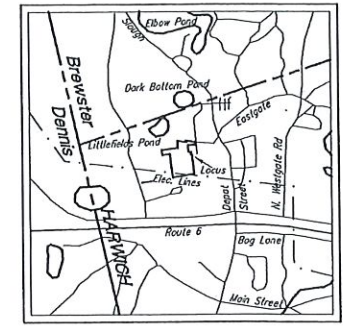


ROADWAY PLAN VIEW



LOCUS MAP  
SCALE 1"=2000'±

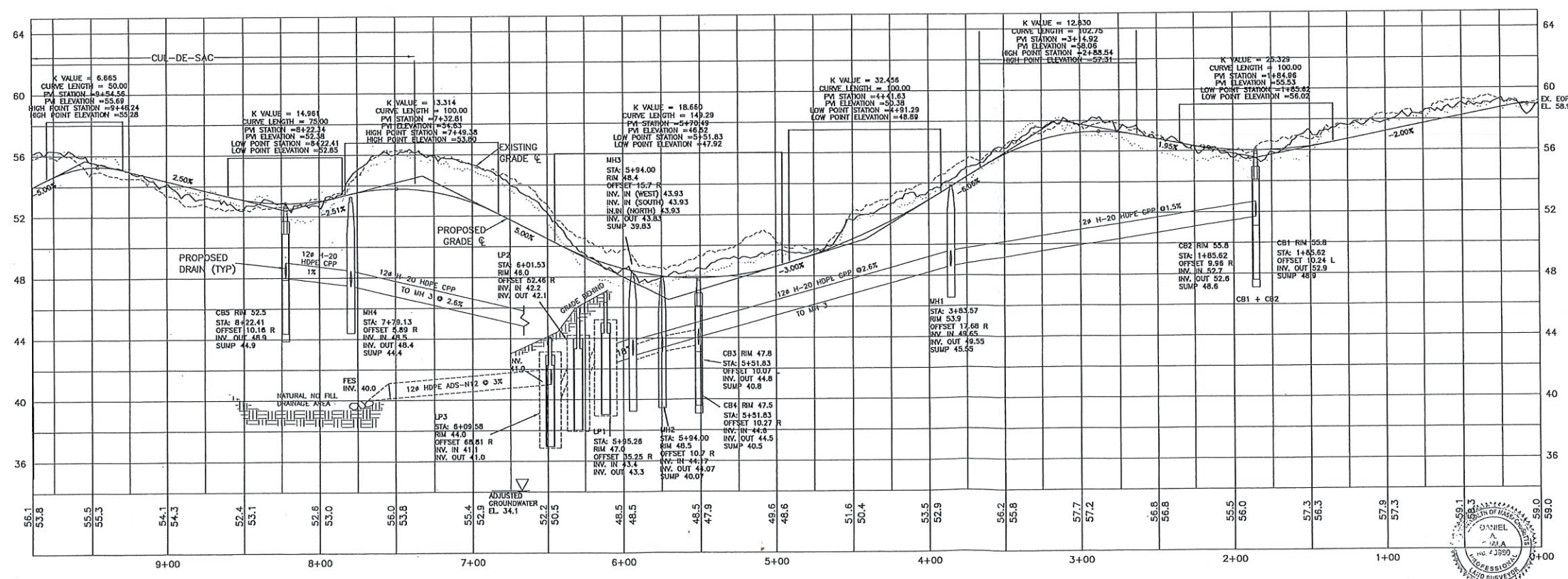
TEST HOLE LOGS

ENGINEER: DANIEL A. OJALA, P.E. P.L.S.  
DATE: 4/20/2021  
PERC. RATE = < 2 MIN/INCH  
CLASS I SOILS

DEPTH	SOIL TYPE	ELEV. 40'
0"	O ORGANIC	
3"	A/E LS	
6"	10YR 4/2	39.5'
30"	B LS	37.5'
	C M/CS	
126"	10YR 7/4	29.5'

G-W ADJ. DATA:  
WELL: CGW 138  
ZONE: C  
ADJ: 4.4'  
APRIL 2021

GROUNDWATER ENCOUNTERED @ 124' EL. 29.7'  
ADJUSTED HIGH GROUNDWATER = EL. 34.1'



