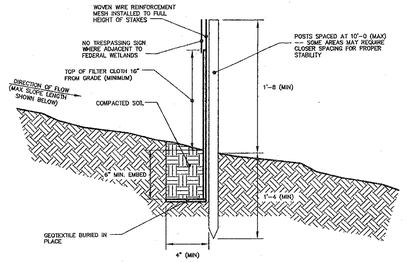


MAXIMUM ALLOWABLE SLOPE LENGTH

MAXIMUM ALLOWABLE SLOPE LENGTHS CONTRIBUTING RUNOFF TO A SECTION OF SILT FENCE SHALL BE AS FOLLOWS:

SLOPE STEEPNESS:	MAX. SLOPE LENGTH:
1:2	25 FT
1:3	50 FT
1:4	75 FT
1:5 OR FLATTER	100 FT

NOTE: MAXIMUM DRAINAGE AREA FOR OVERLAND FLOW TO SILT FENCE SECTION SHALL NOT EXCEED 1/4 ACRE PER 100 FT OF FENCE. CONCENTRATED DISCHARGE OF SEDIMENT LADEN WATER SHALL NOT BE ALLOWED TO FLOW DIRECTLY TO THE FENCING.

CONSTRUCTION NOTES FOR FABRICATED SILT FENCE

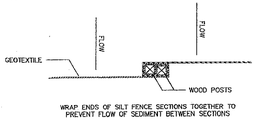
1. INSTALL SILT FENCE IN ACCORDANCE WITH THE "NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL", SECTION 7A.
2. WOVEN WIRE FENCE SHALL BE 12 1/2 GA., 6" MAXIMUM MESH OPENING, FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
3. FILTER CLOTH TO BE TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
4. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED TOGETHER FOR DETAIL 4 ON THIS PAGE.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SEDIMENT REMOVED WHEN ACCUMULATION REACHES 1/2 OF DESIGN CAPACITY OF FENCE. (1/2 HEIGHT OF FILTER FABRIC) OR WHEN "BULGES" DEVELOP IN FENCING.

POSTS: STEEL EITHER "T" OR "U" TYPE OR 2" HARDWOOD

FENCE: WOVEN WIRE, 12 1/2 GA. 6" MAX. MESH OPENING

FILTER CLOTH: FILTER X, MIRAFI 100X, STABILINKA T140N OR APPROVED EQUAL

PREFABRICATED UNIT: GEOFAB, ENVIROFENCE, OR APPROVED EQUAL



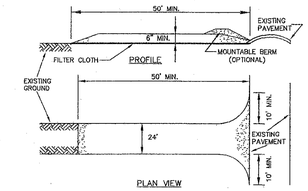
WRAP ENDS OF SILT FENCE SECTIONS TOGETHER TO PREVENT FLOW OF SEDIMENT BETWEEN SECTIONS

SILT FENCE JOINT DETAIL

Design Criteria
Design computations are not required for installations of 1 month or less. Longer installation periods should be designed for expected runoff. All silt fences shall be placed as close to the areas as possible, but at least 10 feet from the toe of a slope to allow for maintenance and roll down. The area beyond the fence must be undisturbed or stabilized.
Sensitive areas to be protected by silt fence may need to be reinforced by using heavy wire fencing for added support to prevent collapse.
Where ends of filter cloth come together, they shall be overlapped, folded and stapled to prevent sediment bypass.
A detail of the silt fence shall be shown on the plan.

