

# REGENTS SCHOOL OF CHARLOTTESVILLE

MAJOR SITE PLAN AMENDMENT

SDP2020-52

TAX MAP 75, PARCEL 66

TAX MAP 76, PARCEL 17

ALBEMARLE COUNTY, VIRGINIA

## LEGEND

EXISTING	NEW	DESCRIPTION
		<b>BOUNDARIES</b>
		BENCHMARK
		SITE PROPERTY LINE
		ADJACENT PROPERTY LINE
		BUILDING SETBACK
		PARKING SETBACK
		<b>SITE TEXT</b>
		PARKING COUNT
		<b>TOPOGRAPHY</b>
		INDEX CONTOUR
		INTERVAL CONTOUR
		SPOT ELEVATION
		TOP OF CURB ELEVATION
		TOP OF WALL ELEVATION
		BOTTOM OF WALL ELEVATION
		STREAM
		STREAM BUFFER
		100 YEAR FLOODPLAIN
		<b>BUILDING</b>
		RETAINING WALL
		STAIRS
		EDGE OF PAVEMENT
		ROAD CENTERLINE
		FRONT OF CURB
		BACK OF CURB
		CG-12 TRUNCATED DOME
		SIDEWALK
		BIKE PARKING
		HANDICAP ACCESSIBLE AISLE
		HANDICAP PARKING
		<b>MATERIAL</b>
		CONCRETE
		RIPRAP
		ASPHALT
		EC-2 MATTING
		EC-3 MATTING
		WETLAND
		TREELINE
		FENCE
		<b>UTILITY</b>
		UTILITY POLE
		GUY WIRE
		OVERHEAD UTILITY
		UNDERGROUND UTILITY
		<b>STORM</b>
		STORM MANHOLE
		DROP INLET
		STORM SEWER
		ROOF DRAIN
		SANITARY
		SANITARY MANHOLE
		SANITARY SEWER MAIN
		SANITARY SEWER LATERAL
		WATER
		WATER LINE
		WATER METER
		WATER METER VAULT
		FIRE HYDRANT
		FIRE DEPARTMENT CONNECTION
		<b>GAS</b>
		GAS LINE
		<b>EASEMENTS</b>
		CONSTRUCTION
		GRADING
		ACCESS
		SIGHT DISTANCE
		UTILITY
		STORMWATER FACILITY MAINTENANCE
		STORMWATER ACCESS
		DRAINAGE
		SANITARY
		WATERLINE
		GASLINE

NOTE:  
1. THE SIZE OF THE SYMBOLS MAY VARY FROM WHAT IS SHOWN.

## OWNER/DEVELOPER

Regents School of Charlottesville Inc.  
3045 Ivy Road  
Charlottesville, Virginia 22903

## PLAN PREPARATION

Shimp Engineering, P.C.  
912 East High Street  
Charlottesville, VA 22902  
(434) 227-5140

## ZONING

EC - Entrance Corridor  
R1 - Residential  
Overlays: Airport Impact Area, Flood Hazard, Steep Slopes - Managed, Steep Slopes - Preserved  
SP201800011 approved on September 18, 2019 permitting a private school use on the site and a central sewerage system, for up to 13 total connections  
WPO2020-28 approved on December 16, 2021  
SDP2020-52 approved on April 18, 2022

## MAGISTERIAL DISTRICT

Samuel Miller

## SOURCE OF TITLE

DB 5237 P 251  
DB 660 P 780 (plat)

## SETBACKS

Front: 5'  
Side: 10'  
Rear: 20'

## BUILDING HEIGHT

Maximum height not to exceed 35'

## SOURCE OF BOUNDARY AND TOPOGRAPHY

Boundary is based on field survey by:  
Dewberry Engineers Inc.  
4805 Lake Brook Drive  
Glen Allen, Virginia 23060  
Provided on 05/11/2018, field verified by Justin Shimp, P.E. 10/22/2019  
Topographic survey with two foot (2') contours provided by Quantum Spatial  
Topography of four foot (4') contours provided by Albemarle County GIS.

## BENCHMARK

Datum for topography is NAVD 88

## FLOODZONE

These parcels lie within the 100-year floodplain, FEMA flood zone "A" as defined on FIRM map 51003C0268D, dated February 4, 2005.

## RESERVOIR WATERSHED

This site is within the Moore's Creek Watershed and the creek shown is a tributary of Moore's Creek.  
Wetlands have not been identified on these parcels.  
This site is not within a watershed of a public water supply.

## WATER & SANITARY SERVICES

This project lies within the ACSA jurisdictional area for both water and sewer. Access to existing water and sewer service is available.

## ALBEMARLE COUNTY SERVICE AUTHORITY GENERAL WATER & SEWER NOTES

- Work shall be subject to inspection by Albemarle County Service Authority inspectors. The Contractor will be responsible for notifying the proper service authority officials at the start of the work.
- The Albemarle County Service Authority shall have access to use the airspace above the locations of construction for the flight of unmanned aerial vehicles for the purpose of imagery collection.
- The location of existing utilities across the line of the proposed work are not necessarily shown on the plans and where shown, are only approximately correct. The contractor shall on his own initiative locate all underground lines and structures as necessary.
- All materials and construction shall comply with the current edition of the general water and sewer construction specifications as adopted by the Albemarle County Service Authority.
- Datum for all elevations shown in National Geodetic Survey.
- The contractor shall be responsible for notifying "MISS UTILITY" (1-800-552-7001).
- All water and sewer pipes shall have a minimum of 3.5 feet of cover measured from the top of pipe, over the centerline of pipe. This includes all fire hydrant lines, service laterals and water lines, etc.
- All water and sewer appurtenances are to be located outside of roadside ditches.
- Valves on deadend lines shall be rodded to provided adequate restraint for the valve during a future extension of the line.
- Trees are not permitted in the ACSA easement.
- The fire sprinkler main downstream of the gate valve is private. Visual inspection and testing of the fire sprinkler main downstream of the gate valve shall be witnessed by the County Building Inspections Department. This inspection shall occur under an "Other Plumbing" permit which must be obtained by the contractor.
- The sewer lateral beyond the connection at the sewer main shall be private. The sewer lateral stub-out shall undergo the ACSA low-pressure air test to satisfy County testing requirements. Visual inspection of the sewer lateral stub-out shall be witnessed by the County Building Inspections Department. This inspection shall occur under an "Other Plumbing" permit which must be obtained by the contractor.
- The sewer lateral beyond the connection at a manhole shall be private. Visual inspection and pressure testing of the sewer lateral shall be witnessed by the County Building Inspections Department. This inspection shall occur under an "Other Plumbing" permit which must be obtained by the contractor.
- The fire sprinkler main downstream of the gate valve is private. Visual inspection and testing of the fire sprinkler main downstream of the gate valve shall be witnessed by the County Building Inspections Department. This inspection shall occur under an "Other Plumbing" permit which must be obtained by the contractor.
- All flushing of fire sprinkler mains shall not occur until approval is given by the ACSA.
- Prior to backflow prevention device testing and the establishment of water service, all backflow prevention device installations shall meet the ACSA backflow requirements as detailed in Section 8 of the most recent revision of the ACSA Rules and Regulations.
- A deed of easement and easement plat for the utility easements, approved by the ACSA, shall be recorded prior to any water and/or sewer service being established.

