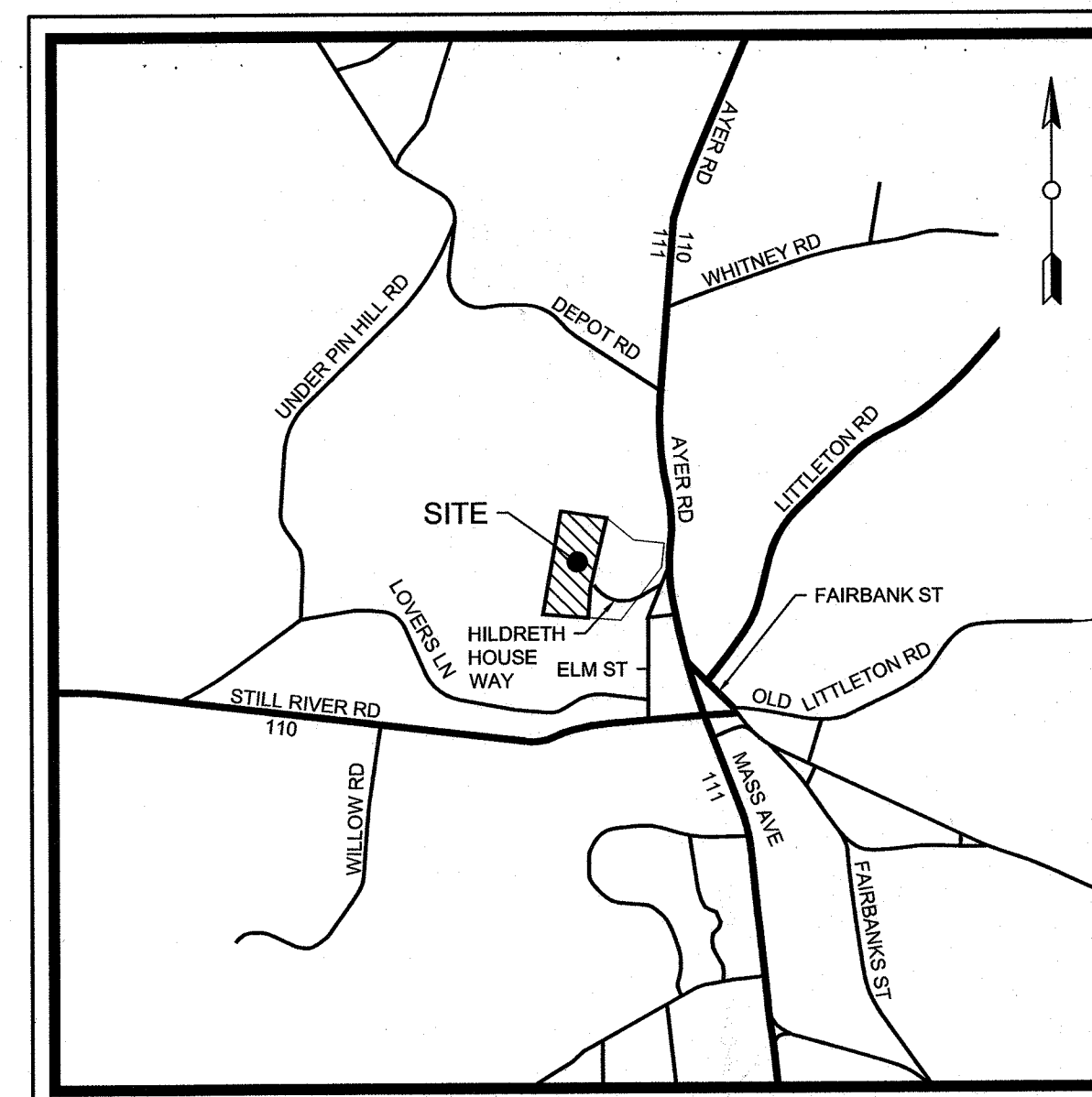


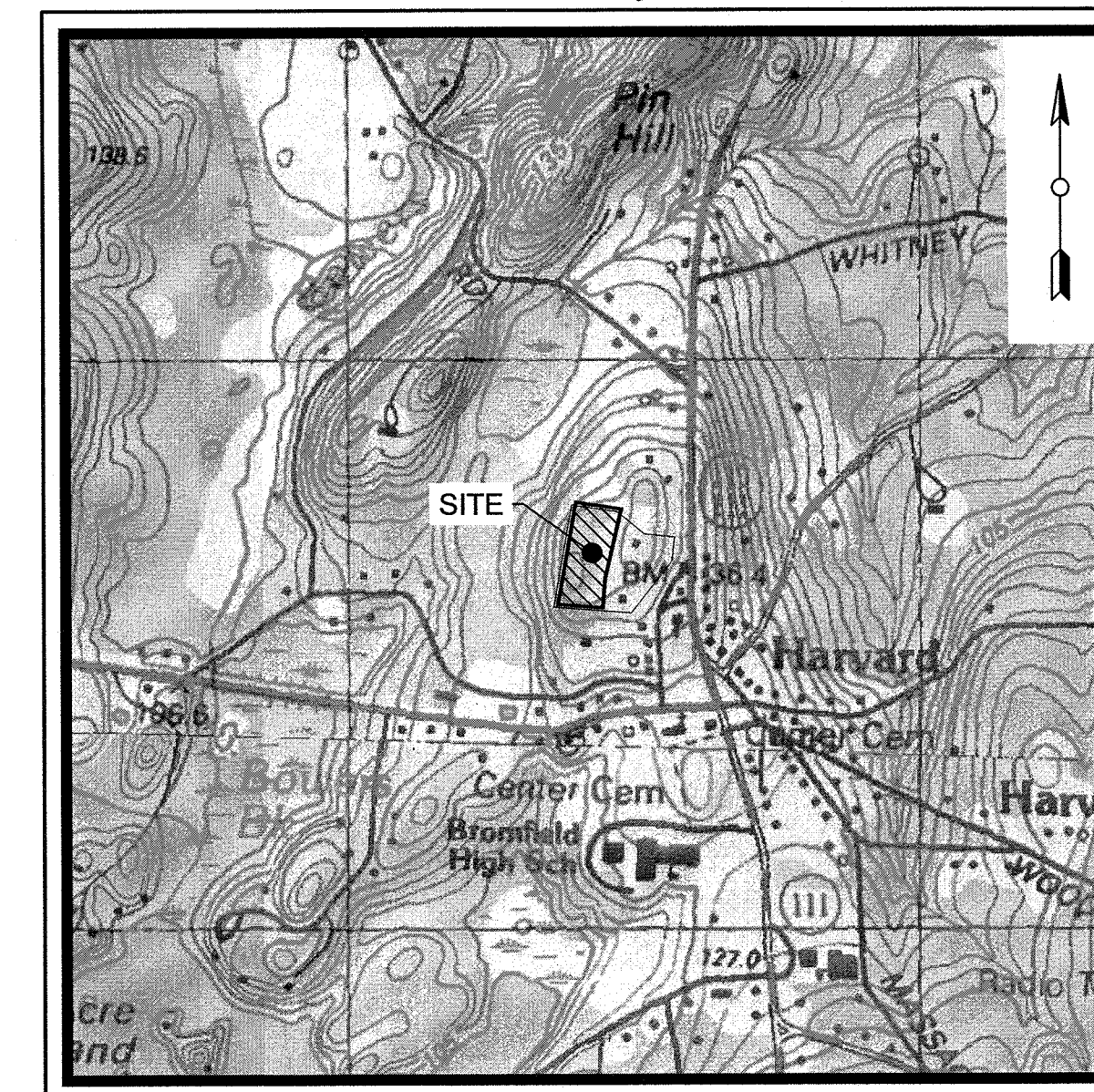
**PREPARED FOR:**  
**TOWN OF HARVARD**  
**HILDRETH HOUSE HOUSING OVERLAY DISTRICT**  
**13 AYER ROAD**  
**HARVARD, MA 01451**

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2.	CS0002	LEGEND, NOTES, AND ABBREVIATIONS
3.	CS0201	EXISTING CONDITIONS PLAN
4.	V0801	ROADWAY LAYOUT AND PROPERTY LINE PLAN
5.	CS1001	LAYOUT AND MATERIALS PLAN
6.	CS1501	GRADING AND DRAINAGE PLAN
7.	CS1701	UTILITY PLAN
8.	CS3501	ROAD PROFILE PLAN
9.	CS6001	SITE DETAILS
10.	CS6021	DRAINAGE DETAILS
11.	CS6051	UTILITY DETAILS
12.	CS8001	EROSION & SEDIMENTATION CONTROL PLAN
13.	CS8501	EROSION & SEDIMENTATION CONTROL NOTES



**LOCATION MAP**  
Scale: N.T.S.



**USGS MAP**  
Scale: N.T.S.

PREPARED BY:  
**TTI ENVIRONMENTAL, INC.**  
A SERVICE DISABLED VETERAN OWNED SMALL BUSINESS (CVE CERTIFIED)



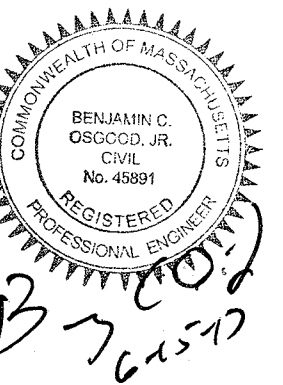
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ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR  
AND OWNER MUST BE NOTIFIED OF ANY  
DISCREPANCIES BEFORE PROCEEDING WITH WORK



COVER SHEET

11 & 16 ELM STREET  
HARVARD, MA 01451

ASSESSOR'S MAP 17C LOTS 35 & 36

PREPARED FOR:

TOWN OF HARVARD

HILDRETH HOUSE HOUSING OVERLAY DISTRICT  
13 AYER ROAD  
HARVARD, MA 01451

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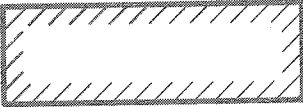
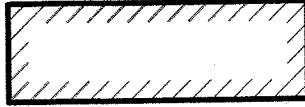














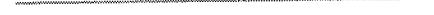
























































































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PROJECT	17-004
DATE	2017-06-15
DRAWING SCALE	AS NOTED
DRAWN BY	CPH
APPROVED BY	BCO

**CS0001**

SHEET 1 OF 13



EXISTING	LEGEND	PROPOSED	ABBREVIATIONS
	BUILDING		ADJ ADJUST
	PROPERTY LINE		APPROX APPROXIMATE
	EXCLUSIVE USE AREA		BIT BITUMINOUS
	ADJACENT PROPERTY LINE		BOS BOTTOM OF SLOPE
	SETBACK LINE		CB CATCH BASIN
	RIGHT-OF-WAY LINE		CCB CAPE COD BERM
	RIGHT-OF-WAY EASEMENT		CLDI CEMENT LINED DUCTILE IRON
	ROADWAY CENTERLINE		C.L.F. CHAIN LINK FENCE
	STONE WALL		CONC CONCRETE
	FENCE		COND CONDUIT
	EDGE OF PAVEMENT		DCB DOUBLE CATCH BASIN
	CAPE COD BERM		DH DRILL HOLE
	SIDEWALK		DMH DRAIN MANHOLE
	OUTCROP/ROCKS		DS DOWN SPOUT
	GRAVEL/RIP RAP		ELEV ELEVATION
	BIT. CONC. PAVEMENT		EOG EDGE OF GRASS
	BIT. CONC. SIDEWALK		EQ EQUAL
	BIT. CONC. DRIVEWAY		ESHGW ESTIMATED SEASONAL HIGH GROUND WATER
	SPOT ELEVATION		EXIST EXISTING
	LIGHT		FDN FOUNDATION
	SIGN		FES FLARED END SECTION
	TEST PIT LOCATION		FND FOUND
	PERCOLATION LOCATION		FP FIRE PROTECTION SERVICE
	CONTOUR		F&G FRAME AND GRATE
	WATER LINE DOMESTIC		F&C FRAME AND COVER
	SANITARY SEWER		GF GARAGE FLOOR
	STORM SEWER		HDPE HIGH DENSITY POLYETHYLENE PIPE
	GAS LINE		HYD HYDRANT
	UNDERGROUND ELECTRIC		INV INVERT ELEVATION
	OVERHEAD ELECTRIC		IP IRON PIPE
	SANITARY MANHOLE		IR IRON ROD
	STORM DRAIN MANHOLE		L/A LANDSCAPE AREA
	STORM DRAIN INLET		MAX MAXIMUM
	STORM DRAIN FLARED END SECTION		MIN MINIMUM
	CONIFEROUS TREE		NIC NOT IN CONTRACT
	DECIDUOUS TREE		NTS NOT TO SCALE
	TREE LINE		OCS OUTLET CONTROL STRUCTURE
	FIRE HYDRANT		OE OVERHEAD ELECTRIC
	WATER VALVE		PC POINT OF CURVATURE
	CONSTRUCTION ENTRANCE		PCC POINT OF CURVE-CURVE
	SILT SACK		PERF PERFORATED
	SILT FENCE/SILT SOCK		PRC POINT OF REVERSE CURVE-CURVE
	HAYBALES		PROP PROPOSED
			PT POINT OF TANGENT
			PVC POLYVINYL CHLORIDE PIPE
			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
			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

## GENERAL NOTES:

- EXISTING CONDITIONS INFORMATION
  - 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.
  - MATERIALS
    - CURBING:

ON SITE:  
ALL CURBING ON SITE SHALL BE CAPE COD BERM (CCB) WITH A 4 INCH VERTICAL REVEAL, UNLESS OTHERWISE NOTED.
    - 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
    - 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
  - 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.
  - 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.
  - LAYOUT DIMENSIONS:

LAYOUT DIMENSIONS ARE FROM FACE OF BUILDINGS, RETAINING WALLS, CURBS OR BERMS.
  - TRAFFIC CONTROLS:

ALL SITE SIGNAGE AND PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
  - 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).
- UTILITIES
  - 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.
  - 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.
  - EXTERIOR LIGHTING:

ON-SITE LIGHTING SHALL BE LOCATED AS SHOWN ON THE UTILITY AND LIGHTING PLANS AND CONFORM TO THE PROVIDED DETAILS.
  - 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.
  - 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.
  - GENERAL CONSTRUCTION REQUIREMENTS:
    - 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.
    - 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.

