

A PATH FORWARD AT THE AMELIA STREET SCHOOL

A COLLECTIVE VISION FOR AN ECOLOGICAL,
ACCESSIBLE EDUCATIONAL TRAIL



MARVEL

Amelia Street is a RPS school located in Richmond's historically redlined, underserved Randolph neighborhood that serves students ages 5 to 21 years with significant intellectual disabilities, behavioral issues, or complex health needs (which include physical disabilities).

Principal Mark Phillips has a goal of creating partnerships within the community that can bring expertise and resources to his school. Specifically, he is seeking partnerships that support hands-on activities, build functional life skills, highlight the outdoors, and create safe learning environments for his students.

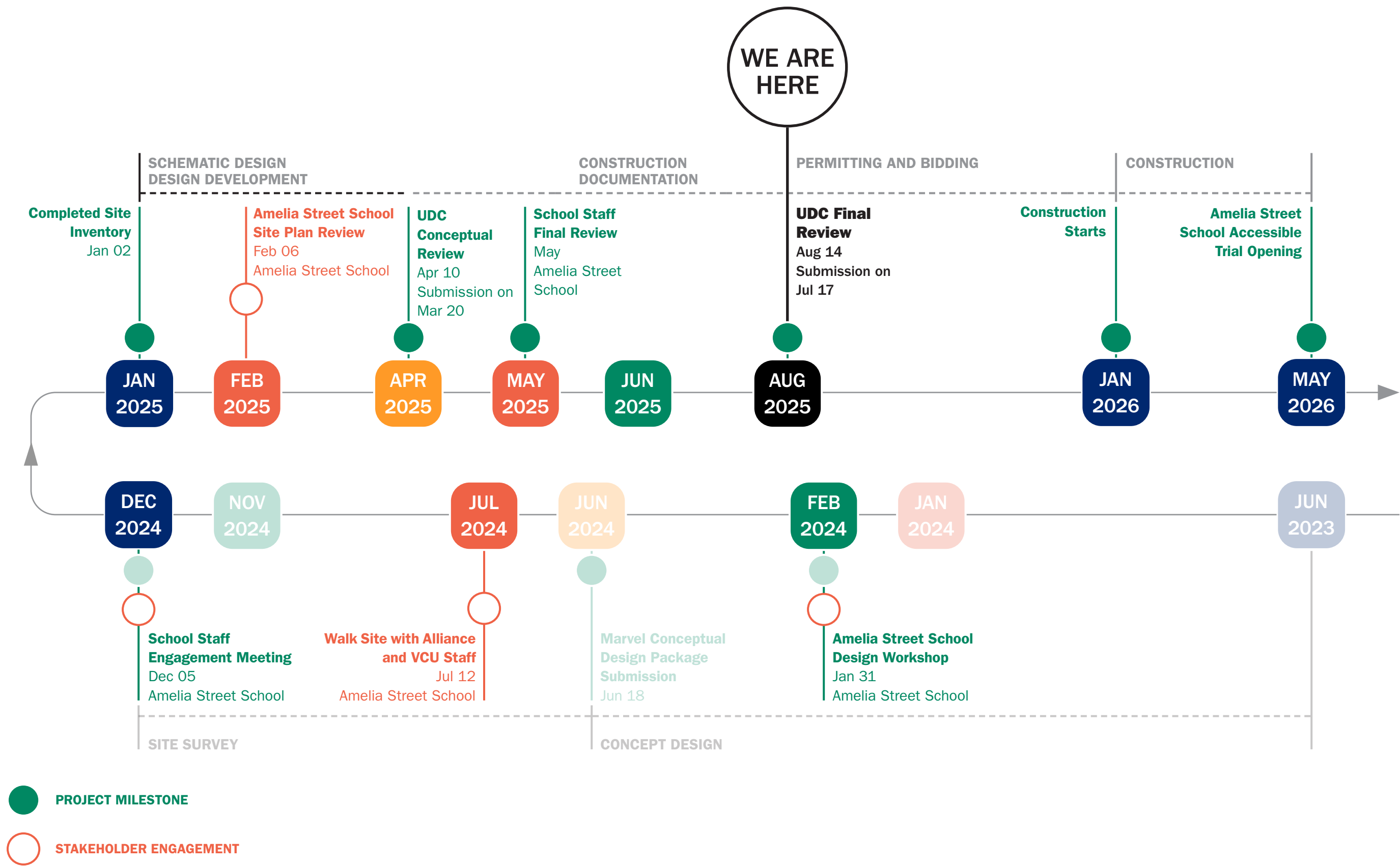
The goals of this project are to improve water quality in the James River and Chesapeake Bay by reducing nutrient and sediment pollution and to promote outdoor learning and environmental literacy through enhanced access to the schoolyard for all students, regardless of ability level. Proposed best management practices (BMPs) include bioretention areas, conservation landscaping, increased native tree canopy, and a permeable, ADA-accessible trail. At the Amelia Street School, the Alliance focused on utilizing stormwater infrastructure as a child-friendly, playful demonstration of how water flows.

The Path Forward at the Amelia Street School will demonstrate that the confluence of accessibility, ecology, safety and education can also be beautiful and engaging.

This project had been funded wholly or in part by the United States Environmental Protection Agency under assistance agreement 4I-95325001, 4I-95303301, and/or C2-96387301.



PROJECT SCHEDULE



PROPOSED PLAN



PROPOSED GRADING PLAN



CANOPY PLANTING PLAN



UNDERSTORY PLANTING PLAN



PLANT PALETTE - BIORETENTION AREAS

GRASSES



Virginia Wild Rye
Elymus virginicus



Broomsedge
Andropogon virginicus



Shenandoah Switch Grass
Panicum virgatum "Shenandoah"



Purple Love Grass
Eragrostis spectabilis

PERENNIALS



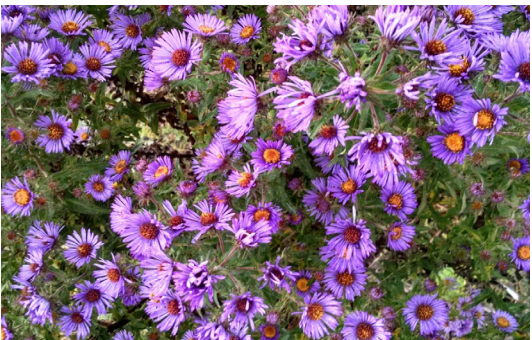
Joe Pye Weed
Eutrochium fistulosum



Swamp Milkweed
Asclepias incarnata



New York Aster
Symphyotrichum novi-belgii



New England Aster
Symphyotrichum novae-angliae

UNDERSTORY TREES/SHRUBS



Paw-Paw
Asimina triloba

AT



Sweetbay Magnolia
Magnolia Virginiana

MV



Silky Dogwood
Cornus amomum

CA

CANOPY TREES



Persimmon
Diospyros virginiana

DV



River Birch
Betula nigra

BN



Black Gum
Nyssa sylvatica

NS



Eastern Red Cedar
Juniperus Virginiana

JV

PLANT PALETTE - CONSERVATION AREAS

GRASSES



Virginia Wildrye
Elymus virginicus



Little Bluestem
Schizachyrium scoparium



Shenandoah Switch Grass
Panicum virgatum "Shenandoah"



Broomsedge
Andropogon virginicus

PERENNIALS



Sweet Goldenrod
Solidago odora



Black Eyed Susan
Rudbeckia hirta



Wild Senna
Senna marylandica



Mouse Eared Coreopsis
Coreopsis Auriculata



Foxglove Breadtongue
Penstemon digitalis



Spotted Bee Balm
Monarda punctata



Rough Blazing Star
Liatris aspera



Butterfly Weed
Asclepias tuberosa

UNDERSTORY TREES/SHRUBS



Paw-Paw
Asimina triloba

AT



Sweetbay Magnolia
Magnolia Virginiana

MV



Southern Arrowwood
Viburnum dentatum

VD

CANOPY TREES



Persimmon
Diospyros virginiana

DV



Black Gum
Nyssa sylvatica

NS

PLANTING SCHEDULE

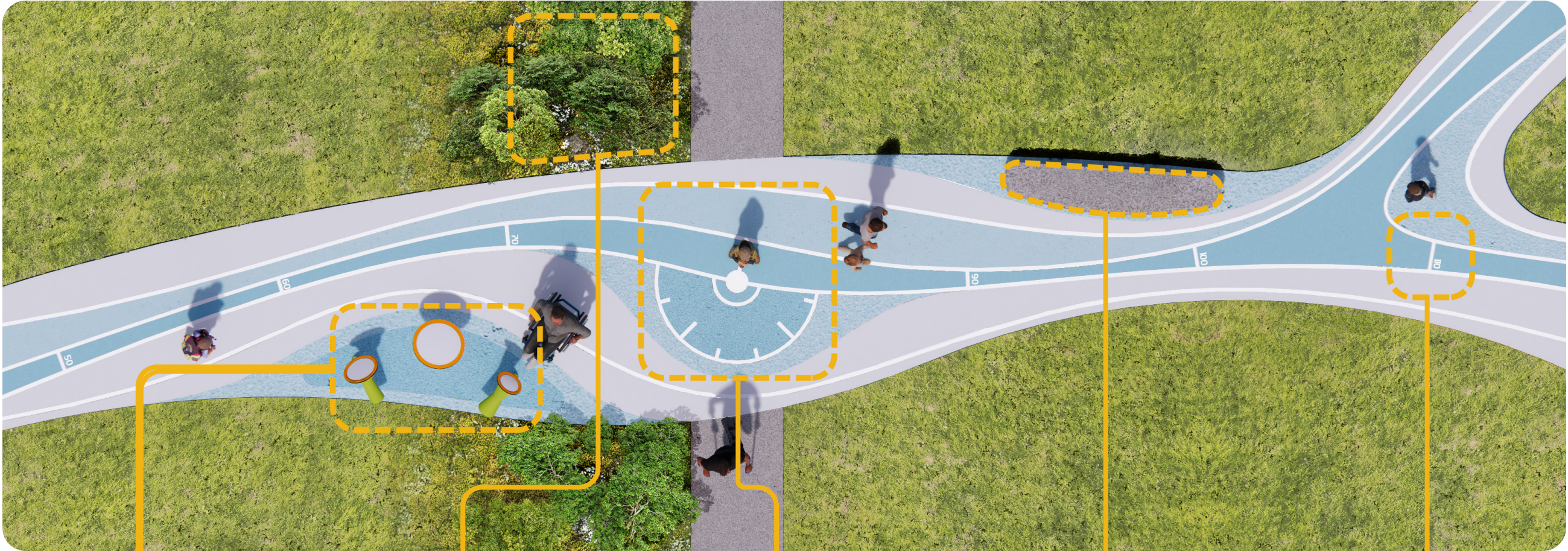
PERENNIAL & GRASSES			
PLANTING GROUP	COMMON NAME	SCIENTIFIC NAME	QUANTITY
PERENNIALS GROUP - YELLOW			700 SF
	Wild Senna	Senna hebecarpa	91
	Sweet Goldenrod	Solidago odora	91
PERENNIALS GROUP - WHITE			1,182 SF
	Rough Blazing Star	Liatris aspera	104
	Spotted Horsemint	Monarda punctata	104
	Beardtongue	Penstemon digitalis	104
PERENNIALS GROUP - PINK			976 SF
	Swamp Milkweed	Asclepias incarnata	126
	Hollow Joe Pye Weed	Eutrochium fistulosum	126
PERENNIALS GROUP - ORANGE			438 SF
	Butterfly Milkweed	Asclepias tuberosa	38
	Lobed Tickseed	Coreopsis auriculata	38
	Black-eyed Susan	Rudbeckia hirta	38
PERENNIALS GROUP - BLUE			580 SF
	New England Aster	Symphyotrichum novae-angliae	74
	New York Aster	Symphyotrichum novi-belgii	74
GRASSES GROUP - PINK			1,220 SF
	Purple Lovegrass	Eragrostis spectabilis	158
	Shenandoah Switch Grass	Panicum virgatum 'Shenandoah'	158
GRASSES GROUP - BROWN			2,504 SF
	Broomsedge Bluestem	Andropogon virginicus	325
	Little Bluestem	Schizachyrium scoparium	325
WILD RYE			2,075 SF
	Virginia Wild Rye	Elymus virginicus	539

TREE & SHRUB					
CODE	COMMON NAME	SCIENTIFIC NAME	CONTAINER/SPACING	SIZE	QUANTITY
TREE					36
AT	Pawpaw	Asimina triloba	B&B	1.5" Cal.	2
BR	River Birch	Betula nigra	B&B	1.5" Cal.	9
DV	Common Persimmon	Diospyros virginiana	B&B	1.5" Cal.	2
JE	Eastern Redcedar	Juniperus virginiana	B&B	1.5" Cal.	4
MS	Sweetbay Magnolia	Magnolia virginiana	B&B	1.5" Cal.	9
ML	Sweet Crabapple	Malus coronaria	B&B	2" Cal.	1
NS	Tupelo	Nyssa sylvatica	B&B	2" Cal.	9
SHRUB					23
CA	Silky Dogwood	Cornus amomum	180" o.c.	5 gal.	7
MN	Northern Bayberry	Morella pensylvanica	120" o.c.	3 gal.	6
VD	Arrowwood Viburnum	Viburnum dentatum 'Arrowwood'	120" o.c.	3 gal.	9

EDUCATIONAL TRAILS AND NODES



EDUCATIONAL TRAIL - UPSTREAM



INTERACTIVE + PLAYFUL ZONE
Sensorial objects of accessible play along the trail



BIOSWALE + EXPLORATION
Stormwater management and plant display



GAMES + GRAPHICS
Playful learning on the ADA accessible trail



SEATING + GATHERING
Eddy spaces for chilling, gathering and resting



MILE MARKER + RUNNING TRACK
Meandering trail mimic the natural water flow

EDUCATIONAL TRAIL - DOWNSTREAM



**ART +
DISCOVERING**
Art installations waiting
for discovery



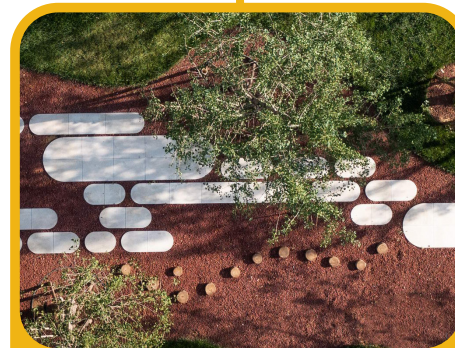
**EDUCATION +
SIGNAGE**
Signage to support learning
through observing



**SOUND +
INTERACTIVE**
Tactile and auditory
sensations / stimuli



**HABITAT
CREATION**
Observe and enjoy the
native wildlife

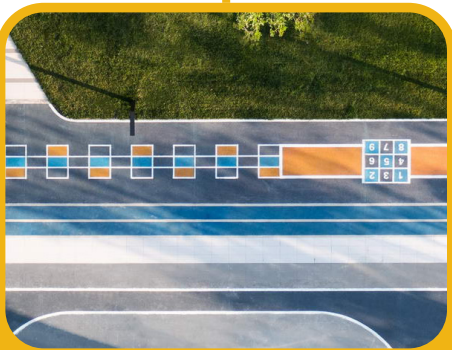


**ADVENTURE +
MEANDERING**
Explore the conservation
garden

EDUCATIONAL TRAIL - BAY AREA



**SUPERGRAPHIC +
MULTI-USE COURT**
Versatile and variable
active recreation options



**PAINTING +
WAYFINDING**
Redefine the boundary of
recreation and learning



**SEATING +
TEACHING**
Rest and take in active
recreation

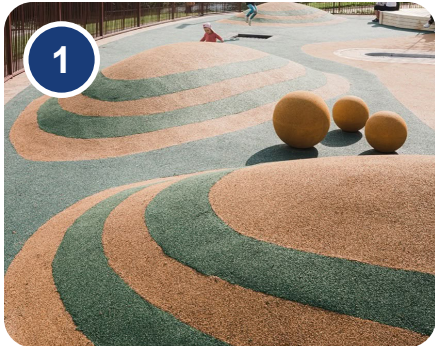


**GAMING +
GATHERING**
Graphics and games
painted on the ground



**MILE MARKER +
RUNNING TRACK**
330 ft (100 m) running
track for races

EDUCATIONAL NODES



Constructed Berm



Climbing Feature



Cozy Dome



Seating Boulders



Stepping Logs



Stepping Features



Sand Pit



Poured Rubber Surface



Stepping Stones



Engineered Wood Fiber

EDUCATIONAL NODES



Crawling Structure



Stepping/Seating Stones



Moveable Seating



Stepping Logs



Engineered Wood Fiber



Climbing Structure



Engineered Wood Fiber

FURNISHING AND PLAYFUL ELEMENTS



PLAYFUL ELEMENTS



Interactive Playscape
Along Trails



Seating Boulders
In Nodes



Companion Seating
Along Trails



Stepping Logs
In Nodes

Suggested Elements



Basketball Hoop
On Court



Stepping Stone
In Nodes



Climbing Wall
Along Trails



Outdoor Classroom
Along Trails



Stepping Features
In Nodes



Soccer Goal
On Court



Educational Signage
Along Trails



Shade Structure
Along Trails



Crawling Structure
In Nodes



Accent Seating
On Court + Along Trails

Optional Elements



Climbing Structure
In Nodes



Climbing Holds
In Nodes



Bird Houses
In Gardens



Playful Instruments
Along Trails



Movable Seating
In Nodes

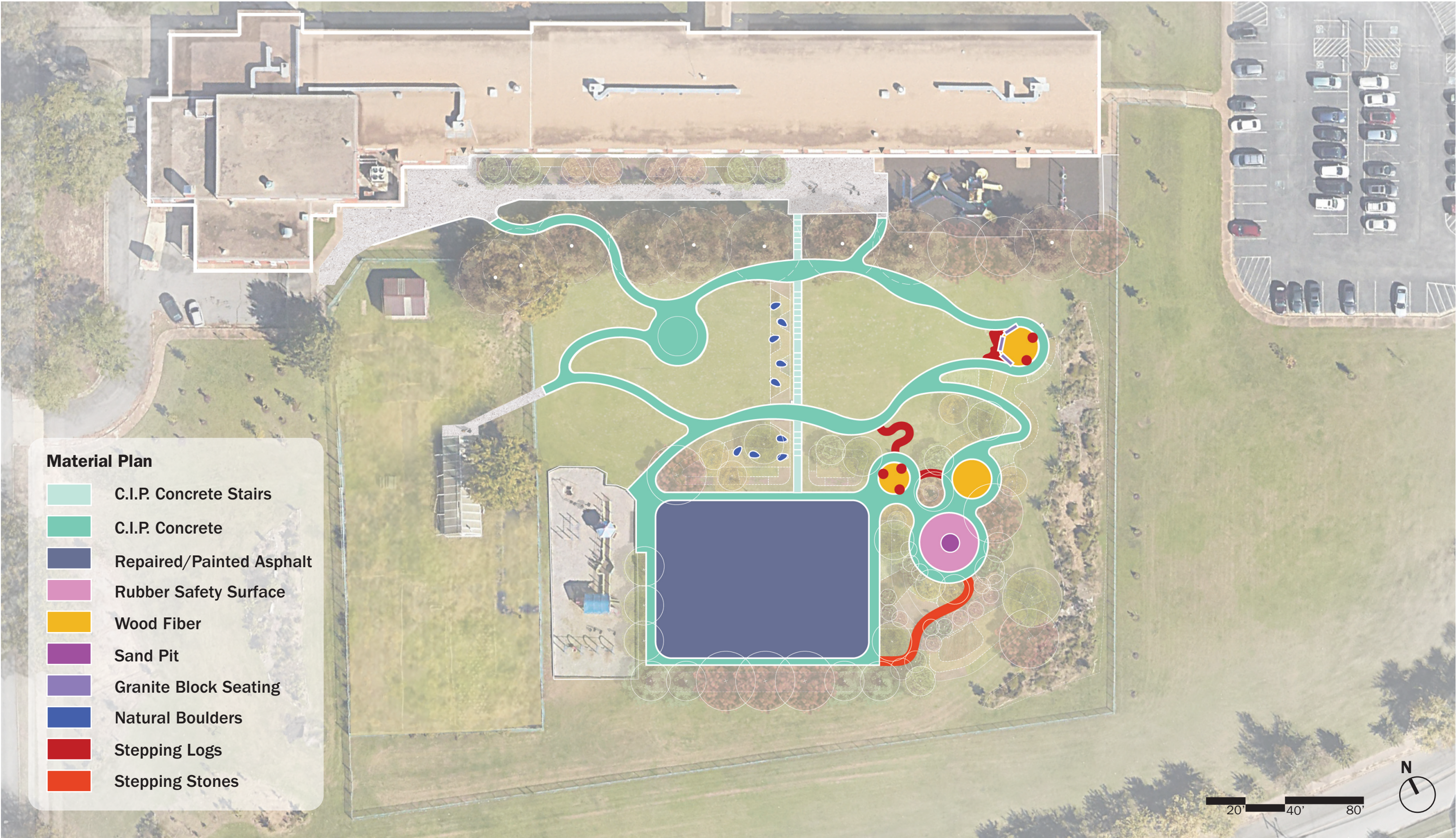


Cozy Dome
In Nodes



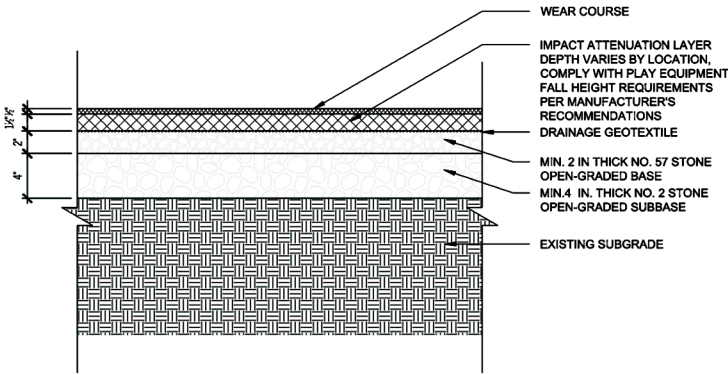
Artwork Installation
In Gardens

MATERIAL PLAN

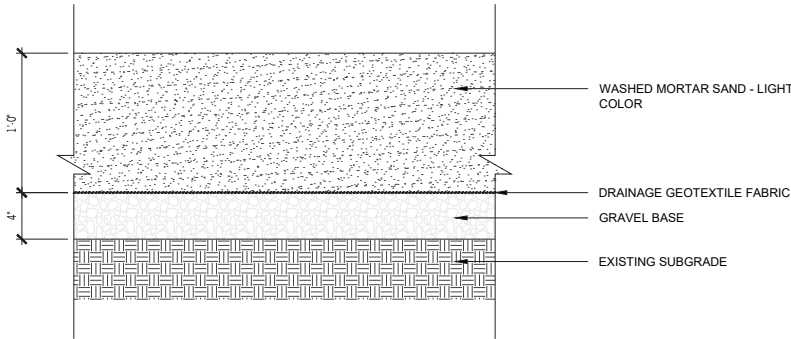


PAVING MATERIAL DETAILS

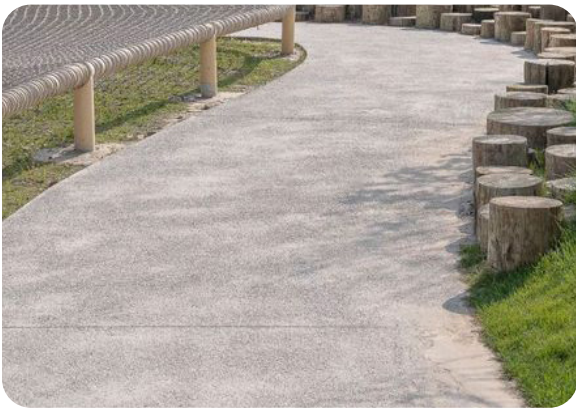
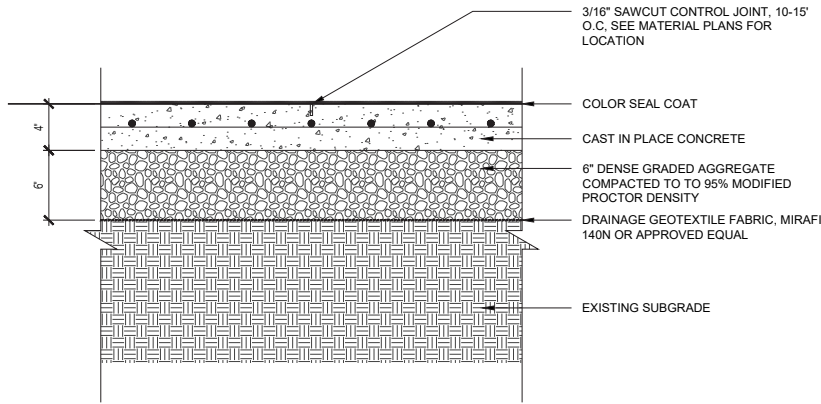
Rubber Safety Surface



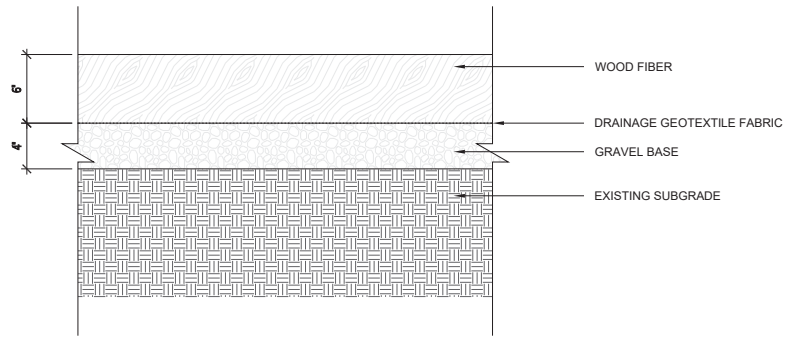
Sand Pit



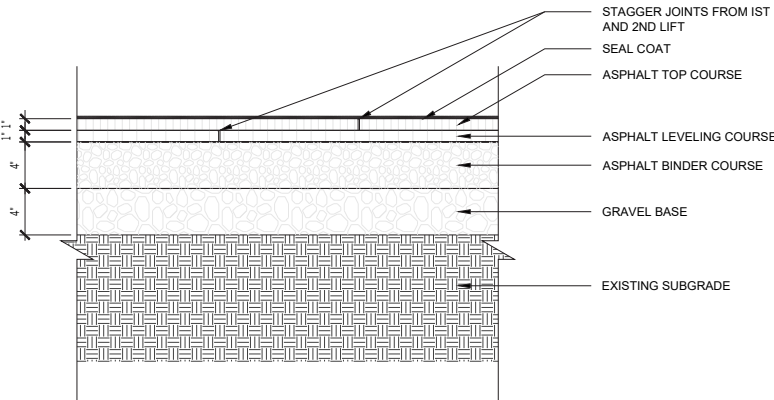
C.I.P. Concrete Paving



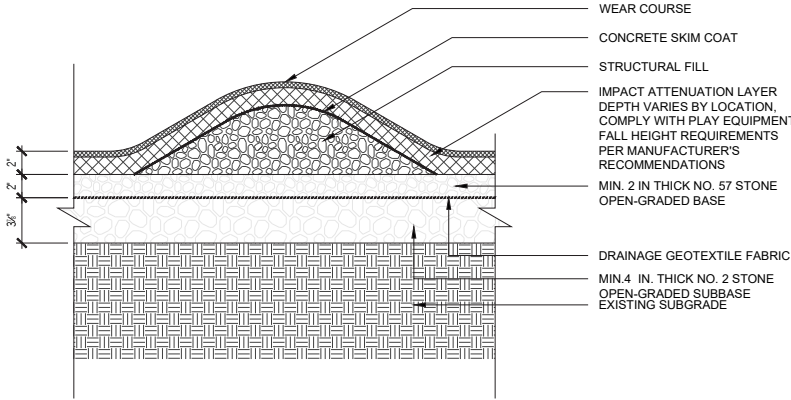
Wood Fiber



Asphalt for Sport Courts

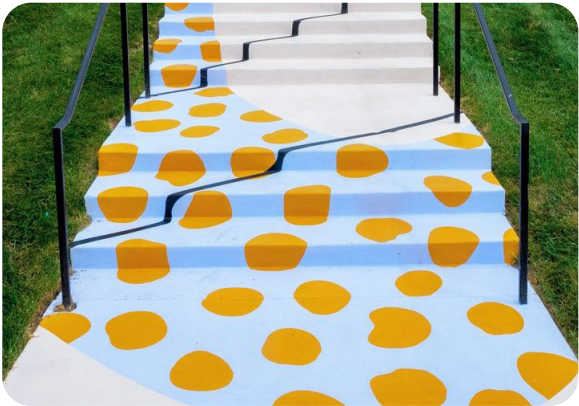
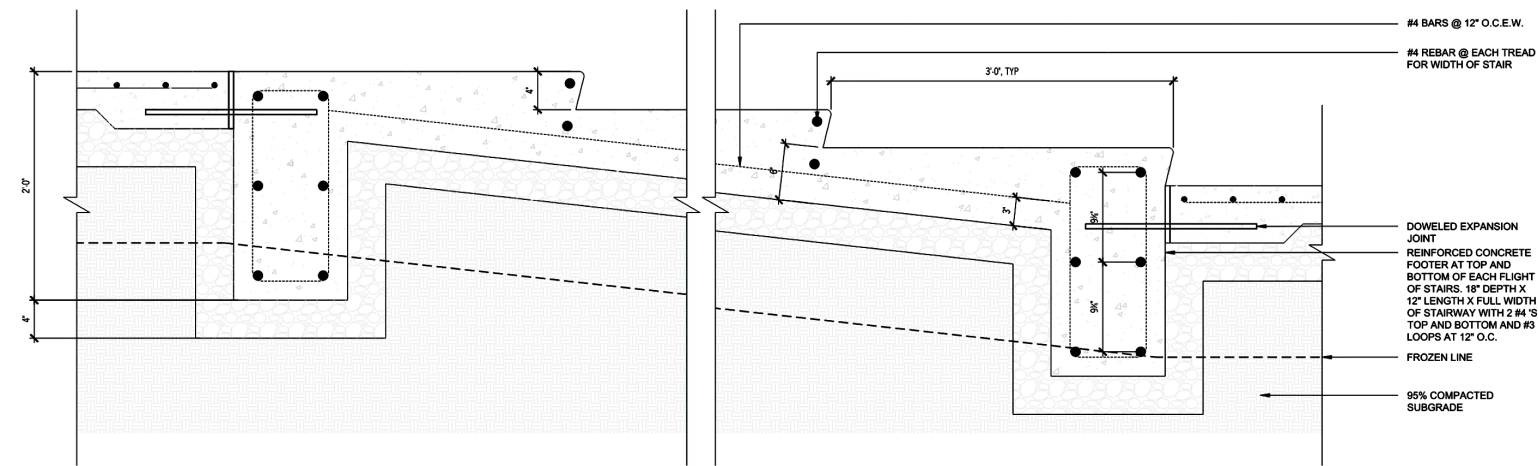


Rubber Mound Safety Surface

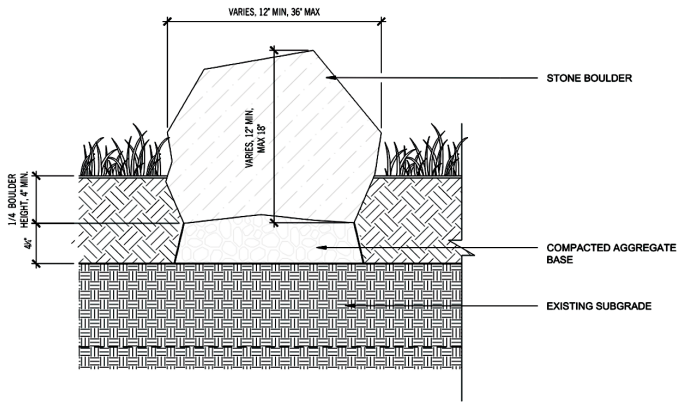


SITE FURNISHING DETAILS

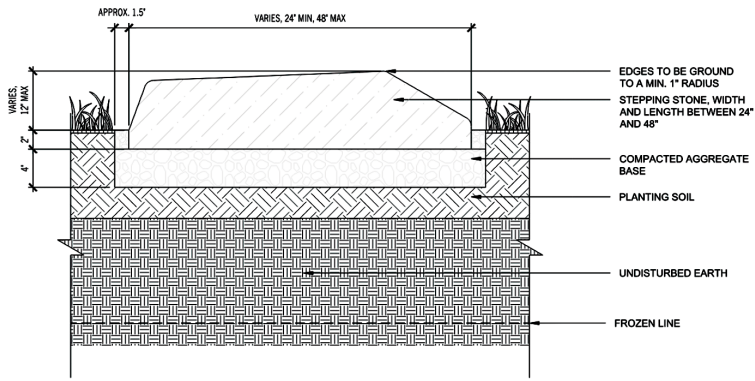
C.I.P. Concrete Stairs



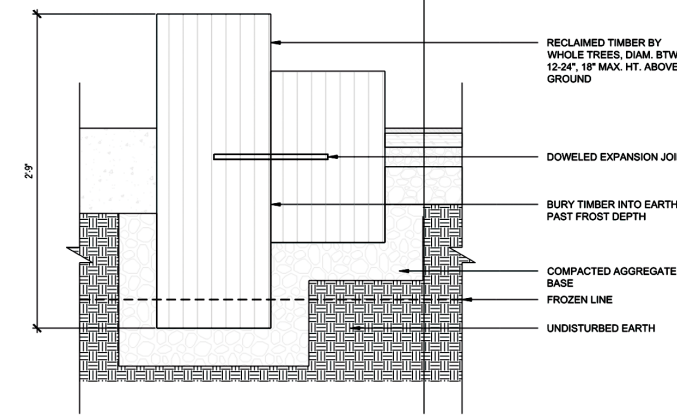
Natural Boulders



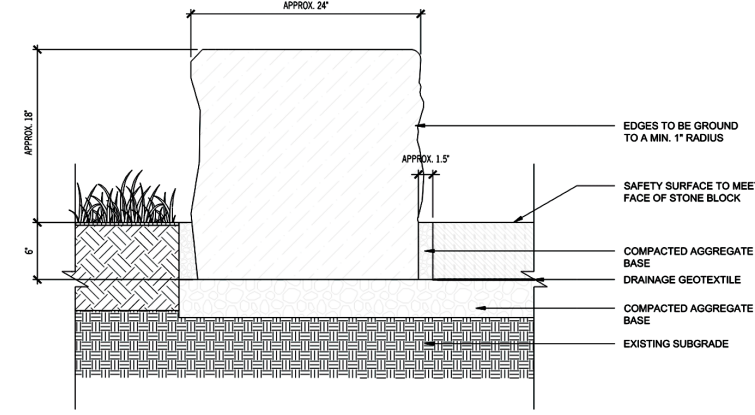
Stepping Stones



Stepping Logs

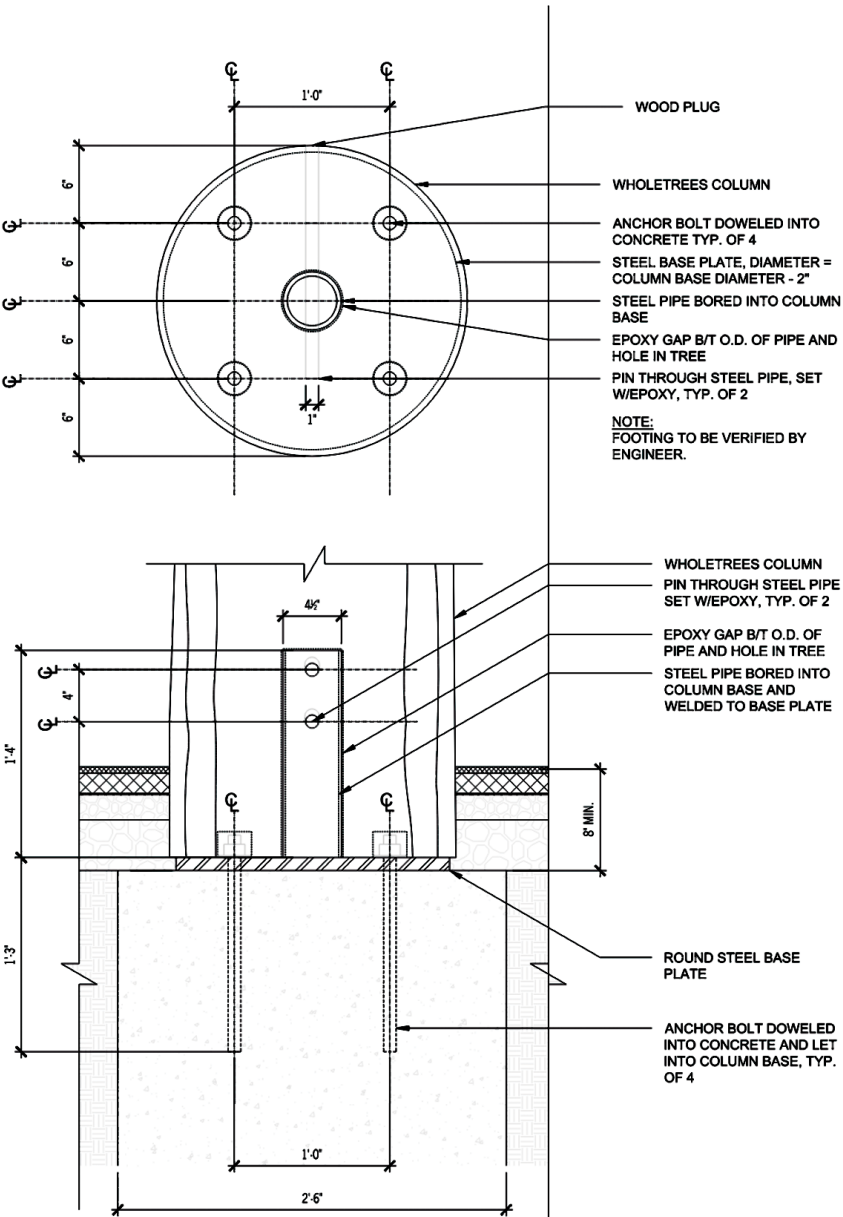


Granite Block Seating

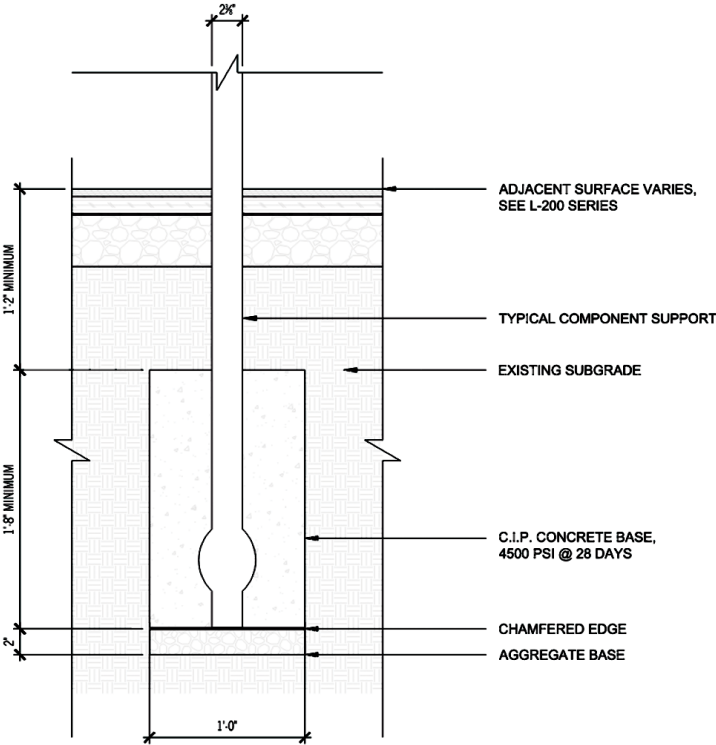


PLAY EQUIPMENT DETAILS

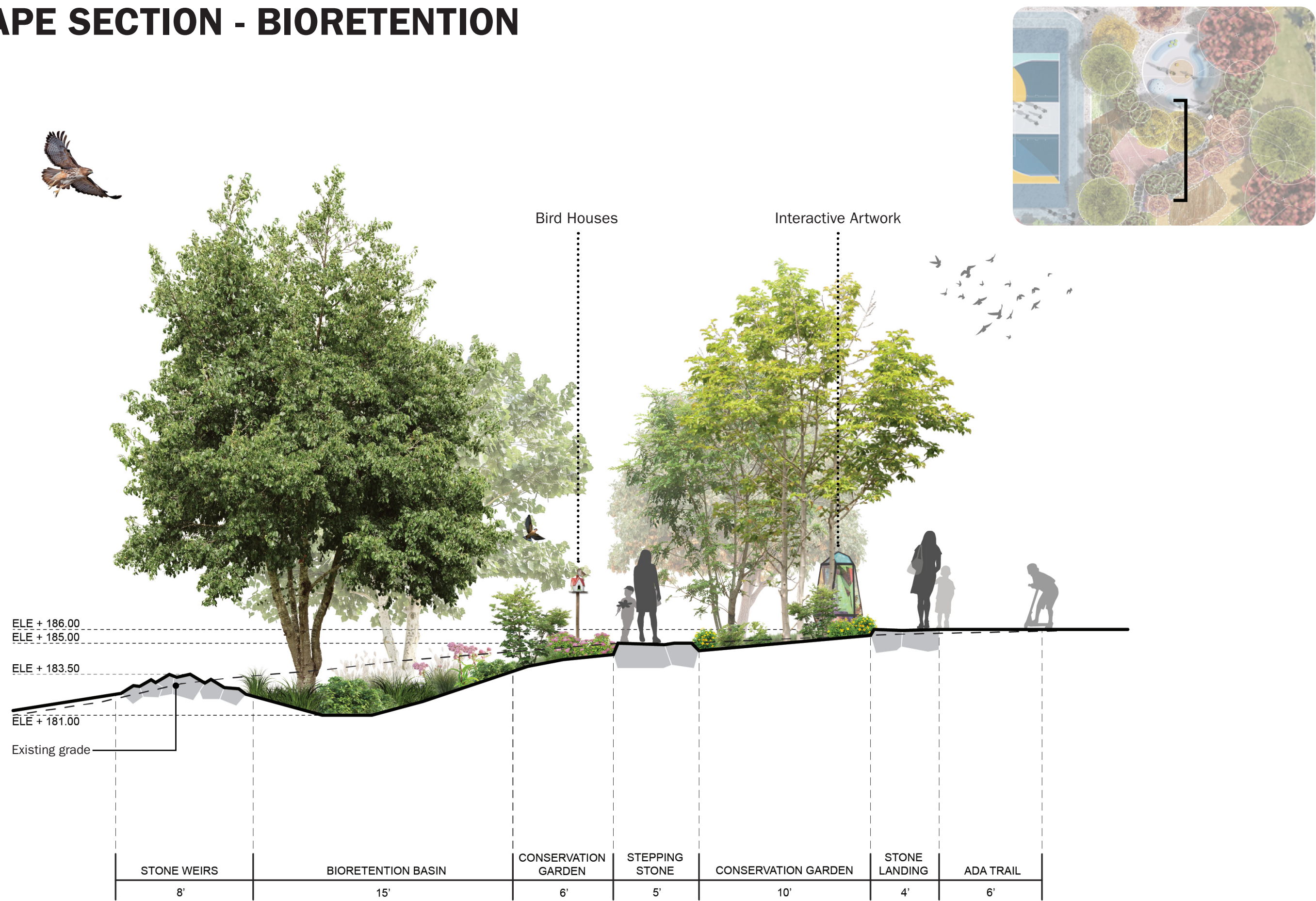
Grove Structure Footing



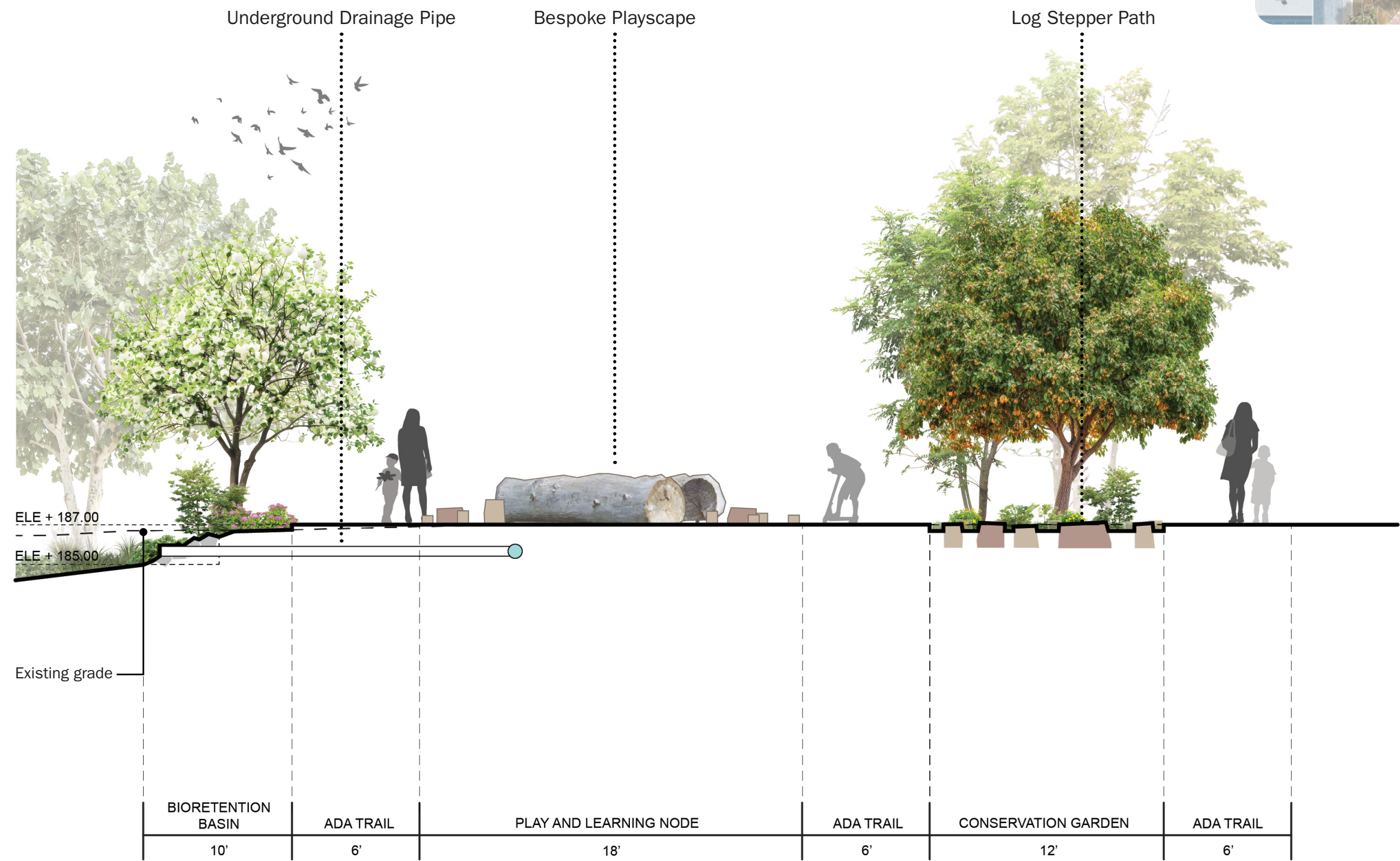
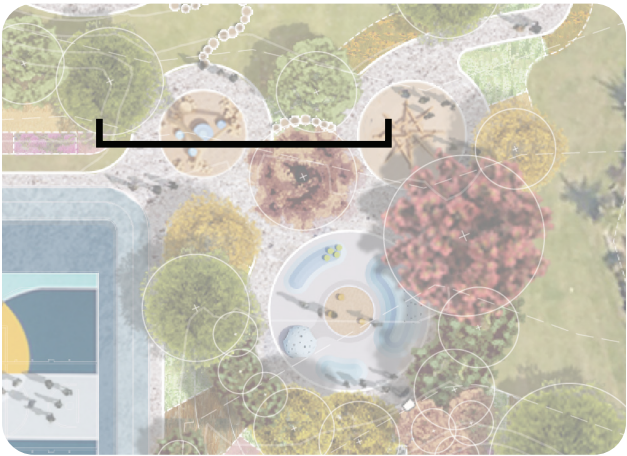
Play Equipment Footing



LANDSCAPE SECTION - BIORETENTION



LANDSCAPE SECTION - CONSERVATION





GATHERING
PAVILION

NEW SHADE TREES

ACCESSIBLE PLAY
& SEATING AREAS

COMPANION SEATING

PAINTED CONCRETE
SURFACE FOR
FLEXIBLE USE

PAINTED CONCRETE
SURFACE

EXPANDED
NATIVE PLANTING



ROOF DOWNSPOUTS:
RUNOFF DISCHARGE

BIOSWALE:
RUNOFF CONVEYANCE
& VELOCITY REDUCTION

BIORETENTION AREAS:
STORMWATER RETENTION
& BIOFILTRATION

SHEET FLOW

RED TAILED HAWKS



GATHERING
PAVILION



EXISTING CANOPY TREES



EXPANDED NATIVE
PLANTING



NEW SHADE TREES



PLAY LAWN



GRANITE BLOCK SEATING



ACCESSIBLE PLAY & ENGINEERED
WOOD FIBER SURFACE



PAINTED CONCRETE
SURFACE





BIORETENTION AREAS:
STORMWATER RETENTION
& BIOFILTRATION

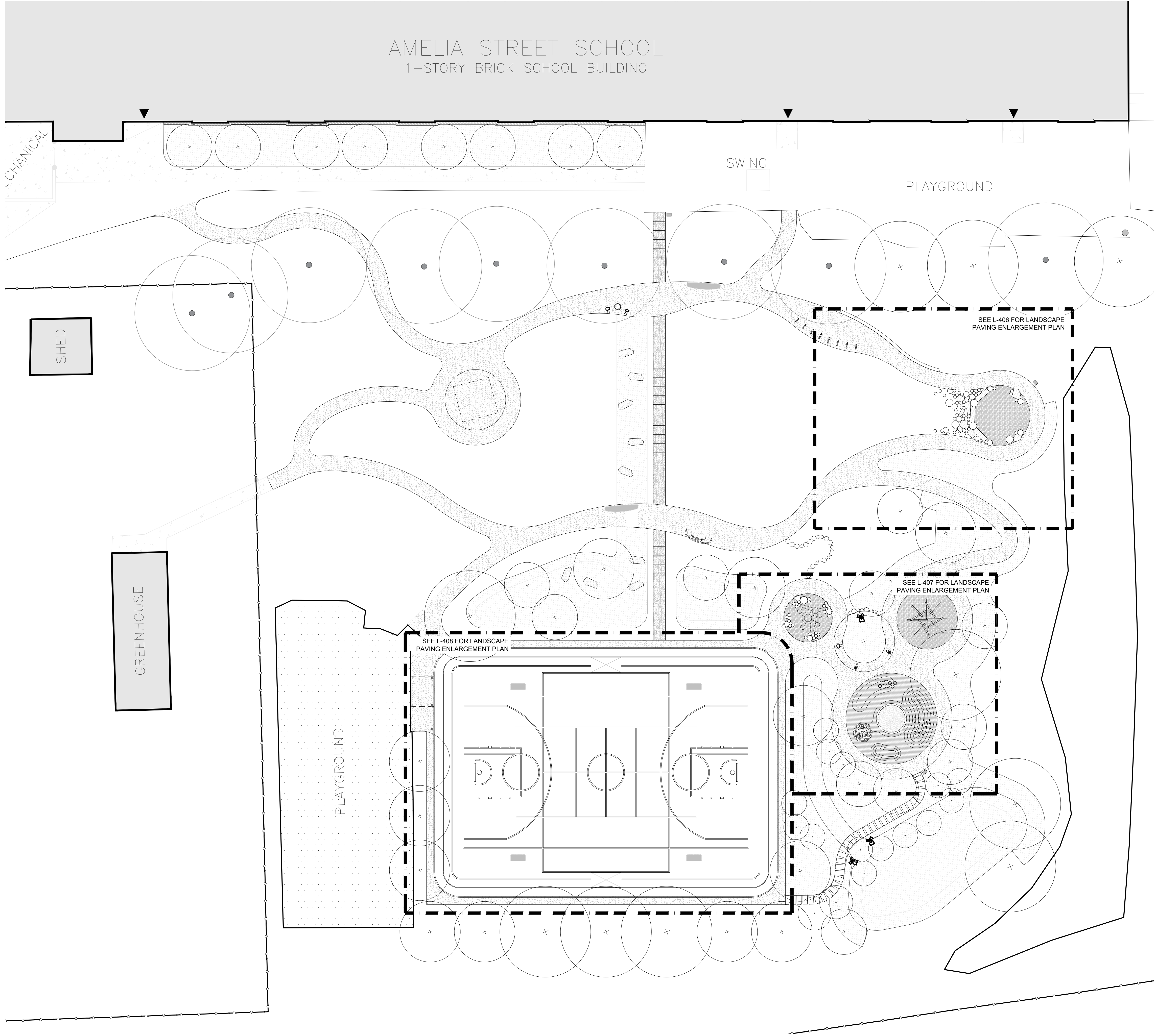
BIOSWALE:
RUNOFF CONVEYANCE
& VELOCITY REDUCTION

SHEET FLOW

ROOF DOWNSPOUTS:
RUNOFF DISCHARGE



APPENDIX



- NOTES:**
1. SEE L-001 FOR NOTES.
 2. SEE L-100 SERIES FOR LAYOUT.
 3. SEE L-200 SERIES FOR MATERIALS.
 4. SEE L-300 SERIES FOR PLANTING.
 5. SEE L-400 SERIES FOR GRAPHIC.
 6. SEE CIVIL DRAWINGS FOR SURFACE GRADING AND DRAINAGE.
 7. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS BEFORE COMMENCING ANY INSTALLATION. ANY DISCREPANCIES BETWEEN INFORMATION SHOWN ON THE DRAWINGS AND ACTUAL FIELD CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT IN WRITING, PRIOR TO COMMENCING WORK.
 8. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION AND CARE, DURING ALL OPERATIONS TO AVOID DISTURBING ADJACENT FACILITIES. ALL DAMAGE RESULTING FROM CONSTRUCTION SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND SHALL BE REPAIRED AT NO EXPENSE TO THE OWNER, OR OTHER DISCIPLINES. ALL REPAIR WORK SHALL BE TO THE SATISFACTION OF THE OWNER AND LANDSCAPE ARCHITECT.
 9. CONTRACTOR SHALL LAYOUT AND MARK IN THE FIELD THE ALIGNMENT OF ALL PAVERS AND OTHER IMPROVEMENTS FOR REVIEW BY THE LANDSCAPE ARCHITECT. ADJUSTMENTS MAY BE MADE ONLY AS APPROVED BY THE LANDSCAPE ARCHITECT. CONTRACTOR MAY NOT PROCEED WITH CONSTRUCTION OF IMPROVEMENTS UNTIL RECEIVING FINAL APPROVAL OF THE LAYOUT FROM THE LANDSCAPE ARCHITECT.

