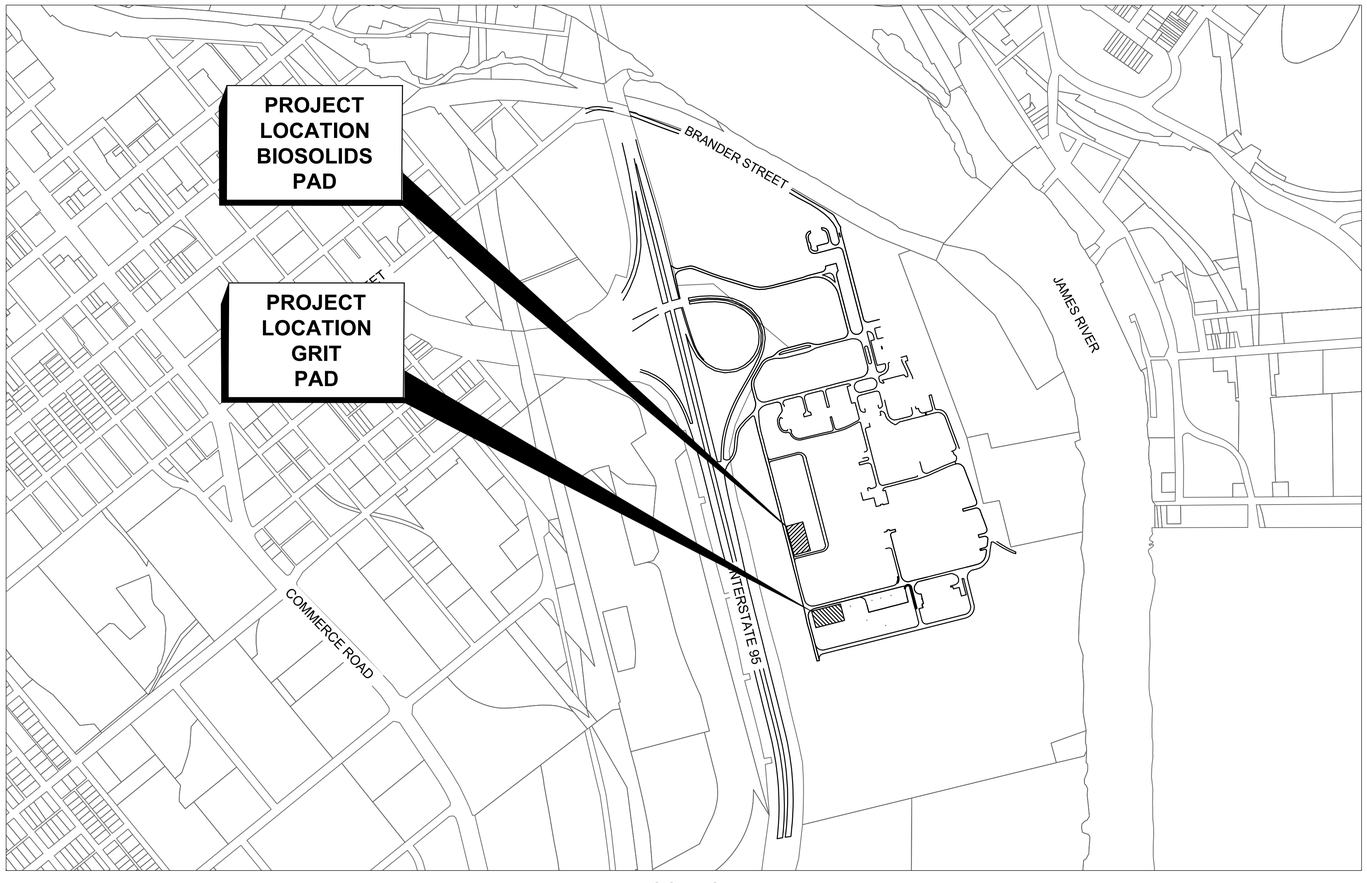
WASTEWATER TREATMENT PLANT BIOSOLIDS AND GRIT PADS UPGRADES

PROJECT NUMBERS 105614 & 109212
CITY OF RICHMOND, VIRGINIA
DEPARTMENT OF PUBLIC UTILITIES
APRIL 2025
90% SUBMITTAL



LOCATION MAP
SCALE 1"=500'

PROJECT ADDRESS
CITY OF RICHMOND WASTEWATER TREATMENT PLANT
1400 BRANDER STREET
RICHMOND, VA 23224

SITE COORDINATES:
37° 31' 01.9" N 77° 25' 27.4" W - BIOSOLIDS PAD
37° 30' 56.6" N 77° 25' 25.9" W - GRIT PAD

OWNERS CONTACT
CITY OF RICHMOND
DEPARTMENT OF PUBLIC UTILITIES
1800 COMMERCE ROAD
RICHMOND, VA 23224

FABIO VILLA-GOMEZ
(804) 495-6645

VICTOR ROSE-SMITH
(804) 648-8403

PERMITS
CITY OF RICHMOND BULDING PERMIT
CITY OF RICHMOND ELECTRICAL PERMIT
CITY OF RICHMOND PLUMBING PERMIT
CITY OF RICHMOND EROSION AND STORMWATER MANAGEMENT PROGRAM PERMIT

Brown AND Caldwell
Environmental Engineers and Consultants
3454 West Clay Street, Richmond, VA 23230

IN ASSOCIATION WITH

ASTUTE ENGINEERING
Creative Designs | Intelligent Solutions
ASTUTE ENGINEERING, PLLC.
1945 OLD GALLOWS ROAD, STE 201, VIENNA, VA 22182
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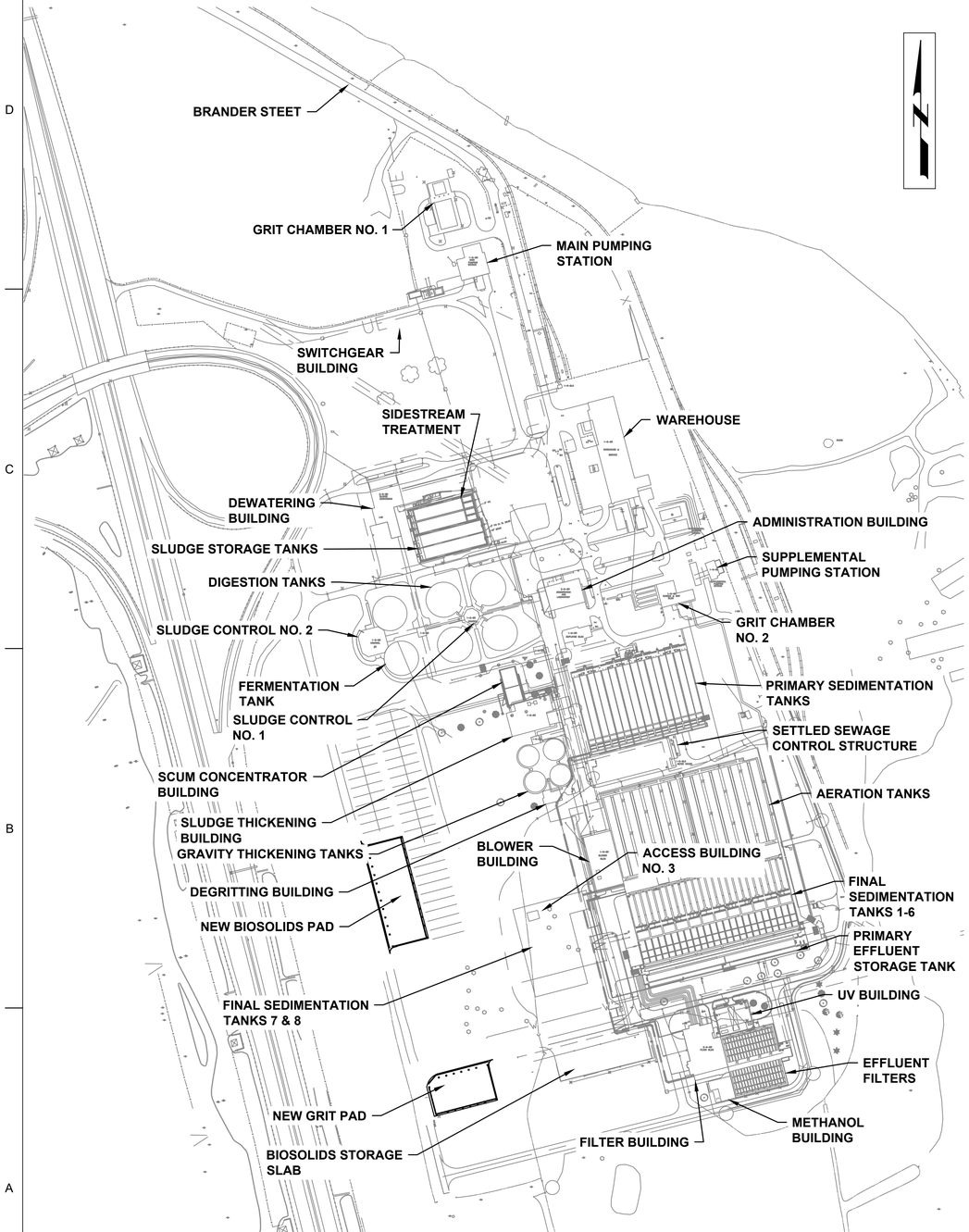
TAM CONSULTANTS
A Terracon COMPANY

va811.com Dig With CARE



PLAN
SCALE: 1" = 200'

LEGEND

DESCRIPTION	SYMBOL
PROPERTY LINES	
LIMITS OF DISTURBANCE	LOD
EXISTING MAJOR CONTOURS	1
EXISTING MINOR CONTOURS	5
RESOURCE PROTECTION AREA	RPA
100–YR FLOOD PLAIN	100-YR
EXISTING WETLANDS	W
EXISTING UNDERGROUND ELECTRIC LINE	UE
EXISTING FIBER OPTIC	FO
EXISTING COMMUNICATIONS	COMM
EXISTING GAS LINE	G
EXISTING FUEL LINE	F
EXISTING SANITARY SEWER	SS
EXISTING SANITARY FORCE MAIN	FM
EXISTING STORM DRAIN	SD
EXISTING WATER LINE	W
PROPOSED TRENCH DRAIN	
PROPOSED WATER LINE	W
PROPOSED UNDERGROUND ELECTRIC WITH PULL BOX	UE
PROPOSED STORM DRAIN	
PROPOSED SILT FENCE	SF
DEMOLISH / REMOVE FEATURE	
DEMOLISH / REMOVE EXISTING CONCRETE PAD	
MILL AND OVERLAY EXISTING PAVE	

DESCRIPTION	SYMBOL
EXISTING ELECTRIC MANHOLE	
EXISTING ELECTRIC BOX	E
EXISTING ELEC HAND BOX	EHB
EXISTING LIGHT POLE	
EXISTING GROUND LIGHT	
EXISTING LIGHTED BOLLARD	
EXISTING UTILITY POLE	
EXISTING ELECTRIC POLE	
EXISTING TRAFFIC SIGNAL POLE	
EXISTING SANITARY MANHOLE	
EXIISTING SANITARY CLEANOUT	
EXISTING TV MANHOLE	
EXISTING GAS MANHOLE	
EXISTING STORM DRAIN MANHOLE	SD
EXISTING STORM INLET	
EXISTING OUTFALL END SECTION	
EXISTING FIRE HYDRANT	
EXISTING WATER VALVE	
EXISTING WATER METER	
EXISTING TREE	
PROPOSED YARD HYDRANT	
PROPOSED STORM INLET	
PROPOSED STORM MANHOLE	SD

DRAWING INDEX

SHEET NUMBER	DRAWING NUMBER	DRAWING TITLE
1	---	COVER
2	G-001	SITE PLAN, DRAWING INDEX, AND LEGEND
3	G-002	GENERAL NOTES AND ABBREVIATIONS
4	G-003	EROSION AND SEDIMENTATION CONTROL NOTES
5	G-004	EROSION AND SEDIMENTATION CONTROL NOTES AND LEGEND
6	C-001	EXISTING CONDITIONS / DEMOLITION BIOSOLIDS STORAGE PAD
7	C-002	EXISTING CONDITIONS / DEMOLITION GRIT STORAGE PAD
8	C-100	SITE PLAN BIOSOLIDS STORAGE PAD
9	C-101	SITE PLAN GRIT STORAGE PAD
10	C-102	PAVING PLAN BIOSOLIDS STORAGE PAD AND GRIT STORAGE PAD
11	C-200	GRADING PLAN BIOSOLIDS STORAGE PAD
12	C-201	GRADING PLAN GRIT STORAGE PAD
13	C-250	VRRM CALCULATIONS
14	C-300	UTILITY PLAN BIOSOLIDS STORAGE PAD AND GRIT STORAGE PAD
15	C-301	UTILITY PLAN AND PROFILE BIOSOLIDS STORAGE PAD
16	C-302	UTILITY PLAN AND PROFILE GRIT STORAGE PAD
17	C-400	EROSION AND SEDIMENTATION CONTROL PLAN BIOSOLIDS STORAGE PAD
18	C-401	EROSION AND SEDIMENTATION CONTROL PLAN GRIT STORAGE PAD
19	C-402	EROSION AND SEDIMENTATION CONTROL DETAILS
20	C-500	CIVIL DETAILS
21	C-501	CIVIL DETAILS
22	C-502	CIVIL DETAILS
23	C-503	CIVIL DETAILS
24	S-001	GENERAL STRUCTURAL NOTES
25	S-111	BIOSOLIDS PAD FOUNDATION & ROOF PLANS
26	S-121	GRIT PAD FOUNDATION & ROOF PLANS
27	S-211	BIOSOLIDS PAD ELEVATIONS
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36	S-911	BIOSOLIDS PAD RENDERINGS
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40	E-102	FINAL SEDIMENTATION BASIN POWER PLAN
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42	E-104	ONE-LINE DIAGRAM, SCHEDULES, AND DETAILS
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Brown AND Caldwell
3454 West Clay Street
Richmond, VA 23230

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

90% DESIGN

CITY OF RICHMOND ESTABLISHED 1737

WASTEWATER TREATMENT PLANT BIOSOLIDS AND GRIT STORAGE PADS UPGRADES

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: A. HALL
DRAWN: J. SHERIDAN
CHECKED: A. HALL
CHECKED: T. PADDEN
APPROVED: T. PADDEN

FILENAME
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BC PROJECT NUMBER
190651 & 196366

CLIENT PROJECT NUMBER
105614 & 109212

CIVIL

SITE PLAN, DRAWING INDEX, AND LEGEND

DRAWING NUMBER
G-001

Path: C:\BCPWD3717142 FILENAME: 190651-G-001.DWG PLOT DATE: 4/24/2025 2:03 PM CAD USER: JIM SHERIDAN

GENERAL NOTES:

1. AERIAL MAPPING DEVELOPED FROM THE CITY OF RICHMOND GIS DATABASE. HORIZONTAL CONTROL FOR THE MAPPING IS BASED ON THE VIRGINIA STATE PLANE COORDINATE SYSTEM, N.A.D. 1983, SOUTH ZONE.

2. ALL ELEVATIONS REFER TO THE CITY OF RICHMOND, VIRGINIA DATUM WHICH IS 1.36 FEET ABOVE THE MEAN LOW WATER DATUM OF THE U.S.C. & G.S., 0.19 FEET ABOVE MEAN SEA LEVEL DATUM OF THE U.S.C. & G.S., AND 2.15 FEET BELOW THE ZERO OF THE U.S. WEATHER BUREAU GAUGE.

3. THE WORK DESCRIBED IN THESE CONTRACT DOCUMENTS IS TO TAKE PLACE ON SITE OF AN ACTIVE WASTEWATER TREATMENT PLANT. WORK UNDER THIS CONTRACT MAY NOT INTERFERE WITH OPERATION OF THE WASTEWATER TREATMENT PLANT AT ANY TIME. THE WASTEWATER TREATMENT PLANT MUST REMAIN ONLINE AND OPERATIONAL AT ALL TIMES.

4. THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT ADDITIONAL CONTRACTS HAVE BEEN OR ARE INTENDED TO BE LET ADJACENT TO HIS WORK AND THAT HE SHALL COORDINATE THOSE PORTIONS OF HIS WORK AFFECTED BY OTHERS. HE SHALL COOPERATE WITH THEM IN EVERY REASONABLE WAY SO THAT THERE SHALL BE A MINIMUM PRACTICABLE INTERFERENCE WITH THEIR OPERATIONS.

5. A DISTINCTION BETWEEN NEW AND EXISTING MATERIALS, EQUIPMENT AND STRUCTURES HAS BEEN MADE ON THE DRAWINGS BY LINE WEIGHT. HEAVY REPRESENTS NEW, LIGHT REPRESENTS EXISTING.

6. THE CONTRACTOR IS RESPONSIBLE TO MAKE ALL MEASUREMENTS NECESSARY TO LOCATE, FABRICATE, ERECT, CONSTRUCT AND OTHERWISE INSTALL ALL NEW WORK IN LOCATIONS SHOWN AND RELOCATE AND REWORK EXISTING WORK ALL TO THE ARRANGEMENTS, GUIDANCE AND INSTRUCTIONS SHOWN AND REQUIRED FOR A COMPLETE TROUBLE-FREE OPERATING INSTALLATION.

7. THE CONTRACTOR IS RESPONSIBLE TO FABRICATE, ERECT, CONSTRUCT AND OTHERWISE INSTALL ALL NEW WORK CONNECTING TO EXISTING WORK AND MAKE ALL NECESSARY RELOCATIONS TO THE ARRANGEMENTS AND GENERAL DESIGN SHOWN. THE CONTRACTOR IS ALSO RESPONSIBLE TO MAKE ANY ADJUSTMENTS IN FABRICATION, ERECTION, CONSTRUCTION AND INSTALLATION NECESSARY TO CONSTRUCT AND FIT NEW WORK AND RELOCATIONS TO EXISTING CONDITIONS AND LOCATIONS TO CONFORM TO THE ARRANGEMENTS AND GENERAL DESIGN SHOWN. ADJUSTMENTS PROPOSED OR CONTEMPLATED BY THE CONTRACTOR SHALL CONFORM TO REQUIREMENTS AND STANDARDS OF THE CONTRACT DOCUMENTS.

8. THE CONTRACTOR IS RESPONSIBLE TO MAKE RELOCATIONS SHOWN TO MATCH THE MATERIAL AND QUALITY OF THE FACILITY, CONSTRUCTION OR WORK TO BE RELOCATED. RELOCATIONS SHOWN ARE TO BE ARRANGED AS REQUIRED TO PRODUCE PERFORMANCE, UTILITY AND ACCESS EQUAL TO THE EXISTING WORK.

9. AN ASTERISK (*) AT NEW CONSTRUCTION DENOTES LOCATIONS, ELEVATIONS, DIMENSIONS AND OTHER INFORMATION DEPENDENT ON THE CONTRACTOR'S SUBMITTALS. THE CONTRACTOR SHALL DEVELOP AND SHOW THE INFORMATION MARKED WITH AN ASTERISK (*) ON HIS SUBMITTALS AND SHALL DEVELOP AND PROVIDE SUCH INFORMATION FOR ALL ASTERISKS (*) WITHIN OR INTERFACING WITH ANY SUBMITTALS AND BETWEEN SUBMITTALS. ALL INFORMATION FOR ASTERISKS (*) ARE THE RESPONSIBILITY OF THE CONTRACTOR TO DEVELOP AND ASSURE COMPATIBLE INTERFACING FOR A COMPLETE, COORDINATED AND TROUBLE-FREE OPERATING INSTALLATION. ALL REQUIREMENTS HEREIN SHALL BE BASED ON FINAL PROCESSING AND/OR REVIEW OF THE CONTRACTORS SUBMITTALS OR SELECTIONS.

10. LOCATIONS, ELEVATIONS AND DIMENSIONS OF EXISTING PIPING, EQUIPMENT, STRUCTURES AND OTHER EXISTING WORK ARE BASED ON INFORMATION FURNISHED BY VARIOUS SOURCES, INCLUDING EXISTING RECORD DRAWINGS AND CONTRACT DOCUMENTS, AND IN SOME INSTANCES FIELD MEASUREMENTS. LOCATIONS, ELEVATIONS AND DIMENSIONS OF NEW WORK CONNECTING OR ADJACENT TO OR INTERFACING WITH EXISTING WORK HAVE BEEN DEVELOPED AND ARRANGED BASED ON THE FOREGOING INFORMATION AND FIELD MEASUREMENTS. THE CONTRACTOR IS RESPONSIBLE TO FIELD CHECK AND MEASURE LOCATIONS, ELEVATIONS AND DIMENSIONS AND TO FIT AND OTHERWISE INSTALL THE NEW WORK TO ACTUAL EXISTING LOCATIONS, ELEVATIONS AND DIMENSIONS FOR A COMPLETE AND TROUBLE-FREE OPERATING FACILITY.

11. THE EXISTING GRADE ELEVATIONS SHOWN ARE APPROXIMATE. WHERE ACTUAL ELEVATIONS AND LOCATIONS ARE NECESSARY FOR THE WORK, THE CONTRACTOR IS RESPONSIBLE TO FIELD MEASURE AND CHECK EXISTING GRADE ELEVATIONS AND TOP OF ROCK ELEVATIONS AND LOCATION OF ROCK OUTCROPPINGS, IF APPLICABLE.

12. EXISTING CONSTRUCTION OR WORK TO BE USED, IMPACTED OR OTHERWISE AFFECTED BY THE CONTRACTOR IN PERFORMANCE OF THE WORK UNDER THIS CONTRACT SHALL BE INSPECTED PRIOR TO STARTING WORK. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR, MODIFY, UPGRADE, PROTECT, SUPPLEMENT OR SUPPORT EXISTING CONSTRUCTION OR WORK TO OBTAIN THE DEGREE OF SERVICE REQUIRED BY THE CONTRACTOR TO PERFORM THE WORK. THE CONTRACTOR SHALL RETURN EXISTING CONSTRUCTION OR WORK TO ITS FUNCTIONAL EQUIVALENCY FOUND PRIOR TO THE START OF THE CONTRACTOR'S WORK TO THE SATISFACTION OF THE ENGINEER.

13. EXISTING CONSTRUCTION SHALL BE REMOVED TO THE EXTENT SHOWN AND SPECIFIED AND AS NEEDED TO BE COMPATIBLE AND ACCOMMODATE NEW WORK OR REPLACEMENT WORK.

14. THE CONTRACTOR IS RESPONSIBLE TO ACCEPT ALL EXISTING CONSTRUCTION FOR WORK IN THE STATUS AND CONDITIONS THAT OCCUR WHEN WORK AT THE FACILITY COMMENCES. THE CONTRACTOR SHALL PERFORM ALL WORK NECESSARY TO PREPARE AND MAINTAIN THE EXISTING CONSTRUCTION AS NEEDED TO PERFORM ALL WORK UNDER THE CONTRACT. THE CONTRACTOR IS RESPONSIBLE TO REMOVE AWAY FROM THE SITE OF THE WORK TO HIS OWN PLACE OF DISPOSAL ALL EXCESS ITEMS, MATERIAL AND SUBSTANCES REMOVED. AS PART OF THIS WORK THE CONTRACTOR IS RESPONSIBLE TO FURNISH ALL DESIGN, FABRICATION, ERECTION, LABOR, EQUIPMENT, MATERIALS AND SERVICES.

14. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ALL SUPPORT OR ANCILLARY ITEMS AND WORK FOR ITEMS SUBMITTED AS EQUIVALENT TO SPECIFIED ITEMS THAT ARE REQUIRED TO PROVIDE THE SAME FUNCTIONAL AND OPERATIONAL CAPABILITIES, NEEDS AND REQUIREMENTS SHOWN AND SPECIFIED FOR THE SPECIFIED ITEM. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE TO SUBMIT ALL SUPPORT AND ANCILLARY ITEMS AND WORK WITH HIS SUBMITTAL OF THE PROPOSED EQUIVALENT ITEM AND TO SHOW THAT THE PROPOSED EQUIVALENT ITEM HAS BEEN PROPERTY COORDINATED, INTERFACED AND OTHERWISE INCORPORATED IN THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ALL SUCH SUPPORT OR ANCILLARY ITEMS AND WORK WHETHER THE NEED FOR THEM HAS BEEN DETERMINED BEFORE, DURING OR AFTER APPROVAL OR ACCEPTANCE OF THE EQUIVALENT ITEM.

15. DESCRIPTIONS NOTED ON PLAN SHEETS REFER TO THE TYPE OF EXISTING SURFACE ONLY. ALL SURFACE RESTORATION SHALL BE IN KIND, UNLESS OTHERWISE SHOWN OR SPECIFIED, SHALL MATCH EXISTING GRADE, SHAPE, THICKNESS, SIZE, QUALITY AND PERFORMANCE. SEE SPECIFICATIONS.

16. AERIAL OR OVERHEAD WIRES ARE NOT SHOWN. THE CONTRACTOR SHALL DETERMINE THE LOCATION OF ALL AERIAL OR OVERHEAD WIRES THAT WILL AFFECT THE WORK AND SHALL COORDINATE TEMPORARY REMOVAL OR RELOCATION OF ALL AERIAL OR OVERHEAD WIRES WITH THE AGENCY OR OWNER OF SUCH WIRES AS NECESSARY.

17. THE CONTRACTOR SHALL PROVIDE AT LEAST 48 HOURS NOTICE TO ALL THE VARIOUS PRIVATE AND MUNICIPAL AGENCIES IN ORDER TO PERMIT THE LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES IN ADVANCE OF CONSTRUCTION, BY CALLING MISS UTILITY (1-800-552-7001) OR, IF NECESSARY, BY CONTACTING THE AGENCIES INDIVIDUALLY.

18. WHEN ABBREVIATED, "NOT TO SCALE" IS DENOTED N.T.S.

19. SECTIONS CUT ON ONE SHEET AND SHOWN ON ANOTHER SHEET ARE IDENTIFIED WITH A FRACTION. THE NUMERATOR OF THE FRACTION IS THE SECTION NUMBER AND THE DENOMINATOR IS THE SHEET NUMBER ON WHICH THE SECTION IS CUT OR SHOWN. WHERE SECTIONS ARE CUT AND SHOWN ON THE SAME SHEET, THE DENOMINATOR MAY BE OMITTED.

20. WHEREVER ANY ABANDONED CONDUITS OR PIPES ARE CUT OR BROKEN DURING CONSTRUCTION THEY SHALL BE FILLED WITH GROUT OR CLASS D CONCRETE SUITABLE BULKHEADS, AS DETERMINED BY THE ENGINEER. GROUT, CONCRETE OR BULKHEADS SHALL BE INSTALLED SO THAT NO MOVEMENT OR LOSS OF GROUND OR BACKFILL MATERIAL SHALL OCCUR.

21. DIMENSIONS NOTED BY A DOUBLE ASTERISK (**) SHALL BE CHECKED BY THE CONTRACTOR BY ACTUAL FIELD MEASUREMENTS AND DIMENSIONS AND CONSTRUCTION ADJUSTED TO FIT NEW CONSTRUCTION TO ACTUAL LOCATIONS OF EXISTING CONSTRUCTION AS SHOWN AND REQUIRED.

22. IF THERE IS DISAGREEMENT IN WORK SHOWN OR SPECIFIED SUCH DISAGREEMENT SHALL BE RESOLVED BY APPLYING THE PRECEDENCE IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE THE WORK NEEDED TO SATISFY FUNCTIONAL, CONTROL AND INTERFACING REQUIREMENTS AND PROVIDE TROUBLE-FREE OPERATING INSTALLATION UNDER THE PRECEDENCE.

23. IN COMPLYING WITH ALL RESPONSIBILITIES AND REQUIREMENTS UNDER THESE GENERAL NOTES, THE CONTRACTOR SHALL PROVIDE ALL DESIGNS, LABOR, EQUIPMENT AND SERVICES NEEDED FOR SUCH COMPLIANCE.

24. THE CONTRACTOR SHALL LIMIT HIS ACCESS TO THE WORK FROM APPROVED PUBLIC RIGHTS-OF-WAY UNLESS HE OBTAINS HIS OWN APPROVALS FOR ALTERNATIVE ACCESS. IF THE CONTRACTOR OBTAINS ALTERNATE ACCESS LOCATIONS, DOCUMENTATION SHOWING APPROVAL FOR USE OF THESE LOCATIONS SHALL BE SUBMITTED TO THE CONSTRUCTION MANAGER PRIOR TO USE OF ACCESS.

25. THE CONTRACTOR SHALL LIMIT ALL CONSTRUCTION OPERATIONS TO WITHIN PUBLIC RIGHTS-OF-WAY AND THE LIMITS OF CONSTRUCTION SHOWN. IF ADDITIONAL TEMPORARY CONSTRUCTION AREA OR EASEMENTS ARE OBTAINED BY THE CONTRACTOR, THE LOCATIONS OF THESE EASEMENTS SHALL BE SUBMITTED TO THE CONSTRUCTION MANAGER PRIOR TO USE BY THE CONTRACTOR.

26. THE CONTRACTOR IS CAUTIONED THAT ACCESS TO SOME AREAS OF WORK IS LIMITED. THE CONTRACTOR SHALL INSPECT THE SITE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND SHALL PROVIDE ANY AND ALL EQUIPMENT REQUIRED TO PERFORM THE WORK. THE CONTRACTOR SHALL SUBMIT STRUCTURAL LOAD CALCULATIONS AND WORKING DRAWINGS PREPARED BY A REGISTERED PROFESSIONAL ENGINEER IN THE COMMONWEALTH OF VIRGINIA FOR PRIOR APPROVAL SHOWING ALL CONSTRUCTION LOADS ON EXISTING STRUCTURES AND FACILITIES AND SHALL DEMONSTRATE TO THE SATISFACTION OF THE ENGINEER THAT THE CAPACITY OF EXISTING STRUCTURES AND FACILITIES WILL NOT BE EXCEEDED BY ANY LOAD DEVELOPED AS PART OF CARRYING OUT THE WORK.

27. PIPELINES ARE SHOWN IN PROFILE BASED ON INTERNAL DIAMETER. OUTER DIAMETER PIPELINES WILL DEPEND ON PIPE MATERIAL USED.

28. THE CONTRACTOR SHALL NOT ALLOW ANY WATER TO ENTER EXISTING SEWER SYSTEMS AS A RESULT OF HIS OPERATIONS WITHOUT THE PRIOR WRITTEN APPROVAL OF THE ENGINEER.

29. ALL WORK AND COSTS ASSOCIATED WITH COMPLIANCE WITH THESE GENERAL NOTES SHALL BE INCLUDED IN THE PRICES BID FOR THE VARIOUS CLASSIFIED UNIT PRICE AND LUMP SUM CONTACT ITEMS AND NO SEPARATE PAYMENT WILL BE MADE THEREFOR.

30. THE CONTRACTOR SHALL NOTE THAT THE WORK UNDER THIS CONTRACT IS LOCATED WITHIN THE 100 YEAR FLOODPLAIN.

31. THE CONTRACTOR SHALL NOT ALLOW ANY TREES TO BE CUT DOWN OR REMOVED WITHOUT THE WRITTEN APPROVAL OF THE CITY OF RICHMOND.

GENERAL DEMOLITION NOTES:

1. UNLESS NOTED OTHERWISE, THESE NOTES APPLY TO ALL DEMOLITION SHOWN ON THE 'C' DRAWINGS.

2. CUT AND REMOVE EXISTING PIPING AT THE LIMITS REQUIRED FOR CONSTRUCTION WORK SHOWN ON SUBSEQUENT INSTALLATION DRAWINGS.

PIPING SERVICE ABBREVIATIONS

C	CENTRATE	PA	PROCESS AIR
CD	CONDENSATE DRAIN	PD	PROCESS DRAIN
CVT	CENTRATE VENT	PS	PRIMARY SLUDGE
CTS	CENTRIFUGE THICKENED SLUDGE	PSC	PRIMARY SCUM
CSC	CONCENTRATED SCUM	PW	PLANT WATER
CW	CITY WATER	RAS	RETURN ACTIVATED SLUDGE
D	DRAIN	RCY	RECYCLE
DS	DIGESTED SLUDGE	SAN	SANITARY
DW	DILUTION WATER	SCTU	SCUM TANK UNDERFLOW
FA	FOUL AIR	SD	STORM DRAIN
FF	FERMENTER FEED	SG	SLUDGE GAS
FS	FERMENTED SLUDGE	SPD	SUMP PUMP DISCHARGE
GTO	GRAVITY THICKENER OVERFLOW	SPW	SPRAY WATER
GTS	GRAVITY THICKENED SLUDGE	SSC	SECONDARY SCUM
HW	HOT WATER	STM	STORMWATER
HW	HOT SLUDGE	TS	THICKENED SLUDGE
HMS	HOT MIXED SLUDGE	UE	UNDERGROUND ELECTRIC
MS	MIXED SLUDGE		

SURVEY NOTES:

1. TOPOGRAPHIC DATA SHOWN ON THESE PLANS IS FOR THE INFORMATION OF THE CONTRACTOR. THE CONTRACTOR SHALL MAKE SUCH ADDITIONAL INVESTIGATIONS AS REQUIRED TO ACQUAINT THEMSELVES ADEQUATELY WITH THE SITE'S TOPOGRAPHY AND SUBSURFACE CONDITIONS FOR THE PREPARATION OF THEIR BID AND FOR THE SUCCESSFUL COMPLETION OF THEIR WORK.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SURVEY REQUIREMENTS OF THIS PROJECT AND SHALL USE A LAND SURVEYOR LICENSED IN THE COMMONWEALTH OF VIRGINA.

3. THE BASE SURVEY INFORMATION FOR THIS SITE WAS COLLECTED BY ROUSE-SIRINE ASSOCIATES, LTD ON MAY 21, 2024; SEPTEMBER 23-24, 2024; AND NOVEMBER 22, 2024. SITE CONDITIONS MAY HAVE CHANGED FROM THOSE SHOWN IN THESE DRAWINGS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING.

4. LIMITED UTILITIES WERE LOCATED IN CONJUNCTION WITH THE REFERENCED SURVEY. UNDERGROUND UTILITIES SHOWN HEREON ARE BASED ON QUALITY LEVEL 'B' MARKINGS AND RECORD DRAWINGS MARKED BY ROUSE-SIRINE ASSOCIATES, LTD. UTILITY SIZES SHOWN ARE BASED ON FIELD OBSERVATIONS AND RECORD DRAWINGS. NON-GRAVITY UTILITY LINES AND NON-GRAVITY PIPE SIZES SHOWN ARE APPROXIMATE IN NATURE. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF ALL UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION.

5. SURVEY HORIZONTAL CONTROL IS BASED ON VIRGINIA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 1983/1983 HARN. SURVEY VERTICAL CONTROL IS BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). CITY OF RICHMOND SURVEY CONTROL STATION #36 (EL. 20.6') WAS UTILIZED AS THE CONTROL POINT FOR THIS SURVEY.

LIST OF ABBREVIATIONS

APPROX	APPROXIMATE
AVG	AVERAGE
BF	BLIND FLANGE
B/W	BACKWASH
BOD	BIOCHEMICAL OXYGEN DEMAND
CC	CONTROL CENTER
CI	CAST IRON
CL	CENTERLINE
CO	CLEANOUT
CONC	CONCRETE
CONT	CONTINUOUS
CSO	COMBINED SEWER OVERFLOW
CW	CITY WATER
CY	CUBIC YARD
DI	DUCTILE IRON
DIA	DIAMETER
DWG	DRAWING
DPU	DEPARTMENT OF PUBLIC UTILITIES
EA	EACH
EL	ELEVATION
EW	EFFLUENT WATER
EWP	EFFLUENT WATER PUMP
FD	FLOOR DRAIN
FE	FLOW METER (ELEMENT)
FL	FLOOR
HP	HIGH POINT
ID	INSIDE DIAMETER
INV	INVERT
LAT	LATERAL
LE	LIQUID LEVEL SWITCH (ELEMENT)
LF	LINEAR FOOT
LOC	LOCATION
LP	LOW POINT
MAX	MAXIMUM
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MIN	MINIMUM
MJ	MECHANICAL JOINT
NPT	NATIONAL PIPE THREAD
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
PA	PIPE ANCHOR
PE	PLAIN END
PEST	PLIMARY EFFLUENT STORAGE TANK
PEW	PLANT EFFLUENT WATER
PH	PIPE HANGER
PS	PIPE SUPPORT
R	RADIUS
RAS	RETURN ACITIVATED SLUDGE
RCP	REINFORCED CONCRETE PIPE
SAN	SANITARY
SF	SQUARE FOOT
SG	SLUICE GATE
SLG	SLIDE GATE
SP	SUMP PUMP
SPD	SUMP PUMP DISCHARGE
SS	STAINLESS STEEL
ST	STORM DRAIN
STL	STEEL
TYP	TYPICAL
TSS	TOTAL SUSPENDED SOLIDS
UV	ULTRAVIOLET
UVT	ULTRAVIOLET TRANSMITTANCE
V	VENT
VT	VITRIFIED CLAY
W /	WITH
WWTP	WASTEWATER TREATMENT PLANT

Brown AND Caldwell
3454 West Clay Street
Richmond, VA 23230

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90% DESIGN

CITY OF RICHMOND ESTABLISHED 1737

WASTEWATER TREATMENT PLANT BIOSOLIDS AND GRIT STORAGE PADS UPGRADES

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: A. HALL
DRAWN: J. SHERIDAN
CHECKED: A. HALL
CHECKED: T. PADDEN
APPROVED: T. PADDEN

FILENAME
190651-G-002.dwg
BC PROJECT NUMBER
190651 & 196366
CLIENT PROJECT NUMBER
105614 & 109212

CIVIL

GENERAL NOTES AND ABBREVIATIONS

DRAWING NUMBER
G-002

Path: C:\BCPWD3717142 FILENAME: 190651-G-002.DWG PLOT DATE: 4/24/2025 11:17 AM CAD USER: JIM SHERIDAN

DCR 19 MINIMUM STANDARDS

(19) SOIL STABILIZATION

- PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE.
- TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 14 DAYS.
- PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.

(1) SOIL STOCKPILE STABILIZATION

DURING CONSTRUCTION OF THE PROJECT, SOIL STOCK PILES AND BORROW AREAS SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE APPLICANT IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS BORROW AREAS AND SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.

(2) PERMANENT STABILIZATION

A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT IS:

- UNIFORM
- MATURE ENOUGH TO SURVIVE
- WILL INHIBIT EROSION

(1) SEDIMENT BASINS & TRAPS

SEDIMENT BASINS AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND-DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE.

(2) STABILIZATION OF EARTHEN STRUCTURES

STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.

(3) SEDIMENT TRAPS & SEDIMENT BASINS

SEDIMENT TRAPS AND SEDIMENT BASINS SHALL BE DESIGNED AND CONSTRUCTED BASED UP THE TOTAL DRAINAGE AREA TO BE SERVED BY THE TRAP OR BASIN AS FOLLOWS:

SEDIMENT TRAPS:

- ONLY CONTROL DRAINAGE AREAS LESS THAN THREE ACRES
- MINIMUM STORAGE CAPACITY OF 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA

SEDIMENT BASINS:

- CONTROL DRAINAGE AREAS GREATER THAN OR EQUAL TO THREE ACRES
- MINIMUM STORAGE CAPACITY OF 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA
- THE OUTFALL SYSTEM SHALL, AT A MINIMUM, MAINTAIN THE STRUCTURAL INTEGRITY OF THE BASIN DURING A TWENTY-FIVE YEAR STORM OF 24-HOUR DURATION

(1) CUT AND FILL SLOPES DESIGN & CONSTRUCTION

CUT AND FILL SLOPES SHALL BE DESIGNED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION. SLOPES THAT ARE FOUND TO BE ERODING EXCESSIVELY WITHIN ONE YEAR OF PERMANENT STABILIZATION SHALL BE PROVIDED WITH ADDITIONAL SLOPE STABILIZING MEASURES UNTIL THE PROBLEM IS CORRECTED.

(2) CONCENTRATED RUNOFF DOWN SLOPES

CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME OR SLOPE DRAIN STRUCTURE.

(3) SLOPE MAINTENANCE

WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.

(4) STORM SEWER INLET PROTECTION

ALL STORM SEWER INLETS THAT ARE MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT-LADEN WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.

(5) STORMWATER CONVEYANCE PROTECTION

BEFORE NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNELS OR PIPES ARE MADE OPERATIONAL, ADEQUATE OUTLET PROTECTION AND ANY REQUIRED TEMPORARY OR PERMANENT CHANNEL LINING SHALL BE INSTALLED IN BOTH THE CONVEYANCE CHANNEL AND RECEIVING CHANNEL.