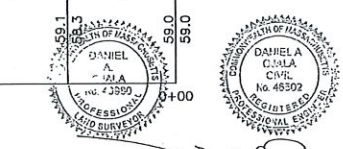
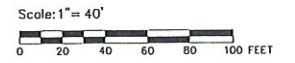
ROADWAY PROFILE

SCALE: HORIZONTAL 1"=40' VERTICAL 1"=4'

ROADWAY PROFILE  
TO ACCOMPANY  
**DEFINITIVE**  
SUBDIVISION PLAN OF LAND  
OFF LITTLEFIELD POND ROAD  
HARWICH, MA

PREPARED FOR  
**R.B.OUR Co. ET AL**

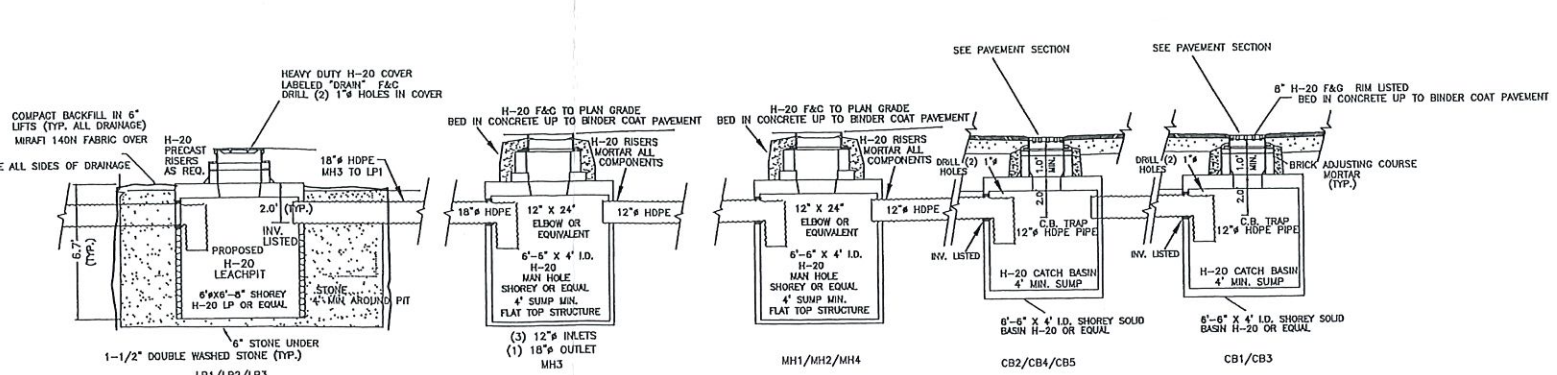
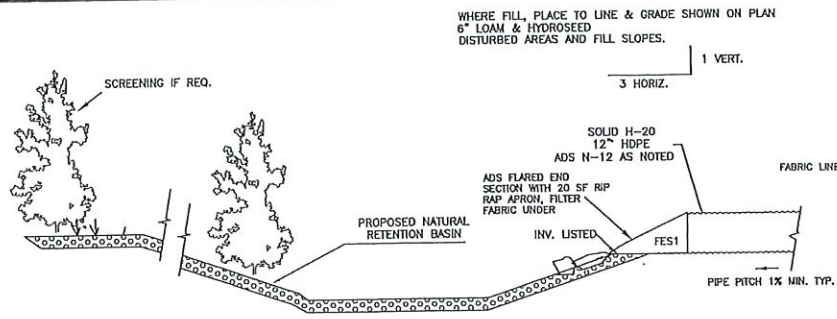
DATE: JANUARY 26, 2022



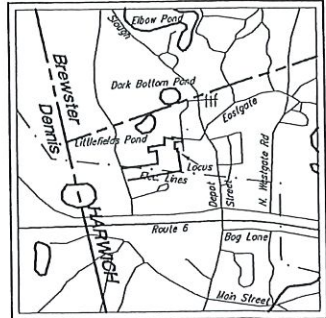
**down cape engineering, inc.**  
civil engineers  
land surveyors  
939 Main Street (Rte 6A)  
YARMOUTHPORT MA 02675