## NOTES

- THE LOCUS IS SHOWN ON TOWN OF HARVARD ASSESSOR'S MAP 17C LOTS 35 & 36, LOCATED IN ZONING DISTRICT - HILDRETH HOUSE OVERLAY DISTRICT AND IS KNOWN AS 11 & 15 ELM STREET, HARVARD, MA 01451.
- ELEVATIONS ARE REFERENCED TO A BENCHMARK FOUND ON A SURVEY TRAVERSE POINT FROM A PREVIOUS PROJECT AT HILDRETH HOUSE SENIOR CENTER. ELEV.= 474.33
- TOPOGRAPHY SHOWN ON THIS PLAN IS THE RESULT OF A FIELD SURVEY PERFORMED BY TTI ENVIRONMENTAL, INC. DURING FEBRUARY 2017.
- DEED REFERENCE: BOOK 5619 PAGE 62 & BOOK 6822 PAGE 23, WORCESTER DISTRICT REGISTRY OF DEEDS.
- THIS PROPERTY IS NOT LOCATED IN A FLOOD HAZARD ZONE AS MAPPED BY FEMA, (WORCETER COUNTRY, MASSACHUSETTS, FIRM MAP NO. 25027C0314E, PANEL 314 OF 1075, EFFECTIVE DATE JULY 4, 2011)

## PLAN REFERENCES:

- "LAND IN HARVARD, MASS., SURVEYED FOR DOROTHY E. HILDRETH", PREPARED BY: CHARLES A. PERKINS CO. INC., SCALE: 1"=80', DATED: JANUARY 1979, PLAN BOOK 467 PLAN 66.
- "LAND IN HARVARD, MASS. SURVEYED FOR TOWN OF HARVARD" PREPARED BY: CHARLES A. PERKINS CO. INC., SCALE: 1"=40', DATED: JAN. 17, 1973, PLAN BOOK 405 PLAN 26
- "PLAN OF EASEMENTS. HARVARD COMMONS, HARVARD, MASSACHUSETTS", PREPARED BY: DAVID E. ROSS ASSOCIATES, INC., SCALE: 1"=40', DATED: DECEMBER, 1992, PLAN BOOK 680 PLAN 2
- "LAND IN HARVARD MASS. SURVEYED FOR EVA SMALL ESTATE & FIRST CONGREGATIONAL UNITARIAN SOCIETY" PREPARED BY: CHARLES A. PERKINS CO, INC., SCALE: 1"=20', DATED: OCTOBER, 1970, PLAN BOOK 345 PLAN 65

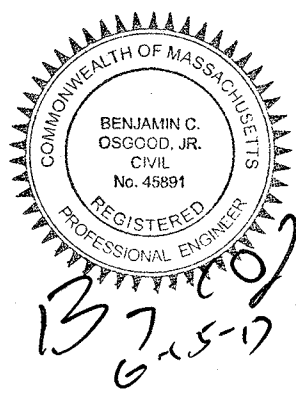
## LEGEND, NOTES AND ABBREVIATIONS

NO.	DATE	REVISIONS	BY

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PROJECT	17-004
DATE	2017-06-15
DRAWING SCALE	N.T.S.
DRAWN BY	CPH
APPROVED BY	BCO
<b>CS0002</b>	
SHEET	2 OF 13

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



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Since 1985

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HARVARD, MA 01451

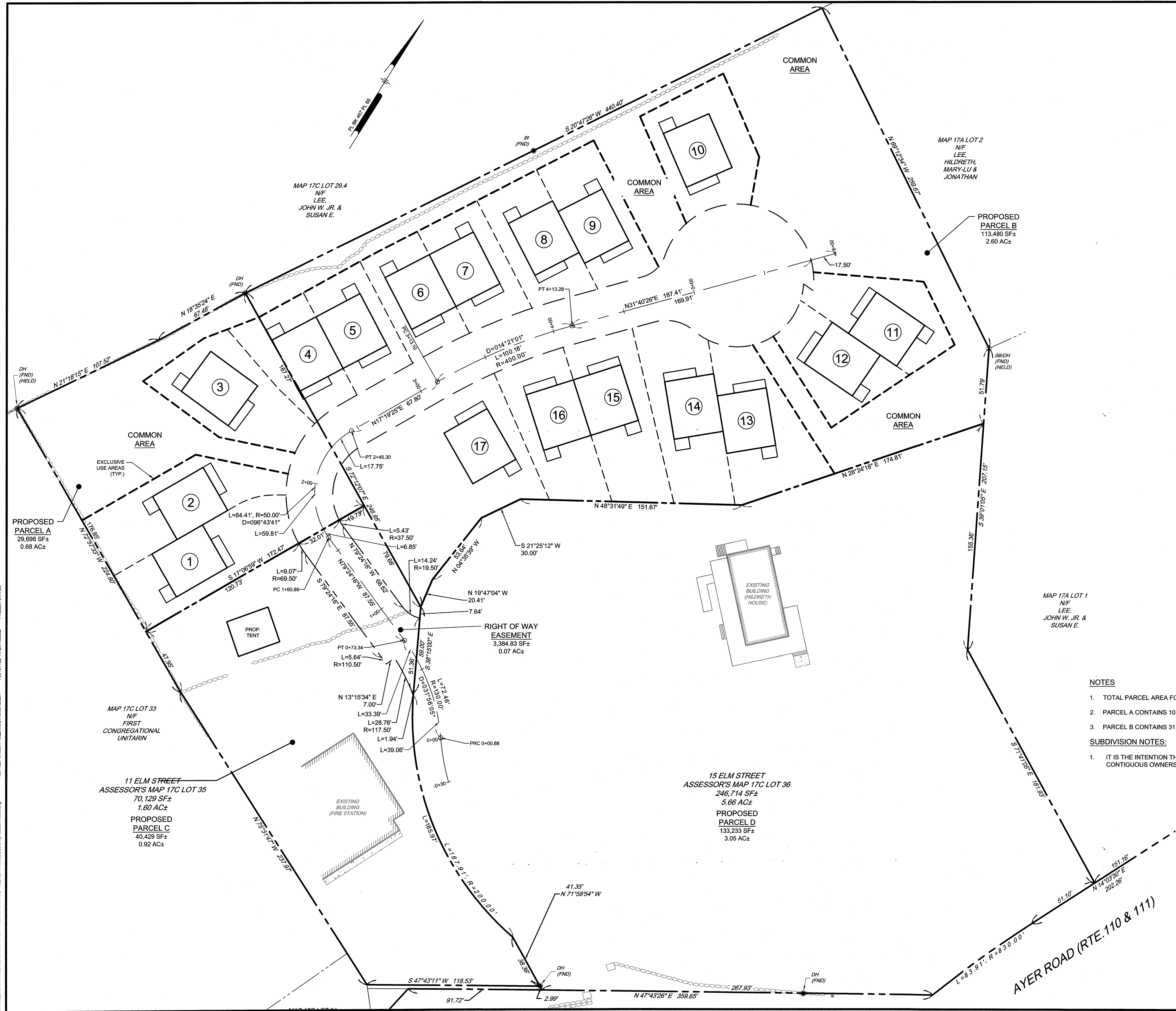
ASSESSOR'S MAP 17C LOTS 35 & 36

11 & 15 ELM STREET  
HARVARD, MA 01451





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#### NOTES

- TOTAL PARCEL AREA FOR 17 UNITS IS 143,179 SF± (3.28 AC±).
- PARCEL A CONTAINS 10,407 SF± (0.24 AC±) OF COMMON AREA.
- PARCEL B CONTAINS 31,066 SF± (0.71 AC±) OF COMMON AREA.

#### SUBDIVISION NOTES:

- IT IS THE INTENTION THAT PARCEL A AND PARCEL B TO BE IN CONTIGUOUS OWNERSHIP.

#### ROADWAY LAYOUT AND PROPERTY LINE PLAN

11 & 15 ELM STREET  
HARVARD, MA 01451  
ASSESSOR'S MAP 17C LOTS 35 & 36  
PREPARED FOR:  
TOWN OF HARVARD  
HILDRETH HOUSE HOUSING OVERLAY DISTRICT  
13 AYER ROAD  
HARVARD, MA 01451

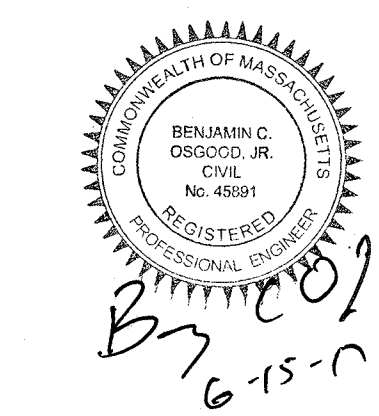
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PROJECT	17-004
DATE	2017-06-15
DRAWING SCALE	1"=30'
DRAWN BY	CPH
APPROVED BY	BCO

**V0801**

SHEET 4 OF 13



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# GRADING AND DRAINAGE PLAN

11 & 15 ELM STREET  
HARVARD, MA 01451

ASSESSOR'S MAP 17C LOTS 35 & 36

TOWN OF HARVARD  
HILDRETH HOUSE HOUSING OVERLAY DISTRICT

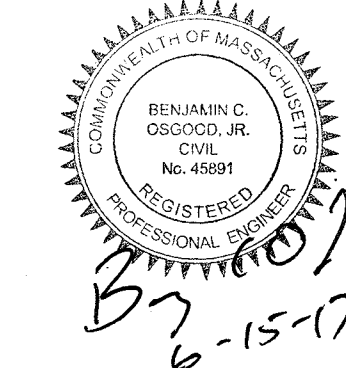
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HARVARD, MA 01451

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PROJECT	17-004
DATE	2017-06-15
DRAWING SCALE	1"=30'
DRAWN BY	CPH
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**CS1501**

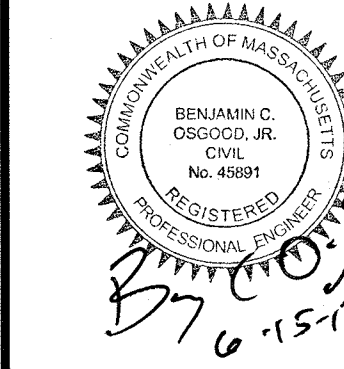
SHEET 6 OF 13



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**UTILITY PLAN**  
11 & 15 ELM STREET  
HARVARD, MA 01451

**ASSESSOR'S MAP 17C LOTS 35 & 36**  
PREPARED FOR:  
**TOWN OF HARVARD**  
HILDRETH HOUSE HOUSING OVERLAY DISTRICT  
13 AYER ROAD  
HARVARD, MA 01451

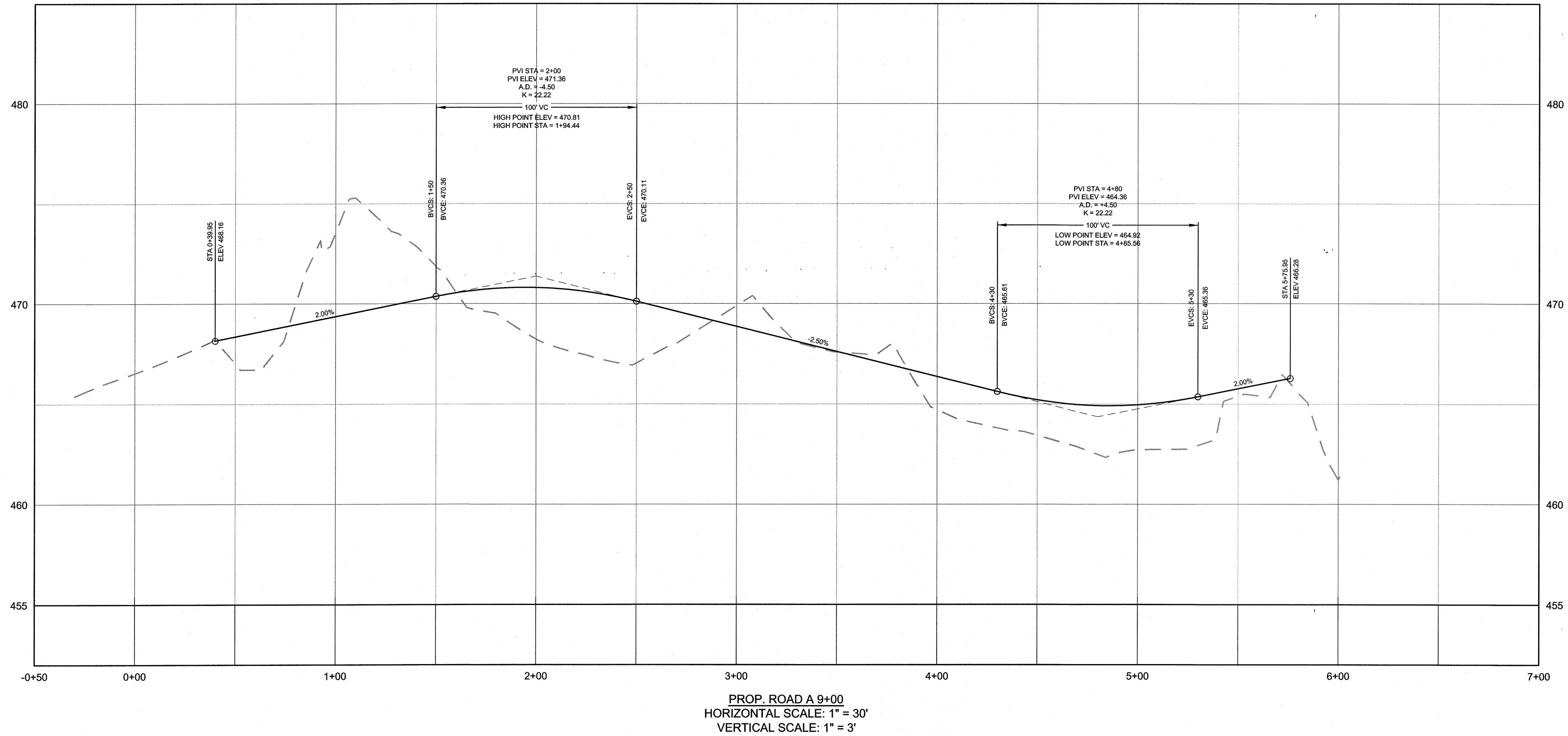
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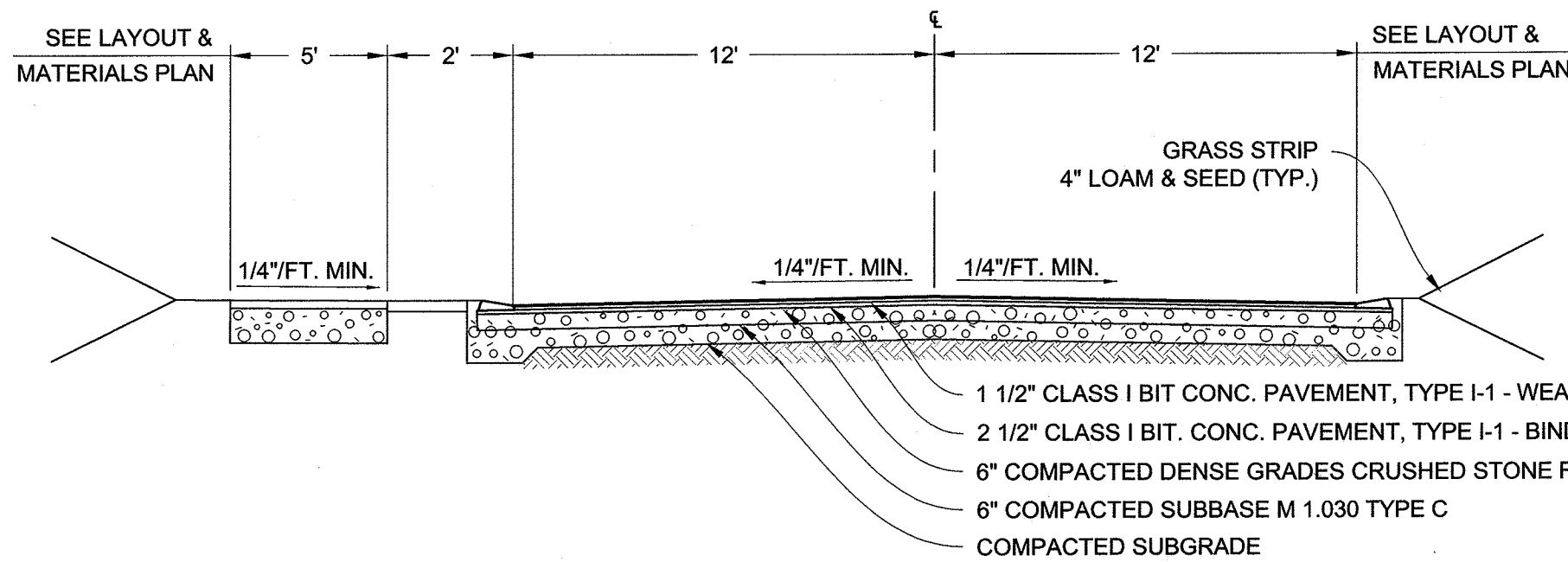
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**CS1701**  
SHEET 7 OF 13