SEDIMENT CONTROL FENCE INSTALLATION DETAIL

NOT TO SCALE



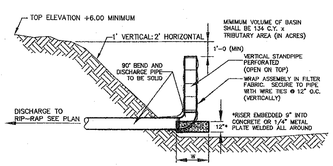
PLAN VIEW

CONSTRUCTION SPECIFICATIONS

1. INSTALL CONSTRUCTION ENTRANCE IN ACCORDANCE WITH "NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL", SECTION 7A.
2. STONE SIZE –USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
3. LENGTH – NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
4. THICKNESS– NOT LESS THAN (6) INCHES.
5. STABILIZATION FABRIC – WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER – ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS–OF–WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS ONTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

STABILIZED CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE



Design Criteria
If any of the design criteria presented here cannot be met, see Standard and Specification for Sediment Basin on page 5A.49.
Drainage Area
The drainage area for sediment traps shall be in accordance with the specific type of sediment trap used (Type I through V).
Location
Sediment traps shall be located so that they can be installed prior to grading or filling in the drainage area they are to protect. Traps must not be located any closer than 20 feet from a proposed building foundation if the trap is to function during building construction. Locate traps to obtain maximum storage benefit from the terrain and for ease of cleanout and disposal of the trapped sediment.
Trap Size
The volume of a sediment trap as measured at the elevation of the crest of the outlet shall be at least 3,600 cubic feet per acre of drainage area. The volume of a constructed trap shall be calculated using standard mathematical procedures. The volume of a natural sediment trap may be approximated by the equation: Volume (cu.ft.) = 0.4 x surface area (sq.ft.) x maximum depth (ft.).
Trap Cleanout
Sediment shall be removed and the trap restored to the original dimensions when the sediment has accumulated to ½ of the design depth of the trap. Sediment removed from the trap shall be deposited in a protected area and in such a manner that it will not erode.
Embankment
All embankments for sediment traps shall not exceed five (5) feet in height as measured at the low point of the original ground along the centerline of the embankment. Embankments shall have a minimum four (4) foot wide top and side slopes of 2:1 or flatter. The embankment shall be compacted by traversing with equipment while it is being constructed. The embankment shall be stabilized with seed and mulch as soon as it is completed.
The elevation of the top of any dike directing water to any sediment trap will equal or exceed the maximum height of the outlet structure along the entire length of the trap.
Excavation
All excavation operations shall be carried out in such a manner that erosion and water pollution shall be minimal. Excavated portions of sediment traps shall have 1:1 or flatter slopes.
Outlet
The outlet shall be designed, constructed, and maintained in such a manner that sediment does not leave the trap and that erosion at or below the outlet does not occur.
New York Standards and Specifications Page 5A.36 August 2005
For Erosion and Sediment Control
Sediment traps must outlet onto stabilized (preferable undisturbed) ground, into a watercourse, stabilized channel, or into a storm drain system. Distance between inlet and outlet should be maximized to the longest length practicable.

NOTES:

1. THE STANDPIPE ASSEMBLY SHOULD BE EITHER PVC OR ADS. THE TOP OF THE STANDPIPE SHOULD BE LEFT OPEN TO SERVE AS AN OVERFLOW. THE TOP OF THE STAND PIPE SHOULD BE AT LEAST 1'–0 BELOW THE EMBANKMENT OF THE SEDIMENT BASIN.
2. DISCHARGE SHOULD BE MONITORED CLOSELY AND THE FILTER FABRIC SHOULD BE CHANGED AS NEEDED. DISCHARGE CAN BE FURTHER TREATED BY ATTACHING A SEDIMENT BAG TO THE DISCHARGE PIPE OR OUTLETTING TO A STONE FILTER.
3. THE TEMPORARY SEDIMENT BASIN SHALL BE CONSTRUCTED AND MAINTAINED THOUGH OUT DEVELOPMENT.
4. THE CONTRACTOR SHALL PERIODICALLY SCHEDULE CLEANING OF ALL CULVERTS USED TO CONVEY SEDIMENT LADEN WATER TO TEMPORARY FACILITIES
5. UPON STABILIZATION OF THE SITE ALL CULVERTS AND DRAINAGE STRUCTURES SHALL BE CLEANED.

TEMPORARY SEDIMENT TRAP DETAIL

NOT TO SCALE

Design Criteria

Aggregate Size: Use a matrix of 1–4 inch stone, or reclaimed or recycled concrete equivalent.

Thickness: Not less than six (6) inches.

Width: 12–foot minimum but not less than the full width of points where ingress or egress occurs. 24–foot minimum if there is only one access to the site.

Length: As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum would apply).

