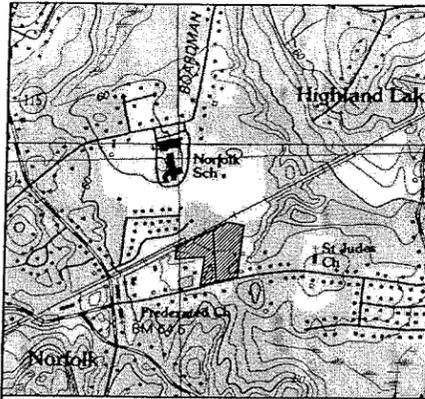


SITE DEVELOPMENT PLANS



"BOYDE'S CROSSING"

A RESIDENTIAL DEVELOPMENT LOCATED IN
NORFOLK, MASSACHUSETTS

PROJECT SUMMARY

PROPOSED USE PER MCL Ch. 40B, SECTION 20-23: 40 CONDOMINIUM UNITS: 30 UNITS WITH 2 BEDROOMS EACH & 10 UNITS WITH 3 BEDROOMS EACH (90 TOTAL BEDROOMS)	
TOTAL PARCEL AREA	= 392,440 S.F. (9.01 AC)
CONTIGUOUS UPLAND AREA	= 360,569 S.F. (8.28 AC)
TOTAL FOOTPRINT AREA OF BLDGS*	= 50,512 S.F.
*INCLUDES UNITS AND GARAGES	
TOTAL BUILDING COVERAGE	= 84,204 S.F.
TOTAL PAVEMENT AREA**	= 50,512 S.F./392,440 S.F. = 12.87%
**INCLUDES DRIVEWAYS, SIDEWALKS AND WALKWAYS	
TOTAL PAVEMENT COVERAGE	= 84,204 S.F./392,440 S.F. = 21.45%
TOTAL IMPERVIOUS AREA	= 134,716 S.F.
TOTAL IMPERVIOUS COVERAGE	= 134,716 S.F./392,440 S.F. = 34.33%
TOTAL LANDSCAPE/NATURAL AREA	= 257,724 S.F.
TOTAL LANDSCAPE/NAT COVERAGE	= 257,724 S.F./392,440 S.F. = 65.67%

WATER DEMAND & SEWAGE FLOW ESTIMATES

90 BEDROOMS X 110 GPD/BEDROOM = 9,900 G.P.D.

PARKING SUMMARY

PARKING REQUIREMENTS PER ZONING BY-LAW:

1.5 SPACES PER DWELLING UNIT, OTHER THAN A SINGLE FAMILY DWELLING
SPACE SIZE: 9'W X 19'L

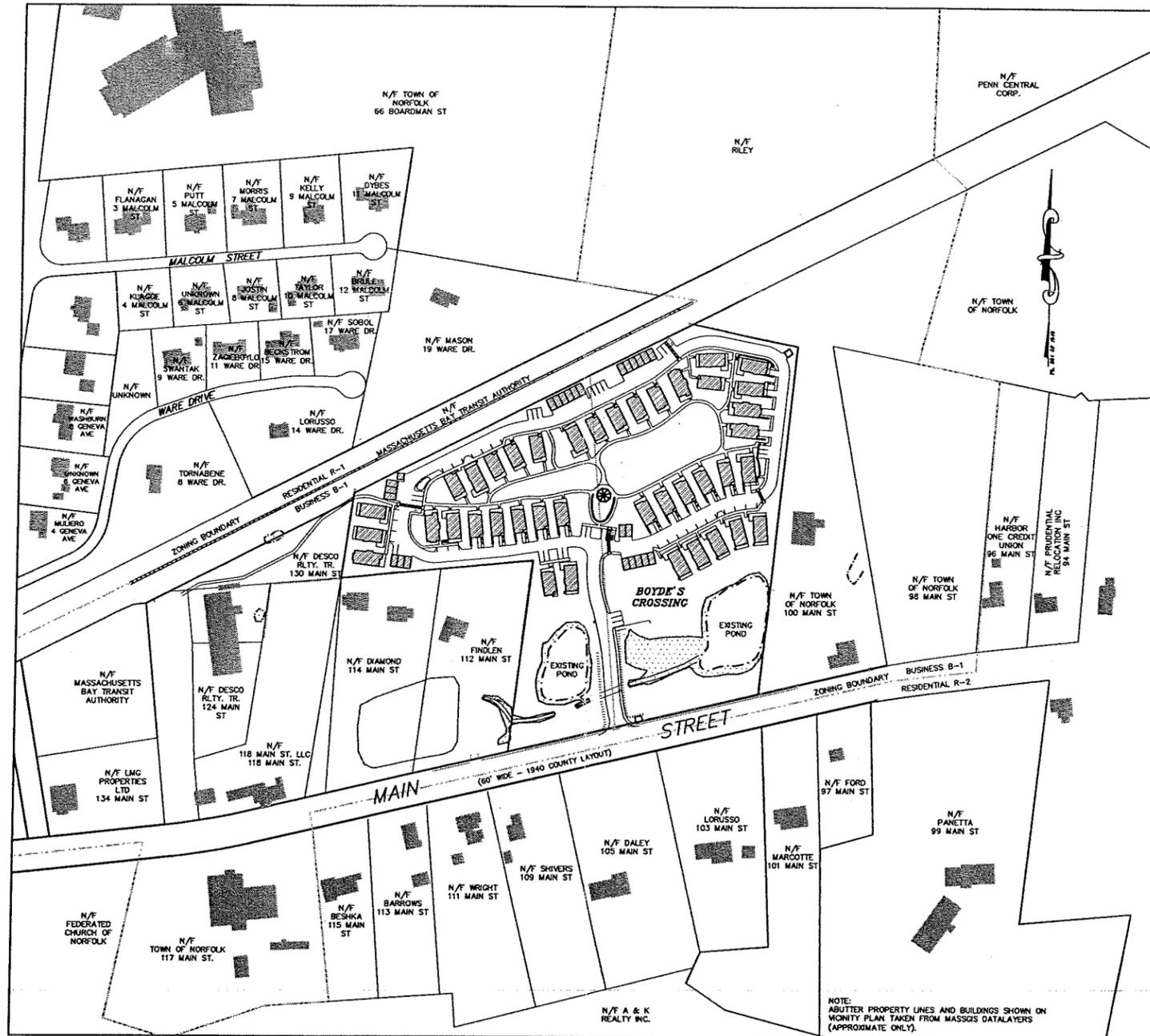
FOR PROPOSED USE WITH: 30 CONDOMINIUM UNITS (2 BEDROOMS EACH),
10 CONDOMINIUM UNITS (3 BEDROOMS EACH),
TOTAL PARKING REQUIRED = 40 UNITS X 1.5 SPACES/UNIT = 60 SPACES

TOTAL PARKING SPACES PROVIDED = 103 INCLUDES 40 GARAGE SPACES &
63 GENERAL SPACES (3'-8"X16' COMPACT SPACES &
3 HANDICAPPED ACCESSIBLE SPACES)

LOCUS
SCALE: 1" = 1000'

GENERAL NOTES

- PROPERTY LINE & TOPOGRAPHIC SURVEY REFERENCES:
 - PROPERTY LINE INFORMATION TAKEN FROM:
 - RECORDED PLANS FROM NORFOLK COUNTY REGISTRY OF DEEDS
 - PLAN BK 3914-612 NO. 807 OF 1961
 - PLAN BK 598 NO. 41 OF 2010
 - PLAN BK 126 NO. 384 OF 1940
 - PLAN BK 410 NO. 782 OF 1992
 - PLAN BK 598 NO. 41 OF 2010
 - LAND COURT PLAN 3783-D
 - UNRECORDED PLANS FROM NORFOLK COUNTY ENGINEERING DEPARTMENT
 - STREET ACCEPTANCE PLAN OF CARLSON CIRCLE NORFOLK, MA, DATED APRIL 16, 2007 AND REVISED APRIL 30, 2007 BY NORFOLK COUNTY ENGINEERING DEPARTMENT.
 - WORKSHEET PLAN OF LAND OFF MAIN STREET NORFOLK, MA DATED FEBRUARY 7, 2007 BY NORFOLK COUNTY ENGINEERING DEPARTMENT.
 - THE TOPOGRAPHY SHOWN HEREON IS THE RESULT OF FIELD SURVEYS PERFORMED BY OUTBACK ENGINEERING, INC. IN OCTOBER 2013 THROUGH JUNE 2014.
 - ALL EXISTING UTILITY INFORMATION SHOWN HEREON IS APPROXIMATE ONLY, COMPILED FROM RECORD PLANS WHERE AVAILABLE AND/OR BY FIELD SURVEY OF DIGSAFE MARKINGS AS PERFORMED BY OUTBACK ENGINEERING. ALL EXISTING UTILITIES MAY NOT BE SHOWN, AND CONTRACTOR MUST VERIFY ALL UTILITY LOCATIONS AND ELEVATIONS PRIOR TO COMMENCING CONSTRUCTION. CONTRACTORS SHALL NOTIFY DIGSAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO THE ONSET OF ANY CONSTRUCTION TO HAVE ALL EXISTING UTILITIES LOCATED AND CLEARLY MARKED.
 - ELEVATIONS ARE BASED ON NGVD 1929 (STATE TBM 3177 NORTH STREET)
- THE LAND SHOWN HEREON FALLS WITHIN ZONE "X" (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) AS SHOWN ON THE FLOOD INSURANCE RATE MAP FOR NORFOLK COUNTY, MA. (MAP NUMBER 25021C0322E, WITH AN EFFECTIVE DATE OF JULY 17, 2012)
- SITE IS NOT LOCATED WITHIN A ZONE II OR IWPA GROUNDWATER RESOURCE PROTECTION AREA. SITE IS NOT LOCATED WITHIN A ZONE A, B, OR C SURFACE WATER PROTECTION AREA.
- THE SITE IS NOT LOCATED WITHIN A NATURAL HERITAGE AND ENDANGERED SPECIES PROGRAM (NHESP) PRIORITY HABITAT OF RARE SPECIES OR WITHIN AN NHESP ESTIMATED HABITAT OF RARE WILDLIFE AS DESIGNATED USING THE LATEST ON-LINE GIS MAPPING INFORMATION.
- THE SITE IS NOT LOCATED WITHIN AN AREA OF CRITICAL ENVIRONMENTAL CONCERN (A.C.E.C.).
- NO KNOWN PRIVATE WELLS ARE LOCATED WITHIN 200' OF THE SUBJECT PROPERTY.
- NO KNOWN PUBLIC OR COMMUNITY WATER SUPPLY WELLS ARE WITHIN 1000' OF THE SUBJECT PROPERTY.



VICINITY PLAN
1" = 120'

LEGEND

EXISTING	PROPOSED
SPOT ELEVATION	100x0
MAJOR CONTOUR	80
MINOR CONTOUR	82
STOCKADE FENCE	
WATER	W
WATER GATE	W
HYDRANT	H
GAS	G
GAS GATE	G
SEWER	S
SEWER MANHOLE	S
DRAIN	D
DRAIN MANHOLE	D
ELECTRIC	E
TELEPHONE	T
CABLE	C
ELEC/TEL/CABLE	ETC
CATCH BASIN	□
UTILITY POLE	
ZONING BOUNDARY	
SILT FENCE	

INDEX

SHEET	DESCRIPTION
1	COVER SHEET
2	EXISTING CONDITIONS SHEET
3	PRELIMINARY LAYOUT PLAN
4	PRELIMINARY GRADING & UTILITY PLAN
5-9	DETAIL SHEETS

ZONING INFORMATION

BUSINESS (B-1) DISTRICT (OUTSIDE CORE)

	REQUIRED	PROVIDED
LOT AREA	30,000 S.F.	392,440 S.F.
FRONT YARD SETBACK	100 FEET	475.45 FEET
SIDEYARD SETBACK	25 FEET	261± FEET
REARYARD SETBACK	0 FEET	5± FEET
BUILDING HEIGHT	10 FEET	5± FEET
BUILDING COVERAGE	40 FEET	40 FEET
MAX. LOT COVERAGE	60 %	33.83 %

REVISIONS

NO.	DATE	DESCRIPTION
1.	6/18/16	REV GRADING/ADD DETAILS
2.	8/31/15	REV LAYOUT/GRADING/UTILS

APPLICANT

POWERHEAD L.L.C.
32 NORFOLK AVENUE
S. EASTON, MA 02375

OWNERS

POWERHEAD L.L.C.
32 NORFOLK AVENUE
S. EASTON, MA 02375
ASSESSORS MAP 14 BLOCK 56
LOT 7
DEED BOOK 32352 PAGE 533
HERRING RUN REALTY TRUST
32 NORFOLK AVENUE
S. EASTON, MA 02375
ASSESSORS MAP 14 BLOCK 56
LOT 8
DEED BOOK 32373 PAGE 118

COVER SHEET
FOR
COMPREHENSIVE
PERMIT
PRELIMINARY PLANS
"BOYDE'S CROSSING"
#106 & #108 MAIN
STREET
IN
NORFOLK
MASSACHUSETTS



165 EAST GROVE STREET
MIDDLEBOROUGH, MA 02346
TEL: (508)-946-9231
FAX: (508)-947-8873
www.outback-eng.com

DATE: FEBRUARY 12, 2015

DRAWN BY: RLG CHECKED BY: JAP

SCALE: 1"=120' SHEET 1 OF 9

0' 120' 240' 360'

OE-2625A



- LEGEND**
- TP-4 PRELIMINARY TEST PIT BY GREG BUNAWICZ, P.E.
 - TP-7 TEST PIT BY EVAN WILMARTH C.S.E. #2615, WITNESSED BY WADE SAUGER (BOH AGENT)
 - TP-108-4 TEST PIT BY OUTBACK ENGINEERING, INC.
 - TP-200 TEST PIT BY OUTBACK ENGINEERING, WITNESSED BY WADE SAUGER (BOH AGENT)
 - MW-1 MONITORING WELL
 - PZ-1 PIEZOMETER

REVISIONS

NO.	DATE	DESCRIPTION
1.	5/18/15	REV GRADING/ADD DETAILS
2.	8/31/15	REV LAYOUT/GRADING/UTILS

APPLICANT
 POWERHEAD L.L.C.
 32 NORFOLK AVENUE
 S. EASTON, MA 02375

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 ASSESSORS MAP 14 BLOCK 56
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HERRING RUN REALTY TRUST
 32 NORFOLK AVENUE
 S. EASTON, MA 02375
 ASSESSORS MAP 14 BLOCK 56
 LOT 8
 DEED BOOK 32373 PAGE 118

