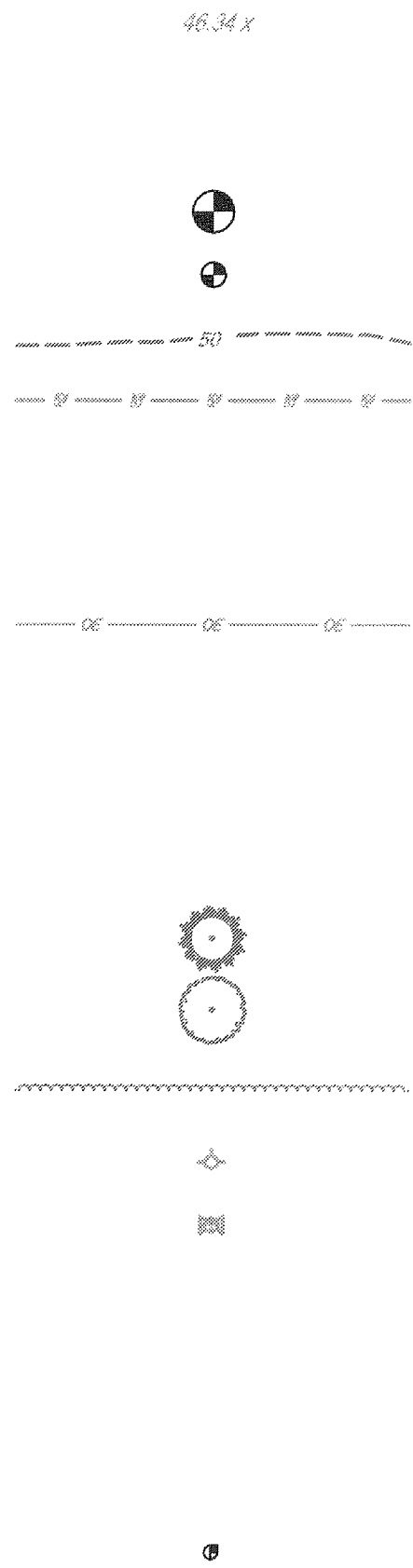
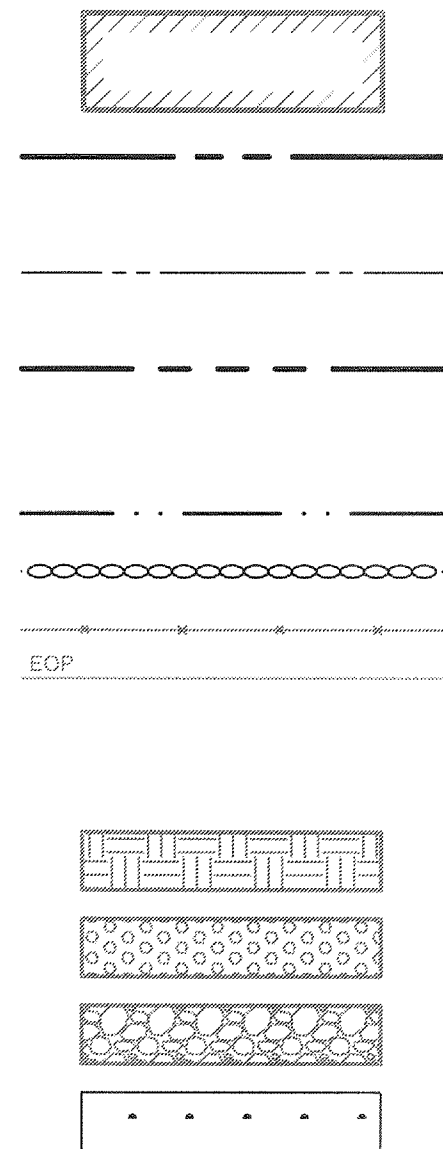


ABBREVIATIONS	
ADJ	ADJUST
APPROX	APPROXIMATE
BIT	BITUMINOUS
BOS	BOTTOM OF SLOPE
CB	CATCH BASIN
CCB	CAPE COD BERM
CLDI	CEMENT LINED DUCTILE IRON
C.L.F.	CHAIN LINK FENCE
CONC	CONCRETE
COND	CONDUIT
DCB	DOUBLE CATCH BASIN
DH	DRILL HOLE
DMH	DRAIN MANHOLE
DS	DOWN SPOUT
ELEV	ELEVATION
EOG	EDGE OF GRASS
EQ	EQUAL
ESHWG	ESTIMATED SEASONAL HIGH GROUND WATER
EXIST	EXISTING
FDN	FOUNDATION
FES	FLARED END SECTION
FND	FOUND
FP	FIRE PROTECTION SERVICE
F&G	FRAME AND GRATE
F&C	FRAME AND COVER
GF	GARAGE FLOOR
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HYD	HYDRANT
INV	INVERT ELEVATION
IP	IRON PIPE
IR	IRON ROD
L/A	LANDSCAPE AREA
MAX	MAXIMUM
MIN	MINIMUM
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OCS	OUTLET CONTROL STRUCTURE
OE	OVERHEAD ELECTRIC
OWS	OIL WATER SEPARATOR
PC	POINT OF CURVATURE
PCC	POINT OF CURVE-CURVE
PERF	PERFORATED
PRC	POINT OF REVERSE CURVE-CURVE
PROP	PROPOSED
PT	POINT OF TANGENT
PVC	POLYVINYL CHLORIDE PIPE
PWW	PAVED WATER WAY
RCP	REINFORCED CONCRETE PIPE
REM	REMOVE
REMOD	REMODEL
RET	RETAIN
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
SGC	SLOPE GRANITE CURB
SMH	SEWER MANHOLE
STR	STRUCTURE
SW	SIDEWALK
TOS	TOP OF SLOPE
TSV&B	TAPPING SLEEVE, VALVE AND BOX
TYP	TYPICAL
UGD	UNDERGROUND DETENTION SYSTEM
UGU	UNDERGROUND UTILITY
VCP	VITRIFIED CLAY PIPE
WCR	WHEEL CHAIR RAMP
WTF	WATER TANK FEED
WQU	WATER QUALITY UNIT




































GENERAL NOTES:

- EXISTING UTILITIES INFORMATION**
- A. BASE PLAN:**
- a. THE LOCUS IS SHOWN ON TOWN OF NEWBURY ASSESSOR'S MAP R-20 LOT 75, LOCATED IN ZONING DISTRICT AGRICULTURAL-RESIDENTIAL (R-AG) AND IS KNOWN AS 55 PEARSON DRIVE (BYFIELD) NEWBURY, MA 01922.
- b. TOPOGRAPHY SHOWN ON THIS PLAN IS A RESULT OF A FIELD SURVEY PERFORMED BY TTI ENVIRONMENTAL, INC. DURING DECEMBER 2015.
- c. DEED REFERENCE: BOOK 34428 PAGE 106, ESSEX COUNTY REGISTRY OF DEEDS.
- d. WETLANDS DELINEATION BY RIMMER ENVIRONMENTAL INC. IN DECEMBER 2015.
- e. TEST PITS PERFORMED BY TTI ENVIRONMENTAL IN NOVEMBER 2015.
- B. REFERENCES**
- a. PLAN BOOK 152, PLAN 63, "DEFINITIVE PLAN, HIGHFIELDS NEWBURY, MASSACHUSETTS, PREPARED BY PORT ENGINEERING ASSOCIATES, INC. DATED AUG. 1978, SCALE: 1"=100";
- b. PLAN BOOK 396, PLAN 5, "APPROVAL NOT REQUIRED PLAN, PIKE DEVELOPMENT LLC, ORCHARD STREET NEWBURY, MASSACHUSETTS, PREPARED BY CAMMETT ENGINEERING, DATED:11-06-05, SCALE: 1"=40'.
- C. UTILITIES:**
- THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE.
- THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE CONTRACTOR IS TO CONTACT "DIG SAFE" AT 1-888-344-7233, 72 HOURS PRIOR TO ANY EXCAVATION PERFORMED ON SITE.
- 2. MATERIALS**
- A. CURBING:**
- ON SITE:**
- ALL CURBING ON SITE SHALL BE SLOPED GRANITE CURB (SGC) WITH A 6 INCH VERTICAL REVEAL, OR CAPE COD BERM (CCB) WITH A 6 INCH VERTICAL REVEAL, UNLESS OTHERWISE NOTED.
- B. BITUMINOUS CONCRETE PAVEMENT:**
- ROADWAYS:**
- SURFACE COURSE: 1-1/2 INCH BITUMINOUS WEARING COURSE
BINDER COURSE: 2-1/2 INCHES BITUMINOUS BINDER COURSE
GRAVEL BASE COURSE: 6 INCHES SELECT COMPACTED DENSE GRADES CRUSHED STONE FOR SUBBASE M2.01.7
GRAVEL BASE COURSE: 6 INCHES SELECT COMPACTED SUBBASE M1.030 TYPE C
- PARKING AREAS & RESIDENTIAL DRIVEWAYS:**
- SURFACE COURSE: 1 INCH BITUMINOUS WEARING COURSE
BINDER COURSE: 2 INCHES BITUMINOUS BINDER COURSE
GRAVEL BASE COURSE: 8 INCHES SELECT COMPACTED GRANULAR FILL
- C. BITUMINOUS CONCRETE SIDEWALK:**
- SURFACE COURSE: 1 INCH BITUMINOUS WEARING COURSE
BINDER COURSE: 1-1/2 INCHES BITUMINOUS BINDER COURSE
GRAVEL BASE COURSE: 8 INCHES SELECT COMPACTED GRANULAR FILL
- D. LANDSCAPE AREAS:**
- ALL DISTURBED AREAS NOT COVERED BY STRUCTURES OR PAVEMENT AND NOT OTHERWISE SPECIFIED ON THE LANDSCAPE PLAN SHALL RECEIVE 6 INCHES OF TOPSOIL. THESE AREAS ARE TO BE SEEDED AND WATERED UNTIL A HEALTHY STAND OF GRASS IS OBTAINED OR MULCHED AS DIRECTED BY THE ARCHITECT.
- E. DISTURBED AREAS:**
- AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
- F. LAYOUT DIMENSIONS:**
- LAYOUT DIMENSIONS ARE FROM FACE OF BUILDINGS, RETAINING WALLS, CURBS OR BERMS.
- G. TRAFFIC CONTROLS:**
- ALL SITE SIGNAGE AND PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
- H. ADA CONFORMANCE:**
- ALL HANDICAPPED ACCESSIBLE RAMPS AND SIDEWALKS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE AMERICANS WITH DISABILITIES ACT AND THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD (WHICHEVER IS MORE RESTRICTIVE).
- 3. UTILITIES**
- A. EXISTING UTILITIES:**
- THE LOCATION AND ELEVATIONS OF EXISTING UTILITIES AS SHOWN ON THESE PLANS ARE BASED ON THE SURVEY NOTED ABOVE AND SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION AND PRIOR TO ORDERING STRUCTURES.
- B. PRIVATE UTILITIES:**
- THE LOCATION, SIZE, DEPTH, AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS PROVIDED BY, AND APPROVED BY, THE RESPECTIVE UTILITY COMPANY (GAS, TELEPHONE OR ELECTRIC). FINAL DESIGN AND LOCATIONS AT THE BUILDING WILL BE PROVIDED BY THE ARCHITECT. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE UTILITY CONNECTIONS WITH THE RESPECTIVE UTILITY COMPANIES PRIOR TO ANY UTILITY CONSTRUCTION OR DEMOLITION.
- C. EXTERIOR LIGHTING:**
- ON-SITE LIGHTING SHALL BE LOCATED AS SHOWN ON THE UTILITY AND LIGHTING PLANS AND CONFORM TO THE PROVIDED DETAILS.
- D. STORM DRAINAGE:**
- STORM DRAIN PIPING SHALL BE HIGH DENSITY POLYETHYLENE PIPE (HDPE) WITH CORRUGATED EXTERIOR, SMOOTH LINED WITH LOCK TIGHT JOINTS UNLESS OTHERWISE NOTED ON THE GRADING & DRAINAGE PLAN.
- E. PROPOSED STRUCTURES:**
- RIM ELEVATIONS OF PROPOSED DRAINAGE MANHOLES AND ASSOCIATED STRUCTURES ARE APPROXIMATE. FINAL ELEVATIONS, ARE TO BE SET FLUSH AND CONSISTENT WITH THE GRADING PLAN. ADJUST ALL OTHER RIM ELEVATIONS OF MANHOLES, WATER GATES, GAS GATES AND OTHER UTILITIES TO FINISH GRADE WITHIN LIMITS OF WORK.
- F. GENERAL CONSTRUCTION REQUIREMENTS:**
- a. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
- b. ALL NECESSARY INSPECTIONS AND/OR CERTIFICATION REQUIRED BY CODES AND/OR UTILITY SERVICE COMPANIES SHALL BE PERFORMED PRIOR TO ANNOUNCED BUILDING POSSESSION AND THE FINAL CONNECTION OF SERVICES.

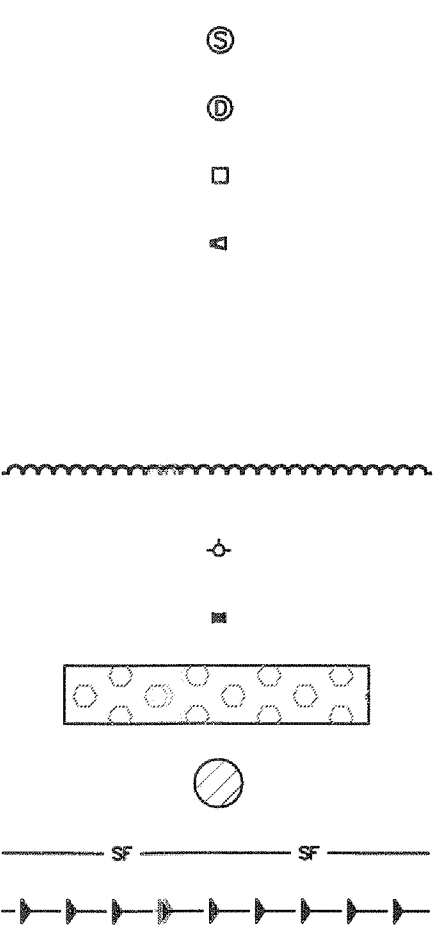
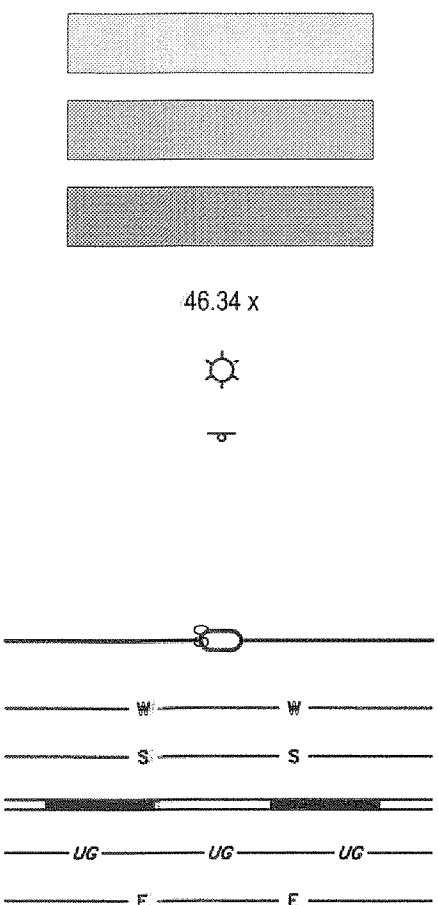
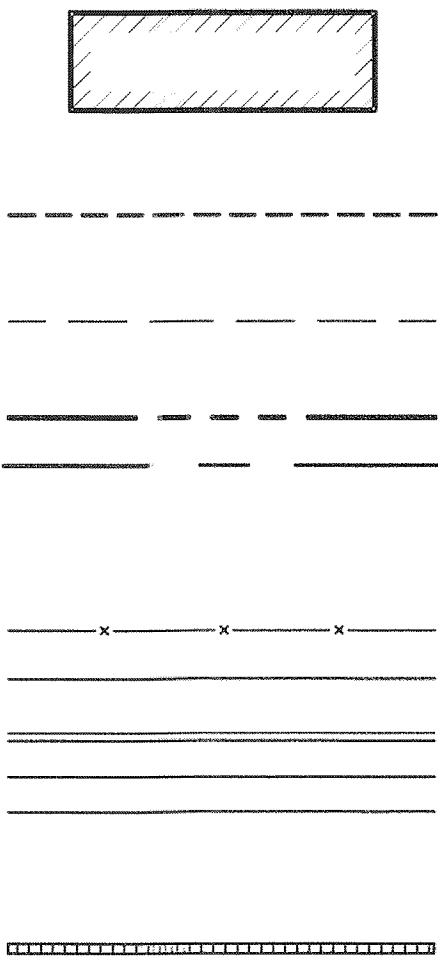
EXISTING



LEGEND

BUILDING	
PROPERTY LINE	
EXCLUSIVE USE AREA	
ADJACENT PROPERTY LINE	
SETBACK LINE	
RIGHT-OF-WAY LINE	
RIGHT-OF-WAY EASEMENT	
ROADWAY CENTERLINE	
WETLAND LINE	
STONE WALL	
FENCE	
EDGE OF PAVEMENT	
SLOPED GRANITE CURB	
SIDEWALK	
OUTCROP/ROCKS	
RETAINING /BOULDER WALL	
GRAVEL	
WETLAND AREA	
BIT. CONC. PAVEMENT	
BIT. CONC. SIDEWALK	
BIT. CONC. DRIVEWAY	
SPOT ELEVATION	46.34 x
LIGHT	
SIGN	
TEST PIT LOCATION	
PERCOLATION LOCATION	
CONTOUR	
WATER LINE DOMESTIC	
SANITARY SEWER	
STORM SEWER	
GAS LINE	
UNDERGROUND ELECTRIC	
OVERHEAD ELECTRIC	
SANITARY MANHOLE	
STORM DRAIN MANHOLE	
STORM DRAIN INLET	
RM DRAIN FLARED END SECTION	
CONIFEROUS TREE	
DECIDUOUS TREE	
TREE LINE	
FIRE HYDRANT	
WATER VALVE	
CONSTRUCTION ENTRANCE	
SILT SACK	
SILT FENCE/SILT SOCK	
HAYBALES	
WETLAND FLAG	

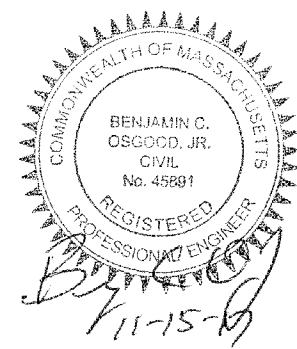
PROPOSED



NOT FOR CONSTRUCTION

**RANGER ENGINEERING &
DESIGN, LLC**
13 Branch Street, Suite 101
Methuen, MA 01844
T 978.435.1324

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR
AND OWNER MUST BE NOTIFIED OF ANY
DISCREPANCIES BEFORE PROCEEDING WITH WORK



BYFIELD ESTATES

BYFIELD (NEWBURY), MA 01922
ASSESSOR'S MAP R-20 LOT 75

LEGEND, NOTES AND ABBREVIATIONS

BYFIELD ESTATES, LLC

2 DEARBORN WAY
MIDDLETON, MA 01949

[illegible]

PROJECT	15-1516
DATE	2017-03-19
DRAWING SCALE	N.T.S.
DRAWN BY	CPH
APPROVED BY	BCO

CS0002



BYFIELD ESTATES
BYFIELD (NEWBURY), MA 01922
ASSESSOR'S MAP R-20 LOT 75

EXISTING CONDITIONS PLAN

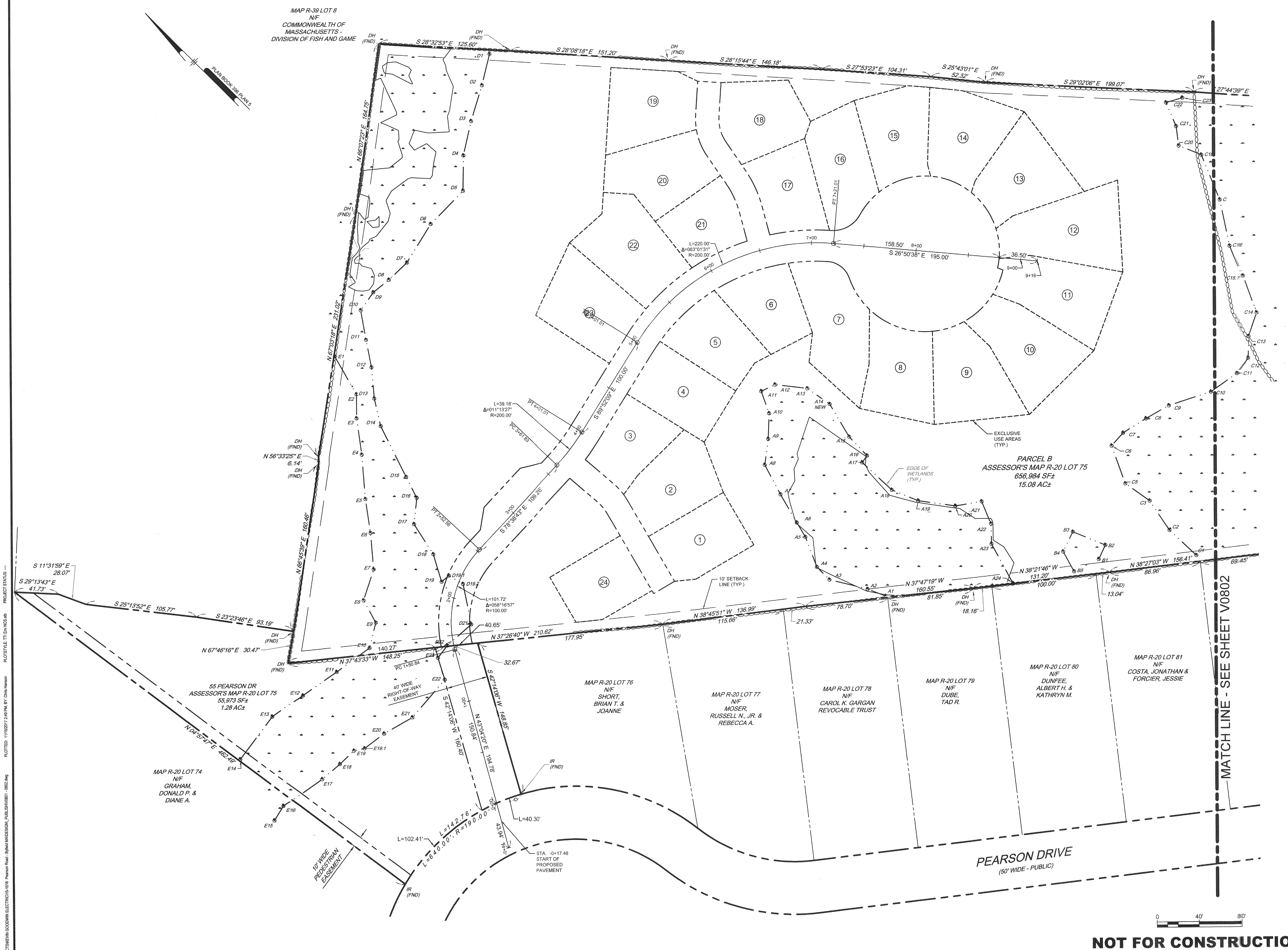
BYFIELD ESTATES, LLC
2 DEARBORN WAY
MIDDLETON, MA 01948

[illegible]

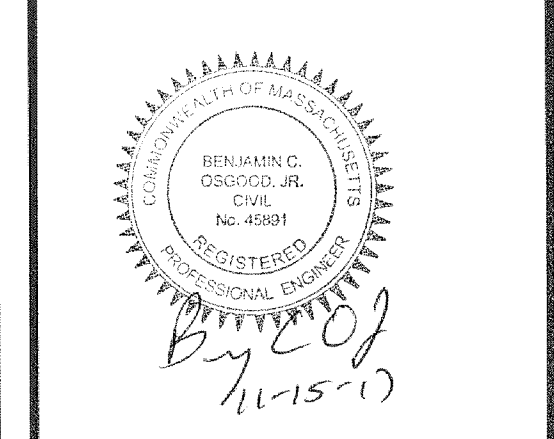
PROJECT	15-1516
DATE	2017-03-22
DRAWING SCALE	1"=40'
DRAWN BY	CPH
APPROVED BY	BCO

CS0201
SHEET 3 OF 17

PROJECT STATUS: —
PI OTSM E- TTEnu MCS 4th
PI OTTED: 11/15/2017 2:47 PM BY: Chris Hanen



RANGER ENGINEERING &
DESIGN, LLC
13 Branch Street, Suite 101
Methuen, MA 01844
T 978.435.1324



BYFIELD ESTATES
BYFIELD (NEWBURY), MA 01922
ASSESSOR'S MAP R-20 LOT 75

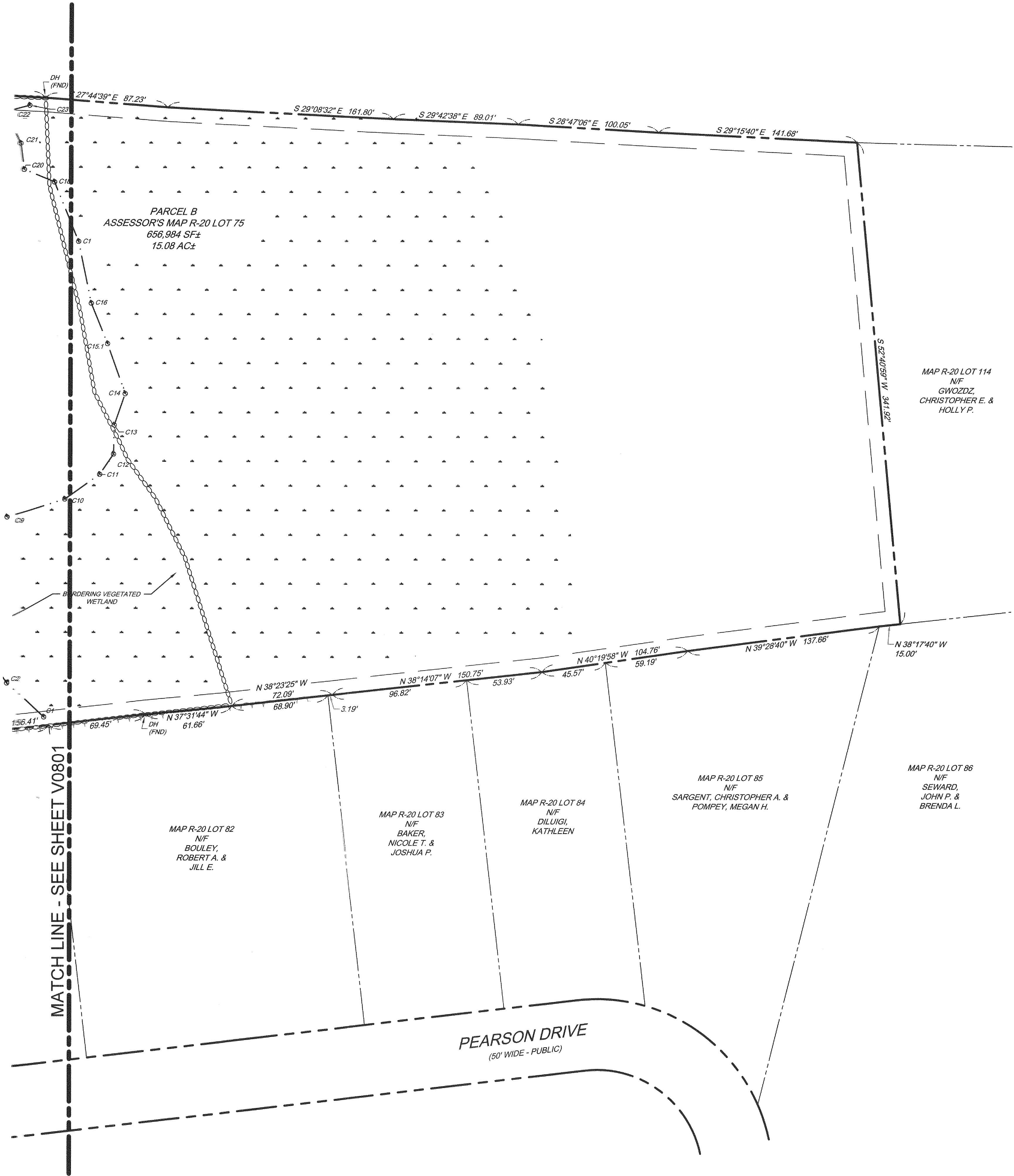
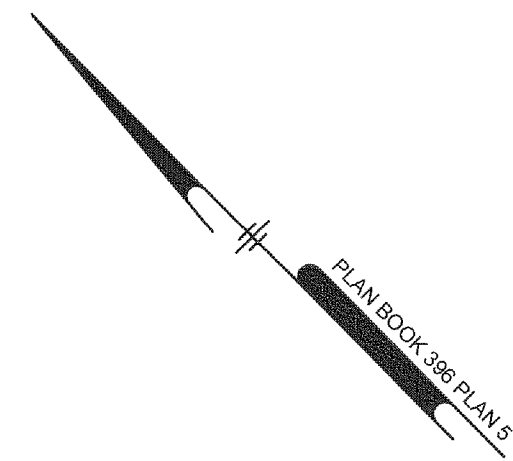
ROADWAY LAYOUT AND PROPERTY LINE PLAN