Geotextile: To be placed over the entire area to be covered with aggregate. Filter cloth will not be required on a single family residence lot. Piping of surface water under entrance shall be provided as required. If piping is impossible, a mountable berm with 5:1 slopes will be permitted.

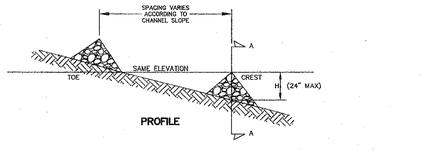
Criteria for Geotextile
The geotextile shall be woven or nonwoven fabric consisting only of continuous chain polymeric filaments or yarns of polyester. The fabric shall be inert to commonly encountered chemicals, hydro–carbons, mildew, rot resistant, and conform to the fabric properties as shown:

Fabric Properties	Light Dutyb Roads Grade Subgrade	Heavy Dutyc Haul Roads Rough Graded	Test Method
Grab Tensile Strength (lbs)	200	220	ASTM D1682
Elongation at Failure (%)	50	60	ASTM D1682
Mullen Burst Strength (lbs)	190	430	ASTM D3786
Puncture Strength (lbs)	40	125	ASTM D751 modified
Equivalent Opening Size	40–80	40–80	US Std Sieve CW–02215
Aggregate Depth	6	10	---

bLight Duty Road: Area sites that have been graded to subgrade and where most travel would be single axle vehicles and an occasional multiaxle truck. Acceptable materials are Trevira Spunbond 1115, Mirafi 100X, Typar 3401, or equivalent.

cHeavy Duty Road: Area sites with only rough grading, and where most travel would be multi–axle vehicles. Acceptable materials are Trevira Spunbond 1135, Mirafi 600X, or equivalent.

dFabrics not meeting these specifications may be used only when design procedure and supporting documentation are supplied to determine aggregate depth and fabric strength.



Design Criteria
Drainage Area: Maximum drainage area above the check dam shall not exceed two (2) acres.

Height: Not greater than 2 feet. Center shall be maintained 9 inches lower than abutments at natural ground elevation.

Side Slopes: Shall be 2:1 or flatter.
Spacing: The check dams shall be spaced as necessary in the channel so that the crest of the downstream dam is at the elevation of the toe of the upstream dam. This spacing is equal to the height of the check dam divided by the channel slope.
Therefore:
S = h/s
Where:
S = spacing interval (ft.)
h = height of check dam (ft.)
s = channel slope (ft./ft.)
Example:
For a channel with a 4% slope and 2 ft. high stone check dams, they are spaced as follows:
S = 2 ft. / .04 ft/ft. = 50 ft.
Stone size: Use a well graded stone matrix 2 to 9 inches in size (NYS –DOT Light Stone Fill meets these requirements). The overflow of the check dams will be stabilized to resist erosion that might be caused by the check dam. See Figure 5A.9 on page 5A.24 for details.
Check dams should be anchored in the channel by a cutoff trench 1.5 ft. wide and 0.5 ft. deep and lined with filter fabric to prevent soil migration.

NOTES:

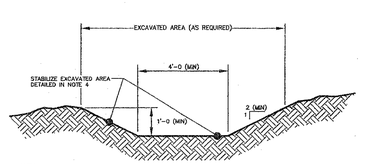
1. INSTALL STONE CHECK DAM IN ACCORDANCE WITH THE "NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL", SECTION 7A IN ALL TEMPORARY OF PERMANENT DRAINAGE SWALES ON SITE.
2. CHECK DAMS SHALL REMAIN IN PLACE UNTIL THE DRAINAGE SWALE IS STABILIZED.
3. LIGHT STONE FILL (NYSDOT ITEM 620.03) SHALL BE PLACED ON FILTER FABRIC ACCORDING TO THE GRADES AND SWALE LINES SHOWN ON THE PLANS.
4. SET SPACING OF CHECK DAMS SO THAT THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION AS THE TOE OF THE UPSTREAM DAM.
5. EXTEND THE STONE A MINIMUM OF 1.5 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
6. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
7. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO BLOCKAGE OR DAMAGE FROM DISPLACED STONE.
8. MAXIMUM DRAINAGE AREA 2 ACRES.
9. LOCATION OF CHECK DAMS SHALL BE AS REQUIRED TO PROVIDE ADEQUATE EROSION CONTROL AND MAY BE DIRECTED BY THE ENGINEER IN AREAS OTHER THAN SHOWN ON THIS PLAN DURING CONSTRUCTION AND UNTIL SITE IS STABILIZED.