(6) WORK IN LIVE WATERCOURSE

WHEN WORK IN A LIVE WATERCOURSE IS PERFORMED:

- PRECAUTIONS SHALL BE TAKEN TO MINIMIZE ENCROACHMENT, CONTROL SEDIMENT TRANSPORT AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION
- NONERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS
- EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NONERODIBLE COVER MATERIALS

(1) CROSSING LIVE WATERCOURSE

WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION VEHICLES MORE THAN TWICE IN ANY SIX-MONTH PERIOD, A TEMPORARY VEHICULAR STREAM CROSSING CONSTRUCTED OF NONERODIBLE MATERIAL SHALL BE PROVIDED.

(2) REGULATION OF WATERCOURSE CROSSING

ALL APPLICABLE FEDERAL, STATE AND LOCAL REQUIREMENTS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET.

(3) WATERCOURSE BANK STABILIZATION

THE BED AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.

(4) UNDERGROUND UTILITY LINE INSTALLATION

UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:

- NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME
- EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES
- EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY
- MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION
- RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THIS CHAPTER
- APPLICABLE SAFETY REQUIREMENTS SHALL BE COMPLIED WITH

(1) VEHICULAR SEDIMENT TRACKING

WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED OR PUBLIC ROADS:

- PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY VEHICULAR TRACKING ONTO THE PAVED SURFACE
- WHERE SEDIMENT IS TRANSPORTED ONTO A PAVED OR PUBLIC ROAD SURFACE, THE ROAD SURFACE SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY
- SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER
- THIS PROVISION SHALL APPLY TO INDIVIDUAL DEVELOPMENT LOTS AS WELL AS TO LARGER LAND-DISTURBING ACTIVITIES

(1) REMOVAL OF TEMPORARY MEASURES

ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE VESCP AUTHORITY. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.

(2) STORMWATER MANAGEMENT

PROPERTIES AND WATERWAYS DOWNSTREAM FROM DEVELOPMENT SITES SHALL BE PROTECTED FROM SEDIMENT DEPOSITION, EROSION, AND DAMAGE DUE TO INCREASES IN VOLUME, VELOCITY, AND PEAK FLOW RATE OF STORMWATER RUNOFF FROM THE STATED FREQUENCY STORM OF 24-HOUR DURATION IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND CRITERIA FOUND IN VESC REGULATION 4VAC50-30-40 MS-19 PARTS A-K.

- CONCENTRATED STORMWATER RUNOFF LEAVING A DEVELOPMENT SITE SHALL BE DISCHARGED DIRECTLY INTO AN ADEQUATE NATURAL OR MAN-MADE RECEIVING CHANNEL, PIPE, OR STORM SEWER SYSTEM. FOR THOSE SITES WHERE RUNOFF IS DISCHARGED INTO A PIPE OR PIPE SYSTEM, DOWNSTREAM STABILITY ANALYSES AT THE OUTFALL OF THE PIPE OR PIPE SYSTEM SHALL BE PERFORMED.

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90% DESIGN

CITY OF RICHMOND ESTABLISHED 1737

WASTEWATER TREATMENT PLANT BIOSOLIDS AND GRIT STORAGE PADS UPGRADES

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

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FILENAME
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CLIENT PROJECT NUMBER
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CIVIL

EROSION AND SEDIMENTATION CONTROL NOTES

DRAWING NUMBER
G-003

EROSION AND SEDIMENT CONTROL NARRATIVE

1. PROJECT DESCRIPTION

THE PURPOSE OF THIS PROJECT IS TO RELOCATE THE EXISTING BIOSOLIDS PAD TO A MORE ACCESSIBLE AREA OF THE SITE AND REPLACE IT WITH A COVERED CONCRETE PAD. THE GRIT PAD WILL ALSO BE REPLACED WITH A COVERED CONCRETE PAD AT ITS EXISTING LOCATION. THE CONTRACT CONSISTS OF A NEW CONCRETE PAD, DRAINAGE SYSTEM, YARD HYDRANTS, PLANT WATER CONNECTIONS, ELECTRICAL CONNECTIONS, ELECTRICAL CONNECTIONS FOR FUTURE LIGHTING AND SOLAR PANELS, A STRUCTURAL FOUNDATION, METAL ROOFING SYSTEM, AND CONCRETE PUSH WALLS.
STORMWATER RUNOFF COLLECTED ON THE BIOSOLIDS PAD ROOF WILL BE DIRECTED INTO A SWALE WHICH DRAINS INTO THE COMBINED SEWER SYSTEM AND DISCHARGES TO THE HEAD OF THE WWTP. STORMWATER RUNOFF FROM THE GRIT PAD ROOF WILL BE COLLECTED BY GUTTERS AND DOWNSPOUTS AND REDIRECTED INTO THE COMBINED SEWER SYSTEM TO DRAIN TO THE HEAD OF THE WWTP. THIS WILL KEEP CONTAMINATED RUNOFF FROM REACHING THE CITY'S MUNICIPAL SEPARATE STORMWATER SYSTEM.

2. EXISTING SITE CONDITIONS

THE PROJECT SITE IS LOCATED WITHIN THE EXISTING CITY OF RICHMOND WASTEWATER TREATMENT PLANT (WWTP). THE BIOSOLIDS PAD WILL BE LOCATED IN AN OPEN AREA THAT IS CURRENTLY BEING USED FOR TEMPORARY DEWATERED BIOSOLIDS STORAGE. THE TERRAIN IS CHARACTERIZED AS FLAT, COMPRISED OF OPEN GRASSY AREAS WITH FEW TREES AND A GRAVEL ROADWAY. THE GRIT PAD WILL BE LOCATED IN THE LOCATION OF THE EXISTING GRIT PAD. THE TERRAIN IS CHARACTERIZED AS FLAT, COMPRISED MOSTLY OF IMPERVIOUS CONCRETE SURFACES WITH AN ELEVATED GRASSY HILL TO THE SOUTH. THERE ARE NO WETLANDS WITHIN THE PROJECT LIMITS.

3. ADJACENT AREAS

THE WWTP IS BOUNDED ON THE WEST BY I-95, ON THE EAST AND NORTH BY THE JAMES RIVER, AND TO THE SOUTH BY THE COLONIAL PIPELINE CO, AND THE VULCAN LANDS INC. PROPERTIES. THE CITY CONSTRUCTED AN INTERCEPTOR SYSTEM, ALONG THE BANKS OF THE JAMES RIVER AND ITS TRIBUTARIES TO CONVEY THE SANITARY SEWAGE TO THE WWTP. THE EXISTING WWTP WAS CONSTRUCTED IN DIFFERENT PHASES STARTING FROM 1955. THE PRIMARY TREATMENT FACILITIES WERE COMPLETED IN 1956 AND WERE UPGRADED THROUGHOUT THE 1960'S TO INCLUDE SOLIDS HANDLING FACILITIES AND SLUDGE DIGESTERS. IN 1973, THE WWTP WAS UPGRADED TO SECONDARY TREATMENT. IN THE EARLY 1990'S THE EFFLUENT FILTERS WERE ADDED AT THE WWTP TO MEET MORE STRINGENT BIOCHEMICAL OXYGEN DEMAND (BOD) AND TOTAL SUSPENDED SOLIDS (TSS) EFFLUENT PERMIT LIMITS.

4. OFF-SITE AREAS

ALL CONSTRUCTION ACTIVITIES UNDER THE NEW CONTRACTS WILL BE CONDUCTED WITHIN THE BOUNDARIES OF THE WWTP SITE; HENCE IT IS ANTICIPATED THAT THERE WILL BE NO DISTURBANCES TO THE ADJACENT AREAS AS A RESULT OF THE CONSTRUCTION. ANY CONSTRUCTION ACTIVITIES WITHIN THE OFFSITE AREAS WILL REQUIRE SEPARATE PERMITS. ALL SPOILS WILL BE TAKEN TO A LICENSED LANDFILL.

5. SOILS

BORINGS HAVE BEEN PERFORMED THROUGHOUT THE CONSTRUCTION OF THE WWTP. SPECIFIC BORINGS WERE MADE FOR THIS PROJECT AND THE DATA HAS BEEN COLLECTED AND REVIEWED.

THE CITY OF RICHMOND GIS DATA IDENTIFIES THE FIVE SOIL TYPES ON-SITE AS CHEWACLA LOAD (K=0.28-0.49), NAWNEY SILT LOAM (K=0.32), RIVERVIEW SILT LOAM (K=0.32), UDORTHENTS LOAMY BORROW PITS (K=N/A), AND UDORTHENTS-DUMPS COMPLEX (K=N/A). THESE SOILS HAVE AN ERODIBILITY FACTOR (K) RANGE OF 0.28 TO 0.49. THE VIRGINIA SEDIMENT AND EROSION CONTROL HANDBOOK (LATEST EDITION) DOES NOT ATTRIBUTE AN ERODIBILITY (K) VALUE TO UDORTHENTS LOAMY BORROW PITS OR UDORTHENTS-DUMPS COMPLEX.

6. CRITICAL AREAS

WHILE LOCATED WITHIN THE CHESAPEAKE BAY RESOURCE MANAGEMENT AREA (RMA) OF THE JAMES RIVER, THERE ARE NO CRITICAL AREAS WITHIN THE LIMITS OF DISTURBANCE FOR THIS PROJECT. THE PROJECT WILL NOT HAVE ADVERSE IMPACTS OF NONPOINT SOURCE POLLUTION ON TOPOGRAPHY, SOILS, ENVIRONMENTALLY SENSITIVE AREA, HYDROLOGY, OR THE QUALITY OF STATE WATERS. THE UPGRADES TO THE WASTEWATER TREATMENT PLANT WILL IMPROVE THE WATER QUALITY OF THE JAMES RIVER. THE PROJECT IS NOT LOCATED IN AN AREA OF HISTORIC OR CULTURAL IMPORTANCE. NO ENDANGERED OR THREATENED SPECIES ARE KNOW TO LIVE IN THE AREA AFFECTED BY THE PROJECT ACTIVITY. NO WETLANDS WILL BE DISTURBED DURING CONSTRUCTION. THE LAYDOWN AND CONSTRUCTION AREAS WILL RECEIVE ALL THE APPROPRIATE SEDIMENT AND EROSION CONTROL MEASURES. APPROPRIATE SEDIMENT AND EROSION CONTROL MEASURES WILL BE USED TO PREVENT THE DISCHARGE OF SILT AND OTHER FORMS OF WATER POLLUTION TO GOODES CREEK AND THE JAMES RIVER.

7. EROSION AND SEDIMENT CONTROL MEASURES

UNLESS OTHERWISE NOTED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (LATEST EDITION); CHAPTER 50, ARTICLE III AND ARTICLE IV OR THE CODE OF THE CITY OF RICHMOND.

8. STRUCTURAL PRACTICES

A. SAFETY FENCE; STD AND SPEC 3.01. A SAFETY FENCE SHALL BE INSTALLED WHERE REQUIRED TO LIMIT ACCESS OF THE SITE TO THE PUBLIC.

B. TEMPORARY CONSTRUCTION ENTRANCE: STD. AND SPEC. 3.02. A TEMPORARY CONSTRUCTION ENTRANCE SHALL BE INSTALLED WHERE REQUIRED.

C. CONSTRUCTION ROAD STABILIZATION: ST. AND SPEC. 3.03. TEMPORARY CONSTRUCTION ROADS SHALL BE STABILIZED AS REQUIRED TO PREVENT EROSION AND SEDIMENTATION.

D. SILT FENCE: STD. AND SPEC. 3.05. SILT FENCE SHALL BE PLACED AROUND THE SITE TO INTERCEPT SEDIMENT AS SHOWN ON THE EROSION CONTROL PLAN.

E. STORM DRAIN INLET PROTECTION; STD. AND SPEC. 3.07. INLET PROTECTION SHALL BE INSTALLED WHERE SHOWN ON THE EROSION AND SEDIMENT CONTROL PLAN.

F. DEWATERING STRUCTURE: STD. AND SPEC. 3.26. DEWATERING STRUCTURES SHALL DISCHARGE IN A MANNER WHICH WILL NOT ADVERSELY AFFECT FLOWING STREAMS, DRAINAGE SYSTEMS OR OFF-SITE PROPERTY.

G. DUST CONTROL: STD. AND SPEC. 3.39. DUST CONTROL MEASURES TO PREVENT SURFACE AND AIR MOVEMENT OF DUST FROM EXPOSED SOIL SURFACES AND REDUCE THE AIRBORNE SUBSTANCES WHICH MAY PRESENT HEALTH HAZARDS, TRAFFIC SAFETY PROBLEMS OR HARM ANIMAL OR PLAN LIFE WILL BE EXERCISED THROUGHOUT THE PROJECT DURATION.

H. WHERE CONSISTENT WITH SAFETY AND SPACE CONSIDERATIONS, EXCAVATED MATERIAL IS TO BE PLACED ON THE UPHILL SIDE OF EXCAVATIONS.

9. VEGETATION PRACTICES

TEMPORARY SEEDING SHALL BE IN ACCORDANCE WITH C-SSM-09 UNDER CHAPTER 7 OF THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK. ALL AREAS ROUGH-GRADED DURING THE INITIAL PHASES OF CONSTRUCTION SHALL BE SEEDED WITH FAST GERMINATING, TEMPORARY VEGETATION WITH 14 DAYS FOLLOWING GRADING WHEN EXPOSED SOILS ARE NOT TO BE PERMANENTLY STABILIZED WITHIN 30 DAYS. SEEDING MIX OF GERMAN MILLET (SETARIA ITALICA) AT A RATE OF 50 LBS/ACRE WILL BE APPLIED AS TEMPORARY SEEDING FROM MAY 1 THROUGH AUGUST 31. SEEDING MIX OF 60/40 MIX OF ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM) AND CEREAL (WINTER) RYE (SECALE CEREALE) AT A RATE OF 100 LBS/ACRE FROM SEPTEMBER 1 THROUGH FEBRUARY 15. SEEDING MIX OF ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM) AT A RATE OF 100 LBS PER ACRE FROM FEBRUARY 16 THROUGH APRIL 30.

10. PERMANENT STABILIZATION

ALL AREAS ON THE SITE WHICH ARE DESIGNATED FOR PAVING SHALL BE STABILIZED WITH GRAVEL IMMEDIATELY AFTER GRADING. ALL OTHER AREAS DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY FOLLOWING FINISH GRADING. GRADED AREAS SHALL BE FERTILIZED, SEEDED, AND MULCHED ACCORDING TO C-SSM-10 UNDER CHAPTER 7 OF THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK AND THE CONTRACT DOCUMENTS. SEEDING MIX OF 90% K-31 FESCUE, 5% RED TOP GRASS, AND 5% IMPROVED KENTUCKY BLUEGRASS. MIXTURE APPLIED AT A RATE OF 200 LBS/ACRE. IN ADDITION, ALL AREAS DISTURBED WITHIN THE RPA WILL BE STABILIZED AND MITIGATED IN ACCORDANCE TO THE GUIDANCE PROVIDED IN THE DCR RIPARIAN BUFFERS AND MODIFICATION AND MITIGATION GUIDANCE MANUAL (LATEST EDITION).

11. PHASING OF LAND DISTURBING ACTIVITIES

A. SILT FENCES, SAFETY FENCES, AND ALL OTHER PROJECT SPECIFIC EROSION AND SEDIMENT CONTROL TEMPORARY IMPLEMENTS SHALL BE IN PLACE BEFORE ANY CONSTRUCTION BEGINS.

B. ALL EROSION AND SEDIMENT MEASURES SHALL BE MAINTAINED DURING DEMOLITION.

C. CONSTRUCTION SHALL BE SEQUENCED SO THAT EXCAVATION OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.

D. TEMPORARY SEEDING SHALL OCCUR WITHIN 7 DAYS AFTER GRADING UNTIL FINAL GRADING IS ACHIEVED.

E. PERMANENT STABILIZATION OF THE SITE SHALL OCCUR IMMEDIATELY FOLLOWING FINAL GRADING AND FINAL CONSTRUCTION OPERATIONS.

12. REMOVAL OF TEMPORARY MEASURES

ALL TEMPORARY EROSIONS AND SEDIMENT CONTROL MEASURES SHALL BE DISPOSED OF WITHIN 30 DAYS AFTER THE FINAL SITE STABILIZATION IS ACHIEVED OR AFTER TEMPORARY MEASURES ARE NO LONGER NEEDED. TRAPPED SEDIMENT AND OTHER DISTURBED SOIL AREAS RESULTING FROM THE DISPOSAL OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED.

13. MAINTENANCE

ALL INSTALLED EROSION AND SEDIMENT CONTROL MEASURES MUST BE IN ACCORDANCE WITH REQUIREMENTS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (LATEST EDITION). ALL EROSION AND SEDIMENT CONTROL MEASURES MUST BE CHECKED DAILY AND AFTER EACH SIGNIFICANT RAINFALL. ANY DAMAGE CAUSED BY RAINFALL OR CONSTRUCTION ACTIVITIES MUST BE REPAIRED BY THE CLOSE OF THE DAY. THE FOLLOWING ITEMS MUST BE CHECKED IN PARTICULAR:

A. ALL SEEDED AREAS MUST BE CHECKED TO SEE THAT A GOOD STAND IS MAINTAINED. THE AREA MUST BE RESEEDED AS NEEDED.

B. SILT FENCES SHALL BE CHECKED DAILY AND AFTER EACH RAIN FOR UNDERMINING. REMOVE AND DISPOSE OF ANY ACCUMULATED SEDIMENT.

C. NO AREA SHALL BE LEFT DENUDED FOR A PERIOD LONGER THAN 14 DAYS EXCEPT THAT PORTION OF THE SITE IN WHICH WORK WILL BE CONTINUOUS BEYOND 14 DAYS.

14. EROSION AND SEDIMENT QUANTITIES TABLE

BIOSOLIDS PAD

EROSION AND SEDIMENT CONTROL PRACTICE	QUANTITY
CONSTRUCTION ENTRANCE	AS REQUIRED
SILT FENCE	1,420 LF
INLET PROTECTION	1 EA
TEMPORARY SEEDING	AS REQUIRED
PERMANENT SEEDING	AS REQUIRED

GRIT PAD

EROSION AND SEDIMENT CONTROL PRACTICE	QUANTITY
CONSTRUCTION ENTRANCE	AS REQUIRED
SILT FENCE	740 LF
INLET PROTECTION	1 EA
TEMPORARY SEEDING	AS REQUIRED
PERMANENT SEEDING	AS REQUIRED

GENERAL NOTES

1. ALL EROSION AND SEDIMENT CONTROL MEASURES MUST BE PERFORMED IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL LAW (TITLE 10.1, CHAPTER 5, ARTICLE 4 OF THE CODE OF VIRGINIA).

2. ALL REGULATED LAND-DISTURBING ACTIVITIES MUST COMPLY WITH THE 19 MINIMUM STANDARDS SPECIFIED IN SECTION 4VAC50-30-40 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL REGULATIONS THAT ARE APPLICABLE TO THE SPECIFIC PROJECT.

3. LOCATION OF TEMPORARY CONSTRUCTION ROADS SHOWN ON THE PLANS IS FOR ILLUSTRATIVE PURPOSES ONLY. TEMPORARY CONSTRUCTION ROAD MAY BE LOCATED ANYWHERE WITHIN THE CONSTRUCTION LIMITS. SEDIMENT AND EROSION MEASURES SHALL BE ADJUSTED ACCORDINGLY. SEE SPECIFICATIONS REGARDING LIMITATION ON USE OF TEMPORARY CONSTRUCTION ACCESS ROADS.

4. THE CONTRACTOR SHALL TAKE ALL MEASURES NECESSARY TO PREVENT THE DISCHARGE OF SILT, SILTED OR TURBID WATER TO THE JAMES RIVER. MEASURES MAY INCLUDE BUT ARE NOT LIMITED TO ROCK CHECK DAMS AND TEMPORARY SEDIMENT TRAP(S). MEASURES MAY BE LOCATED AS REQUIRED TO PERFORM THEIR FUNCTION AND TO ALLOW THE CONSTRUCTION OF THE WORK.

STANDARD EROSION AND SEDIMENT NOTES

1. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE A FINAL GRADE BUT WILL REMAIN, DORMANT (UNDISTURBED) FOR LONGER THAN 14 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO ARES THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.

2. EXCESS EXCAVATION DISPOSED OF OFF THE SITE SHALL BE DISPOSED OF IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.

3. EROSION AND SEDIMENT CONTROLS SHALL BE INSTALLED IN ACCORDANCE WITH VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND SHALL BE PLACED PRIOR TO OR AS THE FIRST STEP OF THE LAND DISTURBING ACTIVITY.

4. EROSION AND SEDIMENT CONTROLS SHALL BE MAINTAINED SO THAT THE SEDIMENT CARRYING RUNOFF FROM THE SITE WILL NOT ENTER STORM DRAINAGE FACILITIES.

5. EROSION AND SEDIMENT CONTROLS SHALL BE MAINTAINED UNTIL THE DISTURBED AREA IS STABILIZED.

6. PROPERTIES ADJOINING THE SITE SHALL BE KEPT CLEAN OF MUD OR SILT CARRIED FROM THE SITE BY VEHICULAR TRAFFIC OR RUNOFF.

7. THE DISPOSAL OF WASTE MATERIALS REMOVED FROM EROSION AND SEDIMENT CONTROL FACILITIES AND THE DISPOSAL OF THESE FACILITIES SHALL BE IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.

8. STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.

9. DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE APPLICANT IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.

EROSION AND SEDIMENT CONTROL LEGEND

CE	CONSTRUCTION ENTRANCE	SF — SF —	SILT FENCE
SAF	SAFETY FENCE	— RPA —	RESOURCE PROTECTION AREA
PS	PERMANENT SEEDING	— RMA —	RESOURCE MANAGEMENT AREA
TS	TEMPORARY SEEDING	— 100YR —	100-YEAR FLOODPLAIN BOUNDARY
MU	MULCHING	— LOD —	LIMITS OF DISTURBANCE
IP	INLET PROTECTION		

CITY OF RICHMOND
EROSION AND SEDIMENT CONTROL GENERAL NOTES

ES-1: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS 9 VAC25-840-40 EROSION AND SEDIMENT CONTROL REGULATIONS.

ES-2: THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRE-CONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.

ES-3: ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO, OR AS THE FIRST STEP, IN CLEARING.

ES-4: A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.

ES-5: PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.

ES-6: THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.

ES-7: ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.

ES-8: DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.

ES-9: THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

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WASTEWATER TREATMENT PLANT BIOSOLIDS AND GRIT STORAGE PADS UPGRADES

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LINE IS 2 INCHES AT FULL SIZE

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DRAWING NUMBER
G-004

Path: C:\BCPWD3717142 FILENAME: 190651-G-004.DWG PLOT DATE: 4/25/2025 12:45 PM CAD USER: JIM SHERIDAN

ASPHALT SERVICE ROAD

EXISTING BERM

GRAVEL SERVICE ROAD

SSMH #10
RIM: 15.02
INV (N) 8.50
INV (SE) 8.38
INV (S) 8.5
INV (W) 8.46

CAP PIPE
(TYP. OF 13)

BIOSOLIDS
AREA

GRAVEL SERVICE ROAD

PLUG AND SEAL EXISTING
MANHOLE AFTER EXISTING
SEWER IS REMOVED

SSMH #9
RIM: 15.33
INV (N) 9.39
INV (E) 9.05
INV (S) 9.08
INV (W) 9.12

GRAVEL SERVICE ROAD

GRAVEL

MILLING
LIMITS (1)

CONTINUE MILL AND OVERLAY
TO EXTENTS DEPICTED ON C-002

REMOVE EXISTING UNDERDRAIN PIPING SYSTEM
REFER TO SECTION THROUGH UNDERDRAIN
ON SHEET C-501 FOR FURTHER DETAIL

ASPHALT SERVICE ROAD

PLAN
SCALE: 1" = 20'

0 20' 40'
SCALE: 1" = 20'

GENERAL NOTES:

1. PRIOR TO THE START OF CONSTRUCTION THE CITY WILL REMOVE ALL BIOSOLIDS STORED WITHIN THE FOOTPRINT OF THE BIOSOLIDS STORAGE PAD AND COVER.

KEY NOTES:

1. CONTRACTOR SHALL MILL AND REPAVE ASPHALT SURFACES FOLLOWING THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AT THE BIOSOLIDS PAD AND THE GRIT PAD.

Brown AND Caldwell
3454 West Clay Street
Richmond, VA 23230

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90% DESIGN

CITY OF RICHMOND ESTABLISHED 1737

WASTEWATER TREATMENT PLANT BIOSOLIDS AND GRIT STORAGE PADS UPGRADES

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	A.HALL
DRAWN:	J. SHERIDAN
CHECKED:	A.HALL
CHECKED:	T. PADDEN
APPROVED:	T. PADDEN
FILENAME	190651-C-001.dwg
BC PROJECT NUMBER	190651 & 196366
CLIENT PROJECT NUMBER	105614 & 109212

CIVIL

EXISTING CONDITIONS / DEMOLITION BIOSOLIDS STORAGE PAD

DRAWING NUMBER
C-001

Path: C:\BCPWD3717143 FILENAME: 190651-C-001.DWG PLOT DATE: 4/24/2025 3:03 PM CAD USER: JIM SHERIDAN

CONTINUE MILL AND OVERLAY TO EXTENTS DEPICTED ON C-001

CONTRACTOR TO REGRADE AREA TO ELIMINATE PONDING AND SEND WATER TO THE NORTHEAST

EDGE OF PAVE

ASPH. SURFACE

MILLING LIMITS 2

REMOVE EXISTING CONCRETE PAD

REMOVE EXISTING INLETS AND SEWER LINE

CONC. SURFACE

REMOVE EXISTING WATER LINE

3 EDGE OF GRAVEL

GRAV. SURFACE

EDGE OF PAVE

REMOVE EXISTING WATER LINE

REMOVE EXISTING CONCRETE PAD

REMOVE EXISTING JERSEY BARRIER

REMOVE EXISTING CONCRETE PAD

CONC. JERSEY WALL

BRUSH

EOT

SSMH (DS #3 (SP PLAN)
RIM=14.06
ST. INV=10.02
(SURCHARGED)

DEMO UTILITY POLE 1

SSMH #20(PLAN)
RIM=16.93
ST. INV=1.78
INV(N)=1.91
INV(S)=1.71
INV(W)=1.90
(SURCHARGED)

2 MILLING LIMITS

APPROX. EDGE OF WOODS

T.O.B

ENC. VEGETATION

REMOVE EXISTING WALLS

CONC. WALL

DEMO LIGHT POLE 1

DEMO LIGHT POLE 1

REMOVE EXISTING WATER LINE

DITCH

PLAN
SCALE: 1" = 20'

0 20' 40'
SCALE: 1" = 20'

GENERAL NOTES:

1.

KEY NOTES:

1. REFER TO ELECTRICAL DRAWINGS FOR FURTHER DETAILS.
2. CONTRACTOR SHALL MILL AND REPAVE ASPHALT SURFACES FOLLOWING THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AT THE BIOSOLIDS PAD AND THE GRIT PAD.
3. CONTRACTOR SHALL PROTECT EXISTING WATER LINE AND YARD HYDRANT TO REMAIN DURING DEMOLITION ACTIVITIES.

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WASTEWATER TREATMENT PLANT BIOSOLIDS AND GRIT STORAGE PADS UPGRADES

REVISIONS

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LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	A. HALL
DRAWN:	J. SHERIDAN
CHECKED:	A. HALL
CHECKED:	T. PADDEN
APPROVED:	T. PADDEN

FILENAME
190651-C-002.dwg

BC PROJECT NUMBER
190651 & 196366

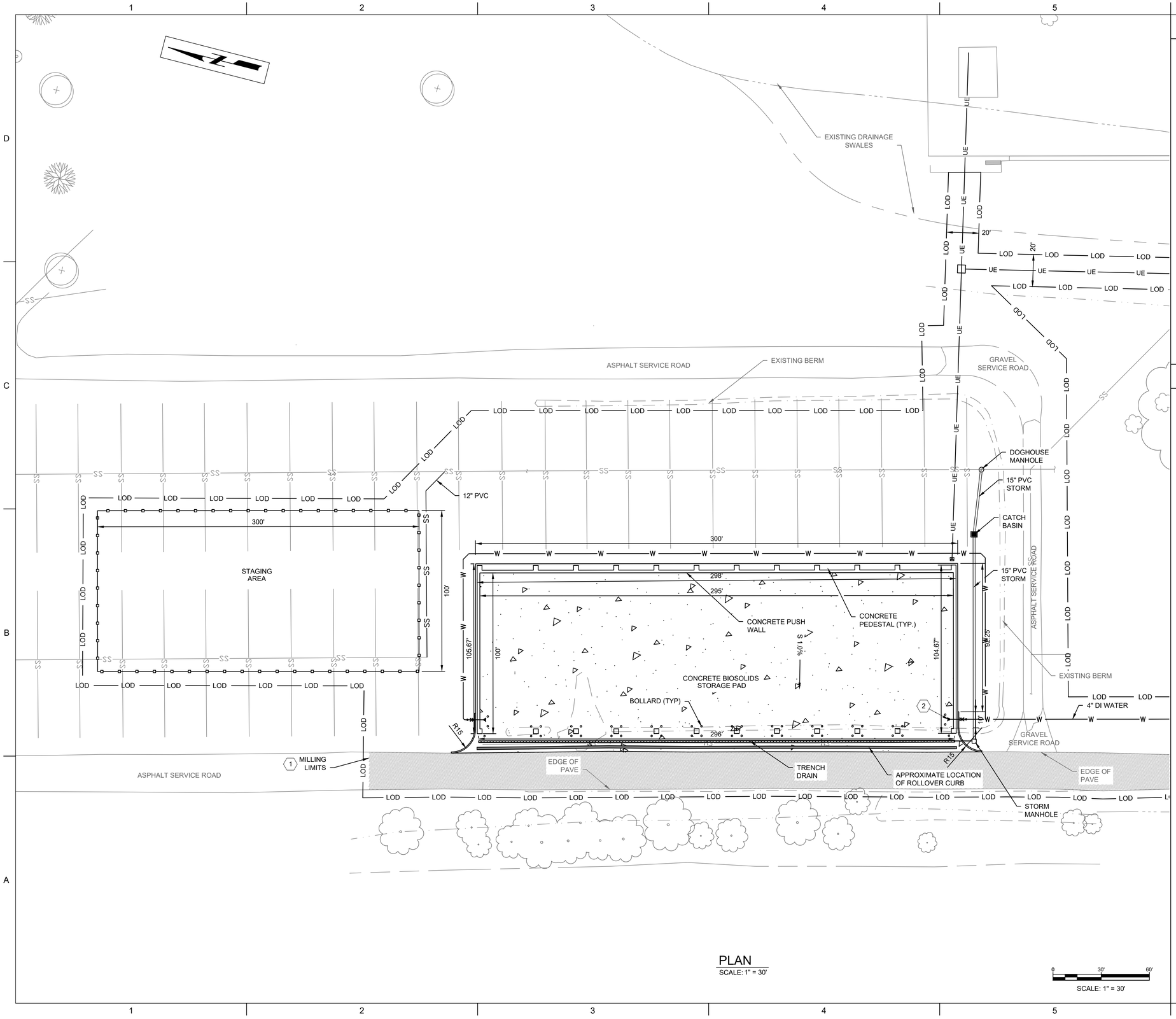
CLIENT PROJECT NUMBER
105614 & 109212

CIVIL

EXISTING CONDITIONS / DEMOLITION GRIT STORAGE PAD

DRAWING NUMBER
C-002

Path: C:\BCPW\D3717143 FILENAME: 190651-C-002.DWG PLOT DATE: 4/25/2025 1:50 PM CAD USER: JIM.SHERIDAN



PLAN
SCALE: 1" = 30'

SCALE: 1" = 30'

GENERAL NOTES:

1.

KEY NOTES:

1. CONTRACTOR SHALL MILL AND REPAVE ASPHALT SURFACES FOLLOWING THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AT THE BIOSOLIDS PAD AND THE GRIT PAD.
2. YARD HYDRANT (TYP. OF 2), SEE SHEET C-501 FOR DETAILS.

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Richmond, VA 23230

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CITY OF RICHMOND ESTABLISHED 1737

WASTEWATER TREATMENT PLANT BIOSOLIDS AND GRIT STORAGE PADS UPGRADES

REVISIONS

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DESIGNED:	A. HALL
DRAWN:	J. SHERIDAN
CHECKED:	A. HALL
CHECKED:	T. PADDEN
APPROVED:	T. PADDEN

FILENAME
190651-C-100.dwg

BC PROJECT NUMBER
190651 & 196366

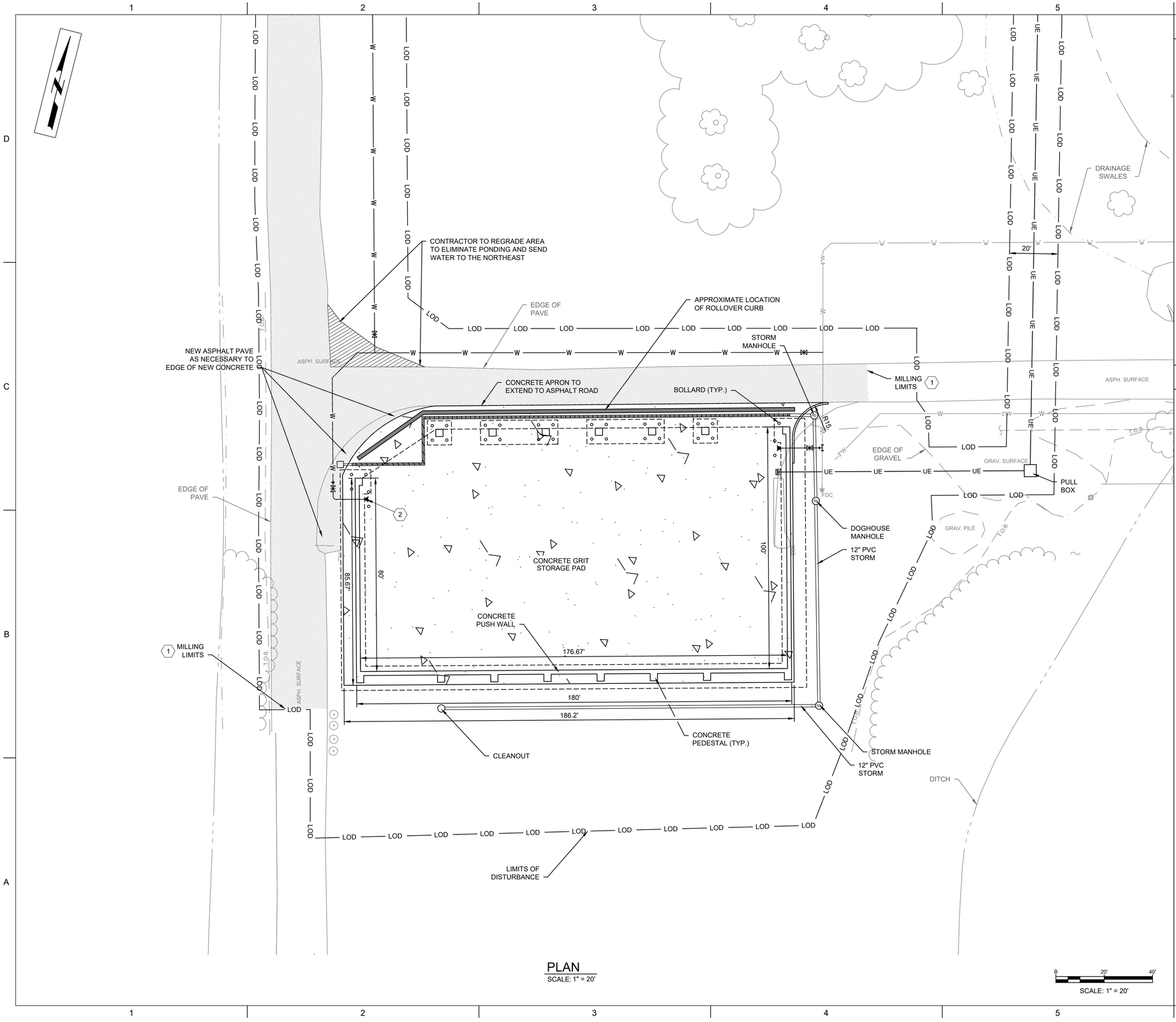
CLIENT PROJECT NUMBER
105614 & 109212

CIVIL

SITE PLAN BIOSOLIDS STORAGE PAD

DRAWING NUMBER
C-100

Path: C:\BCPWD3717143 FILENAME: 190651-C-100.DWG PLOT DATE: 4/25/2025 10:58 AM CAD USER: JIM SHERIDAN



PLAN
SCALE: 1" = 20'

SCALE: 1" = 20'

GENERAL NOTES:

1.

KEY NOTES:

1. CONTRACTOR SHALL MILL AND REPAVE ASPHALT SURFACES FOLLOWING THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AT THE BIOSOLIDS PAD AND THE GRIT PAD.
2. YARD HYDRANT (TYP. OF 2), SEE SHEET C-501 FOR DETAILS

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REVISIONS

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DRAWN:	J. SHERIDAN
CHECKED:	A. HALL
CHECKED:	T. PADDEN
APPROVED:	T. PADDEN

FILENAME
190651-C-101.dwg

BC PROJECT NUMBER
190651 & 196366

CLIENT PROJECT NUMBER
105614 & 109212

CIVIL

SITE PLAN GRIT STORAGE PAD

DRAWING NUMBER
C-101

Path: C:\BCPWD3717143 FILENAME: 190651-C-101.DWG PLOT DATE: 4/25/2025 3:33 PM CAD USER: JIM SHERIDAN

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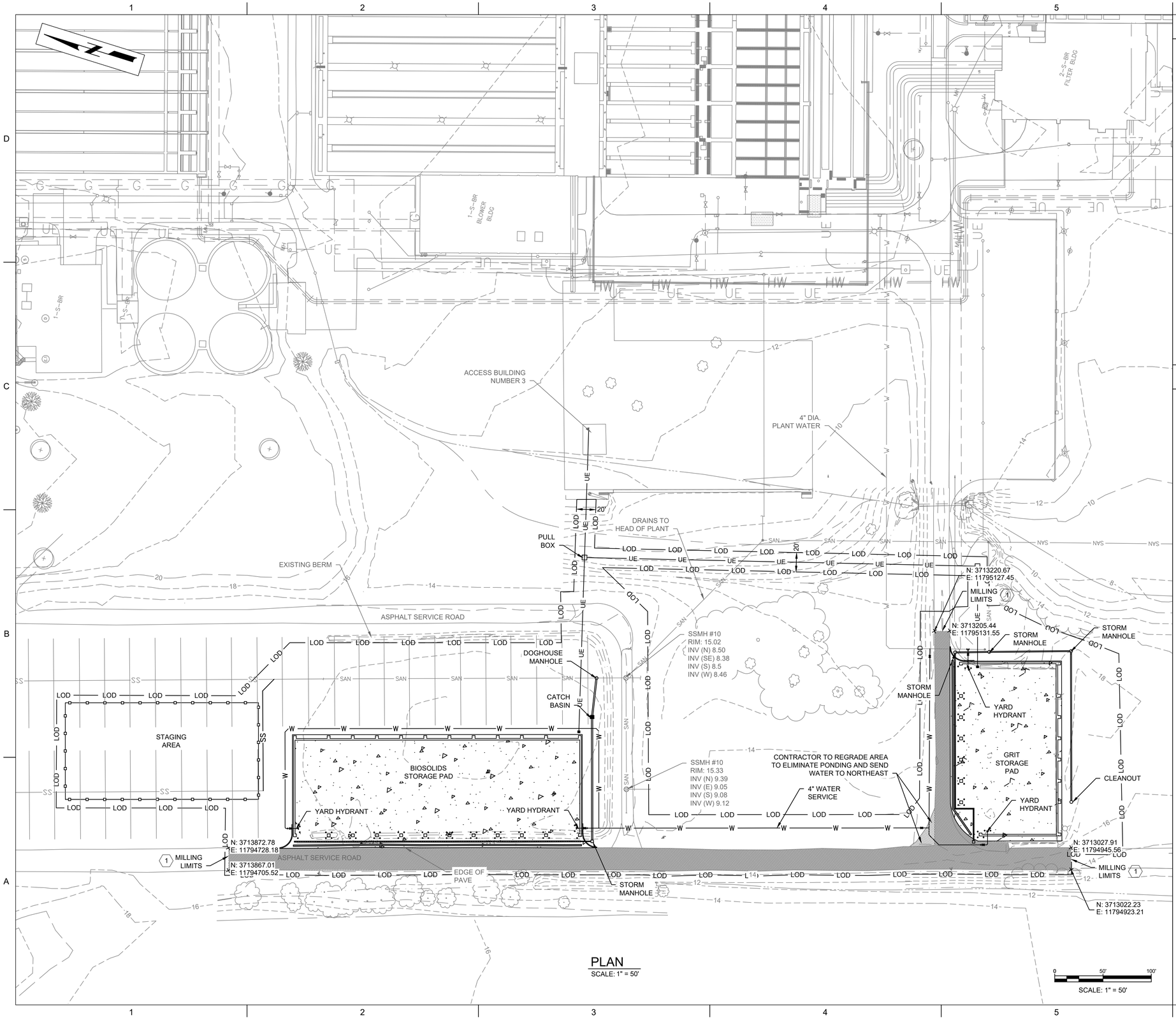

PLAN
SCALE: 1" = 50'

SCALE: 1" = 50'

GENERAL NOTES:

1.