## FIRE PREVENTION NOTES

- A Knox box is required on this property. The location of this Knox box will be coordinated with the fire marshal's office.
- ISO Needed Fire Flow for this site is 2,125 gpm.
- Smoking shall be prohibited in areas where smoking makes conditions such as to make a smoking a hazard and these areas shall be designated with no smoking signs per Virginia Statewide Fire Prevention Code.
- Areas where smoking can occur, shall have appropriate receptacles for discarded smoking materials per Virginia Statewide Fire Prevention Code.
- Per the Virginia Statewide Fire Prevention Code, vehicular access for firefighting shall be provided at all construction and demolition sites, including access to within 100 feet of temporary or permanent fire department connections, and have no overhead wiring or other overhead obstructions lower than 13 ft. 6 inches; this access may be via permanent or temporary road, but shall be capable of supporting fire apparatus in all weather conditions.
- Contractor shall ensure the street numbers are always plainly visible from the frontage street during construction per the Virginia Statewide Fire Code.
- An approved water supply for firefighting operations shall be in place and available as soon as combustible materials arrive on site.
- Waste and combustible debris shall be removed from the building at the end of each day and disposed of in accordance with the Virginia Statewide Fire Code.
- Fire extinguishers shall be provided, with not less than one approved fire extinguisher at each stairwell, on all floor levels where combustible materials have accumulated, in every storage and construction shed and in areas of special hazards, such as where flammable and combustible liquids are stored or used, in accordance with the Virginia Statewide Fire Code.
- Operations involving the use of cutting and welding shall comply with the Virginia Statewide Fire Prevention Code and shall require a permit from the Albemarle County Fire Marshal's Office.

## EXISTING USE

Vacant Land

## PROPOSED USE

Private School (Grades K-12)

## LAND USE SCHEDULE

EXISTING	Area	%	PROPOSED	Area	%
Building	0 SF	0%	Building	35,920 SF	4.3%
Pavement	0 SF	0%	Pavement	40,025 SF	4.8%
Sidewalk	0 SF	0%	Sidewalk	30,811 SF	3.7%
Undeveloped	832,432 SF	100.0%	Undeveloped	725,676 SF	87.2%
Total=	832,432 SF (19.11 ac.)		Total=	832,432 SF (19.11 ac.)	

## PARKING SCHEDULE

Private School Use: 90 spaces required per zoning determination  
60 faculty spaces, 23 student drop off spaces, 4 handicap spaces, 3 guest spaces

Total 94 - 9'x18' spaces provided (includes 4 - van accessible spaces)

Overflow parking to be provided as part of a shared parking agreement with Trinity Presbyterian Church. Pedestrian path provided for access to church parking lot.

## LIGHTING

Lighting shall be in accordance with SP201800011.

## SIGNS

All signs and pavement shall conform with the latest edition of the MUTCD Guidelines.

A sign permit must be issued in accordance with the Albemarle County Sign Regulations prior to placement of any signs on-site. Contractor shall provide handicap signs as shown on plan.

## GENERAL NOTES

- The information and data shown or indicated with respect to the existing underground utilities at or contiguous to the site are based on information and data furnished to the owner and engineer by the owners of such underground facilities or others. The owner or engineer shall not be responsible for the accuracy or completeness of such information or data. The contractor shall have full responsibility for confirming the accuracy of the data, for locating all underground utilities, for coordination of the work with owners of such underground utilities during construction, for the safety and protection thereof and repairing any damage thereto resulting from the work. All of these conditions shall be met at no additional cost to the owner. The contractor shall contact "Miss Utilities" of Virginia at 1-800-552-7001 prior to the start of work.
- When working adjacent to existing structures, poles, etc., the contractor shall use whatever methods that are necessary to protect structures from damage. Replacement of damaged structures shall be at the contractor's expense.
- The contractor shall be responsible for protecting all existing site structures from damage and coordinating work so that the owner can make necessary arrangements to modify/protect existing structures from damages.
- The contractor shall be responsible for notifying all utility owners, adjacent land owners whose property may be impacted and the Virginia Department of Transportation prior to completing any off-site work.
- Contractor shall notify and coordinate all work involving existing utilities with utility owners, at least 72 hours prior to the start of construction.
- Contractor shall immediately report any discrepancies between existing conditions and contract documents to the owner and engineer.
- Contractor shall submit for the approval of the owner submittals of all specified materials listed in the plans, to include shop drawings, manufacturer's specifications and laboratory reports. The owner's approval of submittals will be general and will not relieve the contractor from the responsibility of adherence to the contract and for any error that may exist.
- All bare areas shall be scarified, limed, fertilized, seeded and mulched.
- All trees, saplings, brush, etc. shall be removed from within the right of way and the drainage easements.
- Visibility of all mechanical equipment from the Entrance Corridor shall be eliminated.
- Retaining walls require separate building permits.
- All water service lines, sanitary laterals, and sprinkler lines must be visually inspected by the Albemarle County Building Department from the main to the structure.
- Accessible routes and features must be provided throughout the site in accordance with VCC and ICC A117.1-2009.
- All roof drains shall discharge in a manner not to cause a public nuisance and not over sidewalks.

