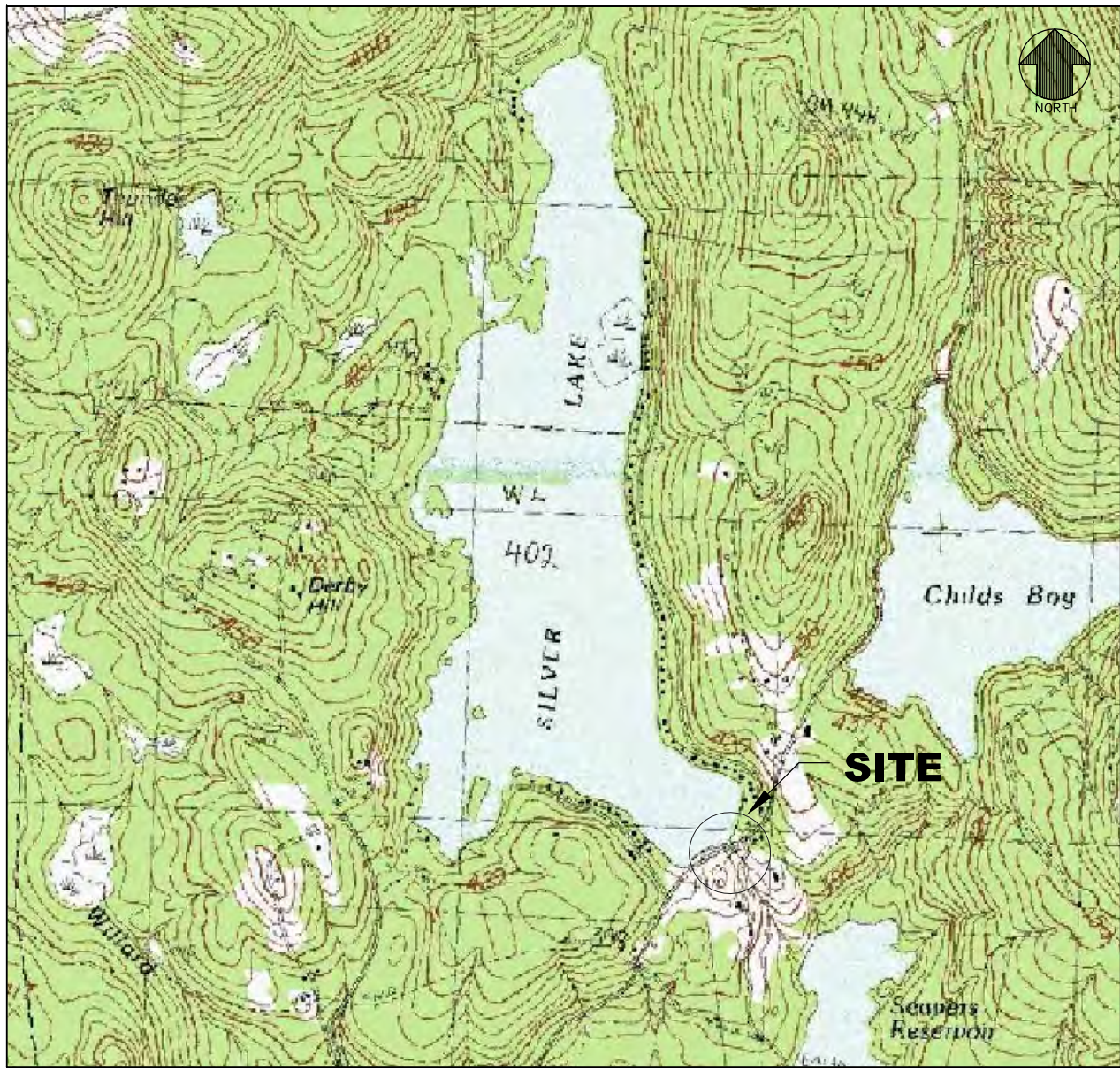


SILVER LAKE HARRISVILLE, NEW HAMPSHIRE

SILVER LAKE LAND TRUST BOAT RAMP AND STONEY BEACH DESIGN CONSTRUCTION DRAWINGS



LOCATION MAP

MAY 2008

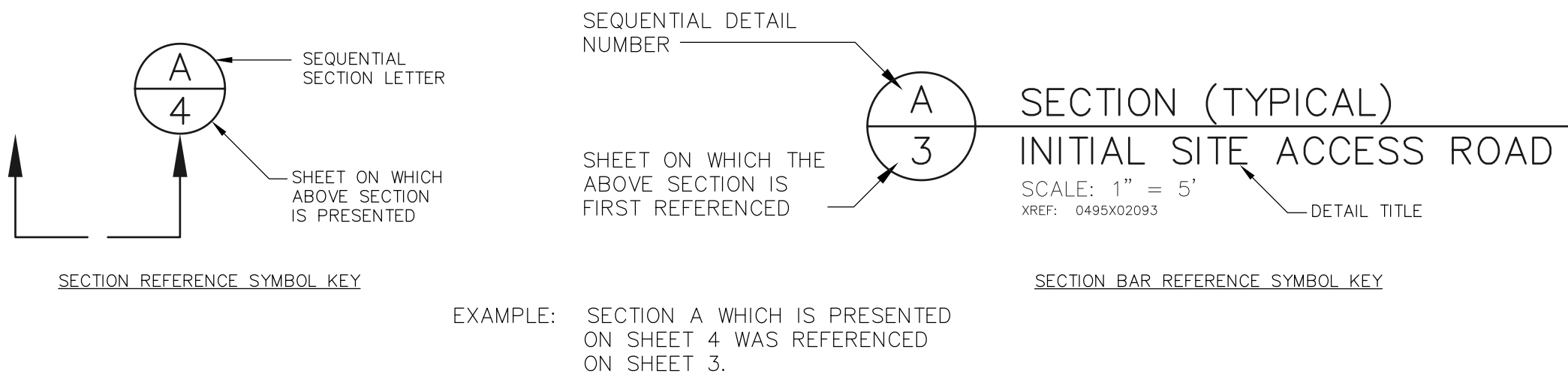
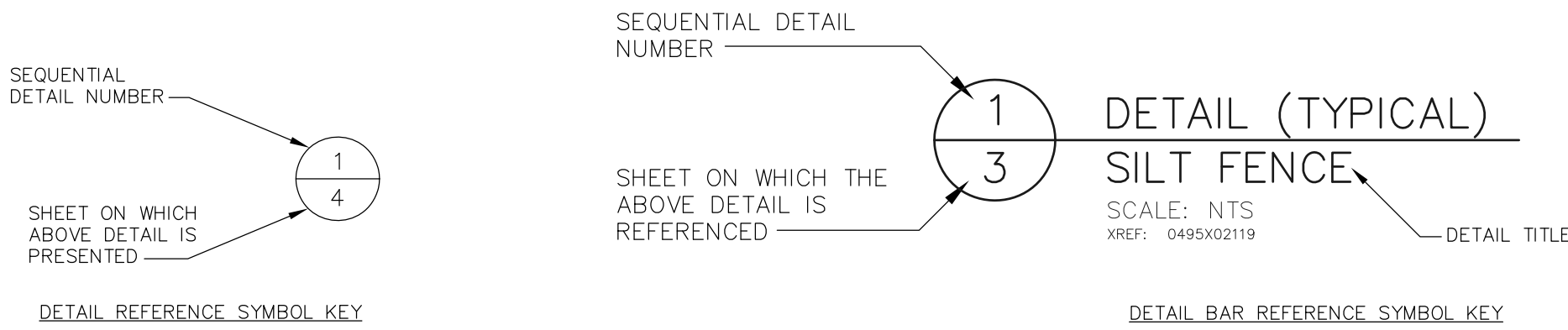
LIST OF SHEETS		
SHEET NO.	SHEET TITLE	REVISION
1	TITLE SHEET	0
2	EXISTING CONDITIONS SITE PLAN	0
3	PROPOSED IMPROVEMENTS SITE PLAN	0
4	DETAILS I AND SPECIFICATIONS I	0
5	DETAILS II AND SPECIFICATIONS II	0
6	DETAILS III AND SPECIFICATIONS III	0



VICINITY MAP

GENERAL NOTES:

1. THE CONTRACTOR SHALL PREPARE AND PROVIDE SUBMITTALS TO THE TOWN/SILVER LAKE LAND TRUST'S REPRESENTATIVE. A MINIMUM OF 2 HARD COPIES OR AN ELECTRONIC VERSION OF EACH OF THE NECESSARY SUBMITTALS SHALL BE PROVIDED. SUBMITTALS SHALL BE PROVIDED WITHIN A MINIMUM OF 14 DAYS PRIOR TO THE INITIAL USE OF THE PRODUCT.
2. SUBMITTALS SHALL BE PRESENTED IN A CLEAR AND THOROUGH MANNER, AND BE COMPLETE WITH RESPECT TO DIMENSIONS, MATERIALS OF CONSTRUCTION, MODEL NUMBER, ALONG WITH APPLICABLE MANUFACTURER'S INSTRUCTIONS FOR DELIVERY, STORAGE, ASSEMBLY, INSTALLATION, AND FINISHING. ANY DEVIATIONS FROM THE CONTRACT DOCUMENTS SHALL BE CLEARLY IDENTIFIED IN THESE SUBMITTALS.
3. THE SUBMITTALS SHALL CONSIST OF SHOP DRAWINGS FOR CONCRETE STRUCTURES, PRODUCT DATA SHEETS FOR NEW INFRASTRUCTURE SUCH AS PIPES, FITTINGS AND PENETRATION SEALS, RESULTS OF ANALYSIS AND FERTILIZER RECOMMENDATIONS FOR EACH SOURCE OF TOPSOIL USED, AND TYPICAL GRAIN SIZE ANALYSIS FOR EACH SOURCE OF STONE MATERIAL.
4. A MINIMUM OF 14 DAYS PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT A CONSTRUCTION SCHEDULE AND PROVIDE WEEKLY PROGRESS UPDATES TO THE TOWN/SILVER LAKE LAND TRUST'S REPRESENTATIVE, AS NECESSARY.
5. AT THE END OF CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT, NO LATER THAN 14 DAYS FROM COMPLETION, A SET OF AS-BUILT DRAWINGS. THESE DRAWINGS SHALL BE AT A MINIMUM REDLINE MARKUP OF THE CONSTRUCTION DRAWINGS. FOR EACH PIPE INSTALLED, INVERT ELEVATIONS OF INLETS AND OUTLETS SHALL BE PROVIDED ALONG WITH THE HORIZONTAL MEASUREMENT OF LENGTH SHALL BE PROVIDED.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL HEALTH AND SAFETY ISSUES RELATED TO THE WORK. IT IS THE SOLE RESPONSIBILITY FOR THE CONTRACTOR TO BE COMPLETELY FAMILIAR WITH AND FOLLOW ALL LOCAL, STATE, AND FEDERAL REGULATIONS PERTAINING TO THE WORK.
7. THE CONTRACTOR SHALL MAINTAIN QUALITY CONTROL OVER THE SUPPLIER'S, MANUFACTURER'S, PRODUCTS, SERVICES, SITE CONDITIONS, AND WORKMANSHIP TO PRODUCE WORK OF HIGH QUALITY. IF ANY MATERIAL OR EQUIPMENT IS DAMAGED OR SUBSTANDARD, OR THE WORK IS NOT PROPERLY ACCOMPLISHED, THE CONTRACTOR SHALL BEAR ALL EXPENSES FOR REMOVAL AND PROPER REPLACEMENT OF SUCH MATERIALS OR EQUIPMENT.



