MASTER DRAINAGE PLAN
LEE'S SUMMIT HIGH SCHOOL
ADDITIONS & RENOVATIONS & ATHLETICS
400 SE BLUE PARKWAY
LEE'S SUMMIT, MISSOURI 64063
SECTION 8, TOWNSHIP 47 N, RANGE 31 W

Prepared for:

LEE SUMMIT SCHOOL DISTRICT
502 SE Transport Drive
Lee's Summit, Missouri 64081

Prepared by:

KAW VALLEY ENGINEERING, INC.
14700 West 114th Terrace
Lenexa, Kansas 66215

October 9, 2020
Revised: November 20, 2020
Revised: December 14, 2020

Kaw Valley Engineering Project No. **C20D0496**

MASTER DRAINAGE PLAN

LEE’S SUMMIT HIGH SCHOOL ADDITIONS & RENOVATIONS
LEE’S SUMMIT HIGH SCHOOL ATHLETICS
400 SE BLUE PARKWAY
LEE’S SUMMIT, MISSOURI
Project No. C20D0496

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REVISIONS

Revision 0 – October 9, 2020	Initial Issue
Revision 1 – November 20, 2020	Per City Comments
Revision 2 – December 14, 2020	Per City Comments

INTRODUCTION

The Lee’s Summit School District is proposing extensive building additions and ancillary improvements across the Lee’s Summit High School (LSHS) at 400 SE Blue Parkway in Lee’s Summit, Missouri. With authorization from the Lee Summit School District, Inc., Kaw Valley Engineering, Inc. has completed a study of the existing and proposed storm drainage conditions associated with the project.

PURPOSE OF STUDY

The purpose of this study is to analyze the changes in storm water drainage conditions and flows associated with the proposed project. Furthermore, the study will show that the proposed drainage system for this project will comply with the adopted City of Lee’s Summit, Missouri storm water guidelines.

CITY STORMWATER MANAGEMENT REQUIREMENTS

Based upon the Storm Water Management Guidelines as described in the KC Metropolitan Chapter of APWA as adopted by the City of Lee’s Summit, the redevelopment on this property would be subject to the following requirements:

- The post development storm water peak runoff control is required for the 1%, 10% and 50% annual chance storm events as defined under Comprehensive Protection strategy outlined in APWA Section 5601.5 A4.a as modified in the City of Lee’s Summit Design and Construction Manual. This project is an additions and renovations project on a fully developed site. The comprehensive Protection Strategy is applied to the increase in impervious coverage in acreage on the LSHS Campus.
- Volumetric and/or extended detention control of the 90% mean annual event (Water Quality Event or 1.37”) is proposed to be provided to mitigate the proposed increase in impervious coverage associated with this project as well.

EXISTING CONDITIONS

The project site is located on the north side of the Blue Parkway, west of Missouri Highway 291. The address is 400 SE Blue Parkway as located on the general vicinity map.

The Lee's Summit High School property consists of approximately 45.53 acres. However, a project area of 17.48 acres has been defined since part of the site will remain undisturbed and is not part of the scope of this project. The project site currently consists of a school building, concrete hardscape, parking areas and driveways, athletics spaces, and green space. Table 1 details the existing land cover of the project area. Storm water runoff from the existing project area generally drains by overland flow and storm sewer to the northwest corner of the LSHS Campus. Runoff is conveyed in an open channel along the north property line of the LSHS campus that discharges into an unnamed tributary upstream of Prairie Lee Lake. This site is in Zone "X" on the revised flood insurance rate map for Lee's Summit (community panel No. 29095C0436G & 29095C0438G) dated January 20, 2017. A copy of the Flood Panel (Firmette) is included in Exhibit A for reference. The existing site topography (demolition plan) is also included in Exhibit A.

Table 1 - Existing Land Cover in the Project Area							
Description	**Area (Sq. Ft)**	**Area (ac)**	**Impervious Area (SF)**	**Impervious Area (ac)**	**% Impervious**	**Rational 'C'**	**CN**
Existing	761,400	17.48	565,150	12.97	74%	0.75	92

A soils map has been provided for the site. The soils were identified according to the soil survey maps in the *NRCS Web Soil Survey*. The map indicates that the following soils exist on the site and included the following engineering characteristics and soil and water features information.

- **10082- Arisburg-Urban Land Complex, 1 to 5 percent slopes.** The surface water runoff class is medium. The water table is at a depth of about 18 to 36 inches. This somewhat poorly drained soil is not hydric and is classed in Hydrologic Group C. No seasonal water table is present.

- **10180- Udarents-Urban Land – Sampsel Complex, 2 to 5 percent slopes.** The surface water runoff class is very high. The water table is at a depth is more than 80 inches. This somewhat poorly drained soil is not hydric and is classed in Hydrologic Group C and C/D.

DESCRIPTION OF PROPOSED IMPROVEMENTS

As stated above, the proposed improvements at Lee's Summit High School will include a building addition, improvements to the stadium, improvement to pedestrian access and flow, reconstruction of the building services area, extension of the emergency access drive and expansion of the existing parking lots to offset the loss in existing parking spaces. The proposed improvements will encompass 17.48 acres of land which includes the disturbance and development within the Prairie Lee Lake watershed. Current plans propose an increase of approximately 16,000 SF of Impervious coverage or 2.1% within the defined project area. Most of the additional impervious coverage is proposed to be constructed on the north side of the property due to the expansion of the existing parking lot and future construction of a weight room. To mitigate the increase in impervious coverage specifically on the north side of campus, an extended dry detention basin is proposed to be constructed in the northwest corner of the site to collect and treat runoff from portions of the aforementioned north parking expansion area. The proposed improvements will preserve the general drainage patterns on the Campus. Storm Sewers will be extended and resized to address onsite capacity issues. Table 2 details the proposed land cover of the property within the project area. See Exhibit B Proposed Grading Plan.

Table 2 - Proposed Land Cover in the Project Area

Description	Area (Sq. Ft)	Area (ac)	Impervious Area (SF)	Impervious Area (ac)	% Impervious	Rational 'C'	CN
Proposed Undetained	727,600	16.70	550,900	12.65	76%	0.75	92
Proposed Detained (STF)	33,800	0.78	30,250	0.69	89%	0.84	95
Proposed	761,400	17.48	581,150	13.34	76%	0.76	92

DRAINAGE ANALYSIS

The storm runoff for the project site was analyzed for the WQv (90%), 2-year (50%), 10-year (10%), and 100 (1%)-year events for the existing and proposed conditions.

The Curve Number (CN) for the drainage areas to be used in the calculations are identified in Tables 1 and 2. This number was based upon the percentage of impervious and pervious surfaces as specified in section 5600 of APWA. It was assumed that pervious surfaces CN value of 74 and impervious surfaces have a CN value of 98.

Time of concentration (Tc) for the proposed conditions was calculated using methods outlined in APWA 5600. The time of concentration (Tc) was calculated for each project area for the existing and proposed conditions using the Urban Hydrology for Small Watersheds TR-55 manual.

Runoff for storm sewer design was calculated using the Rational Method as described in The KC Metropolitan Chapter of APWA Section 5600. Runoff for detention and routing was calculated using the SCS method as described in TR-55.

STORM SEWER ANALYSIS

The existing private storm sewer system will be modified, and new structures and pipes will be installed as part of this project. During review of the existing infrastructure, it was noted that contributions from the Lee's Summit High School exceeded the capacity of the existing public storm sewer on Browning Street for a 10-year event. As part of this project, a substantial portion of the south half of the Lee's Summit High School Campus will be redirected via a new storm extension between the existing school and tennis courts. Refer to Exhibit C for the drainage area map, storm sewer calculations and storm sewer plan and profiles.

RELEASE RATE REQUIREMENTS

Under the comprehensive protection method, the City of Lee's Summit Design and Construction Manual stipulates that the post development release rate is to be detained to a defined cfs/acre rate of runoff. As indicated in Tables 1 and 2 of the report, the impervious surfaces within the project limits will increase by approximately 16,000 SF. Table 3 is a calculation of the existing discharge rates from the defined project area on the LSHS campus.

Table 3 - Existing Release Rates

				WQv Year Storm		**2 Year Storm**	**10 Year Storm**	**100 Year Storm**
Description	**Area (ac)**	**Curve Number**	**Tc (min)**	Q (cfs)	Volume (ac-ft)	Q (cfs)	Q (cfs)	Q (cfs)
Existing	17.48	91.8	10.10	16.5	1.001	59.9	100.6	142.7

Table 4 is calculation of the allowable increase in release rates from the LSHS campus in accordance with the comprehensive control strategy for the 2-year, 10-year and 100-year storm events.

Table 4 - Comprehensive Control Strategy (CCS)
Allowable Site Discharge from Additional Impervious Coverage

Description	SF	AC	2-year Storm 50% (0.5 cfs/acre)	10-year Storm 10% (2 cfs/acre)	100-year Storm 1% (3 cfs/acre)
CCS - Change in Impervious Coverage	16,000.00	0.37	0.18	0.73	1.10

Table 5 specifies the allowable site discharge from the campus. Table 5 also shows the comparison of the existing + allowable and proposed release rates without mitigation. The proposed condition was subdivided to document the unmitigated release rates in both the detained (proposed as part of this project) and undetained drainage areas.

Table 5 - Comparative Analysis of Project Area								
				WQv Year Storm		**2 Year Storm**	**10 Year Storm**	**100 Year Storm**
Description	**Area (ac)**	**Curve Number**	**Tc (min)**	Q (cfs)	Volume (ac-ft)	Q (cfs)	Q (cfs)	Q (cfs)
Existing + Allowable	17.48			16.5	1.001	60.1	101.3	143.8
Proposed Undetained	*16.70*	*92.2*	*10.10*	*1.1*	*0.058*	*3.3*	*5.3*	*7.5*
Proposed Detained (STF)	*0.78*	*95.5*	*5.00*	*15.8*	*0.962*	*57.3*	*96.2*	*136.4*
Proposed	17.48	92.3		16.9	1.020	60.6	101.5	143.9
Target Reduction from STF				**0.4**	**0.019**	**0.5**	**0.2**	**0.1**

To account for this increase of storm water runoff associated with the proposed project and meet the target reductions, Kaw Valley Engineering recommends that the Lee Summit School District constructs an on-site extended dry detention basin to reduce the peak discharge outflow from the site for all storm events analyzed and reduce volumetric increases for the WQv event.

DETENTION BASIN & ANALYSIS RESULTS

The extended dry detention basin (STF) will be located in the northwest corner of the site and is designed in general accordance with APWA 5600 standards. The detention basin will treat runoff from an adjacent parking lot. The detention basin will consist of an above ground detention pond and underground chamber system. The surface pond will have a bottom elevation of 1010.0, top elevation of 1012.0, and maximum side slopes of 3:1 for ease of maintenance. The basin floor will be constructed with a highly permeable Loamy Sand and rip rap floor that will infiltrate surface water into an underground gravel bed and chamber system. The chamber system will be equipped with inspection ports, an overflow drain and capped underdrain routed to the primary outlet structure. The underdrain will be equipped with a secured cleanout cap and 1” orifice. The cap can be removed for underdrain maintenance and inspection. Table 6 provides the drainage area and impervious coverage of the runoff entering the detention basin (STF).

Table 6 – Extended Dry Detention Basin (STF)						
Description	**Area (ac)**	**Impervious Area (SF)**	**Impervious Area (ac)**	**% Impervious**	**Rational 'C'**	**CN**
EEDB (STF)	0.78	30,250	0.69	89%	0.83	95

The detention basin will receive stormwater from overland flow via a flume from the adjacent parking to the south. The outflow will be regulated by an 8” drain tied to the chamber system beneath the basin floor. This 8” drain is designed to limit the discharge from the WQv (1-year event) storm through the basin underdrain system. The gravel bed and chamber system allow for the storage of runoff for extended periods of time. Both the underdrain and 8” chamber connector drain will connect to a 4’ by 4’ yard inlet with a 6” x 4’opening on the west face of the box. This outlet is designed to detain the 2-year, 10-year and 100-year events. The structure will be located on the east side of the basin and will also serve as the emergency outlet structure. The flow from the outlet structure will be conveyed through a 15-inch HDPE storm pipe and discharge to the east into an existing drainage channel. If consecutive 100-year storm events are realized, the detention basin berm will be overtopped on the north and east sides of pond and runoff will drain by overland flow into the existing channel on the north side of the Lee's Summit High School property. Rip rap will be installed at the discharge point of the 15" HDPE storm line. The rip rap apron is to be at least 20' long and consist of 12" to 15" (D50) stone based on the pipe size and discharge velocity. The Drainage Area Map, BMP Plan, and EDDB Calculations are included in Exhibit C of the report.

As documented in Table 7 below, the proposed extended dry detention basin will effectively limit the post construction runoff to the less than the existing rates for the WQv, and the existing + allowable rates for the 2-year, 10-year and 100-year storm events. The requisite increase in volume associated with the WQv is also addressed. The Pondpack Analysis for the existing and proposed conditions is included in Exhibit D of the report.

Table 7 - Proposed Condition with Infiltration Basin Routing Summary

1-year (WQv) Design Storm	Proposed Detained STF	Proposed Undetained	Comparative Analysis	Peak Outflow From Project Area
Inflow (cfs)	1.1	15.8	Proposed Inflow (cfs)	16.9
Outflow (cfs)	0.04	15.8	Proposed Outflow (cfs)*	15.8
Storage (ac-ft)	0.031		Existing Flow (cfs)	16.5
Max WS Elev.	1077.88		Reduction in Flow (cfs)	1.1
			Calculated Volume Reduction	0.020
			Prescribed Volume Reduction	0.019
2-year Design Storm	Proposed Detained STF	Proposed Undetained	Comparative Analysis	Peak Outflow From Project Area
Inflow (cfs)	3.3	57.3	Proposed Inflow (cfs)	60.6
Outflow (cfs)	2.7	57.3	Proposed Outflow (cfs)*	60.0
Storage (ac-ft)	0.047		Existing Flow (cfs) + CCS	60.1
Max WS Elev.	1011.03		Reduction in Flow (cfs)	0.6
10-year Design Storm	Proposed Detained STF	Proposed Undetained	Comparative Analysis	Peak Outflow From Project Area
Inflow (cfs)	5.3	96.2	Proposed Inflow (cfs)	101.5
Outflow (cfs)	3.5	96.2	Proposed Outflow (cfs)*	99.6
Storage (ac-ft)	0.07		Existing Flow (cfs) + CCS	101.3
Max WS Elev.	1011.62		Reduction in Flow (cfs)	1.9
100-year Design Storm	Proposed Detained STF	Proposed Undetained	Comparative Analysis	Peak Outflow From Project Area
Inflow (cfs)	7.5	136.4	Proposed Inflow (cfs)	143.9
Outflow (cfs)	6.4	136.4	Proposed Outflow (cfs)*	142.8
Storage (ac-ft)	0.082		Existing Flow (cfs) + CCS	143.8
Max WS Elev.	1011.91		Reduction in Flow (cfs)	1.1

*Note: Summation of Hydrographs vary from Peak Outflow due to offsetting peaks.

Based on these findings, it is the opinion of Kaw Valley Engineering, Inc. that the increases in runoff for the WQv, 2-year, 10-year and 100-year storm events and increase in volume and runoff for the WQv event related to the planned improvements associated with the LSHS Additions and

Renovations and LSHS Athletics projects can be effectively mitigated with the proposed Detention Strategy. A 1" difference between the planned 100-year WSE and emergency overflow berm is proposed to limit the potential for temporary ponding in the adjacent parking lot that could occur with consecutive 100-year storm events.

Respectfully submitted,
Kaw Valley Engineering, Inc.

STATE OF MISSOURI
DAVID D. WOOD
NUMBER
PE-2011037427
12.14.2020
PROFESSIONAL ENGINEER

David D. Wood, P.E.
Project Manager

Exhibit A

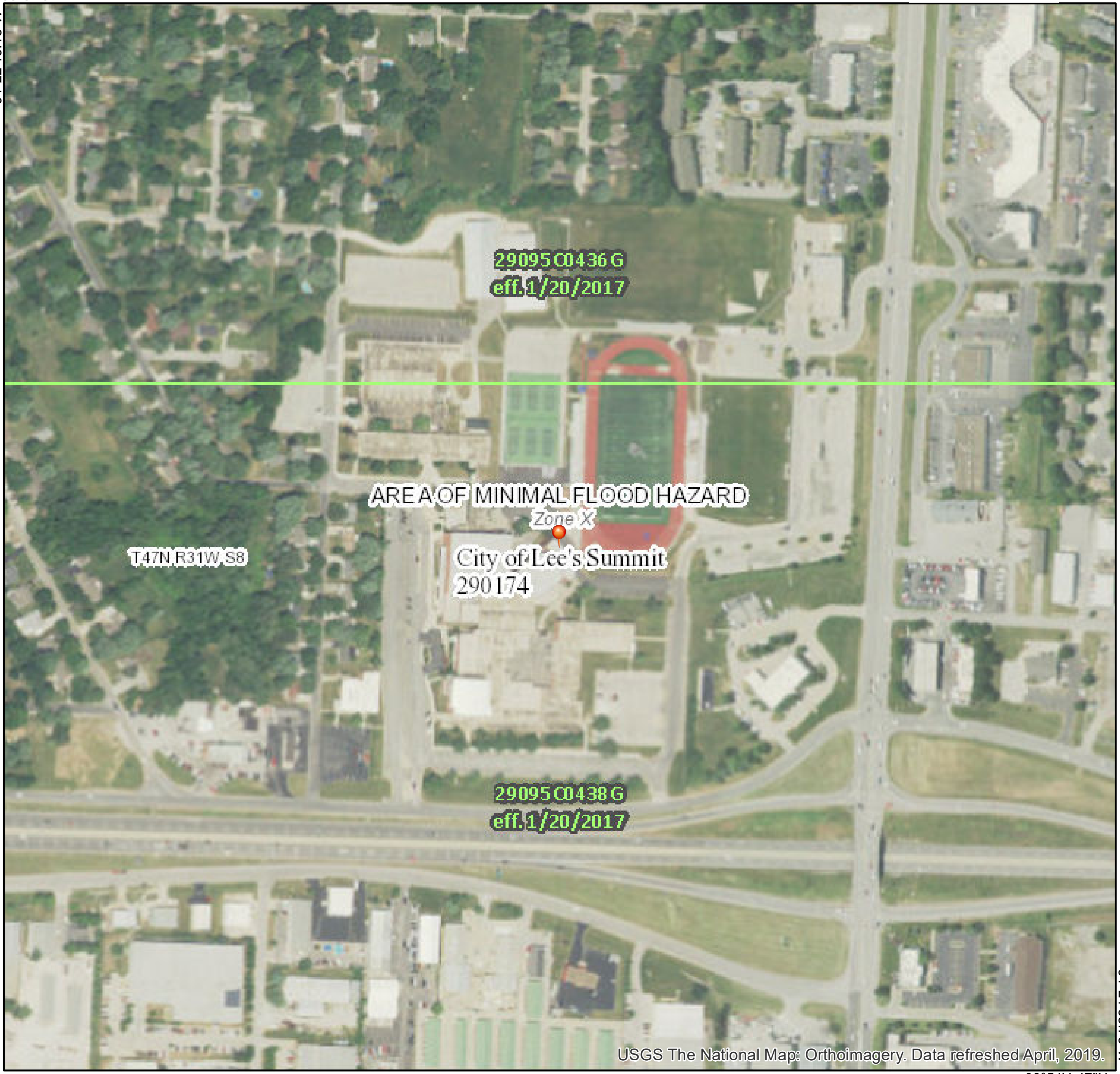
FEMA Firmette
Existing Conditions Plan
Soils Map

National Flood Hazard Layer FIRMette

FEMA

38°54'32.47"N

94°22'16.18"W



94°21'38.73"W

38°54'4.47"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- B 20.2 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- 8 Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

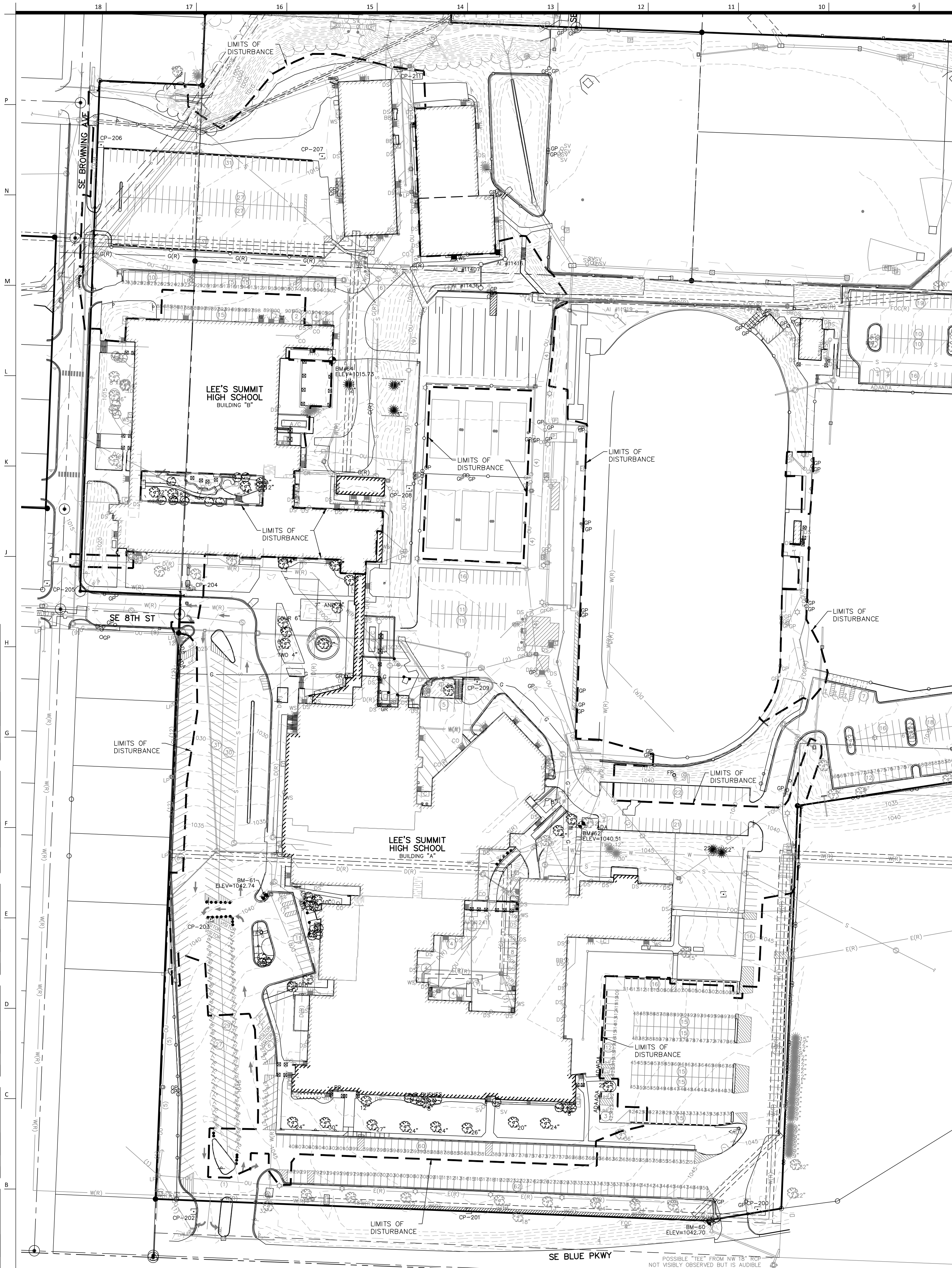
N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/28/2020 at 2:17:12 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



DESCRIPTIONS: (PER TITLE COMMITMENT)

TRACT 1: (MISSOURI WARRANTY DEED, BOOK 923, AT PAGE 743)(DEED 1A)
ALL OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 8, TOWNSHIP 47, RANGE 31, IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI, EXCEPT THAT PART CONVEYED TO THE STATE OF MISSOURI BY WARRANTY DEED RECORDED IN BOOK 656 AT PAGE 111 (DEED 1B), AND

ALSO EXCEPT THAT PART THEREOF CONVEYED TO THE STATE OF MISSOURI BY WARRANTY DEED RECORDED IN BOOK 661 AT PAGE 166 (DEED 1C),

ALSO EXCEPT THAT PART THEREOF CONVEYED TO ARTHUR B. MCLENNAN AND PAULINE P. MCLENNAN, HUSBAND AND WIFE BY WARRANTY DEED RECORDED IN BOOK 883 AT PAGE 51 (DEED 1D), AND

ALSO EXCEPT A TRACT OF LAND IN SAID SOUTHWEST QUARTER OF THE NORTHEAST QUARTER, SECTION 8, TOWNSHIP 47, RANGE 31 DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT 651.69 FEET NORTH OF THE SOUTHEAST CORNER OF THE SAID QUARTER QUARTER SECTION, THENCE WEST 491.69 FEET; THENCE NORTH 63 FEET; THENCE EAST 491.69 FEET TO THE QUARTER SECTION LINE; THENCE SOUTH 63 FEET TO POINT OF BEGINNING.

TRACT 2: (MISSOURI WARRANTY DEED, BOOK 1243, AT PAGE 716)(DEED 2)
ALL OF THE WEST 327 FEET OF THE NORTH 2 ACRES OF THE SOUTH 5 ACRES OF THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 8, TOWNSHIP 47, RANGE 31, IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT 198 FEET NORTH OF THE SOUTHWEST CORNER OF THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 8, TOWNSHIP 47, RANGE 31, IN JACKSON COUNTY, MISSOURI, AND RUNNING THENCE EAST 327 FEET; THENCE NORTH 132 FEET; THENCE WEST 327 FEET; THENCE SOUTH 132 FEET TO POINT OF BEGINNING.

TRACT 3: (MISSOURI WARRANTY DEED, BOOK 1277, AT PAGE 325)(DEED 3)
THE SOUTH 5 ACRES OF THE WEST HALF OF THE NORTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 8, TOWNSHIP 47, RANGE 31, IN LEES' SUMMIT, JACKSON COUNTY, MISSOURI.

TRACT 4: (REPORT OF COMMISSIONERS, BOOK 1484, AT PAGE 306)(DEED 4)
ALL OF THE WEST 327 FEET OF THE SOUTH 3 ACRES OF THAT PART OF THE NORTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 8 TOWNSHIP 47, RANGE 31 IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF THE NORTHEAST QUARTER AND RUNNING THENCE EAST 327 FEET; THENCE NORTH 198 FEET; THENCE WEST 327 FEET; THENCE SOUTH 198 FEET TO THE POINT OF BEGINNING.

TRACT 5: (MISSOURI WARRANTY DEED, BOOK 1491, AT PAGE 140)(DEED 5)
ALL THAT PART OF THE EAST HALF OF THE NORTHWEST QUARTER OF SECTION 8, TOWNSHIP 47, RANGE 31, IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF THE INTERSECTION OF 7TH STREET AND BROWNING AVENUE; THENCE SOUTH ALONG THE EAST LINE OF BROWNING AVENUE A DISTANCE OF 678.52 FEET TO THE NORTH LINE OF 8TH STREET; THENCE EAST ALONG THE NORTH LINE OF 8TH STREET A DISTANCE OF 133 FEET TO THE EAST LINE OF SAID QUARTER SECTION; THENCE NORTH ALONG THE EAST LINE OF SAID QUARTER SECTION A DISTANCE OF 678.52 FEET TO THE NORTH LINE OF 7TH STREET EXTENDED; THENCE WEST ALONG THE NORTH LINE OF 7TH STREET EXTENDED A DISTANCE OF 135.77 FEET TO THE POINT OF BEGINNING.

TRACT 6: (MISSOURI WARRANTY DEED, BOOK 1536, AT PAGE 205)(DEED 6)
ALL THAT PART OF THE SOUTHWEST 1/4 OF THE NORTHEAST 1/4 OF SECTION 8, TOWNSHIP 47 RANGE 31, DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT 556.69 FEET NORTH OF THE SOUTHEAST CORNER OF 1/4 OF 1/4 SECTION: THENCE WEST 491.68 FEET; THENCE NORTH 158 FEET; THENCE EAST 491.69 FEET; THENCE SOUTH 158 FEET TO THE POINT OF BEGINNING, ALL IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI,

EXCEPT THAT PART CONTAINED IN THE REPORT OF COMMISSIONERS RECORDED AS DOCUMENT NO I31081 IN BOOK I89 AT PAGE 465, DESCRIBED AS FOLLOWS:

ALL THAT PART OF THE SW 1/4 OF THE NE 1/4 OF SECTION 8, T47N, R31W, IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI DESCRIBED AS FOLLOWS: BEGINNING AT A POINT 714.69 FEET NORTH AND 57 FEET WEST OF THE SOUTHEAST CORNER OF THE SW 1/4 OF THE NE 1/4 OF SAID SECTION 8, SAID POINT BEING 70 FEET WESTERLY OF THE CENTERLINE OF STATE HIGHWAY DESIGNATED ROUTE 00 (71 BY-PASS), AS MEASURED AT RIGHT ANGLES THERETO; THENCE SOUTH 3 DEGREES 14 MINUTES 23 SECONDS WEST PARALLELING SAID HIGHWAY CENTERLINE, 158 FEET; THENCE WEST PARALLELING THE SOUTH LINE OF SAID 1/4 1/4 SECTION, A DISTANCE OF 432 FEET; THENCE NORTH PARALLELING THE EAST LINE OF SAID 1/4 1/4 SECTION, A DISTANCE OF 75 FEET; THENCE NORTHEASTERLY ALONG A STRAIGHT LINE TO THE POINT OF BEGINNING.

TRACT 7: (MISSOURI WARRANTY DEED, BOOK 1869, AT PAGE 312)(DEED 7)
BEGINNING AT A POINT 1320.0 FEET NORTH OF THE EAST-WEST CENTER LINE OF SECTION 8, TOWNSHIP 47, RANGE 31, IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI, AND ON THE EAST LINE OF THE EAST ½ OF THE NORTHWEST 1/4 OF THE NORTHEAST 1/4 OF SAID SECTION; THENCE WEST 186.3; THENCE NORTH 100 FEET; THENCE EAST 186.3 FEET TO A POINT ON THE EAST LINE; THENCE SOUTH ON SAID EAST LINE 100.0 FEET TO THE POINT OF BEGINNING, EXCEPTING THEREFROM THAT PART SITUATED IN US HIGHWAY 71 BY-PASS.

TRACT 8: (MISSOURI WARRANTY DEED, BOOK 1869, AT PAGE 313)(DEED 8)
ALL OF THE SOUTH 3 ACRES OF THE EAST ½ OF THE NORTHWEST 1/4 OF THE NORTHEAST 1/4 OF SECTION 8, TOWNSHIP 47, RANGE 31, IN LEE'S SUMMIT JACKSON COUNTY, MISSOURI, EXCEPT THE WEST 327 FEET THEREOF AND ALSO EXCEPT THE SOUTH 100 FEET OF THE EAST 186.3 FEET THEREOF.

TRACT 9: (MISSOURI WARRANTY DEED, BOOK I-79, AT PAGE 635)(DEED 9)
THE EAST 88.5 FEET OF THAT PART OF LOT 1, MUCKEY ADDITION, A SUBDIVISION IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI, LYING SOUTH OF THE SOUTH LINE OF 6TH STREET, AS SAID STREET IS DESCRIBED IN DEED RECORDED IN BOOK 1039 AT PAGE 122, EXCEPT THE NORTH 155 FEET OF SAID EAST 88.5 FEET.

TRACT 10: (MISSOURI WARRANTY DEED, BOOK 551, AT PAGE 135)(DEED 10)
ALL OF THE NORTH 2 ACRES OF THE SOUTH 5 ACRES OF THE SOUTHEAST 1/4 OF THE NORTHWEST 1/4 OF THE NORTHEAST 1/4 OF SECTION 8, TOWNSHIP 47, RANGE 31, EXCEPT ALL THE WEST 327 FEET THEREOF MORE PARTICULARLY DESCRIBED AS FOLLOWS: BEGINNING AT A POINT 198 FEET NORTH OF THE SOUTHWEST CORNER OF THE SOUTHEAST 1/4 OF THE NORTHWEST 1/4 OF THE NORTHEAST 1/4 OF SECTION 8, TOWNSHIP 47, RANGE 31 AND RUNNING THENCE EAST 327 FEET; THENCE NORTH 132 FEET; THENCE WEST 327 FEET, THENCE SOUTH 132 FEET TO POINT OF BEGINNING, ALL IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI.

TRACT 11: (MISSOURI WARRANTY DEED, BOOK 623, AT PAGE 833)(DEED 11)
THE SOUTH 220 FEET OF THE WEST 88.5 FEET OF LOT 1, MUCKEY ADDITION, A SUBDIVISION IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI.

DESCRIPTION: (PER TITLE COMMITMENT)

TRACT 1: (MISSOURI WARRANTY DEED, Bk. I-80, Pg. 1904)
ALL THAT PART OF LOT 3, MUCKEY ADDITION, A SUBDIVISION OF LAND IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI ACCORDING TO THE RECORDED PLAT THEREOF, LYING SOUTH OF THE SOUTH LINE OF 6TH STREET IN LEE'S SUMMIT, AS SAID STREET IS DESCRIBED IN THE DEED RECORDED IN BOOK 1039 AT PAGE 122.

HORIZONTAL AND VERTICAL DATUM:

UNLESS OTHERWISE NOTED THE COORDINATES SHOWN HEREON ARE GROUND COORDINATES BASED ON THE MISSOURI STATE PLANE (1983) WEST ZONE (NAD 1983) (NAVD 1988)
CAF: 0.9998978
1 METER = 3.28083333 U.S. SURVEY FEET
GROUND COORDINATES X COMBINED ADJUSTMENT FACTOR (CAF) = GRID COORDINATES
SCALED AROUND 0,0

JA-25 (PID: 095025)

NORTHING:	303,646.030 (GRID/METERS)	996,313.829 (GROUND/FEET)
EASTING:	860,950.475 (GRID/METERS)	2,824,923.692 (GROUND/FEET)
ELEVATION:	321.8 (METERS)	1055.77 (FEET)

SITE BENCHMARKS:

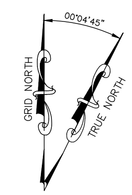
BM-60
FOUND CUT SQUARE AT THE WEST NORTHWEST CONCRETE HEADWALL ON THE WEST SIDE OF THE EAST ENTRY DRIVE TO LEE'S SUMMIT HIGH SCHOOL
ELEVATION= 1042.70

BM-61
SET CUT SQUARE WITH PUNCH IN THE SOUTHWEST EDGE ON A CONCRETE LIGHT BASE ON THE NORTH SIDE OF THE DRIVE LANE AT THE HIGH SCHOOL ADMINISTRATION CENTER ENTRY.
ELEVATION= 1042.74

BM-62
SET CUT SQUARE AT THE NORTHEAST CORNER OF THE FIRST STEP UP OF A CONCRETE WALK ON THE NORTH SIDE OF THE EAST MAIN WING.
ELEVATION= 1040.51

BM-63
SET CUT SQUARE AT THE TOP NORTHEAST CORNER OF A CONCRETE PATIO WITH COVERED TABLES ON THE EAST SIDE OF BUILDING "B".
ELEVATION= 1015.74

BM-64
SET CUT SQUARE AT THE TOP NORTHEAST CORNER OF STEPS TO THE NORTH ENTRY TO BUILDING "B" ON THE WEST SIDE.
ELEVATION= 1015.34



0 30 60 120
SCALE: 1" = 60'

PROJECT CONTROL:

CP #200
1/2" REBAR W/ ORANGE KVE CAP
NORTHING: 996572.06 (GROUND) 996470.24 (GRID)
EASTING: 2827438.76 (GROUND) 2827149.83 (GRID)
ELEV = 1049.49

CP #201
1/2" REBAR W/ ORANGE KVE CAP
NORTHING: 996570.39 (GROUND) 996468.55 (GRID)
EASTING: 2827055.45 (GROUND) 2826766.55 (GRID)
ELEV = 1048.24

CP #202
1/2" REBAR W/ ORANGE KVE CAP
NORTHING: 996569.25 (GROUND) 996467.41 (GRID)
EASTING: 2826689.97 (GROUND) 2826401.11 (GRID)
ELEV = 1042.52

CP #203
MAG NAIL
NORTHING: 996957.62 (GROUND) 996855.74 (GRID)
EASTING: 2826712.48 (GROUND) 2826423.62 (GRID)
ELEV = 1039.43

CP #204
1/2" REBAR W/ ORANGE KVE CAP
NORTHING: 997397.36 (GROUND) 997295.43 (GRID)
EASTING: 2826684.55 (GROUND) 2826395.70 (GRID)
ELEV = 1023.04

CP #205
1/2" REBAR W/ ORANGE KVE CAP
NORTHING: 997403.51 (GROUND) 997301.59 (GRID)
EASTING: 2826495.31 (GROUND) 2826206.47 (GRID)
ELEV = 1018.15

CP #206
1/2" REBAR W/ ORANGE KVE CAP
NORTHING: 997985.93 (GROUND) 997883.94 (GRID)
EASTING: 2826567.03 (GROUND) 2826278.18 (GRID)
ELEV = 1012.56

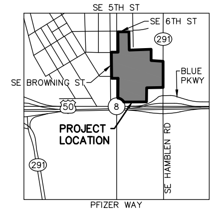
CP #207
1/2" REBAR W/ ORANGE KVE CAP
NORTHING: 997970.64 (GROUND) 997868.66 (GRID)
EASTING: 2826860.58 (GROUND) 2826571.70 (GRID)
ELEV = 1014.79

FLOOD STATEMENT:

THE SURVEYED PARCEL LIES WITHIN ZONE "X" (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) AS DETERMINED BY FEMA FLOOD INSURANCE RATE MAP NUMBER 29095C0438G, MAP REVISED JANUARY 20, 2017, AND BY MAP NUMBER 29095C0436G, REVISED JANUARY 20, 2017 LEE'S SUMMIT, JACKSON COUNTY, MISSOURI. LOCATION DETERMINED BY A SCALED GRAPHICAL PLOT OF THE FLOOD INSURANCE RATE MAP.

UNDERGROUND UTILITY STATEMENT:

THE UNDERGROUND UTILITIES SHOWN HEREON ARE DEPICTED FROM FIELD SURVEY INFORMATION OF ONE-CALL LOCATED UTILITIES AND/OR THE SCALING AND PLOTTING OF EXISTING UTILITY MAPS AND DRAWINGS MADE AVAILABLE TO THE SURVEYOR AT THE TIME OF SURVEY. THE SURVEYOR DOES NOT CERTIFY THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL UNDERGROUND UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. FURTHERMORE, THE SURVEYOR DOES NOT CERTIFY THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION DEPICTED ALTHOUGH HE DOES CERTIFY THAT THEY ARE DEPICTED AS ACCURATELY AS POSSIBLE FROM INFORMATION MADE AVAILABLE TO THE SURVEYOR AT THE TIME OF SURVEY. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES SHOWN HEREON BY EXCAVATION UNLESS OTHERWISE NOTED ON THIS SURVEY.
MISSOURI ONE CALL TICKET NUMBER: #200431409, 200431440, 200431475, 200440745.



VICINITY MAP
SEC 8 - TWP 47N - RNG 31W
NOT TO SCALE

LEGEND:

	CONTROL POINT
	BENCHMARK
	STREET/TRAFFIC SIGN
	PAINTED DIRECTIONAL ARROW
	TURN LANE DIRECTION
	HANDICAP SYMBOL
3	PARKING STALL COUNT
	WHEEL STOP
FOC	UNDERGROUND FIBER OPTIC CABLE
FOC(R)	UNDERGROUND FIBER OPTIC (FROM RECORDS)
TP	TELEPHONE PEDESTAL
S	SANITARY SEWER MANHOLE
D	STORM SEWER MANHOLE
AI	AREA INLET
CI	CURB INLET
CO	SANITARY SEWER CLEAN OUT
DS	DOWN SPOUT
FD	FLOOR DRAIN
	FLARED END SECTION
S	SANITARY SEWER LINE
D	STORM SEWER LINE
CMP	CORRUGATED METAL PIPE
RCP	REINFORCED CONCRETE PIPE
VCP	VITRIFIED CLAY PIPE
DIP	DUCTILE IRON PIPE
HDPE	HIGH DENSITY POLYETHYLENE
	WALL MOUNTED LIGHT
C	WALL MOUNTED CAMERA
E	UNDERGROUND ELECTRIC
(2) OU	OVERHEAD UTILITY LINE (# OF LINES)
P	PULL BOX
	LIGHT POLE
	UTILITY POLE
LP	UTILITY POLE W/ LIGHT
	UTILITY POLE W/ TRANSFORMER
	GUY ANCHOR
W(R)	WATER LINE PER RECORD
E(R)	UNDERGROUND ELECTRIC PER RECORD
EO	WALL MOUNTED ELECTRICAL OUTLET
B/B	BACK TO BACK OF CURB MEASUREMENT
EP	UNDERGROUND ELECTRIC PEDESTAL
G(R)	UNDERGROUND GAS PER RECORD
S(R)	SANITARY SEWER LINE PER RECORD
D(R)	STORM SEWER LINE PER RECORD
A/C	AIR CONDITIONER
G	UNDERGROUND GAS
G	GAS METER
G	GAS VALVE
GR	GAS RISER
G	GAS LINE SIGN
962.04	EXISTING SPOT ELEVATION
950	EXISTING GRADE 5' CONTOUR
939	EXISTING GRADE 1' CONTOUR
DE	DOOR ELEVATION AT THRESHOLD
FF	FINISH FLOOR ELEVATION
BHE	BUILDING HEIGHT/ELEVATION
E/E	EDGE TO EDGE OF ASPHALT
WS	WATER SPIGOT
W	WATER LINE
W	WATER METER
	WATER LINE GATE VALVE
	FIRE HYDRANT
	SPRINKLER CONTROL BOX
W	WATER MANHOLE
SV	SPRINKLER VALVE
	SIAMESE FIRE CONNECTOR
	CANOPY SUPPORT
MB	MAIL BOX
	CONCRETE JOINT/CUT LINE
	BUSH
	DECIDUOUS TREE
	CONIFEROUS TREE
	TREE LINE
FP	FLAG POLE
T/E	TRASH ENCLOSURE
L/S	LANDSCAPING AREA
CONC	CONCRETE
LW	LOWEST WIRE HEIGHT
E	ELECTRIC METER
	SPEAKER BOX
BB	BREAKER BOX
ADA	HANDICAP SIGN
HRMP	HANDICAP RAMP
GP	GATE POST
	CHAIN LINK FENCE
	WOOD FENCE
	BOLLARD

PROJ. NO. C20_0496 DSN: DDW
CFN: 0496EXCON.DWG DWN: NJN

DAVID D. WOOD
ENGINEER
MO # 2011037427

KAW VALLEY ENGINEERING
14700 WEST 114TH TERRACE
LENEXA, KANSAS 66215
PH. (913) 894-5150 | FAX (913) 894-5977
lx@kveng.com | www.kveng.com

KAW VALLEY ENGINEERING, INC., IS AUTHORIZED TO OFFER ENGINEERING SERVICES BY MISSOURI STATE CERTIFICATE OF AUTHORITY # 000842. EXPIRES 12/31/21

gouldevans
kansas city • lawrence • new orleans
phoenix • san francisco

Lee's Summit High School

400 SE Blue Pkwy
Lee's Summit, MO 64063

owner:
Lee's Summit R-7 School District
301 NE Tudor Road
Lee's Summit, MO 64086

architect:
Gould Evans
4200 Pennsylvania Avenue
Kansas City, MO 64111
816.931.6655 voice
www.gouldevans.com

structural engineer:
Bob D. Campbell & Company, Inc.
4338 Belleview
Kansas City, MO 64111
816.531.4144

civil engineer:
Kaw Valley Engineering
14700 West 114th Terrace
Lenexa, KS 66215
913.485.0318

mechanical/electrical engineer:
Henderson Engineers
1801 Main St
Kansas City, MO 64108
816.663.8700

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Kaw Valley Engineering, Inc.
Missouri Certificate of Authority: 000842
David Wood Date: 11/19/2020
Engineer License No. PE-2011037427

REVISIONS

Number	DESCRIPTION	DATE

PROJECT NO: 0119-0100
DATE: November 20, 2020

EXISTING CONDITIONS

C400

Final Development Plan

PRINT DATE/TIME: 3/17/2020 4:49:21 PM

Soil Map

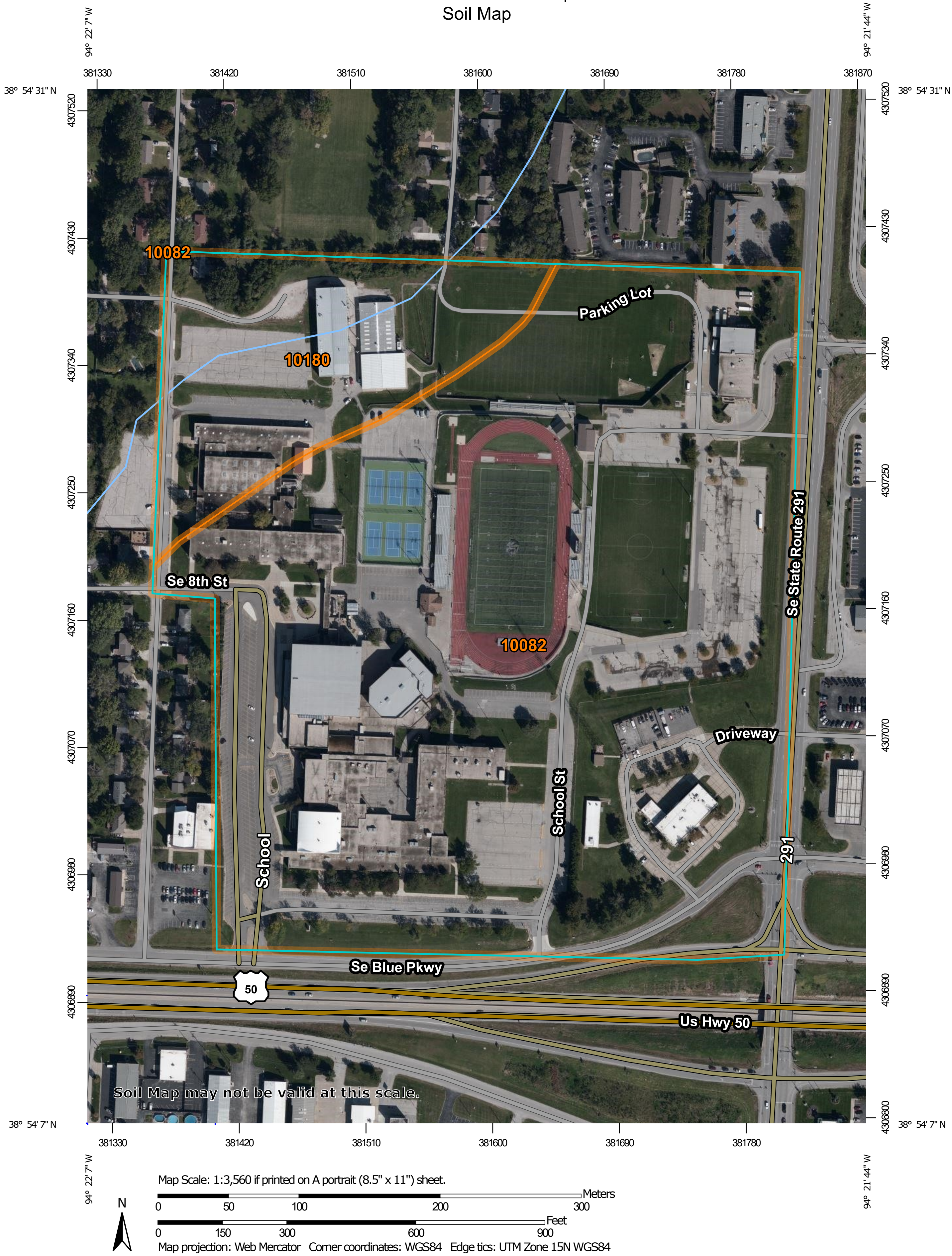
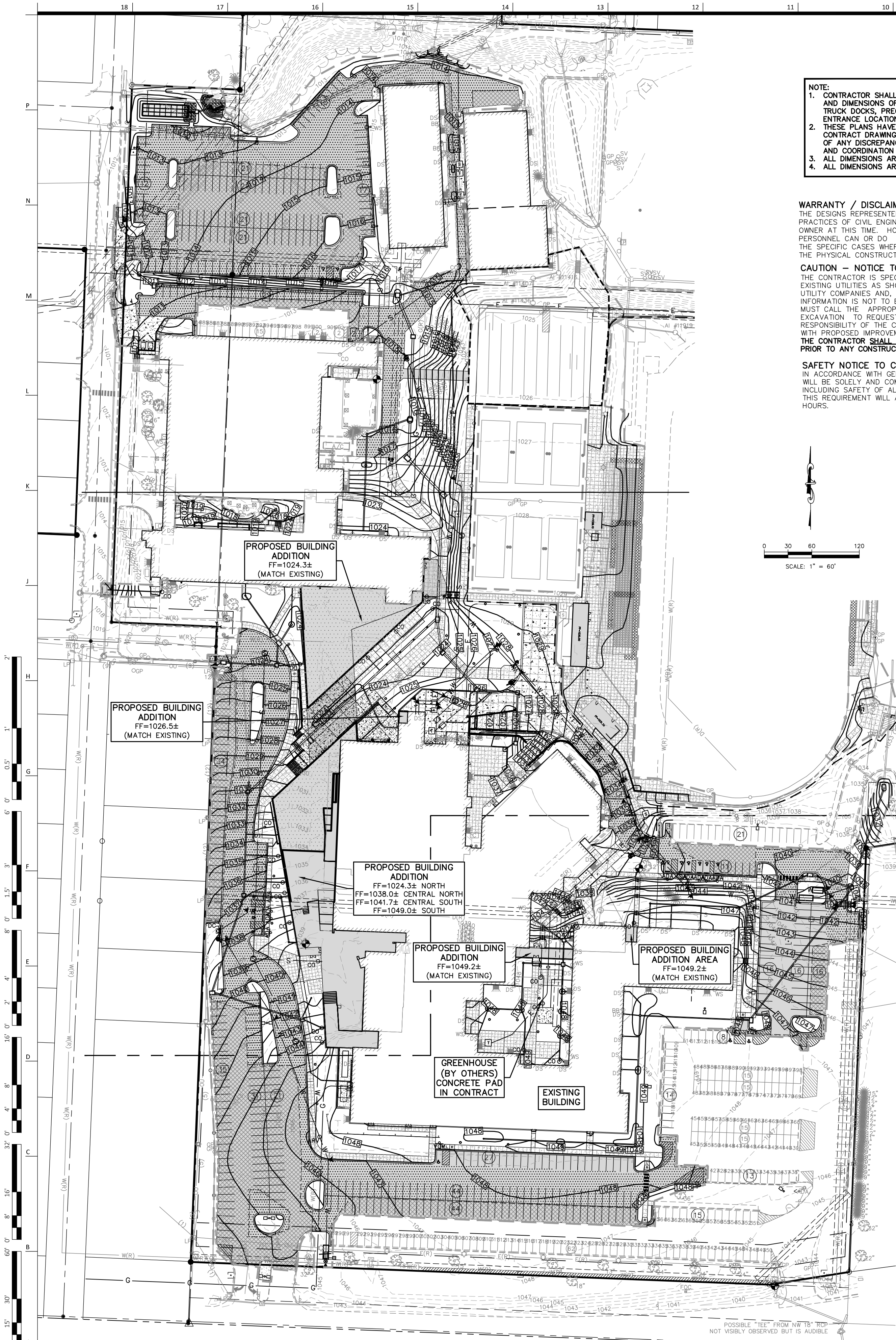

94° 22' 7" W
94° 21' 44" W
381330
381420
381510
381600
381690
381780
381870
38° 54' 31" N
38° 54' 7" N
4307520
4307430
4307340
4307250
4307160
4307070
4306980
4306890
4306800
10082
10180
10082
Parking Lot
Se 8th St
School
School St
Driveway
Se State Route 291
291
Se Blue Pkwy
50
Us Hwy 50
Soil Map may not be valid at this scale.
Map Scale: 1:3,560 if printed on A portrait (8.5" x 11") sheet.
Meters
0
50
100
200
300
Feet
0
150
300
600
900
N
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

Exhibit B

Proposed Grading Plan



NOTE:
1. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF ENTRANCE, SLOPED PAVING, EXIT PORCHES, RAMPS, TRUCK DOCKS, PRECISE BUILDING DIMENSIONS AND EXACT BUILDING UTILITY ENTRANCE LOCATIONS.
2. THESE PLANS HAVE NOT BEEN VERIFIED WITH FINAL ARCHITECTURAL CONTRACT DRAWINGS. CONTRACTOR SHALL VERIFY AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES. CONTRACTOR IS FULLY RESPONSIBLE FOR REVIEW AND COORDINATION OF ALL DRAWINGS AND CONTRACTOR DOCUMENTS.
3. ALL DIMENSIONS ARE TO BACK OF CURB UNLESS NOTED OTHERWISE.
4. ALL DIMENSIONS ARE PERPENDICULAR TO PROPERTY LINE.

