# REGENTS SCHOOL OF CHARLOTTESVILLE

### LEOENE

EXISTING	NEW	DESCRIPTION
		BOUNDARIES
		BENCHMARK
		SITE PROPERTY LINE
		ADJACENT PROPERTY LINE
		BUILDING SETBACK
		PARKING SETBACK SITE TEXT
(10)	(10)	PARKING COUNT
(10)	(10)	TOPOGRAPHY
		INDEX CONTOUR
		INTERVAL CONTOUR
311.5 x	X1,500 C	SPOT ELEVATION
311.5 TC x	х <sup>1,50гс</sup> х <sup>1,50ги</sup>	TOP OF CURB ELEVATION  TOP OF WALL ELEVATION
311.5 TW x 311.5 BW x	X X1 <sup>508W</sup>	BOTTOM OF WALL ELEVATION
· · ·	^	STREAM
		STREAM BUFFER
		100 YEAR FLOODPLAIN
		BUILDING
		BUILDING WALL
	<del></del>	RETAINING WALL STAIRS
		EDGE OF PAVEMENT
		ROAD CENTERLINE
		FRONT OF CURB
		BACK OF CURB
000000000000000000000000000000000000000	\$2505050 \$250505050	CG-12 TRUNCATED DOME
		SIDEWALK BIKE PARKING
		HANDICAP ACCESSIBLE AISLE
4	4	HANDICAP PARKING
G	G	MATERIAL
4 4 4	4 4 4	CONCRETE
		RIPRAP
		ASPHALT
		EC-2 MATTING
Ψ Ψ Ψ Ψ		EC-3 MATTING WETLAND
* * * * * * * * * * * * * * * * * * * *	~~~~~~	TREELINE
X	— x —	FENCE
		UTILITY
-0-	-0-	UTILITY POLE
$\bigcirc$	lacktriangle	GUY WIRE
—— OHU ——	—— OHU ——	OVERHEAD UTILITY
UGU	—— UGU ——	UNDERGROUND UTILITY STORM
		STORM MANHOLE
		DROP INLET
		STORM SEWER
RD	RD	ROOF DRAIN
		SANITARY
		SANITARY MANHOLE
		SANITARY SEWER MAIN SANITARY SEWER LATERAL
— S —	— s —	WATER
W	— w —	WATER LINE
0	0	WATER METER
		WATER METER VAULT
•	•	FIRE HYDRANT
A	A	FIRE DEPARTMENT CONNECTION
0.4.0		<u>GAS</u> GAS LINE
—— GAS ——	—— GAS ——	GAS LINE  EASEMENTS
	<u> </u>	CONSTRUCTION
	<u> </u>	GRADING
		ACCESS
		SIGHT DISTANCE
		UTILITY
	· · ·	STORMWATER FACILITY MAINTENANG
		STORMWATER ACCESS
	· · · ·	DRAINAGE
		SANITARY
		WATERLINE GASLINE

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

Charlottesville, Virginia 22903 PLAN PREPARATION

OWNER/DEVELOPER

Regents School of Charlottesville Inc.

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

ZONING

3045 Ivy Road

EC - Entrance Corridor

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 jursidictional area for both water and sewer. Access to existing water and sewer service is available.

### ALBEMARLE COUNTY SERVICE AUTHORITY **GENERAL WATER & SEWER NOTES**

1. 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.

2. 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.

3. 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 contractors shall on his own initiative locate all underground lines and structures as necessary.

4. All materials and construction shall comply with the current edition of the general water and sewer construction specifications as adopted by

5. Datum for all elevations shown in National Geodetic Survey.

6. The contractor shall be responsible for notifying "MISS UTILITY" (1-800-552-7001).

7. 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.

8. All water and sewer appurtenances are to be located outside of roadside ditches.

9. Valves on deadend lines shall be rodded to provided adequate restraint for the valve during a future extension of the line. 10. Trees are not permitted in the ACSA easement.

11. The contractor shall be responsible to comply with the no-lead regulation regarding brass fittings effective January 4, 2014 (Senate Bill 3874

which amends the Safe Drinking Water Act). 12. 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. 13. 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 14. 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.

15. All flushing of fire sprinklre mains shall not occur until approval is given by the ACSA.

16. 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.

17. 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

# FIRE PREVENTION NOTES

service being established.

1. A knox box is required on this property. The location of this knox box will be coordinated with the fire marshal's office.

