TOWN OF SANDWICH
OLDEST TOWN ON CAPE COD

DEPARTMENT OF PUBLIC WORKS

500 ROUTE 130, SANDWICH, MA 02563

DIRECTOR & TOWN ENGINEER 508.833.8002 ▪ FAX 508.833.8011
ASSISTANT TOWN ENGINEER 508.833.8000 ▪ FAX 508.833.8005
TREE WARDEN 508.833.8003 ▪ FAX 508.833.8011
EMAIL dpw@townofsandwich.net

April 27, 2011

Discharge Monitoring Reports (OES4 – SMR)
U.S. Environmental Protection Agency
5 Post Office Square – Suite 100
Boston, MA 02109-3912

Massachusetts Department of Environmental Protection
Division of Watershed Management
627 Main Street
Worcester, Massachusetts 01608

Subject: Annual Update - NPDES Phase II General Permit
Town of Sandwich Stormwater Management Plan: Year 8 Update

Dear U.S. EPA and MaDEP:

As required under the NPDES Stormwater General Permit, the Town of Sandwich hereby submits this annual update of the Town's Stormwater Management Plan (SMP). This report is a continuation of the original 5-year permit issued for the Town of Sandwich. During the eighth year, the Town continued many efforts implemented in the initial permit and strove to meet goals that were planned but not met within the first five years. An update of Year 8 accomplishments are listed below and shown in the attached tables.

Year 8 Update
The Town of Sandwich continues to be very proactive in the field of stormwater management and has successfully fulfilled nearly all of its goals established in its Stormwater Management Plan over the 8-year period.

This Annual Update provides a look at major accomplishments, new programs and goals and the status of goals that have not been met as scheduled. Below is a summary of Year 8 implementation.

Major Eighth Year Accomplishments (Spring 2010 - Winter 2011)
Below is a list of some of the significant goals accomplished over the past year. Further details and illustrations of these accomplishments are show in the attached appendix.

Commencement of Comprehensive Water Resources Management Plan Development
The Town of Sandwich has begun Comprehensive Water Resources Management Planning to address water resource issues across Town, including stormwater management. In addition to stormwater, the work will assess and develop solutions for wastewater and

other potential pollution sources. The work is primarily funded through a legal settlement with a military contractor that operated on the Massachusetts Military Reservation and impacted groundwater resources in Town. Those funds have become available, and the Town has retained Wright-Pierce of Topsham, Maine. That firm has begun collecting background information and public outreach efforts. It is expected that significant progress will be made over the next year.

Stormwater Mitigation of Mill Creek

Building on an effort that started back in 1990, the Town of Sandwich has continued implementing BMP retrofits through another state grant (319 – Non-point Source Pollution). Construction of the first and second phases are complete and construction of the third phase is underway. The BMPs installed by this program will mitigate stormwater pollution entering Mill Creek, a tributary of Sandwich Harbor. The grant also includes an educational aspect, actively involving local students with stormwater matters.

Shellfishing had been prohibited by the State at Sandwich Harbor since 1985 due to bacteriological contamination. Starting with illicit detection inspection in 1990 and continuing with Coastal Pollution Remediation (CPR) grants and now the 319 grant, the Town continues to actively mitigate stormwater impacts in the Town of Sandwich. The Towns efforts to abate pollution, including stormwater mitigation, have resulted in the recent reopening of the shellfish beds by the Division of Marine Fisheries.

This year the Town began design work for stormwater treatment improvements in the historic Jarvesville section of old Sandwich village. This area also drains to Sandwich Harbor. Funding is being provided by the United States Department of Agriculture's Natural Resource Conservation Service.

In addition to the above work, Sandwich's Natural Resource Department is seeking funds to study and restore Brady's Island Marsh, which is connected to Mill Creek. The study will focus on identifying pollution sources impacting the marsh and methods to rehabilitate the marsh.

Environmental Exposition at Sandwich High School

The Engineering Department attends an Environmental Expo at Sandwich High School each year to view projects completed by the senior class. The Engineering Department assists students throughout their project period by providing mapping and stormwater information related to their local projects.

Sandwich Elementary School Water Festival

The Town continues to participate in Water Festivals held by the Cape Cod Commission and Americorps Cape Cod. These annual events educate elementary students about stormwater impacts and methods to minimize these impacts.

Household Hazardous Products Collection

The Town collaborates annually with four other neighboring communities to provide opportunities for residents to properly dispose of household hazardous products. This reduces the amount of hazardous material released to the environment, including water resources.

Community Pride Day
The Town of Sandwich continues the annual Community Pride Day where residents participate in the cleanup of the Town. The DPW distributes equipment to assist in the cleanup of trash and identifies locations where residents can focus their efforts, such as at walking trails, roadsides, beaches, marshes and along shorelines. This event helps prevent trash from entering our valuable water bodies.

Stormwater Inspections and Monitoring
The Town continues to monitor erosion control at developments and inspect illicit connections throughout town as part of its SMP. The Town's enforcement of this program has effectively cleaned up many sites, minimizing impacts to the Town's drainage system and water bodies.

Stormwater Management Plan on Display
The Stormwater Management Plan is on display on the Town's web site for public viewing. Additionally, the Town's GIS allows the public to pinpoint specific stormwater problems and relay this information via e-mail to the Department of Public Works. The e-mail shows a map and ID number of the drainage facility so the DPW can quickly respond to any drainage issues. This process also allows accurate record keeping by the DPW.

Water Quality Groups
The Town of Sandwich is proactive in matters related to water quality in Sandwich and on Cape Cod. The Town has many public officials and volunteers actively involved with water quality committees including but not limited to the Sandwich Water Quality Advisory Board, Mass Estuaries Program, Popponesset Bay State DEP Pilot Intra-municipal Work Group and 3 Bays Initiative.

Status of Goals for Year 8
Similar to the original table submitted for the NPDES General Permit, the attached table shows goals proposed for all Six Control Measures. This updated table reflects new goals and the status of Year 1 through 8 goals. The yellow highlighted cells represent goals scheduled and met in each season of respective years. Words highlighted in red represent goals that have not yet been reached. New goals mentioned earlier have also been included in the table.

The attached appendix shows several of the actions performed by the Town to meet the Year 8 goals listed in the table.

Overall Status of 8-Year Permit Term
As can be seen in the attached table, almost all of the goals in the Town's SMP have been met over the 8-year permit period. It's important to note that several new goals were added to the Six Control Measures as the SMP evolved. Goals that were not achieved under the 8-year permit are shown below. In all instances, these goals will be accomplished in future years, as identified in the table. Note: Some of the goals overlap in the Six Control Measures.

Unmet Goals of Six Control Measures
5.1 Public Education & Outreach
1k. Catch Basin Stencils – Future Goal
With assistance from Americorps Cape Cod, the Town will glue approximately 100 storm drain markers and distribute 500 door hangers in the environmentally sensitive Town Neck area of Sandwich, which borders Mill Creek and Sandwich Harbor. This project will begin in the summer of 2011.

5.4 Construction Stormwater Runoff Control
4g. Recommended BMP's – Future Goal
The Town requires developers to design drainage facilities using BMP's. The Town had anticipated the Cape Cod Commission obtaining a grant to create a list of "Cape Cod BMP's" to distribute to developers. Since the grant was not awarded, the Town has begun to develop its own brochure and list of BMP's. This work is underway and is anticipated to be completed in permit year 9.