RECEIVED  
TOWN CLERK  
HARWICH, MA  
SEP 20 P 12:05

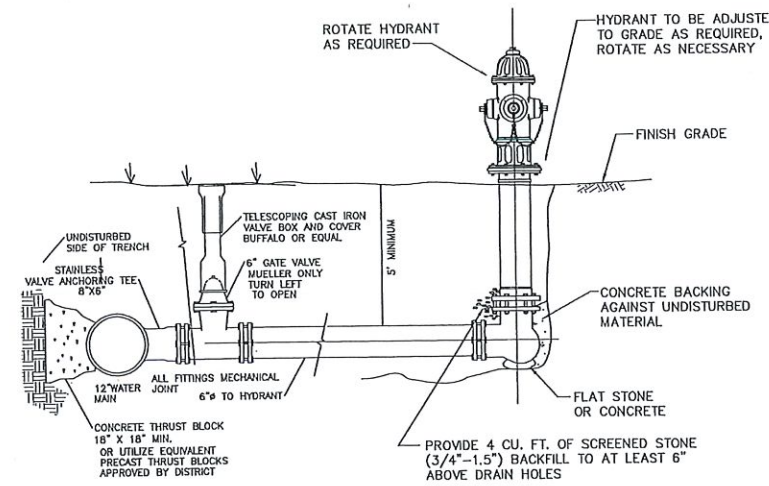
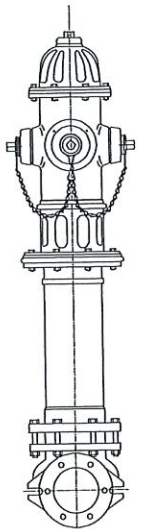