BYFIELD ESTATES, LLC
2 DEARBORN WAY
MIDDLETON, MA 01860

NO.	DATE	REVISIONS	BY
1	11-15-2017	INITIAL COMMENTS	BCO

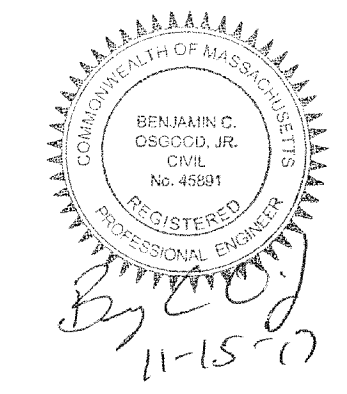
PROJECT 15-1516
DATE 2017-03-22
DRAWING SCALE 1"=40'
DRAWN BY CPH
APPROVED BY BCO

V0801
SHEET 4 OF 17



NOT FOR CONSTRUCTION

RANGER ENGINEERING & DESIGN, LLC
13 Branch Street, Suite 101
Methuen, MA 01844
T 978.435.1324



BYFIELD ESTATES
BYFIELD (NEWBURY), MA 01922
ASSESSOR'S MAP R-20 LOT 75

ROADWAY LAYOUT AND PROPERTY LINE PLAN

BYFIELD ESTATES, LLC
2 DEARBORN WAY
MIDDLETON, MA 01860

DATE	NO.	REVISIONS	BY
11-15-2017	1	INITIAL COMMENTS	BCO

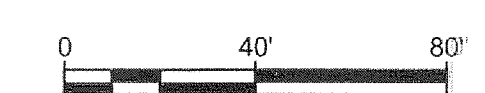
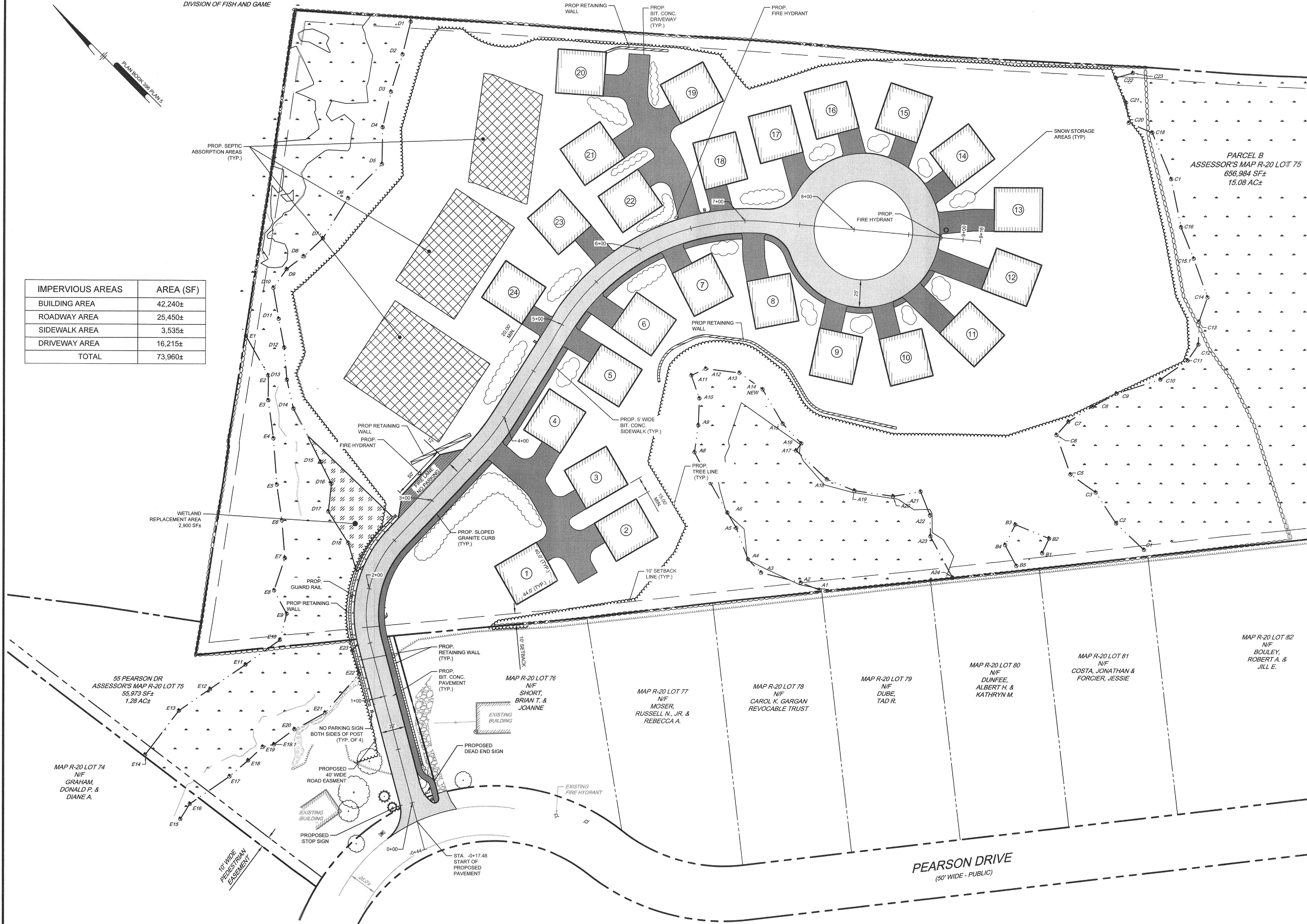
PROJECT	15-1516
DATE	2017-03-22
DRAWING SCALE	1"=40'
DRAWN BY	CPH
APPROVED BY	BCO

V0802
SHEET 5 OF 17

MAP R-39 LOT 8
N/F
COMMONWEALTH OF
MASSACHUSETTS -
DIVISION OF FISH AND GAME

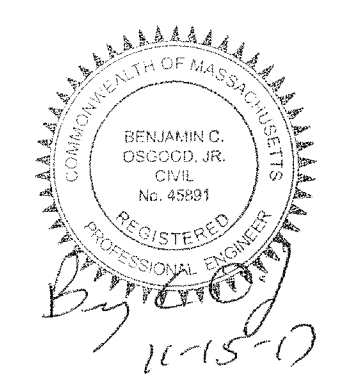
IMPERVIOUS AREAS	AREA (SF)
BUILDING AREA	42,240±
ROADWAY AREA	25,450±
SIDEWALK AREA	3,535±
DRIVEWAY AREA	16,215±
TOTAL	73,960±

Q:\PROJECTS\3001 CS1001\3001 CS1001.dwg 11/15/2017 3:19 PM BY: Chris Heggen PLOT DATE: 11/15/2017 3:19 PM BY: Chris Heggen PROJECT STATUS: — PLOT STYLE: T11.dwt, NCS.ctb



NOT FOR CONSTRUCTION

RANGER ENGINEERING &
DESIGN, LLC
13 Branch Street, Suite 101
Methuen, MA 01844
T 978.435.1324



BYFIELD ESTATES
BYFIELD (NEWBURY), MA 01922
ASSESSOR'S MAP R-20 LOT 75

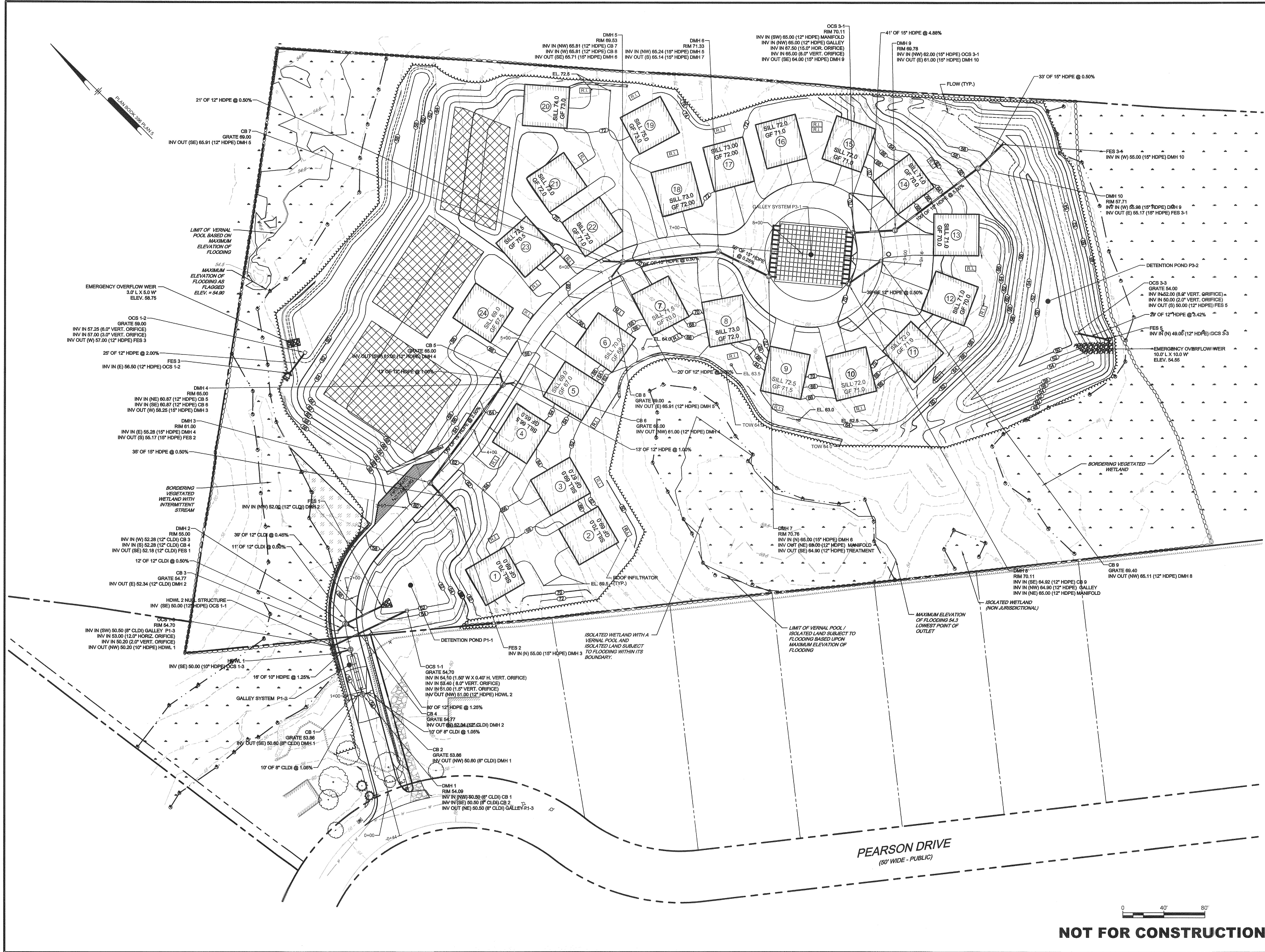
LAYOUT AND MATERIALS PLAN

BYFIELD ESTATES, LLC
2 DEARBORN WAY
MIDDLETON, MA 01849

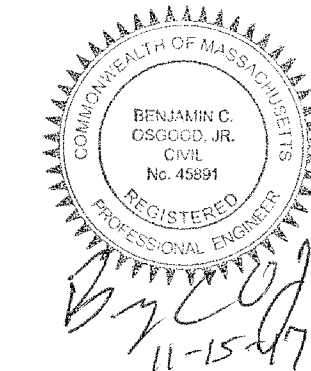
NO.	DATE	INITIAL COMMENTS	BY
1	11-15-2017	REVISIONS	BCO

PROJECT	15-1516
DATE	2017-03-22
DRAWING SCALE	1"=40'
DRAWN BY	JRA
APPROVED BY	BCO
CS1001	
SHEET	6 OF 17

CH00PROJECTS\ENR\G000\DWG\ELECTRICALS-1516 Pearson Road - Byfield Estates.dwg P:\ENR\G000\DWG\ELECTRICALS-1516 Pearson Road - Byfield Estates.dwg
PLOT: 11/03/2017 4:38 PM BY: JRA PLOTSCALE: 1"=40' 11/03/2017 4:38 PM BY: JRA



RANGER ENGINEERING &
DESIGN, LLC
13 Branch Street, Suite 101
Methuen, MA 01844
T 978.435.1324



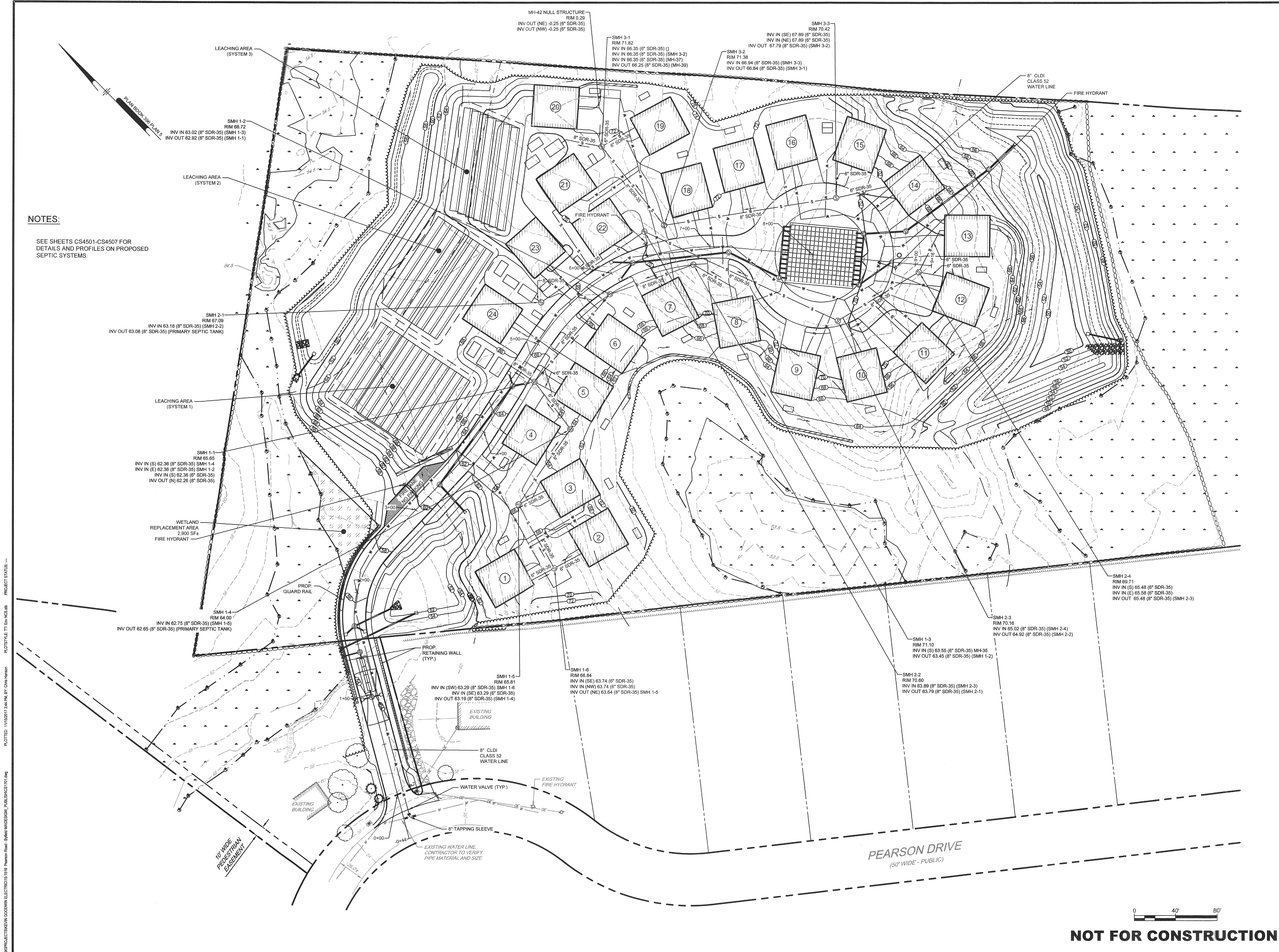
BYFIELD ESTATES
BYFIELD (NEWBURY), MA
ASSESSOR'S MAP R-20 LOT 75

BYFIELD ESTATES, LLC
2 DEARBORN WAY
MIDDLETON MA 01948

GRADING AND DRAINAGE PLAN

NO.	DATE	INITIAL COMMENTS	BY
1	11-15-2017		BCO

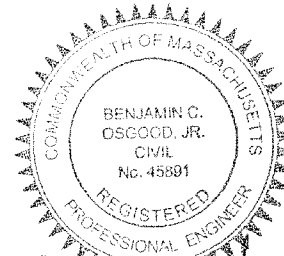
PROJECT	15-1516
DATE	2017-03-22
DRAWING SCALE	1"=40'
DRAWN BY	JRA
APPROVED BY	BCO
SHEET	7 OF 17



NOTES:

SEE SHEETS CS4501-CS4507 FOR
DETAILS AND PROFILES ON PROPOSED
SEPTIC SYSTEMS.

RANGER ENGINEERING &
DESIGN, LLC
13 Branch Street, Suite 101
Methuen, MA 01844
T 978.435.1324



BYFIELD ESTATES
BYFIELD (NEWBURY), MA
ASSESSOR'S MAP R-20 LOT 75
UTILITY PLAN
BYFIELD ESTATES, LLC
2 DEARBORN WAY
MIDDLETON MA 01949

NO.	DATE	REVISIONS	BY
1	11-15-2017	INITIAL COMMENTS	BCO

PROJECT	15-1516
DATE	2017-03-22
DRAWING SCALE	1"=40'
DRAWN BY	JRA
APPROVED BY	BCO

CS1701

SHEET 8 OF 17

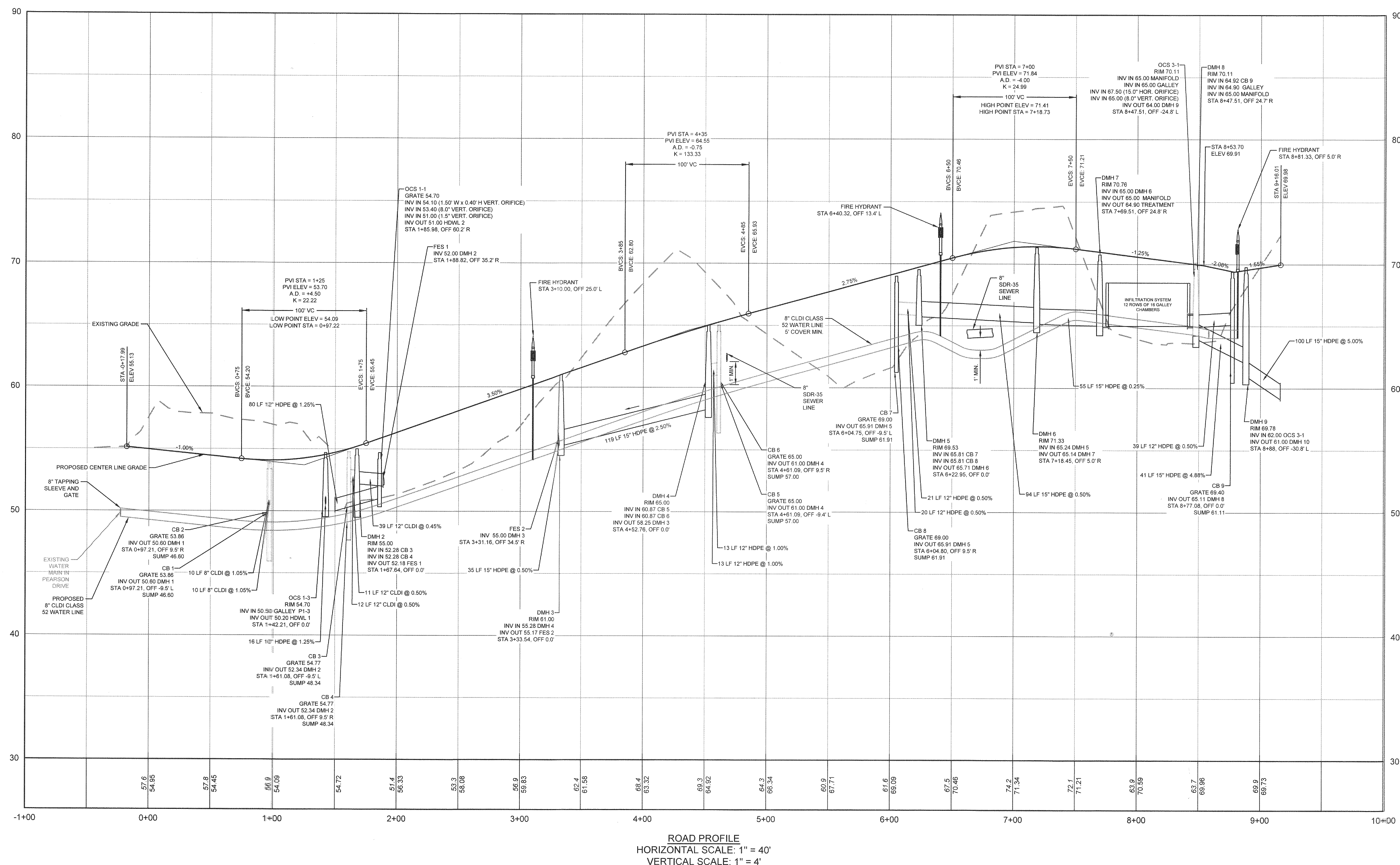
NOT FOR CONSTRUCTION

[illegible]

PROJECT	15-1516
DATE	2017-03-22
DRAWING SCALE	1"=40'
DRAWN BY	JRA
APPROVED BY	BCO

CS3501

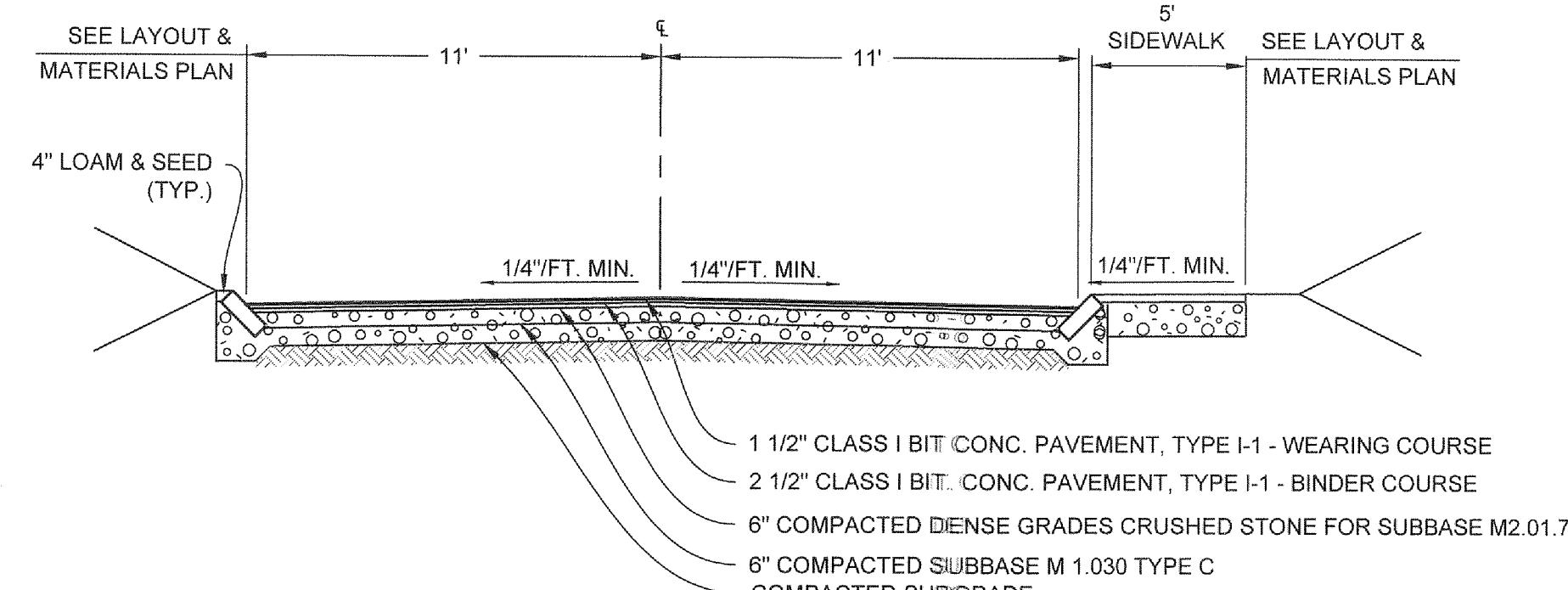
SHEET 9 OF 17



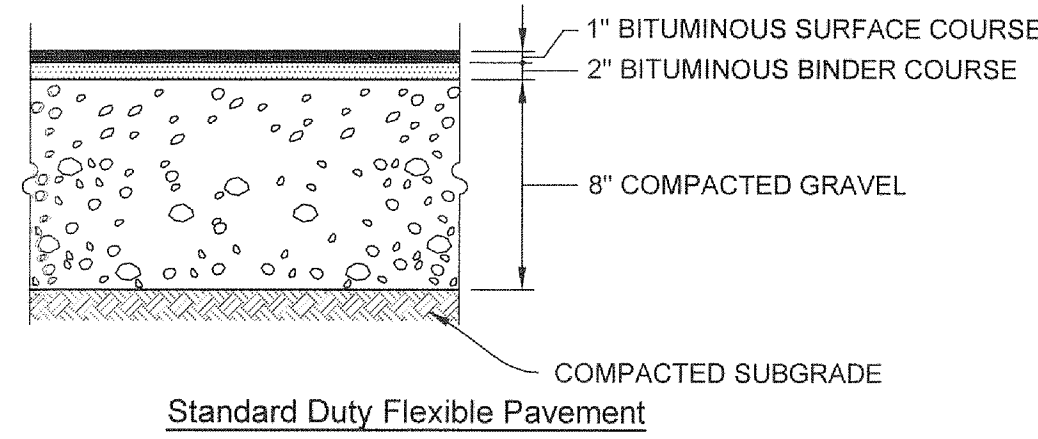
NOTES:

SEE SEPTIC SYSTEM DESIGN PLANS SHEETS CS4501-CS4507.
PLANS TO BE SUBMITTED TO THE BOARD OF HEALTH FOR DETAILS
AND PROFILES FOR PROPOSED SEPTIC SYSTEMS.

