

# SITE DEVELOPMENT PLANS

FOR

33 RIVERSIDE DRIVE  
PEMBROKE, MA

MAY 24, 2023

SHEET INDEX						
SHEET No.	DESCRIPTION	LATEST REVISED DATE	CONSTRUCTION	REVISIONS		
1	COVER SHEET	8/7/23				
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3	LAYOUT PLAN	8/7/23				
4	GRADING PLAN	8/7/23				
5	SEWER & DRAINAGE PLAN	8/7/23				
6	UTILITY PLAN	8/7/23				
7	DETAIL SHEET	8/7/23				
8	DETAIL SHEET	8/7/23				
9	DETAIL SHEET	8/7/23				
	PHOTOMETRIC PLAN	5/25/23				

## OWNER/APPLICANT:

KRR PEMBROKE LLC  
c/o RADER PROPERTIES  
80 WASHINGTON ST. BLDG J-40  
NORWELL, MA 02061

## CIVIL ENGINEERS:

KELLY ENGINEERING GROUP, INC.  
0 CAMPANELLI DRIVE  
BRAINTREE, MA 02184

## ARCHITECT:

ROTH & SEELEN, INC  
50 SOUTH STREET  
HINGHAM, MA 02043

I CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN CONFORMANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

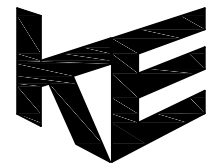
Steven M. Horsfall

Digitally signed by Steven M. Horsfall  
Date: 2023.08.08 17:44:43 -04'00'



STEVEN M. HORSFALL, P.L.S. DATE

33 RIVERSIDE DRIVE  
PEMBROKE, MA



KELLY ENGINEERING GROUP  
civil engineering consultants  
0 Campanelli Drive, Braintree, MA 02184  
Phone: 781-843-4333 www.kellyengineeringgroup.com

SHEET NO.

1

PEMBROKE  
TOWN CLERK

"I, TOWN CLERK OF THE TOWN OF PEMBROKE, MA HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND NO APPEAL WAS RECEIVED DURING THE NEXT TWENTY DAYS AFTER RECEIPT AND RECORDING OF SAID NOTICE"

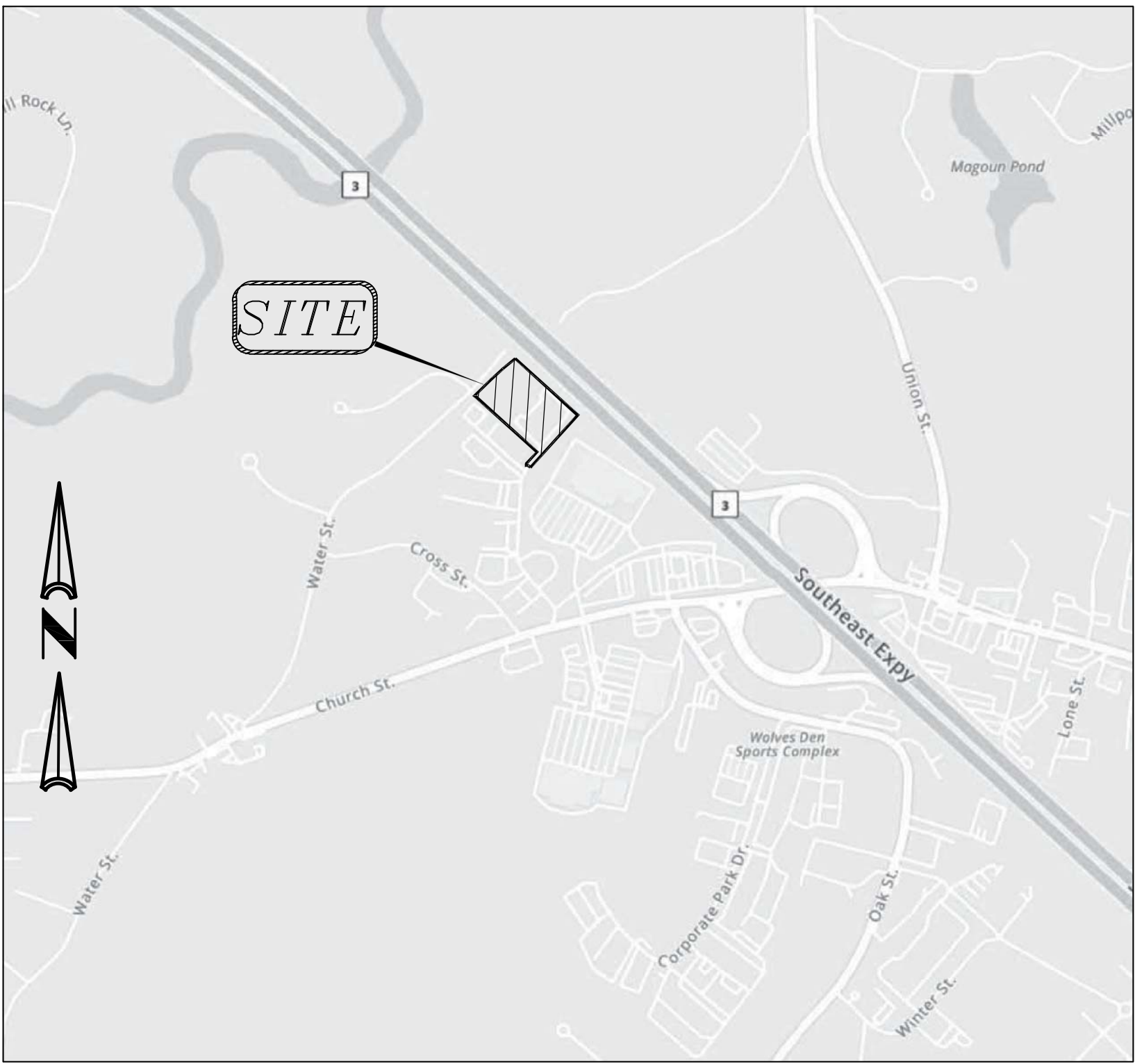
DATE TOWN CLERK

PEMBROKE  
PLANNING BOARD

"THIS SITE PLAN APPROVAL DOES NOT NECESSARILY INDICATE COMPLIANCE WITH THE PEMBROKE ZONING BY-LAW".

APPROVED DATE  
ENDORSED DATE

- SUMMARY OF REQUESTED WAIVERS  
THE FOLLOWING WAIVERS HAVE BEEN REQUESTED:
- SECTION 4.14: DRAWING SCALE
  - SECTION 4.15: DEVELOPMENT IMPACT STATEMENT
  - SECTION 4.22: TRAFFIC IMPACT STUDY
  - SECTION 5.6.2: BITUMINOUS CONCRETE CURBING



LOCATION MAP

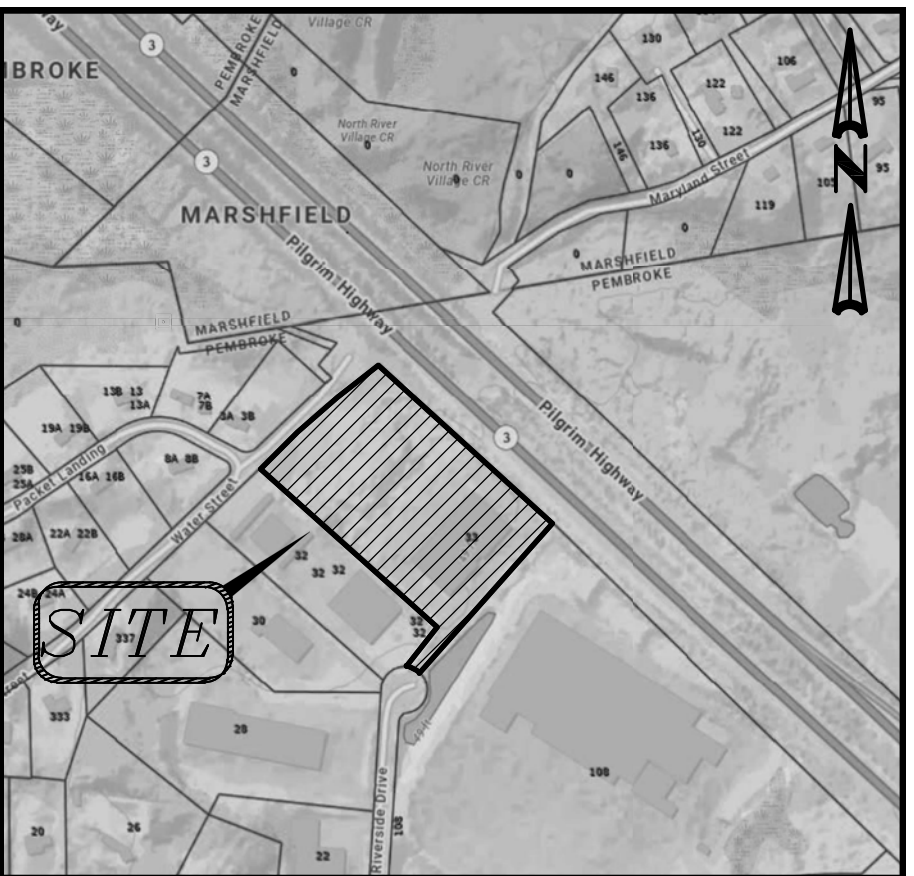
Brandon Li  
2023.08.08  
17:16:34  
-04'00'



SCALE NA	JOB # F:\P\2023-026
DATE 05/24/23	DRAWN BY AJV
SHEET 1 of 9	CHKD BY BGL
FILE # TS01	APPD BY BGL

ROUTE 3  
COMMONWEALTH OF MASSACHUSETTS  
(PUBLIC - 300' WIDE LIMITED ACCESS HIGHWAY)

BENCHMARK: MAG NAIL  
SET IN PAVEMENT  
EL. = 46.01



LOCUS MAP  
(NOT TO SCALE)

LEGEND

	CATCH BASIN
	DRAIN MANHOLE
	TELEPHONE MANHOLE
	SEWER MANHOLE
	MANHOLE
	TREE LINE
	POST INDICATOR VALVE
	HYDRANT
	WATER VALVE
	GAS METER
	GAS VALVE
	OVERHEAD ELECTRIC
	GUY POLE
	UTILITY POLE
	ELECTRIC HAND HOLE
	LIGHT POLE
	GUY WIRE
	SIGN
	SLOPED GRANITE CURB
	BITUMINOUS CONCRETE CURB
	VERTICAL GRANITE CURB
	CAPE COD BERM
	CONCRETE
	BIT.
	LANDSCAPED
	STONE BOUND/ DRILL HOLE FOUND
	DRILL HOLE FOUND
	HANDICAP PARKING
	BOLLARD
	MAILBOX
	GUARDRAIL
	WETLAND FLAG
	WETLAND
	WETLAND LINE
	MAJOR CONTOUR
	MINOR CONTOUR
	SPOT GRADE
	SEWER LINE
	WATER LINE
	GAS LINE
	DRAIN LINE
	TELEPHONE LINE
	TEST PITS
	BORING

PLAN REFERENCES:

(Plymouth County Registry of Deeds)

- 1.) Plan 173 of 1984
- 2.) Plan 480 of 2012
- 3.) Plan 799 of 1983
- 4.) Plan 830 of 1997

CURRENT OWNER:

KRR PEMBROKE LLC  
Deed Bk: 18507 Pg: 5  
Property ID#: F15-60

I CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN  
CONFORMANCE WITH THE RULES AND REGULATIONS OF  
THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF  
MASSACHUSETTS.

Steven  
M.  
Horsfall

Digitally signed  
by Steven M.  
Horsfall  
Date: 2023.08.08  
17:45:05 -04'00'



STEVEN M. HORSFALL, P.L.S.

