GREEN ACRES ELEMENTARY SCHOOL DRAFT

GREEN INFTASTRUCTURE IMPLEMENTATION PROJECT 146 UPPER STATE STREET, NORTH HAVEN NEW HAVEN COUNTY, CONNECTICUT

PROJECT DESCRIPTION:

A RAIN GARDEN WILL BE IMPLEMENTED IN THE WESTERN OPEN SECTION OF THE ELEMENTARY SCHOOL TO CATCH STORMWATER FROM THE ADJACENT ROOFS. A SECOND RAIN GARDEN WILL BE IMPLEMENTED IN THE SOUTHERN MOST PARKING LOT TO COLLECT STORMWATER RUNOFF FROM THE PAVEMENT.

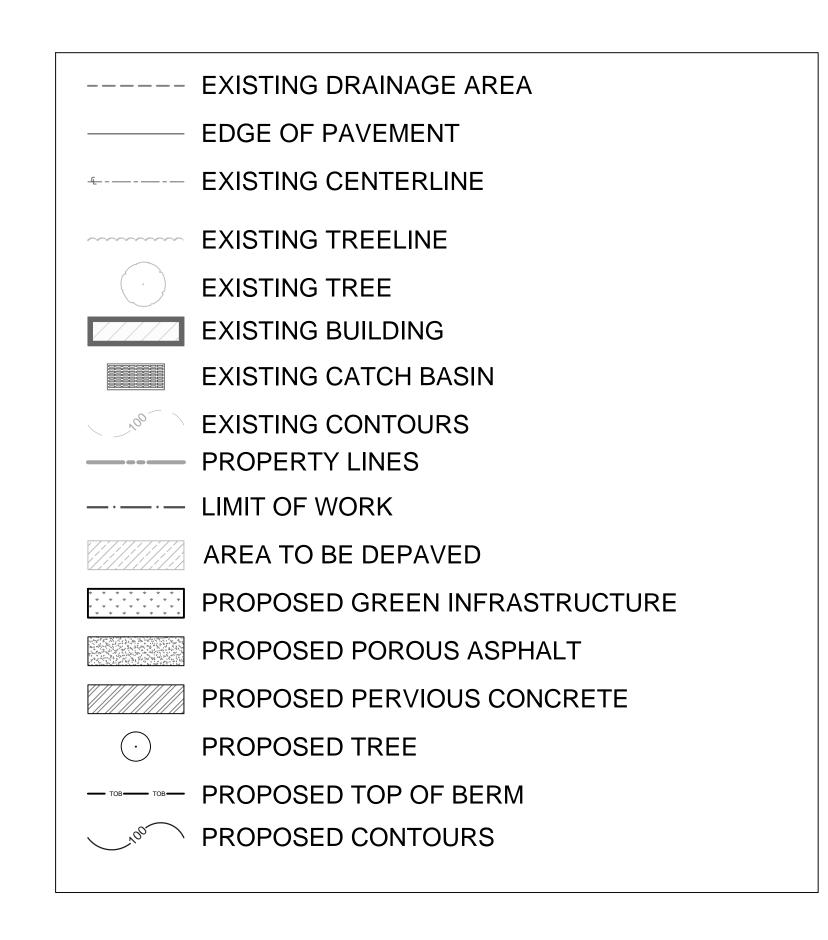
LIST OF DRAWINGS:

SHEET NAME	TITLE	
COVER	COVER SHEET	
P-1	EXISTING CONDITIONS AND DEMOLITION PLAN 1	
P-2	EXISTING CONDITIONS AND DEMOLITION PLAN 2	
P-3	PROPOSED SITE PLAN 1	
P-4	PROPOSED SITE PLAN 2	
P-5	PLANTING PLAN	
DT-1	RAIN GARDEN DETAILS	
DT-2	PLANTING AND LANDSCAPING DETAILS	
DT-3	LANDSCAPE ARCHITECT SKETCH DETAILS	

LOCATION MAP:



LEGEND:





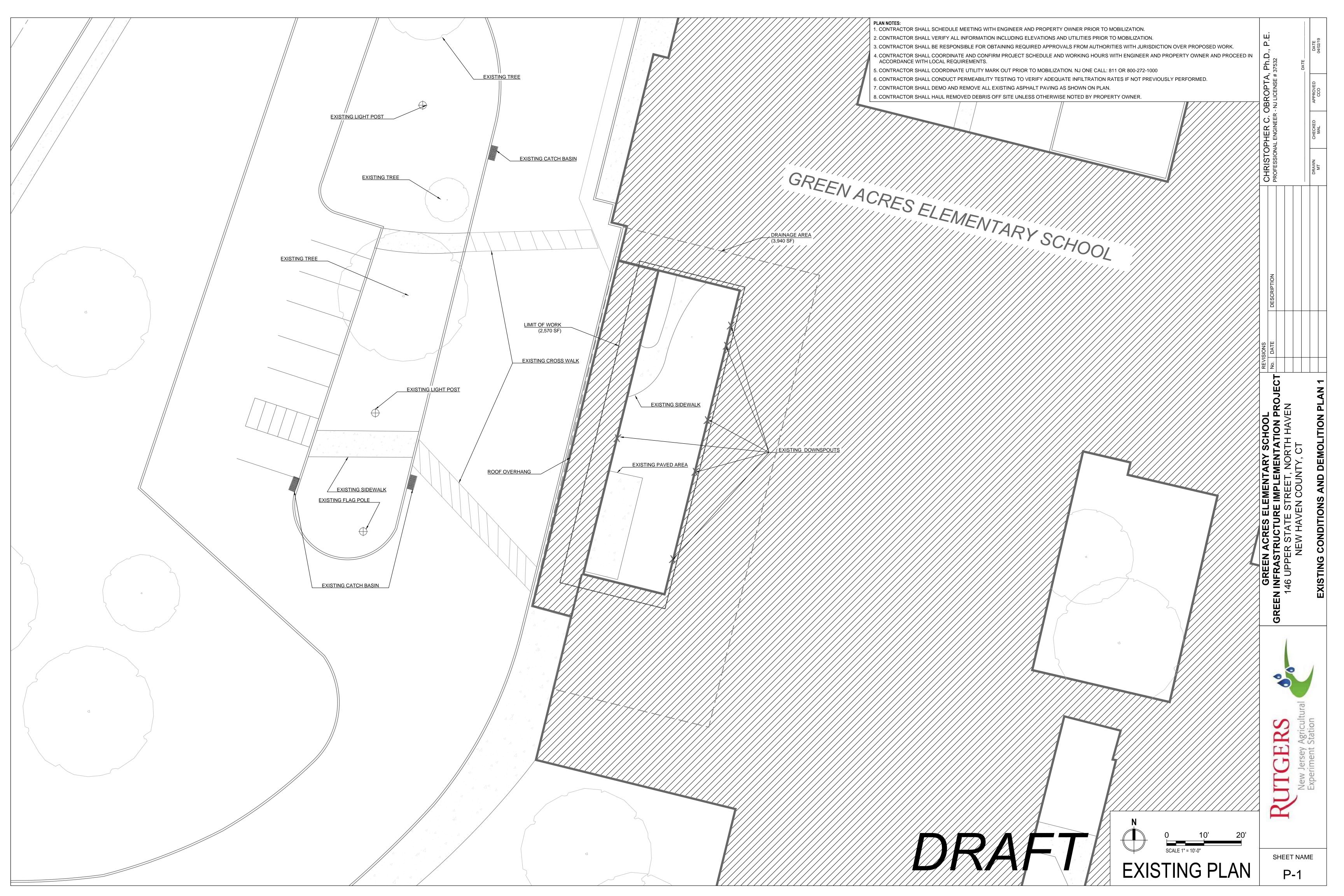


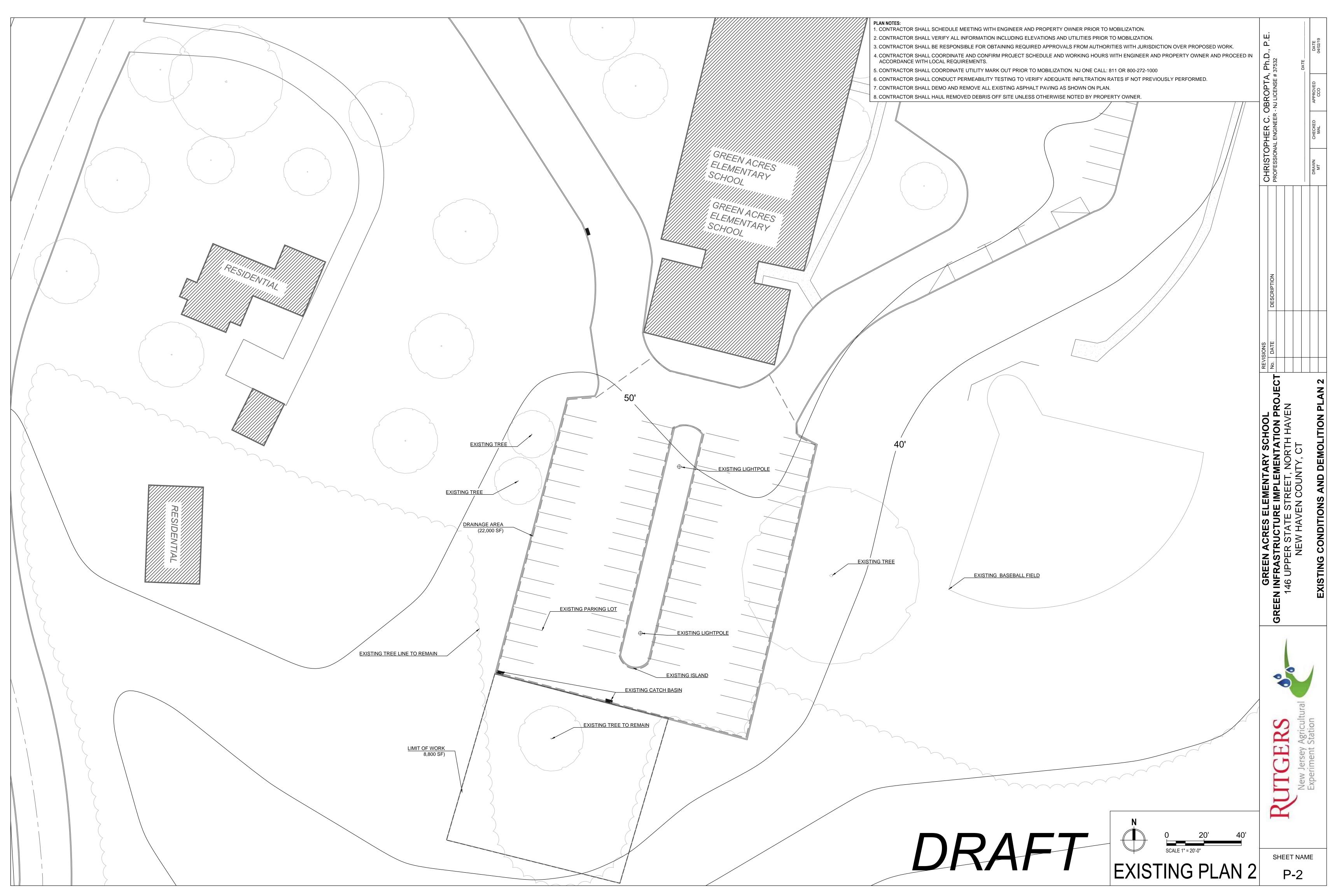
GENERAL NOTES:

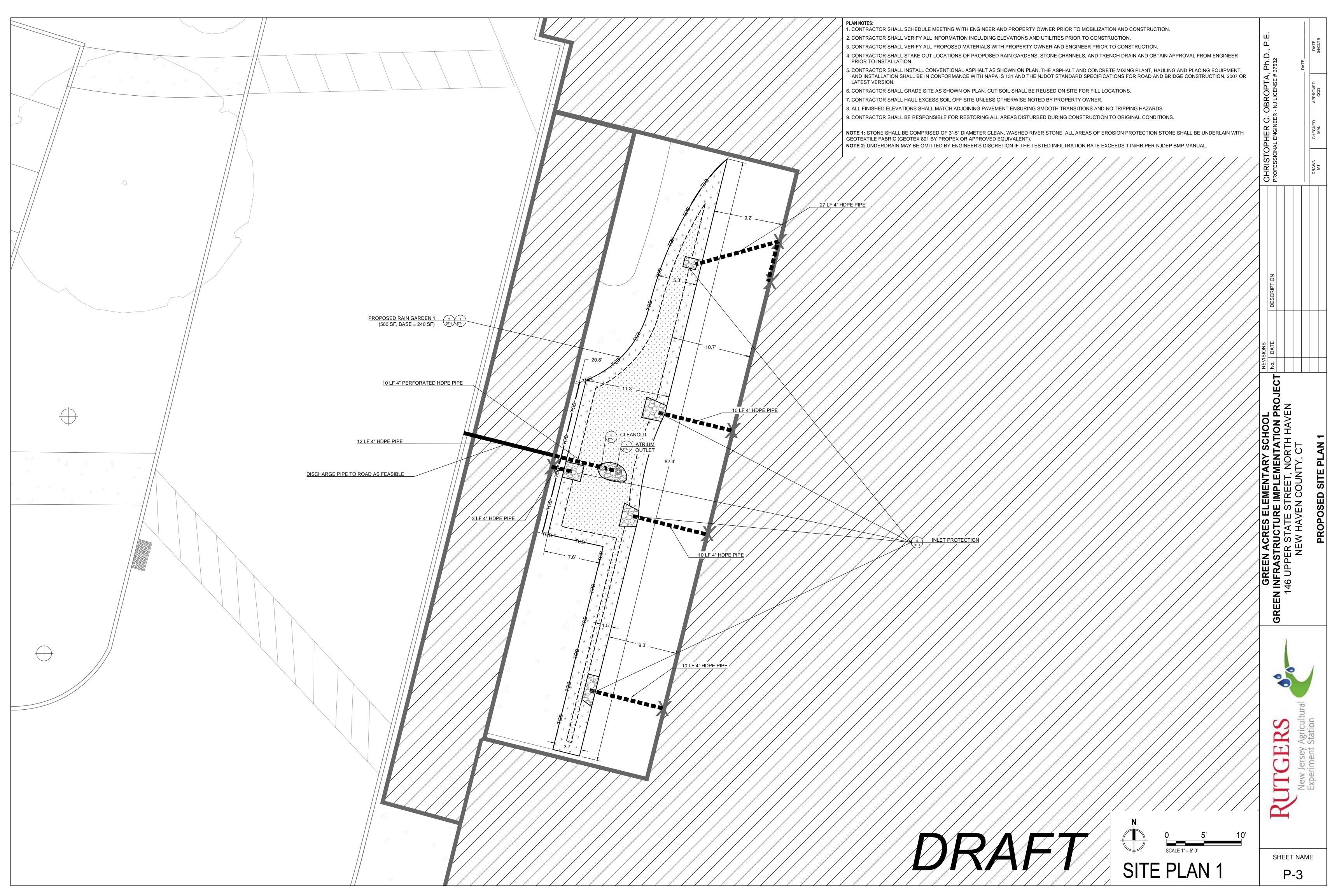
- 1. ELEVATION DATA OBTAINED FROM NOAA DIGITAL COASTAL LIDAR
- 2. ANY OVERHEAD AND UNDERGROUND UTILITIES SHOWN ARE FROM FIELD OBSERVATIONS AND ARE NOT A COMPLETE REPRESENTATION.
 A UTILITY MARKOUT NEEDS TO BE CONDUCTED PRIOR TO MOBILIZATION. NJ ONE CALL: 811 OR 800-272-1000