## RIVANNA WATER & SEWER AUTHORITY GENERAL NOTES

- All materials and methods of construction shall comply with the latest version of the General Water and Sewer Design and Construction Standards - Version 1.0, adopted in December 2015, except as modified below or modified in special notes.
- RWSA shall approve all construction materials and methods of construction. A preconstruction conference shall be held with RWSA prior to the start of any work.
- The contractor shall be responsible for notifying Miss Utility (1-800-552-7001).
- RWSA Engineer (Victoria Fort at (434) 977-2970 ext. 205) shall be notified three business days prior to the start of construction.
- All work is subject to inspection by RWSA staff. No tie-ins to the existing system shall be made without coordination with and the presence of RWSA staff. No work shall be conducted on RWSA facilities on weekends or holidays without special written permission from RWSA.
- For sanitary sewer line construction: RWSA may require bypass pumping for tie-ins to the existing system. All doghouse manholes must be pressure-tested before a connection is made to the system.
- The location of existing utilities as shown on the plans is from data available at the time of design and is not necessarily complete or accurate. The Contractor shall be responsible for the verification of the location, size and depth of all existing utilities, both surface and subsurface. The Contractor shall immediately notify the Engineer of any discrepancies between the plans and field conditions. The Contractor shall use due diligence to protect all utilities and structures from damage at all times, whether shown on the plans or not. Damage to any existing utilities shall be repaired by the contractor to the original condition at no additional cost to the Owner.
- Erosion and sediment control facilities shall not be permitted in the RWSA easement without special written permission from RWSA. No grading shall be permitted in the RWSA easement unless permitted otherwise by RWSA in writing.
- No blasting shall be permitted within 100 feet of RWSA facilities without written permission and RWSA approval of the blasting plan. Ground monitoring during blasting and a pre-blast survey may be required. For blasting within 100 feet of any operative RWSA sewerlines, bypass pumping and/or pre- and post-CCTV may be required. RWSA may also require certification from a licensed professional engineer stating that the proposed blasting will not damage any RWSA facilities. Damage to any utilities due to blasting shall be repaired by the Contractor to the original condition at no additional cost to the Owner.
- The contractor shall observe minimum separation requirements for utility crossings. When a crossing is made under an existing facility, adequate structural support shall be provided for the existing pipe. The area of the crossing shall be backfilled with compacted 57 stone to the springline of the existing pipe.
- New water main installations shall be pressure tested, chlorinated, flushed and have water samples approved prior to making any permanent connection to the public water system. Approved methods of filling and flushing new water mains will be required to prevent any contamination of the public water system.
- All easements for new RWSA facilities shall be recorded prior to placing the new facilities into service.
- No permanent structural facilities will be permitted in the RWSA easement. This includes building overhangs, retaining walls, footers for any structure, drainage structures, etc.
- Trees are not permitted in the RWSA easement.

## GENERAL CONSTRUCTION NOTES

- Prior to any construction within any existing right-of-way, including connection to any existing road, a permit shall be obtained from the Virginia Department of Transit (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 the current specifications and standards of VDOT unless otherwise noted.
- Erosion and siltation control measures shall be provided in accordance with the approved erosion control plan and shall 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).

## MAJOR SITE PLAN AMENDMENT NARRATIVE

This plan is a major site plan amendment to SDP2020-00052 Regents School of Charlottesville, approved on April 18, 2022. Construction of the site is currently ongoing.

The scope of this major site plan amendment incorporates a larger athletic field and the addition of the Upper School Campus, as conceptually shown on approved SDP2020-00052, located adjacent to the athletic field. The approved Lower School Campus, located adjacent to the parking area, has only been revised to shift 30' north, to accommodate the larger field area. This major site plan amendment proposes a new central water supply for one water meter to serve the school use and the expansion of the approved central sewerage system.

## VICINITY MAP SCALE: 1"=1000'

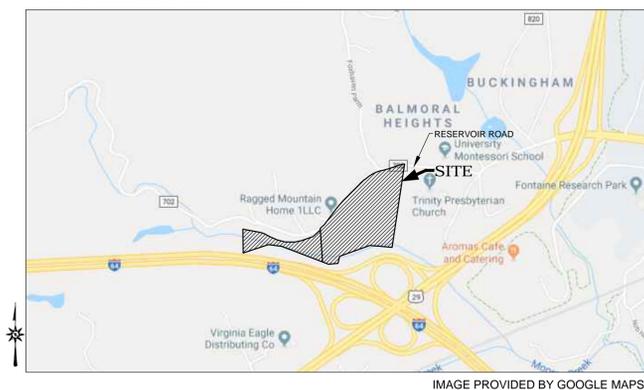


IMAGE PROVIDED BY GOOGLE MAPS

## SHEET INDEX

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- C23 SANITARY SEWER PUMP STATION CALCULATIONS

## APPROVALS

Current Development Planner	Date
Current Development Engineer	Date
Architectural Review Board	Date
Fire Official	Date
Building Official	Date
Albemarle County Service Authority	Date
Virginia Department of Transportation	Date



