

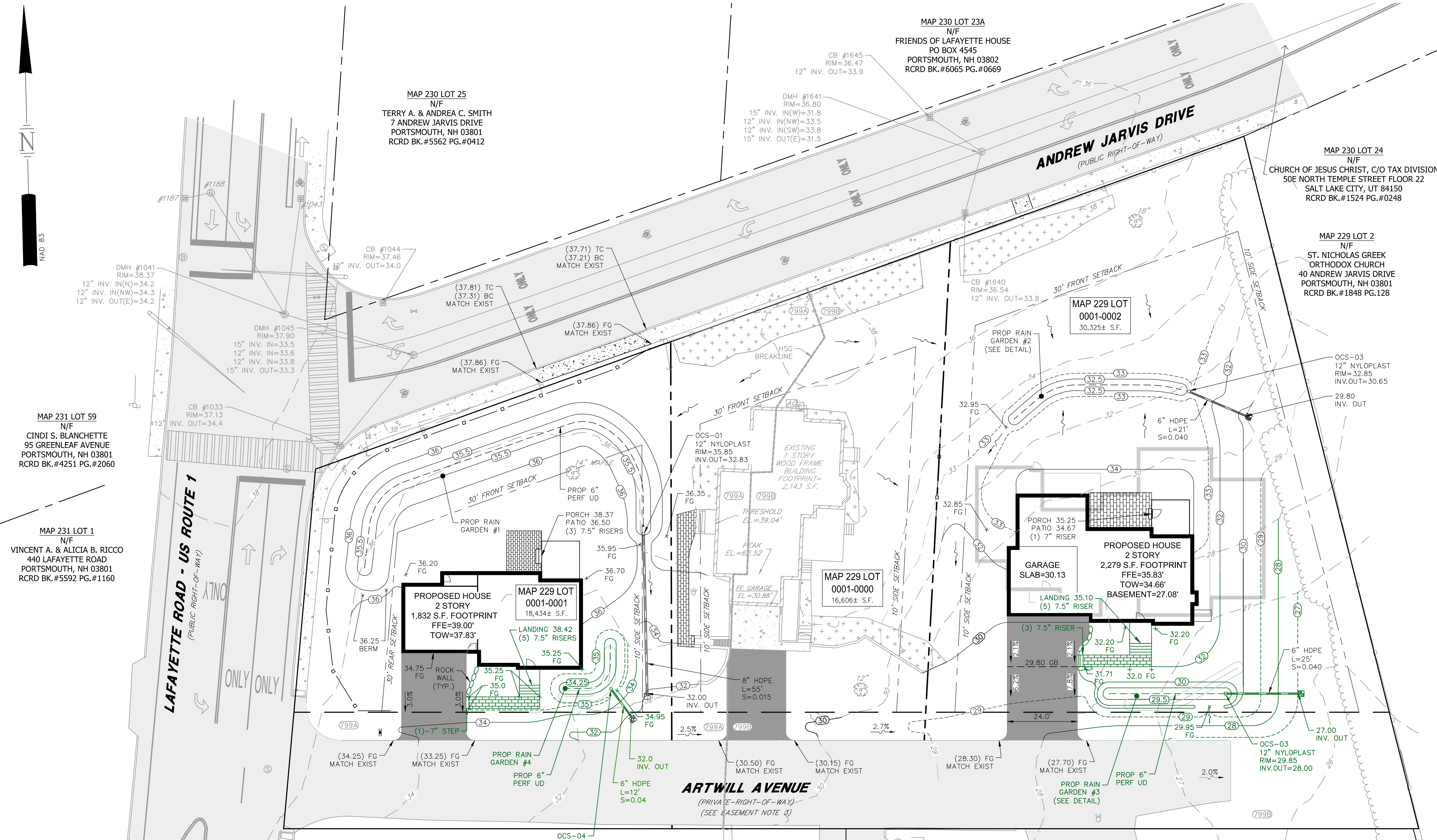
NOTES

- SEE NOTES ON SHEET C-01.
- SEE SHEET C-11 FOR RAIN GARDEN DETAILS.
- ALL DOORS AND GARAGE ENTRANCES SHALL BE AT FINISHED FLOOR ELEVATION UNLESS OTHERWISE NOTED.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE FINISHED GRADES MEET ADA STANDARDS FOR WHEEL CHAIR RAMPS, HANDICAP SPACES AND ACCESS AISLES, CROSSWALKS, SIDEWALKS, ETC.
- ALL ELEVATIONS SHOWN AT CURB ARE TO THE BOTTOM OF CURB UNLESS OTHERWISE NOTED. CURBS HAVE A 6" REVEAL UNLESS OTHERWISE NOTED.
- LENGTH OF PIPE IS FOR CONVENIENCE ONLY. ACTUAL PIPE LENGTH SHALL BE DETERMINED IN THE FIELD.
- ALL PROPOSED DRAINAGE PIPES SHALL BE 12" AND HDPE, UNLESS OTHERWISE NOTED ON THE PLAN.
- DRAINAGE PIPES WITH LESS THAN 3' COVER SHALL BE INSULATED (SEE UTILITY TRENCH DETAIL) AND DRAINAGE CATCH BASINS WITH LESS THAN 3.5' OF COVER OVER INVERTS SHALL USE SLAB TOP CATCH BASIN (SEE DETAILS).
- THE CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT AND ARCHITECTURAL PLANS FOR SUBDRAINAGE SYSTEMS FOR THE BUILDING FOUNDATION. SUBDRAINAGE MUST DAYLIGHT OR TIE INTO THE STORMWATER MANAGEMENT SYSTEM. COORDINATE SUBDRAINAGE SYSTEM DESIGN WITH THE ENGINEER OF RECORD.