- LEGEND**
- EXISTING CANOPY TREE AND TRUNK
 - PROPOSED CANOPY TREE AND SHRUB, SEE PLANS
 - MATCH LINE
 - BUILDING ENTRANCE
 - BUILDING
 - EXISTING CHAINLINK FENCE
 - OVERHEAD STRUCTURES
 - EXISTING GARDEN
 - C.I.P. CONCRETE PAVING, SEE MATERIALS PLAN
 - C.I.P. CONCRETE STAIRWAY, SEE MATERIALS PLAN
 - ASPHALT PAVING, SEE MATERIALS PLAN
 - RUBBER SURFACE, SEE MATERIALS PLAN
 - WOOD FIBER SURFACE, SEE MATERIALS PLAN
 - SAND PIT, SEE MATERIALS PLAN
 - PLANTING AREA, SEE PLANTING PLANS
 - LOOSE STONE DRAINAGE COURSE
 - SEATING BOULDERS
 - BOULDERS BLOCK
 - WOOD STUMP
 - STEPPING STONES
 - CONCRETE/RIVER ROCK SEATS
 - EDUCATIONAL SIGNAGE
 - TRASH RECEPTACLES WITH DOG WASTE CONTAINER



MARVEL
145 HUDSON STREET, FLR.3 NEW YORK, NY 10013
212.816.9429

OWNER/CLIENT ALLIANCE FOR THE CHESAPEAKE BAY
PROJECT MANAGER NEAL FRIEDMAN
CIVIL ENGINEERING NITSCH ENGINEERING
SURVEY NYFELER SURVEY

REV. 07.17.2025 75% CD

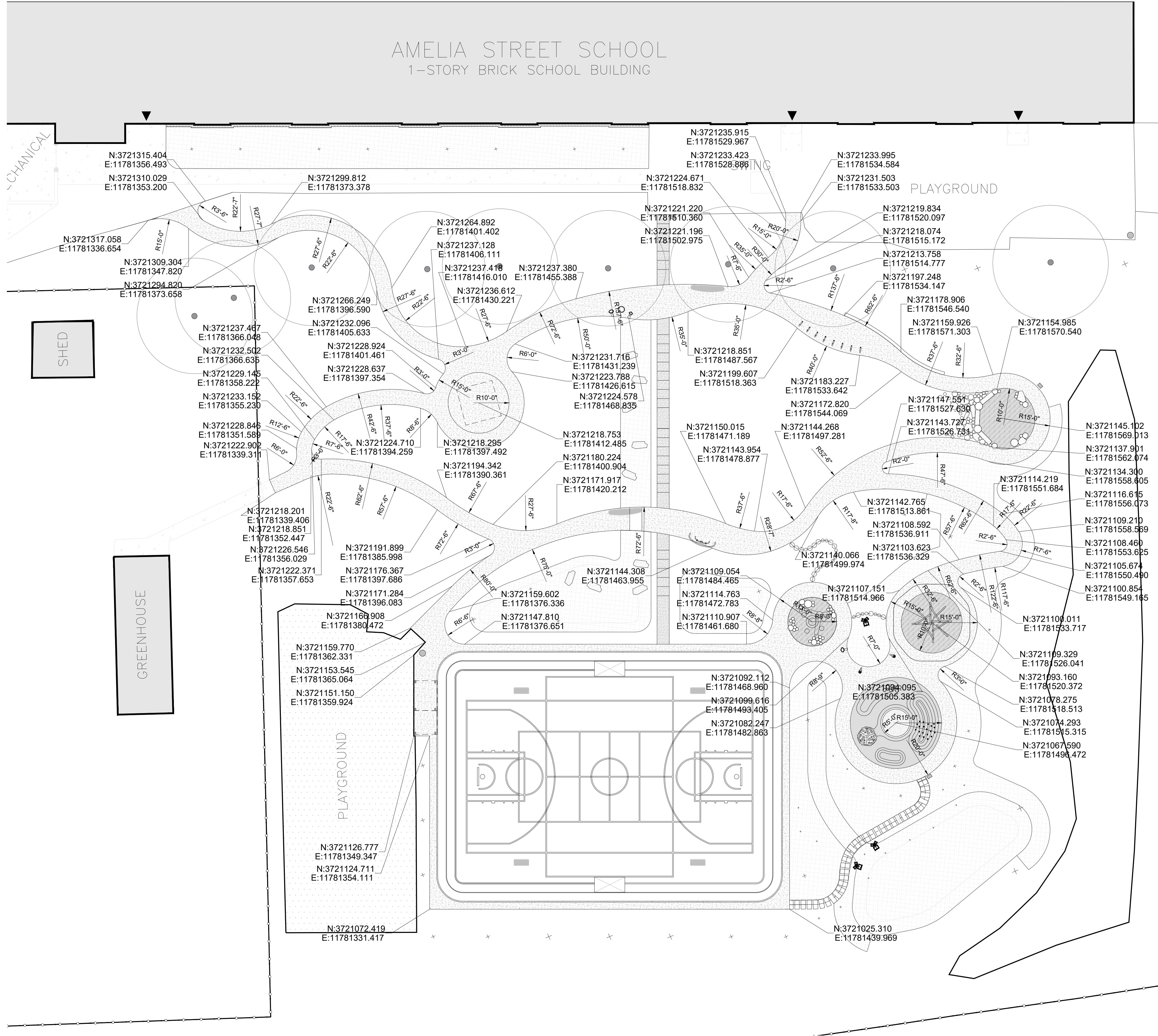
KEY PLAN:NTS

MA PROJECT NO. 2402
**AMELIA STREET SCHOOL
ACCESSIBILITY TRAIL**

1821 AMELIA STREET
CITY OF RICHMOND, VA

**LANDSCAPE
KEY PLAN**

L-003.00
of



- NOTES:
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 2. SEE L-100 SERIES FOR LAYOUT.
 3. SEE L-200 SERIES FOR MATERIALS.
 4. SEE L-300 SERIES FOR PLANTING.
 5. SEE L-400 SERIES FOR GRAPHIC.
 6. SEE CIVIL DRAWINGS FOR SURFACE GRADING AND DRAINAGE.
 7. SEE L-900 SERIES FOR PAVING ENLARGEMENTS AND DESIGN.
 8. THE CONTRACTOR SHALL BLEND NEW WORK WITH EXISTING CONDITIONS WITH A SMOOTH TRANSITION.
 9. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MATERIALS AND PERFORM ALL WORK IN ACCORDANCE WITH RECOGNIZED GOOD STANDARDS OF PRACTICE.
 10. ALL RADII ARE TO THE FACE OF CURB UNLESS OTHERWISE INDICATED.
 11. LANDSCAPE ARCHITECT TO APPROVE ALL LAYOUT IN THE FIELD PRIOR TO INSTALLATION OF MATERIALS.

LEGEND

- EXISTING CANOPY TREE, SEE PLANS
- ✱ PROPOSED CANOPY TREE AND SHRUB, SEE PLANS
- ▲ BUILDING ENTRANCE
- BUILDING
- EXISTING CHAINLINK FENCE
- E:X.X
N:X.X COORDINATE POINT
- CENTER LINE
- OVERHEAD STRUCTURES
- EXISTING GARDEN
- SAW CUT
- C.I.P. CONCRETE PAVING, SEE MATERIALS PLAN
- C.I.P. CONCRETE STAIRWAY, SEE MATERIALS PLAN
- ASPHALT PAVING, SEE MATERIALS PLAN
- RUBBER SURFACE, SEE MATERIALS PLAN
- WOOD FIBER SURFACE, SEE MATERIALS PLAN
- SAND PIT, SEE MATERIALS PLAN
- PLANTING AREA, SEE PLANTING PLANS



MARVEL
145 HUDSON STREET, FLR.3 NEW YORK, NY 10013
212.816.9439

OWNER/CLIENT ALLIANCE FOR THE CHESAPEAKE BAY
PROJECT MANAGER NEAL FRIEDMAN
CIVIL ENGINEERING NITSCH ENGINEERING
SURVEY NYFELER SURVEY

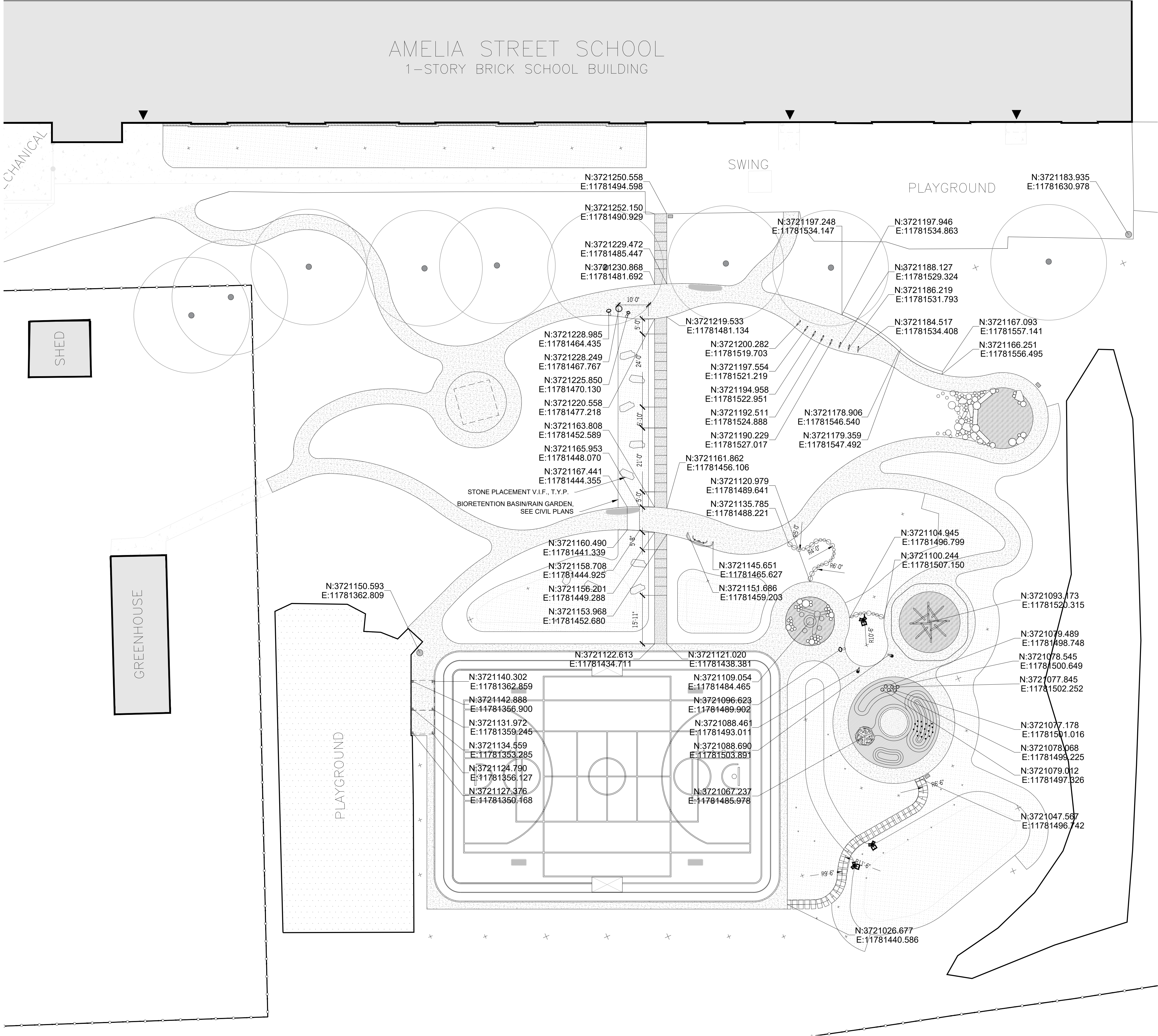
REV.	07.17.2025	75% CD
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KEY PLAN:NTS

MA PROJECT NO. 2402
**AMELIA STREET SCHOOL
ACCESSIBILITY TRAIL**

1821 AMELIA STREET
CITY OF RICHMOND, VA

**LANDSCAPE
LAYOUT PLAN**



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LEGEND	
	EXISTING CANOPY TREE, SEE PLANS
	PROPOSED CANOPY TREE AND SHRUB, SEE PLANS
	BUILDING ENTRANCE
	BUILDING
	EXISTING CHAINLINK FENCE
	COORDINATE POINT
	CENTER LINE
	OVERHEAD STRUCTURES
	EXISTING GARDEN
	SAW CUT
	C.I.P. CONCRETE PAVING, SEE MATERIALS PLAN
	C.I.P. CONCRETE STAIRWAY, SEE MATERIALS PLAN
	ASPHALT PAVING, SEE MATERIALS PLAN
	RUBBER SURFACE, SEE MATERIALS PLAN
	WOOD FIBER SURFACE, SEE MATERIALS PLAN
	SAND PIT, SEE MATERIALS PLAN
	PLANTING AREA, SEE PLANTING PLANS



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OWNER/CLIENT ALLIANCE FOR THE CHESAPEAKE BAY
PROJECT MANAGER NEAL FRIEDMAN
CIVIL ENGINEERING NITSCH ENGINEERING
SURVEY NYFELER SURVEY

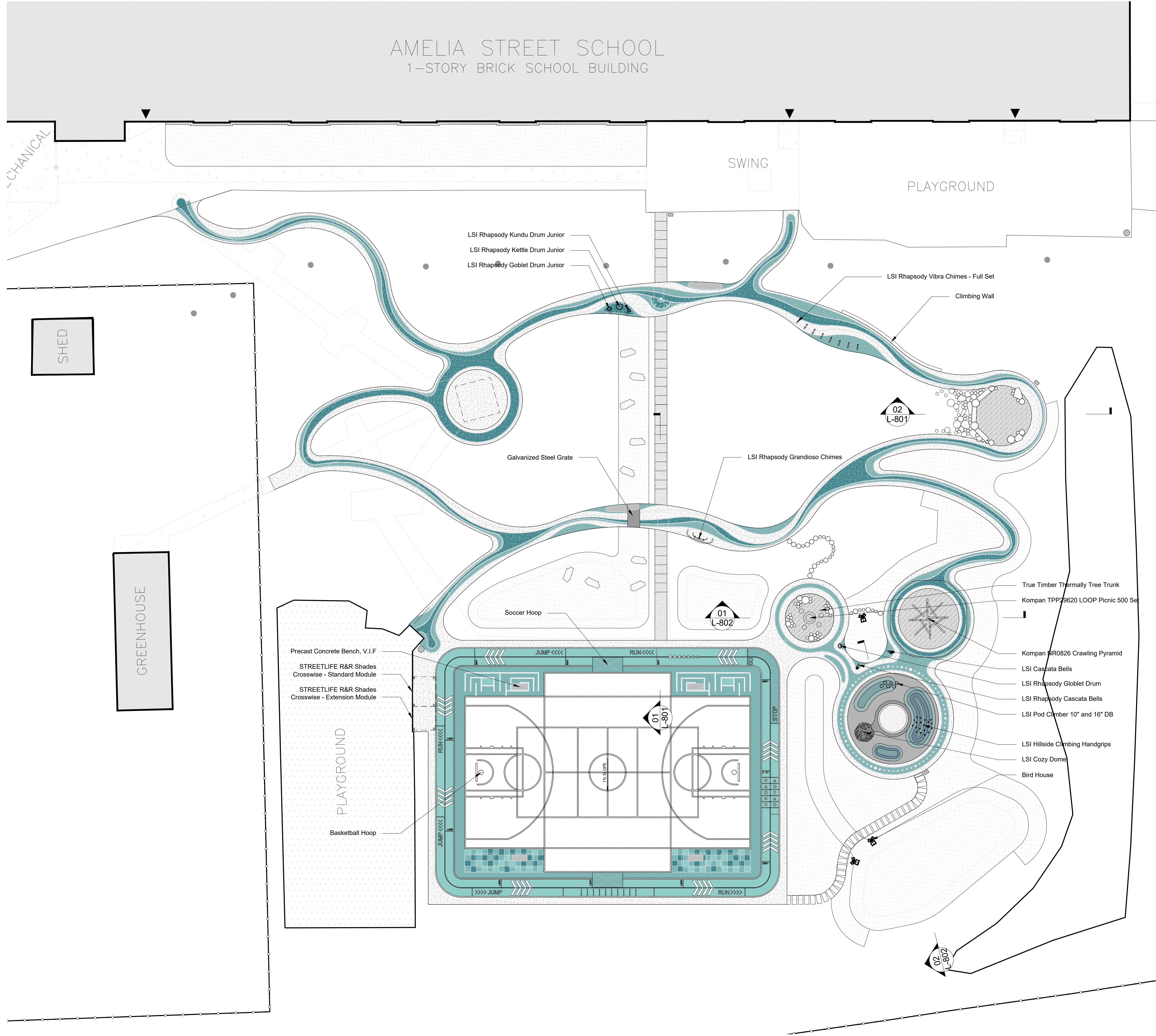
REV. 07.17.2025 75% CD

KEY PLAN:NTS

MA PROJECT NO. 2402
**AMELIA STREET SCHOOL
ACCESSIBILITY TRAIL**

1821 AMELIA STREET
CITY OF RICHMOND, VA

**LANDSCAPE
LAYOUT PLAN**



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 5. SEE L-400 SERIES FOR GRAPHIC.
 6. ALL PROPOSED TOP OF WALL AND BOTTOM OF WALL DATA TAKEN FROM CIVIL DWGS. SEE CIVIL DRAWINGS FOR SURFACE GRADING AND DRAINAGE.
 7. THE CONTRACTOR SHALL VERIFY ALL EXISTING TOPOGRAPHIC INFORMATION, ANY DISCREPANCIES BETWEEN THE SURVEY AND EXISTING CONDITIONS, BETWEEN PLANS AND SPECIFICATIONS, OR BETWEEN DIFFERENT PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT IN WRITING PRIOR TO COMMENCING WORK.
 8. THE CONTRACTOR SHALL EXERCISE EXTREME CARE DURING EARTHWORK OPERATIONS, TO AVOID DISTURBING ADJACENT FACILITIES AND/OR SUB-GRADE STRUCTURES. ALL DAMAGE RESULTING FROM CONSTRUCTION SHALL BE THE CONTRACTORS RESPONSIBILITY AND SHALL BE REPAIRED BY THE CONTRACTOR.
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LEGEND	
	BUILDING ENTRANCE
	BUILDING
	EXISTING CHAINLINK FENCE
	OVERHEAD STRUCTURES
	EXISTING GARDEN
	C.I.P. CONCRETE PAVING, COLOR FINISH RAL 9016
	C.I.P. CONCRETE PAVING, COLOR FINISH RAL 6034
	C.I.P. CONCRETE PAVING, COLOR FINISH RAL 6027
	C.I.P. CONCRETE PAVING, COLOR FINISH RAL 5019
	C.I.P. CONCRETE PAVING, COLOR FINISH RAL 5018
	C.I.P. CONCRETE STAIRWAY, SEE MATERIALS PLAN
	ASPHALT PAVING, COLOR FINISH RAL 9016
	ASPHALT PAVING, COLOR FINISH RAL 6034
	ASPHALT PAVING, COLOR FINISH RAL 6027
	ASPHALT PAVING, COLOR FINISH RAL 5019
	ASPHALT PAVING, COLOR FINISH RAL 5018
	RUBBER SURFACE, 50% LIGHT GRAY + 50% ASH GRAY
	RUBBER SURFACE, 50% SKY BLUE + 50% TEAL
	RUBBER SURFACE, 50% TEAL + 50% ASH GRAY
	RUBBER SURFACE, 5% ROYAL BLUE + 50% SAPPHIRE BLUE
	RUBBER SURFACE, 50% LIGHT GRAY + 50% DARK GRAY
	WOOD FIBER SURFACE
	SAND PIT
	PLANTING AREA, SEE PLANS
	LOOSE STONE DRAINAGE COURSE
	SEATING BOULDERS
	BOULDERS BLOCK
	STEPPING LOGS
	WOOD STUMP
	CONCRETE/RIVER ROCK SEATS
	EDUCATIONAL SIGNAGE
	TRASH RECEPTACLES WITH DOG WASTE CONTAINER



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OWNER/CLIENT ALLIANCE FOR THE CHESAPEAKE BAY

PROJECT MANAGER NEAL FRIEDMAN

CIVIL ENGINEERING NITSCH ENGINEERING

SURVEY NYFELER SURVEY

REV. 07.17.2025 75% CD

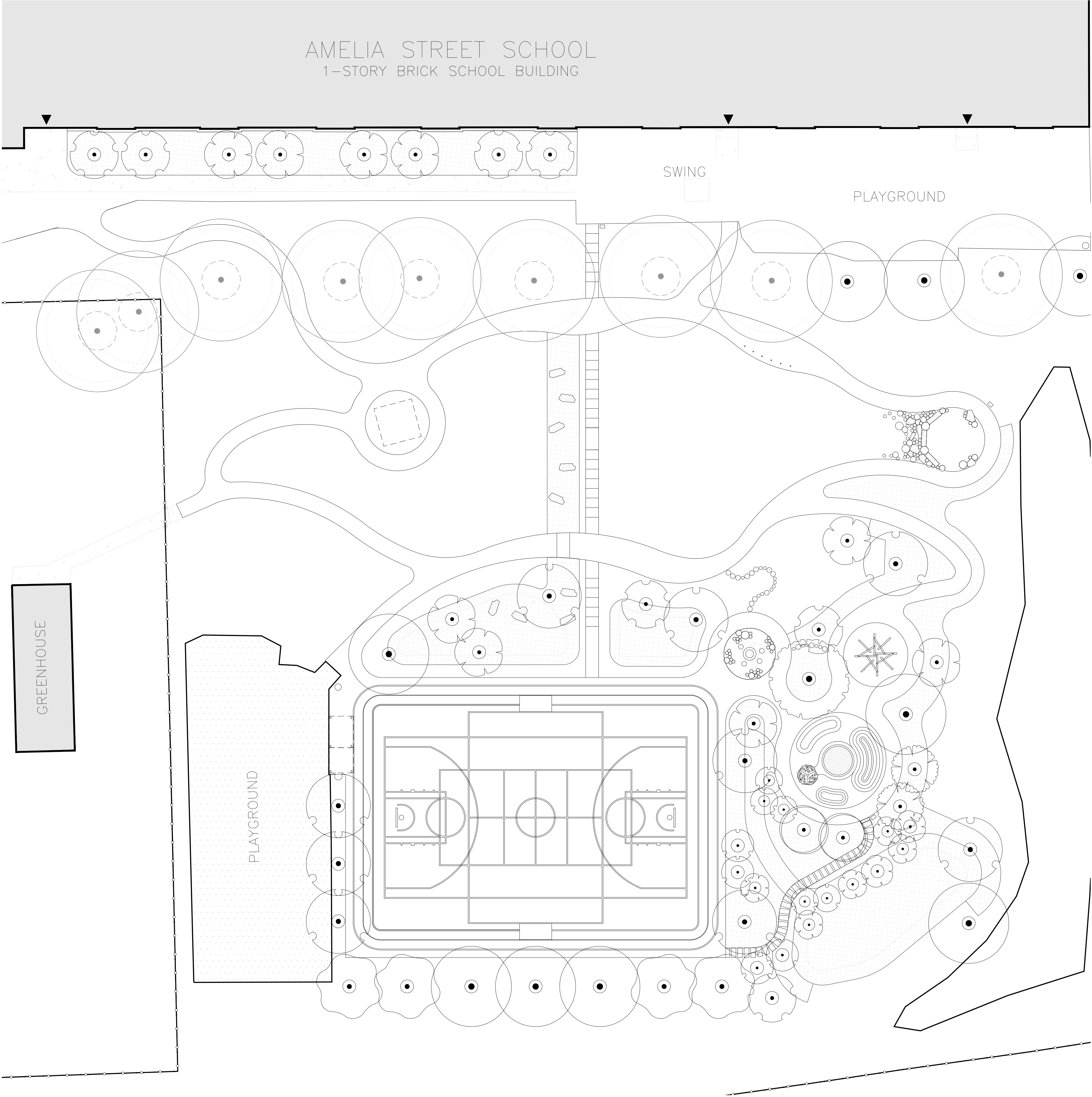
KEY PLAN:NTS

MA PROJECT NO. 2402
**AMELIA STREET SCHOOL
ACCESSIBILITY TRAIL**

1821 AMELIA STREET
CITY OF RICHMOND, VA

**LANDSCAPE
MATERIALS PLAN**

L-201.00
of



TREE PLANTING SCHEDULE

SYMBOL	CODE	BOTANICAL / COMMON NAME	SIZE	CONTAINER	QTY
TREES					
	AT	Asimina triloba / Pawpaw	1.5" Cal.	B&B	2
	BR	Betula nigra / River Birch	1.5" Cal.	B&B	9
	DV	Diospyros virginiana / Common Persimmon	1.5" Cal.	B&B	2
	JE	Juniperus virginiana / Eastern Redcedar	1.5" Cal.	B&B	4
	MS	Magnolia virginiana / Sweetbay Magnolia	1.5" Cal.	B&B	9
	ML	Malus coronaria / Sweet Crabapple	2" Cal.	B&B	1
	NS	Nyssa sylvatica / Tupelo	2" Cal.	B&B	9

SYMBOL	CODE	BOTANICAL / COMMON NAME	SIZE	CONTAINER	SPACING	QTY
SHRUBS						
	CA	Cornus amomum / Silky Dogwood	5 gal.		180" o.c.	7
	MN	Morella pensylvanica / Northern Bayberry	3 gal.		120" o.c.	9
	VD	Viburnum dentatum 'Arrowwood' / Arrowwood Viburnum	3 gal.		120" o.c.	7

LEGEND

	BUILDING ENTRANCE
	BUILDING
	EXISTING CHAINLINK FENCE
	OVERHEAD STRUCTURES
	EXISTING GARDEN
	PLANTING AREA, SEE PLANS
	PROPOSED TREES/SHRUBS AND ROOT BALL
	EXISTING TREE

NOTES:

- SEE L-001 FOR NOTES.
- SEE L-100 SERIES FOR LAYOUT.
- SEE L-200 SERIES FOR MATERIALS.
- SEE L-300 SERIES FOR PLANTING.
- SEE L-400 SERIES FOR GRAPHIC.
- SEE CIVIL DRAWINGS FOR SURFACE GRADING AND DRAINAGE.
- SEE L-900 SERIES FOR PAVING ENLARGEMENTS AND DESIGN.
- THE CONTRACTOR SHALL BLEND NEW WORK WITH EXISTING CONDITIONS WITH A SMOOTH TRANSITION.
- THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MATERIALS AND PERFORM ALL WORK IN ACCORDANCE WITH RECOGNIZED GOOD STANDARDS OF PRACTICE.
- ALL RADII ARE TO THE FACE OF CURB UNLESS OTHERWISE INDICATED.
- LANDSCAPE ARCHITECT TO APPROVE ALL LAYOUT IN THE FIELD PRIOR TO INSTALLATION OF MATERIALS.



MARVEL
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212.816.9439

OWNER/CLIENT ALLIANCE FOR THE CHESAPEAKE BAY
PROJECT MANAGER NEAL FRIEDMAN
CIVIL ENGINEERING NITSCH ENGINEERING
SURVEY NYFELER SURVEY

REV. 07.17.2025 75% CD

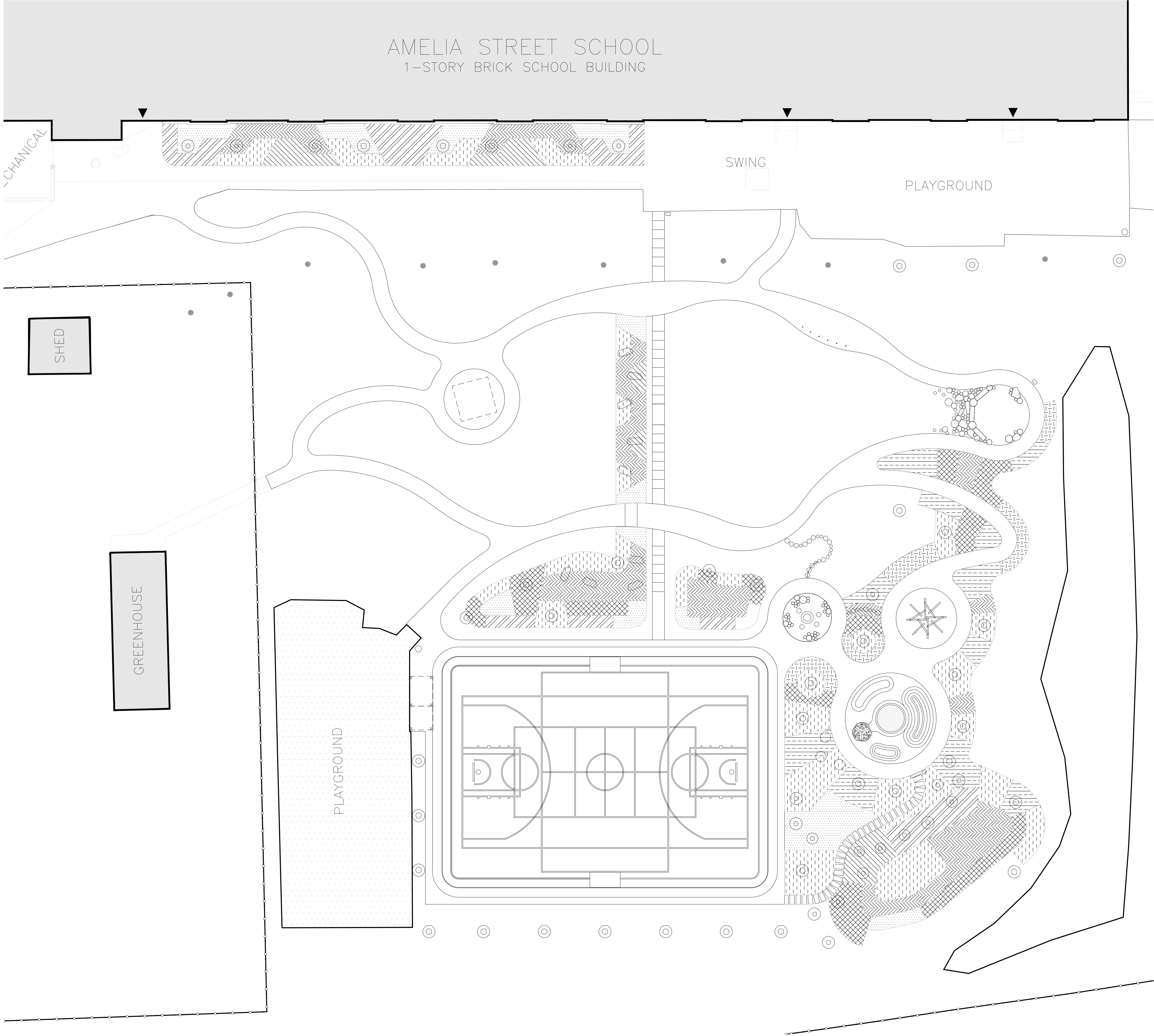
KEY PLAN:NTS

MA PROJECT NO. 2402
**AMELIA STREET SCHOOL
ACCESSIBILITY TRAIL**

1821 AMELIA STREET
CITY OF RICHMOND, VA

**LANDSCAPE
PLANTING PLAN -
CANOPY**

L-301.00
of



UNDERSTORY PLANTING SCHEDULE

<div></div>	PERENNIALS GROUP - YELLOW	1,559 sf
	Senna hebecarpa / Wild Senna	816
	Solidago odora / Sweet Goldenrod	816
<div></div>	PERENNIALS GROUP - WHITE	1,376 sf
	Liatris aspera / Rough Blazing Star	449
	Monarda punctata / Spotted Horsemint	449
	Penstemon digitalis / Beardtongue	449
<div></div>	PERENNIALS GROUP - PINK	978 sf
	Asclepias incarnata / Swamp Milkweed	496
	Eutrochium fistulosum / Hollow Joe Pye Weed	496
<div></div>	PERENNIALS GROUP - ORANGE	544 sf
	Asclepias tuberosa / Butterfly Milkweed	209
	Coreopsis auriculata / Lobed Tickseed	209
	Rudbeckia hirta / Black-eyed Susan	209
<div></div>	GRASSES GROUP - PINK	2029 sf
	Eragrostis spectabilis / Purple Lovegrass	504
	Panicum virgatum 'Shenandoah' / Shenandoah Switch Grass	504
<div></div>	WILD RYE	2,032 sf
	Elymus virginicus / Virginia Wild Rye	2,117
<div></div>	GRASSES GROUP - BROWN	2,622 sf
	Andropogon virginicus / Broomsedge Bluestem	1,245
	Schizachyrium scoparium / Little Bluestem	1,245
<div></div>	PERENNIALS GROUP - BLUE	719 sf
	Symphyotrichum novae-angliae / New England Aster	381
	Symphyotrichum novi-belgii / New York Aster	381

<div></div>	BUILDING ENTRANCE
<div></div>	BUILDING
<div></div>	EXISTING CHAINLINK FENCE
<div></div>	OVERHEAD STRUCTURES
<div></div>	EXISTING GARDEN
<div></div>	PROPOSED TREES/SHRUBS AND ROOT BALL
<div></div>	EXISTING TREE

- NOTES:
- SEE L-001 FOR NOTES.
 - SEE L-100 SERIES FOR LAYOUT.
 - SEE L-200 SERIES FOR MATERIALS.
 - SEE L-300 SERIES FOR PLANTING.
 - SEE L-400 SERIES FOR GRAPHIC.
 - SEE CIVIL DRAWINGS FOR SURFACE GRADING AND DRAINAGE.
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OWNER/CLIENT ALLIANCE FOR THE CHESAPEAKE BAY
PROJECT MANAGER NEAL FRIEDMAN
CIVIL ENGINEERING NITSCH ENGINEERING
SURVEY NYFELER SURVEY

REV.	07.17.2025	75% CD
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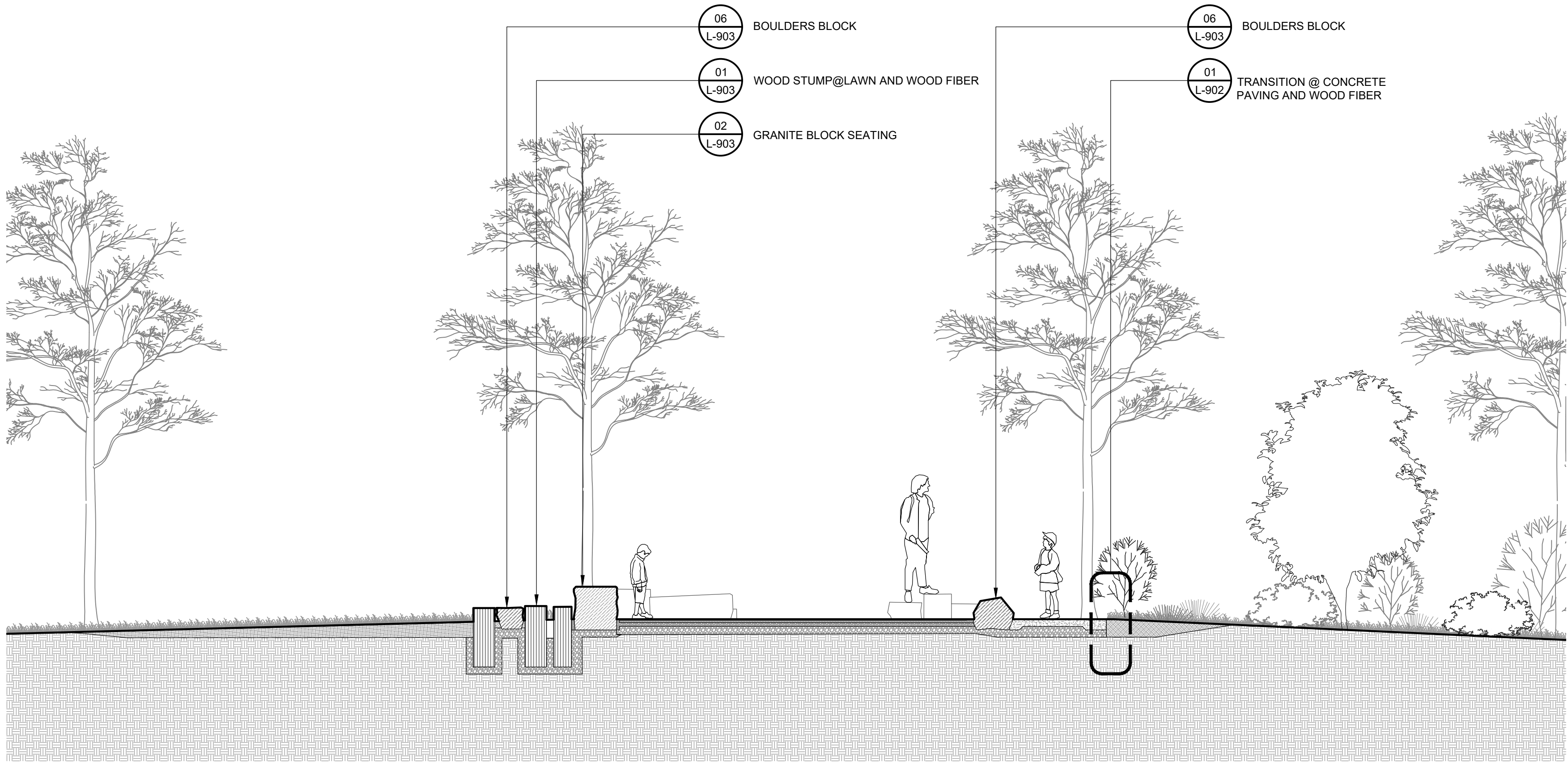
KEY PLAN:NTS

MA PROJECT NO. 2402
**AMELIA STREET SCHOOL
ACCESSIBILITY TRAIL**

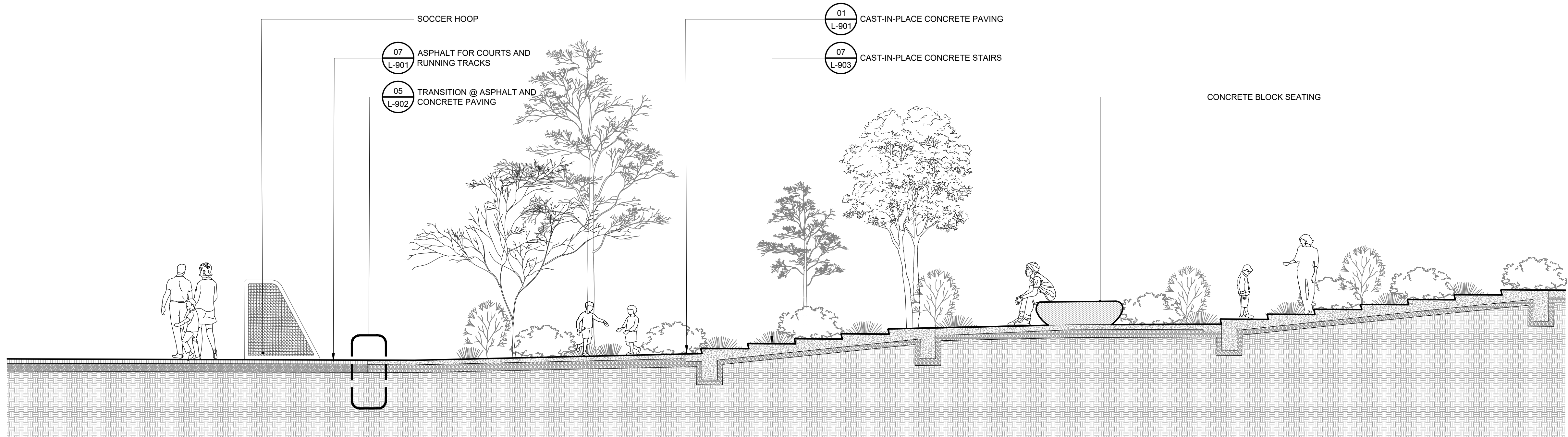
1821 AMELIA STREET
CITY OF RICHMOND, VA

**LANDSCAPE
PLANTING PLAN -
UNDERSTORY**

L-302.00
of



02 EXISTING LAWN & SEATING AREA
SCALE: 1/4" = 1'-0"



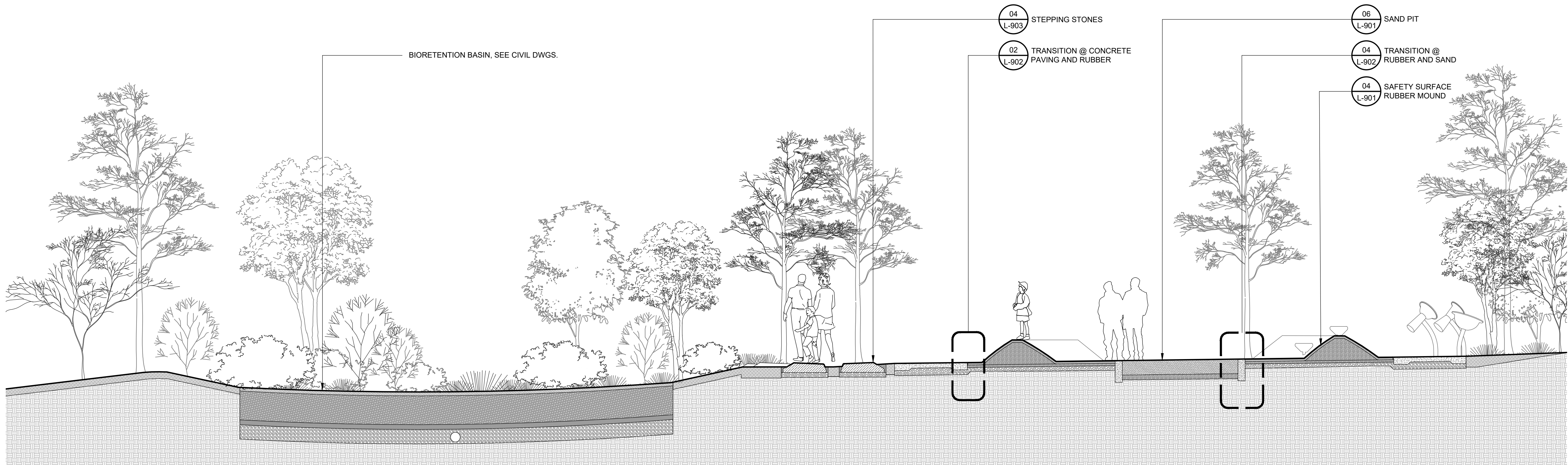
01 STAIRWAY DOWN TO PLAY COURT
SCALE: 1/4" = 1'-0"



MARVEL

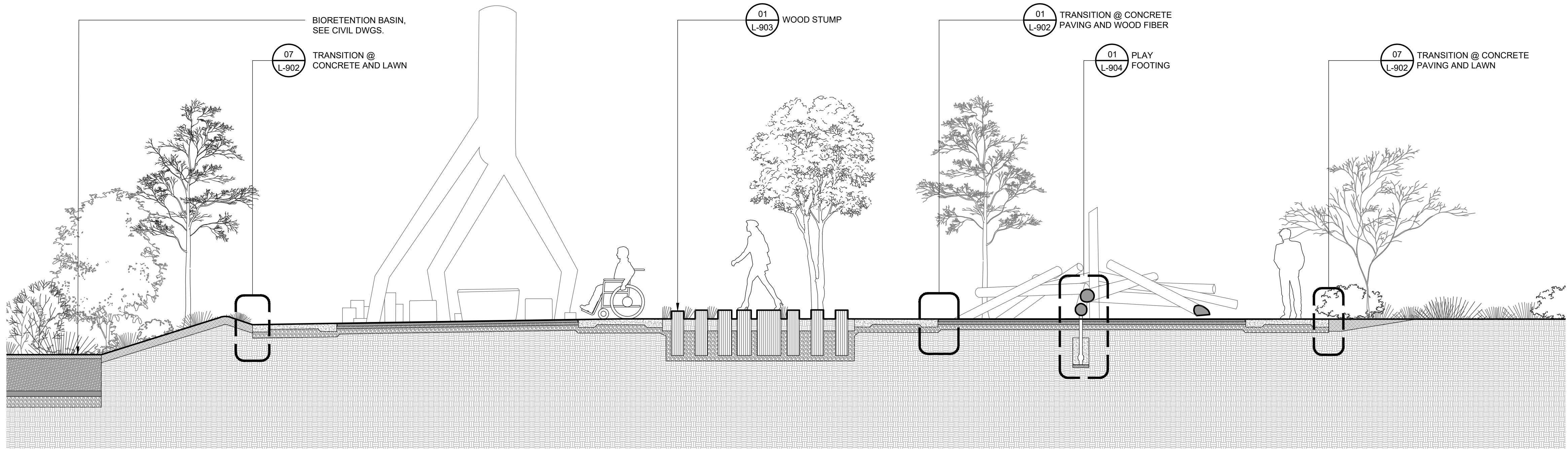
145 HUDSON STREET, FLR.3 NEW YORK, NY 10013
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OWNER/CLIENT ALLIANCE FOR THE CHESAPEAKE BAY
PROJECT MANAGER NEAL FRIEDMAN
CIVIL ENGINEERING NITSCH ENGINEERING
SURVEY NYFELER SURVEY