DATE

NOTES:

- 1.) UNDERGROUND FEATURES HAVE BEEN COMPILED, IN PART, BASED UPON INFORMATION FURNISHED BY OTHERS. THIS INFORMATION IS TO BE CONSIDERED APPROXIMATE AND KELLY ENGINEERING GROUP, INC. DOES NOT TAKE RESPONSIBILITY FOR SUBSEQUENT ERRORS OR OMISSIONS WHICH MAY HAVE BEEN INCORPORATED INTO THIS PLAN AS A RESULT. ADDITIONALLY, OTHER SUCH FEATURES MAY EXIST ON THE SITE. THE EXISTENCE OF WHICH ARE UNKNOWN TO KELLY ENGINEERING GROUP, INC. THE SIZE, LOCATION, AND EXISTENCE OF ALL SUCH FEATURES MUST BE VERIFIED BY THE APPROPRIATE AUTHORITIES PRIOR TO CONSTRUCTION.
- 2.) THE LOCATION OF ALL UTILITIES SHOWN HEREON HAVE BEEN ESTABLISHED USING ASCE 38-02 (STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA) QUALITY LEVEL C.
- 3.) THE SITE DETAIL AND SURFACE IMPROVEMENTS DEPICTED HEREON WERE OBTAINED FROM AN ON THE GROUND SURVEY PERFORMED BY KELLY ENGINEERING GROUP ON MARCH 20, 2023.
- 4.) THE SURVEYED PREMISES IS LOCATED WITHIN FLOOD ZONE "X" (UN-SHADED) AND FLOOD ZONE "A" SHOWN ON THE FLOOD INSURANCE RATE MAPS (FIRM'S) FOR THE TOWN OF PEMBROKE, MASS. DATED 07/06/2021, COMMUNITY PANEL NUMBER 25023C0207K.
- 5.) THE VERTICAL DATUM SHOWN HEREON IS BASED ON NAVD83 (NORTH AMERICAN VERTICAL DATUM OF 1983), ESTABLISHED VIA GPS.
- 6.) THE FIELD SURVEY FOR BOUNDARY AND TOPOGRAPHY SHOWN HEREON WAS ON THE GROUND BETWEEN JUNE OF 2021 AND JUNE OF 2022 BY KELLY ENGINEERING GROUP, INC.

SCALE

1" = 30'

DATE

05/24/2023

SHEET

2 of 9

FILE #

SU01

JOB #

F:\P\2023-026

DRAWN BY

JPM

CHKD BY

SMH

APPD BY

SMH

1

07/06/23

REV

DATE

PEER REVIEW COMMENTS

REVISION

BY

RADER PROPERTIES, INC

33 RIVERSIDE DRIVE

PEMBROKE, MASSACHUSETTS

EXISTING CONDITIONS

PLAN

KELLY ENGINEERING GROUP

civil engineering consultants

0 Campanelli Drive, Braintree, MA 02184

Phone: 781-843-4333 www.kellyengineeringgroup.com

SHEET NO.

2

ROUTE 3  
COMMONWEALTH OF MASSACHUSETTS  
(PUBLIC - 300' WIDE LIMITED ACCESS HIGHWAY)

ZONING LEGEND

ZONING DISTRICT: INDUSTRIAL B  
OVERLAY DISTRICT: MEDICAL MARIJUANA OVERLAY

	REQUIRED	EXISTING	PROVIDED	COMPLIANCE
MIN. AREA	80,000 S.F.	272,000 S.F.	SAME	YES
MIN. FRONTAGE	200'	411.01'	SAME	YES
MIN. LOT WIDTH	135'	408.9'	SAME	YES
MIN. YARD -FRONT	60'	>60' (1)	140.4'	YES
-SIDE	20'	77.3'	58.7'	YES
-REAR	20'	74.2'	50.2'	YES
MAX. STORIES	4	2	SAME	YES
MAX. COVERAGE	80% (2)	40%	79%	YES
MAX. BFA	45% (3)	24%	34%	YES
PARKING TOTAL	98 (4)	172	270 [98 NEW] (4)	YES
-SIZE	9' X 18'	NA	9' X 18'	YES
-HANDICAP	7	3	7	YES
-LOADING	2	0	14	YES
MAX. DRVWY. WIDTH	41' (5)	24'	SAME	YES
MIN. LANDSCAPING				
-FRONT	50% (6)	> 50%	70%	YES
-SIDE	40% (6)	> 40%	45%	YES
-REAR	40% (6)	56%	SAME	YES

NOTES:

- LOT LINES ADJACENT TO RIVERSIDE DRIVE AND WATER STREET ARE FRONT YARDS, THE LOT LINE OPPOSITE RIVERSIDE DRIVE IS THE REAR YARD, AND ALL OTHER LOT LINES ARE SIDE YARDS.
- COVERAGE (SECTION IV 5A.D.12. OF ZONING BYLAW): THE SUM OF THE GROUND AREA OF THE LOT COVERED, OR TO BE COVERED, BY ALL BUILDINGS OR STRUCTURES AND ALL PAVED AREAS, TO INCLUDE WALKWAYS, PATIOS, ROADWAYS, ACCESS WAYS, TURNAROUNDS, LOADING AREAS, AND PARKING AREAS SHALL NOT EXCEED EIGHTY PERCENT OF THE TOTAL SITE AREA.  
  
COVERAGE= 215,619 S.F. / 272,000 S.F. = 79%
- BUILDING FLOOR AREA (SECTION IV 5A.D.11. OF ZONING BYLAW): THE SUM OF THE FLOOR AREA(S) ON ALL LEVELS OF ALL BUILDINGS OR STRUCTURES, BUT EXCLUDING CELLARS OR ATTICS NOT UTILIZED AS A PRIMARY OR ACCESSORY USE IN SAID BUILDING OR STRUCTURE. THE BUILDING FLOOR AREA SHALL NOT EXCEED FORTY-FIVE PERCENT OF THE TOTAL SITE AREA  
  
BFA = EXIST. BUILDING (33,268 S.F. 1ST FLOOR + 15,000 S.F. 2ND FLOOR) + PROP. BUILDING (45,000 S.F.) = 93,268 S.F. / 272,000 S.F. =34%

4) PARKING REQUIRED:

ASSUMED:

85% OF THE BUILDING IS WAREHOUSE SPACE AND THE OTHER 15% IS OFFICE SPACE.

THE NUMBER OF EMPLOYEES IN WAREHOUSE IS 1 EMPLOYEE PER 1,000 S.F. OF WAREHOUSE SPACE.

THE NUMBER OF EMPLOYEES IN OFFICE IS 1 EMPLOYEE PER 150 S.F. OF OFFICE SPACE.

INDUSTRIAL, MANUFACTURING AND WHOLESALE USES: ONE SPACE FOR EACH EMPLOYEE ON ANY ONE SHIFT.

85% OF THE TOTAL BUILDING (45,000 S.F.) = 38,250 S.F.

# OF WAREHOUSE EMPLOYEE SPACES = 38,250 S.F. / 1,000 S.F. = 38 EMPLOYEES SPACES

OFFICES, BANKS AND SIMILAR BUSINESS: ONE SPACE FOR EACH ONE HUNDRED AND FIFTY SQUARE FEET OF FLOOR AREA PLUS ONE SPACE FOR EACH THREE EMPLOYEES OR NEAREST MULTIPLE THEREOF.

15% OF THE TOTAL BUILDING (45,000 S.F.) = 6,750 S.F.

PARKING FOR OFFICE FLOOR AREA = 6,750 S.F. / 150 S.F. = 45 SPACES

# OF OFFICE EMPLOYEE SPACES = (6,750 S.F. / 150 S.F.) / 3 EMPLOYEES = 15 EMPLOYEES SPACES

TOTAL REQUIRED PARKING FOR PROPOSED BUILDING = 98 SPACES

PARKING FOR PROPOSED BUILDING = 98 SPACES

PARKING FOR EXISTING BUILDING = 172 SPACES

TOTAL PROPOSED PARKING = 270 SPACES = 172 EXISTING SPACES + 98 NEW SPACES FOR PROPOSED

- DRIVEWAYS: DRIVEWAYS PROVIDING A MEANS OF ACCESS AND EGRESS FOR EACH INDIVIDUAL LOT OR SHALL NOT EXCEED ONE FOOT IN WIDTH FOR EACH TEN FEET OF FRONTAGE, EXCLUDING RADI, AND THERE SHALL NOT BE MORE THAN TWO SUCH DRIVEWAYS. COMMON DRIVEWAYS PROVIDING A MEANS OF ACCESS AND EGRESS FOR MORE THAN ONE LOT SHALL NOT BE ALLOWED.

- LANDSCAPING: AT LEAST FIFTY PERCENT OF ANY YARD OR BUFFER STRIP ABUTTING A RESIDENTIAL USE OR DISTRICT SHALL BE LANDSCAPED OR LEFT IN A NATURAL STATE. ALONG ANY LOT LINE ABUTTING A RESIDENTIAL USE OR DISTRICT THERE SHALL BE PLANTED A DENSE NATURAL HEDGE GREATER THAN SIX FEET IN HEIGHT AND LOCATED WITHIN TEN FEET OF SAID LOT LINE. SAID NATURAL HEDGE SHALL PROVIDE A VISUAL SCREEN BETWEEN ANY STRUCTURE OR PARKING AREA AND THE RESIDENTIAL AREA.

SCALE 1"= 30'	2	08/07/23	NO CHANGE	
DATE 05/24/2023	1	07/06/23	PEER REVIEW COMMENTS	
SHEET 3 of 9	REV	DATE	REVISION	BY
FILE # LA02				
JOB # F:\P\2023-026				
DRAWN BY AJV				
CHKD BY GSH				
APPD BY BG				
RADER PROPERTIES, INC 33 RIVERSIDE DRIVE PEMBROKE, MASSACHUSETTS LAYOUT PLAN				
KELLY ENGINEERING GROUP civil engineering consultants 0 Campanelli Drive, Braintree, MA 02184 Phone: 781-843-4333 www.kellyengineeringgroup.com				

COMMONWEALTH OF MASSACHUSETTS BRANDON G. LI CIVIL No. 57736 PROFESSIONAL ENGINEER	Brandon Li 2023.08.08 17:17:18 -04'00'
SHEET NO.	3

PROPOSED BUILDING  
45,000 S.F. ± (FOOTPRINT)  
1 STORY  
98 PARKING SPACES  
14 LOADING DOCK SPACES

LOT AREA  
272,000 S.F.  
6.24 AC.

EXISTING BUILDING  
FOOTPRINT AREA = 33,268± S.F.  
2 STORIES  
#33 RIVERSIDE DRIVE  
2ND FLOOR AREA = 15,000 S.F.  
172 EXISTING PARKING SPACES

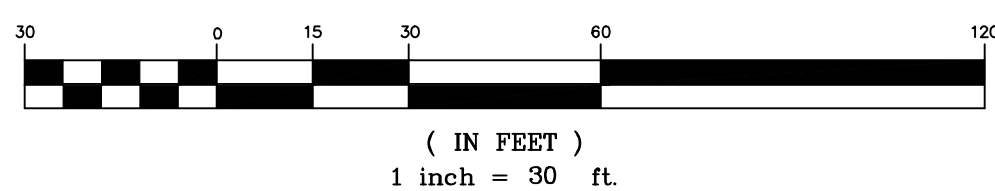
PROPOSED LEGEND

CCB	CAPE COD BERM
ICC	INTEGRATED CONCRETE CURB
CC	CONCRETE CURB
♿ CAR	HANDICAP SPACE
♿ VAN	VAN HANDICAP SPACE
→	HANDICAP RAMP
—	CURB STOP
—	SAW CUT/ MATCH PAVEMENT LINE
▨	HEAVY DUTY PAVEMENT
→	TRAFFIC FLOW
—	SIGN
—	WOOD POST GUARDRAIL
—	CHAIN LINK FENCE
—	SNOW STORAGE
□ □ □	LIGHT POLES
◀	WALL MOUNTED LIGHT
▶	DOOR LOCATION
●	OVERHEAD DOOR LOCATION

PLANTING LEGEND

TREES	KEY	QUANTITY	COMMON NAME	BOTANICAL NAME	SIZE	SPEC
	1	4	BRADFORD CALERY	PYRUS CALLERYANA "BRADFORD"	2 1/2" - 3"	B & B
	2	6	ARISTOCRAT CALLERY PEAR	PYRUS CALLERYANA VAR. ARISTOCRAT	2" - 2 1/2" CALIPER	B & B
	3	8	GREENSPIRE LINDEN	TILIA CORDATA "GREENSPIRE"	2" - 2 1/2" CALIPER	B & B
	4	8	NORWAY SPRUCE	PICEA ABIES	3" CALIPER	B & B
SHRUBS						
	S1	24	AMERICAN CRANBERRY BUSH	VIBURNUM TRILOBUM	#2 POT	B & B
	S2	18	SHASTA VIBURNUM	VIBURNUM PLICATUM VAR. SHASTA	#2 POT	B & B
	S3	18	SHAMROCK INKBERRY	LIX GLABRA VAR. SHAMROCK	#2 POT	B & B

GRAPHIC SCALE



I CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN CONFORMANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

Steven M. Horsfall  
Digitally signed by Steven M. Horsfall  
Date: 2023.08.08 17:45:29 -04'00'

STEVEN M. HORSFALL, P.L.S.

