

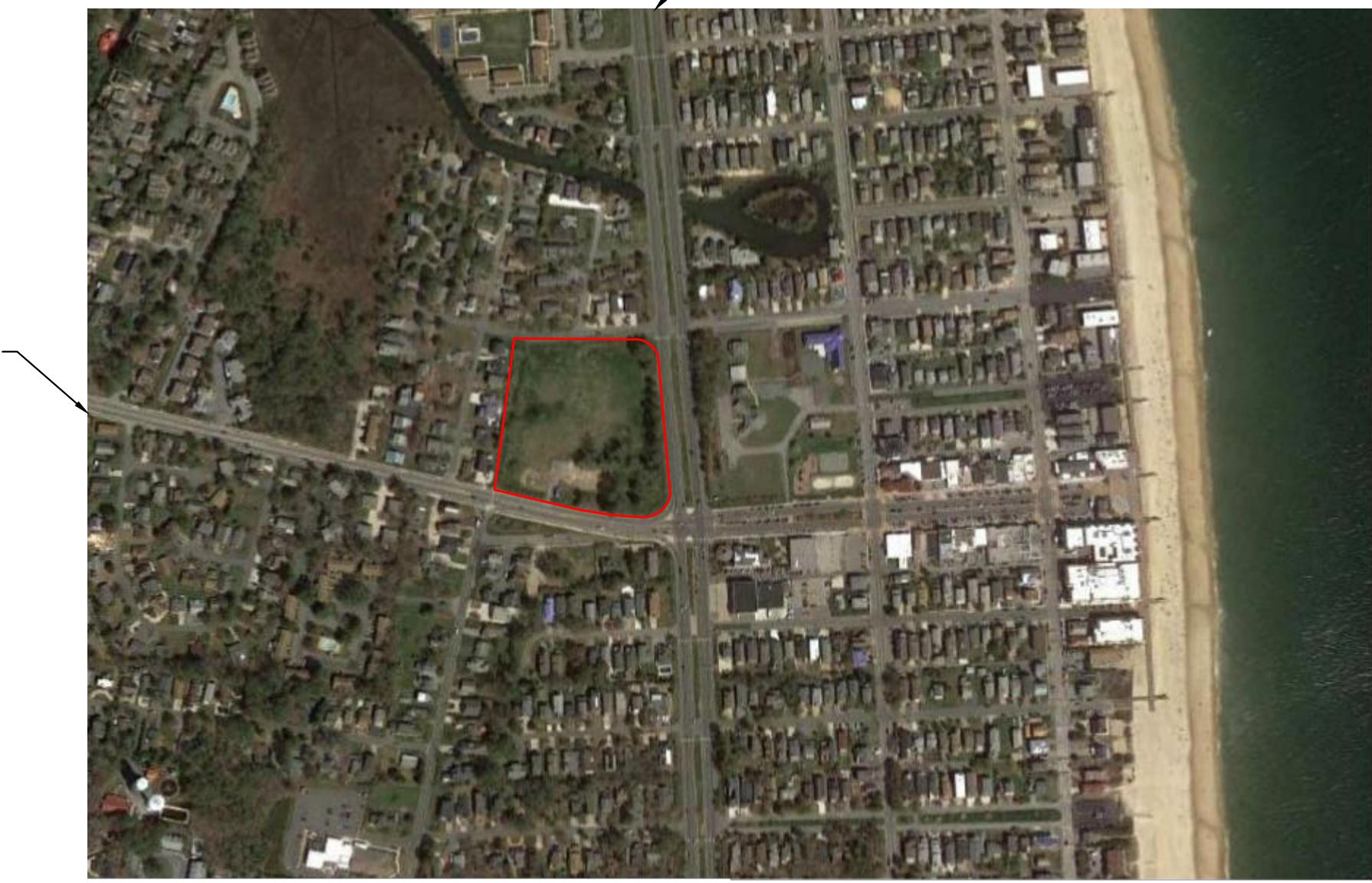
TOWN OF BETHANY BEACH, DE

CENTRAL PARK



SHEET LIST

C-1	Existing Conditions Plan
C-2	Site Details
C-3	Geometry Plan
C-4	Geometry Plan
C-5	Stakeout Plan
C-6	Grading Plan
C-7	Stormwater Management Plan
C-8	Stormwater Management Facility #1 Plan
C-9	Stormwater Management Facility #2 Plan
C-10	Stormwater Management Details
C-11	Lighting/Electrical Plan
C-12	Erosion and Sediment Control Plan
C-13	Erosion and Sediment Control Details
C-14	Erosion and Sediment Control Details
C-15	Erosion and Sediment Control Details



DE. ROUTE 26

U.S. ROUTE 1

CONTEXT PLAN

NTS

LANDSCAPE ARCHITECT:
KIMLEY HORN
215 EAST FORT AVE.
SUITE 304
BALTIMORE, MD 21230

CIVIL ENGINEER:
RKK
700 EAST PRATT STREET
SUITE 500
BALTIMORE, MD 21202

GEOTECH:
GTA INC.
1133 STERLING AVENUE
SUITE 7
GEORGETOWN, DE 19947

SURVEYOR:
KERCHER ENGINEERING INC.
54 CHAPMAN ROAD
SUITE 202
NEWARK, DE 19702

OWNER INFORMATION AND MISCELLANEOUS NOTES

OWNER: TOWN OF BETHANY BEACH
214 GARFIELD PARKWAY
P.O. BOX 109
BETHANY BEACH, DE 19930

PROPERTY ADDRESS: 327 GARFIELD PARKWAY
BETHANY BEACH, DE 19930

TAX PARCELS #'S: 134-13.19-103
MARYLAND AVE UNOPENED 50' R/W
134-13.19-104

DESIGNER/APPLICANT: RK&K
700 E. PRATT STREET, SUITE 500
BALTIMORE, MD 21202

1. WATER SERVICE TO BE PROVIDED BY TOWN OF BETHANY
BEACH - 8" C900 PIPE

2. BENCHMARK: CONCRETE DELAWARE RIGHT-OF-WAY
MONUMENT TO REMAIN. LOCATION: N 196235.37106, E 758244.29451
ELEV. 5.95

3. THIS PROJECT IS BASED ON HORIZONTAL DATUM NAD83 AND VERTICAL
DATUM NAVD 88.

Sheet Set: BETHANY BEACH CENTRAL PARK Layout: COVER SHEET September 26, 2018 01:24:57pm K:\BAL_LALP\114003000.1.200 Bethany Beach Central Park CD's\CAD\PlanSheets\COVER SHEET

Plotted By: Bristow, Conway Sheet Set: BETHANY BEACH CENTRAL PARK Layout: COVER SHEET September 26, 2018 01:24:57pm
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This does not plotted

Kimley-Horn

COVER SHEET

BEACH CENTRAL PARK

BETHANY E PR THE TOWN C NIPALITY

SHEET NUMBER

1 TREE REMOVAL PLAN
L-2 1" = 30'

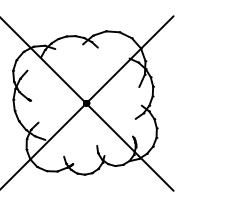


LEGEND

LIMIT OF DISTURBANCE

— LOD —

TREES TO BE REMOVED



NOTES:

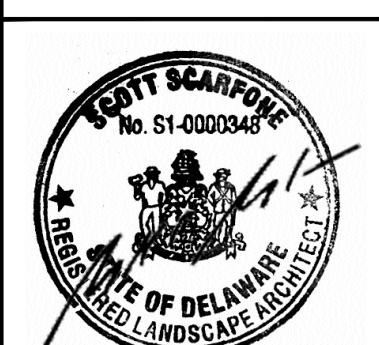
1. REFER TO SHEETS C-12/13 FOR DETAILS ON SENSITIVE AREA PROTECTION
2. TREES SLATED FOR REMOVAL SHALL HAVE TRUNK / ROOT SYSTEMS REMOVED.

TREE REMOVAL AND PROTECTION PLAN

BETHANY BEACH CENTRAL PARK
PREPARED FOR
THE TOWN OF BETHANY BEACH
MUNICIPALITY
DELAWARE

Kimley-Horn

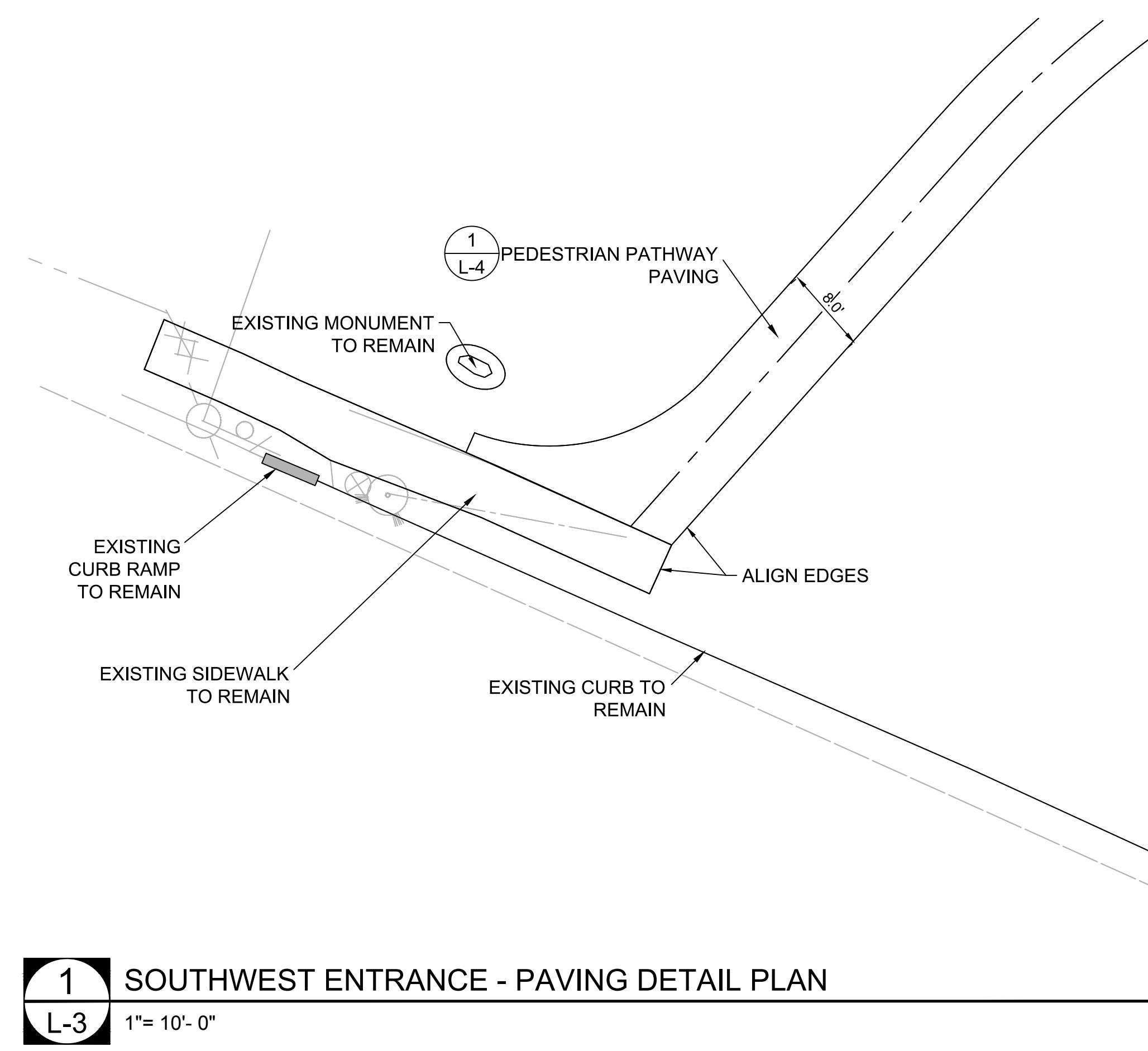
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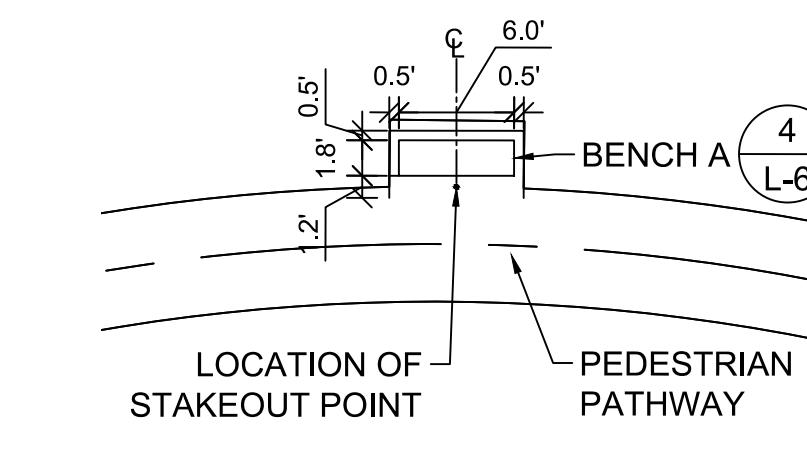
XHA PROJECT
114003000
DATE
09/18/2018
SCALE AS SHOWN
SCS
DESIGNED BY
MR. S.
DRAWN BY
MR. S.
CHECKED BY
SCS

DATE BY
REVISIONS
No.

