MJS ENGINEERING, PC CIVIL • ENVIRONMENTAL • CONSULTING ENGINEERING •
5 RAILROAD STREET, P.O. BOX 359, NEWMARKET, NH 03857 PHONE: (603) 659-4979, FAX: 659-4627
E-mail: mjs@mjs-engineering.com

November 12, 2014

Ms. Marcia Gasses
Town Planner and Land Use Administrator
Town of Barrington, Land Use Department
PO Box 660
Barrington, NH 03825

Re: Response to Engineering Review Letter dated November 4, 2014
TurboCAM - Map 234 / Lot 1.5
Barrington, NH

Dear Ms. Gasses:

This letter is provided in response to the engineering review letter provided by DuBois & King, Inc., dated November 4, 2014. Please find enclosed the following:

DATE	# of Copies	DESCRIPTION
11/12/14	3	Revised Plan Sheets C2 & C9 - Full Size
11/12/14	12	Revised Plan Sheets C2 & C9 - 11x17
11/12/14	3	USGS Quadrangle Map with Watershed Overlay

The review comments by DuBois & King, Inc. are shown below in italics in their original order followed by responses by MJS Engineering.

REVIEW COMMENTS

1. *Although Sheet C2 - Grading, Drainage, Utilities & Erosion Control Plan identifies isolated temporary erosion protection measures (i.e. construction entrance, stone check dams, erosion control blanket) during construction activities in accordance with Article 3.5.3 of the Site Plan Regulations, the plan does not include limits of silt fence within disturbed areas.*

   Siltsoxx locations have been added to Sheet C2. A Siltsoxx Detail had been and will continue to be shown on Sheet C7. We trust that Siltsoxx can be used as an acceptable alternative to silt fence.

2. *The plan set does not include a temporary erosion protection measure construction entrance, or silt fence detail in accordance with Article 3.5.3 of the Site Plan Regulations.*

Sheet C2 provides notes with leaders pointing to the entrances to the proposed development requiring stabilized construction entrances. The Stabilized Construction Entrance Detail on Sheet C10 provides construction requirements.

Regarding silt fence, refer to Response #1.

3. *The Drainage Report does not reference the source of the rainfall data modeled in the drainage analysis.*

   Rainfall data is modelled based on 24-hr SCS rainfall for the Town of Barrington.

4. *The Drainage Report does not overlay the watershed boundary on a USGS quadrangle map. We were unable to confirm the watershed delineation.*

   Refer to the enclosed map.

5. *No percolation information was provided to support the 10-inches per hour infiltration rate reported on Page 2, Section 5, third paragraph of the Drainage Report.*

   A percolation test was performed and the infiltration rate was found to be faster than 2 minutes per inch (which exceeds 10 inches per hour).

6. *The drainage analysis for the StormTrap does not establish a Flood Elevation for the HydroCAD Pond P19.*

   The inside top of the storage chambers are set at elevation 208.5.

7. *The Drainage Report states that soils were determined to exceed the maximum 10-inches per hour for stormwater treatment. We recommend that stormwater be treated prior to the StormTrap system to ensure pollutants do not lead to early failure of the infiltration system.*

   In accordance with Env-Wq 1500 (AOT Regulations), pretreatment is provided in the form of deep sump catch basins, and treatment is provided by the underground infiltration basin (StormTrap system). To meet treatment requirements, the soil below the system must be amended to have a maximum infiltration rate of 10 inches per hour. A factor of safety of 2 is used in the design. Therefore, the design infiltration rate is 5 inches per hour.

8. *The pre-treatment measure Snout and Bioskirt appears to be only shown at DMH No. 2. We recommend that this pre-treatment measure be at all drainage structures (i.e. DMH No. 4, No. 6 and CB No. 7) immediately prior to discharging collected stormwater to the StormTrap system.*

   Snouts and Bioskirts have been added to all drainage structures which discharge directly into the StormTrap system. This includes DMH #4, DMH #6, CB #6, and CB #7. Sheets C2 and C9 have been revised accordingly.