**SOIL LEGEND
(PER SITE SPECIFIC SOIL SURVEY)**

SYMBOL	DESCRIPTION	HYDROLOGIC SOIL GROUP
799*	URBAN LAND-CANTON COMPLEX 3% - 15% SLOPES	A (BASED ON FIELD INFILTRATION RATES)
799*	URBAN LAND-CANTON COMPLEX 3% - 15% SLOPES	B (BASED ON FIELD INFILTRATION RATES)

*ENTIRE PROPERTY IDENTIFIED AS URBAN LAND-CANTON COMPLEX.



SITE DEVELOPMENT PLANS

TAX MAP 229 LOT 1
GRADING & DRAINAGE PLAN
PROPOSED 3 LOT SUBDIVISION
437 LAFAYETTE ROAD
PORTSMOUTH, NEW HAMPSHIRE
 OWNED BY & PREPARE FOR
ARTWILL, LLC
1"=40' (11"X17')
SCALE: 1"=20' (22"X34') **APRIL 19, 2022**

REV	DATE	DESCRIPTION	DR	CK
5	5/10/2023	REVISED GRADING ON LOT #1 AND LOT #3.	MM	MM
4	4/20/2023	REVISED GRADING ON LOT #1 AND LOT #3.	MM	MM
3	11/17/2022	REVISED GRADING ON LOT #1 AND LOT #3.	JSM	JJM
2	8/26/2022	REVISE LOT NUMBERS.	JSM	JJM
1	5/20/2022	REVISE FFE FOR HOUSE ON LOT #3.	JSM	JCC

TFM Civil Engineers
 Structural Engineers
 Traffic Engineers
 Land Surveyors
 Landscape Architects
 Scientists

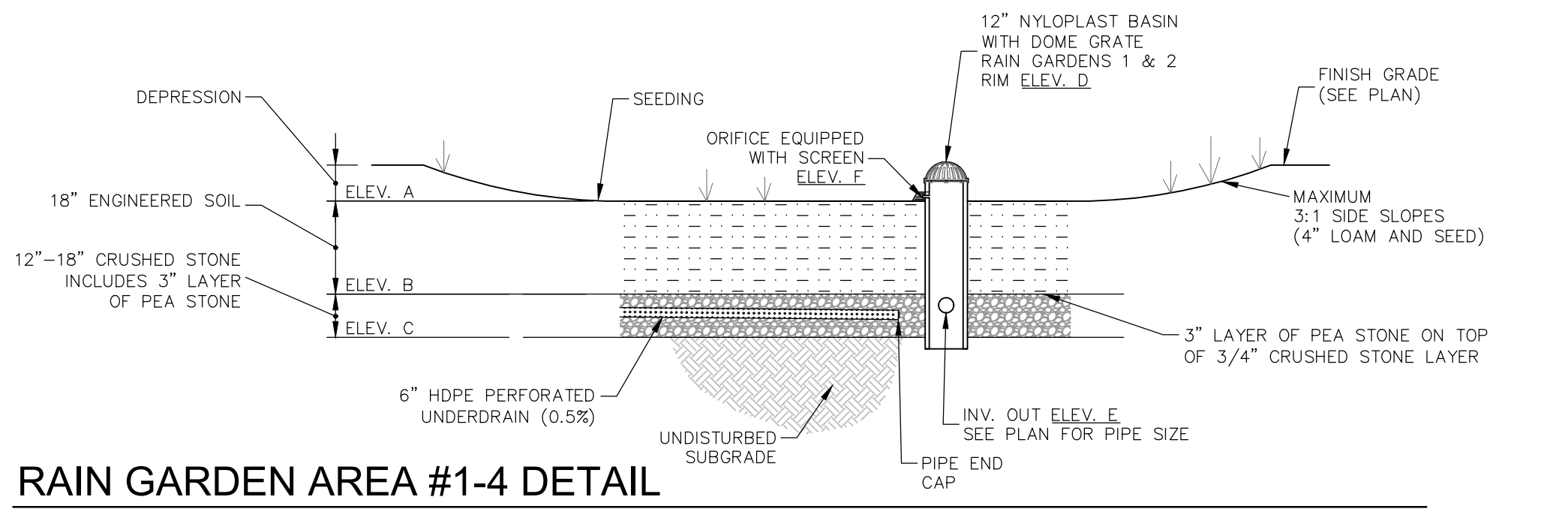
48 Constitution Drive
 Bedford, NH 03110
 Phone (603) 472-4488
 Fax (603) 472-9747
 www.tfmoran.com