WARRANTY / DISCLAIMER

THE DESIGNS REPRESENTED IN THESE PLANS ARE IN ACCORDANCE WITH ESTABLISHED PRACTICES OF CIVIL ENGINEERING FOR THE DESIGN FUNCTIONS AND USES INTENDED BY THE OWNER AT THIS TIME. HOWEVER, NEITHER KAW VALLEY ENGINEERING, INC NOR ITS PERSONNEL CAN OR DO WARRANTY THESE DESIGNS OR PLANS AS CONSTRUCTED, EXCEPT IN THE SPECIFIC CASES WHERE KAW VALLEY ENGINEERING PERSONNEL INSPECT AND CONTROL THE PHYSICAL CONSTRUCTION ON A CONTEMPORARY BASIS AT THE SITE.

CAUTION – NOTICE TO CONTRACTOR

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT LOCATIONS OF POSSIBLE CONFLICTS PRIOR TO ANY CONSTRUCTION.

SAFETY NOTICE TO CONTRACTOR

IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

HORIZONTAL AND VERTICAL DATUM:

UNLESS OTHERWISE NOTED THE COORDINATES SHOWN HEREON ARE GROUND COORDINATES BASED ON THE MISSOURI STATE PLANE (1983) WEST ZONE (NAD 1983) (NAVD 1988)
CAF: 0.9998978
SCALED AROUND 0,0

JA-25 (PID: 095025)

NORTHING:	303646.030 (GRID/METERS)	996313.829 (GROUND/FEET)
EASTING:	860950.475 (GRID/METERS)	2824923.692 (GROUND/FEET)
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SITE BENCHMARKS:

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ELEVATION= 1042.70

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MAG NAIL
NORTHING: 996957.62 (GROUND) 996855.74 (GRID)
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1/2" REBAR W/ ORANGE KVE CAP
NORTHING: 997970.64 (GROUND) 997868.66 (GRID)
EASTING: 2826860.58 (GROUND) 2826571.70 (GRID)
ELEV = 1014.79

GRADING NOTES:

1. THE CONSTRUCTION AREA SHALL BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL AND ORGANIC MATTER FROM ALL AREAS TO BE OCCUPIED BY BUILDING AND PAVING. TOPSOIL FOR REPLACEMENT ON SLOPES MAY BE STOCKPILED ON SITE. EXCESS TOPSOIL MAY BE WASTED IN FILL SLOPES PROVIDED THAT NO TOPSOIL WILL BE WASTED WITHIN 10 FEET OF THE EDGE OF THE BUILDING OR PARKING AREA. BURNING OF TIMBER WILL NOT BE PERMITTED UNLESS APPROVAL IS OBTAINED FROM GOVERNING OFFICIALS. STRIPPING EXISTING TOPSOIL AND ORGANIC MATTER SHALL BE TO A MINIMUM DEPTH OF 6 INCHES. CONSTRUCTION MANAGER SHALL DESIGNATE LOCATION OF STOCKPILE AREAS DURING CONSTRUCTION. ANY UNAUTHORIZED STOCKPILE SHALL BE REMOVE/RELOCATED AT THE CONTRACTORS EXPENSE.
2. AREAS TO RECEIVE FILL SHALL BE SCARIFIED AND THE TOP 12-INCH DEPTH COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 698 WITH A MOISTURE CONTENT OF +/-3% OF OPTIMUM FOR SOILS WITH A LIQUID LIMIT OF LESS THAN 40 AND 0 TO +4% FOR SOILS WITH A LIQUID LIMIT GREATER THAN 40. ANY UNSUITABLE AREAS SHALL BE UNDERCUT AND REPLACED WITH SUITABLE MATERIAL BEFORE ANY FILL MATERIAL CAN BE APPLIED.
3. OFF-SITE SOIL MATERIAL FOR USE UNDER BUILDING AND PAVED AREAS SHALL HAVE A PLASTICITY INDEX OF 25 OR LESS, A LIQUID LIMIT OF 45 OR LESS AND CONTAIN NO ROCK LARGER THAN THREE INCHES. OFF-SITE FILL MATERIAL SHALL BE APPROVED BY THE OWNER'S TESTING AGENCY PRIOR TO BRINGING ON SITE.
4. EARTHWORK UNDER THE BUILDING, PAVING AND LIGHTLY LOADED STRUCTURAL FEATURES SHALL COMPLY WITH THE CONTRACT DOCUMENTS AND PROJECT GEOTECHNICAL REPORT. THE BUILDING PAD SHALL BE EXCAVATED AS REQUIRED TO ALLOW THE PLACEMENT OF LOW VOLUME CHANGE MATERIAL. REFER TO GEOTECHNICAL REPORT FOR PREPARING BUILDING PAD AND LOW VOLUME CHANGE THICKNESS REQUIREMENTS. OTHER FILL MATERIAL SHALL BE MADE IN LIFTS NOT TO EXCEED EIGHT INCHES DEPTH COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 698. LVC SOILS SHALL BE COMPACTED AT A MOISTURE CONTENT OF 0 TO +4% OF OPTIMUM FOR SOILS WITH A LIQUID LIMIT GREATER THAN 40 AND +/-3% OF OPTIMUM FOR SOILS WITH A LIQUID LIMIT LESS THAN 40. NO ROCK LARGER THAN THREE INCHES IN ANY DIMENSION NOR ANY SHALE SHALL BE PLACED IN THE TOP 24 INCHES OF EMBANKMENT.
5. ON-SITE HIGH PLASTICITY CLAYS MAY BE TREATED WITH 5% TYPE 1/2 PORTLAND CEMENT BY WEIGHT. REFER TO PROJECT GEOTECHNICAL REPORT FOR REQUIREMENTS.
6. AREAS THAT ARE TO BE CUT TO SUBGRADE LEVELS SHALL BE PROOF ROLLED WITH A LOADED DUMP TRUCK OR SIMILAR APPROVED CONSTRUCTION EQUIPMENT TO DETECT UNSUITABLE SOIL CONDITIONS.
7. IN ALL AREAS OF EXCAVATION, IF UNSUITABLE SOIL CONDITIONS ARE ENCOUNTERED, THE OWNER'S ENGINEER SHALL RECOMMEND TO THE OWNER THE METHODS OF UNDERCUTTING AND REPLACEMENT OF PROPERLY COMPACTED, APPROVED FILL MATERIAL. ALL PROOFROLLING AND UNDERCUTTING SHOULD BE PERFORMED DURING A PERIOD OF DRY WEATHER.
8. **ALL EXCAVATIONS SHALL BE CONSIDERED AS UNCLASSIFIED. REFER TO PROJECT GEOTECHNICAL REPORT.**
9. ALL DISTURBED SLOPES ARE TO BE 3:1 OR FLATTER.
10. DETENTION BASIN AND ALL SLOPES DISTURBED EXCEEDING 4:1 SHALL BE HYDROSEEDED, SODDED OR PROTECTED BY EROSION CONTROL BLANKETS THAT WILL PREVENT EROSION AND PLACED SUCH THAT THE SURFACE IS FLUSH WITH SURROUNDING GROUND AND SHAPED TO CHANNEL WATER IN DIRECTIONS INDICATED. SEE GENERAL NOTES ON THIS SHEETS.
11. ALL SLOPES AND AREAS DISTURBED BY CONSTRUCTION SHALL BE GRADED SMOOTH AND A MINIMUM OF FOUR INCHES OF TOPSOIL APPLIED. IF ADEQUATE TOPSOIL IS NOT AVAILABLE ON-SITE, THE CONTRACTOR SHALL PROVIDE TOPSOIL, APPROVED BY THE OWNER, AS NEEDED. THE AREA SHALL THEN BE SODDED OR SEEDED, FERTILIZED, MULCHED, WATERED AND MAINTAINED UNTIL HARDY GRASS GROWTH IS ESTABLISHED IN ALL AREAS. ANY AREAS DISTURBED FOR ANY REASON SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER PRIOR TO FINAL ACCEPTANCE OF THE PROJECT. REFER TO THE NOTES ON THIS SHEET FOR TEMPORARY SEEDING SPECIFICATIONS. REFER TO PROJECT SITE PLAN FOR FINAL STABILIZATION TREATMENTS.

11\. CONTRACTOR IS TO REMOVE AND DISPOSE OF ALL DEBRIS, RUBBISH AND OTHER MATERIALS RESULTING FROM PREVIOUS AND CURRENT DEMOLITION OPERATIONS.

12\. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES DURING THE CONSTRUCTION PHASES OF THIS PROJECT. THE CONTRACTOR WILL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGES TO THE ADJACENT PROPERTIES OCCURRING DURING THE CONSTRUCTION PHASES OF THIS PROJECT.

13\. IT IS NOT THE DUTY OF THE ENGINEER OR THE OWNER TO REVIEW THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES, IN, ON OR NEAR THE CONSTRUCTION SITE AT ANY TIME DURING CONSTRUCTION.

14\. IF ANY OF THESE NOTES CONFLICT WITH THE PROJECT GEOTECHNICAL REPORT (CFS PROJECT 20-1075) AND ALL ADDENDUMS PREPARED BY CFS ENGINEERS DATED JUNE 12, 2020, RECOMMENDATIONS IN GEOTECHNICAL REPORT SHALL GOVERN.

15\. GRADE AT ALL STOOPS SHALL BE 1/2" BELOW FINISH FLOOR ELEVATION AND SLOPE AWAY FROM THE BUILDING AT 1/4"/FT. (2.0%).

Know what's below. Call before you dig.

PROJ. NO. C20_0496 DSN: DDW
CFN: 0496GP.DWG DWN: NJN
DAVID D. WOOD
ENGINEER
MO # 2011037427
14700 WEST 114TH TERRACE
LENEXA, KANSAS 66215
PH. (913) 894-5150 | FAX (913) 894-5977
lx@kveng.com | www.kveng.com
KAW VALLEY ENGINEERING
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kansas city • lawrence • new orleans
phoenix • san francisco

Lee's Summit High School

400 SE Blue Pkwy
Lee's Summit, MO 64063

owner:
Lee's Summit R-7 School District
301 NE Tudor Road
Lee's Summit, MO 64086

architect:
Gould Evans
4200 Pennsylvania Avenue
Kansas City, MO 64111
816.931.6655 voice
www.gouldevans.com

structural engineer:
Bob D. Campbell & Company, Inc.
4338 Belleview
Kansas City, MO 64111
816.531.4144

civil engineer:
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14700 West 114th Terrace
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mechanical/electrical engineer:
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STATE OF MISSOURI
DAVID D. WOOD
NUMBER
PE-2011037427
PROFESSIONAL ENGINEER
12.15.2020

Kaw Valley Engineering, Inc.
Missouri Certificate of Authority: 000842
David Wood Date: 12/15/2020
Engineer License No. PE-2011037427

REVISIONS

Number	DESCRIPTION	DATE
1	ADDENDUM #1	11-19-2020
2	PER CITY COMMENTS AND COORDINATION WITH PACKAGE 2	12-15-2020

PROJECT NO: 0119-0100
DATE: November 20, 2020

OVERALL GRADING PLAN

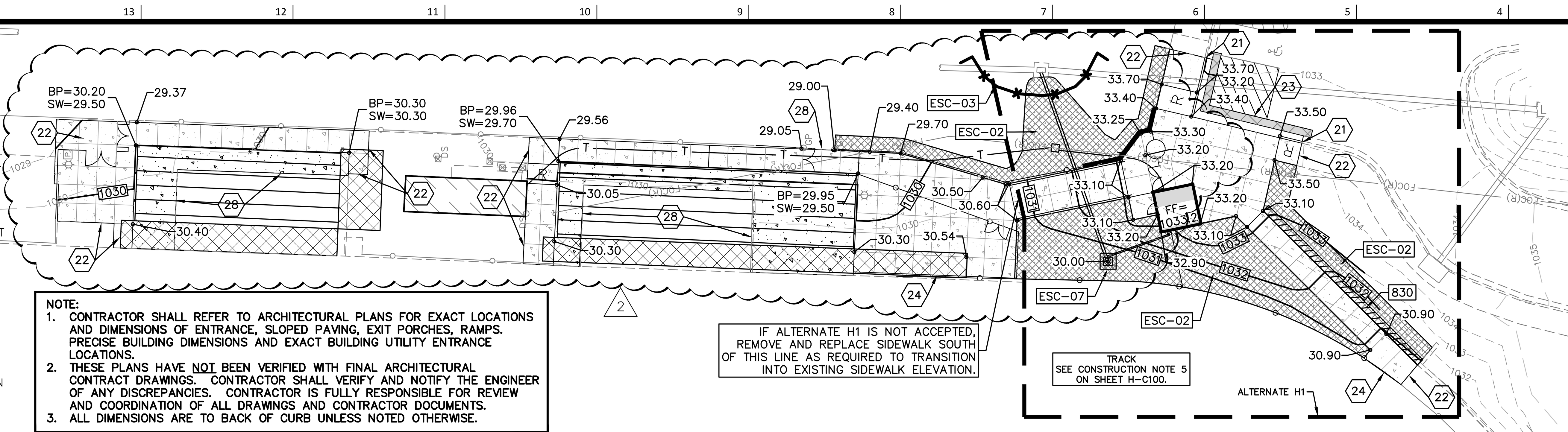
C300

Final Development Plan

PRINT DATE/TIME: 3/17/2020 4:49:21 PM

GENERAL NOTES:

1. PROJECT AREA IS APPROXIMATE LIMITS OF CONSTRUCTION.
2. THE CONTRACTOR SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE DRAWINGS PRIOR TO BEGINNING EARTHWORK OPERATIONS.
3. THE CONTRACTOR SHALL MAINTAIN ALL SILT CONTROL MEASURES DURING CONSTRUCTION.
4. ALL SILT SHALL REMAIN WITHIN THE CONSTRUCTION LIMITS. SURROUNDING PARKING LOTS AND PLAYGROUNDS SHALL BE KEPT CLEAR OF ALL MUD AND DEBRIS.
5. A SEDIMENTATION BARRIER IS TO BE INSTALLED AS SHOWN.
6. ACCUMULATED SEDIMENT SHALL BE REMOVED AND THE SEDIMENTATION BARRIERS MAINTAINED AS NEEDED TO PREVENT SEDIMENTATION BYPASS OF THE BARRIER.
7. SLOPES ARE TO BE LEFT IN A ROUGH CONDITION DURING GRADING.
8. CURB INLET SEDIMENTATION BARRIERS ARE TO BE INSTALLED AROUND INLETS WHERE SEDIMENTATION IS A CONCERN. INLET BARRIERS SHALL BE FILTER BAGS.
9. SEDIMENT IS TO BE REMOVED FROM STORM WATER DRAINAGE SYSTEMS.
10. CONTRACTOR IS RESPONSIBLE FOR INSTALLING ANY ADDITIONAL EROSION CONTROL AS HE/SHE DEEMS NECESSARY.
11. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS, TOOLS, EQUIPMENT AND LABOR AS NECESSARY TO INSTALL AND MAINTAIN ADEQUATE EROSION AND SILTATION CONTROLS REQUIRED TO PREVENT SOIL EROSION FROM LEAVING THE PROJECT SITE. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO ENSURE THAT METHODS UTILIZED ARE ADEQUATE AND COMPLY WITH REQUIREMENTS OF THE SPECIFICATIONS AND GOVERNMENTAL AGENCIES HAVING JURISDICTION OVER THE WORK.
12. TEMPORARY SEDIMENT FENCE/STRAW WATTLES TO REMAIN UNTIL ADEQUATE VEGETATION IS ESTABLISHED.
13. MUD AND DEBRIS SHALL BE CLEANED UP AT THE CONCLUSION OF EACH WORKING DAY, OR AFTER EACH RAINFALL IF SILT IS PRESENT.
14. INSPECTION, MAINTENANCE AND REPAIR OF EROSION CONTROL DEVICES SHALL BE ON GOING THROUGHOUT THE LIFE OF BUILDING CONSTRUCTION TO KEEP THE DEVICES IN OPERABLE CONDITION AT ALL TIMES. ADDITIONAL MEASURES SHALL BE INSTALLED AS REQUIRED BY ACTUAL FIELD CONDITIONS AND/OR GOVERNING INSPECTION AGENCIES.
15. INSTALL CONSTRUCTION ENTRANCE AS NOTED.
16. AT COMPLETION OF SITE GRADING AND OTHER RELATED CONSTRUCTION ACTIVITIES, ALL DISTURBED AREAS WITHIN THE PROJECT SITE SHALL BE SEEDED, SODDED, OR LANDSCAPED AS SHOWN ON THE SITE. IF GRADING ACTIVITIES CEASE ON AN AREA OF THE SITE DISTURBED SLOPES SHALL BE TEMPORARILY SEEDED IN ACCORDANCE WITH PLANS.
17. TOPSOIL IS TO BE PLACED IN AREAS UNSUITABLE FOR VEGETATIVE GROWTH.
18. STRIP TOPSOIL PRIOR TO EXCAVATION, STOCKPILE AND SPREAD ONTO DISKED SUBGRADE (4" MIN) A THICKNESS OF 4 INCHES.
19. THE CONTRACTOR SHALL HAVE THE RESPONSIBILITY FOR RESOLVING COMPLAINTS IN THE EVENT THAT COMPLAINTS OR DAMAGE CLAIMS ARE FILED DUE TO DAMAGES OCCURRING ADJACENT TO OR DOWNSTREAM FROM PROPERTY BY SEDIMENT RESULTING FROM EROSION ON THE PROJECT SITE.
20. GOOD HOUSEKEEPING PRACTICES SHALL BE MAINTAINED ON SITE TO KEEP SOLID WASTE FROM ENTRY INTO WATERS.
21. ALL FUELING FACILITIES PRESENT ON SITE SHALL ADHERE TO APPLICABLE FEDERAL AND STATE REQUIREMENTS CONCERNING UNDERGROUND STORAGE, ABOVE GROUND STORAGE AND DISPENSERS, INCLUDING SPILL PREVENTION, CONTROL AND COUNTER MEASURES.
22. EROSION CONTROL IS TO BE PLACED IN PHASING AS CONSTRUCTION PROGRESSES.
23. MINIMAL WASHING OF CONCRETE EQUIPMENT ALLOWED, CHUTE ETC. CONCRETE WASHOUT OF THE DRUM IS NOT ALLOWED. ANY PIT/WASHOUT AREA NEEDS TO BE MAINTAINED IN A NON-DISCHARGING MANNER AND ANY WASTE RESIDUE WILL NEED TO BE CLEANED OUT AND REMOVED AT THE END OF PROJECT.
24. EROSION CONTROL SEDIMENT FENCE OR STRAW WATTLE SHALL BE INSTALLED 1'-0" BEHIND CURB & GUTTER OR SIDEWALK UPON COMPLETION OF BACKFILL OF CURB IN ALL AREAS WHERE SLOPES FROM DISTURBED AREAS DRAIN TOWARDS CURB OR SIDEWALK. UPON COMPLETION OF FINAL GRADING THE TOES OF ALL EMBANKMENTS IN EXCESS OF TWO FEET IN HEIGHT WILL HAVE EROSION CONTROL SEDIMENT FENCE INSTALLED.



NOTE:

1. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF ENTRANCE, SLOPED PAVING, EXIT PORCHES, RAMPS. PRECISE BUILDING DIMENSIONS AND EXACT BUILDING UTILITY ENTRANCE LOCATIONS.
2. THESE PLANS HAVE NOT BEEN VERIFIED WITH FINAL ARCHITECTURAL CONTRACT DRAWINGS. CONTRACTOR SHALL VERIFY AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES. CONTRACTOR IS FULLY RESPONSIBLE FOR REVIEW AND COORDINATION OF ALL DRAWINGS AND CONTRACTOR DOCUMENTS.
3. ALL DIMENSIONS ARE TO BACK OF CURB UNLESS NOTED OTHERWISE.

NOTES:

21	MATCH EXISTING CURB ELEVATION.
22	MATCH EXISTING SIDEWALK ELEVATION.
23	MATCH EXISTING PAVEMENT ELEVATION.
24	TRANSITION FROM ZERO HEIGHT CURB TO FULL HEIGHT CURB.
25	MATCH EXISTING TRACK CURB ELEVATION.
26	MATCH EXISTING TENNIS COURT ELEVATION
27	2% SLOPE IN ALL DIRECTIONS TO BE PROVIDED WITHIN 10' OF TICKET WINDOW.
28	MATCH EXISTING BLEACHER PAD ELEVATION.

DETAILS – SEE DETAIL SHEET NO. H-C195

830	STRAW WATTLES
ESC-01	CONSTRUCTION ENTRANCE AND CONCRETE WASHOUT
ESC-02	EROSION CONTROL BLANKETS AND TURF REINFORCEMENT MAT
ESC-03	SILT FENCE
ESC-07	AREA INLET PROTECTION

LEGEND:

A/C	AIR CONDITIONER
EO	WALL MOUNTED ELECTRICAL OUTLET
G	UNDERGROUND GAS
G	GAS METER
	CONTROL POINT
	BENCHMARK
GP	GATE POST
	CHAIN LINK FENCE
	WOOD FENCE
	BOLLARD
	STREET/TRAFFIC SIGN
	PAINTED DIRECTIONAL ARROW
	TURN LANE DIRECTION
	HANDICAP SYMBOL
3	PARKING STALL COUNT
ADA	HANDICAP SIGN
HRMP	HANDICAP RAMP
	WHEEL STOP
FOC	UNDERGROUND FIBER OPTIC CABLE
FOC(R)	UNDERGROUND FIBER OPTIC (FROM RECORDS)
TP	TELEPHONE PEDESTAL
S	SANITARY SEWER MANHOLE
D	STORM SEWER MANHOLE
AI	AREA INLET
CI	CURB INLET
CO	SANITARY SEWER CLEAN OUT
DS	DOWN SPOUT
FD	FLOOR DRAIN
	FLARED END SECTION
S	SANITARY SEWER LINE
D	STORM SEWER LINE
CMP	CORRUGATED METAL PIPE
RCP	REINFORCED CONCRETE PIPE
VCP	VITRIFIED CLAY PIPE
E	UNDERGROUND ELECTRIC
(2) OU	OVERHEAD UTILITY LINE (# OF LINES)
P	PULL BOX
	LIGHT POLE
	UTILITY POLE
DIP	DUCTILE IRON PIPE
HDPE	HIGH DENSITY POLYETHYLENE
	WALL MOUNTED LIGHT
C	WALL MOUNTED CAMERA
G	GAS VALVE
GR	GAS RISER
G	GAS LINE SIGN
A	ENCROACHMENT IDENTIFIER
962.04	EXISTING SPOT ELEVATION
950	EXISTING GRADE 5' CONTOUR
939	EXISTING GRADE 1' CONTOUR
DE	DOOR ELEVATION AT THRESHOLD
FF	FINISH FLOOR ELEVATION
BHE	BUILDING HEIGHT/ELEVATION
B/B	BACK TO BACK OF CURB MEASUREMENT
E/E	EDGE TO EDGE OF ASPHALT
W	WATER LINE
W	WATER METER
	WATER LINE GATE VALVE
	FIRE HYDRANT
	SPRINKLER CONTROL BOX
W	WATER MANHOLE
SV	SPRINKLER VALVE
	SIAMESE FIRE CONNECTOR
	CANOPY SUPPORT
MB	MAIL BOX
	CONCRETE JOINT/CUT LINE
	BUSH
	DECIDUOUS TREE
T/E	TRASH ENCLOSURE
L/S	LANDSCAPING AREA
CONC	CONCRETE
LW	LOWEST WIRE HEIGHT
BB	BREAKER BOX
G(R)	UNDERGROUND GAS PER RECORD
S(R)	SANITARY SEWER LINE PER RECORD
D(R)	STORM SEWER LINE PER RECORD
LP	UTILITY POLE W/ LIGHT
	UTILITY POLE W/ TRANSFORMER
	GUY ANCHOR
W(R)	WATER LINE PER RECORD
E(R)	UNDERGROUND ELECTRIC PER RECORD
	CONIFEROUS TREE
	TREE LINE
FP	FLAG POLE
E	ELECTRIC METER
EP	UNDERGROUND ELECTRIC PEDESTAL
	SPEAKER BOX
	OVERLAY
	GRAVEL SURFACE (ESC-01)
	CONCRETE SIDEWALK (055)
	CONCRETE CURB AND GUTTER
	CONCRETE CURB AND GUTTER WITH REVERSE FLOW
L	LANDING
R	RAMP
T	TRANSITION

EROSION & PROPOSED IMPROVEMENTS LEGEND:

- SEDIMENTATION FENCE (ESC-03)
- LIMITS OF DISTURBANCE
- INLET PROTECTION (42)
- STRAW WATTLE
- CW CONCRETE WASH AREA
- EROSION CONTROL BLANKET/ TURF REINFORCEMENT MAT (ESC-02)

LEGEND (PROPOSED)

- 22.9 SPOT ELEVATION (ADD 1000), TOP OF PAVEMENT
- 23.6 TOP OF CURB (ADD 1000) / 23.1 FLOWLINE OF CURB (ADD 1000)
- BP=23.6 BLEACHER PAD ELEVATION (ADD 1000) / SW=23.1 SIDEWALK ELEVATION (ADD 1000)
- 950 FINISHED 1' CONTOUR INTERVALS, TOP OF PAVEMENT
- FLOW DIRECTION

SITE BENCHMARKS:

BM-60
FOUND CUT SQUARE AT THE WEST NORTHWEST CONCRETE HEADWALL ON THE WEST SIDE OF THE EAST ENTRY DRIVE TO LEE'S SUMMIT HIGH SCHOOL
ELEVATION= 1042.70

BM-61
SET CUT SQUARE WITH PUNCH IN THE SOUTHWEST EDGE ON A CONCRETE LIGHT BASE ON THE NORTH SIDE OF THE DRIVE LANE AT THE HIGH SCHOOL ADMINISTRATION CENTER ENTRY.
ELEVATION= 1042.74

BM-62
SET CUT SQUARE AT THE NORTHEAST CORNER OF THE FIRST STEP UP OF A CONCRETE WALK ON THE NORTH SIDE OF THE EAST MAIN WING.
ELEVATION= 1040.51

BM-63
SET CUT SQUARE AT THE TOP NORTHEAST CORNER OF A CONCRETE PATIO WITH COVERED TABLES ON THE EAST SIDE OF BUILDING "B".
ELEVATION= 1015.74

BM-64
SET CUT SQUARE AT THE TOP NORTHEAST CORNER OF STEPS TO THE NORTH ENTRY TO BUILDING "B" ON THE WEST SIDE.
ELEVATION= 1015.34

HORIZONTAL AND VERTICAL DATUM:

UNLESS OTHERWISE NOTED THE COORDINATES SHOWN HEREON ARE GROUND COORDINATES BASED ON THE MISSOURI STATE PLANE (1983) WEST ZONE (NAD 1983) (NAVD 1988)
CAF: 0.9998978
SCALED AROUND 0,0

JA-25 (PID: 095025)

NORTHING:	303646.030 (GRID/METERS)	996313.829 (GROUND/FEET)
EASTING:	860950.475 (GRID/METERS)	2824923.692 (GROUND/FEET)
ELEVATION:	321.8 (METERS)	1055.77 (FEET)

PROJECT CONTROL:

CP #200
1/2" REBAR W/ ORANGE KVE CAP
NORTHING: 996572.06 (GROUND) 996470.24 (GRID)
EASTING: 2827438.76 (GROUND) 2827149.83 (GRID)
ELEV = 1049.49

CP #201
1/2" REBAR W/ ORANGE KVE CAP
NORTHING: 996570.39 (GROUND) 996468.55 (GRID)
EASTING: 2827055.45 (GROUND) 2826766.55 (GRID)
ELEV = 1048.24

CP #202
1/2" REBAR W/ ORANGE KVE CAP
NORTHING: 996569.25 (GROUND) 996467.41 (GRID)
EASTING: 2826689.97 (GROUND) 2826401.11 (GRID)
ELEV = 1042.52

CP #203
MAG NAIL
NORTHING: 996957.62 (GROUND) 996855.74 (GRID)
EASTING: 2826712.48 (GROUND) 2826423.62 (GRID)
ELEV = 1039.43

CP #204
1/2" REBAR W/ ORANGE KVE CAP
NORTHING: 997397.36 (GROUND) 997295.43 (GRID)
EASTING: 2826684.55 (GROUND) 2826395.70 (GRID)
ELEV = 1023.04

CP #205
1/2" REBAR W/ ORANGE KVE CAP
NORTHING: 997403.51 (GROUND) 997301.59 (GRID)
EASTING: 2826495.31 (GROUND) 2826206.47 (GRID)
ELEV = 1018.15

CP #206
1/2" REBAR W/ ORANGE KVE CAP
NORTHING: 997985.93 (GROUND) 997883.94 (GRID)
EASTING: 2826567.03 (GROUND) 2826278.18 (GRID)
ELEV = 1012.56

CP #207
1/2" REBAR W/ ORANGE KVE CAP
NORTHING: 997970.64 (GROUND) 997868.66 (GRID)
EASTING: 2826860.58 (GROUND) 2826571.70 (GRID)
ELEV = 1014.79

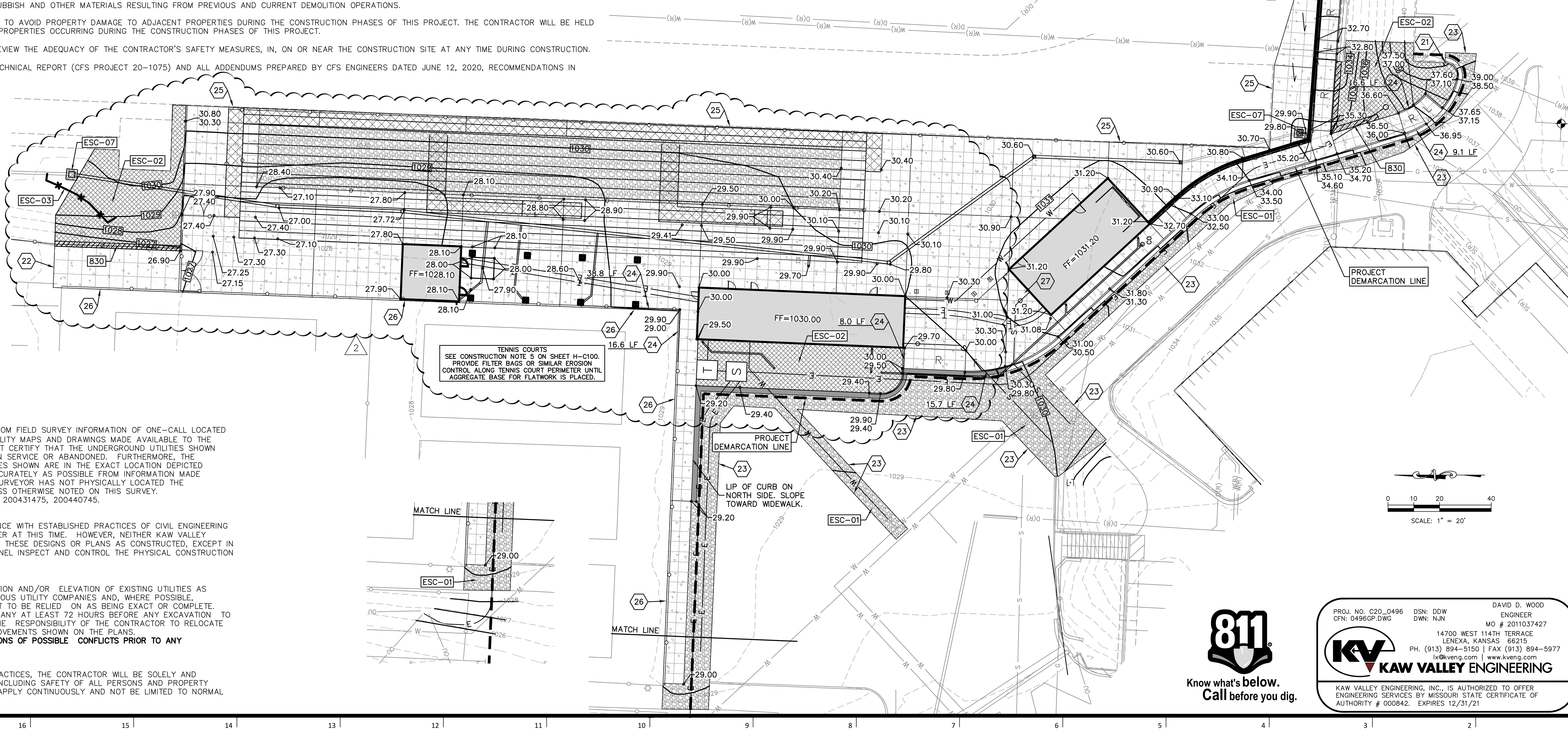
GRADING NOTES:

1. THE CONSTRUCTION AREA SHALL BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL AND ORGANIC MATTER FROM ALL AREAS TO BE OCCUPIED BY BUILDING AND PAVING. TOPSOIL FOR REPLACEMENT ON SLOPES MAY BE STOCKPILED ON SITE. EXCESS TOPSOIL MAY BE WASTED IN FILL SLOPES PROVIDED THAT NO TOPSOIL WILL BE WASTED WITHIN 10 FEET OF THE EDGE OF THE BUILDING OR PARKING AREA. BURNING OF TIMBER WILL NOT BE PERMITTED UNLESS APPROVAL IS OBTAINED FROM GOVERNING OFFICIALS. STRIPPING EXISTING TOPSOIL AND ORGANIC MATTER SHALL BE TO A MINIMUM DEPTH OF 6 INCHES. CONSTRUCTION MANAGER SHALL DESIGNATE LOCATION OF STOCKPILE AREAS DURING CONSTRUCTION. ANY UNAUTHORIZED STOCKPILE SHALL BE REMOVE/RELOCATED AT THE CONTRACTORS EXPENSE.
2. AREAS TO RECEIVE FILL SHALL BE SCARIFIED AND THE TOP 12-INCH DEPTH COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 698 WITH A MOISTURE CONTENT OF +/-3% OF OPTIMUM FOR SOILS WITH A LIQUID LIMIT OF LESS THAN 40 AND 0 TO +4% FOR SOILS WITH A LIQUID LIMIT GREATER THAN 40. ANY UNSUITABLE AREAS SHALL BE UNDERCUT AND REPLACED WITH SUITABLE MATERIAL BEFORE ANY FILL MATERIAL CAN BE APPLIED.
3. OFF-SITE SOIL MATERIAL FOR USE UNDER BUILDING AND PAVED AREAS SHALL HAVE A PLASTICITY INDEX OF 25 OR LESS, A LIQUID LIMIT OF 45 OR LESS AND CONTAIN NO ROCK LARGER THAN THREE INCHES. OFF-SITE FILL MATERIAL SHALL BE APPROVED BY THE OWNER'S TESTING AGENCY PRIOR TO BRINGING ON SITE.
4. EARTHWORK UNDER THE BUILDING, PAVING AND LIGHTLY LOADED STRUCTURAL FEATURES SHALL COMPLY WITH THE CONTRACT DOCUMENTS AND PROJECT GEOTECHNICAL REPORT. THE BUILDING PAD SHALL BE EXCAVATED AS REQUIRED TO ALLOW THE PLACEMENT OF LOW VOLUME CHANGE MATERIAL. REFER TO GEOTECHNICAL REPORT FOR PREPARING BUILDING PAD AND LOW VOLUME CHANGE THICKNESS REQUIREMENTS. OTHER FILL MATERIAL SHALL BE MADE IN LIFTS NOT TO EXCEED EIGHT INCHES DEPTH COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 698. LVC SOILS SHALL BE COMPACTED AT A MOISTURE CONTENT OF 0 TO +4% OF OPTIMUM FOR SOILS WITH A LIQUID LIMIT GREATER THAN 40 AND +/-3% OF OPTIMUM FOR SOILS WITH A LIQUID LIMIT LESS THAN 40. NO ROCK LARGER THAN THREE INCHES IN ANY DIMENSION NOR ANY SHALE SHALL BE PLACED IN THE TOP 24 INCHES OF EMBANKMENT.
5. AREAS THAT ARE TO BE CUT TO SUBGRADE LEVELS SHALL BE PROOF ROLLED WITH A LOADED DUMP TRUCK OR SIMILAR APPROVED CONSTRUCTION EQUIPMENT TO DETECT UNSUITABLE SOIL CONDITIONS.
6. IN ALL AREAS OF EXCAVATION, IF UNSUITABLE SOIL CONDITIONS ARE ENCOUNTERED, THE OWNER'S ENGINEER SHALL RECOMMEND TO THE OWNER THE METHODS OF UNDERCUTTING AND REPLACEMENT OF PROPERLY COMPACTED, APPROVED FILL MATERIAL. ALL PROOFROLLING AND UNDERCUTTING SHOULD BE PERFORMED DURING A PERIOD OF DRY WEATHER.
7. **ALL EXCAVATIONS SHALL BE CONSIDERED AS UNCLASSIFIED. REFER TO PROJECT GEOTECHNICAL REPORT.**
8. ALL DISTURBED SLOPES ARE TO BE 3:1 OR FLATTER.
9. ALL SLOPES DISTURBED EXCEEDING 4:1 SHALL BE HYDROSEEDED, SODDED OR PROTECTED BY EROSION CONTROL BLANKETS THAT WILL PREVENT EROSION AND PLACED SUCH THAT THE SURFACE IS FLUSH WITH SURROUNDING GROUND AND SHAPED TO CHANNEL WATER IN DIRECTIONS INDICATED. SEE GENERAL NOTES ON THIS SHEETS.
10. ALL SLOPES AND AREAS DISTURBED BY CONSTRUCTION SHALL BE GRADED SMOOTH AND A MINIMUM OF FOUR INCHES OF TOPSOIL APPLIED. IF ADEQUATE TOPSOIL IS NOT AVAILABLE ON-SITE, THE CONTRACTOR SHALL PROVIDE TOPSOIL, APPROVED BY THE OWNER, AS NEEDED. THE AREA SHALL THEN BE SODDED OR SEEDED, FERTILIZED, MULCHED, WATERED AND MAINTAINED UNTIL HARDY GRASS GROWTH IS ESTABLISHED IN ALL AREAS. ANY AREAS DISTURBED FOR ANY REASON SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER PRIOR TO FINAL ACCEPTANCE OF THE PROJECT. REFER TO THE NOTES ON THIS SHEET FOR TEMPORARY SEEDING SPECIFICATIONS. REFER TO PROJECT SITE PLAN FOR FINAL STABILIZATION TREATMENTS.
11. CONTRACTOR IS TO REMOVE AND DISPOSE OF ALL DEBRIS, RUBBISH AND OTHER MATERIALS RESULTING FROM PREVIOUS AND CURRENT DEMOLITION OPERATIONS.
12. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES DURING THE CONSTRUCTION PHASES OF THIS PROJECT. THE CONTRACTOR WILL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGES TO THE ADJACENT PROPERTIES OCCURRING DURING THE CONSTRUCTION PHASES OF THIS PROJECT.
13. IT IS NOT THE DUTY OF THE ENGINEER OR THE OWNER TO REVIEW THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES, IN, ON OR NEAR THE CONSTRUCTION SITE AT ANY TIME DURING CONSTRUCTION.
14. IF ANY OF THESE NOTES CONFLICT WITH THE PROJECT GEOTECHNICAL REPORT (CFS PROJECT 20-1075) AND ALL ADDENDUMS PREPARED BY CFS ENGINEERS DATED JUNE 12, 2020, RECOMMENDATIONS IN GEOTECHNICAL REPORT SHALL GOVERN.

EROSION AND SEDIMENT CONTROL INSPECTION PROCEDURES

THE FOLLOWING PROCEDURES WILL BE USED TO MAINTAIN EROSION AND SEDIMENTATION CONTROLS.

1. ALL CONTROL MEASURES WILL BE INSPECTED AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL EVENT PRODUCING RUNOFF AND DAILY DURING PROLONGED RAINFALL PERIODS.
2. ALL MEASURES WILL BE MAINTAINED IN GOOD WORKING ORDER. IF A REPAIR IS NECESSARY, IT WILL BE MADE WITHIN 24 HOURS OF THE INSPECTION.
3. SEDIMENT WILL BE REMOVED FROM THE SILT BARRIERS WHEN IT HAS REACHED ONE-THIRD OF THE HEIGHT OF THE BARRIER.
4. SILT BARRIERS WILL BE INSPECTED FOR DEPTH OF ACCUMULATED SEDIMENT, TEARS, ATTACHMENT TO POSTS, AND STABILITY ON A WEEKLY BASIS.
5. TEMPORARY AND PERMANENT SEEDING AND PLANTING WILL BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND HEALTHY GROWTH.
6. THE CONSTRUCTION MANAGER WILL SELECT INDIVIDUALS TO BE RESPONSIBLE FOR INSPECTIONS, MAINTENANCE, REPAIRS, AND REPORTING. THE DESIGNATED INDIVIDUALS WILL RECEIVE THE NECESSARY TRAINING FROM THE CONSTRUCTION MANAGER TO PROPERLY INSPECT AND MAINTAIN THE CONTROLS IN GOOD WORKING ORDER.



UNDERGROUND UTILITY STATEMENT:

THE UNDERGROUND UTILITIES SHOWN HEREON ARE DEPICTED FROM FIELD SURVEY INFORMATION OF ONE-CALL LOCATED UTILITIES AND/OR THE SCALING AND PLOTTING OF EXISTING UTILITY MAPS AND DRAWINGS MADE AVAILABLE TO THE SURVEYOR AT THE TIME OF SURVEY. THE SURVEYOR DOES NOT CERTIFY THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL UNDERGROUND UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. FURTHERMORE, THE SURVEYOR DOES NOT CERTIFY THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION DEPICTED ALTHOUGH HE DOES CERTIFY THAT THEY ARE DEPICTED AS ACCURATELY AS POSSIBLE FROM INFORMATION MADE AVAILABLE TO THE SURVEYOR AT THE TIME OF SURVEY. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES SHOWN HEREON BY EXCAVATION UNLESS OTHERWISE NOTED ON THIS SURVEY.
MISSOURI ONE CALL TICKET NUMBER: #200431409, 200431440, 200431475, 200440745.

WARRANTY / DISCLAIMER

THE DESIGNS REPRESENTED IN THESE PLANS ARE IN ACCORDANCE WITH ESTABLISHED PRACTICES OF CIVIL ENGINEERING FOR THE DESIGN FUNCTIONS AND USES INTENDED BY THE OWNER AT THIS TIME. HOWEVER, NEITHER KAW VALLEY ENGINEERING, INC NOR ITS PERSONNEL CAN OR DO WARRANTY THESE DESIGNS OR PLANS AS CONSTRUCTED, EXCEPT IN THE SPECIFIC CASES WHERE KAW VALLEY ENGINEERING PERSONNEL INSPECT AND CONTROL THE PHYSICAL CONSTRUCTION ON A CONTEMPORARY BASIS AT THE SITE.

CAUTION – NOTICE TO CONTRACTOR

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT LOCATIONS OF POSSIBLE CONFLICTS PRIOR TO ANY CONSTRUCTION.

SAFETY NOTICE TO CONTRACTOR

IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

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

PROJ. NO. C20_0496 DSN: DDW
CFN: 0496GP.DWG DWN: NJN
DAVID D. WOOD
ENGINEER
MO # 2011037427
14700 WEST 114TH TERRACE
LENEXA, KANSAS 66215
PH. (913) 894-5150 | FAX (913) 894-5977
lx@kveng.com | www.kveng.com
KAW VALLEY ENGINEERING

KAW VALLEY ENGINEERING, INC., IS AUTHORIZED TO OFFER ENGINEERING SERVICES BY MISSOURI STATE CERTIFICATE OF AUTHORITY # 000842. EXPIRES 12/31/21

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kansas city • lawrence • new orleans
phoenix • san francisco

Lee's Summit R7 District Athletics Facilities

Lee's Summit High School
400 SE Blue Parkway
Lee's Summit, MO 64063

owner:
Lee's Summit R-7 School District
301 NE Tudor Road
Lee's Summit, MO 64086

architect:
Gould Evans
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Kansas City, MO 64111
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structural engineer:
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4338 Belleview
Kansas City, MO 64111
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civil engineer:
Kaw Valley Engineering
14700 West 114th Terrace
Lenexa, KS 66215
913.485.0318

mechanical/electrical engineer:
Henderson Engineers
1801 Main St
Kansas City, MO 64108
816.663.8700

STATE OF MISSOURI
DAVID D. WOOD
NUMBER PE-2011037427
PROFESSIONAL ENGINEER
10/23/2020

Kaw Valley Engineering, Inc.
Missouri Certificate of Authority: 000842
David Wood Date: 09/28/2020
Engineer License No. PE-2011037427

REVISIONS

Number	DESCRIPTION	DATE
1	Addendum 1	10/13/20
2	Addendum 3	10/23/20

PROJECT NO: 0119-0100
DATE: SEPTEMBER 28, 2020

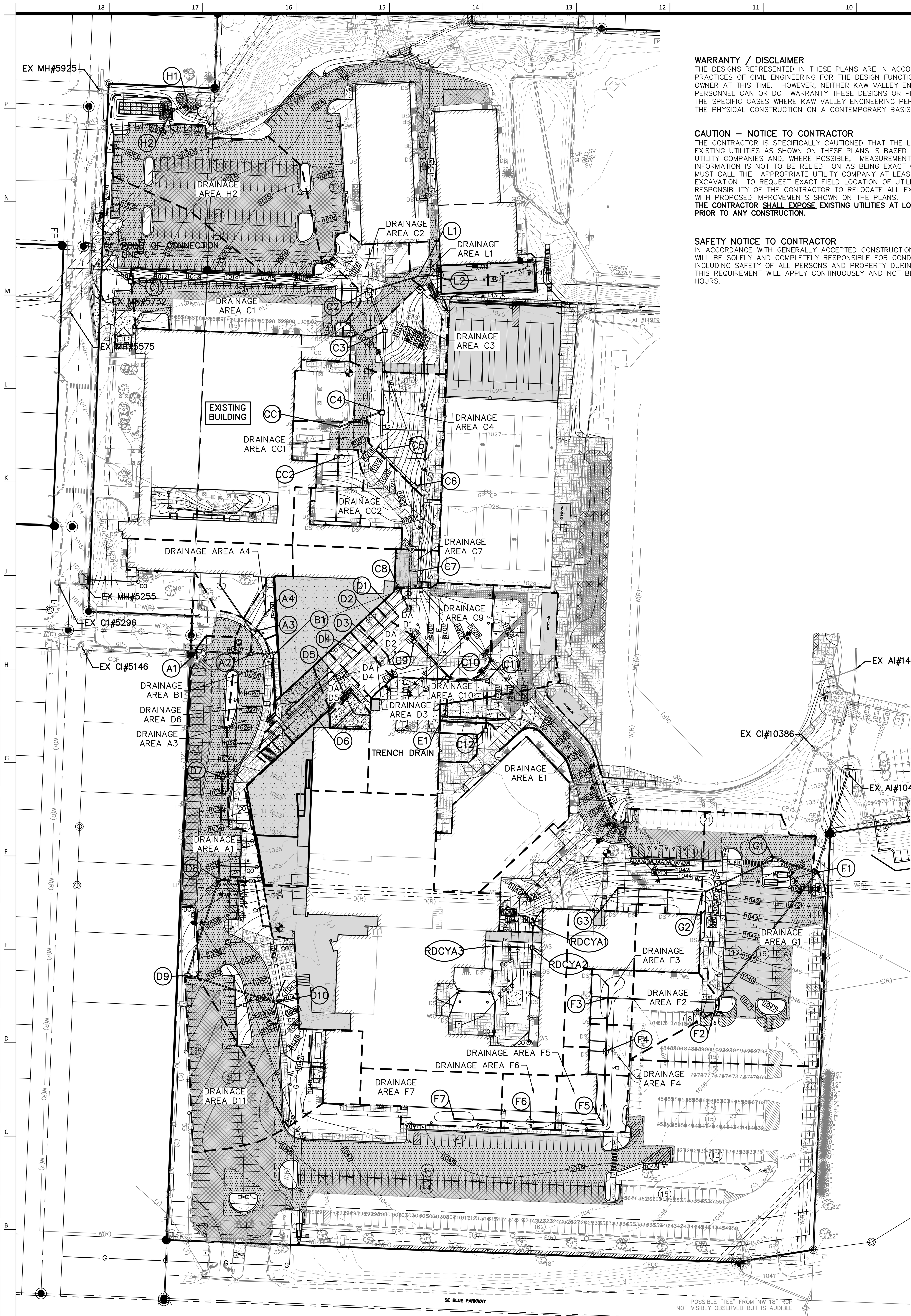
GRADING AND EROSION CONTROL PLAN

H-C300

BID SET

Exhibit C

Drainage Area Map & Calculations
Storm Sewer Plan and Profiles
BMP Plan
EDDB Calculations



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THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT LOCATIONS OF POSSIBLE CONFLICTS PRIOR TO ANY CONSTRUCTION.