4i. Erosion Control Guidelines – Future Goal
The Town has begun to update its current Erosion Control Guideline to reflect current BMP practices and design. This guideline will be available for developers and homeowners. The guideline will also complement enforcement letters for non-compliance. This work is underway and is anticipated to be completed in permit year 9.

5.5 Post Construction Stormwater Management
5f. Recommended BMP's – Future Goal. See Unmet Goal 5.2, 4g above.

5h. Erosion Control Guidelines – Future Goal. See Unmet Goal 5.2, 4.i above.

Future Stormwater Management Plan & Permit
As mentioned above, the Town plans to complete the remaining goals of the SMP during the next permit and will continue implementing most of the SMP goals annually.

The Town will add to its SMP goals as necessary to meet compliance requirements of new permits issued by EPA and DEP. Several of the preliminary requirements for the new permit listed in the EPA letter dated August 3, 2007 are goals that the Town of Sandwich has already implemented. The Town anticipates that it will be able to comply with the others as staffing and funding becomes available.

Conclusion

The Town of Sandwich's accomplishments over the past eight years meet or exceed nearly all of the scheduled goals. Additionally, new goals have been created to further enhance the Towns Stormwater Management Plan. We trust that these accomplishments will satisfy the Massachusetts Department of Environmental Protection and the United States Environmental Protection Agency requirements for this permit. Please contact Sam Jensen of the Sandwich Engineering Department if you have any questions or require further information regarding the Year 8 Annual Update.

Sincerely,

Samuel J.P. Jensen, P.E.
Assistant Town Engineer

Encl.

cc: G. Dunham, Town Manager
P. Tilton, DPW Director, Town Engineer

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Watershed Management

BRP WM 08A NPDES Stormwater General Permit Notice of Intent
for Discharges from Small Municipal Separate Stormwater Sewer Systems (MS4's)
F. Storm Water Management Program TIME FRAMES

Transmittal Number: W035665

Facility ID (if known): _____

BMP ID #	PERMIT YEAR ONE Spring 03	Summer 03	Fall 03	Winter 03-04	PERMIT YEAR TWO Spring 04	Summer 04	Fall 04	Winter 04-05	PERMIT YEAR THREE Spring 05	Summer 05	Fall 05	Winter 05-06	PERMIT YEAR FOUR Spring 06	Summer 06	Fall 06	Winter 06-07	PERMIT YEAR FIVE Spring 07	Summer 07	Fall 07	Winter 07-08	PERMIT YEAR 6 ACHIEVEMENTS	PERMIT YEAR 7 ACHIEVEMENTS	PERMIT YEAR 8 ACHIEVEMENTS	STATUS: Goals	STATUS: Comments
5.1: Public Education & Outreach																									
1a																								Current Educational Brochures	Brochures available at Town buildings and distributed at Stormwater events. Earth Day Events.
1b																								Development Review	Continue to enforce stormwater and erosion regulations during development review.
1c																								Public Display of Stormwater Mgmt Plan	Displayed on Town web site and at Public Library.
1d																								Public Meeting	Held Public Meeting. Updated Board of Selectmen on SMP - BoS endorsed continuation.
1e																								Proposed Educational Brochure	Continue to distribute brochures and educational information.
1f																								Outfall & Catch Basin ID & Mapping	GIS Drainage Layer is complete. Continue drainage updates.
1g																								Web Site Information	SMP is displayed on web site. Future Stormwater information to be displayed on web.
1h																								Educational Festival	Participated in Water Festivals at Elementary Schools w/ County and AmeriCorps.
1i																								Educate DPW Employees	Educated DPW employees about disposal and containment of hazardous wastes
1j																								Educational Video	AmeriCorps Cape Cod w/ Stormwater video in Sandwich complete
1k																								Catch Basin Stencils	Placing approx 100 CB markers & 500 door hangers in Town Neck area during summer.
1l																								Stormwater Posters	Displayed 4 stormwater posters in several Town offices.
1m																								Student Involvement	Assisted Environmental Science Classes at High School.
1n																								Stormwater Committee	Project Storm team continues to meet to discuss stormwater and implement Phase II Regs
1o																								Environmental Expo Review Team	Member of Environmental Expo Review Team for Sandwich High School
5.2: Public Involvement & Participation																									
2a																								Development Review	Continue to enforce stormwater and erosion regulations during development review.
2b																								Public Meeting	Held Public Meeting. Updated Board of Selectmen on SMP - BoS endorsed continuation.
2c																								Public Display of Stormwater Mgmt Plan	Displayed on Town web site and at Public Library.
2d																								Proposed Educational Brochure	Continue to distribute brochures and educational information.
2e																								Illicit Discharge Identification	Continued inspection of potential illicit connections.
2f																								Outfall & Catch Basin ID & Mapping	W/ AmeriCorps, identified over 2,500 CB's and outfalls w/ GPS. Report is available. GIS complete.
2g																								Water Monitoring Program	Health Dept performs annual sampling.
2h																								Educational Video	AmeriCorps Cape Cod w/ Stormwater video in Sandwich complete
2i																								Educational Festival	Participated in Water Festivals at Elementary Schools w/ County and AmeriCorps.
2j																								Student Involvement	Taught HS class, interacted w/ students on projects & involved them with data collection.
2k																								Stormwater Committee	Formed Cape-wide group w/ CCC to develop & distribute educational info related to stormwater
5.3: Illicit Discharge Detection & Elimination																									
3a																								Household Hazardous Waste Program	Continue to distribute info and schedule household hazardous waste collection days w/ County.
3b																								Sandwich Village Stormwater Assessment	Cont'd using Town funds/grants to mitigate stormwater. Completed construction of 319 grant.
3c																								Illicit Discharge & Dumping Identification	Continued inspections of illicit discharges. Inspected and issued notices to sump pump owners.
3d																								Catch Basin Cleaning	Continue to clean & monitor CB conditions. GIS drainage layer complete.
3e																								Outfall & Catch Basin ID & Mapping	W/ AmeriCorps, identified over 2,500 CB's and outfalls w/ GPS. Report is available. GIS complete.
3f																								Educational Information	Displayed posters & distributed brochures to public & developers. Earth Day Activities.
3g																								Allowable Non-Stormwater Discharges	Will continue to search for non-stormwater discharges that may be significant polluters.
3h																								Town Bylaw - Illegal Disposal	Town By-law includes illegal disposal law and fines. Will continue to update regs as necessary
3i																								Water Sampling	Town continues sampling to monitor water quality improvements and to use for stormwater grants.