**DRAINAGE CROSS SECTION**  
NOT TO SCALE



**LOCUS MAP**  
SCALE 1"=2000'  
ASSESSORS MAP 77 PARCEL C20, C22  
ASSESSORS MAP 65 PARCEL R2, R3

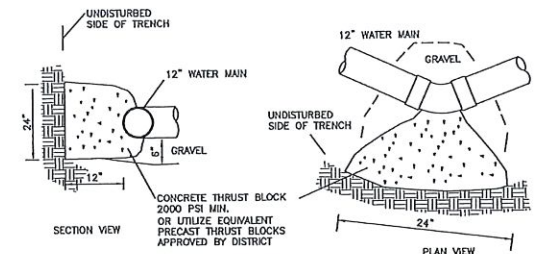


**TYPICAL HYDRANT CONNECTION**  
NOT TO SCALE

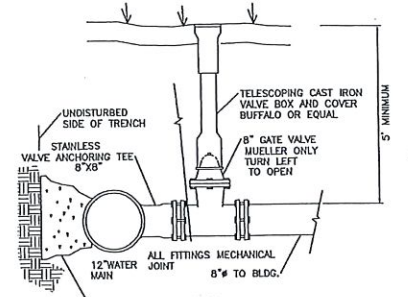
**TYPICAL HYDRANT**  
NOT TO SCALE

**WATER LINE NOTES:**

1. ALL MATERIALS AND WORKMANSHIP TO CONFORM TO THE RULES, REGULATIONS AND SPECIFICATIONS OF THE HARWICH WATER DEPARTMENT AS AMENDED TO PRESENT. DISTRICT HAS AUTHORITY TO AMEND PLANS.
2. WATER MAIN AND FIRE SERVICE LINE SHALL BE CEMENT LINED DUCTILE IRON PIPE CLASS S2 8" DIA. DOMESTIC SERVICE TO BE 200 PSI CIS PLASTIC LINE TO DISTRICT SPECIFICATIONS.
3. GATE VALVE SHALL BE MUELLER ONLY, IRON BODY, BRONZE MOUNTED, DOUBLE DISC, WITH TWO INCH OPERATING NUT WITH MECHANICAL JOINT HUBS. GATE VALVE SHALL CONFORM IN EVERY RESPECT TO ALL APPLICABLE AWWA STANDARDS. VALVE SHALL BE DESIGNED FOR 200 PSI WORKING AND 300 PSI TEST PRESSURE AND SHALL OPEN LEFT.
4. VALVES SHALL ALSO CONFORM TO THE SPECIFICATIONS OF THE AWWA AS TO SIZE, STEM PITCH OF THREAD, GASKET SEATING AREA SHALL BE FULLY MACHINED TO THE FIXED DIMENSIONS AND TOLERANCES AS PER AWWA SPECIFICATIONS. ALL VALVES SHALL BE PROVIDED WITH "O" RINGS. THE DESIGN OF THE VALVE SHALL BE SUCH THAT THE SEAL PLATE CAN BE FITTED WITH NEW "O" RINGS WHILE THE VALVE IS UNDER PRESSURE IN THE FULLY OPEN POSITION.
5. VALVE BOXES SHALL BE BUFFALO OR PIONEER AND SHALL BE FURNISHED AND INSTALLED FOR ALL VALVES. THEY SHALL BE CAST IRON, TAR COATED, SLIDING TYPE ADJUSTABLE VALVE BOXES TOGETHER WITH CAST IRON COVERS. SEE DISTRICT REGULATIONS.
6. CONCRETE THRUST BLOCKS AS SHOWN, CONCRETE SHALL BE 1 PART CEMENT TO 2 PARTS SAND AND 4 PARTS COARSE AGGREGATE, CONCRETE CLASS "C" WITH A 28 DAY COMPRESSION STRENGTH OF 2000 PSI MINIMUM, MAXIMUM AGGREGATE SIZE OF 1-1/2". THRUST BLOCKS SIZED PER SPECIFICATIONS. ALTERNATELY PRECAST THRUST BLOCKS TO DISTRICT SPECIFICATIONS MAY BE UTILIZED.
7. CARE SHALL BE TAKEN TO ENSURE THAT ALL CONCRETE THRUST BLOCKS BEAR AGAINST UNDISTURBED TRENCH WALLS, AND NOT TO EXPOSE FLANGES AND BOLTS ON MECHANICAL JOINT FITTINGS, WHERE UNSUITABLE BEARING MATERIAL IS ENCOUNTERED, EXCAVATE AND PLACE SUFFICIENT CONCRETE BALLAST TO OFFSET THE ANTICIPATED THRUSTS.
8. HARWICH WATER DEPARTMENT APPROVED CONTRACTOR AND INSPECTOR REQUIRED.
9. CONTRACTOR RESPONSIBLE FOR AS-BUILTS AND PLACING SAME ON ENGINEERED DRAWING AND SUBMITTING TO WATER DEPT. FOR THEIR RECORDS.
10. ALL FILL TO BE PLACED IN LIFTS AND ROLLED WITH A 10 TON VIBRATORY ROLLER TO ACHIEVE 95% MAX. DRY DENSITY IN ACCORDANCE WITH ASTM-1557, METHOD "D"



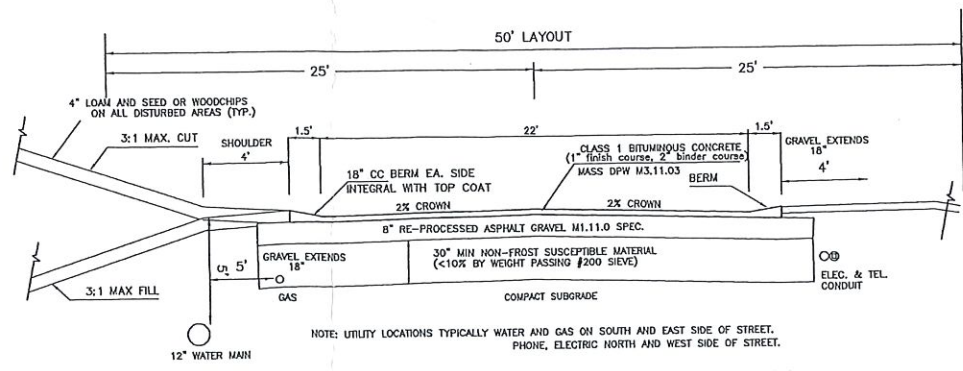
**THRUST BLOCK**  
FOR 45 AND 22.5 DEG BENDS  
NOT TO SCALE



**GATE VALVE**  
NOT TO SCALE

**INSPECTION OF REQUIRED IMPROVEMENTS**  
The following inspections of the required improvements will be made by the Town Engineer. (Form 7, Subdivision Road Construction Inspection Form, shall be used during each inspection.) These inspections may be in addition to any other inspection the Board may make or cause to be made. All sampling and testing of materials shall be performed by qualified personnel acceptable to the Town and shall be at the applicant's expense. At the discretion of the Town Engineer or the applicant's Engineer, additional sampling may be required.