02 BIORENTION BASIN & CLIMBING BERM
SCALE: 1/4" = 1'-0"

REV. 07.17.2025 75% CD



01 RAIN GARDEN & EDUCATIONAL NODES
SCALE: 1/4" = 1'-0"

KEY PLAN: NTS

MA PROJECT NO. 2402
**AMELIA STREET SCHOOL
ACCESSIBILITY TRAIL**

1821 AMELIA STREET
CITY OF RICHMOND, VA

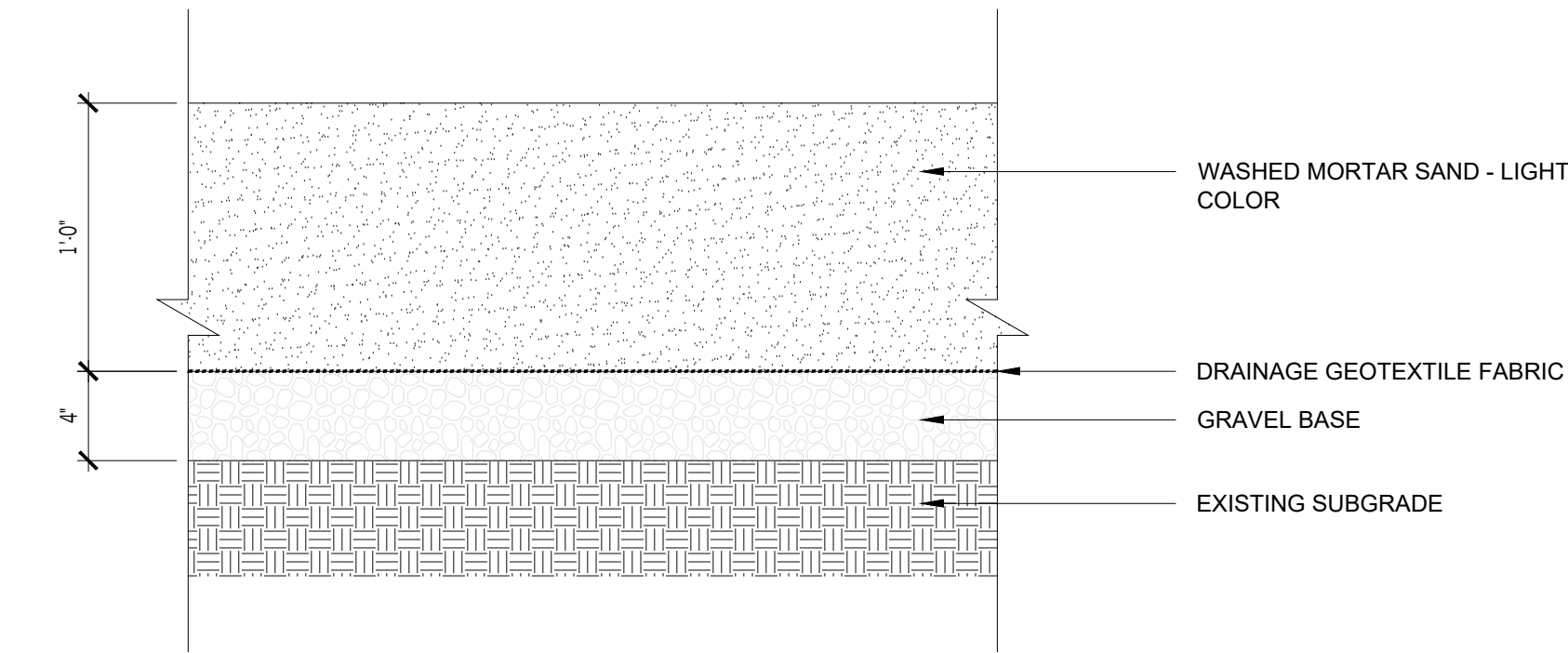
**LANDSCAPE
SECTIONS**

L-802.00
of

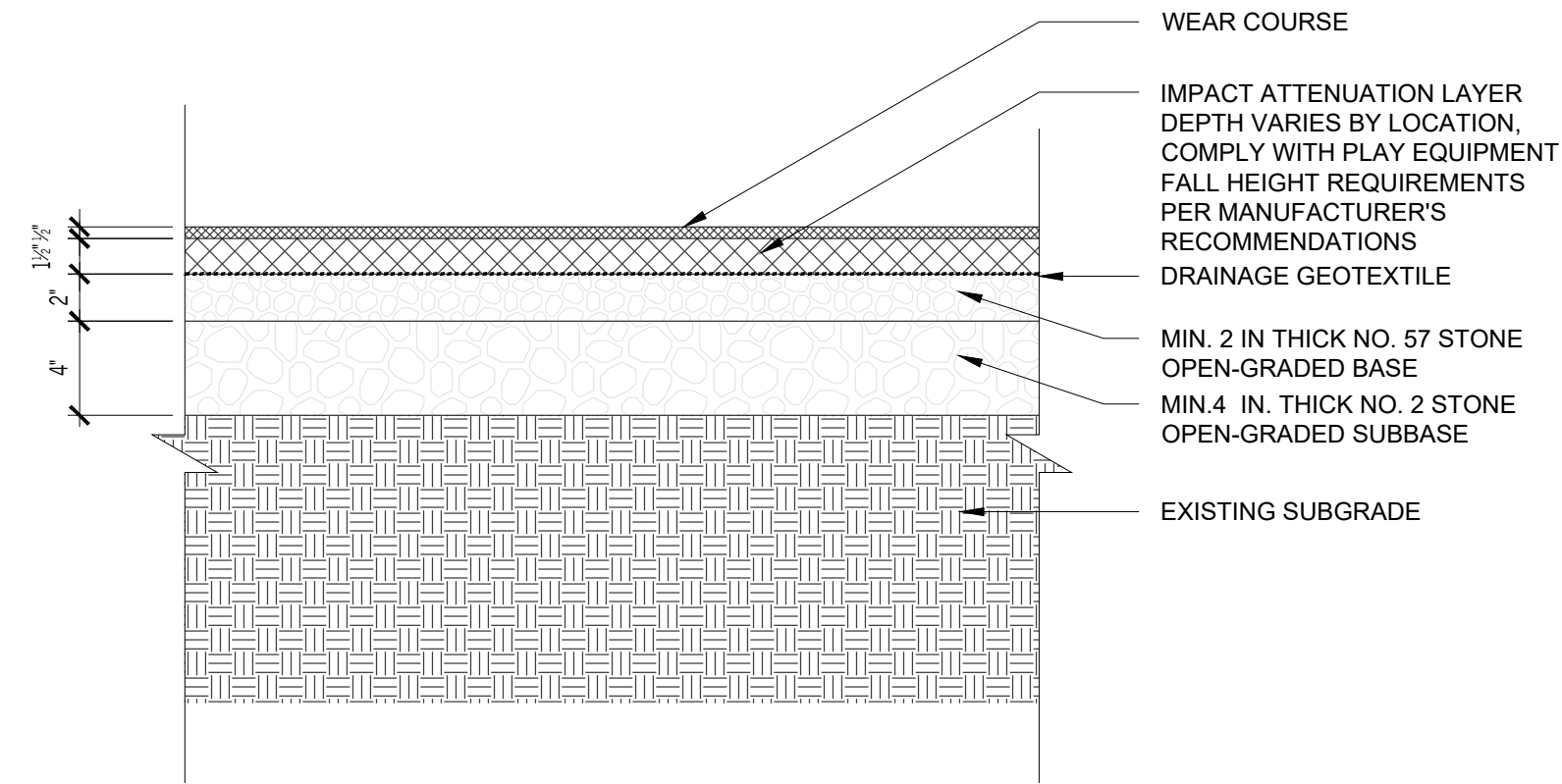


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212.816.9479

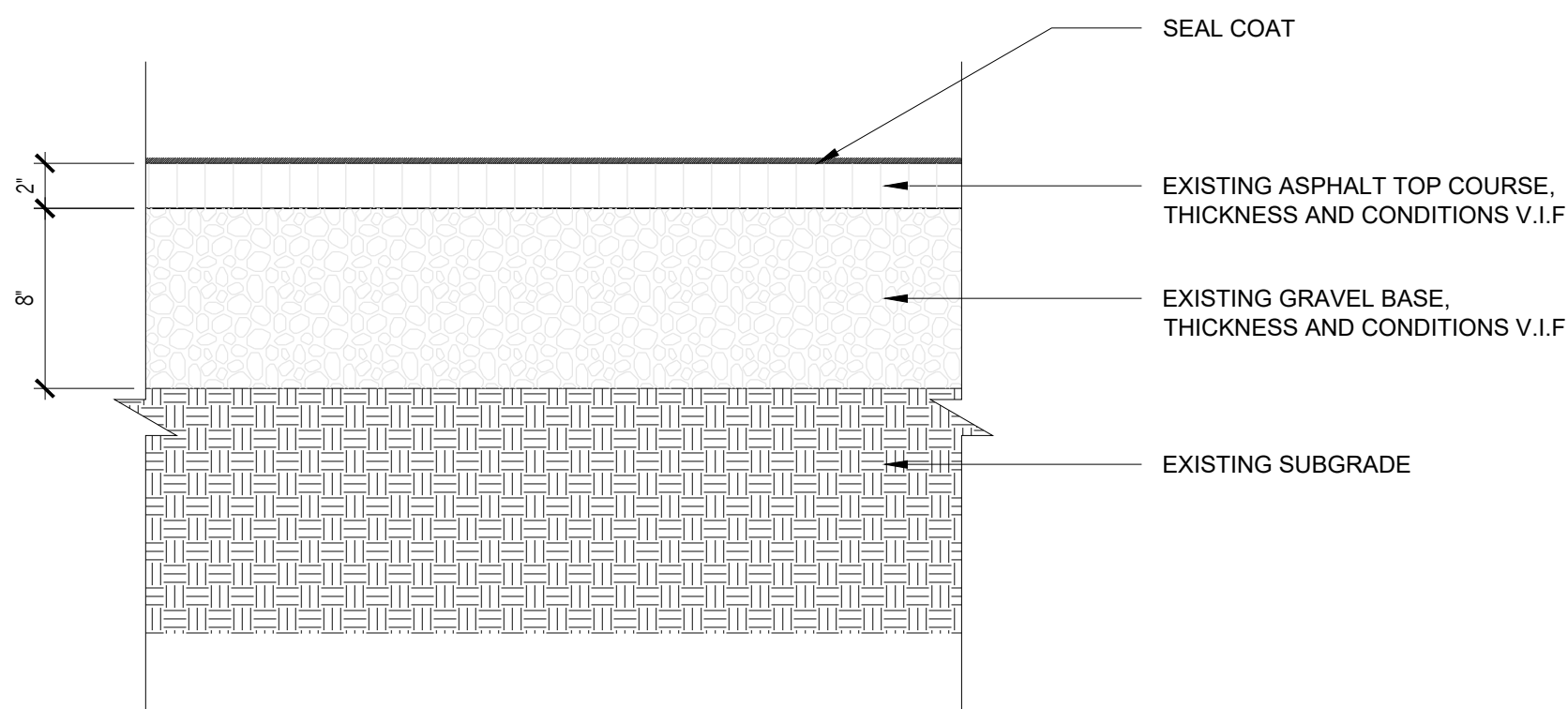
OWNER/CLIENT ALLIANCE FOR THE CHESAPEAKE BAY
PROJECT MANAGER NEAL FRIEDMAN
CIVIL ENGINEERING NITSCH ENGINEERING
SURVEY NYFELER SURVEY



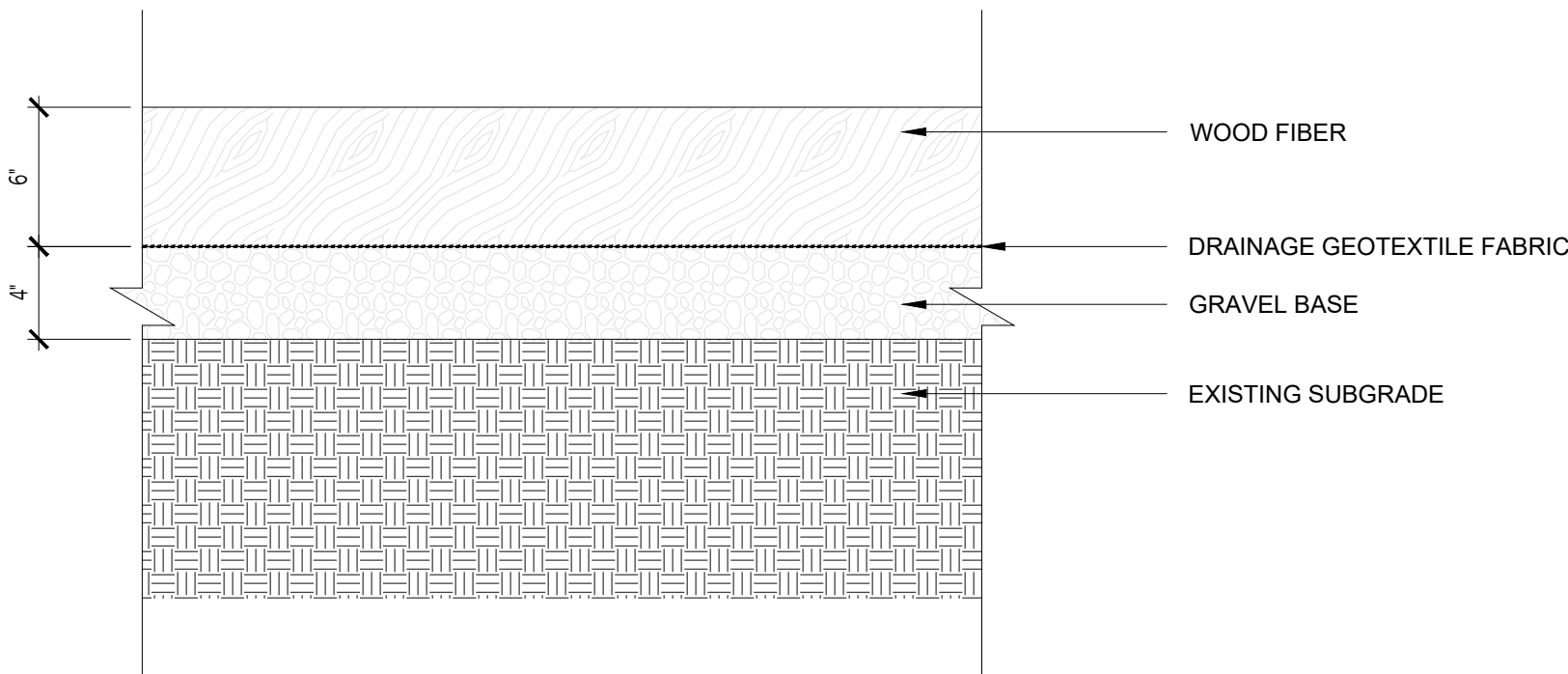
06 SAND PIT
SCALE: 1-1/2"=1'



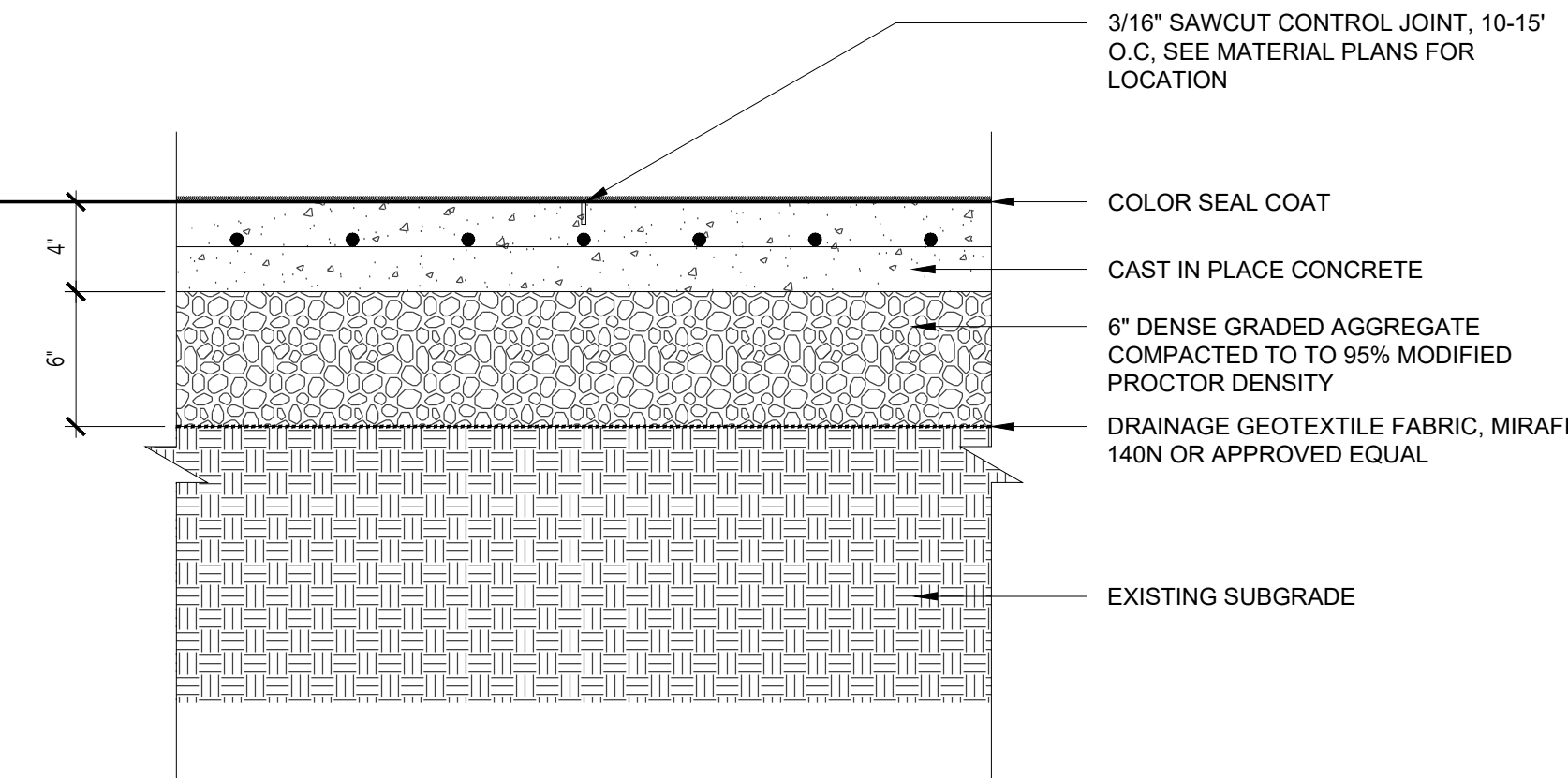
03 SAFETY SURFACE - RUBBER
SCALE: 1-1/2"=1'



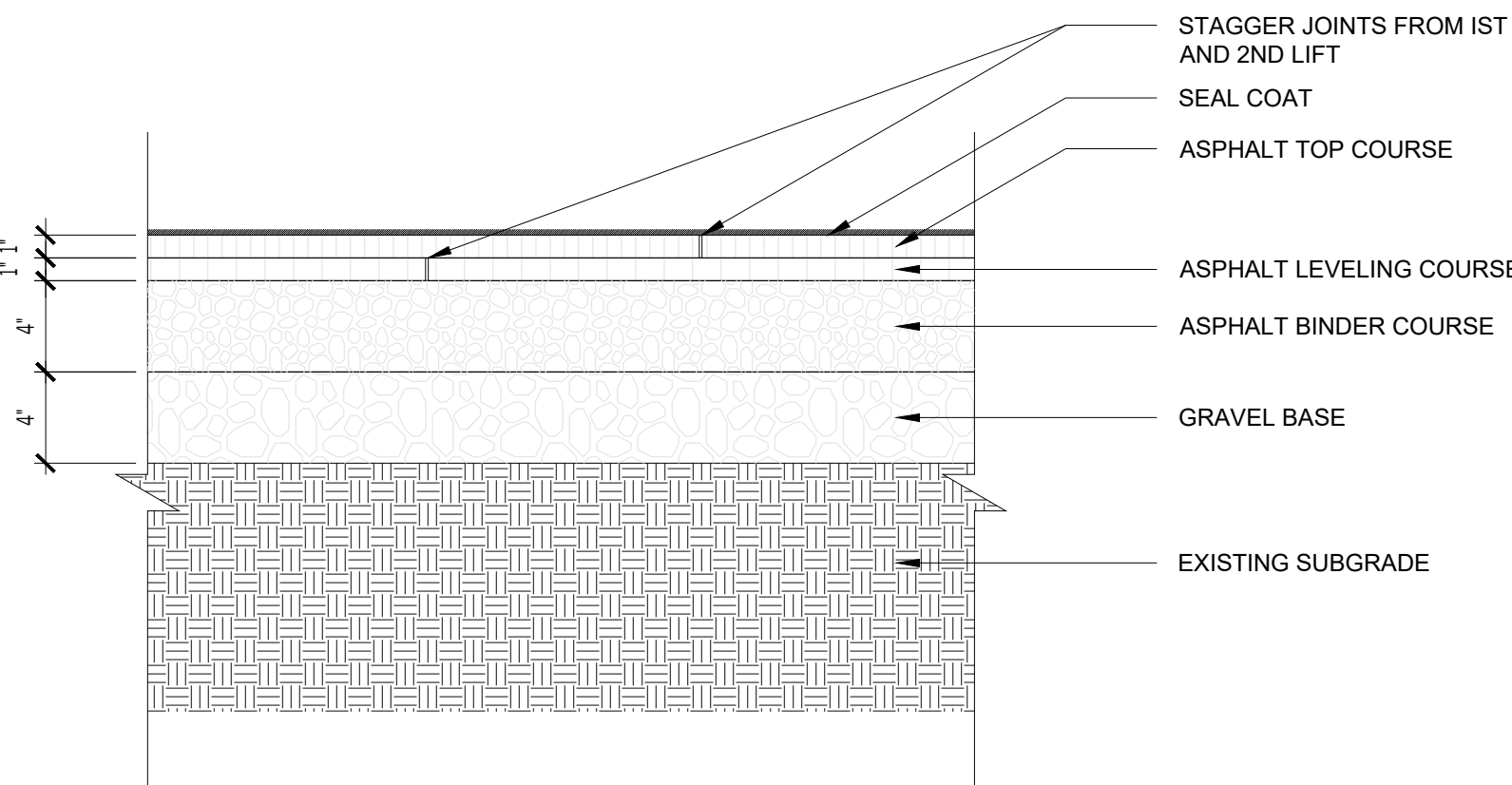
08 ASPHALT REPAVING
SCALE: 1-1/2"=1'



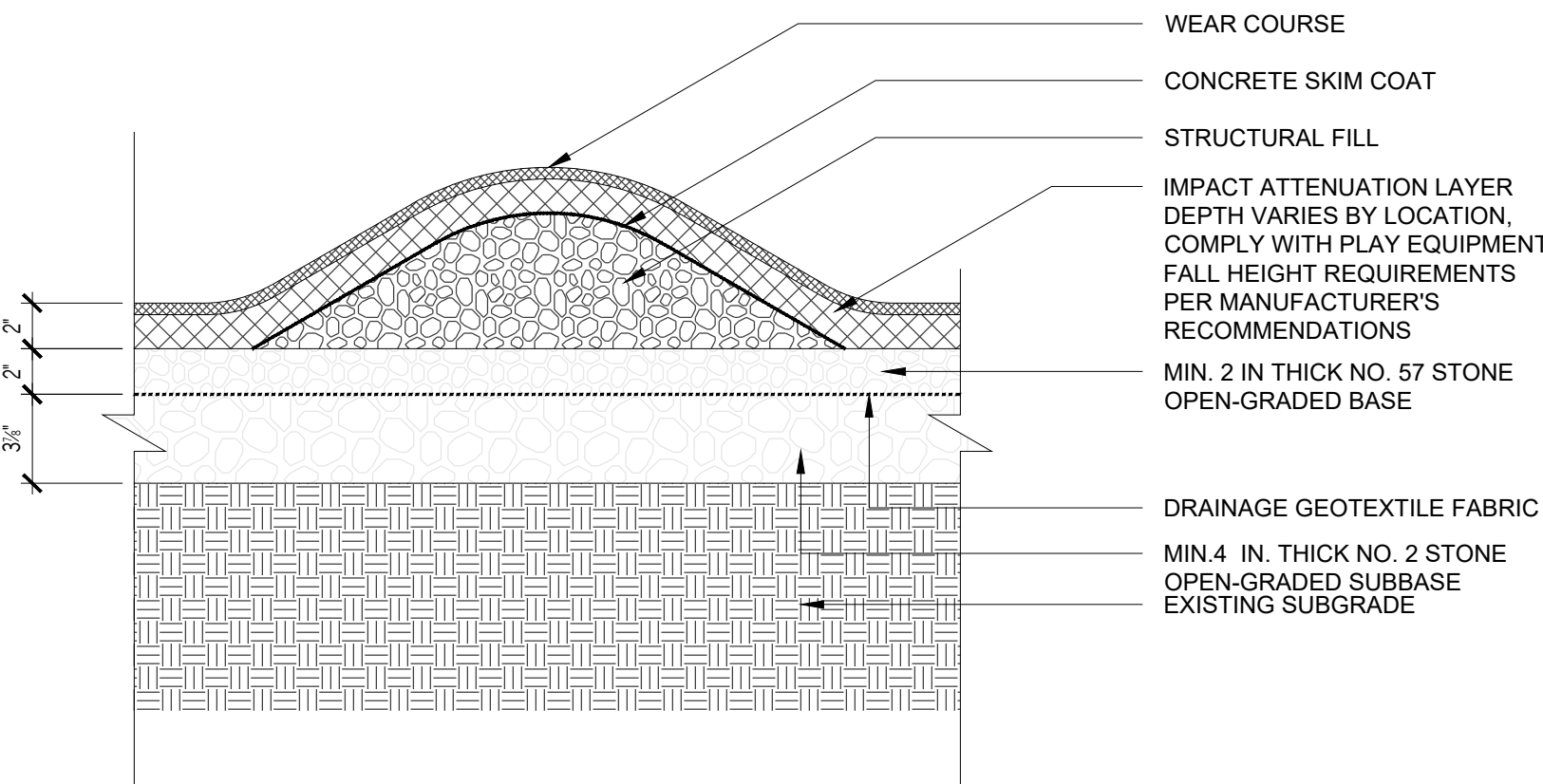
05 SAFETY SURFACE - WOOD FIBER
SCALE: 1-1/2"=1'



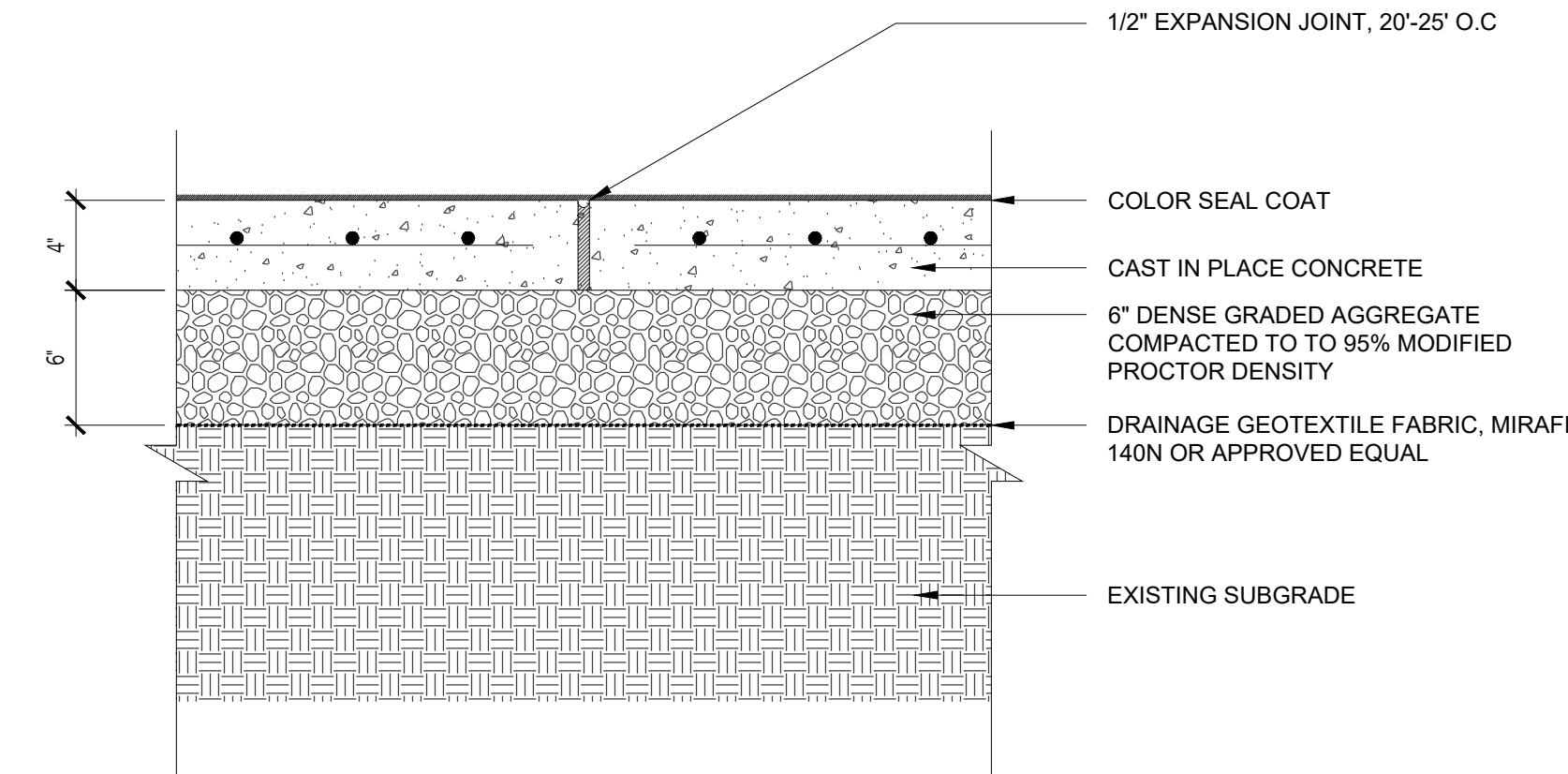
02 CAST-IN-PLACE CONCRETE PAVING JOINT
SCALE: 1-1/2"=1'



07 ASPHALT FOR COURTS AND RUNNING TRACKS
SCALE: 1-1/2"=1'



04 SAFETY SURFACE - RUBBER MOUND
SCALE: 1-1/2"=1'



01 CAST-IN-PLACE CONCRETE PAVING
SCALE: 1-1/2"=1'

KEY PLAN:NTS

MA PROJECT NO. 2402
**AMELIA STREET SCHOOL
ACCESSIBILITY TRAIL**

1821 AMELIA STREET
CITY OF RICHMOND, VA

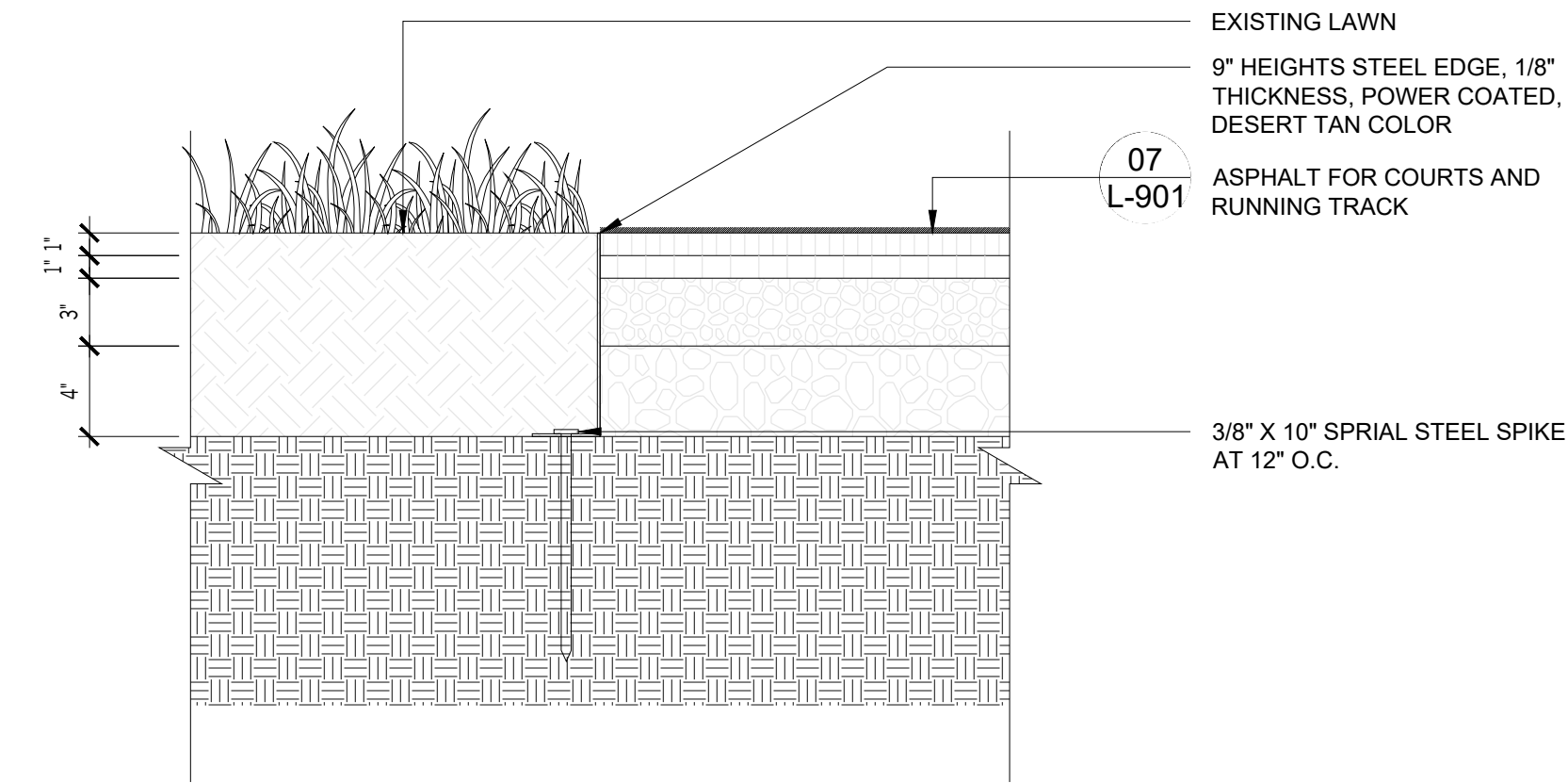
LANDSCAPE DETAILS - PAVING

L-901.00
of

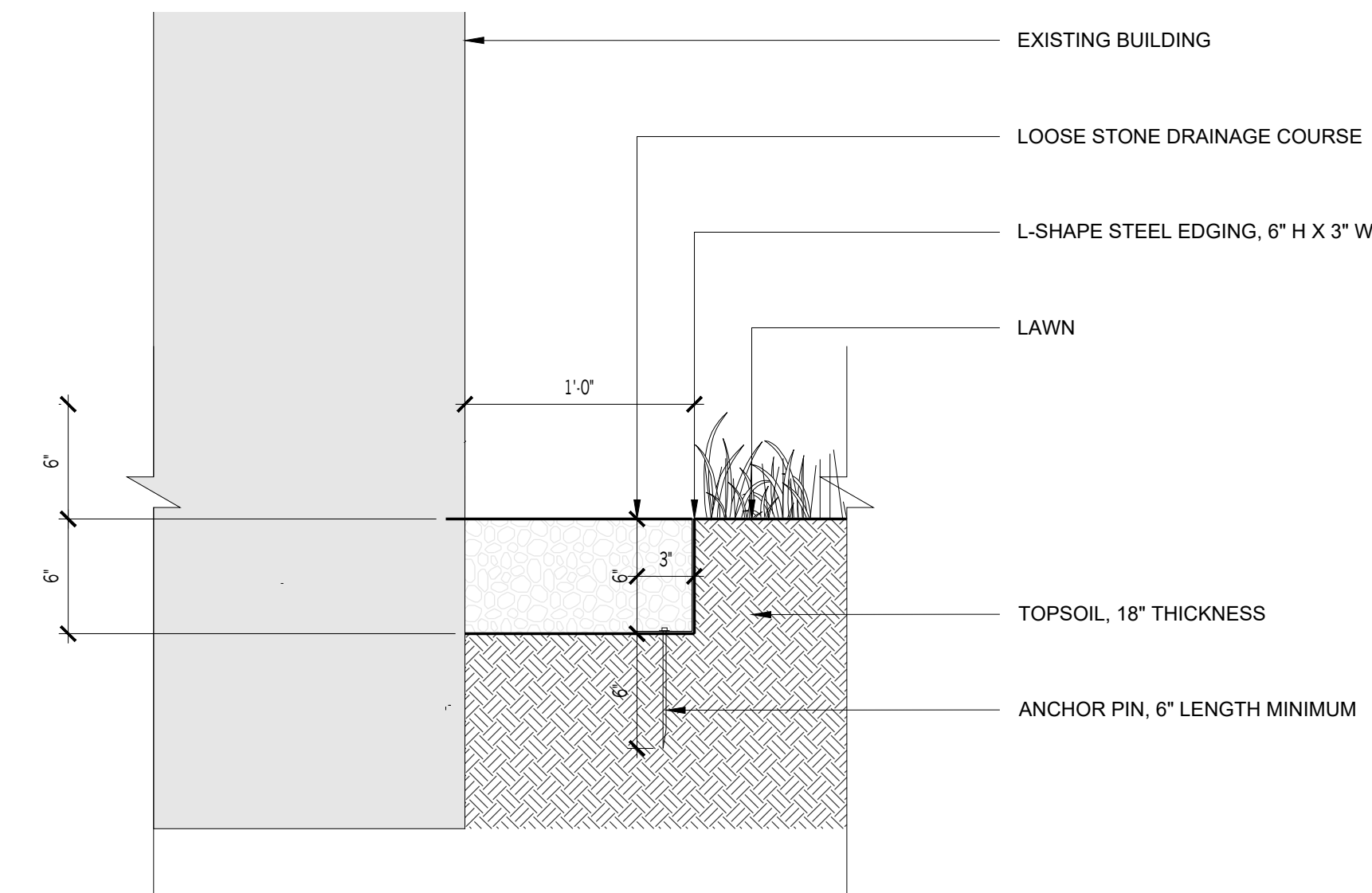


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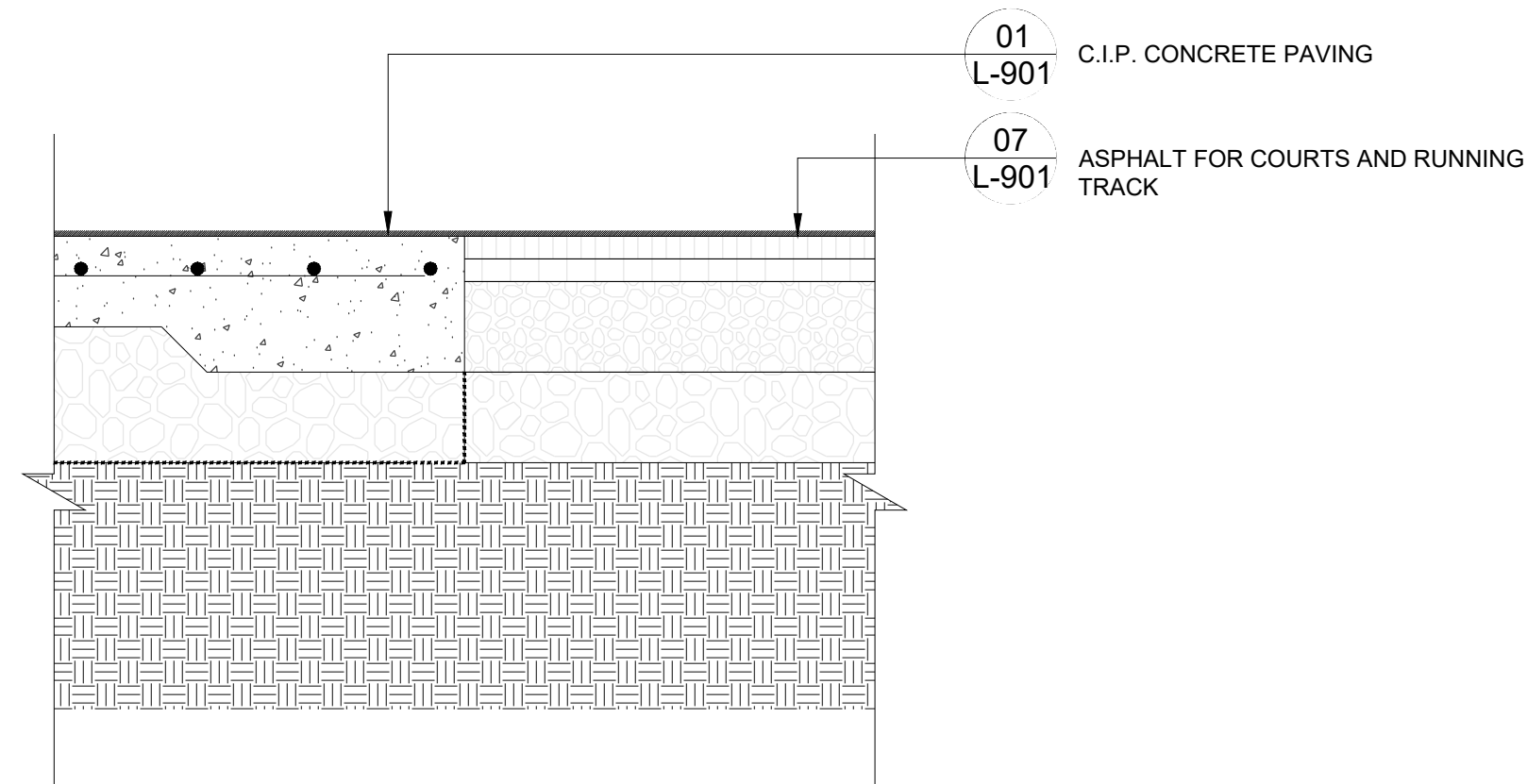
OWNER/CLIENT ALLIANCE FOR THE CHESAPEAKE BAY
PROJECT MANAGER NEAL FRIEDMAN
CIVIL ENGINEERING NITSCH ENGINEERING
SURVEY NYFELER SURVEY



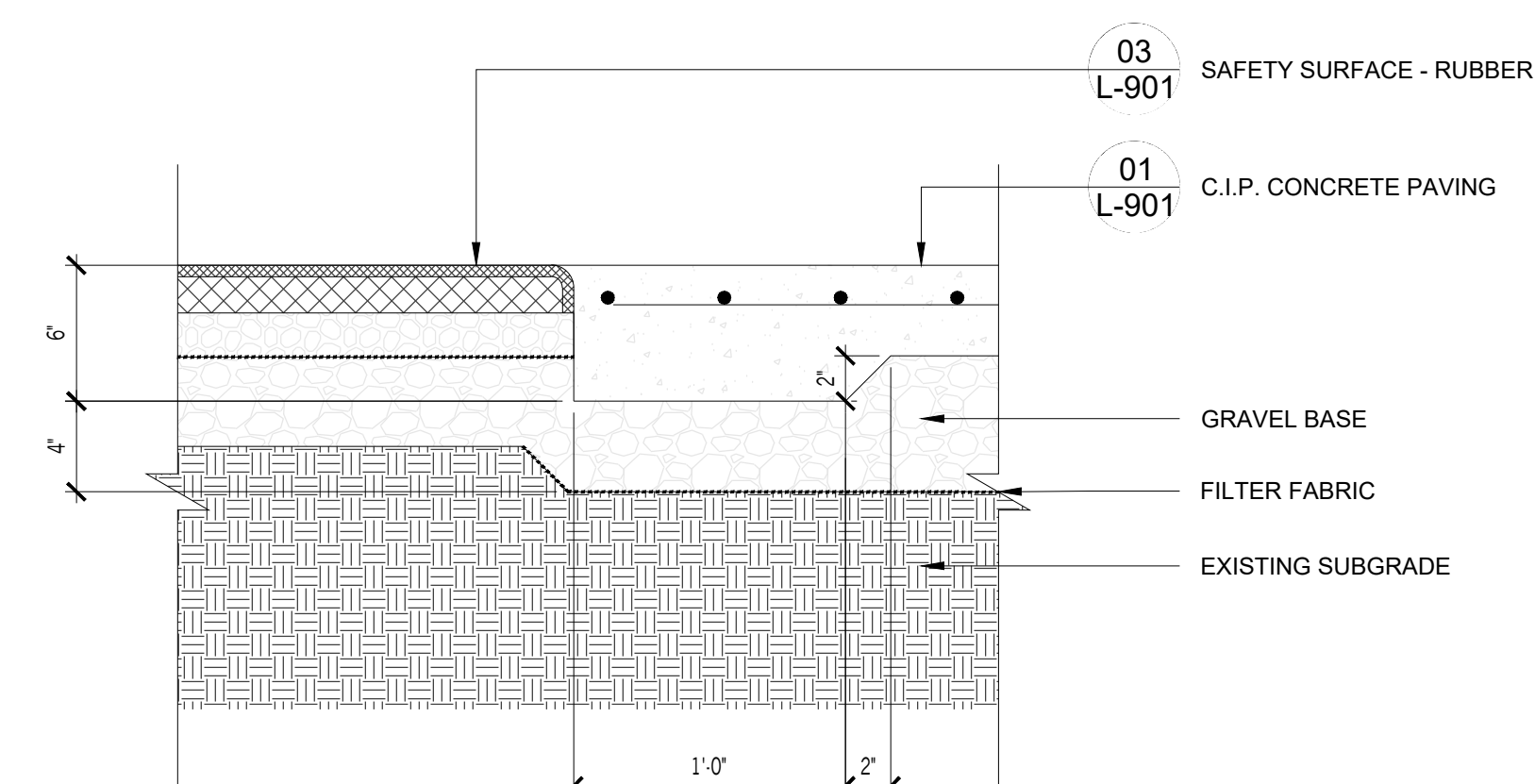
06 TRANSITION DETAIL@ASPHALT AND LAWN
SCALE: 1-1/2\"/>



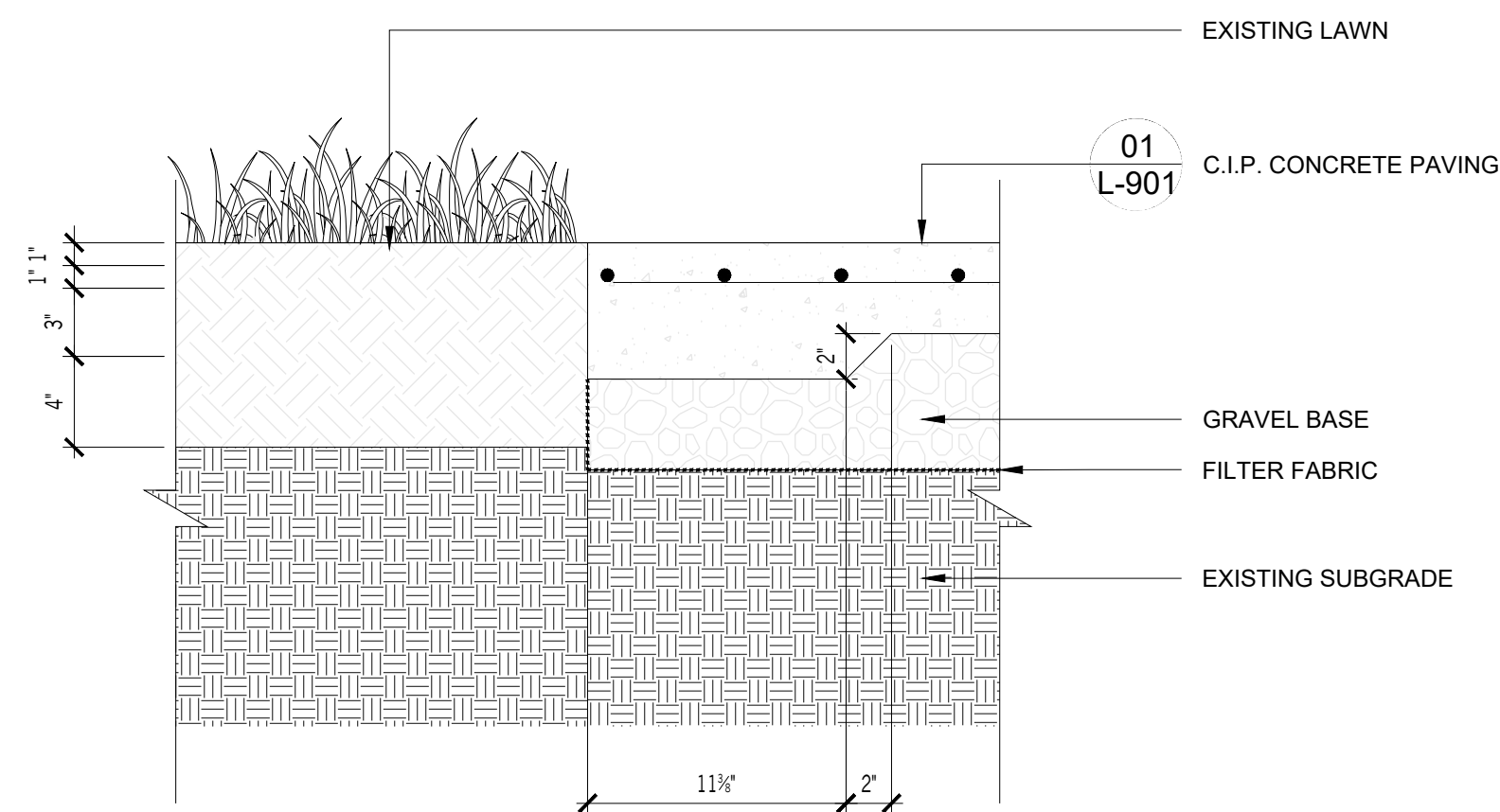
03 STONE DRAINAGE COURSE
SCALE: 1-1/2\"/>



