

Richland County School District One
Invitation for Bids: Meadowfield Elementary School Parking Lot Addition

	Richland County School District One INVITATION FOR BIDS FOR CONSTRUCTION SERVICE AMENDMENT No. 1	Solicitation # Date Issued Procurement Officer Phone E-mail Address	2026-010 JUNE 22, 2026 Brittany Green 803.231.7052 brittany.green@richlandone.org
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Sealed bids Meadowfield Elementary School Parking Addition, will be received from qualified bidders that are properly licensed under the laws of the State of South Carolina. These bids will be opened and read aloud by the Owner at the office of the Procurement Services, Central Services Facility, 201 Park Street, Columbia, SC 29201. Bids received after the indicated times will be rejected and returned to the Bidder unopened. All questions must be submitted via email to: Brittany Green, Construction Contracts Manager (E-mail Above).

SCHEDULE OF EVENTS	DATE AND TIME
Site Visits held on: N/A	
Pre-Bid conference will be held on: Meadowfield Elementary - 525 Galway Ln, Columbia, SC 29209 (Please sign in at the front office)	NA
Bid Questions must be received by:	NA
Bid(s) must be received by:	JUNE 29, 2026 @ 2:00 PM (UPDATED)
Bids will be opened on:	JUNE 29, 2026 @ 2:00 PM (UPDATED)

PROJECT INFORMATION	
The name of the project is	Meadowfield Elementary School Parking Addition
Project Address:	525 Galway Lane, Columbia, SC 29209
The Owner is:	Richland County School District One 201 Park Street Columbia, SC 29201
The Architect/Engineer is:	Chao and Associates, Inc Mr. Gerald Lee 7 Clusters Ct Columbia, SC 29210
The Construction Manager is:	N/A

Description of the Project

The project is a parking lot addition to Meadowfield Elementary School.

Bid Documents

Bidding Documents are available for inspection at the following locations:

- **Chao and Associates, Inc – Contact Miss Ellie Chao | 803-772-8420 | elliec@chaoinc.com**

Bids will be binding for a period of 60 (sixty) calendar days from the date bids are opened.

Please submit 1 (Paper) and 1 (USB) copy of your bid.

NOTICE

Solicitation No. 2026-010
Meadowfield Elementary School Parking Addition
Amendment No. 1

THE FOLLOWING AMNENDMENT SHALL BE INCORPORATED AS PART OF THE SOLICITATION MENTIONED ABOVE; ALL OTHER TERMS AND CONDITIONS SHALL REMAIN THE SAME.

THIS AMENDMENT IS TO EXTEND THE DEADLINE TO **JUNE 29, 2026 @ 2:00 P.M. THE AMENDMENT ALSO ADDS THE GEOTECHNICAL REPORT, CONSTRUCTION DRAWINGS AND LANDSCAPING PLAN FOR CONTRACTORS.**

THIS AMENDMENT IS TO ANSWER QUESTIONS FROM OFFERORS.

Q1. Are you going to extend the bid date?

A1. Yes, the bid date will be extended until June 29, 2026, at 2:00 P.M.

Q2: Can you please send a copy of the CAD file?

A2: email elliec@chaoinc.com for CAD file.

Q3: Can you please send a copy of the Geotech report?

A3: Geotech Report is on the RSD1 Solicitation Page

Q4: The completion date for the project is 90 days after the award. ADS has been about 3-4 weeks after approval of shop drawings. Is there a possibility to get the duration extended to accommodate longer lead time items?

A4: If needed, a time-only change order can be submitted.

Q5: Section 21.0 and 21.1 of the ITB state that "All excavation is unclassified. The Contractor shall assume all risks of unforeseen ground conditions encountered and shall be responsible for completing the project as specified regardless of these conditions. No direct payment will be made for varying ground conditions that may affect the Contractor's ability to complete the work. Rock excavation shall not be paid for separately as all excavation is unclassified although we do not

Richland County School District One

Invitation for Bids: Meadowfield Elementary School Parking Lot Addition

anticipate rock being present within the construction limits. No direct payment will be made for any excavation condition, the cost of which shall be included in other bid items". There's also a not on C5.0 that shows assumed bad subgrade. There was a conversation about putting this as a unit price on the project. Will this be an added item in case we run into bad subgrade?

A5: Please review geotechnical report for subsurface conditions, but we have added line items for mucking and hauling off of excess material.

Q6: Will there be any work restrictions while school is in session?

A6: The only restriction will be that the construction will not interfere with the pick-up/drop-off of the students during normal school hours. It is recommended that a safety fence be installed around the perimeter of the work site.

Q7: The demo page says to protect existing storm drain for the 15", but is in line with proposed line C. Shouldn't this line be removed in the demo plan?

A7: Existing 15" storm drain is to be removed. See revised plans.

Q8: Sheet C3.0 shows the contractor is to install a type 16 out by Galway Lane but shows the structure as existing on C1.0. I did not see an existing structure on the site. So is the contractor to install a complete Type 16 (doghouse) in this area?

A8: Yes, a new Type 16 doghouse will be required.

Q9: Can HDPE be used in lieu of RCP?

A9: Yes, except for any pipe within the SCDOT Right-of-Way needs to be RCP.

Construction Plans
For
Meadowfield Elementary School Parking Addition
In The City of Columbia, Richland County, SC

Prepared For
Richland County School District One
201 Park Street, Columbia, SC 29201

Tel: (803) 600-0196
Email: obryan.dais@richlandone.org
Contact: Mr. O'Bryan Dais

Prepared by:
Chao & Associates, Inc.
Consulting Engineers

C & A #: 398720E-24



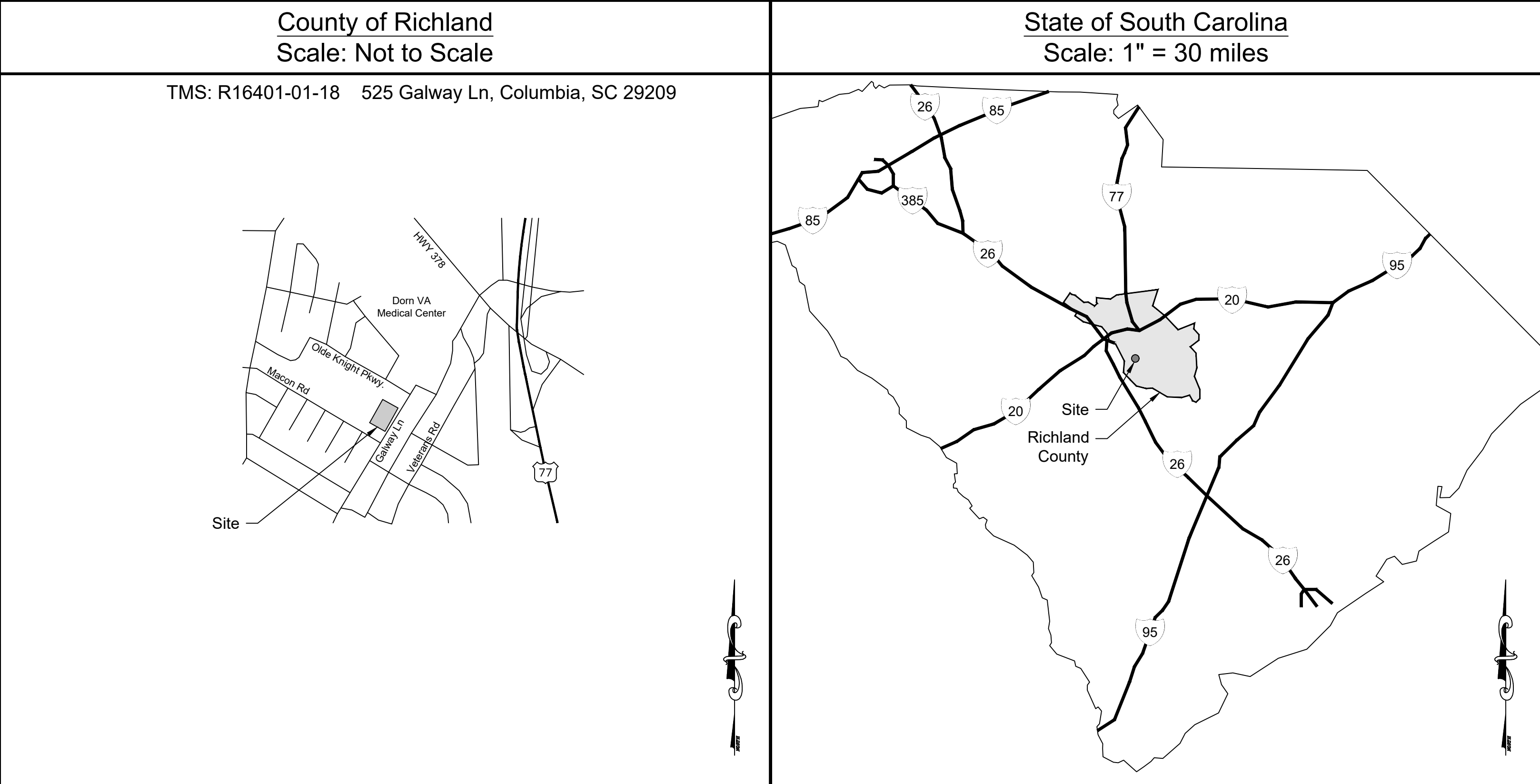
Chao & Associates, Inc.
Civil - Structural - Survey
7 Clusters Court
Columbia, SC 29210
Voice: (803) 772-8420
Fax: (803) 772-9120
Email: consult@chaoinc.com



Drawing Index

- C1.0 Existing Site Conditions & Demolition Plan
- C2.0 Site Layout Plan
- C3.0 Grading & Drainage Plan
- C3.1 Storm Drain Pipe Profiles
- C4.0 Erosion Prevention & Sediment Control Plan
- C5.0 Construction Details
- C5.1 Construction Details
- C5.2 Construction Details
- C5.3 Construction Details
- ADS Underground Detention System
- ADS Underground Detention System
- ADS Underground Detention System
- ADS Underground Detention System

Location Map





1. Where sidewalks exist, make provisions for persons with disabilities.
2. Only the traffic control devices controlling pedestrian flows are shown. Other devices may be needed to control traffic on the streets. Use lane closure signing as needed.
3. For nighttime closures, Type A flashing warning lights may be used on barricades that close walkways. Temporary street lighting may also be considered.

1. Contractor is to notify Richland Maintenance Permit Office when work is scheduled to begin as well as when work is completed. Please provide the permit number or application number for reference.
2. A copy of the encroachment permit and all supporting documents shall be on site at all times when construction is in progress within the SCDOT R-O-W.
3. Traffic control shall be installed and maintained per the approved encroachment permit.
4. Traffic control devices shall not be left in place when no workers are present.
5. Applicant shall be responsible for all future maintenance of any pavement disturbance caused by the utility installation or repair.
6. Any pavement markings, to include RPM's, disturbed shall be replaced to meet current SCDOT Standards and Specifications.
7. Any sidewalk or curb and gutter damaged or removed during installation of a utility shall be replaced joint to joint and to current SCDOT Standard Specifications.
8. Sidewalk removed or damaged shall be replaced within 48 hours of completion of the work. The sidewalk shall remain properly secured and barricaded while awaiting final repair. If repair will require more than 48 hours to complete the applicant shall notify SCDOT immediately by phone or email.
9. All open excavations within SCDOT right-of-way shall be properly secured and barricaded when work is not being performed.
10. Applicant shall ensure all current OSHA requirements are followed for shoring and trenching activities and protection of open excavations from the traveling public and pedestrians.
11. All areas disturbed shall be reseeded and monitored until 100% vegetation is re-established.
12. All markings within SCDOT ROW shall be approved permanent pavement markings per Sections 625, 626, or 627 within the SCDOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
13. Contractor shall be responsible for utilizing all applicable and current SCDOT standard drawings including, but not limited to, the drawings included or referenced within these plans and the approved permit package.
14. Upon substantial project completion, Contractor to clear existing culverts/pipes, catch basins, and ditches along frontage and downstream as necessary to achieve positive drainage.
15. Contractor to remove and replace damaged sidewalk or curb & gutter along property frontage as necessary and/or as specified by District Permit Staff.
16. Sidewalk and curb and gutter to be removed and replaced from joint to joint.
17. Contractor to sawcut existing asphalt for smooth joint not aligned with wheel path.
18. Contractor shall provide traffic control during construction phase in Section 610-005-10 in the SCDOT Standard Drawings.

N/F
ALINE L. SULLIVAN &
LAN L. BONNO
TMS#R16401-01-15

REID O. STEVENSON, ETAL
TMS#R16401-01-16

N/F
EDWARD B. LATIMER
TMS#R16401-01-17

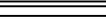
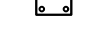
Remove and reconstruct
storm drainage catch basin

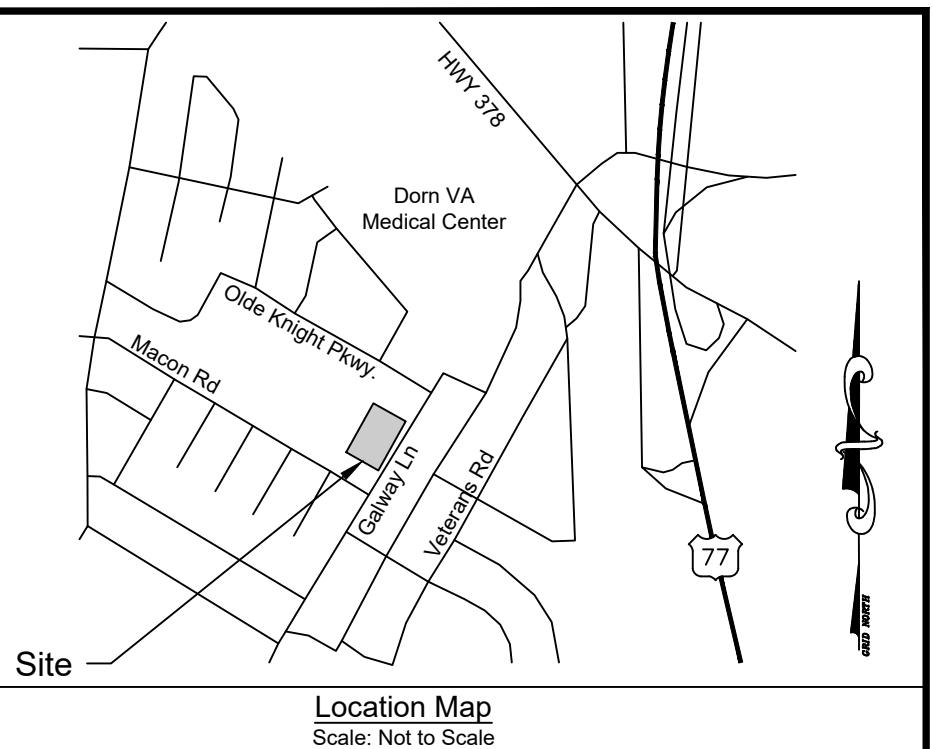
Sawcut & remove the
sidewalk and curb and gutter

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

LEGEND	
	Fire hydrant
	Water valve
	Water meter
	Gas valve
	Sanitary sewer manhole
	Cleanout (CO)
	Natural gas line
—GAS—	Sanitary sewer line
—SS—	Water line
—WL—	Fenceline
—□—	Overhead electric
—E—	Underground telephone
—UT—	Underground fiber optic
—F□—	Underground cable TV
—CTV—	Telephone pedestal
	
	Curb & gutter
	Junction box (JB)
	Drop inlet (DI)
	Hood & grate inlet (H&G)
	Yard inlet (YI)
	Storm drain pipe
	Concrete sidewalk
	Power pole & guy
	Light pole
	Electrical box
	Sign
	Direction of runoff



1. Contractor is cautioned that the location and/or elevation of existing utilities shown herein are based on records provided by the utility company and information obtained from the field. Contractor shall verify all existing field conditions and utilities prior to beginning work.
2. Contractor is required to contact Palmetto Utility Protection Service (811) three days prior to any digging or commencing construction.
3. Provide silt fence and other erosion control devices, as may be required, to control soil erosion during construction. All disturbed areas shall be cleaned, graded and stabilized with grassing immediately after completion of construction in the area.
4. Contractor shall repair any damage caused to any existing site features to remain including, but not limited to, buildings, pavement, curb and gutter, storm drains, underground utilities, fencing, etc. in their entirety. Repairs shall be at the contractor's expense.
5. Seeding shall be provided in all areas disturbed by construction that are not intended to be covered by impervious material, unless otherwise indicated.
6. If necessary, slopes which exceed four vertical feet or 4:1 slopes should be stabilized with an approved turf reinforcing mat in addition to hydroseeding. It may be necessary to install temporary slope drains during construction. Temporary berms may be needed daily until slope is brought to grade.
7. Contractor shall take necessary action to minimize the tracking of mud onto the paved roadway from construction areas. Contractor to daily remove mud/soil from pavement as required.
8. All erosion control devices shall be properly maintained during all phases of construction until the completion of all construction activities and all disturbed areas have been stabilized. Additional control devices may be required during construction in order to control erosion and/or offsite sedimentation. All temporary control devices shall be removed once construction is complete and the site is stabilized to the satisfaction of the City of Columbia and SCDES.
9. Contractor shall abide by all provisions of the applicable city and/or county storm drainage and erosion control ordinances as well as the South Carolina Sediment Reduction Act.
10. All excavation is unclassified. Excess material is to be removed from the site and disposed of in a legal manner.
11. All construction staking shall be provided at the contractor's expense.

1. Boundary & topographic information furnished by Chao and Associates, Inc., dated 12/23/2021.
2. Benchmark is based on mean sea level datum.
3. Horizontal coordinates (NAD 83) and elevations (NAVD 88) based on SC VRS network.
4. All pavement dimensions are referenced to the face of curb, where applicable.
5. The utilities are shown for the contractor's convenience only. There may be other utilities not shown on these Plans. The Engineer assumes no responsibility to verify the locations shown and it shall be the contractor's responsibility to verify the locations of all utilities within the limits of the work. All damage made to existing utilities by the contractor shall be the sole responsibility of the contractor.
6. The information of the on-site utilities (water, sewer, and gas) was taken from RCSDO Meadowfield Elementary School, Utility Plan (City file number 252-12C5.1) and the locations are approximate.

1. SCDOT FILE 40.670.
2. RCSDO Meadowfield Elementary School, Utility Plan (City file number 252-12C5.1).
3. Letter of Pavement Recommendations for Meadowfield Elementary School - Parking Addition. GS2 project # 22-2347-G. Dated May 1, 2022.



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CHAO
AND ASSOCIATES INC.
CONSULTING ENGINEERS
& LAND SURVEYORS

Civil - Structural - Survey
7 Clusters Court
Columbia, SC 29210
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Email: consult@chaoinc.com

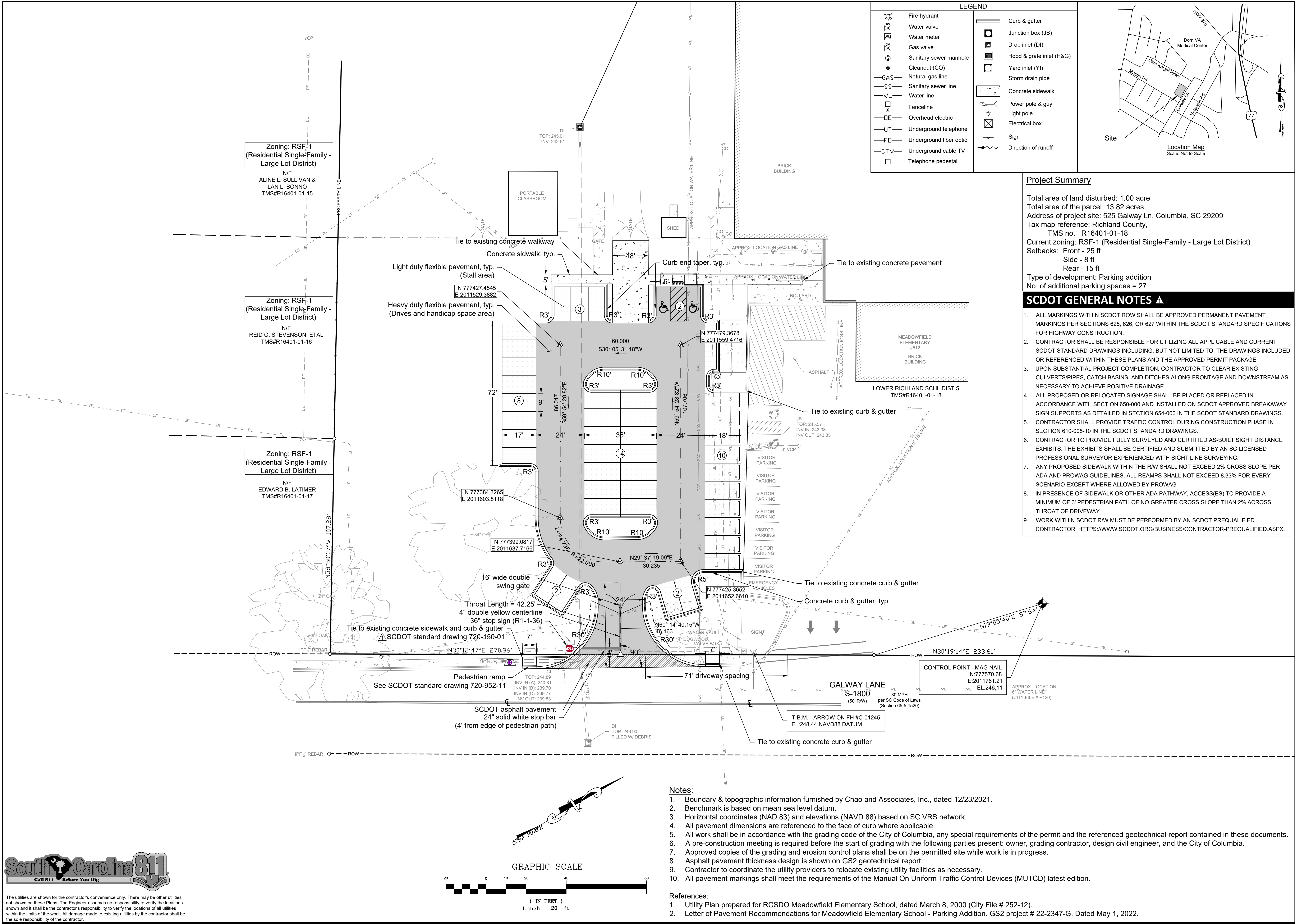


05/12/2

Prepared for:
Richland County School District One
In the City of Columbia, Richland County, SC

Revised:	06/18/2026 Added demo 15" RCP
Drawn:	ETC
Checked:	GW
File:	398720C-25.dwg
Project N	

C1.0
Sheet Number
May 12, 2025
Date



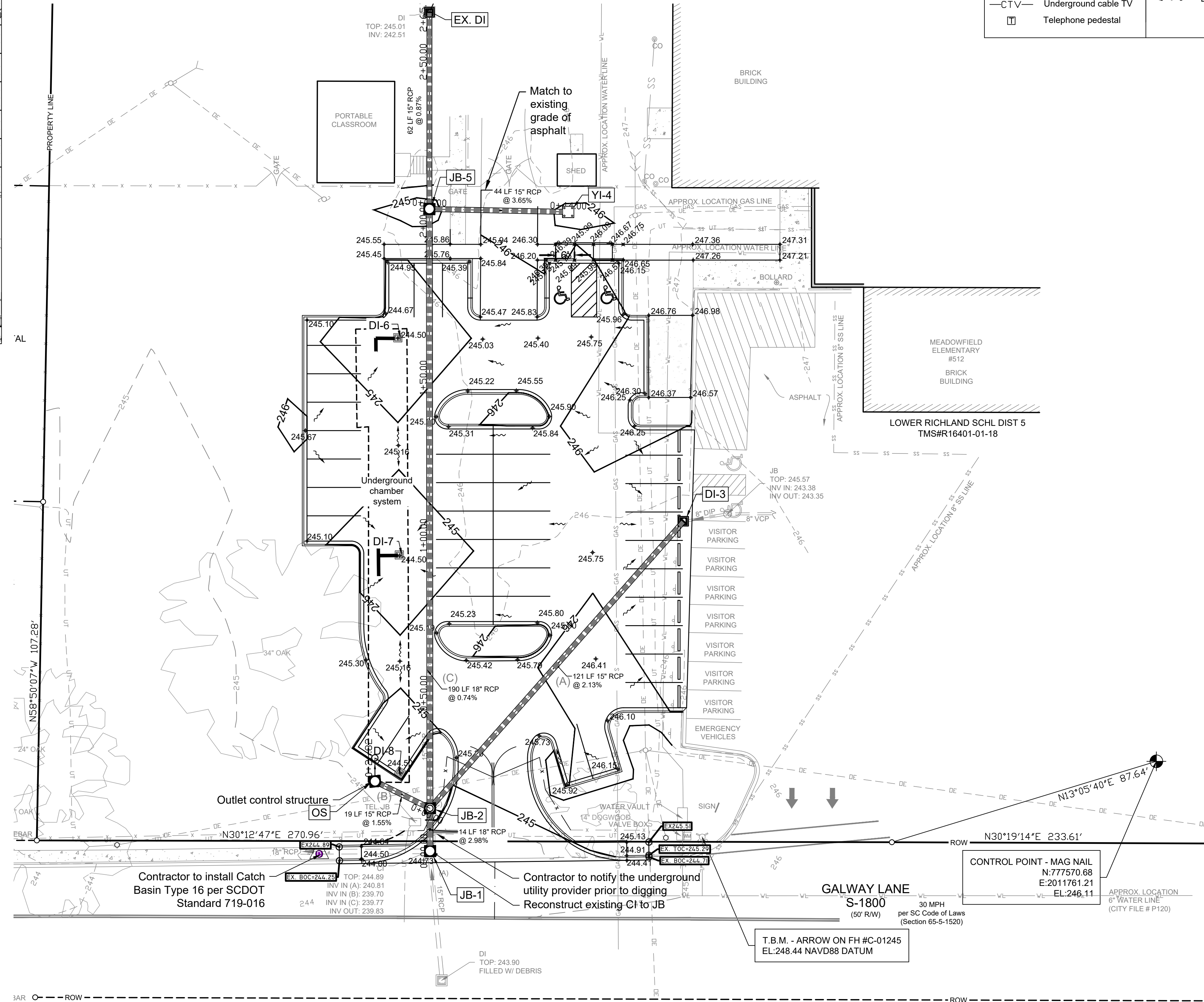
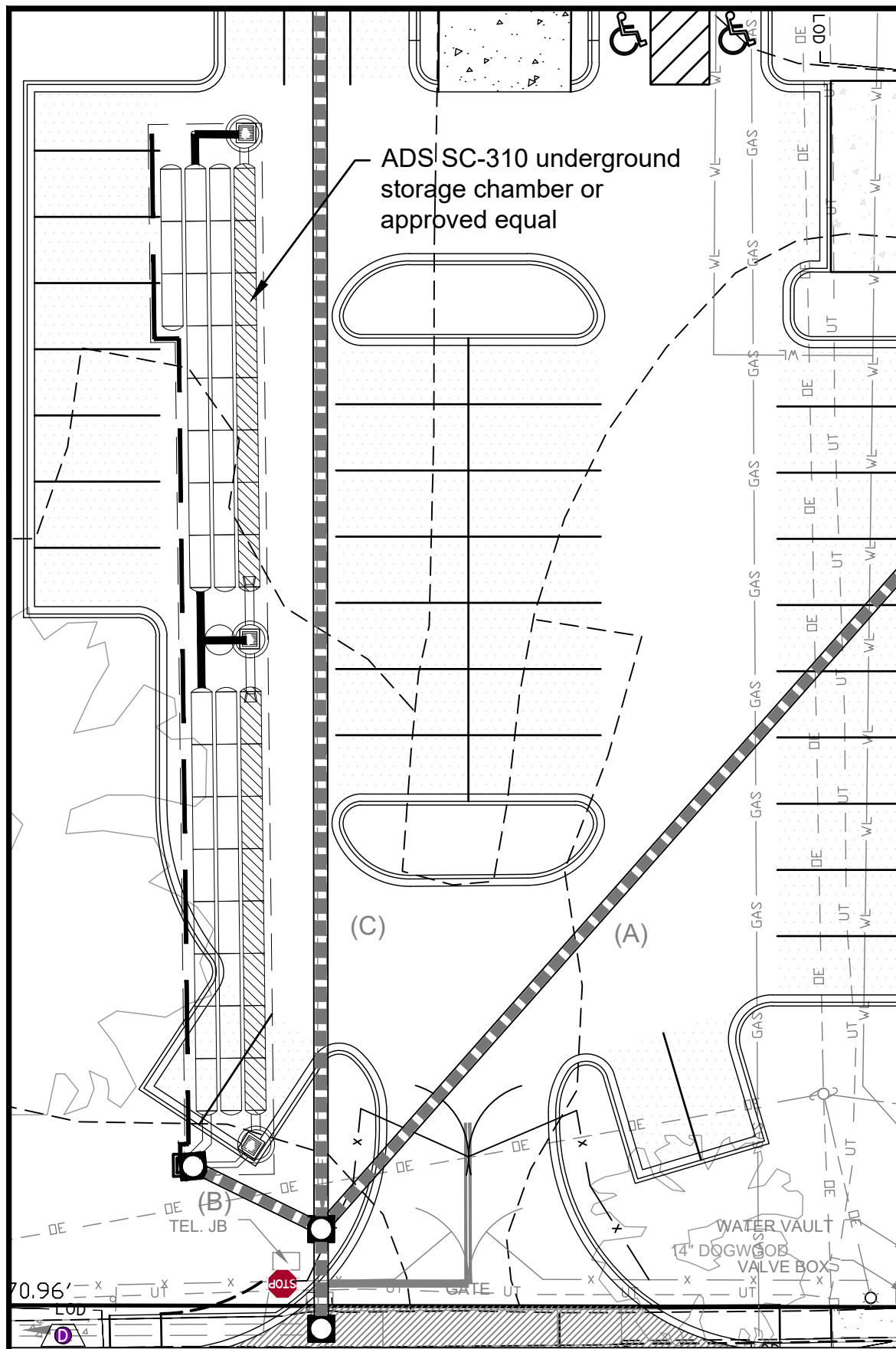
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12/25