EXISTING CONDITIONS SHEET FOR COMPREHENSIVE PERMIT PRELIMINARY PLANS "BOYDE'S CROSSING" #106 & #108 MAIN STREET IN NORFOLK MASSACHUSETTS



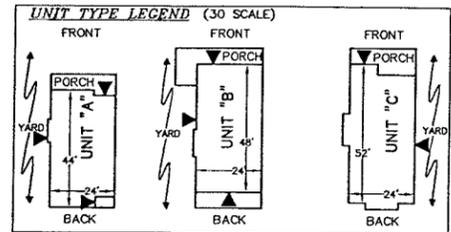
165 EAST GROVE STREET
 MIDDLEBOROUGH, MA 02346
 TEL: (508)-946-9231
 FAX: (508)-947-8873
 www.outback-eng.com

DATE: FEBRUARY 12, 2015
 DRAWN BY: RLG CHECKED BY: JAP
 SCALE: 1"=40' SHEET 2 OF 9
 0' 40' 80' 120'

OE-2625A

NOTES:

1. UNITS 17-19 TO HAVE FIRE SPRINKLERS
2. Ⓢ DESIGNATES AFFORDABLE HOME



REVISIONS

NO.	DATE	DESCRIPTION
1.	5/18/15	REV GRADING/ADD DETAILS
2.	8/31/15	REV LAYOUT/GRADING/UTILS

APPLICANT

POWERHEAD L.L.C.
BISHER I HASHEM, TRUSTEE
32 NORFOLK AVENUE
S. EASTON, MA 02375

OWNERS

POWERHEAD L.L.C.
EOGHAN KELLEY, MANAGER
32 NORFOLK AVENUE
S. EASTON, MA 02375

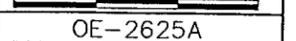
HERRING RUN REALTY TRUST
BISHER I HASHEM, TRUSTEE
32 NORFOLK AVENUE
S. EASTON, MA 02375

PRELIMINARY LAYOUT PLAN FOR COMPREHENSIVE PERMIT PRELIMINARY PLANS "BOYDE'S CROSSING" #106 & #108 MAIN STREET IN NORFOLK MASSACHUSETTS



165 EAST GROVE STREET
MIDDLEBOROUGH, MA 02346
TEL: (508)-946-9231
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DATE: FEBRUARY 12, 2015	CHECKED BY: JAP
DRAWN BY: RLG	CHECKED BY: JAP
SCALE: 1"=40'	SHEET 3 OF 9



OE-2625A



PL 384 OF 1940

RESIDENTIAL R-1

BUSINESS B-1

PROPOSED SW GRAVEL WALKWAY TO COMMUTER PARK

N/F DESCO REALY TRUST

EXISTING SEPTIC LEACHING AREA

N/F 118 MAIN ST. LLC 118 MAIN ST.

N/F PETER DIAMOND 114 MAIN STREET

N/F MICHAEL & HELENA FINDEN 112 MAIN STREET

EXIST. HOUSE #114

EXISTING SEPTIC LEACHING AREA

WATER QUALITY SWALE BOTTOM EL.=180.0 TOP BERM=182.5

WETLANDS DELINEATED BY SCOTT GOODARD ON OCTOBER 8, 2013 WATER EL. 177.38' ON 10/12/13 (178.23 ON 5/29/14)

TOP OF BANK OF POND, FLAG #A1-A22 & A30-31 6" CLAY INV.=178.02

TOP OF BANK OF POND, FLAG #B1-B6 & B22 6" CLAY INV.=177.82

TOP OF BANK OF POND, FLAG #C1-C32 6" CLAY INV.=176.49

TOP OF BANK OF POND, FLAG #A22-A30 6" CLAY INV.=176.65

TOP OF BANK OF POND, FLAG #A22-A30 6" CLAY INV.=177.20

VERT. GRANITE CURB

CAPE COD BERM

N/F TOWN OF NORFOLK

MASSACHUSETTS BAY TRANSIT AUTHORITY

EXISTING RAIL ROAD TRACKS

SNOW STORAGE

DUMPSTER

PERVIOUS PAVEMENT (HATCHED AREA)

N/F TOWN OF NORFOLK

GRAVEL ROAD TO TOWN POND

PERVIOUS PAVEMENT (HATCHED AREA)

N/F TOWN OF NORFOLK

GRAVEL ROAD TO TOWN POND

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N/F TOWN OF NORFOLK

GRAVEL ROAD TO TOWN POND

PERVIOUS PAVEMENT (HATCHED AREA)

N/F TOWN OF NORFOLK

GRAVEL ROAD TO TOWN POND

PERVIOUS PAVEMENT (HATCHED AREA)

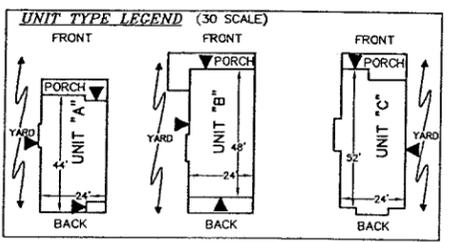
N/F TOWN OF NORFOLK

GRAVEL ROAD TO TOWN POND

PERVIOUS PAVEMENT (HATCHED AREA)

- TEST PIT LEGEND**
- TP-4 PRELIMINARY TEST PIT BY GREG BUNAWCZ, P.E.
 - TEST PIT BY EVAN WILMARTH C.S.E. #2615, WITNESSED BY WADE SAUDER (BOH AGENT)
 - TEST PIT BY OUTBACK ENGINEERING, INC.
 - TEST PIT BY OUTBACK ENGINEERING, WITNESSED BY WADE SAUDER (BOH AGENT)

- NOTES:**
1. UNITS 17-19 TO HAVE FIRE SPRINKLERS
 2. (A) DESIGNATES AFFORDABLE HOME
 3. EXISTING UTILITY POLES AND OVERHEAD WIRES TO BE REMOVED AND UNDERGROUND CABLE UTILITIES TO BE PROVIDED.
 4. SITE TO BE SERVICED BY NATURAL GAS, TOWN WATER, AND PRIVATE SEPTIC SYSTEMS.



REVISIONS

NO.	DATE	DESCRIPTION
1.	5/18/15	REV GRADING/ADD DETAILS
2.	6/31/15	REV LAYOUT/GRADING/UTILS

APPLICANT

POWERHEAD L.L.C.
BISHER I HASHEM, TRUSTEE
32 NORFOLK AVENUE
S. EASTON, MA 02375

OWNERS

POWERHEAD L.L.C.
EOGHAN KELLEY, MANAGER
32 NORFOLK AVENUE
S. EASTON, MA 02375

HERRING RUN REALTY TRUST
BISHER I HASHEM, TRUSTEE
32 NORFOLK AVENUE
S. EASTON, MA 02375

PRELIMINARY GRADING & UTILITY PLAN FOR COMPREHENSIVE PERMIT PRELIMINARY PLANS "BOYDE'S CROSSING" #106 & #108 MAIN STREET IN NORFOLK MASSACHUSETTS

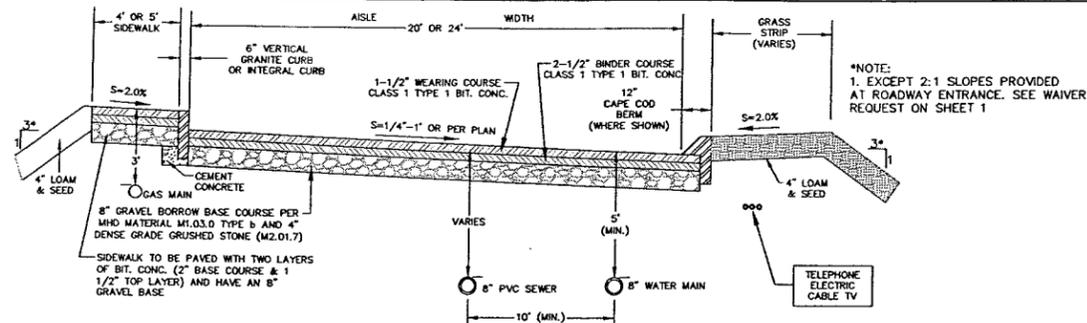


165 EAST GROVE STREET
MIDDLEBOROUGH, MA 02346
TEL: (508)-946-9231
FAX: (508)-947-8873
www.outback-eng.com

DATE: FEBRUARY 12, 2015
DRAWN BY: RLG CHECKED BY: JAP
SCALE: 1"=40' SHEET 4 OF 9

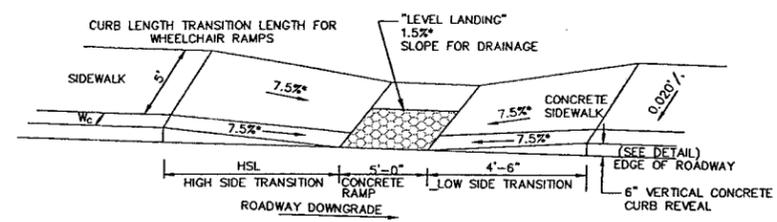
OE-2625A





TYPICAL ROADWAY CROSS SECTION
NOT TO SCALE

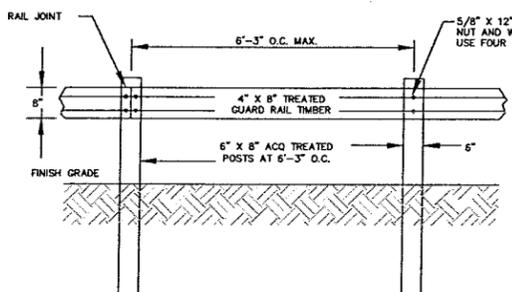
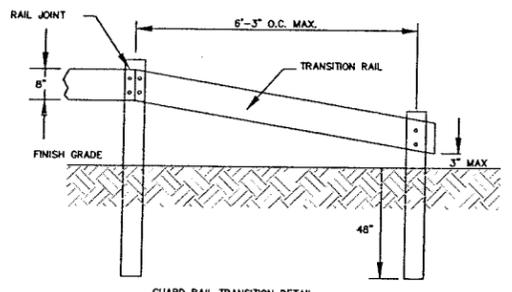
NOTE: 1. BACKFILL SHALL BE COMPACTED TO 95% USING THE MODIFIED PROCTOR TEST IN ACCORDANCE WITH ASTM D 1557-67T, METHOD D
2. WATER MAIN INSTALLATION SHALL CONFORM TO THE TOWNS GUIDELINES AND SPECIFICATIONS FOR A FIRE PROTECTION DISTRIBUTION SYSTEM (FPDS) LATEST EDITION



WHEELCHAIR RAMP DETAIL
NOT TO SCALE

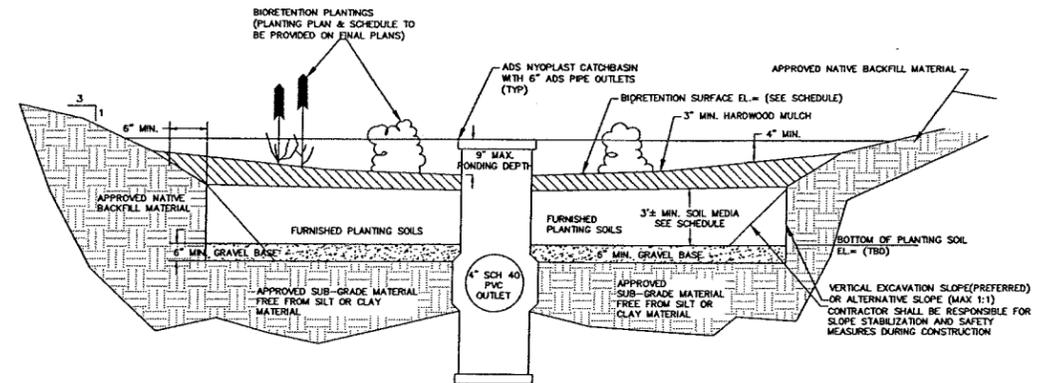
ROADWAY PROFILE GRADE	HIGH SIDE TRANSITION LENGTH
%	ROUNDED LENGTH (4')
G	ENGLISH UNITS
0	6'-6"
1	7'-8"
2	9'-0"
3	11'-0"
4	14'-0"
>4	15'-0" (MAX.)