SAFETY NOTICE TO CONTRACTOR

IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

T_C Calculations 11-13-2020
e's Summit High School Addition and Renovation
KVE Project # C20D0496

Time of Concentration

Structure	Pipe	Design Storm (years)	Tributary Area, A (ac)	Impervious Area	Runoff Coefficient, C	Total Distance	D1	Slope	Inlet Time (min)	D2	Travel Time (min)	Time of Concentration (min)	Notes
A4	A4 - A3	10-year 100-year	0.04	0.01	0.45	30	30	2.5	4.7	0	0.0	4.7	5 Min Minimum
A3	A3 - A2	10-year 100-year	0.27	0.22	0.79	195	100	5.0	3.3	95	0.2	3.4	5 Min Minimum
A2	A2 - AI #6375	10-year 100-year											
AI #6375	AI #6375 - A1	10-year 100-year											
A1	A1 - CI #5146	10-year 100-year	1.12	0.89	0.78	625	100	5.0	3.4	525	0.9	4.3	5 Min Minimum
B1	B1 - A1	10-year 100-year											
C12	C12 - C11	10-year 100-year											
C11	C11 - C10	10-year 100-year											
C10	C10 - C9	10-year 100-year	0.60	0.57	0.87	180	100	2.0	3.3	80	0.1	3.4	5 Min Minimum
C9	C9 - C8	10-year 100-year	0.00	0.00	#DIV/0!	90	90	8.0	#DIV/0!	0	0.0	#DIV/0!	
C8	C8 - C7	10-year 100-year											
C7	C7 - C6	10-year 100-year	0.06	0.06	0.90	50	50	1.0	2.5	0	0.0	2.5	5 Min Minimum
C6	C6 - C5	10-year 100-year											
C5	C5 - C4	10-year 100-year											
C4	C4 - C3	10-year 100-year	0.46	0.16	0.51	120	100	15.0	4.3	20	0.0	4.3	5 Min Minimum
C3	C3 - C2	10-year 100-year	0.22	0.08	0.52	80	80	15.0	3.8	0	0.0	3.8	5 Min Minimum
C2	C2 - C1	10-year 100-year	0.20	0.11	0.63	80	80	6.0	2.0	0	0.0	2.0	5 Min Minimum
C1	C1 - INSERTA TEE 60" RCP	10-year 100-year	0.55	0.45	0.79	270	100	1.5	4.9	170	0.3	5.1	
CC2	CC2 - CC1	10-year 100-year											
CC1	CC1 - C4	10-year 100-year											
D10	D10 - D9	10-year 100-year											
D9	D9 - D8	10-year 100-year	0.37	0.37	0.90	220	100	6.0	3.0	120	0.2	3.2	5 Min Minimum
D8	D8 - D7	10-year 100-year											
D7	D7 - D6	10-year 100-year											
D6	D6 - D5	10-year 100-year	0.10	0.10	0.90	50	50	6.0	1.4	0	0.0	1.4	5 Min Minimum
D5	D5 - D4	10-year 100-year	0.06	0.05	0.80	50	50	6.0	2.1	0	0.0	2.1	5 Min Minimum
D4	D4 - D3	10-year 100-year	0.06	0.03	0.60	50	50	6.0	3.5	0	0.0	3.5	5 Min Minimum
D3	D3 - D2	10-year 100-year	0.05	0.02	0.54	50	50	6.0	3.9	0	0.0	3.9	5 Min Minimum
D2	D2 - D1	10-year 100-year	0.10	0.05	0.60	50	50	6.0	3.5	0	0.0	3.5	5 Min Minimum
D1	D1 - C9	10-year 100-year	0.29	0.07	0.44	50	50	6.0	4.6	0	0.0	4.6	5 Min Minimum
E1 (Dock Trench Drain)	E1 (Dock Trench Drain) - C11	10-year 100-year	1.15	0.69	0.66	460	100	5.0	4.6	360	0.6	5.2	
F7	F7 - F6	10-year 100-year	0.26	0.20	0.76	60	60	2.0	3.7	0	0.0	3.7	5 Min Minimum
F6	F6 - F5	10-year 100-year	0.11	0.08	0.74	30	30	2.0	2.8	0	0.0	2.8	5 Min Minimum
F5	F5 - F4	10-year 100-year	0.15	0.06	0.54	60	60	2.0	6.2	0	0.0	6.2	
F4	F4 - F3	10-year 100-year	0.08	0.00	0.30	30	30	2.0	6.3	0	0.0	6.3	
F3	F3 - F2	10-year 100-year	0.09	0.00	0.30	30	30	2.0	6.3	0	0.0	6.3	
F2	F2 - F1	10-year 100-year	0.19	0.09	0.58	100	100	2.0	7.4	0	0.0	7.4	
F1	F1 - AI #10447	10-year 100-year											
G3	G3 - G2	10-year 100-year											
G2	G2 - G1	10-year 100-year											
G1	G1 - F1	10-year 100-year	1.14	1.00	0.83	340	100	4.0	3.1	240	0.4	3.5	5 Min Minimum

SCALE: 1" = 30'

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

PROJ. NO. C20_0496 DSN: DDW
CFN: 0496DAM.DWG DWN: NJN

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STATE OF MISSOURI
DAVID D. WOOD
NUMBER
PE-2011037427
PROFESSIONAL ENGINEER
12.15.2020

Kaw Valley Engineering, Inc.
Missouri Certificate of Authority: 000842
David Wood Date: 12/15/2020
Engineer License No. PE-2011037427

REVISIONS

Number	DESCRIPTION	DATE
1	ADDENDUM #1	11-19-2020
2	PER CITY COMMENTS AND COORDINATION WITH PACKAGE 2	12-15-2020

PROJECT NO: 0119-0100
DATE: November 20, 2020

DRAINAGE AREA MAP

C600

Final Development Plan

PRINT DATE/TIME: 3/17/2020 4:49:21 PM

Storm Sewer Calculations 11-13-2020
Lee's Summit School District - Lee's Summit High School Addition and Renovation
KVE Project # C20D0496

Lee's Summit High School Addition and Renovation Private Storm Sewer

Design Storm (years)	Structure	Downstream Structure	Pipe	Tributary Area, A (ac)	Impervious Area (ac)	Runoff Coefficient C	Antecedent Precipitation (K)	A x C (ac)	Time of Concentration, Tc (min)	Rainfall Intensity (in/hr)	Tributary Runoff (cfs)	Total Area, A (ac)	Summation of Inlet A x C (ac)	Antecedent Precipitation (K)	System Tc (min)	System Rainfall Intensity (in/hr)	System Discharge (cfs)	Node Condition	Pipe Material	Pipe Shape	Pipe Size, D (in)	Manning's Coefficient	Upstream Invert (ft)	Downstream Invert (ft)	Length (ft)	Pipe Slope	Design Flow (cfs)	Full Flow Capacity (cfs)	Full Flow Velocity (fps)	Flow Time (sec)	Upstream Crown Elevations	Downstream Crown Elevations	Upstream Depth of Cover	Downstream Depth of Cover	Rim Elevation
				Overland Flow								System Flow						Node	Pipe Design																
10-year	A4	A3	A4 - A3	0.04	0.01	0.45	1	0.02	5.0	7.4	0.1	0.04	0.02	1	5.0	7.4	0.1	PVC Drain Basin	HDPE	Circular	15	0.012	1019.20	1018.90	28.2	1.06%	0.1	7.2	5.9	4.8	1020.5	1020.2	2.4	3.6	1,022.90
100-year							1.25			10.3	0.2			1.25		10.3	0.2										0.2								
10-year	A3	A2	A3 - A2	0.27	0.22	0.79	1	0.21	5.0	7.4	1.6	0.59	0.44	1	5.1	7.3	3.2	Non Setback Curb Inlet	HDPE	Circular	15	0.013	1018.60	1018.30	27.9	1.08%	3.2	6.7	5.5	5.1	1019.9	1019.6	3.9	4.5	1,023.80
100-year							1.25			10.3	2.7			1.25		10.3	5.6										5.6								
10-year	A2	AI #6375	A2 - AI #6375									0.61	0.45	1	5.2	7.3	3.3	Junction Box	HDPE	Circular	15	0.013	1017.80	1017.12	43.1	1.58%	3.3	8.1	6.6	6.5	1019.1	1018.4	5.0	5.5	1,024.10
100-year														1.25		10.2	5.7										5.7								
10-year	AI #6375	A1	AI #6375 - A1									0.61	0.45	1	5.3	7.3	3.3	Junction Box	HDPE	Circular	15	0.013	1017.12	1016.80	24.0	1.33%	3.3	7.5	6.1	3.9	1018.4	1018.1	5.5	5.3	1,023.90
100-year														1.25		10.2	5.7										5.7								
10-year	A1	CI #5146	A1 - CI #5146	1.12	0.89	0.78	1	0.87	5.0	7.4	6.4	1.73	1.32	1	5.5	7.2	9.5	Non Setback Curb Inlet	RCP	Circular	15	0.013	1016.63	1013.55	151.2	2.04%	9.5	9.2	7.5	20.1	1017.9	1014.8	5.4	4.9	1,023.30
100-year							1.25			10.3	11.2			1.25		10.1	16.6										16.6								1,023.00
10-year	B1	A1	B1 - A1									0.02	0.01	1	5.0	7.4	0.1	Cleanout/Trench Drain Outlet	PVC	Circular	6	0.013	1023.10	1018.60	43.5	10.34%	0.1	1.8	9.2	4.7	1023.6	1019.1	0.4	0.0	1,024.00
100-year														1.25		10.3	0.2										0.2								
10-year	C12	C11	C12 - C11									0.50	0.45	1	5.0	7.4	3.3	Junction Box	HDPE	Circular	15	0.012	1019.80	1018.80	63.9	1.56%	3.3	8.8	7.1	9.0	1021.1	1020.1	14.6	6.3	1,035.60
100-year														1.25		10.3	5.8										5.8								
10-year	C11	C10	C11 - C10									0.50	0.45	1	5.2	7.3	3.3	Junction Box	HDPE	Circular	15	0.012	1018.50	1018.00	51.1	0.98%	3.3	6.9	5.6	9.1	1019.8	1019.3	6.5	6.7	1,026.30
100-year														1.25		10.3	5.8										5.8								
10-year	C10	C9	C10 - C9	0.60	0.57	0.87	1	0.52	5.0	7.4	3.8	2.25	1.73	1	5.3	7.3	12.6	Non Setback Curb Inlet	HDPE	Circular	18	0.012	1017.70	1016.60	64.2	1.71%	12.6	14.9	8.4	7.6	1019.2	1018.1	6.7	5.0	1,025.90
100-year							1.25			10.3	6.7			1.25		10.2	22.1										22.1								
10-year	C9	C8	C9 - C8									2.25	1.73	1	5.4	7.2	12.5	Junction Box	HDPE	Circular	24	0.012	1016.10	1015.80	42.4	0.71%	12.5	20.6	6.6	6.5	1018.1	1017.8	5.0	5.8	1,023.10
100-year														1.25		10.2	22.0										22.0								
10-year	C8	C7	C8 - C7									6.06	4.85	1	9.0	6.3	30.5	Junction Box	HDPE	Circular	30	0.012	1015.30	1014.80	48.4	1.03%	30.5	45.2	9.2	5.3	1017.8	1017.3	5.8	6.7	1,023.60
100-year														1.25		8.9	53.9										53.9								
10-year	C7	C6	C7 - C6	0.06	0.06	0.90	1	0.05	5.0	7.4	0.4	6.12	4.91	1	9.2	6.2	30.7	Area Inlet	HDPE	Circular	30	0.012	1014.80	1013.70	109.3	1.01%	30.7	44.6	9.1	12.0	1017.3	1016.2	6.7	8.3	1,024.00
100-year							1.25			10.3	0.7			1.25		8.8	54.1										54.1								
10-year	C6	C5	C6 - C5									6.12	4.91	1	9.3	6.2	30.5	Junction Box	HDPE	Circular	30	0.012	1013.50	1012.90	64.8	0.93%	30.5	42.8	8.7	7.4	1016.0	1015.4	8.5	3.1	1,024.50
100-year														1.25		8.8	53.9										53.9								
10-year	C5	C4	C5 - C4									6.12	4.91	1	9.4	6.2	30.4	Junction Box	HDPE	Circular	30	0.012	1009.50	1009.00	48.8	1.02%	30.4	45.0	9.2	5.3	1012.0	1011.5	6.5	3.3	1,018.50
100-year														1.25		8.8	53.7										53.7								
10-year	C4	C3	C4 - C3	0.46	0.16	0.51	1	0.23	5.0	7.4	1.7	7.11	5.45	1	9.6	6.2	33.6	Grate Inlet	HDPE	Circular	30	0.012	1008.80	1007.70	104.7	1.05%	33.6	45.5	9.3	11.3	1011.3	1010.2	3.5	4.0	1,014.80
100-year							1.25			10.3	3.0			1.25		8.7	59.3										59.3								
10-year	C3	C2	C3 - C2	0.22	0.08	0.52	1	0.11	5.0	7.4	0.8	7.33	5.57	1	9.7	6.1	34.1	Grate Inlet	HDPE	Circular	30	0.012	1007.50	1006.90	55.7	1.08%	34.1	46.1	9.4	5.9	1010.0	1009.4	4.2	4.3	1,014.20
100-year							1.25			10.3	1.5			1.25		8.7	60.3										60.3								
10-year	C2	C1	C2 - C1	0.20	0.11	0.63	1	0.13	5.0	7.4	0.9	7.64	5.79	1	10.3	6.0	34.8	Grate Inlet	HDPE	Circular	30	0.012	1006.70	1003.60	307.5	1.01%	34.8	44.6	9.1	33.8	1009.2	1006.1	4.5	4.5	1,013.70
100-year							1.25			10.3	1.6			1.25		8.5	61.6										61.6								
10-year	C1	INSERTA TEE 60" RCP	C1 - INSERTA TEE 60" RCP	0.55	0.45	0.79	1	0.44	5.1	7.3	3.2	8.19	6.23	1	10.3	6.0	37.4	Non Setback Curb Inlet/Yard Inlet	HDPE	Circular	30	0.012	1003.40	1002.90	36.7	1.36%	37.4	51.9	10.6	3.5	1005.9	1005.4	4.7	5.6	1,010.60
100-year							1.25			10.3	5.6			1.25		8.5	66.1										66.1								
10-year	CC2	CC1	CC2 - CC1	0.14	0.00	0.30	1	0.04	6.0	7.1	0.3	0.25	0.14	1	5.0	7.4	1.0	PVC Drain Basin	HDPE	Circular	15	0.012	1011.40	1011.00	39.4	1.02%	1.0	7.1	5.7	6.9	1012.7	1012.3	2.9	3.3	1,015.50
100-year							1.25			9.9	0.5			1.25		10.3	1.8										1.8								
10-year	CC1	C4	CC1 - C4	0.28	0.14	0.60	1	0.17	6.0	7.1	1.2	0.53	0.31	1	5.2	7.3	2.3	PVC Drain Basin	HDPE	Circular	15	0.012	1010.80	1010.20	57.4	1.05%	2.3	7.2	5.8	9.8	1012.1	1011.5	3.5	3.3	1,015.50
100-year							1.25			9.9	2.1			1.25		10.3	4.0										4.0								
10-year	D10	D9	D10 - D9									0.12	0.11	1	8.0	6.5	0.7	Junction Box	HDPE	Circular	15	0.012	1034.20	1031.60	118.5	2.19%	0.7	10.4	8.4	14.0	1035.5	1032.9	7.5	6.9	1,043.00
100-year														1.25		9.2	1.2										1.2								
10-year	D9	D8	D9 - D8	0.37	0.37	0.90	1	0.33	5.0	7.4	2.4	0.49	0.44	1	8.3	6.5	2.9	Non Setback Curb Inlet	HDPE	Circular	15	0.012	1031.10	1028.50	129.3	2.01%	2.9	9.9	8.1	16.0	1032.4	1029.8	7.4	7.2	1,039.70
100-year							1.25			10.3	4.3			1.25		9.1	5.0										5.0								
10-year	D8	D7	D8 - D7									2.95	2.54	1	8.5	6.4	16.3	Junction Box	HDPE	Circular	18	0.012	1028.00	1023.70	130.6	3.29%	16.3	20.6	11.7	11.2	1029.5	1025.2	7.4	5.9	1,036.90
100-year														1.25		9.1	28.7										28.7								
10-year	D7	D6	D7 - D6									2.97	2.55	1	8.7	6.4	16.2	Junction Box	HDPE	Circular	24	0.012	1020.80	1018.75	143.9	1.42%	16.2	29.2	9.3	15.5	1022.8	1020.8	8.3	3.1	1,031.10
100-year														1.25		9.0	28.7										28.7								
10-year	D6	D5	D6 - D5	0.10	0.10	0.90	1	0.09	5.0	7.4	0.7	3.07	2.64	1	8.8	6.3	16.8	Trench Drain	HDPE	Circular	24	0.012	1018.75	1018.00	52.4	1.42%	16.8	29.2	9.3	5.6	1020.7	1020.0	3.2	3.7	1,023.90
100-year							1.25			10.3	1.2			1.25		8.9	29.6										29.6								
10-year	D5	D4	D5 - D4	0.06	0.05	0.80	1	0.05	5.0	7.4	0.4	3.31	2.85	1	8.9	6.3	18.0	PVC Drain Basin	HDPE	Circular	24	0.012	1017.80	1017.15	41.7	1.56%	18.0	30.6	9.7	4.3	1019.8	1019.2	3.9	4.3	1,023.70
100-year							1.25			10.3	0.6			1.25		8.9	31.8										31.8								
10-year	D4	D3	D4 - D3	0.06	0.03	0.60	1	0.04	5.0	7.4	0.3	3.37	2.89	1	8.9	6.3	18.2	Inline Drain	HDPE	Circular	24	0.012	1017.15	1016.79	23.0	1.57%	18.2	30.7	9.8	2.4	1019.2	1018.8	4.3	4.5	1,023.40
100-year							1.25			10.3	0.5			1.25		8.9	32.2										32.2								
10-year	D3	D2	D3 - D2	0.05	0.02	0.54	1	0.03	5.0	7.4	0.2	3.42	2.92	1	9.0	6.3	18.4	Inline Drain	HDPE	Circular	24	0.012	1016.79	1016.42	23.2	1.60%	18.4	31.0	9.9	2.4	1018.8	1018.4	4.5	4.9	1,023.30
100-year							1.25			10.3	0.3			1.25		8.9	32.5										32.5								
10-year	D2	D1	D2 - D1	0.10	0.05	0.60	1	0.06	5.0	7.4	0.4	3.52	2.98	1	9.0	6.3	18.7	Inline Drain	HDPE	Circular	24	0.012	1016.42	1016.06	23.2	1.55%	18.7	30.5	9.7	2.4	1018.4	1018.1	4.9	5.2	1,023.30
100-year							1.25			10.3	0.8			1.25		8.9	33.1										33.1								
10-year	D1	C9	D1 - C9	0.29	0.07	0.44	1	0.13	5.0	7.4	0.9	3.81	3.11	1	9.0	6.3	19.5	Inline Drain	HDPE	Circular	24	0.012	1016.06	1015.80	16.0	1.63%	19.5	31.3	10.0	1.6	1018.1	1017.8	5.2	5.8	1,023.30
100-year							1.25			10.3	1.7			1.25		8.9	34.5										34.5								
10-year	E1 (Dock Trench Drain)	C11	E1 (Dock Trench Drain) - C11	1.15	0.69	0.66	1	0.76	5.3	7.3	5.5	1.15	0.76	1	5.0	7.4	5.6	Trench Drain	HDPE	Circular	15	0.012	1018.80	1018.00	35.7	2.24%	5.6	10.5	8.5	4.2	1020.1	1019.3	2.4	3.9	1,022.40
100-year							1.25			10.2	9.7			1.25		10.3	9.8										9.8								
10-year	F7	F6	F7 - F6	0.26	0.20	0.76	1	0.20	5.0	7.4	1.5	0.26	0.20	1	5.0	7.4	1.5	Inline Drain	HDPE	Circular	12	0.012	1045.00	1044.00	97.8	1.02%	1.5	3.9	5.0	19.7	1046.0	1045.0	1.5	2.9	1,047.50
100-year							1.25			10.3	2.6			1.25		10.3	2.6										2.6								
10-year	F6	F5	F6 - F5	0.11	0.08	0.74	1	0.08	5.0	7.4	0.6	0.37	0.28	1	5.3	7.3	2.0	Inline Drain	HDPE	Circular	12	0.012	1044.00	1043.00	93.7	1.07%	2.0	4.0	5.1	18.5	1045.0	1044.0	2.9	3.5	1,047.90
100-year							1.25			10.3	1.0			1.25		10.2	3.6										3.6								
10-year	F5	F4	F5 - F4	0.15	0.06	0.54	1	0.08	6.5	6.9	0.6	0.52	0.36	1	6.5	6.9	2.5	PVC Drain Basin	HDPE	Circular	12	0.012	1042.50	1041.50	94.0	1.06%	2.5	4.0	5.1	18.5	1043.5	1042.5	4.0	5.0	1,047.50
100-year							1.25			9.7	1.0			1.25		9.7	4.4										4.4								
10-year	F4	F3	F4 - F3	0.08	0.00	0.30	1	0.02	6.3	7.0	0.2	0.63	0.41	1	6.7	6.9	2.8	PVC Drain Basin	HDPE	Circular	12	0.012	1041.30	1040.60	68.8	1.02%	2.8	3.9	5.0	13.9	1042.3	1041.6	5.2	5.9	1,047.50
100-year							1.25			9.8	0.3			1.25		9.6	5.0										5.0								
10-year	F3	F2	F3 - F2	0.09	0.00	0.30	1	0.03	6.3	7.0	0.2	0.79	0.50	1	7.1	6.7	3.4	PVC Drain Basin	HDPE	Circular	15	0.012	1040.10	1038.60	140.3	1.07%	3.4	7.2	5.9	23.8	1041.4	1039.9	6.2	8.5	1,047.50
100-year							1.25			9.8	0.3			1.25		9.5	6.0										6.0								
10-year	F2	F1	F2 - F1	0.19	0.09	0.58	1	0.11	7.4	6.7	0.7	0.98	0.61	1	7.5	6.7	4.1	Non Setback Curb Inlet	HDPE	Circular	15	0.012	1038.10	1032.70	210.2	2.57%	4.1	11.2	9.1	23.0	1039.4	1034.0	9.0	7.3	1,048.30
100-year							1.25			9.4	1.3			1.25		9.4	7.2										7.2								
10-year	F1	AI #10447	F1 - AI #10447									2.42	1.84	1	7.7	6.6	12.2	Junction Box	HDPE	Circular	18	0.012	1032.20	1024.90	133.7	5.46%	12.2	26.6	15.0	8.9	1033.7	1026.4	7.5	2.4	1,041.20
100-year														1.25		9.3	21.4										21.4								
10-year	G3	G2	G3 - G2									0.15	0.14	1	5.0	7.4	1.0	PVC Drain Basin	HDPE	Circular	12	0.012	1042.90	1041.90	98.4	1.02%	1.0	3.9	5.0	19.9	1043.9	1042.9	2.6	3.2	1,046.50
100-year														1.25		10.3	1.7										1.7								
10-year	G2	G1	G2 - G1									0.30	0.29	1	5.1	7.3	2.1	PVC Drain Basin	HDPE	Circular	12	0.012	1039.90	1034.40	99.4	5.53%	2.1	9.1	11.6	8.6	1040.9	1035.4	5.2	4.4	1,046.10
100-year														1.25		10.3	3.7										3.7								
10-year	G1	F1	G1 - F1	1.14	1.00	0.83	1	0.94	5.0	7.4	6.9	1.44	1.23	1	5.2	7.3	8.9	Non Setback Curb Inlet	HDPE	Circular	18	0.012	1033.90	1032.70	54.7	2.19%	8.9	16.9	9.5	5.7	1035.4	1034.2	4.4	7.0	1,039.80
100-year							1.25			10.3	12.2			1.25		10.2	15.7										15.7								

Upstream System/ Roof Drains

10-year	Roof Drain/A3A	A3	Roof Drain/A3A - A3	0.28	0.20	0.73	1	0.20	4.0	7.7	1.6
100-year							1.25			10.8	2.7
10-year	B1 Trench Drain	B1	B1 Trench Drain - B1	0.02	0.01	0.60	1	0.01	5.0	7.4	0.1
100-year							1.25			10.3	0.2
10-year	Roof Rain	C11	Roof Rain - C11	0.46	0.46	0.90	1	0.41	5.0	7.4	3.0
100-year							1.25			10.3	5.3
10-year	Mech Yard Drain	C11	Mech Yard Drain - C11	0.04	0.04	0.90	1	0.04	5.0	7.4	0.3
100-year							1.25			10.3	0.5
10-year	Roof Rain	CC2	Roof Rain - CC2	0.11	0.11	0.90	1	0.10	5.0	7.4	0.7
100-year							1.25			10.3	1.3
10-year	Roof Rain	D10	Roof Rain - D10	0.12	0.12	0.90	1	0.11	5.0	7.4	0.8
100-year							1.25			10.3	1.4
10-year	Roof Rain/Courtyard A	D9	Roof Rain/Courtyard A - D9	2.18	1.98	0.84	1	1.84	10.0	6.1	11.2
100-year							1.25			8.6	19.8
10-year	Roof Rain	D8/D7	Roof Rain - D8/D7	0.28	0.28	0.90	1	0.25	5.0	7.4	1.9
100-year							1.25			10.3	3.3
10-year	Greenway ID (D7/D6)	D7/D6	Greenway ID (D7/D6) - D7/D6	0.02	0.02	0.90	1	0.02	11.0	5.9	0.1
100-year							1.25			8.3	0.2
10-year	Greenway ID (D5)	D5	Greenway ID (D5) - D5	0.04	0.04	0.90	1	0.04	12.0	5.7	0.2
100-year							1.25			8.1	0.4
10-year	Roof Rain South	D5	Roof Rain South - D5	0.14	0.14	0.90	1	0.13	5.0	7.4	0.9
100-year							1.25			10.3	1.6
10-year	Roof Drain North	D8/C9	Roof Drain North - D8/C9	0.42	0.42	0.90	1	0.38	5.0	7.4	2.8
100-year							1.25			10.3	4.9
10-year	Roof Rain	F4	Roof Rain - F4	0.03	0.03	0.90	1	0.03	5.0	7.4	0.2
100-year							1.25			10.3	0.3
10-year	Roof Rain	F3	Roof Rain - F3	0.07	0.07	0.90	1	0.06	5.0	7.4	0.5
100-year							1.25			10.3	0.8
10-year	Roof Rain	G3	Roof Rain - G3	0.15	0.15	0.90	1	0.14	5.0	7.4	1.0
100-year							1.2			10.3	1.7
10-year	Roof Rain	G2	Roof Rain - G2	0.15	0.15	0.90	1	0.14	5.0	7.4	1.0
100-year							1.25			10.3	1.7

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Lee's Summit High School

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816.663.8700

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STATE OF MISSOURI
DAVID D. WOOD
NUMBER PE-2011037427
PROFESSIONAL ENGINEER
12.15.2020

Kaw Valley Engineering, Inc.
Missouri Certificate of Authority: 000842
David Wood Date: 12/15/2020
Engineer License No. PE-2011037427

REVISIONS

Number	DESCRIPTION	DATE
1	ADDENDUM #1	11-19-2020
2	PER CITY COMMENTS AND COORDINATION WITH PACKAGE 2	12-15-2020

PROJECT NO: 0119-0100
DATE: November 20, 2020

PROJ. NO. C20_0496 DSN: DDW
CFN: 0496DAM.DWG DWN: NJN

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KAW VALLEY ENGINEERING

KAW VALLEY ENGINEERING, INC., IS AUTHORIZED TO OFFER ENGINEERING SERVICES BY MISSOURI STATE CERTIFICATE OF AUTHORITY # 000842. EXPIRES 12/31/21

STORM SEWER CALCULATIONS

C605

Final Development Plan

PRINT DATE/TIME: 3/17/2020 4:49:21 PM

STORM SEWER CONSTRUCTION NOTES:

1. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH SECTION 2600 STORM SEWER OF THE KANSAS CITY METRO CHAPTER OF APWA SPECIFICATIONS AS ADOPTED AND AMENDED BY THE CITY OF LEE'S SUMMIT, MISSOURI STANDARD SPECIFICATIONS. REFERENCE APWA SPECIFICATION SECTION 2102.4 FOR EXCAVATION, TRENCHING AND BACKFILLING FOR PIPE AND STORM STRUCTURES.
2. A MINIMUM OF 18" COVER SHALL BE PROVIDED PRIOR TO AND MAINTAINED AFTER INSTALLATION OF STORM SEWER.
3. ALL COORDINATES FOR CURB INLETS ARE TO THE MIDDLE OF THE INSIDE FRONT FACE. ALL COORDINATES FOR PVC STRUCTURES AND CONCRETE YARD INLETS ARE TO THE CENTER OF THE STRUCTURE.
4. ALL JUNCTION BOXES/AREA INLETS HAVE ONE COORDINATE PROVIDED AT THE CENTER OF STRUCTURE. SEE PLAN FOR CLARIFICATION. ORIENT STRUCTURES PARALLEL TO ADJACENT CURB, BUILDING OR WALL FACE, UNLESS NOTED OTHERWISE.
5. RIM ELEVATION IS PROVIDED AT COORDINATE, UNLESS NOTED OTHERWISE. CONTRACTOR TO ADJUST ELEVATION OF RIM AS REQUIRED TO MATCH SLOPE OF ADJACENT CURB LINE. REFER TO GRADING PLAN (C300 SERIES SHEETS).
6. ALL EXISTING UTILITIES INDICATED ON THE DRAWING ARE ACCORDING TO THE BEST INFORMATION AVAILABLE TO THE ENGINEER; HOWEVER, ALL UTILITIES ACTUALLY EXISTING MAY NOT BE SHOWN. UTILITIES DAMAGED THROUGH THE NEGLIGENCE OF THE CONTRACTOR TO OBTAIN THE LOCATION OF SAME SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT THEIR EXPENSE.
7. ALL BACKFILL SHALL BE COMPACTED TO 95 PERCENT STANDARD DENSITY AT OPTIMUM MOISTURE.
8. ALL EXCAVATION BENEATH THE STREETS AND PARKING LOTS FOR DRAINAGE PIPE LESS THAN 4'-0" IN DIAMETER SHALL BE BACKFILLED WITH AGGREGATE TO FOUR FEET (4') PAST BACK OF CURB IN ACCORDANCE WITH APWA SPECIFICATIONS SECTION 2102.4J.
9. RELOCATION OF ANY WATER LINE, SEWER LINE OR SERVICE LINE THEREOF REQUIRED FOR THE CONSTRUCTION OF THIS PROJECT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE AT THEIR EXPENSE.
10. IF PRECAST STORM STRUCTURES ARE TO BE USED ON THIS PROJECT, THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND HAVE THEM APPROVED BY THE ENGINEER PRIOR TO FABRICATION OF THE STRUCTURES. FAILURE TO DO SO SHALL BE CAUSE FOR REJECTION.
11. ALL HDPE PIPE JOINTS SHALL BE WATER TIGHT.

SAFETY NOTICE TO CONTRACTOR

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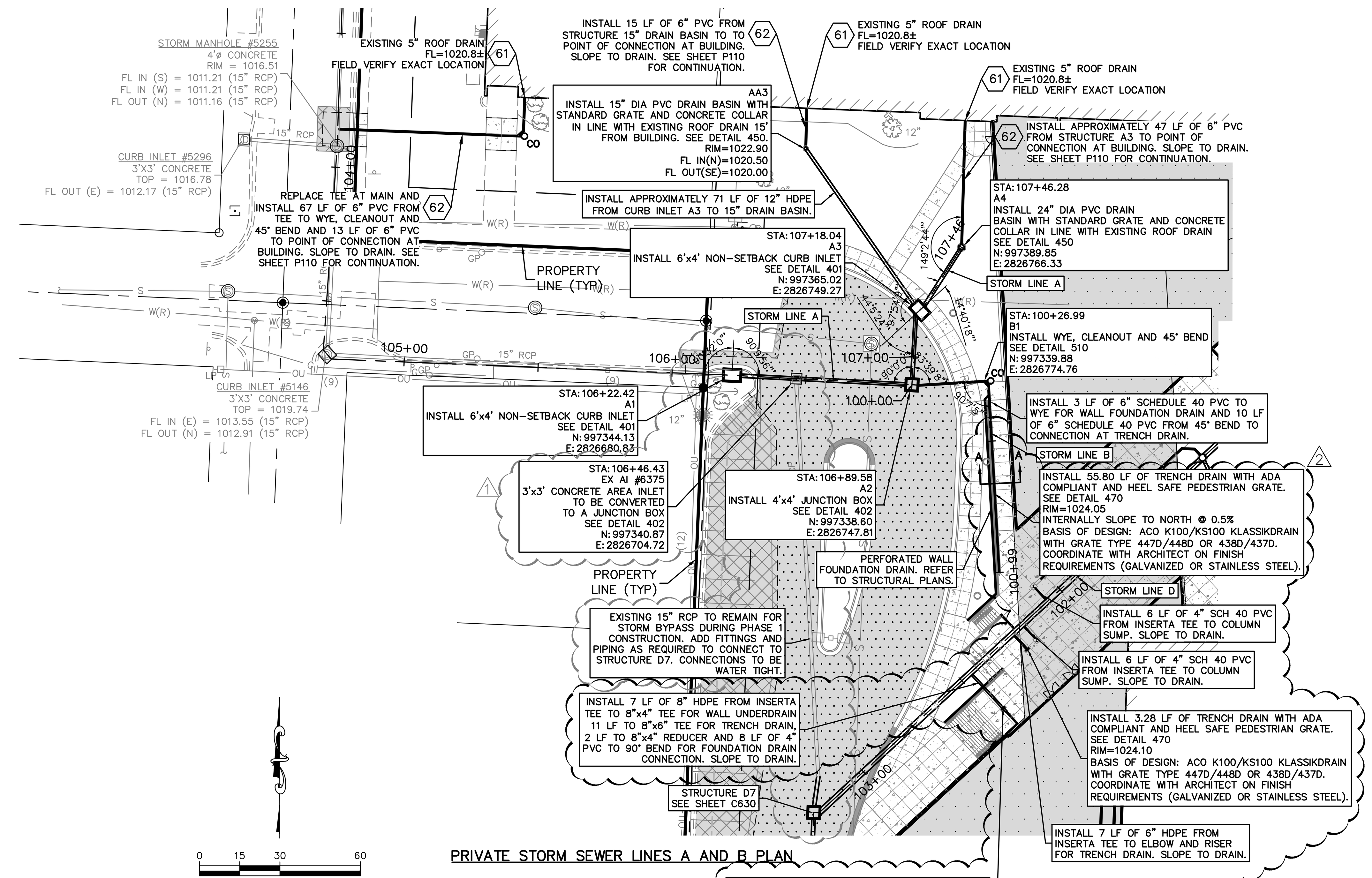
WARRANTY / DISCLAIMER

THE DESIGNS REPRESENTED IN THESE PLANS ARE IN ACCORDANCE WITH ESTABLISHED PRACTICES OF CIVIL ENGINEERING FOR THE DESIGN FUNCTIONS AND USES INTENDED BY THE OWNER AT THIS TIME. HOWEVER, NEITHER KAW VALLEY ENGINEERING, INC NOR ITS PERSONNEL CAN OR DO WARRANTY THESE DESIGNS OR PLANS AS CONSTRUCTED, EXCEPT IN THE SPECIFIC CASES WHERE KAW VALLEY ENGINEERING PERSONNEL INSPECT AND CONTROL THE PHYSICAL CONSTRUCTION ON A CONTEMPORARY BASIS AT THE SITE.

CAUTION – NOTICE TO CONTRACTOR

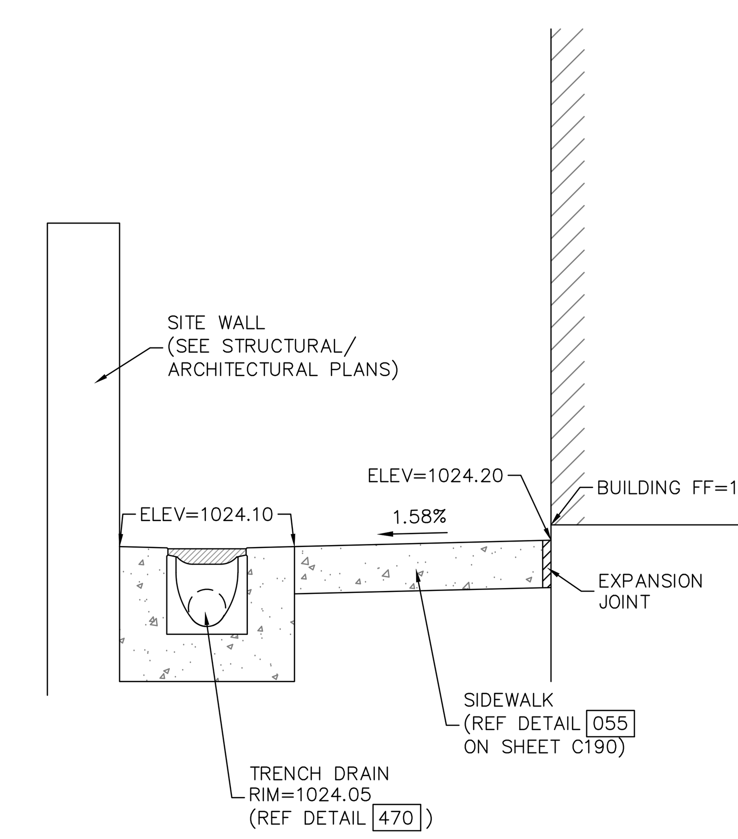
THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH PROPOSED IMPROVEMENTS SHOWN ON THE PLANS. **THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT LOCATIONS OF POSSIBLE CONFLICTS PRIOR TO ANY CONSTRUCTION.**



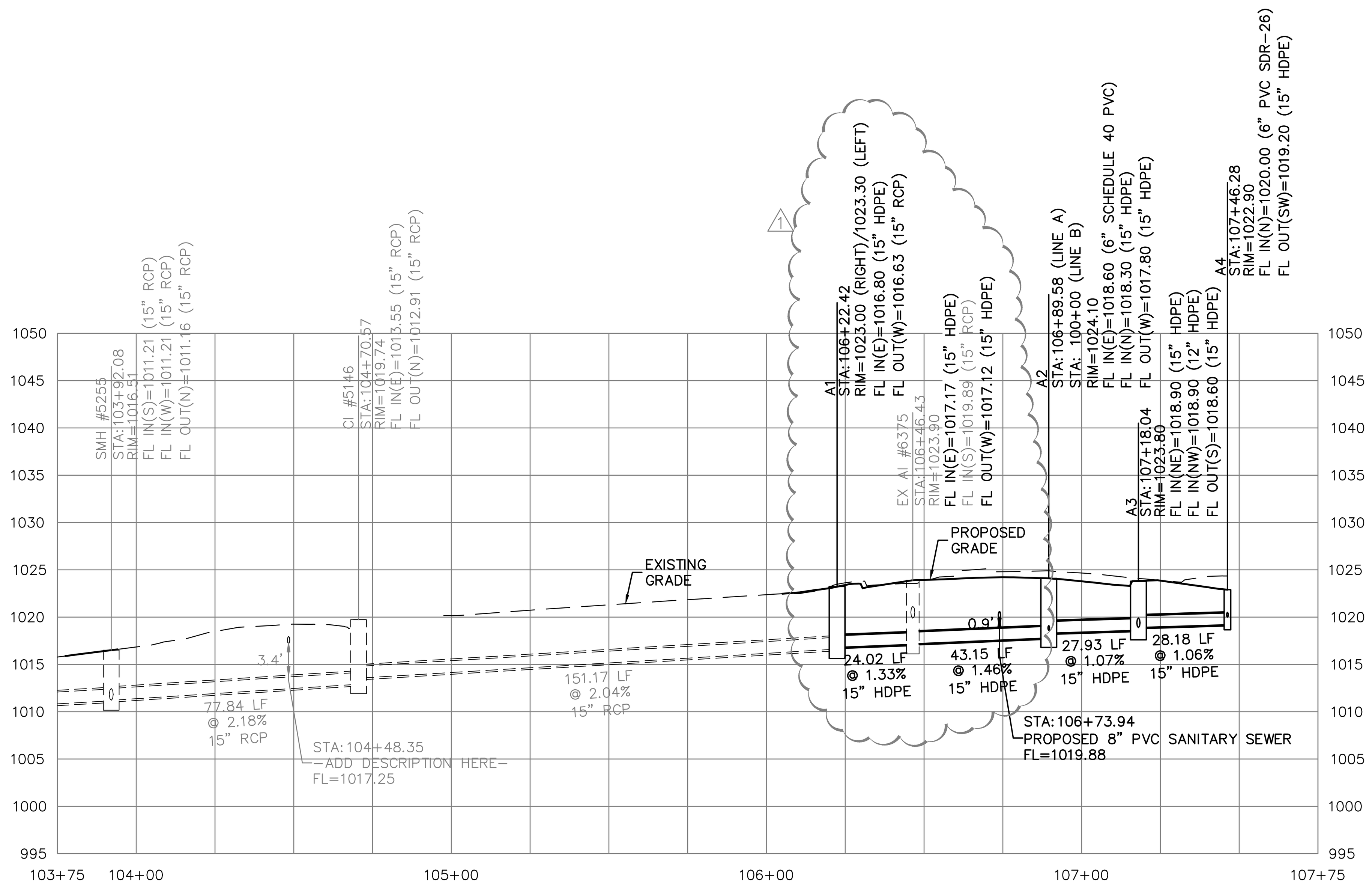
PRIVATE STORM SEWER LINES A AND B PLAN

▭	DETAILS SEE SHEET C690 AND C695
401	NON-SETBACK CURB INLET
402	JUNCTION BOX
403	YARD INLET
406	CONCRETE FLARED END SECTION WITH TOE WALL AND RIP RAP
433	DOWNSPOUT COLLECTOR
450	PVC DRAIN BASIN – CONTRACTOR TO ORDER INLETS ONE FOOT TALLER THAN PLAN ELEVATION SO INLET CAN BE FIELD ADJUSTED
460	INLINE DRAIN
470	TRENCH DRAIN
510	CLEANOUT

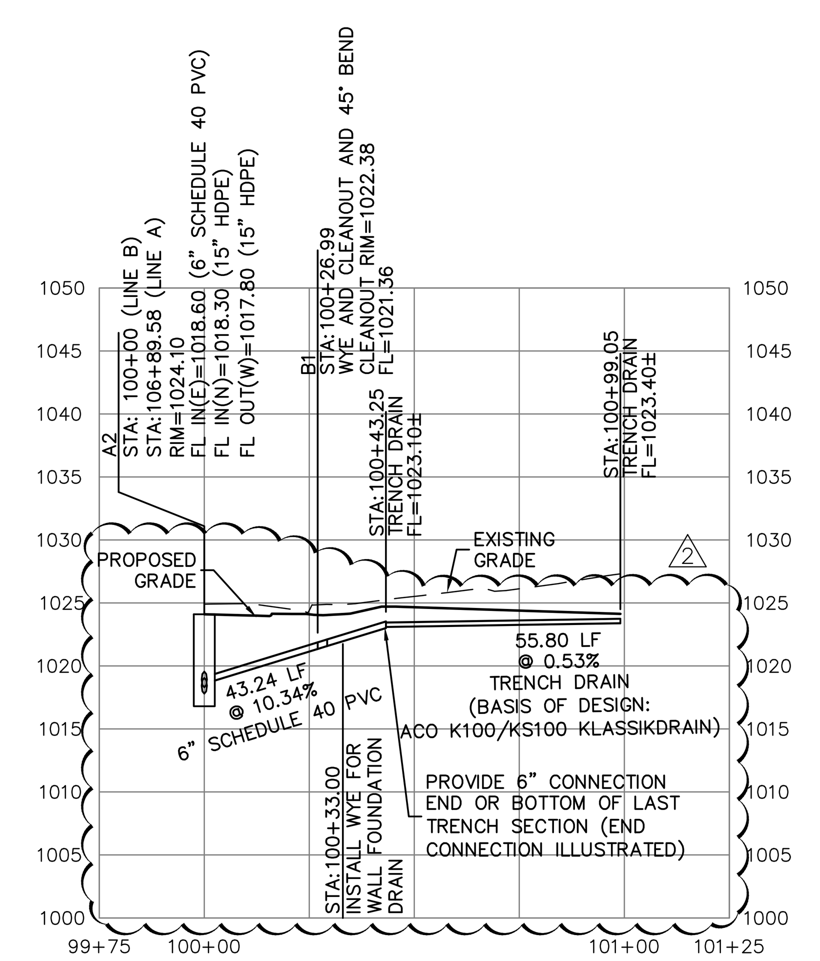
⬡	NOTES
61	STORM SEWER POINT OF CONNECTION AT BUILDING REFER TO MEP PLANS
62	PVC SDR-26 ROOF DRAIN. IF DRAIN IS LESS THAN 2' USE SCHEDULE 40 PVC FOR THE ENTIRE RUN. SLOPE TO DRAIN (1% MINIMUM FOR 6" AND LARGER ROOF DRAINS), 2% MINIMUM FOR 4" ROOF DRAINS)
63	PVC STORM LINE AND TEE FOR FOUNDATION DRAIN. COORDINATE WITH ARCHITECTURAL PLANS FOR SIZE.



SECTION A–A



PRIVATE STORM SEWER LINE A PROFILE



PRIVATE STORM SEWER LINE B PROFILE

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Lee's Summit, MO 64063

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mechanical/electrical engineer:
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STATE OF MISSOURI DAVID D. WOOD NUMBER PE-2011037427 PROFESSIONAL ENGINEER 12-15-20

Kaw Valley Engineering, Inc.
Missouri Certificate of Authority: 000842
David Wood Date: 12/15/2020
Engineer License No. PE-2011037427

REVISIONS

Number	DESCRIPTION	DATE
1	ADDENDUM #1	11-19-2020
2	PER CITY COMMENTS AND COORDINATION WITH PACKAGE 2	12-15-2020

PROJECT NO: 0119-0100
DATE: November 20, 2020

Know what's below. Call before you dig.