0	28 APR 08	ORIGINAL DRAFT	AMB	DJB
REV	DATE	DESCRIPTION	DRN	APP
Geosyntec consultants 289 GREAT ROAD, SUITE 105 ACTON, MASSACHUSETTS 01749 USA PHONE: 978.263.9588		Land Trust Alliance SILVER LAKE LAND TRUST PO BOX 222 HARRISVILLE, NH 03450		
TITLE: TITLE SHEET				
PROJECT: SILVER LAKE LAND TRUST BOAT RAMP AND STONEY BEACH DESIGN				
SITE: HARRISVILLE, NEW HAMPSHIRE				
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.		DESIGN BY: AMB	DATE: MAY 2008	
DRAWN BY: AMB		PROJECT NO.: BW0100		
CHECKED BY: RH		FILE: BOAT_RAMP-001.DWG		
REVIEWED BY: DJB		DRAWING NO.: 1 OF 6		
APPROVED BY: DJB				
SIGNATURE				
DATE				

SILVER LAKE
(ELEV=1318.75 NGVD)



LEGEND

- EXISTING SPOT ELEVATION
- EXISTING CONTOUR LINES
- PARCEL LINES
- WOODEN/WIRE FENCE
- APPROX. EDGE OF BANK
- APPROX. EDGE OF PAVEMENT
- WETLAND FLAGS
- 100 FOOT WETLAND BUFFER
- SIGN
- UTILITY POLE
- ERODED BANK AREA
- LAKE
- GRASS BERM

DRAWING NOTES:

(1) EXISTING CONDITIONS INCLUDING: GENERAL TOPOGRAPHIC INFORMATION, EDGE OF ROAD, AND PARCEL LINE INFORMATION, WERE COMPILED FROM GIS DATA PROVIDED BY THE TOWN OF HARRISVILLE, NH AND DATA COLLECTED BY GEOSYNTEC CONSULTANTS, INC. DURING A STADIA SURVEY ON OCTOBER 24, 2006. ELEVATIONS SHOWN ARE IN N.G.V.D. 1927 DATUM. THE SHORELINE DELINEATION FOR SILVER LAKE WAS OBTAINED FROM NH GIS GRANIT NATIONAL HYDROGRAPHY DATA SET (DATA DIGITIZED IN 1999 FROM USGS TOPOGRAPHY MAPS).

(2) NO BENCHMARKS WERE OBSERVED ON-SITE AT THE TIME OF THE STADIA SURVEY. A TEMPORARY SURVEY MONUMENT (BENCHMARK) WAS ESTABLISHED AT THE BASE OF UTILITY POLE #1 (REFERENCED ON THE SITE PLAN AS UP1/BM). THE ELEVATION OF THE BENCHMARK WAS ASSUMED TO BE 100.0 FT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ESTABLISHMENT AND MAINTENANCE OF ALL BENCHMARKS AS WELL AS VERIFYING ALL RELEVANT ELEVATIONS.

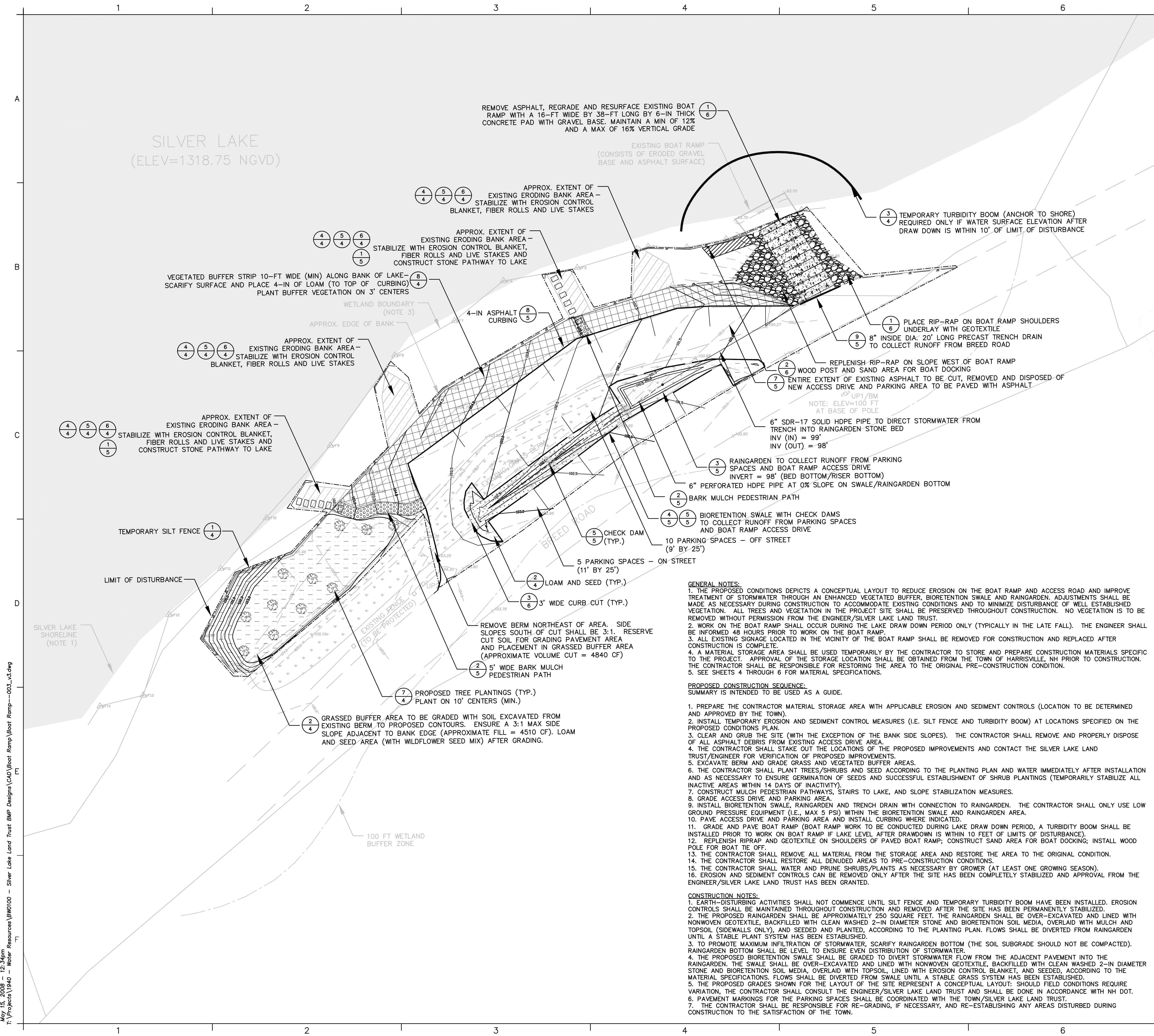
(3) WETLAND DELINEATION SHOWN FOR FLAGS 1 TO 14 WERE FLAGGED AND SURVEYED USING HANDHELD GPS BY ROBERT HARTZEL OF GEOSYNTEC CONSULTANTS, INC. ON OCTOBER 24, 2006.

(4) THE CONTRACTOR SHALL BE RESPONSIBLE FOR: (i) VERIFICATION OF EXISTING CONDITIONS; AND (ii) COORDINATION AND MARKING OF EXISTING UTILITIES PRIOR TO START OF CONSTRUCTION. THE LOCATION OF ALL INFRASTRUCTURE AND UTILITIES IN THE AREA OF WORK MUST BE VERIFIED AND THE DIG-SAFE CALL CENTER CONTACTED (1-800-322-4844) AT LEAST 72 HOURS BUT NOT MORE THAN 30 DAYS PRIOR TO EARTH DISTURBANCE.

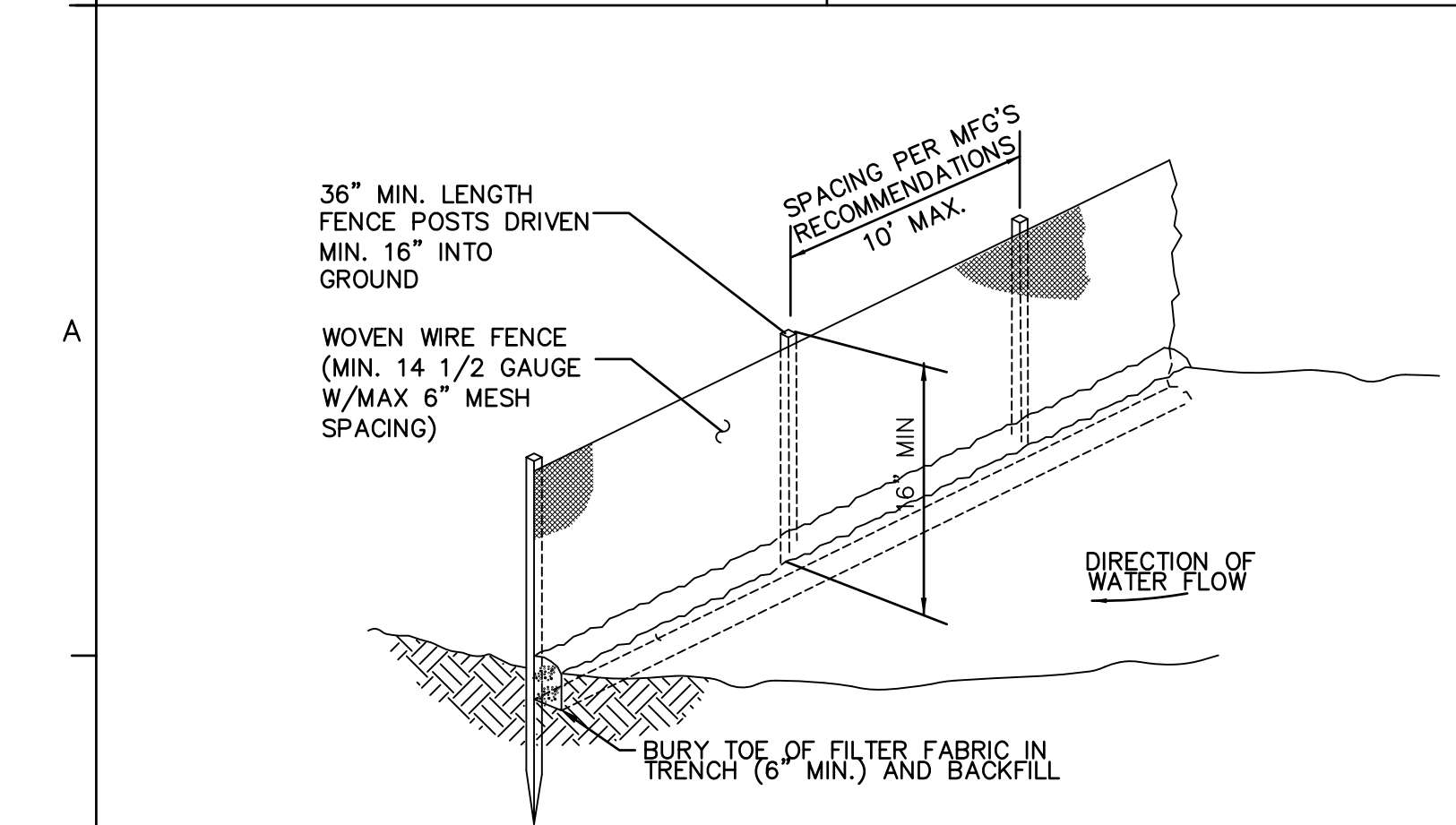
(5) BREED ROAD IS A STATE HIGHWAY AND ANY WORK ON THE HIGHWAY REQUIRES STATE PERMISSION/PERMIT. THE CONTRACTOR SHALL COORDINATE CONTROL OF TRAFFIC DURING CONSTRUCTION WITH THE STATE/TOWN OF HARRISVILLE. POLICE DETAIL AND SECURITY FENCING MAY BE REQUIRED BY THE STATE/TOWN. THE CONTRACTOR SHALL NOTIFY THE STATE/TOWN 48 HOURS PRIOR TO INITIATING WORK.



