

RIVERWOODS DURHAM

STONE QUARRY DRIVE DURHAM, NEW HAMPSHIRE

PLANNING BOARD SUBMISSION

Plan Issue Dates:

Design Review	April 19, 2017
Site Plan Submission	July 19, 2017
Site Plan Re-Submission	October 16, 2017
Site Plan Re-Submission	December 5, 2017

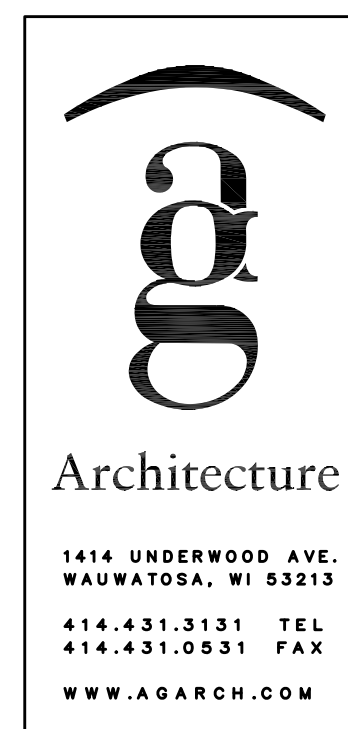
Applicant:

The RiverWoods Group
7 RiverWoods Drive
Exeter, New Hampshire 03833
Tel. (603) 772-4700

Owner (Subject Parcel):

Rockingham Properties 1, LTD
P.O. Box 423
Belmont, MA 02178
Tel. (603) 772-4700

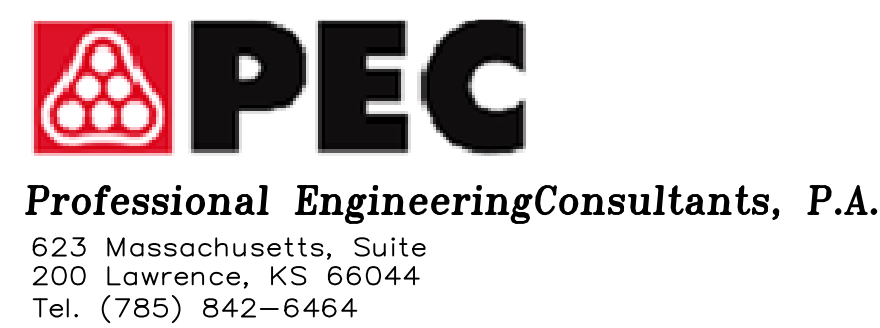
Architect:



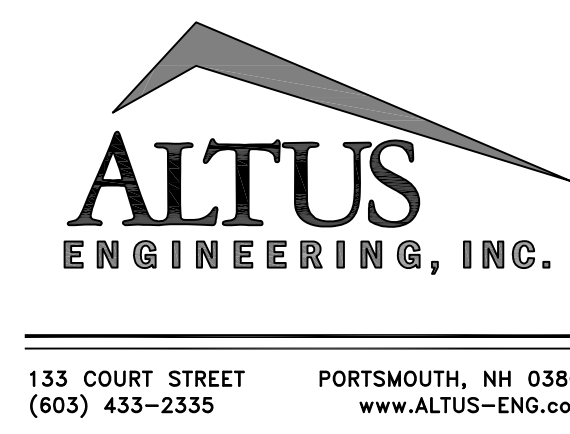
Landscape Architect:



MEP:



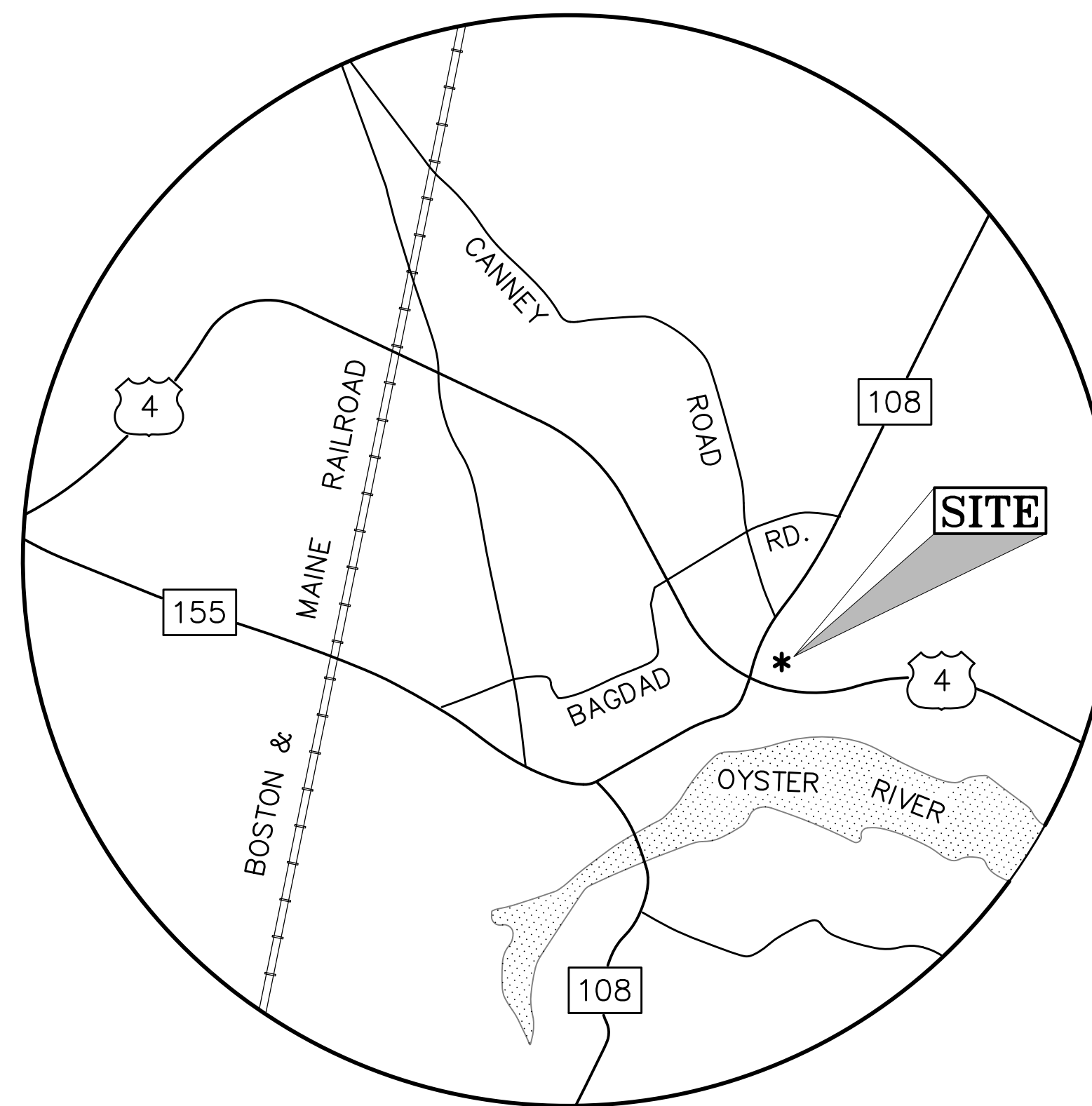
Civil Engineer:



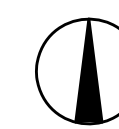
Wetlands/Soils Scientist:

GZA GeoEnvironmental, Inc.
5 Commerce Park
North Bedford, NH 03110 Tel.
(603) 232-8739

Surveyor:



LOCATION PLAN



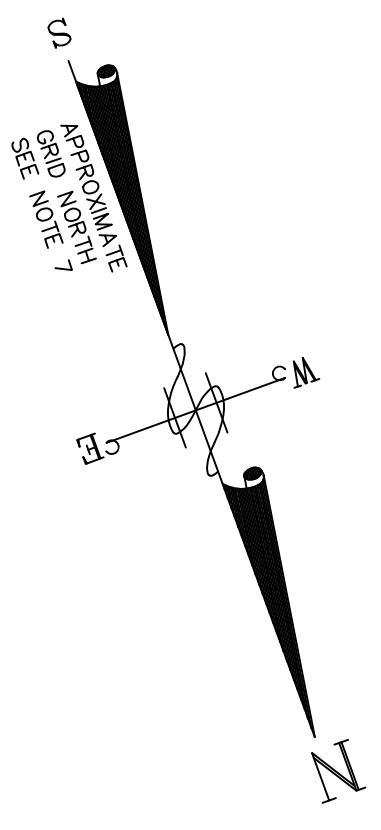
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PERMIT APPROVAL NOTES:

CONSTRUCTION SHALL NOT COMMENCE UNTIL ALL REGULATORY APPROVALS HAVE BEEN RECEIVED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTING THE PROJECT IN ACCORDANCE WITH ALL CONDITIONS OF THE APPROVALS.

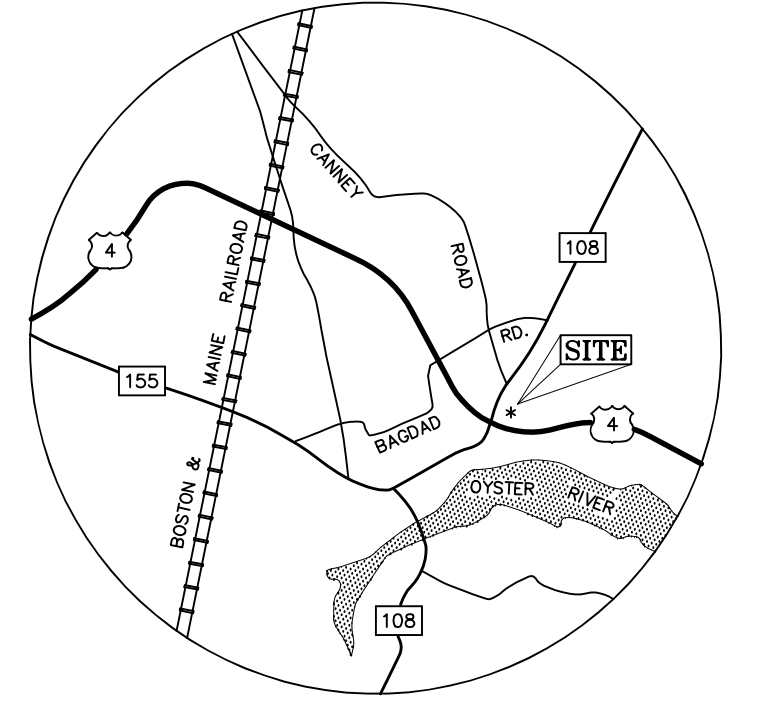
- TOWN OF DURHAM PLANNING BOARD CONDITIONAL SITE PLAN APPROVAL, DATED _____
- NHDES ALTERATION OF TERRAIN PERMIT AOT-xxxxx, DATED _____



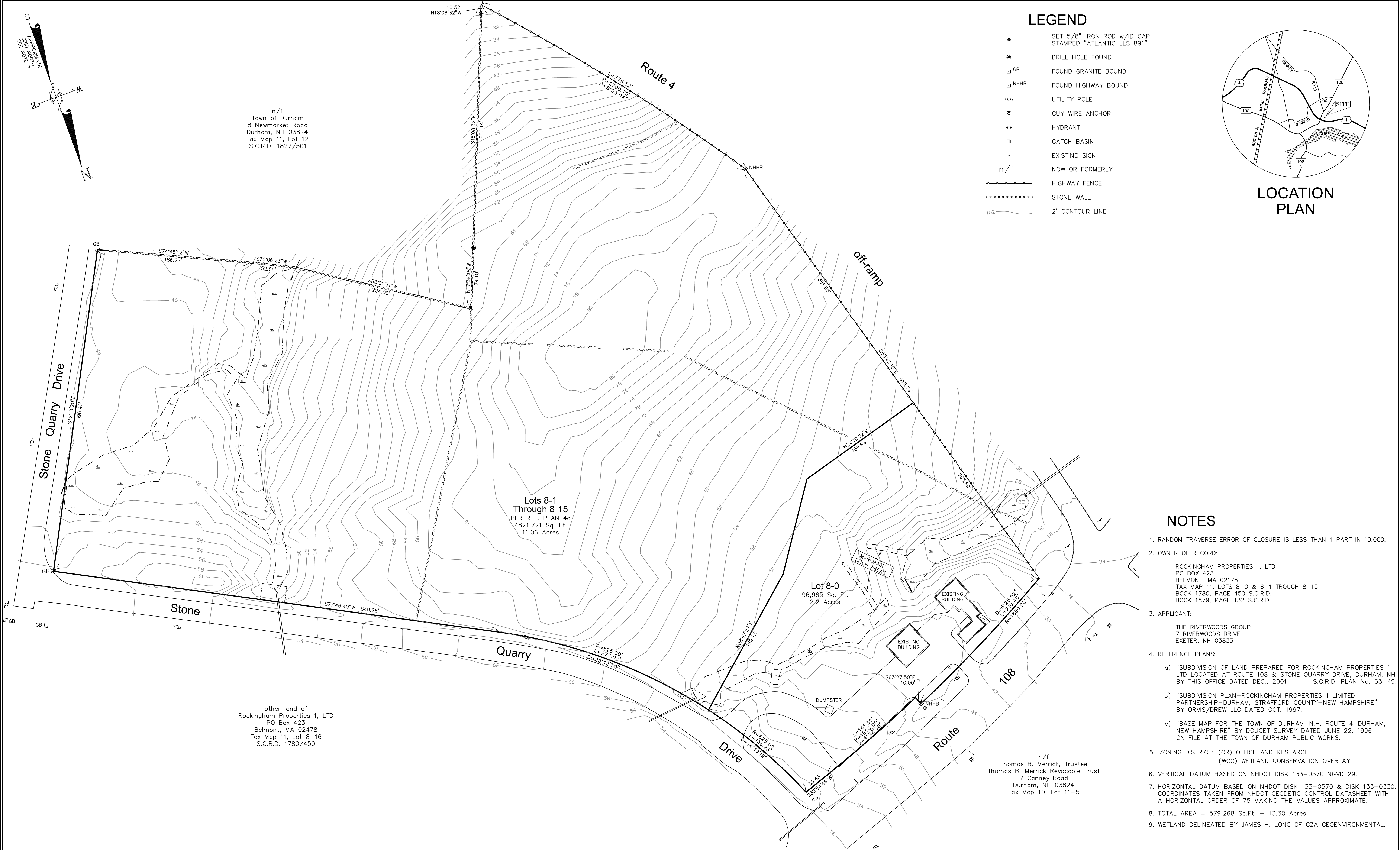
n/f
Town of Durham
8 Newmarket Road
Durham, NH 03824
Tax Map 11, Lot 12
S.C.R.D. 1827/501

LEGEND

- SET 5/8" IRON ROD w/ID CAP STAMPED "ATLANTIC LLS 891"
- ⊙ DRILL HOLE FOUND
- GB FOUND GRANITE BOUND
- NHHB FOUND HIGHWAY BOUND
- UTILITY POLE
- ⊕ GUY WIRE ANCHOR
- ⊖ HYDRANT
- CATCH BASIN
- ⊥ EXISTING SIGN
- n/f NOW OR FORMERLY
- HIGHWAY FENCE
- STONE WALL
- 102 2' CONTOUR LINE



LOCATION PLAN



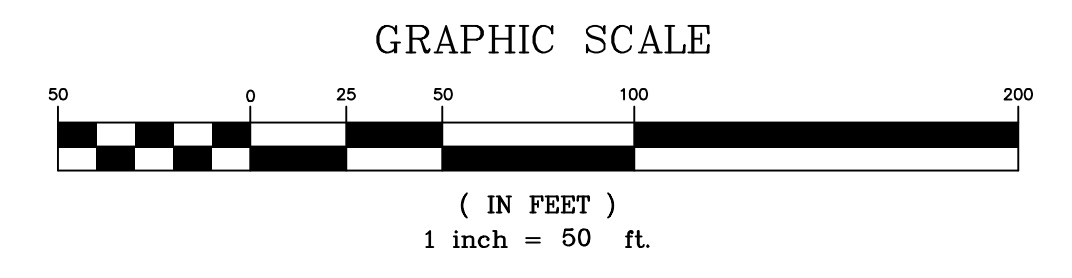
NOTES

1. RANDOM TRAVERSE ERROR OF CLOSURE IS LESS THAN 1 PART IN 10,000.
2. OWNER OF RECORD:
ROCKINGHAM PROPERTIES 1, LTD
PO BOX 423
BELMONT, MA 02178
TAX MAP 11, LOTS 8-0 & 8-1 THROUGH 8-15
BOOK 1780, PAGE 450 S.C.R.D.
BOOK 1879, PAGE 132 S.C.R.D.
3. APPLICANT:
THE RIVERWOODS GROUP
7 RIVERWOODS DRIVE
EXETER, NH 03833
4. REFERENCE PLANS:
a) "SUBDIVISION OF LAND PREPARED FOR ROCKINGHAM PROPERTIES 1 LTD LOCATED AT ROUTE 108 & STONE QUARRY DRIVE, DURHAM, NH BY THIS OFFICE DATED DEC., 2001 S.C.R.D. PLAN No. 53-49.
b) "SUBDIVISION PLAN-ROCKINGHAM PROPERTIES 1 LIMITED PARTNERSHIP-DURHAM, STRAFFORD COUNTY-NEW HAMPSHIRE" BY ORVIS/DREW LLC DATED OCT. 1997.
c) "BASE MAP FOR THE TOWN OF DURHAM-N.H. ROUTE 4-DURHAM, NEW HAMPSHIRE" BY DOUCET SURVEY DATED JUNE 22, 1996 ON FILE AT THE TOWN OF DURHAM PUBLIC WORKS.
5. ZONING DISTRICT: (OR) OFFICE AND RESEARCH (WCO) WETLAND CONSERVATION OVERLAY
6. VERTICAL DATUM BASED ON NHDOT DISK 133-0570 NGVD 29.
7. HORIZONTAL DATUM BASED ON NHDOT DISK 133-0570 & DISK 133-0330. COORDINATES TAKEN FROM NHDOT GEODETIC CONTROL DATASHEET WITH A HORIZONTAL ORDER OF 75 MAKING THE VALUES APPROXIMATE.
8. TOTAL AREA = 579,268 Sq.Ft. - 13.30 Acres.
9. WETLAND DELINEATED BY JAMES H. LONG OF GZA GEOENVIRONMENTAL.

other land of
Rockingham Properties 1, LTD
PO Box 423
Belmont, MA 02478
Tax Map 11, Lot 8-16
S.C.R.D. 1780/450

n/f
Thomas B. Merrick, Trustee
Thomas B. Merrick Revocable Trust
7 Canney Road
Durham, NH 03824
Tax Map 10, Lot 11-5

ISSUE	DATE	DESCRIPTION	BY	CHKD.	APP.



ATLANTIC SURVEY CO, LLC
25 Nute Road, Dover, New Hampshire 03820

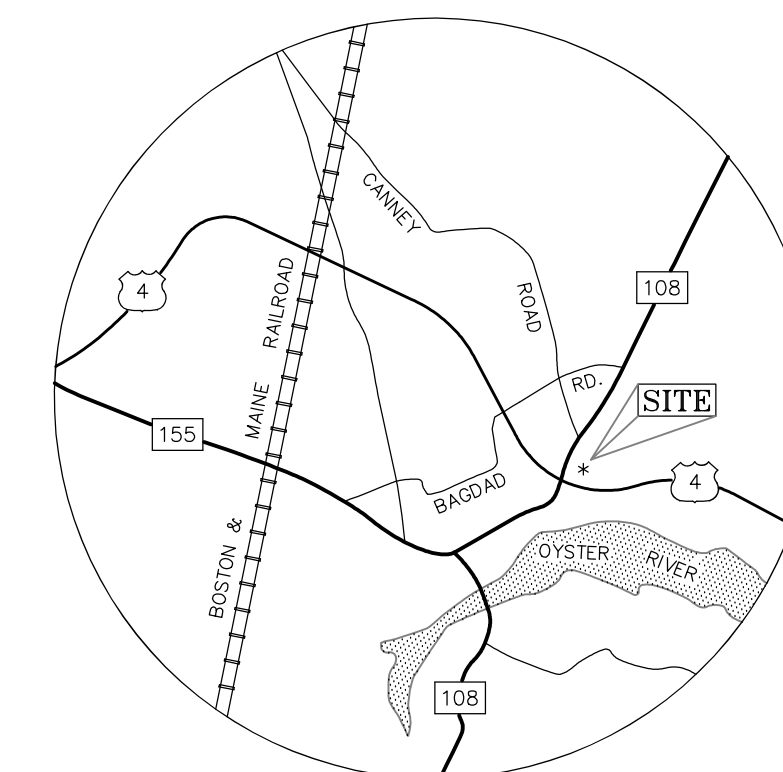
PREPARED BY:
SURVEYORS
PLANNERS
SEPTIC DESIGNERS
603-659-8939

DATE: Dec., 2017
FIELDWORK BY: AF, TF
DESIGNED BY: AF
CAD FILE: 17109-ExCP
PROJECT No.: 17109
SHEET 1 OF 1

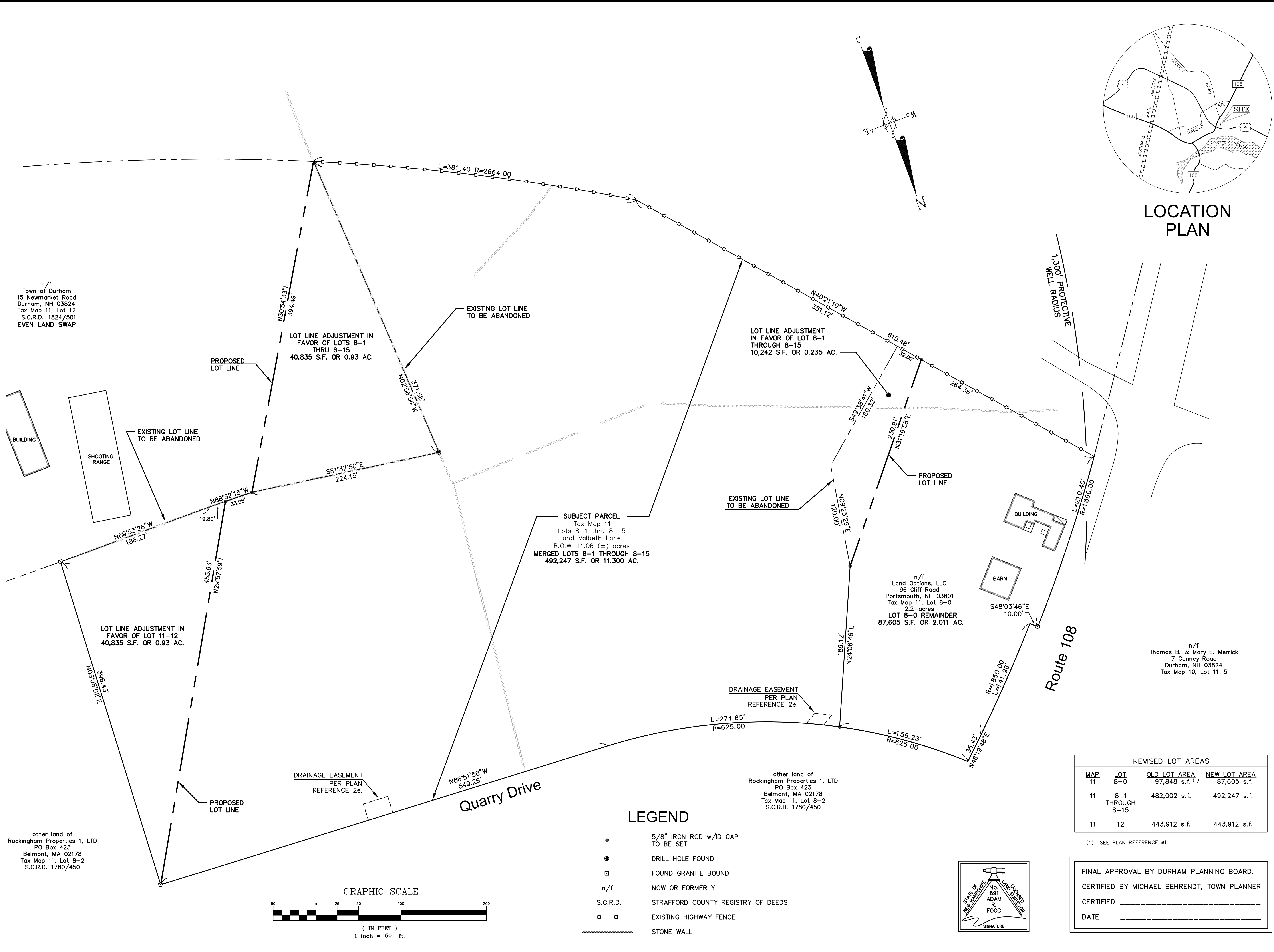
EXISTING CONDITIONS PLAN
PREPARED FOR
The Riverwoods Group
LOCATED AT
Route 108 & Stone Quarry Drive, Durham, N.H.

NOTES

1. RANDOM TRAVERSE ERROR OF CLOSURE IS LESS THAN 1 PART IN 10,000.
2. REFERENCE PLANS:
 - a) "TEMPORARY SHOOTING RANGE PREPARED FOR TOWN OF DURHAM POLICE DEPARTMENT" BY MJS ENGINEERING, P.C., DATED 2/16/15
 - b) "EXISTING CONDITIONS PLAN PREPARED FOR THE RIVERWOODS GROUP", BY ATLANTIC SURVEY COMPANY, DATED APRIL 2017
 - c) "BASE MAP FOR THE TOWN OF DURHAM-NEW HAMPSHIRE" BY DOUCET SURVEY DATED JUNE 22, 1996 ON FILE AT THE TOWN OF DURHAM PUBLIC WORKS.
 - d) "SUBDIVISION OF LAND PREPARED FOR ROCKINGHAM PROPERTIES 1 LTD LOCATED AT ROUTE 108 & STONE QUARRY DRIVE, DURHAM, NH BY ATLANTIC SURVEY CO, LLC DATED DEC., 2001 S.C.R.D. PLAN No. 53-49.
 - e) "SUBDIVISION PLAN-ROCKINGHAM PROPERTIES PARTNERSHIP 1-DURHAM, STRAFFORD COUNTY-NEW HAMPSHIRE" BY ORVIS/DREW LLC DATED OCT. 1997. S.C.R.D. PLAN No. 53-49.
 - f) "BASE MAP FOR THE TOWN OF DURHAM-NEW HAMPSHIRE" BY DOUCET SURVEY DATED JUNE 22, 1996 ON FILE AT THE TOWN OF DURHAM PUBLIC WORKS.



LOCATION PLAN



n/f
Town of Durham
15 Newmarket Road
Durham, NH 03824
Tax Map 11, Lot 12
S.C.R.D. 1824/501
EVEN LAND SWAP

LOT LINE ADJUSTMENT IN FAVOR OF LOTS 8-1 THRU 8-15
40,835 S.F. OR 0.93 AC.

LOT LINE ADJUSTMENT IN FAVOR OF LOT 8-1 THROUGH 8-15
10,242 S.F. OR 0.235 AC.

LOT LINE ADJUSTMENT IN FAVOR OF LOT 11-12
40,835 S.F. OR 0.93 AC.

SUBJECT PARCEL
Tax Map 11
Lots 8-1 thru 8-15
and Valbeth Lane
R.O.W. 11.06 (±) acres
MERGED LOTS 8-1 THROUGH 8-15
492,247 S.F. OR 11.300 AC.

n/f
Land Options, LLC
96 Cliff Road
Portsmouth, NH 03801
Tax Map 11, Lot 8-0
2.2-acres
LOT 8-0 REMAINDER
87,605 S.F. OR 2.011 AC.

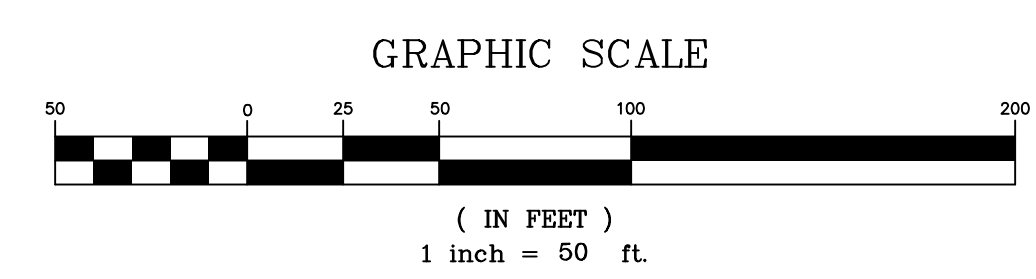
n/f
Thomas B. & Mary E. Merrick
7 Canney Road
Durham, NH 03824
Tax Map 10, Lot 11-5

other land of
Rockingham Properties 1, LTD
PO Box 423
Belmont, MA 02178
Tax Map 11, Lot 8-2
S.C.R.D. 1780/450

other land of
Rockingham Properties 1, LTD
PO Box 423
Belmont, MA 02178
Tax Map 11, Lot 8-2
S.C.R.D. 1780/450

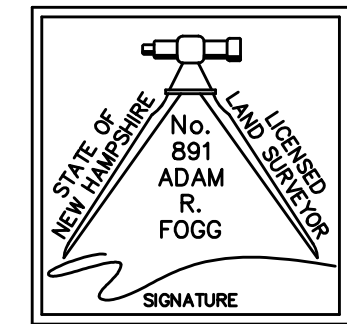
LEGEND

- 5/8" IRON ROD w/D CAP TO BE SET
- DRILL HOLE FOUND
- FOUND GRANITE BOUND
- n/f NOW OR FORMERLY
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- EXISTING HIGHWAY FENCE
- STONE WALL



REVISED LOT AREAS				
MAP	LOT	OLD LOT AREA	NEW LOT AREA	
11	8-0	97,848 s.f. (1)	87,605 s.f.	
11	8-1 THROUGH 8-15	482,002 s.f.	492,247 s.f.	
11	12	443,912 s.f.	443,912 s.f.	

(1) SEE PLAN REFERENCE #1



FINAL APPROVAL BY DURHAM PLANNING BOARD.
CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
CERTIFIED _____
DATE _____

DRAWN BY: _____ RMB
APPROVED BY: _____ JKC, AF
DRAWING FILE: _____ 4836SITE.DWG

SCALE: 1" = 50'

OWNERS:
MAP 11 LOTS 8-1 TO 8-15
ROCKINGHAM PROPERTIES 1, LTD
S.C.R.D. BOOK 1780 PAGE 450
S.C.R.D. BOOK 1879 PAGE 132
P.O. BOX 423
BELMONT, MA 02178

LOT 8-0
LAND OPTIONS, LLC
S.C.R.D. BOOK 4484 PAGE 508
96 CLIFF ROAD
PORTSMOUTH, NH 03801

LOT 11-12
TOWN OF DURHAM
S.C.R.D. BOOK 1827 PAGE 501
15 NEWMARKET ROAD
DURHAM, NH 03824



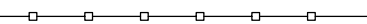




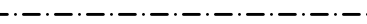
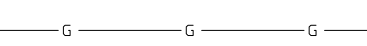
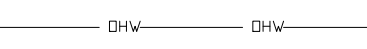
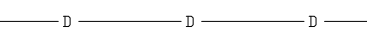
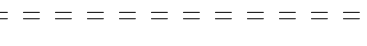
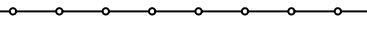







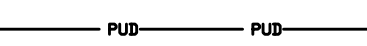
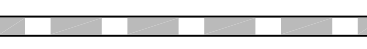













APPLICANT:
THE RIVERWOODS GROUP
7 RIVERWOODS DRIVE
EXETER, NH 03833

PROJECT:
RIVERWOODS DURHAM
STONE QUARRY DRIVE
DURHAM, NH

TITLE:
Lot Line Adjustment Plan
PREPARED FOR
THE RIVERWOODS GROUP
LOCATED AT
STONE QUARRY DR & RTE 108
DURHAM, NH

SHEET NUMBER:
G - 1.0

LEGEND

	UTILITY POLE
	NOW OR FORMERLY
	HIGHWAY FENCE
	STONE WALL
	2' CONTOUR LINE
	JURISDICTIONAL WETLAND
	WETLAND SYMBOL
	75' WETLANDS SETBACK
	EXIST. GAS LINE
	EXIST. OVERHEAD WIRES
	EXIST. DRAIN LINE
	EXIST. CULVERT
	PROP. SEDIMENTATION BARRIER
	PROP. WATER LINE
	PROP. GATE VALVE
	PROP. SEWER LINE
	PROP. UNDERGROUND ELEC./TELE./COMMUNICATION
	PROP. ELECTRICAL CONDUIT
	PROP. LIGHT POLE
	PROP. GAS LINE
	PROP. DRAIN LINE
	PROP. PERFORATED UNDERDRAIN
	PROP. STORMWATER MANAGEMENT GALLERY (SMG)
	PROP. DRAIN MANHOLE
	PROP. CATCH BASIN
	PROP. DROP INLET STRUCTURE
	PROP. AREA DRAIN
	BOTTOM OF WALL
	PROP. CLEANOUT
	CORRUGATED POLYETHYLENE PIPE
	DUCTILE IRON
	HIGH-DENSITY POLYETHYLENE PIPE
	POLYMERIZED VINYL CHLORIDE PIPE
	STORMWATER MANAGEMENT GALERY
	TOP OF WALL

CONSTRUCTION NOTES:

- DO NOT BEGIN CONSTRUCTION UNTIL ALL LOCAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED. THE LANDOWNER AND CONTRACTOR ARE RESPONSIBLE FOR COMPLYING WITH ALL LOCAL, STATE, AND FEDERAL WETLANDS REGULATIONS, INCLUDING ANY PERMITTING AND SETBACKS REQUIREMENTS REQUIRED UNDER THESE REGULATIONS. SEE PROJECT MANUAL APPENDICES FOR COPY OF PERMITS.
- CONTRACTOR SHALL OBTAIN A "DIGSAFE" NUMBER AND NOTIFY OWNER'S AUTHORIZED REPRESENTATIVE AT LEAST 72 HOURS PRIOR TO COMMENCING CONSTRUCTION.
- SITE CONSTRUCTION SHALL COMPLY WITH THE RULES AND REGULATIONS OF THE AMERICANS WITH DISABILITIES ACT (ADA) AS PUBLISHED IN THE FEDERAL REGISTER, VOL. 56, NO. 144, DATED JULY 26, 1991.
- COORDINATE ALL WORK WITHIN TEN (10') FEET OF PROPOSED BUILDINGS WITH BUILDING CONTRACTOR AND ARCHITECTURAL DRAWINGS.
- CONTRACTOR SHALL REMOVE AND DISPOSE OF EXISTING STRUCTURES, BITUMINOUS CONCRETE, DEBRIS, AND CONSTRUCTION WASTE PRODUCTS WHICH ARE NOT AUTHORIZED, TO BE USED AS PART OF CONSTRUCTION. DISPOSE OF EXCESS MATERIALS OFF-SITE IN ACCORDANCE WITH NH DEPARTMENT OF ENVIRONMENTAL SERVICES REQUIREMENTS.
- CLEAN AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAWCUT LINE WITH RS-1 IMMEDIATELY PRIOR TO PLACING NEW BITUMINOUS CONCRETE.
- STRIP PARKING AND DRIVES AS SHOWN INCLUDING PARKING SPACES. ALL MARKINGS TO BE CONSTRUCTED USING WHITE TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248, TYPE F.
- ALL PAVEMENT MARKINGS AND SIGNS TO CONFORM TO ADA REQUIREMENTS AND "MANUAL ON UNIFORM TRAFFIC DEVICES" AND "STANDARD ALPHABETS OF HIGHWAY SIGNS AND PAVEMENT MARKINGS" LATEST EDITIONS.
- UPON COMPLETION OF CONSTRUCTION, THE DRAINAGE INFRASTRUCTURE SHALL BE CLEANED OF ALL DEBRIS AND SEDIMENT.
- PROTECTION OF SUBGRADE: THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN STABLE, DEWATERED SUBGRADES FOR FOUNDATIONS, PAVEMENT AREAS, UTILITY TRENCHES, AND OTHER AREAS DURING CONSTRUCTION. SUBGRADE DISTURBANCE MAY BE INFLUENCED BY EXCAVATION METHODS, MOISTURE, PRECIPITATION, GROUNDWATER CONTROL, AND CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PREVENT SUBGRADE DISTURBANCE. SUCH PRECAUTIONS MAY INCLUDE DIVERTING STORMWATER RUNOFF AWAY FROM CONSTRUCTION AREAS, REDUCING TRAFFIC IN SENSITIVE AREAS, AND MAINTAINING AN EFFECTIVE DEWATERING PROGRAM. SOILS EXHIBITING HEAVING OR INSTABILITY SHALL BE OVER EXCAVATED TO MORE COMPETENT BEARING SOIL AND REPLACED WITH FREE DRAINING STRUCTURAL FILL.
- IF THE EARTHWORK IS PERFORMED DURING FREEZING WEATHER, EXPOSED SUBGRADES ARE SUSCEPTIBLE TO FROST. NO FILL OR UTILITIES SHALL BE PLACED ON FROZEN GROUND. THIS WILL LIKELY REQUIRE REMOVAL OF A FROZEN SOIL CRUST AT THE COMMENCEMENT OF EACH DAY'S OPERATION. THE FINAL SUBGRADE ELEVATION WOULD ALSO REQUIRE AN APPROPRIATE DEGREE OF INSULATION AGAINST FREEZING.
- THE PROJECT AREA IS OUTSIDE THE 100-YEAR FLOOD ZONE. EXCAVATED MATERIAL NOT USED AS FILL MATERIAL ON SITE, SHALL ONLY BE PLACED IN UPLANDS AREA OUTSIDE OF THE 100 YEAR FLOOD ZONE.
- PLACEMENT OF BORROW MATERIALS SHALL BE PERFORMED IN A MANNER THAT PREVENTS LONG TERM DIFFERENTIAL SETTLEMENT. EXCESSIVELY WET MATERIALS SHALL BE STOCKPILED AND ALLOWED TO DRAIN BEFORE PLACEMENT. FROZEN MATERIAL SHALL NOT BE USED FOR CONSTRUCTION. VOIDS BETWEEN STONES AND CLUMPS OF MATERIAL SHALL BE FILLED WITH FINE MATERIALS.
- ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE SIX (6") INCHES OF LOAM, LIMESTONE, FERTILIZER, SEED, MULCH, AND APPROPRIATE SOIL STABILIZATION TECHNIQUES.
- CONTRACTOR TO ESTABLISH AND MAINTAIN TEMPORARY BENCHMARKS (TBMS) AND PERFORM CONSTRUCTION SURVEY LAYOUT.
- THE LOCATION OF EXISTING UNDERGROUND UTILITIES IS APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE ENGINEER, SURVEYOR, OR OWNER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR DAMAGE TO EXISTING UTILITIES, AND RELOCATE EXISTING UTILITIES AT NO EXTRA COST TO THE OWNER.
- CONTRACTOR SHALL MAINTAIN AND PROVIDE RECORD DRAWINGS TO RIVERWOODS AND TO THE TOWN OF DURHAM.
- CONTRACTOR SHALL CONTROL DUST BY SPRAYING WATER, SWEEPING PAVED SURFACES AND VEGETATION AND/OR MULCHING STOCKPILES.
- ALL OUTSIDE CONSTRUCTION ACTIVITY IS RESTRICTED TO THE HOURS OF 7AM TO 6PM MONDAY THROUGH FRIDAY AND 9AM TO 6PM SATURDAY. ACTIVITY OUTSIDE OF THESE HOURS FOR SPECIAL SITUATIONS MAY BE APPROVED BY THE BUILDING OFFICIAL IN CONSULTATION WITH OTHER TOWN STAFF.
- FILL SPACED WITHIN 3 FEET OF THE OUTSIDE OF FOUNDATION WALLS SHALL CONSIST OF STRUCTURAL FILL, UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
- ALL ENTRANCE SLABS AND SIDEWALKS WITHIN 5 FEET OF THE BUILDING SHALL HAVE 4 FEET DEPTH OF STRUCTURAL FILL.
- IT IS THE APPLICANT'S, SITE CONTRACTOR'S, AND BUILDING CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL REQUIREMENTS TO THIS SITE PLAN APPROVAL. PLEASE REVIEW THESE PLANS AND THE PLANNING BOARD NOTICE OF DECISION CAREFULLY. CONTACT THE DURHAM PLANNING DEPARTMENT AT (603) 868-8064 WITH ANY QUESTIONS OF CONCERNS.
- BEST MANAGEMENT PRACTICES SHALL BE FOLLOWED FOR THE PROTECTION OF EXISTING TREES AND VEGETATION THAT TO BE PRESERVED. SEE APPENDIX A - RECOMMENDED LANDSCAPING MEASURES IN ARTICLE 5 IN DURHAM'S SITE PLAN REGULATIONS.
- STORM DRAIN INLET PROTECTION DEVICES SHALL BE INSTALL AT EACH CATCH BASIN, DROP INLET OR AREA DRAIN UPON INSTALLATION OF STRUCTURE.

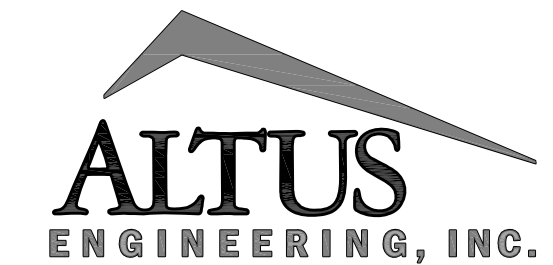
GRADING NOTES:

- WHERE PROPOSED GRADES MEET EXISTING GRADES, CONTRACTOR SHALL BLEND GRADES TO PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING AND NEW WORK. PONDING AT TRANSITION AREAS WILL NOT BE ACCEPTED. ABRUPT RIDGES AT TOPS AND BOTTOM WILL NOT BE ACCEPTED.
- CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM ALL BUILDING FOUNDATIONS, STRUCTURES AND PLANTING BEDS.
- MAXIMUM SLOPE IN DISTURBED AREAS SHALL BE NO STEEPER THAN 3:1 (H:V), UNLESS OTHERWISE NOTED. WHERE SLOPES IN DISTURBED AREAS ARE STEEPER THAN 3:1, CONTRACTOR SHALL PROVIDE CURLEX II EROSION CONTROL BLANKET FROM AMERICAN EXCELSIOR COMPANY (800) 777-7645 OR APPROVED EQUAL UNLESS OTHERWISE NOTED.
- CONTRACTOR SHALL ADJUST UTILITY ELEMENTS MEANT TO BE FLUSH WITH GRADE (CLEANOUTS, UTILITY MANHOLES, CATCH BASINS, INLETS, ETC.) THAT IS AFFECTED BY SITE WORK OR GRADE CHANGES, WHETHER SPECIFICALLY NOTED ON PLANS OR NOT.
- CROSS SLOPES AT ALL WALKS SHALL BE PITCHED TO DRAIN 1 1/2% MINIMUM 2% MAXIMUM.
- PITCH ALL WALKS AND PATIOS AWAY FROM BUILDINGS AT 1-1/2% MINIMUM; PITCH WITHIN 5 FEET OF STAIRS OR DOORS SHALL NOT EXCEED 2%.
- CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE FREE OF LOW SPOTS AND PONDING AREAS.
- ALL UNSUITABLE MATERIALS AND SURPLUS MATERIALS WHICH CAN NOT BE APPROPRIATELY WASTED ON SITE SHALL BE REMOVED AT NO ADDITIONAL COST TO THE OWNER.
- THE GRADING ON THE PLANS SHOWS THE GENERAL INTENT AND DIRECTION OF THE STORMWATER FLOW. CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY FIELD CONDITIONS THAT WILL IMPACT THE GRADING DESIGN SHOWN ON THIS PLAN FOR RESOLUTION.
- SAWCUT AND REMOVE EXISTING PAVEMENT ONE FOOT OFF PROPOSED EDGE OF PAVEMENT OR CURB LINE IN ALL AREAS WHERE NEW PAVEMENT OR CURBING ABUTS EXISTING PAVEMENT.

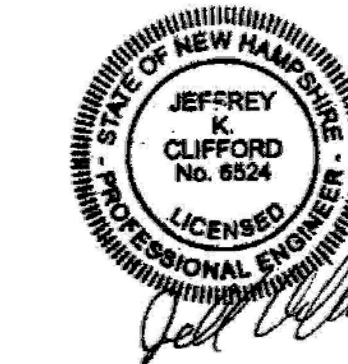
UTILITY NOTES:

- COORDINATE UTILITY WORK WITH UTILITY COMPANIES.
- ALL ELECTRIC, CABLE, AND TELECOMMUNICATION SERVICES AND CONDUITS SHALL BE LOCATED UNDERGROUND WHERE SHOWN. UNDERGROUND UTILITIES INSTALLATIONS SHALL MEET THE MINIMUM REQUIREMENTS OF TOWN OF DURHAM AND UTILITY COMPANIES. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING IN CABLES.
- CONTRACTOR SHALL VERIFY THE EXACT LOCATION & ELEVATIONS OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. ANY DISCREPANCIES BETWEEN FIELD AND PLAN SHALL BE IMMEDIATELY REPORTED TO ENGINEER.
- ALL SEWER, DRAINAGE AND WATER INSTALLATIONS SHALL CONFORM TO THE MINIMUM REQUIREMENTS OF THE DURHAM PUBLIC WORKS DEPARTMENT AND THE NHDES. THE MORE STRINGENT SPECIFICATION SHALL GOVERN.
- SEE ELECTRICAL SITE PLAN FOR TYPICAL ELECTRIC/COMMUNICATION CONDUIT TRENCH SECTION.
- VERIFY LOCATION OF UTILITY BOXES WITH OWNER AND UTILITY COMPANIES.
- ALL UTILITY STRUCTURES SHALL BE SET FLUSH WITH PROPOSED GRADE.

FINAL APPROVAL BY DURHAM PLANNING BOARD.
 CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
 CERTIFIED _____
 DATE _____



133 COURT STREET PORTSMOUTH, NH 03801
 VOICE: (603) 433-2335
 FAX: (603) 433-4194



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ISSUE DATE: **DECEMBER 5, 2017**

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	JKC	7/19/17
1	PB RE-SUBMISSION	JKC	10/16/17
2	PB RE-SUBMISSION	JKC	12/05/17

DRAWN BY: _____ RMB
 APPROVED BY: _____ JKC
 DRAWING FILE: 4836SITE.DWG

SCALE: **1" = 50'**

LAND OWNER - SUBJECT PARCEL:

ROCKINGHAM PROPERTIES 1, LTD
 P.O. BOX 423
 BELMONT, MA 02178

APPLICANT:
THE RIVERWOODS GROUP
 7 RIVERWOODS DRIVE
 EXETER, NH 03833

PROJECT:
RIVERWOODS DURHAM
 STONE QUARRY DRIVE
 DURHAM, NH

TITLE:
GENERAL NOTES & LEGEND

SHEET NUMBER:
G - 1.1

MAP UNIT NO.	SOIL TAXONOMIC NAME	SLOPE	HYDROLOGICAL SOIL GROUP
134A VP	Maybid	0-8%	D
174B/RK	Hollis Charlton Complex	0-8%	B, C, and D
174C/RK	Hollis Charlton Complex	8-15%	B, C, and D
174D/RK	Hollis Charlton Complex	15-25%	B, C, and D
176B/RK	Hollis Charlton Rock Outcrop Complex	0-8%	B, C, and D
176C/RK	Hollis Charlton Rock Outcrop Complex	8-15%	B, C, and D
176D/RK	Hollis Charlton Rock Outcrop Complex	15-25%	B, C, and D
29B	Woodbridge	0-8%	C
29C	Woodbridge	8-15%	C
29D	Woodbridge	15-25%	C
32B	Boxford	0-8%	D
32C	Boxford	8-15%	D
32D	Boxford	15-25%	D
32E	Boxford	25-50%	D
33A P	Scitico	0-8%	C
38B	Eldridge	0-8%	C
38C	Eldridge	8-15%	C
38D	Eldridge	15-25%	C
299A/aaaa	Udorthents, Smoothed	0-8%	A
299D/aaaa	Udorthents	15-25%	A
299B/dfcc	Udorthents Smoothed	0-8%	C
299D/dfcc	Udorthents Smoothed	15-25%	C
600A/efcc	Endoaquents, loamy	0-3%	D

NOTE:
 1. SITE SPECIFIC SOIL MAP WAS PREPARED BY JAMES H. LONG OF GZA GEONVIRONMENTAL, INC. ON APRIL 24 & 26, 2017 USING SSSNE SPECIAL PUBLICATION NO.3 "SITE SPECIFIC SOIL MAPPING STANDARDS FOR NEW HAMPSHIRE AND VERMONT VERSION 4, DATED FEBRUARY 2011"
 2. WETLAND DELINEATED BY JAMES H. LONG AND SURVEYED BY ATLANTIC SURVEY COMPANY IN 2000. JAMES H. LONG VERIFIED WETLAND LIMITS APRIL 2017.

GZA GeoEnvironmental, Inc.
 5 Commerce Park North
 Bedford, New Hampshire 03110
 Tel. (603) 232-8739

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DRAWN BY: RMB
 APPROVED BY: JKJ
 DRAWING FILE: 4836SITE.DWG

SCALE: 1" = 50'

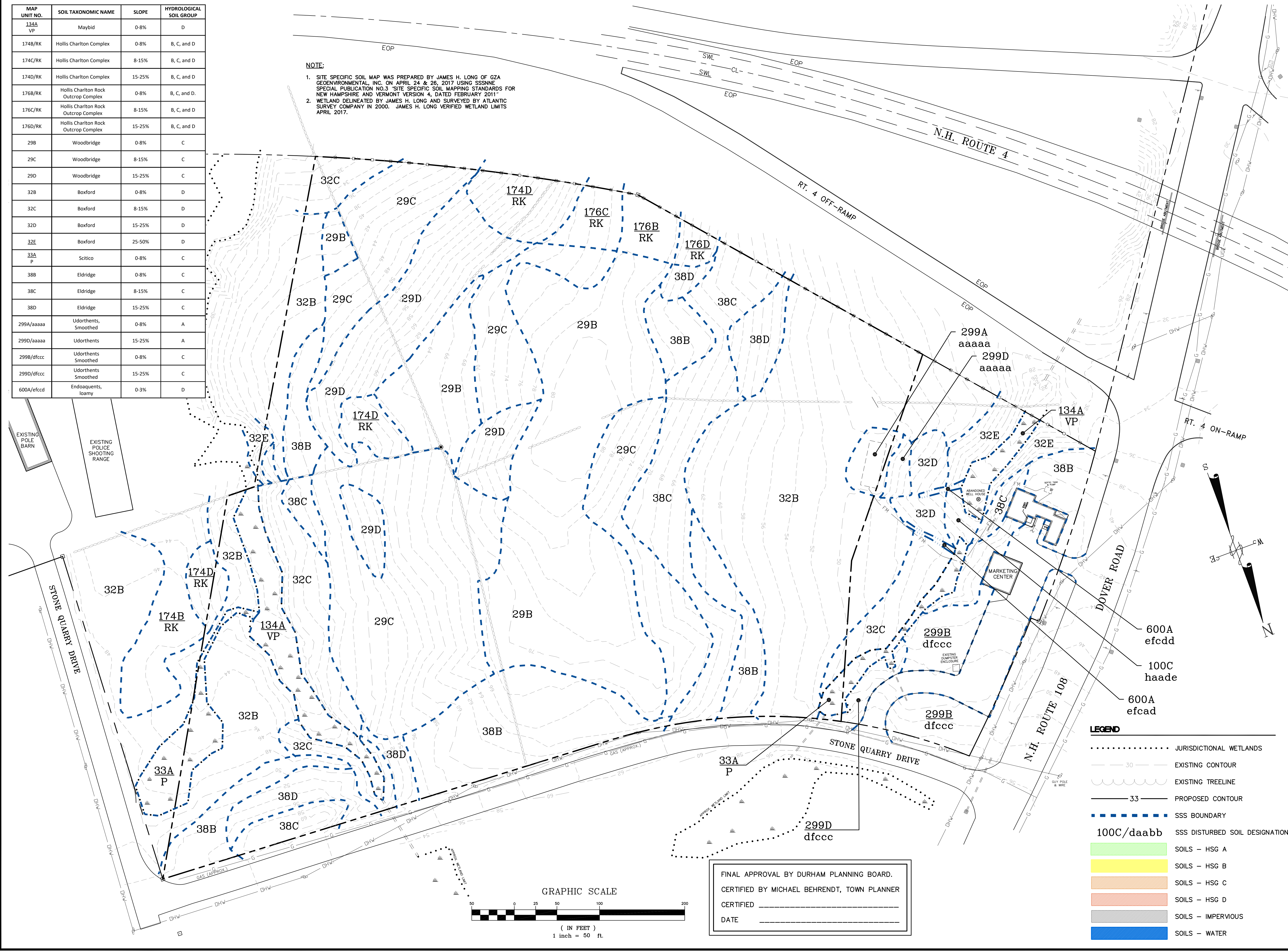
LAND OWNER - SUBJECT PARCEL:
ROCKINGHAM PROPERTIES 1, LTD
 P.O. BOX 423
 BELMONT, MA 02178

APPLICANT:
THE RIVERWOODS GROUP
 7 RIVERWOODS DRIVE
 EXETER, NH 03833

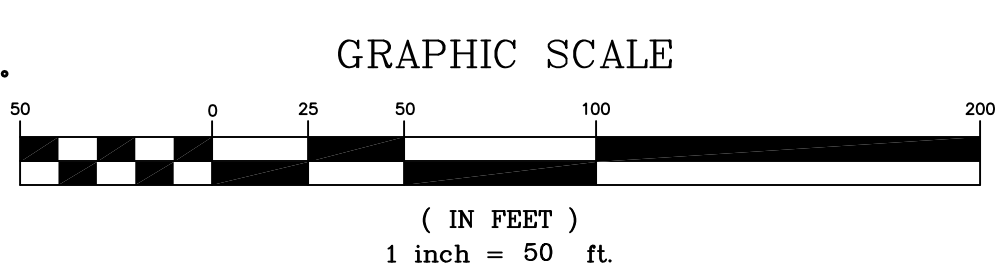
PROJECT:
RIVERWOODS DURHAM
 STONE QUARRY DRIVE
 DURHAM, NH

TITLE:
SITE SPECIFIC SOILS MAP

SHEET NUMBER:
G - 2.0



FINAL APPROVAL BY DURHAM PLANNING BOARD.
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SCALE: **1" = 50'**

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P.O. BOX 423
BELMONT, MA 02178

APPLICANT:
THE RIVERWOODS GROUP
7 RIVERWOODS DRIVE
EXETER, NH 03833

PROJECT:
RIVERWOODS DURHAM
STONE QUARRY DRIVE
DURHAM, NH

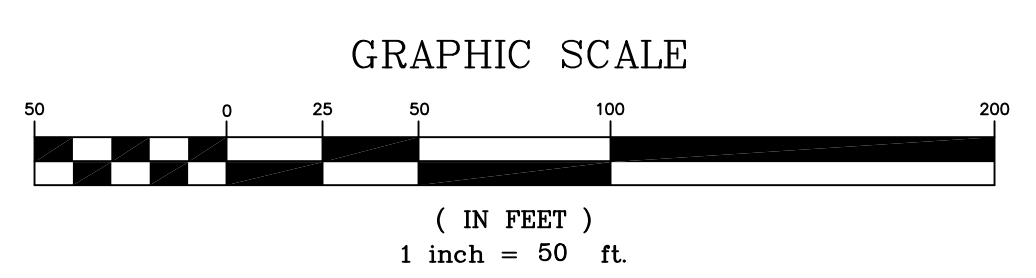
TITLE:
GEOTECHNICAL INVESTIGATION PLAN

SHEET NUMBER:
G - 2.1



- LEGEND:**
- TP #17 TEST PIT
 - B-21 SOIL BORING
 - LP-2 LEDGE PROBE

NOTE:
REFER TO PRELIMINARY GEOTECHNICAL EVALUATION, RW&A PROJECT NO. 1055-010, DATED MAY 30, 2017, PREPARED BY R.W. GILLESPIE & ASSOCIATES, INC. FOR DETAILS.



FINAL APPROVAL BY DURHAM PLANNING BOARD.
CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
CERTIFIED _____
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BEST MANAGEMENT PRACTICES FOR BLASTING

Purpose. The purpose of best management practices for blasting is to minimize the potential for groundwater contamination, to ensure that the groundwater can be used for existing and future drinking water supply sources.

Applicability. This part shall apply to all projects for which an AOT permit is required that will involve blasting of bedrock.

Loading Practices. The following blast hole loading practices shall be implemented:

- (a) The driller shall maintain drilling logs to document:
 - (1) The depths and lengths of voids, cavities, and fault zones or other weak zones encountered; and
 - (2) Groundwater conditions;
- (b) The driller shall communicate the contents of the drilling logs directly to the blaster;
- (c) Explosive products shall be managed on-site such that they are:
 - (1) Used in the borehole;
 - (2) Returned to the delivery vehicle; or
 - (3) Placed in secure containers for off-site disposal;
- (d) Spillage around the borehole shall be:
 - (1) Placed in the borehole; or
 - (2) Cleaned up and returned to an appropriate vehicle for handling or placement in secured containers for off-site disposal;
- (e) Loaded explosives shall be detonated as soon as possible and not left in the blast holes overnight, unless weather or other safety concerns reasonably dictate that detonation should be postponed;
- (f) Loading equipment shall be cleaned in an area where wastewater can be properly contained and handled in a manner that prevents release of contaminants to the environment; and
- (g) Explosives shall be loaded in accordance with industry standard practices for priming, stemming, decking and column rise to maintain good continuity in the column load to promote complete detonation.

Explosive Selection. Explosive products shall be selected that are:

- (a) Appropriate for site conditions and safe blast execution; and
- (b) Have the appropriate water resistance for the site conditions present.

Prevention of Misfires. Industry-standard practices shall be implemented to prevent misfires.

Muck and Rock Management.

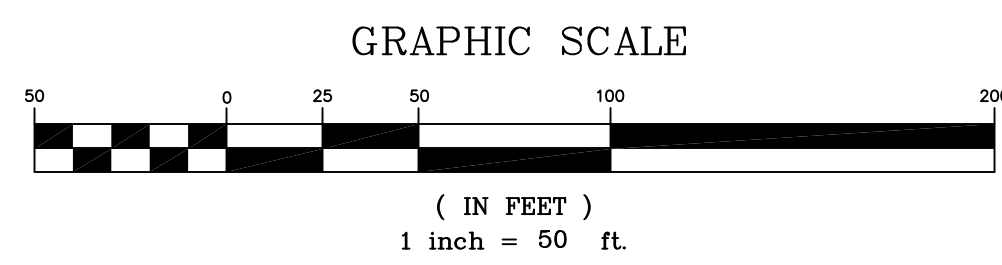
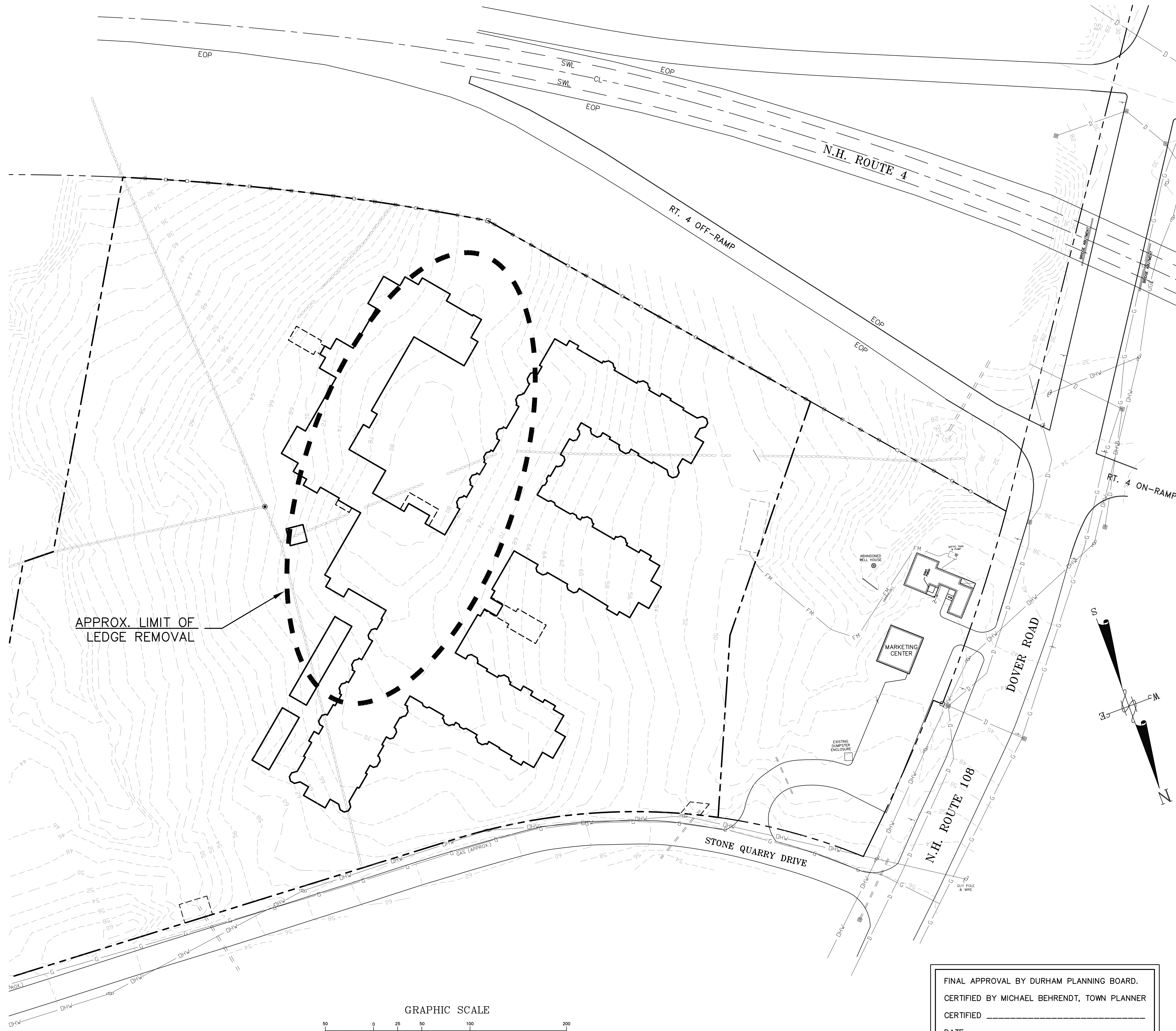
- (a) The following definitions apply:
 - (1) "Blasted material" means all of the earth material loosened as a result of the blasting;
 - (2) "Muck" means the blasted material remaining after the rocks have been removed; and
 - (3) "Rocks" means the larger pieces of blasted material that are separated from the muck for use elsewhere, including for feedstock of a rock crushing operation.
- (b) Muck shall be removed from the blast area as soon as reasonably possible.
- (c) Rocks shall be managed so as to prevent water supply wells or surface waters from being contaminated by runoff.

Spill Prevention Measures and Spill Mitigation.

- (a) Fuel and other regulated substances shall be managed as required by Best Management Practices for Groundwater Protection, Env-Wq 401.04.
- (b) Personnel working at the blast site shall be trained in how to respond to a spill of the regulated substances being used at the site.

Fueling and Maintenance of Construction Equipment.

- (a) If any construction equipment, including but not limited to earthmoving, excavation, and boring equipment, will be fueled from a tank truck or other container that is moved around the site, the following shall apply:
 - (1) Portable containment equipment that is sized to contain the most likely volume of fuel to be spilled during a fuel transfer shall be used, where the most likely volume to be spilled is determined based on the fuel transfer rate, the amount of fuel being transferred, the distance between the hose nozzle and pump shut off switch, and the response time of personnel and equipment available at the facility;
 - (2) The containment equipment shall be positioned to catch any fuel spills due to overfilling the equipment and any other spills that might occur at or near the fuel filler port to that equipment;
 - (3) The type of containment equipment used and its positioning and use shall account for all of the drip points associated with the fuel filling port and the hose from the fuel delivery truck; and
 - (4) Personnel shall not leave the immediate area while fuel is being transferred, to ensure that any spills will be of limited volume.
- (b) If the site will have a fixed location for fueling construction equipment, the following shall apply:
 - (1) All fuel containers, including but not limited to skid-mounted tanks, drums, and five gallon cans, shall have secondary containment that:
 - a. Is capable of containing 110% of the volume of the largest fuel storage container; and
 - b. Has an impervious floor;
 - (2) Secondary containment for tanks may comprise a metal, plastic, polymer or precast concrete vault providing 110% of the volume of the largest fuel storage container;
 - (3) For fuel containers, secondary containment may comprise containment pallets;
 - (4) The area where fuel is transferred shall be a flat, impervious area that:
 - a. Is adjacent to the fuel container(s); and
 - b. Extends beyond the full reach, or length, of the fuel hose; and
 - (5) Secondary containment areas may be in the form of a basin that is:
 - a. Sloped down to a central low point or bermed along the perimeter;
 - b. Lined with a continuous sheet of 20 mil or thicker polymer material or appropriate geomembrane liner; and
 - c. Backfilled with at least 6 inches of sand.



FINAL APPROVAL BY DURHAM PLANNING BOARD.
 CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
 CERTIFIED _____
 DATE _____

ALTUS ENGINEERING, INC.
 133 COURT STREET PORTSMOUTH, NH 03801
 VOICE: (603) 433-2335
 FAX: (603) 433-4194

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DRAWN BY: _____ RMB
 APPROVED BY: _____ JKC
 DRAWING FILE: 4836SITE.DWG

SCALE: **1" = 50'**

LAND OWNER - SUBJECT PARCEL:
ROCKINGHAM PROPERTIES 1, LTD
 P.O. BOX 423
 BELMONT, MA 02178

APPLICANT:
THE RIVERWOODS GROUP
 7 RIVERWOODS DRIVE
 EXETER, NH 03833

PROJECT:
RIVERWOODS DURHAM
 STONE QUARRY DRIVE
 DURHAM, NH

TITLE:
BLASTING PLAN - BEST MANAGEMENT PRACTICES

SHEET NUMBER:
G - 2.2

P-4836



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APPROVED BY: _____ JKJ
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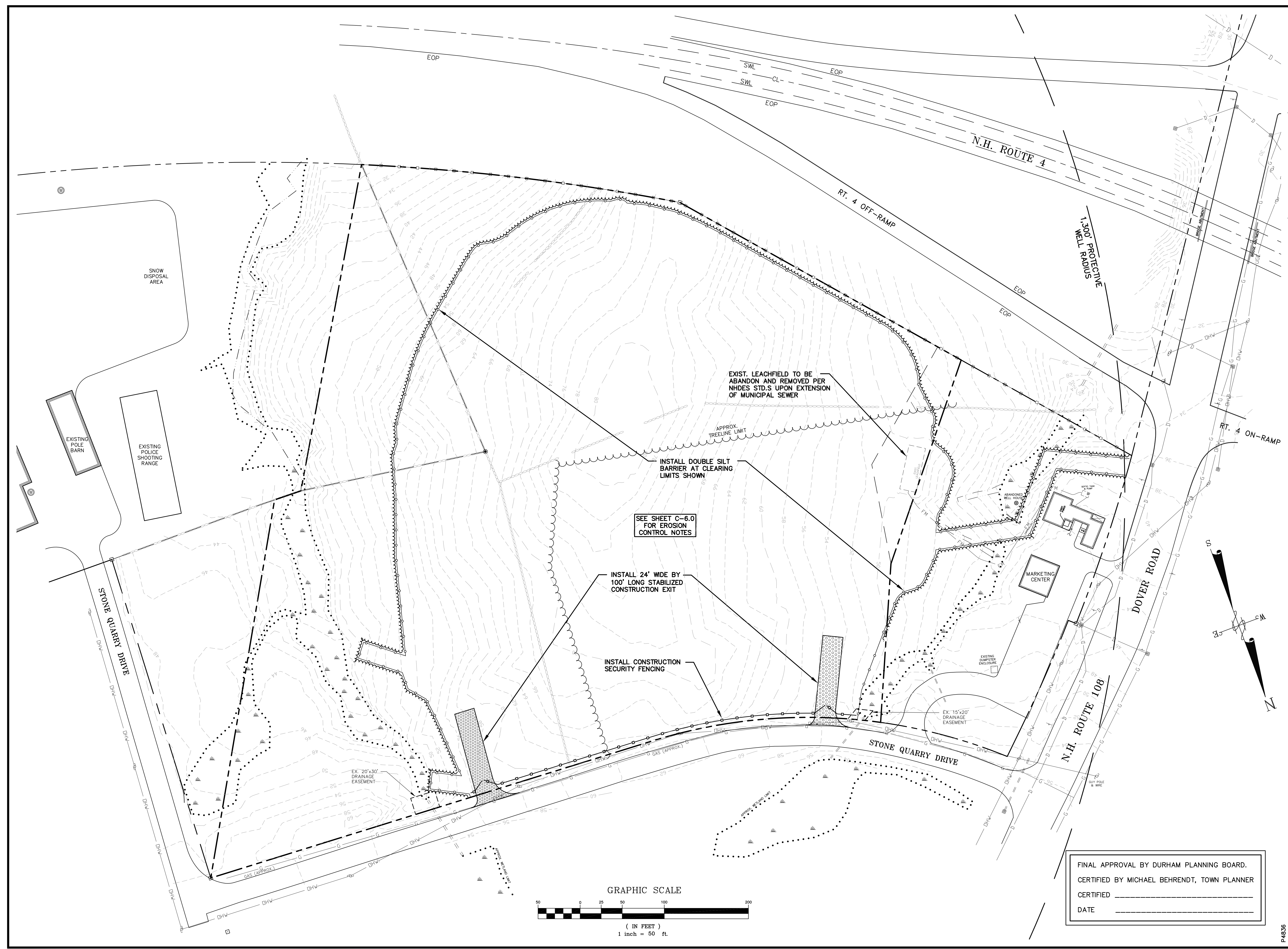
LAND OWNER - SUBJECT PARCEL:
ROCKINGHAM PROPERTIES 1, LTD
P.O. BOX 423
BELMONT, MA 02178

APPLICANT:
THE RIVERWOODS GROUP
7 RIVERWOODS DRIVE
EXETER, NH 03833

PROJECT:
RIVERWOODS DURHAM
STONE QUARRY DRIVE
DURHAM, NH

TITLE:
SITE PREPARATION PLAN

SHEET NUMBER:
C - 1.0



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DRAWN BY: _____ RMB
APPROVED BY: _____ JKJ
DRAWING FILE: 4836SITE.DWG

SCALE: 1" = 30'

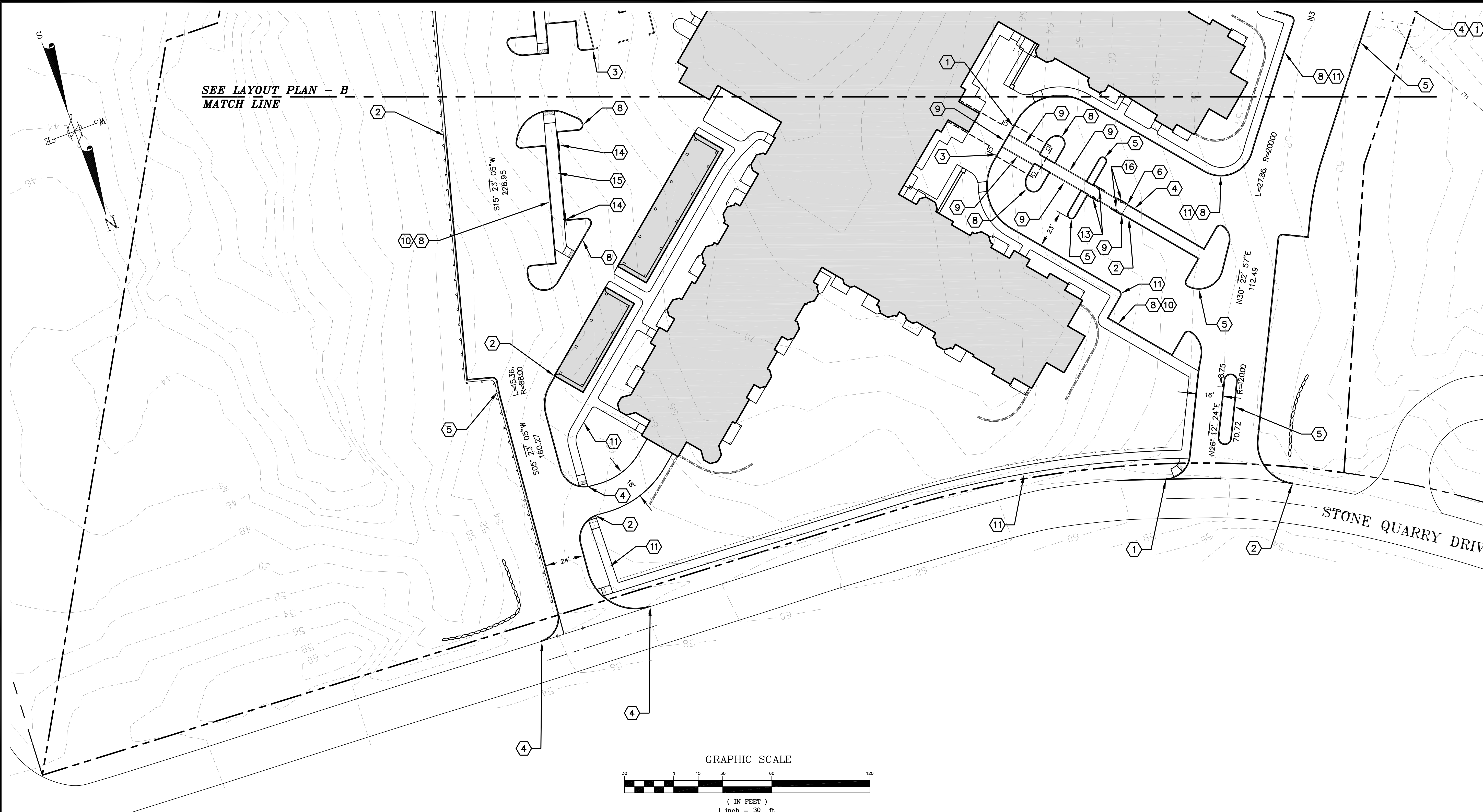
LAND OWNER - SUBJECT PARCEL:
ROCKINGHAM PROPERTIES 1, LTD
P.O. BOX 423
BELMONT, MA 02178

APPLICANT:
THE RIVERWOODS GROUP
7 RIVERWOODS DRIVE
EXETER, NH 03833

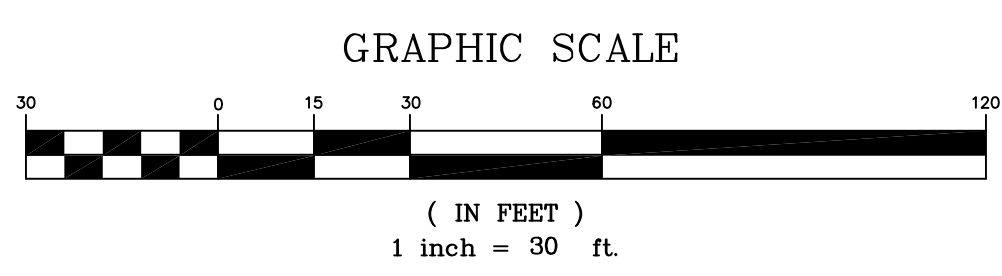
PROJECT:
RIVERWOODS DURHAM
STONE QUARRY DRIVE
DURHAM, NH

TITLE:
LAYOUT PLAN - A

SHEET NUMBER:
C - 3.0

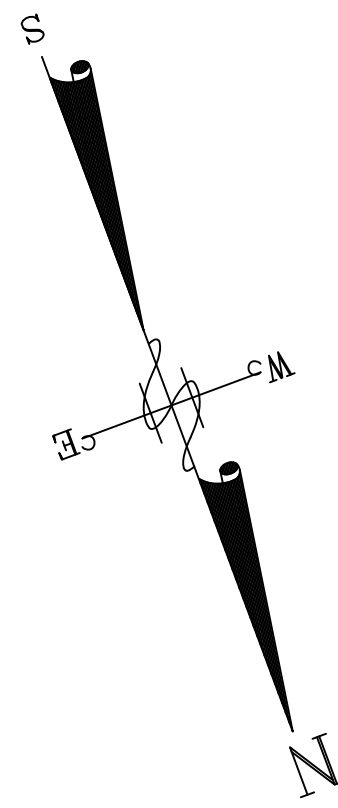


SEE LAYOUT PLAN - B
MATCH LINE



- KEY NOTES**
- ① BEGIN VERTICAL GRANITE CURB (VGC)
 - ② BEGIN SLOPE GRANITE CURB (SGC)
 - ③ END VERTICAL GRANITE CURB (VGC)
 - ④ END SLOPE GRANITE CURB (SGC)
 - ⑤ INSTALL SLOPE GRANITE CURB (SGC)
 - ⑥ BEGIN FLUSH VERTICAL GRANITE CURB
 - ⑦ END FLUSH VERTICAL GRANITE CURB
 - ⑧ INSTALL VERTICAL GRANITE CURB
 - ⑨ INSTALL FLUSH VERTICAL GRANITE CURB
 - ⑩ INSTALL 6'-WIDE SIDEWALK AT PARKING STALLS
 - ⑪ INSTALL 5'-WIDE (MIN.) SIDEWALK OR WALKWAY, TYP.
 - ⑫ INSTALL ADA SIGN (R7-8)
 - ⑬ INSTALL VAN ADA SIGN (R7-8A) ON BOLLARD
 - ⑭ INSTALL COMPACT CAR ONLY
 - ⑮ INSTALL 7'-WIDE SIDEWALK AT PARKING STALLS
 - ⑯ INSTALL VAN ADA SIGN (R7-8A) ON BOLLARD

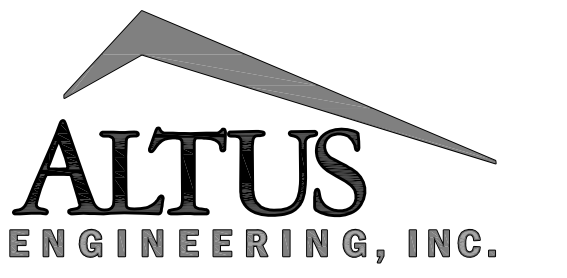
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CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
CERTIFIED _____
DATE _____



KEY NOTES

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- ② BEGIN SLOPE GRANITE CURB (SGC)
- ③ END VERTICAL GRANITE CURB (VGC)
- ④ END SLOPE GRANITE CURB (SGC)
- ⑤ INSTALL SLOPE GRANITE CURB (SGC)
- ⑥ BEGIN FLUSH VERTICAL GRANITE CURB
- ⑦ END FLUSH VERTICAL GRANITE CURB
- ⑧ INSTALL VERTICAL GRANITE CURB
- ⑨ INSTALL FLUSH VERTICAL GRANITE CURB
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DRAWN BY: _____ RMB
 APPROVED BY: _____ JKJ
 DRAWING FILE: 4836SITE.DWG

SCALE: 1" = 30'

LAND OWNER - SUBJECT PARCEL:

ROCKINGHAM PROPERTIES 1, LTD
 P.O. BOX 423
 BELMONT, MA 02178

APPLICANT:

THE RIVERWOODS GROUP
 7 RIVERWOODS DRIVE
 EXETER, NH 03833

PROJECT:

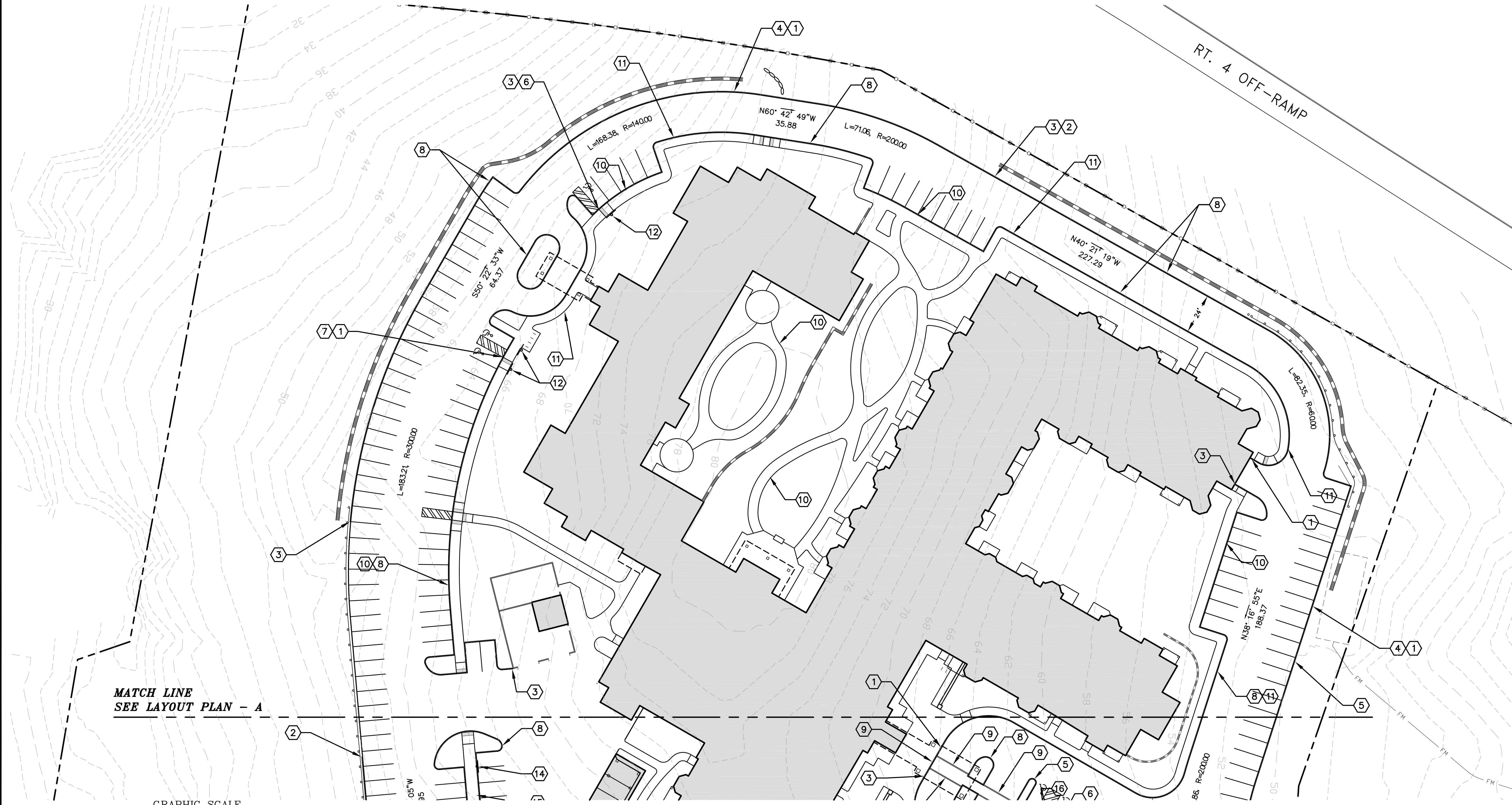
RIVERWOODS DURHAM
 STONE QUARRY DRIVE
 DURHAM, NH

TITLE:

LAYOUT PLAN - B

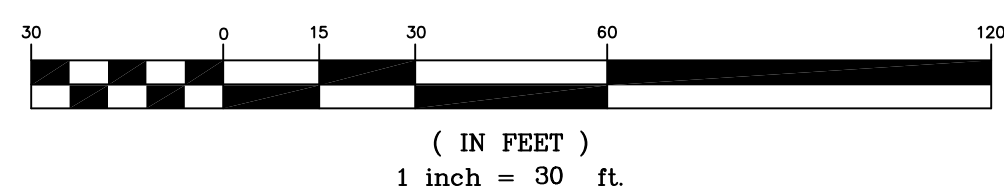
SHEET NUMBER:

C - 3.1

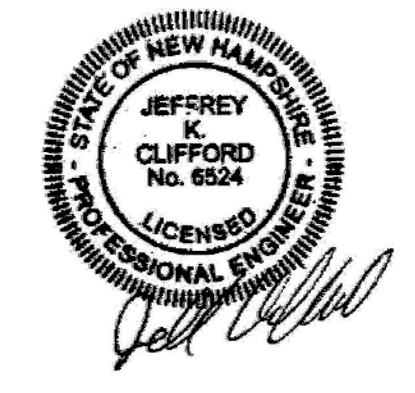


MATCH LINE
SEE LAYOUT PLAN - A

GRAPHIC SCALE



P-4836



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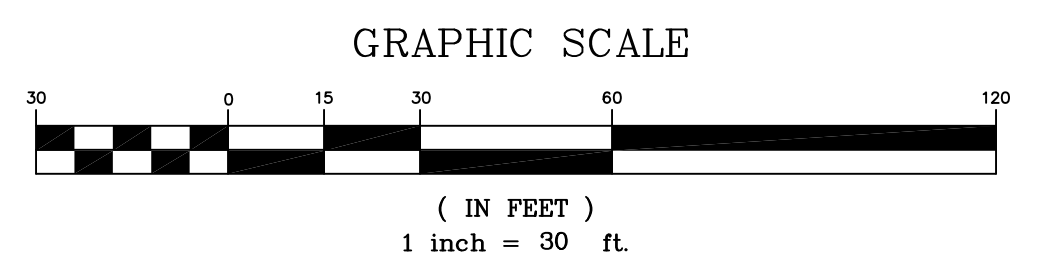
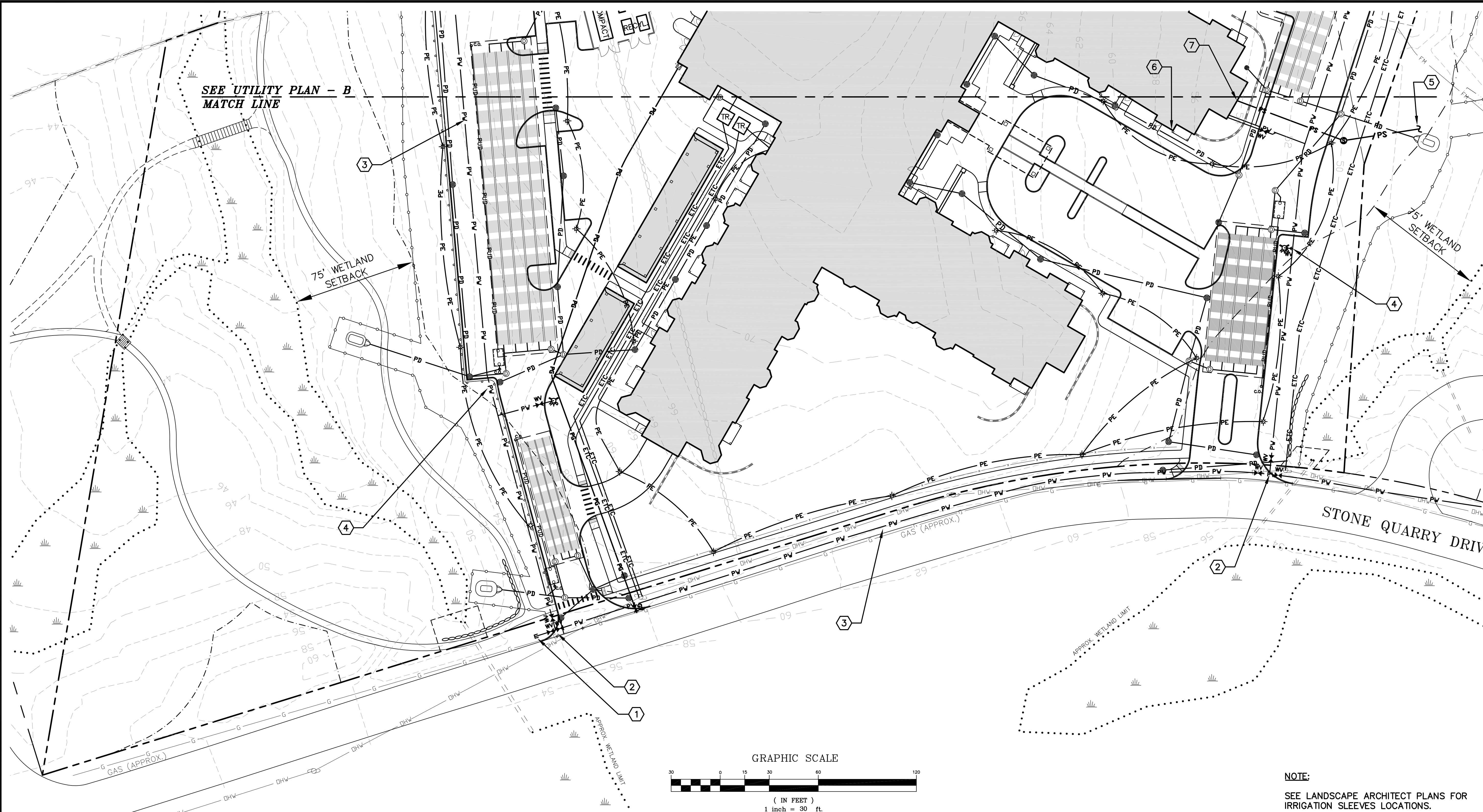
APPLICANT:
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EXETER, NH 03833

PROJECT:
RIVERWOODS DURHAM
STONE QUARRY DRIVE
DURHAM, NH

TITLE:

UTILITY PLAN - A

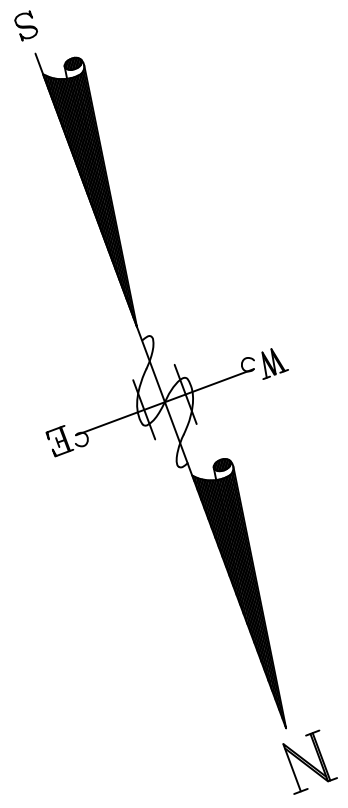
SHEET NUMBER:
C - 4.0



NOTE:
SEE LANDSCAPE ARCHITECT PLANS FOR IRRIGATION SLEEVES LOCATIONS.

