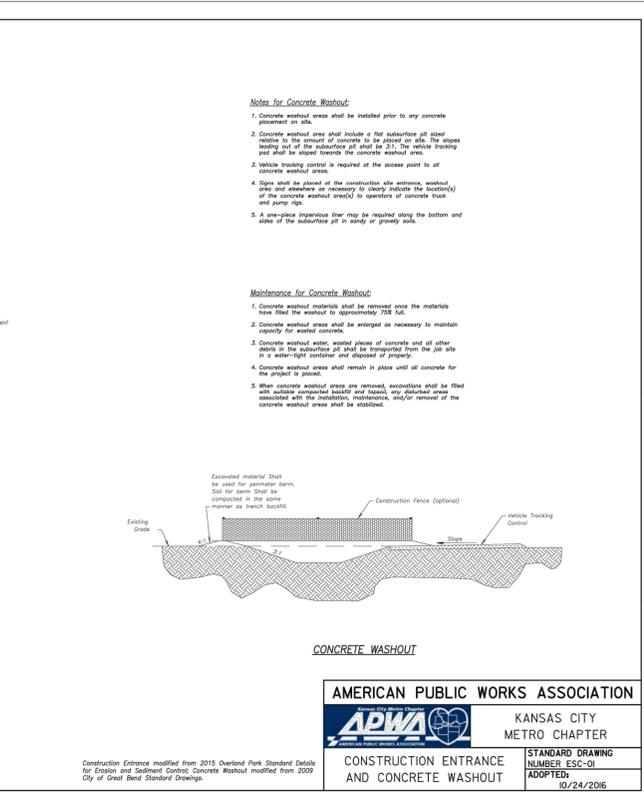
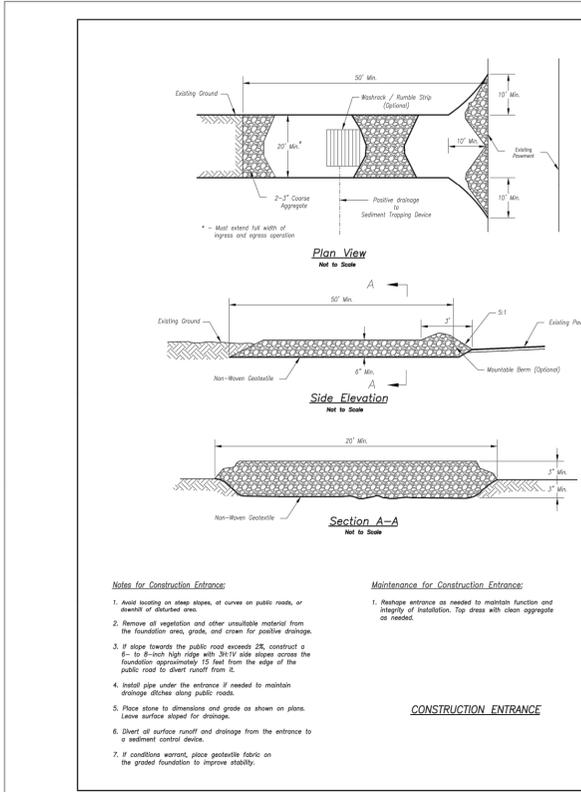
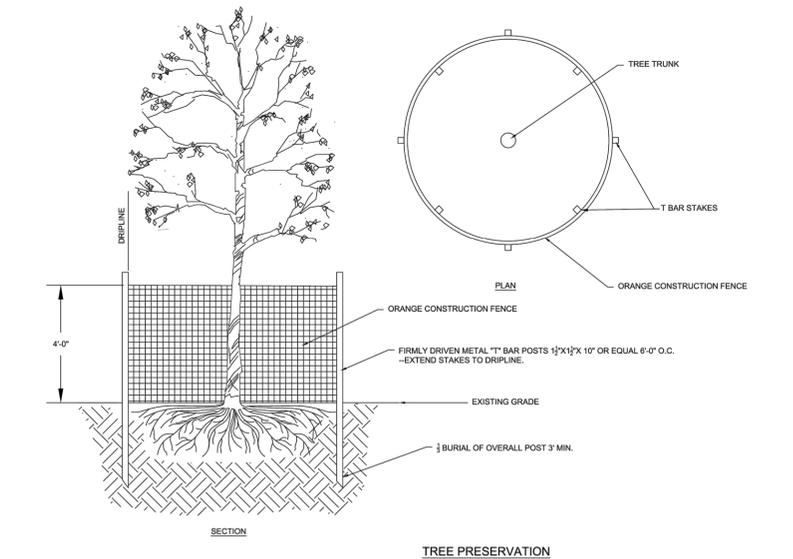
NO.	DATE	REVISIONS	BY	APPROVED
5/15/18		Revised Field Elevations		
8/7/18		City Comments		
8/28/18		City Comments		
9/14/18		City Comments		
10/10/18		Removed Floodway Grading		
11/29/18				
4/11/19		Temporary River Crossing Repair		
4/15/19		Temporary River Crossing Repair		
3/10/20		City Comments		
12/1/20		North slope grading revisions		
3/17/21		Storming Win Station & Inlets		
3/11/21		Line 300 Wingwall Revision		
3/24/21		Headway Detail		



**Erosion Control-Phase 3**

Architect: 00212, Professional Engineer: 000133, Professional Land Surveyor: 000059  
 G:\12720\Civil\_3D\Production Drawings\Mass Grading\Lee's Summit\12720-4050.dwg  
 Layout: 30 Erosion Control -- Tuesday May 09, 2023, 8:55am -- Copyright 2023, George Butler Associates, Inc.

Architect: 00212, Professional Engineer: 000133, Professional Land Surveyor: 000059  
 C:\12220\Civil 3D\Production Drawings\Mass Grading\Lee's Summit\12220-4600.dwg Layout: 31 Erosion Control Details -- Tuesday, May 09, 2023, 8:55am -- Copyright 2023, George Buller Associates, Inc.



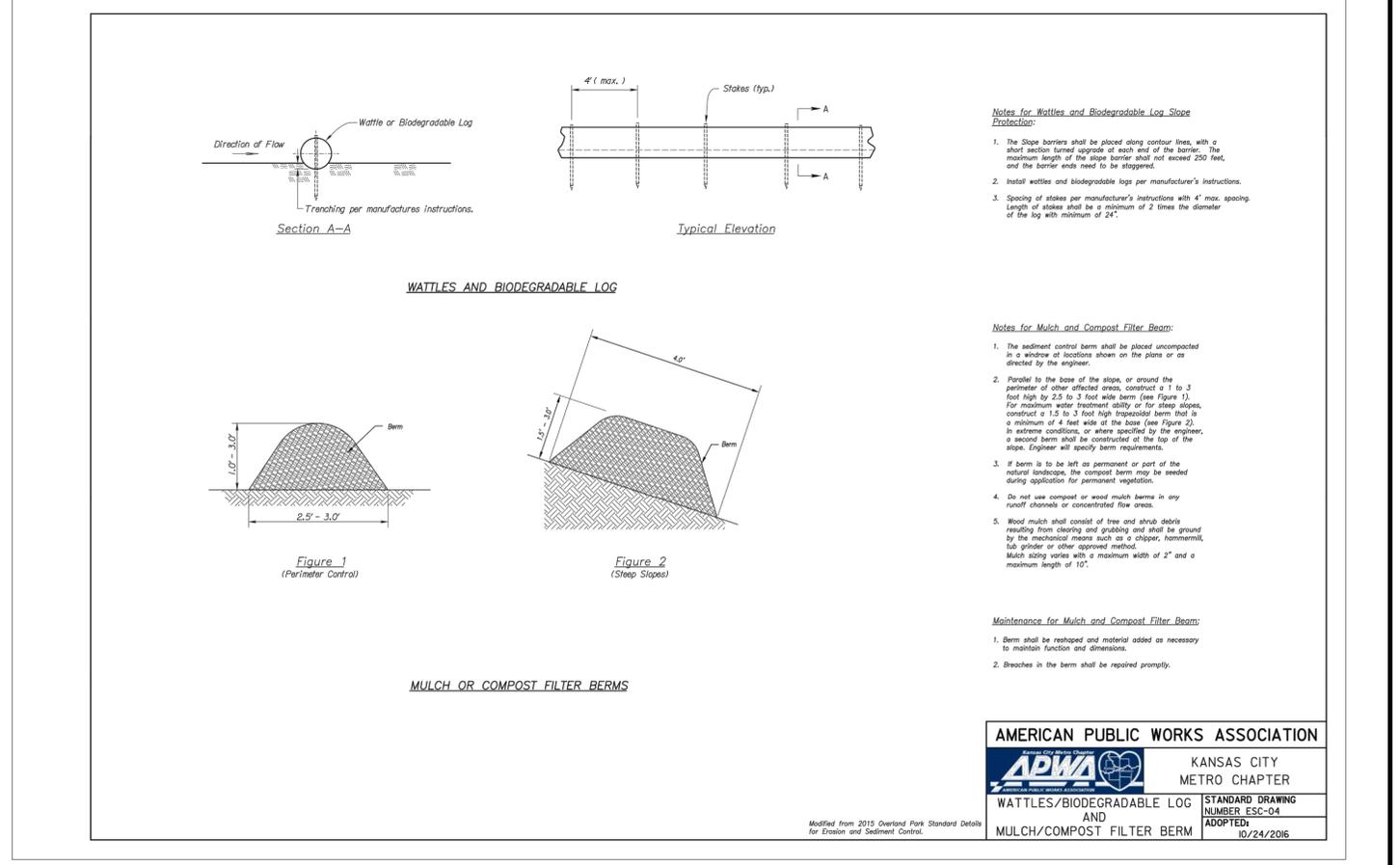
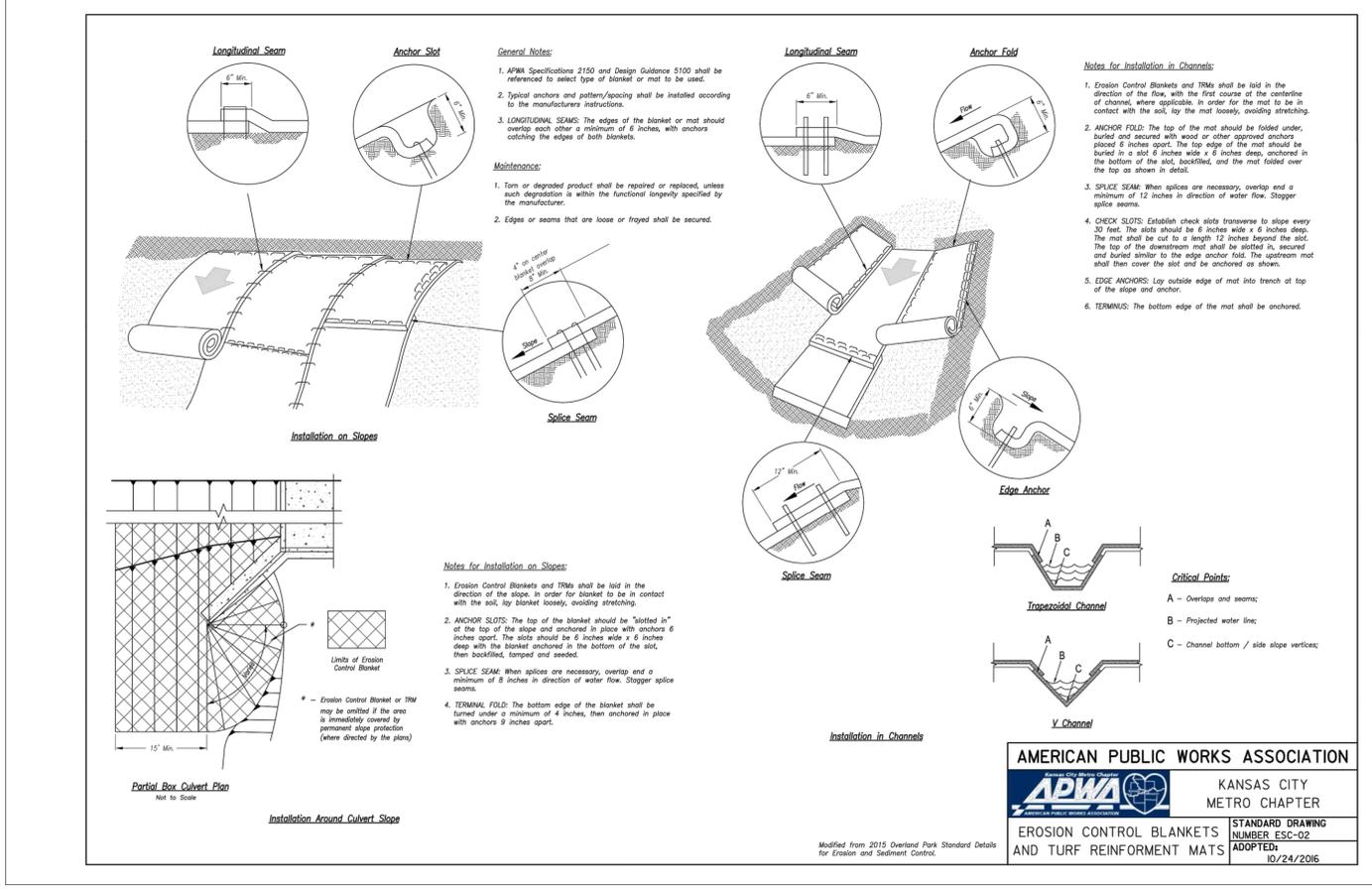
"100-00 100.10", "±.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