45407-120 DR MM FB
 CK CR CADFILE 45407-120_GRADING & DRAINAGE C-04

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May 10, 2023 - 9:04am F:\MISC Projects\45407-120 - Smithfield Construction - 437 Lafayette Rd\Design\PRODUCTION DRAWINGS\45407-120_Grading & Drainage.dwg



RAIN GARDEN AREA #1-4 DETAIL

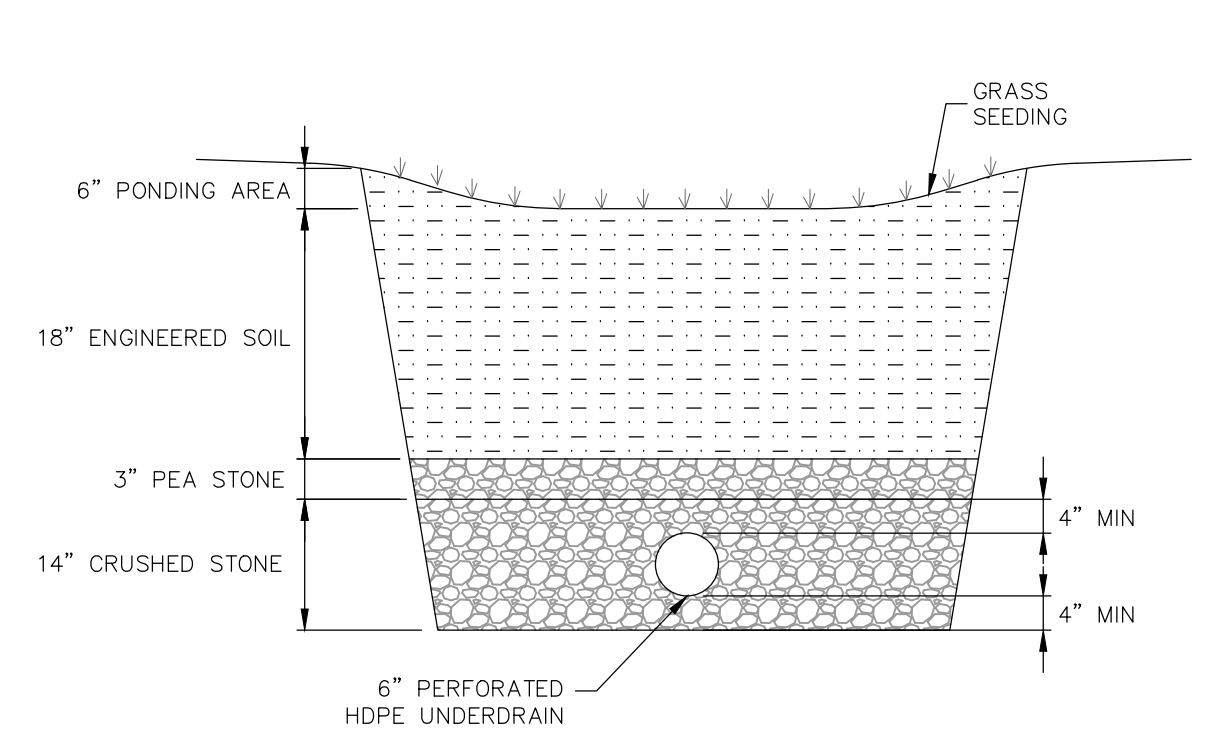
SEEDING

- USE NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR MOIST SITES BY NEW ENGLAND WETLAND PLANTS, INC. OR EQUIVALENT.
- SEED AT A RATE OF 1LB/1250SF. APPLY TO BARE SOIL. LIGHTLY MULCH WITH CLEAN WEED FREE STRAW.

NOT TO SCALE

ELEV.	ELEV.			
	RG #1	RG #2	RG #3	RG #4
A	35.50	32.50	29.50	34.25
B	34.00	31.00	28.00	32.75
C	32.58	29.58	26.58	31.33
D	35.85	32.85	29.85	34.85
E*	32.83	30.65	28.00	32.50
F	35.75	32.75	29.75	34.75

* SEE GRADING AND DRAINAGE PLAN FOR CULVERT SIZES.