FINAL APPROVAL BY DURHAM PLANNING BOARD.
CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
CERTIFIED _____
DATE _____

- KEY NOTES**
- ① INSTALL END CAP
 - ② INSTALL 8"x8"x8" TEE CONNECTION
 - ③ INSTALL 8" D.I. WATERMAIN
 - ④ INSTALL 8"x8"x6" TEE AND HYDRANT ASSEMBLY
 - ⑤ SEE SHEET C-4.2, CONCEPTUAL OFF-SITE UTILITY EXTENSION PLAN FOR CONTINUATION
 - ⑥ INSTALL SIAMESE CONNECTION
 - ⑦ INSTALL 10" SEWER SERVICE
 - ⑧ -



SEE UTILITY PLAN - B
MATCH LINE

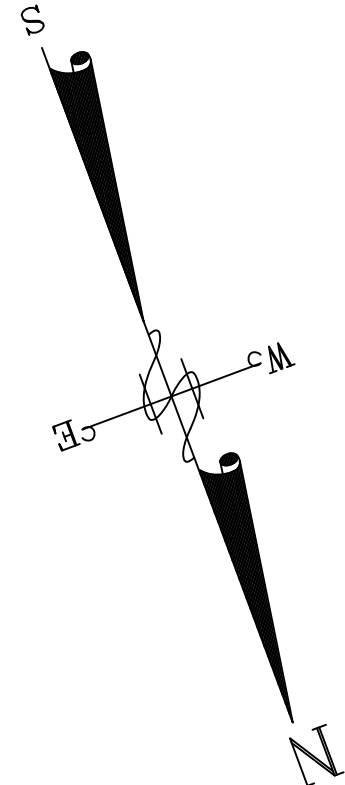
75' WETLAND
SETBACK

75' WETLAND
SETBACK

STONE QUARRY DRIV

GRAPHIC SCALE

(IN FEET)
1 inch = 30 ft.



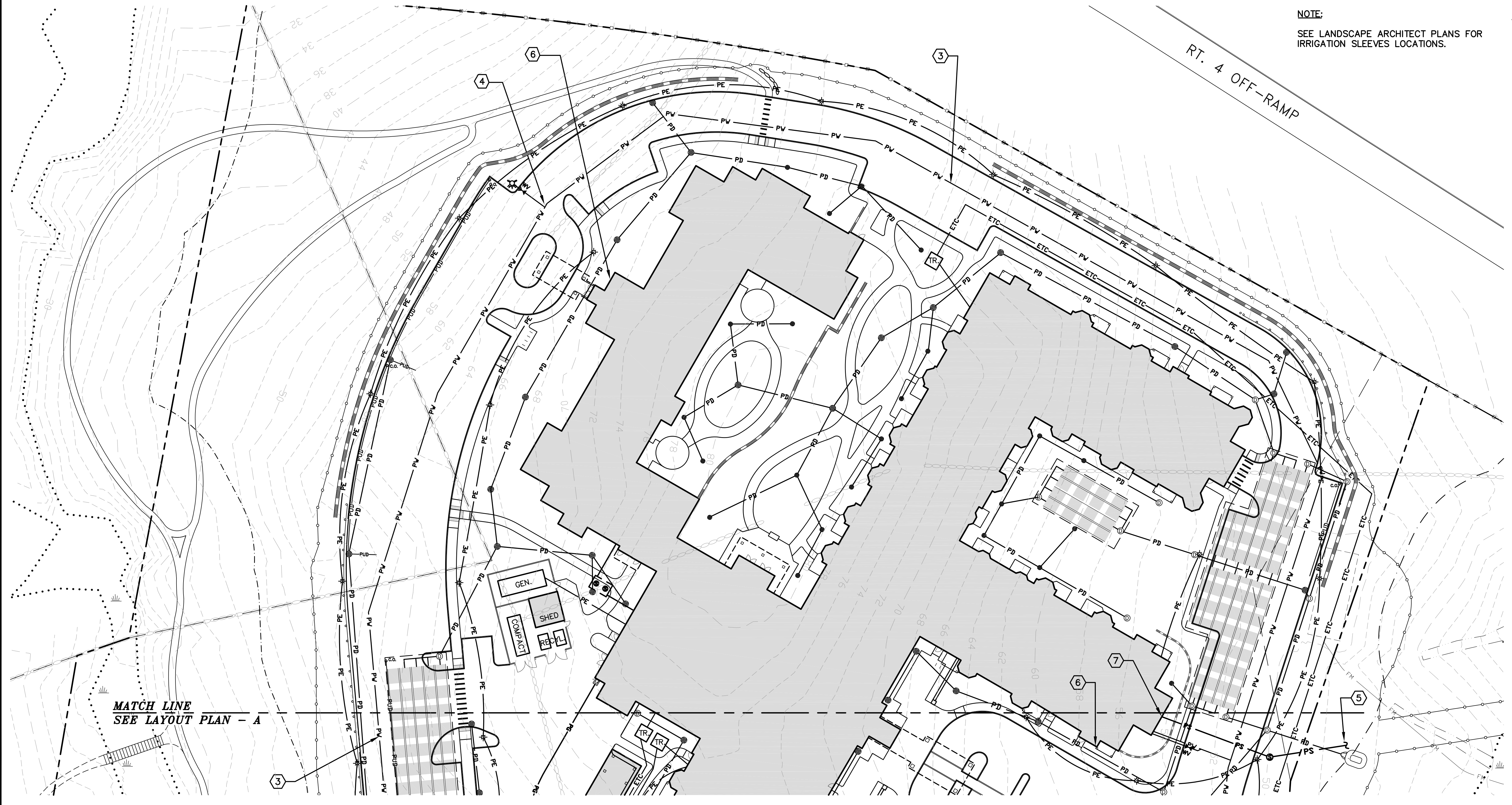
- KEY NOTES**
- ① -
 - ② -
 - ③ INSTALL 8" D.I. WATERMAIN
 - ④ INSTALL 8"x8"x6" AND HYDRANT ASSEMBLY
 - ⑤ SEE SHEETS C-4.2 & C-4.3, CONCEPTUAL OFF-SITE UTILITY EXTENSION PLAN FOR CONTINUATION
 - ⑥ INSTALL SIAMESE CONNECTION
 - ⑦ INSTALL 10" SEWER SERVICE
 - ⑧ -

FINAL APPROVAL BY DURHAM PLANNING BOARD.
 CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
 CERTIFIED _____
 DATE _____

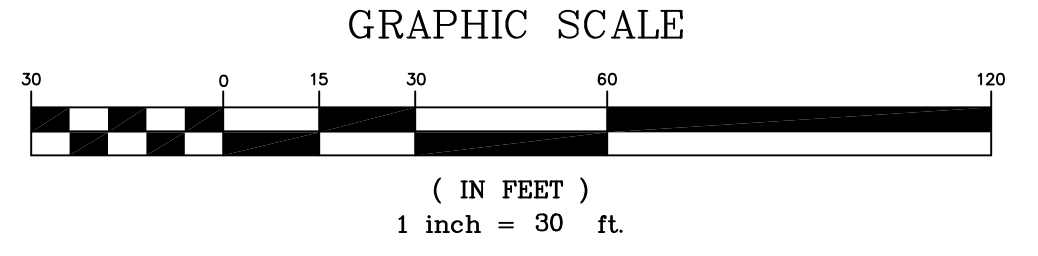
ALTUS
 ENGINEERING, INC.
 133 COURT STREET PORTSMOUTH, NH 03801
 VOICE: (603) 433-2335
 FAX: (603) 433-4194



NOTE:
 SEE LANDSCAPE ARCHITECT PLANS FOR IRRIGATION SLEEVES LOCATIONS.



MATCH LINE
 SEE LAYOUT PLAN - A



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ISSUED FOR: **APPROVAL**

ISSUE DATE: **DECEMBER 5, 2017**

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	JKC	7/19/17
1	PB RE-SUBMISSION	JKC	10/16/17
2	PB RE-SUBMISSION	JKC	12/05/17

DRAWN BY: _____ RMB
 APPROVED BY: _____ JKJ
 DRAWING FILE: 4836SITE.DWG

SCALE: **1" = 30'**

LAND OWNER - SUBJECT PARCEL:
ROCKINGHAM PROPERTIES 1, LTD
 P.O. BOX 423
 BELMONT, MA 02178

APPLICANT:
THE RIVERWOODS GROUP
 7 RIVERWOODS DRIVE
 EXETER, NH 03833

PROJECT:
RIVERWOODS DURHAM
 STONE QUARRY DRIVE
 DURHAM, NH

TITLE:
UTILITY PLAN - B

SHEET NUMBER:
C - 4.1

P4836

THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION

ISSUED FOR: **APPROVAL**

ISSUE DATE: **DECEMBER 5, 2017**

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	JKC	07/19/17
1	PB RE-SUBMISSION	JKC	10/16/17
2	PB RE-SUBMISSION	JKC	12/05/17

DRAWN BY: _____ DMM

APPROVED BY: _____ JKC

DRAWING FILE: 4836.51SEWER.DWG

SCALE: **1" = 40'**

LAND OWNER - SUBJECT PARCEL:

ROCKINGHAM PROPERTIES 1, LTD

P.O. BOX 423
BELMONT, MA 02178

APPLICANT:

THE RIVERWOODS GROUP

7 RIVERWOODS DRIVE
EXETER, NH 03833

PROJECT:

RIVERWOODS DURHAM

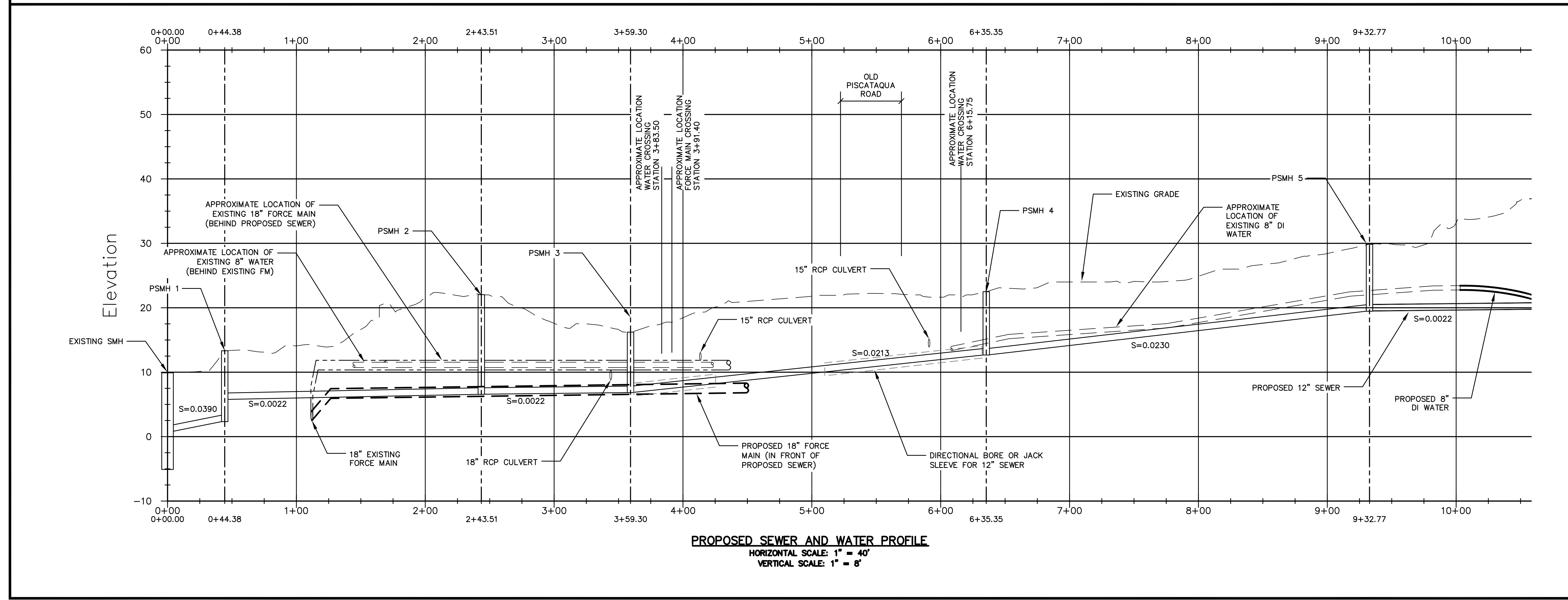
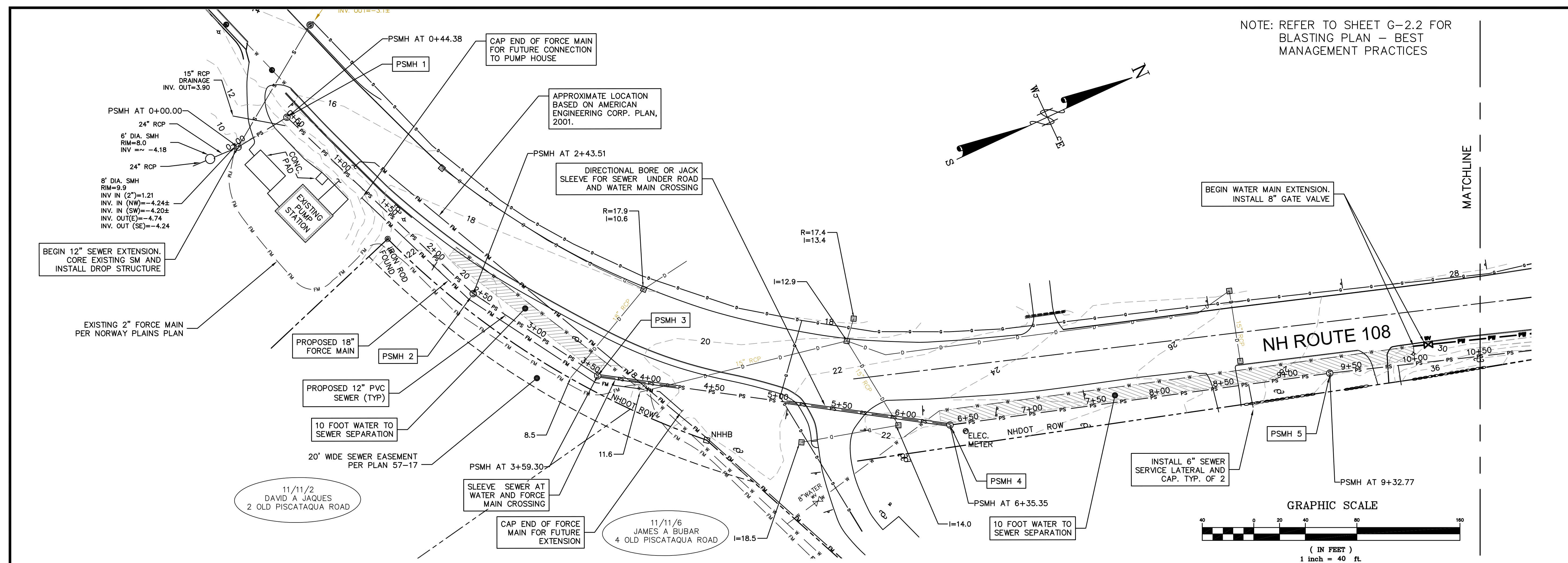
STONE QUARRY DRIVE
DURHAM, NH

TITLE:

CONCEPTUAL OFF-SITE UTILITY EXTENSION PLAN

SHEET NUMBER:

C - 4.2



P-4836.51

THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION
ISSUED FOR: APPROVAL
ISSUE DATE: DECEMBER 5, 2017

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	JKC	07/19/17
1	PB RE-SUBMISSION	JKC	10/16/17
2	PB RE-SUBMISSION	JKC	12/05/17

DRAWN BY: _____ DMM
APPROVED BY: _____ JKC
DRAWING FILE: 4836.51SEWER.DWG

SCALE: 1" = 40'

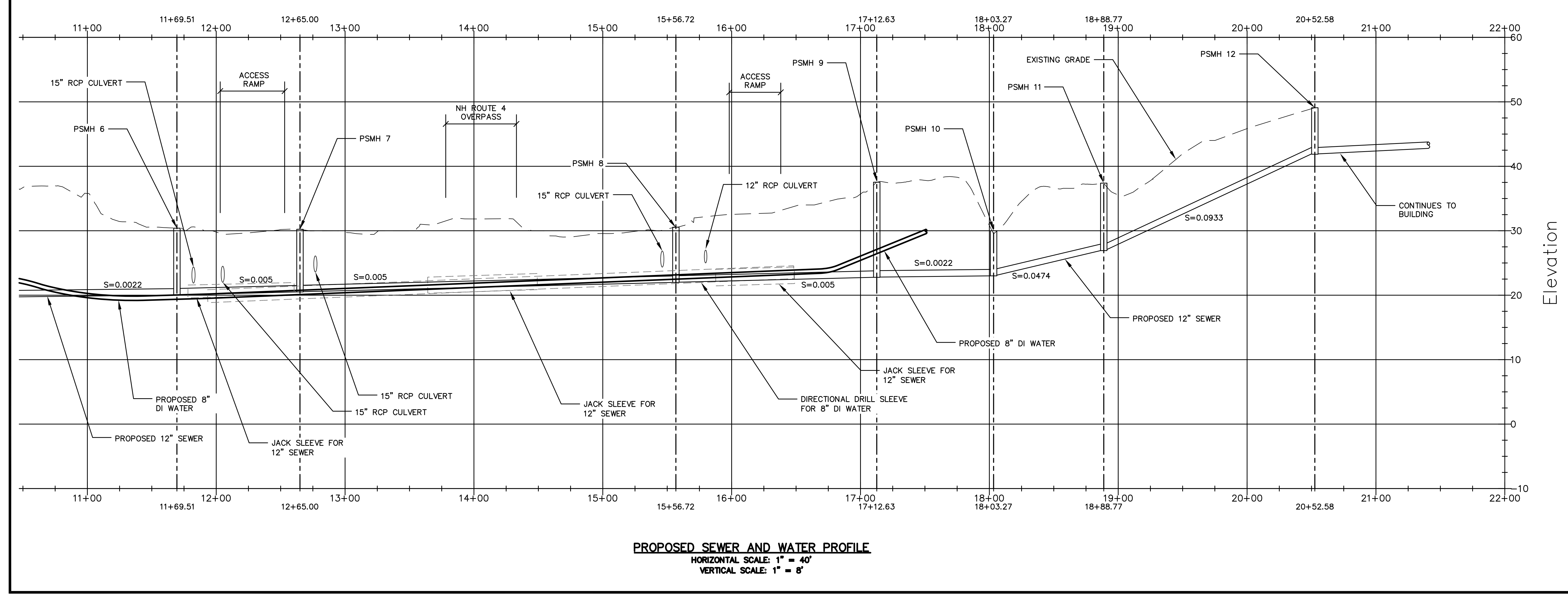
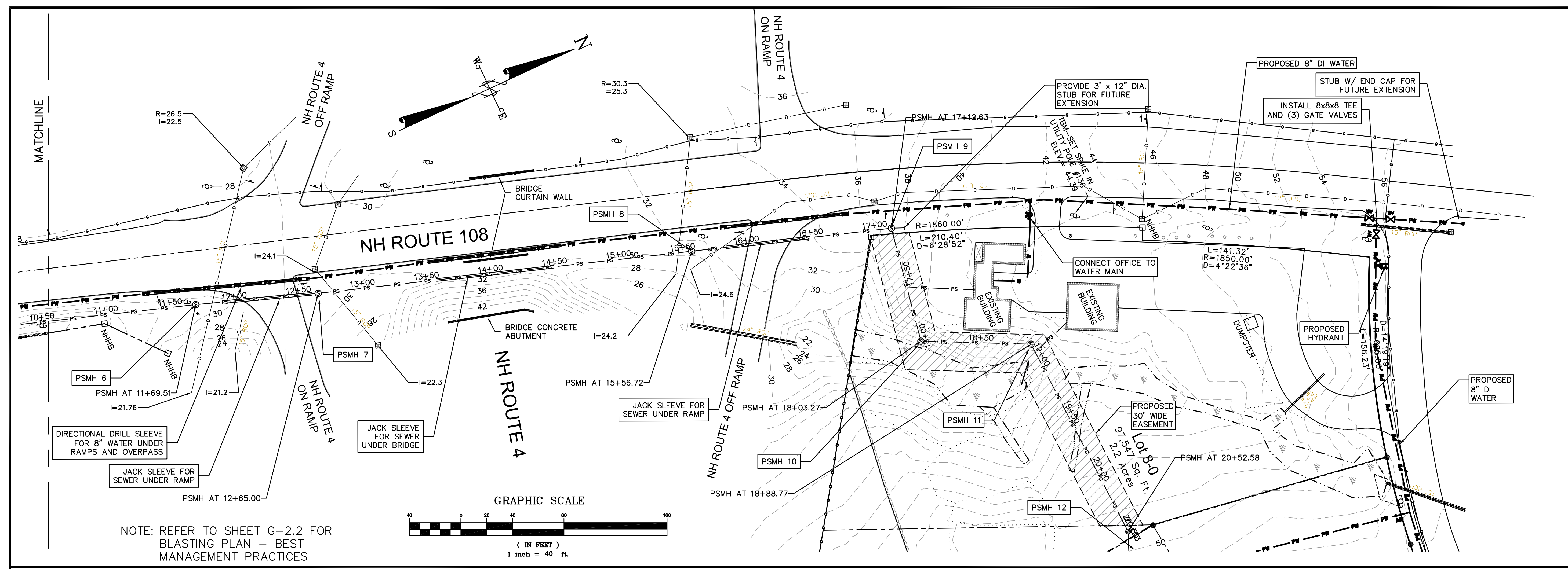
LAND OWNER - SUBJECT PARCEL:
ROCKINGHAM PROPERTIES 1, LTD
P.O. BOX 423
BELMONT, MA 02178

APPLICANT:
THE RIVERWOODS GROUP
7 RIVERWOODS DRIVE
EXETER, NH 03833

PROJECT:
RIVERWOODS DURHAM
STONE QUARRY DRIVE
DURHAM, NH

TITLE:
CONCEPTUAL OFF-SITE UTILITY EXTENSION PLAN

SHEET NUMBER:
C - 4.3



P:4836.51



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ISSUED FOR: APPROVAL

ISSUE DATE: DECEMBER 5, 2017

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	JKC	7/19/17
1	PB RE-SUBMISSION	JKC	10/16/17
2	PB RE-SUBMISSION	JKC	12/05/17

DRAWN BY: RMB
APPROVED BY: JKJ
DRAWING FILE: 4836SITE.DWG

SCALE: 1" = 50'

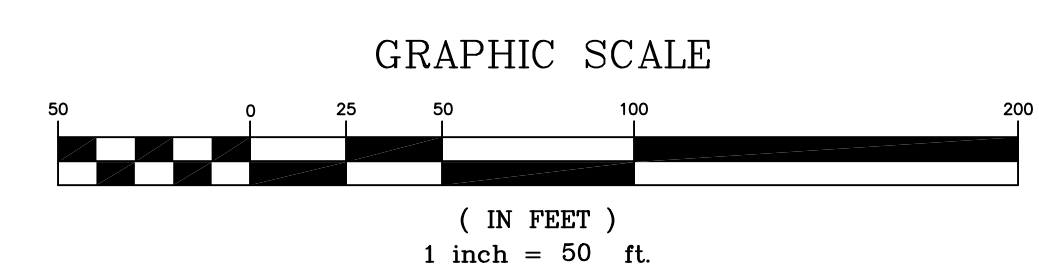
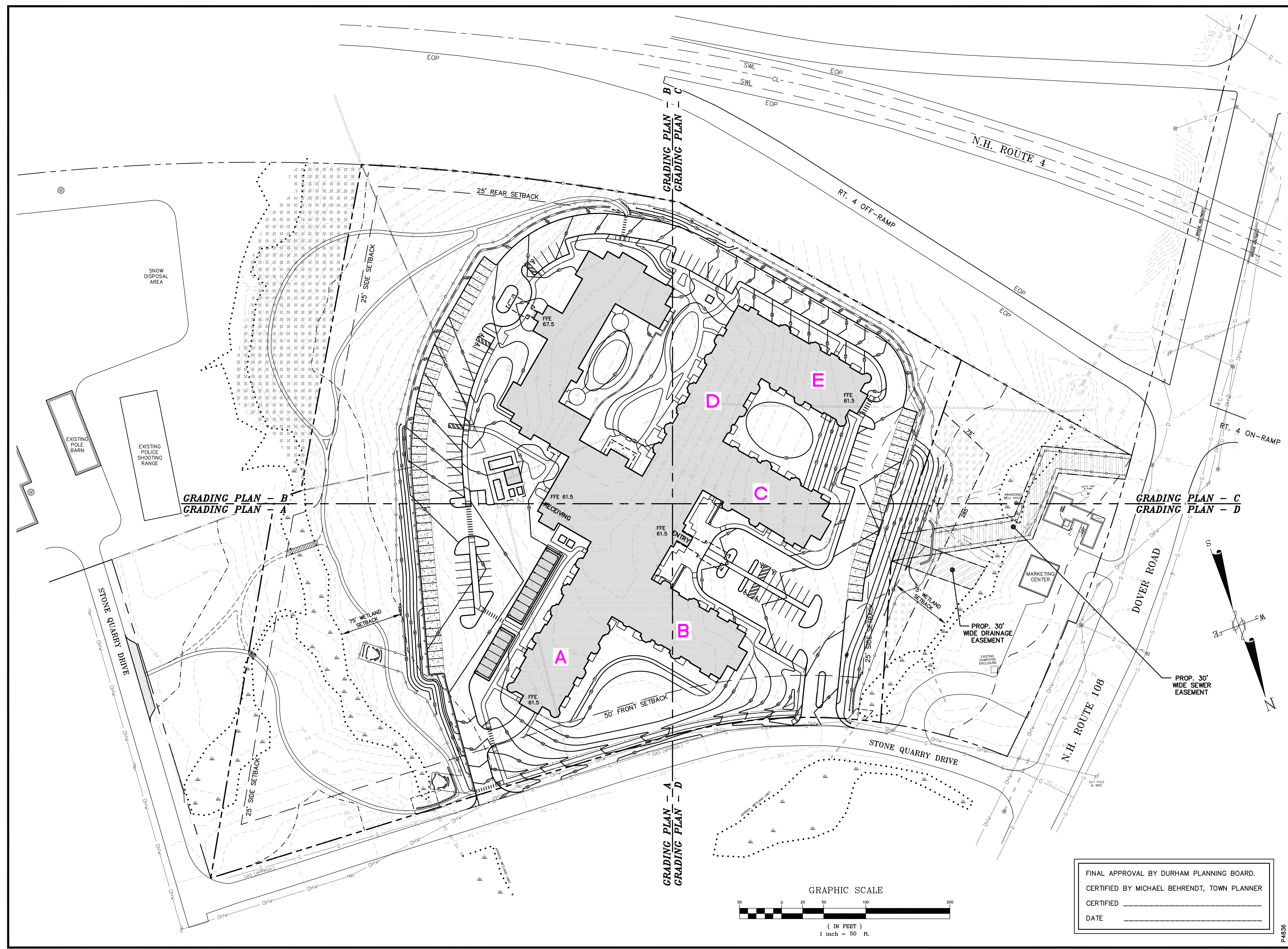
LAND OWNER - SUBJECT PARCEL:
ROCKINGHAM PROPERTIES 1, LTD
P.O. BOX 423
BELMONT, MA 02178

APPLICANT:
THE RIVERWOODS GROUP
7 RIVERWOODS DRIVE
EXETER, NH 03833

PROJECT:
RIVERWOODS DURHAM
STONE QUARRY DRIVE
DURHAM, NH

TITLE:
OVERALL GRADING PLAN

SHEET NUMBER:
C - 5.0



FINAL APPROVAL BY DURHAM PLANNING BOARD.
CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
CERTIFIED _____
DATE _____

PROPOSED DRAINAGE SCHEDULE

<p>PDMH #1 RIM: 56.80 IN: 53.65 [12" CPE, PCB #2] IN: 53.50 [15" CPE, PDMH #3] OUT: 49.43 [DAYLIGHT] 15" CPE, L=37', S=0.0062'/± OUTFALL ELEV.= 49.20</p> <p>PUSF #1A IN: 53.00 [6" PERF. U.D.] OUT: 49.83 [6" CPE] WYE CONNECTION W/15" CPE</p> <p>PCB #2 RIM: 57.00 OUT: 54.00 [PDMH #1] 12" CPE, L=35', S=0.0100'/±</p> <p>PDMH #3 RIM: 57.90 [SEE SHEET C-5.7 FOR DETAILS] OUT: 53.95 [PDMH #1] 15" CPE, L=19', S=0.0058'/±</p> <p>PDMH #4 RIM: 57.85 IN: 53.61 [15" CPE, PCB #5] [SEE SHEET C-5.7 FOR DETAILS]</p> <p>PCB #5 RIM: 56.75 IN: 53.95 [12" CPE, PDI #6] IN: 53.95 [12" CPE, PAD #7] OUT: 53.71 [PDMH #4] 15" CPE, L=19', S=0.0053'/±</p> <p>PDI #6 (W/GRATE & 4' SUMP) RIM: 56.25 OUT: 54.10 [PCB #5] 12" CPE, L=23', S=0.0065'/±</p> <p>PAD #7 RIM: 57.15 OUT: 54.05 [PCB #5] 12" CPE, L=17', S=0.0059'/±</p> <p>PDMH #8 RIM: 49.00 IN: 44.00 [18" CPE, PDMH #8A] OUT: 42.20 [DAYLIGHT] 18" CPE, L=29', S=0.0069'/± OUTLET ELEV.=42.00</p>	<p>PDMH #8A W/GRATE IN: 59.38 IN: 52.10 [18" CPE, PDMH #9] IN: 52.80 [12" CPE, PCB #33] IN: 47.80 [6" CPE, PUSF #9A] IN: 54.80 [8" PVC, PAD #91] OUT: 46.80 [PDMH #8] 18" CPE, L=29', S=0.0966'/±</p> <p>PUSF #9A IN: 51.50 [6" PERF. U.D.] OUT: 48.33 [6" CPE, PDMH #8A]</p> <p>PDMH #9 RIM: 59.73 [SEE SHEET C-5.7 FOR DETAILS] OUT: 52.40 [PDMH #8A] 18" CPE, L=18', S=0.0111'/±</p> <p>PDMH #10 RIM: 59.95 IN: 53.92 [18" CPE, PDMH #11] [SEE SHEET C-5.7 FOR DETAILS]</p> <p>PDMH #11 (5' DIA.) RIM: 60.27 IN: 56.05 [12" CPE, PCB #12] IN: 56.50 [15" CPE, PAD #13] IN: 55.10 [12" CPE, PCB #17] OUT: 54.00 [PDMH #10] 18" CPE, L=5', S=0.0160'/±</p> <p>PCB #12 IN: 59.73 OUT: 56.25 [PDMH #11] 12" CPE, L=39', S=0.0051'/±</p> <p>PAD #13 RIM: 60.70 IN: 57.25 [15" CPE, PAD #13A] OUT: 57.15 [PDMH #11] 15" CPE, L=40', S=0.0163'/±</p> <p>PAD #13A RIM: 60.70 IN: 57.75 [12" CPE, PAD #14] OUT: 57.50 [PAD #13] 15" CPE, L=46', S=0.0054'/±</p> <p>PAD #14 RIM: 60.70 IN: 58.15 [12" CPE, PAD #15] OUT: 58.05 [PAD #13A] 12" CPE, L=34', S=0.0059'/±</p>	<p>PAD #15 RIM: 60.70 IN: 58.65 [10" PVC, PAD #16] OUT: 58.50 [PAD #14] 12" CPE, L=69', S=0.0051'/±</p> <p>PAD #16 (SOLID COVER) RIM: 60.80 OUT: 58.80 [PAD #15] 10" PVC, L=29', S=0.0052'/±</p> <p>PCB #17 RIM: 59.67 IN: 55.40 [12" CPE, PCB #18] OUT: 55.30 [PDMH #11] 12" CPE, L=38', S=0.0053'/±</p> <p>PCB #18 RIM: 58.82 IN: 55.85 [12" CPE, PCB #19] OUT: 55.75 [PCB #17] 12" CPE, L=65', S=0.0054'/±</p> <p>PCB #19 RIM: 59.55 OUT: 56.00 [PAD #18] 12" CPE, L=37', S=0.0068'/±</p> <p>PCB #33 RIM: 58.10 IN: 53.55 [12" CPE, PCB #34] OUT: 53.45 [PDMH #8] 12" CPE, L=113', S=0.0050'/±</p> <p>PAD #91 RIM: 60.80 IN: 55.50 [FOUNDATION DRAIN] OUT: 55.40 [PDMH #11] 8" PVC, L=61', S=0.0098'/±</p>
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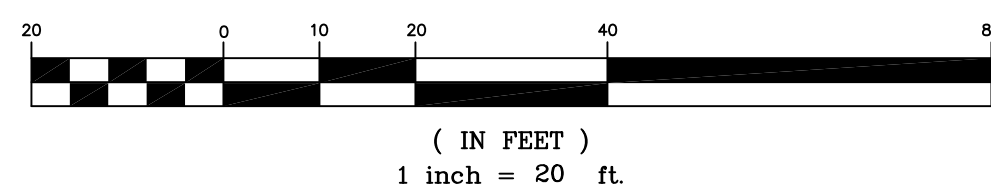
KEY NOTES

- 1 INSTALL POROUS PAVEMENT
- 2 INSTALL UNDERGROUND SAND FILTER (USF)
- 3 INSTALL STORMWATER MANAGEMENT GALLERY (SMG A); STORMTECH SC-740 SYSTEM, 4 ROWS OF 10 CHAMBERS
- 4 INSTALL PLUNGE POOL AT OUTFALL
- 5 INSTALL STORMWATER MANAGEMENT GALLERY (SMG B); STORMTECH MC-3500 SYSTEM, 5 ROWS OF 25 CHAMBERS

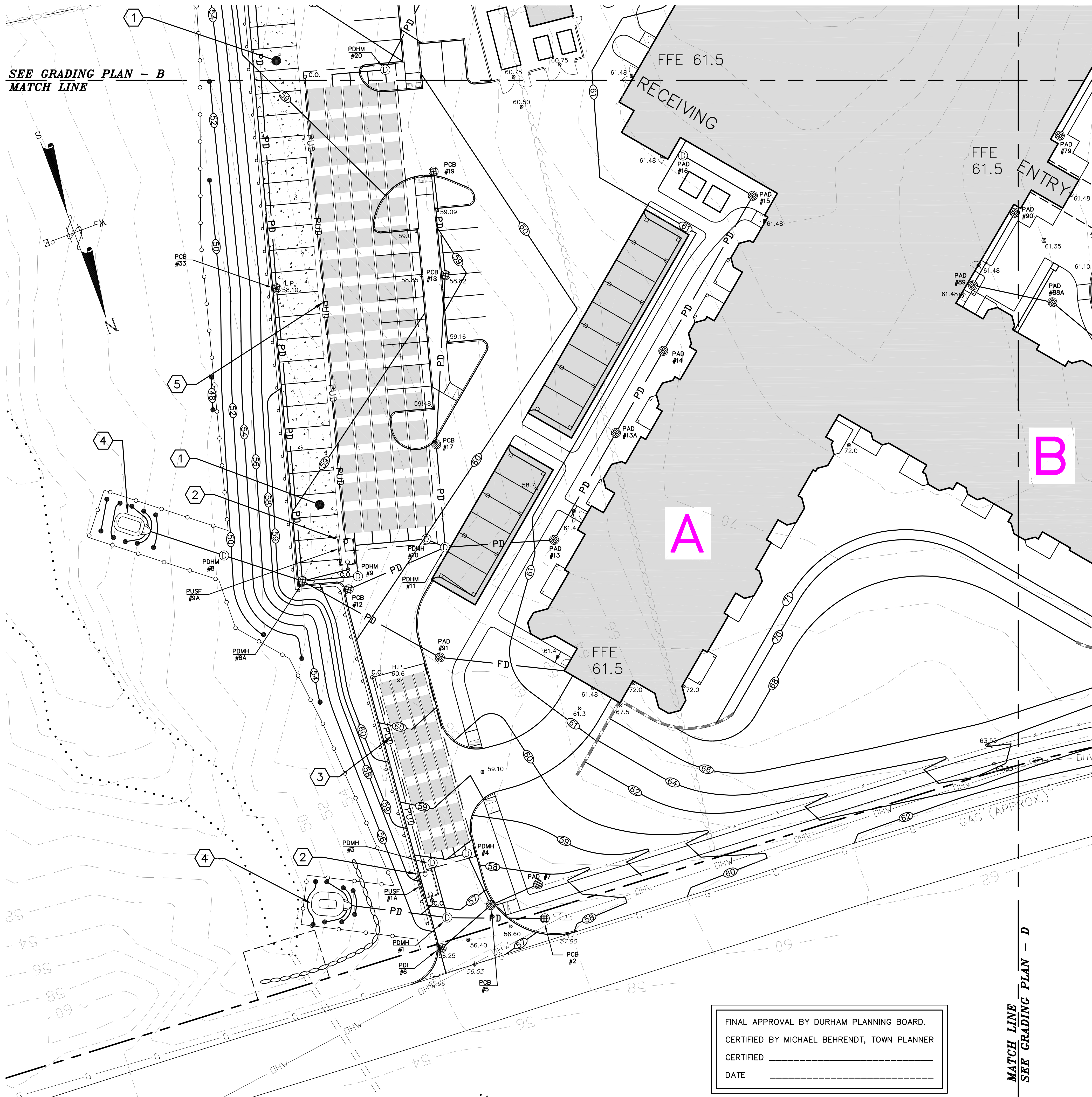
NOTE:

SEE LANDSCAPE ARCHITECT PLANS FOR BUILDING DRIP STRIP LOCATIONS AND DETAIL.

GRAPHIC SCALE



SEE GRADING PLAN - B
MATCH LINE

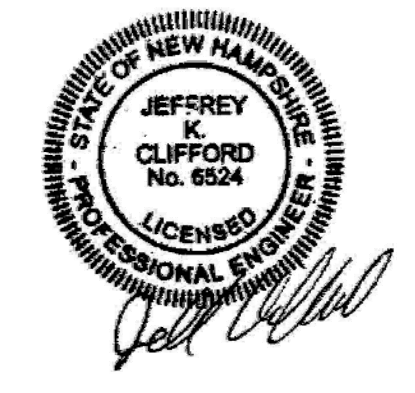


FINAL APPROVAL BY DURHAM PLANNING BOARD.
CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
CERTIFIED _____
DATE _____

MATCH LINE
SEE GRADING PLAN - D

ALTUS
ENGINEERING, INC.

133 COURT STREET PORTSMOUTH, NH 03801
VOICE: (603) 433-2335
FAX: (603) 433-4194



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ISSUED FOR: APPROVAL

ISSUE DATE: DECEMBER 5, 2017

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0	INITIAL SUBMISSION	JKC	7/19/17
1	PB RE-SUBMISSION	JKC	10/16/17
2	PB RE-SUBMISSION	JKC	12/05/17

DRAWN BY: _____ RMB
APPROVED BY: _____ JKC
DRAWING FILE: 4836SITE.DWG

SCALE: 1" = 20'

LAND OWNER - SUBJECT PARCEL:
ROCKINGHAM PROPERTIES 1, LTD
P.O. BOX 423
BELMONT, MA 02178

APPLICANT:
THE RIVERWOODS GROUP
7 RIVERWOODS DRIVE
EXETER, NH 03833

PROJECT:
RIVERWOODS DURHAM
STONE QUARRY DRIVE
DURHAM, NH

TITLE:
GRADING PLAN - A

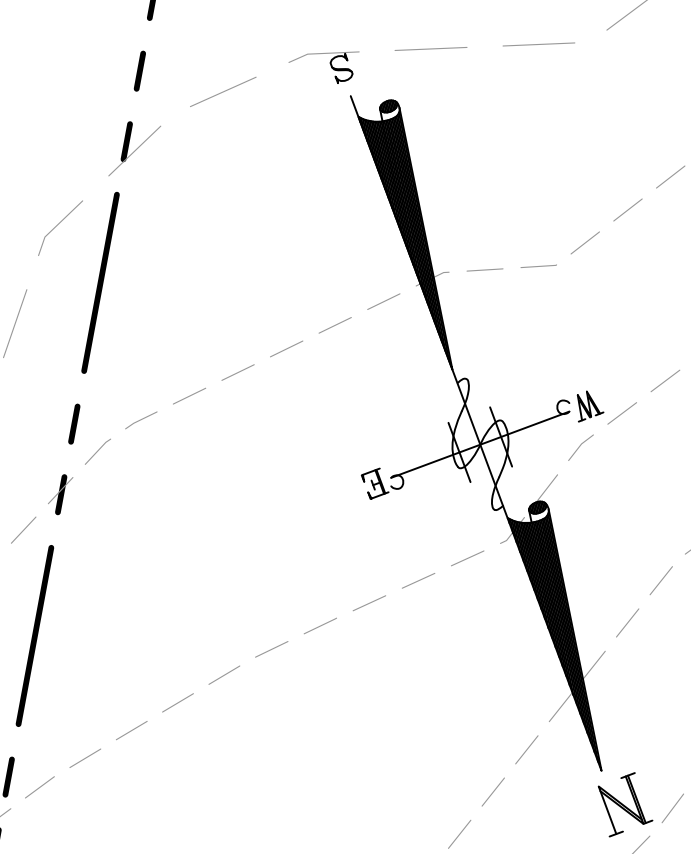
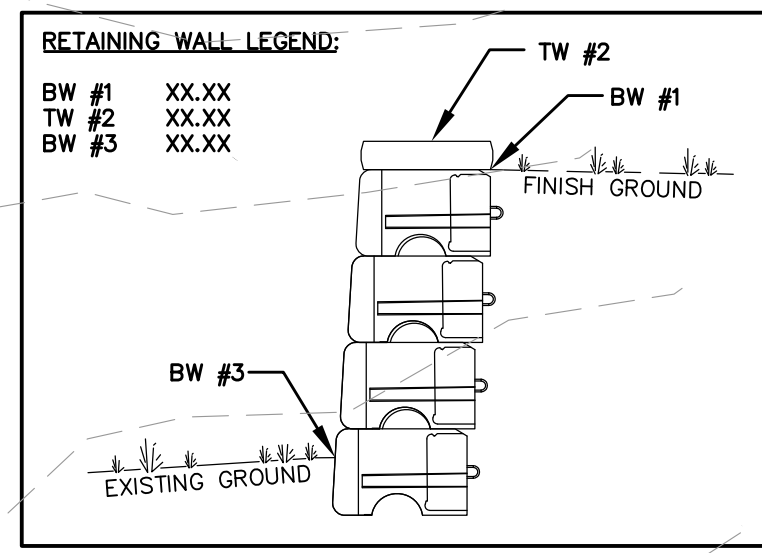
SHEET NUMBER:
C - 5.1

P-4836

PROPOSED DRAINAGE SCHEDULE

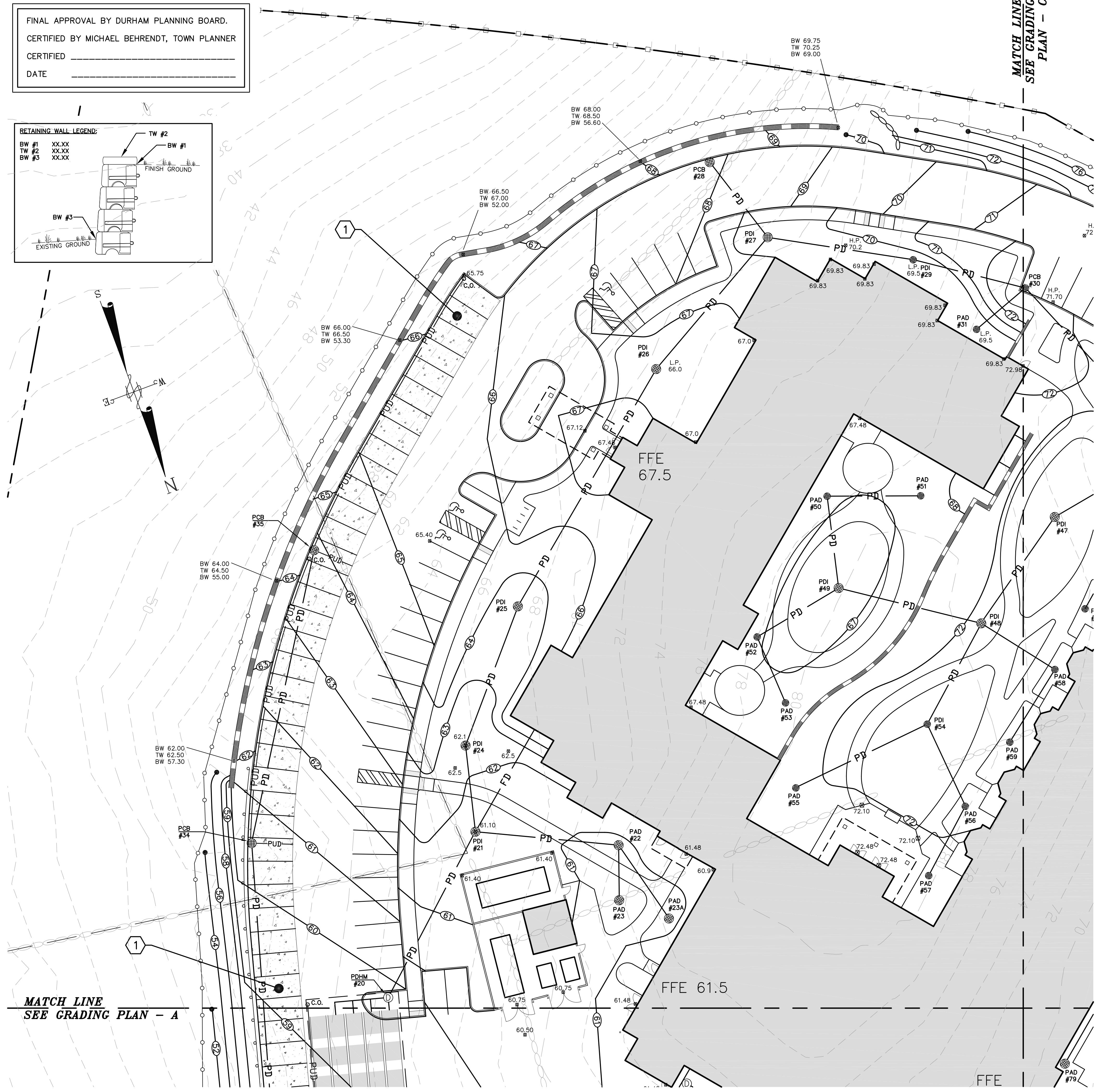
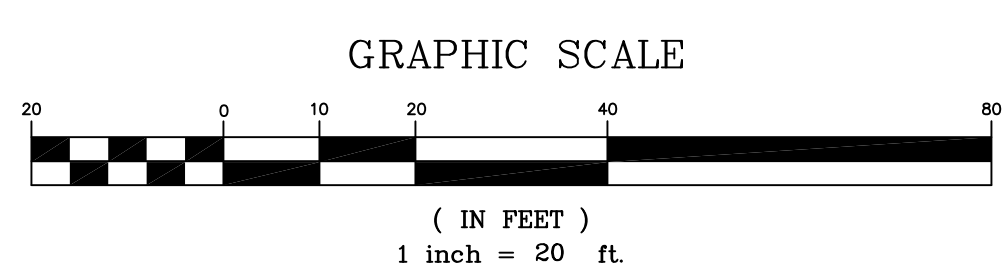
PDMH #20 RIM: 60.44 IN: 53.92 [18" CPE, PDI #21] [SEE SHEET C-5.7 FOR DETAILS]	PDI #21 (4' DIA.) RIM: 61.15 IN: 57.85 [12" CPE, PAD #22] IN: 57.15 [18" CPE, PDI #24] IN: XX.XX [FOUNDATION DRAIN] OUT: 57.05 [PDMH #20] 18" CPE, L=72', S=0.0435'/±	PDI #22 (4' DIA.) RIM: 60.70 IN: 58.40 [8" PVC, PAD #23] IN: 58.10 [12" CPE, PAD #23A] OUT: 57.95 [PDI #21] 12" CPE, L=54', S=0.0056'/±	PDI #23 (4' DIA.) RIM: 60.50 OUT: 58.50 [PAD #22] 8" PVC, L=18', S=0.0056'/±	PDI #23A RIM: 60.70 OUT: 58.30 [PAD #22] 10" PVC, L=32', S=0.0063'/±	PDI #24 (4' DIA.) RIM: 61.70 IN: 57.70 [18" CPE, PDI #25] IN: 57.50 [PDI #21] 18" CPE, L=33', S=0.0106'/±	PDI #25 (4' DIA.) RIM: 63.50 IN: 59.75 [15" CPE, PDI #26] OUT: 59.50 [PDI #24] 18" CPE, L=58', S=0.0310'/±	PDI #26 (4' DIA.) RIM: 66.25 IN: 62.60 [15" CPE, PDI #27] OUT: 62.50 [PDI #25] 15" CPE, L=106', S=0.0259'/±	PDI #27 (4' DIA.) RIM: 69.10 IN: 64.65 [12" CPE, PCB #28] IN: 65.80 [12" CPE, PDI #29] OUT: 64.55 [PDI #26] 15" CPE, L=66', S=0.0455'/±	PCB #28 RIM: 67.85 OUT: 64.85 [PDI #27] 12" CPE, L=34', S=0.0059'/±	PDI #29 (4' DIA.) RIM: 69.50 IN: 66.50 [12" CPE, PCB #30] OUT: 66.40 [PDI #27] 12" CPE, L=56', S=0.0143'/±	PCB #30 RIM: 70.50 IN: 66.95 [10" PVC, PAD #32] IN: 66.95 [10" PVC, PAD #33] OUT: 66.80 [PDI #29] 12" CPE, L=43', S=0.0070'/±	PDI #31 (4' DIA.) RIM: 69.50 IN: 67.10 [PCB #30] 10" PVC, L=23', S=0.0065'/±	PCB #34 RIM: 60.48 IN: 56.55 [12" CPE, PCB #35] IN: 57.05 [6" PERF. U.D.] IN: 57.05 [6" PERF. U.D.] OUT: 56.45 [PCB #33] 12" CPE, L=146', S=0.0199'/±	PCB #35 RIM: 63.80 IN: 59.40 [6" PERF. U.D.] IN: 59.40 [6" PERF. U.D.] OUT: 58.90 [PCB #34] 12" CPE, L=116', S=0.0203'/±	PDI #48 (4' DIA.) RIM: 71.75 IN: 62.85 [12" CPE, PDI #49] IN: 67.00 [12" CPE, PDI #54] IN: 68.00 [12" CPE, PAD #58] OUT: 62.35 [PDI #47] 18" CPE, L=48', S=0.0052'/±	PDI #49 (4' DIA.) RIM: 66.25 IN: 63.50 [8" PVC, PAD #50] IN: 63.50 [8" PVC, PAD #52] OUT: 63.15 [PDI #48] 12" CPE, L=55', S=0.0055'/±	PDI #50 (4' DIA.) RIM: 66.75 IN: 63.80 [8" PVC, PAD #51] OUT: 63.70 [PDI #49] 8" PVC, L=34', S=0.0059'/±	PDI #51 (4' DIA.) RIM: 66.75 OUT: 64.00 [PAD #50] 8" PVC, L=35', S=0.0057'/±	PDI #52 (4' DIA.) RIM: 66.75 IN: 63.80 [8" PVC, PAD #53] OUT: 63.70 [PDI #49] 8" PVC, L=35', S=0.0057'/±	PDI #53 (4' DIA.) RIM: 71.00 IN: 68.35 [8" PVC, PAD #55] IN: 68.00 [12" CPE, PAD #56] OUT: 67.90 [PDI #48] 12" CPE, L=43', S=0.0209'/±	PDI #54 (4' DIA.) RIM: 71.00 IN: 68.35 [8" PVC, PAD #55] IN: 68.00 [12" CPE, PAD #56] OUT: 67.90 [PDI #48] 12" CPE, L=43', S=0.0209'/±	PDI #55 (4' DIA.) RIM: 71.75 IN: 68.60 [12" CPE, PAD #57] OUT: 68.50 [PDI #54] 12" CPE, L=34', S=0.0147'/±	PDI #57 (4' DIA.) RIM: 71.75 OUT: 68.75 [PAD #56] 12" CPE, L=29', S=0.0086'/±	PDI #58 (4' DIA.) RIM: 71.75 IN: 68.50 [12" CPE, PAD #59] OUT: 68.40 [PDI #48] 12" CPE, L=32', S=0.0125'/±	PDI #59 (4' DIA.) RIM: 71.75 OUT: 68.70 [PAD #58] 12" CPE, L=32', S=0.0063'/±
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FINAL APPROVAL BY DURHAM PLANNING BOARD.
 CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
 CERTIFIED _____
 DATE _____



KEY NOTES
 1 INSTALL POROUS PAVEMENT

NOTE:
 SEE LANDSCAPE ARCHITECT PLANS FOR BUILDING DRIP STRIP LOCATIONS AND DETAIL.



MATCH LINE
 SEE GRADING
 PLAN - C

MATCH LINE
 SEE GRADING
 PLAN - A

ALTUS
 ENGINEERING, INC.
 133 COURT STREET PORTSMOUTH, NH 03801
 VOICE: (603) 433-2335
 FAX: (603) 433-4194



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ISSUED FOR: APPROVAL
 ISSUE DATE: DECEMBER 5, 2017

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	JKC	7/19/17
1	PB RE-SUBMISSION	JKC	10/16/17
2	PB RE-SUBMISSION	JKC	12/05/17

DRAWN BY: _____ RMB
 APPROVED BY: _____ JKJ
 DRAWING FILE: 4836SITE.DWG

SCALE: 1" = 20'

LAND OWNER - SUBJECT PARCEL:
ROCKINGHAM PROPERTIES 1, LTD
 P.O. BOX 423
 BELMONT, MA 02178

APPLICANT:
THE RIVERWOODS GROUP
 7 RIVERWOODS DRIVE
 EXETER, NH 03833

PROJECT:
RIVERWOODS DURHAM
 STONE QUARRY DRIVE
 DURHAM, NH

TITLE:
GRADING PLAN - B

SHEET NUMBER:
C - 5.2

PROPOSED DRAINAGE SCHEDULE

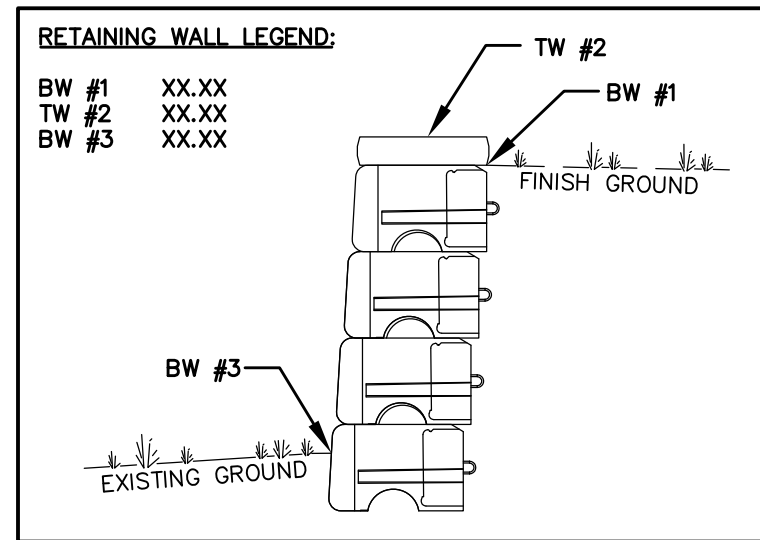
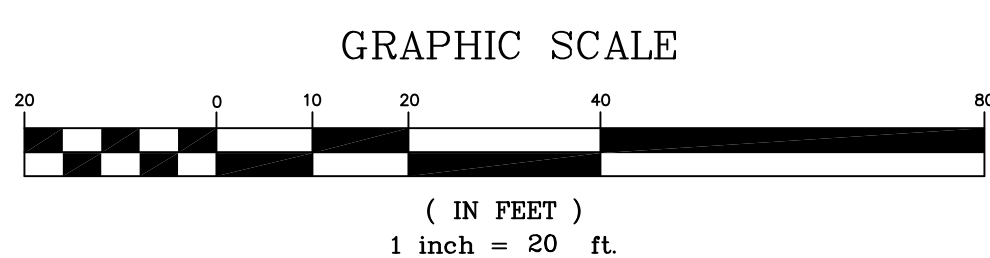
PAD #32 RIM: 71.00 OUT: 67.50 [PCB #30] 8" PVC, L=50', S=0.0110'/±	PDI #44 (4' DIA.) RIM: 64.75 IN: 60.70 [18" CPE, PDI #45] OUT: 60.60 [PDMH #41] 18" CPE, L=55', S=0.0564'/±	PDI #64 RIM: 71.75 IN: 67.80 [12" CPE, PAD #65] OUT: 67.80 [12" CPE, PAD #69] 18" CPE, L=21', S=0.0062'/±
PDMH #37 RIM: 60.50 IN: 55.80 [15" CPE, PCB #3A] IN: 53.30 [18" CPE, PDMH #38] OUT: 53.20 [PDMH #36] 18" CPE, L=80', S=0.0050'/±	PDI #45 (4' DIA.) RIM: 69.50 IN: 61.40 [18" CPE, PCB #46] OUT: 61.30 [PDI #44] 18" CPE, L=116', S=0.0052'/±	PAD #65 RIM: 71.75 IN: 68.00 [12" CPE, PAD #66] OUT: 67.90 [PDI #64] 12" CPE, L=19', S=0.0053'/±
PCB #37A RIM: 59.90 IN: 55.90 [15" CPE, PDMH #61] IN: 56.65 [6" PERF. CPE U.D.] OUT: 55.80 [PDMH #37] 15" CPE, L=4', S=0.0250'/±	PDI #46 (4' DIA.) RIM: 71.50 IN: 61.80 [18" CPE, PDI #46] OUT: 61.70 [PDI #45] 18" CPE, L=49', S=0.0061'/±	PAD #66 RIM: 71.75 IN: 68.30 [12" CPE, PAD #67] IN: 68.65 [8" PVC, PAD #68] OUT: 68.20 [PDI #65] 12" CPE, L=36', S=0.0056'/±
PDMH #38 RIM: 61.25 IN: 53.75 [18" CPE, PDMH #39] OUT: 53.65 [PDMH #37] 18" CPE, L=70', S=0.0050'/±	PDI #47 (4' DIA.) RIM: 71.00 IN: 62.10 [18" CPE, PDI #48] OUT: 62.00 [PDI #46] 18" CPE, L=36', S=0.0056'/±	PAD #67 (W/SOLID COVER) RIM: 71.40 OUT: 68.60 [PAD #66] 12" CPE, L=57', S=0.0053'/±
PDMH #39 RIM: 61.10 [SEE SHEET C-5.8 FOR DETAILS] OUT: 53.90 [PDMH #38] 18" CPE, L=23', S=0.0065'/±	PAD #59 RIM: 71.50 IN: 68.50 [12" CPE, PAD #60] OUT: 68.40 [PDI #46] 12" CPE, L=28', S=0.0143'/±	PAD #68 RIM: 71.40 OUT: 68.85 [PAD #66] 8" PVC, L=31', S=0.0065'/±
PDMH #40 RIM: 61.80 IN: 54.96 [24" CPE, PDMH #41] IN: xx.xx [FOUNDATION DRAIN] [SEE SHEET C-5.8 FOR DETAILS]	PAD #60 RIM: 71.75 OUT: 68.75 [PAD #59] 12" CPE, L=28', S=0.0089'/±	PAD #69 RIM: 71.75 IN: 68.15 [12" CPE, PAD #70] OUT: 68.05 [PDI #64] 12" CPE, L=44', S=0.0057'/±
PDMH #41 RIM: 62.60 IN: 58.10 [12" CPE, PCB #42] IN: 57.60 [18" CPE, PDI #44] OUT: 57.00 [PDMH #40] 24" CPE, L=30', S=0.0680'/±	PDMH #61 RIM: 62.00 IN: 58.35 [15" CPE, PDMH #62] OUT: 56.50 [PCB #37A] 15" CPE, L=66', S=0.0091'/±	PAD #70 RIM: 71.75 IN: 68.40 [12" CPE, PAD #71] OUT: 68.30 [PAD #69] 12" CPE, L=28', S=0.0054'/±
PCB #42 RIM: 61.80 IN: 58.30 [12" CPE, PCB #43] OUT: 58.20 [PDMH #41] 12" CPE, L=8', S=0.0125'/±	PDMH #62 RIM: 71.80 [SEE SHEET C-5.9 FOR DETAILS] OUT: 65.63 [PDMH #61] 15" CPE, L=46', S=0.1583'/±	PAD #71 (W/SOLID COVER) RIM: 72.00 OUT: 68.65 [PAD #70] 12" CPE, L=46', S=0.0054'/±
PCB #43 RIM: 61.95 OUT: 58.45 [PCB #42] 12" CPE, L=23', S=0.0065'/±	PDMH #63 RIM: 71.75 IN: 67.17 [18" CPE, PDI #64] [SEE SHEET C-5.9 FOR DETAILS]	

KEY NOTES

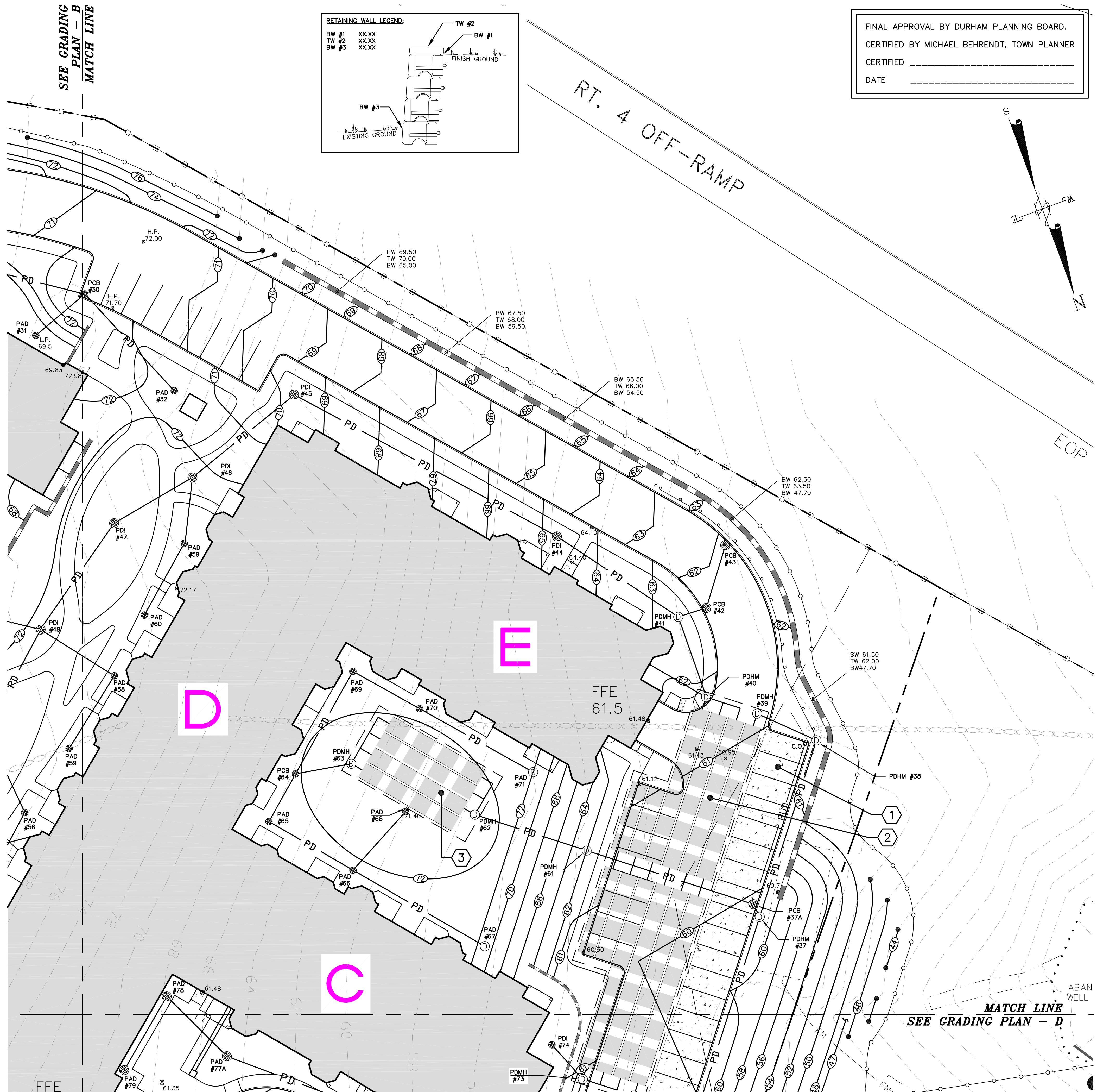
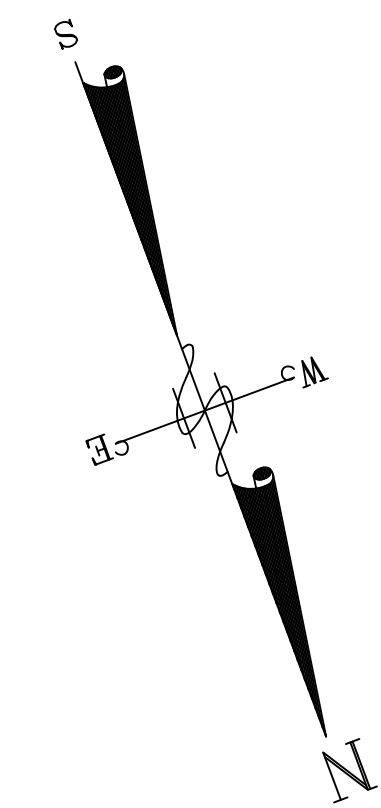
- 1 INSTALL POROUS PAVEMENT
- 2 INSTALL STORMWATER MANAGEMENT GALLERY (SMG C); STORMTECH MC-3500 SYSTEM, 4 ROWS OF 20 CHAMBERS AND 2 ROWS OF 9 CHAMBERS
- 3 INSTALL STORMWATER MANAGEMENT GALLERY (SMG D); STORMTECH MC-3500 SYSTEM, 4 ROWS OF 6 CHAMBERS
- 4 -

NOTE:

SEE LANDSCAPE ARCHITECT PLANS FOR BUILDING DRIP STRIP LOCATIONS AND DETAIL.



FINAL APPROVAL BY DURHAM PLANNING BOARD.
CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
CERTIFIED _____
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ALTUS
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133 COURT STREET PORTSMOUTH, NH 03801
VOICE: (603) 433-2335
FAX: (603) 433-4194



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2	PB RE-SUBMISSION	JKC	12/05/17

DRAWN BY: _____ RMB
APPROVED BY: _____ JKC
DRAWING FILE: 4836SITE.DWG

SCALE: 1" = 20'

LAND OWNER - SUBJECT PARCEL:
ROCKINGHAM PROPERTIES 1, LTD
P.O. BOX 423
BELMONT, MA 02178

APPLICANT:
THE RIVERWOODS GROUP
7 RIVERWOODS DRIVE
EXETER, NH 03833

PROJECT:
RIVERWOODS DURHAM
STONE QUARRY DRIVE
DURHAM, NH

TITLE:
GRADING PLAN - C
SHEET NUMBER:
C - 5.3

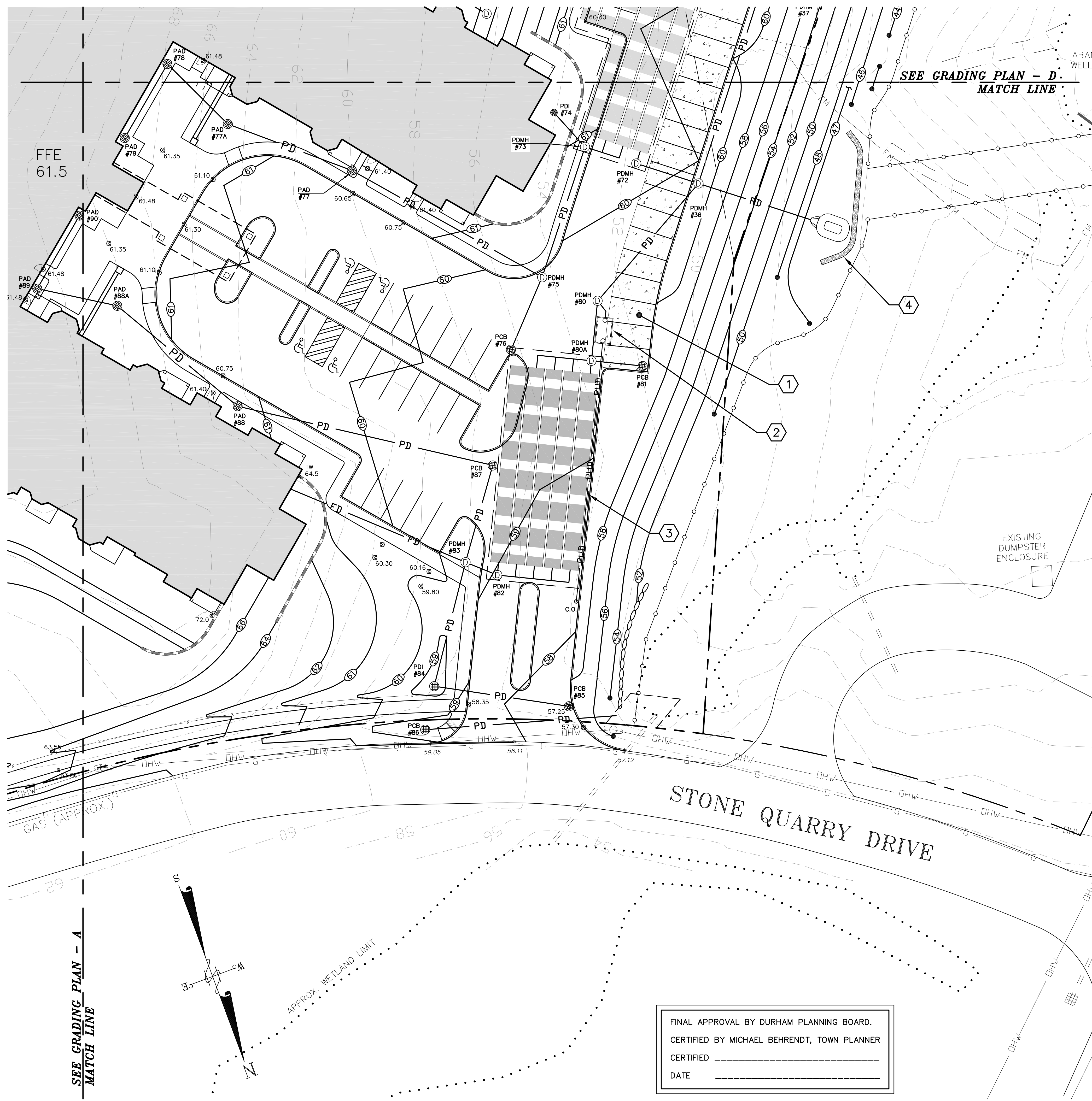
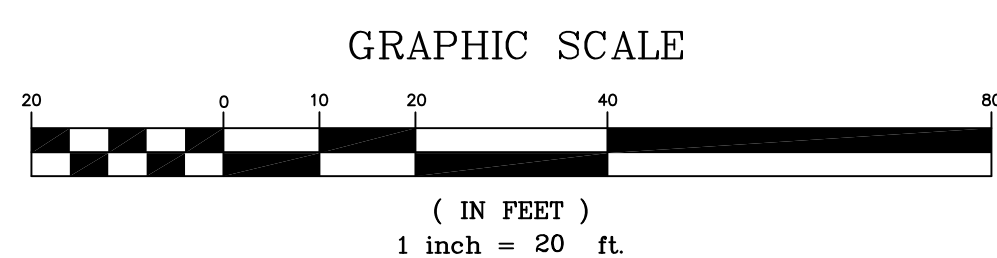
PROPOSED DRAINAGE SCHEDULE

<p>PDMH #36 RIM: 60.45 IN: 52.70 [18" CPE, PDMH #37] IN: 53.70 [18" CPE, PDMH #72] IN: 47.25 [18" CPE, PDMH #90] OUT: 46.50 [DAYLIGHT] 24" CPE, L=45', S=0.0056'/± OUTFALL ELEV.= 46.25</p> <p>PDMH #72 RIM: 60.20 [SEE SHEET C-5.9 FOR DETAILS] OUT: 53.90 [PDMH #36] 18" CPE, L=22', S=0.0091'/±</p> <p>PDMH #73 RIM: 60.95 IN: 58.00 [8" D.I., PDI #74] IN: 55.42 [18" CPE, PDMH #75] [SEE SHEET C-5.9 FOR DETAILS]</p> <p>PDI #74 RIM: 64.10 OUT: 58.10 [PDMH #73] 8" D.I., L=15', S=0.0067'/±</p> <p>PDMH #75 RIM: 59.90 IN: 55.95 [15" CPE, PCB #76] IN: 56.40 [12" CPE, PAD #77] OUT: 55.70 [PDMH #73] 18" CPE, L=51', S=0.0055'/±</p> <p>PCB #76 RIM: 59.55 OUT: 56.10 [PDMH #75] 15" CPE, L=28', S=0.0054'/±</p> <p>PAD #77 RIM: 61.10 IN: 57.35 [12" CPE, PAD #77A] OUT: 57.25 [PDMH #75] 12" CPE, L=83', S=0.0102'/±</p> <p>PAD #77A RIM: 61.10 IN: 57.70 [12" CPE, PAD #78] OUT: 57.60 [PAD #77] 12" CPE, L=49', S=0.0051'/±</p> <p>PAD #78 RIM: 60.75 IN: 57.95 [12" CPE, PAD #79] OUT: 57.85 [PAD #77A] 12" CPE, L=30', S=0.0050'/±</p>	<p>PAD #79 RIM: 60.75 OUT: 58.10 [PAD #78] 12" CPE, L=30', S=0.0050'/±</p> <p>PDMH #80 RIM: 59.65 IN: 52.20 [12" CPE, PDMH #80A] IN: 48.33 [8" CPE, USF #3] OUT: 47.58 [PDMH #83] 15" CPE, L=58', S=0.0057'/±</p> <p>PDMH #80A RIM: 59.35 [SEE SHEET C-5.9 FOR DETAILS] IN: 54.90 [12" CPE, PCB #81] OUT: 52.40 [PDMH #80] 18" CPE, L=20', S=0.0100'/±</p> <p>PCB #81 RIM: 59.25 IN: 55.00 [PDMH #80] 12" CPE, L=17', S=0.0059'/±</p> <p>PDMH #82 RIM: 58.95 IN: 53.00 [18" CPE, PDMH #83] [SEE SHEET C-5.9 FOR DETAILS]</p> <p>PDMH #83 RIM: 59.65 IN: 53.75 [12" CPE, PDI #84] IN: 54.50 [15" CPE, PCB #87] IN: XX.XX [FOUNDATION DRAIN] OUT: 53.25 [PDMH #82] 18" CPE, L=10', S=0.0250'/±</p> <p>PDI #84 RIM: 58.50 IN: 53.95 [12" CPE, PDI #85] OUT: 53.85 [PDMH #83] 12" CPE, L=51', S=0.0059'/±</p> <p>PDI #85 RIM: 57.25 IN: 54.25 [PDI #84] 12" CPE, L=51', S=0.0059'/±</p> <p>PCB #86 RIM: 58.25 OUT: 54.75 [DAYLIGHT] 12" CPE, L=70', S=0.0107'/± OUTFALL ELEV.=54.00</p>	<p>PCB #87 RIM: 59.25 IN: 54.40 [15" CPE, PAD #88] OUT: 54.30 [PDMH #83] 15" CPE, L=36', S=0.0056'/±</p> <p>OUU: PAD #87A RIM: 61.10 IN: 56.95 [12" CPE, PAD #89] OUT: 56.85 [PCB #87] 15" CPE, L=100', S=0.0245'/±</p> <p>PAD #88A RIM: 61.10 IN: 57.35 [15" CPE, PAD #89] OUT: 57.25 [PAD #88A] 15" CPE, L=59', S=0.0051'/±</p> <p>PAD #89 RIM: 60.75 IN: 57.75 [12" CPE, PAD #90] OUT: 57.50 [PAD #88A] 15" CPE, L=29', S=0.0052'/±</p> <p>PAD #90 RIM: 60.75 OUT: 57.90 [PAD #89] 12" CPE, L=30', S=0.0050'/±</p>
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KEY NOTES

- 1 INSTALL POROUS PAVEMENT
- 2 INSTALL UNDERGROUND SAND FILTER (USF)
- 3 INSTALL STORMWATER MANAGEMENT GALLERY (SMG E); STORMTECH MC-3500 SYSTEM, 5 ROWS OF 11 CHAMBERS
- 4 INSTALL PLUNGE POOL AT OUTFALL W/40' STONE LIP LEVEL SPREADER, ELEV.=46.25

NOTE:
SEE LANDSCAPE ARCHITECT PLANS FOR BUILDING DRIP STRIP LOCATIONS AND DETAIL.



