

**WASTEWATER DISPOSAL SYSTEM DESIGN for FIELD "D"**

**I. Wastewater Disposal System Design**  
Per Environmental Protection Rules, Chapter 1, Effective September 29, 2007

**II. Project Description**  
Relocation of wastewater disposal field for single family residence.

**III. Design Flows**  
First 3 bedrooms x 2 persons/bedroom x 70 gal per person per day = 420 gal  
No additional bedrooms.  
Total design flow = 420 gallons per day

**IV. Septic Tank Design**  
For design flows less than 667 gpd, the minimum required liquid capacity is 1,000 gallons. On the outlet end, inside of the tank install a Polylok PL122 effluent filter, or approved equal.  
Recommend inspection and cleaning of the effluent filter semi-annually.  
Recommend removing any sludge buildup inside tank at least once every three years or more frequent if necessary.

**V. Disposal Field Design**  
**Trench Sizing:**  
Design flow = 420 gpd  
Maximum Application Rate for Mound Systems = 1.0 gpd/sf  
Field Size = 420 gpd/1.0 gpd/sf = 420 sf  
Trench Width = 5 feet  
Trench Length = 420 sf/5 ft = 85 feet

**Basal Area:**  
Second Slowest Percolation Rate = 25 min/inch  
Maximum Loading Rate = 0.74 gpd/sf  
Minimum Basal Area = 420 gpd/0.74 gpd/sf = 595 sf  
Actual Basal Area = 986 sf  
Actual Loading Rate = 0.43 gpd/sf

**Orifice Spacing:**  
Required 1 orifice per 25 sf  
420 sf/25 sf = 16.8 orifices minimum  
Use 17 orifices, with 2.5 feet stone bed to end caps  
85 feet/17 orifices = 5 feet spacing between orifices

**Dosing:**  
4 doses required per day  
420 gpd/4 doses per day = 105 gallons per dose

**Pumps:**  
Pumps shall be capable of pumping 20 gpm at 19 feet of total dynamic head.  
Use dual Goulds Pumps Model LEP07, Submersible Effluent Pumps, or approved equal.

**VI. Replacement Disposal Field Design**  
Replacement field not required for mound system design.

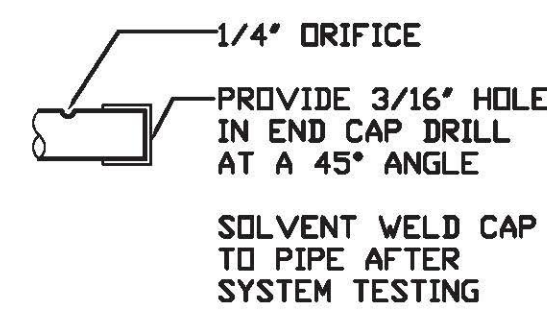
**VII. Linear Loading Rate**  
LLR = (h)(f)  
LLR - linear loading rate, in gallon per day per linear foot of disposal system measured parallel to the natural ground contour.  
h - the soil thickness available for groundwater mounding, measured in feet;  
f - the LLR Factor, based on soil texture and ground slope.

**DISPOSAL FIELD**  
h = 16" = 1.33'  
f = 3.7 (ground slope 1.2%)  
LLR = (1.33 x 3.7) = 4.92 gpd/ft  
420 gpd / 4.92 gpd/ft = 85 ft  
System design required 85 ft - Provided 85 ft

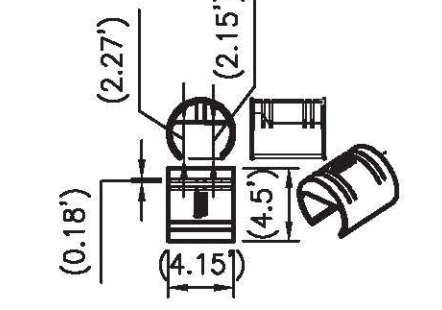
**VIII. Pretreatment System**  
No pretreatment is required beyond the septic tank.

**IX. Inspections and Certifications**  
It is the owner's and/or contractor's responsibility to contact the designer to locate the wastewater disposal field, inspect the soil conditions prior to placement of leaching stone, and witness the force main pressure test.

Certification of construction by the designer as required by § 1-303 (c) of the Environmental Protection Rules may not be provided by the designer, if the procedures outlined herein are not followed.



