

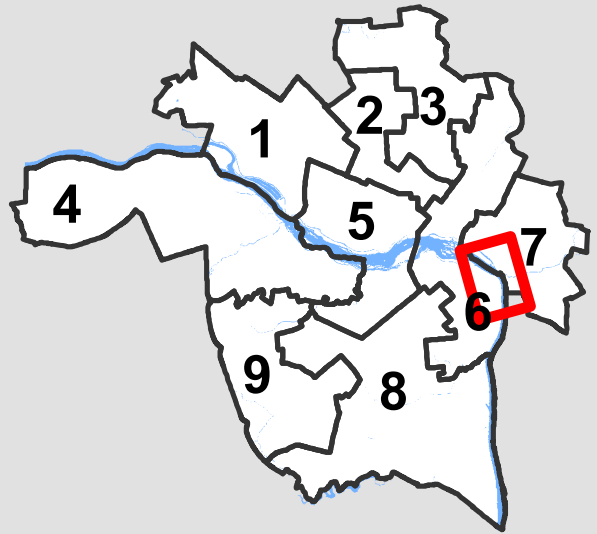
# City of Richmond Department of Planning & Development Review

## Location, Character, and Extent

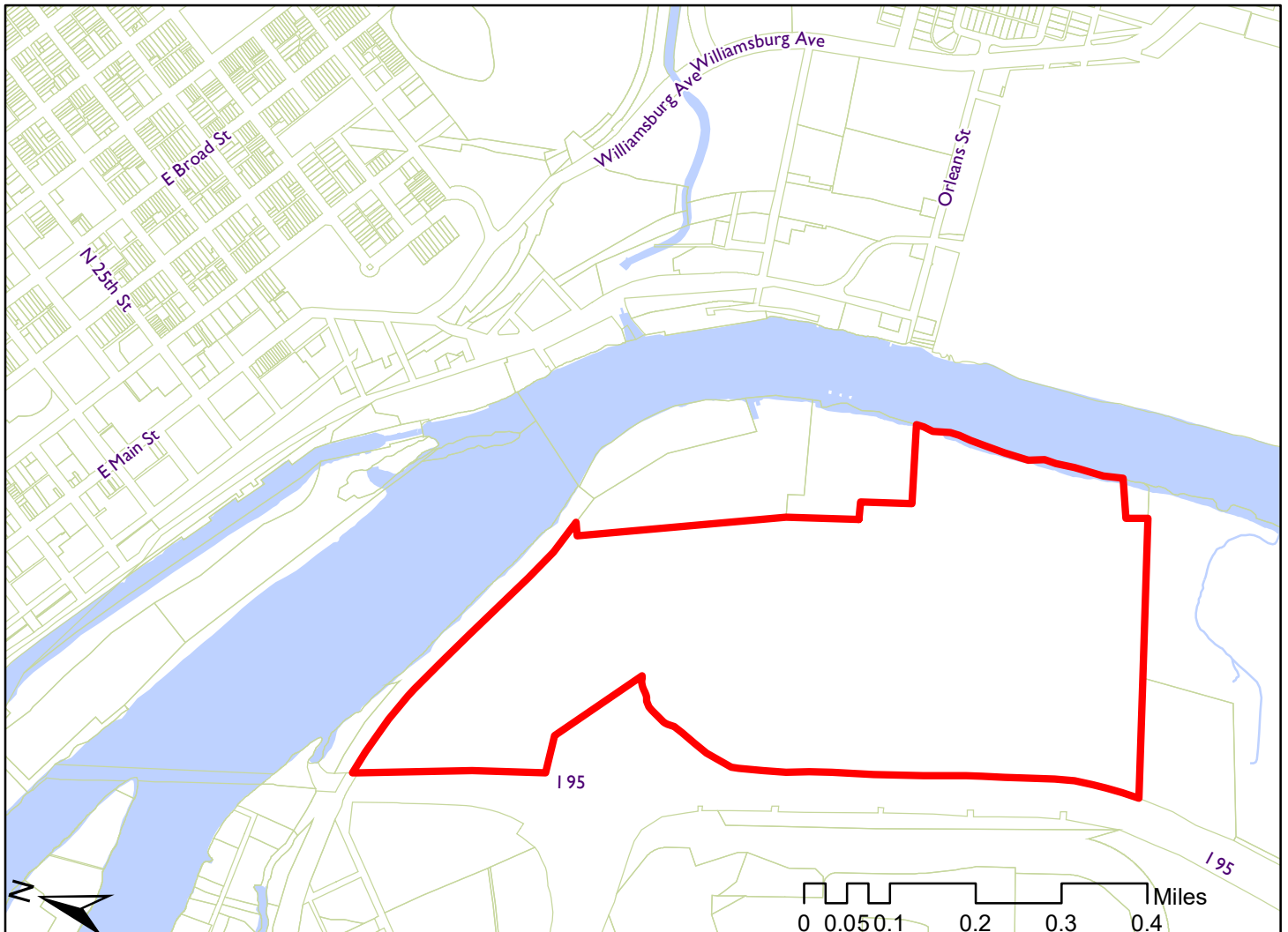
**LOCATION:** 1400 Brander Street

**COUNCIL DISTRICT:** 6

**PROPOSAL:** Review of new Biosolids Storage Cover for Wastewater Treatment Plant.



*For questions, please contact Josh Son  
at 646-3741 or [joshua.son@richmondgov.com](mailto:joshua.son@richmondgov.com)*





## Application for Urban Design Committee Review

Department of Planning and Development Review  
Planning & Preservation Division  
900 E. Broad Street, Room 510  
Richmond, Virginia 23219 | (804) 646-6335  
[www.richmondgov.com/CommitteeUrbanDesign](http://www.richmondgov.com/CommitteeUrbanDesign)



### Application Type (select one)

Location, Character, & Extent  
Section 17.05  
Other:

Encroachment  
Design Overlay District

### Review Type (select one)

Conceptual  
Final

### Project Information

Submission Date: \_\_\_\_\_

Project Name: \_\_\_\_\_

Project Address: \_\_\_\_\_

Brief Project Description (this is not a replacement for the required detailed narrative):

### Applicant Information (a City representative must be the applicant, with an exception for encroachments)

Name: \_\_\_\_\_ Email: \_\_\_\_\_

City Agency: \_\_\_\_\_ Phone: \_\_\_\_\_

Main Contact (if different from Applicant): \_\_\_\_\_

Company: \_\_\_\_\_ Phone: \_\_\_\_\_

Email: \_\_\_\_\_

### Submittal Deadlines

All applications and support materials must be filed no later than 21 days prior to the scheduled meeting of the Urban Design Committee (UDC). Please see the schedule on page 3 as actual deadlines are adjusted due to City holidays. **Late or incomplete submissions will be deferred to the next meeting.**

### Filing

Applications can be mailed or delivered to the attention of "Urban Design Committee" at the address listed at the top of this page. **It is important that the applicant discuss the proposal with appropriate City agencies, Zoning Administration staff, and area civic associations and residents prior to filing the application with the UDC.**

### Submittal Deadlines

The UDC is a ten member committee created by City Council in 1968 whose purpose is to advise the City Planning Commission (CPC) on the design of projects on City property or right-of-way. The UDC provides advice of an aesthetic nature in connection with the performance of the duties of the Commission under Sections 17.05, 17.06, and 17.07 of the City Charter. The UDC also advises the Department of Public Works in regards to private encroachments in the public right-of-way.



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## Submission Requirements

- An electronic copy (PDF preferred) of all application materials, which can be emailed, or delivered by FTP or USB.
- Three (3) copies of the application cover sheet and all support materials (see below).
- Plan sheets should be 11" x 17", folded to 8 1/2" x 11". If it is not possible to scale plans to these dimensions, please provide one set of larger, scaled plans.
- All applications must include the attached cover sheet and the following support materials, as applicable to the project, based on Review Type:

### **Conceptual Review:**

- A detailed project narrative which includes the following: purpose of the project, project background, project budget and funding sources, description of construction program and estimated construction start date (description should also provide information on the surrounding area to provide context).
- A site plan for the project indicating site characteristics which include: building footprints, parking areas, pedestrian routes, recreation areas, open areas, and areas of future expansion.
- A set of floor plans and elevations, as detailed as possible.
- A landscaping plan which shows the general location and character of plant materials and notes any existing tree to be removed.

### **Final Review:**

- A detailed project narrative which includes the following: purpose of the project, project background, project budget and funding sources, description of construction program, and estimated construction start date (description should also provide information on the surrounding area to provide context).
- A site plan for the project indicating site characteristics which include: building footprints, parking areas, pedestrian routes, recreation areas, open areas, and areas of future expansion.
- A set of floor plans and elevations, as detailed as possible.
- A landscaping plan that includes a complete plant schedule, the precise location of all plant materials, and a landscape maintenance analysis. The plant schedule must show number, size and type of each planting proposed. If existing trees are to be removed, their size, type, and location must be noted on the landscape plan.
- The location of all lighting units should be noted on a site plan, including wall-mounted, site, and parking lot lighting. Other site details such as benches, trash containers, and special paving materials should also be located. Include specification sheets for each item.
- Samples of all proposed exterior building materials, including but not limited to brick, mortar, shingles, siding, glass, paint, and stain colors. When an actual sample cannot be provided, a product information sheet that shows the item or a photo of an existing item may be substituted.

## Review and Processing

- Once an application is received, it is reviewed by Staff, who compiles a report that is sent to the UDC.
- A copy of the report and the meeting agenda will be sent to the applicant prior to the meeting.
- At the UDC meeting, the applicant or a representative should be present or the application may be deferred to the next regularly scheduled meeting. It is also strongly suggested that a representative of the City Agency which will have final responsibility for the item be present at the meeting (if the applicant and the representative are not the same).
- Once the UDC recommends action on the application, it is automatically placed on the agenda for the next City Planning Commission (CPC) meeting. Exceptions to this are encroachment applications, recommendations for which are forwarded to the Department of Public Works.
- At the CPC meeting, the applicant or a representative should be present, or the application may be deferred to the next regularly scheduled meeting.



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Regular meetings are scheduled on the Thursday after the first Monday of each month at **10:00 a.m. in the 5th floor conference room of City Hall, 900 E. Broad Street**. Special meetings are scheduled as needed.

### Meeting Schedule 2019

Submission Deadline
November 15, 2018
December 13, 2018
January 17, 2019
February 14, 2019
March 14, 2019
April 11, 2019
May 16, 2019
June 13, 2019
July 11, 2019**
August 15, 2019
September 12, 2019
October 17, 2019
November 14, 2019

UDC Meeting	CPC meeting to follow UDC
<b>December 6, 2018</b>	December 17, 2018
<b>January 10, 2019</b>	January 22, 2019 <sup>1</sup>
<b>February 7, 2019</b>	February 19, 2019 <sup>2</sup>
<b>March 7, 2019</b>	March 18, 2019
<b>April 4, 2019</b>	April 15, 2019
<b>May 9, 2019</b>	May 20, 2019
<b>June 6, 2019</b>	June 17, 2019
<b>July 3, 2019**</b>	July 15, 2019
<b>August 8, 2019</b>	August 19, 2019 <sup>3</sup>
<b>September 5, 2019</b>	September 16, 2019
<b>October 10, 2019</b>	October 21, 2019
<b>November 7, 2019</b>	November 18, 2019
<b>December 5, 2019</b>	December 16, 2019

<sup>1</sup> Monday, January 21, 2019 is a City of Richmond Holiday.

<sup>2</sup> Monday, February 18, 2019 is a City of Richmond Holiday.

<sup>3</sup> This August CPC Meeting may be canceled. If so, the meeting would be Tuesday, September 3, 2019.

\*\* Moved forward to account for Independence Day

The Richmond Urban Design Committee is a ten member advisory committee created by City Council in 1968. Its purpose is to advise the City Planning Commission on the design of City projects. The Urban Design Committee reviews projects for appropriateness in “location, character, and extent” and for consistency with the City’s Master Plan and forwards recommendations to the City Planning Commission. The Urban Design Committee also advises the Department of Public Works in regards to private encroachments in the public right-of-way.