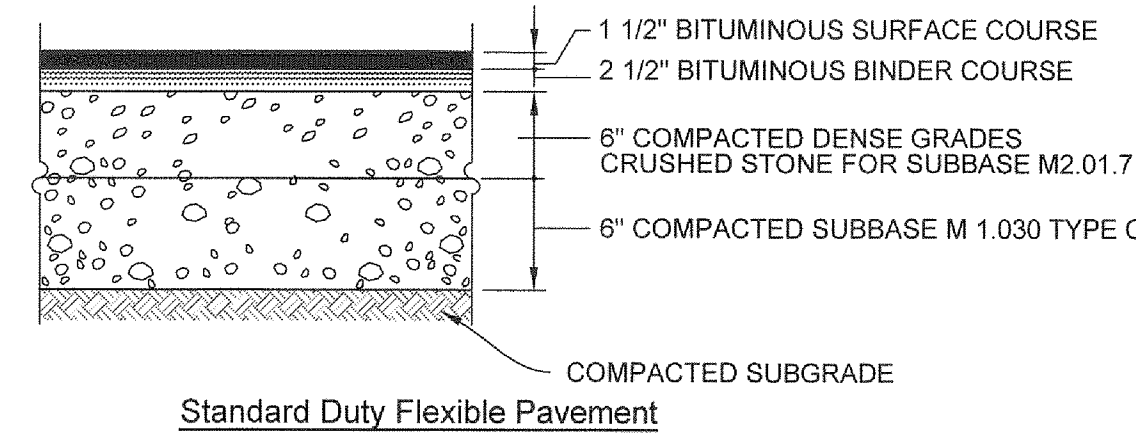
NOT FOR CONSTRUCTION



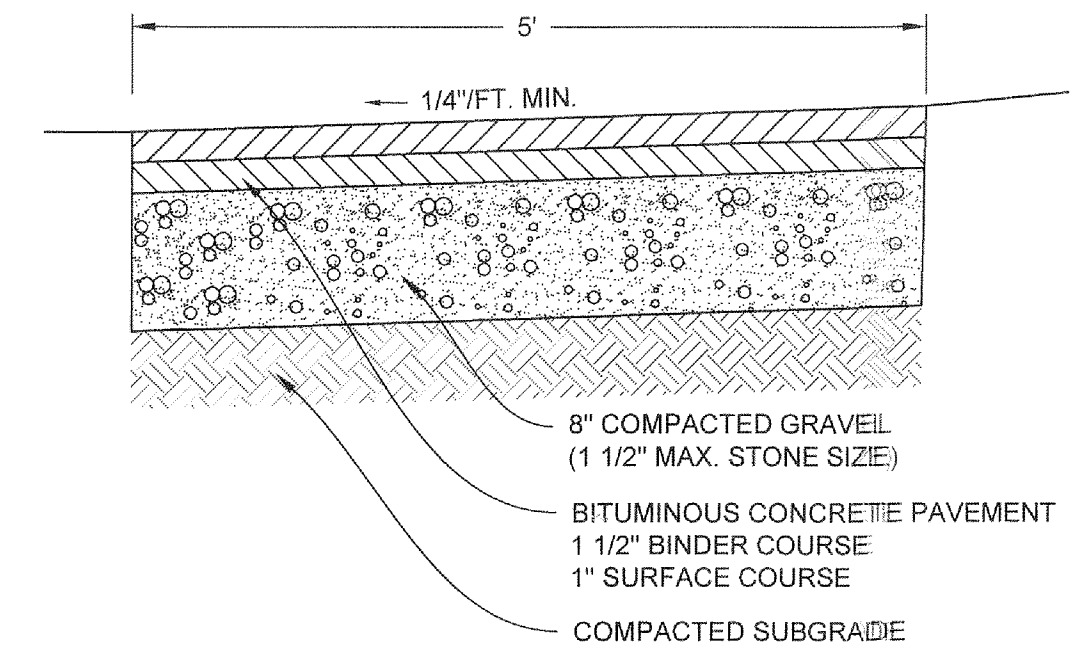
1 TYPICAL ROADWAY CROSS SECTION STA 0+24 - STA 7+46
NOT TO SCALE



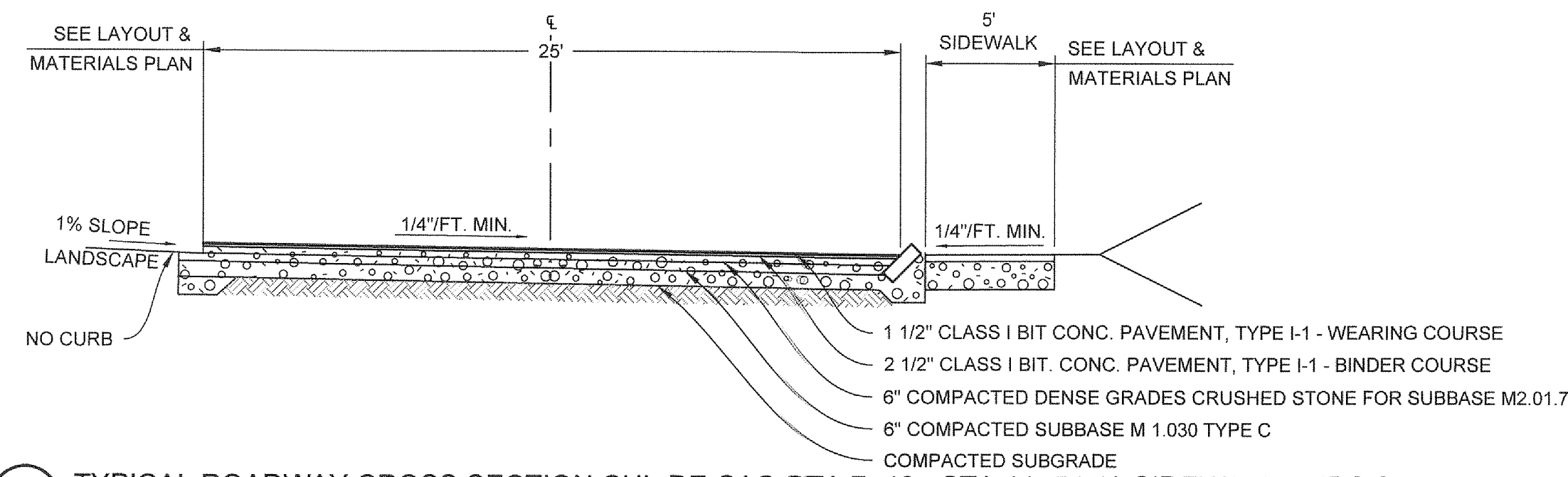
2 BIT. CONC. PAVEMENT SECTIONS
NOT TO SCALE



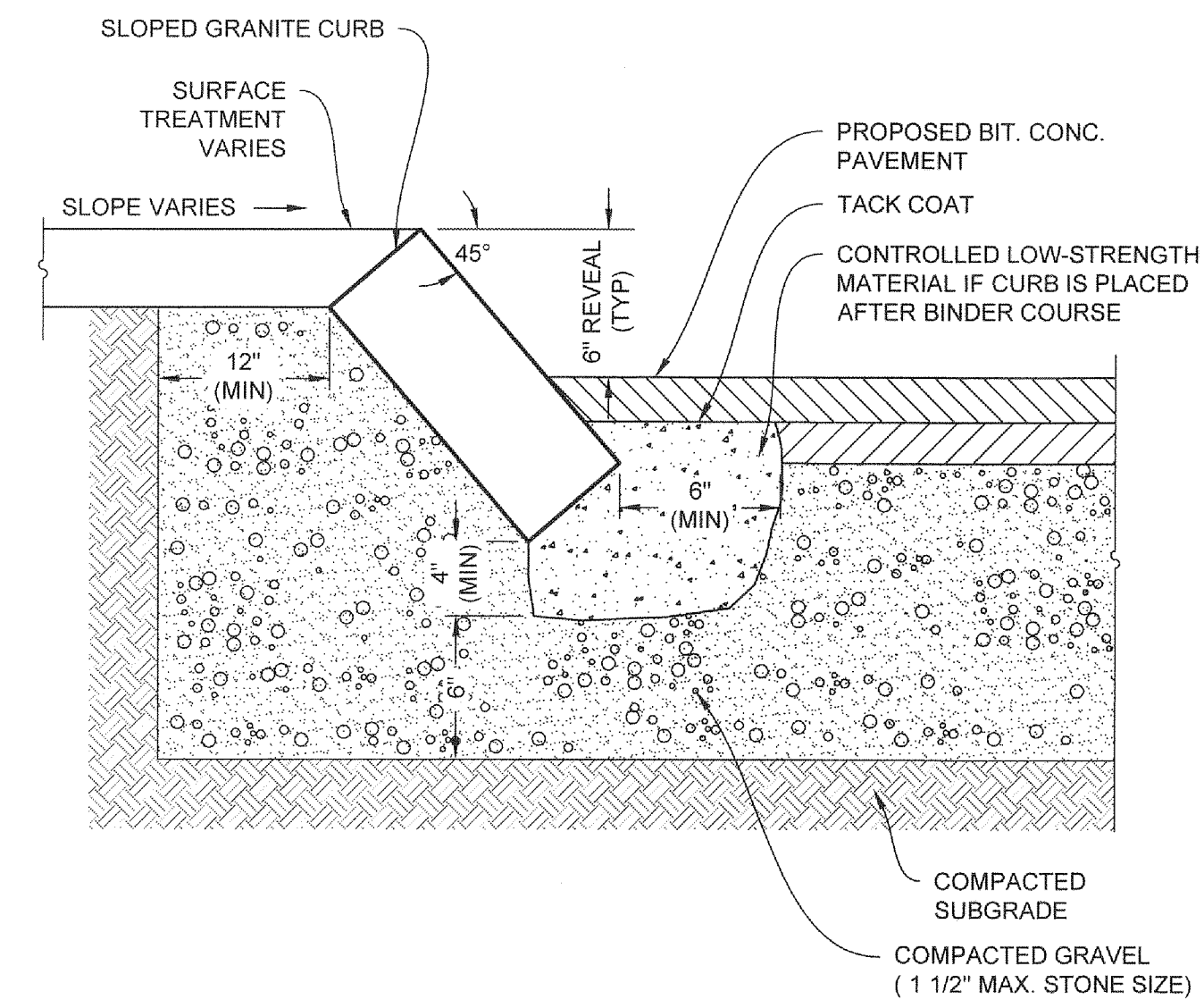
3 BIT. CONC. PAVE. SECTIONS - ROADWAY
NOT TO SCALE



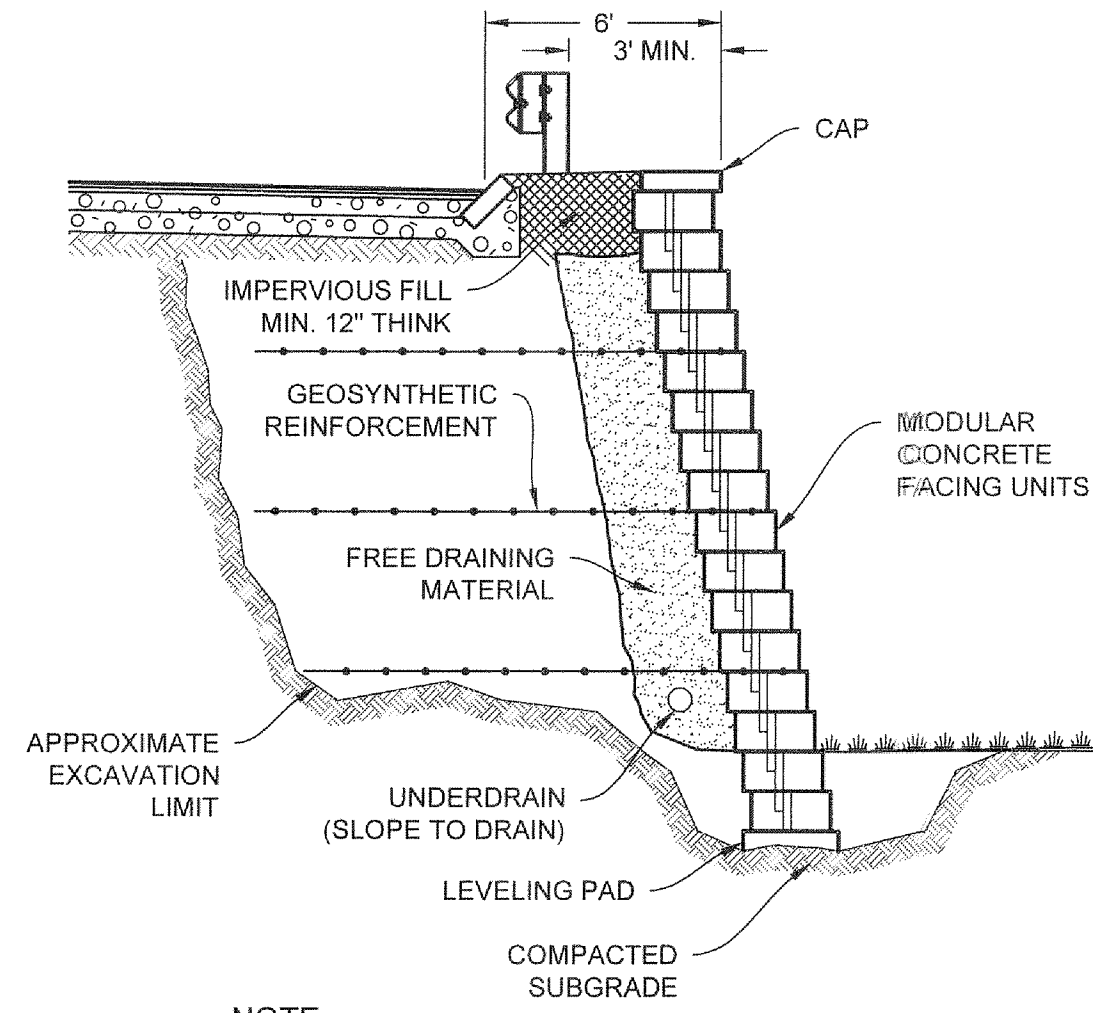
4 TYPICAL SIDEWALK SECTION
NOT TO SCALE



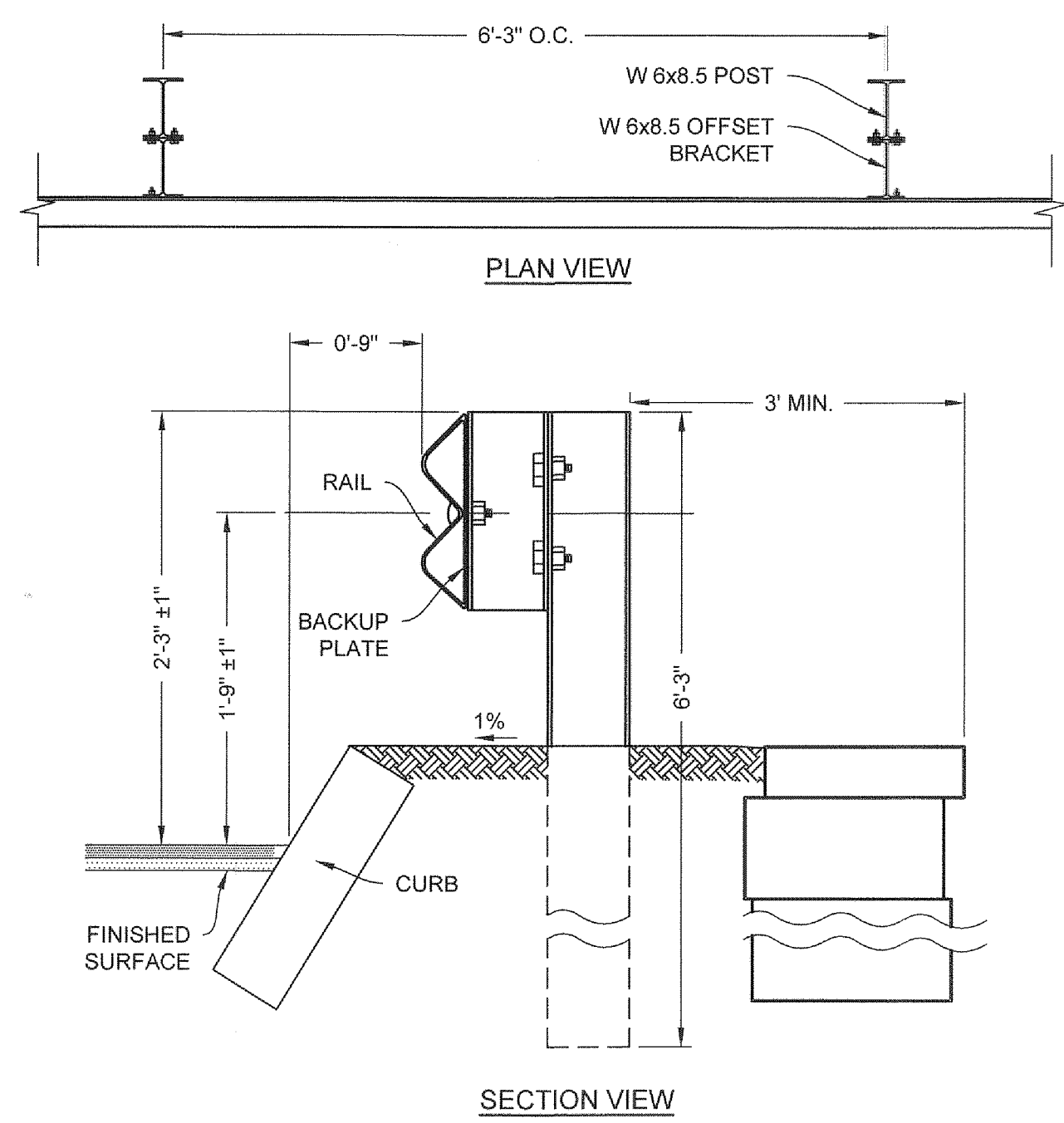
8 TYPICAL ROADWAY CROSS SECTION CUL-DE-SAC STA 7+46 - STA 11+54.49 SIDEWALK ENDS STA 9+75
NOT TO SCALE



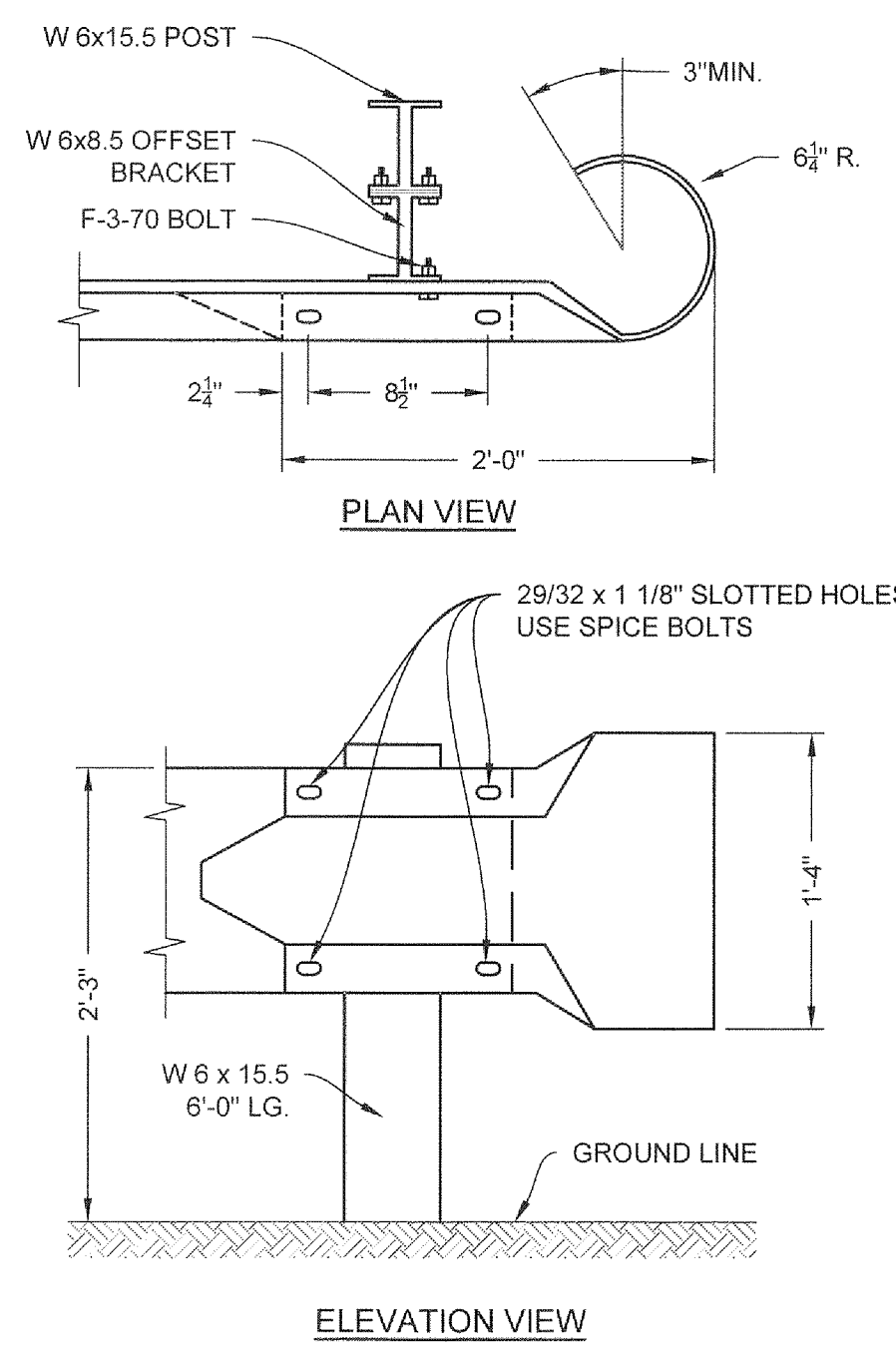
6 SLOPED GRANITE CURB (SGC)
NOT TO SCALE



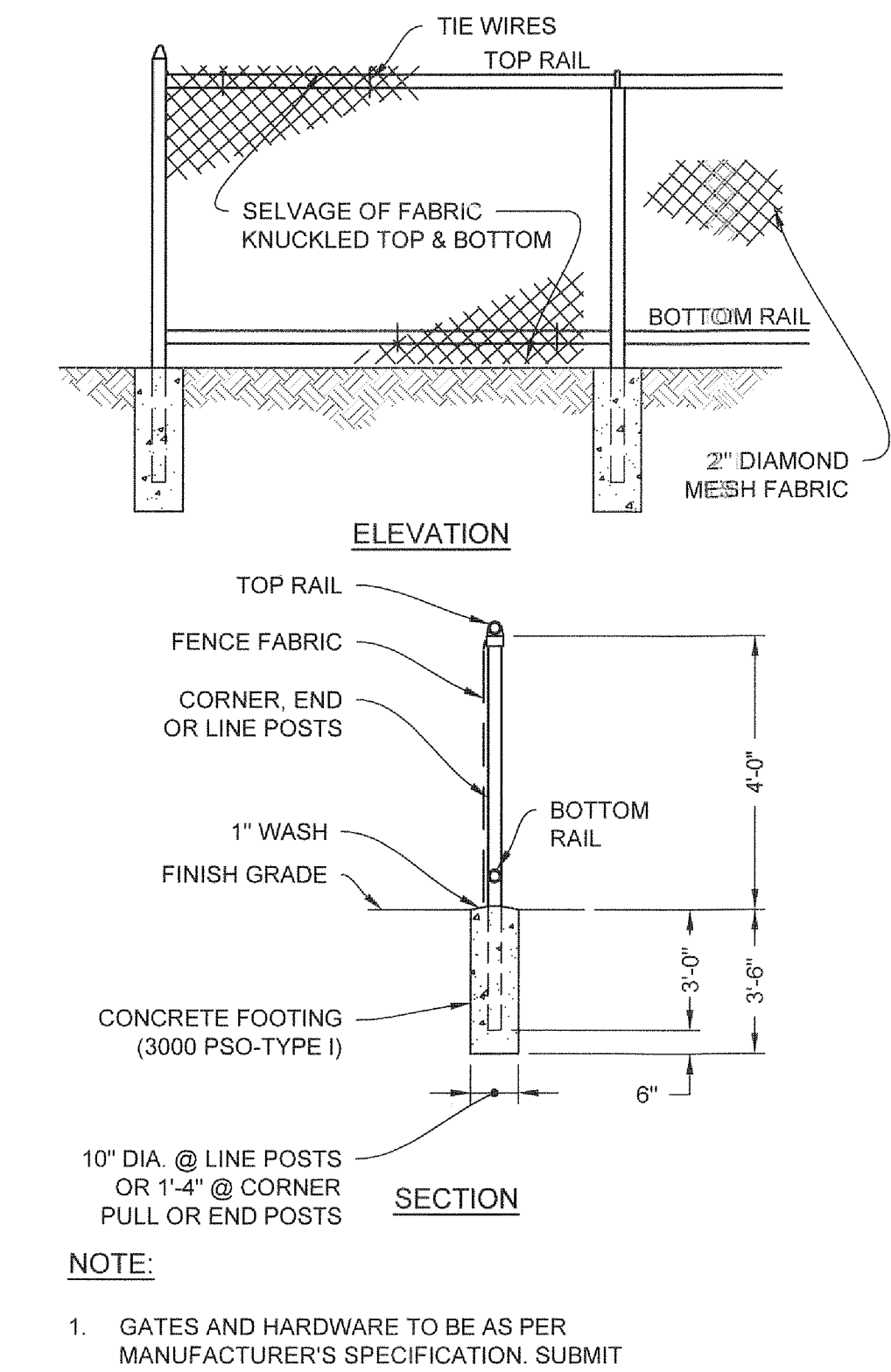
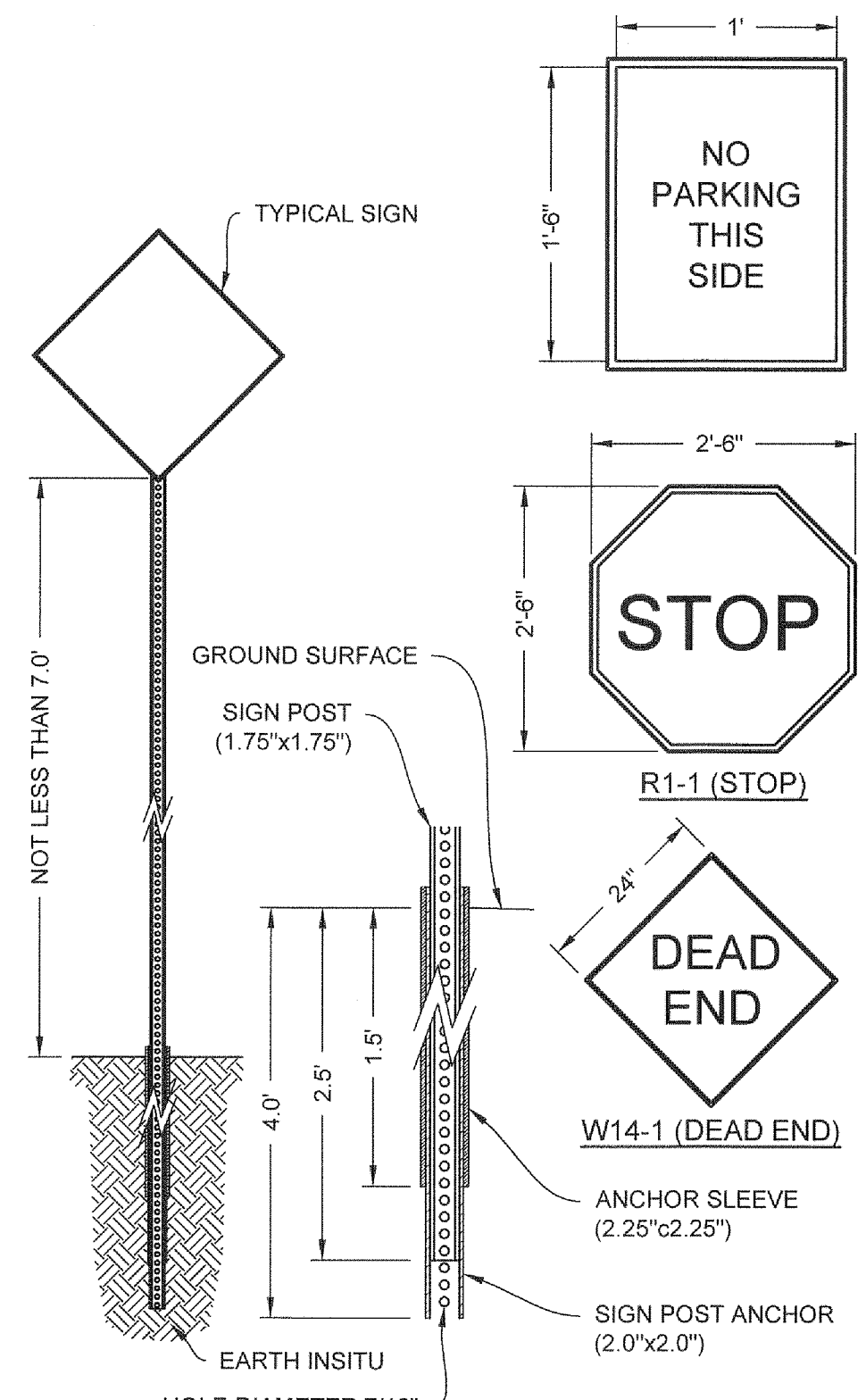
7 MODULAR RETAINING WALL
NOT TO SCALE