Note: Many of the BMP's above will continue beyond the initial 5-year permit period.
= Goals completed in the season & year shown above. Words in Red = goals not accomplished under the five year permit.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Watershed Management

BRP WM 08A NPDES Stormwater General Permit Notice of Intent
for Discharges from Small Municipal Separate Stormwater Sewer Systems (MS4's)
F. Storm Water Management Program TIME FRAMES

Transmittal Number: W035665

Facility ID (if known): _____

BMP ID #	PERMIT YEAR ONE				PERMIT YEAR TWO				PERMIT YEAR THREE				PERMIT YEAR FOUR				PERMIT YEAR FIVE				PERMIT YEAR 6 ACHIEVEMENTS	PERMIT YEAR 7 ACHIEVEMENTS	PERMIT YEAR 8 ACHIEVEMENTS	STATUS	
	Spring 03	Summer 03	Fall 03	Winter 03-04	Spring 04	Summer 04	Fall 04	Winter 04-05	Spring 05	Summer 05	Fall 05	Winter 05-06	Spring 05	Summer 05	Fall 05	Winter 05-06	Spring 07	Summer 07	Fall 07	Winter 07-08				Goals	Comments
5.4: Const. Stormwater Runoff Control																									
4a																								Town Bylaw - Driveway Regulation	Continue to enforce driveway regulations to minimize stormwater impacts.
4b																								Existing Laws & Regulations	Continue to enforce stormwater and erosion regulations and will evaluate need for updates.
4c																								Educational Info & Public Participation	Distributed & displayed educational information. Earth Day Activities. Water & Sewer article.
4d																								Development Review	Continue to enforce stormwater and erosion regulations during development review.
4e																								Consideration of Public Information	Public notifies DPW of drainage issues via GIS. Town will solicit input on SMP and from web site.
4f																								Site Inspections	Town officials continue to inspect & enforce regulations related to stormwater & erosion control.
4g																								Recommended BMP's	Required BMP's thru development review. Town will complete BMP List for developers..
4h																								Zoning Bylaw - Erosion Control	Erosion control law in place and being enforced by site visits. Update as necessary.
4i																								Erosion Control Guidelines	Will include with recommended BMP List for distribution. Old version is being updated.
4j																								Subdivision Rules & Regulations	Made changes to stormwater regs in the Subdivision Rules & Regulations. Update as necessary.
4k																								Water Sampling	Health Department/County sample water quality annually. DPW sampled Mill Creek for 319 Grant.
4l																								Stormwater Posters	Displayed 4 Stormwater posters in Town buildings.
5.5: Post-Construction Stormwater Management																									
5a																								Growth Incentive Zones - Stormwater Plans	Working with CCC on Growth Centers and Local Comprehensive Plan to address these issues.
5b																								Existing Laws and Regulations	Continue to enforce stormwater and erosion regulations and will evaluate need for updates.
5c																								Educational Info & Public Participation	Distributed & displayed educational information. Earth Day Activities. Water & Sewer article.
5d																								Development Review	Continue to enforce stormwater and erosion regulations during development review.
5e																								Catch Basin Cleaning	Continue to clean & monitor CB conditions. Will include Maintenance Plan on GIS.
5f																								Recommended BMP's	Required BMP's thru development review. Town will complete BMP List for developers.
5g																								Zoning Bylaw - Erosion Control	Erosion control law in place and being enforced by site visits. Will update w/ BMP focus
5h																								Erosion Control Guidelines	Will include with recommended BMP List for distribution. Old version is being updated.
5i																								Subdivision Rules & Regulations	Made changes to stormwater regs in the Subdivision Rules & Regulations. Update as necessary.
5j																								Water Sampling	Health Department and County continue to sample water quality and report to DPW.
5k																								Stormwater Posters	Displayed 4 Stormwater posters in Town buildings.
5.6: Pollution Prevention & Good Housekeeping in Municipal Operations																									
6a																								Stormwater Mitigation w/ BMP's	Cont'd using Town funds/grants to mitigate stormwater. Completed construction of 319 Grant
6b																								Pollution Control & Mitigation Measures	Installed fuel spill cleanup kit. Will continue pollution control at DPW and Town buildings.
6c																								BMP Projects on Town-Owned Land	Will continue to implement BMP's at townwide projects.
6d																								DPW: On-Site Stormwater Containment	DPW inspects Transfer Station drainage facilities quarterly and entire site annually.
6e																								DPW Environmental Audit - EPA Program	Constructed Salt Shed and Interior washing area in DPW Garage.
6f																								DPW Maintenance Program	DPW uses GIS to assist w/ catch basin maintenance records
6g																								DPW Training	Employees are trained about stormwater impacts. DPW attends stormwater seminars
6h																								Tree Planting Program	Town has completed a Tree Inventory and Management Plan for Sandwich Village.
6i																								DPW Brochures	DEP and other agency brochures/FAQ are made available to employees/public. On web.

Note: Many of the BMP's above will continue beyond the initial 5-year permit period.
= Goals completed in the season & year shown above. Words in Red = goals not accomplished under the five year permit.

Massachusetts Department of Environmental Protection
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5.7: BMP's for Meeting TMDL																									
7a																								Identification & Mapping of Outfalls & CB's	W/ AmeriCorps, identified over 2,500 CB's and outfalls w/ GPS. Report is available. GIS complete.
7b																								Water Sampling	Town and County continue sampling efforts. DPW will use for grants & BMP projects.
7c																								BMP Mitigation	Cont'd using Town funds/grants to mitigate stormwater. Completed construction of 319 Grant.
7d																								Public Education & Participation	Distributed & displayed educational information. Earth Day Activities. Water & Sewer article.
7e																								DPW Maintenance, Cleanup &	DPW inspects, maintains and records any information related to stormwater impacts.
																								Identification of Illegal Disposals	

Note: Many of the BMP's above will continue beyond the initial 5-year permit period.
= Goals completed in the season & year shown above. Words in Red = goals not accomplished under the five year permit.

APPENDIX
YEAR 8 UPDATE

- COMPREHENSIVE WATER RESOURCES MANAGEMENT PLAN
- STATE 319 GRANT - STORMWATER MITIGATION OF MILL CREEK
- USDA-NRCS GRANT – SANDWICH HARBOR STORMWATER MITIGATION
- COMMUNITY PRIDE DAY – TRASH CLEANUP
- HOUSEHOLD HAZARDOUS PRODUCTS COLLECTION

Sandwich Kicks Off Wastewater Management Plan

Town To Benefit Of Learning From Others

By MARY STANLEY

A seven-hour workshop held last Friday to discuss a comprehensive water resources management plan for the town received high marks, from both the people who hosted it and people in attendance.

"It was excellent. It was very beneficial in terms of what needs to be done. The big takeaway from this workshop is that this is no longer about sewering an entire town. It's about coming up with the best approach for water quality for each section of town," said Selectman Linell M. Grundman.

Members from various boards and committees as well as business owners and Sandwich Chamber of Commerce director Kathleen M. Bavelock attended the workshop.

"It was a great turnout. I was happy to see so many different interested people come to the workshop. There were very good comments. The event was a success," said Michael Giggey, project manager for Wright-Pierce Consulting, the company hired to create a water resources management plan for the town.

Health Inspector David B. Mason said the purpose of the workshop was to outline the process for creating a plan and how that plan is going to proceed.

"The workshop was designed to get as many decision-makers in town informed about what has been done, what is being done and why the process is happening," he said.

These decision-makers include members of local boards and committees such as board of health, conservation, board of selectmen, water district and the planning board.

"They are the committees that will make the policy decisions as things come up," he added.

Mr. Giggey said even though the town is waiting on scientific data from the Massachusetts Estuaries Project, data which is critical to determine how nitrogen loading is impacting areas such as Scorton Creek and Sandwich Harbor, the town can move forward on other pieces of the plan while waiting for those technical reports.