**For more information, please contact the Planning and Preservation Division staff at (804) 646-6335 or the Secretary to the Urban Design Committee at (804) 646-3741 or at [joshua.son@richmondgov.com](mailto:joshua.son@richmondgov.com).**

## **PURPOSE**

Brown and Caldwell (BC) is under contract to the City of Richmond Department of Public Utilities to design a cover system for the existing biosolids storage pad to minimize rain and snow from re-wetting the dewatered biosolids.

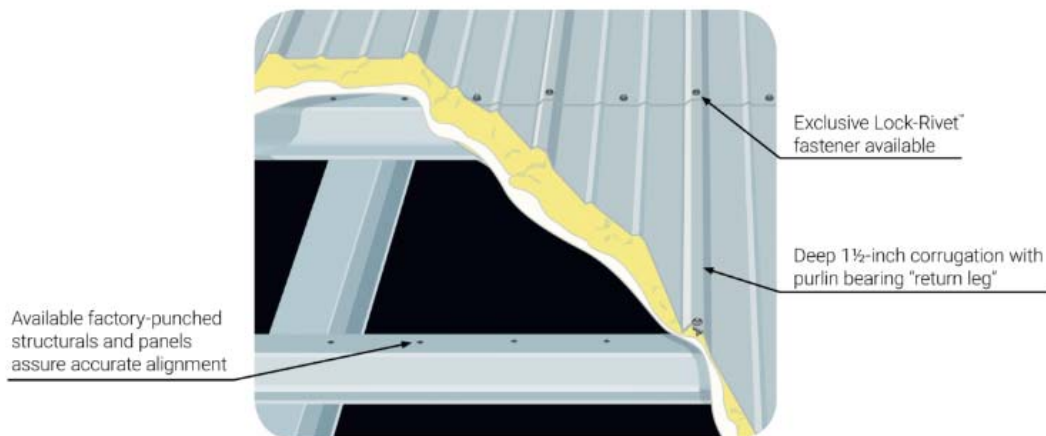
## **PROJECT BACKGROUND**

The City of Richmond Wastewater Treatment Plant (WWTP) produces a Class B biosolids product by dewatering anaerobically digested sludge. The dewatered biosolids cake is transported by a third-party contractor in dump trucks to the southern end of the WWTP to the existing biosolids storage pad where they are dumped. The biosolids cake is stored on the pad until it is hauled off-site to be land applied.

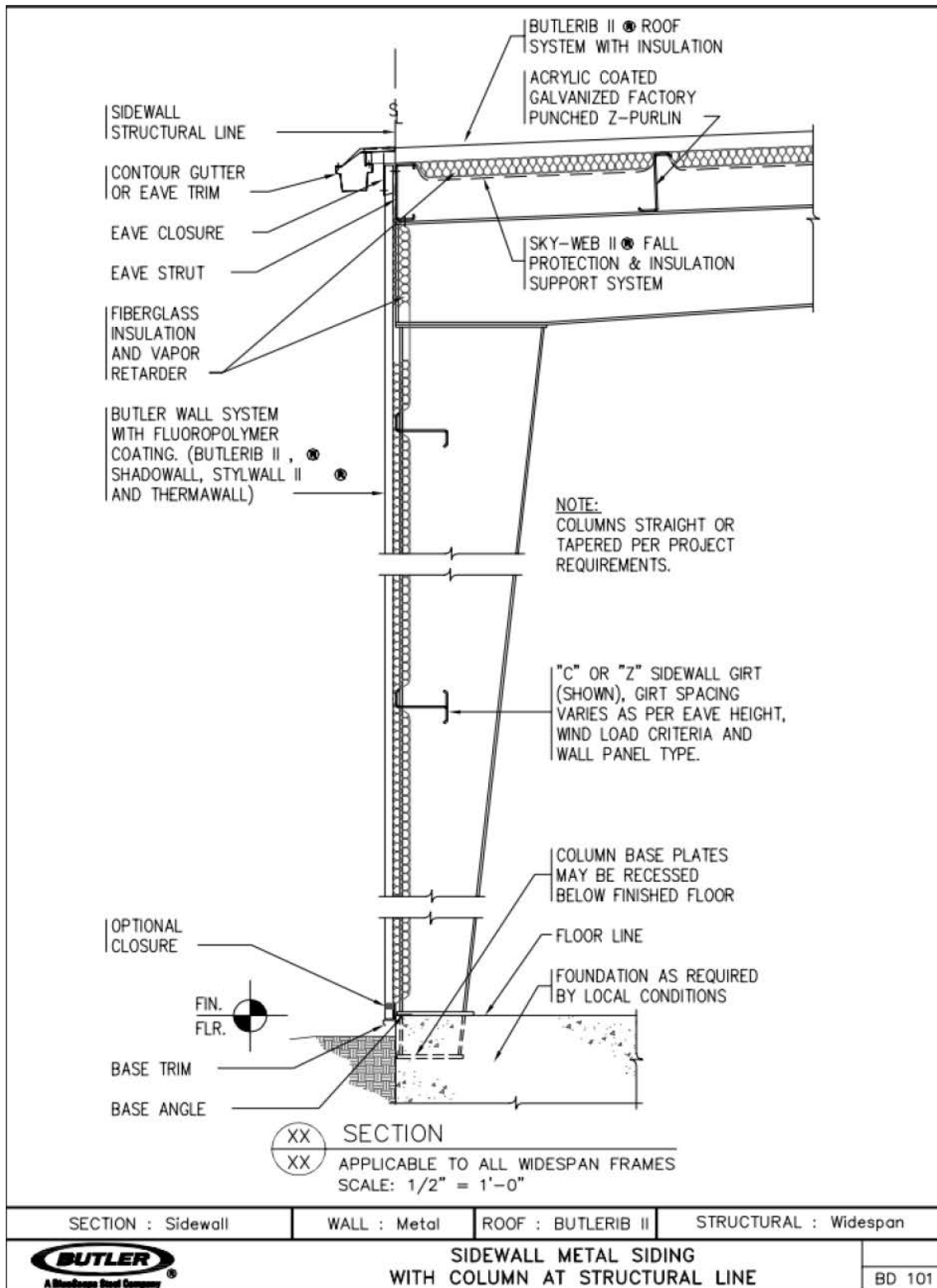
The existing pad is not covered, which results in an increased moisture content of the dewatered biosolids cake due to exposure to rain and snow. The City is charged for hauling the biosolids cake by the third-party contractor on a per weight basis, so it is of interest to the City to prevent the stored biosolids from being exposed to rain and snow to limit the amount of water that is being hauled. The proposed cover system will assist in the aversion of accumulated moisture.

The proposed cover system will cover an area of approximately 264 feet by 95 feet wide. A 100 feet by 50 feet section will remain uncovered to avoid conflict with underground utilities. The cover system will include structural steel primary and secondary members, metal roof system, column base plates, and anchor bolts.

## **BASIS OF DESIGN: BUTLERIB II ROOF SYSTEM**



**BASIS OF DESIGN: BUTLERIB II ROOF SYSTEM**



The cover system fits into the existing infrastructure, so pedestrian routes and parking will not change. Landscape alterations are minimal, causing few changes to existing canopies and/or screening.

**CONSTRUCTION SCHEDULING AND COST ESTIMATE**

The preliminary estimated construction cost for the Biosolids Storage Pad Cover is approximately \$2,000,000. A detailed cost estimate is provided in this document.

The preliminary construction schedule is provided below. It is estimated that the project will take approximately 10 months to complete from Notice to Proceed. Prior to construction biosolids stored on the pad will need to be relocated to the “Overflow Biosolids Pad” to the west. The overflow biosolids pad will need to be used throughout the duration of construction.

	Duration (Months)										
Major Activities	0	1	2	3	4	5	6	7	8	9	10
<b>Notice to Proceed</b>											
<b>Submittals and Shop Drawings</b>											
<b>Site Work</b>											
Concrete Sawcut and Removal											
<b>Structural</b>											
New Concrete: Footings, Slab, Walls											
New Roof Support System and Roof Deck											
<b>Civil</b>											
Instal New Gravity Drain Pipe											
<b>Electrical</b>											
Route Power											
Install Lighting System											
<b>Site Restoration</b>											

**Preliminary construction schedule**

No.	Item	Unit	Unit Price	Est. Qty.	Total Cost
<b>1.</b>	<b>Site Work</b>				
A.	Concrete Sawcut	LF	\$25	1,700	\$42,500
B.	Concrete Removal	CY	\$100	236	\$23,600
C.	Excavation	CY	\$60	1,008	\$60,500
D.	Grading, Topsoiling, Seeding and Strawing of Trenches	SY	\$16	200	\$3,200
<b>2.</b>	<b>Structural</b>				
A.	New Concrete				
i.	Walls	CY	\$1,050	410	\$430,500
ii.	Footings & Pedestals	CY	\$1,000	36	\$36,500
iii.	Slab	CY	\$1,000	104	\$104,000
B.	Backfill	CY	\$70	1,036	\$72,600
C.	Structural Support System and Roofing System Furnishment and Installation	LS	\$450,000	1	\$450,000
D.	Footing Tie Rods	LF	\$100	570	\$60,000
E.	Embedded Push Wall Steel Plate	SF	\$30	1,620	\$48,600
<b>3.</b>	<b>Civil</b>				
A.	12" PVC SDR-35	LF	\$32	310	\$10,000
B.	Mount to Concrete Wall	LS	\$5,000	1	\$5,000
C.	Standard Sanitary Manhole (4-ft Diameter)	VF	\$400	5	\$2,000
D.	Replace/Install Standard Manhole Frame and Cover	EA	\$1,100	1	\$1,100
E.	Earth Excavation for Storm Pipe	CY	\$60	62	\$3,700
G.	Backfill	CY	\$70	62	\$4,400
H.	Grading, Topsoiling, Seeding and Strawing of Trenches	SY	\$16	30	\$500
<b>4.</b>	<b>Subtotal</b>				
A.	Subtotal				\$1,358,700
<b>5.</b>	<b>Additional Items</b>				
A.	Electrical and Lighting Improvements	LS	10%	1	\$140,000
B.	Erosion and Sediment Control	LS	2%	1	\$30,000
C.	Contingency (30%)	LS	30%	1	\$407,610
<b>5.</b>	<b>Total</b>				
A.	Construction Cost				\$2,000,000