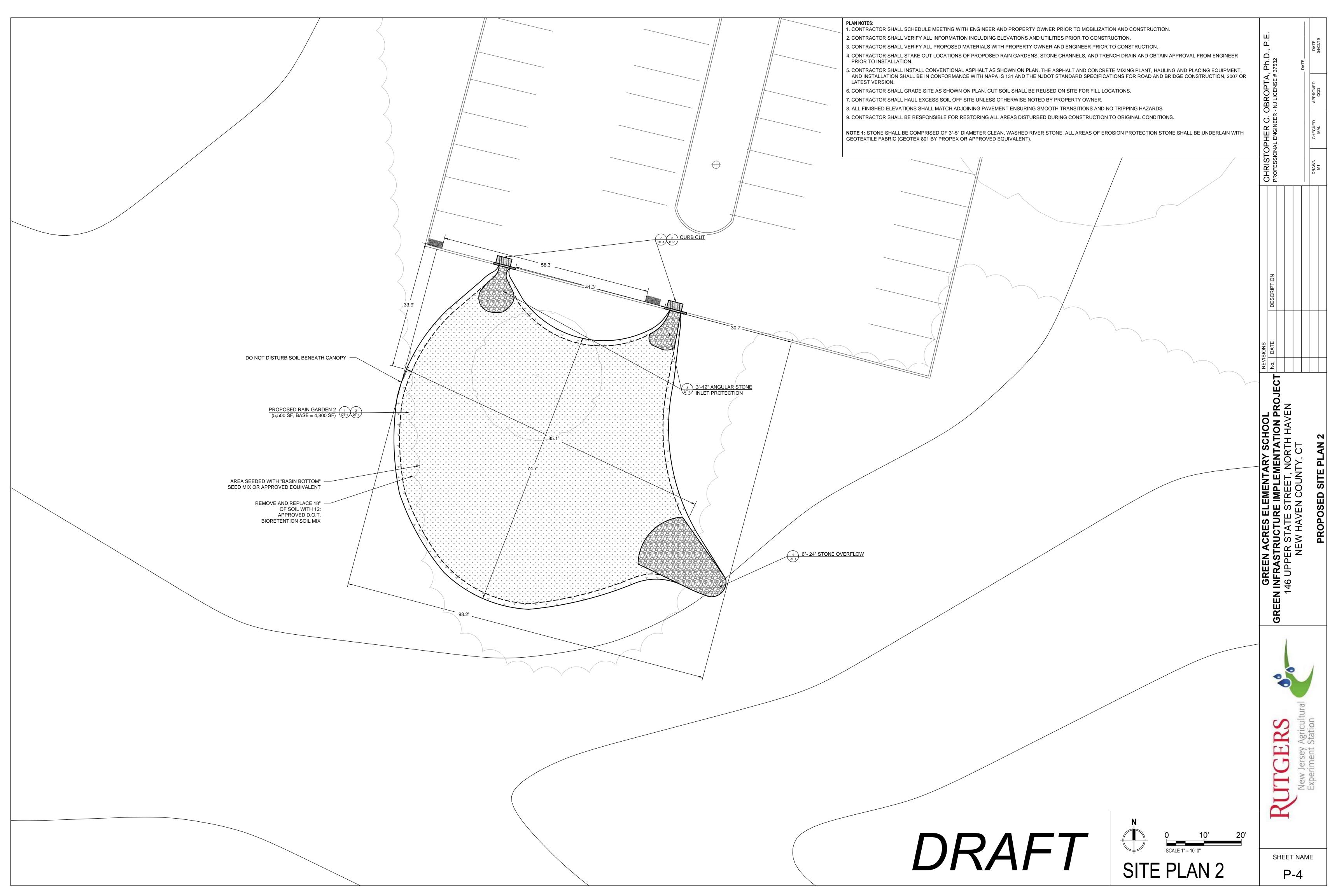
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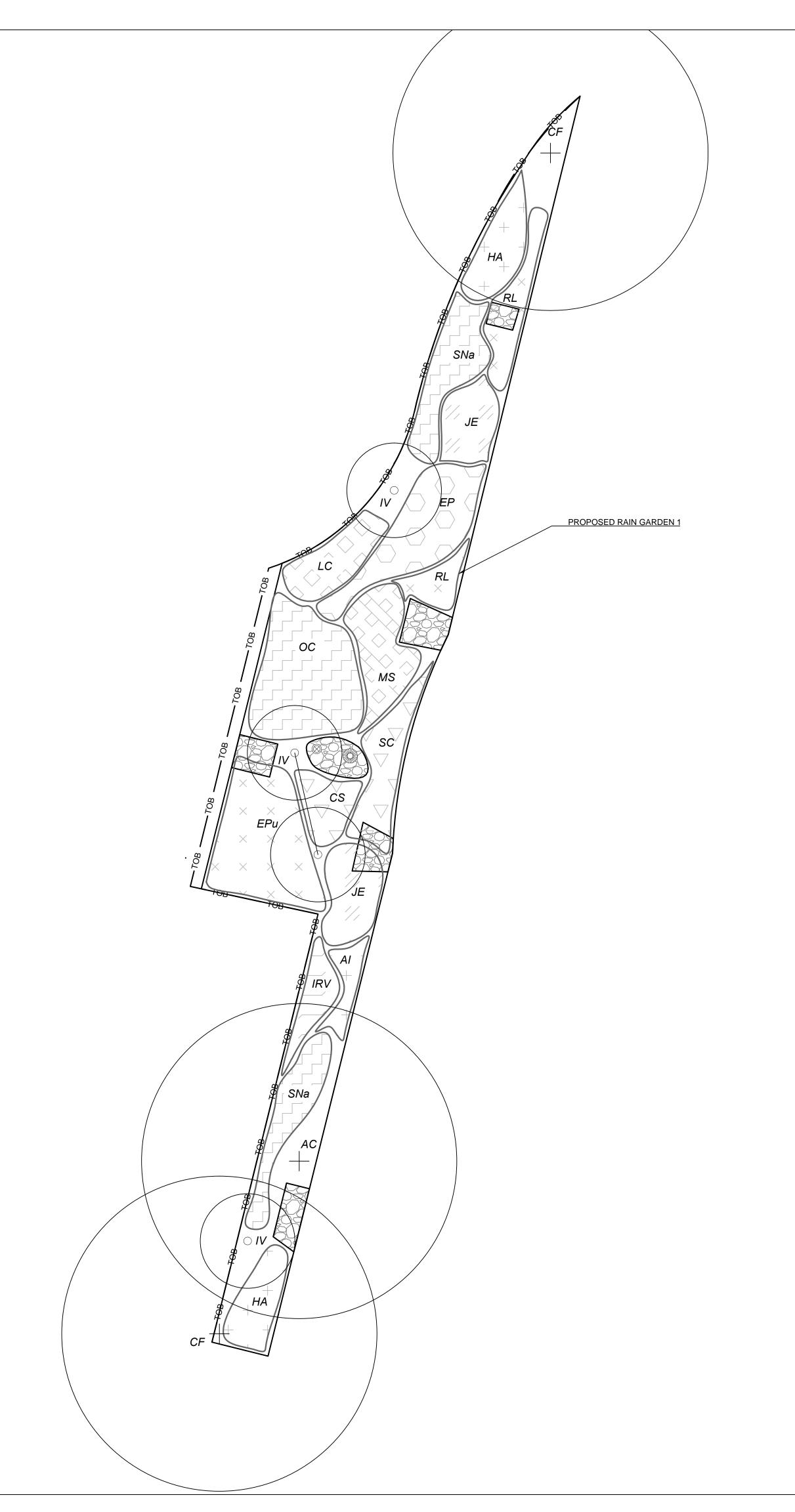
COVER











		PLAN	TING SCHEDULE		
PLANT SPECIES					0175
TYPE	KEY	BOTANICAL NAME	COMMON NAME	QUANTITY	SIZE
		RA	IN GARDEN 1		
PERENNIALS	Al	Asclepias incarnata	SWAMP MILKWEED	5	1 QUART
	cs	Carex stricta	TUSSOCK SEDGE	5	1 QUART
	EP	Eupatorium perfoliatum	COMMON BONESET	15	1 QUART
	EPu	Eupatorium purpureum	SWEET JOE PYE WEED	20	1 QUART
	НА	Helleborus argutifoius	HOLLY LEAVED HELLEBORE	15	1 QUART
	IRV	Iris versicolor	NORTHERN BLUE FLAG	5	1 QUART
	JE	Juncus effasus	SOFT RUSH	15	1 QUART
	MS	Matteuccia struthiopteris	OSTRICH FERN	10	1 QUART
	os	Osmunda cinnamomea	CINNAMON FERN	20	1 QUART
	RL	Rudbeckia lacinata	CUTLEAF CONEFLOWER	10	1 QUART
	SC	Sanguiana canadensis	BLOODROOT	10	1 QUART
	SNa	Symphyotrichum novae-anlicae	NEW ENGLAND ASTER	20	1 QUART
SHRUBS	IV	llex verticilata	WINTERBERRY	4	#2 CONT.
TREES	AC	Amelanchier canadensis	SERVICEBERRY	1	6"-8" CONT.
	CF	Cornus florida	FLOWERING DOGWOOD	2	6"-8" CONT.