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 Date: 4/11/23  
 Certified by: Bradley D. Burton  
 Title: Senior Associate  
 Firm: GBA

**GBA**  
 architects engineers  
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 Lenexa, Kansas 66219  
 913.492.0400  
 www.gbateam.com

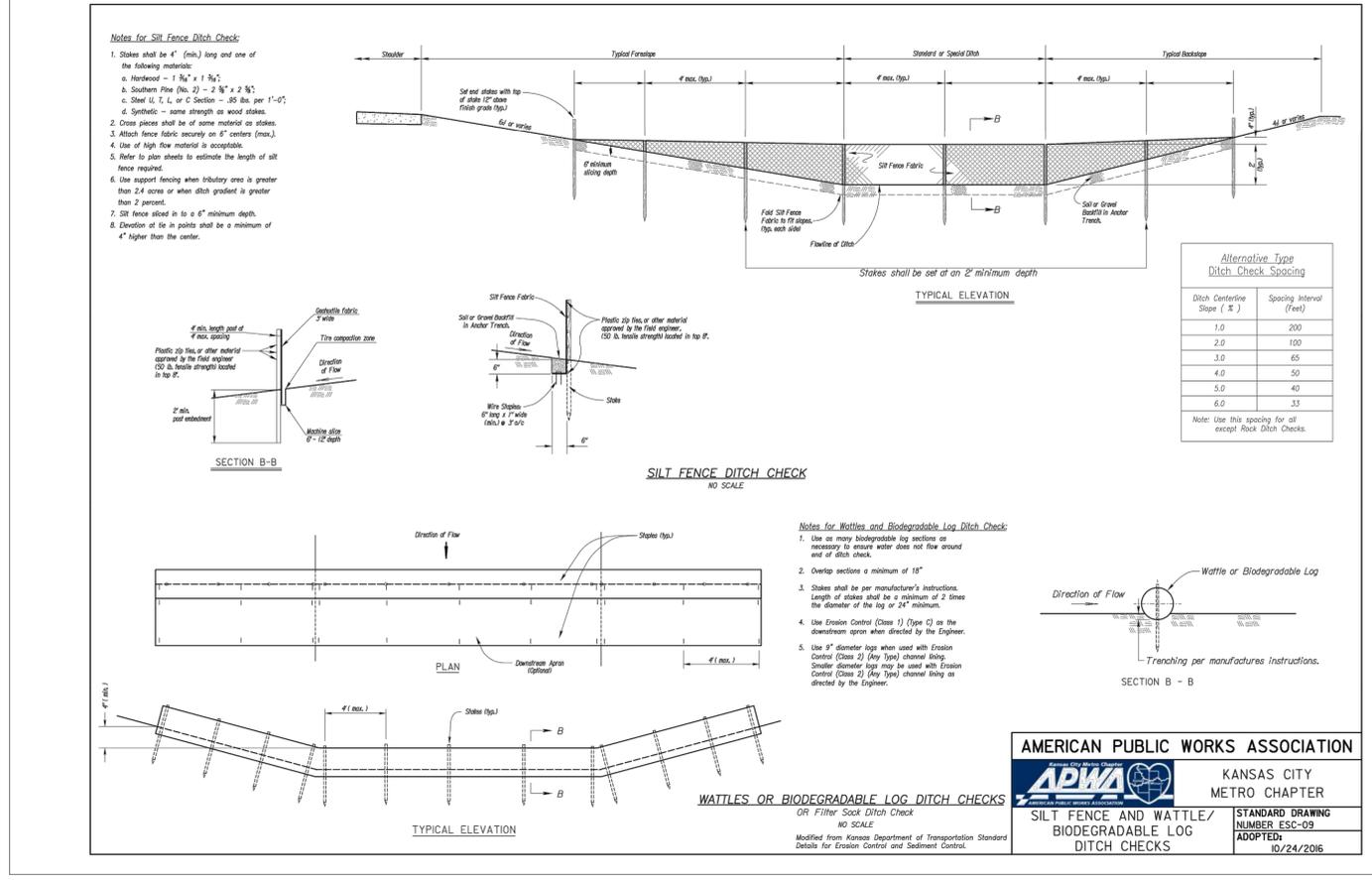
DATE: 4/15/19  
 DESIGN BY: CEL  
 DRAWN BY: DRV  
 PROJECT NO.: 12720  
 SHEET NO.: 31  
 TOTAL SHEETS: 43

Bradley D. Burton Professional Engineer License No. 25862		Storm Sewer Improvements and Mass Grading <b>Paragon Star Development</b> Lee's Summit, Missouri	
NO. DATE		REVISIONS BY APPROVED	
5/15/18		Revised Field Elevations	
8/7/18		City Comments	
8/28/18		City Comments	
9/14/18		City Comments	
10/10/18		Removed Floodway Grading	
3/10/20		City Comments	
12/1/20		North slope grading revisions	



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**APWA**  
 WATTLES/BIODEGRADABLE LOG AND MULCH/COMPOST FILTER BERM  
 KANSAS CITY METRO CHAPTER  
 STANDARD DRAWING NUMBER ESC-04  
 ADOPTED: 10/24/2016

Architect: 00212, Professional Engineer: 000133, Professional Land Surveyor: 000059  
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 Tuesday May 09, 2023, 8:55am  
 C:\12720\Civil\_3D\Production Drawings\Mass Grading\Lee's Summit\127200-4600.dwg Layout: 32 Erosion Control Details  
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Date: 4/11/23  
 Certified by: Bradley D. Burton  
 Title: Senior Associate  
 Firm: GBA

**GBA**  
 architects  
 engineers

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 Lenexa, Kansas 66219  
 913.492.0400  
 www.gbateam.com

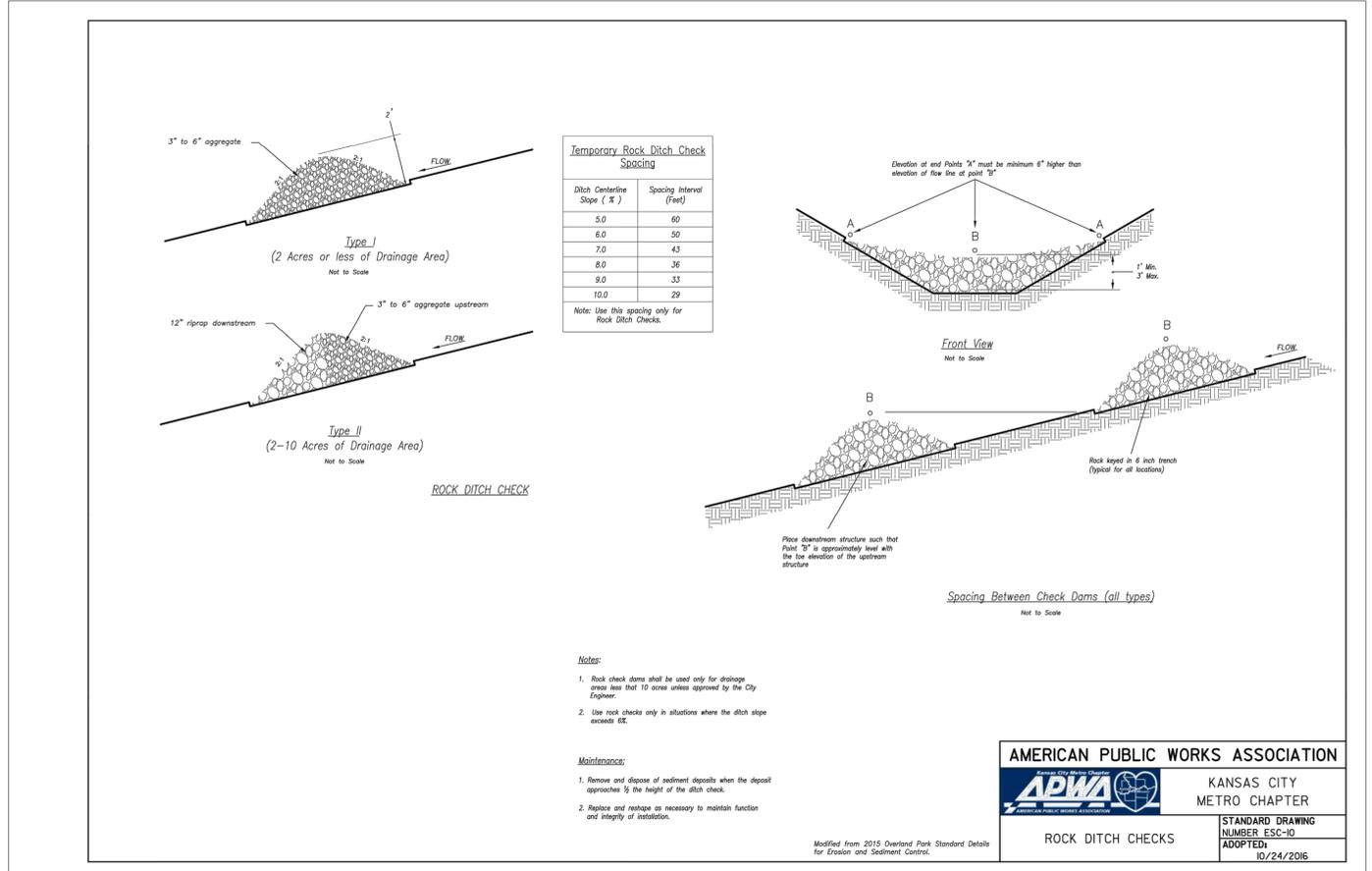
DATE: 4/15/19  
 DESIGN BY: CEL  
 DRAWN BY: DRV  
 PROJECT NO.: 12720

SHEET NO. 32 TOTAL SHEETS 43

Bradley D. Burton  
 Professional Engineer  
 License No. 25862

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
 Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
	5/15/18	Revised Field Elevations		
	8/7/18	City Comments		
	8/28/18	City Comments		
	9/14/18	City Comments		
	10/10/18	Removed Floodway Grading		
	3/10/20	City Comments		
	12/1/20	North slope grading revisions		



**Erosion Control Details**

Architect 00212, Professional Engineer 000133, Professional Land Surveyor 000059  
 C:\12720\Civil 3D\Production Drawings\Mass Grading\Lee's Summit\1272004800.dwg Layout: 33 Seeding Plan -- Tuesday, May 09, 2023, 8:56am -- Copyright 2023, George Butler Associates, Inc.

"+100.00 100.10", "+1.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

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 Date: 4/11/23  
 Certified by: Bradley D. Burton  
 Title: Senior Associate  
 Firm: GBA