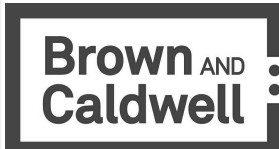
Preliminary cost estimate



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<b>GENERAL</b>	<b>CONCRETE</b>				
G1 SCOPE THE GENERAL NOTES AND STANDARD DETAILS ARE GENERAL AND APPLY TO THE ENTIRE PROJECT EXCEPT WHERE THERE ARE SPECIFIC INDICATIONS TO THE CONTRARY.	C1 APPLICABLE CODES CONCRETE CONSTRUCTION SHALL CONFORM TO ACI 301-05 "SPECIFICATIONS FOR STRUCTURAL CONCRETE" AND THE FOLLOWING CODES: ACI 318-08 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE"				
G2 PRECEDENCE IF THERE IS A CONFLICT BETWEEN PROJECT SPECIFICATIONS AND STRUCTURAL DRAWINGS, INCLUDING STRUCTURAL NOTES, CONTACT THE STRUCTURAL ENGINEER OF RECORD FOR CLARIFICATION. SPECIFIC NOTES AND DETAILS ON DRAWINGS TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS.	C2 REINFORCING STEEL DETAILS ALL DETAILING, FABRICATION AND ERECTION OF REINFORCING BARS, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH ACI DETAILING MANUAL (ACI SP-66), LATEST EDITION.				
G3 DIMENSIONS STRUCTURAL DIMENSIONS CONTROLLED BY OR RELATED TO THE MECHANICAL OR ELECTRICAL EQUIPMENT AND DIMENSIONS RELATED TO EXISTING FACILITIES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL CONSTRUCTION DIMENSIONS AND NOTIFYING CONSTRUCTION MANAGER OF DISCREPANCIES IN A TIMELY FASHION.	C3 DESIGN STRENGTH 1. CAST-IN-PLACE CONCRETE ..... $f_c = 4,000$ PSI 2. REINFORCED STEEL ..... ASTM A615 GRADE 60 DEFORMED BARS UNLESS OTHERWISE NOTED				
G4 PROVISIONS FOR EQUIPMENT MECHANICAL AND ELECTRICAL EQUIPMENT SUPPORTS, ANCHORAGES, OPENINGS, RECESSES AND EMBEDMENTS NOT SPECIFIED ON THE STRUCTURAL DRAWINGS, BUT SPECIFIED ON OTHER CONTRACT DRAWINGS, SHALL BE PROVIDED PRIOR TO CASTING CONCRETE.	C4 CONCRETE COVER CONCRETE COVER FOR REINFORCING BARS SHALL CONFORM TO ACI 350 AND AS FOLLOWS WITH MINIMUM COVER OF ONE BAR DIAMETER: 1. CONCRETE CAST AGAINST EARTH ..... 3" 2. CONCRETE EXPOSED TO EARTH, WASTEWATER, CHEMICALS OR WEATHER ..... 2" 3. CONCRETE NOT EXPOSED TO EARTH, WASTEWATER, CHEMICALS OR WEATHER ..... 1-1/2"				
G5 MEANS, METHODS & CONSTRUCTION LOADS CONTRACT DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. CONTRACTOR IS RESPONSIBLE FOR MEANS, METHODS AND SEQUENCE OF CONSTRUCTION, AND SHALL MAKE ADEQUATE PROVISION TO MAINTAIN THE INTEGRITY OF ALL STRUCTURES AT ALL STAGES OF CONSTRUCTION. DETERMINATION OF AND PROVISIONS FOR CONSTRUCTION LOADING SHALL BE PROVIDED BY THE CONTRACTOR.	C5 BAR DEVELOPMENT AND LAP SPLICE LENGTH SLABS, BEAMS, GIRDERS AND HORIZONTAL REINFORCING AT WALLS, SPLICES OF ADJACENT REINFORCING STEEL BARS SHALL BE STAGGERED AT LEAST ONE SPLICE LENGTH, UNLESS OTHERWISE SPECIFIED. ALL SPLICES SHALL CONFIRM TO THE REQUIREMENTS OF ACI 318-08.  <b>LAP SPLICE SCHEDULE</b> BAR SIZE #3 #4 #5 #6 #7 #8 #9 TOP BAR* 2'-1" 2'-10" 3'-6" 4'-3" 5'-10" 6'-9" 7'-6" OTHER 1'-8" 2'-2" 2'-8" 3'-3" 4'-6" 5'-1" 5'-9"  <b>DEVELOPMENT LENGTH SCHEDULE</b> BAR SIZE #3 #4 #5 #6 #7 #8 #9 TOP BAR* 1'-5" 2'-2" 2'-8" 3'-3" 4'-6" 5'-2" 5'-9" OTHER 1'-3" 1'-8" 2'-1" 2'-6" 3'-6" 3'-11" 4'-5"  *TOP BAR IS DEFINED AS ANY HORIZONTAL BAR PLACED AT THE CENTER OR AS THE TOP LAYER OF SLAB REINFORCING AND ALL WALL HORIZONTAL REINFORCING.				
G6 SAFETY CONTRACTOR SHALL TAKE ADEQUATE PRECAUTIONS TO ENSURE THE SAFETY OF WORKERS AND VISITORS TO THE SITE, INCLUDING BUT NOT LIMITED TO SHORING, BRACING AND ACCESS RESTRICTION. COMPLY WITH ALL FEDERAL, STATE AND LOCAL SAFETY CODES AND STANDARDS.	C6 WELDING REINFORCING BARS ALL REINFORCING TO BE WELDED SHALL CONFORM TO ASTM A706. REBAR WELDING SHALL BE IN ACCORDANCE WITH AWS D1.4.				
G7 DRAINAGE SURFACES SLOPE DRAINAGE SURFACES UNIFORMLY TO DRAIN. SLOPE SHALL BE 1/8" TO 1/4" PER FOOT EXCEPT WHERE NOTED OTHERWISE ON THE PLANS.	C7 STANDARD HOOKS BARS ENDING IN RIGHT ANGLE BENDS OR HOOKS SHALL CONFORM TO THE REQUIREMENTS OF ACI 318-08. PROVIDE STANDARD HOOK IN BARS WHICH TERMINATE AT WALL OR SLAB EDGES / INTERSECTIONS THAT PROVIDE LESS THAN THE SPECIFIED DEVELOPMENT LENGTH.				
G8 OPENINGS OPENINGS THROUGH NEW AND EXISTING WALLS AND SLABS FOR PIPES, DUCTS, CONDUITS, ETC., ARE NOT ALL SHOWN ON THE STRUCTURAL DRAWINGS. THE CONTRACTOR SHALL COORDINATE WITH OTHER DISCIPLINES AND PROVIDE THESE OPENINGS IN ACCORDANCE WITH THE OTHER CONTRACT DOCUMENTS.	C8 CHAMFERS EXCEPT AS OTHERWISE REQUIRED, EXPOSED CONCRETE CORNERS AND EDGES SHALL HAVE 3/4" CHAMFERS. RE-ENTRANT CORNERS SHALL NOT HAVE FILLETS.				
<b>DESIGN CRITERIA</b>	C9 COMPATIBLE FINISHES CURING COMPOUNDS AND OTHER SURFACE TREATMENTS, CONCRETE ADMIXTURES AND SUB-SLAB DRAINAGE SHALL BE REVIEWED BY CONTRACTOR AND CERTIFIED COMPATIBLE WITH FINISHES TO BE APPLIED LATER IN THE CONSTRUCTION SEQUENCE.				
D1 GOVERNING BUILDING CODE THE 2012 VIRGINIA UNIFORM BUILDING CODE (IBC 2012) THIS CODE SHALL GOVERN EXCEPT WHERE OTHER APPLICABLE CODES OR CONTRACT PROVISIONS ARE MORE RESTRICTIVE.	<b>GROUT</b>				
D2 LIVE LOADS 1. SLABS ..... 300 PSF 2. ROOF LIVE LOAD ..... 20 PSF	GR1 PRECISION NON-SHRINK CEMENT GROUT FOR STRUCTURAL STEEL COLUMNS AND TRUSS BEARING BASE PLATES: MASTERFLOW 928 GROUT OR EQUAL APPROVED BY OWNER.				
D3 SNOW LOADS GROUND SNOW LOAD $P_g$ : 20 PSF SNOW EXPOSURE FACTOR $C_e$ : 1.0 THERMAL FACTOR $C_t$ : 1.2 SNOW LOAD IMPORTANCE FACTOR $I_s$ : 1.1 FLAT ROOF SNOW LOAD $P_f$ : 15 PSF	GR2 EQUIPMENT GROUTING SEE MECHANICAL SPECIFICATIONS AND SPECIFICATION SECTION 03 60 00, GROUT.				
D4 WIND BASIC WIND SPEED (ULTIMATE) ..... 120 MPH RISK CATEGORY ..... III EXPOSURE CATEGORY ..... C TOPOGRAPHIC FACTOR ..... $K_{zt} = 1.0$	GR3 EPOXY ADHESIVE GROUT AT ANCHORS INTO CONCRETE: HILTI HIT-RE 500v3 EPOXY ADHESIVE ANCHOR SYSTEM BY HILTI INC. OR EQUAL APPROVED BY ENGINEER OF RECORD. INSTALLERS OF HORIZONTAL OR UPWARDLY INCLINED ADHESIVE ANCHORS SHALL BE CERTIFIED IN ACCORDANCE WITH THE ACI / CRSI ADHESIVE ANCHOR INSTALLER CERTIFICATION PROGRAM.				
D5 SEISMIC MCE ACCELERATION, SHORT PERIOD ..... $S_s = 0.183$ g MCE ACCELERATION, 1-SEC PERIOD ..... $S_1 = 0.062$ g SITE CLASS ..... D (DEFAULT) DESIGN ACCEL, SHORT PERIOD ..... $S_{ps} = 0.196$ g DESIGN ACCEL, 1-SEC PERIOD ..... $S_1 = 0.099$ g RISK CATEGORY ..... III SEISMIC IMPORTANCE FACTOR ..... $I_e = 1.25$ SEISMIC DESIGN CATEGORY ..... B PRE-ENGINEERED COVER STEEL ORDINARY MOMENT FRAMES ..... $R = 3.5$	<b>SPECIAL INSPECTIONS</b>				
ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE	SI1 AN INDEPENDENT TESTING COMPANY RETAINED BY THE OWNER AND APPROVED BY THE BUILDING OFFICIAL SHALL INSPECT THE FOLLOWING (SEE EXPANDED LIST ON DRAWING S-002) 1. SOIL COMPACTION AT FOUNDATIONS. 2. REINFORCING BAR, CONCRETE PLACEMENT AND TAKING OF CONCRETE TEST SPECIMENS. 3. ANCHOR BOLTS. 4. EXPANSION ANCHOR INSTALLATION. 5. ANCHORS INSTALLED USING EPOXY ADHESIVE.				
<b>FOUNDATION</b>	SI2 CONTRACTOR SHALL NOTIFY THE TESTING COMPANY FOR ALL INSPECTIONS.				
F1 DESIGN BASIS FOUNDATION DESIGN IS BASED ON RECOMMENDATIONS CONTAINED IN THE GEOTECHNICAL EXPLORATION REPORT, xxxxxxxxxxxxxxxxxxxx DATED xxxxxxx	<b>STRUCTURAL OBSERVATIONS</b>				
CONTRACTOR SHALL FOLLOW THE PROJECT SPECIFICATIONS AND TAKE INTO CONSIDERATION RECOMMENDATIONS CONTAINED IN THE REPORT. NOTIFY THE OWNER, ENGINEER AND CONSTRUCTION MANAGER OF CONFLICTS BETWEEN SPECIFICATIONS AND THE REPORT RECOMMENDATIONS FOR RESOLUTION.	SO1 THE OWNER SHALL RETAIN A REGISTERED DESIGN PROFESSIONAL TO PERFORM STRUCTURAL OBSERVATIONS. THE CONSTRUCTION MANAGER SHALL NOTIFY THE OWNER AT LEAST 48 HOURS BEFORE A DESIGNATED WORK IS TO BE COVERED. REFER TO SPECIFICATION 01400 FOR ADDITIONAL REQUIREMENTS.				
F2 ALLOWABLE BEARING PRESSURE SHALLOW FOUNDATIONS SHALL BEAR ON NATURAL SOILS OR STRUCTURAL FILL WITH A MINIMUM ALLOWABLE BEARING PRESSURE OF 2,000 PSF.	SO2 REQUIRED STRUCTURAL OBSERVATIONS INCLUDE: 1. STRUCTURAL FILL AND DEEP FOUNDATIONS. 2. FOUNDATIONS PREPARED FOR CONCRETE PLACEMENT. 3. COMPLETION OF LATERAL FORCE RESISTING ELEMENTS INCLUDING MOMENT CONNECTIONS, BRACING, DIAPHRAGMS, AND OTHER ELEMENTS.				
F3 MINIMUM FOUNDATION PREPARATION ALL NEW FOUNDATIONS AND SLAB ON GRADE FLOORS SHALL BE SUPPORTED ON A PROPERLY PLACED AND COMPACTED STRUCTURAL FILL (AS DIRECTED BY THE GEOTECHNICAL REPORT).					
F4 DIFFERING CONDITIONS FOUNDATION CONDITIONS NOTED DURING CONSTRUCTION WHICH DIFFER FROM THOSE INDICATED IN THE REPORT SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CONSTRUCTION MANAGER. CONTRACTOR IS RESPONSIBLE FOR REPLACING WORK CONDUCTED AFTER SUCH NOTIFICATION BUT BEFORE CONSTRUCTION MANAGER PROVIDES ADDITIONAL DIRECTIONS.					
F5 EXCAVATION, DE-WATERING, & SAFETY CONTRACTOR SHALL PROVIDE FOR ALL DE-WATERING OF EXCAVATIONS, AND DESIGN / PROVIDE ALL CRIBBING, SHORING, AND BRACING REQUIRED FOR SAFETY AND TO ALLOW CONSTRUCTION OF THE WORK PRESENTED HEREIN.					
F6 STRUCTURAL BACKFILL UNLESS NOTED OTHERWISE, STRUCTURAL BACKFILL SHALL BE PLACED IN UNIFORM LAYERS AND SHALL BE BROUGHT UP UNIFORMLY AROUND THE STRUCTURE. ADDITIONALLY, BACKFILL SHALL BE BROUGHT UP UNIFORMLY ON BOTH SIDES OF FOUNDATION WALLS. SEE SPECIFICATION 31 23 00 FOR ADDITIONAL INFORMATION.					