## MAJOR SITE PLAN AMENDMENT REGENTS SCHOOL

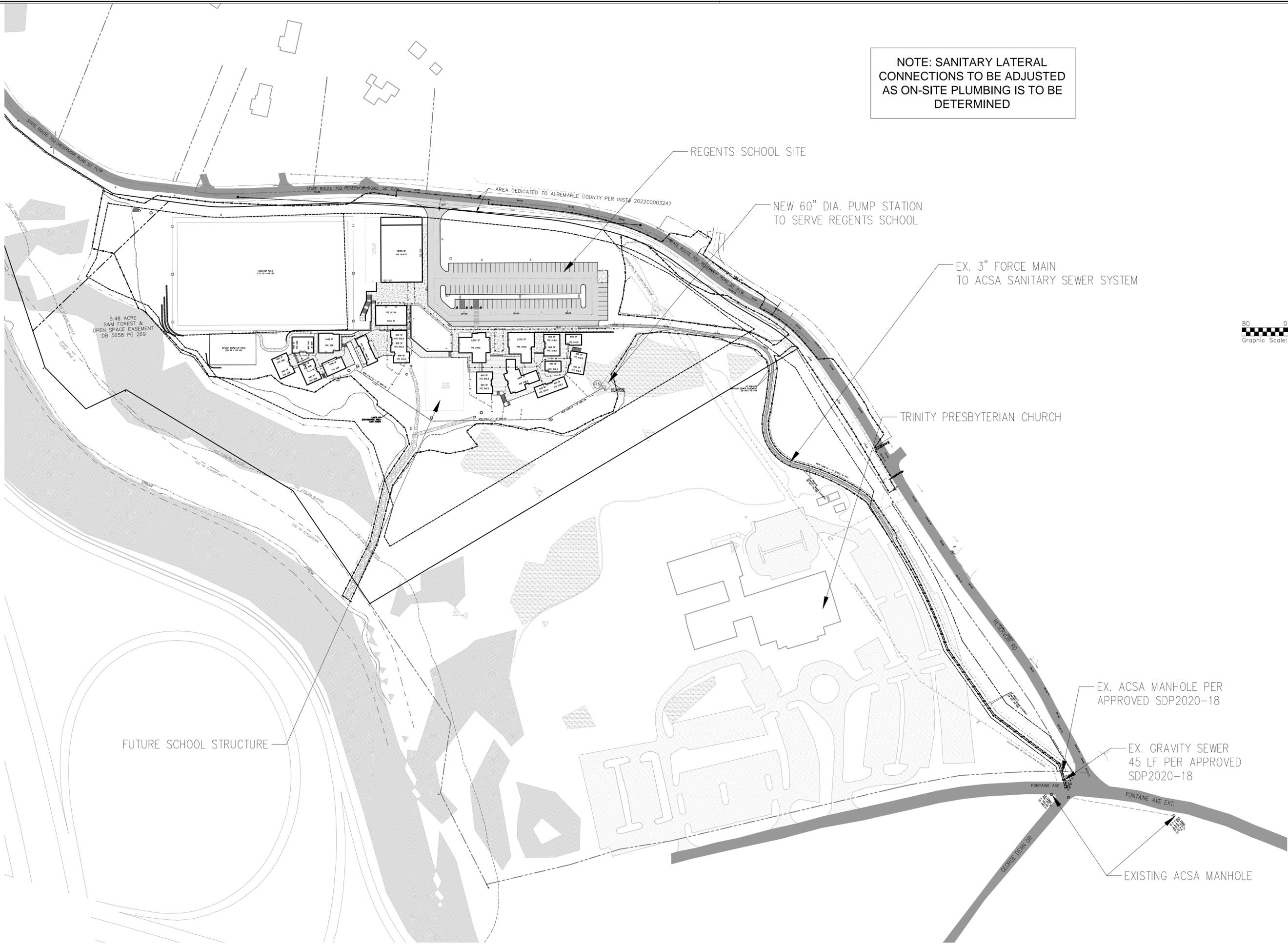
ALBEMARLE COUNTY, VIRGINIA  
**SUBMISSION:**  
2022.06.28  
**REVISION:**  
2022.09.07 [Central Systems Request - ACSA]  
2022.09.27 [ACSA]

FILE NO. 18.020

## COVER

C1

NOTE: SANITARY LATERAL CONNECTIONS TO BE ADJUSTED AS ON-SITE PLUMBING IS TO BE DETERMINED



**SHIMP ENGINEERING**  
LAND PLANNING - PROJECT MANAGEMENT

912 E. HIGH ST. CHARLOTTEVILLE VA, 22902 434.227.5140 JUSTIN@SHIMP-ENGINEERING.COM

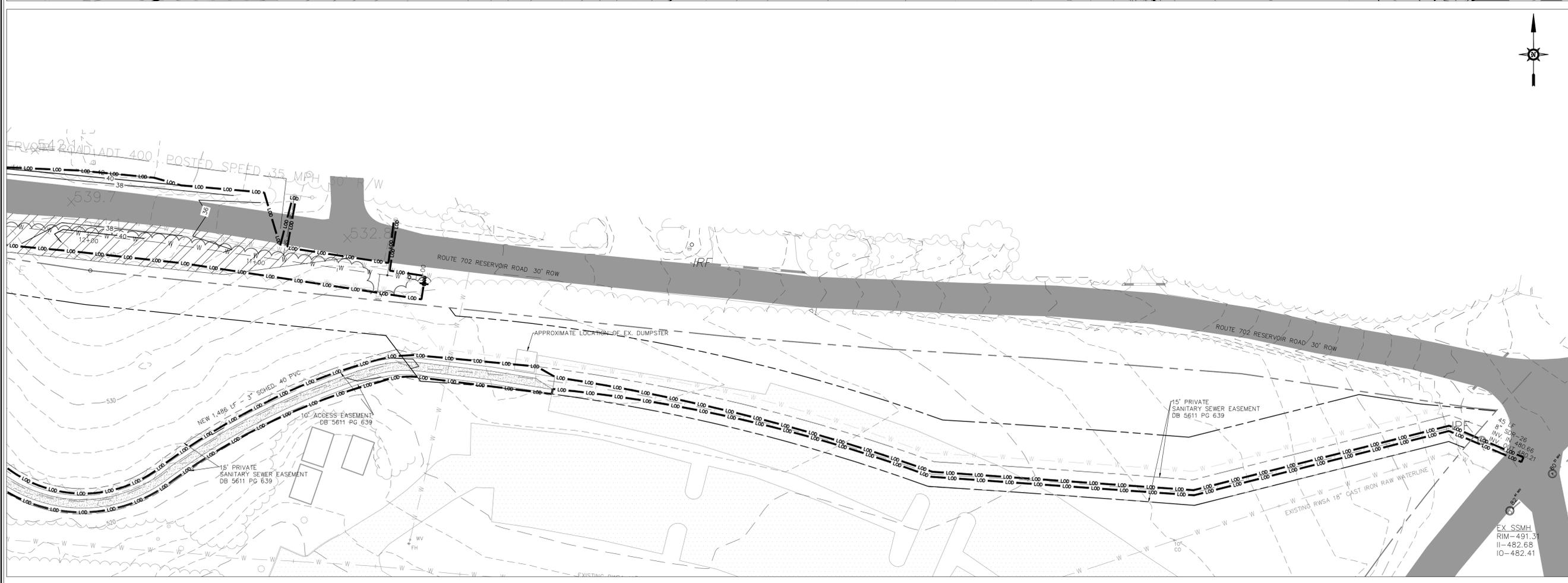
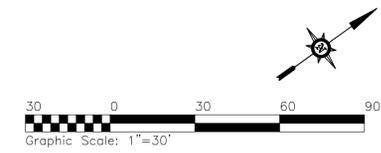
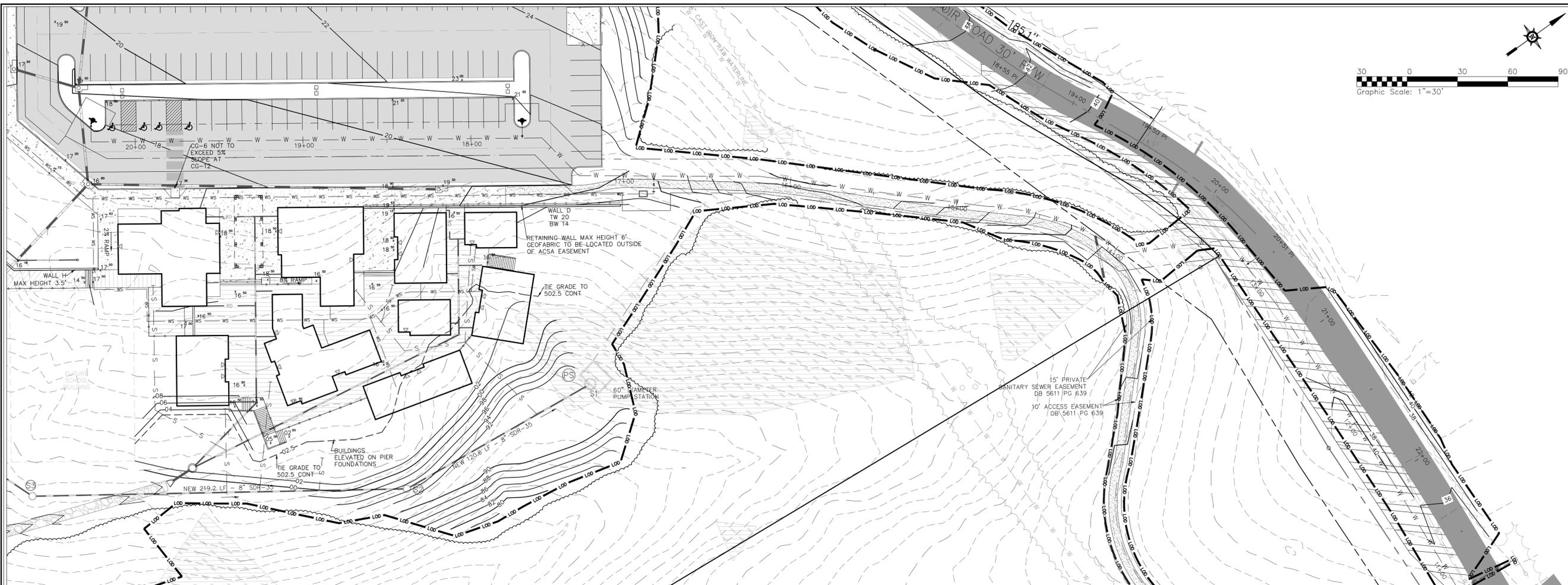