"A good wastewater plan is based on water use records," Mr. Giggey said.

To that end, he said, the project team will be looking to the Sandwich Water District for information about water usage in Sandwich. Once that is determined, Mr. Giggey said, they will be able to estimate how much of that water usage ends up as wastewater. Typically, he said, 85 percent to 90 percent of water usage is wastewater.

However, he said, the estimate that will be much more difficult to project is the growth component. Mr. Giggey explained that if a town is feeding into a watershed, such as Popponesset Bay and the amount of nitrogen going into that bay needs to be reduced by 50 percent to achieve water quality, it is important for a town to consider any potential growth that could skew the number. He explained that even if a town reduced its nitrogen loading by 50 percent, if new businesses result in an additional 50 percent of nitrogen flowing back into the bay, the initial reduction achieved is offset by the new growth of business.

"The growth component can be very expensive to deal with. It's a high stakes game, but the estimation of growth is very important. Once the town figures out the possibility of growth, then it needs to determine how much it is going to spend to deal with that," Mr. Giggey said.

While a town could place the burden of wastewater infrastructure on the backs of developers, Mr. Giggey said that may not be the most ideal or cost-effective option. He explained that if there are several developers or business owners putting in wastewater facilities, the result would be "unplanned piecemeal infrastructure."

"A single-plant solution could cost less for everybody," he said.

Mr. Giggey said there are three steps that must be completed before a town is ready to begin implementing a wastewater management system. He said the first step is the planning stage, which is the phase that Sandwich is at. The second step is the design stage, which requires engineering designs. The third step, and the most expensive, is the construction phase. "The last step is the most expensive. But you need to get the planning right so that [the final phase] is cost efficient," he said.

Sandwich is a part of the watershed of communities that include Falmouth, Mashpee, and Barnstable. While Sandwich has been criticized for its slow response in creating a plan to address nitrogen loading in Popponesset Bay, Mr. Mason said it was due to a lack of funding. Three years ago, however, the town applied for and was awarded a grant to help fund a project that would fulfill the town's obligation of the Clean Water Act, specifically the Massachusetts Estuaries Project. This grant was part of a $400,000 settlement that the state received from munitions company Textron Corporation for its role in the contamination of the Massachusetts Military Reservation.

Mr. Mason said there are some advantages to being a bit behind other towns in this process. He said Sandwich has had the benefit of learning from other towns' mistakes and can benefit from seeing which programs worked well in other towns. "We've only spent $400,000 as opposed to other towns who have spent $1 million or more. We're learning from other towns," Mr. Mason said.

Mr. Giggey agreed. "Sandwich is really in a good position. Several other towns have already laid the groundwork."

He added that because other towns have already begun the planning, the possibility exists that there may be opportunities for regionalizing some of the wastewater management work.

The Town of Sandwich held a household hazardous wa
High School. Old Televisions, paint, oil, computers, and
residents to have recycled and processed.

Town Refinances To On Debt Pay

By MARY STANLEY

Selectmen have approved refinancing some of the town's debt.

According to Town Treasurer Craig F. Mayen, with the town having a strong bond rating, which is somewhat akin to an individual's credit score, and lower interest rates, the timing was right to refinance $6.4 million worth of debt incurred in 2001 and 2003. With the original interest rates on these bonds set at 4.43 and 4.10 percent and the new interest rates set at 2.80 percent, this will translate into a $375,000 savings over the next 12 years. Mr. Mayen said this refinancing process does not extend the debt term, and the d was expected to be pai 2021 and 2023 will still at that time.

A portion of the $125,000, will go back state, since some of the c associated with the ex project at the high schoo the state's School Build thority paid 40 percent project cost. Still, Mr. said, the town is going to a $250,000 savings over 12 years.

"We have been lookir funding these bonds for year and a half. A yea half ago, we were goin fund one of the bonds

Talk Will Focus On High Cost Of Doing Business

Anyone wanting to explore the reasons for what business owners have called the "inordinately high" cost of unemployment insurance in Massachusetts or to discuss the financial challenges facing state and local governments is invited to hear John O'Leary present a talk entitled, "Confessions of a Former Unemployment Insurance Commissioner," on Wednesday from 8 to 9 AM at the Upper Cape Cod Regional Technical School, 220 Sandwich Road, Bourne.

The discussion is sponsored by the National Federation of Independent Business, in concert with the Cape Cod Canal Region, Falmouth and Mashpee chambers of commerce.

Registration for the free program will begin at 7:45 AM and a complimentary continental breakfast will be served.

Those attending are asked to respond to Christopher. Carlozzi@NFIB.org or call 617-482-1327 by Monday.

To Subscribe Call
1-800-286-7744 or
508-299-8379

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Earn up to 80% on outgrown clothing, toys, baby gear and more!
Save up to 90% off retail prices.
Support local businesses, families & nonprofits.
- APRIL 30 IN FALMOUTH -
Still Accepting Consignors.
Please visit our website for consignor registration, sale hours & location, nonprofit partnerships, and a special offer for Cape Cod teachers.

PAID POLITICAL ADVERTISEMENT PAID POLITICAL ADVERTISEMENT
Integrity • Experience • Commitment
Sherry Marshall

OPE
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Cape Cod
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2:30p Registrati
Tilden Arts
• Live Musi

SOUTHERN LIMIT OF COLDPLANE OF TUPPER ROAD.
NORTHERLY LIMIT AT INTERSECTION WITH ROUTE 6.

WORK TO BE DONE BY OTHERS.

PROPOSED PAVEMENT COLDPLANE AND OVERLAY

SURFACE: 1.5" HOT MIX ASPHALT (MODIFIED TOP COURSE MATERIAL)

INTERMEDIATE: 1.5" HOT MIX ASHPALT (FORMERLY BINDER)

TACK COAT SHALL BE APPLIED AT A RATE OF 0.07 GALLONS PER SQUARE YARD FOR M ILLED SURFACES AND 0.05 GALLONS PER SQUARE YARD FOR ALL SMOOTH SURFACES PRIOR TO BEING PAVED.

COLD PLANE DEPTH 2".

B-3 Log
7" Blacktop
3'-5' F silty sand to F sand
5'-7' M-C sand w gravel

GW @ 4.5' (~elev. 10.7)

SITE 1

ST-1
New 1500 Gal. ST
12" inv. in = 11.28
2-8" inv. out = 11.28
"Eliminator" over discharge pipe.

APPROX. EDGE OF EXCAVATION

14-Cultec 150s; 2x7 array approx. 52.5' x 2.75' x 1.54'H to serve CB-2O and CB-2A
8" inv. in = 11.18
Bottom elev. 10.76
Note: Excavate as needed to reach M-C sand.

2O
Rim Elev. = 15.90
8" out elev. 11.32
6" in elev. = ?

B-3

TUPPER ROAD

1996 CO. L.O. (APPROX.)

"buried cable"

Build new divider wall
top elevation = 12.20
12" inv. out = 11.38
Remove and replace top with new top and double frame and cover.
See Detail

2A
Rim Elev. = 13.81
8" out elev. 10.06
Rebuild top 2' of structure

M2A
Rim Elev. = 14.50
8" in elev. 9.83
8" in elev. 9.83
12"out elev. 9.67

APPROX. AREA OF FINAL REPAVEMENT

M2B
Rim Elev. = 14.60
8" out elev. 9.93
was cb, now dmh

GENERAL NOTES

1. All vessels including, but not limited to catchbasins, drain manholes, septic tanks, sleeves, and vessel covers, shall be designed and built for H-20 loading. Unless otherwise indicated, vessels shall be set on a 6" thick layer of 3/4" minus crushed stone compacted to 95% (MDPW M2.01.4) overlying a firm, stable subbase.