2. ISO Needed Fire Flow for this site is 2,125 gpm. 3. 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.

4. Areas where smoking can occur, shall have appropriate receptacles for discarded smoking materials per Virginia

Statewide Fire Prevention Code. 5. 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. 6. Contractor shall ensure the street numbers are always plainly visible form the frontage street during construction per the Virginia Statewide Fire Code.

7. An approved water supply for firefighting operations shall be in place and available as soon as combustible materials

8. 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

10. 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** 

PROPOSED USE

### 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

Lighting shall be in accordance with SP201800011

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**

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

2. 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

3. 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.

impacted and the Virginia Department of Transportation prior to completing any off-site work.

5. Contractor shall notify and coordinate all work involving existing utilities with utility owners, at least 72 hours prior to the

6. Contractor shall immediately report any discrepancies between existing conditions and contract documents to the

and will not relieve the the contractor from the responsibility of adherence to the contract and for any error that may

10. Visibility of all mechanical equipment from the Entrance Corridor shall be eliminated

11. Retaining walls require separate building permits.

12. 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.

13. Accessible routes and features must be provided throughout the site in accordance with VCC and ICC A117.1-2009. 14. All roof drains shall discharge in a manner not to cause a public nuisance and not over sidewalks.

### RIVANNA WATER & SEWER AUTHORITY GENERAL NOTES

Standards - Version 1.0, adopted in December 2015, except as modified below or modified in special notes. 2. RWSA shall approve all construction materials and methods of construction. A preconstruction conference shall be held with RWSA

3. The contractor shall be responsible for notifying Miss Utility (1-800-552-7001).

4. RWSA Engineer (Victoria Fort at (434) 977-2970 ext. 205) shall be notified three business days prior to the start of construction. 5. All work is subject to inspection by RWSA staff. No tie-ins to the existing system shall be made without coordination with and the

must be pressure-tested before a connection is made to the system. 7. 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

9. 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

10. 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.

11. 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

12. All easements for new RWSA facilities shall be recorded prior to placing the new facilities into service. 13. No permanent structural facilities will be permitted in the RWSA easement. This includes building overhangs, retaining walls, footers

for any structure, drainage structures, etc.

14. Trees are not permitted in the RWSA easement.

### **GENERAL CONSTRUCTION NOTES**

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. 2. All materials and construction methods shall conform to the current specifications and standards of VDOT unless otherwise noted.

3. 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. 4. All slopes and disturbed areas are to be fertilized, seeded and mulched.

5. The maximum allowable slope is 2:1 (horizontal:vertical). Where reasonably obtainable, lesser slopes of 3:1 or better are to be 6. Paved, rip-rap or stabilization mat lined ditch may be required when in the opinion of the County Engineer or designee it is

9. All excavation for underground pipe installation must comply with OSHA Standards for the Construction Industry (29 CFR Part

deemed necessary in order to stabilize a drainage channel. 7. All traffic control signs shall conform with the Virginia Manual for Uniform Traffic Control Devices.

### MAJOR SITE PLAN AMENDMENT NARRATIVE

8. Unless othrewise noted all concrete pipe shall be reinforced concrete pipe - Class III.

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

Vacant Land Private School (Grades K-12)

provided for access to church parking lot.

### LIGHTING

### SIGNS

1. The information and data shown or indicated with respect to the existing underground utilities at or contiguous to the

4. The contractor shall be responsible for notifying all utility owners, adjacent land owners whose property may be

7. 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

8. All bare areas shall be scarified, limed, fertilized, seeded and mulched.

9. All trees, saplings, brush, etc. shall be removed from within the right of way and the drainage easements.

1. All materials and methods of construction shall comply with the latest version of the General Water and Sewer Design and Construction

prior to the start of any work.

presence of RWSA staff. No work shall be conducted on RWSA facilities on weekends or holidays without special written permission

6. For sanitary sewer line construction: RWSA may require bypass pumping for tie-ins to the existing system. All doghouse manholes

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. 8. 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. shall be repaired by the Contractor to the original condition at no additional cost to the Owner.

any contamination of the public water system.

1. Prior to any construction within any existing right-of-way, including connection to any existing road, a permit shall be obtained from

use and the expansion of the approved central sewerage system.

