



1001 Boulders Parkway
Suite 300
Richmond, VA 23225

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www.timmons.com

RE: Keswick Estate Utilities, Inc. – Sewage Treatment Plant Upgrade – Project Description

The Keswick Sewage Treatment Plant (STP) serves the Keswick Hall and Golf Club, and residential homes, and has a current capacity of 60,000 gpd. Keswick Estate Utilities, Inc. is planning to upgrade their influent pump station and force main, and add an equalization tank to the Keswick STP. Timmons Group will be the design engineer on the project. Planning and design of the project is currently underway.

This project is required in order for the facility to comply with the State Water Control Law, Clean Water Act, and maintain their Virginia Pollutant Discharge Elimination System (VPDES) Permit with the Virginia Department of Environmental Quality (DEQ).

The main component of this project is the construction of a 100,000 gallon, above-grade, open-top, pre-cast concrete, equalization tank. Pre-cast concrete is shop formed and therefore has a very neat and smooth finish. As shown in the drawings, the tank will be located within the existing STP site. Existing grade at the location of the proposed tank varies from 361' to 367'. Existing grade rises toward I-64 and has an elevation of approximately 370' at the I-64 right of way (ROW) fence. The tank finished floor will be situated at elevation 358'. The tank will be 18' total in height. The top walkway elevation will be 376'.

There is an existing wastewater structure on the site that is similar to the proposed structure in make and materials. It also is an above-grade, open-top, concrete, wastewater tank. It has a top of walkway elevation of 376', which matches that of the proposed tank. However, it is much closer to I-64, with 20' separating the edge of the structure from the ROW line.

As the proposed tank is similar to the existing tank and will hold the same top of walkway elevation as the existing tank, there is no change to the general view from I-64. As existing grade increases towards I-64, this makes the current and proposed tanks nearly invisible to the average passerby.

Adjacent to the equalization tank will be a small pre-fabricated, concrete 10' x 12' electrical building and a small generator. The electrical building concrete wall will have a stamped brick finish.

NOT FOR CONSTRUCTION

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1001 Reelers Parkway, Suite 300, Richmond, VA 23235
TEL 804-200-6500 FAX 804-560-1016 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

REVISION DESCRIPTION

DATE

MARCH 22, 2021

DRAWN BY
J. MARSHALL

DESIGNED BY
M. MILLER

CHECKED BY
B. STRICKLAND

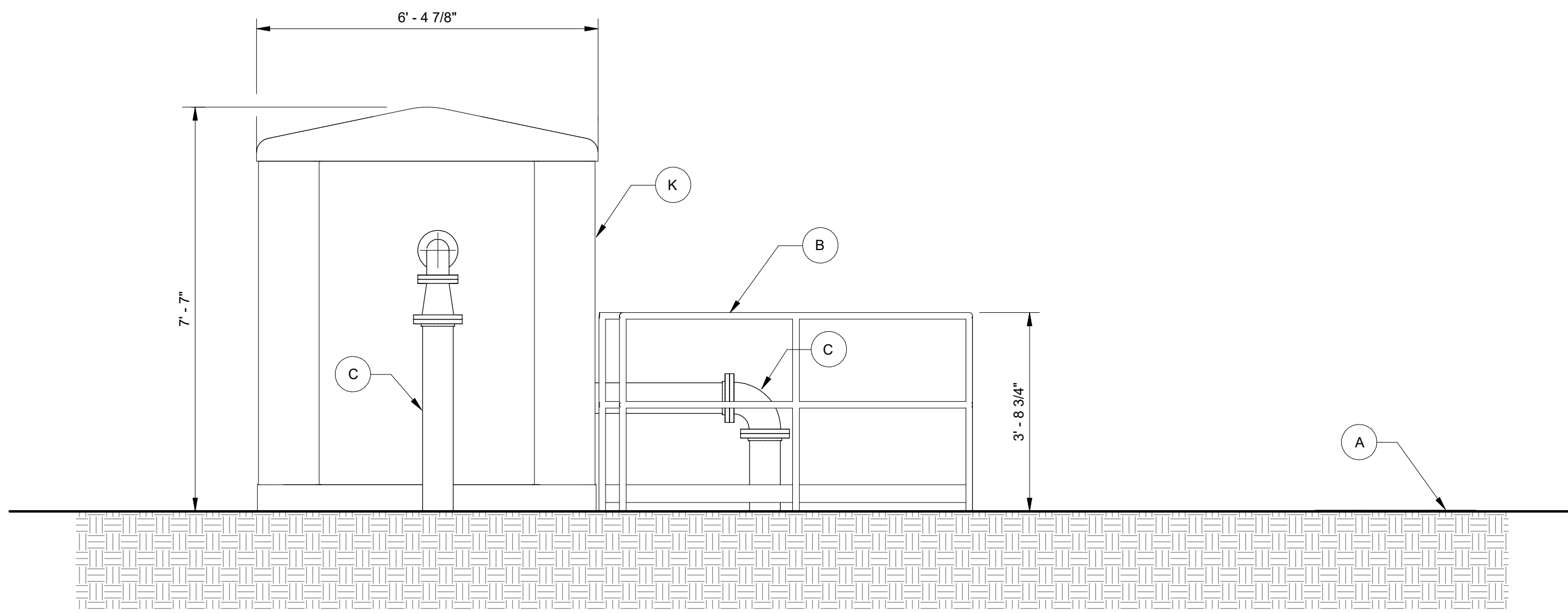
SCALE
As indicated

KESWICK WASTEWATER TREATMENT PLANT IMPROVEMENTS PROJECT
ALBEMARLE COUNTY ARCHITECTURAL REVIEW BOARD APPLICATION
WWTP ELEVATIONS

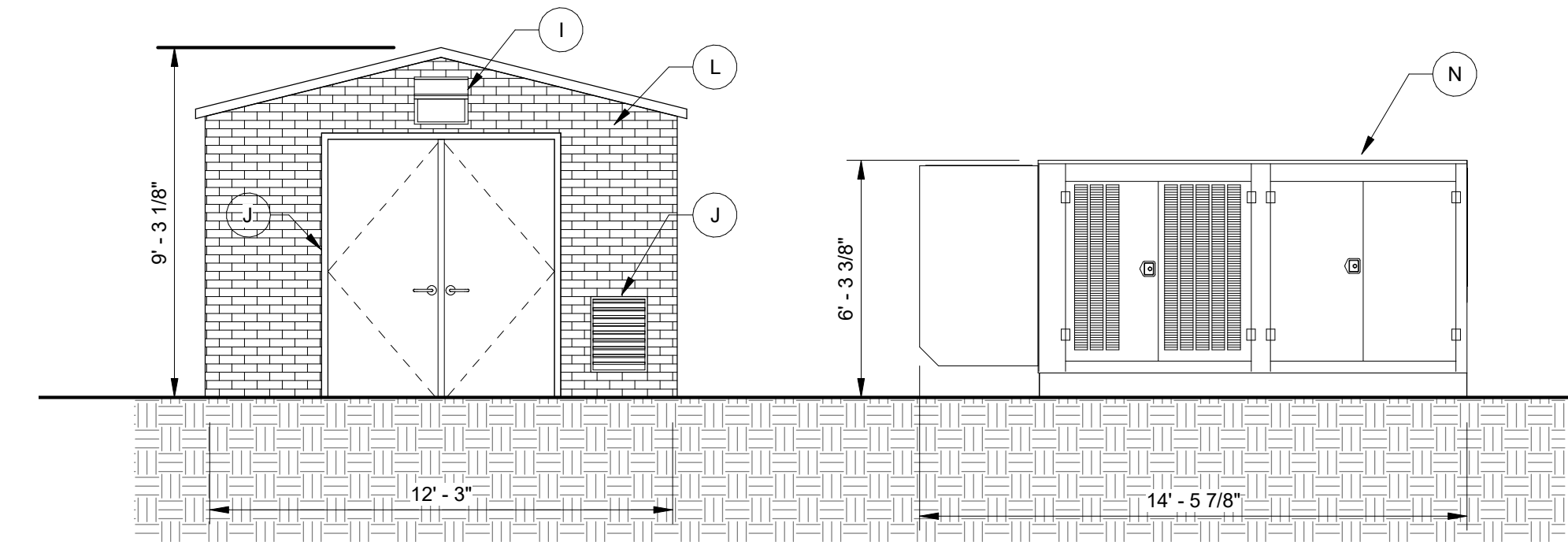
JOB NO.
40241
SHEET NO.
EXHB-1

TIMMONS GROUP

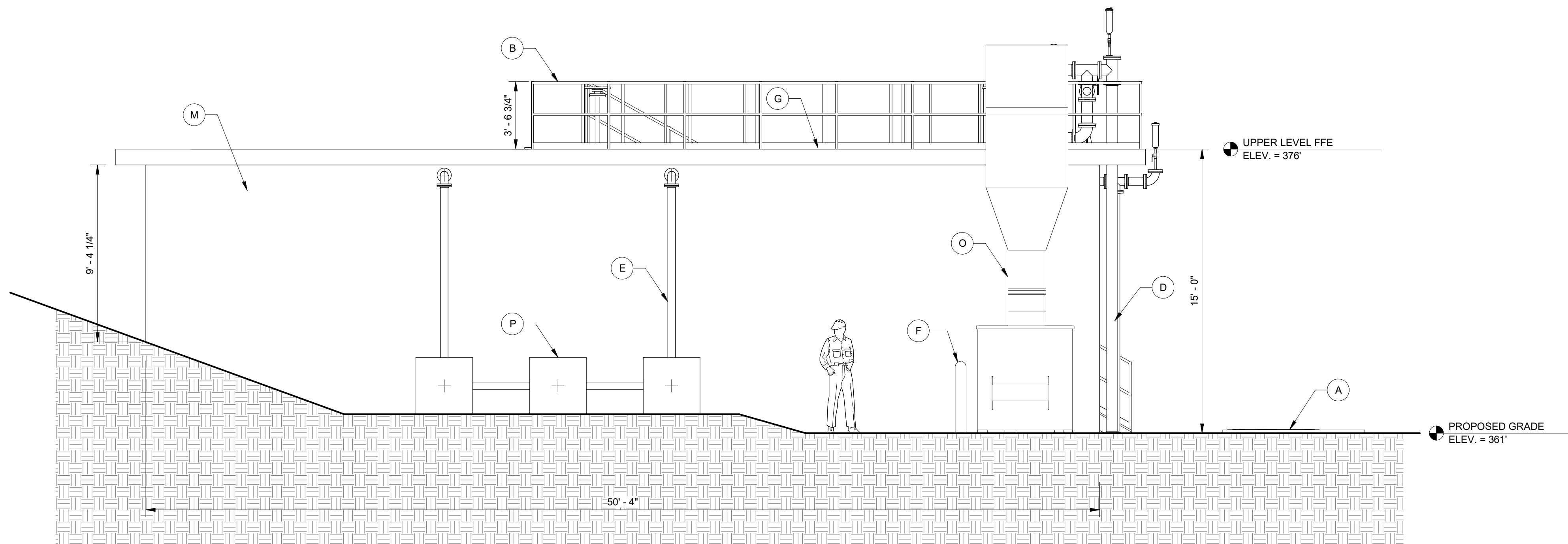
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3 PUMP STATION ELEVATION
1/2" = 1'-0"



2 GENERATOR AND ELECTRICAL BUILDING ELEVATION
1/4" = 1'-0"



1 EQ BASIN ELEVATION
1/4" = 1'-0"

MATERIAL SCHEDULE

A	HALLIDAY ALUMINUM ACCESS HATCH
B	ALUMINUM HAND RAIL
C	TINTED GREEN EPOXY COATED PIPING
D	ALUMINUM JACKETED PIPING
E	STAINLESS STEEL PIPING
F	CONCRETE BOLLARDS WITH YELLOW PAINT FINISH
G	CONCRETE FLOORING WITH SKID-PROOF COATING
H	AMBICO 72"x84" FLUSH DOUBLE DOORS
I	WALL PACK LIGHT
J	ALUMINUM WALL LOUVER
K	FIBERGLASS ENCLOSURE
L	PRECAST CONCRETE WITH RED BRICK STAMPED FINISH
M	PRECAST CONCRETE WITH SMOOTH STEEL TROWEL FINISH
N	STEEL GENERATOR ENCLOSURE
O	ALUMINUM SIDE HILL SCREEN
P	BLOWER PACKAGE

NOTE: MATERIAL SAMPLES PROVIDED TO ARB REPRESENT MATERIALS L AND M IN THE ABOVE SCHEDULE. TWO SAMPLES HAVE BEEN PROVIDED FOR THE ELECTRICAL BUILDING WHICH WILL BE EITHER PRECAST CONCRETE WITH A RED BRICK STAMPED FINISH OR PRECAST CONCRETE WITH AN EXPOSED AGGREGATE FINISH.