TABLE 1 REQUIRED SPECIAL INSPECTIONS - STRUCTURAL SYSTEMS				
SYSTEM OR MATERIAL	REQUIRED INSPECTION	FREQUENCY OF INSPECTION		REMARKS
		CONTINUOUS	PERIODIC	
SOILS	VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL		X	
	VERIFY SOIL MATERIALS BELOW FOOTINGS ARE ADEQUATE TO ACHIEVE DESIGN BEARING CAPACITY		X	
	PRIOR TO PLACEMENT OF CONTROLLED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY		X	
	PERFORM CLASSIFICATION AND TESTING OF CONTROLLED FILL MATERIALS		X	SEE TABLE 3
	VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF CONTROLLED FILL	X		SEE TABLE 3
CONCRETE	PROOF ROLLING OF SOILS DISTURBED BY GROUND IMPROVEMENTS		X	
	PERMANENT SHEET PILING INSTALLATION, INCLUDING VERIFYING TIP AND CUTOFF ELEVATIONS	X		
	SHORING SYSTEM WELDING	X		
	INSPECT FORMWORK FOR LOCATION AND DIMENSIONS OF MEMBER BEING FORMED		X	
	VERIFY MATERIAL FOR REINFORCEMENT		X	CONTRACTOR TO SUBMIT CERTIFIED MILL TEST REPORTS
	REINFORCING STEEL PLACEMENT		X	
	INSPECT ANCHORS TO BE CAST IN CONCRETE		X	PRIOR TO AND DURING CONCRETE PLACEMENT
	INSPECT POST-INSTALLED CONCRETE ANCHORS: - HORIZONTAL AND UPWARDLY INCLINED ADHESIVE ANCHORS - OTHER ANCHORS UNLESS ICC REPORT REQUIRED CONTINUOUS INSPECTION	X		X INSPECTION TO CONFORM TO IBC AND TO ANCHOR MANUFACTURER'S RECOMMENDATIONS AND ICC REPORTS
	VERIFY USE OF REQUIRED CONCRETE MIX DESIGN(S)		X	
	AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND TEMPERATURE OF CONCRETE	X		CONTINUOUS DURING PREPARATION OF SAMPLES
CONCRETE PLACEMENT	X			
INSPECTION FOR MAINTENANCE OF CURING PROCEDURES AND TEMPERATURE		X	VERIFY APPROPRIATE CURING METHOD HAS BEEN IMPLEMENTED AFTER EACH POUR	
VERIFY IN-SITU CONCRETE STRENGTH PRIOR TO REMOVAL OF SHORES AND FORMS FROM STRUCTURAL SLABS AND BEAMS		X		
CEMENTITIOUS GROUTING OF BASE PLATES AND EPOXY GROUTING FOR EQUIPMENT MOUNTING	X			
TABLE 3 REQUIRED TESTING FOR SPECIAL INSPECTIONS				
SYSTEM OR MATERIAL	TESTING		REMARKS	
	CODE OR STANDARD REFERENCE	FREQUENCY		
GEOTECHNICAL				
PREPARED SUBGRADE DENSITY	ASTM D6938	EACH 300 SF OF PREPARED SUBGRADE	PER GEOTECHNICAL REPORT	
FILL IN-PLACE DENSITY	ASTM D6938	EACH 300 SF OF EACH LIFT PLACED EACH DAY	PER GEOTECHNICAL REPORT	
CONCRETE				
CONCRETE COMPRESSIVE STRENGTH	ASTM C31.ASTM C39.ASTM C172	SEE SPECIFICATION 03300		
CONCRETE SLUMP	ASTM C143	WHENEVER CYLINDERS ARE CAST		
CONCRETE AIR CONTENT	ASTM C231	WHENEVER CYLINDERS ARE CAST		
CONCRETE TEMPERATURE	ASTM C1064	WHENEVER CYLINDERS ARE CAST		
<b>QUALITY ASSURANCE NOTES</b>				
1. THE QUALITY OF THE WORKMANSHIP AND THE QUALITY OF THE MATERIALS OF CONSTRUCTION ARE GOVERNED BY THE 2012 NORTH CAROLINA BUILDING CODE (IBC 2009). 2. ALL NEW STRUCTURES AND MODIFICATIONS TO EXISTING STRUCTURES TO BE CONSTRUCTED AS A PART OF THIS PROJECT ARE CLASSIFIED AS OCCUPANT CATEGORY III, WASTE WATER TREATMENT FACILITY, IN ACCORDANCE WITH THE IBC. THE STRUCTURES ARE CLASSIFIED AS SEISMIC DESIGN CATEGORY B. 3. TO ASSURE THE QUALITY OF THE CONSTRUCTION OF THIS PROJECT, STRUCTURAL TESTS, SPECIAL INSPECTION AND STRUCTURAL OBSERVATION WILL BE PERFORMED IN ACCORDANCE WITH IBC, CHAPTER 17. 4. WHERE FREQUENCY OF INSPECTION IS SPECIFIED TO BE CONTINUOUS, THE SPECIAL INSPECTOR IS EXPECTED TO BE PRESENT IN THE AREA WHERE THE WORK IS BEING PERFORMED AND PROVIDING FULL-TIME OBSERVATION OF THE WORK REQUIRING SPECIAL INSPECTION. 5. WHERE FREQUENCY OF INSPECTION IS SPECIFIED TO BE PERIODIC, THE SPECIAL INSPECTOR IS EXPECTED TO BE PRESENT IN THE AREA WHERE THE WORK HAS BEEN OR IS BEING PERFORMED AND AT THE COMPLETION OF THE WORK (PRIOR TO THE NEXT CONSTRUCTION TASK). 6. SPECIAL INSPECTIONS ARE IN ADDITION TO INSPECTIONS BY THE BUILDING OFFICIALS. CONSTRUCTION IS SUBJECT TO INSPECTION BY THE BUILDING OFFICIAL. COORDINATE WITH BUILDING DEPARTMENT TO DETERMINE REQUIRED INSPECTIONS. 7. CONTRACTOR SHALL PROVIDE ACCESS TO THE WORK FOR REQUIRED INSPECTIONS. CONTRACTOR SHALL PROVIDE NOTIFICATION IN ADVANCE OF REQUIRED INSPECTIONS, TESTING AND STRUCTURAL OBSERVATIONS.				



**PRELIMINARY DESIGN**

THIS DRAWING IS NOT VALID FOR CONSTRUCTION PURPOSES UNLESS IT BEARS THE SEAL OF A DULY REGISTERED PROFESSIONAL

**CITY OF RICHMOND BIOSOLIDS COVER**

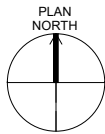
REVISIONS		
REV	DATE	DESCRIPTION

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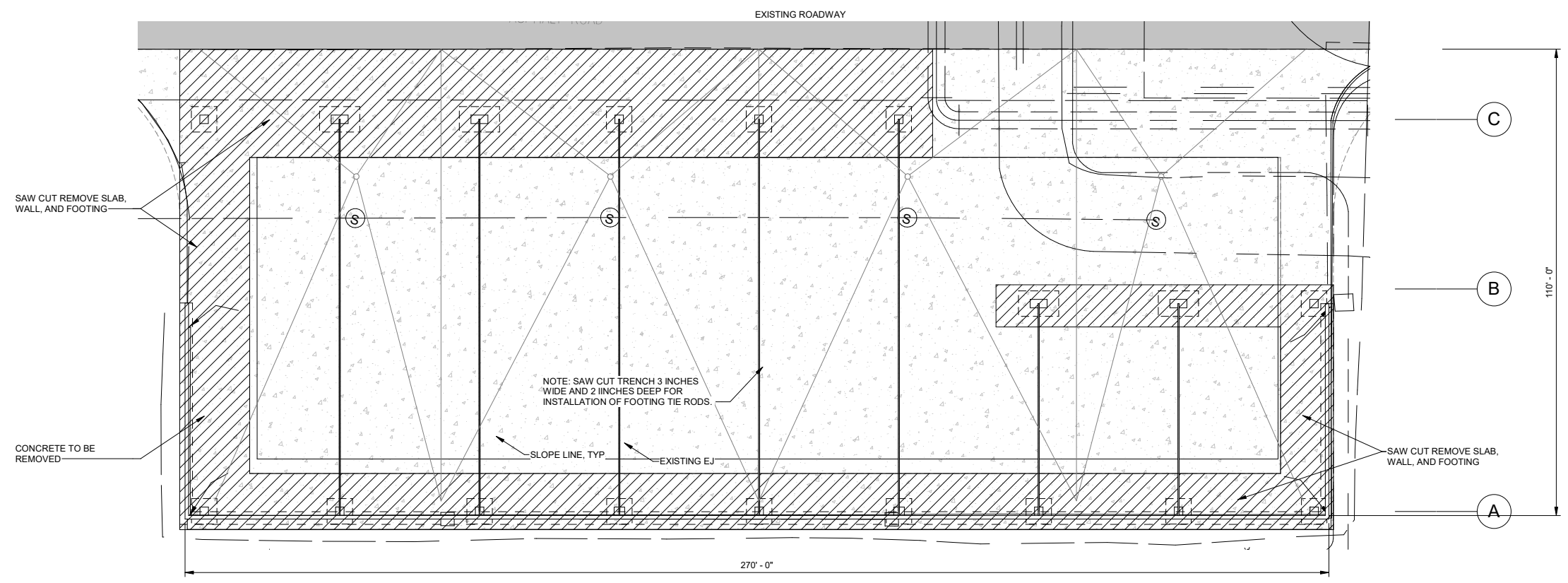
DESIGNED: E.BOTTORFF  
 DRAWN: A.LEPARD  
 CHECKED: D.HABEREK  
 CHECKED:  
 APPROVED: D.HABEREK  
 FILENAME  
 BC PROJECT NUMBER 152170  
 CLIENT PROJECT NUMBER 078155

**GENERAL NOTES**

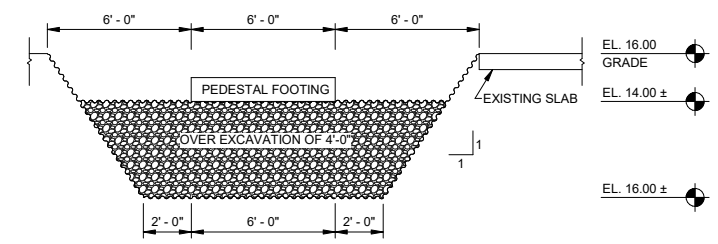
DRAWING NUMBER  
**S-00-001**  
 SHEET NUMBER OF 5



1 2 3 4 5 6



**FOUNDATION PLAN - DEMO**  
SCALE: 1/16" = 1'-0"



ANTICIPATED WIDTH OF EXCAVATION CUT ALONG WEST WALL WORSE CASE.