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REV	DATE	DESCRIPTION	DRN	APP
<div><div><div>Geosyntec</div><div>consultants</div><div>289 GREAT ROAD, SUITE 105 ACTON, MASSACHUSETTS 01749 USA PHONE: 978.263.9588</div></div><div><div>Land Trust Alliance</div><div>SILVER LAKE LAND TRUST PO BOX 222 HARRISVILLE, NH 03450</div></div></div>				
TITLE: EXISTING CONDITIONS SITE PLAN				
PROJECT: SILVER LAKE LAND TRUST BOAT RAMP AND STONEY BEACH DESIGN				
SITE: HARRISVILLE, NEW HAMPSHIRE				
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.		DESIGN BY: AMB DATE: MAY 2008		
SIGNATURE		DRAWN BY: AMB PROJECT NO.: BW0100		
DATE		CHECKED BY: RH FILE: BOAT_RAMP-002.DWG		
		REVIEWED BY: DJB DRAWING NO.: 2 OF 6		
		APPROVED BY: DJB		

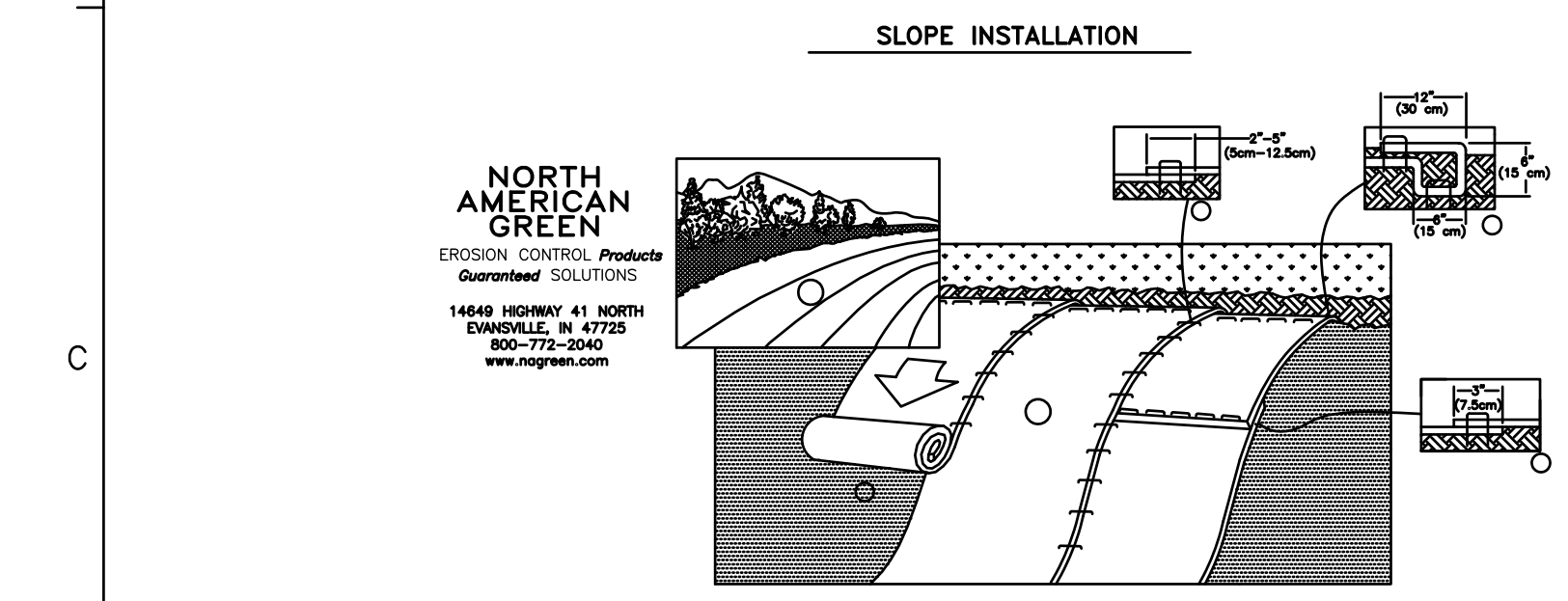


May 15, 2008 - 12:34pm
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1
3
DETAIL
TEMPORARY SILT FENCE

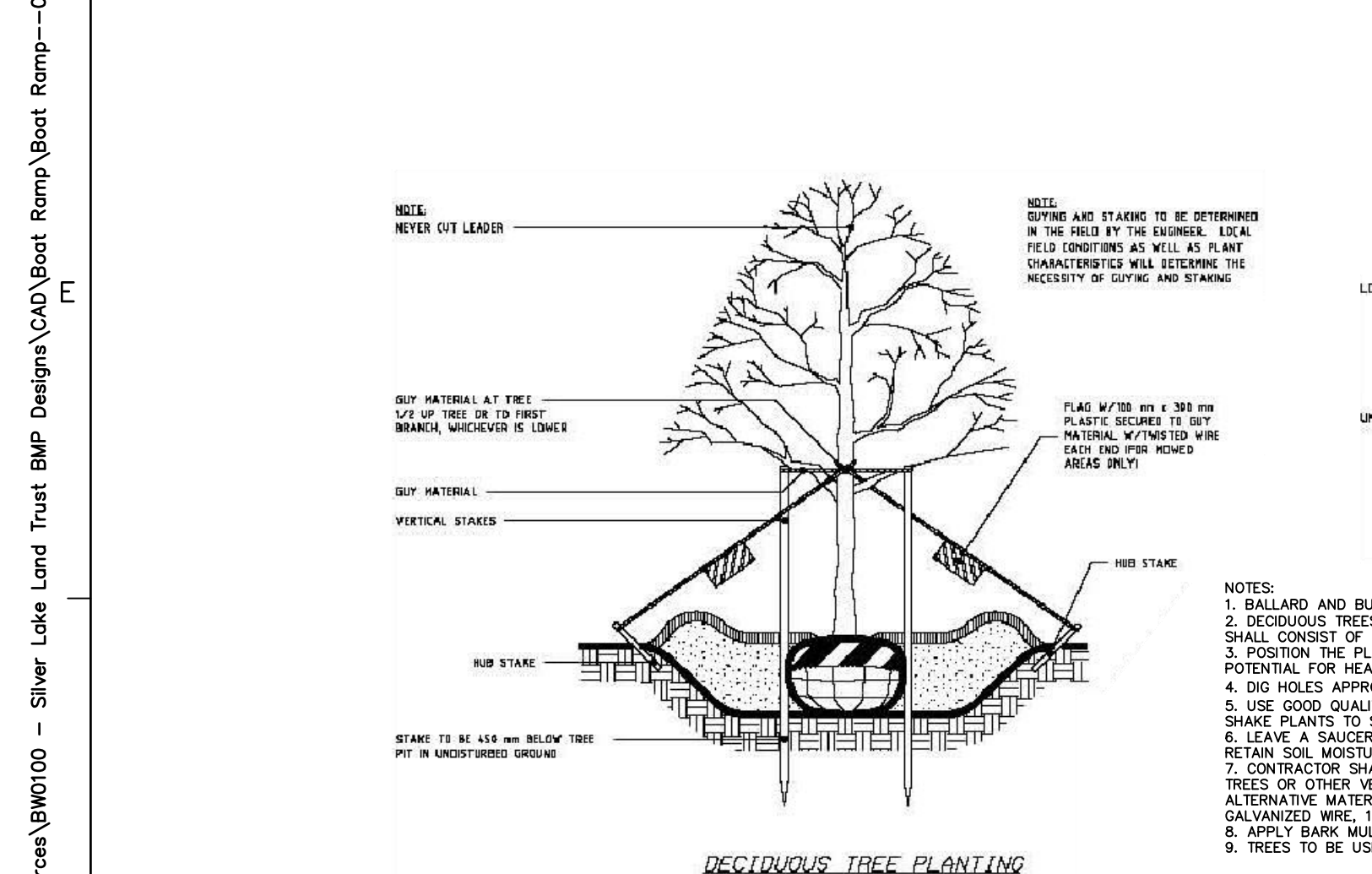
NOTES:
1. SILT FENCE SHALL NOT BE INSTALLED ACROSS CONCENTRATED FLOW PATHS (E.G., CHANNELIZED FLOW).
2. WOVEN WIRE FENCE SHALL BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "1" OR "1 1/2" TYPE.
3. FILTER FABRIC TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND 36" INCHES OF FABRIC FENCE SHALL BE WOVEN WIRE, 12 1/2 GAUGE, 6" MAXIMUM MESH OPENING.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SILT ACCUMULATES TO 50 PERCENT OF THE FENCE CAPACITY.



1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP'S), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP'S IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30 CM) OF RECP'S EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP'S WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECP'S BACK OVER SEED. SECURE RECP'S OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) APART ACROSS THE WIDTH OF THE RECP'S.
3. ROLL THE RECP'S (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. RECP'S WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP'S MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE SINGLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM - STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL RECP'S MUST BE STAPLED WITH APPROXIMATELY 2" - 5" (5 CM - 12.5 CM) OVERLAP DEPENDING ON RECP'S TYPE.
5. CONSECUTIVE RECP'S SPACED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5 CM) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30 CM) APART ACROSS ENTIRE RECP'S WIDTH.
NOTE:
*IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY SECURE THE RECP'S.

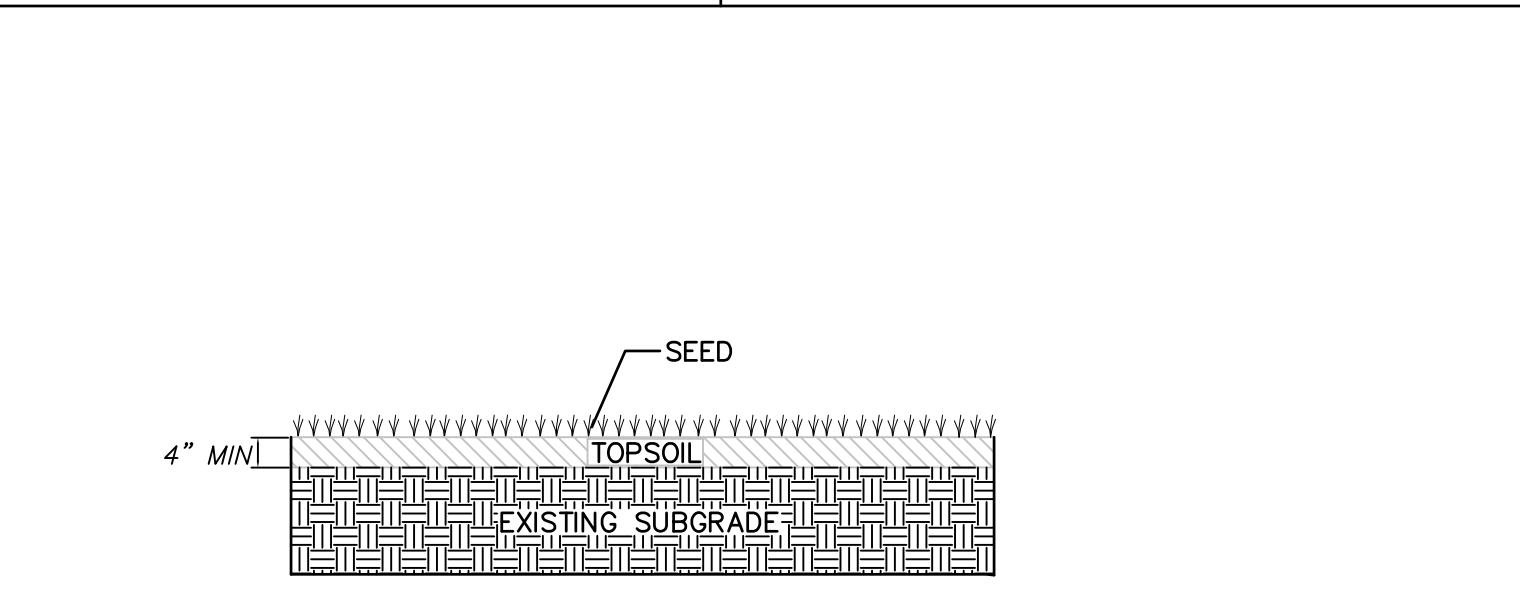
4
3
DETAIL
EROSION CONTROL BLANKET

DETAIL DEVELOPED FROM NORTH AMERICAN GREEN OF EVANSVILLE, IN.