1 PERSPECTIVE VIEW
NOT TO SCALE

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DATE	REVISION DESCRIPTION

DATE
MARCH 22, 2021

DRAWN BY
J. MARSHALL

DESIGNED BY
M. MILLER

CHECKED BY
B. STRICKLAND

SCALE
12" = 1'-0"

TIMMONS GROUP

KESWICK WASTEWATER TREATMENT PLANT IMPROVEMENTS PROJECT
ALBEMARLE COUNTY ARCHITECTURAL REVIEW BOARD APPLICATION
WASTEWATER TREATMENT PLANT IMPROVEMENTS -- TREES REMOVED

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SHEET NO.
EXHB-2

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① PERSPECTIVE VIEW
NOT TO SCALE

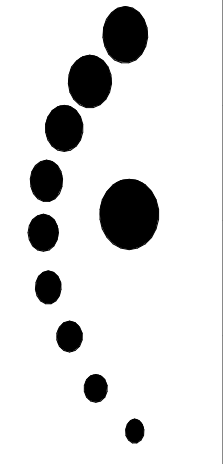
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SCALE	12" = 1'-0"



TIMMONS GROUP

KESWICK WASTEWATER TREATMENT PLANT IMPROVEMENTS PROJECT
ALBEMARLE COUNTY ARCHITECTURAL REVIEW BOARD APPLICATION
WASTEWATER TREATMENT PLANT IMPROVEMENTS

JOB NO.	40241
SHEET NO.	EXHB-3

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KESWICK WASTEWATER TREATMENT PLANT IMPROVEMENTS MINOR SITE PLAN AMENDMENT SDP199100097

COUNTY OF ALBEMARLE, VIRGINIA
RIVANNA DISTRICT

03/22/2021

SITE DATA:

ENGINEER: TIMMONS GROUP
608 PRESTON AVENUE, SUITE 200
CHARLOTTESVILLE, VA 22902
TELEPHONE: 434-327-1681
CONTACT: JONATHAN SHOWALTER, P.E.
JONATHAN.SHOWALTER@TIMMONS.COM

TAX MAP PARCEL: 08000-00-00-060A0 & 08000-00-00-060B0

LIMITS OF DISTURBANCE: 0.22 AC (9,233 SF)

ZONING: RA

SETBACK: 75' FRONT
25' SIDE
35' REAR

MAGISTERIAL DISTRICT: RIVANNA

SOURCE TOPOGRAPHY: TIMMONS GROUP, FEB. 23 & 24 2021

DATUM: HORIZONTAL: NAD83 VIRGINIA STATE GRID SOUTH ZONE
VERTICAL: NAVD88 ESTABLISHED THROUGH LEICA SMARTNET

PROPOSED USES: EXISTING WASTEWATER TREATMENT PLANT IMPROVEMENTS

WETLAND IMPACTS: NONE

WATER SUPPLY: NONE

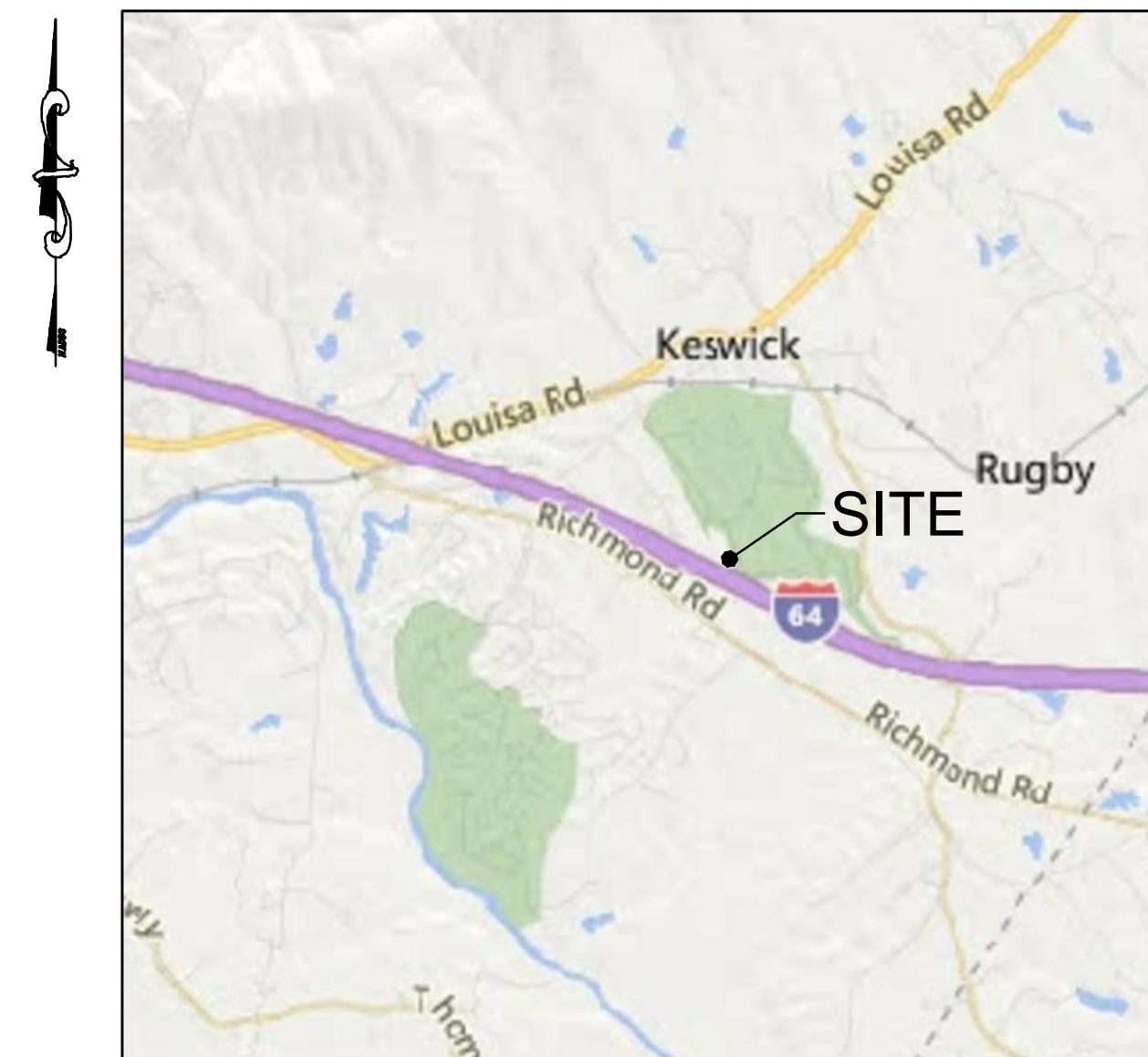
SANITARY SEWER: EXISTING WASTEWATER TREATMENT PLANT

DRAINAGE DISTRICT: MIDDLE RIVANNA RIVER

THERE ARE NO CRITICAL SLOPES LOCATED WITHIN THE PROJECT LIMITS.

THERE ARE NO CONSTRUCTION ACTIVITIES PROPOSED WITHIN THE 100-YR FLOODPLAIN.

THE SITE IS NOT LOCATED IN A WATER SUPPLY PROTECTION DISTRICT.



VICINITY MAP

SCALE: 1" = 5,000'

OWNER:

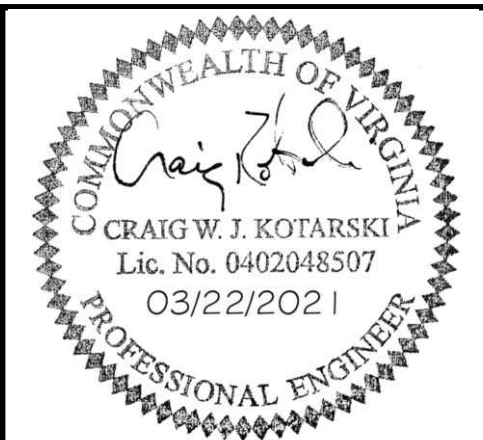
KESWICK HALL AND GOLF CLUB
701 CLUB DRIVE
KESWICK, VA 22947
CONTACT: JOHN TREVENEN
TELEPHONE: (434) 979-3440
EMAIL: JTREVENEN@KESWICK.COM

ENGINEER OF RECORD:

TIMMONS GROUP
608 PRESTON AVE. SUITE 200,
CHARLOTTESVILLE, VA 22903
CONTACT: JONATHAN SHOWALTER, P.E.
TELEPHONE: 434-327-1681

Sheet List Table	
Sheet Number	Sheet Title
C0.0	COVER
C1.0	NOTES AND DETAILS
C2.0	EXISTING CONDITIONS AND DEMO PLAN
C3.0	LAYOUT PLAN
C4.0	GRADING AND DRAINAGE PLAN
C5.0	STORMWATER PROFILES
C6.0	INFLUENT FORCEMAIN PLAN AND PROFILE
C6.1	EQ FM PLAN AND PROFILE
L1.0	LANDSCAPE PLAN
TOTAL SHEETS = 9	

SIGNATURE PANEL:		
DEPARTMENT OF COMMUNITY DEVELOPMENT	APPROVAL	DATE
PLANNING & ZONING	_____	_____
ENGINEERING	_____	_____
INSPECTIONS	_____	_____
ARCHITECTURAL REVIEW BOARD	_____	_____
DEPARTMENT OF FIRE AND RESCUE	_____	_____
ALBEMARLE COUNTY SERVICE AUTHORITY	_____	_____
VIRGINIA DEPARTMENT OF TRANSPORTATION	_____	_____
HEALTH DEPARTMENT	_____	_____



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DATE: 3/22/2021
DRAWN BY: A. MABEE
DESIGNED BY: J. SHOWALTER
CHECKED BY: C. KOTARSKI
SCALE: AS SHOWN

TIMMONS GROUP

KESWICK WWTP IMPROVEMENTS
ALBEMARLE COUNTY, VIRGINIA
COVER

JOB NO. 47747
SHEET NO. C0.0

GENERAL NOTES

- CONTRACTOR SHALL COORDINATE ALL REQUIREMENTS FOR AS BUILT DOCUMENTATION, AS REQUIRED BY THE LOCALITY. THIS INCLUDES, BUT IS NOT LIMITED TO, TESTING, INSTALLATION DOCUMENTATION, SURVEY, ETC. ALL REQUIREMENTS SHALL BE DISCUSSED WITH THE LOCALITY PRIOR TO BEGINNING CONSTRUCTION.
- ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT VIRGINIA DEPARTMENT OF TRANSPORTATION'S SPECIFICATIONS AND STANDARDS.
- PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL CONSULT THE ENGINEER AND VERIFY THE APPROVAL OF THE PLANS BY ALL FEDERAL, STATE AND LOCAL AGENCIES.
- LAND USE PERMITS (LUP-A) MUST BE OBTAINED FROM THE VIRGINIA DEPARTMENT OF TRANSPORTATION PRIOR TO BEGINNING ANY CONSTRUCTION WITHIN THE EXISTING STATE MAINTAINED RIGHT OF WAY (INCLUDING ACCESS).
- VDOT IS TO RECEIVE WRITTEN NOTICES 48 HOURS PRIOR TO COMMENCING WITH INITIAL CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL VERIFY THE ELEVATIONS OF ALL POINTS OF CONNECTION OR PROPOSED WORK TO EXISTING CURBS, SANITARY LINES, WATERLINES, ETC. PRIOR TO CONSTRUCTION.
- UPON DISCOVERY OF SOILS THAT ARE UNSUITABLE FOR FOUNDATIONS, SUBGRADES, OR OTHER ROADWAY CONSTRUCTION PURPOSES, THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE OWNER. THESE AREAS SHALL BE EXCAVATED BELOW PLAN GRADE AS DIRECTED BY THE OWNER'S REPRESENTATIVE, BACKFILLED WITH SUITABLE MATERIAL AND COMPACTED IN ACCORDANCE WITH SPECIFICATIONS.
- ALL STORM SEWER DESIGN AND CONSTRUCTION TO BE IN ACCORDANCE WITH VDOT STANDARDS.
- ALL STORM SEWER PIPE SHALL BE REINFORCED TONGUE AND GROOVE CONCRETE PIPE IN ACCORDANCE WITH ASTM-C-76. PIPE WITHIN THE RIGHT OF WAY SHALL BE MINIMUM CLASS III OR GREATER IN ACCORDANCE WITH CURRENT VDOT STANDARDS AND SPECIFICATIONS.
- IF PRE-CAST UNITS ARE TO BE USED, VDOT SHALL BE NOTIFIED AND THE MANUFACTURER SHALL SUBMIT DRAWING DETAILS FOR REVIEW. CERTIFICATION AND VDOT STAMP WILL BE REQUIRED ON ALL UNITS.
- ALL CONCRETE SHALL BE A3-AE (AIR ENTRAINED 3,000 PSI), UNLESS OTHERWISE NOTED.
- ALL ENTRANCES ARE TO BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH CURRENT VDOT STANDARDS.
- DESIGN CHANGES, SPECIFIED MATERIALS CHANGES AND/OR FIELD CHANGES FROM THE APPROVED PLANS NEED TO BE RESUBMITTED TO THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK. A LETTER OF EXPLANATION SHALL ACCOMPANY THE REVISED PLANS AND/OR THE DRAINAGE CALCULATIONS, WHICH MUST BE SUBMITTED AND APPROVED BY THE ENGINEER.
- CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF ALL UNDERGROUND UTILITIES SHOWN ON PLANS IN AREAS OF CONSTRUCTION PRIOR TO STARTING WORK. CONTACT ENGINEER IMMEDIATELY IF LOCATION OR ELEVATION IS DIFFERENT FROM THAT SHOWN ON PLAN. IF THERE APPEARS TO BE A CONFLICT, AND/OR UPON DISCOVERY OF ANY UTILITY NOT SHOWN ON THIS PLAN, CALL MISS UTILITY OF CENTRAL VIRGINIA AT 1-800-562-7001. THE OWNER SHALL BE RESPONSIBLE FOR THE RELOCATION OF ANY UTILITY WITHIN EXISTING AND/OR PROPOSED RIGHT-OF-WAY REQUIRED BY THE DEVELOPMENT.
- CASING SLEEVES SHALL BE PLACED AT ALL ROAD CROSSINGS FOR GAS, POWER, TELEPHONE AND CABLE TV SERVICE TRUNK LINES. (N/A)
- THE INSTALLATION OF SEWER, WATER, AND GAS MAINS (INCLUDING SERVICE LATERALS AND SLEEVES) SHALL BE COMPLETED PRIOR TO THE PLACEMENT OF AGGREGATE BASE COURSE.
- VDOT & ALBEMARLE COUNTY APPROVAL OF CONSTRUCTION PLANS DOES NOT PRECLUDE THE RIGHT TO REQUIRE ADDITIONAL FACILITIES AS DEEMED NECESSARY.
- VDOT SHALL HAVE APPROVED THE AGGREGATE BASE COURSE(S) FOR DEPTH, TEMPLATE AND PERFORMED THE REQUIRED FIELD INSPECTION (PROOF ROLL) PRIOR TO PLACEMENT OF ANY SURFACE COURSE(S). CONTACT THE OWNER'S REPRESENTATIVE FOR INSPECTION FOR THE AGGREGATE BASE COURSE(S) 48 HOURS PRIOR TO APPLICATION OF THE SURFACE COURSE(S).
- A PRIME COAT SEAL BETWEEN THE AGGREGATE BASE AND BITUMINOUS CONCRETE WILL BE REQUIRED AT THE RATE OF 0.30 GALLONS PER SQUARE YARD (REC-250 PRIME COAT) PER VDOT STANDARDS AND SPECIFICATIONS.
- THE SCHEDULING OF AGGREGATE BASE INSTALLATION AND SUBSEQUENT PAVING ACTIVITIES SHALL ACCOMMODATE FORECAST WEATHER CONDITIONS PER SECTION 315 OF THE ROAD AND BRIDGE SPECIFICATIONS.
- THE OWNER'S REPRESENTATIVE SHALL HAVE APPROVED THE AGGREGATE BASE COURSE(S) FOR DEPTH, TEMPLATE AND PERFORMED THE REQUIRED FIELD INSPECTION (PROOF ROLL) PRIOR TO PLACEMENT OF ANY SURFACE COURSE(S). CONTACT THE OWNER FOR INSPECTION FOR THE AGGREGATE BASE COURSE(S) 48 HOURS PRIOR TO APPLICATION OF THE SURFACE COURSE(S).
- A GEOTECHNICAL ENGINEER IS TO ASCERTAIN CAUSE AND CERTIFY RECOMMENDED METHOD OF REPAIR FOR ALL PAVEMENT STRUCTURAL FAILURES PRIOR TO STATE ACCEPTANCE. (N/A)
- ALL VEGETATION AND ORGANIC MATERIAL IS TO BE REMOVED FROM THE PROPOSED PAVEMENT LIMITS PRIOR TO CONDITIONING OF THE SUBGRADE.
- CERTIFICATION AND SOURCE OF MATERIALS ARE TO BE SUBMITTED TO THE OWNER'S REPRESENTATIVE FOR ALL MATERIALS AND BE IN ACCORDANCE WITH THE ROAD AND BRIDGE SPECIFICATIONS, AND ROAD AND BRIDGE STANDARDS.
- APPROVAL OF A DETAILED CONSTRUCTION SEQUENCING/MAINTENANCE OF TRAFFIC NARRATIVE FOR THE WORK ZONE IS A PREREQUISITE FOR ISSUANCE OF A LAND USE PERMIT ALLOWING ACCESS TO AND CONSTRUCTION WITHIN VDOT MAINTAINED RIGHT OF WAY. (N/A)
- GRADE LINES ON PROFILES DENOTE FINISHED GRADE OF CENTER LINE OF ROAD. (N/A)
- ALL APPROACH GUTTERS TO SAG INLETS SHALL MAINTAIN A MINIMUM SLOPE OF 0.004 ft./ft.
- WHERE A TYPE "B" NOSE IS SPECIFIED ON AN INLET IN CONJUNCTION WITH ROLL FACE CURB AND GUTTER OR CG-7, THERE SHALL BE A 20' TRANSITION ON EACH SIDE OF THE INLET. (N/A)
- CONTRACTOR SHALL PROVIDE A SEQUENCE OF CONSTRUCTION/MAINTENANCE OF TRAFFIC PLAN IN ACCORDANCE WITH THE STANDARDS AND GUIDELINES CONTAINED IN THE 2011 EDITION OF THE VIRGINIA WORK AREA PROTECTION MANUAL FOR REVIEW BY THE ENGINEER, OWNER'S REPRESENTATIVE, AND VDOT PRIOR TO STARTING WORK THAT IMPACTS TRAFFIC ON STATE ROADS.
- ALL NEW HANDICAP ACCESSIBLE REQUIREMENTS ON-SITE AND WITHIN ALL NEW STRUCTURES SHALL COMPLY WITH THE 2006 UNIFORM STATEWIDE BUILDING CODE, 2006 VIRGINIA CONSTRUCTION CODE, AND ICC/ANSI A117.1-03.
- THE CLEAR ZONE IS TO BE FREE OF STORED MATERIALS AND PARKED EQUIPMENT.
- HORIZONTAL AND VERTICAL SIGHT DISTANCES SHALL BE FREE OF PARKED VEHICLES.
- ALL EXCAVATED AREAS WITHIN THE CLEAR ZONE THAT HAVE A DEPTH GREATER THAN 6" SHALL HAVE A 6:1 STONE WEDGE PLACED AT THE END OF THE DAY
- VISIBILITY OF ALL MECHANICAL EQUIPMENT FROM THE ENTRANCE CORRIDOR SHALL BE ELIMINATED.