SEE GRADING PLAN - D.
MATCH LINE

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FAX: (603) 433-4194



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2	PB RE-SUBMISSION	JKC	12/05/17

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APPROVED BY: _____ JKC
DRAWING FILE: 4836SITE.DWG

SCALE: 1" = 20'

LAND OWNER - SUBJECT PARCEL:
ROCKINGHAM PROPERTIES 1, LTD
P.O. BOX 423
BELMONT, MA 02178

APPLICANT:
THE RIVERWOODS GROUP
7 RIVERWOODS DRIVE
EXETER, NH 03833

PROJECT:
RIVERWOODS DURHAM
STONE QUARRY DRIVE
DURHAM, NH

TITLE:
GRADING PLAN - D

SHEET NUMBER:
C - 5.4

FINAL APPROVAL BY DURHAM PLANNING BOARD.
CERTIFIED BY MICHAEL BEHRENT, TOWN PLANNER
CERTIFIED _____
DATE _____

P-4836



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APPROVED BY: _____ JKC
DRAWING FILE: 4836SITE.DWG

SCALE: 1" = 20'

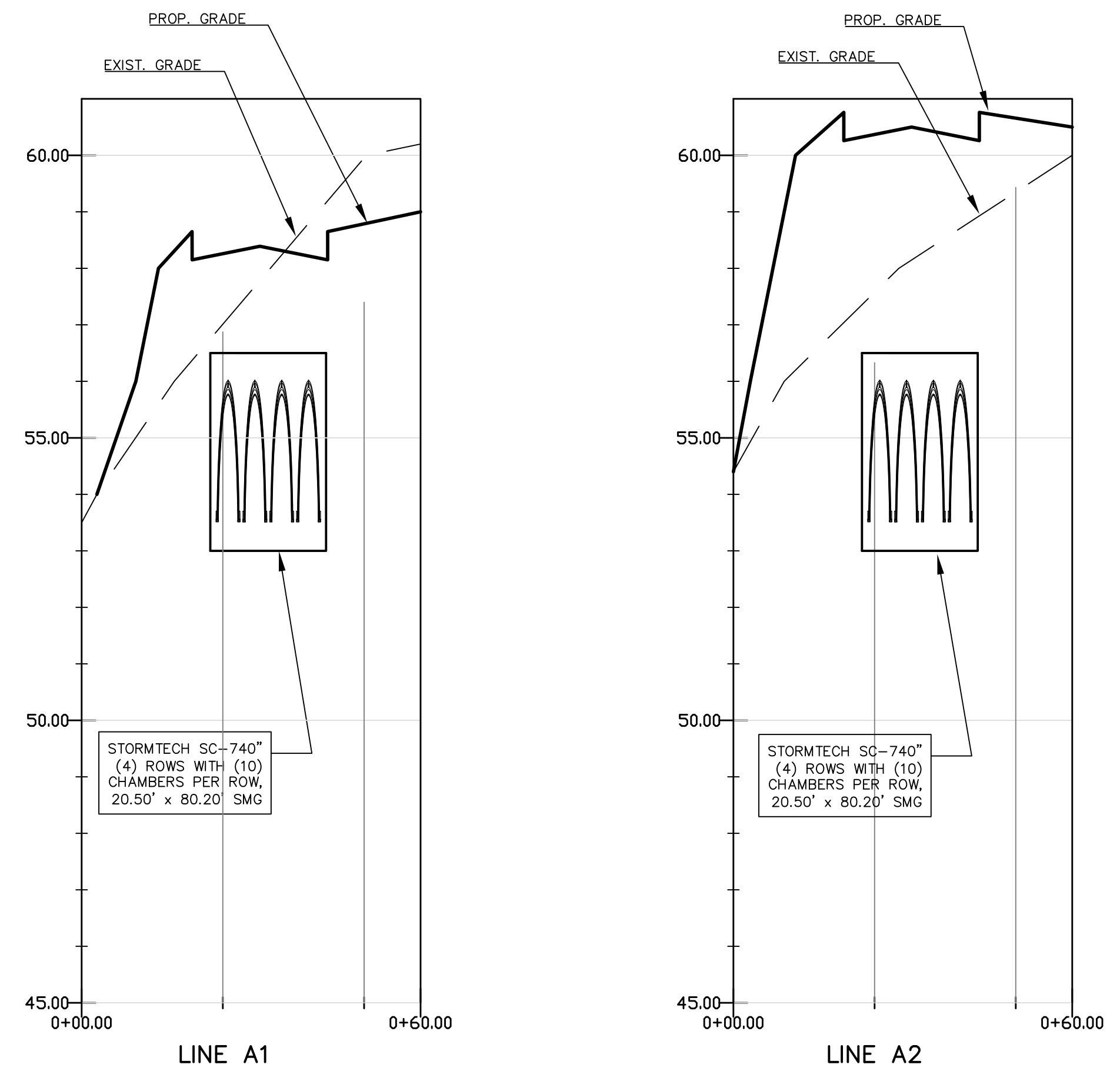
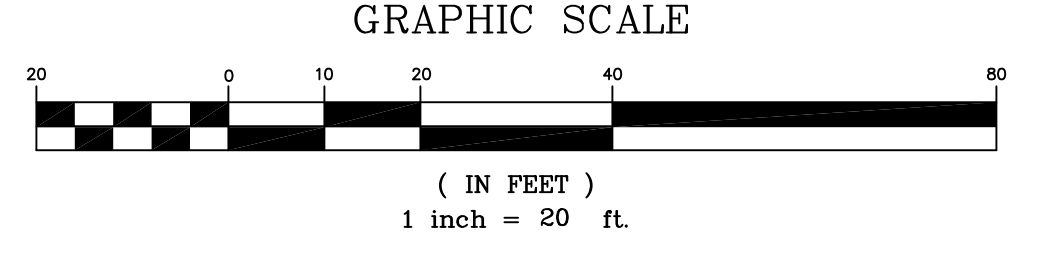
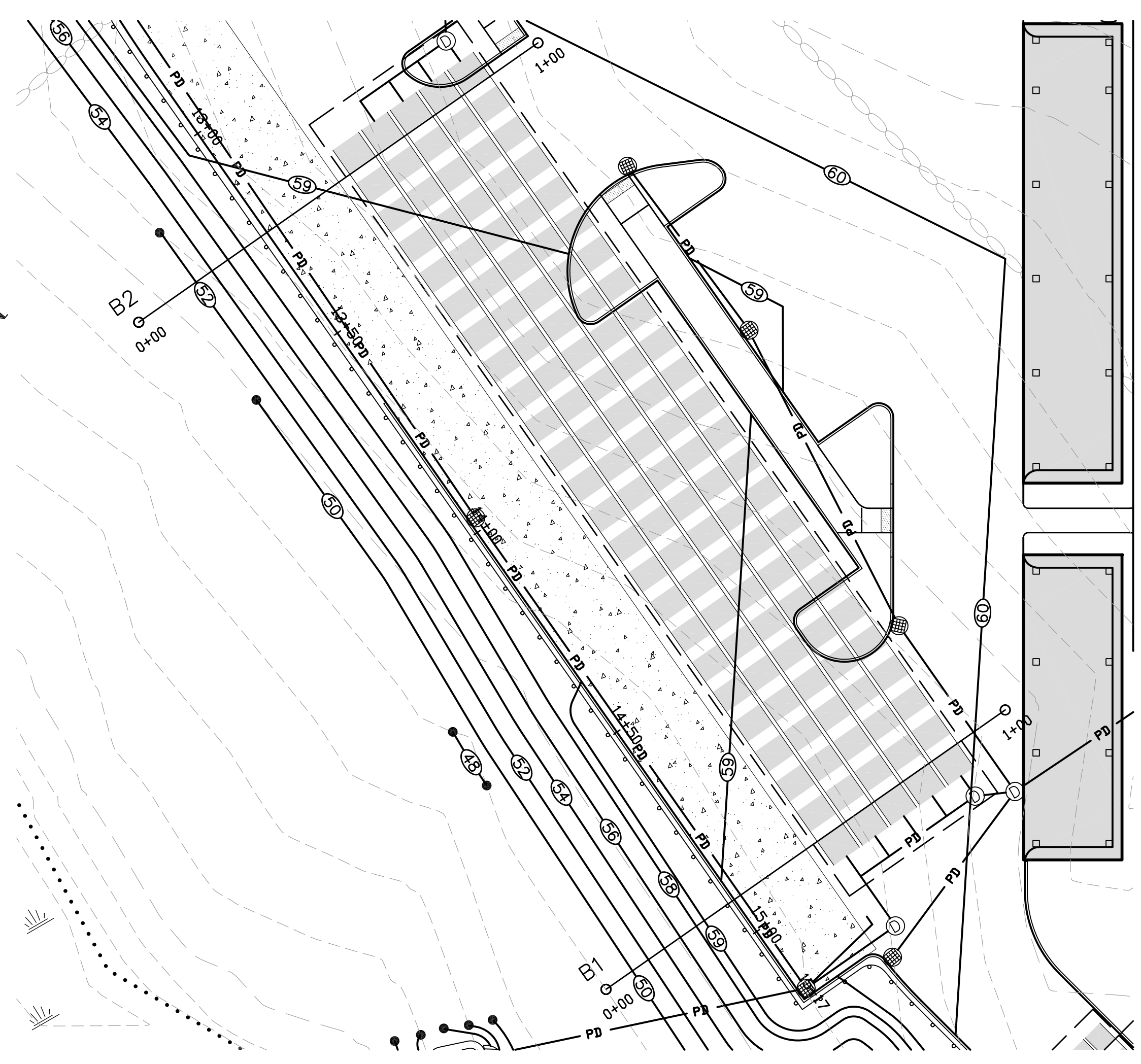
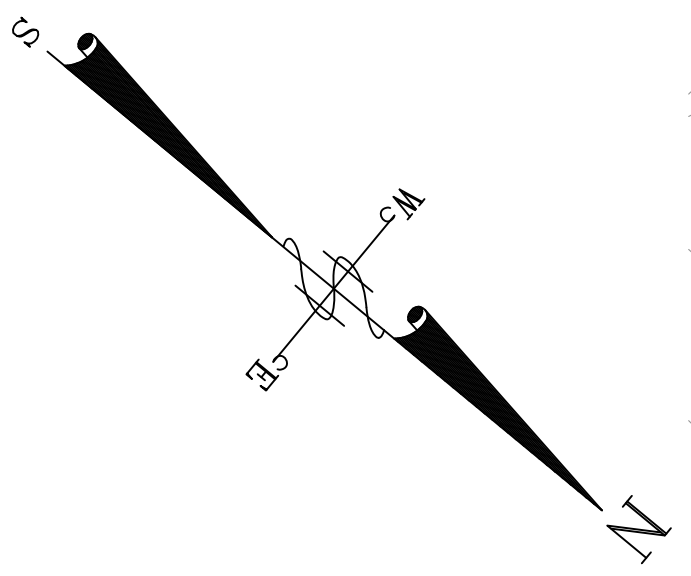
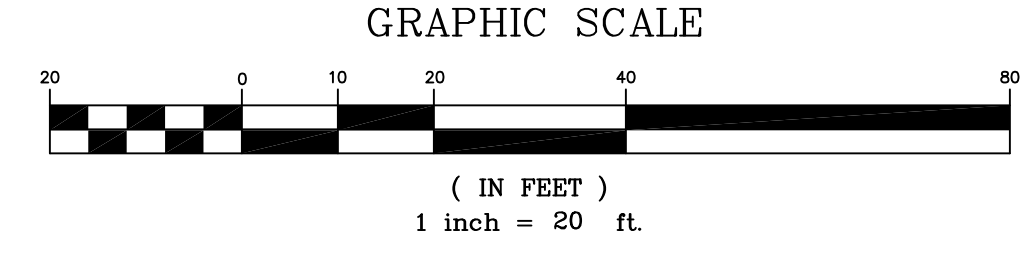
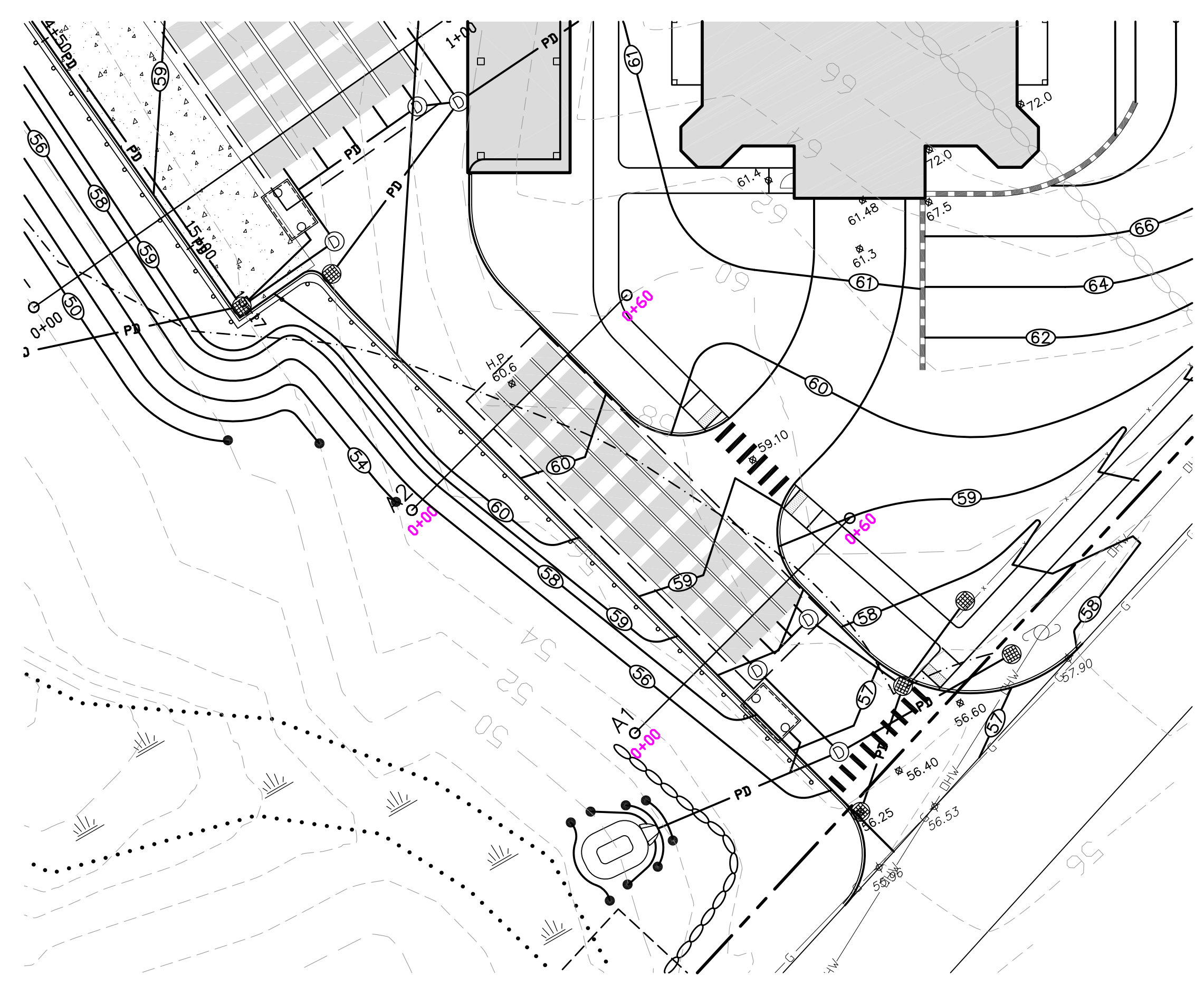
LAND OWNER - SUBJECT PARCEL:
ROCKINGHAM PROPERTIES 1, LTD
P.O. BOX 423
BELMONT, MA 02178

APPLICANT:
THE RIVERWOODS GROUP
7 RIVERWOODS DRIVE
EXETER, NH 03833

PROJECT:
RIVERWOODS DURHAM
STONE QUARRY DRIVE
DURHAM, NH

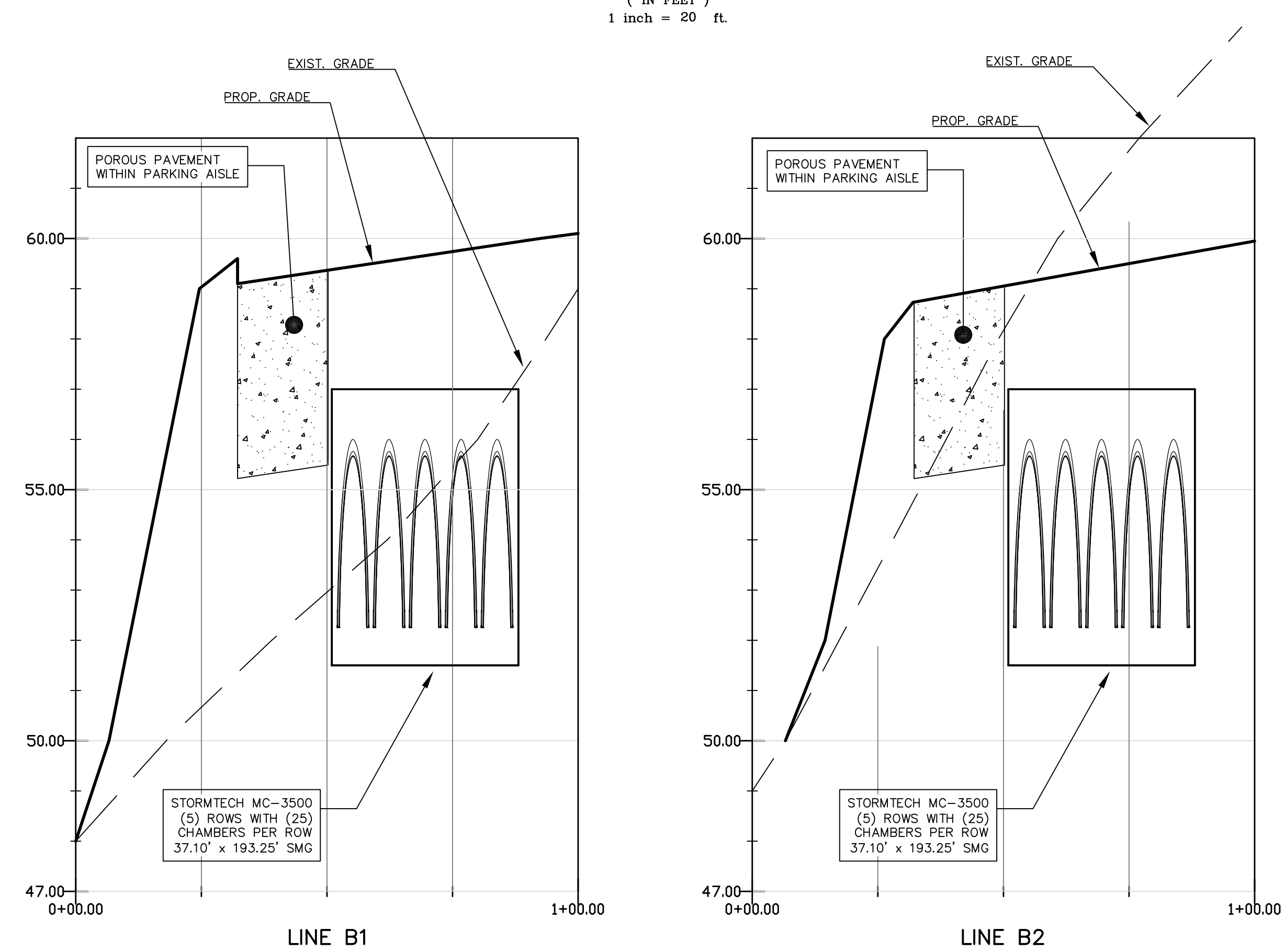
TITLE:
STORMWATER MANAGEMENT GALLERY - CROSS SECTIONS

SHEET NUMBER:
C - 5.5



STORMWATER MANAGEMENT GALLERY "A"

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VERTICAL SCALE: 1" = 2'



STORMWATER MANAGEMENT GALLERY "B"

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'



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DRAWING FILE: 4836SITE.DWG

SCALE: 1" = 30'

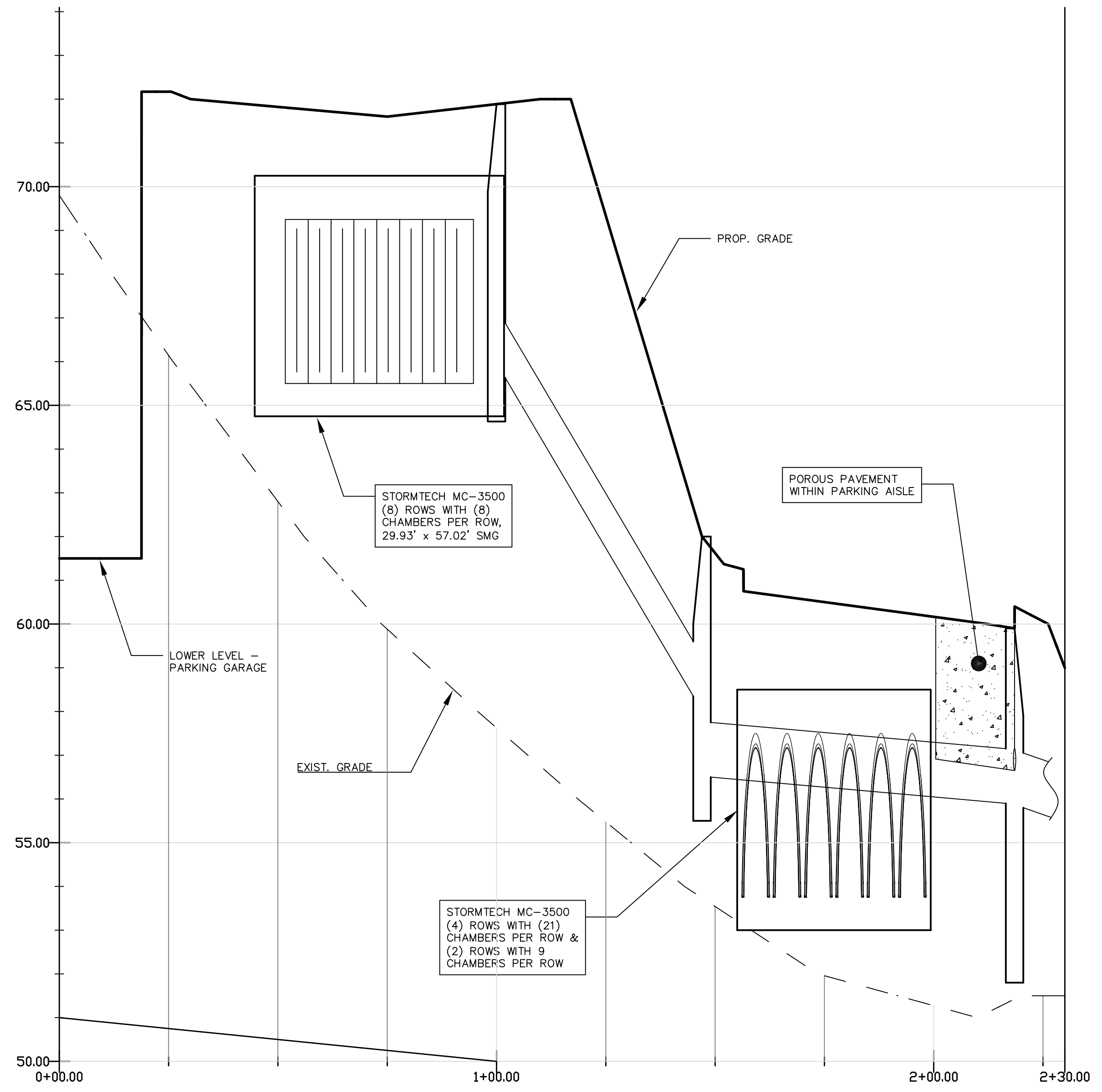
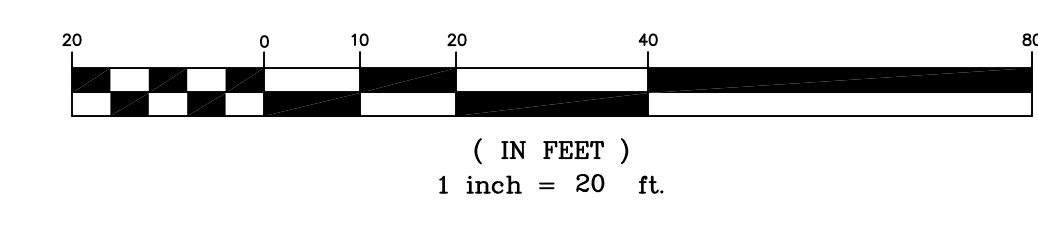
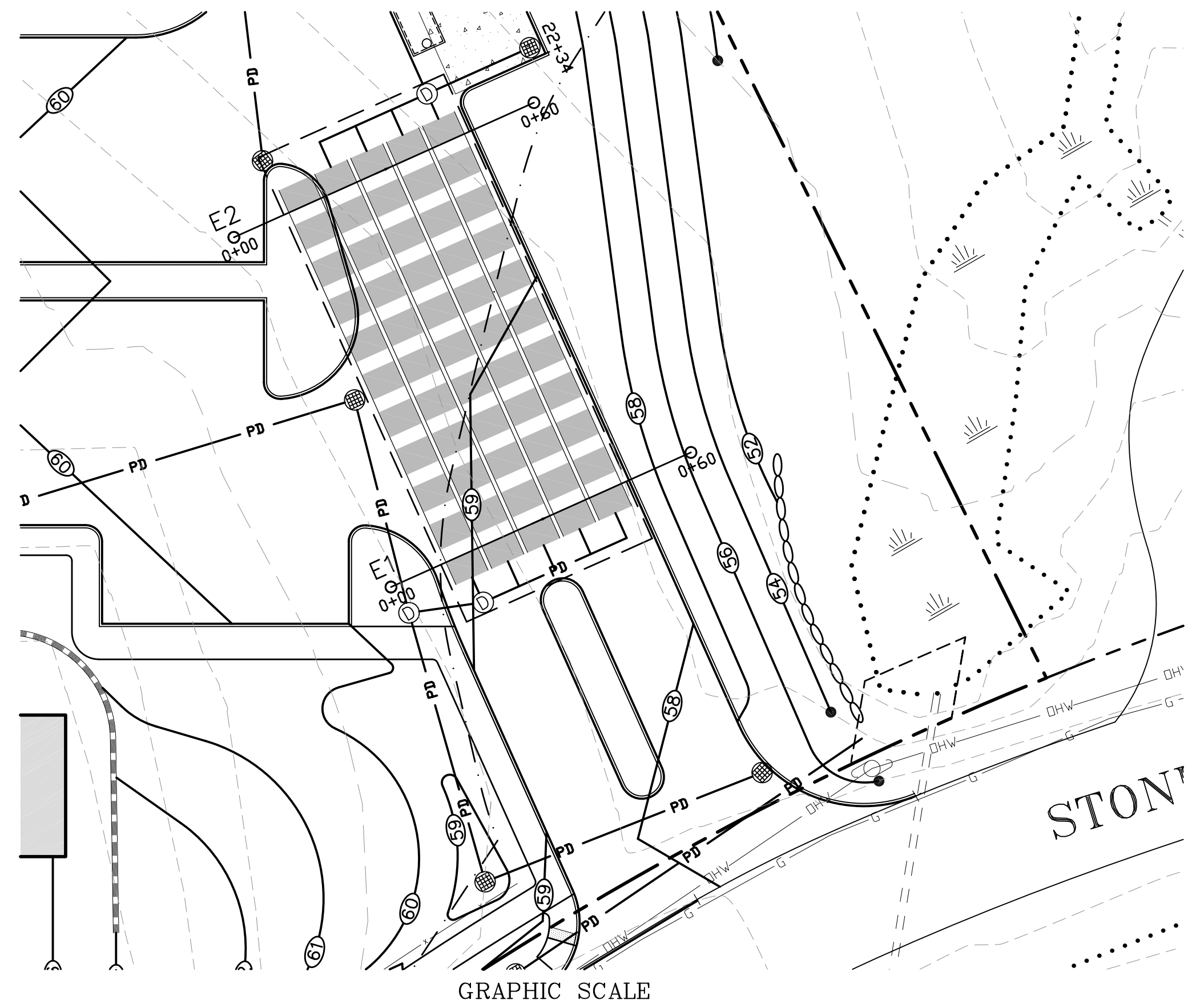
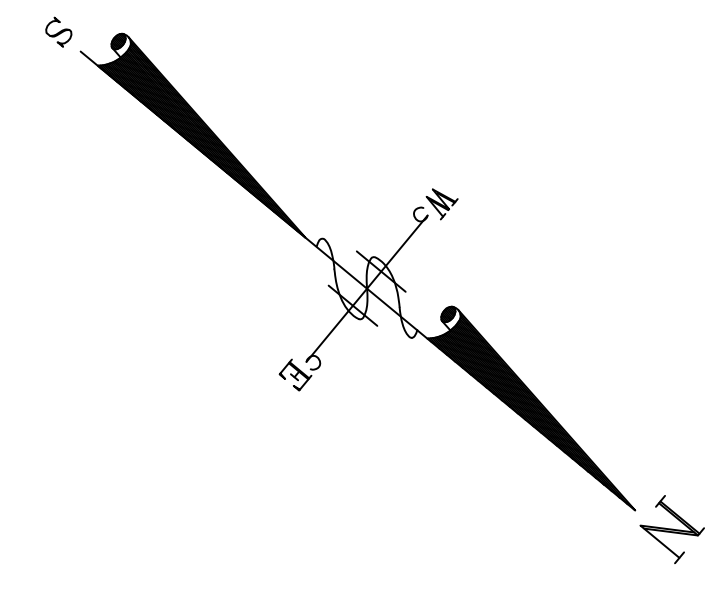
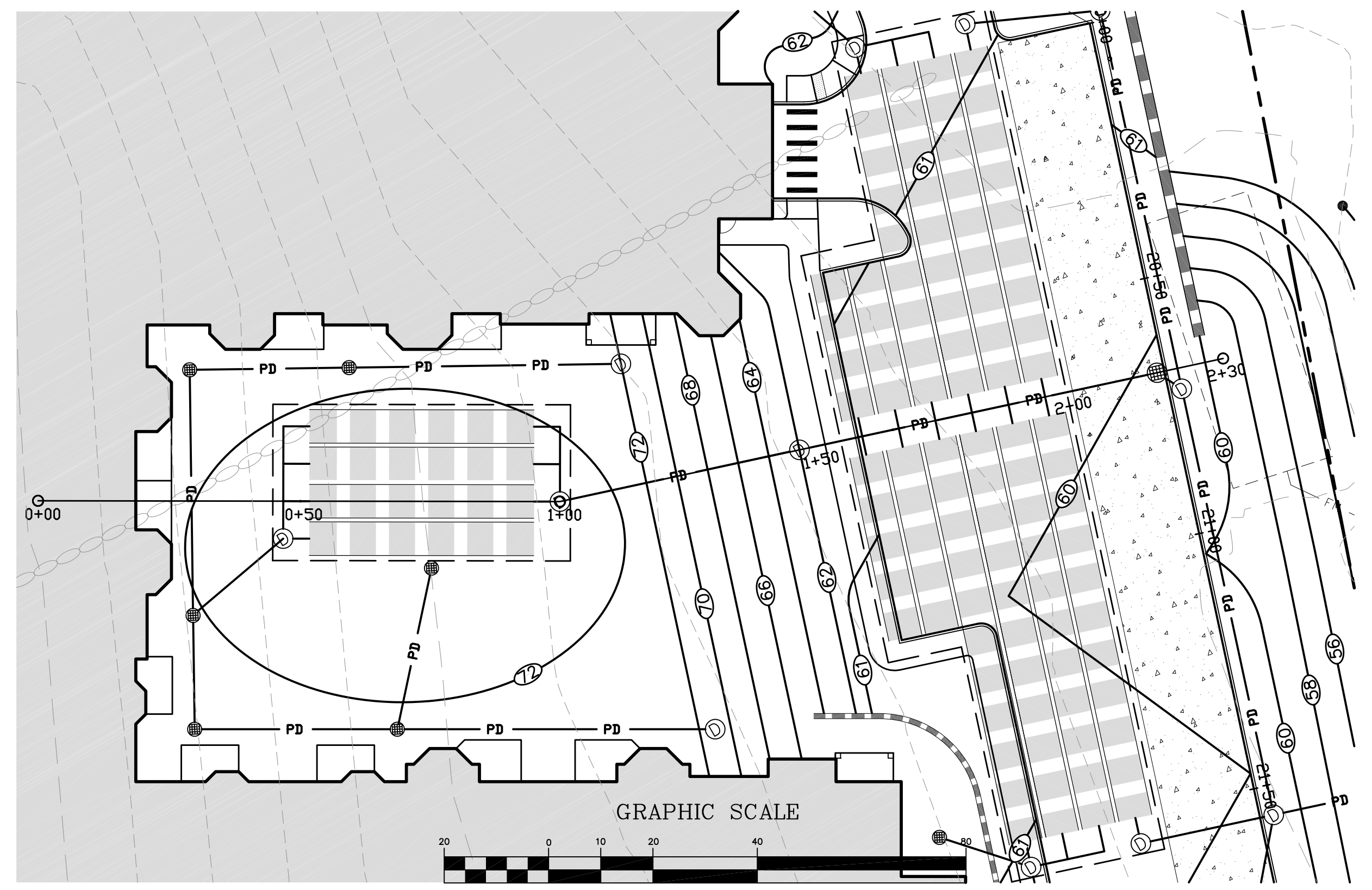
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P.O. BOX 423
BELMONT, MA 02178

APPLICANT:
THE RIVERWOODS GROUP
7 RIVERWOODS DRIVE
EXETER, NH 03833

PROJECT:
RIVERWOODS DURHAM
STONE QUARRY DRIVE
DURHAM, NH

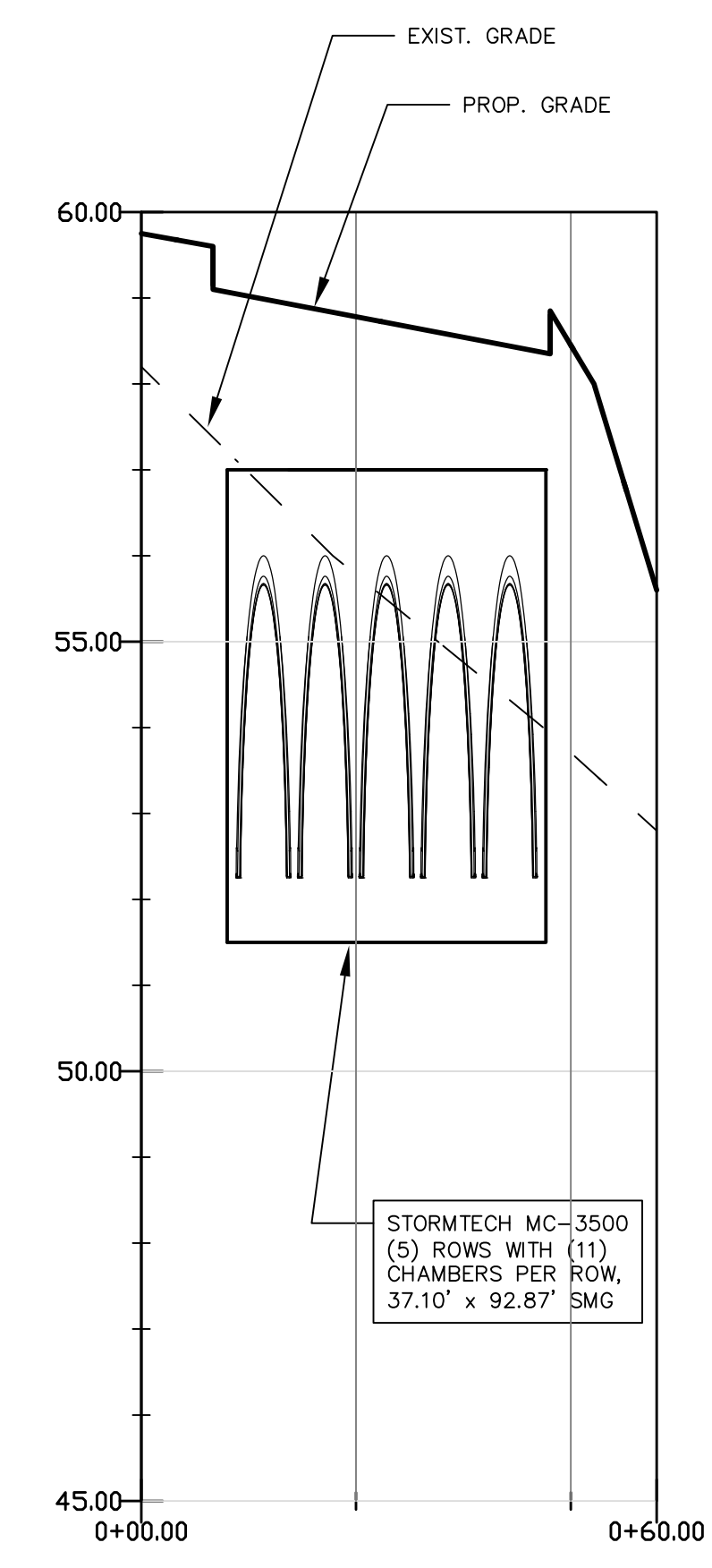
TITLE:
STORMWATER MANAGEMENT GALLERY - CROSS SECTIONS

SHEET NUMBER:
C - 5.6



STORMWATER MANAGEMENT GALLERY "C" & "D"

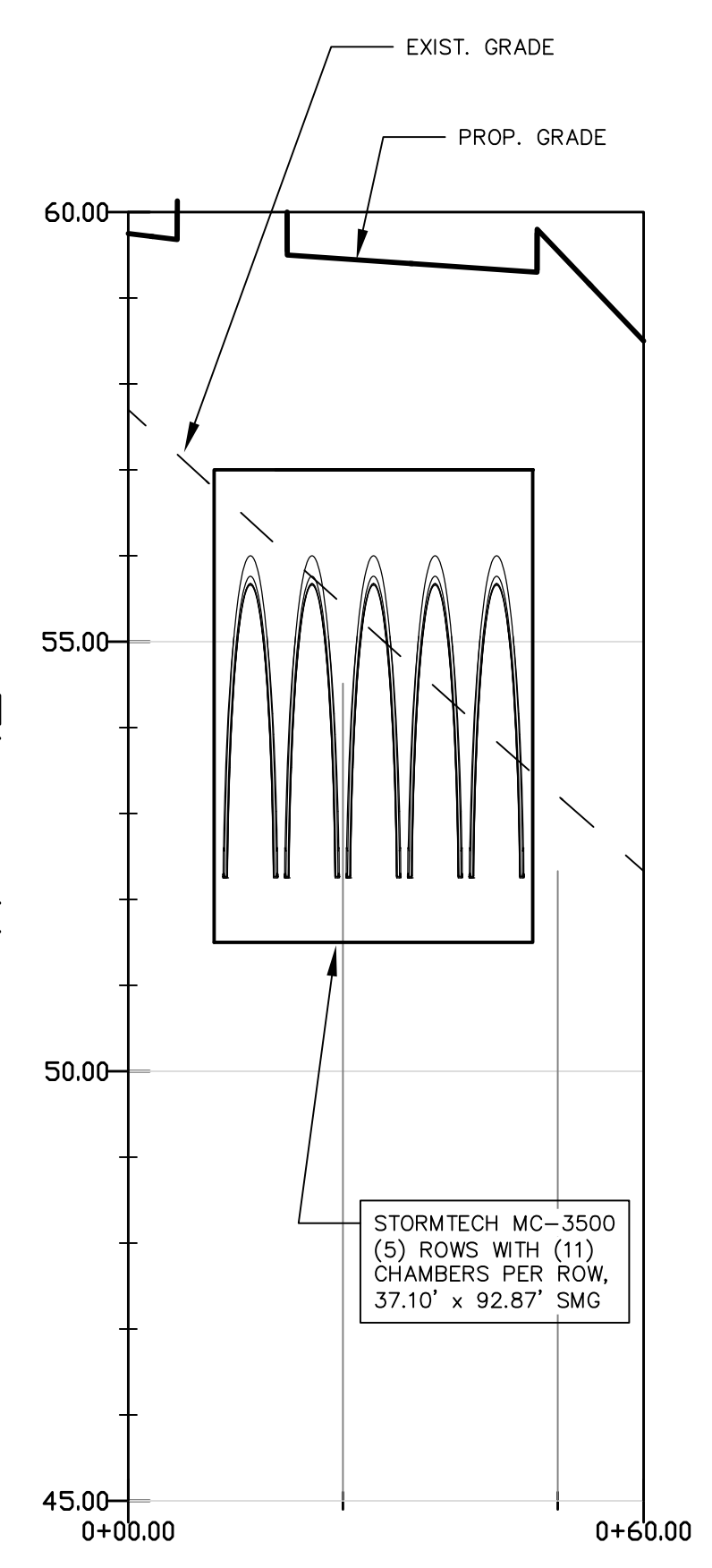
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'



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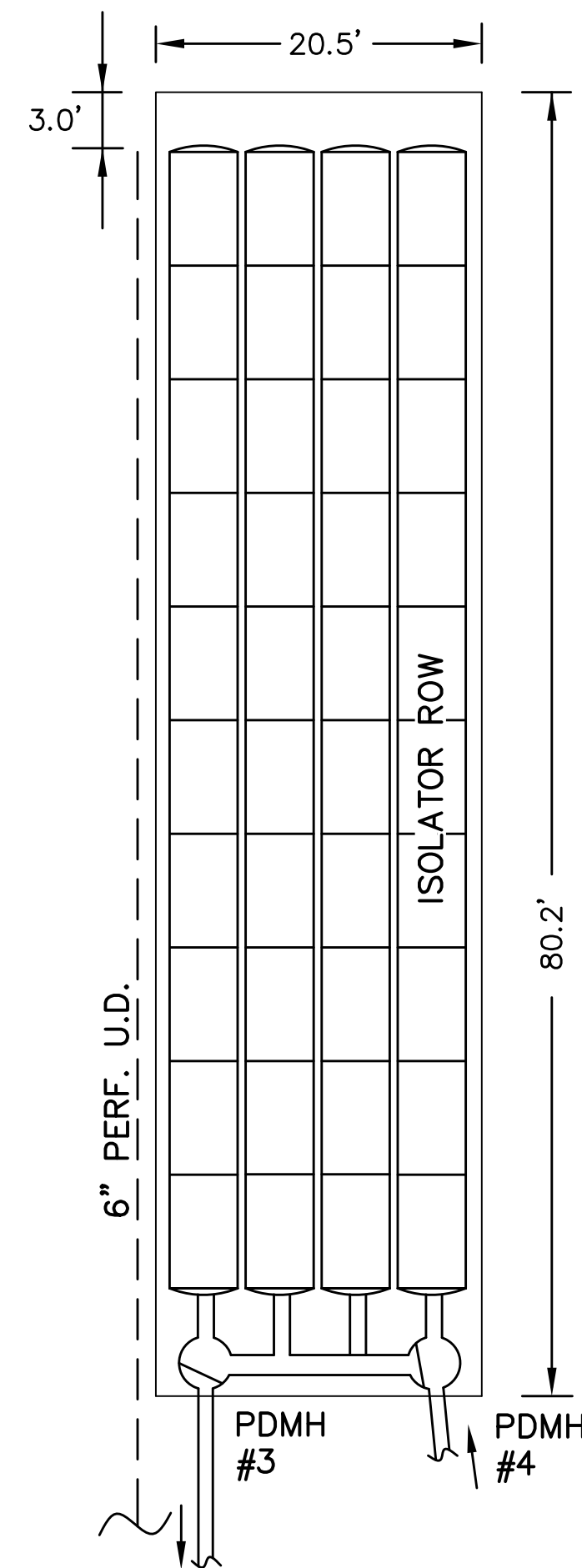
STORMWATER MANAGEMENT GALLERY "E"

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'

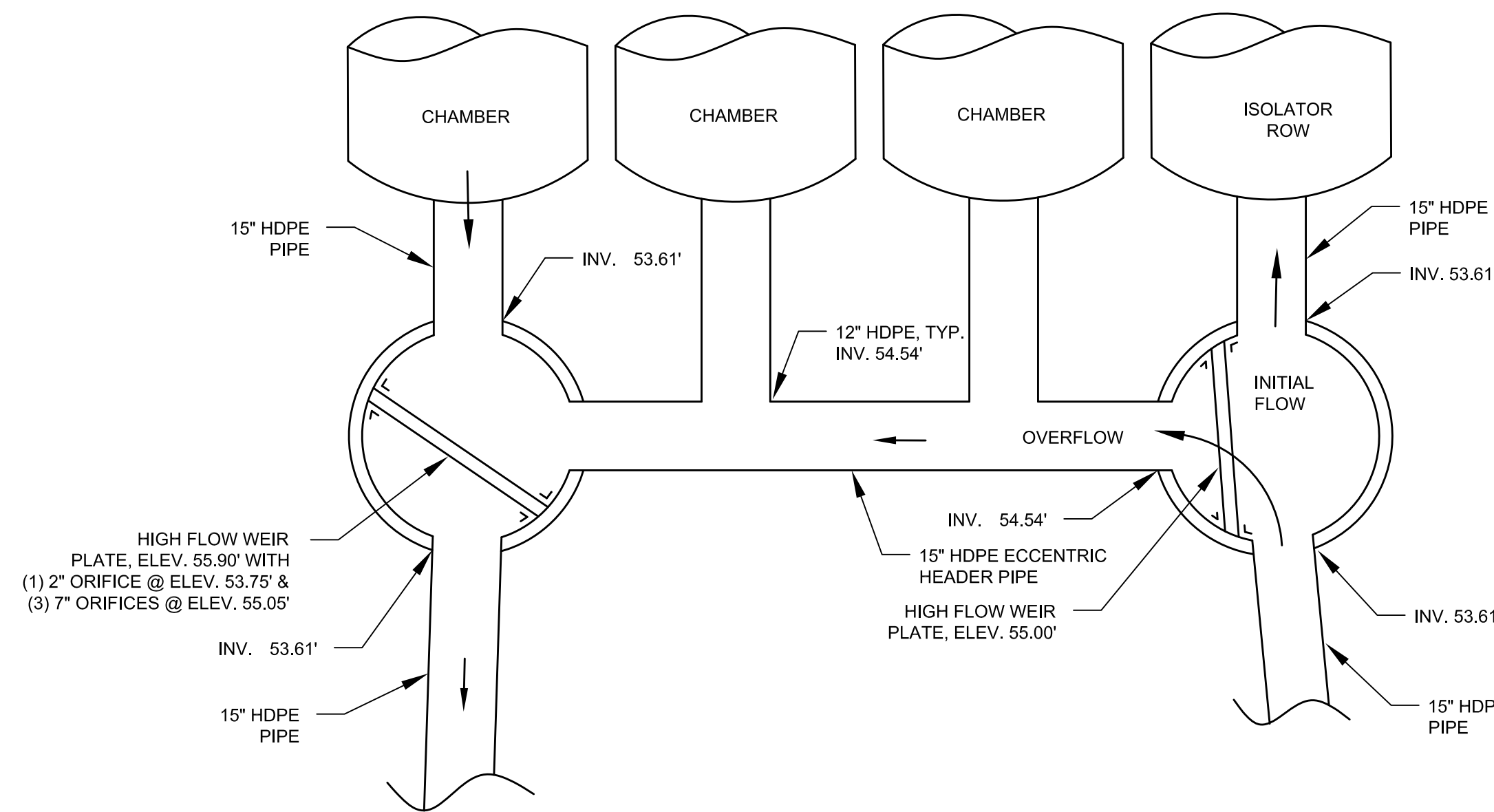


LINE E2

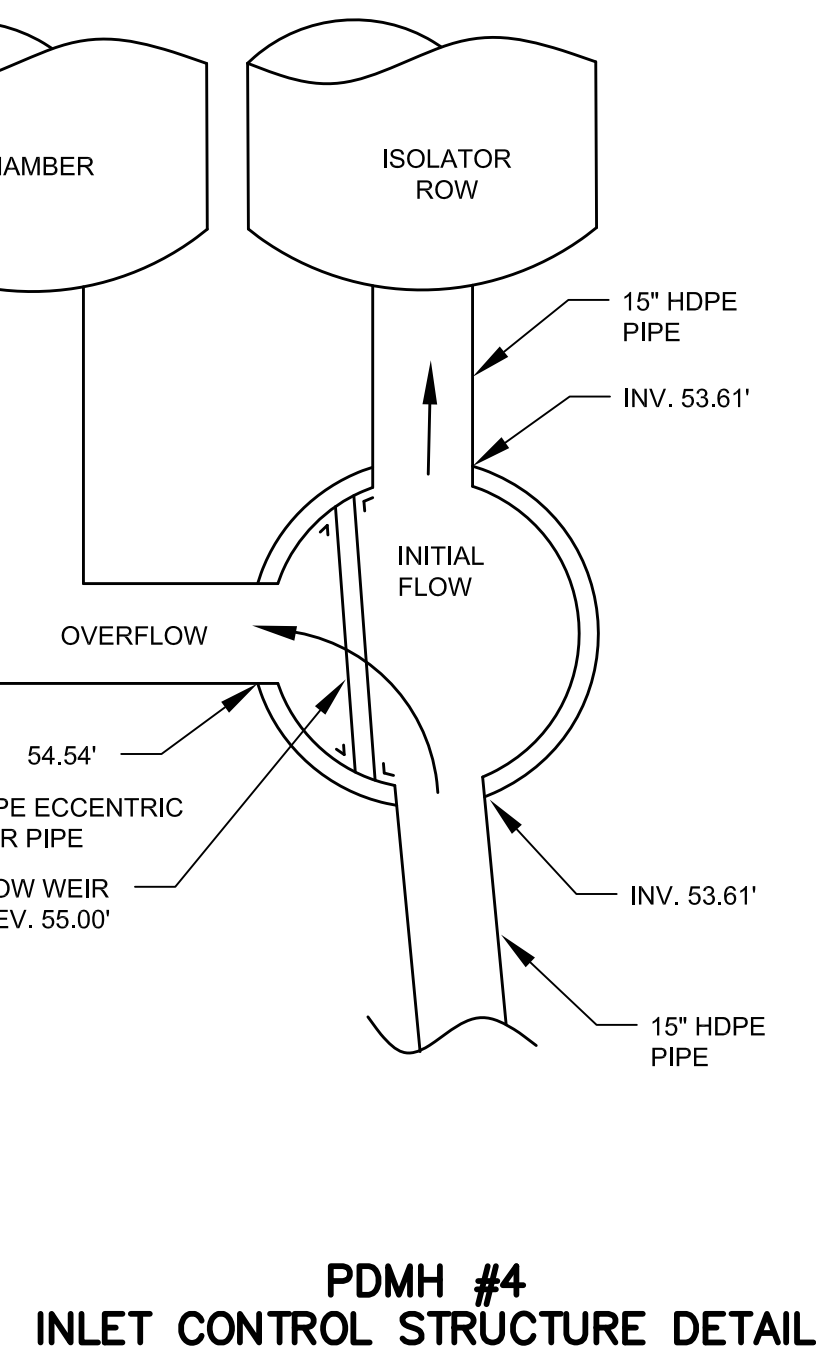
STORMTECH MC-3500
(5) ROWS WITH (11)
CHAMBERS PER ROW,
37.10' x 92.87' SMG



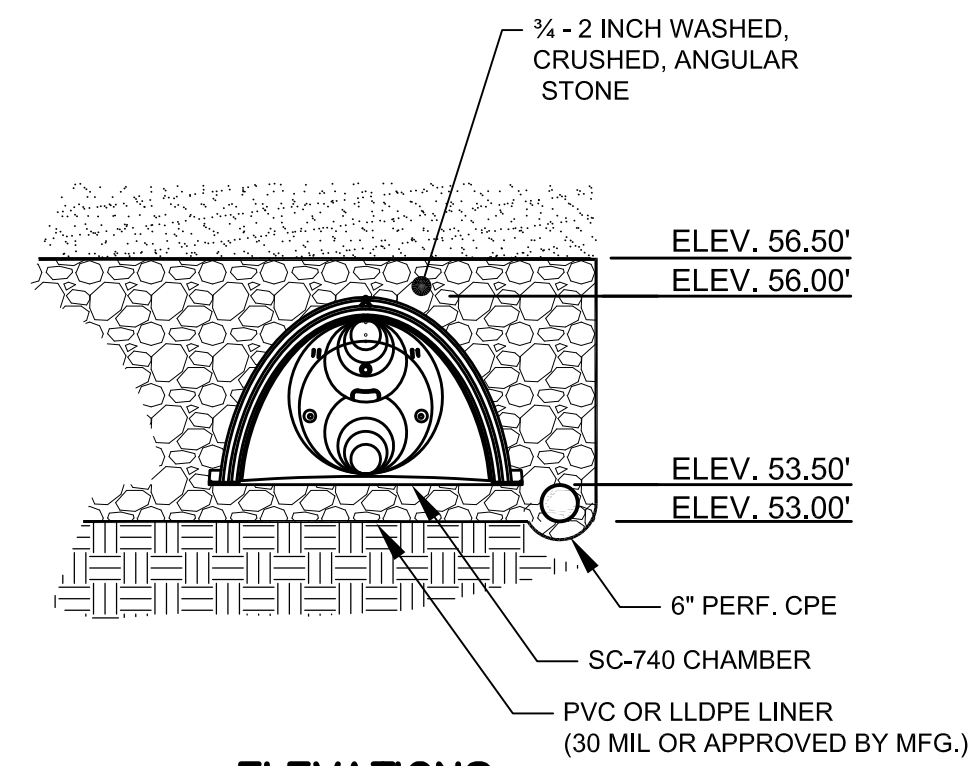
STORMWATER MANAGEMENT GALLERY 'A' LAYOUT
4 ROWS OF 10 SEGMENTS



PDMH #3
OUTLET CONTROL STRUCTURE DETAIL



PDMH #4
INLET CONTROL STRUCTURE DETAIL



ELEVATIONS

FINAL APPROVAL BY DURHAM PLANNING BOARD.
CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
CERTIFIED _____
DATE _____

ALTUS
ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
VOICE: (603) 433-2335
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SCALE: N.T.S.

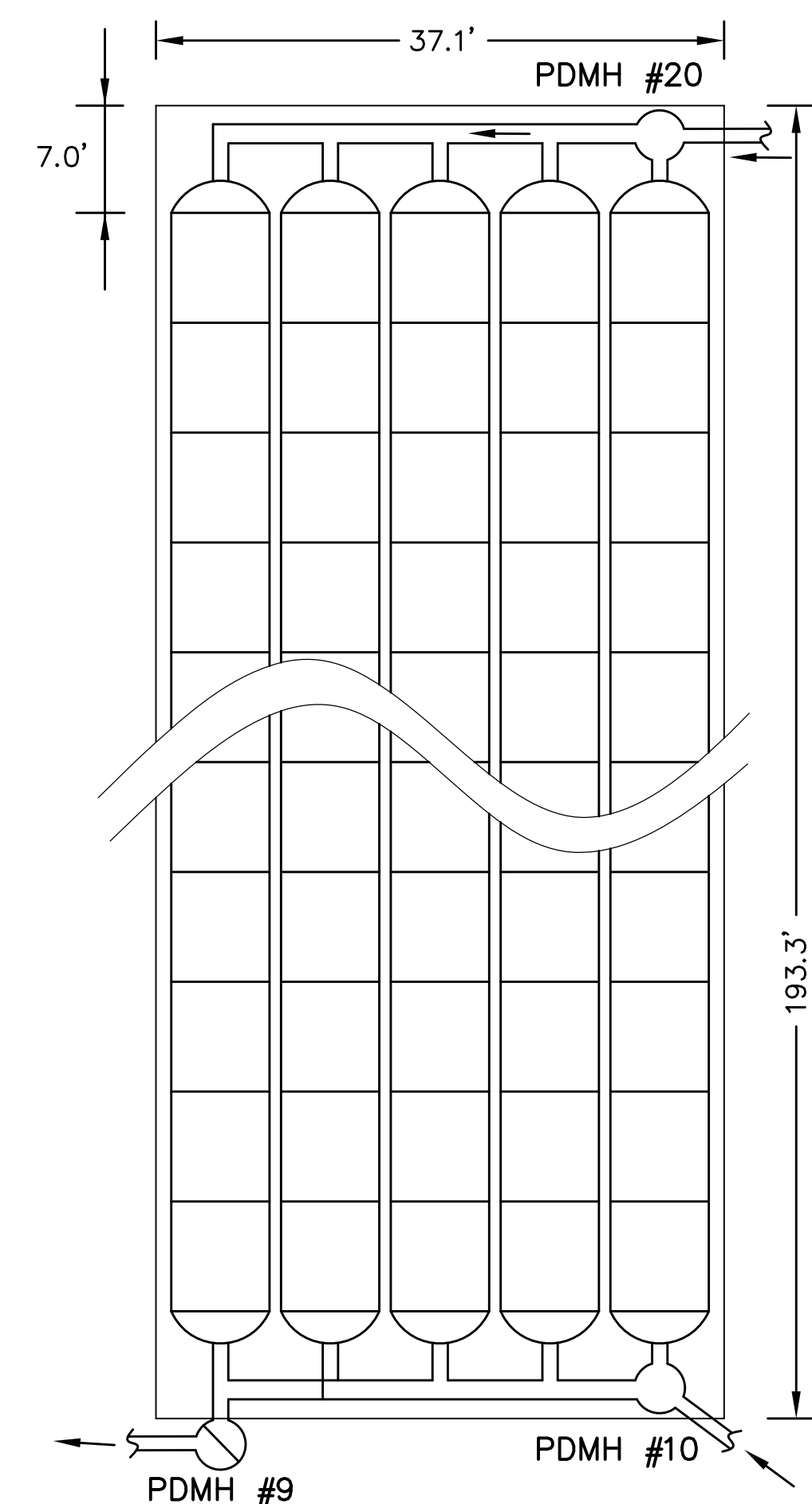
LAND OWNER - SUBJECT PARCEL:
ROCKINGHAM PROPERTIES 1, LTD
P.O. BOX 423
BELMONT, MA 02178

APPLICANT:
THE RIVERWOODS GROUP
7 RIVERWOODS DRIVE
EXETER, NH 03833

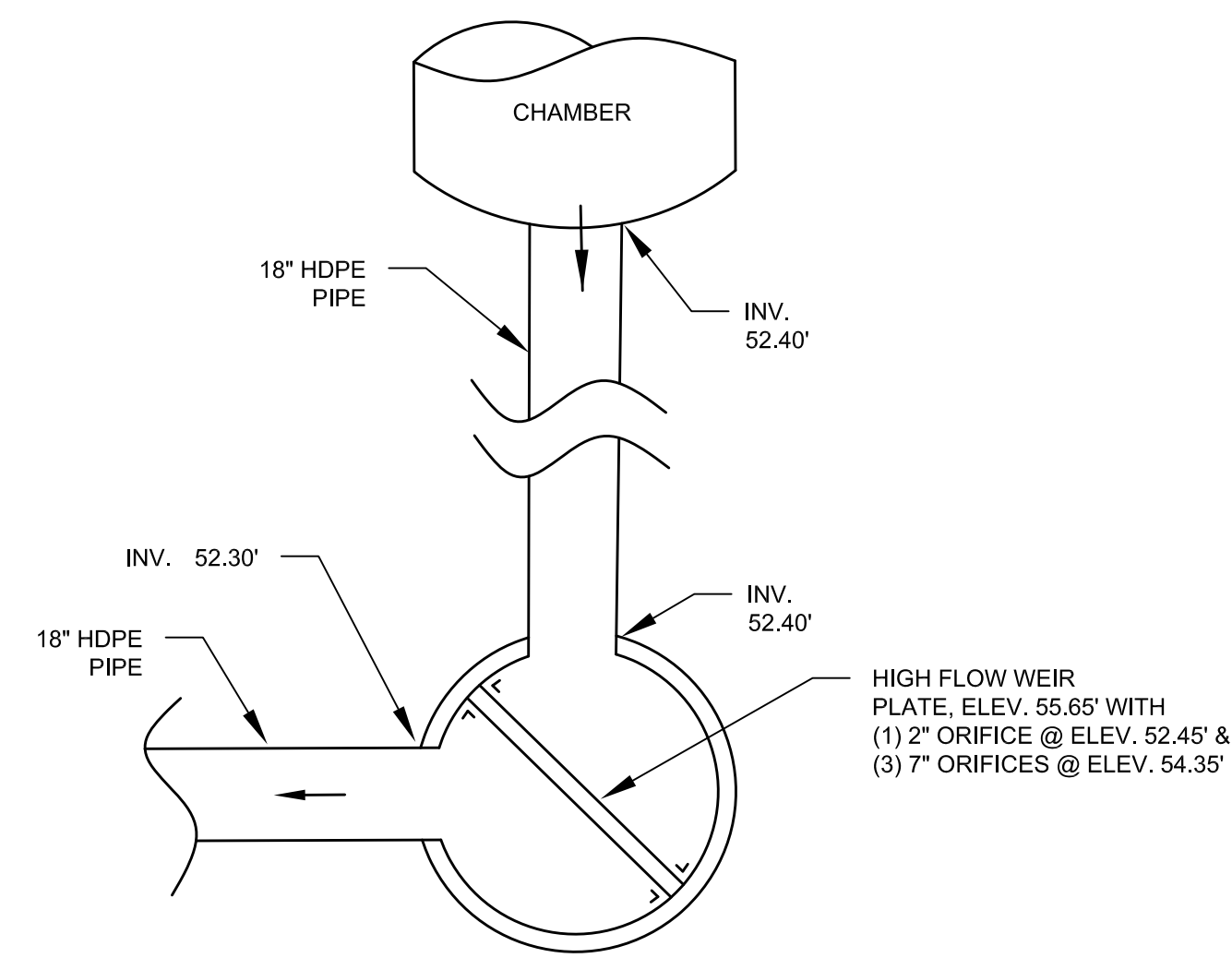
PROJECT:
RIVERWOODS DURHAM
STONE QUARRY DRIVE
DURHAM, NH

TITLE:
**STORMWATER
MANAGEMENT
GALLERY - LAYOUT**

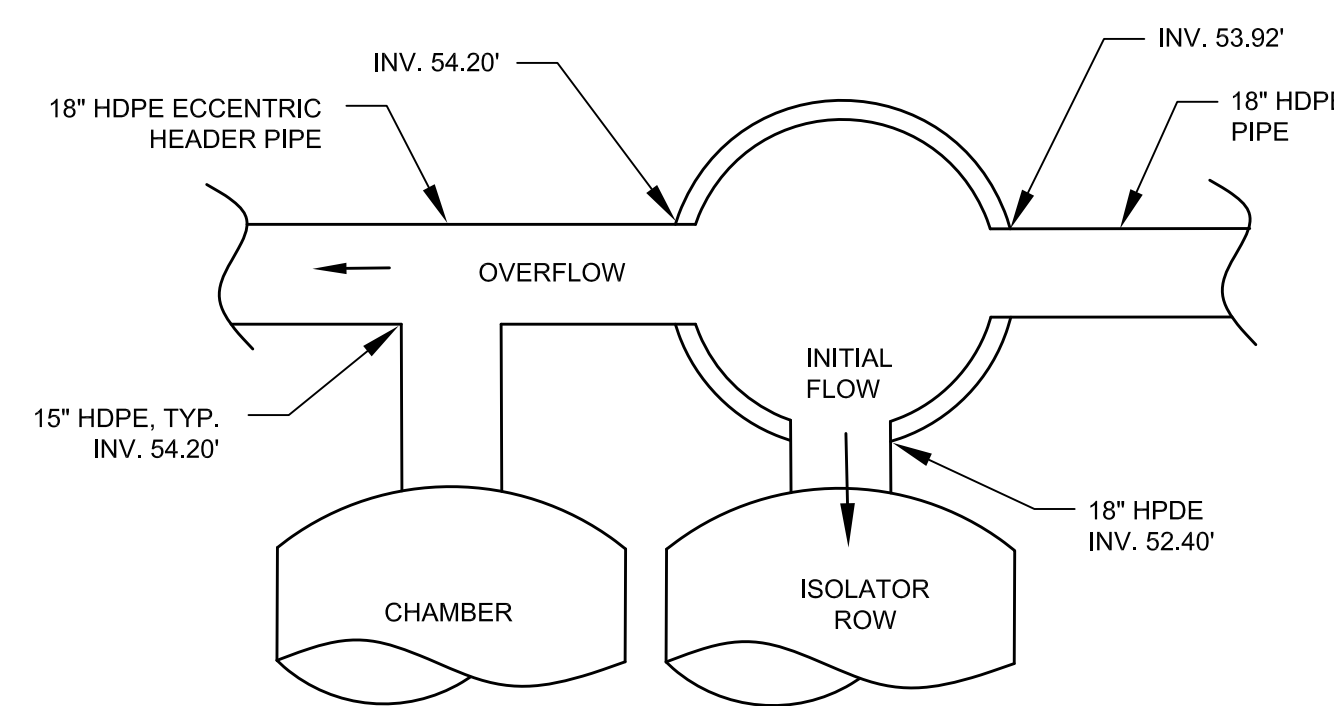
SHEET NUMBER:
C - 5.7



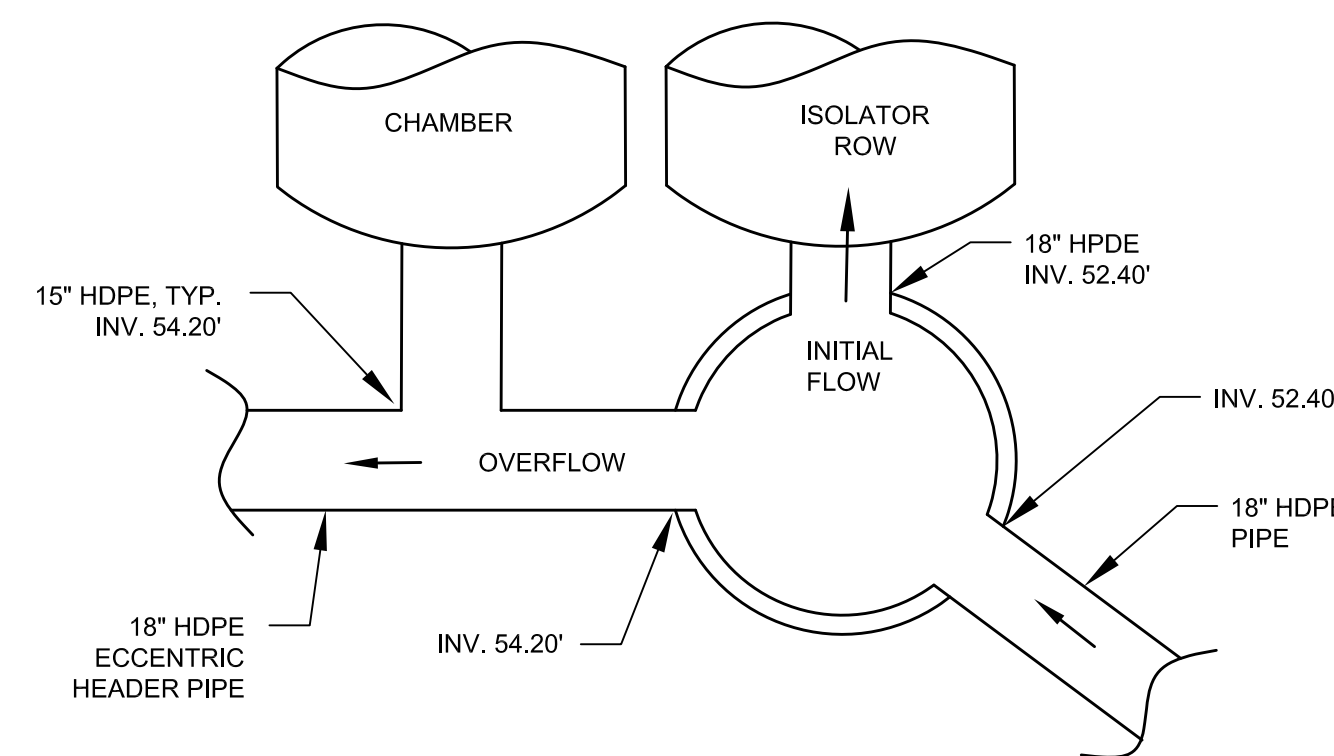
STORMWATER MANAGEMENT GALLERY 'B' LAYOUT
5 ROWS OF 25 SEGMENTS



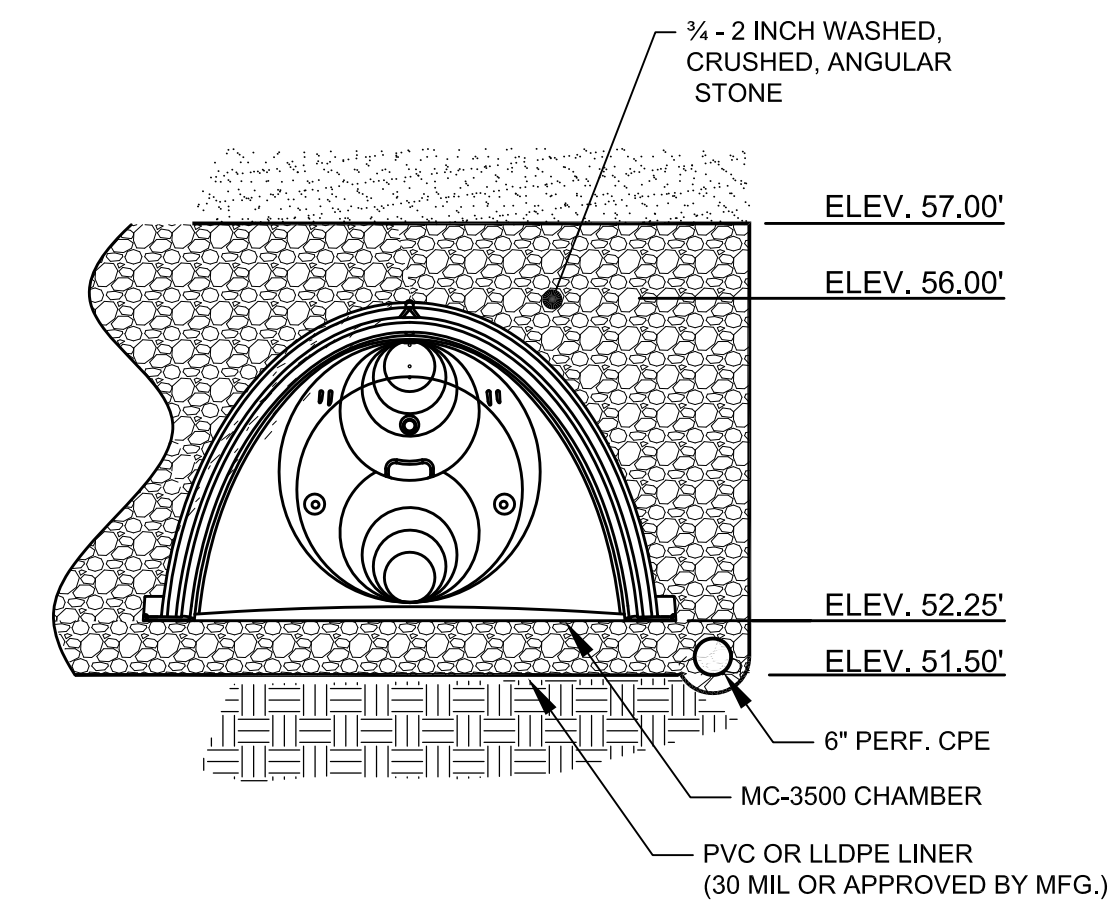
PDMH #9
OUTLET CONTROL STRUCTURE DETAIL



PDMH #20
INLET CONTROL STRUCTURE DETAIL



PDMH #10
INLET CONTROL STRUCTURE DETAIL



ELEVATIONS

P-4836

FINAL APPROVAL BY DURHAM PLANNING BOARD.
 CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
 CERTIFIED _____
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 ENGINEERING, INC.
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 APPROVED BY: _____ JKC
 DRAWING FILE: 4836DS.DWG

SCALE: N.T.S.

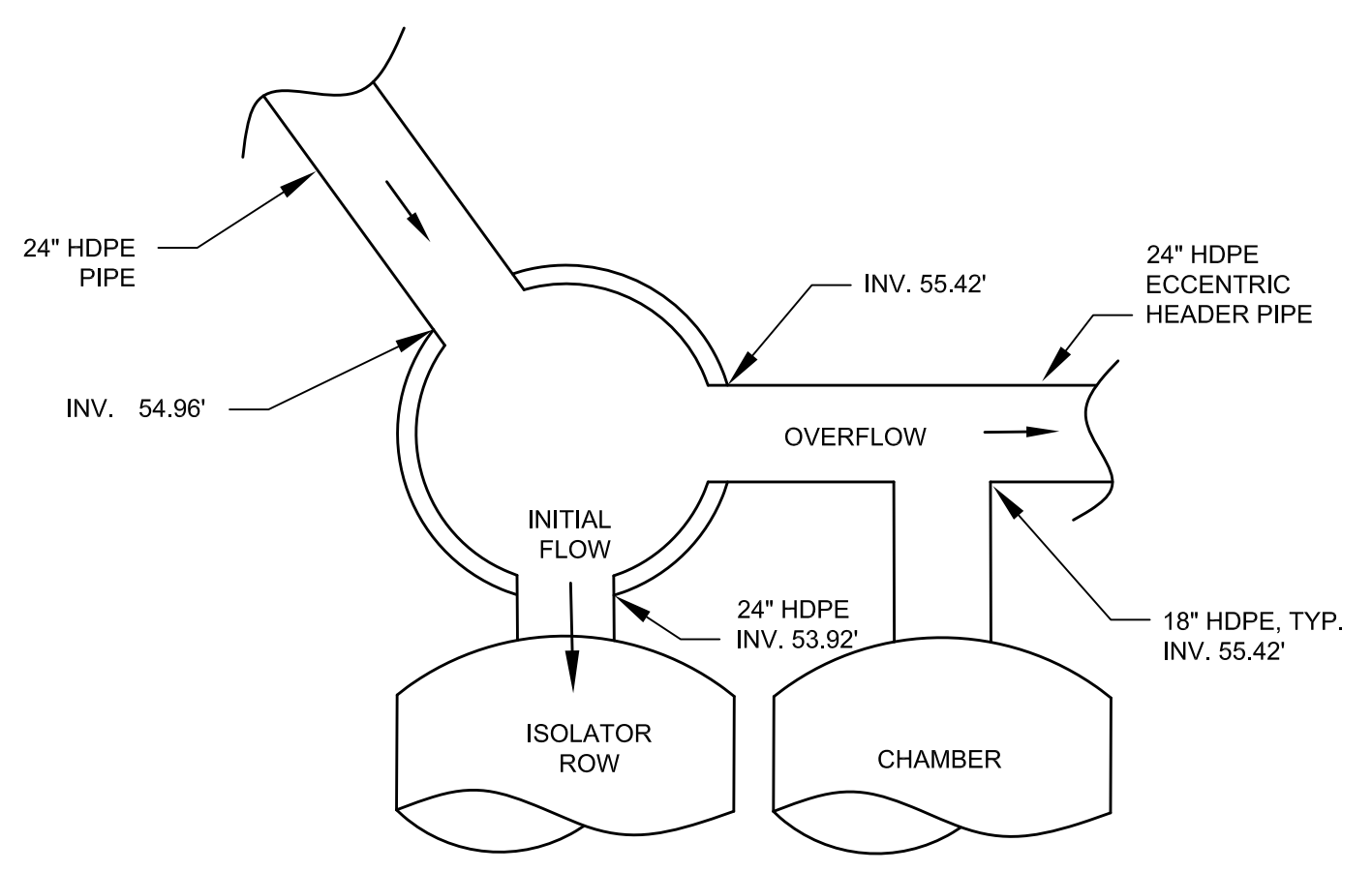
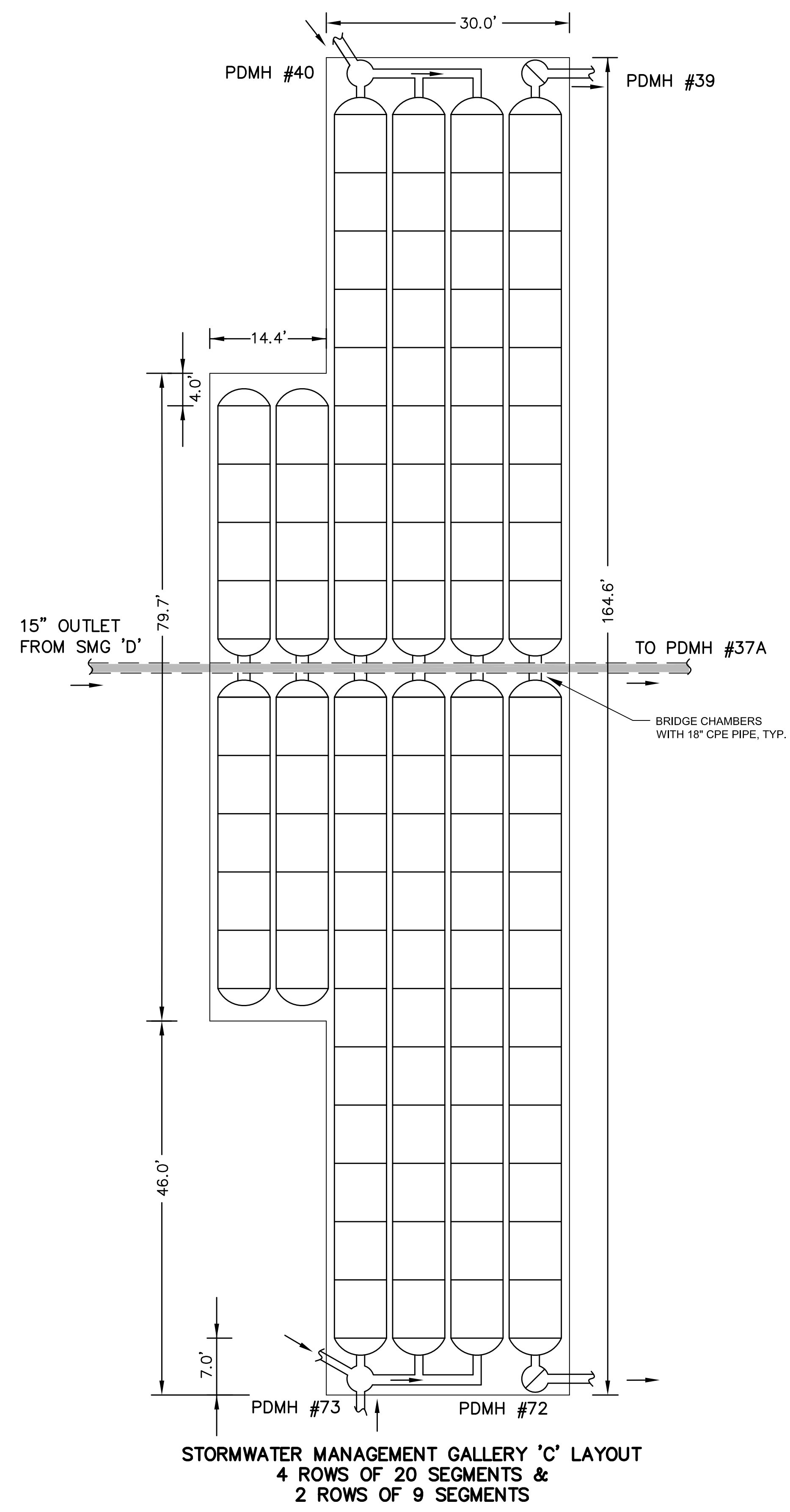
LAND OWNER - SUBJECT PARCEL:
ROCKINGHAM PROPERTIES 1, LTD
 P.O. BOX 423
 BELMONT, MA 02178

APPLICANT:
THE RIVERWOODS GROUP
 7 RIVERWOODS DRIVE
 EXETER, NH 03833

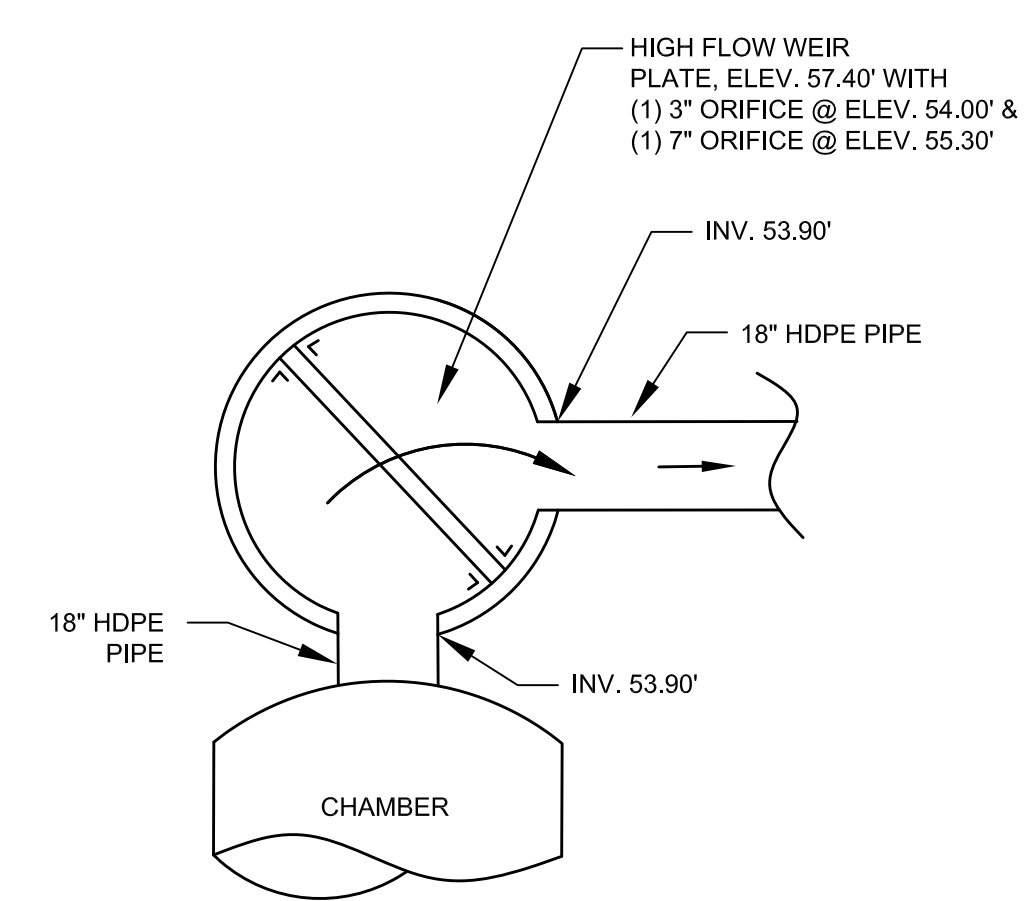
PROJECT:
RIVERWOODS DURHAM
 STONE QUARRY DRIVE
 DURHAM, NH