LEGEND
HSL=HIGH SIDE TRANSITION LENGTH (SEE M/E 107.9.0)
W=SIDEWALK LENGTH
W=CURB WIDTH
±=TOLERANCE FOR CONSTRUCTION ±0.5%
USABLE SIDEWALK WIDTH PER AAB=W-W
USABLE SIDEWALK WIDTH PER AAB IS NOT TO BE LESS THAN 4'-0"
SEE M/E 107.6.5R FOR DETAILS OF DETECTABLE WARNING PANEL

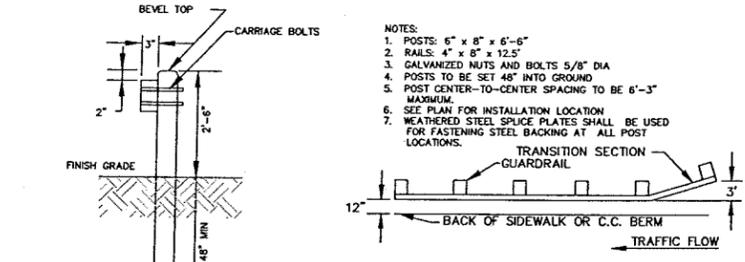


GUARD RAIL TRANSITION DETAIL
TO BE INSTALLED AT ALL GUARD RAIL ENDS EXCEPT BRIDGE ABUTMENTS

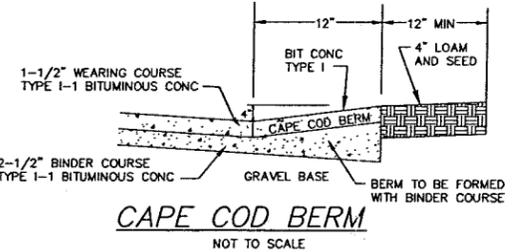
GUARD RAIL DETAIL



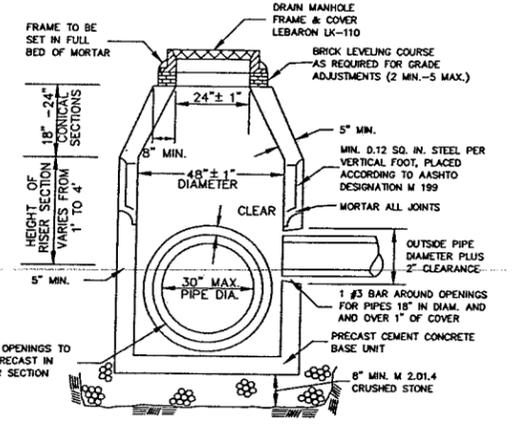
BIORETENTION AREA DETAIL
NOT TO SCALE



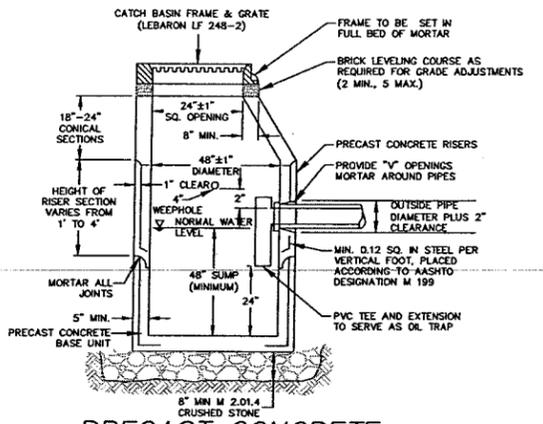
GUARD RAIL DETAILS
NOT TO SCALE



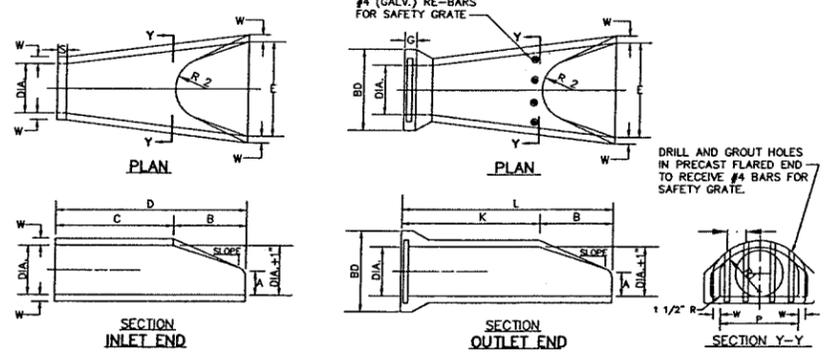
CAPE COD BERM
NOT TO SCALE



PRECAST CONCRETE DRAIN MANHOLE
NOT TO SCALE



PRECAST CONCRETE CATCH BASIN
NOT TO SCALE



DIA.	W	A	B	C	D	E	BD	K	L	P	DIA. + 1"	R1	R2	S	G	SLOPE
12"	2"	4"	2'-0"	4'-0 7/8"	6'-1 3/8"	2'-0"	20"	4'-6 1/8"	6'-6 1/8"	19 15/16"	13"	10 1/8"	9"	4"	2 1/2"	3:1
18"	2 1/2"	9"	2'-3"	3'-10"	6'-1"	3'-0"	28"	4'-3 7/8"	6'-6 7/8"	29"	19"	15 1/2"	12"	4"	2 3/4"	3:1
24"	3"	9 1/2"	3'-7 1/2"	2'-6"	6'-1"	4'-0"	36"	3'-0 1/2"	6'-8"	33 3/16"	25"	16 13/16"	14"	4"	3"	3:1

NOTE: ALL FLARED ENDS MUST BE RCP (ADS FLARED END ARE NOT ALLOWED)
REINFORCED CONCRETE PIPE FLARED ENDS FOR BELL AND SPIGOT PIPE
NOT TO SCALE

REVISIONS

NO.	DATE	DESCRIPTION
1.	5/18/15	REV GRADING/ADD DETAILS
2.	8/31/15	REV LAYOUT/GRADING/UTILS/GEN.

APPLICANT
POWERHEAD L.L.C.
32 NORFOLK AVENUE
S. EASTON, MA 02375

OWNERS
POWERHEAD L.L.C.
32 NORFOLK AVENUE
S. EASTON, MA 02375
ASSESSORS MAP 14 BLOCK 56 LOT 7
DEED BOOK 32352 PAGE 533
HERRING RUN REALTY TRUST
32 NORFOLK AVENUE
S. EASTON, MA 02375
ASSESSORS MAP 14 BLOCK 56 LOT 8
DEED BOOK 32373 PAGE 118

DETAIL SHEET FOR COMPREHENSIVE PERMIT PRELIMINARY PLANS "BOYDE'S CROSSING" #106 & #108 MAIN STREET IN NORFOLK MASSACHUSETTS



165 EAST GROVE STREET
MIDDLEBOROUGH, MA 02346
TEL: (508) 946-9231
FAX: (508) 947-8873
www.outback-eng.com

DATE: FEBRUARY 4, 2015
DRAWN BY: RLG CHECKED BY: JAP
SCALE: NTS SHEET 5 OF 9

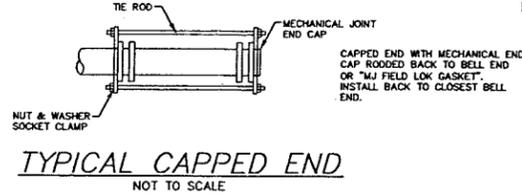
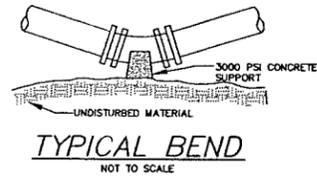
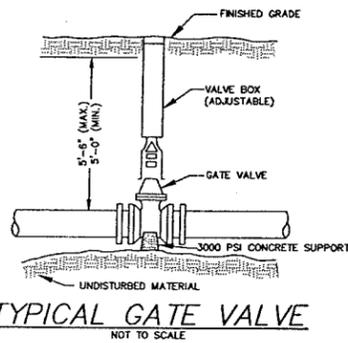
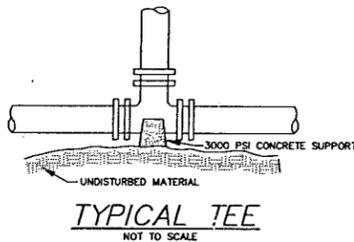
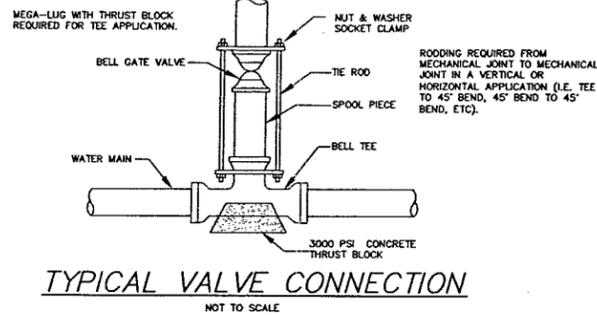


TABLE OF BEARING AREAS IN S.F. FOR WATER MAIN FITTINGS VS. UNDISTURBED MATERIAL

SIZE OF MAIN	45° BEND	TEES & PLUGS	22 1/2° BEND
8" & LESS	8	10	8
10" & 12"	22	16	13



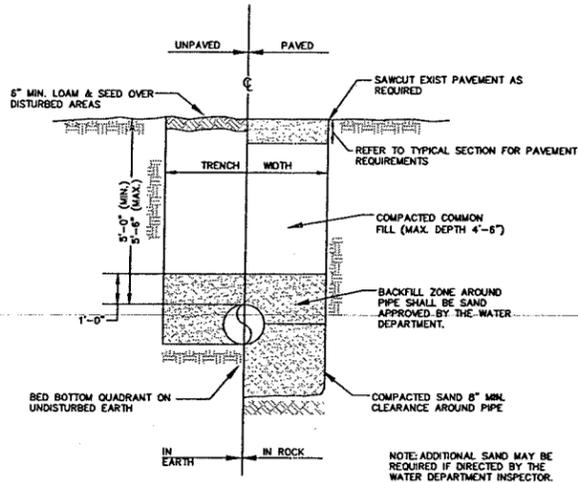
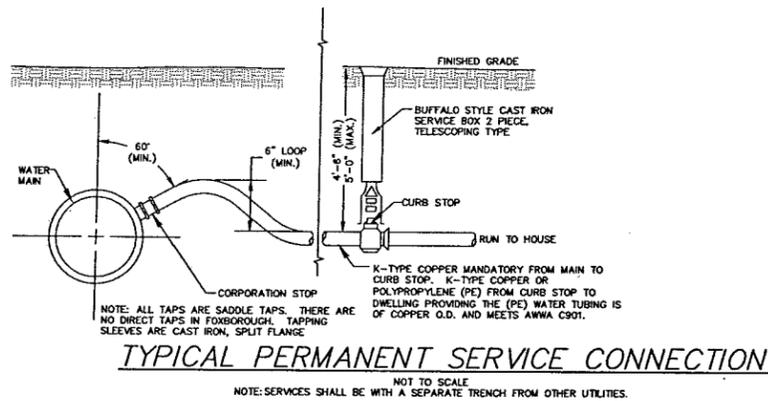
CONCRETE BACKING SCHEDULE



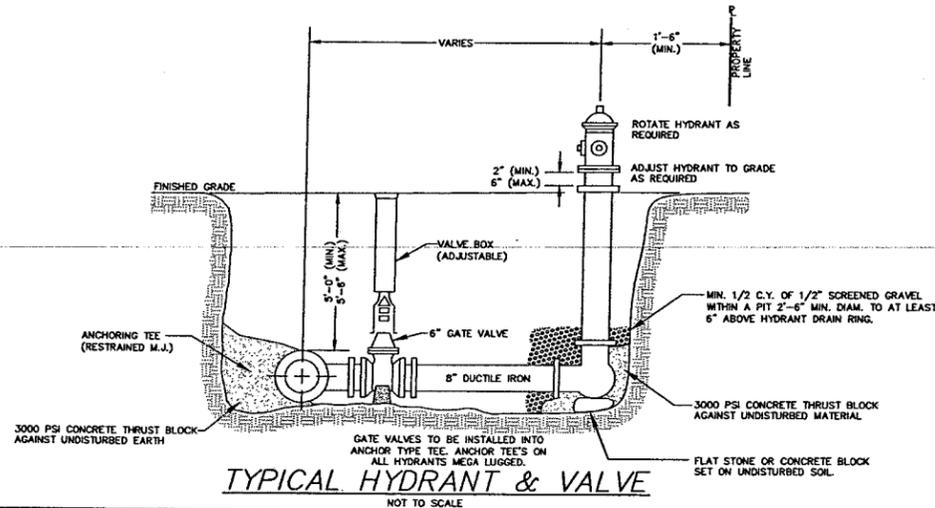
TRENCH WIDTH SCHEDULE

DIAMETER OF PIPE	WIDTH UNSHEETED	WIDTH SHEETED
12" & SMALLER	3'-0"	4'-2"

TRENCH WIDTH SCHEDULE



WATER TRENCH



TYPICAL HYDRANT & VALVE

NOTES:
INSPECTION AND ACCEPTANCE

ALL MATERIALS AND CONSTRUCTION ARE TO BE SUBJECT TO THE APPROVAL OF THE NORFOLK WATER DEPARTMENT AND/OR ITS DESIGNATED INSPECTOR. THE CONTRACTOR SHALL NOT COVER ANY WORK PRIOR TO SAID APPROVAL. THE CONTRACTOR IS RESPONSIBLE FOR CORRECTING ALL DEFICIENCIES TO THE SATISFACTION OF THE WATER DEPARTMENT AND/OR DESIGNATED INSPECTOR. APPROVAL SHALL IN NO WAY AFFECT THE OBLIGATION OF THE CONTRACTOR TO REPAIR OR RENEW SUBSEQUENT DEFICIENCIES. THE WATER DEPARTMENT MUST BE NOTIFIED 2 DAYS PRIOR FOR INSPECTIONS.

TESTING AND DISINFECTION

TESTING: NEW WATER MAINS SHALL BE FILLED AND FLUSHED BY THE WATER DEPARTMENT. ALL AIR SHALL BE EXPELLED FROM THE LINE PRIOR TO TESTING. TESTING SHALL BE PERFORMED IN THE PRESENCE OF THE ENGINEER AND A REPRESENTATIVE OF THE NORFOLK WATER DEPARTMENT. TESTING SHALL BE IN ACCORDANCE WITH AWWA C-600. THE TEST PRESSURE SHALL BE 200 LBS FOR 30 MINUTES (TWICE) FOR COMMERCIAL/SPRINKLER APPLICATIONS. ALLOWABLE LEAKAGE SHALL BE BASED UPON SECTION 4.1 OF AWWA C-600.

DISINFECTION: AFTER AN APPROVED PRESSURE TEST, THE NEW WATER MAIN SHALL BE CHLORINATED IN ACCORDANCE WITH AWWA C-651. CHLORINE SHALL BE INTRODUCED THROUGH A TAP AT ONE END OF THE PIPELINE WHILE WATER IS WITHDRAWN FROM THE OPPOSITE END. CHLORINE DOSAGE MUST BE SUFFICIENT TO PRODUCE A MINIMUM OF 50 MG/L IN THE PIPELINE. FOLLOWING A 24 HR CONTACT PERIOD, THE TREATED WATER SHALL BE FLUSHED FROM THE MAINS AND SAMPLES TAKEN BY FOXBOROUGH WATER DEPARTMENT FOR COLIFORM AND BACKGROUND BACTERIA. MAINS WILL NOT BE ACCEPTED OR APPROVED FOR SERVICE CONNECTIONS UNTIL SAMPLES SHOW ABSENT ZERO BACTERIA COUNTS. THE CONTRACTOR SHALL REDISINFECT AND RESAMPLE UNTIL MAINS ARE ACCEPTABLE.

PIPE

WATER MAINS SHALL BE 8" CEMENT-LINED CLASS 52 DUCTILE IRON. PIPE SHALL CONFORM TO THE REQUIREMENTS OF ANSI A21.50, A21.51 AND AWWA C-150 & C-151. ALL PIPE SHALL BE PROVIDED WITH PUSH-ON JOINTS. PIPES SHALL HAVE A MINIMUM 5' BURY DEPTH AND A MAXIMUM 5'-6" BURY DEPTH.