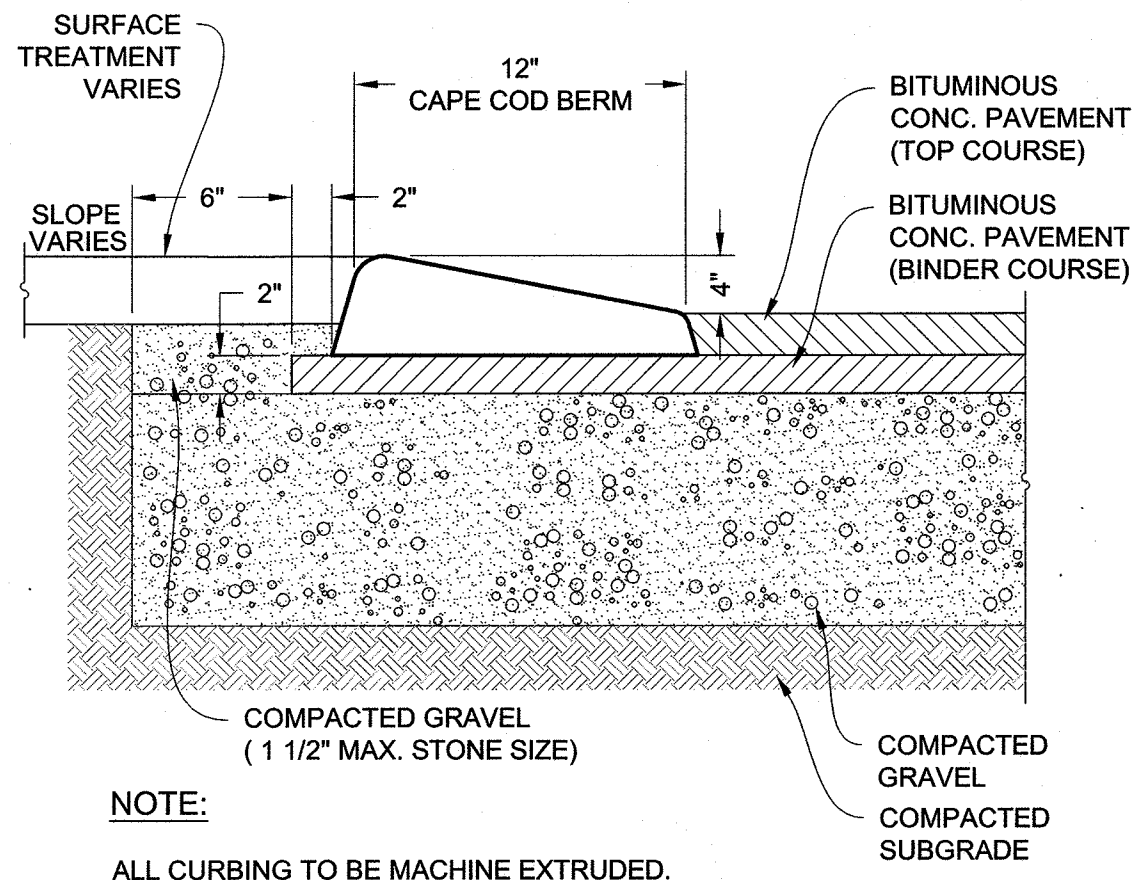
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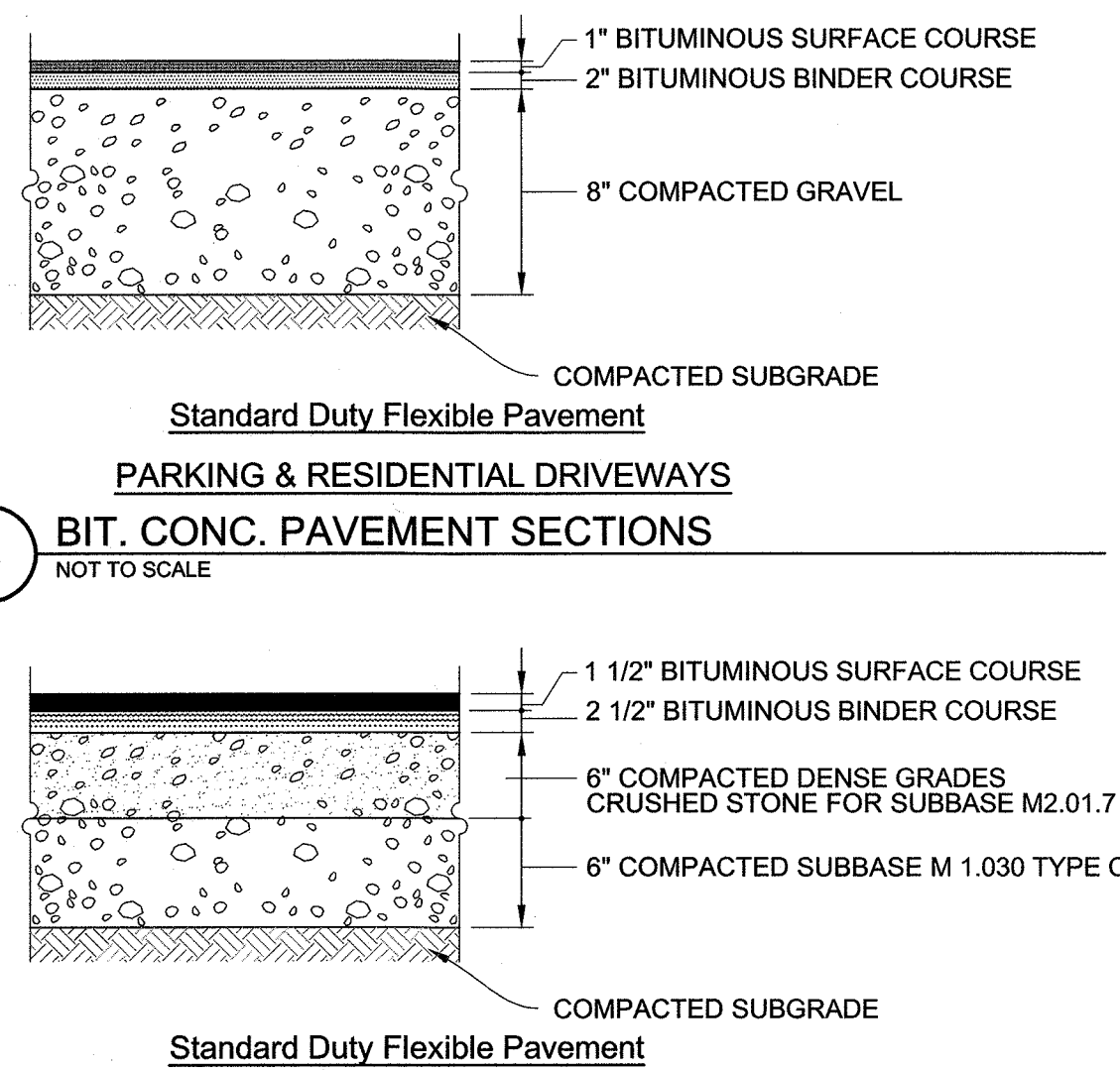




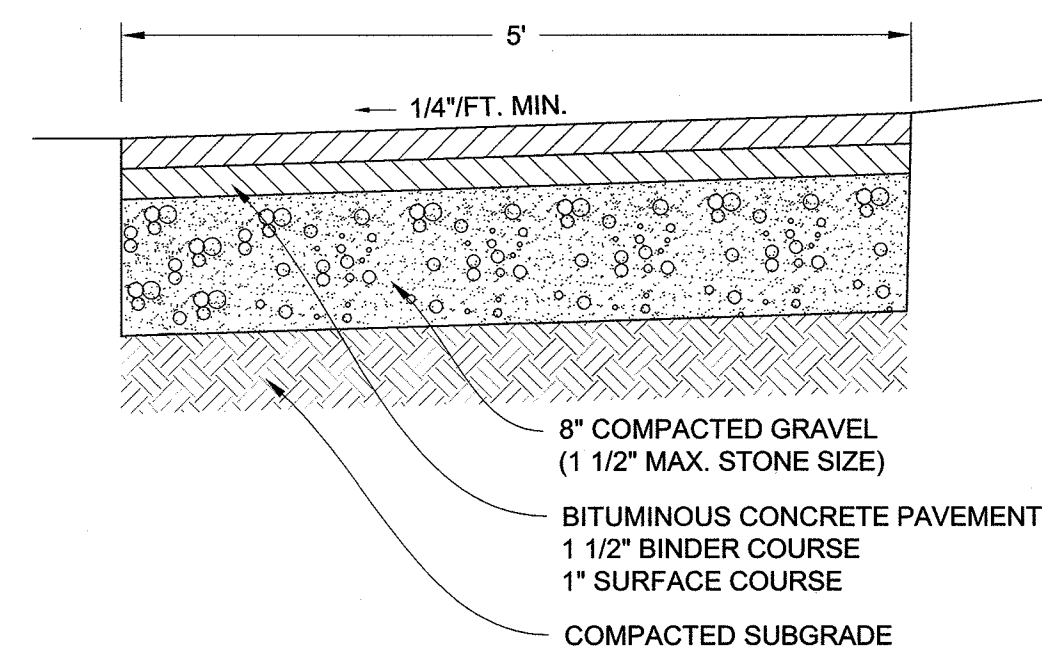
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NOT TO SCALE



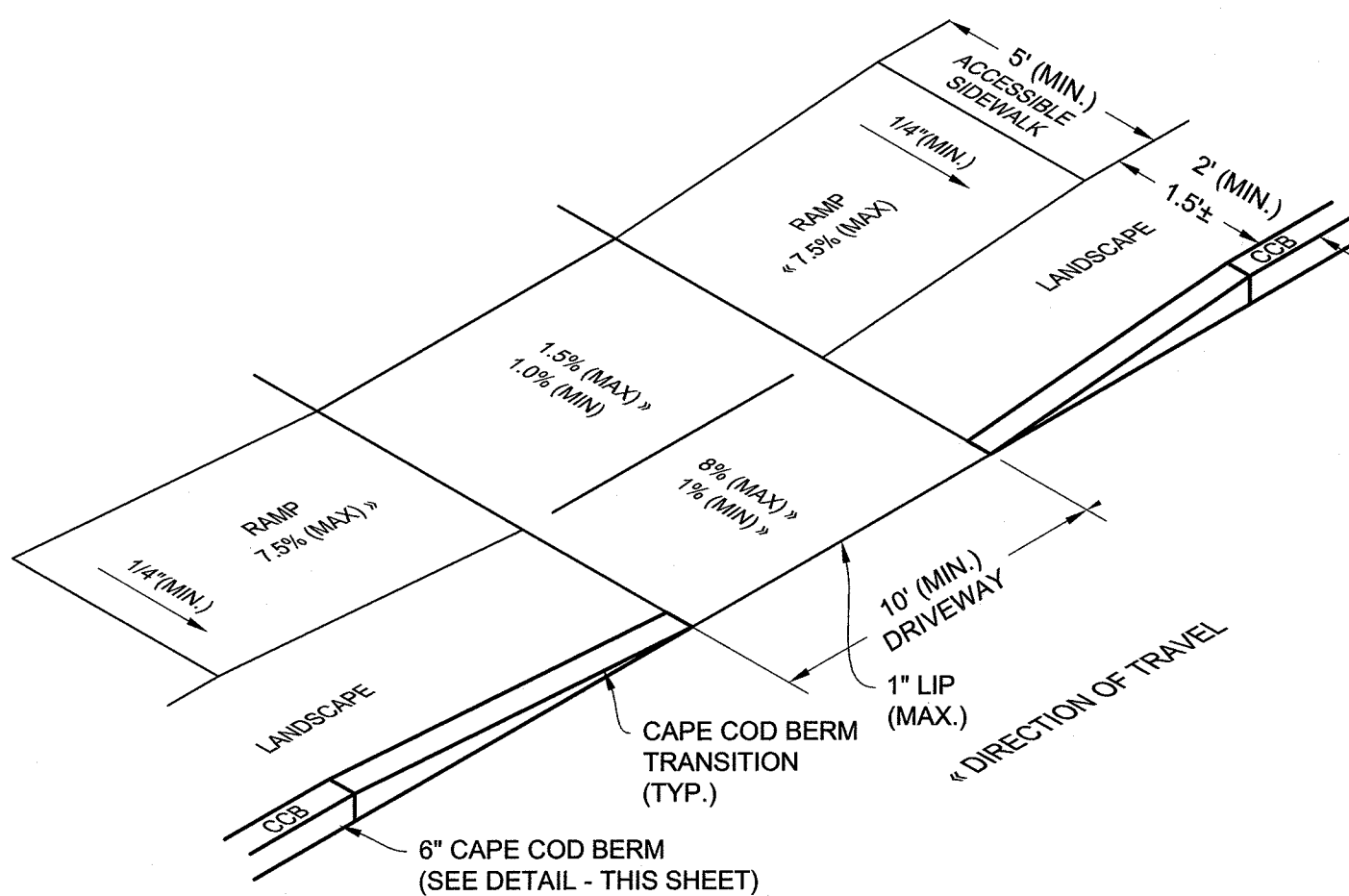
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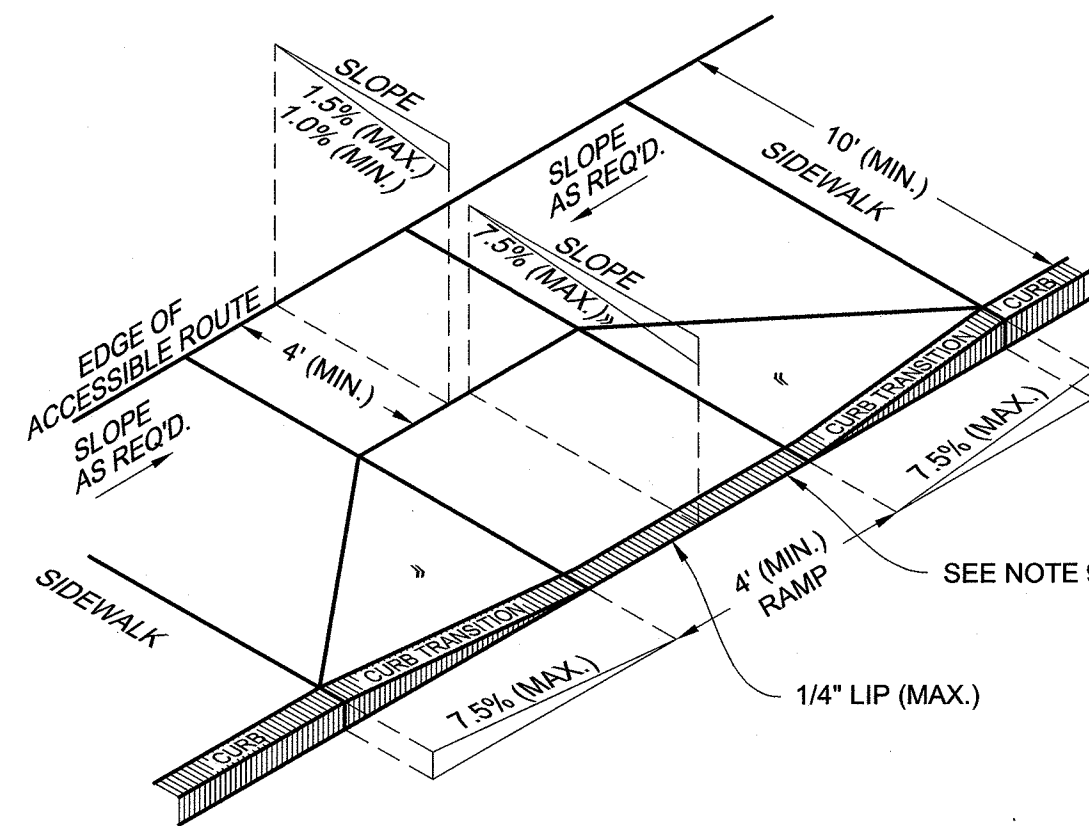
4 BIT. CONC. PAVE. SECTIONS - ROADWAY  
NOT TO SCALE