**EXCAVATION CUT**  
SCALE: 1/4" = 1'-0"



**PRELIMINARY DESIGN**

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**CITY OF RICHMOND BIOSOLIDS COVER**

REVISIONS		
REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: Designer  
DRAWN: Author  
CHECKED: Checker  
CHECKED:  
APPROVED: Approver

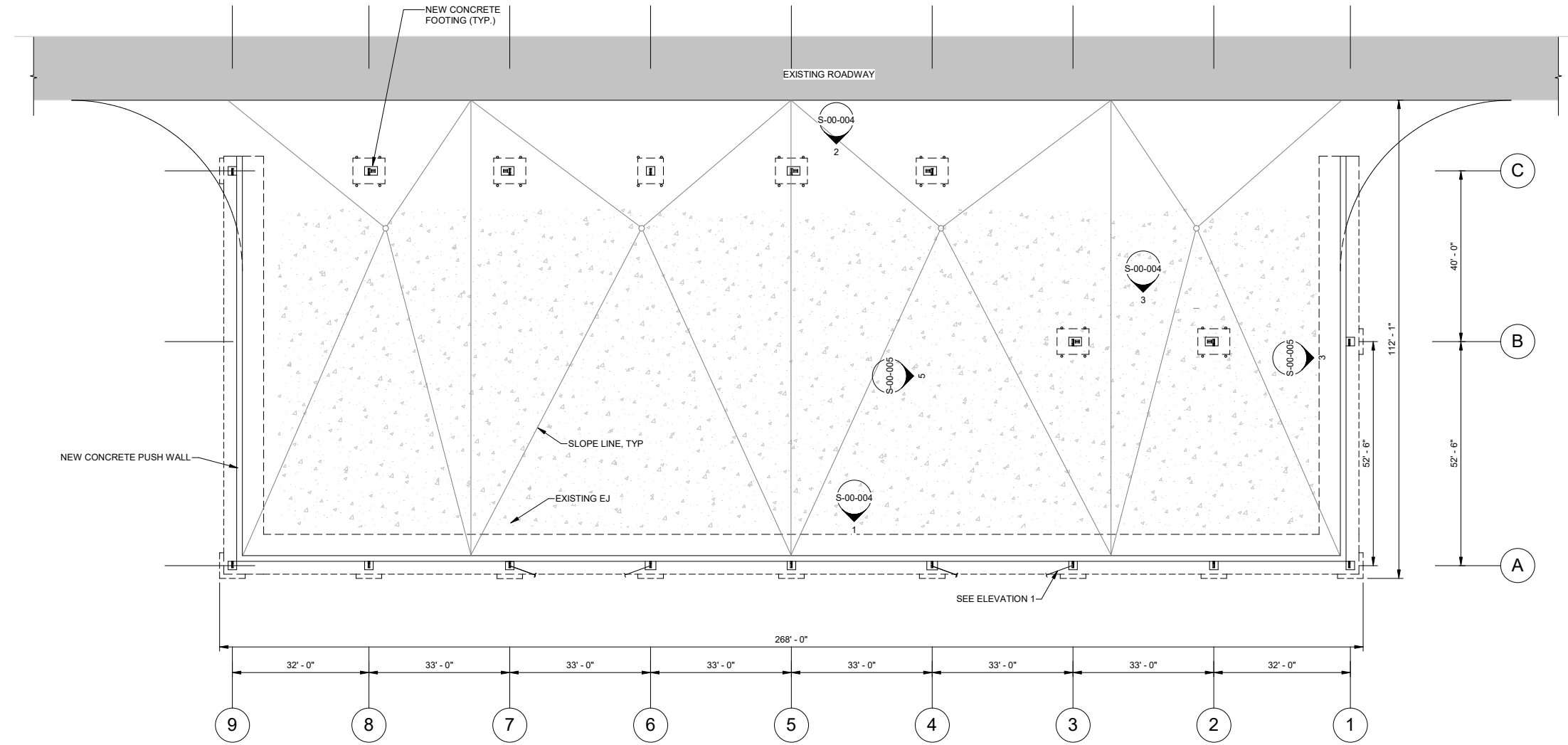
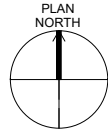
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BC PROJECT NUMBER 152170  
CLIENT PROJECT NUMBER 078155

**DEMOLITION PLAN**

DRAWING NUMBER **S-00-002**  
SHEET NUMBER **3** OF **5**

Plot Date: 3/6/2019 6:57:44 AM Path: \\bcwabp01\projects\Richmond\MSA\_WW\_Sub to JMT\152170 Storage Pad Covers\000\_BIM\04-Rev\152170-S-DSSPV18.rvt

1 2 3 4 5 6



**FOUNDATION PLAN**  
SCALE: 1/16" = 1'-0"



**PRELIMINARY DESIGN**

THIS DRAWING IS NOT VALID FOR CONSTRUCTION PURPOSES UNLESS IT BEARS THE SEAL OF A DULY REGISTERED PROFESSIONAL

**CITY OF RICHMOND BIOSOLIDS COVER**

REVISIONS		
REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: Designer  
DRAWN: Author  
CHECKED: Checker  
CHECKED:  
APPROVED: Approver

FILENAME  
BC PROJECT NUMBER 152170  
CLIENT PROJECT NUMBER 078155  
STRUCTURAL

**FOUNDATION PLAN**

DRAWING NUMBER **S-00-003**  
SHEET NUMBER OF 2 OF 5

Plot Date: 3/6/2019 6:57:44 AM  
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**PRELIMINARY DESIGN**

THIS DRAWING IS NOT VALID FOR CONSTRUCTION PURPOSES UNLESS IT BEARS THE SEAL OF A DULY REGISTERED PROFESSIONAL

**CITY OF RICHMOND BIOSOLIDS COVER**

REVISIONS		
REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

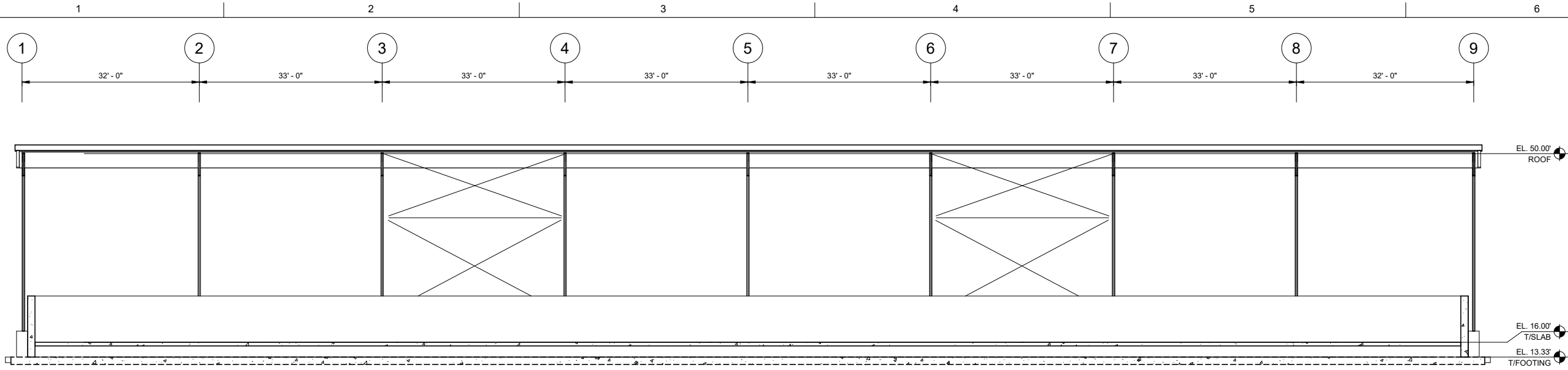
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 DRAWN: Author  
 CHECKED: Checker  
 CHECKED:  
 APPROVED: Approver

FILENAME  
 BC PROJECT NUMBER 152170  
 CLIENT PROJECT NUMBER 078155

**STRUCTURAL ELEVATIONS**

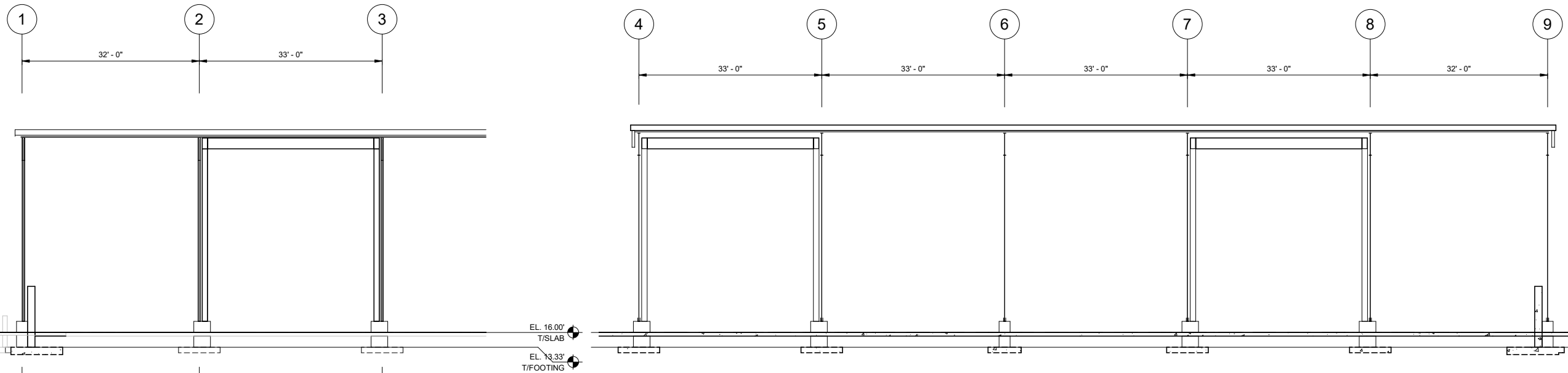
DRAWING NUMBER  
**S-00-004**

4 SHEET NUMBER OF 5



**1 ELEVATION ALONG GRID "A"**

S-00-003 SCALE: 3/32" = 1'-0"



**3 ELEVATION ALONG GRID "B"**

S-00-003 SCALE: 3/32" = 1'-0"

**2 ELEVATION ALONG GRID "C"**

S-00-003 SCALE: 3/32" = 1'-0"

**PRELIMINARY DESIGN**

THIS DRAWING IS NOT VALID FOR CONSTRUCTION PURPOSES UNLESS IT BEARS THE SEAL OF A DULY REGISTERED PROFESSIONAL

**CITY OF RICHMOND BIOSOLIDS COVER**

**REVISIONS**

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: Designer

DRAWN: Author

CHECKED: Checker

CHECKED:

APPROVED: Approver

FILENAME

BC PROJECT NUMBER

152170

CLIENT PROJECT NUMBER

078155

STRUCTURAL

**ELEVATIONS, SECTIONS AND DETAILS**

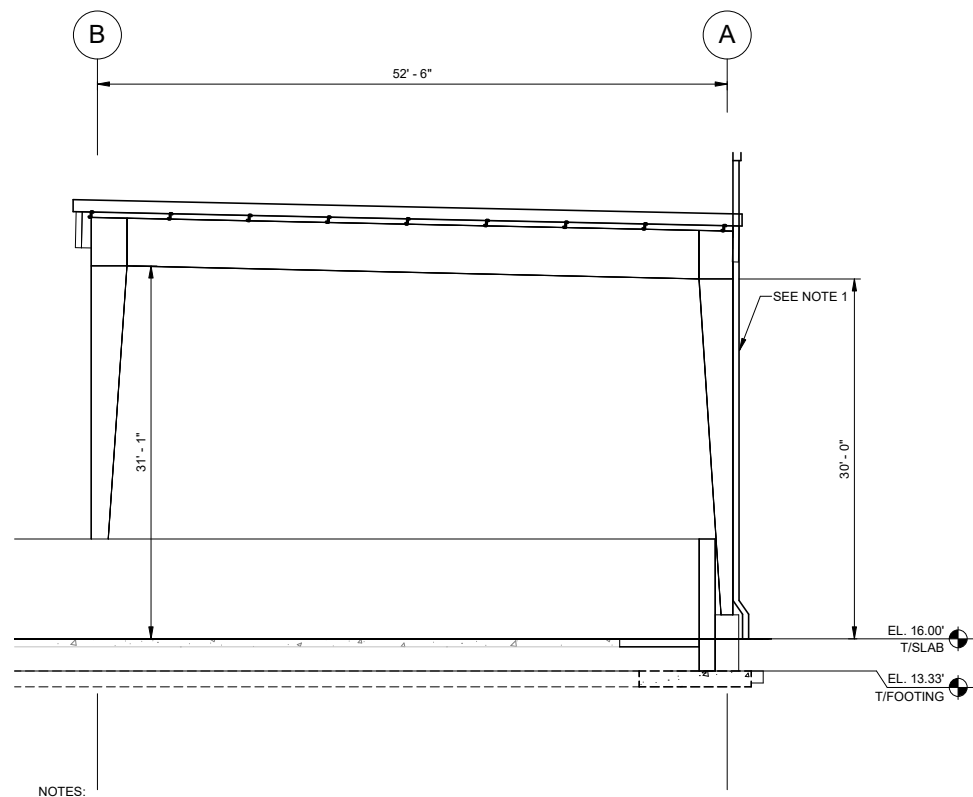
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SHEET NUMBER