**END CAP DETAIL**  
(FORCEMAIN)  
NTS



**ORIFICE SHIELD DETAIL**  
NTS

**SOILS INFORMATION**

Test pits performed on November 9, 2009 by DUBOIS & KING INC.,

**TP-1**  
0'-6" Topsoil  
6"-14" Very fine, Brown, Loamy Sand  
14"-22" Very coarse, Brown, Bank Run Gravel  
22"-24" Very fine, Silty Sand  
24"-48" Very fine, Sandy Silt  
48"-54" Very fine, Sand  
Mottles at 24"

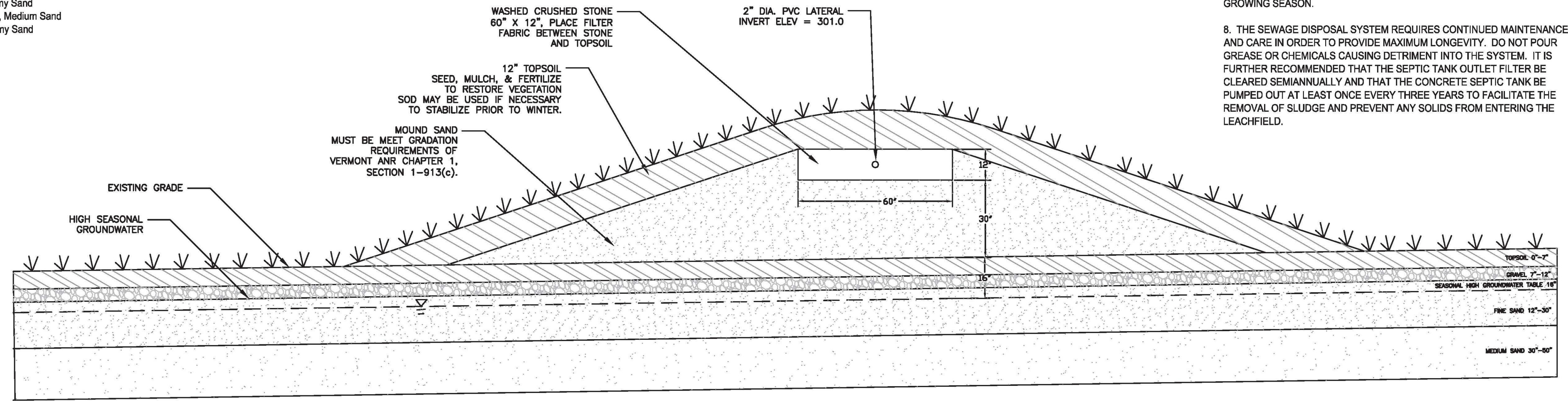
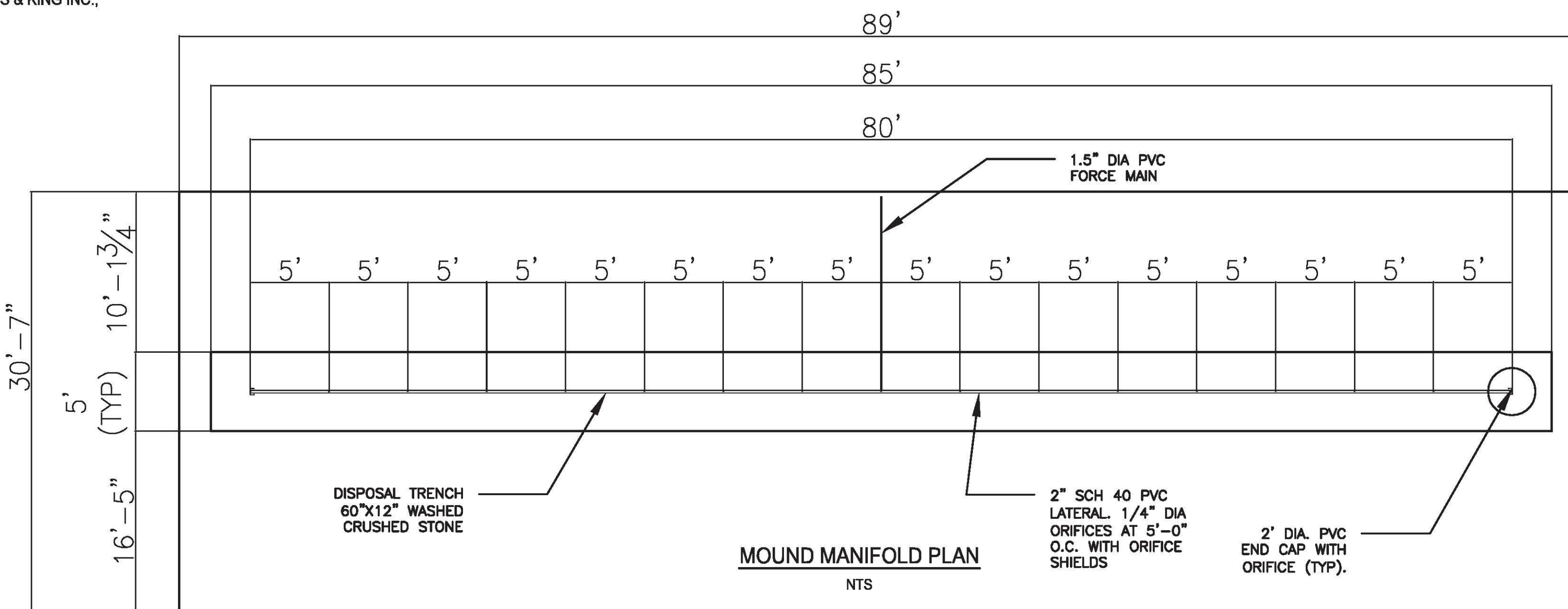
**TP-2**  
0'-6" Topsoil  
6"-9" Very Fine, Medium Brown, Loamy Sand  
9"-12" Fine, Light Brown, Loamy Sand  
12"-14" Course, Brown, Gravel  
14"-17" Fine, Light Brown, Loamy Sand  
17"-51" Very Fine, Brown, Loamy Sand  
51"-54" Medium Texture, Light Brown, Sand  
No water to 54". No mottles observed.