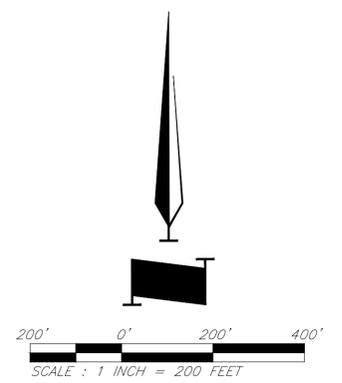
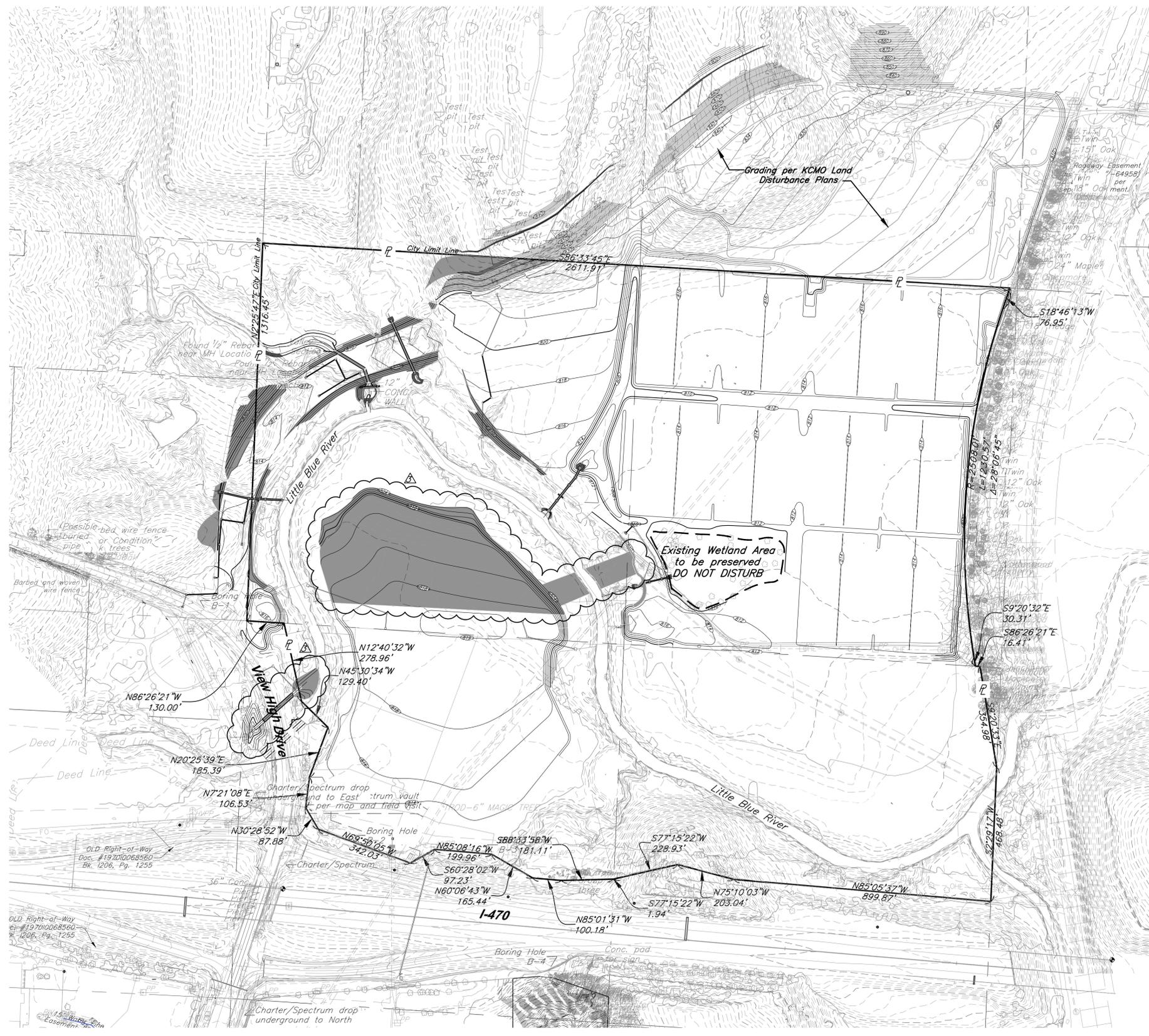
<b>GBA</b> architects engineers 9801 Renner Boulevard Lenexa, Kansas 66219 913.492.0400 www.gbateam.com		DATE: 4/15/19 DESIGN BY: CEL DRAWN BY: DRV PROJECT NO.: 12720 SHEET NO.: <b>33</b> TOTAL SHEETS: <b>43</b>
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Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
 Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
	5/15/18	Revised Field Elevations		
	8/7/18	City Comments		
	8/28/18	City Comments		
	9/14/18	City Comments		
	10/10/18	Removed Floodway Grading		
	11/29/18			
▲	4/11/19	Temporary River Crossing Repair		
▲	4/15/19	Temporary River Crossing Repair		
▲	3/10/20	City Comments		
	12/1/20	North slope grading revisions		
	2/4/21	Retaining Wall Station & Offsets		
	3/11/21	Line 300 Wing Wall Revision		
	3/24/21	Headwall Detail		

Denotes 12" of Topsoil with Permanent Seeding

**NOTE:**  
 All other disturbed areas to be temporary seeded.



**Seeding Plan**

Architect: 00212, Professional Engineer: 000133, Professional Land Surveyor: 000059  
 Tuesday May 09, 2023, 8:57am -- Copyright 2023, George Buller Associates, Inc.  
 C:\12720\Civil\_3D\Production Drawings\Mass Grading\Lee's Summit\1272002800.dwg Layout: 34 Stream Buffer

"+00.00 100.10", "+.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

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 Date: 4/11/23  
 Certified by: Bradley D. Burton  
 Title: Senior Associate  
 Firm: GBA

<b>GBA</b> architects engineers	
9801 Renner Boulevard Lenexa, Kansas 66219 913.492.0400 www.gbateam.com	
DATE: 4/15/19	DESIGN BY: CEL
DRAWN BY: DRV	PROJECT NO.: 12720
SHEET NO. <b>34</b>	TOTAL SHEETS <b>43</b>

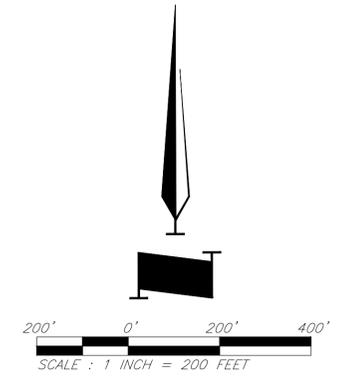
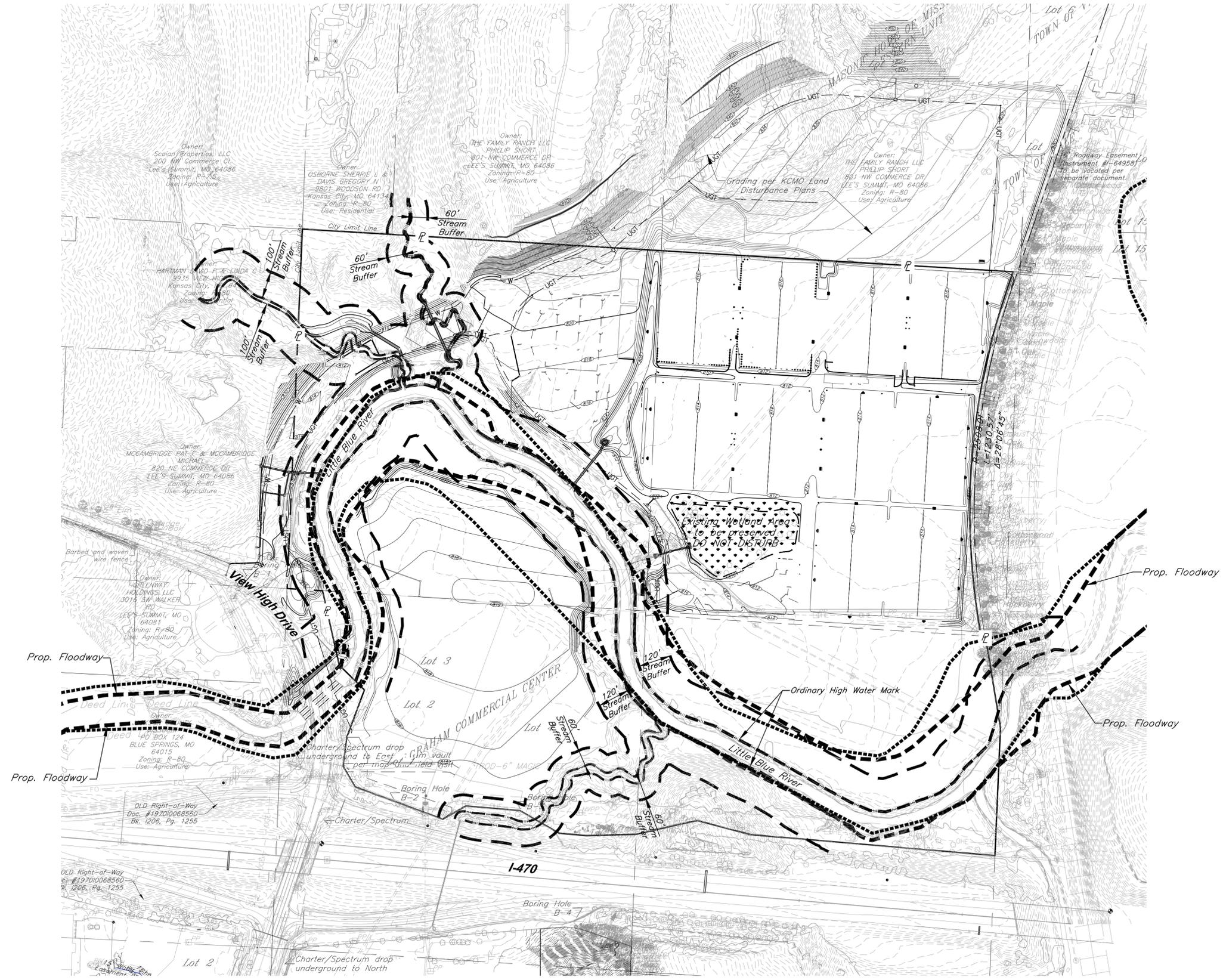
Bradley D. Burton  
 Professional Engineer  
 License No. 25862

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
 Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
	5/15/18	Revised Field Elevations		
	8/7/18	City Comments		
	8/28/18	City Comments		
	9/14/18	City Comments		
	10/10/18	Removed Floodway Grading		
	11/29/18			
	4/11/19	Temporary River Crossing Repair		
	4/15/19	Temporary River Crossing Repair		
	3/10/20	City Comments		
	12/1/20	North slope grading revisions		
	2/4/21	Retaining Wall Station & Offsets		
	3/11/21	Line 300 Wingwall Revision		
	3/24/21	Headwall Detail		

**Legend**

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



**Stream Buffer**

Architect 00212, Professional Engineer 000133, Professional Land Surveyor 000059  
 C:\12720\Civil 3D\Production Drawings\Mass Grading\Lee's Summit\127200300.dwg Layout: 35 Typical Sections (for reference only) -- Tuesday May 09, 2023 8:57am -- Copyright 2023, George Buller Associates, Inc.

"100.00 100.10", "±.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

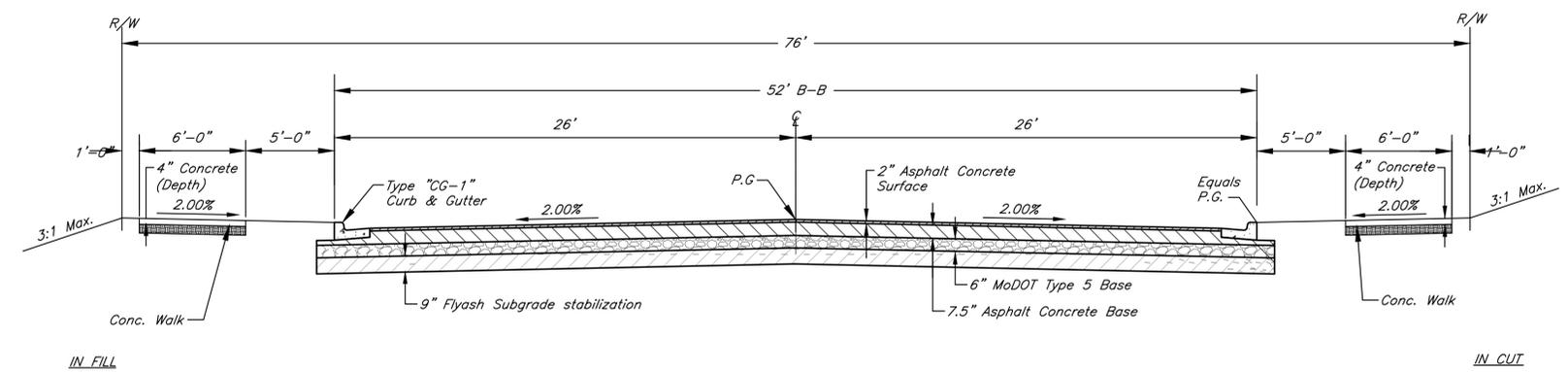
The information provided on this drawing conforms to construction records; it is not intended for construction, implementation or recording purposes; and it is solely based on information obtained by GBA.  
 Date: 4/11/23  
 Certified by: Bradley D. Burton  
 Title: Senior Associate  
 Firm: GBA

<b>GBA</b> architects engineers 9801 Renner Boulevard Lenexa, Kansas 66219 913.492.0400 www.gbateam.com		DATE: 4/15/19
		DESIGN BY: CEL
		DRAWN BY: DRV
		PROJECT NO.: 12720
SHEET NO.	TOTAL SHEETS	
<b>35</b>	<b>43</b>	

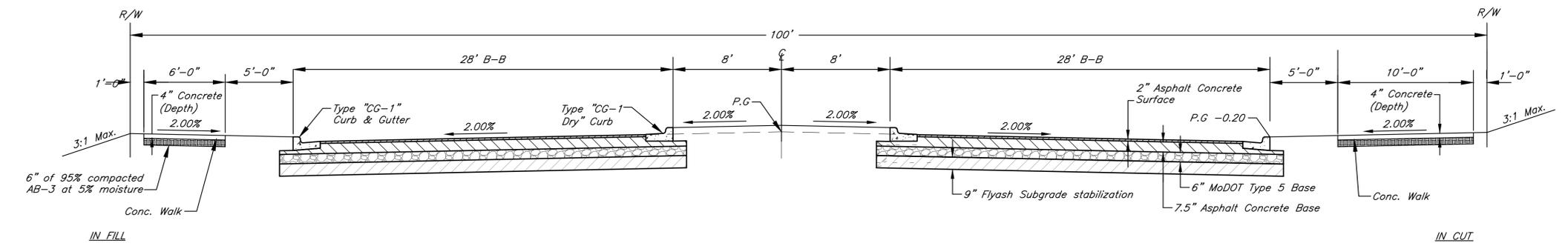
Bradley D. Burton  
 Professional Engineer  
 License No. 25862