9 STEEL BEAM GUARDRAIL WITH STEEL POST
NOT TO SCALE



10 SIGN POST DETAIL
NOT TO SCALE



11 CHAIN LINK FENCE UP TO 6'
NOT TO SCALE

RANGER ENGINEERING & DESIGN, LLC
13 Branch Street, Suite 101
Methuen, MA 01844
T 978.435.1324



BYFIELD ESTATES
BYFIELD (NEWBURY), MA
ASSESSOR'S MAP R-20 LOT 75
SITE DETAILS
BYFIELD ESTATES, LLC
2 DEARBORN WAY
MIDDLETON, MA 01948

NO.	DATE	NO.	REVISIONS	BY
1	11-15-2017	1	INITIAL COMMENTS	BOC

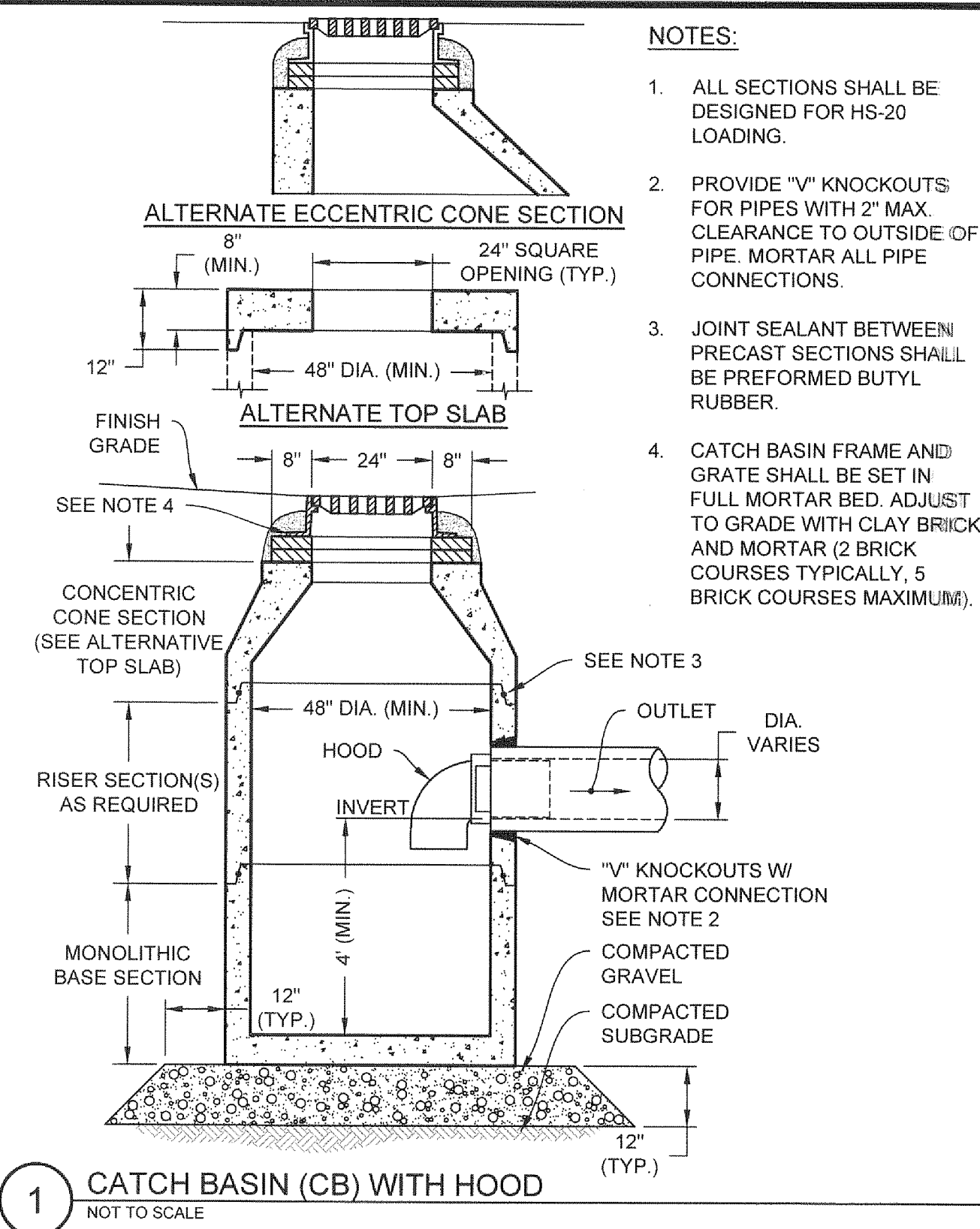
PROJECT	15-1516
DATE	2017-03-22
DRAWING SCALE	N.T.S.
DRAWN BY	CPH
APPROVED BY	BCO

CS6001
SHEET 10 OF 17

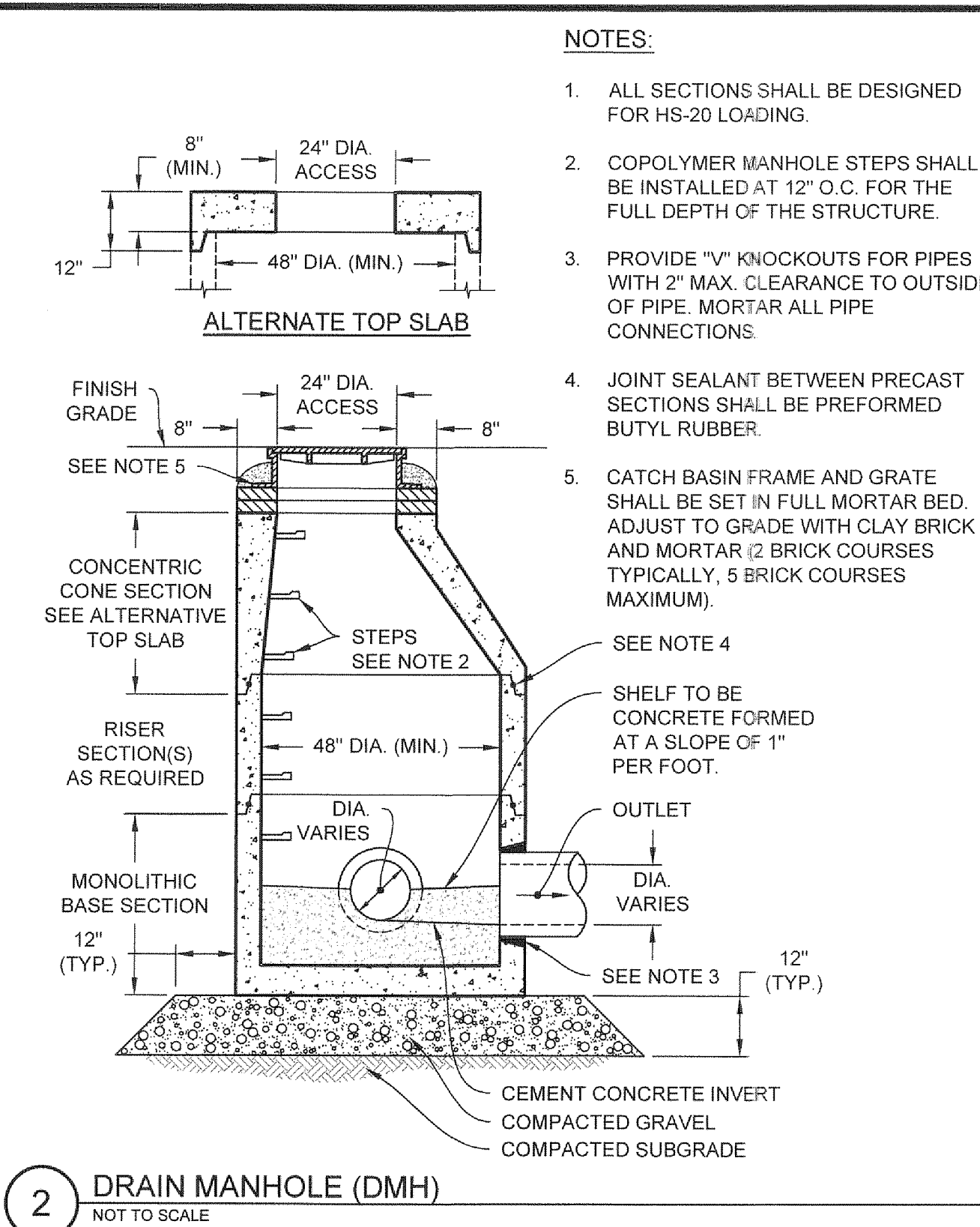
NOT FOR CONSTRUCTION

PROJECT STATUS: — PLOTTED: 11/15/2017 4:58 PM BY: jmk PLTBY: TTI BY: mca:ab

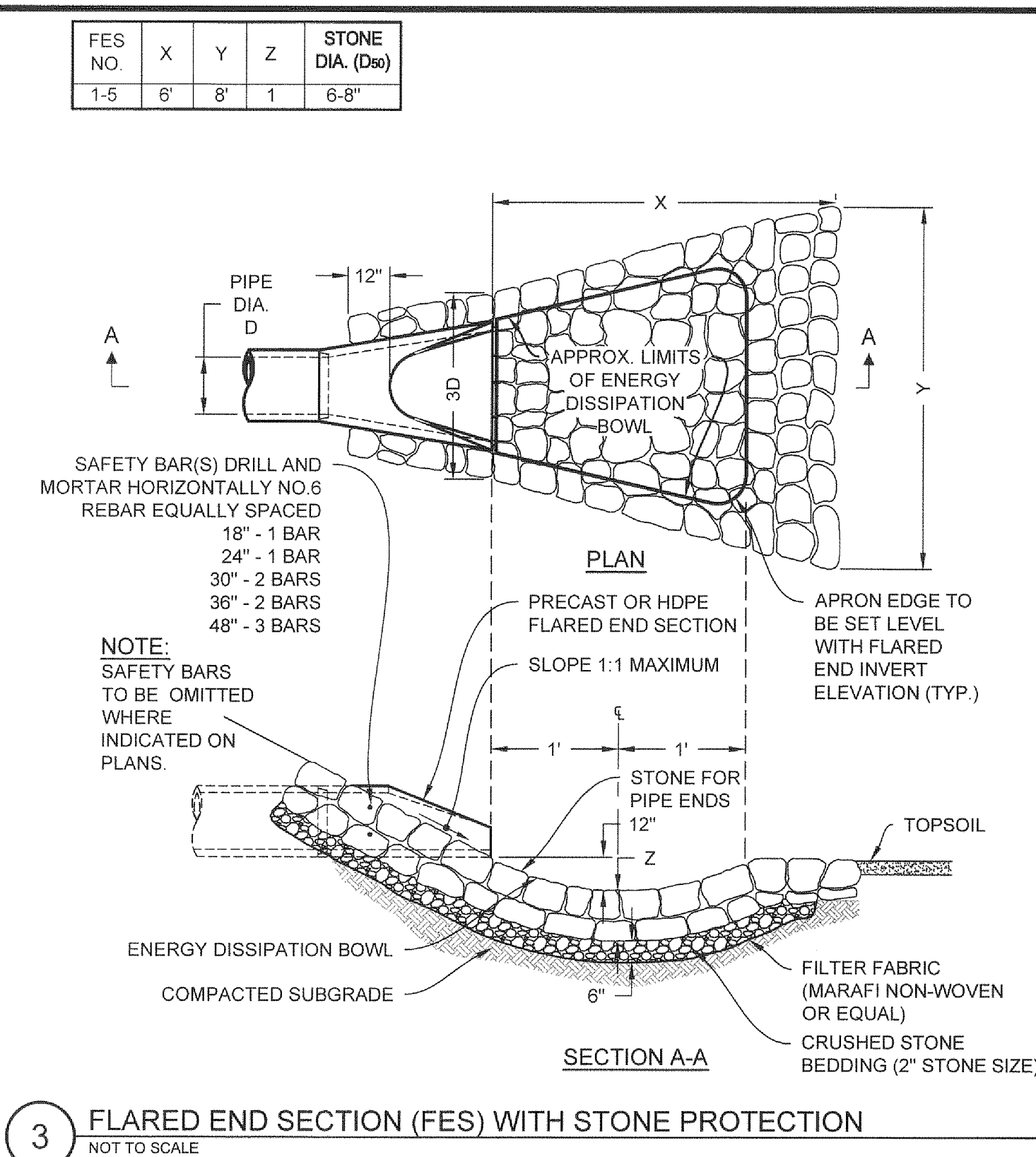
C:\PROJECTS\NEW\GOWAN ELECTRIC\15-1516 Storm Tech - Byfield Estates.dwg



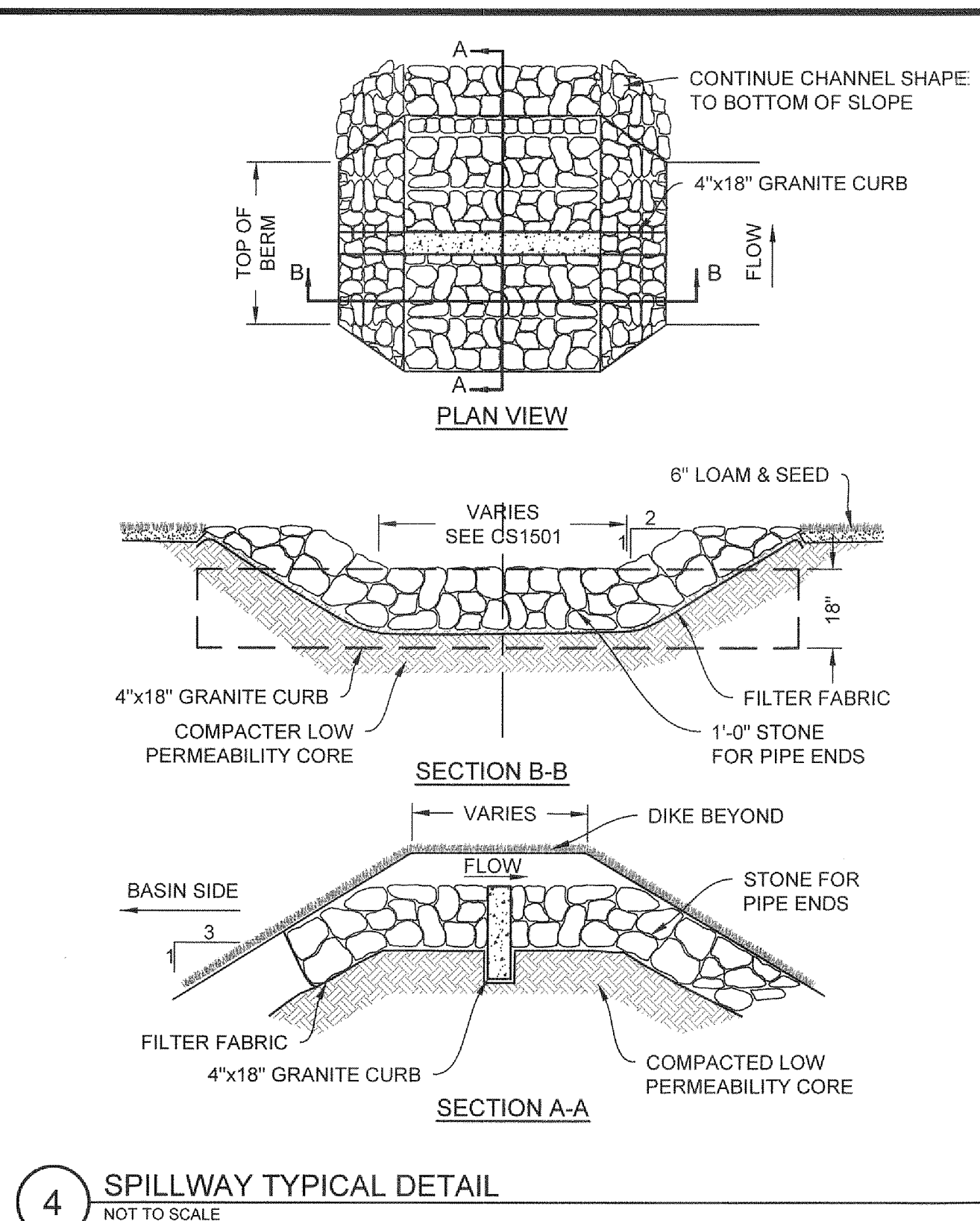
1 CATCH BASIN (CB) WITH HOOD
NOT TO SCALE



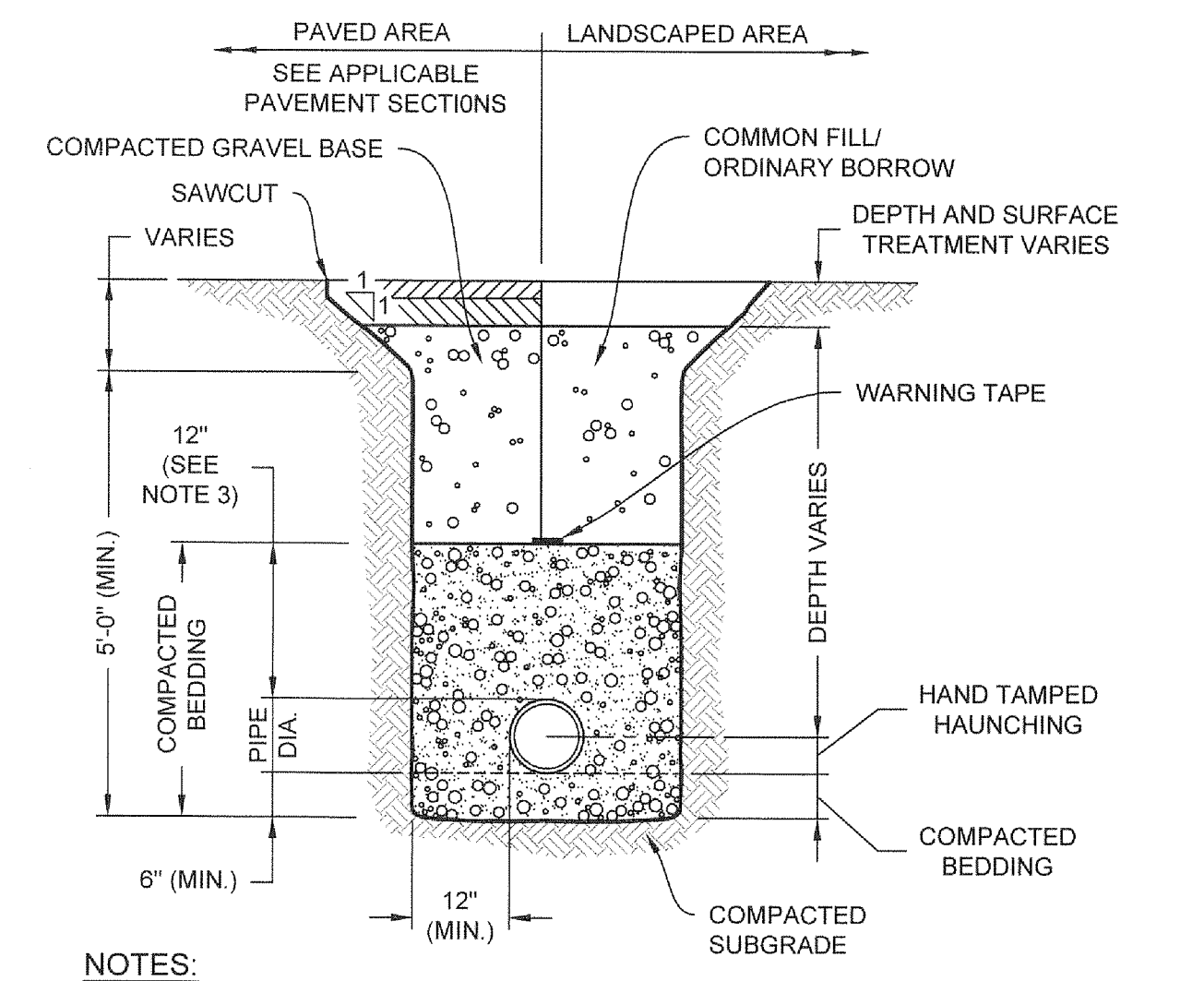
2 DRAIN MANHOLE (DMH)
NOT TO SCALE



3 FLARED END SECTION (FES) WITH STONE PROTECTION
NOT TO SCALE



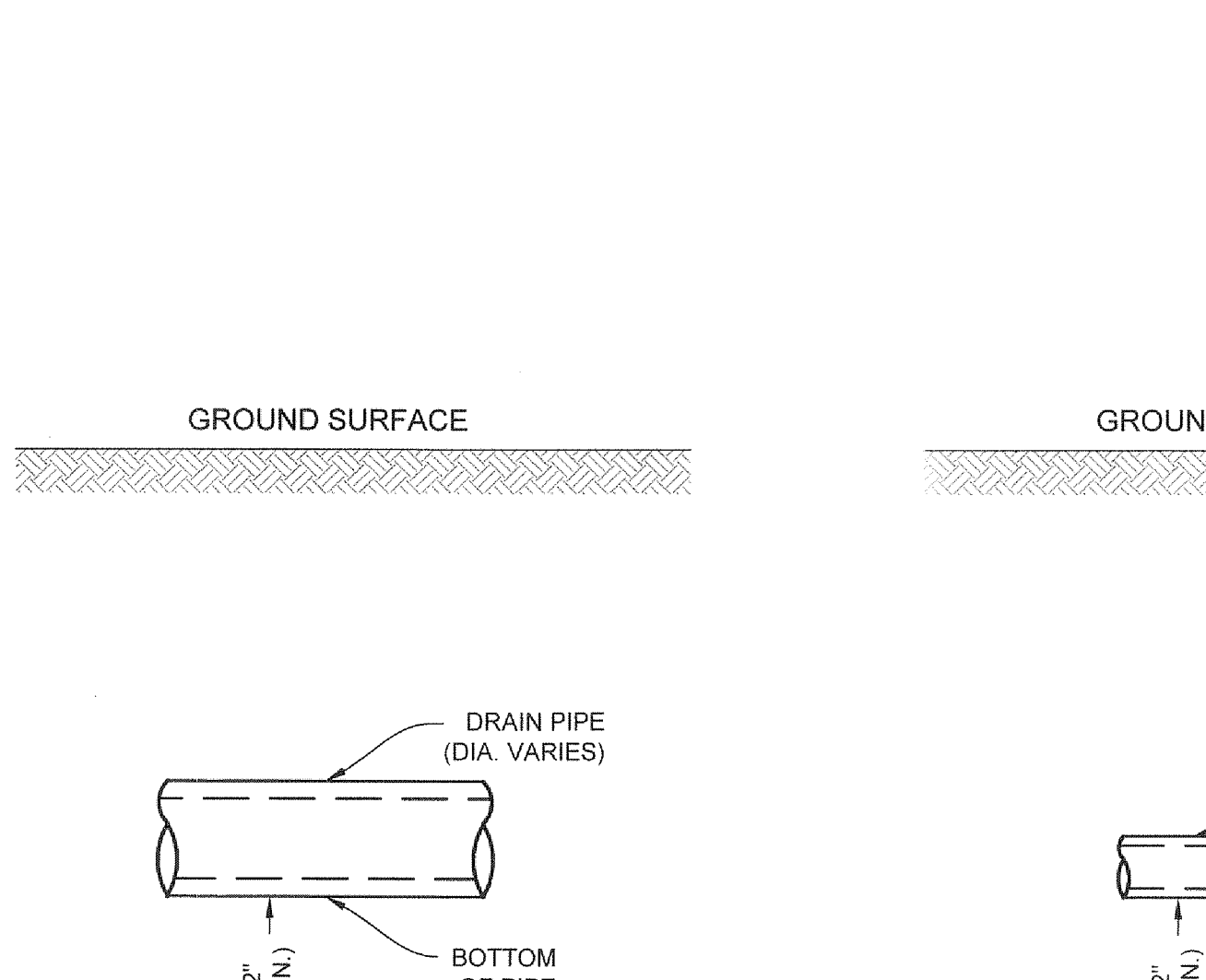
4 SPILLWAY TYPICAL DETAIL
NOT TO SCALE



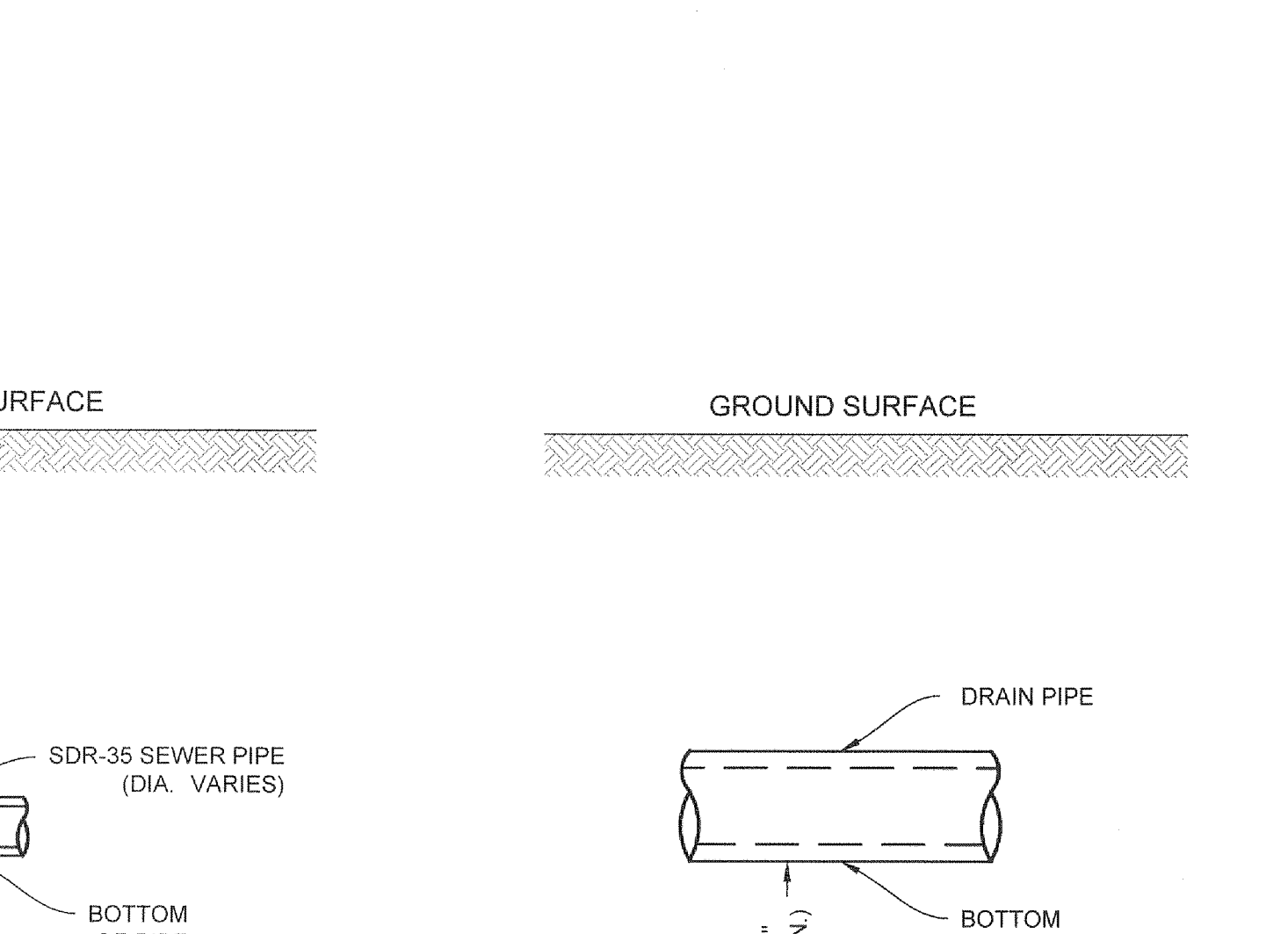
NOTES:

- WHERE UTILITY TRENCHES ARE CONSTRUCTED THROUGH DETENTION BASIN BERMS OR OTHER SUCH SPECIAL SECTIONS, PLACE TRENCH BACKFILL WITH MATERIALS SIMILAR TO THE SPECIAL SECTION REQUIREMENTS.
- USE METALLIC TRACING/WARNING TAPE OVER ALL PIPES.

