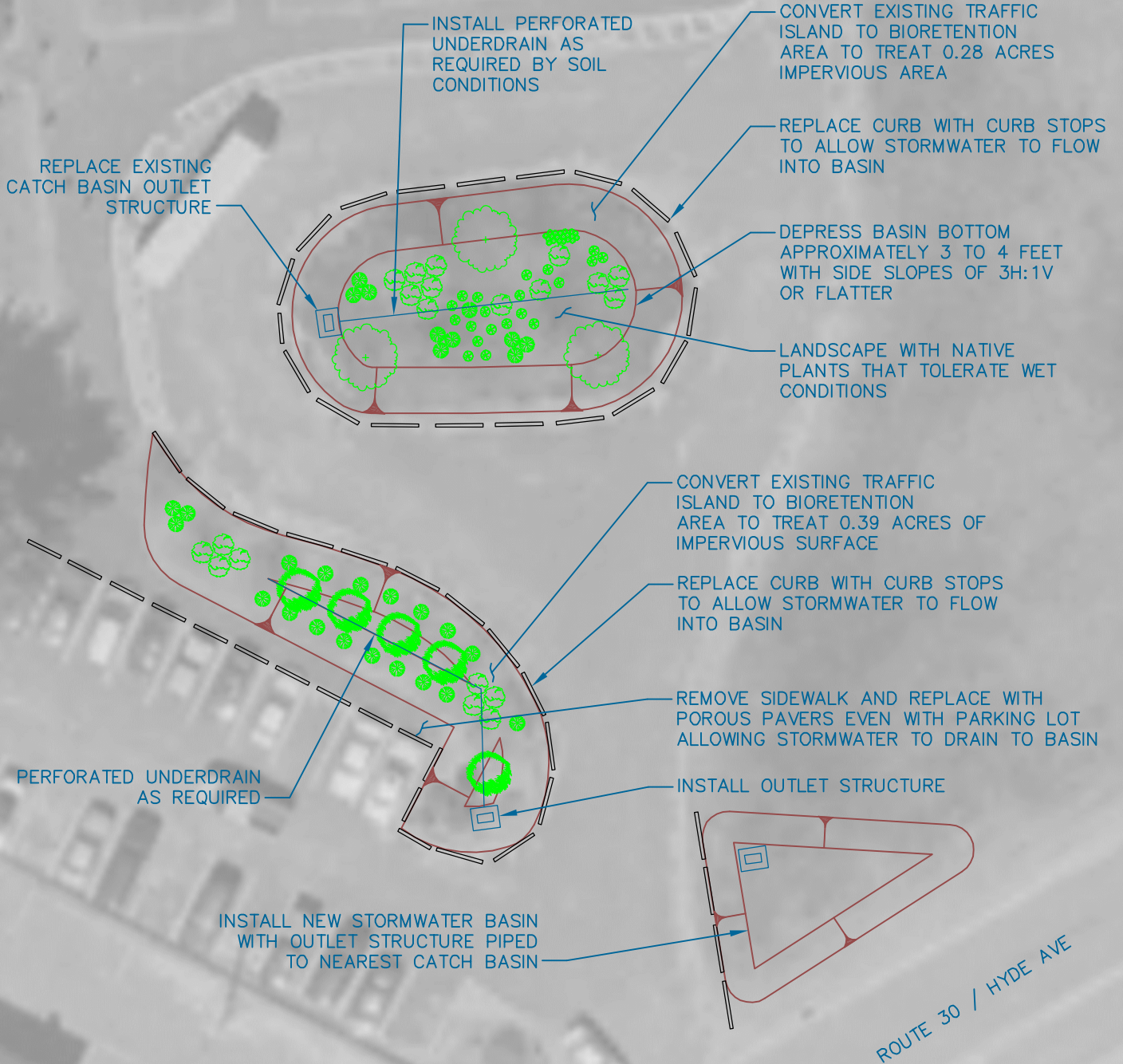


Appendix D

Stormwater Retrofit Concept Designs

NORTHEAST SCHOOL



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STORMWATER RETROFIT CONCEPT
NORTHEAST SCHOOL
TANKERHOOSAN RIVER WATERSHED CONNECTICUT

PROJ. No.: 20050257.A20
DATE: FEBRUARY 2009
1

ROUTE 84 OFF RAMP

DISCHARGE TO STREAM VIA OVERLAND FLOW

PLANT BASIN AND SURROUNDINGS WITH NATIVE WATER TOLERANT AND UPLAND SPECIES AS APPROPRIATE

CONVERT EXISTING GRASSED AREA TO LINEAR STORMWATER BASIN

DEPRESS BASIN BOTTOM APPROXIMATELY 2 TO 3 FEET WITH SIDE SLOPES OF 3H:1V OR FLATTER

INSTALL OPTIONAL UNDERDRAIN IF SOILS DO NOT FACILITATE INFILTRATION

I-84 EXIT 67
CONNDOT COMMUTER LOT
APPROXIMATE IMPERVIOUS
AREA = 2.0 ACRES

REPLACE CURB WITH CURB STOPS
TO ALLOW STORMWATER TO FLOW
INTO BASIN

ABANDON EXISTING CATCH BASIN
AND STORM DRAINAGE PIPE AND
AND REPLACE WITH INLET SWALE

CLARKS BROOK

SEDIMENT FOREBAY TO REMOVE COARSE POLLUTANTS

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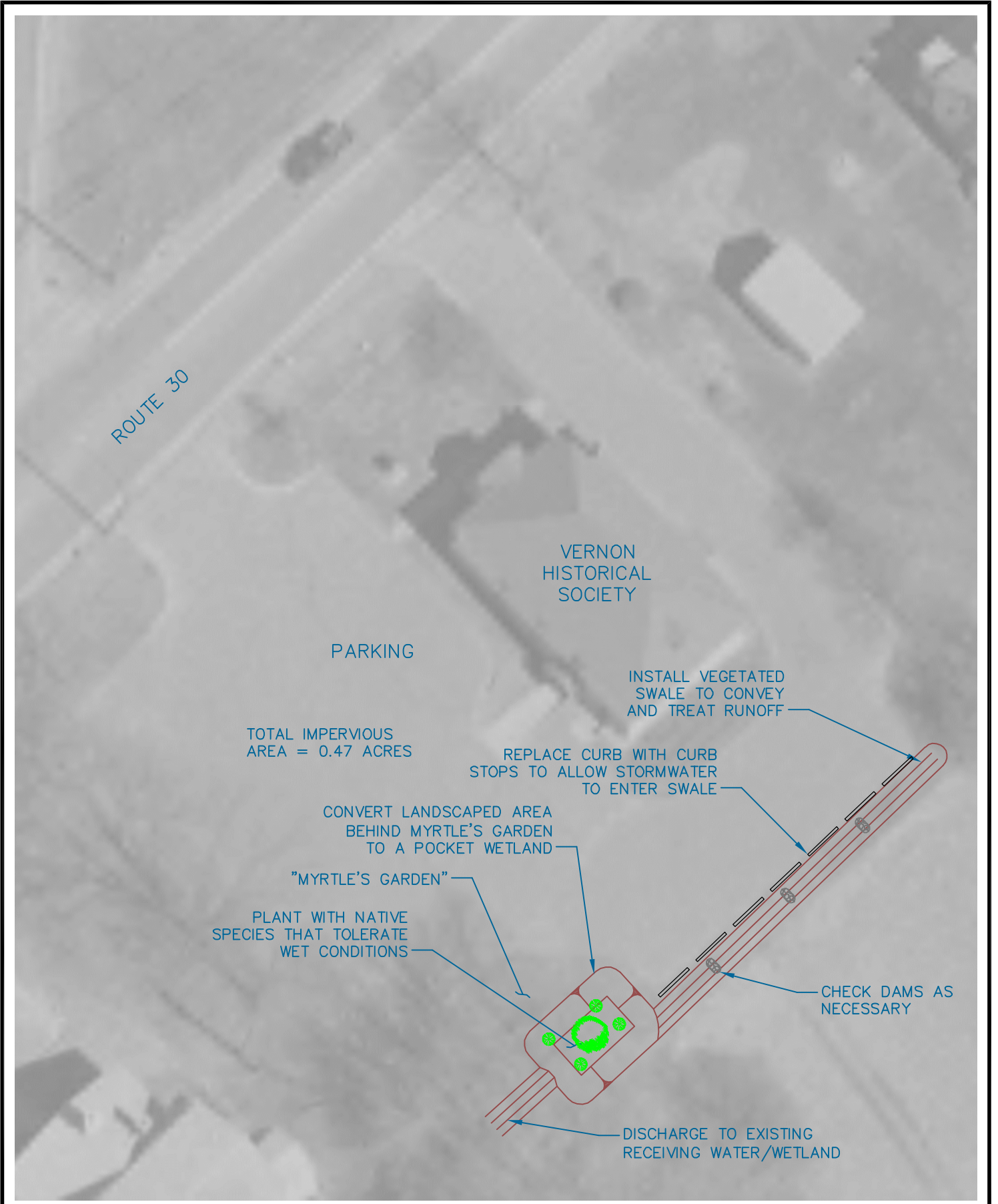