PROJ. NO. C20_0496 DSN: DDW
CFN: 0496DPP.DWG DWN: NJN
DAVID D. WOOD ENGINEER MO # 2011037427
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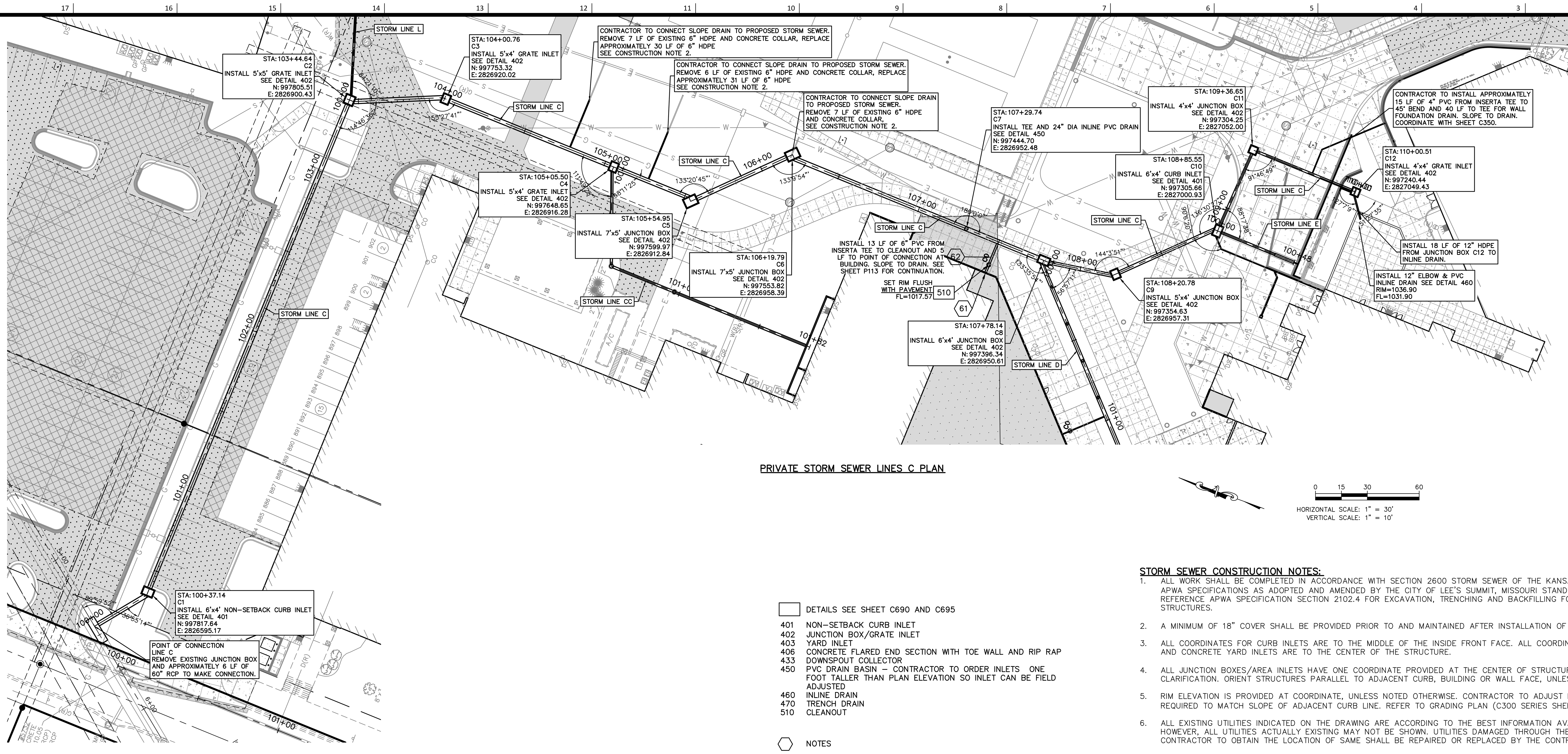
KAW VALLEY ENGINEERING
KAW VALLEY ENGINEERING, INC., IS AUTHORIZED TO OFFER ENGINEERING SERVICES BY MISSOURI STATE CERTIFICATE OF AUTHORITY # 000842. EXPIRES 12/31/21

PRIVATE STORM SEWER PLAN AND PROFILE

C610

Final Development Plan



PRIVATE STORM SEWER LINES C PLAN

0 15 30 60

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 10'

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402	JUNCTION BOX/GRATE INLET
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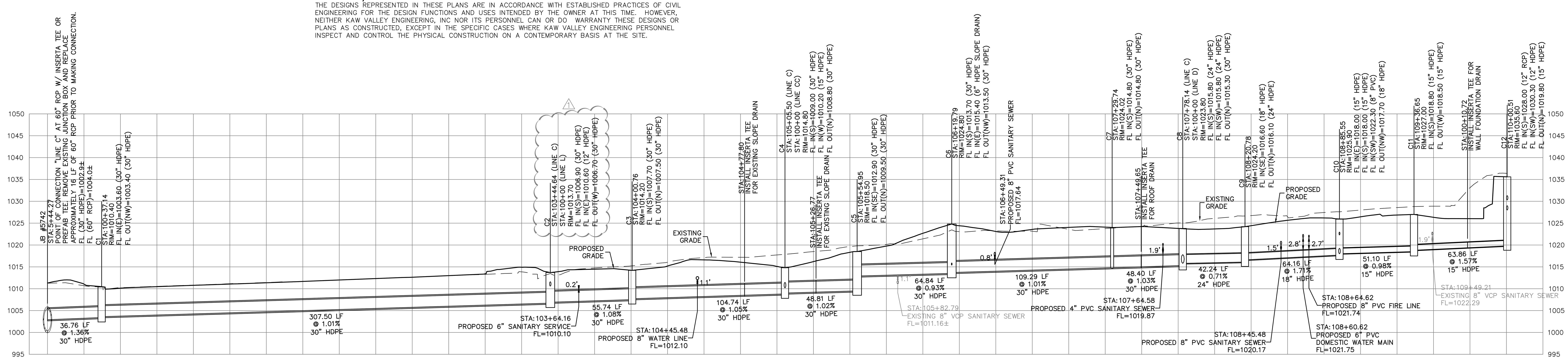

PRIVATE STORM SEWER LINE C PROFILE

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PROJ. NO. C20_0496 DSN: DDW
CFN: 0496DPP.DWG DWN: NJN

DAVID D. WOOD
ENGINEER
MO # 2011037427

14700 WEST 114TH TERRACE
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KAW VALLEY ENGINEERING

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Lee's Summit R-7 School District
301 NE Tudor Road
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architect:
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STATE OF MISSOURI
DAVID D. WOOD
NUMBER PE-2011037427
PROFESSIONAL ENGINEER
12.15.2020

Kaw Valley Engineering, Inc.
Missouri Certificate of Authority: 000842
David Wood Date: 12/15/2020
Engineer License No. PE-2011037427

REVISIONS

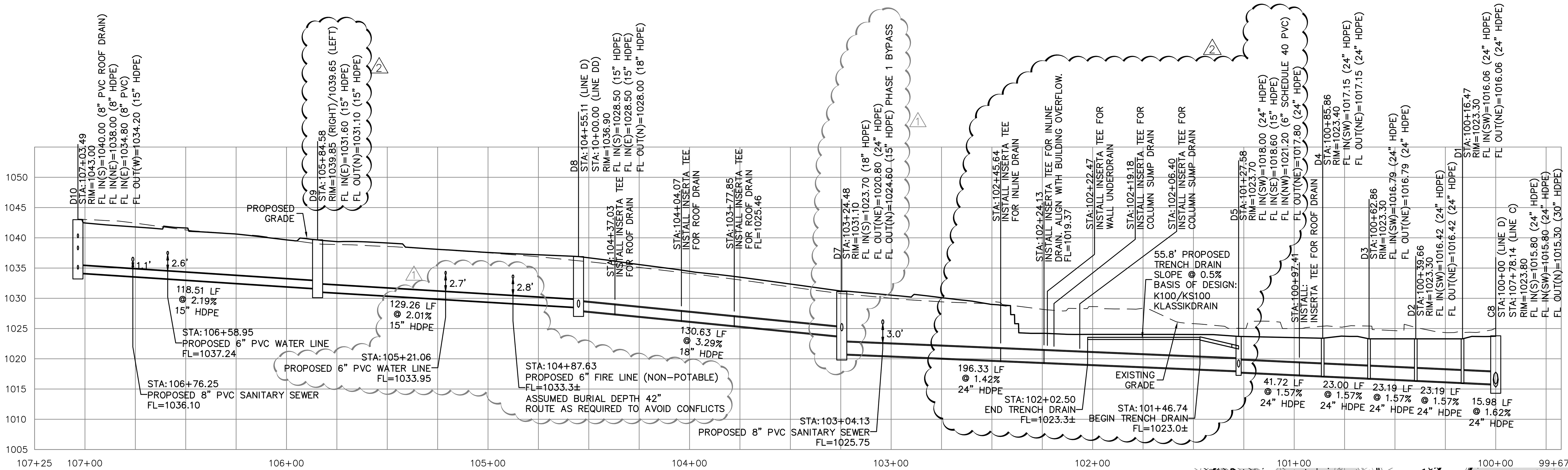
Number	DESCRIPTION	DATE
1	ADDENDUM #1	11-19-2020
2	PER CITY COMMENTS AND COORDINATION WITH PACKAGE 2	12-15-2020

PROJECT NO: 0119-0100
DATE: November 20, 2020

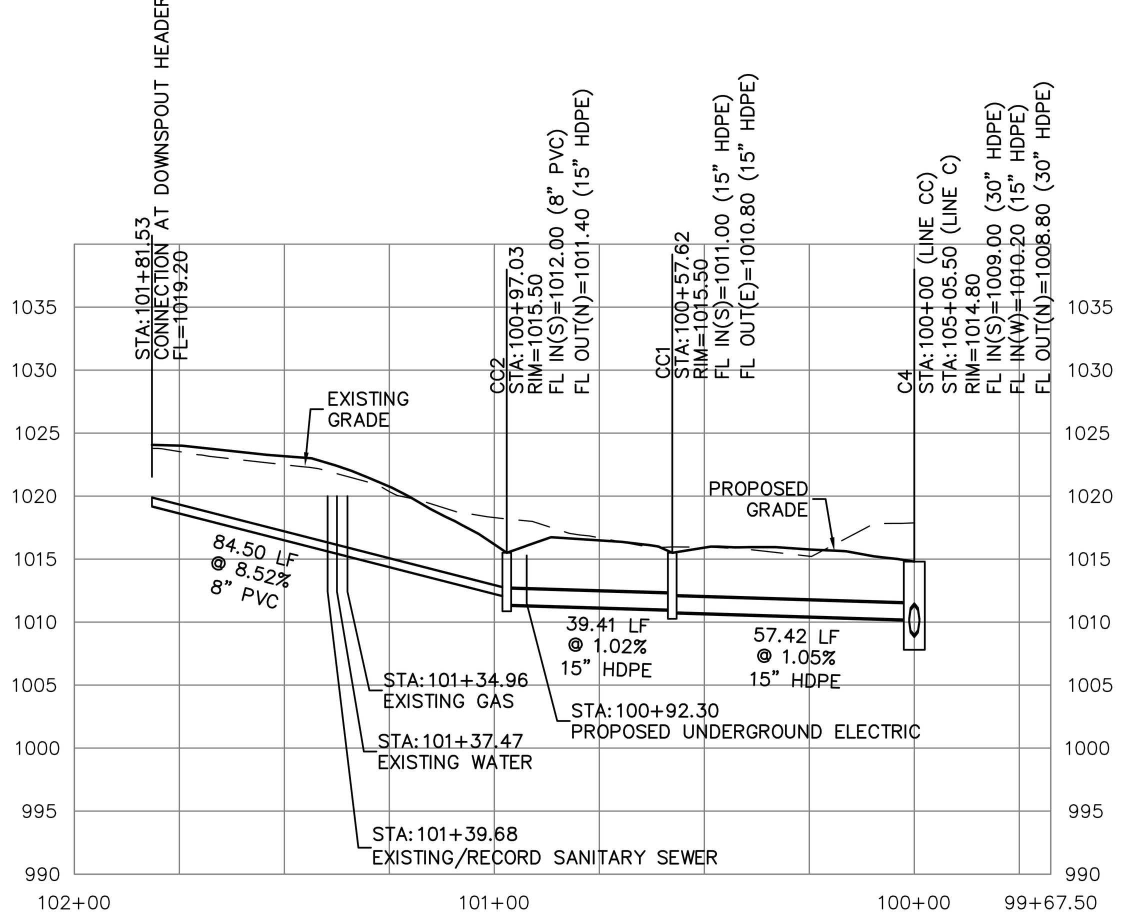
PRIVATE STORM SEWER PLAN AND PROFILE

C620

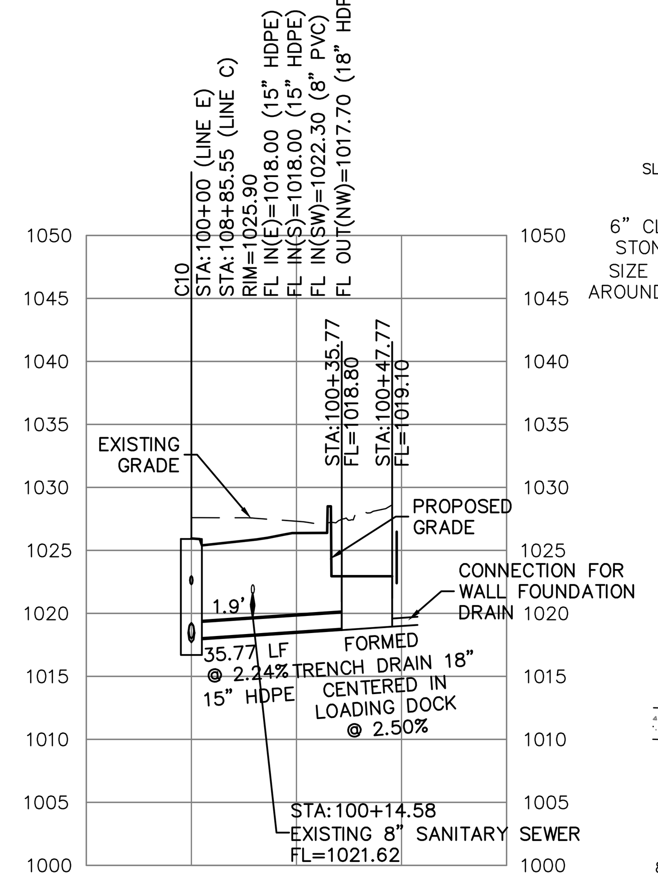
Final Development Plan



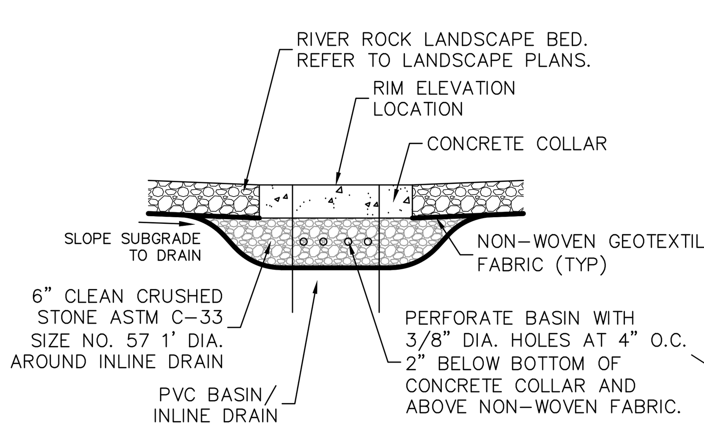
PRIVATE STORM SEWER LINE D PROFILE



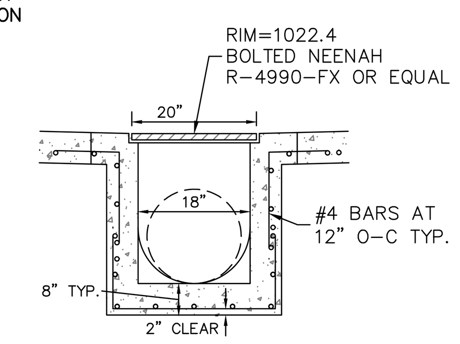
PRIVATE STORM SEWER LINE CC PROFILE



PRIVATE STORM SEWER LINE E PROFILE

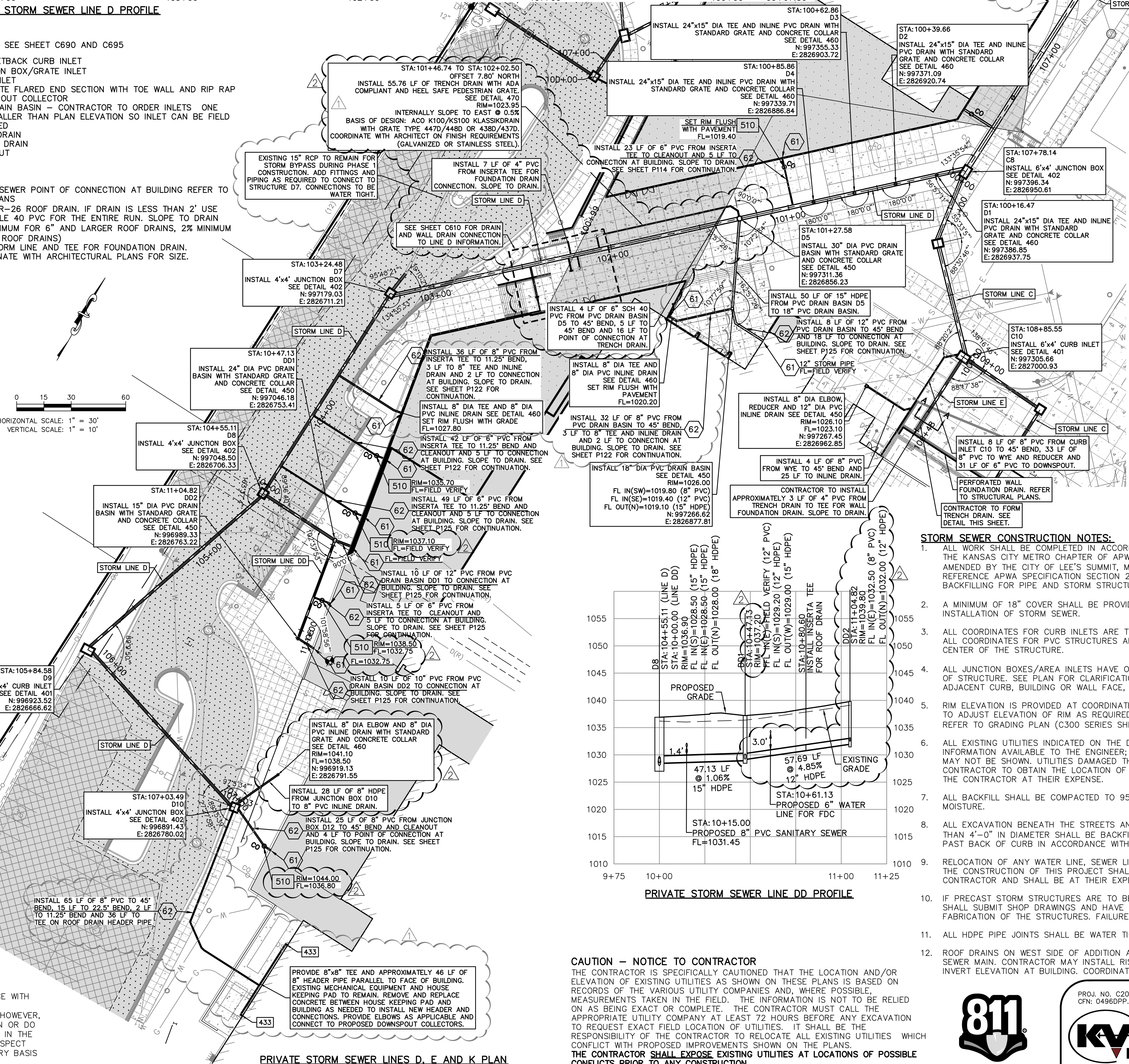


BASIN/INLINE DRAIN FOR GRAVEL BEDS DETAIL



FORMED TRENCH DRAIN

☐	DETAILS SEE SHEET C690 AND C695
401	NON-SETBACK CURB INLET
402	JUNCTION BOX/GRATE INLET
403	YARD INLET
406	CONCRETE FLARED END SECTION WITH TOE WALL AND RIP RAP
433	DOWNSPOUT COLLECTOR
450	PVC DRAIN BASIN – CONTRACTOR TO ORDER INLETS ONE FOOT TALLER THAN PLAN ELEVATION SO INLET CAN BE FIELD ADJUSTED
460	INLINE DRAIN
470	TRENCH DRAIN
510	CLEANOUT
⬡	NOTES
61	STORM SEWER POINT OF CONNECTION AT BUILDING REFER TO MEP PLANS
62	PVC SDR-26 ROOF DRAIN. IF DRAIN IS LESS THAN 2' USE SCHEDULE 40 PVC FOR THE ENTIRE RUN. SLOPE TO DRAIN (1% MINIMUM FOR 6" AND LARGER ROOF DRAINS, 2% MINIMUM FOR 4" ROOF DRAINS)
63	PVC STORM LINE AND TEE FOR FOUNDATION DRAIN. COORDINATE WITH ARCHITECTURAL PLANS FOR SIZE.



PRIVATE STORM SEWER LINES D, E AND K PLAN

PRIVATE STORM SEWER LINE DD PROFILE

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2. A MINIMUM OF 18" COVER SHALL BE PROVIDED PRIOR TO AND MAINTAINED AFTER INSTALLATION OF STORM SEWER.
3. ALL COORDINATES FOR CURB INLETS ARE TO THE MIDDLE OF THE INSIDE FRONT FACE. ALL COORDINATES FOR PVC STRUCTURES AND CONCRETE YARD INLETS ARE TO THE CENTER OF THE STRUCTURE.
4. ALL JUNCTION BOXES/AREA INLETS HAVE ONE COORDINATE PROVIDED AT THE CENTER OF STRUCTURE. SEE PLAN FOR CLARIFICATION. ORIENT STRUCTURES PARALLEL TO ADJACENT CURB, BUILDING OR WALL FACE, UNLESS NOTED OTHERWISE.
5. RIM ELEVATION IS PROVIDED AT COORDINATE, UNLESS NOTED OTHERWISE. CONTRACTOR TO ADJUST ELEVATION OF RIM AS REQUIRED TO MATCH SLOPE OF ADJACENT CURB LINE. REFER TO GRADING PLAN (C300 SERIES SHEETS).
6. ALL EXISTING UTILITIES INDICATED ON THE DRAWING ARE ACCORDING TO THE BEST INFORMATION AVAILABLE TO THE ENGINEER; HOWEVER, ALL UTILITIES ACTUALLY EXISTING MAY NOT BE SHOWN. UTILITIES DAMAGED THROUGH THE NEGLIGENCE OF THE CONTRACTOR TO OBTAIN THE LOCATION OF SAME SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT THEIR EXPENSE.
7. ALL BACKFILL SHALL BE COMPACTED TO 95 PERCENT STANDARD DENSITY AT OPTIMUM MOISTURE.
8. ALL EXCAVATION BENEATH THE STREETS AND PARKING LOTS FOR DRAINAGE PIPE LESS THAN 4'-0" IN DIAMETER SHALL BE BACKFILLED WITH AGGREGATE TO FOUR FEET (4') PAST BACK OF CURB IN ACCORDANCE WITH APWA SPECIFICATIONS SECTION 2102.4J.
9. RELOCATION OF ANY WATER LINE, SEWER LINE OR SERVICE LINE THEREOF REQUIRED FOR THE CONSTRUCTION OF THIS PROJECT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE AT THEIR EXPENSE.
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11. ALL HDPE PIPE JOINTS SHALL BE WATER TIGHT.
12. ROOF DRAINS ON WEST SIDE OF ADDITION ARE ROUTED UNDER THE PROPOSED SANITARY SEWER MAIN. CONTRACTOR MAY INSTALL RISER EAST OF SANITARY SEWER TO SHALLOW INVERT ELEVATION AT BUILDING. COORDINATE WITH PLUMBING PLANS.

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CFN: 0496DPP.DWG DWN: NJN

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MO # 2011037427

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12.15.2020

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David Wood Date: 12/15/2020
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PROJECT NO: 0119-0100
DATE: November 20, 2020

PRIVATE STORM SEWER PLAN AND PROFILE

C630

Final Development Plan

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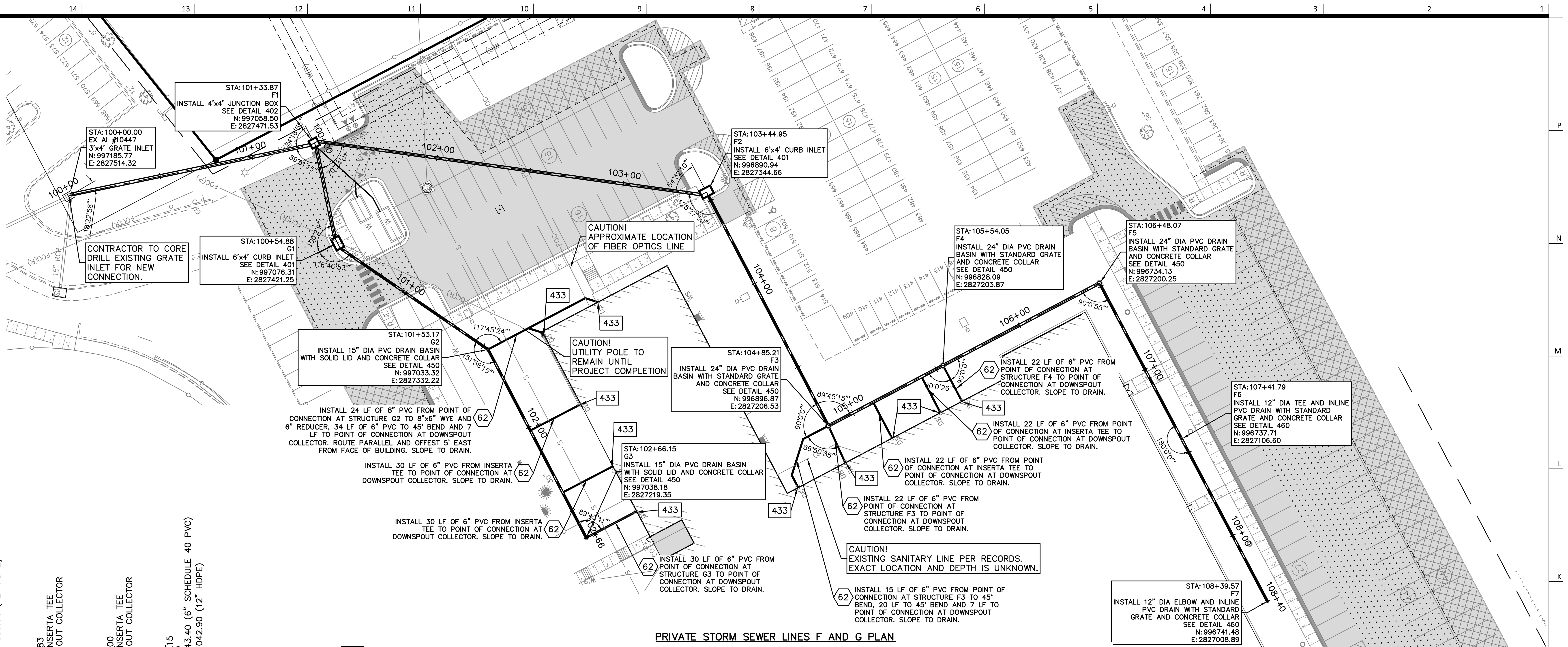
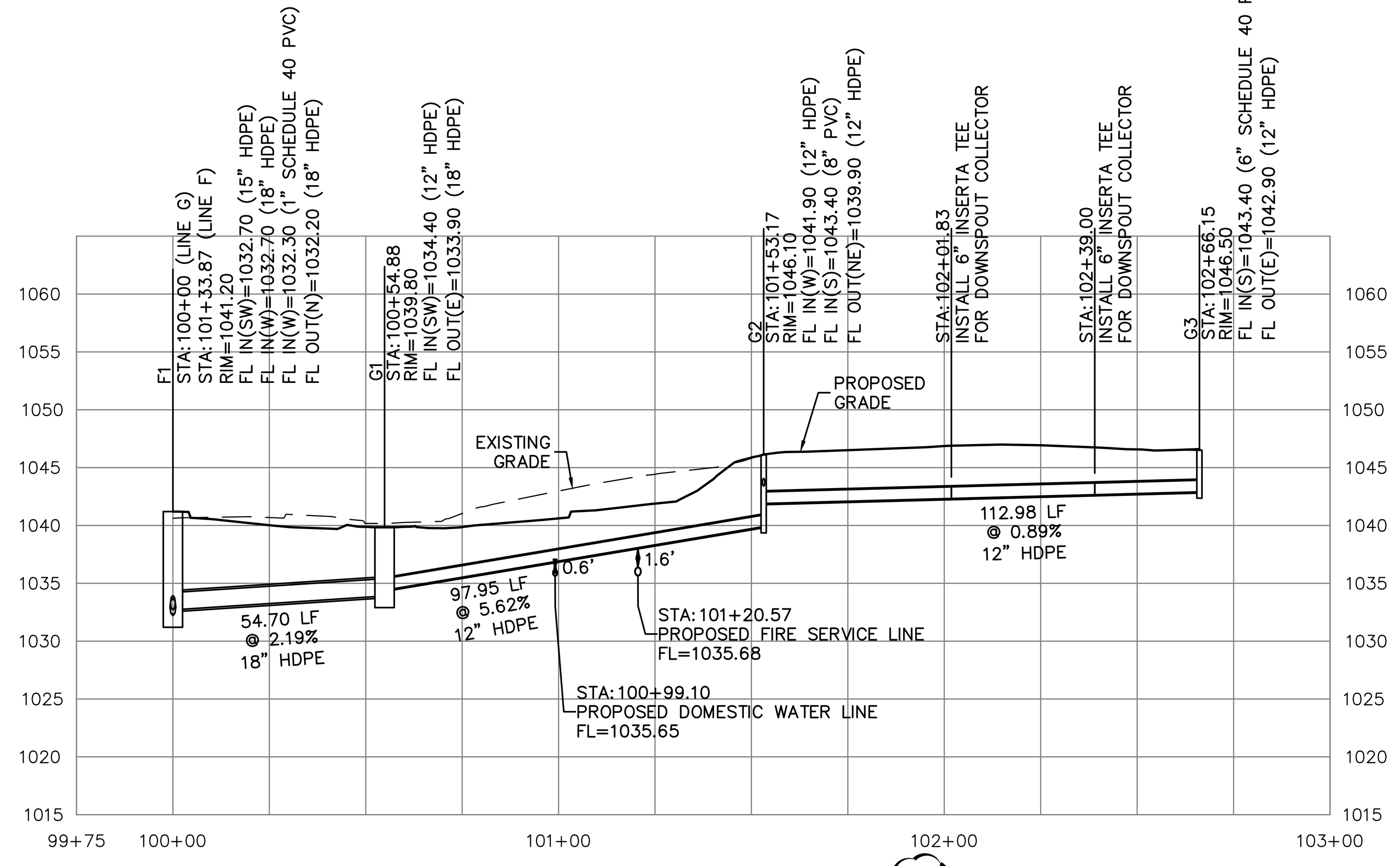


PRIVATE STORM SEWER LINES F AND G PLAN



PRIVATE STORM SEWER LINE G PROFILE

DETAILS SEE SHEET C690 AND C695

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0 15 30 60

HORIZONTAL SCALE: 1" = 30'
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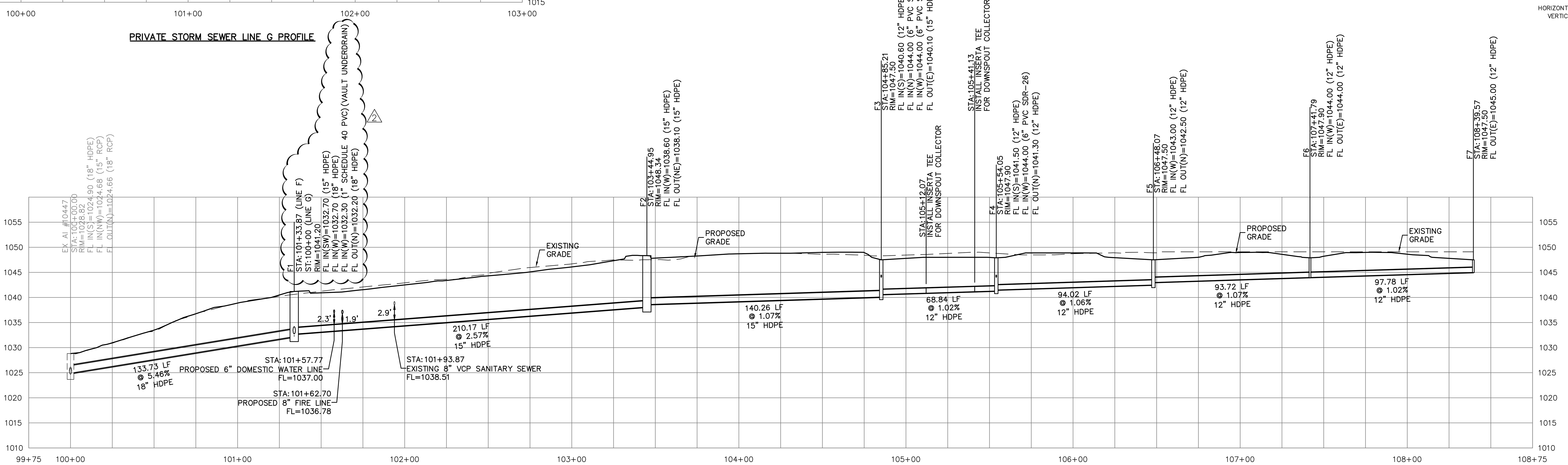

PRIVATE STORM SEWER LINE F PROFILE

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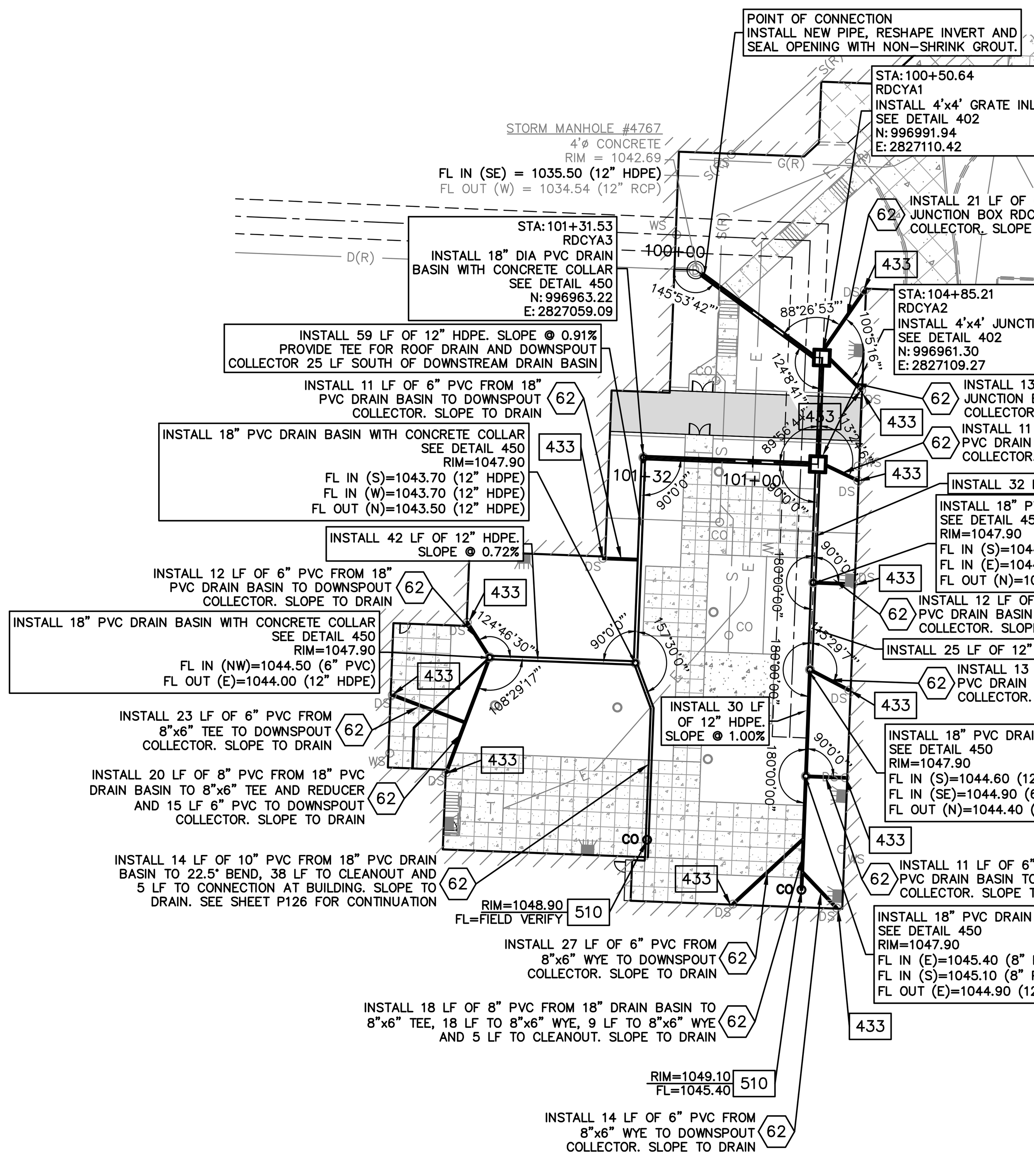
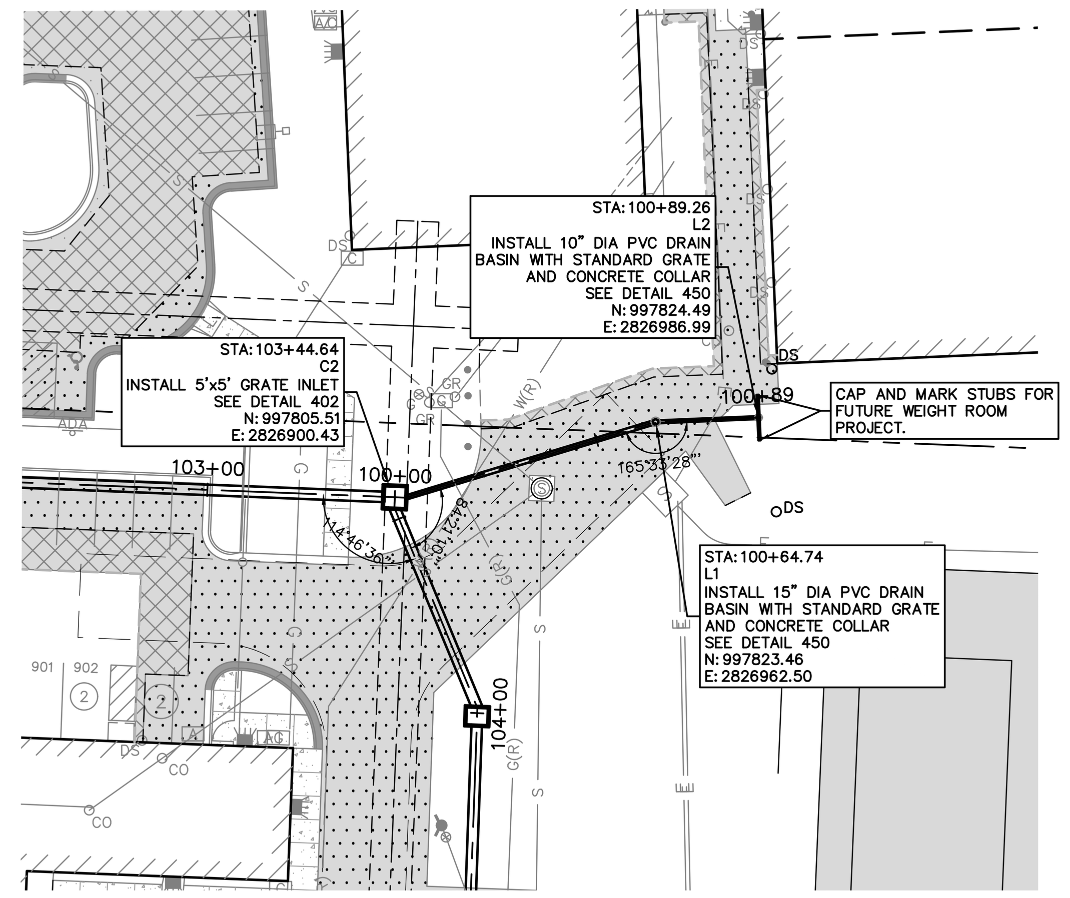
PRIVATE STORM SEWER PLAN AND PROFILE

C640

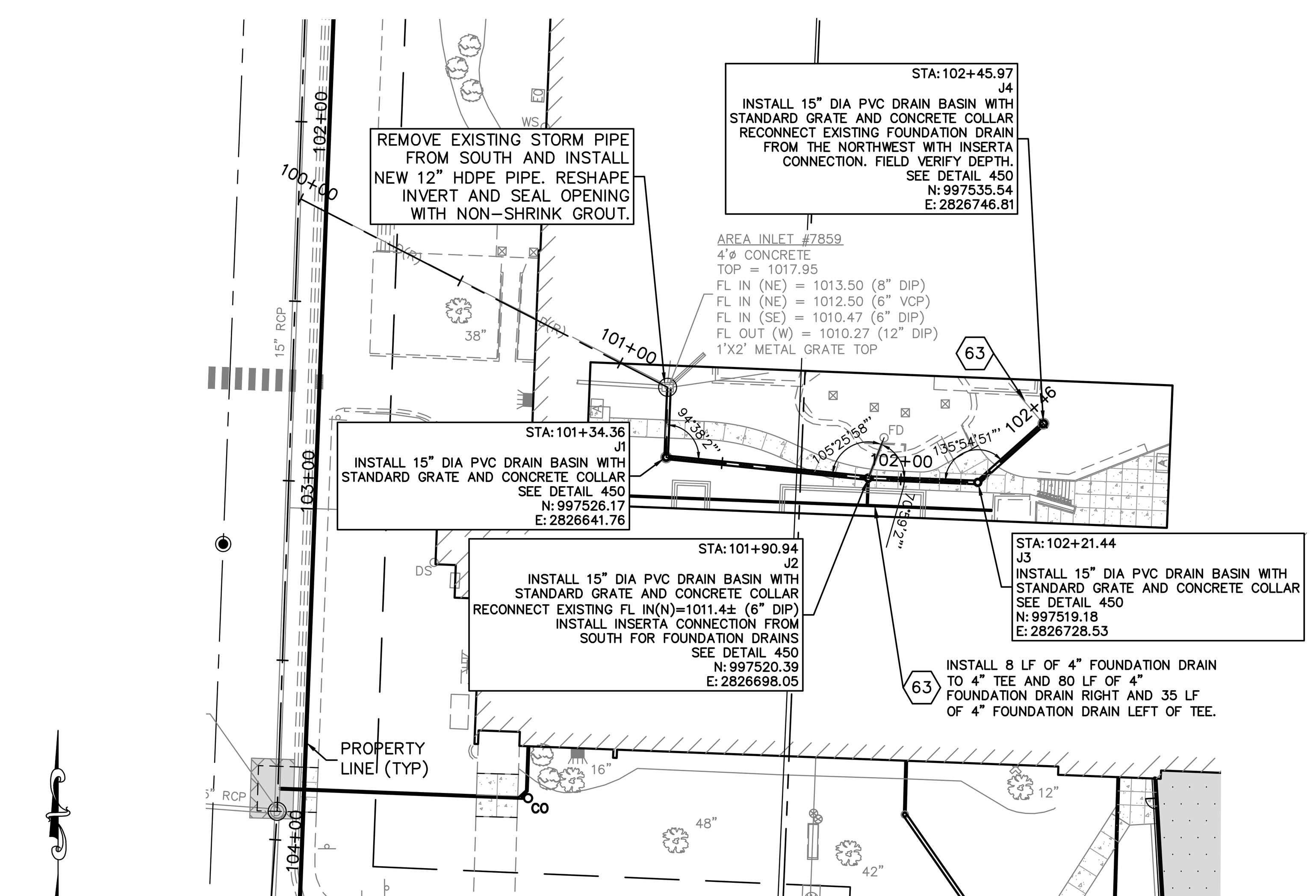
Final Development Plan



PRIVATE STORM SEWER ROOF DRAIN/COURTYARD A PLAN



PRIVATE STORM SEWER LINE L PLAN



PRIVATE STORM SEWER LINE J PLAN

HORIZONTAL SCALE: 1" = 30'
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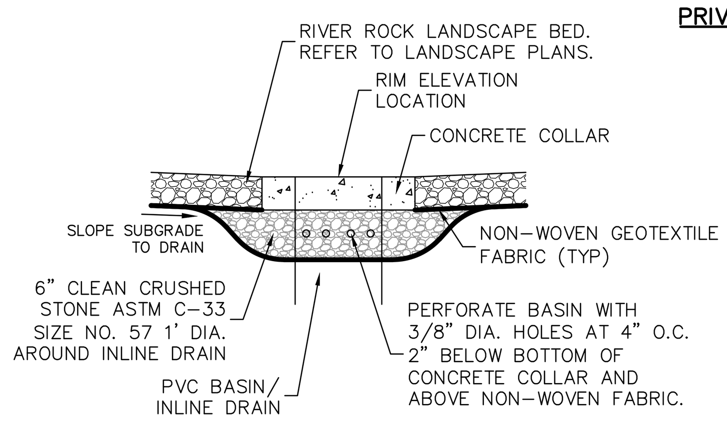

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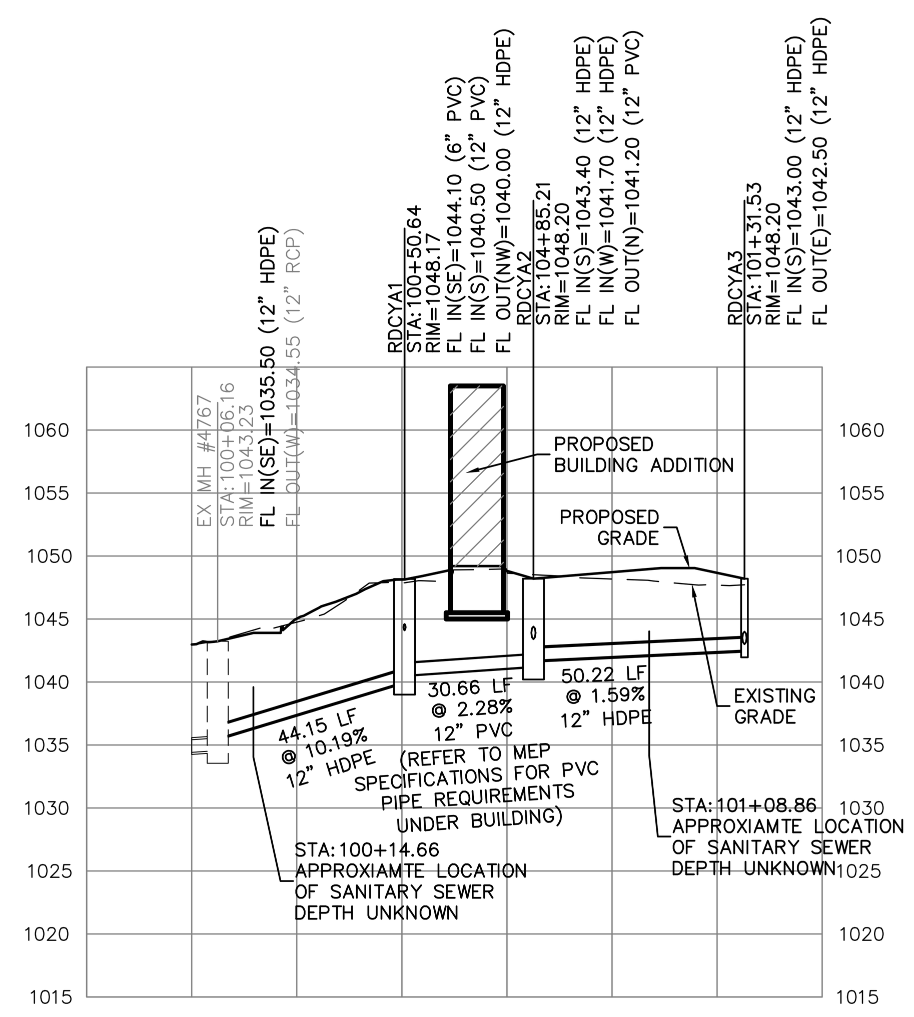
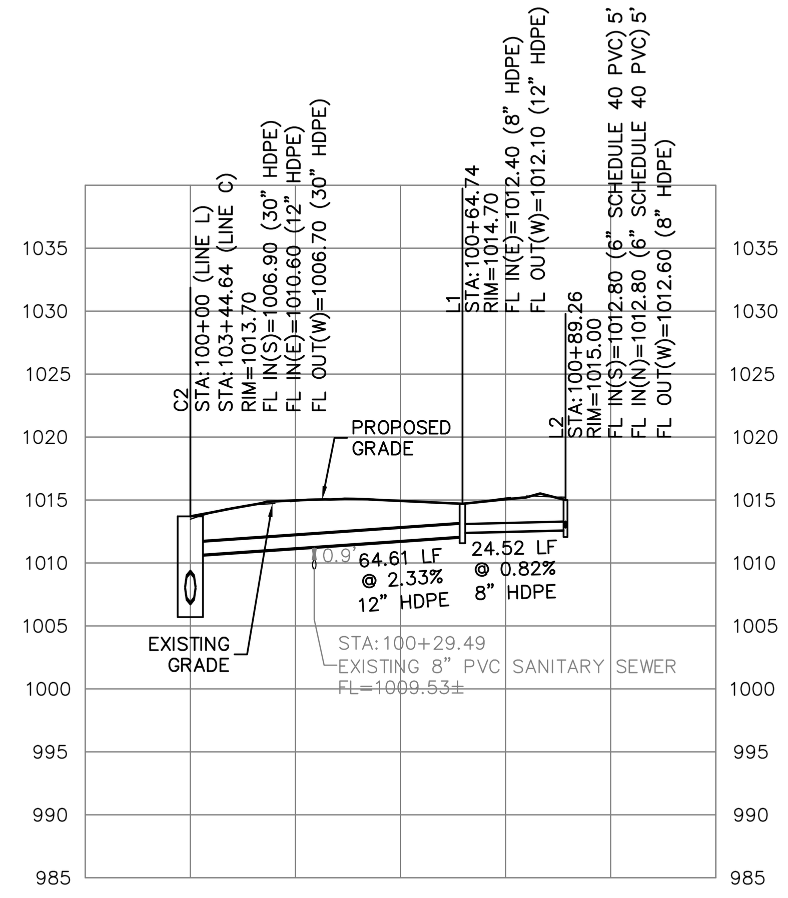
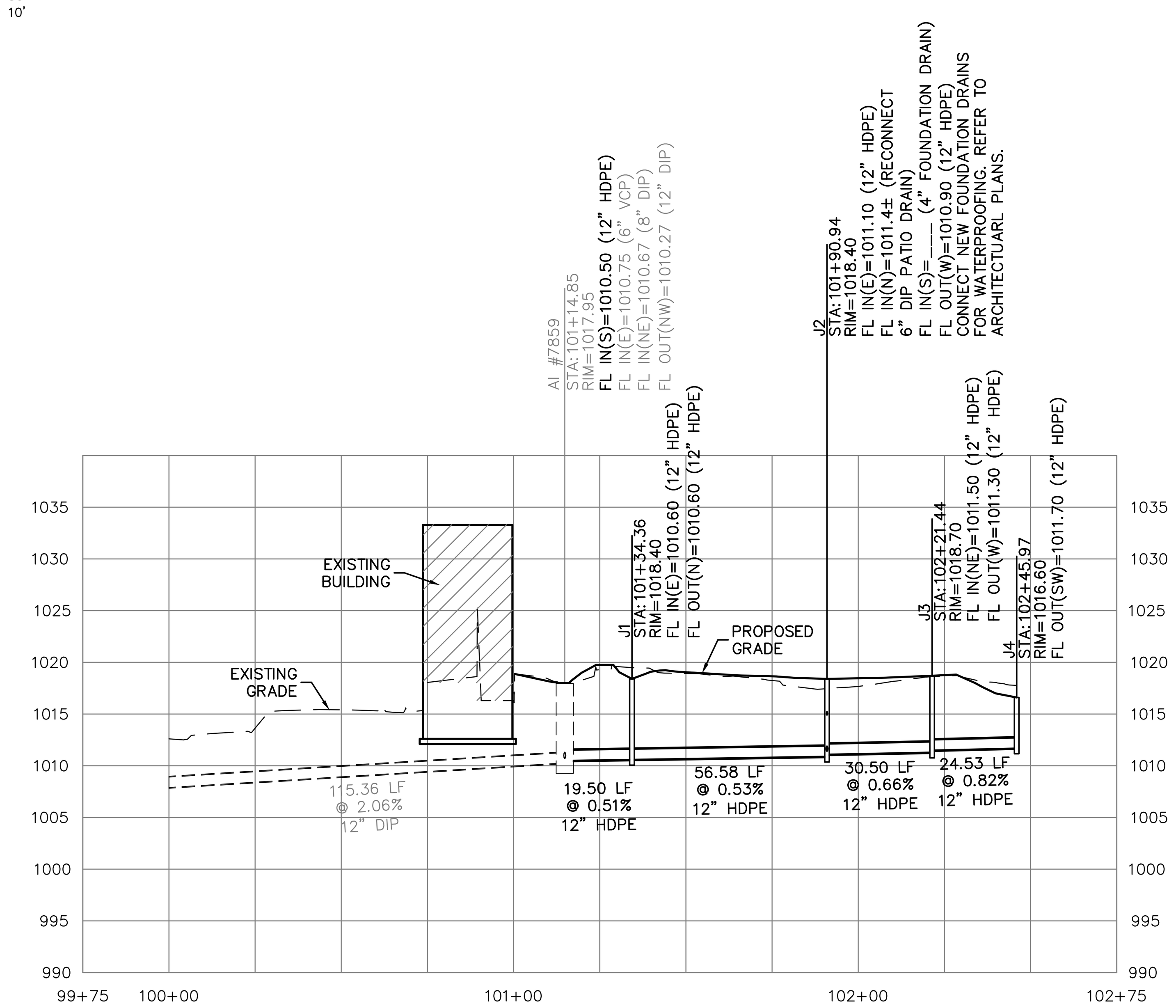


PRIVATE STORM SEWER ROOF DRAIN/COURTYARD A PROFILE



PRIVATE STORM SEWER LINE L PROFILE



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3. ALL COORDINATES FOR CURB INLETS ARE TO THE MIDDLE OF THE INSIDE FRONT FACE. ALL COORDINATES FOR PVC STRUCTURES AND CONCRETE YARD INLETS ARE TO THE CENTER OF THE STRUCTURE.
4. ALL JUNCTION BOXES/AREA INLETS HAVE ONE COORDINATE PROVIDED AT THE CENTER OF STRUCTURE. SEE PLAN FOR CLARIFICATION. ORIENT STRUCTURES PARALLEL TO ADJACENT CURB, BUILDING OR WALL FACE, UNLESS NOTED OTHERWISE.
5. RIM ELEVATION IS PROVIDED AT COORDINATE, UNLESS NOTED OTHERWISE. CONTRACTOR TO ADJUST ELEVATION OF RIM AS REQUIRED TO MATCH SLOPE OF ADJACENT CURB LINE. REFER TO GRADING PLAN (C300 SERIES SHEETS).
6. ALL EXISTING UTILITIES INDICATED ON THE DRAWING ARE ACCORDING TO THE BEST INFORMATION AVAILABLE TO THE ENGINEER; HOWEVER, ALL UTILITIES ACTUALLY EXISTING MAY NOT BE SHOWN. UTILITIES DAMAGED THROUGH THE NEGLIGENCE OF THE CONTRACTOR TO OBTAIN THE LOCATION OF SAME SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT THEIR EXPENSE.
7. ALL BACKFILL SHALL BE COMPACTED TO 95 PERCENT STANDARD DENSITY AT OPTIMUM MOISTURE.
8. ALL EXCAVATION BENEATH THE STREETS AND PARKING LOTS FOR DRAINAGE PIPE LESS THAN 4'–0" IN DIAMETER SHALL BE BACKFILLED WITH AGGREGATE TO FOUR FEET (4') PAST BACK OF CURB IN ACCORDANCE WITH APWA SPECIFICATIONS SECTION 2102.4J.
9. RELOCATION OF ANY WATER LINE, SEWER LINE OR SERVICE LINE THEREOF REQUIRED FOR THE CONSTRUCTION OF THIS PROJECT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE AT THEIR EXPENSE.
10. IF PRECAST STORM STRUCTURES ARE TO BE USED ON THIS PROJECT, THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND HAVE THEM APPROVED BY THE ENGINEER PRIOR TO FABRICATION OF THE STRUCTURES. FAILURE TO DO SO SHALL BE CAUSE FOR REJECTION.
11. ALL HDPE PIPE JOINTS SHALL BE WATER TIGHT.