5 TYPICAL SIDEWALK SECTION  
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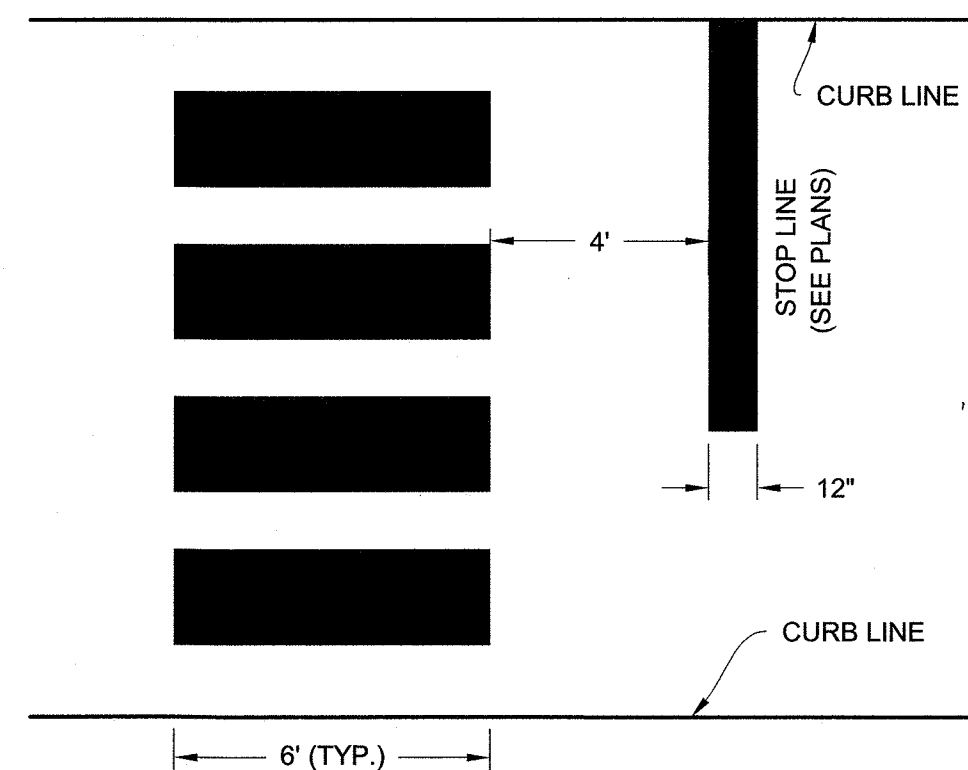


6 TYPICAL DRIVEWAY ENTRANCE W/ SIDEWALK  
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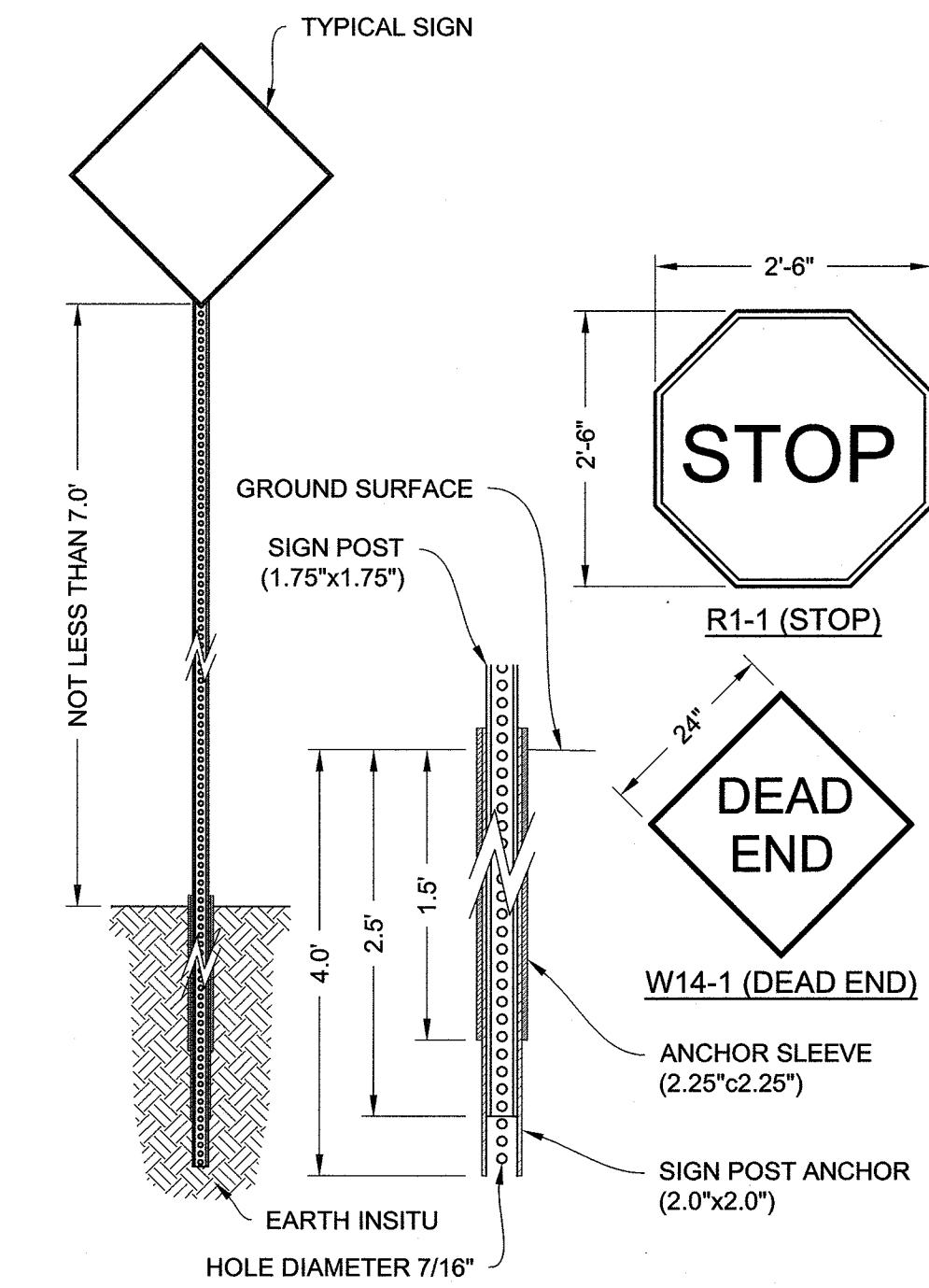
7 ACCESSIBLE CURB RAMP (ACR) - TYPE 'D'  
NOT TO SCALE

- NOTES:**
1. THE MAXIMUM ALLOWABLE SIDEWALK AND CURB RAMP CROSS SLOPES SHALL BE 1.5 (1% MIN.).
  2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
  3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE CURB RAMPS SHALL BE 7.5%.
  4. A MINIMUM OF 3 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
  5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
  6. RAMP, CURB, AND ADJACENT PAVEMENTS SHALL BE GRADED TO PREVENT PONDING.
  7. TYPICAL SIDEWALK SECTION FOR RAMP SECTION CONSTRUCTION.
  8. WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5' x 5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200 FEET.
  9. ELIMINATE CURBING AT RAMP WHERE IT ABUTS ROADWAY, EXCEPT WHERE VERTICAL CURBING IS INDICATED ON THE DRAWINGS TO BE SET FLUSH.

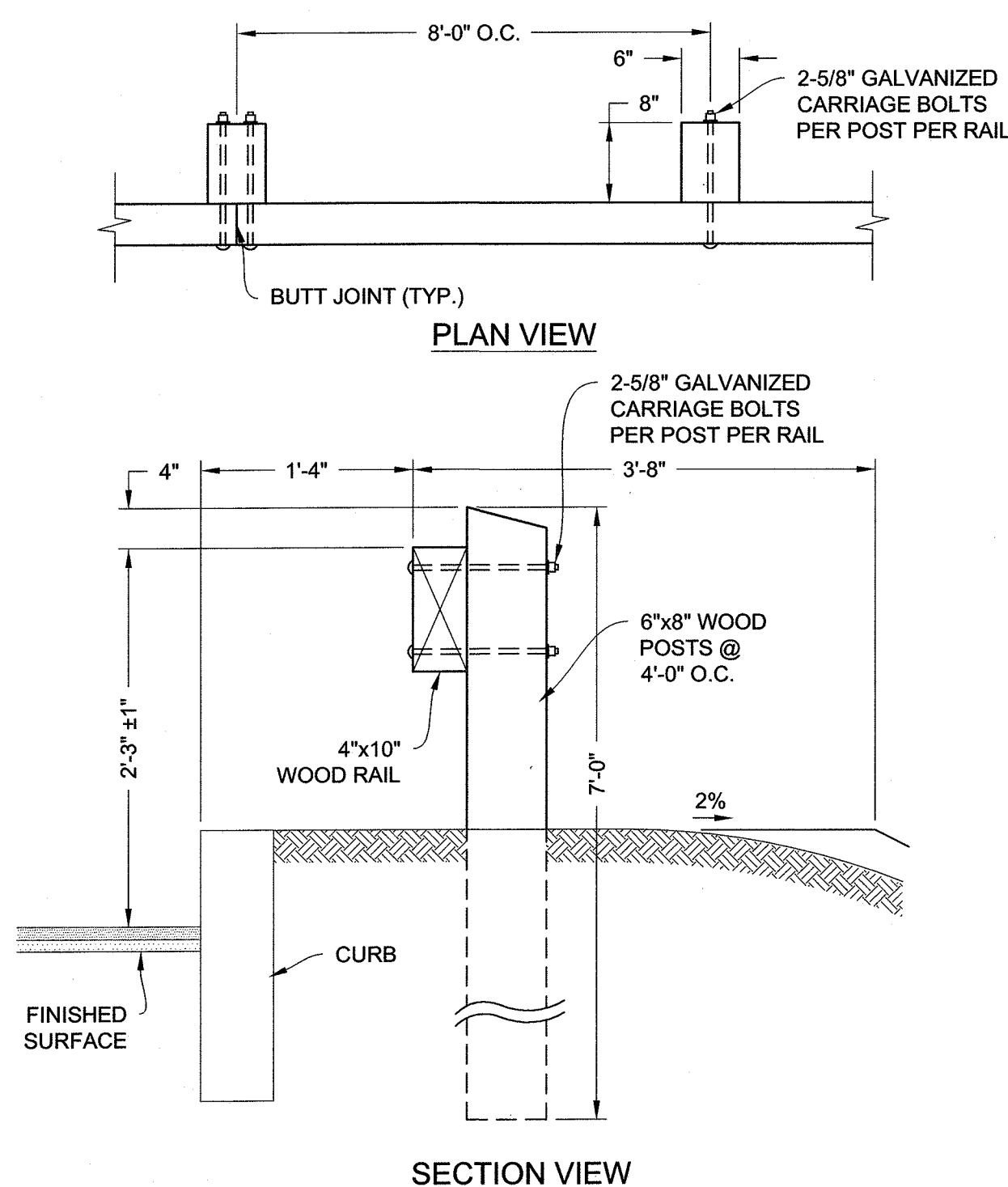


- NOTES:**
1. TWELVE INCH (12") LINES SHALL BE APPLIED IN ONE APPLICATION, NO COMBINATION OF LINES (TWO - 6 INCH LINES) WILL BE ACCEPTED.
  2. LONGITUDINAL CROSSWALK LINES TO BE PARALLEL TO CURB LINE.
  3. ALL LONGITUDINAL CROSSWALK LINES TO BE THE SAME LENGTH AND PROPERLY ALIGNED.
  4. CROSS WALK SIDE SLOPE SHALL NOT EXCEED 1.5%.