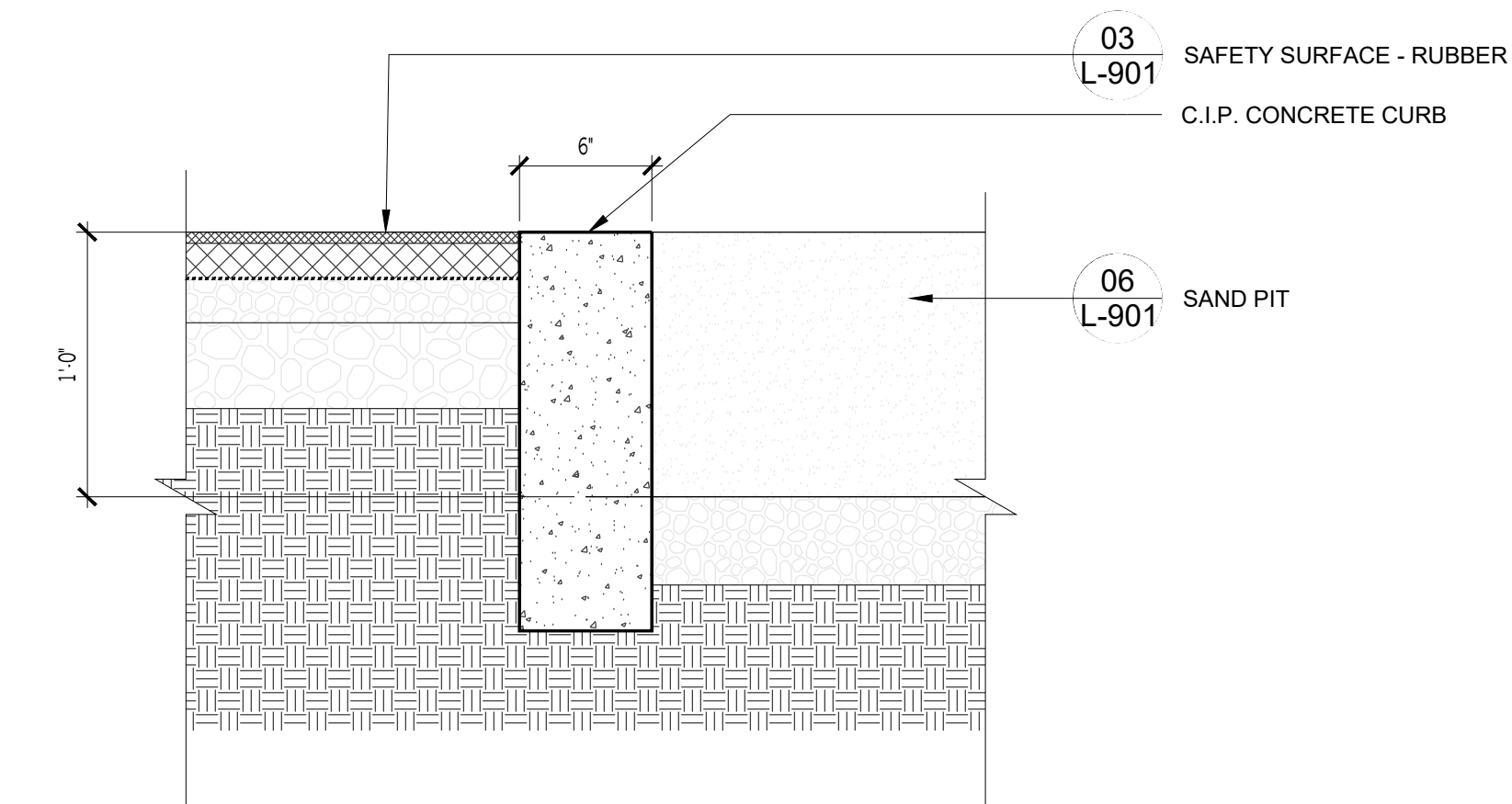
05 TRANSITION DETAIL@ASPHALT AND CONCRETE PAVING
SCALE: 1-1/2\"/>



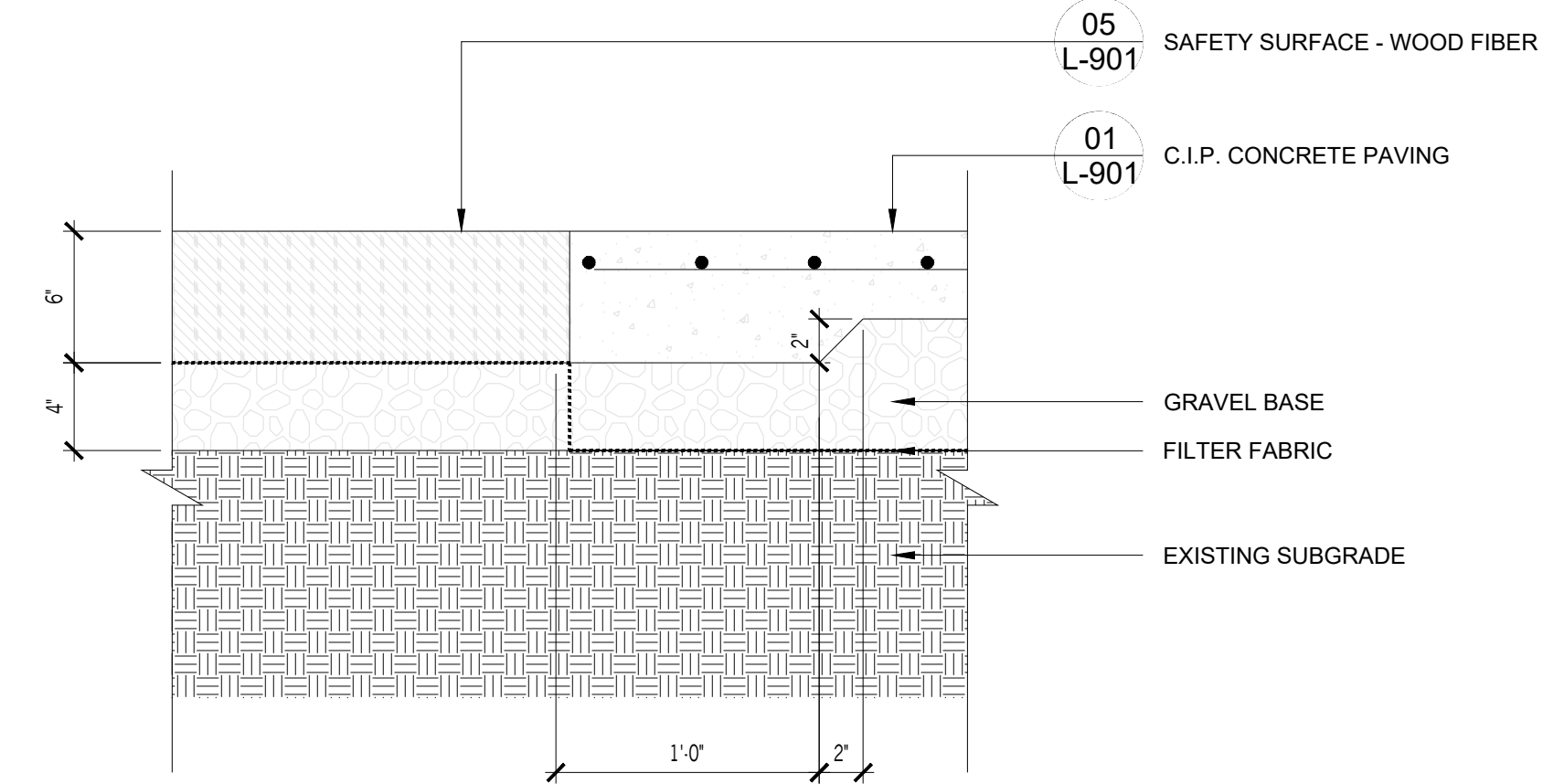
02 TRANSITION DETAIL@CONCRETE PAVING AND RUBBER
SCALE: 1-1/2\"/>



07 TRANSITION DETAIL@CONCRETE AND LAWN
SCALE: 1-1/2\"/>



04 TRANSITION DETAIL@RUBBER AND SAND
SCALE: 1-1/2\"/>



01 TRANSITION DETAIL @ CONCRETE PAVING AND WOOD FIBER
SCALE: 1-1/2\"/>

REV. 07.17.2025 75% CD

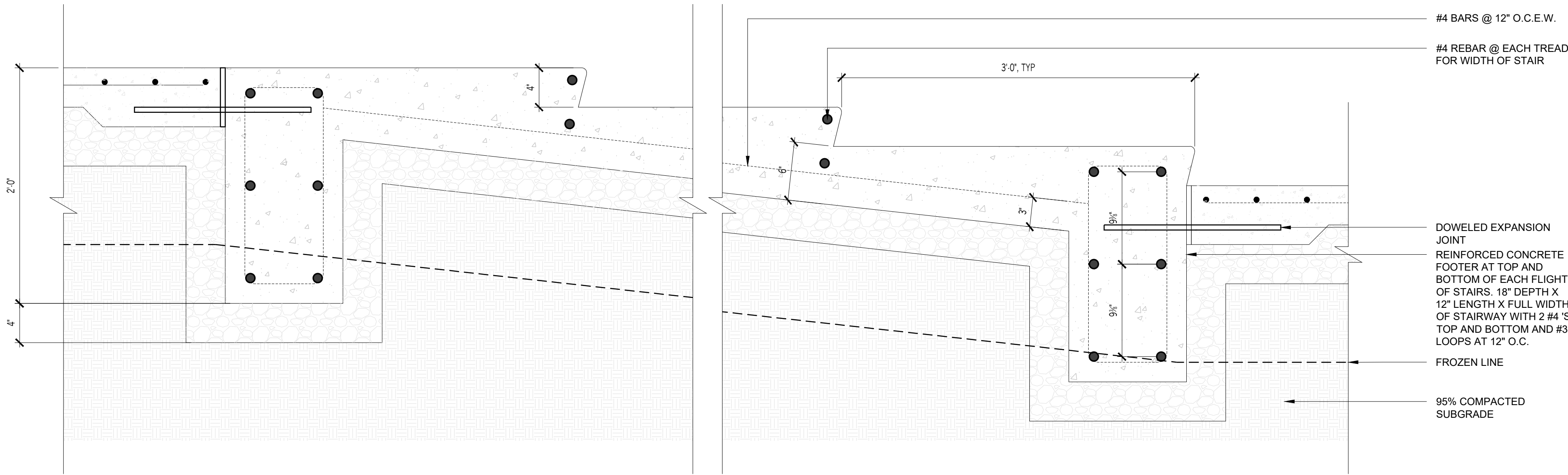
KEY PLAN: NTS

MA PROJECT NO. 2402
**AMELIA STREET SCHOOL
ACCESSIBILITY TRAIL**

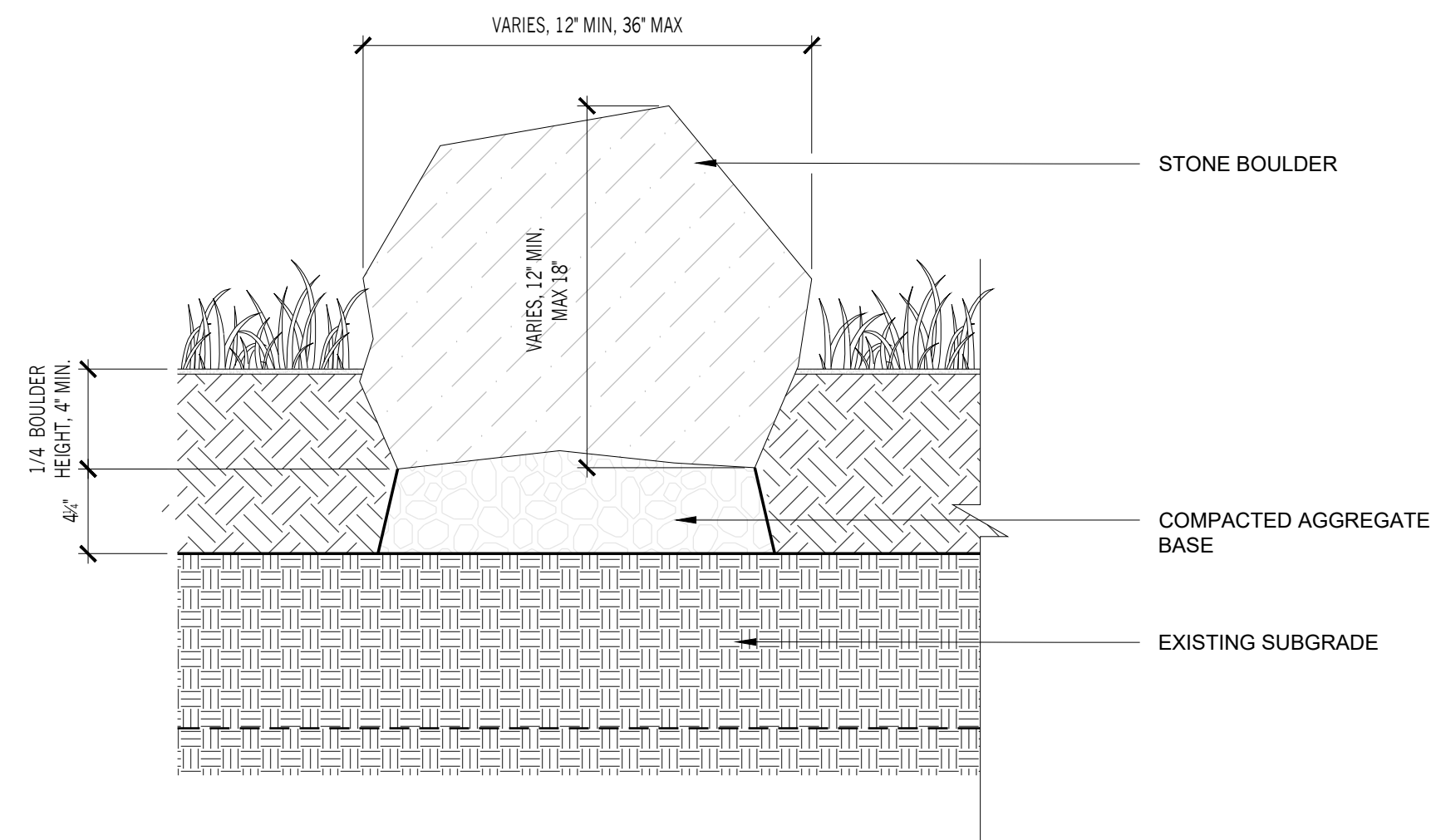
1821 AMELIA STREET
CITY OF RICHMOND, VA

**LANDSCAPE
DETAILS -
TRANSITION**

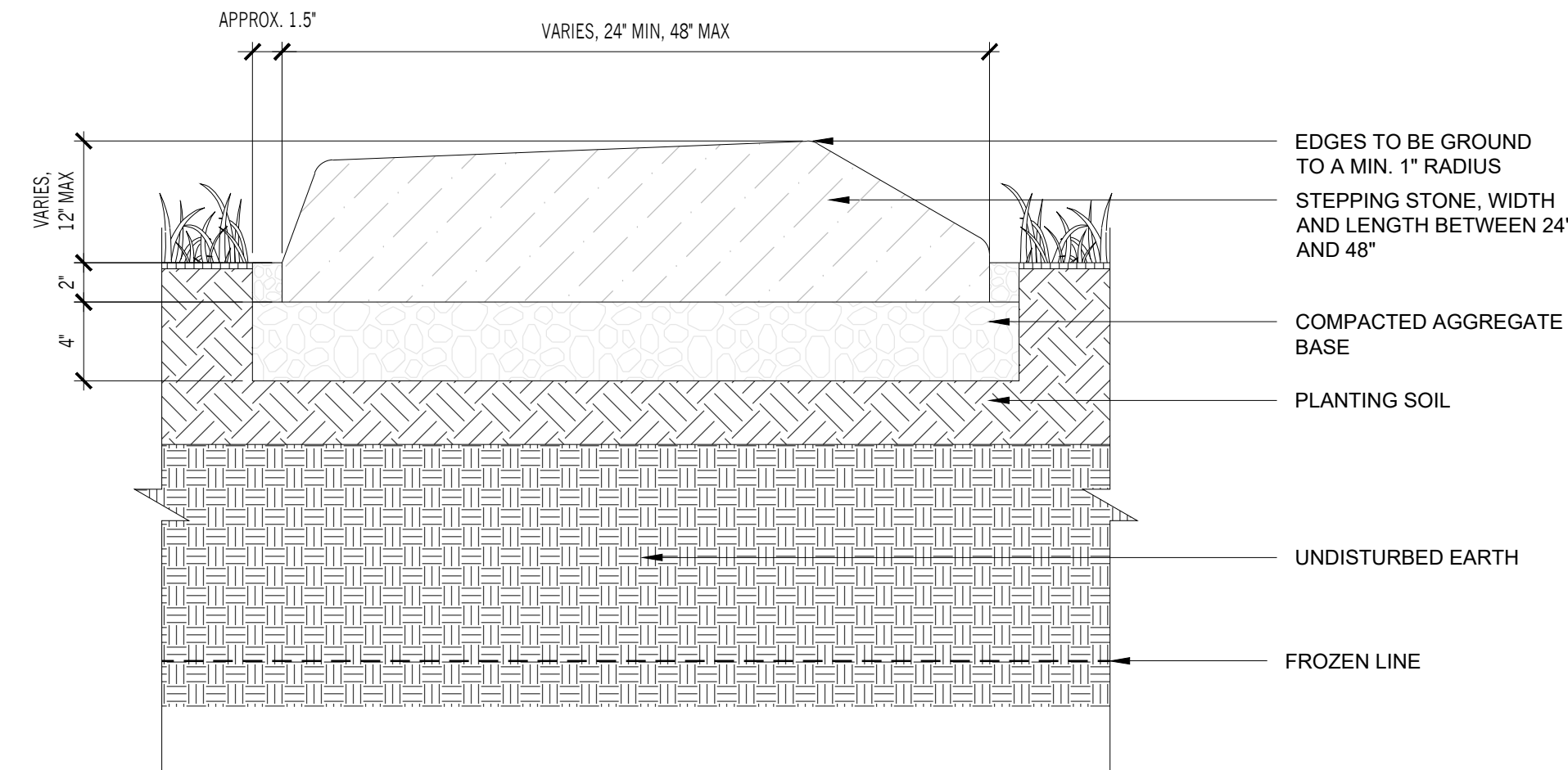
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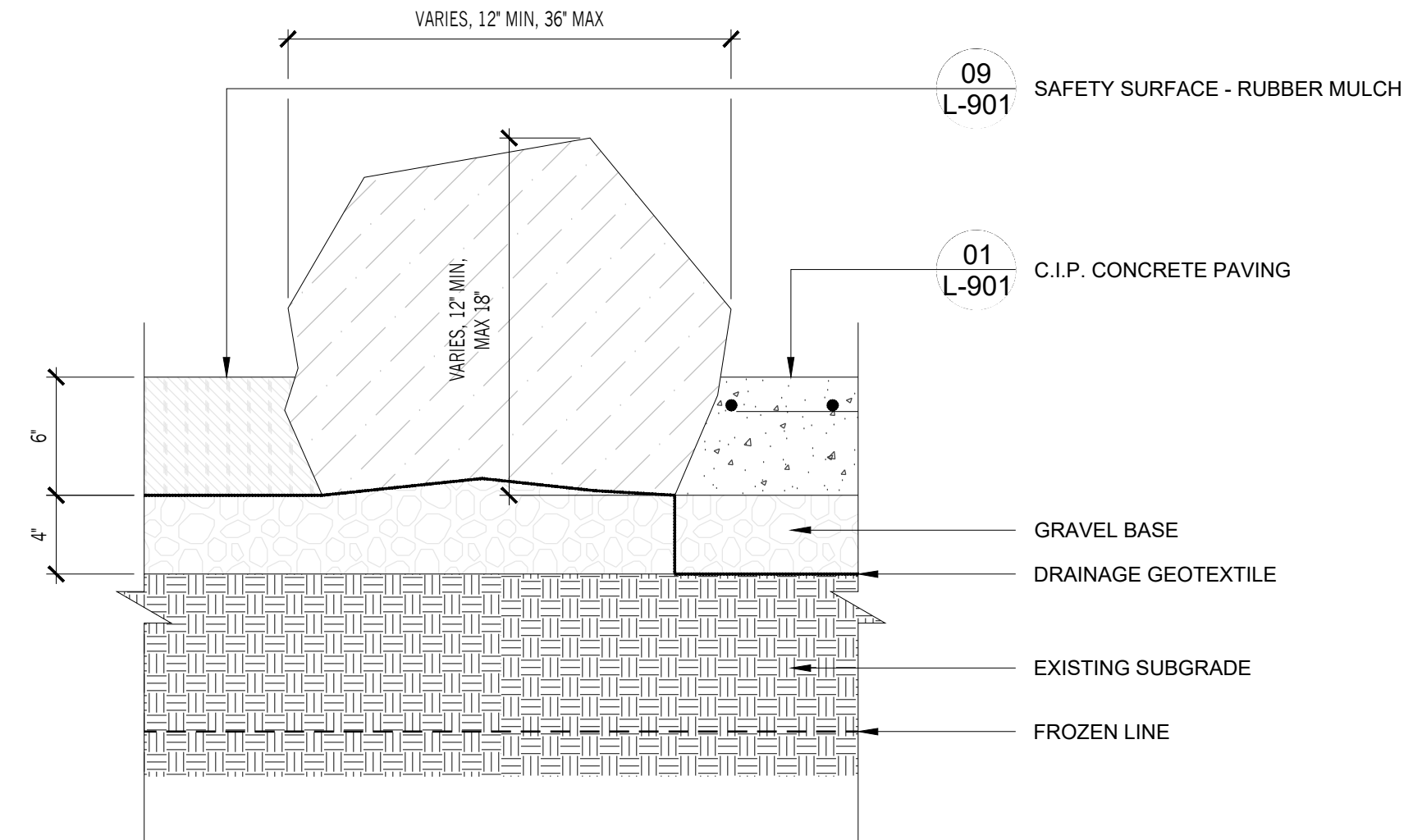
07 CAST-IN-PLACE CONCRETE STAIRS
SCALE: 1-1/2"=1'



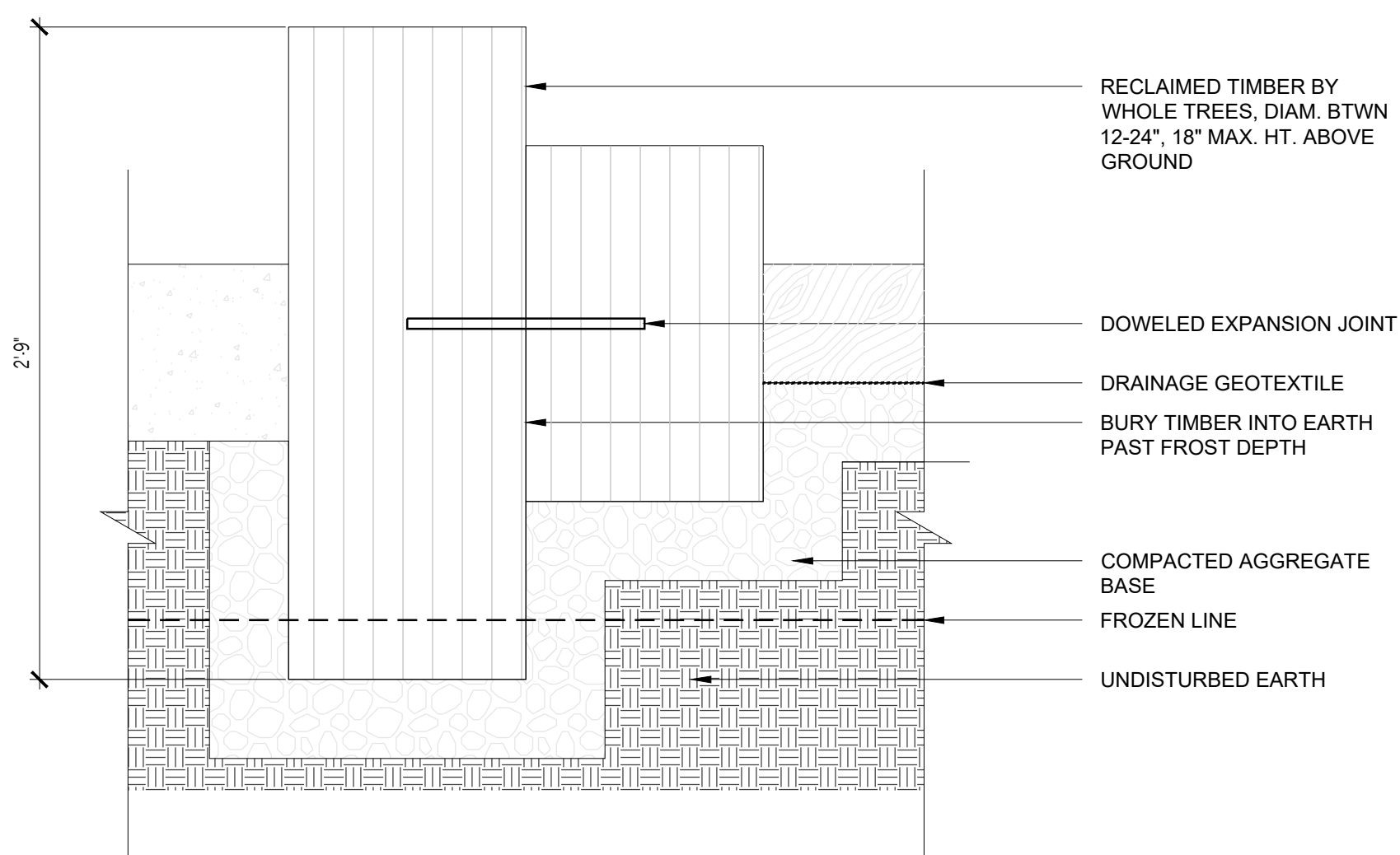
06 BOULDERS BLOCK
SCALE: 1-1/2"=1'



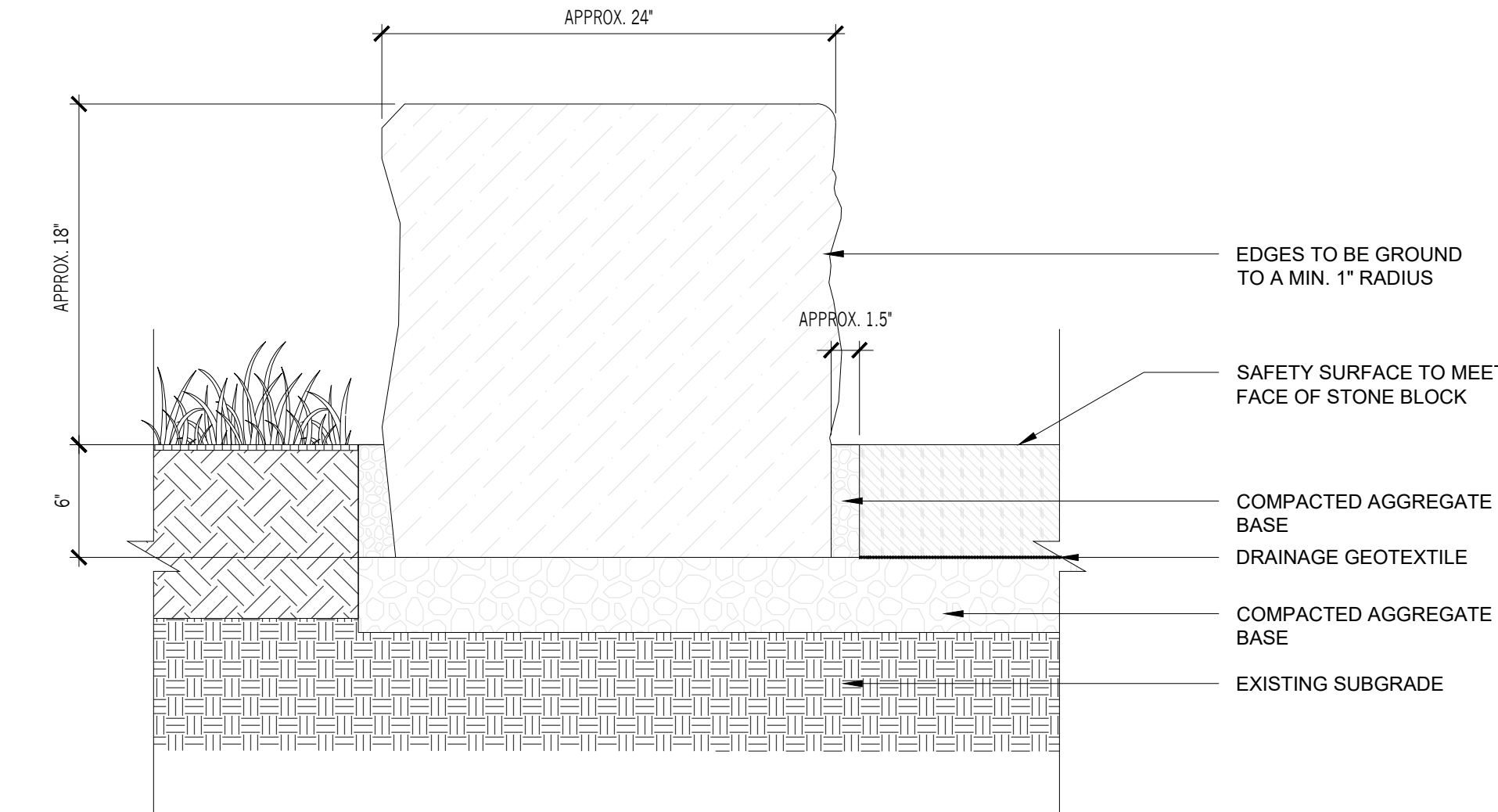
04 STEPPING STONES
SCALE: 1-1/2"=1'



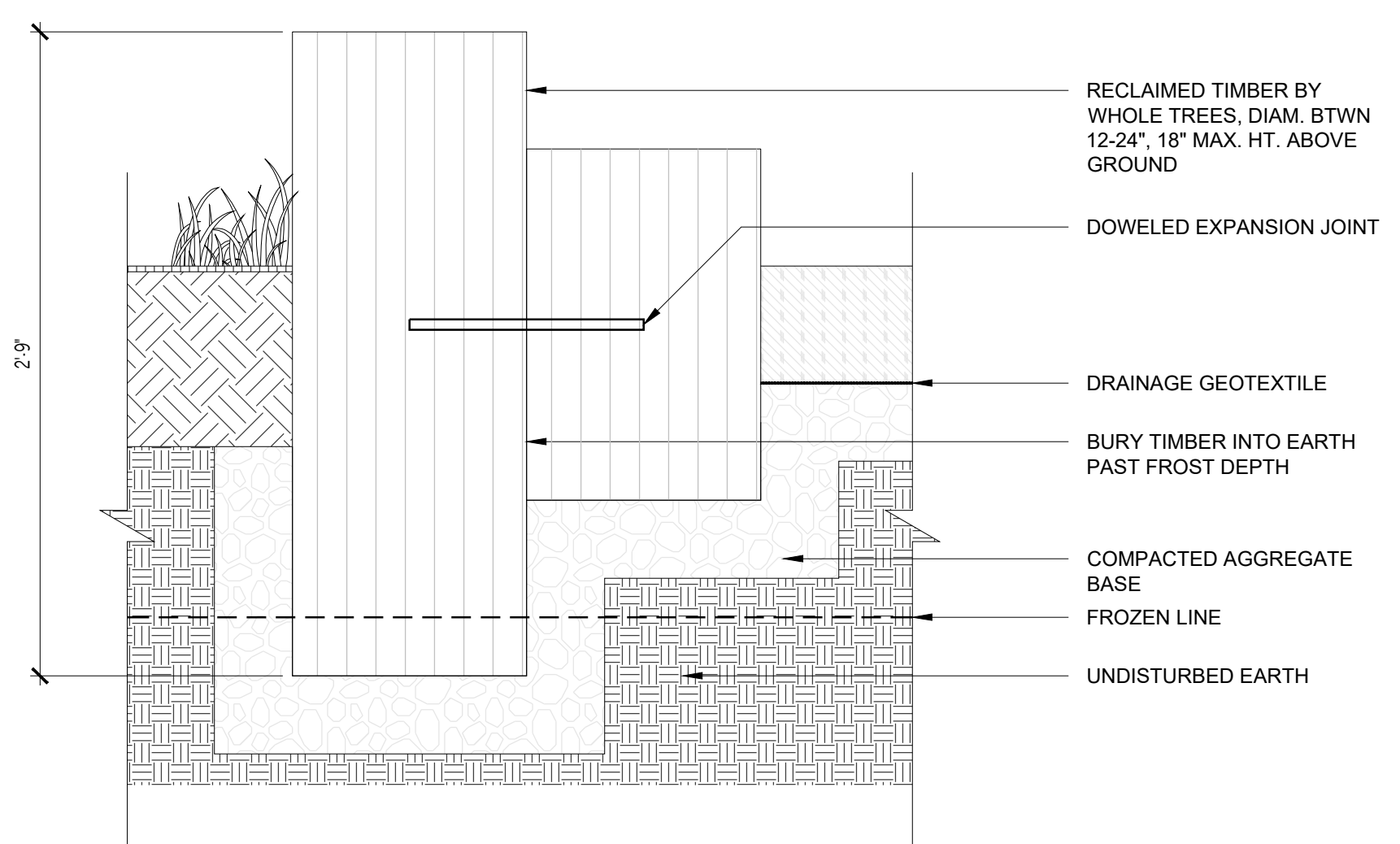
02 BOULDERS BLOCK
SCALE: 1-1/2"=1'



05 WOOD STUMP@CONCRETE AND WOOD FIBER
SCALE: 1-1/2"=1'



03 GRANITE BLOCK SEATING
SCALE: 1-1/2"=1'



01 WOOD STUMP@LAWN AND WOOD FIBER
SCALE: 1-1/2"=1'



MARVEL

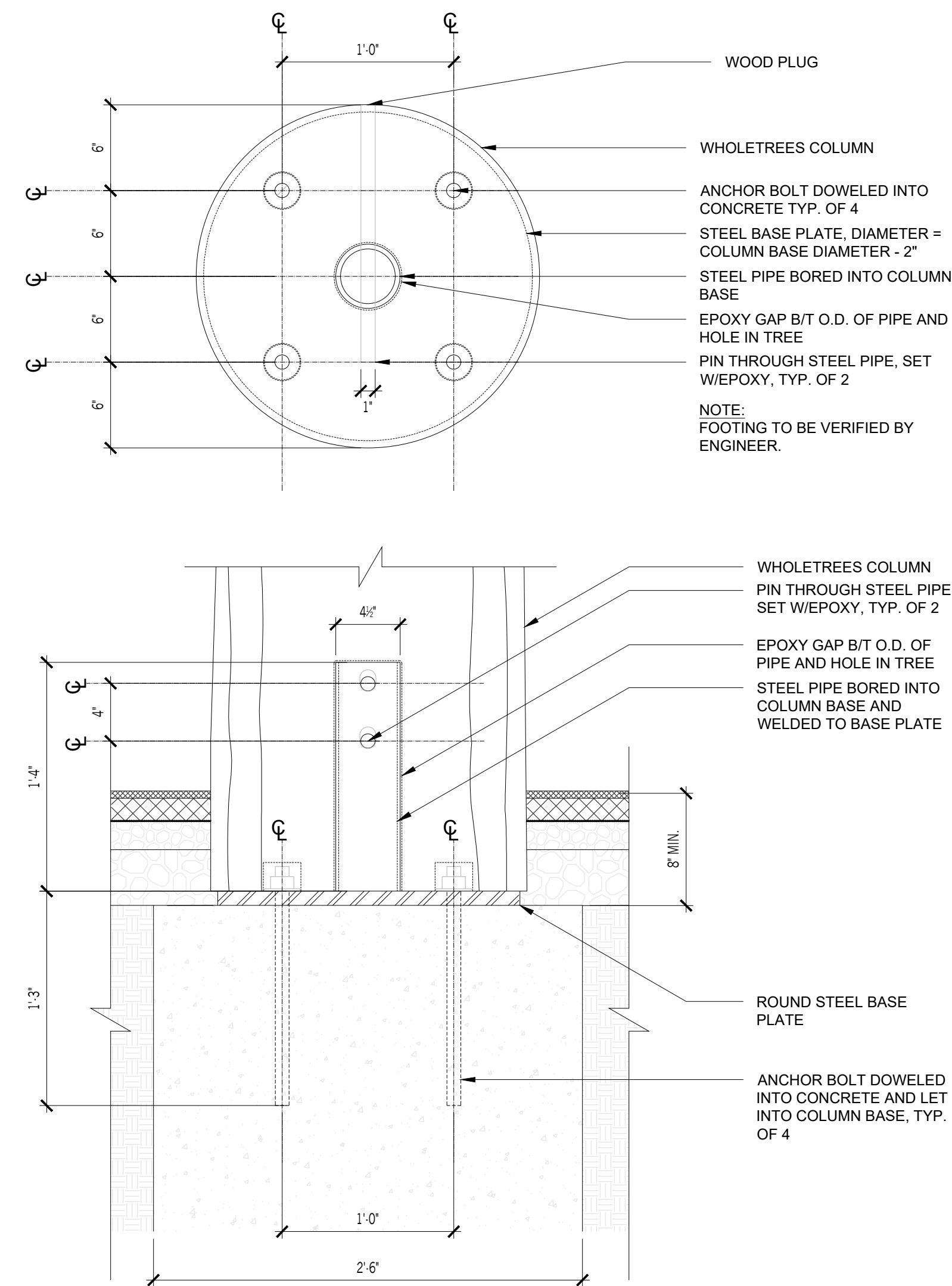
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212.616.0420

OWNER/CLIENT ALLIANCE FOR THE CHESAPEAKE BAY

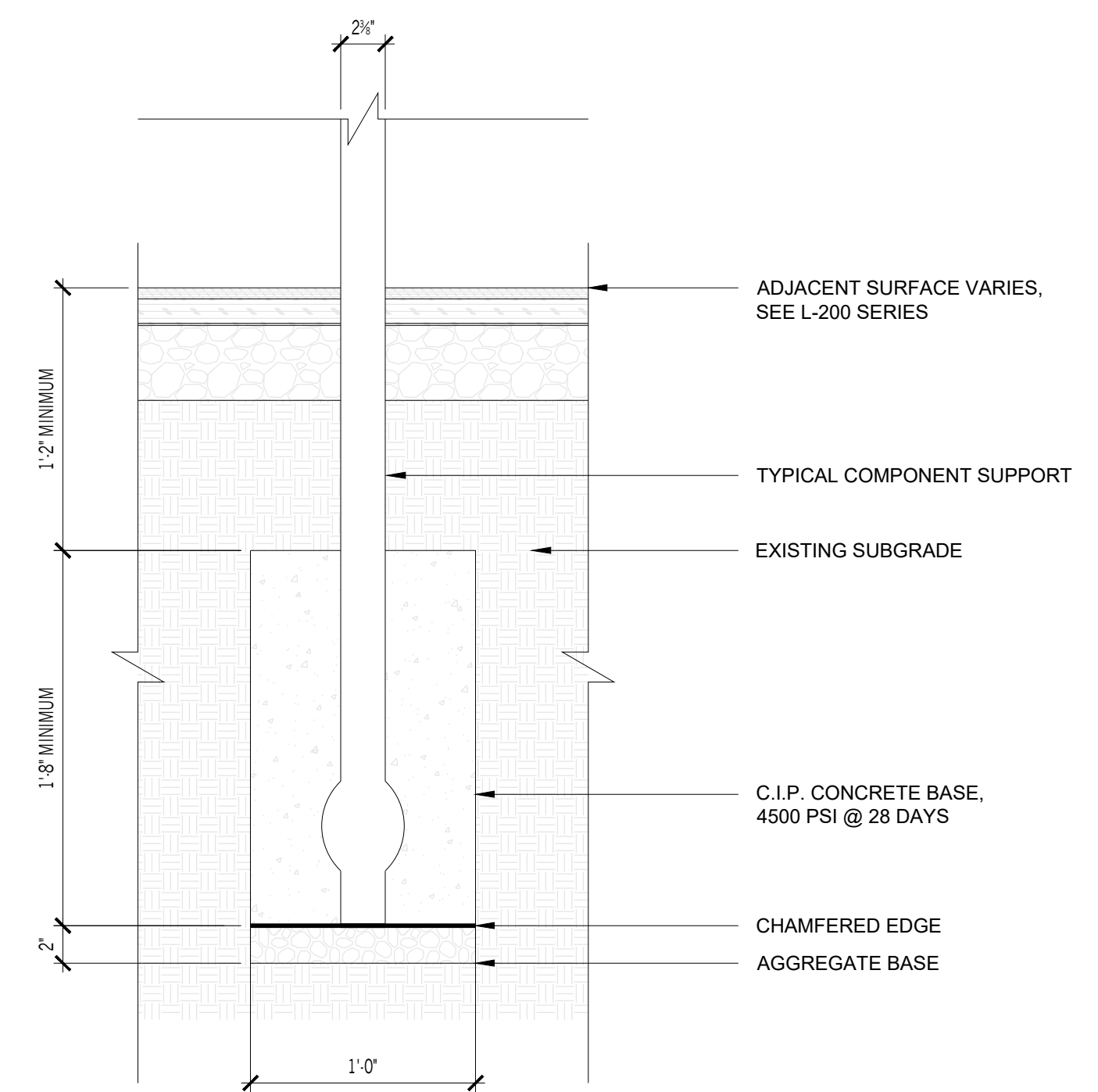
PROJECT MANAGER NEAL FRIEDMAN

CIVIL ENGINEERING NITSCH ENGINEERING

SURVEY NYFELER SURVEY

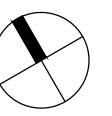


02 GROVE STRUCTURE FOOTING
SCALE: 1-1/2"=1'



01 PLAY EQUIPMENT FOOTING
SCALE: 1-1/2"=1'

KEY PLAN:NTS



MA PROJECT NO. 2402
**AMELIA STREET SCHOOL
ACCESSIBILITY TRAIL**

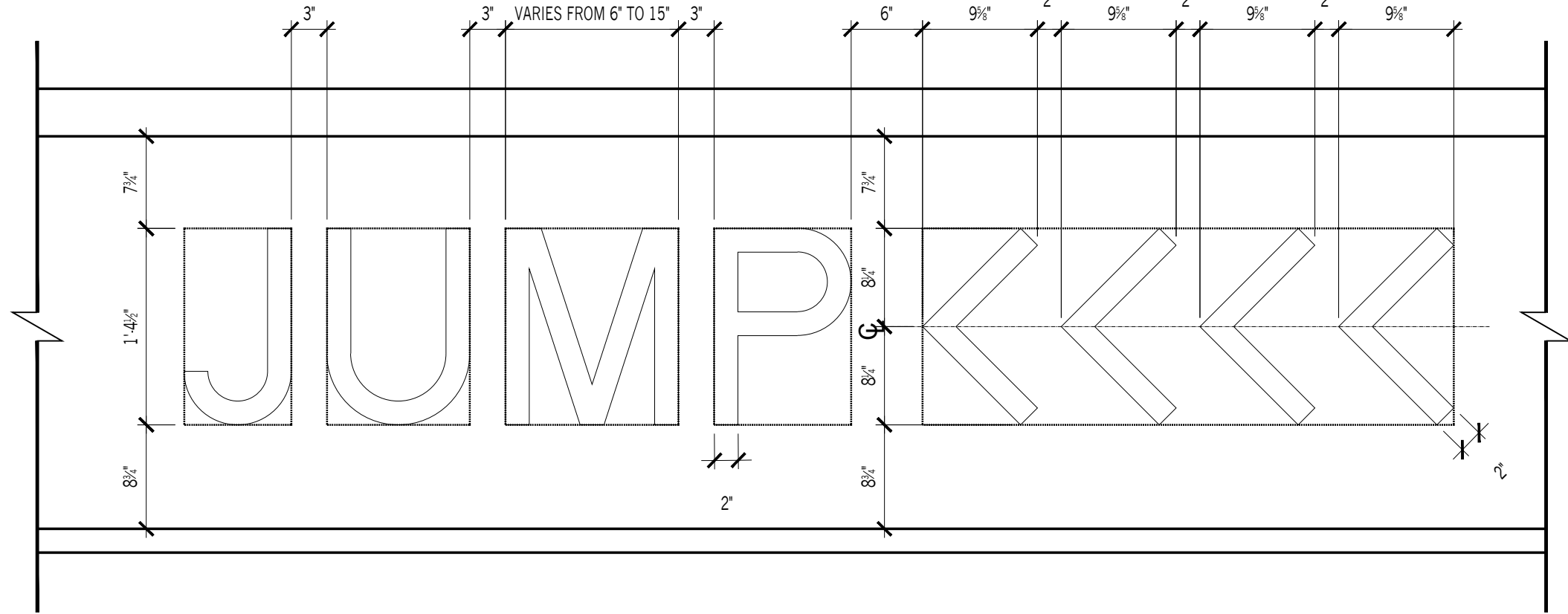
1821 AMELIA STREET
CITY OF RICHMOND, VA

LANDSCAPE DETAILS - GRAPHIC

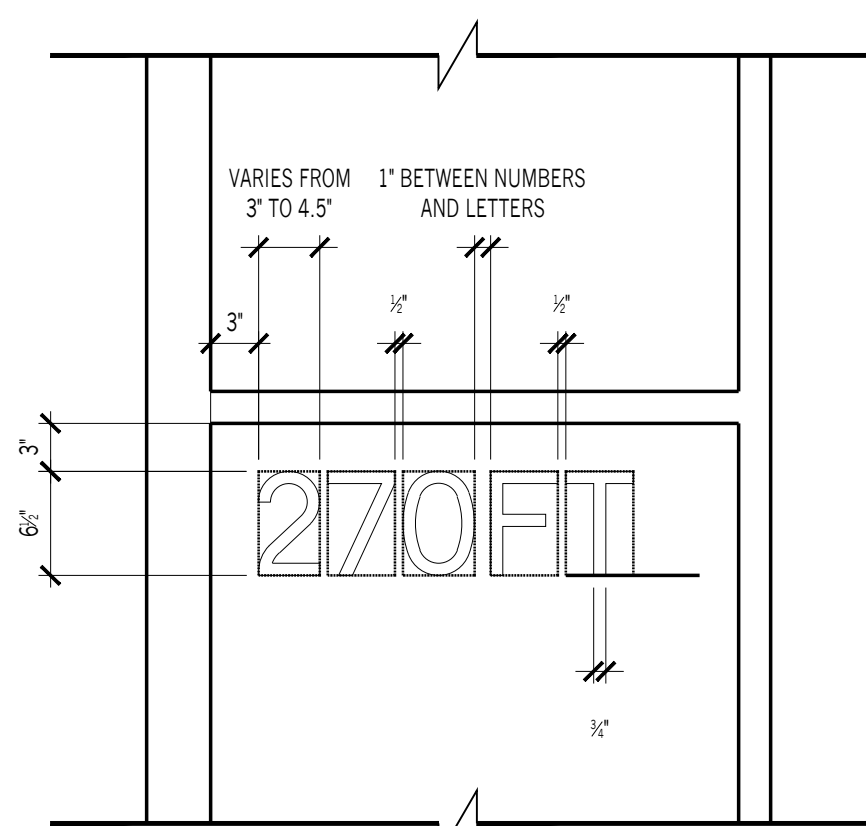
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of

NOTES

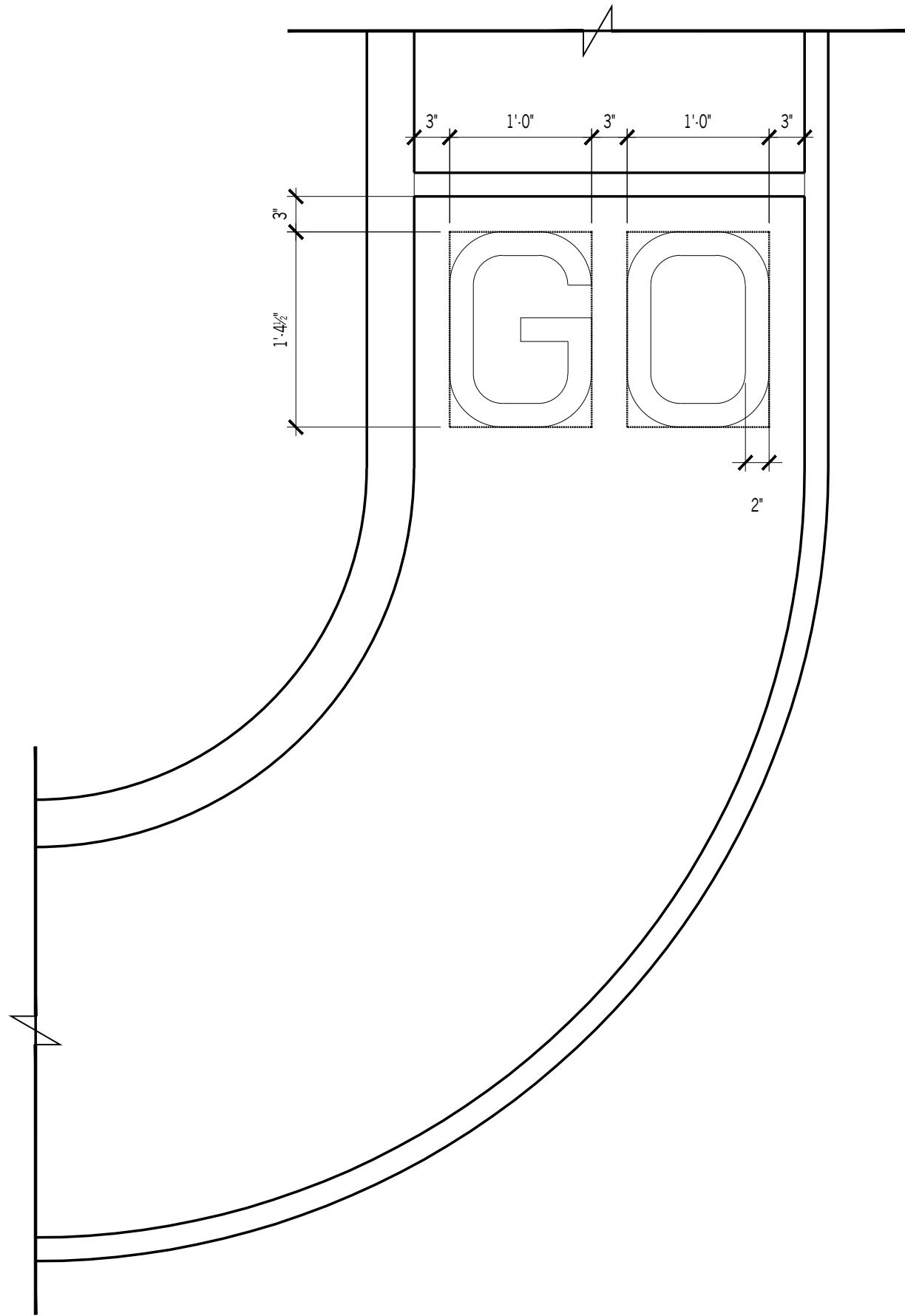
- 1. COLOR IS TO BE COLOR SEAL COAT RAL 9016 TRAFFIC WHITE BY ADVANCED POLYMER TECHNOLOGY OR APPROVED EQUAL.
- 2. CONTRACTOR TO PROVIDE PAINT SAMPLES FOR APPROVAL PRIOR TO PAINTING.
- 3. ALL NUMERALS ARE TO BE PATTERNED AFTER 'ARIAL' STYLE. SAMPLE TO BE SUBMITTED TO LANDSCAPE ARCHITECT PRIOR TO PAINTING.
- 4. CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION TO APPROVE LAYOUT IN FIELD.
- 5. ALL CIRCLES IN DETAIL 05 TO BE UNIFORM IN SIZE.
- 6. ALL ARROWS IN DETAIL 02 AND 07 TO BE UNIFORM IN SIZE.
- 7. THE TEXT IN DETAIL 07 MAY VARIES, REFER TO PLAN.