FITTINGS

FITTINGS SHALL BE CEMENT-LINED DUCTILE IRON WITH BITUMEN COATING INSIDE AND OUT. FITTINGS SHALL CONFORM TO THE REQUIREMENTS OF ANSI A21.53 AND AWWA C-153. FITTINGS SHALL BE MECHANICAL JOINT CONFORMING TO ANSI A21.11 AND AWWA C-111. ALL FITTINGS SHALL BE BACKED BY CONCRETE THRUST BLOCKS AND HAVE MEGALUG RESTRAINTS AT ALL MECHANICAL JOINT ENDS.

VALVES

GATE VALVES SHALL BE EPOXY-COATED IRON BODY, BRONZE MOUNTED, RESILIENT SEAT, NON-RISING STEM WITH "O-RING SEALS". VALVES SHALL BE NEW YORK PATTERN, METROPOLITAN TYPE CONFORMING TO THE REQUIREMENTS OF AWWA C-500. RESILIENT-SEALED GATE VALVES CONFORMING TO THE REQUIREMENTS OF AWWA C-509 ARE REQUIRED. ALL VALVES SHALL HAVE 250 PSI MECHANICAL JOINT ENDS AND SHALL OPEN RIGHT OR CLOCKWISE. VALVES SHALL BE MANUFACTURED BY US PIPE, MUELLER, OR AMERICAN FLOW CONTROL. ALL GATE VALVES SHALL BE ACCOMPANIED BY A HEAVY CAST IRON, ADJUSTABLE SLIDE TYPE BOX HAVING A MINIMUM 5-INCH DIAMETER BARREL AND A CAST IRON COVER WITH THE WORD "WATER" CAST IN THE TOP. BOXES SHALL BE DESIGNED AND INSTALLED SUCH THAT NO PRESSURE SHALL BE EXERTED BY THE VALVE BOX ON THE WATER MAIN OR VALVE.

HYDRANTS

HYDRANTS SHALL BE US PIPE M/94, MUELLER SUPER CENTURION 200, OR AMERICAN DARLING B-84-B CONFORMING TO AWWA C-502, HAVE A MINIMUM 5-1/4 INCH BREAK FLANGE CONSTRUCTION W/ONE 4 1/2" PUMPER NOZZLE BARREL AND 2, 2 1/2" HOSE NOZZLES. HYDRANTS SHALL BE PROVIDED WITH AN EPOXY-COATED SHOE. THEY SHALL OPEN RIGHT OR CLOCKWISE AND A 5 FOOT DEPTH OF BURY IS RECOMMENDED.

SERVICES

CORPORATION STOPS, CURB STOPS AND FITTINGS SHALL BE BRASS CONFORMING TO AWWA C-800.

CORPORATION STOP: 1" MUELLER, REDHED, MCDONALD, OR CAMBRIDGE "BALL TYPE" WITH COMPRESSION CONNECTION OUTLET.

CURB STOP: 1" MUELLER, REDHED, MCDONALD, OR CAMBRIDGE OPEN-RIGHT "BALL TYPE" WITH DRAIN AND COMPRESSION CONNECTIONS.

METER: AMCO METERS. MUST BE IRON BASED WITH ERT SYSTEM MEASURING CUBIC FEET.

BALL VALVES: 1-INCH, 125 LB., BRONZE BODY AS MANUFACTURED BY FORD.

TUBING: ALL SERVICE PIPES 1" IN DIAMETER TO AND INCLUDING 2" SHALL BE K-TYPE COPPER (MANDATORY FROM MAIN TO CURB STOP) AND EITHER K-TYPE COPPER OR POLYPROPYLENE (PE) FROM CURB STOP INTO DWELLING PROVIDING THE (PE) WATER TUBING IS OF COPPER O.D. AND MEETS AWWA C901.

CURB BOXES: BUFFALO STYLE, CAST IRON, ADJUSTABLE SLIDE TYPE, MINIMUM DIAMETER 2-1/2 INCHES WITH CAST IRON TWO PIECE TELESCOPING TYPE.

GRANULAR FILL MATERIALS

MATERIALS SHALL CONFORM TO THE COMMONWEALTH OF MASSACHUSETTS "STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES", LATEST EDITION, FOR SCREENED AND BANK RUN GRAVEL.

CONCRETE

MATERIALS SHALL CONFORM TO THE COMMONWEALTH OF MASSACHUSETTS "STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES", LATEST EDITION, FOR TYPE II CEMENT AND 3000 PSI CONCRETE.

CONSTRUCTION

TRENCHES SHALL BE EXCAVATED TO THE DEPTH AS INDICATED ON THE DRAWINGS OR AS DIRECTED BY THE ENGINEER AND IN WIDTHS SUFFICIENT FOR LAYING OF THE NEW MAINS AND APPURTENANCES. ALL PIPES SHALL HAVE A MINIMUM OF 5' AND MAXIMUM OF 5'-6" COVER. SERVICE CONNECTIONS TO BE BURIED-A MAXIMUM OF 5' DEEP WITHIN A SEPARATE TRENCH FROM OTHER UTILITIES.

IF USED, WOOD SHEETING SHALL NOT BE WITHDRAWN IF DRIVEN BELOW THE MIDPOINT OF THE PIPE. SHEETING SHALL BE CUT OFF NO LOWER THAN 1 FOOT ABOVE THE TOP OF THE PIPE.

BLASTING IF REQUIRED SHALL BE CONDUCTED IN FULL COMPLIANCE WITH ALL LAWS OF THE STATE AND LOCAL ORDINANCES. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS AND ENSURING PUBLIC SAFETY.

ALL VALVES AND HYDRANTS SHALL BE SET PLUMB IN TRUE VERTICAL ALIGNMENT. VALVE BOXES SHALL BE INSTALLED VERTICALLY, CENTERED OVER THE OPERATING NUT AND THE ELEVATION OF THE TOP SHALL BE SET TO FINISHED GRADE.

SUPPLY AND DEMAND

BASED ON 310 CMR 15.203, THE DEVELOPMENT WILL HAVE THE FOLLOWING WATER DEMAND:
(30 UNITS X 2 BEDROOMS EACH) + (10 UNITS X 3 BEDROOMS) @ 110 GALLONS PER DAY PER BEDROOM = 9,900 GPD.

REVISIONS

NO.	DATE	DESCRIPTION
1.	5/18/15	REV GRADING/ADD DETAILS
2.	8/31/15	REV LAYOUT/GRADING/UTILS/GEN.

APPLICANT
POWERHEAD L.L.C.
32 NORFOLK AVENUE
S. EASTON, MA 02375

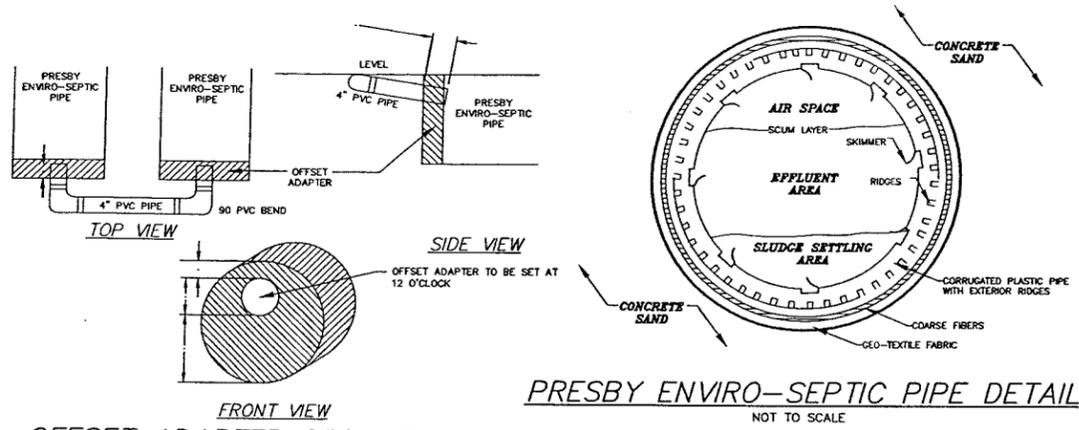
OWNERS
POWERHEAD L.L.C.
32 NORFOLK AVENUE
S. EASTON, MA 02375
ASSESSORS MAP 14 BLOCK 56
LOT 7
DEED BOOK 32352 PAGE 533
HERRING RUN REALTY TRUST
32 NORFOLK AVENUE
S. EASTON, MA 02375
ASSESSORS MAP 14 BLOCK 56
LOT 8
DEED BOOK 32373 PAGE 118

WATER DETAILS FOR COMPREHENSIVE PERMIT PRELIMINARY PLANS "BOYDE'S CROSSING" #106 & #108 MAIN STREET IN NORFOLK MASSACHUSETTS

Outback Engineering Incorporated

165 EAST GROVE STREET
MIDDLEBOROUGH, MA 02346
TEL: (508)-946-9231
FAX: (508)-947-8873
www.outback-eng.com

DATE: FEBRUARY 4, 2015
DRAWN BY: RLG CHECKED BY: JAP
SCALE: NTS SHEET 6 OF 9



OFFSET ADAPTER DETAILS
N.T.S.

PRESBY ENVIRO-SEPTIC PIPE DETAIL
NOT TO SCALE

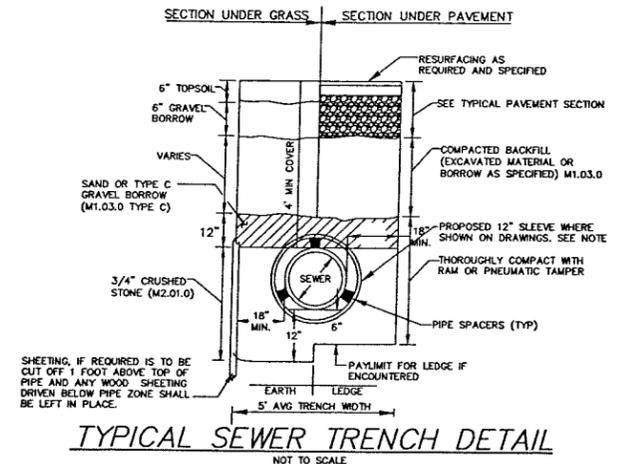
CONSTRUCTION PROCESS FOR PRESBY ENVIRO-SEPTIC SAND BEDS:

INSTALLER TO COMPLY WITH GENERAL USE PERMIT DATED OCTOBER 24, 2011 AND LATEST PRESBY ENVIRO-SEPTIC WASTEWATER TREATMENT SYSTEM DESIGN AND INSTALLATION MANUAL FOR MASSACHUSETTS. THE FOLLOWING IS A GENERAL INSTALLATION GUIDE:

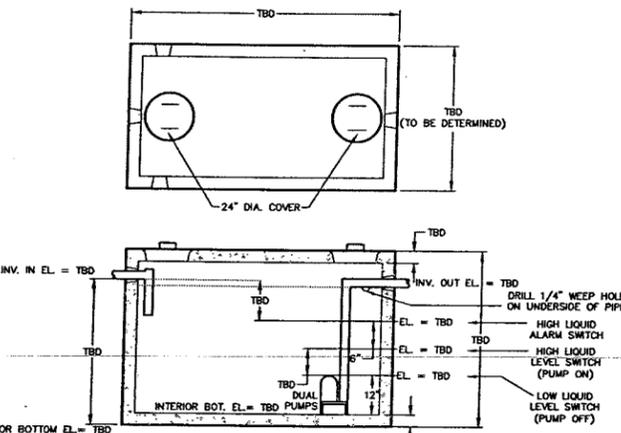
- 1- CONTRACTOR IS TO EXCAVATE TOTAL BOTTOM AREAS TO DEPTH SPECIFIED ON PLAN.
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- 3- TITLE 5 SANDS TO BE PUT IN PLACE TO BOTTOM ELEVATION IMMEDIATELY AFTER TILLING TO PROTECT BED FROM PRECIPITATION DAMAGE.
- 4- A 6" LAYER OF ASTM C-33 SYSTEM SANDS SHOULD THEN BE PLACED IN CENTER OF HOLE COVERING THE BOTTOM OF THE HOLE TO BOTTOM ELEVATION (SEE SCHEDULE).
- 5- PIPE NETWORK SHALL BE LAID IN PLACE AND CONNECTED.
- 6- SYSTEM SAND SHOULD THEN BE PLACED OVER ENTIRE PIPE NETWORK TO A TOP ELEVATION (SEE SCHEDULE).
- 7- SURROUNDING TITLE 5 SANDS SHOULD BE SET IN PLACE AROUND PERIMETER OF SYSTEM TO MAINTAIN SYSTEM SIZE.
- 8- COMPLETE VENTING AND INSPECTION PORTS. PORTS SHALL BE INSTALLED PER TITLE 5.
- 9- AS-BUILT SHALL BE PERFORMED BY THE DESIGN ENGINEER AND TOWN BOARD OF HEALTH.
- 10- CLEAN FILL PLACED OVER SYSTEM.
- 11- AS-BUILT FOR FINAL GRADES BY ENGINEER.

NOTES:

- 1.) PRESBY ENVIRO-SEPTIC SUPPLIED BY PRESBY ENVIRONMENTAL, INC. (143 AIRPORT ROAD, WHITEFIELD, NH 03598, 1-800-473-9864)
- 2.) OPERATION AND MAINTENANCE PLAN TO BE OBTAINED BY THE FACILITY OWNER WITH A CERTIFIED INSPECTOR FOR A MINIMUM OF 2 YEARS AND MAINTAINED IN ACCORDANCE WITH D.E.P. GUIDELINES FOR GENERAL USE.
- 3.) CURRENTLY, THE SYSTEM SHALL BE MONITORED ANNUALLY WITH ALL DATA SUBMITTED TO THE LOCAL BOARD OF HEALTH AND D.E.P. WITHIN 30 DAYS.
- 4.) ONLY AN APPROVED INSTALLER WHO HAS BEEN CERTIFIED BY PRESBY ENVIRONMENTAL, INC. CAN BE ALLOWED TO INSTALL THE PRESBY ENVIRO-SEPTIC WASTEWATER TREATMENT SYSTEM.