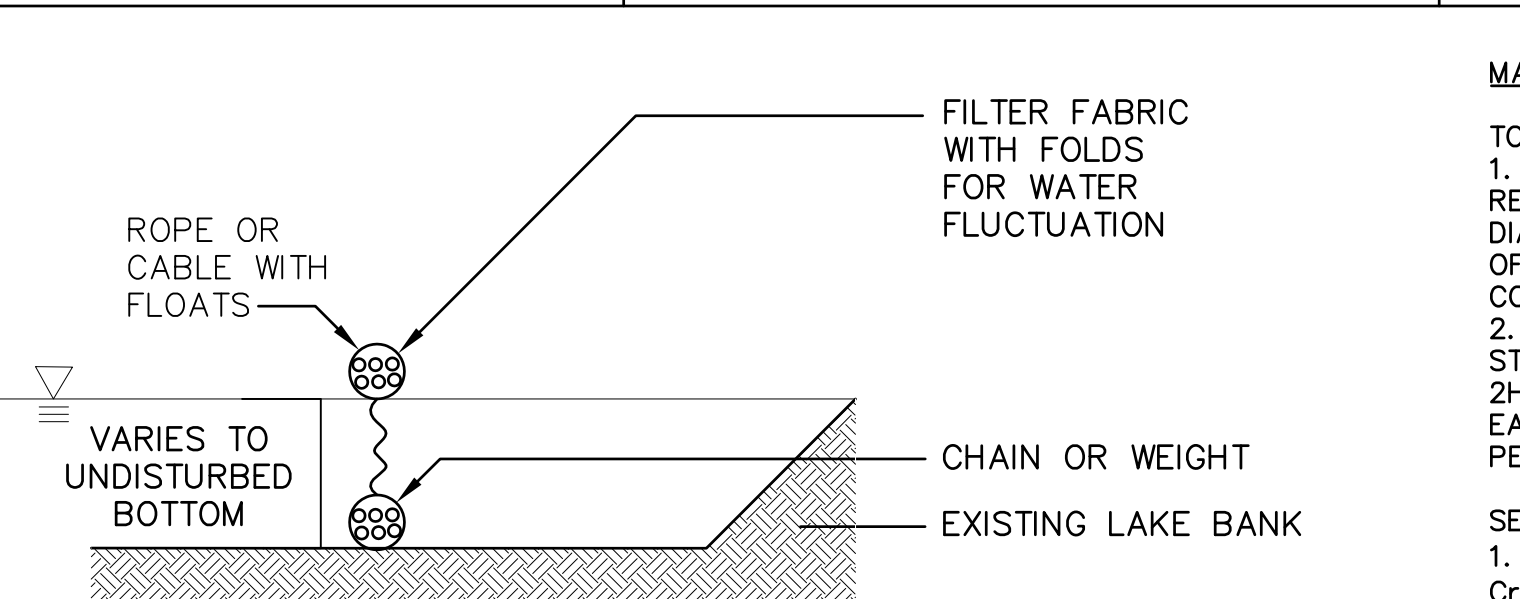
7
3
DETAIL
TREE PLANTING

DETAIL DEVELOPED FROM NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION



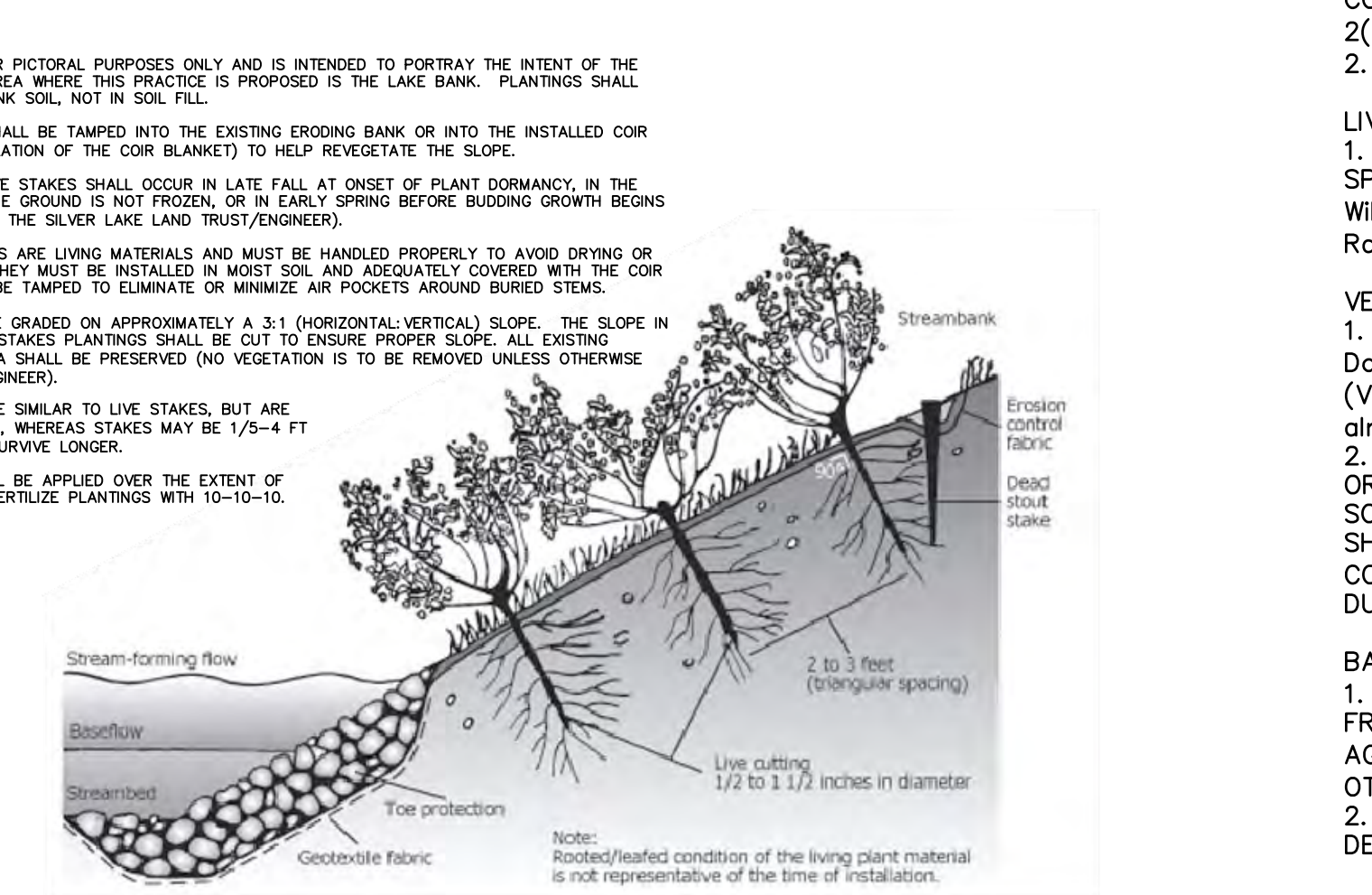
2
3
DETAIL
LOAM AND SEED

NOTES:
1. PRIOR TO PLACING TOPSOIL, VERIFY THAT THE SUBGRADE HAS BEEN GRADED AND COMPACTED. SCARIFY THE SUBGRADE SURFACE TO A DEPTH OF 3 INCHES (E.G., TRACKED WITH DOZERS) OR DISK THE SUBGRADE TO ENSURE THAT THE TOPSOIL BONDS WITH UNDERLYING SUBGRADE.
2. TOPSOIL SHALL BE FROM A REPUTABLE NON-CONTAMINATED SOURCE. THE CONTRACTOR SHALL SUBMIT A TOPSOIL SAMPLE TO A LOCAL SOIL CONSERVATION SERVICE OR HORTICULTURE LABORATORY FOR A SOIL ANALYSIS FOR ORGANIC CONTENT, AVAILABLE NUTRIENTS, ETC. AND RECOMMENDATIONS ON FERTILIZER TYPE, APPLICATION RATE, ETC. NEEDED TO ESTABLISH VEGETATION GROWTH. RESULTS OF THE ANALYSIS AND RECOMMENDATIONS SHALL BE SUBMITTED TO THE ENGINEER. TOPSOIL TESTS WHENEVER A CHANGE IN TOPSOIL IS NOTED AND FROM EACH DIFFERENT SOURCE.
3. APPLY A MINIMUM OF 4 INCHES OF TOPSOIL EVENLY. COMPACT TOPSOIL LIGHTLY AFTER SEEDING WITH ONE OR TWO PASSES OF A TRACKED PIECE OF EQUIPMENT OR EQUIVALENT TO REDUCE EROSION POTENTIAL.
4. FOR ALL DISTURBED AREAS, APPLY NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DRY SITES (OR EQUIVALENT LOW MAINTENANCE MIX) AT AN APPLICATION RATE OF 38 LBS/ACRE (1000 SQ. FT./AC) WITHIN 48 HOURS OF PLACING TOPSOIL AND APPLY STRAW MULCH AT A RATE OF 100 TO 120 BALES PER ACRE.
5. FOR THE GRASSED BUFFER AREA, APPLY NEW ENGLAND WILDFLOWER SEED MIX (OR EQUIVALENT LOW MAINTENANCE MIX) AT AN APPLICATION RATE OF 23 LBS/ACRE (1000 SQ. FT./AC) WITHIN 48 HOURS OF PLACING TOPSOIL AND APPLY STRAW MULCH AT A RATE OF 100 TO 120 BALES PER ACRE.
6. APPLY FERTILIZER AND/OR LIME AT RATES SUITABLE FOR THE PARTICULAR TYPE OF VEGETATION AND TOPSOIL CONDITIONS OR AS RECOMMENDED BY THE LOCAL SOIL CONSERVATION SERVICE.