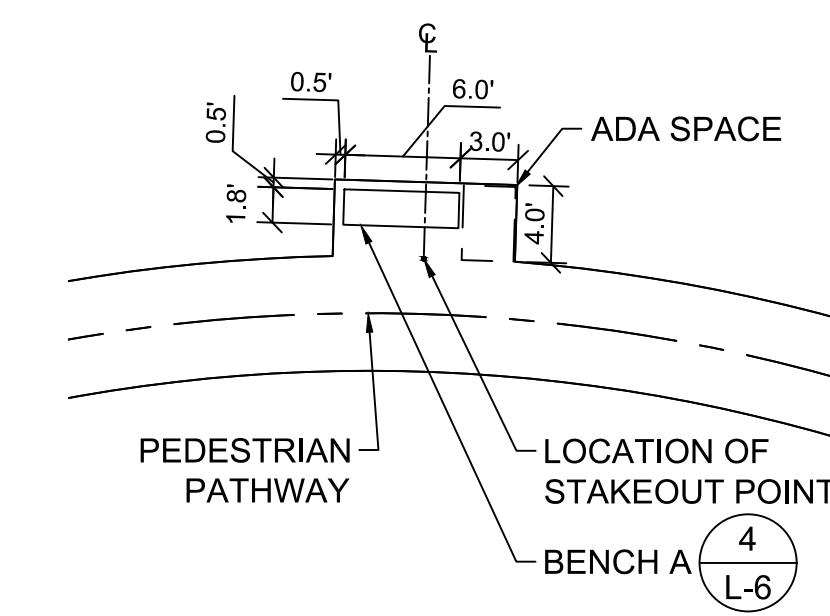
SHEET NUMBER
L-2



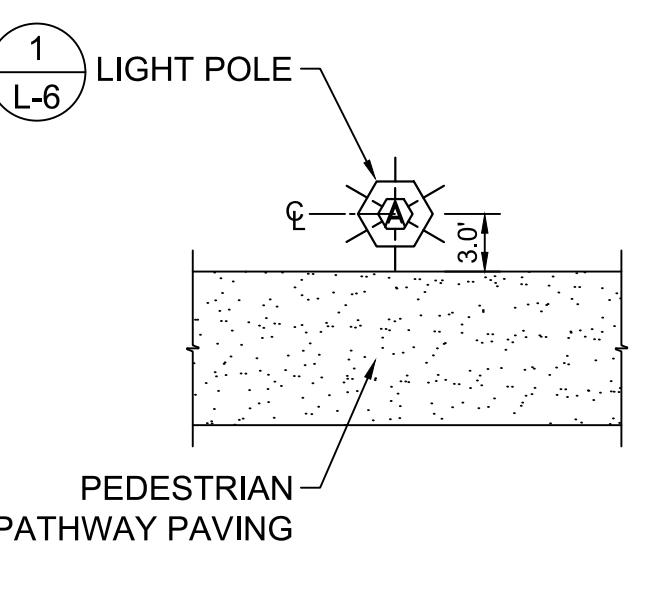
1 SOUTHWEST ENTRANCE - PAVING DETAIL PLAN
L-3 1' = 10'-0"



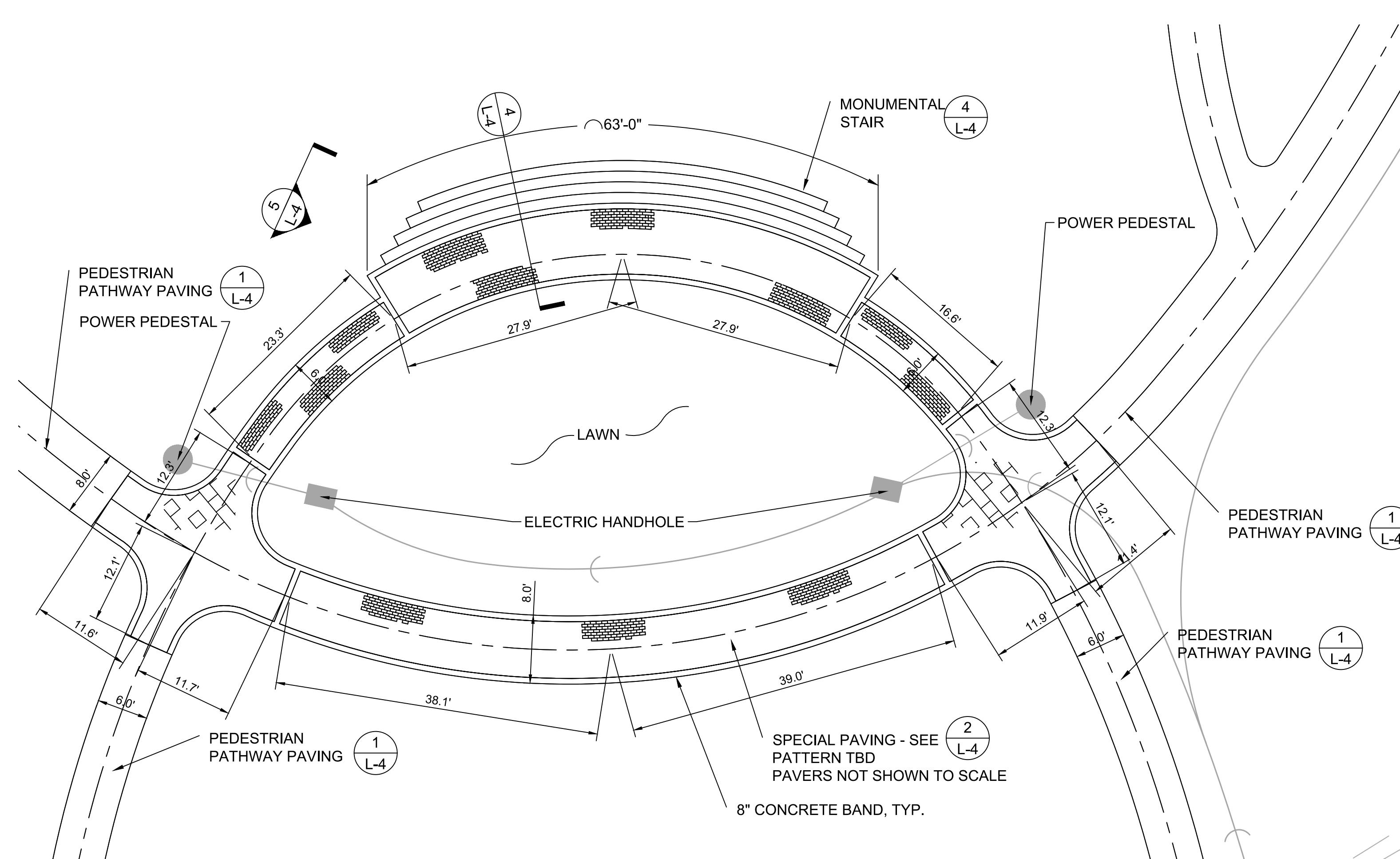
2 BENCH PAD DETAIL PLAN (TYP.)
L-3 NTS



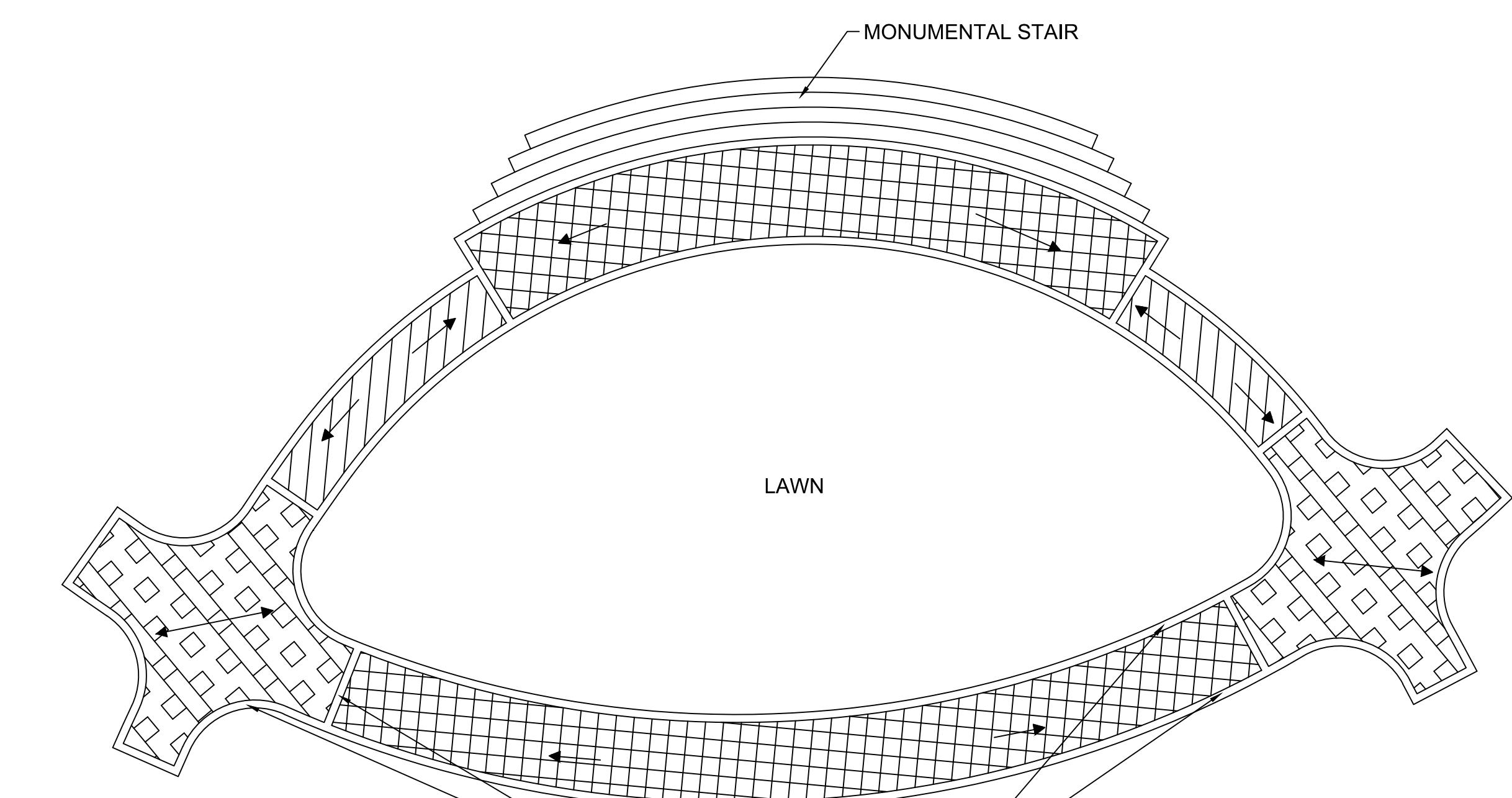
3 ADA BENCH PAD DETAIL PLAN (TYP.)
L-3 NTS



4 LIGHT POLE DETAIL PLAN
L-3 NTS



5 PERFORMANCE AREA DETAIL PLAN
L-3 1' = 10'-0"



KEY	PAVER TYPE	LAYOUT PATTERN
	FUTURE ENGRAVED CONCRETE PAVER - COORDINATE WITH OWNER	RUNNING BOND
	STANDARD CONCRETE PAVER (SEE COLOR MATRIX BELOW)	RUNNING BOND
	STANDARD CONCRETE PAVER (SEE COLOR MATRIX BELOW)	HERRINGBONE
→		PREDOMINATE PAVER DIRECTION
	PRODUCT INFORMATION: MANUFACTURER: HANOVER PAVERS SIZE: 4" X 8" COLORS: LIMESTONE GREY (40%) CHARCOAL (25%) #M1064/T (35%)	 RUNNING BOND
		 HERRINGBONE

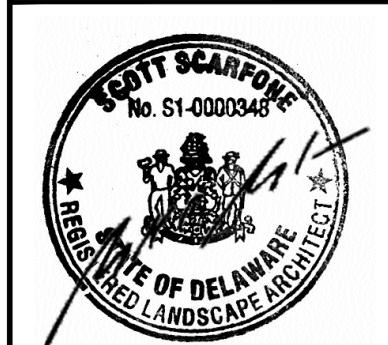
6 PERFORMANCE AREA PAVER PLAN
L-3 1' = 10'-0"