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STORMWATER RETROFIT CONCEPT
I-84 EXIT 67 COMMUTER LOT
TANKERHOUSEN RIVER WATERSHED CONNECTICUT

PROJ. No.: 20050257.A20
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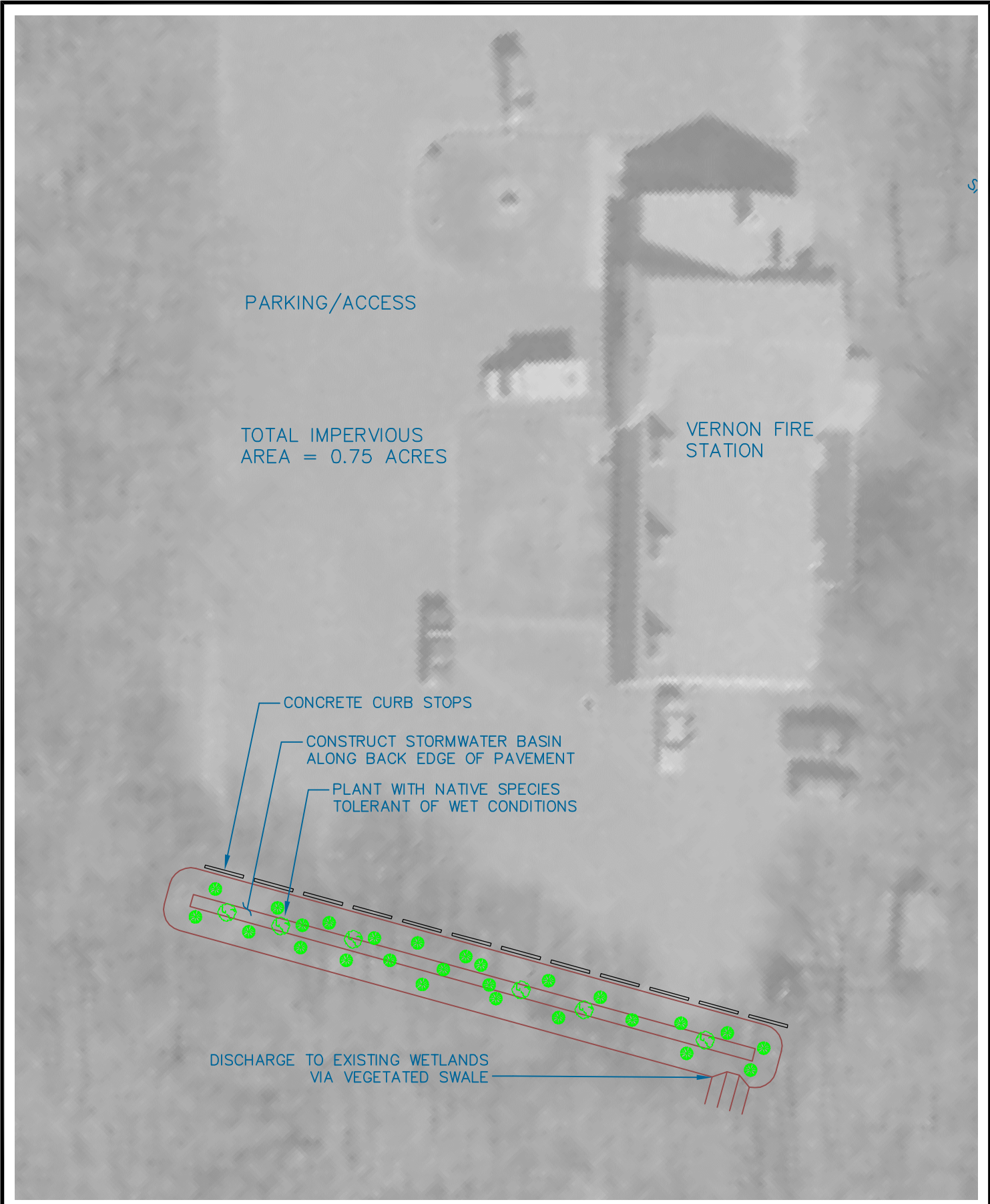


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STORMWATER RETROFIT CONCEPT
VERNON HISTORICAL SOCIETY
TANKERHOUSEN RIVER WATERSHED CONNECTICUT

PROJ. No.:	20050257.A20
DATE:	FEBRUARY 2009
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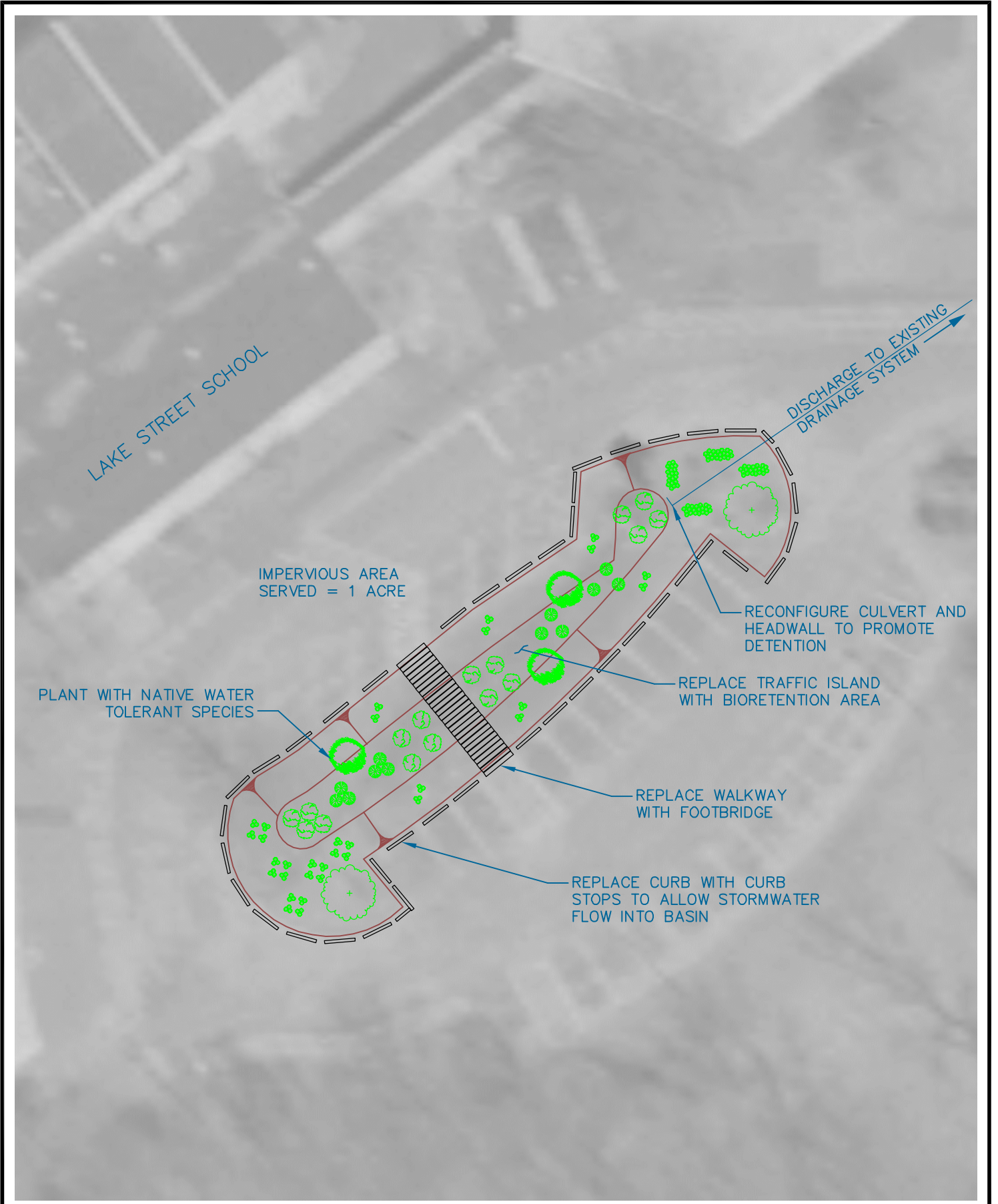
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 STORMWATER RETROFIT CONCEPT
 VERNON FIRE STATION