TAX MAP 76, PARCEL 17 ALBEMARLE COUNTY, VIRGINIA

TAX MAP 75, PARCEL 66

SDP2020-52

### VICINITY MAP SCALE: 1"=1000"

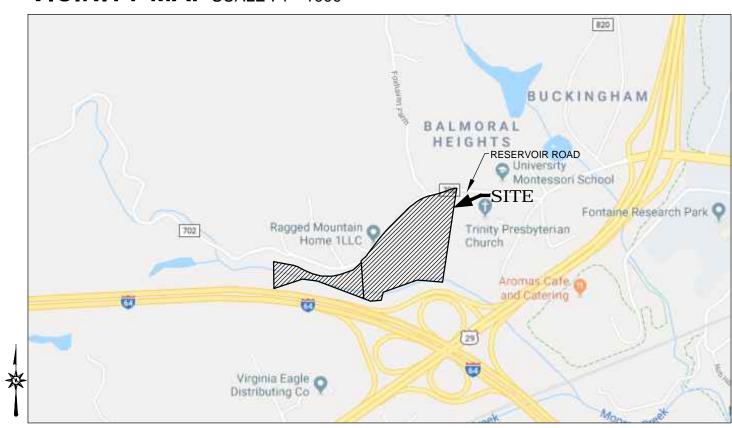


IMAGE PROVIDED BY GOOGLE MAPS

# **SHEET INDEX**

COVER

SP APPLICATION PLAN & CONDITIONS

SP APPLICATION PLAN & CONDITIONS

**EXISTING CONDITIONS** 

SITE PLAN OVERVIEW SITE PLAN

SITE PLAN

**GRADING & UTILITY PLAN** 

**C10** UTILITY PROFILES

**GRADING & UTILITY PLAN** 

C11 WATER MAIN REPLACEMENT & PROFILE

C12 ROAD PLAN C13 ROAD PLAN

C14 ROAD PLAN

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C17 LIGHTING PLAN

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C19 CENTRAL SEWER OVERVIEW

C20 SANITARY SEWER GRAVITY FLOW PLAN **C21** SANITARY SEWER FORCE MAIN PLAN

C22 SANITARY SEWER PROFILE & PUMP STATION DETAILS

C23 SANITARY SEWER PUMP STATION **CALCULATIONS** 

### **APPROVALS**

Virginia Department of Transportation

urrent Development Planner	Date
urrent Development Engineer	Date
chitectural Review Board	Date
re Official	Date
ilding Official	Date
bemarle County Service Authority	Date



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



MAJOR SITE PLAN AMENDMENT

ALBEMARLE COUNTY, VIRGINIA

# **REGENTS SCHOOL**

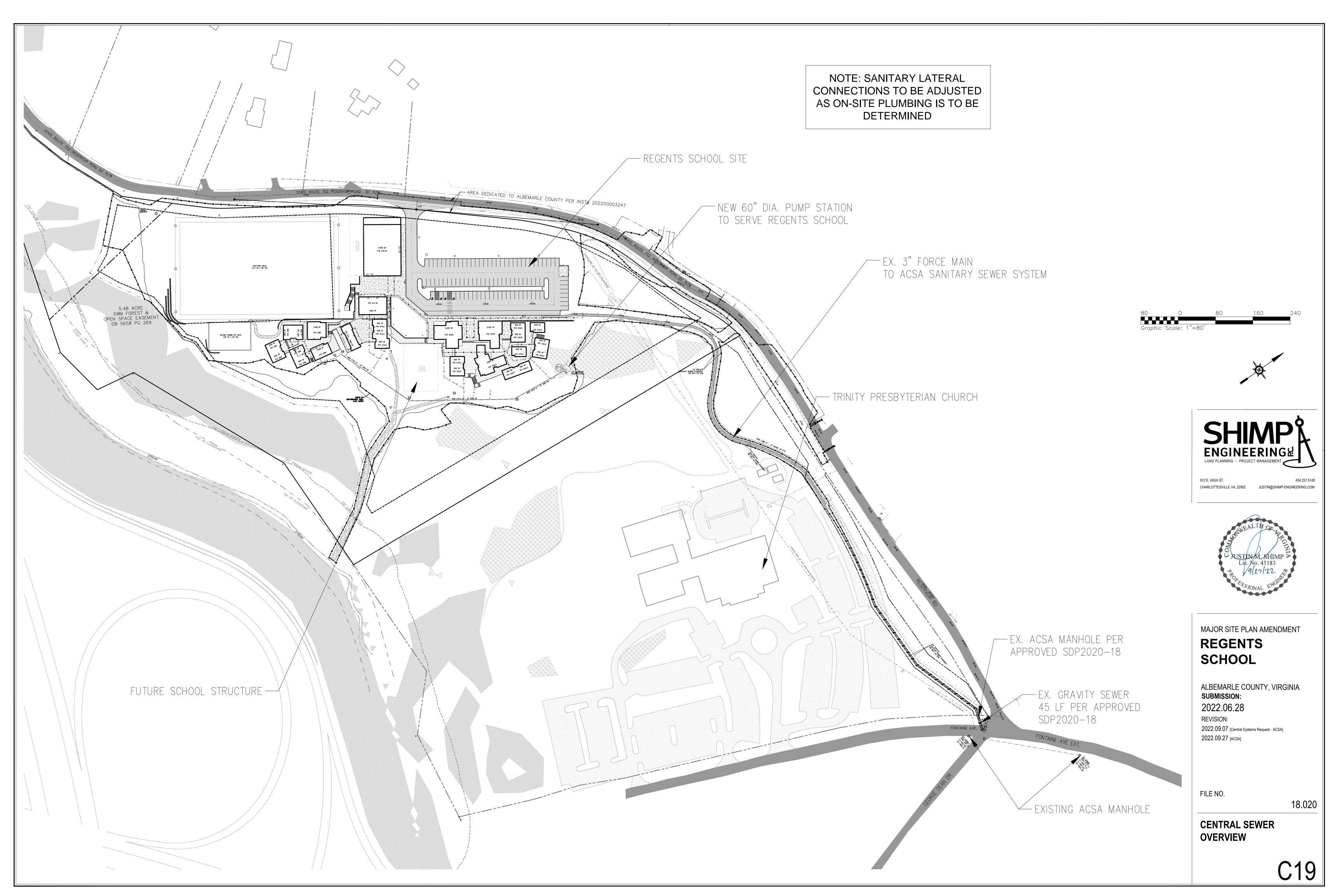
**SUBMISSION:** 2022.06.28 **REVISION:** 2022.09.07 [Central Systems Request - ACSA]