9. *The drainage analysis modeled a 79.9-inch stone border around the StormTrap system. The StormStrap Installation Specification Note No. 2.B.4, located on Sheet*

C11, states a 2-foot minimum perimeter stone base. The 5'-0" Single Trap Detail, located on Sheet C11, does not specify a stone base perimeter width. Please confirm that the drainage analysis reflects the proposed design.

The drainage analysis accurately reflects the proposed design.

The 79.9 inch border being referred to (per the HydroCAD analysis) is not a stone border. It is actually the width of the concrete chambers which are located along the perimeter of the StormTrap system. The StormTrap system relies on concrete chambers along the perimeter which are of different dimensions and construction than the interior concrete chambers. The interior chambers are mostly open, allowing water to flow through while the perimeter chambers provide solid enclosing walls along the perimeter thus preventing water from flowing out along the sides.

Regarding the 2 foot perimeter stone base, as indicated by note 2.B.4 on Sheet C11, this requirement is also shown on the 5'-0" Single Trap Detail.

10. *We request the Applicant clarify the reason for the amended soil located under the stone subbase of the Stormtrap. It is our understanding that the soil is being amended to reduce the infiltration rate capacity. However, we are concerned that a" field mix of the amended soil will not be consistent and could lead to early failure of the infiltration system.*

Refer to Response #7. In addition, the amended soil mix will be field tested by a geotechnical engineer to confirm the 10 inches per hour infiltration rate, in accordance with Env-Wq 1504.14(e).

We trust this letter and enclosures have addressed the engineering review comments and recommendations made by DuBois & King, Inc. as well as the concerns of the Town of Barrington. If you need additional information, please do not hesitate to contact me at (603) 659-4979 x305.

Sincerely,

Jeff Garnett
Project Engineer

Cc: Jeffrey A. Adler, P.E.

1 OF 1	JOB: 14-028	MJS ENGINEERING, PC Civil Environmental Consulting Engineering 5 Fabrica Street, P.O. Box 359 Newmarket, NH 03857 Phone (603) 659-5979, Fax (603) 659-6627 E-Mail: mjs@mjs-engineering.com	TOPOQUAD WITH WATERSHED OVERLAY prepared for TURBOCAM MAP 234, LOT 1.5 ROUTE 9 BARRINGTON, NH	DATE: 11/12/14 SCALE: 1"=200' DESIGNER: JLG DRAWN BY: JLG APPROVED BY: MJS	SEAL:

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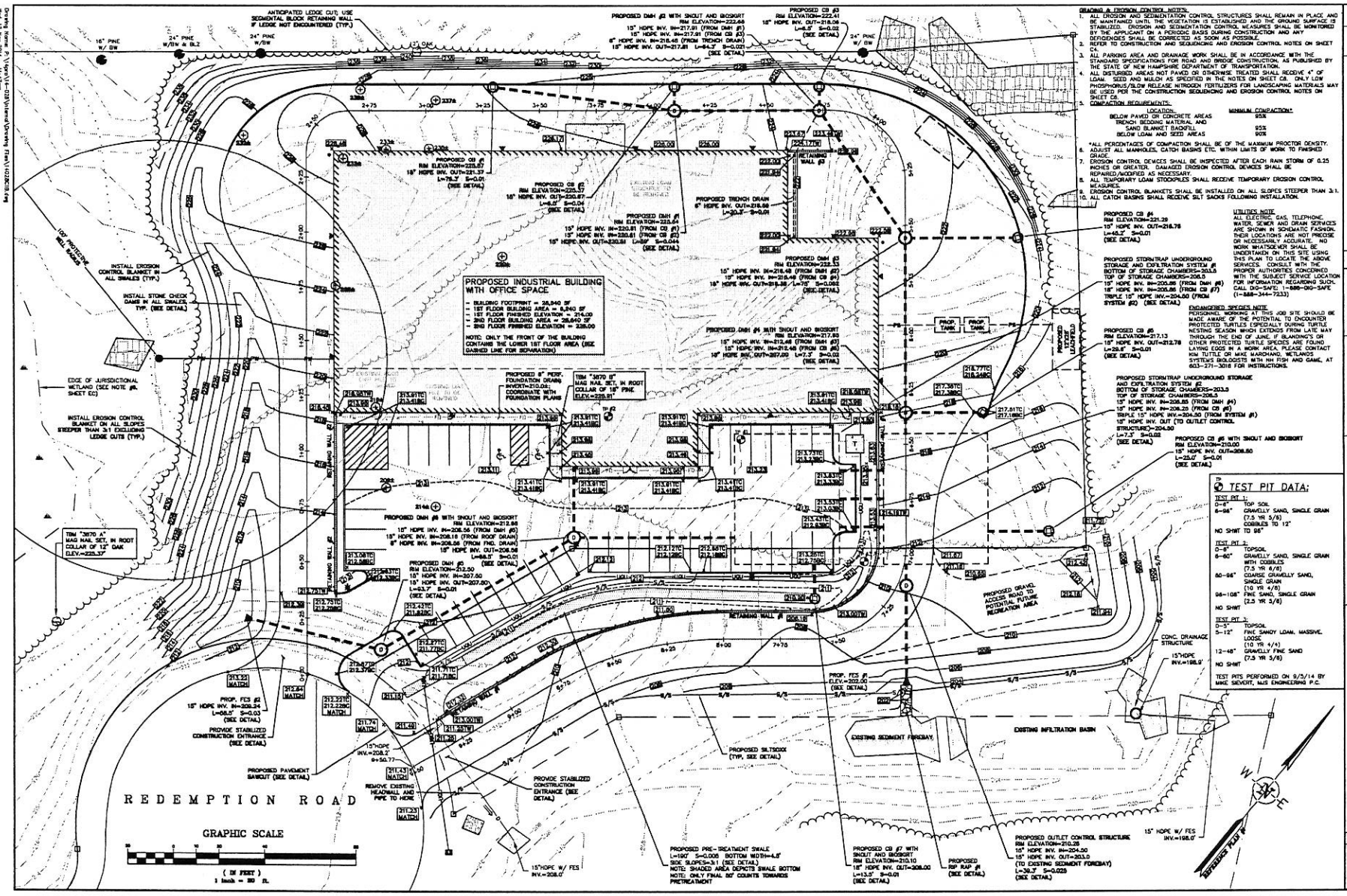
Wed, 12 Nov 2014 - 11:50am



GRADING & EROSION CONTROL NOTES:

1. ALL EROSION AND SEDIMENTATION CONTROL STRUCTURES SHALL REMAIN IN PLACE AND BE MAINTAINED UNTIL THE VEGETATION IS ESTABLISHED AND THE GROUND SURFACE IS STABILIZED. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE MONITORED BY THE APPLICANT ON A PERIODIC BASIS DURING CONSTRUCTION AND ANY DEFICIENCIES SHALL BE CORRECTED AS SOON AS POSSIBLE.
2. REFER TO CONSTRUCTION AND SEQUENCING AND EROSION CONTROL NOTES ON SHEET C4.
3. ALL PARKING AREA AND DRAINAGE WORK SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AS PUBLISHED BY THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION.
4. ALL DISTURBED AREAS NOT PAVED OR OTHERWISE TREATED SHALL RECEIVE 4" OF LOAM. SEED AND MULCH AS SPECIFIED IN THE NOTES ON SHEET C8. ONLY LOW PHOSPHORUS/SLOW RELEASE NITROGEN FERTILIZERS FOR LANDSCAPING MATERIALS MAY BE USED PER THE CONSTRUCTION SEQUENCING AND EROSION CONTROL NOTES ON SHEET C8.
5. COMPACTION REQUIREMENTS:

LOCATION:	MINIMUM COMPACTION*
BELOW PAVED OR CONCRETE AREAS	95%
TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL	95%
BELOW LOAM AND SEED AREAS	90%

*ALL PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM PROCTOR DENSITY.