2. Existing conditions and topography obtained per field survey performed May 2008 by A T P ENVIRONMENTAL.

3. Topographic survey completed on NGVD. Benchmark to be used in construction is located on cb w/disk on Old Tupper Road; Elev. 19.49.

4. Soil borings log shown on plans is summary only. Full boring log is provided in specifications. Soil borings were performed in September 2008.

5. All new pipe is to be HDPE unless otherwise shown.

6. All discharge outlets to percolation systems shall be fitted with an appropriately sized oil trap hood.

7. New drain manholes and catchbasins
   a) Frame and cover to be Le Baron LA 246 (DMHs), LF 244 (CBs), LF 246 for CB-1.
   b) Hood in CB-1 to be Eliminator, BMP "Snout", Le Baron L201, or approved equal
   c) Set frame in full bed of mortar. Bricks (3-5 courses) may be used for grade adjusments.
   d) Mortar all joints
   e) Provide "V" openings for pipes with 2" clearance outside op pipe.
   f) Provide min. of 0.12 sq. in. of steel per vertical foot and place per AASHTO M199.
   g) Construction material for structure to consist of concrete block set in mortar or precast concrete with a 28 day compressive strength of 4000 psi.

8. Contractor must notify "DIGSAFE" at 1-888-344-7233 at least 72 hours prior to construction.

9. All new septic tanks shall have risers with frame and cover to grade as shown on Sheet 4. Frame and cover to be Lebaron LA 246. Septic tank hoods to be Eiminator, BMP "Snout", Le Baron L201, or approved equal.

10. Contractor shall comply with all applicable Federal, State, and local trenching requirements.

11. Provide a minimum of 24" clearance between edge of excavation and all catchbasins and drain manholes.

12. All pavement to be sawcut; no jack hammer cutting. Pavement patching shall be with binder only and may be 7" deep or more (See Boring B-3).

13. Additional erosion control measures shall be installed as determined necessary by the Conservation Commission, Natural Resource Officer, and/or the Herring Warden.

PROJECT LOCUS

1" = 2000'

SANDWICH CENTER

SITE 1

Sheet 1

SITE 2

SITE 3

SITE 4

Sheet 2

Sheet 3

SHEET LEGEND

TUPPER ROAD
No Scale

GRAPHIC SCALE
(IN FEET)

10 0 5 10 20 40

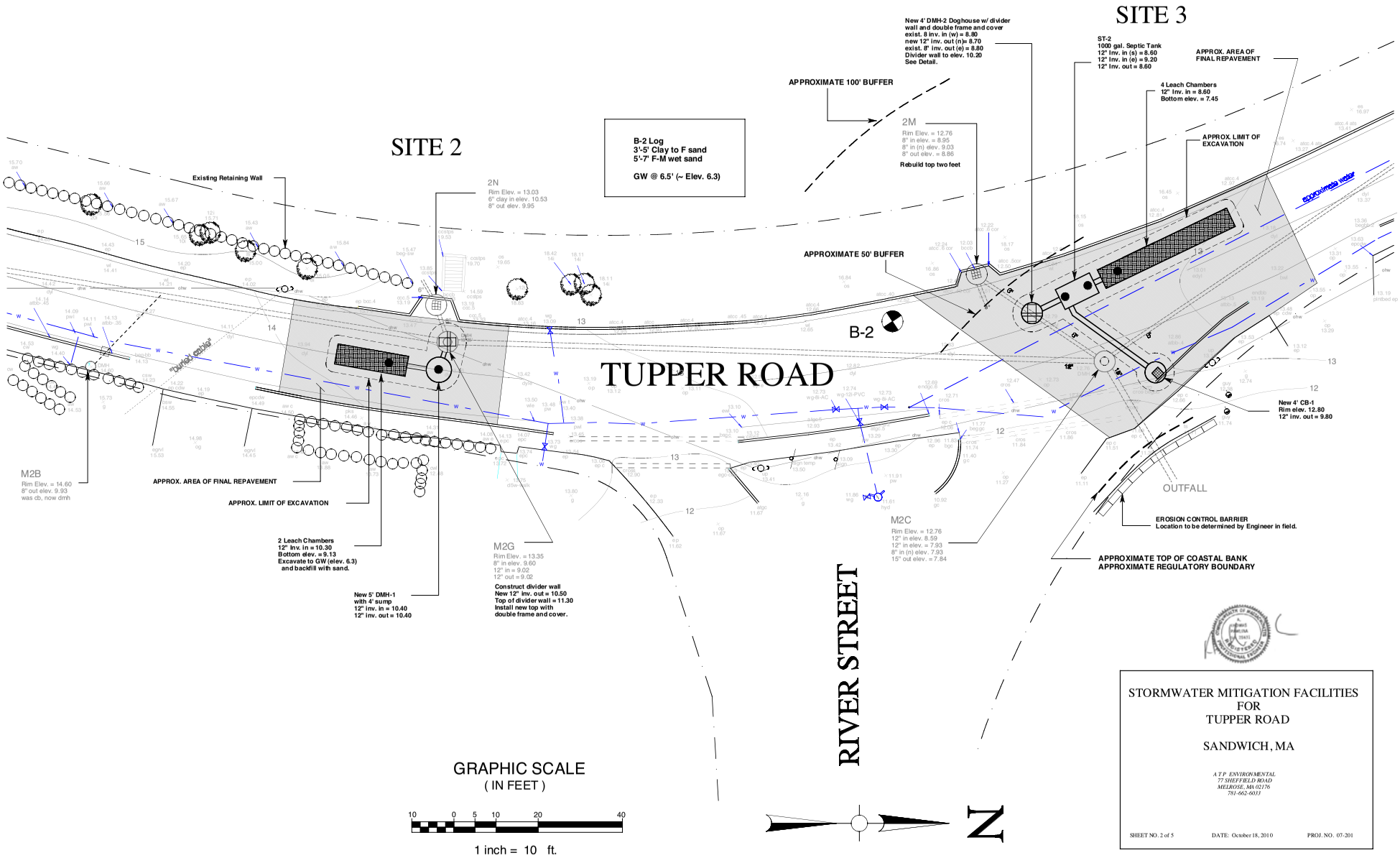
1 inch = 10 ft.