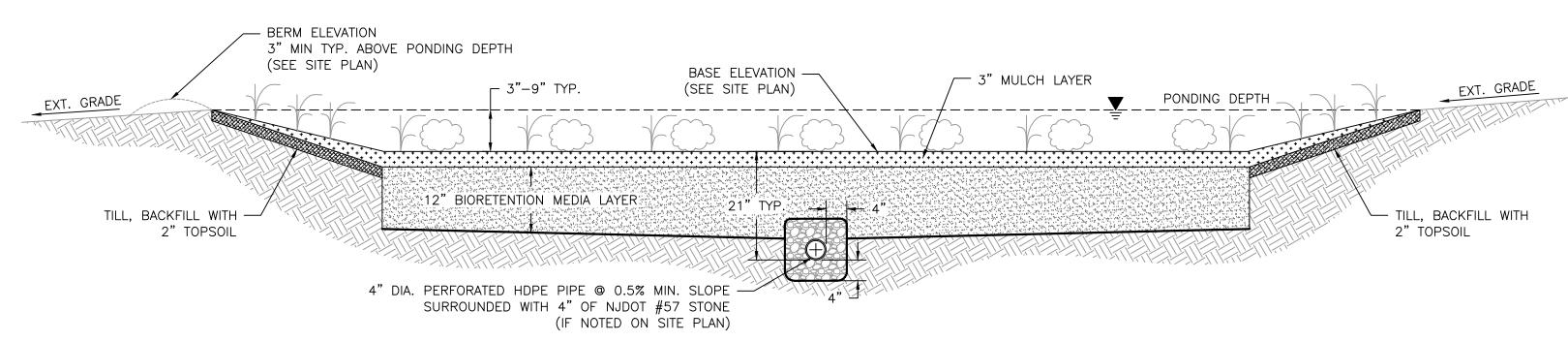
DRAFT

SHEET NAME

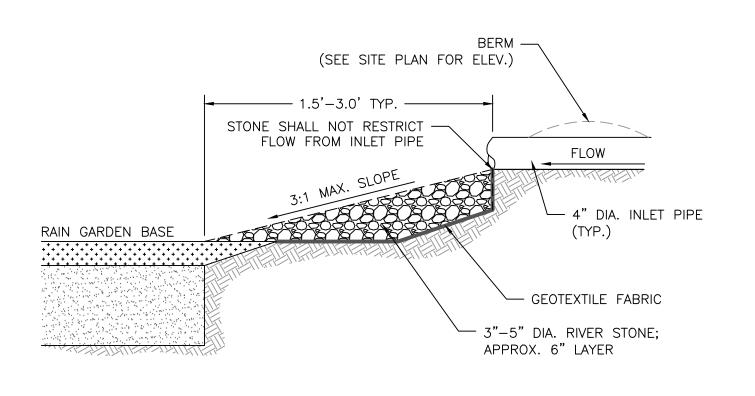
P-5

PLANTING PLAN

RAIN GARDEN EXCAVATION SECTION



RAIN GARDEN CROSS—SECTION



ROCK-LINED OVERFLOW DETAIL

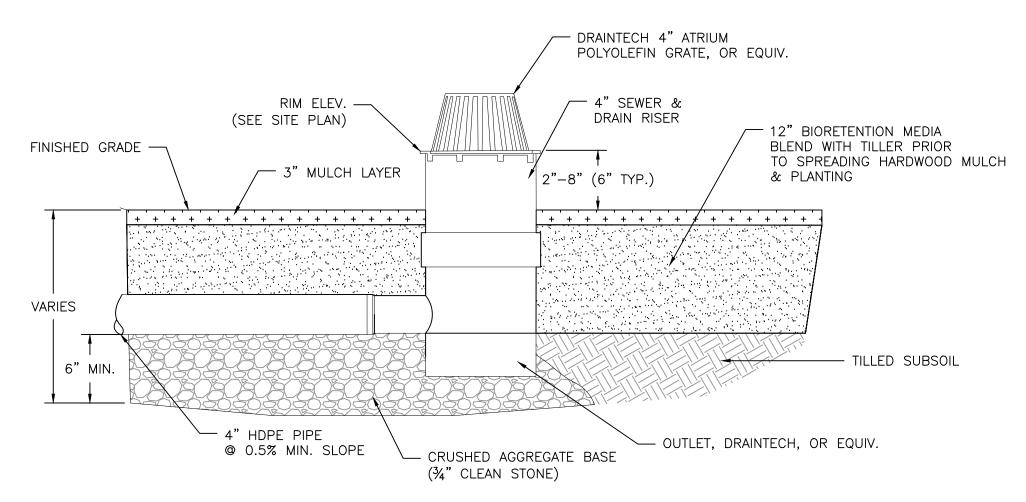
APPROX. 6" LAYER OF RIVER STONE -

RAIN GARDEN BASE

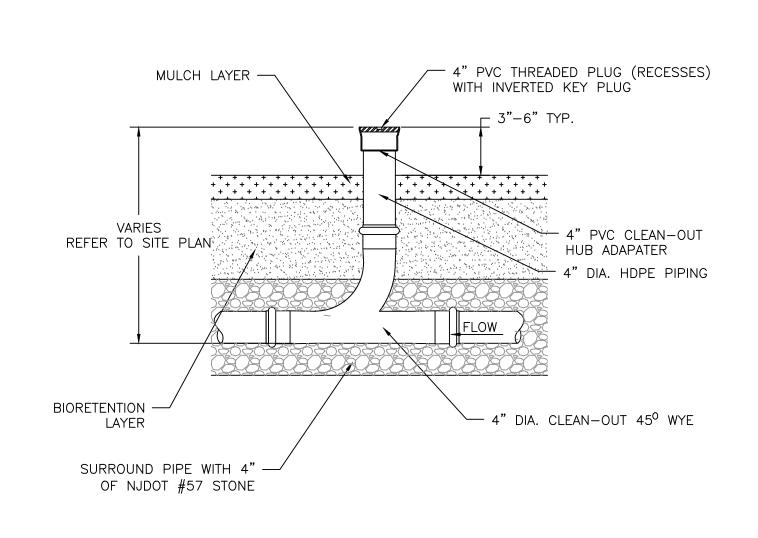
(SEE SITE PLAN FOR ELEV.)

(SEE SITE PLAN FOR ELEV.)





DRAINTECH OUTLET DETAIL



- OVERFLOW CREST INV.

(SEE SITE PLAN)

GEOTEXTILE FABRIC

CLEAN OUT DETAIL

CONSTRUCTION NOTES:

- 1. THE CONTRACTOR SHALL VERIFY ALL INFORMATION PRIOR TO EXCAVATION INCLUDING ELEVATIONS AND LOCATIONS OF EXISTING UTILITIES. 2. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF ANY FIELD CONDITIONS DIFFER MATERIALLY FROM THOSE REPRESENTED ON THESE DRAWINGS AND THE SPECIFICATIONS OR IF, IN THE
- CONTRACTOR'S OPINION, SAID CONDITIONS CONFLICT WITH THE DESIGNS SHOWN HEREON. 3. THE ENGINEER SHALL INSPECT ALL PLANTING BED AREAS BEFORE MULCHING TO ENSURE THAT ADEQUATE DRAINAGE EXISTS. IF ANY AREAS TO BE MULCHED SHOW EVIDENCE OF POOR DRAINAGE, THE
- CONTRACTOR SHALL TAKE CORRECTIVE ACTION.
- 4. THE CONTRACTOR SHALL AVOID DISTURBING ALL EXISTING TREES. ANY DISTURBANCE TO TREES OR TREE ROOTS MUST BE COORDINATED WITH THE PROPERTY OWNER.
- DIMENSIONS AND SHAPE WILL VARY, REFER TO SITE PLAN.
- RIVER STONE PROTECTION DIMENSIONS ARE TYPICAL AND MAY VARY PER SITE. CONSULT THE ENGINEER AND SITE PLAN FOR DIMENSIONS ON A PER SITE BASIS.
- RIVER STONE PROTECTION SHALL SLOPE TO RAIN GARDEN BASE. 8. REFER TO SITE PLAN TO DETERMINE OUTLET TYPE (ROCK-LINED OVERFLOW OR DRAINTECH RISER).
- 9. REFER TO SITE PLAN FOR ALL ELEVATIONS AND INVERTS.
- 10. THE CONTRACTOR SHALL EXCAVATE 15" LOWER THAN THE BASE ELEVATION SHOWN ON THE SITE PLANS. THE SLOPES OF THE RAIN GARDEN SHALL BE AT A 3:1 MAXIMUM. 11. THE SUBGRADE OF THE RAIN GARDEN SHALL BE LEVEL TO ENSURE PROPER DRAINAGE. CONTRACTOR SHALL OBTAIN ENGINEER APPROVAL PRIOR TO BACKFILLING WITH 12" OF BIORETENTION MEDIA.
- 12. THE CONTRACTOR SHALL INSTALL OVERFLOW IF SPECIFIED IN SITE PLANS PRIOR TO BACKFILLING WITH BIORETENTION MEDIA.
- 13. THE BIORETENTION LAYER SHALL BE LEVEL TO ENSURE PROPER DRAINAGE. CONTRACTOR SHALL OBTAIN ENGINEER APPROVAL PRIOR TO SPREADING MULCH AND PLANTING
- 14. INLET AND OUTLET PROTECTION SHALL BE UNDERLAIN WITH GEOTEXTILE FABRIC.
- 15. INLETS AND OUTLETS SHALL NOT INHIBIT THE FLOW OF WATER FROM THE STREET. THE RIVER STONE SHALL BE PLACED BELOW THE BOTTOM OF THE PIPE.
- 16. THE CONTRACTOR SHALL TILL THE BERM SECTION AND BACKFILL WITH TOPSOIL.
- 17. ALL DISTURBED AREAS EXCLUSIVE OF RAIN GARDEN AND SLOPED BERM SHALL BE RESTORED TO ORIGINAL CONDITIONS BY CONTRACTOR.
- 18. THE CONTRACTOR SHALL HAVE A PRE-CONSTRUCTION MEETING WITH THE PROJECT ENGINEER PRIOR TO ANY WORK ON SITE. 19. CONTRACTOR SHALL PERFORM REQUIRED TESTING TO DETERMINE SOIL PERMEABILITY AND SEASONAL HIGH WATER TABLE ELEVATION AT THE SITE TO VERIFY INFILTRATION CAPABILITIES. TESTING SHALL BE DONE PRIOR TO EXCAVATION AND INSTALLATION OF THE PROPOSED PROJECTS. PROJECT ENGINEER SHALL BE PRESENT DURING TESTING AND SHALL BE INFORMED OF THE RESULTS.

SPECIFICATIONS:

- 1. MAX COVER OVER TOP OF PIPES IS 4 FT. CONTACT ADS IF OTHERWISE GREATER. 2. THE APPROVAL OF MATERIALS AND MIXING OF SAND, COMPOST, AND SOIL SHALL BE DONE UNDER THE SUPERVISION OF THE PROJECT ENGINEER/LANDSCAPE ARCHITECT. BIORETENTION MEDIA SHALL CONSIST OF
- 70% SAND AND 30% COMPOST MIXTURE. 3. SAND SHALL AT THE MINIMUM CONFORM TO THE SIEVE ANALYSIS FOR CONCRETE AGGREGATE SAND (ASTM C-33). USGA TEE/GREEN SIEVE GRADATION MIX IS PREFERABLE WHERE AVAILABLE.
- 4. UNDERLYING SOILS SHALL BE TILLED/SCARIFIED PRIOR TO SPREADING/MIXING OF BIORETENTION MEDIA.
- 5. ALL BIORETENTION MEDIA SHALL BE PLACED FROM THE SIDES OF THE FACILITIES, AND IN NO EVENT SHALL ANY TRACKED OR WHEELED EQUIPMENT BE PERMITTED TO CROSS THE RAIN GARDEN.
- 6. RAIN GARDEN SHALL BE CONSTRUCTED TO DIMENSIONS INDICATED ON THE SITE PLAN. 7. 3-5 INCH DELAWARE RIVER STONE SHALL BE USED FOR STONE CHANNEL AND INLET/OUTLET PROTECTION.
- 8. NON-DYED. TRIPLE-SHREDDED HARDWOOD MULCH SHALL BE USED.
- 9. PLANTING OF RAIN GARDEN AND SLOPED BERM SHALL BE COMPLETED AS INDICATED ON THE SITE PLAN. 10. THE CONTRACTOR SHALL PERFORM ALL WORK IN CONFORMANCE WITH THE NJDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2007 OR LATEST VERSION.

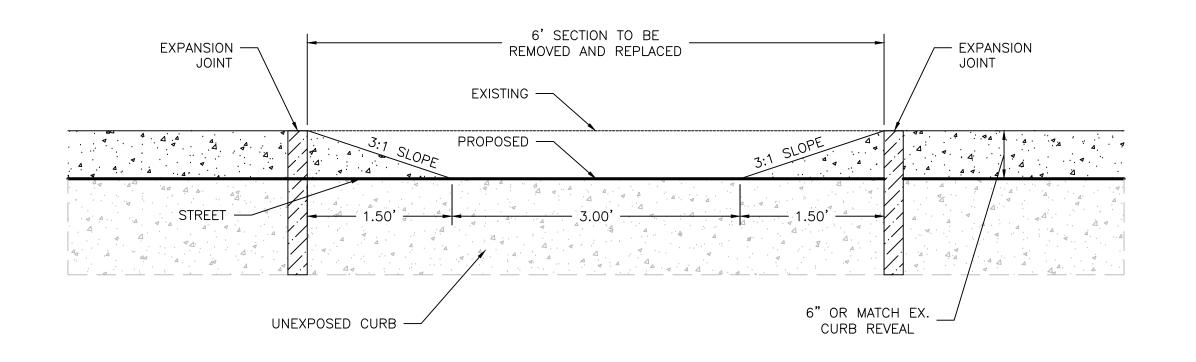
CONSTRUCTION NOTES:

- THE CONTRACTOR SHALL VERIFY ALL INFORMATION PRIOR TO EXCAVATION INCLUDING ELEVATIONS AND LOCATIONS OF EXISTING UTILITIES.
- THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF ANY FIELD CONDITIONS DIFFER MATERIALLY FROM THOSE REPRESENTED ON THESE DRAWINGS AND THE SPECIFICATIONS OR IF, IN THE
 - CONTRACTOR'S OPINION, SAID CONDITIONS CONFLICT WITH THE DESIGNS SHOWN HEREON. THE CONTRACTOR SHALL AVOID DISTURBING ALL EXISTING TREES. ANY DISTURBANCE TO TREES OR TREE ROOTS MUST BE COORDINATED WITH THE BOROUGH DEPARTMENT OF PUBLIC WORKS.
- 4. INLET AND OUTLET PROTECTION SHALL BE UNDERLAIN WITH GEOTEXTILE FABRIC.
- 5. INLET AND OUTLET CURB CUTS SHALL NOT INHIBIT THE FLOW OF WATER FROM THE STREET. THE CURB CUT SHALL BE SLIGHTLY LOWER THAN THE ROAD. THE CONCRETE SLAB SHALL BE PLACED JUST BELOW THE BOTTOM OF THE CURB CUT.
- 6. THE CONTRACTOR SHALL SAWCUT, REMOVE AND REPLACE A 6 FOOT SECTION OF CURB FOR THE CONCRETE FUNNEL. THE ENTIRE CURB SHALL BE REINSTALLED WITH A 3 FOOT DEPRESSED SECTION FLUSH WITH
- THE PAVEMENT AND ADJOINING 18" 3:1 SLOPED SECTIONS.
- 7. THE CONTRACTOR SHALL POUR THE CONCRETE FLOW PAD AS SHOWN WITH 60° RIDGES. THE RIDGES SHALL BE 1 1/4" IN HEIGHT.
- 8. ALL AREAS EXCLUSIVE FROM THE TRENCH DRAIN AND/OR CURB CUT SHALL BE RESTORED TO ORIGINAL CONDITIONS.
- 9. THE CONTRACTOR SHALL HAVE A PRE-CONSTRUCTION MEETING WITH THE ENGINEER PRIOR TO ANY WORK ON SITE.

