

- GENERAL NOTES**
- SINGULAIR® AERATOR, AS TESTED AND ACCEPTED BY NSF.
 - FALL THROUGH SINGULAIR® PLANT FROM INLET INVERT TO OUTLET INVERT IS FOUR INCHES. INLET INVERT IS TWELVE INCHES BELOW TANK TOP.
 - ON DEEPER INSTALLATIONS, PRECAST RISERS MUST BE USED TO EXTEND AERATOR MOUNTING CASTING AND BIO-KINETIC® SYSTEM MOUNTING CASTING TO GRADE. INSPECTION COVER ON PRETREATMENT CHAMBER MUST BE DEVELOPED TO WITHIN TWELVE INCHES OF GRADE.
 - TANK REINFORCED PER ACI STD. 318-83.
 - REMOVABLE COVERS ON RISERS WEIGH IN EXCESS OF SEVENTY FIVE POUNDS EACH TO PREVENT UNAUTHORIZED ACCESS.
 - TOTAL SYSTEM CAPACITY: 1300 GAL.
 - THE OWNER SHALL COMPLY WITH ALL DEP REQUIREMENTS AS IT PERTAINS TO THE *STANDARD CONDITIONS FOR ALTERNATIVE SOIL ABSORPTION SYSTEMS WITH GENERAL USE CERTIFICATION AND/OR APPROVED FOR REMEDIAL USE AS REVISED FEBRUARY 3, 2016*.

SINGULAIR® BIO-KINETIC® WASTEWATER TREATMENT SYSTEM
MODEL 960
 500 GPD TREATMENT CAPACITY
 Siegmund Environmental Services, Inc.
 49 Pavilion Avenue, Providence, RI 02905
 Tel: 401 785 0130 Fax: 401 785 3110

1,000 GAL. PUMP CHAMBER

A 1,000 GAL. PUMP CHAMBER IS TO BE INSTALLED IN THE LOCATION SHOWN. USE A 1,000 GAL. H-10 LEACHING T.A. SHEA PRECAST TK-1000 SEPTIC TANK (OR APPROVED EQUIVALENT) AS A PUMP CHAMBER.

PUMPING IS TO BE ACCOMPLISHED BY ONE GOULDS 3886, W5038, 1/3 HP, 230 VOLT PUMP OR EQUIVALENT WITH MERCURY SWITCH TILT BULB CONTROLS AND A NEMA 1 SIMPLEX CONTROL PANEL WHICH IS TO BE LOCATED WITHIN THE DWELLING.

PUMP MUST PASS 1-1/4" SOLIDS ACCORDING TO TITLE 5. [310 CMR 15.231(7)]

INSIDE DIMENSION = 4'-8"

DOSE VOLUME = 330 GPD
 DRAIN BACK VOLUME = 3' x P(0.08) = 0.26 GAL
 330 + 0.26 / 2 CYCLES = 115.13 GAL PER CYCLE

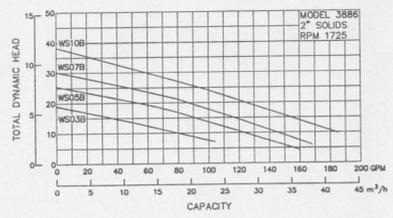
THE CONTROLS ARE TO BE FIELD ADJUSTED TO DISCHARGE 0.44 LIQUID FT. OR 115.13 GALLONS PER CYCLE.

ALL PUMPS MUST BE EQUIPPED WITH A HIGH WATER ALARM LOCATED IN THE BUILDING SERVED WHICH IS POWERED BY A CIRCUIT SEPARATE FROM THE CIRCUIT TO THE PUMP(S). [310 CMR 15.231(9)]

THE STORAGE AVAILABLE (805 GAL.) IN THE PUMP CHAMBER BETWEEN THE ELEVATION OF THE PUMP CHAMBER INLET AND THE HIGH WATER ALARM IS IN EXCESS OF THE 24 HOUR STORAGE (330 GAL.) REQUIRED.