TANKERHOUSEN RIVER WATERSHED

CONNECTICUT

PROJ. No.: 20050257.A20
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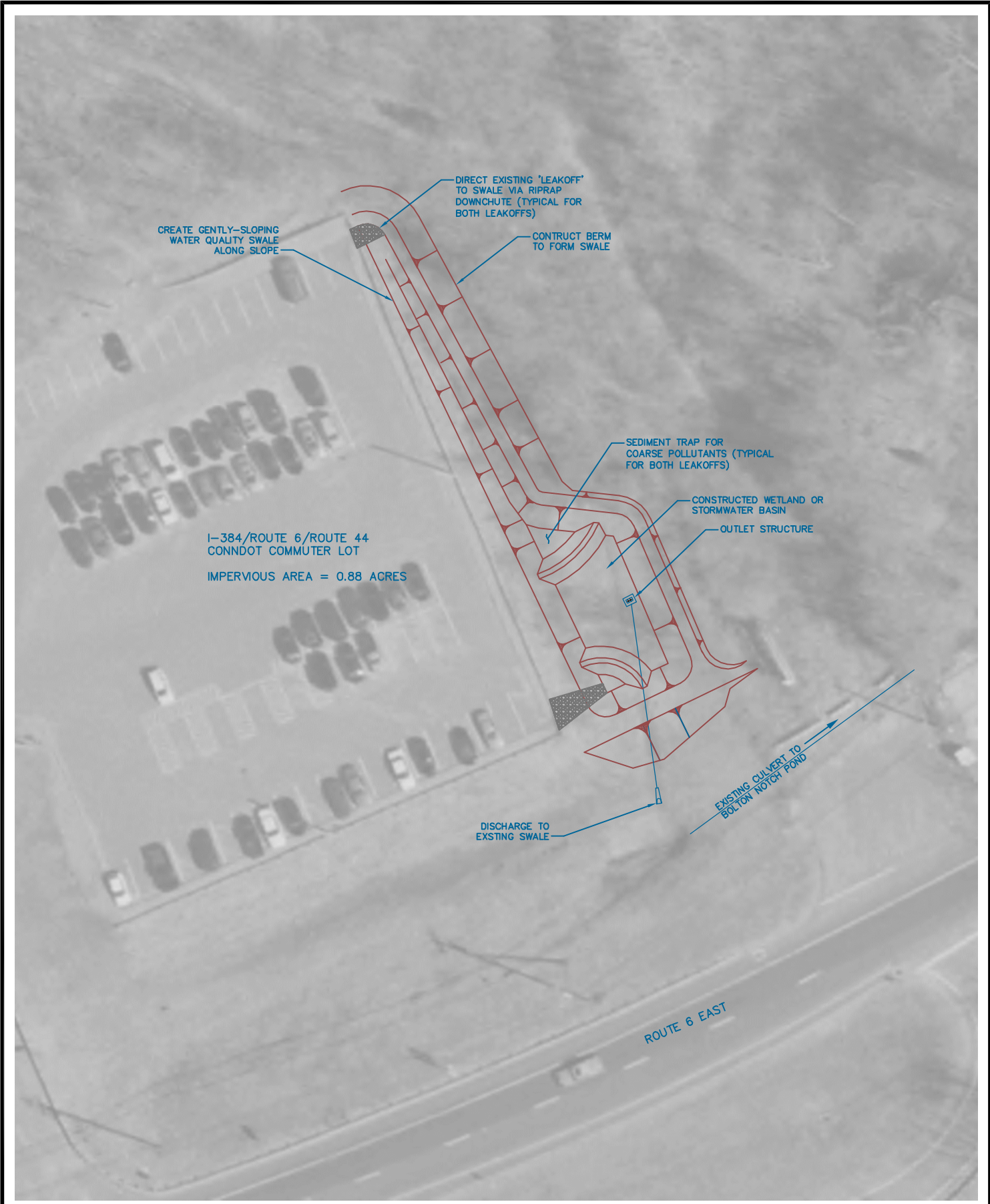


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STORMWATER RETROFIT CONCEPT
LAKE STREET SCHOOL
TANKERHOUSEN RIVER WATERSHED CONNECTICUT

PROJ. No.: 20050257.A20
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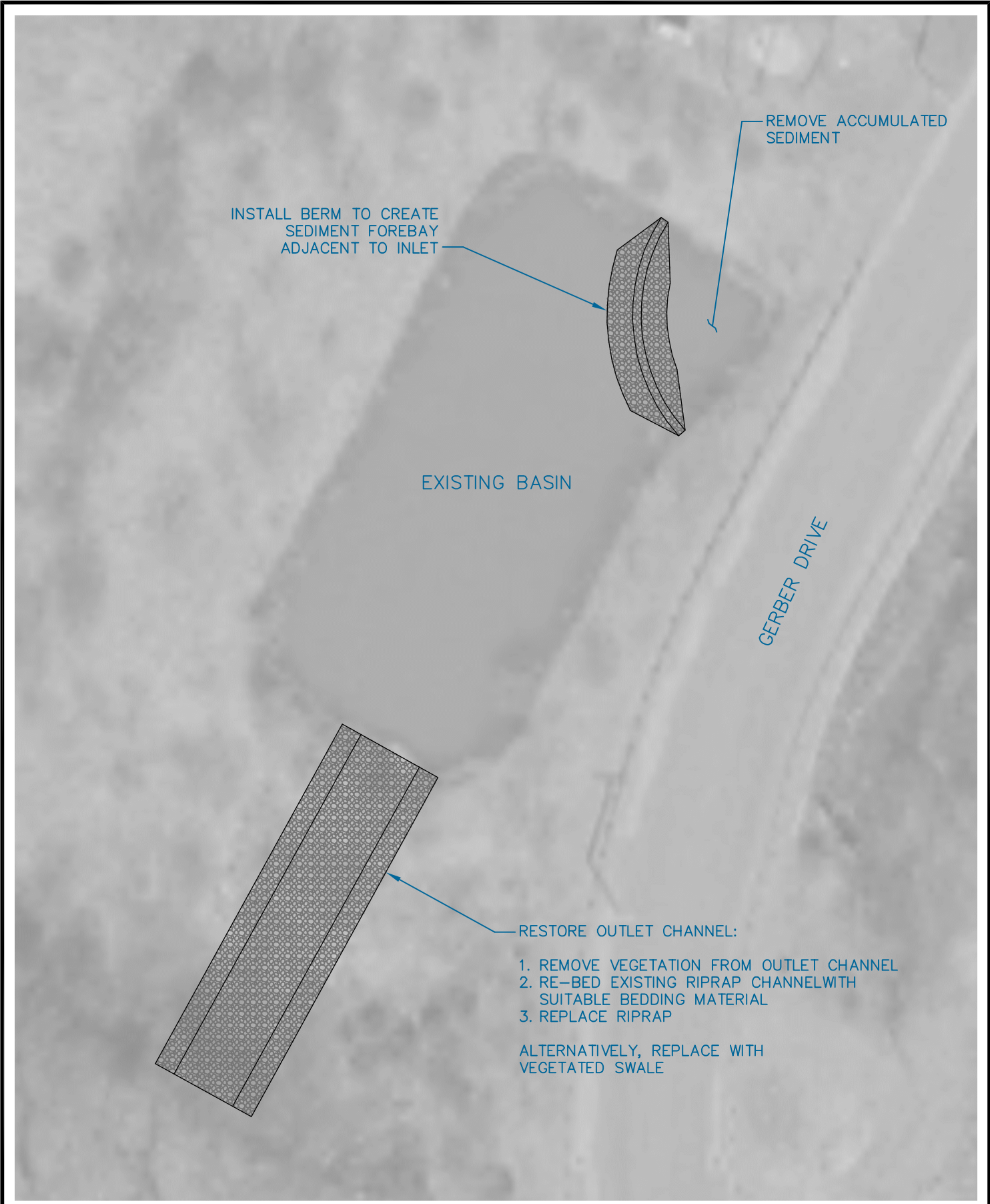
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 STORMWATER RETROFIT CONCEPT
 BOLTON NOTCH POND