STORMWATER MITIGATION FACILITIES
FOR
TUPPER ROAD

SANDWICH, MA

A T P ENVIRONMENTAL
77 SHEFFIELD ROAD
MELROSE, MA 02176
781-662-6033

SHEET NO. 1 of 5 DATE: October 18, 2010 PROJ. NO. 07-201



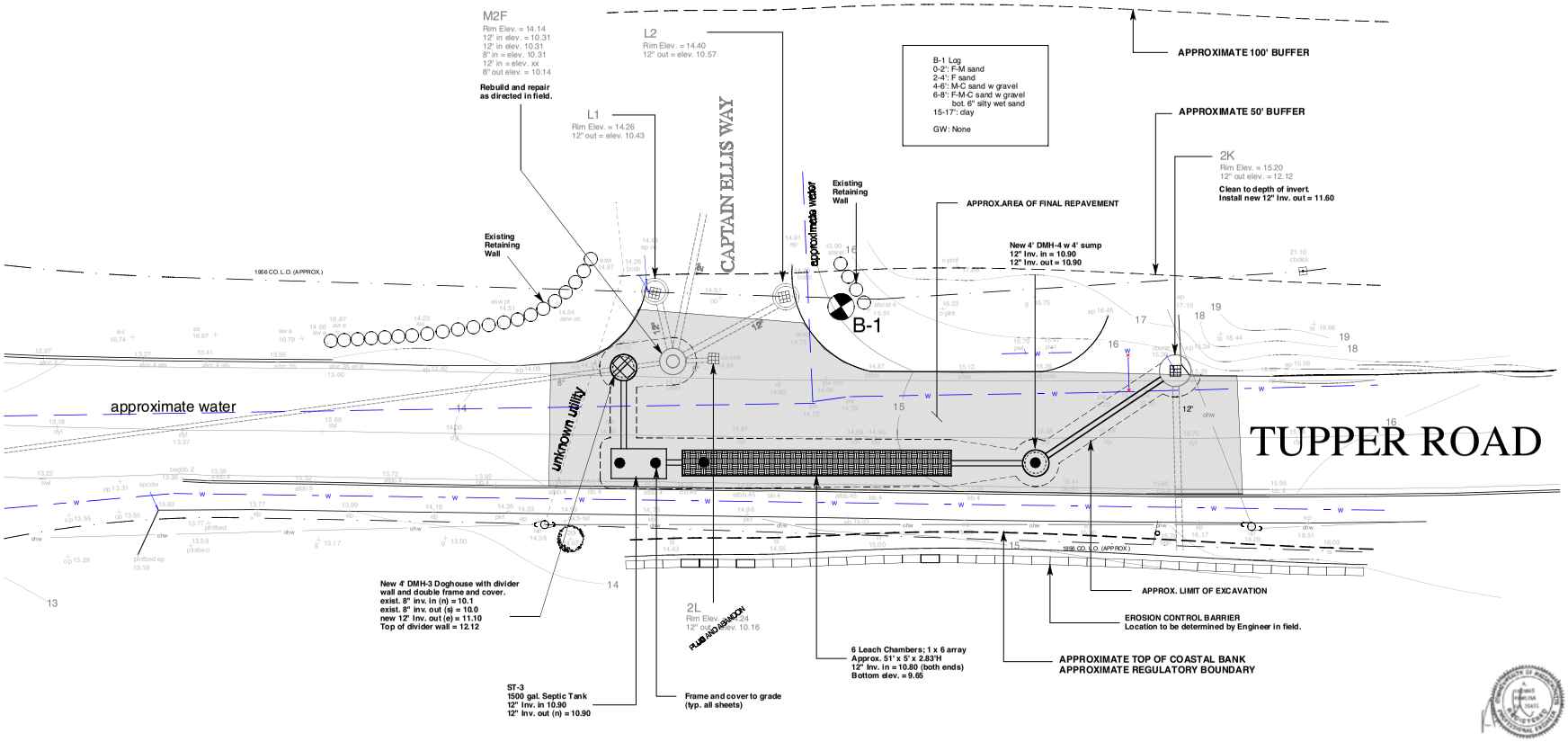
STORMWATER MITIGATION FACILITIES
FOR
TUPPER ROAD

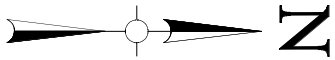
SANDWICH, MA

A.T.P. ENVIRONMENTAL
77 SHEFFIELD ROAD
MELROSE, MA 02176
781-662-6033

SHEET NO. 2 of 5 DATE: October 18, 2010 PROJ. NO. 07-201

SITE 4





GRAPHIC SCALE
(IN FEET)

1 inch = 10 ft.

STORMWATER MITIGATION FACILITIES
FOR
TUPPER ROAD

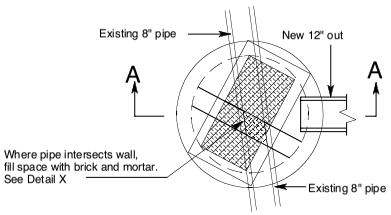
SANDWICH, MA

A T P ENVIRONMENTAL
77 SHEFFIELD ROAD
MELROSE, MA 02176
781-662-6033

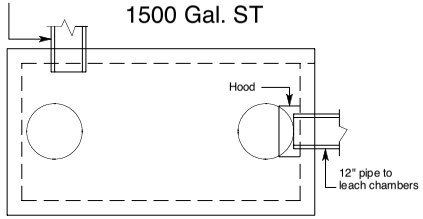
SHEET NO. 3 of 5 DATE: October 18, 2010 PROJ. NO. 07-201

DMH -3

Refer to Doghouse Detail

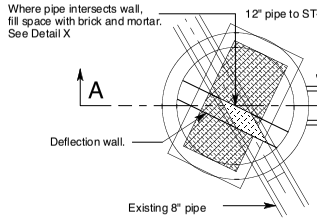


ST-3
1500 Gal. ST

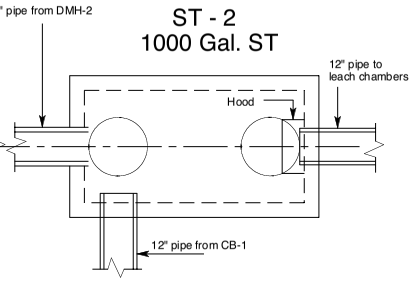


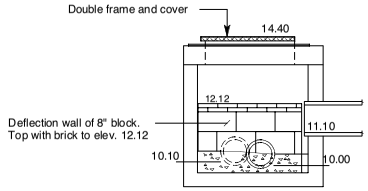
DMH -2

Refer to Doghouse Detail

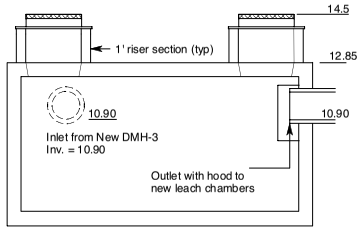


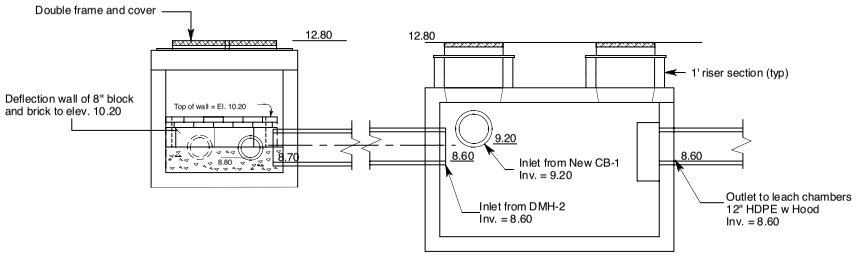
ST - 2
1000 Gal. ST

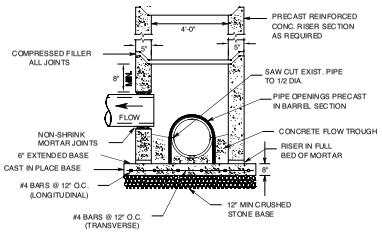




SECTION A-A

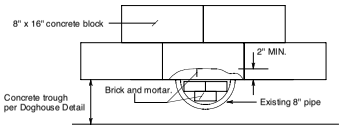






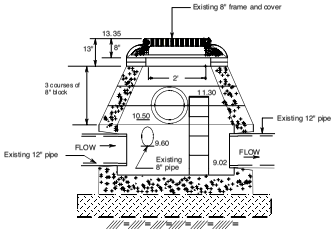
TYPICAL PRECAST DOGHOUSE
DRAIN MANHOLE

Detail X



1) Brick shall be placed such that it projects 2" min. upstream and downstream from wall.