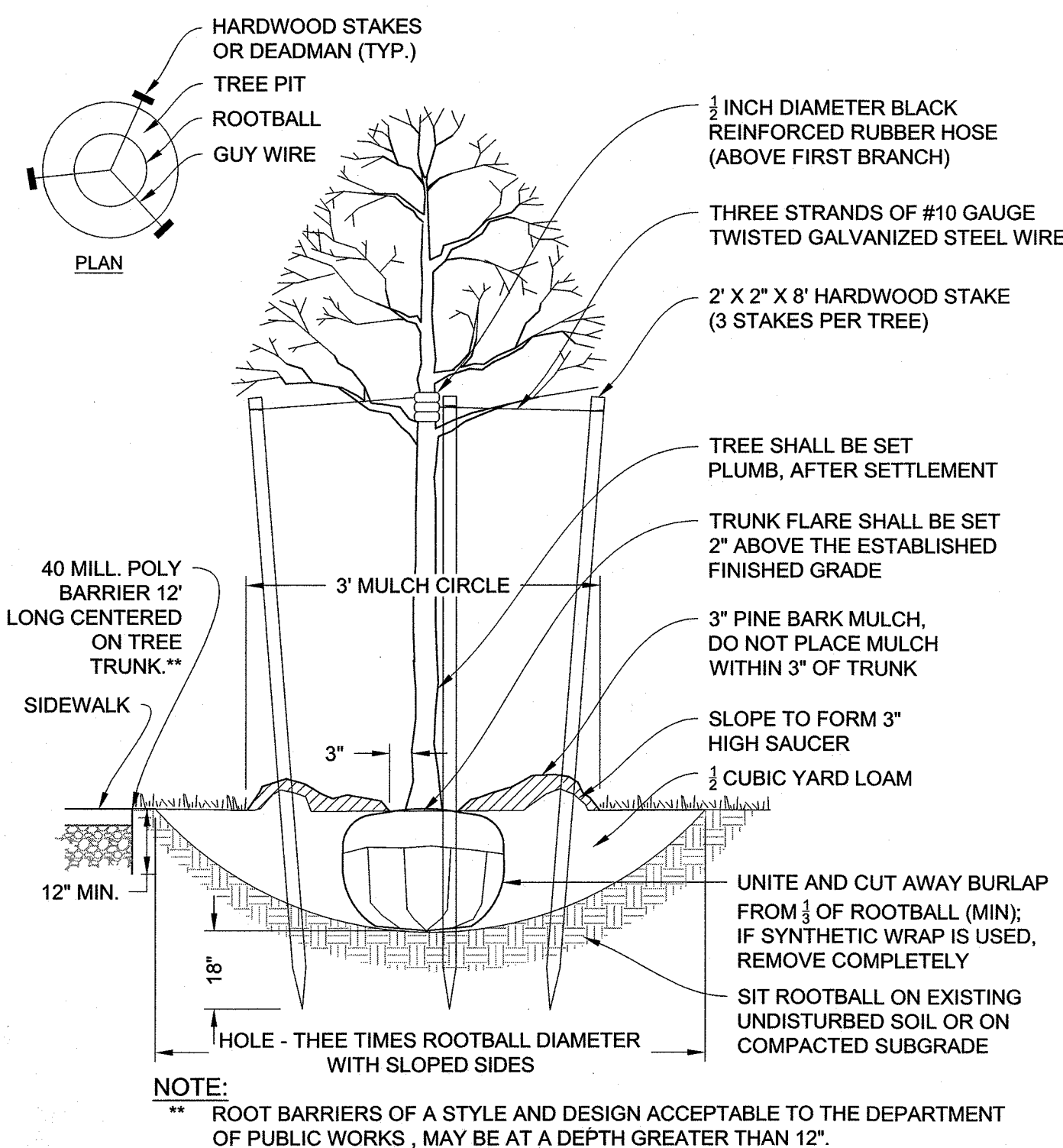
8 CROSSWALK  
NOT TO SCALE



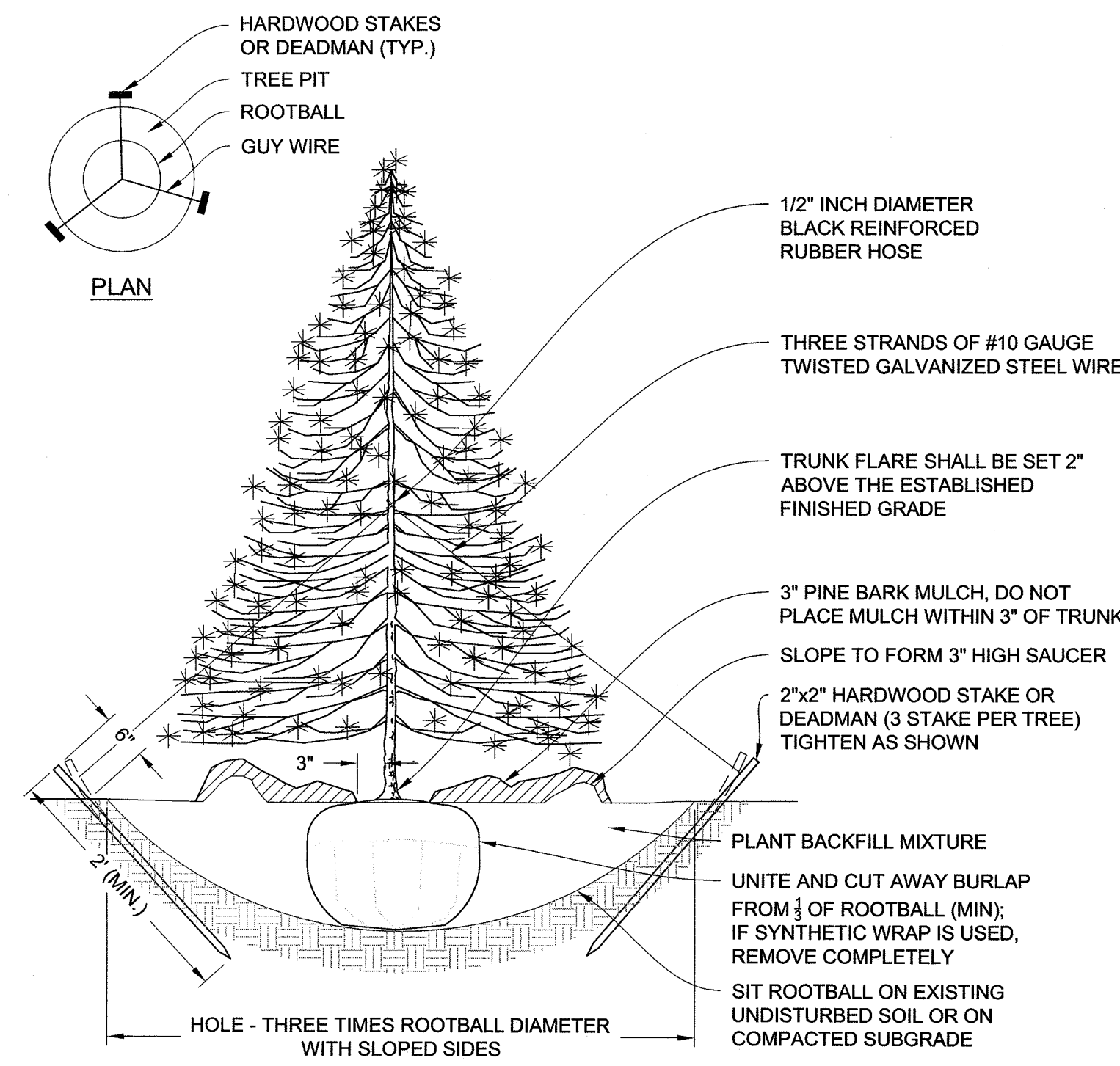
9 SIGN POST DETAIL  
NOT TO SCALE



10 WOOD GUARDRAIL  
NOT TO SCALE



11 TREE PLANTING (FOR 2\"/>

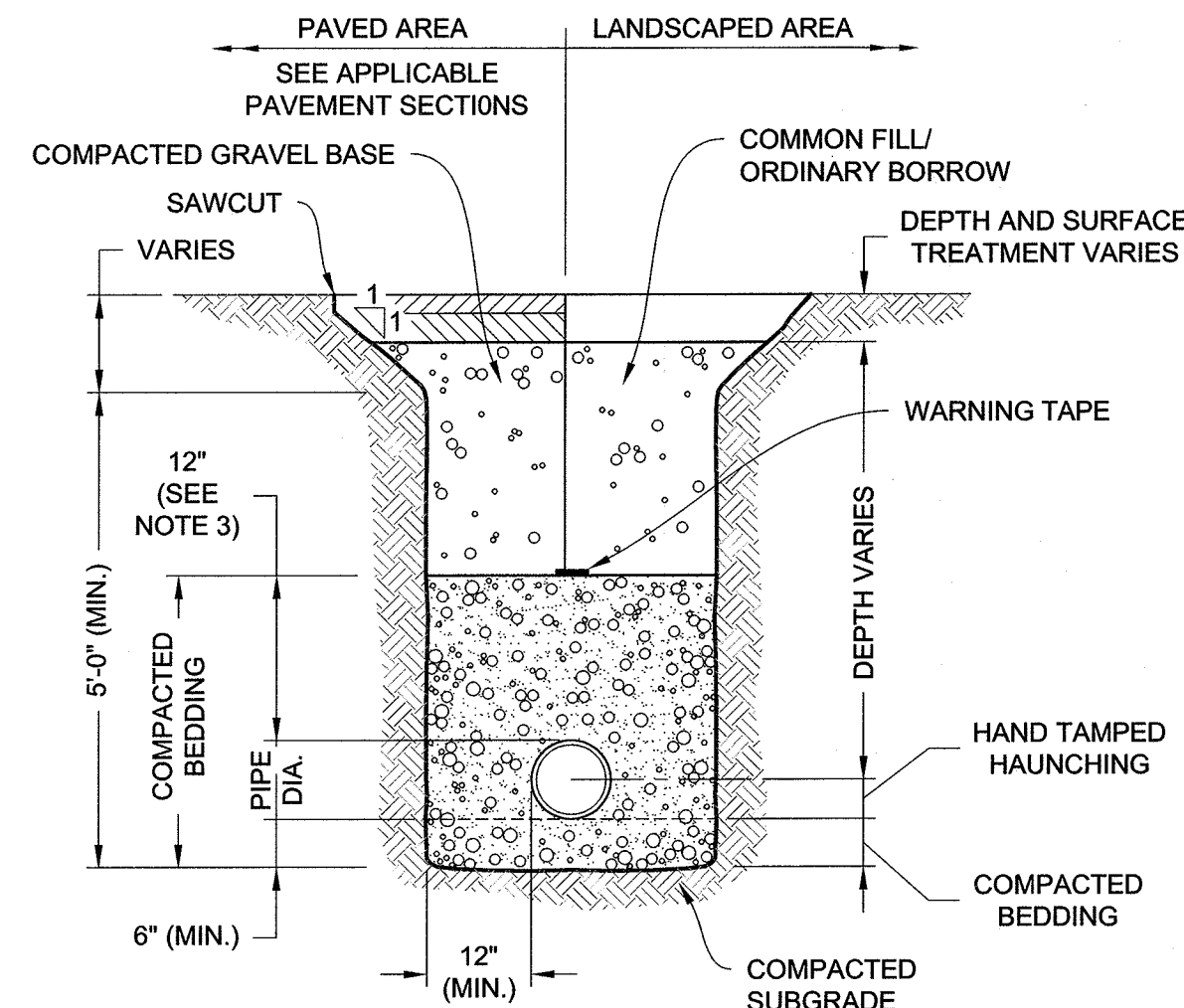


12 EVERGREEN TREE PLANTING  
NOT TO SCALE

NO.	DATE	REVISIONS	BY

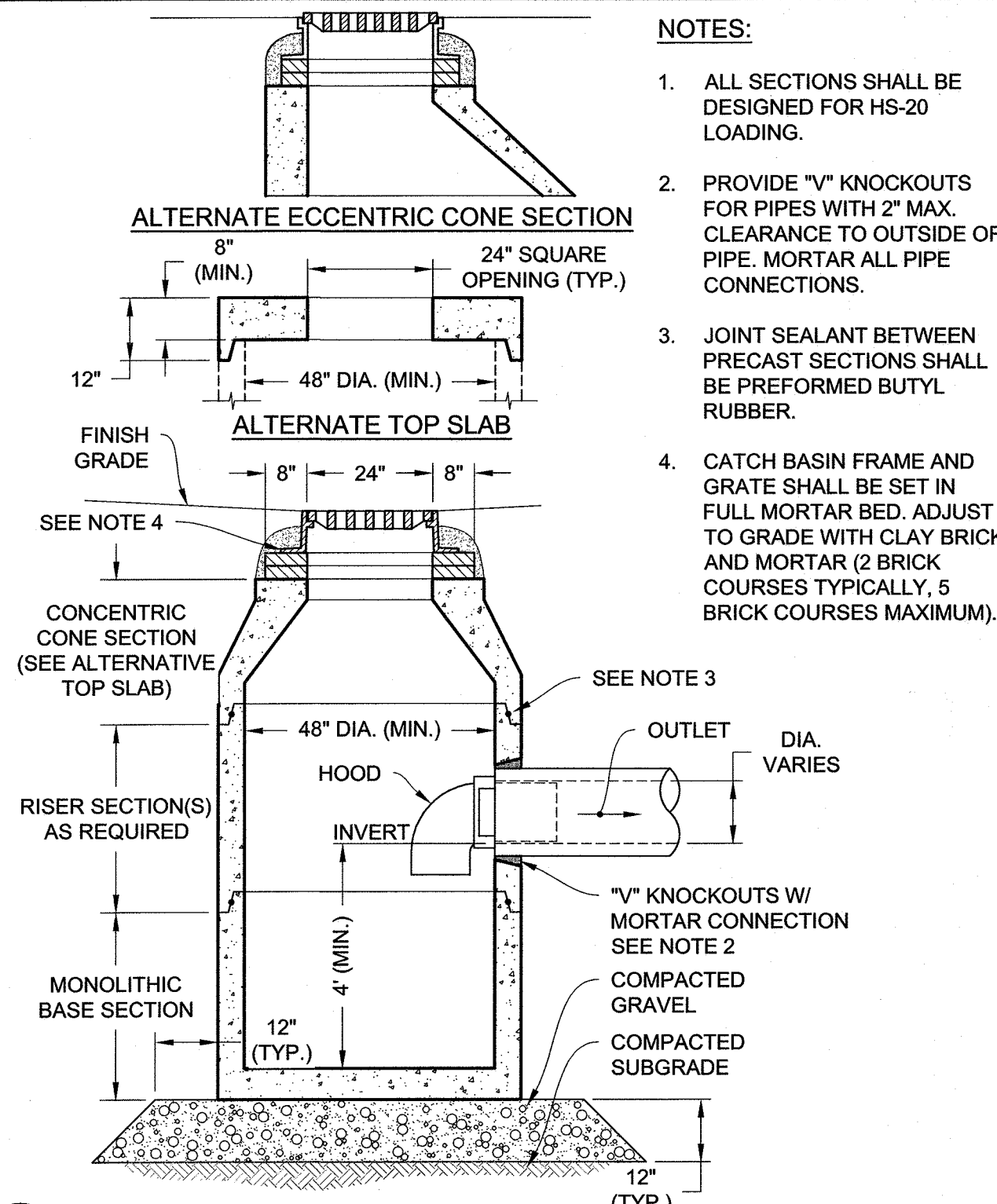


\\projects\harvard.ma\town\p17-004 - TOWN OF HARVARD - HILDRETH HOUSE DESIGN\_PUBLISHED\CS6021.dwg PLOTTED: 6/15/2017 3:34 PM BY: Chris Mariani PLOTSTYLE: TTIEnv NCS.ctb PROJECT STATUS: ---



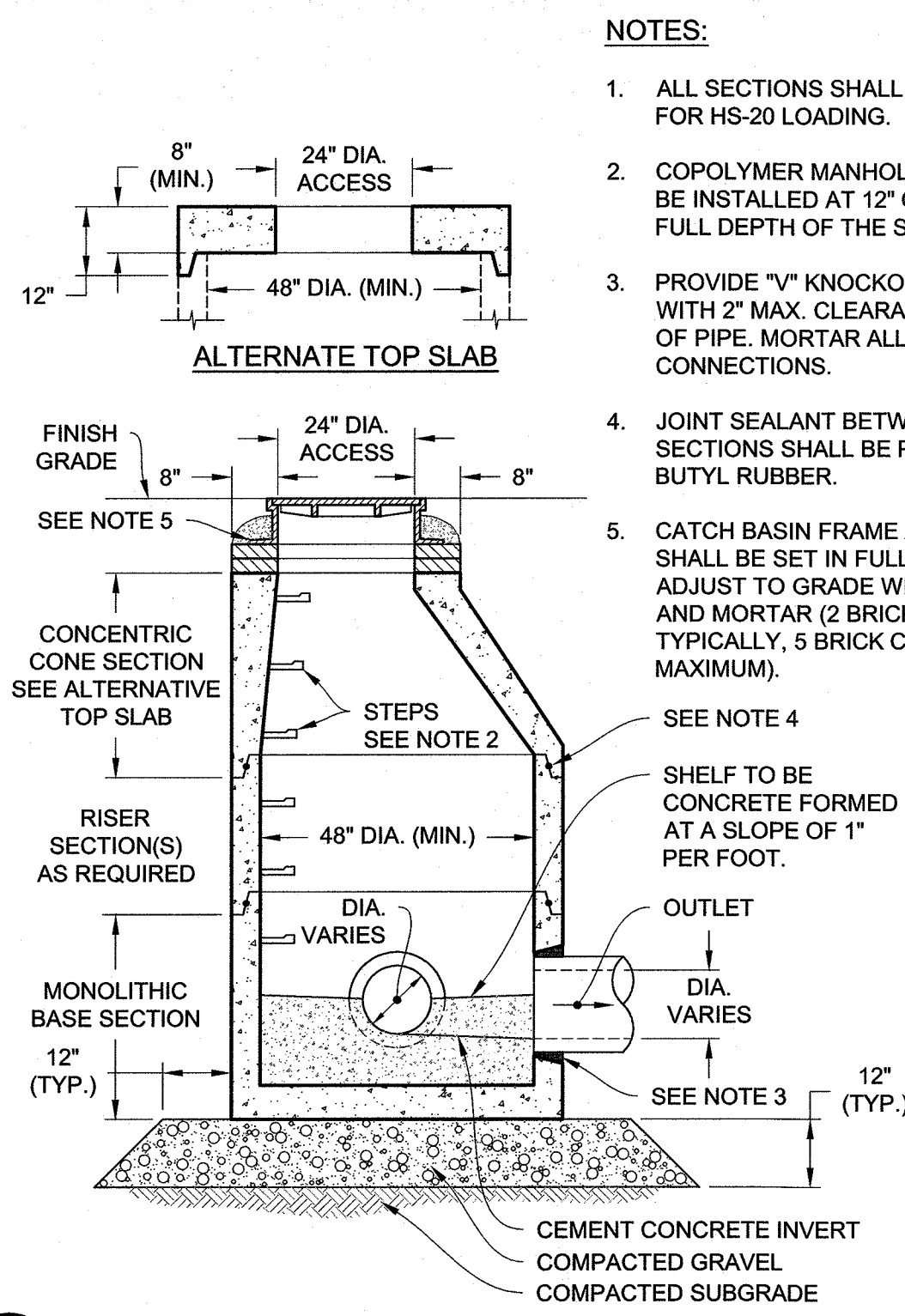
- NOTES:
- WHERE UTILITY TRENCHES ARE CONSTRUCTED THROUGH DETENTION BASIN BERMS OR OTHER SUCH SPECIAL SECTIONS, PLACE TRENCH BACKFILL WITH MATERIALS SIMILAR TO THE SPECIAL SECTION REQUIREMENTS.
  - USE METALLIC TRACING/WARNING TAPE OVER ALL PIPES.