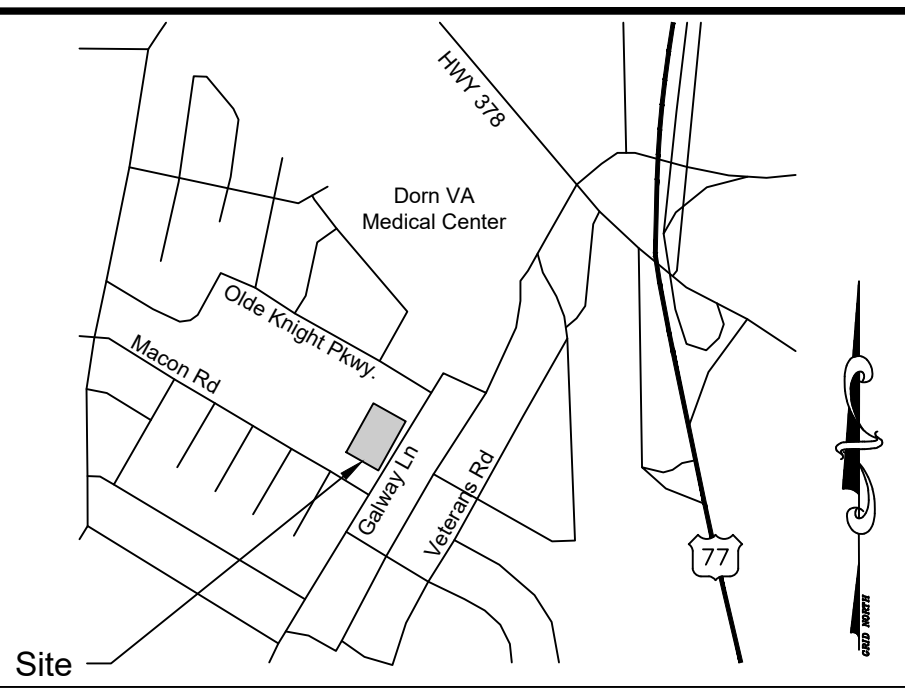
Site Layout Plan R2
Meadowfield Elementary School Parking Addition
Prepared for:
Richland County School District One
In the City of Columbia, Richland County, SC

Drawn: EYC	Checked: GAL
Revised: 07/22/2025	Revised per SCDOT's comments
File: 398720C-25.dwg	
Project No.: 398720C	

C2.0
Sheet Number
May 12, 2025
Date



LEGEND	
	Fire hydrant
	Water valve
	Water meter
	Gas valve
	Sanitary sewer manhole
	Cleanout (CO)
	Natural gas line
	Sanitary sewer line
	Water line
	Fence line
	Overhead electric
	Underground telephone
	Underground fiber optic
	Underground cable TV
	Telephone pedestal
	Curb & gutter
	Junction box (JB)
	Drop inlet (DI)
	Hood & grate inlet (H&G)
	Yard inlet (YI)
	Storm drain pipe
	Concrete sidewalk
	Power pole & guy
	Light pole
	Electrical box
	Sign
	Direction of runoff



Grading Notes:

- All work shall be in accordance with the grading code of City of Columbia and SCDOT and any special requirements of the permit.
- A on-site pre-construction meeting is required before the start of grading with the following parties present: owner, grading contractor, design civil engineer, soil engineer, the City of Columbia, SCDOT and SCDES officials.
- Approved copies of the grading and erosion control plans shall be on the permitted site while work is in progress.
- Cut and fill slopes shall be no steeper than 3-foot horizontal to 1-foot vertical (3:1) except where specifically approved otherwise.
- Contractor shall furnish measurements of the storm drainage system, water, and sewer to the engineer for the preparation of record drawings. Measurements shall be taken by a professional land surveyor licensed to practice in the state of South Carolina. Measurements shall be furnished in electronic format compatible with AutoCAD release 2010 minimum.
- Boundary & topographic information furnished by Chao and Associates, Inc.
- Benchmark is based on mean sea level datum.
- Proposed contours and proposed spot elevations represent finished grade.

Flood Certification

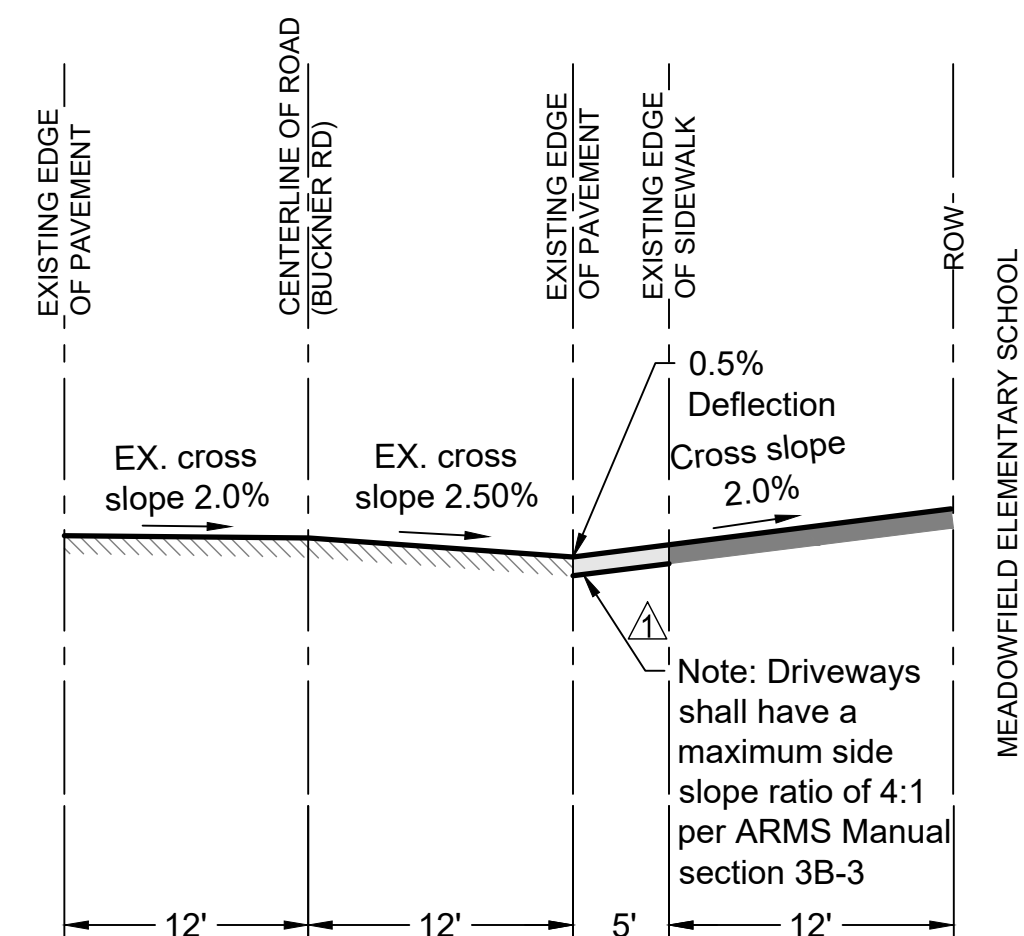
I hereby certify that I have consulted the National Flood Insurance Program, "Flood Insurance Rate Map", Map Number 45079C0377L, panel number 377 of 650, effective date: 12/21/2017. I have determined that the above site lies within an unshaded zone "X".

Gerald A. Lee, P.E.

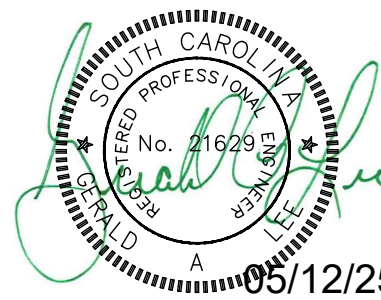
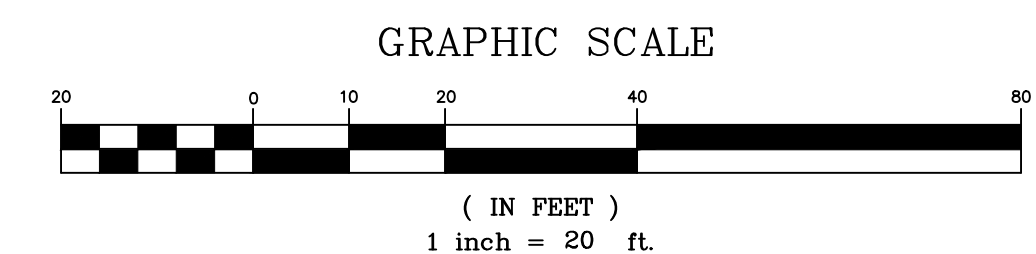
SC Reg. Professional Engineer #21629

Certification Statement

I have placed my signature and seal on the design documents submitted signifying that I accept responsibility for the design of the system. Further, I certify to the best of my knowledge and belief that the design is consistent with the requirements of Title 48, Chapter 14 of the Code of Laws of SC, 1976 as amended, pursuant to Regulation 72-300 et seq. (if applicable), and in accordance with the terms and conditions of SCR100000.

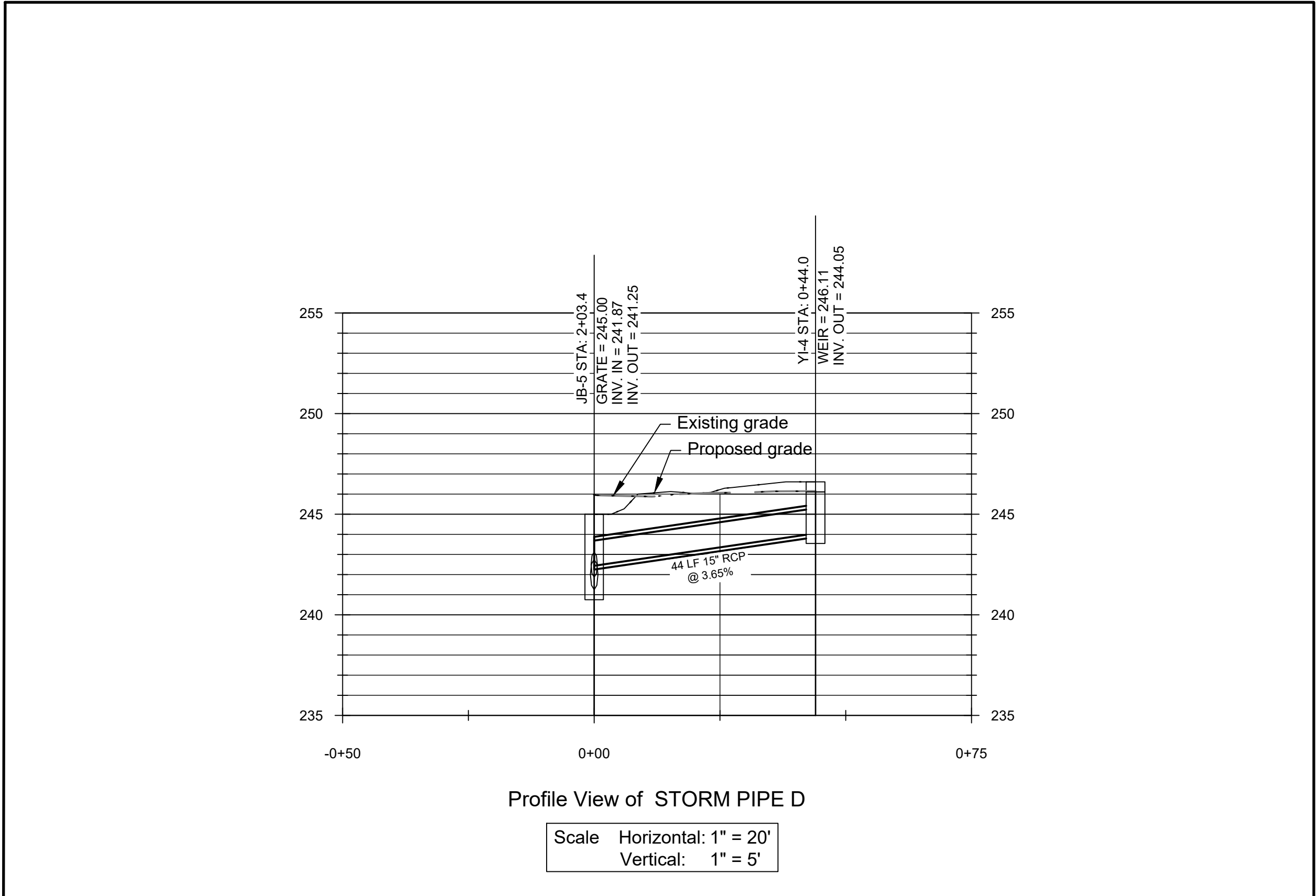
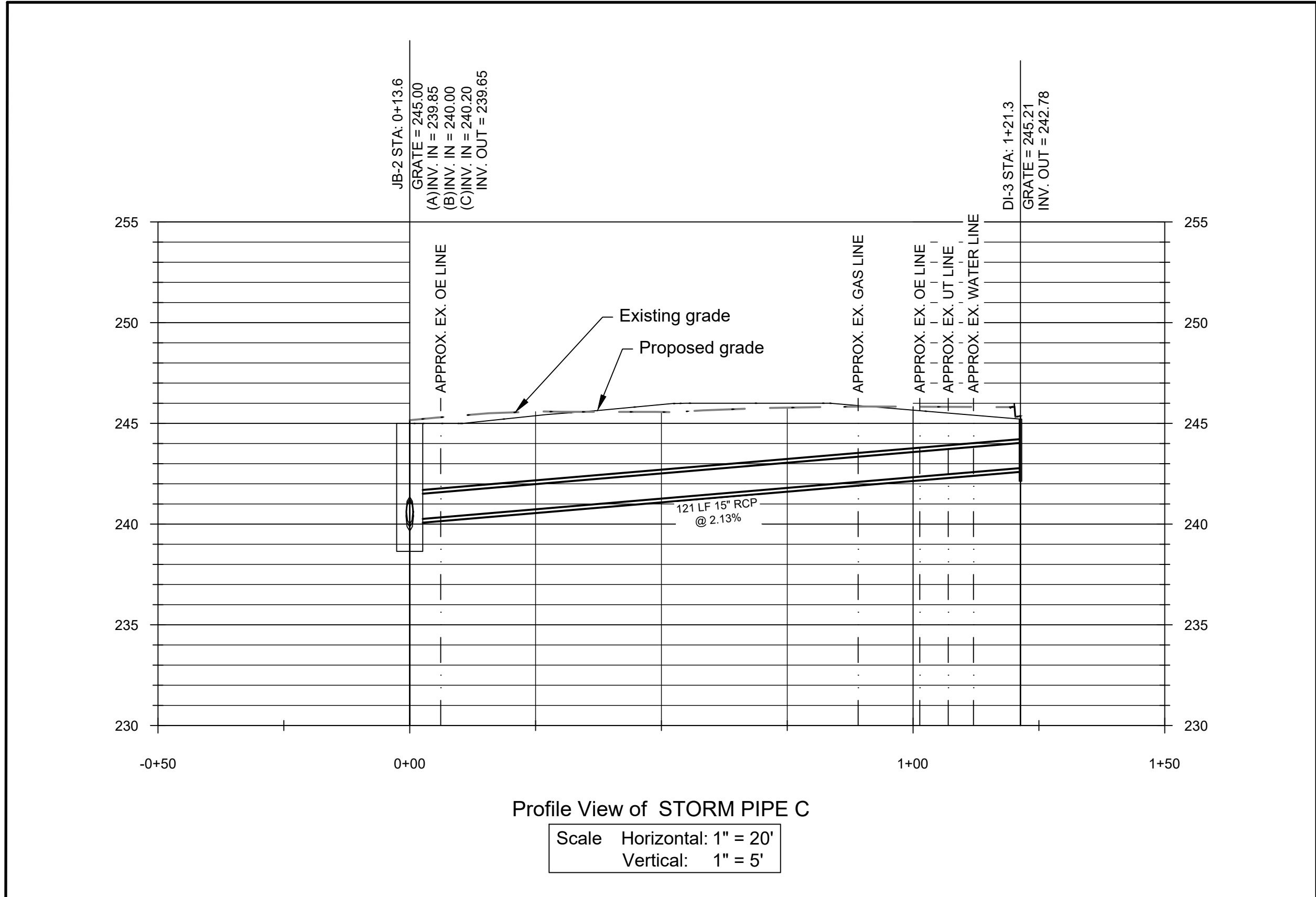
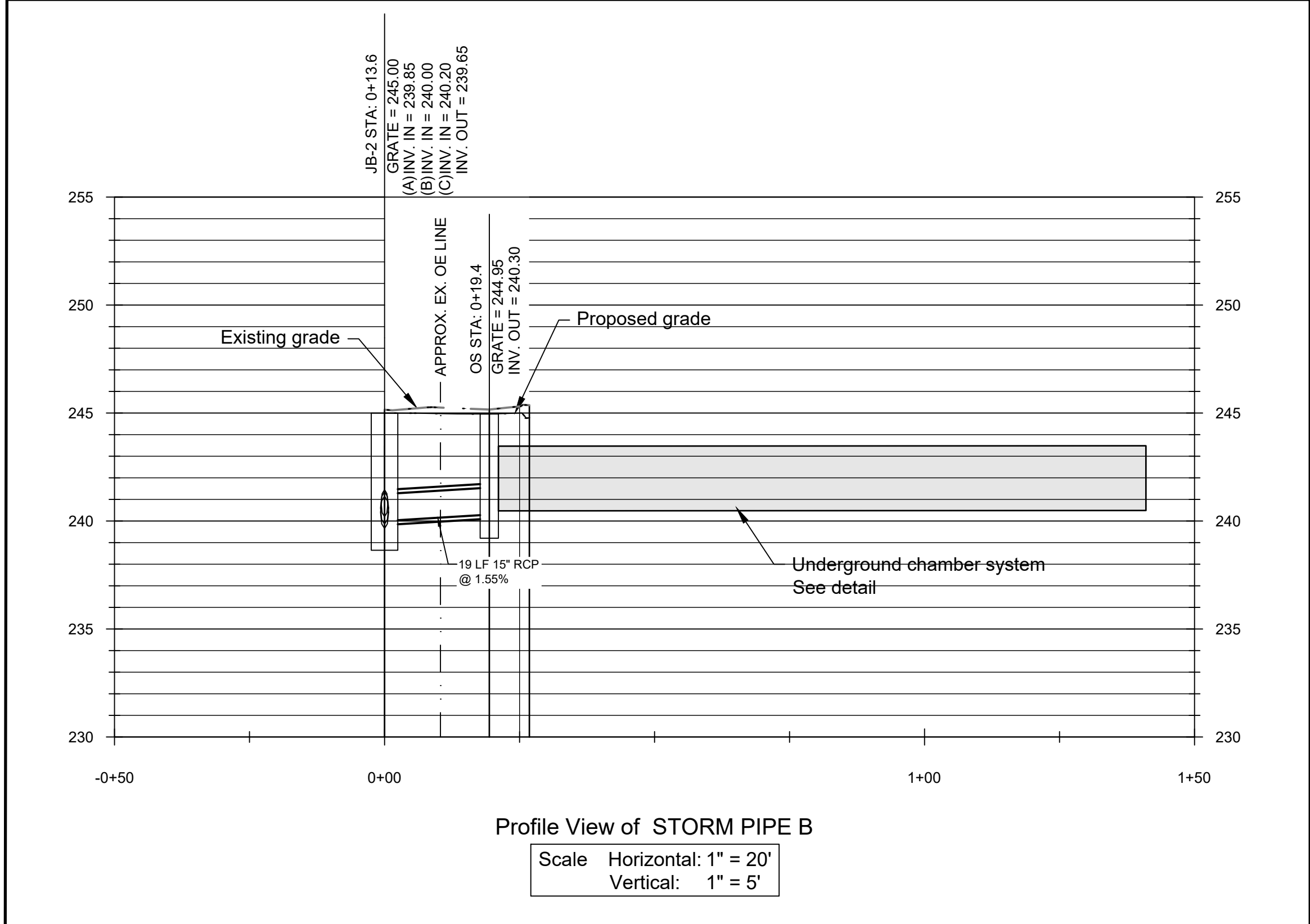
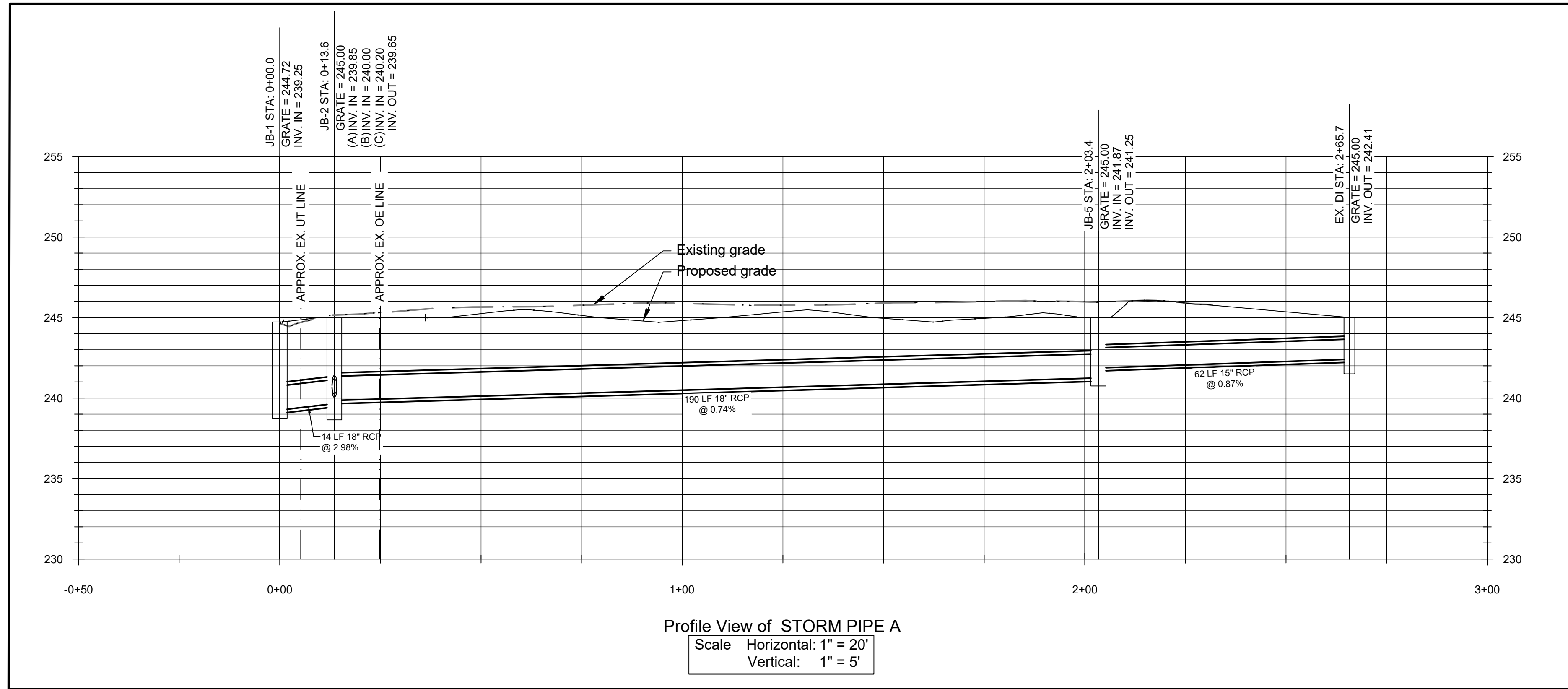


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Grading & Drainage Plan
Meadowfield Elementary School Parking Addition
Prepared for:
Richland County School District One
In the City of Columbia, Richland County, SC

Drawn: EYC
Checked: GAL
Revised: 07/22/2025 Revised per SCDOT's comments
04/15/2026 Revised per SCDOT's comments
Project No.: 398720C
File: 398720C-25.dwg