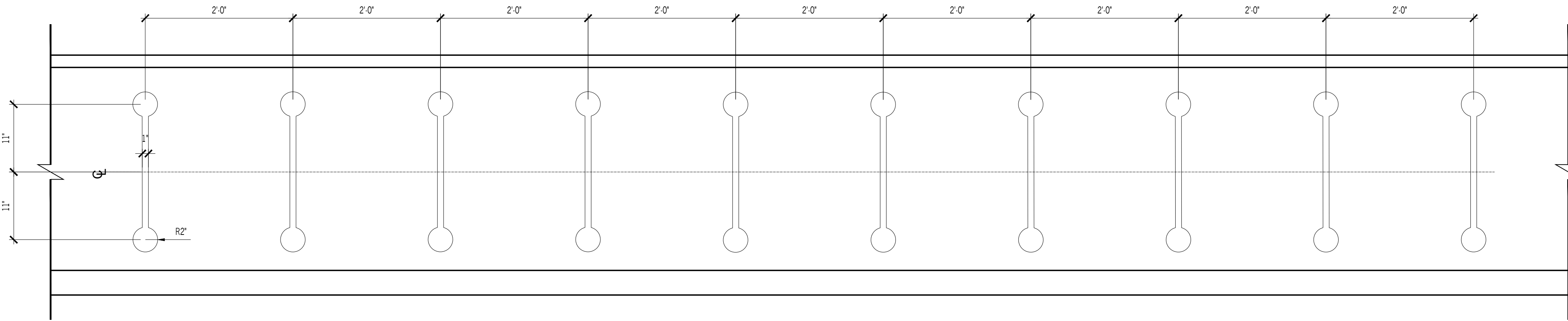
07 GRAPHIC GAME - MARKER WITH ARROWS
SCALE: 1"=1'



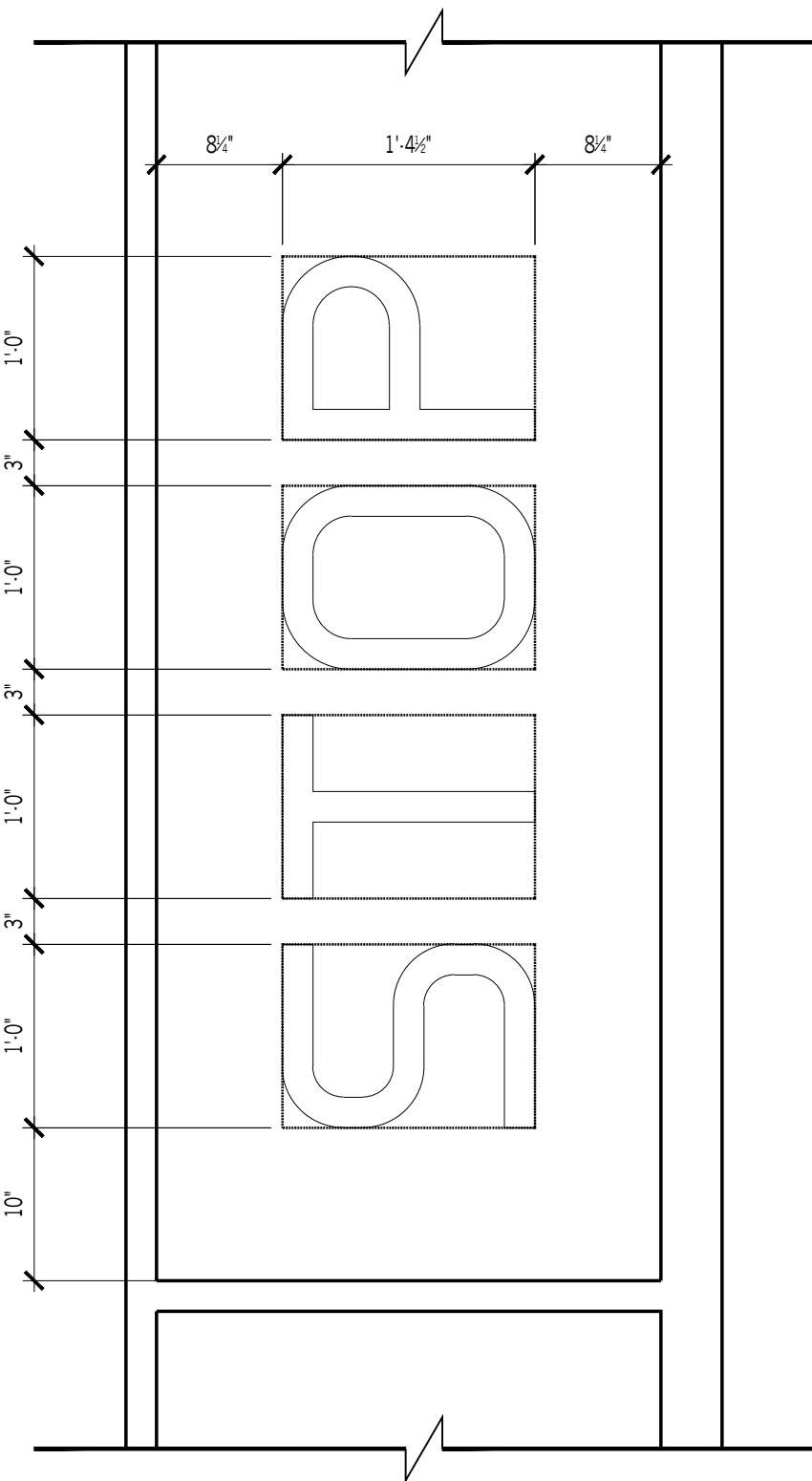
06 GRAPHIC GAME - MILE MARKER
SCALE: 1"=1'



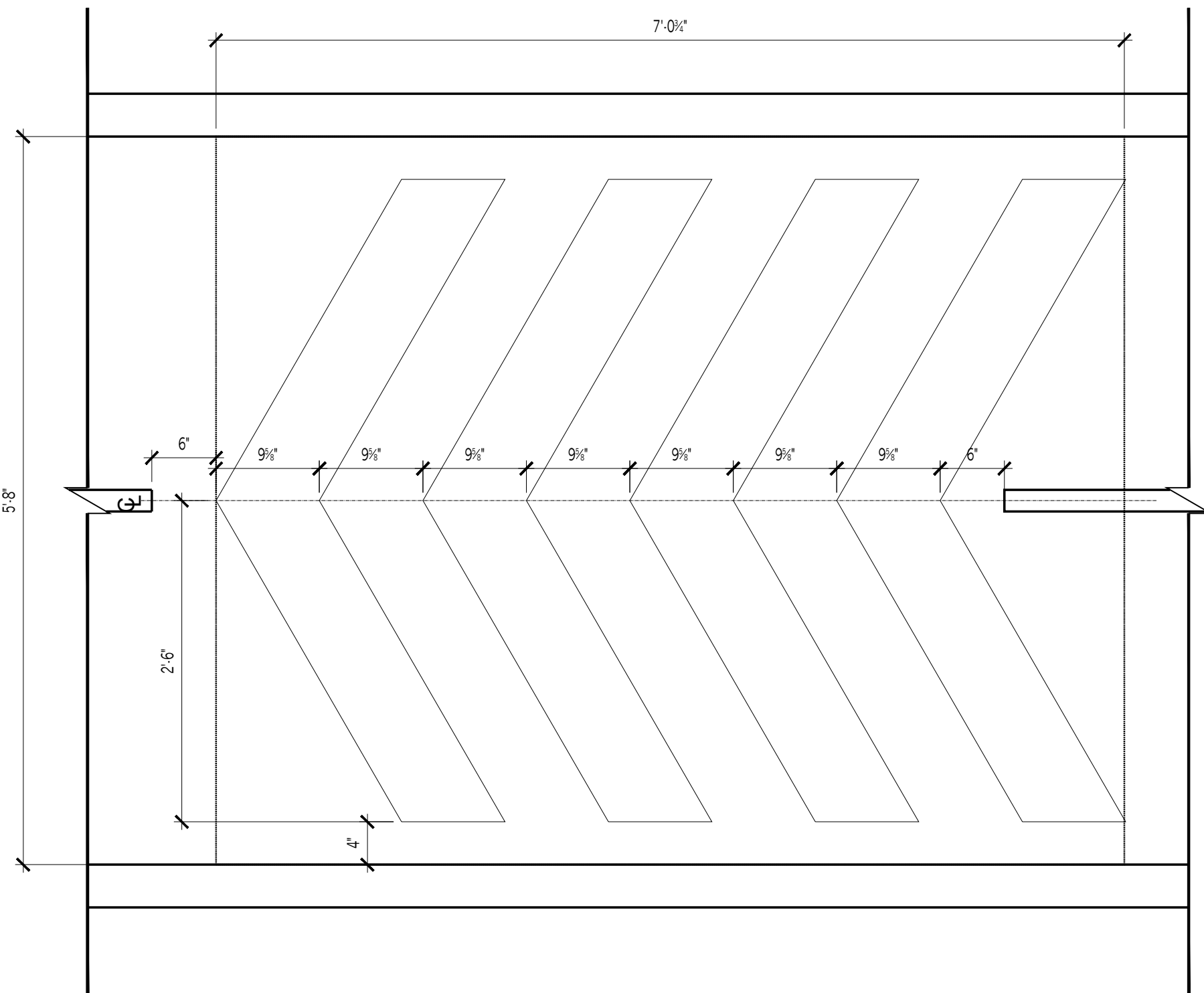
04 GRAPHIC GAME - GO MARKER
SCALE: 1"=1'



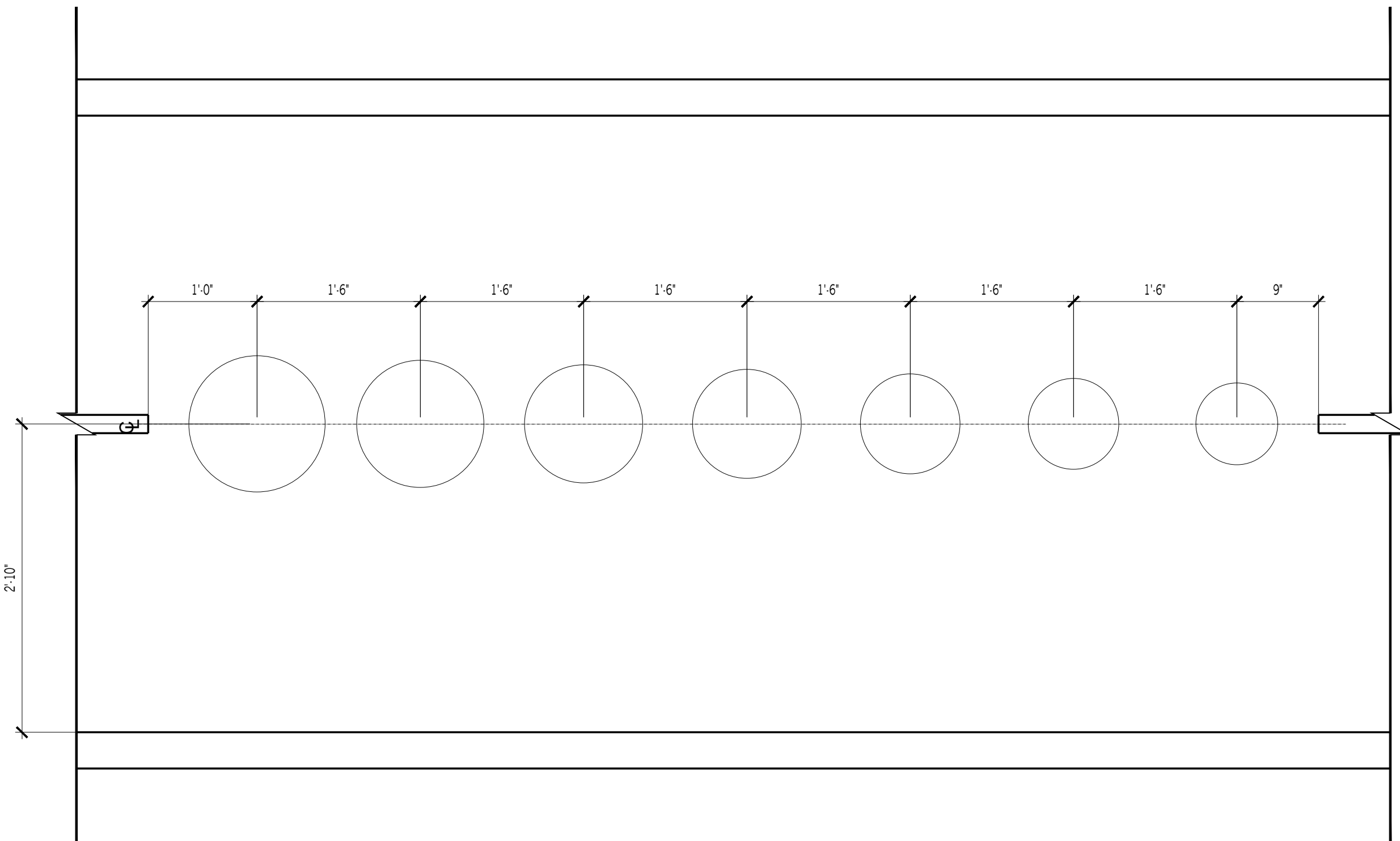
05 GRAPHIC GAME - JUMPING HURDLES
SCALE: 1"=1'



03 GRAPHIC GAME - STOP MARKER
SCALE: 1"=1'



02 GRAPHIC GAME - GO STRAIGHT ARROWS
SCALE: 1"=1'



01 GRAPHIC GAME - GO STRAIGHT DOTS
SCALE: 1"=1'



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OWNER/CLIENT ALLIANCE FOR THE CHESAPEAKE BAY
PROJECT MANAGER NEAL FRIEDMAN
CIVIL ENGINEERING NITSCH ENGINEERING
SURVEY NYFELER SURVEY

REV. 07.17.2025 75% CD

KEY PLAN: NTS

MA PROJECT NO. 2402
**AMELIA STREET SCHOOL
ACCESSIBILITY TRAIL**

1821 AMELIA STREET
CITY OF RICHMOND, VA

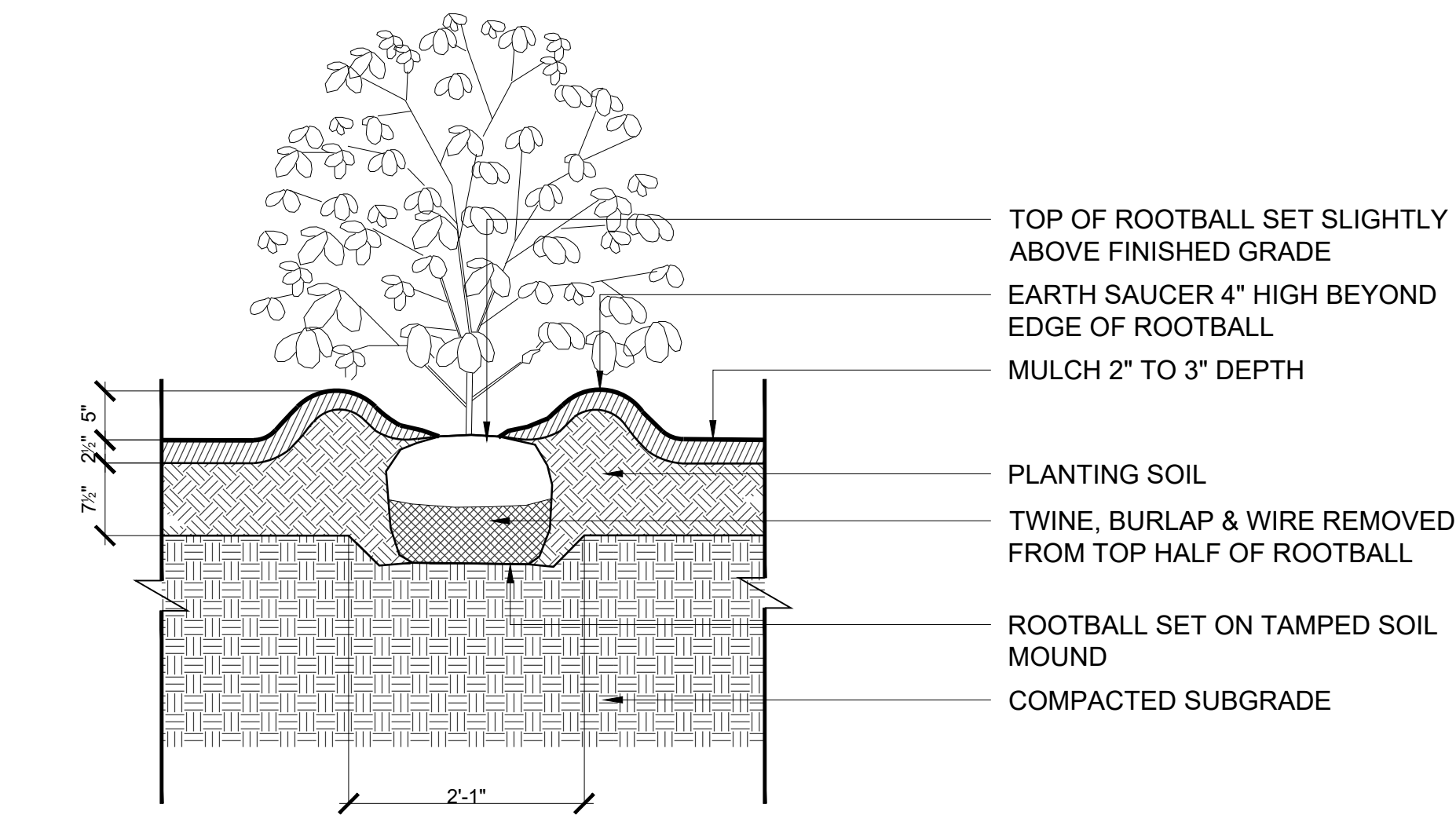
**LANDSCAPE
DETAILS -
GRAPHIC**

L-905.00
of



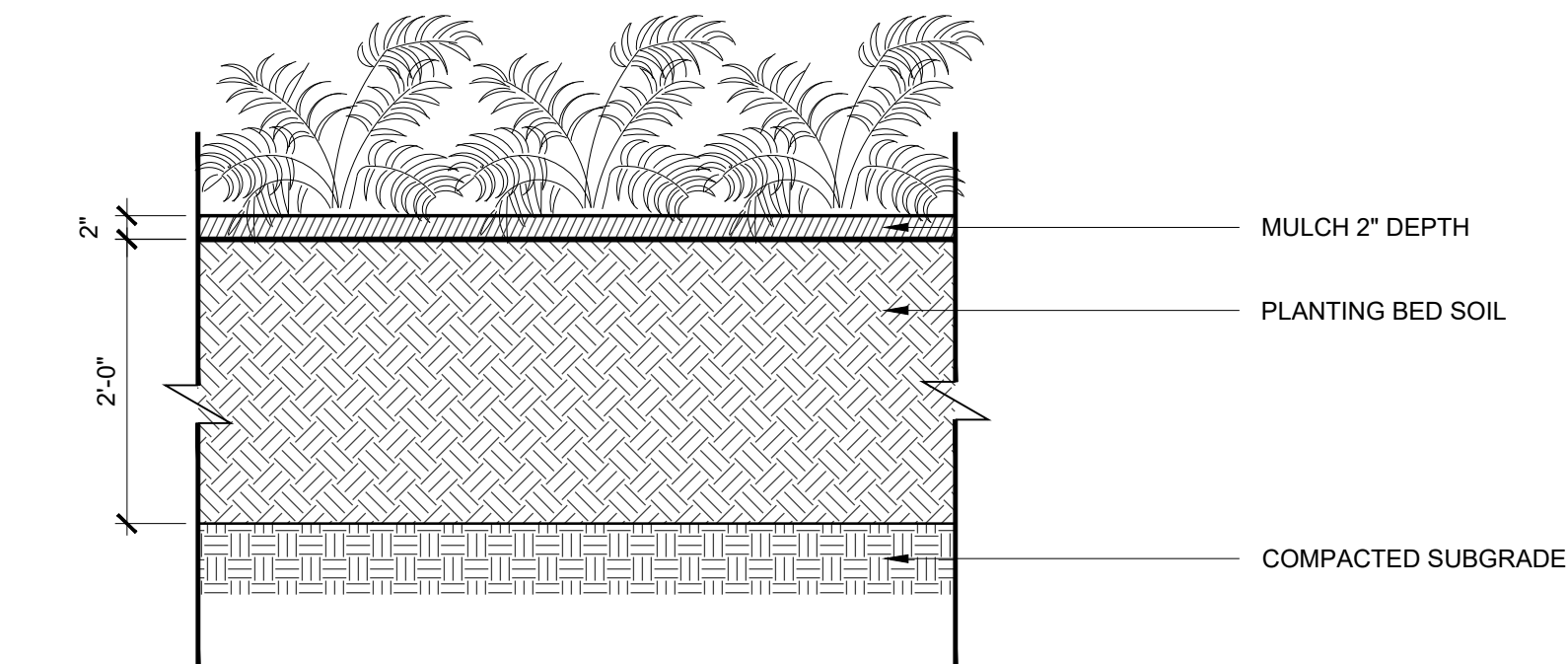
MARVEL
145 HUDSON STREET, FLR.3 NEW YORK, NY 10013
212.816.9479

OWNER/CLIENT ALLIANCE FOR THE CHESAPEAKE BAY
PROJECT MANAGER NEAL FRIEDMAN
CIVIL ENGINEERING NITSCH ENGINEERING
SURVEY NYFELER SURVEY



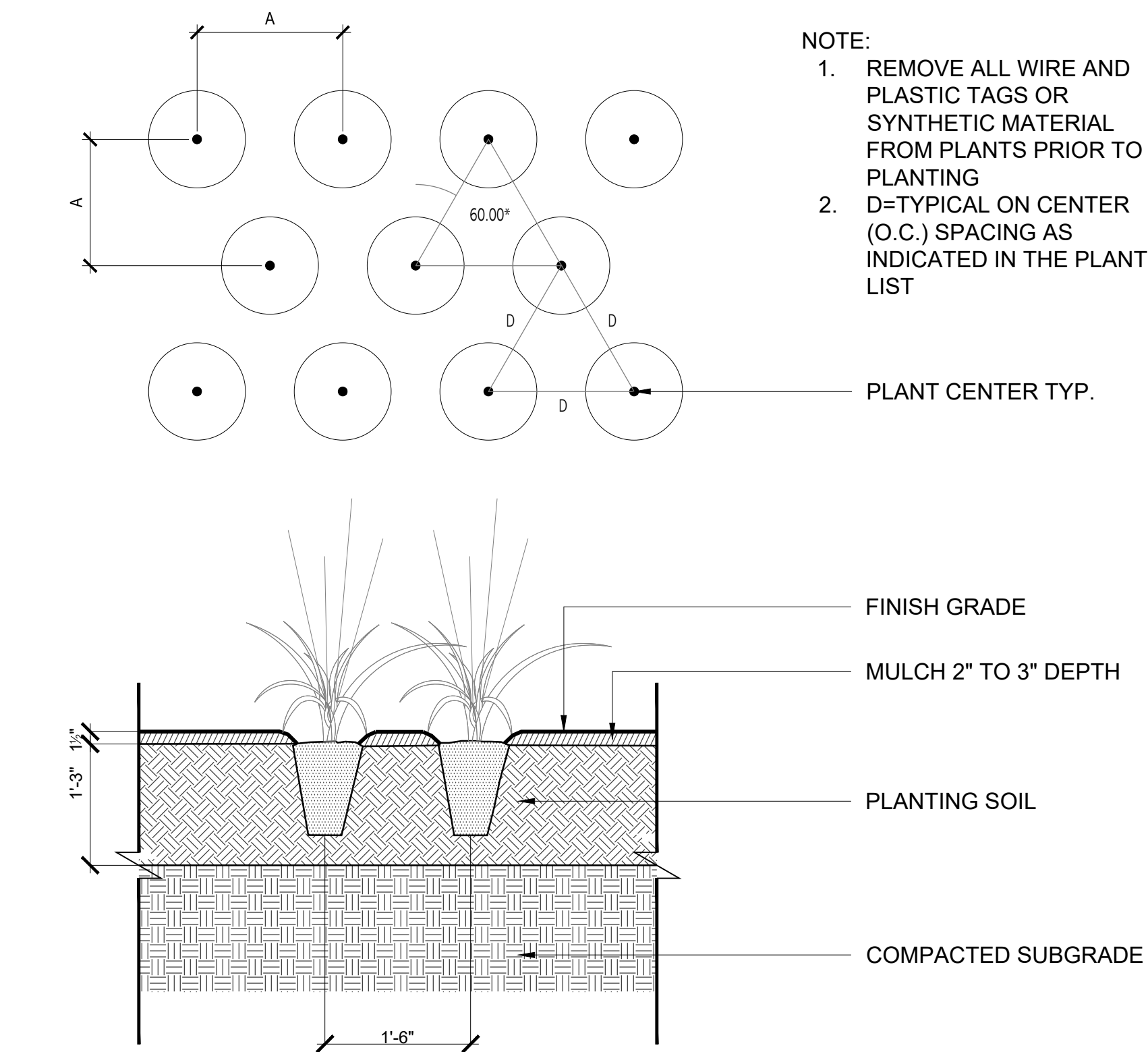
05 SHRUB PLANTING

SCALE: 3/4"=1'



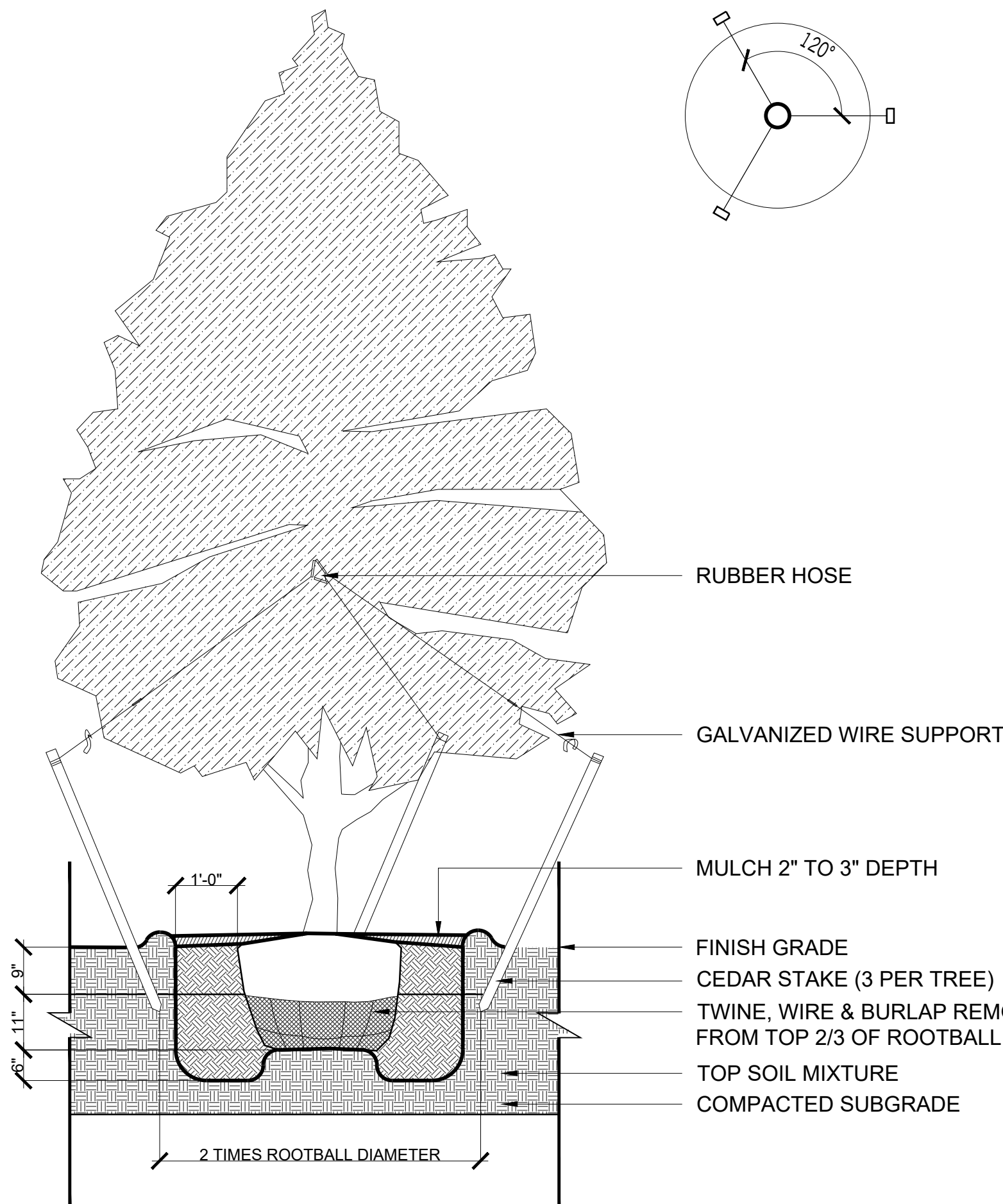
03 TYPICAL PLANTING BED ON GRADE

SCALE: 3/4"=1'



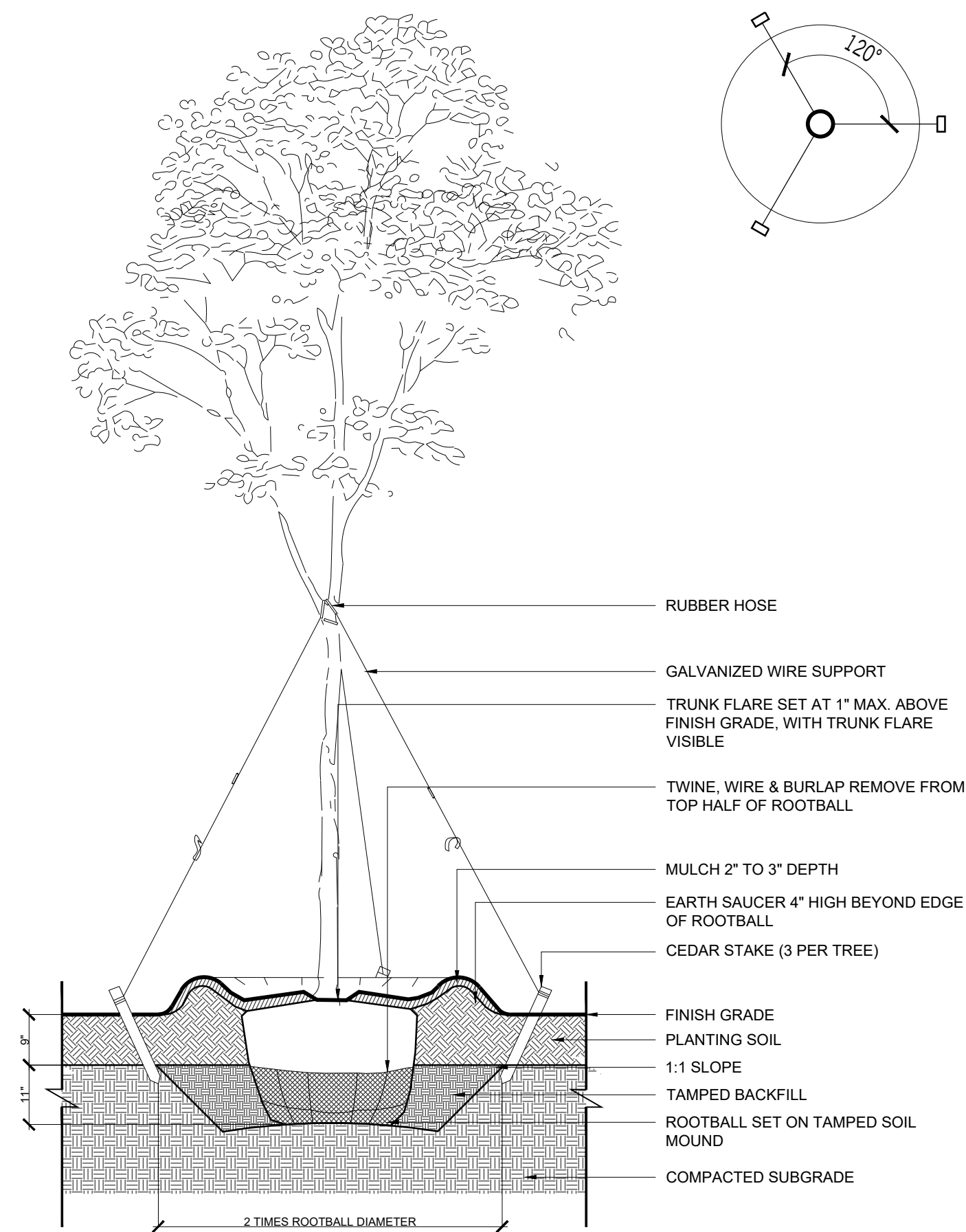
04 GRASS AND PERENNIAL PLANTING

SCALE: 3/4"=1'



02 EVERGREEN TREE PLANTING AT GRADE

SCALE: 3/4"=1'



01 TREE PLANTING AT GRADE

SCALE: 3/4"=1'

REV. 07.17.2025 75% CD

KEY PLAN: NTS

MA PROJECT NO. 2402
**AMELIA STREET SCHOOL
ACCESSIBILITY TRAIL**

1821 AMELIA STREET
CITY OF RICHMOND, VA

L-909.00
of

GENERAL NOTES:

1. TOPOGRAPHIC DATA, PROPERTY LINE INFORMATION, AND EXISTING SITE FEATURES WERE OBTAINED FROM A SURVEY TITLED "TOPOGRAPHIC SURVEY FOR A PORTION OF AMELIA STREET SCHOOL" DATED 12/30/2024 BY NYFELER SURVEY, PREPARED FOR MARVEL DESIGNS.
2. FLOODPLAIN INFORMATION WAS OBTAINED FROM THE FLOOD INSURANCE RATE MAP (FIRM) NO. 5101290036D DATED APRIL 2, 2009. THE SITE IS IN ZONE X.
3. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS, RULES, REGULATIONS AND SAFETY CODES IN THE CONSTRUCTION OF ALL IMPROVEMENTS.
4. THE LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES ARE APPROXIMATE AND ALL UTILITIES MAY NOT BE SHOWN. PRESENCE AND LOCATIONS OF ALL UTILITIES WITHIN THE LIMIT OF WORK MUST BE DETERMINED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING AND CONTACTING THE CONTROLLING AUTHORITIES AND/OR UTILITY COMPANIES RELATIVE TO THE LOCATIONS AND ELEVATIONS OF THEIR LINES. THE CONTRACTOR SHALL KEEP A RECORD OF ANY DISCREPANCIES OR CHANGES IN THE LOCATIONS OF ANY UTILITIES SHOWN OR ENCOUNTERED DURING CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED TO THE OWNER AND NITSCH ENGINEERING. ANY DAMAGE RESULTING FROM THE FAILURE OF THE CONTRACTOR TO MAKE THESE DETERMINATIONS AND CONTACTS SHALL BE BORNE BY THE CONTRACTOR.
5. THE CONTRACTOR SHALL, THROUGHOUT CONSTRUCTION, TAKE ADEQUATE PRECAUTIONS TO PROTECT ALL WALKS, GRADING, SIDEWALKS AND SITE DETAILS OUTSIDE OF THE LIMIT OF DISTURBANCE AS DEFINED ON THE DRAWINGS AND SHALL REPAIR AND REPLACE OR OTHERWISE MAKE GOOD AS DIRECTED BY THE ENGINEER OR OWNER'S DESIGNATED REPRESENTATIVE ANY SUCH OR OTHER DAMAGE SO CAUSED.
6. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR JOB SITE SAFETY AND ALL CONSTRUCTION MEANS AND METHODS.
7. PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE SITE AND CONSTRUCTION DOCUMENTS TO DEVELOP A THOROUGH UNDERSTANDING OF THE PROJECT, INCLUDING ANY SPECIAL CONDITIONS AND CONSTRAINTS.
8. IT IS THE CONTRACTOR'S RESPONSIBILITY TO BECOME FAMILIAR WITH THE PROJECT SITE AND TO VERIFY ALL CONDITIONS IN THE FIELD AND REPORT DISCREPANCIES BETWEEN PLANS AND ACTUAL CONDITIONS TO THE OWNER OR OWNER'S REPRESENTATION IMMEDIATELY.
9. THE CONTRACTOR SHALL CONDUCT ALL NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN ALL NECESSARY CONSTRUCTION PERMITS.
10. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE ESTABLISHMENT AND USE OF ALL VERTICAL AND HORIZONTAL CONSTRUCTION CONTROLS.
11. ELEVATIONS REFER TO DATUM NAVD 88.

EARTH MOVING AND GRADING NOTES:

1. ALL TOPSOIL ENCOUNTERED WITHIN THE WORK AREA SHALL BE STRIPPED TO ITS FULL DEPTH AND STOCKPILED FOR REUSE. EXCESS TOPSOIL SHALL BE REMOVED FROM THE SITE UNLESS OTHERWISE DIRECTED BY THE OWNER TO REMAIN. TOPSOIL PILES SHALL REMAIN SEGREGATED FROM EXCAVATED SUBSURFACE SOIL MATERIALS.
2. CROSS SLOPES OF ALL PEDESTRIAN WALKS SHALL NOT EXCEED 1.5%.
3. RUNNING SLOPE OF ALL PEDESTRIAN WALKS SHALL NOT EXCEED 4.5%, UNLESS OTHERWISE NOTED.
4. THE CONTRACTOR SHALL EXERCISE CAUTION IN ALL EXCAVATION ACTIVITY DUE TO POSSIBLE EXISTENCE OF UNRECORDED UTILITY LINES.
5. ALL PAVED AREAS MUST PITCH TO DRAIN AT A MINIMUM OF 1% UNLESS OTHERWISE NOTED.
6. PROVIDE POSITIVE DRAINAGE AWAY FROM FACE OF BUILDINGS AT ALL LOCATIONS.
7. PITCH EVENLY BETWEEN CONTOUR LINES AND BETWEEN SPOT GRADES. SPOT GRADE ELEVATIONS TAKE PRECEDENCE OVER CONTOUR LINES.
8. THE CONTRACTOR SHALL BLEND NEW GRADING SMOOTHLY INTO EXISTING GRADING AT LIMITS OF GRADING.
9. WHERE NEW PAVING MEETS EXISTING PAVING, MEET LINE AND GRADE OF EXISTING PAVING WITH SMOOTH TRANSITION BETWEEN EXISTING AND NEW SURFACES.
10. THE CONTRACTOR SHALL VERIFY EXISTING GRADES IN THE FIELD AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE ARCHITECT OR OWNER'S REPRESENTATIVE PRIOR TO STARTING WORK.
11. PITCH TOPS OF ALL WALLS AT ONE-EIGHTH INCH (1/8") PER FOOT FROM BACK OF WALL TO FACE OF WALL.
12. SURPLUS MATERIALS SHALL BE REMOVED FROM THE SITE UNLESS DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE TO REMAIN. REFER TO EARTHWORK SPECIFICATIONS.
13. ANY AREAS OUTSIDE OF THE LIMIT OF WORK THAT ARE DISTURBED SHALL BE RESTORED BY THE CONTRACTOR TO THE PRE-CONSTRUCTION CONDITION/GRADE AT NO COST TO THE OWNER.
14. EXCAVATION REQUIRED WITHIN PROXIMITY OF EXISTING UTILITY LINES SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT NO ADDITIONAL COST TO OWNER.

DEMOLITION NOTES:

1. SITE PREPARATION AND DEMOLITION SHALL INCLUDE THOSE AREAS WITHIN THE LIMITS OF DISTURBANCE LINE AS SHOWN ON THE CONTRACT DOCUMENTS.
2. ANY AREA OUTSIDE OF THE LIMITS OF DISTURBANCE THAT IS DISTURBED SHALL BE RESTORED TO ITS ORIGINAL CONDITION AT NO ADDITIONAL COST TO THE OWNER.
3. CONSULT ALL OF THE DRAWINGS AND SPECIFICATIONS FOR COORDINATION REQUIREMENTS BEFORE COMMENCING DEMOLITION.
4. THE CONTRACTOR SHALL COORDINATE SITE DEMOLITION EFFORTS WITH ALL TRADES THAT MAY BE AFFECTED BY THE WORK.
5. ALL ITEMS REQUIRING REMOVAL SHALL BE REMOVED TO FULL DEPTH TO INCLUDE BASE MATERIAL AND FOOTINGS OR FOUNDATIONS AS REQUIRED TO FACILITATE CONSTRUCTION, AND LEGALLY DISPOSED OF OFFSITE BY CONTRACTOR.
6. UTILITY PIPES DESIGNATED TO BE ABANDONED IN PLACE SHALL BE PLUGGED AT THEIR ENDS WITH WATERTIGHT BRICK MASONRY OR CEMENT MORTAR WITH A MINIMUM THICKNESS OF 8 INCHES.
7. UTILITY PIPES DESIGNATED TO BE REMOVED SHALL CONSIST OF THE COMPLETE REMOVAL AND DISPOSAL OF THE ENTIRE LENGTH OF PIPE AND BACKFILL AND 95% COMPACTION OF THE VOID WITH ORDINARY BORROW. WHEN THE VOID IS WITHIN THE FOOTPRINT OF THE NEW BUILDING, GRAVEL BORROW SHALL BE USED TO BACKFILL THE VOID.
8. UTILITY STRUCTURES DESIGNATED TO BE ABANDONED IN PLACE SHALL HAVE THEIR CAST IRON CASTINGS REMOVED AND DISPOSED, INLET AND OUTLET PIPES PLUGGED, THE BOTTOM OF THE STRUCTURES SHALL BE BROKEN, THE VOID OF THE STRUCTURES SHALL BE BACKFILLED AND COMPACTED TO 95% WITH ORDINARY BORROW OR FLOWABLE FILL, AND THE TOP OF THE STRUCTURE SHALL BE REMOVED SO THAT IT IS AT LEAST 36 INCHES BELOW FINISH GRADE.
9. UTILITY STRUCTURES DESIGNATED TO BE REMOVED SHALL CONSIST OF THE REMOVAL AND DISPOSAL OF CAST IRON CASTINGS, PLUGGING OF INLET AND OUTLET PIPES, REMOVAL OF THE STRUCTURE, AND BACKFILL AND 95% COMPACTION OF THE VOID WITH ORDINARY BORROW. WHEN HE VOID IS WITHIN THE FOOTPRINT OF THE NEW BUILDING, GRAVEL BORROW SHALL BE USED TO BACKFILL THE VOID.
10. ALL DEBRIS GENERATED DURING SITE PREPARATION ACTIVITIES SHALL BE LEGALLY DISPOSED OF OFFSITE.
11. AT ALL LOCATIONS WHERE EXISTING CURBING, CONCRETE PAVEMENT OR BITUMINOUS CONCRETE ROADWAY ABUTS NEW CONSTRUCTION, THE EDGE OF THE EXISTING CURB OR PAVEMENT SHALL BE SAW CUT TO A CLEAN, SMOOTH EDGE.
12. THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER PRIOR TO ANY EXPANSION OF THE LIMITS OF DISTURBANCE. IF IT IS DEEMED NECESSARY TO EXTEND THE DESIGNATED LIMITS OF DISTURBANCE TO ACCOMPLISH ROUGH GRADING, EROSION CONTROL, AND SITE WORK AS REQUIRED BY THESE DRAWINGS AND SPECIFICATIONS, ADDITIONAL PERMITTING WILL BE REQUIRED FOR ANY EXPANSION OF THE LIMITS OF DISTURBANCE.
13. THE CONTRACTOR SHALL REMOVE FROM THE SITE ALL RUBBISH AND DEBRIS FOUND THEREON. STORAGE OF SUCH MATERIALS ON THE PROJECT SITE WILL NOT BE PERMITTED. THE CONTRACTOR SHALL LEAVE THE SITE IN SAFE, CLEAN, AND LEVEL CONDITION UPON COMPLETION OF THE SITE DEMOLITION WORK.
14. REMOVE AND STOCKPILE ALL EXISTING SITE LIGHTS, BENCHES, TRASH RECEPTACLES, TRAFFIC SIGNS, GRANITE CURB, AND OTHER SITE IMPROVEMENTS WITHIN LIMIT OF WORK LINE UNLESS OTHERWISE NOTED.
15. ALL EXISTING TREES AND SHRUBS TO REMAIN SHALL BE PROTECTED AND MAINTAINED THROUGHOUT THE TIME OF CONSTRUCTION, AS SPECIFIED AND DIRECTED BY THE EROSION AND SEDIMENT CONTROL PLANS.
16. BEFORE ANY TREES OR SHRUBS ARE REMOVED, THE CONTRACTOR SHALL ARRANGE A CONFERENCE ON THE SITE WITH THE OWNER OR OWNER'S REPRESENTATIVE TO IDENTIFY TREES AND SHRUBS THAT ARE TO BE REMOVED, AS WELL AS THOSE WHICH ARE TO BE PROTECTED. DO NOT COMMENCE CLEARING OPERATIONS WITHOUT A CLEAR UNDERSTANDING OF EXISTING CONDITIONS TO BE PRESERVED.
17. THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER PRIOR TO REMOVAL FROM THE AREA OF CONSTRUCTION PAVEMENT, CONCRETE, CURBING, POLES AND FOUNDATIONS, ISLANDS, TREE BERMS AND OTHER FEATURES WITHIN THE LIMITS OF CONSTRUCTION THAT ARE NOT INDICATED TO BE REMOVED ON SHEET C-1.0 AS REQUIRED TO ACCOMMODATE NEW CONSTRUCTION.

EROSION AND SEDIMENT CONTROL NOTES:

1. PRIOR TO STARTING ANY OTHER WORK ON THE SITE, THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES AND SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS IDENTIFIED IN FEDERAL, STATE, AND LOCAL APPROVAL DOCUMENTS PERTAINING TO THIS PROJECT.
 2. SEEDING OPERATIONS SHALL BE INITIATED WITHIN 7 DAYS AFTER REACHING FINAL GRADE OR UPON SUSPENSION OF GRADING OPERATIONS FOR ANTICIPATED DURATION OF GREATER THAN 14 DAYS OR UPON COMPLETION OF GRADING OPERATIONS FOR A SPECIFIC AREA.
 3. CONTRACTOR SHALL INSPECT AND MAINTAIN EROSION CONTROL MEASURES AND REMOVE SEDIMENT THEREFROM ON A WEEKLY BASIS AND WITHIN TWELVE HOURS AFTER EACH STORM EVENT. CONTRACTOR SHALL DISPOSE OF ANY SEDIMENTS REMOVED FROM EROSION CONTROL MEASURES IN AN UPLAND AREA SUCH THAT THEY DO NOT ENCUMBER OTHER DRAINAGE STRUCTURES AND PROTECTED AREAS.
 4. THE CONTRACTOR IS RESPONSIBLE FOR THE DAILY REMOVAL OF SEDIMENT THAT HAS BEEN TRANSPORTED ONTO A PAVED OR PUBLIC ROAD SURFACE.
 5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREVENTING SURFACE AND AIR MOVEMENT OF DUST FROM EXPOSED SOILS WHICH MAY PRESENT HEALTH HAZARDS, TRAFFIC SAFETY PROBLEMS, OR HARM ANIMAL OR PLANT LIFE.
 6. DISTURBANCE IS LOCATED ENTIRELY WITHIN THE RICHMOND COMBINED SEWER OVERFLOW (CSO).SEE [HTTP://WWW.DEQ.VIRGINIA.GOV/PROGRAM/WATER/STORMWATERMANAGEMENT/VSPPERMITS.ASPX](http://www.deq.virginia.gov/program/water/stormwatermanagement/vsppermits.aspx) FOR INFORMATION
 7. CONTRACTOR SHALL BE FULLY RESPONSIBLE TO CONTROL CONSTRUCTION SUCH THAT SEDIMENTATION SHALL NOT AFFECT REGULATORY PROTECTED AREAS WHETHER SUCH SEDIMENTATION IS CAUSED BY WATER, WIND, OR DIRECT DEPOSIT.
 8. CONTRACTOR SHALL SEQUENCE CONSTRUCTION SUCH THAT EARTH MATERIALS ARE EXPOSED FOR THE MINIMUM LENGTH OF TIME BEFORE THEY ARE COVERED, SEEDED, OR OTHERWISE STABILIZED TO PREVENT EROSION.
 9. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER, CONTRACTOR SHALL REMOVE AND DISPOSE OF EROSION CONTROL MEASURES AND CLEAN SEDIMENT AND DEBRIS FROM ALL DRAINAGE AND SEWER SYSTEMS.
- LAYOUT AND MATERIALS NOTES:
1. DIMENSIONS ARE FROM THE FACE OF CURB, FACE OF BUILDING, FACE OF WALL, AND CENTER LINE OF PAVEMENT MARKINGS, UNLESS OTHERWISE NOTED.
 2. CURB RADII ARE 5 FEET TO FACE OF CURB UNLESS OTHERWISE NOTED.
 3. CURBING SHALL BE CG-2 WITHIN THE SITE UNLESS OTHERWISE INDICATED ON THE PLANS.
 4. SEE ARCHITECTURAL DRAWINGS FOR EXACT BUILDING DIMENSIONS AND DETAILS CONTIGUOUS TO THE BUILDING, INCLUDING SIDEWALKS, RAMPS, BUILDING ENTRANCES, STAIRWAYS, UTILITY PENETRATIONS, CONCRETE DOOR PADS, COMPACTOR PAD, LOADING DOCKS, BOLLARDS, ETC.
 5. PROPOSED BONDS AND ANY EXISTING PROPERTY LINE MONUMENTS DISTURBED DURING CONSTRUCTION SHALL BE SET OR RESET BY A PROFESSIONAL LAND SURVEYOR.
 6. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL VERIFY EXISTING PAVEMENT ELEVATIONS AT INTERFACE WITH PROPOSED PAVEMENTS, AND EXISTING GROUND ELEVATIONS ADJACENT TO DRAINAGE OUTLETS TO ASSURE PROPER TRANSITIONS BETWEEN EXISTING AND PROPOSED FACILITIES.
 7. SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SCALED TO THEIR ACTUAL DIMENSIONS OR LOCATIONS ON THE DRAWINGS. THE CONTRACTOR SHALL REFER TO THE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT FEATURES.
 8. CONTRACTOR SHALL NOT RELY SOLELY ON ELECTRONIC VERSIONS OF THE PLANS, SPECIFICATIONS, AND DATA FILES THAT ARE OBTAINED FROM THE DESIGNERS, BUT SHALL VERIFY LOCATION OF PROJECT FEATURES IN ACCORDANCE WITH THE PAPER COPIES OF THE PLANS AND SPECIFICATIONS THAT ARE SUPPLIED AS A PART OF THE CONTRACT DOCUMENTS.