RAIN GARDEN TYPICAL SECTION

RAIN GARDEN CONSTRUCTION

- CLEAR AND GRUB THE AREA WHERE THE RAIN GARDEN AREAS ARE TO BE LOCATED. STOCKPILE LOAM FOR REUSE ON SLOPES.
- GRADE RAIN GARDEN AREAS ACCORDING TO PLAN AND DETAILS. SIDE SLOPES SHALL HAVE 4" LOAM AND SEED AND A SLOPE NOT TO EXCEED 3:1. BOTTOM OF RAIN GARDEN AREAS TO BE CONSTRUCTED WITH MANUFACTURED SOIL (SEE RAIN GARDEN CONSTRUCTION DETAIL). SPECIFIC PLANTINGS SHALL BE PLACED IN THE FACILITY ACCORDING TO THE LANDSCAPE PLAN PLANTING DETAIL.
- RAIN GARDEN SOIL MIXTURE SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES EXCLUDING MULCH. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE RAIN GARDEN AREA THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVIDE A HINDERANCE TO THE PLANTING OR MAINTENANCE OPERATION.
- THE USDA TEXTURAL CLASSIFICATION OF THE SANDY SOIL SHALL BE LOAMY SAND OR SANDY LOAM.
- THE ENGINEERED SOIL - SEE ENGINEERED SOIL MIX NOTES.
 - SOILS TO BE TESTED AND APPROVED BY THE ENGINEER OF RECORD. ENGINEER SHALL SUBMIT LETTER OF VERIFICATION TO THE CITY.
- THE CONTRACTOR SHALL TAKE MEASURES TO PREVENT EQUIPMENT & VEHICLE TRAFFIC FROM DRIVING IN THE AREA OF THE PROPOSED RAIN GARDEN AREA DURING CONSTRUCTION.
- AFTER THE BASIN IS EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE INFILTRATION RATES. THE BASIN BOTTOM SHOULD BE LEVELED PRIOR TO BACKFILLING WITH CRUSHED STONE AND RAIN GARDEN SOIL MIXTURE.
- AASHTO #57 STONE CAN BE USED IN PLACE OF 3/4" CRUSHED STONE.
- FILL MATERIAL BENEATH RAIN GARDENS SHALL HAVE A MINIMUM INFILTRATION RATE OF 2 INCHES PER HOUR AND A MAXIMUM INFILTRATION RATE OF 10 INCHES PER HOUR.

RAIN GARDEN MAINTENANCE

MAINTENANCE SCHEDULE TO BEGIN AFTER CONSTRUCTION IS FINISHED AND BASIN STABILIZATION IS COMPLETE.

- CONTRACTOR AND LAND OWNERS TO PERFORM SCHEDULED MAINTENANCE ON THE RAIN GARDENS.
- REGULAR WATERING DURING THE FIRST FEW WEEKS AFTER PLANTING AND DURING HOT, DRY SPELLS, ESPECIALLY IN THE FIRST TWO YEARS AFTER PLANTING. AFTER THE FIRST TWO YEARS AND ONCE PLANTS ARE ESTABLISHED, WATERING SHOULD ONLY BE NECESSARY DURING DROUGHT CONDITIONS.
- FOR THE FIRST YEAR, FREQUENT AND AGGRESSIVE WEEDING MONTHLY DURING GROWING SEASON. REMOVE ONLY INVASIVE SPECIES.
- TWICE PER YEAR, INSPECT SPILLWAYS AND REMOVE ANY ACCUMULATED DEBRIS OR SEDIMENT TO ENSURE PROPER FUNCTIONALITY.
- ONCE A YEAR TRIM AND PRUNE EXCESS VEGETATION. DEAD, DYING, DISEASED, OR HAZARDOUS BRANCHES SHOULD BE TRIMMED AND REMOVED AS THEY OCCUR.
- ONCE A YEAR INSPECT RAIN GARDEN FOR DEAD OR DYING VEGETATION. REPLACE VEGETATION AS NEEDED. NEW PLANTS SHOULD BE PLACED IN THE SAME LOCATION AS THE OLD PLANT, OR AS NEAR AS POSSIBLE TO THE OLD LOCATION. NEW PLANTS SHOULD BE THE NATIVE AND SAME OR EQUIVALENT VARIETY.
- DO NOT MOW GARDEN.
- ONCE A YEAR, INSPECT BOTTOM OF RAIN GARDEN. MAINTAIN A 2-3" LAYER OF MULCH. REPLACE AS REQUIRED.
- DURING INSPECTIONS, REMOVE ANY TRASH, ACCUMULATED DEBRIS OR SEDIMENT.
- ONCE A YEAR INSPECT BERM FOR SETTLING. ADD COMPACTED SOIL AND REPLANT AS NEEDED.
- ONCE A YEAR IN THE FALL THE SYSTEM SHOULD BE INSPECTED FOR DRAWDOWN TIME AFTER A RAINFALL EVENT THAT EXCEEDS 1.0 INCHES IN A 24-HOUR PERIOD. THE SYSTEM SHOULD BE CHECKED TO CONFIRM THAT IT COMPLETELY DRAINS IN 72-HOUR AFTER THE RAINFALL EVENT. IF THE GARDEN DOES NOT DRAIN, A QUALIFIED PROFESSIONAL SHOULD ASSESS THE CONDITION OF THE FACILITY TO DETERMINE MEASURES REQUIRED TO RESTORE FILTRATION OR INFILTRATION FUNCTIONS, INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS.
- ONCE A YEAR TEST PLANTING BED FOR PH. IF THE PH IS BELOW 5.2, LIMESTONE SHOULD BE APPLIED. IF THE PH IS ABOVE 8.0, IRON SULFATE AND SULFUR SHOULD BE APPLIED.