ENLARGED DETAIL PLANS

BETHANY BEACH CENTRAL PARK
THE TOWN OF BETHANY BEACH
DELAWARE
MUNICIPALITY

Kimley»Horn

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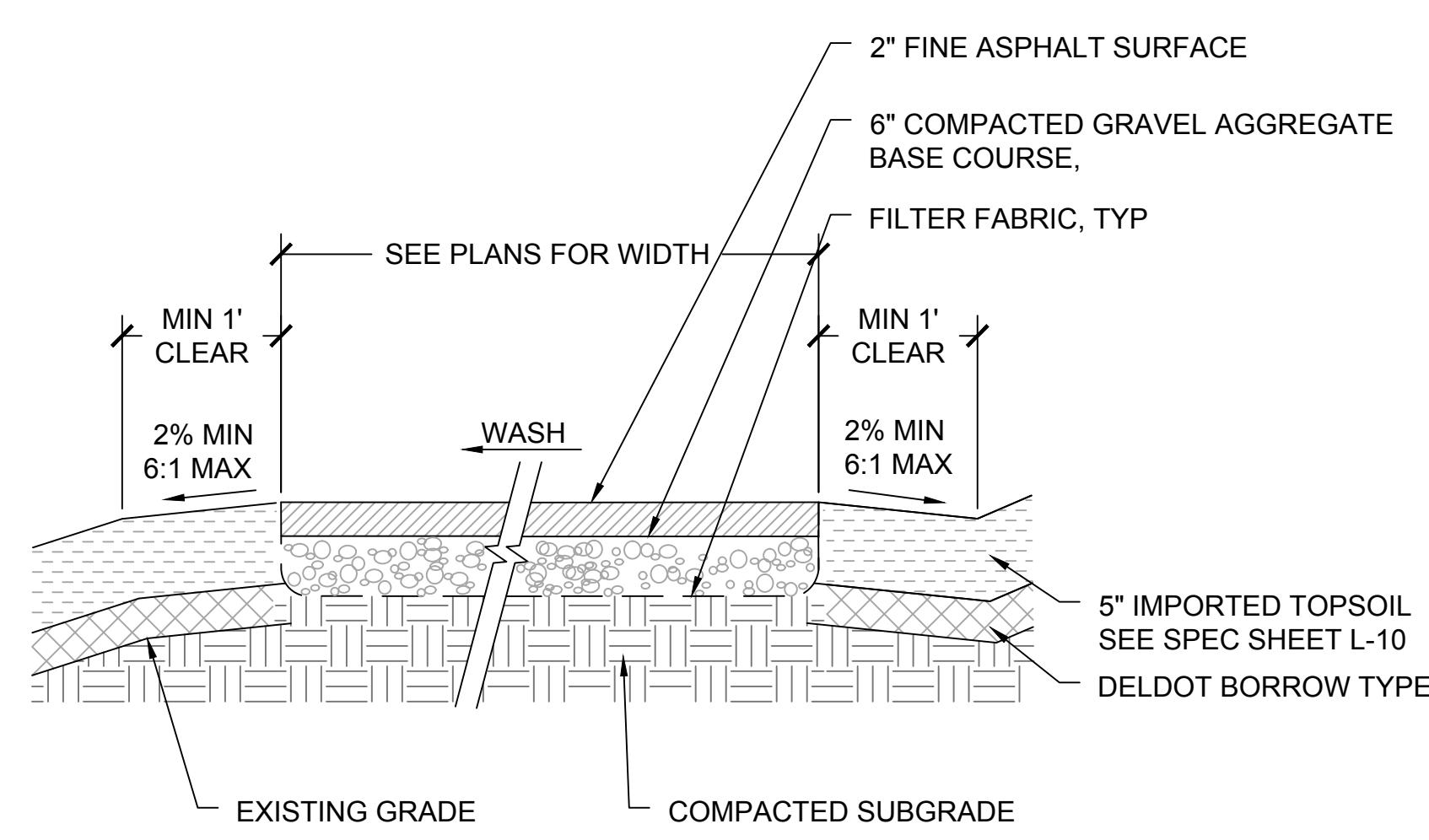


XHA PROJECT
114003000
DATE
09/18/2018
SCALE AS SHOWN
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DESIGNED BY
MR. S.
DRAWN BY
SCS
CHECKED BY
SCS

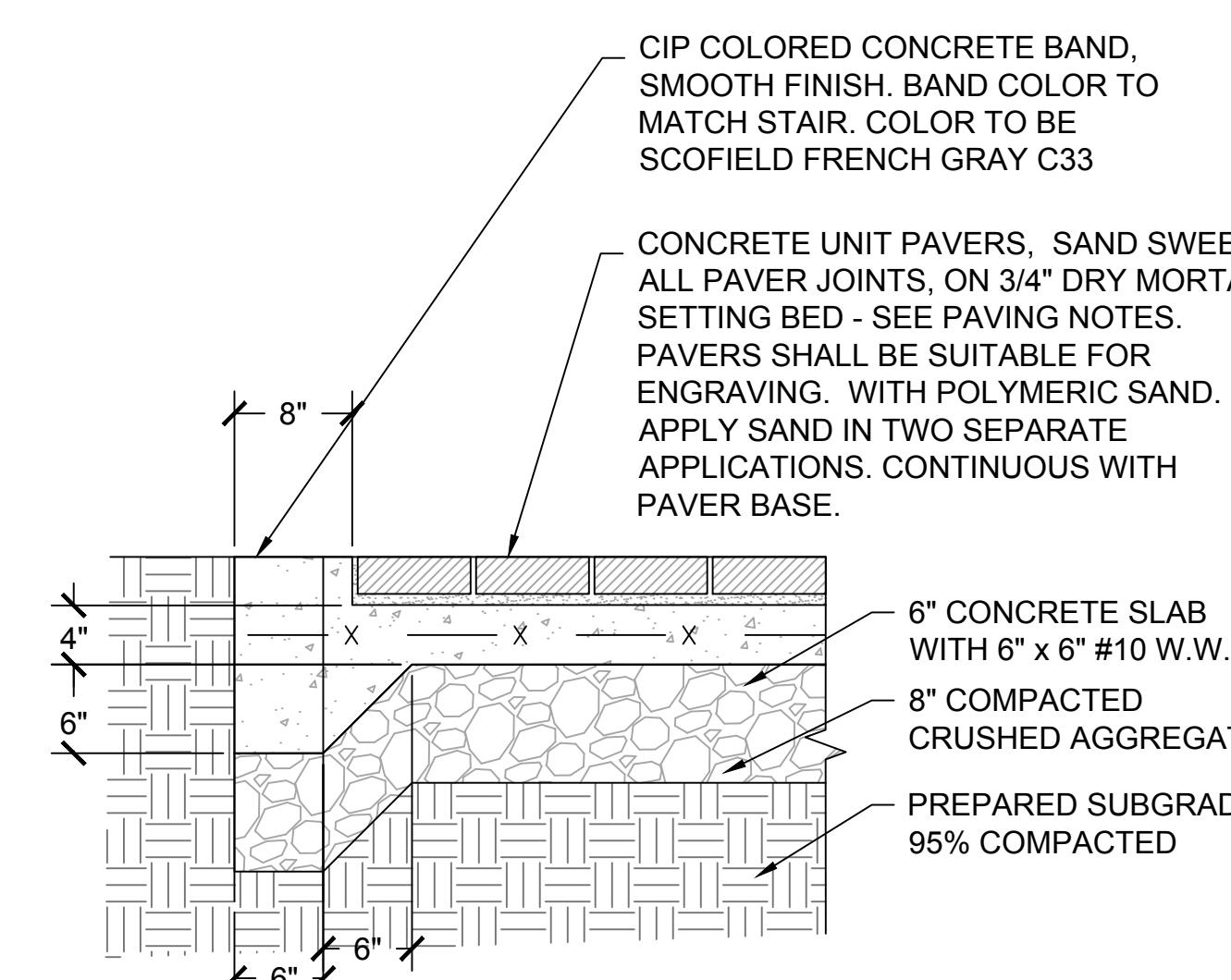
DATE: _____
REVISIONS: _____
No. _____



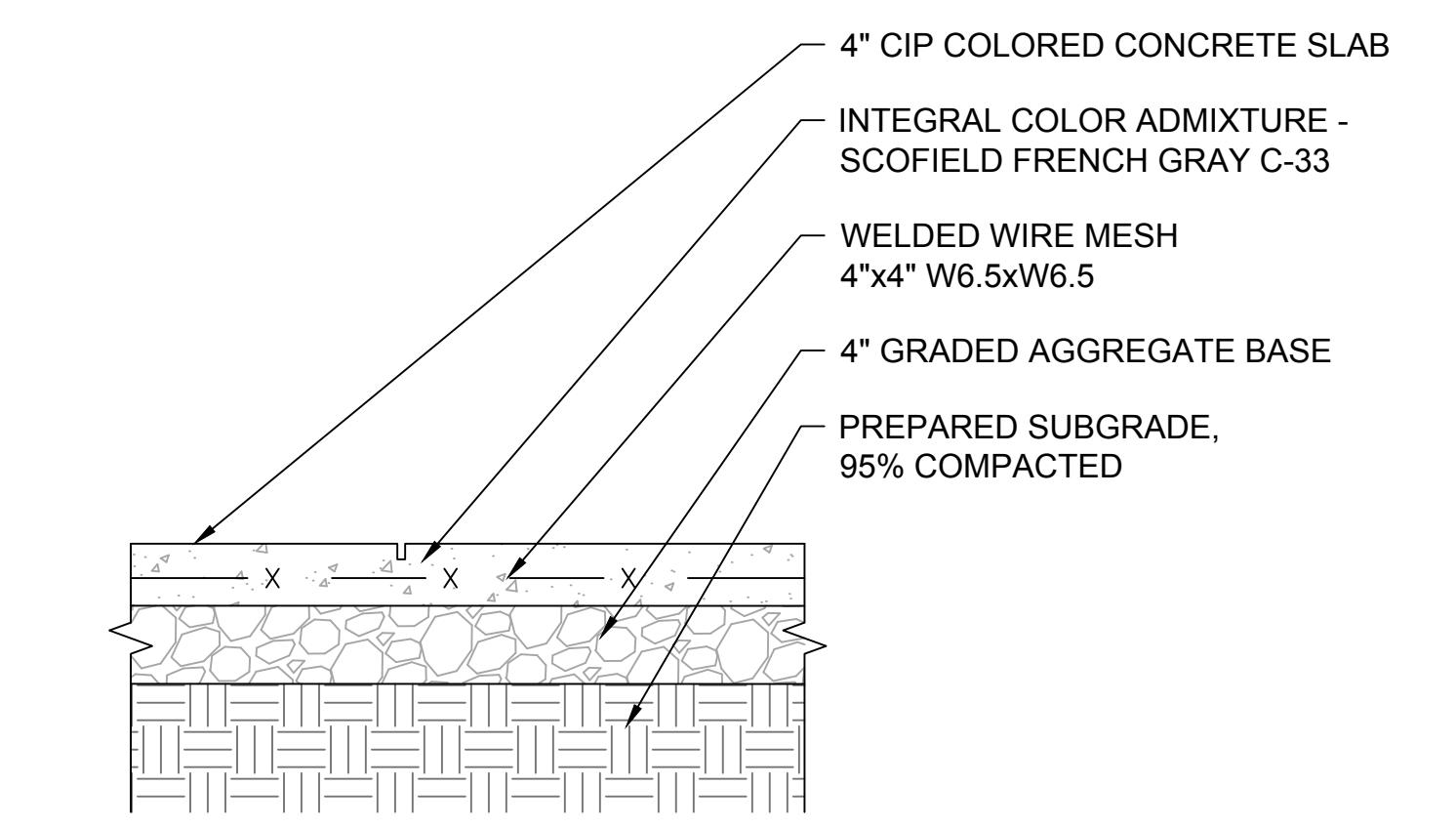
CALL 48 HOURS
BEFORE YOU DIG
IT'S THE LAW!
DIAL 811
Know what's
below
Call
before you dig