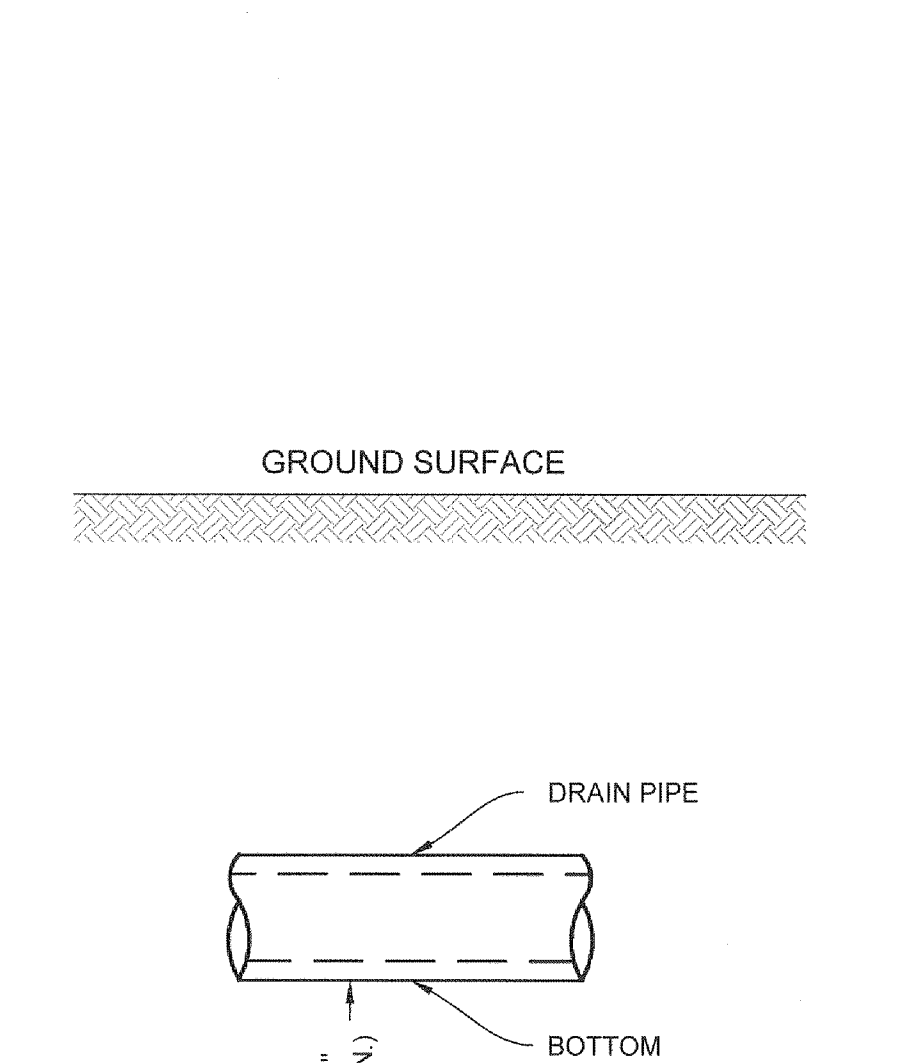
5 DRAINAGE TRENCH
NOT TO SCALE



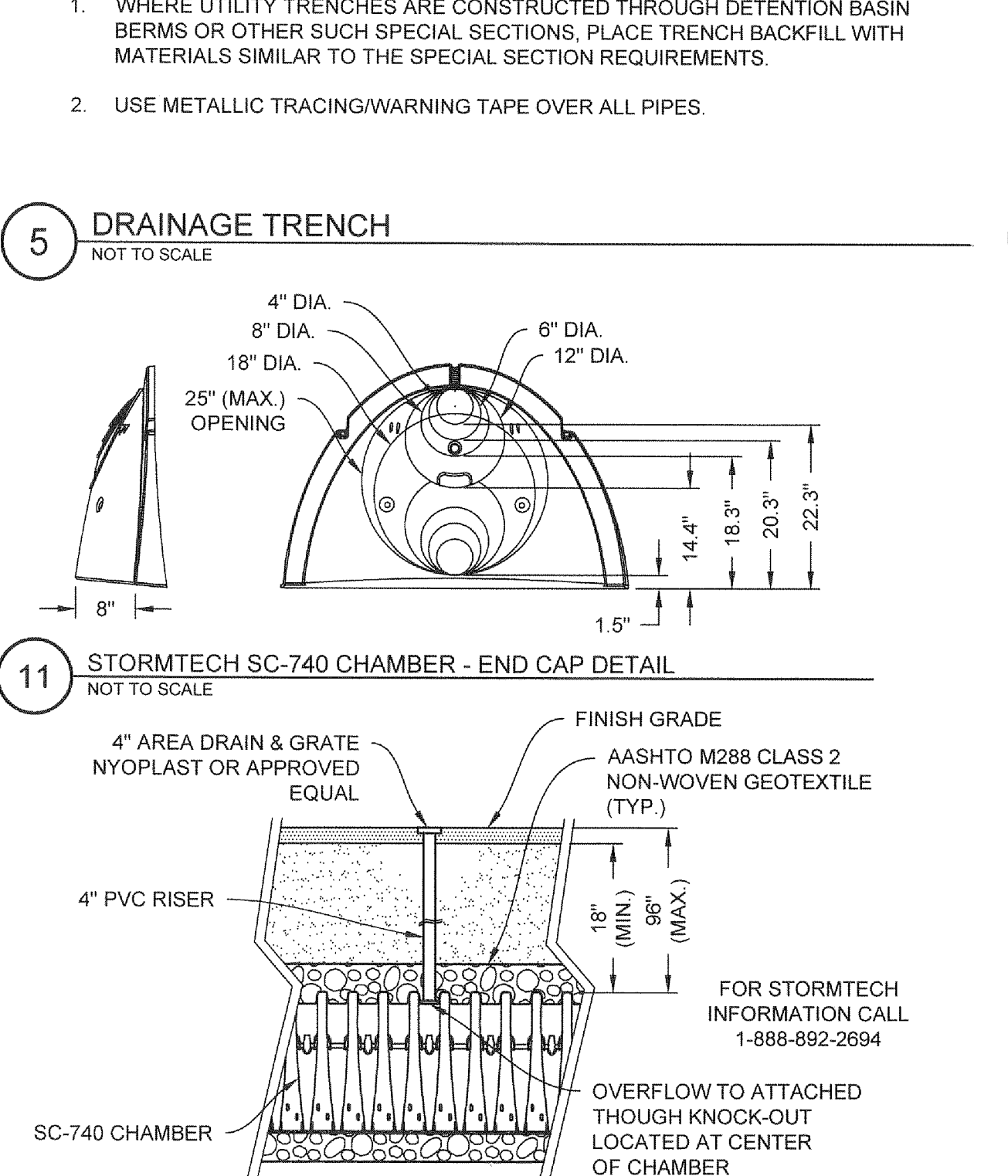
6 DRAIN PIPE AND WATER PIPE CROSSING
NOT TO SCALE



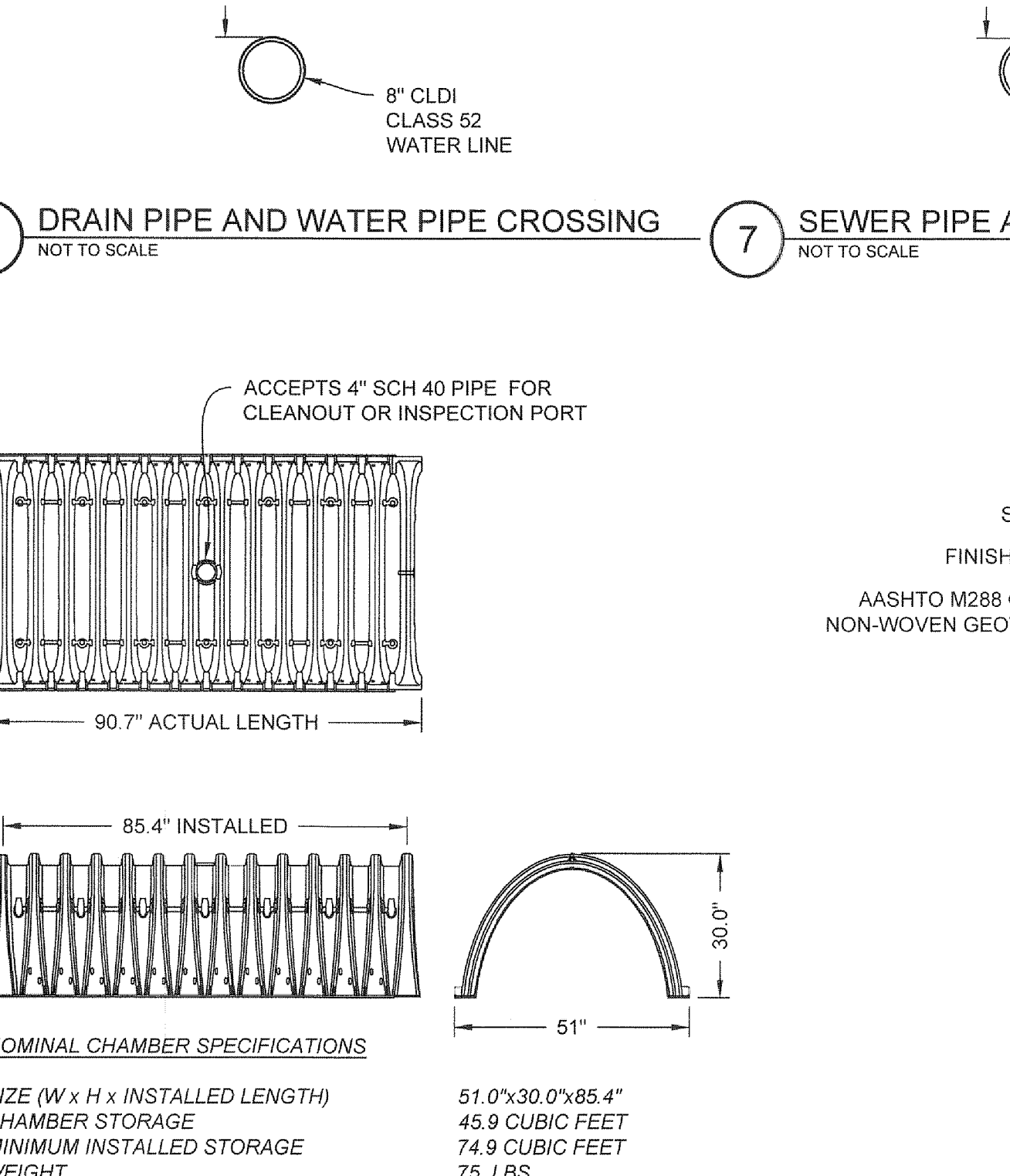
7 SEWER PIPE AND WATER PIPE CROSSING
NOT TO SCALE



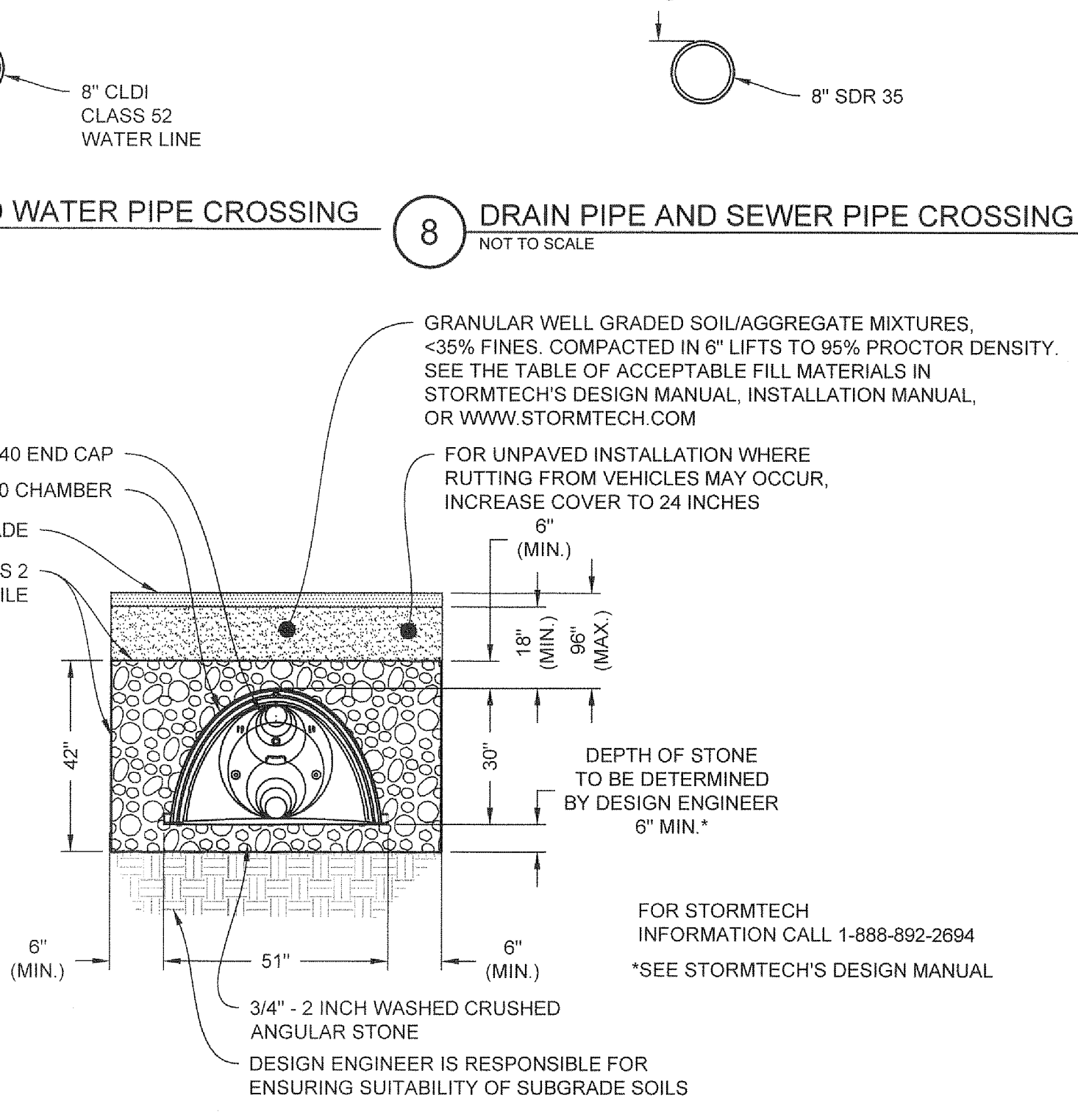
8 DRAIN PIPE AND SEWER PIPE CROSSING
NOT TO SCALE



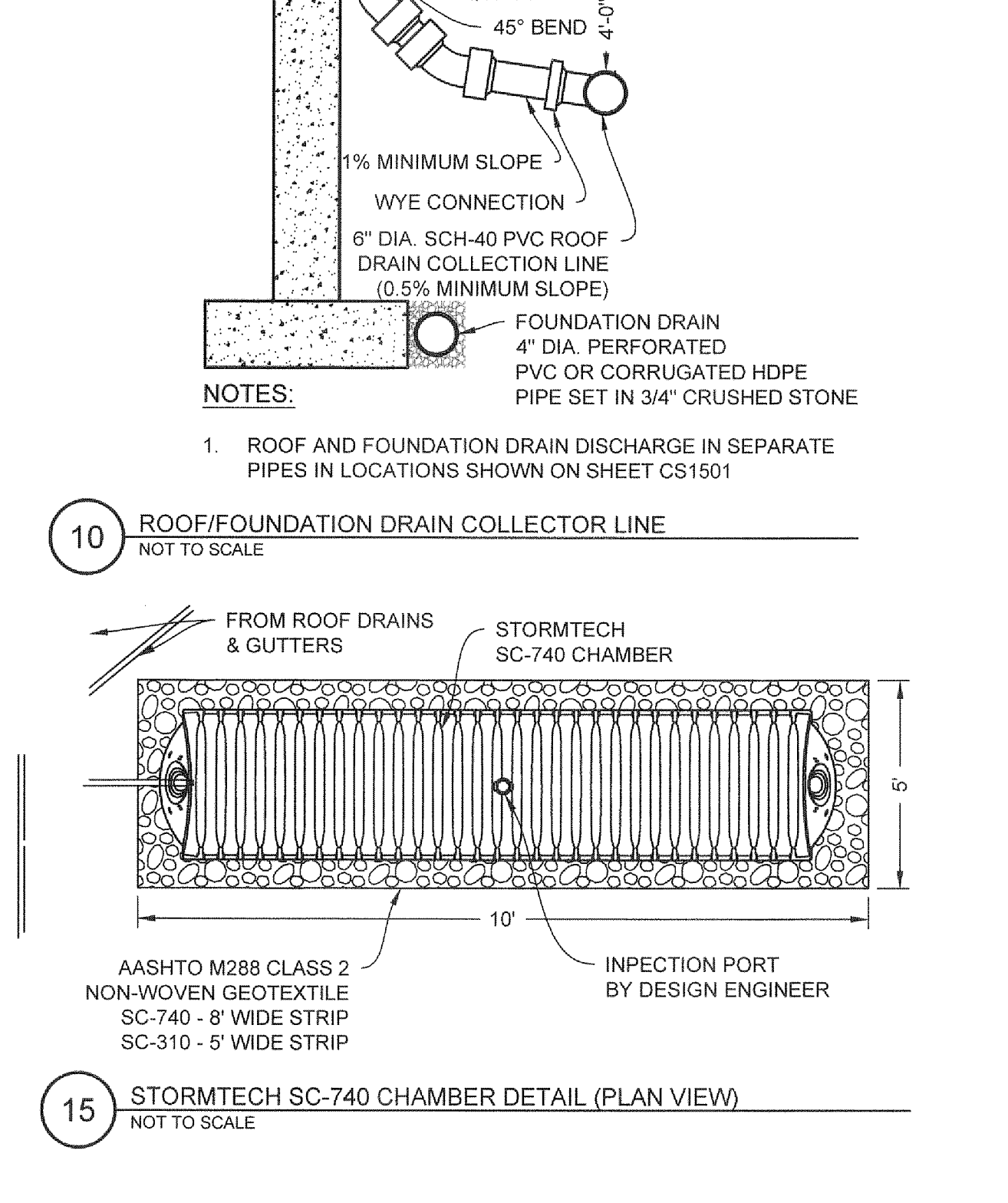
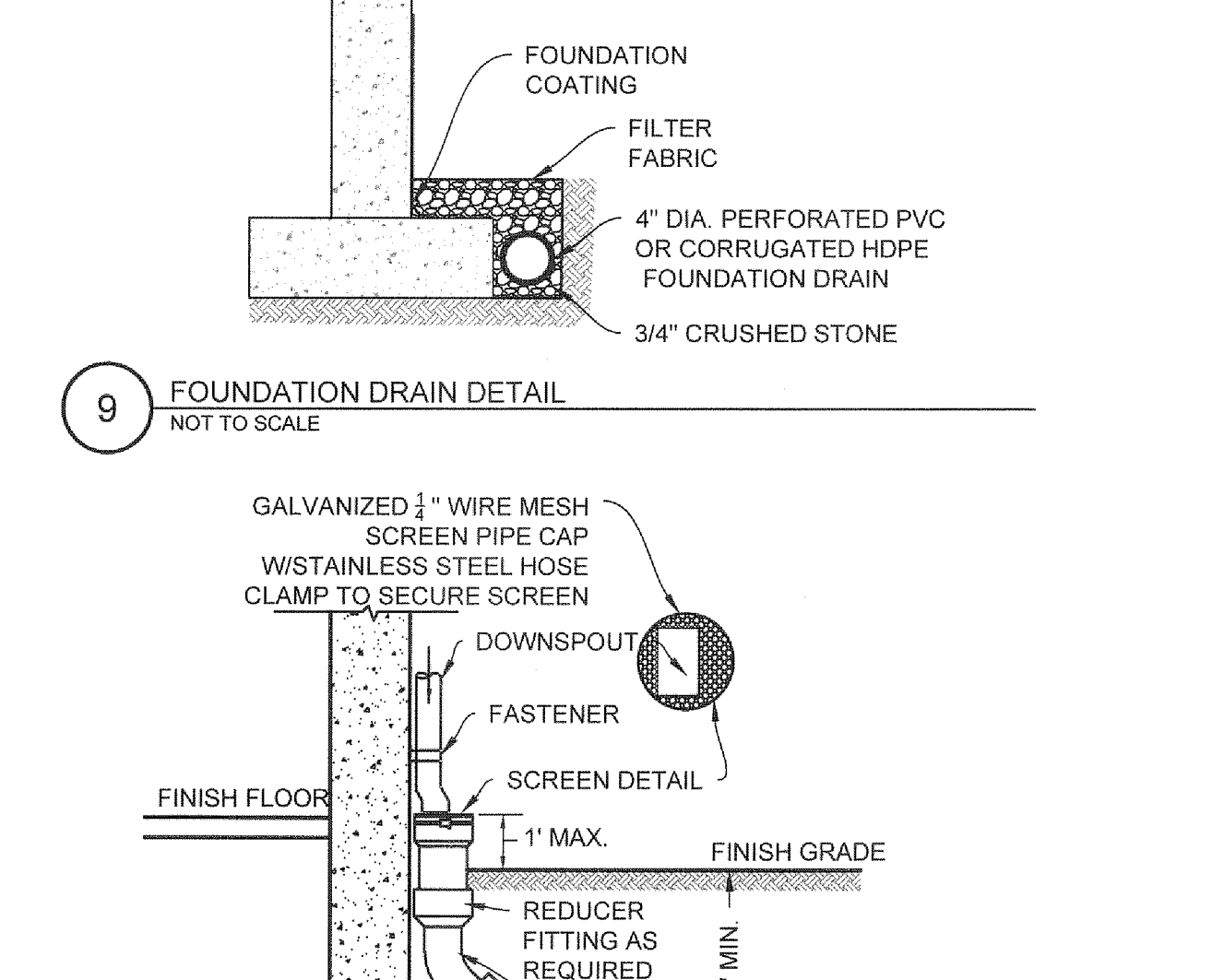
11 STORMTECH SC-740 CHAMBER - END CAP DETAIL
NOT TO SCALE



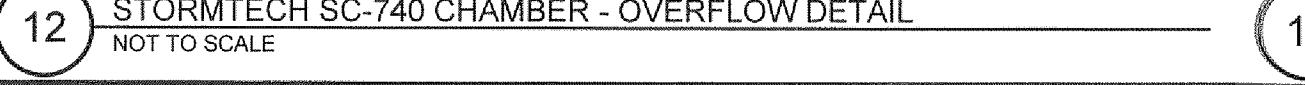
12 STORMTECH SC-740 CHAMBER - OVERFLOW DETAIL
NOT TO SCALE



13 STORMTECH SC-740 CHAMBER DETAIL
NOT TO SCALE



10 ROOF/FOUNDATION DRAIN COLLECTOR LINE
NOT TO SCALE



14 STORMTECH SC-740 CHAMBER SYSTEM - TYPICAL CROSS SECTION DETAIL
NOT TO SCALE



15 STORMTECH SC-740 CHAMBER DETAIL (PLAN VIEW)
NOT TO SCALE

NOT FOR CONSTRUCTION

RANGER ENGINEERING & DESIGN, LLC
13 Branch Street, Suite 101
Methuen, MA 01844
T 978.435.1324

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

BYFIELD ESTATES
BYFIELD (NEWBURY), MA
ASSESSOR'S MAP R-20 LOT 75

DRAINAGE DETAILS

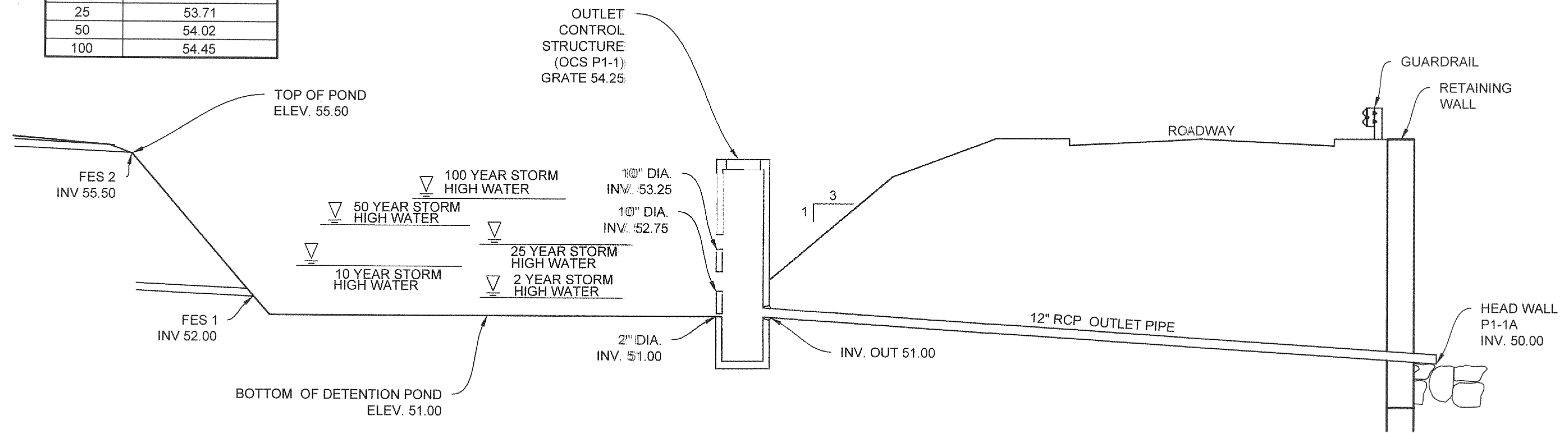
BYFIELD ESTATES, LLC
2 DEARBORN WAY
MIDDLETON, MA 01948