6. ADJUST ALL MANHOLES, CATCH BASINS ETC. WITHIN LIMITS OF WORK TO FINISHED GRADE.
7. EROSION CONTROL DEVICES SHALL BE INSPECTED AFTER EACH RAIN STORM OF 0.25 INCHES OR GREATER. DAMAGED EROSION CONTROL DEVICES SHALL BE REPAIRED/MODIFIED AS NECESSARY.
8. ALL TEMPORARY LOAM STOCKPILES SHALL RECEIVE TEMPORARY EROSION CONTROL MEASURES.
9. EROSION CONTROL BLANKETS SHALL BE INSTALLED ON ALL SLOPES STEEPER THAN 3:1.
10. ALL CATCH BASINS SHALL RECEIVE SILT SACKS FOLLOWING INSTALLATION.

UTILITIES NOTE:
ALL ELECTRIC, GAS, TELEPHONE, WATER, SEWER AND DRAIN SERVICES ARE SHOWN IN SCHEMATIC FASHION. THEIR LOCATIONS ARE NOT PRECISE OR NECESSARILY ACCURATE. NO WORK WHATSOEVER SHALL BE UNDERTAKEN ON THIS SITE USING THIS PLAN TO LOCATE THE ABOVE SERVICES. CONSULT WITH THE PROPER AUTHORITIES CONCERNED WITH THE SUBJECT SERVICE LOCATION FOR INFORMATION REGARDING SUCH. CALL DIG-SAFE: 1-888-DIG-SAFE (1-888-344-7233)

ENDANGERED SPECIES NOTE:
PERSONNEL WORKING AT THIS JOB SITE SHOULD BE MADE AWARE OF THE POTENTIAL TO ENCOUNTER PROTECTED TURTLES ESPECIALLY DURING TURTLE NESTING SEASON WHICH EXTENDS FROM LATE MAY THROUGH THE END OF JUNE. IF BLANDING'S OR OTHER PROTECTED TURTLE SPECIES ARE FOUND LAYING EGGS IN A WORK AREA, PLEASE CONTACT KIM TUTTLE OR MIKE MARCHAND, WETLANDS SYSTEMS BIOLOGISTS WITH NH FISH AND GAME, AT 603-271-3018 FOR INSTRUCTIONS.

NO.	REVISIONS	DATE	INT.
5.	INITIAL SUBMISSION TO BARRINGTON PLANNING BOARD	9/17/14	AJC
4.	REVISED PER TOWN PLANNER COMMENTS DATED 10/7/14	10/8/14	AJC
3.	REVISED PER REVIEW ENGINEER COMMENTS DATED 11/6/14	11/13/14	AJC
2.			
1.			

SEAL

DATE: 9/17/14
SCALE: 1" = 20'
DESIGNED BY: A.C./MJS
DRAWN BY: A.C.
APPROVED BY: MJS
DWG. FILE: 14028C15.dwg

GRADING, DRAINAGE, UTILITIES & EROSION CONTROL PLAN

prepared for
TURBOCAM
MAP 234, LOT 1.5
ROUTE 9 BARRINGTON, NH

MJS ENGINEERING, PC
Mark J. Sievert, P.E.
Mike Sievert, Jr.
Civil Engineering Consultants
Land Development Consultants
Site Development Consultants
Environmental Consultants
Land Surveyors
Fine Home Design Consultants

JOB: 14-028

C2

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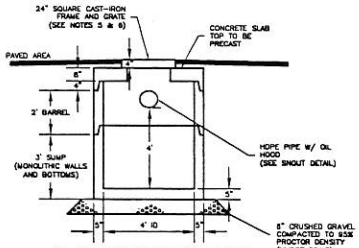
Plot Date: Nov 20, 2014 - 11:11am