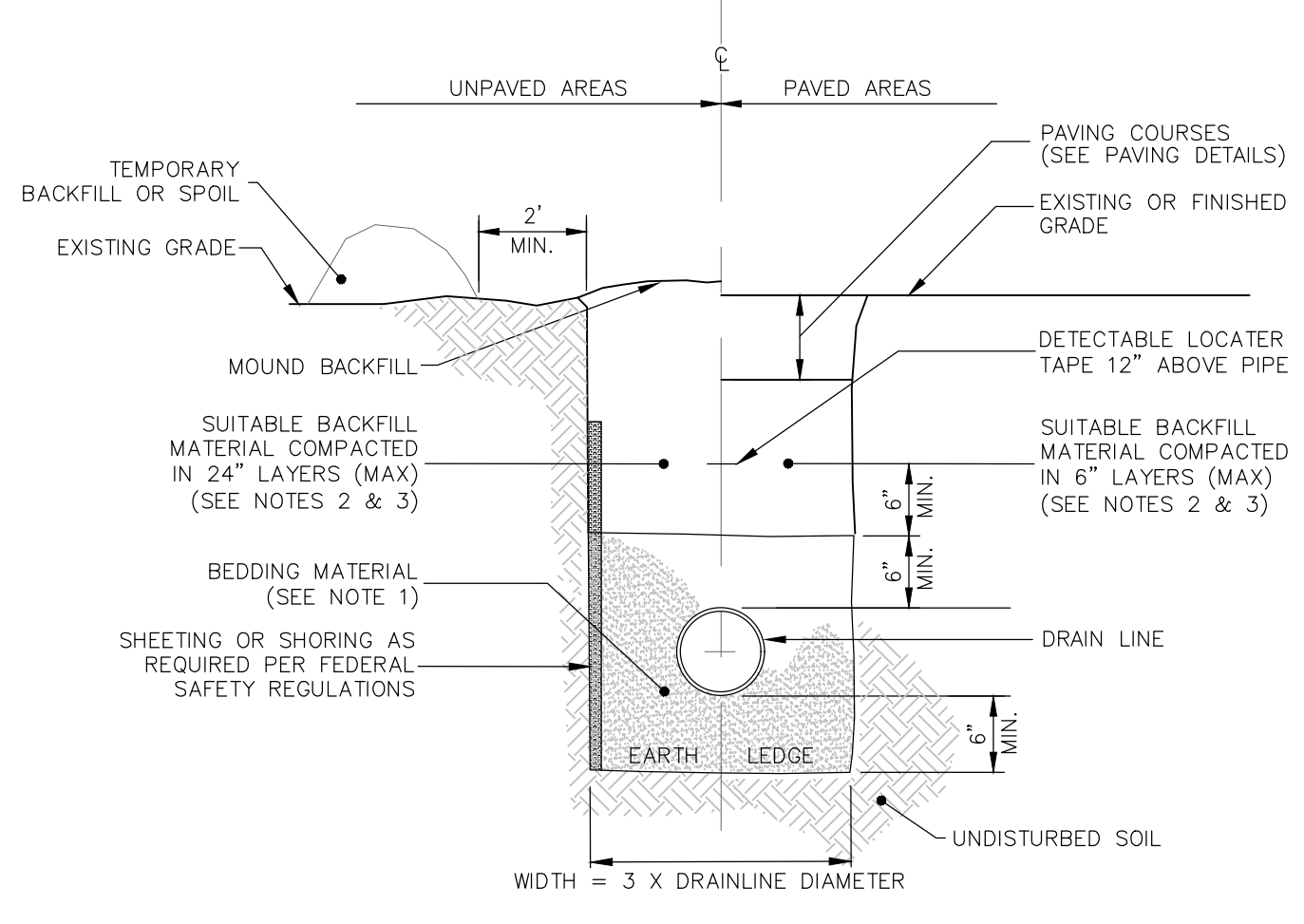
ENGINEERED SOIL MIX

- THE ENGINEERED SOIL IS MADE OF IS 10% WOOD CHIPS, 35% LOAM, AND 55% SAND.
- LOAM SHALL MEET THE USDA TEXTURAL CLASSIFICATION OF LOAMY FINE SAND.
- SAND SHALL BE CONCRETE SAND MEETING ASTM C-33 SPECIFICATION.
- WOOD CHIPS SHALL BE SHREDDED WOOD, WOOD CHIPS, GROUND BARK, OR WOOD WASTE; OF UNIFORM TEXTURE AND FREE OF STONES, STICKS, SOIL, OR TOXIC MATERIALS
- SOIL REACTION: PH OF 6 TO 7.
- CEC OF TOTAL SOIL: MINIMUM 10 MEQ/100 ML AT PH OF 7.0.
- BASIS-OF-DESIGN PRODUCT: SUBJECT TO COMPLIANCE WITH REQUIREMENTS INDICATED ON DRAWINGS
- BASIC PROPERTIES: MANUFACTURED SOIL SHALL NOT CONTAIN THE FOLLOWING:
 - UNACCEPTABLE MATERIALS: CONCRETE SLURRY, CONCRETE LAYERS OR CHUNKS, CEMENT, PLASTER, BUILDING DEBRIS, ASPHALT, BRICKS, OILS, GASOLINE, DIESEL FUEL, PAINT THINNER, TURPENTINE, TAR, ROOFING COMPOUND, ACID, SOLID WASTE, AND OTHER EXTRANEOUS MATERIALS THAT ARE HARMFUL TO PLANT GROWTH.
 - UNSUITABLE MATERIALS: STONES, ROOTS, PLANTS, SOD, CLAY LUMPS, AND POCKETS OF COARSE SAND THAT EXCEED A COMBINED MAXIMUM OF 5 PERCENT BY DRY WEIGHT OF THE MANUFACTURED SOIL.
 - LARGE MATERIALS: STONES, CLODS, ROOTS, CLAY LUMPS, AND POCKETS OF COARSE SAND EXCEEDING 0.187 INCHES (4.76 MM) IN ANY DIMENSION.

ENGINEERED SOIL MIX PARTICLE SIZE DISTRIBUTION (PSD)			
PSD UPPER LIMIT		PSD LOWER LIMIT	
SIEVE #	% PASSING	SIEVE #	% PASSING
4	100	4	100
10	95	10	95
40	40	40	15
200	20	200	15
<200	5	<200	5

RAIN GARDEN INSPECTION SCHEDULE

- RAIN GARDEN TO BE INSPECTED BY THE DESIGN ENGINEER FOR EACH STAGE OF CONSTRUCTION.
- PHASES OF CONSTRUCTION BEING:
 - EXCAVATION OF THE RAIN GARDEN BASIN, INCLUDING ROTOTILLING.
 - INSTALLATION OF THE CRUSHED STONE
 - INSTALLATION OF THE ENGINEERED SOIL