- 1. First Inspection**  
An inspection will be made of the work upon completion of all clearing, grubbing, and excavation and all work incidental thereto as may be required in Section V, C. No fill shall have been placed at the time of this inspection.
- 2. Second Inspection**  
An inspection will be made of the completed drainage system (without backfill) as required herein or on the Definitive Plan. At the same time, or such other time as the work may be available, an inspection will be made of the completed utilities (without backfill) as required on the Definitive Plan. The inspection of the required utilities will be made by the agency responsible for the particular service as well as by the applicant's Engineer. The Town Engineer shall also be notified so that he or she may inspect the utilities prior to backfill. Each agency so involved will notify the Town Engineer of the approval of such work.  
Backfill of any portion of the drainage system or utilities shall not be made until after receipt of notification of approval or acceptance by the Town Engineer or agency responsible. The inspection of the construction of the ways shall include the inspection of the backfilling and compaction of all utility trenches and as such work shall be performed in the manner as required by these Rules and Regulations. It shall be the applicant's responsibility to insure compliance with these requirements. If, in the opinion of the Planning Board, the backfilling and compaction of utility trenches and the patching of the pavement, if required, has not been performed in accordance with these Rules and Regulations, the Planning Board may not release the bond or covenant applicable until such work has been performed to the satisfaction of the Planning Board.
- 3. Third Inspection**  
An inspection will be made of the compacted fill as specified in Section V, G, and as may be required to bring the roadways to their proposed grades. The applicant shall notify the Town and the Town Engineer as to the source of gravel for fill as soon as such information is known, so that samples may be taken and analyzed by the Town and the Town Engineer. The applicant is hereby advised not to proceed with the filling operation until the Town and the Town Engineer notify the applicant that the gravel proposed for the fill is acceptable. If the applicant proceeds with the fill prior to such notice this act shall be at the applicant's own risk. The applicant shall not use a gravel source other than the one designated without prior notice to the Board and the Town Engineer. The applicant's Engineer or the Town Engineer may also require compaction tests.
- 4. Fourth Inspection**  
An inspection will be made of the first layer of compacted roadway foundation (stone dust, gravel, processed stone, or reclaimed asphalt) as specified in Section V, H. A gravel sample or samples may be taken at the option of the Town Engineer, in the same manner as prescribed for the Third Inspection. Compaction tests may also be required by the applicant's Engineer or the Town Engineer.
- 5. Fifth Inspection**  
An inspection will be made of the final layer of compacted roadway foundation (processed stone) prior to the application of the concrete penetration as specified in Section V, I, and gravel sample may be taken by the Town Engineer. Compaction tests may also be required by the applicant's Engineer or the Town Engineer.
- 6. Sixth Inspection**  
An inspection of the binder course (bituminous concrete) will be made during placement and following completion. If required, samples of the mix shall be taken by the applicant's Engineer or the Town Engineer for the purposes of performing extraction tests, compaction tests, or pavement thickness tests. Core drill samples may be required at the applicant's expense. Certified paving slips indicating bituminous concrete quantities shall be submitted to the applicant's Engineer who will tabulate the quantities, check the correlation with the anticipated quantities, and then forward the slips and a report to the Town Engineer.
- 7. Seventh Inspection**  
An inspection of the finish course (bituminous concrete) before, during, and following the placement of the mix shall be performed. A task cost shall be applied to the binder course of the mix prior to placement of the top coat where required by the applicant's Engineer or the Town Engineer. The requirements regarding sampling, testing, and quantity slips indicated in paragraph 6 above for binder course shall also apply to the top coat.
- 8. Eighth Inspection**  
An inspection will be made of all work as required on sidewalks, berms, topsoil, hydroseeding, open space, side slopes, monuments, bounds, and street signs.
- 9. Ninth Inspection**  
A final inspection will be made of all subsequent work as required herein or on the Definitive Plan, which shall include the final clean up. An as-built plan shall be filed following this inspection.



**TYPICAL SECTION THRU PAVEMENT**  
NOT TO SCALE

**DETAIL SHEET TO ACCOMPANY DEFINITIVE SUBDIVISION PLAN OF LAND**

**OFF LITTLEFIELD POND ROAD HARWICH, MA**

PREPARED FOR  
**R.B.OUR Co. ET AL**

DATE: JANUARY 26, 2022



Scale: 1"= 40'  
**down cape engineering, inc.**  
civil engineers  
land surveyors  
939 Main Street (Rte 6A)  
YARMOUTHPORT MA 02675



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