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
 Lee's Summit, Missouri

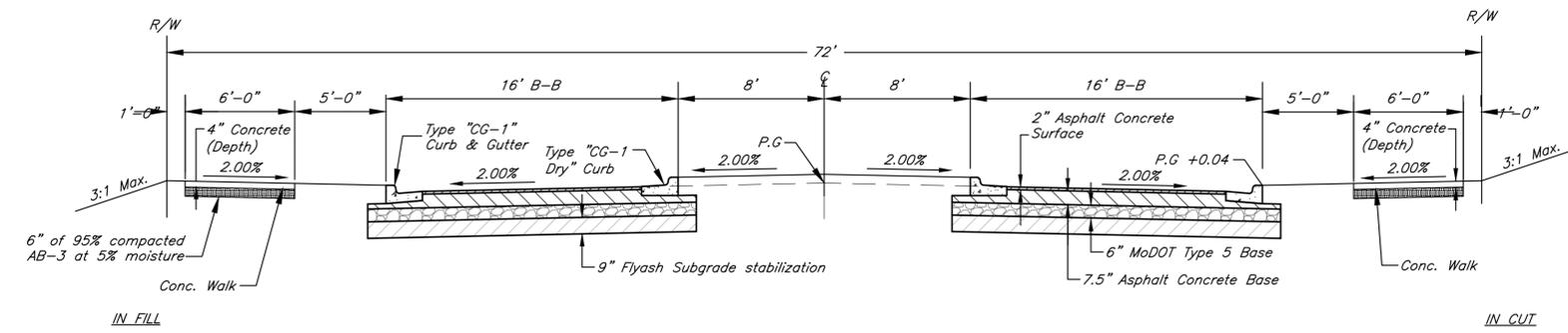
NO.	DATE	REVISIONS	BY	APPROVED
	5/15/18	Revised Field Elevations		
	8/7/18	City Comments		
	8/28/18	City Comments		
	9/14/18	City Comments		
	10/10/18	Removed Floodway Grading		
	11/29/18			
	4/11/19	Temporary River Crossing Repair		
	4/15/19	Temporary River Crossing Repair		
	3/10/20	City Comments		
	12/1/20	North slope grading revisions		
	2/4/21	Retaining Wall Station & Offsets		
	3/11/21	Line 300 Wingwall Revision		
	3/24/21	Headwall Detail		



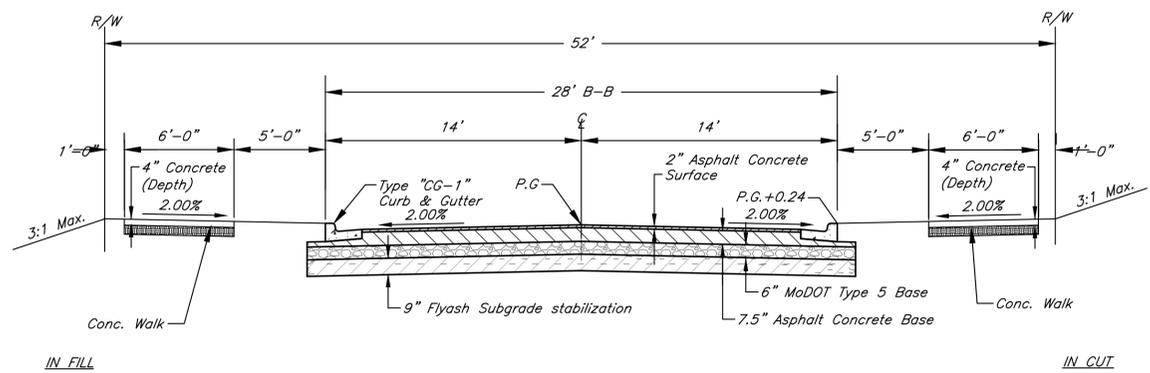
**TYPICAL SECTION  
 VIEW HIGH DRIVE**  
 Scale: 1" = 5'



**TYPICAL SECTION  
 VIEW HIGH PARKWAY**  
 Scale: 1" = 5'



**TYPICAL SECTION  
 PARAGON PARKWAY**  
 Scale: 1" = 5'



**TYPICAL SECTION  
 RIVER DRIVE**  
 Scale: 1" = 5'

These sections provided for reference only, no street construction is proposed with this plan set

NOTE:  
 Road Sections shall adhere to all City of Lee's Summit, Missouri Specifications.

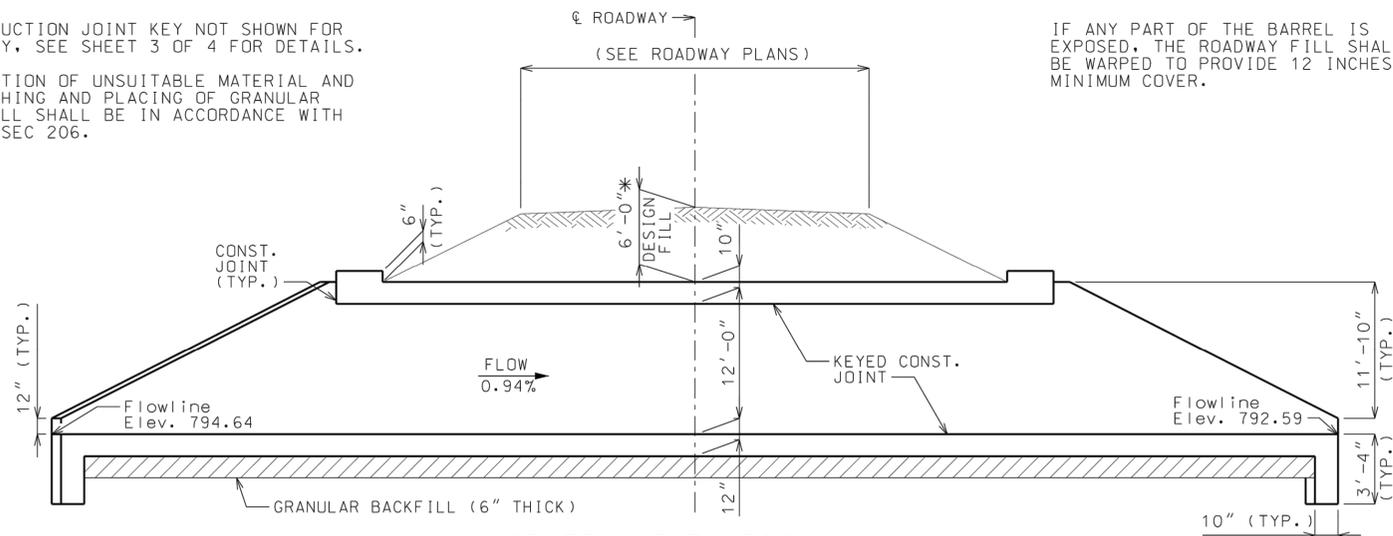
**Typical Sections (for reference only)**



CONSTRUCTION JOINT KEY NOT SHOWN FOR CLARITY, SEE SHEET 3 OF 4 FOR DETAILS.

EXCAVATION OF UNSUITABLE MATERIAL AND FURNISHING AND PLACING OF GRANULAR BACKFILL SHALL BE IN ACCORDANCE WITH MODOT SEC 206.

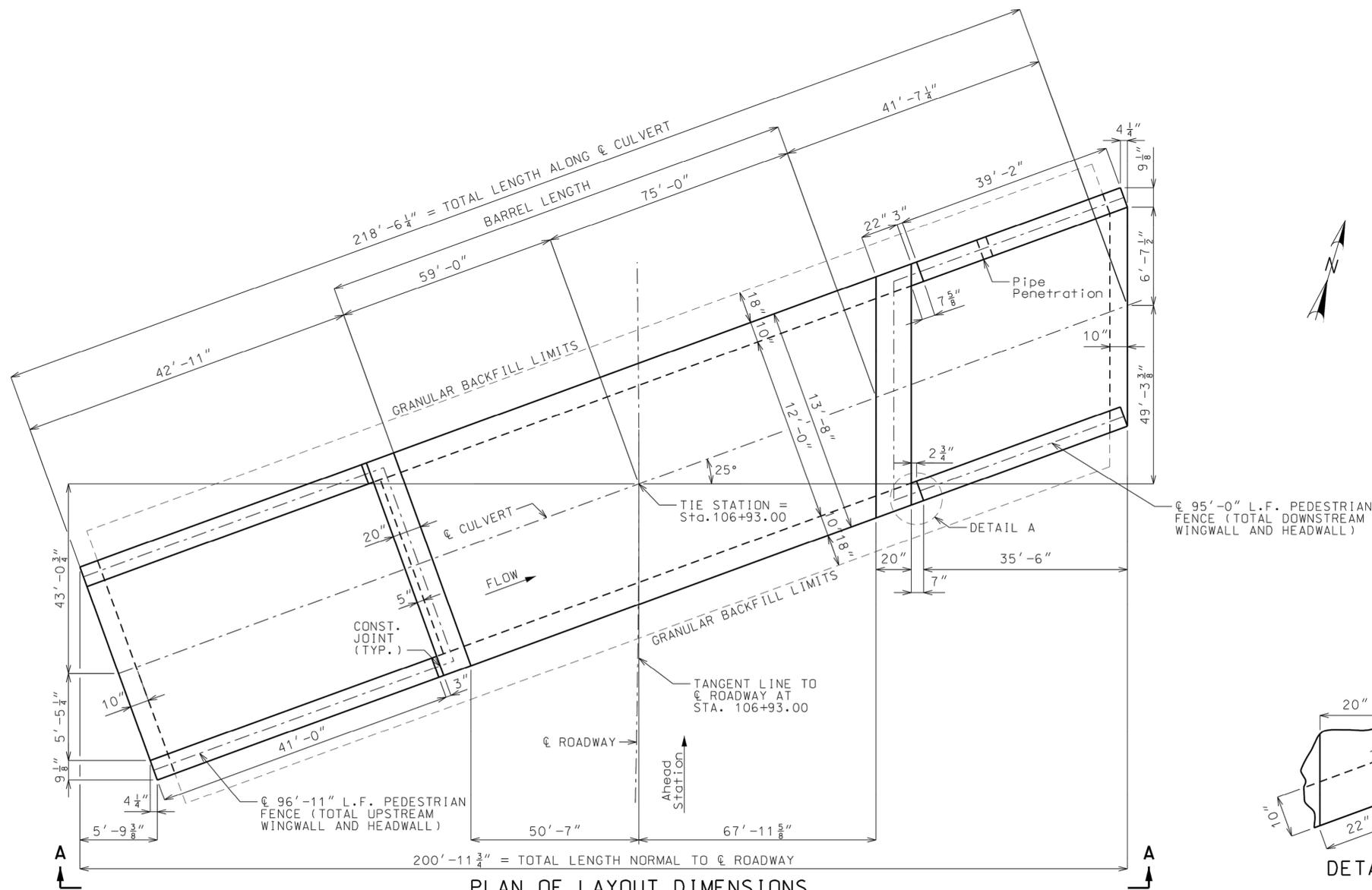
IF ANY PART OF THE BARREL IS EXPOSED, THE ROADWAY FILL SHALL BE WARPED TO PROVIDE 12 INCHES MINIMUM COVER.



GENERAL ELEVATION A-A

CHANNEL BOTTOM SHALL BE GRADED FOR TRANSITION OF CHANNEL BED TO CULVERT OPENINGS. CHANNEL BANKS SHALL BE TAPERED TO MATCH CULVERT OPENINGS.

\* BOX CULVERT DESIGNED FOR 6'-0" DESIGN FILL FOR EXISTING GRADE AND 8'-0" DESIGN FILL FOR FINAL GRADE.



PLAN OF LAYOUT DIMENSIONS

Note: This drawing is not to scale. Follow dimensions.



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

DATE:	02-25-20
DESIGN BY:	HAL
DRAWN BY:	GMH
PROJECT NO.:	12720
SHEET NO.:	37
TOTAL SHEETS:	43

Holly A. Lehmkuhl  
Professional Engineer  
License No. 200932976

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
9/2/20		City Comments		
11/23/20		Utility Updates		

- 1/27/21 Revised Structure Size
- 2/4/21 Retaining Wall Station & Offsets
- 2/26/21 RFI 11
- 3/11/21 RFI 12
- 3/11/21 Revised Line 400
- 4/8/21 Utility Updates
- 5/25/21 Paver Revision
- 6/15/21 Grading Updates
- 6/24/21 Wiring Diagram Updates
- 9/30/21 RFI 15-Irrigation Sleeves
- 10/30/22 Record Drawings
- 11/4/23 Record Drawings

As-Built: "400-00 100.10", "4-00% 1.15% slope", or "9-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

**GENERAL NOTES:**

SEE MODOT SPECIFICATIONS AND STANDARD PLANS FOR ADDITIONAL INFORMATION.

**DESIGN SPECIFICATIONS:**

2010 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND 2010 INTERIM REVISIONS

**DESIGN LOADING:**

VEHICULAR = HL-93 MINUS LANE LOAD, EARTH = 120 LB/CF  
EQUIVALENT FLUID PRESSURE = 30 LB/CF (MIN.), 60 LB/CF (MAX.)