 - INSTALLATION OF THE OUTLET STRUCTURE AND UNDERDRAIN IN THE OUTLET STONE TRENCHES
- SAMPLE OF THE INDIVIDUAL COMPONENTS OF THE ENGINEERED SOIL TO BE PROVIDED AND APPROVED PRIOR BEING COMBINED AND INSTALLED. SAMPLE CRUSHED STONE TO BE PROVIDED AND APPROVED PRIOR TO INSTALLATION.
- ENGINEER TO VERIFY MIX RATIO OF ENGINEERED SOIL MIX.



TRENCH FOR DRAIN LINE

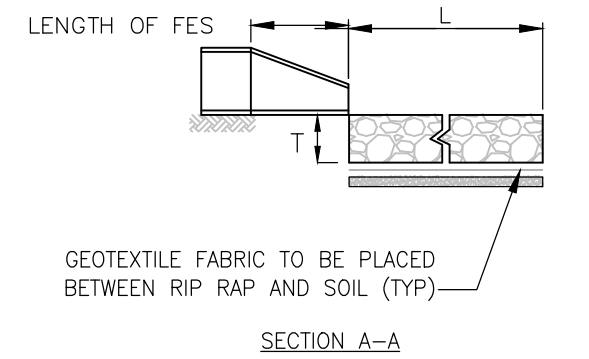
- NOTES
- BEDDING - BEDDING FOR PIPES SHALL CONSIST OF PREPARING THE BOTTOM OF THE TRENCH TO SUPPORT THE ENTIRE LENGTH OF THE PIPE AT A UNIFORM SLOPE AND ALIGNMENT. CRUSHED STONE SHALL BE USED TO BED THE PIPE TO THE ELEVATION SHOWN ON THE DRAWINGS. NORMAL PIPE BEDDING IS CRUSHED STONE TO THE HAUNCH OF THE PIPE AND SAND BEDDING 6" ABOVE THE CROWN. IF THE TOP OF THE PIPE IS LESS THAN 30" FROM FINISH GRADE, BED PIPE COMPLETELY IN STONE UP TO 6" ABOVE PIPE CROWN. UNDERDRAIN TO HAVE 4" MINIMUM OF STONE OVER PIPE OR AS NECESSARY TO BE IN CONTACT WITH GRAVEL LAYER OF SELECTS ABOVE.
 - COMPACTION - ALL BACKFILL SHALL BE COMPACTED AT OR NEAR OPTIMUM MOISTURE CONTENT BY PNEUMATIC TAMPERS, VIBRATORY COMPACTORS OR OTHER APPROVED MEANS. BACKFILL BENEATH PAVED SURFACES SHALL BE COMPACTED TO NOT LESS THAN 95% OF AASHTO 199, METHOD C.
 - SUITABLE MATERIAL - IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED SURFACES, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS; PIECES OF PAVEMENT; ORGANIC MATTER; TOP SOIL; ALL WET OR SOFT MUCK, PEAT, OR CLAY; ALL EXCAVATED LEDGE MATERIAL; ROCKS OVER 6" IN LARGEST DIMENSION; FROZEN EARTH AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION.
 - BASE COURSE AND PAVEMENT - SHALL MEET THE REQUIREMENT OF THE NHDOT LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES DIVISION 300 AND 400 RESPECTIVELY.