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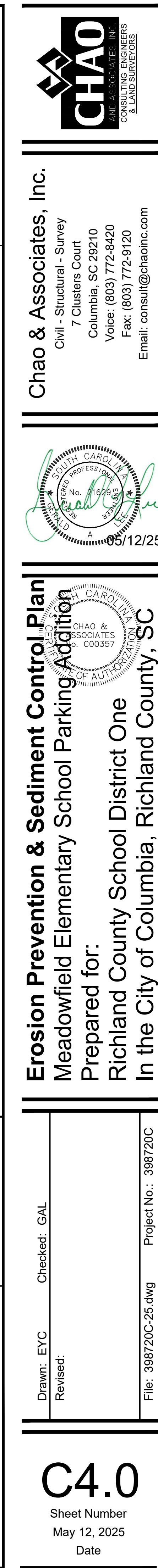
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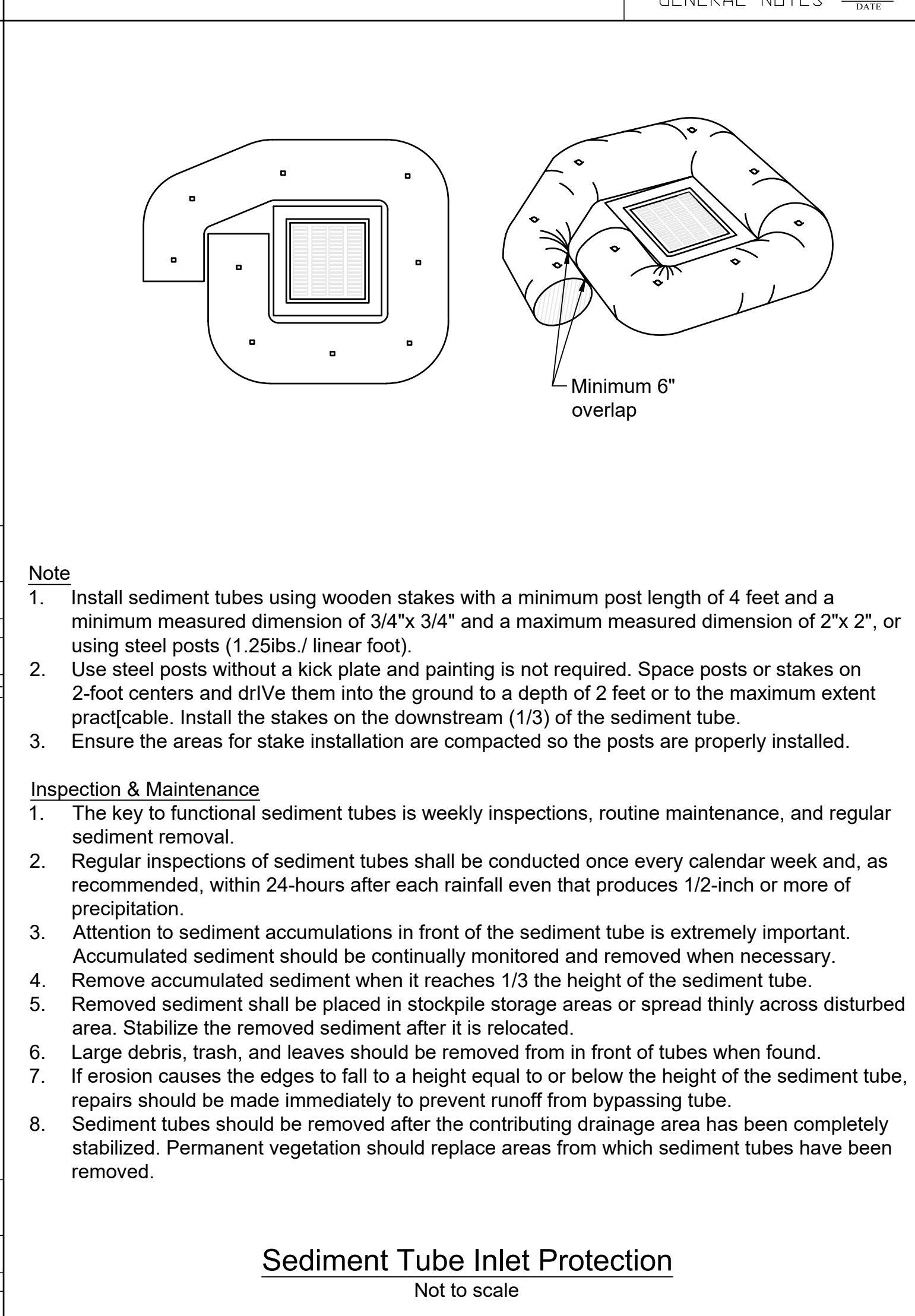
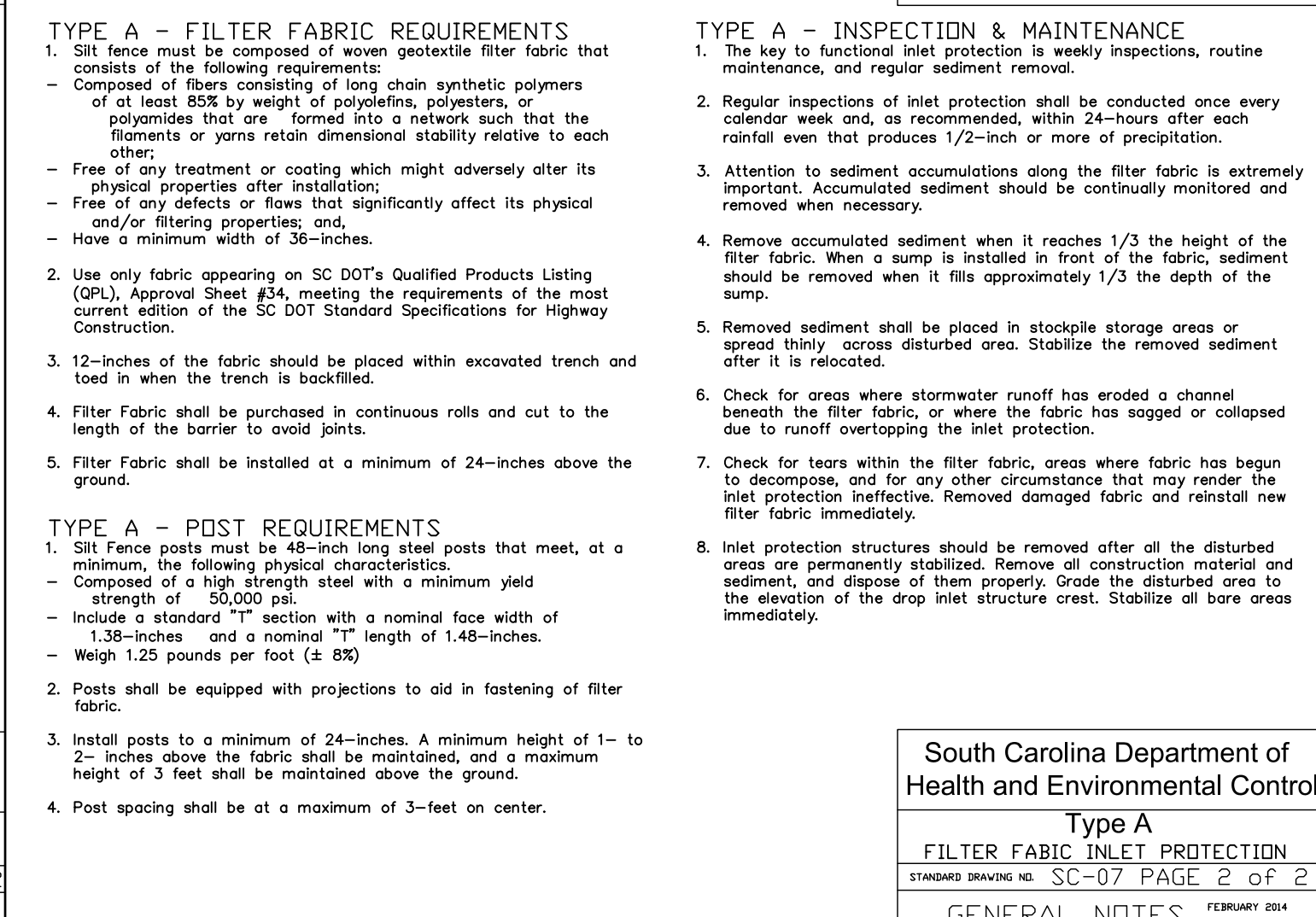
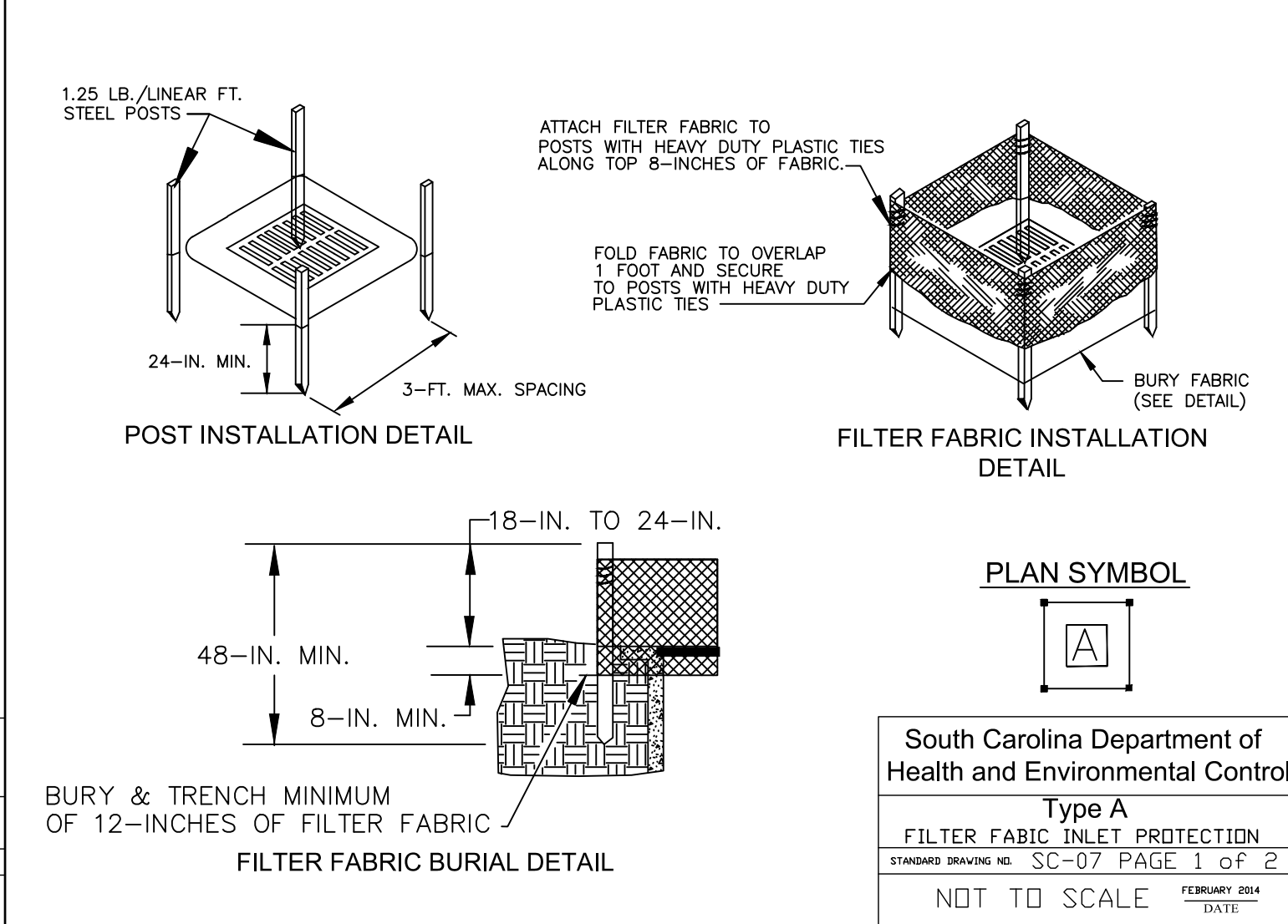


Storm Drain Pipe Profiles
Meadowfield Elementary School Parking Addition
Prepared for:
Richland County School District One
In the City of Columbia, Richland County, SC

Drawn: EYC
Revised: 07/22/2025
Checked: GAL
Revised per SCDOT's comments
Project No.: 398720C
File: 398720C-25.dwg

C3.1
Sheet Number
May 12, 2025
Date



[illegible]

C5.0

Sheet Number

May 12, 2025

Date

Drawn: EYC Checked: GAL

Revised:

 07/22/2025 Revised per SCDOT's comments

File: 398720C-25.dwg Project No.: 398720C

Construction Details

Meadowfield Elementary School Parking Addition

Prepared for:

Richland County School District One

In the City of Columbia, Richland County, SC

05/12/25

Chao & Associates, Inc.

Civil - Structural - Survey

7 Clusters Court

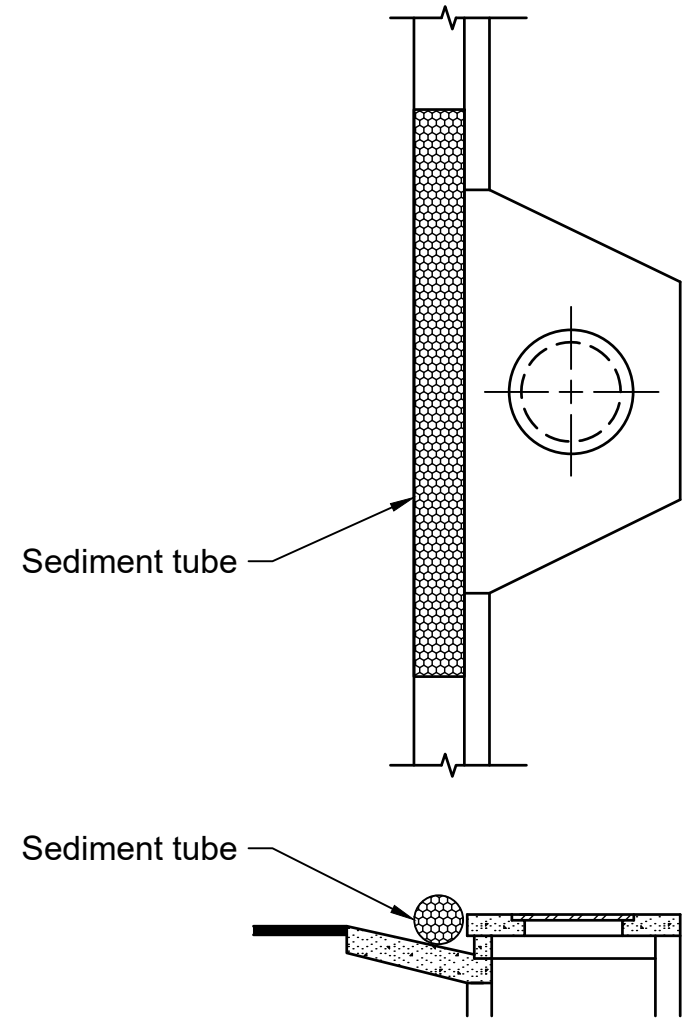
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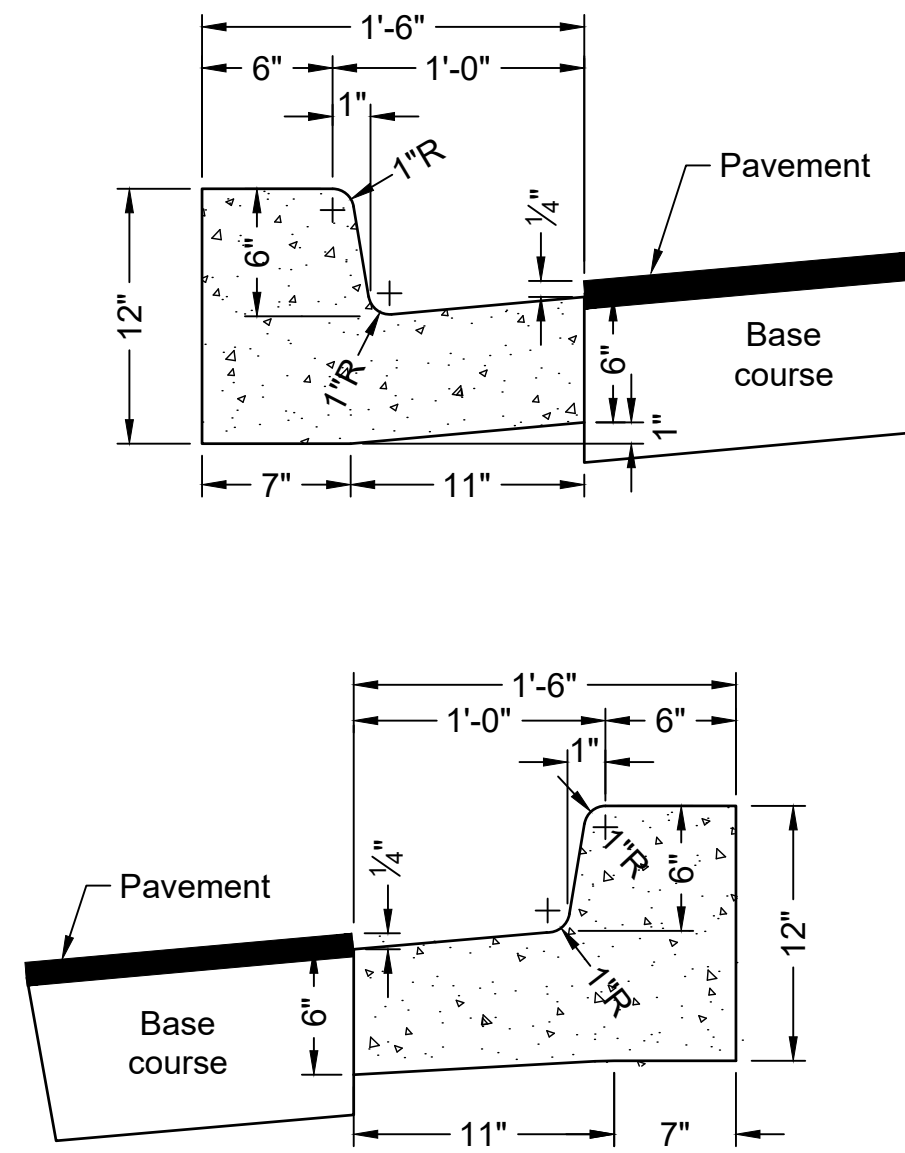
Email: consult@chaoinc.com

CHAO & ASSOCIATES, INC.
CONSULTING ENGINEERS
& LAND SURVEYORS



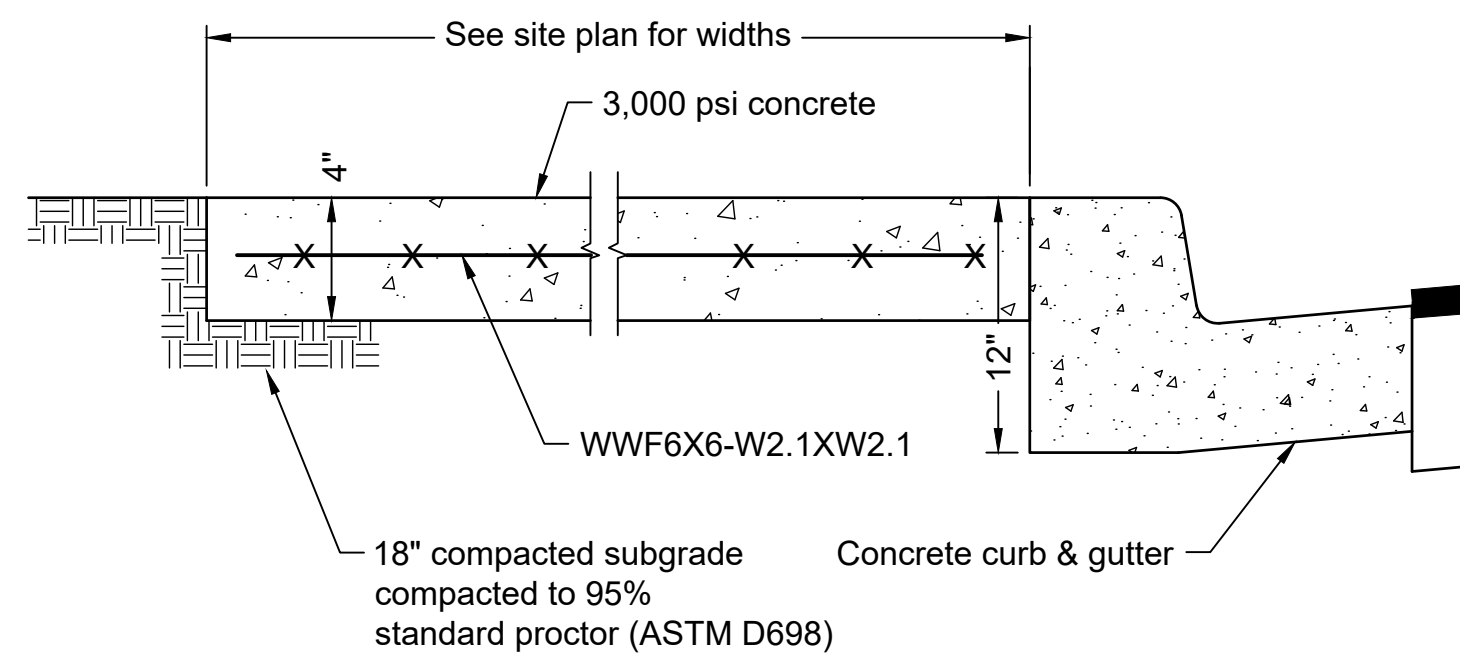
- Maintenance notes:
- Sediment shall be removed and trap restored to its original dimensions when the sediment has accumulated to 1/2 the design depth of the trap. Removed sediment shall be placed in a suitable area and in such a manner that it will not erode.
 - The structure shall be inspected after each rain and repairs made as needed.
 - Construction operations shall be carried out in such a manner that erosion and water pollution shall be minimized.
 - The sediment trap shall be removed and the area stabilized when the remaining drainage area has been properly stabilized.

Gutter Inlet Protection Detail
Not to scale

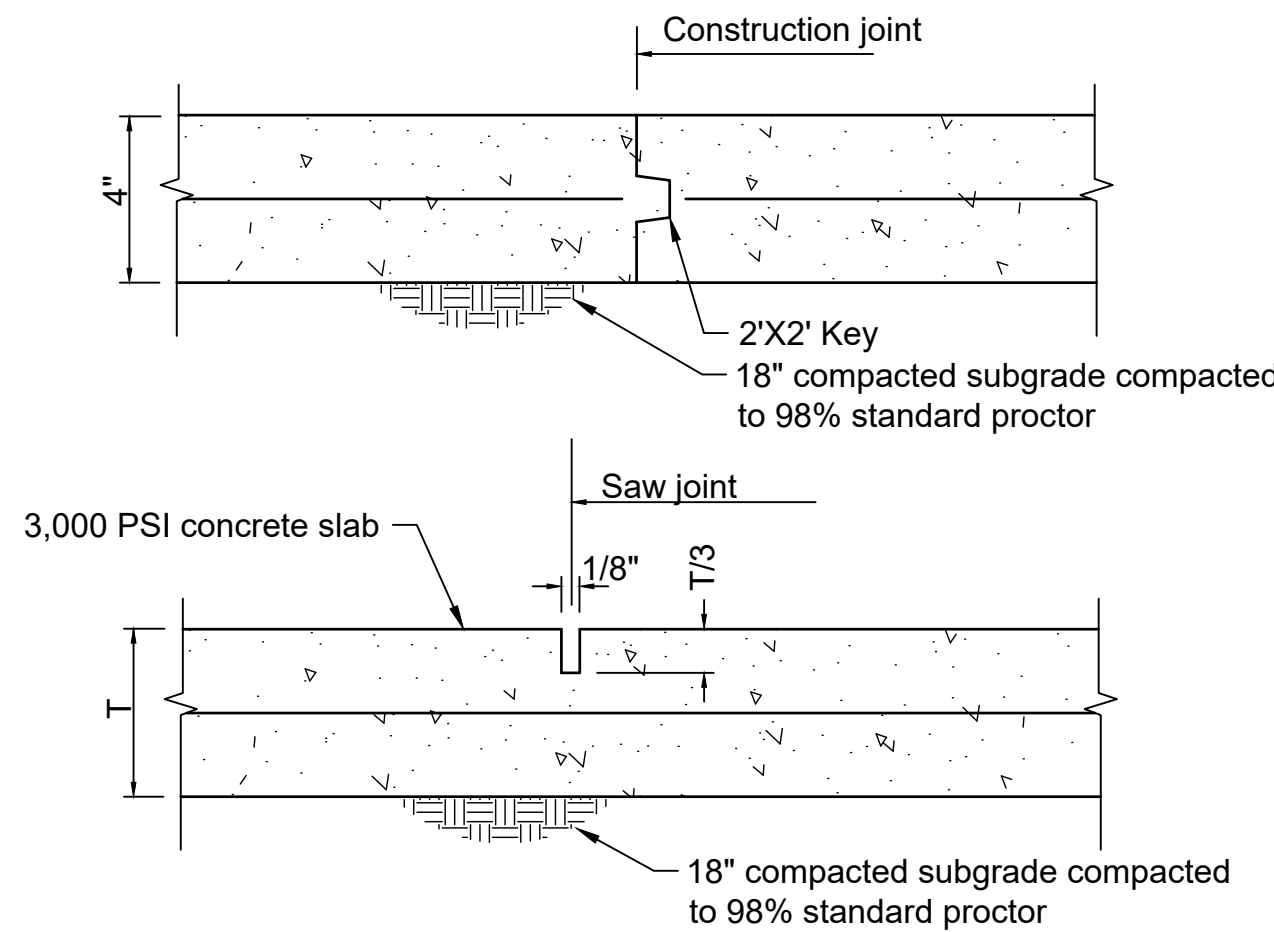


- Notes:
- Curb and gutter to be constructed in 10 foot lengths.
 - A 1/2" expansion joint shall be provided at intervals not to exceed 50 feet. At the ends and mid-point of returns, and at any point where the new curb and gutter abuts other concrete structures.
 - 5' long transitions shall be provided between normal gutter and pitched gutter, unless otherwise noted on the paving plans.
 - Normal curb and gutter will be used where the pavement slopes toward the curb.
 - Pitched curb and gutter will be used where the pavement slopes away from the curb.
 - The strength of concrete curb & gutter shall be 3,000 PSI.

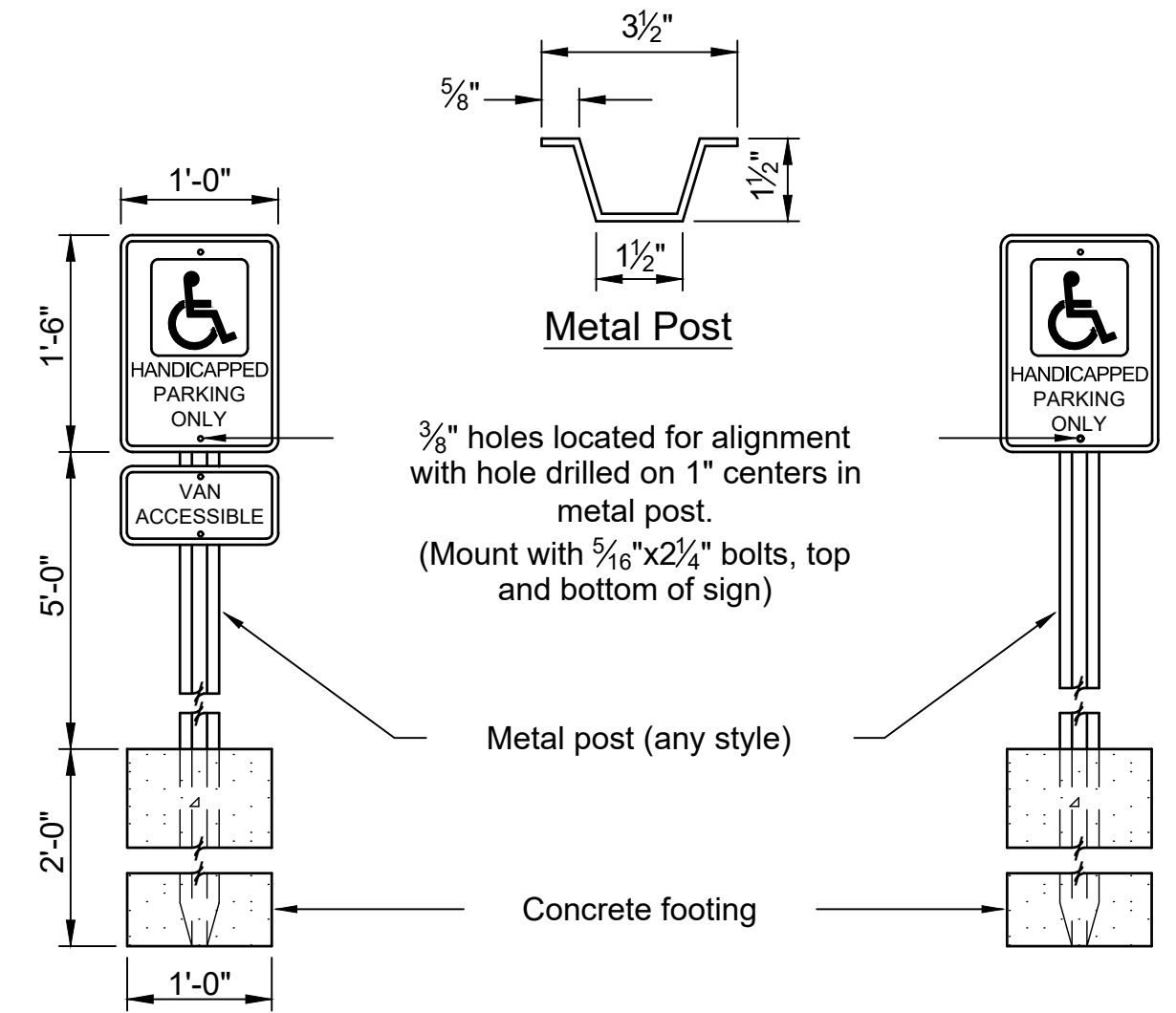
Detail of 1'-6" Barrier Type Concrete Curb & Gutter
Not to scale