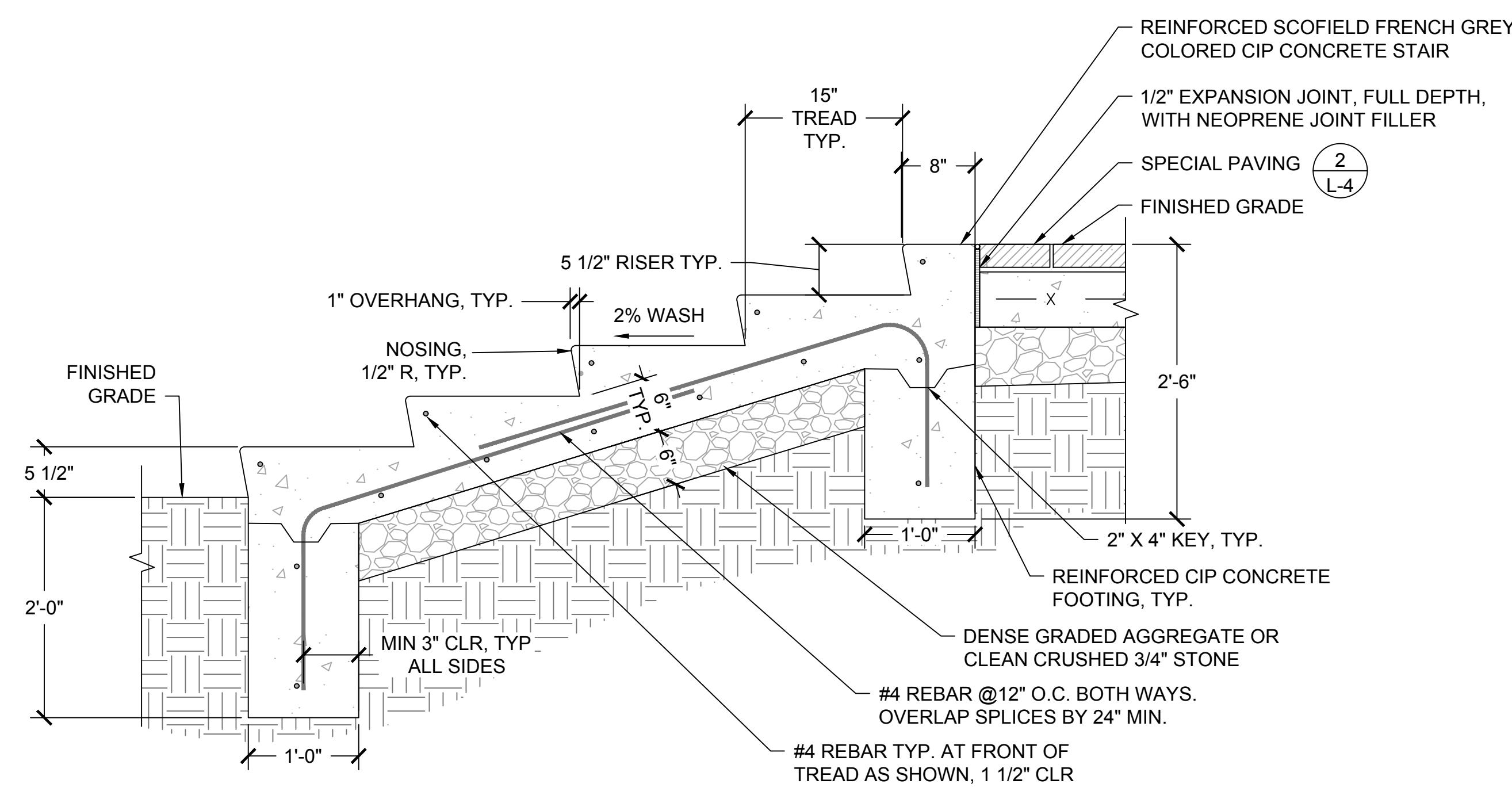
1 PEDESTRIAN PATHWAY PAVING (TYPE 1)
L-4 NTS



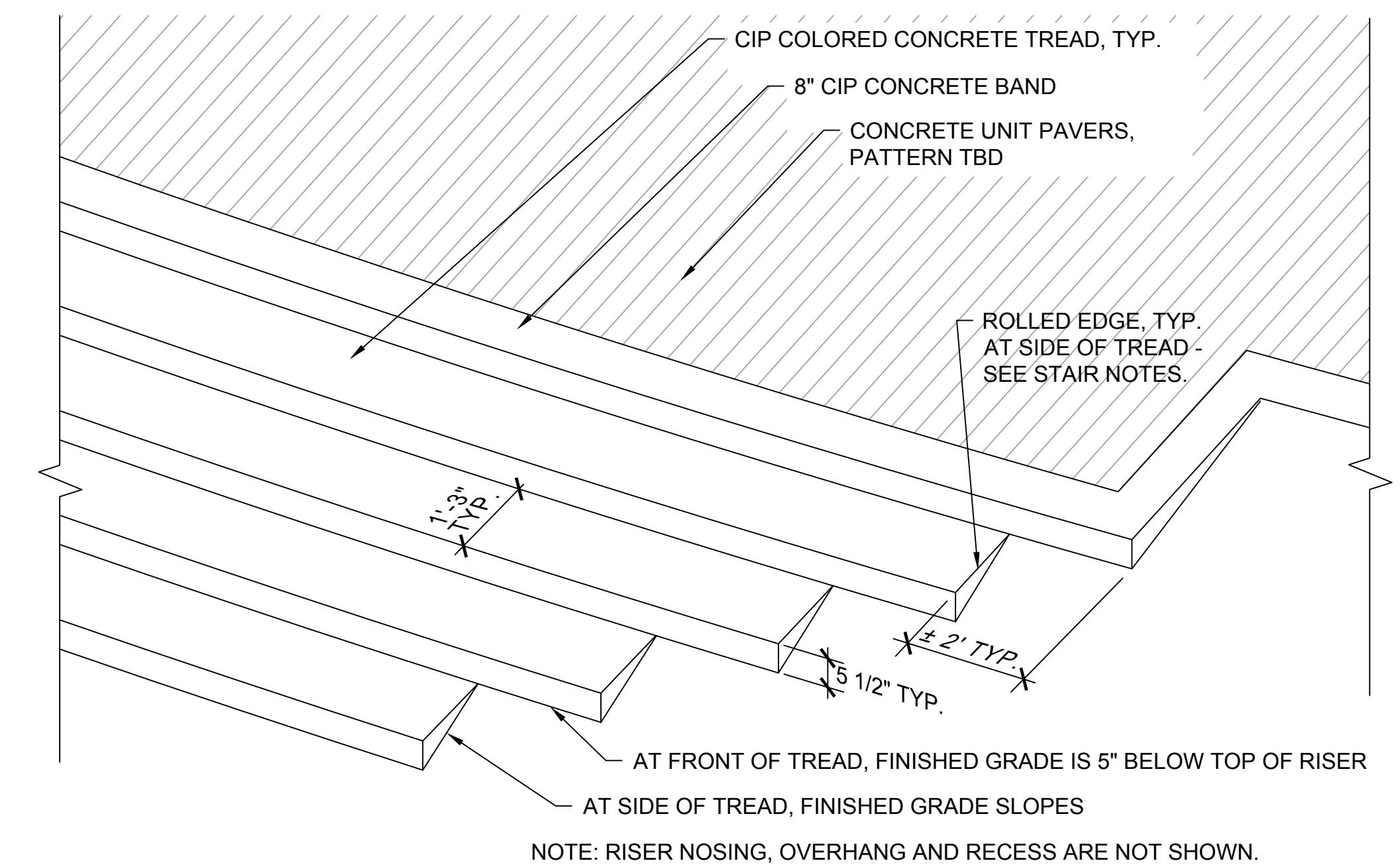
2 SPECIAL PAVING - UNIT PAVERS WITH CONCRETE BAND (TYPE 2)
L-4 NTS



3 CONCRETE PAVING (TYPE 3)
L-4 NTS



4 CIP CONCRETE STAIR (TYPE 4)
L-4
1" = 1' - 0"



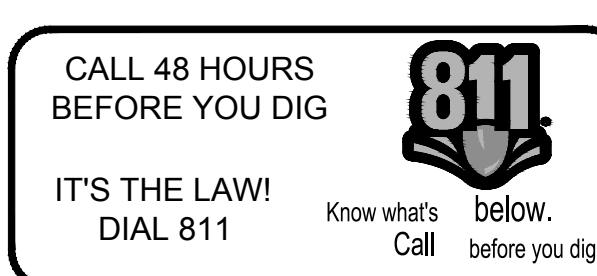
5 CIP CONCRETE STAIR - PARTIAL AXONIMETRIC DIAGRAM
L-4
1/2" = 1' - 0"

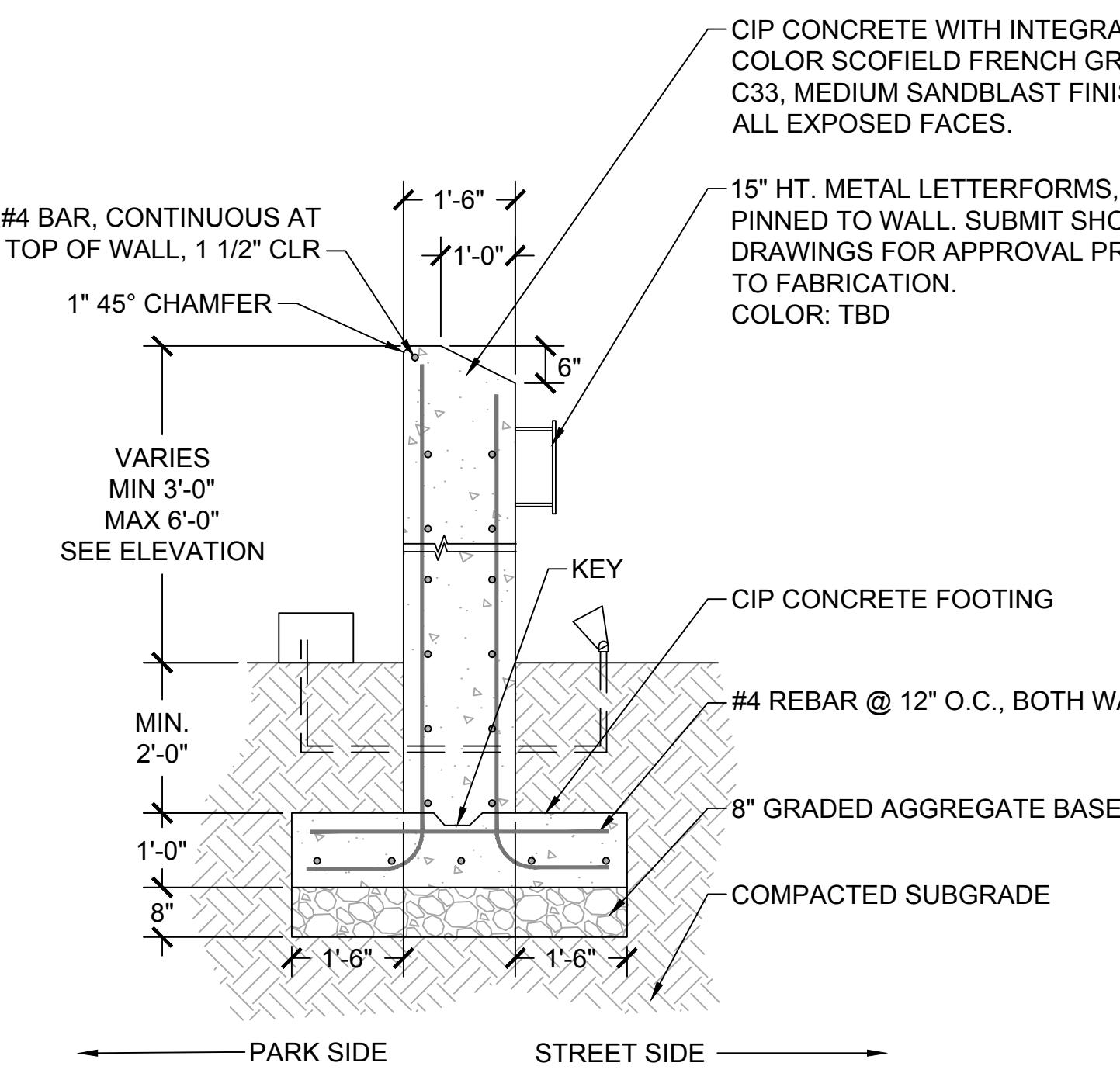
PAVING NOTES:

1. INTEGRAL COLOR ADMIXTURE: SCOFIELD FRENCH GREY C33
2. CONCRETE UNIT PAVERS:
3. MORTAR COLOR:
SUBMIT SAMPLES FOR SELECTION BY OWNER