FILE NO.

COVER

2022.09.27 [ACSA]

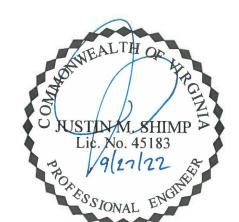
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CHARLOTTESVILLE VA, 22902 JUSTIN@SHIMP-ENGINEERING.COM



MAJOR SITE PLAN AMENDMENT **REGENTS** 

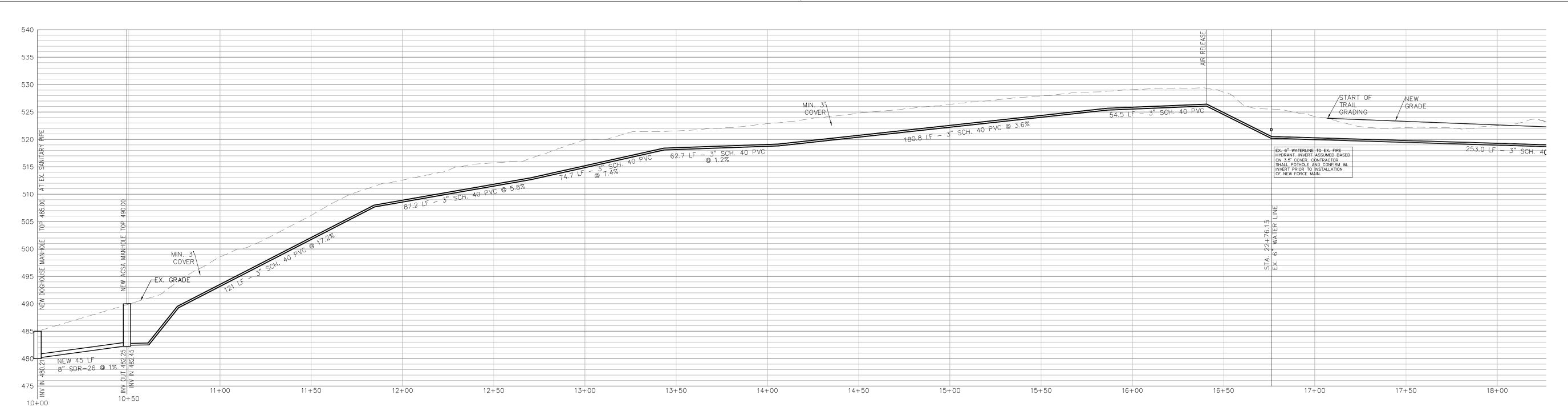
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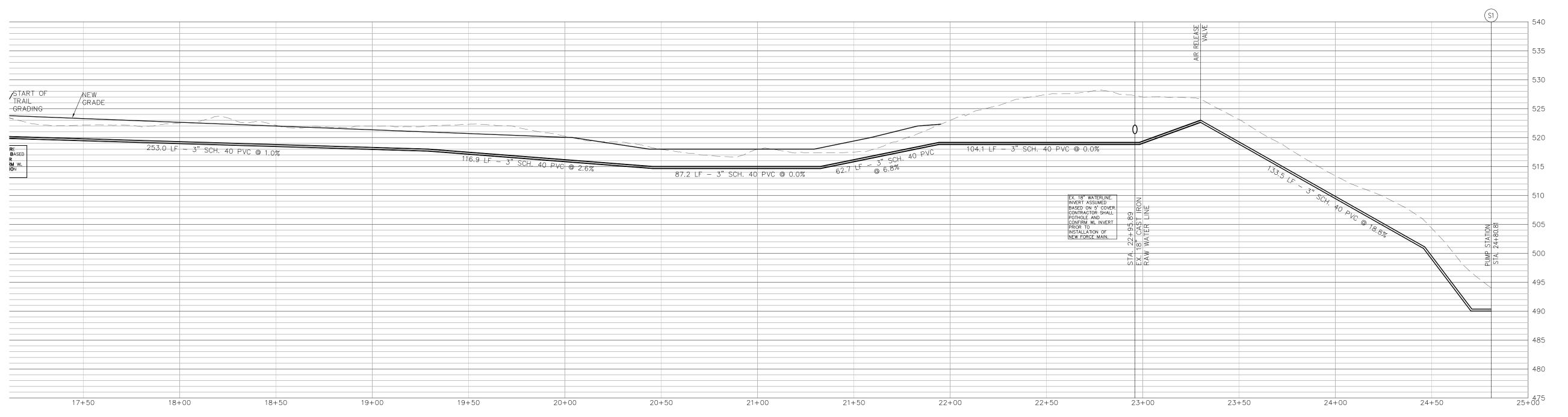
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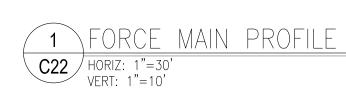