NO.	DATE	INITIAL COMMENTS	REVISIONS	BY
1	11-15-2017			BCO

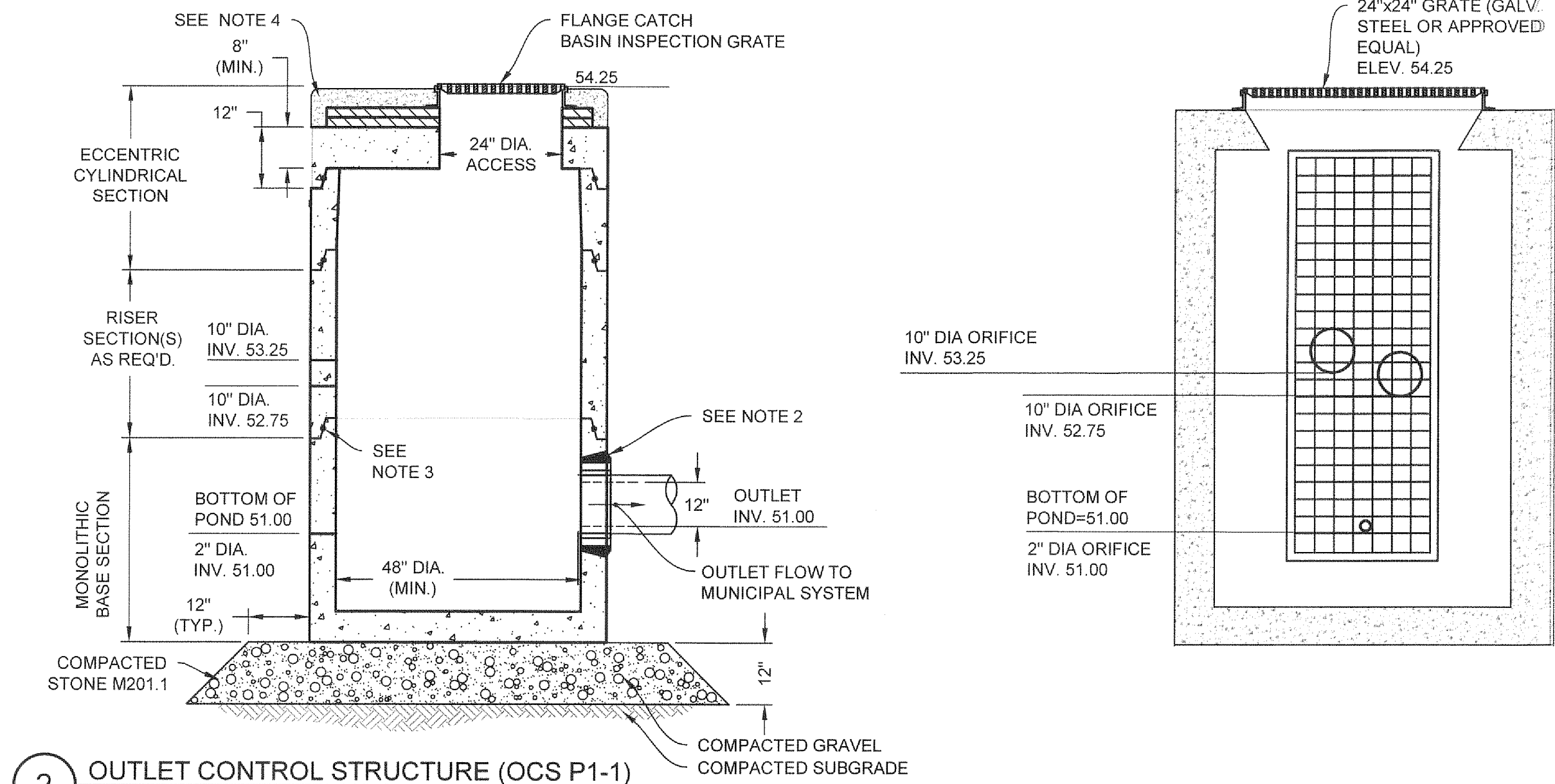
PROJECT: 15-1516
DATE: 2017-03-22
DRAWING SCALE: N.T.S.
DRAWN BY: OMR
APPROVED BY: BCO

CS6021
SHEET 11 OF 17

STORM	HIGH WATER ELEV.
2	52.74
10	53.35
25	53.71
50	54.02
100	54.45

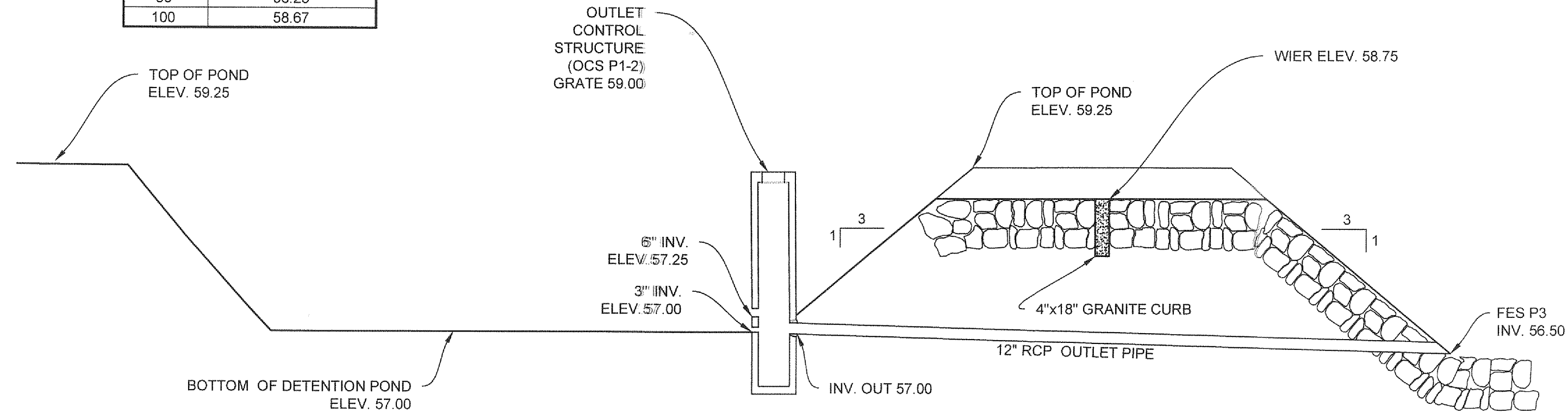


1 CROSS SECTION DETENTION POND (P1-1)
NOT TO SCALE

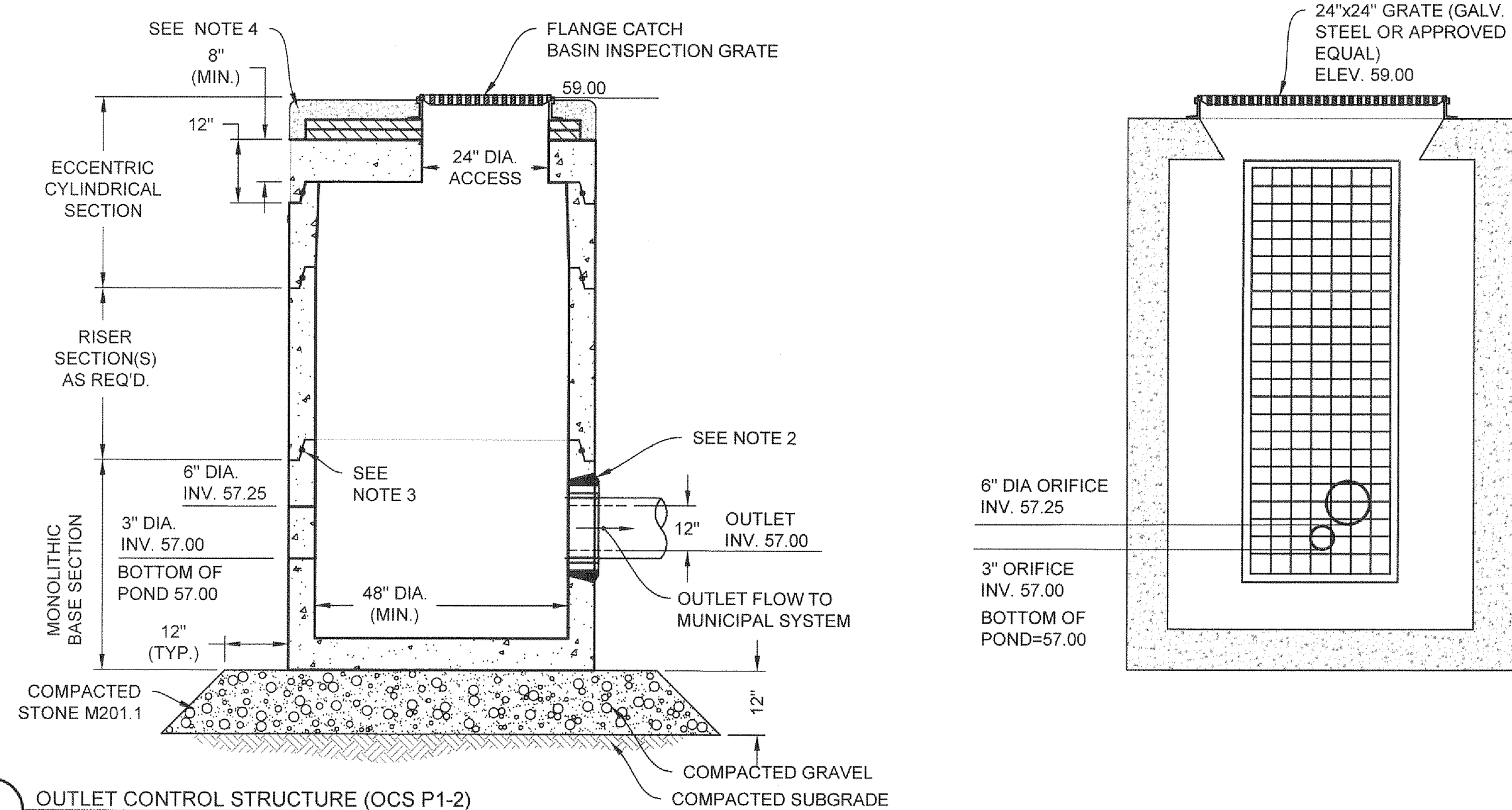


2 OUTLET CONTROL STRUCTURE (OCS P1-1)
NOT TO SCALE

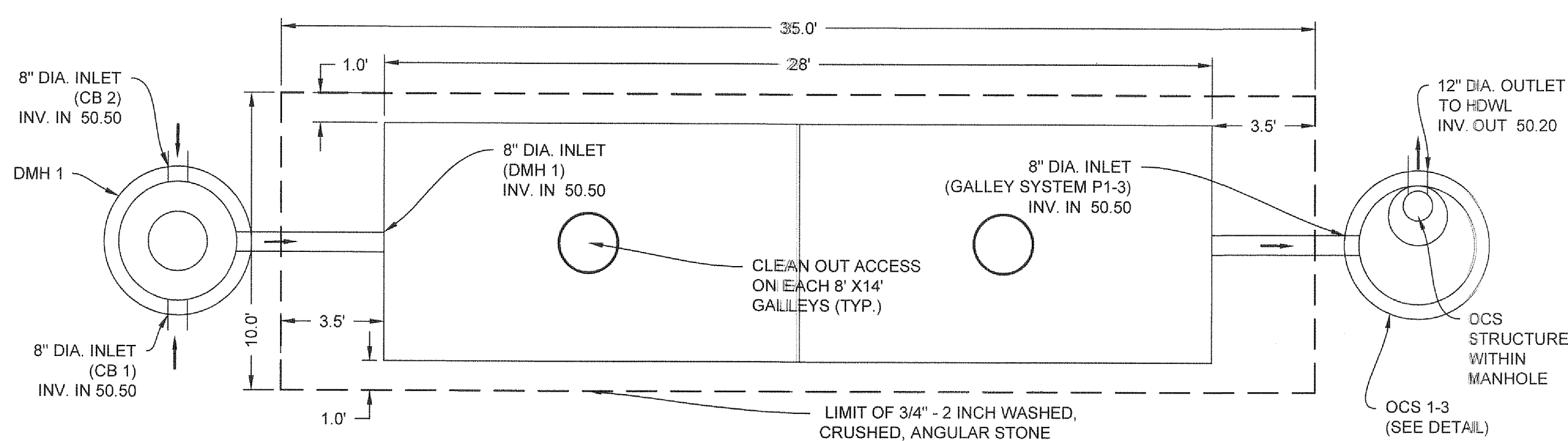
STORM	HIGH WATER ELEV.
2	57.27
10	57.63
25	57.94
50	58.23
100	58.67



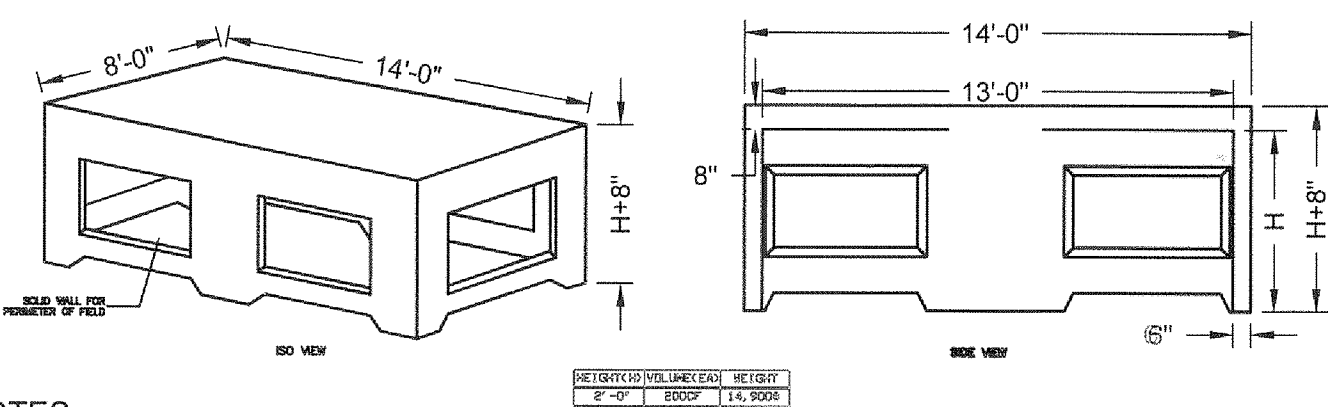
3 CROSS SECTION DETENTION POND (P1-2)
NOT TO SCALE



4 OUTLET CONTROL STRUCTURE (OCS P1-2)
NOT TO SCALE



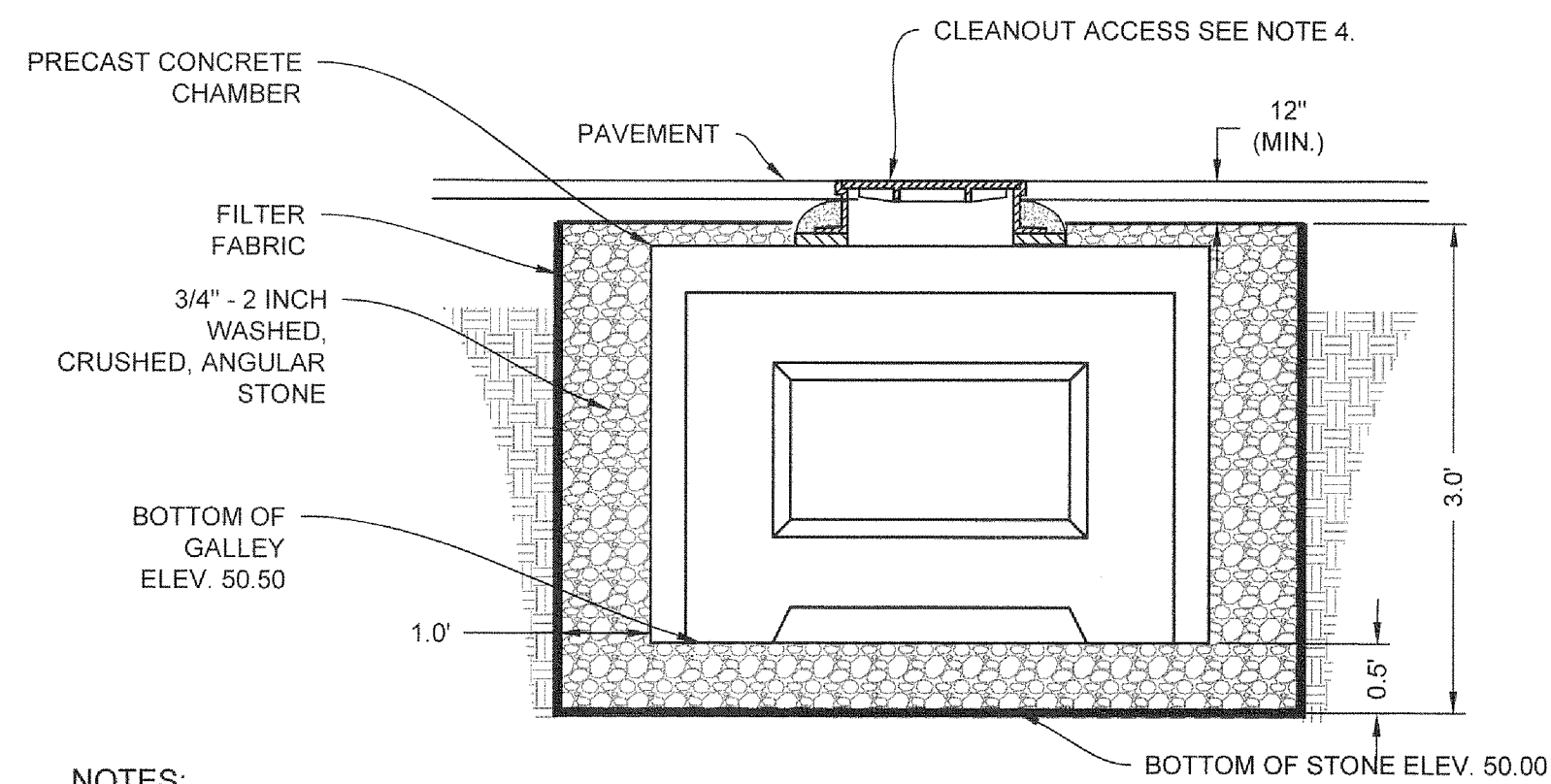
5 GALLEY SYSTEM P1-3 (1 ROW OF 2 8' X 14' GALLEY CHAMBERS)
NOT TO SCALE



NOTES:

- CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
- DESIGNED FOR H-20 LOADING.
- GALLEY AVAILABLE IN BOTH END AND CENTER SECTIONS. CENTER SECTIONS HAVE LARGE OPENING IN BOTH THE BACK AND FRONT SIDES.

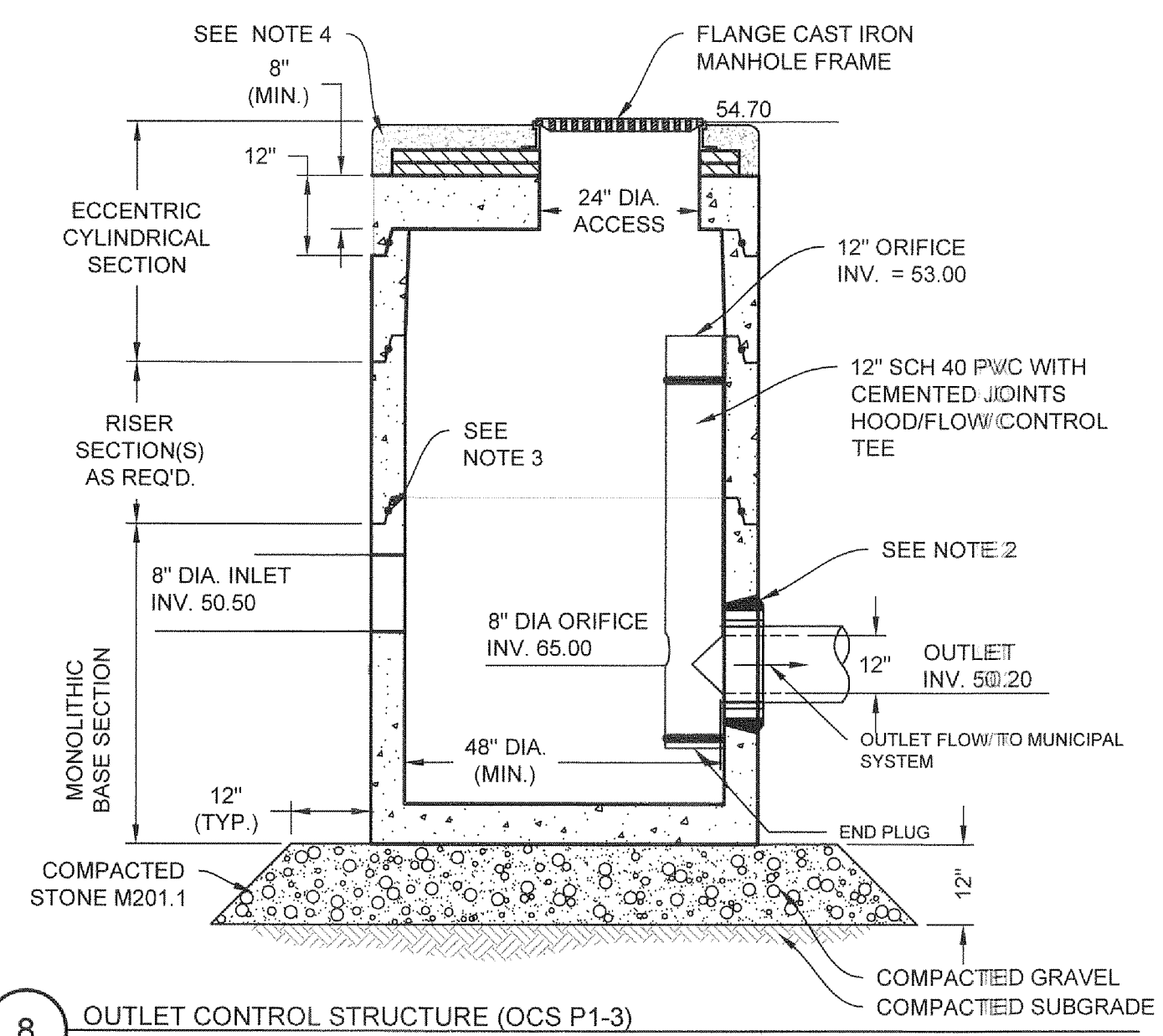
6 GALLEY 8 X 14 DETAIL
NOT TO SCALE



NOTES:

- CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
- DESIGNED FOR H-20 LOADING.
- GALLEY AVAILABLE IN BOTH END AND CENTER SECTIONS. CENTER SECTIONS HAVE LARGE OPENING IN BOTH THE BACK AND FRONT SIDES.
- CLEAN OUT ACCESS SHALL BE A 24" CAST IRON MANHOLE FRAMES SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR.

7 TYPICAL 8' X 14' GALLEY CROSS SECTION DETAIL
NOT TO SCALE

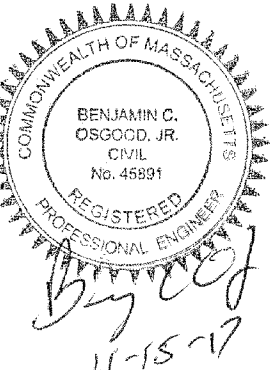


8 OUTLET CONTROL STRUCTURE (OCS P1-3)
NOT TO SCALE

NOT FOR CONSTRUCTION

RANGER ENGINEERING & DESIGN, LLC
13 Branch Street, Suite 101
Methuen, MA 01844
T 978.435.1324