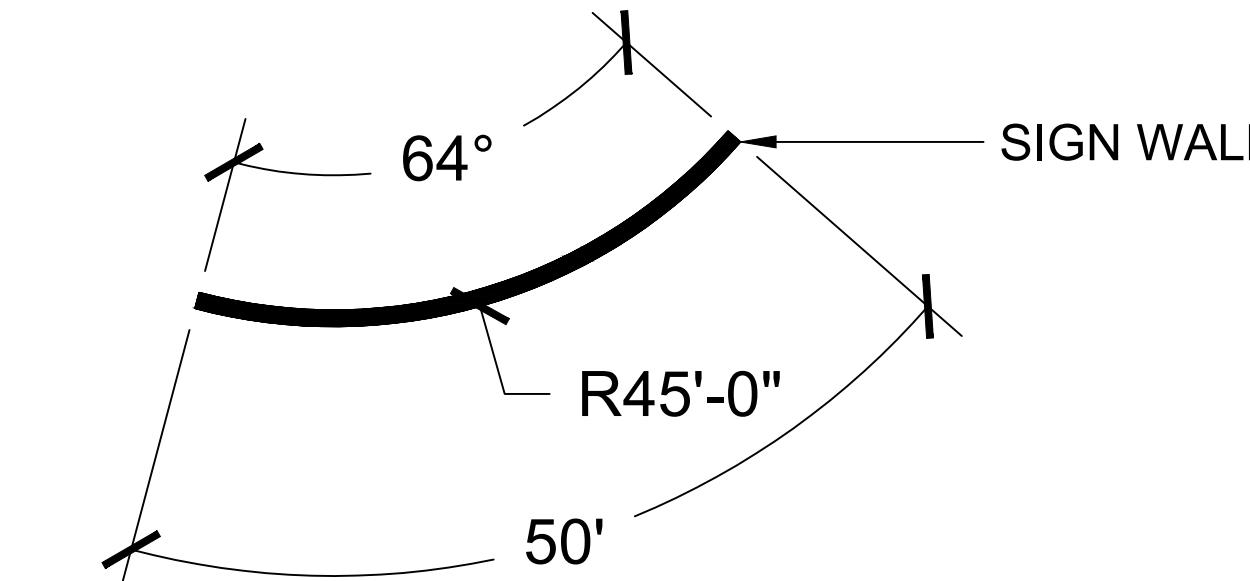
STAIR NOTES:

1. TREADS SHALL RECEIVE NON-SLIP BROOM FINISH, PERPENDICULAR TO DIRECTION OF TRAVEL. ALL OTHER EXPOSED SURFACES SHALL BE TROWEL FINISHED.
2. ALL EXPOSED CORNERS SHALL HAVE ROLLED EDGE, SIMILAR TO STAIR NOSINGS.



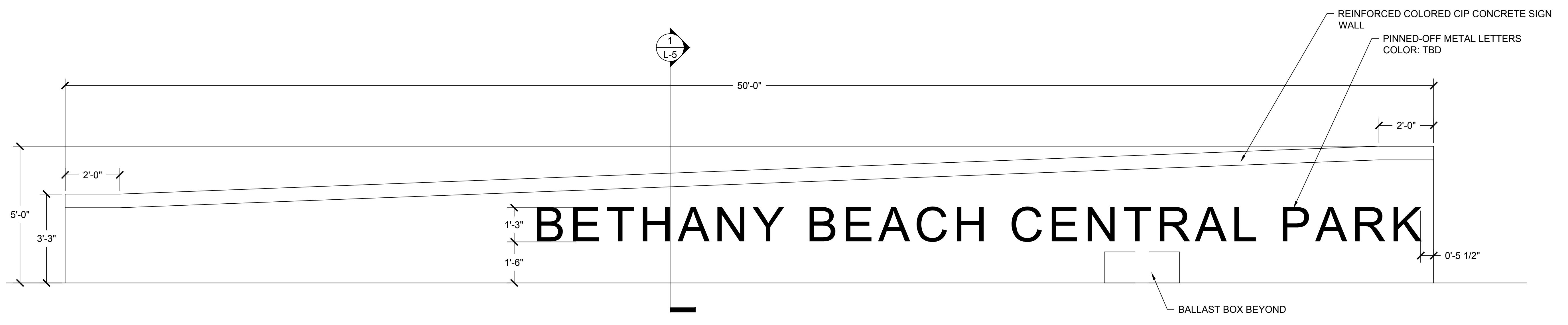


1 SIGN WALL - SECTION
L-5 1/2" = 1' - 0"



NOTE: REFER TO SHEET C-5
FOR STAKEOUT COORDINATES

2 SIGN WALL - LAYOUT PLAN
L-5 3/4" = 1' - 0"



3 SIGN WALL - UNFOLDED ELEVATION
L-5 1/2" = 1' - 0"

DETAILS

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BETHANY BEACH CENTRAL
PARK

PREPARED FOR

THE TOWN OF BETHANY BEACH

DELAWARE

SHEET NUMBER
L-5

DATE: BY

REVISIONS

DATE



**Fixture A
Decorative Pole Light**

**QTY: NEW - 5, RELOCATE
ADD ALTERNATE QTY:
Fixture shall match I
Lights installed in
Anchor mounted
Wattage and voltage
Comparable fixture:
Series 2000
Manufacturer: TRA
Menomonee Falls,
888-719-7599
www.concretepoles.com
OR APPROVED EQUIVALENT**



A black rectangular sign with a white horizontal band across the middle. On the left side, there is a white circle containing the number '1' in black. To the right of the circle, the words 'LIGHT POLE' are printed in large, bold, black capital letters. Below the horizontal band, the code 'L-6' is printed in black.

TRASH RECEPTACLE
RAIN BONNET LID

QTY: 3

TYPE: SD-42 TRASH RECEPTACLE
RAIN BONNET LID
BRONZE COLOR
36 GALLON LINER

MANUFACTURER:
VICTOR STANLEY
DUNKIRK, MD
301 855 8300
WWW.VICTORSTANLEY.COM



3 TRASH RECEPTACLE
L-6

BENCH A
BACKLESS BENCH

QTY: 6

TYPE: CR-16 BACKLESS BENCH
INTERMEDIATE ARMRESTS
BRONZE COLOR
6' LENGTH

MANUFACTURER:
VICTOR STANLEY
DUNKIRK, MD
301 855 8300
WWW.VICTORSTANLEY.COM



The logo consists of a white circle with a black border. Inside the circle, the number '4' is positioned at the top, and 'L-6' is positioned at the bottom. To the right of the circle, the word 'BENCH' is written in a large, bold, black, sans-serif font.

BENCH B
REGULAR BENCH

QTY: 5
TYPE: CR-18 BENCH
INTERMEDIATE ARMRESTS
BRONZE COLOR
6' LENGTH
MANUFACTURER:
VICTOR STANLEY
DUNKIRK, MD
301 855 8300
WWW.VICTORSTANLEY.COM



A circular black and white benchmark indicator. The top half of the circle contains the number '5' in black. The bottom half contains the text 'L-6' in black. A horizontal line extends from the right side of the circle across the image.

FIXTURE B
SIGN UPLIGHT

QTY: 3

TYPE: KONA XS FLOODLIGHT PROJECTOR
NEUTRAL WHITE
6W LED

MANUFACTURER:
ERCO Lighting
Edison, NJ
732 225 8856
WWW.ERCO.COM
OR APPROVED EQUIVALENT



WALL UPLIGHT

**BETHANY BEACH CENTRAL
PARK**
PREPARED FOR
THE TOWN OF BETHANY BEACH

Kimley-Horn

AVE, SUITE 304, BALTIMORE, MD 21230
PHONE: 443-743-3470
WWW.KIMLEY-HORN.COM

KHA PROJECT 114003000	DATE 09/18/2018	SCALE AS SHOW
		DESIGNED BY SC
		DRAWN BY MRJ

NGS

SITE FURNISH

BETHANY BEACH CENTRAL
PARK
PREPARED FOR
THE TOWN OF BETHANY BEACH
SHEET NUMBER
T-6

SHEET NUMBER
L-6

This technical diagram illustrates a 'TYPICAL SECTION (BASE 6)' for a utility pole base. The structure is a rectangular foundation with a central vertical column. Key dimensions include:

- Width: 24"
- Depth: 8'-0"
- Top surface thickness: 2"
- Bottom thickness: 2"
- Vertical reinforcement spacing: 3"
- Horizontal reinforcement spacing: 3"
- Reinforcement types: #5 REINFORCING BAR (TYP.) and #6 REINFORCING BAR (TYP.)
- Expansion material: Expansion Material is shown at the top left.
- Conduit: A 3" CONDUIT SWEEP is shown on the right side.
- Anchor bolts: ANCHOR BOLTS (SEE NOTE) are shown at the bottom left.
- Ground rod: A GROUND ROD (1/4" x 240") is shown at the bottom right, embedded 8'-0" into undisturbed soil.

Notes: (SEE POLE BASE DATA CHART) is indicated on the left side.

FINISHED GRADE (SIDEWALK, PAVEMENT, ETC.)

FINISHED GRADE (SOIL)

EXPANSION MATERIAL

3" (SEE POLE BASE DATA CHART)

#5 REINFORCING BAR (TYP.)

#6 REINFORCING BAR (TYP.)

ANCHOR BOLTS (SEE NOTE)

3" CONDUIT SWEEP

CONDUIT

3"

GROUND ROD (1/4" x 240") EMBED 8'-0" INTO UNDISTURBED SOIL

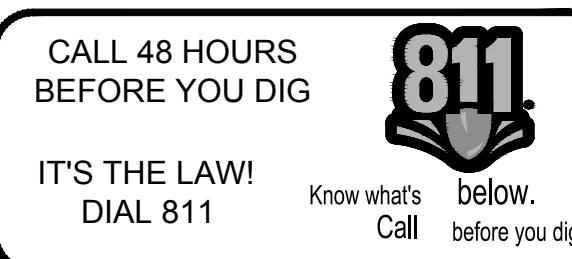
TYPICAL SECTION (BASE 6)

NOTE: ANCHOR BOLTS AND BOLT PATTERN FOR TYPES 5, 6, & 7 POLE BASES TO BE PROVIDED BY THE MANUFACTURER.





1 PLANTING PLAN
L-11 1" = 30'



PLANT SCHEDULE

TREES	QTY	BOTANICAL NAME	COMMON NAME	CONT
AR	4	Acerspecie 'Summer Glory' TM	Summer Glory Maple	4" cal
CJ	19	Cryptomeria japonica	Japanese Cedar	6" HT
MV	6	Magnolia virginiana	Sweet Bay	14" HT
NS	3	Nyssa sylvatica	Sour Gum	2" CAL
PT	46	Pinus taeda	Loblolly Pine	6" HT
QA	4	Quercus alba	White Oak	4" cal
QR	6	Quercus rubra	Red Oak	4" cal
SR	9	Syringa reticulata	Japanese Tree Lilac	2.5" CAL

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	CONT
CA	14	Clethra alnifolia	Summerweet Clethra	24" HT. MIN.
FG	18	Fothergilla gardenii	Dwarf Fothergilla	24" HT. MIN.
HQ	40	Hydrangea quercifolia	Quercifl. Hydrangea	24" HT. MIN.
IA	5	Ilex opaca	American Holly	8" HT
MA	88	Potentilla fruticosa	Bush Cinquefoil	18" SPREAD
PF	30	Potentilla fruticosa 'Abbotswood'	Abbotswood Potentilla	1 GAL
PA	78	Rosa x 'Pink Knockout'	Pink Knockout Rose	18" SPREAD
RP	22	Syringa meyeri	Korean Lilac	36" HT. MIN.
SM	15	Viburnum dentatum	Viburnum x 'Burkwoodii' 'Mohawk'	36" HT. MIN.
VA	18	Viburnum x burkwoodii	Mohawk Viburnum	30" SPD.

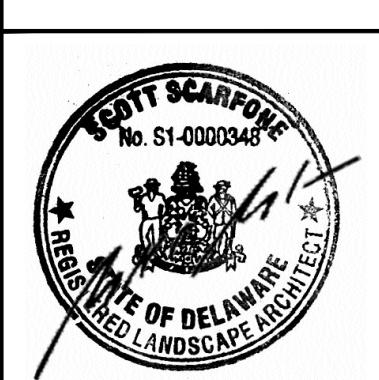
SHRUB AREAS	QTY	BOTANICAL NAME	COMMON NAME	CONT	SPACING
	81	Calamagrostis x acutiflora 'Karl Foerster'	Feather Reed Grass	1 gal	18" o.c.
	60	Chasmanthium latifolium	Wood Oats	2 GAL.	18" o.c.
	284	Hemerocallis x 'Happy Returns'	Happy Returns Daylily	1 gal	12" o.c.
	39	Imperata cylindrica 'Red Baron'	Japanese Blood Grass	1 gal	24" o.c.
	84	Juniperus conferta 'Silver Mist'	Shore Juniper	1 gal	18" o.c.
	541	Liriope spicata 'Silver Dragon'	Creeping Lily Turf	2 QT.	10" o.c.
	561	Muhlenbergia capillaris	Pink Muhly	2 QT.	12" o.c.
	155	Nassella tenuissima	Texas Needle Grass	2 QT.	12" o.c.
	142	Nepeta x faassenii 'Walkers Low'	Walkers Low Catmint	2 QT.	15" o.c.
	27	Perovskia atriplicifolia	Russian Sage	1 gal	36" o.c.
	118	Sedum x 'Matrona'	Sedum	1 gal	12" o.c.