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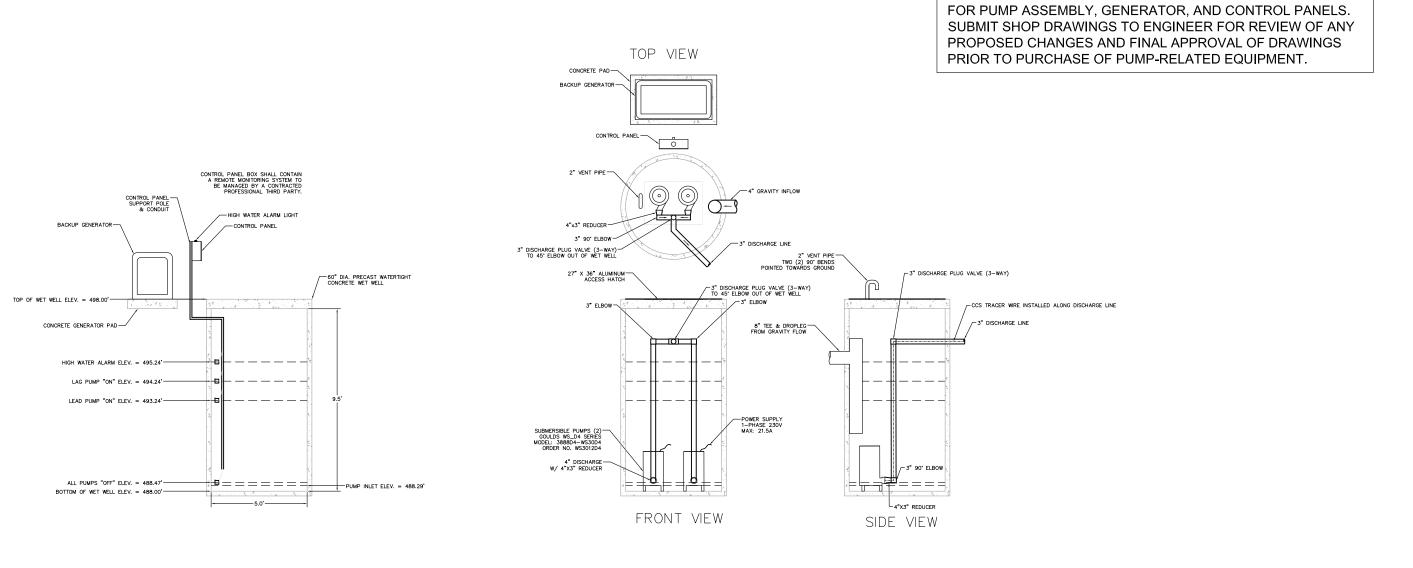
SANITARY SEWER FORCE











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



912 E. HIGH ST.

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MAJOR SITE PLAN AMENDMENT

# **REGENTS** SCHOOL

CONTRACTOR SHALL OBTAIN SHOP DRAWINGS FROM VENDOR

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

FILE NO.