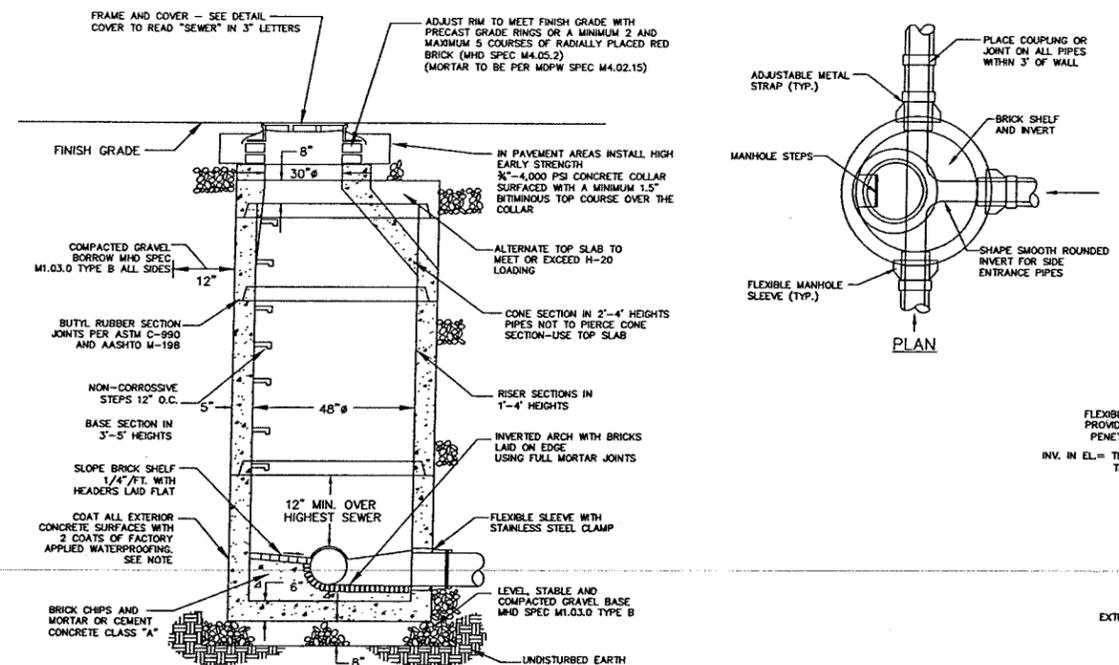


TYPICAL SEWER TRENCH DETAIL
NOT TO SCALE



PUMP CHAMBER H-20
NOT TO SCALE

NOTE:
PUMP CHAMBER SHALL BE SIZED AT TIME OF SUBMITTAL TO THE NORFOLK BOARD OF HEALTH. THE DETAIL SHOWN ABOVE IS FOR GENERAL INFORMATION ONLY IN CONJUNCTION WITH FILING WITH THE NORFOLK PLANNING BOARD FOR SITE PLAN APPROVAL.



4' I.D. DIAMETER PRECAST CONCRETE SEWER MANHOLE
N.T.S.

NOTES:

1. EXCAVATION TO ALLOW FOR FREE TRAVEL OF COMPACTION EQUIPMENT
2. ALL COMPACTION TO A MINIMUM 95 PERCENT DRY DENSITY DETERMINED BY ASTM D1557. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS
3. ALL PRECAST TO MEET OR EXCEED ASTM C-478 AND ASSHTO M 199 SPECIFICATIONS
4. REINFORCED STEEL TO MEET OR EXCEED ASTM A185 AND H-20 LOADING REQUIREMENTS
5. ALL PRECAST CONCRETE TO BE 4,000 PSI MINIMUM AND MEET ASTM C-478 (5.1)

DESIGN CALCULATIONS-USE OAKSON DRIP DISPERSAL LEACHING SYSTEM

SYSTEM #1

- 1.) ESTIMATED DAILY FLOW: FOR CONDOMINIUMS: (9 UNITS: 7 X 2 BEDROOMS PER UNIT + 2 X 3 BEDROOM PER UNIT) X 110 GALLONS PER DAY PER BEDROOM = 2,200 GALLONS PER DAY (20 BEDROOMS).
- 2.) REQUIRED SEPTIC TANK CAPACITY: (PER NORFOLK BOARD OF HEALTH REGULATIONS) TWO TANKS IN SERIES (OR TWO COMPARTMENT TANK):
FIRST COMPARTMENT = 48 HOUR DETENTION = 5 BEDROOMS @ 1500 GAL. + EACH ADD'L BEDROOM @ 220 GAL.
FIRST COMPARTMENT = 1500 GAL. + (15 BEDROOMS X 220 GAL) = 4,800 GAL. (PER NORFOLK BOH REG'S)
SECOND COMPARTMENT = 24 HOUR DETENTION = 1X DESIGN FLOW = 2,200 GAL. (PER TITLE 5)
SEPTIC TANK SIZE PROVIDED (2-COMPARTMENT TANK) = 4,800 GAL. + 2,200 GAL. = 7,000 GAL. (USE 7,500 GAL.)
- 3.) PRESBY ENVIRO-SEPTIC SYSTEM LEACHING REQUIREMENTS:
USE $2 \text{ M.P.I. PERCOLATION RATE}$
EFFLUENT LOADING RATE = 0.74 GPD/SF (CLASS I)
PER TITLE V, AREA REQUIRED = 2,200 GPD / 0.74 GPD/SF = 2,973 SF
*USING PRESBY ENVIRO-SEPTIC SYSTEM, EMPLOY 40% REDUCTION TO LEACHING SYSTEM AREA: 2,973 SF X 0.6 = 1,784 SF
USE (1) 100' X 19' W LEACHING BEDS = 1,900 S.F.
- 4.) PRESBY ENVIRO-SEPTIC PIPE REQUIREMENTS:
FOR A PERC RATE OF 1-9 MPE, NEED 100LF OF GEO-FLOW SEPTIC PIPE FOR EACH 2 BEDROOMS. 20 TOTAL BEDROOMS: 100LF PER 2 BEDROOMS X 20 BEDROOMS = 1000 LF OF PRESBY ENVIRO-SEPTIC PIPE REQUIRED. USE 100' LENGTHS OF 100' PIPE.

SYSTEM #2

- 1.) ESTIMATED DAILY FLOW: FOR CONDOMINIUMS: (16 UNITS: 13 X 2 BEDROOMS PER UNIT + 3 X 3 BEDROOM PER UNIT) X 110 GALLONS PER DAY PER BEDROOM = 3,850 GALLONS PER DAY (35 BEDROOMS).
- 2.) REQUIRED SEPTIC TANK CAPACITY:

SEPTIC TANK	# UNITS	MIN. # BEDROOMS	TANK SIZE USED 2-COMPARTMENT
2A	3	7	2,000+1,000 (USE 3,000 GAL)
2B	6	13	3,100+1,600 (USE 5,000 GAL)
2C	7	15	3,600+1,800 (USE 6,000 GAL)

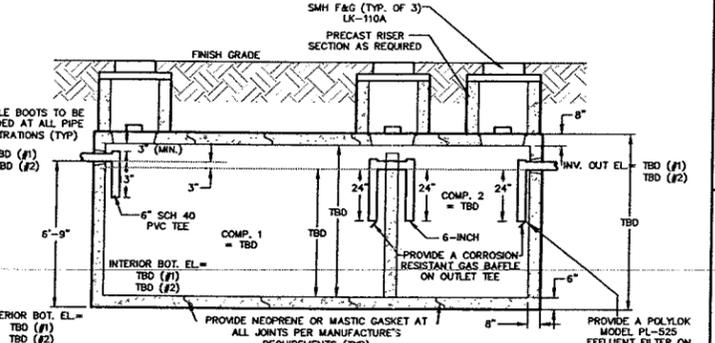
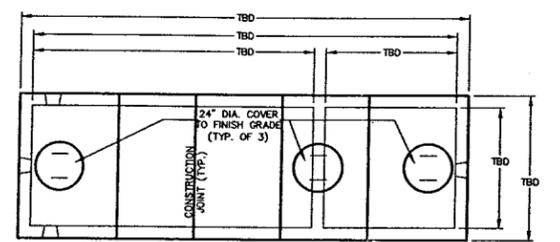
- 3.) PRESBY ENVIRO-SEPTIC SYSTEM LEACHING REQUIREMENTS:
USE $2 \text{ M.P.I. PERCOLATION RATE}$
EFFLUENT LOADING RATE = 0.74 GPD/SF (CLASS I)
PER TITLE V, AREA REQUIRED = 3,850 GPD / 0.74 GPD/SF = 5,203 SF
*USING PRESBY ENVIRO-SEPTIC SYSTEM, EMPLOY 40% REDUCTION TO LEACHING SYSTEM AREA: 5,203 SF X 0.6 = 3,122 SF
USE (1) 94' X 34' W LEACHING BEDS = 3,196 SF.
- 4.) PRESBY ENVIRO-SEPTIC PIPE REQUIREMENTS:
FOR A PERC RATE OF 1-9 MPE, NEED 100LF OF GEO-FLOW SEPTIC PIPE FOR EACH 2 BEDROOMS. 35 TOTAL BEDROOMS: 100LF PER 2 BEDROOMS X 35 BEDROOMS = 1750 LF OF PRESBY ENVIRO-SEPTIC PIPE REQUIRED. USE 20' LENGTHS OF 90' PIPE.

SYSTEM #3

SAME DESIGN FLOW AS SYSTEM #2, EXCEPT 15 UNITS CONNECTED (10 @ 2 BEDROOM + 5 @ 3 BEDROOM = 35 BEDROOMS)

- 2.) REQUIRED SEPTIC TANK CAPACITY:

SEPTIC TANK	# UNITS	MIN. # BEDROOMS	TANK SIZE USED 2-COMPARTMENT
3A	9	21	5,000+2,500 (USE 7,500 GAL)
3B	6	14	3,200+1,600 (USE 5,000 GAL)



TYPICAL 2-COMPARTMENT SEPTIC TANK H-20
NOT TO SCALE

REVISIONS	
NO.	DESCRIPTION
1.	REV GRADING/ADD DETAILS
2.	REV LAYOUT/GRADING/UTILS/GRN.

APPLICANT
POWERHEAD L.L.C.
32 NORFOLK AVENUE
S. EASTON, MA 02375

OWNERS
POWERHEAD L.L.C.
32 NORFOLK AVENUE
S. EASTON, MA 02375
ASSESSORS MAP 14 BLOCK 56
LOT 7
DEED BOOK 32352 PAGE 533

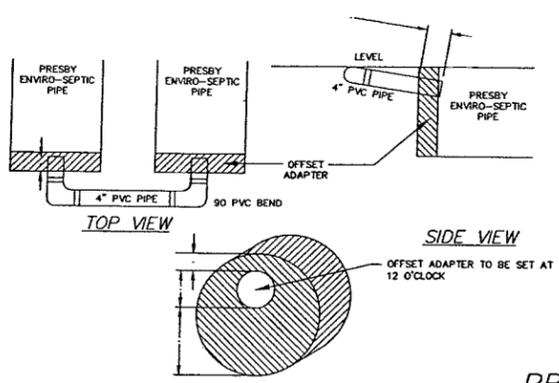
HERRING RUN REALTY TRUST
32 NORFOLK AVENUE
S. EASTON, MA 02375
ASSESSORS MAP 14 BLOCK 56
LOT 8
DEED BOOK 32373 PAGE 118

SEPTIC SYSTEM DETAILS FOR COMPREHENSIVE PERMIT PRELIMINARY PLANS "BOYDE'S CROSSING" #106 & #108 MAIN STREET IN NORFOLK MASSACHUSETTS

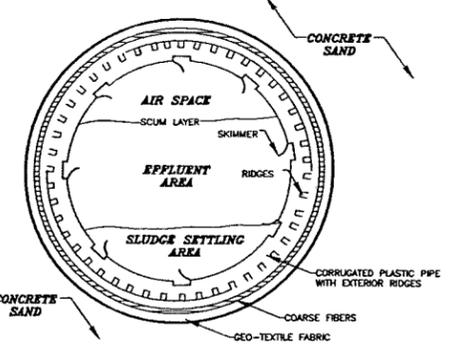
Outback Engineering Incorporated

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DATE: FEBRUARY 4, 2015
DRAWN BY: RLG CHECKED BY: JAP
SCALE: NTS SHEET 7 OF 9



OFFSET ADAPTER DETAILS
N.T.S.



PRESBY ENVIRO-SEPTIC PIPE DETAIL
NOT TO SCALE

CONSTRUCTION PROCESS FOR PRESBY ENVIRO-SEPTIC SAND BEDS:

INSTALLER TO COMPLY WITH GENERAL USE PERMIT DATED OCTOBER 24, 2011 AND LATEST PRESBY ENVIRO-SEPTIC WASTEWATER TREATMENT SYSTEM DESIGN AND INSTALLATION MANUAL FOR MASSACHUSETTS. THE FOLLOWING IS A GENERAL INSTALLATION GUIDE:

- 1- CONTRACTOR IS TO EXCAVATE TOTAL BOTTOM AREAS TO DEPTH SPECIFIED ON PLAN.
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- 3- TITLE 5 SANDS TO BE PUT IN PLACE TO BOTTOM ELEVATION IMMEDIATELY AFTER TILLING TO PROTECT BED FROM PRECIPITATION DAMAGE.
- 4- A 6" LAYER OF ASTM C-33 SYSTEM SANDS SHOULD THEN BE PLACED IN CENTER OF HOLE COVERING THE BOTTOM OF THE HOLE TO BOTTOM ELEVATION (SEE SCHEDULE).
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- 11- AS-BUILT FOR FINAL GRADES BY ENGINEER.

NOTES:

- 1.) PRESBY ENVIRO-SEPTIC SUPPLIED BY PRESBY ENVIRONMENTAL, INC. (143 AIRPORT ROAD, WHITEFIELD, NH 03598, 1-800-473-9864)
- 2.) OPERATION AND MAINTENANCE PLAN TO BE OBTAINED BY THE FACILITY OWNER WITH A CERTIFIED INSPECTOR FOR A MINIMUM OF 2 YEARS AND MAINTAINED IN ACCORDANCE WITH D.E.P. GUIDELINES FOR GENERAL USE.
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- 4.) ONLY AN APPROVED INSTALLER WHO HAS BEEN CERTIFIED BY PRESBY ENVIRONMENTAL, INC. CAN BE ALLOWED TO INSTALL THE PRESBY ENVIRO-SEPTIC WASTEWATER TREATMENT SYSTEM.