**DESIGN UNIT STRESSES:**

CLASS B-1 CONCRETE (BOX CULVERT) f'c = 4,000 PSI  
REINFORCING STEEL (GRADE 60) fy = 60,000 PSI

**MISCELLANEOUS:**

FOR REINFORCEMENT DETAILS, SEE SHEET 2 OF 4. FOR SECTION DETAILS AND PIPE PENETRATION DETAILS, SEE SHEET 3 OF 4. FOR ADDITIONAL DETAILS NOT SHOWN, SEE MODOT STANDARD PLANS 703.10J AND 703.14J.

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED.

WHEN ALTERNATE PRECAST CONCRETE BOX CULVERT SECTIONS ARE USED, THE MINIMUM DISTANCE FROM INSIDE FACE OF HEADWALLS TO PRECAST SECTIONS MEASURED ALONG THE SHORTEST WALL SHALL BE 3 FEET. REINFORCEMENT AND DIMENSIONS FOR WINGS AND HEADWALLS SHALL BE IN ACCORDANCE WITH MISSOURI STANDARD PLANS.

ALL MATERIAL, LABOR, EXCAVATION, GRANULAR BACKFILL AND EQUIPMENT REQUIRED TO CONSTRUCT THE RCB AND PEDESTRIAN FENCE SHALL BE SUBSIDIARY TO THE BID ITEM "12'x12' CONCRETE BOX CULVERT", LINEAR FOOT.

**CONCRETE SINGLE 12'X12'  
BOX CULVERT**  
SHEET 1 OF 4

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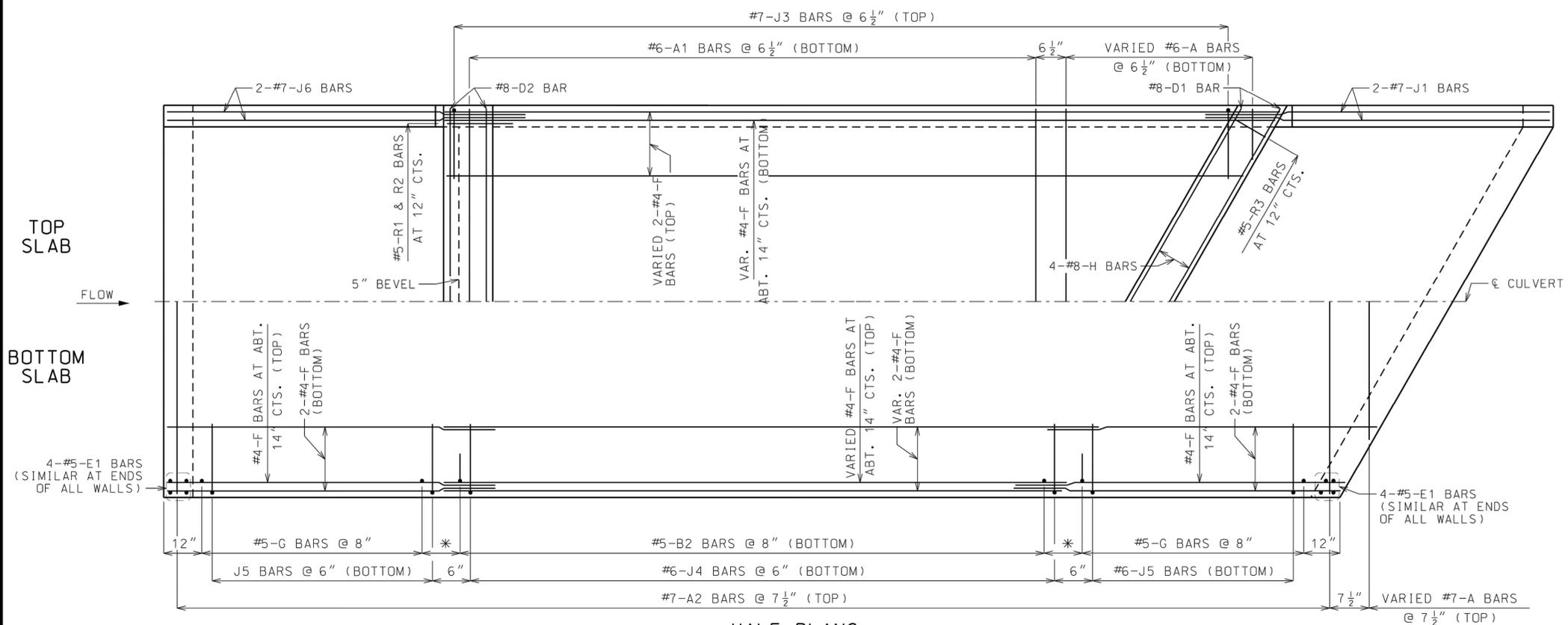
DATE: 02-25-20	
DESIGN BY: HAL	
DRAWN BY: GMH	
PROJECT NO.: 12720	
SHEET NO.	TOTAL SHEETS
<b>38</b>	<b>43</b>

Holly A. Lehmkuhl  
Professional Engineer  
License No. 200932976

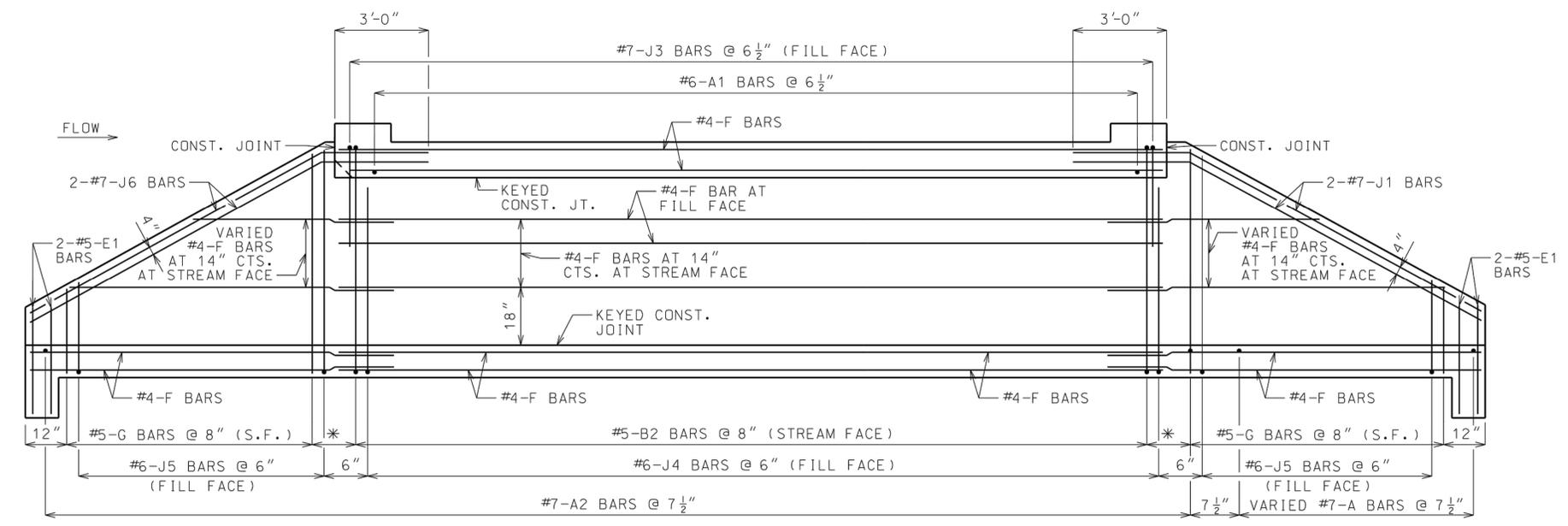
Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
9/2/20		City Comments		
11/23/20		Utility Updates		

- 1 1/27/21 Revised Structure Size
  - 2 2/4/21 Retaining Wall Station & Offsets
  - 3 2/26/21 RFI 11
  - 4 3/11/21 RFI 12
  - 5 3/11/21 Revised Line 400
  - 6 4/8/21 Utility Updates
  - 7 5/25/21 Paver Revision
  - 8 6/15/21 Grading Updates
  - 9 6/24/21 Wiring Diagram Updates
  - 10 9/30/21 RFI 15-Irrigation Sleeves
  - 11 9/30/22 Record Drawings
  - 12 4/7/23 Record Drawings
- As-Built: "48x48 100.10", "4-88# 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.



**HALF PLANS**  
HALF PLANS ARE SYMMETRICAL ABOUT CULVERT.



**ELEVATION**  
J1 AND J6 BARS MAY BE BENT IN FIELD OR SHOP.

\* VARIES, 12" MAX

Note: This drawing is not to scale. Follow dimensions.

**GENERAL NOTES:**

- FOR SECTIONS THRU BARREL, WINGS AND HEADWALLS, SEE SHEET 3 OF 4. FOR INFORMATION NOT SHOWN, SEE MODOT STANDARD PLAN 703.37.
- CONSTRUCTION JOINT KEY NOT SHOWN FOR CLARITY IN HALF PLANS AND ELEVATION. SEE SHEET 3 OF 4 FOR DETAILS.
- DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.
- MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1 1/2".
- LAP LONGITUDINAL BARS A MINIMUM OF 23" AT SPLICES.
- BEVELED HEADWALL SHALL BE LOCATED AT UPSTREAM END.

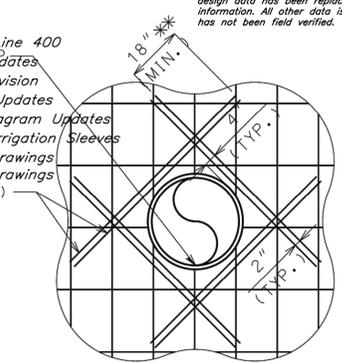
**CONCRETE SINGLE 12'X12'**  
**BOX CULVERT**  
SHEET 2 OF 4

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		<b>GBA</b> architects engineers 9801 Renner Boulevard Lenexa, Kansas 66219 913.492.0400 www.gbateam.com	DATE: 02-25-20 DESIGN BY: HAL DRAWN BY: GMH PROJECT NO.: 12720 SHEET NO.: <b>39</b> TOTAL SHEETS: <b>43</b>
Holly A. Lehmkuhl Professional Engineer License No. 200932976		<b>Paragon Star Development</b> Lee's Summit, Missouri	

NO.	DATE	REVISIONS	BY	APPROVED
9/2/20		City Comments		
11/23/20		Utility Updates		

- 1 1/27/21 Revised Structure Size
  - 2 2/4/21 Retaining Wall Station & Offsets
  - 2/26/21 RFI 11
  - 3 3/11/21 RFI 12
  - 4 3/11/21 Revised Line 400
  - 5 4/8/21 Utility Updates
  - 6 5/25/21 Paver Revision
  - 7 6/15/21 Grading Updates
  - 8 6/24/21 Wiring Diagram Updates
  - 9 9/30/21 RFI 15-Irrigation Sleeves
  - 10 9/30/22 Record Drawings
  - 11 4/7/23 Record Drawings
- #6 BAR (TYP.)



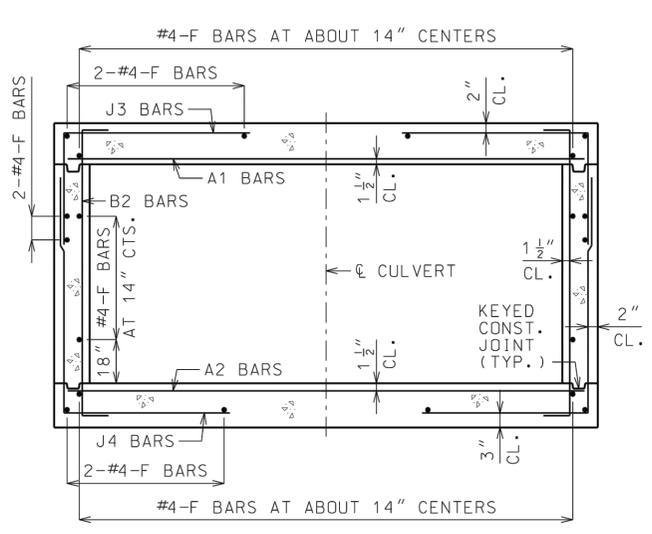
**ADDITIONAL REINFORCING FOR PIPE PENETRATIONS INTO RCB WINGWALL**

Note: CUT HORIZ. & VERT. REINF. TO ALLOW FOR PIPE OPENING.

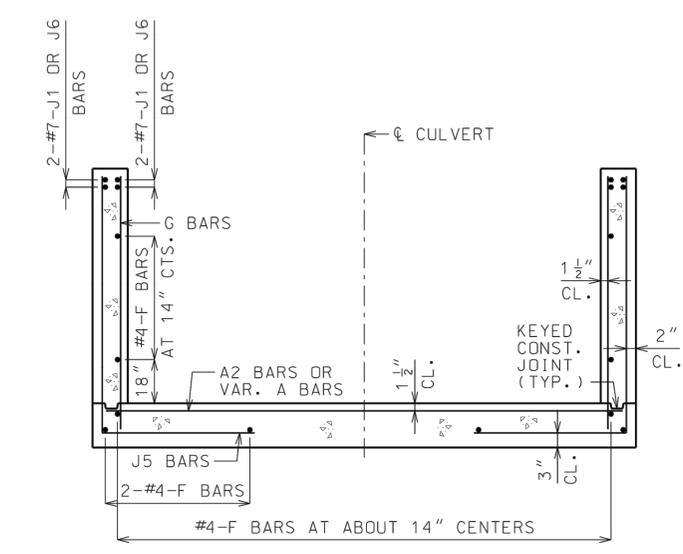
INSTALL TREATED PLYWOOD BOARD OVER 18" END SECTION UPON COMPLETION OF RCB CONSTRUCTION.