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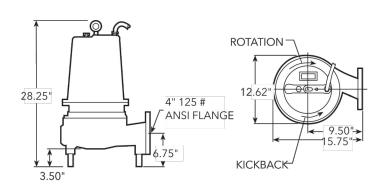
FORCE MAIN PROFILE & **SANITARY SEWER PUMP** STATION DETAILS

### **APPLICATION DATA AND CONSTRUCTION DETAILS**

omerged for continuous operation v top of motor for intermittent operation 04° F) continuous operation, 60° C (140° F) intermittent operation FOW: single phase, 1½ and 2 HP	
v top of motor for intermittent operation 04° F) continuous operation, 60° C (140° F) intermittent operation TOW: single phase, 1½ and 2 HP	
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014 - 1 1 444 0115 15115 44014	
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	
st Iron - ASTM A48, Class 30	
st Iron - ASTM A48 or Cast Bronze - ASTM B584 C87600	
Series Stainless Steel	
6 Frame, oil filled with Class F Insulation	
hase: on winding thermal overload protection auto reset	
nase: requires Class 10 overloads in control panel	
es Stainless Steel	
en with pump out vanes on back shroud	
ts	
1½-5 HP single and three phase: 7 quarts	
nree phase: 6.5 quarts	
Ceramic; Type 21	
Ceramic, Type 21	
Carbide/Silicon Carbide; Type 31	
i o h	

### **DIMENSIONS**

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



• 1.5 - 7.5 HP; 200, 230, 460 and 575 volts

control panel

outside environment.

to carry thrust loads.

**AGENCY LISTINGS** 

Class F insulation

Class 10 overload protection must be provided in

• Fully submerged in oil-filled chamber: High grade

turbine oil surrounds motor for more efficient heat dissipation, permanent lubrication of bearings and

mechanical seal for complete protection against

• Designed for Continuous Operation: Pump ratings

are within the motor manufacturer's recommended

working limits and can be operated continuously

• Bearings: Upper and lower heavy duty ball bearing

construction for precision positioning of parts and

jacket damage and to prevent oil wicking. 20 foot

Tested to UL 778 and CSA 22.2 108 Standards By Canadian Standards Association

without damage when fully submerged.

• Power Cable: Severe duty rated, oil and water

resistant. Epoxy seal on motor end provides

secondary moisture barrier in case of outer

standard with optional lengths available.

• O-ring: Assures positive sealing against

contaminants and oil leakage.