KEY NOTES:

1. CONTRACTOR SHALL MILL AND REPAVE ASPHALT SURFACES FOLLOWING THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AT THE BIOSOLIDS PAD AND THE GRIT PAD.

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WASTEWATER TREATMENT PLANT BIOSOLIDS AND GRIT STORAGE PADS UPGRADES

REVISIONS

REV	DATE	DESCRIPTION

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DESIGNED:	A. HALL
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CHECKED:	A. HALL
CHECKED:	T. PADDEN
APPROVED:	T. PADDEN
FILENAME	190651-C-102.dwg
BC PROJECT NUMBER	190651 & 196366
CLIENT PROJECT NUMBER	105614 & 109212

CIVIL

PAVING PLAN BIOSOLIDS STORAGE PAD AND GRIT STORAGE PAD

DRAWING NUMBER
C-102

Path: C:\BCPWD\3717143 FILENAME: 190651-C-102.DWG PLOT DATE: 4/25/2025 3:17 PM CAD USER: JIM SHERIDAN

GENERAL NOTES:

1. THE CONTRACTOR SHALL NOT ALLOW ANY TREES TO BE CUT DOWN OR REMOVED WITHOUT THE WRITTEN APPROVAL OF THE CITY OF RICHMOND.
2. THE CONTRACTOR SHALL PLACE CONCRETE SPLASH BLOCKS, OR EQUIVALENT, AT DISCHARGE POINT OF ALL DOWNSPOUT LOCATIONS.

KEY NOTES:

1. CONTRACTOR SHALL MILL AND REPAVE ASPHALT SURFACES FOLLOWING THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AT THE BIOSOLIDS PAD AND THE GRIT PAD.

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WASTEWATER TREATMENT PLANT BIOSOLIDS AND GRIT STORAGE PADS UPGRADES

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: A. HALL
DRAWN: J. SHERIDAN
CHECKED: A. HALL
CHECKED: T. PADDEN
APPROVED: T. PADDEN

FILENAME
190651-C-200.dwg
BC PROJECT NUMBER
190651 & 196366
CLIENT PROJECT NUMBER
105614 & 109212

CIVIL

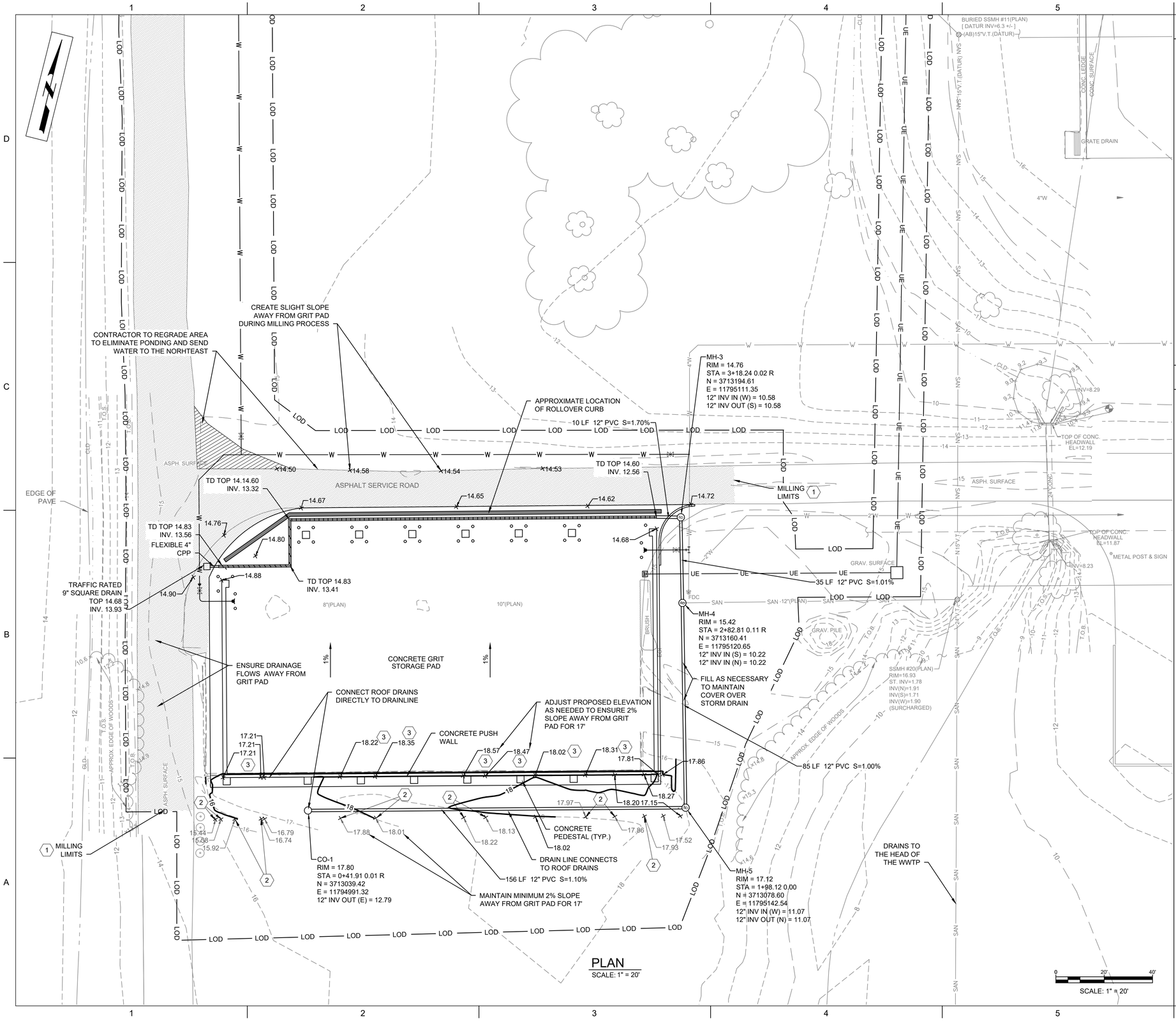
GRADING PLAN BIOSOLIDS STORAGE PAD

DRAWING NUMBER
C-200

PLAN
SCALE: 1" = 30'

0 30' 60'
SCALE: 1" = 30'

Path: C:\BCPWD3717143 FILENAME: 190651-C-200.DWG PLOT DATE: 4/25/2025 11:51 AM CAD USER: JIM SHERIDAN



PLAN
SCALE: 1" = 20'

0 20' 40'
SCALE: 1" = 20'

GENERAL NOTES:

1. THE CONTRACTOR SHALL NOT ALLOW ANY TREES TO BE CUT DOWN OR REMOVED WITHOUT THE WRITTEN APPROVAL OF THE CITY OF RICHMOND.

KEY NOTES:

1. CONTRACTOR SHALL MILL AND REPAVE ASPHALT SURFACES FOLLOWING THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AT THE BIOSOLIDS PAD AND THE GRIT PAD.
2. MEET EXISTING GRADE AT THESE LOCATIONS AND PROVIDE 2% SLOPE TOWARDS CNCRETE PUSH WALL TO MAINTAIN DRAINAGE AWAY FROM GRIT STORAGE PAD.
3. PROPOSED GRADE WHERE IT MEETS CONCRETE PUSH WALL WILL VARY TO MAINTAIN DRAINAGE AWAY FROM GRIT STORAGE PAD.

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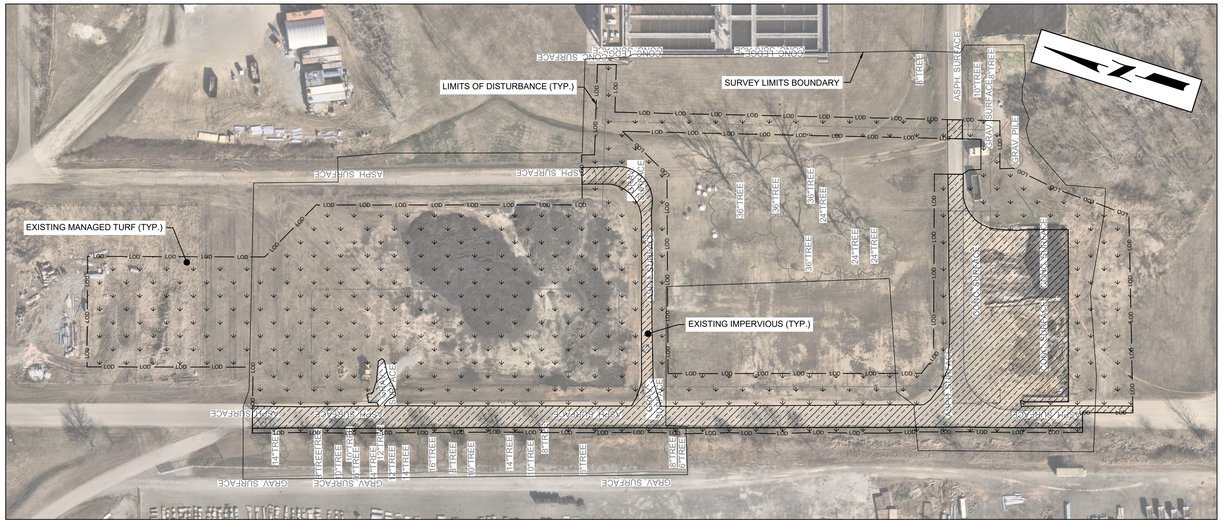
CHECKED:	T. PADDEN
APPROVED:	T. PADDEN
FILENAME	190651-C-201.dwg
BC PROJECT NUMBER	190651 & 196366
CLIENT PROJECT NUMBER	105614 & 109212

CIVIL

GRADING PLAN GRIT STORAGE PAD

DRAWING NUMBER
C-201

Path: C:\BCPW\D3717143 FILENAME: 190651-C-201.DWG PLOT DATE: 4/25/2025 5:06 PM CAD USER: JIM.SHERIDAN



EXISTING LAND COVER

SCALE: 1" = 80'

0 80' 160'

SCALE: 1" = 80'

PLACEHOLDER

FOR DPU STORMWATER
LETTER OF NUTRIENT AVAILABILITY

GENERAL NOTES:

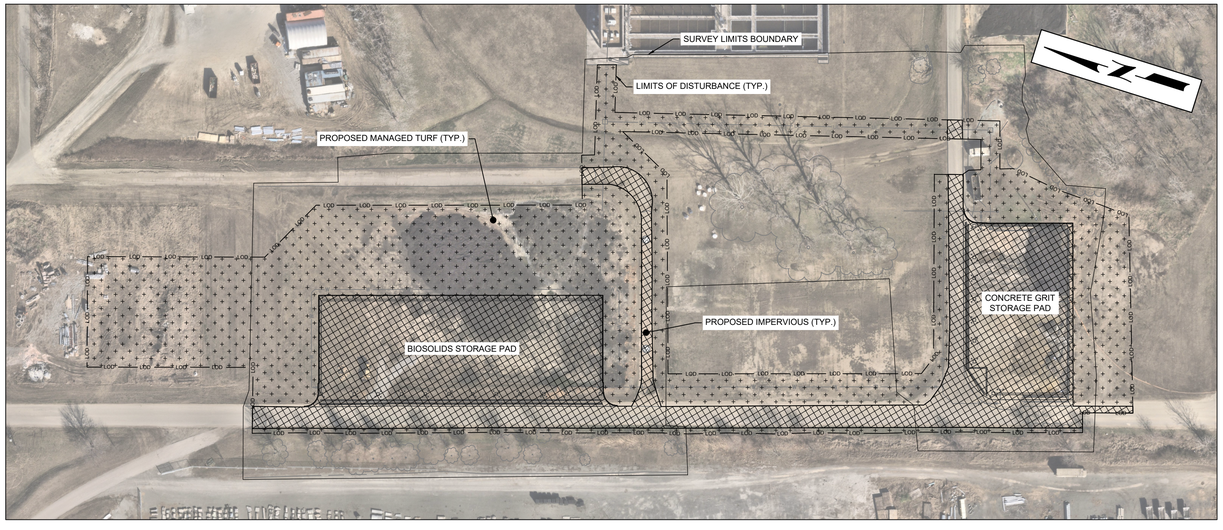
1. ALL SOIL WITHIN LOD IS UDORTHENTS DUMPS COMPLEX (MAP UNIT SYMBOL 40, HYDRAULIC SOIL GROUP D), PER NRCS WEB SOIL SURVEY
2. THIS PROJECT CREATES A MINIMAL NET INCREASE IN IMPERVIOUS SURFACE AREA WITHIN THE MS4 AREA.
3. NO MORE LAND SHALL BE DISTURBED THAN NECESSARY FOR THE UTILITY INSTALLATION.
4. THE INCREASE IN IMPERVIOUS AREA IS DUE TO INSTALLATION OF CONCRETE PADS ABOVE FINAL GRADE.
5. AN EXCEPTION TO 9VAC-870-122 IS REQUESTED DUE TO THE FOLLOWING: (I) THE EXCEPTION IS THE MINIMUM NECESSARY TO AFFORD RELIEF. (II) REASONABLE AND APPROPRIATE CONDITIONS SHALL BE IMPOSED AS NECESSARY UPON ANY EXCEPTION GRANTED SO THAT THE END OF THE ACT AND THIS CHAPTER ARE PRESERVED. (III) GRADING THE EXCEPTION WILL NOT CONFER ANY SPECIAL PRIVILEGES THAT ARE BASED UPON CONDITIONS OR CIRCUMSTANCES THAT ARE SELF-IMPOSED OF SELF-CREATED.
6. PREDEVELOPMENT AND POST-DEVELOPMENT LAND COVER WERE ENTERED INTO THE VIRGINIA RUNOFF-REDUCTION SPREADSHEET.
7. THE CITY PLANS TO PURCHASE THE REQUIRED CREDITS FOR THIS PROJECT FROM THEIR INTERNAL CREDIT BANK. SEE OFFER LETTER ON THIS SHEET (TO BE PROVIDED LATER).

KEY NOTES:

1. NONE

LEGEND:

- EXISTING MANAGED TURF
- EXISTING IMPERVIOUS
- PROPOSED MANAGED TURF
- PROPOSED IMPERVIOUS



PROPOSED LAND COVER

SCALE: 1" = 80'

0 80' 160'

SCALE: 1" = 80'

Virginia Runoff Reduction Method Worksheet

DEQ Virginia Runoff Reduction Method Re-Development Compliance Spreadsheet - Version 4.1

BMP Design Specifications List: **2024 Stds & Specs**

Site Summary

Project Title: Wastewater Treatment Plant Biosolids and Grit Storage Pads Upgrades
Date: 45765

Total Disturbed Acreage:	4.82

Site Land Cover Summary

Pre-ReDevelopment Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals	% of Total
Forest (acres)	0.00	0.00	0.00	0.00	0.00	0
Mixed Open (acres)	0.00	0.00	0.00	0.00	0.00	0
Managed Turf (acres)	0.00	0.00	0.00	3.66	3.66	76
Impervious Cover (acres)	0.00	0.00	0.00	1.16	1.16	24
					4.82	100

Post-ReDevelopment Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals	% of Total
Forest (acres)	0.00	0.00	0.00	0.00	0.00	0
Mixed Open (acres)	0.00	0.00	0.00	0.00	0.00	0
Managed Turf (acres)	0.00	0.00	0.00	2.83	2.83	59
Impervious Cover (acres)	0.00	0.00	0.00	1.99	1.99	41
					4.82	100

* Forest/Open Space areas must be protected in accordance with the Virginia Runoff Reduction Method

Site Tv and Land Cover Nutrient Loads

	Final Post-Development (Post-ReDevelopment & New Impervious)	Post-ReDevelopment	Post-Development (New Impervious)	Adjusted Pre-ReDevelopment
Site Rv	0.54	0.45	0.00	0.45
Treatment Volume (ft^3)	9,438	6,568	2,869	6,568
TP Load (lb/yr)	4.10	3.39	0.71	3.39

Total TP Load Reduction Required (lb/yr)	1.18	0.68	0.50

	Final Post-Development Load (Post-ReDevelopment & New Impervious)	Pre-ReDevelopment
TN Load (lb/yr)	50.06	47.30

Pre-ReDevelopment TP Load per acre (lb/acre/yr)	Final Post-Development TP Load per acre (lb/acre/yr)	Post-ReDevelopment TP Load per acre (lb/acre/yr)
0.85	0.85	0.85

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CITY OF RICHMOND ESTABLISHED 1737

WASTEWATER TREATMENT PLANT BIOSOLIDS AND GRIT STORAGE PADS UPGRADES

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

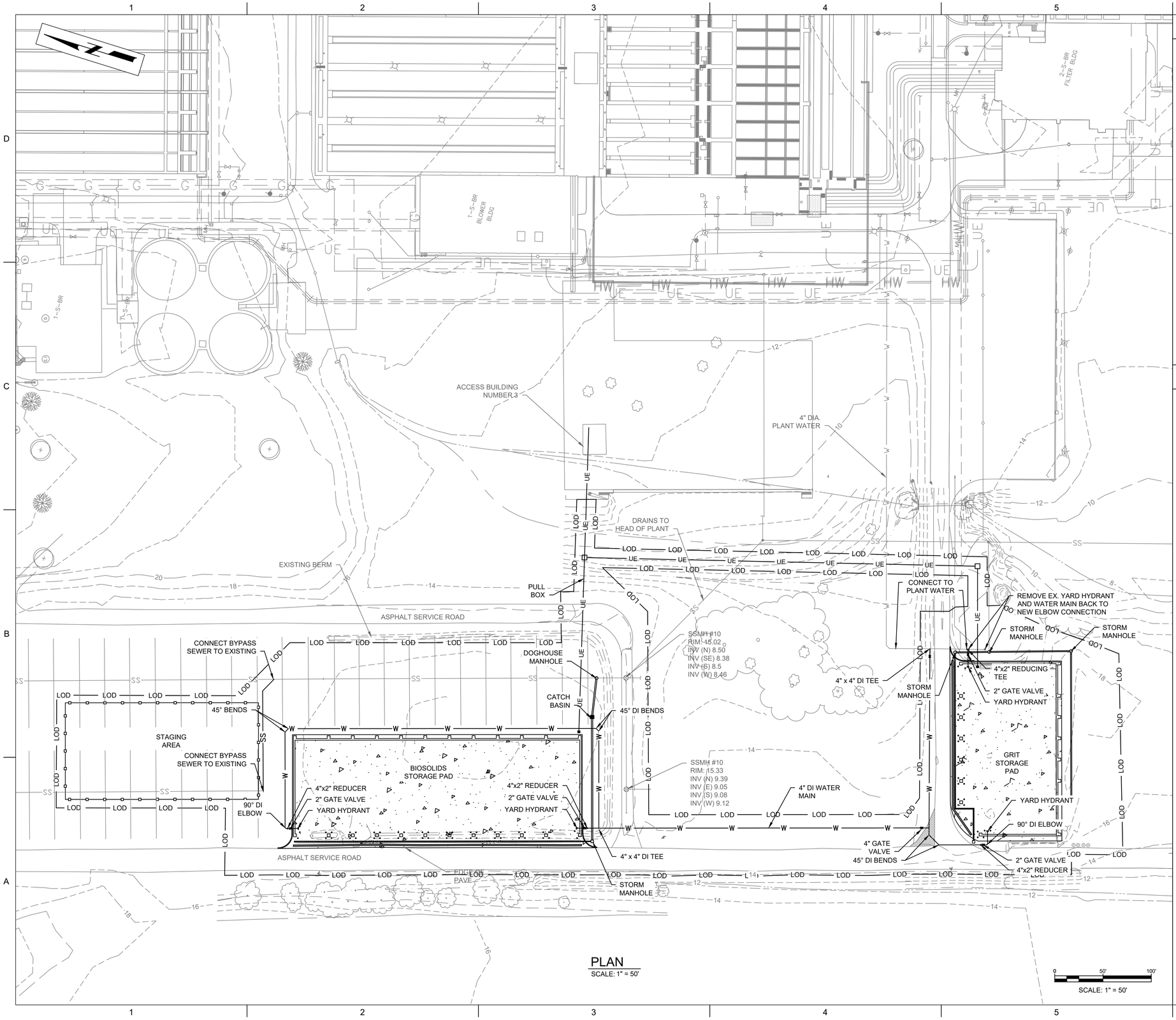
DESIGNED: A. HALL
DRAWN: J. SHERIDAN
CHECKED: A. HALL
CHECKED: T. PADDEN
APPROVED: T. PADDEN

FILENAME
190651-C-250.dwg
BC PROJECT NUMBER
190651 & 196366
CLIENT PROJECT NUMBER
105614 & 109212

CIVIL

VRRM CALCULATIONS

DRAWING NUMBER
C-250



PLAN
SCALE: 1" = 50'

0 50' 100'
SCALE: 1" = 50'

GENERAL NOTES:

1. ALL FITTINGS ON NEW DIP WATER MAIN SHALL HAVE MECHANICALLY RESTRAINED JOINTS.

KEY NOTES:

1. _

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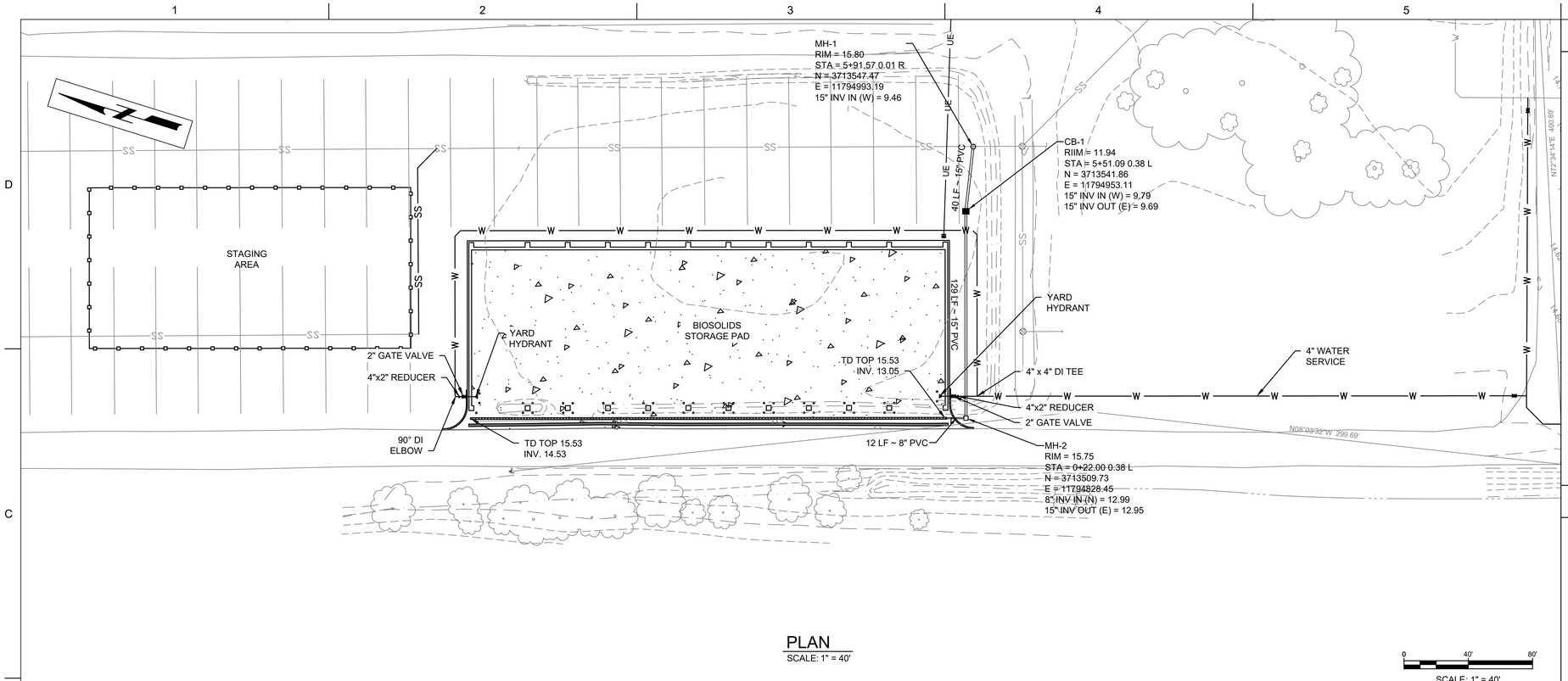
CHECKED:	T. PADDEN
APPROVED:	T. PADDEN
FILENAME	190651-C-300.dwg
BC PROJECT NUMBER	190651 & 196366
CLIENT PROJECT NUMBER	105614 & 109212

CIVIL

UTILITY PLAN BIOSOLIDS STORAGE PAD AND GRIT STORAGE PAD

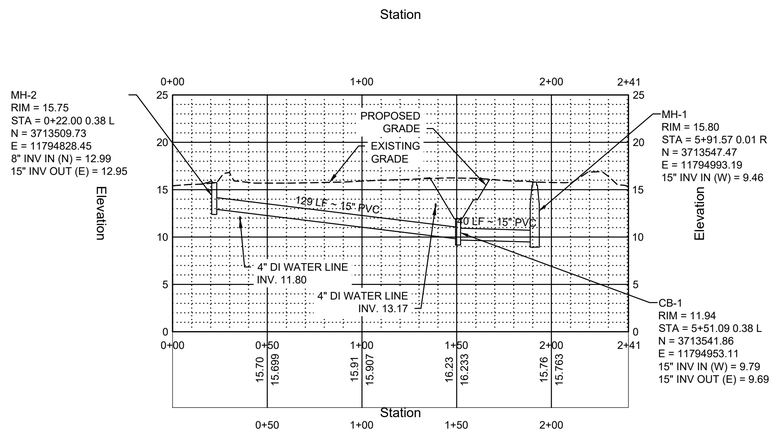
DRAWING NUMBER
C-300

Path: C:\BCPWD3717143 FILENAME: 190651-C-300.DWG PLOT DATE: 4/25/2025 3:22 PM CAD USER: JIM SHERIDAN



PLAN
SCALE: 1" = 40'

0 40' 80'
SCALE: 1" = 40'



PROFILE
HORIZ SCALE: 1" = 40'
VERT SCALE: 1" = 8'

VERTICAL
SCALE: 1" = 8'

GENERAL NOTES:

1. ALL FITTINGS ON NEW DIP WATERMAIN SHALL HAVE MECHANICALLY RESTRAINED JOINTS.
2. THE CONTRACTOR SHALL PLACE CONCRETE SPLASH BLOCKS, OR EQUIVALENT, AT DISCHARGE POINT OF ALL DOWNSPOUT LOCATIONS.

KEY NOTES:

1. _

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FILENAME
190651-C-301.dwg

BC PROJECT NUMBER
190651 & 196366

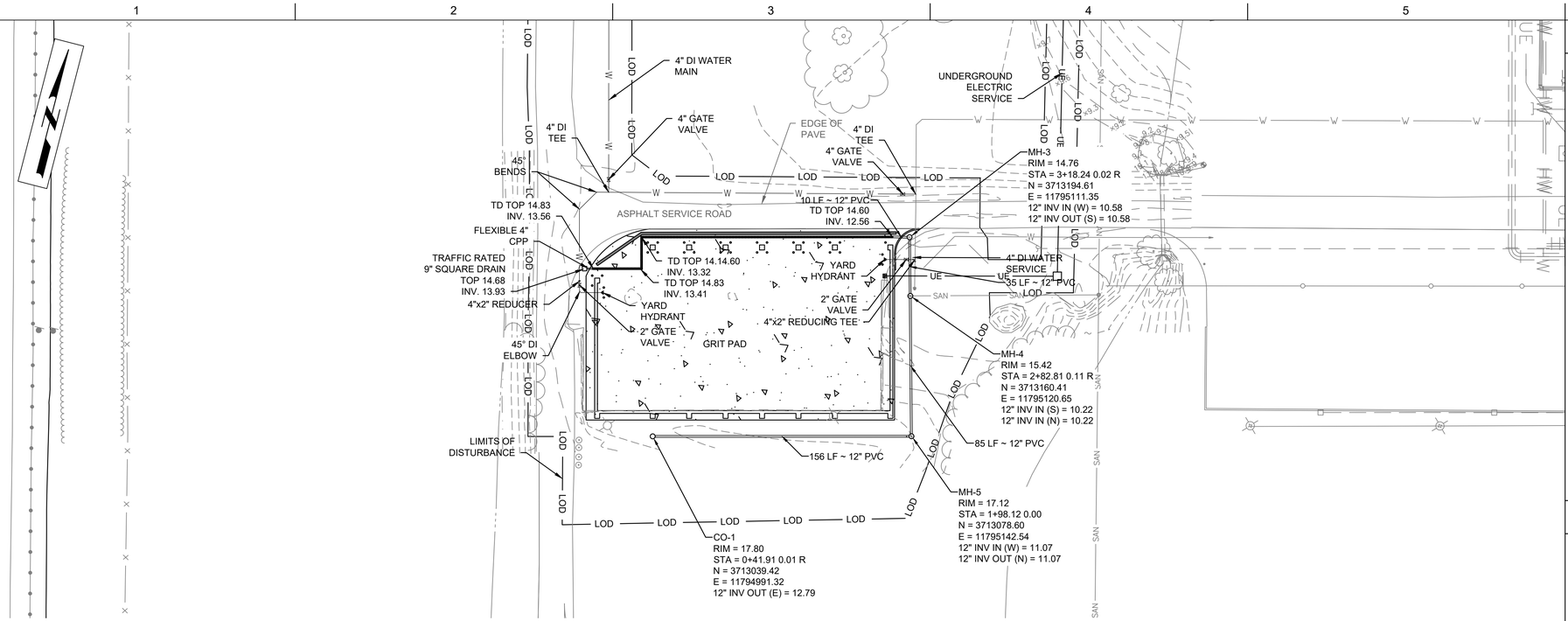
CLIENT PROJECT NUMBER
105614 & 109212

CIVIL

UTILITY PLAN AND PROFILE BIOSOLIDS STORAGE PAD

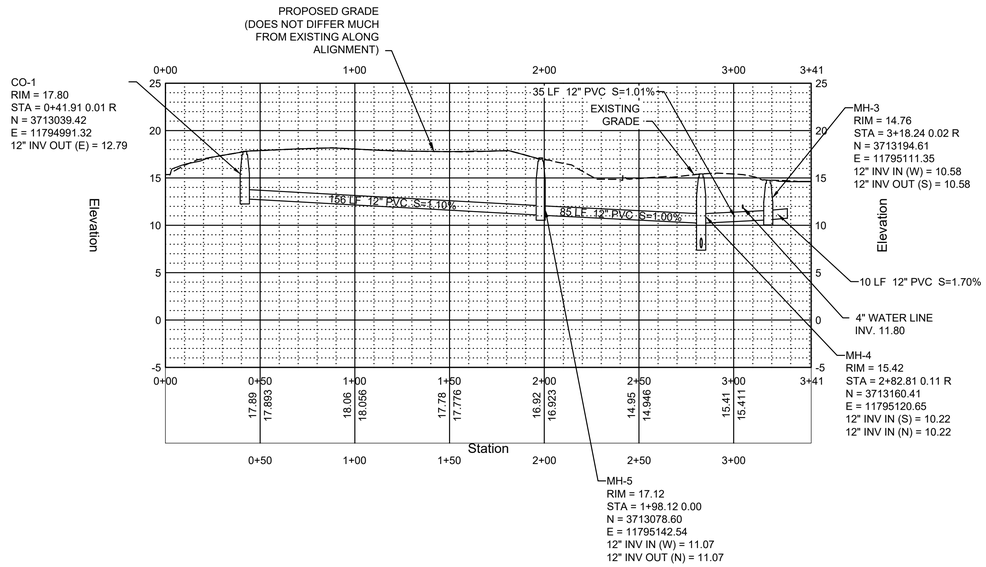
DRAWING NUMBER
C-301

Path: C:\BCPWD\3717143 FILENAME: 190651-C-301.DWG PLOT DATE: 4/25/2025 11:58 AM CAD USER: JIM SHERIDAN



PLAN
SCALE: 1" = 40'

0 40' 80'
SCALE: 1" = 40'



PROFILE
HORIZ SCALE: 1" = 40'
VERT SCALE: 1" = 8'

0 4' 8'
VERTICAL
SCALE: 1" = 8'

GENERAL NOTES:

1. ALL FITTINGS ON NEW DIP WATER MAIN SHALL HAVE MECHANICALLY RESTRAINED JOINTS.

KEY NOTES:

1. _

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CHECKED:	A. HALL
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APPROVED:	T. PADDEN

FILENAME
190651-C-302.dwg
BC PROJECT NUMBER
190651 & 196366
CLIENT PROJECT NUMBER
105614 & 109212

CIVIL

UTILITY PLAN AND PROFILE GRIT STORAGE PAD

DRAWING NUMBER
C-302

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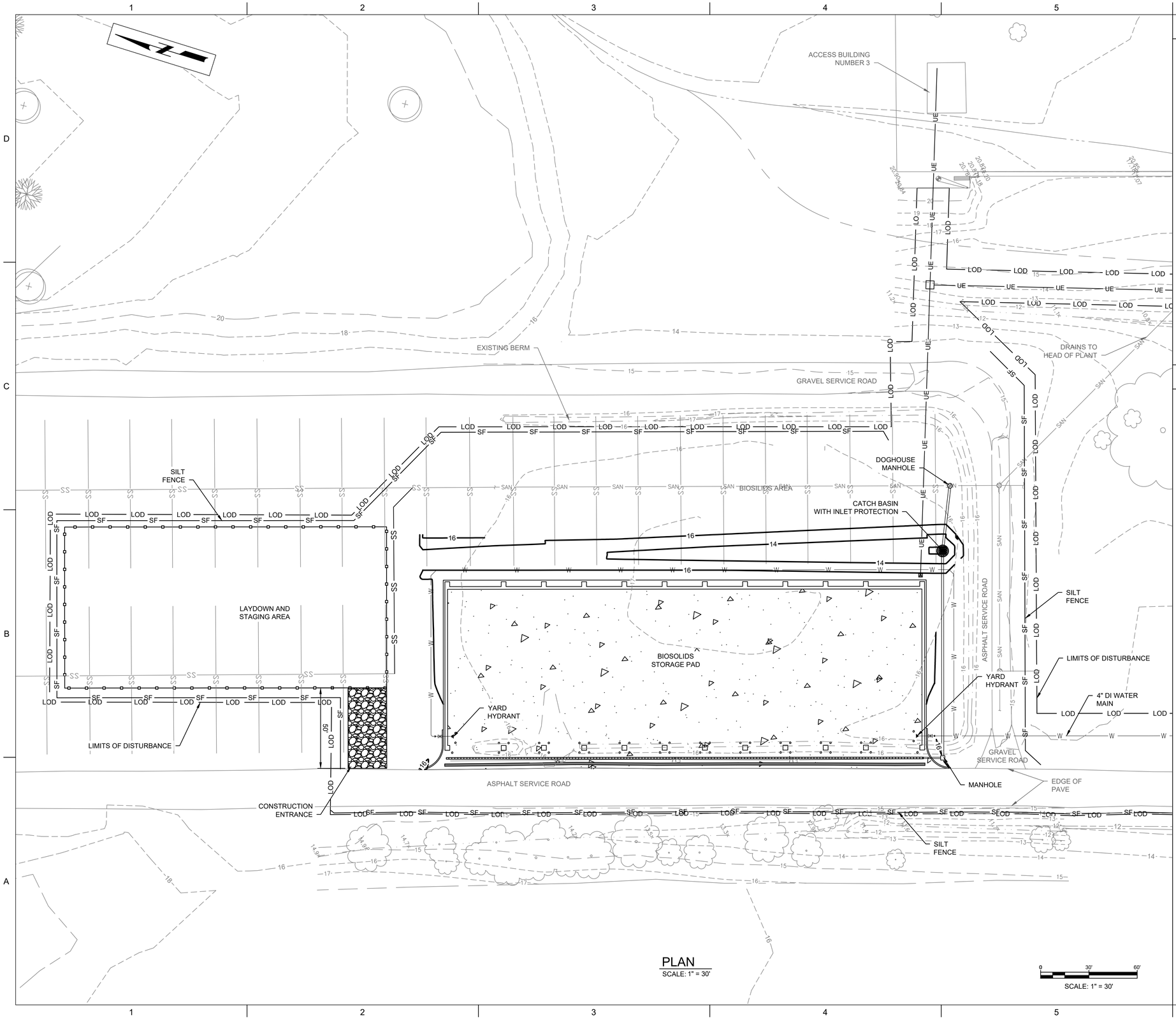

GENERAL NOTES:

1.

KEY NOTES:

1. _

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Richmond, VA 23230

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90% DESIGN

WASTEWATER TREATMENT PLANT BIOSOLIDS AND GRIT STORAGE PADS UPGRADES

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	A. HALL
DRAWN:	J. SHERIDAN
CHECKED:	A. HALL
CHECKED:	T. PADDEN
APPROVED:	T. PADDEN

FILENAME
190651-C-400.dwg

BC PROJECT NUMBER
190651 & 196366

CLIENT PROJECT NUMBER
105614 & 109212

CIVIL

EROSION AND SEDIMENTATION CONTROL PLAN BIOSOLIDS STORAGE PAD

DRAWING NUMBER
C-400

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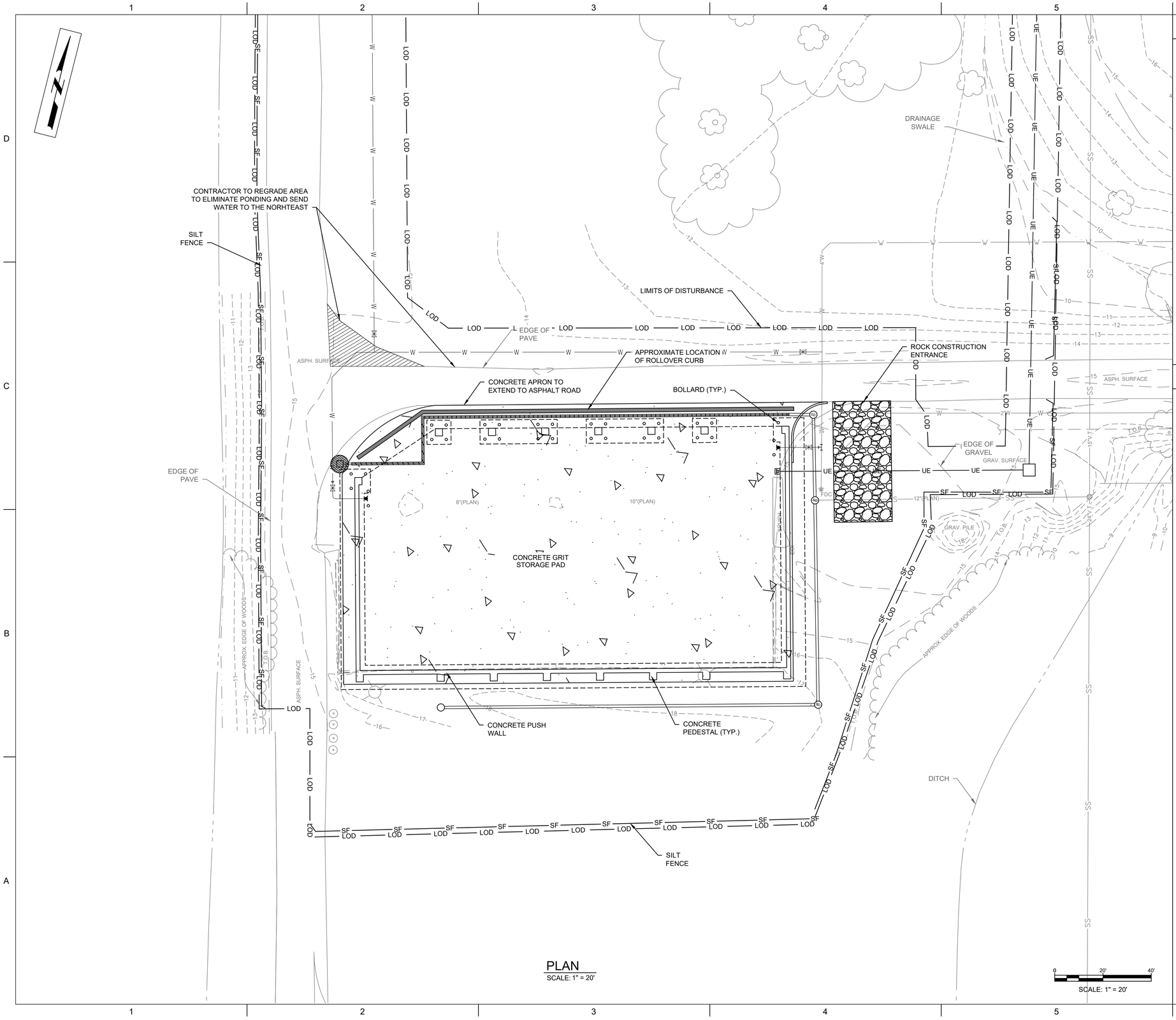

PLAN
SCALE: 1" = 20'

0 20' 40'
SCALE: 1" = 20'

GENERAL NOTES:

1.