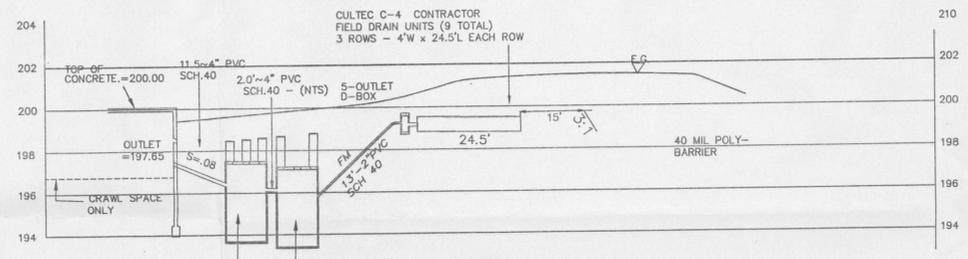
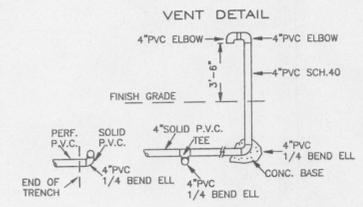
TOTAL HEAD
 VERTICAL HEIGHT = 199.22 - 192.60 = 6.62'
 FRICTION LOSS
 13 FT. x 2" PVC SCH. 40 PIPE AT 50 GPM = 4.8/100' x 13' = 0.62'
 FITTINGS AND VALVES = 5.00'
 TOTAL PUMP HEAD = 12.24 FT.

INV. INLET	195.85
ELEV. ALARM	193.54
ELEV. PUMP ON	193.04
ELEV. PUMP OFF	192.60
FLOOR	191.60



LEACHING FIELD DESIGN:
 THIS SEPTIC SYSTEM IS DESIGNED FOR THREE BEDROOMS.

PERCOLATION RATE: 7 MIN./INCH
 SOIL CLASS: 1
 LTAR: 0.68 GPD/S.F.
 DESIGN FLOW REQUIRED = 330 GPD
 USING CULTREC FIELD DRAIN CONTACTORS C-4'S
 PROPOSED: 9 C-4s (3 ROWS, 3 C-4s/ROW)
 SURFACE AREA EACH ROW = 3 UNITS x 8 LF + 0.5 LF = 24.5 LF
 24.5 LF x 6.7 SF/LF = 164.15 SF PER ROW
 TOTAL SURFACE AREA = 3 ROWS x 164.15 SF = 492.45 SF
 CAPACITY = 492.45 SF x 0.68 GPD/SF = 334.9 GPD PROVIDED



PROPOSED ELEVATIONS	
TOP FOUNDATION	200.00
INV. AT FOUNDATION	197.65
SINGULAIR TANK INLET	196.33
SINGULAIR TANK OUTLET	196.00
P-CHAMBER INLET	195.85
P-CHAMBER OUTLET	195.60
D-BOX INLET	199.22
D-BOX OUTLET	199.05
TOP GEO-FABRIC	199.22
TOP CUL-TECS	199.21
INV. CUL-TECS	198.87
BOTTOM CUL-TECS	198.50
GROUND WATER ELEV.	193.50
EXISTING GROUND	200.0

VARIANCES:

- TOWN OF ACTON B.O.H. REGULATION 16-6.1.3: THE PROPOSED SEPTIC SYSTEM UPGRADE IS LOCATED WITHIN A WELL PROTECTION AREA (ZONE 1). A SINGULAIR 960 TREATMENT SYSTEM IS PROPOSED IN ORDER TO ENHANCE NITROGEN NUTRIENT REMOVAL. SEE 310 CMR 15.281(3).
- TOWN OF ACTON B.O.H. REGULATION 11, TABLE 1 - THREE BEDROOMS REQUIRES 600 S.F. OF LEACHING AREA - 392 S.F. IS PROVIDED. AN I/A SYSTEM, CONSISTING OF A SINGULAIR TREATMENT TANK AND A CULTREC CHAMBER BED CONFIGURATION IS PROPOSED INSTEAD OF A STANDARD SEPTIC TANK AND LEACHFIELD DUE TO THE LIMITED AREA TO WORK WITH.