Typical Concrete Sidewalk Adjacent Curb & Gutter
Not to Scale



Control Joint Details
Not to scale

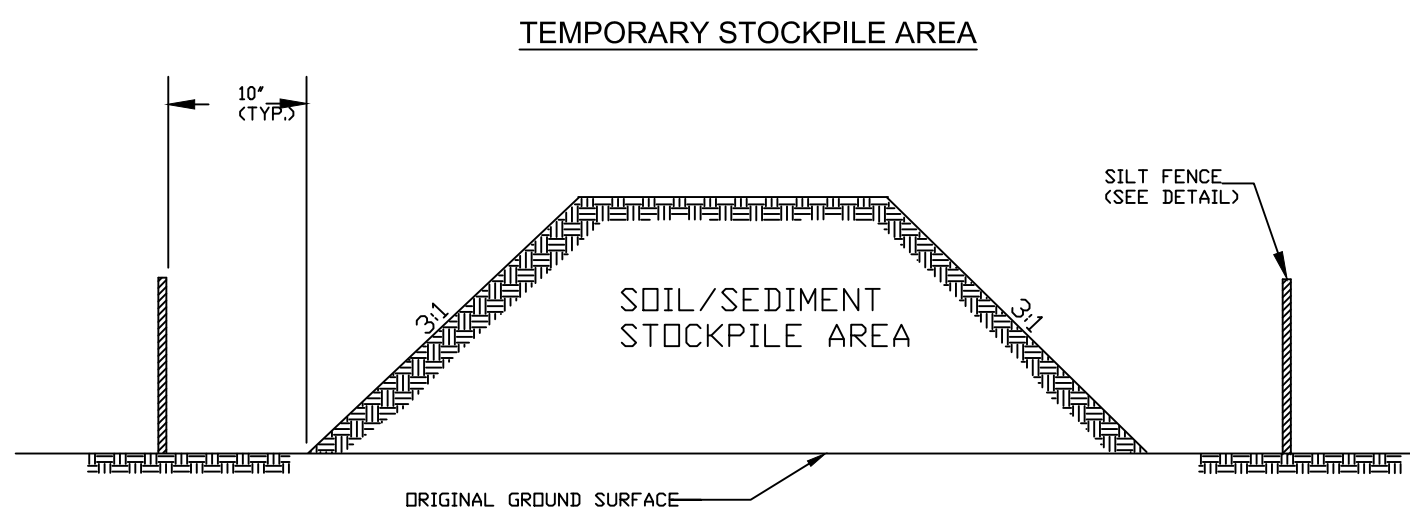


Van accessible sign

Automobile sign

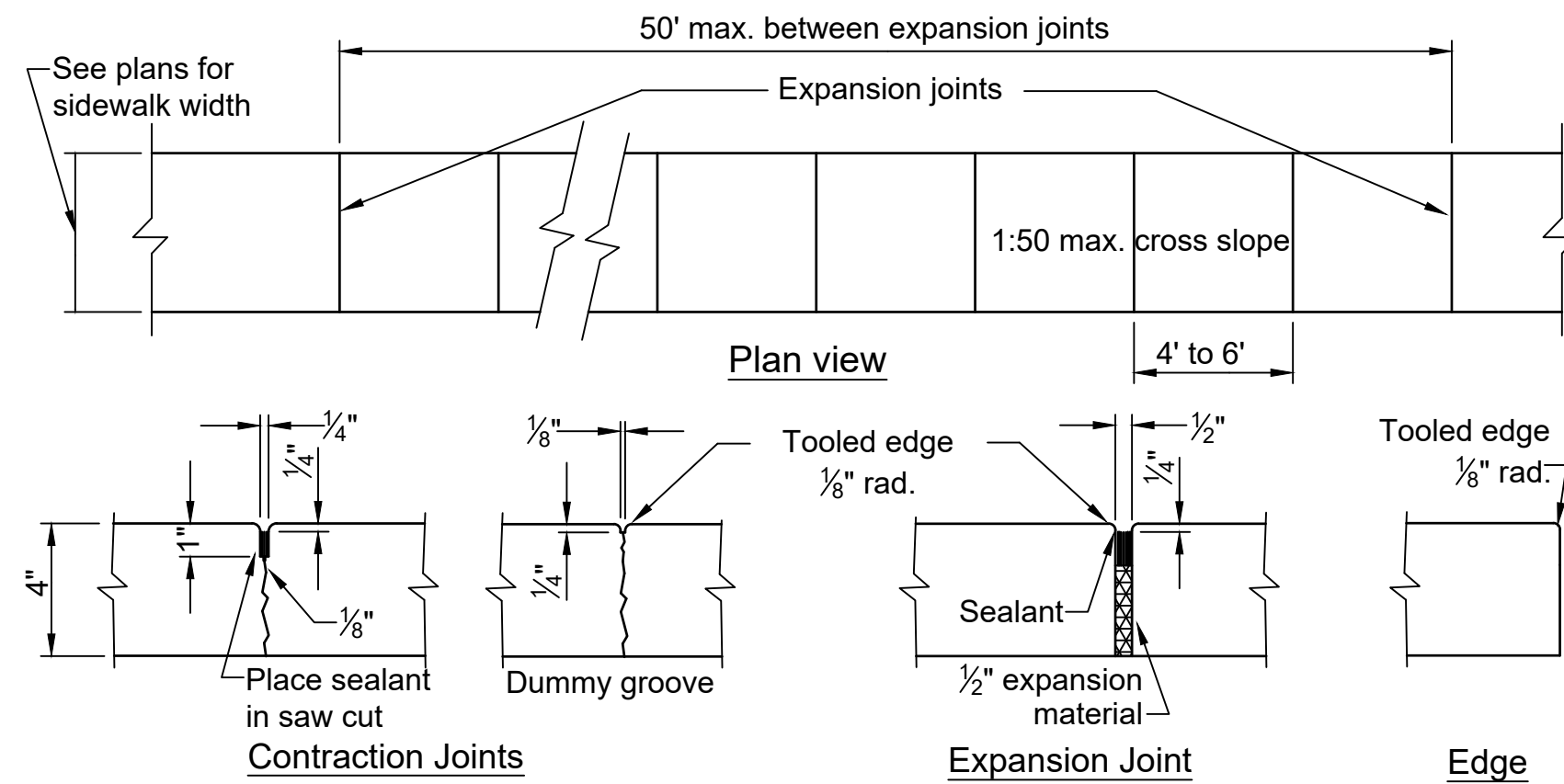
- Notes:
- Metal post to be galvanized. all bolts, nuts, washers and screws must be rustproof. (Post may be any style.)
 - Concrete for footing shall be of portland cement and have a minimum compressive strength of 3,000 PSI.
 - Signs will be fabricated by using a reflecting coating in the symbol, message and borders applied to a sheet aluminum backing (0.80) in thickness.
 - Message lettering shall be upper case (white, series b) 2" high in accordance with manual on uniform traffic control devices.
 - The symbol is composed of two elements; a white wheelchair figure (which should always face right) on a square background, international blue in color (FED. STD. 595A, Color #15180).
 - Sign post shall be minimum of 2'-0" clear from back of sidewalk. see plans for location of signs.

Handicap Sign
Not to scale

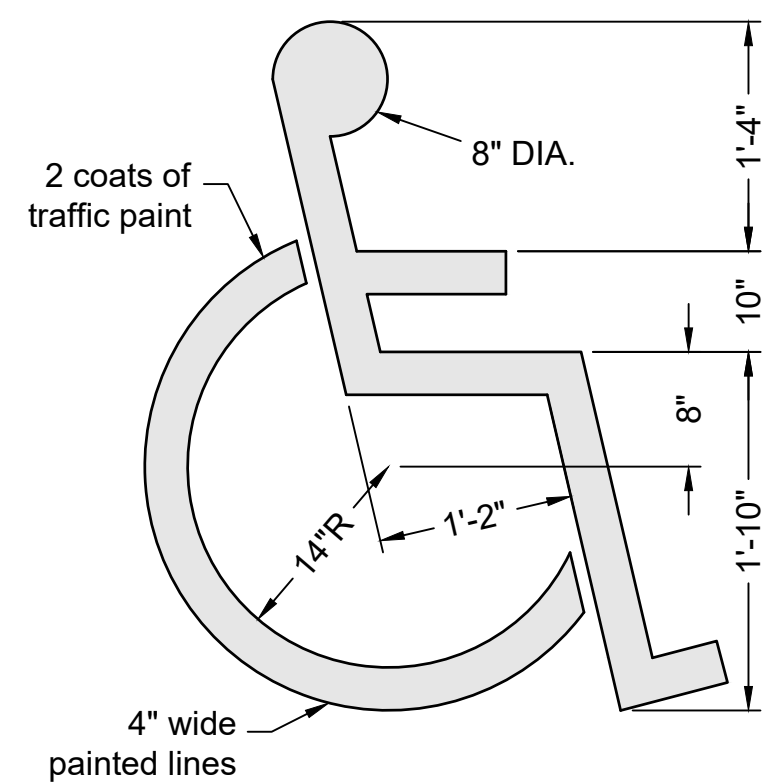


- NOTES:
- SILT FENCE TO EXTEND AROUND ENTIRE PERIMETER OF STOCKPILE, OR IF STOCKPILE AREA IS LOCATED ON/NEAR A SLOPE THE SILT FENCE IS TO EXTEND ALONG CONTOURS OF THE DOWN-GRADIENT AREA.
 - IF STOCKPILE IS TO REMAIN FOR MORE THAN 14 DAYS, TEMPORARY STABILIZATION MEASURES MUST BE IMPLEMENTED.
 - SILT FENCE SHALL BE MAINTAINED UNTIL STOCKPILE AREA HAS EITHER BEEN REMOVED OR PERMANENTLY STABILIZED.
 - THE KEY TO FUNCTIONAL TEMPORARY STOCKPILE AREAS IS WEEKLY INSPECTIONS, ROUTINE MAINTENANCE, AND REGULAR SEDIMENT REMOVAL.

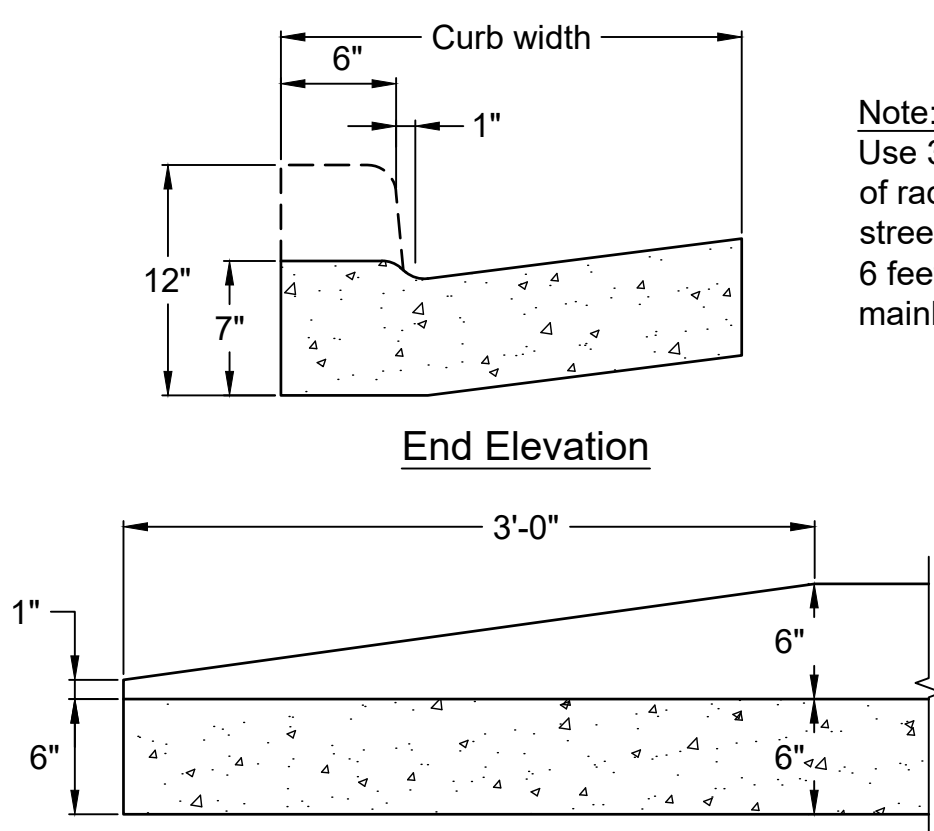
South Carolina Department of
Health and Environmental Control
TEMPORARY STOCKPILE
STANDARD DRAWING NO. SC-15 PAGE 1 of 1
NOT TO SCALE DATE FEBRUARY 2014



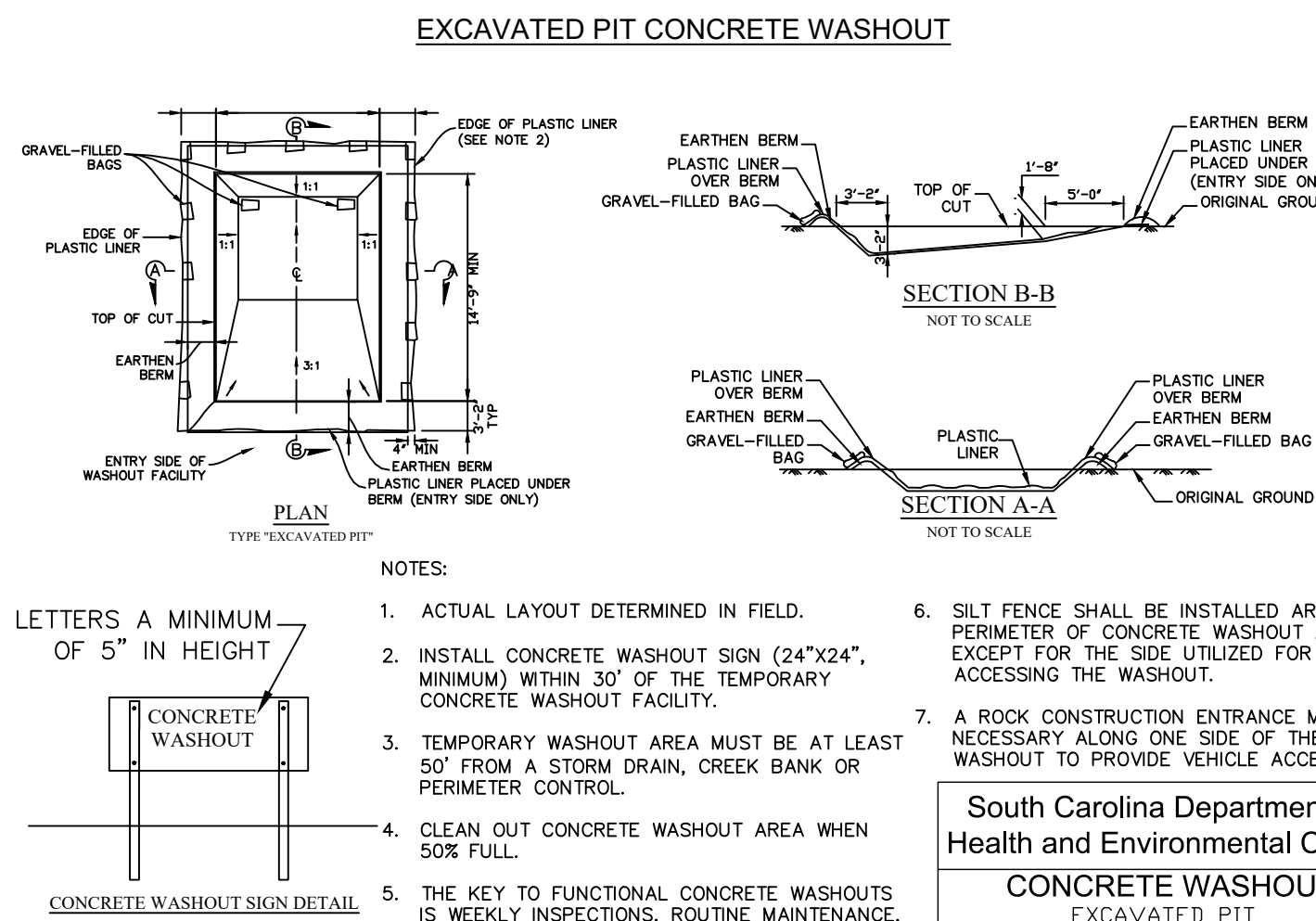
Sidewalk Detail
Not to scale



Handicap Parking Symbol Detail
Not to scale

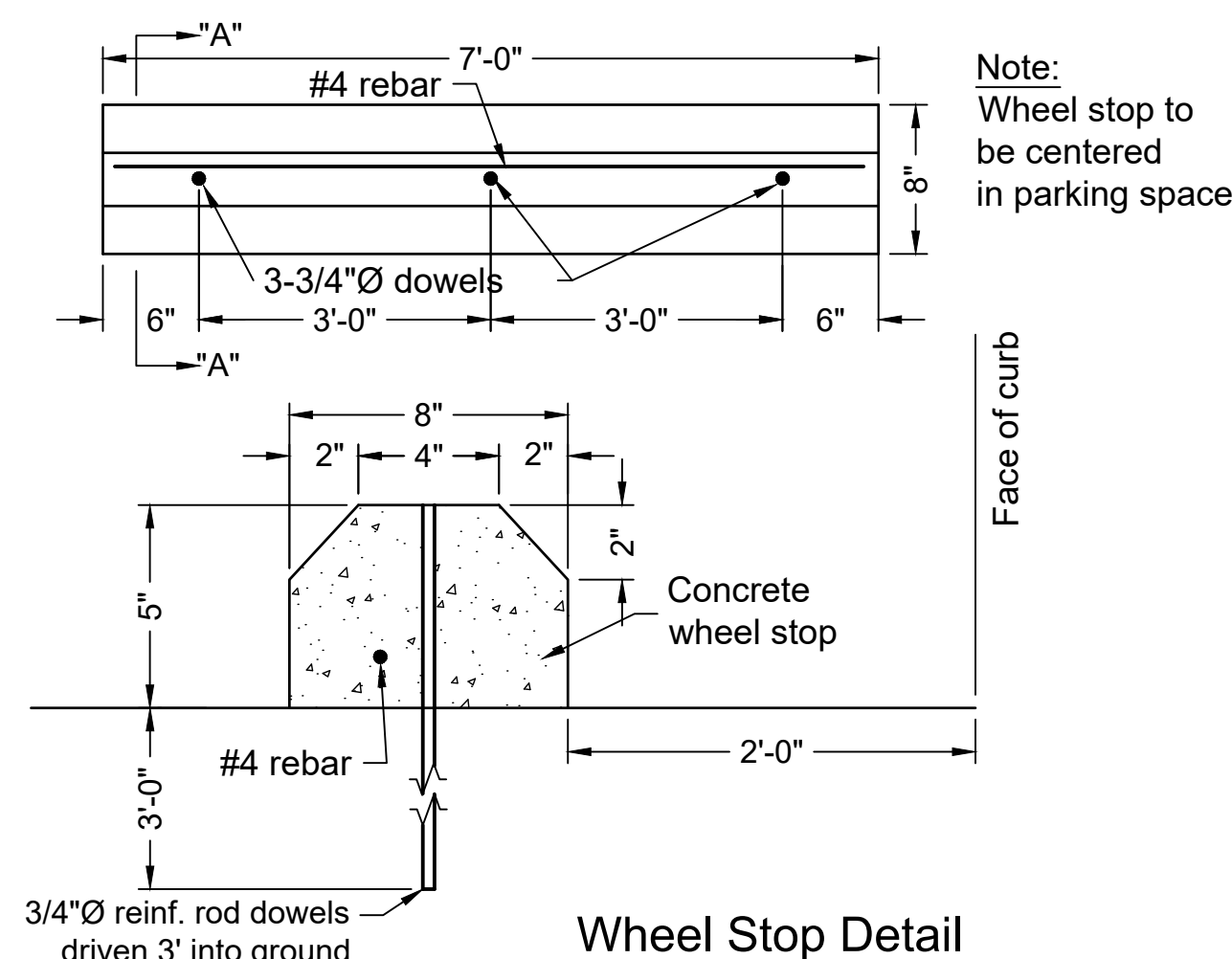


Detail of Curb End Taper
Not to Scale

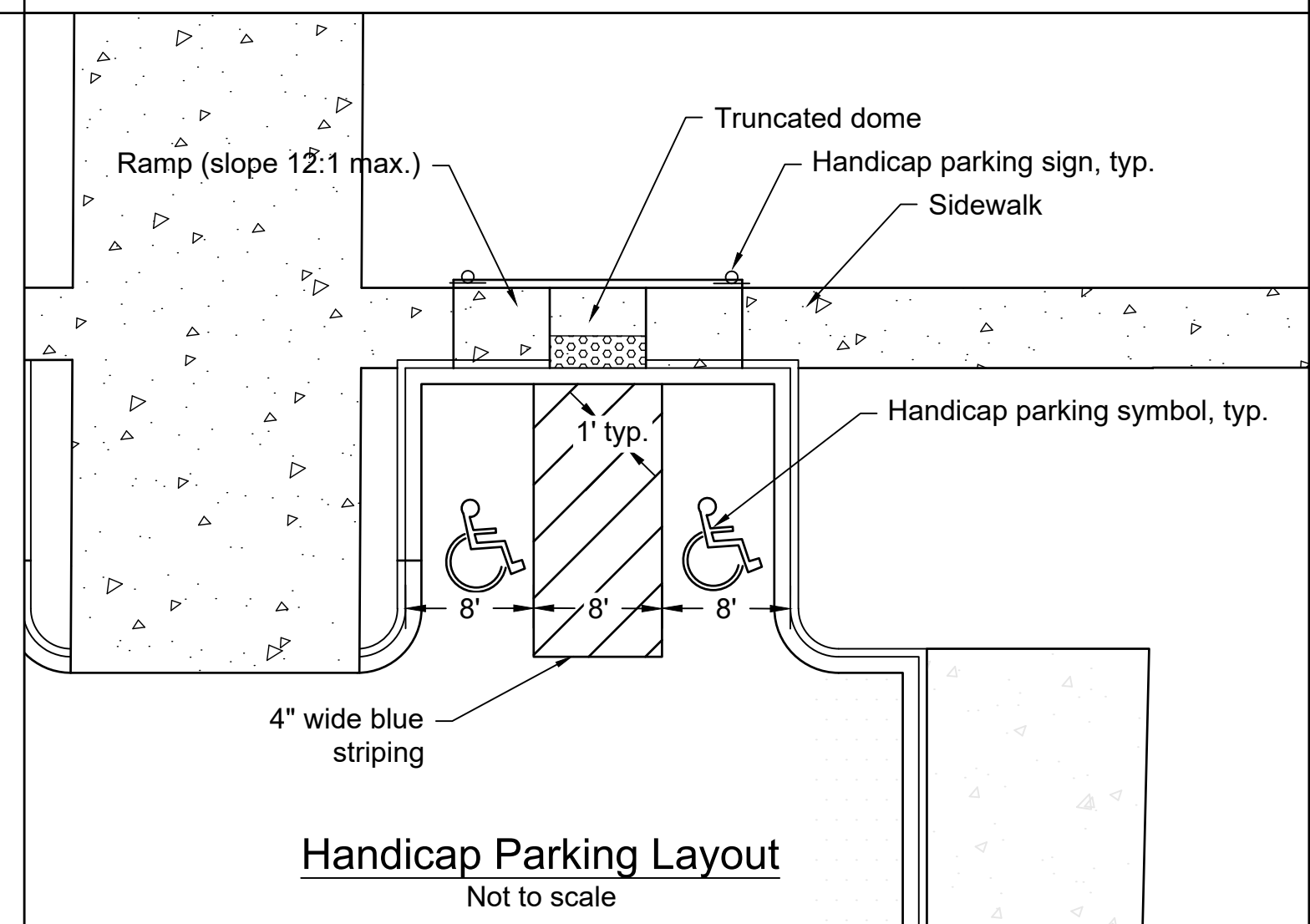


- NOTES:
- ACTUAL LAYOUT DETERMINED IN FIELD.
 - INSTALL CONCRETE WASHOUT SIGN (24"X24", MINIMUM) WITHIN 30' OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
 - TEMPORARY WASHOUT AREA MUST BE AT LEAST 50' FROM A STORM DRAIN, CREEK BANK OR PERIMETER CONTROL.
 - CLEAN OUT CONCRETE WASHOUT AREA WHEN 50% FULL.
 - THE KEY TO FUNCTIONAL CONCRETE WASHOUTS IS WEEKLY INSPECTIONS, ROUTINE MAINTENANCE, AND REGULAR CLEAN OUT.
 - SILT FENCE SHALL BE INSTALLED AROUND PERIMETER OF CONCRETE WASHOUT AREA EXCEPT FOR THE SIDE UTILIZED FOR ACCESSING THE WASHOUT.
 - A ROCK CONSTRUCTION ENTRANCE MAY BE NECESSARY ALONG ONE SIDE OF THE WASHOUT TO PROVIDE VEHICLE ACCESS.

South Carolina Department of
Health and Environmental Control
**CONCRETE WASHOUT
EXCAVATED PIT**
STANDARD DRAWING NO. RC-08 PAGE 1 of 1
NOT TO SCALE DATE FEBRUARY 2014



Wheel Stop Detail
Not to scale

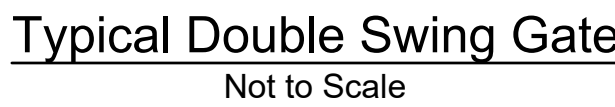


Handicap Parking Layout
Not to scale



- Heavy Duty Asphalt Pavement Section
Not to Scale

- Standard Duty Asphalt Pavement Section
Not to Scale



PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER	BRENT HUTCHINSON 864-399-0545 BRENT.HUTCHINSON@ADSPIPE.COM
ADS SALES REP	JEFF HARTZOG 843-615-0731 JEFF.HARTZOG@ADS-PIPE.COM
PROJECT NO.	S284376



MEADOWFIELD ELEMENTARY SCHOOL

COLUMBIA, SC

SC-310 STORMTECH CHAMBER SPECIFICATIONS

- CHAMBERS SHALL BE STORMTECH SC-310.
- CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE OR POLYETHYLENE COPOLYMERS.
- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2922 (POLETHYLENE) OR ASTM F2418 (POLYPROPYLENE), "STANDARD SPECIFICATION FOR CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
- THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
- CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
 - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
 - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
 - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 325 LBS/FT/%. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
- ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
 - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
 - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
 - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2922 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
- CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.
- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECHNICAL NOTE 6.32 FOR MANIFOLD SIZING GUIDANCE. DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- ADS DOES NOT DESIGN OR PROVIDE MEMBRANE LINER SYSTEMS. TO MINIMIZE THE LEAKAGE POTENTIAL OF LINER SYSTEMS, THE MEMBRANE LINER SYSTEM SHOULD BE DESIGNED BY A KNOWLEDGEABLE GEOTEXTILE PROFESSIONAL AND INSTALLED BY A QUALIFIED CONTRACTOR.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-310 SYSTEM

- STORMTECH SC-310 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
- STORMTECH SC-310 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/SC-800/DC-780 CONSTRUCTION GUIDE".
- CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
 - STONESHOOTER LOCATED OFF THE CHAMBER BED.
 - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
 - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
- THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
- JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
- MAINTAIN MINIMUM - 3" (75 mm) SPACING BETWEEN THE CHAMBER ROWS.
- EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE; AASHTO M43 #3, 357, 4, 467, 5, 56, OR 57.
- THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
- ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

- STORMTECH SC-310 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/SC-800/DC-780 CONSTRUCTION GUIDE".
- THE USE OF CONSTRUCTION EQUIPMENT OVER SC-310 & SC-740 CHAMBERS IS LIMITED:
 - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
 - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/SC-800/DC-780 CONSTRUCTION GUIDE".
 - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/SC-800/DC-780 CONSTRUCTION GUIDE".
- FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-800-821-6710 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

51	STORMTECH SC-310 CHAMBERS
14	STORMTECH SC-310 END CAPS
6	STONE ABOVE (in)
10	STONE BELOW (in)
40	% STONE VOID
2,402	INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED)
1828	SYSTEM AREA (ft²)
317	SYSTEM PERIMETER (ft)

250.66	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)
244.50	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC)
243.99	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)
243.99	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT)
243.99	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT)
243.16	TOP OF STONE
242.66	TOP OF SC-310 CHAMBER
241.62	8" TOP MANIFOLD/CONNECTION INVERT
241.41	12" ISOLATOR ROW PLUS CONNECTION INVERT
241.41	12" BOTTOM MANIFOLD INVERT
241.33	BOTTOM OF SC-310 CHAMBER
240.50	UNDERDRAIN INVERT
240.50	BOTTOM OF STONE

- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.

-
- STRUCTURE PER PLAN W/ELEVATED BYPASS MANIFOLD
MAXIMUM INLET FLOW 0.8 CFS
(DESIGN BY ENGINEER / PROVIDED BY OTHERS)
- 8" x 8" ADS N-12 TOP MANIFOLD
INVERT 3.50" ABOVE CHAMBER BASE
(TYP 2 PLACES)
- STRUCTURE PER PLAN W/ELEVATED BYPASS MANIFOLD
MAXIMUM INLET FLOW 1.7 CFS
(DESIGN BY ENGINEER / PROVIDED BY OTHERS)
- INSTALL FLAMP ON 12" ACCESS PIPE
PART #SC31012RAMP
(TYP 2 PLACES)
- STRUCTURE PER PLAN W/ELEVATED BYPASS MANIFOLD
MAXIMUM INLET FLOW 2.0 CFS
(DESIGN BY ENGINEER / PROVIDED BY OTHERS)
- 8" ADS N-12 TOP CONNECTION
INVERT 3.50" ABOVE CHAMBER BASE
- 12" EZ END CAP, PART# SC310ECEZ
TYP OF ALL SC-310 12" CONNECTIONS &
12" ISOLATOR ROW PLUS CONNECTIONS
- 12" X 12" ADS N-12 BOTTOM MANIFOLD
INVERT 0.90" ABOVE CHAMBER BASE
- 6" ADS N-12 DUAL WALL PERFORATED HDPE UNDERDRAIN
(SIZE TBD BY ENGINEER / SOLID OUTSIDE PERIMETER STONE)
- OUTLET STRUCTURE PER PLAN
MAXIMUM OUTLET FLOW 2.0 CFS
(DESIGN BY ENGINEER / PROVIDED BY OTHERS)
- Dimensions: 15.43', 12.83', 22.55', 58.13', 3.33', 29.64', 113.29'

— — BED LIMITS

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SHEET
OF 5

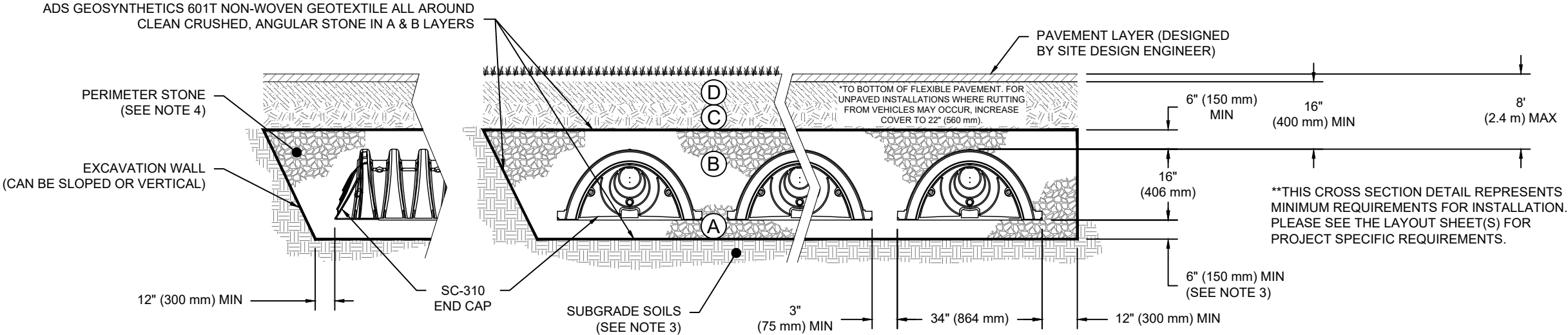
THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

ACCEPTABLE FILL MATERIALS: STORMTECH SC-310 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	3.25	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 16" (400 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145 ¹ A-1, A-2-4, A-3 OR AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE ⁵	AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE ⁵	AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. ^{2,3}

PLEASE NOTE:

1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
5. WHERE RECYCLED CONCRETE AGGREGATE IS USED IN LAYERS 'A' OR 'B' THE MATERIAL SHOULD ALSO MEET THE ACCEPTABILITY CRITERIA OUTLINED IN TECHNICAL NOTE 6.20 "RECYCLED CONCRETE STRUCTURAL BACKFILL".