ALBEMARLE COUNTY ENGINEERING GENERAL CONSTRUCTION NOTES

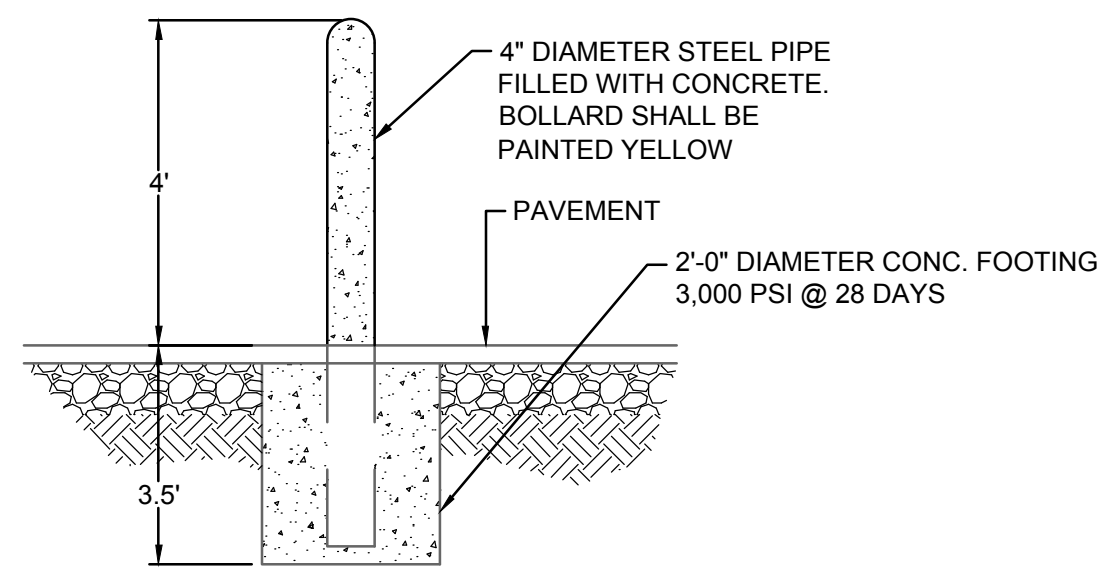
- PRIOR TO ANY CONSTRUCTION WITHIN ANY EXISTING PUBLIC RIGHT OF WAY, INCLUDING CONNECTION TO ANY EXISTING ROAD, A PERMIT SHALL BE OBTAINED FROM THE VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT). THIS PLAN AS DRAWN MAY NOT ACCURATELY REFLECT THE REQUIREMENTS OF THE PERMIT. WHERE ANY DISCREPANCIES OCCUR THE REQUIREMENTS OF THE PERMIT SHALL GOVERN.
- ALL MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO CURRENT SPECIFICATIONS AND STANDARDS OF VDOT.
- EROSION AND SILTATION CONTROL MEASURES SHALL BE PROVIDED IN ACCORDANCE WITH THE APPROVED EROSION CONTROL PLAN AND MUST BE INSTALLED PRIOR TO ANY CLEARING, GRADING OR OTHER CONSTRUCTION.
- ALL SLOPES AND DISTURBED AREAS ARE TO BE FERTILIZED, SEEDED AND MULCHED.
- THE MAXIMUM ALLOWABLE SLOPE IS 2:1 (HORIZONTAL:VERTICAL), WHERE REASONABLY OBTAINABLE, LESSER SLOPES OF 3:1 OR BETTER ARE TO BE ACHIEVED.
- PAVED, RIP-RAP OR STABILIZATION MAT LINED DITCH MAY BE REQUIRED WHEN IN THE OPINION OF THE COUNTY ENGINEER, OR DESIGNEE, IT IS DEEMED NECESSARY IN ORDER TO STABILIZE A DRAINAGE CHANNEL.
- ALL TRAFFIC CONTROL SIGNS SHALL CONFORM WITH THE VIRGINIA MANUAL FOR UNIFORM TRAFFIC CONTROL DEVICES.
- UNLESS OTHERWISE NOTED ALL CONCRETE PIPE SHALL BE REINFORCED CONCRETE PIPE - CLASS III.
- ALL EXCAVATION FOR UNDERGROUND PIPE INSTALLATION MUST COMPLY WITH OSHA STANDARDS FOR THE CONSTRUCTION INDUSTRY (29 CFR PART 1926).
- RETAINING WALLS GREATER THAN 3 FEET IN HEIGHT REQUIRE A SEPARATE BUILDING PERMIT. WALLS EXCEEDING 4 FEET IN HEIGHT REQUIRE A STAMPED ENGINEERED DESIGN ALSO. WALLS REQUIRE INSPECTIONS AS OUTLINED IN THE USBC.
- ALL WATER LINES, SEWER LINES, AND FIRE LINES FROM THE MAIN TO THE STRUCTURE MUST HAVE A VISUAL INSPECTION PERFORMED BY THE BUILDING DEPARTMENT.

BLASTING NOTES

- BLASTING SHALL NOT BE PERMITTED ON THIS PROJECT.

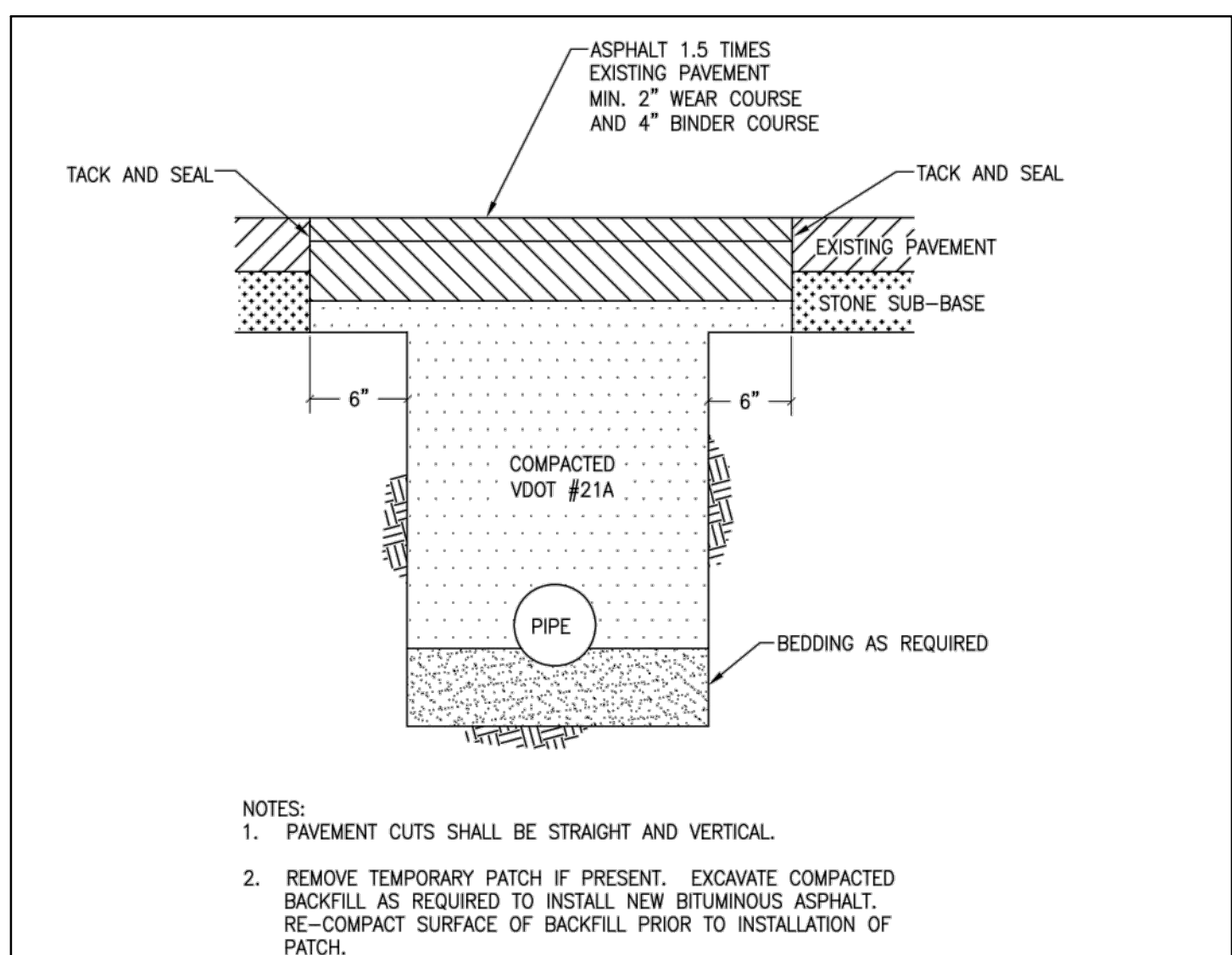
ALBEMARLE COUNTY STORMWATER MANAGEMENT NOTES

- ALL DAMS AND CONSTRUCTED FILL TO BE WITHIN 95% OF MAXIMUM DRY DENSITY AND 2% OF OPTIMUM MOISTURE CONTENT. ALL FILL MATERIAL TO BE APPROVED BY A GEOTECHNICAL ENGINEER. A GEOTECHNICAL ENGINEER IS TO BE PRESENT DURING CONSTRUCTION OF DAMS.
- PIPE AND RISER JOINTS ARE TO BE WATERTIGHT WITHIN STORMWATER MANAGEMENT FACILITIES.
- FOR TEMPORARY SEDIMENT TRAPS OR BASINS WHICH ARE TO BE CONVERTED TO PERMANENT STORMWATER MANAGEMENT FACILITIES, CONVERSION IS NOT TO TAKE PLACE UNTIL THE SITE IS STABILIZED, AND PERMISSION HAS BEEN OBTAINED FROM THE COUNTY EROSION CONTROL INSPECTOR.