**TP-3**  
0'-3" Topsoil with Organics  
3"-16" Brown Gravel  
16"-45" Brown Loamy Sand  
45"-52" Brown Medium Sand  
Mottles at 16"-18"  
Moist No Water.

**TP-4**  
0'-3" Brown Topsoil with Organics  
3"-8" Brown Gravel  
8"-38" Brown Loamy Sand  
38"-50" Light Brown, Medium Sand

**TP-5**  
0'-1" Brown Topsoil with Organics  
1"-6" Brown Gravel  
6"-18" Brown, Loamy Fine Sand  
18"-24" Light Brown, Mixed Sand  
24"-42" Brown, Fine Sand  
42"-50" Light Brown, Course Sand

**TP-6**  
0'-7" Brown, Topsoil Organics  
7"-11" Brown, Gravel  
11"-21" Brown, Loamy Sand  
21"-31" Light Brown, Medium Sand  
31"-54" Brown, Loamy Sand



**MOUND SYSTEM SECTION**  
NOT TO SCALE

**DISPOSAL FIELD CONSTRUCTION NOTES**

- CONTACT ENGINEER PRIOR TO ANY WORK BEING PERFORMED IN ORDER TO DISCUSS SYSTEM LAYOUT AND INSPECTION REQUIREMENTS. THE ENGINEER SHALL RECEIVE 48 HOURS NOTICE PRIOR TO CONSTRUCTION IN ORDER TO STAKEOUT THE SEPTIC SYSTEM AT THE LOCATION AND ELEVATION SHOWN ON THE DRAWINGS. THE LOT OWNER OR HIS/HER REPRESENTATIVE SHALL BE RESPONSIBLE FOR ARRANGING INSPECTION SERVICES WITH THE ENGINEER IN ORDER TO MEET THE STATE AND LOCAL PERMIT REQUIREMENTS FOR AS-BUILT CERTIFICATIONS.
- THE SEPTIC TANK/PUMP STATION STRUCTURE SHALL BE OF WATERTIGHT CONSTRUCTION AND MADE OF REINFORCED CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI AT 28 DAYS. THE TANK SHALL BE STRUCTURALLY REINFORCED WITH STEEL REINFORCING BARS AND/OR WIRE MESH AS PROVIDED BY CAMP PRECAST OR APPROVED EQUAL. TANK JOINTS SHALL BE SEALED WITH BITUMINOUS MASTIC OR APPROVED EQUAL. THE GRAVITY INLET PIPE PENETRATION THROUGH THE TANK WALLS SHALL BE SEALED WITH A LOW PRESSURE SEAL. THE FORCE MAIN OUTLET PIPE CONNECTION SHALL BE INTEGRALLY CAST INTO THE TANK WALL.
- REMOVE ALL TREES AND REMAINING VEGETATIVE GROWTH FLUSH WITH THE GROUND. DO NOT REMOVE THE ASSOCIATED STUMPS AND/OR ROOT BALLS. MAINTAIN AT LEAST A TEN FOOT CLEARED BUFFER FROM THE DISPOSAL FIELD EDGE. DO NOT ALLOW THE ESTABLISHMENT OF ANY BRUSH OR SIMILAR VEGETATIVE GROWTH WITHIN THIS BUFFER.