1 DRAINAGE TRENCH  
NOT TO SCALE



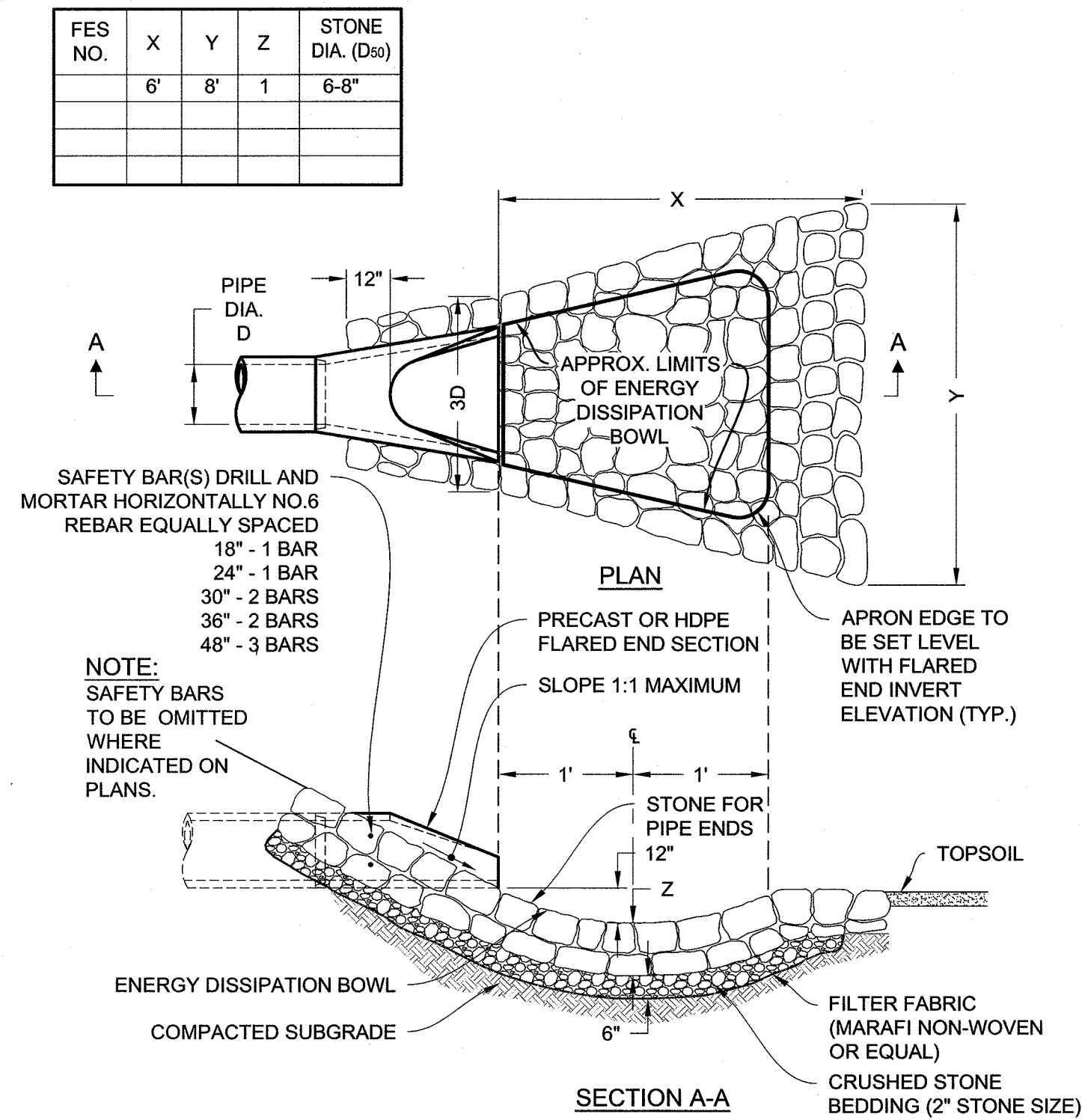
- NOTES:
- ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
  - PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
  - JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
  - CATCH BASIN FRAME AND GRATE SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM).

2 CATCH BASIN (CB) WITH HOOD  
NOT TO SCALE

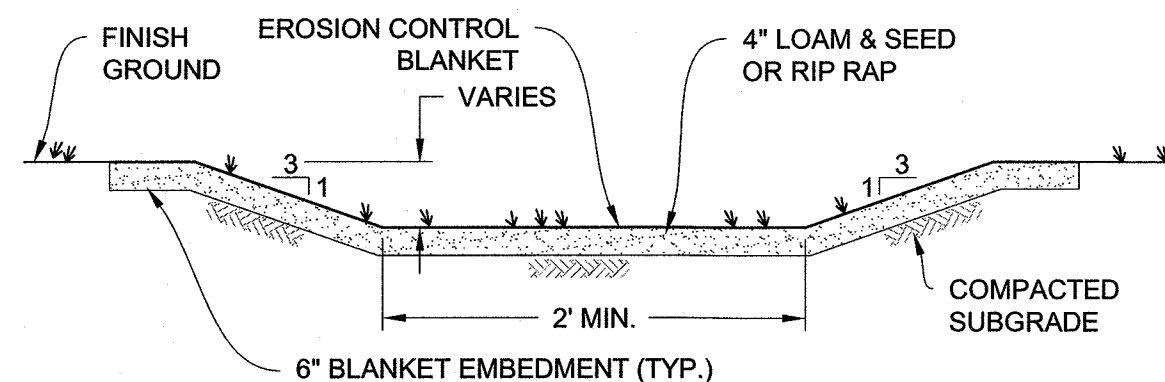


- NOTES:
- ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
  - COPOLYMER MANHOLE STEPS SHALL BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE.
  - PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
  - JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
  - CATCH BASIN FRAME AND GRATE SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM).

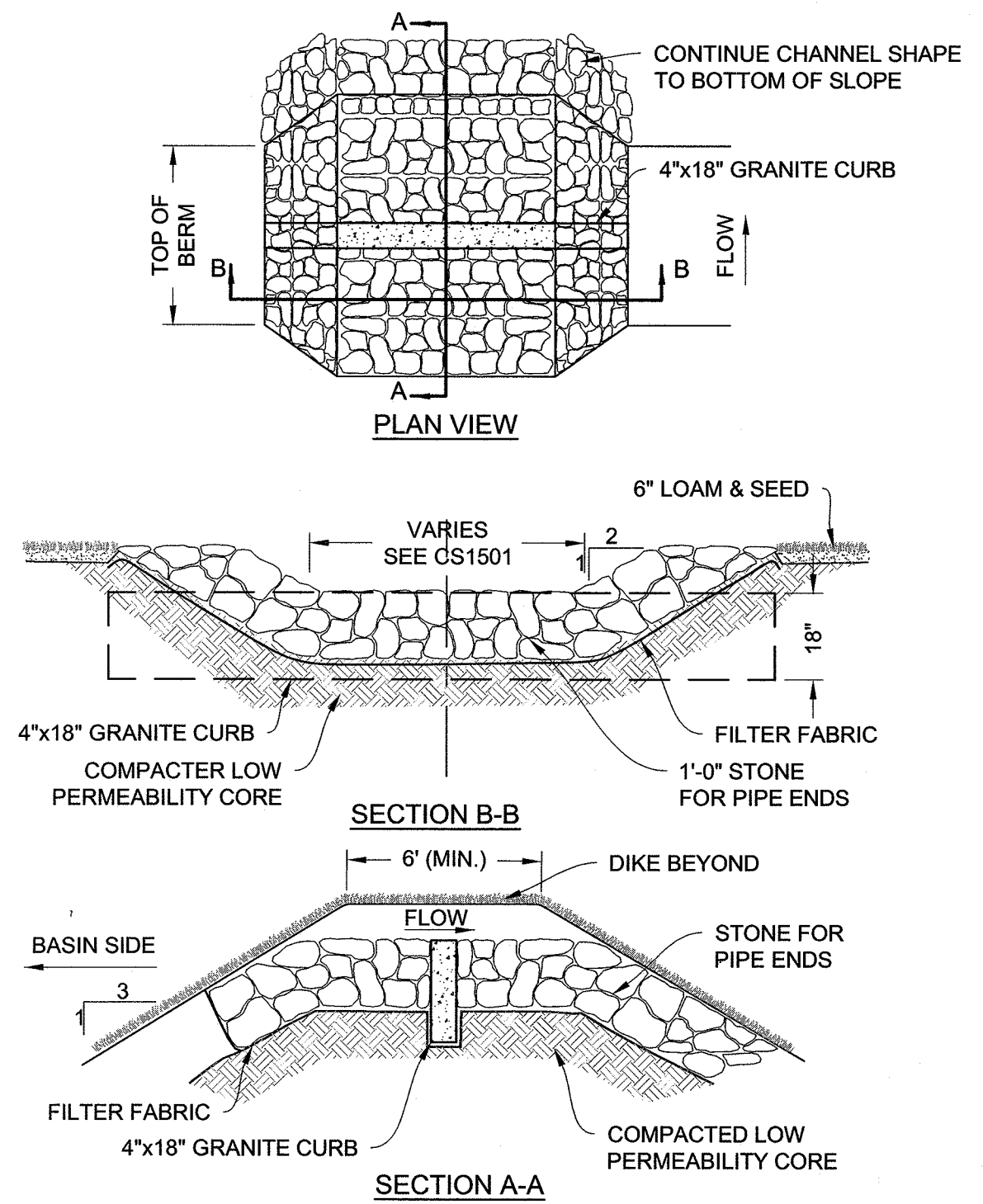
3 DRAIN MANHOLE (DMH)  
NOT TO SCALE



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



5 SWALE  
NOT TO SCALE



6 SPILLWAY TYPICAL DETAIL  
NOT TO SCALE

DRAINAGE DETAILS

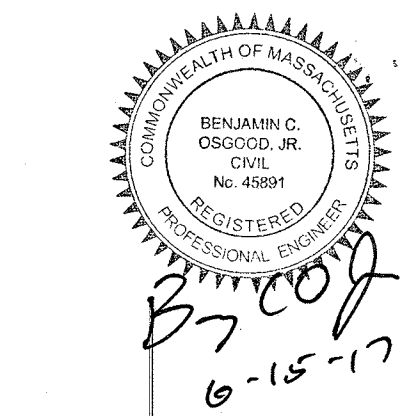
11 & 15 ELM STREET  
HARVARD, MA 01451

ASSESSOR'S MAP 17C LOTS 35 & 36

PREPARED FOR:

TOWN OF HARVARD

HILDRETH HOUSE HOUSING OVERLAY DISTRICT  
13 AYER ROAD  
HARVARD, MA 01451



TTI ENVIRONMENTAL INC.  
Engineering Division  
13 Branch Street, Suite 111  
Methuen, MA 01844  
T 978.749.9929 F 978.749.9920

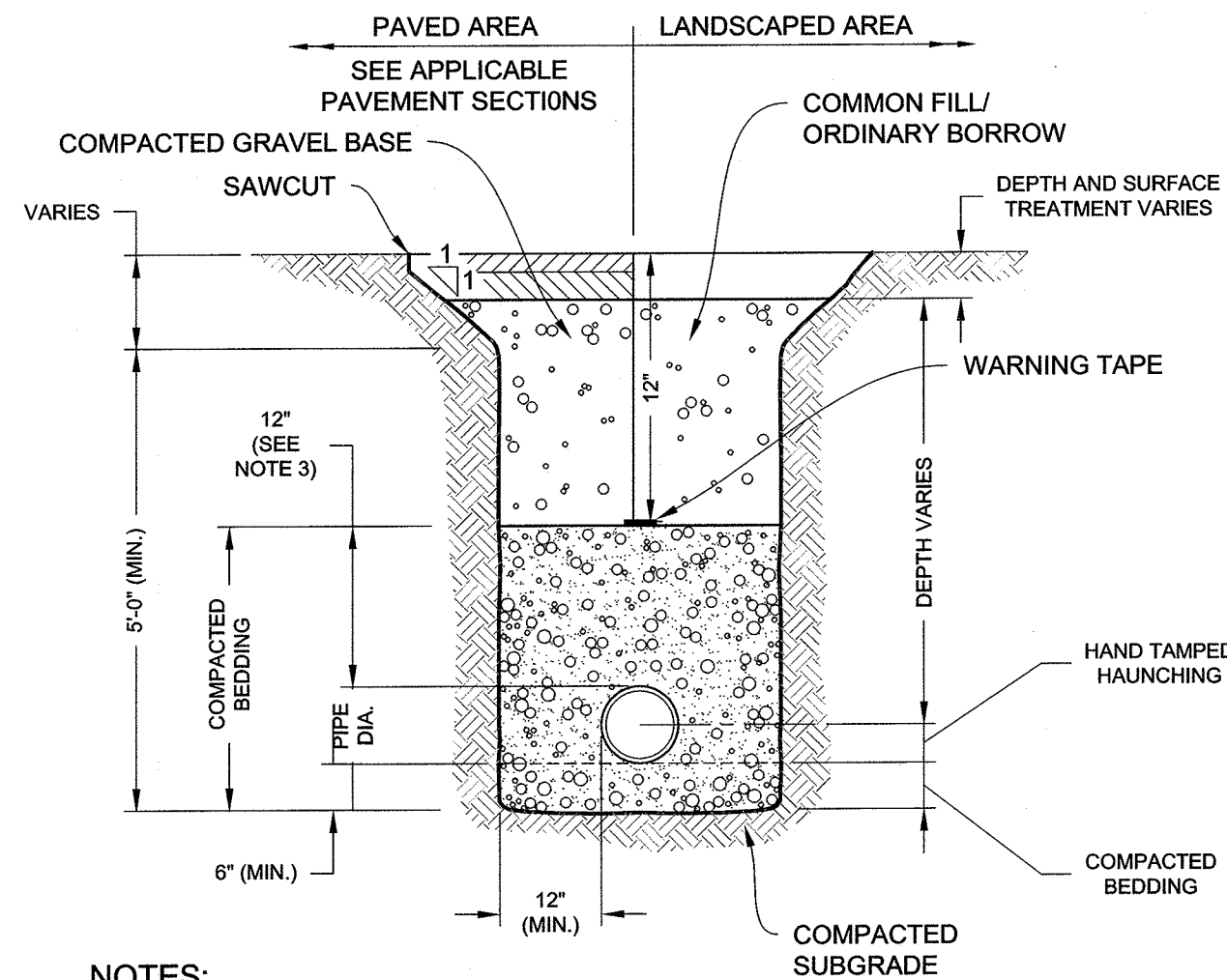
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PROJECT 17-004  
DATE 2017-06-15  
DRAWING SCALE 1"=30'  
DRAWN BY CPH  
APPROVED BY BCO

CS6021  
SHEET 9 OF 13



K:\PROJECTS\HARVARD, MA, TOWN OF HARVARD - HILBRETH HOUSE\DESIGN, PUBLISHING\CS6051.dwg PLOTTED: 01/20/2017 10:38 AM BY: Chris Henrich PLOTSTYLE: TTI Env NC34a6 PROJECT STATUS: —



- 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"	12"	6"	45"	8"	30"	12"
6"	22 1/2"	"	19"	"	"	13"	6"	90"	"	30"	"
8"	11 1/4"	"	20"	"	"	12"	8"	45"	"	30"	"
8"	22 1/2"	"	22"	"	"	17"	8"	90"	"	38"	"
12"	11 1/4"	"	30"	"	"	15"	12"	45"	"	40"	"
12"	22 1/2"	"	35"	"	"	25"	12"	90"	"	60"	"