MAINTENANCE:

THE OUTLET PROTECTION SHOULD BE CHECKED AT LEAST ANNUALLY AND AFTER EVERY MAJOR STORM. IF THE RIP RAP HAS BEEN DISPLACED, UNDERMINED OR DAMAGED, IT SHOULD BE CHECKED TO SEE THAT EROSION IS NOT OCCURRING. THE DOWNSTREAM CHANNEL SHOULD BE KEPT CLEAR OF OBSTRUCTIONS SUCH AS FALLEN TREES, DEBRIS, AND SEDIMENT THAT COULD CHANGE FLOW PATTERNS AND/OR TAILWATER DEPTHS ON THE PIPES. REPAIRS MUST BE CARRIED OUT IMMEDIATELY TO AVOID ADDITIONAL DAMAGE TO THE OUTLET PROTECTION APRON.

CONSTRUCTION SPECIFICATIONS:

- THE SUBGRADE FOR THE FILTER MATERIAL, GEOTEXTILE FABRIC, AND RIP RAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
- THE ROCK OR GRAVEL USED FOR FILTER OR RIP RAP SHALL CONFORM TO THE SPECIFIED GRADATION.
- GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIP RAP. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 12".
- STONE FOR THE RIP RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.
- ADD ANIMAL SCREEN TO FLARED END SECTION OUTLET.

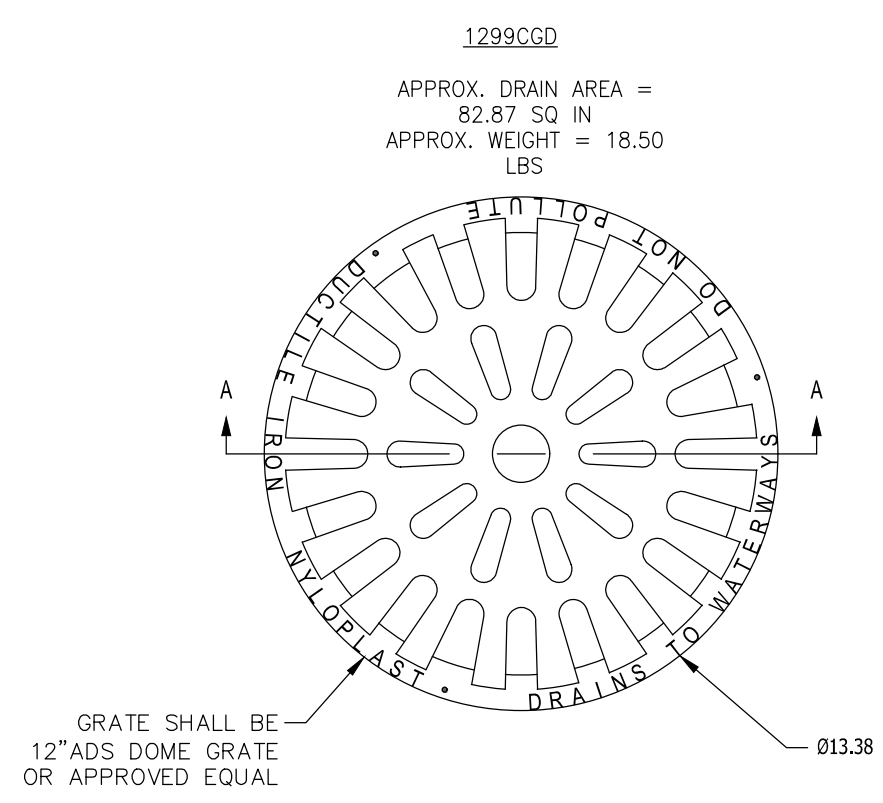


RIP RAP AND FLARED END SECTION WITH OUTLET PROTECTION

NOT TO SCALE

LOCATION	RIPRAP DIMENSIONS			
	FES01	FES02	FES03	FES04
d50 STONE SIZE (IN)	6	6	6	6
L- LENGTH OF APRON (FT)	2	3	2	2
W-WIDTH OF APRON (FT)	2	3	2	2
T-DEPTH OF APRON (IN)	9	9	9	9