MAJOR SITE PLAN AMENDMENT  
**REGENTS SCHOOL**

ALBEMARLE COUNTY, VIRGINIA  
SUBMISSION:  
2022.06.28  
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2022.09.07 (Central Systems Request - ACSA)  
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FILE NO. 18.020

**CENTRAL SEWER OVERVIEW**



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 CHARLOTTEVILLE VA, 22902 JUSTIN@SHIMP-ENGINEERING.COM



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**SANITARY SEWER FORCE MAIN PLAN**

**C20**



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 CHARLOTTEVILLE VA, 22902 JUSTIN@SHIMP-ENGINEERING.COM



MAJOR SITE PLAN AMENDMENT  
**REGENTS SCHOOL**

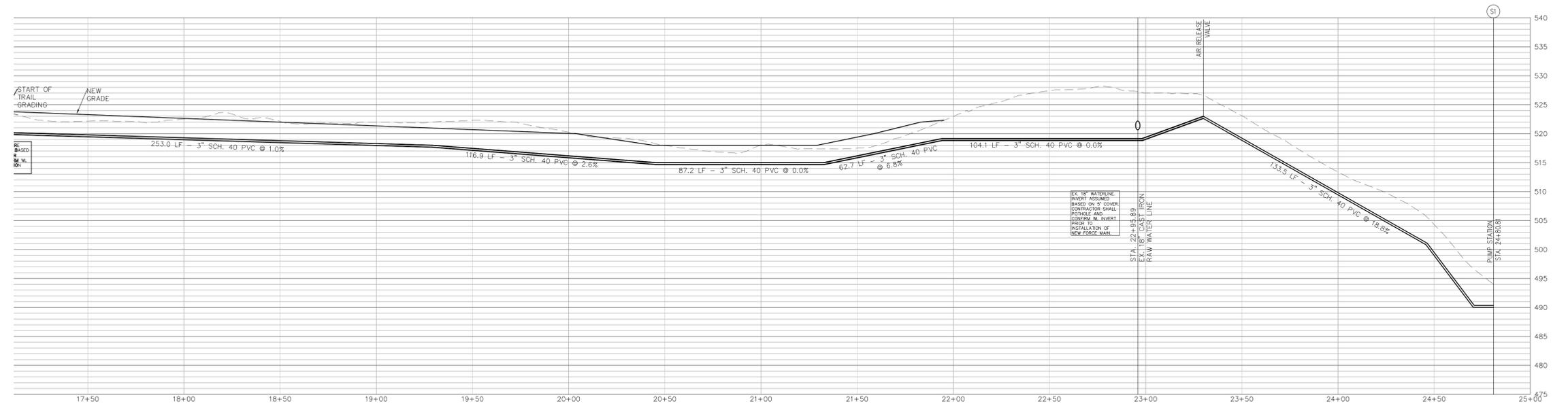
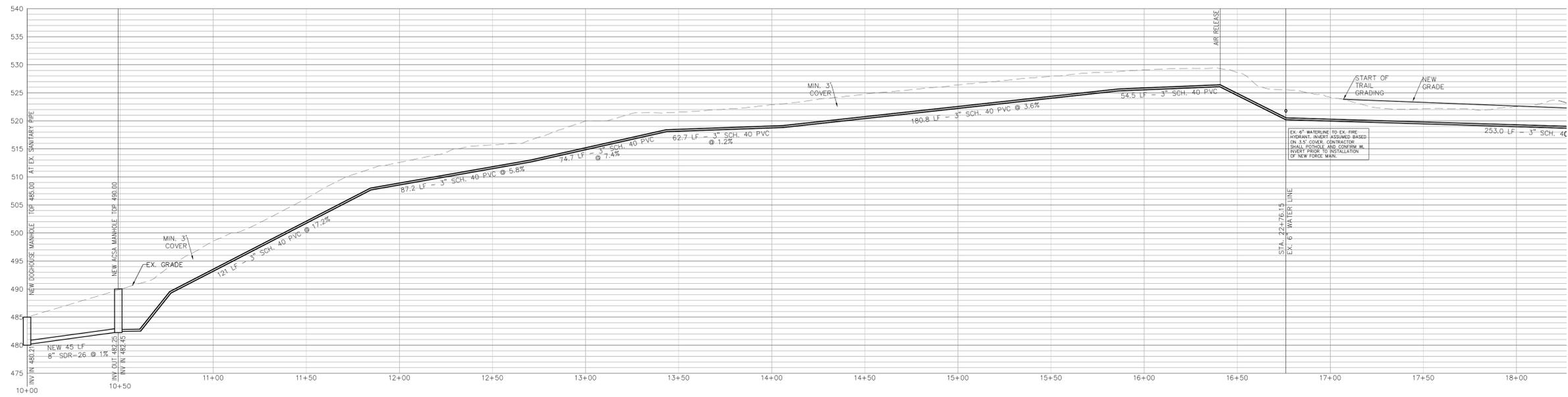
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**SANITARY SEWER GRAVITY FLOW PLAN**