DETAILS SEE SHEET C690 AND C695

401	NON–SETBACK CURB INLET
402	JUNCTION BOX/GRATE INLET
403	YARD INLET
406	CONCRETE FLARED END SECTION WITH TOE WALL AND RIP RAP
433	DOWNSPOUT COLLECTOR
450	PVC DRAIN BASIN – CONTRACTOR TO ORDER INLETS ONE FOOT TALLER THAN PLAN ELEVATION SO INLET CAN BE FIELD ADJUSTED
460	INLINE DRAIN
470	TRENCH DRAIN
510	CLEANOUT

NOTES

61	STORM SEWER POINT OF CONNECTION AT BUILDING REFER TO MEP PLANS
62	PVC SDR–26 ROOF DRAIN. IF DRAIN IS LESS THAN 2' USE SCHEDULE 40 PVC FOR THE ENTIRE RUN. SLOPE TO DRAIN (1% MINIMUM FOR 6" AND LARGER ROOF DRAINS, 2% MINIMUM FOR 4" ROOF DRAINS)
63	PVC STORM LINE AND TEE FOR FOUNDATION DRAIN. COORDINATE WITH ARCHITECTURAL PLANS FOR SIZE.

Know what's below. Call before you dig.

PROJ. NO. C20_0496 DSN: DDW
CFN: 0496DPP.DWG DWN: NJN

DAVID D. WOOD
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KAW VALLEY ENGINEERING

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owner:
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301 NE Tudor Road
Lee's Summit, MO 64086

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4200 Pennsylvania Avenue
Kansas City, MO 64111
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structural engineer:
Bob D. Campbell & Company, Inc.
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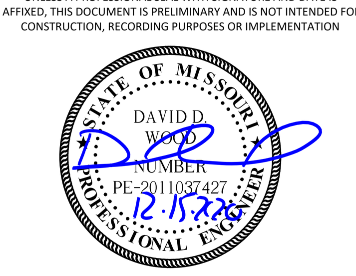


Kaw Valley Engineering, Inc.
Missouri Certificate of Authority: 000842
David Wood Date: 12/15/2020
Engineer License No. PE-2011037427

REVISIONS

Number	DESCRIPTION	DATE
1	ADDENDUM #1	11-19-2020
2	PER CITY COMMENTS AND COORDINATION WITH PACKAGE 2	12-15-2020

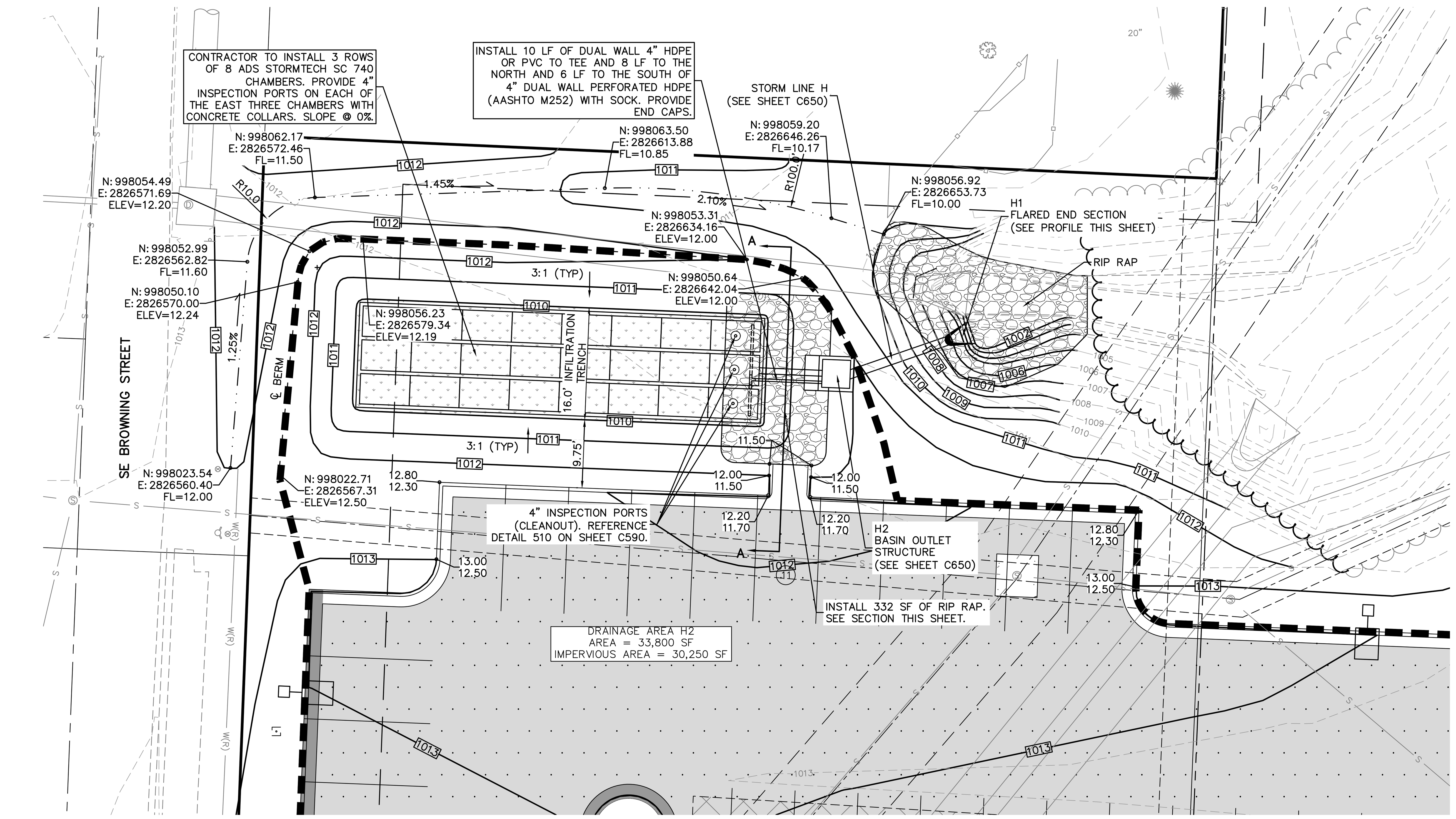
PROJECT NO: 0119-0100
DATE: November 20, 2020

PRIVATE STORM SEWER PLAN AND PROFILE

C650

Final Development Plan

PRINT DATE/TIME: 3/17/2020 4:49:21 PM

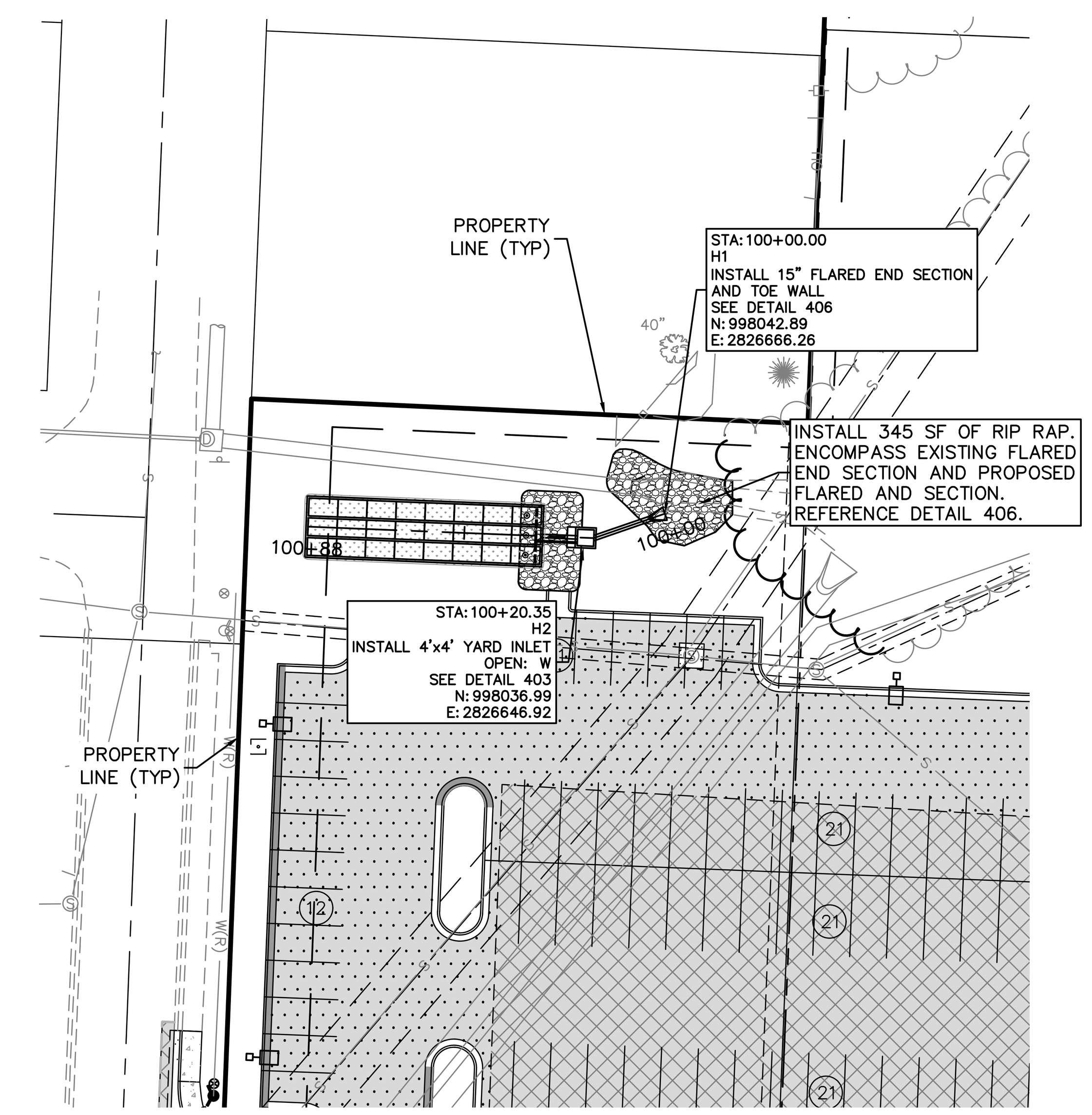


LEGEND:

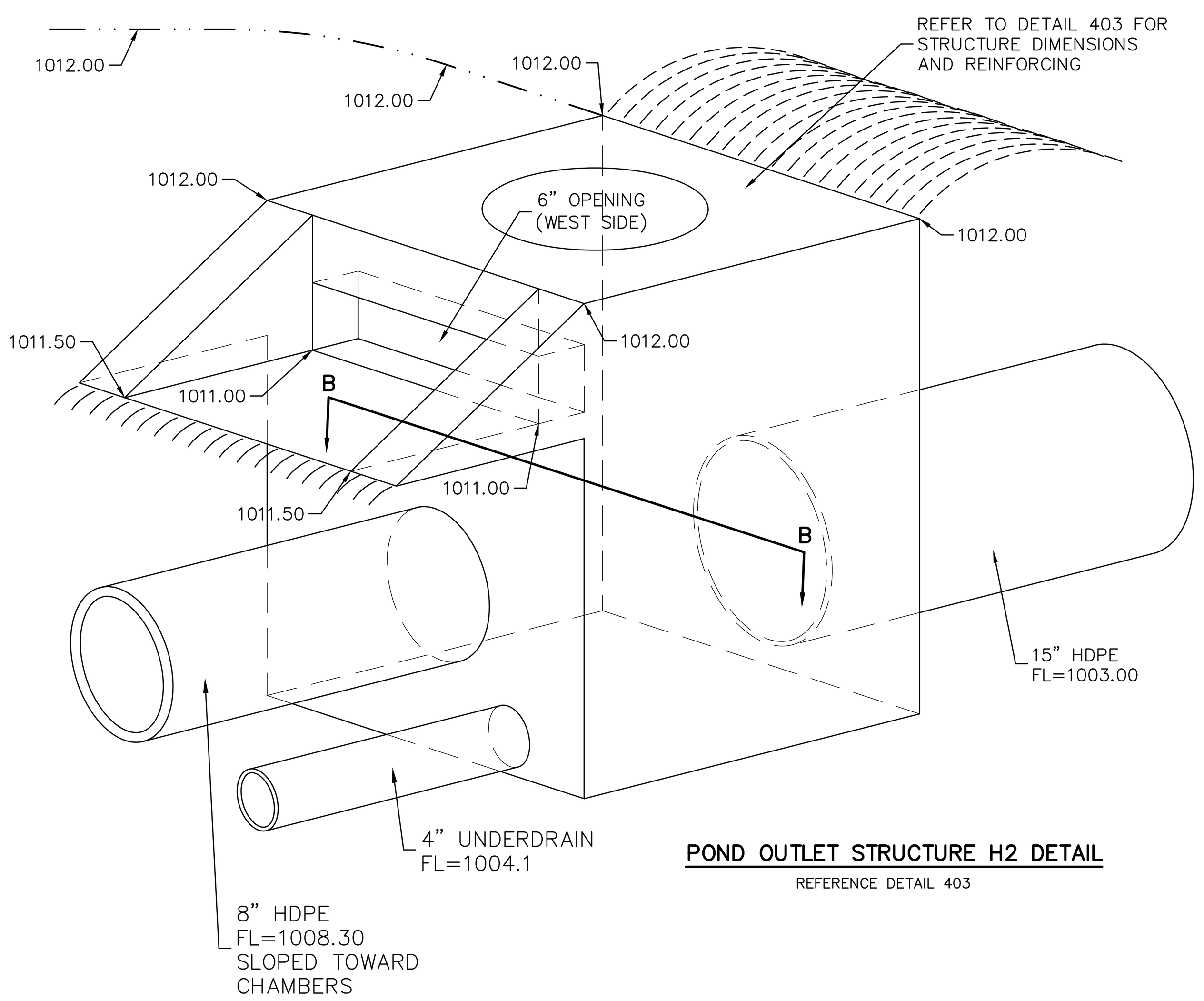
- MONUMENT FOUND ORIGIN UNKNOWN UNLESS OTHERWISE NOTED
- 1/2"x24" REBAR W/LS 214F CAP SET (UNLESS NOTED OTHERWISE)
- BENCHMARK
- CONTROL POINT
- BUSH
- CABLE TV PEDESTAL
- DOWN SPOUT
- DECIDUOUS TREE
- ELECTRICAL TRANSFORMER
- ELECTRIC METER
- FF FINISH FLOOR ELEVATION
- WOOD FENCE
- FIRE SPRINKLER VALVE
- UNDERGROUND GAS
- GATE POST
- GAS LINE RISER
- HDPE HIGH DENSITY POLYETHYLENE
- LIGHT POLE
- SPRINKLER CONTROL BOX
- STORM SEWER MANHOLE
- STREET/TRAFFIC SIGN
- UNDERGROUND ELECTRIC
- UNDERGROUND TELEVISION
- WALL MOUNTED LIGHT
- WALL MOUNTED SIAMESE FIRE CONNECTOR
- EXISTING GRADE 1' CONTOUR
- EXISTING GRADE 5' CONTOUR
- PROPOSED ASPHALT PAVEMENT
- PROPOSED CONCRETE PAVEMENT
- SWALE

0 5 10 20
SCALE: 1" = 10'

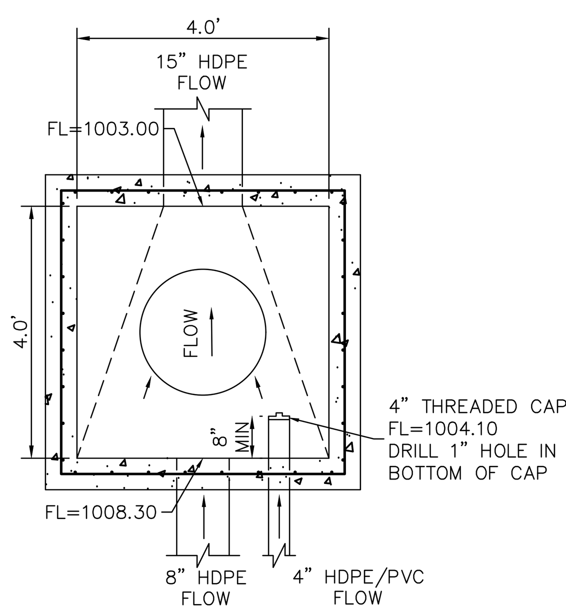
2
NOTE TO CONTRACTOR
STORM LINE H AND DETENTION BASIN MUST BE INSTALLED AND OPERATIONAL; PRIOR TO WORK COMMENCING ON NORTH PARKING LOT.PROTECT GRAVEL BLANKET ON TOP OF CHAMBER SYSTEM FOR DURATION OF CONSTRUCTION. LOAMY SAND SHALL BE INSTALLED AFTER CURBING, PAVING BASE COURSE, TOP SOIL AND EROSION CONTROL BLANKET INSTALLATION. REFER TO C400 SERIES DRAWINGS.



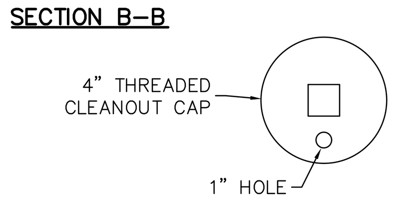
PRIVATE STORM SEWER LINE H PLAN



POND OUTLET STRUCTURE H2 DETAIL
REFERENCE DETAIL 403



SECTION B–B



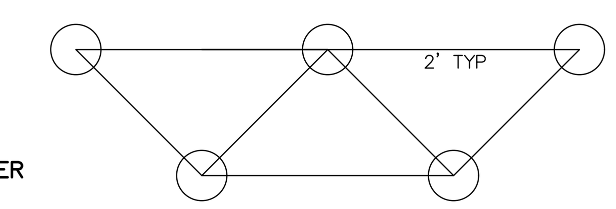
Pond Volume		
Elevation	Cum CF	ac-ft
1005.5	0	0
1006	141	0.003
1007	841	0.019
1008	1429	0.033
1009	1759	0.040
1010	1759	0.040
1011	2004	0.046
1012	3704	0.085

Detention Pond		
Elevation	Surface Area (sf)	Surface Area (ac)
1010	940	0.022
1011	1430	0.033
1011.5	1700	0.039
1011.7	1900	0.044

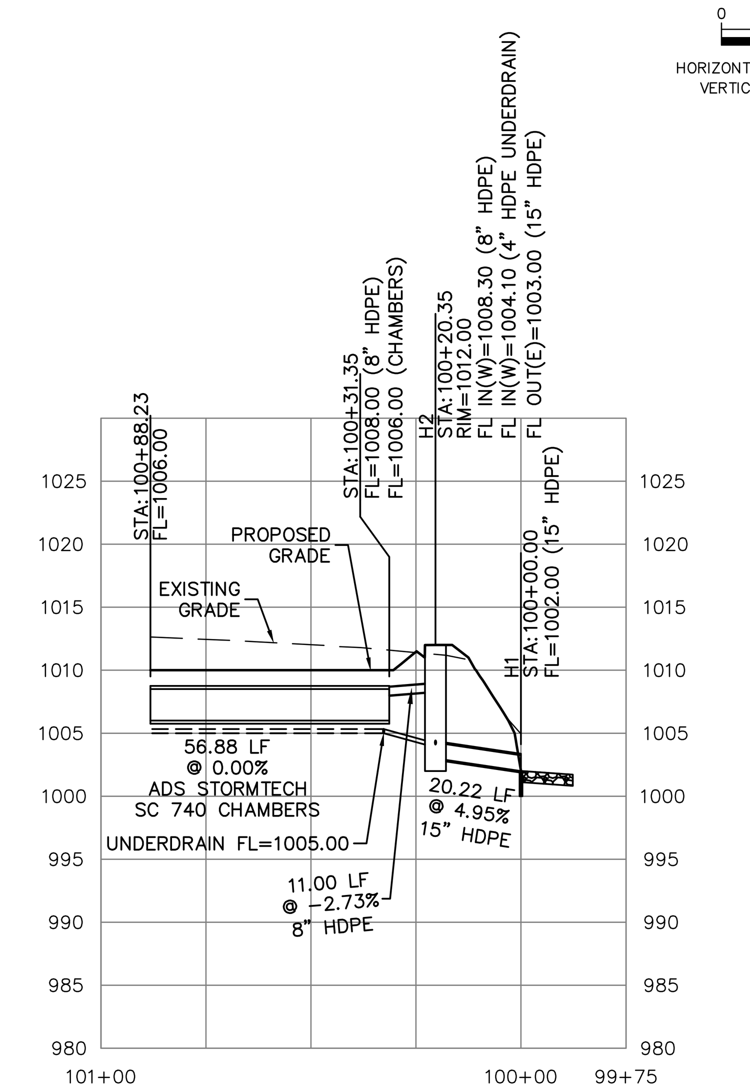
PLANTING SCHEDULE		
QTY.	BOTANICAL NAME	COMMON NAME
940 SF COVERAGE 2' O.C.	ANDROPOGON GERARDII PANICUM VIRGATUM SCHIZACHYRIUM SCOPARIUM	BIG BLUE STEM (CENTER) SWITCH GRASS (CENTER) LITTLE BLUE STEM (PERIMETER)

LOCAL SOURCE
APPLIED ECOLOGIST SOLUTIONS
1269 N 222 ROAD,
BALDWIN CITY, KS, 66006
PH: 785-594-2245

NATIVE GRASSES (PLUGS 24" ON CENTER AT ELEVATION 1010.50 AND BELOW)
NOTE: SLOPES SHALL BE STABILIZED PRIOR TO PLANTING PERMANENT VEGETATION. UPSTREAM EROSION CONTROL SHALL REMAIN IN PLACE UNTIL VEGETATION IN BASIN IS ESTABLISHED.

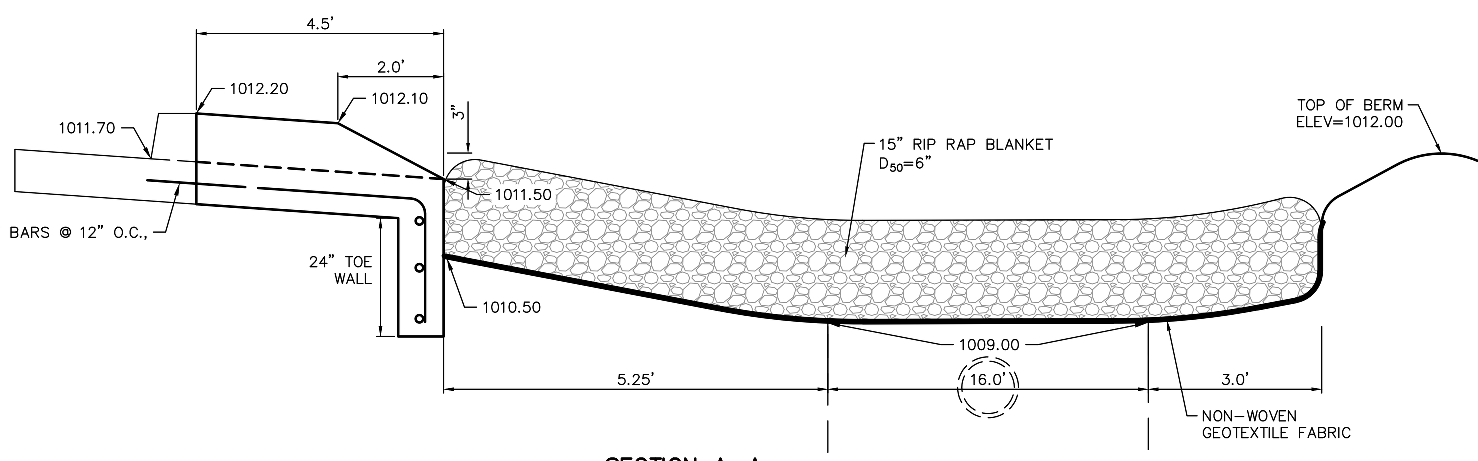


PLANTING DIAGRAM

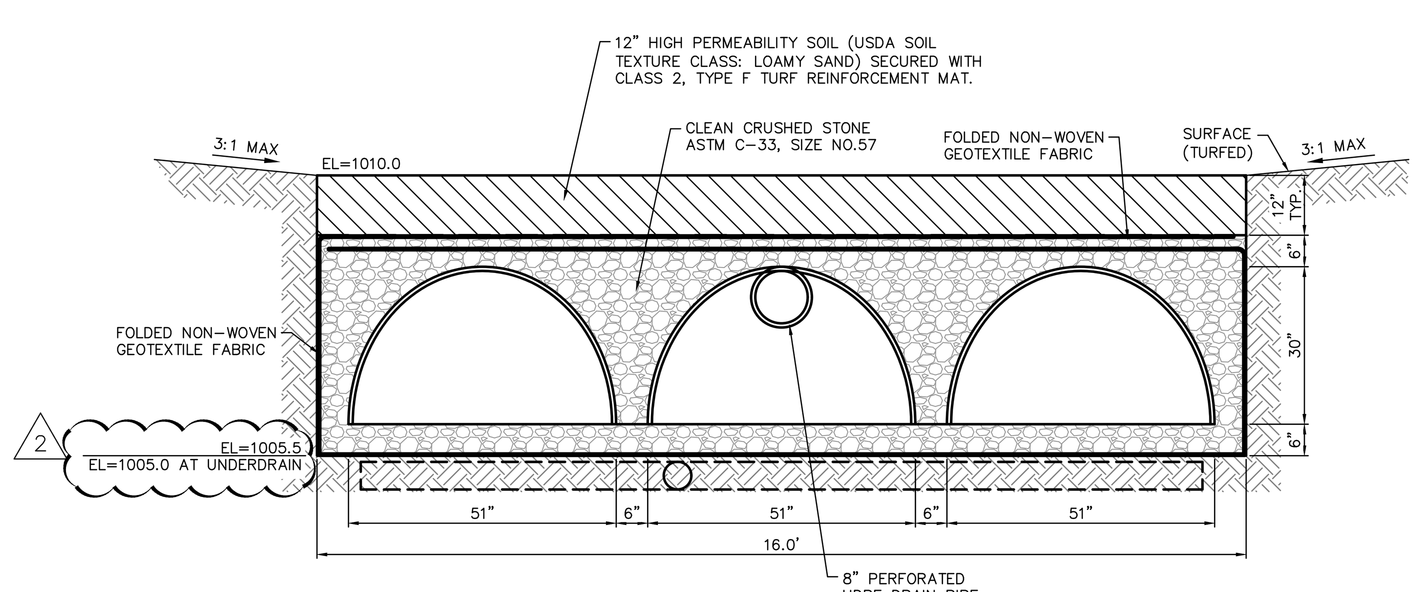


0 15 30 60
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 10'

PRIVATE STORM SEWER LINE H PROFILE



SECTION A–A



INFILTRATION TRENCH
MINIMUM SURFACE ELEVATION = 940 SF
VOLUMETRIC STORAGE FOR INFILTRATION = 1320 CF

NOTE:
SIDES AND BOTTOM OF INFILTRATION TRENCH MUST BE LINED WITH GEOTEXTILE FABRIC (FILTER FABRIC)

SAFETY NOTICE TO CONTRACTOR
IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

WARRANTY / DISCLAIMER
THE DESIGNS REPRESENTED IN THESE PLANS ARE IN ACCORDANCE WITH ESTABLISHED PRACTICES OF CIVIL ENGINEERING FOR THE DESIGN FUNCTIONS AND USES INTENDED BY THE OWNER AT THIS TIME. HOWEVER, NEITHER KAW VALLEY ENGINEERING, INC NOR ITS PERSONNEL CAN OR DO WARRANTY THESE DESIGNS OR PLANS AS CONSTRUCTED, EXCEPT IN THE SPECIFIC CASES WHERE KAW VALLEY ENGINEERING PERSONNEL INSPECT AND CONTROL THE PHYSICAL CONSTRUCTION ON A CONTEMPORARY BASIS AT THE SITE.

CAUTION – NOTICE TO CONTRACTOR
THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT LOCATIONS OF POSSIBLE CONFLICTS PRIOR TO ANY CONSTRUCTION.

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

PROJ. NO. C20_0496 DSN: DDW
CFN: 0496BMP.DWG DWN: NJN
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owner:
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STATE OF MISSOURI DAVID D. WOOD NUMBER PE-2011037427 PROFESSIONAL ENGINEER
12.15.2020

Kaw Valley Engineering, Inc.
Missouri Certificate of Authority: 000842
David Wood Date: 12/15/2020
Engineer License No. PE-2011037427

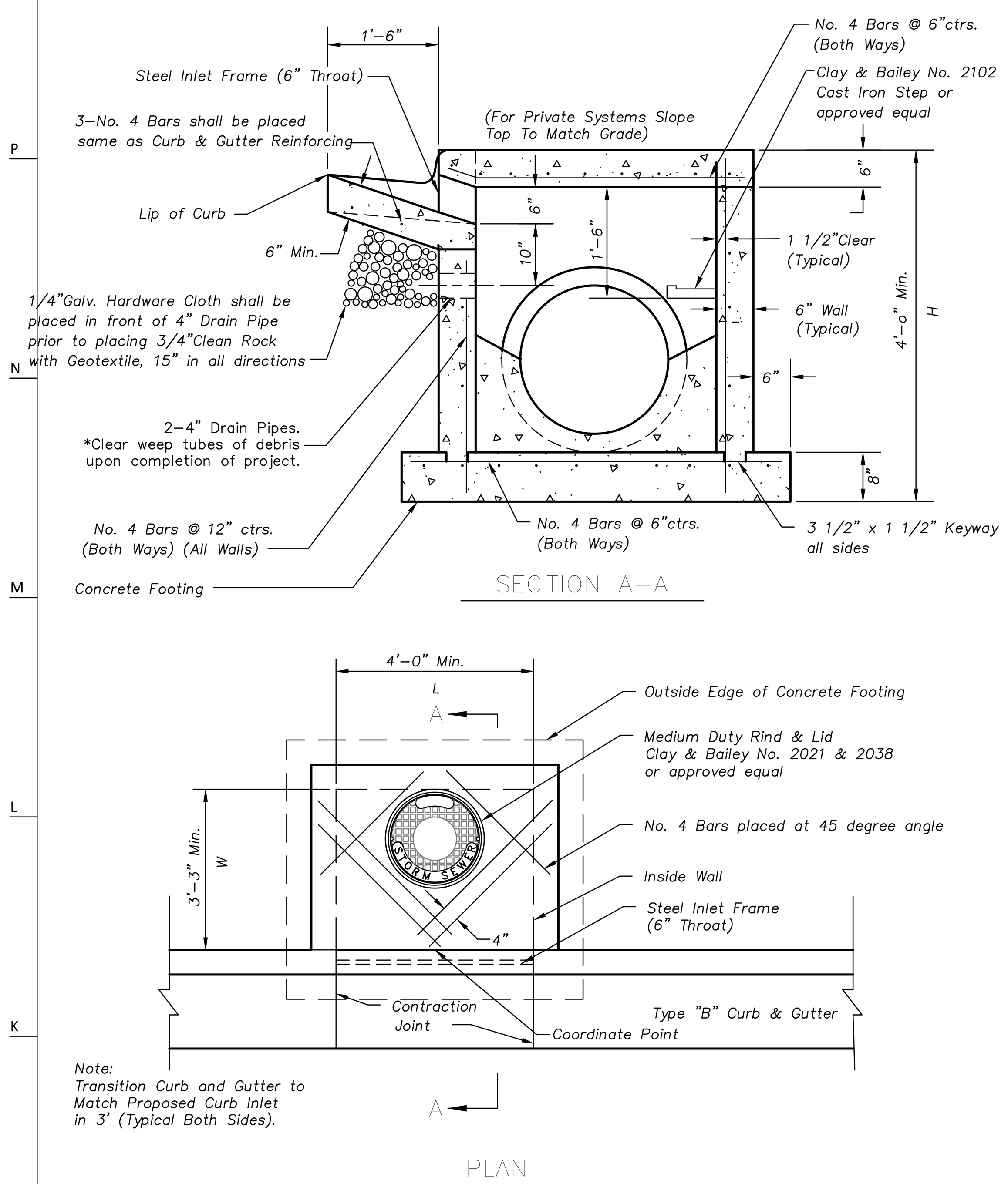
REVISIONS

Number	DESCRIPTION	DATE
1	ADDENDUM #1	11-19-2020
2	PER CITY COMMENTS AND COORDINATION WITH PACKAGE 2	12-15-2020

PROJECT NO: 0119-0100
DATE: November 20, 2020

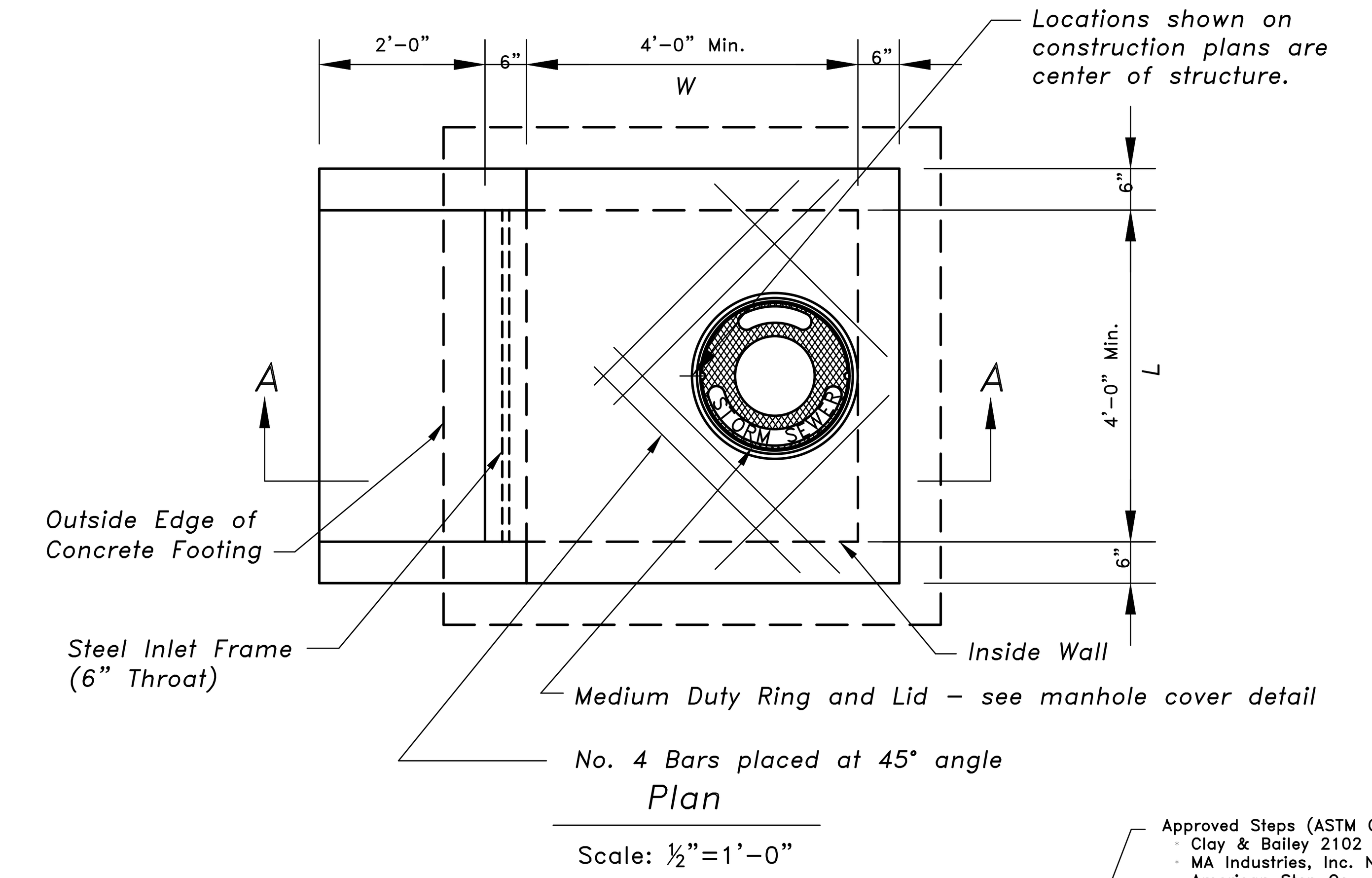
BMP PLAN
C660
Final Development Plan

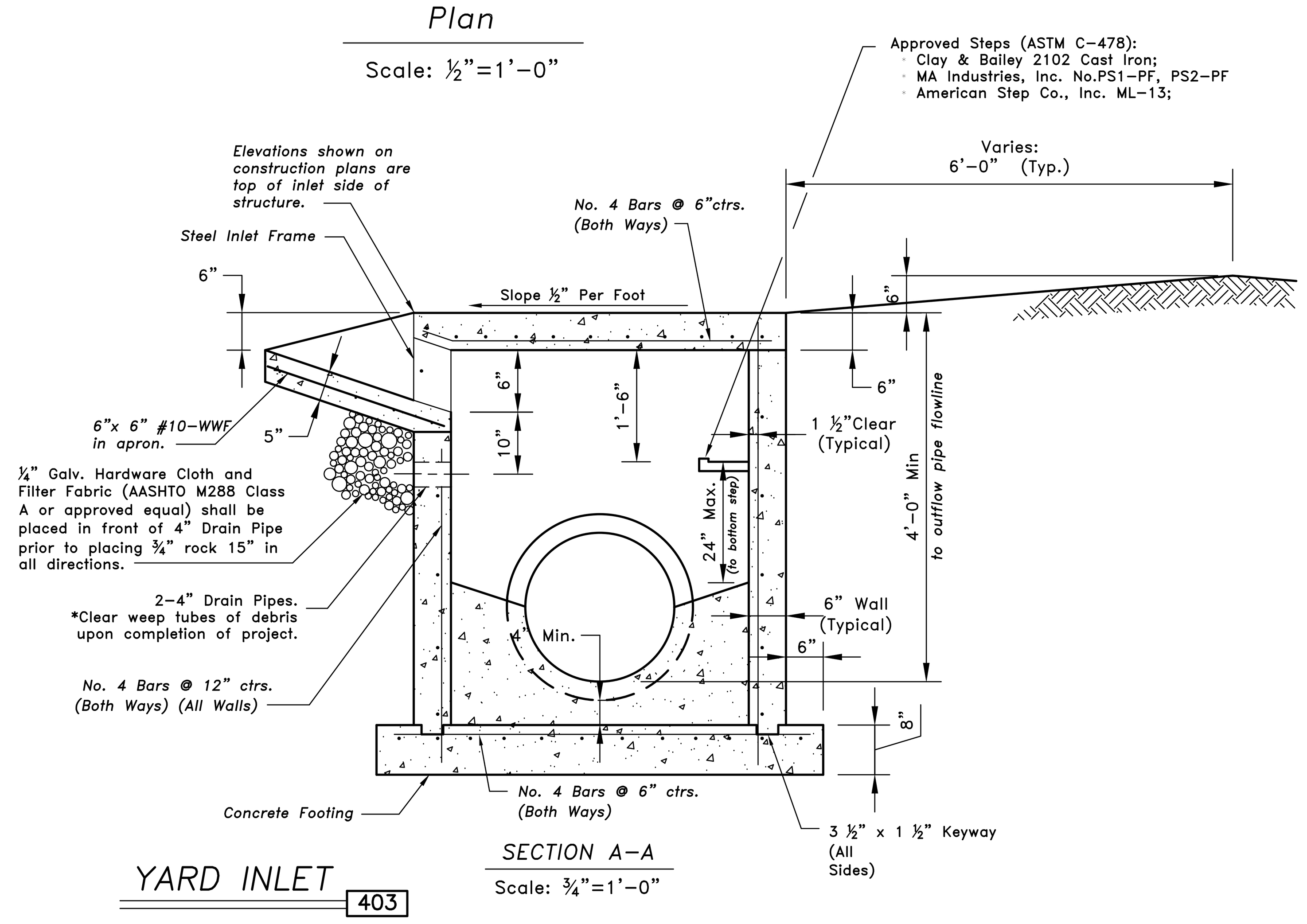
PRINT DATE/TIME: 3/17/2020 4:49:21 PM



NON-SETBACK CURB INLET 401

USE STEEL INLET FRAME WITH 6" THROAT
PARKING LOTS ONLY





YARD INLET 403

JUNCTION BOX YARD INLETS AND CURB INLET NOTES

GENERAL

1. ALL STORM SEWER STRUCTURES SHALL BE PRE-CAST OR POURED IN PLACE. IF PRE-CAST STRUCTURES ARE USED FOR PUBLICLY FINANCED, MAINTAINED OR ADMINISTERED CONSTRUCTION, THE TOPS SHALL BE POURED IN PLACE AND THE WALL STEEL SHALL BE LEFT EXPOSED TO A HEIGHT 2" BELOW THE FINISH TOP ELEVATION, OR AS DIRECTED BY THE CITY ENGINEER.
2. PRE-CAST SHOP DRAWINGS ARE TO BE APPROVED BY THE ENGINEER.
3. DO NOT SCALE THESE DRAWINGS FOR DIMENSIONS OR CLEARANCES. ANY QUESTIONS REGARDING DIMENSIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO CONSTRUCTION.
4. THE FIRST DIMENSION LISTED IN THE CONSTRUCTION NOTES IS THE "L" DIMENSION. THE SECOND DIMENSION IS THE "W" DIMENSION. THE CONCRETE THICKNESS AND REINFORCEMENT SHOWN IS FOR BOXES WITH ("L"+"H") AND ("W"+"H") LESS THEN OR EQUAL TO 20. FOR BOXES WITH EITHER OF THESE CALCULATIONS GREATER THAN 20, A SPECIAL DESIGN IS REQUIRED. PRECASTER SHALL PROVIDE DESIGN CALCULATIONS FOR DEEP STRUCTURES TO ENGINEER PRIOR TO CONSTRUCTING BOX.

CONCRETE

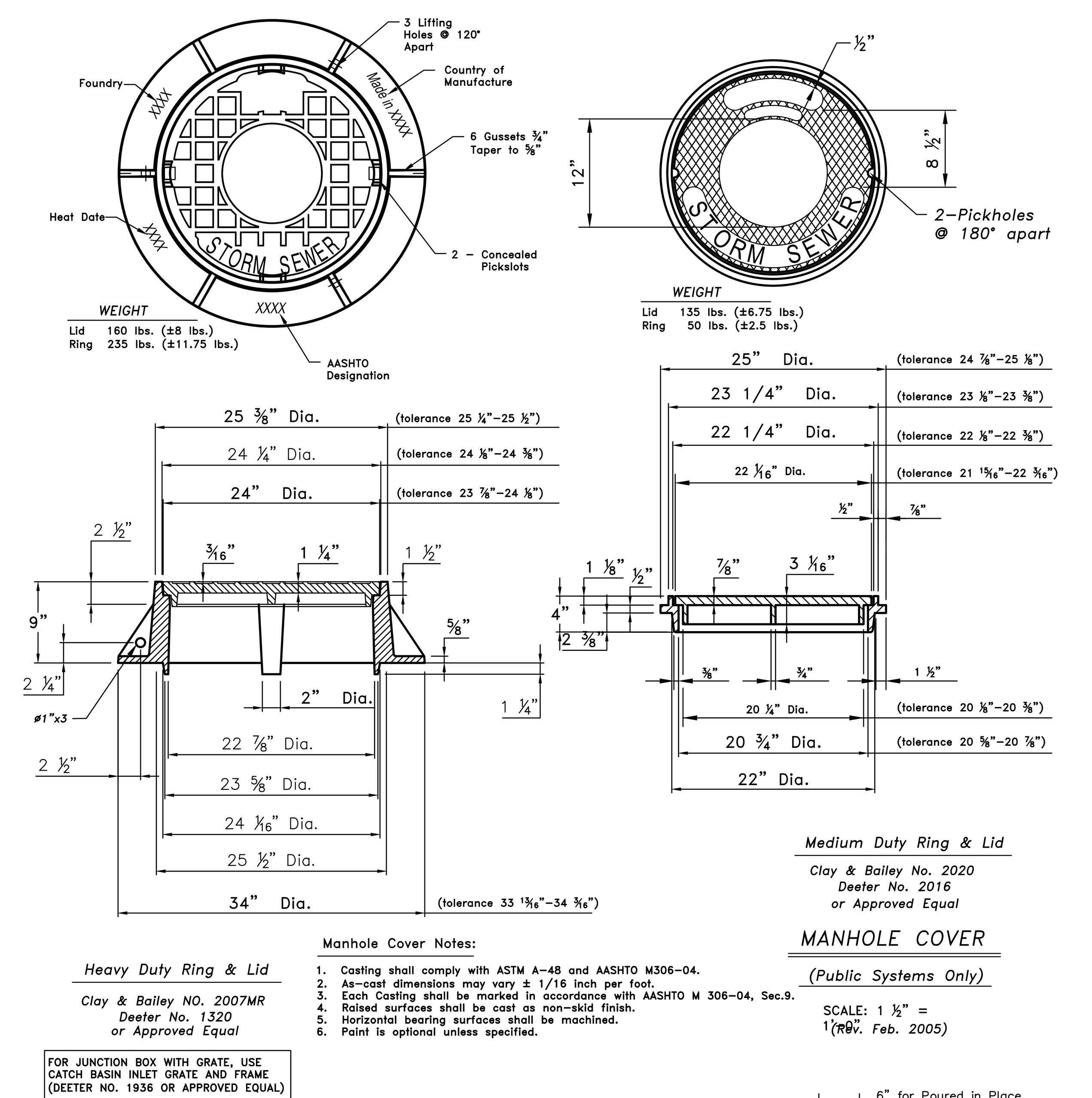
5. CONCRETE USED IN THIS WORK SHALL BE CLASS "A" CONCRETE (AE) THROUGHOUT, AND SHALL MEET THE REQUIREMENTS OF THE KANSAS CITY METROPOLITAN CHAPTER OF THE APWA TECHNICAL SPECIFICATIONS.
6. CONCRETE CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF STANDARD SPECIFICATIONS FOR MCIB, LATEST EDITION, EXCEPT AS MODIFIED IN THE APWA TECHNICAL SPECIFICATIONS.
7. INLET FLOORS SHALL BE SHAPED WITH NON-REINFORCED CONCRETE INVERTS TO PROVIDE SMOOTH FLOW.
8. BEVEL ALL EXPOSED EDGES WITH ¾" TRIANGULAR MOLDING.
9. 8" SOLID CONCRETE BLOCK OR BRICK MAY BE USED IN WALLS IN LIEU OF POURED CONCRETE WHERE NEITHER "H"+"L" NOR "H"+"W" (IN FEET) EXCEED FOURTEEN. BLOCK OR BRICK MAY BE USED IN ANY BOX WHERE "H" IS 5' OR LESS.
10. ALL CRUSHED STONE USED AS AGGREGATE FOR CONCRETE CONSTRUCTION SHALL BE OBTAINED FROM QUARRIES AND BEDS DESIGNATED BY THE MISSOURI DEPARTMENT OF TRANSPORTATION AS MEETING DURABILITY REQUIREMENTS OF KANSAS CITY METROPOLITAN CHAPTER OF THE APWA TECHNICAL SPECIFICATIONS.