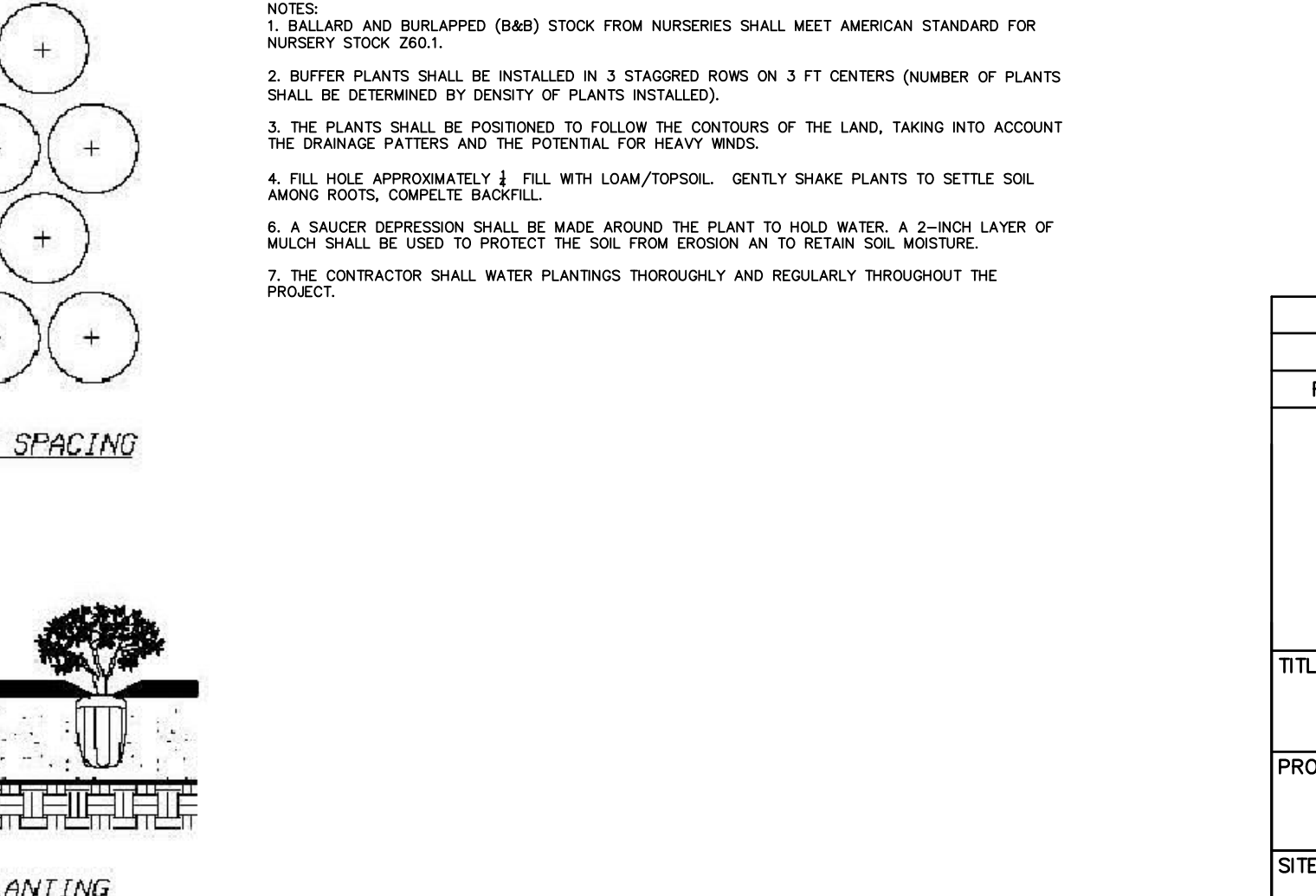
3
3
DETAIL
TURBIDITY BOOM

NOTES:
1. REQUIRED ONLY IF LAKE LEVEL AFTER DRAW DOWN IS WITHIN 10 FEET OF LIMITS OF DISTURBANCE.



6
3
DETAIL
LIVE STAKES

DETAIL DEVELOPED FROM LCSMC/USDA-NRCS, 2002.



8
3
DETAIL
VEGETATED BUFFER STRIP

DETAIL DEVELOPED FROM NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

MATERIAL SPECIFICATIONS:

TOPSOIL
1. VEGETATIVE TOPSOIL SHALL CONSIST OF FERTILE, FRIABLE, NATURAL SOILS THAT ARE REASONABLY FREE OF DEBRIS, FOREIGN OBJECTS, AND ROOTS. NO MATERIAL WITH A MAXIMUM DIAMETER LARGER THAN 2 INCHES SHALL BE ALLOWED. THE VEGETATIVE TOPSOIL SHALL BE FREE OF NOXIOUS WEEDS, STICKS, BRUSH, AND OTHER LITTER AND SHALL HAVE A MINIMUM ORGANIC CONTENT OF 4 PERCENT.
2. VEGETATIVE SOIL SHALL BE ONLY STOCKPILED IN THE DESIGNATED SOIL STOCKPILE AREA. STOCKPILES SHALL BE OF NEAT CONFIGURATIONS AND HAVING SIDESLOPES NO STEEPER THAN 2H:1V. THE SURFACE OF EACH STOCKPILE SHALL BE SHAPED AND TRACKED PRIOR TO THE END OF EACH WORKING DAY IN WHICH SOIL IS STOCKPILED. STOCKPILES SHALL BE PLACED UPGRADIENT OF PERIMETER CONTROL.
SEED
1. NEW ENGLAND EROSION CONTROL/RESTORATION MIX INCLUDES FOR DRY SITES: Creeping Red Fescue (Festuca rubra), Annual Rye-grass (Lolium multiflorum), Little Bluestem (Schizachyrium scoparium), Indian Grass (Sorghastrum nutans) Upland Bentgrass (Agrostis perennans), Rough Bentgrass/Ticklegrass (Agrostis scabra), Blue Grama (Bouteloua gracilis), Canada Wild Rye (Elymus canadensis), Perennial Ryegrass (naturalized)(Lolium perenne).
2. NEW ENGLAND WILDFLOW MIX INCLUDES: Creeping Red Fescue (Festuca rubra), Little Bluestem (Schizachyrium scoparium), Indian Grass (Sorghastrum nutans), Partridge Pea (Chamaecrista fasciculata), Big Leaf Lupine (Lupinus polyphylus), Canada Wild Rye (Elymus canadensis), New England Aster (Aster novae-angliae), Common Milkweed (Asclepias syriaca), Virginia Wild Rye (Elymus virginicus), Ox Eye Sunflower (Heliopsis helianthoides), Black Eyed Susan (Rudbeckia hirta), Wild Senna (Senna Hebecarpa), Early Goldenrod (Solidago juncea).

FIBER ROLL
1. FIBER ROLL SHALL CONSIST OF 9 INCH DIAMETER COCONUT FIBER WATTLE WITH A BIODEGRADABLE CASING AND MINIMUM SPECIFIED LIFE OF 24 MONTHS. FIBER ROLL SHALL BE BIOD-WATL(TM) 9 FROM ROLANKA INTERNATIONAL OR PRIOR APPROVED EQUAL.
2. WATTLES SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

WOOD STAKES
1. WOOD STAKES SHALL CONSIST OF DIMENSIONAL 2X4 LUMBER OR 3 INCH DIAMETER HARDWOOD DOWEL THAT HAVE A DIAGONAL POINT CUT ON THE LOWER PORTION OF THE STAKE. THE STAKE SHALL BE DRIVEN INTO THE SUBGRADE AT LEAST 18 INCHES BELOW GROUND SURFACE. THE STAKE SHALL BE CUT OFF ONE INCH FROM THE TOP OF THE WATTLE THAT THE STAKE IS SUPPORTING. WOOD STAKES SHALL BE PLACED AT 4 FT MAXIMUM.

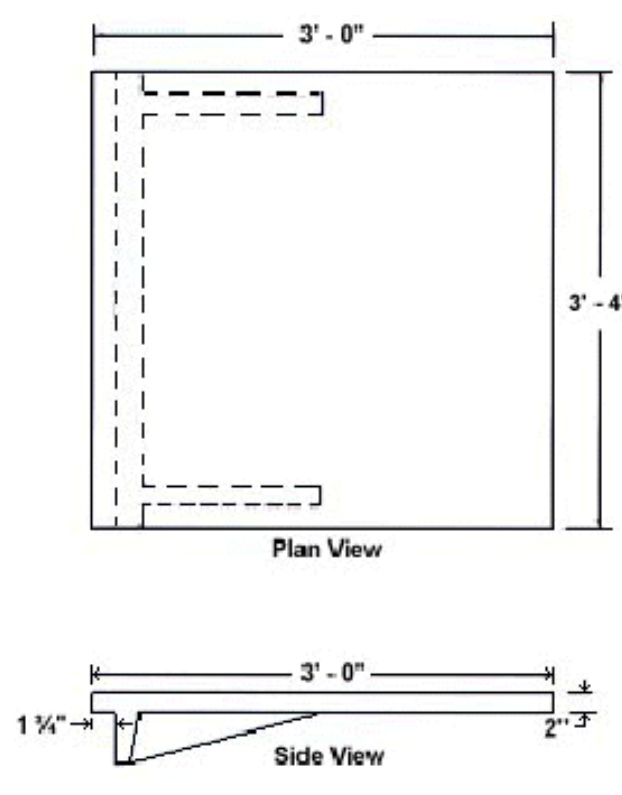
EROSION CONTROL BLANKET
1. THE EROSION CONTROL BLANKET SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS: SHOULD CONSIST OF BIODEGRADABLE FIBER DOUBLE NET EROSION CONTROL BLANKET SPECIFIED FOR 2(H):1(V) SLOPES OR GREATER (E.G., NORTH AMERICAN GREEN S150BN OR EQUIVALENT).
2. BLANKETS SHALL BE INSTALLED ACCORDING TO MANUFACTURERS' SPECIFICATIONS.

LIVE STAKES
1. PLANTS TO BE INSTALLED FOR SLOPE STABILIZATION SHALL INCLUDE THE FOLLOWING NATIVE SPECIES:
Willows (Salix spp.), Cotton Wood (Populus deltoides), Alder (Alnus spp.), and Arrow-wood, Wild Rasin (Viburnum spp.).

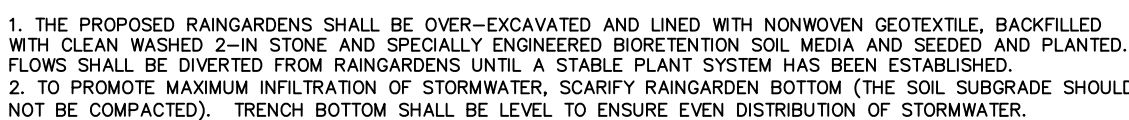
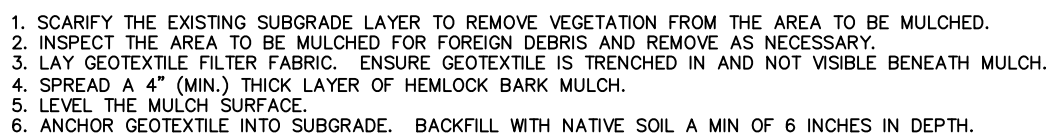
VEGETATED BUFFER STRIP
1. THE PLANTS FOR THE VEGETATED BUFFER STRIP SHALL INCLUDE THE FOLLOWING: Silky Dogwood (Cornus amomum), 2-3'; Bayberry (Myrica pensylvanica), 18-24"; Northern Arrow-wood (Viburnum dentatum), 8-24"; Wild Rasin (Viburnum cassinoides), 2-3'; Sweet Pepperbush (Clethra alnifolia), 2-3'; and Inkberry (Ilex glabra), 2-3'.
2. PLANTING SOIL FOR THE SHRUBS SHALL CONSIST OF REUSED SOIL EXCAVATED FROM THE BERM OR FROM AN OUTSIDE SOURCE IF NEEDED. THE CONTRACTOR SHALL ENSURE THAT THE REUSED SOIL IS RELATIVELY HOMOGENOUS FREE OF FOREIGN DEBRIS AND LARGE ORGANIC MATTER AND SHALL MEET THE REQUIREMENTS SPECIFIED BY THE PLANT SUPPLIER WITH A MINIMUM ORGANIC CONTENT OF 4 TO 8 PERCENT. FERTILIZER (10-10-10) SHALL BE APPLIED TO THE PLANTING SOIL DURING PLANTING.