2) Carry brick/mortar 2" min. above spring line, both sides.

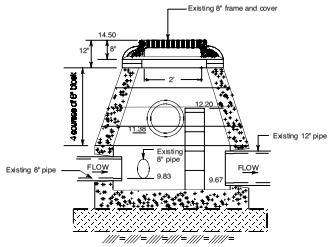


DMH M2G

No Scale

REBUILD M2G

1) Replace 3 courses of cone with 3 courses of barrel.
2.) Provide for new 12" pipe east.
3) Construct diversion wall of concrete block.
4) Install flat top with 24" Type "F" double frame and grate LeBaron LF 244 or approved equal.



DMH M2A

No Scale

REBUILD M2A

1) Replace 4 courses of cone with 4 courses of barrel.
2.) Provide for new 12" pipe west.
3) Construct diversion wall of concrete block.
4) Install flat top with 24" Type "F" double frame and grate LeBaron LF 244 or approved equal.

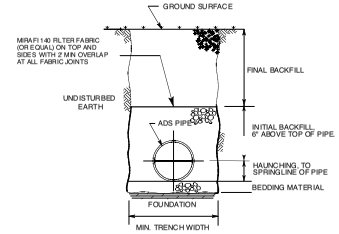
STORMWATER MITIGATION FACILITIES
FOR
TUPPER ROAD

SANDWICH, MA

A T P ENVIRONMENTAL
77 SHEFFIELD ROAD
MELROSE, MA 02176
781-662-6033

SHEET NO. 4 of 5 DATE: October 18, 2010 PROJ. NO. 07-201

TRENCH INSTALLATION DETAIL



TYPICAL TRENCH CROSS-SECTION
(N.T.S.)

NOTES:

1. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH A FOUNDATION OF CLASS I OR II MATERIAL AS DEFINED IN ASTM D2321 "STANDARD PRACTICE FOR INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST EDITION, AS AN ALTERNATIVE AND AT THE DISCRETION OF THE ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A WOVEN GEOTEXTILE FABRIC.

2. BEDDING: SUITABLE MATERIAL SHALL BE CRUSHED, STONE (M2.01.2).

   UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 6" (150mm) FOR 12" (300mm) CORRUGATED POLYETHYLENE PIPE (CPEP); 6" (150mm) FOR 30"-60" (750-1500mm) CPEP.

3. HAUNCHING AND INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CRUSHED STONE (M2.01.2)

4. UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, MINIMUM TRENCH WIDTHS SHALL BE AS FOLLOWS:

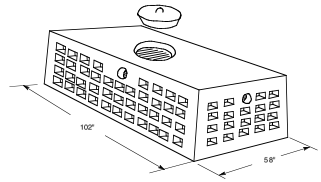
NOMINAL in (mm)	MIN. RECOMMENDED TRENCH WIDTH, in (mm)
4 (100)	21 (530)
6 (150)	23 (580)
8 (200)	25 (630)
10 (250)	28 (710)
12 (300)	30 (760)
15 (375)	34 (860)
18 (450)	37 (940)
24 (600)	48 (1200)
30 (750)	66 (1680)
36 (900)	78 (1980)

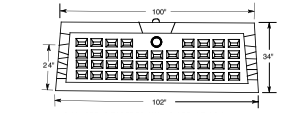
5. MINIMUM COVER: MINIMUM RECOMMENDED DEPTHS OF COVER FOR VARIOUS LIVE LOADING CONDITIONS ARE SUMMARIZED IN THE FOLLOWING TABLE. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE TAKEN FROM THE TOP OF PIPE TO THE GROUND SURFACE.

SURFACE LIVE LOADING CONDITION	MINIMUM RECOMMENDED COVER, in (mm)
H25 (FLEXIBLE PAVEMENT)	12 (300), 34 (800) FOR 60" (1500) PIPE *
H25 (RIGID PAVEMENT)	12 (300), 34 (800) FOR 60" (1500) PIPE
E80 RAILWAY	24 (600)
HEAVY CONSTRUCTION	48 (1200)

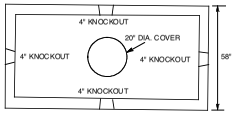
* TOP OF PIPE TO BOTTOM OF BITUMINOUS PAVEMENT SECTION

6. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL TRENCHING REQUIREMENTS



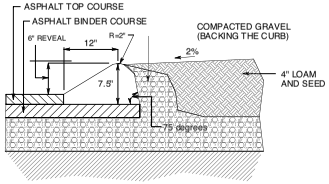


CHAMBER IS TAPERED, WALLS ARE 3" THICK

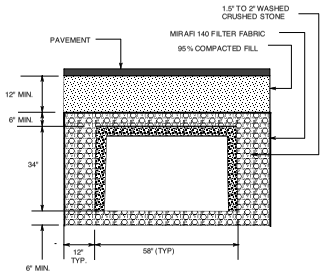


34' LEACH CHAMBER

SCALE : NONE



CAPE COD BERM
NO SCALE

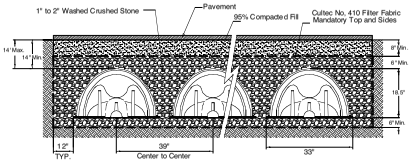


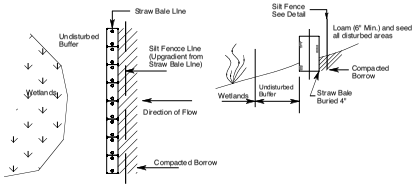
34" LEACH CHAMBER SYSTEM

TYPICAL CROSS SECTION
NOT TO SCALE

Cultec Recharger 150HD Chamber System

Typical Cross Section Detail
Not to Scale

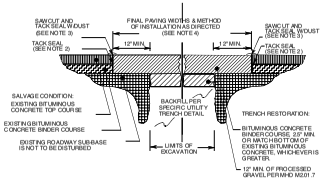




Note: Contractor to install temporary straw bale erosion control as shown above and have it inspected by the Conservation Commission prior to any excavation or earth removal on site.

Note: Contractor is responsible for insuring erosion control is properly maintained at all times in accordance with Conservation Commission requirements (Wetlands Permit) and in good operating condition. Erosion under straw bale line is strictly prohibited.