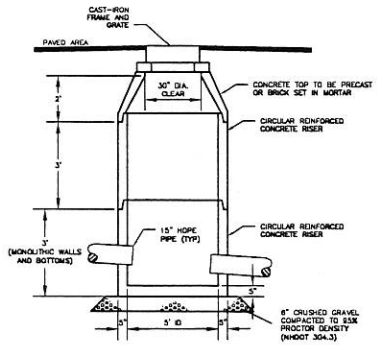


SLAB TOP CATCH BASIN

N.T.S

CATCH BASIN AND DRAIN MANHOLE NOTES:

1. DRAINAGE STRUCTURE MATERIALS SHALL COMPLY WITH NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION, DIVISION 600, SECTION 604.
2. SITE CONTRACTOR SHALL BACKFILL AROUND DRAINAGE STRUCTURES IN 6 TO 8 INCH LIFTS, ATTAINING 95% MAXIMUM PROCTOR DENSITY FOR EACH LIFT.
3. PIPE OPENINGS SHALL BE FULLY MORTARED ON OUTSIDE PRIOR TO BACK FILLING. INSIDE OF PIPE OPENINGS SHALL BE MORTARED AND ALLOWED TO CURE PER MANUFACTURERS REQUIREMENTS PRIOR TO RECEIVING RUNOFF.
4. JOINTS BETWEEN ADJACENT RISERS SHALL BE FULLY SEALED WITH ELASTOMERIC SEALANT PER MANUFACTURERS REQUIREMENTS.
5. WHEN FRAME/GRATE ARE LOCATED IN A PAVED AREA, THEY SHALL BE BROUGHT TO FINISH GRADE AFTER BINDER COURSE PAVEMENT IS PLACED. THE EXCAVATION REQUIRED AROUND THE GRATE AND FRAME SHALL BE BACKFILLED FLUSH WITH THE TOP OF BINDER COURSE WITH NHDOT CLASS B CONCRETE.
6. FRAME AND GRATE:
   CATCH BASIN:
   NHDOT TYPE B BY NEENAH FOUNDRY
   R-3570-A (4" FLANGE)
   HEAVY DUTY OR EQUAL
   DRAIN MANHOLE:
   NEENAH FOUNDRY
   R-1743
7. CB #6 AND CB #7 TO ACCOMMODATE SNOUT AND BIO-SKIRT. SUMP DEPTH OF 48" EXCEEDS REQUIREMENTS FOR SNOUT AND BIO-SKIRT.

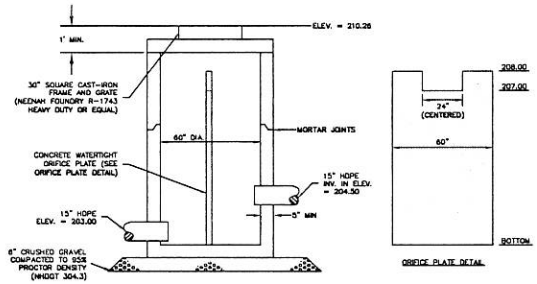


DRAIN MANHOLE

N.T.S

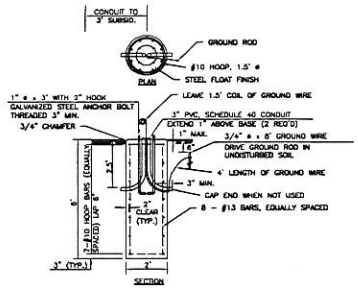
NOTE:

1. MINIMUM 37.5" SUMP REQUIRED FOR DMH #2, DMH #4, AND DMH #8 TO ACCOMMODATE SNOUT AND BIO-SKIRT



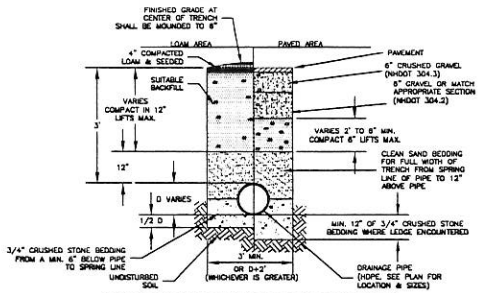
OUTLET CONTROL STRUCTURE

N.T.S



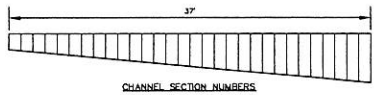
CONCRETE LIGHT POLE BASE

N.T.S

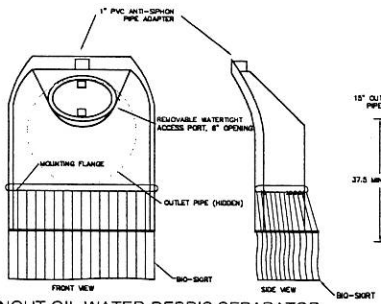


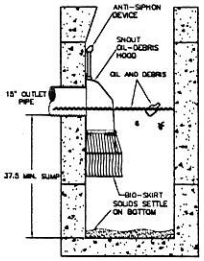
STANDARD DRAINAGE PIPE TRENCH

N.T.S



CHANNEL SECTION NUMBERS





SNOUT OIL-WATER-DEBRIS SEPARATOR WITH BIO-SKIRT

N.T.S

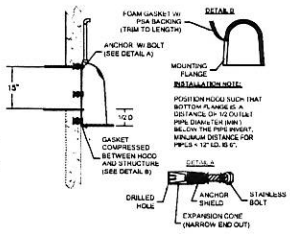
NOTES:

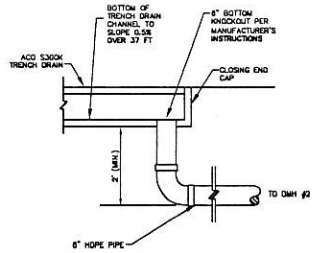
1. SNOUT MODEL 18R. SNOUT TO BE INSTALLED WITH BIO-SKIRT WHERE NOTED.
2. INSTALL SNOUT AND BIO-SKIRT PER MANUFACTURERS SPECIFICATIONS.
   SNOUT AND BIO-SKIRT MANUFACTURED BY:
   BMP, INC.
   53 MT. ARCHER ROAD, LYME, CT. 06371
   (800) 504-8008 FAX: (860)434-3183
3. FOR SALES, CONTACT: HANCOR
   GEOFF HUSBARD - (603)-988-7583
   88 SOUTH STREET
   PORTSMOUTH, NH 03801

MAINTENANCE NOTES:

1. MAINTAIN THE SNOUT AND BIO-SKIRT PER MANUFACTURERS REQUIREMENTS.
2. THE STRUCTURE SHOULD BE CLEANED WITH A VACUUM TRUCK WHEN THE SUMP IS HALF FULL OF SOLIDS (18" FROM THE BOTTOM). STRUCTURE SHOULD ALSO BE CLEANED IN THE EVENT OF A SPILL.
3. THE BIO-SKIRT SHOULD BE CHECKED ON A MONTHLY BASIS AND SERVICED OR REPLACED ANNUALLY OR WHEN MORE THAN 2/3 OF THE BOOM IS SUBMERGED, INDICATING A NEARLY SATURATED STATE. BIO-SKIRT MAY BE WRUNG OUT TO REMOVE ACCUMULATED OILS AND WASHED IN AN INDUSTRIAL WASHING MACHINE IN WARM WATER AND REUSED AS LONG AS MATERIAL MAINTAINS ITS STRUCTURAL INTEGRITY. IN THE EVENT OF A SPILL IMMEDIATELY SERVICE OR REPLACE BIO-SKIRT.
4. THE ANTI SIPHON VENT AND ACCESS HATCH ON THE SNOUT SHOULD BE INSPECTED ANNUALLY. A SIMPLE FLUSHING OR A GENTLE RODDING WITH A FLEXIBLE WIRE OF THE SIPHON VENT WILL SUFFICE. THE ACCESS HATCH SHOULD BE OPENED AND CLOSED ONCE A YEAR.
5. ALL COLLECTED WASTES MUST BE HANDLED AND DISPOSED OF ACCORDING TO LOCAL ENVIRONMENTAL REQUIREMENTS.