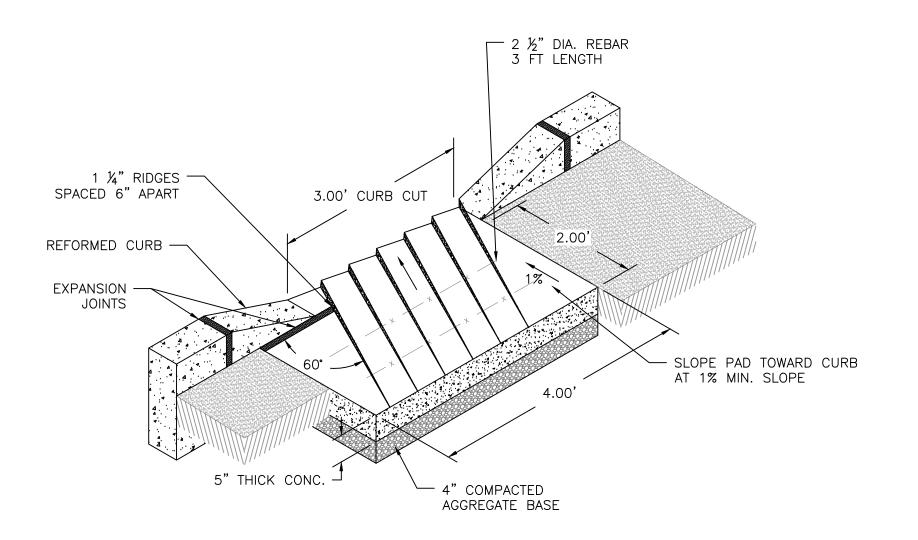
SPECIFICATIONS:

EXISTING LAWN

- 1. TRENCH DRAIN SHALL BE ECONODRAIN® SERIES #12 AS MANUFACTURED BY ECONODRAIN®, OR APPROVED EQUIVALENT.
- GRATE FOR TRENCH DRAIN SHALL BE CAST IRON ADA GRATE #EG14242CIADA WITH LOCKING FASTENERS, OR EQUAL.
- END CAP CUTOUTS TO BE REMOVED UPON APPROVAL. 4. STONE FOR PROTECTION SHALL BE 3"-5" DIAMETER WASHED RIVER STONE.
- 5. THE CONTRACTOR SHALL BE PERFORMED IN CONFORMANCE WITH THE NJDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2007 OR LATEST VERSION.
- 6. THE CONTRACTOR SHALL ONLY USE CONCRETE WITH 4,500 PSI STRENGTH.









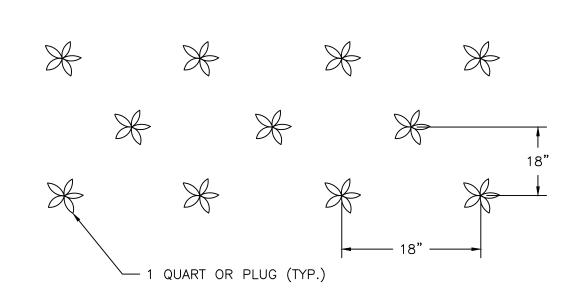
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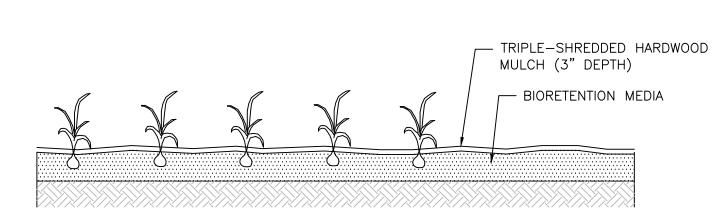
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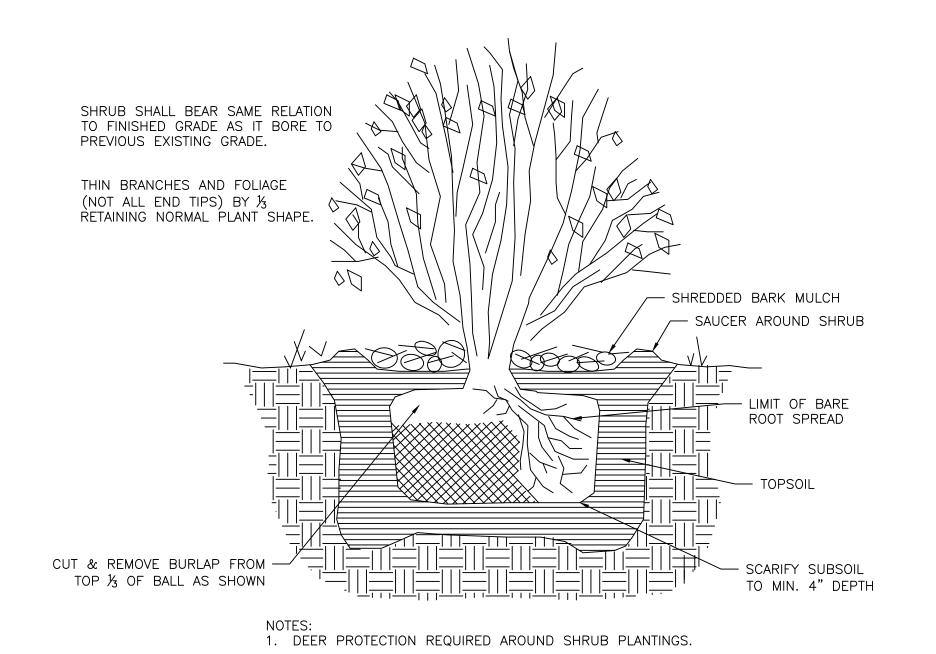
SHEET NAME

DT-1

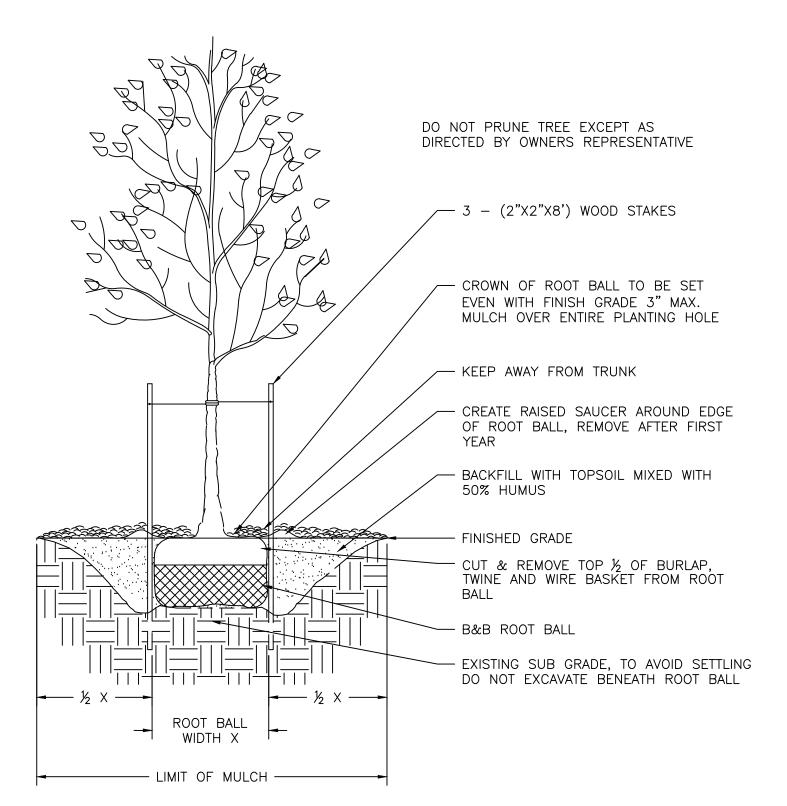








2 SHRUB PLANTING DETAIL DT-2 N.T.S.



NOTES:

1. DO NOT DAMAGE MAIN ROOTS OR ROOT BALL WHEN INSTALLING TREE STAKE.

2. WATER THOROUGHLY AFTER INSTALLATION.

3. REMOVE SAUCER AND STAKES TWO YEARS OR LESS AFTER INSTALLATION.

4. CONTRACTOR IS NOT TO USE TREE WRAP.



OPEN LAWN AND TURF AREAS

1. SEED ALL REMAINING PARK AREAS WITH TURF TYPE FALL FESCUE AND PERENNIAL RYEGRASS BLEND (LOFTS — SUMMER STRESS MIX II OR APPROVED EQUIVALENT).
INSTALL AT A RATE OF 350 LBS. PER ACRE PER MANUFACTURERS SPECIFICATIONS.