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2922 (POLYETHYLENE) OR ASTM F2418 (POLYPROPYLENE), "STANDARD SPECIFICATION FOR CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-310 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS. REFERENCE STORMTECH DESIGN MANUAL FOR BEARING CAPACITY GUIDANCE.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
 - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
 - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
 - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANTS AS DEFINED IN SECTION 6.2.8 OF ASTM F2922 SHALL BE GREATER THAN OR EQUAL TO 325 LBS/FT². AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

PROJECT NAME #	CITY - STATE	
DATE:	03/01/22	DRAWN: DC
PROJECT #:	S284376	CHECKED: N/A

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StormTech®
Chamber System

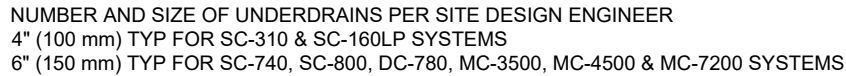
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HILLIARD, OH 43026



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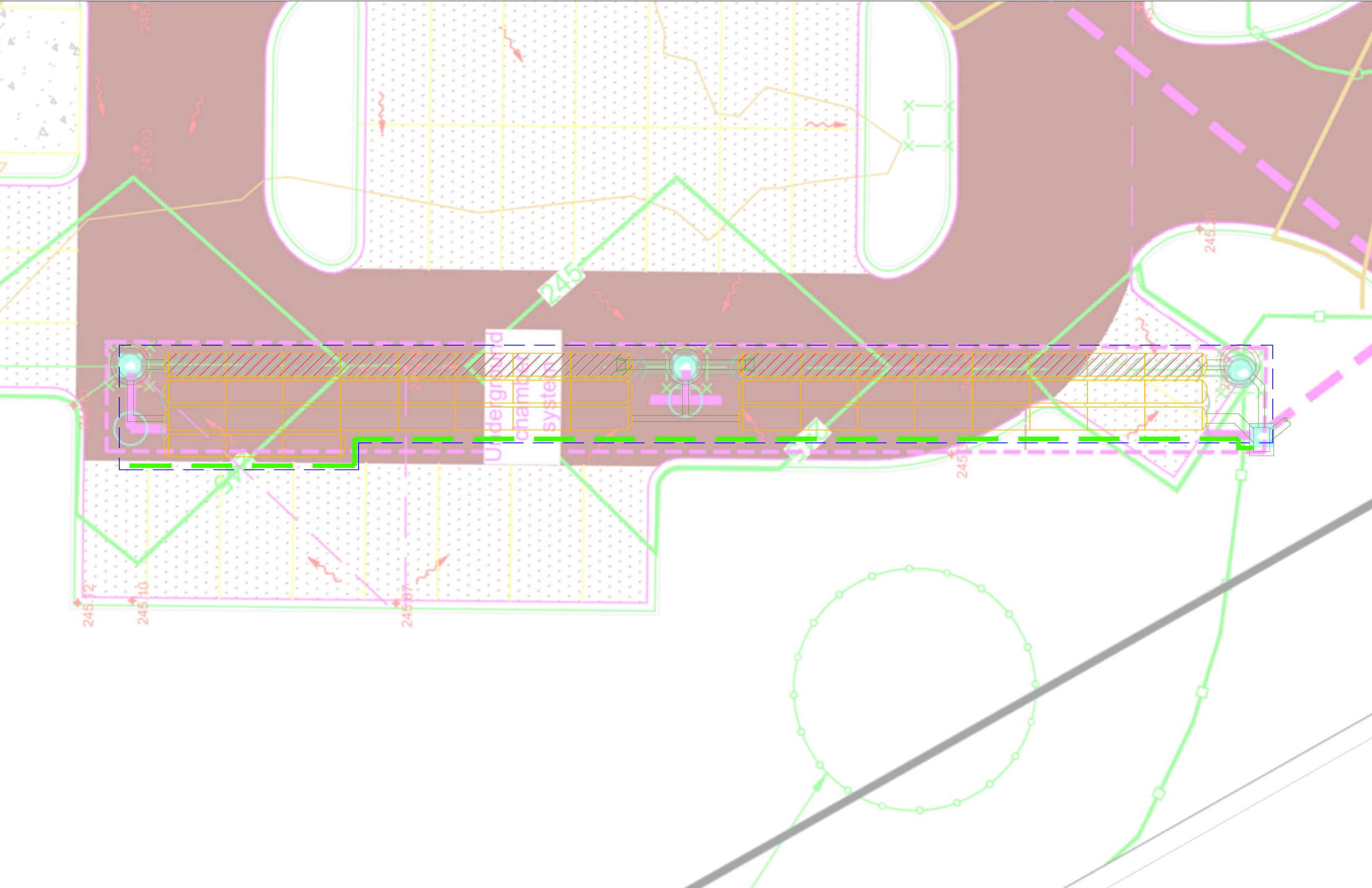


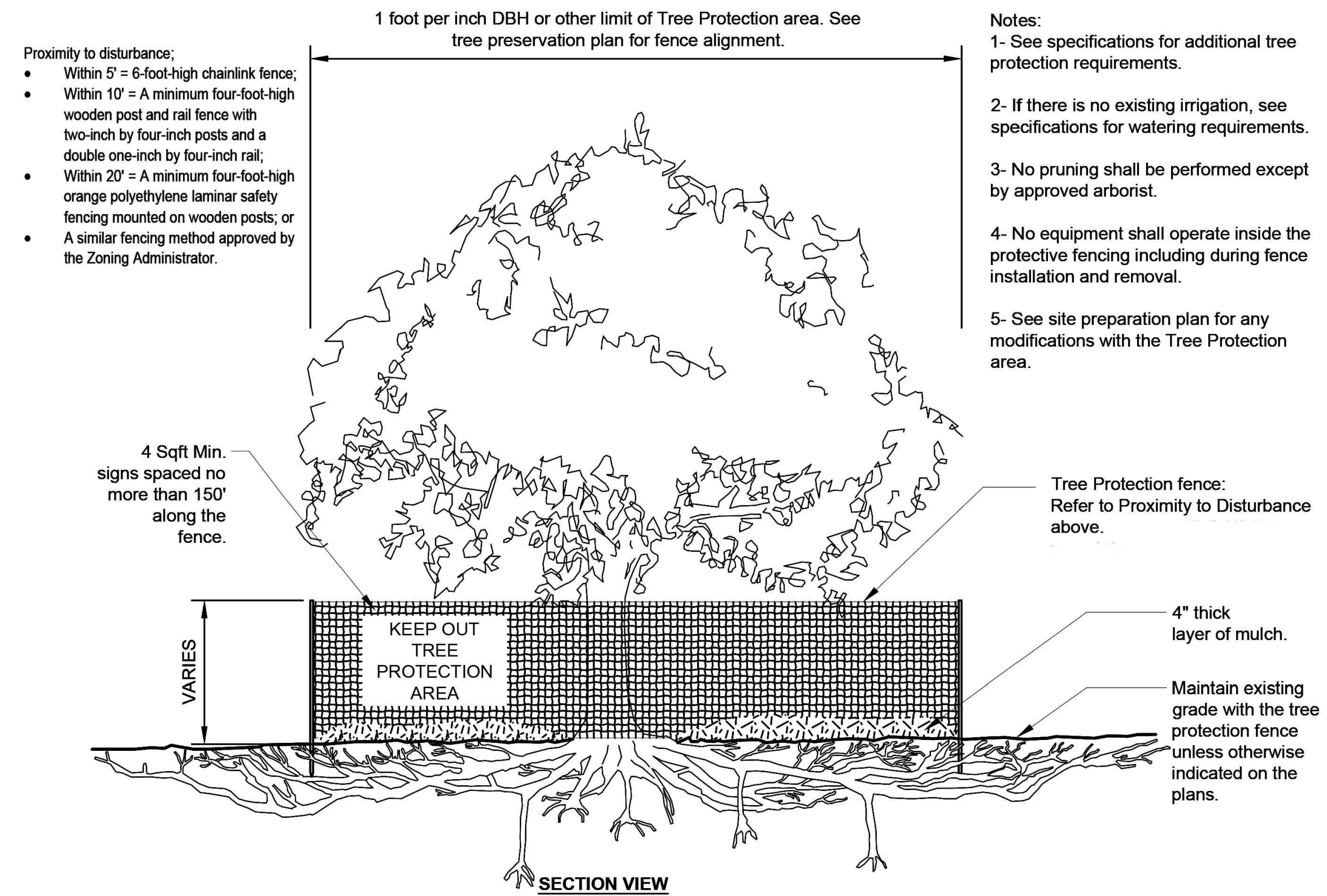
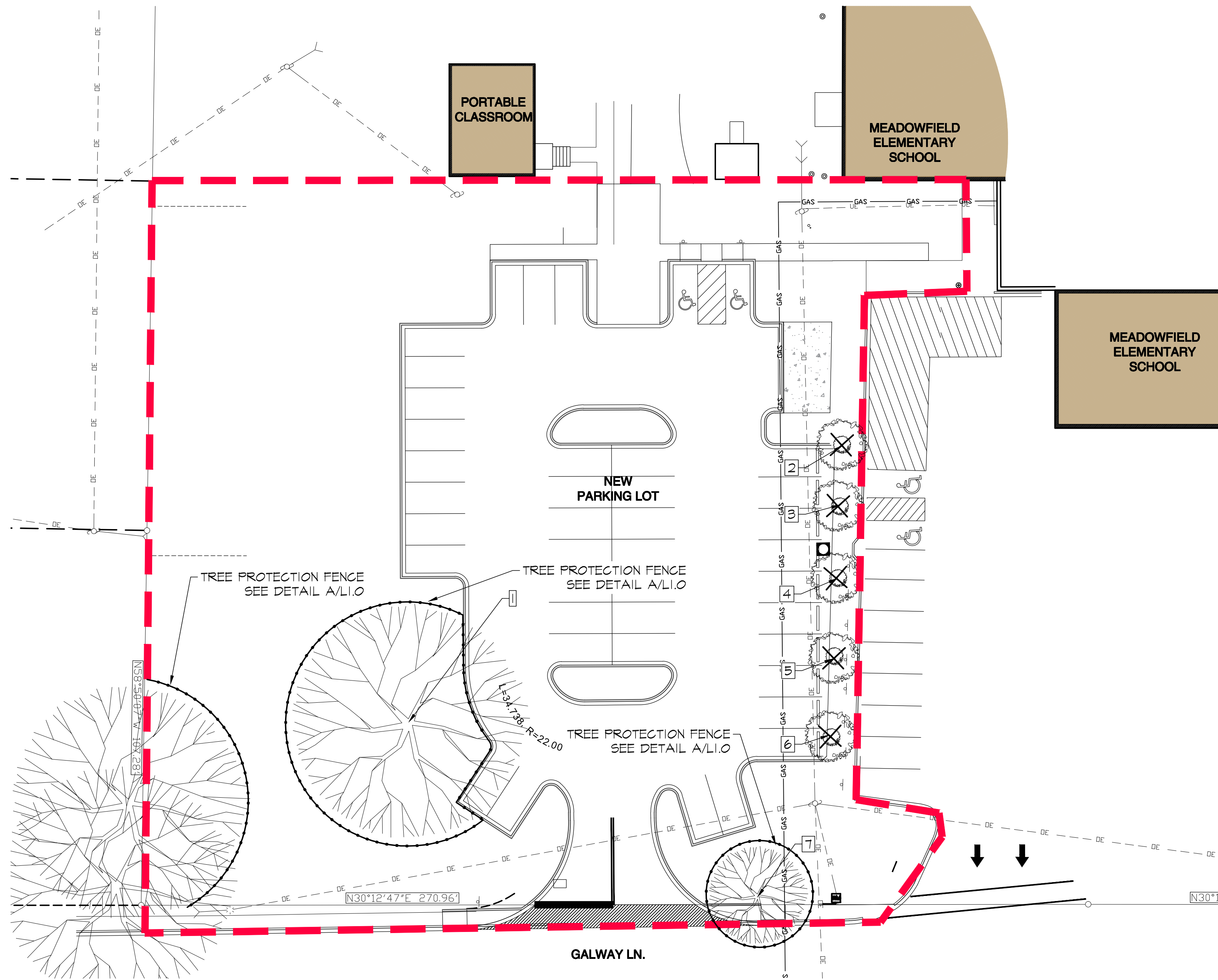
(864 mm X 406 mm X 2169 mm)
(0.42 m³)
(0.88 m³)
(16.8 kg)

Figure 1 consists of two schematic diagrams, labeled B and C, illustrating the experimental setup. Both diagrams show a horizontal surface with a mass on it. A spring is attached to the mass and a vertical support. In diagram B, the mass is a simple rectangle. In diagram C, the mass is a rectangle with a shaded triangular region on its right side, representing a different mass distribution. The distance between the spring and the support is labeled 'A' in both diagrams.

PART #	STUB	A	B	C
SC310EPE06T / SC310EPE06TPC	6" (150 mm)	9.6" (244 mm)	5.8" (147 mm)	---
SC310EPE06B / SC310EPE06BPC			---	0.5" (13 mm)
SC310EPE08T / SC310EPE08TPC	8" (200 mm)	11.9" (302 mm)	3.5" (89 mm)	---
SC310EPE08B / SC310EPE08BPC			---	0.6" (15 mm)
SC310EPE10T / SC310EPE10TPC	10" (250 mm)	12.7" (323 mm)	1.4" (36 mm)	---
SC310EPE10B / SC310EPE10BPC			---	0.7" (18 mm)
SC310ECEZ*	12" (300 mm)	13.5" (343 mm)	---	0.9" (23 mm)

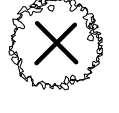
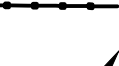
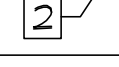
NOTE: ALL DIMENSIONS ARE NOMINAL

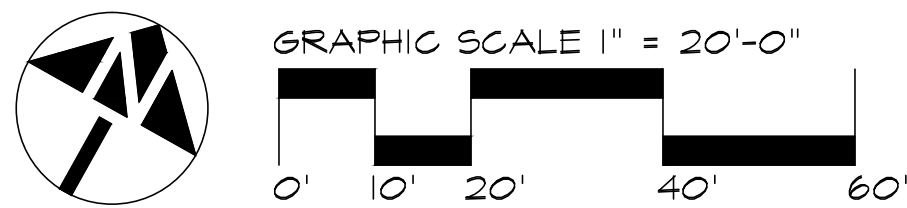


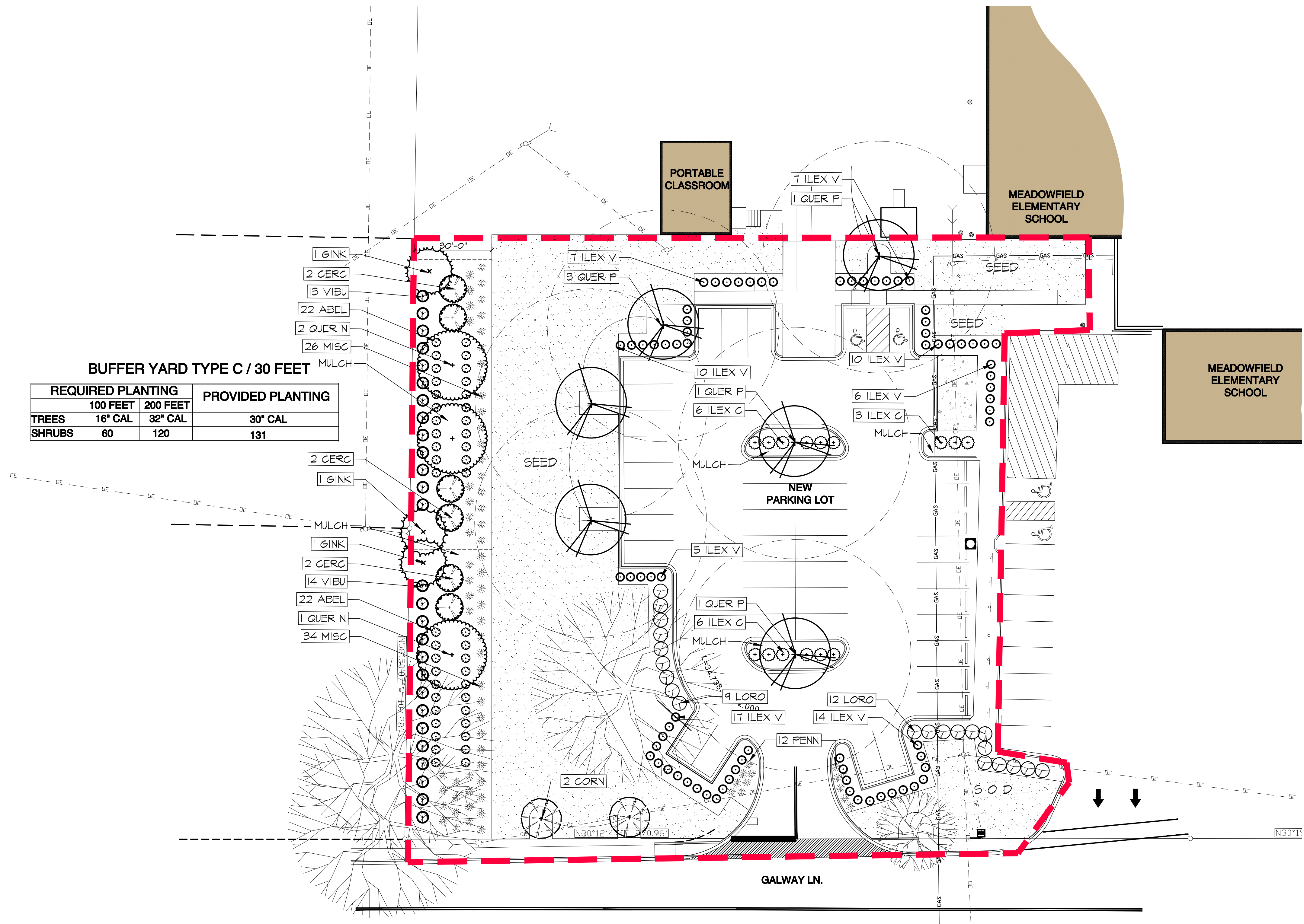


A
L1.0
TREE PROTECTION FENCING City of Columbia
NOT TO SCALE

NUMBER	PLANT NAME	DBH	CONDITION	DESCRIPTION	ACTION
1	OAK	34"	100 % GOOD	GRAND TREE	REMAIN & PROTECT
2	GRAPE MYRTLE	10"	50 % GOOD	MULTI TRUNK	REMOVE FOR CONSTRUCTION
3	GRAPE MYRTLE	10"	50 % GOOD	MULTI TRUNK	REMOVE FOR CONSTRUCTION
4	GRAPE MYRTLE	10"	50 % GOOD	MULTI TRUNK	REMOVE FOR CONSTRUCTION
5	GRAPE MYRTLE	10"	50 % GOOD	MULTI TRUNK	REMOVE FOR CONSTRUCTION
6	GRAPE MYRTLE	10"	50 % GOOD	MULTI TRUNK	REMOVE FOR CONSTRUCTION
7	DOGWOOD	14"	75 % GOOD	DOGWOOD	REMAIN & PROTECT

KEY	DESCRIPTION
	EXISTING TREE TO REMAIN
	EXISTING TREE TO REMOVE
	LIMITS OF WORK
	TREE PROTECTION FENCING
	TREE IDENTIFICATION NUMBER





GENERAL NOTES

- EXISTING ECOLOGY AND AESTHETICS WILL OFTEN CAUSE ADJUSTMENT OF THESE PLANS TO FIT THE SITE. STAKE-OUT BY THE CONTRACTOR AND ADJUSTMENT BY THE LANDSCAPE ARCHITECT IS ABSOLUTELY NECESSARY.
- LOCATIONS OF THOSE UTILITIES SHOWN ARE APPROXIMATE AND FOR INFORMATION PURPOSES ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR THE EXACT LOCATION OF ALL UTILITIES WHETHER SHOWN OR NOT SHOWN ON THESE PLANS, AND SHALL BE RESPONSIBLE FOR ANY AND ALL DAMAGE RESULTING FROM THE FAILURE TO DO SO. CONTACT PALMETTO UTILITY PROTECTION SERVICE AT 1-888-721-7877 AT LEAST 72 HOURS PRIOR TO COMMENCING CONSTRUCTION.
- CONTRACTOR SHALL INFORM LANDSCAPE ARCHITECT IF PROPOSED DESIGN IS IN CONFLICT WITH EXISTING OR PROPOSED UTILITIES. CONTRACTOR SHALL COORDINATE WITH LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION TO ADJUST PROPOSED DESIGN OR UTILITIES AS NECESSARY TO RESOLVE CONFLICTS.
- BASE PLAN DATA DERIVED FROM SITE SURVEY. PROVIDED BY CHAO AND ASSOCIATES DATED 05/06/25 (RECEIVED)

GRASSING SCHEDULE (PER 1000 SF)

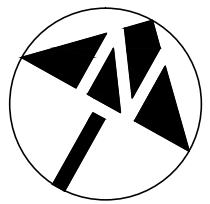
NOTE: SEED ALL DISTURBED AREAS DUE TO GRADING OR TRENCHING AND ALL AREAS NOT TO BE PLANTED OR SODDED.

FROM MAY 1 - AUGUST 31

1 LB. BROWNTOP MILLET
1 LB. HULLED BERMUDA
6 OUNCES CENTIPEDE GRASS
25 LBS. 10-10-10 FERTILIZER
(50% SLOW RELEASE NITROGEN)
75 LBS. LIMESTONE

FROM SEPTEMBER 1 - APRIL 30

2 LB. ANNUAL RYE
1 LB. UNHULLED BERMUDA
6 OUNCES CENTIPEDE GRASS
25 LBS. 10-10-10 FERTILIZER
(50% SLOW RELEASE NITROGEN)
75 LBS. LIMESTONE