KEY NOTES:

1. _

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WASTEWATER TREATMENT PLANT BIOSOLIDS AND GRIT STORAGE PADS UPGRADES

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DRAWN: J. SHERIDAN
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FILENAME
190651-C-401.dwg
BC PROJECT NUMBER
190651 & 196366
CLIENT PROJECT NUMBER
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CIVIL

EROSION AND SEDIMENTATION CONTROL PLAN GRIT STORAGE PAD

DRAWING NUMBER
C-401

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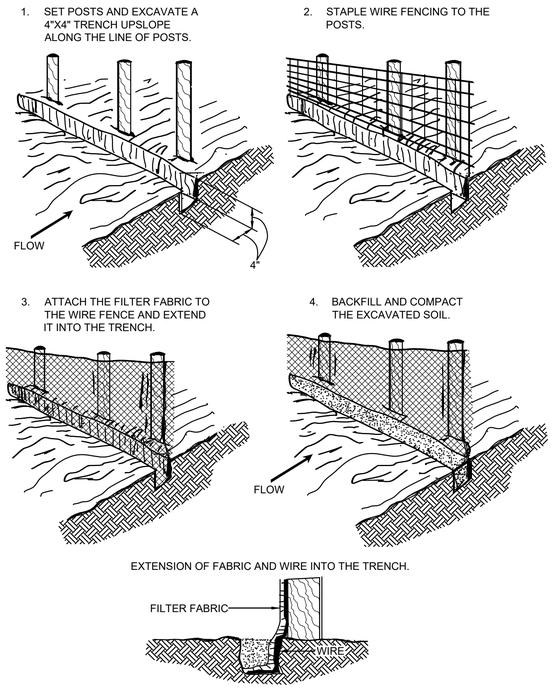
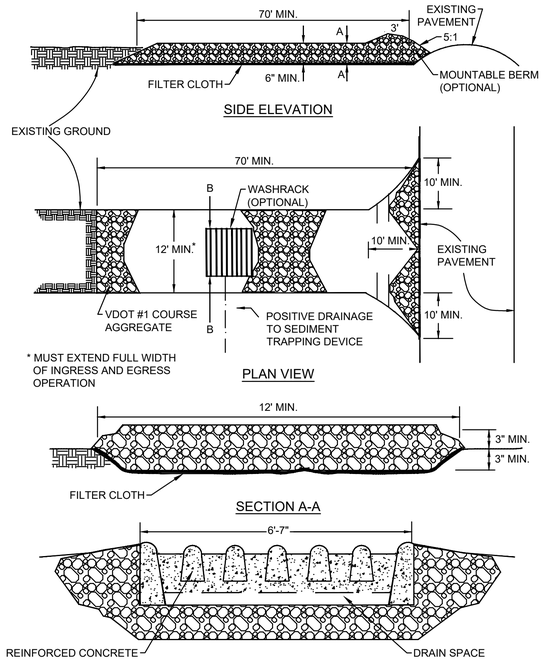


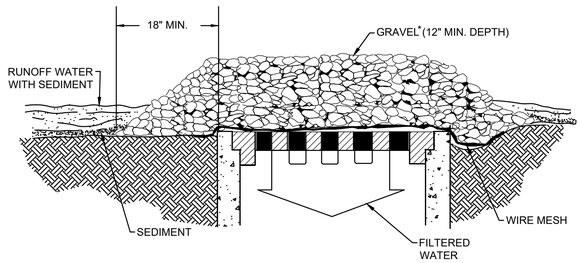
CONSTRUCTION OF SILT FENCE WITH WIRE SUPPORT APPLICATION

SCALE: NONE



STONE CONSTRUCTION ENTRANCE

SCALE: NONE



SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY CONCENTRATED FLOWS ARE EXPECTED BUT NOT WHERE PONDING AROUND THE STRUCTURE MIGHT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT STRUCTURES AND UNPROTECTED AREAS.

* GRAVEL SHALL BE VDOT #3, #357 OR #5 COARSE AGGREGATE.

GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER

SCALE: NONE

TABLE 3.31-C

TEMPORARY SEEDING PLANT MATERIALS, SEEDING RATES, AND DATES

SPECIES	SEEDING RATE		NORTH[a]			SOUTH[b]			PLANT CHARACTERISTICS
	Acre	1000 ft²	3/1 to 4/30	5/1 to 8/15	8/15 to 11/1	2/15 to 4/30	5/1 to 9/1	9/1 to 11/15	
OATS (Avena sativa)	3 bu. (up to 100 lbs., not less than 50 lbs.)	2 lbs.	X	-	-	X	-	-	Use spring varieties (e.g., Noble).
RYE[d] (Secale cereale)	2 bu. (up to 110 lbs., not less than 50 lbs.)	2.5 lbs.	X	-	X	X	-	X	Use for late fall seedings, winter cover. Tolerates cold and low moisture.
GERMAN MILLET (Setaria italica)	50 lbs.	approx. 1 lb.	-	X	-	-	X	-	Warm-season annual. Dies at first frost. May be added to summer mixes.
ANNUAL RYEGRASS[c] (Lolium multi-florum)	60 lbs.	1½ lbs.	X	-	X	X	-	X	May be added in mixes. Will mow out of most stands.
WEEPING LOVEGRASS (Eragrostis curvula)	15 lbs.	5½ ozs.	-	X	-	-	X	-	Warm-season perennial. May bunch. Tolerates hot, dry slopes and acid, infertile soils. May be added to mixes.
KOREAN LESPEDEZA[c] (Lespedeza stipulacea)	25 lbs.	approx. 1½ lbs.	X	X	-	X	X	-	Warm season annual legume. Tolerates acid soils. May be added to mixes.

[a] Northern Piedmont and Mountain region. See Plates 3.22-1 and 3.22-2.
[b] Southern Piedmont and Coastal Plain.
[c] May be used as a cover crop with spring seeding.
[d] May be used as a cover crop with fall seeding.
X May be planted between these dates.
- May not be planted between these dates.

TABLE 3.32-C
SITE SPECIFIC SEEDING MIXTURES FOR APPALACHIAN/MOUNTAIN AREA

	Total Lbs. Per Acre
Minimum Care Lawn	
- Commercial or Residential	200-250 lbs.
- Kentucky 31 or Turf-Type Tall Fescue	90-100%
- Improved Perennial Ryegrass *	0-10%
- Kentucky Bluegrass	0-10%
High-Maintenance Lawn	
Minimum of three (3) up to five (5) varieties of bluegrass from approved list for use in Virginia.	125 lbs.
General Slope (3:1 or less)	
- Kentucky 31 Fescue	128 lbs.
- Red Top Grass	2 lbs.
- Seasonal Nurse Crop **	20 lbs.
	150 lbs.
Low-Maintenance Slope (Steeper than 3:1)	
- Kentucky 31 Fescue	108 lbs.
- Red Top Grass	2 lbs.
- Seasonal Nurse Crop **	20 lbs.
- Crownvetch ***	20 lbs.
	150 lbs.

* Perennial Ryegrass will germinate faster and at lower soil temperatures than fescue, thereby providing cover and erosion resistance for seedbed.

** Use seasonal nurse crop in accordance with seeding dates as stated below:
March, April through May 15th ..... Annual Rye
May 16th through August 15th ..... Foxtail Millet
August 16th through September, October ..... Annual Rye
November through February ..... Winter Rye

*** If Flatpea is used, increase to 30 lbs./acre. All legume seed must be properly inoculated. Weeping Lovegrass may also be included in any slope or low-maintenance mixture during warmer seeding periods; add 10-20 lbs/acre in mixes.

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CITY OF RICHMOND ESTABLISHED 1737

WASTEWATER TREATMENT PLANT BIOSOLIDS AND GRIT STORAGE PADS UPGRADES

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LINE IS 2 INCHES AT FULL SIZE

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CHECKED: A. HALL
CHECKED: T. PADDEN
APPROVED: T. PADDEN
FILENAME 190651-C-402.dwg
BC PROJECT NUMBER 190651 & 196366
CLIENT PROJECT NUMBER 105614 & 109212

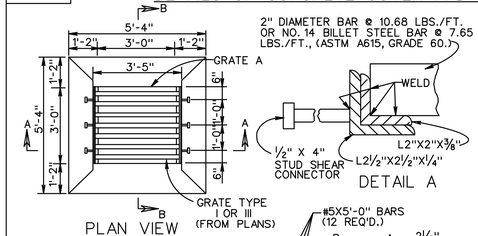
CIVIL

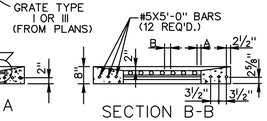
EROSION AND SEDIMENTATION CONTROL DETAILS

DRAWING NUMBER
C-402

DI-7,7A,7B

DETAILS OF CONCRETE COVER AND GRATE





APPROXIMATE QUANTITIES	
CONCRETE CLASS A3	REINFORCING STEEL
0.423 C. Y.	63 LBS.

GRATE A:

BAR SPACING CHART		
GRATE TYPE	MAXIMUM DIMENSION	
	A	B
I	1½"	3"
III	1"	1"

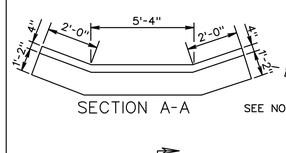
NOTES

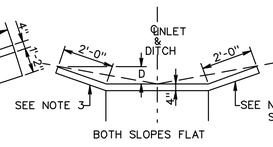
1. GRATE A IS TO BE UTILIZED IN LOCATIONS NOT NORMALLY SUBJECT TO TRAFFIC.
2. GRATE B IS TO BE UTILIZED IN LOCATIONS NORMALLY SUBJECT TO TRAFFIC.
3. FOR DETAILS OF LOAD CARRYING GRATE (GRATE B), SEE T-DI-7, SHEET 103.08.
4. CONCRETE COVER AND GRATE ARE TO BE FURNISHED AS A SINGLE UNIT. OUTSIDE DIMENSIONS OF GRATE TO BE 3'-4" X 2'-11½" (GRATE A) OR 3'-4" X 2'-11½" (GRATE B).
5. ALTERNATE METHODS OF ANCHORING ANGLE IRON WILL BE ACCEPTABLE IF APPROVED BY THE ENGINEER.
6. GRATE AND COLLAR ARE TO BE GALVANIZED.
7. CONCRETE COVER MAY BE PRECAST OR CAST IN PLACE.
8. CONCRETE TO BE CLASS A3 IF CAST IN PLACE. 4000 PSI IF PRECAST.
9. GRATE BARS TO BE PARALLEL TO DITCH FLOW.

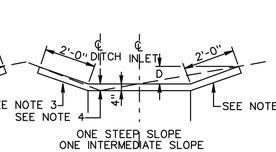
DETAILS OF GUTTER AND METHOD OF PLACEMENT

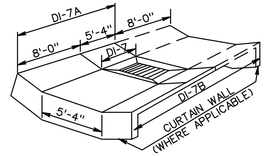
NOTES

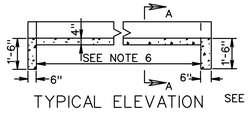
1. DI-7 NO GUTTERS.
   DI-7A NO GUTTER IN ONE DIRECTION.
   DI-7B GUTTER IN BOTH DIRECTIONS.
2. JOINTS BETWEEN GUTTERS AND CONCRETE COVER ARE TO BE DOWELED WITH #4 X 8" SMOOTH RODS @ APPROX. 12" C-C TO PREVENT SETTLEMENT. IN LIEU OF DOWELS A 2" X 4" NOTCH MAY BE PROVIDED.
   SEE STANDARD T-DI-3, 4 ALTERNATE DESIGN.
3. VARIABLE 2:1 OR FLATTER.
4. DITCH GRADE MUST BE ADJUSTED TO MEET DIFFERENCE IN ELEVATION. SEE LONGITUDINAL SECTION.
5. IF DEPTH (D) BECOMES LESS THEN 4", LENGTH OF WINGS ARE TO BE EXTENDED AS DIRECTED BY THE ENGINEER.
6. CURTAIN WALL TO BE LOCATED AT THE END OF THE PAVED DITCH SECTIONS OF THE DI-7A & DI-7B THAT ARE NOT ABUTTED BY OTHER DRAINAGE.
7. IF NORMAL DITCH GRADE IS TOO FLAT TO ALLOW FOR ADJUSTED GRADE TO INLET, A SPECIAL GUTTER DETAIL WILL BE REQUIRED ON PLANS.

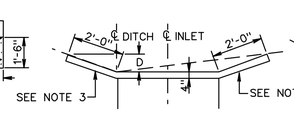


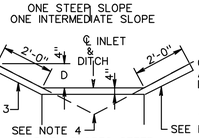


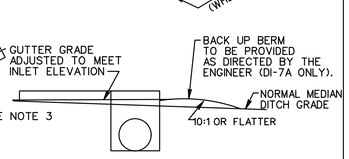












APPROXIMATE QUANTITY FOR ONE CURTAIN WALL, MEASURED FROM BOTTOM OF GUTTER	
CONCRETE CLASS A3	0.241 CU. YDS.

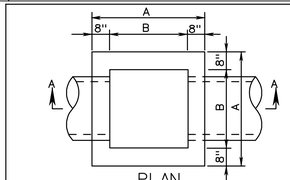
APPROXIMATE QUANTITIES			
CONCRETE CLASS A3	DI-7	DI-7A	DI-7B
(CU. YDS.)	NONE	1.211	2.148

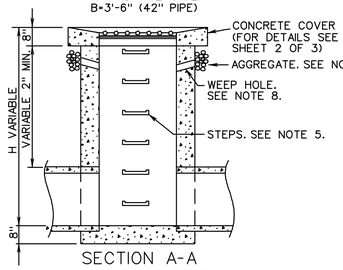
STANDARD MEDIAN DROP INLET
12" TO 42" PIPE
VIRGINIA DEPARTMENT OF TRANSPORTATION

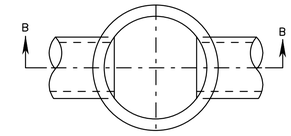
REV. 7/05

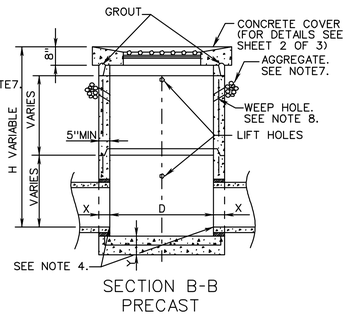
104.23

SPECIFICATION REFERENCE
241 503









RECOMMENDED MINIMUM HEIGHT CHART		
PIPE SIZE	H DIMENSION	
	CONC.	CORR. METAL
12"	2'-6"	2'-5"
15"	2'-9¼"	2'-8"
18"	3'-0½"	2'-11"
21"	3'-3¾"	3'-2"
24"	3'-7"	3'-5"
27"	3'-10¼"	3'-8"
30"	4'-1½"	3'-11"
33"	4'-4¾"	4'-2"
36"	4'-8"	4'-5"
42"	5'-2½"	4'-11"

NOTES (CONT.)

15. DI-7--------NO GUTTER
    DI-7A-------SINGLE GUTTER WHEN DROP INLET IS ON A GRADE.
    DI-7B------ DOUBLE GUTTER WHEN DROP INLET IS IN A SAG BETWEEN TWO GRADES.
16. FOR DETAILS OF PRECAST DI-7 NOT SHOWN HEREON SEE PRECAST UNIT ASSEMBLY DIAGRAM, PAGE 103.01, FOR PRECAST GENERAL NOTES, PAGE 103.02 AND FOR APPLICABLE PRECAST BASE, RISER AND TOP DETAILS, PAGES 103.07 THRU 103.12.
17. GRATE BARS TO BE PARALLEL TO DITCH FLOW.

PIPE SIZE	12"	15"	18"	24"	30"	36"	42"
MINIMUM DEPTH H	2'-0"	2'-3¼"	2'-6½"	3'-1"	3'-7½"	4'-2"	4'-8½"
CONCRETE CUBIC YARDS	.947	1.045	1.143	1.339	1.535	1.731	1.927

INCREMENT PER FOOT OF ADDITIONAL DEPTH (H) { = 0.362 CU. YDS. (12" - 36" PIPE) = 0.410 CU. YDS. (42" PIPE)

DI-7,7A,7B

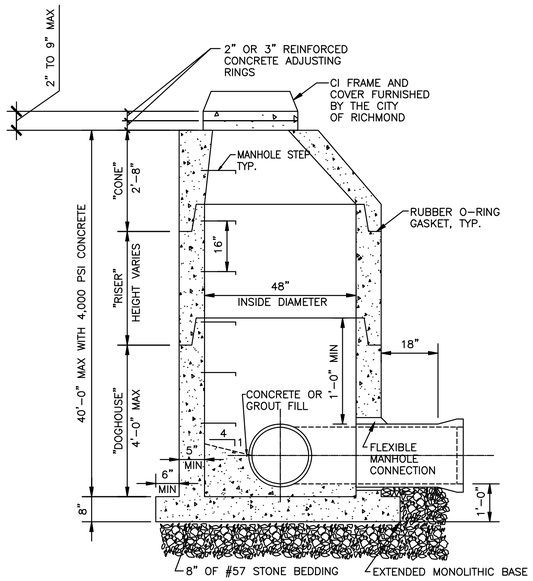
NOTES

1. DEPTH OF INLET (H) TO BE SHOWN ON PLANS.
2. THE "H" DIMENSION SHOWN ON THE STANDARDS AND SPECIFIED ON THE PLANS WILL BE MEASURED FROM THE INVERT OF THE OUTFALL PIPE TO THE TOP OF THE STRUCTURE. PLAN "H" DIMENSIONS ARE APPROXIMATE ONLY FOR ESTIMATING PURPOSES AND THE ACTUAL DIMENSIONS SHALL BE DETERMINED BY THE CONTRACTOR FROM FIELD CONDITIONS. MAXIMUM DEPTH (H) TO BE 12'-8.
3. WHEN SPECIFIED ON THE PLANS THE INVERT IS TO BE SHAPED IN ACCORDANCE WITH STANDARD IS-1. THE COST OF FURNISHING AND PLACING ALL MATERIALS INCIDENTAL TO THE SHAPING IS TO BE INCLUDED IN THE BID PRICEN FOR THE STRUCTURE.
4. IN THE EVENT THE INVERT OF THE OUTFALL PIPE IS HIGHER THAN THE BOTTOM OF THE STRUCTURE, THE INVERT OF THE STRUCTURE SHALL BE SHAPED WITH CEMENT MORTAR TO PREVENT STANDING OR PONDING OF WATER IN THE STRUCTURE. THE COST OF FURNISHING AND PLACING ALL MATERIALS INCIDENTAL TO THE SHAPING IS TO BE INCLUDED IN THE BID PRICE FOR THE STRUCTURE.
5. STEPS ARE TO BE PROVIDED WHEN H IS 4'-0" OR GREATER. FOR DETAILS SEE STANDARD ST-1.
6. REINFORCED CONCRETE FOOTING MAY BE PRECAST OR CAST-IN-PLACE. TWO LIFTING HOOKS OF FABRICATORS DESIGN TO BE PROVIDED IN PRECAST FOOTING
7. 4" DEPTH AGGREGATE #68,#78, OR #8 X 6" WIDTH.
8. 3" DIAMETER WEEP HOLE WITH 12"X12" PLASTIC HARDWARE CLOTH ¼" MESH OR GALVANIZED STEEL WIRE, MINIMUM WIRE DIAMETER 0.03", NUMBER 4 MESH HARDWARE CLOTH ANCHORED FIRMLY TO THE OUTSIDE OF THE STRUCTURE.
9. THE TYPE OF INLET (PRECAST OR CAST IN PLACE), DETAILED HEREON, TO BE CONSTRUCTED, WILL BE AT THE OPTION OF THE CONTRACTOR.
10. FOR DETAILS OF CONCRETE COVER, COLLAR AND GRATE AND THE METHOD OF PLACING APPROACH GUTTER SEE SHEET 2 OF 3.
11. CAST-IN PLACE CONCRETE IS TO BE CLASS A3 (3000 PSI). PRECAST CONCRETE IS TO BE 4000 PSI.
12. CONCRETE QUANTITIES SHOWN ARE FOR INDICATED DEPTH (H) WITHOUT PIPES. THE AMOUNT DISPLACED BY PIPES MUST BE DEDUCTED TO OBTAIN TRUE QUANTITIES. FOR INLETS OF DIFFERENT DEPTHS ADD OR SUBTRACT THE APPROPIATE CUBIC YARDS OF CONCRETE FOR EACH FOOT OF DEPTH.
13. PAVED DITCHES ARE TO BE TRANSITIONED TO MEET INLET GUTTER AS SHOWN IN STANDARD PG-2A.
14. PROVIDE SAFETY SLABS WHEN SPECIFIED ON THE PLANS.

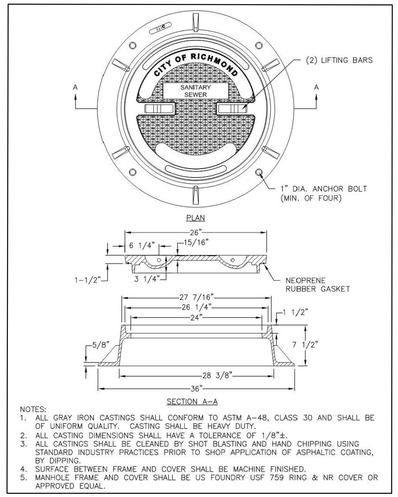
SPECIFICATION REFERENCE
241 503

STANDARD MEDIAN DROP INLET
12" TO 42" PIPE
VIRGINIA DEPARTMENT OF TRANSPORTATION

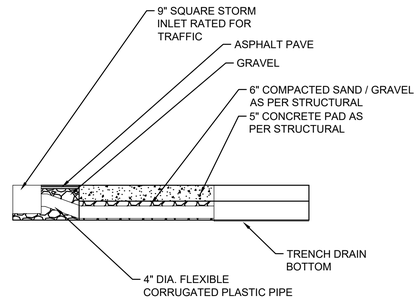
104.22



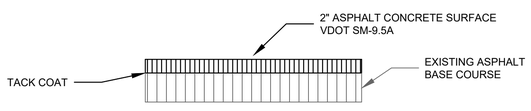
DETAIL SEWER MANHOLE
SCALE: NONE



STANDARD FRAME AND COVER
SCALE: NONE



STORM DRAIN CONNECTION TO TRENCH DRAIN



DETAIL SURFACE MILL AND OVERLAY
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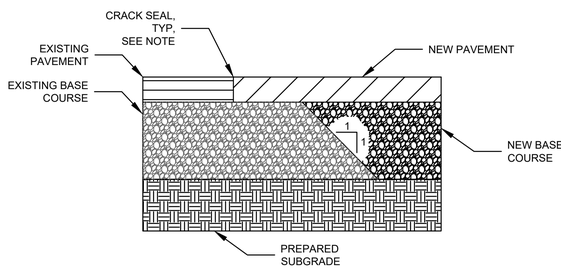

NOTES:
1. PAINT EDGE OF EXISTING ASPHALT WITH TACK COAT PRIOR TO PAVING. CRACK SEAL JOINT AFTER PAVING OPERATION HAS BEEN COMPLETED

DETAIL PAVEMENT CONNECTION
SCALE: NONE

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3454 West Clay Street
Richmond, VA 23230

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WASTEWATER TREATMENT PLANT BIOSOLIDS AND GRIT STORAGE PADS UPGRADES

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DRAWN: J. SHERIDAN
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APPROVED: T. PADDEN

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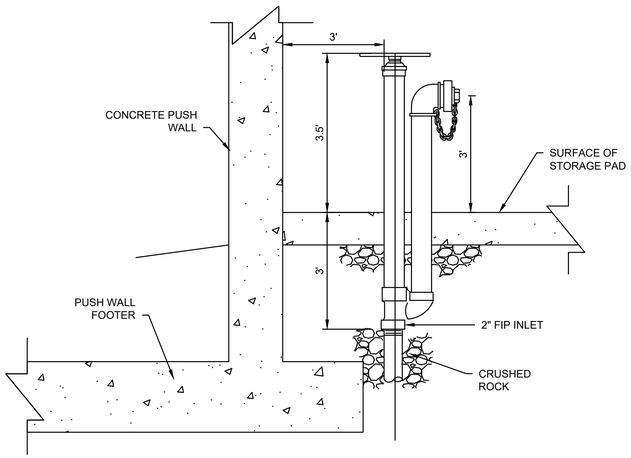
BC PROJECT NUMBER 190651 & 196366
CLIENT PROJECT NUMBER 105614 & 109212

CIVIL

CIVIL DETAILS

DRAWING NUMBER
C-500



NOTES:

HYDRANTS SHALL BE NO. 80WD MAINGUARD HYDRANTS AS MANUFACTURED BY KUPPERLE FOUNDRY CO., ST. LOUIS, MO, OR APPROVED EQUAL.

HYDRANTS SHALL BE NON-FREEZING, SELF DRAINING TYPE WITH A DEPTH OF BURY OF 3'.

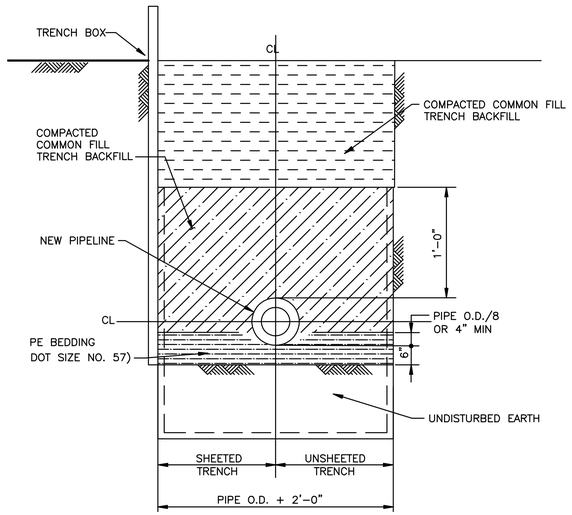
HYDRANTS SHALL BE FURNISHED WITH A 2" FIP INLET AND A 2-1/2" NST OUTLET OR SMALLER.

HYDRANT SHALL HAVE A NON-TURNING OPERATING ROD AND SHALL OPEN TO THE LEFT.

ALL WORKING PARTS SHALL BE BRONZE TO BRONZE DESIGN AND BE SERVICEABLE FRO ABOVE GRADE WITH NO DIGGING.

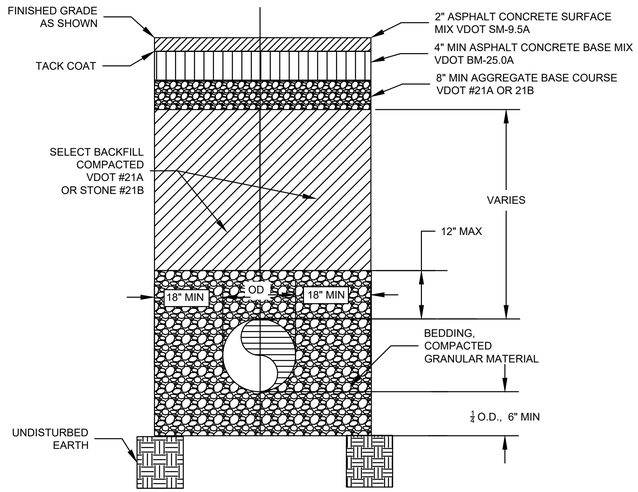
YARD HYDRANT

SCALE: NONE



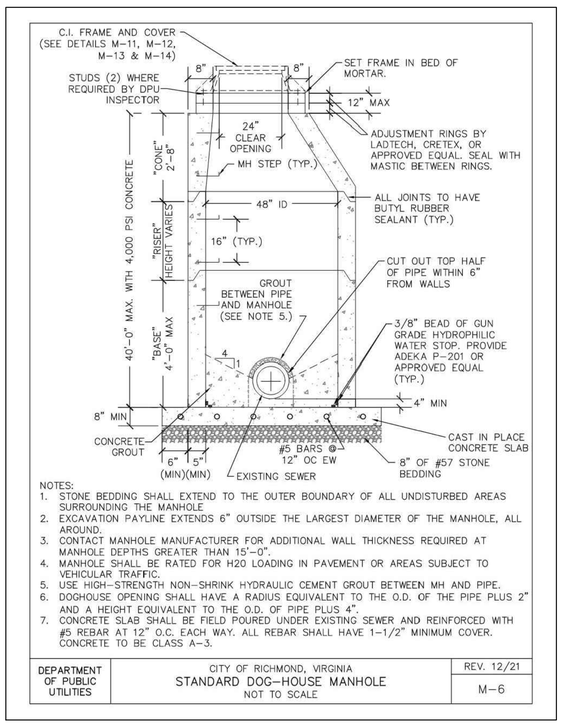
TYPICAL TRENCH AND PIPE BEDDING

SCALE: NONE



TRENCH REPAIR RESTORATION

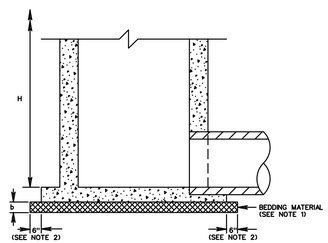
SCALE: NONE



NOTES:
1. STONE BEDDING SHALL EXTEND TO THE OUTER BOUNDARY OF ALL UNDISTURBED AREAS SURROUNDING THE MANHOLE
2. EXCAVATION PAYLINE EXTENDS 6" OUTSIDE THE LARGEST DIAMETER OF THE MANHOLE, ALL AROUND.
3. CONTACT MANHOLE MANUFACTURER FOR ADDITIONAL WALL THICKNESS REQUIRED AT MANHOLE DEPTHS GREATER THAN 15'-0".
4. MANHOLE SHALL BE RATED FOR H20 LOADING IN PAVEMENT OR AREAS SUBJECT TO VEHICULAR TRAFFIC.
5. USE HIGH-STRENGTH NON-SHRINK HYDRAULIC CEMENT GROUT BETWEEN MH AND PIPE.
6. DOGHOUSE OPENING SHALL HAVE A RADIUS EQUIVALENT TO THE O.D. OF THE PIPE PLUS 2" AND A HEIGHT EQUIVALENT TO THE O.D. OF PIPE PLUS 4".
7. CONCRETE SLAB SHALL BE FIELD POURED UNDER EXISTING SEWER AND REINFORCED WITH #5 REBAR AT 12" O.C. EACH WAY. ALL REBAR SHALL HAVE 1-1/2" MINIMUM COVER. CONCRETE TO BE CLASS A-3.

DEPARTMENT OF PUBLIC UTILITIES	CITY OF RICHMOND, VIRGINIA STANDARD DOG-HOUSE MANHOLE NOT TO SCALE	REV. 12/21 M-6

DSB-1



SECTIONAL ELEVATION

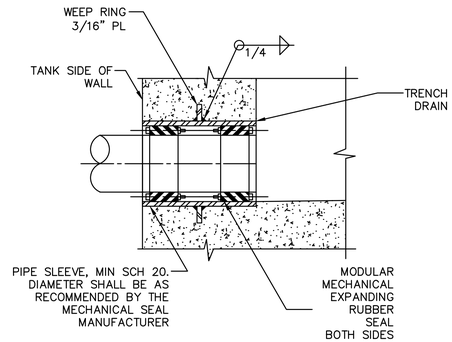
NOTES

1. BEDDING MATERIAL IS TO BE AGGREGATE SIZE 25 OR 26. IF FOUNDATION HAS STANDING OR RUNNING WATER PRESENT, THEN AGGREGATE NO. 57 SHALL BE USED FOR THE DEPTH SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER, CAPPED WITH 4 INCHES OF AGGREGATE NO. 25 OR 26.
2. WIDTH OF BEDDING MATERIAL SHALL EXTEND A MINIMUM OF 6" BEYOND THE BASE OF THE STRUCTURE ON ALL SIDES.
3. HEIGHT OF STRUCTURE (H) IS MEASURED FROM THE INVERT OF THE STRUCTURE TO THE TOP OF THE FRAME AND COVER OR CONCRETE DEPENDING ON STRUCTURE TYPE. SEE APPLICABLE DRAINAGE STRUCTURE STANDARD FOR DETAIL.

BEDDING THICKNESS TABLE

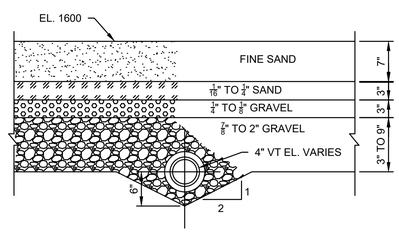
FOUNDATION TYPE	BEDDING THICKNESS (b)
NORMAL EARTH	4" FOR H < 10' 6" FOR H > 10'
ROCK	1" PER FOOT OF H, MAX. 8"
SOFT & YIELDING	AS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER

SPECIFICATION REFERENCE	DRAINAGE STRUCTURE BEDDING FOR DROP INLET, MANHOLE, AND JUNCTION BOX VIRGINIA DEPARTMENT OF TRANSPORTATION	NEW 9/06 106.15
302		



TRENCH DRAIN CONNECTION

SCALE: NONE



SECTION THROUGH UNDERDRAIN

SCALE: NONE

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90% DESIGN

CITY OF RICHMOND ESTABLISHED 1737

WASTEWATER TREATMENT PLANT BIOSOLIDS AND GRIT STORAGE PADS UPGRADES

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: A. HALL
DRAWN: J. SHERIDAN
CHECKED: A. HALL
CHECKED: T. PADDEN
APPROVED: T. PADDEN

FILENAME
190651-C-501.dwg
BC PROJECT NUMBER
190651 & 196366
CLIENT PROJECT NUMBER
105614 & 109212

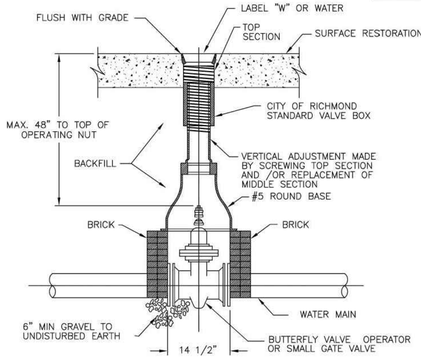
CIVIL

CIVIL DETAILS

DRAWING NUMBER
C-501

Path: C:\BCPWD3717143 FILENAME: 190651-C-501.DWG PLOT DATE: 4/23/2025 4:37 PM CAD USER: JIM SHERIDAN

DEPARTMENT OF PUBLIC UTILITIES
RICHMOND, VIRGINIA



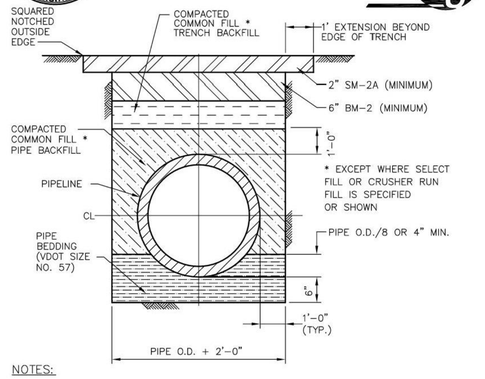
NOTES:

1. PROVIDE EXTENSION STEM IF TOP OF VALVE OPERATING NUT IS GREATER THAN 48" BELOW GROUND SURFACE
2. PROVIDE MIDDLE SECTION TO EXTEND FOR DEEP BOXES
3. ADJUST BOX TOP FOR STREET PAVEMENT OVERLAY, IF OVERLAY IS PERFORMED
4. IN GRASS AREAS PROVIDE 1'-6" SQ. x 4" THICK CONC. PAD AROUND TOP OF VALVE BOX

SMALL VALVE BOX

SCALE: NONE

DEPARTMENT OF PUBLIC UTILITIES
RICHMOND, VIRGINIA



NOTES:

1. CUTS SHALL BE AS CLEAN AND STRAIGHT AS POSSIBLE, WITH NO OUTLINE DIMENSIONS LESS THAN 3 FEET WITHOUT SPECIAL APPROVAL OF THE DEPARTMENT'S INSPECTOR.
2. ALL ASPHALT PAVEMENT RESTORATION THICKNESS SHALL BE 1 1/2 TIMES THE EXISTING SECTION OR A MINIMUM OF 8-INCHES WHICHEVER IS GREATER. SEE THE DPW TRENCH RESTORATION ILLUSTRATION FOR THE TYPICAL CONFORMANCE STANDARDS.
3. THE FINAL RESTORATION ON OPEN TRENCH CUTS REQUIRES THE DISTURBED ASPHALT PAVEMENT ZONE TO BE A SQUARE POINTED OFF AND STRAIGHT LINE. THE AREA OF PAVEMENT RESTORATION IS TO BE FULLY ENVELOPED BY THE FINAL SURFACE COURSE REPAIRS. THE ADJOINING SURFACE/TOP COURSE LAYER IS TO BE OVER-MILLED A MINIMUM DEPTH OF 1.25 INCHES OR MORE, A MINIMUM DISTANCE OF ONE FOOT BEYOND EACH SIDE OF THE TRENCH WALL.
4. WHERE A SLURRY SEAL OR OTHER MICROSURFACE COATING IS THE FINISH SURFACE COURSE, A RE-TREATMENT APPLICATION IS REQUIRED.