\* FIELD BEND AS NECESSARY TO MAINTAIN 1 1/2" CLEAR.

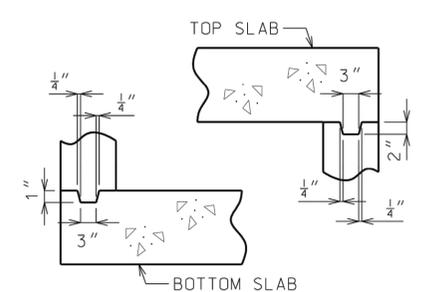
PIPE PENETRATION LOCATION	
STATION	107+34.41
FLOWLINE	E1. 798.5
OFFSET	82.93' Rt.
PIPE SIZE	18"



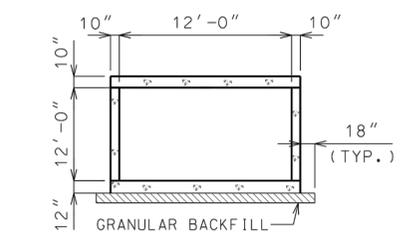
**BARREL REINFORCEMENT**  
 SYMMETRICAL ABOUT AND NORMAL TO CULVERT



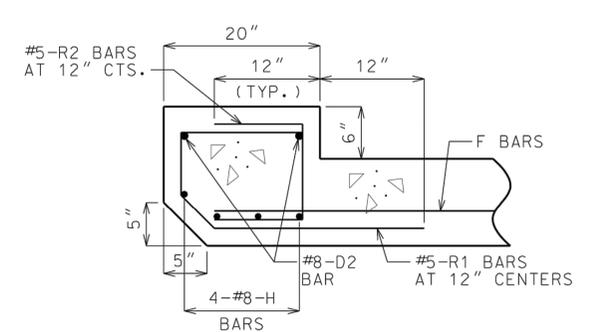
**UPSTREAM AND DOWNSTREAM WINGS REINFORCEMENT**



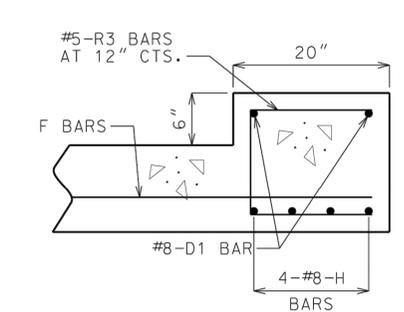
**KEYED CONSTRUCTION JOINT**



**GRANULAR BACKFILL LIMITS AND MEMBER DIMENSIONS**



**UPSTREAM HEADWALL REINFORCEMENT**



**DOWNSTREAM HEADWALL REINFORCEMENT**

**GENERAL NOTES:**

J5 BARS ARE #6 @ 6"

BARREL AND WINGS SECTIONS ARE SYMMETRICAL ABOUT AND NORMAL TO CULVERT, EXCEPT AS SHOWN. HEADWALL SECTIONS ARE NORMAL TO LONG DIRECTION OF HEADWALL.

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1 1/2".

SEE MODOT STANDARD PLAN 703.17 FOR REINFORCEMENT LENGTHS USING 12'X12' BOX CULVERT DIMENSIONS WITH A DESIGN FILL OF 6'-0".

ALL MATERIAL, LABOR, EXCAVATION AND EQUIPMENT REQUIRED TO CONSTRUCT THE PIPE PENETRATION SHALL BE SUBSIDIARY TO THE BID ITEM "12'X12' CONCRETE BOX CULVERT", LINEAR FOOT.

**CONCRETE SINGLE 12'X12' BOX CULVERT**  
 SHEET 3 OF 4

Note: This drawing is not to scale. Follow dimensions.

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 Tuesday, May 09, 2023, 8:58am -- Tuesday, May 09, 2023, 8:58am -- Layout: 40\_PCD(4)



**GBA**  
architects  
engineers

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

DATE: 02-25-20  
DESIGN BY: HAL  
DRAWN BY: GMH  
PROJECT NO.: 12720  
SHEET NO. 40 TOTAL SHEETS 43

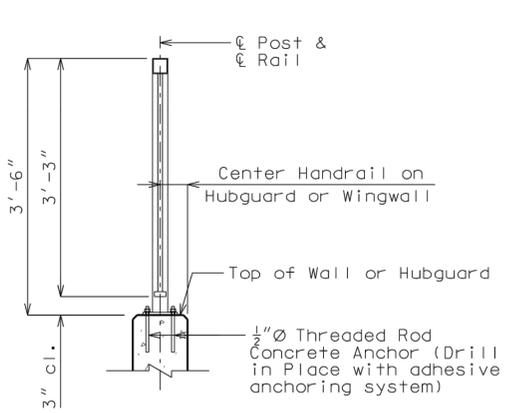
Holly A. Lehmkuhl  
Professional Engineer  
License No. 200932976

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
Lee's Summit, Missouri

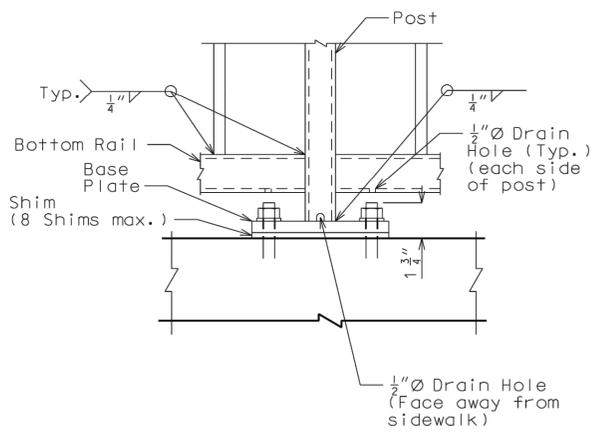
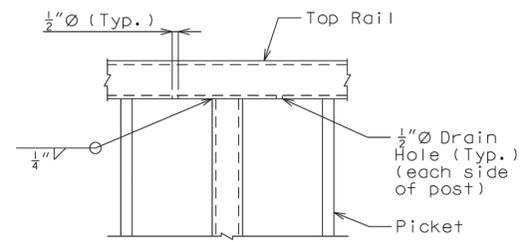
NO.	DATE	REVISIONS	BY	APPROVED
11/23/20		Utility Updates		
9/2/20		City Comments		

- 1/27/21 Revised Structure Size
- 2/4/21 Retaining Wall Station & Offsets
- 2/26/21 RFI 11
- 3/11/21 RFI 12
- 3/11/21 Revised Line 400
- 4/8/21 Utility Updates
- 5/25/21 Paper Revision
- 6/15/21 Grading Updates
- 6/24/21 Wiring Diagram Updates
- 9/30/21 RFI 15-Irrigation Sleeves
- 9/30/22 Record Drawings
- 4/7/23 Record Drawings

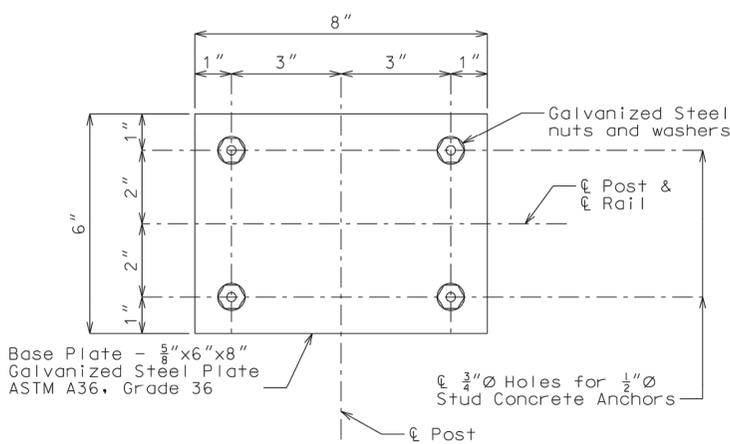
As-Built: "400-00 100.10", "4-00% 1.15% slope", or "9-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.