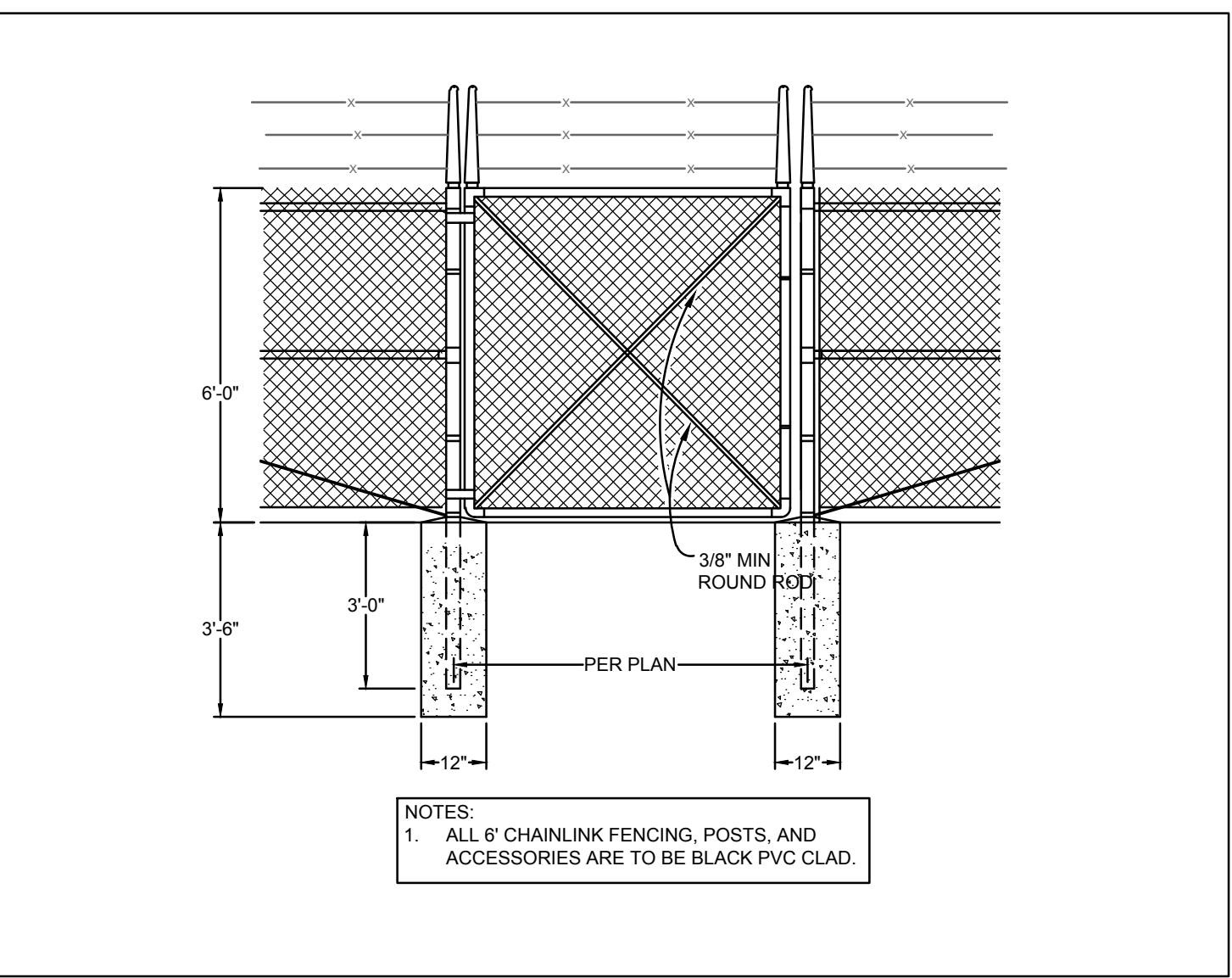
FIXED BOLLARD DETAIL

No Scale



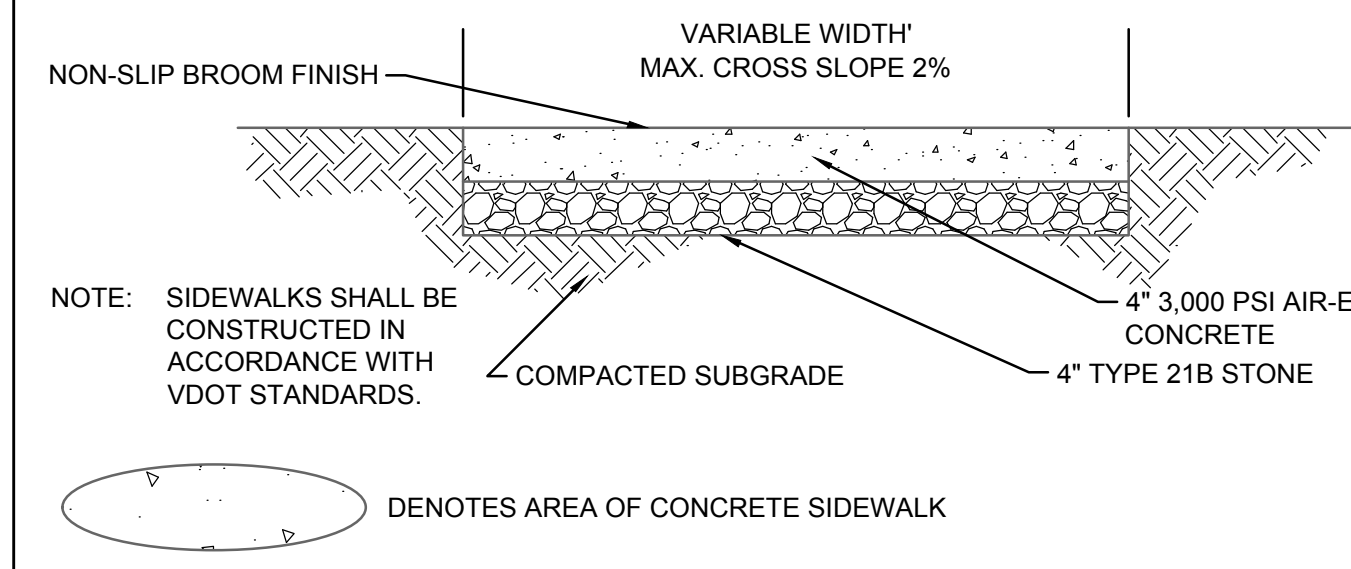
PAVEMENT REPLACEMENT

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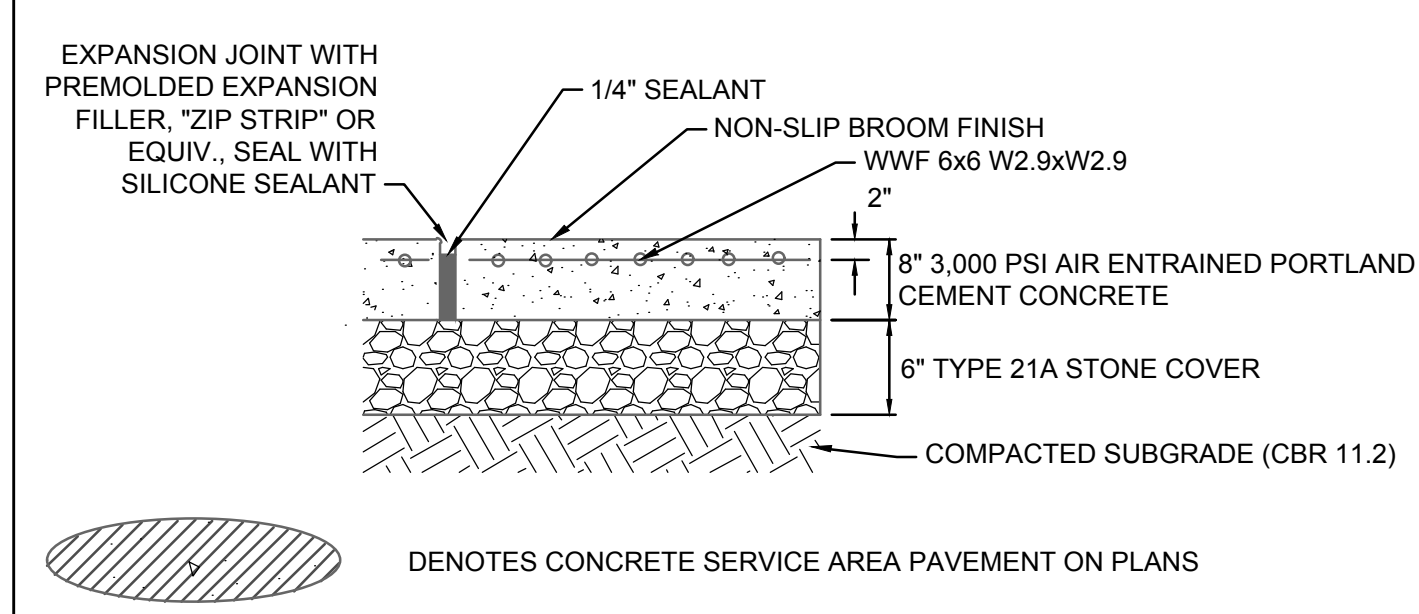
FENCE AND GATE

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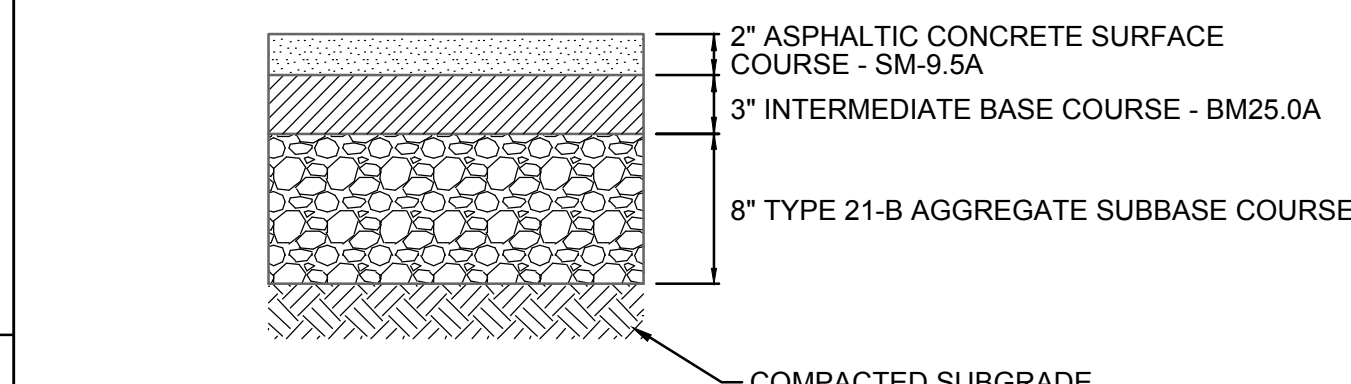
CONCRETE SIDEWALK PAVEMENT SECTION

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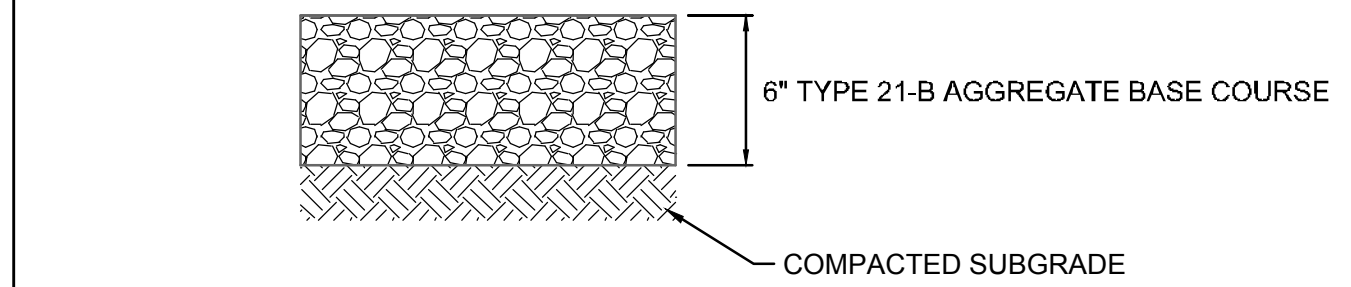
HEAVY DUTY CONCRETE SECTION

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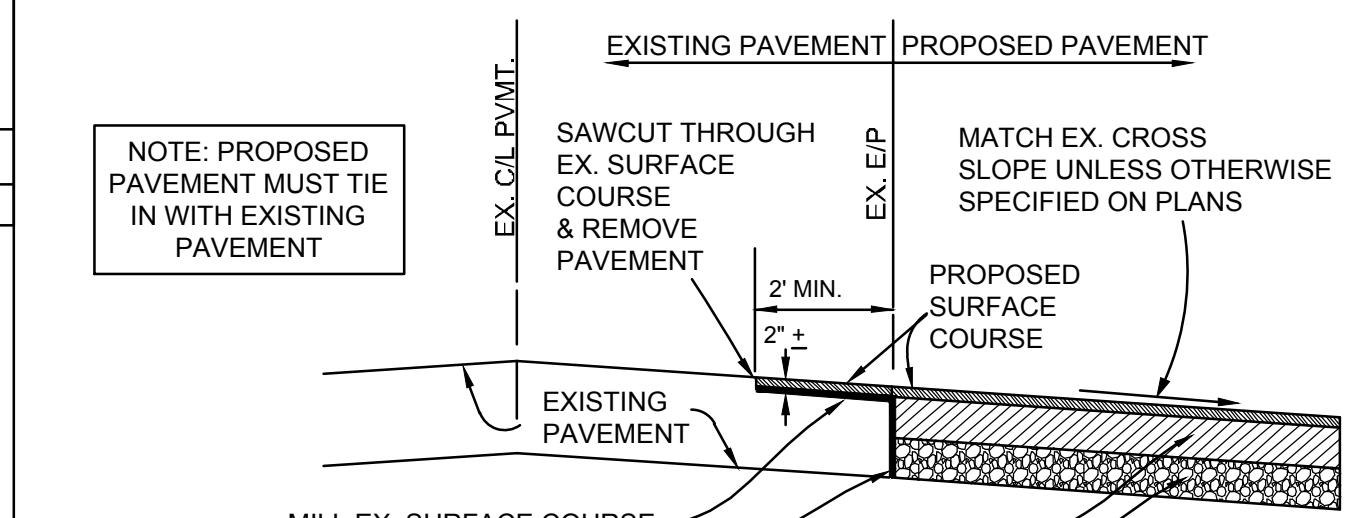
HEAVY DUTY ASPHALT PAVEMENT SECTION

No Scale



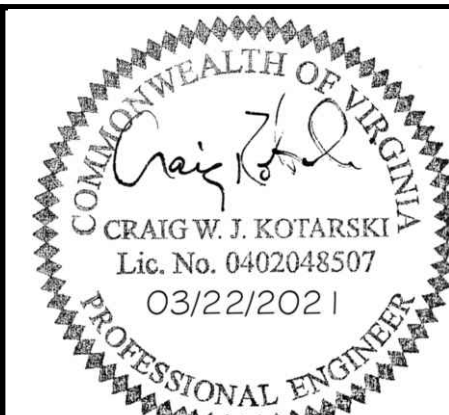
GRAVEL ROAD SECTION

No Scale



PAVEMENT REPLACEMENT JOINT DETAIL

No Scale



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CHECKED BY	C. KOTARSKI
SCALE	AS SHOWN