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK



BYFIELD ESTATES
BYFIELD (NEWBURY), MA
ASSESSOR'S MAP R-20 LOT 75

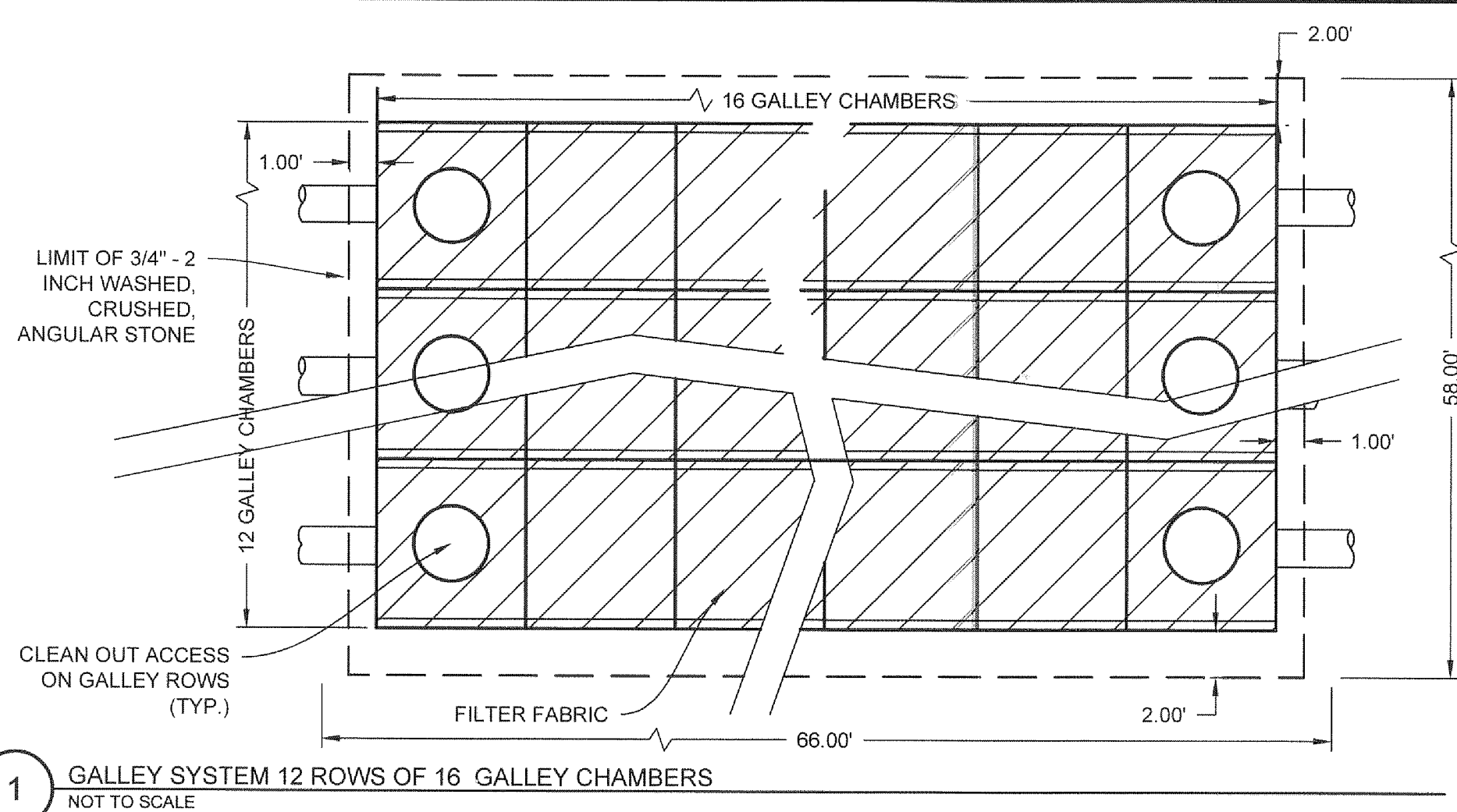
DRAINAGE DETAILS

BYFIELD ESTATES, LLC
2 DEARBORN WAY
MIDDLETON, MA 01948

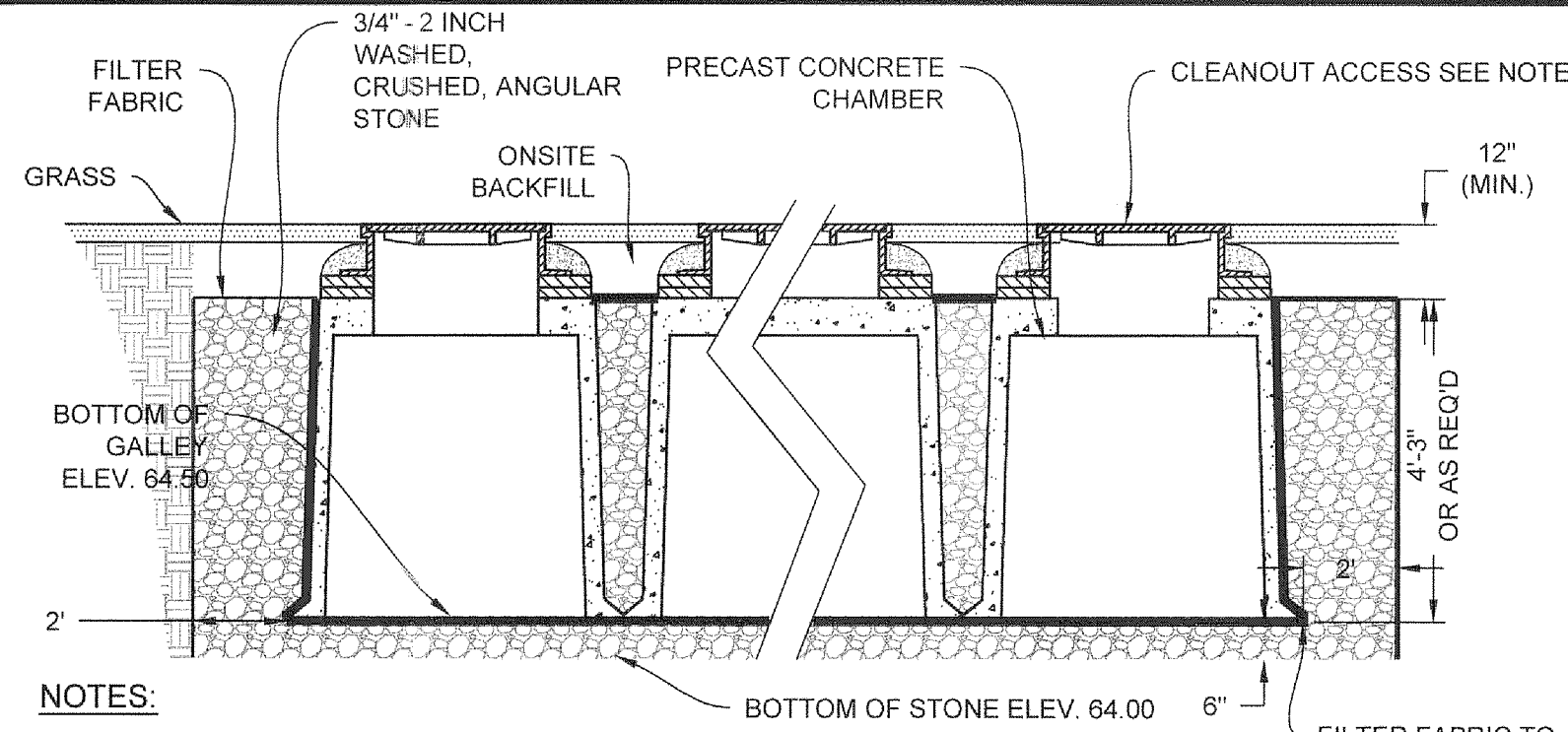
NO.	DATE	INITIAL COMMENTS	REVISIONS	BY
1	11-15-2017			BCO

PROJECT	15-1516
DATE	2017-03-22
DRAWING SCALE	N.T.S.
DRAWN BY	OMR
APPROVED BY	BCO

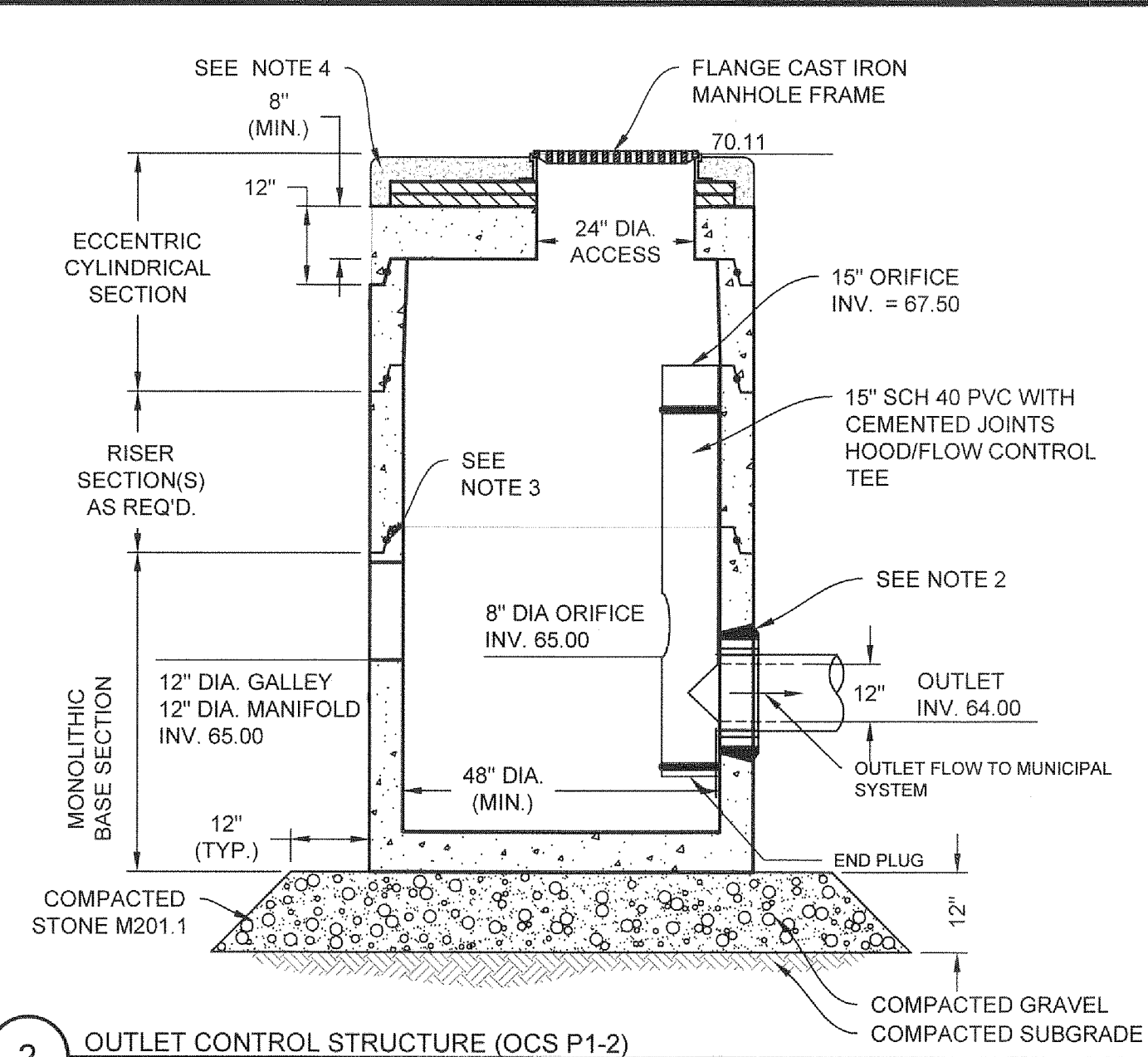
CS6022
SHEET 12 OF 17



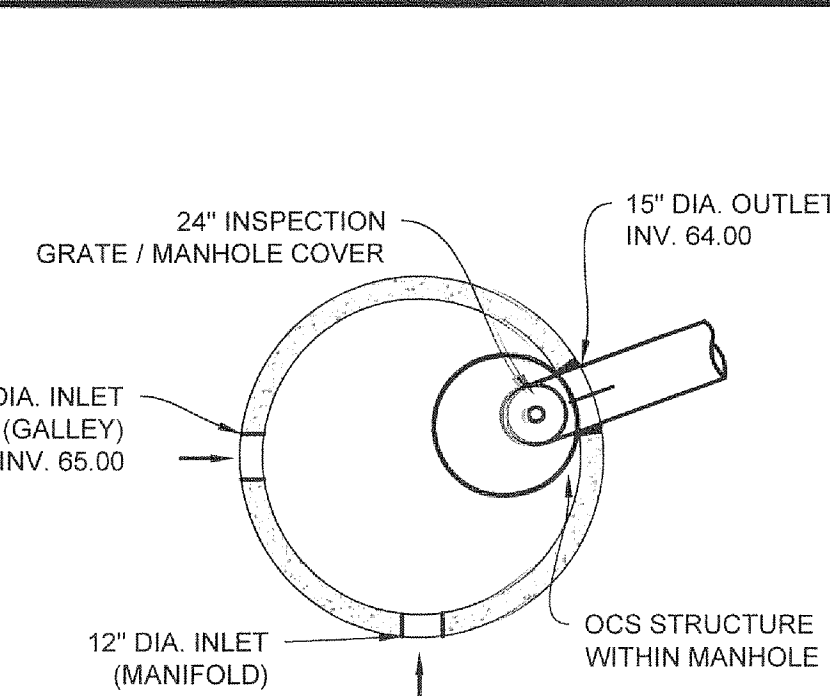
1 GALLEY SYSTEM 12 ROWS OF 16 GALLEY CHAMBERS
NOT TO SCALE



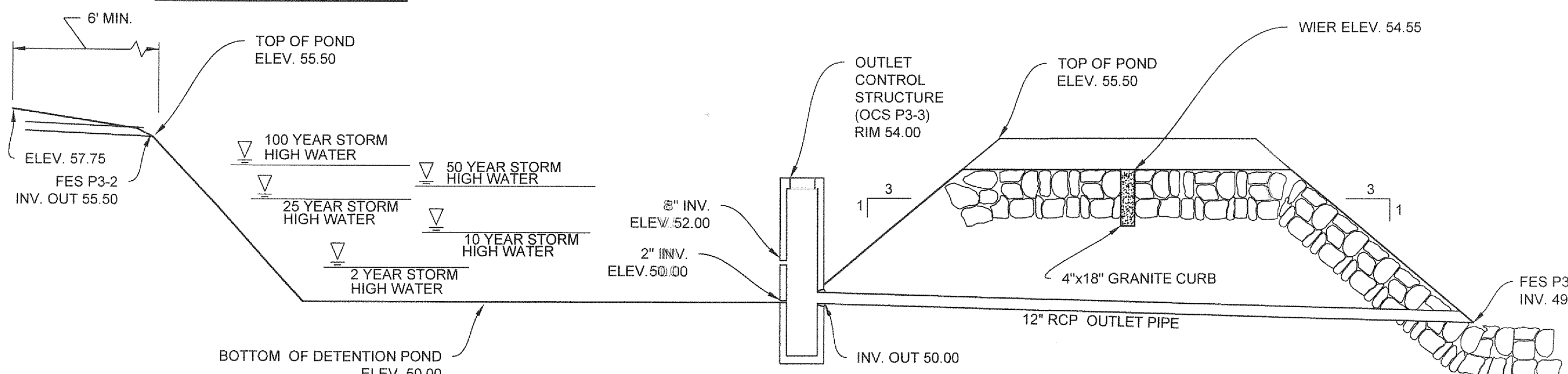
2 TYPICAL GALLEY CROSS SECTION DETAIL
NOT TO SCALE



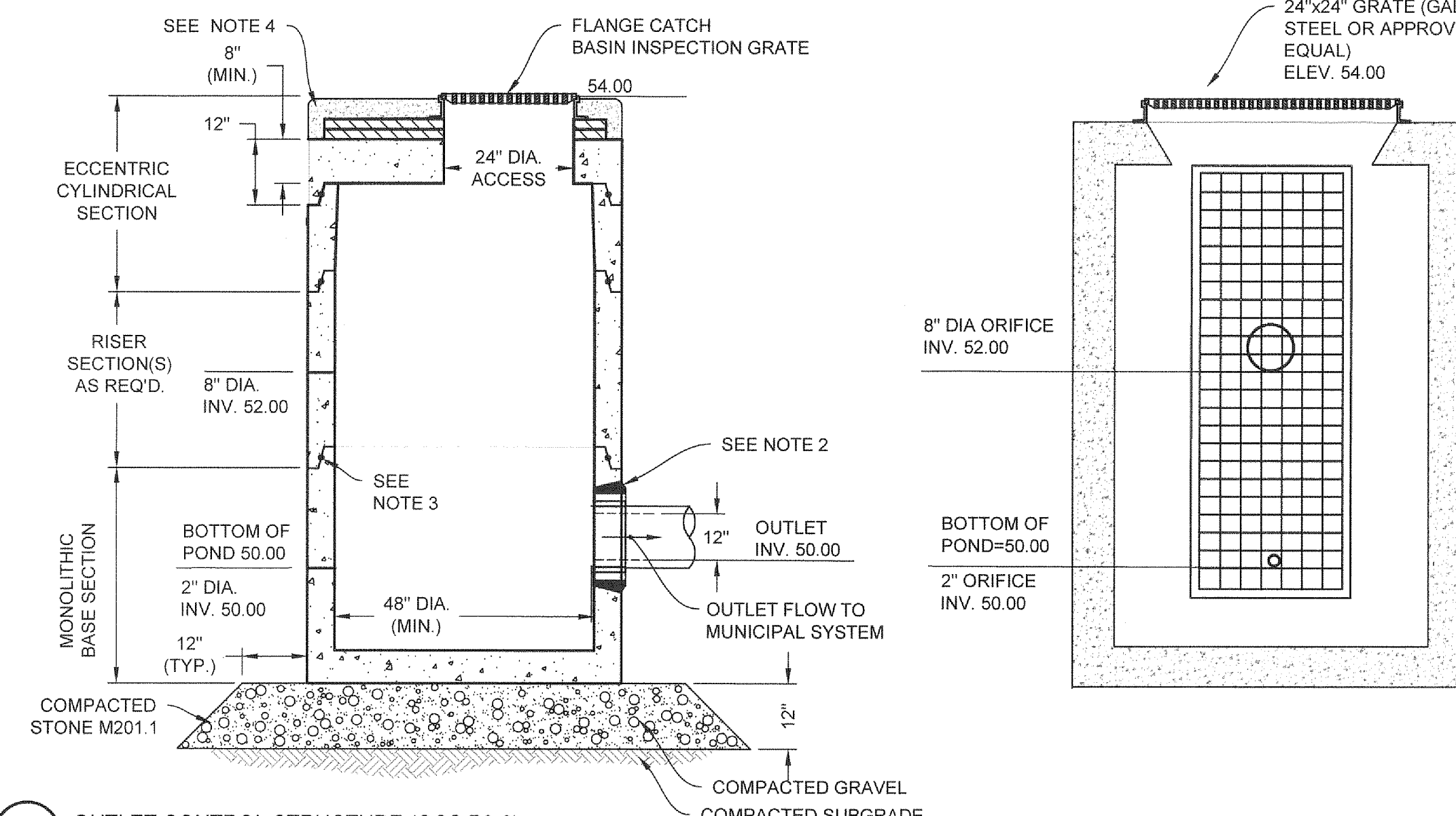
2 OUTLET CONTROL STRUCTURE (OCS P1-2)
NOT TO SCALE



STORM	HIGH WATER ELEV.
2	51.88
10	52.66
25	53.22
50	53.72
100	54.22



5 CROSS SECTION DETENTION POND (P3-2)
NOT TO SCALE



6 OUTLET CONTROL STRUCTURE (OCS P3-2)
NOT TO SCALE

OUTLET CONTROL NOTES:

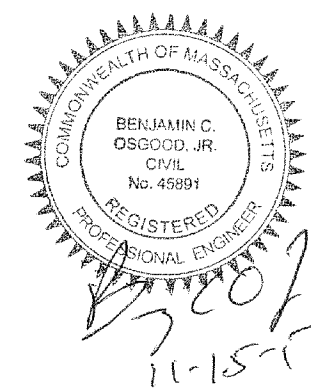
- ALL SECTIONS SHALL BE DESIGNED FOR H-20 LOADING.
- PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
- JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
- DRAIN MANHOLE FRAME AND COVER SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM).
- INSTALL ANTI-SEEPAGE COLLARS AT ALL DISCHARGE PIPE LOCATIONS (E.G. DRAINAGE SOLUTIONS, INC. OR APPROVED EQUAL) AT 2' FROM OUTSIDE OF STRUCTURE (MAX.)

DETENTION POND NOTES:

- DETENTION / INFILTRATION BERMS SHALL BE CONSTRUCTED USING ORDINARY BORROW (MASSACHUSETTS HIGHWAY DEPT. STANDARDS SPECIFICATION M1.01.0), CONTAINING BETWEEN 20% AND 30% OF MATERIAL WHICH PASSES A #200 SIEVE. MATERIAL SHALL BE PLACED IN 12" LIFTS AND COMPACTED TO A DRY DENSITY OF 95% OF MODIFIED PROCTOR TEST.

RANGER ENGINEERING & DESIGN, LLC
13 Branch Street, Suite 101
Methuen, MA 01844
T 978.435.1324

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR
AND OWNER MUST BE NOTIFIED OF ANY
DISCREPANCIES BEFORE PROCEEDING WITH WORK



BYFIELD ESTATES
BYFIELD (NEWBURY), MA
ASSESSOR'S MAP R-20 LOT 75

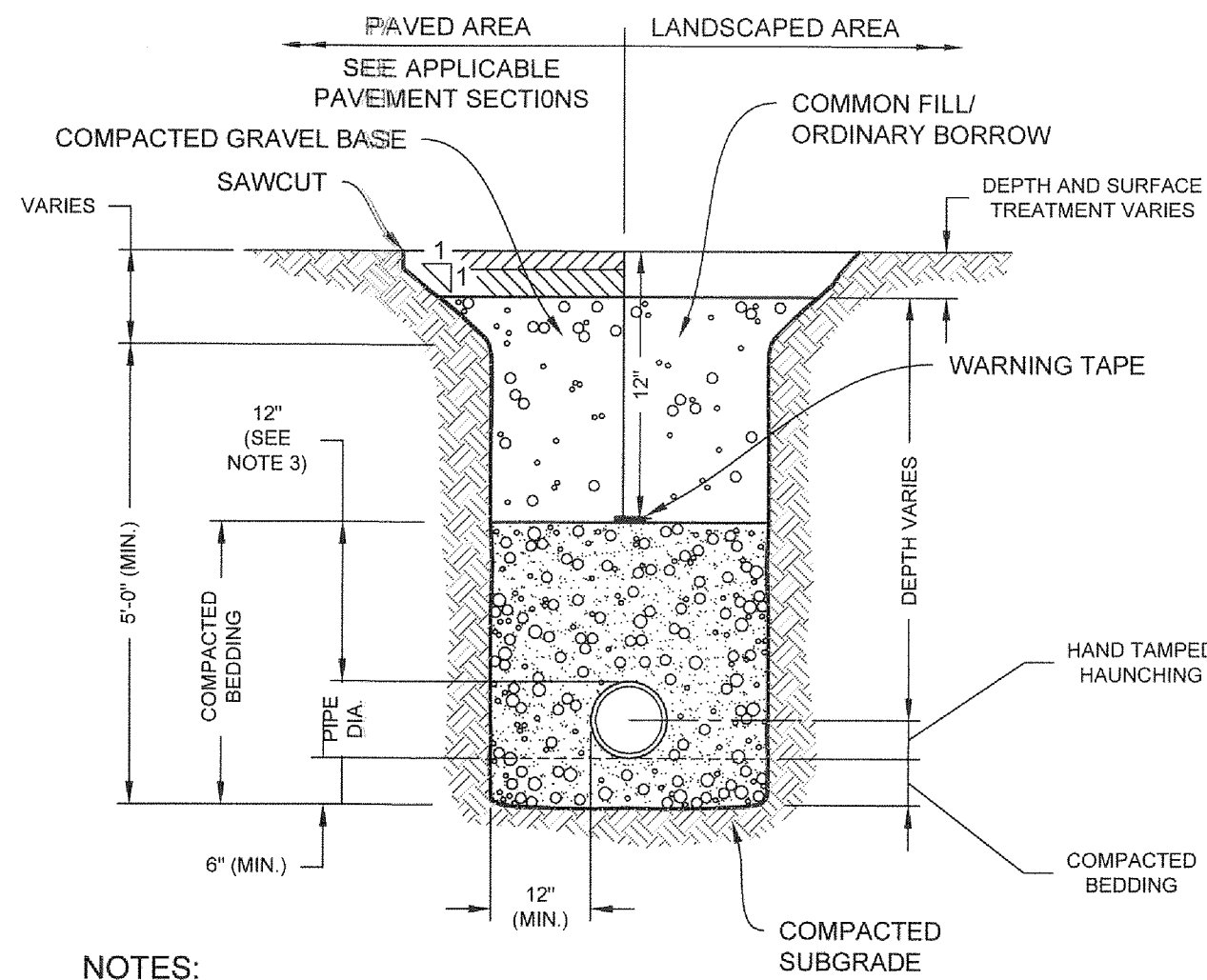
BYFIELD ESTATES, LLC
2 DEARBORN WAY
MIDDLETON, MA 01549

NO.	DATE	INITIAL COMMENTS	REVISIONS	BY
1	11-15-2017			BCO

PROJECT	15-1516
DATE	2017-03-22
DRAWING SCALE	N.T.S.
DRAWN BY	OMR
APPROVED BY	BCO

CS6023
SHEET 13 OF 17

NOT FOR CONSTRUCTION



NOTES:

- WHERE UTILITY TRENCHES ARE CONSTRUCTED THROUGH DETENTION BASIN BERMS OR OTHER SUCH SPECIAL SECTIONS, PLACE TRENCH BACKFILL WITH MATERIALS SIMILAR TO THE SPECIAL SECTION REQUIREMENTS.
- USE METALLIC TRACING/WARNING TAPE OVER ALL PIPES.

1 WATER TRENCH NOT TO SCALE

TABLE OF DIMENSIONS

BENDS	B	C	D	E	F	BENDS	B	C	D	E	F
6"	11 1/4"	8"	15"	12"	24"	6"	45°	8"	30"	12"	24"
6"	22 1/2"	"	19"	"	13"	6"	90°	"	30"	"	27"
8"	11 1/4"	"	20"	"	12"	8"	45°	"	30"	"	24"
8"	22 1/2"	"	22"	"	17"	8"	90°	"	38"	"	36"
12"	11 1/4"	"	30"	"	15"	12"	45°	"	40"	"	40"
12"	22 1/2"	"	35"	"	25"	12"	90°	"	60"	"	52"

BENDS

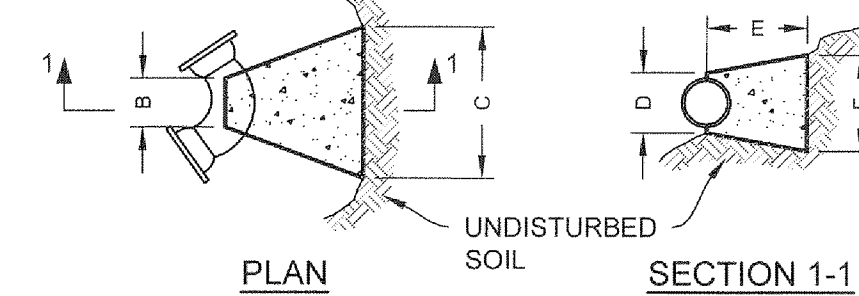
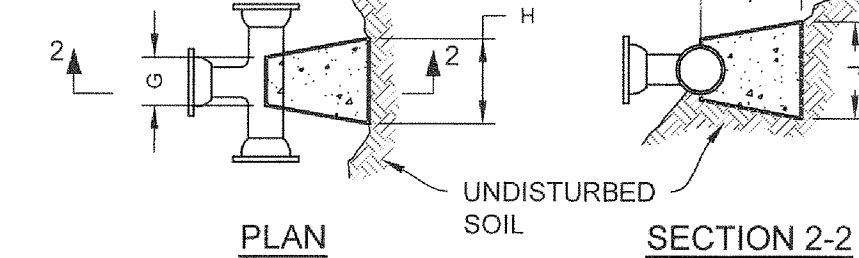


TABLE OF DIMENSIONS

TEES	G	H	I	J	TEES	G	H	I	J
6"x 6"x 6"	12"	24"	24"	18"	12"x 12"x 6"	12"	24"	24"	18"
8"x 8"x 8"	"	"	"	"	12"x 12"x 8"	"	"	"	24"
8"x 8"x 8"	"	"	"	24"	12"x 12"x 12"	"	36"	"	36"

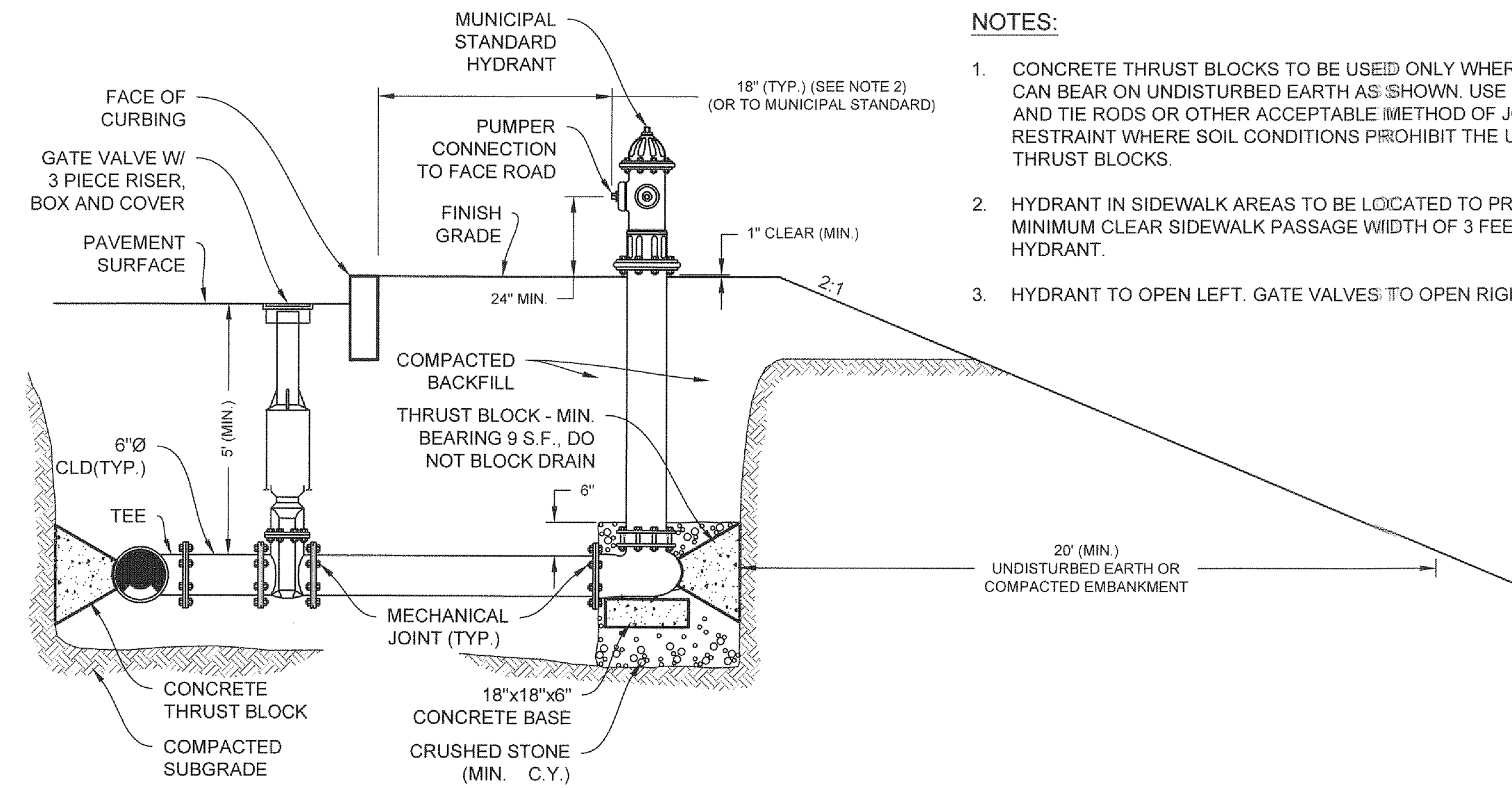
TEES



NOTES:

- PROVIDE BLOCKS FOR TAPPING SLEEVES, DEAD ENDS, GATE VALVES, AND VERTICAL BENDS (SAME SIZE AS REQUIRED FOR TEES). PROVIDE ANCHOR RODS AT VERTICAL BENDS AND GATE VALVES.
- CONCRETE SHALL NOT BE PLACED AGAINST PIPE BEYOND FITTING.
- CONCRETE SHALL BE 3000 PSI-TYPE I.