DATE

TREES

KEY QUANTITY

COMMON NAME

BOTANICAL NAME

SIZE

SPEC

SHRUBS

S1

S2

S3

AMERICAN CRANBERRY BUSH

SHASTA VIBURNUM

SHAMROCK INKBERRY

VIBURNUM TRILOBUM

VIBURNUM PLICATUM VAR. SHASTA

LIX GLABRA VAR. SHAMROCK

#2 POT

#2 POT

#2 POT

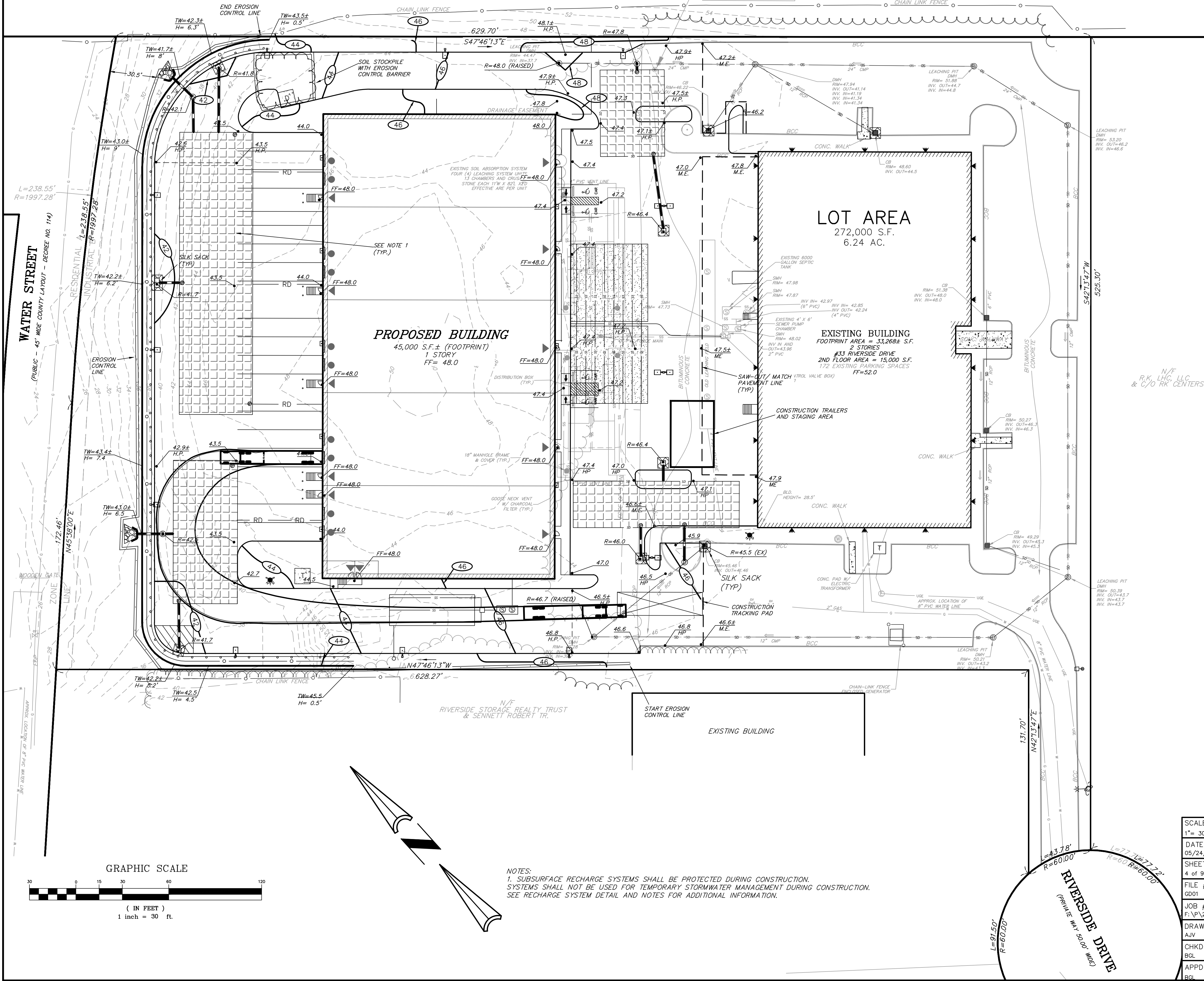
B & B

B & B

B & B

ROUTE 3  
COMMONWEALTH OF MASSACHUSETTS  
(PUBLIC - 300, WIDE LIMITED HIGHWAY ACCESS HIGHWAY)

BENCHMARK: MAG NAIL  
SET IN PAVEMENT  
EL. = 46.01



PROPOSED LEGEND

	RIP RAP
	FLARED END SECTION
	CATCH BASIN
	DOUBLE CATCH BASIN
	DRAIN MANHOLE
	INSPECTION PORT
	DRAIN LINE
	ROOF DRAIN LINE
	SAW CUT/ MATCH PAVEMENT LINE
	CONTOUR LINE
	SPOT GRADE
	MATCH EXISTING
	HIGH POINT
	HIGH POINT LINE
	EROSION CONTROL LINE
	SILT SACK
	SILT SACK
	DRAIN RIP-RAP

I CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN CONFORMANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

Steven M. Horsfall  
Digitally signed by Steven M. Horsfall  
Date: 2023.08.08 17:45:54 -04'00'



STEVEN M. HORSFALL, P.L.S.

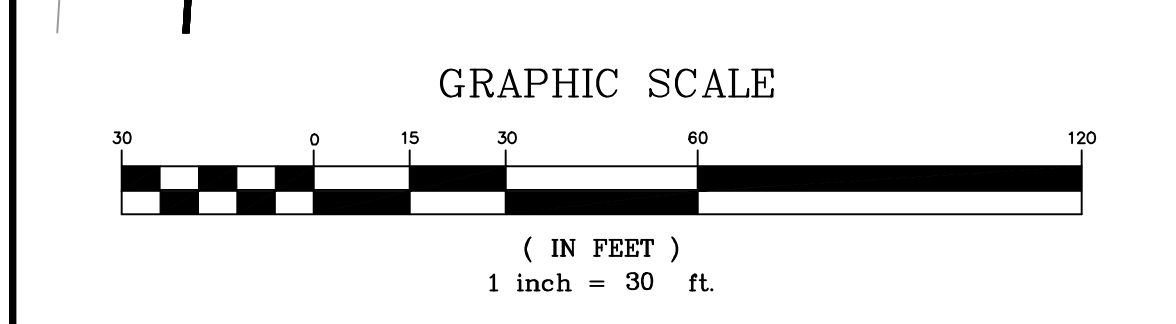
DATE

SCALE 1" = 30'	2	08/07/23	PEER REVIEW COMMENTS	
DATE 05/24/2023	1	07/06/23	PEER REVIEW COMMENTS	
SHEET 4 of 9	REV	DATE	REVISION	BY
FILE # G001				
JOB # F:\P\2023-026				
DRAWN BY AJV				
CHKD BY BGL				
APPD BY BGL				
RADER PROPERTIES, INC 33 RIVERSIDE DRIVE PEMBROKE, MASSACHUSETTS GRADING PLAN				
KELLY ENGINEERING GROUP civil engineering consultants 0 Campanelli Drive, Braintree, MA 02184 Phone: 781-843-4333 www.kellyengineeringgroup.com				

COMMONWEALTH OF MASSACHUSETTS REGISTERED PROFESSIONAL ENGINEER BRANDON G. LI No. 57736	Brandon Li 2023.08.08 17:17:41 -04'00'
SHEET NO.	4

## (PUBLIC - 300' WIDE LIMITED ACCESS HIGHWAY)

### CHAIN LINK FENCE




NOTES:

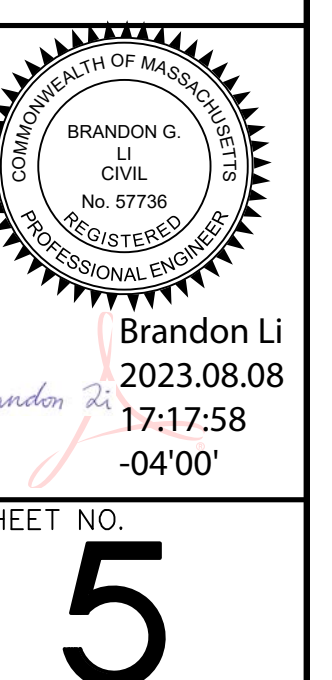
1. ALL STRUCTURE INVERTS ARE LISTED WITH OUTLET FIRST THEN CLOCKWISE AROUND STRUCTURE.
2. FOR EXISTING SYMBOL LEGEND SEE SHEET 02

Steven M. Horsfall

Digitally signed by Steven M. Horsfall  
Date: 2023.08.08 17:48:45 -04'00'









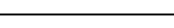

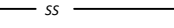


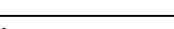




SCALE 1"= 30'	2	08/07/23	PEER REVIEW COMMENTS	
DATE 05/24/2023	REV	DATE	REVISION	BY
SHEET 5 of 9	<p style="text-align: center;"> <b>RADER PROPERTIES, INC</b>  <b>33 RIVERSIDE DRIVE</b>  <b>PEMBROKE, MASSACHUSETTS</b>  <b>SEWER AND DRAINAGE</b>  <b>PLAN</b> </p>			
FILE # S002				
JOB # F:\P\2023-026				
DRAWN BY AJW				
CHKD BY BGL				
APPD BY	 <p style="margin-left: 20px;"> <b>KELLY ENGINEERING GROUP</b>  civil engineering consultants  0 Campanelli Drive, Braintree, MA 02184  Phone: 781-843-4333 www.kellyengineeringgroup.com </p>			



BENCHMARK: MAG NAIL  
SET IN PAVEMENT  
EL.=46.01



	RIP RAP
	FLARED END SECTION
	CATCH BASIN
	DRAIN MANHOLE
	INSPECTION PORT
	DRAIN LINE
	ROOF DRAIN LINE
	SEWER MANHOLE
	SEWER LINE
	GAS VALVE
	GAS LINE
	HYDRANT
	WATER VALVE
	WATER LINE
	TRANSFORMER
	UNDERGROUND ELECTRIC LINE

NOTE:  
FOR EXISTING SYMBOL LEGEND SEE SHEET 2

SILT SOCKS SHALL BE INSTALLED AROUND THE PERIMETER OF ALL STOCKPILES.

NO HEAVY EQUIPMENT/VEHICLE WASHING  
WILL BE ALLOWED ON-SITE UNLESS TO HOSE  
OFF SEDIMENTS TO PREVENT VEHICLE  
TRACK-OUT ONTO PUBLIC ROADS. NO  
SOAPS OR DETERGENTS SHALL BE USED

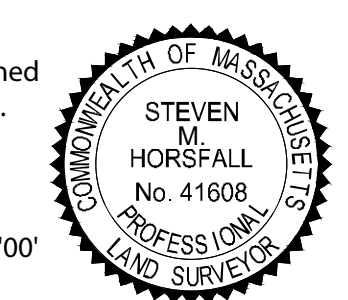
CONSTRUCTION EQUIPMENT SHALL BE PARKED/STAGED WITHIN DESIGNATED AREAS OUTSIDE OF THE BUFFER ZONE FROM WETLAND RESOURCE AREAS.

SUBSURFACE INFILTRATION CHAMBER SYSTEMS ARE NOT TO BE UTILIZED FOR TEMPORARY SEDIMENT TRAPS AND SHALL BE PROTECTED FROM HEAVY CONSTRUCTION TRAFFIC TO AVOID COMPROMISING THE SOIL CONDITIONS

I CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN CONFORMANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

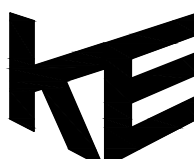
Steven M. Horsfall

Digitally signed by Steven M. Horsfall  
Date: 2023.08.08 17:49:34 -04'00'



STEVEN M. HORSFALL, P.L.S.