STONE CHECK DAM DETAIL

NOT TO SCALE

Design Criteria

1. Stabilization of the swale shall be completed within 7 days of installation in accordance with the appropriate standard and specifications for vegetative stabilization or stabilization with mulch as determined by the time of year.
2. In highly erodible soils, as defined by the local approving agency, refer to the next higher slope grade for type of stabilization.
3. Recycled Concrete Equivalent shall be concrete broken into the required size, and shall contain no steel reinforcement. New York Standards and Specifications Page 5A.4 August 2005 For Erosion and Sediment Control Outlet
4. Swale shall have an outlet that functions with a minimum of erosion, and dissipates runoff velocity prior to discharge off the site.
5. Runoff shall be conveyed to a sediment trapping device such as a sediment trap or sediment basin until the drainage area above the swale is adequately stabilized.
6. The on–site location may need to be adjusted to meet field conditions in order to utilize the most suitable outlet condition.
7. If a swale is used to divert clean water flows from entering a disturbed area, a sediment trapping device may not be needed.
8. RECP (ROLLED EROSION CONTROL PRODUCT) SHALL BE JUTE OR EXCELSIOR MATTING. PROVIDE 4" MIN TOPSOIL AND SEED WITH KENTUCKY BLUEGRASS, CREEPING RED FESCUE AND PERENNIAL RYGRASS AT A RATE OF 25, 20 AND 10 LBS PER ACRE RESPECTIVELY.
9. AS AN ALTERNATE PRACTICE TO TEMPORARY SWALES, EARTH DIKES MAY BE USED. SEE DETAIL THIS SHEET.



NOTES:

1. INSTALL TEMPORARY SWALES IN ACCORDANCE WITH THE "NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENTATION CONTROL", SECTION 7A AS SHOWN ON THE EROSION CONTROL PLAN OR WHEREVER NEEDED TO CONTROL THE FLOW OF RUNOFF.
2. TEMPORARY SWALES DIVERTING RUNOFF FROM A DISTURBED AREA SHALL OUTLET INTO A SEDIMENT TRAPPING DEVICE.
3. TEMPORARY SWALES DIVERTING RUNOFF FROM AN UNDISTURBED OR STABILIZED AREA SHALL OUTLET DIRECTLY TO AN UNDISTURBED, STABILIZED AREA AT A NON–EROSIVE VELOCITY.
4. THE MINIMUM SURFACE TREATMENT OF THE TEMPORARY SWALE SHALL BE RECP AND AS DETERMINED AS FOLLOWS:

DRAINAGE AREA	SWALE A <5 ACRES	SWALE B 5–10 ACRES
BOTTOM WIDTH OF FLOW CHANNEL	4'	6'
DEPTH OF FLOW CHANNEL	1'	1'
SIDE SLOPES GRADE	2:1 0.5% MIN. 20% MAX	2:1 0.5% MIN. 20% MAX

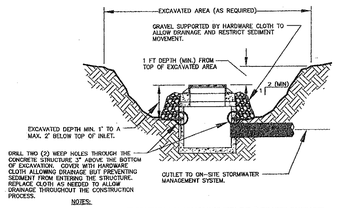
CONDITION:	CHANNEL GRADE:	REQUIRED SURFACE TREATMENT: <5 ACRES	5–10 ACRES
1	0.5 – 3.0%	RECP (SEE DESIGN CRITERIA)	RECP (SEE DESIGN CRITERIA)
2	3.1 – 5.0%	SEED & STRAW MULCH	SEED AND COVER WITH RECP, SOD OR LINED WITH PLASITC OR 2" STONE
3	5.1 – 8.0%	SEED AND COVER WITH JUTE, SOD OR LINE WITH 2"ø STONE	LINE WITH 4–8 IN. OR STONE RECYCLED CONCRETE EQUIVALENT OR GEOTEXTILE
4	8.1 – 20%	LINE WITH LIGHT STONE FILL	SITE SPECIFIC ENGINEERING DESIGN