TOPSOILING, SEEDING AND MULCHING NOTES

- 1. ANY UNDISTURBED AREA ON WHICH ACTIVITY HAS CEASED AND WHICH WILL REMAIN EXPOSED FOR MORE THAN 10 DAYS MUST BE SEEDED AND MULCHED IMMEDIATELY. DURING NON-GERMINATING PERIODS, MULCH MUST BE APPLIED AT THE REQUIRED RATES. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE REDISTURBED WITHIN 1 YEAR SHALL BE SEEDED AND MULCHED WITH A QUICK GROWING TEMPORARY SEEDING MIXTURE AND MULCH. DISTURBED AREAS WHICH ARE EITHER AT FINISHED GRADE OR WILL NOT BE REDISTURBED WITHIN 1 YEAR MUST BE SEEDED AND MULCHED WITH A PERMANENT SEED MIXTURE AND MULCH.
- 2. DIVERSIONS, CHANNELS, SEDIMENTATION BASINS, SEDIMENT TRAPS, AND STOCKPILES MUST BE SEEDED AND MULCHED IMMEDIATELY.
- 3. GRADED AREAS SHALL BE TEMPORARILY SEEDED AND MULCHED IMMEDIATELY FOLLOWING EARTH MOVING PROCEDURES. TEMPORARY SEED SHALL BE ANNUAL RYE GRASS APPLIED AT A RATE OF 3 LBS. PER 1000 SQ. FT.
- 4. AFTER SEEDING, HAY OR STRAW MULCH MUST BE APPLIED AT A RATE OF AT LEAST 3.0 TONS PER ACRE. MULCH SHALL BE ANCHORED BY EITHER CRIMPING WITH A COULTER IMPLEMENT, OR BY STAPLING BIODEGRADABLE NETTING TO THE SURFACE.
- 5. SITE PREPARATION TO UPLAND AREAS: APPLY 1 TON OF AGRICULTURAL—GRADE LIMESTONE PER ACRE PLUS 10-20-10 FERTILIZER AT THE RATE OF 500 LB. PER ACRE. WORK IN WHERE POSSIBLE. SEEDING OF DISTURBED UPLAND AREAS (BEYOND LIMITS OF RIPARIAN ENHANCEMENT AREA) TO BE DONE USING MIX OF FINE FESCUE AT 35 LBS/ACRE (PURE LIVE SEED) PLUS PERENNIAL RYEGRASS AT 15 LBS/ACRE (PURE LIVE SEED).
- 6. TOPSOIL SHALL BE A CLEAN FRIABLE LOAM WITH SUFFICIENT ORGANIC CONTENT (2.75%) TO PROMOTE PLANT VIGOR. AMENDMENTS SHALL BE ADDED AS NEEDED TO IMPROVE DEFICIENT SOILS. TOPSOIL SHALL BE RETURNED AT A LOOSE DEPTH OF FIVE INCHES TO ALLOW FOR SETTLEMENT.
- 7. ESTABLISH PERMANENT SEEDING AS SOON AS POSSIBLE AFTER FINAL GRADING IS COMPLETE. UNLESS OTHERWISE INDICATED, PERMANENT SEEDING SHALL BE SEED MIXTURE SPECIFIED IN TABLE.
- 8. SEE TABLES FOR SEED SPECIES MIXTURE AND APPLICATION RATES.

PHONE 1-800-667-2729

- 9. SEED MIXES ARE AVAILABLE AT ERNST CONSERVATION SEEDS IN MEADVILLE, PA. WEBSITE: WWW.ERNSTSEED.COM OR PHONE: 1-800-873-3321.
- 10. NATIVE SHRUBS AND HERBACEOUS PLUGS ARE AVAILABLE AT PINELANDS NURSERY AND SUPPLY, COLUMBUS NJ. WEBSITE: WWW.PINELANDSNURSERY.COM OR

GENERAL LANDSCAPING NOTES

- 1. ALL PLANT MATERIALS SHALL CONFIRM TO THE AMERICAN ASSOCIATION OF NURSERYMEN'S AMERICAN STANDARD FOR NURSERY STOCK (LATEST EDITION)
- 2. INSPECTION OF PLANTING BEDS THE LANDSCAPE ARCHITECT SHALL INSPECT ALL PLANTING AREAS BEFORE ANY TOPSOILING OR PLANTING IS BEGUN TO ENSURE THAT ADEQUATE DRAINAGE EXISTS. IF ANY AREAS TO BE LANDSCAPED SHOW EVIDENCE OF POOR DRAINAGE, THE LANDSCAPE ARCHITECT SHALL NOTIFY THE OWNER IMMEDIATELY FOR CORRECTIVE ACTION
- 3. THE LANDSCAPE ARCHITECT SHALL APPROVE ALL PLANT MATERIAL AND STAKED PLANT LOCATIONS PRIOR TO INSTALLATION.
- 4. ALL TREES, SHRUBS, AND GROUNDCOVER SHALL BE PLACED IN CONTINUOUS MULCHED BEDS 4" IN DEPTH. MUCH SHALL BE TRIPLE SHREDDED HARDWOOD.
- 5. ALL TREES, SHRUBS, AND GROUNDCOVER SHALL BE AS SPECIFIED AND SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS AND COMMENTS NOTED ON THE DRAWINGS.
- 6. TOPSOIL SHALL BE PROVIDED BY THE LANDSCAPE CONTRACTOR FOR PLANTING ACCORDING TO THE PLANS AND DETAILS.
- 7. PREPARED TOPSOIL FOR BACKFILLING AROUND TREE BALLS SHALL BE A MIXTURE OF VOLUME OF THE FOLLOWING MATERIALS IN QUANTITIES SPECIFIED: ½ COMPOST, ¾ TOPSOIL
- 8. ALL HERBACEOUS PLUG PLANTINGS SHALL BE MINIMUM 3 INCH DEPTH. PLUGS SHALL BE PLANTED 1 FOOT O.C. AS INDICATED ON PLAN.

PLANTING SCHEDULE								
PLANT SPECIES					0.17.5			
TYPE	KEY	BOTANICAL NAME	COMMON NAME	- QUANTITY	SIZE			
RAIN GARDEN								
PERENNIALS	AI	Asclepias incarnata	SWAMP MILKWEED	5	1 QUART			
	CS	Carex stricta	TUSSOCK SEDGE	5	1 QUART			
	EP	Eupatorium perfoliatum	COMMON BONESET	15	1 QUART			
	EPu	Eupatorium purpureum	SWEET JOE PYE WEED	20	1 QUART			
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	RL	Rudbeckia lacinata	CUTLEAF CONEFLOWER	10	1 QUART			
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TREES	AC	Amelanchier canadensis	SERVICEBERRY	1	6"-8" CONT.			
	CF	Cornus florida	FLOWERING DOGWOOD	2	6"-8" CONT.			

CHRISTOPHER C. OBROPTA, Ph.D., P.E.
PROFESSIONAL ENGINEER - NJ LICENSE # 37532

DATE

DRAWN

CHECKED

MT

MT

CHRISTOPHER C. OBROPTA, Ph.D., P.E.