DESIGN CALCULATIONS-USE OAKSON DRIP DISPERSAL LEACHING SYSTEM

SYSTEM #1

- 1.) ESTIMATED DAILY FLOW: FOR CONDOMINIUMS: (9 UNITS: 7 X 2 BEDROOMS PER UNIT + 2 X 3 BEDROOM PER UNIT) X 110 GALLONS PER DAY PER BEDROOM = 2,200 GALLONS PER DAY (20 BEDROOMS).
- 2.) REQUIRED SEPTIC TANK CAPACITY: (PER NORFOLK BOARD OF HEALTH REGULATIONS) TWO TANKS IN SERIES (OR TWO COMPARTMENT TANK):
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FIRST COMPARTMENT = 1500 GAL. + (15 BEDROOMS X 220 GAL) = 4,800 GAL (PER NORFOLK BOH REGS)
SECOND COMPARTMENT = 24 HOUR DETENTION = 1X DESIGN FLOW = 2,200 GAL (PER TITLE 5)
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- 3.) PRESBY ENVIRO-SEPTIC SYSTEM LEACHING REQUIREMENTS:
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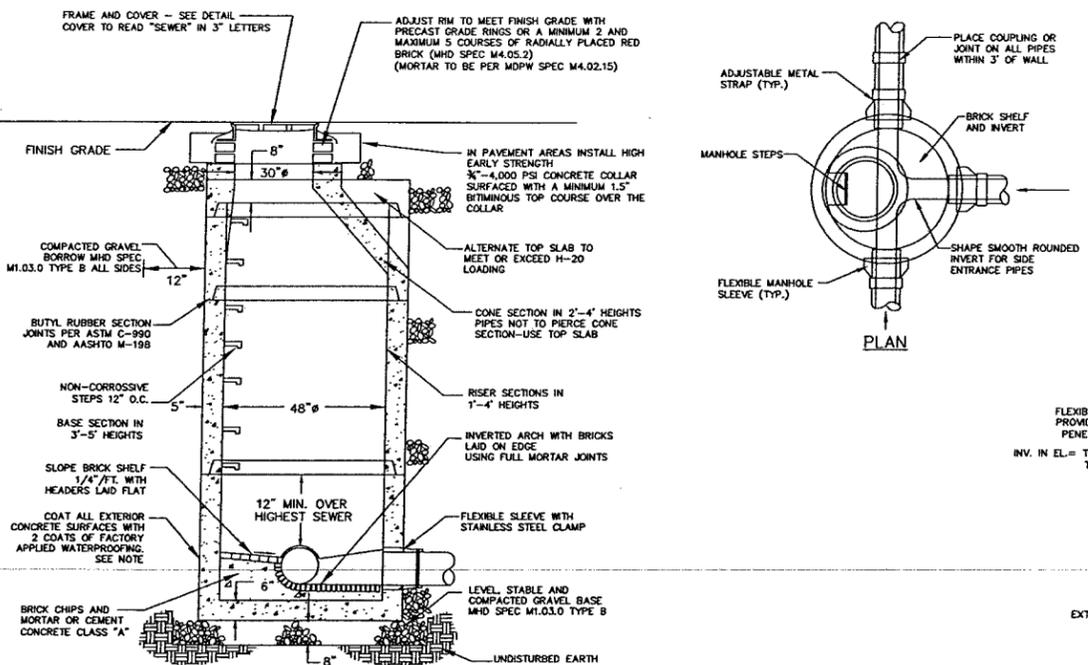
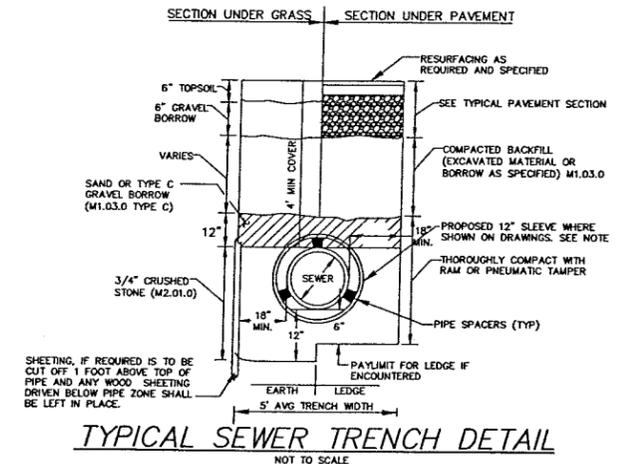
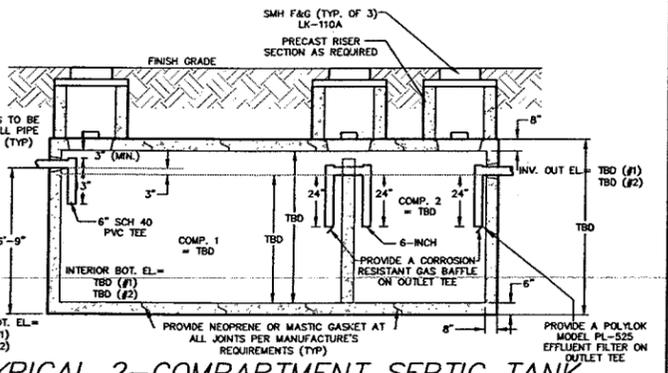
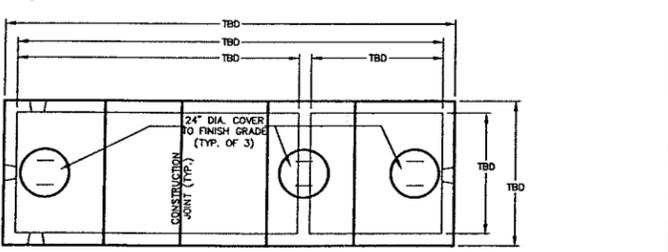
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NOTES:

1. EXCAVATION TO ALLOW FOR FREE TRAVEL OF COMPACTION EQUIPMENT
2. ALL COMPACTION TO A MINIMUM 95 PERCENT DRY DENSITY DETERMINED BY ASTM D1557. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS
3. ALL PRECAST TO MEET OR EXCEED ASTM C-478 AND ASSHTO M 199 SPECIFICATIONS
4. REINFORCED STEEL TO MEET OR EXCEED ASTM A185 AND H-20 LOADING REQUIREMENTS
5. ALL PRECAST CONCRETE TO BE 4,000 PSI MINIMUM AND MEET ASTM C-478 (6.1)

REVISIONS

NO.	DATE	DESCRIPTION
1.	6/16/16	REV GRADING/ADD DETAILS
2.	8/31/15	REV LAYOUT/GRADING/UTILS/GEN.

APPLICANT
POWERHEAD L.L.C.
32 NORFOLK AVENUE
S. EASTON, MA 02375
ASSESSORS MAP 14 BLOCK 56
LOT 7
DEED BOOK 32352 PAGE 533

OWNERS
POWERHEAD L.L.C.
32 NORFOLK AVENUE
S. EASTON, MA 02375
ASSESSORS MAP 14 BLOCK 56
LOT 8
DEED BOOK 32373 PAGE 118

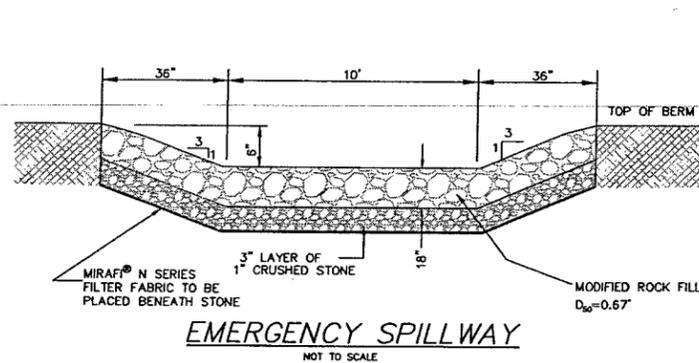
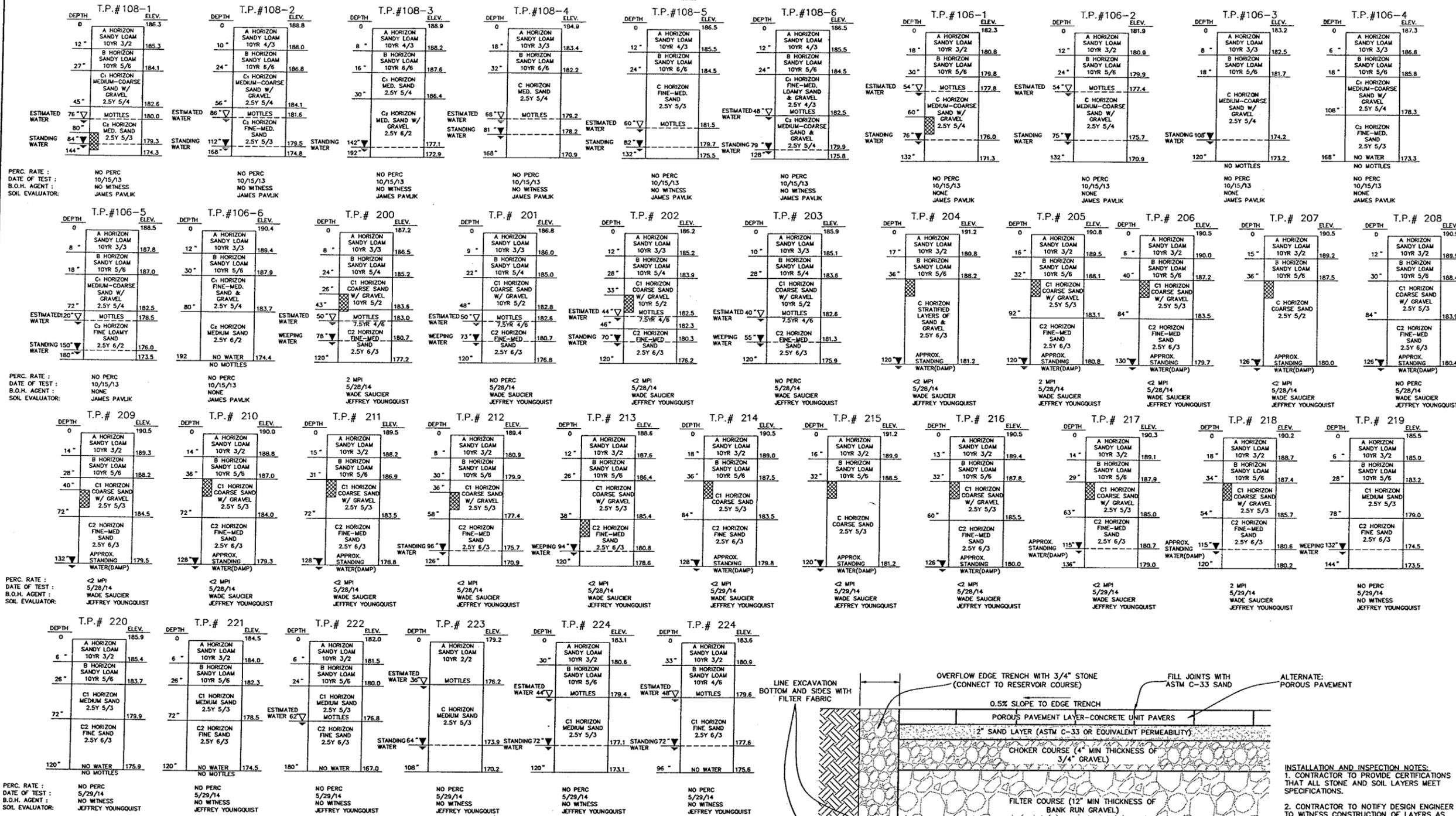
SEPTIC SYSTEM DETAILS FOR COMPREHENSIVE PERMIT PRELIMINARY PLANS "BOYDE'S CROSSING" #106 & #108 MAIN STREET IN NORFOLK MASSACHUSETTS



165 EAST GROVE STREET
MIDDLEBOROUGH, MA 02346
TEL: (508)-945-9231
FAX: (508)-947-8873
www.outback-eng.com

DATE: FEBRUARY 4, 2015
DRAWN BY: RLG CHECKED BY: JAP
SCALE: NTS SHEET 7 OF 9

SOIL LOGS

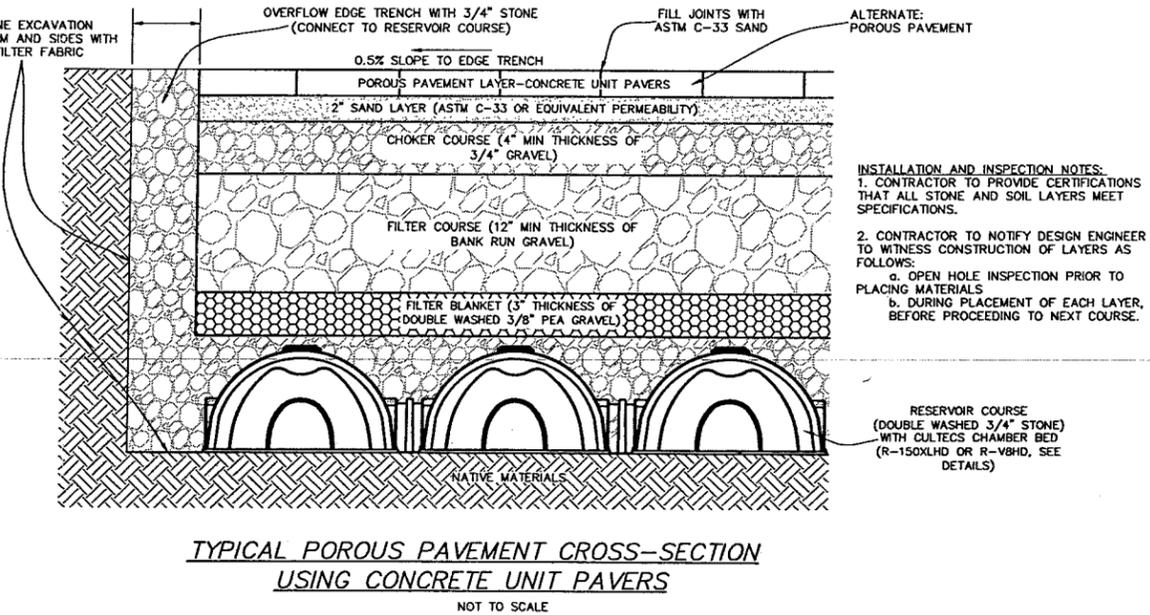


SPILLWAY NOTES:

- A WELL GRADED MIXTURE OF ROCK SIZES SHALL BE USED FOR THE STONE. FIFTY PERCENT BY WEIGHT OF THE STONE MIXTURE SHALL BE SMALLER THAN THE MEDIAN SIZE STONE (d50 = 8"). THE LARGEST STONE SIZE IN THE MIXTURE SHALL BE 1.5 TIMES THE d50 SIZE (12").
- STONES FOR RIP RAP SHALL BE ANGULAR OR SUBANGULAR. THE STONES SHALL BE SHAPED SO THAT THE LEAST DIMENSION OF THE STONE FRAGMENT SHALL NOT BE LESS THAN ONE-THIRD OF THE GREATEST DIMENSION OF THE FRAGMENT. FLAT ROCKS SHALL NOT BE USED FOR RIP RAP.
- STONE FOR THE RIP RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT DISPLACEMENT OF THE UNDERLYING MATERIALS. HAND PLACEMENT MAY BE REQUIRED TO PREVENT DAMAGE TO ANY PERMANENT STRUCTURES.
- VOIDS IN THE ROCK RIP RAP SHOULD BE FILLED WITH SPALLS AND SMALLER ROCKS.