TITLE:
STORMWATER MANAGEMENT GALLERY - LAYOUT

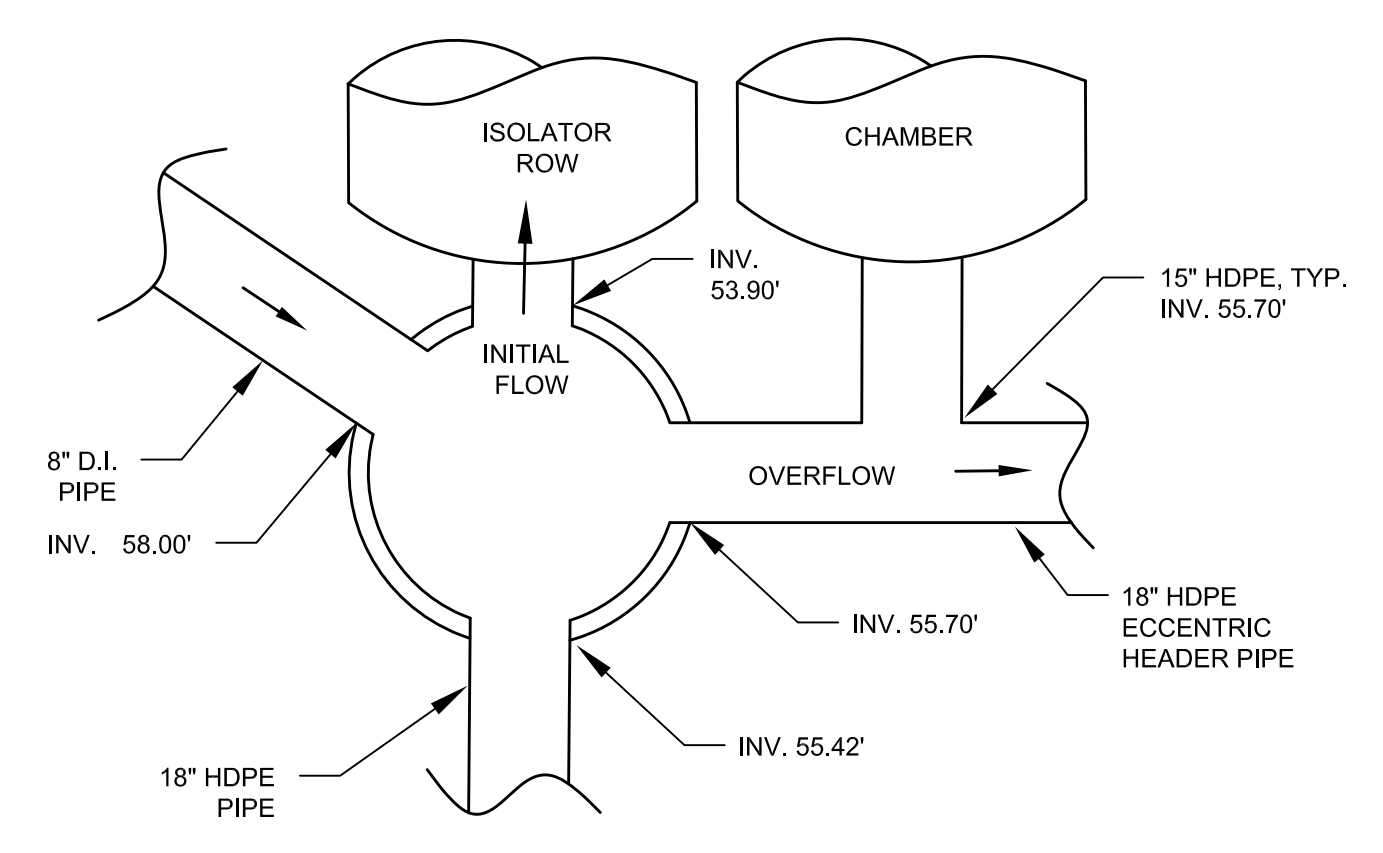
SHEET NUMBER:
C - 5.8



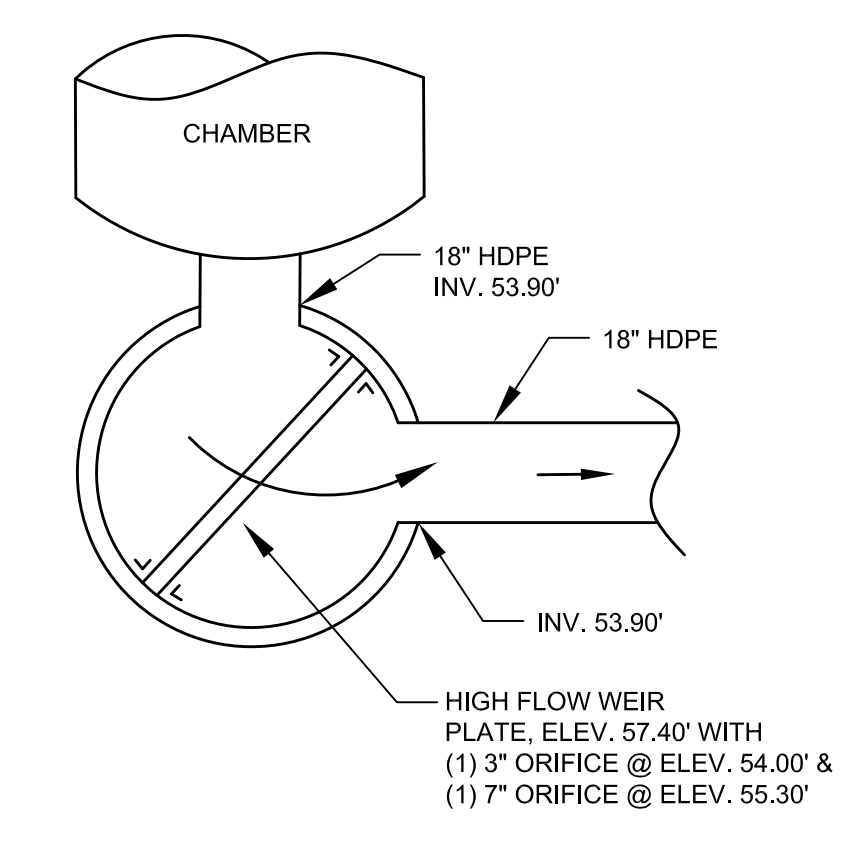
PDMH #40
 INLET CONTROL STRUCTURE DETAIL



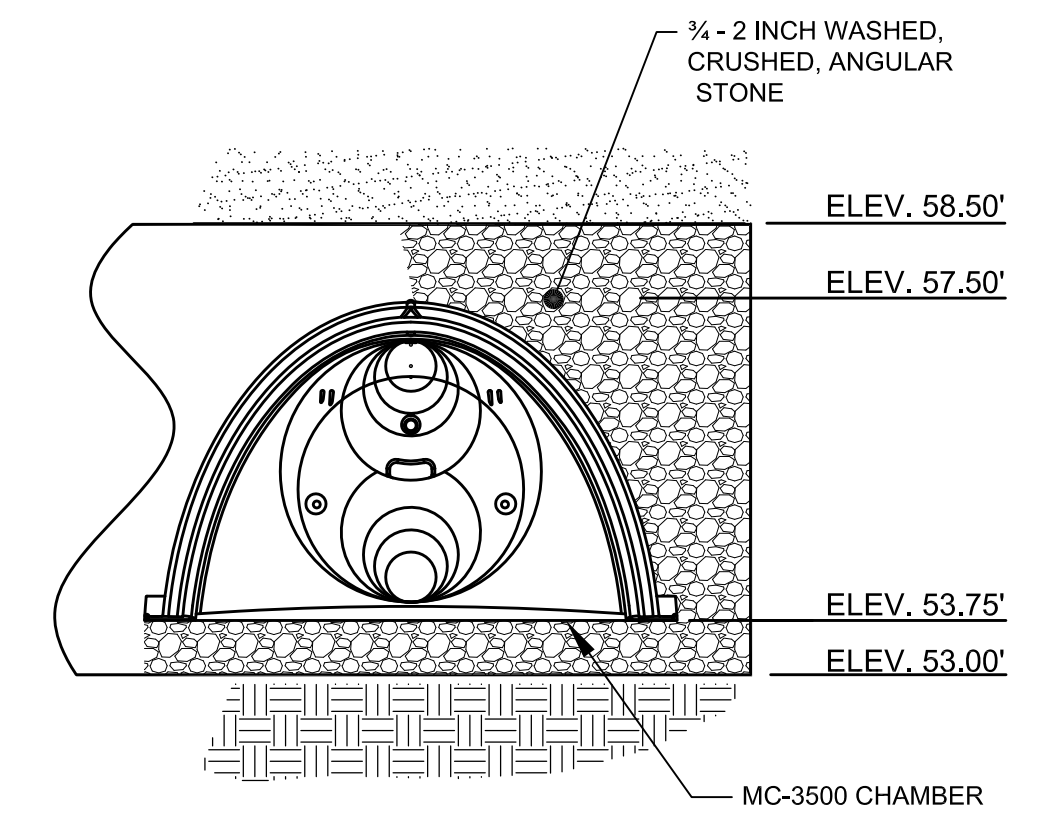
PDMH #39
 OUTLET CONTROL STRUCTURE DETAIL



PDMH #73
 INLET CONTROL STRUCTURE DETAIL

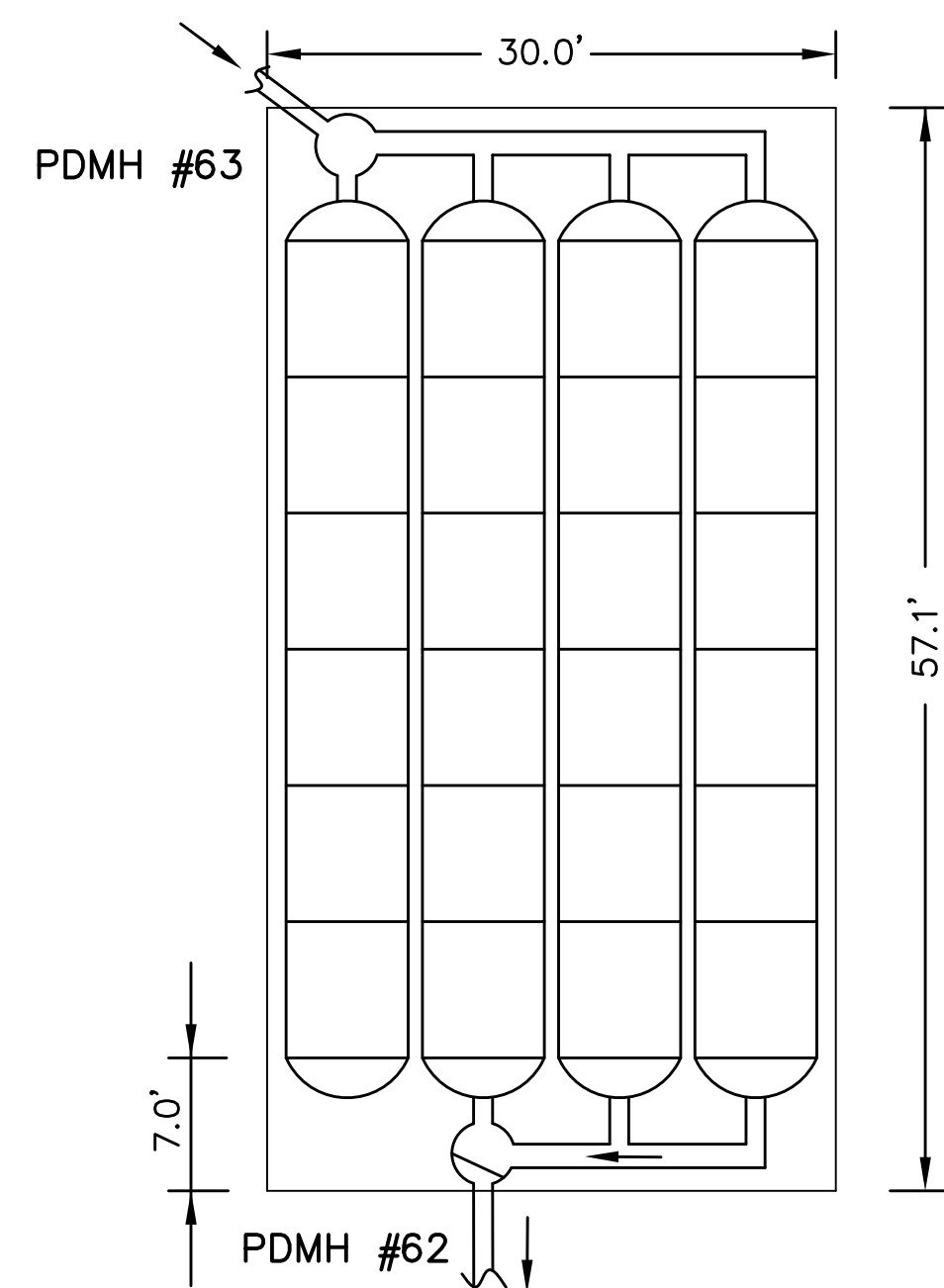


PDMH #72
 OUTLET CONTROL STRUCTURE DETAIL

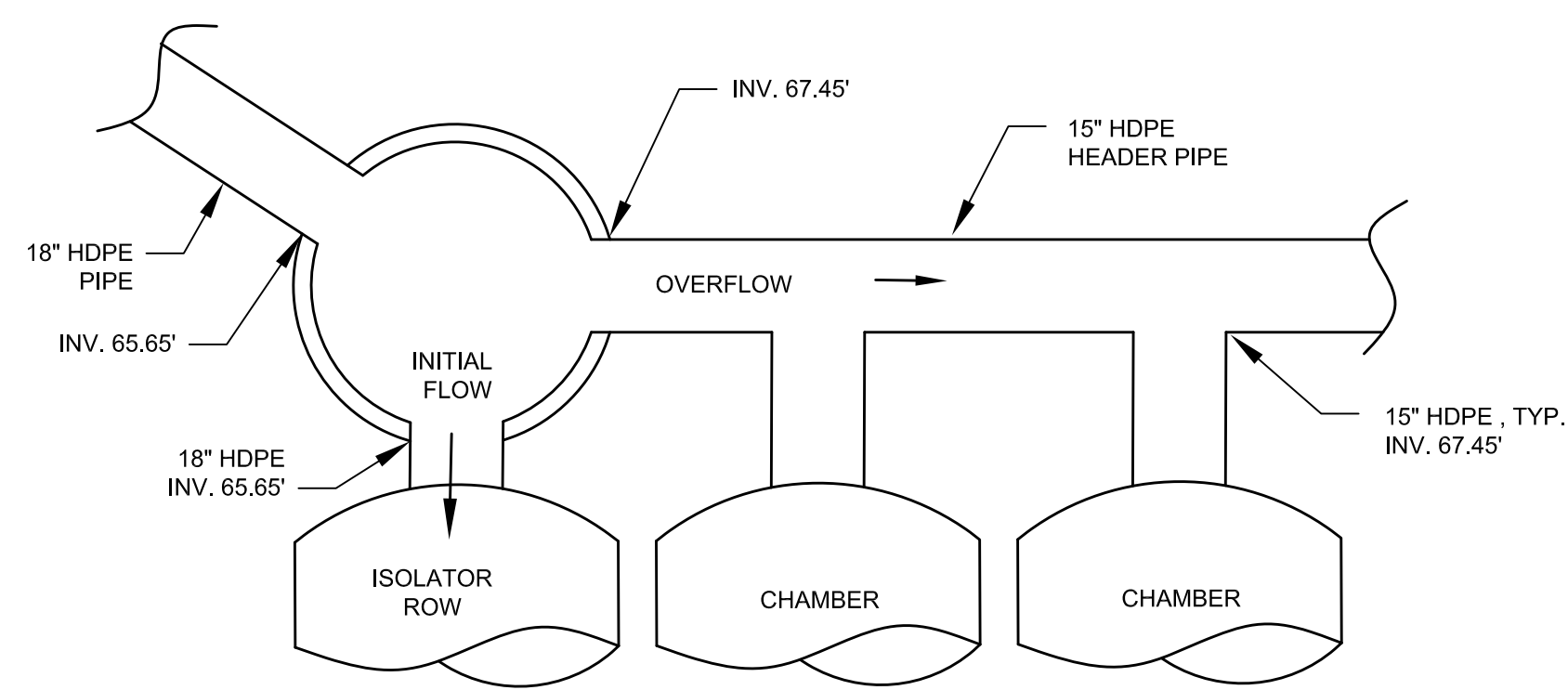


ELEVATIONS

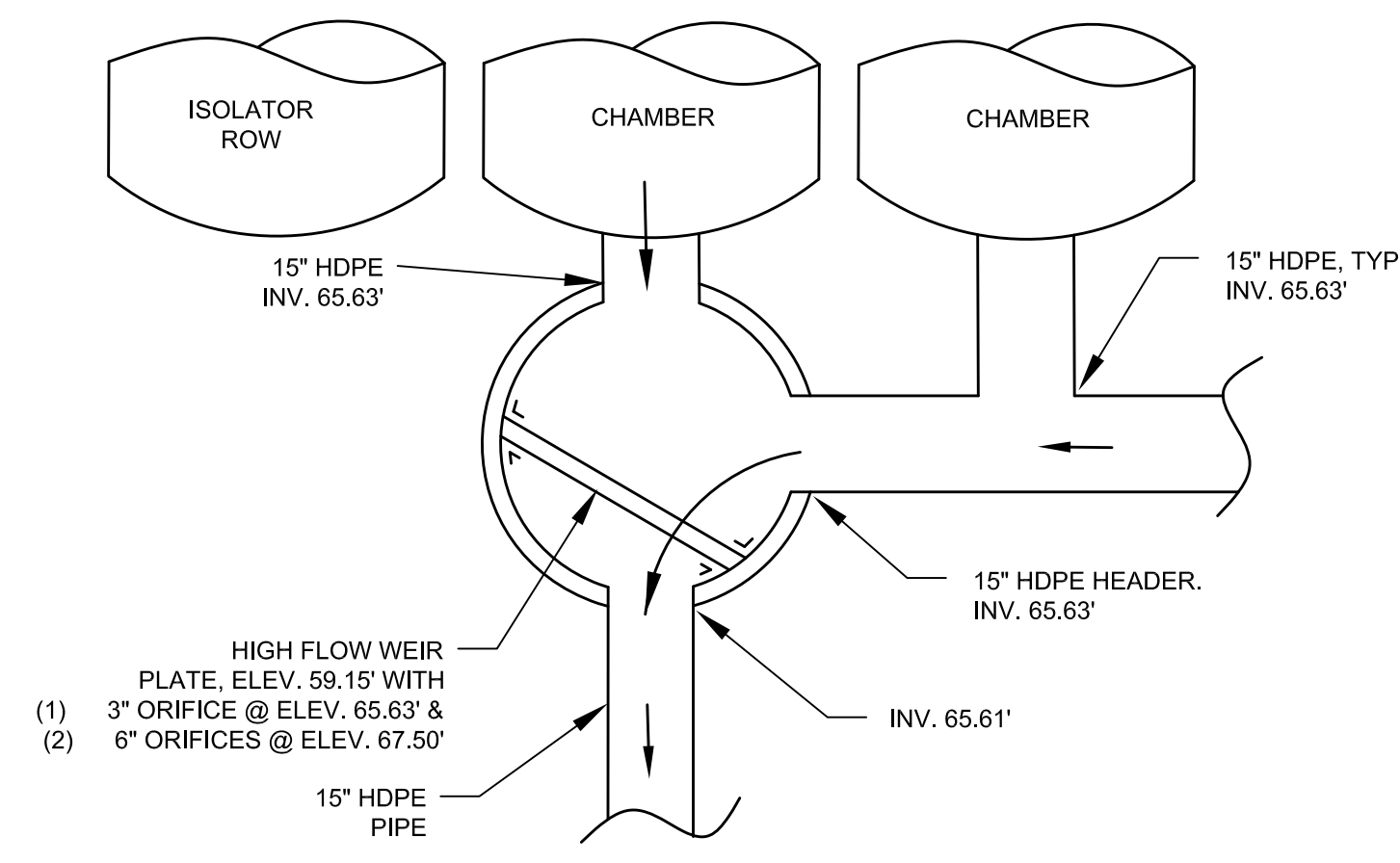
P-4836



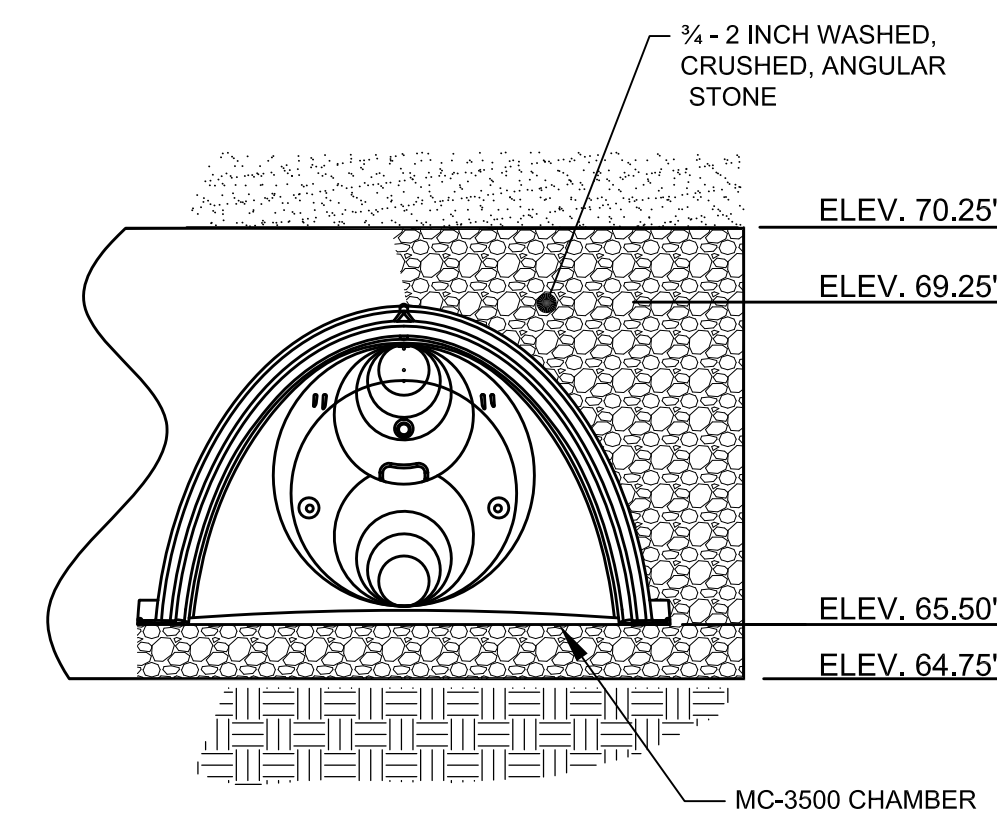
STORMWATER MANAGEMENT GALLERY 'D' LAYOUT
4 ROWS OF 6 SEGMENTS



PDMH #63
INLET CONTROL STRUCTURE DETAIL



PDMH #62
OUTLET CONTROL STRUCTURE DETAIL



ELEVATIONS

FINAL APPROVAL BY DURHAM PLANNING BOARD.
CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
CERTIFIED _____
DATE _____

ALTUS
ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
VOICE: (603) 433-2335
FAX: (603) 433-4194



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ISSUED FOR:	APPROVAL
ISSUE DATE:	DECEMBER 5, 2017

REVISIONS	NO.	DESCRIPTION	BY	DATE
0	PB SUBMISSION		JKC	12/05/17

DRAWN BY: _____ RMB
APPROVED BY: _____ JKC
DRAWING FILE: 4836DS.DWG

SCALE: N.T.S.

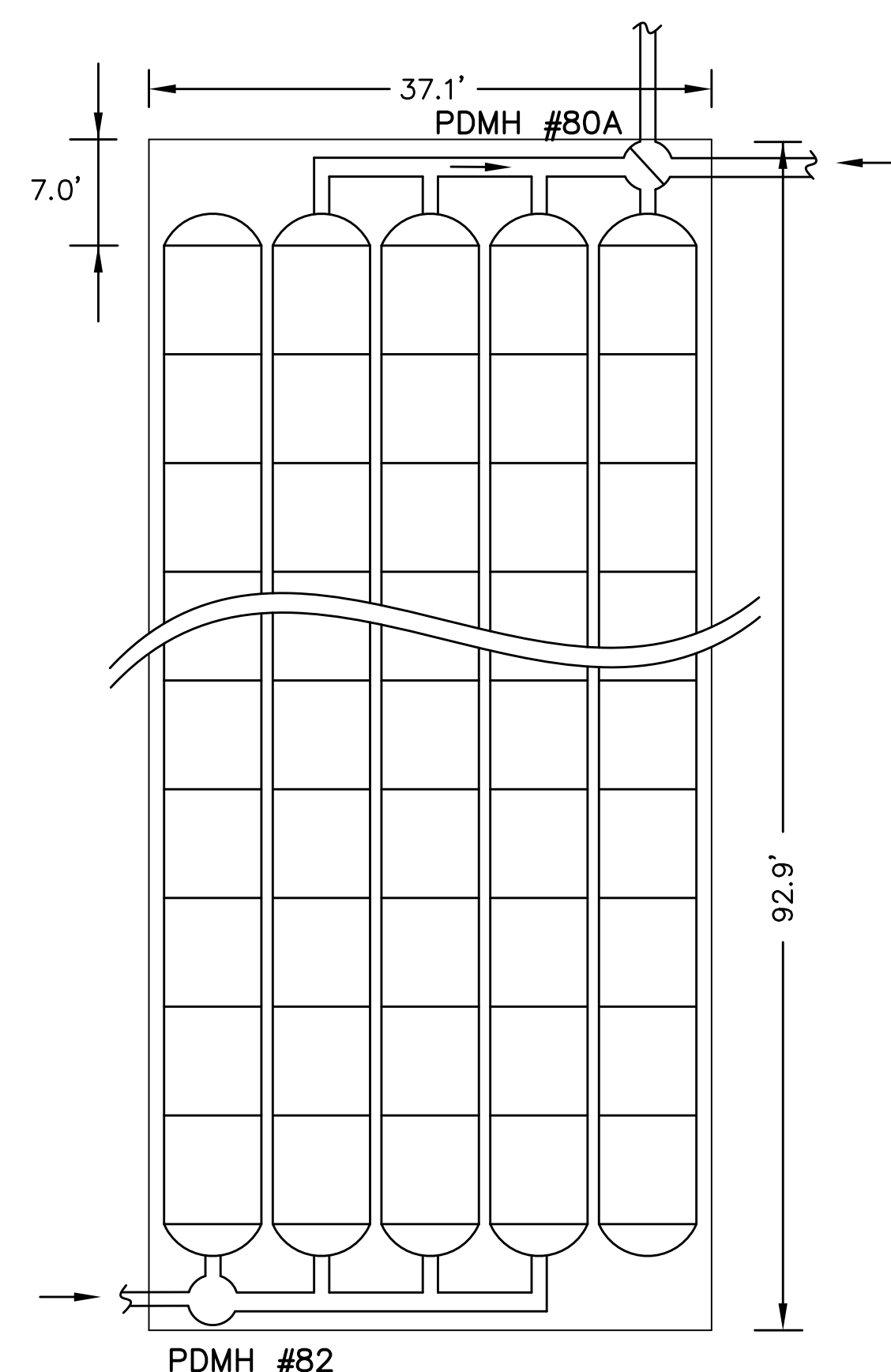
LAND OWNER - SUBJECT PARCEL:
ROCKINGHAM PROPERTIES 1, LTD
P.O. BOX 423
BELMONT, MA 02178

APPLICANT:
THE RIVERWOODS GROUP
7 RIVERWOODS DRIVE
EXETER, NH 03833

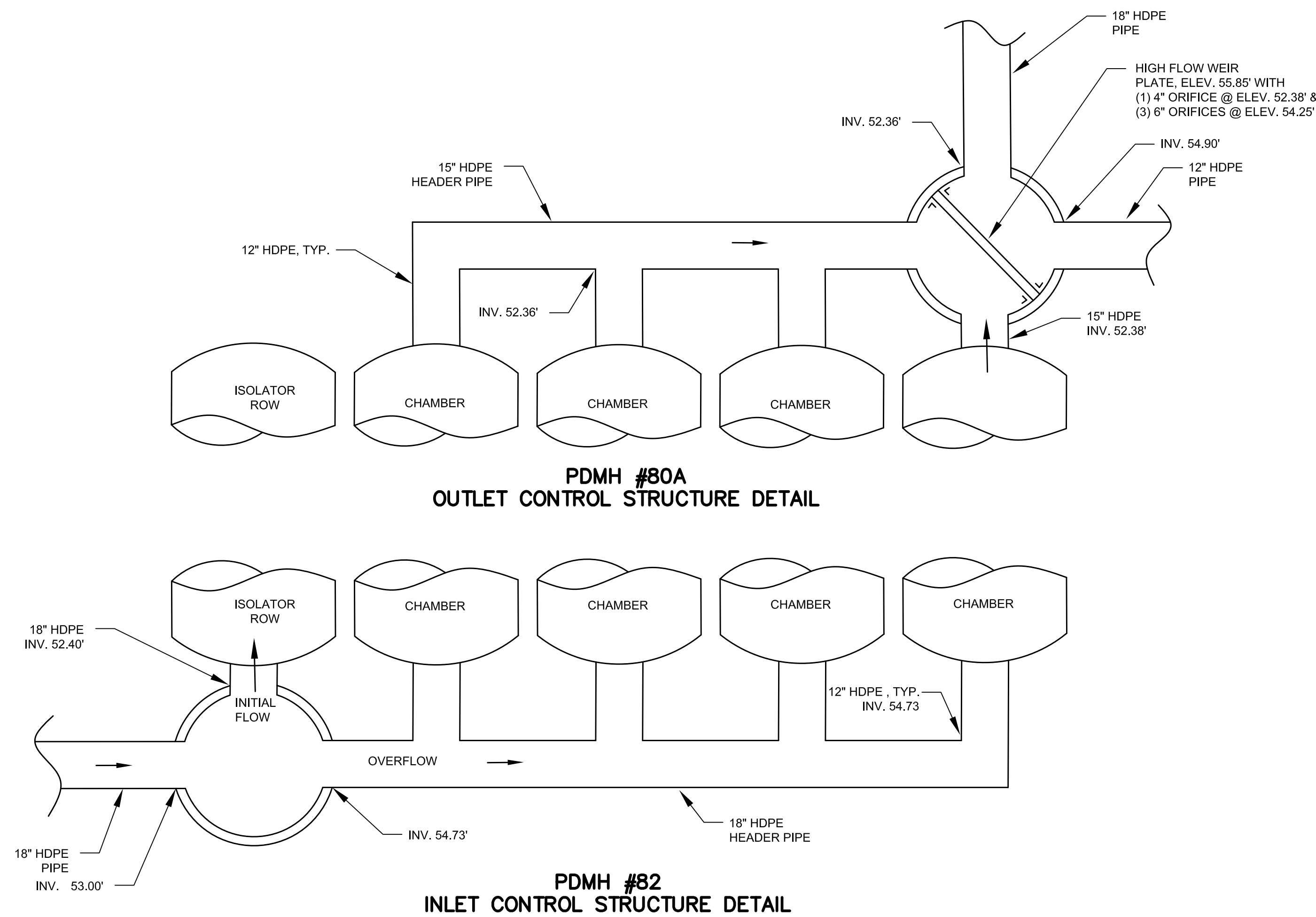
PROJECT:
RIVERWOODS DURHAM
STONE QUARRY DRIVE
DURHAM, NH

TITLE:
STORMWATER MANAGEMENT GALLERY - LAYOUT

SHEET NUMBER:
C - 5.9

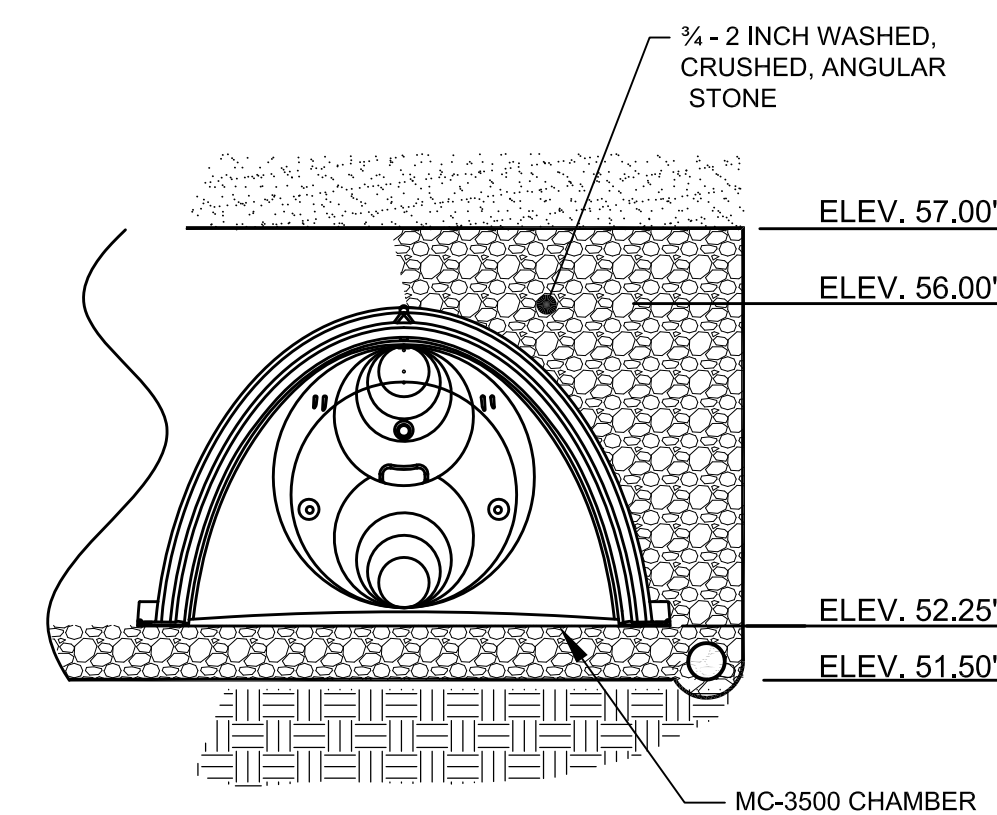


STORMWATER MANAGEMENT GALLERY 'E' LAYOUT
5 ROWS OF 11 SEGMENTS



PDMH #80A
OUTLET CONTROL STRUCTURE DETAIL

PDMH #82
INLET CONTROL STRUCTURE DETAIL

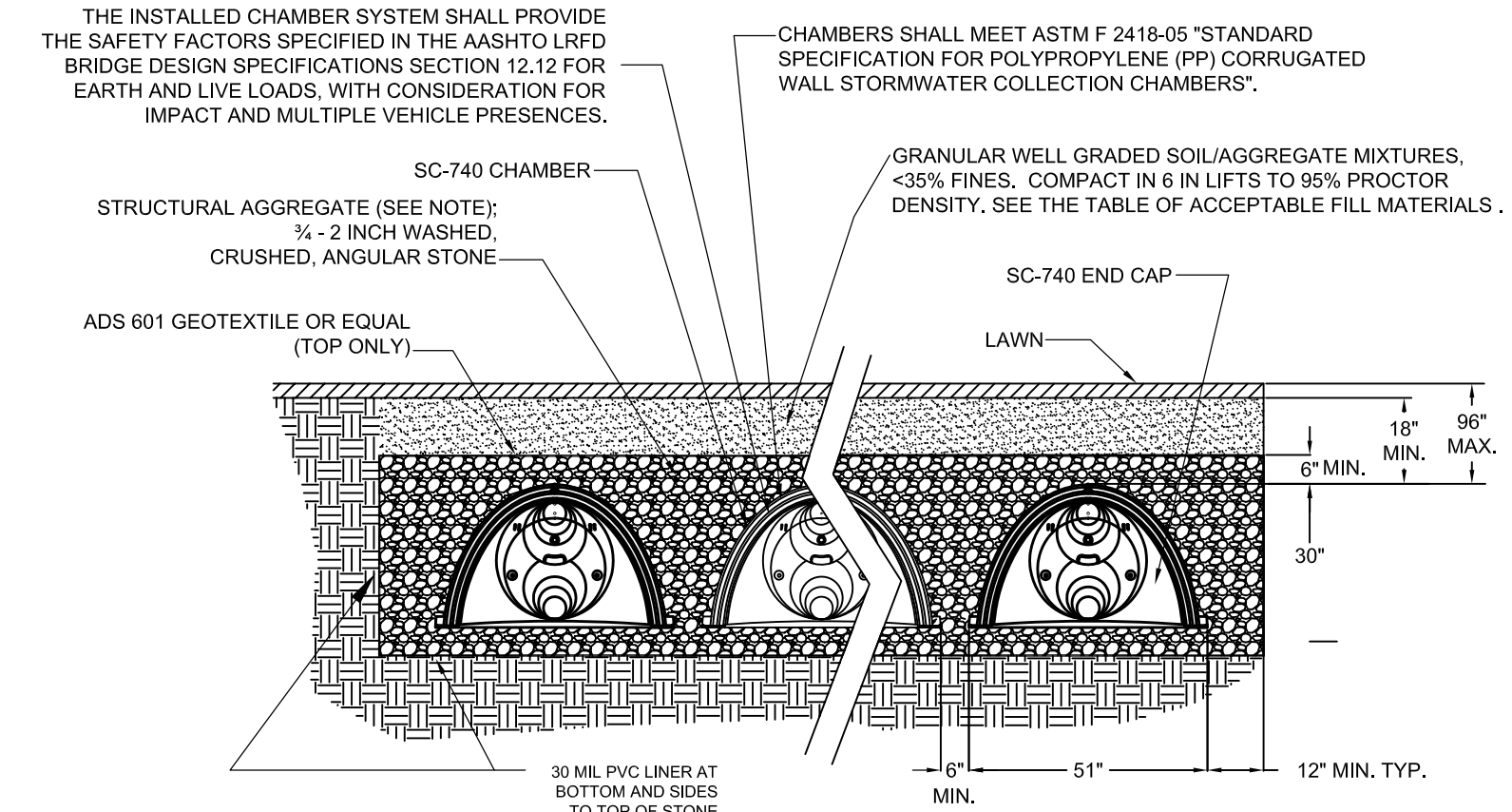


ELEVATIONS

P-4836

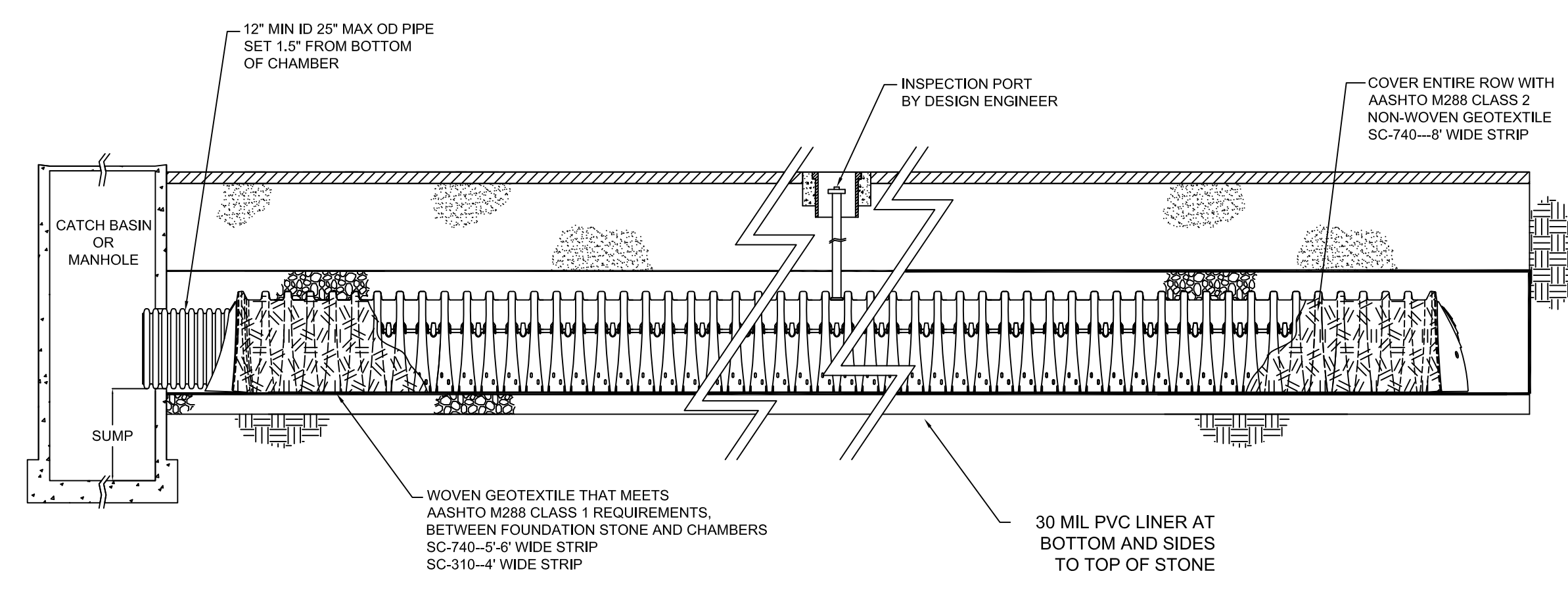
FINAL APPROVAL BY DURHAM PLANNING BOARD.
 CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
 CERTIFIED _____
 DATE _____

ALTUS
 ENGINEERING, INC.
 133 COURT STREET PORTSMOUTH, NH 03801
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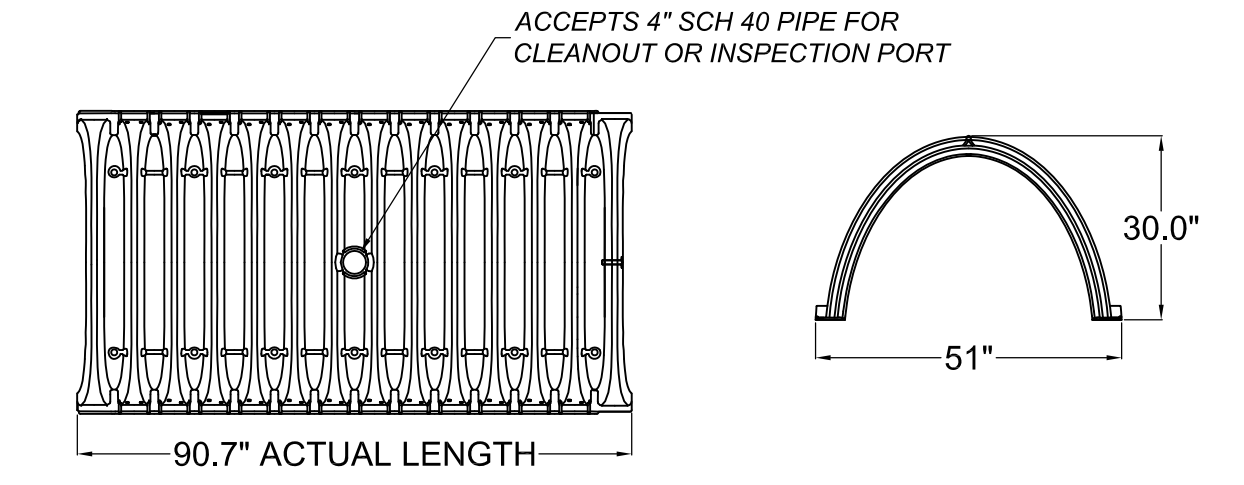


THIS CROSS SECTION DETAILS THE REQUIREMENTS NECESSARY TO SATISFY THE SAFETY FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 12.12 FOR EARTH AND LIVE LOADS USING STORMTECH CHAMBERS

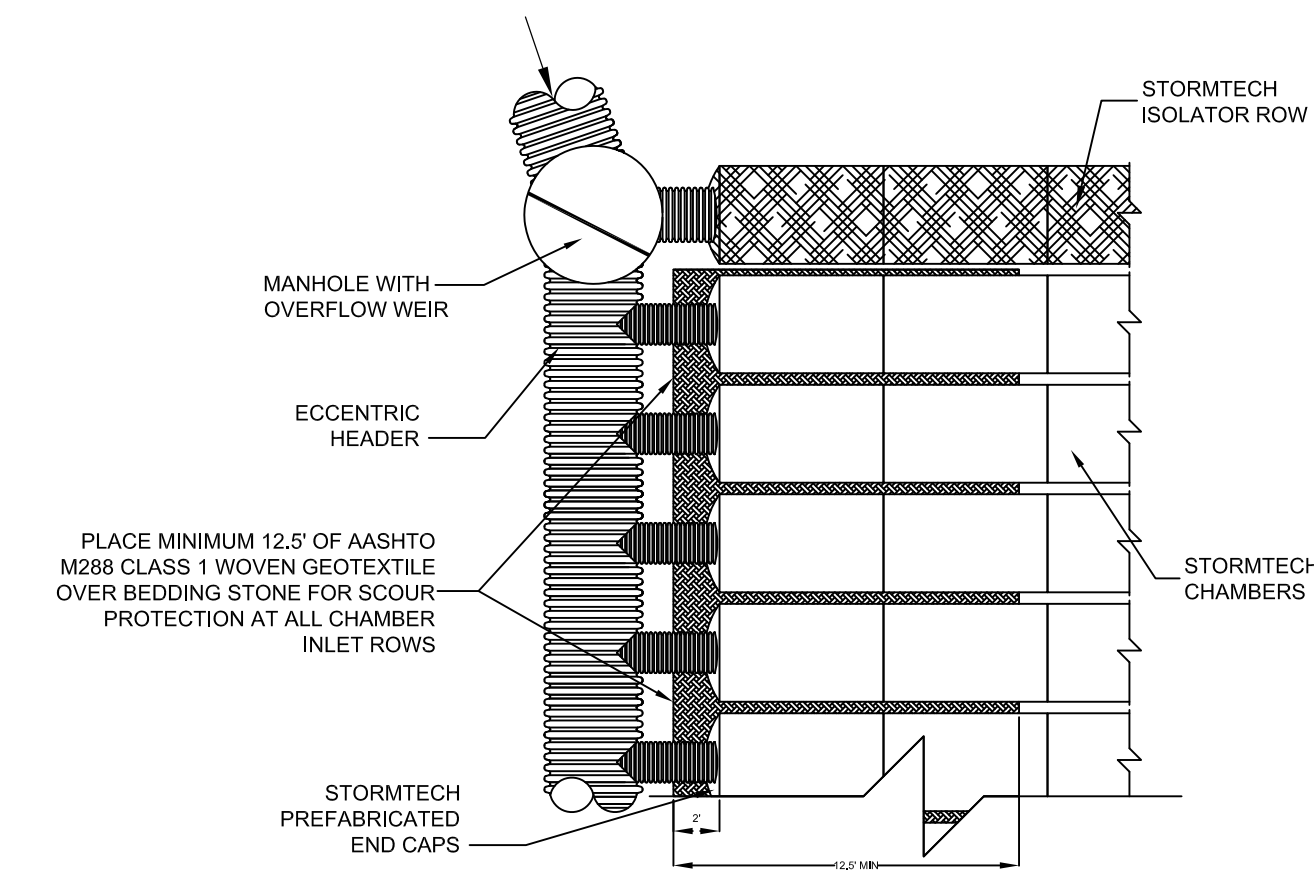
STRUCTURAL AGGREGATE NOTE: SAMPLES SHALL BE TESTED IN ACCORDANCE TO ASTM C29 TO DETERMINE THE BULK DENSITY AND VERIFY THE POROSITY OF THE AGGREGATE. THE ENGINEER SHALL BE NOTIFIED IF THE POROSITY IS LESS THAN 40%.



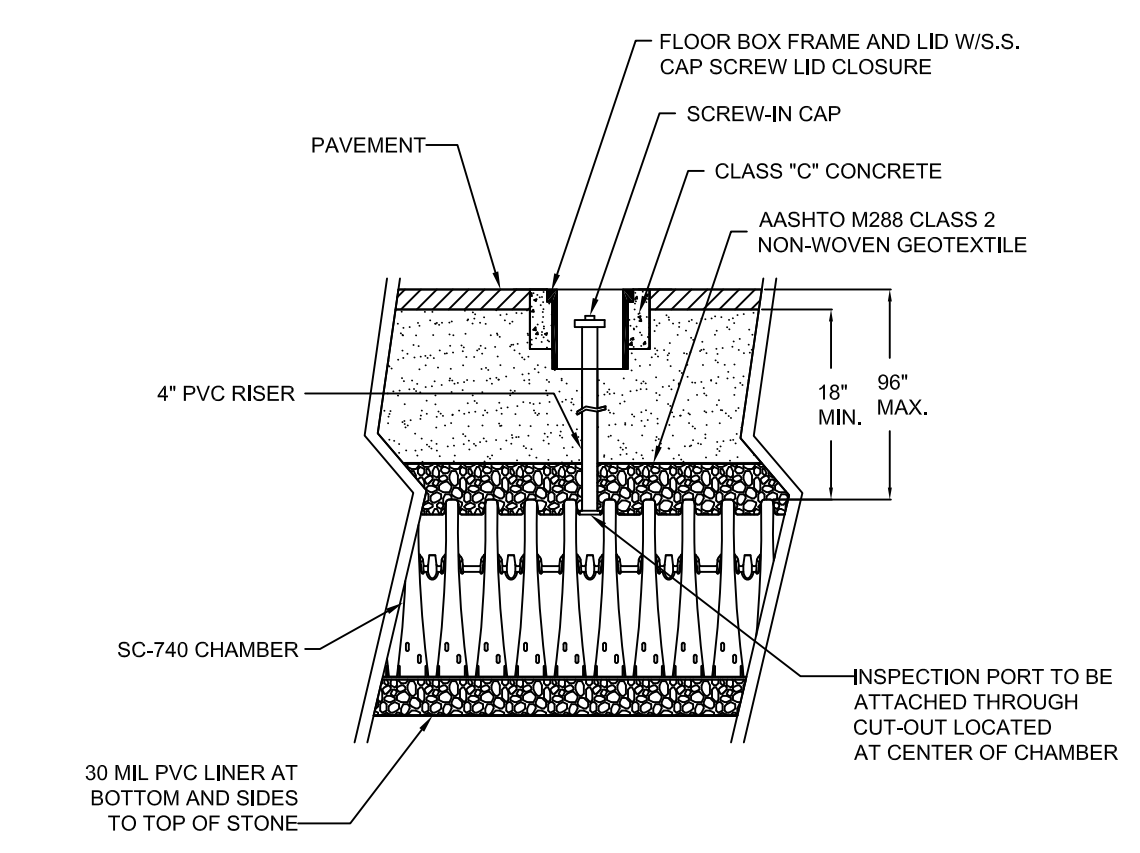
STORMTECH ISOLATOR ROW PROFILE



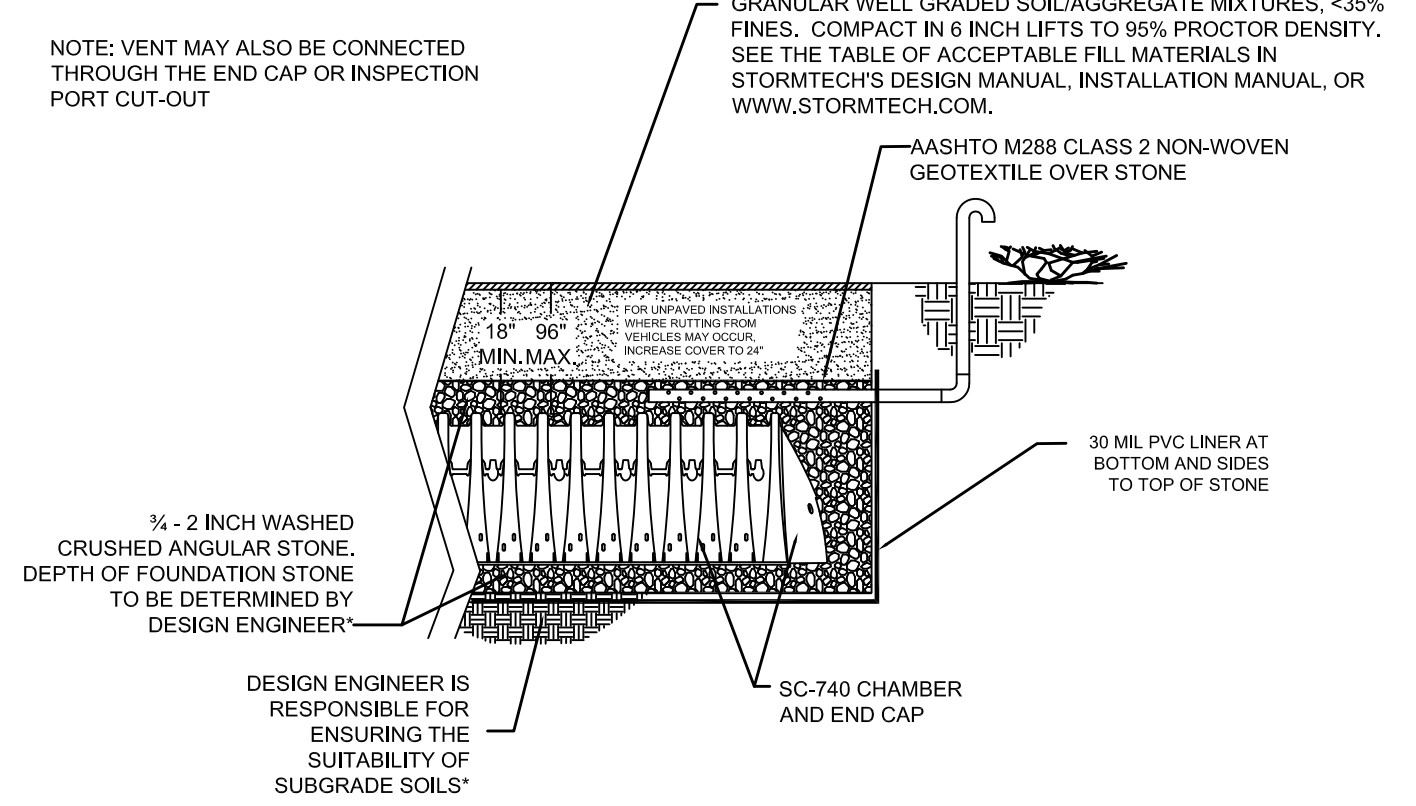
STORMTECH SC-740 TYPICAL CROSS SECTION



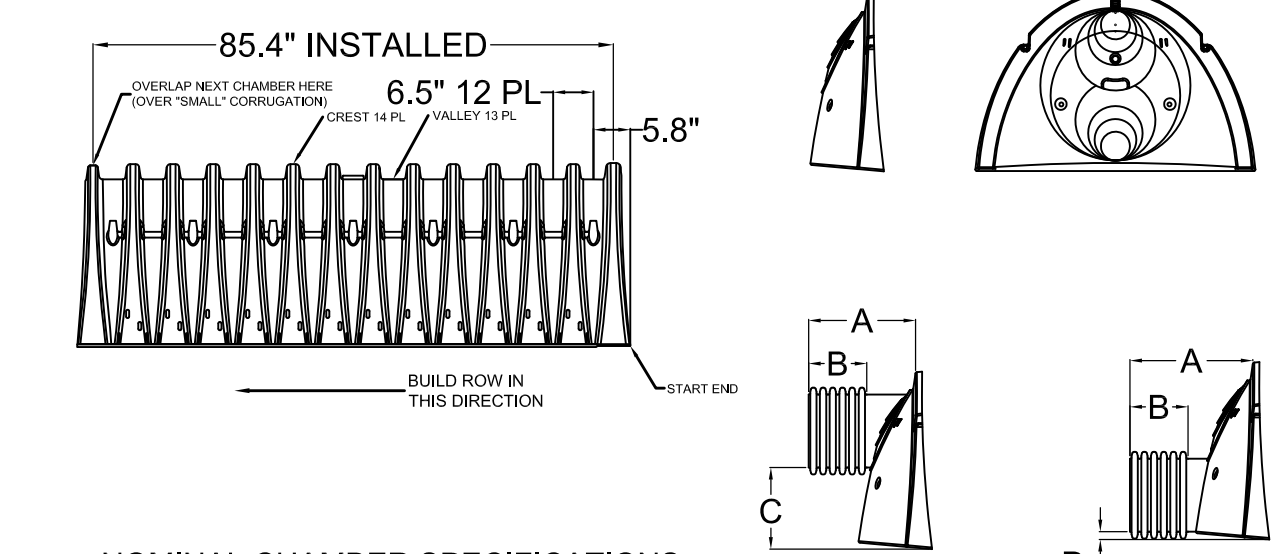
STORMTECH ISOLATOR ROW MANIFOLD DETAIL



STORMTECH INSPECTION PORT DETAIL



CHAMBER VENT DETAIL



NOMINAL CHAMBER SPECIFICATIONS
 SIZE (W x H x INSTALLED LENGTH) -
 CHAMBER STORAGE - 45.9 CUBIC FEET
 MINIMUM INSTALLED STORAGE - 74.9 CUBIC FEET
 WEIGHT - 75 LBS.

PART #	CHAMBER	PIPE SIZE	A	B	C	D
SC740EPE06T	SC 740	6 in (150 mm)	10.90 in (277 mm)	3.85 in (98 mm)	18.50 in (470 mm)	N/A
SC740EPE06B	SC 740	6 in (150 mm)	10.90 in (277 mm)	3.85 in (98 mm)	N/A	0.50 in (13 mm)
SC740EPE12T	SC 740	12 in (300 mm)	14.70 in (373 mm)	7.70 in (196 mm)	12.50 in (318 mm)	N/A
SC740EPE12B	SC 740	12 in (300 mm)	14.70 in (373 mm)	7.70 in (196 mm)	N/A	1.20 in (30 mm)
SC740EPE15T	SC 740	15 in (375 mm)	18.40 in (467 mm)	10.36 in (263 mm)	9.00 in (229 mm)	N/A
SC740EPE15B	SC 740	15 in (375 mm)	18.40 in (467 mm)	10.36 in (263 mm)	N/A	1.30 in (33 mm)
SC740EPE18T	SC 740	18 in (460 mm)	19.70 in (500 mm)	10.72 in (272 mm)	5.00 in (127 mm)	N/A
SC740EPE18B	SC 740	18 in (460 mm)	19.70 in (500 mm)	10.72 in (272 mm)	N/A	1.60 in (41 mm)
SC740EPE24B	SC 740	24 in (600 mm)	18.50 in (470 mm)	9.45 in (240 mm)	N/A	0.10 in (3 mm)

NOTE: ALL DIMENSIONS ARE NOMINAL
 ALL STUBS, EXCEPT FOR THE SC740EPE24B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

* FOR THE SC740EPE24B THE 24" STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75". BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE 12" STUB SO THAT THE FITTING SETS LEVEL.

TECHNICAL SPECIFICATIONS

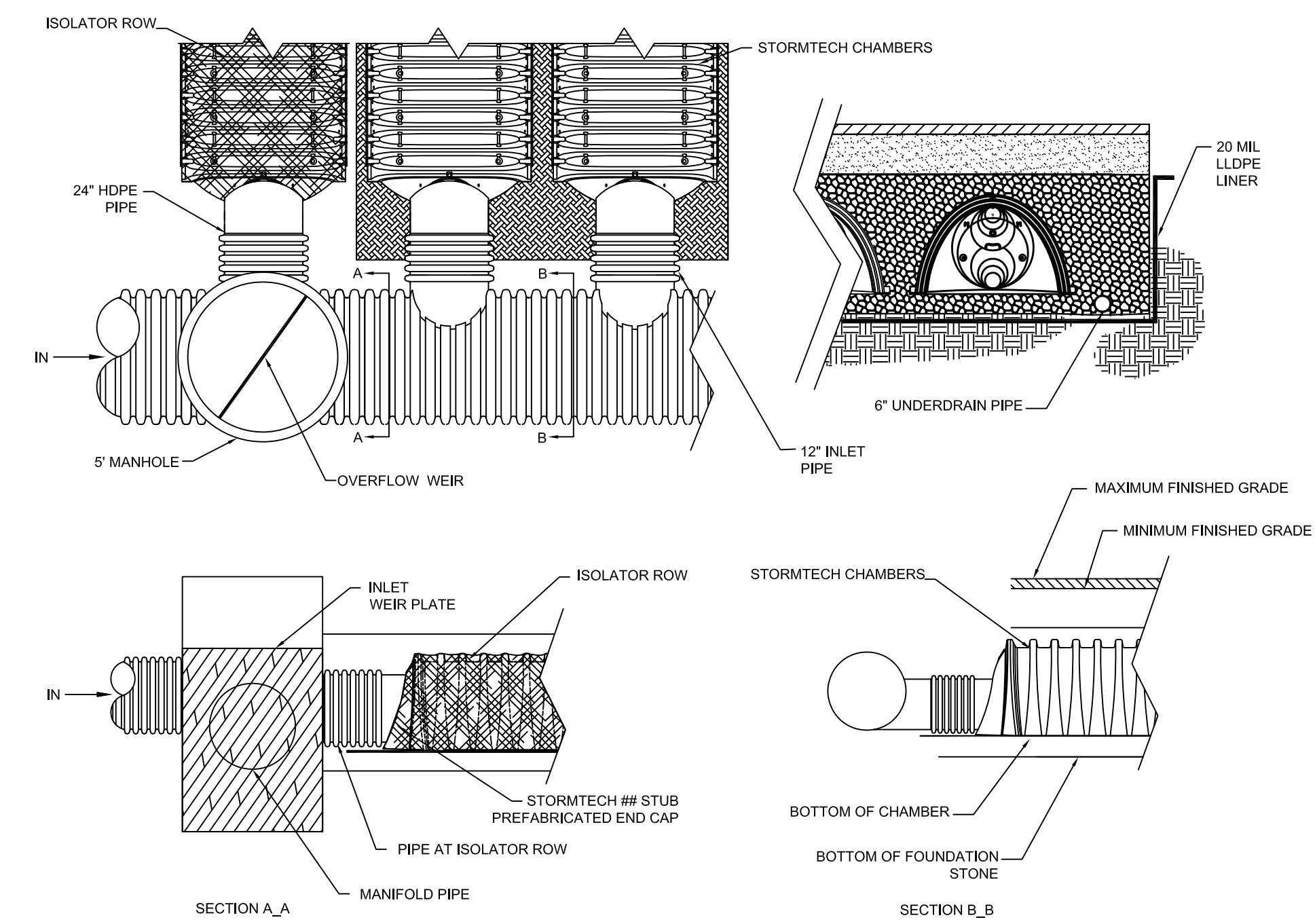
MATERIAL LOCATION	DESCRIPTION	AASHTO M43 DESIGNATION	AASHTO M145 DESIGNATION	COMPACTION/DENSITY REQUIREMENT
① FILL MATERIAL FROM 18" TO GRADE ABOVE CHAMBERS	ANY SOIL/ROCK MATERIALS, NATIVE SOILS OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	N/A	PREPARE PER ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
② FILL MATERIAL FOR 6" TO 18" ELEVATION ABOVE CHAMBERS (24" FOR UNPAVED INSTALLATIONS)	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES.	3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	A-1, A-2, A-3	COMPACT IN 6" LIFTS TO A MINIMUM 95% STANDARD PROCTOR DENSITY. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 LBS. DYNAMIC FORCE NOT TO EXCEED 20,000 LBS.
③ EMBEDMENT STONE SURROUNDING AND TO A 6" ELEVATION ABOVE CHAMBERS	WASHED ANGULAR STONE WITH THE MAJORITY OF PARTICLES BETWEEN 1/2" - 2 INCH	3, 357, 4, 467, 5, 56, 57	N/A	NO COMPACTION REQUIRED
④ FOUNDATION STONE BELOW CHAMBERS	WASHED ANGULAR STONE WITH THE MAJORITY OF PARTICLES BETWEEN 1/2" - 2 INCH	3, 357, 4, 467, 5, 56, 57	N/A	PLATE COMPACT OR ROLL TO ACHIEVE A 95% STANDARD PROCTOR DENSITY

PLEASE NOTE: THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE WASHED CRUSHED ANGULAR. FOR EXAMPLE, THE STONE MUST BE SPECIFIED AS WASHED, CRUSHED, ANGULAR NO. 4 STONE.

STORMTECH ACCEPTABLE FILL MATERIALS

STORMTECH GENERAL NOTES

- STORMTECH LLC ("STORMTECH") REQUIRES INSTALLING CONTRACTORS TO USE AND UNDERSTAND STORMTECH'S LATEST INSTALLATION INSTRUCTIONS PRIOR TO BEGINNING SYSTEM INSTALLATION.
- OUR TECHNICAL SERVICES DEPARTMENT OFFERS INSTALLATION CONSULTATIONS TO INSTALLING CONTRACTORS. CONTACT OUR TECHNICAL SERVICES REPRESENTATIVE AT LEAST 30 DAYS PRIOR TO SYSTEM INSTALLATION TO ARRANGE A PRE-INSTALLATION CONSULTATION. OUR REPRESENTATIVES CAN THEN ANSWER QUESTIONS OR ADDRESS COMMENTS ON THE STORMTECH CHAMBER SYSTEM AND INFORM THE INSTALLING CONTRACTOR OF THE MINIMUM INSTALLATION REQUIREMENTS BEFORE BEGINNING THE SYSTEM'S CONSTRUCTION. CALL 1-888-892-2694 TO SPEAK TO A TECHNICAL SERVICE REPRESENTATIVE OR VISIT WWW.STORMTECH.COM TO RECEIVE A COPY OF OUR INSTALLATION INSTRUCTIONS.
- STORMTECH'S REQUIREMENTS FOR SYSTEMS WITH PAVEMENT DESIGN (ASPHALT, CONCRETE PAVERS, ETC.); MINIMUM COVER IS 18 INCHES NOT INCLUDING PAVEMENT; MAXIMUM COVER IS 96 INCHES INCLUDING PAVEMENT. FOR INSTALLATIONS THAT DO NOT INCLUDE PAVEMENT, WHERE RUTTING FROM VEHICLES MAY OCCUR, MINIMUM REQUIRED COVER IS 24 INCHES, MAXIMUM COVER IS 96 INCHES.
- THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE DESIGN ENGINEER.
- AASHTO M288 CLASS 2 NON-WOVEN GEOTEXTILE (FILTER FABRIC) MUST BE USED AS INDICATED IN THE PROJECT PLANS.
- STONE PLACEMENT BETWEEN CHAMBERS ROWS AND AROUND PERIMETER MUST FOLLOW INSTRUCTIONS AS INDICATED IN THE MOST CURRENT VERSION OF STORMTECH'S INSTALLATION INSTRUCTIONS.
- BACKFILLING OVER THE CHAMBERS MUST FOLLOW REQUIREMENTS AS INDICATED IN THE MOST CURRENT VERSION OF STORMTECH'S INSTALLATION INSTRUCTIONS.
- THE CONTRACTOR MUST REFER TO STORMTECH'S INSTALLATION INSTRUCTIONS FOR A TABLE OF ACCEPTABLE VEHICLE LOADS AT VARIOUS DEPTHS OF COVER. THIS INFORMATION IS ALSO AVAILABLE AT STORMTECH'S WEBSITE: WWW.STORMTECH.COM. THE CONTRACTOR IS RESPONSIBLE FOR PREVENTING VEHICLES THAT EXCEED STORMTECH'S REQUIREMENTS FROM TRAVELING ACROSS OR PARKING OVER THE STORMWATER SYSTEM. TEMPORARY FENCING, WARNING TAPE AND APPROPRIATELY LOCATED SIGNS ARE COMMONLY USED TO PREVENT UNAUTHORIZED VEHICLES FROM ENTERING SENSITIVE CONSTRUCTION AREAS.
- THE CONTRACTOR MUST APPLY EROSION AND SEDIMENT CONTROL MEASURES TO PROTECT THE STORMWATER SYSTEM DURING ALL PHASES OF SITE CONSTRUCTION PER LOCAL CODES AND DESIGN ENGINEER'S SPECIFICATIONS.
- STORMTECH PRODUCT WARRANTY IS LIMITED. SEE CURRENT PRODUCT WARRANTY FOR DETAILS. TO ACQUIRE A COPY CALL STORMTECH AT 1-888-892-2694 OR VISIT WWW.STORMTECH.COM.



STORMTECH ELEVATIONS

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ISSUED FOR: APPROVAL

ISSUE DATE: DECEMBER 5, 2017

REVISIONS:
 NO. DESCRIPTION BY DATE
 0 PB SUBMISSION JKC 12/05/17

DRAWN BY: RMB
 APPROVED BY: JKC
 DRAWING FILE: 4836DS.DWG

SCALE: N.T.S.

LAND OWNER - SUBJECT PARCEL:
ROCKINGHAM PROPERTIES 1, LTD
 P.O. BOX 423
 BELMONT, MA 02178

APPLICANT:
THE RIVERWOODS GROUP
 7 RIVERWOODS DRIVE
 EXETER, NH 03833

PROJECT:
RIVERWOODS DURHAM
 STONE QUARRY DRIVE
 DURHAM, NH

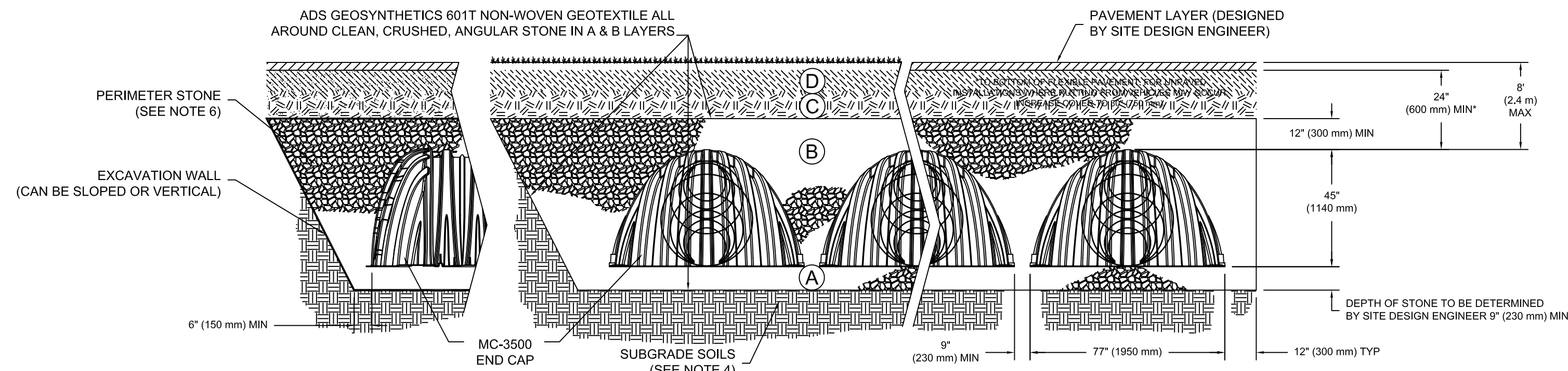
TITLE:
STORMWATER MANAGEMENT GALLERY - DETAILS

SHEET NUMBER:
C - 5.10

ACCEPTABLE FILL MATERIALS: STORMTECH MC-3500 CHAMBER SYSTEMS

MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	AASHTO M145 ¹ A-1, A-2-4, A-3 OR AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	AASHTO M43 ¹ 3, 4	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	AASHTO M43 ¹ 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. ^{2,3}

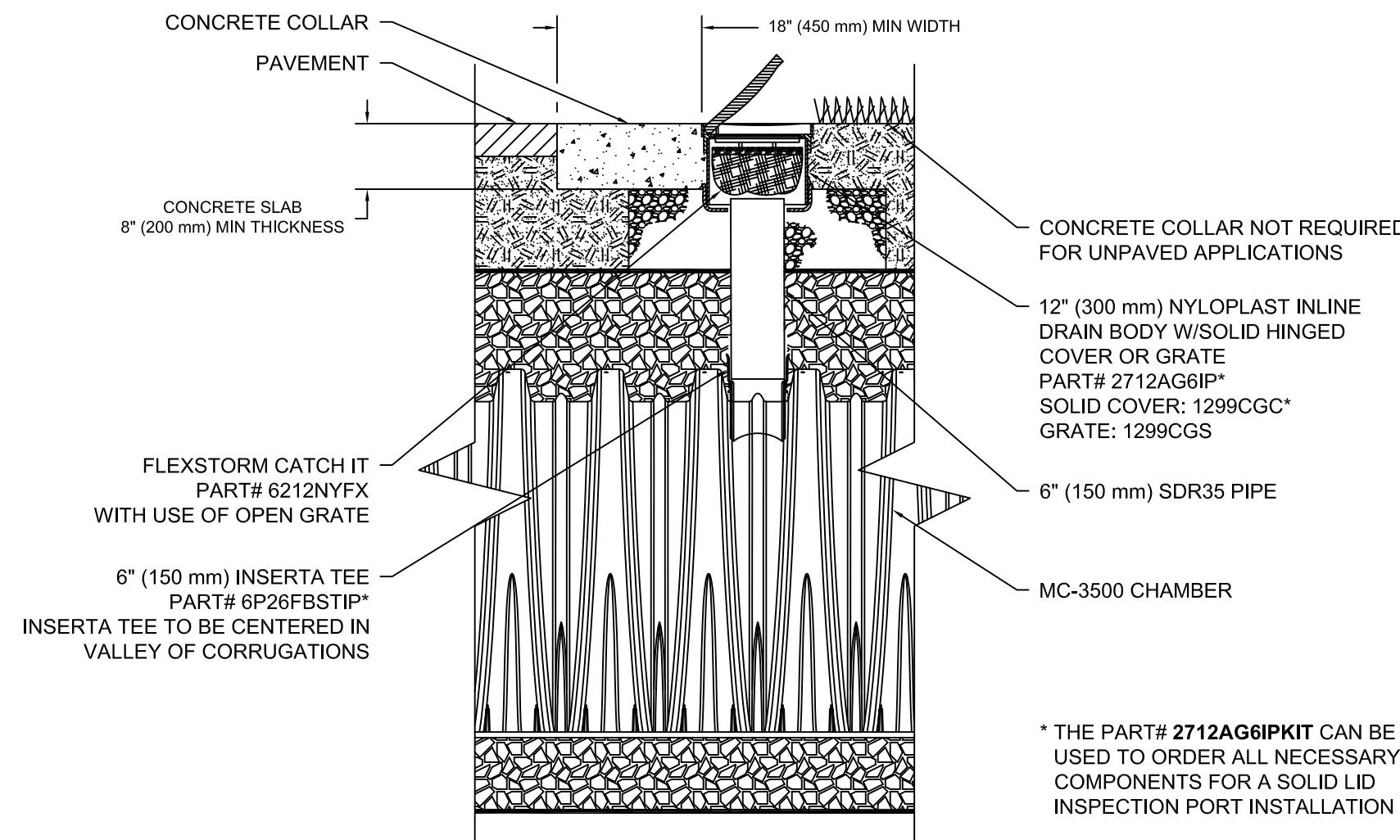
PLEASE NOTE:
 1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
 2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
 3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



*FOR COVER DEPTHS GREATER THAN 8.0' (2.4 m) PLEASE CONTACT STORMTECH

NOTES:

- MC-3500 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- MC-3500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
- THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



MC-3500 6" INSPECTION PORT DETAIL

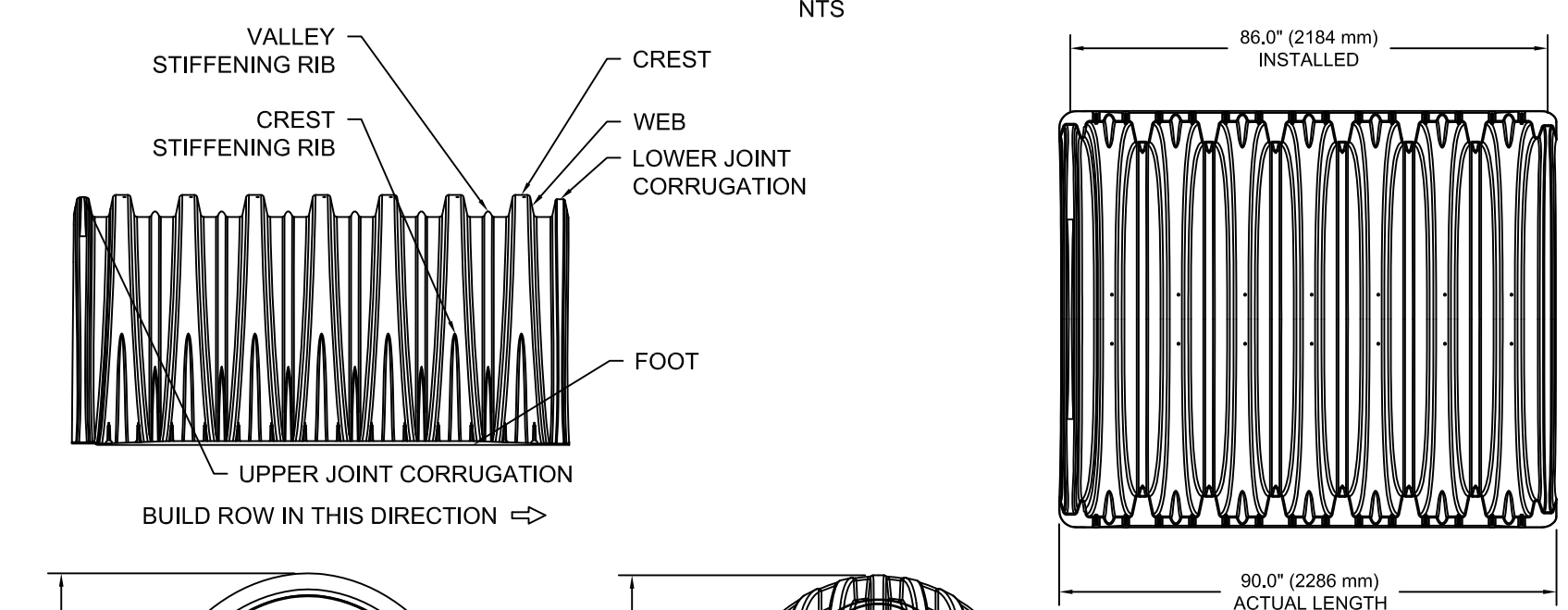
NTS

FINAL APPROVAL BY DURHAM PLANNING BOARD.
 CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
 CERTIFIED _____
 DATE _____

ALTUS ENGINEERING, INC.
 133 COURT STREET PORTSMOUTH, NH 03801
 VOICE: (603) 433-2335
 FAX: (603) 433-4194



MC-3500 TECHNICAL SPECIFICATION



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	CHAMBER STORAGE	MINIMUM INSTALLED STORAGE*	WEIGHT
77.0" X 45.0" X 88.0"	109.9 CUBIC FEET (3.11 m ³)	178.9 CUBIC FEET (5.06 m ³)	135.0 lbs. (61.2 kg)
1956 mm X 1143 mm X 2184 mm			

NOMINAL END CAP SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	END CAP STORAGE	MINIMUM INSTALLED STORAGE*	WEIGHT
77.0" X 45.0" X 22.5"	14.9 CUBIC FEET (0.42 m ³)	46.0 CUBIC FEET (1.30 m ³)	50.0 lbs. (22.7 kg)
1956 mm X 1143 mm X 571 mm			

*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY

STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
 STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
 END CAPS WITH A WELDED CROWN PLATE END WITH "C"
 END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"

PART #	STUB	B	C
MC3500IEPP06T	6" (150 mm)	33.21" (844 mm)	---
MC3500IEPP06B	---	---	0.66" (17 mm)
MC3500IEPP08T	8" (200 mm)	31.16" (791 mm)	---
MC3500IEPP08B	---	---	0.81" (21 mm)
MC3500IEPP10T	10" (250 mm)	29.04" (738 mm)	---
MC3500IEPP10B	---	---	0.93" (24 mm)
MC3500IEPP12T	12" (300 mm)	26.36" (670 mm)	---
MC3500IEPP12B	---	---	1.35" (34 mm)
MC3500IEPP15T	15" (375 mm)	23.39" (594 mm)	---
MC3500IEPP15B	---	---	1.50" (38 mm)
MC3500IEPP18TC	---	---	---
MC3500IEPP18TW	---	20.03" (509 mm)	---
MC3500IEPP18BC	---	---	1.77" (45 mm)
MC3500IEPP18BW	---	---	---
MC3500IEPP24TC	---	---	---
MC3500IEPP24TW	---	14.48" (368 mm)	---
MC3500IEPP24BC	---	---	2.06" (52 mm)
MC3500IEPP24BW	---	---	---
MC3500IEPP30BC	30" (750 mm)	---	2.75" (70 mm)

NOTE: ALL DIMENSIONS ARE NOMINAL

CUSTOM PRECURED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-3500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

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ISSUED FOR: APPROVAL

ISSUE DATE: DECEMBER 5, 2017

REVISIONS

NO.	DESCRIPTION	BY	DATE
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 APPROVED BY: JKC
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SCALE: N.T.S.

