

EROSION & SEDIMENTATION CONTROL NARRATIVE

GLEN BROOK GREEN CLUSTER SUBDIVISION

The proposed project is being developed in conjunction with the University of Connecticut, E.P.A., and D.E.P. National Monitoring Project. The front "traditional" section and back "BMP" sections will contain different treatments as detailed in construction and grading plans. No modifications of the approved plans shall be allowed without prior written approval by the design engineer.

The proposed 29 lot cluster subdivision, is on approximately 17.5 ac. of land. The proposed project site is located approximately 600' east of Nevins Brook and 1200' west of Clark Lane.

Most of the property has been previously impacted. The front section which contains a small stream was modified and channelized probably some forty years ago. The front portion of the site contains an existing residential house, chicken coops and retail outlet. The rear portion has been largely excavated under a previous gravel permit.

Anticipated project commencement is estimated to be about May, 1, 1997 and completed by Dec. 1998. Road construction is estimated to take 12 to 15 months depending on construction schedules and weather. House construction will be on going once acceptable access is established. This is estimated to take an additional 3 - 4 years. It is the intent that all of the site "improvements" be made, regardless of the sequencing or phasing. "Site improvements" shall be as shown on these plans, including, but not limited to, all roadways and utilities, culverts and associated drainage; detention basin; drainage swales and removal of the existing culvert; grading and installation of curtain drains on lots 10, 15) loan and seeding of all disturbed areas and all proposed plantings exclusive of bioretention gardens.

While it is difficult to accurately anticipate all construction activities that may affect sequencing of construction work, the following major activities are intended to be sequenced as follows:

Construction Sequence

- Preconstruction meeting** - A preconstruction meeting with the Town Environmental, and Planning and Zoning Enforcement staff, Applicant and the on-site construction supervisor are to be present.
- Limits of clearing** - Limits of general clearing shall be clearly marked in the field by licensed surveyor. Clearing limits shall be inspected and approved by Town staff. Clearing of trees and other vegetation may begin only if there is no grubbing or stumping activities involved. These activities will be allowed only after the completion of item 3, installation of erosion control barriers.
- Installation of E & S Controls** - Installation of E & S Controls, including:
 - Installation of silt fence to be installed.
 - No construction activity shall begin without proper installation of appropriate E & S Measures. Stockpile and staging areas shall be approved by town staff. Town agencies shall be notified 48 hours prior to any activity.
- Construction Access** - Construction access shall initially be from the existing Fog Plain Road access drive. A construction entrance pad shall be placed adjacent to the paved section. Stone per project detail shall be installed.
- Structure and Topsoil Removal** - Remove stumps, strip and stockpile topsoil, and seed with temporary seed mix. Structures, as noted on the plans, shall be removed and disposed of off site. No onsite burying of stumps will be allowed. Any required sedimentation controls for stockpiled areas shall be in place prior to placement of material. Stockpiling of material to be installed in proposed stockpile areas. Other locations shall be approved by Town staff. If so requested during construction. No stockpiles shall be allowed within swale areas. Seeding and mulching of stockpiles shall take place within 15 days. All bulky waste debris in or adjacent to the wetlands shall be removed. Removal shall be by hand with the aid of a machine only to the extent that such machines shall not enter brushed or wooded areas.
- Stormwater** - Construct all outlet control devices for stormwater. This specifically includes the detention pond in the vicinity of STA. 20+00. Swales shall be constructed as early in the project as feasible so as to coincide with the earliest growing season as possible. It is not intended to hold up other construction, should it be ready to begin, before appropriate weather for swale construction. Swales shall be protected with hay bales and high visibility fences or silt fence during construction. All swales shall be protected, at a minimum, with a North American Green erosion blankets, as designated on site plans or narrative on swales.
- Roadway Cuts and Fill** - Begin brook crossing (Construction to take place between June 1, and Sept. 30). Begin fill and compaction of road fills. Cut sections may proceed simultaneously if cut material is suitable for fill material. Fill may be brought in as needed from off site. Cuts and fills may proceed in conjunction with item 6. Fill may proceed prior to item 6 with appropriate erosion control and temporary seeding. Regrade in final plantings in wetlands and adjacent area in the southeast corner shall be completed in this same time frame.
- Utilities, Grade and Pave** - Install water mains, catch basins and drainage pipes, and underground cables (tel., etc.). Finish grass and pave. Construction of houses may begin only after installation of base course of pavement and activation of hydrants. Segmental pavers and underlying materials shall be inspected by the design engineer in addition to town inspectors.
- Finish Loan & Seed** - Finish loaning and seeding of shoulder areas and all areas to the east of the proposed roadway. Final stabilization of all disturbed and graded areas shall be finished with loan and seed. Loan (topsoil and subsoil) shall be placed at a minimum depth of 4". A fertilizer mix shall be provided as follows:

Fertilizer may be applied at a rate of 7.5 lb. per 1,000 s.f. of 10-10-10 or natural (manure) fertilizers may be substituted with lime applied at a rate of 180 lb. per 1,000 s.f. (4 tons per acre, or as suggested after soil testing).

The recommended seeding dates are between April 15 through June 15 and Aug. 15 through Oct. 15.

Seed mixes may vary within the site, but in general will conform with the following mixtures:

Permanent Vegetative Cover

General disturbed areas shall be seeded with .45 lb. per 1,000 s.f. (20 lb. per ac.) of creeping red or tall fescue; .05 lb. per 1,000 s.f. (2 lb. per ac.) of red top, and 20 lb. per 1,000 s.f. (8 lb. per ac.) of birdsfoot trefoil with inoculant or an approved equal substitute.

Drainage Swales: Creeping red fescue, "Ensisyla" (25% / 10 lb. per ac.), red top, "Common" (7.5% / 3 lb. per ac.), Tall fescue "K-31" (37.5% / 15 lb. per ac.), Reed Canarygrass, "Venture" (25% / 10 lb. per ac.) and White Clover "Common" (5% / 2 lb. per ac.) or approved substitute. Preparation, seed mix (if different) and maintenance of swales will be as per project report prepared by appropriate team member.

Mulch/Erosion Blankets; disturbed areas shall be mulched after loosing and seeding. Mulch shall consist of straw or hay at the rate of 90 lb. per 1,000 s.f. Mulch shall be anchored when deemed necessary by the Town Zoning Officer. Anchoring methods shall consist of mulch netting or asphalt spray. The outlet swale adjacent to existing S.M.H. 6 & 7 shall be protected with North American Green erosion control blanket C125 or equal to the first stone berm and 375 beyond the first berm. Slopes of 3H:1V or greater shall be protected with North American Green erosion control blanket S 75 or equal.

Seed Bed/ seed bed preparation will conform to the standards recommended by the Connecticut Guidelines for Soil Erosion and Sedimentation Control Manual (Rev. 1988). Hydroseeding will be permitted only on slopes that are no steeper than 2' horizontally to 1' vertically, where hydroseeding is used the above seeding rates shall be increased by 10%.

All seeded areas shall be maintained and reseeded if necessary until sufficient stands of grass are established.

Temporary Vegetative Cover:

The recommended seeding dates for temporary cover are from Mar. 1 through June 15 and Aug. 15 through Oct. 15, and shall consist of 10 lb. per 1,000 s.f. of annual ryegrass.

In the event that cover is required for stockpiles or finished areas outside of normal seeding dates, straw mulching shall be applied at the rate of 90 lb. per 1,000 s.f. Other mulch materials used shall be approved and applied at the recommended rates of the Connecticut Guidelines for Soil Erosion and Sedimentation Control Manual.

10. Residential House Construction

- Install erosion control and begin cuts and fills for site grading in conjunction with;
- Foundation work followed by work on the structure.
- Install site utilities.
- Finish grade lot, loan and seed.
- Complete all other details for Zoning Compliance Certificate prior to the issuance of any C.D.

11. Plantings

Plantings particularly in the front wetland creation area and the rear "BMP" area will require special consideration. As per note 7.

12. Erosion Control Agent

Responsibility for installation of the above work shall belong to the developer. The developer shall designate an on-site agent, to be approved by the Town, prior to any excavation, who shall be responsible for ensuring to the town that actual measures taken comply with the certified plan prior to any construction. The contact person for the E & S measures is the applicant's agent. The agent shall also retain a qualified individual to do weekly or other periodic inspections. Said individual shall make or submit monthly reports to the Town of Waterford. Should the owner wish a different individual to be named as agent, the change must be approved by the Zoning Officer to ensure said individual will be adequately qualified to carry out the responsibilities of the agent.