NOTE:
ALL PINUS TAEDA TO BE FIELD LOCATED BY LANDSCAPE ARCHITECT

PLANTING PLAN

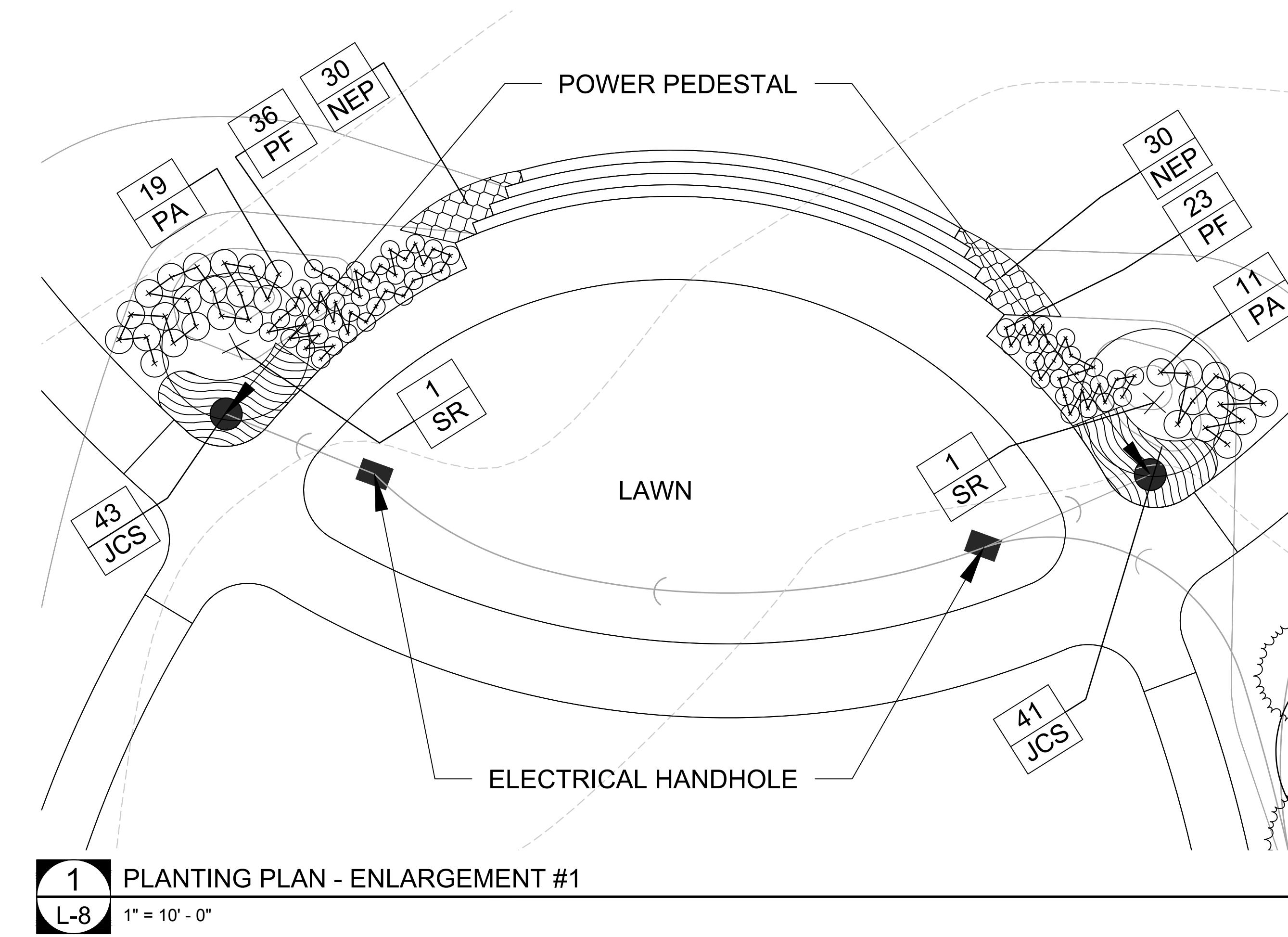
BETHANY BEACH CENTRAL PARK
PREPARED FOR
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DELAWARE

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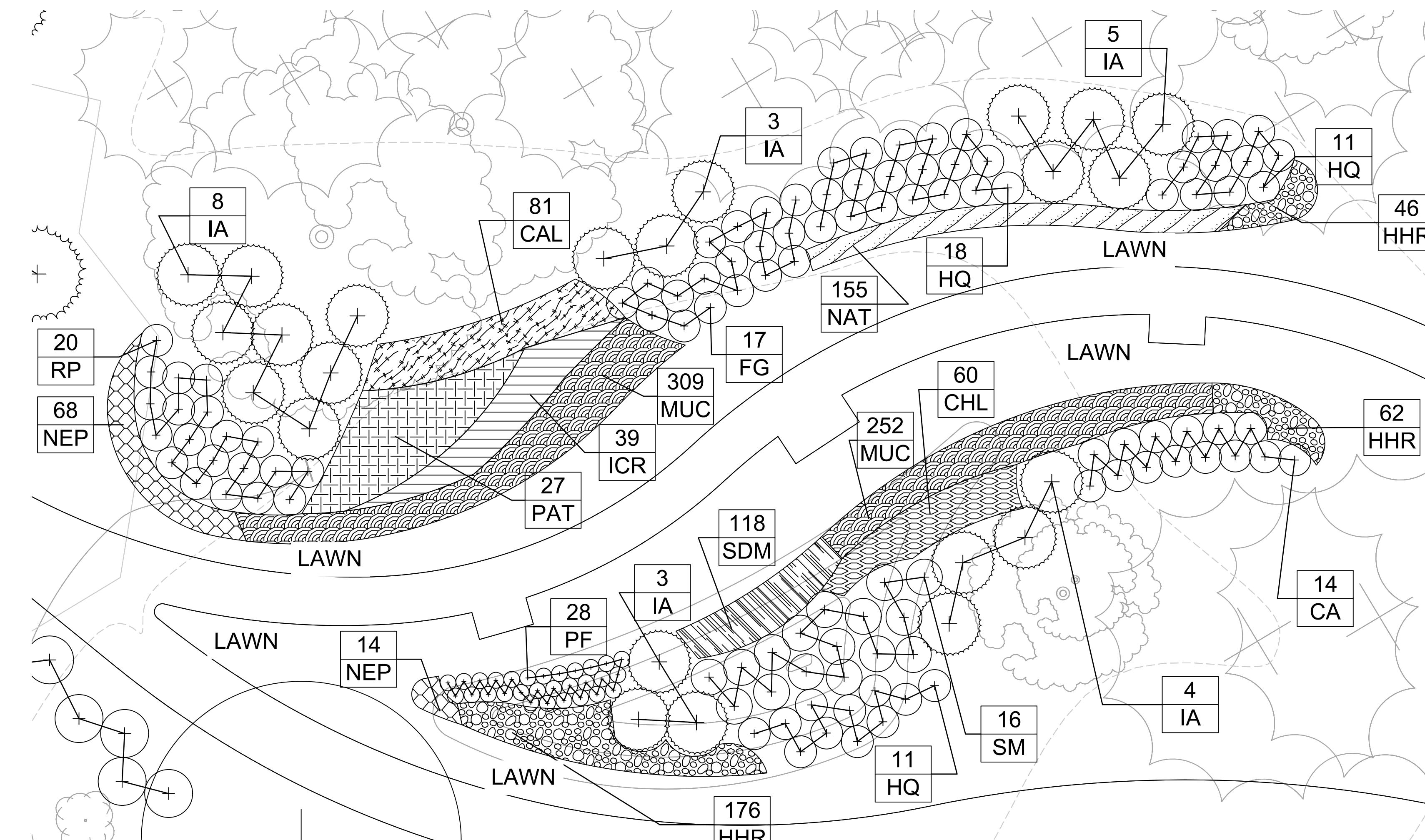
SHEET NUMBER
L-7

DATE	BY	REVISIONS



1 PLANTING PLAN - ENLARGEMENT

L-8

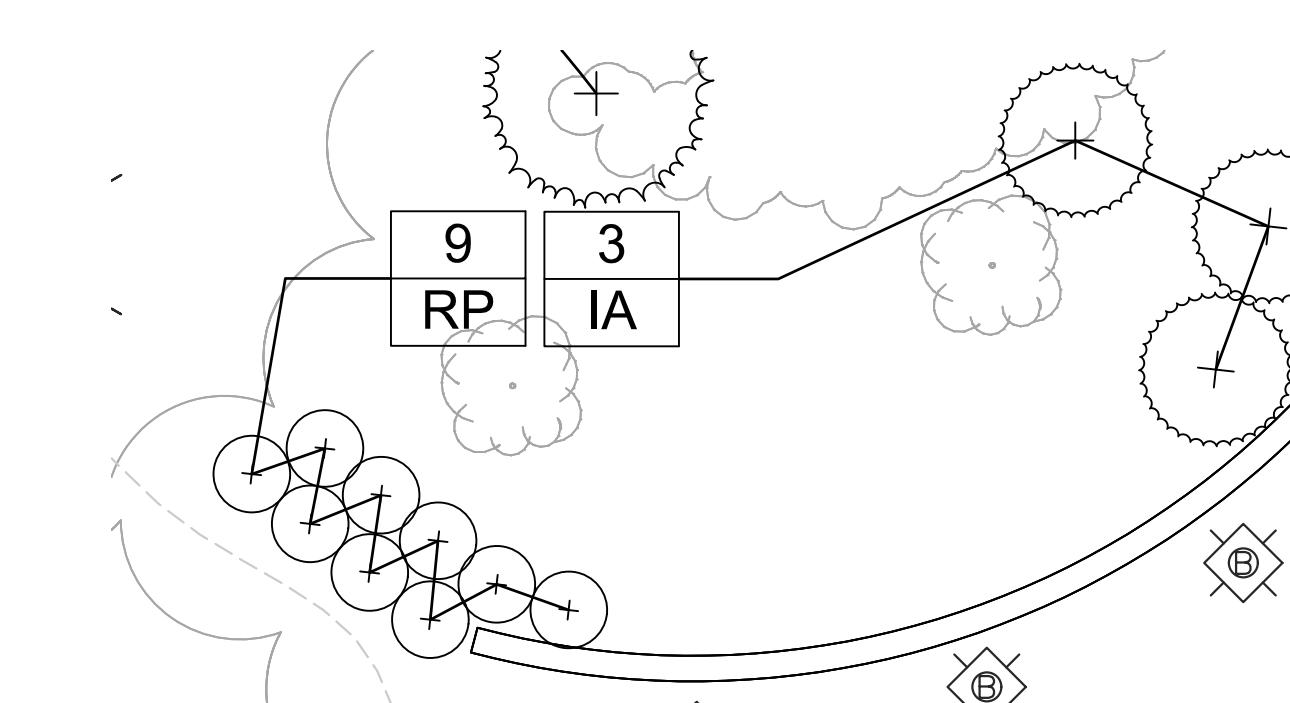


2 PLANTING PLAN - ENLARGEMENT

L-8

PLANT SCHEDULE ENLARGEMENT #1

<u>TREES</u>	<u>QTY</u>	<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>	<u>CONT</u>	<u>REMARKS</u>	
SR	2	Syringa reticulata	Japanese Tree Lilac	2.5" CAL.		
<u>SHRUBS</u>	<u>QTY</u>	<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>	<u>CONT</u>	<u>REMARKS</u>	
PF	59	Potentilla fruticosa	Bush Cinquefoil	18" SPREAD		
PA	30	Potentilla fruticosa 'Abbotswood'	Abbotswood Potentilla	1 GAL.		
<u>SHRUB AREAS</u>	<u>QTY</u>	<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>	<u>CONT</u>	<u>SPACING</u>	<u>REMARKS</u>
	84	Juniperus conferta 'Silver Mist'	Shore Juniper	1 gal	18" o.c.	
	60	Nepeta x faassenii 'Walkers Low'	Walkers Low Catmint	2 QT.	15" o.c.	