PAVEMENT RESTORATION FOR PIPE TRENCHES

SCALE: NONE

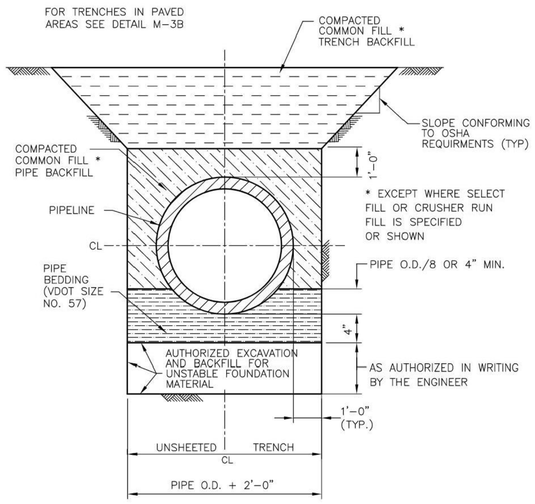
SEWER NOTES:

1. ALL CONSTRUCTION AND MATERIALS FOR SEWER SYSTEMS SHALL CONFORM WITH THE CITY OF RICHMOND DEPARTMENT OF PUBLIC UTILITIES (DPU) SANITARY SEWER SYSTEM STANDARDS APPLICABLE AT THE TIME OF RELEASE TO CONSTRUCTION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING DPU TO SCHEDULE A PRE-CONSTRUCTION MEETING AT LEAST 48 HOURS PRIOR TO BEGINNING ANY WORK.
3. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS FOR THE WORK.
4. EXISTING UTILITIES ACROSS OR ALONG THE LINE OF THE PROPOSED WORK ARE SHOWN ONLY IN AN APPROXIMATE LOCATION ON THE PLANS. CONTRACTOR SHALL, ON HIS OWN INITIATIVE AND NO ADDITIONAL COST, LOCATE ALL UNDERGROUND LINES AND STRUCTURES AS NECESSARY. CONTRACTOR SHALL CALL "MISS-UTILITY" AT 811 PRIOR TO START OF CONSTRUCTION. CONTRACTOR WILL BE RESPONSIBLE FOR ANY DAMAGE TO UNDERGROUND LINES OR STRUCTURES.
5. CONTRACTOR SHALL BEAR ALL COSTS ASSOCIATED WITH RELOCATING, SUPPORTING AND MAINTAINING SEWER SERVICE TO ALL CUSTOMERS DURING CONSTRUCTION.
6. CONTRACTOR SHALL CONTACT DPU IMMEDIATELY IN THE EVENT OF ANY SEWAGE SPILLS AND OVERFLOWS. CONTRACTOR SHALL PROVIDE DPU WITH DOCUMENTATION ON THE SPILL AND OVERFLOW INCLUDING DATE, TIME, DURATION, ESTIMATED AMOUNT, LOCATION, CORRECTIVE ACTION, AND CAUSE OF SPILL AND OVERFLOW WITHIN FIVE CALENDAR DAYS.
7. CONTRACTOR SHALL INCLUDE IN APPLICABLE BID PRICE, COST OF LOCATING AND UNCOVERING ALL SEWER MANHOLES AFTER COMPLETION OF ALL PAVING AND TO ADJUST THEM TO THE FINAL ROAD GRADES. CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR CLEANING OUT SEWER MAINS FOR FINAL INSPECTION, IF NECESSARY.
8. NO STRUCTURES OR PLANTING OF TREES SHALL BE PERMITTED IN UTILITY EASEMENTS.
9. VANDALPROOF / WATERTIGHT COVERS SHALL BE USED ON ALL MANHOLES IN EASEMENTS AND IN FLOODPLAINS.
10. FINAL ACCEPTANCE OF WORK BY DPU SHALL NOT BE MADE UNTIL ALL WORK SHOWN ON THE APPROVED UTILITY PLANS IS COMPLETED, INCLUDING PAVING, GRADING, AND ALL REQUIRED ADJUSTMENTS.
11. THE CONTRACTOR SHALL SCHEDULE ALL WORK INVOLVING THE EXISTING SEWER SYSTEMS, TIE INS, SHUTDOWNS OR REPAIRS WITH DPU AND AFFECTED PARTIES 48 HOURS IN ADVANCE, UNLESS SPECIFICALLY APPROVED BY DPU FOR EMERGENCY SITUATIONS.
12. MONITORING MANHOLES SHALL BE INSTALLED ON ALL SEWER LATERALS WHERE NON-DOMESTIC OR STRONG WASTE WILL BE POTENTIALLY DISCHARGED TO THE PUBLIC SEWER SYSTEM. IF MONITORING MANHOLES ARE NOT PROVIDED WITH THE INITIAL CONSTRUCTION, DPU MAY REQUIRE THAT THE OWNER ADD A MONITORING MANHOLE, AT THE OWNERS COST, SHOULD THE USE OF THE FACILITY CHANGE, SHOULD THE CHARACTERISTICS OF THE WASTE DISCHARGED BE CHANGED, SHOULD REGULATIONS CHANGE, OR SHOULD DPU DETERMINE FOR ANY REASON WHAT SO EVER, IN ITS SOLE JUDGEMENT, THAT A MONITORING MANHOLE IS NECESSARY TO PROTECT THE CITY'S SEWER SYSTEM OR TREATMENT FACILITIES.
13. PIPING OR MATERIALS BEING REPLACED OR REMOVED AS PART OF WORK SHALL BE PROPERLY DISPOSED OF AT THE CONTRACTOR'S EXPENSE.
14. NO STAGING OF EQUIPMENT OR STOCKPILING OF MATERIAL SHALL OCCUR WITHIN 75 FEET OF ANY STREAM, WITHIN LIMITS OF WETLANDS, OR WITHIN THE 100 YEAR FLOODPLAIN.
15. CONTRACTOR SHALL BE RESPONSIBLE FOR THE MEANS AND METHODS AND SEQUENCE OF CONSTRUCTION FOR THE WORK AND ALL COSTS FOR THE SAME. CONTRACTOR SHALL UTILIZE THE INFORMATION PROVIDED IN THE CONTRACT DOCUMENTS, VISIT THE SITE, MAKE INDEPENDENT INVESTIGATIONS AS DEEMED NECESSARY TO DETERMINE THE CONDITIONS AFFECTING THE COST OF THE WORK, AND MAKE PROVISIONS AS NECESSARY.

STANDARD SEWER NOTES

SCALE: NONE

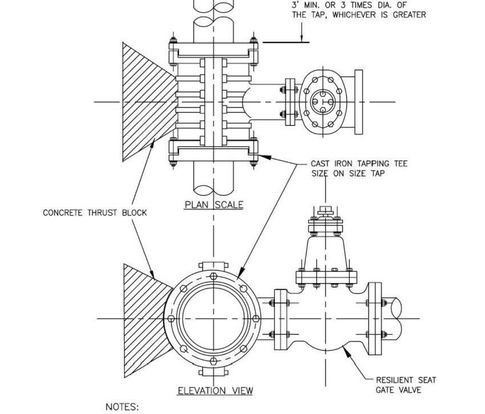
DEPARTMENT OF PUBLIC UTILITIES
RICHMOND, VIRGINIA



TRENCH AND PIPE BEDDING FOR DUCTILE IRON PIPE 12" DIA. AND SMALLER - UNSHEETED TRENCH

SCALE: NONE

DEPARTMENT OF PUBLIC UTILITIES
RICHMOND, VIRGINIA

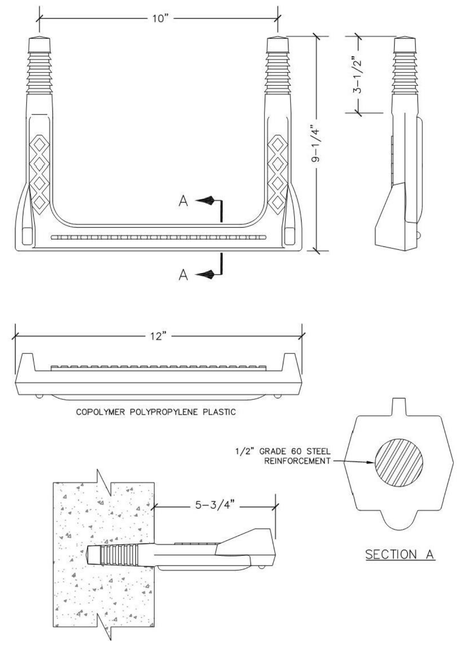


NOTES:

1. DETAIL FOR DUCTILE IRON PIPE ONLY.
2. CONTRACTOR TO DETERMINE OD OF EXISTING PIPE FOR SLEEVE SUITABILITY.
3. CITY TO PROVIDE TAPPING SLEEVE AND VALVE.
4. CONTRACTOR TO INSTALL SLEEVE.
5. CITY TO PERFORM TAPPING.

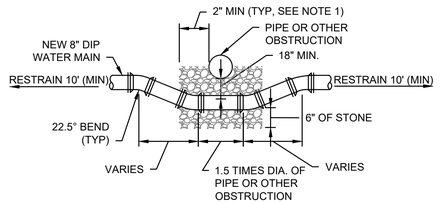
TYPICAL WATER MAIN TAPPING SLEEVE AND TAPPING VALVE DETAIL

SCALE: NONE



STANDARD MANHOLE STEP

SCALE: NONE



NOTES:

1. BEDDING MATERIAL SHALL BE PLACED A MINIMUM OF 2 FEET BEYOND EACH PIPE AND PROJECT OUTWARD FROM THE CROSSING ALONG BOTH PIPES.
2. RESTRAIN ALL FITTINGS.
3. MAINTAIN 3'-6' COVER OVER UPPER PIPE OR OBSTRUCTION.

UTILITY CONFLICT

SCALE: NONE

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90% DESIGN

CITY OF RICHMOND ESTABLISHED 1737

WASTEWATER TREATMENT PLANT BIOSOLIDS AND GRIT STORAGE PADS UPGRADES

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: A. HALL
DRAWN: J. SHERIDAN
CHECKED: A. HALL
CHECKED: T. PADDEN
APPROVED: T. PADDEN

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CIVIL

CIVIL DETAILS

DRAWING NUMBER
C-502

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MINIMUM TEST TIMES FOR VARIOUS MANHOLE DIAMETERS									
DEPTH	DIAMETER (IN)								
	30	33	36	42	48	54	60	66	72
	TIME (SECONDS)								
<4	6	7	7	9	10	12	13	15	16
6	9	10	11	13	15	18	20	22	25
8	11	12	14	17	20	23	26	29	33
10	14	15	18	21	25	29	33	36	41
12	17	18	21	25	30	35	39	43	49
14	20	21	25	30	35	41	46	51	57
16	22	24	29	34	40	46	52	58	67
18	25	27	32	38	45	52	59	65	73
20	28	30	35	42	50	53	65	72	81
22	31	33	39	46	55	64	72	79	89
24	33	36	42	51	59	64	78	87	97
26	36	39	46	55	64	75	85	94	105
28	39	42	49	59	69	81	91	101	113
30	42	45	53	63	74	87	98	108	121

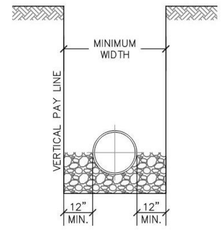
NOTES:

1. THE TEST HEAD SHALL BE PLACED AT THE TOP OF THE MANHOLE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMENDATIONS.
2. A VACUUM OF 10 IN. OF MERCURY SHALL BE DRAWN ON THE MANHOLE, THE VALVE ON THE VACUUM LINE OF THE TEST HEAD CLOSED, AND THE VACUUM PUMP SHUT OFF. THE TIME SHALL BE MEASURED FOR THE VACUUM TO DROP TO 9 IN. OF MERCURY.
3. THE MANHOLE SHALL PASS IF THE TIME FOR THE VACUUM READING TO DROP FROM 10 IN. OF MERCURY MEETS OR EXCEEDS THE VALUES INDICATED ABOVE.
4. IF THE MANHOLE FAILS THE INITIAL TEST, NECESSARY REPAIRS SHALL BE MADE BY AN APPROVED METHOD. THE MANHOLE SHALL THEN BE RETESTED UNTIL A SATISFACTORY TEST IS OBTAINED.
5. ABOVE TABLE AND METHOD IS BASED ON ASTM C1244–11.

MANHOLE VACUUM TEST TABLE

SCALE: NONE

PIPE SIZE	OUTER DIAMETER OF PIPE (SEE NOTE 2)	MIN TRENCH WIDTH (FT)
6"	6.63	2.55
8"	8.62	2.72
10"	10.75	2.90
12"	12.75	3.06
14"	14.00	3.17
16"	16.00	3.33
18"	18.00	3.50
20"	20.00	3.67
24"	24.00	4.00
30"	30.00	4.50

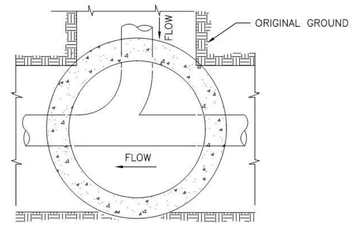


NOTES:

1. DIMENSIONS ALLOWED FOR SEWER EXCAVATIONS FOR SDR 26 PVC.
2. FOR DEPTHS GREATER THAN 30' CONTACT THE DPU FOR ALLOWABLE EXCAVATIONS.
4. CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL OSHA REQUIREMENTS.

PIPELINE EXCAVATION FOR PVC

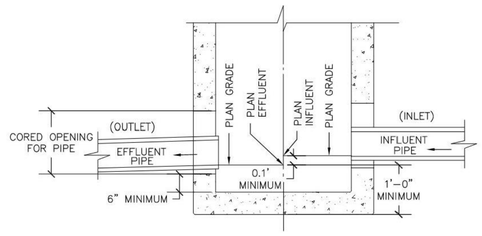
SCALE: NONE



PLAN INVERT

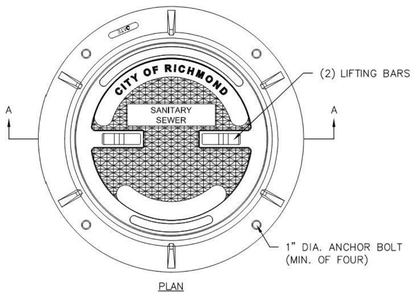
NOTE:

1. THE EFFLUENT ELEVATION SHOWN AT A MANHOLE IS ESTABLISHED FROM THE INFLUENT ELEVATION OF THE MANHOLE IMMEDIATELY DOWNSTREAM. ELEVATIONS SHOWN APPLY AT THE ℄ OF MANHOLES & ARE BASED ON THE HORIZONTAL DISTANCE, ℄ TO ℄ M.H. USING PERCENT OF GRADE INDICATED.
2. INVERT CHANNEL WIDTH SHALL BE EQUAL TO THE CONTRIBUTING PIPE'S I.D.
3. INVERT CHANNEL HEIGHT SHALL BE EQUAL TO THE 75% OF THE CONTRIBUTING PIPE'S I.D.
4. SLOPE BENCH TOWARDS CHANNEL AT 2" PER FOOT MIN.
5. BENCH AND CHANNELS SHALL BE FORMED USING 3,000 PSI CONCRETE OR HIGH STRENGTH NON SHRINK GROUT.
6. PROVIDE GROUT ABOVE PROTRUDING PIPES IN MANHOLES.

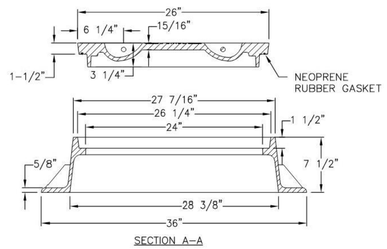


INVERT SHAPING

SCALE: NONE



PLAN



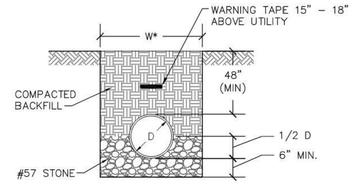
SECTION A–A

NOTES:

1. ALL GRAY IRON CASTINGS SHALL CONFORM TO ASTM A–48, CLASS 30 AND SHALL BE OF UNIFORM QUALITY. CASTING SHALL BE HEAVY DUTY.
2. ALL CASTING DIMENSIONS SHALL HAVE A TOLERANCE OF 1/8"±.
3. ALL CASTINGS SHALL BE CLEANED BY SHOT BLASTING AND HAND CHIPPING USING STANDARD INDUSTRY PRACTICES PRIOR TO SHOP APPLICATION OF ASPHALTIC COATING, BY DIPPING.
4. SURFACE BETWEEN FRAME AND COVER SHALL BE MACHINE FINISHED.
5. MANHOLE FRAME AND COVER SHALL BE US FOUNDRY USF 759 RING & NR COVER OR APPROVED EQUAL.

STANDARD FRAME AND COVER

SCALE: NONE



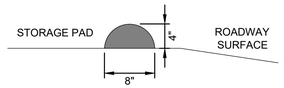
COMPACTED GRANULAR BEDDING
CLASS B

NOTES:

1. * FOR "W" SEE DETAILS P–1A AND P–1B.
2. USE CLASS B COMPACTED GRANULAR BEDDING UNLESS OTHERWISE DIRECTED BY DPU TECHNICAL SERVICES DIVISION.
3. TRENCH, BACKFILL AND STREET RESTORATION SHALL BE IN ACCORDANCE WITH CITY OF RICHMOND DEPARTMENT OF PUBLIC WORKS AND/OR VDOT REQUIREMENTS.
4. DI PIPE IS REQUIRED IN AREAS WITH LESS THAN 48" OF COVER.

SEWER BEDDING

SCALE: NONE



ASPHALT CONCRETE ROLLED CURB

SCALE: NONE

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C-503

ERECTION PROCEDURES, SEQUENCE AND SAFETY:

1. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE BUILDING IS FULLY COMPLETED. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ERECTION PROCEDURES AND SEQUENCE, AND TO ENSURE THE STABILITY OF THE BUILDING AND ITS COMPONENT PARTS, AND THE ADEQUACY OF TEMPORARY OR INCOMPLETE CONNECTIONS, DURING ERECTION. THIS INCLUDES THE ADDITION OF ANY SHORING, SHEETING, TEMPORARY GUYS, BRACING OR TIE DOWNS THAT MIGHT BE NECESSARY. SUCH MATERIAL IS NOT SHOWN ON THE DRAWINGS. IF APPLIED, THEY SHALL BE REMOVED AS CONDITIONS PERMIT AND SHALL REMAIN THE CONTRACTOR'S PROPERTY. THE ENGINEER HAS NO EXPERTISE IN, AND TAKES NO RESPONSIBILITY FOR, CONSTRUCTION MEANS AND METHODS OR JOB SITE SAFETY DURING CONSTRUCTION.

2. PROCESSING AND/OR APPROVING SUBMITTALS MADE BY THE CONTRACTOR WHICH MAY CONTAIN INFORMATION RELATED TO CONSTRUCTION METHODS OR SAFETY ISSUES, OR PARTICIPATION IN MEETINGS WHERE SUCH ISSUES MIGHT BE DISCUSSED, SHALL NOT BE CONSTRUED AS VOLUNTARY ASSUMPTION BY THE ENGINEER OF ANY RESPONSIBILITY FOR SAFETY PROCEDURES. IT IS SOLELY THE RESPONSIBILITY OF EACH CONTRACTOR TO FOLLOW ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION. THE ENGINEER IS NOT ENGAGED IN, AND DOESN'T SUPERVISE CONSTRUCTION.

SHOP DRAWINGS:

1. SHOP DRAWINGS FOR ALL STRUCTURAL ELEMENTS SHOWN ON THE CONTRACT DOCUMENTS MUST BE SUBMITTED BY THE GENERAL CONTRACTOR AND REVIEWED BY THE ENGINEER. UNDER NO CIRCUMSTANCES SHALL THE CONTRACT DRAWINGS BE REPRODUCED AND USED AS SHOP DRAWINGS.

2. THE CONTRACTOR SHALL COORDINATE AND VERIFY ALL DIMENSIONS PRIOR TO START OF CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.

3. THE STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS. THE CONTRACTOR SHALL VERIFY THE REQUIREMENTS OF OTHER TRADES AS TO SLEEVES, CHASES, HANGERS, INSERTS, ANCHORS, HOLES, ETC. TO SET THE STRUCTURAL WORK.

4. ALL CONTRACTOR MODIFICATIONS (INCLUDING PRODUCTS SUBMISSION) MUST BE IDENTIFIED IN WRITING AS A PROPOSED "AS EQUAL" CHANGE AT TIME OF SUBMISSION.

5. IF THE CONTRACTOR OR OWNER FAILS TO SUBMIT THE SHOP DRAWINGS OR FAILS TO FOLLOW THE ABOVE "AS EQUAL" PROCEDURE, THE ENGINEER (TAM CONSULTANTS, INC.), WILL NOT BE RESPONSIBLE FOR THE STRUCTURAL CERTIFICATION AND DESIGN OF THE PROJECT.

6. SHOP DRAWINGS ARE REVIEWED BY THE ENGINEER AS A CONVENIENCE TO THE CONTRACT AND ARE NOT A CONTRACT DOCUMENT.

INSPECTION:

1. SPECIAL INSPECTIONS ARE REQUIRED FOR THE PROJECT IN CONFORMANCE WITH THE VIRGINIA UNIFORM STATEWIDE BUILDING CODE (VUSBC) SECTION 1704 AND IBC 2021.

2. THE OWNER SHALL EMPLOY ONE OR MORE SPECIAL INSPECTORS TO PROVIDE INSPECTIONS DURING CONSTRUCTION ON THE ITEMS LISTED IN THE STATEMENT OF SPECIAL INSPECTIONS AND SCHEDULE FOR SPECIAL INSPECTIONS PREPARED FOR THIS PROJECT.

3. SPECIAL INSPECTION DOES NOT TAKE THE PLACE OF NORMAL INSPECTIONS REQUIRED BY CODE OFFICIALS. ALL NORMAL INSPECTIONS BY LOCAL CODE OFFICIALS ARE STILL REQUIRED.

4. THE STRUCTURAL ENGINEER OF RECORD MAY VISIT THE SITE PERIODICALLY TO ASCERTAIN GENERAL CONFORMANCE TO CONTRACT DOCUMENTS. THESE VISITS DO NOT SUBSTITUTE FOR SPECIAL INSPECTIONS, NOR DO THEY IMPLY ACCEPTANCE OF THE WORK. THEY SHOULD NOT BE CONSTRUED TO RELIEVE THE CONTRACTOR IN ANY WAY FROM OBLIGATIONS AND RESPONSIBILITIES UNDER THE CONSTRUCTION CONTRACT.

5. THE FOLLOWING ITEMS SHALL BE SHOP-FABRICATED BY A CERTIFIED FABRICATOR WITH A QUALITY ASSURANCE PROGRAM APPROVED BY THE LOCAL BUILDING CODE OFFICIAL TO ALLOW FABRICATION WITHOUT IN-SHOP SPECIAL INSPECTIONS:
   - PRE-ENGINEERED METAL BUILDING

   IF THE FABRICATOR CANNOT SUBSTANTIATE AN ACCEPTABLE QUALITY ASSURANCE PROGRAM FOR THE COUNTY, THE FABRICATOR'S WORK SHALL BE INSPECTED BY AN APPROVED, QUALIFIED AGENCY DURING FABRICATION AT NO ADDITIONAL COST TO THE OWNER.

   AT THE CONCLUSION OF THE PROJECT, THE FABRICATOR SHALL PROVIDE A CERTIFICATE OF COMPLIANCE TO THE BUILDING OFFICIAL STATING THAT THE WORK WAS COMPLETED IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS.

DESIGN WITHOUT CONSTRUCTION REVIEW

IT IS AGREED THAT IF TAM CONSULTANTS, INC.'S PROFESSIONAL SERVICES DO NOT EXTEND TO OR INCLUDE THE REVIEW OR SITE OBSERVATION OF THE CONTRACTOR'S WORK OR PERFORMANCE, THEN THE OWNER WILL DEFEND, INDEMNIFY AND HOLD HARMLESS TAM CONSULTANTS, INC., FROM ANY CLAIM OR SUIT WHATSOEVER, INCLUDING BUT NOT LIMITED TO ALL PAYMENTS, EXPENSES OR COSTS INVOLVED, ARISING FROM OR ALLEGED TO HAVE ARISEN FROM THE CONTRACTOR'S PERFORMANCE OR THE FAILURE OF THE CONTRACTOR'S WORK TO CONFORM TO THE DESIGN INTENT AND THE CONTRACT DOCUMENTS. TAM CONSULTANTS, INC., AGREES TO BE RESPONSIBLE FOR ITS OWN OR IT'S EMPLOYEES' NEGLIGENT ACTS, ERRORS OR OMISSIONS.

OWNERSHIP OF DOCUMENTS

THE CONTRACTOR ACKNOWLEDGES THESE PLANS AND SPECIFICATIONS PREPARED BY TAM CONSULTANTS, INC., AS INSTRUMENTS OF PROFESSIONAL SERVICE. NEVERTHELESS, THE PLANS AND SPECIFICATIONS PREPARED UNDER THIS AGREEMENT SHALL REMAIN THE PROPERTY OF TAM CONSULTANTS, INC. UPON COMPLETION OF THE WORK. THE CONTRACTOR AGREES TO HOLD HARMLESS AND INDEMNIFY TAM CONSULTANTS INC., AGAINST ALL DAMAGES, CLAIMS AND LOSSES, INCLUDING DEFENSE COSTS, ARISING OUT OF ANY REUSE OF THE PLANS AND SPECIFICATIONS WITHOUT THE WRITTEN AUTHORIZATION OF TAM CONSULTANTS, INC.

FOUNDATIONS - SPREAD FOOTINGS

1. ELEVATIONS SHOWN ON PLAN ARE TO THE TOP OF THE FOOTINGS AND ARE GIVEN RELATIVE TO THE FINISHED FLOOR ELEVATION (SEE NOTE ON FOUNDATION PLAN FOR ACTUAL FINISHED FLOOR ELEVATION).

2. BOTTOM OF ALL FOOTINGS SHALL BE A MINIMUM OF 2'-0" BELOW THE ORIGINAL GRADE OR SHALL BE PLACED ON APPROVED COMPACTED FILL.

3. BOTTOM OF ALL EXTERIOR FOOTINGS SHALL BE A MINIMUM OF 2'-0" BELOW FINISHED GRADE.

4. A SOIL BEARING CAPACITY OF 2000 PSF WAS USED IN THE FOUNDATION DESIGN AND MUST BE FIELD VERIFIED BY A REGISTERED GEOTECHNICAL ENGINEER. IF SOIL OF THIS BEARING CAPACITY IS NOT ENCOUNTERED AT THE ELEVATIONS INDICATED ON THE CONTRACT DRAWINGS, FOOTINGS SHALL BE LOWERED OR INCREASED IN SIZE AS DIRECTED BY THE STRUCTURAL ENGINEER.

5. EARTH FORMED FOOTINGS SHALL CONFORM TO THE SHAPE, LINES AND DIMENSIONS SHOWN ON THE FOUNDATION PLAN. ALL WATER SHALL BE REMOVED PRIOR TO PLACING CONCRETE.

6. BEFORE PLACING CONCRETE, ALL EMBEDDED ITEMS SHALL BE PROPERLY LOCATED, ACCURATELY POSITIONED AND MAINTAINED SECURELY IN PLACE.

CONTROLLED FILL AND BACKFILL:

1. THE SITE SHALL BE PREPARED IN ACCORDANCE WITH THE CIVIL PLANS PREPARED BY BROWN AND CALWELL. THE WORK SHALL BE DONE UNDER THE OBSERVATION OF THE GEOTECHNICAL OR CIVIL ENGINEER.

2. SAMPLES OF ALL MATERIALS THAT THE CONTRACTOR PROPOSES TO USE FOR COMPACTED FILL SHALL BE APPROVED BY THE GEOTECHNICAL/CIVIL AND STRUCTURAL ENGINEERS.

3. SAMPLES OF ALL MATERIALS THAT THE CONTRACTOR PROPOSES TO USE FOR COMPACTED FILL SHALL BE APPROVED BY A GEOTECHNICAL ENGINEER AS PART OF THE SPECIAL INSPECTIONS PROCESS. THE GEOTECHNICAL ENGINEER SHALL APPROVE THE PLACING OF THE COMPACTED FILL AND ALL MATERIALS AND EQUIPMENT USED FOR THIS PURPOSE, AND SHALL MAKE SUCH SOIL TESTS AS MAY BE REQUIRED FOR THE COMPLETION OF THE WORK, PERFORMING AT LEAST 6 IN PLACE DENSITY TESTS DURING EACH EIGHT HOUR SHIFT.

4. COMPACTED FILL SHALL CONSIST OF LOCAL MATERIAL FREE OF DELETERIOUS MATTER AND CLASSIFIED CL, SC, GC, GM, OR SM PER ASTM D2487.

5. THE CONTROL OF MOISTURE FOR PLACING THE FILL WILL BE BASED ON THE RESULTS OF COMPACTION TESTS PER ASTM D-1557.

6. ALL COMPACTED FILL SHALL HAVE A DENSITY OF AT LEAST 95% FOR COHESIONLESS SOILS AND 90% FOR COHESIVE SOILS OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D1557.

7. PRIOR TO PLACEMENT OF ANY FILLS, THE SITE SHALL BE STRIPPED OF ALL TOPSOIL, VEGETATION, ROCKS AND ORGANIC MATERIALS AND THE EXPOSED SUB GRADE SHALL BE COMPACTED IN PLACE TO A CONFIRMED DENSITY OF 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY.

8. FILL MATERIAL SHALL BE PLACED IN LOOSE LIFTS NOT EXCEEDING 8" IN THICKNESS AND SHALL BE MIXED, SPREAD AND PLACED IN SUCH A WAY AS TO PRODUCE A UNIFORM THICKNESS OF MATERIAL AFTER PLACING.

9. EACH LAYER OF FILL SHALL BE COMPACTED WITH A MINIMUM OF 6 COMPLETE PASSES ON ALL PORTIONS OF THE SURFACE OF EACH LIFT OF FILL BY RUBBER-TIRED ROLLERS, SHEEPS-FOOT ROLLERS OR OTHER MECHANICAL EQUIPMENT APPROVED BY THE GEOTECHNICAL ENGINEER AND THE STRUCTURAL ENGINEER.

10. COMPACTED FILL PLACED WITHIN 4 FEET OF STRUCTURES AND PIPES SHOULD BE PLACED IN HORIZONTAL LIFTS NOT TO EXCEED 4 INCHES THICKNESS AND COMPACTED WITH HAND TAMPERS OR LIGHT COMPACTION EQUIPMENT TO THE SAME STANDARD.

11. HEAVY COMPACTION EQUIPMENT SHOULD NOT BE ALLOWED WITHIN 4 FEET OF STRUCTURES UNLESS A MINIMUM 2 FEET DEPTH OF FILL COVERS THE STRUCTURES.

12. THE CONTRACTOR SHALL TAKE ALL MEASURES REQUIRED TO PROVIDE FOR FREE DRAINAGE OF THE SITE AND TO PREVENT PONDING OF WATER.

13. SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED AT ALL TIMES.

14. WHENEVER IN-PLACE DENSITIES ARE FOUND BELOW ACCEPTABLE LIMITS, ADDITIONAL ROLLING TO PRODUCE THE SPECIFIED DENSITIES SHALL BE REQUIRED.

15. PLACING OF FILL CONTAINING ORGANIC MATTER; PLACING OF FILL WITH MOISTURE CONTENT TOO HIGH OR TOO LOW FOR PROPER COMPACTION; PLACING OF FILL WHEN FREE WATER IS STANDING ON THE EXISTING FILL SURFACE; PLACING OF FILL IN A FROZEN CONDITION OR ON TOP OF FROZEN MATTER SHALL NOT BE PERMITTED.

16. THE GEOTECHNICAL ENGINEER SHALL SUPERVISE THE PLACING OF THE COMPACTED FILL AND ALL THE MATERIAL AND EQUIPMENT USED FOR THIS PURPOSE AND SHALL MAKE SUCH SOILS TESTS AS MAY BE REQUIRED FOR THE COMPLETION OF THE WORK, PERFORMING AT LEAST 6 IN PLACE DENSITY TESTS DURING EACH EIGHT HOUR SHIFT.

CONCRETE:

1. ALL CONCRETE WORK SHALL CONFORM TO ALL THE PROVISIONS OF THE "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS" (ACI 301-R85) AND TO THE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" (ACI 318-14).

2. ALL STRUCTURAL CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI UNLESS NOTED OTHERWISE.
   THE MAXIMUM SLUMP OF ALL CONCRETE SHALL BE 4".
   ALL CONCRETE EXPOSED TO THE WEATHER SHALL HAVE AN AIR ENTRAINMENT OF 6%±1%

3. NO ADMIXTURES CONTAINING CALCIUM CHLORIDE SHALL BE PERMITTED.

4. THE CONTRACTOR SHALL COMPLY WITH ALL THE PROVISIONS OF "RECOMMENDED PRACTICE FOR HOT WEATHER CONCRETING" (ACI 305-R10) AND "RECOMMENDED PRACTICE FOR COLD WEATHER CONCRETING" (ACI 306-R10). THE CONTRACTOR SHALL SUBMIT COLD/HOT WEATHER PROCEDURES FOR APPROVAL.

5. ALL FORMWORK SHALL BE IN ACCORDANCE WITH THE AMERICAN CONCRETE INSTITUTE "FORMWORK FOR CONCRETE" SPECIAL PUBLICATION NO. 4 AND ACI'S "STANDARD RECOMMENDED PRACTICE FOR CONCRETE FORMWORK" (ACI 347-LATEST EDITION).

6. PROVIDE SAWN JOINTS OR CONSTRUCTION JOINTS IN SLABS AT ALL COLUMN CENTERLINES AND AS SHOWN ON THE PLANS. SAWN JOINTS SHALL BE PROVIDED SO THAT NO SLAB PANEL EXCEEDS 30 TIMES THE SLAB THICKNESS PER ACI RECOMMENDATIONS. SAWN JOINTS SHALL BE CUT AS SOON AS POSSIBLE PER ACI RECOMMENDATIONS.

7. FLOOR SLABS SHALL BE FINISHED TO A MINIMUM FLATNESS F-NUMBER, FF = 25 AND A MINIMUM LEVELNESS F-NUMBER, FL = 20 IN ANY DIRECTION.

8. FLOOR SLABS ON GRADE SHALL BE REINFORCED WITH FIBERMESH 650 FIBER REINFORCING AT AN APPLICATION RATE OF 3.0 LBS/CY, OR AN APPROVED EQUAL.

9. FLOOR SLABS ON GRADE SHALL HAVE CHAIRS TO KEEP REINFORCING MID-DEPTH OF THE SLAB UNO. ALL OTHER MEANS OF MAINTAING PLACEMENT REQUIRE APPROVAL.

10. CONCRETE STRUCTURES MAY NOT SUPPORT THEIR DESIGN LIVE LOAD UNTIL THE SPECIFIED COMPRESSIVE STRENGTH HAS BEEN ACHIEVED. LOADS GREATER THAN THE DESIGN LIVE LOADS SHALL NOT BE PLACED ON THE STRUCTURE. THE CONTRACTOR SHALL SUPPORT ADJACENT STRUCTURES, UTILITIES, AND EXCAVATIONS AS REQUIRED FOR COMPLETION OF WORK.

11. ONE SET OF COMPRESSIVE TEST CYLINDERS FOR EACH 100 CUBIC YARDS POURED, BUT NOT LESS THAN ONE SET FOR EACH DAY'S PLACEMENT AND EACH CLASS OF CONCRETE, ALONG WITH SLUMP TESTS SHALL BE PERFORMED BY A TESTING LABORATORY APPROVED BY THE STRUCTURAL ENGINEER.

12. ALL CONCRETE SHALL BE CURED IN ACCORDANCE WITH THE LATEST EDITION OF ACI 308, STANDARD SPECIFICATION FOR CURING CONCRETE. LIQUID CURING COMPOUNDS SHALL BE COMPATIBLE WITH FLOORING ADHESIVES AND OTHER SURFACE TREATMENTS AND SHALL BE APPROVED BY THE ARCHITECT PRIOR TO USE.

REINFORCING STEEL:

1. REINFORCING STEEL SHALL BE DEFORMED BARS IN ACCORDANCE WITH ASTM A615, GRADE 60.

2. BENDS SHALL BE FABRICATED AS PER DETAILS.

3. PLACE MAIN REINFORCING STEEL SO AS TO PROVIDE 3" MINIMUM COVER FOR FOUNDATIONS POURED ON EARTH, 2" MINIMUM COVER FOR BEAMS AND COLUMNS, ¾ MINIMUM COVER FOR SLABS AND 1½ FOR ALL REBAR IN EXPOSED CONCRETE (EXCEPT AS OTHERWISE DETAILED).

4. ALL BEAM AND SLAB STEEL SHALL HAVE A MINIMUM EXTENSION INTO THE SUPPORTS IN ACCORDANCE WITH THE LATEST EDITION OF THE ACI CODE.

5. PROVIDE ACCESSORIES AND BAR SUPPORTS IN ACCORDANCE WITH THE MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES (ACI 315-80).

6. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185, GRADE 60 UNLESS OTHERWISE NOTED, WWF REINFORCING SHALL BE PLACED AT MID-DEPTH OF SLABS ON GRADE AND DRAPED OVER SUPPORTS IN CONCRETE SLABS ON CENTERING. END LAPS OF ALL WWF REINFORCING SHALL BE 8" MINIMUM.

7. UNLESS NOTED OTHERWISE, REINFORCING STEEL BAR LAPS SHALL BE AS FOLLOWS
   #3 - 1'-9" #4 - 2'-4" #5 - 2'-11" #6 - 3'-6" #7 - 4'-1" #8 - 4'-11"

STRUCTURAL STEEL:

1. PRE-ENGINEERED METAL BUILDING TO BE DESIGNED BY MANUFACTURER.

2. ALL STRUCTURAL STEEL WIDE FLANGE SHAPES SHALL BE IN ACCORDANCE WITH ASTM A992 SPECIFICATIONS (Fy = 50 KSI). ALL OTHER STRUCTURAL STEEL SHAPES SHALL BE IN ACCORDANCE WITH ASTM A36 SPECIFICATIONS (Fy = 36 KSI). TUBES SHALL BE IN ACCORDANCE WITH ASTM A500 GRADE B (Fy = 46 KSI).

3. ALL STRUCTURAL STEEL WORK SHALL CONFORM TO THE CURRENT EDITION OF THE "MANUAL OF STEEL CONSTRUCTION" OF THE "AMERICAN INSTITUTE OF STEEL CONSTRUCTION".

4. ALL FIELD BOLTED SHEAR CONNECTIONS SHALL BE BEARING TYPE CONNECTIONS (THREADS INCLUDED IN THE SHEAR PLANE) WITH 3/4" DIAMETER ASTM A325 HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED ON THE DRAWINGS. ALL SHEAR CONNECTIONS SHALL BE DESIGNED TO SUPPORT HALF OF THE TOTAL UNIFORM LOAD CAPACITY SHOWN IN THE "TABLES OF ALLOWABLE LOADS ON BEAMS" OF THE CURRENT EDITION OF THE AISC "MANUAL OF STEEL CONSTRUCTION". THE LENGTH OF THE SPAN SHALL BE AS SHOWN ON THE DRAWINGS. THE ABOVE IS NOT REQUIRED IF THE REACTION IS SHOWN ON THE PLANS.

5. ALL WELDED CONNECTIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MANUAL OF STEEL CONSTRUCTION" OF THE "AMERICAN INSTITUTE OF STEEL CONSTRUCTION" AND THE LATEST EDITION OF THE "CODE FOR WELDING IN BUILDING CONSTRUCTION" OF THE AMERICAN WELDING SOCIETY. USE E70XX LOW HYDROGEN ELECTRODES.

6. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY GUYING AND BRACING REQUIRED TO ERECT AND HOLD THE STEEL FRAME IN PROPER ALIGNMENT UNTIL ALL ROOF DECK, BRIDGING, BRACING, ETC. IS IN PLACE TO RESIST LATERAL MOVEMENT OF THE FRAME.

7. FINISHES AND COATINGS:

   A. ALL STRUCTURAL STEEL SHALL BE SHOP PRIMED PRIOR TO DELIVERY TO THE SITE.

   B. ALL METAL BUILDING FRAME COLUMNS, SECONDARY FRAMING, AND ASSOCIATED CONNECTIONS BELOW THE D.F.E. SHALL BE HOT-DIP GALVANIZED.