TANKERHOUSEN RIVER WATERSHED CONNECTICUT

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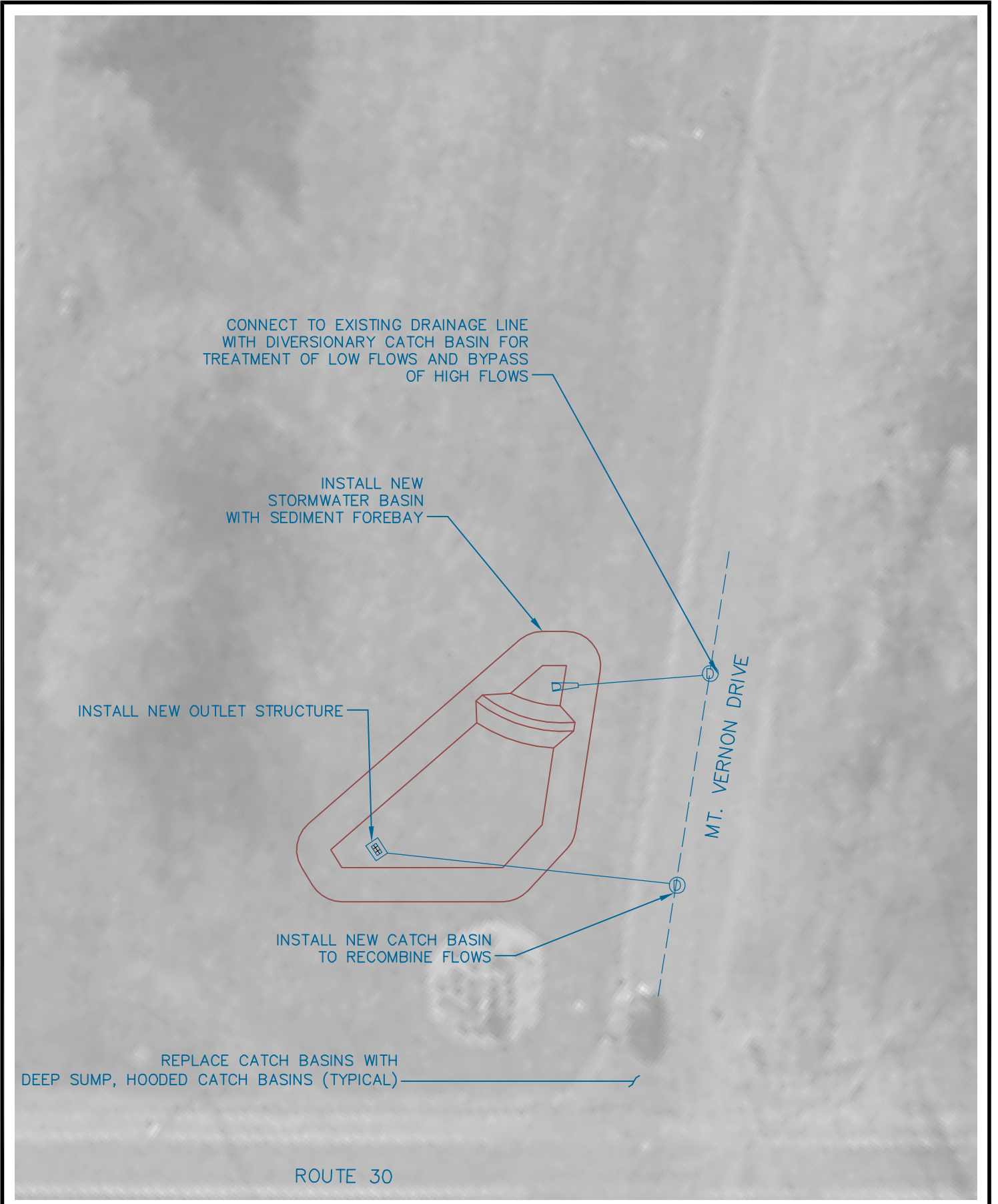


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STORMWATER RETROFIT CONCEPT
GERBER TECHNOLOGIES BASIN
TANKERHOUSEN RIVER WATERSHED CONNECTICUT

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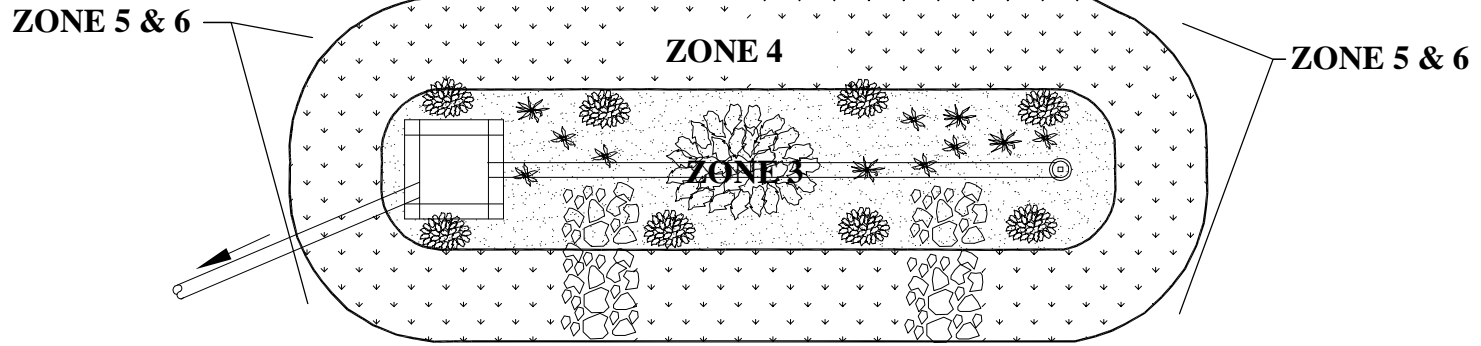
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STORMWATER RETROFIT CONCEPT
MOUNT VERNON APARTMENTS
TANKERHOUSEN RIVER WATERSHED CONNECTICUT