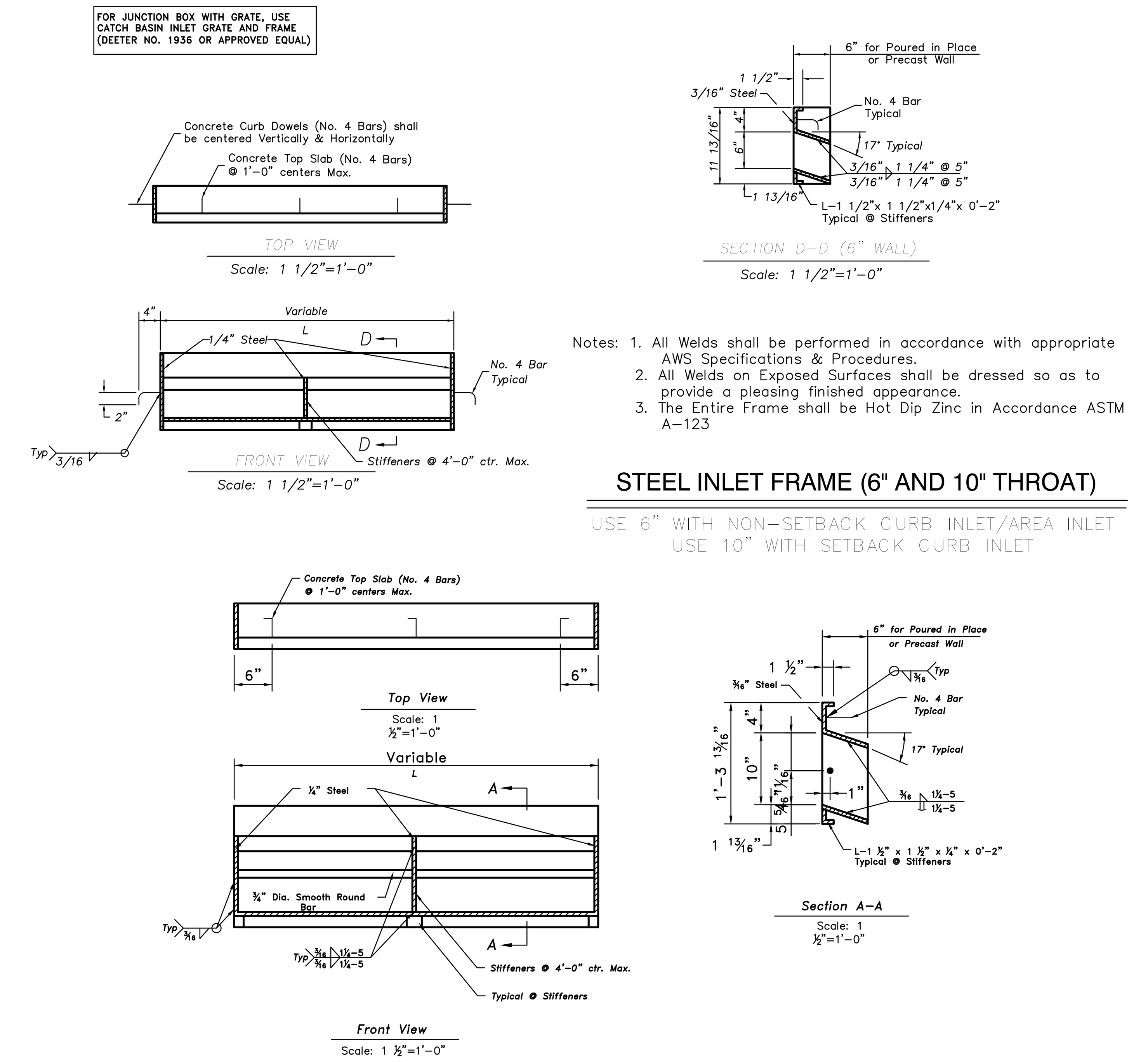
REINFORCING STEEL

11. REINFORCING STEEL SHALL BE NEW BILLET, MINIMUM GRADE 60 AS PER ASTM A615, AND SHALL BE BENT COLD.
12. ALL DIMENSIONS RELATIVE TO REINFORCING STEEL ARE TO CENTERLINE OF BARS. 2" CLEARANCE SHALL BE PROVIDED THROUGHOUT UNLESS NOTED OTHERWISE. TOLERANCE OF +/- ⅛" SHALL BE PERMITTED.
13. ALL LAP SPLICES NOT SHOWN SHALL BE A MINIMUM OF 40 BAR DIAMETERS IN LENGTH.
14. ALL REINFORCING STEEL SHALL BE SUPPORTED ON FABRICATED STEEL BAR SUPPORTS @ 3'-0" MAXIMUM SPACING.
15. ALL DOWELS SHALL BE ACCURATELY PLACED AND SECURELY TIED IN PLACE PRIOR TO PLACEMENT OF BOTTOM SLAB CONCRETE. STICKING OF DOWELS INTO FRESH OR PARTIALLY HARDENED CONCRETE WILL NOT BE ACCEPTABLE.

CONSTRUCTION

16. THE BOTTOM SLAB SHALL BE AT LEAST 24 HOURS OLD BEFORE PLACING SIDEWALL CONCRETE. ALL SIDEWALL FORMS SHALL REMAIN IN PLACE A MINIMUM OF 24 HOURS AFTER SIDEWALLS ARE POURED BEFORE REMOVAL, AND AFTER REMOVAL SHALL BE IMMEDIATELY TREATED WITH MEMBRANE CURING COMPOUND.
17. PIPE CONNECTIONS TO PRE-CAST STRUCTURES SHALL HAVE A MINIMUM OF 6" OF CONCRETE AROUND THE ENTIRE PIPE WITHIN 2' OF THE STRUCTURE.
18. MATERIAL SELECTION AND COMPACTION REQUIREMENTS FOR BACKFILL AROUND STRUCTURES SHALL BE AS SPECIFIED IN THE KANSAS CITY METROPOLITAN CHAPTER OF THE APWA TECHNICAL SPECIFICATIONS.

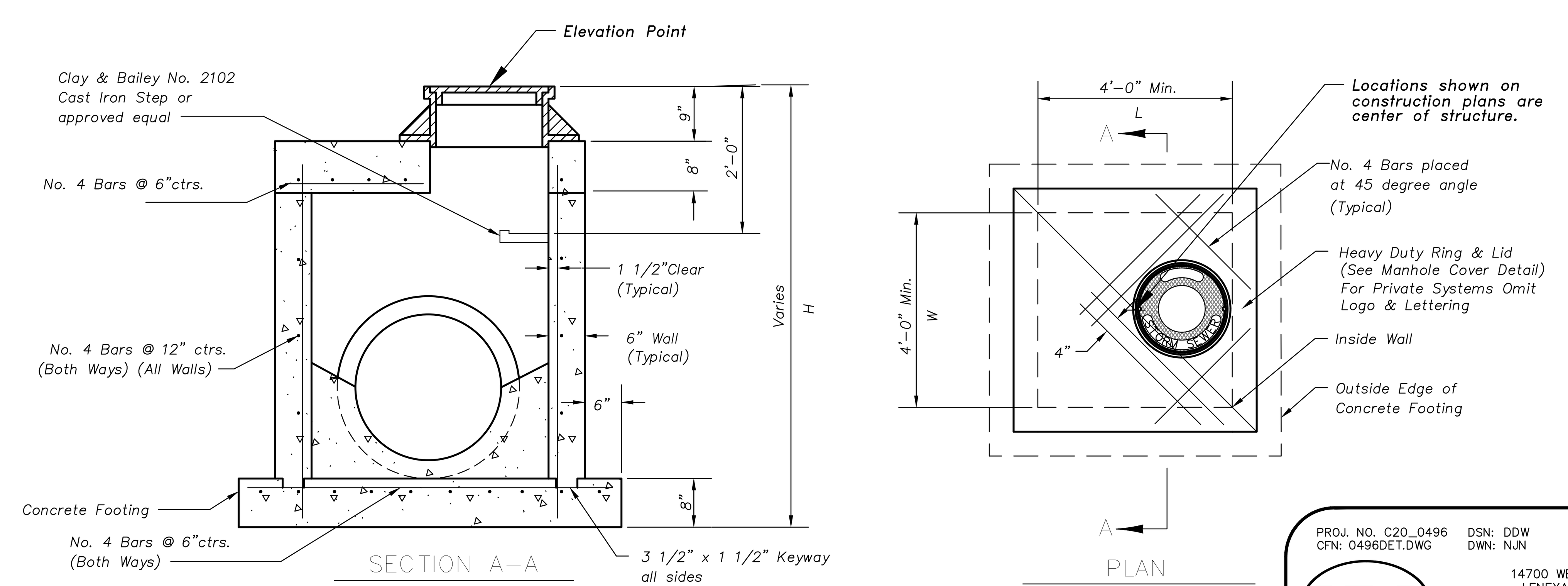




Notes:
1. All Welds shall be performed in accordance with appropriate AWS Specifications & Procedures.
2. All Welds on Exposed Surfaces shall be dressed so as to provide a pleasing finished appearance.
3. The Entire Frame shall be Hot Dip Zinc in Accordance ASTM A-123

STEEL INLET FRAME (6" AND 10" THROAT)

USE 6" WITH NON-SETBACK CURB INLET/AREA INLET
USE 10" WITH SETBACK CURB INLET



JUNCTION BOX/GRATE INLET 402

FOR JUNCTION BOX WITH GRATE, USE CATCH BASIN INLET GRATE AND FRAME (DEETER NO. 1936 OR APPROVED EQUAL)

PROJ. NO. C20_0496 DSN: DDW
CFN: 0496DET.DWG DWN: NJN

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DAVID D. WOOD
NUMBER PE-2011037427
PROFESSIONAL ENGINEER
12-15-20

Kaw Valley Engineering, Inc.
Missouri Certificate of Authority: 000842
David Wood Date: 12/15/2020
Engineer License No. PE-2011037427

REVISIONS

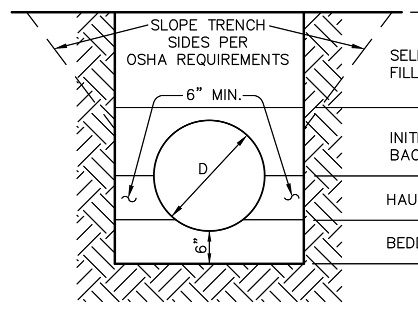
Number	DESCRIPTION	DATE
1	ADDENDUM #1	11-19-2020
2	PER CITY COMMENTS AND COORDINATION WITH PACKAGE 2	12-15-2020

PROJECT NO: 0119-0100
DATE: November 20, 2020

STORM SEWER DETAILS

C690

Final Development Plan



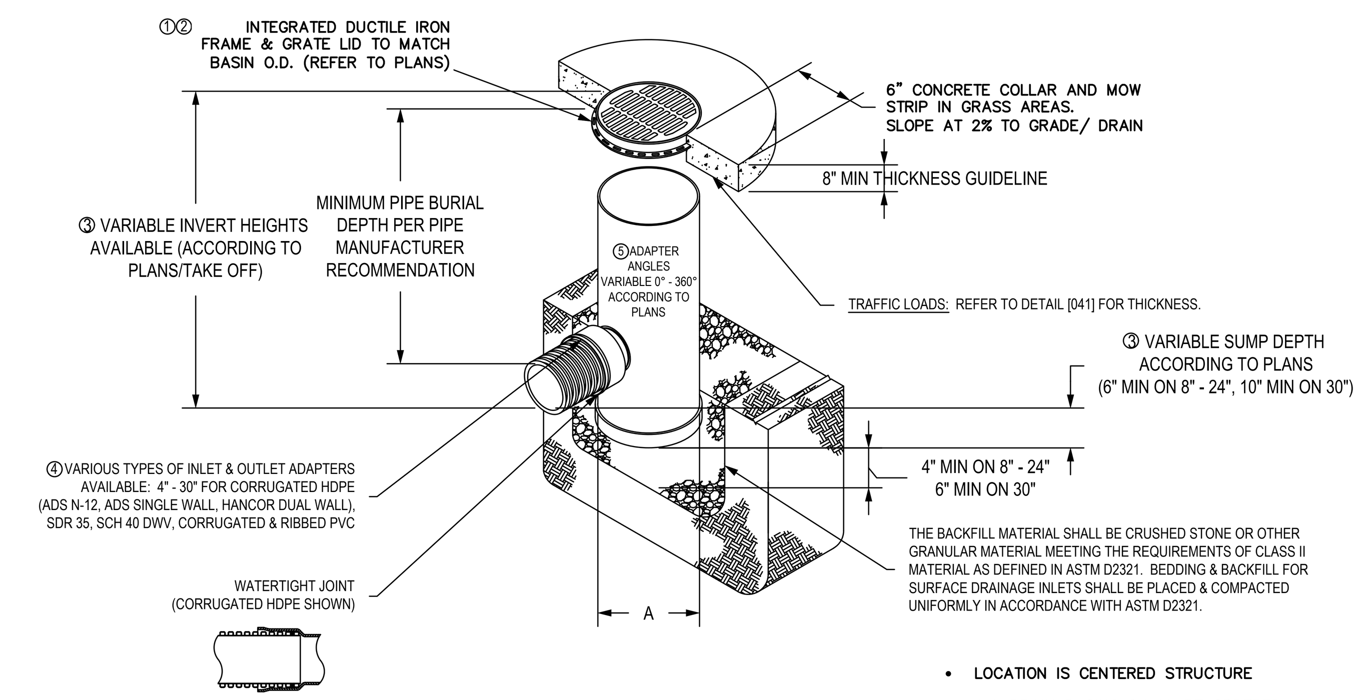
FLEXIBLE PIPE: INCLUDES CORRUGATED METAL PIPE. CORRUGATED POLYETHELENE PIPE AND/OR POLYVINYL CHLORIDE PIPE.

1. BEDDING SHALL BE COMPACTED CRUSHED STONE AND SHALL BE SHAPED TO THE BOTTOM OF THE PIPE.
2. HAUNCHING AND INITIAL BACKFILL MATERIAL SHALL BE CLASS I OR II (REF. ASTM D2321) GRANULAR MATERIAL AND SHALL BE COMPACTED TO 95% STANDARD PROCTOR.

TRENCH AND BEDDING DETAILS

REFER TO KANSAS CITY METROPOLITAN CHAPTER OF APWA SPECIFICATIONS SECTION 2102.4

PVC DRAIN BASIN 450



THE BACKFILL MATERIAL SHALL BE CRUSHED STONE OR OTHER GRANULAR MATERIAL MEETING THE REQUIREMENTS OF CLASS II MATERIAL AS DEFINED IN ASTM D2321. BEDDING & BACKFILL FOR SURFACE DRAINAGE INLETS SHALL BE PLACED & COMPACTED UNIFORMLY IN ACCORDANCE WITH ASTM D2321.

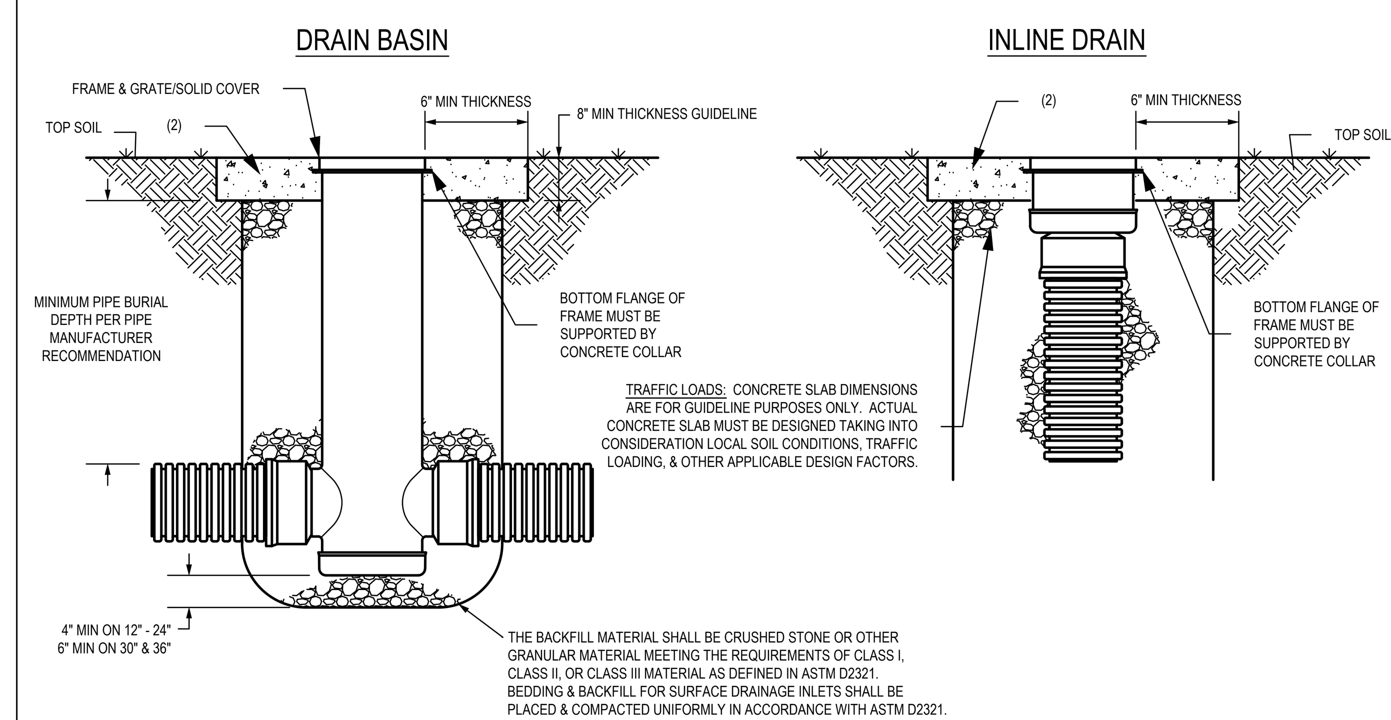
- LOCATION IS CENTERED STRUCTURE
- ALL DRAIN BASINS SHALL BE ORDERED A MINIMUM 1' TALLER THAN PLAN ELEVATION AND SHALL BE FIELD ADJUSTED TO GRADE UPON COMPLETED OF CONSTRUCTION

①- 8" - 30" GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05, WITH THE EXCEPTION OF THE 8" - 15" BRONZE GRATES
②- 12" - 30" FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
③- DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065
④- DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
⑤- ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012, 7001-110-013, & 7001-110-014.
6 - GRATES SHALL MEET H-10 LOAD RATING FOR 12" - 24" PED
7 - GRATES SHALL MEET H-20 LOAD RATING FOR 30" PED & 12" - 30" STD & SOLID
8 - ALL BRONZE GRATES, DROP IN GRATES, & 8" & 10" PED/STD GRATES & SOLID COVERS ARE RATED FOR LIGHT DUTY APPLICATIONS ONLY
9 - DOME GRATES HAVE NO LOAD RATING

NYLOPLAST BASIN IS THE BASIS OF DESIGN

DRAWN BY EBC	MATERIAL	Nyloplast	3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com
DATE 1-23-06			
APPD BY CJA	PROJECT NO./NAME	TITLE DRAIN BASIN WITH STANDARD GRATE QUICK SPEC INSTALLATION DETAIL	
DATE 1-23-06			
DWG SIZE A	SCALE 1:40 SHEET 1 OF 1	DWG NO. 7001-110-144	REV D

DRAIN BASIN / INLINE DRAIN

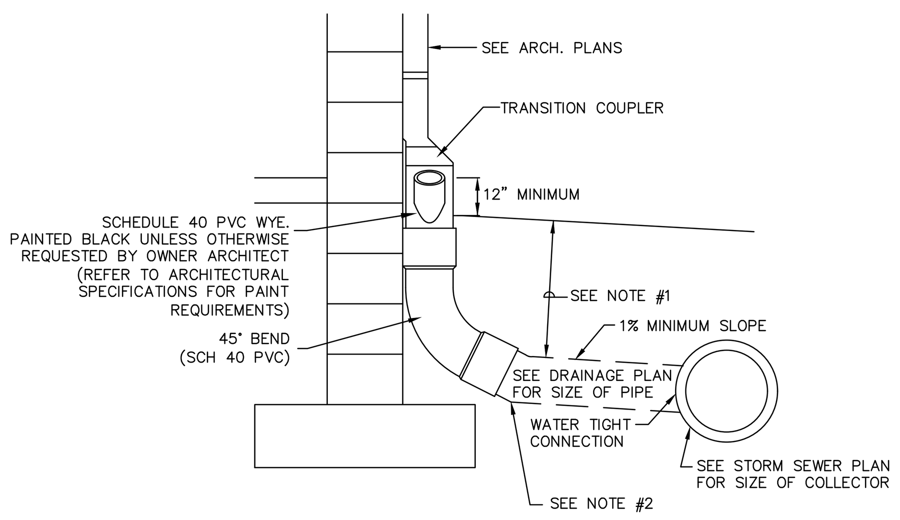


THE BACKFILL MATERIAL SHALL BE CRUSHED STONE OR OTHER GRANULAR MATERIAL MEETING THE REQUIREMENTS OF CLASS I, CLASS II, OR CLASS III MATERIAL AS DEFINED IN ASTM D2321. BEDDING & BACKFILL FOR SURFACE DRAINAGE INLETS SHALL BE PLACED & COMPACTED UNIFORMLY IN ACCORDANCE WITH ASTM D2321.

460

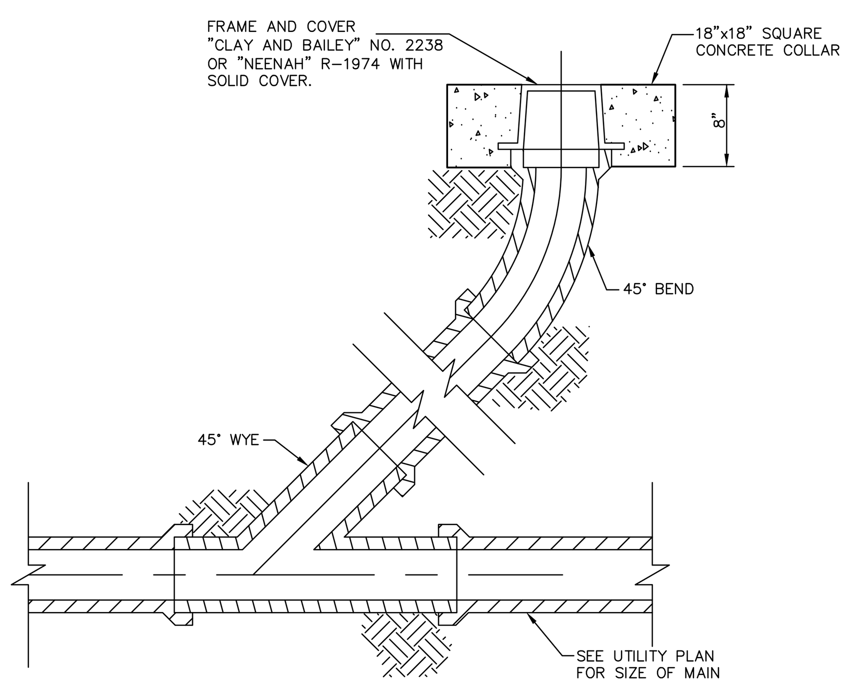
1. GRATES/SOLID COVERS SHALL MEET H-20 LOAD RATING FOR 30" PEDESTRIAN & 12" - 30" STANDARD & SOLID
2. DESIGN SHOULD ACCOUNT FOR ROOT DEPTH TO ALLOW TURF TO GROW AND PREVENT EROSION AROUND GRATE SO THAT HAZARDS DO NOT FORM.

DRAWN BY EBC	MATERIAL	Nyloplast	3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com
DATE 01-05-09			
REVISED BY NMH	PROJECT NO./NAME	TITLE DRAIN BASIN & INLINE DRAIN TURF TRAFFIC INSTALLATION	
DATE 06-12-18			
DWG SIZE A	SCALE 1:25 SHEET 1 OF 1	DWG NO. 7001-110-340	REV G

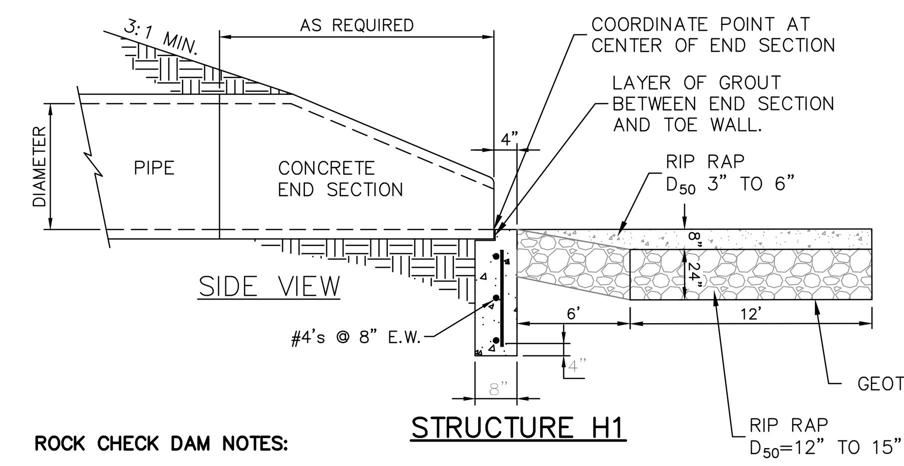


NOTES:
1) FOR ALL DEPTHS OF COVER LESS THAN TWO (2) FEET, PIPE MUST BE SCHEDULE 40 PVC. FOR DEPTHS OF COVER GREATER THAN TWO (2) FEET, FLEXIBLE PIPE MAY BE USED. REFER TO SPECIFICATIONS FOR ALLOWABLE PIPE TYPES.
2) A WATERTIGHT CONNECTION SHALL BE MAINTAINED WITH ANY TRANSITION FROM SCHEDULE 40 PVC PIPE TO ANY OTHER PIPE TYPE.

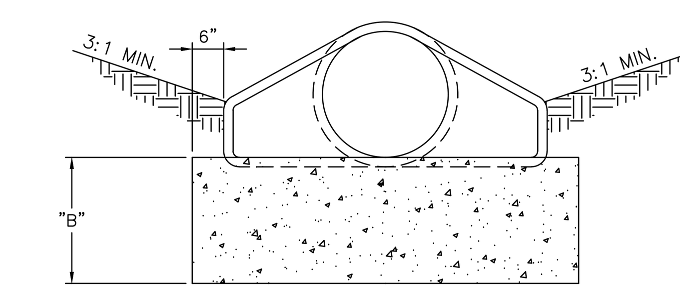
DOWNSPOUT COLLECTOR 433



CLEAN-OUT 510



STRUCTURE H1



FRONT VIEW

TABLE

TOE WALL DEPTH	
PIPE DIAMETER	"B"
12" – 21"	24"
24" – 48"	30"
54" – 66"	36"

ROCK CHECK DAM NOTES:

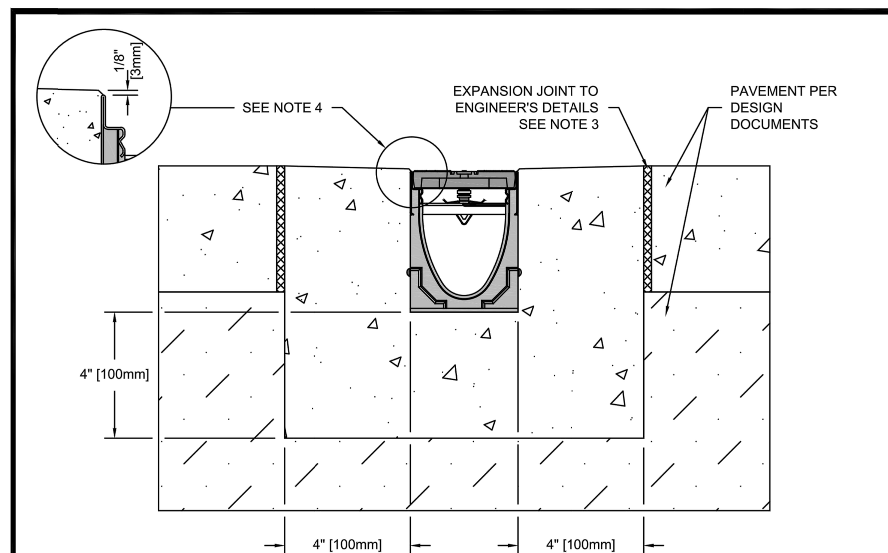
A) CONSTRUCTION SPECIFICATIONS & INSTALLATION:
1. THE MAXIMUM HEIGHT OF THE DAM SHALL BE 1 FEET. THE CENTER OF THE CHECK DAM IS AT THE SAME ELEVATION OF THE OUTER EDGES.
2. FOR ADDED STABILITY, THE BASE OF THE CHECK DAM SHALL BE KEYED INTO THE SOIL APPROXIMATELY 6 INCHES.
3. STONE SHOULD BE PLACED ACCORDING TO THE CONFIGURATION ABOVE. HAND OR MECHANICAL PLACEMENT WILL BE NECESSARY TO ACHIEVE COMPLETE COVERAGE OF THE DITCH OR SWALE AND TO INSURE THAT THE CENTER OF THE DAM IS LOWER THEN THE EDGES.
4. GEOTEXTILE MAY BE USED UNDER THE STONE TO PROVIDE A STABLE FOUNDATION AND TO FACILITATE REMOVAL OF THE STONE.

B) INSPECTION AND MAINTENANCE:
1. CHECK DAMS SHOULD BE CHECKED FOR SEDIMENT ACCUMULATION AFTER EACH STORM EVENT OF 1/2" OR GREATER. SEDIMENT SHOULD BE REMOVED WHEN IT REACHES 1/2 OF THE ORIGINAL HEIGHT OF THE DAM.
2. REGULAR INSPECTIONS SHOULD BE MADE TO ENSURE THAT THE CENTER OF THE DAM IS LOWER THEN THE EDGES. EROSION CAUSED BY HIGH FLOWS AROUND EDGES OF THE DAM SHOULD BE CORRECTED.

NOTES:
1. THE DEPTH OF THE TOE WALL SHALL BE PER TABLE. IF BEDROCK IS ENCOUNTERED A MINIMUM OF 12" INTO BEDROCK IS REQUIRED.
2. ALL CONCRETE SHALL MEET APWA 2600 SPECIFICATIONS.

CONCRETE FLARED END SECTION W/ TOE WALL AND RIP RAP STILLING BASIN 406

2



NOTES:
1. IT IS NECESSARY TO ENSURE MINIMUM DIMENSIONS SHOWN ARE SUITABLE FOR EXISTING GROUND CONDITIONS. *ENGINEERING ADVICE MAY BE REQUIRED.*
2. MINIMUM CONCRETE STRENGTH OF 4,000 PSI IS RECOMMENDED. CONCRETE SHOULD BE VIBRATED TO ELIMINATE AIR POCKETS.
3. EXPANSION AND CONTRACTION CONTROL JOINTS AND REINFORCEMENT ARE RECOMMENDED TO PROTECT CHANNEL AND CONCRETE SURROUND. *ENGINEERING ADVICE MAY BE REQUIRED.*
4. THE FINISHED LEVEL OF THE CONCRETE SURROUND MUST BE APPROX. 1/8" [3mm] ABOVE THE TOP OF THE CHANNEL EDGE.
5. CONCRETE BASE THICKNESS SHOULD MATCH SLAB THICKNESS. ENGINEERING ADVICE MAY BE REQUIRED TO DETERMINE PROPER LOAD CLASS.
6. REFER TO ACO'S LATEST INSTALLATION INSTRUCTIONS FOR FURTHER DETAILS.

SPECIFICATION CLAUSE

K100 KLASSIKDRAIN - LOAD CLASS B

GENERAL
THE SURFACE DRAINAGE SYSTEM SHALL BE POLYMER CONCRETE K100 CHANNEL SYSTEM WITH GALVANIZED STEEL EDGE RAILS AS MANUFACTURED BY ACO POLYMER PRODUCTS, INC.

MATERIALS
CHANNELS SHALL BE MANUFACTURED FROM POLYESTER RESIN POLYMER CONCRETE WITH AN INTEGRALLY CAST-IN GALVANIZED STEEL EDGE RAIL. MINIMUM PROPERTIES OF POLYMER CONCRETE WILL BE AS FOLLOWS:

COMPRESSIVE STRENGTH:	14,000 PSI
FLEXURAL STRENGTH:	4,000 PSI
TENSILE STRENGTH:	1,500 PSI
WATER ABSORPTION:	0.07%
FROST PROOF	YES
DILUTE ACID AND ALKALI RESISTANT	YES
B117 SALT SPRAY TEST COMPLIANT	YES

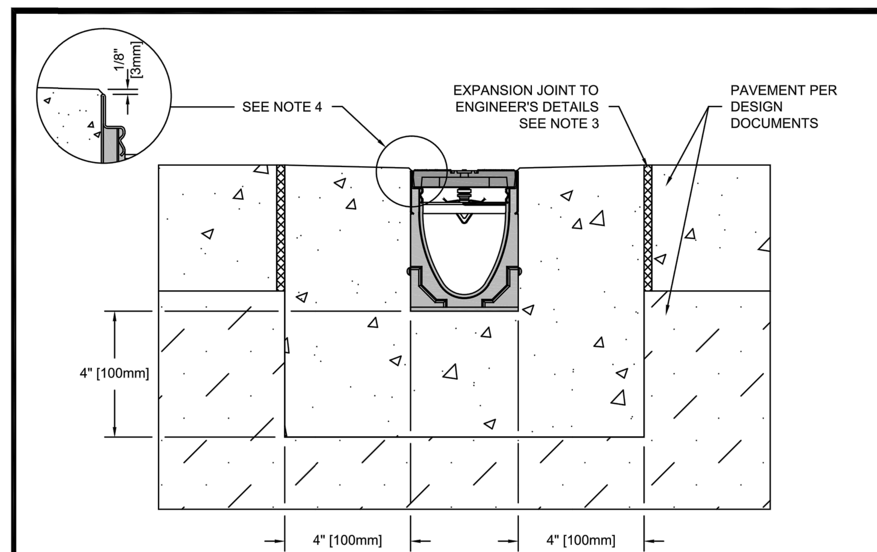
THE SYSTEM SHALL BE 4" (100mm) NOMINAL INTERNAL WIDTH WITH A 5.1" (130mm) OVERALL WIDTH AND A BUILT-IN SLOPE OF 0.5%. CHANNEL INVERT SHALL HAVE DEVELOPED "V" SHAPE. ALL CHANNELS SHALL BE INTERLOCKING WITH A MALE/FEMALE JOINT.

THE COMPLETE DRAINAGE SYSTEM SHALL BE BY ACO POLYMER PRODUCTS, INC. ANY DEVIATION OR PARTIAL SYSTEM DESIGN AND/OR IMPROPER INSTALLATION WILL VOID ANY AND ALL WARRANTIES PROVIDED BY ACO POLYMER PRODUCTS, INC.

CHANNEL SHALL WITHSTAND LOADING TO PROPER LOAD CLASS AS OUTLINED BY EN 1433. GRATE TYPE SHALL BE APPROPRIATE TO MEET THE SYSTEM LOAD CLASS SPECIFIED AND INTENDED APPLICATION. GRATES SHALL BE SECURED USING 'QUICKLOK' BOLTLESS LOCKING SYSTEM. CHANNEL AND GRATE SHALL BE CERTIFIED TO MEET THE SPECIFIED EN 1433 LOAD CLASS. THE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.

K1-B-ECP	K100 - KLASSIKDRAIN - LOAD CLASS: B Exposed Concrete Pavement	ACO Polymer Products, Inc.		
ACO		825 W. Beechcraft St Casa Grande, AZ 85122 Tel: 520-421-9988 Fax: 520-421-9899	9470 Pinecone Dr. Mentor, OH 44060 Tel: 440-639-7230 Fax: 440-639-7235	4211 Pleasant Rd. Fort Mill, SC 29708 Tel: 440-639-7230 Fax: 803-802-1063
DATE: 08/24/15	INSTALLATION DRAWING - ACO DRAIN			

Arizona Tel: 888-490-9552 e-mail: sales@acousa.com Ohio Tel: 800-543-4764 www.acousa.com South Carolina Tel: 800-543-4764



NOTES:
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5. CONCRETE BASE THICKNESS SHOULD MATCH SLAB THICKNESS. ENGINEERING ADVICE MAY BE REQUIRED TO DETERMINE PROPER LOAD CLASS.
6. REFER TO ACO'S LATEST INSTALLATION INSTRUCTIONS FOR FURTHER DETAILS.

SPECIFICATION CLAUSE

KS100 KLASSIKDRAIN - LOAD CLASS B

GENERAL
THE SURFACE DRAINAGE SYSTEM SHALL BE POLYMER CONCRETE KS100 CHANNEL SYSTEM WITH STAINLESS STEEL EDGE RAILS AS MANUFACTURED BY ACO POLYMER PRODUCTS, INC.

MATERIALS
CHANNELS SHALL BE MANUFACTURED FROM POLYESTER RESIN POLYMER CONCRETE WITH AN INTEGRALLY CAST-IN STAINLESS STEEL EDGE RAIL. MINIMUM PROPERTIES OF POLYMER CONCRETE WILL BE AS FOLLOWS:

COMPRESSIVE STRENGTH:	14,000 PSI
FLEXURAL STRENGTH:	4,000 PSI
TENSILE STRENGTH:	1,500 PSI
WATER ABSORPTION:	0.07%
FROST PROOF	YES
DILUTE ACID AND ALKALI RESISTANT	YES
B117 SALT SPRAY TEST COMPLIANT	YES

THE SYSTEM SHALL BE 4" (100mm) NOMINAL INTERNAL WIDTH WITH A 5.1" (130mm) OVERALL WIDTH AND A BUILT-IN SLOPE OF 0.5%. CHANNEL INVERT SHALL HAVE DEVELOPED "V" SHAPE. ALL CHANNELS SHALL BE INTERLOCKING WITH A MALE/FEMALE JOINT.

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KS1-B-ECP	KS100 - KLASSIKDRAIN - LOAD CLASS: B Exposed Concrete Pavement	ACO Polymer Products, Inc.		
ACO		825 W. Beechcraft St Casa Grande, AZ 85122 Tel: 520-421-9988 Fax: 520-421-9899	9470 Pinecone Dr. Mentor, OH 44060 Tel: 440-639-7230 Fax: 440-639-7235	4211 Pleasant Rd. Fort Mill, SC 29708 Tel: 440-639-7230 Fax: 803-802-1063
DATE: 08/25/15	INSTALLATION DRAWING - ACO DRAIN			

Arizona Tel: 888-490-9552 e-mail: sales@acousa.com Ohio Tel: 800-543-4764 www.acousa.com South Carolina Tel: 800-543-4764

470

PROJ. NO. C20_0496 DSN: DDW
CFN: 0496DET.DWG DWN: NJN

DAVID D. WOOD
ENGINEER
MO # 2011037427

KAW VALLEY ENGINEERING
14700 WEST 114TH TERRACE
LENEXA, KANSAS 66215
PH. (913) 894–5150 | FAX (913) 894–5977
lx@kveng.com | www.kveng.com

KAW VALLEY ENGINEERING, INC., IS AUTHORIZED TO OFFER ENGINEERING SERVICES BY MISSOURI STATE CERTIFICATE OF AUTHORITY # 000842. EXPIRES 12/31/21

gouldevans

kansas city • lawrence • new orleans
phoenix • san francisco

Lee's Summit High School

400 SE Blue Pkwy
Lee's Summit, MO 64063

owner:
Lee's Summit R-7 School District
301 NE Tudor Road
Lee's Summit, MO 64086

architect:
Gould Evans
4200 Pennsylvania Avenue
Kansas City, MO 64111
816.931.6655 voice
www.gouldevans.com

structural engineer:
Bob D. Campbell & Company, Inc.
4338 Belleview
Kansas City, MO 64111
816.531.4144

civil engineer:
Kaw Valley Engineering
14700 West 114th Terrace
Lenexa, KS 66215
913.485.0318

mechanical/electrical engineer:
Henderson Engineers
1801 Main St
Kansas City, MO 64108
816.663.8700

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STATE OF MISSOURI
DAVID D. WOOD
NUMBER PE-2011037427
PROFESSIONAL ENGINEER
12.15.20

Kaw Valley Engineering, Inc.
Missouri Certificate of Authority: 000842
David Wood Date: 12/15/2020
Engineer License No. PE-2011037427

REVISIONS

Number	DESCRIPTION	DATE
1	ADDENDUM #1	11-19-2020
2	PER CITY COMMENTS AND COORDINATION WITH PACKAGE 2	12-15-2020

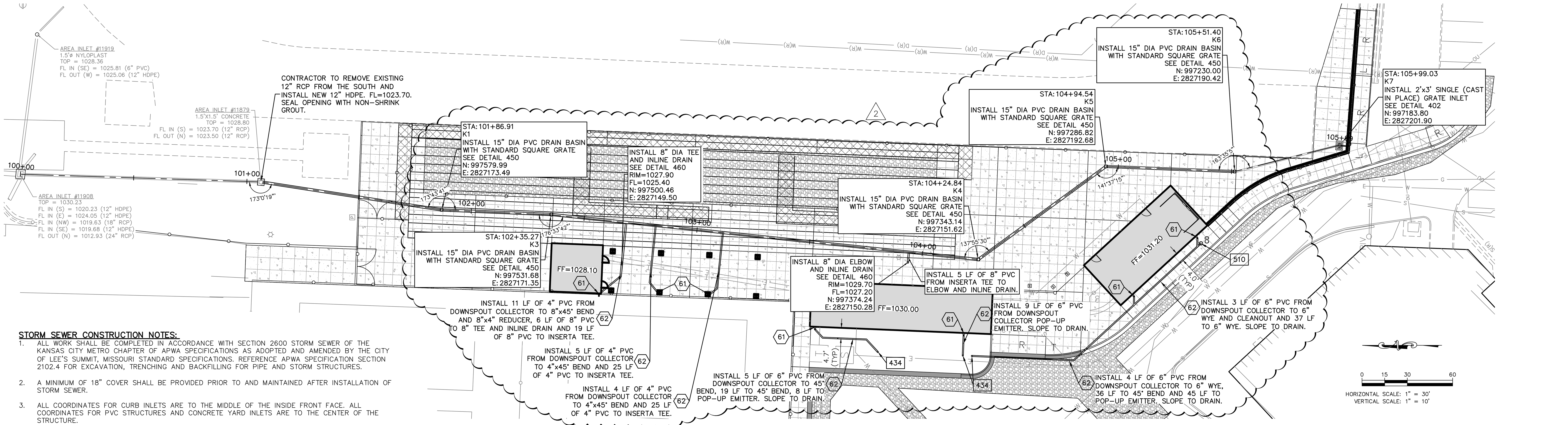
PROJECT NO: 0119-0100
DATE: November 20, 2020

STORM SEWER DETAILS

C695

Final Development Plan

PRINT DATE/TIME: 3/17/2020 4:49:21 PM



PRIVATE STORM SEWER LINE K PLAN

STORM SEWER CONSTRUCTION NOTES:

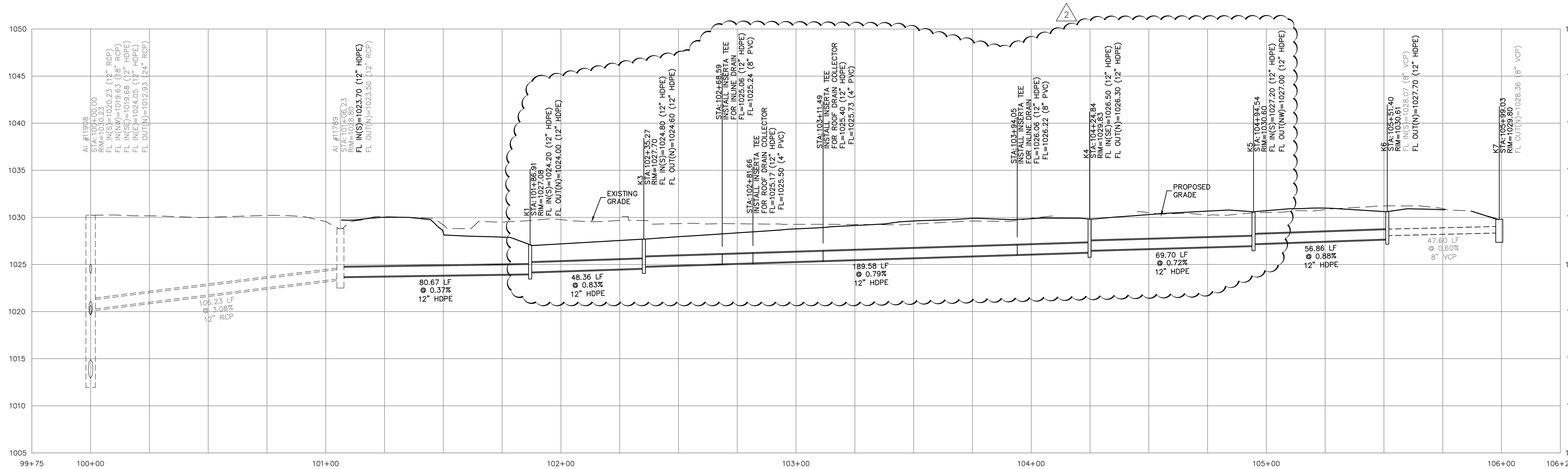
1. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH SECTION 2600 STORM SEWER OF THE KANSAS CITY METRO CHAPTER OF APWA SPECIFICATIONS AS ADOPTED AND AMENDED BY THE CITY OF LEE'S SUMMIT, MISSOURI STANDARD SPECIFICATIONS. REFERENCE APWA SPECIFICATION SECTION 2102.4 FOR EXCAVATION, TRENCHING AND BACKFILLING FOR PIPE AND STORM STRUCTURES.
2. A MINIMUM OF 18" COVER SHALL BE PROVIDED PRIOR TO AND MAINTAINED AFTER INSTALLATION OF STORM SEWER.
3. ALL COORDINATES FOR CURB INLETS ARE TO THE MIDDLE OF THE INSIDE FRONT FACE. ALL COORDINATES FOR PVC STRUCTURES AND CONCRETE YARD INLETS ARE TO THE CENTER OF THE STRUCTURE.
4. ALL JUNCTION BOXES/AREA INLETS HAVE ONE COORDINATE PROVIDED AT THE CENTER OF STRUCTURE. SEE PLAN FOR CLARIFICATION. ORIENT STRUCTURES PARALLEL TO ADJACENT CURB, BUILDING OR WALL FACE, UNLESS NOTED OTHERWISE.
5. RIM ELEVATION IS PROVIDED AT COORDINATE, UNLESS NOTED OTHERWISE. CONTRACTOR TO ADJUST ELEVATION OF RIM AS REQUIRED TO MATCH SLOPE OF ADJACENT CURB LINE. REFER TO GRADING PLAN (C300 SERIES SHEETS).
6. ALL EXISTING UTILITIES INDICATED ON THE DRAWING ARE ACCORDING TO THE BEST INFORMATION AVAILABLE TO THE ENGINEER; HOWEVER, ALL UTILITIES ACTUALLY EXISTING MAY NOT BE SHOWN. UTILITIES DAMAGED THROUGH THE NEGLIGENCE OF THE CONTRACTOR TO OBTAIN THE LOCATION OF SAME SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT THEIR EXPENSE.
7. ALL BACKFILL SHALL BE COMPACTED TO 95 PERCENT STANDARD DENSITY AT OPTIMUM MOISTURE.
8. ALL EXCAVATION BENEATH THE STREETS AND PARKING LOTS FOR DRAINAGE PIPE LESS THAN 4'-0" IN DIAMETER SHALL BE BACKFILLED WITH AGGREGATE TO FOUR FEET (4') PAST BACK OF CURB IN ACCORDANCE WITH APWA SPECIFICATIONS SECTION 2102.4J.
9. RELOCATION OF ANY WATER LINE, SEWER LINE OR SERVICE LINE THEREOF REQUIRED FOR THE CONSTRUCTION OF THIS PROJECT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE AT THEIR EXPENSE.
10. IF PRECAST STORM STRUCTURES ARE TO BE USED ON THIS PROJECT, THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND HAVE THEM APPROVED BY THE ENGINEER PRIOR TO FABRICATION OF THE STRUCTURES. FAILURE TO DO SO SHALL BE CAUSE FOR REJECTION.
11. ALL HDPE PIPE JOINTS SHALL BE WATER TIGHT.

DETAILS SEE SHEET C690 AND C691

402	SINGLE GRATE INLET
433	DOWNSPOUT COLLECTOR
434	POP-UP EMITTER
450	PVC DRAIN BASIN – CONTRACTOR TO ORDER INLETS ONE FOOT TALLER THAN PLAN ELEVATION SO INLET CAN BE FIELD ADJUSTED
460	INLINE DRAIN
510	CLEANOUT

NOTES

61	DOWNSPOUT COLLECTOR (SEE DETAIL 433 ON SHEET W-C901)
62	PVC SCH-40 ROOF DRAIN SLOPE TO DRAIN (1% MINIMUM FOR 6" ROOF DRAINS, 2% MINIMUM FOR 4" ROOF DRAINS)



PRIVATE STORM SEWER LINE K PROFILE

SAFETY NOTICE TO CONTRACTOR

IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

WARRANTY / DISCLAIMER

THE DESIGNS REPRESENTED IN THESE PLANS ARE IN ACCORDANCE WITH ESTABLISHED PRACTICES OF CIVIL ENGINEERING FOR THE DESIGN FUNCTIONS AND USES INTENDED BY THE OWNER AT THIS TIME. HOWEVER, NEITHER KAW VALLEY ENGINEERING, INC NOR ITS PERSONNEL CAN OR DO WARRANTY THESE DESIGNS OR PLANS AS CONSTRUCTED, EXCEPT IN THE SPECIFIC CASES WHERE KAW VALLEY ENGINEERING PERSONNEL INSPECT AND CONTROL THE PHYSICAL CONSTRUCTION ON A CONTEMPORARY BASIS AT THE SITE.

CAUTION – NOTICE TO CONTRACTOR

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT LOCATIONS OF POSSIBLE CONFLICTS PRIOR TO ANY CONSTRUCTION.