   C. ALL OTHER STEEL AND CONNECTIONS EXPOSED TO THE WEATHER SHALL BE COATED WITH EXTERIOR-GRADE PAINT.

2021 VIRGINIA CONSTRUCTION CODE (VCC) DESIGN LOADS
REFERENCE ASCE 7-22

USE/LOCATION	LIVE LOAD	DEAD LOAD:
SLAB	900 PSF	SELF WEIGHT
WHEEL LOAD	11,500 LB	
ROOF	20 PSF	5 PSF
SOLAR ALLOWANCE		5 PSF
CEILING COLLATERAL		5 PSF

SNOW LOAD
- GROUND SNOW LOAD, Pg = 35 PSF
- IMPORTANCE FACTOR, I = 1.0
- SNOW EXPOSURE FACTOR, Ce = 1.0
- THERMAL FACTOR, Ct = 1.2
- FLAT ROOF SNOW LOAD, Pf = 29.4 PSF

WIND LOAD
- ULTIMATE DESIGN WIND SPEED = 115 MPH
- WIND RISK CATEGORY II
- WIND EXPOSURE C
- OPEN BUILDING
- COMPONENTS AND CLADDING (LRFD, 10 SQFT):
  - FASCIA: +/- 34.07 PSF
  - ROOF: + 29.54 & + 7.38 PSF
  - 27.07 & - 2.46 PSF
  (WINDWARD & LEEWARD)

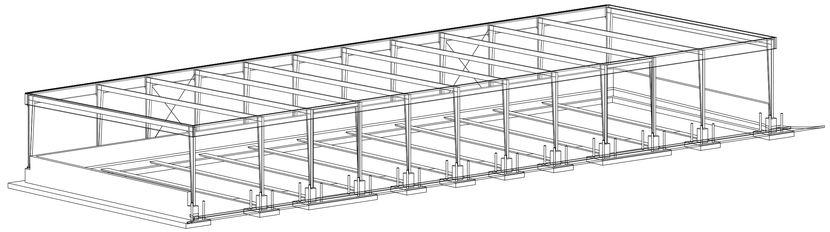
EARTHQUAKE DESIGN DATA
- SEISMIC IMPORTANCE FACTOR, IE = 1.0
- RISK CATEGORY II
- SPECTRAL RESPONSE ACCELERATION, Ss = 0.177g, S1 = 0.066g
- SITE CLASS C
- SPECTRAL RESPONSE COEFFICIENT, SDS = 0.19, SD1 = 0.11
- SEISMIC DESIGN CATEGORY B
- SFRS: TO BE DESIGNED BY METAL BUILDING MANUFACTURER

FLOOD DESIGN DATA
- FLOOD ZONE - AE 32.3 (JAMES RIVER CROSS SECTION M3, 1% ANNUAL CHANCE)
- BASE FLOOD ELEVATION (B.F.E.) = 32.3 FT
- FREEBOARD = N/A
- DESIGN FLOOD ELEVATION (D.F.E.) = 32.3 FT
- DESIGN FLOOD VELOCITY (V) = 4.30 FT/SEC
- DEBRIS IMPACT (FI) = 3,500 LB
  (ACTING AT ANY HEIGHT UP TO THE D.F.E.)
- FOR FURTHER INFORMATION, REFERENCE THE FOLLOWING DOCUMENTS:

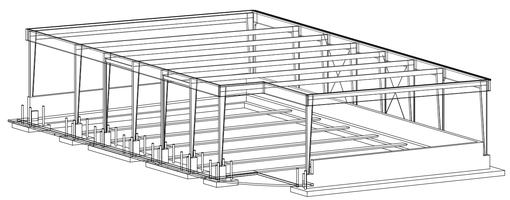
  FEMA FIRM PANEL 510129-0043E
  FOR THE CITY OF RICHMOND , VIRGINIA DATED 07/16/2014

ABBREVIATIONS

A.B.	-	ANCHOR BOLT
ARCH	-	ARCHITECT, ARCHITECTURAL
B.F.E.	-	BASE FLOOD ELEVATION
BLDG.	-	BUILDING
B.O.S.	-	BOTTOM OF STEEL
C.J.	-	CONTROL JOINT
CLR.	-	CLEAR
COL.	-	COLUMN
CONC.	-	CONCRETE
CFS	-	COLD FORMED STEEL
DET.	-	DETAIL
D.F.E.	-	DESIGN FLOOD ELEVATION
DIA.	-	DIAMETER
EA.	-	EACH
E.F.	-	EACH FACE
E.W.	-	EACH WAY
EXIST.	-	EXISTING
F.F. EL.	-	FINISH FLOOR ELEVATION
F.O.	-	FACE OF
FTG.	-	FOOTING
GWB	-	GYPSUM WALL BOARD
HORIZ.	-	HORIZONTAL
L.A.G.	-	LOWEST ADJACENT GRADE
LLV	-	LONG LEG VERTICAL
LLH	-	LONG LEG HORIZONTAL
O.C.	-	ON CENTER
O.H.	-	OPPOSITE HAND
PL.	-	PLATE
REINF.	-	REINFORCING, REINFORCED
SHT.	-	SHEET
SIM.	-	SIMILAR
S.J.	-	SAWN JOINT
S.O.G.	-	SLAB ON GRADE
SW	-	SHEAR WALL
T.O.F.	-	TOP OF FOOTING
T.O.S.	-	TOP OF STEEL
TYP.	-	TYPICAL
U.N.O.	-	UNLESS NOTED OTHERWISE
VERT.	-	VERTICAL
W/	-	WITH
W/O	-	WITHOUT



B S-001 BIOSOLIDS ISOMETRIC



G S-001 GRIT ISOMETRIC

Brown AND Caldwell
3454 WEST CLAY STREET
RICHMOND, VA 23230

TAM CONSULTANTS
4350 NEW TOWN AVE #201
WILLIAMSBURG, VA 23188

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

90% DESIGN

CITY OF RICHMOND ESTABLISHED 1737

WASTEWATER TREATMENT PLANT BIOSOLIDS AND GRIT STORAGE PADS UPGRADES

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	ZA
DRAWN:	ZA
CHECKED:	--
CHECKED:	--
APPROVED:	--

FILENAME
MB246219 & MB246220 BC CoR WWTP BIOSOLIDS & GRIT UPGRADES

BC PROJECT NUMBER
190651 & 196366

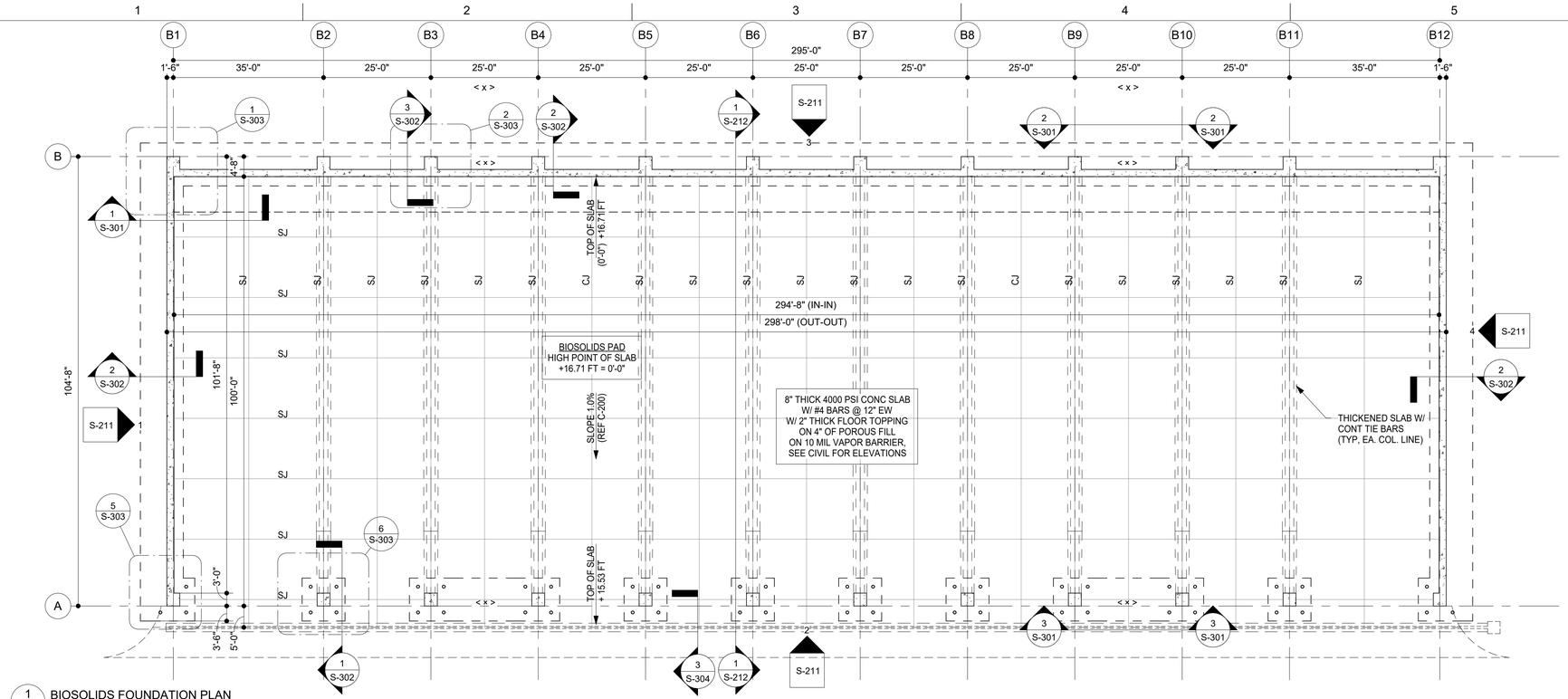
CLIENT PROJECT NUMBER
105614 & 109212

STRUCTURAL

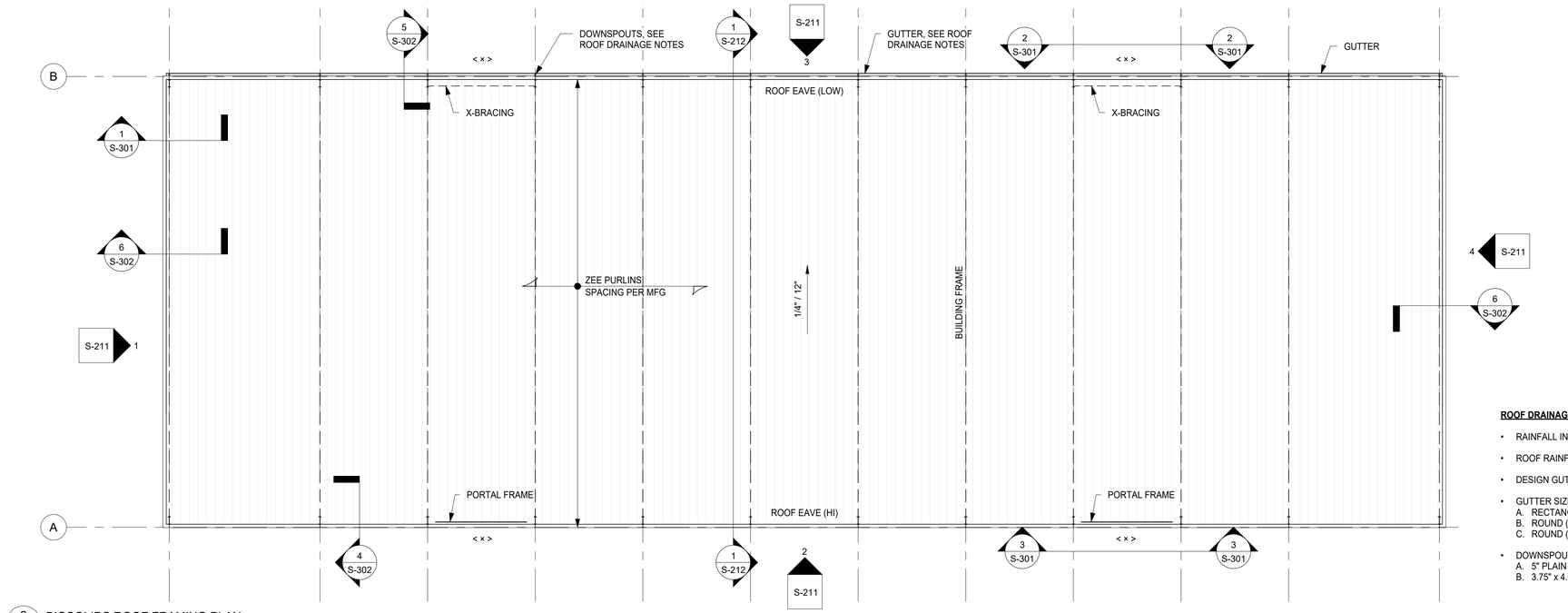
GENERAL STRUCTURAL NOTES

DRAWING NUMBER
S-001

Plotted on: 4/25/2025 11:42:54 AM



1 S-111 BIOSOLIDS FOUNDATION PLAN
1/16" = 1'-0"



2 S-111 BIOSOLIDS ROOF FRAMING PLAN
1/16" = 1'-0"

ROOF DRAINAGE:

- RAINFALL INTENSITY: 7.1 IN/HR (10-YEAR)
- ROOF RAINFALL DESIGN AREA: 3,150 SQFT
- DESIGN GUTTER LENGTH: 30 FT
- GUTTER SIZE:
  A. RECTANGULAR: 6" DEEP x 8" WIDE
  B. ROUND (LEVEL): 12" DIA
  C. ROUND (1/8" SLOPE): 8" DIA
- DOWNSPOUT AREA: 18.6 SQIN
  A. 5" PLAIN ROUND
  B. 3.75" x 4.75" RECTANGULAR

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90% DESIGN

CITY OF RICHMOND ESTABLISHED 1737

WASTEWATER TREATMENT PLANT BIOSOLIDS AND GRIT STORAGE PADS UPGRADES

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: ZA
DRAWN: ZA
CHECKED: --
CHECKED: --
APPROVED: --

FILENAME
MB246219 & MB246220 BC CoR WWTP BIOSOLIDS & GRIT UPGRADES

BC PROJECT NUMBER
190651 & 196366

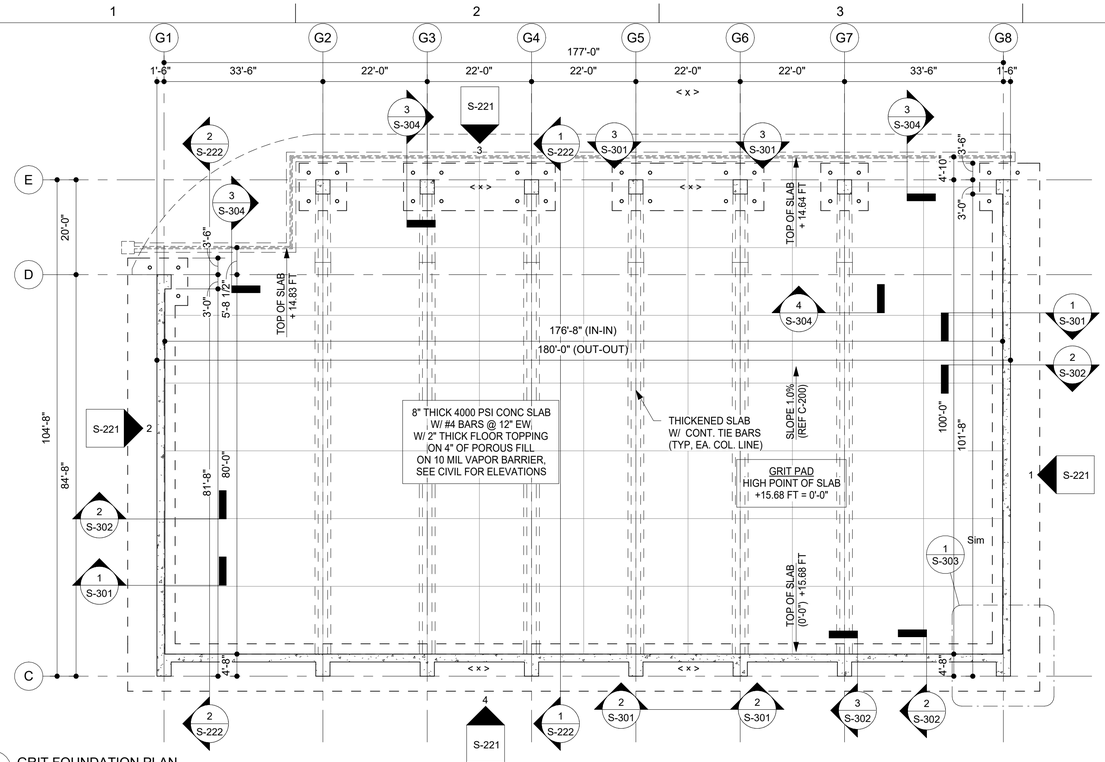
CLIENT PROJECT NUMBER
105614 & 109212

STRUCTURAL

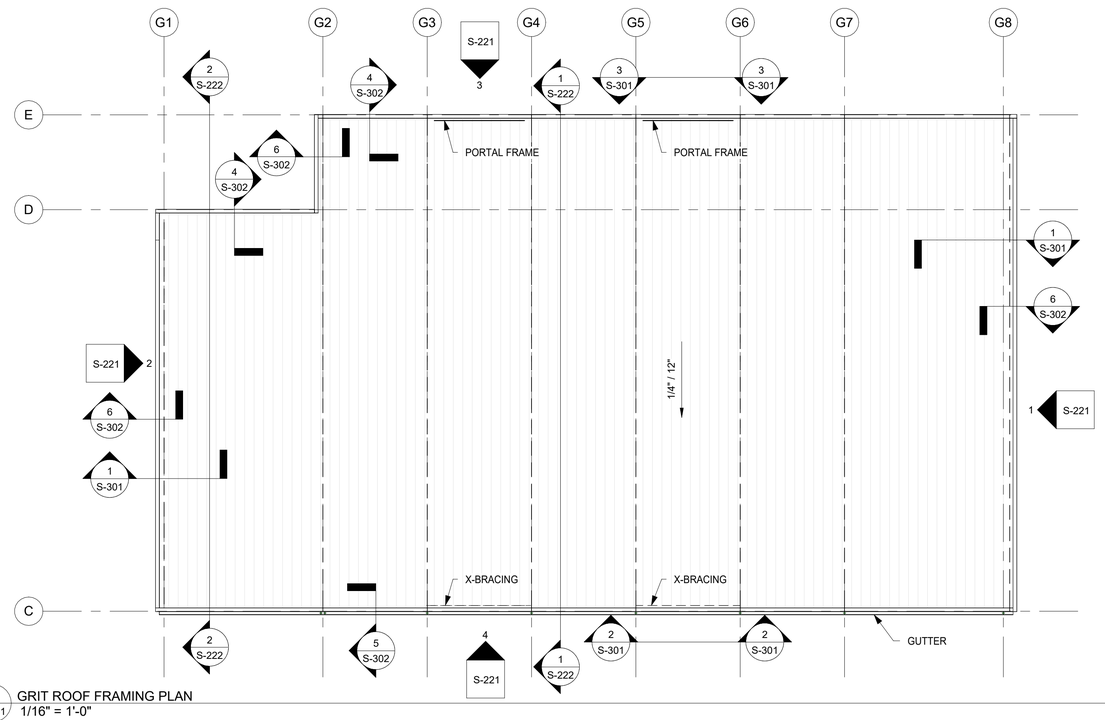
BIOSOLIDS PAD FOUNDATION & ROOF PLANS

DRAWING NUMBER
S-111

Plotted on: 4/25/2025 11:42:59 AM



1 S-121 GRIT FOUNDATION PLAN
1/16" = 1'-0"



2 S-121 GRIT ROOF FRAMING PLAN
1/16" = 1'-0"

ROOF DRAINAGE:

- RAINFALL INTENSITY: 7.1 IN/HR (10-YEAR)
- ROOF RAINFALL DESIGN AREA: 3,150 SQFT
- DESIGN GUTTER LENGTH: 30 FT
- GUTTER SIZE:
  A. RECTANGULAR: 6" DEEP x 8" WIDE
  B. ROUND (LEVEL): 12" DIA
  C. ROUND (1/8" SLOPE): 8" DIA
- DOWNSPOUT AREA: 18.6 SQIN
  A. 5" PLAIN ROUND
  B. 3.75" x 4.75" RECTANGULAR

N

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WASTEWATER TREATMENT PLANT BIOSOLIDS AND GRIT STORAGE PADS UPGRADES

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STRUCTURAL

GRIT PAD FOUNDATION & ROOF PLANS

DRAWING NUMBER
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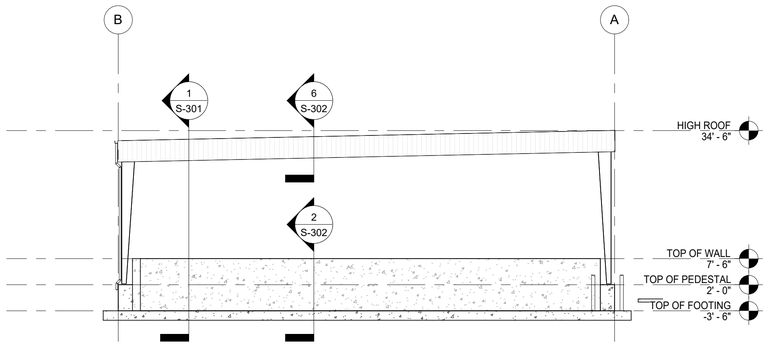
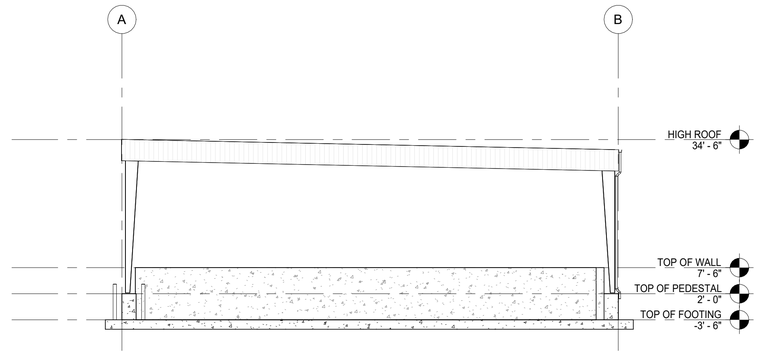
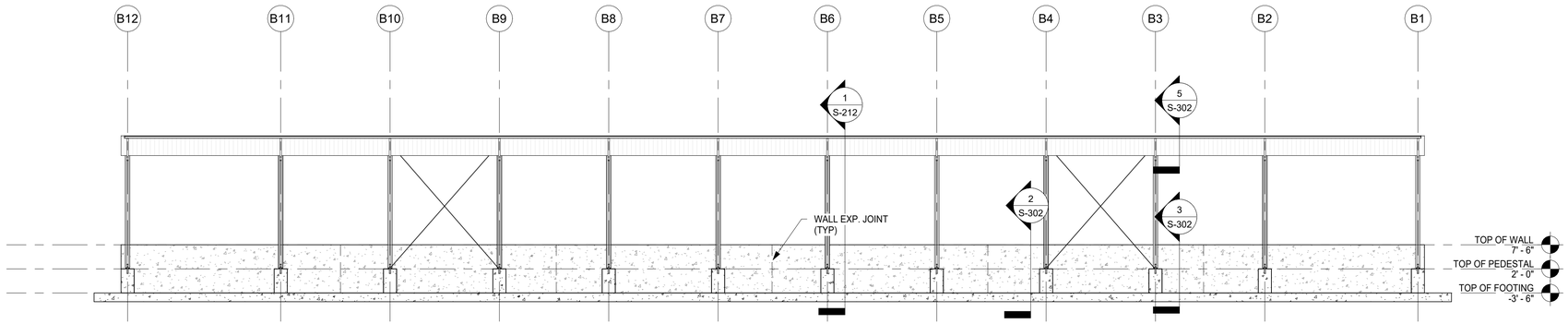


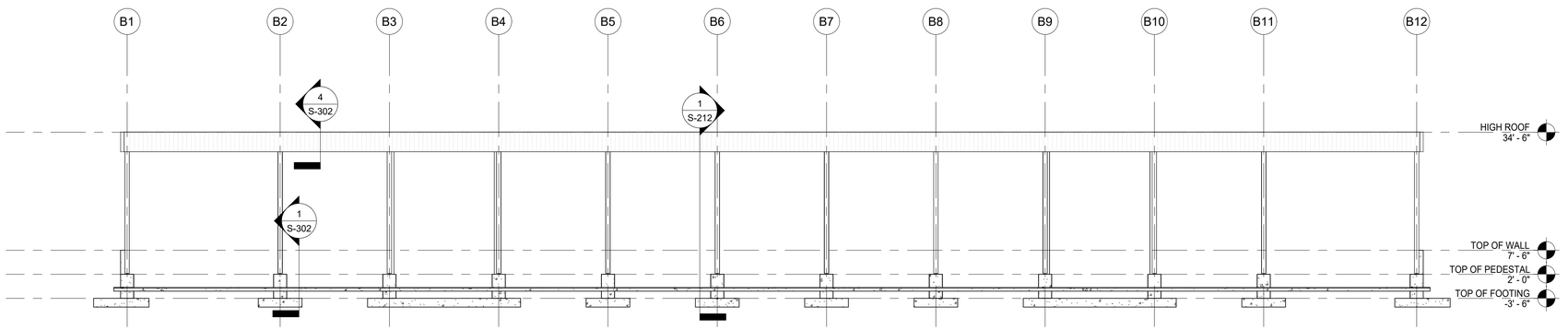
1 S-211 BIOSOLIDS ELEVATION - NORTH
1/16" = 1'-0"



4 S-211 BIOSOLIDS ELEVATION - SOUTH
1/16" = 1'-0"



3 S-211 BIOSOLIDS ELEVATION - WEST
1/16" = 1'-0"



2 S-211 BIOSOLIDS ELEVATION - EAST
1/16" = 1'-0"

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STRUCTURAL

BIOSOLIDS PAD ELEVATIONS

DRAWING NUMBER
S-211

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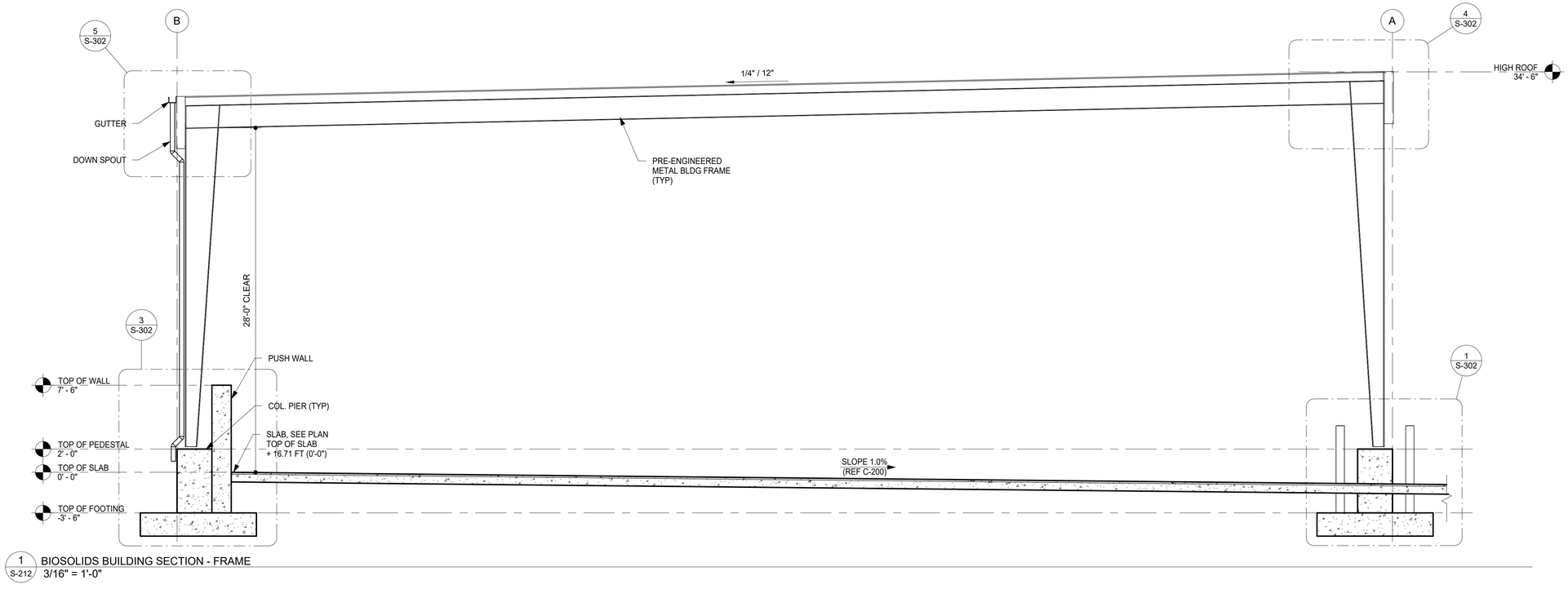

1 S-212 BIOSOLIDS BUILDING SECTION - FRAME
3/16" = 1'-0"

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BIOSOLIDS PAD BUILDING SECTIONS

DRAWING NUMBER
S-212

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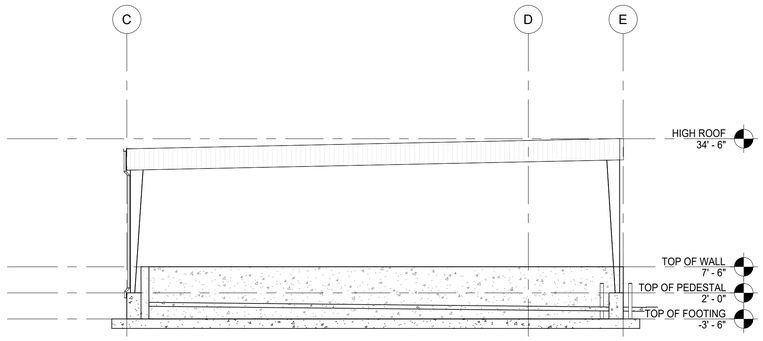
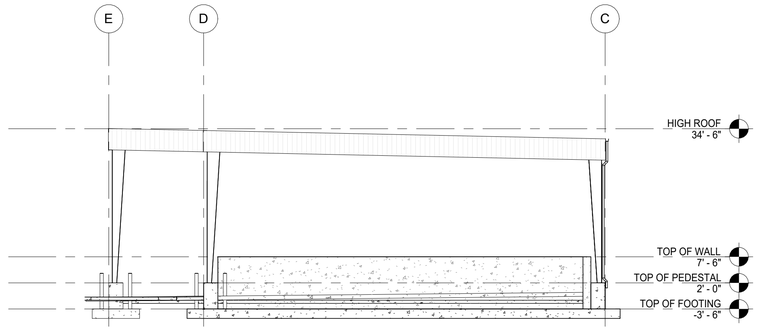
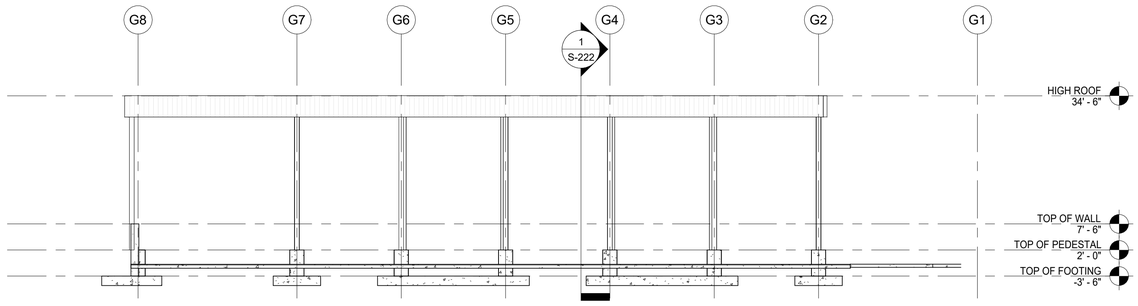


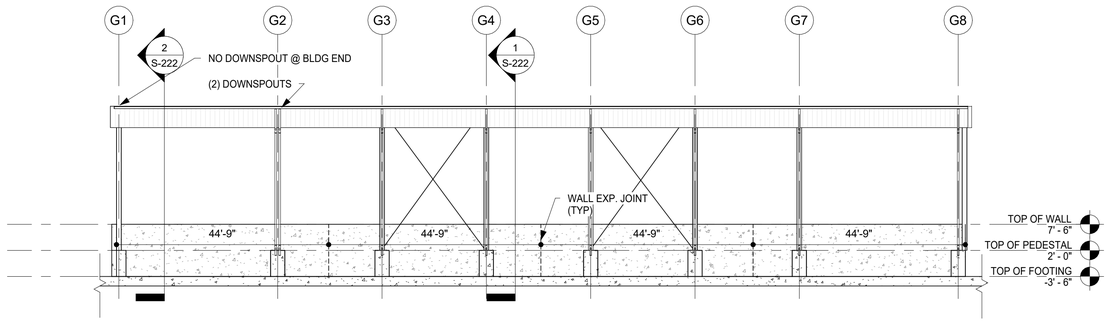
1 S-221 GRIT ELEVATION - EAST
1/16" = 1'-0"



2 S-221 GRIT ELEVATION - WEST
1/16" = 1'-0"



3 S-221 GRIT ELEVATION - NORTH
1/16" = 1'-0"



4 S-221 GRIT ELEVATION - SOUTH
1/16" = 1'-0"

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GRIT PAD ELEVATIONS

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S-221

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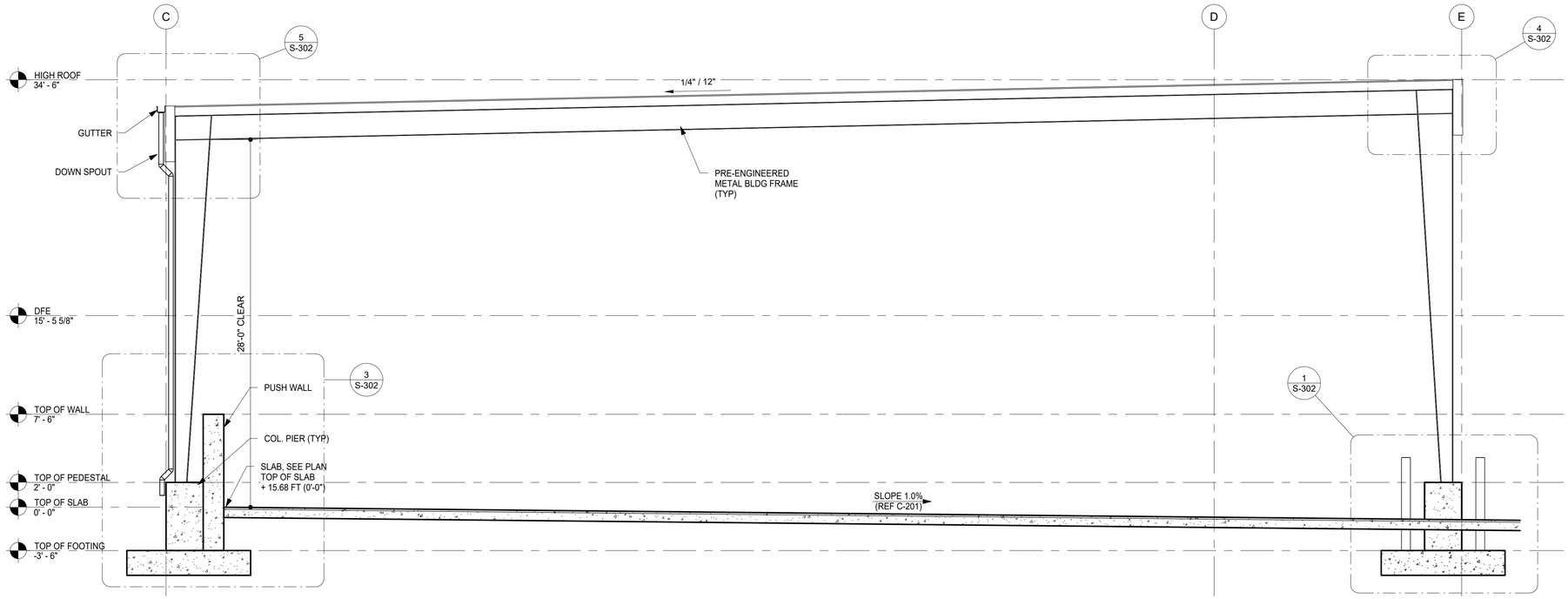
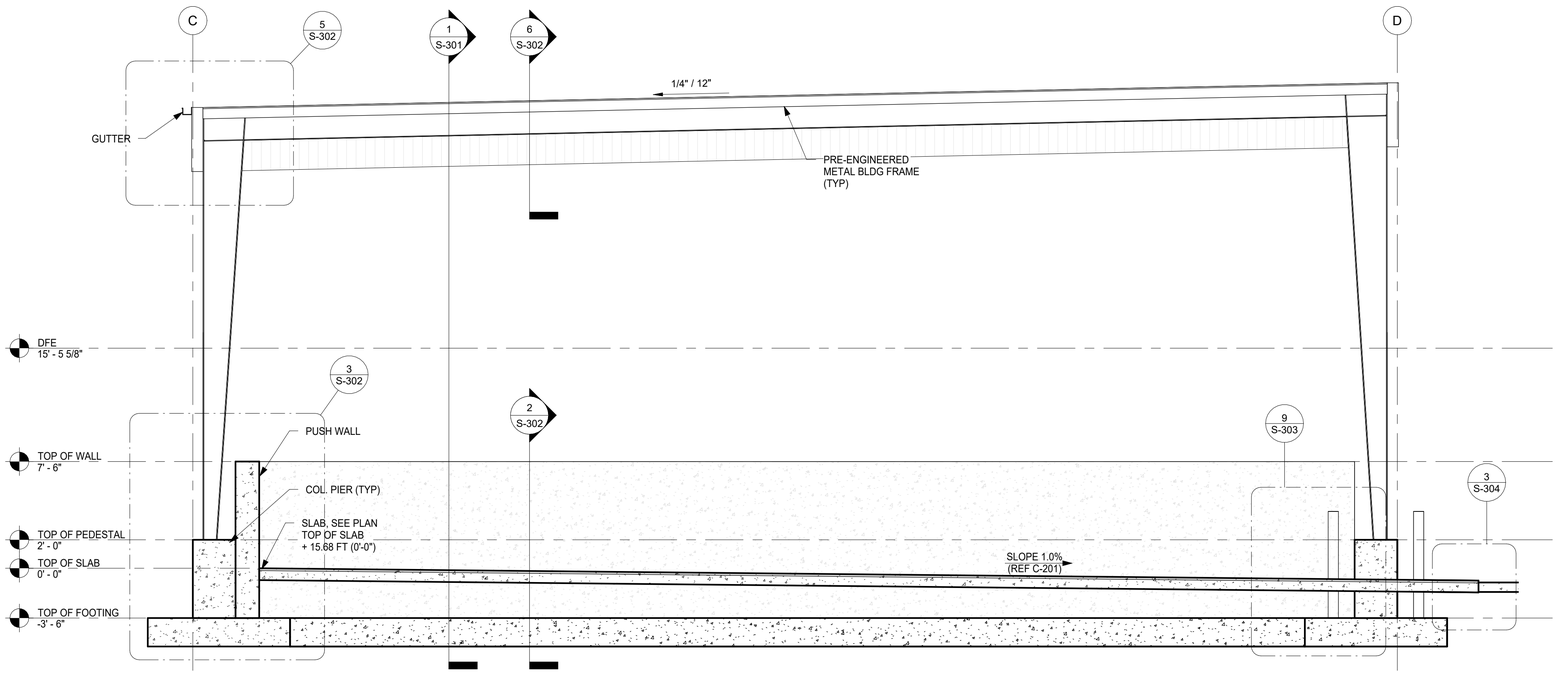


1 S-222 GRIT PAD BUILDING SECTION - FRAME
3/16" = 1'-0"



2 S-222 GRIT PAD BUILDING SECTION - FRAME1
3/16" = 1'-0"

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GRIT PAD BUILDING SECTIONS

DRAWING NUMBER
S-222

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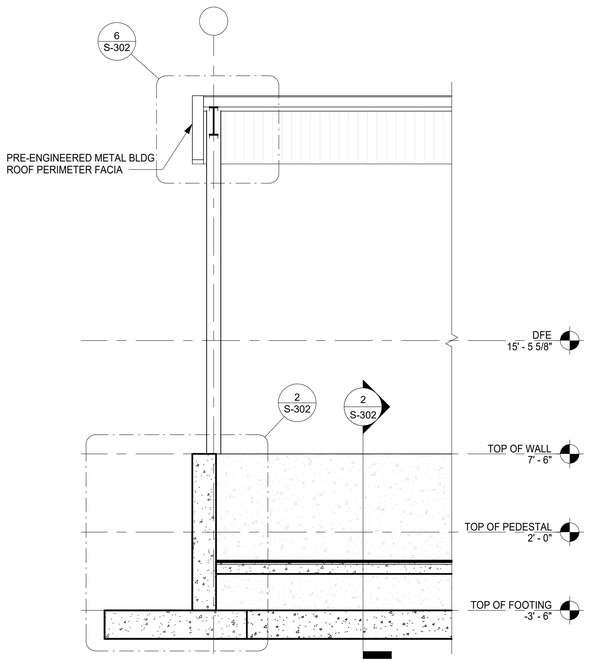
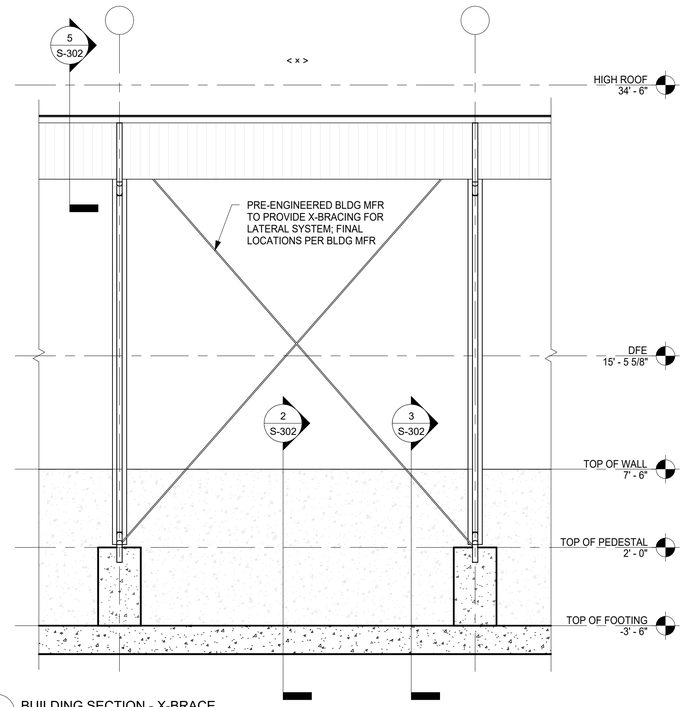
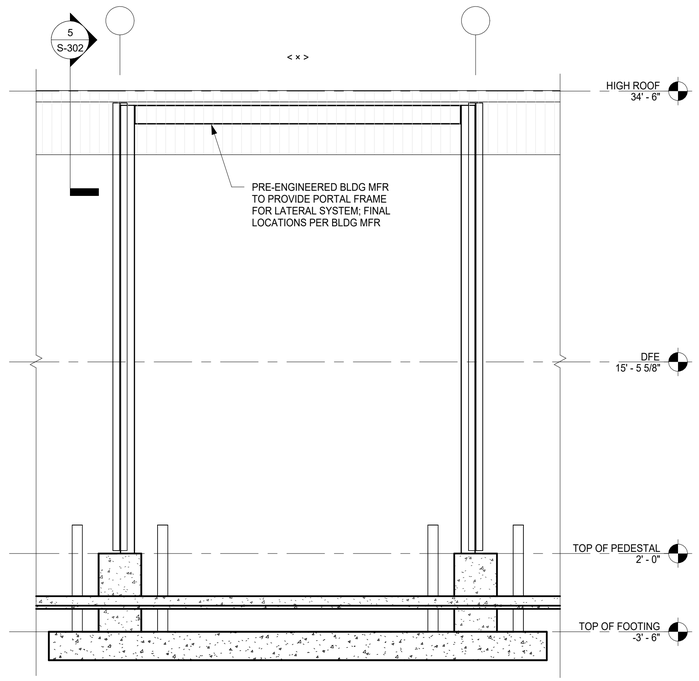