DATE \_\_\_\_\_

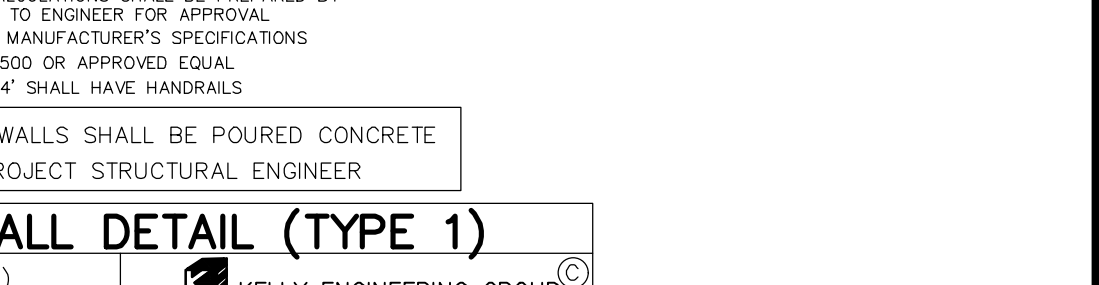
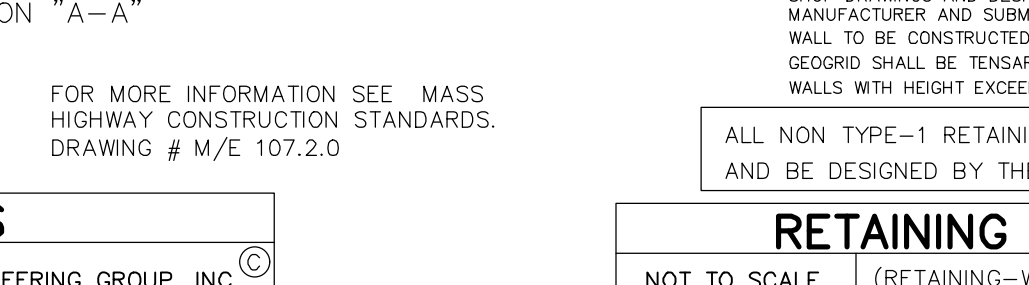
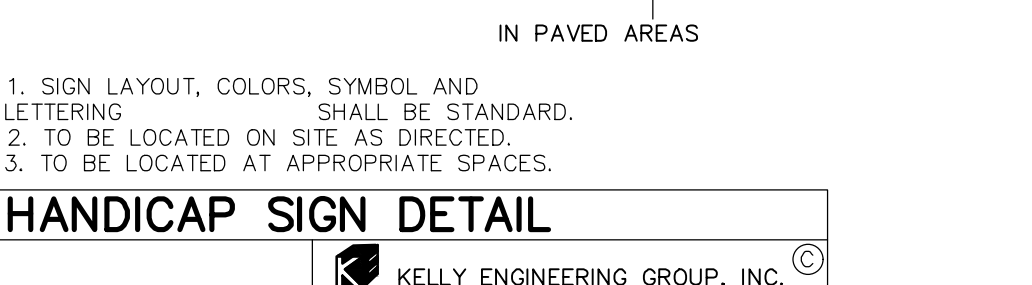
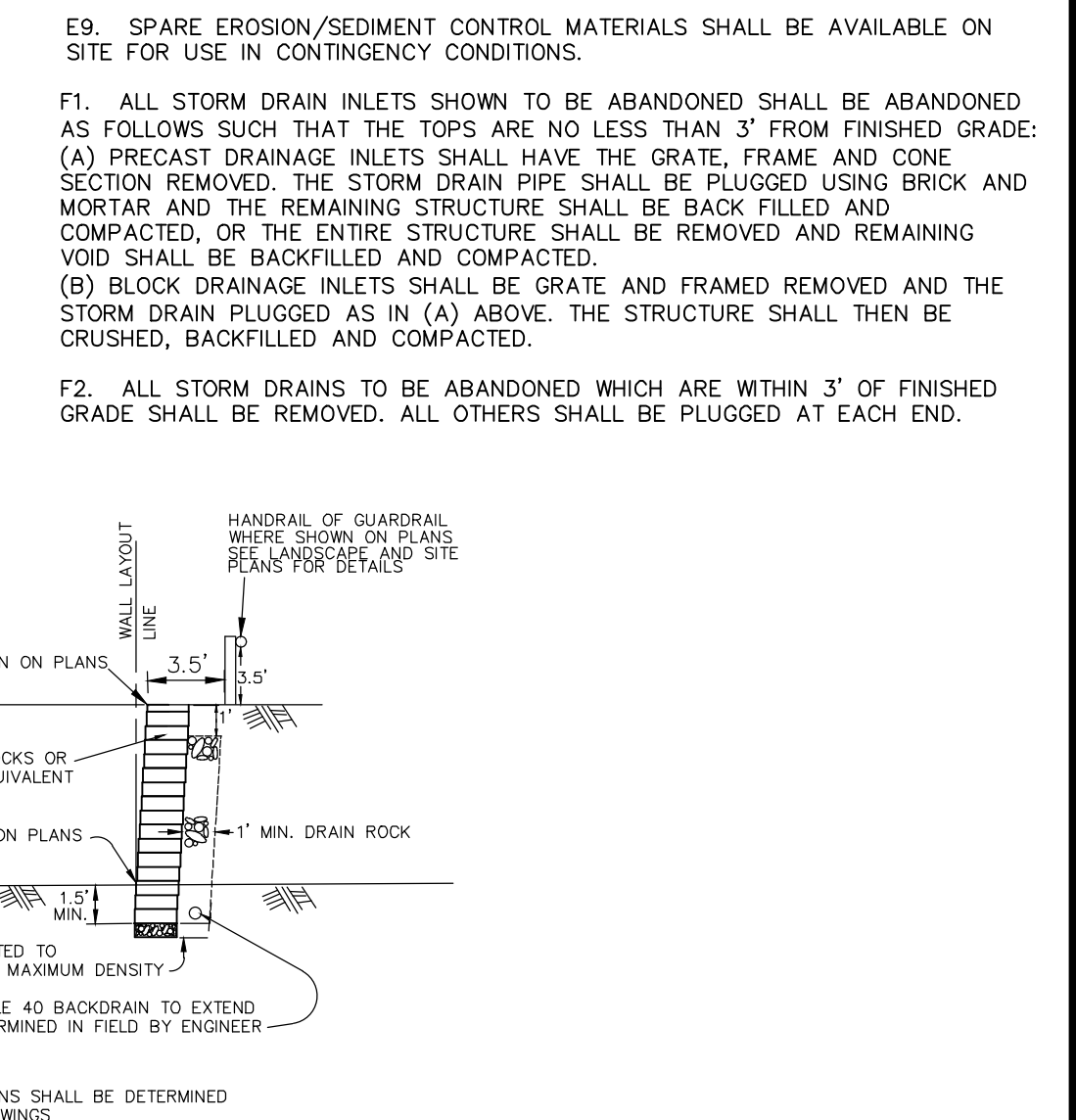
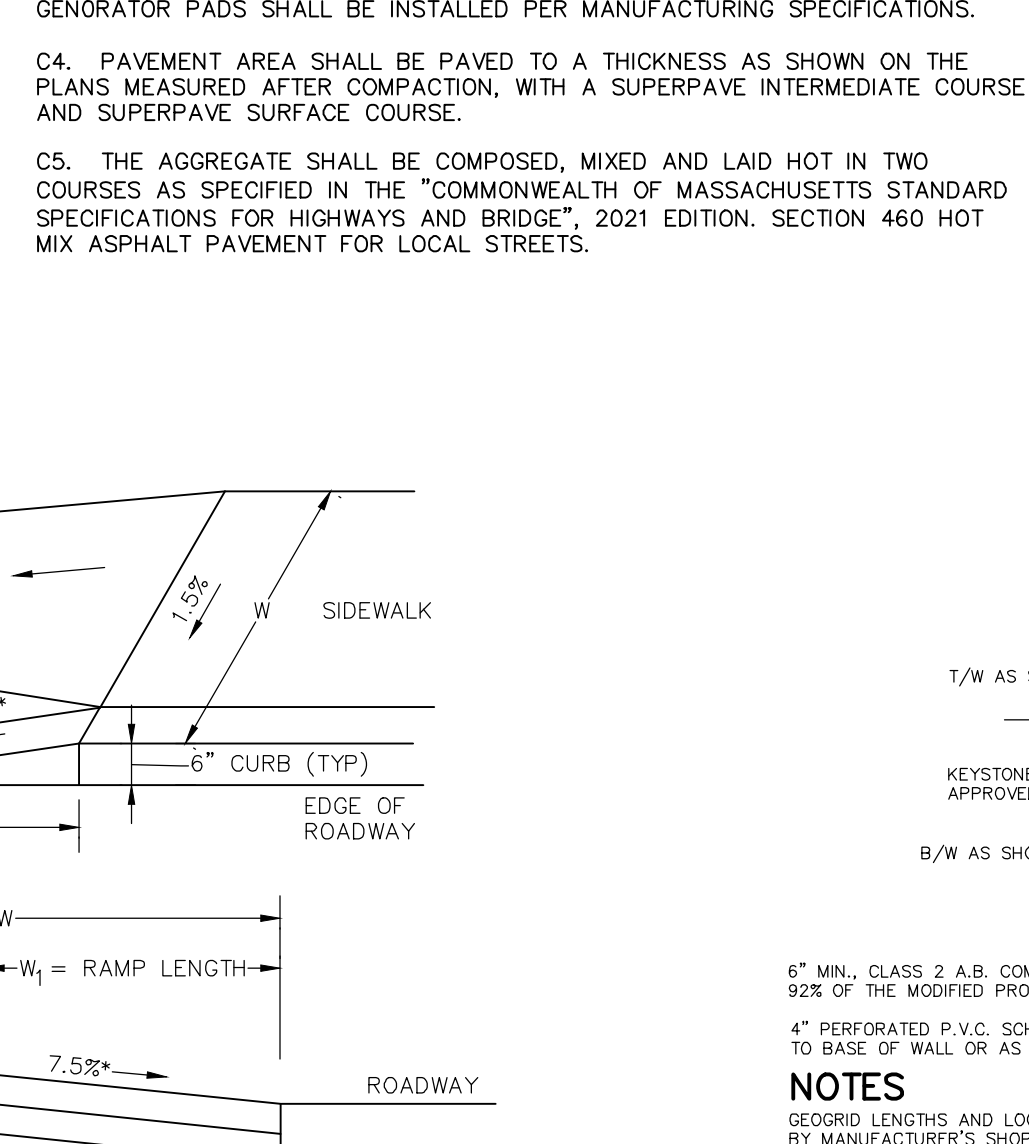
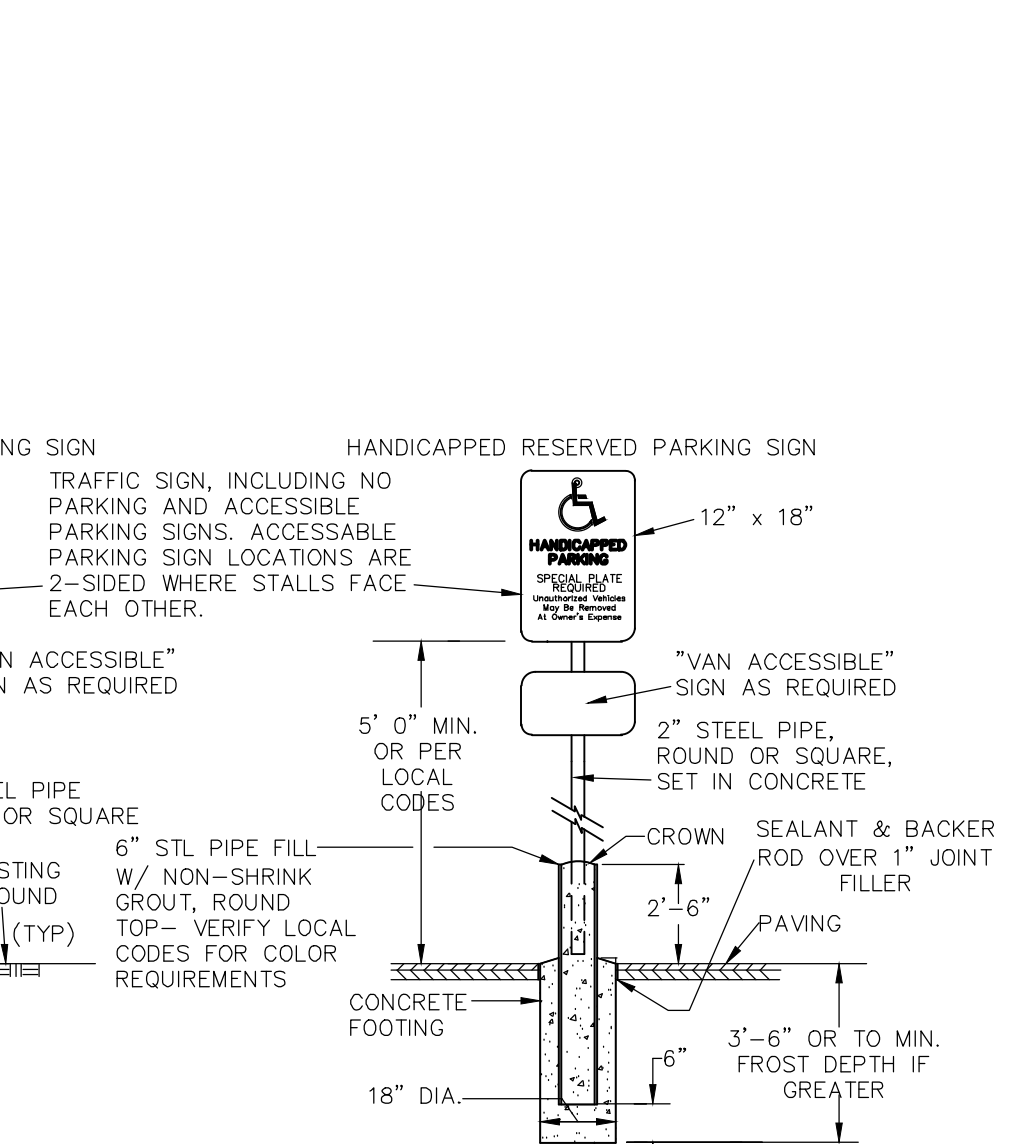
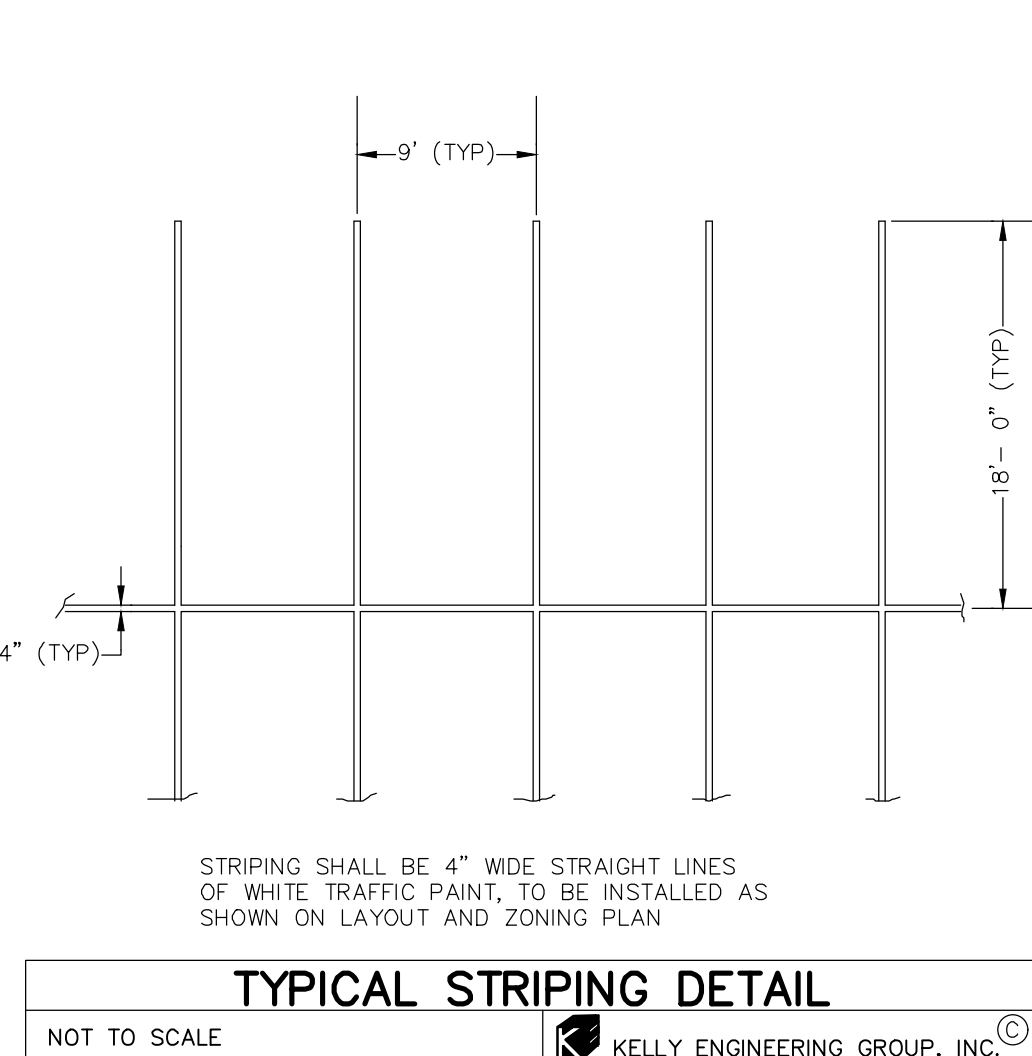
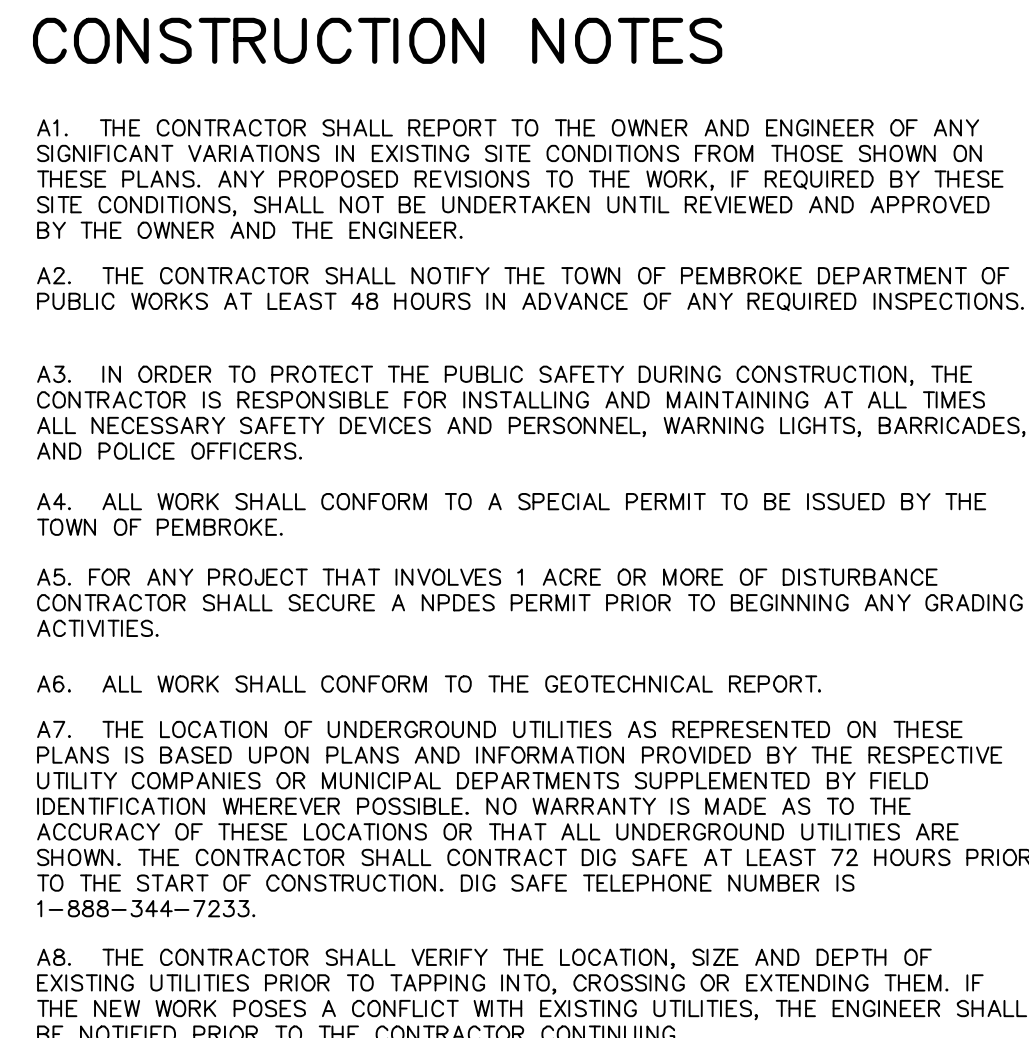
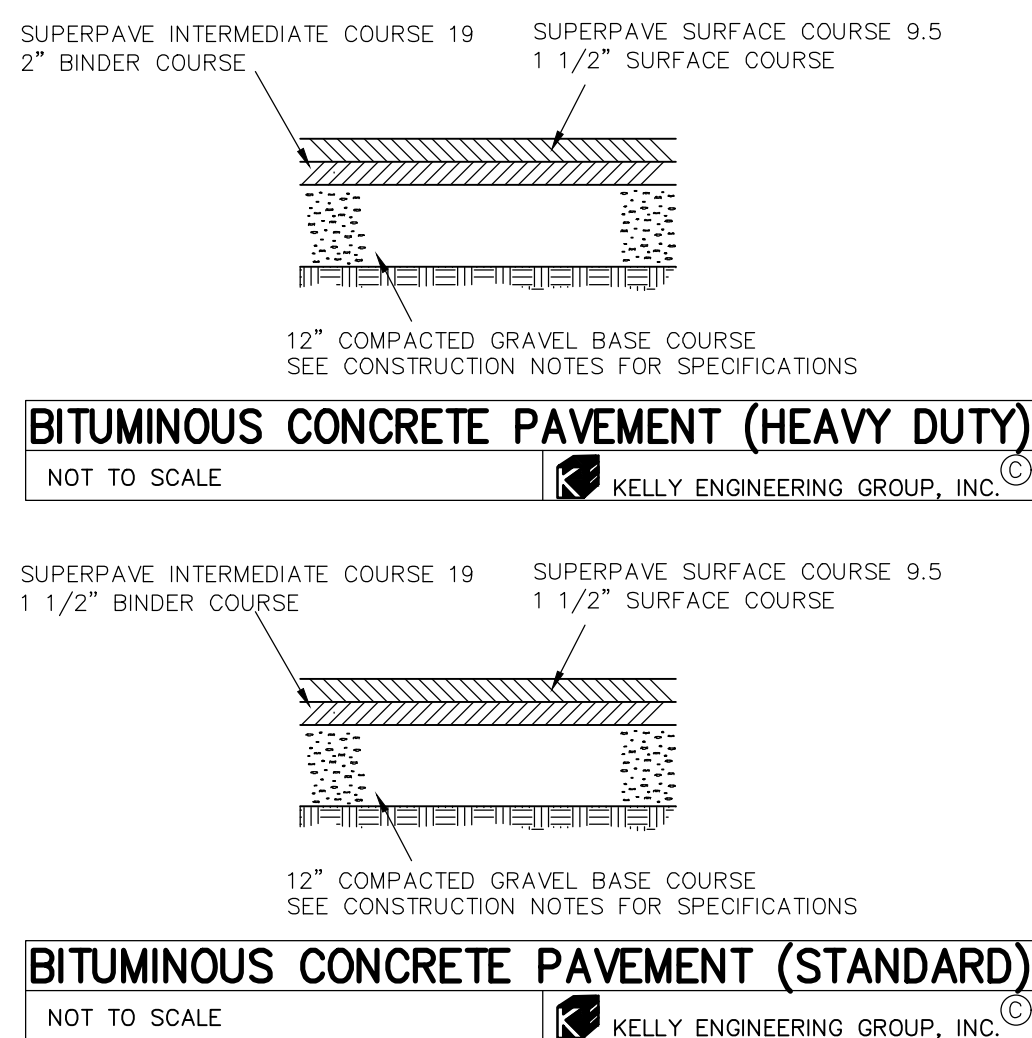
SCALE 1"= 30'				
	2	08/07/23	PEER REVIEW COMMENTS	
DATE 05/24/2023	1	07/06/23	PEER REVIEW COMMENTS	
	REV	DATE	REVISION	BY
SHEET 6 of 9	<p style="text-align: center;"><b>RADER PROPERTIES, INC</b>  <b>33 RIVERSIDE DRIVE</b>  <b>PEMBROKE, MASSACHUSETTS</b></p>			
FILE # UT01				
JOB # F:\P\2023-026				
<b>UTILITY PLAN</b>				
DRAWN BY AJV	 <p style="text-align: center;"><b>KELLY ENGINEERING GROUP</b>  civil engineering consultants  0 Campanelli Drive, Braintree, MA 02184  Phone: 811-843-4333 www.kellyengineeringgroup.com</p>			
CHKD BY BGL				
APP BY APD				