BARK MULCH
1. MULCH FOR THE TREE/SHRUB PLANTINGS SHALL BE DOUBLE SHREDDED HARDWOOD MULCH FREE FROM WEED SEEDS, SAWDUST, SPLINTERS, OR OTHER DEBRIS. THE MULCH LAYER SHOULD BE WELL AGED (STOCKPILED OR STORED FOR AT LEAST 12 MONTHS), UNIFORM IN COLOR AND FREE OF OTHER MATERIALS (I.E., WEEDS FOREIGN DEBRIS, SOIL ROOTS, ETC.).
2. BARK MULCH SHALL NOT CONTAIN RESIN, TANNIN, WOOD FIBER, OR OTHER COMPOUNDS DETRIMENTAL TO PLANT LIFE.

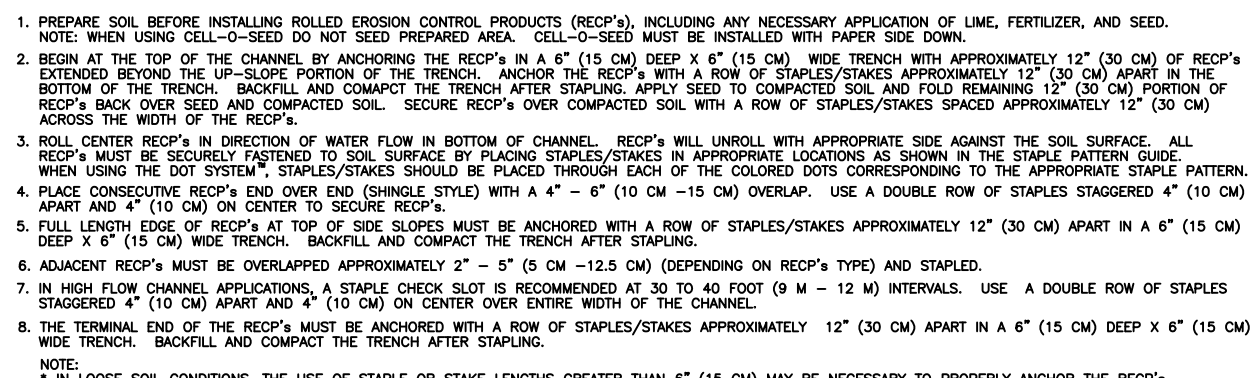
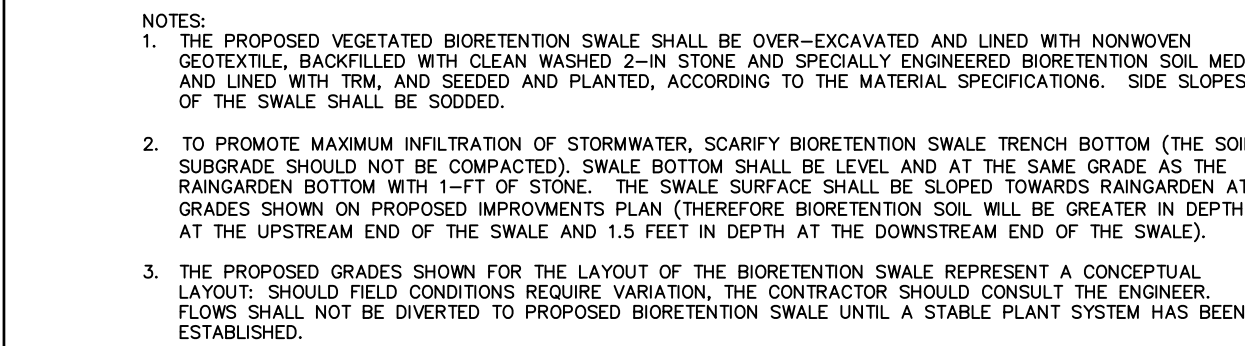
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Land Trust Alliance SILVER LAKE LAND TRUST PO BOX 222 HARRISVILLE, NH 03450					
TITLE: DETAILS I AND SPECIFICATIONS I					
PROJECT: SILVER LAKE LAND TRUST BOAT RAMP AND STONEY BEACH DESIGN					
SITE: HARRISVILLE, NEW HAMPSHIRE					
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SIGNATURE		DRAWN BY: AMB	PROJECT NO.: BW0100		
DATE		CHECKED BY: RH	FILE: BOAT_RAMP-004.DWG		
		REVIEWED BY: DJB	DRAWING NO: 4 OF 6		
		APPROVED BY: DJB			



1. CONTRACTOR SHALL INSTALL SHAWNEE PRE-CAST CONCRETE TERRACE STEPS OR PRIOR APPROVED EQUAL
2. THE STEP SHALL BE 3 FT WIDTH PRECAST CONCRETE.
3. CONTRACTOR SHALL ENSURE THAT THE SLOPE OF THE STAIRWAY DOES NOT EXCEED 2:1 (H:V).
4. CONTRACTOR SHALL FOLLOW MANUFACTURERS SPECIFICATIONS AND INSTALLATION INSTRUCTIONS.



DETAIL DEVELOPED FROM AMERICAN CONCRETE INDUSTRIES OF AUBURN, ME



STONE PATHWAY

1. STONES FOR PATHWAY SHALL BE SHAWNEE PRE-CAST CONCRETE TERRACE STEPS MANUFACTURED BY AMERICAN CONCRETE INDUSTRIES (1022 MINOT AVE, AUBURN, ME 04210, PHONE: 207-784-1388) OR PRIOR APPROVED EQUAL.
2. EACH STEP SHALL BE SEPARATE CONCRETE CASTING WITH A WIDTH OF 3 FT.
3. CONTRACTOR SHALL ENSURE THAT THE SLOPE OF THE STAIRWAY DOES NOT EXCEED 2:1 (H:V).
4. CONTRACTOR SHALL FOLLOW MANUFACTURERS SPECIFICATIONS AND INSTALLATION INSTRUCTIONS.

1. NONWOVEN GEOTEXTILE SHALL CONSIST OF MIRAFI 5000 NONWOVEN GEOTEXTILE OF EQUIVALENT (I.E. MASS PER UNIT AREA 8 OZ./SQ.YD.; GRAB TENSILE STRENGTH 230 LBS.; PERMEABILITY 0.31 CM/SEC. FLOW RATE 100 GAL/MIN./SQ.FT.)

2. NONWOVEN GEOTEXTILES SHALL BE OVERLAPPED A MINIMUM OF 18 INCHES OR SEWN IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS

3. THE NONWOVEN GEOTEXTILE SHALL BE INSTALLED SO THAT THE GEOTEXTILE LIES TIGHTLY AGAINST THE WALLS OF THE RAINGARDEN/BIORETENTION SWALE SIDE WALLS AND IS ANCHORED BELOW THE SURFACE (I.E., NO GEOTEXTILE SHALL BE EXPOSED). PROTECT GEOTEXTILE FROM TEARING WHILE PLACING STONE AND REPAIR ANY DAMAGE IMMEDIATELY BY REMOVING STONE AND INSTALLING ANOTHER SECTION OF GEOTEXTILE.

1. THE ENGINEERED BIORETENTION SOIL MEDIA SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS: 30 PERCENT PLANTING/TOPSOIL, 20 PERCENT BARK MULCH, AND 50 PERCENT SAND.

2. THE TOPSOIL SHALL HAVE A MINIMUM PARTICLE DIAMETER OF 2 INCHES, MAXIMUM CLAY/SILT CONTENT OF 10 PERCENT, HAVE A MINIMUM OF 15 PERCENT ORGANIC CONTENT, AND BE FREE OF STONES AND NOXIOUS WEEDS.

3. THE BIORETENTION SOIL MEDIA SHALL BE PLACED AND GRADED USING LOW GROUND-CONTACT PRESSURE EQUIPMENT OR BY EXCAVATORS AND/OR BACKHOES OPERATING ON THE GROUND ADJACENT TO THE RAINGARDEN AND SWALE AREAS. NO HEAVY EQUIPMENT SHALL BE USED WITHIN THE PERIMETER OF THE BIORETENTION SOIL AREA DURING OR AFTER PLACEMENT OF THE SOIL.

4. FINAL GRADING OF THE MIXTURE SHALL BE PERFORMED AFTER A 24-HOUR SETTLING PERIOD. THE SOIL SHALL BE INSTALLED IN MAX. 12 INCH LIFTS. EACH LIFT SHALL BE COMPLETELY SATURATED BY SPRINKLING OR LIGHT SPRAYING TO PROVIDE NON-MECHANICAL COMPACTION.

2" STONE

1. CRUSHED STONE SHALL BE CLEAN, WASHED STONE OF A RELATIVELY HOMOGENEOUS MATERIAL THAT ARE FREE OF DEBRIS, FOREIGN OBJECTS, AGGREGATE PARTICLES GREATER THAN TWO INCHES, AND ORGANIC MATERIAL.
2. THE CRUSHED STONE SHALL MEET THE FOLLOWING GRADATION: 100 PERCENT PASSING 2.0 INCH SEIVE, 95 TO 100 PERCENT PASSING 1.5-IN SEIVE, 30 TO 70 PERCENT PASSING 1.0-IN SEIVE, 0 TO 25 PERCENT PASSING THE 0.75-IN SEIVE.
3. A MINIMUM OF 2" OF STONE SHALL BE PLACED ABOVE AND BELOW THE PERFORATED UNDERDRAIN WITHIN THE RAINGARDEN.
4. THE STONE SHALL BE SHALL BE INSTALLED IN 12-IN LIFTS.

RANGAEREN/BIORETENTION SWALE PLANTING PLAN:

1. FOLLOWING FINAL GRADING (AND PRIOR TO INSTALLATION OF THE EROSION CONTROL BLANKET) THE ENTIRE SWALE AREA SHALL BE SEEDED WITH NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DETENTION BASINS AND MOIST SITES FROM NEW ENGLAND WETLAND PLANTS, INC. (OR COMPARABLE SEED MIX) AT AN APPLICATION RATE AS SPECIFIED BY SUPPLIER.
2. FOLLOWING INSTALLATION OF THE EROSION CONTROL BLANKET WITHIN THE SWALE, SHRUBS SHALL BE PLANTED WITHIN THE CENTER CHANNEL OF THE SWALE AND IN THE RANGAEREN AND SHALL BE INSTALLED IN 2 STAGGERED ROWS ON APPROXIMATE 3-FOOT CENTERS. THE FOLLOWING IS A LIST OF THE SPECIES TO BE PLANTED. THE SHRUB SPECIES TO BE PLANTED WILL BE FINALIZED BASED ON AVAILABILITY AT THE TIME OF PLANTING BASED ON THE SUGGESTED PLANTING PLAN):

PLANTING PLAN				
Symbol	Scientific Name	Common Name	Separation Distance	Specification
AN	<i>Aster novae-angliae</i>	New England Aster	6"	2' plug
CA	<i>Cactaria alifolia</i>	Swart Peupelbush	3'	3-4' gallon container
EP	<i>Euphorbia perfoliatus</i>	Joe Pyeweed	1'	gallon container
EL	<i>Euphorbia maculatum</i>	Joe Pyeweed	1'	gallon container
SM	<i>Sium latifolium</i>	Wood-sorrel	6"1'	2-3' gallon container
EP	<i>Erchemine purpurea</i>	Eastern Purple Coneflower	6"	gallon container
JH	<i>Juncus horatialis</i>	Creeping Juncus	3'	gallon container
YD	<i>Yarrow horatialis</i>	Yarrow Daylily	6"	gallon container
MP	<i>Malva sylvestris</i>	Babytree	3'	3-4' gallon container

1. PERFORATED - THE BIORETENTION CELL UNDERDRAIN PIPE SHALL BE CORRUGATED, FLEXIBLE, PERFORATED/SLOTTED, POLYETHYLENE PIPE MANUFACTURED WITH A SMOOTH INTERIOR. THE PIPE SHALL MEET THE REQUIREMENTS OF ASTM F405 AND ASTM D252. THE PIPE SHALL BE MANUFACTURED TO A MINIMUM OF 1/2" WALL THICKNESS. THE PIPE SHALL BE ADS N-12 PIPE OR AN APPROVED EQUAL. FITTINGS FOR THE PIPE SHALL BE PRODUCED BY THE SAME MANUFACTURER OF THE PIPE.
2. SOLID - THE PIPE SHALL BE SDR-17 FLEXIBLE SLOTTED POLYETHYLENE PIPE. THE PIPE SHALL MEET THE REQUIREMENTS OF ASTM F714. FITTINGS SHALL BE FROM THE SAME MANUFACTURER AS THE PIPE, HAVE THE SAME PRESSURE RATING, AND CONFORM TO ASTM D3261 (BUTT FUSION) OR ASTM D2683 (SOCKET). ALL JOINTS AND PENETRATIONS SHALL BE WATER-TIGHT. THE PIPE SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D232.