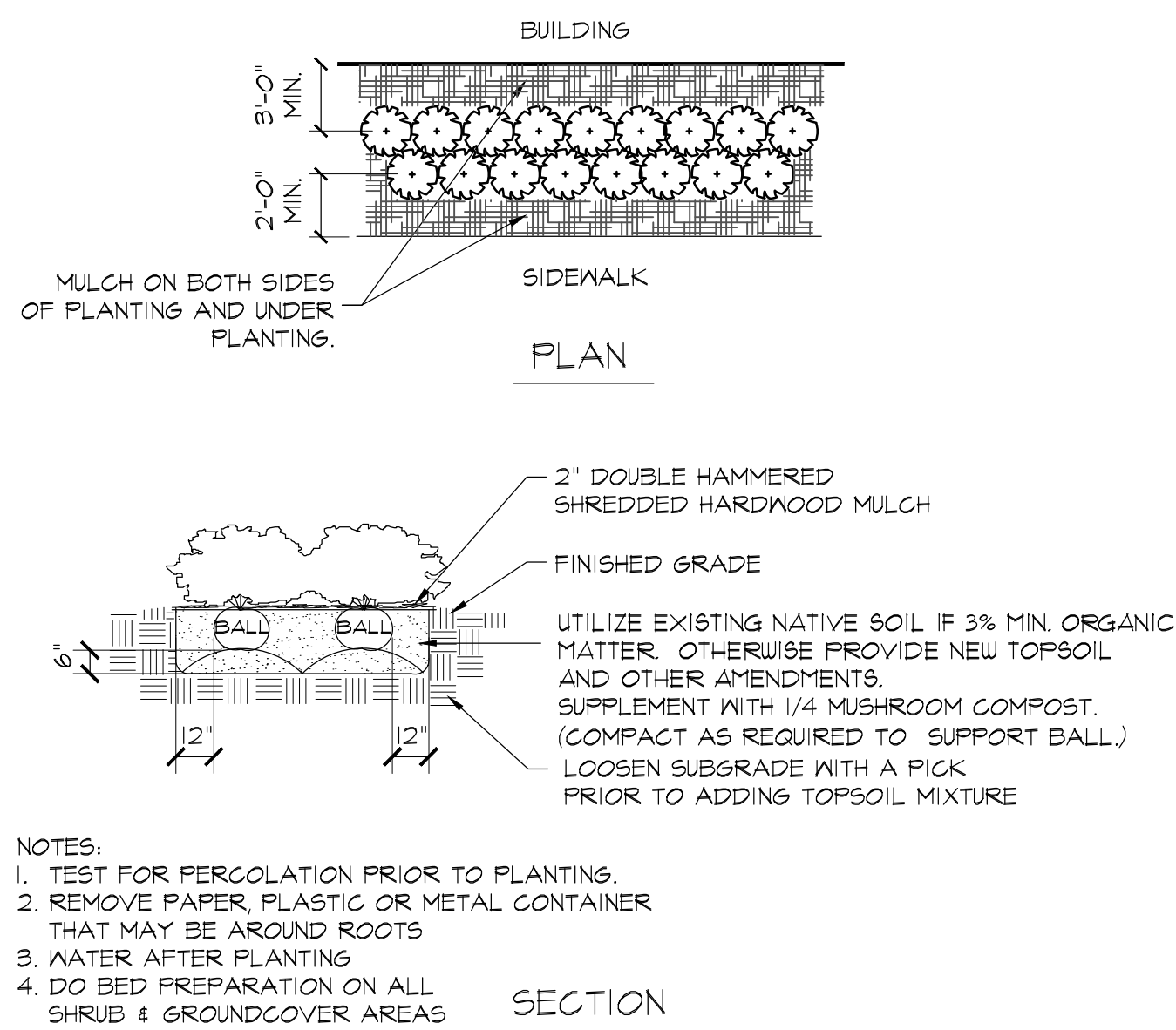
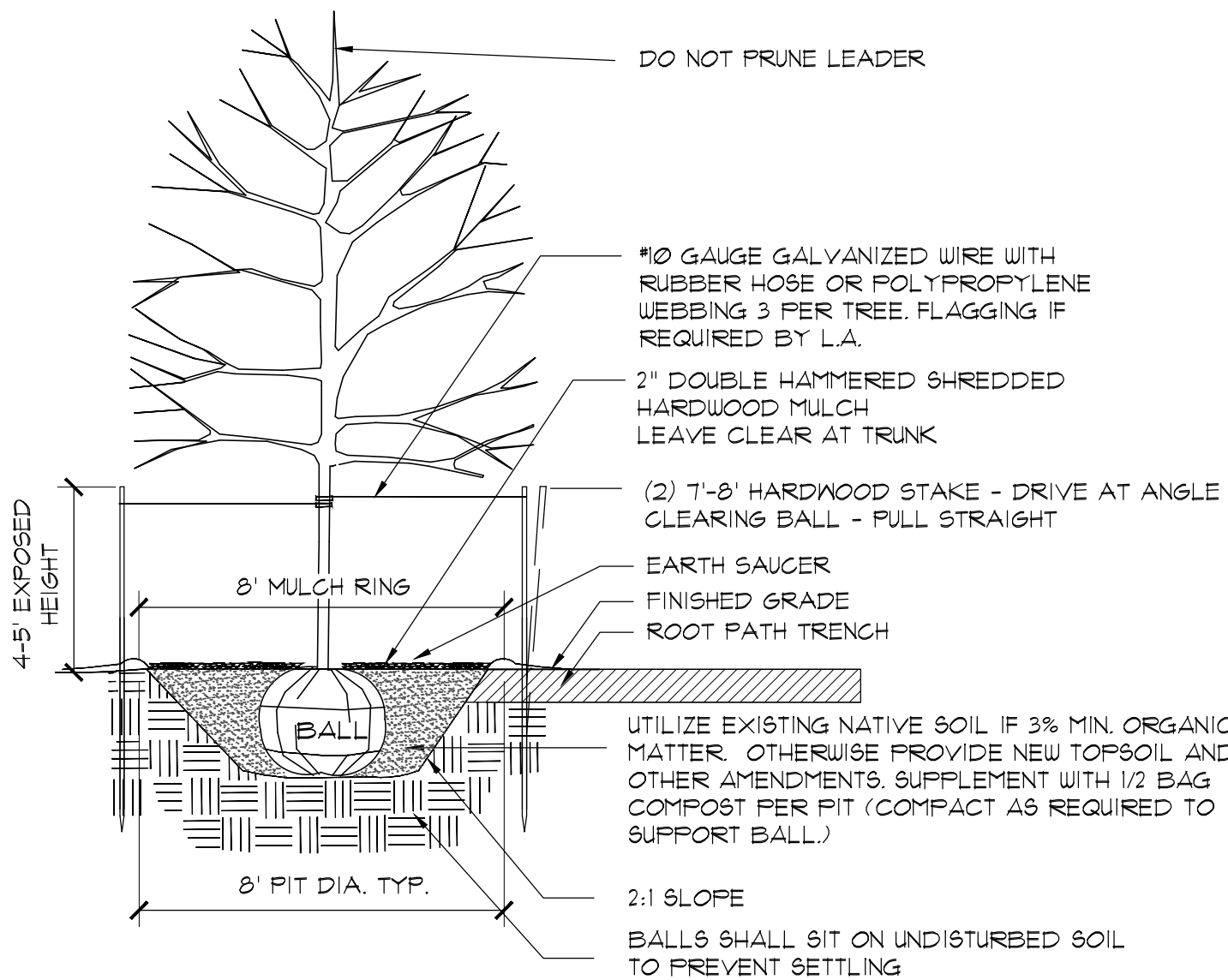
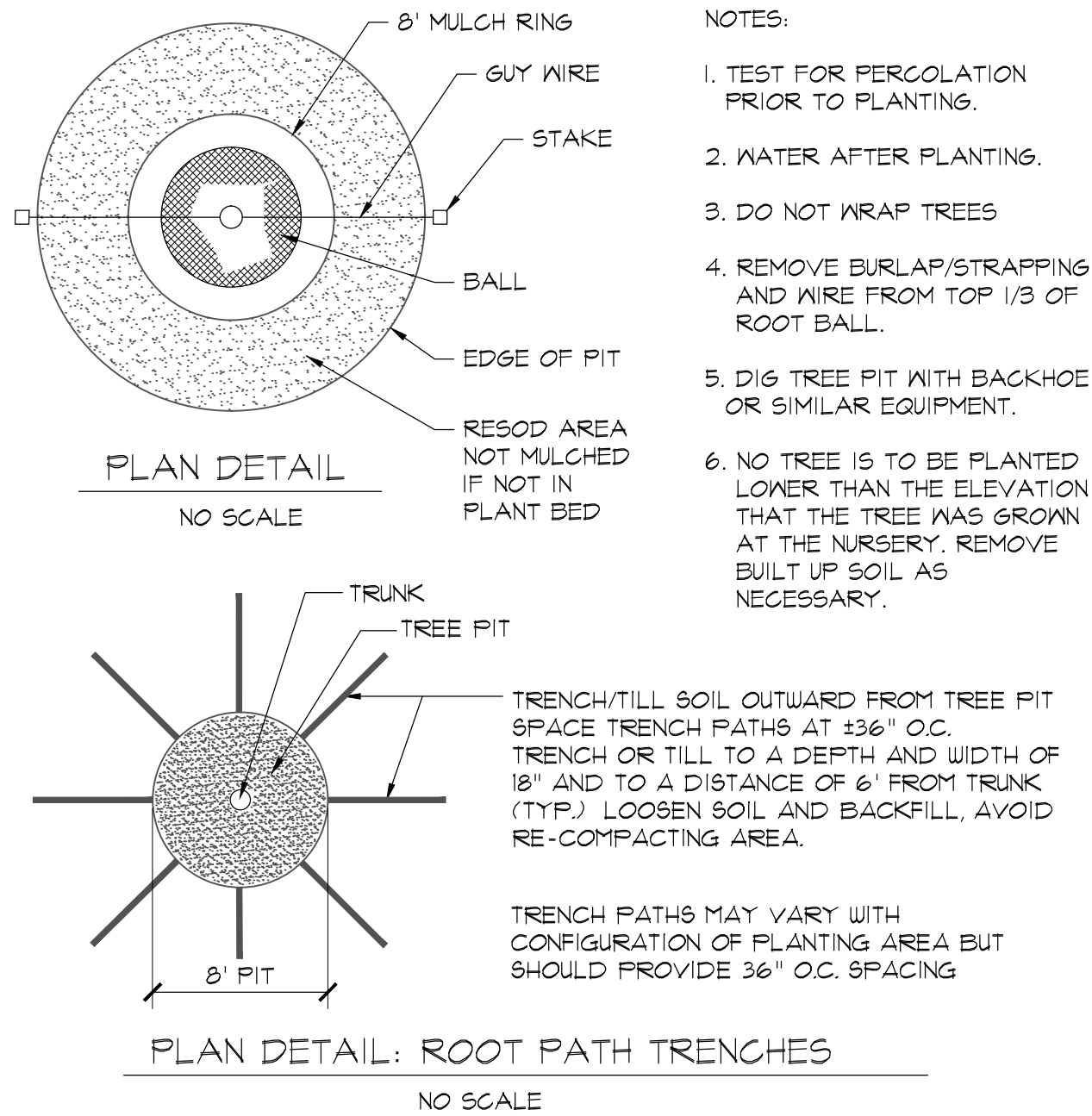


PLANT LIST 30 FEET TYPE C BUFFERYARD Meadowfield Elementary School

ABBR.	BOTANICAL NAME	COMMON NAME	MINIMUM					COMMENTS	QTY.
			GALIPER	SPREAD	HEIGHT	BALL DIA.	NO. CANES		
CERC	CERCIS CANADENSIS	EASTERN REDBUD	2"	6"	12"	32"	1	SPECIMEN	6
GINK	GINKGO BILOBA 'PRINCETON SENTRY'	PRINCETON SENTRY GINKGO	2"	6"	12"	32"	1	SPECIMEN	3
QUER N	QUERCUS NUTTALLI	NUTTALL OAK	4"	8"	18"	42"	1	SPECIMEN	3
SHRUBS									
ABEL	ABELIA 'ROSE CREEK'	ROSE CREEK ABELIA	18"	18"	3 GAL.	3-5		PLANT 4' O.C.	44
MISC	MISCANTHUS SINENSIS 'LITTLE KITTEN'	MISCANTHUS LITTLE KITTEN	18"	18"	3 GAL.	3-5		PLANT 5' O.C.	60
VIBU	VIBURNUM AWABUKI 'CHINDO'	CHINDO VIBURNUM	18"	18"	3 GAL.	3-5		PLANT 6' O.C.	21

PLANT LIST PARKING Meadowfield Elementary School

ABBR.	BOTANICAL NAME	COMMON NAME	MINIMUM					COMMENTS	QTY.
			GALIPER	SPREAD	HEIGHT	BALL DIA.	NO. CANES		
TREES									
CORN	CORNUS FLORIDA	FLOWERING DOGWOOD	2"	6"	12"	32"	1	SPECIMEN	2
QUER P	QUERCUS PHellos	WILLOW OAK	2"	6"	12"	32"	1	SPECIMEN	6
SHRUBS									
ILEX C	ILEX CORNUTA 'CARISSA'	CARISSA HOLLY	18"	18"	3 GAL.	3-5		AS SHOWN	15
ILEX V	ILEX VOMITORIA NANA	DWARF YAUPOH HOLLY	18"	18"	3 GAL.	3-5		PLANT 3' O.C.	76
LORO	LOROPETALUM CHINENSE 'PURPLEDAY DREAM'	PURPLE DAYDREAM LOROPETALUM	18"	18"	3 GAL.	3-5		PLANT 5' O.C.	21
GROUND COVER									
PENN	PENNISETUM ALOPECUROIDES 'LITTLE BUNNY'	FOUNTAIN GRASS	18"	18"	3 GAL.	3-5		AS SHOWN	12



PLANTING NOTES

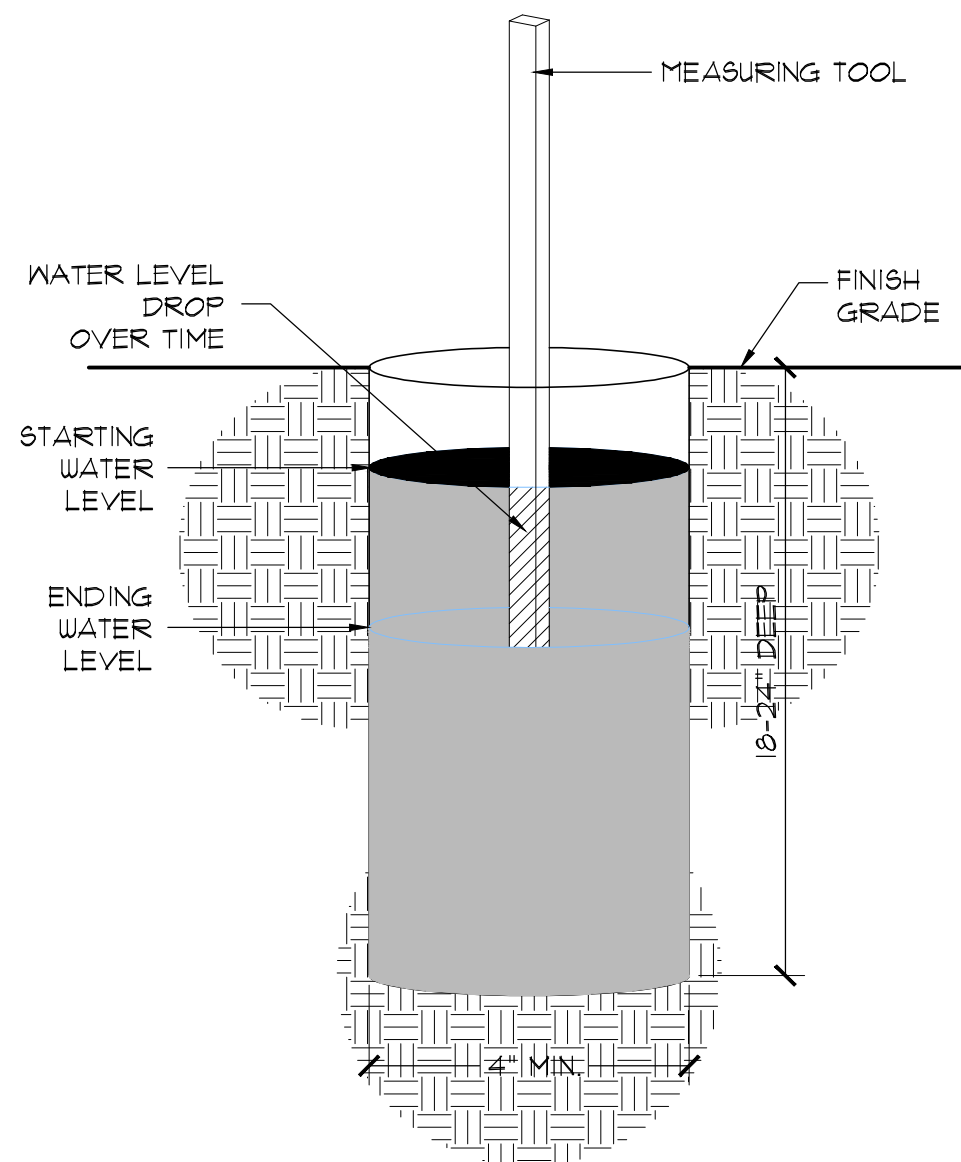
- PLANTS LABELED NIC ARE NOT IN CONTRACT AND ARE NOT A PART OF THIS PHASE OF WORK. PLANTING FOR MUCH OF THIS PROJECT WILL BE DONE IN PREVIOUSLY PAVED AREAS. IT IS CRITICAL THAT THE CONTRACTOR BREAK UP COMPACTED SOIL THOROUGHLY, REMOVE INORGANIC SUBSOIL, AND PROVIDE NEW TOPSOIL AND PLANTING AMENDMENTS AS REQUIRED TO ENSURE FUTURE PLANT HEALTH.
- REQUIREMENTS FOR THE MEASUREMENTS, BRANCHING, GRADING, QUALITY, BALLING AND BURLAPPING OF PLANTS IN THE PLANT LIST GENERALLY FOLLOWS OR EXCEEDS A CODE OF STANDARDS CURRENTLY RECOMMENDED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC. IN THE AMERICAN STANDARD FOR NURSERY STOCKS. SEE THE PLANT LIST FOR MORE RESTRICTIVE REQUIREMENTS.
- ALL PLANTS SHALL HAVE A WELL FORMED HEAD WITH MINIMUM CALIPER, HEIGHT AND SPREAD OF THE SIDE BRANCHES AS SHOWN ON THE PLANT LIST. TRUNKS SHALL BE UNDamAGED AND SHAPE SHALL BE TYPICAL OF THE SPECIES.
- MEASUREMENT OF CONIFER HEIGHT SHALL INCLUDE NOT MORE THAN FIFTY (50) PER CENT OF THIS YEARS VERTICAL GROWTH (TOP CANDLE).
- THE LANDSCAPE CONTRACTOR IS HEREBY NOTIFIED OF THE EXISTENCE OF UNDERGROUND UTILITIES WITHIN THE LIMITS OF THE PROJECT AREA. THE CONTRACTOR SHOULD VERIFY THE EXACT LOCATION OF ALL UTILITY LINES PRIOR TO COMMENCEMENT OF DIGGING OPERATIONS.
- THE CONTRACTOR WILL BE RESPONSIBLE FOR STAKING AND LAYOUT OF PLANTINGS ON THIS PROJECT. THE LANDSCAPE ARCHITECT OR OWNER SHALL BE ADVISED WHEN STAKES ARE READY FOR INSPECTION ON VARIOUS PLANTING AREAS. ALL LAYOUT WORK SHALL BE INSPECTED AND APPROVED BY THE LANDSCAPE ARCHITECT AND OWNER PRIOR TO OPENING ANY PLANTING PITS.
- IT IS THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR TO VERIFY THAT EACH EXCAVATED TREE OR SHRUB PIT WILL PERCOLATE (DRAIN) PRIOR TO ADDING TOPSOIL AND INSTALLING TREES OR SHRUBS. THE CONTRACTOR SHALL DO PERCOLATION TEST AS DETAILED ON DETAIL D/L2.O. THE OWNER OR LANDSCAPE ARCHITECT SHALL VERIFY ACCURACY AND EFFECT OF PERCOLATION TESTING. IF THE SOIL AT GIVEN AREA DOES NOT DRAIN PROPERLY, A PVC DRAIN OR GRAVEL SUMP SHALL BE INSTALLED OR THE PLANTINGS RELOCATED.
- SHOULD THE LANDSCAPE CONTRACTOR ENCOUNTER UNSATISFACTORY SURFACE OR SUBSURFACE DRAINAGE CONDITIONS, SOIL DEPTH, LATENT SOILS, HARD PANS, STEAM OR OTHER UTILITY LINES OR OTHER CONDITIONS THAT WILL JEOPARDIZE THE HEALTH AND VIGOR OF THE PLANTS, HE MUST ADVISE THE LANDSCAPE ARCHITECT IN WRITING OF THE CONDITIONS PRIOR TO INSTALLING THE PLANTS. OTHERWISE, THE LANDSCAPE CONTRACTOR WARRANTS THAT THE PLANTING AREAS ARE SUITABLE FOR PROPER GROWTH AND DEVELOPMENT OF THE PLANTS TO BE INSTALLED.
- PLANTING PITS FOR TREE AND SHRUBS SHALL BE PREPARED AS PER DETAILS.
- DOUBLE HAMMERED SHREDDED HARDWOOD MULCH SHALL BE APPLIED TO ALL SHRUB BEDS BY THE CONTRACTOR. BEDS SHALL BE TREATED WITH PREEMERGENT HERBICIDE BY THE CONTRACTOR BEFORE MULCH IS APPLIED. SHREDDED HARDWOOD MULCH SHALL BE TWO INCHES DEEP. A SAMPLE OF MULCH SHALL BE PRESENTED TO THE LANDSCAPE ARCHITECT FOR APPROVAL.
- ALL TREES ARE TO BE STAKED IMMEDIATELY AFTER PLANTING AS DETAILED. CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF STAKING HOSES, ETC. AT THE END OF THE ONE YEAR GUARANTEE PERIOD.
- THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING UP THE SITE AT THE COMPLETION OF THE PROJECT AND SHALL MAINTAIN THE SITE IN A REASONABLY NEAT AND CLEAN STATE THROUGHOUT THE INSTALLATION PROCESS. STREETS AND PAVED AREAS SHALL BE CLEANED REGULARLY TO REMOVE CONSTRUCTION MATERIALS AND OTHER DEBRIS RESULTING FROM WORK OF THE PROJECT.
- PLANTS SHALL BE GUARANTEED FOR THE DURATION OF ONE (1) FULL YEAR AFTER THE FINAL ACCEPTANCE OF THE PLANTING BY THE OWNER AND SHALL BE ALIVE AND IN SATISFACTORY GROWTH AT THE END OF THE GUARANTEE PERIOD. ANY PLANT NOT IN A HEALTHY AND VIGOROUS STATE AT THE END OF THE GUARANTEE PERIOD SHALL BE REPLACED AT NO COST TO THE OWNER. PLANTS SEVERELY DAMAGED BY VANDALS ARE NOT SUBJECT TO REPLACEMENT BY THE CONTRACTOR DURING THE ONE YEAR GUARANTEE PERIOD.
- REPLACEMENTS OF DEAD OR UNSATISFACTORY MATERIAL SHALL BE MADE AS SPECIFIED IN THE PLANT LIST. THE OWNER OR LANDSCAPE ARCHITECT SHALL INSPECT REPLACED PLANTS WHEN ALL REPLACEMENTS HAVE BEEN MADE. REPLACEMENTS ARE TO BE ALIVE AND IN A HEALTHY CONDITION WHEN THE REPLACEMENTS ARE COMPLETE, AND SHALL BE SUBJECT TO A ONE (1) YEAR GUARANTEE FROM THE DATE OF SATISFACTORY REPLACEMENT.
- NO EXCAVATION OR PLANTING PIT SHALL BE LEFT OPEN OR UNATTENDED OVERNIGHT.
- PLANT MATERIAL QUANTITIES PROVIDED IN THE PLANT LIST ARE FOR REFERENCE ONLY AND THE CONTRACTOR IS RESPONSIBLE FOR THE ACTUAL PLANT MATERIAL COUNTS. DISCREPANCIES BETWEEN QUANTITIES SHOWN ON THE PLANTING PLAN AND THOSE IN THE PLANT LIST SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR CLARIFICATION. IF CLARIFICATION OF DISCREPANCIES FROM THE LANDSCAPE ARCHITECT IS NOT POSSIBLE, THEN QUANTITIES SHOWN ON THE PLANTING PLAN SHALL TAKE PRECEDENCE.
- ALL AREAS DISTURBED BY CONSTRUCTION OPERATIONS (WHETHER SHOWN ON THE PLANS OR NOT) SHALL BE STABILIZED AND EITHER SEEDED, SODDED, OR MULCHED BY CONTRACTOR, AS DIRECTED BY OWNER, AT NO ADDITIONAL COST TO CONTRACT.

INSTRUCTIONS FOR PERFORMING A PERCOLATION TEST

- WITH A SHOVEL OR POSTHOLE DIGGER, DIG HOLE 18" TO 24" DEEP. HOLE DIAMETER SHOULD BE A MINIMUM OF 4 INCHES. THE DIAMETER OF THE HOLE SHOULD BE UNIFORM FROM TOP TO BOTTOM WITH THE BOTTOM BEING FLAT.
- FILL HOLE WITH WATER TO THE TOP AND LET STAND FOR AT LEAST AN HOUR TO PRE-WET THE SOIL.
- REFILL HOLE TO WITHIN A COUPLE INCHES OF THE TOP. DON'T OVERFLOW THE HOLE.
- TO AID IN MEASUREMENT, PLACE A STICK ACROSS THE TOP OF THE HOLE AND USE A RULER OR MEASURING TAPE TO MARK PERIODIC DROPS IN WATER LEVEL.
- ALLOW THE HOLE TO DRAIN FOR AT LEAST ONE HOUR. A LONGER PERIOD OF TIME (2 TO 3 HOURS) WILL GIVE A MORE ACCURATE READING OF AVERAGE PERCOLATION RATES.
- DETERMINE AVERAGE DROP IN WATER LEVEL PER HOUR AND REFER TO THE TABLE BELOW TO INTERPRET RESULTS.

HOW TO INTERPRET RESULTS	
IF WATER LEVEL IN HOLE DROPS...	SITE IS...
LESS THAN ONE-HALF INCH PER HOUR	POORLY DRAINED AND SUITED TO NET -SITE SPECIES
ONE HALF-INCH TO ONE INCH PER HOUR	MODERATELY WELL DRAINED AND ACCEPTABLE FOR MANY SPECIES INCLUDING NET SITE SPECIES
MORE THAN ONE INCH PER HOUR	WELL DRAINED AND SUITABLE FOR ALL SPECIES INCLUDING SENSITIVE SPECIES

PERCOLATION TEST HOLE



TYPICAL GROUNDCOVER PLANTING

PERCOLATION TEST

NOT TO SCALE

Planting Details
Meadowfield Elementary School Parking Addition
Prepared for:
Richland County School District One
In the City of Columbia, Richland County, SC

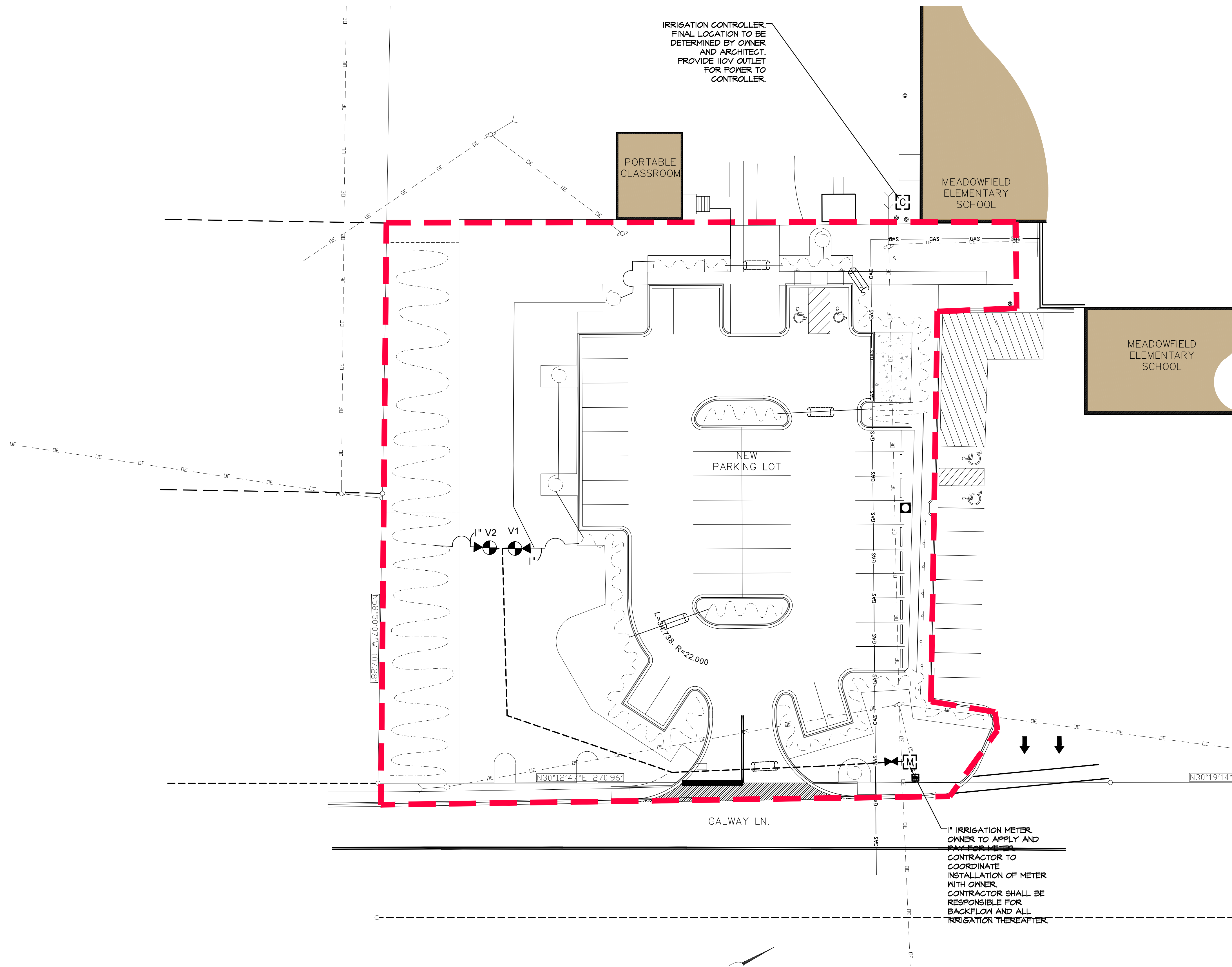
Drawn: MTM
Revised:
Checked: TMC

File: GC-Landbase 05.06.25 Project No.: 398720C

L3.0
Sheet Number
May 06, 2025
Date

**GRIMBALL
COTTERILL**
LANDSCAPE ARCHITECTS & LAND PLANNERS

Chao & Associates, Inc.
Civil - Structural - Survey
7 Clusters Court
Columbia, SC 29210
Voice: (803) 772-9420
Fax: (803) 772-9120
Email: consult@chaocinc.com



IRRIGATION LEGEND

- PROPOSED 1" IRRIGATION METER
- RAINBIRD ESP-LXME CONTROLLER WITH RAIN SENSOR
- 1" BACKFLOW PREVENTER
- RAINBIRD P6A-100 SERIES ELECTRIC VALVE
- XGZ-100-B-COM
- 1 1/2" MAINLINE
- CLASS 160 OR 200 PVC PIPING SIZE AS NOTED
- RAINBIRD DRIP TUBING WITH RAIN-BUG EMITTERS
- 4" SCH. 40 PVC SLEEVING

VALVE SCHEDULE

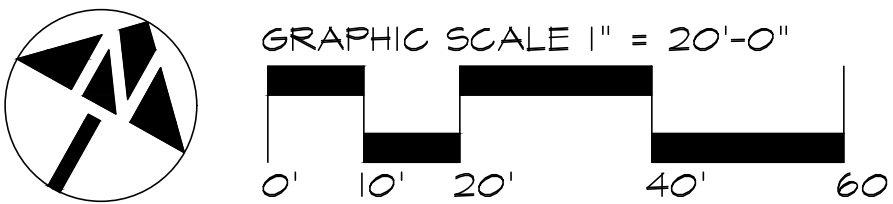
VALVE	SIZE	TYPE	GPM
V1	1"	DRIP	15±
V2	1"	DRIP	20±

IRRIGATION NOTES

- ALL IRRIGATION TO BE AS SPECIFIED OR APPROVED EQUAL.
- SYSTEM DESIGNED TO RUN AT 20 GPM WITH 65 PSI.
- CONTRACTOR TO COORDINATE WITH OWNER CONCERNING IRRIGATION METER PRIOR TO COMMENCEMENT OF WORK SO AS NOT TO DELAY COMPLETION OF IRRIGATION.
- CONTRACTOR SHALL PERFORM PRESSURE AND FLOW TESTS AT PROPOSED POINT OF CONNECTION PRIOR TO INSTALLATION TO VERIFY THAT ADEQUATE DESIGN CRITERIA IS PRESENT.
- ADJUSTMENT OF SPRINKLER HEADS AND DRIP LINES WILL BE NECESSARY IN THE FIELD.
- DRIP TUBE SYMBOLS AND IRRIGATION PIPING LAYOUT PROVIDED FOR GENERAL LOCATIONS IN THE FIELD ONLY. SYMBOLS DO NOT NECESSARILY PORTRAY AN ACCURATE QUANTITY. THE DESIGN INTENT IS TO PROVIDE 100% HEAD TO HEAD COVERAGE. IF THIS CANNOT BE ACHIEVED, NOTIFY LANDSCAPE ARCHITECT IMMEDIATELY.
- UTILIZE EMITTER DISTRIBUTION TUBING AS DETAILED.
- INSTALL AUTO FLUSH VALVES ON DRIP TUBE AT ENDS AS NEEDED TO DRAIN DRIP TUBE AFTER EACH USE.
- ALL DRIP TUBE TO BE INSTALLED UNDER MULCH.
- WHERE IRRIGATION PIPING CROSSES SIDEWALKS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PLACING A SLEEVE 2 SIZES LARGER THAN THE CROSSING PIPE.
- IRRIGATION CONTRACTOR TO ADJUST SPRAY PATTERNS TO SURROUNDING PLANT BEDS. OVERSPRAY ONTO BUILDINGS AND SIDE WALKS SHALL BE AVOIDED AS MUCH AS POSSIBLE.