### **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,

### **SPECIFICATIONS**

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

<b>DEL AND</b>	<b>MOTOR</b>	INFORMATION	

Order No.	НР	Phase	Volts	RPM	Impeller	Maximum	L.R.	KVA	Power	F.L. Motor	Res	istance	Wt.
Order No.	нР	Pnase	voits	RPIVI	Dia. (in.)	Amps	Amps	Code	Cable	Efficiency %	Start	Line-Line	(lbs.)
WS1518D4M		_	208			17.2	50.8	В	4.470	80	1.1	0.9	
WS1512D4M		1	230	]		14.7	29.5	Е	14/3	70	1.4	1.8	
WS1538D4M	1.5		200	1750	5.63	11.5	40.9	Н		81		1.7	105
NS1532D4M	1.5	3	230	1/50	5.63	10.0	40.0	F	14/4	83	NA	2.3	195
WS1534D4M		٥	460	]		5.0	20.0	F	14/4	83	INA	9.3	
WS1537D4M			575			4.0	14.4	Н		74		14.8	
WS1518D4		1	208			17.2	50.8	В	14/3	80	1.1	0.9	
WS1512D4			230	]		14.7	29.5	Е	14/3	70	1.4	1.8	
WS1538D4	1.5		200	1750	6.25	11.5	40.9	Н		81		1.7	195
WS1532D4	1.5	3	230	1/30	0.23	10.0	40.0	F	14/4	83	NA	2.3	173
WS1534D4		٦	460			5.0	20.0	F	14/4	83	IVA	9.3	
WS1537D4			575			4.0	14.4	Н		74	14.8		
WS2018D4		1	208			20.3	50.8	В	1/1/3		80 1.1 0.9	4	
WS2012D4			230			17.3	36.9	D	14/3	75	1.4	1.5	
WS2038D4	2		200	1750	6.63	13.3	40.9	Н		81		1.7	200
WS2032D4	_	3	230	1730	0.03	11.6	40.0	F	14/4	83	NA	2.3	200
WS2034D4			460			5.8	20.0	F	1777	83	11/	9.3	-
WS2037D4			575			4.6	14.4	H		74		14.8	
WS3018D4		1	208			25.5	50.8	В	10/3	80	1.1	0.9	208
WS3012D4			230			21.5	46.4	C	(	79	1.0	1.0	(200
WS3038D4	3		200	1750	7.00	16.6	53.8	G	10/4	85		1.3	
WS3032D4	_	3	230	1.700	7.00	14.4	49.5	H		83	NA	1.9	205
WS3034D4			460 575			7.2	24.8	H	14/4	83 78		7.5	
WS3037D4 WS5012D4		1	230			5.8	17.3 57.7	G	10/3	80	1.0	11.6 0.8	213
WS5012D4 WS5038D4			200			26.5 19.1	73.9	A F	10/3	84	1.0		213
WS5038D4 WS5032D4	5		230	1750	7.25	16.6	63.6		10/4			0.9	
WS5034D4	Э	3	460	1/50	7.25	8.3	31.8	E	E   00   NA   1.2	210			
WS5034D4 WS5037D4			575	-		6.6	22.8	E	14/4	85 80		4.8 7.4	
WS7532D4			230			23.0	105.0	G		83		0.7	
WS7534D4	7.5	3	460	1750	7.69	11.5	52.5		10/4	83	NA	2.8	225
WS7534D4 WS7537D4	7.5	٥	575	1/50	7.07	9.2	42.0	G E	10/4	84	INA	4.4	225



Discharge Pipe	Information		
Pipe 1	3" force main	1	
	Pipe 1		
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	
lydraulic radius	0.063	ft	
Pross-sectional area (feet)			

Daily Peak Flowrates

Daily Average Flow

Pumping Rate

Time to Empy

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				
Туре:	Unit:	Number of Units:	gpd/ unit	Total (gpd)
Grade School w/ Showers	per student / staff	468	16	7,488
*day assumed to be 12-hr for pu	rpose of this analysis.		Total	7,488

Number of Units:

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

gpm

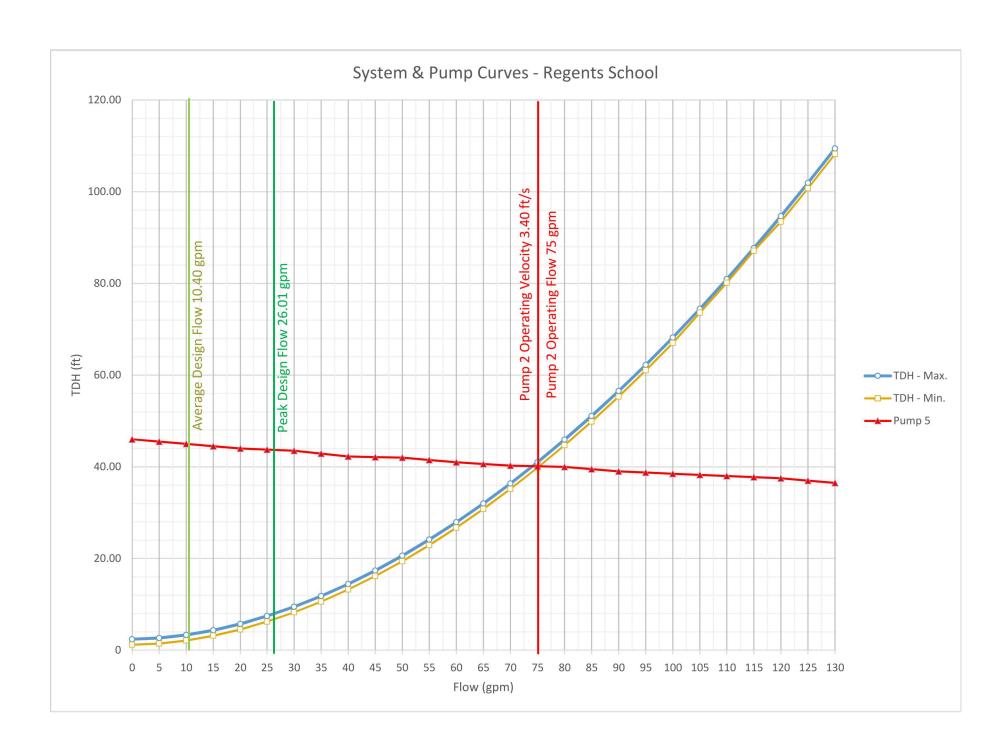
minutes

Unit:

gpd (12-hr)