Brandon Li  
2023.08.08  
17:18:16  
-04'00'

SHEET NO.

6



STEVEN M. HORSFALL, P.L.S. DATE

[illegible]

NA	2	08/07/23	NO CHANGE
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05/24/2023	REV	DATE	REVISION
SHEET			

FILE #	33 RIVERSIDE DRIVE
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JOB #	DETAIL
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DRAWN BY \_\_\_\_\_ SHEET \_\_\_\_\_

CHKD BY  KELET ENGINEERING GROUP  
civil engineering consultants

APPD BY

SHEET NO.

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\_\_\_\_\_

Steven  
M.  
Horsfall

Digitally signed  
by Steven M.  
Horsfall  
Date: 2023.08.0  
17:50:29 -04'00'



DATE \_\_\_\_\_

NOTE: CONFIRM TYPE AND LOCATION WITH WATER DEPARTMENT AND FIRE DEPARTMENT.

\* HYDRANTS SHALL BE MUELLER CENTURION 2000, MODEL A-423, LEFT OPENING PAINTED YELLOW

GROUND SURFACE

SAFETY FLANGE

3/4" CRUSHED STONE AT LEAST 6" ABOVE HYDRANT DRAIN

HYDRANT DRAIN

CONCRETE THRUST BLOCK

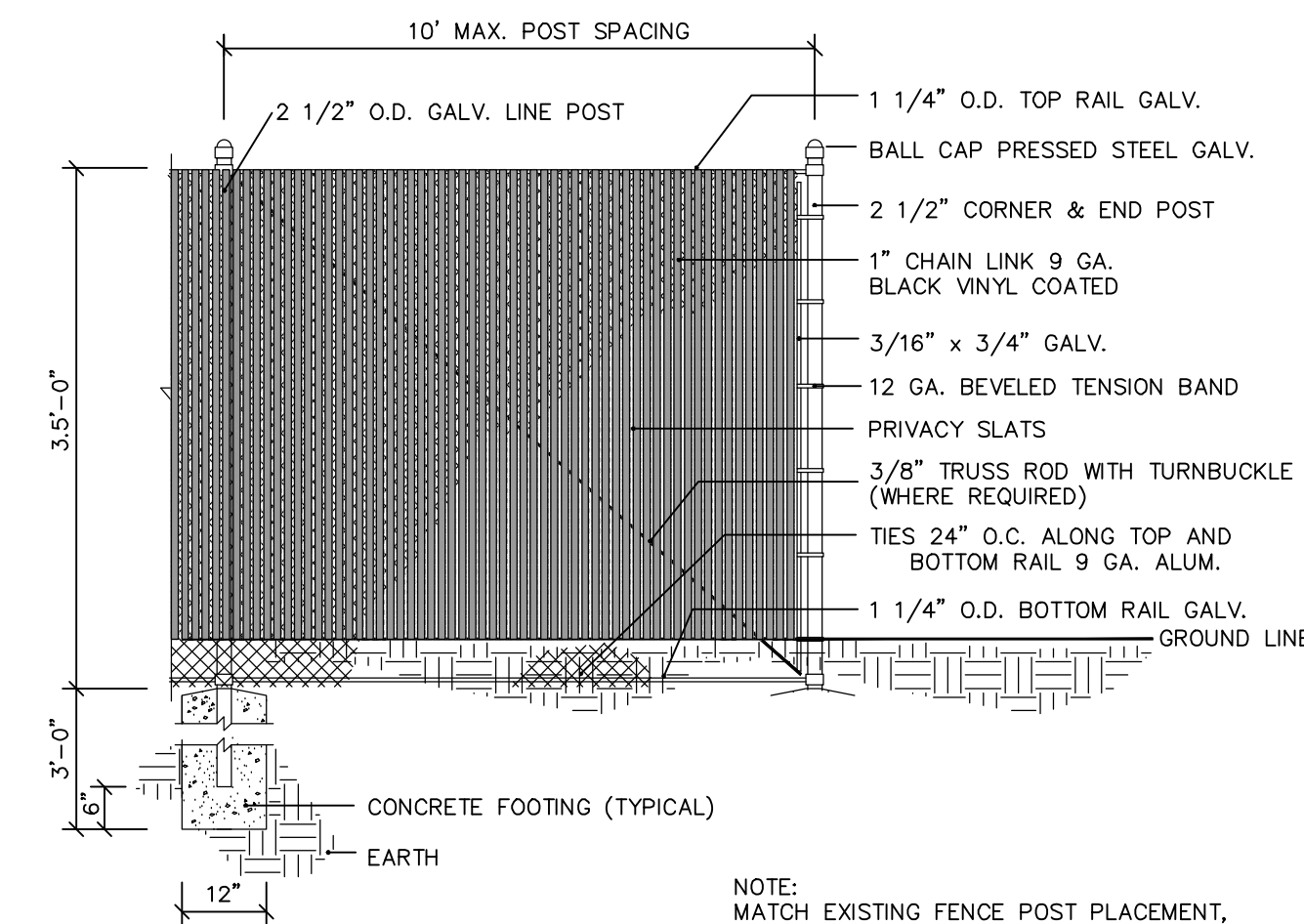
FLAT STONE

H<sub>2</sub>O

GATE BOX

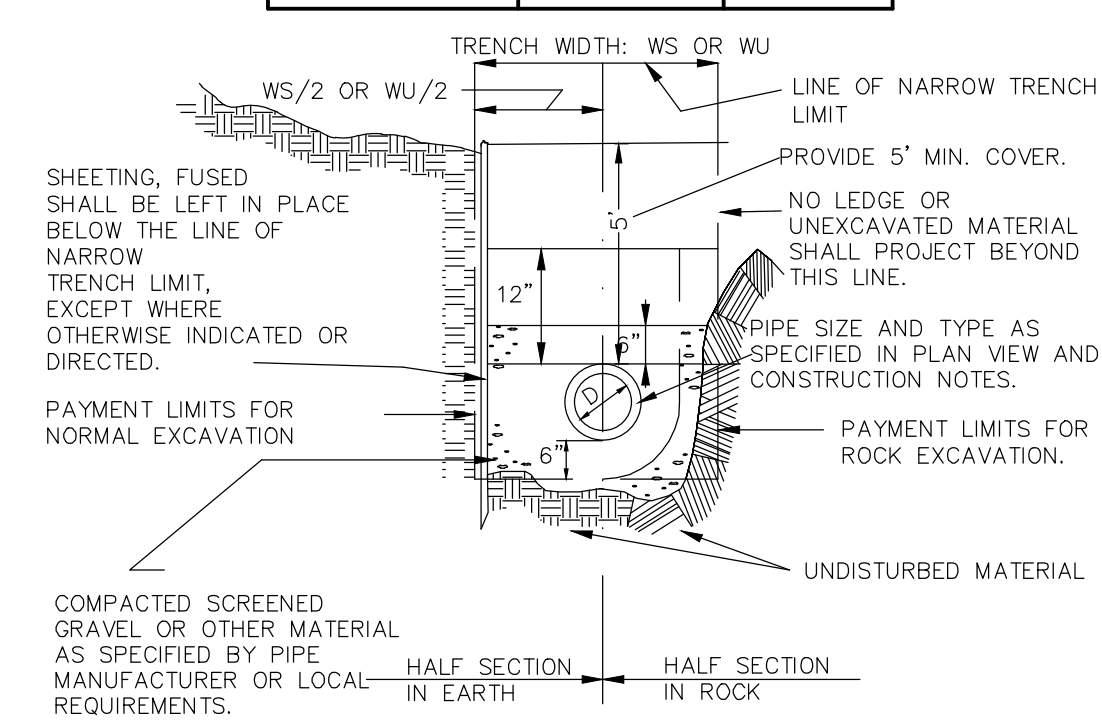
6" GATE VALVE FLG. & M.J.

HYDRANT SETTING DETAIL		
NOT TO SCALE		KELLY ENGINEERING GROUP, INC. ©

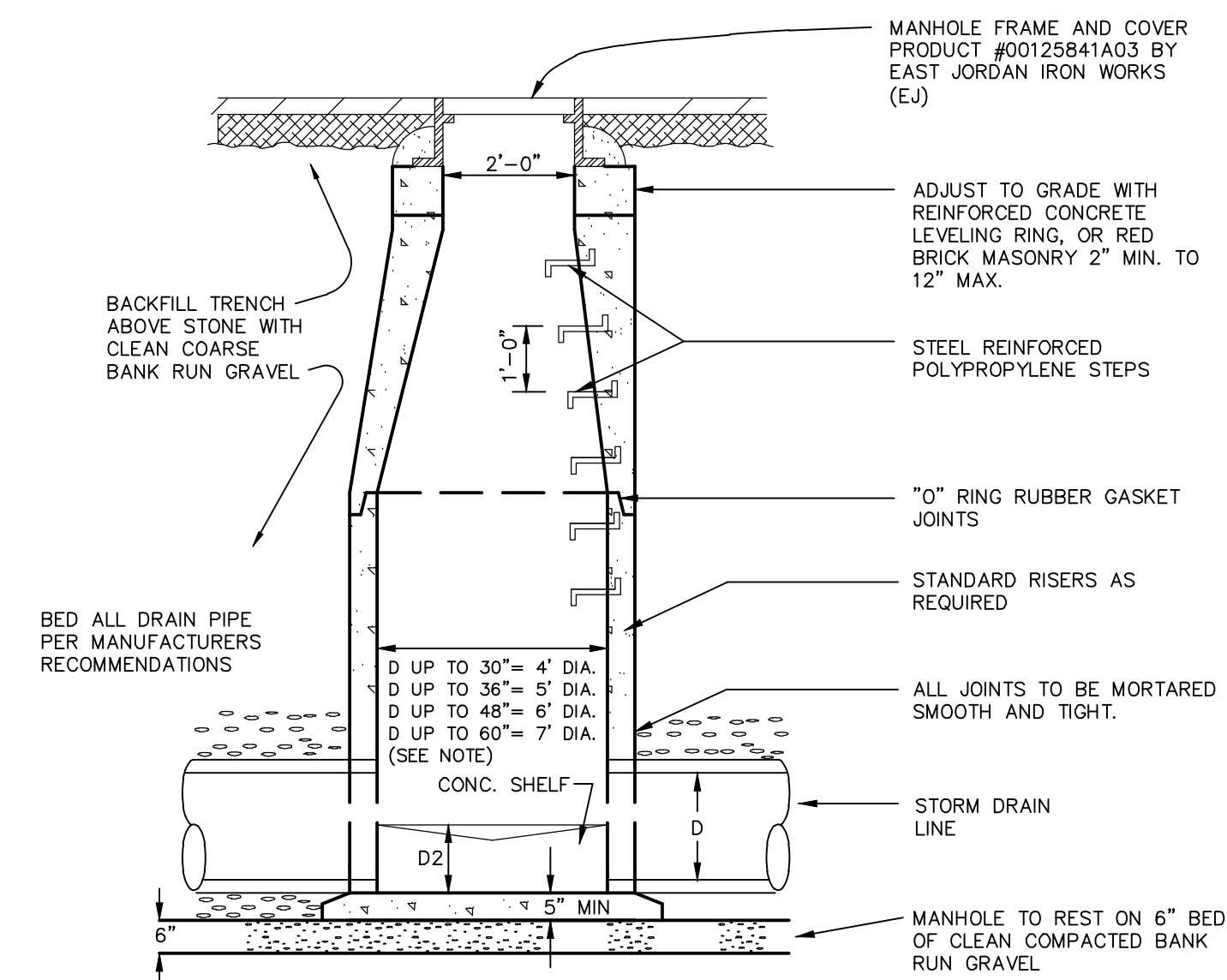


**3.5' CHAIN LINK FENCE WITH PRIVACY SLATS**  
 NOT TO SCALE  KELLY ENGINEERING GROUP, INC. ©

TRENCH WIDTH WS OR WU		
DIAM. OF PIPE	WU UNSHEETED	WS SHEETED
12" AND SMALLER	3'-0"	4'-2"
15" AND LARGER	O.D. + 20"	O.D. + 30"



<b>WATER TRENCH SECTION</b>	
NOT TO SCALE	 KELLY ENGINEERING GROUP, INC. ©



NOTES:

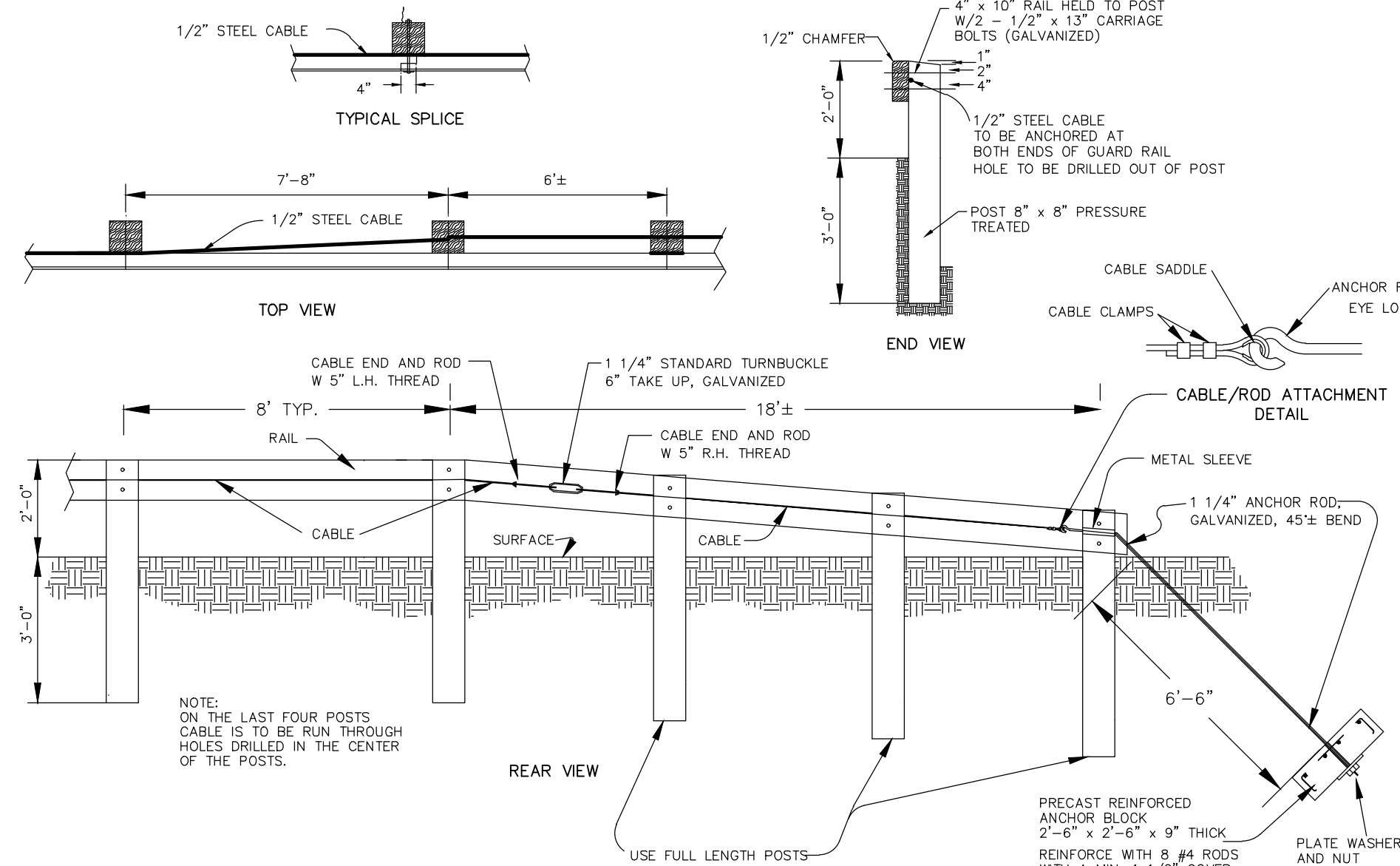
- 1) CONCRETE, 4,000 PSI MINIMUM AFTER 28 DAYS.
- 2) REINFORCED STEEL TO CONFORM TO LATEST ASTM A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) BASE BOTTOM.
- 3) H-20 DESIGN LOADING PER AASHTO HS-20-44; ASTM C478 SPEC. FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."
- 4) STEEL REINFORCED COPOLYMER POLYPROPYLENE PLASTIC STEP TO CONFORM TO LATEST ASTM C478 SPEC.

NOTE: CONFIGURATIONS W/ MULTIPLE  
INLETS MAY REQUIRE LARGER STRUCTURES

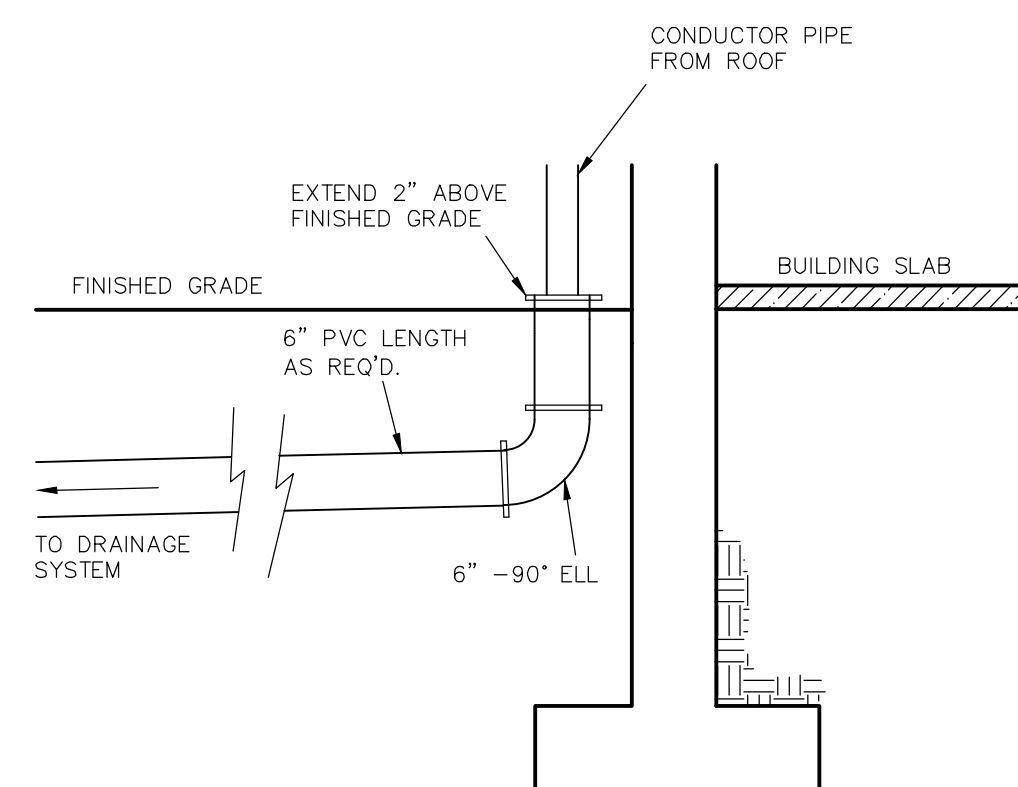
**PRECAST DRAIN MANHOLE DETAIL**

NOT TO SCALE

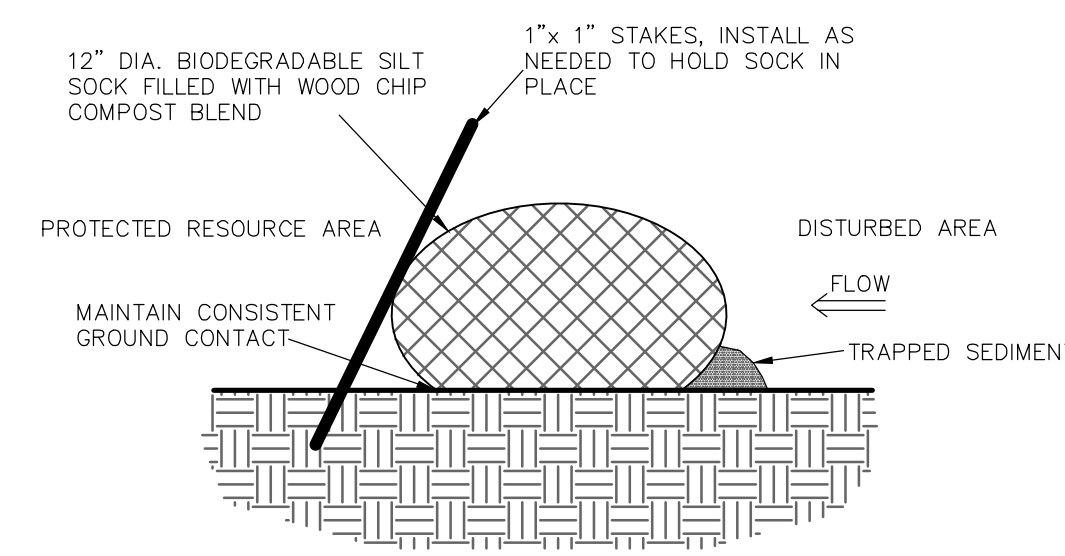
 KELLY ENGINEERING GROUP, INC. ©



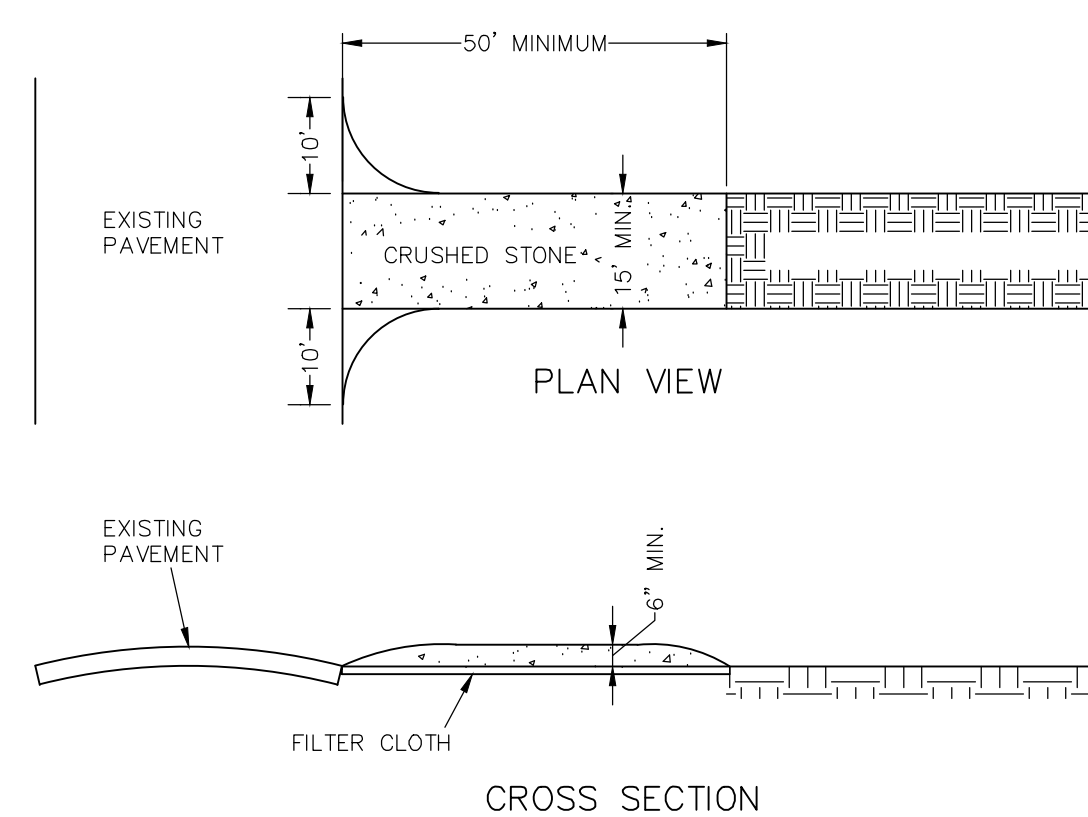
WOOD POST & RAIL DETAIL		
NOT TO SCALE		 KELLY ENGINEERING GROUP, INC. ©



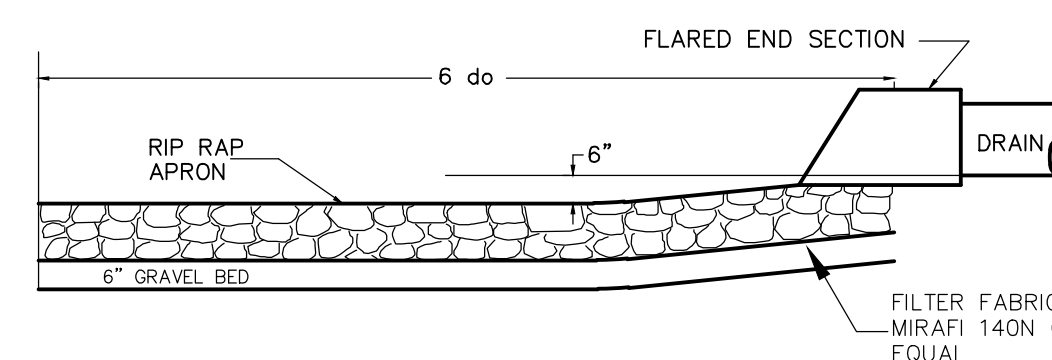
<h1 style="text-align: center;">ROOF DRAIN CONNECTION DETAIL</h1>	
NOT TO SCALE	 KELLY ENGINEERING GROUP, INC. ©