SIZE OF STONE	MAX. % OF TOTAL WEIGHT SMALLER THAN GIVEN SIZE
400 LB	100%
300 LB	80%
200 LB	25%
25 LB	10%

NO MORE THAN 5% BY WEIGHT SHALL PASS A 2" SIEVE.



REVISIONS

NO.	DATE	DESCRIPTION
1.	5/18/15	REV GRADING/ADD DETAILS
2.	8/31/15	REV LAYOUT/GRADING/UTILS/GEN

APPLICANT
POWERHEAD L.L.C.
32 NORFOLK AVENUE
S. EASTON, MA 02375

OWNERS
POWERHEAD L.L.C.
32 NORFOLK AVENUE
S. EASTON, MA 02375
ASSESSORS MAP 14 BLOCK 56 LOT 7
DEED BOOK 32352 PAGE 533

HERRING RUN REALTY TRUST
32 NORFOLK AVENUE
S. EASTON, MA 02375
ASSESSORS MAP 14 BLOCK 56 LOT 8
DEED BOOK 32373 PAGE 118

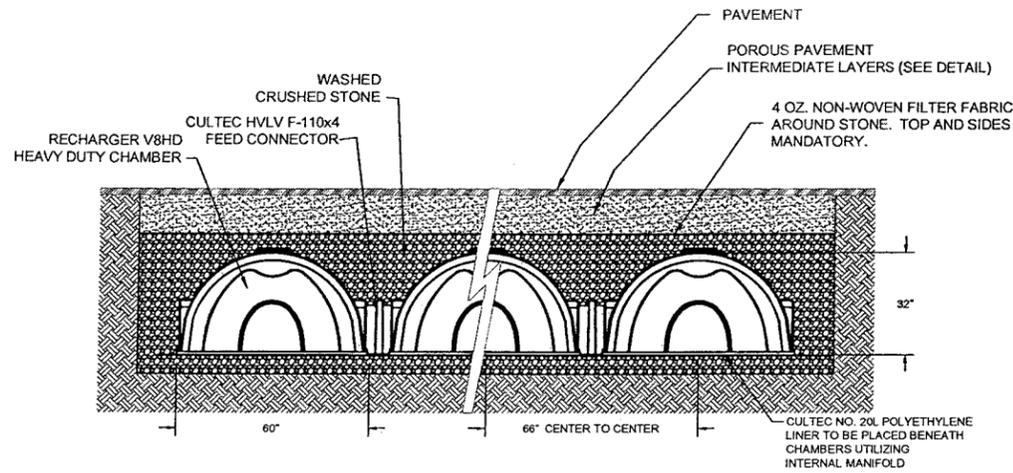
DRAINAGE DETAILS FOR COMPREHENSIVE PERMIT PRELIMINARY PLANS "BOYDE'S CROSSING" #106 & #108 MAIN STREET IN NORFOLK MASSACHUSETTS

Outback Engineering Incorporated

165 EAST GROVE STREET
MIDDLEBOROUGH, MA 02346
TEL: (508)-946-9231
FAX: (508)-947-8873
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DATE: FEBRUARY 4, 2015
DRAWN BY: RLG CHECKED BY: JAP
SCALE: NTS SHEET 8 OF 9

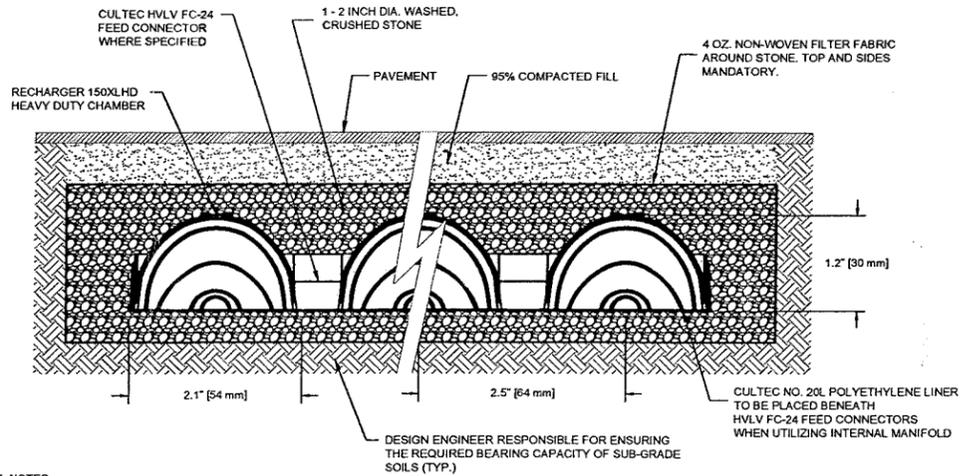
OE-2625A



GENERAL NOTES
 RECHARGER V8HD BY CULTEC, INC. OF BROOKFIELD, CT. STORAGE PROVIDED = 13.274 CF/FT PER DESIGN UNIT. REFER TO CULTEC, INC.'S CURRENT RECOMMENDED INSTALLATION GUIDELINES.
 USE RECHARGER V8HD HEAVY DUTY FOR TRAFFIC AND/OR H-25 APPLICATIONS.

ALL RECHARGER V8HD HEAVY DUTY UNITS ARE MARKED WITH A COLOR STRIPE FORMED INTO THE PART ALONG THE LENGTH OF THE CHAMBER. ALL RECHARGER V8HD CHAMBERS MUST BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.

CULTEC RECHARGER V8HD CHAMBER DETAIL
 NOT TO SCALE



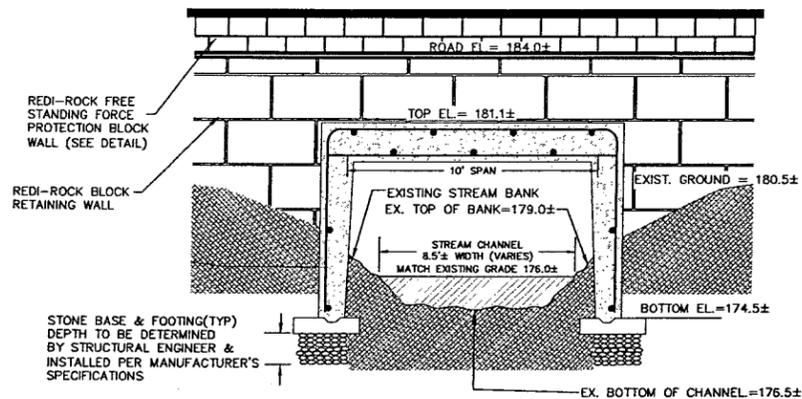
GENERAL NOTES
 RECHARGER 150XLHD BY CULTEC, INC. OF BROOKFIELD, CT. STORAGE PROVIDED = 4.89 CF/FT (0.45 M3/M) PER DESIGN UNIT. REFER TO CULTEC, INC.'S CURRENT RECOMMENDED INSTALLATION GUIDELINES. MAXIMUM ALLOWED COVER OVER TOP OF UNIT SHALL BE 12\"/>

ALL RECHARGER 150XLHD HEAVY DUTY UNITS ARE MARKED WITH A COLORED STRIPE FORMED INTO THE PART ALONG THE LENGTH OF THE CHAMBER. ALL RECHARGER 150XLHD CHAMBERS MUST BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.

CULTEC RECHARGER 150XLHD CHAMBER DETAIL
 NOT TO SCALE

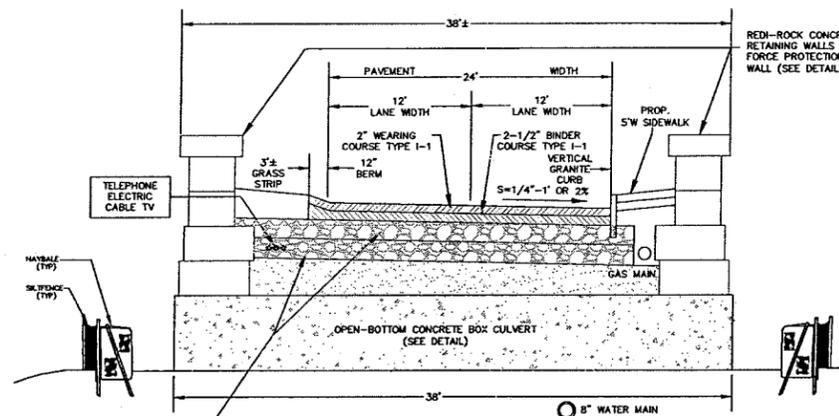
DESIGN NOTES

STRUCTURAL ENGINEERED PLANS & DETAILS TO BE PROVIDED PRIOR TO CONSTRUCTION
 CONCRETE MINIMUM STRENGTH - 5000 PSI @ 28 DAYS
 STEEL REINFORCEMENT - ASTM A615, GRADE 60
 COVER TO STEEL - 1" MIN.
 DESIGN LOADING - AASHTO HS20-44
 CONSTRUCTION JOINT - SEALED WITH 1" DIA. BUTYL RUBBER
 DESIGN SPECIFICATION - ACI 318 & AASHTO LOAD FACTOR DESIGN METHOD
 NOTE: ALL UNSUITABLE MATERIAL SUCH AS PEAT SHALL BE REMOVED PRIOR TO CONSTRUCTION OF THE CROSSING AREA.



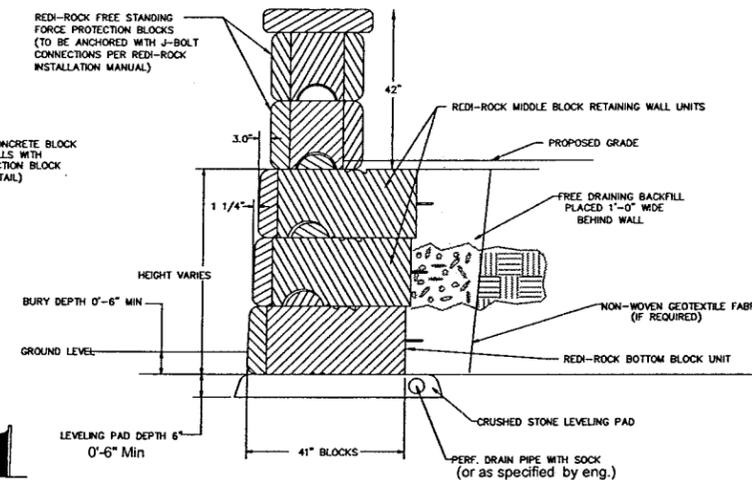
10'W X 38'L 3-SIDED BOX CULVERT DETAIL
 NOT TO SCALE

USE ROTONDO 3-SIDED BRIDGE SECTIONS @ 22° COUNTERCLOCKWISE SKEW ANGLE (OR EQUAL)
 SHOP DRAWING TO BE DESIGNED AND STAMPED BY A STRUCTURAL ENGINEER PRIOR TO CONSTRUCTION

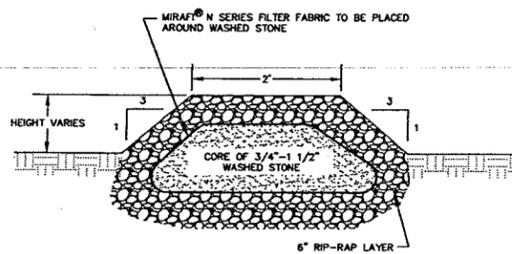


ROADWAY CROSS SECTION AT STREAM CROSSING
 NOT TO SCALE

NOTE: 1. BACKFILL SHALL BE COMPACTED TO 95% USING THE MODIFIED PROCTOR TEST IN ACCORDANCE WITH ASTM D 1557-67T, METHOD D



REDI-ROCK GRAVITY RETAINING WALL
 NOT TO SCALE

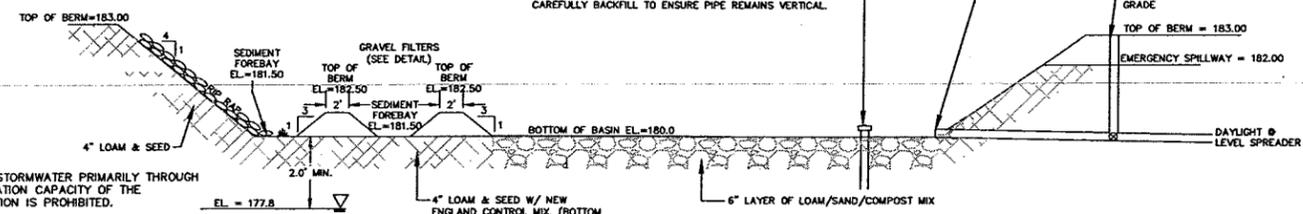


GRAVEL FILTER / CHECK DAM
 NOT TO SCALE

INFILTRATION BASIN NOTES:

THE CONTRACTOR IS CAUTIONED THAT THE INFILTRATION BASIN IS DESIGNED TO INFILTRATE/RECHARGE STORMWATER PRIMARILY THROUGH THE BOTTOM OF THE BASIN. CONSTRUCTION TECHNIQUES THAT WOULD POTENTIALLY DIMINISH THE FILTRATION CAPACITY OF THE UNDERLYING SOILS ARE TO BE AVOIDED. COMPACTION AND SILTATION OF THE BASIN DURING CONSTRUCTION IS PROHIBITED.