Duplex Pump (2 Pumps)	Parameter	Pressure
	Pipe Length, (ft)	1500
	Pipe Dia., (in)	3
	Hazen-Williams Obeff, C	120
*Piping from pump basin to di	scharge point	

Туре	K-values	# Fittings
Gate Valve	0.19	0
Plug Valve (99%open)	0.86	1
Butterfly Valve	0.4	0
Swing Check Valve	2.5	1
90° Bend	0.25	1
45° Bend	0.2	3
22.5° Bend	0.12	0
11.25° Bend	0.06	0
Tee (through)	0.6	0
Tee (side out)	1.8	0
Cross (through)	0.6	0
Cross (side out)	1.8	0
Reducer/Increaser	0.1	0
Discharge to air	1	1





Pump Selection

Pump 5

Goulds

WS\_D4 Series

Model: 3888D4

WS30D4

Oder No. WS3012D4

3" (Solids)

4" Discharge Flange

1-Phase 230V

1750 RPM

Max Amps: 21.5

Pump 5 TDH

TDH (ft) 46.00

45.50

45.00

44.50

44.00

43.75

43.50

42.88

42.25

42.13

42.00

41.50

41.00

40.63

40.25

40.13 40.00

39.50

39.00

38.75

38.50

38.25

38.00

37.75

37.50

37.00 36.50

Flow

(gpm)

15

20

25

30

35

40

45

50

55

60

65

70

75

80

90

95

100

105

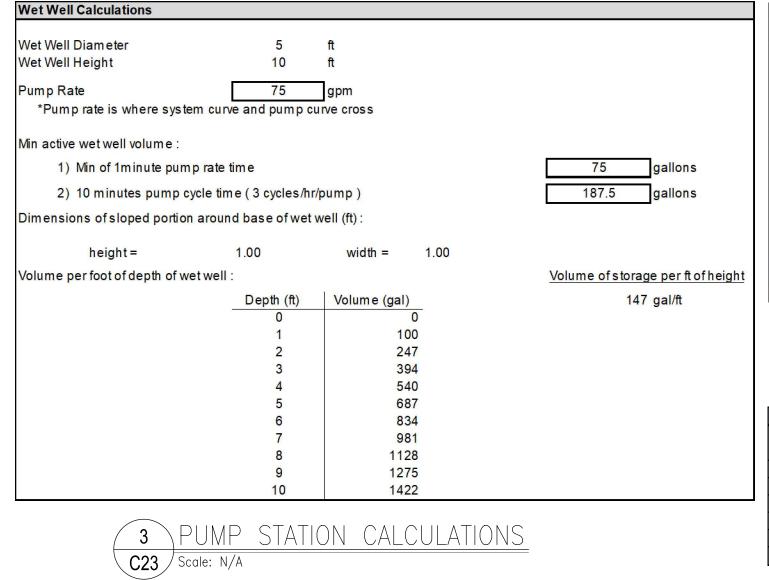
110

115

120

125

	System Curve - Head Loss Calculations							
Flo	Flowrate		city 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)	Min. Lift (ft)
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	
Inflow rate into Wet Well Discharge Flow Out of Wet Well	Qin= Qout=	26.01 gpm 75.00 gpm	0.058 cfs 0.167 cfs
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		25.39 min	0.42 hr
Time to Empty From Start		9.65 min	0.16 hr
Minimum cycle time between starts		5.00 min	0.08 hr
Total Cycle Time		14.65 min	0.24 hr
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 Submer	gence Hx		
Fd=	0.020		
Hx=	0.175	ft	
Hmin=	4.775	ft	

	Pump settings :			
		400.00.0		
	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		

SHI ENGINER	<b>1</b>
912 E. HIGH ST. CHARLOTTESVILLE VA, 22902	434.227.5 JUSTIN@SHIMP-ENGINEERING.C

Lic. No. 45183

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