1 S-301 BUILDING SECTION - END
3/16" = 1'-0"



2 S-301 BUILDING SECTION - X-BRACE
3/16" = 1'-0"



3 S-301 BUILDING SECTION - PORTAL FRAME
3/16" = 1'-0"

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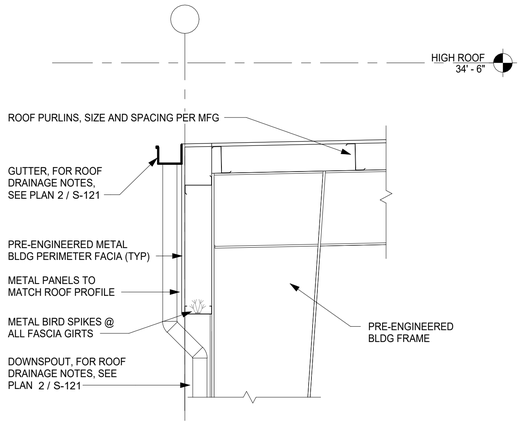
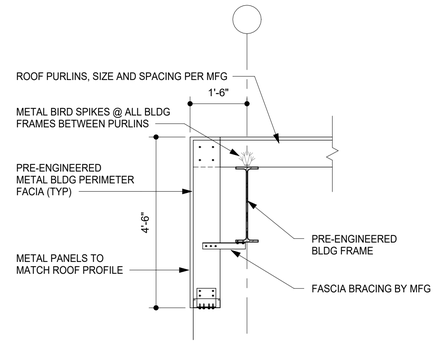
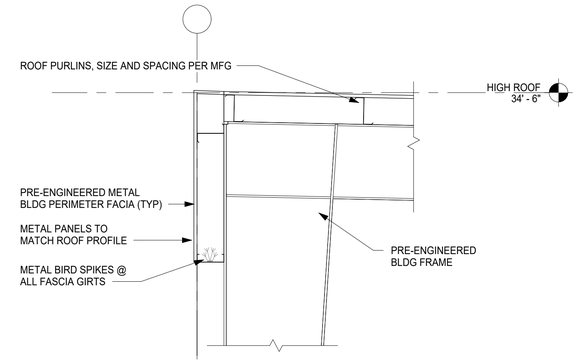


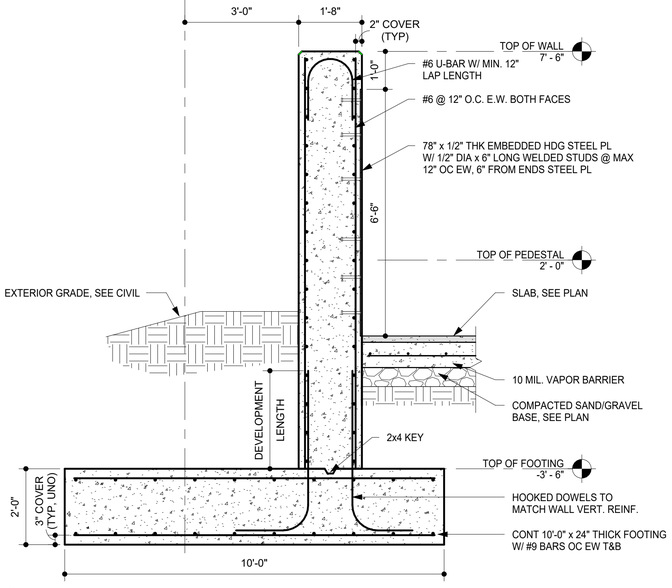
5 S-302 ROOF EAVE - GUTTER
1/2" = 1'-0"



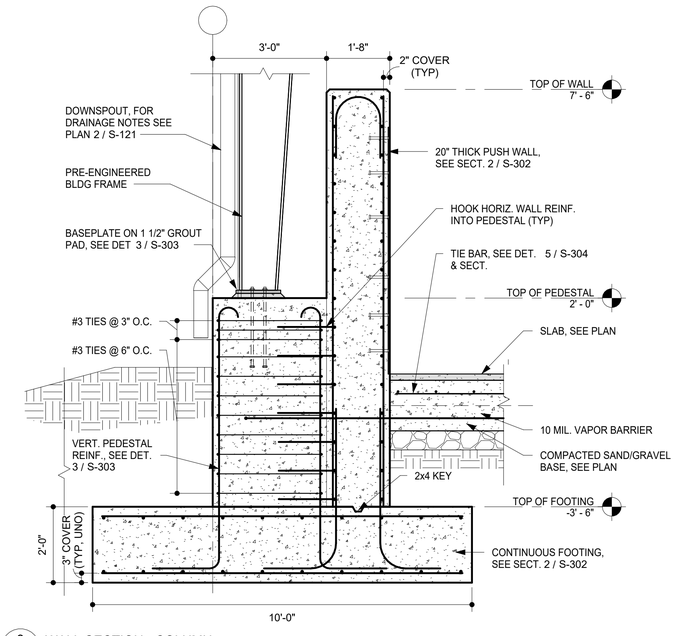
6 S-302 ROOF EAVE - END
1/2" = 1'-0"



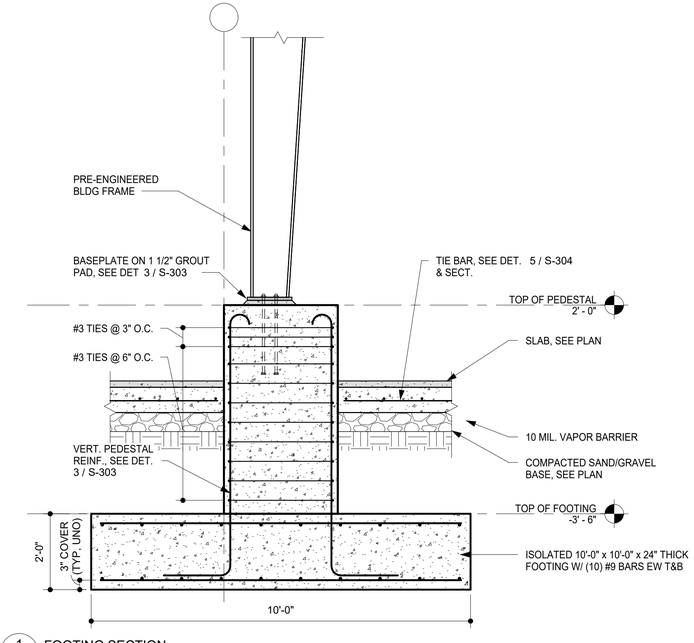
4 S-302 ROOF EAVE - HIGH
1/2" = 1'-0"



2 S-302 WALL SECTION
1/2" = 1'-0"



3 S-302 WALL SECTION - COLUMN
1/2" = 1'-0"



1 S-302 FOOTING SECTION
1/2" = 1'-0"

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FOUNDATION & ROOF SECTIONS

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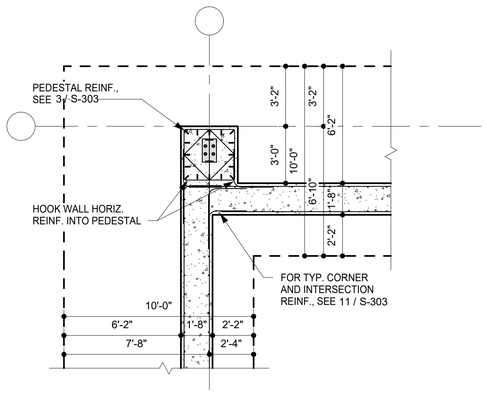
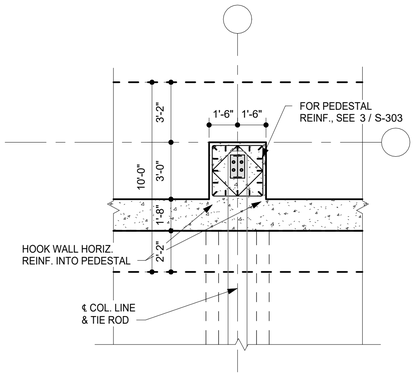
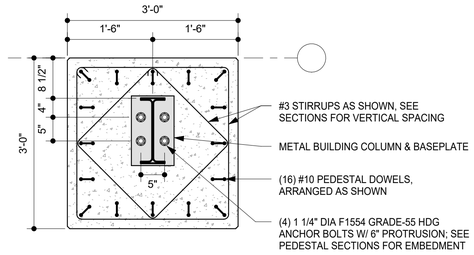


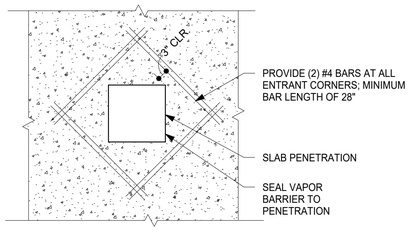
1 S-303 FOUNDATION DETAIL - CORNER
1/4" = 1'-0"



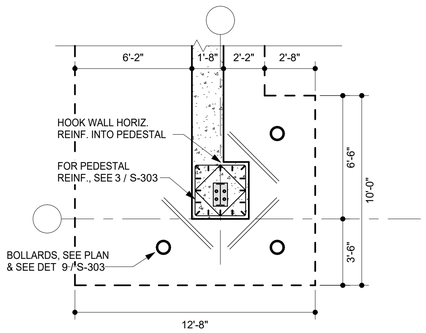
2 S-303 FOUNDATION DETAIL - PILASTER
1/4" = 1'-0"



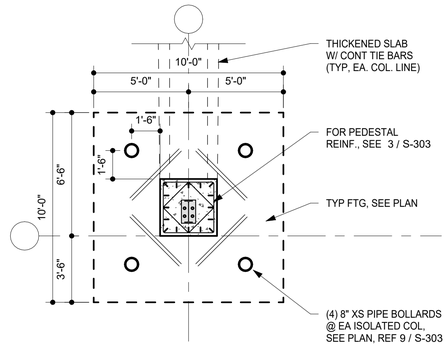
3 S-303 TYPICAL PEDESTAL
3/4" = 1'-0"



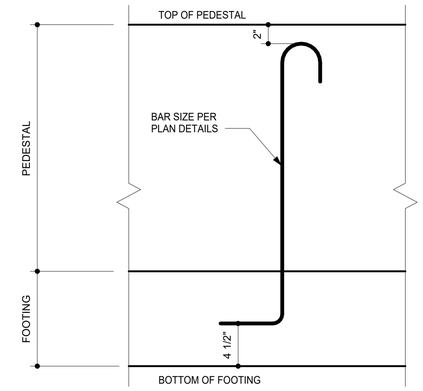
4 S-303 SLAB PENETRATION DETAIL
N.T.S.



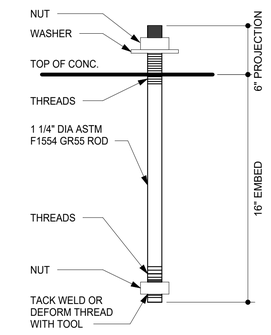
5 S-303 FOUNDATION DETAIL - END WALL
1/4" = 1'-0"



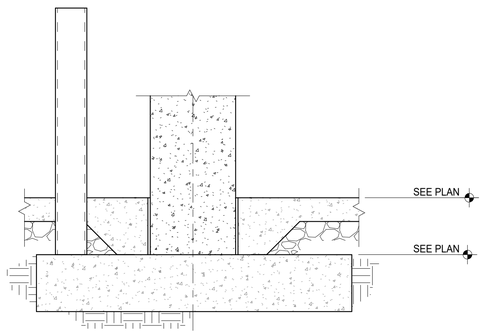
6 S-303 FOUNDATION DETAIL - FOOTING
1/4" = 1'-0"



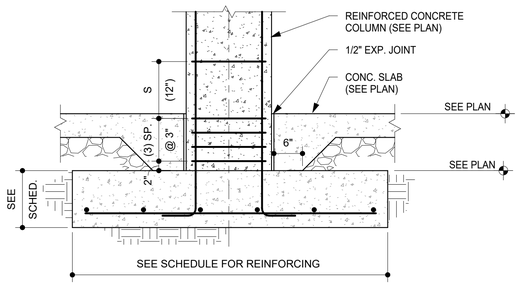
7 S-303 TYPICAL PIER DOWEL DETAIL
N.T.S.



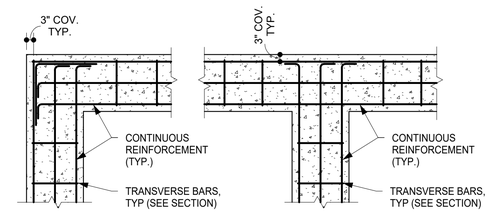
8 S-303 ANCHOR BOLT DETAIL
N.T.S.



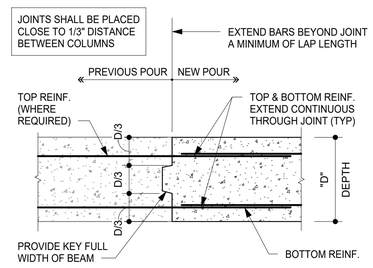
9 S-303 BOLLARD SECTION
N.T.S.



10 S-303 TYPICAL INTERIOR CONCRETE COLUMN FOUNDATION
N.T.S.



11 S-303 TYPICAL FOUNDATION CORNER AND INTERSECTION
N.T.S.



12 S-303 FOUNDATION CONSTRUCTION JOINT.
N.T.S.

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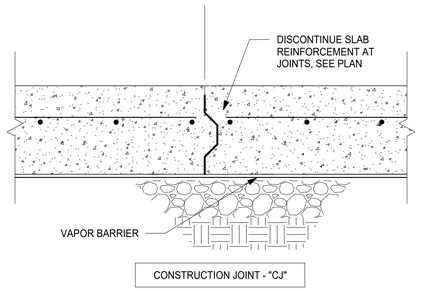
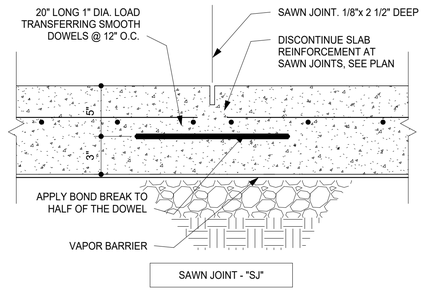
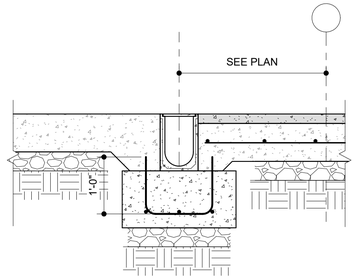


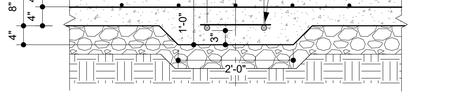
1 S-304 TYPICAL SAWN JOINT
N.T.S.



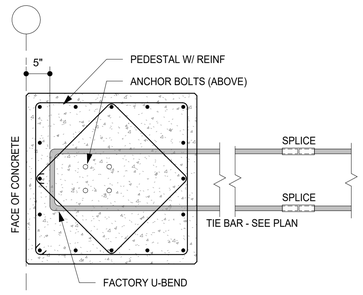
2 S-304 APPARATUS BAY SAWN JOINT
N.T.S.



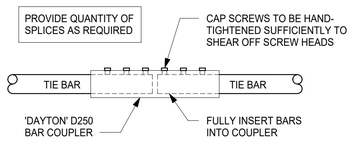
3 S-304 TRENCH DRAIN SLAB EDGE
3/4" = 1'-0"



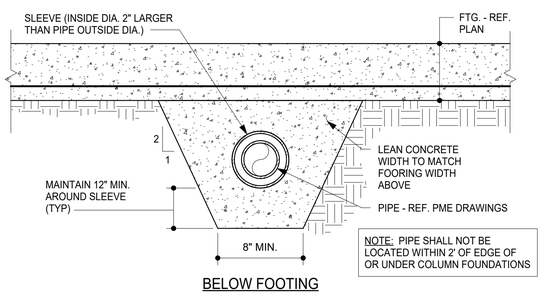
4 S-304 THICKENED SLAB
3/4" = 1'-0"



5 S-304 TYPICAL TIE BAR DETAIL
N.T.S.



6 S-304 TYPICAL TIE BAR SPLICE DETAIL
N.T.S.



7 S-304 TYPICAL PIPE SLEEVE DETAILS
N.T.S.

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WASTEWATER TREATMENT PLANT BIOSOLIDS AND GRIT STORAGE PADS UPGRADES

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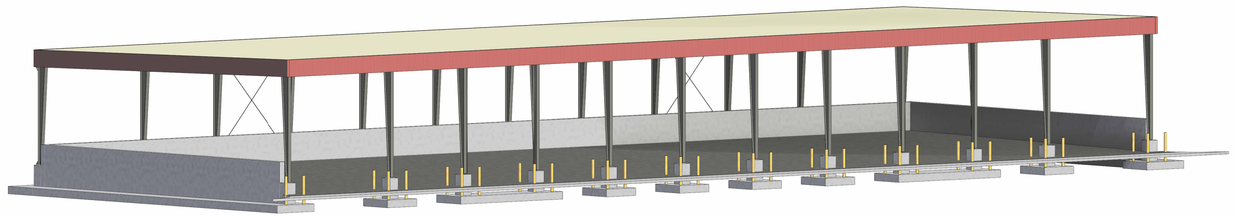
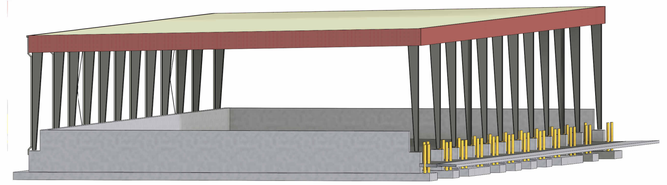
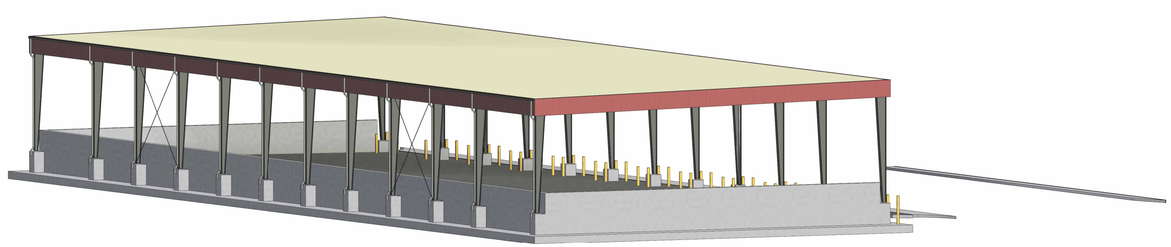


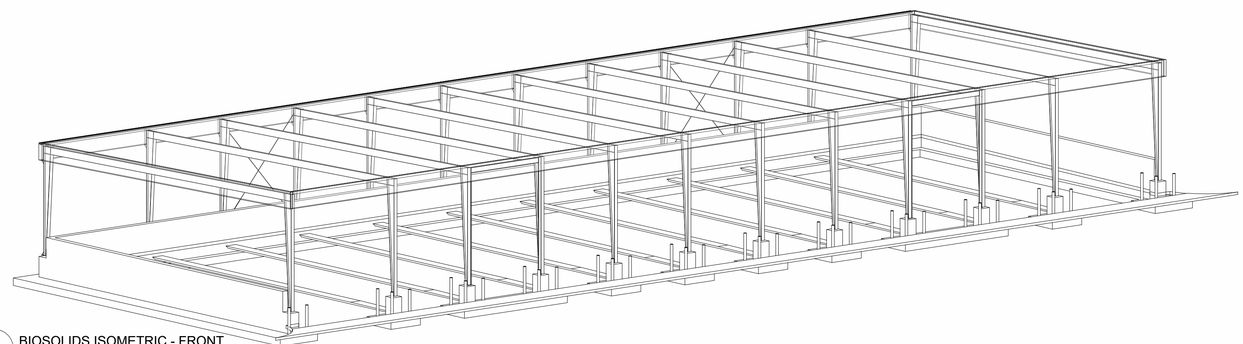
1 S-911 BIOSOLIDS ISOMETRIC - COLOR FRONT



5 S-911 BIOSOLIDS ISOMETRIC - COLOR SIDE



3 S-911 BIOSOLIDS ISOMETRIC - COLOR REAR



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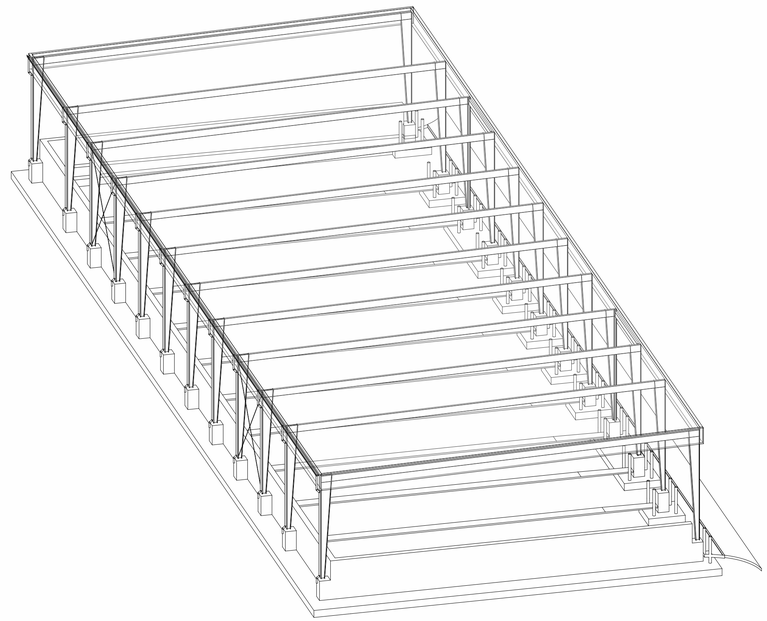

4 S-911 BIOSOLIDS ISOMETRIC - SIDE

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BIOSOLIDS PAD RENDERINGS

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S-911

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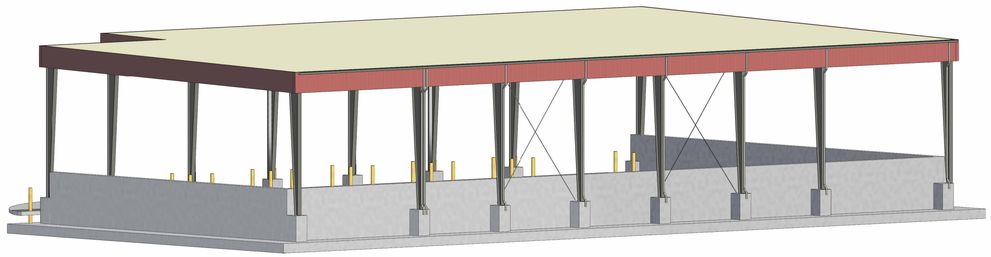
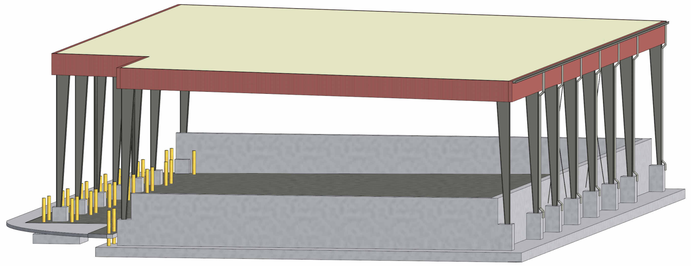


1 S-921 GRIT ISOMETRIC - COLOR REAR



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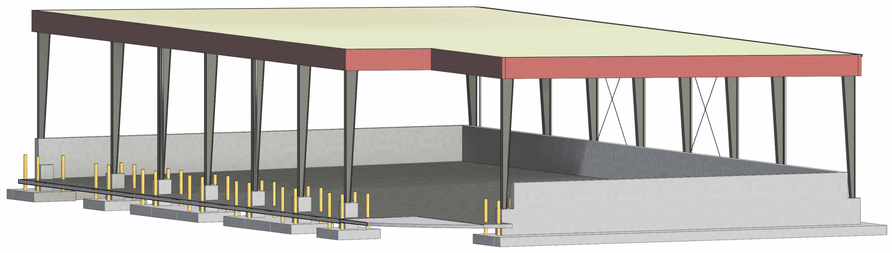

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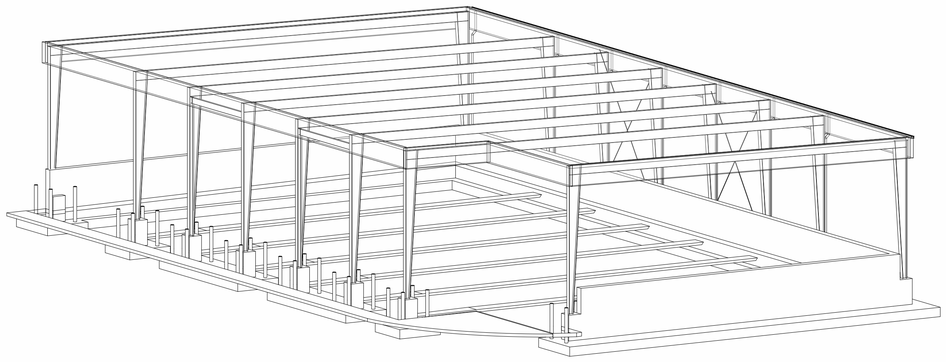
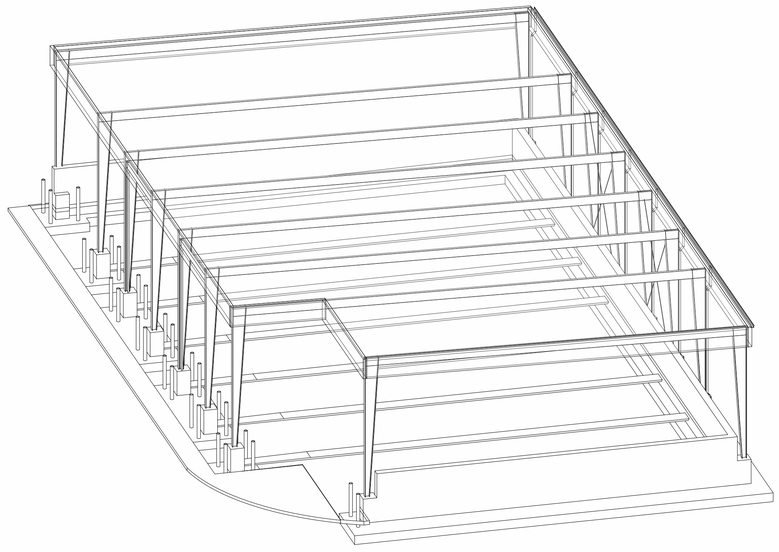


4 S-921 GRIT ISOMETRIC - FRONT



5 S-921 GRIT ISOMETRIC - SIDE

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GRIT PAD RENDERINGS

DRAWING NUMBER
S-921

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ONE LINE AND SCHEMATIC DIAGRAM SYMBOLS

SYMBOL	DESCRIPTION
	INCOMING FEEDER
	OUTGOING FEEDER
	CONDUCTORS CONNECTED
	GROUNDING CONNECTION
	LIGHTNING OR SURGE ARRESTOR
	RECTIFIER OR DIODE
	SURGE CAPACITOR
	POWER TRANSFORMER
CPT	CONTROL POWER TRANSFORMER
2 CT	CURRENT TRANSFORMER (NUMBER DENOTES QUANTITY REQUIRED)
CT	CURRENT TRANSFORMER 3 PHASE WINDOW TYPE
2 PT	POTENTIAL TRANSFORMER (NUMBER DENOTES QUANTITY REQUIRED)
52	MEDIUM VOLTAGE DRAWOUT TYPE CIRCUIT BREAKER
	DISCONNECTING OR DRAWOUT DEVICE
100A	LOW VOLTAGE AIR CIRCUIT BREAKER WITH 100A TRIP
225AF/125AT	LOW VOLTAGE AIR CIRCUIT BREAKER 225A FRAME AND 125A TRIP
225AF/150AT	LOW VOLTAGE AIR CIRCUIT BREAKER WITH COORDINATED CURRENT LIMITING FUSES - 225A FRAME AND 150A TRIP
	KEY INTERLOCK - DASHED LINE WITH ARROWS INDICATES MOVEMENT OF KEY DURING INTERLOCK PROCEDURE
M	FULL VOLTAGE MAGNETIC COMBINATION STARTER WITH MOTOR CIRCUIT PROTECTOR, CONTROL TRANSFORMER AND OVERLOAD RELAYS (M - OPERATING COIL)
F R	FULL VOLTAGE MAGNETIC COMBINATION REVERSING STARTER WITH MOTOR CIRCUIT PROTECTOR, CONTROL TRANSFORMER AND OVERLOAD RELAYS (F - FORWARD, R - REVERSE)
H L	FULL VOLTAGE MAGNETIC COMBINATION TWO SPEED STARTER WITH MOTOR CIRCUIT PROTECTOR, CONTROL TRANSFORMER AND OVERLOAD RELAYS (H - HIGH, L - LOW, F - FAST, S - SLOW)
2S R TR 1S	REDUCED VOLTAGE MAGNETIC COMBINATION AUTOTRANSFORMER STARTER WITH MOTOR CIRCUIT PROTECTOR, CONTROL TRANSFORMER AND OVERLOAD RELAYS (R - RUN, TR - TIMER, 1S & 2S - TRANSITION)
SOLID STATE STARTER	SOLID STATE REDUCED VOLTAGE COMBINATION STARTER WITH MOTOR CIRCUIT PROTECTOR AND CONTROL TRANSFORMER
5	MOTOR - THREE PHASE (NUMBER DENOTES HORSEPOWER)
	FUSED DISCONNECT SWITCH, 3-POLE UNLESS NOTED OTHERWISE

SYMBOL	DESCRIPTION
M	OPERATING COIL (C-CONTACTOR, F-FAST, F-FORWARD, H-HIGH, L-LOW, M-MOTOR STARTER, R-REVERSE, S-SLOW)
AR XX	RELAY COIL (AR-AUXILIARY RELAY, CR-CONTROL RELAY, LOR-LOCKOUT RELAY, TR-TIME DELAY RELAY WHERE 'XX' DENOTES RELAY FUNCTION OR NUMBER)
	NORMALLY OPEN CONTACT
	NORMALLY CLOSED CONTACT
OL	OVERLOAD RELAY CONTACT
X-X-O	NORMALLY OPEN (SHOWN) OR NORMALLY CLOSED RESET TIMER CONTACT (X-X-O - DENOTES TIMER SEQUENCE FOR RESET-TIMING-TIMED OUT PERIODS. X INDICATES CONTACT CLOSED)
TC	NORMALLY OPEN CONTACT WITH TIME DELAY CLOSING (ON DELAY)
TC	NORMALLY CLOSED CONTACT WITH TIME DELAY CLOSING (OFF DELAY)
TO	NORMALLY CLOSED CONTACT WITH TIME DELAY OPENING (ON DELAY)
TO	NORMALLY OPEN CONTACT WITH TIME DELAY OPENING (OFF DELAY)
LS	LIMIT SWITCH
FS	FLOAT SWITCH
PS OR VS	PRESSURE OR VACUUM SWITCH
FLS	FLOW SWITCH
TS	TEMPERATURE SWITCH
TQ	TORQUE SWITCH
U L / L U	LATCHING RELAY WITH CLEARING CONTACTS
	SELECTOR SWITCH
	NORMALLY OPEN PUSHBUTTON
	NORMALLY CLOSED PUSHBUTTON
	PUSHBUTTON STATION (ONE, TWO OR THREE UNIT)
R	INDICATING LIGHT (A-AMBER, B-BLUE, G-GREEN, R-RED, W-WHITE)
	THERMAL OVERLOAD ELEMENT (OL)
	ON-OFF SWITCH
R	RESISTOR
	FUSE
+ -	BATTERY
	HEATING ELEMENT
PULL PUSH ON OFF	MAINTAINED CONTACT PUSHBUTTON WITH MUSHROOM HEAD OPERATOR
HAND OFF AUTO XOO	SELECTOR SWITCH X INDICATES CONTACT CLOSED IN CORRESPONDING SWITCH POSITION
CS	CURRENT SENSOR TRIP SWITCH

SYMBOL	DESCRIPTION
27	PROTECTIVE RELAYS: 25 - SYNCHRONIZING CHECK 27 - UNDERVOLTAGE 32 - REVERSE POWER 43 - SELECTOR SWITCH 47 - PHASE SEQUENCE 49 - THERMAL 50 - INSTANTANEOUS OVERCURRENT 51 - AC TIME OVERCURRENT 52 - AC CIRCUIT BREAKER 59 - OVERVOLTAGE 60 - VOLTAGE OR CURRENT BALANCE 62 - TIME DELAY 64 - GROUND 67 - DIRECTIONAL OVERCURRENT 86 - LOCKOUT 87 - DIFFERENTIAL CURRENT DBX - DEAD BUS AUXILIARY G - DEVICE IN GROUND CIRCUIT GSR - GROUND SENSING IR - INTERPOSING LOR - LOCKOUT N - DEVICE IN NEUTRAL CIRCUIT PSR - PHASE SENSING X - AUXILIARY
DPS	CONTROL DEVICES: DPS - DIFFERENTIAL PRESSURE SWITCH FS - FLOAT SWITCH FLS - FLOW SWITCH LLS - LEVEL SWITCH LS - LIMIT SWITCH PS - PRESSURE SWITCH RS - ROTATIONAL SWITCH ST - SHUNT TRIP SV - SOLENOID VALVE T - THERMOSTAT TQ - TORQUE SWITCH TS - TEMPERATURE SWITCH VIB - VIBRATION SWITCH VS - VACUUM SWITCH XS - TAMPER SWITCH
A	METER, INSTRUMENT OR INSTRUMENT SWITCHES: A - AMMETER AS - AMMETER SWITCH AT - CURRENT TRANSDUCER CS - BREAKER CONTROL SWITCH DT - DUTY TRANSFER SWITCH MMS - MICROPROCESSOR METERING SYSTEM MPR - MICROPROCESSOR PROTECTION RELAY MSH - MOTOR SPACE HEATER PF - POWER FACTOR METER POT - POTENTIOMETER SI - SPEED INDICATOR SS - SELECTOR SWITCH TM - ELAPSED TIME METER TMR - TIMER V - VOLTMETER VAR - VARMETER VIB - VIBRATION SWITCH VS - VOLTMETER SWITCH VT - VOLTAGE TRANSDUCER W - WATTMETER WH - WATTHOUR METER WHD - WATTHOUR DEMAND METER WT - WATTS TRANSDUCER ZT - POSITION TRANSMITTER

ABBREVIATIONS

AFD - ADJUSTABLE FREQUENCY DRIVE
AFF - ABOVE FINISHED FLOOR
ATS - AUTOMATIC TRANSFER SWITCH
BKR - BREAKER
BTD - BEARING TEMPERATURE DETECTOR
CKT - CIRCUIT
CP - CONTROL PANEL
CFTC - CONTROL FIELD TERMINATION CABINET
DP - DISTRIBUTION PANELBOARD
DTC - DATA TERMINAL CABINET
EO - ELECTRICALLY OPERATED
FO - FIBER OPTIC
GFI - GROUND FAULT INTERRUPTER
GND - GROUND
GRS - GALVANIZED RIGID STEEL
JB - JUNCTION BOX
LCP - LIGHTING CONTROL PANEL
LP - LIGHTING PANELBOARD
MTC - MOTOR TERMINATION CABINET
MCC - MOTOR CONTROL CENTER
MSH - MOTOR SPACE HEATER
PB - PULL BOX
PLC - PROGRAMMABLE LOGIC CONTROLLER
PVC - POLYVINYL CHLORIDE
RTU - REMOTE TERMINAL UNIT
SP - SPACE
TB - TERMINAL BOX
TCP - TEMPERATURE CONTROL PANEL
TTC - TELEPHONE TERMINAL CABINET
WP - WEATHERPROOF
XP - EXPLOSION-PROOF

POWER, LIGHTING AND MISCELLANEOUS PLAN SYMBOLS

SYMBOL	DESCRIPTION
	EXPOSED CONDUIT RUN
	CONCEALED CONDUIT RUN ABOVE CEILING OR IN WALLS
	CONCEALED CONDUIT RUN IN OR BELOW FLOOR SLAB
E	UNDERGROUND CONDUIT (CONCRETE ENCASED)
DB	UNDERGROUND CONDUIT (DIRECT BURIED)
C	UNDERGROUND CABLE (DIRECT BURIED)
	CONDUIT CAPPED
	CONDUIT UP
	CONDUIT DOWN
	CONDUIT WITH HOT, NEUTRAL AND GROUND WIRES (LONG LINE DENOTES NEUTRAL; LONG LINE WITH DOT DENOTES GROUND)
LP6 1,3,5	HOME RUN TO LIGHTING PANELBOARD (LP6 INDICATES PANELBOARD AND 1,3,5 INDICATES CIRCUITS 1, 3 AND 5)
	FLEXIBLE CONDUIT OR CABLE
	GROUNDING CONDUCTOR
	NEUTRAL CONDUCTOR
	EQUIPMENT ENCLOSURE AS INDICATED ON PLAN
	LIGHTING PANELBOARD 208Y/120V OR 120/240V
	LIGHTING PANELBOARD 480Y/277V
T	DRY TYPE TRANSFORMER
	JUNCTION BOX, PULL BOX OR TERMINAL BOX
	MANUALLY OPERATED DISCONNECTING CIRCUIT BREAKER OR SWITCH (SEE SPECIFICATIONS)
RS	MANUAL REVERSING DRUM SWITCH, FORWARD-OFF-REVERSE, MAINTAINED CONTACTS
	FULL VOLTAGE MAGNETIC STARTER OR CONTACTOR
	COMBINATION CIRCUIT BREAKER STARTER
	MOTOR - THREE PHASE
	MOTOR - SINGLE PHASE
M	MOTOR OPERATED VALVE OR SLUICE GATE WITH INTEGRAL CONTROLLER AND CONTROL STATION
	CONTROL STATION (SEE SCHEMATIC DIAGRAMS FOR ASSOCIATED DEVICES)
X	CONTROL STATION AND FIELD CONTROL DEVICES (SEE ONE LINE DIAGRAMS AND SCHEMATICS FOR DETAILS)
	GROUND ROD
	GROUND ROD WITH ACCESS BOX
	LIGHTNING ROD
M	METER SOCKET
WH	WATER HEATER
	UNIT HEATER
	LIGHT LINE DENOTES EXISTING WORK
	HEAVY LINE DENOTES NEW WORK
	WORK TO BE DEMOLISHED
A	FIELD PHOTOGRAPH
CIRCUITING B-6	CIRCUIT # / PANEL #
UE	ELECTRICAL UNDERGROUND DUCTBANK

SYMBOL	DESCRIPTION
A 1A	WALL OR CEILING MOUNTED INCANDESCENT OR HID LIGHTING FIXTURE UPPER LETTER DENOTES FIXTURE TYPE NUMBER DENOTES CIRCUIT NUMBER AND LETTER DENOTES SWITCH CONTROLLING FIXTURE
	EMERGENCY LIGHTING FIXTURE
	WALL OR CEILING MOUNTED EXIT OR DIRECTIONAL SIGN (SHADED SIDE DENOTES ILLUMINATED FACE ARROW INDICATES DIRECTION)
	POLE MOUNTED LIGHTING FIXTURE
	FLOODLIGHT
	FLUORESCENT STRIP LIGHTING FIXTURE
	FLUORESCENT LIGHTING FIXTURE
	EMERGENCY FLUORESCENT LIGHTING FIXTURE
T	REMOTE TEST PUSHBUTTON AND "ON" INDICATING LIGHT FOR BATTERY EQUIPPED LIGHTING FIXTURES
	EMERGENCY BATTERY PACK WITH TWO LIGHTING HEADS
	EMERGENCY BATTERY PACK - REMOTE HEAD
PC	PHOTOELECTRIC CELL
	SINGLE RECEPTACLE 120 VOLT, 20A, OR AS NOTED
	DUPLEX RECEPTACLE 120 VOLT, 20A, OR AS NOTED
	DUPLEX RECEPTACLE 208 VOLT, 20A, OR AS NOTED
	FLOOR OUTLET BOX WITH DUPLEX RECEPTACLE 120 VOLT, 20A, OR AS NOTED
	SINGLE RECEPTACLE - SINGLE PHASE (RATING AS NOTED)
	SINGLE RECEPTACLE - THREE PHASE (RATING AS NOTED)
C	CLOCK WITH RECEPTACLE
TYPE	SINGLE POLE SWITCH UNLESS NOTED OTHERWISE 2P - TWO POLE 3 - THREE WAY 4 - FOUR WAY D - DOOR SWITCH M - MOMENTARY CONTACT MS - MOTOR STARTING PL - WITH PILOT LIGHT T - THERMAL OVERLOAD TS - TIME SWITCH
	INTERCOM TELEPHONE OUTLET
	INTERCOM TELEPHONE FLOOR OUTLET
	PUBLIC TELEPHONE OUTLET
	PUBLIC TELEPHONE FLOOR OUTLET
S	SPEAKER
S	BI-DIRECTIONAL SPEAKER
S	INTERCOMMUNICATION SPEAKER
V	INTERCOMMUNICATION SPEAKER VOLUME CONTROL
TV	CLOSED CIRCUIT TELEVISION CAMERA
	ALARM HORN
	ALARM BELL
FACP	FIRE ALARM CONTROL PANEL
FAAP	FIRE ALARM ANNUNCIATOR PANEL
F	MANUAL PULL STATION
S	SMOKE DETECTOR
H	HEAT DETECTOR
	PHOTOELECTRIC BEAM SMOKE DETECTOR TRANSMITTER
	PHOTOELECTRIC BEAM SMOKE DETECTOR RECEIVER
A	AUDIBLE/VISUAL INDICATING DEVICE WITH HORN
A	AUDIBLE/VISUAL INDICATING DEVICE WITH BELL
A	VISUAL INDICATING DEVICE
FS	SPRINKLER SYSTEM FLOW SWITCH
TS	SPRINKLER SYSTEM TAMPER SWITCH
M	MAGNETIC DOOR SWITCH
PI	PASSIVE INFRARED MOTION DETECTOR
	INFRARED BEAM MOTION DETECTION TRANSMITTER
	INFRARED BEAM MOTION DETECTION RECEIVER

NOTE:

THIS IS A GENERAL LEGEND PROVIDED TO FACILITATE USE OF THE ELECTRICAL DRAWINGS.
ALL SYMBOLS MAY NOT BE USED IN THIS SET OF ELECTRICAL DRAWINGS.
REFER TO THE DRAWINGS AND SPECIFICATIONS FOR ITEMS REQUIRED.