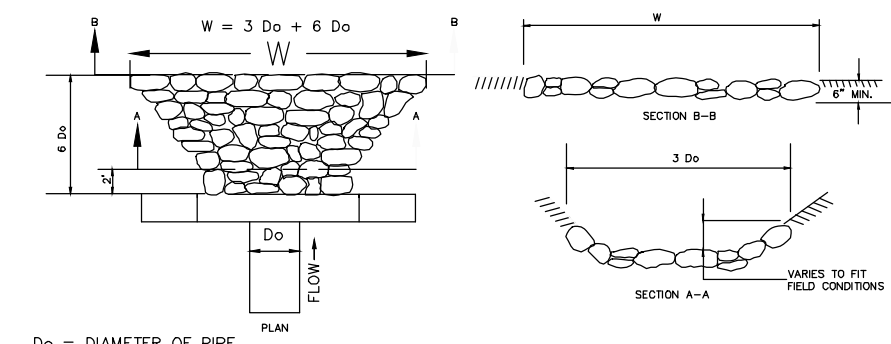
<b>SILT SOCK LINE DETAIL</b>	
NOT TO SCALE	 <b>KELLY ENGINEERING GROUP, INC.</b> ©



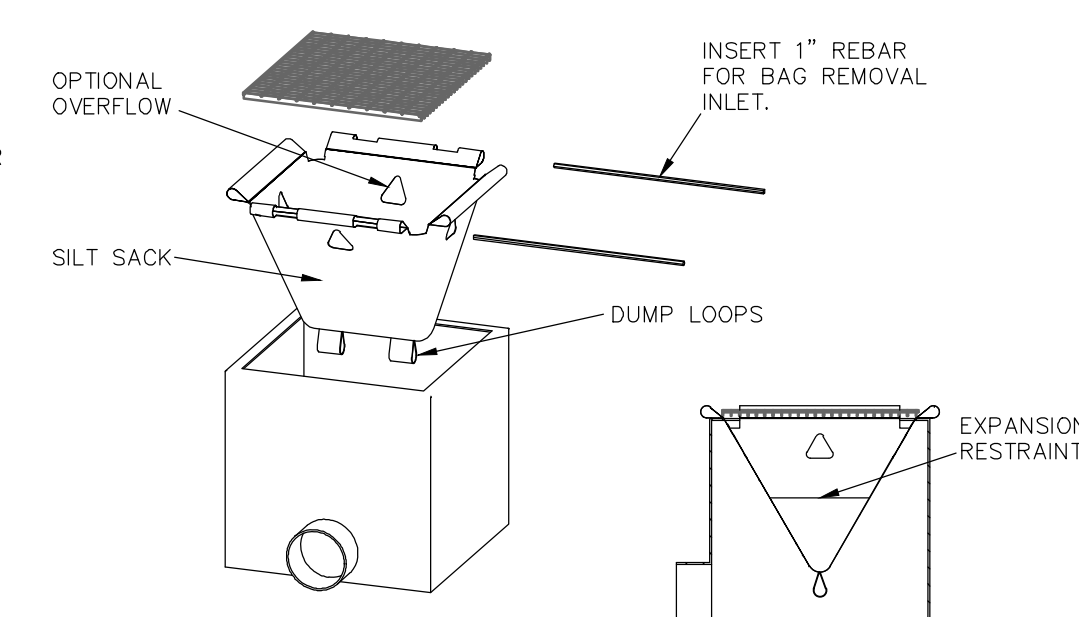
CONSTRUCTION TRACKING PAD		
NOT TO SCALE		 KELLY ENGINEERING GROUP, INC. ©



APRON TO BE COMPOSED OF A LAYER OF STONES 12" IN THICKNESS OR MORE, PLACED UPON A BED OF SAND AND GRAVEL 6" IN THICKNESS. THE STONES SHALL BE SIZED SO THAT NOT LESS THAN 60% SHALL HAVE ONE DIMENSION 12" OR MORE. THE STONES, AFTER BEING LAID, SHALL BE CAREFULLY CHINKED BY HAND TO MAKE A REASONABLY SMOOTH AND SHAPED SURFACE. RIP RAP IS TO BE USED WHERE INDICATED ON THE PLAN.



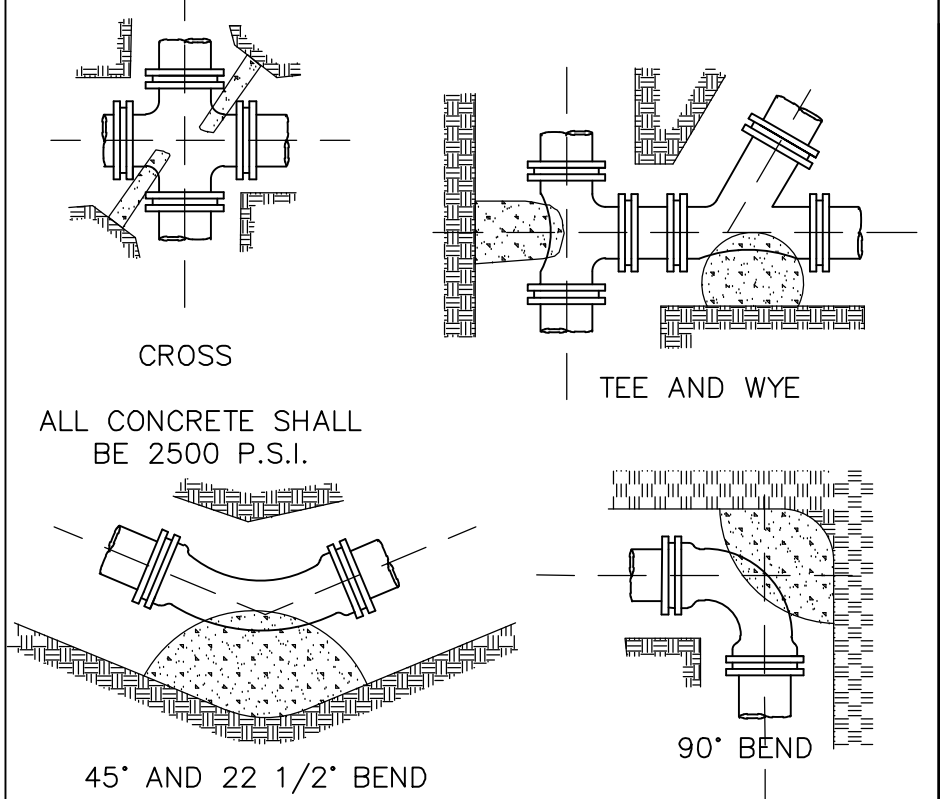
RIP-RAP APRON DETAIL AT F.E.S.	
NOT TO SCALE	KELLY ENGINEERING GROUP, INC. ©



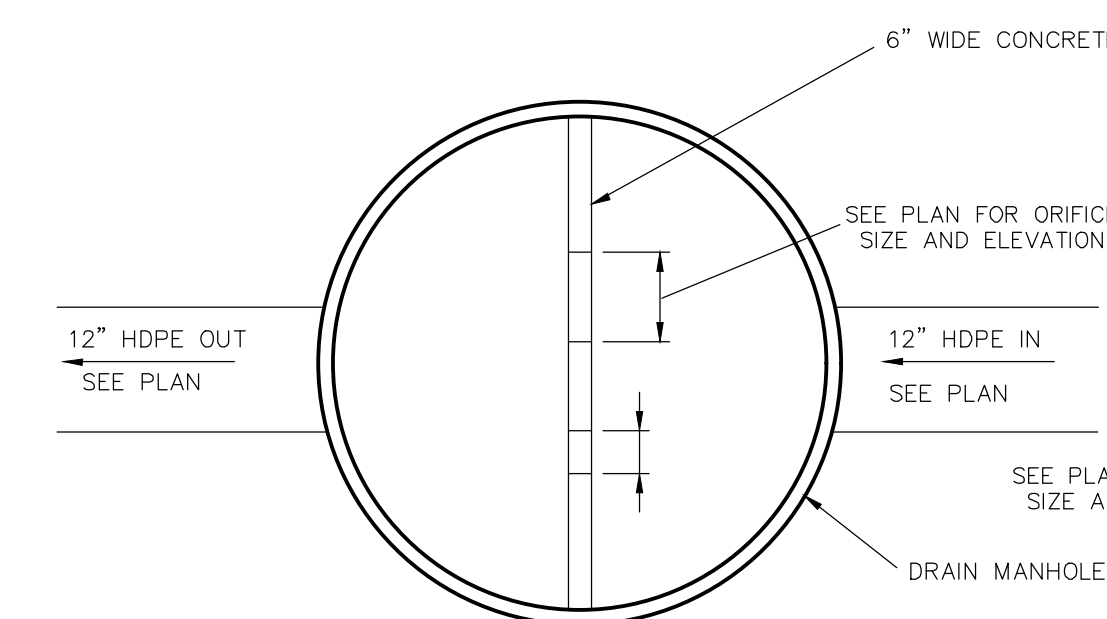
<b>SILT SACK- TYPE A DETAIL</b>	
NOT TO SCALE	 KELLY ENGINEERING GROUP, INC. ©

THRUST BLOCK SCHEDULE			
TABLE OF MINIMUM BEARING AREA IN SQ. IN. AGAINST UNDISTURBED SOIL FOR 8 IN. DIA. PIPE			
SOIL BEARING CAPACITY (PSF)	90 DEGREE BEND	TEE	45 DEGREE BEND
1000	945	674	516
1500	630	450	344
2000	473	337	258
3000	315	225	172

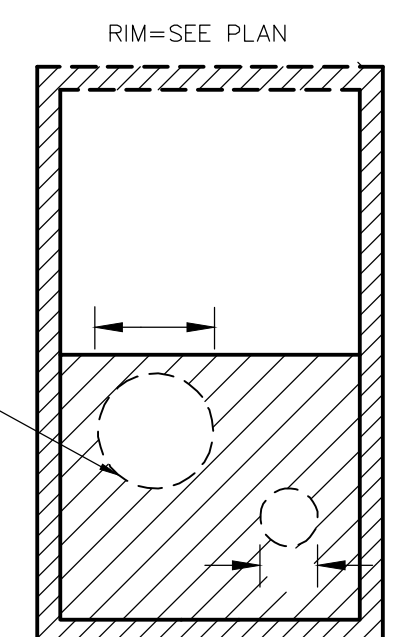
NOTE: FOR FITTINGS W/LESS THAN 45°  
DEFLECTION USE BEARING AREA FB  
BASED ON INTERNAL PRESSURE C



<b>THRUST BLOCK</b>	
NOT TO SCALE	 KELLY ENGINEERING GROUP, INC. ©



TOP VIEW




## SECTION

NOTE: FOR OTHER NOTES AND DETAILS SEE TYPICAL DRAIN MANHOLE DETAIL

NOT TO SCALE

**CONTROL STRUCTURE MANHOLE**

KELLY ENGINEERING GROUP, INC. ©

SCALE				
NA	2	08/07/23	NO CHANGE	
DATE	1	07/06/23	PEER REVIEW COMMENTS	
05/24/2023	REV	DATE	REVISION	BY
SHEET 8 of 9	<b>RADER PROPERTIES, INC</b> <b>33 RIVERSIDE DRIVE</b> <b>PEMBROKE, MASSACHUSETTS</b>			
FILE # DT02				
JOB # F:\P\2023-026	<b>DETAIL</b> <b>SHEET</b>			
DRAWN BY AJV	 <b>KELLY ENGINEERING GROUP</b> civil engineering consultants 0 Campanelli Drive, Braintree, MA 02184 Phone: 781-843-4333 www.kellyengineeringgroup.com			
CHKD BY BGL				
APPD BY				



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8