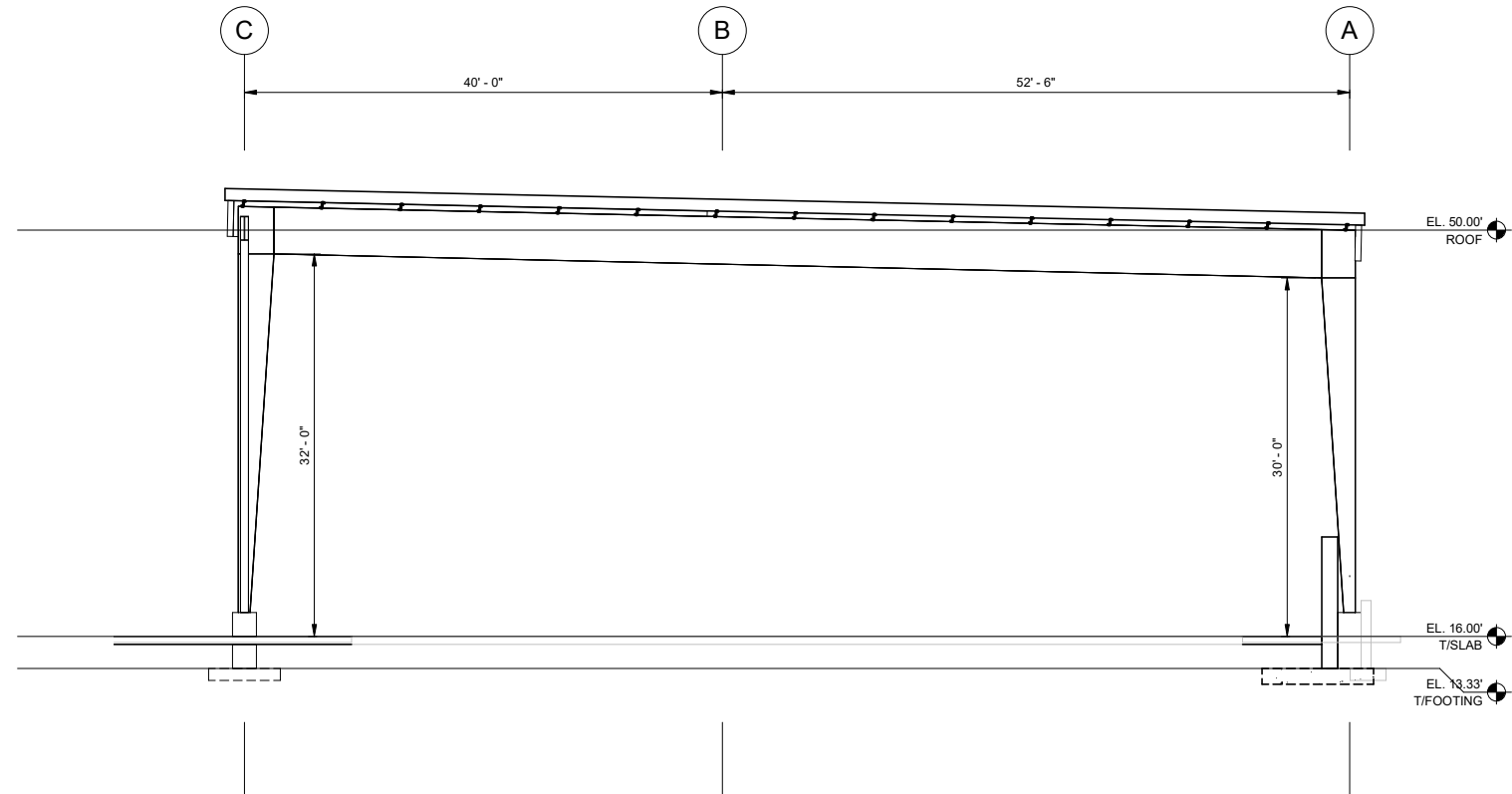
OF

**5**



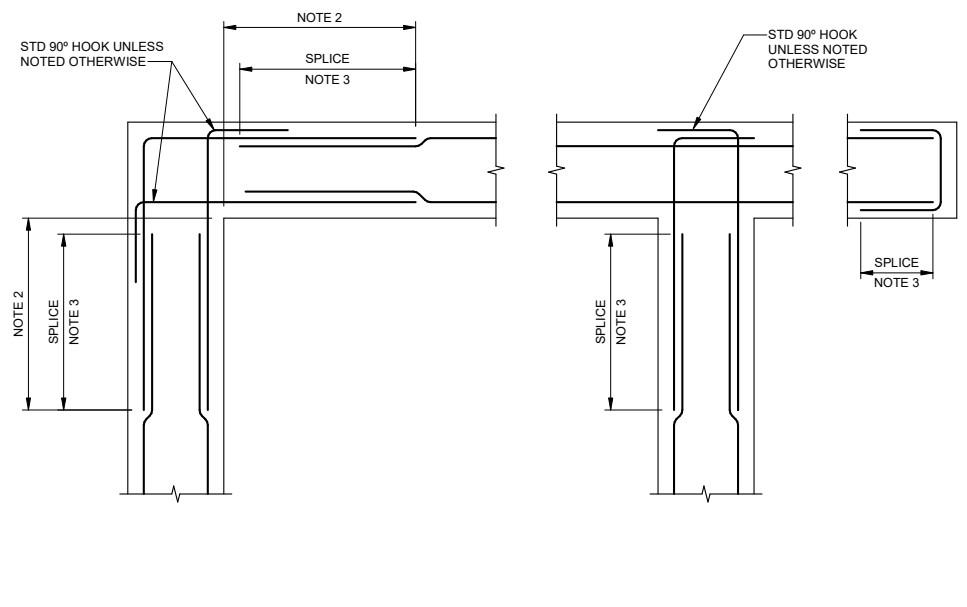
- NOTES:
1. PROVIDE GUTTERS ALONG ROW A WITH DOWNSPOUTS AT COLUMN LINES 1, 3, 5, 7, AND 9.

**3 ELEVATION ALONG GRID "1"**  
SCALE: 1/8" = 1'-0"



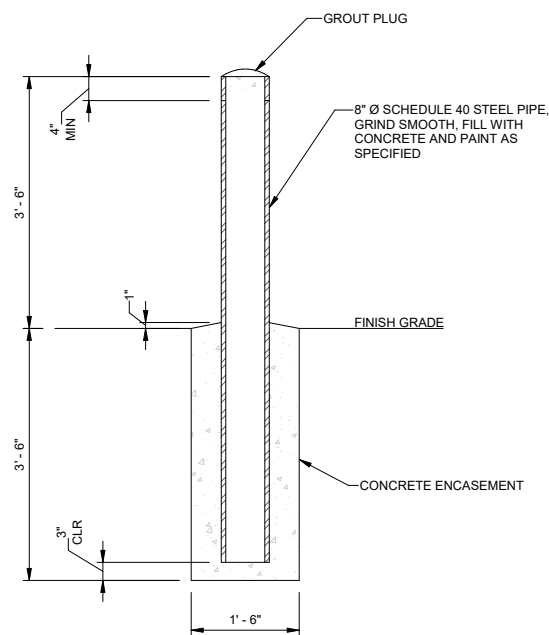
- NOTES:
1. PROVIDE GUTTERS ALONG ROW A WITH DOWNSPOUTS AT COLUMN LINES 1, 3, 5, 7, AND 9.

**5 ELEVATION ALONG GRID "4"**  
SCALE: 1/8" = 1'-0"



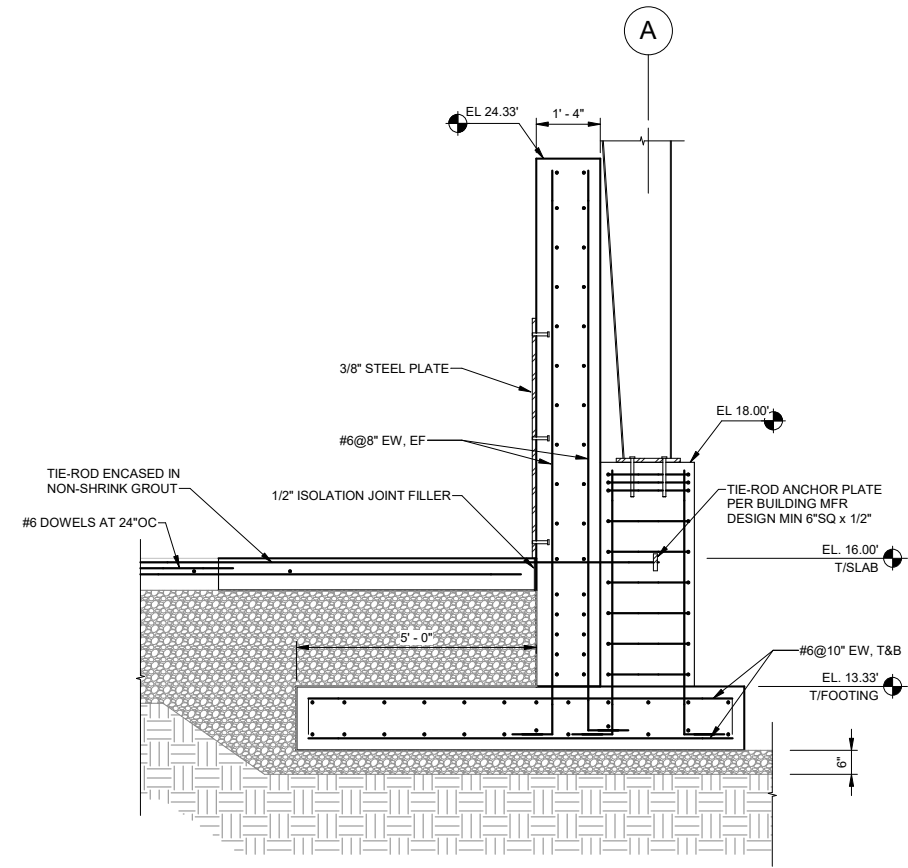
- NOTES:
1. UNLESS NOTED OTHERWISE, SIZE AND SPACING OF CORNER OR INTERSECTION REINFORCING SHALL MATCH HORIZONTAL REINFORCING SHOWN IN SPECIFIC SECTIONS OR DETAILS. VERTICAL REINFORCING NOT SHOWN FOR CLARITY.
  2. UNLESS NOTED OTHERWISE, BAR SPLICE SHALL BE LOCATED OUTSIDE OF CORNER OR INTERSECTION AREA TO AVOID CONGESTION. CONTRACTORS OPTION TO PROVIDE SINGLE BENT BAR IN LIEU OF SPLICE CONFIGURATION AT ONE END ONLY.
  3. SEE GENERAL STRUCTURAL NOTES FOR SPLICE LENGTH. HORIZONTAL WALL BARS SHALL BE CONSIDERED TOP BARS FOR DEVELOPMENT AND SPLICE LENGTHS.