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ELECTRICAL

ELECTRICAL LEGEND AND SYMBOLS

DRAWING NUMBER
E-001

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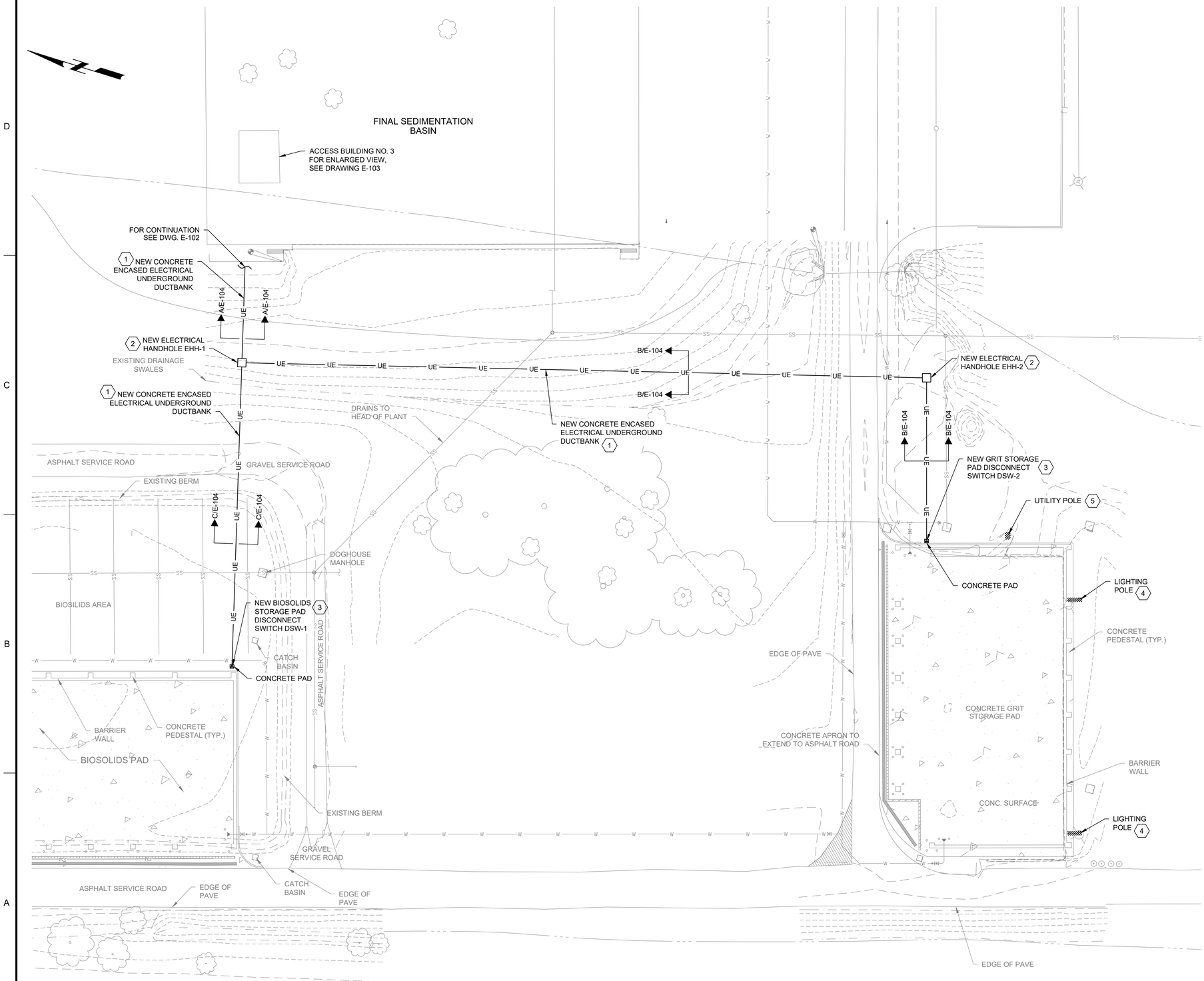

BIOSOLIDS AND GRIT STORAGE PADS - ELECTRICAL SITE PLAN - EXISTING AND NEW WORK

SCALE: 1" = 30'

GENERAL NOTES:

A. FOR ELECTRICAL LEGEND AND SYMBOLS, SEE DRAWING E-001.

B. FOR FINAL SEDIMENTATION BASIN POWER PLAN - EXISTING AND NEW WORK, SEE DRAWING E-102.

C. FOR ACCESS BUILDING NO. 3 ELECTRICAL ROOM POWER PLAN - EXISTING AND NEW WORK, SEE DRAWING E-103.

D. FOR ONE LINE DIAGRAM, SCHEDULES AND DETAILS, SEE DRAWINGS E-104 AND E-105.

F. SPECIFIC NOTES FOR UNDERGROUND CONDUITS.
   a. INSTALL METAL COUPLING BEFORE RISING THROUGH THE GROUND AND CONTINUE WITH PVC COATED RGS CONDUIT ABOVE THE GROUND, UP TO ELECTRICAL EQUIPMENT/DEVICE.
   b. FIELD VERIFY ALL OTHER UTILITIES PRESENT IN THE SAME VICINITY BEFORE ANY WORK. RUN THE NEW CONDUIT/DUCT APPROXIMATELY 5' AWAY FROM OTHER UTILITIES. HYDRO-EXCAVATE AS NECESSARY USING A 1' SLOT TRENCH TO FIND ALL SURROUNDING UTILITIES AND VERIFY EXISTING CONDITIONS.

KEY NOTES: (#)

1. PROVIDE NEW CONCRETE ENCASED TYPE ELECTRICAL UNDERGROUND DUCTBANK, AS SHOWN. FOR DETAILS AND SECTIONS, SEE DRAWING E-104.
2. PROVIDE NEW ELECTRICAL HANDHOLE AS INDICATED. FOR DETAILS, SEE DRAWING E-105.
3. PROVIDE NEW UNISTRUT MOUNTED DISCONNECT SWITCH ON CONCRETE PAD FOR BIOSOLIDS AND GRIT STORAGE PADS, AS SHOWN. PROVIDE NEW 3/4" DIA. x 10 FT LONG CU-CLAD GROUND ROD. PROVIDE NEW GROUNDING ELECTRODE CONDUCTOR FROM DISCONNECT SWITCH TO NEW GROUND ROD. FOR DETAILS, SEE DRAWING E-105.
4. DISCONNECT AND REMOVE THE EXISTING LIGHTING POLE AND FIXTURE. PULL WIRING BACK TO SOURCE AND DISPOSE OF. ABANDON EXISTING UNDERGROUND CONDUIT. CAP AND SEAL CONDUIT ENDS.
5. DISCONNECT AND REMOVE THE EXISTING UTILITY POLE. PULL WIRING BACK TO SOURCE AND DISPOSE OF. ABANDON EXISTING UNDERGROUND CONDUIT. CAP AND SEAL CONDUIT ENDS.

GRAPHIC SCALE:

30 0 30 60 FT

SCALE: 1"=30'

Brown AND Caldwell
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90% DESIGN

CITY OF RICHMOND ESTABLISHED 1737

WASTEWATER TREATMENT PLANT BIOSOLIDS AND GRIT STORAGE PADS UPGRADES

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	NB/HB
DRAWN:	SV
CHECKED:	UB
CHECKED:	HU
APPROVED:	

FILENAME
E-101.dwg

BC PROJECT NUMBER
190651 & 196366

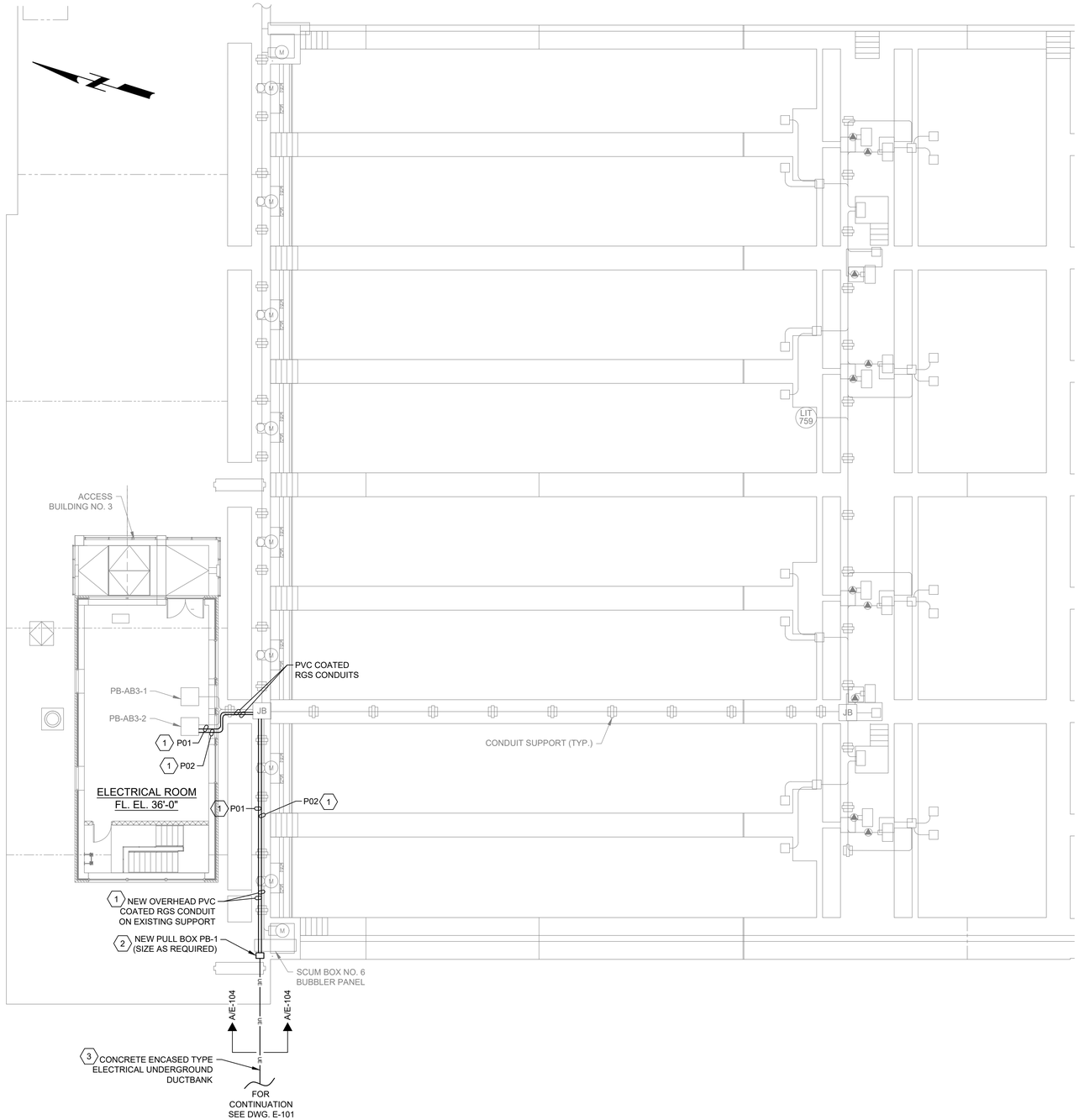
CLIENT PROJECT NUMBER
105614 & 109212

ELECTRICAL

BIOSOLIDS AND GRIT STORAGE PADS - ELECTRICAL SITE PLAN

DRAWING NUMBER
E-101

Path: C:\USERS\MAYUR\DOWNLOADS\D3717150 FILENAME: E-101.DWG PLOT DATE: 4/25/2025 5:43 PM CAD USER: MAYUR



FINAL SEDIMENTATION BASIN POWER PLAN - EXISTING AND NEW WORK

SCALE: 3/32" = 1'-0"

GENERAL NOTES:

A. FOR ELECTRICAL LEGEND AND SYMBOLS, SEE DRAWING E-001.

B. FOR BIOSOLIDS AND GRIT STORAGE PADS ELECTRICAL SITE PLAN, SEE DRAWING E-101.

C. FOR ACCESS BUILDING NO. 3 ELECTRICAL ROOM POWER PLAN - EXISTING AND NEW WORK, SEE DRAWING E-103.

D. FOR ONE LINE DIAGRAM, SCHEDULES AND DETAILS, SEE DRAWINGS E-104 AND E-105.

KEY NOTES: (#)

1. RUN NEW WIRING IN NEW CONDUIT ON EXISTING SUPPORTS, AS SHOWN. FIELD VERIFY THE EXACT LOCATION OF EXISTING SUPPORTS, BUBBLER PANEL, PULLBOX AND JUNCTION BOX.
2. PROVIDE NEW TYPE 316 STAINLESS STEEL NEMA 4X PULL BOX MOUNTED ON EXISTING UNISTRUT, AS SHOWN.
3. PROVIDE NEW CONCRETE ENCASED TYPE ELECTRICAL UNDERGROUND DUCTBANK, AS SHOWN. FOR DETAILS AND SECTIONS, SEE DRAWING E-104.

GRAPHIC SCALE:

8 0 8 16 24 FT

SCALE: 3/32"=1'-0"

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WASTEWATER TREATMENT PLANT BIOSOLIDS AND GRIT STORAGE PADS UPGRADES

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FILENAME
E-102.dwg

BC PROJECT NUMBER
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CLIENT PROJECT NUMBER
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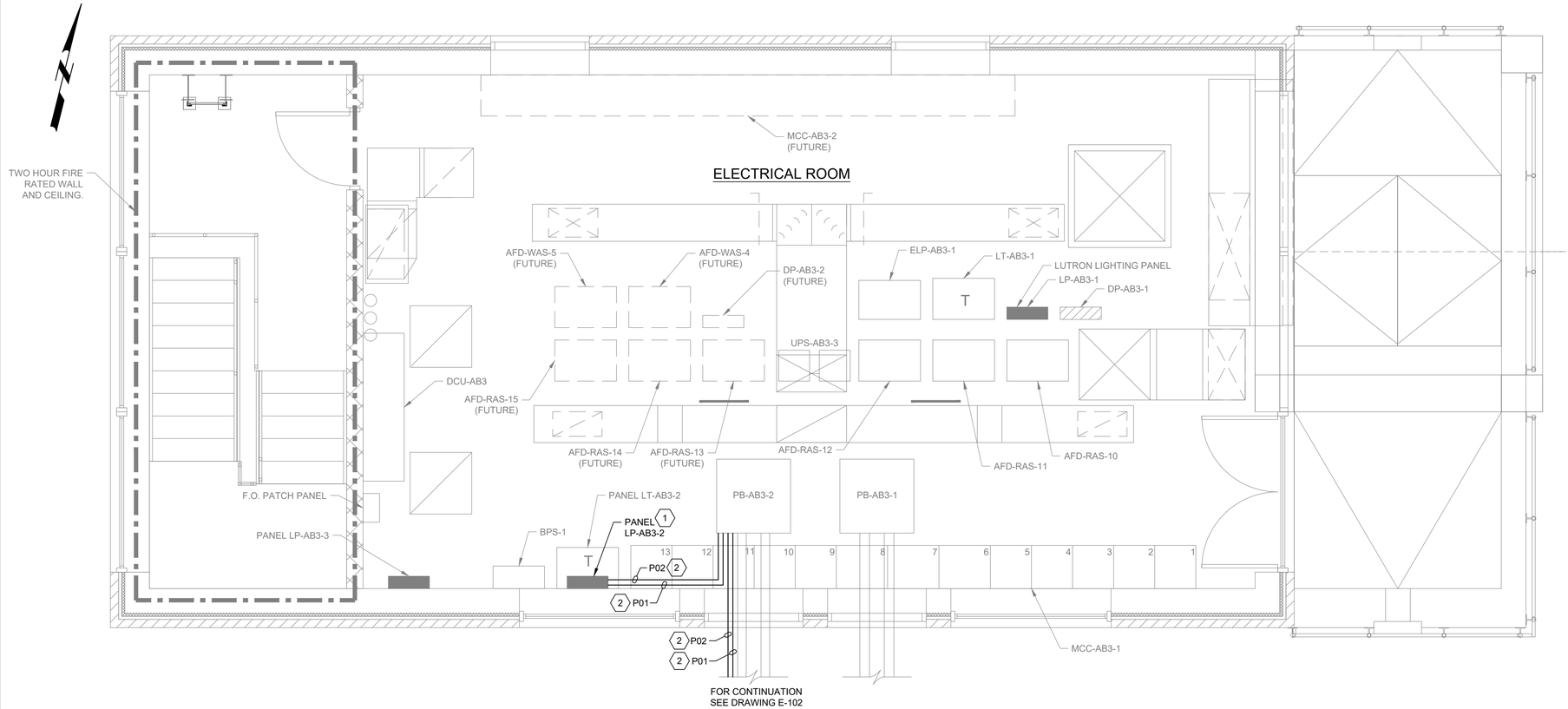
ELECTRICAL

FINAL SEDIMENTATION BASIN POWER PLAN

DRAWING NUMBER
E-102

Path: C:\USERS\MAYUR\DOWNLOADS\D3717150 FILENAME: E-102.DWG PLOT DATE: 4/25/2025 5:43 PM CAD USER: MAYUR



ACCESS BUILDING NO.3 ELECTRICAL ROOM POWER PLAN - EXISTING AND NEW WORK

SCALE: 3/8" = 1'-0"

GENERAL NOTES:

A. FOR ELECTRICAL LEGEND AND SYMBOLS, SEE DRAWING E-001.

B. FOR BIOSOLIDS AND GRIT STORAGE PADS ELECTRICAL SITE PLAN, SEE DRAWING E-101.

C. FOR FINAL SEDIMENTATION BASIN POWER PLAN, SEE DRAWING E-102.

D. FOR ONE LINE DIAGRAM, SCHEDULES AND DETAILS, SEE DRAWINGS E-104 AND E-105.

KEY NOTES: (#)

1. USE EXISTING ELECTRICAL PANEL LP-AB3-2 TO PROVIDE POWER FOR NEW BIOSOLIDS STORAGE PAD DISCONNECT SWITCH DSW-1 AND NEW GRIT STORAGE PAD DISCONNECT SWITCH DSW-2. FOR PANEL SCHEDULE, SEE DRAWING E-104.

2. RUN NEW WIRING IN NEW CONDUIT, AS SHOWN. FIELD VERIFY THE EXACT LOCATION OF EXISTING PULLBOX AND JUNCTION BOX.

GRAPHIC SCALE:

1 0 1 2 3 4 5 6 7 FT

SCALE: 3/8"=1'-0"

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WASTEWATER TREATMENT PLANT BIOSOLIDS AND GRIT STORAGE PADS UPGRADES

REVISIONS

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CHECKED: HU
APPROVED:

FILENAME
E-103.dwg

BC PROJECT NUMBER
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CLIENT PROJECT NUMBER
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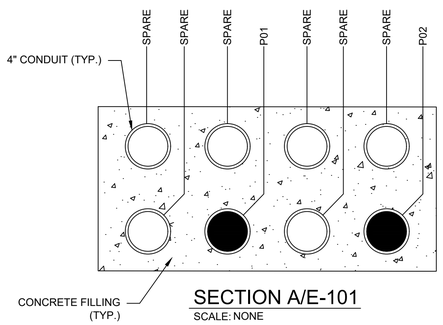
ELECTRICAL

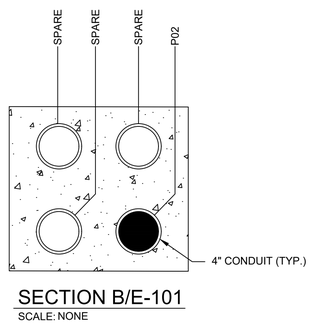
ACCESS BUILDING NO.3 ELECTRICAL ROOM POWER PLAN

DRAWING NUMBER
E-103

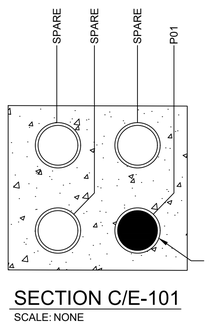
Path: C:\USERS\MAYUR\DOWNLOADS\D3717150 FILENAME: E-103.DWG PLOT DATE: 4/25/2025 5:43 PM CAD USER: MAYUR



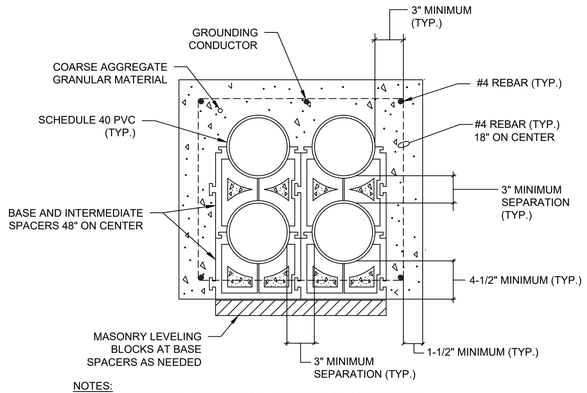
SECTION A/E-101
SCALE: NONE



SECTION B/E-101
SCALE: NONE



SECTION C/E-101
SCALE: NONE



NOTES:
1. CONCRETE SHALL BE 4000 P.S.I. @ 28 DAYS, OR AS SPECIFIED.
2. PROVIDE #4 REINFORCING RODS ON TOP AND BOTTOM OF DUCTS.
3. MINIMUM COVER TO TOP OF ENVELOPE SHALL BE 36".
4. PROVIDE WARNING TAPE AT 12" DEPTH FROM GROUND.
5. FIELD LOCATE WATER PIPELINES, ELECTRICAL DUCTBANK AND TEST-PIT DEPTH, PRIOR TO STARTING THE INSTALLATION OF NEW DUCTBANK. ADJUST CONDUIT LOCATION AND DEPTH AS NEEDED. PROVIDE RED-LINED MARKUPS SHOWING AS-BUILT CONDITION, TO CITY/ENGINEER.

TYPICAL DETAIL - CONCRETE ENCASED DUCTBANK
SCALE: NONE

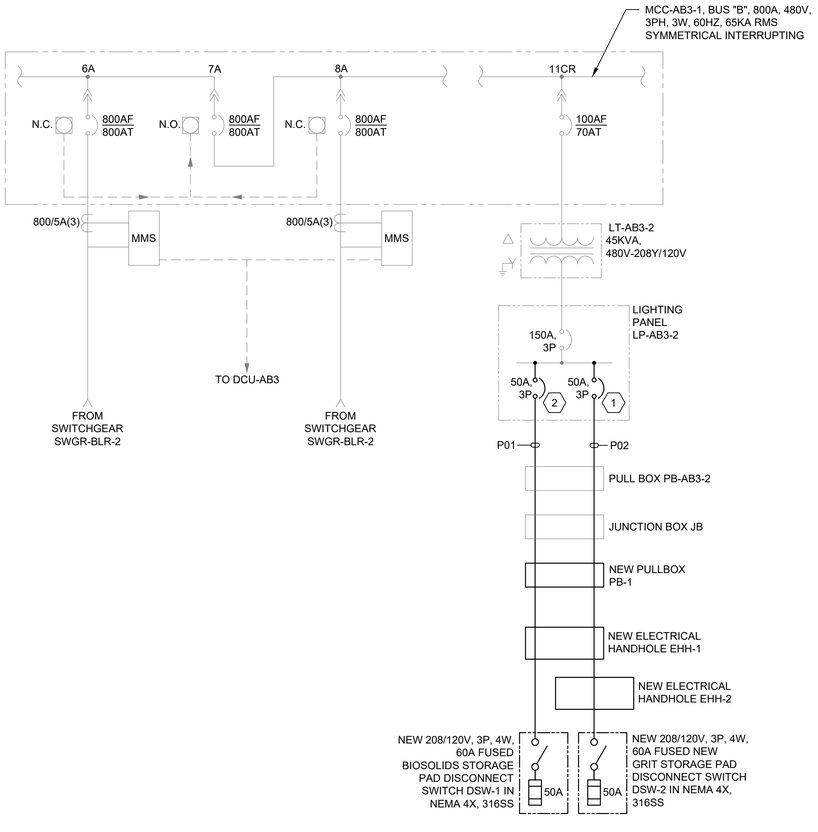
CABLE AND CONDUIT SCHEDULE

CONDUIT NAME	CONDUIT SIZE	CONDUCTOR QUANTITY AND SIZE	FROM	TO	REMARKS
ELECTRICAL WIRES					
P01	1 1/4"	4#3AWG, 1#6G	PANEL LP-AB3-2	BIOSOLIDS STORAGE PAD DSW-1	UNDERGROUND CONDUIT DUCT SIZE 4"
P02	2"	4#1/0AWG, 1#3G	PANEL LP-AB3-2	GRIT STORAGE PAD DSW-2	UNDERGROUND CONDUIT DUCT SIZE 4"

EXISTING PANEL: LP-AB3-2 — FED FROM: EXISTING MCC-AB3-1 BIA TRANSFORMER LT-AB3-2
LOCATION/BLDG: ACCESS BUILDING NO. 3 ELECTRICAL ROOM — BUS: 150 AMPS — MLO / MAIN: MAIN
KAIC: 22 — VOLTAGE: 208/120 VAC — MAIN BREAKER RATING: 150 AMPS
ENCLOSURE TYPE: EXISITING — MOUNTING: SURFACE — PHASE: 3 — WIRES: 4 — GND: Y

	LOAD DESCRIPTION	LOAD VA PH A	PH B	PH C	TA	P	WIRE SIZE	CKT NO.	BUS A	BUS B	BUS C	CKT. NO.	WIRE SIZE	TA	P	LOAD VA PH A	PH B	PH C	LOAD DESCRIPTION
	EXISTING B-PACU-2	1200	-	-	20	2	EXISTING	1				2	EXISTING	20	1	648	-	-	EXISTING UNKNOWN LOAD
		-	1200	-				3				4	EXISTING	20	1		648	-	EXISTING RECEPTACLE
	EXISTING B-CRU-1	-	-	240	20	1	EXISTING	5				6	EXISTING	20	1	-	-	1404	EXISTING B-SHU-1
		4803	**-**	**-**				**7**				8	EXISTING	20	1	1440	-	-	EXISTING HEAT TRACE
2	**NEW BIOSOLIDS STORAGE PAD DISCONNECT SWITCH DSW-1**	**-**	**4803**	**-**	**50**	**3**	**P01**	**9**				10	EXISTING	20	1	-	360	-	EXISTING UNKNOWN LOAD
		-	**-**	**4803**				**11**				12	EXISTING	20	1	-	-	360	EXISTING RECS IN CAGE FOR UPS
	EXISTING RECEPTACLE CONTROL ROOM	840	-	-	20	1	EXISTING	13				14	EXISTING	20	1	528	-	-	EXISTING TANK RECEPTACLE
	EXISTING B-TCP-1	-	360	-	20	1	EXISTING	15				16	EXISTING	20	1	-	528	-	EXISTING TANK RECEPTACLE
	EXISTING BATTERY INVERTOR	-	-	2004	30	1	EXISTING	17				18	EXISTING	20	1	-	-	528	EXISTING TANK RECEPTACLE
	EXISTING PANEL LCP-7 RECEPTACLE	840	-	-	20	1	EXISTING	19				20	EXISTING	20	1	792	-	-	EXISTING GALLERY RECEPTACLE
	EXISTING RECEPTACLE ELECT. ROOM	-	600	-	20	1	EXISTING	21				22	EXISTING	20	1	-	792	-	EXISTING GALLERY RECEPTACLE
	EXISTING RECEPTACLE ROOF	-	-	600	20	1	EXISTING	23				24	EXISTING	20	1	-	-	396	EXISTING GALLERY RECEPTACLE
		-	-	-				25				26	EXISTING	20	1	360	-	-	EXISTING PANEL LCP-8 RECEPTACLE
	SPARE	-	-	-	40	3	N/A	27				28	EXISTING	30	1	-	2520	-	EXISTING UPS
		-	-	-				29				30	N/A	30	1	-	-	-	SPARE
		4803	**-**	**-**				31				32	N/A	-	-	-	-	-	SPACE
1	**NEW GRIT STORAGE PAD DISCONNECT SWITCH DSW-2**	**-**	**4803**	**-**	**50**	**3**	**P02**	33				34	N/A	-	-	-	-	-	SPACE
		-	**-**	**4803**				35				36	N/A	-	-	-	-	-	SPACE
	SPACE	-	-	-	-	-	N/A	37				38	N/A	-	-	-	-	-	SPACE
	SPACE	-	-	-	-	-	N/A	39				40	N/A	-	-	-	-	-	SPACE
	SPACE	-	-	-	-	-	N/A	41				42	N/A	-	-	-	-	-	SPACE
	SUB TOTAL PER PHASE	12487	11767	12451												3768	4848	2688	
	TOTAL LOAD PER PHASE	16255	16615	15139															
	CONNECTED LOAD =	48008	VA																
	10% (SPARE + OTHER LOAD) =	4801	VA																
	TOTAL CONNECTED LOAD=	52809	VA																
		146.59	A																

NOTES:
1. VA RATINGS FOR EXISTING LOADS ARE TAKEN FROM RECORD DRAWINGS PROVIDED BY COR.



NOTE: PARTIAL ONE LINE DIAGRAM FOR THE EXISTING SYSTEM IS REPRODUCED BASED ON RECORD DRAWINGS PROVIDED BY CITY OF RICHMOND AND VISUAL, NON-INVASIVE FIELD SURVEY ONLY, WITH LIMITED OR NO ACCESS TO ENCLOSED CONCEALED SPACES. CONTRACTOR TO FIELD VERIFY THE SYSTEM CONFIGURATION. NOTIFY CITY OF RICHMOND/ENGINEER IMMEDIATELY IF ANY DISCREPANCY IS FOUND, AND SEEK DIRECTIONS BEFORE MAKING ANY MODIFICATIONS.

PARTIAL ONE LINE DIAGRAM - EXISTING AND NEW WORK
SCALE: NONE

GENERAL NOTES:

A. FOR ELECTRICAL LEGEND AND SYMBOLS, SEE DRAWING E-001.

B. FOR BIOSOLIDS AND GRIT STORAGE PADS ELECTRICAL SITE PLAN, SEE DRAWING E-101.

C. FOR FINAL SEDIMENTATION BASIN POWER PLAN, SEE DRAWING E-102.

D. FOR ACCESS BUILDING NO. 3 ELECTRICAL ROOM POWER PLAN - EXISTING AND NEW WORK, SEE DRAWING E-103.

E. UPON COMPLETION OF WORK, UPDATE DIRE-CORIES, LABELS, TAGS, ETC., OF ALL AFFECTED EQUIPMENT, DEVICES, CABLES, CONDUITS, ETC., TO ENSURE THAT ALL SYSTEM ELEMENTS CARRY CORRECT IDENTIFICATION.

KEY NOTES: ⟨#⟩

1. PROVIDE NEW 50A, 3P CIRCUIT BREAKER (COMPATIBLE WITH EXISTING PANEL) AT AVAILABLE SPACE IN EXISTING PANEL FOR GRIT STORAGE PAD DISCONNECT SWITCH DSW-2.

2. REPLACE EXISTING 40A, 3P CIRCUIT BREAKER WITH NEW 50A, 3P CIRCUIT BREAKER (COMPATIBLE WITH EXISTING PANEL) FOR BIOSOLIDS STORAGE PAD DISCONNECT SWITCH DSW-1, AS SHOWN.

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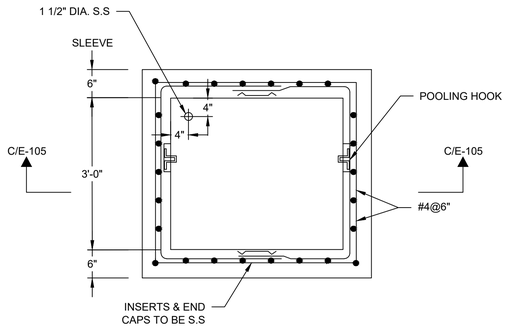
ELECTRICAL

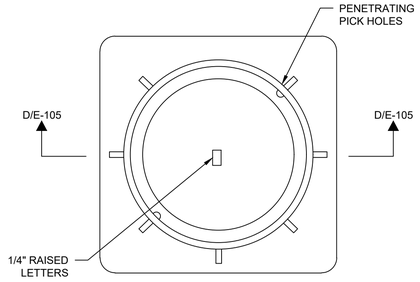
ONE-LINE DIAGRAM, SCHEDULES AND DETAILS

DRAWING NUMBER
E-104



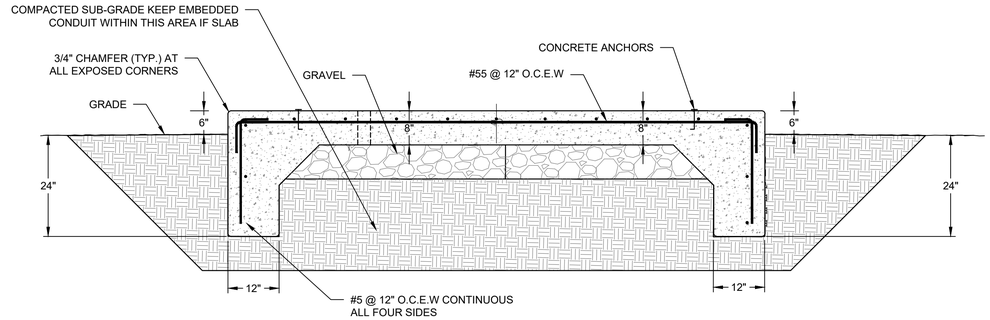
TYPICAL ELECTRICAL HANDHOLE DETAIL

SCALE: NONE



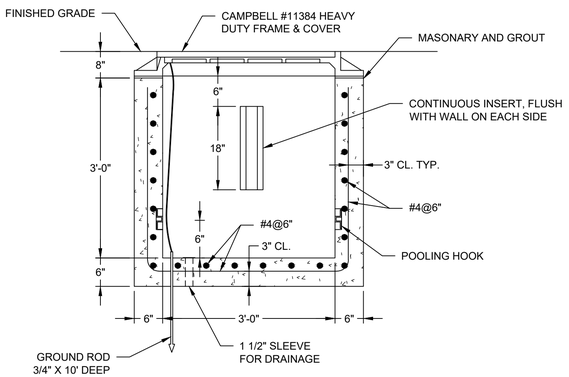
ELECTRICAL HANDHOLE COVER DETAIL

SCALE: NONE



CONCRETE PAD DETAILS

SCALE: NONE



SECTION C/E-105

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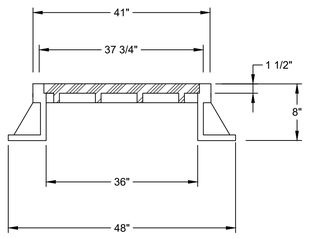

SECTION D/E-105

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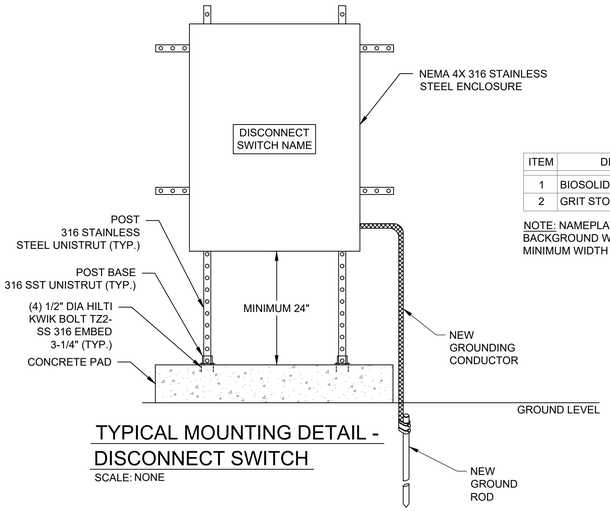
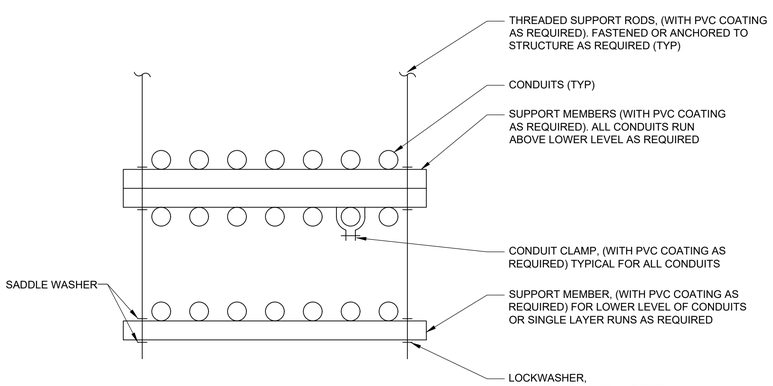


ITEM	DISCONNECT SWITCH NAME
1	BIOSOLIDS STORAGE PAD DISCONNECT SWITCH DSW-1
2	GRIT STORAGE PAD DISCONNECT SWITCH DSW-2

NOTE: NAMEPLATES SHALL BE ENGRAVED ON BLACK BACKGROUND WITH WHITE CHARACTERS AND HAVE A MINIMUM WIDTH OF 1/2".

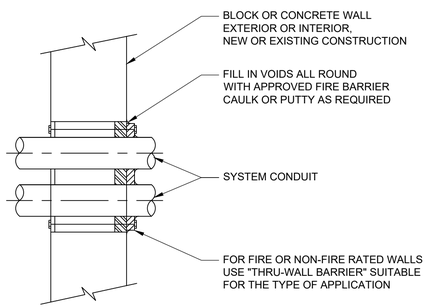
TYPICAL MOUNTING DETAIL - DISCONNECT SWITCH

SCALE: NONE



TYPICAL CONDUIT SUPPORTS

SCALE: NONE



TYPICAL THRU WALL CONDUIT

SCALE: NONE

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ELECTRICAL

MISCELLANEOUS DETAILS

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