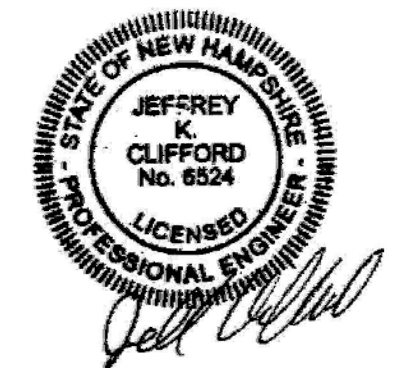
LAND OWNER - SUBJECT PARCEL:
ROCKINGHAM PROPERTIES 1, LTD
 P.O. BOX 423
 BELMONT, MA 02178

APPLICANT:
THE RIVERWOODS GROUP
 7 RIVERWOODS DRIVE
 EXETER, NH 03833

PROJECT:
RIVERWOODS DURHAM
 STONE QUARRY DRIVE
 DURHAM, NH

TITLE:
STORMWATER MANAGEMENT GALLERY - DETAILS

SHEET NUMBER:
C - 5.11



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DRAWING FILE: 4836SITE.DWG

SCALE: 1" = 20'

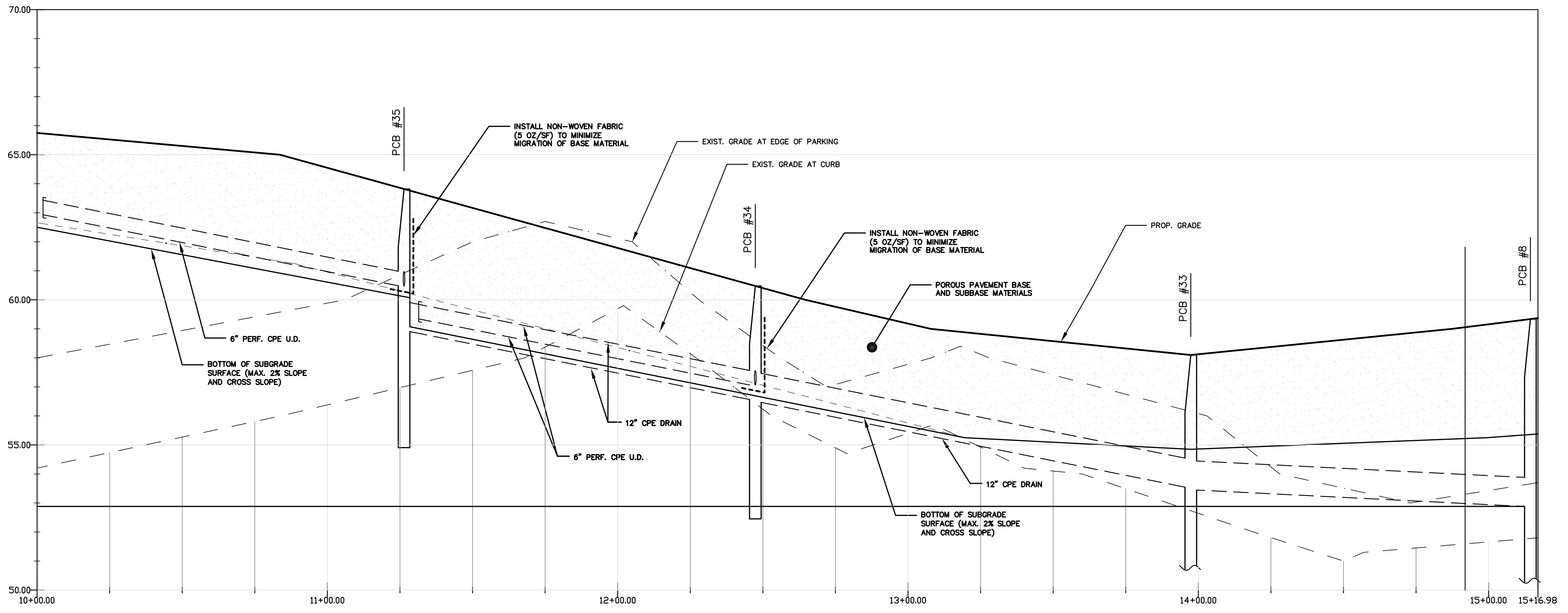
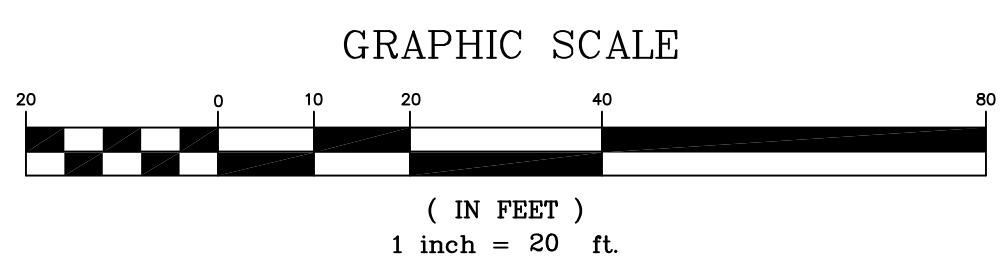
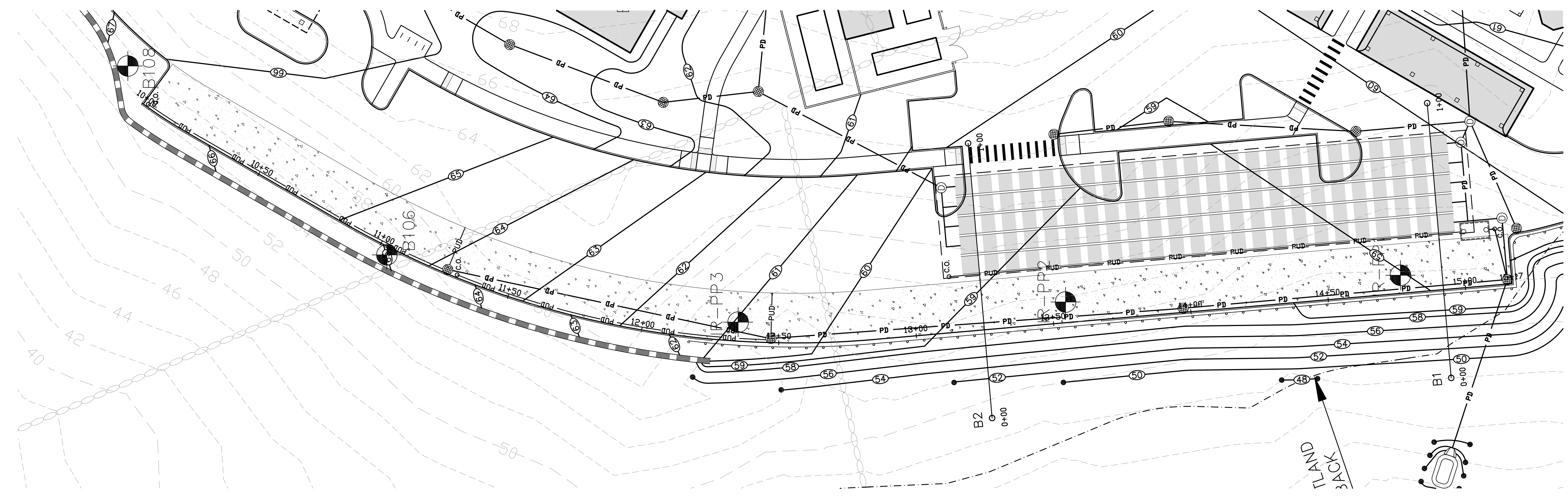
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7 RIVERWOODS DRIVE
EXETER, NH 03833

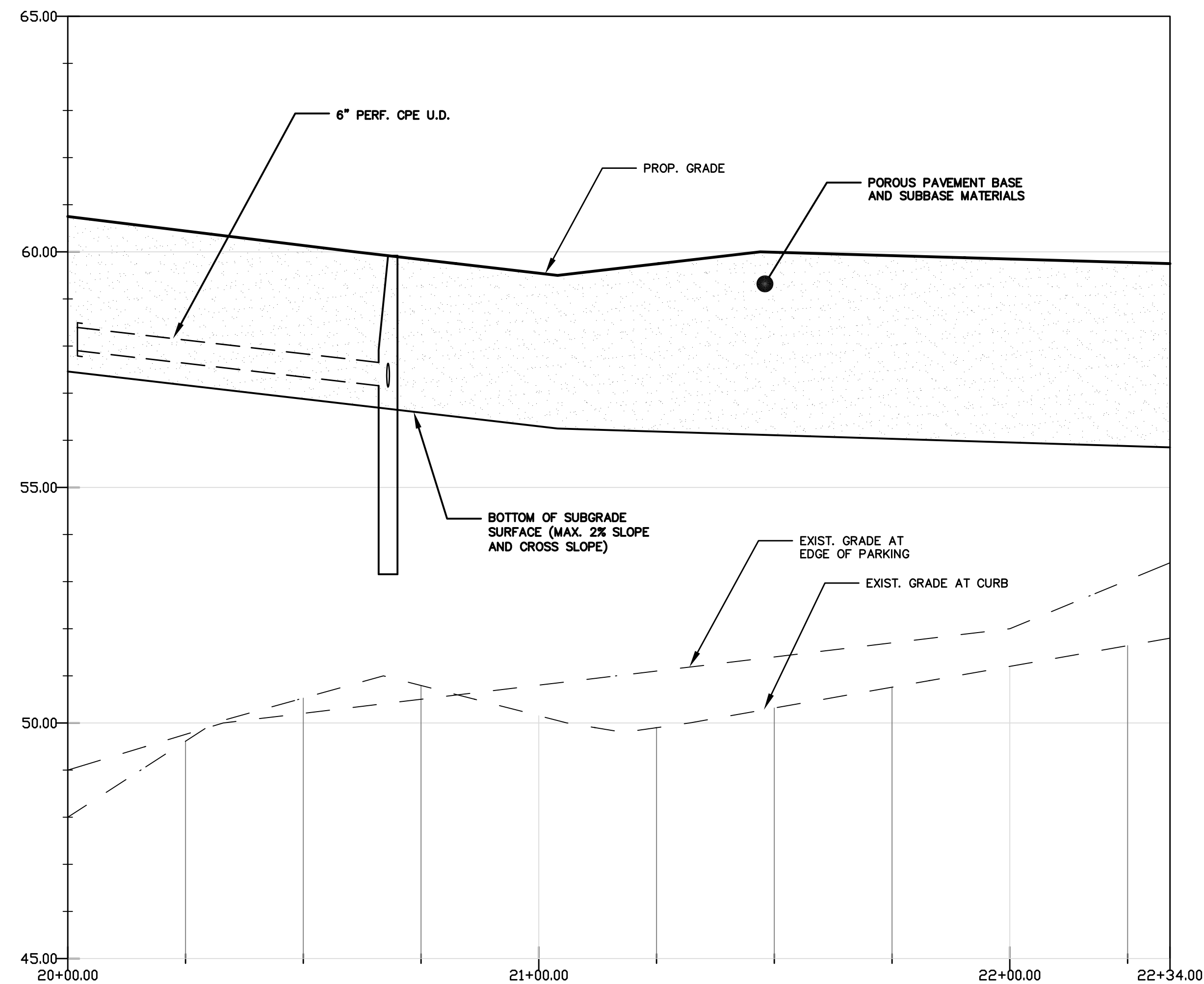
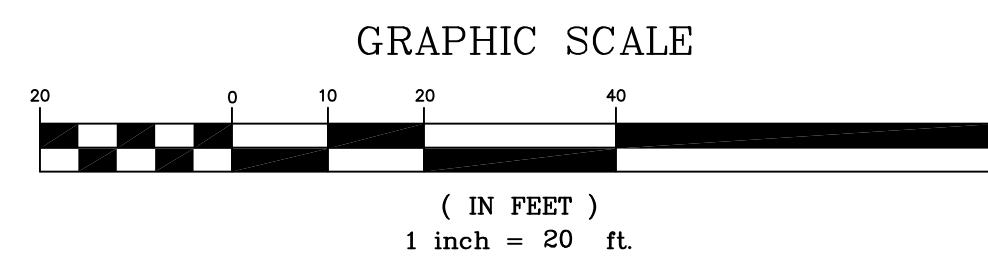
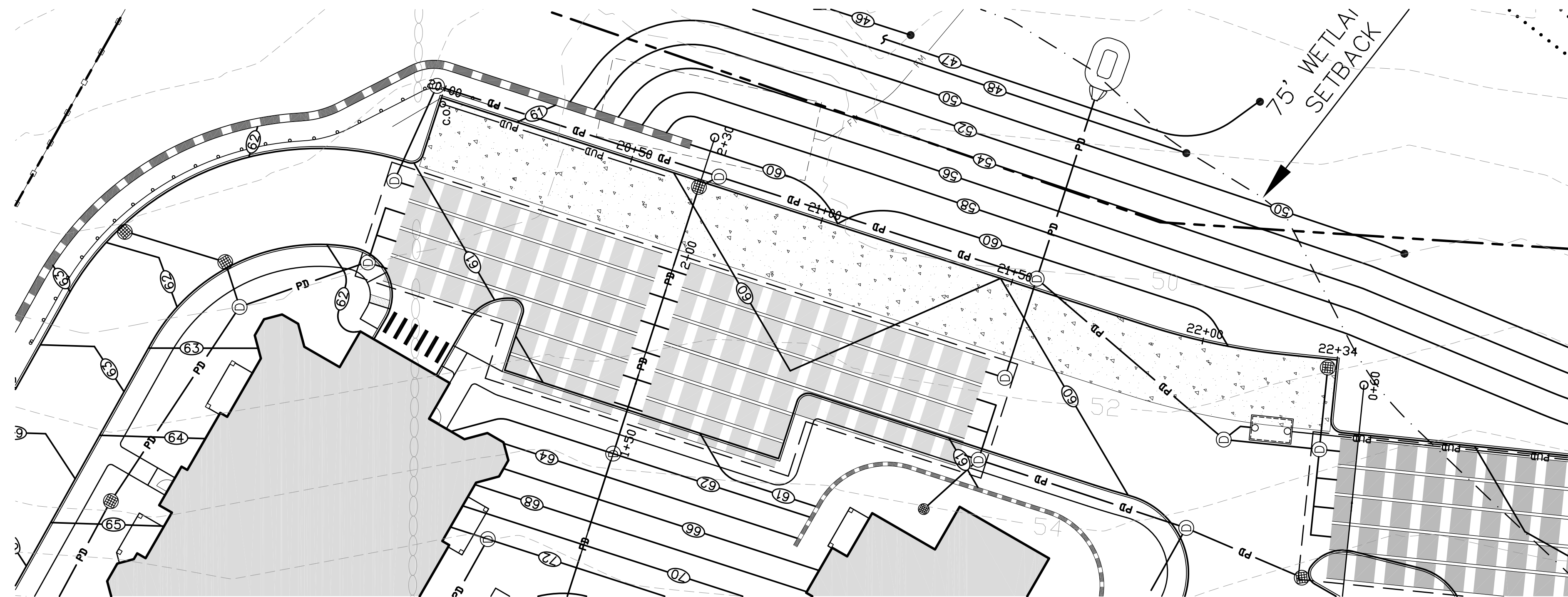
PROJECT:
RIVERWOODS DURHAM
STONE QUARRY DRIVE
DURHAM, NH

TITLE:
POROUS PAVEMENT EAST - PROFILE

SHEET NUMBER:
C - 5.12



POROUS PAVEMENT
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'



POROUS PAVEMENT

HORIZONTAL SCALE: 1" = 20'
 VERTICAL SCALE: 1" = 2'



THIS DRAWING HAS NOT BEEN
 RELEASED FOR CONSTRUCTION

ISSUED FOR: **APPROVAL**

ISSUE DATE: **DECEMBER 5, 2017**

REVISIONS	NO.	DESCRIPTION	BY	DATE
	0	PB SUBMISSION	JKC	12/05/17

DRAWN BY: _____ RMB
 APPROVED BY: _____ JKC
 DRAWING FILE: _____ 4836SITE.DWG

SCALE: **1" = 20'**

LAND OWNER - SUBJECT PARCEL:
ROCKINGHAM PROPERTIES 1, LTD
 P.O. BOX 423
 BELMONT, MA 02178

APPLICANT:
THE RIVERWOODS GROUP
 7 RIVERWOODS DRIVE
 EXETER, NH 03833

PROJECT:
RIVERWOODS DURHAM
 STONE QUARRY DRIVE
 DURHAM, NH

TITLE:
POROUS PAVEMENT WEST - PROFILE

SHEET NUMBER:
C - 5.13

LANDSCAPE NOTES

- Design is based on drawings by Altus Engineering dated October 16, 2017 and may require adjustment due to actual field conditions.
- The contractor shall follow best management practices during construction and shall take all means necessary to stabilize and protect the site from erosion.
- Erosion Control shall be in place prior to construction.
- The Contractor shall verify layout and grades and inform the Landscape Architect or Client's Representative of any discrepancies or changes in layout and/or grade relationships prior to construction.
- It is the contractor's responsibility to verify drawings provided are to the correct scale prior to any bid, estimate or installation. A graphic scale bar has been provided on each sheet for this purpose. If it is determined that the scale of the drawing is incorrect, the landscape architect will provide a set of drawings at the correct scale, at the request of the contractor.
- Location, support, protection, and restoration of all existing utilities and appurtenances shall be the responsibility of the Contractor.
- The Contractor shall verify exact location and elevation of all utilities with the respective utility owners prior to construction. Call DIGSAFE at 1-888-344-7233.
- The Contractor shall procure any required permits prior to construction.
- Prior to any landscape construction activities Contractor shall test all existing loam and loam from off-site intended to be used for lawns and plant beds using a thorough sampling throughout the supply. Soil testing shall indicate levels of pH, nitrates, macro and micro nutrients, texture, soluble salts, and organic matter. Contractor shall provide Landscape Architect with test results and recommendations from the testing facility along with soil amendment plans as necessary for the proposed plantings to thrive. All loam to be used on site shall be amended as approved by the Landscape Architect prior to placement.
- Contractor shall notify landscape architect or owner's representative immediately if at any point during demolition or construction a site condition is discovered which may negatively impact the completed project. This includes, but is not limited to, unforeseen drainage problems, unknown subsurface conditions, and discrepancies between the plan and the site. If a contractor is aware of a potential issue, and does not bring it to the attention of the landscape architect or owner's representative immediately, they may be responsible for the labor and materials associated with correcting the problem.
- The Contractor shall furnish and plant all plants shown on the drawings and listed thereon. All plants shall be nursery-grown under climatic conditions similar to those in the locality of the project. Plants shall conform to the botanical names and standards of size, culture, and quality for the highest grades and standards as adopted by the American Association of Nurserymen, Inc. in the *American Standard of Nursery Stock ANSI Z60.1*, American Standards Institute, Inc. 230 Southern Building, Washington, D.C. 20005.
- A complete list of plants, including a schedule of sizes, quantities, and other requirements is shown on the drawings. In the event that quantity discrepancies or material omissions occur in the plant materials list, the planting plans shall govern.
- All plants shall be legibly tagged with proper botanical name.
- The Contractor shall guarantee all plants for not less than one year from time of acceptance.
- Owner or Owner's Representative will inspect plants upon delivery for conformity to Specification requirements. Such approval shall not affect the right of inspection and rejection during or after the progress of the work. The Owner reserves the right to inspect and/or select all trees at the place of growth and reserves the right to approve a representative sample of each type of shrub, herbaceous perennial, annual, and ground cover at the place of growth. Such sample will serve as a minimum standard for all plants of the same species used in this work.
- No substitutions of plants may be made without prior approval of the Owner or the Owner's Representative for any reason.
- Trees should be planted using commonly accepted best management practices, such as those listed in ANSI A300 Part 6: Tree Maintenance Standard Practices (Transplanting), which is available from the International Society of Landscape Architects.
- The contractor shall ensure that there is adequate root ball space and overhead clearance and fit for the trees to be installed.
- Only low phosphorus/slow release nitrogen fertilizers for landscaping materials may be used throughout the property.
- Upon completion, contractor shall provide water and other tree care as appropriate during the first growing season (May through October).
- All landscaping shall be provided with an underground sprinkling system. Install appropriate PVC underground sleeves as needed.
- All irrigation valve boxes shall be located within plant bed areas.
- All disturbed areas will be dressed with 6" of topsoil and planted as noted on the plans or seeded except plant beds. Plant beds shall be prepared to a depth of 12" with 75% loam and 25% compost.
- Trees, ground cover, and shrub beds shall be mulched to a depth of 2" with one-year-old, well-composted, shredded native bark not longer than 4" in length and 1/2" in width, free of woodchips and sawdust. Mulch for ferns and herbaceous perennials shall be no longer than 1" in length. Trees in lawn areas shall be mulched in a 5' diameter min. saucer. Color of mulch shall be dark brown with no dyes.
- In no case shall mulch touch the stem of a plant nor shall mulch ever be more than 3" thick total (including previously applied mulch) over the root ball of any plant.
- Maintenance of Landscaping. The provision for maintenance of landscaping materials as specified in Section 175-124 - Maintenance Requirements of the Article XXII - Landscaping in the Durham Zoning Ordinance, shall apply.
- Secondary lateral branches of deciduous trees overhanging vehicular and pedestrian travel ways shall be pruned up to a height of 6' to allow clear and safe passage of vehicles and pedestrians under tree canopy.
- Landscape Architect is not responsible for the means and methods of the contractor.



woodburn & company
 LANDSCAPE ARCHITECTURE
 103 Kent Place
 Newmarket, New Hampshire
 Phone: 603.659.5949

RiverWoods Durham
 SITE LANDSCAPE PLAN
 Stone Quarry Drive Durham, New Hampshire

Drawn By: VM
 Checked By: RW
 Scale: 1" = 50' - 0"
 Date: July 19, 2017
 Revisions: October 16, 2017
 December 1, 2017

L-1
 Sheet 1 of 9

SHRUBS		Symbol	Botanical Name	Common Name	Size	MINIMUM DIMENSIONS	Comments	QUANTITY TOTAL	L-1
Az1	<i>Azalea kiusianum</i> 'Best Pink'		Best Pink Azalea		3 gal	18"Wx18"H		4	
Az2	<i>Azalea kiusianum</i> 'White Form'		White Form Azalea		3 gal	18"Wx18"H		21	
Box	<i>Buxus microphylla</i> 'Winter Gem'		Winter Gem Boxwood		3 gal	18"Wx18"H		18	
Cl	<i>Clethra alnifolia</i> 'Hummingbird'		Hummingbird Compact Summersweet		3 gal	18"Wx18"H		35	
Cor	<i>Cornus alba</i> 'Ivory Halo'		Ivory Halo Dogwood		5 gal	24"Wx24"H		7	
CR	<i>Cornus racemosa</i>		Grey Dogwood		4-5' Ht		B&B	115	115
Enk	<i>Enkianthus campanulatus</i>		Revein Enkianthus		4-5' Ht		B&B	5	
FOR	<i>Forsythia x intermedia</i> 'Gold Tide'		Dwarf Forsythia		3 gal	18"Wx18"H		59	
HS	<i>Hibiscus syriacus</i> 'Blue Satin'		Blue Satin Rose-of-Sharon		5-6' Ht		B&B	12	
HyA	<i>Hydrangea arborescens</i> 'Annabelle'		Annabelle Hydrangea		5 gal	24"Wx24"H		75	
HyB	<i>Hydrangea paniculata</i> 'Bobo'		Bobo Hydrangea		3 gal	18"Wx18"H		22	
HyE	<i>Hydrangea macrophylla</i> 'Endless Summer'		Endless Summer Hydrangea		3 gal	18"Wx18"H		16	
HyL	<i>Hydrangea paniculata</i> 'Little Lime'		Little Lime Hydrangea		7 gal			5	
HyP	<i>Hydrangea anomala</i> 'petiolaris'		Climbing Hydrangea		5 gal		STAKED	3	
HyPG	<i>Hydrangea paniculata</i> 'Grandiflora'		P.G. Hydrangea		5 gal		B&B TREEFORM	3	
HyQ	<i>Hydrangea quercifolia</i> 'Sike's Dwarf'		Sike's Dwarf Hydrangea		5 gal	24"Wx24"H		12	
HyQR	<i>Hydrangea quercifolia</i> 'Ruby Slippers'		Ruby Slippers Oakleaf Hydrangea		5 gal	24"Wx24"H		3	
Ic	<i>Ilex crenata</i> 'Green Lustre'		Green Lustre Japanese Holly		3 gal	18"Wx18"H		42	
Ig	<i>Ilex glabra</i> 'Compacta'		Inkberry		5 gal	24"Wx24"H		38	
It	<i>Itea virginica</i> 'Little Henry'		Little Henry Sweetspire		3 gal	18"Wx18"H		17	
Jc	<i>Juniperus chinensis</i> 'Sargent'		Sargent Juniper		3 gal	18"Wx18"H		31	
Jsg	<i>Juniperus chinensis</i> 'Seagreen'		Seagreen Juniper		2-5' Ht		B&B	17	
KLE	<i>Kalmia latifolia</i> 'Elf'		Elf Dwarf Mountain Laurel		5 gal	24"Wx24"H		13	
Lau	<i>Leucothoe fontanesiana</i> 'Compacta'		Compact Drooping Leucothoe		3 gal	18"Wx18"H		104	
Md	<i>Microbiota decussata</i>		Russian Cypress		3 gal	18"Wx18"H		44	
Mp	<i>Myrica pensylvanica</i>		Northern Bayberry		3-4' Ht		B&B FULL	33	
RhA	<i>Rhododendron</i> 'Aglo'		Aglo Rhododendron		2-5' Ht		B&B	29	
RhS	<i>Rhododendron</i> 'Scintillation'		Scintillation Rhododendron		2-5' Ht		B&B	23	
Rls	<i>Rhus aromatica</i> 'GrowLow'		Grow Low Sumner		3 gal	18"Wx18"H		176	
ROS1	<i>Rosa</i> 'Dwarf Pavement'		Pink Fragrant Low semi-double Rose		3 gal	18"Wx18"H		17	
Ros	<i>Rosa</i> 'Knockout'		Double Red Knockout Rose		3 gal	18"Wx18"H		46	
SpA	<i>Spiraea x bumalda</i> 'Anthony Waterer'		Anthony Waterer Spiraea		3 gal	18"Wx18"H		12	
SpG	<i>Spiraea x Goldmound</i>		Goldmound Spiraea		3 gal	18"Wx18"H		48	
SVB	<i>Syringa</i> 'Bloomerang'		Bloomerang Lilac		2-5' Ht		B&B	87	
SYp	<i>Syringa meyeri</i> 'Palibin'		Dwarf Korean Lilac		3-4' Ht		B&B	24	
Tax	<i>Taxus media</i> 'Everlow'		Everlow Yew		16-24' Ht		B&B	44	
ThT	<i>Thuja occidentalis</i> 'Techy'		Techy Arborvitae		6-7' Ht		B&B	4	
TmT	<i>Taxus media</i> 'Tauntont'		Tauntont Yew		3 gal	18"Wx18"H		29	
VP	<i>Viburnum prunifolium</i>		Blackhaw Viburnum		4-5' Ht		B&B	35	35
VpT	<i>Viburnum plicatum</i> 'tomentosum 'Marieii'		Marie's Doublefile Viburnum		4-5' Ht		B&B	9	
VT	<i>Viburnum trilobum</i>		American Cranberry Viburnum		4-5' Ht		B&B	60	60

Master Plant List

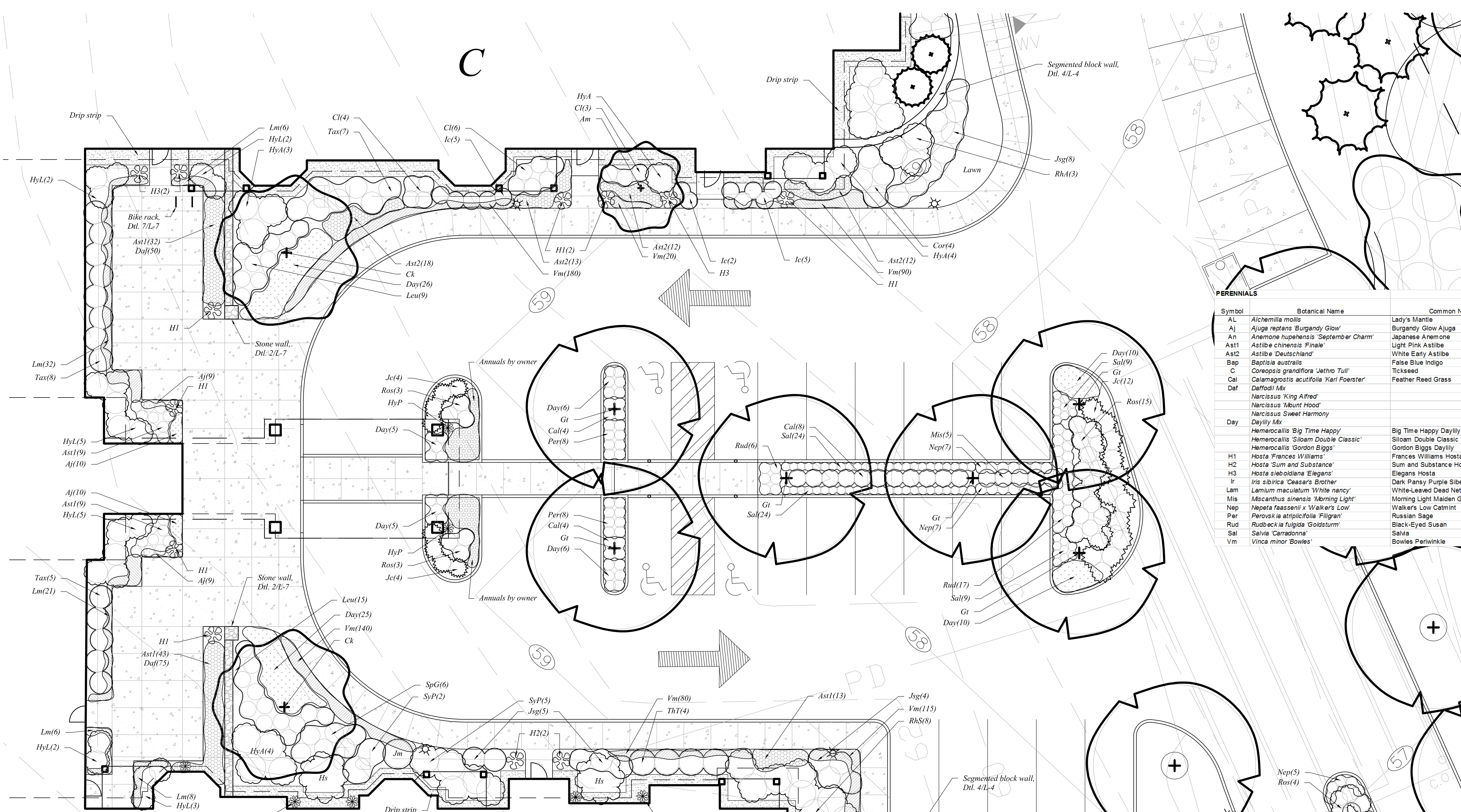
TREES		Symbol	Botanical Name	Common Name	Size	Comments	QUANTITY TOTAL	L-1
Ac	<i>Abies concolor</i>		White Fir		7-8' Ht	B&B	1	
Am	<i>Amelanchier x grandiflora</i> 'Autumn Brilliance'		Autumn Brilliance Serviceberry		8-10' Ht	B&B	3	
AR	<i>Acer rubrum</i> 'October Glory'		October Glory Red Maple		3-3.5' Cal	B&B	5	5
ARk	<i>Acer rubrum</i> 'Karpick'		Karpick Red Maple		3-3.5' Cal	B&B	13	12
Bn	<i>Betula nigra</i> 'Heritage'		Heritage River Birch		12-14' Ht	B&B	16	
Cb	<i>Caprinus betulus</i> 'Frans Fontaine'		Hornbeam		3-3.5' Cal	B&B	1	
Cc	<i>Crataegus crus-galli</i> 'Inermis'		Thornless Cockspur Hawthorn		2-2.5' Cal	B&B	1	
Ck	<i>Cornus kousa</i>		Kousa Dogwood		8-10' Ht	B&B	2	
Gt	<i>Gleditsia triacanthos inermis</i> 'Halka'		Halka Thornless Honeylocust		3-3.5' Cal	B&B SPECIMEN	8	2
Ham	<i>Hamamelis x intermedia</i> 'Arnold promise'		Arnold Promise Witchhazel		5-6' Ht	B&B MULTISTEMMED	1	
LAB	<i>Laburnum x watereri</i> 'Vossii'		Golden Chain Tree		2-2.5' Cal	B&B	1	
Mag	<i>Magnolia</i> 'Butterfly'		Butterfly magnolia		8-10' Ht	B&B	1	
Mil	<i>Malus Donald Wyman</i>		Donald Wyman Crabapple		2-2.5' Cal	B&B	1	
Ls	<i>Liquidambar styraciflua</i>		American Sweetgum		3-3.5' Cal	B&B	7	7
Jm	<i>Juniperus chinensis</i> 'Mountbatten'		Mountbatten Juniper		7-8' Ht	B&B	7	
JV	<i>Juniperus virginiana</i>		Eastern Red Cedar		7-8' Ht	B&B	12	12
Ns	<i>Nyssa sylvatica</i>		Black Tupelo		3-3.5' Cal	B&B	5	5
Po	<i>Picea orientalis</i>		Oriental Spruce		8-10' Ht	B&B	1	
POg	<i>Picea orientalis</i> 'Gowdy'		Gowdy Oriental Spruce		8-10' Ht	B&B	3	
PP	<i>Picea pungens</i> 'Glaucal'		Colorado Blue Spruce		8-10' Ht	B&B	7	7
PSK	<i>Prunus serrulata</i> 'Kwanzan'		Kwanzan Cherry		2-2.5' Cal	B&B	3	
Qb	<i>Quercus bicolor</i>		Swamp White Oak		3-3.5' Cal	B&B	2	
THP1	<i>Thuja plicata</i> 'Green Giant'		Green Giant Arborvitae		12' Ht	B&B FULL	5	4
THP2	<i>Thuja plicata</i> 'Green Giant'		Green Giant Arborvitae		14' Ht	B&B FULL	6	6
Ua	<i>Ulmus americana</i> 'Princeton'		Princeton American Elm		3-3.5' Cal	B&B	8	8
Z	<i>Zelkova serrata</i> 'Green Vase'		Green Vase Zelkova		3-3.5' Cal	B&B	8	6

PERENNIALS

Symbol	Botanical Name	Common Name	Size	Comments	QUANTITY TOTAL	L-1
AL	<i>Achimilla mollis</i>	Lady's Mantle	1 gal		18	
Aj	<i>Ajuga reptans</i> 'Burgandy Glow'	Burgandy Glow Ajuga	1 gal		144	
An	<i>Anemone hepheensis</i> 'September Charm'	Japanese Anemone	1 gal		34	
As1	<i>Astilbe chinensis</i> 'Finale'	Light Pink Astilbe	1 gal		120	
As2	<i>Astilbe</i> 'Deutschland'	White Early Astilbe	1 gal		55	
Bap	<i>Baptisia australis</i>	False Blue Indigo	1 gal		1	
C	<i>Carexps grandiflora</i> 'Jethro Tull'	Ticksseed	1 gal		32	
Cal	<i>Calamagrostis acutifolia</i> 'Karl Foerster'	Feather Reed Grass	1 gal		35	
Daf	<i>Daffodil</i> Mx					
	<i>Narcissus</i> 'King Alfred'		TOPSIZE		87	
	<i>Narcissus</i> 'Mount Hood'		TOPSIZE		87	
	<i>Narcissus</i> Sweet Harmony		TOPSIZE		87	
Day	<i>Daylily</i> Mx					
	<i>Hemerocallis</i> 'Big Time Happy'	Big Time Happy Daylily	1 gal		65	
	<i>Hemerocallis</i> 'Sloam Double Classic'	Sloam Double Classic Daylily	1 gal	MIX EVENLY	65	
	<i>Hemerocallis</i> 'Gordon Biggs'	Gordon Biggs Daylily	1 gal		64	
H1	<i>Hosta</i> 'Frances Williams'	Frances Williams Hosta	1 gal		17	
H2	<i>Hosta</i> 'Sum and Substance'	Sum and Substance Hosta	1 gal		13	
H3	<i>Hosta sieboldiana</i> 'Elegans'	Elegans Hosta	1 gal		10	
Ir	<i>Isis sibirica</i> 'Caesar's Brother'	Dark Pansy Purple Siberian Ins	1 gal		13	
Lam	<i>Lamium maculatum</i> 'White rancy'	White-Leaved Dead Nettle	1 gal		73	
C	<i>Carexps grandiflora</i> 'Morning Light'	Morning Light Maiden Grass	1 gal		5	
Nep	<i>Nepeta faassenii</i> x 'Walker's Low'	Walker's Low Catmint	1 gal		41	
Per	<i>Pervoskia atriplicifolia</i> 'Filigran'	Russian Sage	1 gal		65	
Rud	<i>Rudbeckia fulgida</i> 'Goldsturm'	Black-Eyed Susan	1 gal		51	
Sal	<i>Salvia</i> 'Carradonna'	Salvia	1 gal		153	
Vm	<i>Vinca minor</i> 'Bowles'	Bowles Penwinkle	2.5' Pots	SET 8" ON CENTER	3028	



Key Plan



PERENNIALS

Symbol	Botanical Name	Common Name	Size	Comments	QUANTITY TOTAL	L-2
AL	<i>Alchemilla mollis</i>	Lady's Mantle	1 gal		18	
AJ	<i>Ajuga reptans 'Burgandy Glow'</i>	Burgandy Glow Ajuga	1 gal		144	38
An	<i>Anemone hepatica 'September Charm'</i>	Japanese Anemone	1 gal		34	
Ast1	<i>Astilbe chinensis 'Finale'</i>	Light Pink Astilbe	1 gal		120	106
Ast2	<i>Astilbe 'Deutschland'</i>	White Early Astilbe	1 gal		55	55
Bap	<i>Baptisia australis</i>	False Blue Indigo	1 gal		3	
C	<i>Coropis grandiflora 'Uethro Tull'</i>	Ticksseed	1 gal		12	
Cal	<i>Calamagrostis acutifolia 'Karl Foerster'</i>	Feather Reed Grass	1 gal		35	29
Daf	<i>Daffodil Mx</i>					
	<i>Narcissus 'King Alfred'</i>		TOPSIZE		87	62
	<i>Narcissus 'Mount Hood'</i>		TOPSIZE		87	62
	<i>Narcissus 'Sweet Harmony'</i>		TOPSIZE		87	62
Day	<i>Daylily Mx</i>					
	<i>Hemerocallis 'Big Time Happy'</i>	Big Time Happy Daylily	1 gal	MIX EVENLY	65	31
	<i>Hemerocallis 'Sloam Double Classic'</i>	Sloam Double Classic Daylily	1 gal		65	31
	<i>Hemerocallis 'Gordon Biggs'</i>	Gordon Biggs Daylily	1 gal		64	30
H1	<i>Hosta 'Frances Williams'</i>	Frances Williams Hosta	1 gal		17	7
H2	<i>Hosta 'Sum and Substance'</i>	Sum and Substance Hosta	1 gal		13	2
H3	<i>Hosta sieboldiana 'Elegans'</i>	Elegans Hosta	1 gal		10	5
Ir	<i>Iris sibirica 'Caesar's Brother'</i>	Dark Pansy Purple Siberian Iris	1 gal		13	0
Lam	<i>Lamium maculatum 'White Nancy'</i>	White-Leaved Dead Nettle	1 gal		73	73
Mis	<i>Miscanthus sinensis 'Morning Light'</i>	Morning Light Maiden Grass	1 gal		5	5
Nep	<i>Nepeta faassenii x 'Walkers Low'</i>	Walkers Low Catmint	1 gal		41	24
Per	<i>Perovskia atriplicifolia 'Filigran'</i>	Russian Sage	1 gal		65	16
Rud	<i>Rudbeckia fulgida 'Goldsturm'</i>	Black-Eyed Susan	1 gal		51	23
Sal	<i>Salvia 'Caradonna'</i>	Salvia	1 gal		153	111
Vm	<i>Vinca minor 'Bowles'</i>	Bowles Periwinkle	2.5" Pots	SET 8" ON CENTER	3028	625

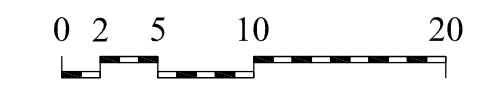
SHRUBS

Symbol	Botanical Name	Common Name	Size	MINIMUM DIMENSIONS	Comments	QUANTITY TOTAL	L-2
Az1	<i>Azalea kiusianum 'Best Pink'</i>	Best Pink Azalea	3 gal	18"Wx18"H		4	
Az2	<i>Azalea kiusianum 'White Form'</i>	White Form Azalea	3 gal	18"Wx18"H		21	
Bax	<i>Buxus microphylla 'Winter Gem'</i>	Winter Gem Boxwood	3 gal	18"Wx18"H		18	
Cl	<i>Celastrus alifolius 'Hummingbird'</i>	Hummingbird Compact Summersweet	3 gal	18"Wx18"H		35	13
Cor	<i>Cornus alba 'Ivory Halo'</i>	Ivory Halo Dogwood	5 gal	24"Wx24"H		7	4
CR	<i>Cornus racemosa</i>	Grey Dogwood	4.5 Ht		E&B	115	
Enk	<i>Enkianthus campanulatus</i>	Redvein Enkianthus	4.5 Ht		E&B	5	
FOR	<i>Forsythia x intermedia 'Gold Tide'</i>	Dwarf Forsythia	3 gal	18"Wx18"H		59	
Hs	<i>Hibiscus syriacus 'Blue Satin'</i>	Blue Satin Rose-of-Sharon	5.6 Ht		E&B	12	2
HyA	<i>Hydrangea arborescens 'Annabelle'</i>	Annabelle Hydrangea	5 gal	24"Wx24"H		75	12
HyB	<i>Hydrangea paniculata 'Bobo'</i>	Bobo Hydrangea	3 gal	18"Wx18"H		22	
HyE	<i>Hydrangea macrophylla 'Endless Summer'</i>	Endless Summer Hydrangea	3 gal	18"Wx18"H		16	
HyL	<i>Hydrangea paniculata 'Little Lime'</i>	Little Lime Hydrangea	7 gal			35	19
HyP	<i>Hydrangea anomala petiolaris</i>	Climbing Hydrangea	5 gal		STAKED	5	5
HYPG	<i>Hydrangea paniculata 'Grandiflora'</i>	P.G. Hydrangea	5.6 Ht		B&B TREEFORM	3	
HyQ	<i>Hydrangea quercifolia 'Sikes Dwarf'</i>	Sikes's Dwarf Hydrangea	5 gal	24"Wx24"H		12	
HyQR	<i>Hydrangea quercifolia 'RUBY Slippers'</i>	Ruby Slippers Oakleaf Hydrangea	5 gal	24"Wx24"H		3	
lg	<i>Ilex cornata 'Green Lustre'</i>	Green Lustre Japanese Holly	3 gal	18"Wx18"H		42	12
lg	<i>Ilex glabra 'Compacta'</i>	Inkberry	5 gal	24"Wx24"H		38	
l	<i>Ilex virginica 'Little Henry'</i>	Little Henry Sweetpire	3 gal	18"Wx18"H		17	
.c	<i>Juniperus chinensis 'Sargentii'</i>	Sargent Juniper	3 gal	18"Wx18"H		31	20
Jsg	<i>Juniperus chinensis 'Seagreen'</i>	Seagreen Juniper	2.2-5 Ht		E&B	17	17
KLE	<i>Kalmia latifolia 'Elfin'</i>	Elfin Dwarf Mountain Laurel	5 gal	24"Wx24"H		13	
Lau	<i>Leucothoe fontanesiana 'Compacta'</i>	Compact Drooping Leucothoe	3 gal	18"Wx18"H		104	24
Md	<i>Microbiota decussata</i>	Russian Cypress	3 gal	18"Wx18"H		44	
Mp	<i>Myrica pensylvanica</i>	Northern Bayberry	3.4 Ht		B&B FULL	33	
RaA	<i>Rhododendron 'Aglo'</i>	Aglo Rhododendron	2.2-5 Ht		E&B	29	3
RaS	<i>Rhododendron 'Scintillation'</i>	Scintillation Rhododendron	2.5-3 Ht		E&B	23	8
Ra	<i>Rhus aromatica 'Grow-Low'</i>	Grow Low Sumac	3 gal	18"Wx18"H		176	
ROS1	<i>Rosa 'Dwarf Pavement'</i>	Pink Fragrant Low semi-double Rose	3 gal	18"Wx18"H		17	
RS	<i>Rosa 'Knockout'</i>	Double Red Knockout Rose	3 gal	18"Wx18"H		46	29
SpA	<i>Spiraea x bumalda 'Anthony Waterer'</i>	Anthony Waterer Spiraea	3 gal	18"Wx18"H		48	
SpG	<i>Spiraea x 'Goldmound'</i>	Goldmound Spiraea	3 gal	18"Wx18"H		12	6
SYB	<i>Syringa 'Bloomerang'</i>	Bloomerang Lilac	2.5-3 Ht		E&B	87	
SyP	<i>Syringa meyeri 'Palibin'</i>	Dwarf Korean Lilac	3.4 Ht		E&B	24	7
Tax	<i>Taxus media 'Everlow'</i>	Everlow Yew	18-24 W		E&B	44	20
ThT	<i>Thuja occidentalis 'Tectony'</i>	Tectony Arborvitae	6-7 Ht		E&B	4	4
ThT	<i>Taxus media 'Tauntonii'</i>	Taunton Yew	18"Wx18"H			29	
VP	<i>Viburnum prunifolium</i>	Blackhaw Viburnum	4.5 Ht		E&B	35	
VpT	<i>Viburnum plicatum tomentosum 'Mariesii'</i>	Marie's Doublefile Viburnum	4.5 Ht		E&B	8	
VT	<i>Viburnum trilobum</i>	American Cranberry Viburnum	4.5 Ht		E&B	60	

Master Plant List

TREES

Symbol	Botanical Name	Common Name	Size	Comments	QUANTITY TOTAL	L-2
Ac	<i>Abies concolor</i>	White Fir	7-8 Ht	B&B	1	
Am	<i>Amelanchier x grandiflora 'Autumn Brilliance'</i>	Autumn Brilliance Serviceberry	8-10 Ht	B&B	3	
AR	<i>Acer rubrum 'October Glory'</i>	October Glory Red Maple	3-3.5 Cal	B&B	5	1
ArK	<i>Acer rubrum 'Karpick'</i>	Karpick Red Maple	3-3.5 Cal	B&B	13	
Bn	<i>Betula nigra 'Heritage'</i>	Heritage River Birch	12-14 Ht	B&B	16	
Cb	<i>Carpinus betulus 'Frans Fontaine'</i>	Hombear	3-3.5 Cal	B&B	1	
Cc	<i>Crataegus crus-galli 'Inermis'</i>	Thornless Cockspur Hawthorn	2-2.5 Cal	B&B	1	
Ok	<i>Cornus dogwood</i>	Kousa Dogwood	8-10 Ht	B&B	2	2
Gt	<i>Gleditsia triacanthos inermis 'Halka'</i>	Halka Thornless Honeylocust	3-3.5 Cal	B&B SPECIMEN	8	6
Ham	<i>Hamamelis x intermedia 'Arnold promise'</i>	Arnold Promise Witchhazel	5-6 Ht	B&B MULTSTEMMED	1	
LAB	<i>Laburnum x watereri 'Vossii'</i>	Golden Chain Tree	2-2.5 Cal	B&B	1	
Mag	<i>Magnolia 'Butterfly'</i>	Butterfly magnolia	8-10 Ht	B&B	1	
Mal	<i>Malus 'Donald Wyman'</i>	Donald Wyman Crabapple	2-2.5 Cal	B&B	1	
Ls	<i>Liquidambar styraciflua</i>	American Sweetgum	3-3.5 Cal	B&B	7	
Jm	<i>Juniperus chinensis 'Muntbatten'</i>	Muntbatten Juniper	7-8 Ht	B&B	7	1
JV	<i>Juniperus virginiana</i>	Eastern Red Cedar	7-8 Ht	B&B	12	
Na	<i>Nyssa sylvatica</i>	Black Tupelo	3-3.5 Cal	B&B	5	
Po	<i>Picea orientalis</i>	Oriental Spruce	8-10 Ht	B&B	1	
PoG	<i>Picea orientalis 'Gowdy'</i>	Gowdy Oriental Spruce	8-10 Ht	B&B	3	1
PP	<i>Picea pungens 'Glaucia'</i>	Colorado Blue Spruce	8-10 Ht	B&B	7	
PSK	<i>Prunus serrulata 'Kwanzan'</i>	Kwanzan Cherry	2-2.5 Cal	B&B	3	
Qb	<i>Quercus bicolor</i>	Swamp White Oak	3-3.5 Cal	B&B	2	
ThP1	<i>Thuja plicata 'Green Giant'</i>	Green Giant Arborvitae	12 Ht	B&B FULL	5	
ThP2	<i>Thuja plicata 'Green Giant'</i>	Green Giant Arborvitae	14 Ht	B&B FULL	6	
Ua	<i>Ulmus americana 'Princeton'</i>	Princeton American Elm	3-3.5 Cal	B&B	8	
Z	<i>Zelkova serrata 'Green Vase'</i>	Green Vase Zelkova	3-3.5 Cal	B&B	8	



RiverWoods Durham
MAIN ENTRY LANDSCAPE PLAN
Stone Quarry Drive Durham, New Hampshire

Drawn By: VM
Checked By: RW
Scale: 1" = 10' - 0"
Date: July 19, 2017
Revisions: October 16, 2017
December 1, 2017

L-2

Symbol	Botanical Name	Common Name	Size	Comments	QUANTITY TOTAL	L-3
Ac	<i>Abies concolor</i>	White Fir	7-8' Ht		1	
Am	<i>Amelanchier x grandiflora 'Autumn Brilliance'</i>	Autumn Brilliance Serviceberry	8-10' Ht	B&B	3	
AR	<i>Acer rubrum 'October Glory'</i>	October Glory Red Maple	3-3.5' Cal	B&B	5	
ArK	<i>Acer rubrum 'Karpick'</i>	Karpick Red Maple	3-3.5' Cal	B&B	13	
Bn	<i>Betula nigra 'Heritage'</i>	Heritage River Birch	12-14 Ht	B&B	16	7
Cb	<i>Carpinus betulus 'Frans Fontaine'</i>	Hornbeam	3-3.5' Cal	B&B	1	
Cc	<i>Crataegus crus-galli 'Tremis'</i>	Thornless Cockspur Hawthorn	2-2.5' Cal	B&B	1	1
Ck	<i>Cornus kousa</i>	Kousa Dogwood	8-10' Ht	B&B	2	
Gt	<i>Gleditsia triacanthos inermis 'Halka'</i>	Halka Thornless Honeylocust	3-3.5' Cal	B&B SPECIMEN	8	
Ham	<i>Hamamelis x intermedia 'Arnold promise'</i>	Arnold Promise Witchhazel	5-6' Ht	B&B MULTISTEMMED	1	1
LAB	<i>Laburnum x watereri 'Vossii'</i>	Golden Chain Tree	2-2.5' Cal	B&B	1	1
Mag	<i>Magnolia 'Butterfly'</i>	Butterfly magnolia	8-10' Ht	B&B	1	
Mal	<i>Malus Donald Wyman'</i>	Donald Wyman Crabapple	2-2.5' Cal	B&B	1	
LS	<i>Liquidambar styraciflua</i>	American Sweetgum	3-3.5' Cal	B&B	7	
Jm	<i>Juniperus chinensis 'Mountbatten'</i>	Mountbatten Juniper	7-8' Ht	B&B	7	6
JV	<i>Juniperus virginiana</i>	Eastern Red Cedar	7-8' Ht	B&B	12	
Ns	<i>Nyssa sylvatica</i>	Black Tupelo	3-3.5' Cal	B&B	5	
Po	<i>Picea orientalis</i>	Oriental Spruce	8-10' Ht	B&B	1	
PoG	<i>Picea pungens 'Gowdy'</i>	Gowdy Oriental Spruce	8-10' Ht	B&B	3	
FP	<i>Picea pungens 'Glaucia'</i>	Colorado Blue Spruce	8-10' Ht	B&B	7	
PSK	<i>Prunus serotina 'Kwanzan'</i>	Kwanzan Cherry	2-2.5' Cal	B&B	3	
Qb	<i>Quercus bicolor</i>	Swamp White Oak	3-3.5' Cal	B&B	2	
THP1	<i>Thuja plicata 'Green Giant'</i>	Green Giant Arborvitae	12' Ht	B&B FULL	5	1
THP2	<i>Thuja plicata 'Green Giant'</i>	Green Giant Arborvitae	14' Ht	B&B FULL	6	
Ua	<i>Ulmus americana 'Princeton'</i>	Princeton American Elm	3-3.5' Cal	B&B	8	
Z	<i>Zelkova serrata 'Green Vase'</i>	Green Vase Zelkova	3-3.5' Cal	B&B	8	

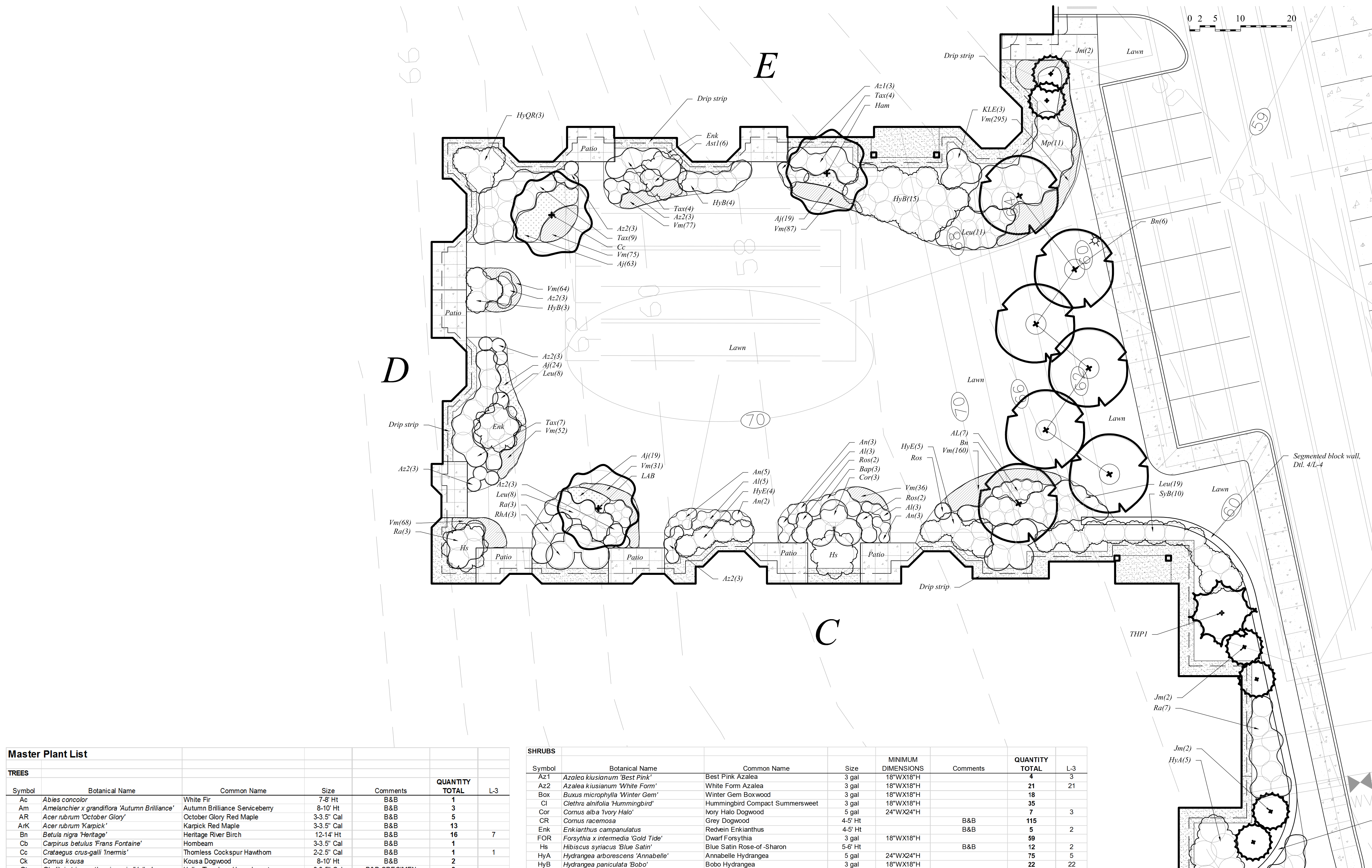
Symbol	Botanical Name	Common Name	Size	MINIMUM DIMENSIONS	Comments	QUANTITY TOTAL	L-3
Az1	<i>Azalea kiusianum 'Best Pink'</i>	Best Pink Azalea	3 gal	18"Wx18"H		4	3
Az2	<i>Azalea kiusianum 'White Form'</i>	White Form Azalea	3 gal	18"Wx18"H		21	21
Box	<i>Buxus microphylla 'Winter Gem'</i>	Winter Gem Boxwood	3 gal	18"Wx18"H		18	
Cl	<i>Clethra alnifolia 'Hummingbird'</i>	Hummingbird Compact Summersweet	3 gal	18"Wx18"H		35	
Cor	<i>Cornus alba 'Ivory Halo'</i>	Ivory Halo Dogwood	5 gal	24"Wx24"H		7	3
CR	<i>Cornus racemosa</i>	Grey Dogwood	4-5' Ht		B&B	115	
Enk	<i>Enkiarthus campanulatus</i>	Redvein Enkiarthus	4-5' Ht		B&B	5	2
FOR	<i>Forsythia x intermedia 'Gold Tide'</i>	Dwarf Forsythia	3 gal	18"Wx18"H		59	
Hs	<i>Hibiscus syriacus 'Blue Satin'</i>	Blue Satin Rose-of-Sharon	5-6' Ht		B&B	12	2
HyA	<i>Hydrangea arborescens 'Annabelle'</i>	Annabelle Hydrangea	5 gal	24"Wx24"H		75	5
HyB	<i>Hydrangea paniculata 'Bobo'</i>	Bobo Hydrangea	3 gal	18"Wx18"H		22	22
HyE	<i>Hydrangea macrophylla 'Endless Summer'</i>	Endless Summer Hydrangea	3 gal	18"Wx18"H		16	9
HyL	<i>Hydrangea paniculata 'Little Lime'</i>	Little Lime Hydrangea	7 gal			35	
HyP	<i>Hydrangea anomala 'petiolaris'</i>	Climbing Hydrangea	5 gal		STAKED	5	
HyPG	<i>Hydrangea paniculata 'Grandiflora'</i>	P.G. Hydrangea	5-6' Ht		B&B TREEFORM	3	
HyQ	<i>Hydrangea quercifolia 'Sikes Dwarf'</i>	Sike's Dwarf Hydrangea	5 gal	24"Wx24"H		12	
HyQR	<i>Hydrangea quercifolia 'Rubys Slippers'</i>	Ruby Slippers Oakleaf Hydrangea	5 gal	24"Wx24"H		3	3
Ic	<i>Ilex crenata 'Green Lustre'</i>	Green Lustre Japanese Holly	3 gal	18"Wx18"H		42	
Ig	<i>Ilex glabra 'Compacta'</i>	Inkberry	5 gal	24"Wx24"H		38	
It	<i>Itea virginica 'Little Henry'</i>	Little Henry Sweetpire	3 gal	18"Wx18"H		17	
Jc	<i>Juniperus chinensis 'Sargentii'</i>	Sargent Juniper	3 gal	18"Wx18"H		31	
Jsg	<i>Juniperus chinensis 'Seagreen'</i>	Seagreen Juniper	2-2.5' Ht		B&B	17	
KLE	<i>Kalmia latifolia 'Elr'</i>	Elf Dwarf Mountain Laurel	5 gal	24"Wx24"H		13	3
Leu	<i>Leucothoe fontaniana 'Compacta'</i>	Compact Drooping Leucothoe	3 gal	18"Wx18"H		104	46
Md	<i>Microbiota decussata</i>	Russian Cypress	3 gal	18"Wx18"H		44	
Mp	<i>Myrica pensylvanica</i>	Northern Bayberry	3-4' Ht		B&B FULL	33	11
RhA	<i>Rhododendron 'Aglo'</i>	Aglo Rhododendron	2-2.5' Ht		B&B	29	3
RhS	<i>Rhododendron 'Scintillation'</i>	Scintillation Rhododendron	2.5 - 3' Ht		B&B	23	
Ra	<i>Rhus aromatica 'Grow-Low'</i>	Grow Low Sumac	3 gal	18"Wx18"H		176	13
ROS1	<i>Rosa 'Dwarf Pavement'</i>	Pink Fragrant Low semi-double Rose	3 gal	18"Wx18"H		17	
Ros	<i>Rosa 'Knockout'</i>	Double Red Knockout Rose	3 gal	18"Wx18"H		46	5
SpA	<i>Spiraea x bumalda 'Anthony Waterer'</i>	Anthony Waterer Spirea	3 gal	18"Wx18"H		48	
SpG	<i>Spiraea x 'Goldmound'</i>	Goldmound Spirea	3 gal	18"Wx18"H		12	
SYB	<i>Syringa 'Bloomerang'</i>	Bloomerang Lilac	2.5-3' Ht		B&B	87	10
SyP	<i>Syringa meyeri 'Palibin'</i>	Dwarf Korean Lilac	3-4' Ht		B&B	24	
Tax	<i>Taxus media 'Everlow'</i>	Everlow Yew	18-24" W		B&B	44	24
TH1	<i>Thuja occidentalis 'Techny'</i>	Techny Arborvitae	6-7' Ht		B&B	4	
TmT	<i>Taxus media 'Tauntonii'</i>	Taunton Yew	3 gal	18"Wx18"H		29	
VP	<i>Viburnum prunifolium</i>	Blackhaw Viburnum	4-5' Ht		B&B	35	
VpT	<i>Viburnum plicatum tomentosum 'Mariesii'</i>	Marie's Doublefile Viburnum	4-5' Ht		B&B	9	
VT	<i>Viburnum trilobum</i>	American Cranberry Viburnum	4-5' Ht		B&B	60	

Symbol	Botanical Name	Common Name	Size	Comments	QUANTITY TOTAL	L-3
AL	<i>Alchemilla mollis</i>	Lady's Mantle	1 gal		18	
Aj	<i>Ajuga reptans 'Burgandy Glow'</i>	Burgandy Glow Ajuga	1 gal		144	106
An	<i>Anemone hupehensis 'September Charm'</i>	Japanese Anemone	1 gal		34	13
Ast1	<i>Astilbe chinensis 'Finale'</i>	Light Pink Astilbe	1 gal		120	6
Ast2	<i>Astilbe 'Deutschland'</i>	White Early Astilbe	1 gal		55	
Bap	<i>Baptisia australis</i>	False Blue Indigo	1 gal		3	3
C	<i>Coreopsis grandiflora 'Jethro Tull'</i>	Tickseed	1 gal		12	
Cal	<i>Calamagrostis acutiflora 'Karl Foerster'</i>	Feather Reed Grass	1 gal		35	
Daf	<i>Daylily Mix</i>					
	<i>Hemerocallis 'King Alfred'</i>	King Alfred Daylily	1 gal	TOPSIZE	87	
	<i>Hemerocallis 'Siloam Double Classic'</i>	Siloam Double Classic Daylily	1 gal	TOPSIZE	87	
	<i>Hemerocallis 'Gordon Biggs'</i>	Gordon Biggs Daylily	1 gal	TOPSIZE	64	
H1	<i>Hosta 'Frances Williams'</i>	Frances Williams Hosta	1 gal		17	
H2	<i>Hosta 'Sum and Substance'</i>	Sum and Substance Hosta	1 gal		13	
H3	<i>Hosta sieboldiana 'Elegans'</i>	Elegans Hosta	1 gal		10	
Ir	<i>Iris sibirica 'Caesar's Brother'</i>	Dark Parsy Purple Siberian Iris	1 gal		13	
Lam	<i>Lamium maculatum 'White nancy'</i>	White-Leaved Dead Nettle	1 gal		79	
Mis	<i>Miscanthus sinensis 'Morning Light'</i>	Morning Light Maiden Grass	1 gal		5	
Nep	<i>Nepeta faasseni x 'Walker's Low'</i>	Walker's Low Catmint	1 gal		41	
Per	<i>Perovskia atriplicifolia 'Filigran'</i>	Russian Sage	1 gal		65	
Rud	<i>Rudbeckia fulgida 'Goldsturm'</i>	Black-Eyed Susan	1 gal		51	
Sal	<i>Salvia 'Caradonna'</i>	Salvia	1 gal		153	
Vm	<i>Vinca minor 'Bowles'</i>	Bowles Periwinkle	2.5" Pots	SET 8" ON CENTER	3028	858

Master Plant List

SHRUBS

PERENNIALS



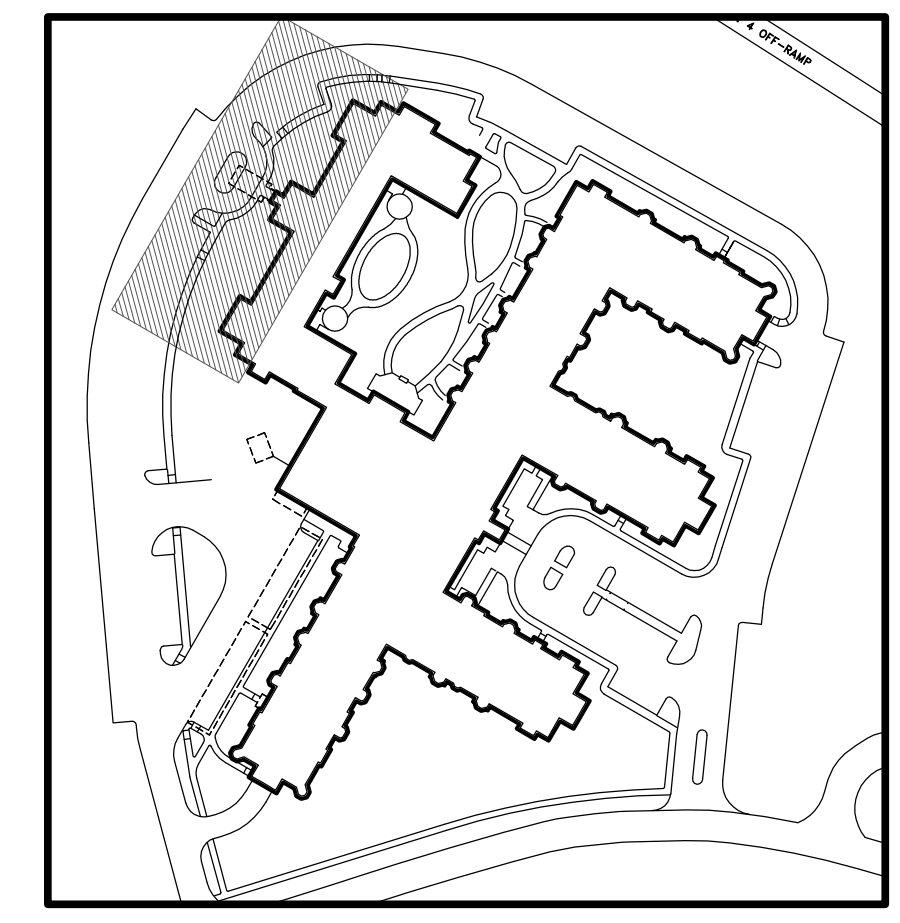
Key Plan

woodburn & company
LANDSCAPE ARCHITECTURE
103 Kent Place, New Hampshire
Phone: 603.659.5919

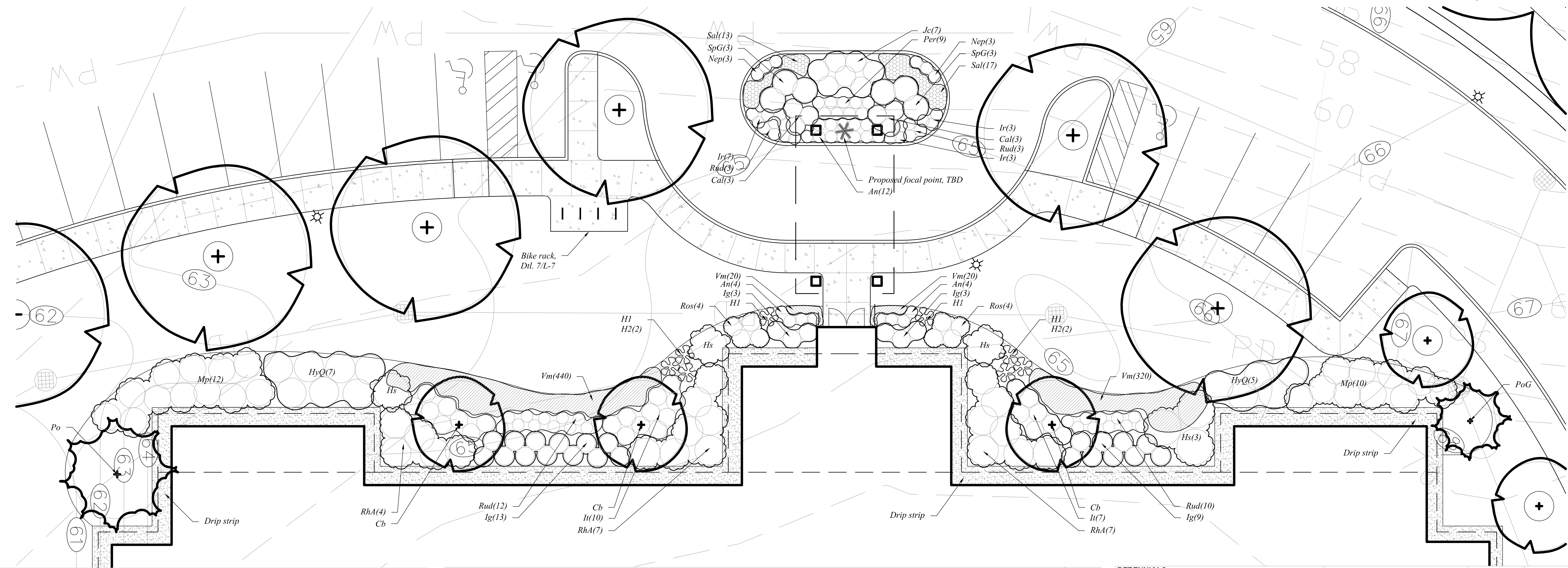
RiverWoods Durham
NORTH WEST COURTYARD LANDSCAPE PLAN
Stone Quarry Drive Durham, New Hampshire

Drawn By: VM
Checked By: RW
Scale: 1" = 10' - 0"
Date: July 19, 2017
Revisions: October 16, 2017
December 1, 2017

L-3
Sheet 3 of 9



Key Plan



RiverWoods Durham
 HEALTH CARE LANDSCAPE PLAN
 Stone Quarry Drive Durham, New Hampshire

Master Plant List

TREES	Symbol	Botanical Name	Common Name	Size	Comments	QUANTITY TOTAL	L-5
Ac		<i>Abies concolor</i>	White Fir	7-8' Ht	B&B	1	
Am		<i>Amelanchier x grandiflora</i> 'Autumn Brilliance'	Autumn Brilliance Serviceberry	8-10' Ht	B&B	3	
AR		<i>Acer rubrum</i> 'October Glory'	October Glory Red Maple	3-3.5' Cal	B&B	5	
ArK		<i>Acer rubrum</i> 'Karpick'	Karpick Red Maple	3-3.5' Cal	B&B	13	
Bn		<i>Betula nigra</i> 'Heritage'	Heritage River Birch	12-14' Ht	B&B	16	
Cb		<i>Carpinus betulus</i> 'Frans Fontaine'	Hornbeam	3-3.5' Cal	B&B	1	1
Cc		<i>Crataegus crus-galli</i> 'Inermis'	Thornless Cockspur Hawthorn	2-2.5' Cal	B&B	1	
Ck		<i>Cornus kousa</i>	Kousa Dogwood	8-10' Ht	B&B	2	
Gt		<i>Gleditsia triacanthos inermis</i> 'Halka'	Halka Thornless Honeylocust	3-3.5' Cal	B&B SPEC/IVEN	8	
Ham		<i>Hamamelis x intermedia</i> 'Arnold promise'	Arnold Promise Witchhazel	2-2.5' Cal	B&B MULTISTEMMED	1	
LAB		<i>Laburnum x watereri</i> 'Vossii'	Golden Chain Tree	5-6' Ht	B&B	1	
Mag		<i>Magnolia</i> 'Butterfly'	Butterfly magnolia	8-10' Ht	B&B	1	
Mal		<i>Malus</i> 'Donald Wyman'	Donald Wyman Crabapple	2-2.5' Cal	B&B	1	
Ls		<i>Liquidambar styraciflua</i>	American Sweetgum	3-3.5' Cal	B&B	7	
Jm		<i>Juniperus chinensis</i> 'Mountbatten'	Mountbatten Juniper	7-8' Ht	B&B	7	
JV		<i>Juniperus virginiana</i>	Eastern Red Cedar	7-8' Ht	B&B	12	
Ns		<i>Nyssa sylvatica</i>	Black Tupelo	3-3.5' Cal	B&B	5	
Po		<i>Picea orientalis</i>	Oriental Spruce	8-10' Ht	B&B	1	1
PoG		<i>Picea orientalis</i> 'Gowdy'	Gowdy Oriental Spruce	8-10' Ht	B&B	3	1
PP		<i>Picea pungens</i> 'Glauca'	Colorado Blue Spruce	8-10' Ht	B&B	7	
PSK		<i>Prunus semilata</i> 'Kwanzan'	Kwanzan Cherry	2-2.5' Cal	B&B	3	
Qb		<i>Quercus bicolor</i>	Swamp White Oak	3-3.5' Cal	B&B	2	
THP1		<i>Thuja plicata</i> 'Green Giant'	Green Giant Arborvitae	12' Ht	B&B FULL	6	
THP2		<i>Thuja plicata</i> 'Green Giant'	Green Giant Arborvitae	14' Ht	B&B FULL	6	
Ua		<i>Ulmus americana</i> 'Princeton'	Princeton American Elm	3-3.5' Cal	B&B	8	
Z		<i>Zelkova serrata</i> 'Green Vase'	Green Vase Zelkova	3-3.5' Cal	B&B	8	2

SHRUBS

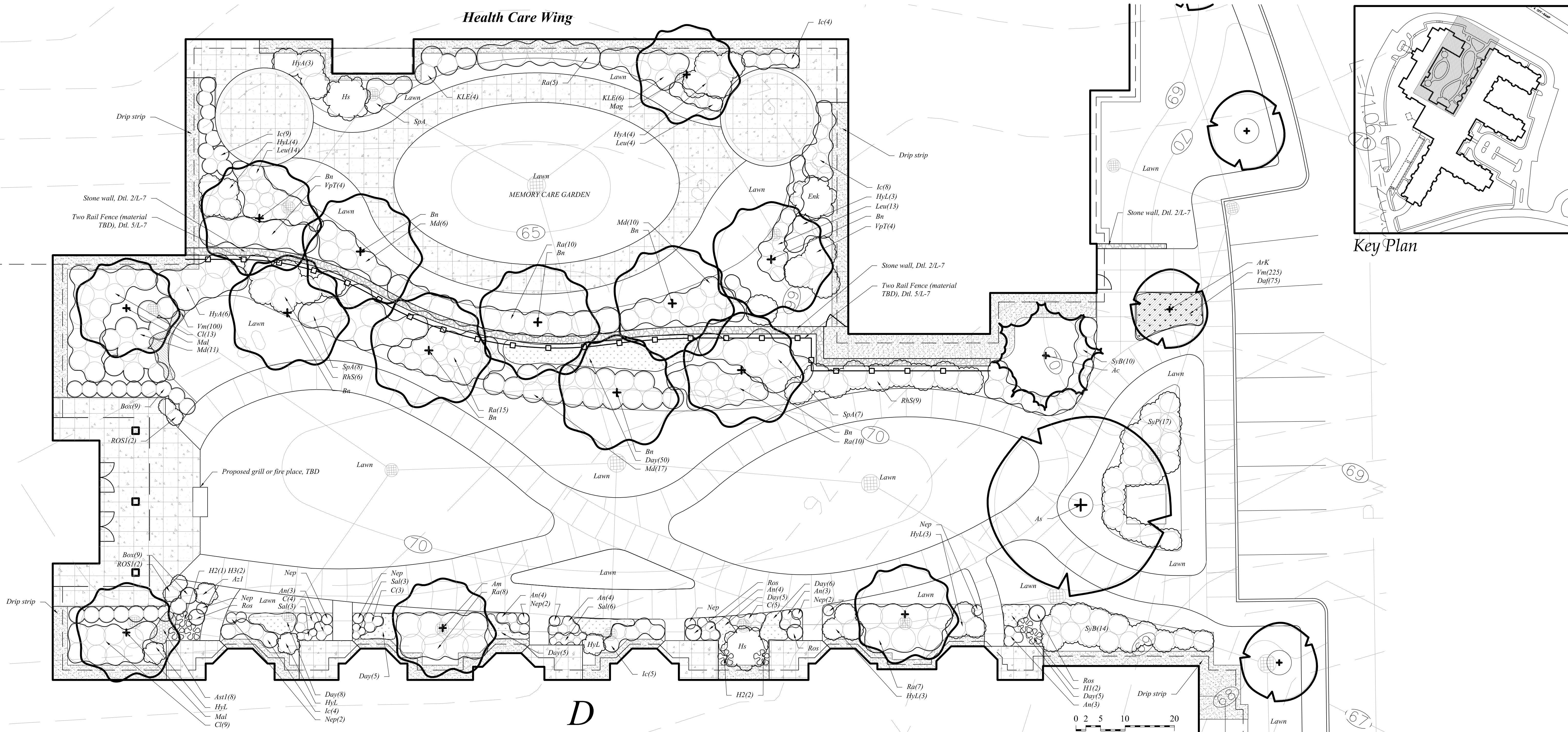
Symbol	Botanical Name	Common Name	Size	MINIMUM DIMENSIONS	Comments	QUANTITY TOTAL	L-5
Az1	<i>Azalea kiusianum</i> 'Best Pink'	Best Pink Azalea	3 gal	18"Wx18"H		4	
Az2	<i>Azalea kiusianum</i> 'White Form'	White Form Azalea	3 gal	18"Wx18"H		21	
Box	<i>Buxus microphylla</i> 'Winter Gem'	Winter Gem Boxwood	3 gal	18"Wx18"H		38	
Ci	<i>Celastrus alnifolia</i> 'Hummingbird'	Hummingbird Compact Summersweet	3 gal	18"Wx18"H		15	
Cor	<i>Cornus alba</i> 'Ivory Halo'	Ivory Halo Dogwood	5 gal	24"Wx24"H		7	
CR	<i>Cornus racemosa</i>	Grey Dogwood	4.5' Ht		B&B	115	
Enk	<i>Enkianthus campanulatus</i>	Redvein Enkianthus	4.5' Ht		B&B	5	
FOR	<i>Forsythia x intermedia</i> 'Gold Tide'	Dwarf Forsythia	3 gal	18"Wx18"H		69	
Hs	<i>Hibiscus syriacus</i> 'Blue Satin'	Blue Satin Rose-of-Sharon	5.6' Ht		B&B	12	6
HyA	<i>Hydrangea arborescens</i> 'Annabelle'	Annabelle Hydrangea	5 gal	24"Wx24"H		75	
HyB	<i>Hydrangea paniculata</i> 'Bobo'	Bobo Hydrangea	3 gal	18"Wx18"H		22	
HyE	<i>Hydrangea macrophylla</i> 'Endless Summer'	Endless Summer Hydrangea	3 gal	18"Wx18"H		16	
HyL	<i>Hydrangea paniculata</i> 'Little Lime'	Little Lime Hydrangea	7 gal			35	
HYR	<i>Hydrangea anomala</i> 'petiolaris'	Climbing Hydrangea	5 gal			5	
HYPG	<i>Hydrangea paniculata</i> 'Grandiflora'	P. G. Hydrangea	5.6' Ht		B&B TREEFORM	3	
HyQ	<i>Hydrangea quercifolia</i> 'Sikes Dwarf'	Sikes' Dwarf Hydrangea	5 gal	24"Wx24"H		12	12
HYQR	<i>Hydrangea quercifolia</i> 'Ruby Slippers'	Ruby Slippers Oakeleaf Hydrangea	5 gal	24"Wx24"H		3	
Ic	<i>Ilex crenata</i> 'Green Lustre'	Green Lustre Japanese Holly	3 gal	18"Wx18"H		42	
Ig	<i>Ilex glabra</i> 'Compacta'	Inkberry	5 gal	24"Wx24"H		38	28
It	<i>Itea virginica</i> 'Little Henry'	Little Henry Sweetspire	3 gal	18"Wx18"H		17	17
Jc	<i>Juniperus chinensis</i> 'Sargentii'	Sargent Juniper	3 gal	18"Wx18"H		31	7
Jsg	<i>Juniperus chinensis</i> 'Seagreen'	Seagreen Juniper	2.5-5' Ht		B&B	17	
KLE	<i>Kalmia latifolia</i> 'Elf'	Elf Dwarf Mountain Laurel	5 gal	24"Wx24"H		13	
Leu	<i>Leucothoe fontanesiana</i> 'Compacta'	Compact Drooping Leucothoe	3 gal	18"Wx18"H		104	
Md	<i>Microbiota decussata</i>	Russian Cypress	3 gal	18"Wx18"H		44	
Mp	<i>Myrica pensylvanica</i>	Northern Bayberry	3.4' Ht		B&B FULL	33	22
RhA	<i>Rhododendron</i> 'Aglo'	Aglo Rhododendron	2-2.5' Ht		B&B	29	18
RhS	<i>Rhododendron</i> 'Scintillation'	Scintillation Rhododendron	2.5-3' Ht		B&B	23	
Ra	<i>Rhus aromatica</i> 'Grow-Low'	Grow Low Sumac	3 gal	18"Wx18"H		176	
ROS1	<i>Rosa</i> 'Dwarf Pavement'	Pink Fragrant Low semi-double Rose	3 gal	18"Wx18"H		17	
Ros	<i>Rosa</i> 'Knockout'	Double Red Knockout Rose	3 gal	18"Wx18"H		46	8
SpA	<i>Spiraea x bumalda</i> 'Anthony Waterer'	Anthony Waterer Spirea	3 gal	18"Wx18"H		48	
SpG	<i>Spiraea x Goldmound</i>	Goldmound Spirea	3 gal	18"Wx18"H		12	6
SYB	<i>Syringa</i> 'Bloomerang'	Bloomerange Lilac	2.5-3' Ht		B&B	87	
SyP	<i>Syringa meyer</i> 'Palibin'	Dwarf Korean Lilac	3.4' Ht		B&B	24	
Tax	<i>Taxus media</i> 'Everlow'	Everlow Yew	18-24' W		B&B	44	
ThT	<i>Thuja occidentalis</i> 'Techny'	Techny Arborvitae	6-7' Ht		B&B	4	
TmT	<i>Taxus media</i> 'Tauntonii'	Taunton Yew	3 gal	18"Wx18"H		29	
VP	<i>Viburnum prunifolium</i>	Blackhaw Viburnum	4.5' Ht		B&B	35	
VpT	<i>Viburnum plicatum</i> 'tomentosum 'Mariesii'	Marie's Doublefile Viburnum	4.5' Ht		B&B	9	
VT	<i>Viburnum trilobum</i>	American Cranberry Viburnum	4.5' Ht		B&B	60	

PERENNIALS

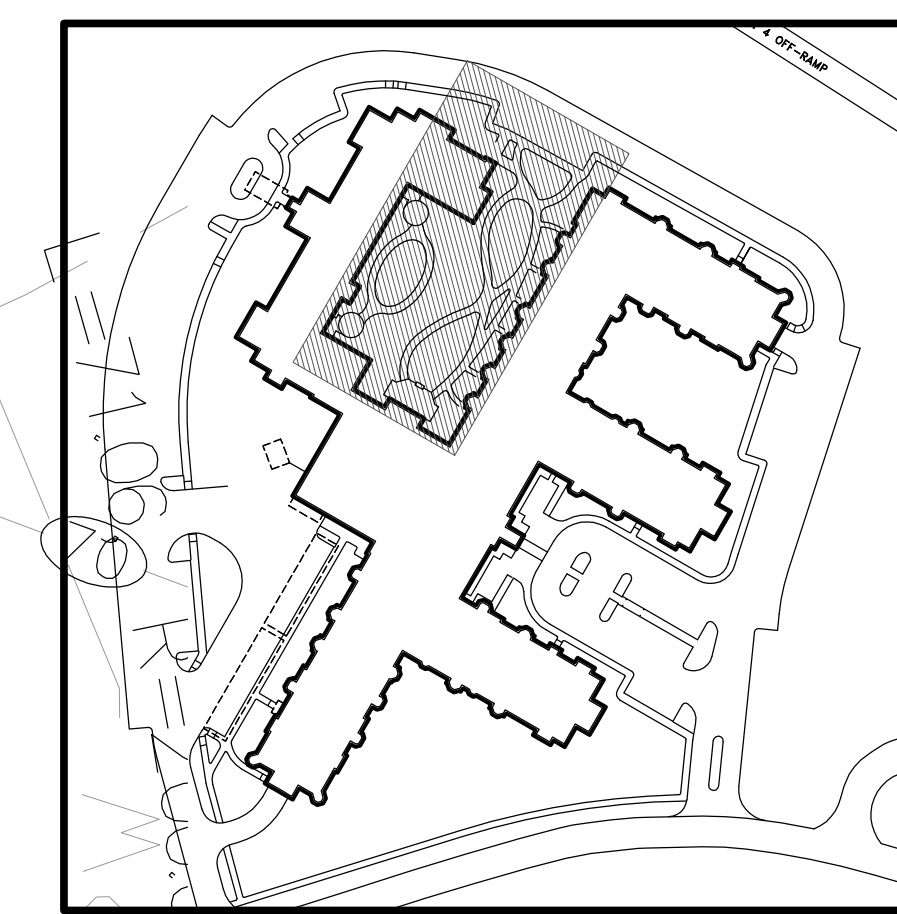
Symbol	Botanical Name	Common Name	Size	Comments	QUANTITY TOTAL	L-5
AL	<i>Alchemilla mollis</i>	Lady's Mantle	1 gal		18	
Aj	<i>Ajuga reptans</i> 'Burgandy Glow'	Burgandy Glow Ajuga	1 gal		144	
An	<i>Anemone hepatica</i> 'September Charm'	Japanese Anemone	1 gal		34	
Ast1	<i>Astilbe chinensis</i> 'Finale'	Light Pink Astilbe	1 gal		120	
Ast2	<i>Astilbe</i> 'Deutschland'	White Early Astilbe	1 gal		55	
Bap	<i>Baptisia australis</i>	False Blue Indigo	1 gal		3	
C	<i>Coreopsis grandiflora</i> 'Jethro Tull'	Tickseed	1 gal		12	
Cal	<i>Calamagrostis acutiflora</i> 'Karl Foerster'	Feather Reed Grass	1 gal		35	6
Daf	<i>Daffodil</i> Mix					
	<i>Narcissus</i> 'King Alfred'			TOPSIZE	87	
	<i>Narcissus</i> 'Mount Hood'			TOPSIZE	87	
	<i>Narcissus</i> 'Sweet Harmony'			TOPSIZE	87	
Day	<i>Daylily</i> Mix					
	<i>Hemerocallis</i> 'Big Time Happy'	Big Time Happy Daylily	1 gal	MIX EVENLY	65	
	<i>Hemerocallis</i> 'Siloam Double Classic'	Siloam Double Classic Daylily	1 gal		65	
	<i>Hemerocallis</i> 'Gordon Biggs'	Gordon Biggs Daylily	1 gal		64	
H1	<i>Hosta</i> 'Frances Williams'	Frances Williams Hosta	1 gal		17	4
H2	<i>Hosta</i> 'Sum and Substance'	Sum and Substance Hosta	1 gal		13	4
H3	<i>Hosta sieboldiana</i> 'Elegans'	Elegans Hosta	1 gal		10	
Ir	<i>Iris sibirica</i> 'Cesar's Brother'	Dark Pansy Purple Siberian Iris	1 gal		13	13
Lam	<i>Lamium maculatum</i> 'White nancy'	White-Leaved Dead Nettle	1 gal		73	
Mis	<i>Miscanthus sinensis</i> 'Morning Light'	Morning Light Maiden Grass	1 gal		5	
Nep	<i>Nepeta faassenii</i> x 'Walker's Low'	Walker's Low Catmint	1 gal		41	6
Per	<i>Perovskia atriplicifolia</i> 'Filigran'	Russian Sage	1 gal		65	7
Rud	<i>Rudbeckia fulgida</i> 'Goldsturm'	Black-Eyed Susan	1 gal		51	28
Sal	<i>Salvia</i> 'Carradonna'	Salvia	1 gal		153	30
Vm	<i>Vinca minor</i> 'Bowles'	Bowles Periwinkle	2.5' Pots	SET 8" ON CENTER	3028	800