EXISTING LEGEND

	EXISTING ELEVATION CONTOURS
	EDGE OF LANDSCAPED AREA
	EXISTING ASPHALT
	EXISTING CONCRETE
	SURVEY CONTROL POINT
	CLEAN OUT
	UTILITY VAULT/HANDHOLE
	BASKETBALL HOOP
	DECIDUOUS TREE
	EVERGREEN TREE
	FENCE GATE POST
	FENCE
	SIGN

PROPOSED LEGEND

	LIMITS OF DISTURBANCE (0.92 AC)
	PROPERTY LINE
	EXISTING SITE FEATURE TO BE DEMOLISHED
	SAWCUT LINE
	ELEVATION CONTOURS
	CLEANOUT
	AREA DRAIN
	DRAIN MANHOLE
	DRAIN PIPE
	RIP-RAP OUTLET PROTECTION

ABBREVIATIONS

AD	AREA DRAIN
BC	BOTTOM OF CURB ELEVATION
BS	BOTTOM OF STAIR ELEVATION
BW	BOTTOM OF WALL ELEVATION
CB	CATCH BASIN
CO	CLEANOUT
CPP	CORRUGATED POLYETHYLENE PIPE
DMH	DRAIN MANHOLE
FFE	FINISHED FLOOR ELEVATION
INV	INVERT ELEVATION
LF	LINEAR FEET
LOD	LIMIT OF DISTURBANCE
MG	MATCH EXISTING GRADE
PERF	PERFORATED
PVC	POLYVINYL CHLORIDE PIPE
RD	ROOF DRAIN
RIM	RIM ELEVATION
TC	TOP OF CURB ELEVATION
TW	TOP OF WALL ELEVATION
TYP	TYPICAL



OWNER/CLIENT	ALLIANCE FOR THE CHESAPEAKE BAY
PROJECT MANAGER	NEAL FRIEDMAN
CIVIL ENGINEERING	NITSCH ENGINEERING
SURVEY	NYFELER SURVEY

NOT FOR CONSTRUCTION

REV.	07.17.2025	PERMIT
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KEY PLAN:NTS

MA PROJECT NO. 2402

AMELIA STREET SCHOOL ACCESSIBILITY TRAIL

1821 AMELIA STREET

CITY OF RICHMOND, VA

NOTES, LEGEND & ABBREVIATIONS

OWNER/CLIENT **ALLIANCE FOR THE CHESAPEAKE BAY**

PROJECT MANAGER **NEAL FRIEDMAN**

CIVIL ENGINEERING **NITSCH ENGINEERING**

SURVEY **NYFELER SURVEY**

**NOT FOR
CONSTRUCTION**

REV. 07.17.2025 PERMIT

KEY PLAN:NTS

MA PROJECT NO. 2402
**AMELIA STREET SCHOOL
ACCESSIBILITY TRAIL**

1821 AMELIA STREET
CITY OF RICHMOND, VA

EXISTING CONDITIONS AND DEMOLITION PLAN

SCALE:

$$1'' = 20'$$

of _____

C-1.0

DATE 03.04.2025 © MARVEL ARCHITECTS, PLLC 2025

AMELIA STREET SCHOOL
1-STORY BRICK SCHOOL BUILDING



MARVEL

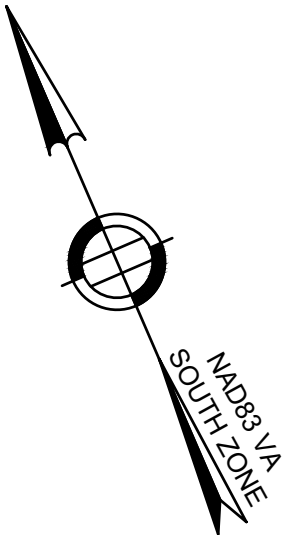
145 HUDSON STREET, FLR.3 NEW YORK, NY 10013
212.616.0470

OWNER/CLIENT ALLIANCE FOR THE CHESAPEAKE BAY

PROJECT MANAGER NEAL FRIEDMAN

CIVIL ENGINEERING NITSCH ENGINEERING

SURVEY NYFELER SURVEY



**NOT FOR
CONSTRUCTION**

REV. 07.17.2025 PERMIT

KEY PLAN:NTS

MA PROJECT NO. 2402
**AMELIA STREET SCHOOL
ACCESSIBILITY TRAIL**

1821 AMELIA STREET
CITY OF RICHMOND, VA

PHASE 1 EROSION AND
SEDIMENT CONTROL PLAN

**EROSION AND SEDIMENT
CONTROL LEGEND**

LOD (0.88 AC)

PROPERTY LINE

SAF	C-PCM-01 SAFTEY FENCE	SAF SAF
SSF	C-PCM-04 SUPER SILT FENCE	SSF SSF
TP	C-SSM-01 TREE PROTECTION	
BM	C-SSM-05 BLANKETS AND MATTING	
TS	C-SSM-09 TEMPORARY SEEDING	
PS	C-SSM-10 PERMANENT SEEDING	
CE	C-SCM-03 CONSTRUCTION ENTRANCE	
IP	C-SCM-04 INLET PROTECTION	
RR	C-ECM-13 RIVER ROCK RIP-RAP	

SCALE:

1" = 20'

20 10 0 20 40 of

C-2.0

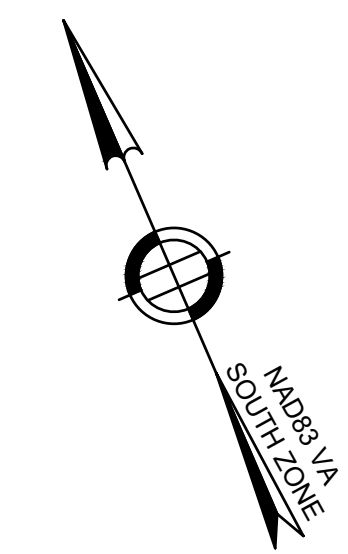


**NOT FOR
CONSTRUCTION**

KEY PLAN:NTS

1821 AMELIA STREET
CITY OF RICHMOND, VA

DATE 03.04.2025 © MARVEL ARCHITECTS, PLLC 21



SCALE:
1" = 20'

20 10 0 20 40 of

A horizontal graphic scale bar with alternating black and white segments. The segments are labeled 20, 10, 0, 20, 40 from left to right, indicating distances in feet. The bar is divided into five equal segments, each representing 10 feet.

C-2.1

NOTES:

1. UPSTREAM DRAINAGE AREAS SHALL BE STABILIZED WITH SUFFICIENT VEGETATIVE COVER PRIOR TO CONSTRUCTION AND INSTALLATION OF BIORETENTIONS.
2. CONSTRUCTION VEHICLES INVOLVED IN EXCAVATION OF BIORETENTION AREAS MUST AVOID COMPACTION OF PONDING AREA.

9VAC25-875-560. EROSION AND SEDIMENT CONTROL CRITERIA, TECHNIQUES, AND METHODS: MINIMUM STANDARDS.

AN EROSION AND SEDIMENT CONTROL PLAN CONSISTENT WITH THE FOLLOWING CRITERIA, TECHNIQUES, AND METHODS SHALL BE SUBMITTED TO THE VESMP AUTHORITY OR VESCP AUTHORITY FOR REVIEW AND APPROVAL:

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

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

3. A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT IS UNIFORM, IS MATURE ENOUGH TO SURVIVE, AND WILL INHIBIT EROSION.

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

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

6. SEDIMENT TRAPS AND SEDIMENT BASINS SHALL BE DESIGNED AND CONSTRUCTED BASED UPON THE TOTAL DRAINAGE AREA TO BE SERVED BY THE TRAP OR BASIN.

A. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT TRAP SHALL BE 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA AND THE TRAP SHALL ONLY CONTROL DRAINAGE AREAS LESS THAN THREE ACRES.

B. SURFACE RUNOFF FROM DISTURBED AREAS THAT IS COMPRISED OF FLOW FROM DRAINAGE AREAS GREATER THAN OR EQUAL TO THREE ACRES SHALL BE CONTROLLED BY A SEDIMENT BASIN. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT BASIN SHALL BE 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA. THE OUTFALL SYSTEM SHALL, AT A MINIMUM, MAINTAIN THE STRUCTURAL INTEGRITY OF THE BASIN DURING A 25-YEAR STORM OF 24-HOUR DURATION. RUNOFF COEFFICIENTS USED IN RUNOFF CALCULATIONS SHALL CORRESPOND TO A BARE EARTH CONDITION OR THOSE CONDITIONS EXPECTED TO EXIST WHILE THE SEDIMENT BASIN IS UTILIZED.

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

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

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

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

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

12. WHEN WORK IN A LIVE WATERCOURSE IS PERFORMED, PRECAUTIONS SHALL BE TAKEN TO MINIMIZE ENCROACHMENT, CONTROL SEDIMENT TRANSPORT, AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION. NONERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NONERODIBLE COVER MATERIALS.

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

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

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

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

A. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.

B. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.

C. EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY.

D. MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION.

E. RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THIS CHAPTER.

F. APPLICABLE SAFETY REQUIREMENTS SHALL BE COMPLIED WITH.

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

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

19. PROPERTIES AND WATERWAYS DOWNSTREAM FROM DEVELOPMENT SITES SHALL BE PROTECTED FROM SEDIMENT DEPOSITION, EROSION, AND DAMAGE DUE TO INCREASES IN VOLUME, VELOCITY, AND PEAK FLOW RATE OF STORMWATER RUNOFF FOR THE STATED FREQUENCY STORM OF 24-HOUR DURATION IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND CRITERIA. STREAM RESTORATION AND RELOCATION PROJECTS THAT INCORPORATE NATURAL CHANNEL DESIGN CONCEPTS ARE NOT MANMADE CHANNELS AND SHALL BE EXEMPT FROM ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MANMADE CHANNELS.

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

b. ADEQUACY OF ALL CHANNELS AND PIPES SHALL BE VERIFIED IN THE FOLLOWING MANNER:

(1) THE APPLICANT SHALL DEMONSTRATE THAT THE TOTAL DRAINAGE AREA TO THE POINT OF ANALYSIS WITHIN THE CHANNEL IS 100 TIMES GREATER THAN THE CONTRIBUTING DRAINAGE AREA OF THE PROJECT IN QUESTION; OR

(2) (A) NATURAL CHANNELS SHALL BE ANALYZED BY THE USE OF A TWO-YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP CHANNEL BANKS NOR CAUSE EROSION OF CHANNEL BED OR BANKS.

(b) ALL PREVIOUSLY CONSTRUCTED MANMADE CHANNELS SHALL BE ANALYZED BY THE USE OF A 10-YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP THE STORMWATERS BANKS AND BY THE USE OF A TWO-YEAR STORM TO DEMONSTRATE THAT STORMWATER WILL NOT CAUSE EROSION OF CHANNEL BED OR BANKS; AND

(c) PIPES AND STORM SEWER SYSTEMS SHALL BE ANALYZED BY THE USE OF A 10-YEAR STORM TO VERIFY THAT STORMWATER WILL BE CONTAINED WITHIN THE PIPE OR SYSTEM.

c. IF EXISTING NATURAL RECEIVING CHANNELS OR PREVIOUSLY CONSTRUCTED MANMADE CHANNELS OR PIPES ARE NOT ADEQUATE, THE APPLICANT SHALL:

(1) IMPROVE THE CHANNELS TO A CONDITION WHERE A 10-YEAR STORM WILL NOT OVERTOP THE BANKS AND A TWO-YEAR STORM WILL NOT CAUSE EROSION TO THE CHANNEL, THE BED, OR THE BANKS;

(2) IMPROVE THE PIPE OR PIPE SYSTEM TO A CONDITION WHERE THE 10-YEAR STORM IS CONTAINED WITHIN THE APPURTENANCES;

(3) DEVELOP A SITE DESIGN THAT WILL NOT CAUSE THE PREDEVELOPMENT PEAK RUNOFF RATE FROM A TWO-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A NATURAL CHANNEL OR WILL NOT CAUSE THE PREDEVELOPMENT PEAK RUNOFF RATE FROM A 10-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A MANMADE CHANNEL; OR

(4) PROVIDE A COMBINATION OF CHANNEL IMPROVEMENT, STORMWATER DETENTION, OR OTHER MEASURES THAT IS SATISFACTORY TO THE VESCP OR VESMP AUTHORITY TO PREVENT DOWNSTREAM EROSION.

d. THE APPLICANT SHALL PROVIDE EVIDENCE OF PERMISSION TO MAKE THE IMPROVEMENTS.

e. ALL HYDROLOGIC ANALYSES SHALL BE BASED ON THE EXISTING WATERSHED CHARACTERISTICS AND THE ULTIMATE DEVELOPMENT CONDITION OF THE SUBJECT PROJECT.

f. IF THE APPLICANT CHOOSES AN OPTION THAT INCLUDES STORMWATER DETENTION, THE APPLICANT SHALL OBTAIN APPROVAL FROM THE VESCP OR VESMP AUTHORITY FOR A PLAN FOR MAINTENANCE OF THE DETENTION FACILITIES. THE PLAN SHALL SET FORTH THE MAINTENANCE REQUIREMENTS OF THE FACILITY AND THE PERSON RESPONSIBLE FOR PERFORMING THE MAINTENANCE.

g. OUTFALL FROM A DETENTION FACILITY SHALL BE DISCHARGED TO A RECEIVING CHANNEL, AND ENERGY DISSIPATORS SHALL BE PLACED AT THE OUTFALL OF ALL DETENTION FACILITIES AS NECESSARY TO PROVIDE A STABILIZED TRANSITION FROM THE FACILITY TO THE RECEIVING CHANNEL.

h. ALL ON-SITE CHANNELS MUST BE VERIFIED TO BE ADEQUATE.

i. INCREASED VOLUMES OF SHEET FLOWS THAT MAY CAUSE EROSION OR SEDIMENTATION ON ADJACENT PROPERTY SHALL BE DIVERTED TO A STABLE OUTLET, ADEQUATE CHANNEL, PIPE, OR PIPE SYSTEM OR TO A DETENTION FACILITY.

j. IN APPLYING THESE STORMWATER MANAGEMENT CRITERIA, INDIVIDUAL LOTS OR PARCELS IN A RESIDENTIAL, COMMERCIAL, OR INDUSTRIAL DEVELOPMENT SHALL NOT BE CONSIDERED TO BE SEPARATE DEVELOPMENT PROJECTS. INSTEAD, THE DEVELOPMENT, AS A WHOLE, SHALL BE CONSIDERED TO BE A SINGLE DEVELOPMENT PROJECT. HYDROLOGIC PARAMETERS THAT REFLECT THE ULTIMATE DEVELOPMENT CONDITION SHALL BE USED IN ALL ENGINEERING CALCULATIONS.

k. ALL MEASURES USED TO PROTECT PROPERTIES AND WATERWAYS SHALL BE EMPLOYED IN A MANNER THAT MINIMIZES IMPACTS ON THE PHYSICAL, CHEMICAL, AND BIOLOGICAL INTEGRITY OF RIVERS, STREAMS, AND OTHER WATERS OF THE STATE.

l. ANY PLAN APPROVED PRIOR TO JULY 1, 2014, THAT PROVIDES FOR STORMWATER MANAGEMENT THAT ADDRESSES ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MANMADE CHANNELS SHALL SATISFY THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MANMADE CHANNELS IF THE PRACTICES ARE DESIGNED TO (i) DETAIN THE WATER QUALITY VOLUME AND TO RELEASE IT OVER 48 HOURS; (ii) DETAIN AND RELEASE OVER A 24-HOUR PERIOD THE EXPECTED RAINFALL RESULTING FROM THE ONE YEAR, 24-HOUR STORM; AND (iii) REDUCE THE ALLOWABLE PEAK FLOW RATE RESULTING FROM THE 1.5-YEAR, TWO-YEAR, AND 10-YEAR 24-HOUR STORMS TO A LEVEL THAT IS LESS THAN OR EQUAL TO THE PEAK FLOW RATE FROM THE SITE ASSUMING THE SITE WAS IN A GOOD FORESTED CONDITION, ACHIEVED THROUGH MULTIPLICATION OF THE FORESTED PEAK FLOW RATE BY A REDUCTION FACTOR THAT IS EQUAL TO THE RUNOFF VOLUME FROM THE SITE WHEN THE SITE WAS IN A GOOD FORESTED CONDITION DIVIDED BY THE RUNOFF VOLUME FROM THE SITE IN THE SITE'S PROPOSED CONDITION, AND SHALL BE EXEMPT FROM ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MANMADE CHANNELS AS DEFINED IN ANY REGULATIONS PROMULGATED PURSUANT TO § 62-144.15.28 OF THE CODE OF VIRGINIA (VESMA) OR § 62-144.15.54 OR 62-144.15.65 OF THE CODE OF VIRGINIA (ESCL).

m. FOR PLANS APPROVED ON AND AFTER JULY 1, 2014, THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS OF § 62-144.15.52 A OF THE CODE OF VIRGINIA (ESCL) THIS SUBDIVISION 19 SHALL BE SATISFIED BY COMPLIANCE WITH WATER QUANTITY REQUIREMENTS IN THE VESMA AND ATTENDANT REGULATIONS, UNLESS SUCH LAND-DISTURBING ACTIVITIES (i) ARE IN ACCORDANCE WITH PROVISIONS FOR TIME LIMITS ON APPLICABILITY OF APPROVED DESIGN CRITERIA IN 9VAC25-875-540 OR GRANDFATHERING IN 9VAC25-875-450, IN WHICH CASE THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS OF § 62-144.15.52 A OF THE CODE OF VIRGINIA (ESCL) SHALL APPLY; OR (ii) ARE EXEMPT PURSUANT TO § 62-144.15.34 G 2 OF THE CODE OF VIRGINIA (VESMA).

n. COMPLIANCE WITH THE WATER QUANTITY MINIMUM STANDARDS SET OUT IN 9VAC25-875-600 SHALL BE DEEMED TO SATISFY THE REQUIREMENTS OF THIS SUBDIVISION 19.

CITY OF RICHMOND EROSION AND SEDIMENT CONTROL NOTES

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

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

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

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

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

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

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

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

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

GENERAL EROSION AND SEDIMENT CONTROL NOTES

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

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

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

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

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

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

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

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

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

EROSION AND SEDIMENT CONTROL NARRATIVE:

PROJECT DESCRIPTION

THIS PROJECT INCLUDES THE CONSTRUCTION OF A NEW WALKWAY, GATHERING AND PLAY AREAS AND STORMWATER BEST MANAGEMENT PRACTICES. THE LIMITS OF DISTURBANCE IS 0.92 AC.

EXISTING SITE CONDITIONS

THE SITE IS WITHIN THE GROUNDS OF A SCHOOLYARD, AND CONSISTS OF ASPHALT WALKWAYS, AN ASPHALT BASKETBALL COURT, A GAZEBO, A GREENHOUSE, TWO PLAYGROUNDS, AND LAWN AREA. THE SITE DRAINS VIA SHEET FLOW FROM THE NORTHEAST TO SOUTHWEST PROPERTY LINE ALONG COLORADO AVE. ULTIMATELY DRAINING INTO THE CITY OF RICHMOND COMBINED SEWER SYSTEM.

ADJACENT PROPERTY

THE WESTERN PROPERTY LINE IS BOUND BY S MEADOW ST. THE NORTHERN PROPERTY LINE IS BOUND BY AMELIA ST. THE EASTERN PROPERTY LINE IS BOUND BY S ALLEN AVE. THE SOUTHERN PROPERTY LINE IS BOUND BY COLORADO AVE. THE NEIGHBORING PROPERTIES OPPOSITE THE RIGHT OF WAY ON THREE SIDES OF THE PROPERTY ARE RESIDENTIAL, AND OPPOSITE S ALLEN AVE IS A SCHOOL.

OFF-SITE AREAS

NO OFFSITE AREAS WILL BE DISTURBED AS PART OF CONSTRUCTION.

SOILS

THE UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE SOILS MAP REPORTS THE SITE SOILS AS CONSISTING OF:

4D - APLING WEDOWEE COMPLEX, 12 TO 20 PERCENT SLOPES, WELL DRAINED, HYDROLOGIC SOIL GROUP B
37B - TURBEVILLE-URBAN LAND COMPLEX, 2 TO 6 PERCENT SLOPES, WELL DRAINED, HYDROLOGIC SOIL GROUP B

CRITICAL EROSION AREAS

THERE ARE NO CRITICAL EROSION AREAS ON THE SITE.

ACCORDING TO THE U.S. FEDERAL EMERGENCY MANAGEMENT (FEMA) FLOOD INSURANCE RATE MAP, THERE ARE NO FEMA FLOODPLAINS ON THE PROPOSED SITE.

THERE ARE NO WETLANDS LOCATED WITHIN THE LIMITS OF THIS SITE.

EROSION AND SEDIMENT CONTROL MEASURES

UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE CURRENT EDITION OF THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK. THE MINIMUM STANDARDS OF THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK SHALL BE ADHERED TO UNLESS OTHERWISE WAIVED OR APPROVED BY A VARIANCE BY LOCAL AUTHORITIES HAVING JURISDICTION.

STRUCTURAL PRACTICES:

1. **TEMPORARY CONSTRUCTION ENTRANCE C-SCM-02** - A TEMPORARY CONSTRUCTION ENTRANCE SHALL BE PROVIDED AT THE LOCATION INDICATED ON THE PLANS. IT IS IMPERATIVE THAT THIS MEASURE BE MAINTAINED THROUGHOUT CONSTRUCTION. ITS PURPOSE IS TO REDUCE THE AMOUNT OF MUD TRANSPORTED ONTO PAVED PUBLIC ROADS BY MOTOR VEHICLES OR RUNOFF.
2. **SILT FENCE BARRIER C-PCM-04** - SILT FENCE SEDIMENT BARRIERS SHALL BE INSTALLED DOWNSTREAM OF AREAS WITH MINIMAL GRADES TO FILTER SEDIMENT-LADEN RUNOFF FROM SHEET FLOW AS INDICATED. ITS PURPOSE IS TO INTERCEPT SMALL AMOUNTS OF SEDIMENT FROM DISTURBED AREAS AND PREVENT SEDIMENT FROM LEAVING THE SITE.
3. **STORM DRAIN INLET PROTECTION C-SCM-04** - STONE FILTERS SHALL BE PLACED AT THE INLET OF ALL DRAINAGE STRUCTURES AS INDICATED ON PLANS. ITS PURPOSE IS TO PREVENT SEDIMENT FROM ENTERING THE STORM DRAINAGE SYSTEM PRIOR TO PERMANENT STABILIZATION.
4. **CULVERT INLET PROTECTION C-SCM-05** - CULVERT INLET PROTECTION SHALL BE USED TO PREVENT SEDIMENT FROM ENTERING, ACCUMULATING, AND BEING TRANSPORTED BY A CULVERT AND ASSOCIATED DRAINAGE SYSTEM BEFORE THE PERMANENT STABILIZATION OF A DISTURBED PROJECT AREA.
5. **OUTLET PROTECTION C-ESM-15** - STRUCTURALLY LINED APRONS OR OTHER ACCEPTABLE ENERGY DISSIPATING DEVICES SHALL BE PLACED AT ALL OUTLETS OF PIPES OR PAVED CHANNEL SECTIONS.

VEGETATIVE PRACTICES:

1. **TREE PRESERVATION AND PROTECTION C-SSM-01** - DESIGNATED TREES SHALL BE PROTECTED FROM CONSTRUCTION ACTIVITIES VIA FENCING AND ARMORING. THE PURPOSE IS TO ENSURE THE SURVIVAL OF DESIRABLE TREES AND PROTECT THEIR ROOT ZONES FROM CONSTRUCTION EQUIPMENT OR SOIL COMPACTION BY VEHICULAR TRAFFIC.
2. **TOPSOIL TEMPORARY STOCKPILES C-SSM-02** - TOPSOIL SHALL BE STRIPPED FROM AREAS TO BE GRADED AND STOCKPILED FOR LATER SPREADING. STOCKPILE LOCATIONS SHALL BE LOCATED ONSITE AND SHALL BE STABILIZED WITH TEMPORARY SILT FENCE AND VEGETATION.
3. **SOIL STABILIZATION BLANKETS & MATTING C-SSM-05** - A PROTECTIVE COVERING BLANKET OR SOIL STABILIZATION MAT SHALL BE INSTALLED ON PREPARED PLANTING AREAS OF CHANNELS TO PROTECT AND PROMOTE VEGETATION ESTABLISHMENT AND REINFORCE ESTABLISHED TURF.
4. **TEMPORARY SEEDING C-SSM-09** - ALL DENUDED AREAS WHICH WILL BE LEFT DORMANT FOR MORE THAN 30 DAYS SHALL BE SEEDED WITH FAST GERMINATING TEMPORARY VEGETATION IMMEDIATELY FOLLOWING GRADING OF THOSE AREAS. SELECTION OF THE SEED MIXTURE SHALL DEPEND ON THE TIME OF YEAR IT IS APPLIED.
5. **PERMANENT SEEDING C-SSM-10** - FOLLOWING GRADING ACTIVITIES, ESTABLISH PERENNIAL VEGETATIVE COVER BY PLANTING SEED TO REDUCE EROSION, STABILIZE DISTURBED AREAS, AND ENHANCE NATURAL BEAUTY.

MAINTENANCE OF EROSION AND SEDIMENT CONTROL FACILITIES

ALL MAINTENANCE OF TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL FACILITIES SHALL BE CARRIED OUT IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL REGULATIONS (9VAC25-840-40). DURING THE PERIOD THAT THE PROJECT SITE IS UNDER CONSTRUCTION, THE CONTRACTOR WILL BE RESPONSIBLE FOR MAINTENANCE OF THE EROSION AND SEDIMENT CONTROL FACILITIES. THE CONTRACTOR WILL INSPECT EROSION AND SEDIMENT CONTROL FACILITIES ON A REGULAR BASIS, ESPECIALLY AFTER PERIODS OF HEAVY RAINFALL. ANY DAMAGE DISCOVERED WILL BE REPAIRED PROMPTLY BY THE CONTRACTOR. FURTHERMORE, A READILY AVAILABLE SUPPLY OF EROSION AND SEDIMENT CONTROL MATERIALS WILL BE MAINTAINED BY THE CONTRACTOR AT ALL TIMES.

1. CONSTRUCTION ENTRANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS OF WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR THE WASHING AND REWORKING OF EXISTING STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANUP OF ANY STRUCTURES USED TO TRAP SEDIMENT.
2. SILT FENCE - SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER. CLOSE ATTENTION SHALL BE PAID TO THE REPAIR OF DAMAGED SILT FENCE RESULTING FROM END RUNS AND UNDERCUTTING.
3. INLET PROTECTION - THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NECESSARY. SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ONE HALF THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.

PERMANENT STABILIZATION

ALL NON-PAVED AREAS DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY FOLLOWING FINISHED GRADING. SEEDING SHALL BE IN ACCORDANCE WITH STD. & SPEC. C-SSM-10. PERMANENT SEEDING. SEED TYPE SHALL BE AS SPECIFIED FOR "GENERAL SLOPE (3H:1V OR LESS)" IN TABLE C-SSM-10-7 OF THE HANDBOOK FOR SLOPES LESS THAN 3:1. FOR SLOPES GREATER THAN 3:1, SEED TYPE SHALL BE AS SPECIFIED FOR "LOW-MAINTENANCE SLOPE (3:1) OR INACCESSIBLE AREA" IN TABLE C-SSM-10-7 OF THE HANDBOOK. MULCH (STRAW OR FIBER) SHALL BE USED ON ALL SEEDED SURFACES. IN ALL SEEDING OPERATIONS SEED, FERTILIZER AND LIME SHALL BE APPLIED PRIOR TO MULCHING.

PUMPING OF STORMWATER

SHOULD IT BE NECESSARY TO PUMP STORMWATER DURING CONSTRUCTION BECAUSE THE GRADING WILL NOT ALLOW FOR GRAVITY FLOW, THEN THE PUMPED STORMWATER MUST BE FILTERED THROUGH A SILT SACK OR SIMILAR SEDIMENT TRAPPING DEVICE BEFORE DRAINING INTO THE ADJACENT STORM SEWER SYSTEM.

STORMWATER RUNOFF CONSIDERATIONS

DURING DEMOLITION AND THROUGHOUT CONSTRUCTION, STORMWATER RUNOFF WILL SHEET FLOW TO EXISTING OR PROPOSED STORMWATER INLETS OR CONVEYANCES, WITH INLET PROTECTION, AND OTHER PERIMETER CONTROLS SUCH AS SILT FENCE. THROUGH THESE MEASURES, THE RUNOFF WILL BE FILTERED PRIOR TO RELEASE INTO THE EXISTING STORM SEWER SYSTEM.

SEQUENCE OF INSTALLATION

PHASE I (SEE SHEET C-2.0)

1. A PRE-CONSTRUCTION MEETING IS REQUIRED WITH THE CITY OF RICHMOND E&S INSPECTOR, CONTRACTOR, OWNER, AND ENGINEER. THIS MEETING SHALL TAKE PLACE AT THE COUNTY OFFICE BUILDING. CLEARING LIMITS MUST BE FLAGGED PRIOR TO THE MEETING WITH ONE (1) WEEK OF NOTICE.
2. INSTALL CONSTRUCTION ENTRANCE. SHOULD THE TEMPORARY CONSTRUCTION ENTRANCE NOT BE MAINTAINED PROPERLY OR AN EXCESSIVE AMOUNT OF SOIL BE TRACKED ONTO THE PUBLIC ROADWAY, THEN A PAVED CONSTRUCTION ENTRANCE, WATER TANKER TRUCK WITH PRESSURE WASHERS, AND SETTING AREA MAY BE REQUIRED BY THE EROSION CONTROL INSPECTOR.
3. INSTALL PERIMETER SILT FENCE AND TREE PROTECTION ALONG LIMITS OF GRADING.
4. AFTER ALL MEASURES ARE IN PLACE, CONTRACTOR TO COORDINATE INSPECTIONS AS REQUIRED BY THE CITY OF RICHMOND.
5. CLEAR THE PROJECT AREA AND BRING SITE UP TO GRADE.
6. SEED ALL DENUDED AREAS PER VIRGINIA STORMWATER HANDBOOK CONSTRUCTION BMP STANDARDS.

PHASE II (SEE SHEET C-2.1)

1. AS CONTRACTOR BRINGS SITE UP TO GRADE - CONSTRUCTION ENTRANCE STABILIZATION MAY BE REQUIRED IF DEEMED NECESSARY.
2. MAINTAIN POSITIVE DRAINAGE TO PERIMETER CONTROLS. ENSURE THAT NO SECTION OF SILT FENCE IS OVERLOADED. SEED ALL DENUDED AREAS PER VESCH STANDARDS.
3. STABILIZE ALL UPSTREAM AREAS PRIOR TO INSTALLATION AND CONNECTION OF DRAINAGE THROUGH BIORETENTION PRACTICES.
4. FOLLOWING STABILIZATION AND CONNECTION OF ALL PERMANENT STORMWATER MEASURES, REMOVE PHASE I EROSION CONTROL MEASURES.

SEQUENCE OF CONSTRUCTION

THE FOLLOWING OUTLINES THE GENERAL CONSTRUCTION SEQUENCE THAT WILL BE EMPLOYED DURING THE SITE CONSTRUCTION STAGE:

1. A PRE-CONSTRUCTION MEETING MUST TAKE PLACE PRIOR TO ANY LAND DISTURBING ACTIVITIES. THE OWNERS REPRESENTATIVE, ENGINEER, EROSION CONTROL INSPECTOR, AND CONTRACTOR MUST BE PRESENT AT THIS MEETING. THE SITE WORK CONTRACTOR SHALL GIVE THE DEO INSPECTOR TWO WORKING DAYS NOTIFICATION.
2. A CERTIFIED RESPONSIBLE LAND DISTURBER (RLD) IS REQUIRED DURING ALL STAGES OF CONSTRUCTION. FROM THE INITIAL LAND DISTURBANCE THROUGH FINAL SITE STABILIZATION, THE NAME OF THE PROJECT RLD MUST BE PROVIDED BEFORE ANY LAND DISTURBANCE MAY BEGIN.
3. THE SITE CONTRACTOR WILL BE RESPONSIBLE FOR SCHEDULING AND CONDUCTING ALL NECESSARY INSPECTIONS WITH THE APPROPRIATE LOCAL AND STATE OFFICIALS. COORDINATION WITH THE APPROPRIATE ENTITIES WILL BE EXECUTED BY THE CONTRACTOR.
4. PRIOR TO STARTING ANY OTHER WORK ON THE SITE, THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES AND SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS IDENTIFIED IN FEDERAL, STATE, AND LOCAL APPROVAL DOCUMENTS PERTAINING TO THIS PROJECT. THE SITE WORK CONTRACTOR SHALL GIVE THE EROSION AND SEDIMENT CONTROL INSPECTOR 1 WEEK NOTIFICATION PRIOR TO COMMENCING WORK.
5. DURING PHASE I EROSION AND SEDIMENT CONTROL WORK, THE CONTRACTOR SHALL INSTALL PERIMETER CONTROLS SUCH AS SILT FENCING, SAFETY FENCING, CONSTRUCTION ENTRANCES, LAY DOWN AREAS, AND INLET PROTECTION AS SHOWN ON THE EROSION CONTROL PLAN. LAND DISTURBANCE WITHIN THE LIMITS OF DISTURBANCE MAY NOT OCCUR UNTIL THE INITIAL ESC MEASURES INSTALLATION HAS BEEN APPROVED BY THE ENVIRONMENTAL INSPECTOR.
6. CONTRACTOR SHALL INSPECT AND MAINTAIN EROSION CONTROL MEASURES, AND REMOVE SEDIMENT THEREFROM ON A WEEKLY BASIS AND WITHIN 12 HOURS AFTER EACH STORM EVENT AND DISPOSE OF THE SEDIMENTS IN AN UPLAND AREA SUCH THAT THEY DO NOT ENCUMBER OTHER DRAINAGE STRUCTURES AND PROTECTED AREAS. CONTRACTOR IS FULLY RESPONSIBLE TO CONTROL CONSTRUCTION SUCH THAT SEDIMENTATION SHALL NOT AFFECT REGULATORY PROTECTED AREAS, WHETHER SUCH SEDIMENTATION IS CAUSED BY WATER, WIND, OR DIRECT DEPOSIT.
7. CONTRACTOR SHALL PROVIDE SURFACE DRAINAGE FROM GRADING OPERATIONS TO ADJACENT STORM SEWER STRUCTURES IF POSSIBLE. INLET PROTECTION SHALL BE PROVIDED FOR ALL DOWNSTREAM STRUCTURES AND INSPECTED AND MAINTAINED ON A WEEKLY BASIS.
8. DEMOLITION OF THE SITE MAY BEGIN AFTER PHASE 1 EROSION CONTROL MEASURES ARE INSTALLED AND APPROVED BY THE INSPECTOR.
9. UPON COMPLETION OF SITE DEMOLITION, ROUGH GRADING OPERATIONS MAY COMMENCE. DEWATERING DEVICES TO BE INSTALLED AS NECESSARY TO REMOVE TRAPPED WATER FROM THE EXCAVATED AREA. REFER TO THE PUMPING OF STORMWATER NOTE ON WITH THE EROSION CONTROL DETAILS.
10. BEGIN INSTALLATION OF PROPOSED STORM SEWER PIPES AND INLETS. CONTRACTOR SHALL COORDINATE UTILITY CONNECTIONS WITH THE CITY OF RICHMOND DEPARTMENT OF PUBLIC UTILITIES.
11. INSTALL DRAINAGE STRUCTURES AS REQUIRED.
12. INSTALL SITE HARDSCAPE AND FINE GRADE SIDEWALKS.
13. STABILIZE ALL AREAS AS REQUIRED IN PLANS AND SPECIFICATIONS.
14. INSTALL BIORETENTIONS ACCORDING TO PLANS AND SPECIFICATIONS ONCE ALL UPSTREAM DRAINAGE AREAS HAVE BEEN STABILIZED.
15. APPLY TEMPORARY SEEDING WITHIN 7 DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT FOR PERIODS LONGER THAN 14 DAYS. APPLY PERMANENT SEEDING TO AREAS THAT WILL REMAIN DORMANT FOR MORE THAN 1 YEAR.
16. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL REMAIN IN OPERATION AND MAINTAINED UNTIL CONSTRUCTION OPERATIONS ARE COMPLETE. TEMPORARY ESC MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER THEY ARE NO LONGER NEEDED. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER, CONTRACTOR SHALL REMOVE AND DISPOSE OF EROSION CONTROL MEASURES AND CLEAN SEDIMENT AND DEBRIS FROM SITE PAVEMENTS AND SEWER SYSTEMS.



Table C-SSM-09-2 Liming		
Liming Requirements for Temporary Sites		
pH Test	Recommended Application of Agricultural Limestone	
below 4.2	3 tons per acre	
4.2 to 5.2	2 tons per acre	
5.2 to 6	1 ton per acre	

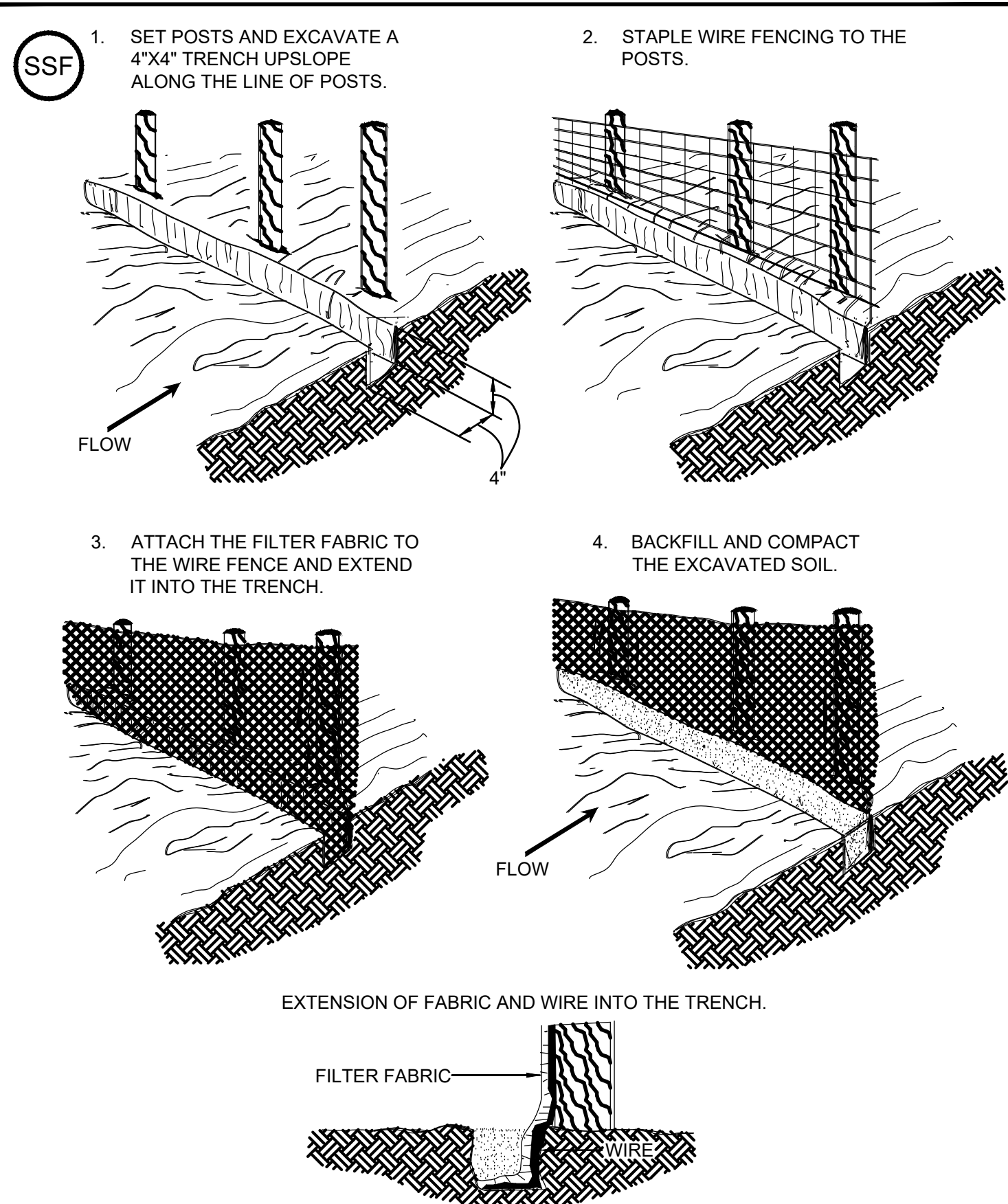
Source: Va. DSWC

Table C-SSM-09-3 Plant Material for Temporary Seeding		
Acceptable Temporary Seeding Plant Materials “Quick Reference for all Regions”		
Planting Dates	Species	Rate (pounds per acre)
Sept. 1 – Feb. 15	50/50 Mix of annual ryegrass (<i>Lolium multi-florum</i>) & cereal (winter) rye (<i>Secale cereale</i>)	50 – 100
Feb. 16 – Apr. 30*	Annual ryegrass (<i>Lolium multi-florum</i>)	60 – 100
May 1* – Aug. 31	German millet (<i>Setaria italica</i>)	50

* The shift date for annual rye to German millet should be April 15 for the Piedmont and Coastal Plain, rather than May 1.

Table C-SSM-09-4 Temporary Seeding Applications									
Temporary Seeding Plant Materials, Seeding Rates, and Dates									
Species	Seeding Rate	North ^a			South ^b			Plant Characteristics	
	lbs./acre	lbs./1,000 ft ²	3/1 - 4/30	5/1 8/15	8/15 11/1	2/15 4/30	5/1 9/1 - 11/15		
Oats (<i>Avena sativa</i>)	50 – 100	2.0	X	-	--	X	-	-	Use spring varieties (e.g., Noble).
Rye ^d (<i>Secale cereale</i>)	50 – 110	2.5	X	-	X	X	-	X	Use for late fall seedings, winter cover. Tolerates cold and low moisture.
German millet (<i>Setaria italica</i>)	50	1.0	-	X*	-	-	X*	-	Warm-season annual. Dies at first frost. May be added to summer mixes.
Annual ryegrass ^c (<i>Lolium multi-florum</i>)	60	1.5	X*	-	X	X*	-	X	May be added in mixes. Will mow out of most stands.
Korean Lespedeza ^c (<i>Lespedeza stipulacea</i>)	25	1.5	X	X	-	X	X	-	Warm-season annual legume. Tolerates acid soils. May only be used in a mix with another grass (e.g., annual or cereal rye); it is not suitable as a pure seeding for this purpose.
a. Northern Piedmont and Mountain regions. See Figure C-ENV-01-1 and Figure C-ENV-01-2 .									
b. Southern Piedmont and Coastal Plain.									
c. May be used as a cover crop with spring seeding.									
d. May be used as a cover crop with fall seeding.									
Xa. May not be planted between these dates.									
-f. May be planted between these dates.									

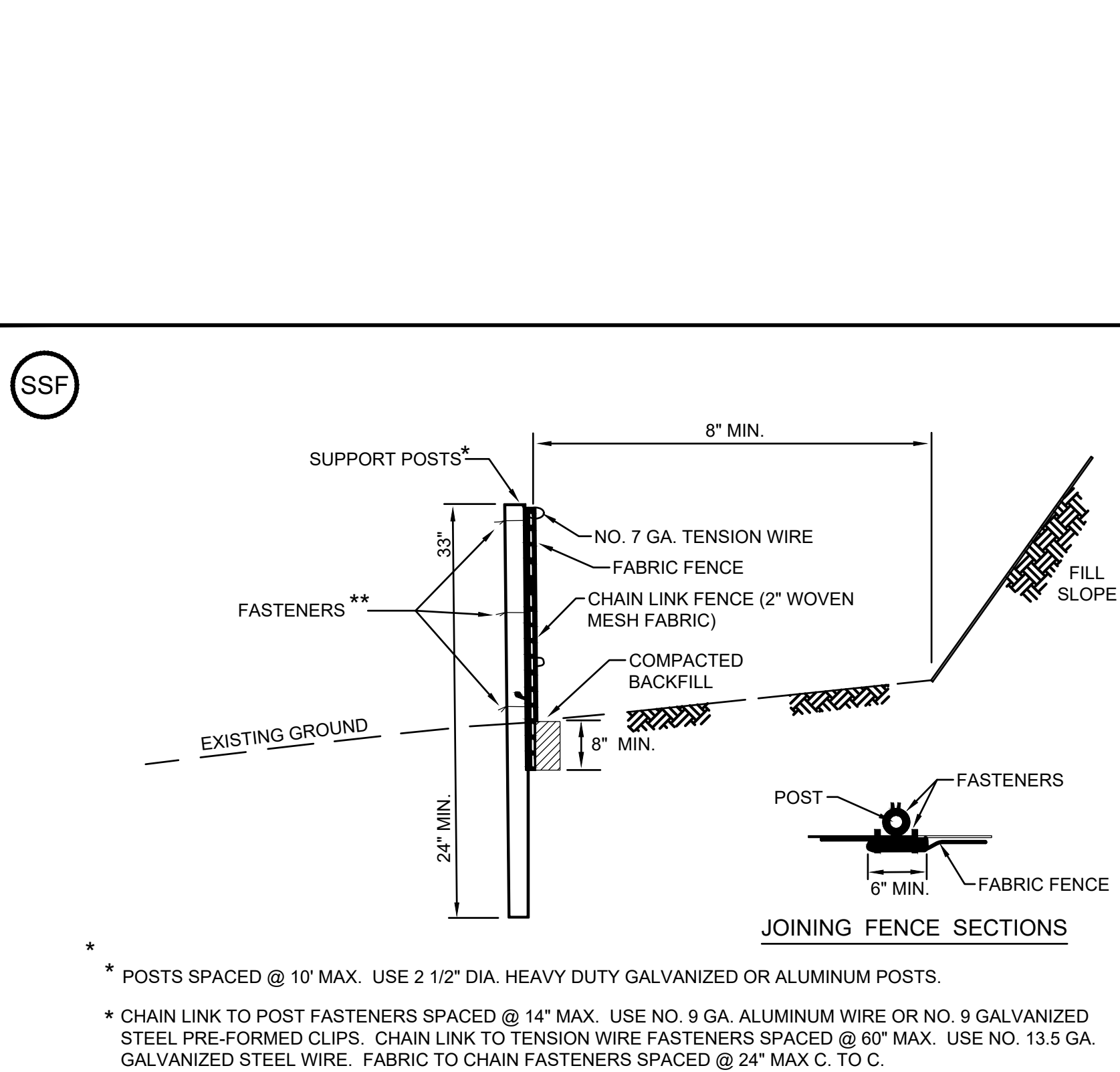
* The shift date for annual rye to German millet should be April 15 for the Piedmont and Coastal Plain, rather than May 1.