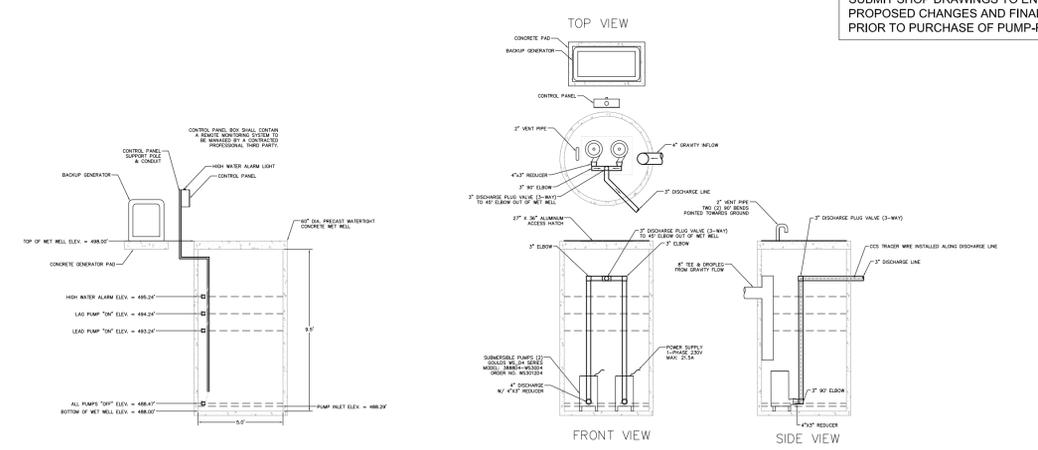


**C21**

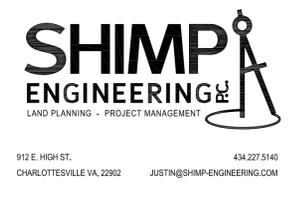


**1** FORCE MAIN PROFILE  
 C22 HORIZ: 1"=30'  
 VERT: 1"=10'

CONTRACTOR SHALL OBTAIN SHOP DRAWINGS FROM VENDOR FOR PUMP ASSEMBLY, GENERATOR, AND CONTROL PANELS. SUBMIT SHOP DRAWINGS TO ENGINEER FOR REVIEW OF ANY PROPOSED CHANGES AND FINAL APPROVAL OF DRAWINGS PRIOR TO PURCHASE OF PUMP-RELATED EQUIPMENT.



**2** SANITARY SEWER PUMP STATION DETAILS  
 C22 Scale: 1"=5'



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**FORCE MAIN PROFILE & SANITARY SEWER PUMP STATION DETAILS**

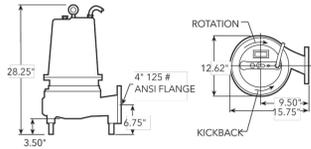
**C22**

**APPLICATION DATA AND CONSTRUCTION DETAILS**

Maximum Solid Size	3"
Minimum Casing Thickness	3/4"
Casing Corrosion Allowance	1/4"
Maximum Working Pressure	30 PSI
Maximum Submergence	50 feet
Minimum Submergence	Fully submerged for continuous operation 6" below top of motor for intermittent operation
Maximum Environmental Temperature	40° C (104° F) continuous operation, 60° C (140° F) intermittent operation
Power Cable - Type (See Motor Information for AWG data/size)	Type SJTOW: single phase, 1½ - 3 HP and 2 HP Type STOW: single phase, 1½ - 3 HP and 5 HP, 460 V Type STOW: single phase, 3 and 5 HP, three phase 5 HP, 230 V and 7½ HP
Motor Cover, Bearing Housing, Seal Housing, Casing	Gray Cast Iron - ASTM A48, Class 30
Impeller - Standard, Optional	Gray Cast Iron - ASTM A48 or Cast Bronze - ASTM B584 C87600
Motor Shaft	ANSI 300 Series Stainless Steel
Motor Design	NEMA 56 Frame, oil filled with Class F insulation
Motor Overload Protection	Single phase: on winding thermal overload protection auto reset Three phase: requires Class 10 overloads in control panel
External Hardware	300 Series Stainless Steel
Impeller Type	Semi-open with pump out vanes on back shroud
Oil Capacity - Seal Chamber	1.5 quarts
Oil Capacity - Motor Chamber	1½-5 HP single and three phase: 7 quarts 7½ HP three phase: 6.5 quarts
Mechanical Seals - Standard	Upper: Silicon Carbide/Silicon Carbide, Type 31 Lower: Silicon Carbide/Fungsten Carbide, Type 31
Mechanical Seals - Optional Lower	Silicon Carbide/Fungsten Carbide, Type 31

**DIMENSIONS**

(All dimensions are in inches. Do not use for construction purposes.)