1. THE EROSION CONTROL BLANKET SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS: SHOULD CONSIST OF BIODEGRADABLE FIBER DOUBLE NET EROSION CONTROL BLANKET SPECIFIED FOR 2(H):1(V) SLOPES OR GREATER (E.G., NORTH AMERICAN GREEN S150BN OR EQUIVALENT).
2. BLANKETS SHALL BE INSTALLED ACCORDING TO MANUFACTURERS' SPECIFICATIONS.

1. RIPRAP MATERIAL SHALL CONSIST OF HARD DURABLE STONES THAT ARE FREE OF OVERBURDEN, SPOIL, SHALE, AND ORGANIC MATERIAL.

1. THE ENTIRE EXTENT OF EXISTING ASPHALT PAVEMENT (WITHIN THE ACCESS ROAD AND BOAT RAMP AREA) SHALL BE CUT, REMOVED AND PROPERLY DISPOSED OF (APPROXIMATE VOLUME = 1200 CF ASSUMING PAVEMENT IS GENERALLY 3-IN THICK).
2. NEW ACCESS DRIVE AND PARKING AREAS SHALL BE PAVED WITH ASPHALT PAVEMENT.
3. ASPHALT SHALL BE STANDARD ASPHALT MIX AND MEET SPECIFICATIONS LISTED IN SECTION 403 - HOT BITUMINOUS PAVEMENTS OF THE 2006 NHDOT STANDARD SPECIFICATIONS.
4. ASPHALT PAVEMENT SHALL BE CROWNED TO DRAIN INTO RAINGARDEN AND BIORETENTION SWALE AREAS.

1. ASPHALT PAVEMENT BASE COURSE SHALL CONFORM TO THE SPECIFICATIONS LISTED IN SECTION 304 - AGGREGATE BASE COURSES OF THE 2006 NHDOT STANDARD SPECIFICATIONS.

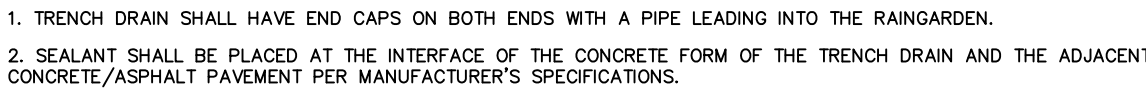
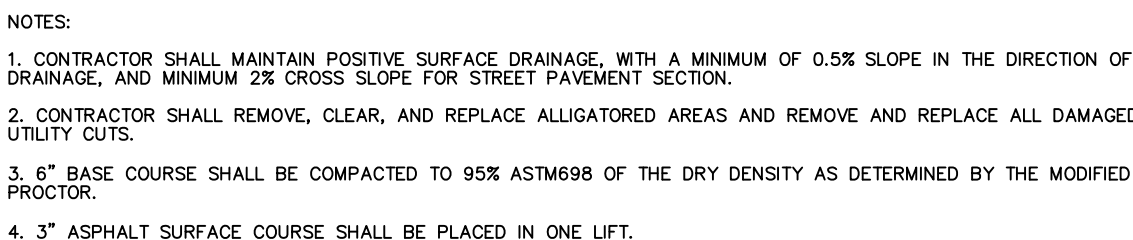
1. TRENCH DRAIN SHALL BE PRECAST 8" POLYDRAIN MANUFACTURED BY ABT, INC. OF TROUTMAN, NORTH CAROLINA, OR PRIOR APPROVED EQUIVALENT. PHONE: (800) 438-6057.

4. CHANNELS SHALL HAVE TONGE AND GROOVE JOINTS SEALED WITH ABT POLYSEAL III. GRATE LOCK DOWN SLOTS SHALL HAVE POLYPROPYLENE VIBRATION DAMPENING INSERTS. ALL CHANNELS MUST HAVE FULL LENGTH ANCHORING RIBS FOR POSITIVE MECHANICAL LOCK WITH THE SURROUNDING CONCRETE.

6. GRATING SHALL BE POLYDRAIN PART NUMBER 854. GRATING SHALL BE BLACK EPOXY-COATED DUCTILE IRON MEETING ASTM-A536 GRADE 80-85-06. GRATING SHALL SEAT IN CHANNELS WITHOUT ROCKING. GRATING SHALL BE LOCKED TO THE CHANNEL USING A STAINLESS STEEL 5/16 - 18UNC BOLT AND STAINLESS STEEL TOGGLE BAR SYSTEM WITH BOLT TORQUE OF 10 IN/LB.

7. TRENCH SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. UTILIZE MANUFACTURER'S APPROVED INSTALLATION DEVICE TO ASSURE PROPER JOINTS, DRAWN TIGHTLY TOGETHER BY DEVICE. THE TRENCH DRAIN AND ITS ENCAPSULATING CONCRETE SHOULD BE ISOLATED FROM THE EXPANSION AND CONTRACTION STRESS OF THE ADJACENT SLABS.

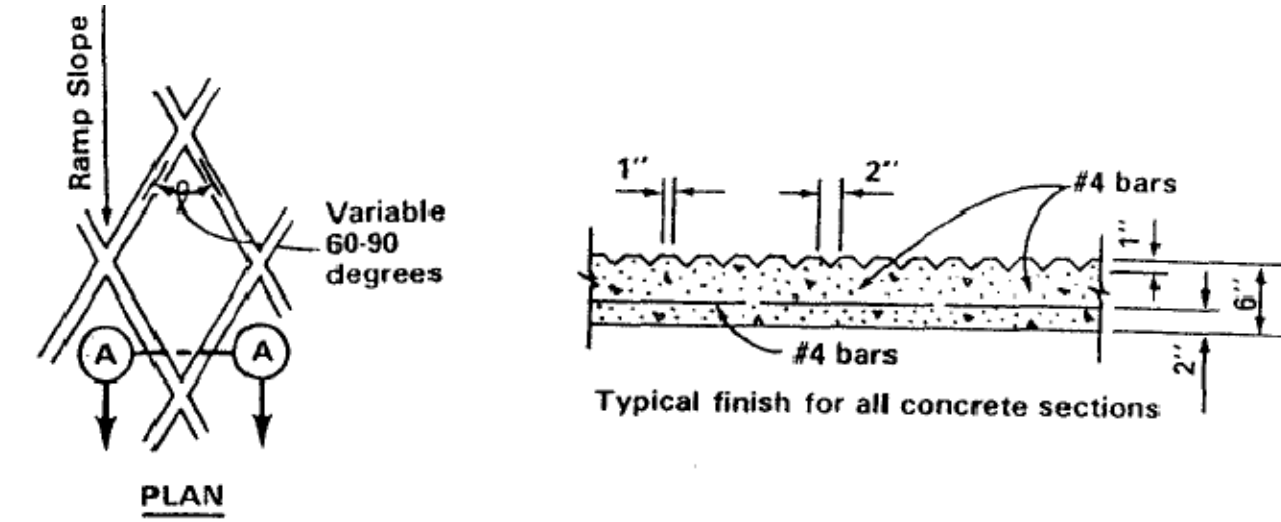
5. SOD SHALL BE COMPOSED OF KENTUCKY BLUEGRASS MIX OR PRIOR APPROVED ALTERNATE.
6. SOD SHALL BE Laid IN ROWS AND SPACED TO ALLOW FOR WEEDS AND INSECTS AND 12-24 HOURS TO DRY THE SOD. SOD SHALL NOT BE CUT.
7. AFTER ALL GRADING HAS BEEN COMPLETED, THE SOD SHALL BE IRRIGATED WITH 1-2 INCHES OF WATER.
8. THE FIRST ROW OF SOD SHALL BE Laid IN A STRAIGHT LINE, WITH SUBSEQUENT ROWS Laid PARALLEL TO, AND TIGHTLY AGAINST EACH OTHER.
9. LATERAL JOINTS SHALL BE STAGGERED TO MAINTAIN UNIFORM WIDTH AND STRENGTH.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SOD TO BE EXERCISED TO INSURE THAT THE SOD IS NOT STRETCHED OR COMPRESSED, THAT ALL JOINTS ARE BUTTED TOGETHER TO PREVENT VOIDS.
11. ON SLOPING AREAS SOD SHALL BE Laid IN STAGGERED JOINTS AND SECURED BY PEGGING.
12. AFTER THE SOD IS Laid, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SOD TO BE EXERCISED TO INSURE THAT THE SOD IS NOT STRETCHED OR COMPRESSED, THAT ALL JOINTS ARE BUTTED TOGETHER TO PREVENT VOIDS.
13. ON SLOPING AREAS SOD SHALL BE Laid IN STAGGERED JOINTS AND SECURED BY PEGGING.
14. AFTER THE SOD IS Laid, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SOD TO BE EXERCISED TO INSURE THAT THE SOD IS NOT STRETCHED OR COMPRESSED, THAT ALL JOINTS ARE BUTTED TOGETHER TO PREVENT VOIDS.
15. AFTER THE SOD IS Laid, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SOD TO BE EXERCISED TO INSURE THAT THE SOD IS NOT STRETCHED OR COMPRESSED, THAT ALL JOINTS ARE BUTTED TOGETHER TO PREVENT VOIDS.
16. AFTER THE SOD IS Laid, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SOD TO BE EXERCISED TO INSURE THAT THE SOD IS NOT STRETCHED OR COMPRESSED, THAT ALL JOINTS ARE BUTTED TOGETHER TO PREVENT VOIDS.
17. THE CONTRACTOR SHALL FOLLOW THE SPECIFICATION FOR SODDING AND SOD PREPARATION BY THE NEW ENGLAND SOD PRODUCERS ASSOCIATION.