PROJ. No.: 20050257.A20
DATE: FEBRUARY 2009

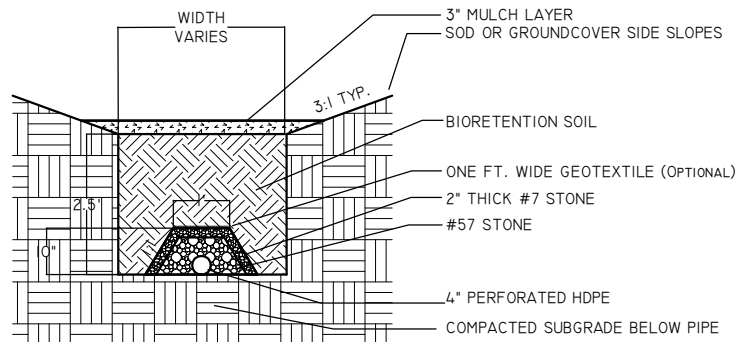
8



PLAN

NOTES:

1. PLANTING ZONES AND PLANT SELECTION PER DETAIL SHEET 7
2. ALL PLANTINGS SHALL BE LOCAL NATIVE SPECIES.
3. IRRIGATION MAY BE PROVIDED FOR INITIAL ESTABLISHMENT AND DRY SEASONS.



ADAPTED FROM CONNECTICUT STORMWATER QUALITY MANUAL (2004) AND CHARLOTTE - MECKLENBURG, NC POST-CONSTRUCTION BMP DESIGN MANUAL (APRIL 2008)

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FRIENDS OF THE HOCKANUM RIVER LINEAR PARK

STORMWATER RETROFIT DETAILS

BIORETENTION AREA

TANKERHOUSEN RIVER WATERSHED

CONNECTICUT

PROJ. No.: 20050257.A20
 DATE: FEBRUARY 2009

DET 1

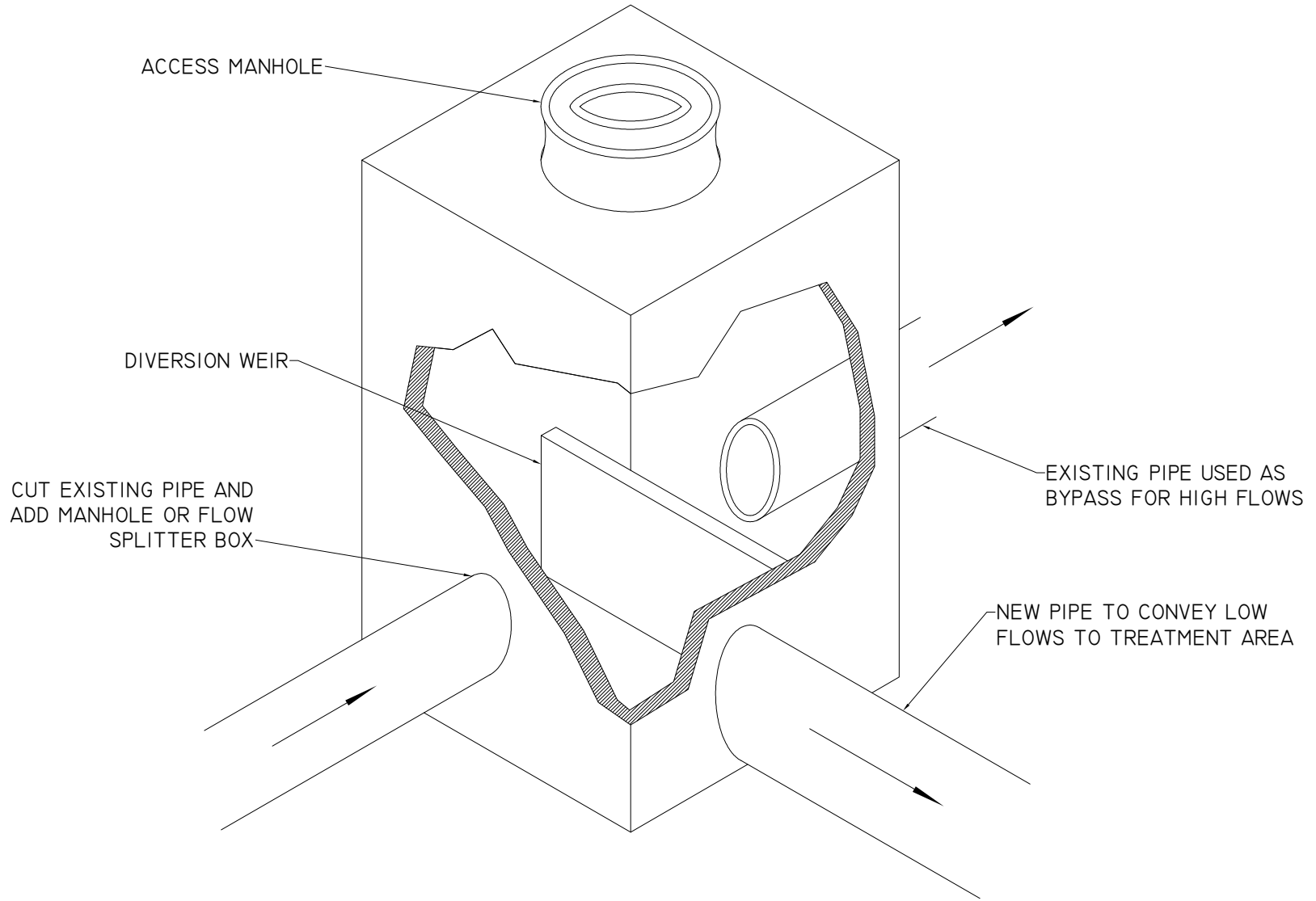
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ADAPTED FROM THE CONNECTICUT STORMWATER QUALITY MANUAL (2004)

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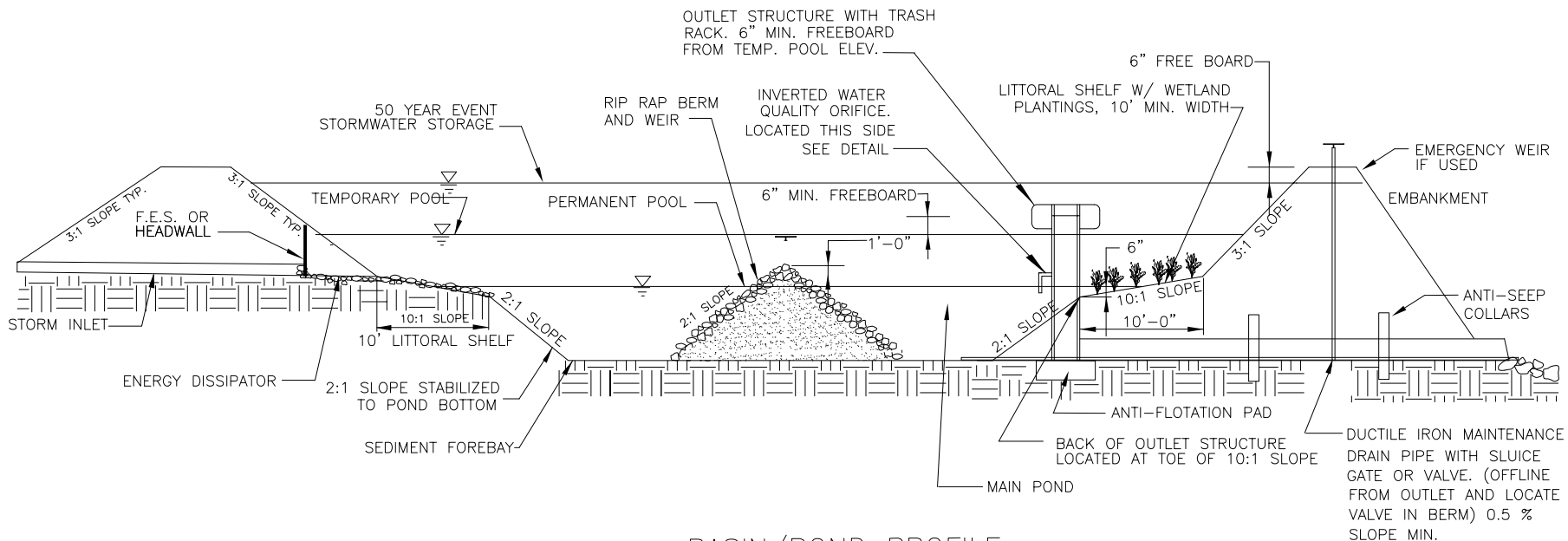
FRIENDS OF THE HOCKANUM RIVER LINEAR PARK
STORMWATER RETROFIT DETAILS
FLOW SPLITTER