**APPLICATIONS**

Used in a variety of residential, commercial and industrial applications such as:

- Sewage systems, Flood and Pollution Control, Dewatering/Effluent, Farms, Hospitals, Trailer Courts, Motels

**PUMP SPECIFICATIONS**

**Pump:**

- Maximum solid size: 3"
- Discharge size: 4", 125 # ANSI flange
- Maximum capacity: 620 GPM
- Maximum total head: 60 feet
- 300 Series stainless steel fasteners
- 20' Power cord
- Standard silicon carbide/silicon carbide outer seal

**Motor:**

- Maximum ambient temperature: 104° F (40° C) continuous duty, 140° F (60° C) intermittent duty
- Rated for continuous duty when fully submerged
- Insulation: Class F
- 60 Hertz
- Single row ball bearings
- 300 Series stainless steel keyed shaft

**Single Phase:**

- 1.5 - 5 HP; 208 and 230 volts
- Built-in thermal overloads with automatic reset
- Built-in capacitors

**MODEL AND MOTOR INFORMATION**

Order No.	HP	Phase	Volts	RPM	Impeller Dia. (in.)	Maximum Amps	L.R. Amps	KVA Code	Power Cable	F.L. Motor Efficiency %	Resistance Start Line-Line	Wt. (lbs.)
WS1518D4M	1.5	1	208	1750	5.63	17.2	50.8	B	14/3	80	1.1	0.9
WS1520D4M	1.5	1	230	1750	5.63	14.7	29.5	E	14/3	70	1.4	1.8
WS1538D4M	1.5	3	208	1750	5.63	11.5	40.9	H	14/4	81	1.4	1.7
WS1532D4M	1.5	3	230	1750	5.63	10.0	40.0	F	14/4	83	NA	2.3
WS1534D4M	1.5	3	230	1750	5.63	5.0	20.0	F	14/4	83	NA	9.9
WS1537D4M	1.5	3	230	1750	5.63	4.0	14.4	H	14/4	74	14.8	14.8
WS1518D4	1.5	1	208	1750	6.25	17.2	50.8	B	14/3	80	1.1	0.9
WS1520D4	1.5	1	230	1750	6.25	14.7	29.5	E	14/3	70	1.4	1.8
WS1538D4	1.5	3	208	1750	6.25	11.5	40.9	H	14/4	81	1.4	1.7
WS1532D4	1.5	3	230	1750	6.25	10.0	40.0	F	14/4	83	NA	2.3
WS1534D4	1.5	3	230	1750	6.25	5.0	20.0	F	14/4	83	NA	9.9
WS1537D4	1.5	3	230	1750	6.25	4.0	14.4	H	14/4	74	14.8	14.8
WS2018D4	2	1	208	1750	6.63	20.3	50.8	B	14/3	80	1.1	0.9
WS2012D4	2	1	230	1750	6.63	17.3	36.9	D	14/3	75	1.4	1.5
WS2038D4	2	3	208	1750	6.63	13.3	40.9	H	14/4	81	1.4	1.7
WS2032D4	2	3	230	1750	6.63	11.4	40.0	F	14/4	83	NA	2.3
WS2034D4	2	3	230	1750	6.63	5.8	20.0	F	14/4	83	NA	9.9
WS2037D4	2	3	230	1750	6.63	4.4	14.4	H	14/4	74	14.8	14.8
WS3018D4	3	1	208	1750	7.00	25.5	50.8	B	10/3	80	1.1	0.9
WS3012D4	3	1	230	1750	7.00	21.5	46.4	C	10/4	79	1.0	1.0
WS3038D4	3	3	208	1750	7.00	16.4	53.8	G	10/4	85	1.3	1.3
WS3032D4	3	3	230	1750	7.00	14.4	49.5	H	10/4	83	NA	1.9
WS3034D4	3	3	230	1750	7.00	7.2	24.8	H	10/4	83	NA	7.5
WS3037D4	3	3	230	1750	7.00	5.8	17.9	G	10/4	84	NA	11.6
WS5012D4	5	1	230	1750	7.25	26.5	57.7	A	10/3	80	1.0	0.8
WS5038D4	5	3	208	1750	7.25	19.1	73.9	F	10/4	84	0.9	0.9
WS5032D4	5	3	230	1750	7.25	16.4	63.6	E	10/4	85	NA	1.2
WS5034D4	5	3	230	1750	7.25	8.3	31.8	E	10/4	85	NA	4.8
WS7532D4	7.5	3	230	1750	7.69	16.4	22.8	E	10/4	80	NA	7.4
WS7534D4	7.5	3	230	1750	7.69	23.0	105.0	G	10/4	83	NA	0.7
WS7537D4	7.5	3	230	1750	7.69	11.5	32.5	G	10/4	83	NA	2.8
WS7539D4	7.5	3	230	1750	7.69	9.2	42.0	E	10/4	84	NA	4.4

**2 PUMP SPECIFICATIONS**

C23 Scale: N/A

**Discharge Pipe Information**

Pipe 1	3" force main
Pipe length (feet)	1500 ft
Pipe diameter (inches)	3 in
Pipe C-factor	120
Portion of Flow	1
Cross-sectional area (feet)	0.049 ft
Hydraulic radius	0.063 ft

Suction water surface elevation (A)	488.00 feet
Suction water surface elevation (B)	489.00 feet
Discharge water surface elevation	490.00 feet
Static head (A)	2.0 feet
Static head (B)	1.0 feet

**Daily Average Flowrates**

Type:	Unit:	Number of Units:	gpd/unit	Total (gpd)
Grade School w/ Showers	per student / staff	468	16	7,488
<b>Total</b>				<b>7,488</b>

**Daily Peak Flowrates**

Type:	Unit:	Number of Units:
Daily Average Flow	gpd (12-hr)	7,488
Daily Average Flow	gpm	10.40
Peaking Factor	n/a	2.5
Peak Daily Flow	gpm	26.01

**Wet Well Sizing**

Type:	Unit:	Number of Units:
Diameter	ft	5
Volume per foot	gallons	100
Wet Working Depth	ft	5.24
Wet Working Volume	gallons	5.95
Total Storage	gallons	1,422
Pumping Rate	gpm	75
Time to Empty	minutes	19