GENERAL NOTES

- EXISTING ECOLOGY AND AESTHETICS WILL OFTEN CAUSE ADJUSTMENT OF THESE PLANS TO FIT THE SITE. STAKE-OUT BY THE CONTRACTOR AND ADJUSTMENT BY THE LANDSCAPE ARCHITECT IS ABSOLUTELY NECESSARY.
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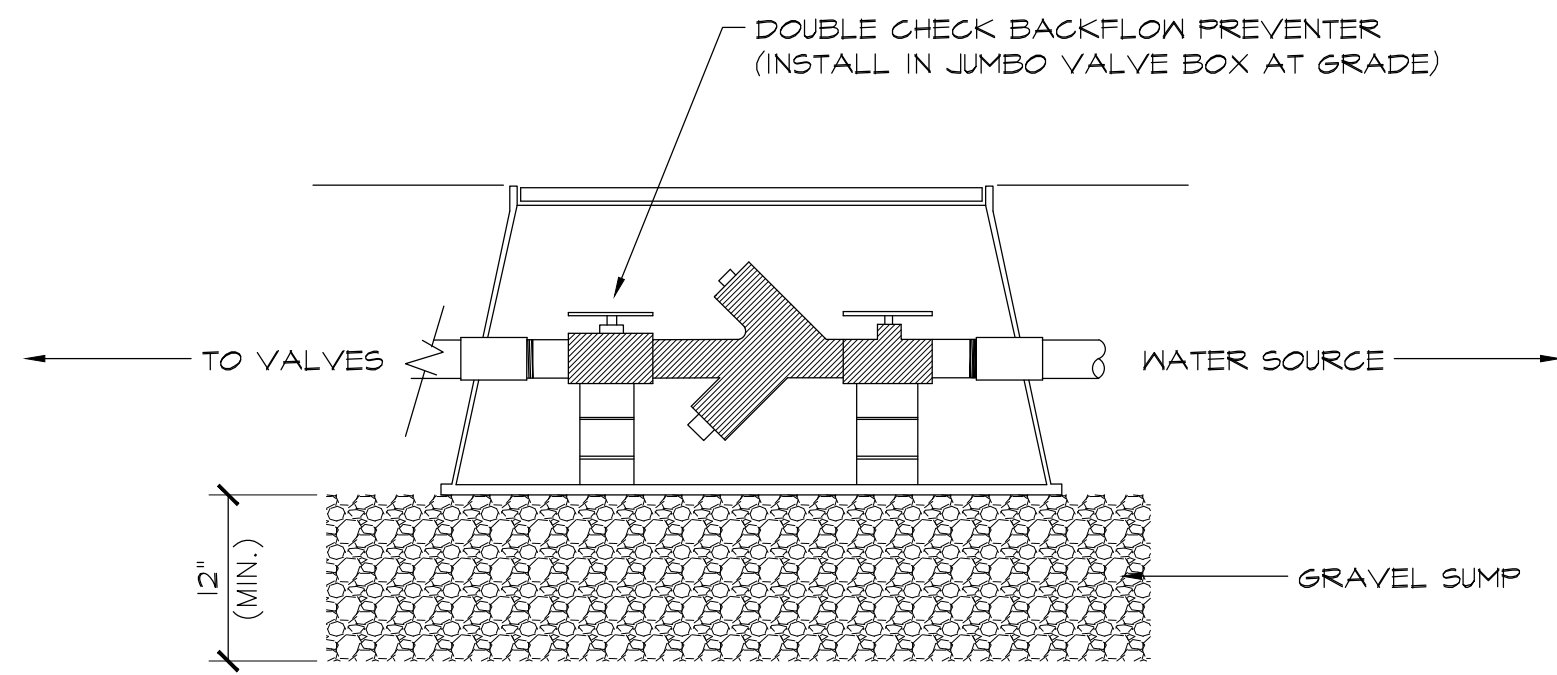


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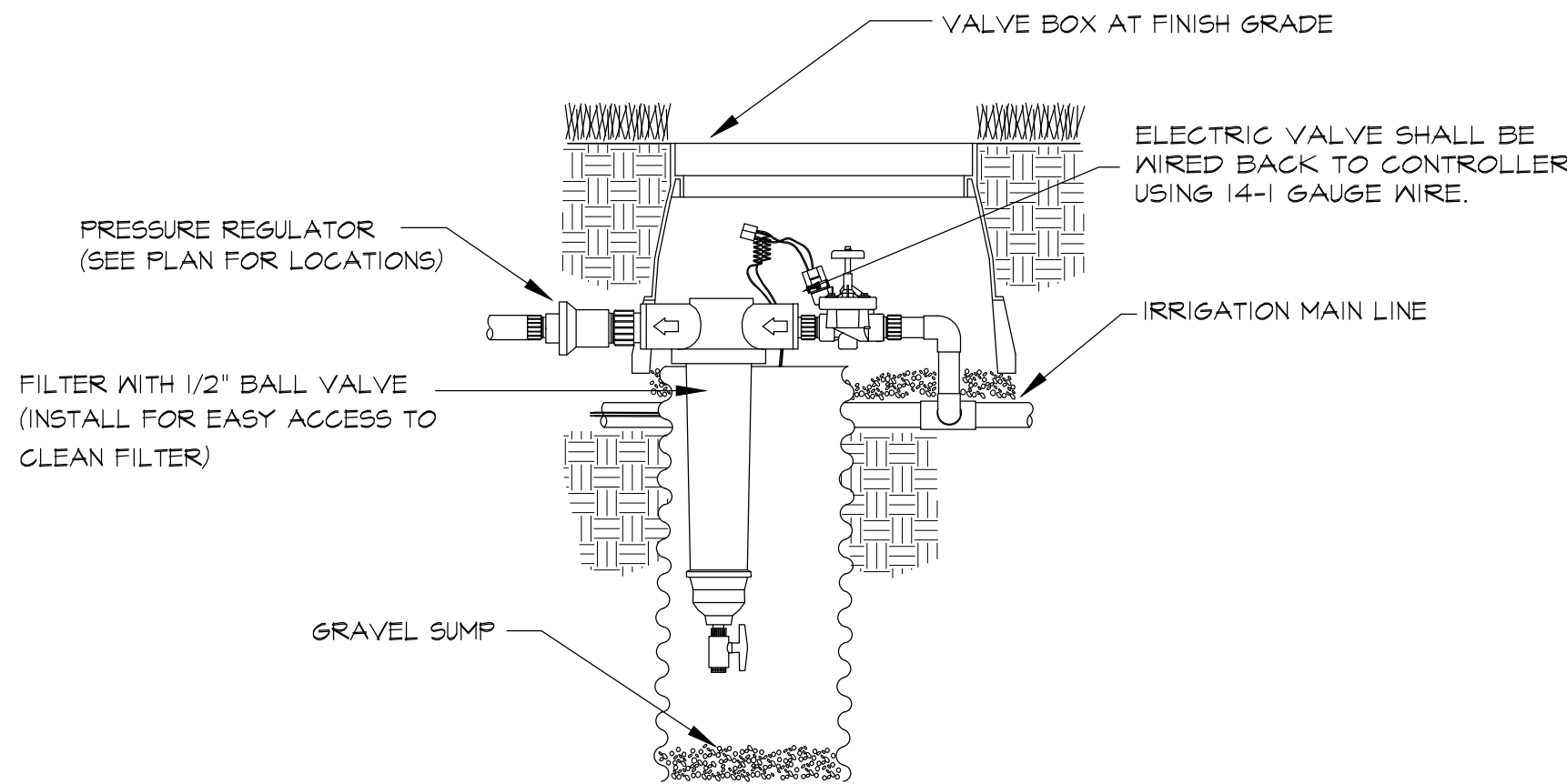
Irrigation Plan
Meadowfield Elementary School Parking Addition
Prepared for:
Richland County School District One
In the City of Columbia, Richland County, SC

Drawn: SKC
Revised:
Checked: TMC

Project No.: 398720C
File:



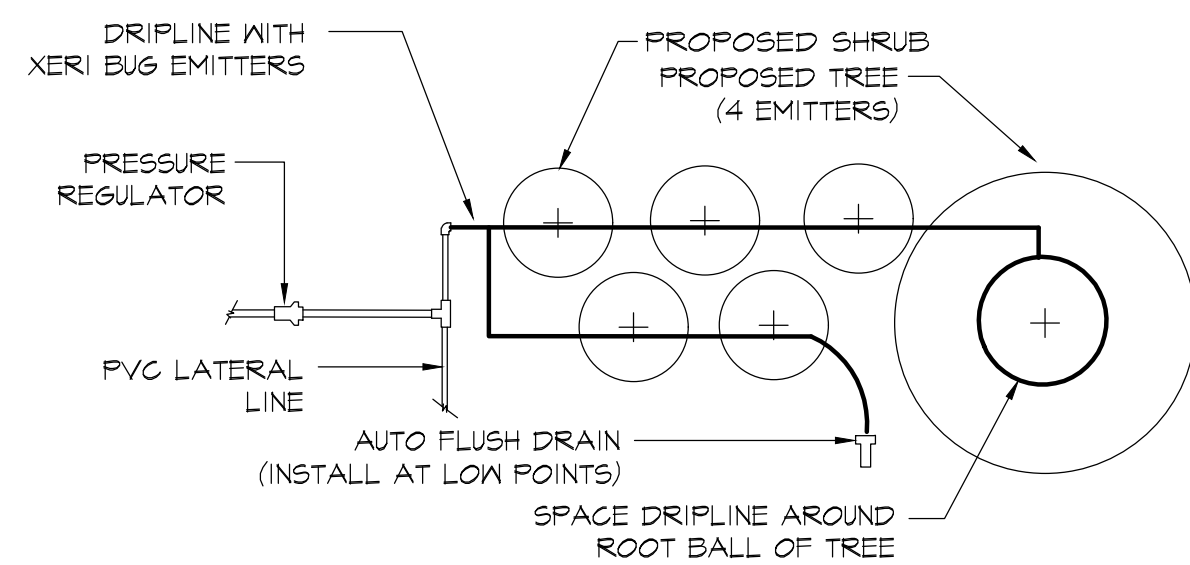
A
1.20
BACKFLOW PREVENTER
SECTION NOT TO SCALE



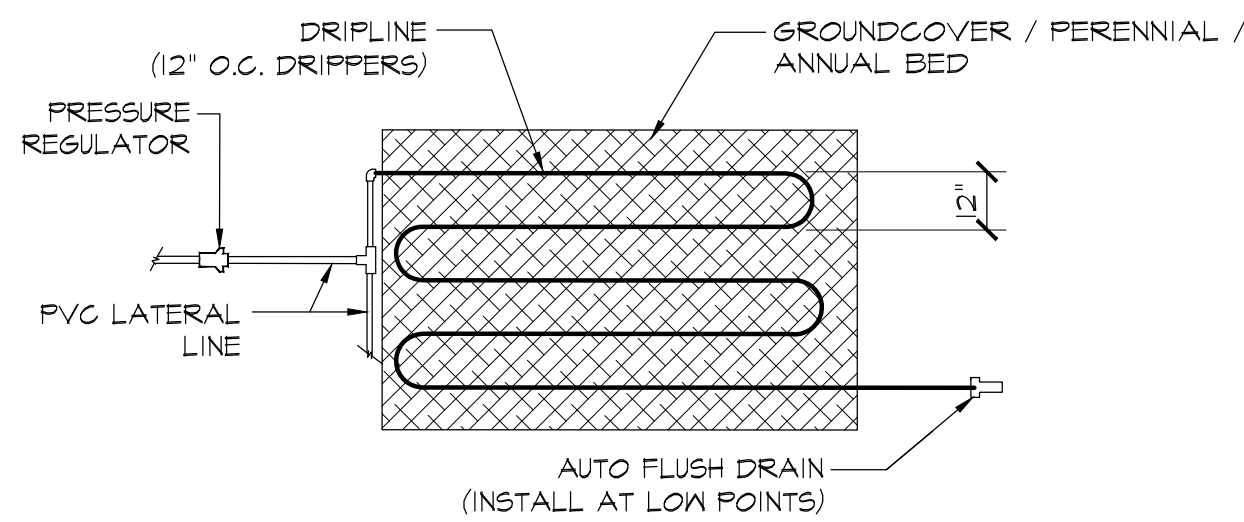
B
1.20
ELECTRIC VALVE-DRIP ZONE
SECTION NOT TO SCALE

IRRIGATION NOTES

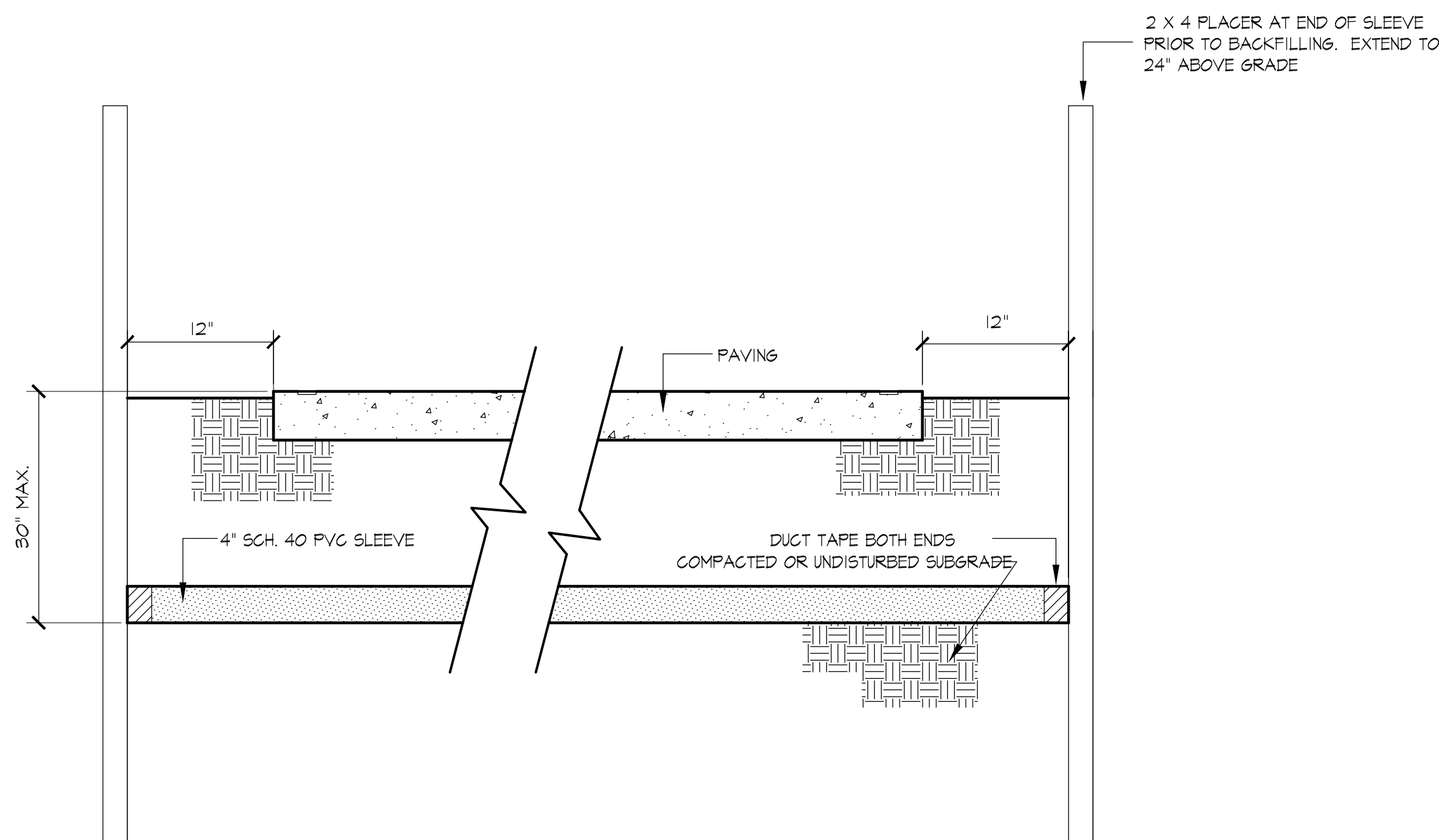
1. ALL PLASTIC PIPE FITTINGS TO BE MINIMUM SCHEDULE 40 PVC.
2. ALL MAIN LINES TO BE SCHEDULE 40 PVC OR SCHEDULE 200 PVC.
3. ALL LATERAL LINES TO BE SCHEDULE 200 PVC OR SCHEDULE 160 PVC.
4. COORDINATE WITH GENERAL CONTRACTOR FOR INSTALLATION OF SCHEDULE 40 PVC PIPE UNDER PAVED SURFACES AS NOTED ON THE DRAWINGS TO BE UTILIZED FOR IRRIGATION SLEEVING. THE LOCATION OF SLEEVING IS MARKED ON THE IRRIGATION PLAN. DEVIATIONS MAY OCCUR DURING CONSTRUCTION.
5. TRENCHES FOR PVC PIPE MAINLINES SHALL BE EXCAVATED TO SUFFICIENT DEPTH OF 18" MINIMUM AND AN SUFFICIENT WIDTH TO PERMIT PROPER HANDLING AND INSTALLATION OF PIPE AND FITTINGS. TRENCHES FOR PVC PIPE LATERAL SPRINKLER LINES SHALL BE EXCAVATED TO SUFFICIENT DEPTH OF 12" MINIMUM AND AN SUFFICIENT WIDTH TO PERMIT PROPER HANDLING AND INSTALLATION OF PIPE AND FITTINGS.
6. ALL CONTROL VALVES SHALL BE INSTALLED IN A VALVE BOX IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
7. ALL WIRING TO BE USED FOR CONNECTING THE AUTOMATIC REMOTE CONTROL VALVE TO THE AUTOMATIC CONTROLLERS SHALL BE TYPE "UFY, 14-1" STRANDED OR SOLID COPPER SINGLE CONDUCTION WIRE WITH PVC INSULATION AND BEAR UL APPROVAL FOR DIRECT UNDERGROUND BURIAL FEEDER CABLE. WIRE CONNECTIONS TO REMOTE CONTROL ELECTRIC VALVES AND SPLICES OF WIRE IN THE FIELD SHALL BE PEN-TITE WIRE CONNECTORS OR APPROVED EQUAL AND SEALING CEMENT.
8. THE IRRIGATION CONTRACTOR SHALL CONNECT ALL VALVE WIRING TO A SPECIFIED CONTROLLER LOCATED AS NOTED ON THIS PLAN.
9. ALL CONTROL VALVE CABLES SHALL BE INSTALLED BY DIRECT BURIAL AT A MINIMUM DEPTH OF 12". WHERE PRACTICAL, THE WIRE SHALL BE INSTALLED IN THE SAME TRENCH AS THE MAINLINE PIPE.
10. AFTER COMPLETION OF THE PIPING INSTALLATION, THE CONTRACTOR SHALL FURNISH AN "AS-BUILT" DRAWING SHOWING ALL SPRINKLER HEADS, VALVES, DRAINS AND PIPE LINES TO SCALE WITH DIMENSIONS WHERE REQUIRED. INSTRUCTION SHEETS AND PARTS LISTS COVERING ALL OPERATING EQUIPMENT WILL BE BOUND INTO A FOLDER AND FURNISHED TO THE OWNER IN DUPLICATE.
11. FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK PERFORMED UNDER THIS CONTRACT, THE CONTRACTOR SHALL PROMPTLY FURNISH, WITHOUT COST TO THE OWNER, ANY AND ALL PARTS AND LABOR WHICH PROVE DEFECTIVE IN MATERIAL OR WORKMANSHIP.
12. DURING THE LAST MONTH OF THE GUARANTEE PERIOD, THE LANDSCAPE ARCHITECT AND CONTRACTOR SHALL INSPECT THE INSTALLATION TO DETERMINE THE CONDITION OF THE COMPLETE SYSTEM. A LIST OF DEFECTIVE MATERIALS OR INSTALLATIONS TO BE REPLACED SHALL BE MADE BY THE CONTRACTOR WITHIN THIRTY DAYS OF RECEIVING WRITTEN NOTIFICATION. REPLACED MATERIALS AND INSTALLATION SHALL BE IN ACCORD WITH THESE SPECIFICATIONS, DRAWINGS AND OR SCHEDULES.



C
1.20
DRIPLINE IN SHRUBS
PLAN NOT TO SCALE



D
1.20
DRIPLINE IN GROUNDCOVER
PLAN NOT TO SCALE



E
1.20
SLEEVING DETAIL
SECTION NOT TO SCALE

May 1, 2022

Chao and Associates Inc.
7 Clusters Court
Columbia, SC 29201

Attention: Mr. Haoming Chen, PE (haoming@chaoinc.com)

Reference: Letter of Pavement Recommendations
Meadowfield Elementary School - Parking Addition
525 Galway Lane
Columbia, South Carolina
GS2 Project No.: 22-2347-G



Corporate - Columbia Branch Office
241 Business Park Boulevard
Columbia, South Carolina 29203

Charleston Branch Office
4301 Dorchester Road, Suite 12A
North Charleston, South Carolina 29405

Florence Field Testing Office
2426 Third Loop Road, Suite A
Florence, South Carolina 29501

Myrtle Beach Field Testing Office
1514 U.S. Highway 501 Gumm Plaza
Myrtle Beach, South Carolina 29577

www.gs2engineering.com

Dear Mr. Chen,

This letter presents our recommendations for the proposed pavements for the Meadowfield Elementary School - Parking Addition site, in Columbia, South Carolina. Information obtained from knowledge of the site through our hand augered soil borings was used to evaluate the existing site conditions for the use of developing design parameters for the proposed pavements. This work was performed in general accordance with industry standards.

Recommendations detailed in this letter are specific to the soil conditions in the immediate vicinity of the soil borings for this particular project. The findings associated with the assessment of the site do not include any environmental assessment of soils, surface water or groundwater, the determination of wetlands, the determination of noise impact, the assessment of air quality, the identification of cultural resources, and the identification of endangered species. These services are beyond the scope of services of this letter.

PROJECT INFORMATION

Site Location

The site of the Proposed Parking Addition is located south of the existing Meadowfield Elementary School, in the south corner of the school grounds, in Columbia, South Carolina.

Site Description

The subject site is generally rectangular in shape, and at the time of our visit, was noted to be cleared, partially paved and partially grassed. The site was further noted to be bordered by the existing school to the north and west, Galway Lane to the east, and residences to the south. Access to the site was gained via Galway Lane.

Corporate - Columbia
(803) 699-7900
(844) 699-7911

Charleston
(843) 225-3031
(844) 699-7911

Bluffton
(843) 297-2035
(844) 699-7911

Greenville
(803)-699-7900
(844) 699-7911

Florence
(843) 407-6755
(844) 699-7911

Myrtle Beach
(843) 444-2766
(844) 699-7911

Proposed Development

We understand that the proposed development at the site will consist of a new parking lot with associated driveways. Anticipated traffic volumes were not available at the time of this report, however, based upon our understanding of the planned improvements at the site, we anticipate that the development will require light duty pavements for vehicle parking, with an estimated 48 parking spaces assumed.

SITE SOIL CONDITIONS

Site Geology

The subject site is located in an old river terrace formed in the Upper Coastal Plain Physiographic Province of South Carolina, in downtown Columbia. The soils of this terrace are composed of a mixture of re-deposited material washed from upstream sources of ancient rivers, and are typically mixed with rocks that vary in size and depth which have been rounded through years of exposure to flowing water. The deposits in these areas are highly variable and may cover areas of the river bed and associated flood plains, which when deposited were established in very loose and wet conditions. Ultimately these terraces are underlain by firmer materials of the Piedmont Physiographic Province.

Soil Conditions

The subgrade conditions within the proposed pavements were explored with five (5) hand augered soil borings, with Dynamic Cone Penetrometer (DCP) tests taken at regular intervals, extended to the refusal/termination depths of up to 5 feet below the existing ground surface. In general, the borings encountered surface material, in the form of gravel and topsoil, roughly 2 to 4 inches in thickness, underlain by clean and clayey sands (SP and SM), and some clays (CL) with DCP blow counts observed to range between 2 and 15 blows per increment (bpi), indicating very loose to firm relative densities in the sands and firm consistencies in the clays.

Groundwater

Free groundwater was not encountered in the borings at the time of drilling. For safety, the boreholes were backfilled upon completion, therefore, 24-hour stabilized groundwater reading were not obtained.

Groundwater levels are dependent on many factors, and can experience seasonal, tidal, and various other fluctuations due to precipitation, construction activities, and many other factors.

CONCLUSIONS AND RECOMMENDATIONS

The borings performed during our investigation indicate that the existing sandy soils (SP and SM) are suitable, while the clays (CL) are marginally suitable, for support of the proposed pavements, provided that the soil conditions at the site do not vary greatly from those encountered in our borings and that our recommendations presented in the following sections of this report are followed.



Suitability of On-site Soils

As previously stated, the near-surface soils at the site have been identified to have **SP**, **SM** and **CL** USCS soil classifications. Most text includes soils with Unified Soil Classifications of SW, SP, SM, SC, SM-SC, ML and CL as suitable for support of pavements or for use as structural fill, while soils with classifications of MH, CH, OL and OH are considered unsuitable. Therefore, it is important to note that the near-surface soils at the site are considered in the industry to be **suitable** to **marginally suitable**.

Soils that have SP designations are considered clean and sandy in nature, meaning the soil particles pass the No. 4 sieve but are retained on the No. 200 sieve, meaning they are smaller in size than gravel particles but larger in size than silt and clay particles. SP soil designations are poorly graded in nature, meaning the particle sizes of the material are similar with little variance. These soils are well drained and show little effect due to moisture content. Subsequently, these soils are preferred as fill material, with good structural support characteristics under pavements.

Fine-grained sandy soils (SM and SC) are similar to clean SP soils in that fact that they are sandy in nature and pass the No. 4 sieve but are retained on the No. 200 sieve, meaning they are smaller in size than gravel particles, however, these soil designations also have fine-grained silty (M) and clayey (C) particles mixed in, resulting in these designations being preferable fill soils that exhibit good structural support characteristics under buildings and pavements, however, depending on the fines (silt and clay) content, may have less ease in workability, with less flexibility in achieving compaction at various moisture contents.

Soils that have ML and CL designations are less preferable fill soils that exhibit fair to good structural support characteristics under buildings, less ease in workability, with little flexibility in achieving compaction at various moisture contents. Consequently, these soils are less preferred for use as roadway subgrade, with a fair to poor rating, due to their instability when exposed to excessive moisture. These soils may be used as roadway subgrade, if adequate moisture control is maintained during placement and if stormwater is not allowed to pond or penetrate these soils, ultimately preventing subgrade degradation due to over-saturation.

Fine-grained soils (ML and CL) are typically sensitive to variations in moisture content with a relatively narrow range of workable moisture contents. Therefore, close control of moisture content will probably be necessary during grading and fill placement operations, where these soils are involved. In addition, these soils may become difficult to work during periods of wet weather. Grading operations under wet conditions may result in the deterioration of otherwise suitable soil conditions, or of previously placed and properly compacted fill.

Site Preparation

General Clearing and Grubbing: Any vegetation and/or organic laden soils (i.e. topsoils) and buried or surface debris (e.g. gravels) should be stripped and grubbed from structurally loaded or fill areas within the roadbed, and wasted off site or in areas to be landscaped prior to placement of structural fills or pavements.



Pavement Subgrades: We recommend that the loose near-surface soils encountered at the site be modified in order to support the proposed pavements. In general, the modification of the near-surface soils should incorporate the reworking or densification of at least the upper 3 feet beneath pavement subgrade elevations, and 3 feet beyond their perimeters, in order to provide the support of the proposed pavements.

Pre-Pave Inspections: After achieving a stabilized subgrade, and prior to the construction of the finished pavements, assuming some time will pass where the pavement subgrade is exposed, the prepared subgrade will need to be re-inspected and proofrolled in order to detect locally yielding soils.

Any localized areas of yielding, soft/loose and/or saturated soils identified during proofrolling will need to be densified in-place, undercut and the removed soil replaced with properly compacted structural fill, or be modified by the use of mechanical or chemical means. Any modification activities should be monitored and all fill should be placed in general accordance with the recommendations presented in the *Structural Fill* section of this report.

General Proofroll Recommendations: Proofrolling should be performed with a twenty-ton rubber-tired tandem axle vehicle or similarly loaded vehicle or construction equipment, and should be observed by a qualified geotechnical engineer. For paved roadways, the designated vehicle should make at least two passes over each section of the exposed subgrade soils, including the proposed curblines. A final proofroll is recommended to be performed within 24 hours of pavement construction. If inclement weather occurs or if the proofroll fails to yield favorable results within this 24-hour window, then reworking of the subgrade soils may be required to achieve a suitable subgrade.