While significant effort has been made to anticipate erosion potential and location, unforeseen "problem" areas may develop. It is the intention of this plan to prevent and contain erosion wherever possible. To this end, the contractor may find that it is necessary to install additional sediment barriers, cut-off trenches, stone or earth berms to meet the intent of the plans.

Contractor is notified that all exposed non-stabilized areas are subject to erosion regardless of protection measures. It should be anticipated that all non-vegetated surfaces will erode. Every effort should be made to establish some type of vegetation as soon as possible. This will be especially important on sloped areas going into winter months. Erosion blankets, mulches, etc., will help minimize problems but the contractor should not assume that the use of such protective measures will eliminate erosion problems.

13. Inspection and Maintenance

All of the above measures shall be inspected on a weekly basis by the onsite agent. The contractor shall make daily inspections of all E & S controls. Inspection of control measures shall be done immediately after any significant adverse weather conditions. If control measures become nonfunctional, action shall be taken to restore the effectiveness of the measures. Should significant breach of any barriers occur and result in the deposition of sediment beyond said barrier, excess sediment shall be removed as directed by the Town Environmental or Zoning Officer. All control measures shall be inspected for proper operation and replaced as necessary.

In general, the contractor should try to identify potential "open" areas prior to failure. A few common potential problems are identified above, but they do not relieve the contractor from addressing other problems or failures such as bale displacement, undercutting of bales or fence, fence collapsing, torn fabric, runoff escaping around end of barrier, or sediment build up behind barriers. Hay bales and silt fence shall have sediment removed before it builds up to half the level of the original barrier.

All measures shall remain in place, inspected by the on-site agent, and maintained by the owner until the Zoning Officer is satisfied that the associated site has been stabilized.

14. Erosion and Sedimentation Control Replacement - All erosion control measures shall be upgraded or replaced sooner than scheduled if they exhibit any marked signs of deterioration. Failure or inadequacy. As hay bales generally have a relatively short life span they should only be used where they will be required for 60 days or less. Hay bales shall be replaced at least every three months (sooner if there are any signs of deterioration). Silt fence that is intended to be in place for periods greater than three months shall have U.V. resistance of 80% or greater.

SEQUENCING OF WETLAND REGULATED ACTIVITY AREAS

All areas below will require additional notifications to the Town Environmental Enforcement Officer. At least 48 hrs. notification will be required prior to work in these areas.

Existing and Proposed Stormwater Outlet - Fog Plain Road

The existing stormwater outlet that collects Fog Plain Road, east to Clark Lane, currently discharges into the existing brook. This discharge shall be cut back, as shown on sheet 5. The construction sequence for this area shall be as follows and should not begin prior to June 1. Work in this section should be completed, if possible prior to June 30, work after this date shall be co-ordinated with the town conservation staff. In no case should this work be completed later than Sept. 15.

- Grading limits shall be established and approved as per note 3.
- Topsoil shall be stripped back and stockpiled over the existing storm drain.
- Regrade area between property line and existing storm drain, to the east, as shown on sheet 5. Spread topsoil and establish seed mix as per note 9 - Drainage Swales. Establish shrub and tree plantings. A qualified nursery person or Town approved equivalent shall determine suitable planting lines and install plantings. A certified soil scientist or approved equivalent, shall oversee the overall construction of all grading and plantings in this area. "Approved equivalents" shall be at the sole discretion of the Town.