Drawn By: VM
 Checked By: RW
 Scale: 1" = 10' - 0"
 Date: July 19, 2017
 Revisions: October 16, 2017
 December 1, 2017

Health Care Wing



Key Plan



woodburn & company
LANDSCAPE ARCHITECTURE
103 Kent Place
Newmarket, New Hampshire
Phone: 603.659.5949

RiverWoods Durham
WEST COURTYARD LANDSCAPE PLAN
Stone Quarry Drive Durham, New Hampshire

Master Plant List

TREES	Symbol	Botanical Name	Common Name	Size	Comments	QUANTITY TOTAL	L-6
Ac		<i>Abies concolor</i>	White Fir	7-8' Ht	B&B	1	1
Am		<i>Amelanchier x grandiflora</i> 'Autumn Brilliance'	Autumn Brilliance Spicebush	8-10' Ht	B&B	3	1
AR		<i>Acer rubrum</i> 'October Glory'	October Glory Red Maple	3-3.5' Cal	B&B	5	
ArK		<i>Acer rubrum</i> 'Karpick'	Karpick Red Maple	3-3.5' Cal	B&B	13	1
Bn		<i>Betula nigra</i> 'Heritage'	Heritage River Birch	12-14' Ht	B&B	16	9
Cb		<i>Carpinus betulus</i> 'Frans Fontaine'	Hornbeam	3-3.5' Cal	B&B	1	
Cc		<i>Crataegus crus-galli</i> 'Inermis'	Thornless Cockspur Hawthorn	2-2.5' Cal	B&B	1	
Ck		<i>Cornus kousa</i>	Kousa Dogwood	8-10' Ht	B&B	2	
Gt		<i>Gleditsia triacanthos inermis</i> 'Haika'	Haika Thornless Honeylocust	3-3.5' Cal	B&B SPECIMEN	8	
Ham		<i>Hamamelis x intermedia</i> 'Arnold promise'	Arnold Promise Witchhazel	5-6' Ht	B&B MULTISTEMMED	1	
LAB		<i>Laburnum x watereri</i> 'Vossii'	Golden Chain Tree	2-2.5' Cal	B&B	1	
Mag		<i>Magnolia 'Butterfly'</i>	Butterfly magnolia	8-10' Ht	B&B	1	1
Mal		<i>Malus 'Donald Wyman'</i>	Donald Wyman Crabapple	2-2.5' Cal	B&B	1	1
Ls		<i>Liquidambar styraciflua</i>	American Sweetgum	3-3.5' Cal	B&B	7	
Jm		<i>Juniperus chinensis</i> 'Mountbatten'	Mountbatten Juniper	7-8' Ht	B&B	7	
JV		<i>Juniperus virginiana</i>	Eastern Red Cedar	7-8' Ht	B&B	12	
Ns		<i>Nyssa sylvatica</i>	Black Tupelo	3-3.5' Cal	B&B	5	
Po		<i>Picea orientalis</i>	Oriental Spruce	8-10' Ht	B&B	1	
PoG		<i>Picea orientalis</i> 'Gowdy'	Gowdy Oriental Spruce	8-10' Ht	B&B	3	
PP		<i>Picea pungens</i> 'Glauca'	Colorado Blue Spruce	8-10' Ht	B&B	7	
PSK		<i>Prunus serrulata</i> 'Kwanzan'	Kwanzan Cherry	2-2.5' Cal	B&B	3	
Qb		<i>Quercus bicolor</i>	Swamp White Oak	3-3.5' Cal	B&B	2	
THP1		<i>Thuja plicata</i> 'Green Giant'	Green Giant Arborvitae	12' Ht	B&B FULL	5	
THP2		<i>Thuja plicata</i> 'Green Giant'	Green Giant Arborvitae	14' Ht	B&B FULL	6	
Ua		<i>Ulmus americana</i> 'Princeton'	Princeton American Elm	3-3.5' Cal	B&B	8	
Z		<i>Zelkova serrata</i> 'Green Vase'	Green Vase Zelkova	3-3.5' Cal	B&B	8	

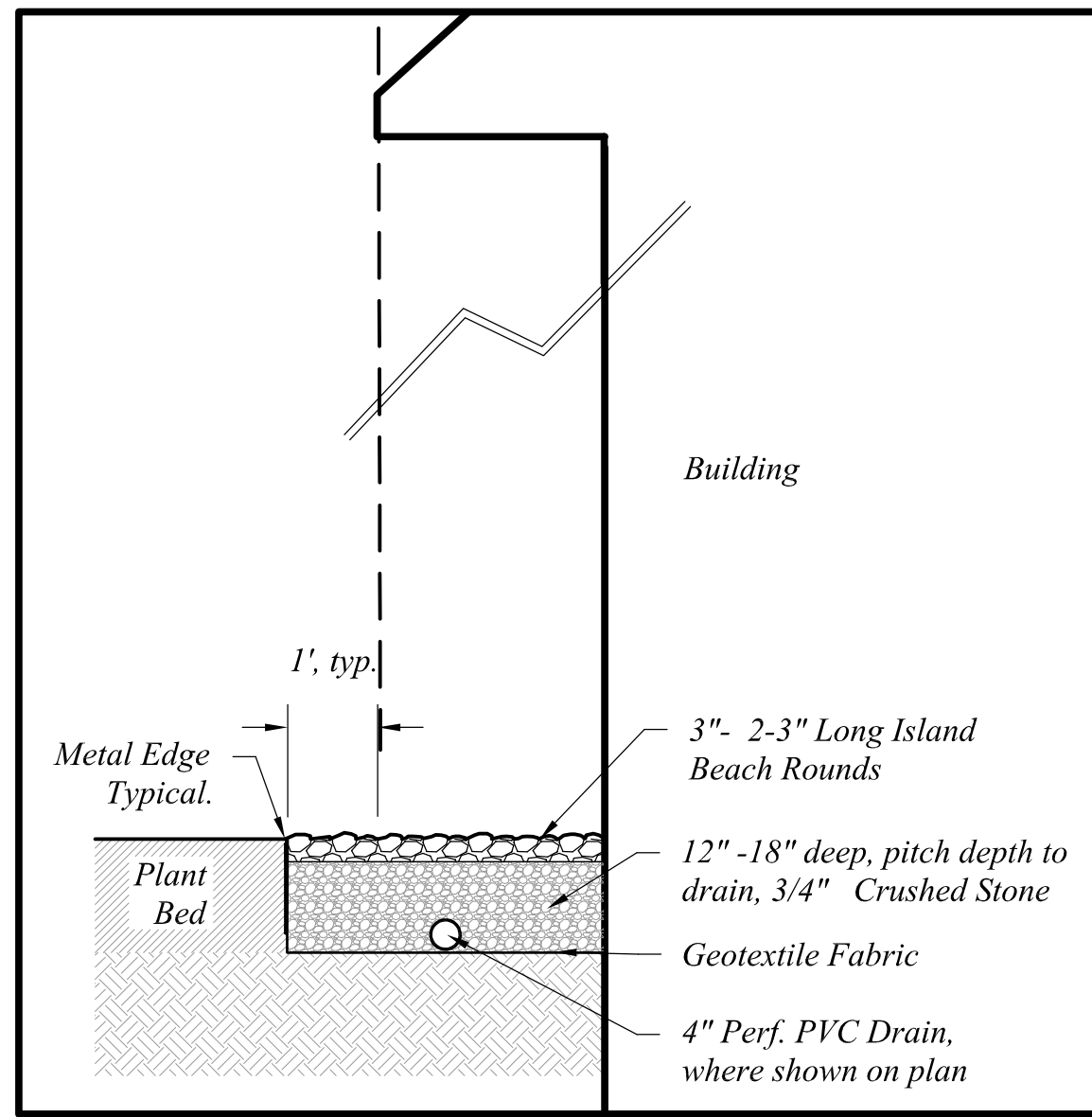
SHRUBS

Symbol	Botanical Name	Common Name	Size	MINIMUM DIMENSIONS	Comments	QUANTITY TOTAL	L-6
Az1	<i>Azalea kiusianum</i> 'Best Pink'	Best Pink Azalea	3 gal	18"WX18"H		4	1
Az2	<i>Azalea kiusianum</i> 'White Form'	White Form Azalea	3 gal	18"WX18"H		21	
Box	<i>Buxus microphylla</i> 'Winter Gem'	Winter Gem Boxwood	3 gal	18"WX18"H		18	18
Cl	<i>Clethra alnifolia</i> 'Hummingbird'	Hummingbird Compact Summersweet	3 gal	18"WX18"H		35	22
Ci	<i>Cornus alba</i> 'Ivory Halo'	Ivory Halo Dogwood	5 gal	24"WX24"H		7	
CR	<i>Cornus racemosa</i>	Grey Dogwood	4-5' Ht		B&B	115	
Enk	<i>Erkianthus campanulatus</i>	Redvein Erkanthus	4-5' Ht		B&B	5	1
FOR	<i>Forsythia x intermedia</i> 'Gold Tide'	Dwarf Forsythia	3 gal	18"WX18"H		59	
Hs	<i>Hibiscus syriacus</i> 'Blue Satin'	Blue Satin Rose-of-Sharon	5-6' Ht		B&B	12	2
HyA	<i>Hydrangea arborescens</i> 'Annabelle'	Annabelle Hydrangea	5 gal	24"WX24"H		75	13
HyB	<i>Hydrangea paniculata</i> 'Bobo'	Bobo Hydrangea	3 gal	18"WX18"H		22	
HyE	<i>Hydrangea macrophylla</i> 'Endless Summer'	Endless Summer Hydrangea	3 gal	18"WX18"H		16	
Hyl	<i>Hydrangea paniculata</i> 'Little Lime'	Little Lime Hydrangea	7 gal			35	16
HYP	<i>Hydrangea paniculata</i> 'Grandiflora'	P.G. Hydrangea	5-6' Ht		STAKED B&B TREEFORM	3	
HyQ	<i>Hydrangea quercifolia</i> 'Sikes Dwarf'	Sikes Dwarf Hydrangea	5 gal	24"WX24"H		12	
HyQR	<i>Hydrangea quercifolia</i> 'Ruby Slippers'	Ruby Slippers Oakleaf Hydrangea	5 gal	24"WX24"H		3	
Ic	<i>Ilex crenata</i> 'Green Lustre'	Green Lustre Japanese Holly	3 gal	18"WX18"H		42	30
Ig	<i>Ilex glabra</i> 'Compacta'	Inkberry	5 gal	24"WX24"H		38	
Il	<i>Ilex virginica</i> 'Little Henry'	Little Henry Sweetpire	3 gal	18"WX18"H		17	
Jc	<i>Juniperus chinensis</i> 'Sargentii'	Sargent Juniper	3 gal	18"WX18"H		3	
Jsg	<i>Juniperus chinensis</i> 'Seagreen'	Seagreen Juniper	2-2.5' Ht		B&B	17	
KLE	<i>Kalmia latifolia</i> 'Elf'	Elf Dwarf Mountain Laurel	5 gal	24"WX24"H		13	10
Leu	<i>Leucothoe fontanesiana</i> 'Compacta'	Compact Drooping Leucothoe	3 gal	18"WX18"H		104	31
Md	<i>Microbiota decussata</i>	Russian Cypress	3 gal	18"WX18"H		44	44
Mp	<i>Myrica pensylvanica</i>	Northern Bayberry	3-4' Ht		B&B FULL	33	
RhA	<i>Rhododendron 'Aglo'</i>	Aglo Rhododendron	2-2.5' Ht		B&B	29	
RhS	<i>Rhododendron 'Scintillation'</i>	Scintillation Rhododendron	2.5-3' Ht		B&B	23	
Ra	<i>Rhus aromatica</i> 'Grow/Low'	Grow Low Sumac	3 gal	18"WX18"H		176	15
ROSI	<i>Rosa</i> 'Dwarf Pavement'	Pink Fragrant Low semi-double Rose	3 gal	18"WX18"H		17	118
Ros	<i>Rosa</i> 'Knock out'	Double Red Knockout Rose	3 gal	18"WX18"H		46	4
SpA	<i>Spiraea x bumalda</i> 'Anthony Waterer'	Anthony Waterer Spiraea	3 gal	18"WX18"H		48	4
SpG	<i>Spiraea x Goldmound</i>	Goldmound Spiraea	3 gal	18"WX18"H		12	19
SyB	<i>Syringa 'Bloomerang'</i>	Bloomerang Lilac	2-2.5' Ht		B&B	87	
SyP	<i>Syringa meyeri</i> 'Palibin'	Dwarf Korean Lilac	3-4' Ht		B&B	24	24
Tax	<i>Taxus media</i> 'Everlow'	Everlow Yew	18-24' W		B&B	44	17
ThT	<i>Thuja occidentalis</i> 'Techny'	Techny Arborvitae	6-7' Ht		B&B	4	
TmT	<i>Taxus media</i> 'Tauntonii'	Taunton Yew	3 gal	18"WX18"H		29	
VP	<i>Viburnum prunifolium</i>	Blackhaw Viburnum	4-5' Ht		B&B	35	
VpT	<i>Viburnum plicatum tomentosum</i> 'Mariesii'	Marie's Doublefile Viburnum	4-5' Ht		B&B	9	
VT	<i>Viburnum trilobum</i>	American Cranberry Viburnum	4-5' Ht		B&B	60	8

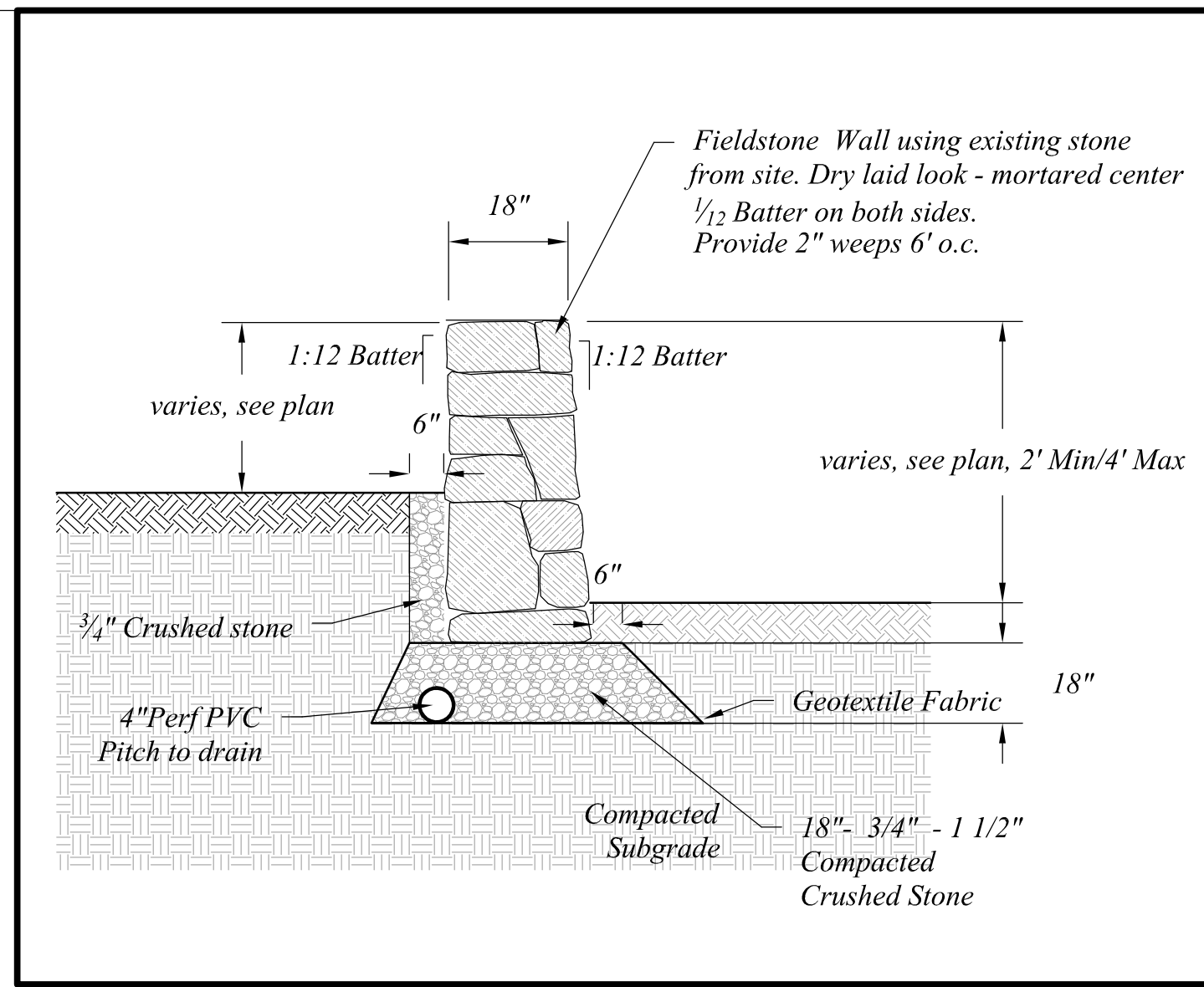
PERENNIALS

Symbol	Botanical Name	Common Name	Size	Comments	QUANTITY TOTAL	L-6
AL	<i>Alchemilla mollis</i>	Lady's Mantle	1 gal		18	
AJ	<i>Ajuga reptans</i> 'Burgandy Glow'	Burgandy Glow Ajuga	1 gal		144	
An	<i>Anemone hephehensis</i> 'September Charm'	Japanese Anemone	1 gal		34	21
Ast1	<i>Astilbe chinensis</i> 'Finale'	Light Pink Astilbe	1 gal		120	8
Ast2	<i>Astilbe 'Deutschland'</i>	White Early Astilbe	1 gal		55	
Bap	<i>Baptisia australis</i>	False Blue Indigo	1 gal		3	
C	<i>Coreopsis grandiflora</i> 'Jethro Bull'	Ticksseed	1 gal		12	12
Cal	<i>Calamagrostis acutifolia</i> 'Karl Foerster'	Feather Reed Grass	1 gal		35	
Daf	<i>Daffodil Mix</i>					
Day	<i>Daylily Mix</i>					
Day	<i>Hemerocallis 'Big Time Happy'</i>	Big Time Happy Daylily	1 gal		65	30
Day	<i>Hemerocallis 'Siloam Double Classic'</i>	Siloam Double Classic Daylily	1 gal		65	30
Day	<i>Hemerocallis 'Gordon Biggs'</i>	Gordon Biggs Daylily	1 gal		64	30
H1	<i>Hosta 'Frances Williams'</i>	Frances Williams Hosta	1 gal		17	2
H2	<i>Hosta 'Sum and Substance'</i>	Sum and Substance Hosta	1 gal		13	3
H3	<i>Hosta sieboldiana</i> 'Elegans'	Elegans Hosta	1 gal		10	2
Ir	<i>Iris sibirica</i> 'Caesar's Brother'	Dark Pansy Purple Siberian Iris	1 gal		13	
Lam	<i>Lamium maculatum</i> 'White nancy'	White-Leaved Dead Nettle	1 gal		73	
Mis	<i>Miscanthus sinensis</i> 'Morning Light'	Morning Light Maiden Grass	1 gal		5	
Nep	<i>Nepeta faassenii</i> x 'Walkers Low'	Walkers Low Catmint	1 gal		41	11
Per	<i>Perovskia atriplicifolia</i> 'Filigran'	Russian Sage	1 gal		65	
Rud	<i>Rudbeckia 'Tulipina Goldsturm'</i>	Black-Eyed Susan	1 gal		51	
Sai	<i>Salvia 'Caradonna'</i>	Salvia	1 gal		153	12
Vm	<i>Vinca minor</i> 'Bowles'	Bowles Periwinkle	2.5' Pots	SET 8" ON CENTER	3028	325

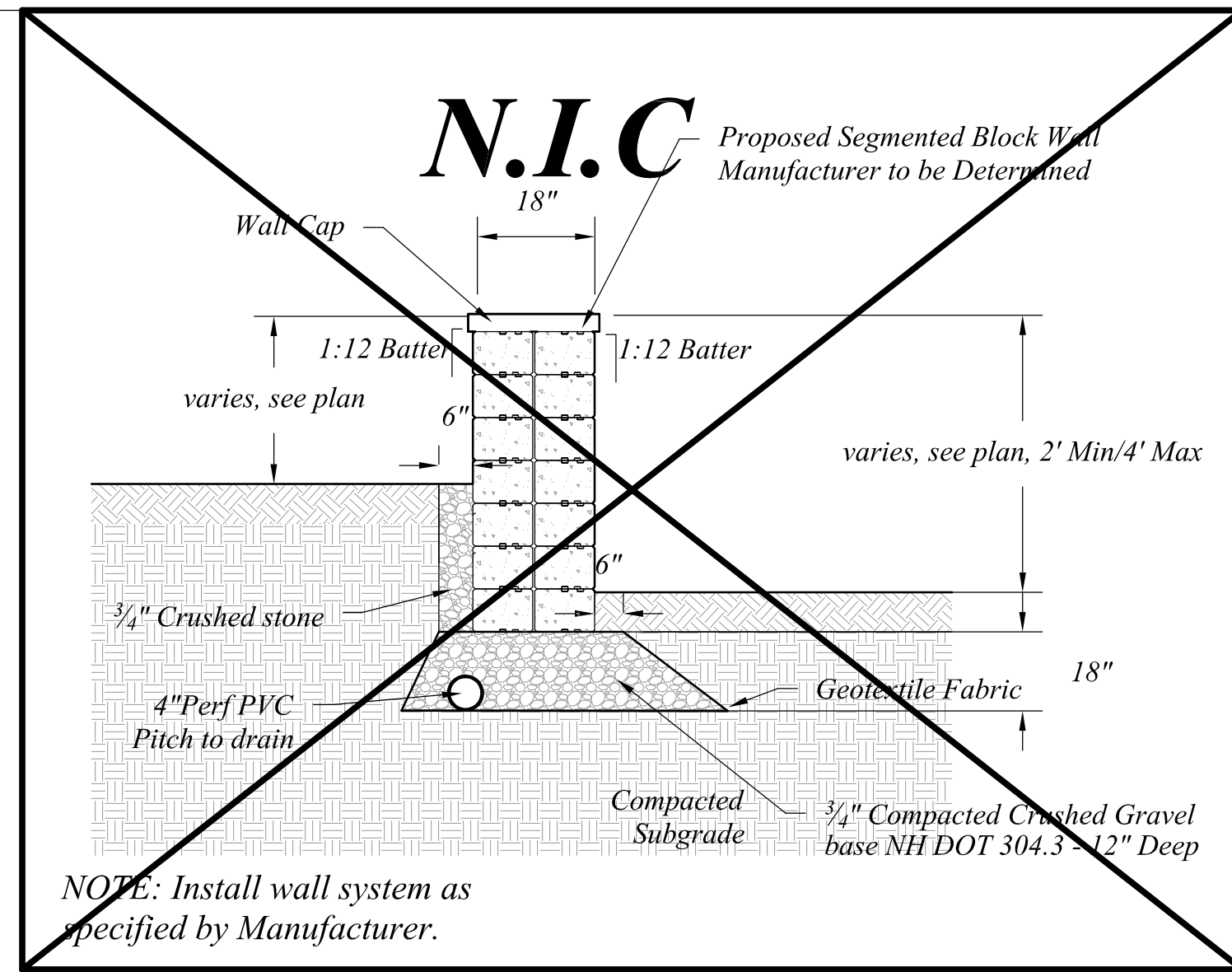
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Revisions: October 16, 2017
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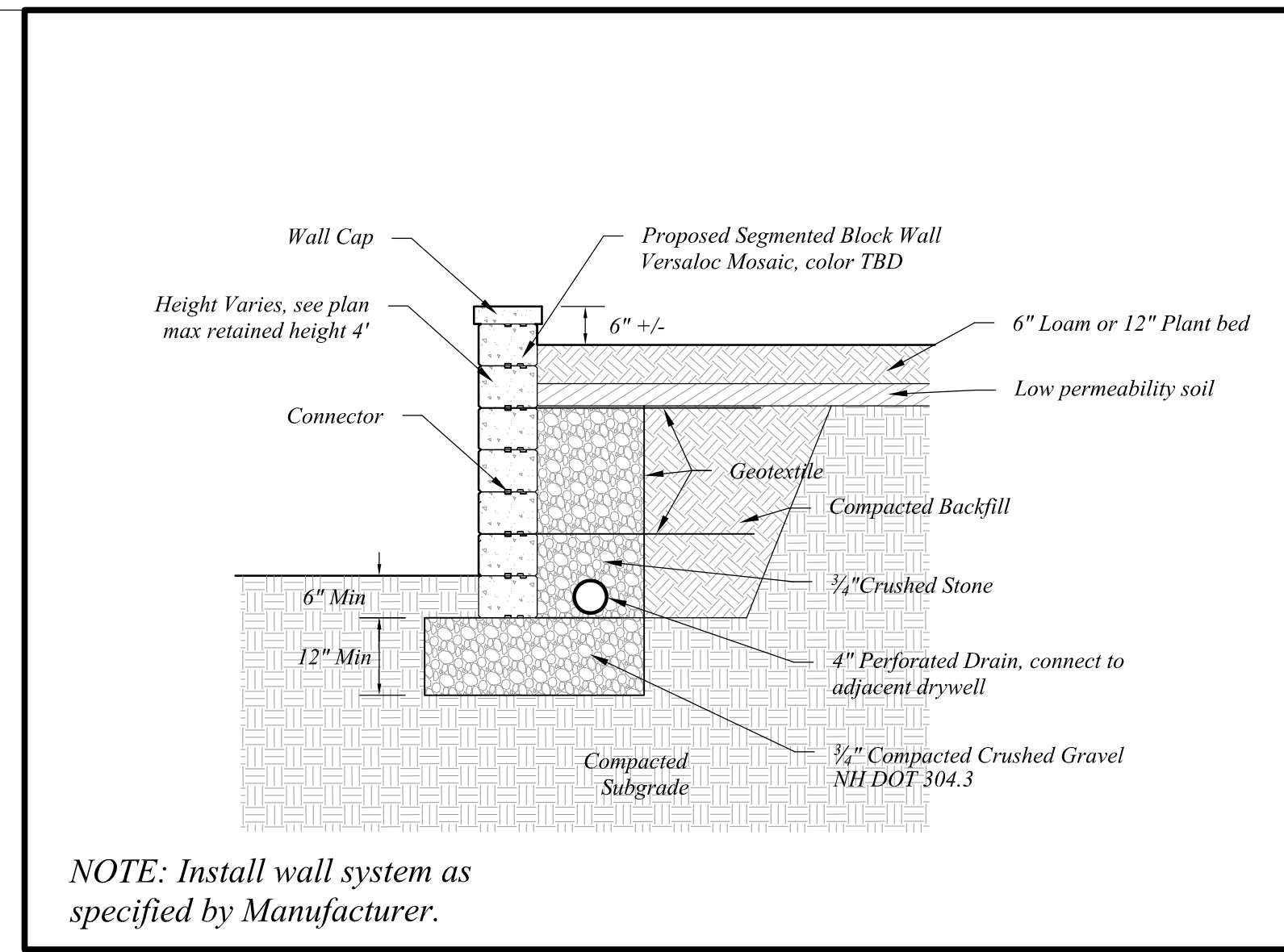
1 DRIP STRIP SECTION
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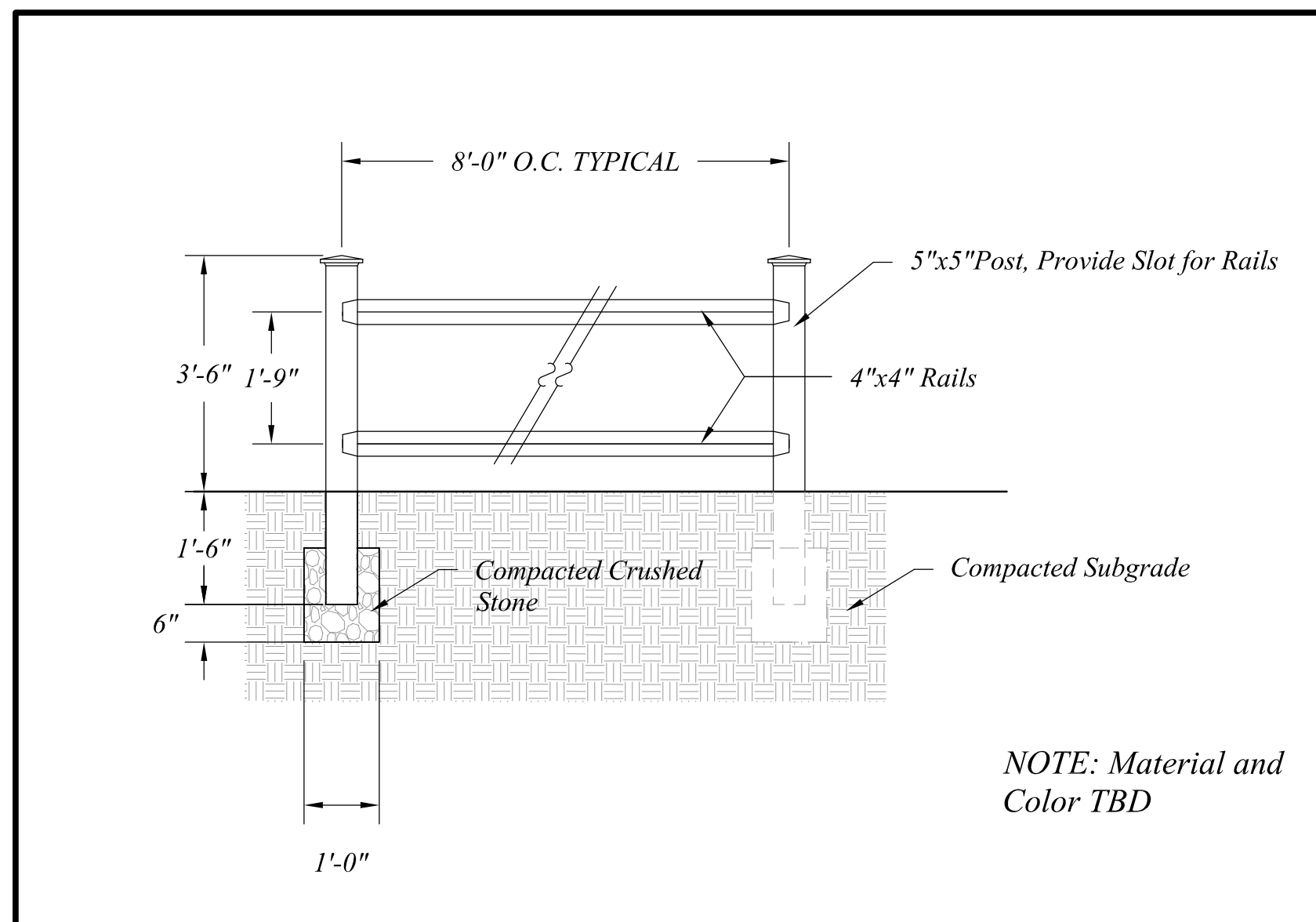
2 STONE RETAINING WALL SECTION
Scale: 1/2"=1'-0"



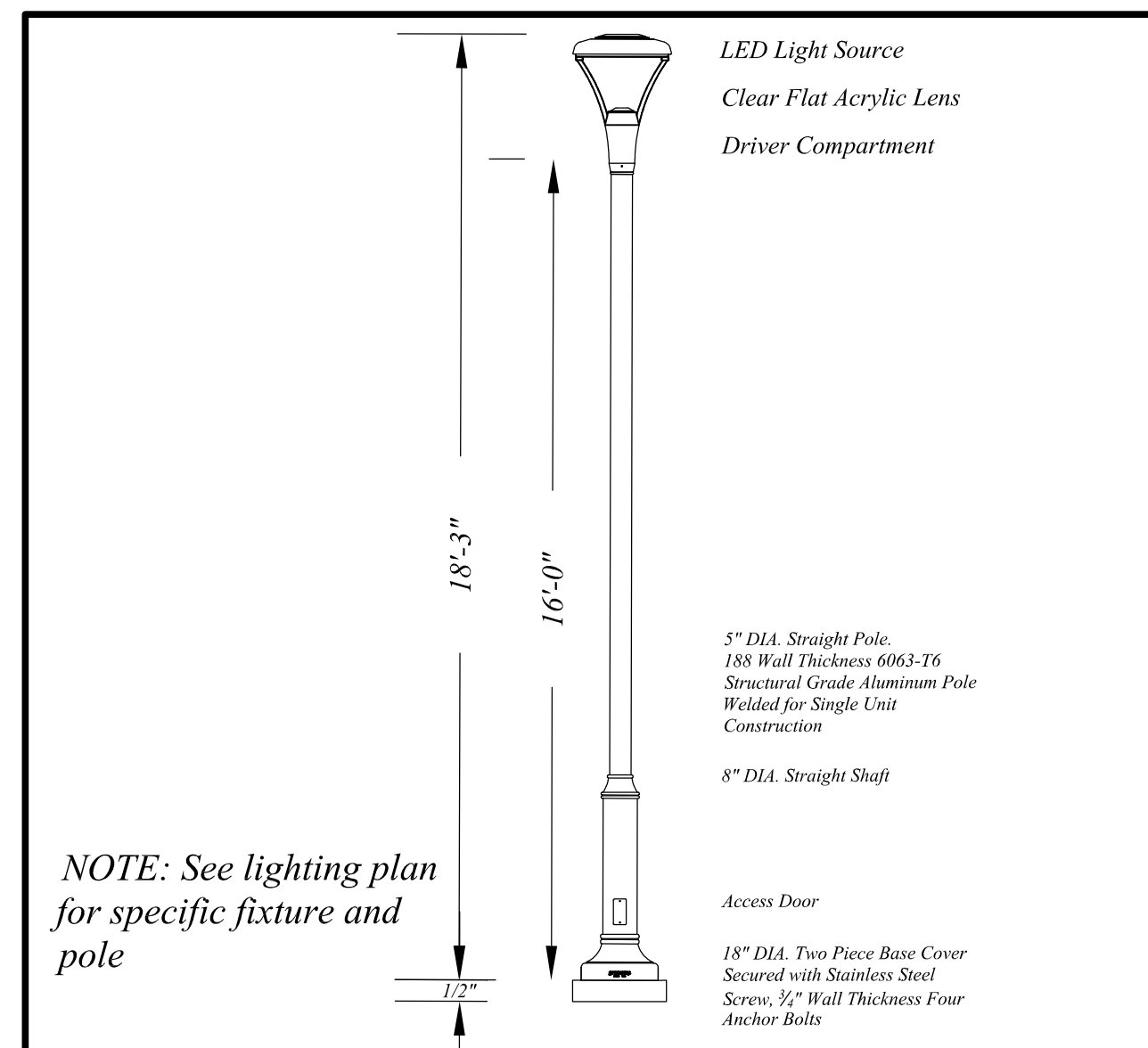
3 SEGMENTED BLOCK WALL-DOUBLE SIDED
Scale: 1/2"=1'-0"



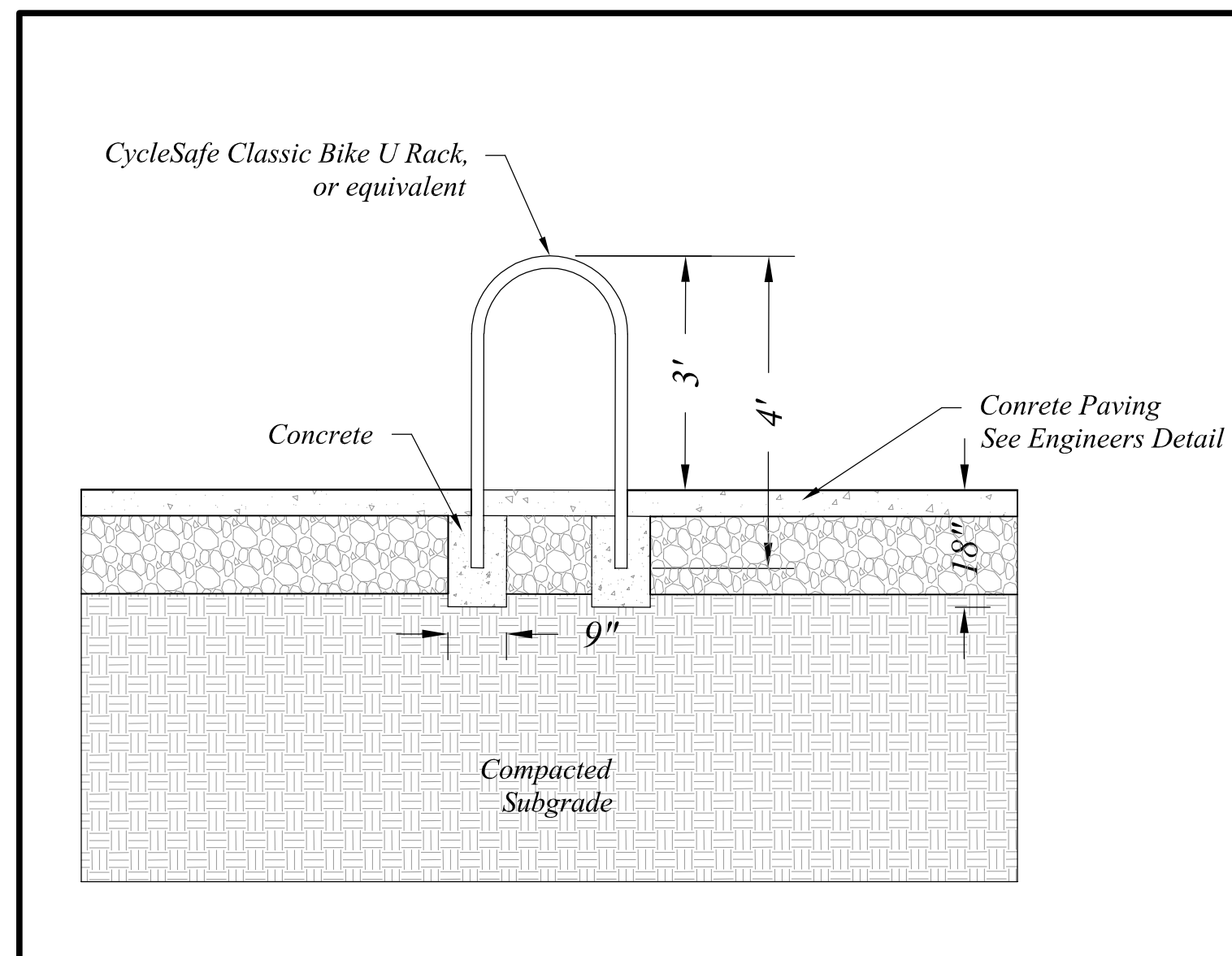
4 SEGMENTED BLOCK WALL-SINGLE SIDED
Scale: 1/2"=1'-0"



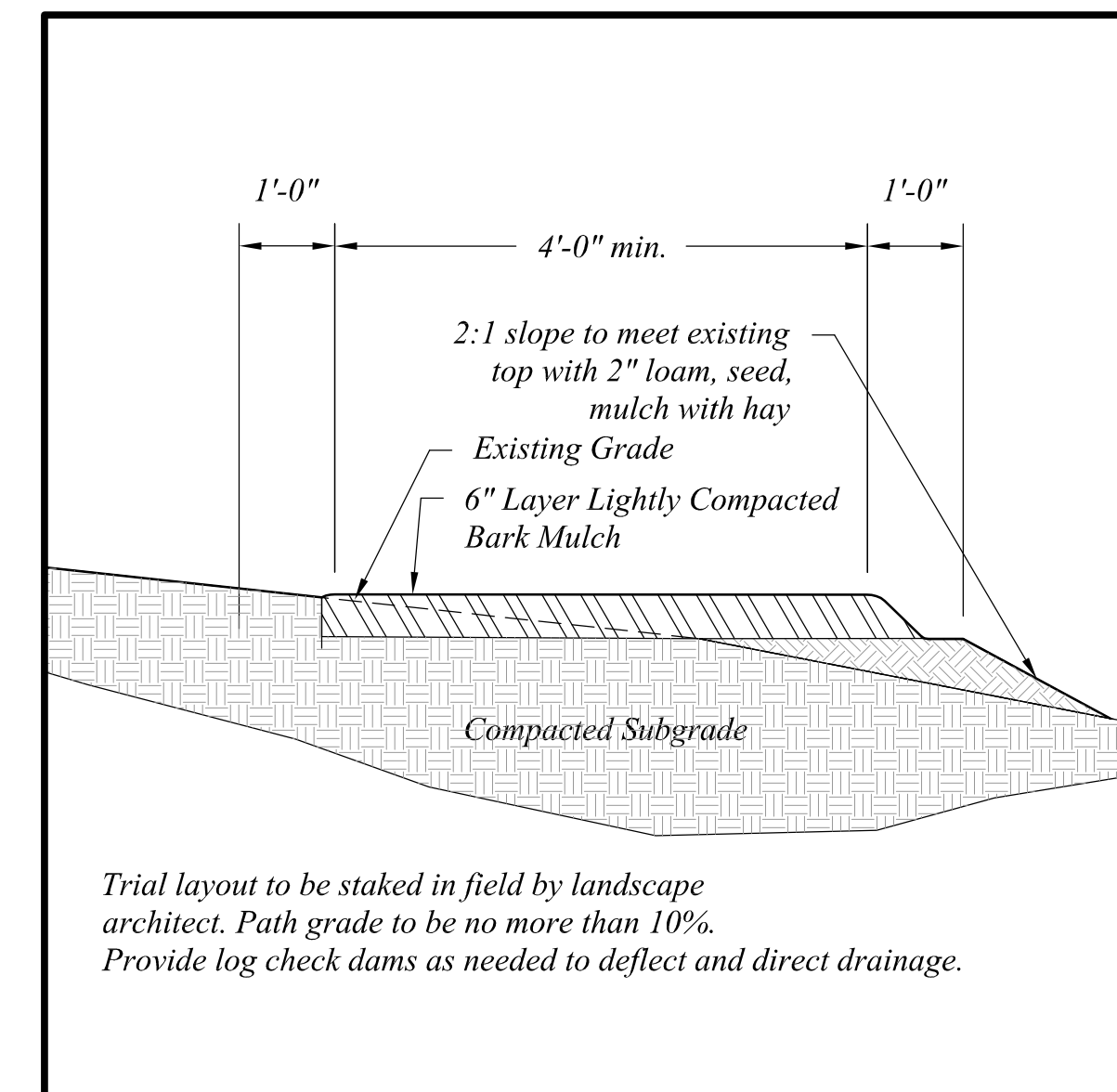
5 DIAMOND RAIL FENCE
Scale: 1/2"=1'-0"



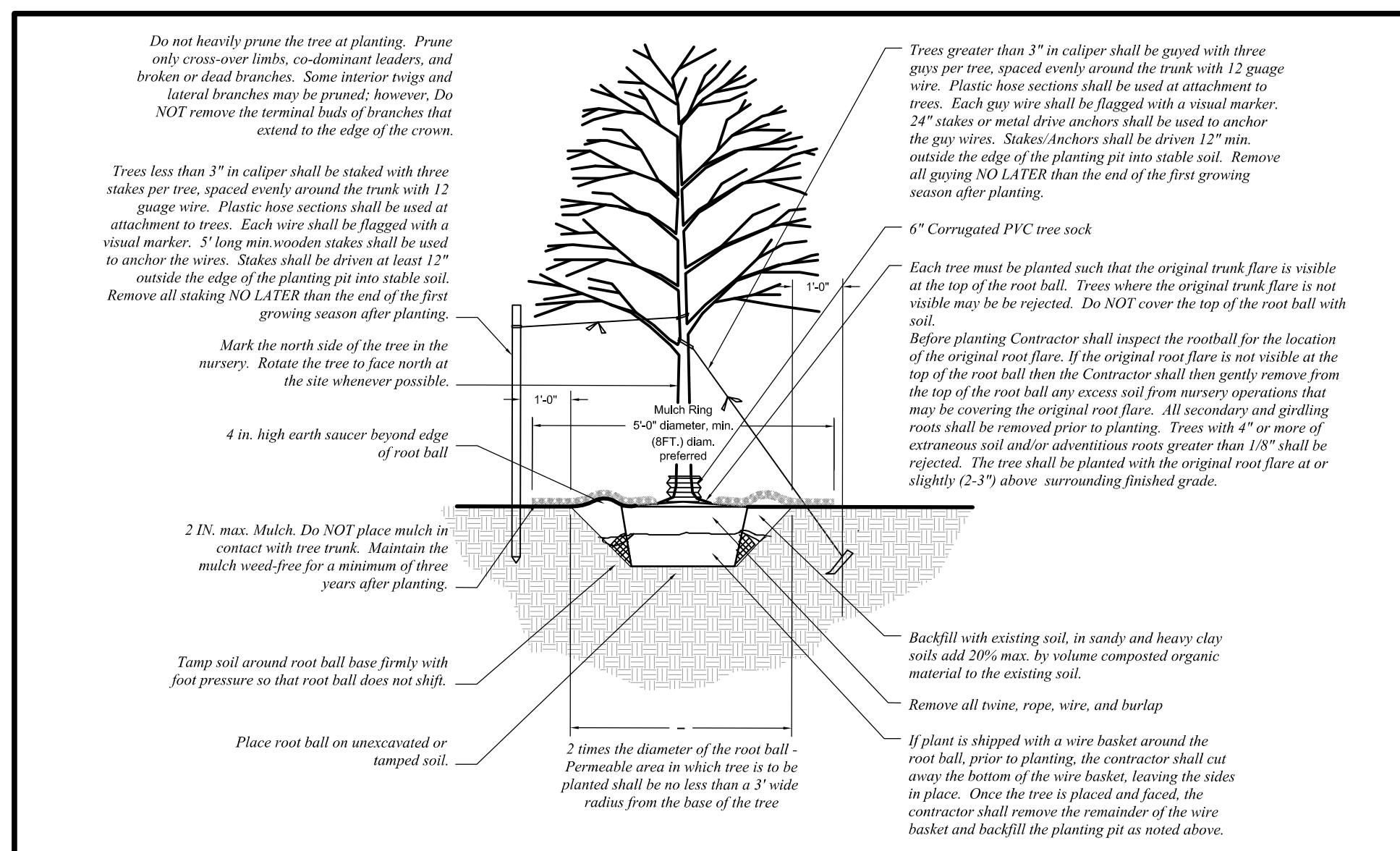
6 LIGHT FIXTURE & POLE
Scale: 1/4"=1'-0"



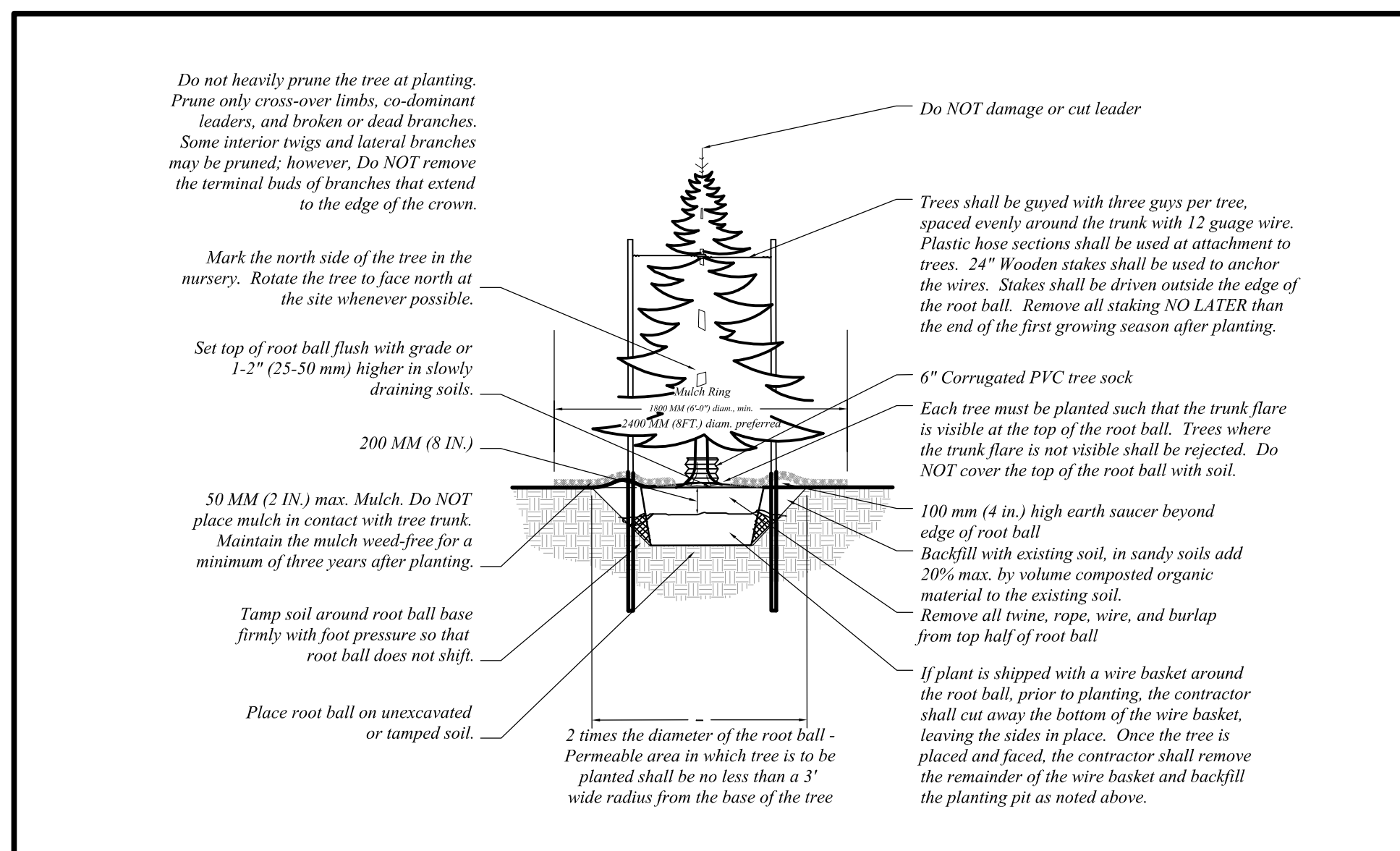
7 BIKE RACK
Scale: 1/4"=1'-0"



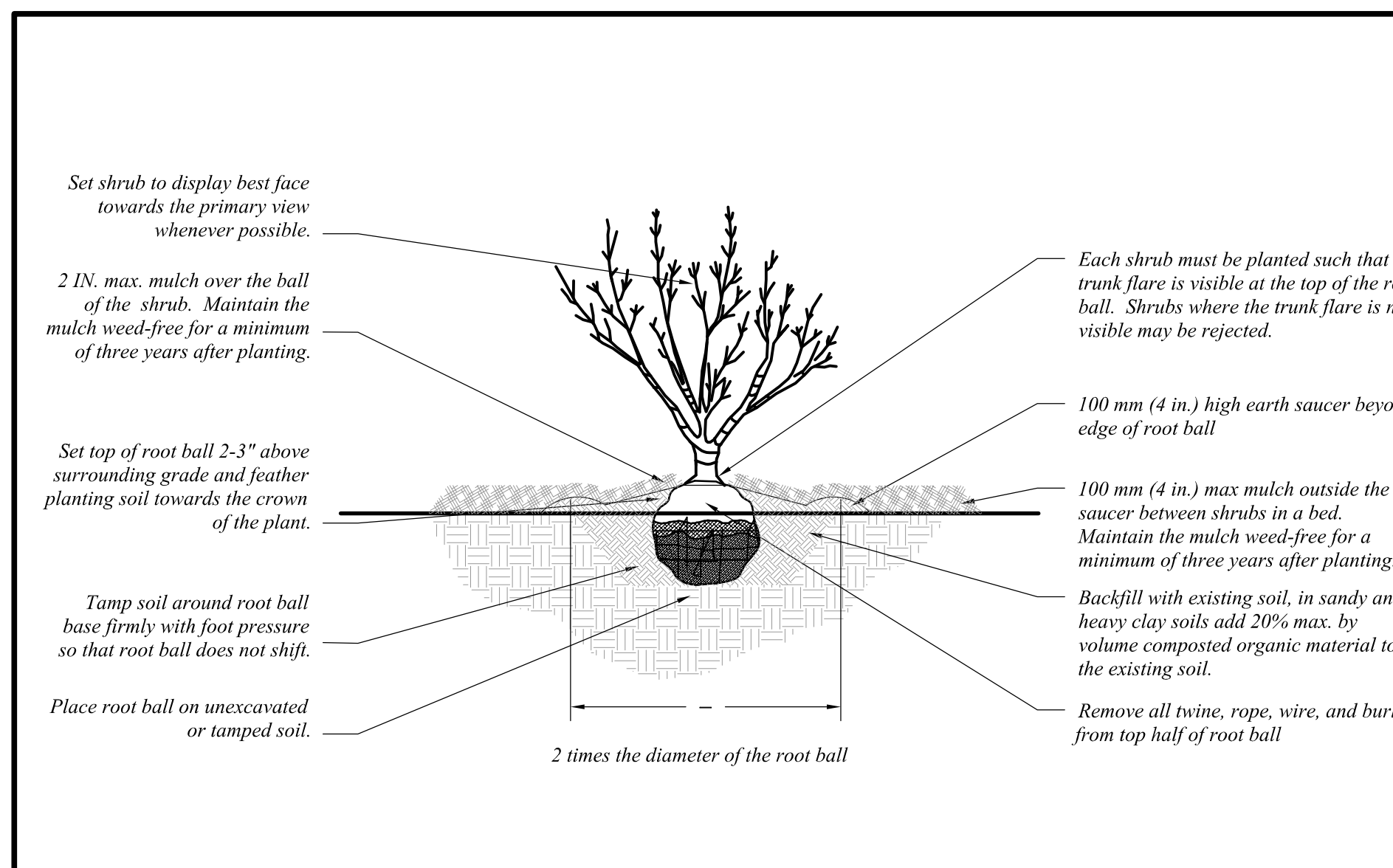
8 WOODLAND PATH
Scale: 1/2"=1'-0"



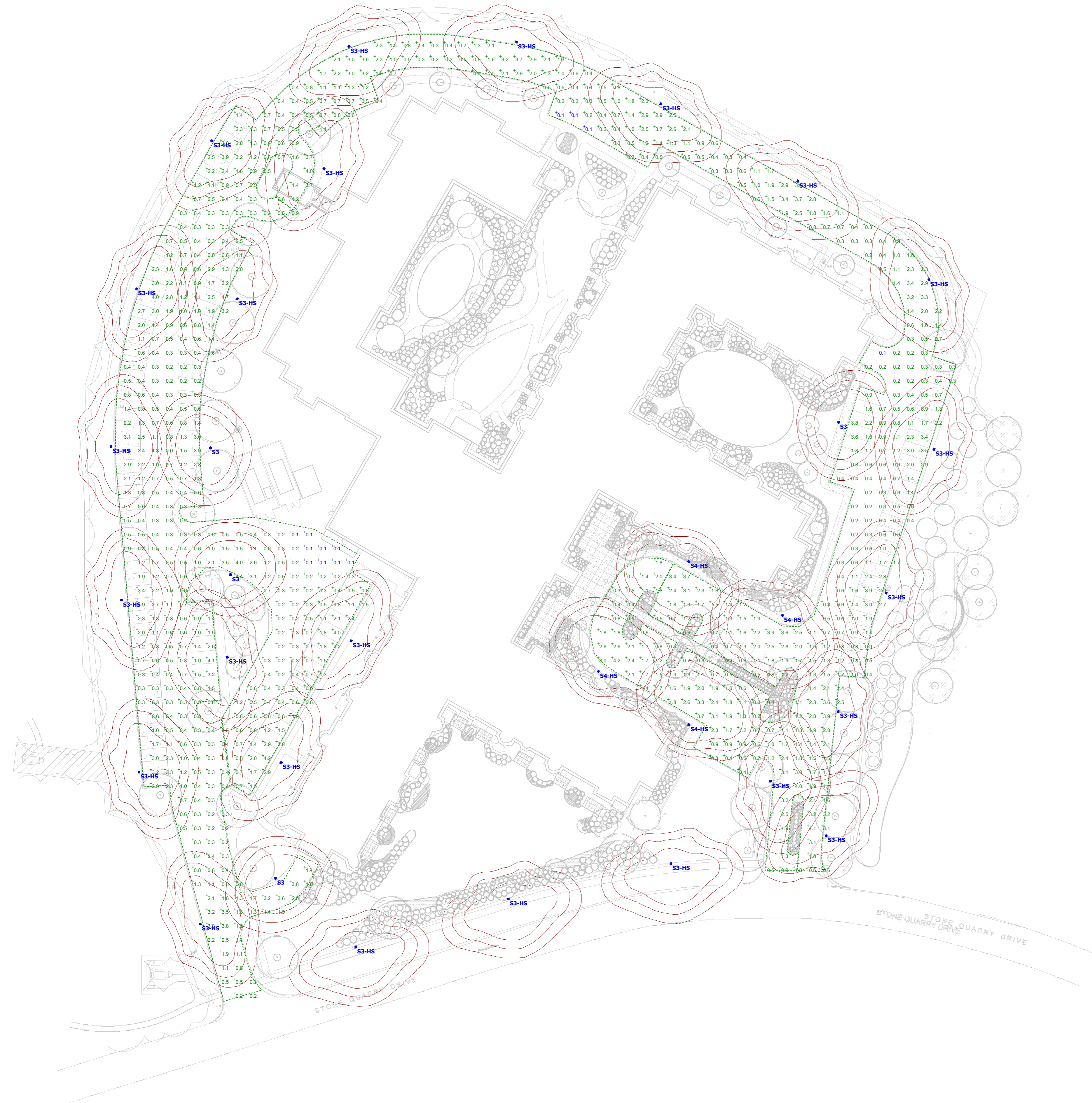
9 TREE PLANTING
NTS



10 EVERGREEN PLANTING
NTS



11 SHRUB PLANTING
NTS



Plan View
Scale - 1" = 40ft

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Calc Zone #1	+	1.2 fc	4.7 fc	0.1 fc	47.0:1	12.0:1

Schedule

Symbol	Label	Quantity	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Filename	Lumens Per Lamp	Light Loss Factor	Wattage
	S3	4	Sternberg Lighting	SL760-FFG-84L45T3R-MDL03 pole mounted at 16' above grade	Solana Series, Post Top, Flat Frosted Acrylic, Type 3R Optic	84 LEDs	1	SL760-FFG-84L45T3R-MDL03.IES	6815	0.9	95.4
	S3-HS	24	Sternberg Lighting	SL760-FFG-84L45T3-MDL03-HSS pole mounted at 16' above grade	SL660 medium size Solana Post Top, Clear Flat Glass (AR)-HSS, Type 3	84 LED, 45k	1	SL660-FG-84L45T3-MDL03-HSS.IES	7179	0.9	92
	S4-HS	4	Sternberg Lighting	SL760-FFG-84L45T4-MDL03-HSS pole mounted at 16' above grade	SL660 medium size Solana Post Top, Clear Flat Glass (AR) HSS, Type 4	84 LED, 45k	1	SL660-FG-84L45T4-MDL03-HSS.IES	7673	0.9	92.3

SEDIMENT AND EROSION CONTROL NOTES

PROJECT NAME AND LOCATION

RIVERWOODS DURHAM
TAX MAP 11 LOT 8-1 TO 8-15
STONE QUARRY DRIVE
DURHAM, NEW HAMPSHIRE

LATITUDE: 043° 08' 20" N
LONGITUDE: 070° 54' 35" W

APPLICANT:
THE RIVERWOODS GROUP
C/O JUSTINE VOGEL, CEO
7 RIVERWOODS DRIVE
EXETER, NEW HAMPSHIRE 03833

DESCRIPTION

The project consists of the construction of a Continuing Care Retirement Community with associated site and utility improvements.

DISTURBED AREA

The total area to be disturbed is approximately 330,540 square feet or 7.6 acres.

NAME OF RECEIVING WATER

Closed drainage system draining into unnamed wetlands and water course flowing to Oyster River.

NPDES CONSTRUCTION GENERAL PERMIT

Contractor shall prepare a Stormwater Pollution Prevention Plan (SWPPP) in accordance with federal storm water permit requirements. The SWPPP must be prepared in a format acceptable to the Owner and three (3) copies provided to the Town at least fourteen (14) days prior to initiating construction. Contractor is responsible for all cost associated with preparation and implementation of SWPPP including any temporary erosion control measures (whether indicated or not on these drawings) as required for the contractor's sequence of activities.

The Contractor and Owner shall each file a Notice of Intent (NOI) with the U.S.E.P.A. under the NPDES Construction General Permit. (U.S.E.P.A., 1200 Pennsylvania Avenue NW, Washington, DC 20460) All work shall be in accordance with NPDES General Permit: NHR120000, including NOI requirements, effluent limitations, standards and management for construction.

The Contractor shall be responsible for obtaining a USEPA Construction Dewatering Permit, if required.

SEQUENCE OF MAJOR ACTIVITIES

1. Prepare SWPPP and file NPDES Notice of Intent, prior to any construction activities. The Contractor and Owner shall each file a Notice of Intent (N.O.I.) to U.S.E.P.A.
2. Install temporary erosion control measures, including silt fences and stabilized construction entrances.
3. Upon completion of items 1 through 2, clear and grub wooded areas, strip and stockpile loam. Stockpiles shall be temporarily stabilized with hay bales, mulch and surrounded by a hay bale or silt fence barrier until material is removed and final grading is complete.
4. Construct ditches and swales early in construction sequence; stabilize them prior to directing flow to them.
5. Ditches and swales shall have sides and bottom reinforced with excelsior matting. Permanent turf reinforcement shall be installed at swale sloped greater than 5%.
6. Construct drainage structures, parking area & road base materials.
7. All roadways and parking lots shall be stabilized within 72 hours of achieving finished grade.
8. Grade and shape lots to finish elevations.
9. All cut and fill slopes, not being paved, shall be seeded/loamed within 72 hours of achieving finished grade.
10. When all construction activity is complete and site is stabilized, remove all hay bales, storm check dams, silt fences and sediment that has been trapped by these devices.
11. File a Notice of Termination (N.O.T.) with U.S.E.P.A.

TEMPORARY EROSION & SEDIMENT CONTROL AND STABILIZATION PRACTICES

All work shall be in accordance with state and local permits. Work shall conform to the practices described in the "New Hampshire Stormwater Manual, Volumes 1 - 3", issued December 2008, as amended. As indicated in the sequence of Major Activities, the silt fences shall be installed prior to commencing any clearing or grading of the site. Structural controls shall be installed concurrently with the applicable activity. Once construction activity ceases permanently in an area, silt fences and any earth/dikes will be removed once permanent measures are established.

During construction, runoff will be diverted around the site with stabilized channels where possible. Sheet runoff from the site shall be filtered through hay bale barriers, stone check dams, and silt fences. All storm drain inlets shall be provided with hay bale filters or stone check dams. Stone rip rap shall be provided at the outlets of drain pipes and culverts where shown on the drawings.

Stabilize all ditches, swales, stormwater ponds, level spreaders and their contributing areas prior to directing flow to them.

Temporary and permanent vegetation and mulching is an integral component of the erosion and sedimentation control plan. All areas shall be inspected and maintained until vegetative cover is established. These control measures are essential to erosion prevention and also reduce costly rework of graded and shopped areas.

Temporary vegetation shall be maintained in these areas until permanent seeding is applied. Additionally, erosion and sediment control measures shall be maintained until permanent vegetation is established.

INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES

A. GENERAL

These are general inspection and maintenance practices that shall be used to implement the plan:

1. The smallest practical portion of the site shall be denuded at one time, but in no case shall it exceed 5 acres at one time.
2. All sediment control measures shall be inspected at least once each week and following any storm event of 0.5 inches or greater. A SWPPP inspection report shall be made after each inspection by a qualified inspector engaged by the Contractor. The qualified inspector shall be a Professional Engineer licensed in New Hampshire or be a Certified Professional in Erosion and Sediment Control approved by the Owner. Corrective actions shall be performed to address unacceptable level of turbidity as defined by the Construction General Permit and NHDES requirements.
3. All measures shall be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours.
4. Built-up sediment shall be removed from silt fence or other barriers when it has reached one-third the height of the tubular barrier or bale, or when "bulges" occur in silt fence.
5. All diversion dikes shall be inspected and any breaches promptly repaired.
6. Temporary seeding and planting shall be inspected for bare spots, washouts, and unhealthy growth.
7. The owner's authorized engineer shall inspect the site on a periodic basis to review compliance with the plans.
8. The Contractor's site superintendent shall be responsible for maintenance and repair of erosion control practices.
9. Perimeter controls shall be installed prior to earth moving operations.
10. All ditches and swales shall be stabilized prior to directing runoff to them.
11. All cut and fill slopes shall be seeded/loamed within 72 hours of achieving finished grade.

INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES (CON'T)

12. An area shall be considered stable if one of the following has occurred:
 - a. Base coarse gravels have been installed in areas to be paved;
 - b. A minimum of 85% vegetated growth as been established;
 - c. A minimum of 3 inches of non-erosive material such as stone or riprap has been installed; - or -
 - d. Erosion control blankets have been properly installed.
13. The length of time of exposure of area disturbed during construction shall not exceed 45 days.

B. MULCHING

Mulch shall be used on highly erodible soils, on critically eroding areas, on areas where conservation of moisture will facilitate plant establishment, and where shown on the plans.

1. Timing - In order for mulch to be effective, it must be in place prior to major storm events. There are two (2) types of standards which shall be used to assure this:
 - a. Apply mulch prior to any storm event. This is applicable when working within 100 feet of wetlands. It will be necessary to closely monitor weather predictions, usually by contacting the National Weather Service in Concord, to have adequate warning of significant storms.
 - b. Required Mulching within a specified time period. The time period can range from 21 to 28 days of inactivity on a area, the length of time varying with site conditions. Professional judgment shall be used to evaluate the interaction of site conditions (soil erodibility, season of year, extent of disturbance, proximity to sensitive resources, etc.) and the potential impact of erosion on adjacent areas to choose an appropriate time restriction.

2. Guidelines for Winter Mulch Application -

Type	Rate per 1,000 s.f.	Use and Comments
Hay or Straw	70 to 90 lbs.	Must be dry and free from mold. May be used with plantings.
Wood Chips or Bark Mulch	460 to 920 lbs.	Used mostly with trees and shrub plantings.
Jute and Fibrous Matting (Erosion Blanket)	As per manufacturer Specifications	Used in slope areas, water courses and other control areas.
Crushed Stone 1/4" to 1-1/2" dia.	Spread more than 1/2" thick	Effective in controlling wind and water erosion.
Erosion Control Mix	2" thick (min)	<ul style="list-style-type: none"> • The organic matter content is between 80 and 100% dry weight basis. • Particle size by weight is 100% passing a 6" screen and a minimum of 70 % maximum of 85% passing a 0.75" screen. • The organic portion needs to be fibrous and elongated. • Large portions of silts, clays or fine sands are not acceptable in the mix. • Soluble salts content is less than 4.0 mmhos/cm. • The pH should fall between 5.0 and 9.0.

3. Maintenance - All mulches must be inspected periodically, in particular after rainstorms, to check for rill erosion. If less than 90% of the soil surface is covered by mulch, additional mulch shall be immediately applied.

C. TEMPORARY GRASS COVER

1. Seedbed Preparation - Apply Fertilizer (refer to Landscape Drawings and Specs)
2. Seeding -
 - a. Utilize annual rye grass at a rate of 40 lbs/acre.
 - b. Where the soil has been compacted by construction operations, loosen soil to a depth of two (2) inches before applying fertilizer, lime and seed.
 - c. Apply seed uniformly by hand, cyclone seeder, or hydroseeder (slurry including seed and fertilizer). Hydroseedings, which include mulch, may be left on soil surface. Seeding rates must be increased 10% when hydroseeding.
3. Maintenance -
 - a. Temporary seedings shall be periodically inspected. At a minimum, 95% of the soil surface should be covered by vegetation. If any evidence of erosion or sedimentation is apparent, repairs shall be made and other temporary measures used in the interim (mulch, filter barriers, check dams, etc.).

D. FILTERS

1. Tubular Sediment Barrier <ol style="list-style-type: none"> a. See detail. b. Install per manufacturer's requirements. 														
2. Silt Fence (if used) <ol style="list-style-type: none"> a. Synthetic filter fabric shall be a pervious sheet of propylene, nylon, polyester or ethylene yarn and shall be certified by the manufacturer or supplier as conforming to the following requirements: 	<table border="1"> <thead> <tr> <th>Physical Property</th> <th>Test</th> <th>Requirements</th> </tr> </thead> <tbody> <tr> <td>Filtering Efficiency</td> <td>VTM-51</td> <td>75% minimum</td> </tr> <tr> <td>Tensile Strength at 20% Maximum Elongation*</td> <td>VTM-52</td> <td>Extra Strength 50 lb/in in (min) Standard Strength 30 lb/in in (min)</td> </tr> <tr> <td>Flow Rate</td> <td>VTM-51</td> <td>0.3 gal/sf/min (min)</td> </tr> </tbody> </table>	Physical Property	Test	Requirements	Filtering Efficiency	VTM-51	75% minimum	Tensile Strength at 20% Maximum Elongation*	VTM-52	Extra Strength 50 lb/in in (min) Standard Strength 30 lb/in in (min)	Flow Rate	VTM-51	0.3 gal/sf/min (min)	
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Flow Rate	VTM-51	0.3 gal/sf/min (min)												

* Requirements reduced by 50 percent after six (6) months of installation.
Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizer to provide a minimum of six (6) months of expected usable construction life at a temperature range of 0 degrees F to 120° F.

- b. Posts shall be spaced a maximum of ten (10) feet apart at the barrier location or as recommended by the manufacturer and driven securely into the ground (minimum of 16 inches).
- c. A trench shall be excavated approximately six (6) inches wide and eight (8) inches deep along the line of posts and upslope from the barrier.
- d. When standard strength filter fabric is used, a wire mesh support fence shall be fastened securely to the upslope side of the posts using heavy duty wire staples at least one (1) inch long, tie wires or hog rings. The wire shall extend no more than 36 inches above the original ground surfaces.
- e. The "standard strength" filter fabric shall be stapled or wired to the fence, and eight (8) inches of the fabric shall be extended into the trench. The fabric shall not extend more than 36 inches above the original ground surface. Filter fabric shall not be stapled to existing trees.
- f. When extra strength filter fabric and closer post spacing are used, the wire mesh support fence may be eliminated. In such a case, the filter fabric is stapled or wired directly to the posts with all other provisions of item (g) applying.
- g. The trench shall be backfilled and the soil compacted over the filter fabric.
- h. Silt fences shall be removed when they have served their useful purpose but not before the upslope areas has been permanently stabilized.

3. Sequence of Installation - Sediment barriers shall be installed prior to any soil disturbance of the contributing upslope drainage area.
4. Maintenance -
 - a. Silt fence barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. They shall be repaired if there are any signs of erosion or sedimentation below them. Any required repairs shall be made immediately. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water, the sediment barriers shall be replaced with a temporary stone check dam.

- b. Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and the barrier still is necessary, the fabric shall be replaced promptly.
 - c. Sediment deposits must be removed when deposits reach approximately one-third (1/3) the height of the barrier.
 - d. Any sediment deposits remaining in place after the silt fence or other barrier is no longer required shall be removed. The area shall be prepared and seeded.
 - e. Additional stone may have to be added to the construction entrance, rock barrier and riprap lined swales, etc., periodically to maintain proper function of the erosion control structure.
- E. PERMANENT SEEDING -**

1. Bedding - stones larger than 1 1/2", trash, roots, and other debris that will interfere with seeding and future maintenance of the area should be removed. Where feasible, the soil should be tilled to a depth of 6" to prepare a seedbed and mix fertilizer (refer to Landscape Drawings and Specifications) into the soil.
2. Fertilizer (refer to Landscape Drawings and Specifications) - lime and fertilizer should be applied evenly over the area prior to or at the time of seeding and incorporated into the soil. Kinds and amounts of lime and fertilizer should be based on an evaluation of soil tests.
3. Seed Mixture (See Landscape Drawings for additional information):
 - 3.1. Lawn seed mix shall be a fresh, clean new seed crop. The Contractor shall furnish a dealer's guaranteed statement of the composition of the mixture and the percentage of purity and germination of each variety.
 - 3.2. Seed mixture shall conform to landscape specifications
4. Sodding - sodding is done where it is desirable to rapidly establish cover on a disturbed area. Sodding an area may be substituted for permanent seeding procedures anywhere on site. Bed preparation, fertilizing, and placement of sod shall be performed according to the S.C.S. Handbook. Sodding is recommended for steep sloped areas, areas immediately adjacent to sensitive water courses, easily erodible soils (fine sand/silt), etc.

WINTER CONSTRUCTION NOTES

1. All proposed vegetated areas which do not exhibit a minimum of 85% vegetative growth by October 15th, or which are disturbed after October 15th, shall be stabilized by seeding and installing erosion control blankets on slopes greater than 3:1, and elsewhere seeding and placing 3 to 4 tons of mulch per acre, secured with anchored netting. The installation of erosion control blankets or mulch and netting shall not occur over accumulated snow or on frozen ground and shall be completed in advance of thaw or spring melt events;
2. All ditches or swales which do not exhibit a minimum of 85% vegetative growth by October 15th, or which are disturbed after October 15th, shall be stabilized temporarily with stone or erosion control blankets appropriate for the design flow conditions; and
3. After November 15th, incomplete road or parking surfaces where work has stopped for the winter season shall be protected with a minimum of 3 inches of crushed gravel per NHDOT Item 304.3.

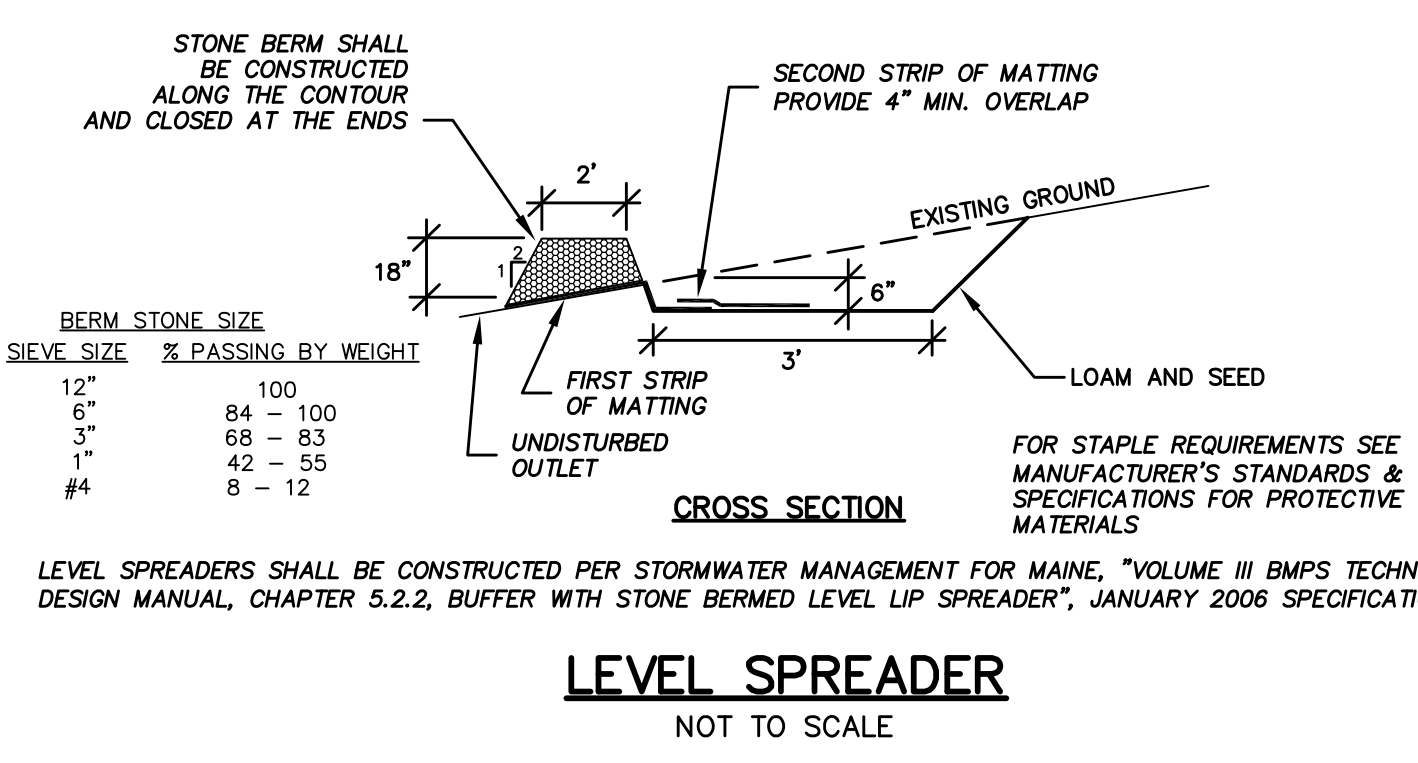
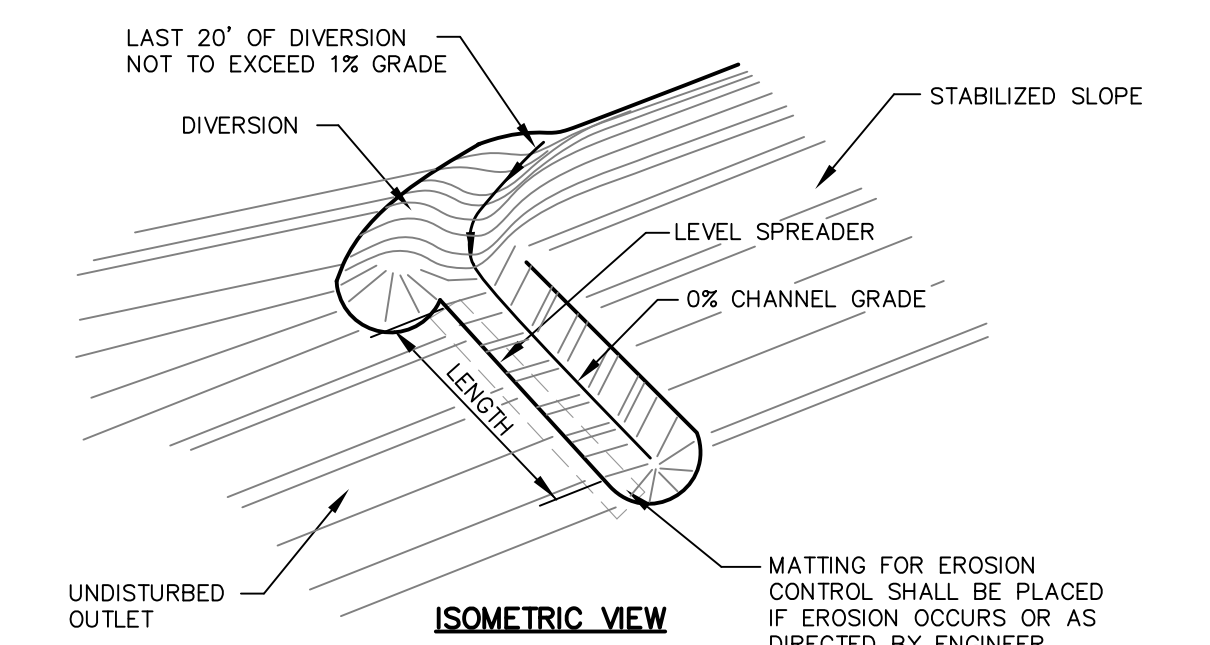
HOUSEKEEPING

The following general performance standards apply to the proposed project both during and after construction.

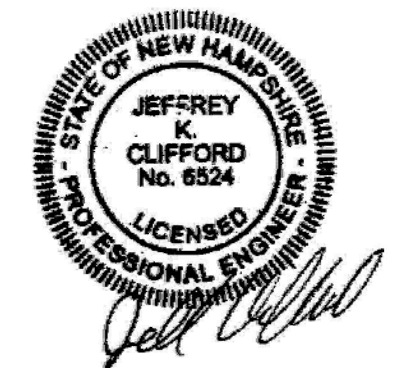
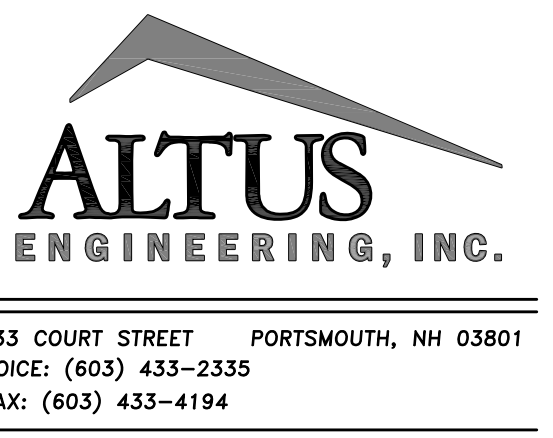
- A. **Spill prevention:** Controls must be used to prevent pollutants from being discharged from materials and equipment on-site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation.
- B. **Groundwater protection:** During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors, accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.
- C. **Fugitive sediment and dust:** Actions must be taken to insure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control.
- D. **Debris and other materials:** Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.
- E. **Trench or foundation dewatering:** Trench dewatering is the removal of water from trenches, foundations, cofferdams, ponds, and other areas within the construction area that retain water after excavation. In most cases, the collected water is heavily silted and hinders correct and safe construction practices. The collected water must be removed from the ponded area, either through gravity or pumping, and must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved.

	Spring	Fall or Yearly	After Major Storm
Inspect all slopes and embankments	x		x
Replant bare areas or areas with sparse growth	x		x
Armor areas with rill erosion with an appropriate lining or divert the erosive flows to on-site areas able to withstand concentrated flows.	x		x
Inspect ditches, swales and other open stormwater channels	x	x	x
Remove any obstructions and accumulated sediments or debris	x	x	
Control vegetated growth and woody vegetation		x	
Repair any erosion of the ditch lining		x	
Mow vegetated ditches		x	
Remove woody vegetation growing through riprap		x	
Repair any slumping side slopes		x	
Replace riprap where underlying filter fabric or underdrain gravel is exposed or where stones have been dislodged		x	
Remove accumulated sediments and debris at inlet, outlet and within the conduit	x	x	x
Repair any erosion damage at the culvert's inlet and outlet	x	x	x
Remove woody vegetation growing through riprap		x	
Remove accumulated winter sand along roadways	x		
Sweep pavement to remove sediment	x		
Grade road shoulders and remove excess sand either manually or by a front-end loader	x		
Grade gravel roads and gravel shoulders	x		
Clean out sediment contained in water bars or open-top culverts	x		
Ensure that stormwater is not impeded by accumulations of material or false ditches in the roadway shoulder	x		
Mow grass swales monthly			
Inspect swale following significant rainfall event	x	x	x
Control vegetated growth and woody vegetation	x	x	
Repair any erosion of the ditch	x	x	
Remove debris and litter as necessary			
Eliminate potential source of unwanted sediment	x	x	
Routine Quarterly Vacuum Sweeping	x	x	
The use of sand in winter is prohibited			

NOTE:
ALL FACILITIES SHOULD BE INSPECTED ON AN ANNUAL BASIS AT A MINIMUM. IN ADDITION, ALL FACILITIES SHOULD BE INSPECTED AFTER A SIGNIFICANT PRECIPITATION EVENT TO ENSURE THE FACILITY IS DRAINING APPROPRIATELY AND TO IDENTIFY ANY DAMAGE THAT OCCURRED AS A RESULT OF THE INCREASED RUNOFF. FOR THE PURPOSE OF THIS STORMWATER MANAGEMENT PROGRAM, A SIGNIFICANT RAINFALL EVENT IS CONSIDERED AN EVENT OF THREE (3) INCHES IN A 24-HOUR PERIOD OR 0.5 INCHES IN A ONE-HOUR PERIOD. IT IS ANTICIPATED THAT A SHORT, INTENSE EVENT IS LIKELY TO HAVE A HIGHER POTENTIAL OF EROSION FOR THIS SITE THAN A LONGER, HIGH VOLUME EVENT.



FINAL APPROVAL BY DURHAM PLANNING BOARD.
CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
CERTIFIED _____
DATE _____



THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION

ISSUED FOR: APPROVAL

ISSUE DATE: DECEMBER 5, 2017

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	JKC	7/19/17
1	PB RE-SUBMISSION	JKC	10/16/17
2	PB RE-SUBMISSION	JKC	12/05/17

DRAWN BY: RMB
APPROVED BY: JKJ
DRAWING FILE: 4836DS.DWG

SCALE: N.T.S.