TIMMONS GROUP

KESWICK WWTP IMPROVEMENTS
 ALBEMARLE COUNTY, VIRGINIA

NOTES AND DETAILS

JOB NO. 47747
 SHEET NO. C1.0



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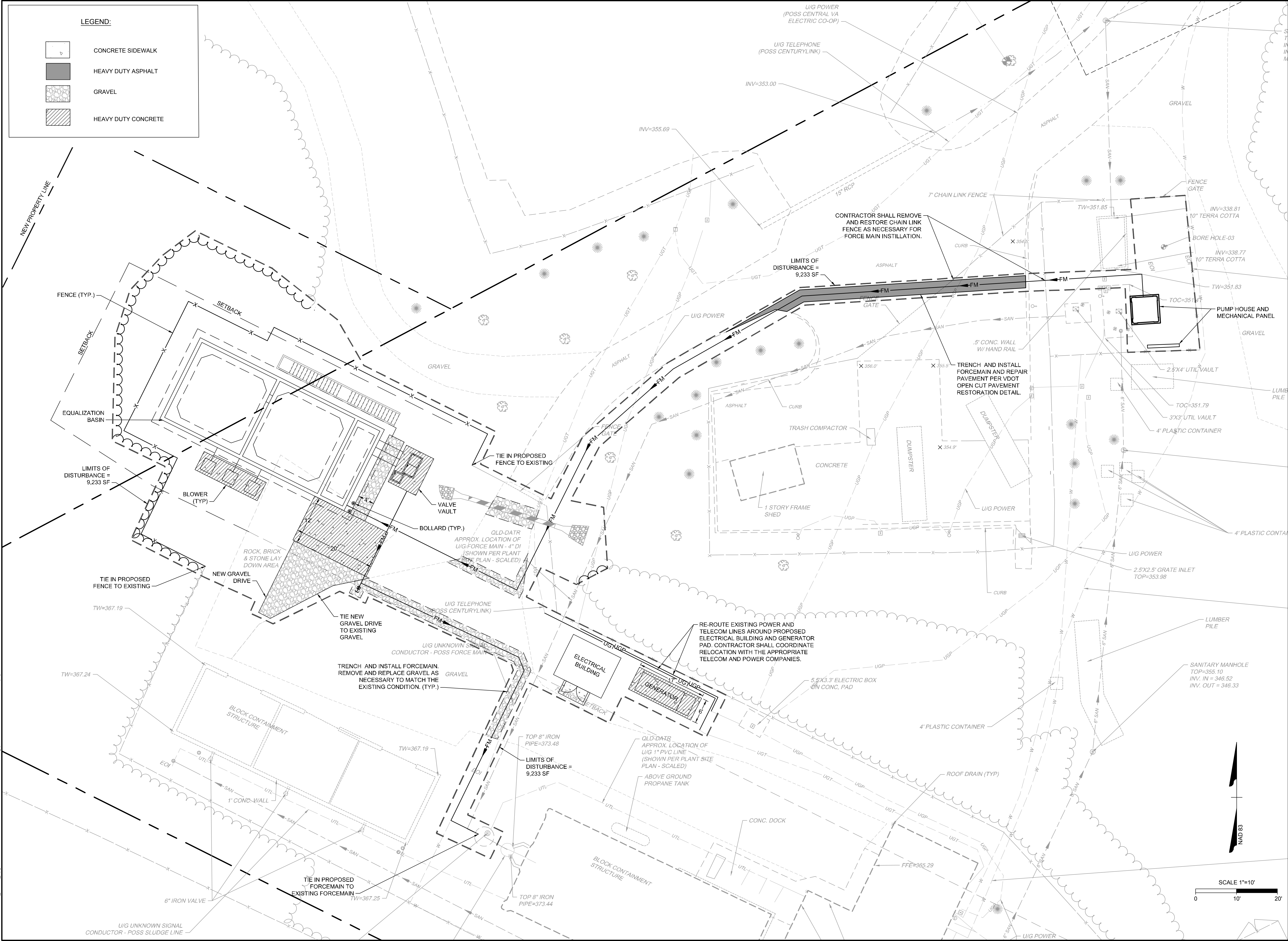
KESWICK WWTP IMPROVEMENTS

ALBEMARLE COUNTY, VIRGINIA

LAYOUT PLAN

JOB NO.	SHEET NO.
47747	C3.0

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LEGEND:

- [Symbol: Dotted pattern] CONCRETE SIDEWALK
- [Symbol: Solid black] HEAVY DUTY ASPHALT
- [Symbol: Stippled pattern] GRAVEL
- [Symbol: Hatched pattern] HEAVY DUTY CONCRETE

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REVISION DESCRIPTION	DATE

DATE
3/22/2021

DRAWN BY
A. MABEE

DESIGNED BY
J. SHOWALTER

CHECKED BY
C. KOTARSKI

SCALE
1" = 10'

TIMMONS GROUP

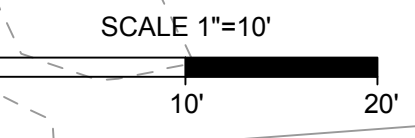
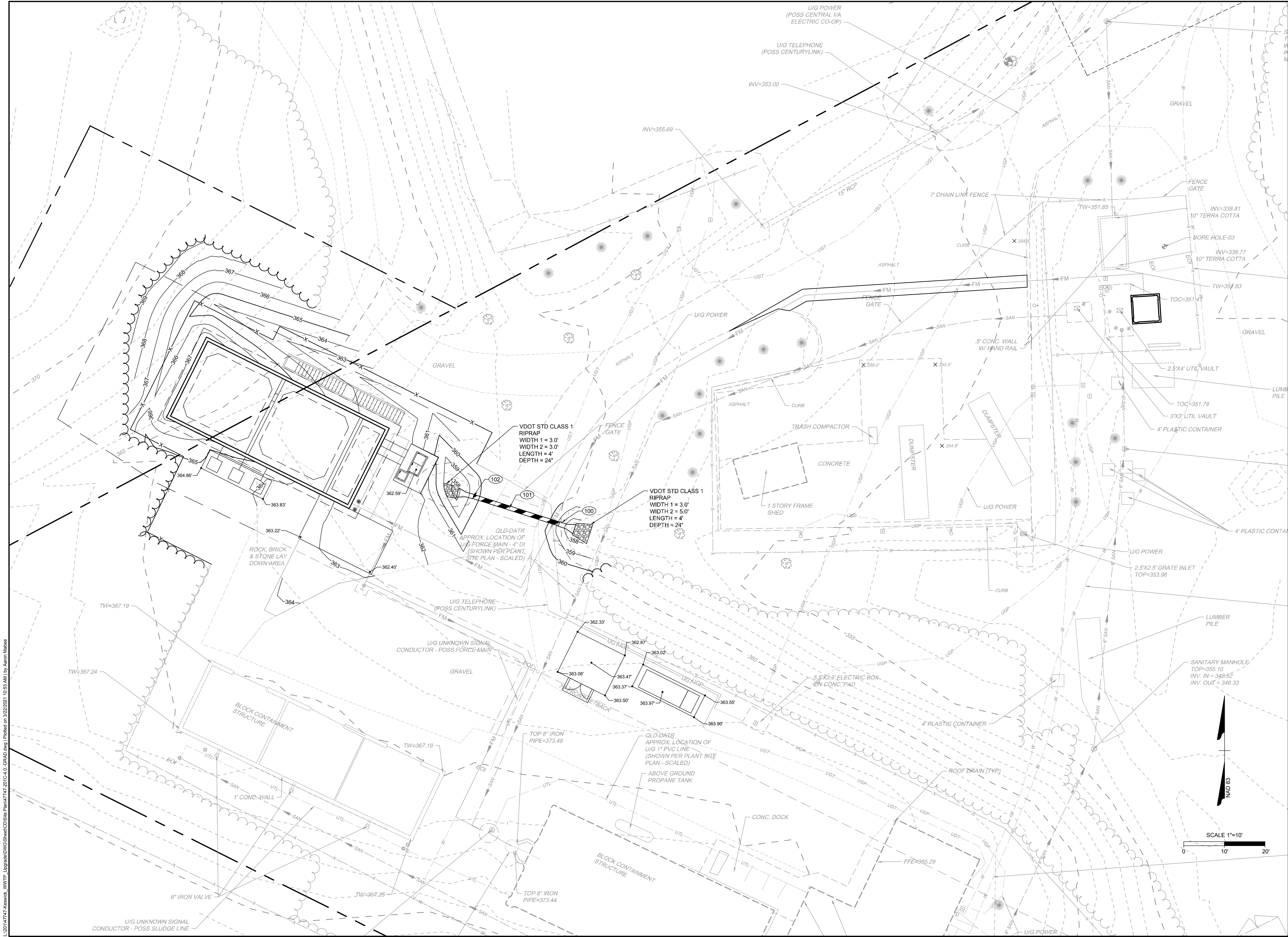
KESWICK WWTP IMPROVEMENTS
 ALBEMARLE COUNTY, VIRGINIA

GRADING AND DRAINAGE PLAN

JOB NO.
47747

SHEET NO.
C4.0

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PROJECT **KESWICK WWTP** COUNTY **Albemarle (Zone 1)** SHEET **OF** CULVERT DESIGN FORM LD-269
ROAD **1** DESIGNER: **A. MABEE** DATE: **3/19/2021**
CULVERT **1** UNITS: **ENGLISH** REVIEWER: DATE:
NOAA Station **Charlottesville**

HYDROLOGICAL DATA
Method: **RATIONAL** Roadway Width **11** ft ROADWAY ELEVATION **360.49** ft Road Length **0** Surface Type **GRAVEL**
Drainage Area: **1.15** Acres Freeboard: **#VALUE!** ft
Time of Concentration **10** Minutes Shldr. Elev. Lt. = ft Shldr. Elev. Rt. = ft

DESIGN FLOWS
R.I. (years) FLOW (cfs)
5 Design 1.68
2 Check 1.45
10 Max. 1.88

DESIGN DATA
ELHW_d = **358.46** ft
EL_d = **0.00** ft
EL_i = **357.65** ft
L = **22.07** ft
S = **2.22%**
DRAINAGE DEPRESSION = **0** in.
"n" Bed = **0.013**
Elev = **357.16** ft
TW DEPTH = **0.09** ft
TW VEL. = **15.10** fps
Channel Inv. El. = **357.53** ft

CULVERT DESCRIPTION: **Single/Multiple Conforming**
TYPE: **Single/Multiple Conforming**

HEADWATER CALCULATIONS

Inlet Edge Description:		TOTAL FLOW	FLOW PER BARREL	HEADWATER CALCULATIONS										CONTROL	MINIMUM	COMMENTS				
Smooth Tapered Inlet Throat		Q	Q/N	INLET CONTROL					OUTLET CONTROL					HEADWATER	OUTLET	SHOULDER				
MATERIAL	SHAPE	Size (in)	N	Mannings	Q	Q/N	HW _d D	HW _i	FALL	ELHW _i	TW	dc	(dc-D)/2	ho	ka	H	ELHW _o	ELEV	VEL	ELEV.
Concrete	Circular	12	1	0.01	1.68	1.7	0.81	0.81	0.00	358.46	0.09	0.55	0.78	0.78	0.20	0.13	358.07	358.46	5.99	
					1.45	1.5	0.75	0.75	0.00	358.40	0.08	0.51	0.76	0.76	0.20	0.10	358.01	358.40	5.74	
					1.88	1.9	0.87	0.87	0.00	358.52	0.10	0.59	0.80	0.79	0.20	0.17	358.12	358.52	6.16	

Broken Back Culvert

LENGTH	Elev.	SKREW °	Channel Shape	Trapezoidal	Bottom Width, ft	Side Slope Lt. (H:V)	Side Slope Rt. (H:V)	Channel Slope, ft/ft	Distance	Elevation	"n"
				1.00		2.50	2.50	4.0000			

TAILWATER RESULTS:

Discharge	Elevation	Flow depth	Velocity	Shear force
Design	357.62	0.09	15.10	22.71
Check	357.61	0.08	14.42	20.97
Max.	357.63	0.10	15.65	24.21

ROADWAY DATA:

Roadway Width, ft	Surface Type	Top of Road Elevation, ft	Length of Road, ft
11	GRAVEL	360.49	0

ROADWAY OVERTOPPING:

Discharge	Overtopping Discharge	Overtopping Elevation
Design	0	0.00
Check	0	0.00
Max.	0	0.00

TECHNICAL FOOTNOTES:
(1) USE Q/NB FOR BOX CULVERTS
(2) HW_dD = HW_d OR HW_dD FROM DESIGN CHARTS
(3) FALL = HW_i - (ELHW_d - EL_d); FALL IS ZERO FOR CULVERTS ON GRADE
(4) EL_h = HW_i + EL_i (INVERT OF INLET CONTROL SECTION)
(5) TW BASED ON DOWNSTREAM CONTROL OR FLOW
(6) ho = TW or (dc + D/2) (WHICHEVER IS GREATER)
(7) H = [1 + ka + (2ka/L)R^{1.49}]v²g
DEPTH IN CHANNEL