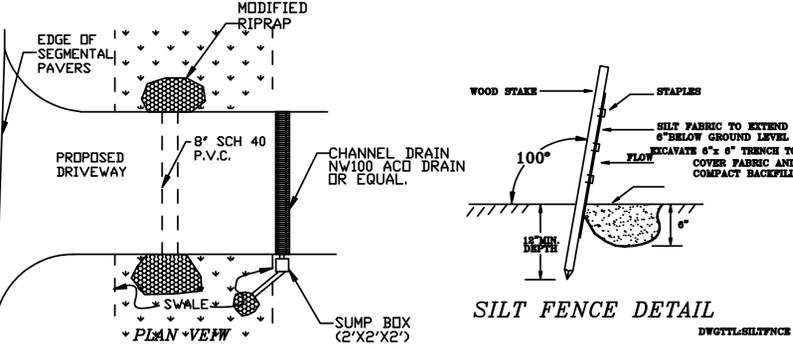
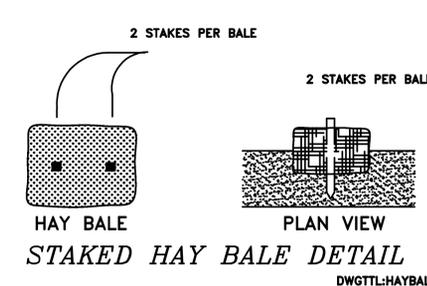
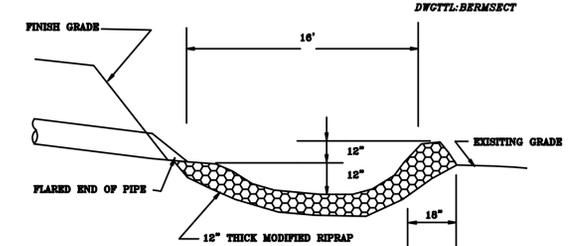
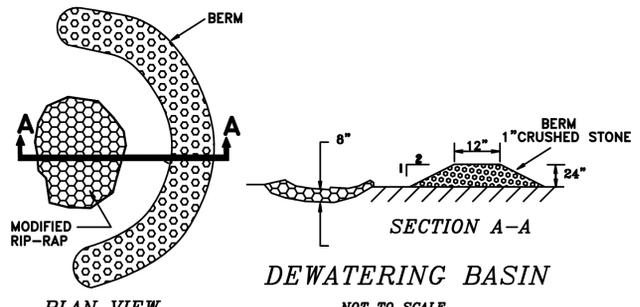
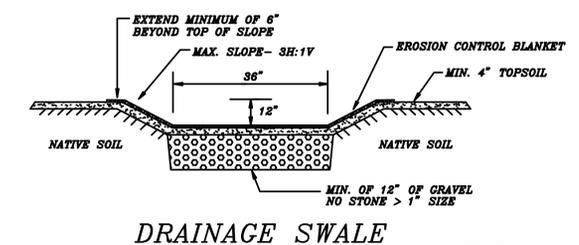
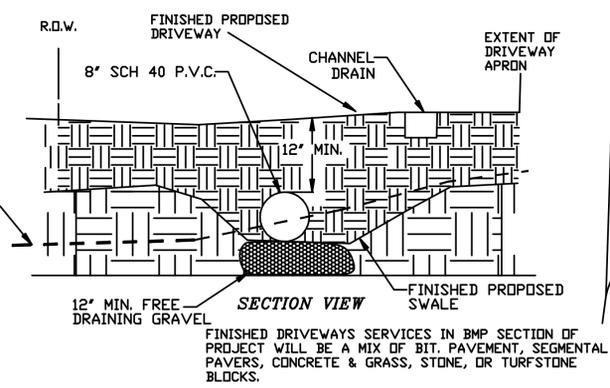
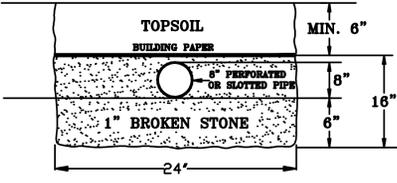
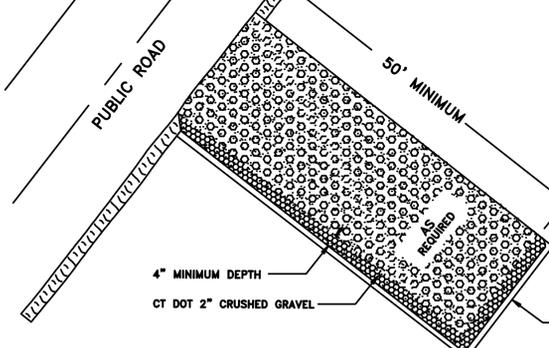
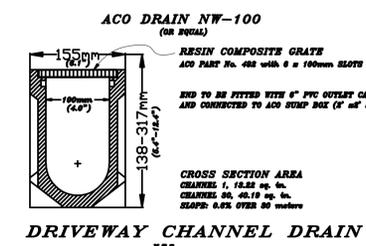
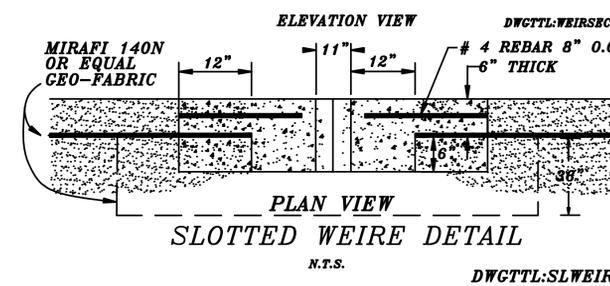
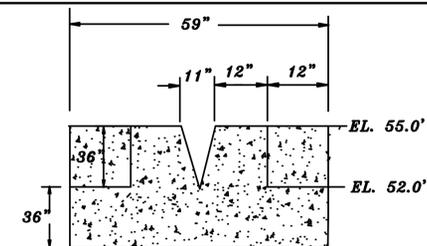
D. The swale areas to the east of the proposed road and west of the existing drainage pipe may proceed simultaneously with the area to the east, with the same controls as outlined in A. Through C. Swales shall be lined with North American Green C125 Erosion control blankets and planted with the approved plantings. After completion of the swales in this area, the outlet for C.B. 1 and 2 may be installed. Modified rip rap shall be placed under the existing storm drain, in the area of the proposed swale to allow for hydraulic connection between the two areas.