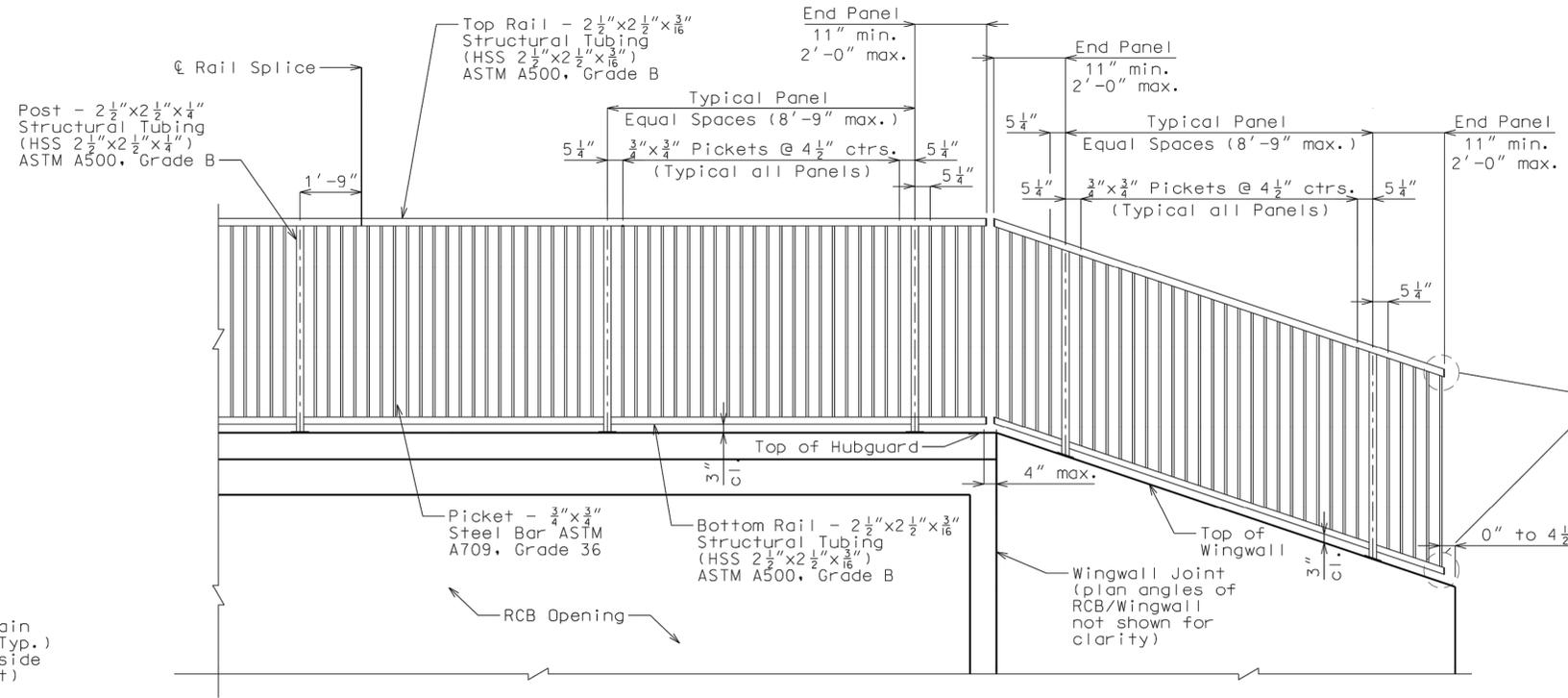
SECTION THRU RAIL



POST DETAIL

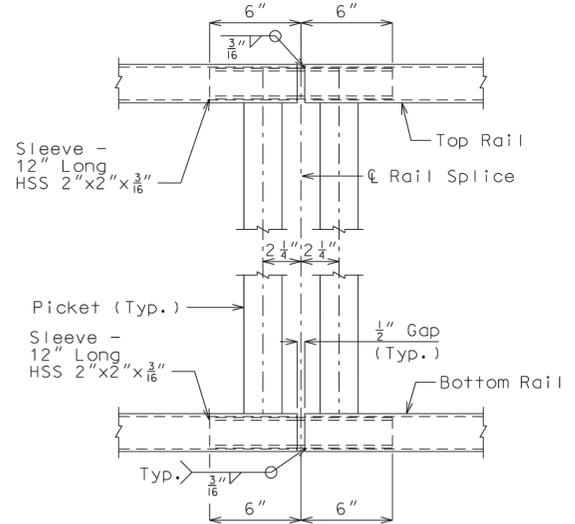


BASE PLATE DETAIL

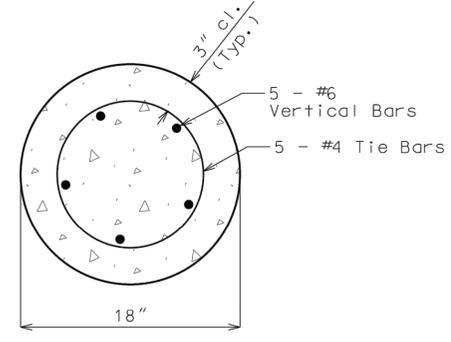


TYPICAL METAL HANDRAIL ELEVATION ON RCB HUBGUARD & WINGWALL

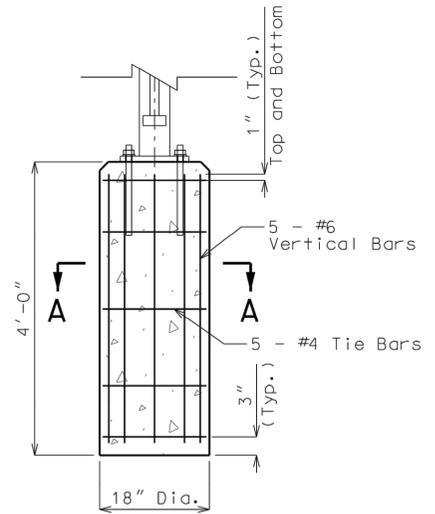
Not to Scale



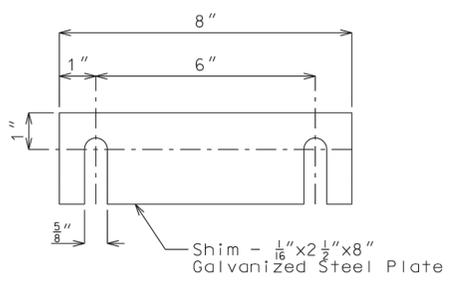
TYPICAL SPLICE DETAIL



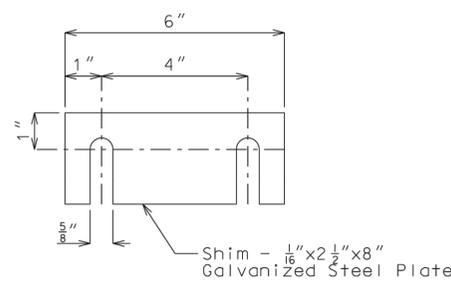
SECTION A-A



POST FOUNDATION DETAIL



8" SHIM DETAIL



6" SHIM DETAIL

PEDESTRIAN FENCE DETAILS

HANDRAIL NOTES:

Construction shall be per 2019 Missouri Standard Specifications for Highway Construction.

Galvanize all rail, rail splice, posts, pickets, shims and base plates after fabrication in accordance with the requirements of ASTM A123. No field galvanizing will be allowed. Handrails shall be protected from any damage to the galvanized surfaces. Handrails delivered to the job site with damaged galvanizing shall be returned to the manufacturer to be re-galvanized.

Set rails parallel to the top of the wall. Set posts and pickets vertical in both planes of the handrail. Top of handrail elevations to match at hubguard - wingwall interface. Shims may be used between concrete and base plate of steel posts (1/2" max. shim without prior City approval).

Grind smooth all top and bottom rail-to-post welded connections.

Field welding is not permitted.

The Contractor shall submit shop drawings to the Engineer for approval prior to fabrication of the handrail. Field verify as-built dimensions and elevations of hubguards or wingwalls prior to fabrication of handrail. Post spacing will be reviewed during the shop drawing review period.

Fabricate handrail in units to include a minimum of one and a maximum of three panels. The maximum length of an individual handrail unit shall be 30'-0"

Attach top rail members to at least two posts. Locate center of rail splices 1'-9" from centerline of post unless shown otherwise.

The threaded rod concrete anchors shall be galvanized and provide a minimum pullout strength of 8,000 pounds on 4,000 psi concrete. Length of embedment into concrete shall conform to manufacturer's recommendations. After the holes are drilled, remove all loose material by using a wire brush to free the dust from the side of the hole and then vacuuming to remove material and dust. Place epoxy capsule system in the hole and insert the threaded rod in accordance with the manufacturer's directions.

All tools, materials, labor and incidentals necessary to complete the work for the handrail are subsidiary to the bid item "Reinforced Concrete Box Culvert (12'x12')", lump sum.

**CONCRETE SINGLE 12'X12'  
BOX CULVERT**  
SHEET 4 OF 4

Note: This drawing is not to scale. Follow dimensions.

**LEGEND**

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

"+00.00 100.10", "+.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

The information provided on this drawing conforms to construction records; it is not intended for construction, implementation or recording purposes; and it is solely based on information obtained by GBA.

Date: 4/11/23  
 Certified by: Bradley D. Burton  
 Title: Senior Associate  
 Firm: GBA

<b>GBA</b> architects engineers		DATE: 4/15/19
9801 Renner Boulevard Lenexa, Kansas 66219 913.492.0400 www.gbateam.com		DESIGN BY: CMN
		DRAWN BY: CMN
		PROJECT NO.: 12720
SHEET NO.	TOTAL SHEETS	
<b>41</b>	<b>43</b>	

Bradley D. Burton  
 Professional Engineer  
 License No. 25862

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
 Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
5/15/18		Revised Field Elevations		
8/7/18		City Comments		
8/28/18		City Comments		
9/14/18		City Comments		
10/10/18		Removed Floodway Grading		
11/29/18				
4/11/19		Temporary River Crossing Repair		
4/15/19		Temporary River Crossing Repair		
3/10/20		City Comments		
12/1/20		North slope grading revisions		
2/4/21		Retaining Wall Station & Offsets		
3/11/21		Line and Stationing		
3/24/21		Header Labels		

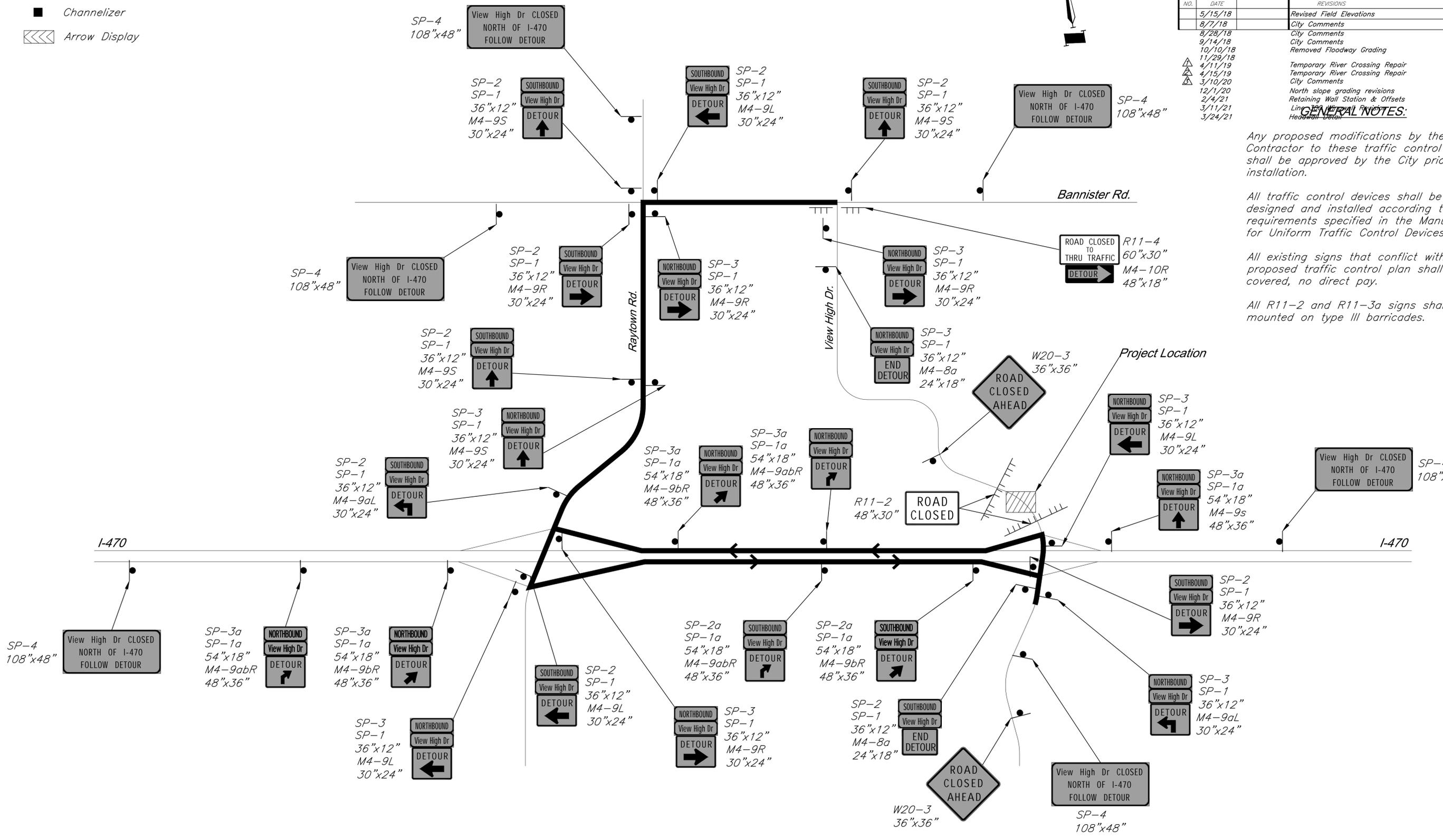
**GENERAL NOTES:**

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.



Architect: 00212, Professional Engineer: 000133, Professional Land Surveyor: 000059  
 C:\12720\Civil\_3D\Production Drawings\Mass Grading\Lee's Summit\1272015400.dwg Layout: Traffic Control Detour -- Tuesday, May 09, 2023, 8:58am -- Copyright 2023, George Butler, Associates, Inc.

**Traffic Control Detour**

Architect: 00212, Professional Engineer: 000133, Professional Land Surveyor: 000059  
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 Tuesday, May 09, 2023, 8:58am  
 C:\12720\Civil\_3D\Production Drawings\Mass Grading\Lee's Summit\1272015-400.dwg Layout: TTC Details 1

"100-00 100.10", "±0.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

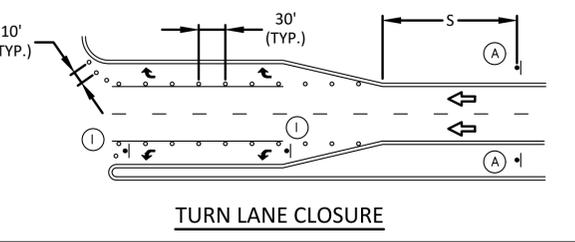
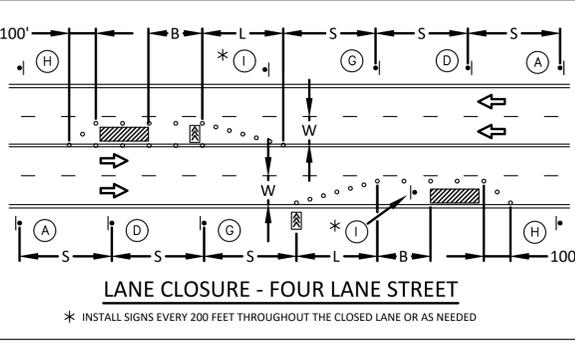
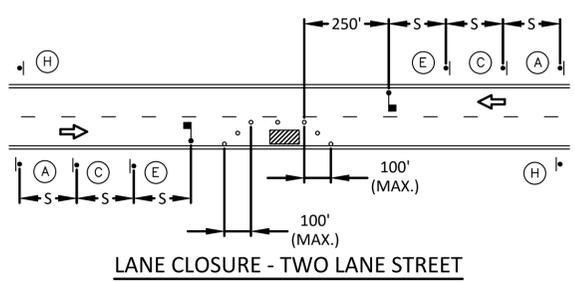
The information provided on this drawing conforms to construction records; it is not intended for construction, implementation or recording purposes; and it is solely based on information obtained by GBA.  
 Date: 4/11/23  
 Certified by: Bradley D. Burton  
 Title: Senior Associate  
 Firm: GBA

		DATE: 4/15/19 DESIGN BY: CMN DRAWN BY: CMN PROJECT NO.: 12720
8901 Renner Boulevard Lenexa, Kansas 66219 913-492-0400 www.gbateam.com	SHEET NO.: 42 TOTAL SHEETS: 43	Storm Sewer Improvements and Mass Grading <b>Paragon Star Development</b> Lee's Summit, Missouri

Bradley D. Burton  
 Professional Engineer  
 License No. 25862

NO.	DATE	REVISIONS	BY	APPROVED
5/15/18		Revised Field Elevations		
8/7/18		City Comments		
8/28/18		City Comments		
9/14/18		City Comments		
10/10/18		Removed Floodway Grading		
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3/10/20		City Comments		
12/1/20		North slope grading revisions		
2/4/21		Retaining Wall Station & Offsets		
3/11/21		Line 300 Wingwall Revision		
3/24/21		Headwall Detail		