CONSTRUCTION OF SILT FENCE WITH WIRE SUPPORT INSTALLATION

SOURCE: ADAPTED FROM STRAW & FAB. BARRIERS, SHERWOOD & WYANT

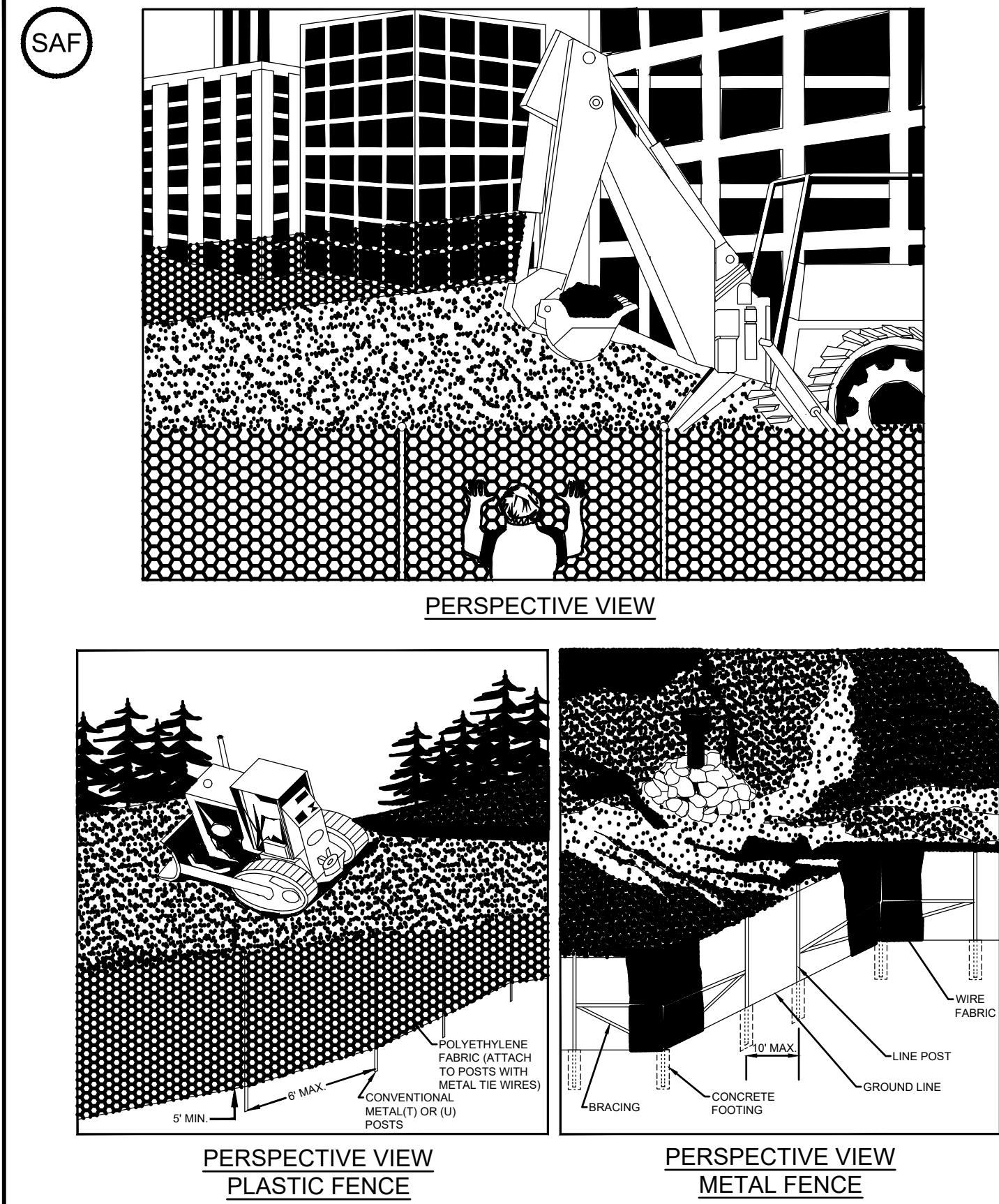
C-PCM-04-2



SUPER SILT FENCE INSTALLATION

SOURCE: ADAPTED FROM PA DEP 2012

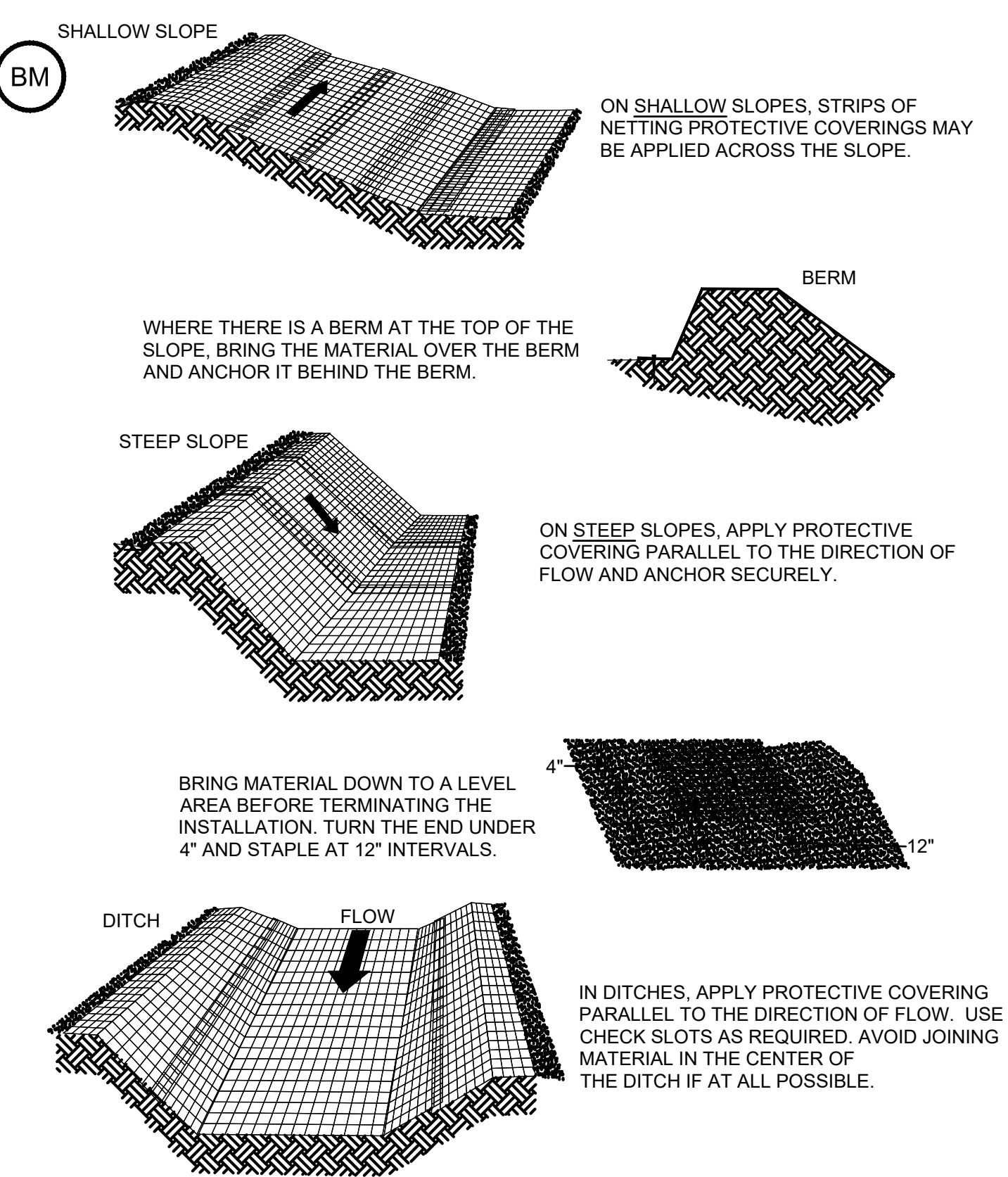
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SAFETY FENCE

SOURCE: VDOT STDs., VA DSWC, CONWED PLASTICS

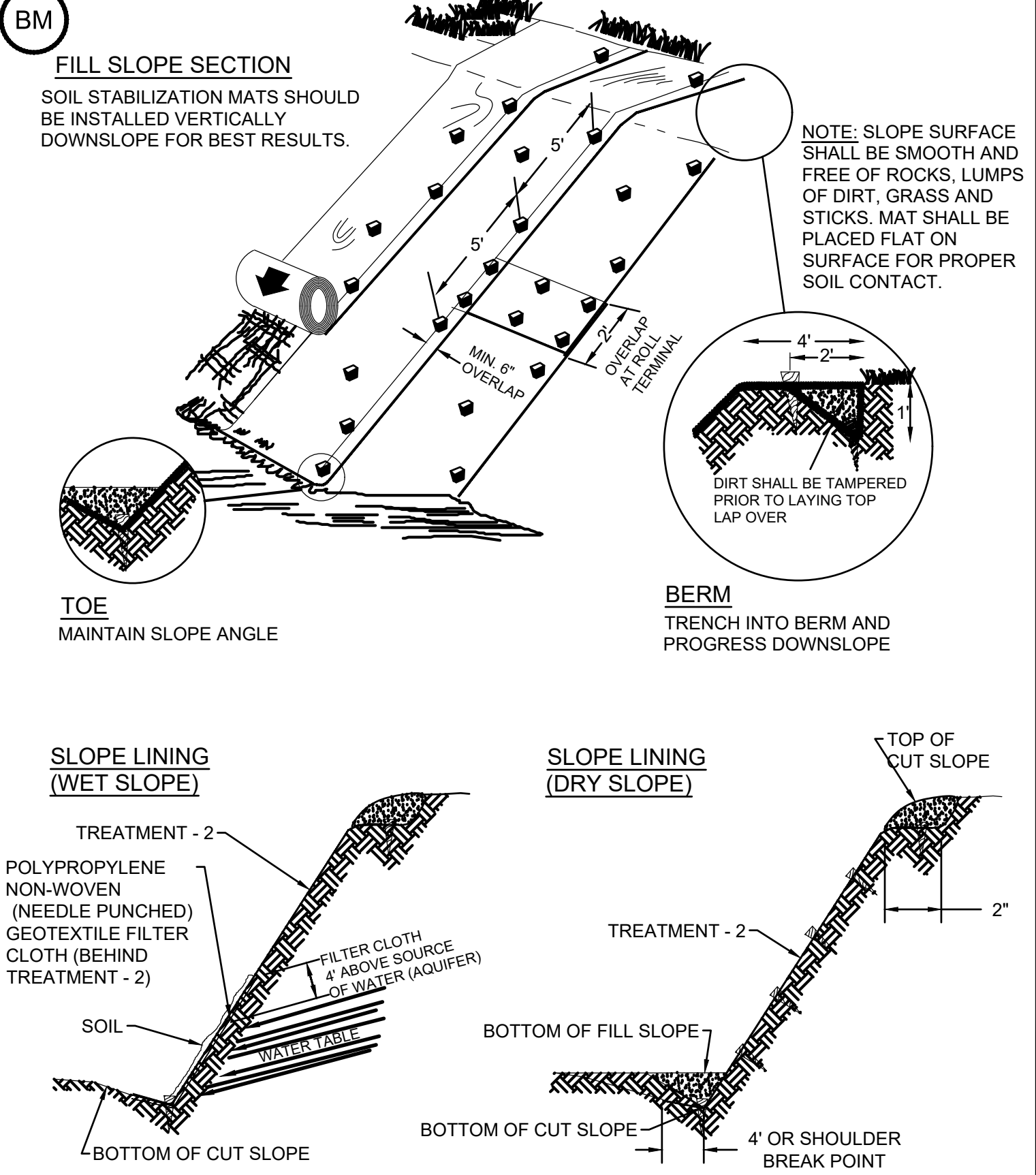
C-PCM-01-1



TYPICAL ORIENTATION OF TREATMENT - 1 (SOIL STABILIZATION BLANKET)

SOURCE: ADAPTED FROM LUDLOW PRODUCTS BROCHURE

C-SSM-05-1



TYPICAL TREATMENT - 2 SOIL STABILIZATION MATTING SLOPE INSTALLATION

SOURCE: VDOT ROAD & BRIDGE STDs.

C-SSM-05-5

Table C-SSM-10-7 Site-Specific Seeding Mixtures for Piedmont Area			
Site Condition	Seed Mix	Application Rate (pounds per acre)	
Minimum-Care Lawn Commercial or Residential	Turf-Type Tall Fescue	95-100%	150 – 200
	Improved Perennial Ryegrass	0-5%	
	Kentucky Bluegrass	0-5%	
High-Maintenance Lawn	Improved (VCIA) Turf-Type Tall Fescue	100%	150 – 200
	Tall Fescue***		
	Red Top or Red/Hard Fescue		
General Slope (3H:1V or less)	White Clover and/or Birdsfoot Trefoil**		10 – 20
	Seasonal Nurse Crop*		
	Tall Fescue		
	Red Top and/or Hard Fescue		
	White Clover and/or Birdsfoot Trefoil**		
Low-Maintenance Slope (> 3:1) or Inaccessible Area***	Annual Lespedeza**		15 – 20
	Seasonal Nurse/Cover Crop		
	Seasonal Nurse/Cover Crop		

* Use seasonal nurse crop in accordance with seeding dates as stated below: February 16 through April annual rye
February 16 through April – annual/cereal rye
May 1 through August 15 – foxtail/German millet
August 16 through February 15 – annual/cereal rye
** Use legume seed that is properly inoculated with specified Rhizobia. Legumes recommended unless periodic N fertilization is intended. Weeping lovegrass may be added to any slope or low-maintenance mix during warmer seeding periods; add 10 to 20 lbs/acre in mixes.
*** Increase seeding rate if KY-31 is used rather than VCIA/VDOT improved varieties.
Bermudagrass can be added to substitute for Tall or Hard Fescue in the Low Maintenance mixes for the Southern Piedmont, particularly on sandy soils or hot (S and V) facing slopes. May through October, use hulled seed. All other seeding periods, use un-hulled seed.
Note: Seed mixes are suggested and subject to modification based on site-specific conditions by an agronomist or other qualified revegetation professionals. All seed rates expressed as PLS (Pure Live Seed; see [Table C-SSM-10-9](#)).



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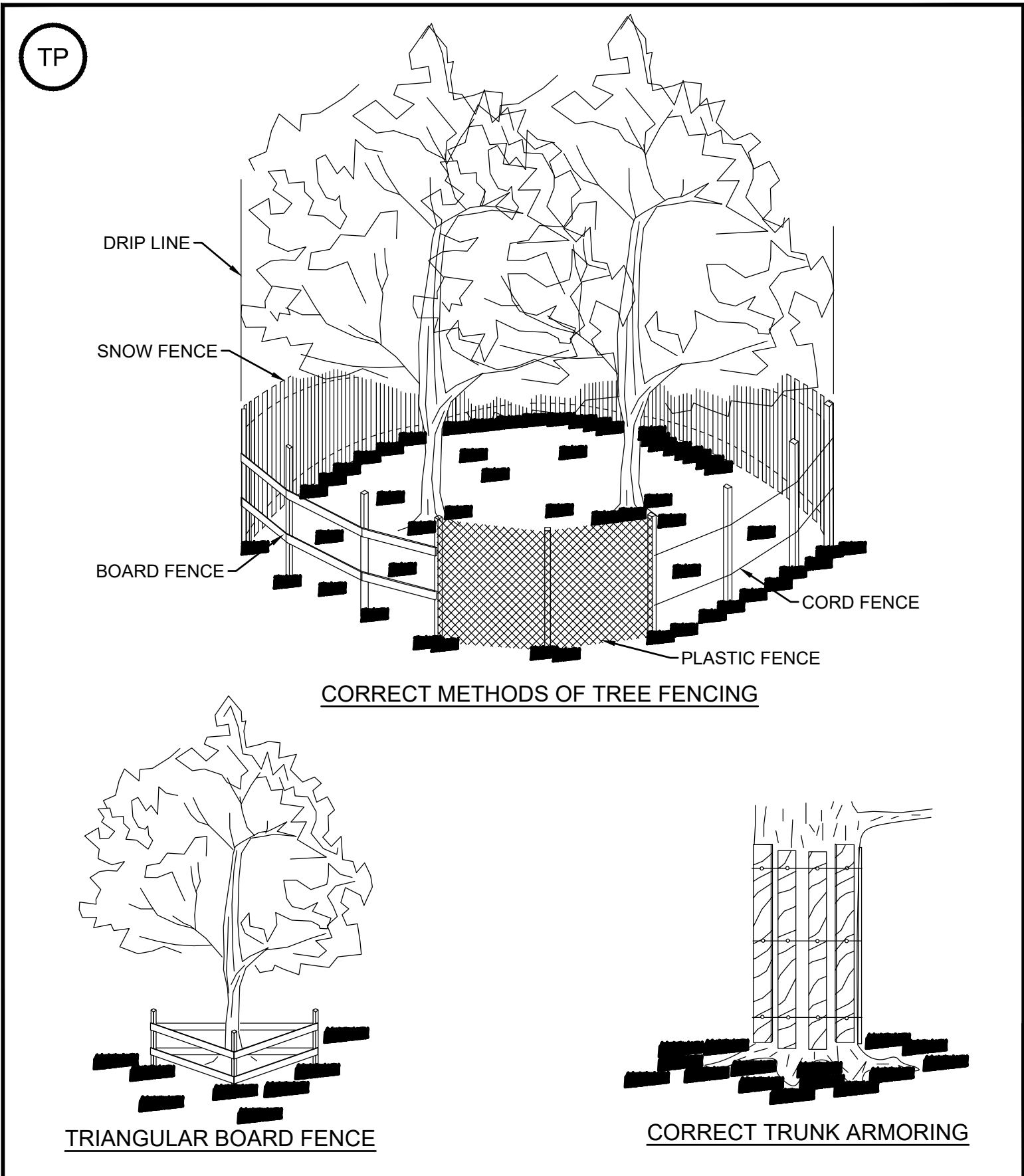
KEY PLAN:NTS

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ACCESSIBILITY TRAIL**

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EROSION AND SEDIMENT
CONTROL DETAILS

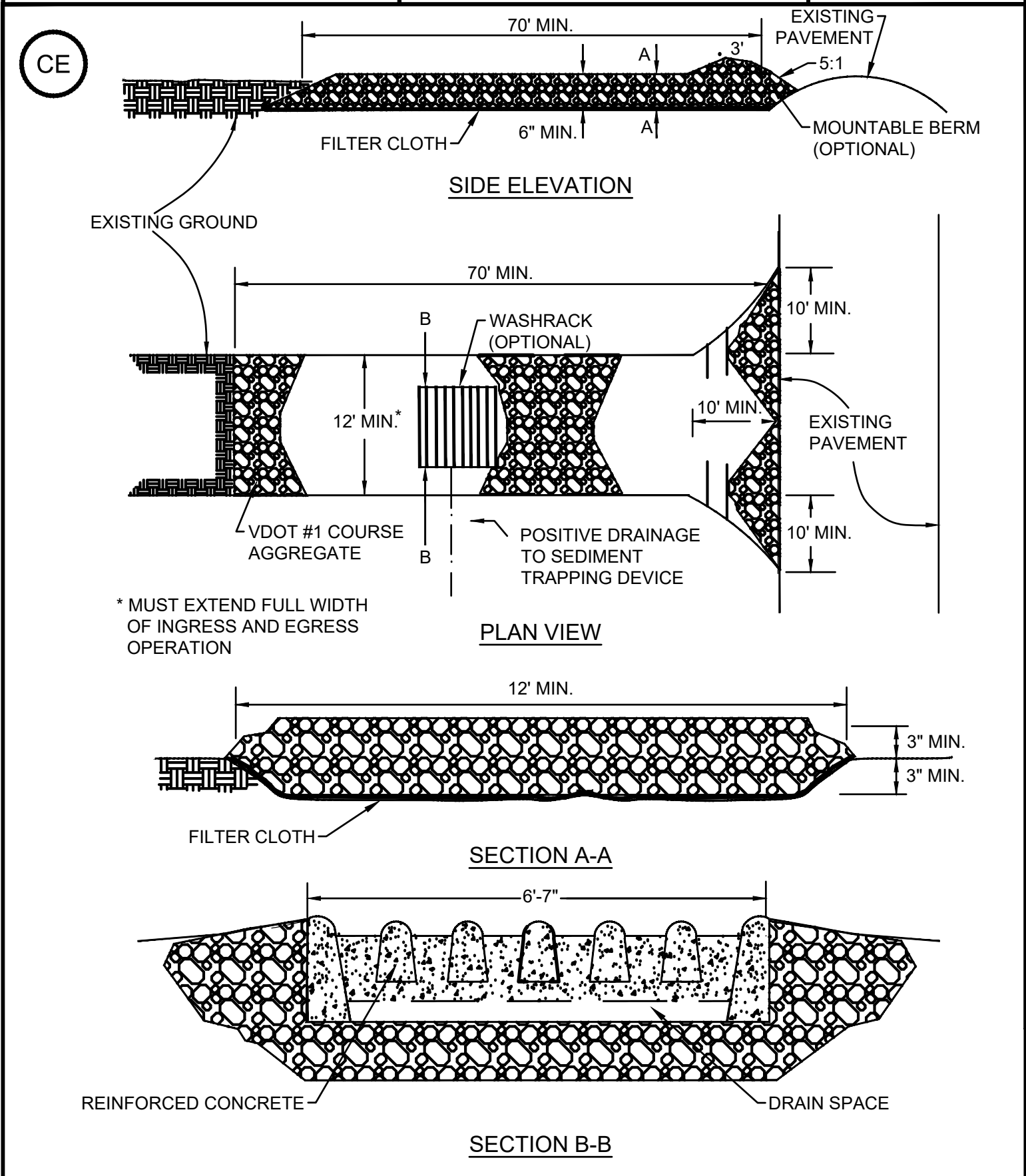
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DEQ
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FENCING AND ARMORING

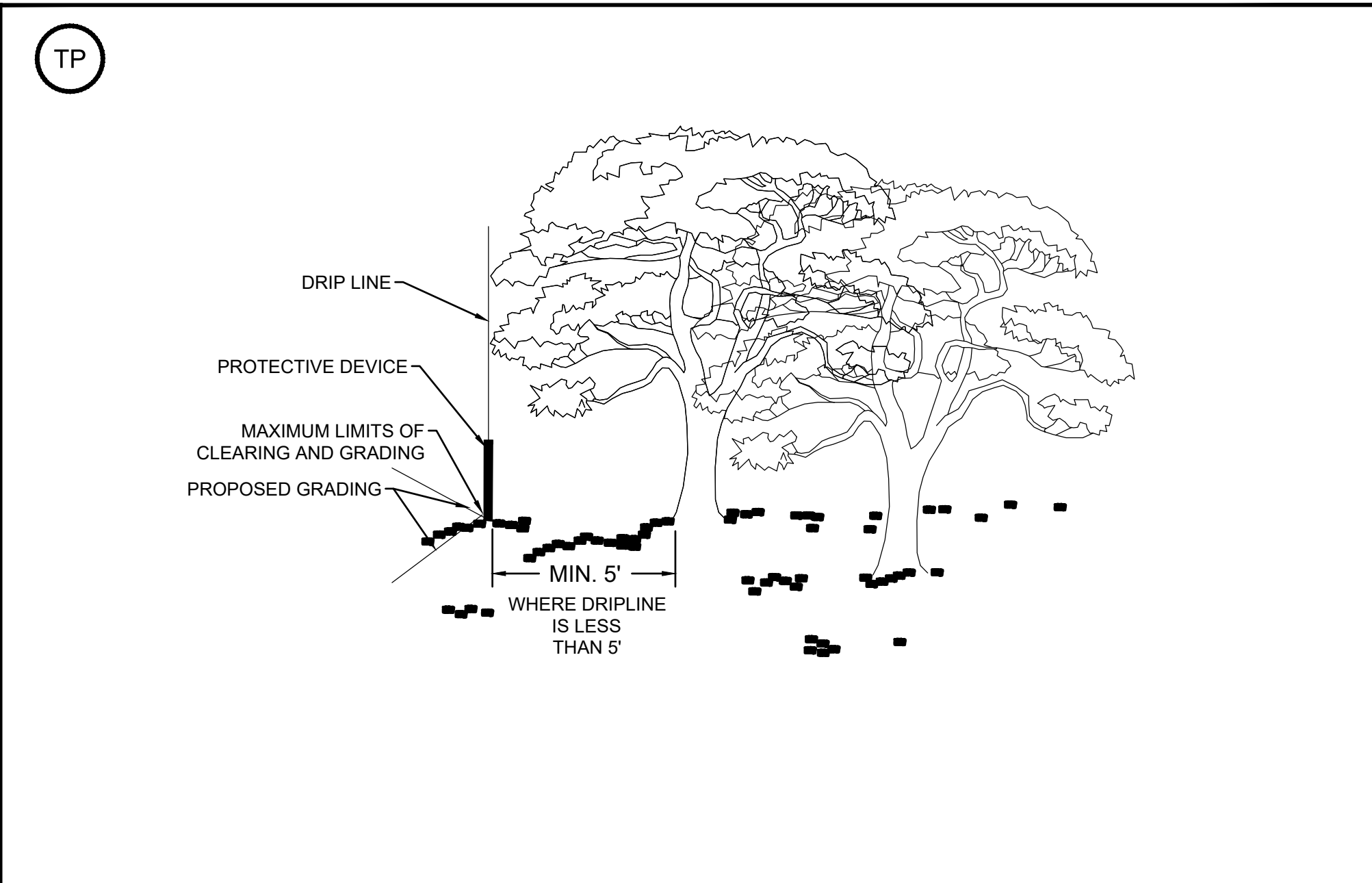
v1.1 SOURCE: VA, DSWC C-SSM-01-2



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STONE CONSTRUCTION ENTRANCE

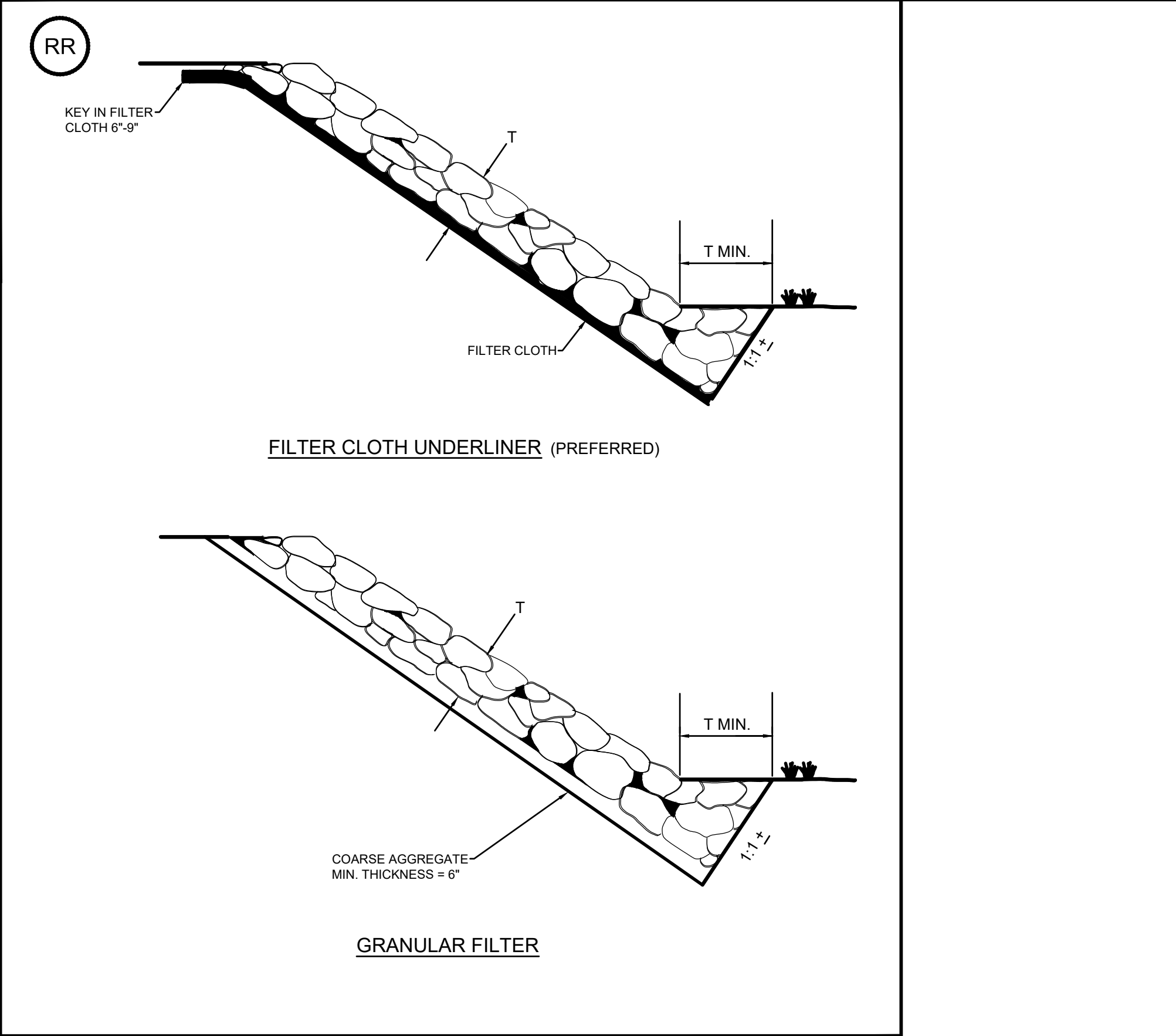
v1.1 SOURCE: VA, DSWC, MD ESC STDS C-SCM-03-1



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CONSTRUCTION OPERATIONS RELATIVE TO THE LOCATION OF PROTECTED TREES

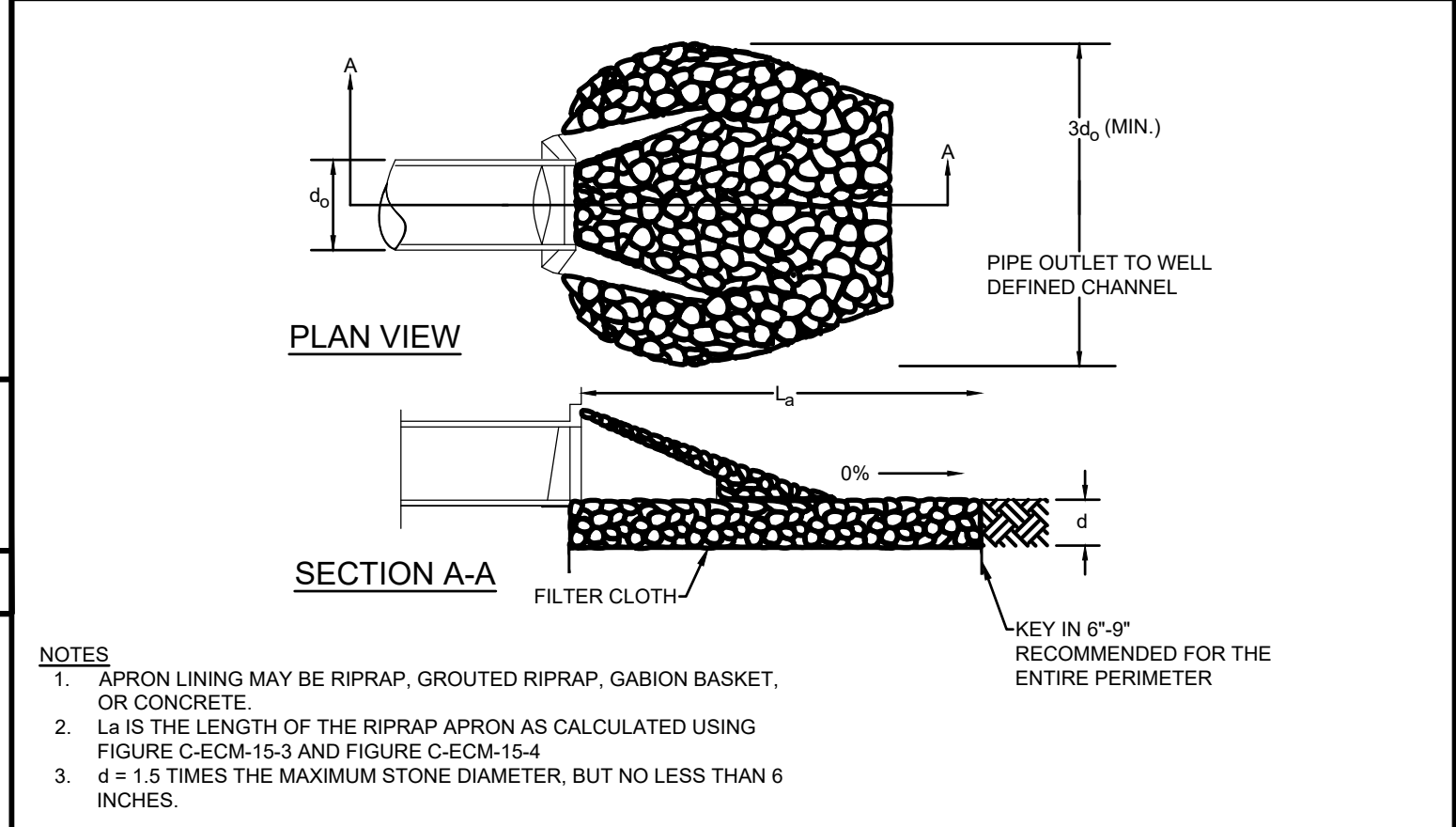
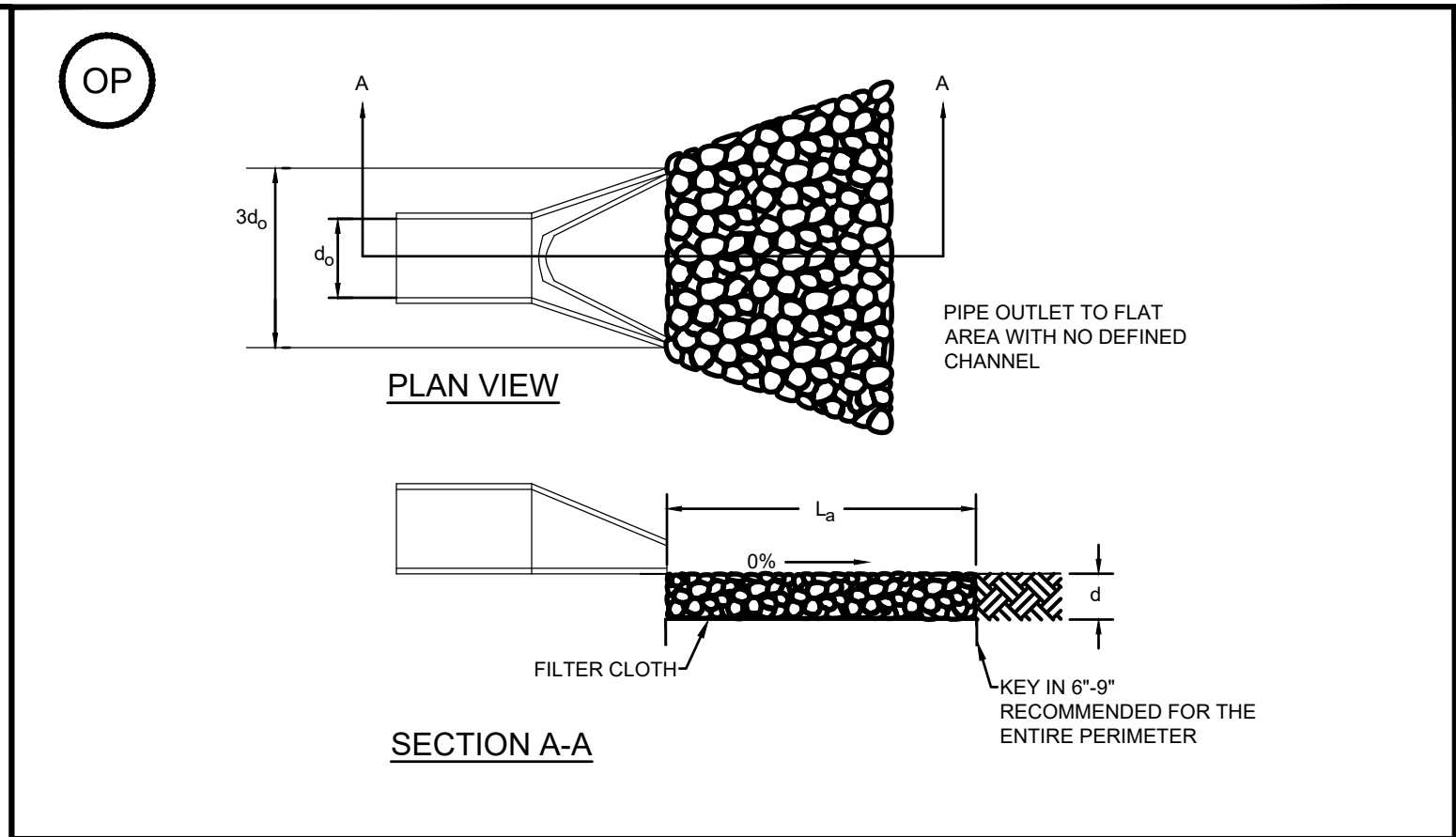
v1.1 SOURCE: FAIRFAX CO., VA, PUBLIC FACILITIES MANUAL C-SSM-01-1



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TOE REQUIREMENTS FOR RIP-RAP BANK STABILIZATION

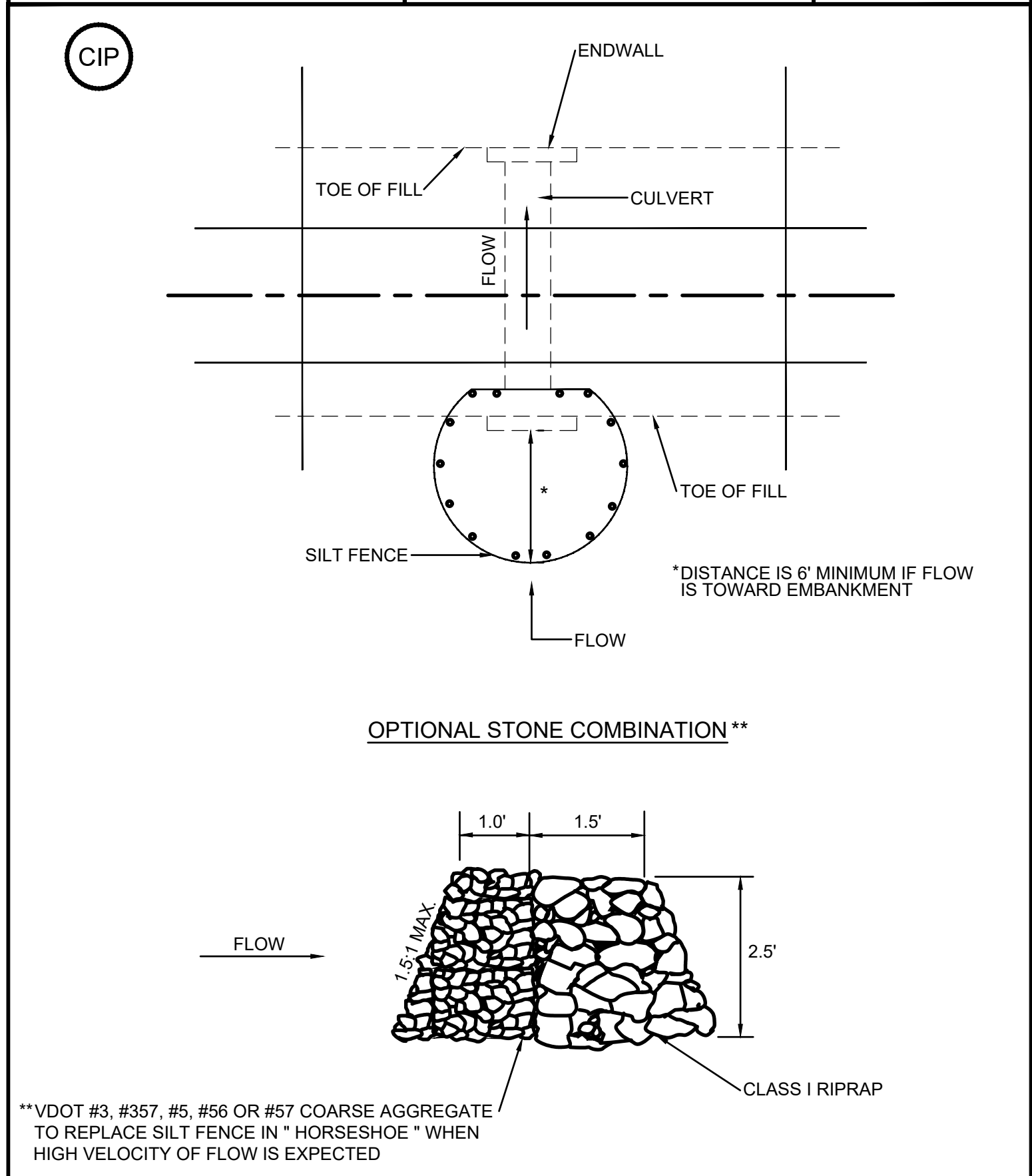
v1.1 SOURCE: VDOT 2017 C-ECM-13-1



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PIPE OUTLET CONDITIONS

v1.1 SOURCE: VA DSWC C-ECM-15-1



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SILT FENCE CULVERT INLET PROTECTION

v1.1 SOURCE: VA, DSWC, VDOT C-SCM-05-1



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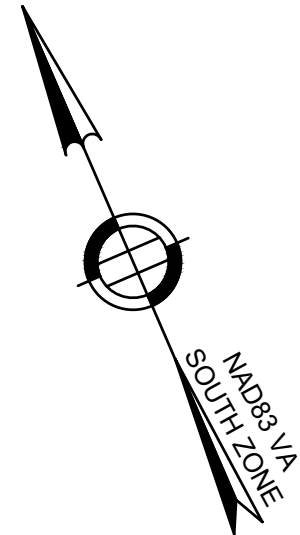
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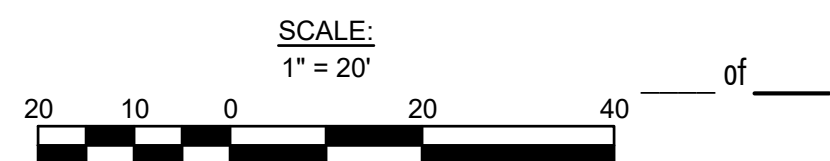
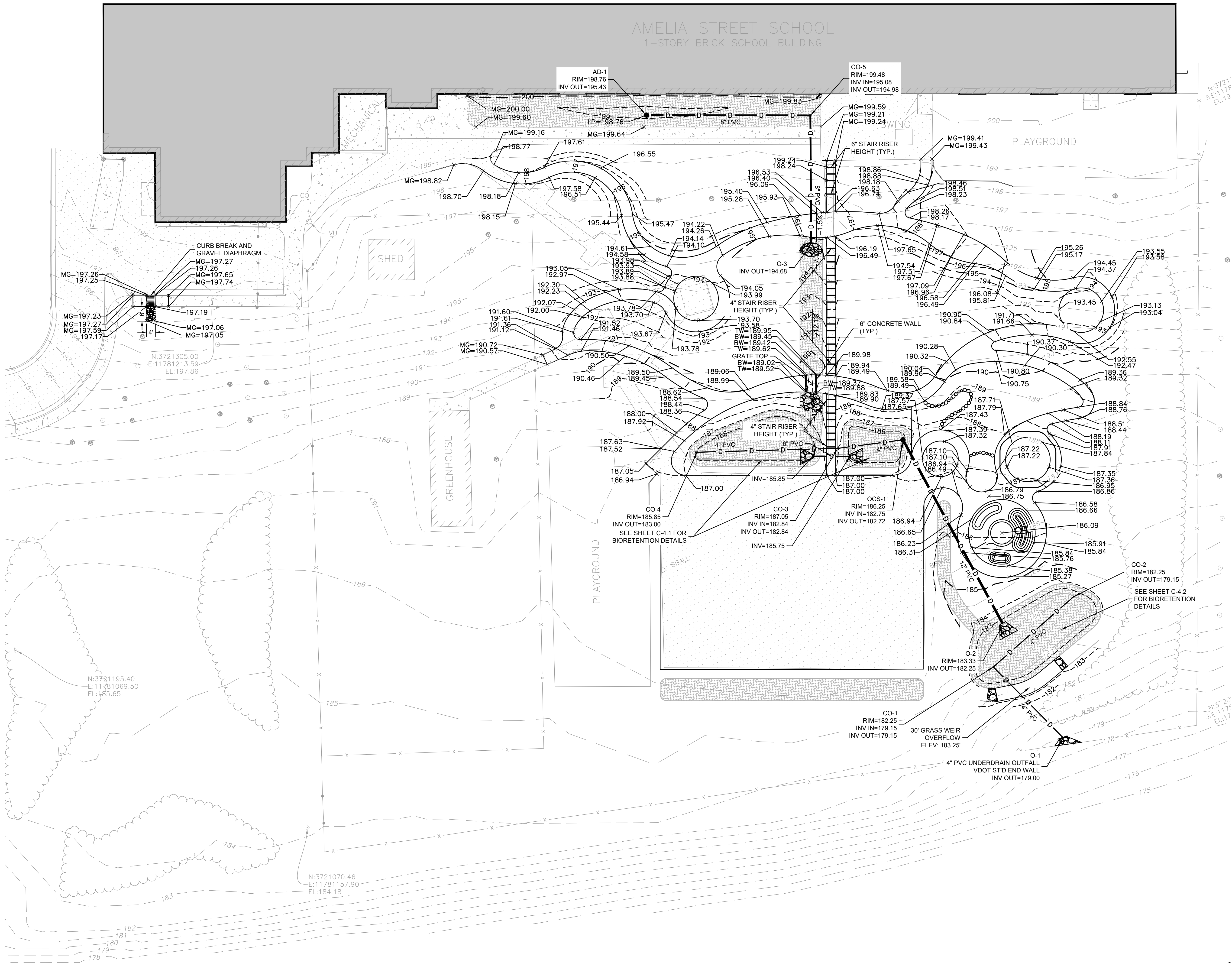
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GRADING AND DRAINAGE PLAN



C-3.0



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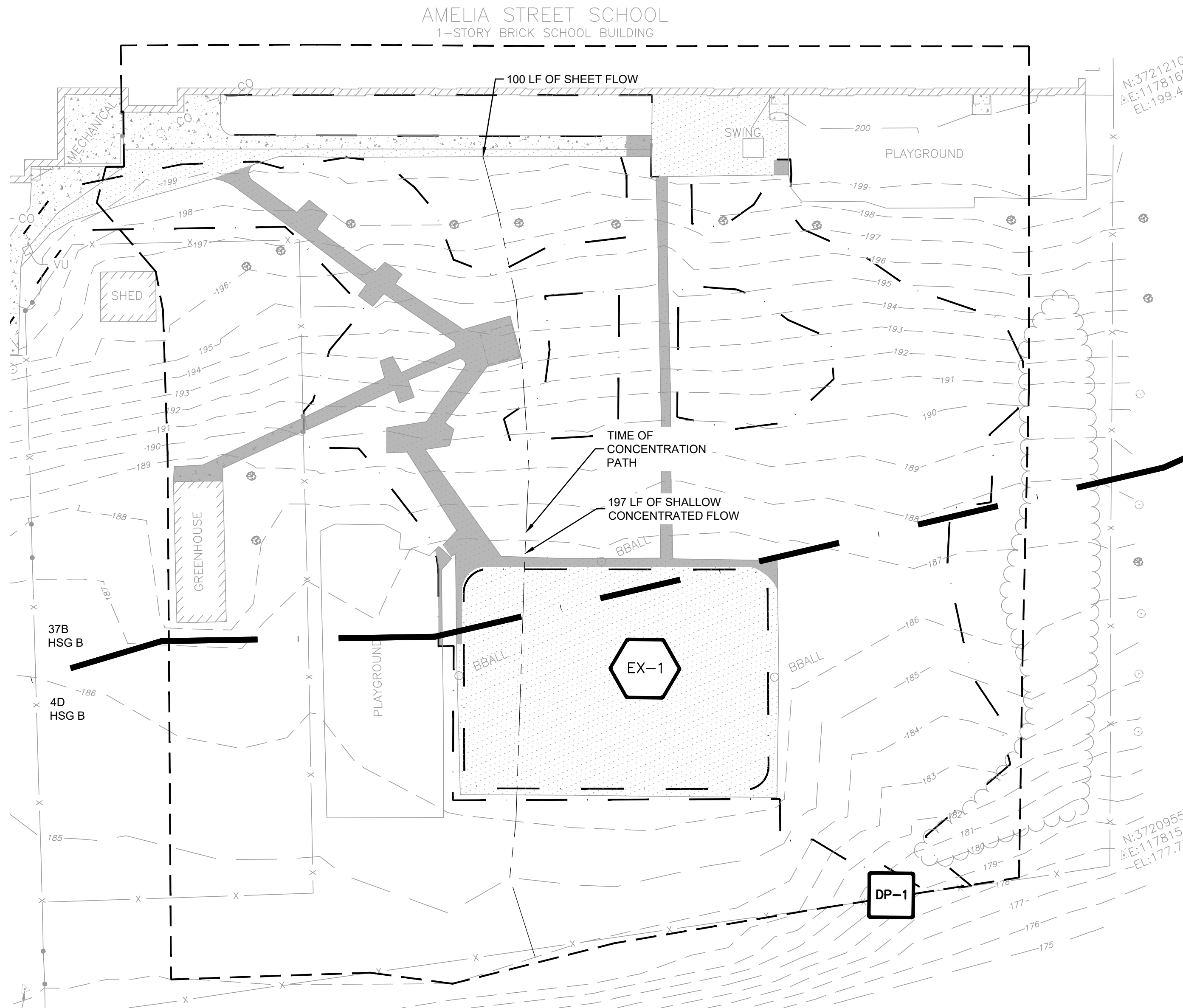
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DRAINAGE AREA MAPS