**System Curve - Head Loss Calculations**

Flowrate	Water Velocity In	Dynamic Losses, ft			Total Dynamic Head		Total Dynamic Head (+20%)		
		gpm	cfs	Velocity ft/s	Minor Losses	Pipe Friction	Max. Lift (ft)	Min. Lift (ft)	Max. Lift (ft)
0	0	0	0	0	0	2.00	1.00	2.40	1.20
5	0.01	0.23	0.00	0.21	2.21	1.21	2.66	1.46	
10	0.02	0.45	0.01	0.75	2.77	1.77	3.32	2.12	
15	0.03	0.68	0.03	1.60	3.63	2.63	4.35	3.15	
20	0.04	0.91	0.06	2.72	4.78	3.78	5.73	4.53	
25	0.06	1.13	0.09	4.11	6.20	5.20	7.44	6.24	
30	0.07	1.36	0.13	5.75	7.89	6.89	9.46	8.26	
35	0.08	1.59	0.18	7.65	9.83	8.83	11.80	10.60	
40	0.09	1.82	0.24	9.80	12.03	11.03	14.44	13.24	
45	0.10	2.04	0.30	12.18	14.48	13.48	17.37	16.17	
50	0.11	2.27	0.37	14.80	17.17	16.17	20.60	19.40	
55	0.12	2.50	0.45	17.66	20.10	19.10	24.12	22.92	
60	0.13	2.72	0.53	20.74	23.27	22.27	27.92	26.72	
65	0.14	2.95	0.62	24.05	26.67	25.67	32.01	30.81	
70	0.16	3.18	0.72	27.58	30.31	29.31	36.37	35.17	
75	0.17	3.40	0.83	31.34	34.17	33.17	41.00	39.80	
80	0.18	3.63	0.94	35.31	38.26	37.26	45.91	44.71	
85	0.19	3.86	1.07	39.50	42.57	41.57	51.08	49.88	
90	0.20	4.08	1.19	43.91	47.10	46.10	56.53	55.33	
95	0.21	4.31	1.33	48.53	51.86	50.86	62.23	61.03	
100	0.22	4.54	1.47	53.36	56.83	55.83	68.20	67.00	

**Wet Well Calculations**

Wet Well Diameter: 5 ft  
Wet Well Height: 10 ft

Pump Rate: 75 gpm  
\*Pump rate is where system curve and pump curve cross

Min active wet well volume:  
1) Min of 1 minute pump rate time: 75 gallons  
2) 10 minutes pump cycle time (3 cycles/hr/pump): 187.5 gallons

Dimensions of sloped portion around base of wet well (ft):  
height = 1.00 width = 1.00

Volume per foot of depth of wet well: 147 gal/ft

Depth (ft)	Volume (gal)
0	0
1	100
2	247
3	394
4	540
5	687
6	834
7	981
8	1128
9	1275
10	1422

**Wet Well**

In flow rate into Wet Well: Qin = 26.01 gpm  
Discharge Flow Out of Wet Well: Qout = 75.00 gpm

Minimum cycle time between starts: Tmin = 5 min

Min Storage Volume of Well: Vmin = 93.75 gal

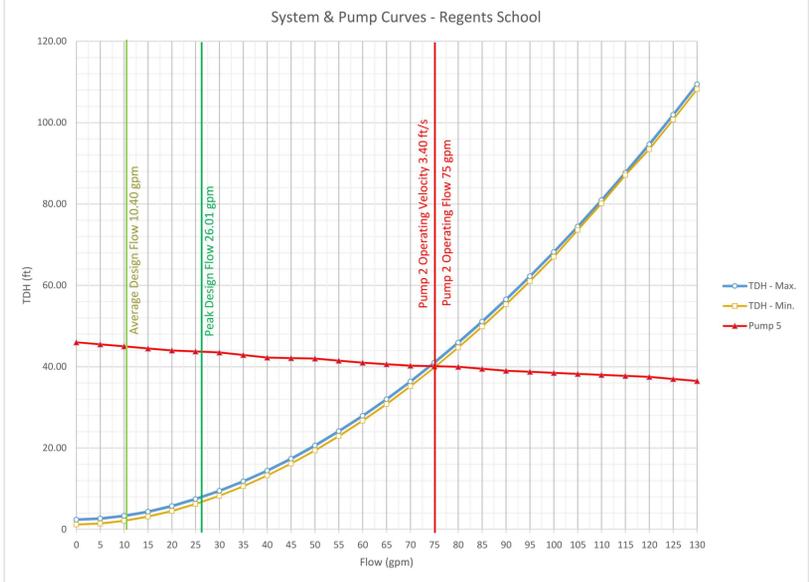
Height to start pump: 5.24 ft  
Volume storage at pump start: 723 gal  
Time to Start Pump from empty: 25.30 min  
Time to Empty From Start: 9.85 min  
Minimum cycle time between starts: 5.00 min  
Total Cycle Time: 14.65 min  
Cycles per Day (12 Hours): 23.70 cycles/12hr  
Cycles per hour: 1.97 cycl/hr  
Max Cycles per hour: 4.10 cycl/hr

**Minimum Submergence Hx**

Fd = 0.020 ft  
Hx = 0.175 ft  
Hmin = 4.775 ft

**Pump settings:**

1) Bottom of wet well	488.00 ft
2) Pump inlet	488.29 ft
2) All pumps off	488.47 ft
3) Lead pump on	493.24 ft (Condition A)
4) Lag pump on	494.24 ft (Condition B)
5) High Water Alarm	495.24 ft
6) Top of wet well	498.00 ft



**1 SYSTEM & PUMP CURVES**

C23 Scale: N/A

**Pump Selection**

Pump 5  
Goulds  
WS\_D4 Series  
Model: 3888D4  
WS30D4  
Order No. WS3012D4  
3" (Solids)  
4" Discharge Flange  
1-Phase 230V  
1750 RPM  
Max Amps: 21.5

Flow (gpm)	Pump 5 TDH (ft)
0	46.00
5	45.50
10	45.00
15	44.50
20	44.00
25	43.75
30	43.50
35	42.88
40	42.25
45	42.13
50	42.00
55	41.50
60	41.00
65	40.63
70	40.25
75	40.13
80	40.00
85	39.50
90	39.00
95	38.75
100	38.50
105	38.25
110	38.00
115	37.75
120	37.50
125	37.00
130	36.50



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**MAJOR SITE PLAN AMENDMENT**  
**REGENTS SCHOOL**

ALBEMARLE COUNTY, VIRGINIA  
**SUBMISSION:**  
2022.06.28  
REVISION:  
2022.09.07 (Central Systems Request - ACSA)  
2022.09.27 (ACSA)

FILE NO. 18.020

**SANITARY SEWER PUMP STATION CALCULATIONS**

C23