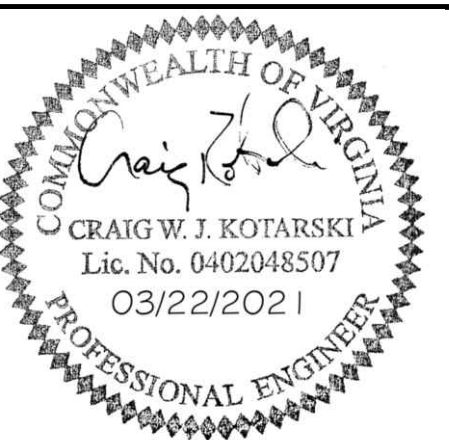
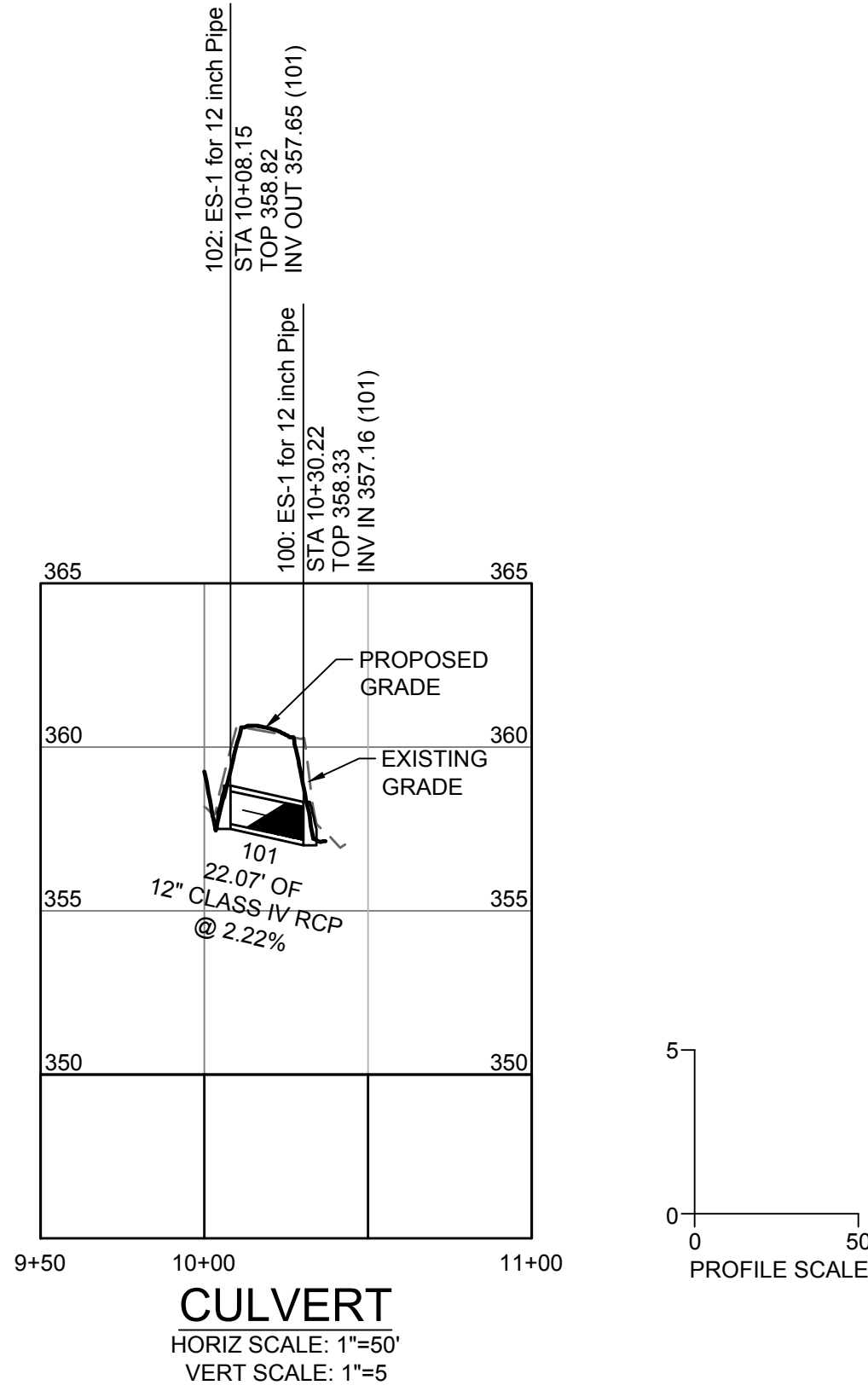
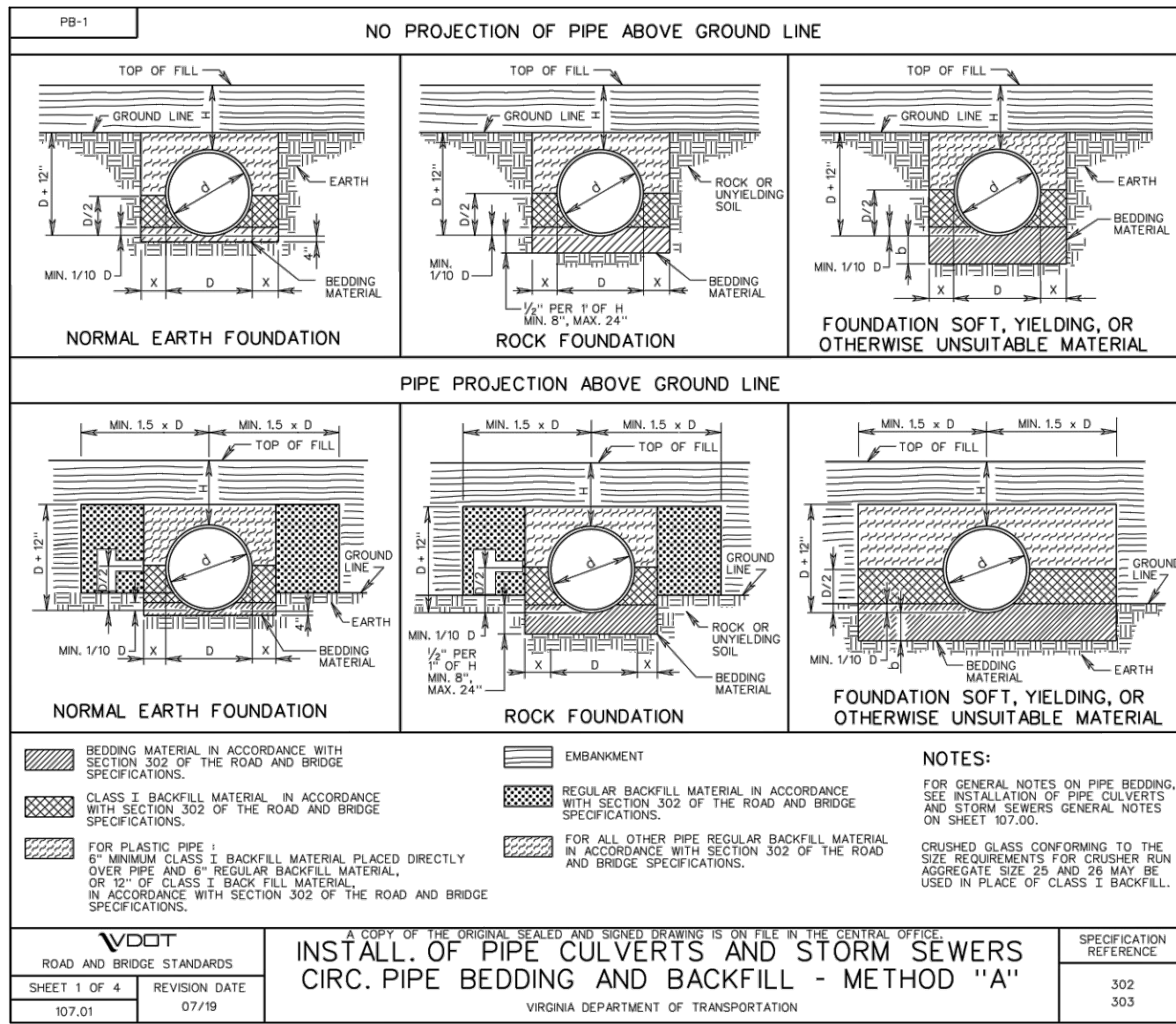
SUBSCRIPT DEFINITIONS:

HW _d	DESIGN HEADWATER	i	INLET
HW _i	HW IN INLET CONTROL	o	OUTLET
HW _o	HW IN OUTLET CONTROL	sf	Streambed

COMMENTS / DISCUSSION:

CULVERT BARREL SELECTED

SIZE: **n**
SHAPE: MATERIAL:
ENTRANCE:



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DESIGNED BY: **J. SHOWALTER**
CHECKED BY: **C. KOTARSKI**
SCALE: **AS SHOWN**

TIMMONS GROUP

KESWICK WWTP IMPROVEMENTS
ALBEMARLE COUNTY, VIRGINIA
STORMWATER PROFILES

JOB NO. **47747**
SHEET NO. **C5.0**

- FORCE MAIN NOTES:**
- DUCTILE IRON PIPE SHALL MEET THE REQUIREMENTS OF AWWA C111/C150/C151 & DUCTILE IRON PIPE FITTINGS SHALL MEET THE REQUIREMENTS OF AWWA C110/C153. PIPE & FITTINGS SHALL HAVE A 40 MIL (NOMINAL THICKNESS) PROTECTO 401 EPOXY LINING IN COMPLIANCE WITH AWWA C116 AND A BITUMINOUS SEAL COATING.
 - DUCTILE IRON PIPE FITTINGS SHALL BE PRESSURE CLASS 250 AND HAVE MECHANICAL JOINTS CONFORMING TO THE REQUIREMENTS OF AWWA C111.
 - INSTALLATION OF DUCTILE IRON PIPE AND APPURTENANCES SHALL CONFORM TO AWWA C600.
 - FORCE MAIN SHALL HAVE A MINIMUM OF 3.5 FEET OF COVER, UNLESS NOTED OTHERWISE.
 - AFTER BACKFILLING, FINISHED GRADE ABOVE THE TRENCH SHALL BE RESTORED TO ORIGINAL CONDITION.
 - THE LOCATION OF EXISTING UTILITIES ACROSS OR ALONG THE ROUTE OF THE PROPOSED WORK IS NOT NECESSARILY SHOWN ON THE PLANS, AND WHEN SHOWN, IS ONLY APPROXIMATELY CORRECT. IN ADDITION TO CONTACTING MISS UTILITY PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL, ON HIS OWN INITIATIVE, LOCATE ALL EXISTING UNDERGROUND LINES, FACILITIES, AND STRUCTURES. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY UNDERGROUND LINES, FACILITIES, AND STRUCTURES DAMAGED.

NOTES:

- THRUST RESTRAINTS SHALL BE PROVIDED ON ALL VALVES, FITTINGS, BENDS, TEES AND DEAD ENDS.
- THRUST RESTRAINTS SHALL EXTEND A FULL JOINT OF PIPE IN EACH DIRECTION (20 FEET MINIMUM).
- ADDITIONAL RESTRAINED LENGTH SHALL BE PROVIDED WHERE INDICATED BELOW. THRUST RESTRAINTS SHALL BE MANUFACTURED BY EBAA IRON OR APPROVED EQUAL AND THE SERIES AS INDICATED:

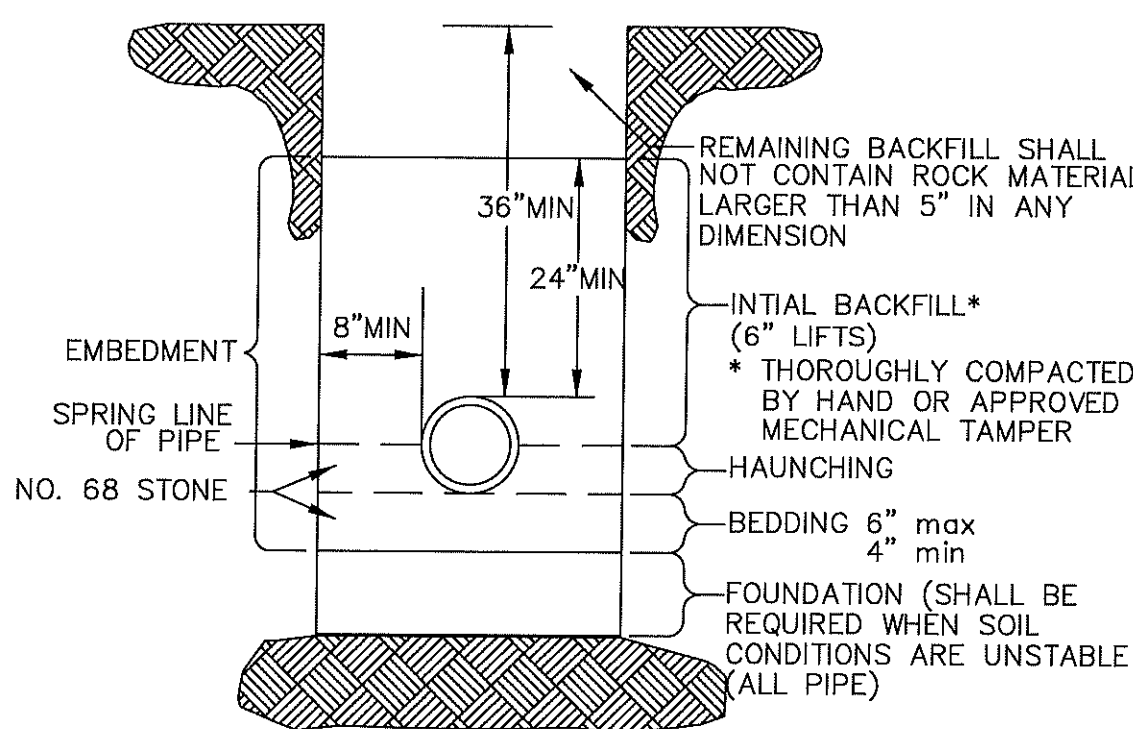
DUCTILE IRON PIPE AND MECHANICAL JOINTS: SERIES 1100
 DUCTILE IRON PIPE PUSH ON JOINTS: SERIES 1700
 PVC PIPE TO MECHANICAL JOINTS: SERIES 2000PV
 PVC PUSH ON JOINTS: SERIES 2800

6" FORCE MAIN (CL 52 DIP) RESTRAINT LENGTHS		
FITTING	LENGTH	NOTES
11.25° BEND	20'	EACH DIRECTION
22.5° BEND	20'	EACH DIRECTION
45° BEND	20'	EACH DIRECTION
90° BEND	40'	EACH DIRECTION
VALVE	60'	EACH DIRECTION

ASSUMPTIONS:

SOIL TYPE: MH (GRANULAR FILL)
 SAFETY FACTOR: 2
 TRENCH TYPE: 4
 DEPTH OF BURY: 3.5'
 TEST PRESSURE: 150 P.S.I.