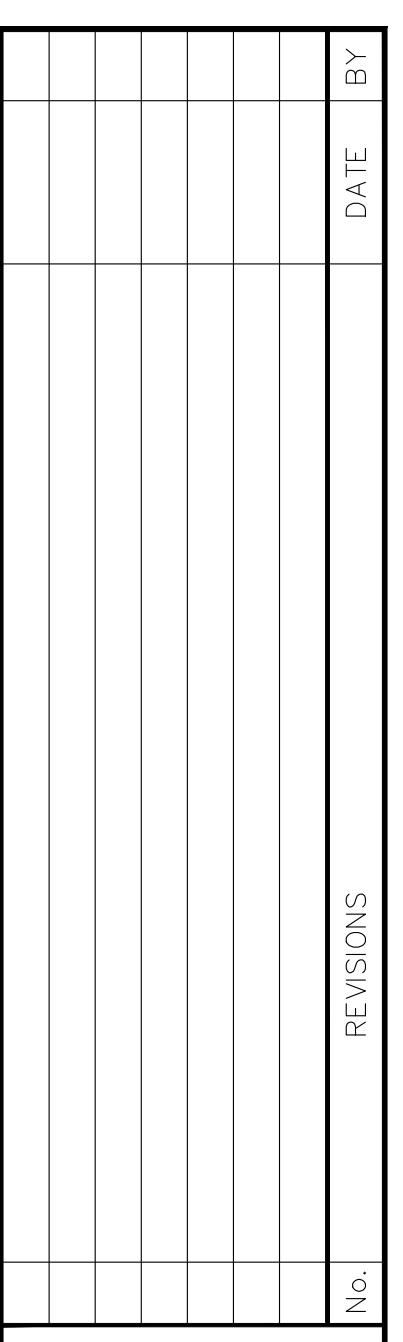


3 ENTRY SIGN PLANTING PL

1" = 10

PLANT SCHEDULE SIGN PLANTING

<u>SHRUBS</u>	<u>QTY</u>	<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>	<u>CONT</u>
IA	3	<i>Ilex opaca</i>	American Holly	8` HT.
RP	9	Rosa x 'Pink Knockout'	Pink Knockout Rose	18" SPREAD



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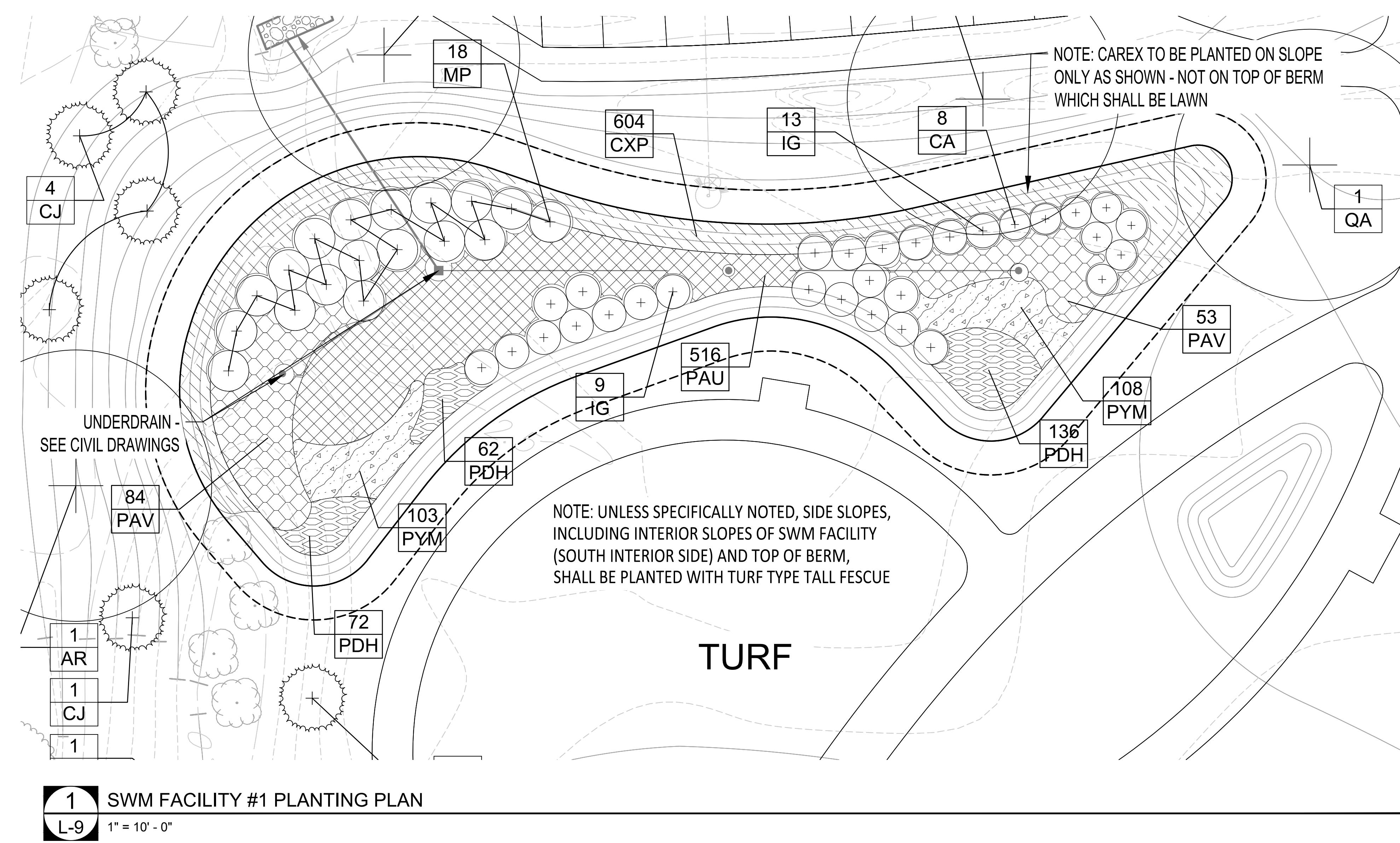
ENLARGED PLANTING PLANS

BETHANY BEACH CENTRAL PARK

PREPARED FOR

THE TOWN OF BETHANY BEACH

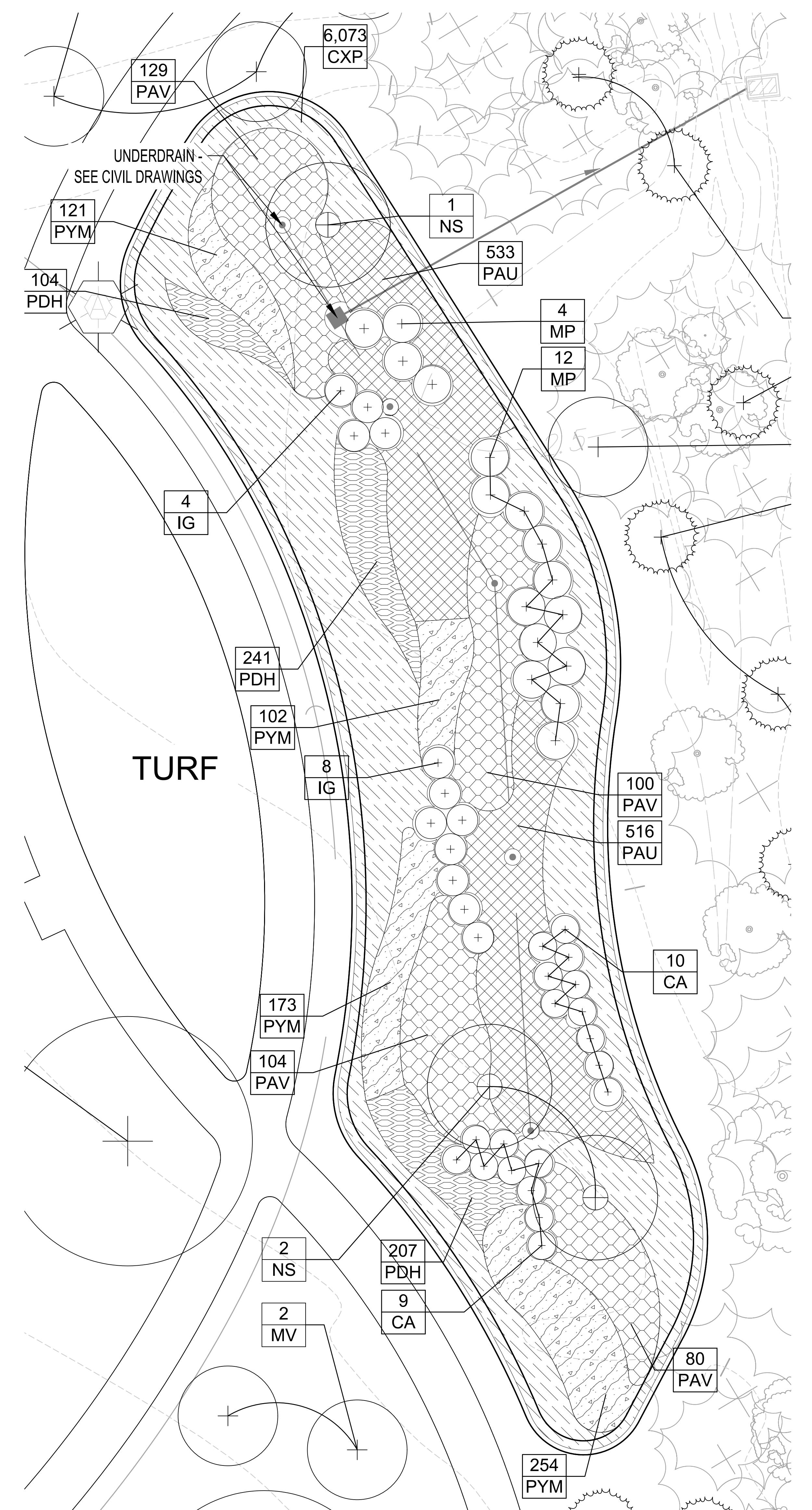
SHEET NUMBER
L-8



PLANT SCHEDULE

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	CONT	SPACING
CA	27	Clethra alnifolia	Summersweet Clethra	18" HT MIN.	
IG	34	Ilex glabra	Inkberry Holly	24" HT. MIN.	
MP	34	Myrica pensylvanica	Northern Bayberry	30" MIN. HT.	
GROUND COVERS	CODE	QTY	BOTANICAL NAME	COMMON NAME	CONT
	CXP	6,677	Carex pensylvanica	Pennsylvania Sedge	2 qt
	PAU	1,565	Packera aurea	Golden Groundsel	2 qt
	PAV	550	Panicum virgatum	Switch Grass	1 gal.
	PDH	822	Penstemon digitalis 'Husker Red'	Beardtongue	2 qt
	PYM	861	Pycnanthemum muticum	Clustered Mountainmint	2 qt

NOTES:
• SEE PLANTING PLAN ON SHEET L-7 FOR PROPOSED CANOPY AND UNDERSTORY TREES



BETHANY BEACH CENTRAL PARK
PREPARED FOR
THE TOWN OF BETHANY BEACH
DELAWARE
MUNICIPALITY

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DATE	REVISIONS
12/15/2018	0
SCOTT SCARFONE No. 51-000045	SCS
DESIGNED BY MR. S.	DRAWN BY MR. S.
CHECKED BY SCS	

DATE	REVISIONS
09/18/2018	0
SCOTT SCARFONE No. 51-000045	SCS
DESIGNED BY MR. S.	DRAWN BY MR. S.
CHECKED BY SCS	

DATE	REVISIONS
09/18/2018	0
SCOTT SCARFONE No. 51-000045	SCS
DESIGNED BY MR. S.	DRAWN BY MR. S.
CHECKED BY SCS	

DATE	REVISIONS
09/18/2018	0
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PLANTING NOTES

Plant Identification - All plants shall be properly marked for identification and checking.

List of Plant Material - The quantities given in the plant list are approximate only. The contractor will verify plant quantities prior to bidding and any discrepancies shall be brought to the attention of the landscape architect. The Contractor shall furnish, and plant, all plants required to complete the work as shown on the drawings. Substitutions shall not be made without the written approval of Kimley-Horn and the owner. This contract will be based on the bidder having verified prior to bidding the availability of the required plant materials as specified on the Plant Materials List.

Plant Quality - All plants shall be healthy, heavy to the ground, and disease free. Evidence of rotting, rotting, and shriveled roots shall be vigorous, healthy and of good color. All plants shall be sound free of plant disease, infestation, insect damage and shall have a healthy, strong root system. Plants shall be freshly dug and not heeled-in stock, nor stock from cold storage. All plants shall be nursery grown. Plants shall not be pruned prior to delivery. The shape of the plant shall, in general, conform to its natural growth proportions unless otherwise specified. All plants, including container grown, shall conform to the branching, caliper and height specifications of the American Association of Nurserymen's Publication entitled American Standard for Nursery Stock, ANSI/Z60.1-2004 or latest edition, and shall have a well-shaped, heavy-branched structure for the species. Evergreen trees are to have an internode no greater than 24" and shall be uniformly well-shaped. Plants of a given size shall not measure less than the minimum size set forth in the American Standard for Nursery Stock, ANSI/Z60.1-2004 or latest edition.