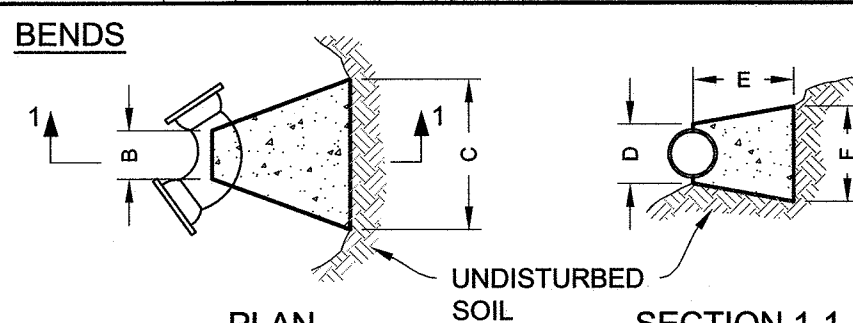
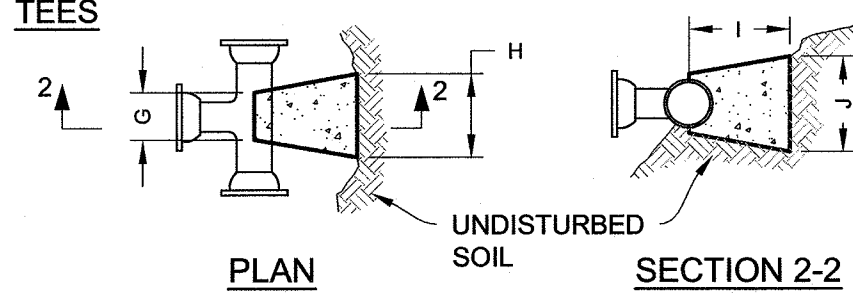
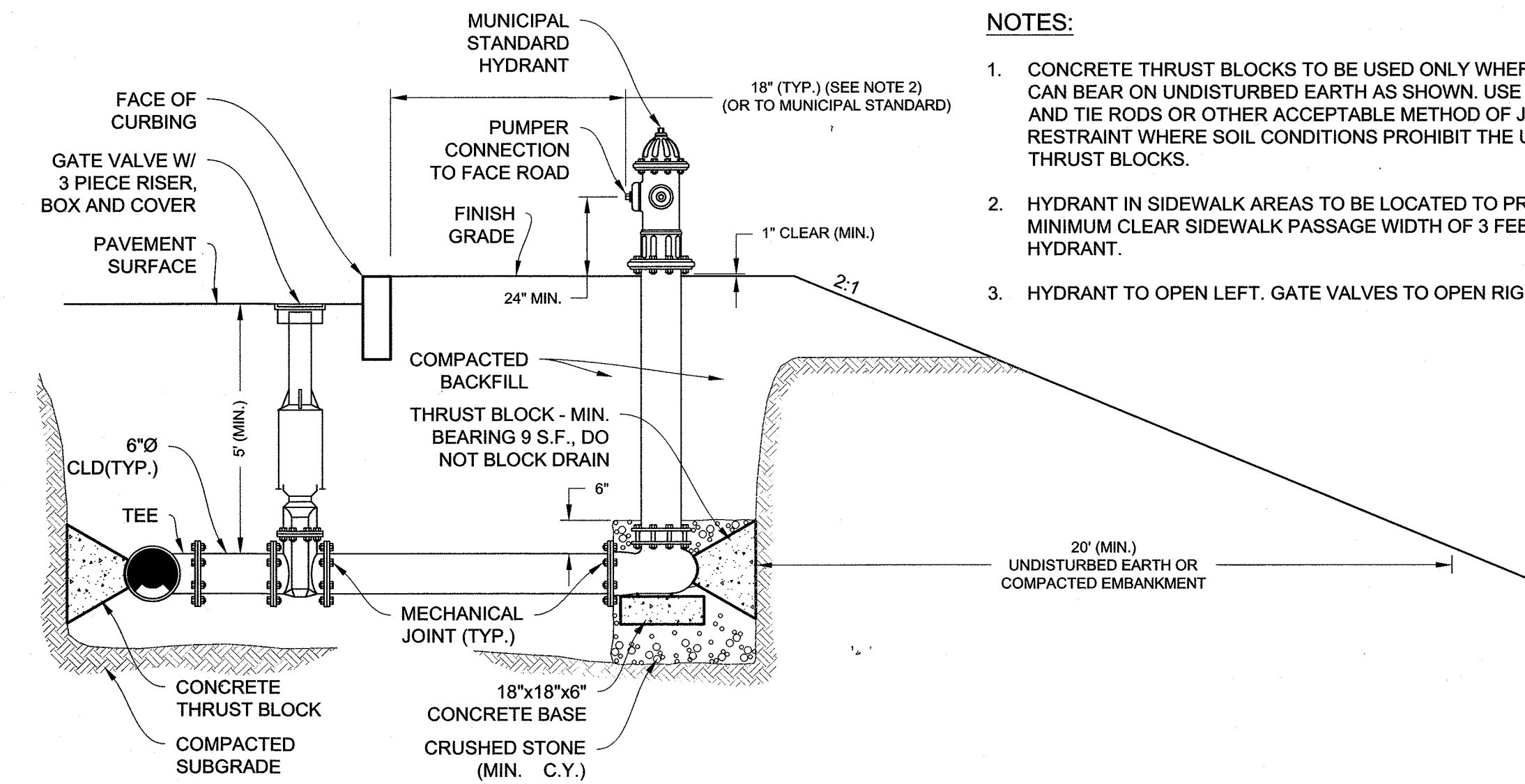


TABLE OF DIMENSIONS									
TEES	G	H	I	J	TEES	G	H	I	J
6" x 6" x 6"	12"	24"	24"	18"	12" x 12" x 6"	12"	24"	24"	18"
8" x 8" x 6"	"	"	"	"	12" x 12" x 8"	"	"	"	24"
8" x 8" x 8"	"	"	"	24"	12" x 12" x 12"	"	36"	"	36"



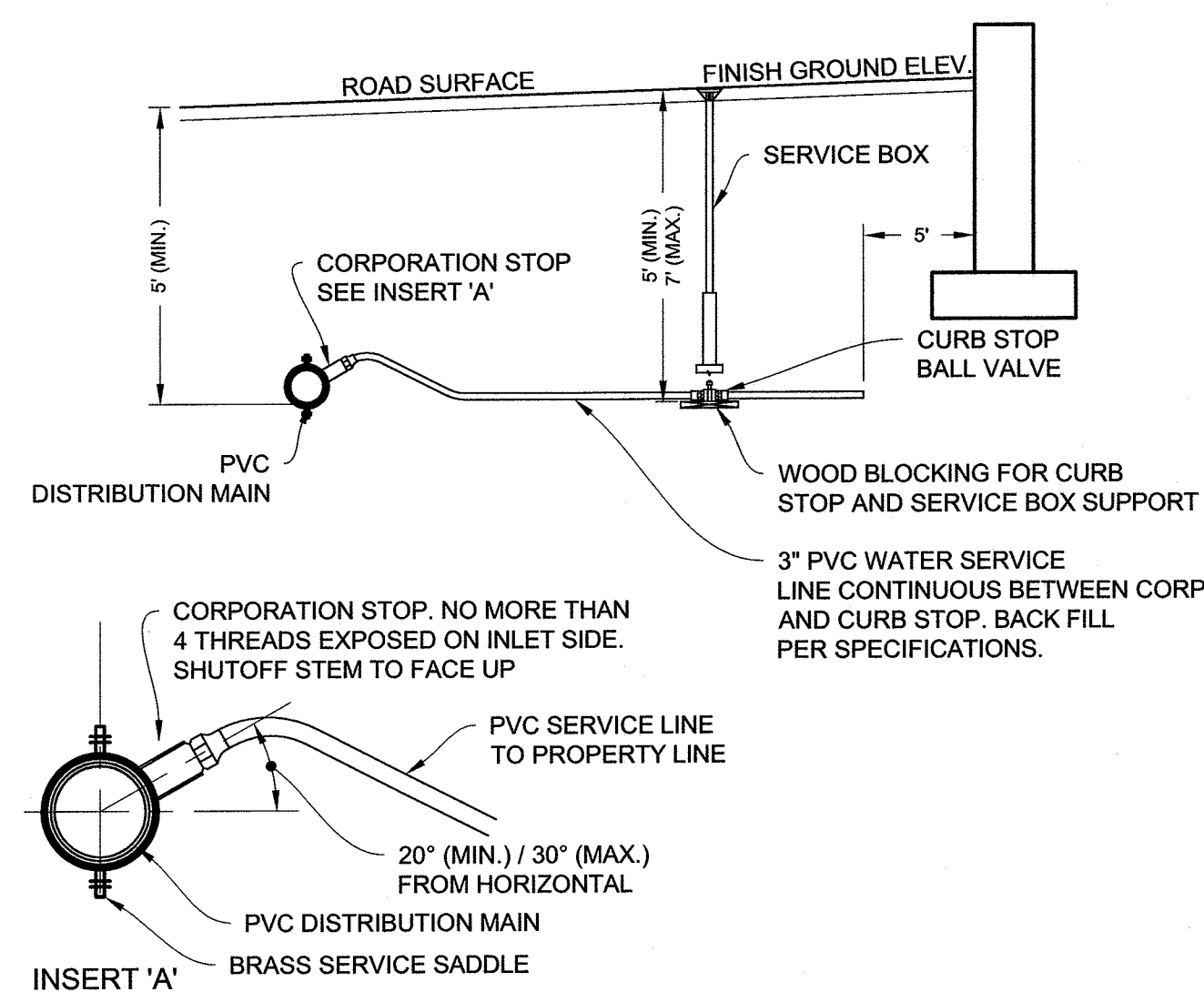
- NOTES:
- PROVIDE BLOCKS FOR TAPPING SLEEVES, DEAD ENDS, GATE VALVES, AND VERTICAL BENDS (SAME SIZE AS REQUIRED FOR TEES). PROVIDE ANCHOR RODS AT VERTICAL BENDS AND GATE VALVES.
  - CONCRETE SHALL NOT BE PLACED AGAINST PIPE BEYOND FITTING.
  - CONCRETE SHALL BE 3000 PSI-TYPE I.

2 CONCRETE THRUST BLOCK  
NOT TO SCALE

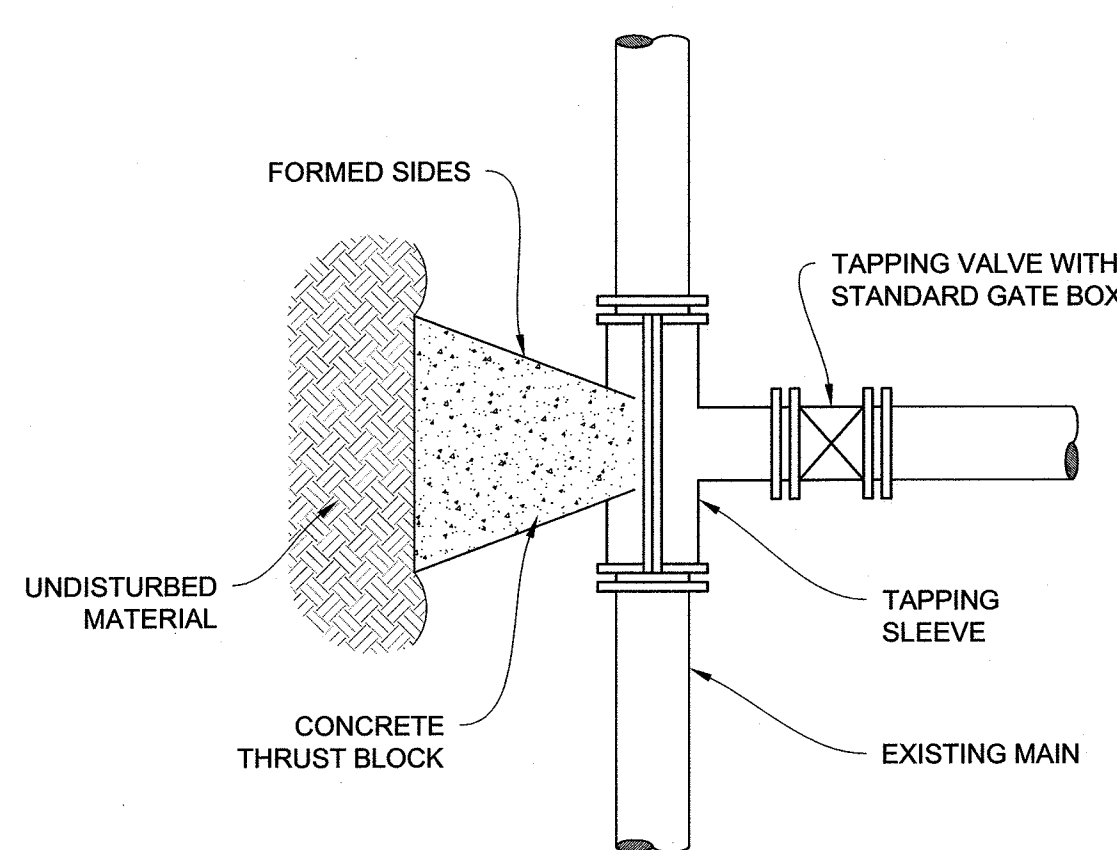


- NOTES:
- CONCRETE THRUST BLOCKS TO BE USED ONLY WHERE THEY CAN BEAR ON UNDISTURBED EARTH AS SHOWN. USE CLAMPS AND TIE RODS OR OTHER ACCEPTABLE METHOD OF JOINT RESTRAINT WHERE SOIL CONDITIONS PROHIBIT THE USE OF THRUST BLOCKS.
  - HYDRANT IN SIDEWALK AREAS TO BE LOCATED TO PROVIDE MINIMUM CLEAR SIDEWALK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