SOIL EVALUATOR: RUSS WILSON
 B.O.H. AGENT: EVAN CARLONI
 TESTING DATE: MARCH 18, 2016

DTH 316-1 ELEV. = 200.0'
 DEPTH HORIZON TEXTURE COLOR
 0'-32" F ---
 32"-102" C SL 7.5YR6/3

NO STANDING WATER
 NO SEEPAGE
 MOTTLES @ 78"
 ESTIMATED HIGH G.W. @ 78" (193.5')

PERCOLATION TEST:
 (60" DEEP)
 RATE: 7 MINUTES PER INCH

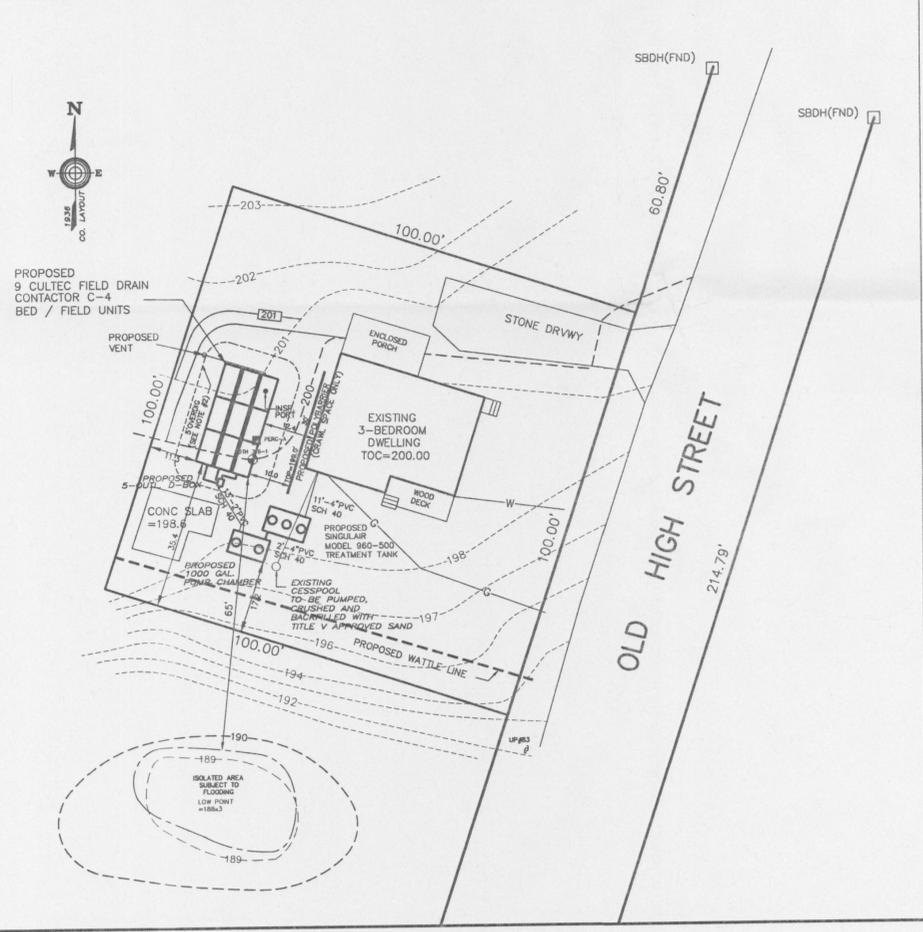
CULTEC, Inc.
 P.O. Box 280
 878 Federal Road
 Brookfield, CT 06804 USA

PH: (203) 775-4416
 PH: (800) 4-CULTEC
 FX: (203) 775-1462
 www.cultec.com



DEED REFERENCE: BOOK 17296, PAGE 140
 PLAN REFERENCE: PLAN 1682 OF 1952
 ASSESSOR'S REFERENCE: MAP J-3, PARCEL 35
 ZONING DISTRICT: R-2
 PERMIT AREA: WELL PROTECTION AREA (ZONE 1)