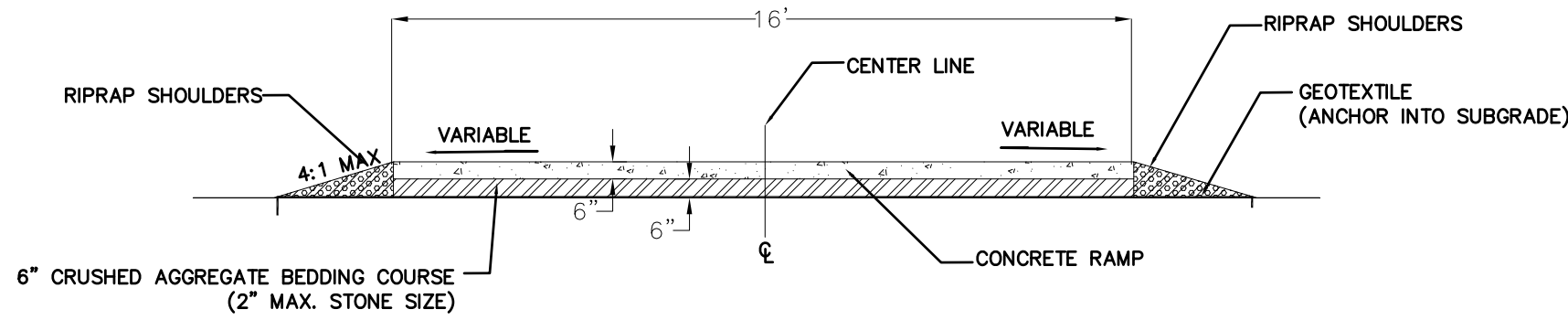
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- NOTES:
1. THE BOAT RAMP SHALL BE RESURFACED WITH REINFORCED PRESTRESSED CONCRETE. RAMP SHALL HAVE A MINIMUM CONCRETE THICKNESS OF 6" WITH A 6" BEDDING COURSE OF 3/4" STONE. THE RESURFACED BOAT RAMP SHALL MAINTAIN A MIN OF 12% AND A MAX OF 16% VERTICAL GRADE.
 2. SUB-GRADE PREPARATION: THE BOAT RAMP SHALL BE GRADED ACCORDING TO THE CONSTRUCTION PLANS AND PROOF ROLLED. THE CONCRETE RAMP SHALL BE PLACED ON 6" OF COMPACTED 3/4" WASHED STONE (BEDDING COURSE) WHICH IS PLACED ON NONWOVEN GEOTEXTILE FABRIC TO PREVENT WASHOUT. THE BEDDING COURSE SHALL BE COMPACTED USING A PLATE COMPACTOR USING 4 PASSES.
 3. THE CONCRETE BOAT RAMP SHALL TERMINATE AT SILVER LAKE HIGH WATER LEVEL. NO PART OF THE CONCRETE PAD SHALL BE SUBMERGED. THE DOWN GRADIENT END OF THE BOAT RAMP - PAST THE EXTENTS OF THE CONCRETE PAD - SHALL BE GRADED TO PROVIDE A SMOOTH TRANSITION BETWEEN THE CONCRETE PAD AND THE BOTTOM OF THE BOAT RAMP. NOTE: THE CONCRETE PAD IS TERMINATING AT THE HIGH WATER MARK. THIS PLAN DOES NOT PROVIDE STABILIZATION FOR THE BOTTOM OF THE RAMP. IF STABILIZATION OF THE RAMP BOTTOM IS REQUIRED IN THE FUTURE, THEN 10-11" WIDE CONCRETE PLANS WITH 3-11" WIDE GRAVEL SHOULDERS ARE RECOMMENDED TO BE ADDED AND TIED INTO THE PROPOSED CONCRETE PAD.
 4. THE CONCRETE PAD SHALL HAVE A CHAMFORD EDGE TO PREVENT SPAULDING. THE SURFACE SHOULD BE GROOVED IN A HERRINGBONE PATTERN, DOWN SLOPED FROM THE CENTER OF THE RAMP TO THE OUTSIDE EDGE.
 5. THE RAMP SURFACE SHALL BE FINISHED BY JITTERBUGGING (VIBRATING A STEEL MESH INTO THE RAMP SURFACE). WHEN THE TOOL IS REMOVED FROM THE SURFACE THE RESULTING FINISH SHALL BE A DENSE ROUGH SURFACE. THE SPACE BETWEEN PARALLEL GROOVES OF THE SURFACE FINISH SHALL NOT BE LESS THAN 2" NOR MORE THAN 3".
 6. RAMP SHOULDERS SHALL BE STABILIZED WITH RIP-RAP TO PREVENT EROSION AND TO PROVIDE SUPPORT TO ERRANT VEHICLE WHEELS GOING OFF THE PAVEMENT.



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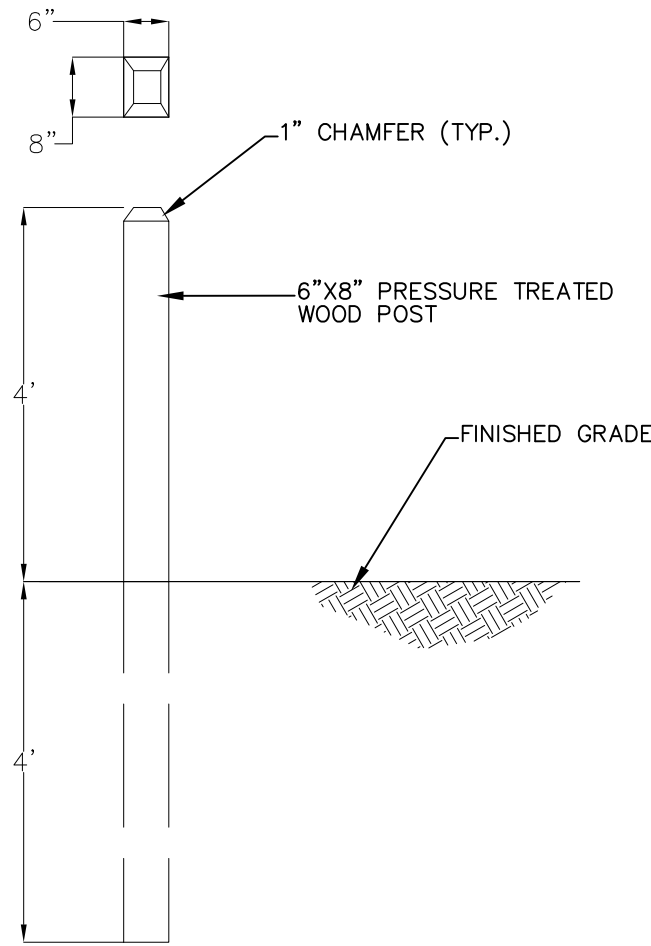


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DETAIL

TYPICAL BOAT RAMP CONCRETE PAD

C



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DETAIL

WOOD POST MARKER



- NOTES:
1. CURB CUTS SHALL BE CONSTRUCTED ALONG THE LENGTH OF THE BIOTENTION SWALE AND RAINGARDEN TO DIRECT PAVEMENT STORMWATER RUNOFF INTO THE SWALE/RAINGARDEN. THE CURB CUTS SHALL BE 3-FT IN LENGTH, PARALLEL TO THE ROADWAY AND 3-FT WIDE.
 2. THE CURB CUTS SHALL BE GRADED AS TO PROVIDE POSITIVE FLOW FROM THE PAVEMENT INTO THE SWALE/RAINGARDEN.
 3. RIPRAP SHALL BE PLACED IN THE GRADED AREA TO PROVIDE STABILIZATION FROM EROSION FLOWS ENTERING THE SWALE/RAINGARDEN.

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DETAIL

RIPRAP CURB CUTS

F


MATERIAL SPECIFICATIONS (CONT.):

- CONCRETE
1. CONCRETE SHALL MEET SPECIFICATIONS LISTED IN SECTION 520 - PORTLAND CEMENT CONCRETE OF THE 2006 NHDOT STANDARD SPECIFICATIONS.
 2. CONCRETE SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH OF 3000 PSI; HAVE 4-6% AIR ENTRAINMENT; BE PROPERLY WORKED, PLACED, CONSOLIDATED, SCREEDED, AND BULL FLOATED SO THAT THE AGGREGATE IS ABOUT 0.5 INCHES BELOW THE SURFACE.
 3. THE CONCRETE RAMP SHALL BE 6" THICK. THE CONCRETE RAMP SHALL BE REINFORCED WITH NUMBER 4 (1/2" DIAMETER) GRADE 60 REBAR, PLACED AT 12" ON CENTER LENGTHWISE, AND 18" ON CENTER ACROSS. THE STEEL REINFORCEMENT SHALL BE 3" FROM THE SURFACE AND BOTTOM AND SIDES OF THE CONCRETE.
 4. CONCRETE SHALL BE FINISHED WITH A SURFACE ROUGH ENOUGH TO PROVIDE GOOD TRACTION (EVEN WHEN COVERED WITH ALGAE). SEE DETAIL 2.

- 3/4" STONE
1. CRUSHED STONE SHALL BE CLEAN, WASHED STONE OF A RELATIVELY HOMOGENEOUS MATERIAL THAT ARE FREE OF DEBRIS, FOREIGN OBJECTS, AGGREGATE PARTICLES GREATER THAN 1 INCHES, AND ORGANIC MATERIAL.
 2. THE CRUSHED STONE SHALL MEET THE FOLLOWING GRADATION: 100 PERCENT PASSING 1.0-IN SIEVE; 90 TO 100 PERCENT PASSING 3/4-IN SIEVE; 10 TO 50 PERCENT PASSING 1/2-IN SIEVE; 0 TO 20 PERCENT PASSING THE 3/8-IN SIEVE; AND 0 - 5 PERCENT PASSING THE NO. 4 SIEVE.
 3. A MINIMUM OF 8" OF COMPACTED, CRUSHED STONE SHOULD BE PLACED OVER THE SUBRADE. 3/4" STONE SHALL BE USED. IF SOFT AREAS ARE ENCOUNTERED OR IF THE SOIL IS DIFFICULT TO COMPACT, THE POOR MATERIAL SHALL BE UNDERCUT AND LARGER STONE (2-4" DIAMETER STONE) SHALL BE USED TO PROVIDE AN ADEQUATE BASE FOR THE SMALLER STONE.

- RIPRAP
1. RIPRAP MATERIAL SHALL CONSIST OF HARD DURABLE STONES THAT ARE FREE OF OVERBURDEN, SPOIL, SHALE, AND ORGANIC MATERIAL.
 2. RIPRAP FOR THE BOAT RAMP SHOULDERS SHALL A MEAN DIAMETER OF 6" D50 (i.e., D50 = 6-in.), AND A MAXIMUM DIAMETER OF 12-INCHES AND UNDERLAIN WITH GEOTEXTILE.
 3. RIPRAP MATERIAL FOR THE CURB CUTS SHALL HAVE A D50 GREATER THAN 4 INCHES WITH 0 TO 5 PERCENT PASSING 2.5 INCHES IN DIAMETER.

- SAND
1. SAND AREA ADJACENT TO BOAT RAMP SHALL BE PRESCREENED WASHED BEACH SAND.

0	28 APR 08	ORIGINAL DRAFT		AMB	DJB	
REV	DATE	DESCRIPTION			DRN	APP
<div>Geosyntec</div> <div>consultants</div> <div>289 GREAT ROAD, SUITE 105 ACTON, MASSACHUSETTS 01749 USA PHONE: 978.263.9588</div>			<div></div> <div>Land Trust Alliance</div> <div>SILVER LAKE LAND TRUST PO BOX 222 HARRISVILLE, NH 03450</div>			
TITLE: DETAILS III AND SPECIFICATIONS III						
PROJECT: SILVER LAKE LAND TRUST BOAT RAMP AND STONEY BEACH DESIGN						
SITE: HARRISVILLE, NEW HAMPSHIRE						
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.		DESIGN BY: AMB		DATE: MAY 2008		
		DRAWN BY: AMB		PROJECT NO.: BW0100		
		CHECKED BY: RH		FILE: BOAT_RAMP-005.DWG		
		REVIEWED BY: DJB		DRAWING NO.: 6 OF 6		
		APPROVED BY: DJB				
<div>SIGNATURE</div> <div>DATE</div>						

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