LAND OWNER - SUBJECT PARCEL:
ROCKINGHAM PROPERTIES 1, LTD
P.O. BOX 423
BELMONT, MA 02178

APPLICANT:
THE RIVERWOODS GROUP
7 RIVERWOODS DRIVE
EXETER, NH 03833

PROJECT:
RIVERWOODS DURHAM
STONE QUARRY DRIVE
DURHAM, NH

TITLE:
EROSION CONTROL NOTES

SHEET NUMBER:
C - 6.0



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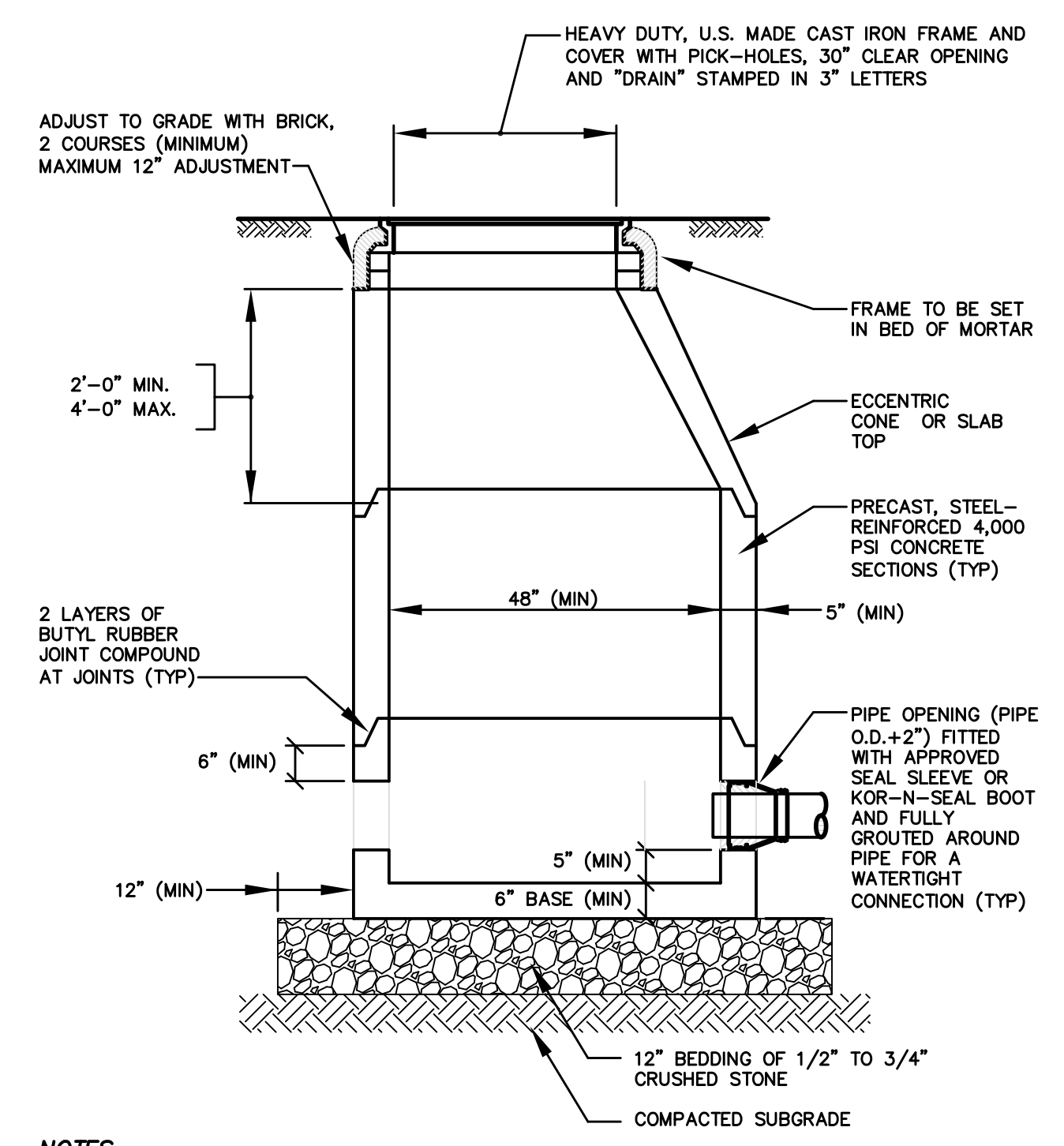
PROJECT:
RIVERWOODS DURHAM
STONE QUARRY DRIVE
DURHAM, NH

TITLE:

DETAIL SHEET

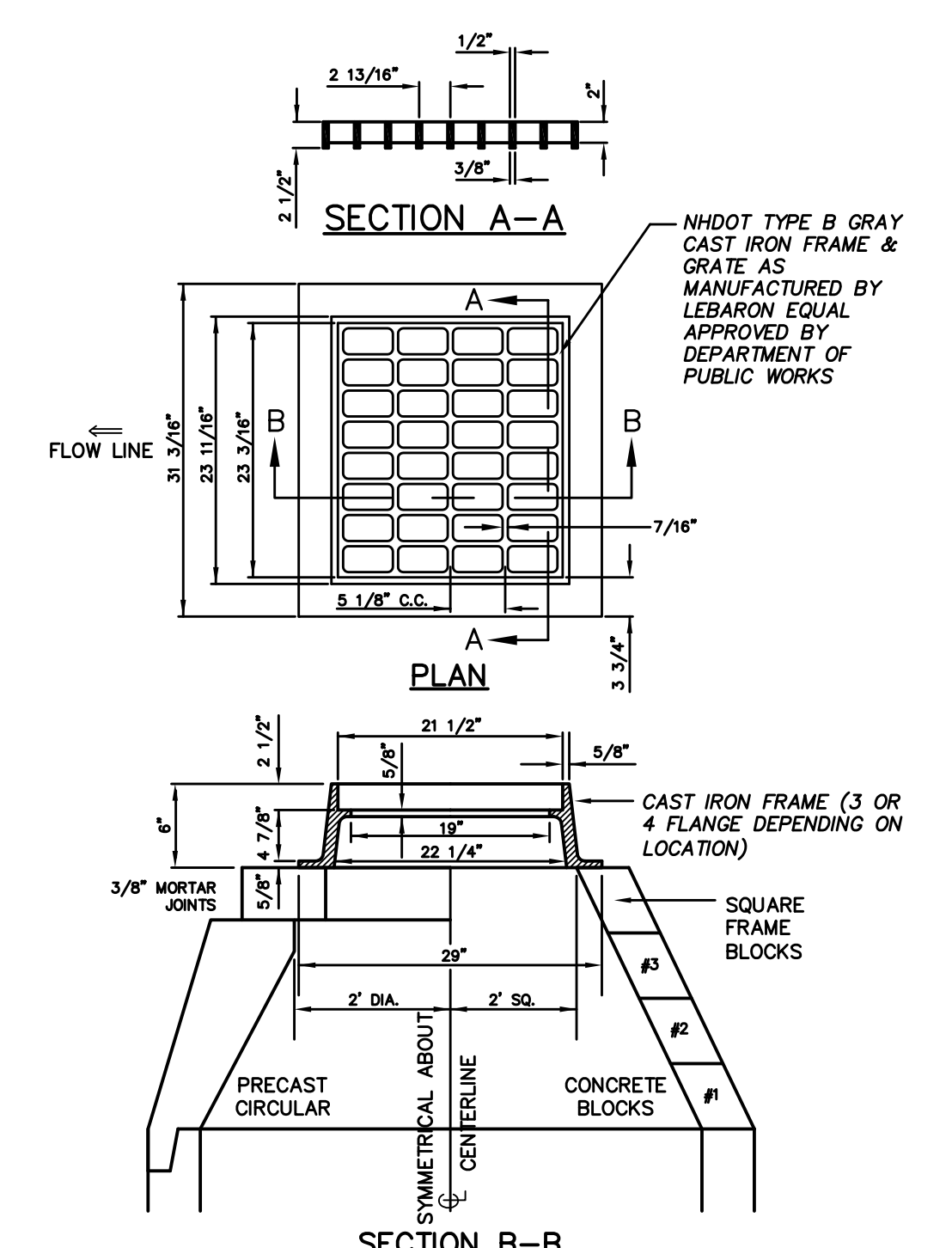
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C - 6.2



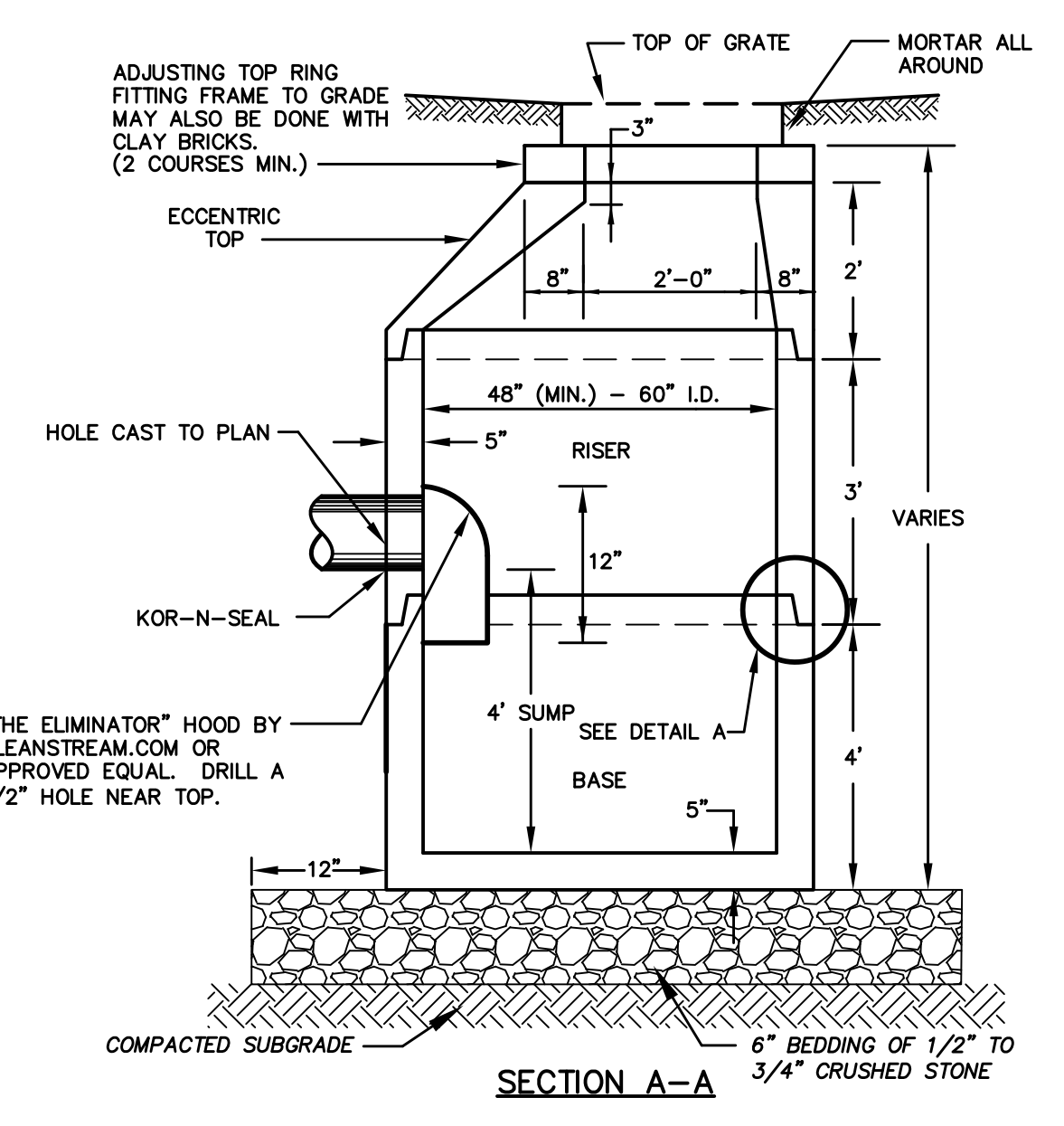
- NOTES**
1. ALL SECTIONS SHALL BE CONCRETE CLASS AA (4000 PSI).
 2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ. IN. PER LINEAR FT. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
 3. THE TONGUE OR GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FT.
 4. RISERS OF 1', 2', 3' & 4' CAN BE USED TO REACH DESIRED DEPTH.
 5. ALL MANHOLE STRUCTURES SHALL BE DESIGNED FOR H2O LOADING.
 6. USE H-20 LOADING SLAB TOP SECTION IN LIEU OF ECCENTRIC TOP WHERE PIPE INVERT IS WITHIN 4 FT OF GRADE.
 7. MANHOLE STEPS ARE NOT PERMITTED.

DRAIN MANHOLE DETAIL
NOT TO SCALE



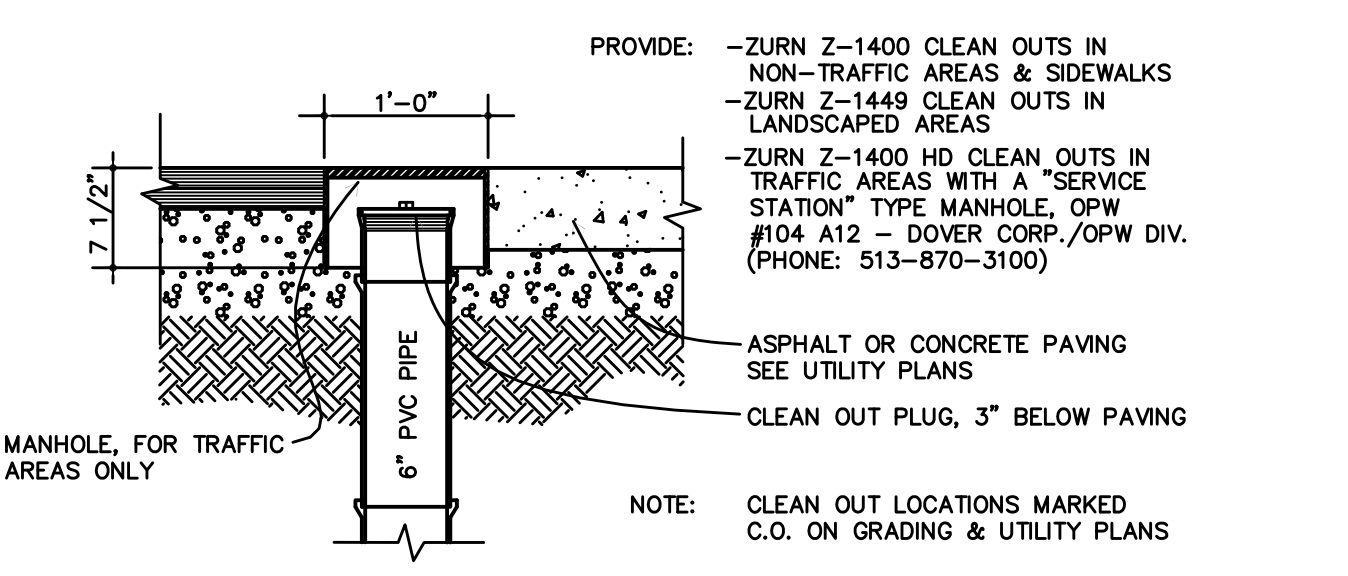
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 6. USE H2O LOADING SLAB TOP SECTION IN LIEU OF ECCENTRIC TOP WHERE PIPE INVERT IS WITHIN 4 FT OF FINISH GRADE.

DEEP SUMP CATCH BASIN
NOT TO SCALE



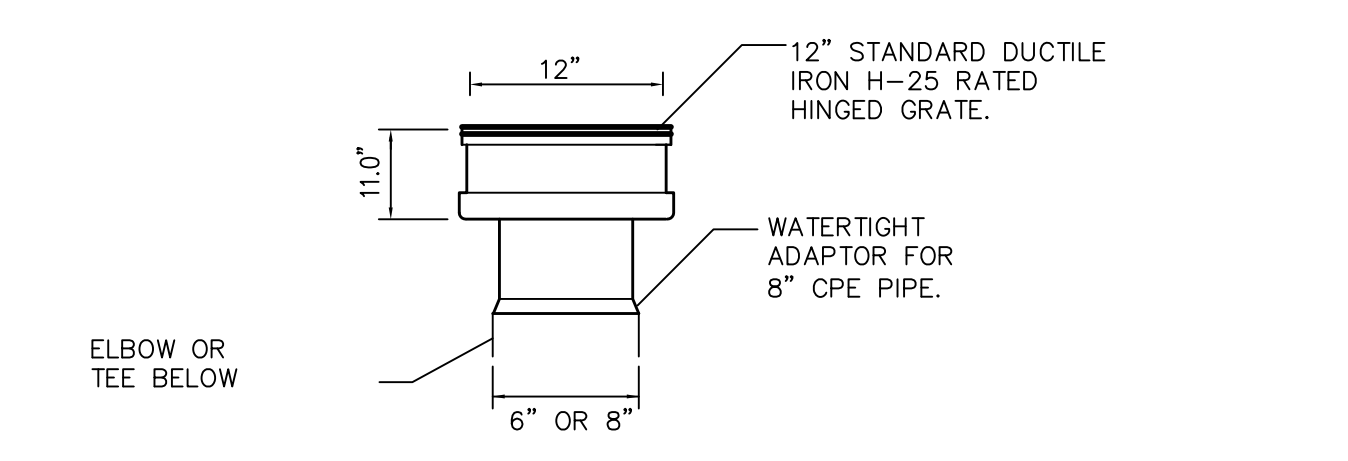
1. CONSTRUCT PLUNGE POOL TO THE WIDTHS AND LENGTHS SHOWN ON THE PLAN.
2. THE SUBGRADE FOR THE GEOTEXTILE FABRIC AND RIPRAP SHALL BE PREPARED TO LINES AND GRADES SHOWN ON THE PLANS.
3. EROSION STONE USED FOR THE PLUNGE POOL SHALL MEET THE FOLLOWING GRADATION.
4. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE EROSION STONE. 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 18 INCHES.
5. THE EROSION STONE 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.

PLUNGE POOL
NOT TO SCALE

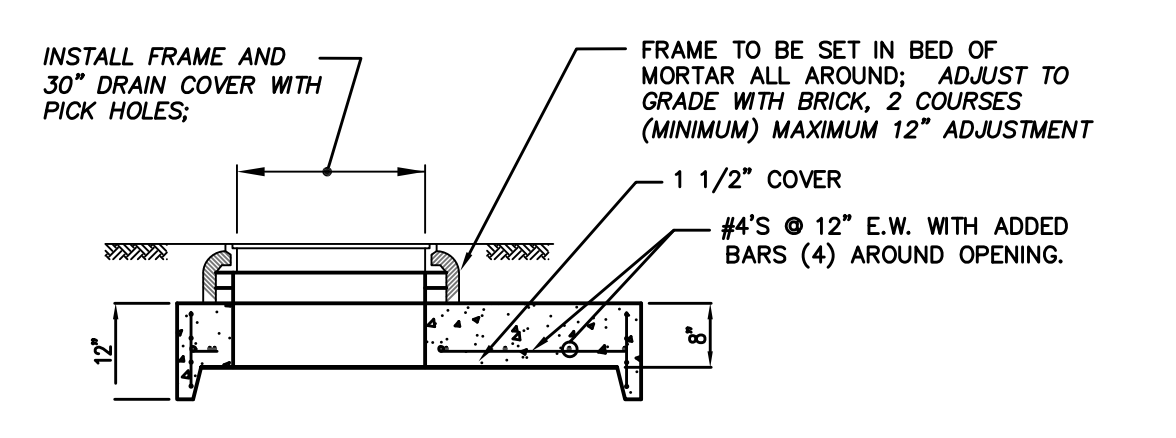


CLEANOUT DETAIL
NOT TO SCALE

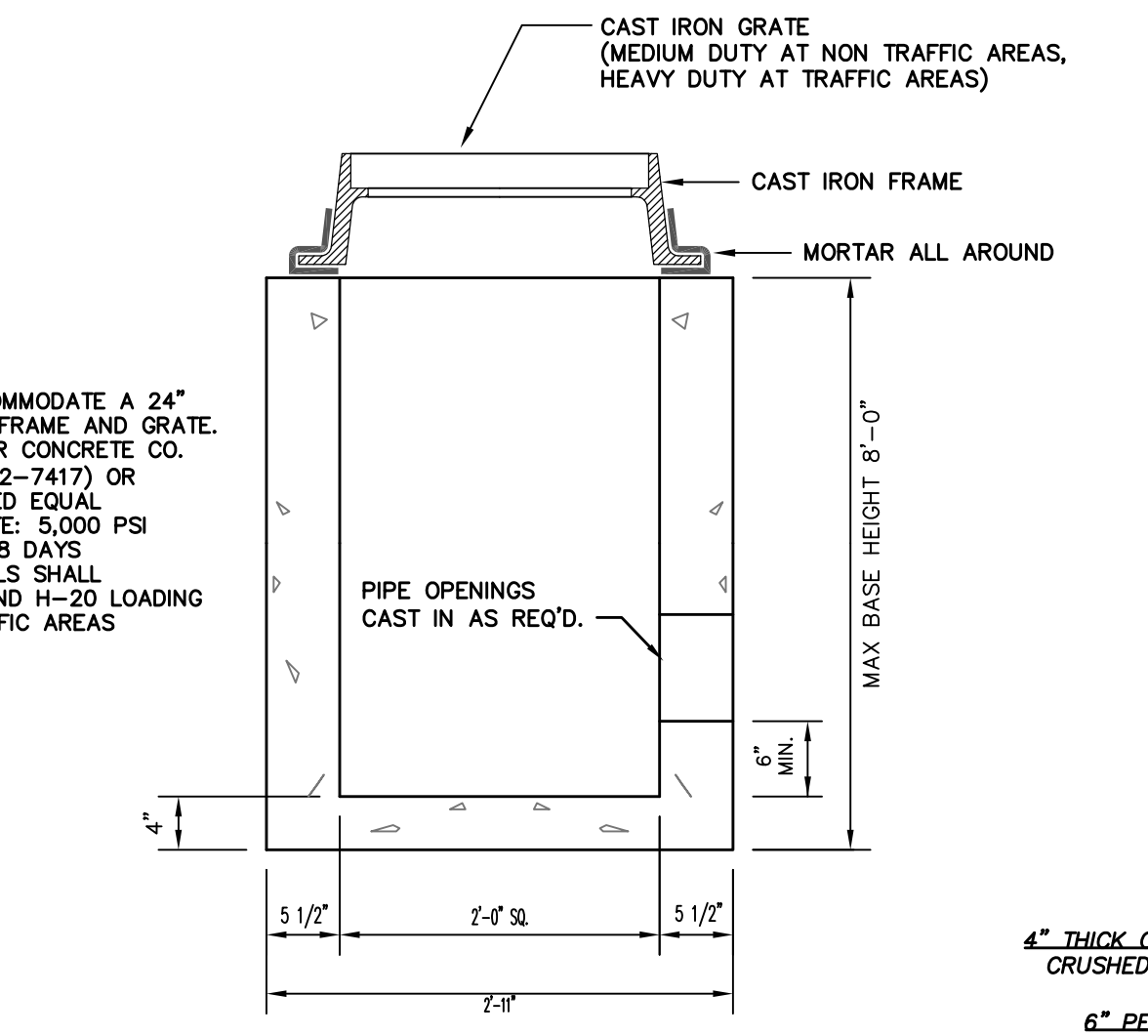
- NOTES:**
1. INLINE DRAIN TO BE 12" DIAMETER PVC AS MANUFACTURED BY ADS (1-800-821-6710), NDS, INC. (1-800-726-1994) OR APPROVED EQUAL.
 2. THE CONTRACTOR SHALL INSTALL THE INLINE DRAIN AS PER THE MANUFACTURERS RECOMMENDATIONS AND AS SHOWN IN THE DRAWINGS.



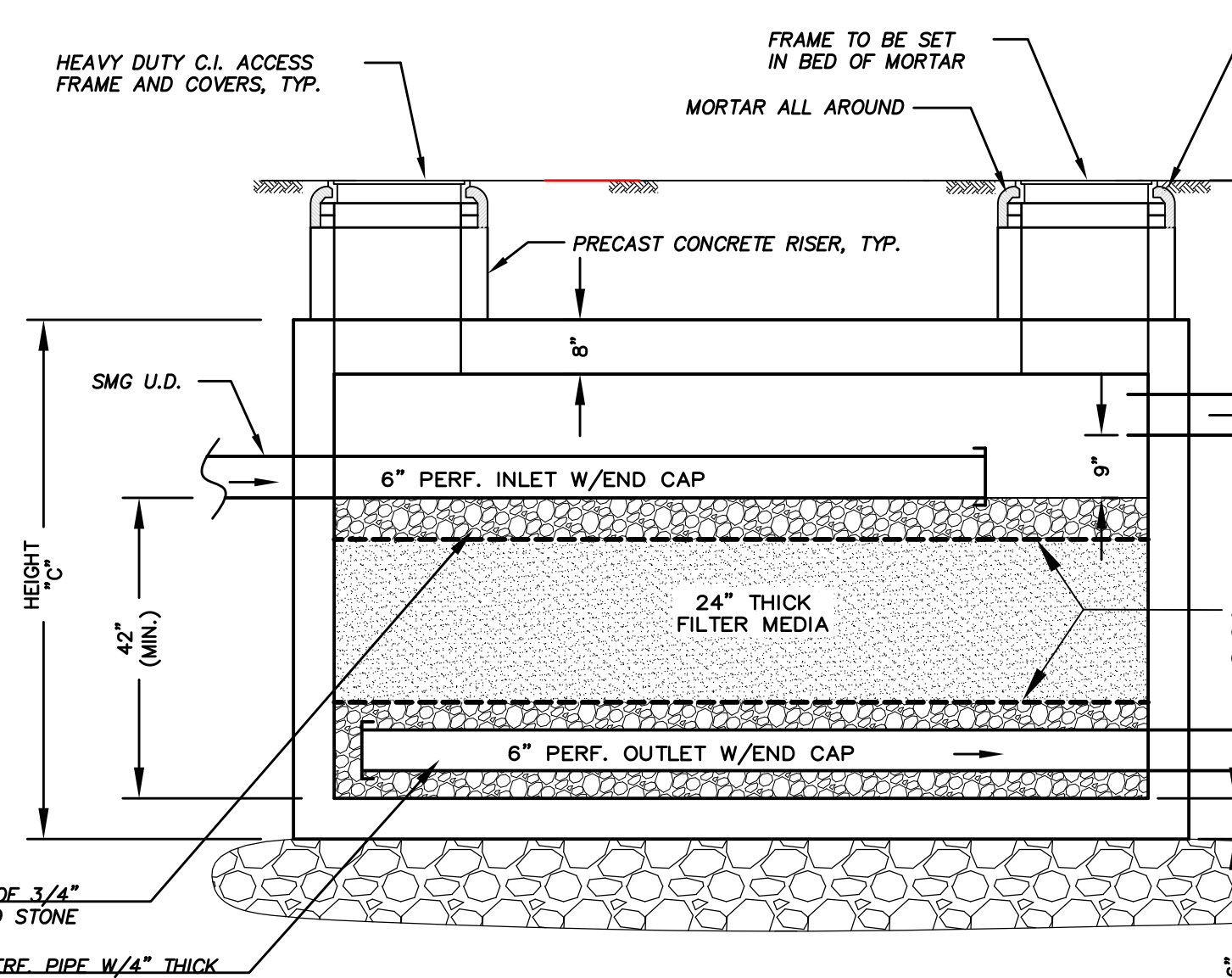
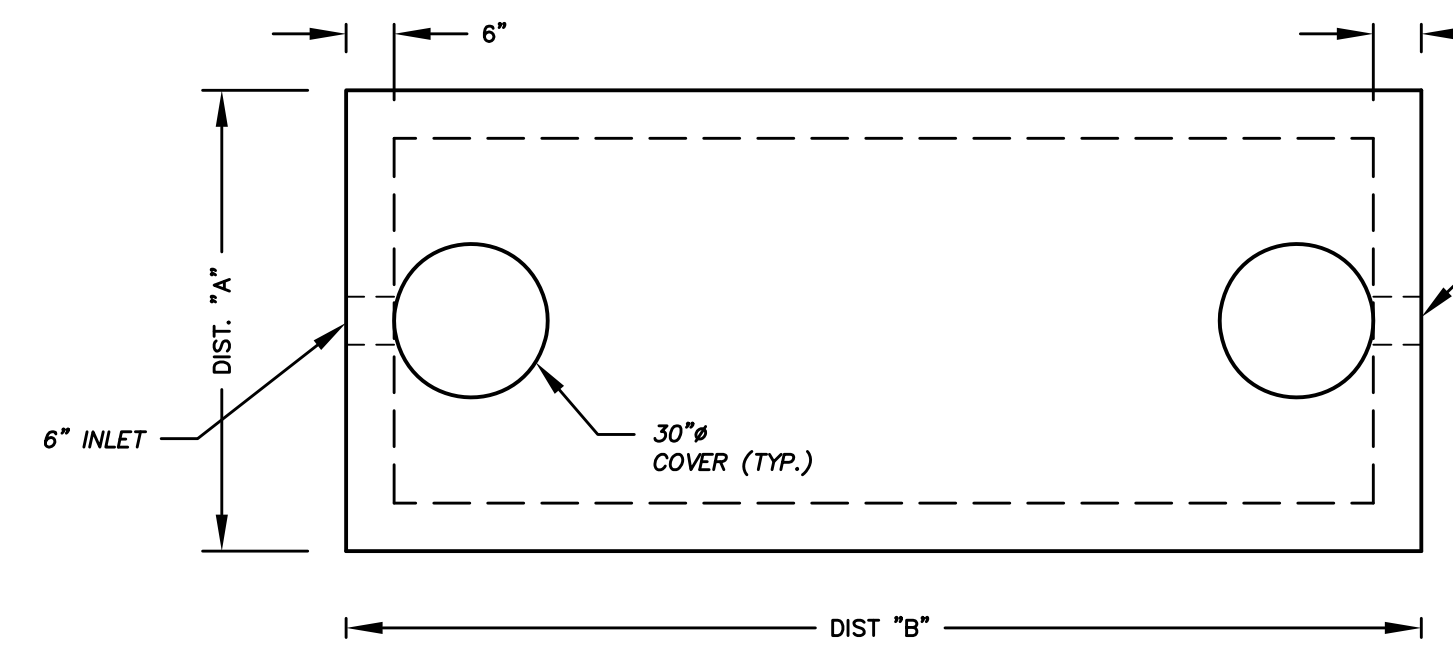
12\"/>



SLAB TOP DETAIL
NOT TO SCALE



DROP INLET STRUCTURE
NOT TO SCALE



UNDERGROUND SAND FILTER DETAIL
NOT TO SCALE

SMG ID.	DIST. A MIN.	DIST. B MIN.	DIST. C MIN.
A	5'	9'	5'-8"
B	7'	18'	5'-8"
E	7'	13'	5'-8"

COMPONENT	% PASSING BY VOLUME	SEIVE NO.	% PASSING BY WEIGHT
MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH	20 - 30	200	<5
LOAMY COURSE SAND	70 - 80	10	85 - 100
		20	70 - 100
		60	15 - 40
		200	8 - 15

FINAL APPROVAL BY DURHAM PLANNING BOARD.
CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
CERTIFIED _____
DATE _____



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ISSUED FOR: APPROVAL

ISSUE DATE: DECEMBER 5, 2017

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APPROVED BY: _____ JKC
DRAWING FILE: 4836DS.DWG

SCALE: N.T.S.

LAND OWNER - SUBJECT PARCEL:
ROCKINGHAM PROPERTIES 1, LTD
P.O. BOX 423
BELMONT, MA 02178

APPLICANT:
THE RIVERWOODS GROUP
7 RIVERWOODS DRIVE
EXETER, NH 03833

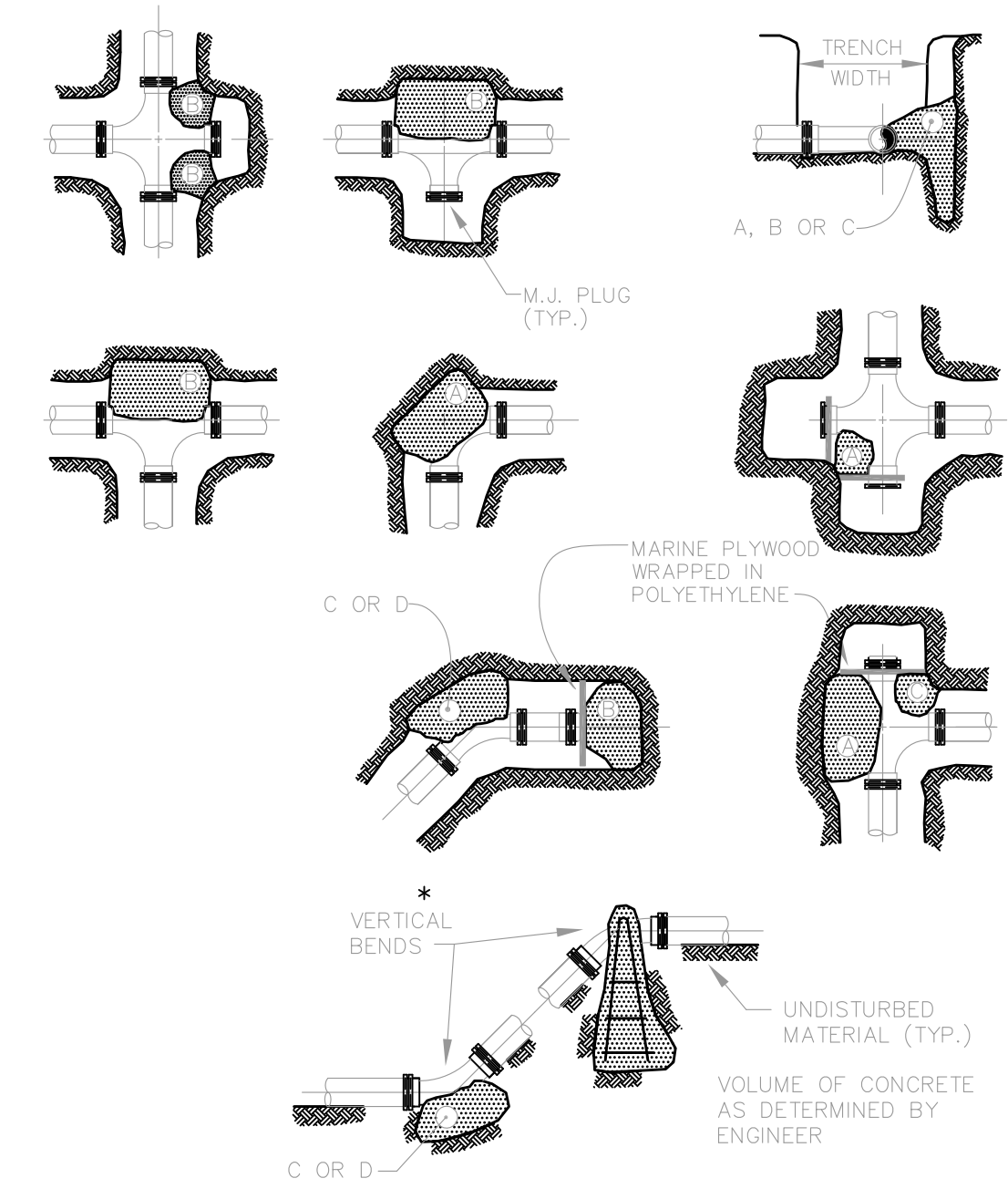
PROJECT:
RIVERWOODS DURHAM
STONE QUARRY DRIVE
DURHAM, NH

TITLE:

DETAIL SHEET

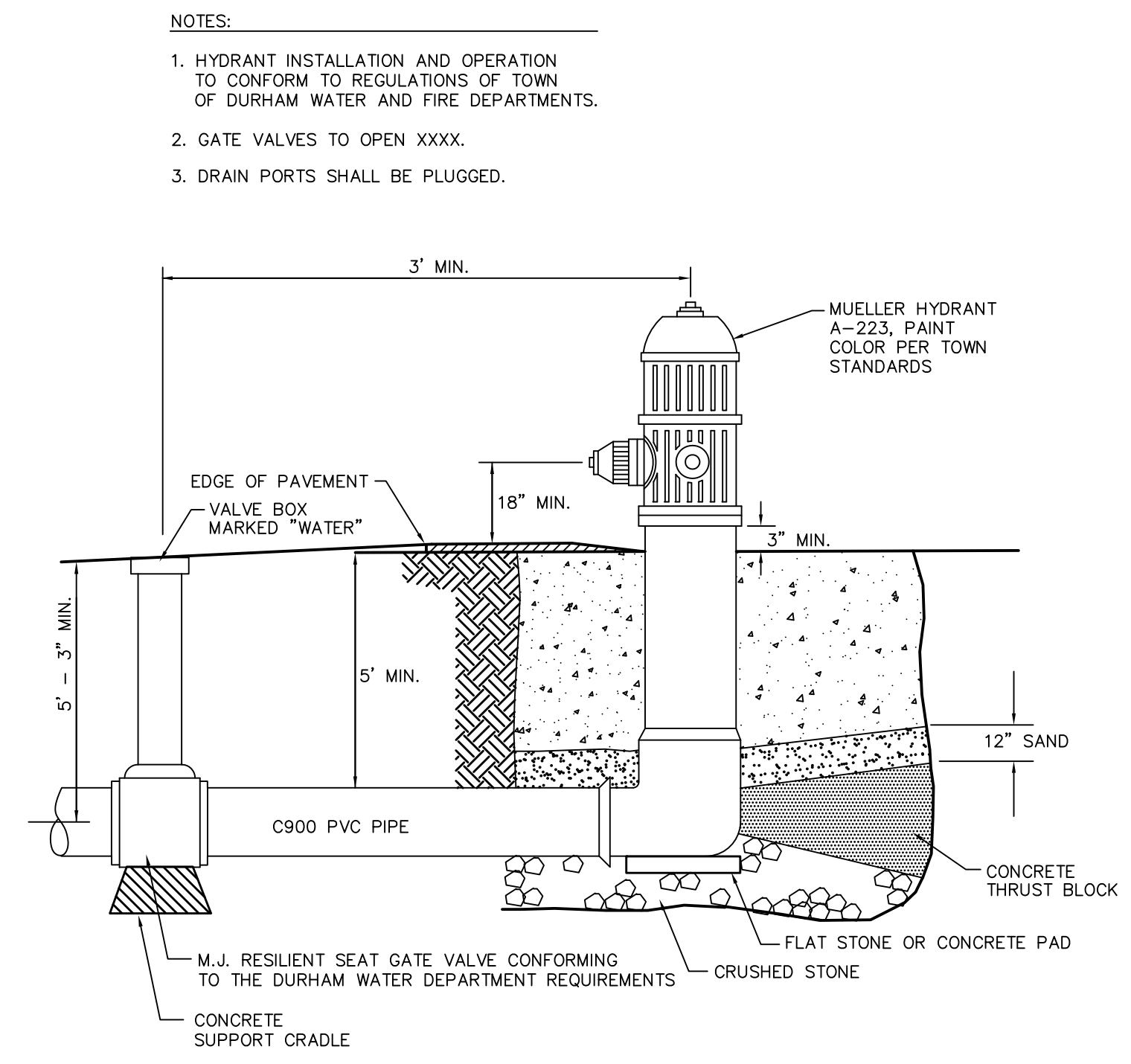
SHEET NUMBER:

C - 6.3



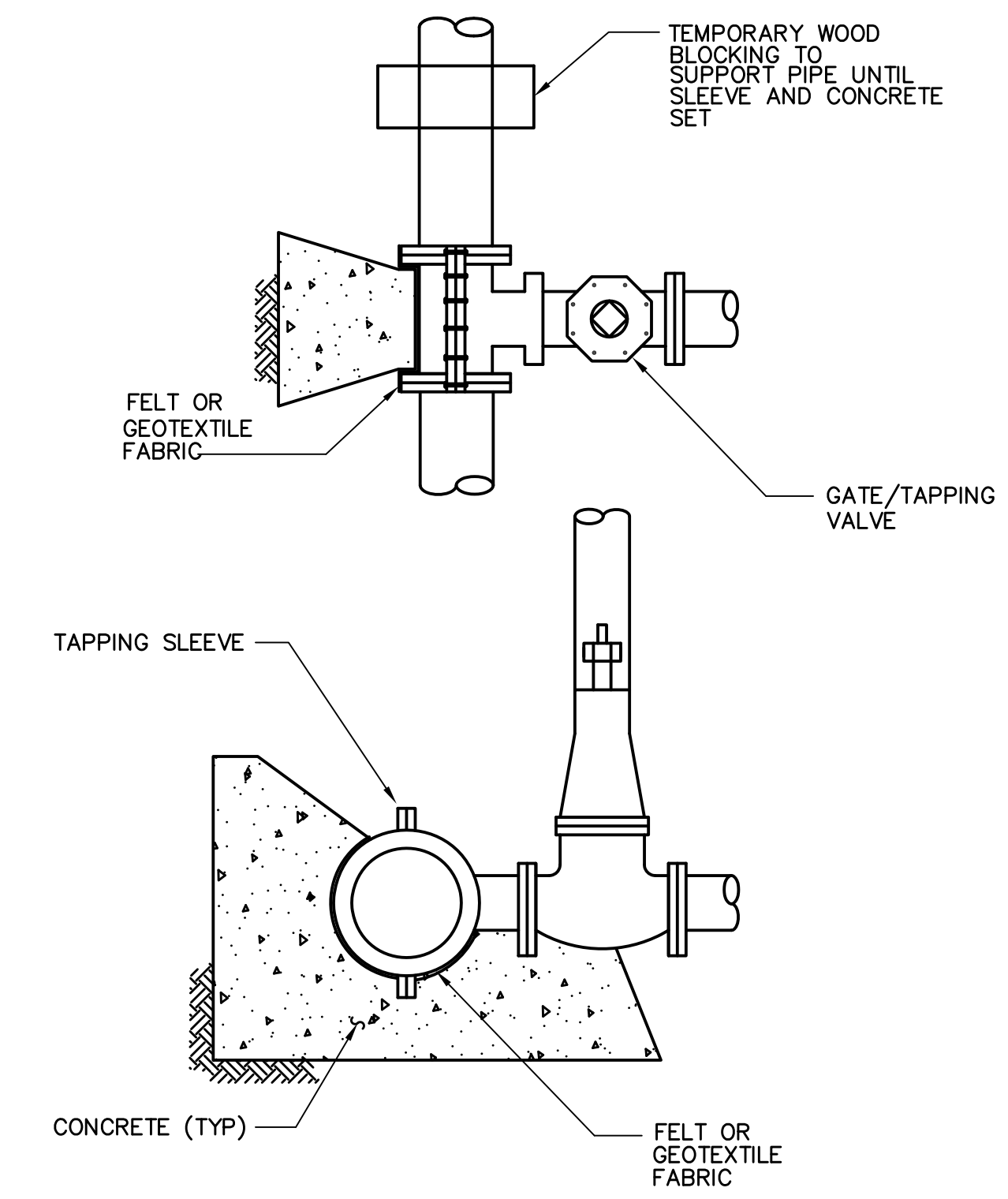
REACTION TYPE	4"	6"	8"	10"	12"
A 90°	0.89	2.19	3.82	11.14	17.24
B 180°	0.65	1.55	2.78	8.38	12.00
C 45°	0.48	1.19	2.12	6.02	9.32
D 22-1/2°	0.25	0.60	1.06	3.08	4.74
E 11-1/4°	0.13	0.30	0.54	1.54	2.38

- NOTES:**
- FOUR THRUST BLOCKS AGAINST UNDISTURBED MATERIAL. WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL. NO JOINTS SHALL BE COVERED WITH CONCRETE.
 - ON BENDS AND TEES, EXTEND THRUST BLOCKS FULL LENGTH OF FITTING.
 - PLACE BOARD IN FRONT OF ALL PLUGS BEFORE POURING.
 - WHERE M.J. PIPE IS USED, M.J. PLUG WITH RETAINER GLAND MAY BE SUBSTITUTED FOR END BLOCKING. POLYETHYLENE (6 MIL) SHALL BE PLACED AROUND FITTINGS PRIOR TO CONCRETE PLACEMENT.

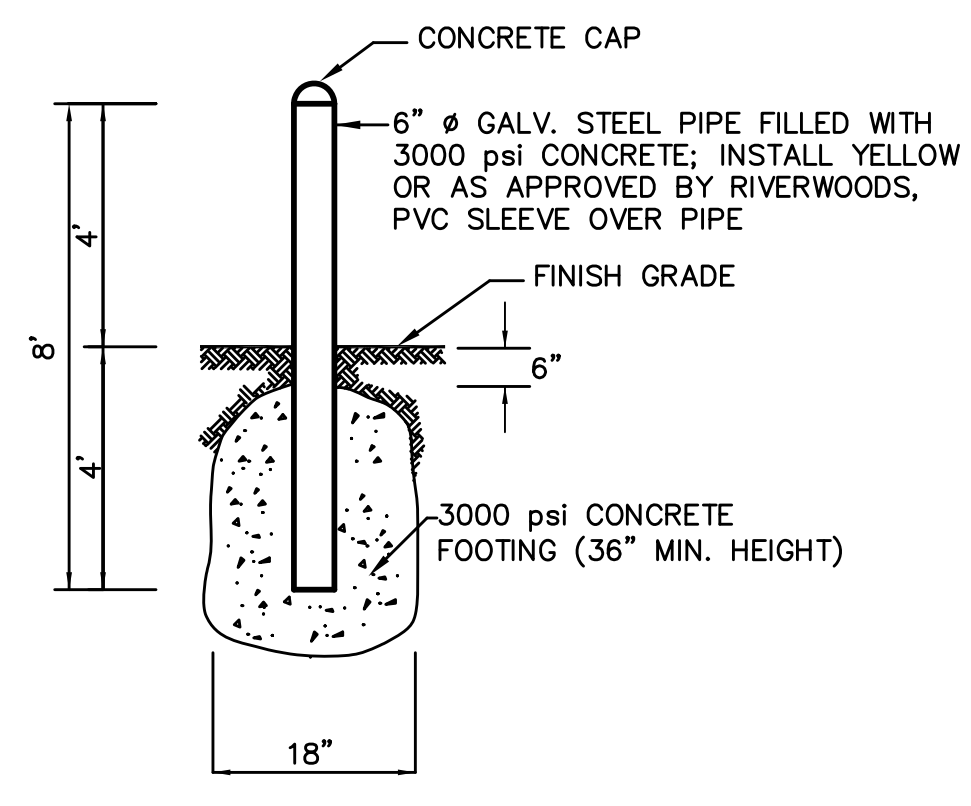


- NOTES:**
- HYDRANT INSTALLATION AND OPERATION TO CONFORM TO REGULATIONS OF TOWN OF DURHAM WATER AND FIRE DEPARTMENTS.
 - GATE VALVES TO OPEN XXXX.
 - DRAIN PORTS SHALL BE PLUGGED.

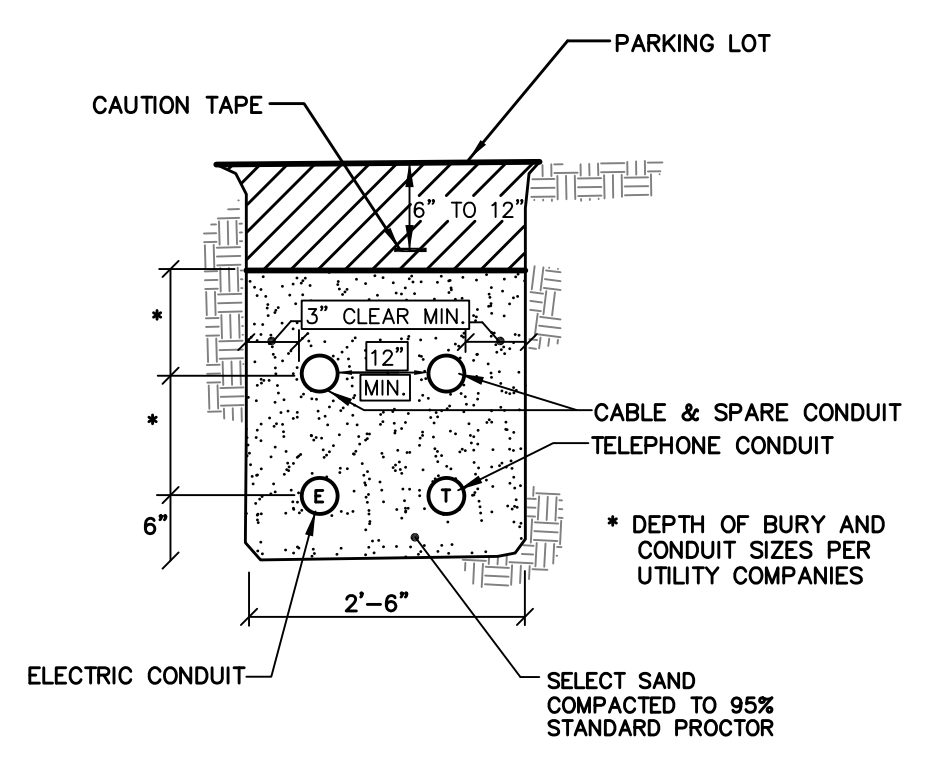
FIRE HYDRANT
(DURHAM HYDRANT STANDARD)
NOT TO SCALE



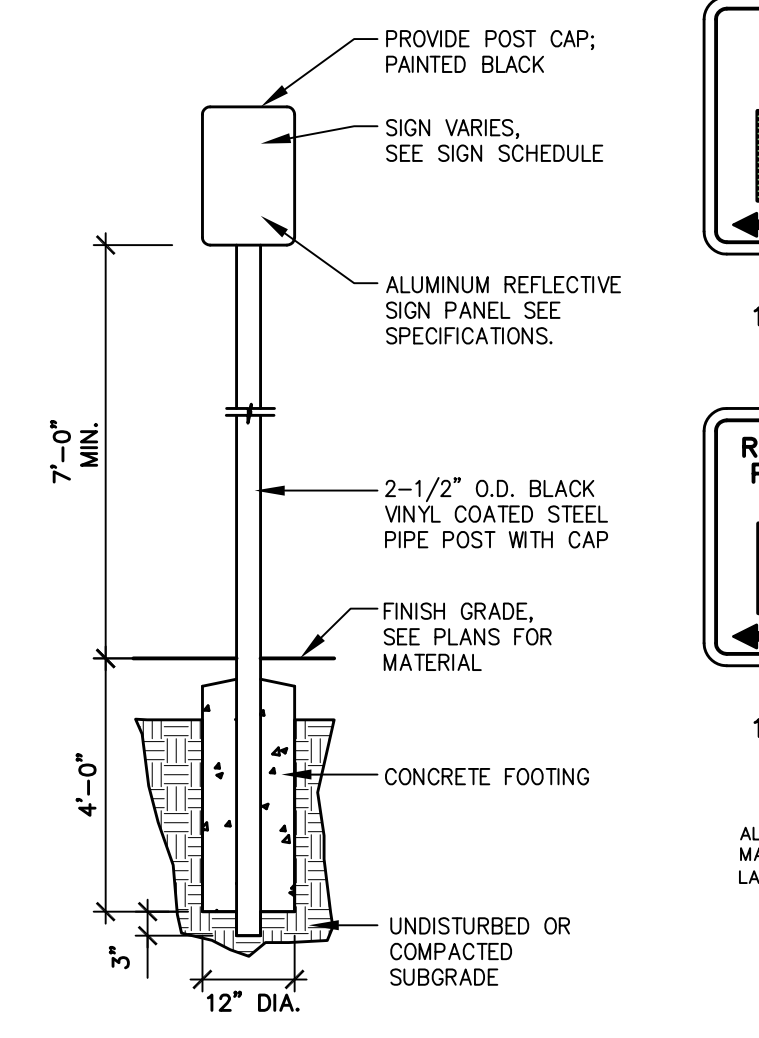
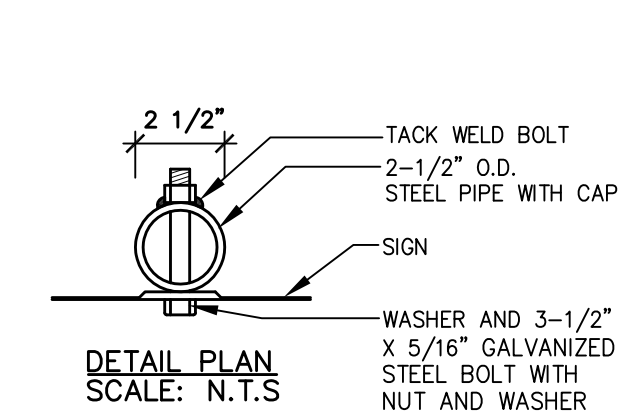
TAPPING SLEEVE AND VALVE ASSEMBLY
NOT TO SCALE



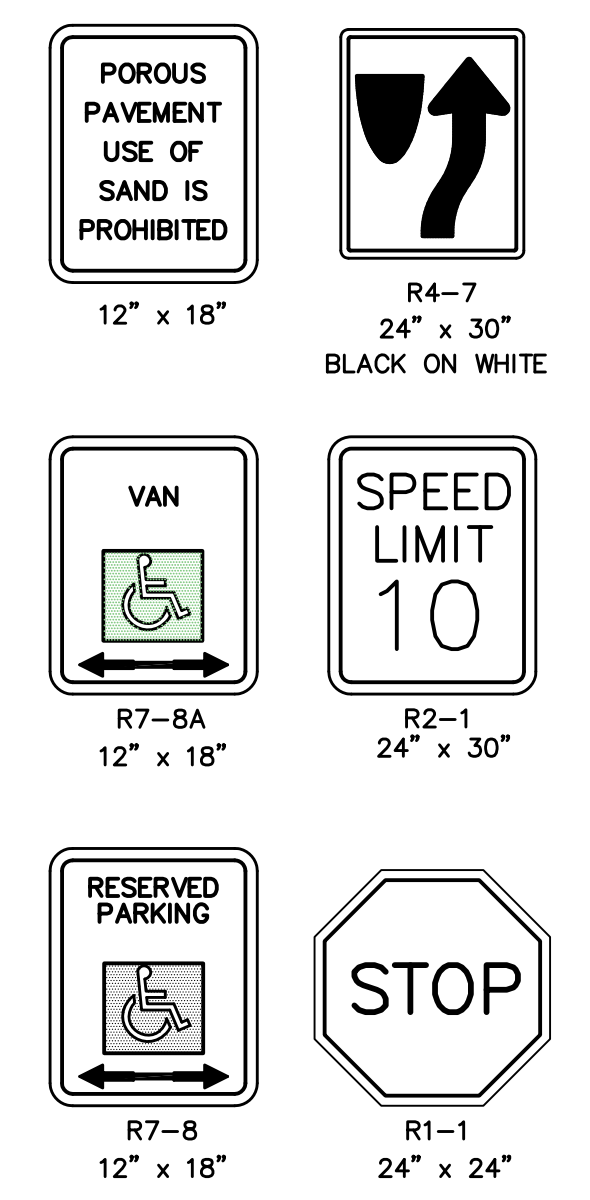
BOLLARD DETAIL
NOT TO SCALE



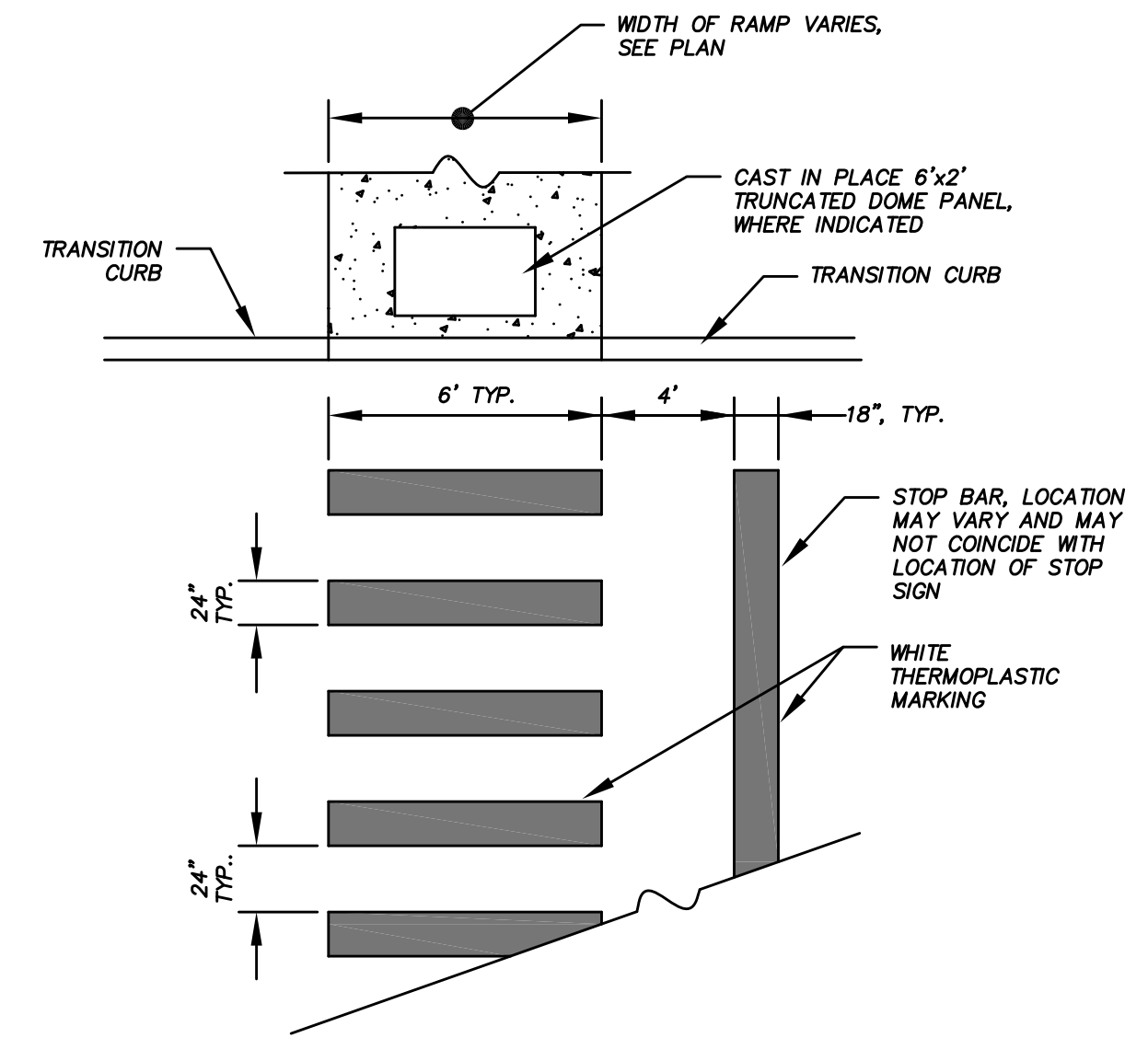
ELECTRIC/COMMUNICATION CONDUIT TRENCH SECTION
NOT TO SCALE



SIGN POST DETAIL
NOT TO SCALE

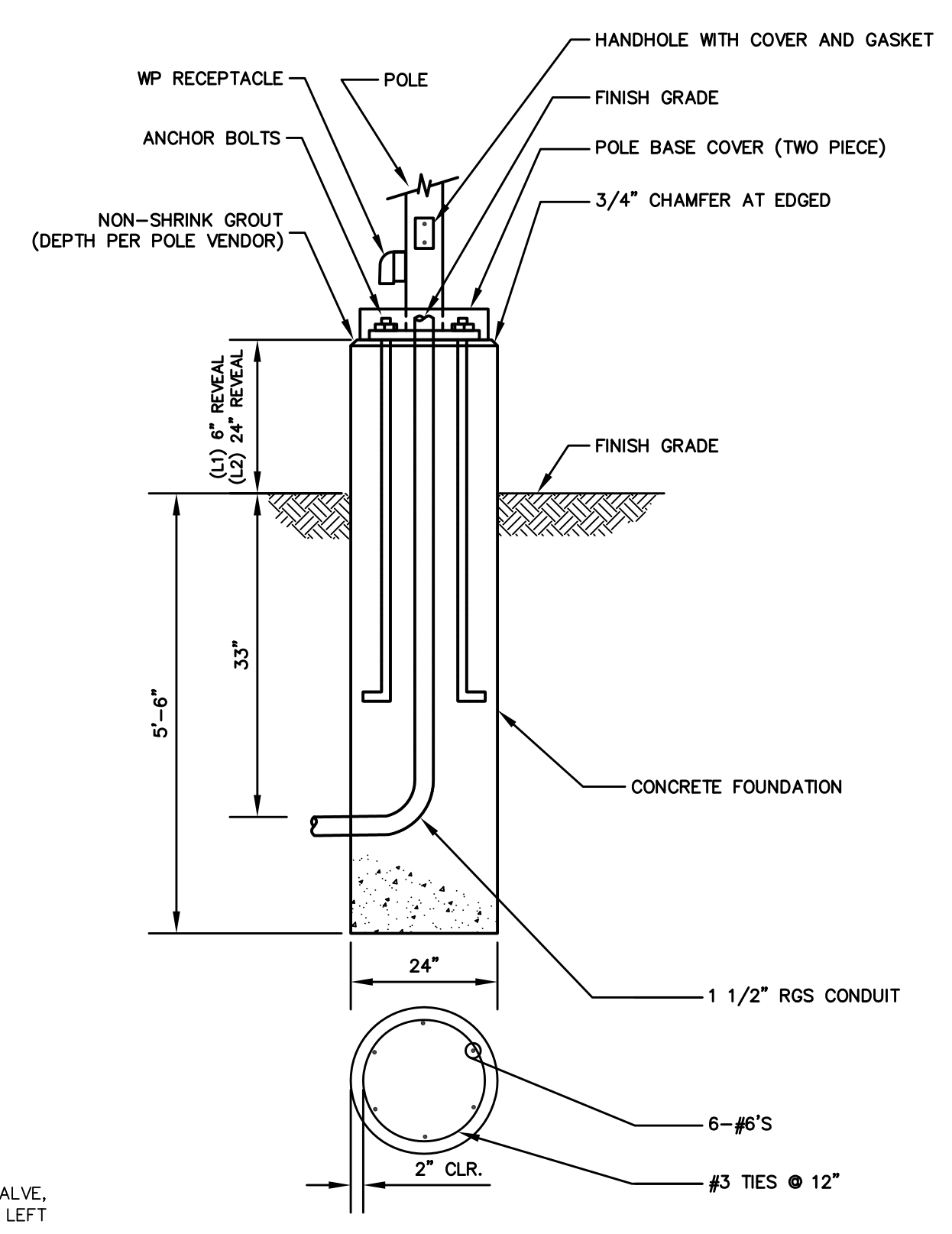


SIGN LEGEND
NOT TO SCALE

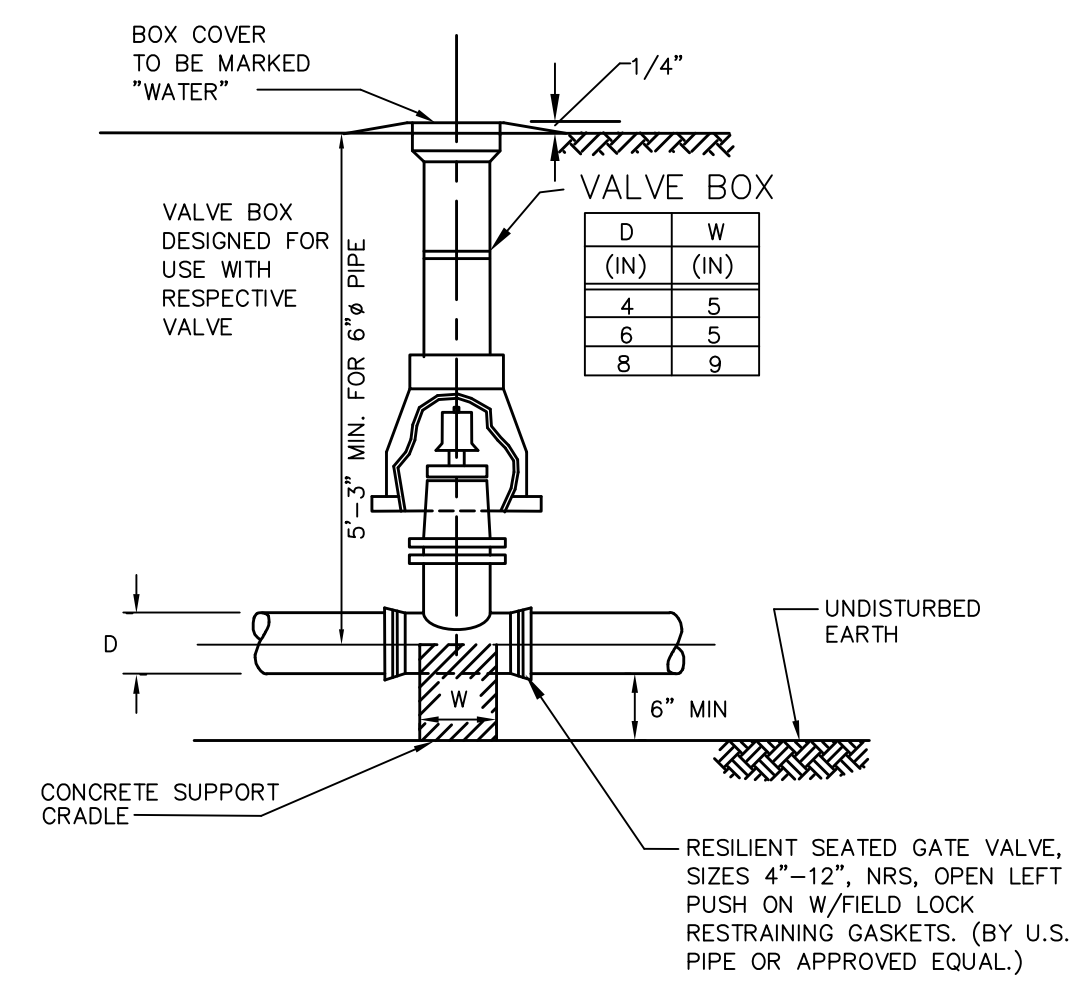


CROSSWALK DETAIL
NOT TO SCALE

FINAL APPROVAL BY DURHAM PLANNING BOARD.
CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
CERTIFIED _____
DATE _____



LIGHT POLE BASE DETAIL
NOT TO SCALE



WATER VALVE DETAIL
NOT TO SCALE

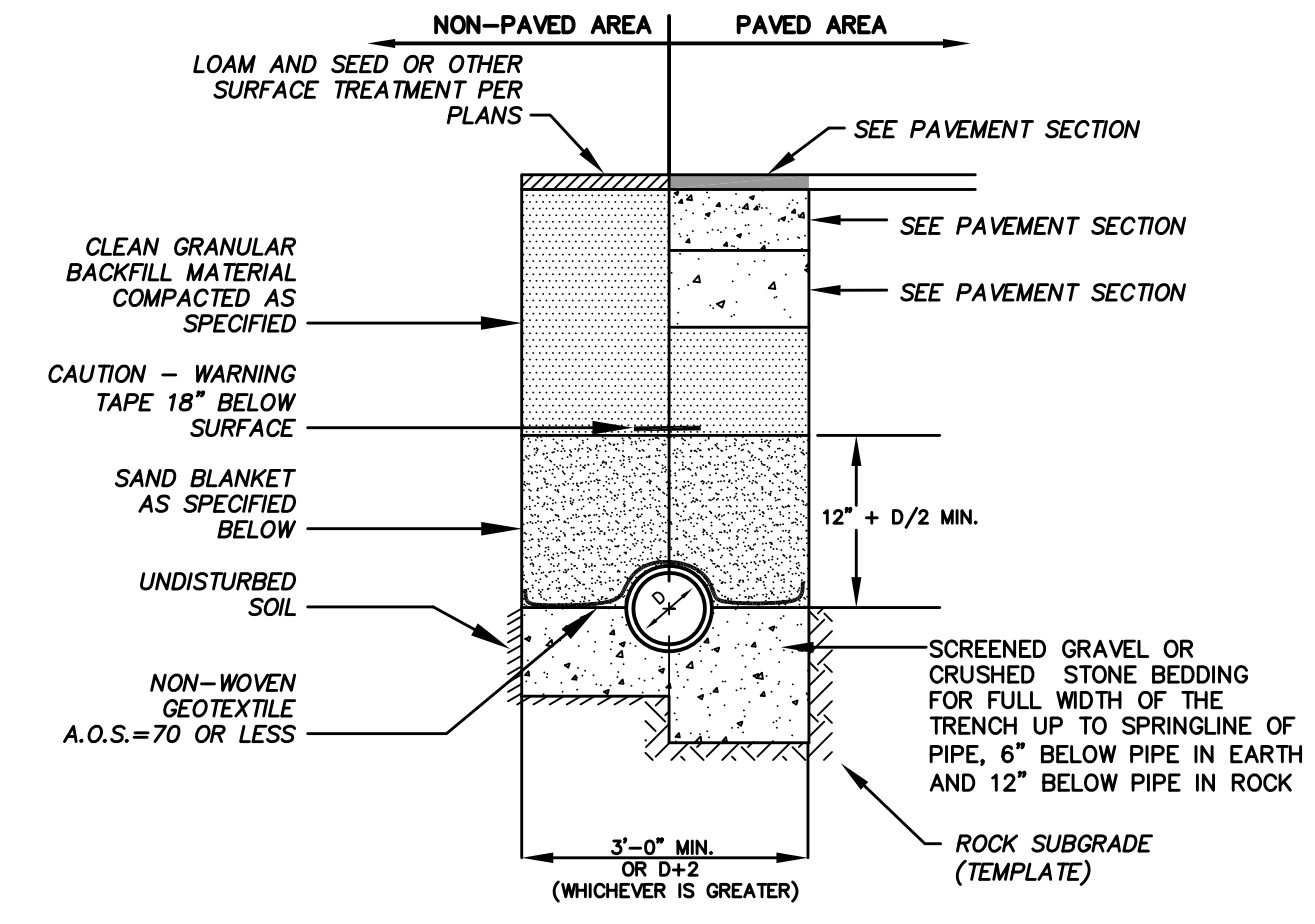
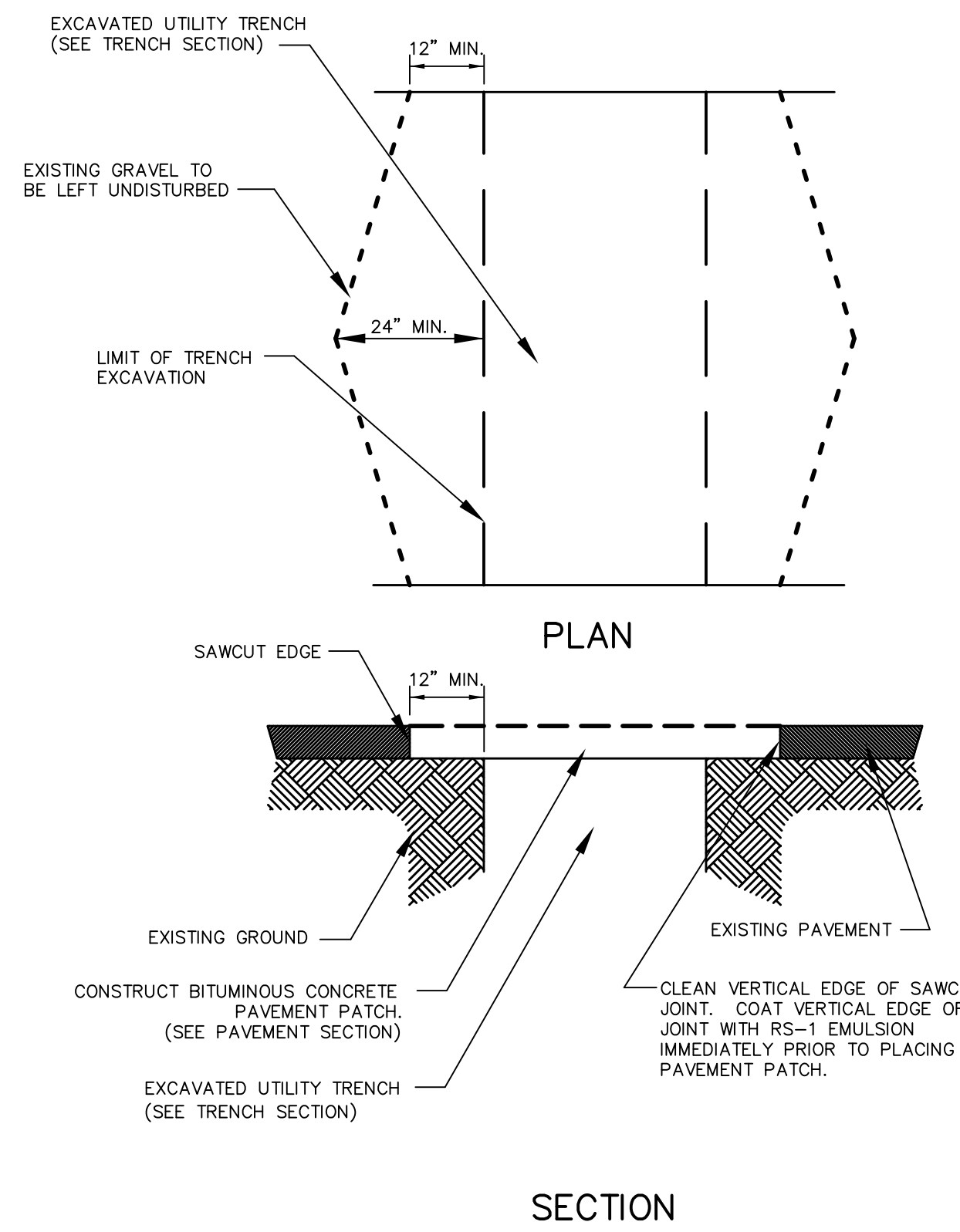
STANDARD TRENCH NOTES:

- ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE: BACKFILL AS STATED IN THE TECHNICAL SPECIFICATIONS OR AS SHOWN OF THE DRAWING
- BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33, STONE SIZE NO. 67.
 - 100% PASSING 1 INCH SCREEN
 - 90 - 100% PASSING 3/4 INCH SCREEN
 - 20 - 55% PASSING 3/8 INCH SCREEN
 - 0 - 10% PASSING #4 SIEVE
 - 0 - 5% PASSING #8 SIEVE
 WHERE ORDERED BY THE ENGINEER TO STABILIZE THE BASE, SCREENED GRAVEL OR CRUSHED STONE 1-1/2 INCH TO 1/2 INCH SHALL BE USED.
- SAND BLANKET: CLEAN SAND FREE FROM ORGANIC MATTER, SO GRADED THAT 90 - 100% PASSES 1/2 INCH SIEVE AND NOT MORE THAN 15% WILL PASS A #200 SIEVE. BLANKET MAY BE OMITTED FOR CAST-IRON, DUCTILE IRON, AND REINFORCED CONCRETE PIPE PROVIDED HOWEVER, THAT NO STONE LARGER THAN 2" IS IN CONTACT WITH THE PIPE.
- SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, 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: ALL ROCKS OVER 6 INCHES IN LARGEST DIMENSION; AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION.

IN CROSS COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK, OR PEAT, IF SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE SEWER, FOR MAINTENANCE AND POSSIBLE RECONSTRUCTION, WILL BE PRESERVED.
- BASE COURSE AND PAVEMENT SHALL MEET THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES - DIVISIONS 300 AND 400 RESPECTIVELY.
- SHEETING, IF REQUIRED: WHERE SHEETING IS PLACED ALONGSIDE THE PIPE AND EXTENDS BELOW MID-DIAMETER, IT SHALL BE CUT OFF AND LEFT IN PLACE TO AN ELEVATION 1 FOOT ABOVE THE TOP OF PIPE. WHERE SHEETING IS ORDERED BY THE ENGINEER TO BE LEFT IN PLACE, IT SHALL BE CUT OFF AT LEAST 3 FEET BELOW FINISHED GRADE, BUT NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE.
- W = MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12 INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES IN NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE OUTSIDE DIAMETER (O.D.) ALSO, W SHALL BE THE TRENCH WIDTH FOR LEDGE EXCAVATION AND FOR ORDERED EXCAVATION BELOW GRADE.
- FOR CROSS COUNTRY CONSTRUCTION, BACKFILL OR FILL SHALL BE MOUND TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
- CONCRETE FOR ENCASEMENT SHALL CONFORM TO THE NEW HAMPSHIRE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS STANDARD SPECIFICATION REQUIREMENTS FOR CLASS A (3000#) CONCRETE AS FOLLOWS:
 - CEMENT: 6.0 BAGS PER CUBIC YARD
 - WATER: 5.75 GALLONS PER BAG CEMENT
 - MAXIMUM SIZE OF AGGREGATE: 1 INCH
 CONCRETE ENCASEMENT IS NOT ALLOWED FOR PVC PIPE.
- CONCRETE FULL ENCASEMENT: IF FULL ENCASEMENT IS UTILIZED, DEPTH OF CONCRETE BELOW PIPE SHALL BE 1/4 I.D. (4" MINIMUM). BLOCK SUPPORT SHALL BE SOLID CONCRETE BLOCKS.
- NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES DESIGN STANDARDS REQUIRE TEN FEET (10') SEPARATION BETWEEN WATER AND SEWER. REFER TO TOWN'S STANDARD SPECIFICATIONS FOR METHODS OF PROTECTION IN AREAS THAT CANNOT MEET THESE REQUIREMENTS.

MANHOLE NOTES:

- IT IS THE INTENTION OF THE NOTES THAT THE MANHOLE, INCLUDING ALL COMPONENT PARTS, HAVE ADEQUATE SPACE, STRENGTH AND LEAKPROOF QUALITIES CONSIDERED NECESSARY BY THE COMMISSION FOR THE INTENDED SERVICE. SPACE REQUIREMENTS AND CONFIGURATIONS SHALL BE AS SHOWN ON THE DRAWING. MANHOLES MAY BE AN ASSEMBLY OF PRECAST SECTIONS, WITH OR WITHOUT STEEL REINFORCEMENT, WITH ADEQUATE JOINTING, OR CONCRETE CAST MONOLITHICALLY IN PLACE WITH OR WITHOUT REINFORCEMENT IN ANY APPROVED MANHOLE. THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND LOADS OF 8 TONS (H-20 LOADING) WITHOUT FAILURE AND PREVENT LEAKAGE IN EXCESS OF ONE GALLON PER DAY PER VERTICAL FOOT OF MAN-HOLE CONTINUOUSLY FOR THE LIFE OF THE STRUCTURE, A PERIOD GENERALLY IN EXCESS OF 25 YEARS IS TO BE UNDERSTOOD IN BOTH CASES.
- BARRELS AND CONE SECTIONS SHALL BE PRECAST REINFORCED.
- PRECAST CONCRETE BARREL SECTIONS, CONES AND BASES SHALL CONFORM TO ASTM C478.
- LEAKAGE TEST SHALL BE PERFORMED IN ACCORDANCE WITH THE TOWN'S STANDARD SPECIFICATIONS.
- INVERTS AND SHELVES MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW AT CHANGES IN DIRECTION. THE INVERTS SHALL BE LAID OUT IN CURVES, OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPE TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. OVERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY.
- FRAMES AND COVERS MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30-INCH CLEAR OPENING. A 3-INCH (MINIMUM HEIGHT) LETTER "S" FOR SEWERS OR "D" FOR DRAINS SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER.
- BEDDING SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33.
 - 100% PASSING 1 INCH SCREEN 0-10% PASSING #4 SIEVE
 - 90-100% PASSING 3/4 INCH SCREEN 0-5% PASSING #8 SIEVE
 - 20- 55% PASSING 3/8 INCH SCREEN
 WHERE ORDERED BY THE ENGINEER TO STABILIZE THE BASE, SCREENED GRAVEL OR CRUSHED STONE 1-1/2" TO 1/2" SHALL BE USED.
- CONCRETE FOR DROP SUPPORT SHALL CONFORM TO THE REQUIREMENT FOR CLASS A (3000 LBS.) CONCRETE OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AS FOLLOWS:
 - CEMENT 6.0 BAGS PER CUBIC YARD
 - WATER 5.75 GALLONS PER BAG CEMENT
 - MAXIMUM SIZE OF AGGREGATE 1 INCH 9.
- FLEXIBLE JOINT. A FLEXIBLE JOINT SHALL BE PROVIDED WITHIN THE FOLLOWING DISTANCES:
 - PVC PIPE - 60"
 - RCP & CI PIPE - ALL SIZES - 48"
 - AC & VC PIPE - UP THROUGH 12" DIAMETER - 18"
 - AC & VC PIPE - LARGER THAN 12" DIAMETER - 36"
- SHALLOW MANHOLE IN LIEU OF A CONE SECTION, WHEN MANHOLE DEPTH IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED HAVING AN ECCENTRIC ENTRANCE OPENING AND CAPABLE OF SUPPORTING H-20 LOADS.



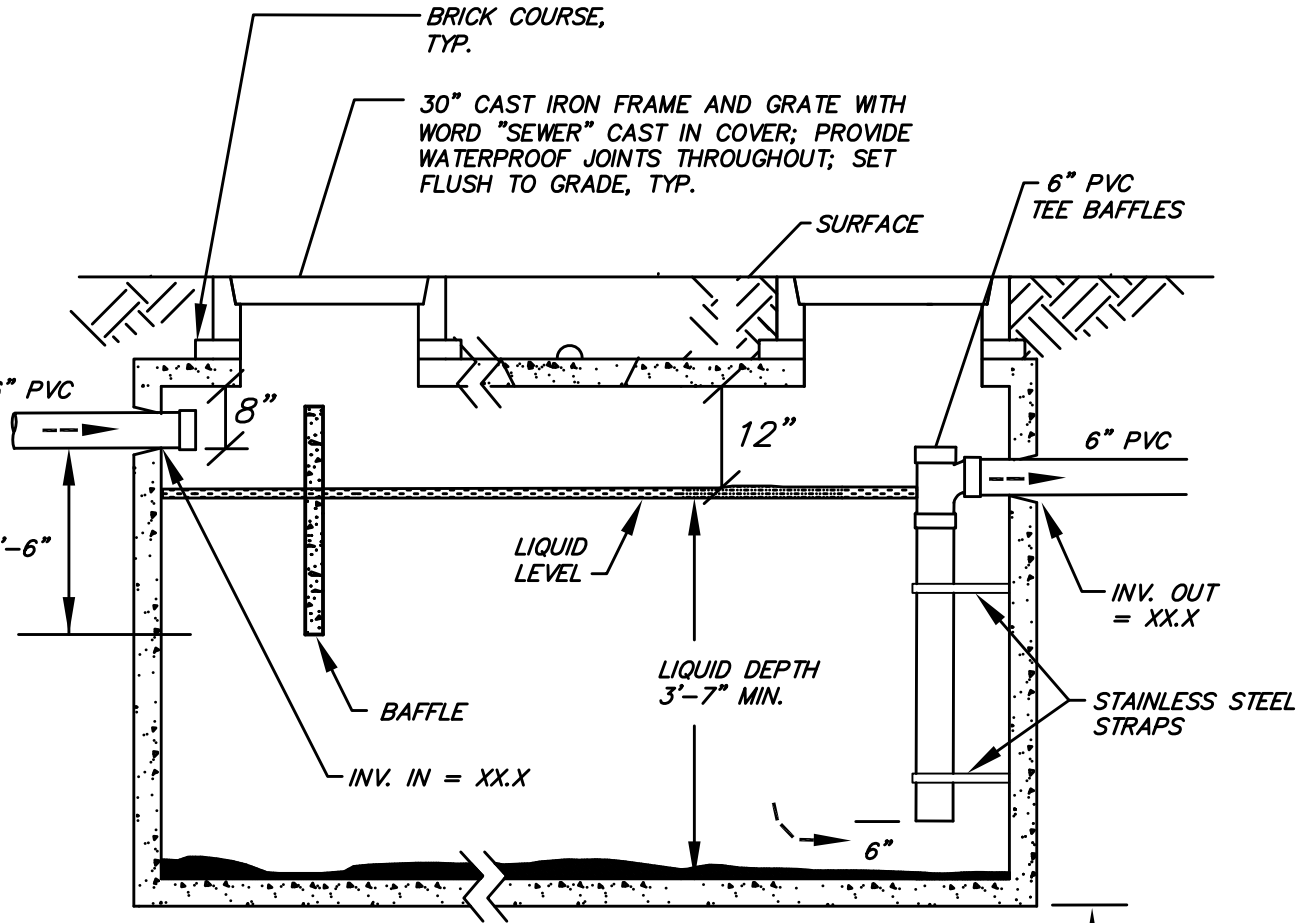
BACKFILL MATERIAL BELOW PAVED OR CONCRETE AREAS, BEDDING MATERIAL, AND SAND BLANKET SHALL BE COMPACTED TO NOT LESS THAN 95% OF AASHTO T 99, METHOD C. SUITABLE BACKFILL MATERIAL BELOW LOAM AREAS SHALL BE COMPACTED TO NOT LESS THAN 90% OF AASHTO T 99, METHOD C.