- GENERAL NOTES:**
- THIS PLAN IS TO BE USED FOR THE INSTALLATION OF THE SUBSURFACE SEWAGE DISPOSAL SYSTEM, INCLUDING REQUIRED WETLAND RESOURCE PROTECTION, ONLY.
 - ALL TOPSOIL, PEAT OR OTHER UNSUITABLE IMPERVIOUS SOIL LAYERS SHALL BE REMOVED FROM BELOW AND 5 FT. AROUND THE LEACHING AREA AS SHOWN AND REPLACED WITH FILL MATERIAL PURSUANT TO TITLE 5 (310 CMR 15.255).
 - ANY DEVIATION FROM THE DESIGN OF THIS PLAN MUST FIRST BE APPROVED BY THE LOCAL BOARD OF HEALTH AND R. WILSON ASSOCIATES.
 - THE CONTRACTOR SHALL NOTIFY THE BOARD OF HEALTH AGENT AND OR ENGINEER A MINIMUM OF 24 HOURS BEFORE EACH REQUIRED INSPECTION.
 - ALL STRUCTURES SHALL BE PRECAST CONCRETE (MINIMUM STRENGTH 4,000 PSI AFTER 28 DAYS)
 - ALL PIPES AND JOINTS SHALL BE WATER TIGHT AND SHALL BE 4" PVC SCH. 40 (OR APPROVED EQUAL) UNLESS OTHERWISE INDICATED.
 - ALL DISTURBED AREAS SHALL BE LOAMED AND SEEDING IN ORDER TO PREVENT EROSION.
 - THIS SEPTIC SYSTEM IS NOT DESIGNED FOR A GARBAGE DISPOSAL UNIT. OWNERS OF SYSTEM SHALL TAKE STEPS TO ENSURE THAT GARBAGE DISPOSAL UNITS ARE NOT INSTALLED.
 - THE APPLICANT AND CONTRACTOR SHALL BE AWARE OF THEIR OBLIGATION TO COMPLY WITH THE REQUIREMENTS OF THE WETLANDS PROTECTION ACT (M.G.L. CH.131 SECT.40)
 - THE LOCATION OF ALL WATER COURSES AND WETLANDS WITHIN 100 FT. OF THE PROPOSED SYSTEM LOCATION ARE SHOWN.
 - THE LOCATION OF ALL SOURCES OF WATER SUPPLY (PUBLIC AND PRIVATE) WITHIN 400 FT. OF THE PROPOSED SYSTEM LOCATION IN THE CASE OF SURFACE WATER SUPPLIES AND GRAVEL PACKED PUBLIC SUPPLY WELLS; WITHIN 250 FT. OF THE PROPOSED SYSTEM LOCATION IN THE CASE OF TUBULAR WATER SUPPLY WELLS; AND WITHIN 150 FT. OF THE PROPOSED SYSTEM LOCATION IN THE CASE OF PRIVATE WATER SUPPLY WELLS ARE SHOWN.
 - ANY WATER LINE CONNECTIONS MUST BE AT LEAST 10 FT. FROM THE PROPOSED SEPTIC SYSTEM.
 - THERE IS NO NEW FOUNDATION DRAIN PROPOSED FOR THE DWELLING SHOWN.
 - CONTRACTOR MUST VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION. DIG-SAFE TELEPHONE NUMBER: 1-888-DIG-SAFE
 - ALL SYSTEM COMPONENTS SHALL BE MARKED WITH MAGNETIC MARKING TAPE OR A COMPARABLE MEANS IN ORDER TO LOCATE THEM ONCE BURIED. [310 CMR 15.22 (12)]
 - FOR SEPTIC TANKS AND D-BOXES EQUIPPED WITH RISERS, THE RISERS SHALL BE NO DEEPER THAN 6 (6) INCHES BELOW GROUND SURFACE. [310 CMR 15.22 (13)]
 - ANY EXISTING WELL IS TO BE ABANDONED PER TITLE V REGULATIONS.
 - WETLANDS FLAGGED BY TOM TIDMAN, ACTON CONSERVATION-FEB18, 2016



RECEIVED
 APR 28 2016
 ACTON CONSERVATION COMMISSION

SUBSURFACE SEWAGE DISPOSAL UPGRADE PLAN
 FOR
297 OLD HIGH STREET
 IN
ACTON, MASS.

OWNER: PATRICIA ELLIS
 297 OLD HIGH STREET ACTON MASS. 01720

SCALE: 1 INCH = 20 FEET DATE: APRIL 18, 2016

R. WILSON AND ASSOCIATES
 LAND SURVEYORS AND CIVIL ENGINEERS
 360 MASSACHUSETTS AVE STE 202 ACTON, MA 01720
 PHONE: 978-266-0203 FAX: 978-266-0202

No.	REVISIONS	DATE	FILE NO. 2096	DWG NO. 2096SD5	SHEET NO. 1 OF 1
1	BOH COMMENTS	4/26/16			