- ONCE THE DISPOSAL FIELD AREA IS PREPARED, THE ABSORPTION TRENCHES SHALL BE CONSTRUCTED AS SHOWN ON THIS DRAWING. CONSTRUCTION SHALL NOT COMMENCE WHEN THE SOIL MOISTURE CONTENT IS HIGH AS DETERMINED BY THE ENGINEER. ONCE SOIL CONDITIONS ARE ACCEPTABLE CRUSHED STONE SHALL BE PLACED IN THE TRENCHES AS NOTED IN THE DETAILS.
- LAY THE DISTRIBUTION 2" RIGID PERFORATED PIPES LEVEL IN THE TRENCHES, THE ENDS OF ALL PIPES MUST BE CAPPED. DRILL A DRAIN HOLE AT THE CAPPED END OF THE LINE AT A DOWNWARD 45° ANGLE. ENSURE THERE IS 4 INCHES OF STONE COVER OVER THE PIPING. A LAYER OF MIRAFI NON-WOVEN FILTER FABRIC OR APPROVED EQUAL SHALL BE PLACED OVER THE CRUSHED STONE BEFORE PLACEMENT OF ANY NATIVE BACKFILL AND TOPSOIL.
- ALL DISTURBED AREAS AROUND THE LEACHFIELD SHALL BE FINE GRADED, SEEDED WITH A GRASS MIXTURE AND COVERED WITH HAY MULCH UPON COMPLETION OF JOB. ENSURE THAT THE ENTIRE LEACHFIELD AREA IS SHAPED TO CONTOURS SO THAT THERE WILL BE NO STANDING WATER.
- TO LIMIT POTENTIAL EROSION DURING SPRING FLOOD EVENTS, A FULLY VEGETATED COVER SHALL BE IN PLACE PRIOR TO THE END OF THE GROWING SEASON.
- THE SEWAGE DISPOSAL SYSTEM REQUIRES CONTINUED MAINTENANCE AND CARE IN ORDER TO PROVIDE MAXIMUM LONGEVITY. DO NOT POUR GREASE OR CHEMICALS CAUSING DETRIMENT INTO THE SYSTEM. IT IS FURTHER RECOMMENDED THAT THE SEPTIC TANK OUTLET FILTER BE CLEARED SEMIANNUALLY AND THAT THE CONCRETE SEPTIC TANK BE PUMPED OUT AT LEAST ONCE EVERY THREE YEARS TO FACILITATE THE REMOVAL OF SLUDGE AND PREVENT ANY SOLIDS FROM ENTERING THE LEACHFIELD.

- NOTES:**
- FLOOD PLAIN ELEVATION AT RICHMOND BRIDGE IS 302.7'.
  - 100 YEAR FLOOD INFORMATION PROVIDED BY THE NATIONAL FLOOD INSURANCE PROGRAM FOR THE TOWN OF RICHMOND, DATED JULY 5, 1982.

NO.	DATE	REVISIONS	BY	CK'D

**DuBois & King**  
engineering planning management development

**CONANT FARM**  
**SEPTIC SYSTEM REPLACEMENT**  
**RICHMOND, VERMONT**  
  
16 KENYON ROAD  
DETAILS

DRAWN BY LAW	DATE 5-24-2010
CHECKED BY	PROJ. NO. 420716
PROJ. ENG. LJH	DRAW. NO.
SHEET 2 OF 3	