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

PROJ. NO. C20_0496 DSN: DDW
CFN: 0496DPP.DWG DWN: NJN
DAVID D. WOOD
ENGINEER
MO # 2011037427
14700 WEST 114TH TERRACE
LENEXA, KANSAS 66215
PH. (913) 894-5150 | FAX (913) 894-5977
lx@kveng.com | www.kveng.com
KAW VALLEY ENGINEERING

KAW VALLEY ENGINEERING, INC., IS AUTHORIZED TO OFFER ENGINEERING SERVICES BY MISSOURI STATE CERTIFICATE OF AUTHORITY # 000842. EXPIRES 12/31/21

Lee's Summit R7 District Athletics Facilities

Lee's Summit High School
400 SE Blue Parkway
Lee's Summit, MO 64063

owner:
Lee's Summit R-7 School District
301 NE Tudor Road
Lee's Summit, MO 64086

architect:
Gould Evans
4200 Pennsylvania Avenue
Kansas City, MO 64111
816.931.6655 voice
www.gouldevans.com

structural engineer:
Bob D. Campbell & Company, Inc.
4338 Belleview
Kansas City, MO 64111
816.531.4144

civil engineer:
Kaw Valley Engineering
14700 West 114th Terrace
Lenexa, KS 66215
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STATE OF MISSOURI
DAVID D. WOOD
NUMBER
PE-2011037427
PROFESSIONAL ENGINEER
10.23.2020

Kaw Valley Engineering, Inc.
Missouri Certificate of Authority: 000842
David Wood Date: 09/28/2020
Engineer License No. PE-2011037427

REVISIONS

Number	DESCRIPTION	DATE
1	Addendum 1	10/13/20
2	Addendum 3	10/23/20

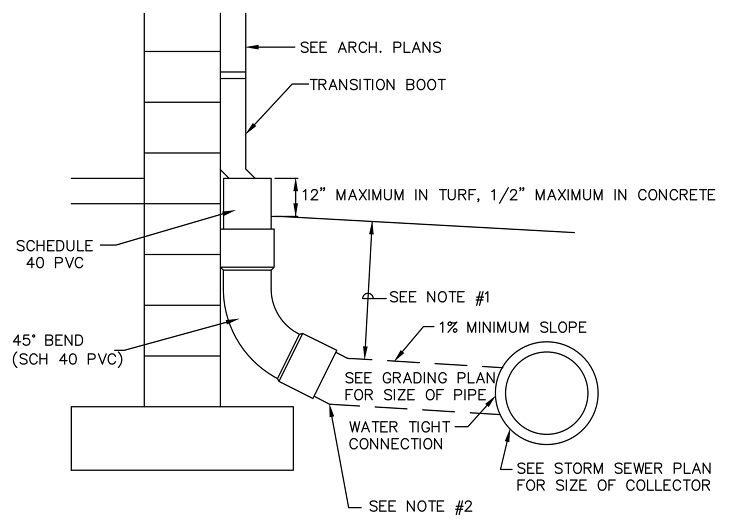
PROJECT NO: 0119-0100
DATE: SEPTEMBER 28, 2020

STORM SEWER PLAN AND PROFILE

H-C600

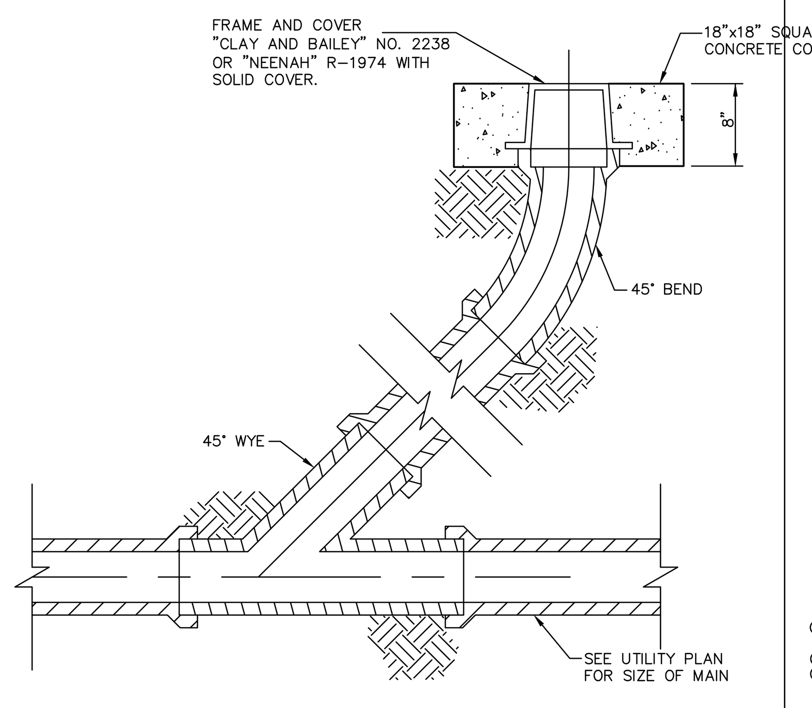
BID SET

PRINT DATE/TIME: 3/17/2020 4:49:21 PM

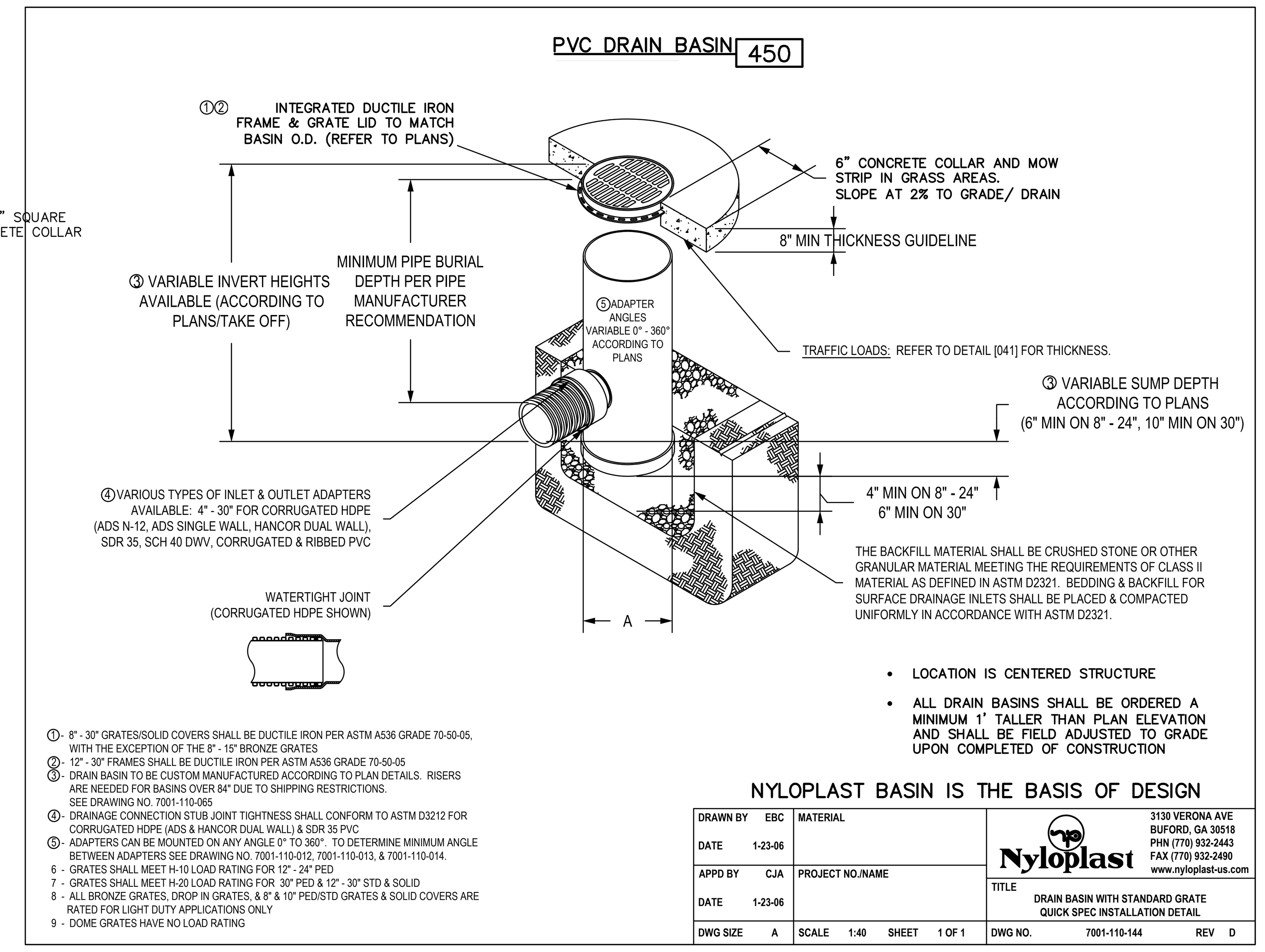


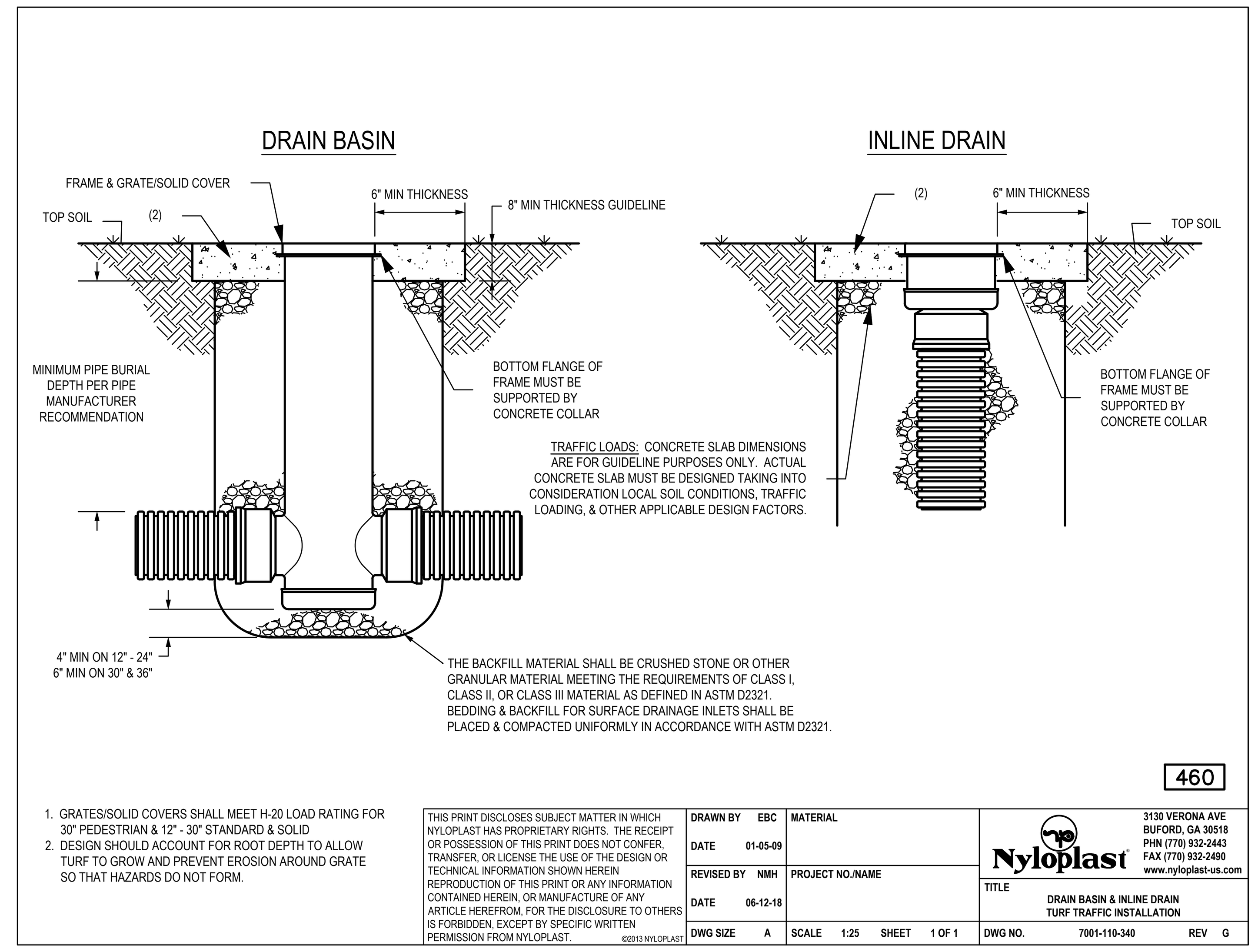
NOTES:
1) FOR ALL DEPTHS OF COVER LESS THAN TWO (2) FEET, PIPE MUST BE SCHEDULE 40 PVC. FOR DEPTHS OF COVER GREATER THAN TWO (2) FEET, FLEXIBLE PIPE MAY BE USED. REFER TO SPECIFICATIONS FOR ALLOWABLE PIPE TYPES.
2) A WATERTIGHT CONNECTION SHALL BE MAINTAINED WITH ANY TRANSITION FROM SCHEDULE 40 PVC PIPE TO ANY OTHER PIPE TYPE.
3) THE DOWNSPOUT COLLECTOR DRAIN SHALL BE INSTALLED BEFORE THE DOWNSPOUTS ARE INSTALLED ON THE BUILDING. SITEWORK CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK TO AND INCLUDING THE RODENT SCREEN. BUILDING CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONNECTION AT THE POINT OF THE RODENT SCREEN.

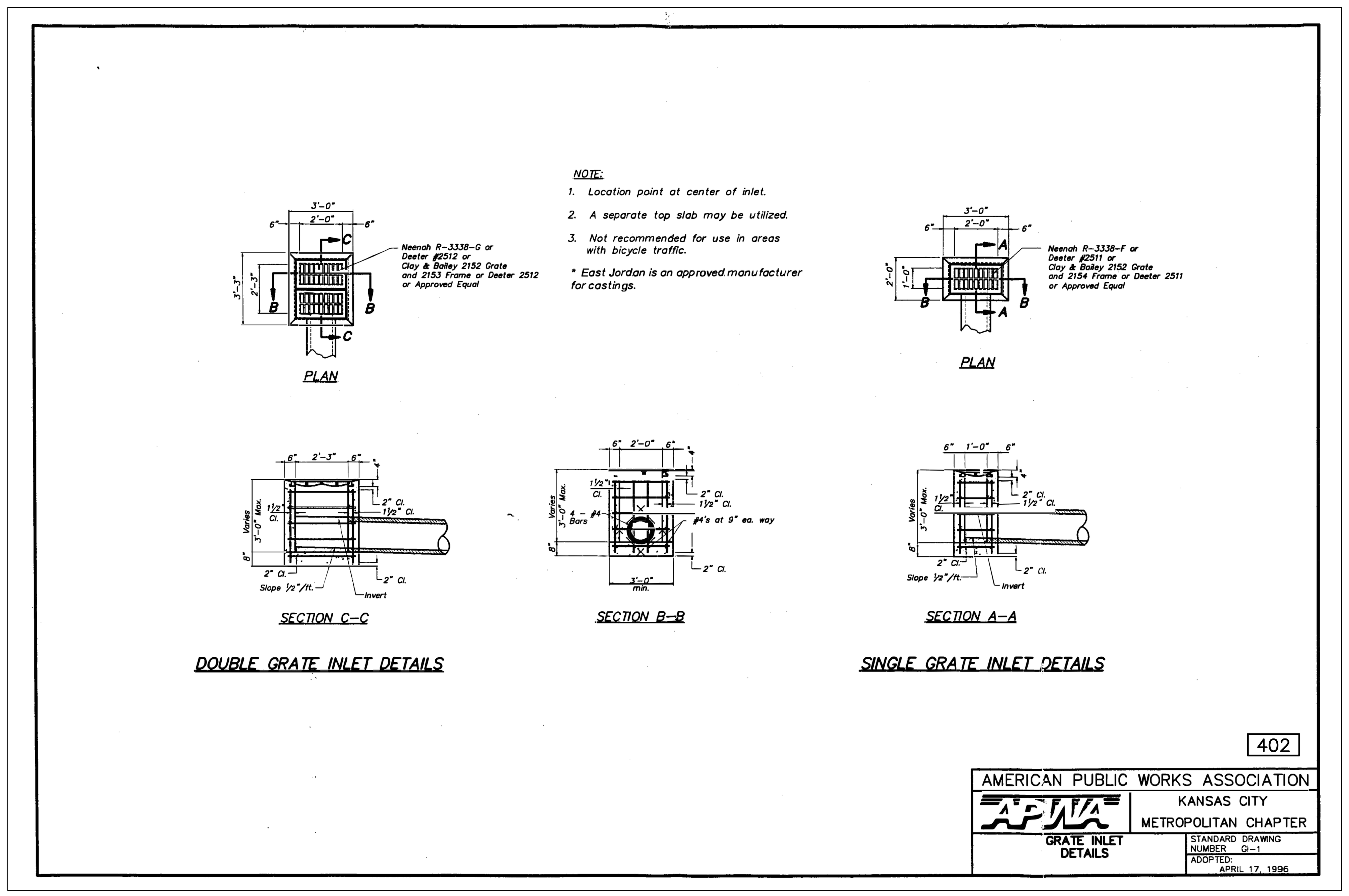
DOWNSPOUT COLLECTOR 433

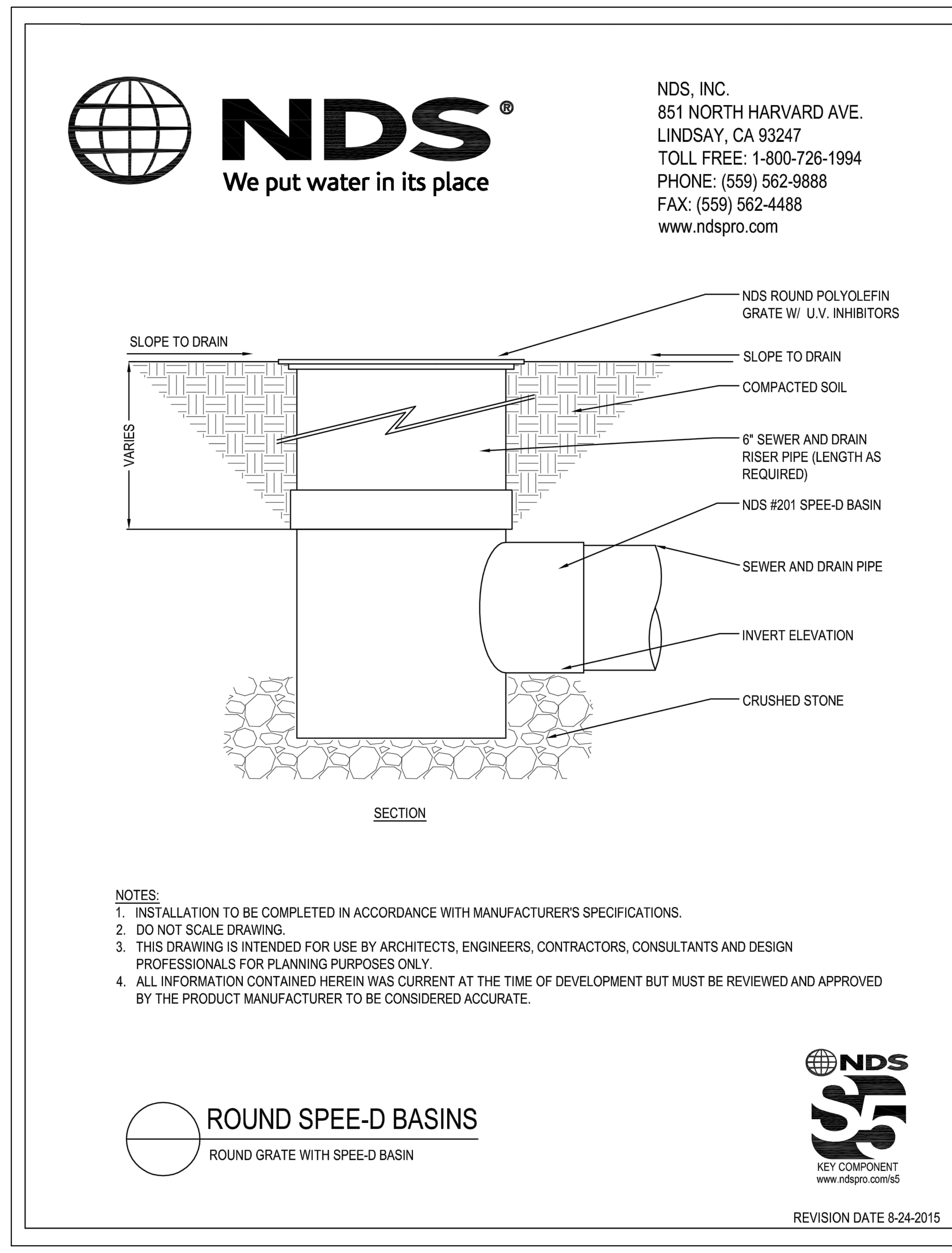


CLEAN-OUT 510

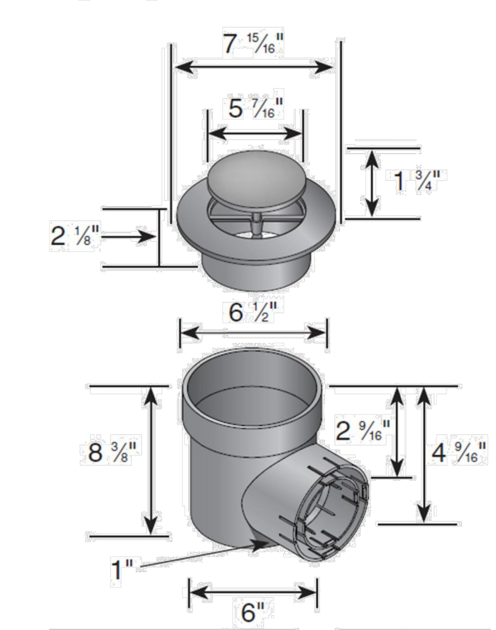








6" Pop Up Emitter with 6" Basin



Part #: 625 - Center Spring Loaded
Material: High Density Polypropylene (HDPE)
Colors: Pop Up (Green) Basin (Black)
Fits: 3" and 4" sewer, drain, triple wall, corrugated and sch. 40 pipe
Spring: Stainless Steel Grade 302
Opening Pressure: 1 PSI
Open Surface Area: 28.8 Sq. Inches
Flow Rate
1" Head: 124.60 GPM
0.5" Head: 88.10 GPM
Basin: 6" NDS Spee-D Basin
Weight Per Each: 2.14 lbs.
UV inhibitor

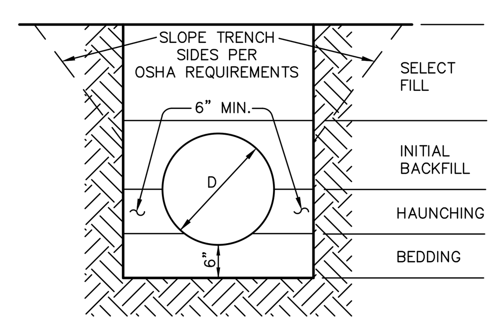
Load Recommendation Guide

Class A
- Loads of 1-60 psi.
- Recommended for pedestrians, bicycles and wheel chair traffic.

851 N. Harvard Avenue
Lindsay, CA 93247
800-726-1994

Visit ndspro.com for specs, detail drawings, and case studies

POP-UP EMITTER 434



FLEXIBLE PIPE: INCLUDES CORRUGATED METAL PIPE. CORRUGATED POLYETHELENE PIPE AND/OR POLYVINYL CHLORIDE PIPE.

1. BEDDING SHALL BE COMPACTED CRUSHED STONE AND SHALL BE SHAPED TO THE BOTTOM OF THE PIPE.
2. HAUNCHING AND INITIAL BACKFILL MATERIAL SHALL BE CLASS I OR II (REF. ASTM D2321) GRANULAR MATERIAL AND SHALL BE COMPACTED TO 95% STANDARD PROCTOR.

TRENCH AND BEDDING DETAILS

REFER TO KANSAS CITY METROPOLITAN CHAPTER OF APWA SPECIFICATIONS SECTION 2102.4

INLET NOTES

GENERAL

1. ALL STORM SEWER STRUCTURES SHALL BE POURED IN PLACE.
2. DO NOT SCALE THESE DRAWINGS FOR DIMENSIONS OR CLEARANCES. ANY QUESTIONS REGARDING DIMENSIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO CONSTRUCTION.
3. THE FIRST DIMENSION LISTED IN THE CONSTRUCTION NOTES IS THE "L" DIMENSION. THE SECOND DIMENSION IS THE "W" DIMENSION. THE CONCRETE THICKNESS AND REINFORCEMENT SHOWN IS FOR BOXES WITH ("L"+"H") AND ("W"+"H") LESS THEN OR EQUAL TO 20. FOR BOXES WITH EITHER OF THESE CALCULATIONS GREATER THAN 20, A SPECIAL DESIGN IS REQUIRED. PRECASTER SHALL PROVIDE DESIGN CALCULATIONS FOR DEEP STRUCTURES TO ENGINEER PRIOR TO CONSTRUCTING BOX.

CONCRETE

4. CONCRETE USED IN THIS WORK SHALL BE CLASS "A" CONCRETE (AE) THROUGHOUT, AND SHALL MEET THE REQUIREMENTS OF THE KANSAS CITY METROPOLITAN CHAPTER OF THE APWA TECHNICAL SPECIFICATIONS.
5. CONCRETE CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF STANDARD SPECIFICATIONS FOR MCIB, LATEST EDITION, EXCEPT AS MODIFIED IN THE APWA TECHNICAL SPECIFICATIONS.
6. INLET FLOORS SHALL BE SHAPED WITH NON-REINFORCED CONCRETE INVERTS TO PROVIDE SMOOTH FLOW.
7. BEVEL ALL EXPOSED EDGES WITH ¾" TRIANGULAR MOLDING.
8. 8" SOLID CONCRETE BLOCK OR BRICK MAY BE USED IN WALLS IN LIEU OF POURED CONCRETE WHERE NEITHER "H"+"L" NOR "H"+"W" (IN FEET) EXCEED FOURTEEN. BLOCK OR BRICK MAY BE USED IN ANY BOX WHERE "H" IS 5' OR LESS.
9. ALL CRUSHED STONE USED AS AGGREGATE FOR CONCRETE CONSTRUCTION SHALL BE OBTAINED FROM QUARRIES AND BEDS DESIGNATED BY THE MISSOURI DEPARTMENT OF TRANSPORTATION AS MEETING DURABILITY REQUIREMENTS OF KANSAS CITY METROPOLITAN CHAPTER OF THE APWA TECHNICAL SPECIFICATIONS.

REINFORCING STEEL

10. REINFORCING STEEL SHALL BE NEW BILLET, MINIMUM GRADE 60 AS PER ASTM A615, AND SHALL BE BENT COLD.
11. ALL DIMENSIONS RELATIVE TO REINFORCING STEEL ARE TO CENTERLINE OF BARS. 2" CLEARANCE SHALL BE PROVIDED THROUGHOUT UNLESS NOTED OTHERWISE. TOLERANCE OF +/- ⅛" SHALL BE PERMITTED.
12. ALL LAP SPLICES NOT SHOWN SHALL BE A MINIMUM OF 40 BAR DIAMETERS IN LENGTH.
13. ALL REINFORCING STEEL SHALL BE SUPPORTED ON FABRICATED STEEL BAR SUPPORTS @ 3'-0" MAXIMUM SPACING.
14. ALL DOWELS SHALL BE ACCURATELY PLACED AND SECURELY TIED IN PLACE PRIOR TO PLACEMENT OF BOTTOM SLAB CONCRETE. STICKING OF DOWELS INTO FRESH OR PARTIALLY HARDENED CONCRETE WILL NOT BE ACCEPTABLE.

CONSTRUCTION

15. THE BOTTOM SLAB SHALL BE AT LEAST 24 HOURS OLD BEFORE PLACING SIDEWALL CONCRETE. ALL SIDEWALL FORMS SHALL REMAIN IN PLACE A MINIMUM OF 24 HOURS AFTER SIDEWALLS ARE POURED BEFORE REMOVAL, AND AFTER REMOVAL SHALL BE IMMEDIATELY TREATED WITH MEMBRANE CURING COMPOUND.
16. MATERIAL SELECTION AND COMPACTION REQUIREMENTS FOR BACKFILL AROUND STRUCTURES SHALL BE AS SPECIFIED IN THE KANSAS CITY METROPOLITAN CHAPTER OF THE APWA TECHNICAL SPECIFICATIONS.

PROJ. NO. C20_0496 DSN: DDW
CFN: 0496DET.DWG DWN: NJN

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KAW VALLEY ENGINEERING

KAW VALLEY ENGINEERING, INC., IS AUTHORIZED TO OFFER ENGINEERING SERVICES BY MISSOURI STATE CERTIFICATE OF AUTHORITY # 000842. EXPIRES 12/31/21

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Lee's Summit R7 District Athletics Facilities

Lee's Summit High School
400 SE Blue Parkway
Lee's Summit, MO 64063

owner:
Lee's Summit R-7 School District
301 NE Tudor Road
Lee's Summit, MO 64086

architect:
Gould Evans
4200 Pennsylvania Avenue
Kansas City, MO 64111
816.931.6655 voice
www.gouldevans.com

structural engineer:
Bob D. Campbell & Company, Inc.
4338 Belleview
Kansas City, MO 64111
816.531.4144

civil engineer:
Kaw Valley Engineering
14700 West 114th Terrace
Lenexa, KS 66215
913.485.0318

mechanical/electrical engineer:
Henderson Engineers
1801 Main St
Kansas City, MO 64108
816.663.8700

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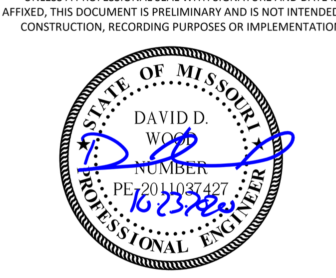

Kaw Valley Engineering, Inc.
Missouri Certificate of Authority: 000842
David Wood Date: 09/28/2020
Engineer License No. PE-2011037427

REVISIONS

Number	Description	Date
1	Addendum 1	10/13/20
2	Addendum 3	10/23/20

PROJECT NO: 0119-0100
DATE: SEPTEMBER 28, 2020

STORM DETAILS

H-C690

BID SET

Extended Dry Detention Basin Design

Tributary Area	0.78	AC		0.78	Acres
Impervious Area	0.69	AC	88%	84	CN
Pervious Area	0.09	AC	12%		

Treatment Volume (from PondPack)	3180	ft^3
WQv Storage Elevation	1008	
Basin Bottom Elevation Above Sediment Deposition	N/A	

Water Quality Outlet, Perforated Riser Pipe/Underain (24-hour draw-down)

Depth of WQV at outlet:	3.9	ft
Average Head of WQV over invert of orifice:	1.95	ft
Average WQV outflow rate:	0.0367	cfs

Utilize 1" Orifice in Screw in Cap

I. Basin Water Quality Storage Volume

Step 1)	Tributary Area to EDDB, A_T (ac)	A_T (ac)=	0.78		
Step 2)	Calculate WQ_V using methodoly in Section 6	WQ_V (ac-ft)=	0.0730	3,179.88	CF
Step 3)	Add 20 percent to account for silt and sediment deposition	V_{design} (ac-ft)=	0.0876	3,815.86	CF

III. Flood Control

Refer to APWA Specifications Section 5608

Notes:

IV. Trash Racks

Step 1)	Total outlet area, A_{ot} (in^2)	A_{ot} (in^2)=	N/A
Step 2)	Required trash rack open area, A^t (in^2)	A_t (in^2)=	N/A
	--not applicable for perforated riser--		

V. Basin Shape

Step 1)	Length to width ratio should be at least 3:1 (L:W) wherever practicable	(L:W)=	3:1
Step 2)	Low flow channel side lining (Concrete, Soil/Riprap, None, or Specify)	Lining Type=	Soil/Riprap
Step 3)	Top stage floor drainage slope (toward low flow channel), S_{ts} (%)	S_{ts} (%)=	2
	Top stage depth, D_{ts} (ft)	D_{ts} (ft)=	4.5
Step 4)	Bottom stage volume, V_{bs} (ac-ft)	V_{bs} (% of WQ_V)=	-

VI. Forebay (Optional)

Step 1)	Volume should be greater than 10% of WQ_V	Min V_{FB} (ac-ft)=	0.0073
Step 2)	Forebay depth, Z_{FB} (ft)	Z_{FB} (ft)=	0.5
Step 3)	Forebay surface area, A_{FB} (ac)	Min A_{FB} (ac)=	0.0146
Step 4)	Paved/hard bottom and sides?	Yes or No	No

VII. Basin Side Slopes

Step 1)	Basin side slopes should be at least 4:1 (H:V)	Basin SS (H:V)=	3:1 Max

VIII. Dam Embankment Side Slopes

Step 1)	Dam embankment slopes should be at least 3:1 (H:V)	Dam Emb. SS (H:V)=	3:1

IX. Vegetation

Step 1)	Native Grass, Irrigated Turf Grass, Specify	Vegetation Type=	Native

X. Inlet Protection

Step 1)	Indicate method of inlet protection/energy dissipation at EDDB inlet	Intet Protecion=	Riprap

XI. Access

Step 1)	Indicate that access has been provided for maintenance vehicles	Is Access Provided=	Yes

WQv release rate			# of holes	# of holes req'd	# holes	Total discharge	Time to
orifice size	discharge cfs	duration hr	req'd (24hr)	(40hr)	used	(cfs)	empty (hrs)
1/32	0.0000	24664.33	1027.68	616.61		0.0000	#DIV/0!
1/16	0.0001	6166.08	256.92	154.15		0.0000	#DIV/0!
3/32	0.0003	2740.48	114.19	68.51		0.0000	#DIV/0!
1/8	0.0006	1541.52	64.23	38.54		0.0000	#DIV/0!
5/32	0.0009	986.57	41.11	24.66		0.0000	#DIV/0!
3/16	0.0013	685.12	28.55	17.13		0.0000	#DIV/0!
7/32	0.0018	503.35	20.97	12.58		0.0000	#DIV/0!
1/4	0.0023	385.38	16.06	9.63		0.0000	#DIV/0!
9/32	0.0029	304.50	12.69	7.61		0.0000	#DIV/0!
5/16	0.0036	246.64	10.28	6.17		0.0000	#DIV/0!
11/32	0.0043	203.84	8.49	5.10		0.0000	#DIV/0!
3/8	0.0052	171.28	7.14	4.28		0.0000	#DIV/0!
13/32	0.0061	145.94	6.08	3.65		0.0000	#DIV/0!
7/16	0.0070	125.84	5.24	3.15		0.0000	#DIV/0!
15/32	0.0081	109.62	4.57	2.74		0.0000	#DIV/0!
1/2	0.0092	96.35	4.01	2.41		0.0000	#DIV/0!
17/32	0.0103	85.34	3.56	2.13		0.0000	#DIV/0!
9/16	0.0116	76.12	3.17	1.90		0.0000	#DIV/0!
19/32	0.0129	68.32	2.85	1.71		0.0000	#DIV/0!
5/8	0.0143	61.66	2.57	1.54		0.0000	#DIV/0!
21/32	0.0158	55.93	2.33	1.40		0.0000	#DIV/0!
11/16	0.0173	50.96	2.12	1.27		0.0000	#DIV/0!
23/32	0.0189	46.62	1.94	1.17		0.0000	#DIV/0!
3/4	0.0206	42.82	1.78	1.07	1	0.0206	42.82
25/32	0.0224	39.46	1.64	0.99		0.0000	#DIV/0!
13/16	0.0242	36.49	1.52	0.91		0.0000	#DIV/0!
27/32	0.0261	33.83	1.41	0.85		0.0000	#DIV/0!
7/8	0.0281	31.46	1.31	0.79		0.0000	#DIV/0!
29/32	0.0301	29.33	1.22	0.73		0.0000	#DIV/0!
15/16	0.0322	27.40	1.14	0.69		0.0000	#DIV/0!
31/32	0.0344	25.67	1.07	0.64		0.0000	#DIV/0!
1	**0.0367**	**24.09**	**1.00**	**0.60**	**1**	**0.0367**	**24.09**
1 1/32	0.0390	22.65	0.94	0.57		0.0000	#DIV/0!
1 1/16	0.0414	21.34	0.89	0.53		0.0000	#DIV/0!
1 3/32	0.0439	20.13	0.84	0.50		0.0000	#DIV/0!
1 1/8	0.0464	19.03	0.79	0.48		0.0000	#DIV/0!
1 5/32	0.0490	18.02	0.75	0.45		0.0000	#DIV/0!
1 3/16	0.0517	17.08	0.71	0.43		0.0000	#DIV/0!
1 7/32	0.0545	16.22	0.68	0.41		0.0000	#DIV/0!
1 1/4	0.0573	15.42	0.64	0.39		0.0000	#DIV/0!
1 9/32	0.0602	14.67	0.61	0.37		0.0000	#DIV/0!
1 5/16	0.0632	13.98	0.58	0.35		0.0000	#DIV/0!
1 11/32	0.0662	13.34	0.56	0.33		0.0000	#DIV/0!
1 3/8	0.0693	12.74	0.53	0.32		0.0000	#DIV/0!
1 13/32	0.0725	12.18	0.51	0.30		0.0000	#DIV/0!
1 7/16	0.0758	11.66	0.49	0.29		0.0000	#DIV/0!
1 15/32	0.0791	11.17	0.47	0.28		0.0000	#DIV/0!
1 1/2	0.0825	10.71	0.45	0.27		0.0000	#DIV/0!
1 17/32	0.0860	10.27	0.43	0.26		0.0000	#DIV/0!
1 9/16	0.0895	9.87	0.41	0.25		0.0000	#DIV/0!
1 19/32	0.0931	9.48	0.40	0.24		0.0000	#DIV/0!
1 5/8	0.0968	9.12	0.38	0.23		0.0000	#DIV/0!
1 21/32	0.1006	8.78	0.37	0.22		0.0000	#DIV/0!
1 11/16	0.1044	8.46	0.35	0.21		0.0000	#DIV/0!
1 23/32	0.1083	8.15	0.34	0.20		0.0000	#DIV/0!
1 3/4	0.1123	7.86	0.33	0.20		0.0000	#DIV/0!
1 25/32	0.1164	7.59	0.32	0.19		0.0000	#DIV/0!
1 13/16	0.1205	7.33	0.31	0.18		0.0000	#DIV/0!
1 27/32	0.1247	7.09	0.30	0.18		0.0000	#DIV/0!
1 7/8	0.1289	6.85	0.29	0.17		0.0000	#DIV/0!
1 29/32	0.1333	6.63	0.28	0.17		0.0000	#DIV/0!
1 15/16	0.1377	6.42	0.27	0.16		0.0000	#DIV/0!
1 31/32	0.1421	6.21	0.26	0.16		0.0000	#DIV/0!
2	0.1467	6.02	0.25	0.15		0.0000	#DIV/0!

Orifice Flow - Circular			Q=C(A)(2gh)^(1/2)				Hw/D
Dia (in) frac	Dia. (in) dec	A (sf)	A (in2)	C	h (ft)	Q (cfs)	
1/32	0.0313	0.000	0.0008	0.6	1.95	0.000	748.80
1/16	0.0625	0.000	0.0031	0.6	1.95	0.000	374.40
3/32	0.0938	0.000	0.0069	0.6	1.95	0.000	249.60
1/8	0.1250	0.000	0.0123	0.6	1.95	0.001	187.20
5/32	0.1563	0.000	0.0192	0.6	1.95	0.001	149.76
3/16	0.1875	0.000	0.0276	0.6	1.95	0.001	124.80
7/32	0.2188	0.000	0.0376	0.6	1.95	0.002	106.97
1/4	0.2500	0.000	0.0491	0.6	1.95	0.002	93.60
9/32	0.2813	0.000	0.0621	0.6	1.95	0.003	83.20
5/16	0.3125	0.001	0.0767	0.6	1.95	0.004	74.88
11/32	0.3438	0.001	0.0928	0.6	1.95	0.004	68.07
3/8	0.3750	0.001	0.1104	0.6	1.95	0.005	62.40
13/32	0.4063	0.001	0.1296	0.6	1.95	0.006	57.60
7/16	0.4375	0.001	0.1503	0.6	1.95	0.007	53.49
15/32	0.4688	0.001	0.1726	0.6	1.95	0.008	49.92
1/2	0.5000	0.001	0.1963	0.6	1.95	0.009	46.80
17/32	0.5313	0.002	0.2217	0.6	1.95	0.010	44.05
9/16	0.5625	0.002	0.2485	0.6	1.95	0.012	41.60
19/32	0.5938	0.002	0.2769	0.6	1.95	0.013	39.41
5/8	0.6250	0.002	0.3068	0.6	1.95	0.014	37.44
21/32	0.6563	0.002	0.3382	0.6	1.95	0.016	35.66
11/16	0.6875	0.003	0.3712	0.6	1.95	0.017	34.04
23/32	0.7188	0.003	0.4057	0.6	1.95	0.019	32.56
3/4	**0.7500**	**0.003**	**0.4418**	**0.6**	**1.95**	**0.021**	**31.20**
25/32	0.7813	0.003	0.4794	0.6	1.95	0.022	29.95
13/16	0.8125	0.004	0.5185	0.6	1.95	0.024	28.80
27/32	0.8438	0.004	0.5591	0.6	1.95	0.026	27.73
7/8	0.8750	0.004	0.6013	0.6	1.95	0.028	26.74
29/32	0.9063	0.004	0.6450	0.6	1.95	0.030	25.82
15/16	0.9375	0.005	0.6903	0.6	1.95	0.032	24.96
31/32	0.9688	0.005	0.7371	0.6	1.95	0.034	24.15
1	**1.0000**	**0.005**	**0.7854**	**0.6**	**1.95**	**0.037**	**23.40**
1 1/32	1.0313	0.006	0.8353	0.6	1.95	0.039	22.69
1 1/16	1.0625	0.006	0.8866	0.6	1.95	0.041	22.02
1 3/32	1.0938	0.007	0.9396	0.6	1.95	0.044	21.39
1 1/8	1.1250	0.007	0.9940	0.6	1.95	0.046	20.80
1 5/32	1.1563	0.007	1.0500	0.6	1.95	0.049	20.24
1 3/16	1.1875	0.008	1.1075	0.6	1.95	0.052	19.71
1 7/32	1.2188	0.008	1.1666	0.6	1.95	0.054	19.20
1 1/4	1.2500	0.009	1.2272	0.6	1.95	0.057	18.72
1 9/32	1.2813	0.009	1.2893	0.6	1.95	0.060	18.26
1 5/16	1.3125	0.009	1.3530	0.6	1.95	0.063	17.83
1 11/32	1.3438	0.010	1.4182	0.6	1.95	0.066	17.41
1 3/8	1.3750	0.010	1.4849	0.6	1.95	0.069	17.02
1 13/32	1.4063	0.011	1.5532	0.6	1.95	0.073	16.64
1 7/16	1.4375	0.011	1.6230	0.6	1.95	0.076	16.28
1 15/32	1.4688	0.012	1.6943	0.6	1.95	0.079	15.93
1 1/2	1.5000	0.012	1.7671	0.6	1.95	0.083	15.60
1 17/32	1.5313	0.013	1.8415	0.6	1.95	0.086	15.28
1 9/16	1.5625	0.013	1.9175	0.6	1.95	0.090	14.98
1 19/32	1.5938	0.014	1.9949	0.6	1.95	0.093	14.68
1 5/8	1.6250	0.014	2.0739	0.6	1.95	0.097	14.40
1 21/32	1.6563	0.015	2.1545	0.6	1.95	0.101	14.13
1 11/16	1.6875	0.016	2.2365	0.6	1.95	0.104	13.87
1 23/32	1.7188	0.016	2.3201	0.6	1.95	0.108	13.61
1 3/4	1.7500	0.017	2.4053	0.6	1.95	0.112	13.37
1 25/32	1.7813	0.017	2.4920	0.6	1.95	0.116	13.14
1 13/16	1.8125	0.018	2.5802	0.6	1.95	0.120	12.91
1 27/32	1.8438	0.019	2.6699	0.6	1.95	0.125	12.69
1 7/8	1.8750	0.019	2.7612	0.6	1.95	0.129	12.48
1 29/32	1.9063	0.020	2.8540	0.6	1.95	0.133	12.28
1 15/16	1.9375	0.020	2.9483	0.6	1.95	0.138	12.08
1 31/32	1.9688	0.021	3.0442	0.6	1.95	0.142	11.89
2	2.0000	0.022	3.1416	0.6	1.95	0.147	11.70

Exhibit D

PondPack Analysis

Lee's Summit High School - Network Layout

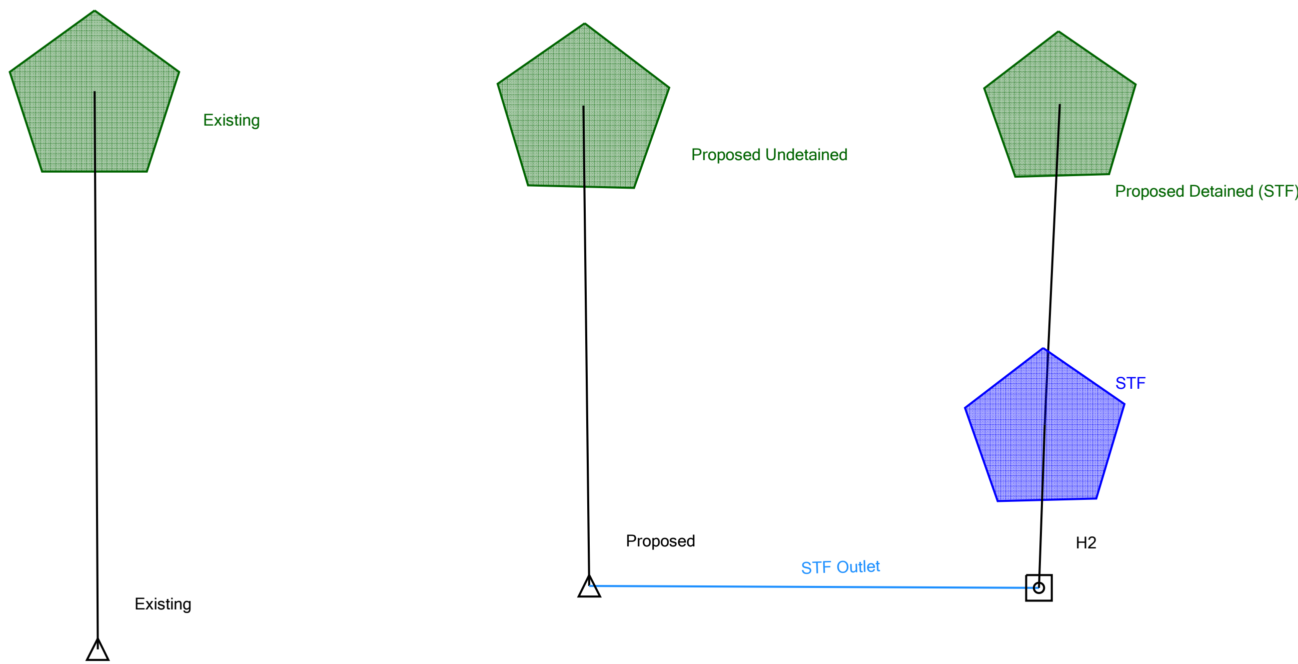

Table of Contents

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
Proposed Detained (STF)	WQv	1	0.058	11.900	1.05
Proposed Detained (STF)	2-year	2	0.190	11.900	3.28
Proposed Detained (STF)	10-YEAR	10	0.318	11.900	5.33
Proposed Detained (STF)	100-YEAR	100	0.452	11.900	7.47
Existing	WQv	1	0.955	12.000	15.66
Existing	2-year	2	3.637	12.000	56.87
Existing	10-YEAR	10	6.315	12.000	95.45
Existing	100-YEAR	100	9.170	12.000	135.41
Proposed Undetained	WQv	1	0.910	12.000	14.93
Proposed Undetained	2-year	2	3.466	12.000	54.21
Proposed Undetained	10-YEAR	10	6.020	12.000	90.98
Proposed Undetained	100-YEAR	100	8.741	12.000	129.08

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
Existing	WQv	1	0.955	12.000	15.66
Existing	2-year	2	3.637	12.000	56.87
Existing	10-YEAR	10	6.315	12.000	95.45
Existing	100-YEAR	100	9.170	12.000	135.41
Proposed	WQv	1	0.948	12.000	14.96
Proposed	2-year	2	3.617	12.000	56.91
Proposed	10-YEAR	10	6.292	12.000	94.44
Proposed	100-YEAR	100	9.147	12.000	135.44

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
STF (IN)	WQv	1	0.058	11.900	1.05	(N/A)	(N/A)
STF (OUT)	WQv	1	0.038	13.500	0.04	1,007.88	0.031
STF (IN)	2-year	2	0.190	11.900	3.28	(N/A)	(N/A)
STF (OUT)	2-year	2	0.151	12.000	2.70	1,011.03	0.047
STF (IN)	10-YEAR	10	0.318	11.900	5.33	(N/A)	(N/A)
STF (OUT)	10-YEAR	10	0.272	12.050	3.51	1,011.62	0.070
STF (IN)	100-YEAR	100	0.452	11.900	7.47	(N/A)	(N/A)
STF (OUT)	100-YEAR	100	0.406	12.000	6.37	1,011.91	0.082

Subsection: Time-Depth Curve
Label: SCS Type II
Scenario: 100-YEAR

Return Event: 100 years
Storm Event: 100-yr

Time-Depth Curve: 100-yr	
Label	100-yr
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	100 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.1	0.1	0.1
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.2
2.000	0.2	0.2	0.2	0.2	0.2
2.500	0.2	0.2	0.2	0.2	0.3
3.000	0.3	0.3	0.3	0.3	0.3
3.500	0.3	0.3	0.3	0.3	0.4
4.000	0.4	0.4	0.4	0.4	0.4
4.500	0.4	0.4	0.4	0.5	0.5
5.000	0.5	0.5	0.5	0.5	0.5
5.500	0.5	0.6	0.6	0.6	0.6
6.000	0.6	0.6	0.6	0.6	0.7
6.500	0.7	0.7	0.7	0.7	0.7
7.000	0.8	0.8	0.8	0.8	0.8
7.500	0.8	0.8	0.9	0.9	0.9
8.000	0.9	0.9	0.9	1.0	1.0
8.500	1.0	1.0	1.0	1.1	1.1
9.000	1.1	1.1	1.2	1.2	1.2
9.500	1.2	1.3	1.3	1.3	1.3
10.000	1.4	1.4	1.4	1.5	1.5
10.500	1.6	1.6	1.6	1.7	1.7
11.000	1.8	1.8	1.9	2.0	2.1
11.500	2.2	2.3	2.7	3.3	4.3
12.000	5.0	5.2	5.3	5.4	5.5
12.500	5.6	5.7	5.7	5.8	5.8
13.000	5.9	5.9	6.0	6.0	6.0
13.500	6.1	6.1	6.1	6.2	6.2
14.000	6.2	6.3	6.3	6.3	6.3
14.500	6.4	6.4	6.4	6.4	6.5
15.000	6.5	6.5	6.5	6.6	6.6
15.500	6.6	6.6	6.6	6.7	6.7
16.000	6.7	6.7	6.7	6.7	6.8
16.500	6.8	6.8	6.8	6.8	6.8
17.000	6.9	6.9	6.9	6.9	6.9