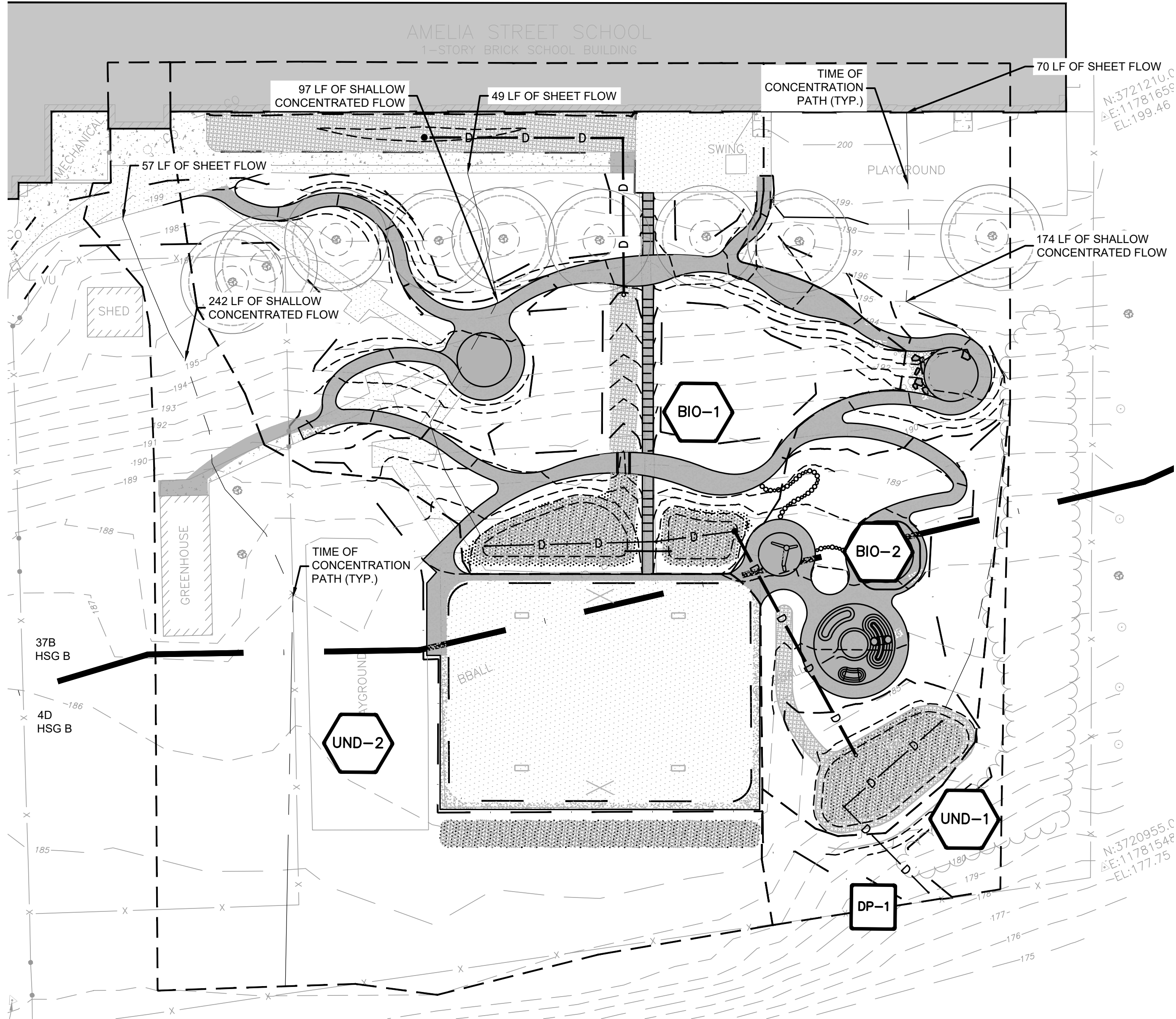
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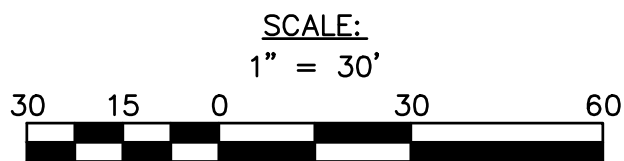
PRE-DEVELOPMENT LAND COVER AND DRAINAGE AREA MAP



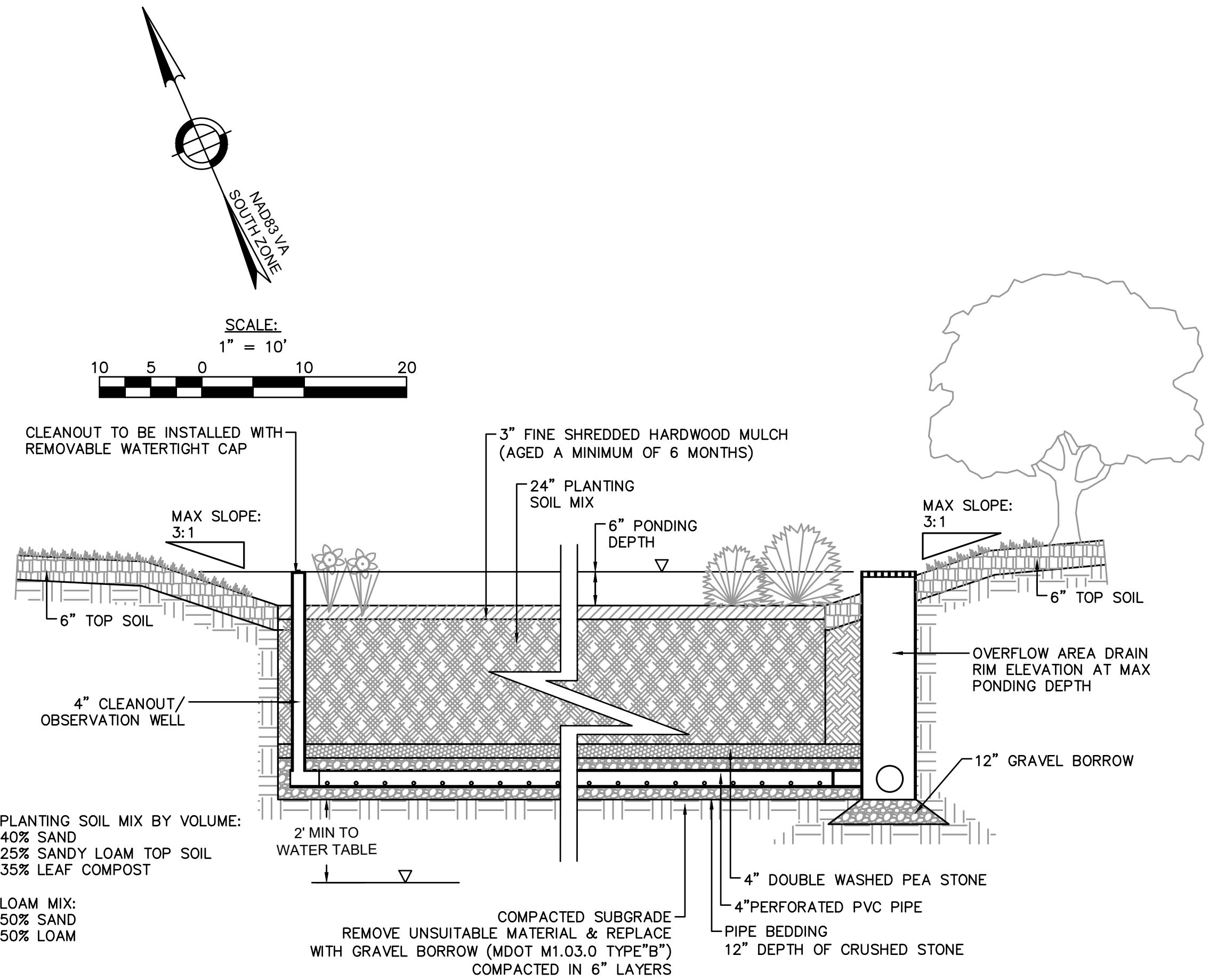
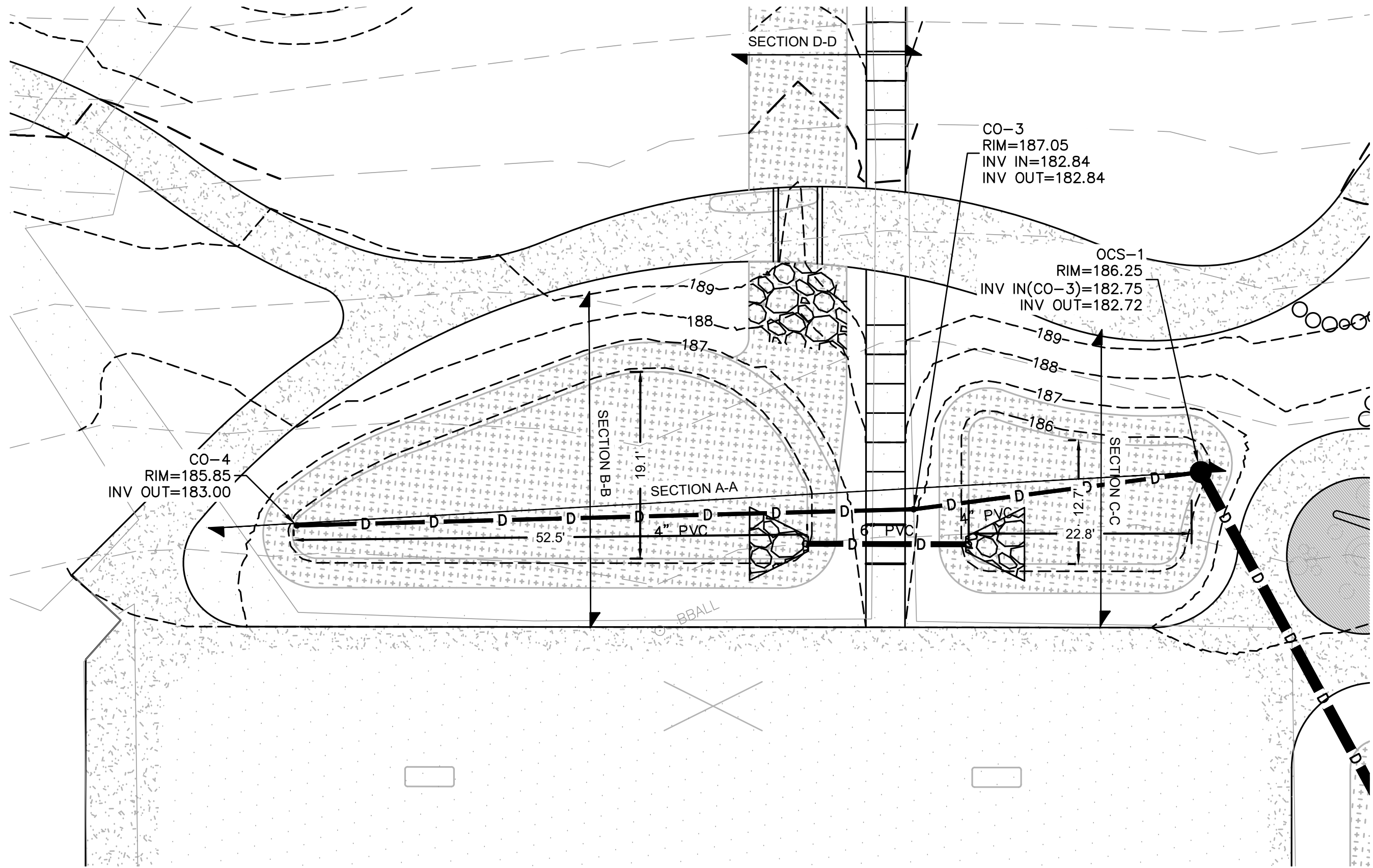
POST DEVELOPMENT LAND COVER AND DRAINAGE AREA MAP

STORMWATER MANAGEMENT SUMMARY:
THIS PROJECT WILL CONSIST OF THE CONSTRUCTION OF NEW PATHWAYS FROM THE EXISTING AMELIA STREET SCHOOL TO THE EXISTING GREENHOUSE, PLAYGROUND, AND BASKETBALL COURT. THE TOTAL LAND DISTURBANCE IS .89 AC. THE SITE DRAINS FROM NORTHWEST TO SOUTHEAST AS SHEET FLOW UNTIL IT CHANNELIZES IN THE GUTTER ON COLORADO AVENUE AND ENTERS THE STORM DRAIN NETWORK. THE PROJECT IS LOCATED WITHIN THE CITY OF RICHMOND'S COMBINED SEWER OVERFLOW (CSO) SYSTEM. NO CHANGES TO THE SANITARY SEWER FLOW OF THE EXISTING SCHOOL ARE PROPOSED WITH THIS PROJECT.

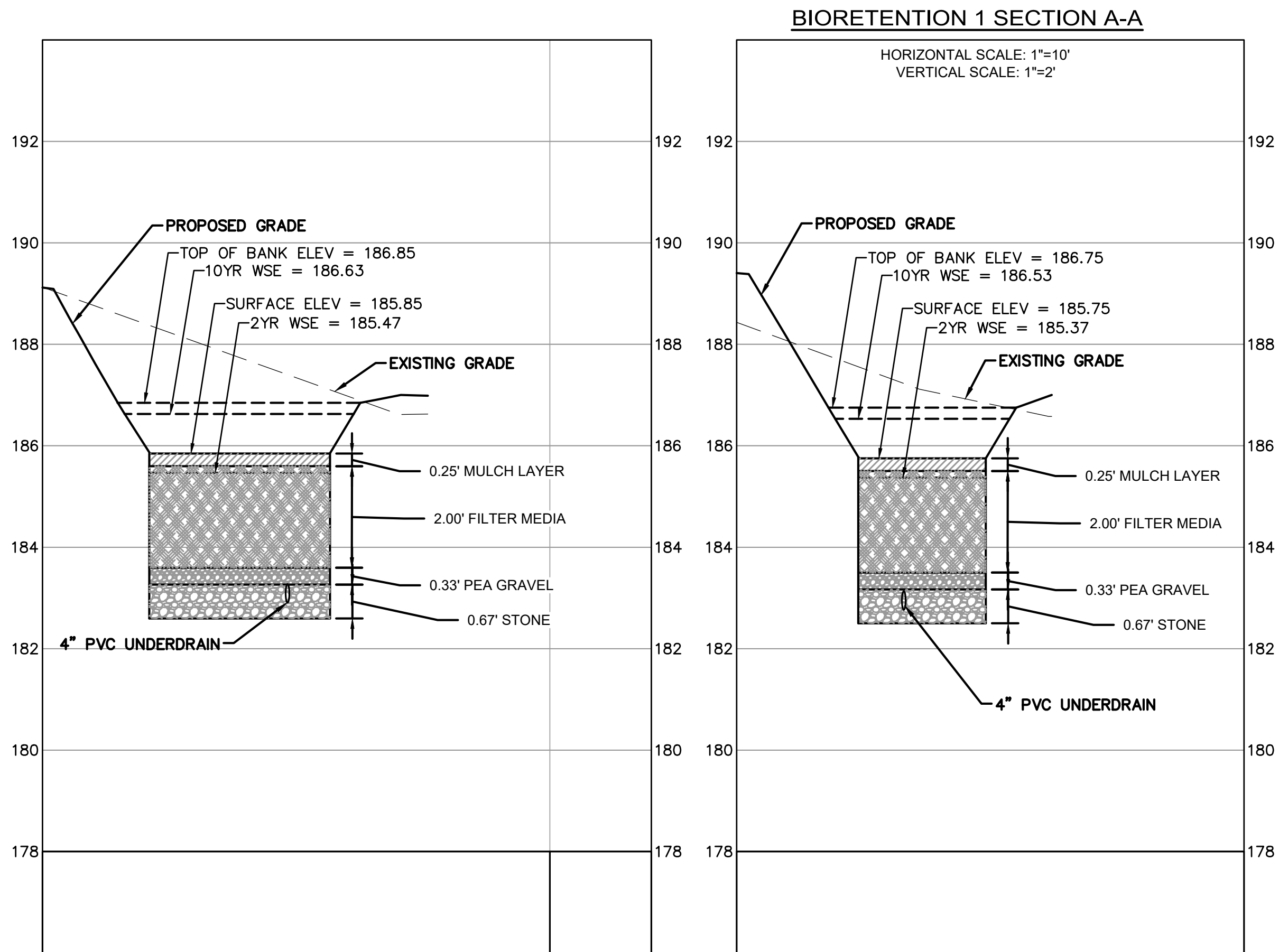
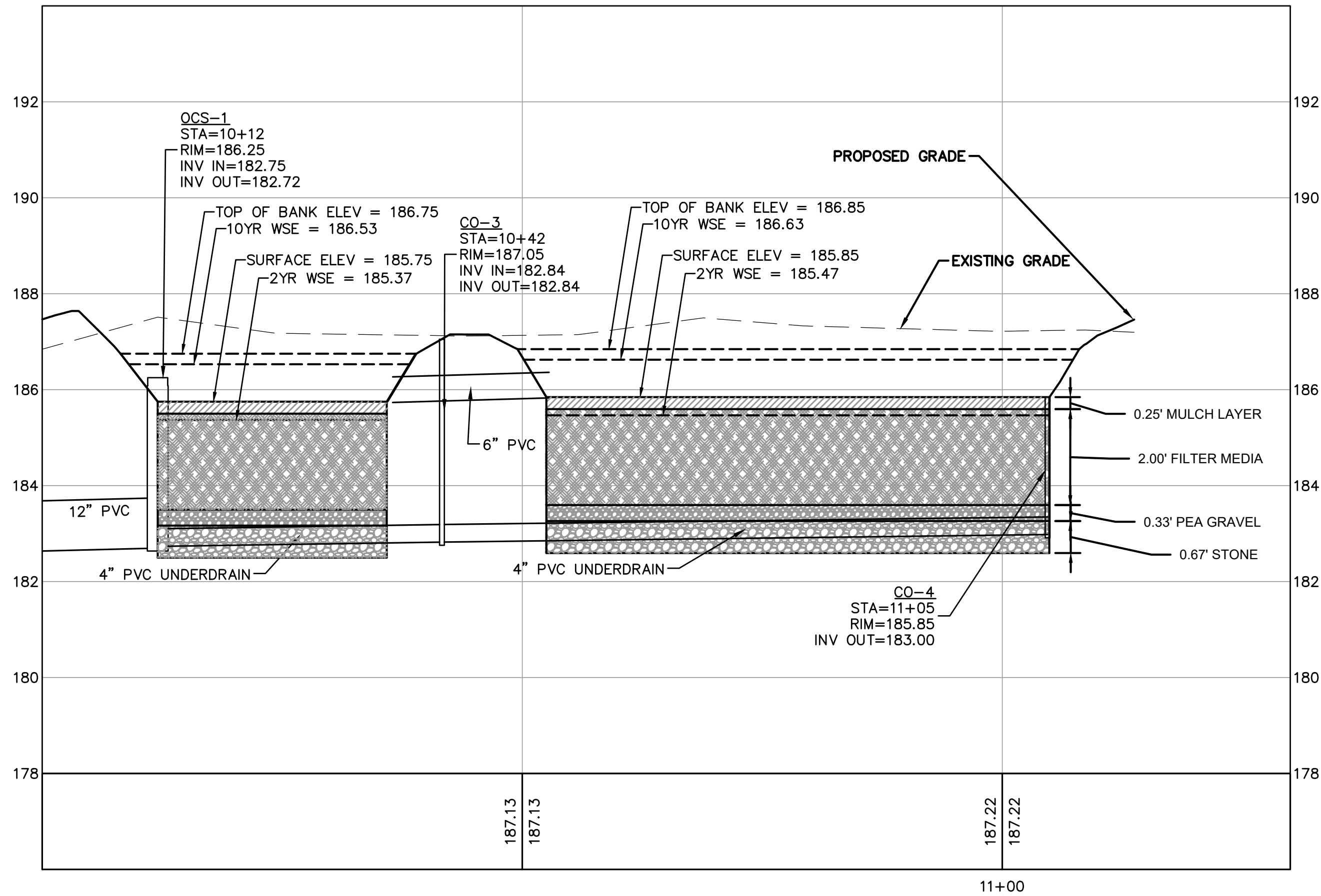
THE EXISTING SITE IS MOSTLY MANAGED TURF. THE PROPOSED DEVELOPMENT WILL INCREASE THE IMPERVIOUS AREA BY 0.13 ACRES. BIORETENTION FACILITIES ARE PROVIDED ONSITE TO MANAGE THE INCREASE IN IMPERVIOUS AREA AND REDUCE 10-YR POST DEVELOPMENT PEAK FLOW RATES BELOW 10-YR PREDEVELOPMENT PEAK FLOW RATES.



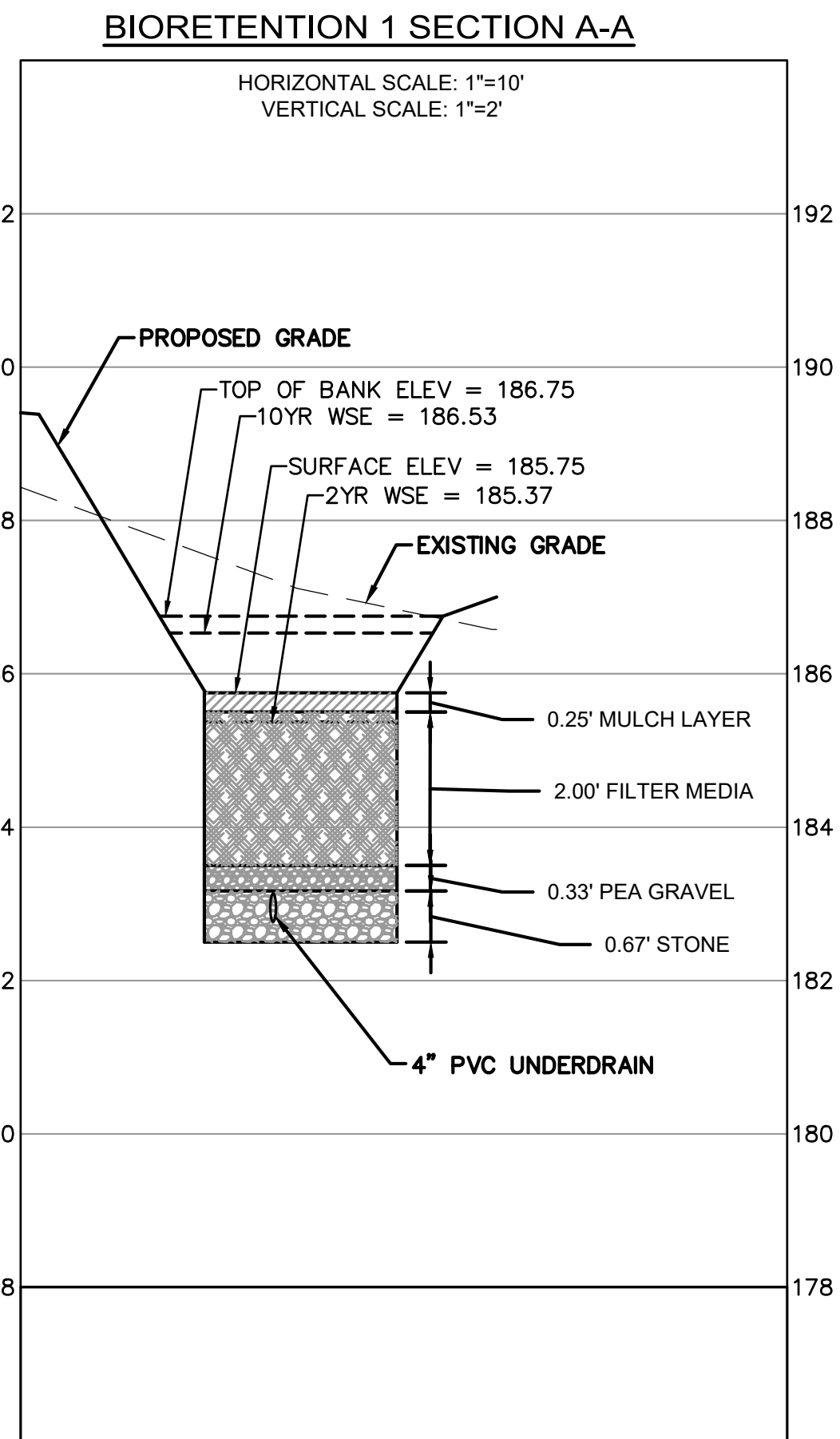
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LOD	---
IMPERVIOUS COVER	▬
PERVIOUS COVER	▬
STORMWATER BMP	▬
SUBCATCHMENT DIVIDE	---
SOILS	▬
TIME OF CONCENTRATION PATH	---
DESIGN POINT	DP-#
SUBCATCHMENT	DA-#



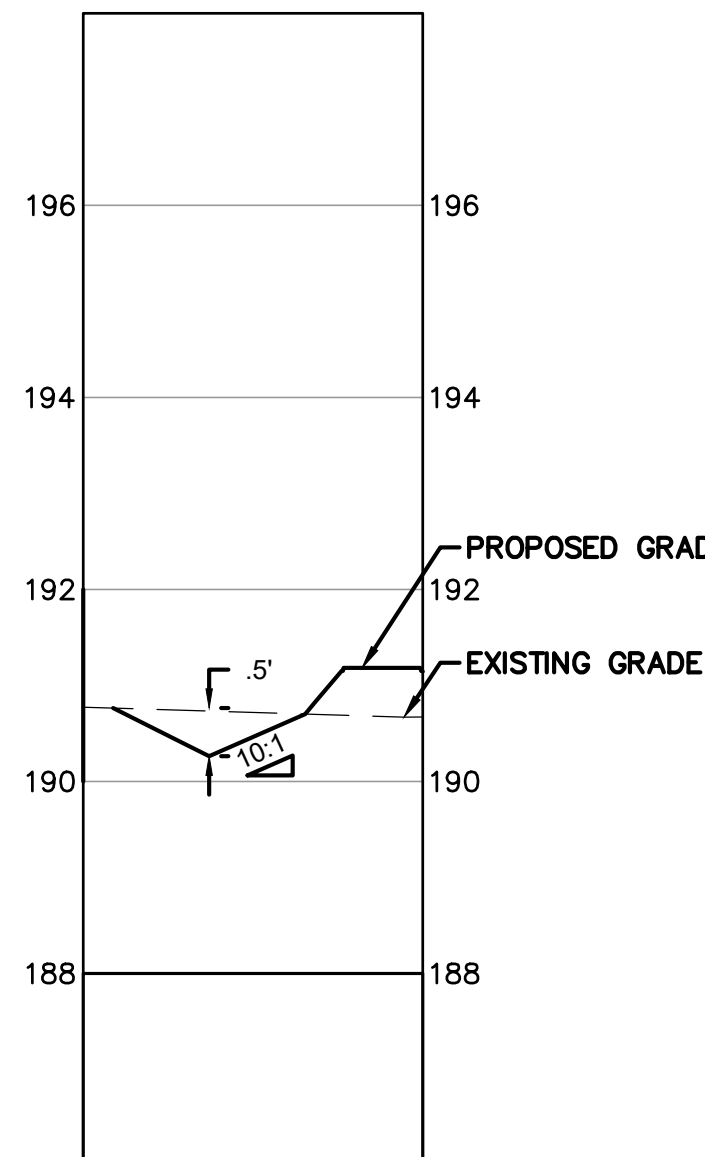
BIORETENTION BASIN
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BIORETENTION 1 SECTION B-B
HORIZONTAL SCALE: 1"=10'
VERTICAL SCALE: 1"=2'



BIORETENTION 1 SECTION C-C
HORIZONTAL SCALE: 1"=10'
VERTICAL SCALE: 1"=2'



SWALE TO BIORETENTION 1 SECTION D-D
HORIZONTAL SCALE: 1"=10'
VERTICAL SCALE: 1"=2'



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BIORETENTION 1

of



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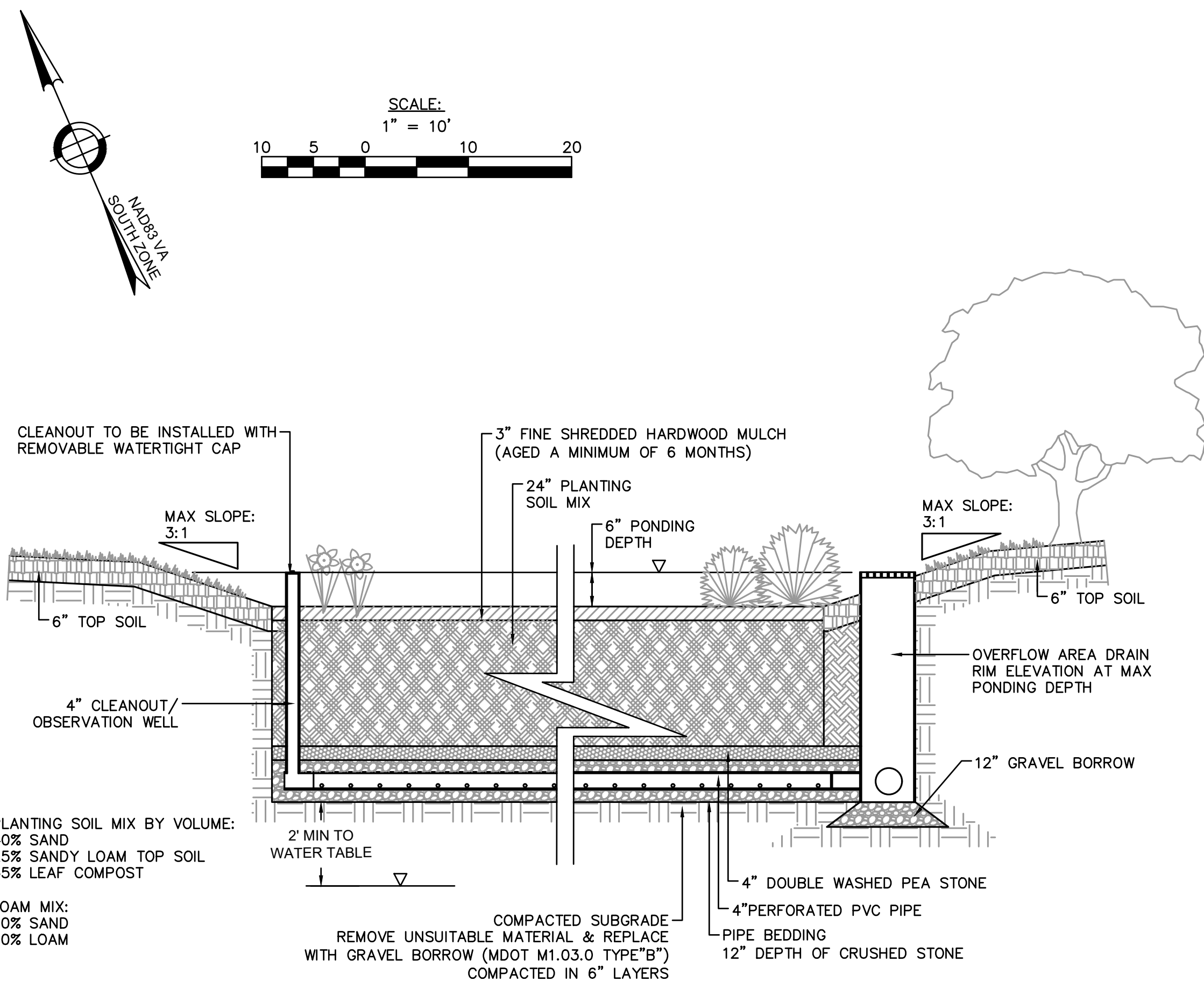
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BIORETENTION 2

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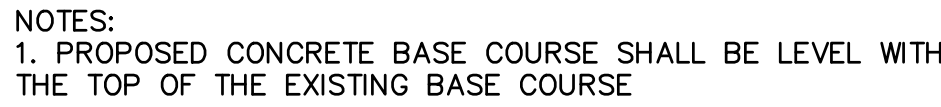


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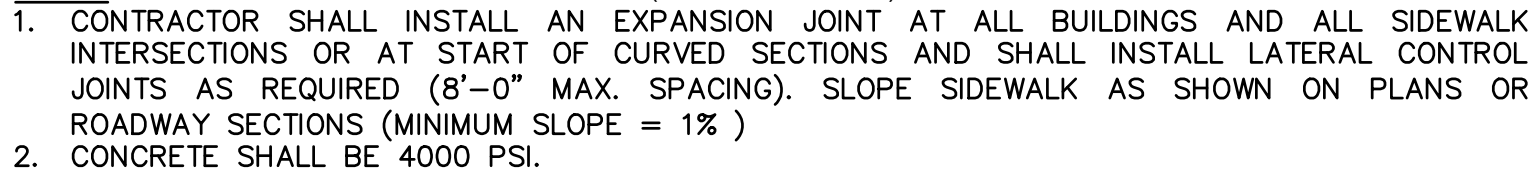


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VERTICAL SCALE: 1"=2'

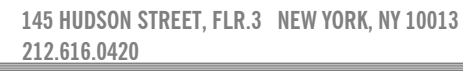
1. EROSION AND SEDIMENTATION
CONTROL BLANKETS AND MATTING ACCORDING TO
C-SSM-05 SHOULD BE USED ON SLOPES OF 3:1 OR
GREATER FOR STABILIZATION DURING CONSTRUCTION.



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NOT TO SCALE



SURVEY NYFELER SURVEY

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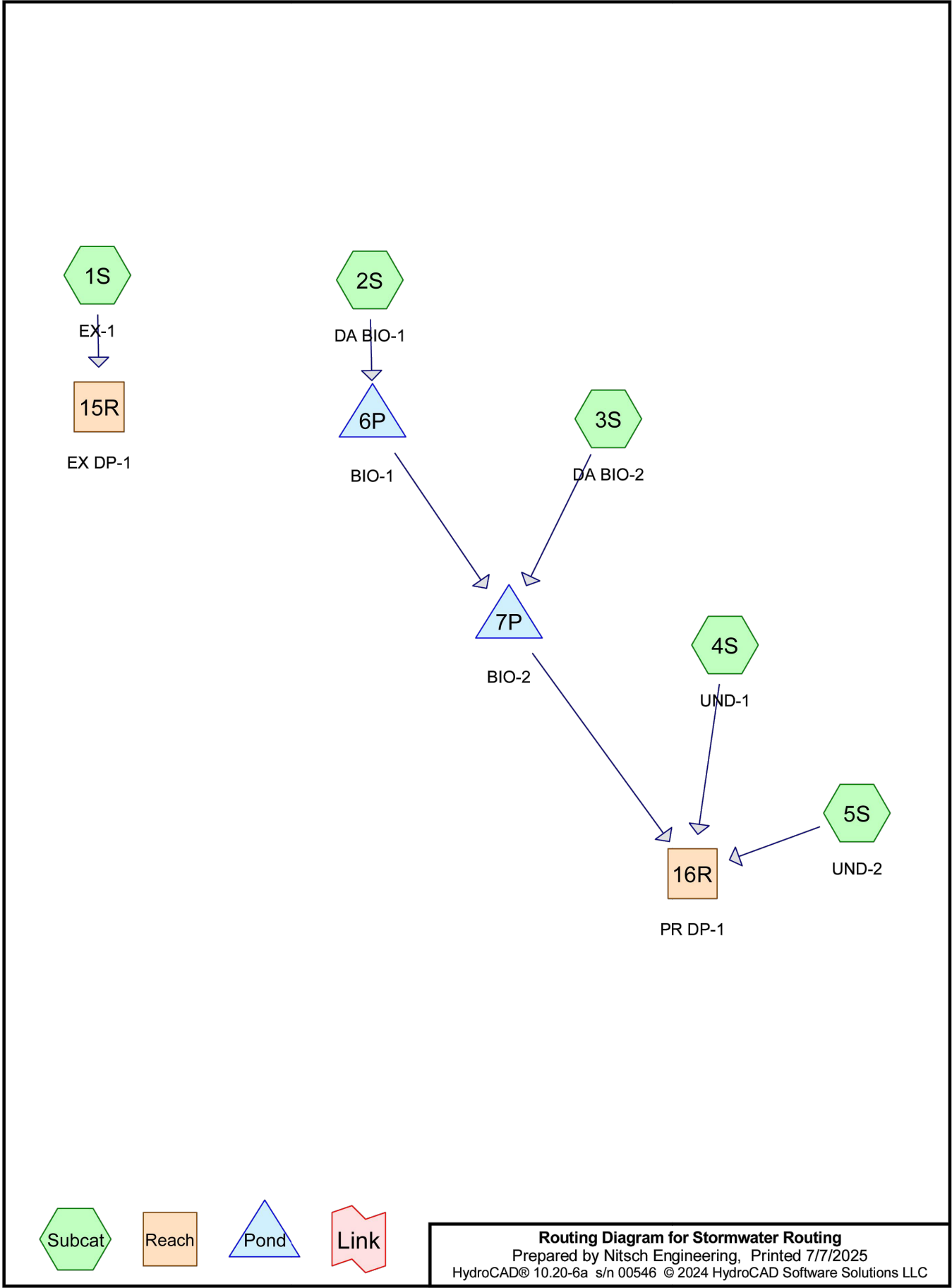
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DETAILS



Stormwater Routing Type II 24-hr 10-yr Rainfall=5.09", P2=3.35"
Prepared by Nitsch Engineering Printed 7/7/2025
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Area (ac)	CN	Description
* 0.386	98	
* 0.564	61	
0.950	76	Weighted Average
0.564		59.37% Pervious Area
0.386		40.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Reach 15R: EX DP-1

Inflow Area = 2.423 ac, 30.87% Impervious, Inflow Depth > 2.07" for 10-yr event
Inflow = 8.45 cfs @ 12.01 hrs, Volume= 0.419 af
Outflow = 8.45 cfs @ 12.01 hrs, Volume= 0.419 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach 16R: PR DP-1

Inflow Area = 2.420 ac, 36.16% Impervious, Inflow Depth > 2.03" for 10-yr event
Inflow = 5.18 cfs @ 11.96 hrs, Volume= 0.409 af
Outflow = 5.18 cfs @ 11.96 hrs, Volume= 0.409 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 6P: BIO-1

Inflow Area = 0.871 ac, 31.34% Impervious, Inflow Depth > 2.16" for 10-yr event
Inflow = 3.69 cfs @ 11.96 hrs, Volume= 0.157 af
Outflow = 2.17 cfs @ 12.05 hrs, Volume= 0.153 af, Atten= 41%, Lag= 5.5 min
Primary = 2.17 cfs @ 12.05 hrs, Volume= 0.153 af
Routed to Pond 7P : BIO-2

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 186.53' @ 12.05 hrs Surf.Area= 1,511 sf Storage= 2,023 cf

Plug-Flow detention time= 30.1 min calculated for 0.153 af (97% of inflow)
Center-of-Mass det. time= 20.4 min (811.7 - 791.3)

Volume	Invert	Avail.Storage	Storage Description
#1	182.49'	2,310 cf	Custom Stage Data (Prismatic) Listed below

Stormwater Routing Type II 24-hr 10-yr Rainfall=5.09", P2=3.35"
Prepared by Nitsch Engineering Printed 7/7/2025
HydroCAD® 10.20-6a s/n 00546 © 2024 HydroCAD Software Solutions LLC Page 12

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: EX-1
Runoff Area=2.423 ac 30.87% Impervious Runoff Depth>2.07"
Flow Length=297' Tc=9.6 min CN=72 Runoff=8.45 cfs 0.419 af

Subcatchment 2S: DA BIO-1
Runoff Area=0.871 ac 31.34% Impervious Runoff Depth>2.16"
Tc=5.0 min CN=73 Runoff=3.69 cfs 0.157 af

Subcatchment 3S: DA BIO-2
Runoff Area=0.506 ac 42.69% Impervious Runoff Depth>2.49"
Tc=5.0 min CN=77 Runoff=2.45 cfs 0.105 af

Subcatchment 4S: UND-1
Runoff Area=0.093 ac 0.00% Impervious Runoff Depth>1.27"
Flow Length=299' Tc=7.2 min CN=61 Runoff=0.22 cfs 0.010 af

Subcatchment 5S: UND-2
Runoff Area=0.950 ac 40.63% Impervious Runoff Depth>2.41"
Tc=5.0 min CN=76 Runoff=4.45 cfs 0.190 af

Reach 15R: EX DP-1
Inflow=8.45 cfs 0.419 af
Outflow=8.45 cfs 0.419 af

Reach 16R: PR DP-1
Inflow=5.18 cfs 0.409 af
Outflow=5.18 cfs 0.409 af

Pond 6P: BIO-1
Peak Elev=186.53' Storage=2,023 cf Inflow=3.69 cfs 0.157 af
Outflow=2.17 cfs 0.153 af

Pond 7P: BIO-2
Peak Elev=183.35' Storage=2,499 cf Inflow=3.66 cfs 0.258 af
Primary=0.58 cfs 0.209 af Secondary=2.34 cfs 0.044 af Outflow=2.91 cfs 0.253 af

Total Runoff Area = 4.843 ac Runoff Volume = 0.881 af Average Runoff Depth = 2.18"
66.49% Pervious = 3.220 ac 33.51% Impervious = 1.623 ac

Stormwater Routing Type II 24-hr 10-yr Rainfall=5.09", P2=3.35"
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Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
182.49	1,015	0.0	0	0
182.50	1,015	40.0	4	4
183.50	1,015	40.0	406	410
183.51	1,015	25.0	3	413
185.75	1,015	25.0	568	981
185.76	1,015	100.0	10	991
186.75	1,649	100.0	1,319	2,310

Device	Routing	Invert	Outlet Devices
#1	Primary	182.67'	12.0" Round CMP_Round 12" L= 87.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 182.67' / 182.20' S= 0.0054 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf 4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads 12.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Device 1	182.77'	
#3	Device 1	186.27'	

Primary OutFlow Max=2.13 cfs @ 12.05 hrs HW=186.53' TW=183.34' (Dynamic Tailwater)
1=CMP_Round 12" (Passes 2.13 cfs of 5.33 cfs potential flow)
2=Orifice/Grate (Orifice Controls 0.75 cfs @ 8.60 fps)
3=Orifice/Grate (Weir Controls 1.38 cfs @ 1.67 fps)

Summary for Pond 7P: BIO-2

Inflow Area = 1.377 ac, 35.51% Impervious, Inflow Depth > 2.25" for 10-yr event
Inflow = 3.66 cfs @ 12.00 hrs, Volume= 0.258 af
Outflow = 2.91 cfs @ 12.08 hrs, Volume= 0.253 af, Atten= 20%, Lag= 4.7 min
Primary = 0.58 cfs @ 12.08 hrs, Volume= 0.209 af
Routed to Reach 16R : PR DP-1
Secondary = 2.34 cfs @ 12.08 hrs, Volume= 0.044 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 183.35' @ 12.08 hrs Surf.Area= 1,522 sf Storage= 2,499 cf

Plug-Flow detention time= 41.3 min calculated for 0.252 af (98% of inflow)
Center-of-Mass det. time= 34.6 min (834.9 - 800.3)

Volume	Invert	Avail.Storage	Storage Description
#1	178.99'	3,041 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
178.99	1,031	0.0	0	0
179.00	1,031	40.0	4	4
180.00	1,031	40.0	412	417
180.01	1,031	25.0	3	419
182.25	1,031	25.0	577	996
182.26	1,031	100.0	10	1,007
183.75	1,700	100.0	2,035	3,041

Stormwater Routing Type II 24-hr 10-yr Rainfall=5.09", P2=3.35"
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Summary for Subcatchment 1S: EX-1

Runoff = 8.45 cfs @ 12.01 hrs, Volume= 0.419 af, Depth> 2.07"
Routed to Reach 15R : EX DP-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.09", P2=3.35"

Area (ac)	CN	Description
1.675	61	>75% Grass cover, Good, HSG B
0.748	98	Paved parking, HSG B
2.423	72	Weighted Average
1.675		69.13% Pervious Area
0.748		30.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	100	0.0700	0.20		Sheet Flow , Grass: Dense n= 0.240 P2= 3.35"
0.2	52	0.1200	5.58		Shallow Concentrated Flow , Unpaved Kv= 16.1 fps
0.7	84	0.0100	2.03		Shallow Concentrated Flow , Paved Kv= 20.3 fps
0.3	61	0.0400	3.22		Shallow Concentrated Flow , Unpaved Kv= 16.1 fps
9.6	297	Total			

Summary for Subcatchment 2S: DA BIO-1

Runoff = 3.69 cfs @ 11.96 hrs, Volume= 0.157 af, Depth> 2.16"
Routed to Pond 6P : BIO-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.09", P2=3.35"

Area (ac)	CN	Description
0.273	98	Paved parking, HSG B
0.598	61	>75% Grass cover, Good, HSG B
0.871	73	Weighted Average
0.598		68.66% Pervious Area
0.273		31.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Stormwater Routing Type II 24-hr 10-yr Rainfall=5.09", P2=3.35"
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Device	Routing	Invert	Outlet Devices
#1	Primary	179.25'	4.0" Round 4" Underdrain L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 179.25' / 179.00' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.09 sf 30.0' long + 3.0 ' SideZ x 6.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#2	Secondary	183.25'	

Primary OutFlow Max=0.58 cfs @ 12.08 hrs HW=183.35' TW=0.00' (Dynamic Tailwater)
1=4" Underdrain (Barrel Controls 0.58 cfs @ 6.61 fps)

Secondary OutFlow Max=2.16 cfs @ 12.08 hrs HW=183.35' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 2.16 cfs @ 0.74 fps)

Stormwater Routing Type II 24-hr 10-yr Rainfall=5.09", P2=3.35"
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Summary for Subcatchment 3S: DA BIO-2

Runoff = 2.45 cfs @ 11.96 hrs, Volume= 0.105 af, Depth> 2.49"
Routed to Pond 7P : BIO-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.09", P2=3.35"

Area (ac)	CN	Description
* 0.216	98	
* 0.290	61	
0.506	77	Weighted Average
0.290		57.31% Pervious Area
0.216		42.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 4S: UND-1

Runoff = 0.22 cfs @ 12.00 hrs, Volume= 0.010 af, Depth> 1.27"
Routed to Reach 16R : PR DP-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.09", P2=3.35"

Area (ac)	CN	Description			
* 0.093	61				
0.093		100.00% Pervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description

Summary for Subcatchment 5S: UND-2

Runoff = 4.45 cfs @ 11.96 hrs, Volume= 0.190 af, Depth> 2.41"
Routed to Reach 16R : PR DP-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.09", P2=3.35"



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KEY PLAN:NTS

MA PROJECT NO. 2402
**AMELIA STREET SCHOOL
ACCESSIBILITY TRAIL**

1821 AMELIA STREET
CITY OF RICHMOND, VA

CALCULATIONS

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C-5.1



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KEY PLAN:NTS

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**AMELIA STREET SCHOOL
ACCESSIBILITY TRAIL**

1821 AMELIA STREET
CITY OF RICHMOND, VA

CALCULATIONS

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C-5.2

CO-5 TO O-3 - 8" PIPE	
Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.010
Channel Slope	0.500 %
Diameter	8.0 in
Discharge	0.70 cfs
Results	
Normal Depth	4.6 in
Flow Area	0.2 ft²
Wetted Perimeter	1.1 ft
Hydraulic Radius	2.2 in
Top Width	0.66 ft
Critical Depth	4.7 in
Percent Full	57.6 %
Critical Slope	0.458 %
Velocity	3.36 ft/s
Velocity Head	0.18 ft
Specific Energy	0.56 ft
Froude Number	1.055
Maximum Discharge	1.19 cfs
Discharge Full	1.11 cfs
Slope Full	0.199 %
Flow Type	Supercritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	57.6 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	4.6 in
Critical Depth	4.7 in
Channel Slope	0.500 %
Critical Slope	0.458 %

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[10.03.00.03]
Page 5 of 5

SWALE TO BIO 2	
Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.050
Channel Slope	12.000 %
Left Side Slope	10.000 %
Right Side Slope	10.000 %
Discharge	0.53 cfs
Results	
Normal Depth	2.0 in
Flow Area	0.3 ft²
Wetted Perimeter	3.3 ft
Hydraulic Radius	1.0 in
Top Width	3.30 ft
Critical Depth	2.1 in
Critical Slope	8.224 %
Velocity	1.94 ft/s
Velocity Head	0.06 ft
Specific Energy	0.22 ft
Froude Number	1.193
Flow Type	Supercritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	2.0 in
Critical Depth	2.1 in
Channel Slope	12.000 %
Critical Slope	8.224 %

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Page 2 of 5

O-3 TO BIO 1 - SWALE	
Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.050
Channel Slope	12.000 %
Left Side Slope	10.000 %
Right Side Slope	10.000 %
Discharge	0.70 cfs
Results	
Normal Depth	2.2 in
Flow Area	0.3 ft²
Wetted Perimeter	3.7 ft
Hydraulic Radius	1.1 in
Top Width	3.66 ft
Critical Depth	2.4 in
Critical Slope	7.927 %
Velocity	2.09 ft/s
Velocity Head	0.07 ft
Specific Energy	0.25 ft
Froude Number	1.218
Flow Type	Supercritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	2.2 in
Critical Depth	2.4 in
Channel Slope	12.000 %
Critical Slope	7.927 %

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Page 1 of 5

CO-1 TO O-1 - 4" PIPE	
Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.010
Channel Slope	5.000 %
Diameter	4.0 in
Discharge	0.58 cfs
Results	
Normal Depth	3.5 in
Flow Area	0.1 ft²
Wetted Perimeter	0.8 ft
Hydraulic Radius	1.2 in
Top Width	0.22 ft
Critical Depth	4.0 in
Percent Full	87.2 %
Critical Slope	5.074 %
Velocity	7.18 ft/s
Velocity Head	0.80 ft
Specific Energy	1.09 ft
Froude Number	2.105
Maximum Discharge	0.60 cfs
Discharge Full	0.55 cfs
Slope Full	5.496 %
Flow Type	Supercritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	87.2 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.5 in
Critical Depth	4.0 in
Channel Slope	5.000 %
Critical Slope	5.074 %

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Page 3 of 5

OCS-1 TO O-2 - 12" PIPE	
Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.010
Channel Slope	0.500 %
Diameter	12.0 in
Discharge	2.17 cfs
Results	
Normal Depth	7.1 in
Flow Area	0.5 ft²
Wetted Perimeter	1.8 ft
Hydraulic Radius	3.3 in
Top Width	0.98 ft
Critical Depth	7.6 in
Percent Full	59.5 %
Critical Slope	0.421 %
Velocity	4.46 ft/s
Velocity Head	0.31 ft
Specific Energy	0.90 ft
Froude Number	1.116
Maximum Discharge	3.52 cfs
Discharge Full	3.27 cfs
Slope Full	0.220 %
Flow Type	Supercritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	59.5 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	7.1 in
Critical Depth	7.6 in
Channel Slope	0.500 %
Critical Slope	0.421 %

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Page 4 of 5

Table C-ECM-15-3 Permissible Velocities for Earth Linings	
Soil Types	Permissible Velocities (ft/s)
Fine Sand (non-colloidal)	2.5
Sandy Loam (non-colloidal)	2.5
Silt Loam (non-colloidal)	3.0
Ordinary Firm Loam	3.5
Fine Gravel	5.0
Stiff Clay (very colloidal)	5.0
Graded, Loam to Cobbles (non-colloidal)	5.0
Graded, Silt to Cobbles (colloidal)	5.5
Alluvial Silts (non-colloidal)	3.5
Alluvial Silts (colloidal)	5.0
Coarse Gravel (non-colloidal)	6.0
Cobbles and Shingles	5.5
Shales and Hard Plans	6.0

Source: Schwab, G., et al. 1966

Table C-ECM-09-2 Maximum Velocities for Grass-Lined Channels			
Cover Type	Slope (%)	Erosion Resistant Soils (feet/second)	Easily Eroded Soils (feet/second)
Bermudagrass	0 – 5 5 – 10	6 5	4.5 3.8
Kentucky bluegrass	0 – 5	5	3.8
Reed Canarygrass	5 – 10	4	3
Tall fescue	> 10	3	2.3
Grass-legume mixture	0 – 5 5 – 10	4 3	3 2.3
Red fescue	0 – 5	2.5	1.9

Sources: Virginia Department of Environmental Quality 1992; Ree 1949; Temple et al. 1987; NOVA 2007