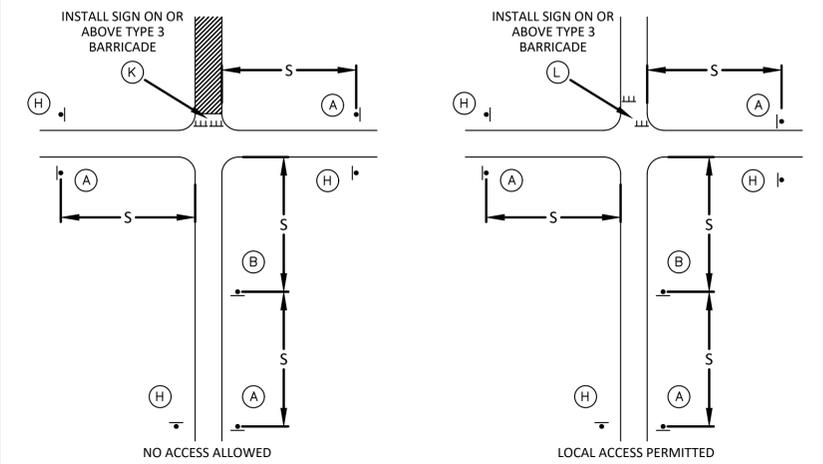
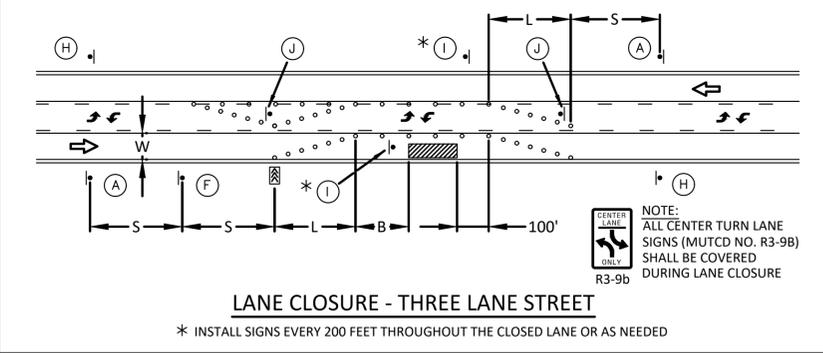
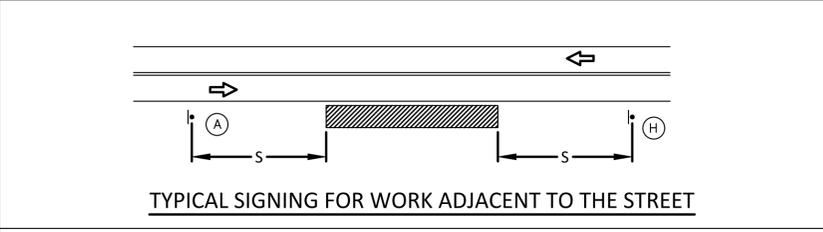
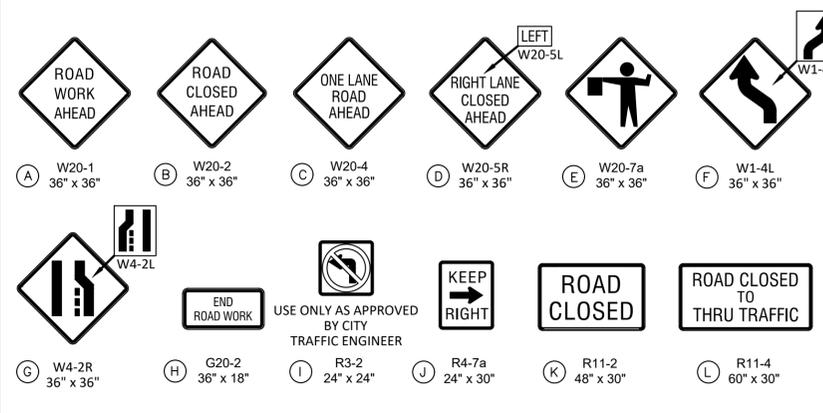
**SYMBOL LEGEND**



SIGN SPACING "S"		TAPER DIMENSIONS (FEET)				
SPEED LIMIT (MPH)	SPACING (FEET)	SPEED LIMIT	MINIMUM TAPER LENGTH "L", PER LANE WIDTH "W"	MINIMUM NUMBER OF CHANNELIZERS		
25	100	25	10	11	12	6
30-35	250	30	150	165	180	7
≥ 40	350	35	205	225	245	8
		40	270	295	320	9
		45	450	495	540	13

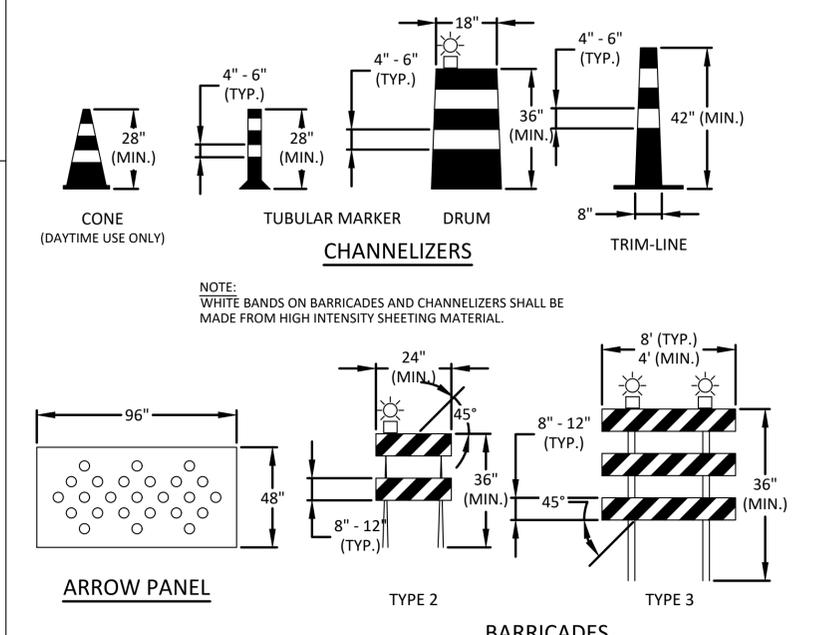
GUIDELINES FOR LENGTH OF LONGITUDINAL BUFFER SPACE "B"		MAXIMUM CHANNELIZER SPACING		
SPEED LIMIT (MPH)	LENGTH (FEET)	SPEED LIMIT (MPH)	WITHIN TAPER (FEET)	OUTSIDE TAPER (FEET)
25	35	25	25	50
30	55	30	30	60
35	85	35	35	70
40	120	40	40	80
45	170	45	45	90

**SIGN LEGEND**



**GENERAL NOTES:**

- 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).
- 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.
- 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.
- 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 ERCTED 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.
- TRIM-LINES ARE THE CITY'S PREFERRED CHANNELIZING DEVICE. CONES MAY NOT BE USED AT NIGHTTIME.
- TRAFFIC CONTROL DEVICES NOT IN USE OR NOT APPLICABLE SHALL BE EITHER COVERED OR REMOVED FROM THE WORK AREA.
- 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.
- ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS AND SIDE STREETS UNLESS NOTED OTHERWISE ON THE PLANS.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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).
- 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.
- NO TRAFFIC SIGNAL SHALL BE ALTERED OR MODIFIED IN ANY WAY WITHOUT A PLAN APPROVED BY THE CITY TRAFFIC ENGINEER.
- 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.
- 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.
- 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:
  - EMPLOY ANOTHER AGENCY TO CORRECT DEFICIENCIES IN TRAFFIC CONTROL DEVICES AND DEDUCT THE COST FROM THE CONTRACTOR'S PAY ESTIMATE.
  - STOP THE WORK UNTIL DEFICIENCIES ARE CORRECTED.
  - SUSPEND ALL PAY ESTIMATES UNTIL DEFICIENCIES ARE CORRECTED, OR
  - PLACE THE CONTRACTOR IN DEFAULT.



**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  
 Street Name: TRF-1 TRAFFIC CONTROL DETAILS

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

C:\12720\Civil\_3D\Production Drawings\Mass Grading\Lee's Summit\1272015-400.dwg Layout: TTC Details 2 -- Tuesday, May 09, 2023, 6:58am -- Copyright 2023, George Butler Associates, Inc. Architect: 00212, Professional Engineer: 000133, Professional Land Surveyor: 000059

"+100.00 100.10", "+.00% 1.15% slope", or "8-inch HDPE PVC pipe" are all typical examples of revisions that indicate that design data has been replaced with "as-built" information. All other data is as designed and has not been field verified.

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 Date: 4/11/23  
 Certified by: Bradley D. Burton  
 Title: Senior Associate  
 Firm: GBA

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

DATE:	4/15/19
DESIGN BY:	CMN
DRAWN BY:	CMN
PROJECT NO.:	12720
SHEET NO.	TOTAL SHEETS
<b>43</b>	<b>43</b>

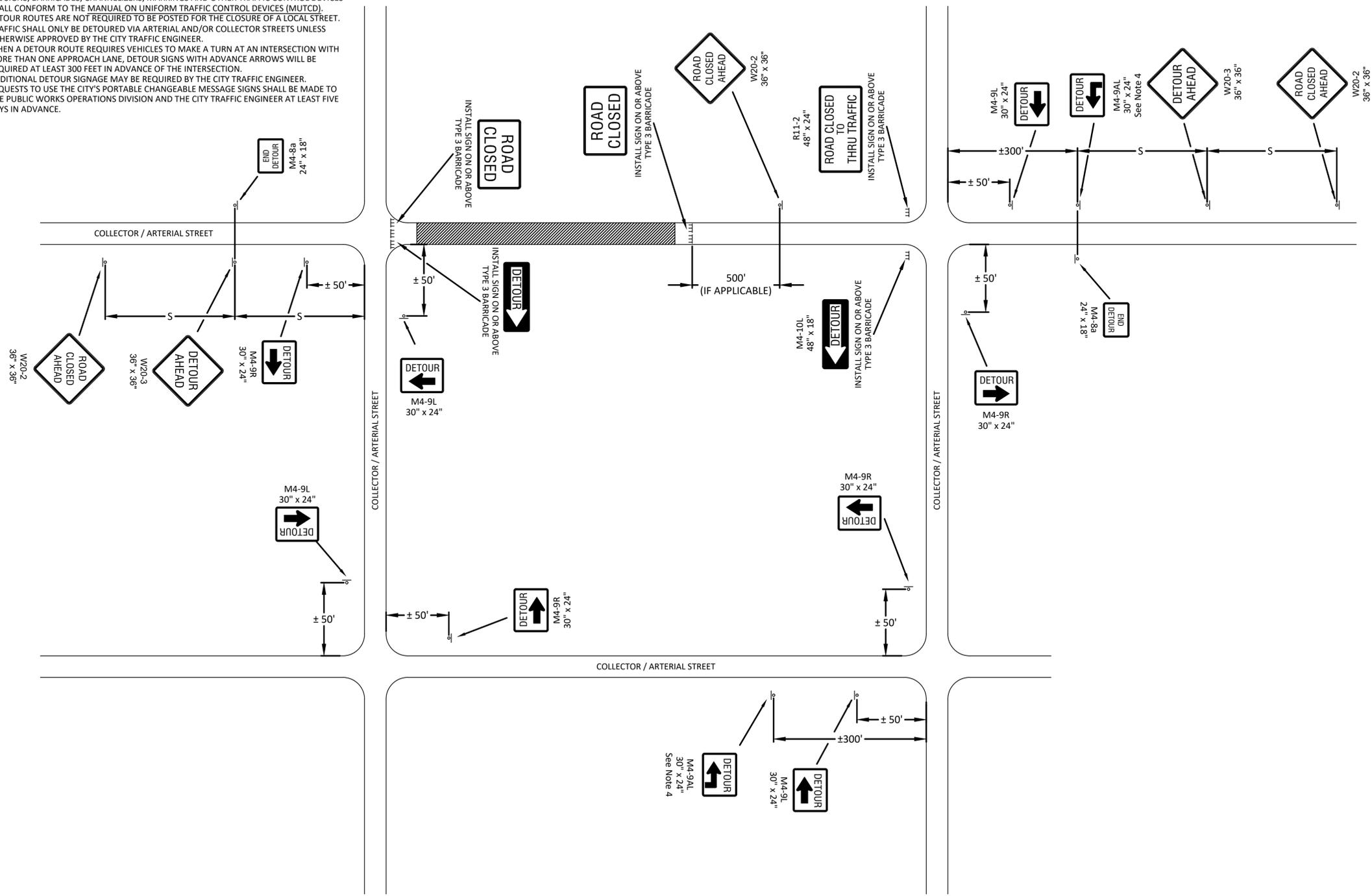
Bradley D. Burton  
 Professional Engineer  
 License No. 25862

Storm Sewer Improvements and Mass Grading  
**Paragon Star Development**  
 Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
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**DETOUR GENERAL NOTES:**

- ALL SIGNS, BARRICADES, CHANNELIZERS, MARKINGS AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
- DETOUR ROUTES ARE NOT REQUIRED TO BE POSTED FOR THE CLOSURE OF A LOCAL STREET.
- TRAFFIC SHALL ONLY BE DETOURED VIA ARTERIAL AND/OR COLLECTOR STREETS UNLESS OTHERWISE APPROVED BY THE CITY TRAFFIC ENGINEER.
- 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.
- ADDITIONAL DETOUR SIGNAGE MAY BE REQUIRED BY THE CITY TRAFFIC ENGINEER.
- 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.



**LEE'S SUMMIT**  
**MISSOURI**  
 PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64003

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

**Traffic Control Details**