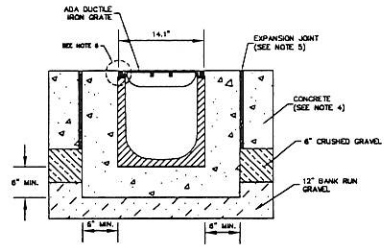
INSTALLATION DETAIL





TRENCH DRAIN DETAIL

N.T.S



ACO S300K POWERDRAIN TRENCH DRAIN INSTALLED IN CONCRETE

N.T.S

NOTES:

1. TRENCH DRAIN MANUFACTURED BY ACO POLYMER PRODUCTS, INC.
   FOR SALES, CONTACT:
   JASON BUTLER
   ACO NORTHEAST REGION CONTACT
   (413) 652-1620
2. TRENCH DRAIN SYSTEM SHALL BE ACO S300K OR APPROVED EQUAL. GRATE SHALL BE MEDIUM INDUSTRIAL CLASS E, ADA IRON. TRENCH DRAINS SHALL BE PRE-SLOPED AT 0.5%. TRENCH DRAINS ARE AVAILABLE IN 3.28 FOOT (1-METER) SECTIONS. INSTALL PER MANUFACTURERS SPECIFICATIONS.
3. CHANNELS ARE AVAILABLE IN PRE-SLOPED 3.28 FT (1 METER) CHANNELS. A LIMITED NUMBER OF NEUTRAL (NON-SLOPED) CHANNELS ARE AVAILABLE IN 1.64 FT (0.5 METER) SECTIONS. ONE NEUTRAL CHANNEL (1.64') WILL BE REQUIRED FOR THE #6-25 SECTION RUN OF 3.28 FOOT SECTIONS. THIS ADDITIONAL SECTION WILL BE LOCATED BETWEEN #19 AND #20.
4. CONCRETE STRENGTH SHALL BE 3000 PSI. THE CONCRETE SHOULD BE VIBRATED TO ELIMINATE AIR POCKETS.
5. INSTALL EXPANSION AND CRACK CONTROL JOINTS TO PROTECT THE CHANNEL AND THE CONCRETE SURROUND.
6. THE FINISHED LEVEL OF THE CONCRETE SURROUND MUST BE APPROX. 1/8" ABOVE THE TOP OF THE CHANNEL EDGE.
7. REFER TO ACO'S LATEST INSTALLATION INSTRUCTIONS FOR COMPLETE DETAILS. FOLLOW ALL MANUFACTURERS SPECIFICATIONS.

NO.	REVISIONS	DATE	INT.
2.	REVISED PER REVIEW COMMENTS DATED 11/4/14	11/13/14	AG
1.	REVISED PER TOWN PLANNER COMMENTS DATED 10/1/14	10/8/14	AG
0.	INITIAL SUBMISSION TO BARRINGTON PLANNING BOARD	9/17/14	KO

SEAL

DATE: 9/17/14
SCALE: AS SHOWN
DESIGNED BY: KO/AJS
DRAWN BY: KO
APPROVED BY: MJS
DWG FILE: 14028C18.dwg

CONSTRUCTION DETAILS
prepared for
TURBOCAM
MAP 234, LOT 1.5
ROUTE 9 BARRINGTON, NH

MJS ENGINEERING, PC

JOB: 14-028

C9

Drawing Name: P:\Work\14-028\Internal\Drawing Files\14028C18.dwg
Wed, 12 Nov 2014 - 11:46am