Any localized areas of yielding, soft/loose and/or saturated soils identified during proofrolling will need to be densified in-place, undercut and the removed soil replaced with properly compacted structural fill, or be modified by the use of mechanical or chemical means. Any modification activities should be monitored and all fill should be placed in general accordance with the recommendations presented in the *Structural Fill* section of this report.

General In-Place Densification Recommendations: In-place soil densification can be accomplished, using a large smooth-drum vibratory roller by making several passes over the area to be densified in a crossing pattern, after the site has been stripped. Densification in-place of loose “dead sands” yields varying results in the field, and is highly dependent upon obtaining a sufficiently large roller, the in-situ moisture content, and the ability to achieve confinement on at least one side, (i.e. along one strip), prior to proceeding to the next. Obtaining confinement in sand is typically an iterative process and requires that multiple passes along well established rolling lanes be performed, the initial passes made with the vibratory setting used and the finishing passes made with a static roller. Upon achieving an optimal densification in one direction it is recommended that the rolling efforts be repeated in the perpendicular direction, until no noticeable improvements in densification are observed. In-place soil densification is recommended for soils in which below optimum moisture contents are present, and where groundwater is greater than 3 feet below the depth of densification required. Densification of the on-site soils should continue until an SPT N-value of 8, or an equivalent Dynamic Cone Penetrometer (DCP) value of 9, is achieved, with a target density of 95 percent of the laboratory Standard Proctor maximum dry density (ASTM D698). The densification techniques and activities should be verified as the work progresses. In



the event that adequate confinement for densification is not achieved, we recommend that overexcavation and replacement be conducted.

Groundwater and Stormwater Management

As previously stated, free groundwater was not encountered in the borings at the time of drilling. If perched groundwater is encountered during grading operations, the contractor will need to be prepared to temporarily dewater any excavations or exposed subgrade soils by ditching or pumping, while the need for permanent dewatering systems (e.g. French drains, underdrains, etc.) should be assessed by the geotechnical engineer during grading operations. From our experience with similar projects and site conditions, the soil types encountered at this site will likely require several days to weeks to drain.

Any exposed subgrade soils and recently placed fill soils should be well drained to minimize the accumulation of stormwater runoff. If the exposed subgrade soils are not as anticipated, or become excessively wet, the geotechnical engineer should be consulted. Additionally, the working site grades should be graded to allow for positive run-off of the under-construction areas to help prevent destabilization of existing subgrades or recently placed fill soils.

Finally, the finished site grades should be designed by a registered civil engineer, and should promote positive drainage away from finished structures, to prevent water-softening of structural soils, or possible undermining of structures.

Structural Fill

On-site Sands: In general, the on-site *sandy* soils (SP and SM) encountered, appear suitable for use as structural fill.

On-site Clays: As stated mentioned, the on-site low-plasticity clayey soils (CL) are ***marginally suitable*** for re-use as structural fill. The fine-grained nature of the on-site soils (clays) indicates that they are typically sensitive to variations in moisture content, with a relatively narrow range of workable moisture contents. Therefore, close control of moisture content will be necessary during grading and fill placement operations. In addition, the soils at this site may become difficult to work during periods of wet weather. Grading operations under wet conditions may result in the deterioration of otherwise suitable soil conditions, or of previously placed and properly compacted fill

Furthermore, these inherent soil properties (clays) make these soils less desirable for use as structural fill; however, if placed properly, suitable support of structures is achievable, provided subgrade drainage is established and maintained throughout the service life of the structure. Alternate, more suitable, borrow soils should be sought in the event that the on-site soils are deemed, during grading activities by the geotechnical engineer, to be unsuitable (CH) for use as structural fill for the support of structures

General Fill Recommendations: Prior to the placement of fill soils, representative soil samples should be obtained and tested to determine their classification and compaction characteristics. Optimum fill material should be free of debris and any fibrous organic material or organic soils and should have a Plasticity Index (PI) less than 15. We recommend that fibrous organic material found in the fill materials be no more than 5 percent by weight. Compaction characteristics of the fill soils should be determined



using the laboratory Modified Proctor density test, ASTM D698, *Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,00 ft-lbf/ft³)*.

Fill material should be placed in no more than 8 to 10-inch thick lifts, loose measurement, and within +/- 2 percent of the optimum moisture content determined by ASTM D698. Fill material placed beneath the area of the pavement and 5 feet beyond the perimeter should be compacted to a minimum **95** percent of the laboratory Standard Proctor maximum dry density (ASTM D698).

Furthermore, placement of the fill material should be observed and tested by a geotechnical engineer or qualified engineering technician as placement of the fill progresses. For grading along roadways, compaction testing should be performed at a minimum frequency of one test per lane per 200 linear feet of fill placed. For utility trench backfill, compaction testing should be performed at a minimum frequency of one test per lift per 200 feet of fill placed within utility trenches, where these trenches are extended beneath pavement. Upon completion of the mass grading and the installation of buried utilities and/or conduits, it will be necessary to retest the compaction of the structural fill placed within all backfilled utility trenches, where they have been buried within a previously tested and approved area. Failure to re-inspect and retest these trenches beneath pavements may result in varying soil support of the loaded subgrade soils.

Pavement Thickness Recommendations

We have assumed that a re-compacted design California Bearing Ratio (CBR) value of approximately **8** is available to support the planned pavements, provided the subgrade soils are adequately densified and prepared, as stipulated in the recommendations presented in this report.

As previously mentioned, we have assumed only light-duty paved areas will be required for this project. We define light-duty areas as areas having a heavy concentration of automobiles and no loaded trucks, such as a car parking lot pavement. We define heavy-duty paved areas as areas receiving a heavy concentration of automobiles and loaded trucks such as an access drive or a loading dock area. Traffic loading criteria is assumed to be as roughly 2 cars per day per parking space for an assumed 48 spaces, 2 delivery trucks per week and 1 EMS per year. We therefore calculate a total traffic loading of an equivalent axle loading (EAL) for light pavements of about 4900 passes of an 18-kip equivalent axle load over a life span of 20 years. It is important to note that these traffic volumes do not account for construction traffic, therefore, proper construction staging techniques should be used, or the pavement thicknesses should be recalculated with respect to this traffic.

Our thickness analyses for flexible pavements were performed in general accordance with the *AASHTO Guide for Design of Pavement Structures, 1993*. Based on the above assumptions, we recommend the following pavement sections over the prepared subgrade:



Table 1: Flexible Pavement Thickness Recommendations

Pavement Type	Layers	Material	Thickness (inches)		
			Light Duty		Heavy Duty Drive
			Stalls	Drives	
Flexible	a.	Asphaltic Concrete Surface Course	1-1/2	2	---
	b.	Asphaltic Concrete Binder Course	---	---	---
	c.	Graded Aggregate Base Course	6	6	---
	d.	Properly Prepared Subgrade	18		---
Rigid	a.	Portland Cement Concrete	6 (Minimum recommended)		
	b.	Graded Aggregate Base Course	6		
	c.	Properly Prepared Subgrade	18		

Flexible Pavement Section: The asphalt surface course should conform to the South Carolina Department of Transportation (SCDOT) Standard Specification, Section 403, for Type 1 Hot Laid Asphalt Concrete Surface Course. The binder material, if utilized, should conform to SCDOT Standard Specification Section 402.

Base Material Section: Additionally, the base course material should be a Graded Aggregate Base Course (GABC) conforming to SCDOT Standard Specification, Section 305. The base course should be compacted to 100 percent of the Modified Proctor (ASTM D-1557) maximum dry density, per Richland County specifications.

Rigid Pavement Section: The concrete course should conform to the SCDOT Standard Specification, Section 701, for Portland Cement and Portland Cement Concrete. Additionally, we recommend that the concrete pavements have a minimum 5,000 psi compressive strength and 650 psi flexural strength at 28 days, and that the heavy duty concrete paving sections be reinforced by reinforcing steel or dowels, as specified by a structural engineer. We further recommend that fiber mesh not be allowed to be specified as an alternate to steel reinforcement members to counteract flexural design stresses for heavy duty paving applications at this project.

General Quality Control Recommendations: For fine grading and subbase preparation of the base course material, compaction testing should be performed at a minimum frequency of one test per lift per 2000 square feet of material placed within parking areas and at a minimum of one test per 500 linear feet of roadway. Additionally, thickness measurements should be performed at a minimum of one measurement per lift per 5000 square feet of material placed within parking areas and at a minimum of one test per 250 linear feet of roadway. Finally, during placement of base course materials for roadways, one bulk sample should be obtained per 1000 linear feet of roadway for gradation testing, per ASTM C136.

Prior to asphalt surface and binder course placement, a roller pattern with random density testing should be performed to establish the designated number and passes of the compaction equipment per lift of material. Once this roller pattern is established, if cores are not going to be obtained to measure thickness and density, the lay-down thickness of the asphaltic materials should be monitored and measured on a continuous basis, while the density of the materials should be tested at a minimum of 10 tests per days placement. If cores are to be obtained from the recently placed asphaltic materials for measurement purposes, then the binder and surface course materials should be cored at a minimum of one core per 5000 square feet of material placed within parking lots and at a minimum of five cores per 1500 and 2500 linear feet, respectively, of roadway. Once the cores have been obtained, they should be measured for thickness and bulk specific gravity (to calculate density), per ASTM C174 and D2726, respectively.

General Pavement Recommendations: Related civil design factors such as subgrade drainage, shoulder support, cross-sectional configurations, surface elevations, and environmental factors that will significantly affect the service life must be included in the preparation of the construction drawings and specifications. Normal periodic maintenance will be required

BASIS FOR RECOMMENDATIONS

The recommendations presented in this letter are based on our understanding of the project information, our interpretation of the data obtained during our investigation and our experience with similar soil and project conditions. Regardless of the thoroughness of this investigation, it is possible that the soil conditions vary from the soil conditions encountered during field and laboratory testing. Therefore, it will be necessary for a geotechnical engineer or qualified engineering technician to be present during grading and paving operations in order to evaluate and document that the anticipated design conditions actually exist.

CLOSING

Once again we appreciate the opportunity to provide our services for your geotechnical consulting needs. If there are any questions concerning our recommendations or if additional information becomes available please contact us.

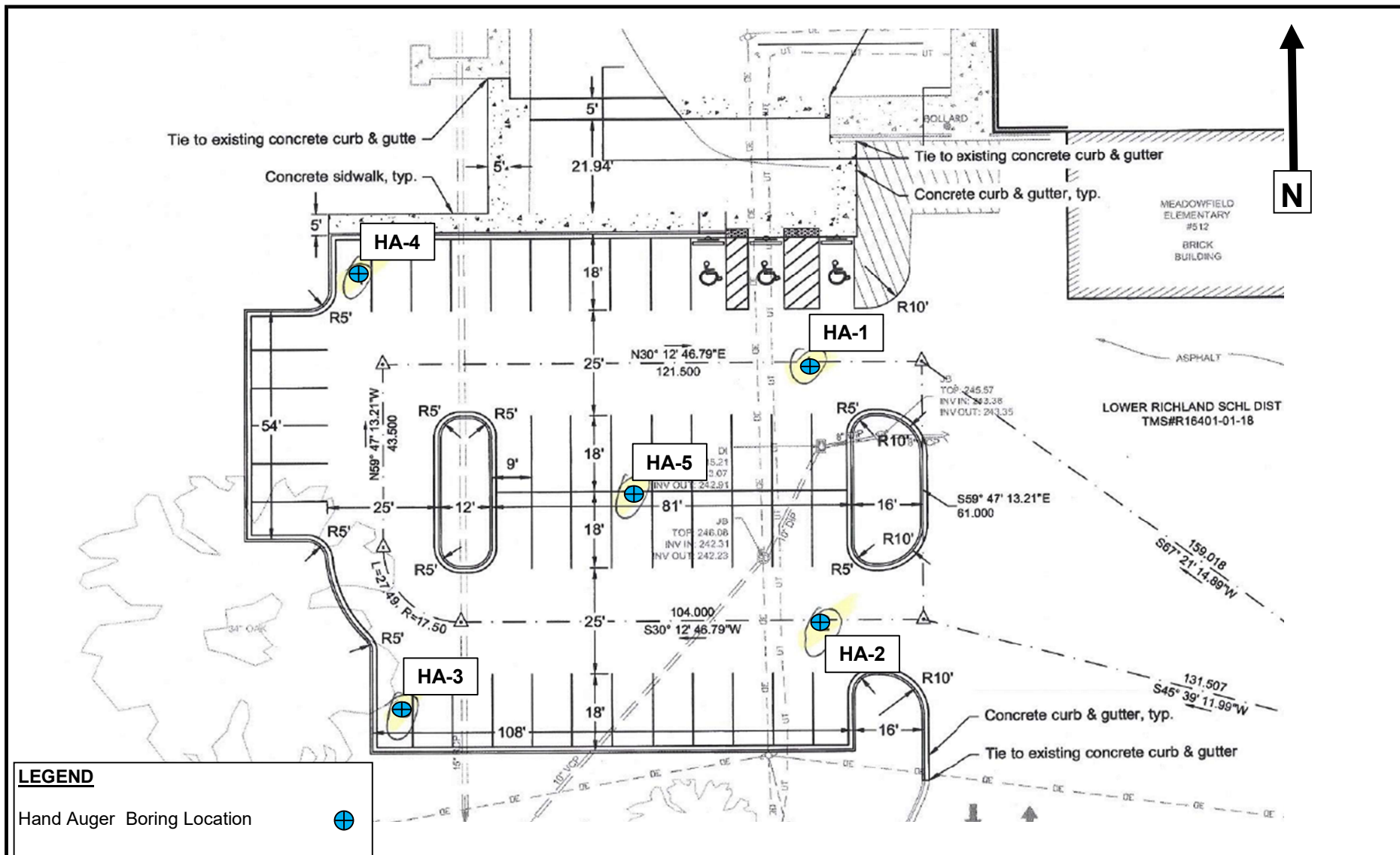
Sincerely,
GS2 ENGINEERING, INC.



George A. Sembos, PE
Chief Engineer

Attachments: Figure
 Record of Hand Augered Borings





Boring Location Plan
Meadowfield ES Parking Addition
525 Galway Lane
Columbia, South Carolina

Chao and Associates Inc.
7 Clusters Court
Columbia, SC 29210

Prepared By/Date: SW-5/22
Checked By/Date: GS-5/22

Scale
NOT TO SCALE

Figure 1



Record Of Hand Auger Boring

Project Name: Meadowfield

Boring No.: HA-1

Project Number: 22-2347-G

Date: 4/11/2022

Depth		Soil Description	Depth of Test	DCP* Blow Counts			Average** DCP (bpi)
From	To			1st	2nd	3rd	
0'		Brown, Red, Silty SAND	0'	12	15	15	15
			1'	3	2	3	3
			2'	4	4	5	5
			3'	15	15	15	15
			4'	15	15	15	15
			5'	15	15	15	15
	5'						
		Hand Auger Termination at 5 Feet	6'				
			7'				
			8'				
			9'				
			10'				

Method of drilling: Hand Auger

Performed By: E.C./K.K.

Depth of Groundwater T.O.B.: Not Encountered

Boring Location: B1

Depth of Groundwater 24 hrs.: Not Available

Notes: 1. Please see attached report.

* DCP (or Dynamic Cone Penetrometer) tests were taken in general accordance with ASTM #T-399.

** The average DCP blow per increment (bpi) is arrived at by averaging the 2nd and 3rd blows.

Signature: _____

Jayson E. Floyd, P.E.
Special Inspections Coordinator



Record Of Hand Auger Boring

Project Name: Meadowfield

Boring No.: HA-2

Project Number: 22-2347-G

Date: 4/11/2022

Depth		Soil Description	Depth of Test	DCP* Blow Counts			Average** DCP (bpi)
From	To			1st	2nd	3rd	
0'		Brown, Red, Silty SAND	0'	8	15	15	15
			1'	5	4	4	4
			2'	3	3	3	3
			3'	3	4	4	4
			4'	5	15	15	15
			5'	15	15	15	15
	5'						
		Hand Auger Termination at 5 Feet	6'				
			7'				
			8'				
			9'				
			10'				

Method of drilling: Hand Auger

Performed By: E.C./K.K.

Depth of Groundwater T.O.B.: Not Encountered

Boring Location: B2

Depth of Groundwater 24 hrs.: Not Available

Notes: 1. Please see attached report.

* DCP (or Dynamic Cone Penetrometer) tests were taken in general accordance with ASTM #T-399.

** The average DCP blow per increment (bpi) is arrived at by averaging the 2nd and 3rd blows.

Signature: _____

Jayson E. Floyd, P.E.
Special Inspections Coordinator



Record Of Hand Auger Boring

Project Name: Meadowfield

Boring No.: HA-3

Project Number: 22-2347-G

Date: 4/11/2022

Depth		Soil Description	Depth of Test	DCP* Blow Counts			Average** DCP (bpi)
From	To			1st	2nd	3rd	
0'		Brown SAND	0'	2	4	5	5
	1'		1'	7	6	6	6
1'		Brown, Silty SAND	2'	2	6	10	8
	3'		3'	15	15	15	15
		Hand Auger Refusal at 3 Feet due to Rock	4'				
			5'				
			6'				
			7'				
			8'				
			9'				
			10'				

Method of drilling: Hand Auger

Performed By: E.C./K.K.

Depth of Groundwater T.O.B.: Not Encountered

Boring Location: B3

Depth of Groundwater 24 hrs.: Not Available

Notes: 1. Please see attached report.
2. Offset x2.

* DCP (or Dynamic Cone Penetrometer) tests were taken in general accordance with ASTM #T-399.

** The average DCP blow per increment (bpi) is arrived at by averaging the 2nd and 3rd blows.

Signature: _____

Jayson E. Floyd, P.E.
Special Inspections Coordinator



Record Of Hand Auger Boring

Project Name: Meadowfield

Boring No.: HA-4

Project Number: 22-2347-G

Date: 4/11/2022

Depth		Soil Description	Depth of Test	DCP* Blow Counts			Average** DCP (bpi)
From	To			1st	2nd	3rd	
0'		Brown SAND	0'	15	15	15	15
	1'		1'	5	7	7	7
1'		Brown, Silty CLAY	2'	2	1	2	2
	3'		3'	2	5	4	5
		Hand Auger Refusal at 3 Feet due to Rock	4'				
			5'				
			6'				
			7'				
			8'				
			9'				
			10'				

Method of drilling: Hand Auger

Performed By: E.C./K.K.

Depth of Groundwater T.O.B.: Not Encountered

Boring Location: B4

Depth of Groundwater 24 hrs.: Not Available

Notes: 1. Please see attached report.
2. Offset x2.

* DCP (or Dynamic Cone Penetrometer) tests were taken in general accordance with ASTM #T-399.

** The average DCP blow per increment (bpi) is arrived at by averaging the 2nd and 3rd blows.

Signature: _____

Jayson E. Floyd, P.E.
Special Inspections Coordinator



Record Of Hand Auger Boring

Project Name: Meadowfield

Boring No.: HA-5

Project Number: 22-2347-G

Date: 4/11/2022

Depth		Soil Description	Depth of Test	DCP* Blow Counts			Average** DCP (bpi)
From	To			1st	2nd	3rd	
0'		Brown SAND	0'	15	15	15	15
	1'		1'	8	3	3	3
1'		Orange, Silty SAND	2'	3	3	4	4
	3'		3'	3	4	7	6
		Hand Auger Refusal at 3 Feet due to Rock	4'				
			5'				
			6'				
			7'				
			8'				
			9'				
			10'				

Method of drilling: Hand Auger

Performed By: E.C./K.K.

Depth of Groundwater T.O.B.: Not Encountered

Boring Location: B5

Depth of Groundwater 24 hrs.: Not Available

Notes: 1. Please see attached report.
2. Offset x2.

* DCP (or Dynamic Cone Penetrometer) tests were taken in general accordance with ASTM #T-399.

** The average DCP blow per increment (bpi) is arrived at by averaging the 2nd and 3rd blows.

Signature: _____

Jayson E. Floyd, P.E.
Special Inspections Coordinator

Particle-Size Analysis of Soils (ASTM D422)

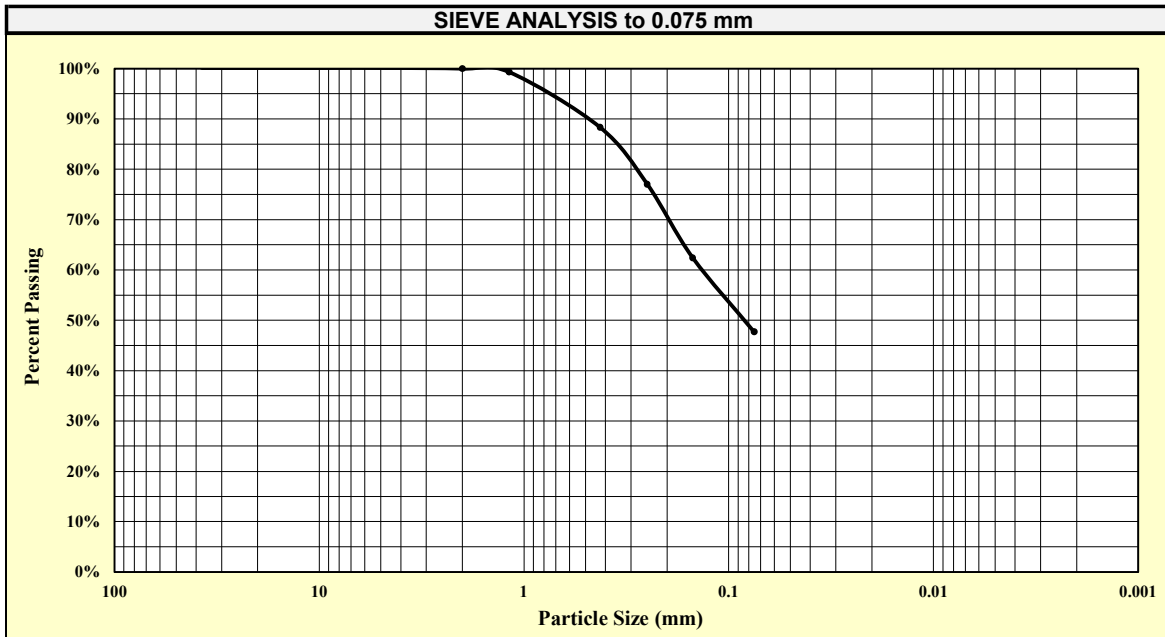


Project Name: Meadowfield
 Project Number: 22-2347-G
 Laboratory Number: GS-9010
 Client: Chao & Associates, Inc.

LABORATORY TESTING INFORMATION	
Date of Test: <u>29-Apr-2022</u>	Sample Description: <u>Orange, Silty SAND</u>
Sample Location: <u>On Site</u>	Performed By: <u>C. McLane</u>

MECHANICAL SIEVE ANALYSIS			
SPECIFICATION		TESTING RESULTS	
Sieve	Percent Passing	Sieve	Percent Passing
3.0"		3.0"	100.1%
1.5"		1.5"	100.1%
1.0"		1.0"	100.1%
3/4"		3/4"	100.1%
1/2"		1/2"	100.1%
3/8"		3/8"	100.1%
#4		#4	100.1%
#10		#10	100.0%
#16		#16	99.3%
#40		#40	88.3%
#60		#60	77.0%
#100		#100	62.4%
#200		#200	47.7%

DESCRIPTION OF SAND AND GRAVEL PARTICLES			
SHAPE:	Angular ☐	HARDNESS:	Hard and Durable ☒
	Rounded ☒		Soft ☐
SPECIFIC GRAVITY:	Assumed 2.65		Weathered and Friable ☐

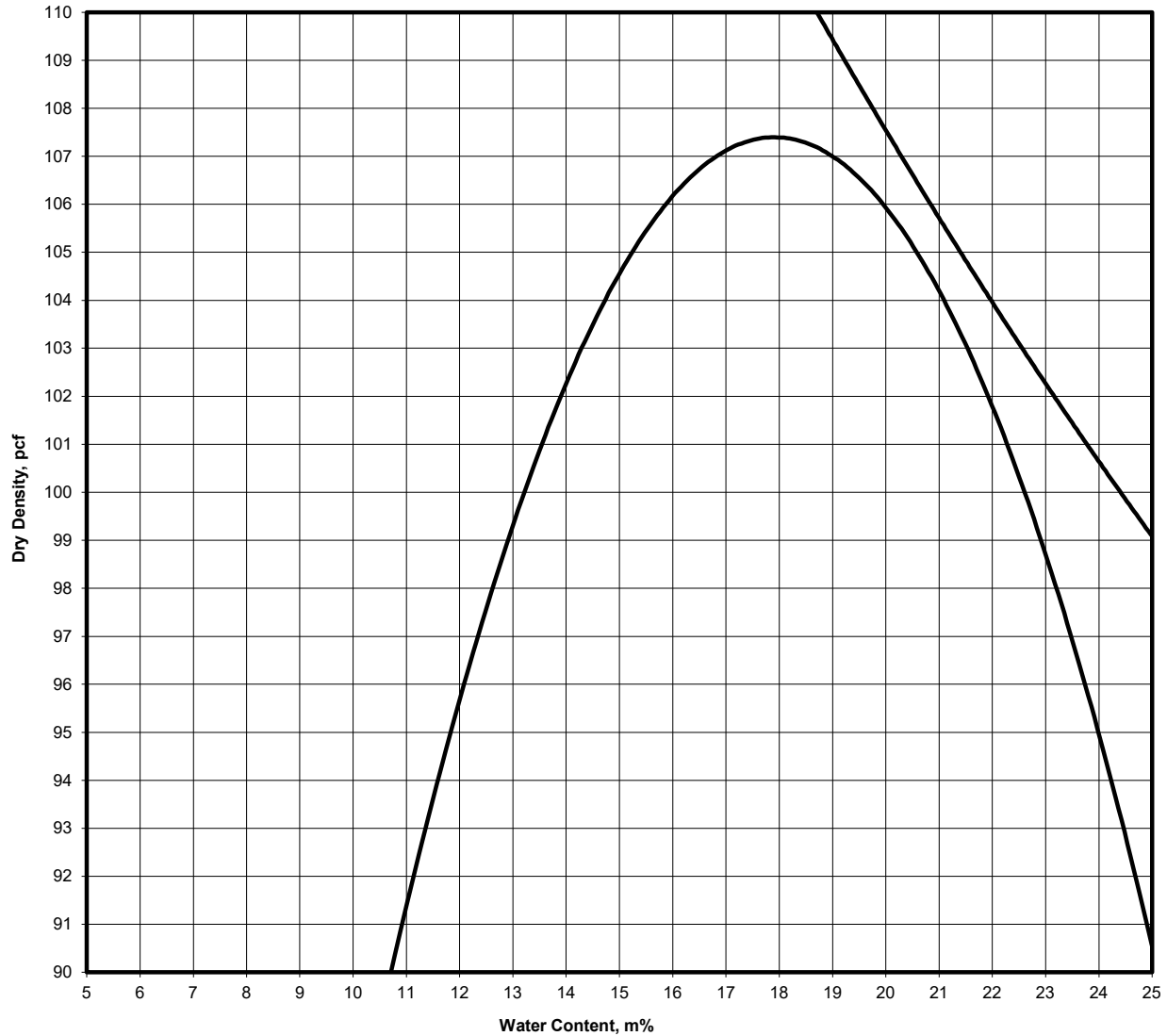


Soil Particle Breakdown			
% Coarse Sand: <u>0.1%</u>	% Medium Sand: <u>11.7%</u>	% Fine Sand: <u>40.6%</u>	% Silts and Clays: <u>47.7%</u>
passing No. 4 & retained on No. 10	passing No. 10 & retained on No. 40	passing No. 40 & retained on No. 200	Particles smaller than 0.075 mm
USCS Soil Classification: <u>SM</u>		Coefficient of Uniformity (Cu) = <u>N/A</u> Coefficient of Curvature (Cc) = <u>N/A</u>	

Respectfully Submitted

George A. Sembos, P.E.
 Chief Engineer

STANDARD PROCTOR MOISTURE DENSITY-RELATIONSHIP CURVE



ASTM D698 - Method A

Zero Voids Curve Corresponds to $G_s = 2.63$

TEST RESULTS					MATERIAL DESCRIPTION			
Maximum Dry Density = 107.4 pcf Optimum Moisture Content = 18.0 %					Orange, Silty SAND			
Classification		Natural Moisture	Specific Gravity	Liquid Limit	Plastic Limit	Plasticity Index	Passing #4	Passing No. 200
USCS	AASHTO							
NT	NT	NT	NT	NT	NT	NT	100%	50%

Project / Location: Meadowfield

Project No.: 22-2347-G

Material Source: On-site

Test Date: 4/13/2022

Remarks: Assumed specific gravity = 2.63

Curve #: 1

Lab #: GS-9010