* IN HIGHLY ERODIBLE SOILS, THE ENGINEER OR INSPECTING PROFESSIONAL MAY REQUIRE STABILIZATION OF THE NEXT HIGHER SLOPE GRADE.

5. ALL TREES, BRUSH, STUMPS AND OTHER OBSTRUCTIONS SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTION OF THE SWALE.
6. THE SWALE SHALL BE EXCAVATED OR SHAPED TO MEET THE CROSS SECTION SHOWN ABOVE AND SHALL BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES THAT MAY IMPEDE FLOW.

TEMPORARY SWALE DETAIL

NOT TO SCALE



NOTES:

1. INSTALL INLET PROTECTION IN ACCORDANCE WITH THE "NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL", SECTION 7A FOR ALL STRUCTURES THAT WILL BE COLLECTING RUNOFF DURING CONSTRUCTION.
2. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER EXCAVATION.
3. GRADE APPROACH TO THE INLET UNIFORMLY AROUND THE BASIN.
4. WEEP HOLES SHALL BE PROVIDED BY 2"ø STONE OR GRAVEL.
5. UPON STABILIZATION OF CONTRIBUTING DRAINAGE AREA, SEAL WEEP HOLES, FILL BASIN WITH STABLE SOIL TO FINAL GRADE, COMPACT IT PROPERLY AND STABILIZE WITH PERMANENT SEEDING.
6. THE MAXIMUM DRAINAGE AREA SHALL BE 1 ACRE.
7. THE STORAGE VOLUME OF THE EXCAVATED AREA SHALL BE 900 CUBIC FEET. EXAMPLES: A BASIN 22 FT WIDE BY 22 FT LONG BY 2 FT DEEP, OR
A BASIN 30 FT WIDE BY 30 FT LONG BY 1 FT DEEP, OR
A BASIN 13 FT WIDE BY 35 FT LONG BY 2 FT DEEP, ETC.

Design Criteria

Drainage Area –The drainage area for storm drain inlets shall not exceed one acre. The crest elevations of these practices shall provide storage and minimize bypass flow.

Type I –Excavated Drop Inlet Protection
See details for Excavated Drop Inlet Protection.

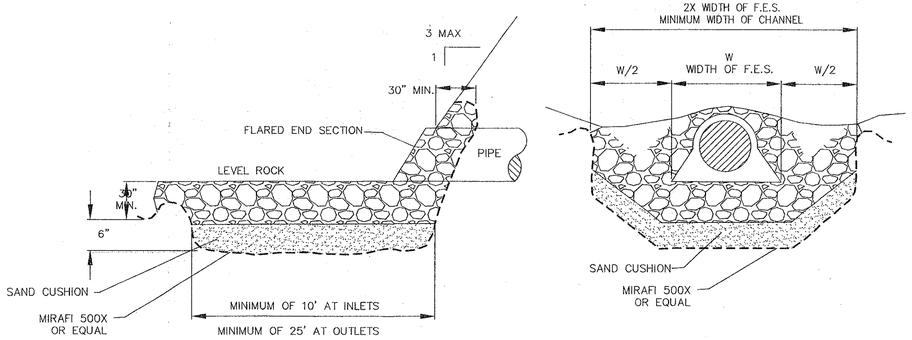
Limit the drainage area to the inlet device to 1 acre.

Excavated side slopes shall be no steeper than 2:1. The minimum depth shall be 1 foot and the maximum depth 2 feet as measured from the crest of the inlet structure. Shape the excavated basin to fit conditions with the longest dimension oriented toward the longest inflow area to provide maximum trap efficiency. The capacity of the excavated basin should be established to contain 900 cubic feet per acre of disturbed area. Weep holes, protected by fabric and stone, should be provided for draining the temporary pool.