**4 DOUBLE MAT REINFORCING**  
SCALE: 12" = 1'-0"



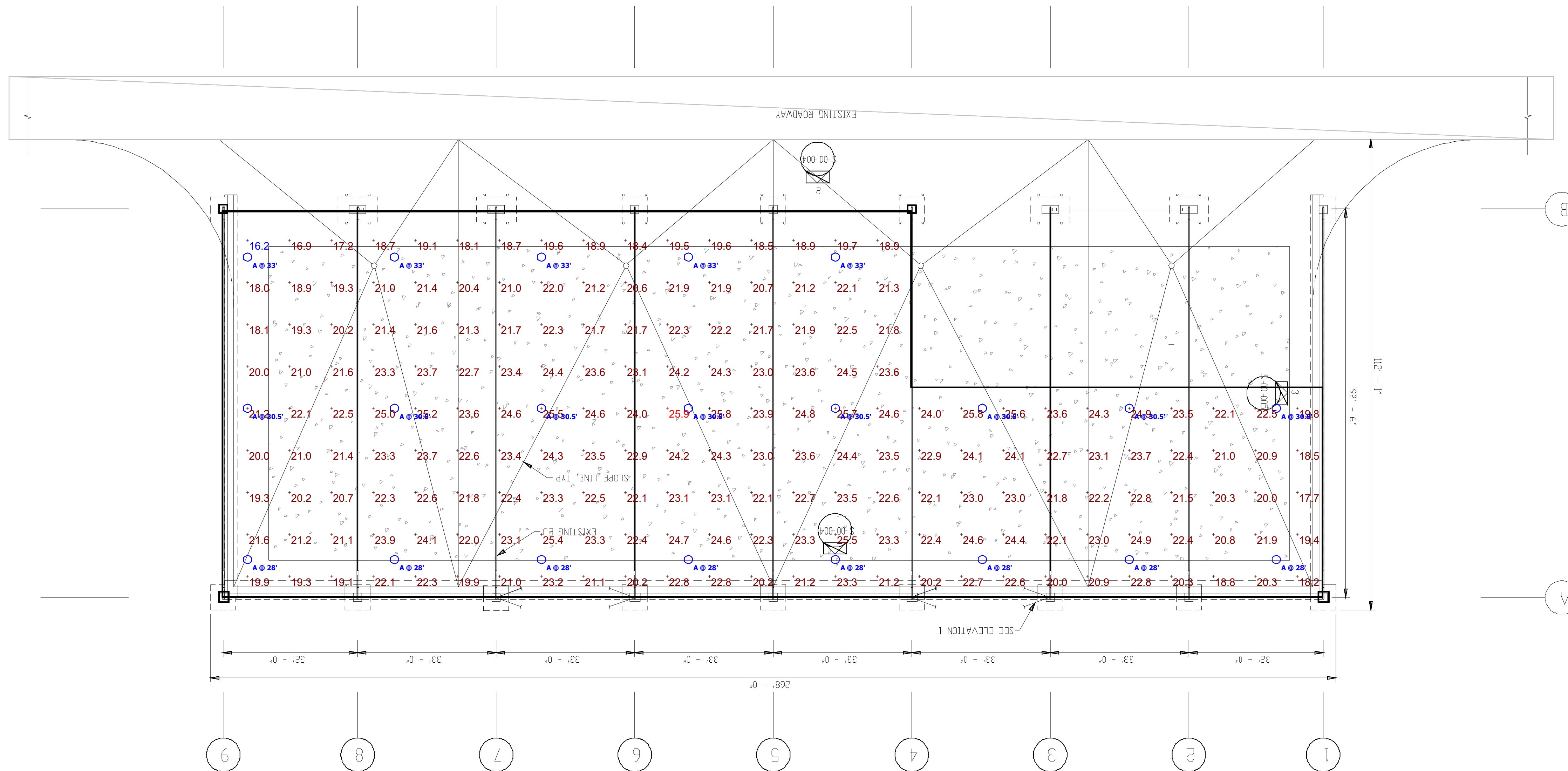
- NOTE:
- HOT-DIP GALVANIZE AFTER FABRICATION

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

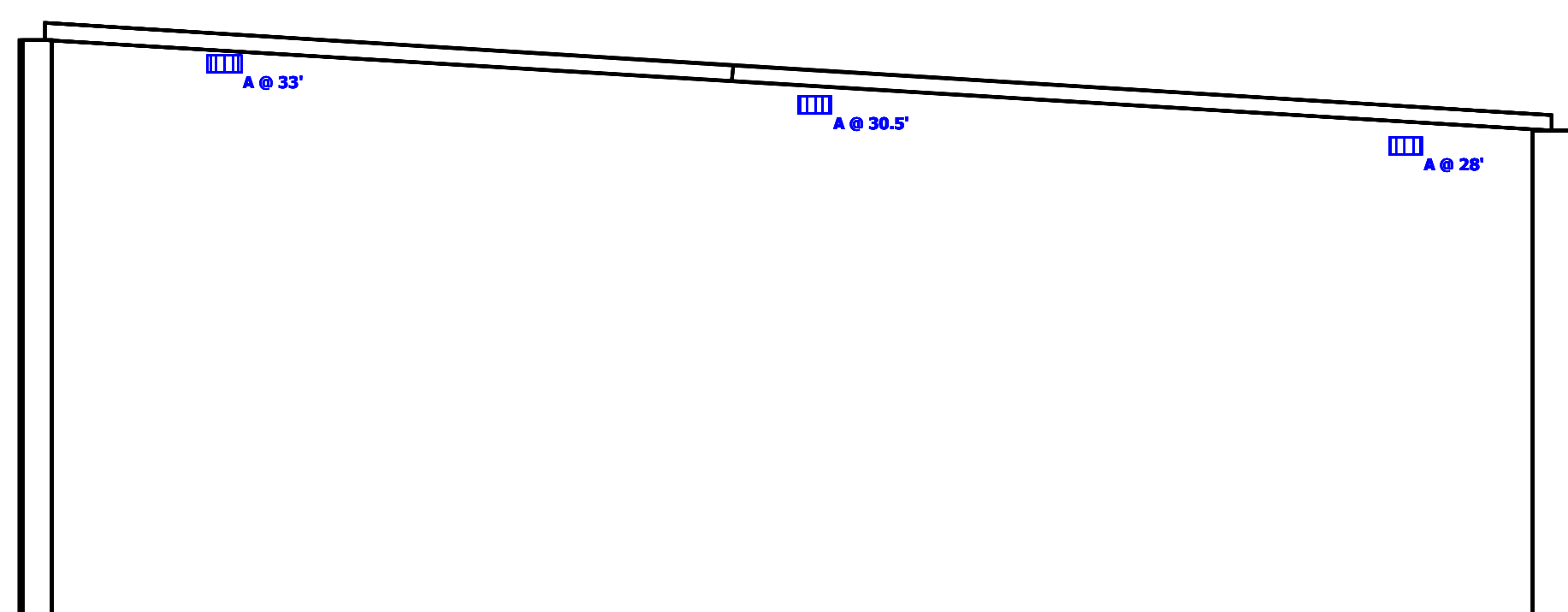


**2 SECTION**  
SCALE: 1/2" = 1'-0"

EXHIBIT #3



Plan View  
 Scale - 1" = 16'



West View  
 Scale - 1" = 10'

Luminaire Locations										
No.	Label	Location					Aim			
		X	Y	Z	MH	Orientation	Tilt	X	Y	Z
7	A	6.00	9.00	28.00	28.00	180.00	0.00	6.00	9.00	0.00
14	A	6.00	45.00	30.50	30.50	180.00	0.00	6.00	45.00	0.00
21	A	6.00	81.00	33.00	33.00	0.00	0.00	6.00	81.00	0.00
22	A	41.00	9.00	28.00	28.00	180.00	0.00	41.00	9.00	0.00
23	A	41.00	45.00	30.50	30.50	180.00	0.00	41.00	45.00	0.00
24	A	41.00	81.00	33.00	33.00	0.00	0.00	41.00	81.00	0.00
25	A	76.00	9.00	28.00	28.00	180.00	0.00	76.00	9.00	0.00
26	A	76.00	45.00	30.50	30.50	180.00	0.00	76.00	45.00	0.00
27	A	76.00	81.00	33.00	33.00	0.00	0.00	76.00	81.00	0.00
28	A	111.00	9.00	28.00	28.00	180.00	0.00	111.00	9.00	0.00
29	A	111.00	45.00	30.50	30.50	180.00	0.00	111.00	45.00	0.00
30	A	111.00	81.00	33.00	33.00	0.00	0.00	111.00	81.00	0.00
31	A	146.00	9.00	28.00	28.00	180.00	0.00	146.00	9.00	0.00
32	A	146.00	45.00	30.50	30.50	180.00	0.00	146.00	45.00	0.00
33	A	146.00	81.00	33.00	33.00	0.00	0.00	146.00	81.00	0.00
34	A	181.00	9.00	28.00	28.00	180.00	0.00	181.00	9.00	0.00
35	A	181.00	45.00	30.50	30.50	180.00	0.00	181.00	45.00	0.00
37	A	216.00	9.00	28.00	28.00	180.00	0.00	216.00	9.00	0.00
38	A	216.00	45.00	30.50	30.50	180.00	0.00	216.00	45.00	0.00
40	A	251.00	9.00	28.00	28.00	180.00	0.00	251.00	9.00	0.00
41	A	251.00	45.00	30.50	30.50	180.00	0.00	251.00	45.00	0.00

Schedule											
Symbol	Label	Quantity	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Filename	Lumens Per Lamp	Light Loss Factor	Wattage
⊙	A	21	Holophane	PHZ 40L 4K 80CRI XX XX XXX M xxxxxx	Phuzion 40,000 Lumens, 4K CCT, 80 CRI, Medium Glass	LED	1	PHZ_40L_4K_80CRI_XX_XX_XXX_M_XXXXXX.ces	37222	0.9	288.36

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
CALCULATIONS	+	22.0 fc	25.9 fc	16.2 fc	1.6:1	1.4:1

**Note**  
 1. Readings shown are based on a total LLF of .90 at floor.  
 2. Please refer to the luminaire locations\* for mounting heights.  
 3. Product information can be obtained at www.Holophane.com or through you local agency.  
 4. Reflectance = 80/0/0.

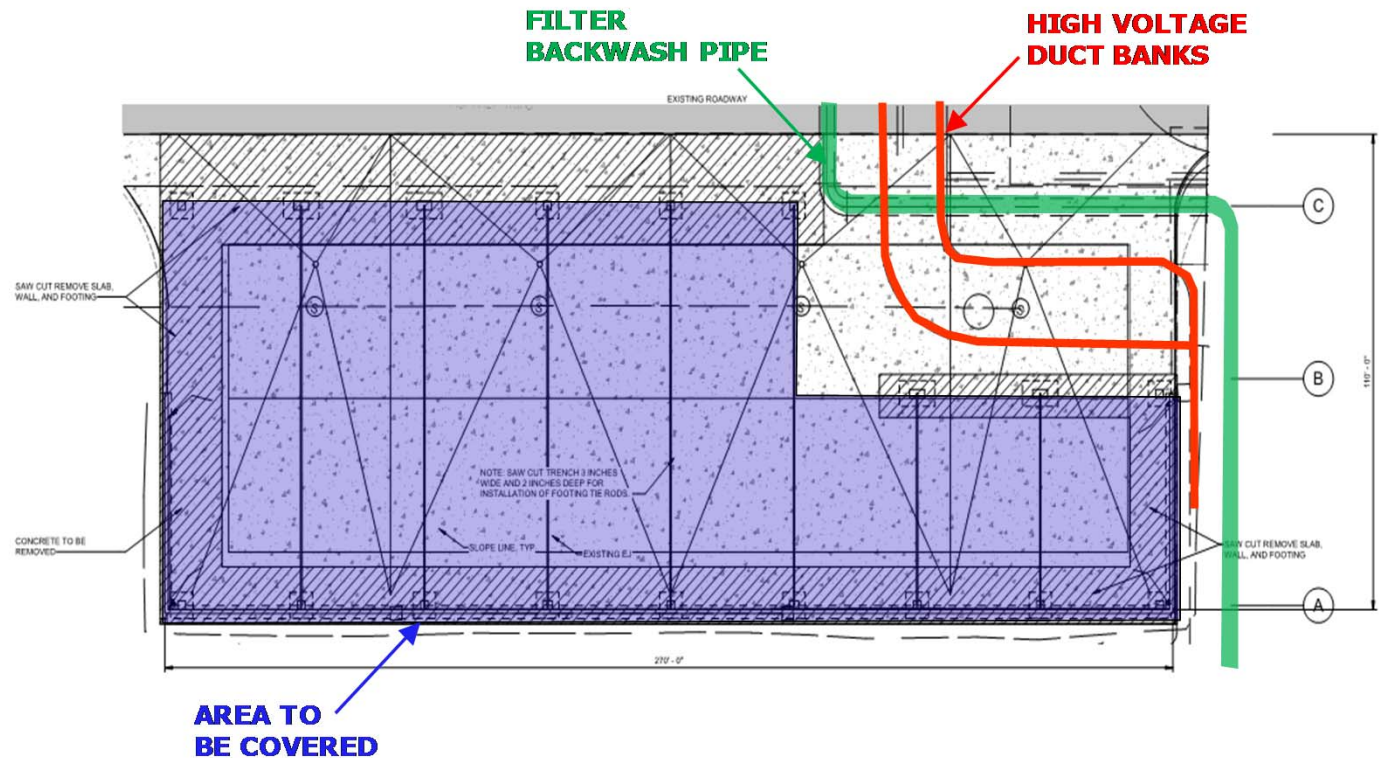
CITY OF RICHMOND  
 BIOSOLID COVER LIGHTING  
 POINT ILLUMINATION STUDY