TANKERHOUSEN RIVER WATERSHED

CONNECTICUT

PROJ. No.: 20050257.A20
DATE: FEBRUARY 2009

DET 2



BASIN/POND PROFILE

NOTES:

1. 4-6 INCH LAYER OF AMENDED SOIL IS RECOMMENDED IN ANY AREA WHERE PLANTINGS ARE REQUIRED

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FRIENDS OF THE HOCKANUM RIVER LINEAR PARK

STORMWATER RETROFIT DETAILS

STORMWATER BASIN / POND PROFILE

TANKERHOUSEN RIVER WATERSHED

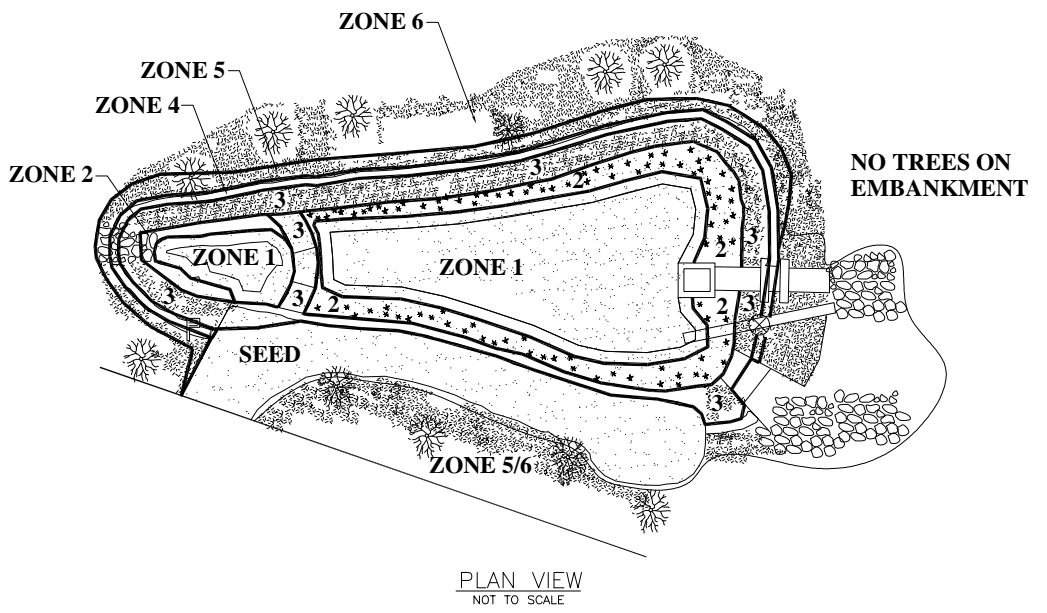
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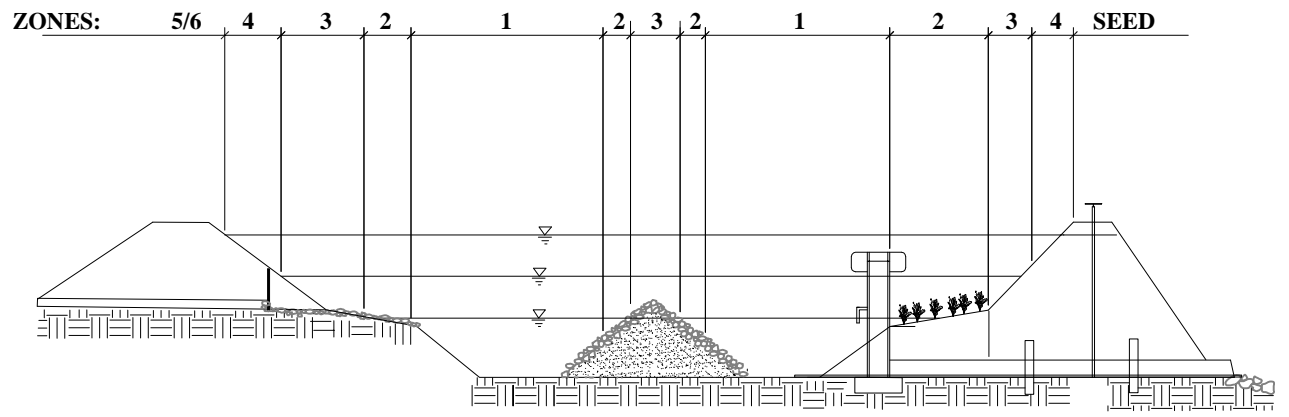
DET 3

NOTES:

1. PLANTINGS ZONES AND PLANT SELECTION PER NOTES ON DETAIL SHEET 7
2. ALL PLANTINGS SHALL BE LOCAL NATIVE SPECIES.
3. IRRIGATION MAY BE PROVIDED FOR INITIAL ESTABLISHMENT AND DRY SEASONS.



PLAN VIEW
NOT TO SCALE



POND CROSS SECTION

ADAPTED FROM THE CONNECTICUT STORMWATER QUALITY MANUAL (2004) AND THE CHARLOTTE - MECKLENBURG, NC POST-CONSTRUCTION BMP DESIGN MANUAL (APRIL 2008)