Inspect and clean the excavated basin after every storm.

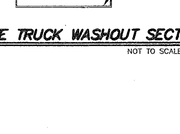
Sediment should be removed when 50 percent of the storage volume is achieved This material should be incorporated into the site in a stabilized manner.

EXCAVATED DROP INLET PROTECTION



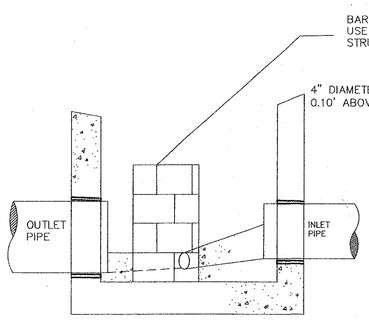
FLARE END SECTION AND RIP–RAP DETAIL

NOT TO SCALE



CONCRETE TRUCK WASHOUT SECTION

NOT TO SCALE



ENERGY DISSAPATING STRUCTURE DETAIL

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. ALL DIKES SHALL BE COMPACTED BY EARTH–MOVING EQUIPMENT.
2. ALL DIKES SHALL HAVE POSITIVE DRAINAGE TO AN OUTLET.
3. TOP WIDTH MAY BE WIDER AND SIDE SLOPES BE FLATTER IF DESIRED TO FACILITATE CROSSING BY CONSTRUCTION TRAFFIC.
4. FIELD LOCATION SHOULD BE ADJUSTED AS NEEDED TO UTILIZE A STABILIZED SAFE OUTLET.
5. EARTH DIKES SHALL HAVE AN OUTLET THAT FUNCTIONS WITH A MINIMUM OF EROSION. RUNOFF SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE SUCH AS A SEDIMENT TRAP OR SEDIMENT BASIN WHERE EITHER THE DIKE CHANNEL OR THE DRAINAGE AREA ABOVE THE DIKE ARE NOT ADEQUATELY STABILIZED.
6. STABILIZATION SHALL BE: (A) IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR SEED AND STRAW MULCH IF NOT IN SEEDING SEASON, (B) FLOW CHANNEL AS PER THE CHART ON THE PREVIOUS PAGE.
7. AS AN ALTERNATE PRACTICE TO EARTH DIKES, TEMPORARY SWALES MAY BE USED. SEE DETAIL THIS SHEET.

EARTH DIKE

NOT TO SCALE

PLANNING BOARD
TOWN OF BETHLEHEM
ALBANY COUNTY, NEW YORK

This Site Plan Approved.

Title CHAIRMAN

Date 8/22/2011 SPACER

RECEIVED
AUG 12 2011
Town of Bethlehem Planning Board

ALBANY COUNTY DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH SERVICES
By direction of the Commissioner of Health, the plans are hereby approved. See [illegible] date and signature.

HERSHBERG & HERSHBERG
Consulting Engineers and Land Surveyors
18 Locust Street
Albany, New York 12203

ALTERATION OF THIS DOCUMENT EXCEPT BY A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR, IS ILLEGAL

STATE OF NEW YORK — GREGG E. HERSHBERG — 044226 — LICENSED PROFESSIONAL ENGINEER & LAND SURVEYOR

REMARKS	DATE
TOWN COMMENTS RE–SUBMISSION	6/8/09
TOWN COMMENTS RE–SUBMISSION	8/19/09
TOWN COMMENTS RE–SUBMISSION	2/8/10

REVISIONS

PROPOSED EROSION & SEDIMENT CONTROL DETAILS – PHASE 1A
VISTA TECHNOLOGY CAMPUS
TOWN OF BETHLEHEM
ALBANY COUNTY, STATE OF NEW YORK

SCALE: AS NOTED | BY: MM | CHK: DRH | DATE: 7/31/08 | 2701A5–phase1A–1.dwg | FILE: 2701A5

C20