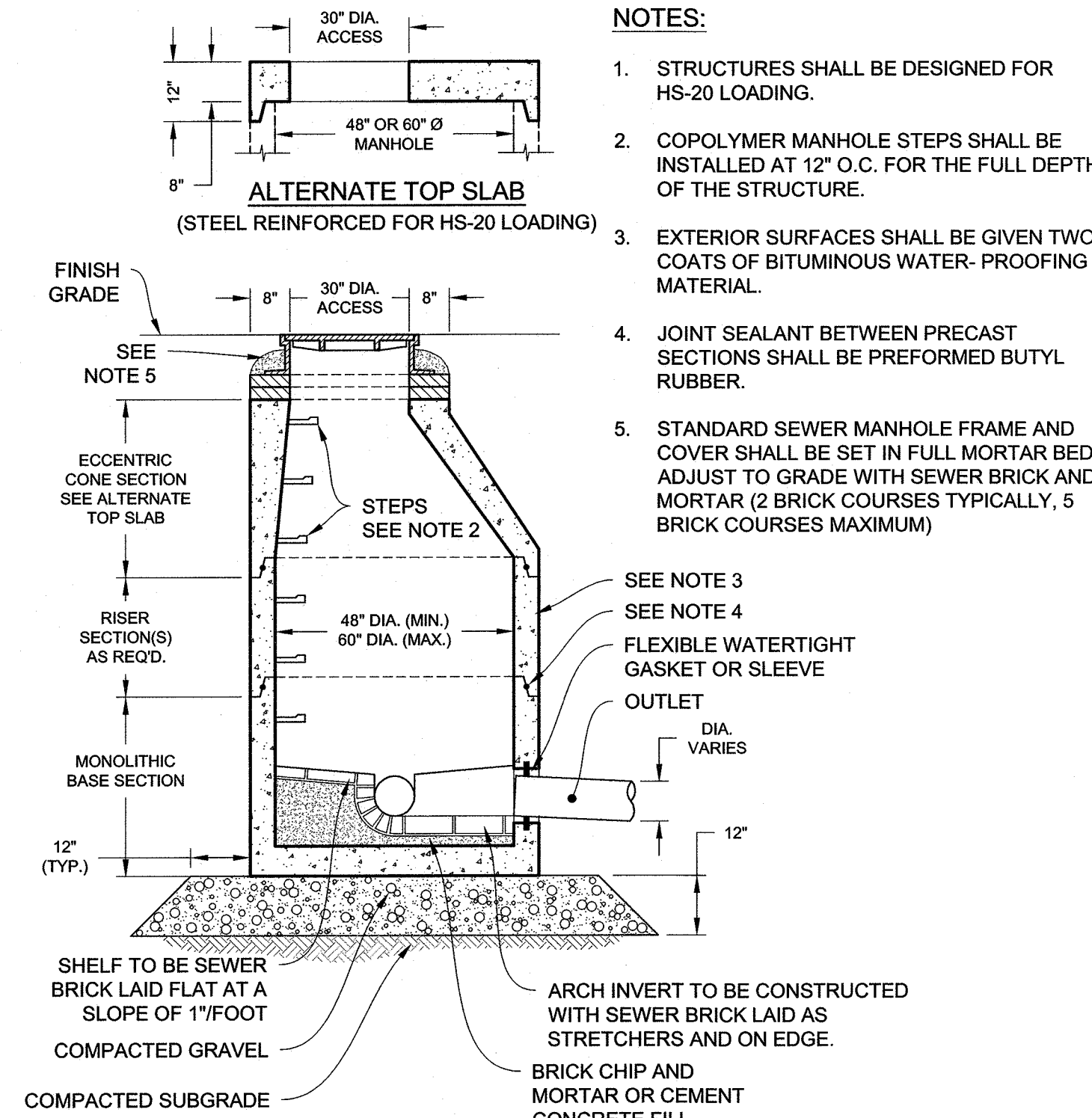
3 HYDRANT CONNECTION  
NOT TO SCALE



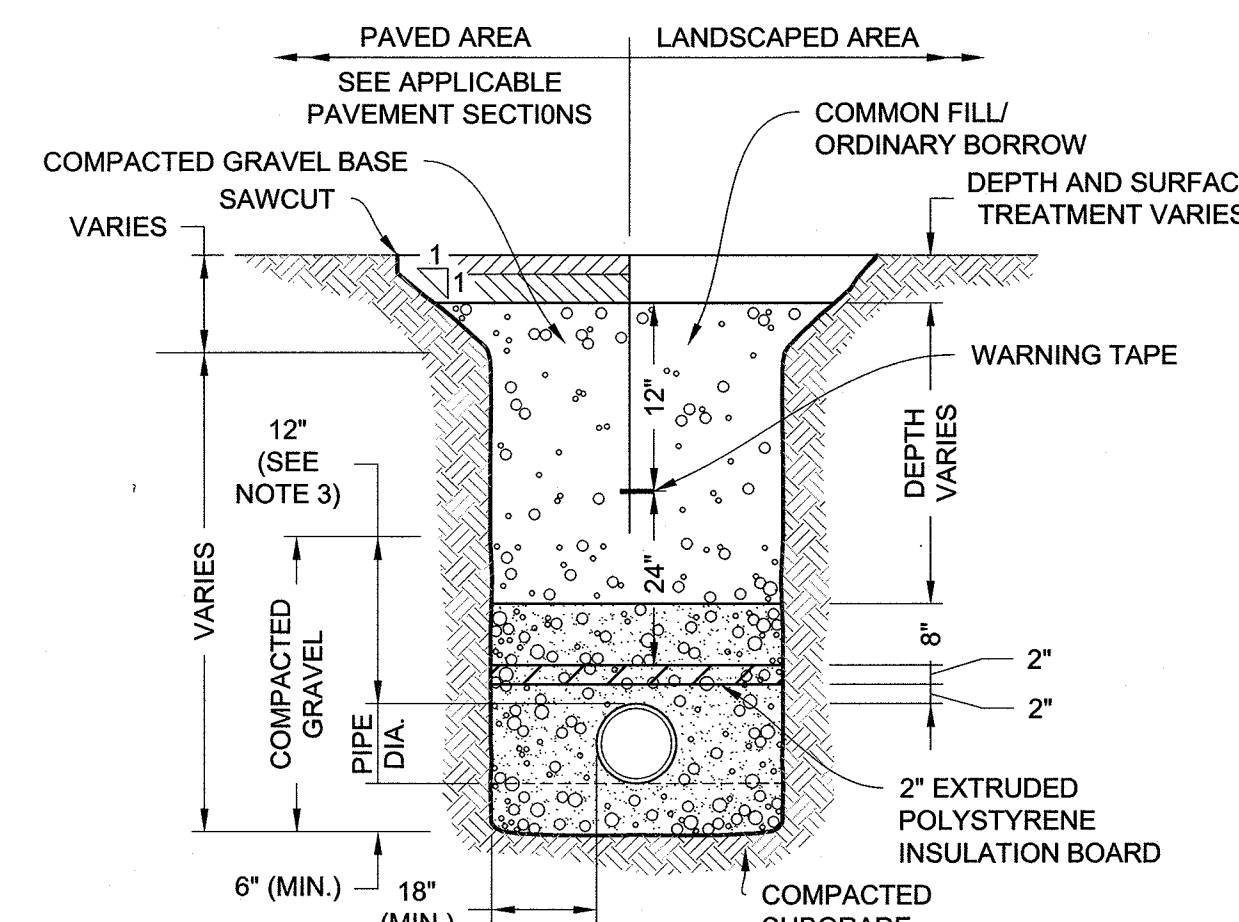
4 WATER SERVICE INSTALLATION  
NOT TO SCALE



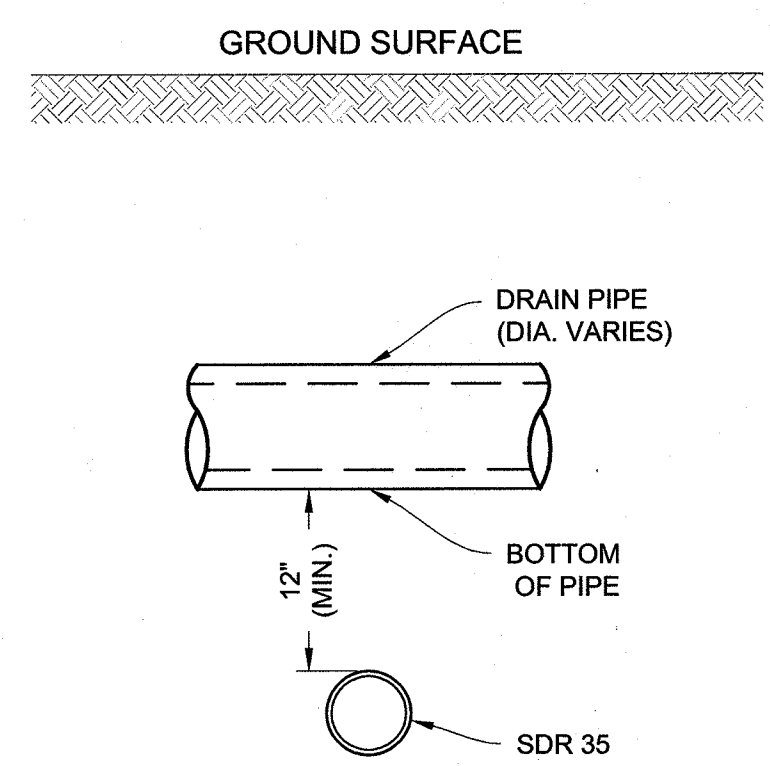
5 TAPPING SLEEVE & VALVE CONNECTION  
NOT TO SCALE



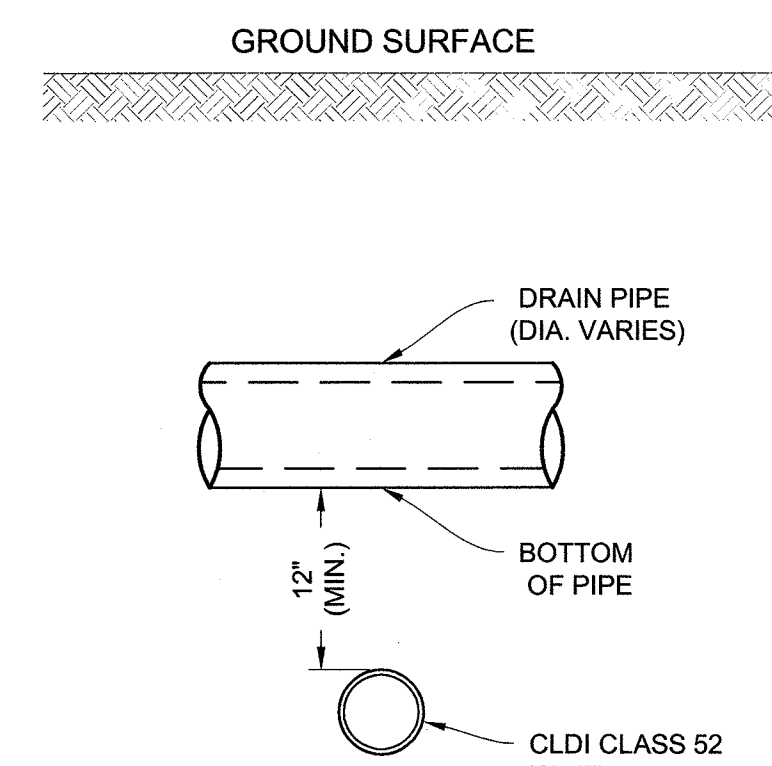
6 SANITARY SEWER MANHOLE (SMH)  
NOT TO SCALE



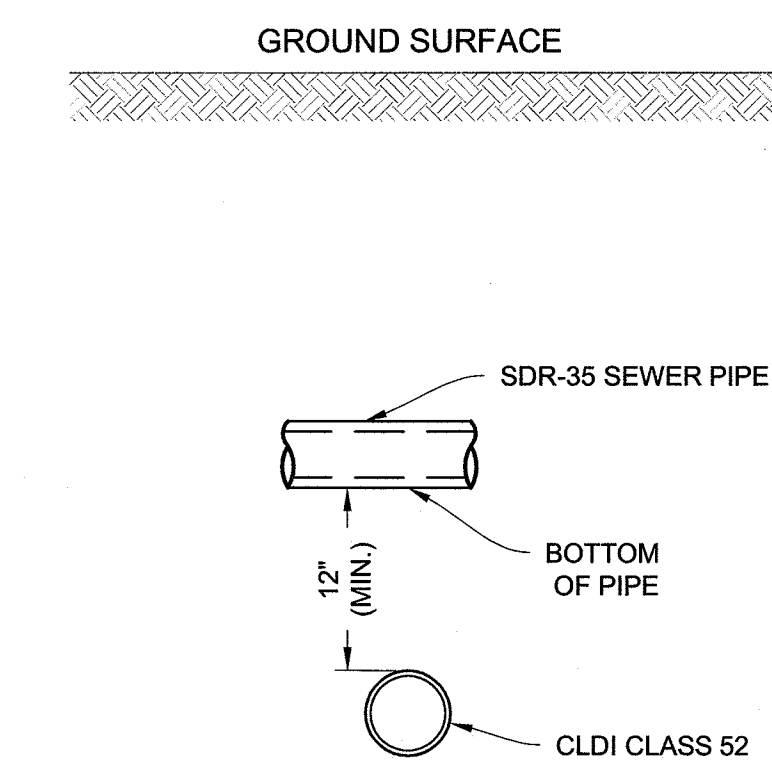
7 SEWER LINE TRENCH  
NOT TO SCALE



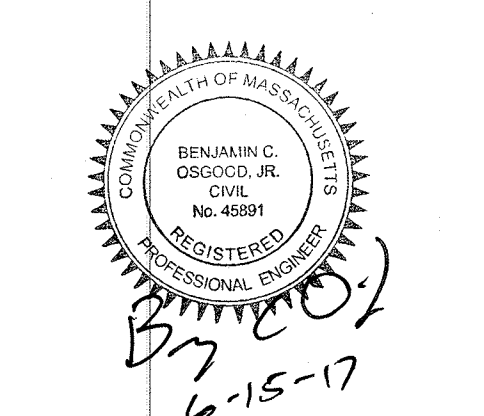
8 DRAIN PIPE AND SEWER PIPE CROSSING  
NOT TO SCALE



9 DRAIN PIPE AND WATER PIPE CROSSING  
NOT TO SCALE



10 SEWER PIPE AND WATER PIPE CROSSING  
NOT TO SCALE



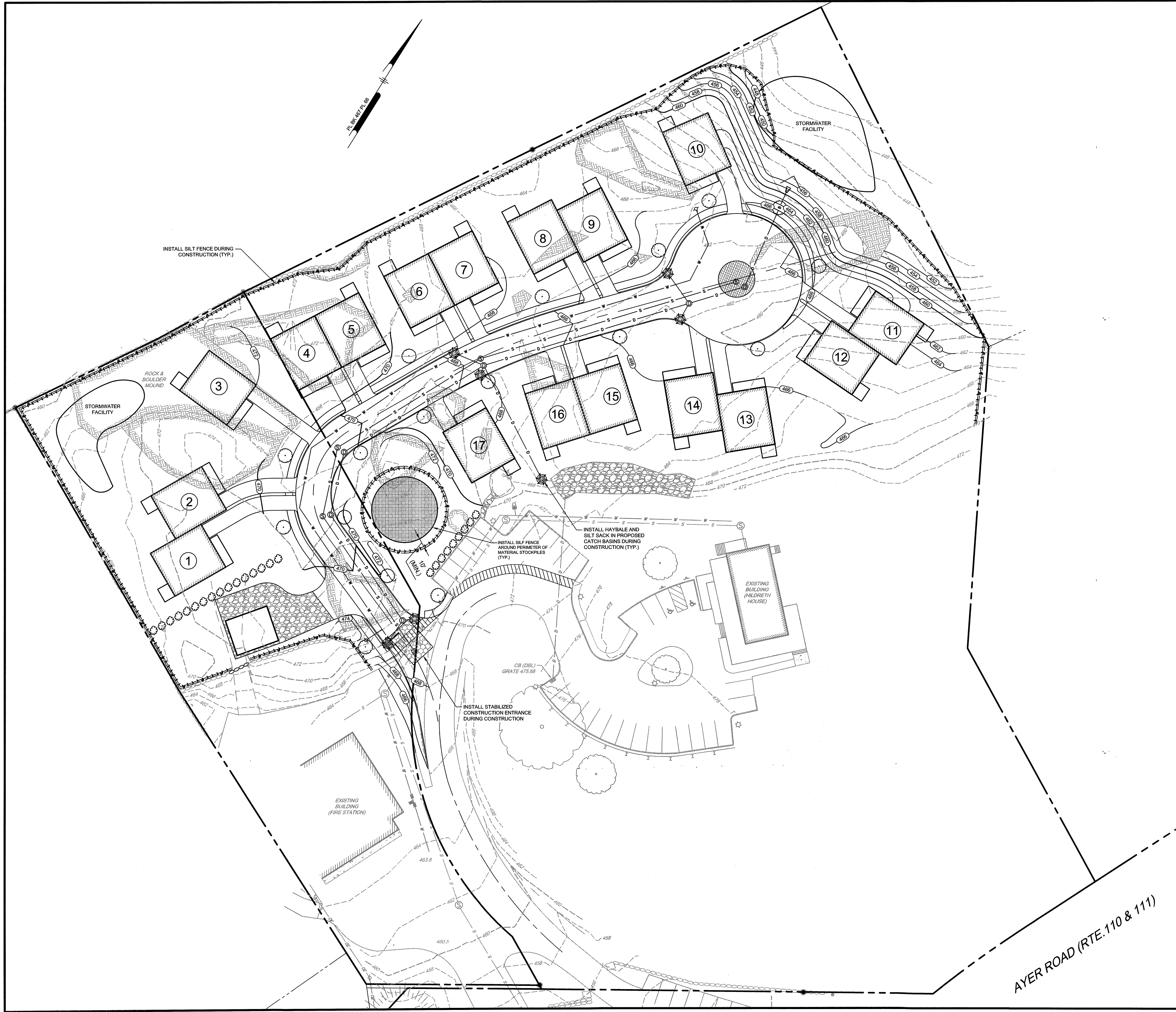
NO.	DATE	REVISIONS	BY

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PROJECT	17-004
DATE	2017-06-15
DRAWING SCALE	AS NOTED
DRAWN BY	CPH
APPROVED BY	BCO



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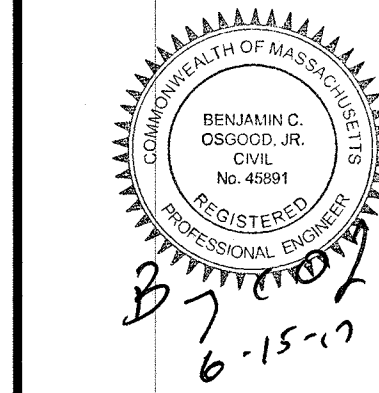
EROSION & SEDIMENTATION CONTROL PLAN

11 & 15 ELM STREET  
HARVARD, MA 01451  
ASSESSOR'S MAP 170 LOTS 35 & 36  
PREPARED FOR:  
TOWN OF HARVARD  
HILDRETH HOUSE HOUSING OVERLAY DISTRICT  
13 AYER ROAD  
HARVARD, MA 01451

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PROJECT	17-004
DATE	2017-06-15
DRAWING SCALE	1"=30'
DRAWN BY	CPH
APPROVED BY	BCO

**CS8001**  
SHEET 12 OF 13



**TTI ENVIRONMENTAL INC.**  
Engineering Division  
13 Branch Street, Suite 111  
Methuen, MA 01844  
T 978.749.9929 F 978.749.9920



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 REGULATORY 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.

1. 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.

## CONSTRUCTION PHASE

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.

REGULAR MAINTENANCE IS TO INCLUDE THE FOLLOWING

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 SWEEP 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.