Plant Tagging - The contractor shall prepare a list of nurseries supplying the specified plant material for the owner and Kimley-Horn to inspect, at their option, and tag prior to digging.

Plant Spacing - Plant spacing is to scale on plan. No shrub material shall be closer than 30' to building walls.

Soil Mix - Soil mix will be 2/3 existing topsoil, 1/3 leafmold thoroughly mixed and homogenized. Other organic material may be substituted upon written approval by Kimley-Horn.

Rootball Size - The ball size shall conform to the American Association of Nurserymen's Publication entitled American Standard for Nursery Stock, ANSI/Z60.1-2004 or latest edition, and shall be wrapped in untreated burlap.

Excavation - Holes for all trees shall be 2 times the size of root ball or container and shall have vertical sides. Holes for shrubs shall be 12" wider than the root ball. Beds for mass planting shall be entirely rotated to a depth of 8" and shall be 18" beyond the average outside edge of plant balls. Organic material (leafmold) will be incorporated into plant beds by tilling again to a depth of 8". Proportions of soil to organic material will be two parts existing soil to one part organic material.

Planting - Backfilling shall be done with soil mix previously described, reasonably free of stones, subsoil, clay, lumps, stumps, roots, weeds, Bermuda grass, litter, toxic substances, or any other material which may be harmful to plant growth or hinder grading, planting, or maintenance operations. Should any unforeseen or unusual planting conditions arise, such as faulty soil drainage, chemical residues or inconsistencies between plane and actual site conditions, they should be called to the attention of Kimley-Horn and the owner for adjustment before planting. Plants shall be set plumb and straight and trees shall be gued or staked, where required, at the time of planting. Backfill shall be well worked about the roots and sealed by tamping. Plants will be planted higher than surrounding grade. Shrubs and trees will be set at a depth to place 1/8" of the rootball above finish grade. Remove rope from round tree trunk and lay back burlap and wire baskets from top 1/3 of all B&B material. Nylon, plastic, or vinyl rope and/or burlap will be completely removed from all plant material prior to planting.

Cultivation - All trenches and shrub beds shall be cultivated, edged and mulched to a depth of 2" minimum and 3" maximum with well-aged, fine-shredded hardwood bark. The area around isolated plants shall be mulched to at least a 6" greater diameter than that of the hole. Plant beds adjacent to buildings shall be entirely mulched to the building wall.

Mulching - The Contractor shall be responsible during the contract and up to the time of acceptance for keeping the planting and work incidental thereto in good condition by repairing, plant replacement, watering, weeding, cultivating, pruning, restaking and cleaning up, and by performing all other necessary operations of care for the promotion of good plant growth so that all work is in satisfactory condition at the time of acceptance at no additional cost to the owner.

Fertilizer & Incubation - All fertilizer shall be granular, with 35 to 80 percent of the total nitrogen in a slowly available form. For trees, shrubs, and groundcover, fertilizer shall be a complete fertilizer with a minimum analysis of 10 percent nitrogen, 6 percent phosphorus and 4 percent potassium. For perennials, annuals, and bulbs, fertilizer shall be a time-released, high-phosphate fertilizer, i.e., osmocote. For bulbs, fertilizer shall be bone meal (commercial, raw and finely-ground), with an analysis of 4 percent nitrogen and 20 percent phosphoric acid.

Fertilizer - Fertilizer shall be added depending on the size of the plant and the manufacturer's recommendation using the following application rates:

1. Trees: Use 2 lb. of 10-6-4 fertilizer per inch of tree diameter.
2. Shrubs: Use 1 lb. of 10-6-4 fertilizer per foot of height or spread per plant, or 3-5 lbs of 10-6-4 fertilizer per 100 square feet of bed area.
3. Groundcover: Use 1/4 lb. of 10-6-4 fertilizer per 100 square feet of bed area.
4. Perennials, Annuals, Bulbs: Use 3 lbs. of time-released, high-phosphate fertilizer (5-10-5) per 100 square feet of bed area.
5. Planting pits shall be backfilled with a mixture containing 80% existing topsoil, 20% organic material such as leaf mold, peat moss or composted sewage sludge. Incorporate endo and ectomycorrhizal fungi transplant amendment per manufacturer's recommendations (manufacturer - Horticultural Alliance, Inc. phone 1-800-628-6373).

Ground Cover - All areas of groundcover shall be rotated to a depth of 6". Apply 2" of organic material (leafmold) and rototill until thoroughly mixed. Apply mulch as stated above.

Perennial Flower Bed Preparation - A soil test shall be taken for pH analysis and the soil amended with ground limestone for acidic soil and garden sulfur or ferrous sulfate for alkaline soil at rates recommended by the soil test. The final pH should be between 6.5 and 7.0. Soil shall be spaded to a depth of 12". Spread 4" of coarse, well-rotted manure at least one year old, or compost) over the soil. Use 1/2" to 1" of organic material of selected quality per 100 square feet of bed area. Over this layer spread a thin layer of fertilizer per the schedule unless the test indicates otherwise. Rotate fertilizer and organic material, mixing them thoroughly into the soil. Use a tiller that will cultivate to a minimum depth of 8" and do not make more than two passes. The entire bed may be cultivated with a spade if preferred. When finished, rake surface with a steel-tooth rake until smooth. Moisten the bed, let the water soak in, and rake it again.

Guarantee and Replacement - All plant material shall be unconditionally guaranteed for one year. The guarantee will begin on the date of final acceptance of the work. After a plant has been determined to be dead, dying or damaged from harvesting or installation, it will be replaced during the next growing season. For example, if a plant is found dead during the summer months, it will be replaced during the fall planting season. The guarantee will end for all plant material one year after acceptance. During the guarantee period, the Contractor will not be responsible for mechanical injury or vandalism caused by other parties.

Material Inspection - Owner and/or Kimley-Horn shall, at their discretion, inspect plant material before and during delivery and installation. Plant material shall be properly delivered in clean trucks, and properly uncovered when delivered to prevent damage. Material will be unloaded and prepared for handling and delivery to the planting site. Planting material shall be delivered in a clean, uncontaminated condition to the owner for mechanical damage, and damage that will subsequently cause misshapen and deformed material. Owner will have authority to reject site preparation and planting installations, and have the right to reject any work if the specifications and construction documents are not followed. All plant material shall be of the quality specified and installed as described above, and unless these minimum standards are satisfied, the plants will be rejected.

TOPSOIL

PART 1: GENERAL DESCRIPTION

1. Topsoil shall consist of furnishing and placing topsoil for lawn, shrub beds, planters, and tree pits. Topsoil shall be a rich, friable material conforming with the requirements of these specifications.
2. Topsoil shall be placed at a depth of 12 inches in all unpaved areas and feathered to the final grade lines. Topsoil shall be placed in conformity with the requirements of these specifications.
3. On site material is not suitable for use as topsoil. All topsoil must be obtained from a pre-approved off-site location. Topsoil shall be placed so that the grade shown on the plans is the final grade of soil at 85% compaction.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to work of this section.
- 1.3 RELATED SECTIONS
- A. Planting Notes and Specifications

PART 2: PRODUCTS

2.1 DESCRIPTION

- A. Topsoil shall be friable loam topsoil of uniform quality, free from gravel, stones, and other materials retained on a 50 mm (2") sieve. Topsoil shall have no heavy clay, frozen clods, lumps, plants, roots, sticks, asphalt, concrete, or foreign materials harmful to plant growth.
- B. Topsoil shall be reasonably free of noxious perennial weeds or wood vegetations and completely void of Johnsongrass (Sorghum halapense) as determined through prior inspection by an authorized representative of the Department.

2.2 TESTING

- A. At least 30 days prior to ordering materials, the Contractor shall submit to the Engineer or the Engineer's representative certified tests and records for materials specified herein including topsoil sources. No materials shall be ordered until the required test results and records have been reviewed and approved by the Engineer or the Engineer's representative. Delivered materials shall match the approved samples. Approval shall not constitute final acceptance. The Engineer reserves the right to reject, on or after delivery, any material that does not meet these specifications.
- B. Three soil samples shall be taken from each stock of topsoil to be used. Soil samples shall be submitted to a public agricultural extension service agency or other testing facility capable of all testing required under these specifications (See below Section 2.2. B) and approved by the Engineer. The testing laboratory for physical analysis shall have a minimum of five years experience with the test protocols of the USDA. Test results shall be sent directly from the testing facility to the owner.

- C. The method of testing topsoil shall be in accordance with the requirements of AASHTO T 88, Modified; AASHTO T 89, Method B; AASHTO T 90, AASHTO T 267 and shall meet the following specified requirements

1. Grading Analysis:	Minimum Mass (Weight)		
	Standard Alternate	Percent Passing	
2	2 in.	100	
0.2	No. 4	90	
0.08	No. 10	80	
	Minimum	Maximum	
	Percent	Percent	
Sand:	30	40	- Passing 0.08 in. (No. 10) and retained on 0.003 in. (No. 200) sieve
Silt:	40	60	- Passing 0.003 in. (No. 200) sieve
Clay:	5	20	- Passing 0.003 in. (No. 200) sieve

- D. Chemical Analysis:

- Organic matter shall consist of approved organic material and shall make up not less than 3% nor more than 8% of topsoil.
- pH between 5.5 and 6.0.
- Soluble salt less than 0.9 mmol/m.
- Cation Exchange Capacity (CEC) 15 or greater
- Carbon/Nitrogen Ratio less than 33:1.
- Magnesium - Mg 125 - 265 lbs/acre
- Phosphorus - P2O5 103 - 205 lbs/acre
- Potassium - K2O 161 - 320 lbs/acre
- Calcium - Ca 861 - 1720 lbs/acre
- Soluble salts Not to exceed 900 ppm

The following elements shall not exceed the indicated amount:

- Boron 3 lbs/acre
- Manganese 50 lbs/acre
- Potassium 450 lbs/acre
- Sodium 20 lbs/acre
- Total elements and compounds shall be below a maximum level as recommended by the approved soil testing facility for the plants being grown.
- Pore space 35 - 50 percent.

2.3 APPROVED PRODUCTS

- A. The area or areas from which topsoil is secured shall possess such uniformity of material depth, color, texture, drainage, and other characteristics as to offer assurance that when removed in commercial quantities, the product will be homogeneous in nature and will conform to the requirements of these specifications.
- 2.4 SUBMITTALS

- A. Submit a soil test from a soil testing laboratory as noted under 2.2 of these specifications.
- B. Submit the source locations of all topsoil to be used.
- C. Submit a list of all chemicals and herbicides applied to the topsoil for the last five years and a list of any plants grown in the topsoil.
- C. The Contractor shall not transport topsoil to the site without the proper testing, certifications, and acceptance by the Engineer. Topsoil transported to the site without prior approval shall not be accepted for placement and be disposed of by the contractor at their expense. All testing and certifications shall be the sole responsibility of the contractor.

PART 3: EXECUTION

- A. Placing. Before placing or depositing topsoil upon any section as shown on the plans, the foundation upon which the topsoil is to be placed shall be approved.
- B. Rip all sub-soil areas to receive topsoil to a depth of 6-8" prior to topsoil placement.
- C. Topsoil shall be installed in six inch lifts. Each lift shall be compacted to 85 percent. The final elevation of the topsoil shall be based on an 85 percent compaction rate and shall correspond to elevations shown on the plans.
- D. Maintaining the Topsoil. The contractor shall maintain the topsoil at his/her own expense until final completion and acceptance of the contract. Maintenance shall consist of preserving, protecting, and replacing, such other work as may be necessary to keep the topsoil in a satisfactory condition which shall be defined as not allowing erosion or compaction to take place.
- E. Final Cleaning. Upon the completion of this section, final cleaning shall be done within the limits of the project, and shall consist of completely cleaning the project of excess material, sweeping pavements and structures of dirt and rubbish, and the removal of any unused material which will mar the appearance of the contract or repairing any areas as determined by the Engineer as not meeting the specifications.

NOTE: GROUNDCOVERS AND PERENNIALS TO BE INSTALLED WITH TRIANGULAR SPACING

PLANT (TYP.)

PLANT SPACING	ROW
'D'	6.93" O.C.
'D'	8.66" O.C.
'D'	10.4" O.C.
'D'	12.0" O.C.
'D'	13.8" O.C.
'D'	20.8" O.C.
'D'	30.0" O.C.
'D'	31.5" O.C.

1 GROUNDCOVER SPACING
L-9 NTS