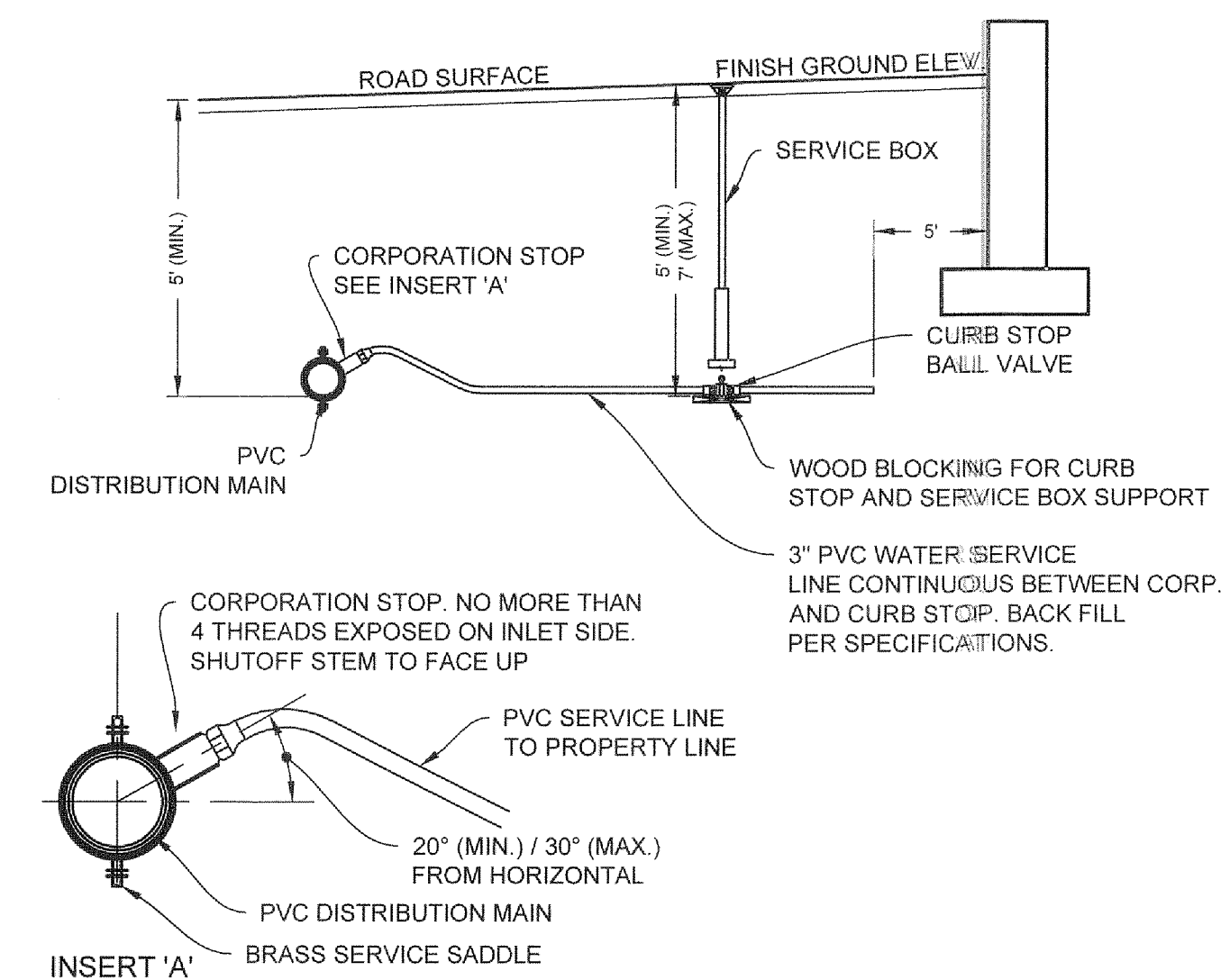
2 CONCRETE THRUST BLOCK NOT TO SCALE



NOTES:

- CONCRETE THRUST BLOCKS TO BE USED ONLY WHERE THEY CAN BEAR ON UNDISTURBED EARTH AS SHOWN. USE CLAMPS AND TIE RODS OR OTHER ACCEPTABLE METHOD OF JOINT RESTRAINT WHERE SOIL CONDITIONS PROHIBIT THE USE OF THRUST BLOCKS.
- HYDRANT IN SIDEWALK AREAS TO BE LOCATED TO PROVIDE MINIMUM CLEAR SIDEWALK PASSAGE WIDTH OF 3 FEET AT HYDRANT.
- HYDRANT TO OPEN LEFT. GATE VALVES TO OPEN RIGHT.

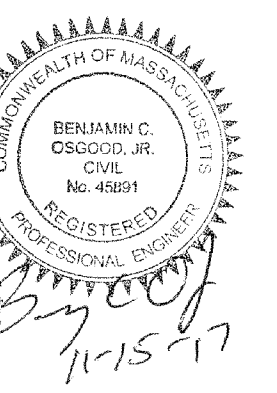
3 HYDRANT CONNECTION NOT TO SCALE



4 WATER SERVICE INSTALLATION NOT TO SCALE

RANGER ENGINEERING & DESIGN, LLC
13 Branch Street, Suite 101
Methuen, MA 01844
T 978.435.1324

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK



BYFIELD ESTATES
BYFIELD (NEWBURY), MA
ASSESSOR'S MAP R-20 LOT 75

UTILITY DETAILS

BYFIELD ESTATES, LLC
2 DEARBORN WAY
MIDDLETON, MA 01949

NO.	DATE	REVISIONS	BY
1	11-15-2017	INITIAL COMMENTS	BCO

PROJECT	15-1516
DATE	2017-03-22
DRAWING SCALE	N.T.S.
DRAWN BY	CPH
APPROVED BY	BCO

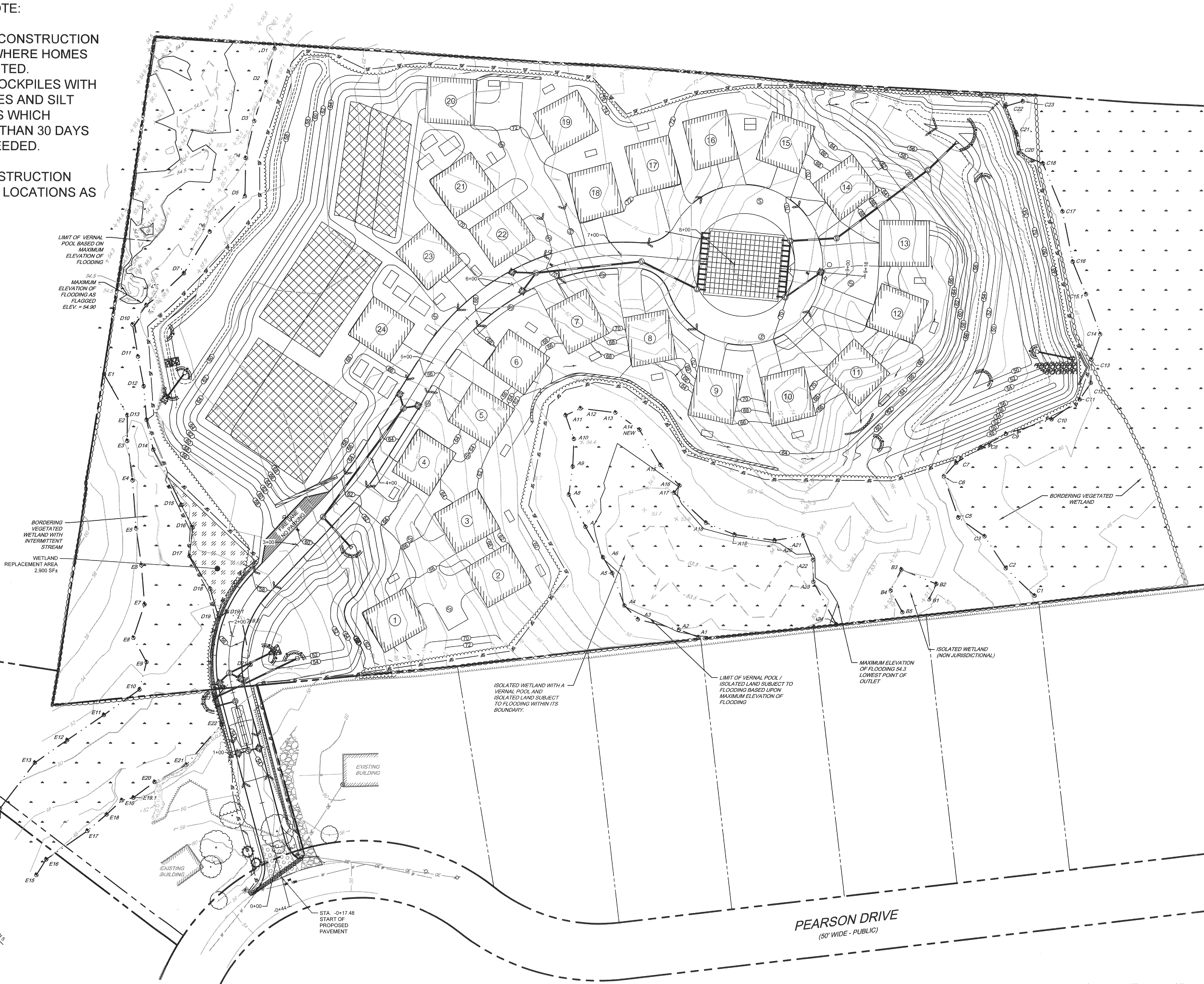
CS6051
SHEET 15 OF 17

NOT FOR CONSTRUCTION

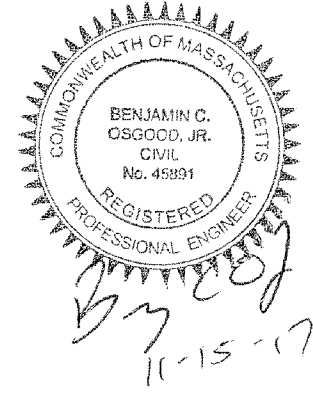
SOIL STOCKPILE NOTE:

DURING ROADWAY CONSTRUCTION
STOCKPILE SOILS WHERE HOMES
WILL BE CONSTRUCTED.
SURROUND ANY STOCKPILES WITH
A ROW OF HAY BALES AND SILT
FENCE. STOCKPILES WHICH
REMAIN FOR MORE THAN 30 DAYS
SHALL BE HYDROSEEDING.

DURING HOME CONSTRUCTION
ADJUST STOCKPILE LOCATIONS AS
REQUIRED.



RANGER ENGINEERING &
DESIGN, LLC
13 Branch Street, Suite 101
Methuen, MA 01844
T 978.435.1324



BYFIELD ESTATES
BYFIELD (NEWBURY), MA 01922
ASSESSOR'S MAP R-20 LOT 75
EROSION AND SEDIMENTATION
CONTROL PLAN
BYFIELD ESTATES, LLC
2 DEARBORN WAY
MIDDLETON, MA 01949

NO.	DATE	INITIAL COMMENTS	REVISIONS	BY
1	11-15-2017			ECO

PROJECT 15-1516
DATE 2017-03-22
DRAWING SCALE 1"=40'
DRAWN BY JRA
APPROVED BY BCO

CS8001
SHEET 16 OF 17

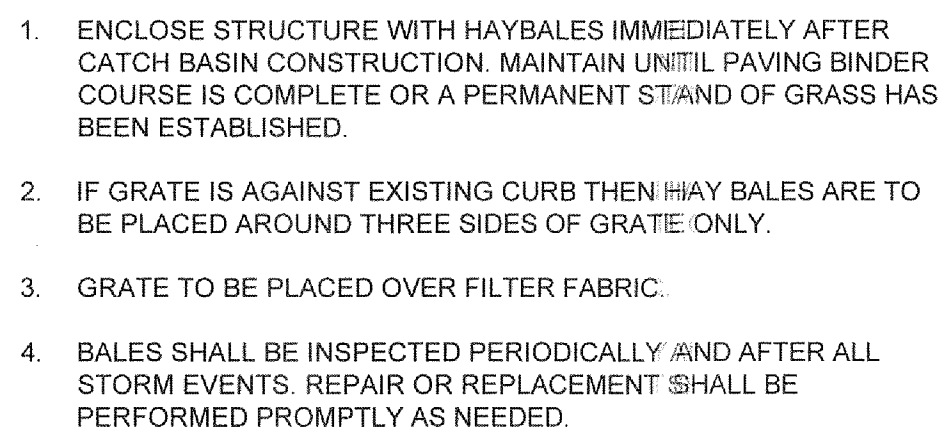
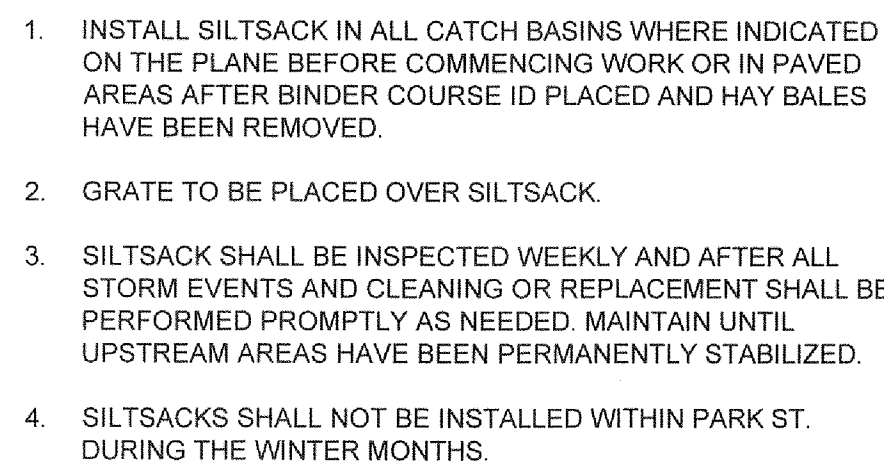
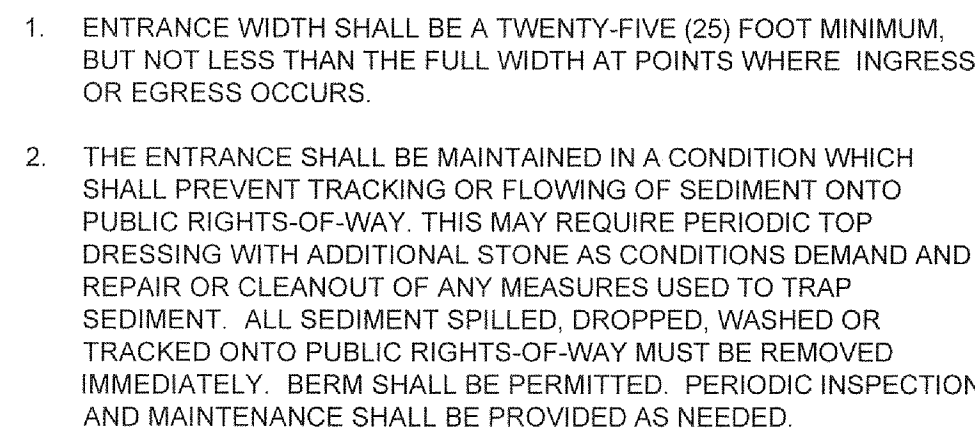
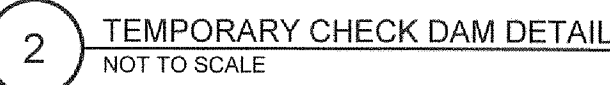
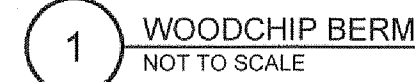
NOT FOR CONSTRUCTION

1. THE CONTRACTOR MUST INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND IN THE DETAILS PRIOR TO STARTING ANY OTHER WORK ON THE SITE. EROSION CONTROL MUST BE INSTALLED AT EVERY INLET STRUCTURE (EXISTING AND PROPOSED) AND MAINTAINED FOR THE DURATION OF THE PROJECT.
2. EROSION CONTROLS AS SHOWN ON PLANS SHALL BE INSPECTED, REPAIRED AND/OR MAINTAINED BY THE CONTRACTOR WEEKLY AND WITHIN 12 HOURS OF EACH STORM EVENT.
3. SEDIMENT DEPOSITS SHALL BE REMOVED WHEN THEY REACH A DEPTH OF 6 INCHES.
4. SEDIMENT SHALL BE CONTAINED WITHIN THE CONSTRUCTION SITE, AWAY FROM DRAINAGE STRUCTURES.
5. STABILIZE SLOPES STEEPER THAN 3:1 (HORIZONTAL TO VERTICAL) WITH SEED, SECURED GEOTEXTILE FABRIC, OR ROCK RIP-RAP AS REQUIRED TO PREVENT EROSION DURING CONSTRUCTION.
6. CLEAN OUT ALL CATCH BASINS, DRAIN MANHOLES AND STORM DRAIN PIPES AFTER COMPLETION OF CONSTRUCTION.
7. LOAM AND SEED ALL DISTURBED AREAS.
8. UPON ESTABLISHMENT OF PERMANENT VEGETATION OVER DISTURBED AREAS, REMOVE AND DISPOSE OF HAYBALES, STAKES AND SILT FENCE.
9. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN AND SUPPLEMENT THE SPECIFIED SEDIMENTATION CONTROLS AS NECESSARY TO PREVENT SEDIMENTATION OF OFF-SITE AREAS AND/OR ANY REGULATED RESOURCE AREAS. FAILURE BY THE CONTRACTOR TO CONTROL EROSION, POLLUTION AND/OR SILTATION SHALL BE CAUSE FOR THE OWNER TO EMPLOY OUTSIDE ASSISTANCE OR TO USE HIS OWN MEANS TO PROVIDE THE NECESSARY CORRECTIVE MEASURE. THE COST OF SUCH ASSISTANCE PLUS PROJECT ENGINEERING COSTS WILL BE THE CONTRACTOR'S RESPONSIBILITY.
10. THE CONTRACTOR SHALL CHECK THE CONDITION OF EROSION CONTROLS DAILY TO KEEP THEM IN GOOD OPERATING CONDITION. EROSION CONTROLS SHALL ALSO BE INSPECTED, REPAIRED AND MAINTAINED BY THE CONTRACTOR WITHIN 12 HOURS OF ANY STORM EVENT PRODUCING 1/2 INCH OF RAINFALL OR MORE. EROSION CONTROLS SHALL BE REPLACED WHEN DETERIORATED, OR WHEN ORDERED BY THE ENGINEER. SEDIMENT DEPOSITS SHALL BE REMOVED WHEN THEY REACH A DEPTH OF 6 INCHES.
11. IN ADDITION TO THOSE LOCATIONS SHOWN ON THIS PLAN AND ON THE GRADING AND DRAINAGE PLANS, EROSION CONTROLS SHALL BE INSTALLED AT THE FOLLOWING LOCATIONS: TOE OF SLOPE OF EMBANKMENT CONSTRUCTION, TOE OF TEMPORARY EARTHWORK STOCKPILES.
12. EROSION AND SEDIMENTATION CONTROL SHALL BE IN COMPLIANCE WITH MASSACHUSETTS STORMWATER POLICY.

2. INSTALL EROSION AND SEDIMENT CONTROLS AS SHOWN ON PLAN.
2. COMMENCE CLEARING, GRUBBING AND EARTHWORK.
3. CUT AND DISPOSE OF ANY DEBRIS PRODUCED DURING EARTHWORK.
4. INSTALL SITE DRAINAGE AND UTILITIES.
5. STABILIZE SIDE SLOPES. SIDE SLOPES MUST BE FULLY STABILIZED BEFORE ANY STORMWATER DISCHARGE.
6. PERFORM EARTHWORK OPERATIONS. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED WITHIN 72 HOURS AFTER BEING CONSTRUCTED. TEMPORARY GRADED AREAS SHOULD BE STABILIZED WITH MULCH BY OCTOBER 1ST, SO AS NOT TO BE LEFT EXPOSED DURING WINTER CONDITIONS.
7. INSTALLATION OF UNDERGROUND UTILITIES AND CATCH BASINS SHALL BE PROTECTED FROM SEDIMENT IN ACCORDANCE WITH THE PLANS. THE CONTROLS SHALL REMAIN UNTIL THE SITE IS SUFFICIENTLY STABILIZED. ALL PERMANENT STORMWATER MANAGEMENT MEASURES SHALL HAVE A HEALTHY STAND OF VEGETATION ESTABLISHED PRIOR TO DIRECTING RUNOFF INTO THEM.
8. AS THE BUILDING(S) ARE COMPLETED, ALL DISTURBED AREAS SHALL BE PERMANENTLY STABILIZED WITHIN 72 HOURS.
9. FINAL PAVING OF DRIVEWAYS.
10. INSPECT ALL SEDIMENT AND EROSION CONTROL MEASURES.
11. INSTALL SITE LANDSCAPING AND PERMANENT SEEDING OF ALL DISTURBED AREAS.
12. AFTER ALL SEEDED AREAS HAVE ESTABLISHED STABLE GROWTH, ALL TEMPORARY EROSION CONTROL CAN BE REMOVED.
13. CONTRACTOR SHALL NOTIFY AND COORDINATE WITH ALL AUTHORITIES RESPONSIBLE FOR INSPECTIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL REQUIRED INSPECTION SIGN-OFFS.

1. THE CONTRACTOR IS TO INSTALL AND MAINTAIN DRAINAGE FACILITIES AS SHOWN ON PLAN (BY TTI ENVIRONMENTAL INC., DATED MARCH, 2017).
2. PRIOR TO CONSTRUCTION, ALL EROSION/SILTATION CONTROL DEVICES SHOWN ON ABOVE PLAN ARE TO BE INSTALLED. TO PREVENT SILT INTRUSION INTO THE DRAINAGE SYSTEM DURING CONSTRUCTION, THE CONTRACTOR IS TO INSTALL AND MAINTAIN INLET PROTECTION AT ALL CATCH BASINS, AND SET A SILT FENCE AND HAY BALES AT ALL SLOPES WHICH MAY ERODE IN THE DIRECTION OF ANY OPEN DRAINAGE FACILITIES. SUCH PREVENTIVE MEASURES ARE TO BE MAINTAINED THROUGHOUT THE CONSTRUCTION PROCESS.
3. ALL CONSTRUCTION OF DRAINAGE FACILITIES IS TO BE INSPECTED BY TTI ENVIRONMENTAL INC. TO VERIFY CONFORMANCE TO THE DESIGN PLAN.
4. THE SEQUENCE OF DRAINAGE CONSTRUCTION SHALL BE AS FOLLOWS:
 - A. CLEAR, GRUB, EXCAVATE AREAS FOR DRAINAGE SYSTEMS.
 - B. TRENCH AND INSTALL PIPES, CATCH BASINS MANHOLES
 - C. INSTALL INLET PROTECTION.
5. EROSION CONTROLS ARE TO BE INSPECTED AND MAINTAINED ON A DAILY BASIS. UPON DISCOVERY OF SILT BUILD-UP IN ANY CATCH BASIN SUMPS, OR ANY OTHER STRUCTURES, THEY ARE TO BE CLEANED.
6. ALL EXPOSED SOILS SHALL BE IMMEDIATELY STABILIZED WITH A LAYER OF MULCH HAY OR JUTE BLANKETS-AS NEEDED FOR SLOPES STEEPER THAN 3:1.
7. UPON INSTALLATION OF CATCH BASINS, INLET PROTECTION-AS DESCRIBED ON SITE PLANS- SHALL BE INSTALLED AND MAINTAINED UNTIL READY FOR PAVING.
8. PRIOR TO CONSTRUCTION OF IMPERVIOUS AREAS, ALL DRAINAGE STRUCTURES AND PIPES SHALL BE INSTALLED AND INSPECTED FOR PROPER FUNCTION. DURING CONSTRUCTION OF OTHER SITE FEATURES, ALL DRAINAGE FACILITIES SHALL BE INSPECTED ON A DAILY BASIS AND CLEANED/REPAIRED IMMEDIATELY UPON DISCOVERY OF SEDIMENT BUILD-UP OR DAMAGE.
9. AFTER PAVING IS INSTALLED, IT SHALL BE SWEEP CLEAN ON A REGULAR BASIS.
10. THE ENTIRE DRAINAGE SYSTEM MUST BE VACUUMED OUT BEFORE THE ISSUANCE OF THE LAST CERTIFICATE OF OCCUPANCY.

1. INSPECTION OF ALL DRAINAGE FACILITIES (CATCH BASINS, PIPES AND DETENTION BASINS, EVERY THREE MONTHS. DURING THESE INSPECTIONS, THE INSPECTOR (A REGISTERED PROFESSIONAL CIVIL ENGINEER QUALIFIED IN DRAINAGE SYSTEMS AS DESIGNATED BY THE PROJECT ASSOCIATION) SHALL LOOK FOR EVIDENCE OF THE FOLLOWING: STRUCTURAL DAMAGE, SILT ACCUMULATION (NEAR INLET INVERTS ON CATCH BASINS, INFILTRATORS), AND IMPROPER FUNCTION. A REPORT ON THE SYSTEM SHALL BE DELIVERED TO THE PROJECT ASSOCIATION, WITH A COPY DELIVERED TO THE TOWN ENGINEER.
2. AFTER INSPECTION, IF ANY OF THE ABOVE CONDITIONS EXIST, THE INSPECTOR SHALL NOTIFY THE PROJECT ASSOCIATION WHO SHALL IMMEDIATELY ARRANGE FOR ALL NECESSARY REPAIRS AND/OR SEDIMENT REMOVAL.
3. THE ROAD WAY IS TO BE SWEEPED CLEAN, AS REQUIRED (I.E., VISUALLY NOTICEABLE DEBRIS BUILD-UP). A MINIMUM OF ONCE PER YEAR.
4. ALL GRADED SLOPES SHALL BE INSPECTED EVERY SPRING FOR EROSION. UPON DISCOVERY OF ANY FAILURE (IE. EROSION), LOAM AND SEED SHALL BE PUT IN PLACE AND NURTURED.
5. DURING THE WINTER MONTHS, ALL SNOW IS TO BE STORED SUCH THAT SNOW MELT IS CONTROLLED WITHIN THE PAVED AREA AND ENTERS THE STORMWATER TREATMENT SYSTEM.



SHEET 17 OF 17