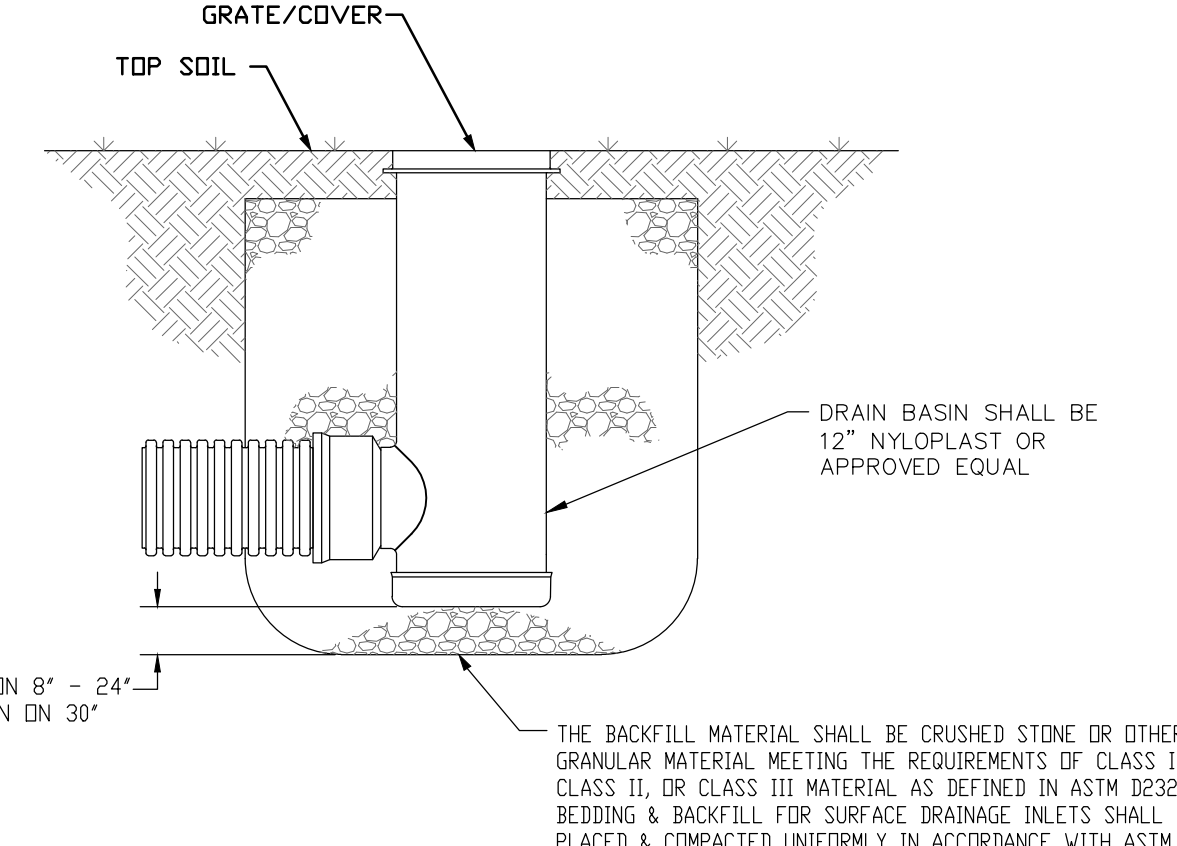
% OF WEIGHT SMALLER THAN THE GIVEN SIZE OF STONE (INCHES)	FES01	FES02	FES03	FES04
100	9.00 TO 12.00	7.80 TO 10.80	8.00 TO 9.00	1.80 TO 3.00
85				
50				
15				



12" DOME GRATE

NOT TO SCALE

DIMENSIONS ARE FOR REFERENCE ONLY ACTUAL DIMENSIONS MAY VARY DIMENSIONS ARE IN INCHES QUALITY: MATERIALS SHALL CONFORM TO ASTM A536 GRADE 70-50-05 PAINT: CASTINGS ARE FINISHED WITH A BLACK PAINT LOCKING DEVICE AVAILABLE UPON REQUEST



DRAIN BASIN NON-TRAFFIC INSTALLATION

NOT TO SCALE

SITE DEVELOPMENT PLANS

TAX MAP 229 LOT 1
DETAILS
PROPOSED 3 LOT SUBDIVISION
437 LAFAYETTE ROAD
PORTSMOUTH, NEW HAMPSHIRE
 OWNED BY & PREPARE FOR
ARTWILL, LLC

SCALE: APRIL 19, 2022

	Civil Engineers Structural Engineers Traffic Engineers Land Surveyors Landscape Architects Scientists	48 Constitution Drive Bedford, NH 03110 Phone (603) 472-4488 Fax (603) 472-9747 www.tfmoran.com
	F I L E 45407-120 DR MM FB CK CR CADFILE 45407-120_DETAILS C-11	

REV	DATE	DESCRIPTION	DR	CK
5	5/10/2023	REVISED RAIN GARDEN DETAIL, ADDED NOTE 12.	MM	MM
4	4/20/2023	REVISED RAIN GARDEN DETAIL.	MM	MM
3	11/17/2022	REVISED RAIN GARDEN DETAIL.	JSM	JJM
2	8/26/2022	REVISED RAIN GARDEN SECTION.	JSM	JJM
1	5/20/2022	NO REVISIONS TO SHEET.	JSM	JJM

May 10, 2023 - 7:38am F:\MISC Projects\45407 - Lafayette Road - Portsmouth\45407-120 - Smithfield Construction - 437 Lafayette Rd\Design\PRODUCTION DRAWINGS\45407-120_Details.dwg

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