SAND BLANKET/BARRIER		SCREENED GRAVEL OR CRUSHED STONE BEDDING	
SIZE	% FINER BY WEIGHT	SIZE	% PASSING BY WEIGHT
1/2"	90 - 100	1"	100
200	0 - 15	3/4"	90 - 100
		3/8"	20 - 55
		# 4	0 - 10
		# 8	0 - 5

* EQUIVALENT TO STANDARD STONE SIZE #67 - SECTION 703 OF NHDOT STANDARD SPECIFICATIONS

DRAIN AND UTILITY TRENCH SECTION

NOT TO SCALE

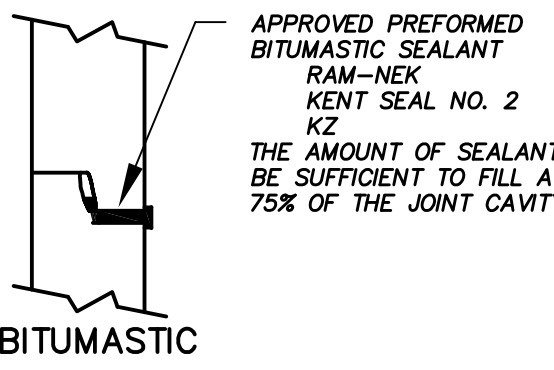


1000 GALLON GREASE (SEPTIC) TANK

- DESIGN LOAD SHALL BE H-20.
- SEAL THE OUTSIDE OF THE TANK AND MANHOLE WITH TWO BITUMINOUS COATINGS.
- SEAL PRECAST SECTION JOINTS, WITH 1" BUTYL RUBBER OR EQUAL.

GREASE TRAP

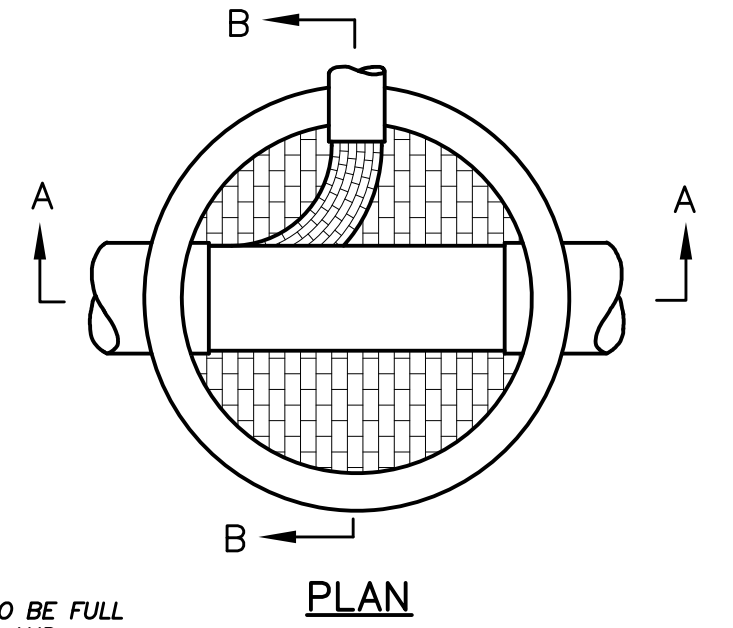
NOT TO SCALE



NOTE: ALL GASKETS, SEALANTS, MORTAR, ETC. SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS WRITTEN INSTRUCTIONS.

DETAIL-B

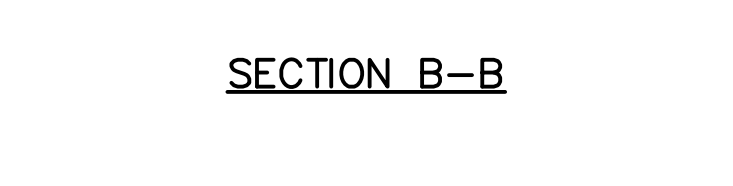
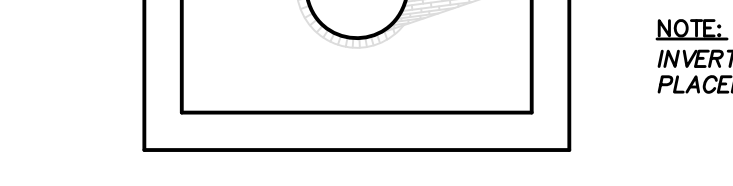
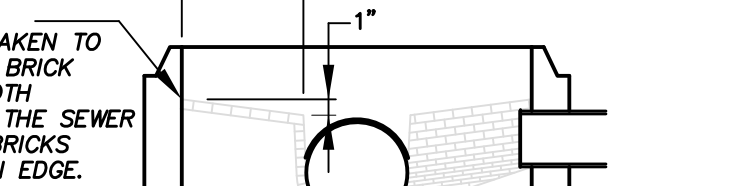
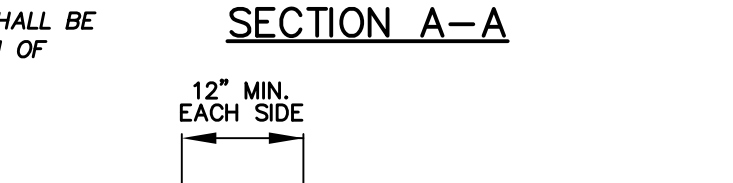
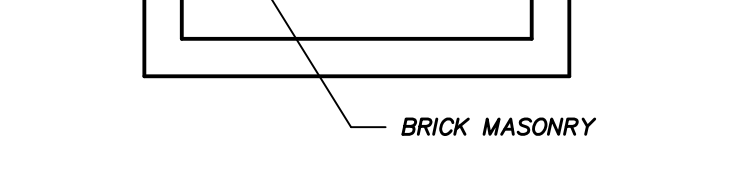
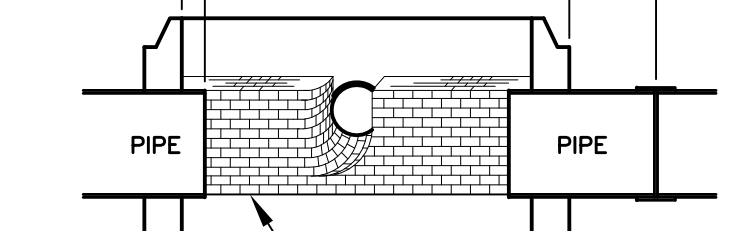
(APPROVED MANHOLE SECTION JOINTING METHODS)



TYPICAL TRENCH PATCH

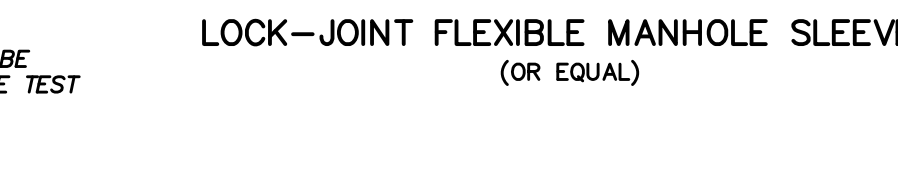
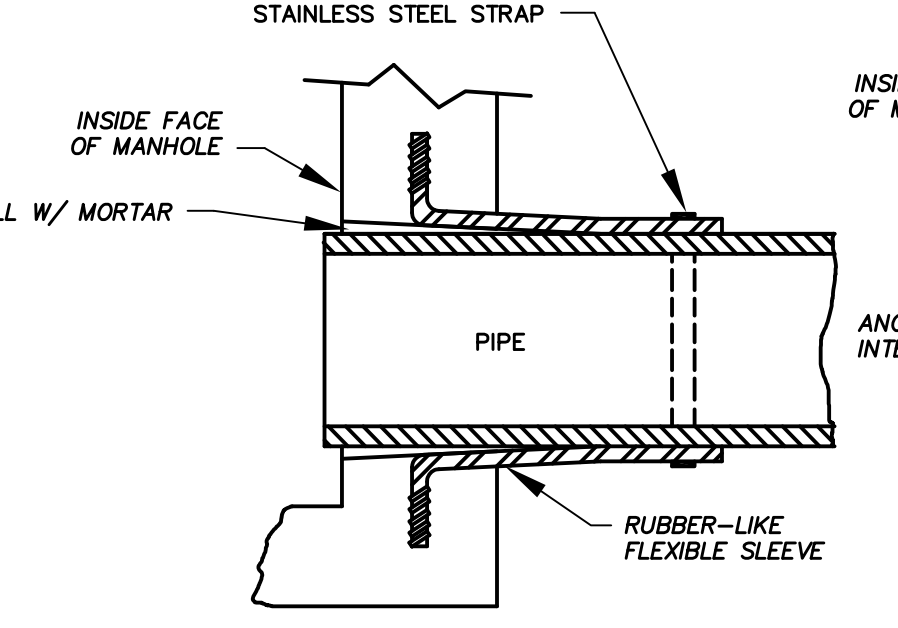
NOT TO SCALE

PLAN

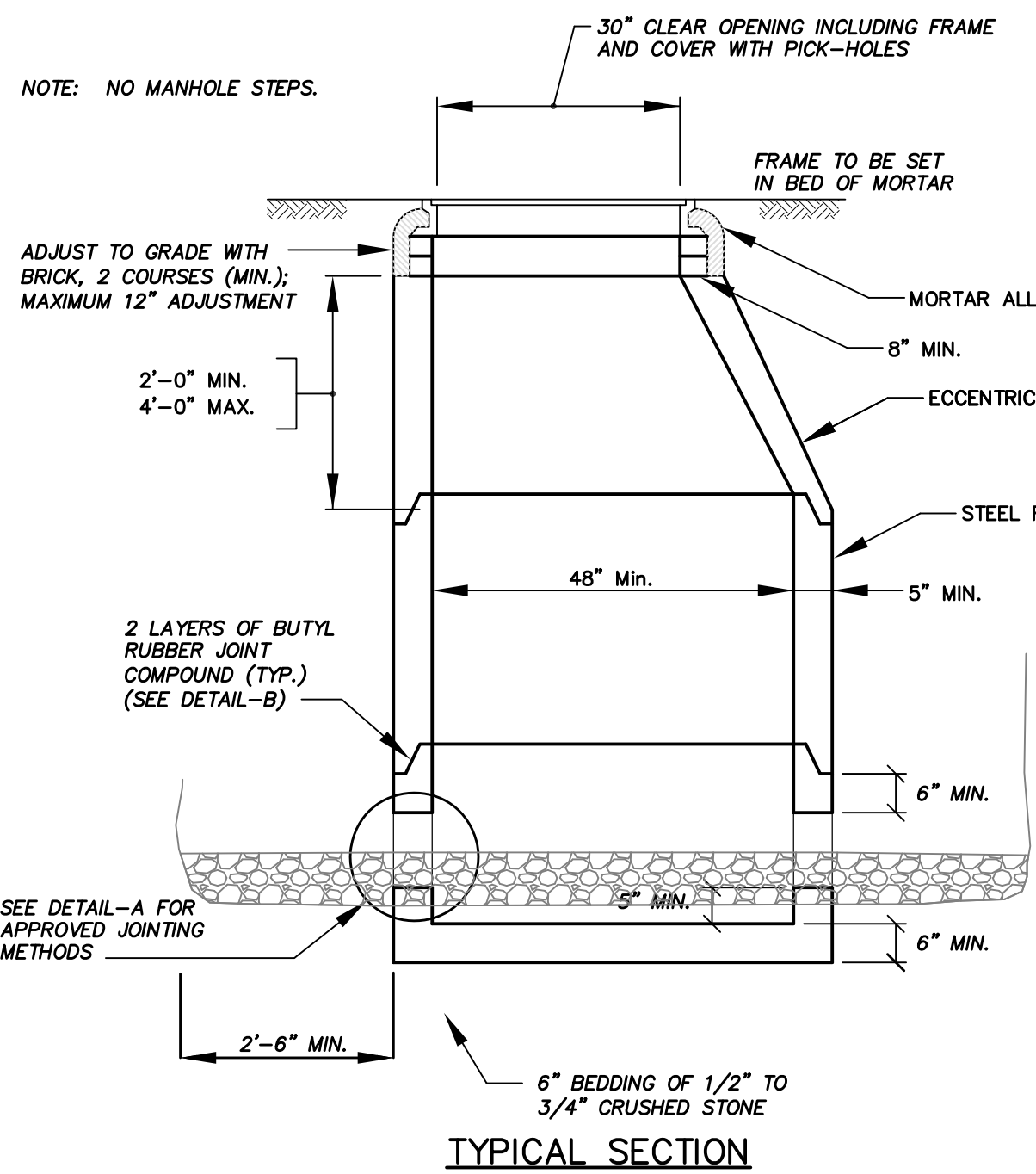


SEWER MANHOLE DETAILS

NOT TO SCALE



DETAIL-A



TYPICAL SECTION

ALTUS ENGINEERING, INC.
 133 COURT STREET PORTSMOUTH, NH 03801
 VOICE: (603) 433-2335
 FAX: (603) 433-4194

JEFFREY R. CLIFFORD
 No. 6524
 LICENSED PROFESSIONAL ENGINEER
 State of New Hampshire

THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION

ISSUED FOR: APPROVAL

ISSUE DATE: DECEMBER 5, 2017

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	JKC	7/19/17
1	PB RE-SUBMISSION	JKC	10/16/17
2	PB RE-SUBMISSION	JKC	12/05/17

DRAWN BY: RMB
 APPROVED BY: JKC
 DRAWING FILE: 4836DS.DWG

SCALE: N.T.S.

LAND OWNER - SUBJECT PARCEL:

ROCKINGHAM PROPERTIES 1, LTD
 P.O. BOX 423
 BELMONT, MA 02178

APPLICANT:
THE RIVERWOODS GROUP
 7 RIVERWOODS DRIVE
 EXETER, NH 03833

PROJECT:
RIVERWOODS DURHAM
 STONE QUARRY DRIVE
 DURHAM, NH

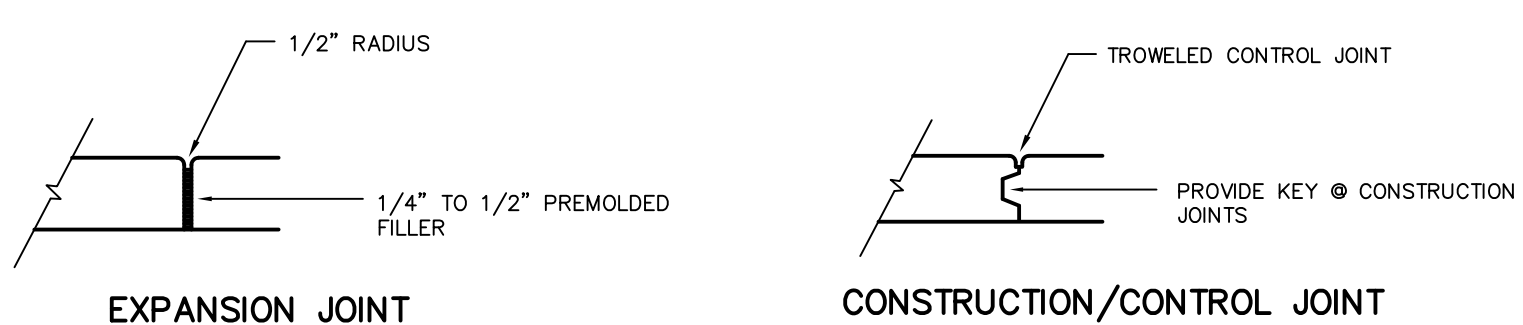
TITLE:

FINAL APPROVAL BY DURHAM PLANNING BOARD.
 CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
 CERTIFIED _____
 DATE _____

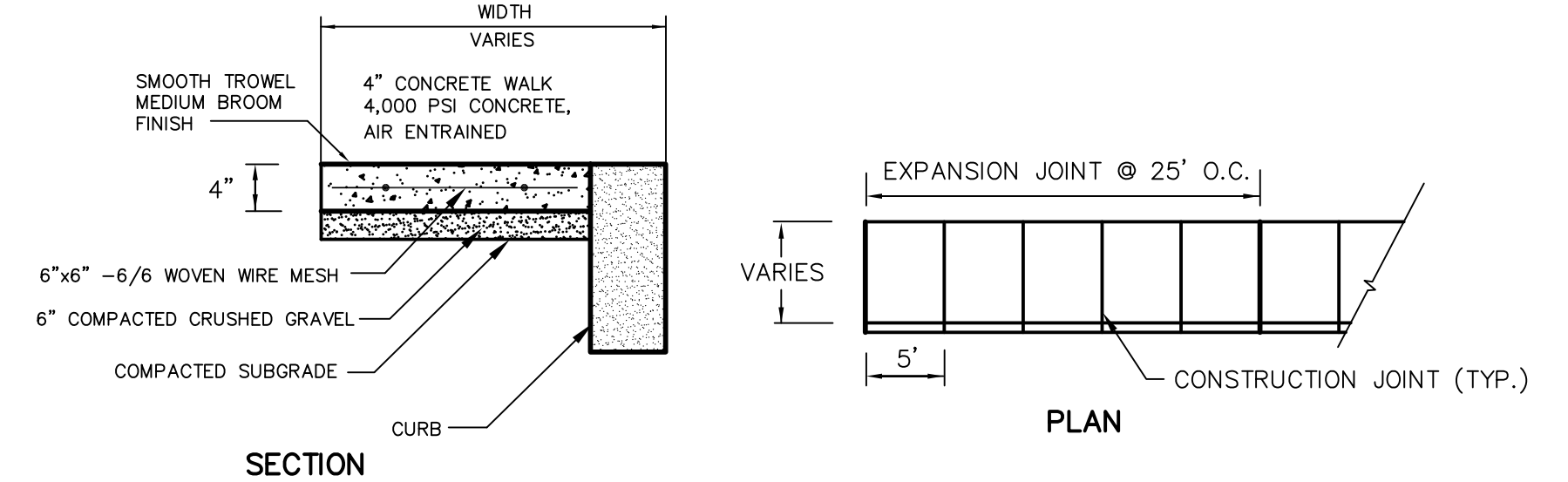
DETAIL SHEET

SHEET NUMBER:

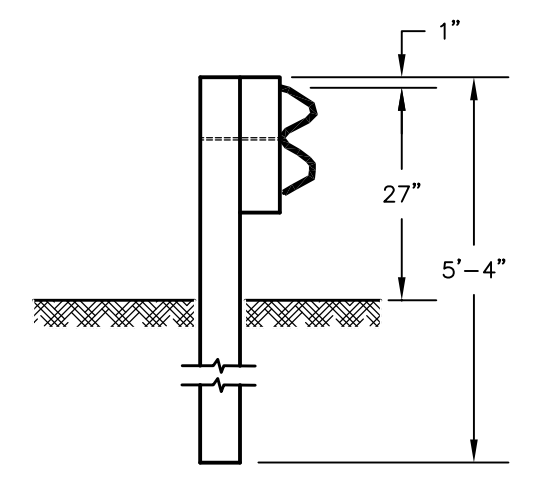
C - 6.4



EXPANSION JOINT
(TO BE INSTALLED AT ENTRY/DROP OFF AREAS)

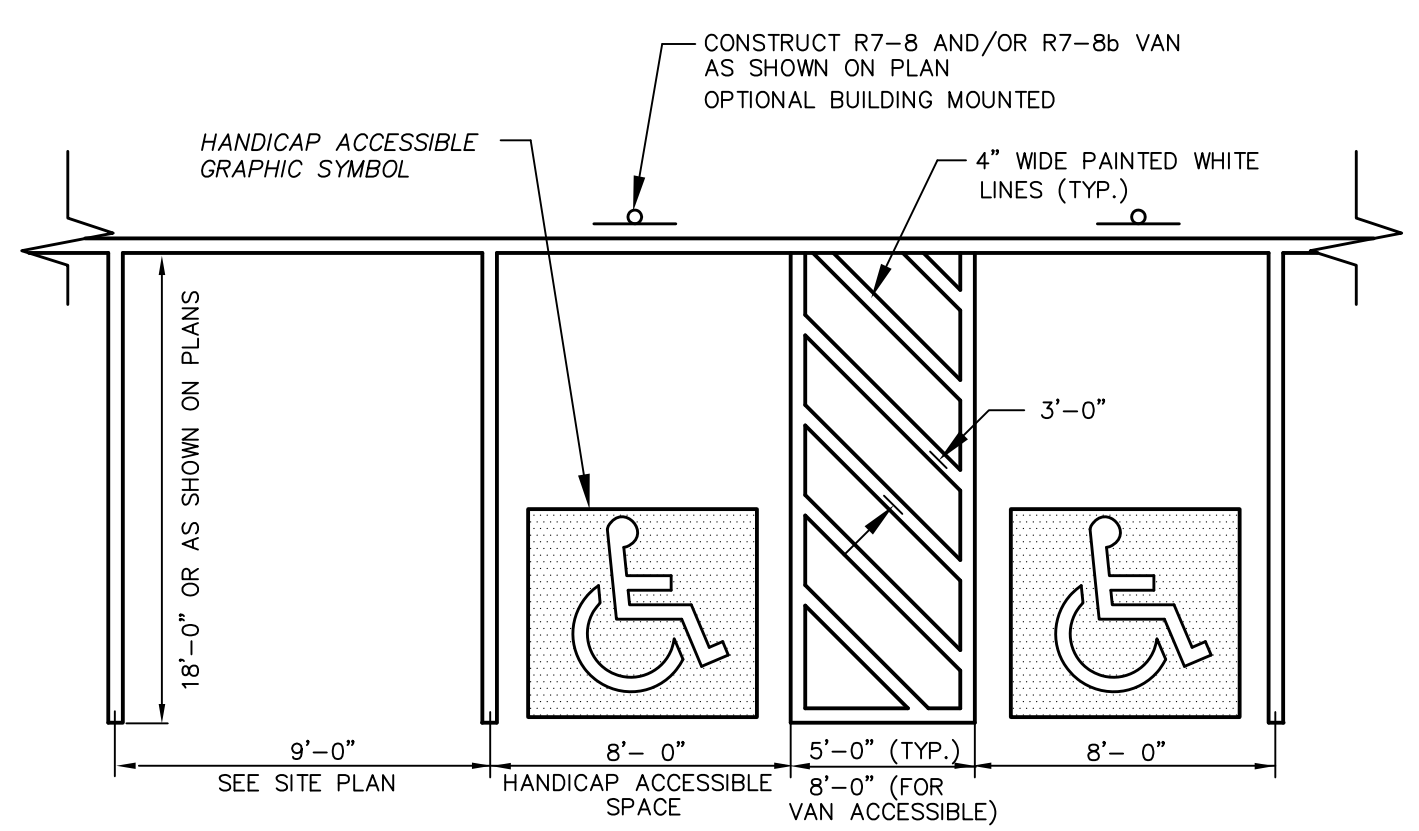


CONCRETE SIDEWALK DETAIL
NOT TO SCALE

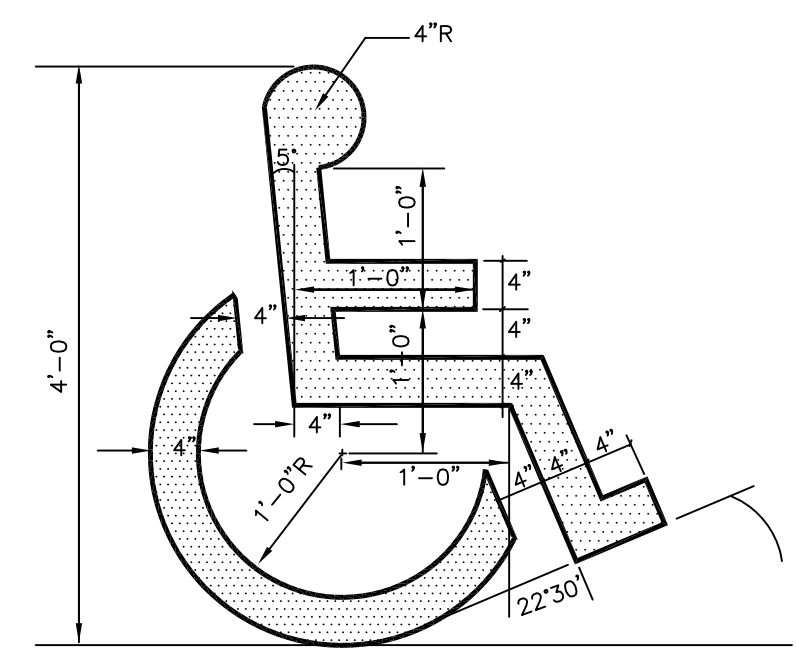


"W" BEAM GUARDRAIL DETAIL (WOOD POSTS)
NOT TO SCALE

AASHTO DESIGNATION: G4(2W)
NH STANDARD BEAM GUARD RAIL DETAIL, SECTION 606
POST SPACING: 6'-3"
DEFLECTION DISTANCE: 3'
POST TYPE: 6" x 8" TREATED WOOD POST
BEAM TYPE: "W" SECTION, 12 GA., "CORTEN" STEEL, NHDOT 606.2
OFFSET BRACKETS: 6" x 8" x 14" TREATED BLOCK
PROVIDE TERMINAL SECTION AT EACH END

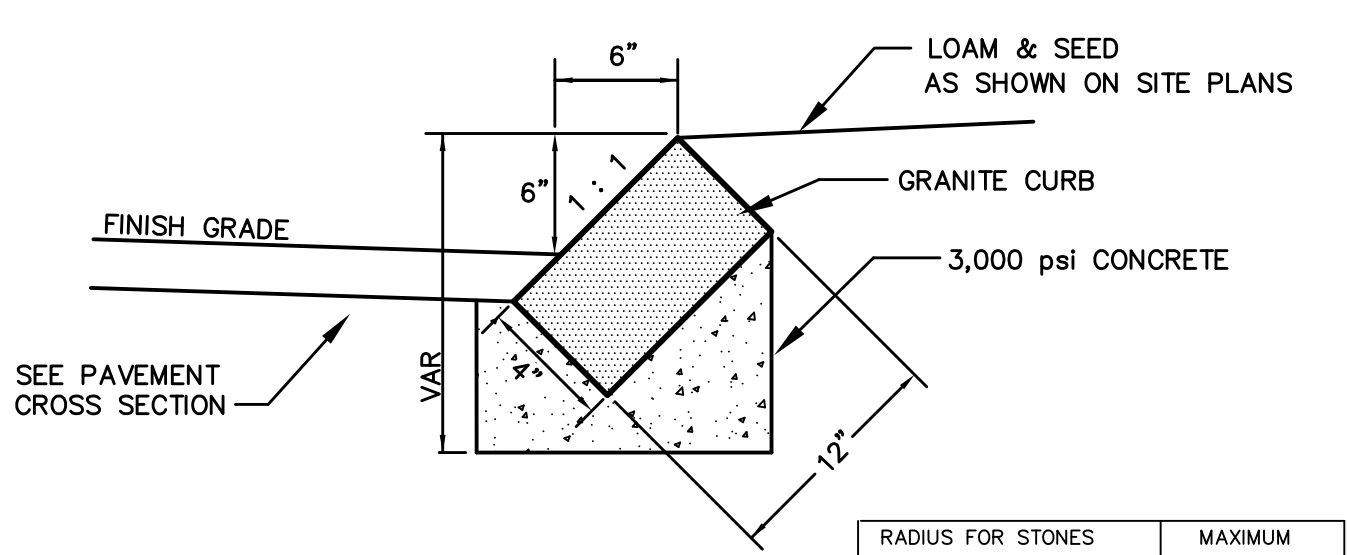


STALL PARKING
NOT TO SCALE



NOTE:
SYMBOL TO BE PAINTED IN ALL HANDICAPPED ACCESSIBLE SPACES

ADA SYMBOL
NOT TO SCALE

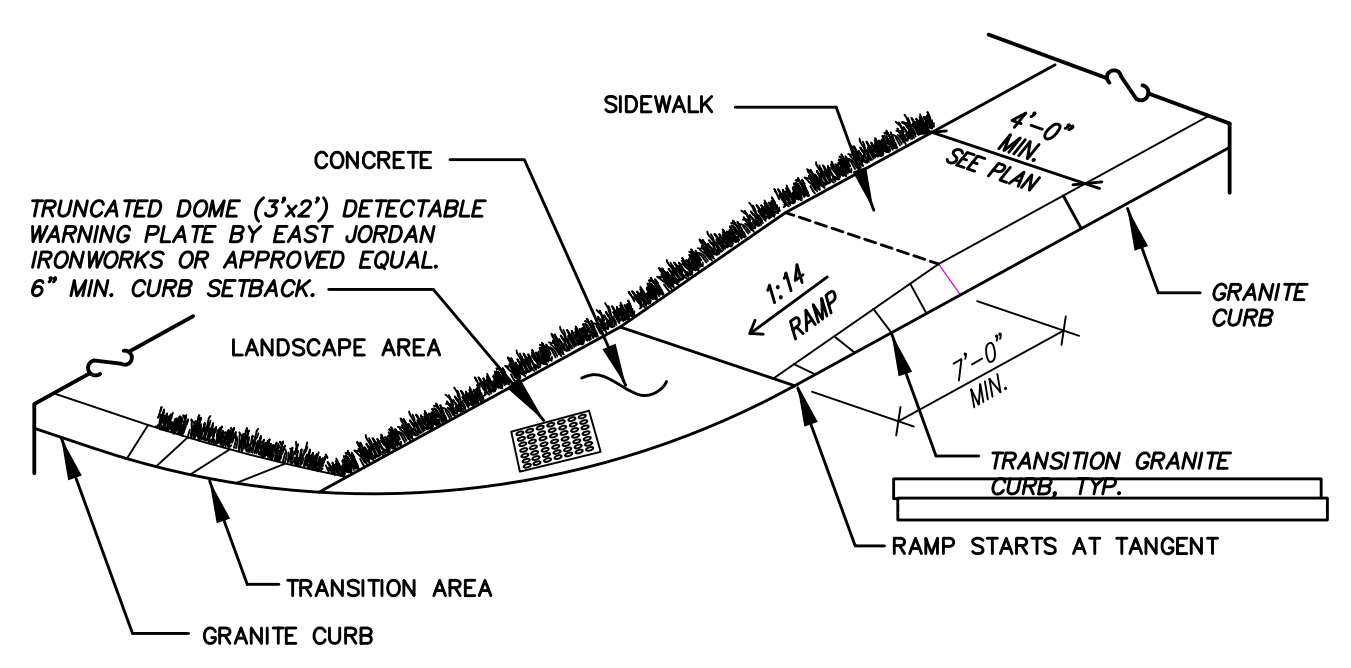


NOTES

- SEE SITE PLAN FOR LIMITS OF CURBING
- ADJOINING STONES OF STRAIGHT CURB LAID ON CURVES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH
- MINIMUM LENGTH OF STRAIGHT CURB STONES = 18"
- MAXIMUM LENGTH OF STRAIGHT CURB STONES = 8'
- MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES - SEE CHART

RADIUS FOR STONES WITH SQUARE JOINTS	MAXIMUM LENGTH
16'-28'	1'-6"
29'-41'	2'
42'-55'	3'
56'-68'	4'
69'-82'	5'
83'-96'	6'
97'-110'	7'
OVER 110'	8'

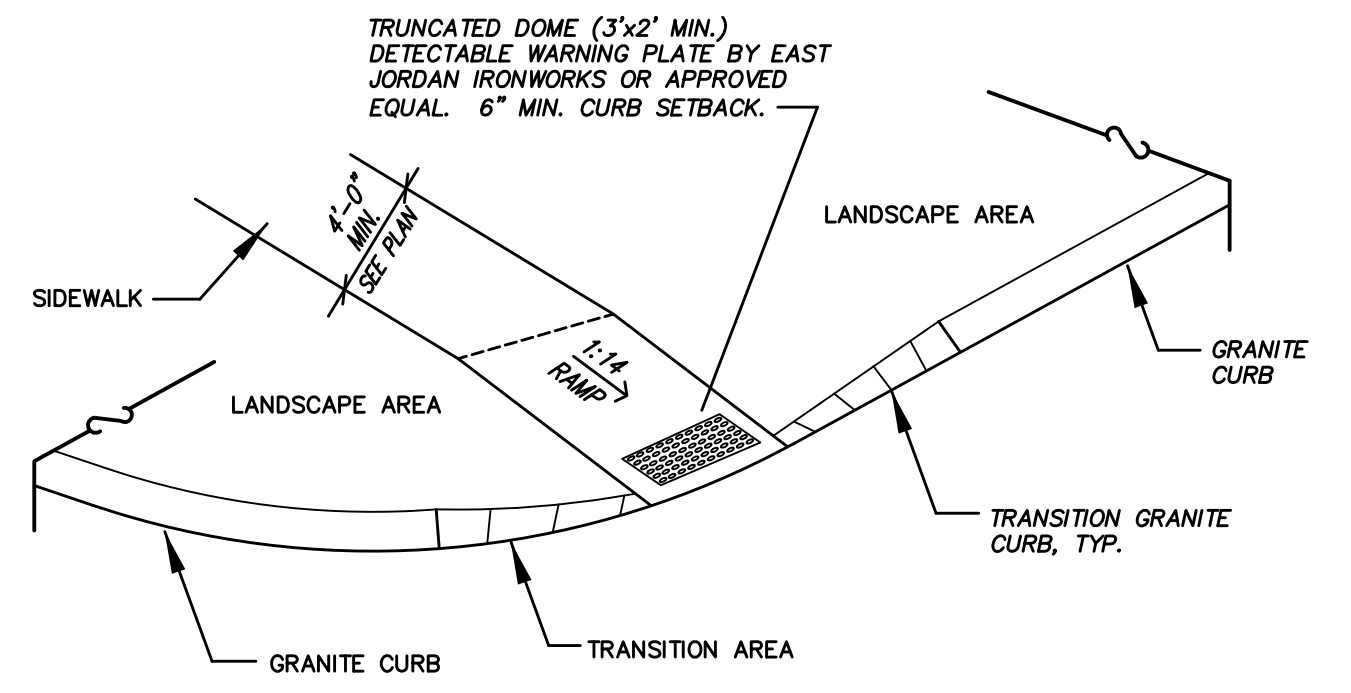
SLOPE GRANITE CURB
NOT TO SCALE



NOTE:

- RAMP CROSS SECTION TO BE THE SAME AS ADJACENT SIDEWALK.
- DIMENSIONS ARE SUBJECT TO CHANGE IN FIELD. ALL SLOPES AND DIMENSIONS TO COMPLY WITH A.D.A. REQUIREMENTS.

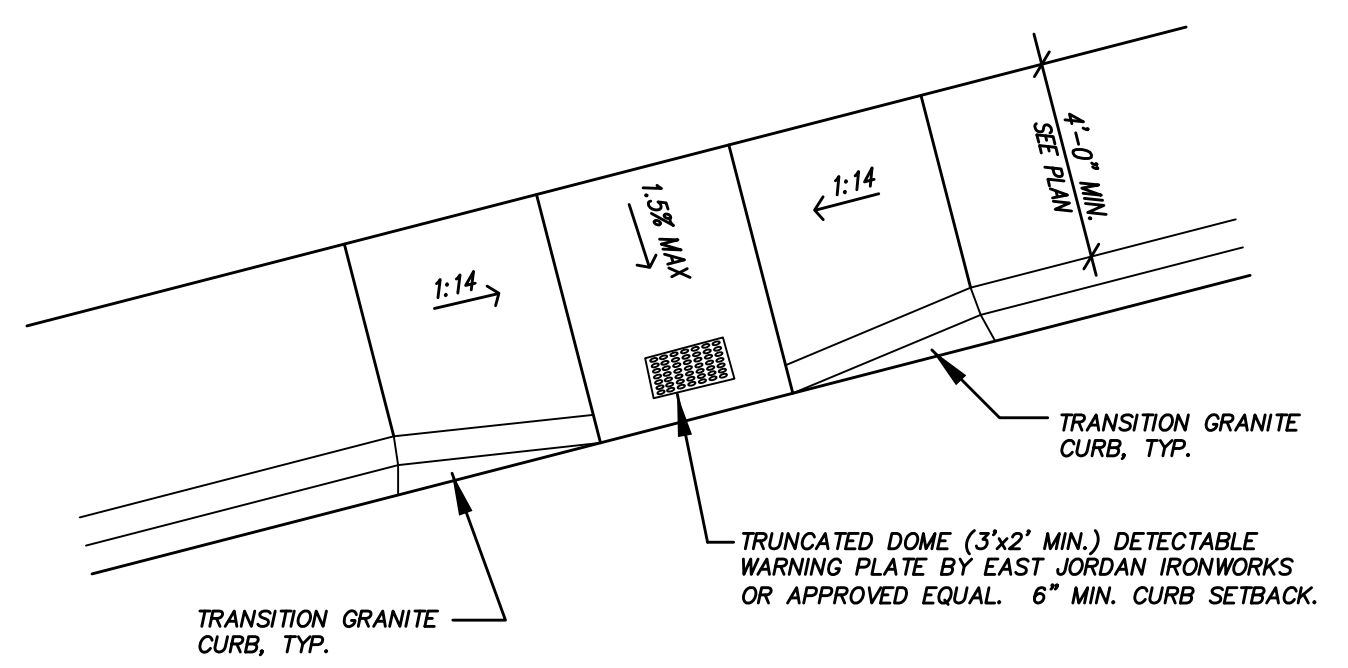
CURB CUT TYPE A
NOT TO SCALE



NOTE:

- RAMP CROSS SECTION TO BE THE SAME AS ADJACENT SIDEWALK.
- DIMENSIONS ARE SUBJECT TO CHANGE IN FIELD. ALL SLOPES AND DIMENSIONS TO COMPLY WITH A.D.A. REQUIREMENTS.

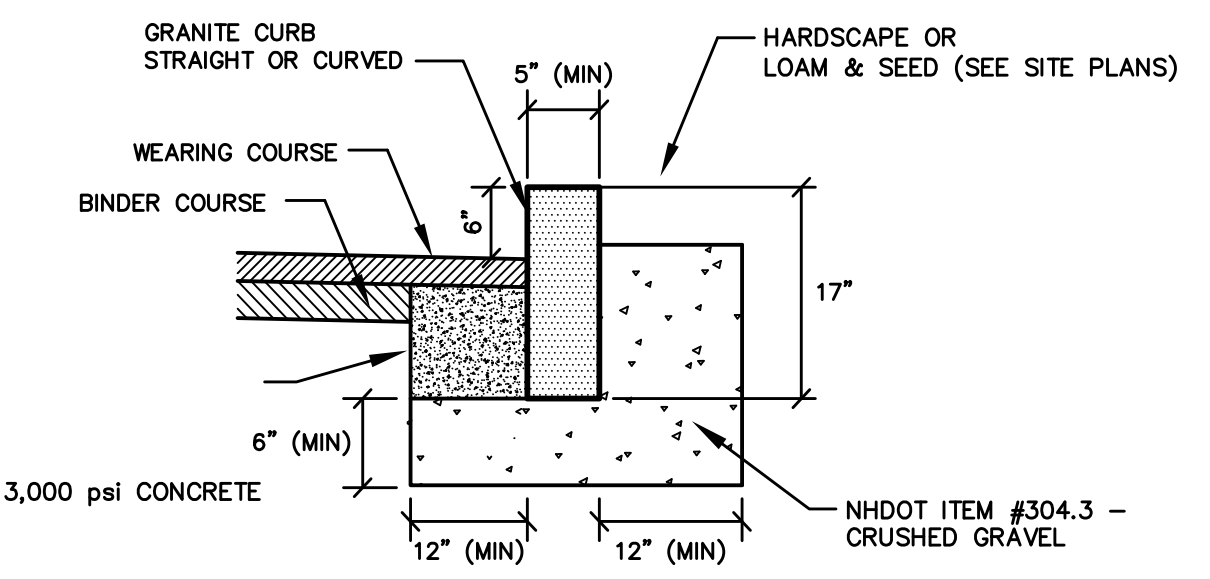
CURB CUT TYPE C
NOT TO SCALE



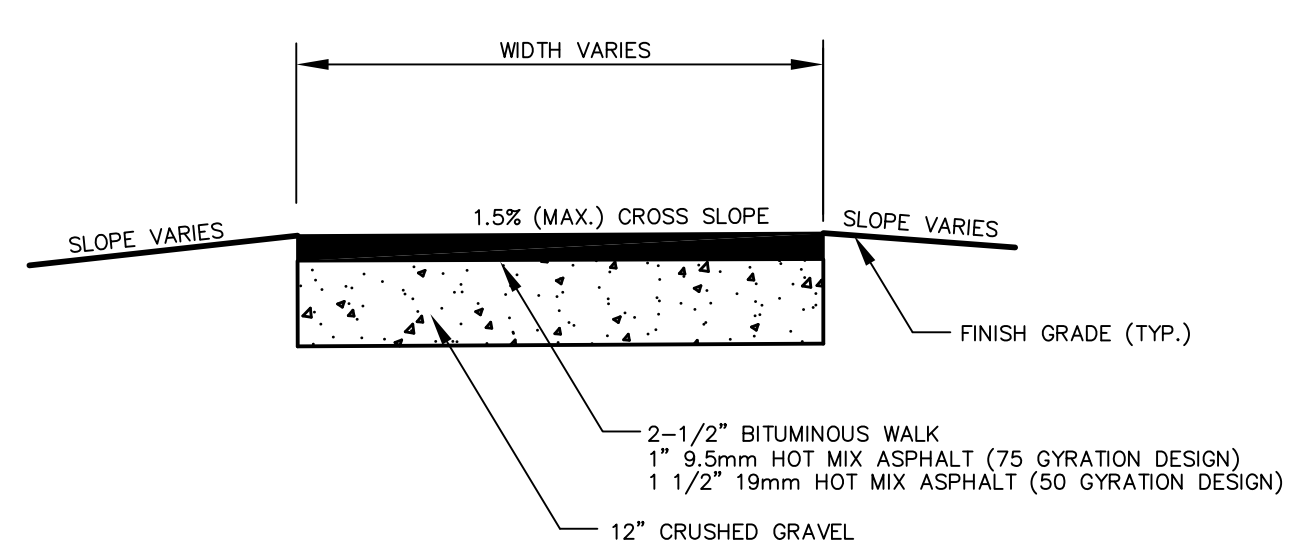
NOTE:

- RAMP CROSS SECTION TO BE THE SAME AS ADJACENT SIDEWALK.
- DIMENSIONS ARE SUBJECT TO CHANGE IN FIELD. ALL SLOPES AND DIMENSIONS TO COMPLY WITH A.D.A. REQUIREMENTS.

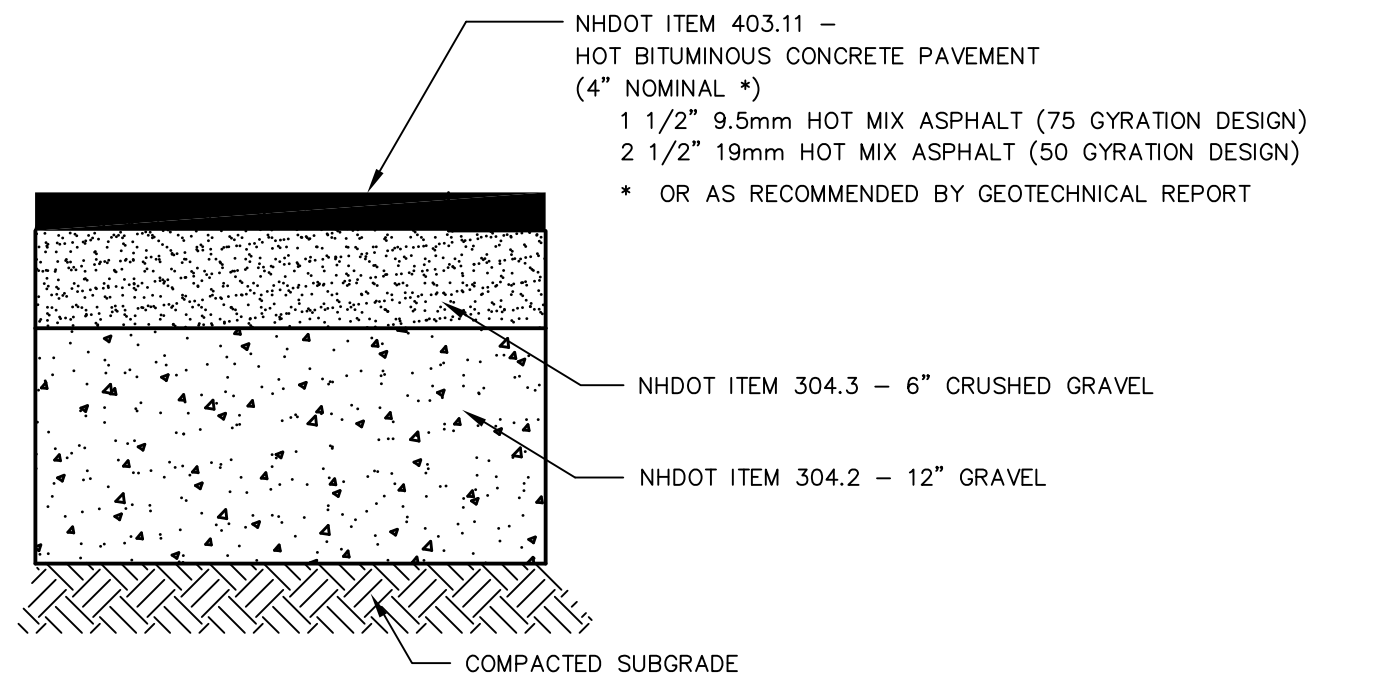
CURB CUT TYPE D
NOT TO SCALE



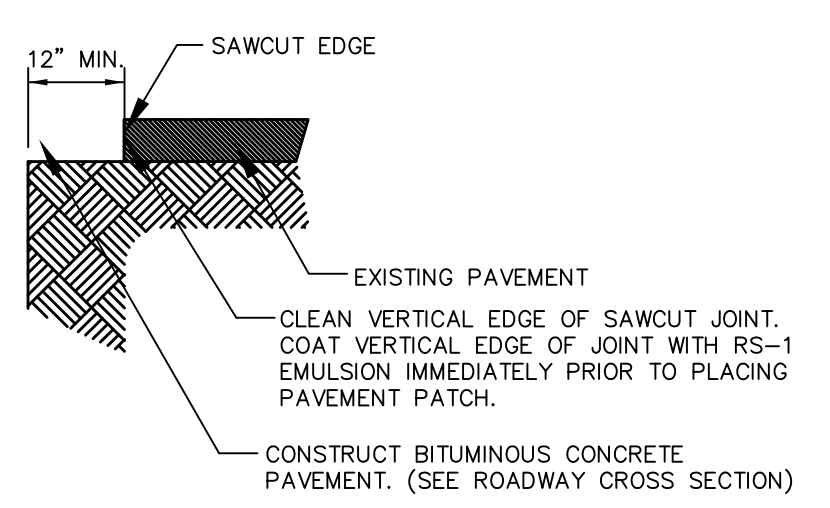
VERTICAL GRANITE CURB
NOT TO SCALE



BITUMINOUS PAVEMENT SIDEWALK DETAIL
NOT TO SCALE



BITUMINOUS PAVEMENT DETAIL
NOT TO SCALE



TYPICAL PAVEMENT SAWCUT DETAIL
NOT TO SCALE

- NOTES:**
- SEE PLANS FOR CURB LOCATION.
 - ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
 - MINIMUM LENGTH OF CURB STONES = 3'
 - MAXIMUM LENGTH OF CURB STONES = 10'
 - MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES - SEE CHART.
 - CURB ENDS TO ROUNDED AND BATTERED FACES TO BE CUT WHEN CALLED FOR ON THE PLANS.

RADIUS	MAX. LENGTH
21'	3'
22'-28'	4'
29'-35'	5'
36'-42'	6'
43'-49'	7'
50'-56'	8'
57'-60'	9'
OVER 60'	10'

FINAL APPROVAL BY DURHAM PLANNING BOARD.
CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
CERTIFIED _____
DATE _____

THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION

ISSUED FOR: APPROVAL

ISSUE DATE: DECEMBER 5, 2017

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	JKC	7/19/17
1	PB RE-SUBMISSION	JKC	10/16/17
2	PB RE-SUBMISSION	JKC	12/05/17

DRAWN BY: _____ RMB
APPROVED BY: _____ JKC
DRAWING FILE: 4836DS.DWG

SCALE: N.T.S.

LAND OWNER - SUBJECT PARCEL:
ROCKINGHAM PROPERTIES 1, LTD
P.O. BOX 423
BELMONT, MA 02178

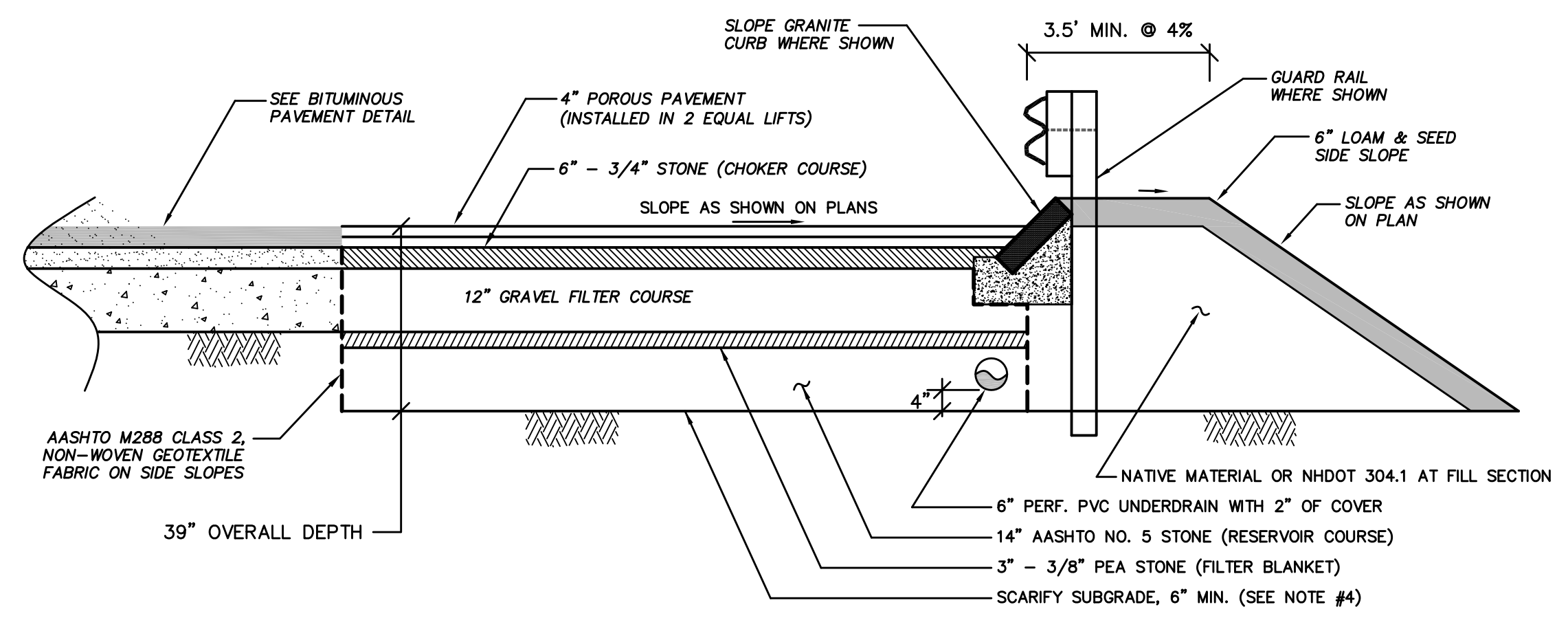
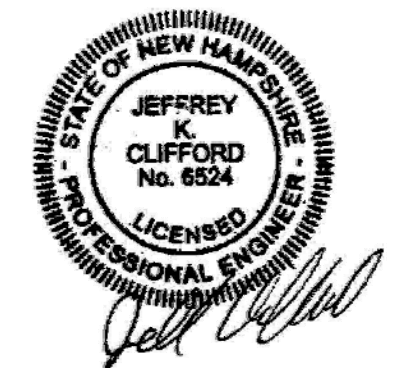
APPLICANT:
THE RIVERWOODS GROUP
7 RIVERWOODS DRIVE
EXETER, NH 03833

PROJECT:
RIVERWOODS DURHAM
STONE QUARRY DRIVE
DURHAM, NH

TITLE:

DETAIL SHEET

SHEET NUMBER:
C - 6.5



MATERIAL GRADATIONS

RESERVOIR COURSE

SIEVE SIZE	% PASSING BY WEIGHT
1-1/2"	100
1"	90 - 100
3/4"	20 - 55
1/2"	0 - 10
3/8"	0 - 5

CHOKER COURSE STONE

SIEVE SIZE	% PASSING BY WEIGHT
1-1/2"	100
1"	95 - 100
1/2"	25 - 60
# 4	0 - 10
# 8	0 - 5

FILTER BLANKET

SIEVE SIZE	% PASSING BY WEIGHT
1/2"	100
3/8"	85 - 100
# 4	10 - 30
# 8	0 - 10
# 16	0 - 5

GRAVEL FILTER COURSE

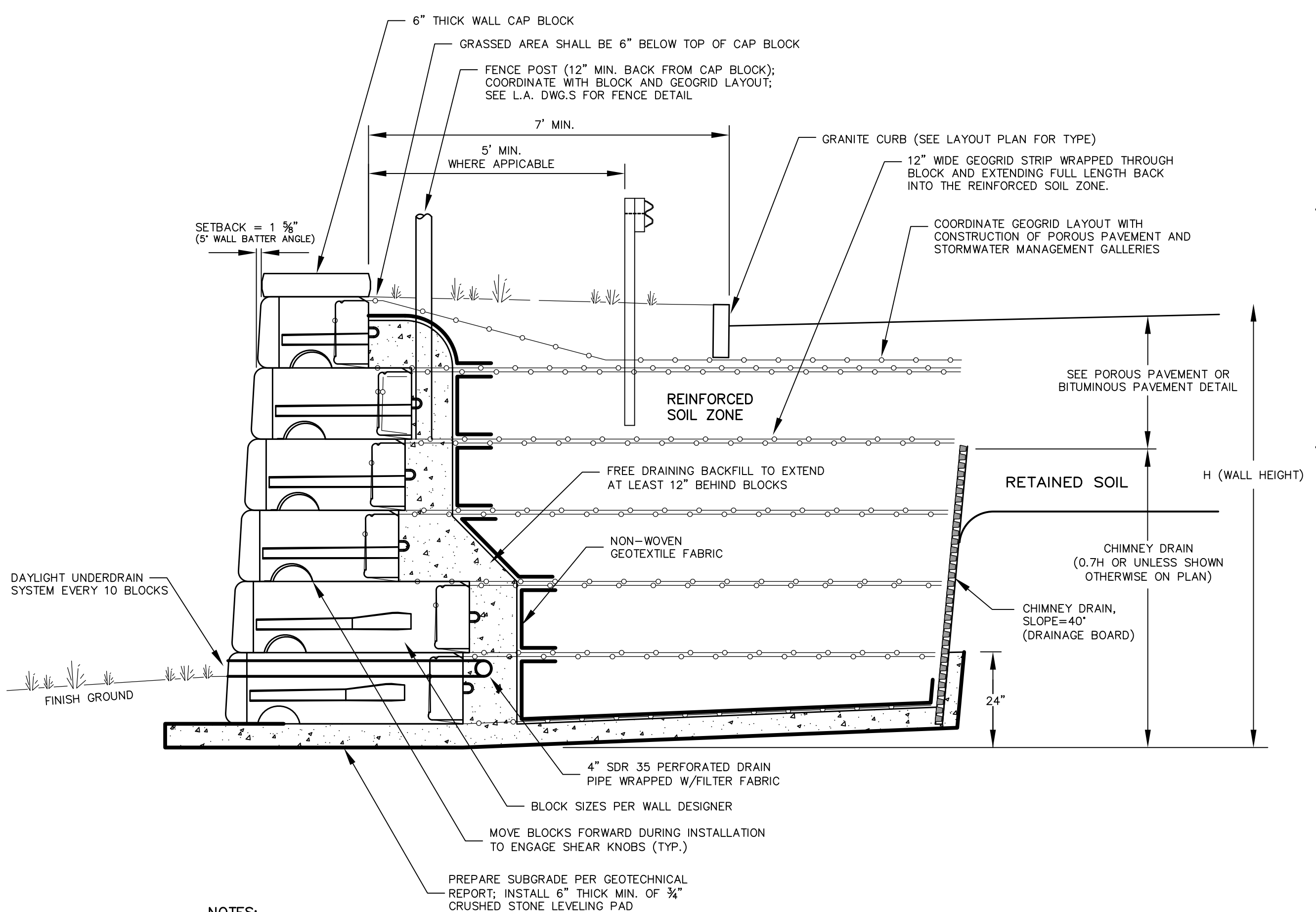
SIEVE SIZE	% PASSING BY WEIGHT
6"	100
# 4	70 - 85
# 200	0 - 6

POROUS PAVEMENT DETAIL

NOT TO SCALE

NOTES:

- CONTRACTOR SHALL PROVIDE SUBMITTALS FOR POROUS PAVEMENT AS NOTED IN THE SPECIFICATIONS A MINIMUM OF 14-DAYS PRIOR TO COMMENCING CONSTRUCTION.
- CONTRACTOR SHALL NOTIFY ENGINEER A MINIMUM OF 7 DAYS IN ADVANCE OF WORK SO THAT THE ENGINEER CAN OBSERVE INSTALLATION OF POROUS PAVEMENT CROSS SECTION.
- CONTRACTOR TO REMOVE ANY EXISTING BURIED LAYERS OF LOAM OR UNSUITABLE MATERIAL DURING THE EXCAVATION OF THE PARKING AREA AND/OR WHENEVER ENCOUNTERED IN TRENCHES.
- AT AREAS REQUESTED BY ENGINEER, PROOF ROLL PRIOR TO SCARIFYING THE SUBGRADE.



NOTES:

- RETAINING WALL TO BE EQUAL TO REDI-ROCK SYSTEM, WWW.EDI-ROCK.COM OR APPROVED EQUAL.
- INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
- WALLS AND OPTIONAL REINFORCEMENT TO BE DESIGNED AND STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN NH.
- DO NOT SCALE DRAWING.
- GEOTECHNICAL ENGINEER TO REVIEW THE WALL SHOP DRAWINGS AND THE SUBGRADE.
- CONSTRUCTION OF WALL SHALL BE COORDINATED WITH CONSTRUCTION OF POROUS PAVEMENT AND STORMWATER MANAGEMENT GALLERIES.

TYPICAL LARGE BLOCK RETAINING WALL DETAIL

NOT TO SCALE

FINAL APPROVAL BY DURHAM PLANNING BOARD.
CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
CERTIFIED _____
DATE _____

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ISSUED FOR: **APPROVAL**

ISSUE DATE: **DECEMBER 5, 2017**

REVISIONS

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APPROVED BY: _____ JKC
DRAWING FILE: 4836DS.DWG

SCALE: **N.T.S.**

LAND OWNER - SUBJECT PARCEL:
ROCKINGHAM PROPERTIES 1, LTD
P.O. BOX 423
BELMONT, MA 02178

APPLICANT:
THE RIVERWOODS GROUP
7 RIVERWOODS DRIVE
EXETER, NH 03833

PROJECT:
RIVERWOODS DURHAM
STONE QUARRY DRIVE
DURHAM, NH

TITLE:
DETAIL SHEET

SHEET NUMBER:
C - 6.6



1414 UNDERWOOD AVE.
WAUWATOSA, WI 53215
414.431.3331 TEL
414.431.0331 FAX
WWW.AGARCH.COM
Architecture
Engineering
Planning

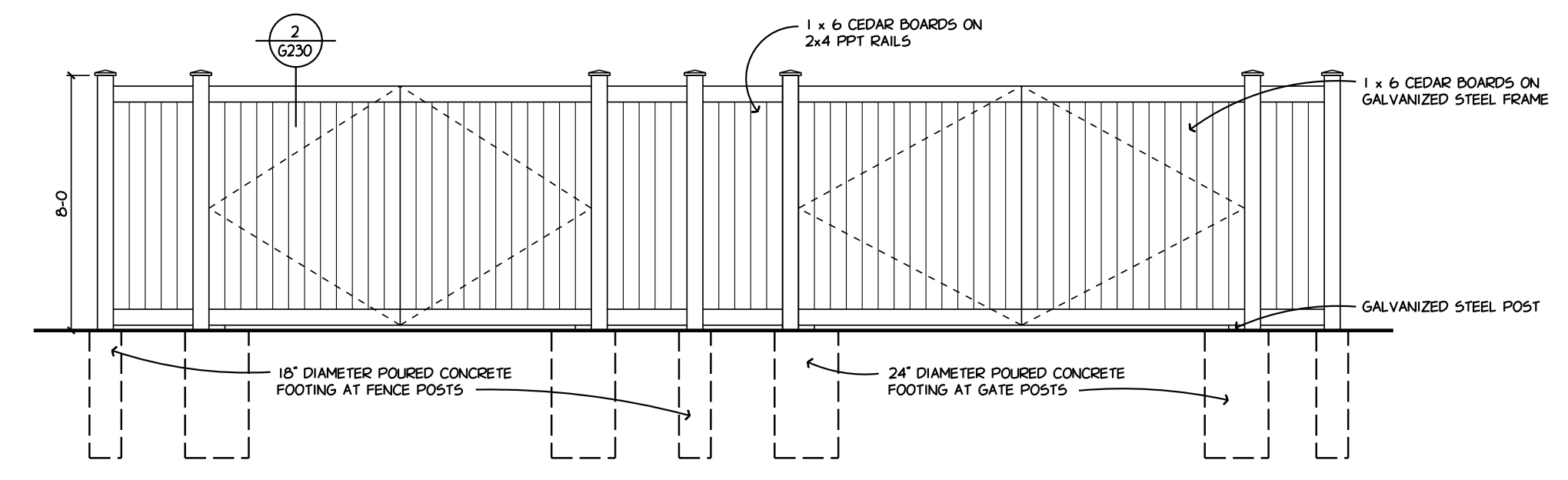
REVISIONS

50% DESIGN DEVELOPMENT
NOT FOR
CONSTRUCTION

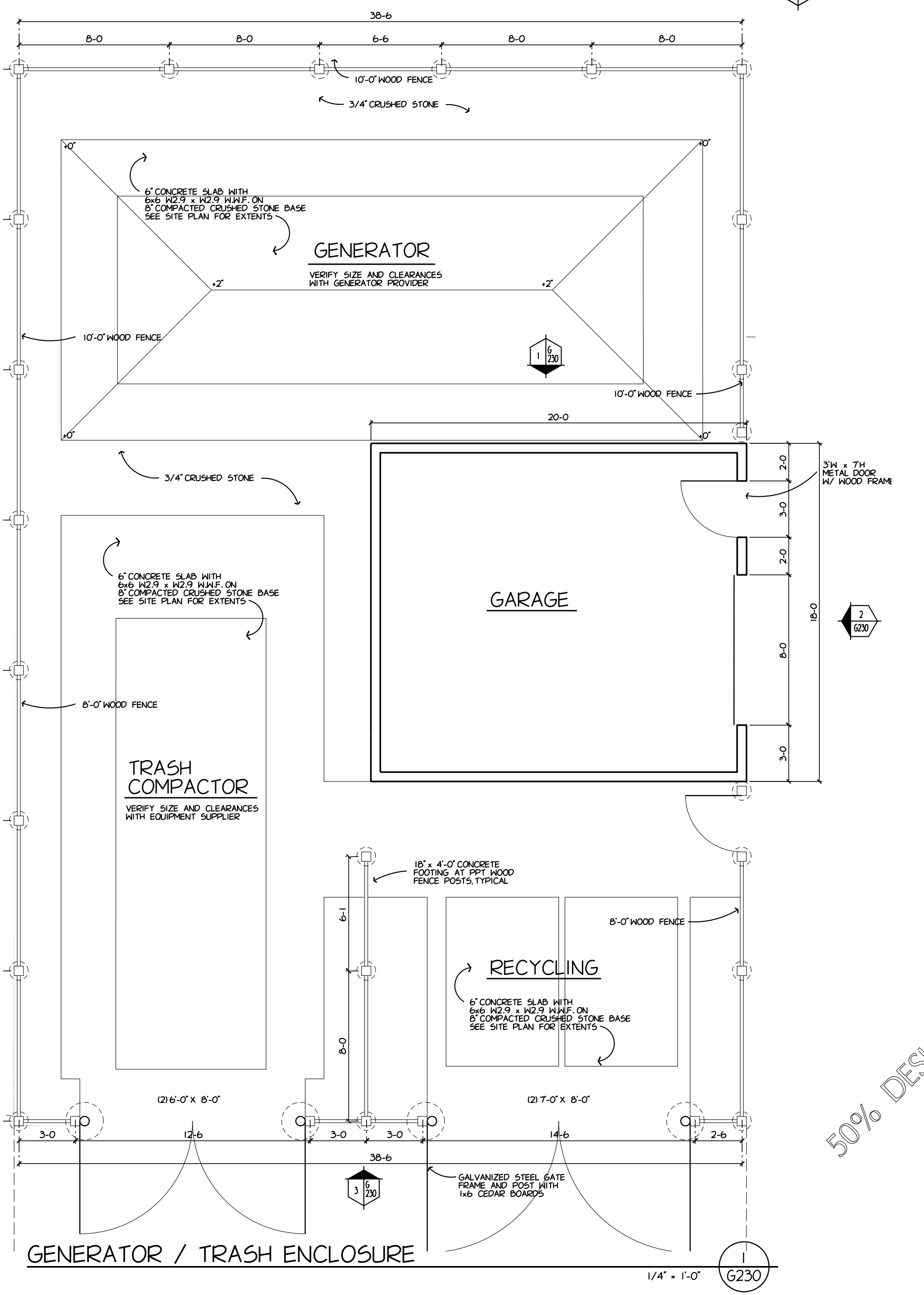
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DRAWN BY
DRN
DATE
1 DEC 2017
PROJECT
163301
SHEET NO.

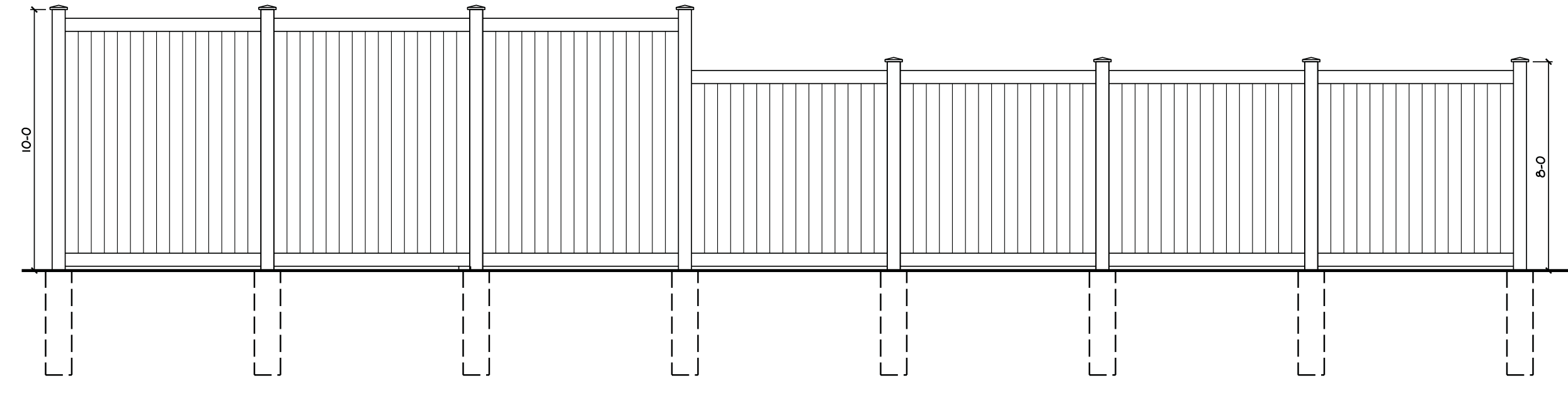
SITE DETAILS G230
TYPICAL



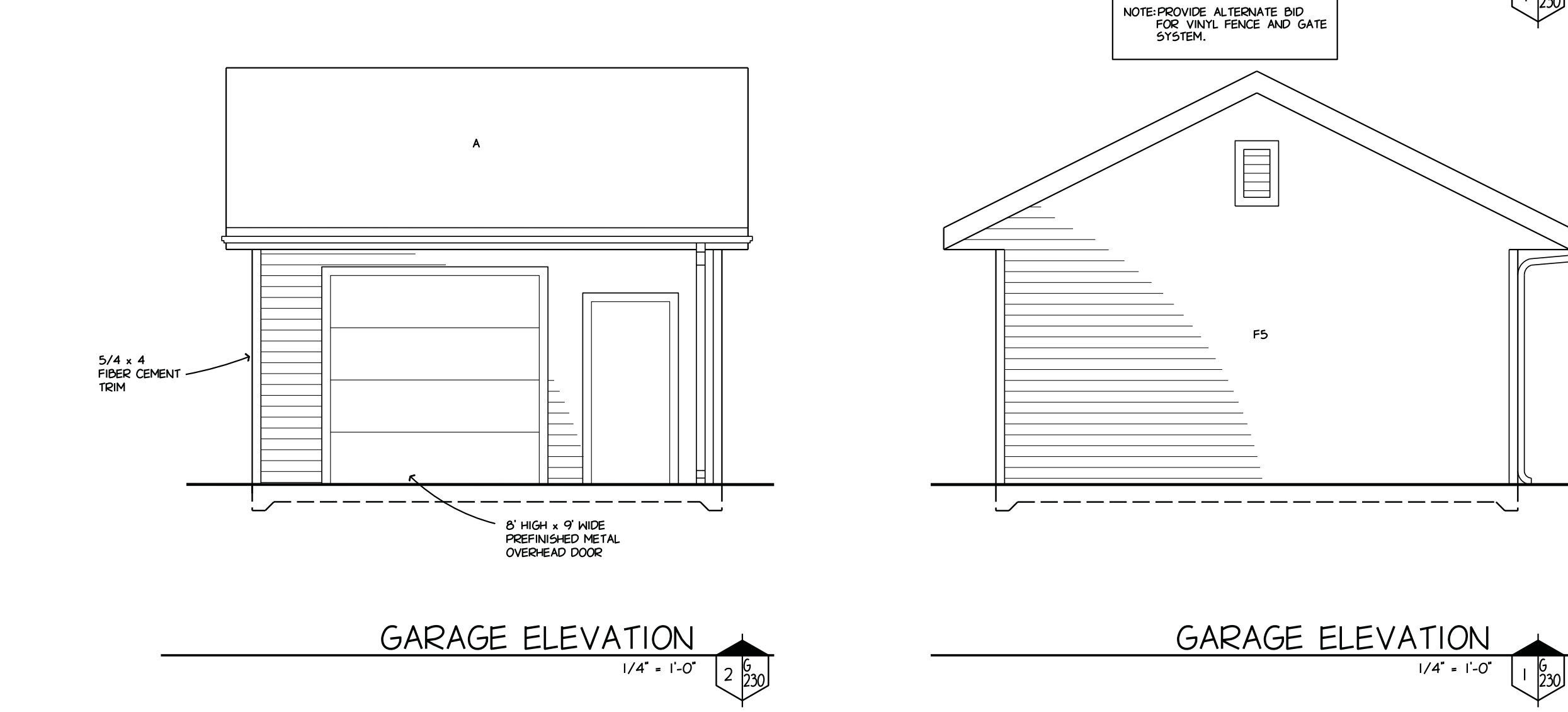
TRASH/GENERATOR ENCLOSURE ELEVATION



GENERATOR / TRASH ENCLOSURE

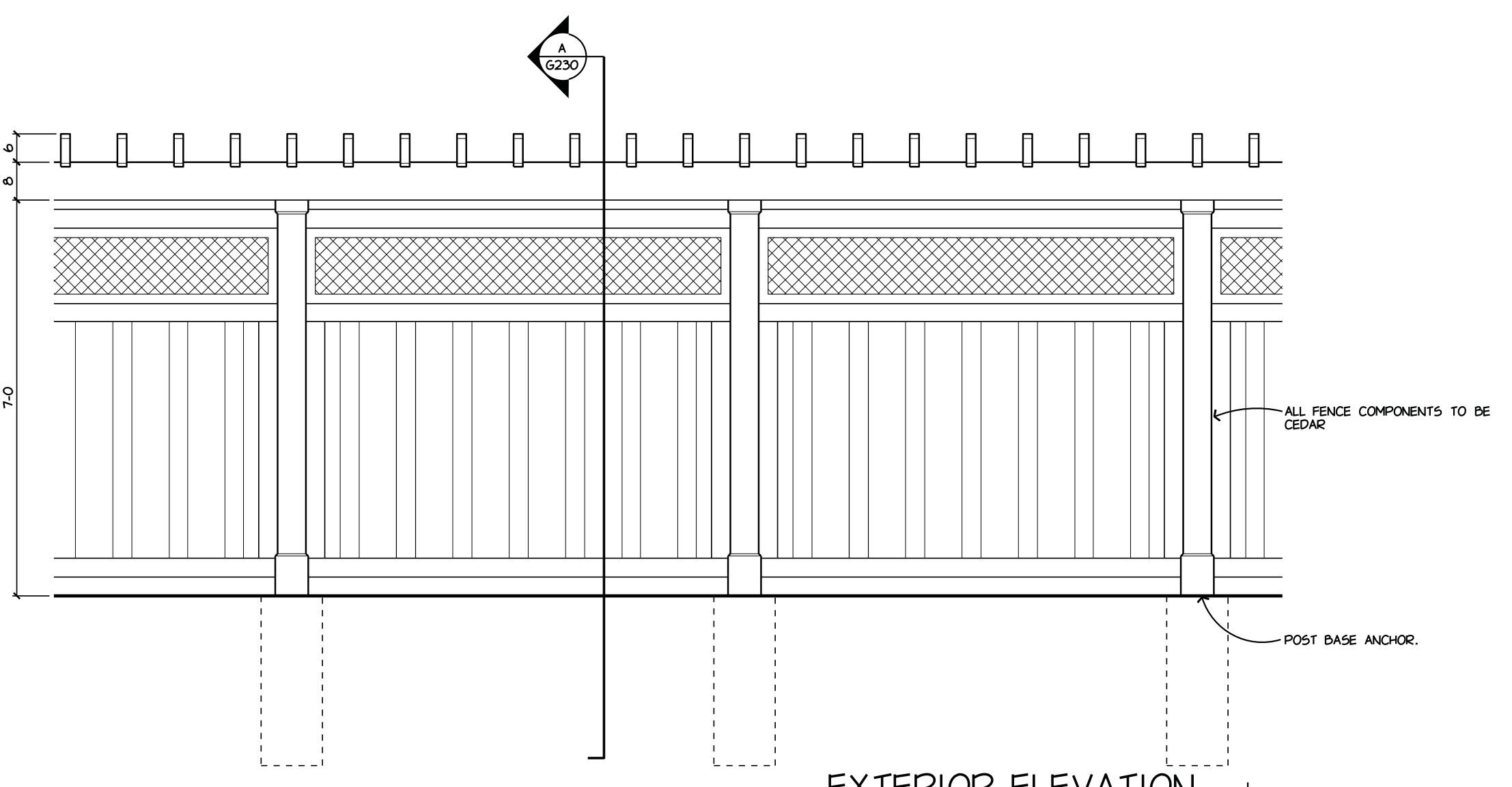


TRASH/GENERATOR ENCLOSURE ELEVATION

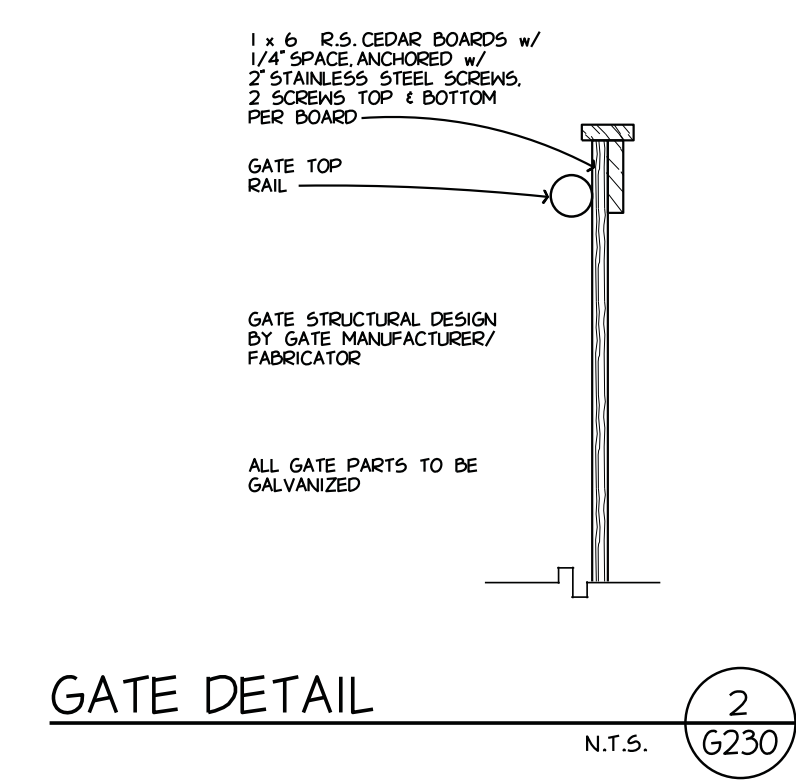


GARAGE ELEVATION

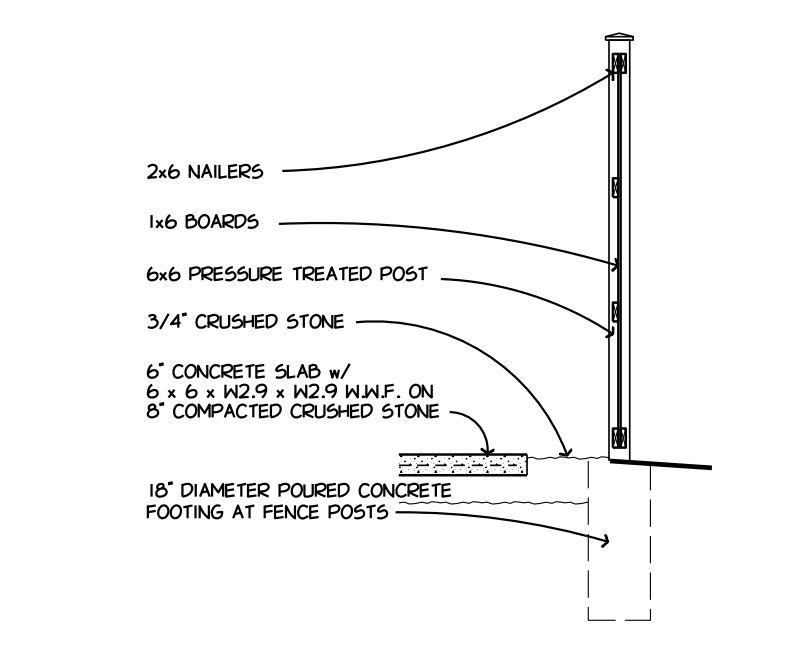
GARAGE ELEVATION



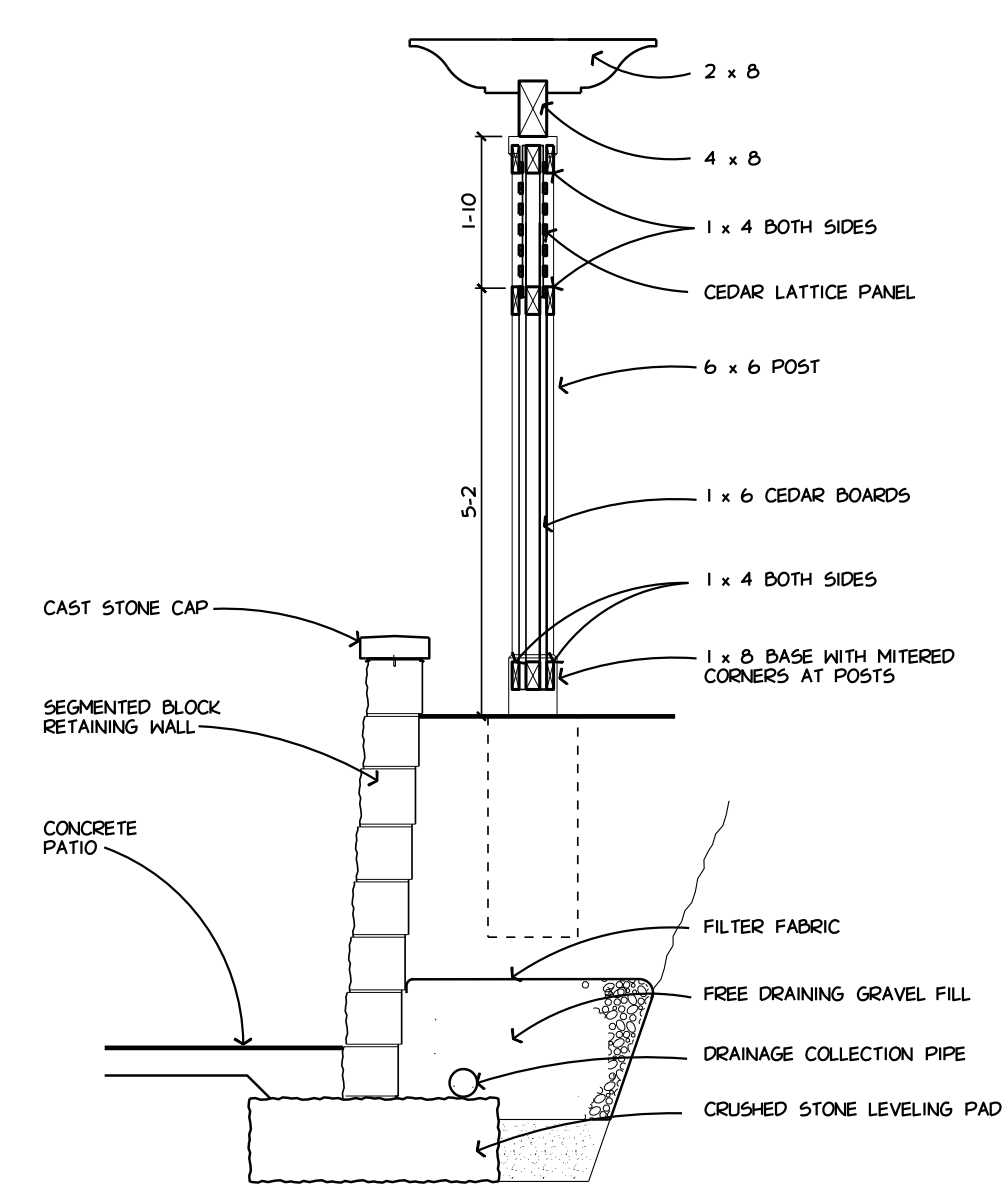
EXTERIOR ELEVATION



GATE DETAIL



SECTION B



FENCE SECTION A

PLOT NUMBER: 163301-01
 SHEET: 11 OF 11
 DATE: 11/20/17
 PROJECT: 163301-01
 DRAWING: 163301-01-01