6" FORCE MAIN RESTRAINED JOINT NOTES



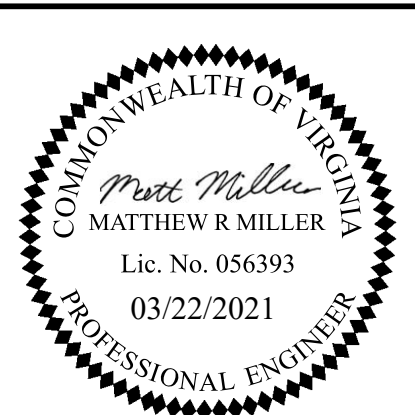
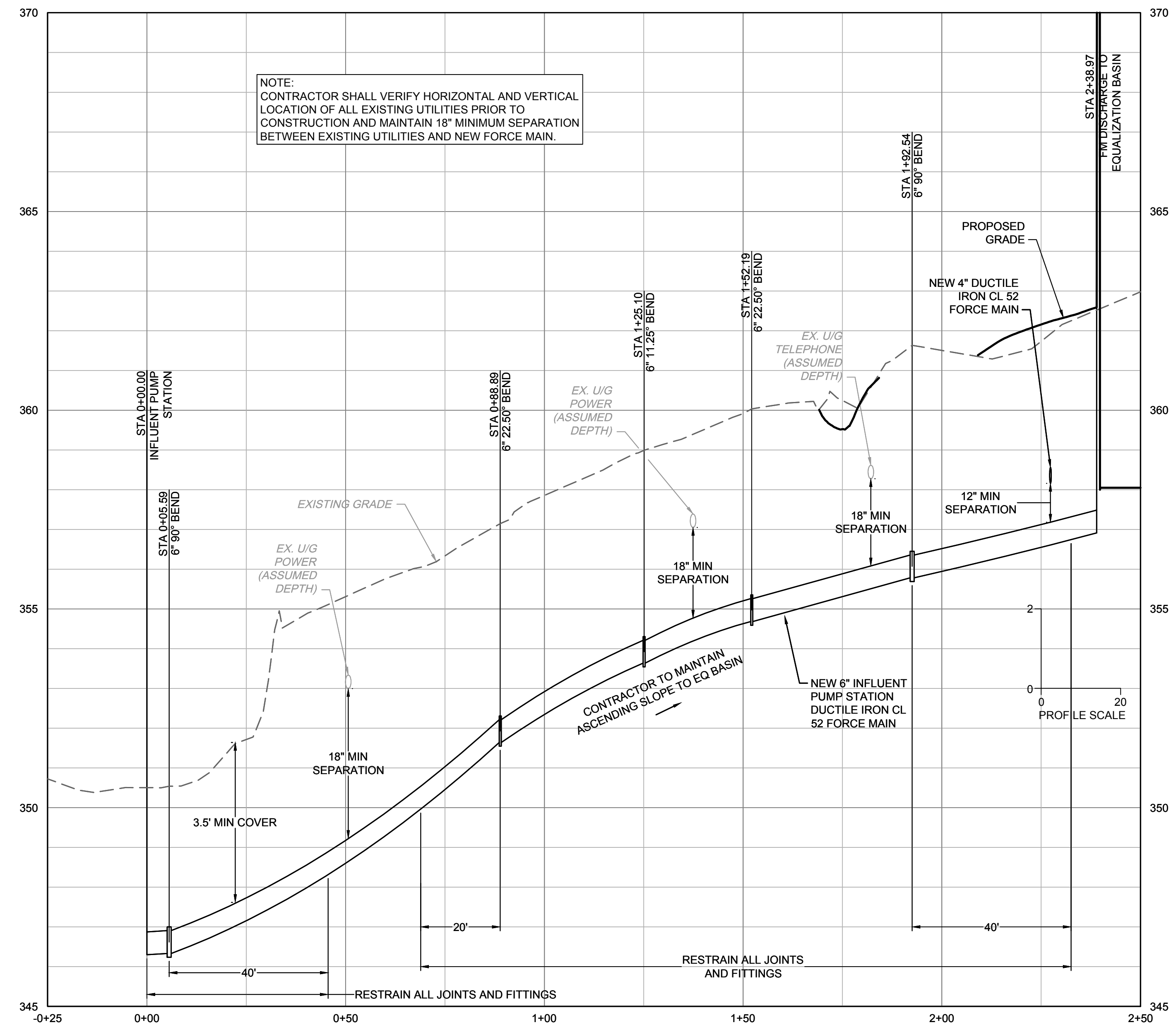
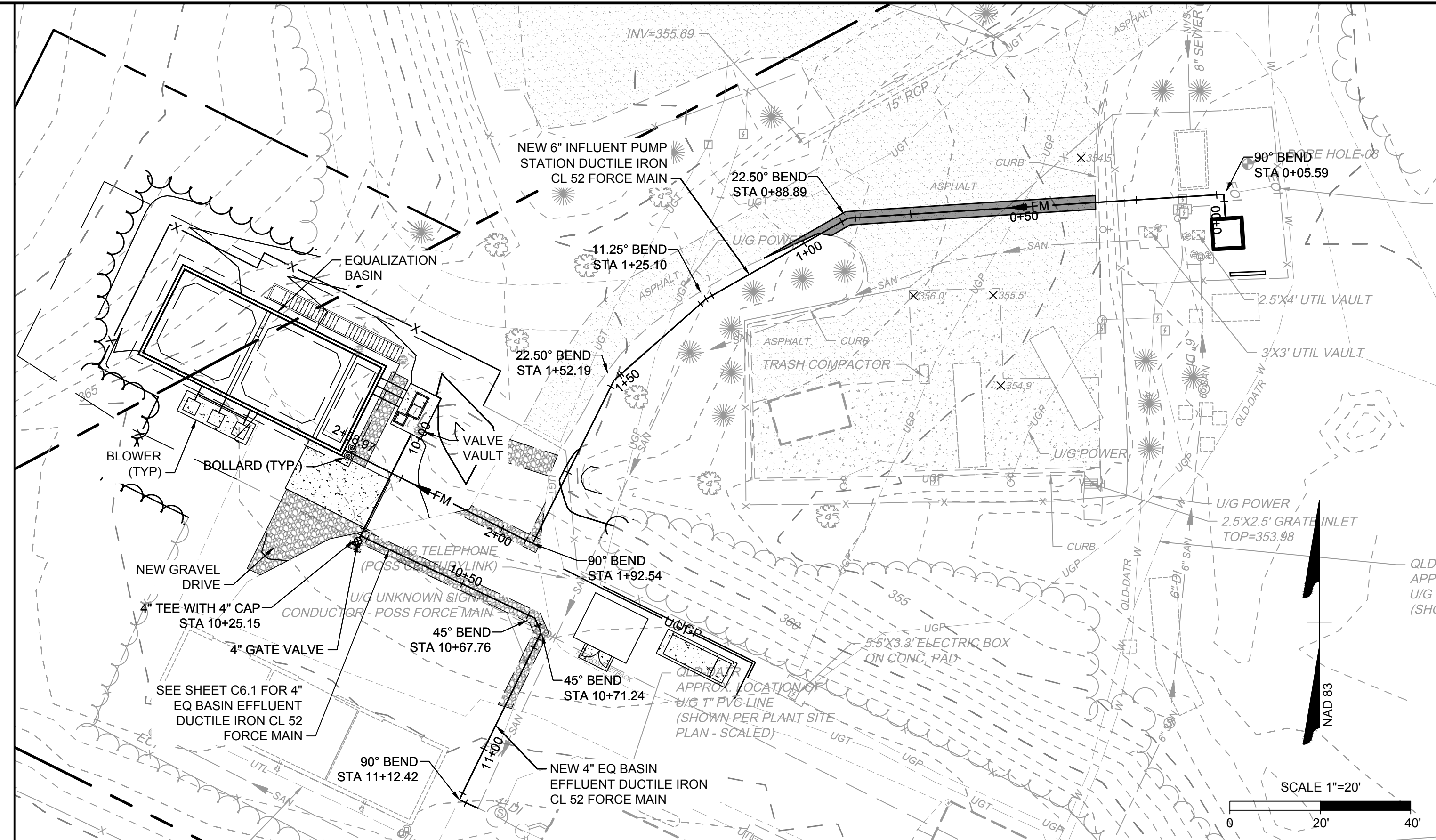
NOTE :

- OPEN CUTS IN PAVED AREAS WITHIN EXISTING VDOT RIGHT-OF-WAY SHALL BE BACKFILLED ENTIRELY WITH NO. 21A STONE.
- FOR DUCTILE IRON PIPE THE BOTTOM OF THE TRENCH SHALL BE SCRAPPED AND COMPACTED, AND ALL STONES REMOVED OR A 4" BEDDING OF NO. 68 STONE SHALL BE PROVIDED.
- WHERE ROCK IS ENCOUNTERED PIPE SHALL BE INSTALLED ON A MINIMUM 6" BEDDING OF NO. 68 STONE.
- BACKFILL SHALL BE COMPACTED TO 95% STANDARD PROCTOR PER ASTM D698

TYPICAL SEWER PIPE INSTALLATION IN TRENCH

NTS
 FIG. S-3

TD-34



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DATE: 3/22/21
 DRAWN BY: J. MARSHALL
 DESIGNED BY: M. MILLER
 CHECKED BY: B. STRICKLAND
 SCALE: ---

TIMMONS GROUP

KESWICK WWTP IMPROVEMENTS
 ALBEMARLE COUNTY - VIRGINIA
INFLUENT FORCEMAIN PLAN AND PROFILE

JOB NO. 40241
 SHEET NO. C6.0

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FORCE MAIN NOTES:

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NOTES:

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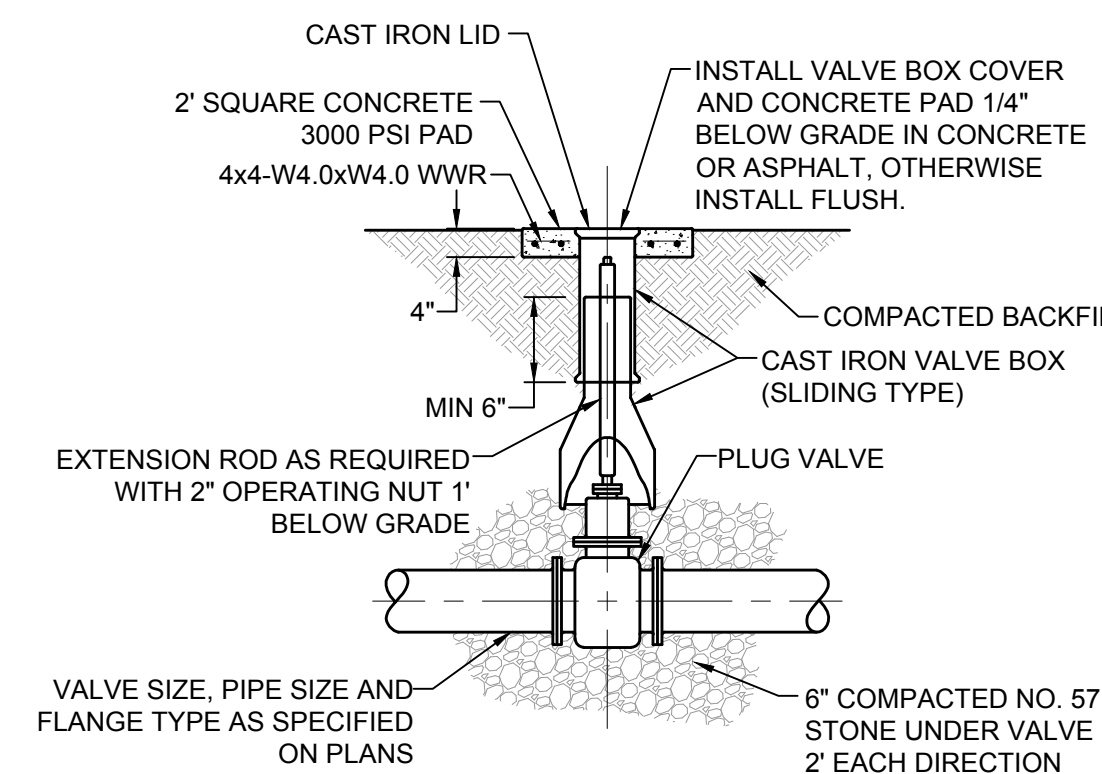
DUCTILE IRON PIPE AND MECHANICAL JOINTS: SERIES 1100
 DUCTILE IRON PIPE PUSH ON JOINTS: SERIES 1700
 PVC PIPE TO MECHANICAL JOINTS: SERIES 2000PV
 PVC PUSH ON JOINTS: SERIES 2800

4" FORCE MAIN (CL 52 DIP) RESTRAINT LENGTHS		
FITTING	LENGTH	NOTES
11.25° BEND	20'	EACH DIRECTION
22.5° BEND	20'	EACH DIRECTION
45° BEND	20'	EACH DIRECTION
90° BEND	20'	EACH DIRECTION
VALVE	40'	EACH DIRECTION

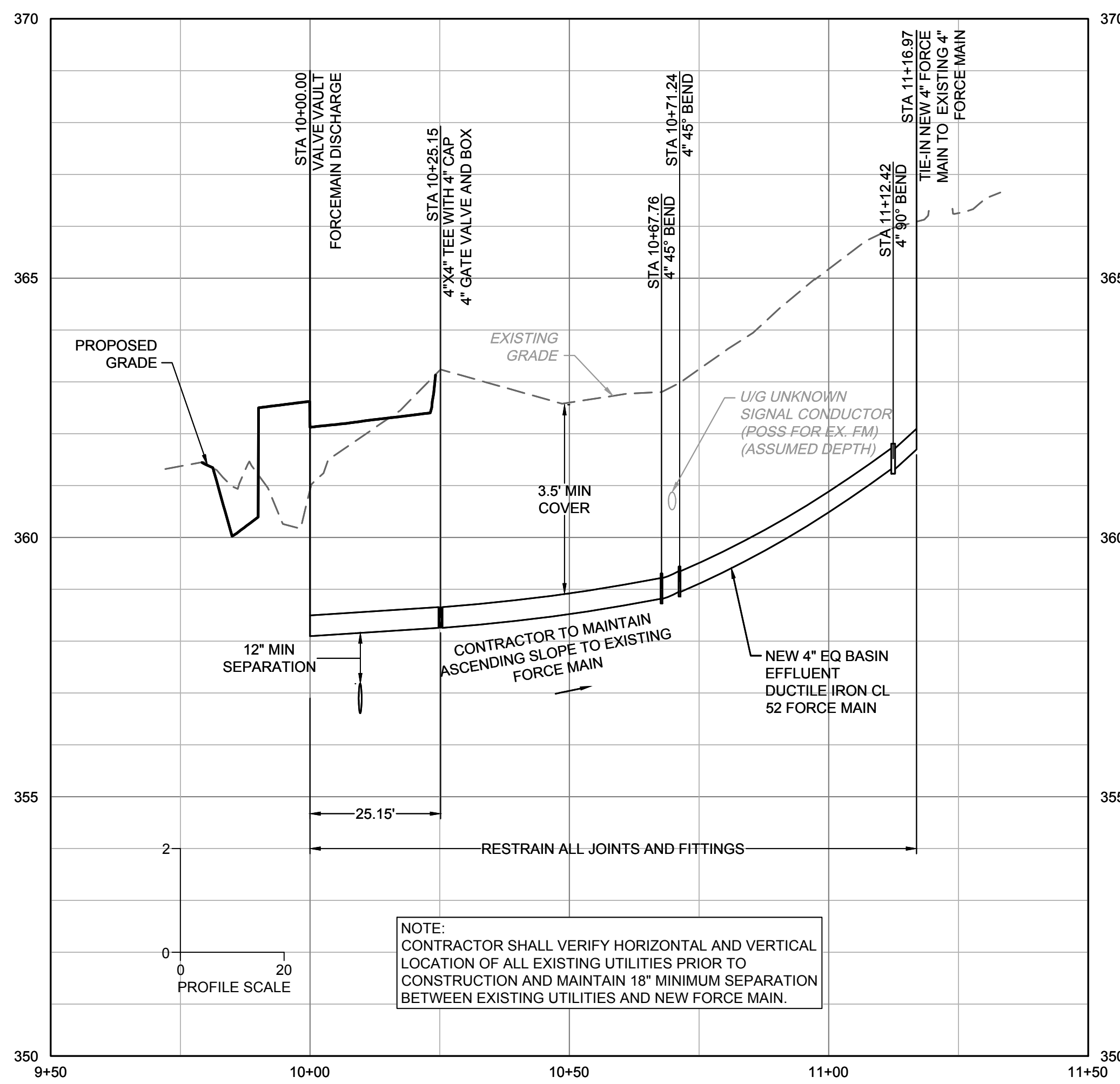
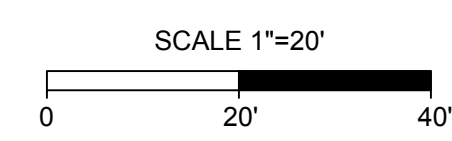
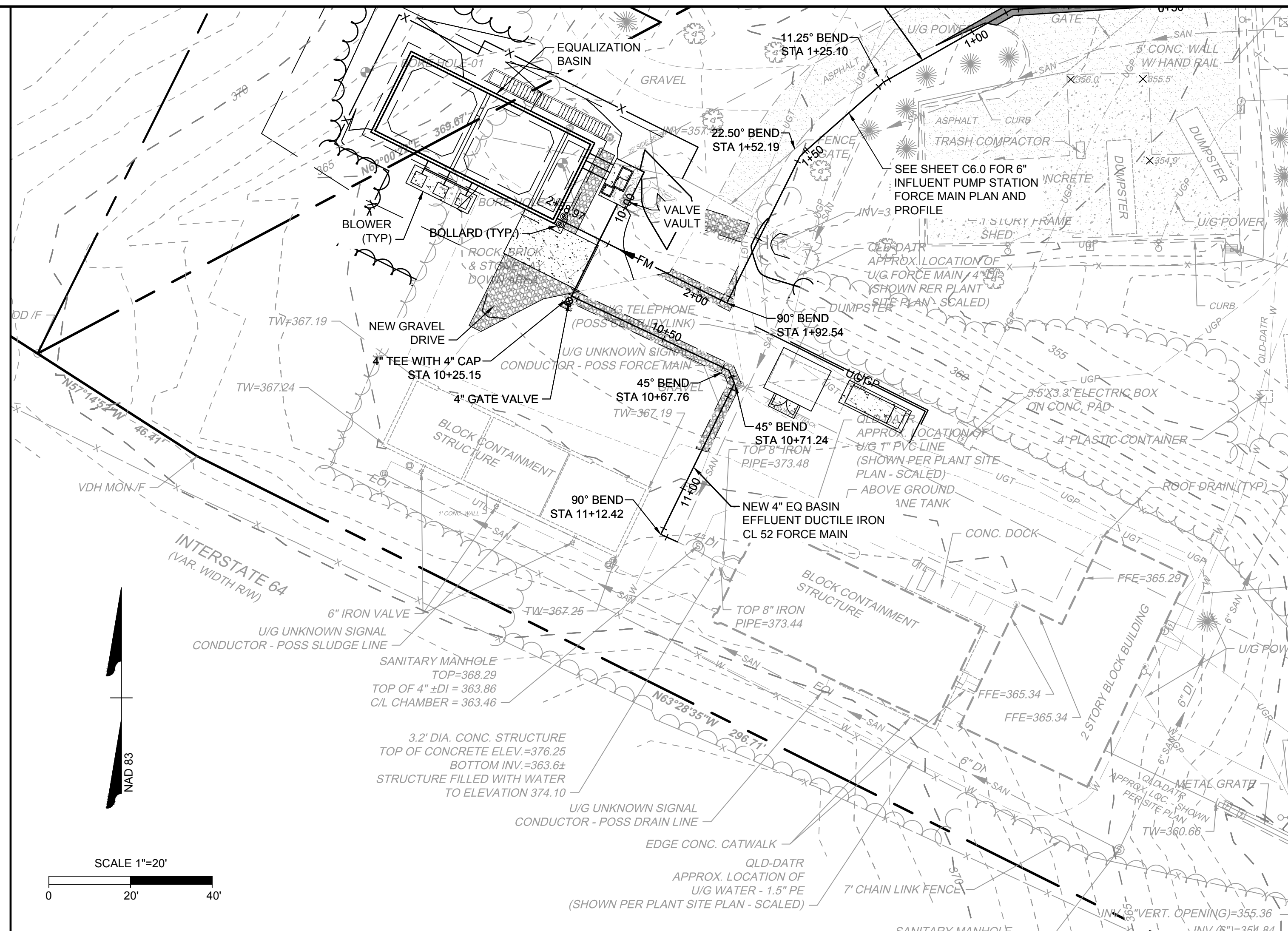
ASSUMPTIONS:

SOIL TYPE: MH (GRANULAR FILL)
 SAFETY FACTOR: 2
 TRENCH TYPE: 4
 DEPTH OF BURY: 3.5'
 TEST PRESSURE: 150 P.S.I.

4" FORCE MAIN RESTRAINED JOINT NOTES



TYPICAL PLUG VALVE
 SCALE: NOT TO SCALE



NOTE:
 CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION AND MAINTAIN 18" MINIMUM SEPARATION BETWEEN EXISTING UTILITIES AND NEW FORCE MAIN.



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KESWICK WWTP IMPROVEMENTS
 ALBEMARLE COUNTY - VIRGINIA
 EQ FORCE MAIN PLAN AND PROFILE

JOB NO. 40241
 SHEET NO. C6.1

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1. **The following items shall be shown on the plan:**
 - Trees to be saved;
 - Limits of clearing (outside dripline of trees to be saved);
 - Location and type of protective fencing;
 - Grade changes requiring tree wells or walls;
 - Proposed trenching or tunneling beyond the limits of clearing.
 2. **Markings:**
 - All trees to be saved shall be marked with print or ribbon at a height clearly visible to equipment operators.
 - No grading shall begin until the tree marking has been inspected and approved by a County Inspector.
 3. **Pre-Construction Conference:**
 - Tree preservation and protection measures shall be reviewed with the contractor on site.
 4. **Equipment Operation and Storage:**
 - Heavy equipment, vehicular traffic and storage of construction materials including soil shall not be permitted within the driplines of trees to be saved.
 5. **Soil Erosion and Stormwater Detention Devices:**
 - Such devices shall not adversely affect trees to be saved.
 6. **Fires:**
 - Fires are not permitted within 100 feet of the dripline of trees to be saved.
 7. **Toxic Materials:**
 - Toxic materials shall not be stored within 100 feet of the dripline of trees to be saved.
 8. **Protective Fencing:**
 - Trees to be retained within 40 feet of a proposed building or grading activity shall be protected by fencing.
 - Fencing shall be in place and shall be inspected and approved by a County Inspector prior to grading or construction.
 9. **Tree Walls:**
 - When the ground level must be raised within the dripline of a tree to be saved, a tree wall shall be provided and a construction detail submitted for approval.
 10. **Tree Walls:**
 - When the ground level must be lowered within the dripline a tree to be saved, a tree wall shall be provided; and a construction detail submitted for approval.
 11. **Trenching and Tunneling:**
 - When trenching is required within the limits of clearing, it shall be done as far away from the trunks of trees as possible. Tunneling under a large tree shall be considered as an alternative when it is anticipated that necessary trenching will destroy feeder roots.
 12. **Clearing:**
 - Protective fencing shall be the last items removed during the final cleanup.
 13. **Damaged Trees:**
 - Damaged trees shall be treated immediately by pruning, fertilization or other methods recommended by a tree specialist.
- NOTE: IT IS THE DEVELOPER'S RESPONSIBILITY TO CONFER WITH THE CONTRACTOR ON TREE CONSERVATION REQUIREMENTS.**

OWNER SIGNATURE _____ (DATE) _____
CONTRACT PURCHASER SIGNATURE _____ (DATE) _____

5/1/06 Page 1 of 1

NOTE: STAKE EVERGREENS 6' OR TALLER, ON SLOPES, WITH LARGE CROWNS, OR IF LOCATED ON WINDY SITES.

REMOVE TAGS, LABELS, AND PLASTIC SLEEVING. DO NOT STAKE UNLESS NECESSARY (SEE NOTE). DO NOT WRAP TRUNK

SET ROOTBALL FLUSH TO GRADE OR 1-2" HIGHER IN SLOWLY DRAINING SOILS. DO NOT COVER THE TOP OF THE ROOTBALL WITH SOIL. ROOTFLARE SHALL BE VISIBLE ABOVE FINISHED GRADE.

PRUNE SUCKERS

1:1 SLOPE ON SIDES OF PLANTING HOLE

SCARIFY SIDES BEFORE PLANTING

PLACE ROOTBALL ON UNEXCAVATED OR TAMPED SOIL

3 X ROOTBALL DIAMETER

PRUNE CODOMINATE LEADERS
RUBBER HOSE
GALVANIZED WIRE GUY 12 GAUGE. ALLOW FOR A SLIGHT AMOUNT OF MOVEMENT

2"X2" HARDWOOD STAKE 2'-6" MIN BELOW SURFACE. STAKE SHALL BE DRIVEN A MIN 18" OUT FROM TRUNK AND OUTSIDE OF ROOTBALL

IF FIELD GROWN CUT AWAY ALL BALLING ROPES. REMOVE BURLAP OR WIRE BASKET FROM TOP 1/2 OF BALL. IF CONTAINER GROWN, REMOVE CONTAINER AND CUT CIRCLING ROOTS

1" COMPOST LAYER

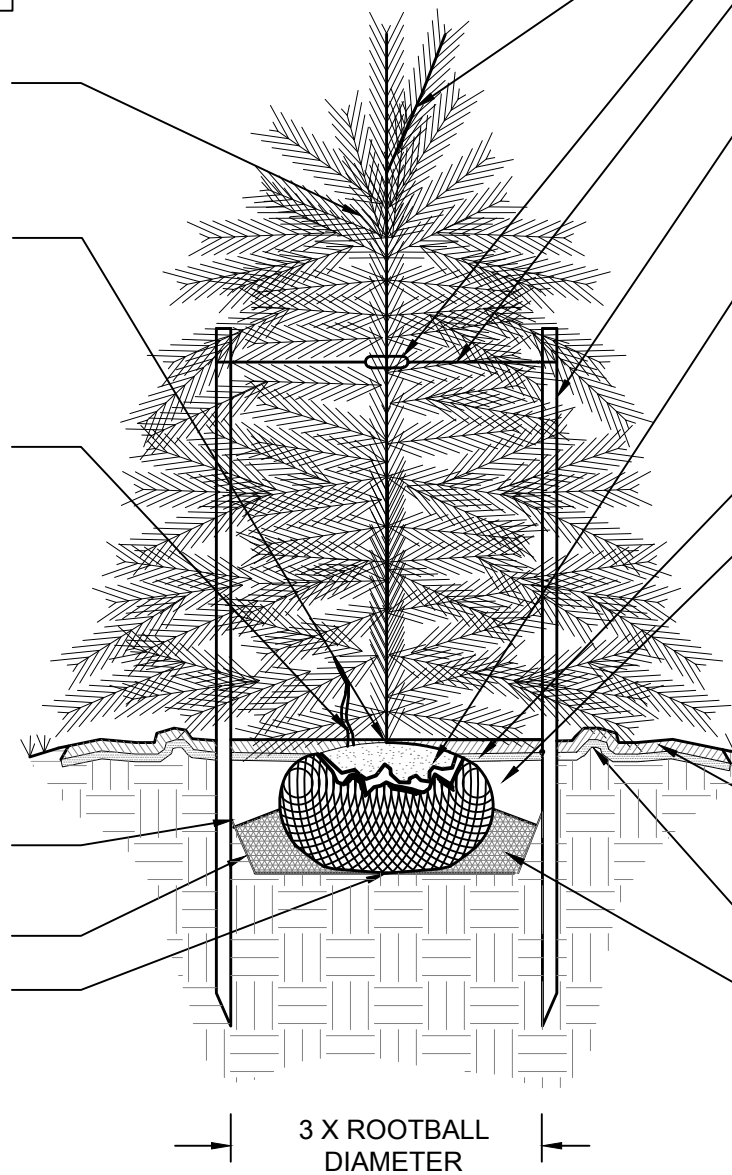
BACKFILL PLANTING PIT WITH NATIVE SOIL. INCORPORATE SLOW-RELEASE GRANULAR FERTILIZER

2-3" MULCH LAYER. MULCH TO EDGE OF DRIPLINE. KEEP 4-6" AWAY FROM TRUNK FLARE

6" SAUCER

TAMP SOIL AROUND ROOTBALL BASE FIRMLY WITH FOOT PRESSURE SO THAT ROOTBALL DOES NOT SHIFT

**1 EVERGREEN TREE - STAKING SPECIFIED
NOT TO SCALE**



TREES	QTY	BOTANICAL NAME	COMMON NAME	MIN. INSTALLED SIZE	ROOT
ILE AME	15	ILEX OPACA	AMERICAN HOLLY	8' HT.	B&B
JUN EAS	13	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	8' HT.	B&B



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REVISION DESCRIPTION	DATE

DATE
3/22/2021

DRAWN BY
M. RACHNER

DESIGNED BY
M. RACHNER

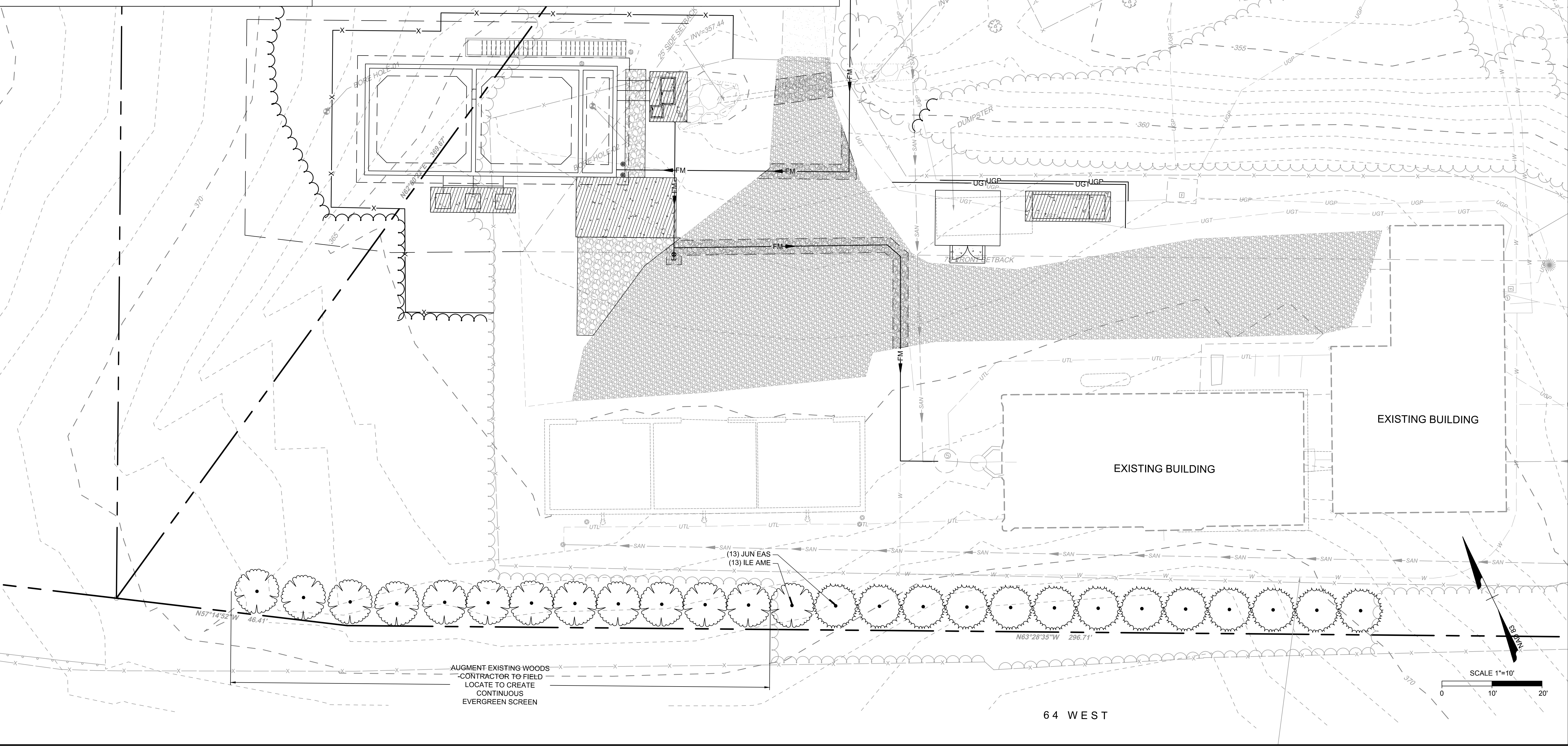
CHECKED BY
F. HANCOCK

SCALE
1" = 10'

TIMMONS GROUP
KESWICK WWTP IMPROVEMENTS
ALBEMARLE COUNTY, VIRGINIA
LANDSCAPE PLAN

JOB NO.
47747
SHEET NO.
L1.0

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SCALE 1"=10'
0 10' 20'

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