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PROJECT No. DATE DESCRIPTION
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GREEN ACRES ELEMENTARY SCHOOL

N INFRASTRUCTURE IMPLEMENTATION PRO
146 UPPER HAVEN STREET, NORTH HAVEN
NEW HAVEN COUNTY, CT

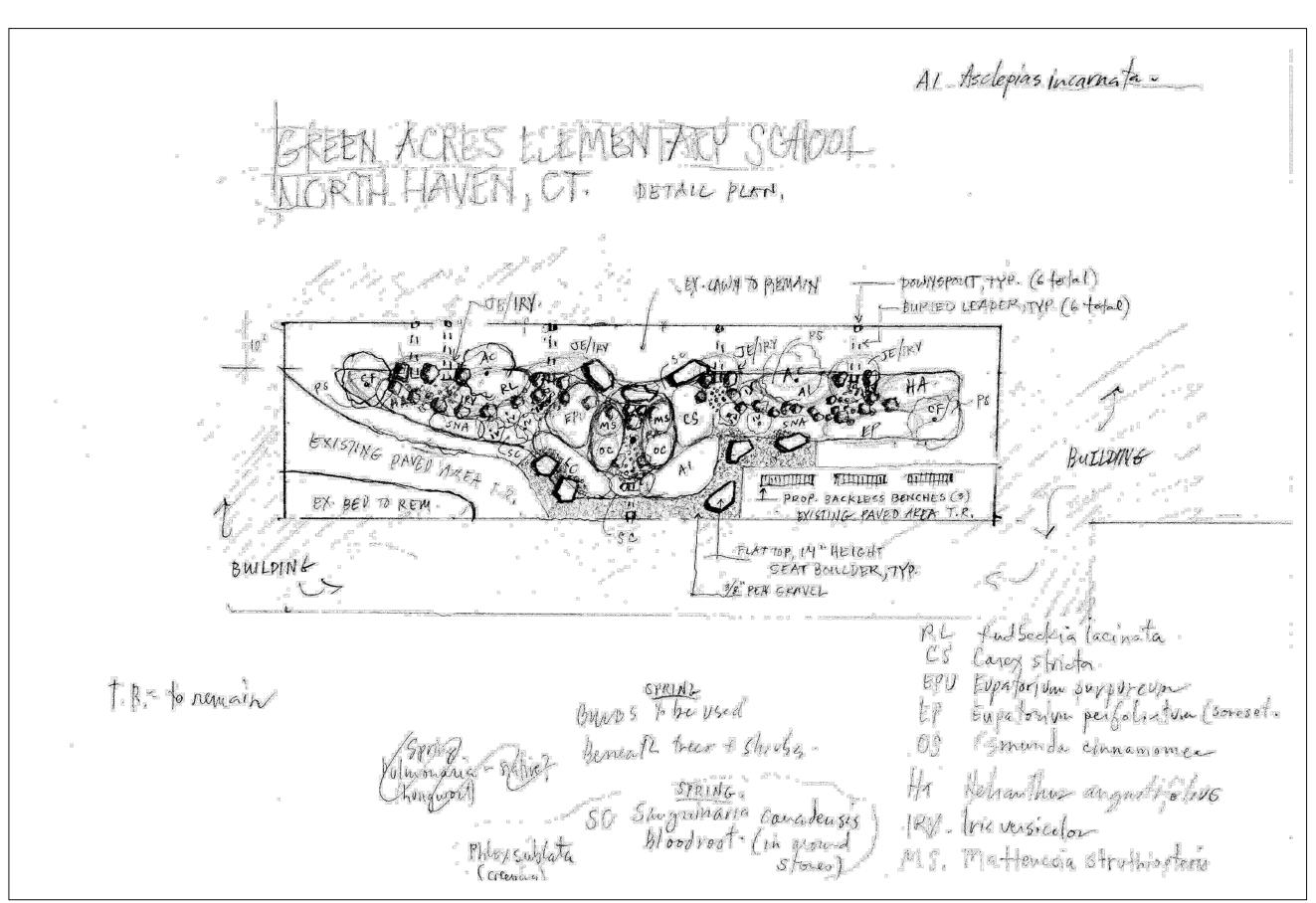
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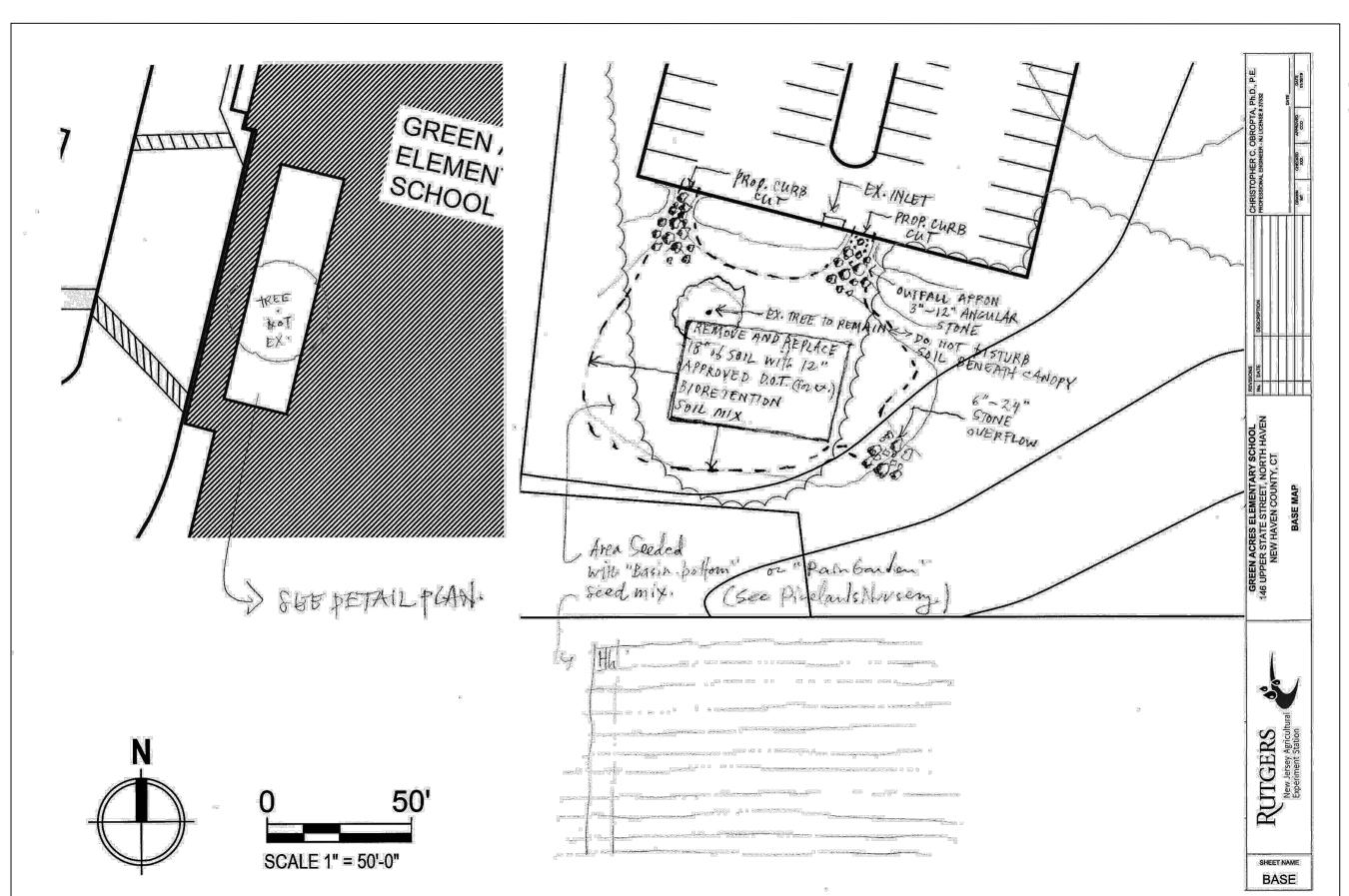


SHEET NAME

DT-2



1 LANDSCAPING SKETCH FOR RAIN GARDEN 1 N.T.S.



2 LANDSCAPING SKETCH FOR RAIN GARDEN 2 DT-3 N.T.S.



GREEN ACRES ELEMENTA GREEN INFRASTRUCTURE IMPLEM 146 UPPER HAVEN STREET, N NEW HAVEN COUNT LANDSCAPE ARCHITECT S

SHEET NAME

DT-3