Subsection: Time-Depth Curve
Label: SCS Type II
Scenario: 100-YEAR

Return Event: 100 years
Storm Event: 100-yr

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.500	6.9	6.9	7.0	7.0	7.0
18.000	7.0	7.0	7.0	7.0	7.1
18.500	7.1	7.1	7.1	7.1	7.1
19.000	7.1	7.1	7.2	7.2	7.2
19.500	7.2	7.2	7.2	7.2	7.2
20.000	7.2	7.2	7.3	7.3	7.3
20.500	7.3	7.3	7.3	7.3	7.3
21.000	7.3	7.3	7.4	7.4	7.4
21.500	7.4	7.4	7.4	7.4	7.4
22.000	7.4	7.4	7.4	7.5	7.5
22.500	7.5	7.5	7.5	7.5	7.5
23.000	7.5	7.5	7.5	7.5	7.5
23.500	7.6	7.6	7.6	7.6	7.6
24.000	7.6	(N/A)	(N/A)	(N/A)	(N/A)

Time-Depth Curve: 10-yr	
Label	10-yr
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	10 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.1
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.2	0.2	0.2	0.2	0.2
3.000	0.2	0.2	0.2	0.2	0.2
3.500	0.2	0.2	0.2	0.2	0.3
4.000	0.3	0.3	0.3	0.3	0.3
4.500	0.3	0.3	0.3	0.3	0.3
5.000	0.3	0.4	0.4	0.4	0.4
5.500	0.4	0.4	0.4	0.4	0.4
6.000	0.4	0.4	0.5	0.5	0.5
6.500	0.5	0.5	0.5	0.5	0.5
7.000	0.5	0.6	0.6	0.6	0.6
7.500	0.6	0.6	0.6	0.6	0.6
8.000	0.7	0.7	0.7	0.7	0.7
8.500	0.7	0.7	0.8	0.8	0.8
9.000	0.8	0.8	0.8	0.9	0.9
9.500	0.9	0.9	0.9	1.0	1.0
10.000	1.0	1.0	1.0	1.1	1.1
10.500	1.1	1.2	1.2	1.2	1.3
11.000	1.3	1.3	1.4	1.4	1.5
11.500	1.6	1.7	1.9	2.4	3.1
12.000	3.6	3.8	3.8	3.9	4.0
12.500	4.0	4.1	4.1	4.2	4.2
13.000	4.2	4.3	4.3	4.3	4.4
13.500	4.4	4.4	4.4	4.5	4.5
14.000	4.5	4.5	4.5	4.6	4.6
14.500	4.6	4.6	4.6	4.7	4.7
15.000	4.7	4.7	4.7	4.7	4.8
15.500	4.8	4.8	4.8	4.8	4.8
16.000	4.8	4.9	4.9	4.9	4.9
16.500	4.9	4.9	4.9	4.9	4.9
17.000	5.0	5.0	5.0	5.0	5.0

Subsection: Time-Depth Curve
Label: SCS Type II
Scenario: 10-YEAR

Return Event: 10 years
Storm Event: 10-yr

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.500	5.0	5.0	5.0	5.0	5.1
18.000	5.1	5.1	5.1	5.1	5.1
18.500	5.1	5.1	5.1	5.1	5.1
19.000	5.2	5.2	5.2	5.2	5.2
19.500	5.2	5.2	5.2	5.2	5.2
20.000	5.2	5.2	5.3	5.3	5.3
20.500	5.3	5.3	5.3	5.3	5.3
21.000	5.3	5.3	5.3	5.3	5.3
21.500	5.3	5.3	5.4	5.4	5.4
22.000	5.4	5.4	5.4	5.4	5.4
22.500	5.4	5.4	5.4	5.4	5.4
23.000	5.4	5.4	5.5	5.5	5.5
23.500	5.5	5.5	5.5	5.5	5.5
24.000	5.5	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time-Depth Curve | Return Event: 2 years
Label: SCS Type II | Storm Event: 2-yr
Scenario: 2-year

Time-Depth Curve: 2-yr	
Label	2-yr
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	2 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.0	0.0	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.1
3.000	0.1	0.1	0.1	0.1	0.1
3.500	0.1	0.1	0.2	0.2	0.2
4.000	0.2	0.2	0.2	0.2	0.2
4.500	0.2	0.2	0.2	0.2	0.2
5.000	0.2	0.2	0.2	0.2	0.2
5.500	0.2	0.3	0.3	0.3	0.3
6.000	0.3	0.3	0.3	0.3	0.3
6.500	0.3	0.3	0.3	0.3	0.3
7.000	0.3	0.4	0.4	0.4	0.4
7.500	0.4	0.4	0.4	0.4	0.4
8.000	0.4	0.4	0.4	0.4	0.5
8.500	0.5	0.5	0.5	0.5	0.5
9.000	0.5	0.5	0.5	0.5	0.6
9.500	0.6	0.6	0.6	0.6	0.6
10.000	0.6	0.6	0.7	0.7	0.7
10.500	0.7	0.7	0.8	0.8	0.8
11.000	0.8	0.8	0.9	0.9	1.0
11.500	1.0	1.1	1.2	1.5	2.0
12.000	2.3	2.4	2.4	2.5	2.5
12.500	2.6	2.6	2.6	2.7	2.7
13.000	2.7	2.7	2.7	2.8	2.8
13.500	2.8	2.8	2.8	2.8	2.9
14.000	2.9	2.9	2.9	2.9	2.9
14.500	2.9	2.9	3.0	3.0	3.0
15.000	3.0	3.0	3.0	3.0	3.0
15.500	3.0	3.0	3.1	3.1	3.1
16.000	3.1	3.1	3.1	3.1	3.1
16.500	3.1	3.1	3.1	3.1	3.1
17.000	3.2	3.2	3.2	3.2	3.2

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.500	3.2	3.2	3.2	3.2	3.2
18.000	3.2	3.2	3.2	3.2	3.2
18.500	3.3	3.3	3.3	3.3	3.3
19.000	3.3	3.3	3.3	3.3	3.3
19.500	3.3	3.3	3.3	3.3	3.3
20.000	3.3	3.3	3.3	3.3	3.4
20.500	3.4	3.4	3.4	3.4	3.4
21.000	3.4	3.4	3.4	3.4	3.4
21.500	3.4	3.4	3.4	3.4	3.4
22.000	3.4	3.4	3.4	3.4	3.4
22.500	3.4	3.4	3.4	3.5	3.5
23.000	3.5	3.5	3.5	3.5	3.5
23.500	3.5	3.5	3.5	3.5	3.5
24.000	3.5	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time-Depth Curve
Label: SCS Type II
Scenario: WQv

Return Event: 1 years
Storm Event: WQ

Time-Depth Curve: WQ	
Label	WQ
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	1 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.0	0.0	0.0
1.500	0.0	0.0	0.0	0.0	0.0
2.000	0.0	0.0	0.0	0.0	0.0
2.500	0.0	0.0	0.0	0.0	0.0
3.000	0.0	0.0	0.1	0.1	0.1
3.500	0.1	0.1	0.1	0.1	0.1
4.000	0.1	0.1	0.1	0.1	0.1
4.500	0.1	0.1	0.1	0.1	0.1
5.000	0.1	0.1	0.1	0.1	0.1
5.500	0.1	0.1	0.1	0.1	0.1
6.000	0.1	0.1	0.1	0.1	0.1
6.500	0.1	0.1	0.1	0.1	0.1
7.000	0.1	0.1	0.1	0.1	0.1
7.500	0.1	0.2	0.2	0.2	0.2
8.000	0.2	0.2	0.2	0.2	0.2
8.500	0.2	0.2	0.2	0.2	0.2
9.000	0.2	0.2	0.2	0.2	0.2
9.500	0.2	0.2	0.2	0.2	0.2
10.000	0.2	0.3	0.3	0.3	0.3
10.500	0.3	0.3	0.3	0.3	0.3
11.000	0.3	0.3	0.3	0.4	0.4
11.500	0.4	0.4	0.5	0.6	0.8
12.000	0.9	0.9	1.0	1.0	1.0
12.500	1.0	1.0	1.0	1.0	1.0
13.000	1.1	1.1	1.1	1.1	1.1
13.500	1.1	1.1	1.1	1.1	1.1
14.000	1.1	1.1	1.1	1.1	1.1
14.500	1.1	1.2	1.2	1.2	1.2
15.000	1.2	1.2	1.2	1.2	1.2
15.500	1.2	1.2	1.2	1.2	1.2
16.000	1.2	1.2	1.2	1.2	1.2
16.500	1.2	1.2	1.2	1.2	1.2
17.000	1.2	1.2	1.2	1.2	1.2

Subsection: Time-Depth Curve
Label: SCS Type II
Scenario: WQv

Return Event: 1 years
Storm Event: WQ

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.500	1.2	1.3	1.3	1.3	1.3
18.000	1.3	1.3	1.3	1.3	1.3
18.500	1.3	1.3	1.3	1.3	1.3
19.000	1.3	1.3	1.3	1.3	1.3
19.500	1.3	1.3	1.3	1.3	1.3
20.000	1.3	1.3	1.3	1.3	1.3
20.500	1.3	1.3	1.3	1.3	1.3
21.000	1.3	1.3	1.3	1.3	1.3
21.500	1.3	1.3	1.3	1.3	1.3
22.000	1.3	1.3	1.3	1.3	1.3
22.500	1.3	1.3	1.3	1.4	1.4
23.000	1.4	1.4	1.4	1.4	1.4
23.500	1.4	1.4	1.4	1.4	1.4
24.000	1.4	(N/A)	(N/A)	(N/A)	(N/A)

Infiltration	
Infiltration Method (Computed)	Constant
Infiltration Rate (Constant)	0.01 ft³/s

Initial Conditions	
Elevation (Water Surface, Initial)	1,005.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
1,005.50	0.00	0.000	0.000	0.00	0.00	0.00
1,005.60	0.01	0.001	0.000	0.01	0.01	0.30
1,005.70	0.01	0.001	0.000	0.01	0.02	0.60
1,005.80	0.01	0.002	0.000	0.01	0.02	0.89
1,005.90	0.02	0.002	0.000	0.01	0.02	1.18
1,006.00	0.02	0.003	0.000	0.01	0.02	1.48
1,006.10	0.02	0.005	0.000	0.01	0.03	2.25
1,006.20	0.02	0.006	0.000	0.01	0.03	3.03
1,006.30	0.02	0.008	0.000	0.01	0.03	3.80
1,006.40	0.02	0.009	0.000	0.01	0.03	4.58
1,006.50	0.03	0.011	0.000	0.01	0.03	5.36
1,006.60	0.03	0.013	0.000	0.01	0.03	6.13
1,006.70	0.03	0.014	0.000	0.01	0.03	6.91
1,006.80	0.03	0.016	0.000	0.01	0.04	7.68
1,006.90	0.03	0.017	0.000	0.01	0.04	8.46
1,007.00	0.03	0.019	0.000	0.01	0.04	9.23
1,007.10	0.03	0.020	0.000	0.01	0.04	9.91
1,007.20	0.03	0.022	0.000	0.01	0.04	10.59
1,007.30	0.03	0.023	0.000	0.01	0.04	11.27
1,007.40	0.04	0.025	0.000	0.01	0.04	11.95
1,007.50	0.04	0.026	0.000	0.01	0.04	12.63
1,007.60	0.04	0.027	0.000	0.01	0.04	13.31
1,007.70	0.04	0.029	0.000	0.01	0.04	13.98
1,007.80	0.04	0.030	0.000	0.01	0.05	14.66
1,007.90	0.04	0.032	0.000	0.01	0.05	15.34
1,008.00	0.04	0.033	0.000	0.01	0.05	16.02
1,008.10	0.04	0.034	0.000	0.01	0.05	16.36
1,008.20	0.04	0.034	0.000	0.01	0.05	16.70
1,008.30	0.04	0.035	0.000	0.01	0.05	17.04

Subsection: Elevation-Volume-Flow Table (Pond) Return Event: 1 years
Label: STF Storm Event: WQ
Scenario: WQv

Elevation (ft)	Outflow (ft^3/s)	Storage (ac-ft)	Area (ft^2)	Infiltration (ft^3/s)	Flow (Total) (ft^3/s)	2S/t + O (ft^3/s)
1,008.40	0.07	0.036	0.000	0.01	0.08	17.40
1,008.50	0.15	0.037	0.000	0.01	0.16	17.82
1,008.60	0.27	0.037	0.000	0.01	0.28	18.28
1,008.70	0.44	0.038	0.000	0.01	0.44	18.79
1,008.80	0.63	0.039	0.000	0.01	0.63	19.31
1,008.90	0.84	0.039	0.000	0.01	0.84	19.86
1,009.00	1.08	0.040	0.000	0.01	1.09	20.45
1,009.10	1.22	0.040	0.000	0.01	1.22	20.58
1,009.20	1.34	0.040	0.000	0.01	1.34	20.70
1,009.30	1.45	0.040	0.000	0.01	1.45	20.81
1,009.40	1.55	0.040	0.000	0.01	1.55	20.91
1,009.50	1.64	0.040	0.000	0.01	1.65	21.01
1,009.60	1.73	0.040	0.000	0.01	1.74	21.10
1,009.70	1.82	0.040	0.000	0.01	1.82	21.18
1,009.80	1.90	0.040	0.000	0.01	1.91	21.27
1,009.90	1.98	0.040	0.000	0.01	1.98	21.34
1,010.00	2.05	0.040	0.000	0.01	2.06	21.42
1,010.10	2.12	0.041	0.000	0.01	2.13	21.78
1,010.20	2.19	0.041	0.000	0.01	2.20	22.14
1,010.30	2.26	0.042	0.000	0.01	2.27	22.50
1,010.40	2.33	0.042	0.000	0.01	2.33	22.86
1,010.50	2.39	0.043	0.000	0.01	2.40	23.21
1,010.60	2.45	0.044	0.000	0.01	2.46	23.56
1,010.70	2.52	0.044	0.000	0.01	2.52	23.91
1,010.80	2.57	0.045	0.000	0.01	2.58	24.26
1,010.90	2.63	0.045	0.000	0.01	2.64	24.61
1,011.00	2.69	0.046	0.000	0.01	2.70	24.96
1,011.10	2.74	0.050	0.000	0.01	2.75	26.90
1,011.20	2.80	0.054	0.000	0.01	2.80	28.84
1,011.30	2.85	0.058	0.000	0.01	2.86	30.79
1,011.40	2.90	0.062	0.000	0.01	2.91	32.73
1,011.50	2.96	0.066	0.000	0.01	2.96	34.66
1,011.60	3.39	0.069	0.000	0.01	3.39	36.98
1,011.70	4.13	0.073	0.000	0.01	4.13	39.61
1,011.80	5.08	0.077	0.000	0.01	5.08	42.45
1,011.90	6.19	0.081	0.000	0.01	6.19	45.45
1,012.00	7.44	0.085	0.000	0.01	7.45	48.59

Subsection: Level Pool Pond Routing Summary

Label: STF (IN)

Scenario: WQv

Return Event: 1 years

Storm Event: WQ

Infiltration	
Infiltration Method (Computed)	Constant
Infiltration Rate (Constant)	0.01 ft³/s

Initial Conditions	
Elevation (Water Surface, Initial)	1,005.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	1.05 ft³/s	Time to Peak (Flow, In)	11.900 hours
Infiltration (Peak)	0.01 ft³/s	Time to Peak (Infiltration)	10.150 hours
Flow (Peak Outlet)	0.04 ft³/s	Time to Peak (Flow, Outlet)	13.500 hours

Elevation (Water Surface, Peak)	1,007.88 ft
Volume (Peak)	0.031 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.000 ac-ft
Volume (Total Inflow)	0.058 ac-ft
Volume (Total Infiltration)	0.008 ac-ft
Volume (Total Outlet Outflow)	0.038 ac-ft
Volume (Retained)	0.012 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.2 %

Infiltration	
Infiltration Method (Computed)	Constant
Infiltration Rate (Constant)	0.01 ft³/s

Initial Conditions	
Elevation (Water Surface, Initial)	1,005.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	3.28 ft³/s	Time to Peak (Flow, In)	11.900 hours
Infiltration (Peak)	0.01 ft³/s	Time to Peak (Infiltration)	5.350 hours
Flow (Peak Outlet)	2.70 ft³/s	Time to Peak (Flow, Outlet)	12.000 hours

Elevation (Water Surface, Peak)	1,011.03 ft
Volume (Peak)	0.047 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.000 ac-ft
Volume (Total Inflow)	0.190 ac-ft
Volume (Total Infiltration)	0.010 ac-ft
Volume (Total Outlet Outflow)	0.151 ac-ft
Volume (Retained)	0.029 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.1 %

Subsection: Level Pool Pond Routing Summary
Label: STF (IN)
Scenario: 10-YEAR

Return Event: 10 years
Storm Event: 10-yr

Infiltration

Infiltration Method (Computed)	Constant
Infiltration Rate (Constant)	0.01 ft³/s

Initial Conditions

Elevation (Water Surface, Initial)	1,005.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Inflow/Outflow Hydrograph Summary

Flow (Peak In)	5.33 ft³/s	Time to Peak (Flow, In)	11.900 hours
Infiltration (Peak)	0.01 ft³/s	Time to Peak (Infiltration)	3.450 hours
Flow (Peak Outlet)	3.51 ft³/s	Time to Peak (Flow, Outlet)	12.050 hours

Elevation (Water Surface, Peak)	1,011.62 ft
Volume (Peak)	0.070 ac-ft

Mass Balance (ac-ft)

Volume (Initial)	0.000 ac-ft
Volume (Total Inflow)	0.318 ac-ft
Volume (Total Infiltration)	0.011 ac-ft
Volume (Total Outlet Outflow)	0.272 ac-ft
Volume (Retained)	0.035 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.1 %

Subsection: Level Pool Pond Routing Summary
Label: STF (IN)
Scenario: 100-YEAR

Return Event: 100 years
Storm Event: 100-yr

Infiltration	
Infiltration Method (Computed)	Constant
Infiltration Rate (Constant)	0.01 ft^3/s

Initial Conditions	
Elevation (Water Surface, Initial)	1,005.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft^3/s
Flow (Initial Infiltration)	0.00 ft^3/s
Flow (Initial, Total)	0.00 ft^3/s
Time Increment	0.050 hours

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	7.47 ft^3/s	Time to Peak (Flow, In)	11.900 hours
Infiltration (Peak)	0.01 ft^3/s	Time to Peak (Infiltration)	2.500 hours
Flow (Peak Outlet)	6.37 ft^3/s	Time to Peak (Flow, Outlet)	12.000 hours

Elevation (Water Surface, Peak)	1,011.91 ft
Volume (Peak)	0.082 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.000 ac-ft
Volume (Total Inflow)	0.452 ac-ft
Volume (Total Infiltration)	0.011 ac-ft
Volume (Total Outlet Outflow)	0.406 ac-ft
Volume (Retained)	0.035 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.1 %

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Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
Proposed Detained (STF)	WQv	1	0.058	11.900	1.05
Proposed Detained (STF)	2-year	2	0.190	11.900	3.28
Proposed Detained (STF)	10-YEAR	10	0.318	11.900	5.33
Proposed Detained (STF)	100-YEAR	100	0.452	11.900	7.47
Existing	WQv	1	1.006	12.000	16.51
Existing	2-year	2	3.833	12.000	59.94
Existing	10-YEAR	10	6.657	12.000	100.62
Existing	100-YEAR	100	9.666	12.000	142.74
Proposed Undetained	WQv	1	0.962	12.000	15.77
Proposed Undetained	2-year	2	3.663	12.000	57.28
Proposed Undetained	10-YEAR	10	6.362	12.000	96.15
Proposed Undetained	100-YEAR	100	9.237	12.000	136.41

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
Existing	WQv	1	1.006	12.000	16.51
Existing	2-year	2	3.833	12.000	59.94
Existing	10-YEAR	10	6.657	12.000	100.62
Existing	100-YEAR	100	9.666	12.000	142.74
Proposed	WQv	1	0.999	12.000	15.81
Proposed	2-year	2	3.814	12.000	59.99
Proposed	10-YEAR	10	6.634	12.000	99.60
Proposed	100-YEAR	100	9.643	12.000	142.77

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
STF (IN)	WQv	1	0.058	11.900	1.05	(N/A)	(N/A)
STF (OUT)	WQv	1	0.038	13.500	0.04	1,007.88	0.031
STF (IN)	2-year	2	0.190	11.900	3.28	(N/A)	(N/A)
STF (OUT)	2-year	2	0.151	12.000	2.70	1,011.03	0.047
STF (IN)	10-YEAR	10	0.318	11.900	5.33	(N/A)	(N/A)
STF (OUT)	10-YEAR	10	0.272	12.050	3.51	1,011.62	0.070
STF (IN)	100-YEAR	100	0.452	11.900	7.47	(N/A)	(N/A)
STF (OUT)	100-YEAR	100	0.406	12.000	6.37	1,011.91	0.082

Subsection: Time-Depth Curve
Label: SCS Type II
Scenario: 100-YEAR

Return Event: 100 years
Storm Event: 100-yr

Time-Depth Curve: 100-yr	
Label	100-yr
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	100 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.1	0.1	0.1
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.2
2.000	0.2	0.2	0.2	0.2	0.2
2.500	0.2	0.2	0.2	0.2	0.3
3.000	0.3	0.3	0.3	0.3	0.3
3.500	0.3	0.3	0.3	0.3	0.4
4.000	0.4	0.4	0.4	0.4	0.4
4.500	0.4	0.4	0.4	0.5	0.5
5.000	0.5	0.5	0.5	0.5	0.5
5.500	0.5	0.6	0.6	0.6	0.6
6.000	0.6	0.6	0.6	0.6	0.7
6.500	0.7	0.7	0.7	0.7	0.7
7.000	0.8	0.8	0.8	0.8	0.8
7.500	0.8	0.8	0.9	0.9	0.9
8.000	0.9	0.9	0.9	1.0	1.0
8.500	1.0	1.0	1.0	1.1	1.1
9.000	1.1	1.1	1.2	1.2	1.2
9.500	1.2	1.3	1.3	1.3	1.3
10.000	1.4	1.4	1.4	1.5	1.5
10.500	1.6	1.6	1.6	1.7	1.7
11.000	1.8	1.8	1.9	2.0	2.1
11.500	2.2	2.3	2.7	3.3	4.3
12.000	5.0	5.2	5.3	5.4	5.5
12.500	5.6	5.7	5.7	5.8	5.8
13.000	5.9	5.9	6.0	6.0	6.0
13.500	6.1	6.1	6.1	6.2	6.2
14.000	6.2	6.3	6.3	6.3	6.3
14.500	6.4	6.4	6.4	6.4	6.5
15.000	6.5	6.5	6.5	6.6	6.6
15.500	6.6	6.6	6.6	6.7	6.7
16.000	6.7	6.7	6.7	6.7	6.8
16.500	6.8	6.8	6.8	6.8	6.8
17.000	6.9	6.9	6.9	6.9	6.9

Subsection: Time-Depth Curve
Label: SCS Type II
Scenario: 100-YEAR

Return Event: 100 years
Storm Event: 100-yr

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.500	6.9	6.9	7.0	7.0	7.0
18.000	7.0	7.0	7.0	7.0	7.1
18.500	7.1	7.1	7.1	7.1	7.1
19.000	7.1	7.1	7.2	7.2	7.2
19.500	7.2	7.2	7.2	7.2	7.2
20.000	7.2	7.2	7.3	7.3	7.3
20.500	7.3	7.3	7.3	7.3	7.3
21.000	7.3	7.3	7.4	7.4	7.4
21.500	7.4	7.4	7.4	7.4	7.4
22.000	7.4	7.4	7.4	7.5	7.5
22.500	7.5	7.5	7.5	7.5	7.5
23.000	7.5	7.5	7.5	7.5	7.5
23.500	7.6	7.6	7.6	7.6	7.6
24.000	7.6	(N/A)	(N/A)	(N/A)	(N/A)

Time-Depth Curve: 10-yr	
Label	10-yr
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	10 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.1
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.2	0.2	0.2	0.2	0.2
3.000	0.2	0.2	0.2	0.2	0.2
3.500	0.2	0.2	0.2	0.2	0.3
4.000	0.3	0.3	0.3	0.3	0.3
4.500	0.3	0.3	0.3	0.3	0.3
5.000	0.3	0.4	0.4	0.4	0.4
5.500	0.4	0.4	0.4	0.4	0.4
6.000	0.4	0.4	0.5	0.5	0.5
6.500	0.5	0.5	0.5	0.5	0.5
7.000	0.5	0.6	0.6	0.6	0.6
7.500	0.6	0.6	0.6	0.6	0.6
8.000	0.7	0.7	0.7	0.7	0.7
8.500	0.7	0.7	0.8	0.8	0.8
9.000	0.8	0.8	0.8	0.9	0.9
9.500	0.9	0.9	0.9	1.0	1.0
10.000	1.0	1.0	1.0	1.1	1.1
10.500	1.1	1.2	1.2	1.2	1.3
11.000	1.3	1.3	1.4	1.4	1.5
11.500	1.6	1.7	1.9	2.4	3.1
12.000	3.6	3.8	3.8	3.9	4.0
12.500	4.0	4.1	4.1	4.2	4.2
13.000	4.2	4.3	4.3	4.3	4.4
13.500	4.4	4.4	4.4	4.5	4.5
14.000	4.5	4.5	4.5	4.6	4.6
14.500	4.6	4.6	4.6	4.7	4.7
15.000	4.7	4.7	4.7	4.7	4.8
15.500	4.8	4.8	4.8	4.8	4.8
16.000	4.8	4.9	4.9	4.9	4.9
16.500	4.9	4.9	4.9	4.9	4.9
17.000	5.0	5.0	5.0	5.0	5.0

Subsection: Time-Depth Curve
Label: SCS Type II
Scenario: 10-YEAR

Return Event: 10 years
Storm Event: 10-yr

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.500	5.0	5.0	5.0	5.0	5.1
18.000	5.1	5.1	5.1	5.1	5.1
18.500	5.1	5.1	5.1	5.1	5.1
19.000	5.2	5.2	5.2	5.2	5.2
19.500	5.2	5.2	5.2	5.2	5.2
20.000	5.2	5.2	5.3	5.3	5.3
20.500	5.3	5.3	5.3	5.3	5.3
21.000	5.3	5.3	5.3	5.3	5.3
21.500	5.3	5.3	5.4	5.4	5.4
22.000	5.4	5.4	5.4	5.4	5.4
22.500	5.4	5.4	5.4	5.4	5.4
23.000	5.4	5.4	5.5	5.5	5.5
23.500	5.5	5.5	5.5	5.5	5.5
24.000	5.5	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time-Depth Curve
Label: SCS Type II
Scenario: 2-year

Return Event: 2 years
Storm Event: 2-yr

Time-Depth Curve: 2-yr	
Label	2-yr
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	2 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.0	0.0	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.1
3.000	0.1	0.1	0.1	0.1	0.1
3.500	0.1	0.1	0.2	0.2	0.2
4.000	0.2	0.2	0.2	0.2	0.2
4.500	0.2	0.2	0.2	0.2	0.2
5.000	0.2	0.2	0.2	0.2	0.2
5.500	0.2	0.3	0.3	0.3	0.3
6.000	0.3	0.3	0.3	0.3	0.3
6.500	0.3	0.3	0.3	0.3	0.3
7.000	0.3	0.4	0.4	0.4	0.4
7.500	0.4	0.4	0.4	0.4	0.4
8.000	0.4	0.4	0.4	0.4	0.5
8.500	0.5	0.5	0.5	0.5	0.5
9.000	0.5	0.5	0.5	0.5	0.6
9.500	0.6	0.6	0.6	0.6	0.6
10.000	0.6	0.6	0.7	0.7	0.7
10.500	0.7	0.7	0.8	0.8	0.8
11.000	0.8	0.8	0.9	0.9	1.0
11.500	1.0	1.1	1.2	1.5	2.0
12.000	2.3	2.4	2.4	2.5	2.5
12.500	2.6	2.6	2.6	2.7	2.7
13.000	2.7	2.7	2.7	2.8	2.8
13.500	2.8	2.8	2.8	2.8	2.9
14.000	2.9	2.9	2.9	2.9	2.9
14.500	2.9	2.9	3.0	3.0	3.0
15.000	3.0	3.0	3.0	3.0	3.0
15.500	3.0	3.0	3.1	3.1	3.1
16.000	3.1	3.1	3.1	3.1	3.1
16.500	3.1	3.1	3.1	3.1	3.1
17.000	3.2	3.2	3.2	3.2	3.2

Subsection: Time-Depth Curve
Label: SCS Type II
Scenario: 2-year

Return Event: 2 years
Storm Event: 2-yr

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.500	3.2	3.2	3.2	3.2	3.2
18.000	3.2	3.2	3.2	3.2	3.2
18.500	3.3	3.3	3.3	3.3	3.3
19.000	3.3	3.3	3.3	3.3	3.3
19.500	3.3	3.3	3.3	3.3	3.3
20.000	3.3	3.3	3.3	3.3	3.4
20.500	3.4	3.4	3.4	3.4	3.4
21.000	3.4	3.4	3.4	3.4	3.4
21.500	3.4	3.4	3.4	3.4	3.4
22.000	3.4	3.4	3.4	3.4	3.4
22.500	3.4	3.4	3.4	3.5	3.5
23.000	3.5	3.5	3.5	3.5	3.5
23.500	3.5	3.5	3.5	3.5	3.5
24.000	3.5	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time-Depth Curve
Label: SCS Type II
Scenario: WQv

Return Event: 1 years
Storm Event: WQ

Time-Depth Curve: WQ	
Label	WQ
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	1 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.0	0.0	0.0
1.500	0.0	0.0	0.0	0.0	0.0
2.000	0.0	0.0	0.0	0.0	0.0
2.500	0.0	0.0	0.0	0.0	0.0
3.000	0.0	0.0	0.1	0.1	0.1
3.500	0.1	0.1	0.1	0.1	0.1
4.000	0.1	0.1	0.1	0.1	0.1
4.500	0.1	0.1	0.1	0.1	0.1
5.000	0.1	0.1	0.1	0.1	0.1
5.500	0.1	0.1	0.1	0.1	0.1
6.000	0.1	0.1	0.1	0.1	0.1
6.500	0.1	0.1	0.1	0.1	0.1
7.000	0.1	0.1	0.1	0.1	0.1
7.500	0.1	0.2	0.2	0.2	0.2
8.000	0.2	0.2	0.2	0.2	0.2
8.500	0.2	0.2	0.2	0.2	0.2
9.000	0.2	0.2	0.2	0.2	0.2
9.500	0.2	0.2	0.2	0.2	0.2
10.000	0.2	0.3	0.3	0.3	0.3
10.500	0.3	0.3	0.3	0.3	0.3
11.000	0.3	0.3	0.3	0.4	0.4
11.500	0.4	0.4	0.5	0.6	0.8
12.000	0.9	0.9	1.0	1.0	1.0
12.500	1.0	1.0	1.0	1.0	1.0
13.000	1.1	1.1	1.1	1.1	1.1
13.500	1.1	1.1	1.1	1.1	1.1
14.000	1.1	1.1	1.1	1.1	1.1
14.500	1.1	1.2	1.2	1.2	1.2
15.000	1.2	1.2	1.2	1.2	1.2
15.500	1.2	1.2	1.2	1.2	1.2
16.000	1.2	1.2	1.2	1.2	1.2
16.500	1.2	1.2	1.2	1.2	1.2
17.000	1.2	1.2	1.2	1.2	1.2

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.500	1.2	1.3	1.3	1.3	1.3
18.000	1.3	1.3	1.3	1.3	1.3
18.500	1.3	1.3	1.3	1.3	1.3
19.000	1.3	1.3	1.3	1.3	1.3
19.500	1.3	1.3	1.3	1.3	1.3
20.000	1.3	1.3	1.3	1.3	1.3
20.500	1.3	1.3	1.3	1.3	1.3
21.000	1.3	1.3	1.3	1.3	1.3
21.500	1.3	1.3	1.3	1.3	1.3
22.000	1.3	1.3	1.3	1.3	1.3
22.500	1.3	1.3	1.3	1.4	1.4
23.000	1.4	1.4	1.4	1.4	1.4
23.500	1.4	1.4	1.4	1.4	1.4
24.000	1.4	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Elevation-Volume-Flow Table (Pond)
Label: STF
Scenario: WQv

Return Event: 1 years
Storm Event: WQ

Infiltration	
Infiltration Method (Computed)	Constant
Infiltration Rate (Constant)	0.01 ft³/s

Initial Conditions	
Elevation (Water Surface, Initial)	1,005.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
1,005.50	0.00	0.000	0.000	0.00	0.00	0.00
1,005.60	0.01	0.001	0.000	0.01	0.01	0.30
1,005.70	0.01	0.001	0.000	0.01	0.02	0.60
1,005.80	0.01	0.002	0.000	0.01	0.02	0.89
1,005.90	0.02	0.002	0.000	0.01	0.02	1.18
1,006.00	0.02	0.003	0.000	0.01	0.02	1.48
1,006.10	0.02	0.005	0.000	0.01	0.03	2.25
1,006.20	0.02	0.006	0.000	0.01	0.03	3.03
1,006.30	0.02	0.008	0.000	0.01	0.03	3.80
1,006.40	0.02	0.009	0.000	0.01	0.03	4.58
1,006.50	0.03	0.011	0.000	0.01	0.03	5.36
1,006.60	0.03	0.013	0.000	0.01	0.03	6.13
1,006.70	0.03	0.014	0.000	0.01	0.03	6.91
1,006.80	0.03	0.016	0.000	0.01	0.04	7.68
1,006.90	0.03	0.017	0.000	0.01	0.04	8.46
1,007.00	0.03	0.019	0.000	0.01	0.04	9.23
1,007.10	0.03	0.020	0.000	0.01	0.04	9.91
1,007.20	0.03	0.022	0.000	0.01	0.04	10.59
1,007.30	0.03	0.023	0.000	0.01	0.04	11.27
1,007.40	0.04	0.025	0.000	0.01	0.04	11.95
1,007.50	0.04	0.026	0.000	0.01	0.04	12.63
1,007.60	0.04	0.027	0.000	0.01	0.04	13.31
1,007.70	0.04	0.029	0.000	0.01	0.04	13.98
1,007.80	0.04	0.030	0.000	0.01	0.05	14.66
1,007.90	0.04	0.032	0.000	0.01	0.05	15.34
1,008.00	0.04	0.033	0.000	0.01	0.05	16.02
1,008.10	0.04	0.034	0.000	0.01	0.05	16.36
1,008.20	0.04	0.034	0.000	0.01	0.05	16.70
1,008.30	0.04	0.035	0.000	0.01	0.05	17.04

Subsection: Elevation-Volume-Flow Table (Pond) Return Event: 1 years
Label: STF Storm Event: WQ
Scenario: WQv

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
1,008.40	0.07	0.036	0.000	0.01	0.08	17.40
1,008.50	0.15	0.037	0.000	0.01	0.16	17.82
1,008.60	0.27	0.037	0.000	0.01	0.28	18.28
1,008.70	0.44	0.038	0.000	0.01	0.44	18.79
1,008.80	0.63	0.039	0.000	0.01	0.63	19.31
1,008.90	0.84	0.039	0.000	0.01	0.84	19.86
1,009.00	1.08	0.040	0.000	0.01	1.09	20.45
1,009.10	1.22	0.040	0.000	0.01	1.22	20.58
1,009.20	1.34	0.040	0.000	0.01	1.34	20.70
1,009.30	1.45	0.040	0.000	0.01	1.45	20.81
1,009.40	1.55	0.040	0.000	0.01	1.55	20.91
1,009.50	1.64	0.040	0.000	0.01	1.65	21.01
1,009.60	1.73	0.040	0.000	0.01	1.74	21.10
1,009.70	1.82	0.040	0.000	0.01	1.82	21.18
1,009.80	1.90	0.040	0.000	0.01	1.91	21.27
1,009.90	1.98	0.040	0.000	0.01	1.98	21.34
1,010.00	2.05	0.040	0.000	0.01	2.06	21.42
1,010.10	2.12	0.041	0.000	0.01	2.13	21.78
1,010.20	2.19	0.041	0.000	0.01	2.20	22.14
1,010.30	2.26	0.042	0.000	0.01	2.27	22.50
1,010.40	2.33	0.042	0.000	0.01	2.33	22.86
1,010.50	2.39	0.043	0.000	0.01	2.40	23.21
1,010.60	2.45	0.044	0.000	0.01	2.46	23.56
1,010.70	2.52	0.044	0.000	0.01	2.52	23.91
1,010.80	2.57	0.045	0.000	0.01	2.58	24.26
1,010.90	2.63	0.045	0.000	0.01	2.64	24.61
1,011.00	2.69	0.046	0.000	0.01	2.70	24.96
1,011.10	2.74	0.050	0.000	0.01	2.75	26.90
1,011.20	2.80	0.054	0.000	0.01	2.80	28.84
1,011.30	2.85	0.058	0.000	0.01	2.86	30.79
1,011.40	2.90	0.062	0.000	0.01	2.91	32.73
1,011.50	2.96	0.066	0.000	0.01	2.96	34.66
1,011.60	3.39	0.069	0.000	0.01	3.39	36.98
1,011.70	4.13	0.073	0.000	0.01	4.13	39.61
1,011.80	5.08	0.077	0.000	0.01	5.08	42.45
1,011.90	6.19	0.081	0.000	0.01	6.19	45.45
1,012.00	7.44	0.085	0.000	0.01	7.45	48.59

Subsection: Level Pool Pond Routing Summary
Label: STF (IN)
Scenario: WQv

Return Event: 1 years
Storm Event: WQ

Infiltration	
Infiltration Method (Computed)	Constant
Infiltration Rate (Constant)	0.01 ft³/s

Initial Conditions	
Elevation (Water Surface, Initial)	1,005.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	1.05 ft³/s	Time to Peak (Flow, In)	11.900 hours
Infiltration (Peak)	0.01 ft³/s	Time to Peak (Infiltration)	10.150 hours
Flow (Peak Outlet)	0.04 ft³/s	Time to Peak (Flow, Outlet)	13.500 hours

Elevation (Water Surface, Peak)	1,007.88 ft
Volume (Peak)	0.031 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.000 ac-ft
Volume (Total Inflow)	0.058 ac-ft
Volume (Total Infiltration)	0.008 ac-ft
Volume (Total Outlet Outflow)	0.038 ac-ft
Volume (Retained)	0.012 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.2 %

Infiltration	
Infiltration Method (Computed)	Constant
Infiltration Rate (Constant)	0.01 ft^3/s

Initial Conditions	
Elevation (Water Surface, Initial)	1,005.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft^3/s
Flow (Initial Infiltration)	0.00 ft^3/s
Flow (Initial, Total)	0.00 ft^3/s
Time Increment	0.050 hours

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	3.28 ft^3/s	Time to Peak (Flow, In)	11.900 hours
Infiltration (Peak)	0.01 ft^3/s	Time to Peak (Infiltration)	5.350 hours
Flow (Peak Outlet)	2.70 ft^3/s	Time to Peak (Flow, Outlet)	12.000 hours

Elevation (Water Surface, Peak)	1,011.03 ft
Volume (Peak)	0.047 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.000 ac-ft
Volume (Total Inflow)	0.190 ac-ft
Volume (Total Infiltration)	0.010 ac-ft
Volume (Total Outlet Outflow)	0.151 ac-ft
Volume (Retained)	0.029 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.1 %

Subsection: Level Pool Pond Routing Summary
Label: STF (IN)
Scenario: 10-YEAR

Return Event: 10 years
Storm Event: 10-yr

Infiltration	
Infiltration Method (Computed)	Constant
Infiltration Rate (Constant)	0.01 ft³/s

Initial Conditions	
Elevation (Water Surface, Initial)	1,005.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	5.33 ft³/s	Time to Peak (Flow, In)	11.900 hours
Infiltration (Peak)	0.01 ft³/s	Time to Peak (Infiltration)	3.450 hours
Flow (Peak Outlet)	3.51 ft³/s	Time to Peak (Flow, Outlet)	12.050 hours

Elevation (Water Surface, Peak)	1,011.62 ft
Volume (Peak)	0.070 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.000 ac-ft
Volume (Total Inflow)	0.318 ac-ft
Volume (Total Infiltration)	0.011 ac-ft
Volume (Total Outlet Outflow)	0.272 ac-ft
Volume (Retained)	0.035 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.1 %

Infiltration	
Infiltration Method (Computed)	Constant
Infiltration Rate (Constant)	0.01 ft³/s

Initial Conditions	
Elevation (Water Surface, Initial)	1,005.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	7.47 ft³/s	Time to Peak (Flow, In)	11.900 hours
Infiltration (Peak)	0.01 ft³/s	Time to Peak (Infiltration)	2.500 hours
Flow (Peak Outlet)	6.37 ft³/s	Time to Peak (Flow, Outlet)	12.000 hours

Elevation (Water Surface, Peak)	1,011.91 ft
Volume (Peak)	0.082 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.000 ac-ft
Volume (Total Inflow)	0.452 ac-ft
Volume (Total Infiltration)	0.011 ac-ft
Volume (Total Outlet Outflow)	0.406 ac-ft
Volume (Retained)	0.035 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.1 %

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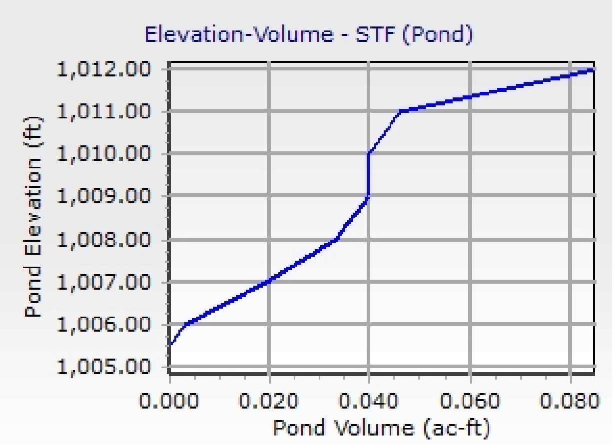
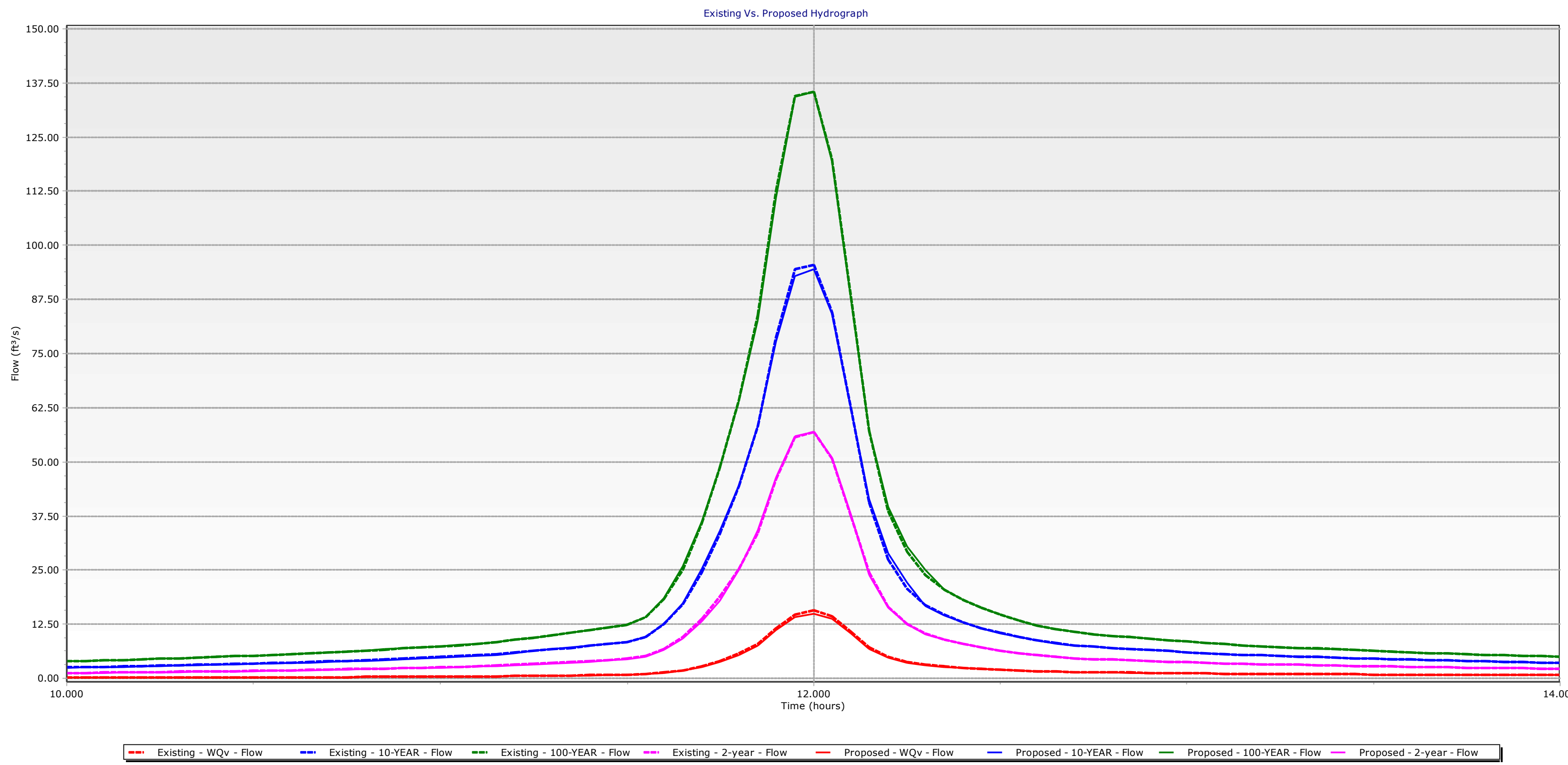
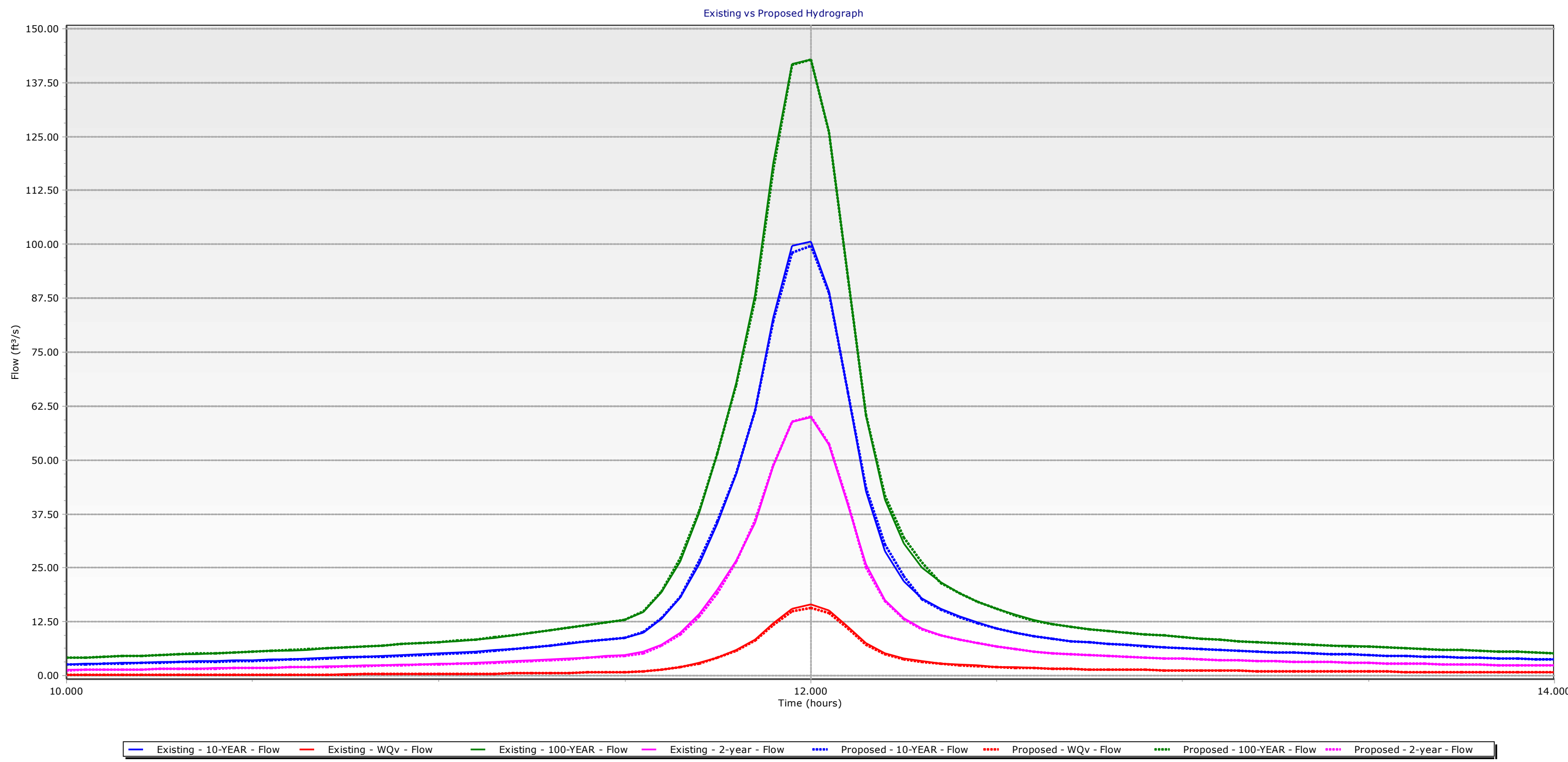
Elevation-Volume - STF (Pond)

Pond Elevation (ft)	Pond Volume (ac-ft)
1,005.50	0.000
1,006.00	0.003
1,007.00	0.019
1,008.00	0.033
1,009.00	0.040
1,010.00	0.040
1,011.00	0.046
1,012.00	0.085




Existing Vs. Proposed Hydrograph
Flow (ft³/s)
150.00
137.50
125.00
112.50
100.00
87.50
75.00
62.50
50.00
37.50
25.00
12.50
0.00
10.000
12.000
14.000
Time (hours)
Existing - WQv - Flow
Existing - 10-YEAR - Flow
Existing - 100-YEAR - Flow
Existing - 2-year - Flow
Proposed - WQv - Flow
Proposed - 10-YEAR - Flow
Proposed - 100-YEAR - Flow
Proposed - 2-year - Flow



Existing vs Proposed Hydrograph
150.00
137.50
125.00
112.50
100.00
87.50
75.00
62.50
50.00
37.50
25.00
12.50
0.00
Flow (ft³/s)
10.000
12.000
14.000
Time (hours)
Existing - 10-YEAR - Flow
Existing - WQv - Flow
Existing - 100-YEAR - Flow
Existing - 2-year - Flow
Proposed - 10-YEAR - Flow
Proposed - WQv - Flow
Proposed - 100-YEAR - Flow
Proposed - 2-year - Flow