- A.) DO NOT UTILIZE ANY PORTION OF THE BASIN FLOOR AS A HAUL ROAD FOR MATERIAL AND HEAVY EQUIPMENT.
- B.) DO NOT COMPACT SOILS IN THE BASIN FLOOR.
- C.) DO NOT PLACE GRAVEL OR OTHER MATERIALS TO STABILIZE THE BASIN FLOOR FOR CONSTRUCTION VEHICULAR TRAVEL ACCESS.
- D.) STRICT COMPLIANCE WITH THE EROSION CONTROL PLAN AND THE STORMWATER OPERATIONS AND MAINTENANCE PLAN IS NECESSARY.
- E.) BASIN CONSTRUCTION SHALL OCCUR AT THE EARLY STAGES OF THE PROJECT CONSTRUCTION SO THAT THEY ARE FULLY VEGETATED AND STABILIZED PRIOR TO RECEIVING STORMWATER.
- F.) DESIGN ENGINEER TO INSPECT BOTTOM OF BASIN PRIOR TO PLACEMENT OF STONE BOTTOM.
- G.) RIP-RAP IN THE BOTTOM OF THE BASIN TO BE PLACED, NOT DUMPED, DO NOT COMPACT.
- H.) DO NOT USE THE INFILTRATION BASIN AS A TEMPORARY SEDIMENT BASIN OR DE-WATERING BASIN.



CROSS SECTION INFILTRATION BASIN
 NOT TO SCALE

EXISTING TOP, SUBSOIL, AND ANY UNSUITABLE SOILS BENEATH INFILTRATION BASIN (EXCLUDING SEDIMENT FOREBAY) TO BE REMOVED TO A DEPTH OF NATURALLY OCCURRING PERVIOUS SOIL AND REPLACED WITH CLEAN WASHED SAND TO THE DEPTH REQUIRED. DESIGN ENGINEER TO INSPECT OPEN HOLE PRIOR TO PLACEMENT OF SAND & TOPSOIL.

REVISIONS		
NO.	DATE	DESCRIPTION
1.	5/18/15	REV GRADING/ADD DETAILS
2.	8/31/15	REV LAYOUT/GRADING/UTILS/GER.

APPLICANT
 POWERHEAD L.L.C.
 32 NORFOLK AVENUE
 S. EASTON, MA 02375

OWNERS
 POWERHEAD L.L.C.
 32 NORFOLK AVENUE
 S. EASTON, MA 02375
 ASSESSORS MAP 14 BLOCK 56 LOT 7
 DEED BOOK 32352 PAGE 533

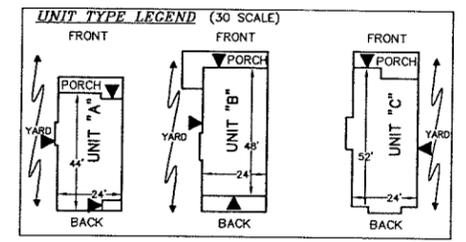
HERRING RUN REALTY TRUST
 32 NORFOLK AVENUE
 S. EASTON, MA 02375
 ASSESSORS MAP 14 BLOCK 56 LOT 8
 DEED BOOK 32373 PAGE 118

DETAIL SHEET FOR COMPREHENSIVE PERMIT PRELIMINARY PLANS "BOYDE'S CROSSING" #106 & #108 MAIN STREET IN NORFOLK MASSACHUSETTS

Outback Engineering Incorporated
 165 EAST GROVE STREET
 MIDDLEBOROUGH, MA 02346
 TEL: (508)-946-9231
 FAX: (508)-947-8873
 www.outback-eng.com

DATE: FEBRUARY 4, 2015
 DRAWN BY: RLG CHECKED BY: JAP
 SCALE: NTS SHEET 9 OF 9

**AFFORDABLE DISTRIBUTION
PLAN**



REVISIONS		
NO.	DATE	DESCRIPTION

APPLICANT
 POWERHEAD L.L.C.
 BISHAR I HASHEM, TRUSTEE
 32 NORFOLK AVENUE
 S. EASTON, MA 02375

OWNERS
 POWERHEAD L.L.C.
 EOGHAN KELLEY, MANAGER
 32 NORFOLK AVENUE
 S. EASTON, MA 02375

HERRING RUN REALTY TRUST
 BISHAR I HASHEM, TRUSTEE
 32 NORFOLK AVENUE
 S. EASTON, MA 02375

AFFORDABLE UNIT DISTRIBUTION PLAN FOR COMPREHENSIVE PERMIT PRELIMINARY PLANS "BOYDE'S CROSSING" #106 & #108 MAIN STREET IN NORFOLK MASSACHUSETTS

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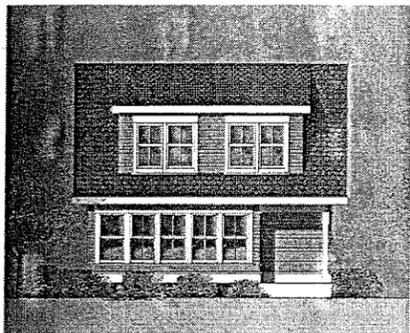
DATE: SEPTEMBER 3, 2015
 DRAWN BY: RLG CHECKED BY: JAP
 SCALE: 1"=40' SHEET 1 OF 1

OE-2625A

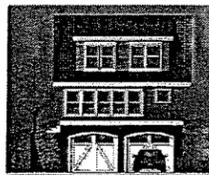
ARCHITECTURAL



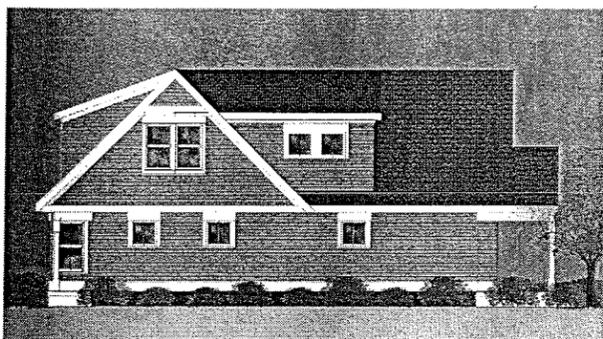
3C RIGHT



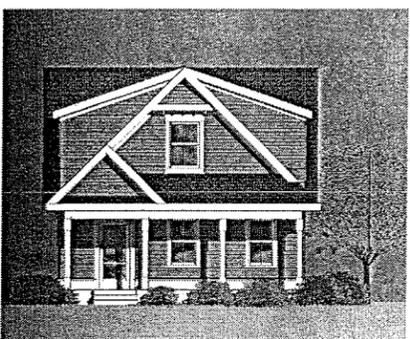
3D REAR



3E REAR (GARAGE)

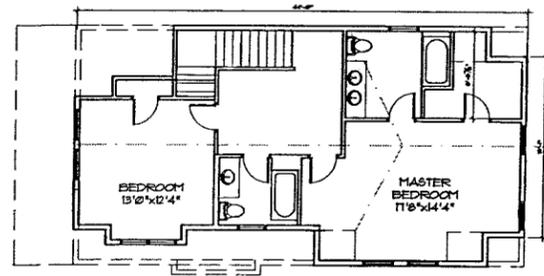


3E LEFT

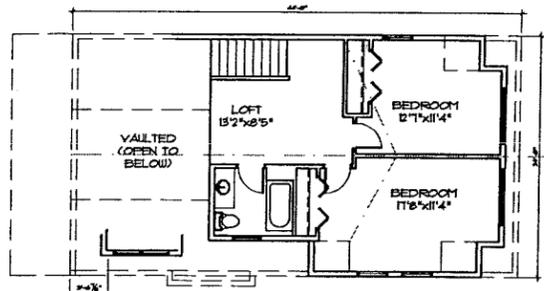


3A FRONT

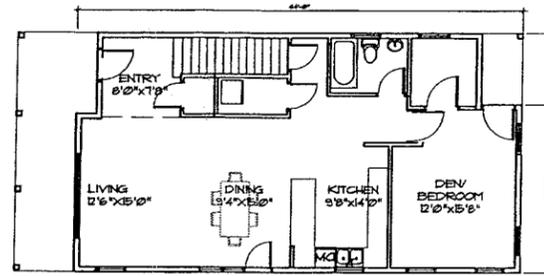
3 UNIT A
TEED RIDGE
SCALE: NTS



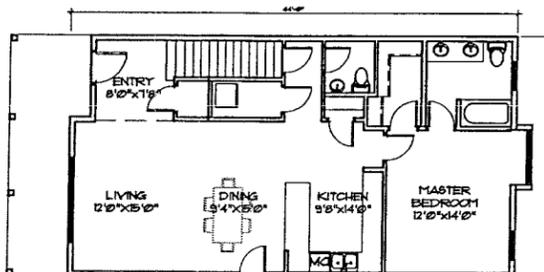
2B 44' UNIT (2-3) BEDS
2nd FLOOR - OPTION B
SCALE: 1/8" = 1'-0"



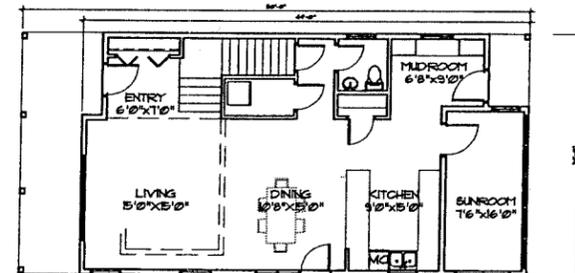
2A 44' UNIT (2-3) BEDS
2nd FLOOR - OPTION A
SCALE: 1/8" = 1'-0"



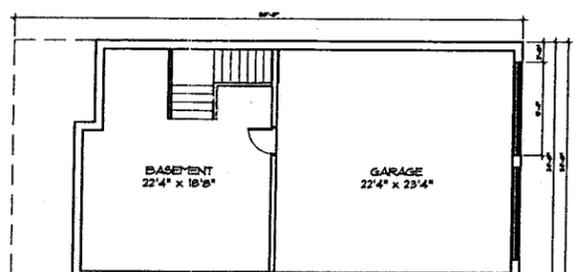
1C 44' UNIT (2-3) BEDS
1st FLOOR PLAN
SCALE: 1/8" = 1'-0"



1B 44' UNIT (2-3) BEDS
1st FLOOR PLAN
SCALE: 1/8" = 1'-0"



1A 44' UNIT (2-3) BEDS
1st FLOOR PLAN
SCALE: 1/8" = 1'-0"



b 44' UNIT (2-3) BEDS
1st FLOOR PLAN
SCALE: 1/8" = 1'-0"

UNIT A			
1st FLOOR OPTIONS			
2nd FLOOR OPTIONS	1A	1B	1C
2A	+1,692sf 2BR	+1,702sf 3BR	+1,692sf 2/3BR
2B	1,951sf 2BR	1,961sf 3BR	1,951sf 2/3BR
BASMENT/GARAGE = 1,040 SF. +325sf 2nd FL. VAULTED SPACE			



4E REAR (GARAGE)

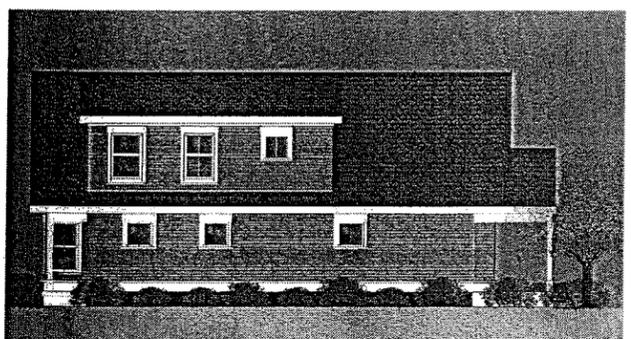


4C RIGHT



4D REAR

4 UNIT A
TEED RIDGE
SCALE: NTS



4E LEFT



4A FRONT

Rev	Date	Description

UNIT-A: (2-3) BEDROOM UNIT OPTIONS
BOYDE'S CROSSING
POWERHEAD LLC
106 & 108 MAIN ST.
NORFOLK, MA

Scale: 1/8" = 1'-0"
Date: 2/13/15
Drawn By: T.F.
Checked By: DGG
Job Number: 214251

Drawing:
A



3C RIGHT

3D REAR



3E LEFT

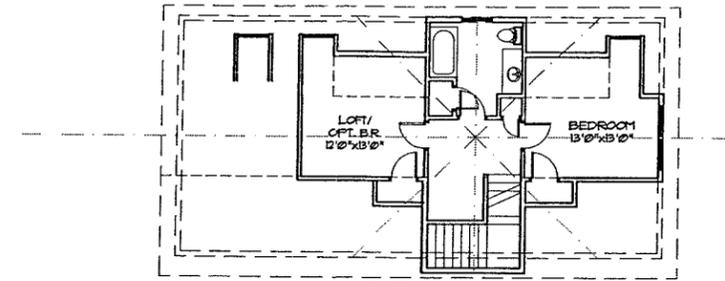


3A FRONT

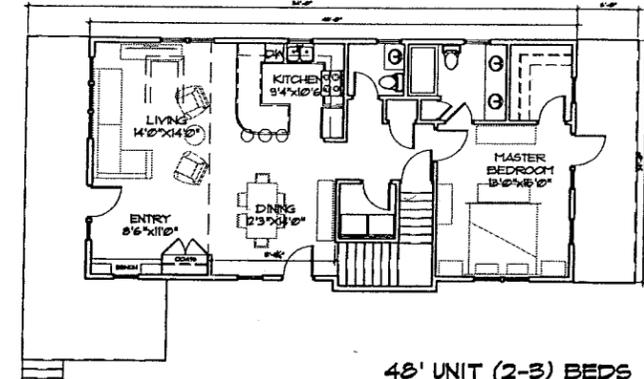
3 UNIT A ELEVATIONS
SCALE: NTS

UNIT B	
1st FLOOR	1,162sf
2nd FLOOR	617sf*
TOTAL	1,779sf

*284sf 2nd FL. VAULTED SPACE



2 48' UNIT (2-3) BEDS
2ND FLOOR PLAN
SCALE: 1/8" = 1'-0"



1 48' UNIT (2-3) BEDS
1ST FLOOR PLAN
SCALE: 1/8" = 1'-0"

EKA
EKA Architects, Inc.
Architects & Interiors
142 Crescent Street
Brockton, MA 02302
Tel: 508.683.6600
Fax: 508.564.2014
e-mail: bka@ekaarch.com

Date	Revisions

UNIT-B: (2-3) BEDROOM UNIT OPTIONS
BOYDE'S CROSSING
POWERHEAD LLC
106 + 108 MAIN ST.
NORFOLK, MA

Scale: 1/8" = 1'-0"
Date: 2/3/15
Drawn By: J.L.F.
Checked By: DGS
Job Number: 214251

Drawing:
B