Straw Bale Erosion Control Detail



TYPICAL TRENCH REPAIR
PAVEMENT SECTION DETAIL

NOT TO SCALE

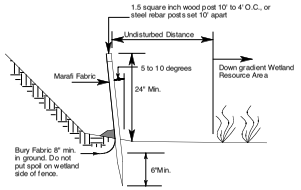
1. ALL INSTALLATION AND MATERIAL SPECIFICATIONS PER MASS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES 1988, AS AMENDED.

2. ALL EXPOSED BITUMINOUS CONCRETE IS TO BE TACKED PER MHD PRIOR TO NEW BITUMINOUS CONCRETE INSTALLATION.

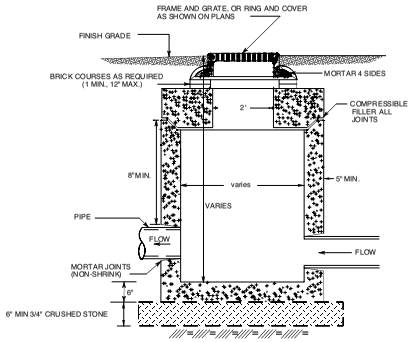
3. ALL EXPOSED JOINTS ARE TO BE SEALED WITH TACK AND STONE DUST.

4. ANY TOP COURSE APPLIED AT A WIDTH OF 6" WIDE OR GREATER IS TO BE PLACED BY MACHINE/BOX SPREADER WHEN AND AS DIRECTED BY THE TOWN OF SANDWICH.

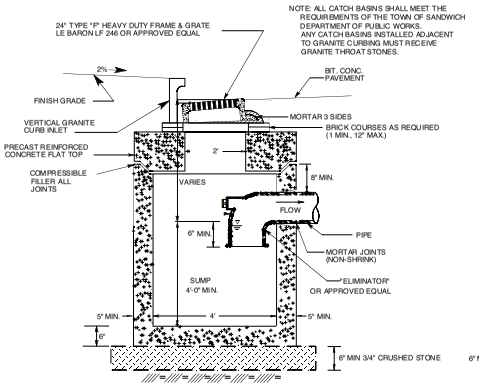
5. PAVEMENT TO BE BINDER ONLY. DEPTH MAY BE UP TO 7" PLACED IN LAYERS NOT-TO-EXCEED 2".



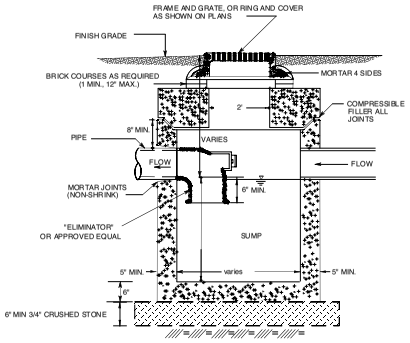
Silt Fence Detail



TYPICAL PRECAST CONCRETE DRAIN MANHOLE
(NOT TO SCALE)



TYPICAL PRECAST CONCRETE CATCHBASIN
FOR GRANITE CURB INLET
FLAT TOP
(NOT TO SCALE)



TYPICAL PRECAST CONCRETE DRAIN MANHOLE
TO LEACH SYSTEMS
WITH GAS TRAP
(NOT TO SCALE)

STORMWATER MITIGATION FACILITIES FOR TUPPER ROAD

SANDWICH, MA

A T P ENVIRONMENTAL
77 SHEFFIELD ROAD
MELROSE, MA 02176
781-662-6033

SHEET NO. 5 of 5 | DATE: October 18, 2010 | PROJ. NO. 07-201

FIGURE 1
OVERVIEW

LEGEND

Shellfish Suitability Areas

Habitat

- American Oyster
- Bay Scallop
- Blue Mussel
- European Oyster
- Ocean Quahog
- Quahog
- Razor Clam
- Sea Scallop
- Soft-shelled Clam
- Surf Clam

- Overland Outfall
- Pipe Outfall
- Parcels
- 100 Year Flood Plain

LOCUS MAP

0 175 350 700 Feet

1:4,200

Data source: 1. Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs.
Data valid as of December 2010.
2. Town of Sandwich, MA

January 2011

Sandwich Harbor
Stormwater Mitigation
Sandwich, Massachusetts

Tighe&Bond

FIGURE
1

G:\GIS\MA\SandwichMA\S1826\avproj\Overview.mxd

HOME > COMMUNITY PRIDE

The Sandwich Board of Selectmen have proclaimed that the 2nd Saturday prior to Memorial Day each year shall be known as Community Pride Day.

Please click this link for more info about Community Pride day: Community Pride Info

Thank you!

Town of Sandwich
Main Town Hall
130 Main Street, 02563
E-Mail: townhall@townofsandwich.net
© 2011 Town of Sandwich

Plan

velopers or busi-
ıtting in wastewa-
the result would
piecemeal infra-

ınt solution could
erybody," he said.
ıid there are three
be completed be-
ready to begin im-
astewater manage-
e said the first step
stage, which is the
lwich is at. The sec-
design stage, which
eering designs. The
he most expensive,
on phase. "The last
st expensive. But
the planning right
ıl phase] is cost ef-

a part of the water-
nities that include
shpee, and Barn-
andwich has been
its slow response
lan to address ni-
g in Popponesset
n said it was due
ıding. Three years
the town applied
warded a grant to
roject that would
's obligation of the
ct, specifically the
Estuaries Project.
part of a $400,000
t the state received
s company Textron
or its role in the
of the Massachu-
Reservation.
ıid there are some
being a bit behind
ı this process. He
has had the ben-
from other towns'
can benefit from
programs worked
towns. "We've only
as opposed to oth-
have spent $1 mil-
Ve're learning from
Mr. Mason said.
ıgreed. "Sandwich
good position. Sev-
wns have already

REBECCA FORSTER/ENTERPRISE

The Town of Sandwich held a household hazardous waste collection on Saturday at Sandwich High School. Old Televisions, paint, oil, computers, and other various items were dropped off by residents to have recycled and processed.

Town Refinances To Save Money On Debt Payments

By MARY STANLEY

Selectmen have approved refinancing some of the town's debt.

According to Town Treasurer Craig F. Mayen, with the town having a strong bond rating, which is somewhat akin to an individual's credit score, and lower interest rates, the timing was right to refinance $6.4 million worth of debt incurred in 2001 and 2003. With the original interest rates on these bonds set at 4.43 and 4.10 percent and the new interest rates set at 2.80 percent, this will translate into a $375,000 savings over the next 12 years. Mr. Mayen said this refinancing process does not extend the debt term, and the debt that was expected to be paid off in 2021 and 2023 will still be paid at that time.

A portion of the savings, $125,000, will go back to the state, since some of the debt was associated with the expansion project at the high school where the state's School Building Authority paid 40 percent of that project cost. Still, Mr. Mayen said, the town is going to realize a $250,000 savings over the next 12 years.

"We have been looking at refunding these bonds for the past year and a half. A year and a half ago, we were going to refund one of the bonds, issued in 2001, but the market and the interest rates changed before we could refund the bond. When the market changed again this year, we were able to include a bond issued in 2003, as well," Mr. Mayen said.

In as much as the town will realize this $250,000 savings over 12 years, Town Manager George H. Dunham said this does not represent an influx of cash but rather a reduction in the amount of money that needs to be raised each year.

"It's just like refinancing a home. It doesn't put money into your pocket immediately but it saves money down the road," said Mr. Dunham.