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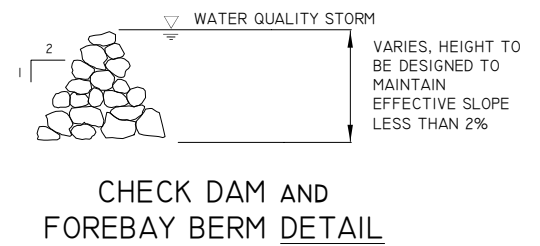
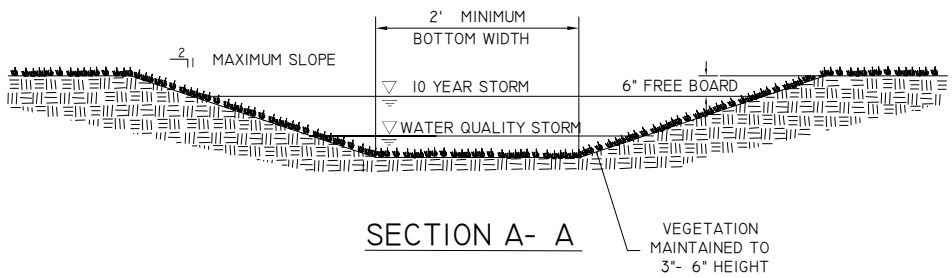
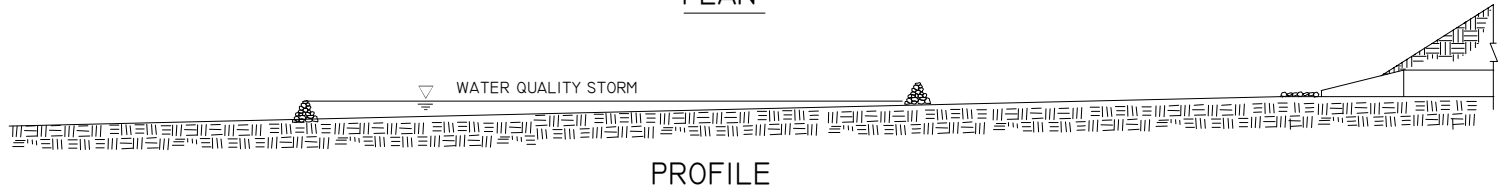
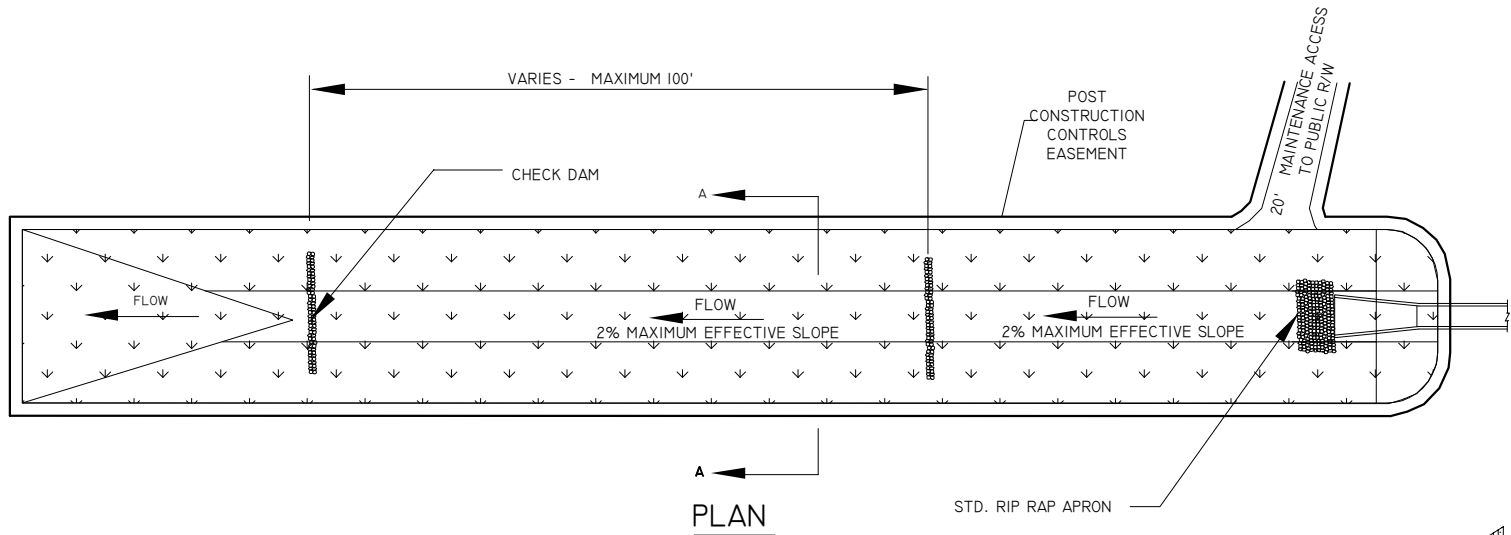
FRIENDS OF THE HOCKANUM RIVER LINEAR PARK
STORMWATER RETROFIT DETAILS
POND PLANTING PLAN

TANKERHOUSEN RIVER WATERSHED

CONNECTICUT

PROJ. No.: 20050257.A20
DATE: FEBRUARY 2009

DET 4



NOTES:

1. CONNECT GRASS SWALE EASEMENT TO A DEDICATED PUBLIC RIGHT OF WAY WITH A 20-FOOT ACCESS EASEMENT.

ADAPTED FROM THE CONNECTICUT STORMWATER QUALITY MANUAL (2004) AND THE CHARLOTTE - MECKLENBURG, NC POST-CONSTRUCTION BMP DESIGN MANUAL (APRIL 2008)

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<p>GRAPHIC SCALE</p>	



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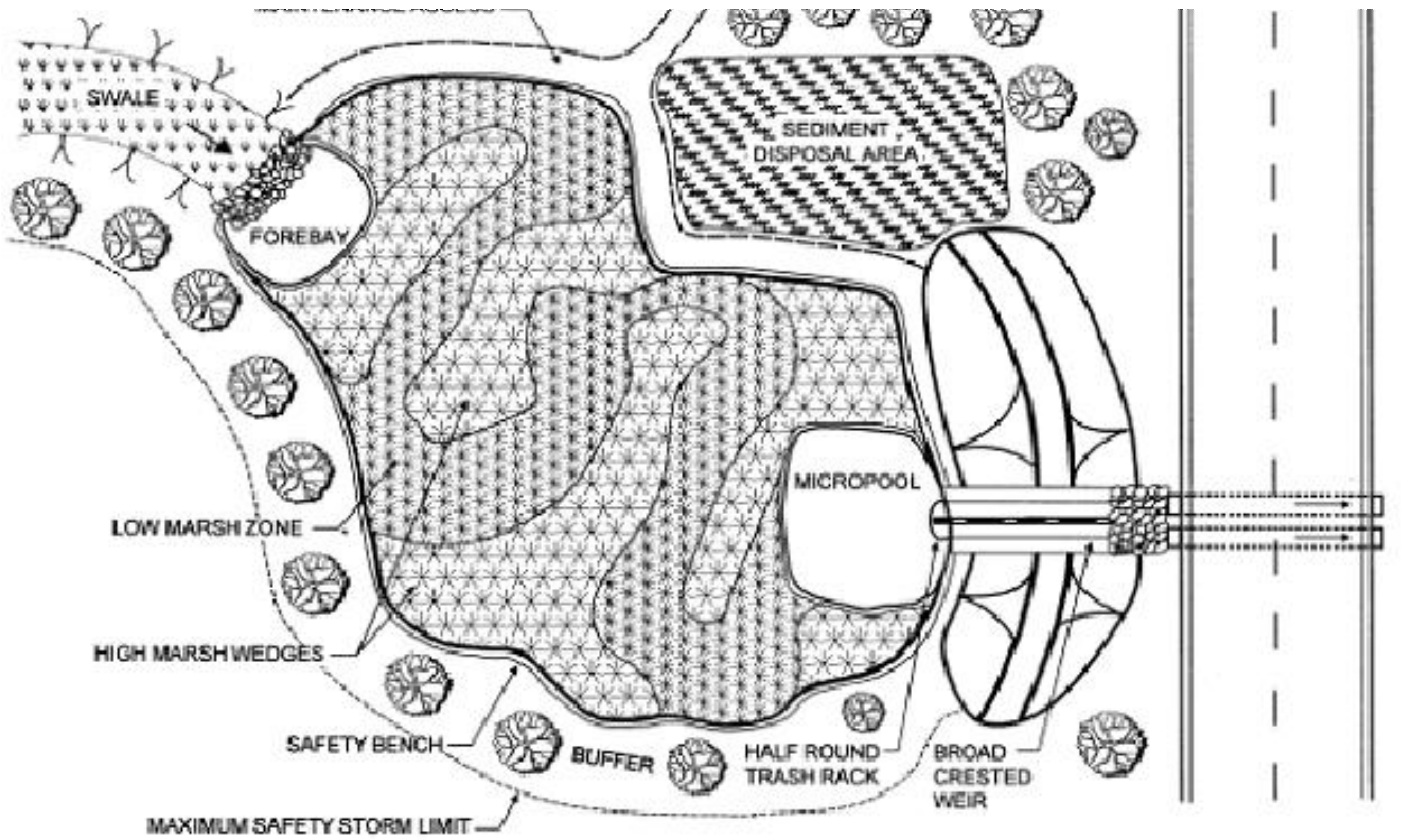
FRIENDS OF THE HOCKANUM RIVER LINEAR PARK
 STORMWATER RETROFIT DETAILS
 VEGETATED SWALE