E. After June 1, of the following year (the intent is to allow for the establishment of adequate vegetation through two growing seasons) The existing pipe shall be removed and shortened to the extent shown on sheet 5. Rip rap shall be established, the remaining portion of the swale constructed seeded with twice the recommended seeding rate of note 9 and C125 erosion blanket shall be immediately put down. This work should be completed by June 15 to allow for some establishment of vegetation prior to the summer season. As practical, watering of this area through the summer should be conducted.

Roadway Culvert Crossing and Removal of Existing Crossing

Begin brook crossing (Construction to take place between June 1, and Sept. 30). Although flows will likely be low or even possible non-existent measures and precautions must be made for moderate to significant peak flows from potential storm events. A rip rap barrier shall be installed up stream from the work area. The barrier shall be constructed in such a manner as to allow for the collection and by pass pumping of stream flows. It should be expected that the excavation in this area will be difficult. Area of disturbance shall be minimized and approved by the Town Conservation Officer. The barrier shall be constructed with an impermeable or low permeable liner or covering to minimize water seepage. It shall be the contractor's responsibility to construct and operate such a system that will allow only the discharge of clean water out of the work site. Work schedules for both areas should be planned with weather conditions in mind and sequencing to minimize the time of construction. Schedules should be planned so that once an area is disturbed, all reasonable effort shall be made on a daily basis until that area is completed and stabilized. Both areas may not be worked simultaneously. Culverts, wing wall and rip rap shall be installed as per relevant plan sheets.

The existing driveway crossing shall be removed following the same conditions as the proposed roadway, as delineated above. After removal of the existing culvert, the channel shall be lined with modified rip rap and the sidewalks shall transition from stone wall to stone and vegetation in a short distance as feasible. Erosion control blankets shall be placed on exposed channel slopes. Bi-annual monitoring of the wetland restoration plantings and swale stability will be conducted and a report submitted to the Commission's agent.



CURTAIN DRAIN STONE TRENCH DETAIL
N.T.S.

CONSTRUCTION ENTRANCE
DWGTTL:ENTR

STAKED HAY BALE DETAIL
DWGTTL:HAYBALE

SILT FENCE DETAIL
DWGTTL:SILTFENCE

DRIVEWAY SWALE CROSSING
N.T.S.

THESE PLANS AND DETAILS WERE PREPARED FOR A SPECIFIC PROJECT. CONCEPTS AND PRINCIPLES MUST BE ANALYZED BY APPROPRIATE PROFESSIONALS FOR ANY OTHER PROJECTS.

DATE	REVISION
2/13/97	E&S NAR/DETAILS
3/24/97	DETAILS
6/5/97	NOTES

EROSION & SEDIMENTATION CONTROL DETAILS
GLEN BROOK GREEN, JORDAN COVE URBAN WATER SHED
SEC. 319 NATIONAL MONITORING PROGRAM PROJECT
25 FOG PLAIN ROAD WATERFORD, CONNECTICUT

SHEET: 11 OF 14
SCALE: AS SHOWN
DATE: OCT. 21, 1996

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