Designer  
 R.A. MCILRATH  
 Date  
 10/10/2018  
 Scale  
 AS NOTED  
 Drawing No.  
 81304-2 A1  
 Summary



# Proposed Improvements - Footprint

- 264-ft-by 95-ft covered area
- A 100-ft by 50-ft section will remain open to avoid conflict with underground utilities.
- Existing Storage Volume = 81,000 cf
- Storage Volume to be Covered = 160,000 cf







Existing Biosolids Storage Pad Facing East



Proposed Biosolids Storage Pad Facing East



Existing Biosolids Storage Pad Facing South



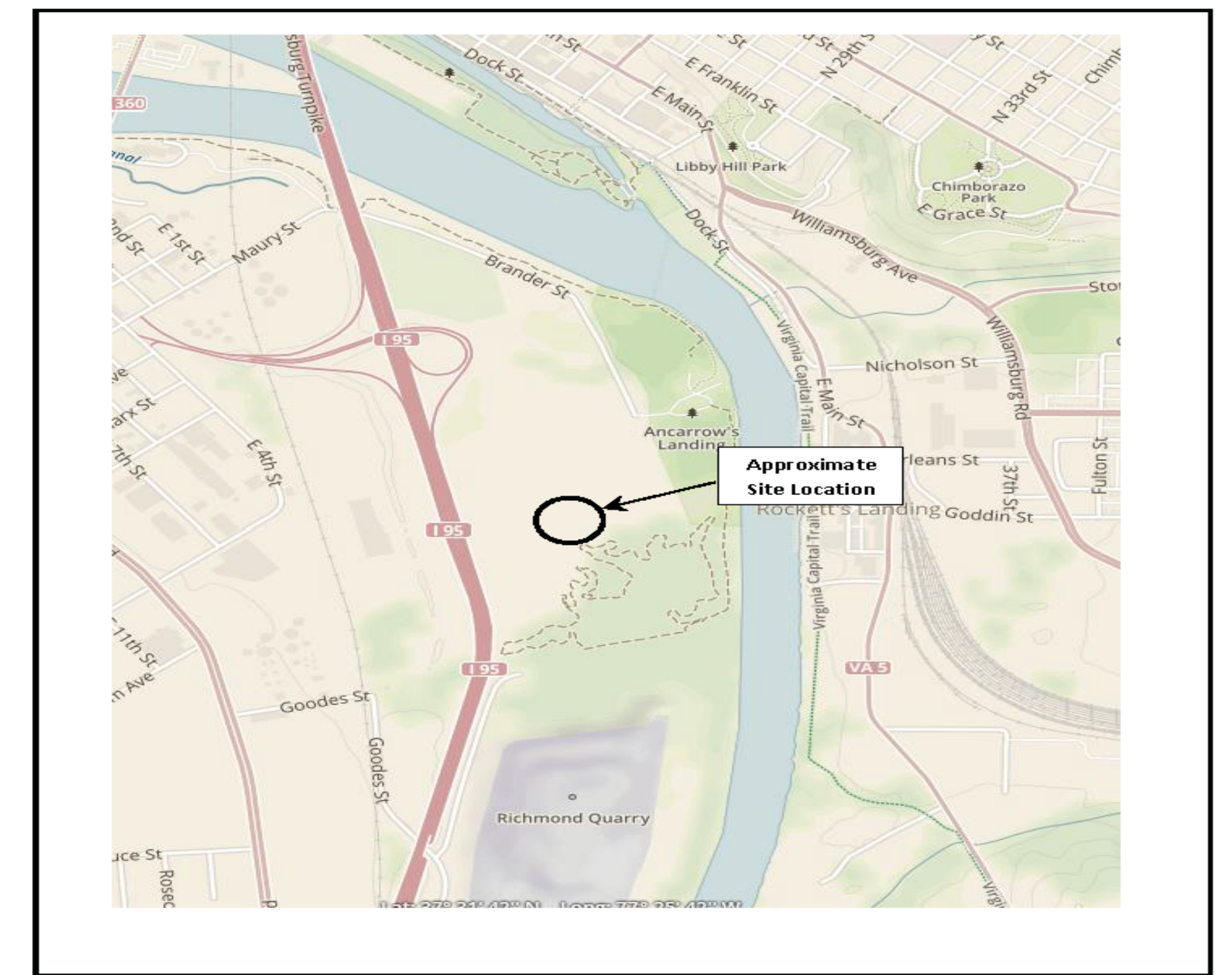
Proposed Biosolids Storage Pad Facing South



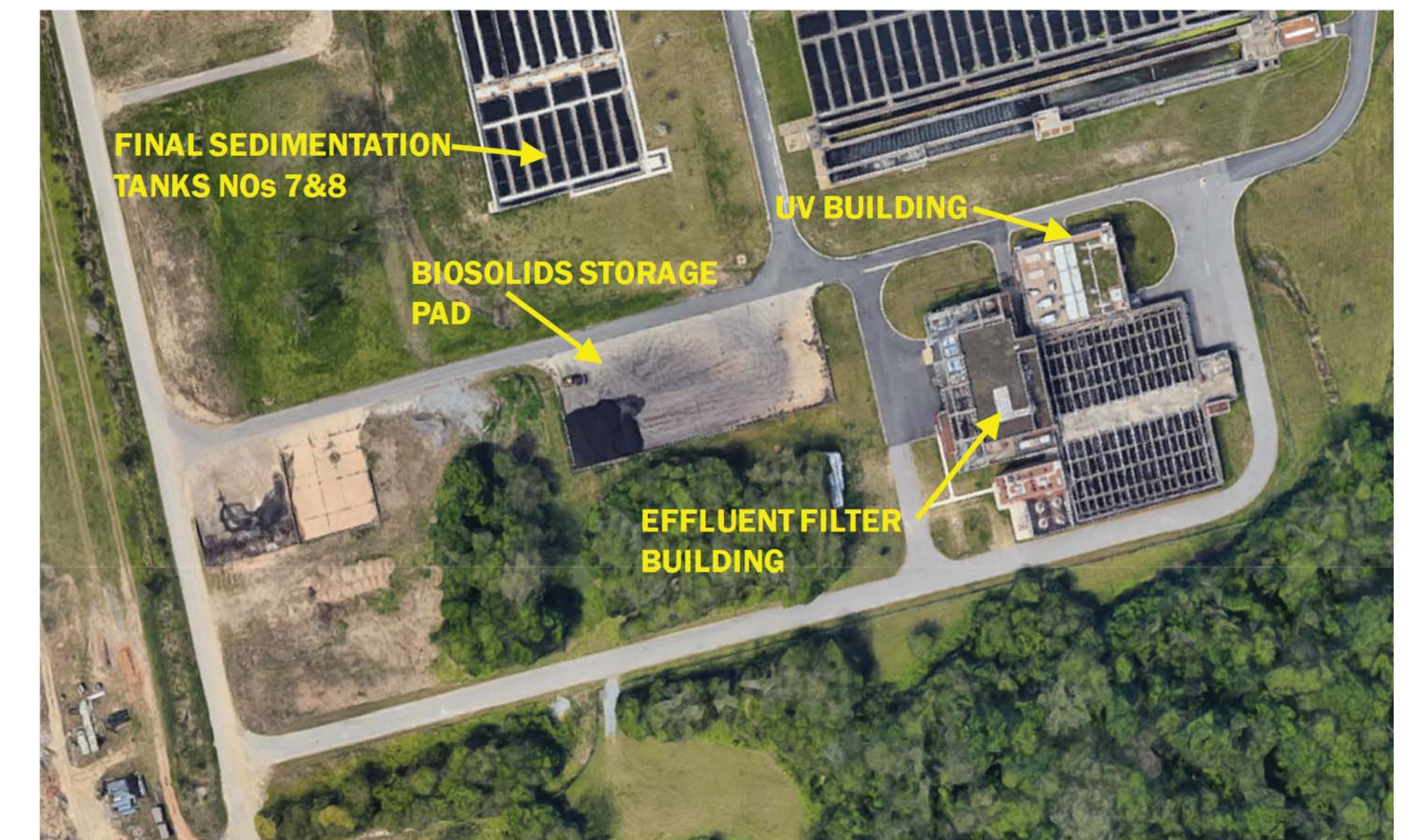
Existing Biosolids Storage Pad Facing West



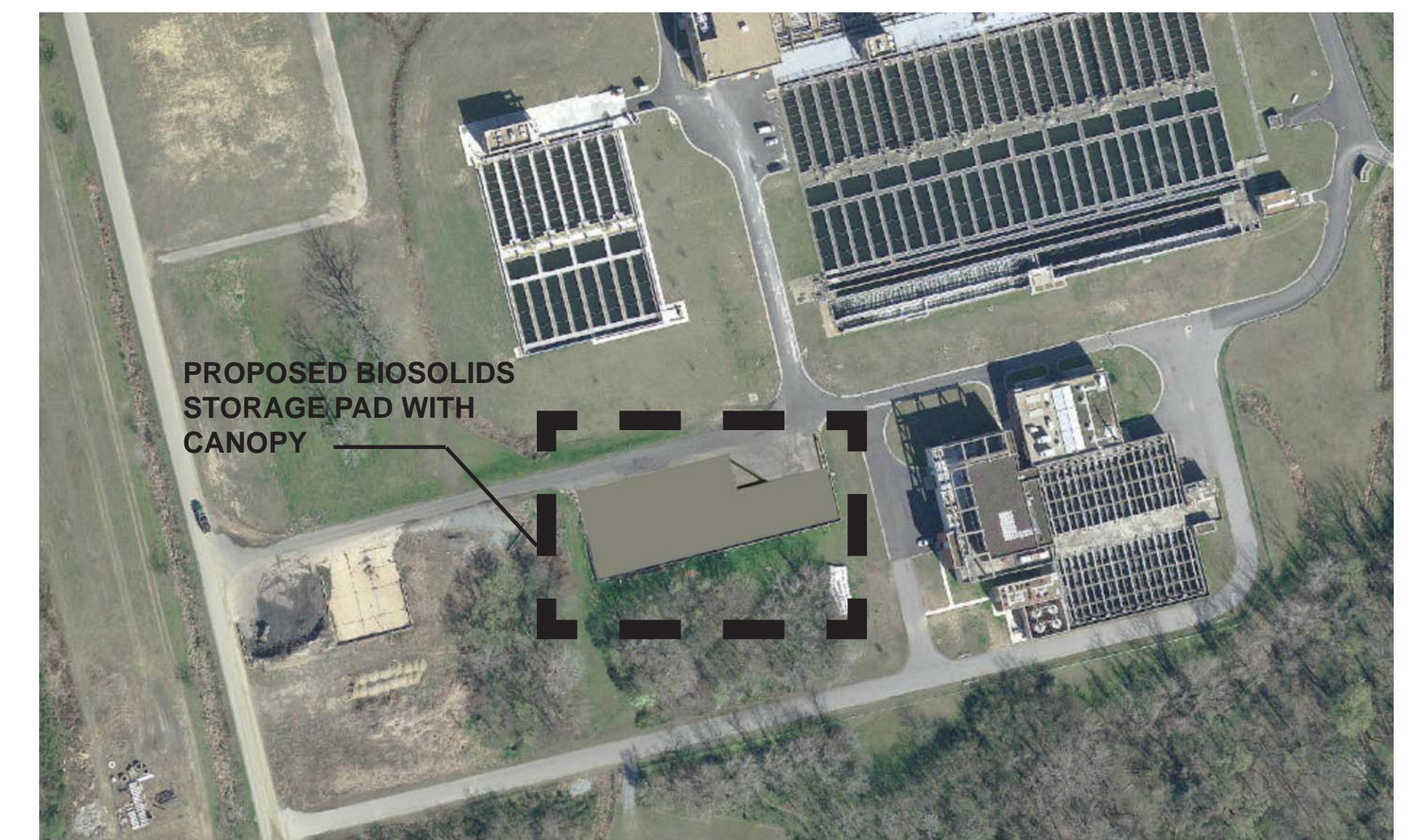
Proposed Biosolids Storage Pad Facing West



Site Location



Existing Aerial View



Proposed Aerial View