TANKERHOUSEN RIVER WATERSHED

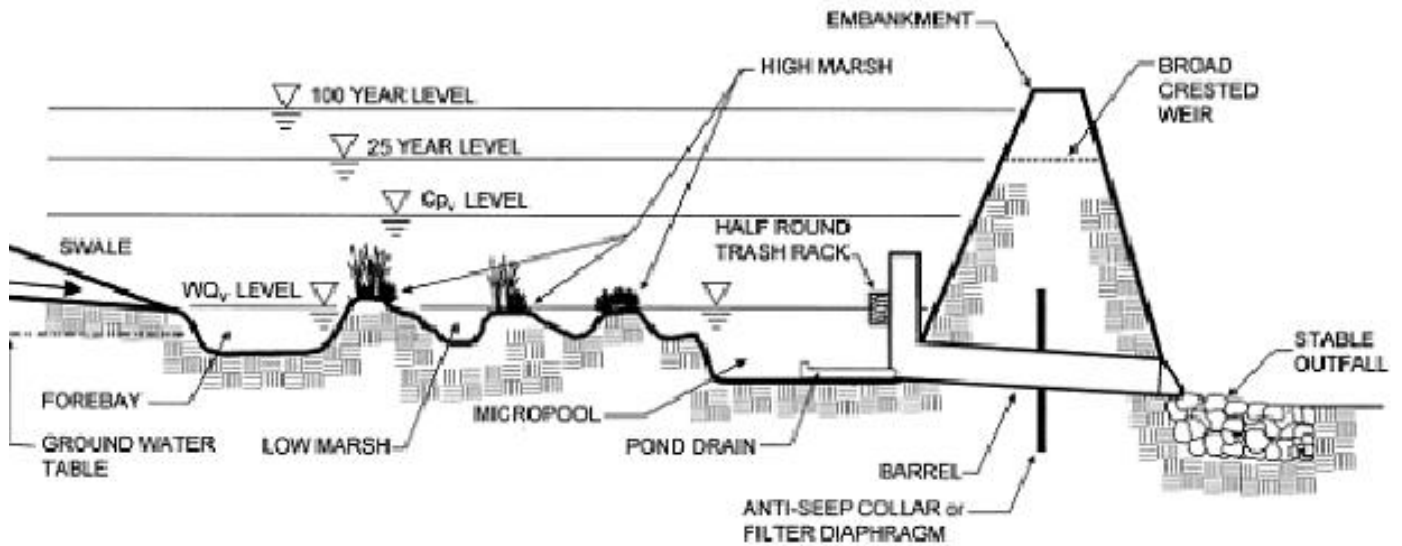
CONNECTICUT

PROJ. No.: 20050257.A20
 DATE: FEBRUARY 2009

DET 5



PLAN VIEW



PROFILE

SOURCE: CENTER FOR WATERSHED PROTECTION

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STORMWATER RETROFIT CONCEPT
POCKET WETLAND

TANKERHOUSEN RIVER WATERSHED

CONNECTICUT

PROJ. No.: 20050257.A20
DATE: FEBRUARY 2009

DET 6

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STORMWATER STRUCTURE PLANTING ZONES		
ZONE	DESCRIPTION	
1	DEEP WATER AREA	INUNDATED WITH 1 TO 3 FEET OF WATER THROUGHOUT THE GROWING SEASON
2	SHALLOW WATER BENCH	INUNDATED WITH 0.5 TO 1 FOOT OF WATER THROUGHOUT THE GROWING SEASON
3	SHORELINE FRINGE	REGULARLY INUNDATED, RANGING FROM 0.5 FT ABOVE TO 0.5 FT.BELOW THE PERMANENT POOL ELEVATION
4	RIPARIAN FRINGE	PERIODICALLY OR SEASONALLY INUNDATED, FROM 0.5 FT. ABOVE THE PERMANENT POOL ELEVATION TO THE APPROXIMATE 2- YEAR STORM WATER SURFACE ELEVATION
5	FLOODPLAIN TERRACE	INFREQUENTLY OR IRREGULARLY INUNDATED, FROM THE APPROXIMATE 2- YEAR WATER SURFACE ELEVATION TO THE 10- YEAR WATER SURFACE ELEVATION
6	UPLAND	ABOVE THE 10- YEAR WATER SURFACE ELEVATION

GENERAL PLANTING NOTES:

Grasses, Forbs, and Sedges in Zones 1, 2 and 3. Plant selections should be appropriate for the field environmental conditions of the planting site.

- Zone 1 – Deep Water Emergents: The designer should employ a method of “triangular spacing”, and an approximate density of about 0.5 plants per square foot. A minimum of 2 herbaceous species shall be selected, for placement in each of the Zone 1 planting areas.
- Zone 2 – Shallow Water Bench Emergents: The designer should employ a method of “triangularspacing”, and an approximate density of about 0.5 plants per square foot. A minimum of 3 herbaceous species shall be selected, for placement in each of the Zone 2 planting areas.
- Zone 3 – Shoreline Fringe: The designer should employ a method of “triangular spacing”, and an approximate density of about 0.5 plants per square foot. A minimum of 4 herbaceous species shall be selected, for placement in each of the Zone 3 planting areas.

Grasses, Forbs, and Sedges (Seed Mixes) in Zones 4, 5 and 6.

- Zone 4 –Riparian Fringe, Zone 5 –Floodplain Terrace and Zone 6 – Planting zones shall receive preparation and seeding, with an appropriate seed mix, for establishing Native Wet Meadow, or Native Dry Meadow.

Trees, Shrubs, and Vines in Zones 4, 5 and 6 (ALL BMP’s EXCEPT BIORETENTION): In designing and executing the plantings for Zone 4 –Riparian Fringe, Zone 5 –Floodplain Terrace and Zone 6 – Upland Plantings, the designer should consider the following:

- Employ a method of “random spacing”, and a density of 1000 stems per acre. A full 70% of the species shall be Large Maturing Deciduous Tree species, and 30% shall be Small Maturing Deciduous Tree, Evergreen Tree, Deciduous Shrub, or Evergreen Shrub species.
- A minimum of 5 Large Maturing Deciduous Tree species shall be selected for each planting area and a minimum of 3 Small Maturing Deciduous Tree, Evergreen Tree, Deciduous Shrub or Evergreen Shrub species shall be selected for each planting area.
- The use of 3 plants of the same genus does not constitute the minimum selection and should be avoided.
- In addition to the 5 large stock tree and the 3 small stock tree requirements, each planted area shall contain, interspersed randomly among the stock, large maturing deciduous trees at a planting density of 20 trees per acre, and a minimum size of two–inch caliper (2”cal.).

Trees, Shrubs, and Vines in BIORETENTION AREAS ONLY: In designing and executing the plantings for Bioretention Areas, the designer should consider the following:

- Employ a method of “random spacing”, and a density of 2000 stems per acre. A maximum of 10% of the species shall be Large Maturing Deciduous Tree species, and 90% shall be Small Maturing Deciduous Tree, Evergreen Tree, Deciduous Shrub, or Evergreen Shrub species. Up to 25% of the Small Maturing Tree requirement (90%) may be substituted with certain grasses that grow to 3–ft to 5–ft in height if planted in five or seven–gallon pots.
- A minimum of 3 Large Maturing Deciduous Tree species shall be selected for each planting area, and a minimum of 3 Small Maturing Deciduous Tree, Evergreen Tree, Deciduous Shrub or Evergreen Shrub species shall be selected for each planting area.
- The use of 3 plants of the same genus does not constitute the minimum selection and should be avoided.

ADAPTED FROM THE CONNECTICUT STORMWATER QUALITY MANUAL (2004) AND THE CHARLOTTE – MECKLENBURG, NC POST–CONSTRUCTION BMP DESIGN MANUAL (APRIL 2008)

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STORMWATER RETROFIT CONCEPT
PLANTING NOTES

TANKERHOUSEN RIVER WATERSHED CONNECTICUT

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DATE: FEBRUARY 2009

DET 7

Appendix E

Site-Specific Stormwater Retrofit Cost Estimates

