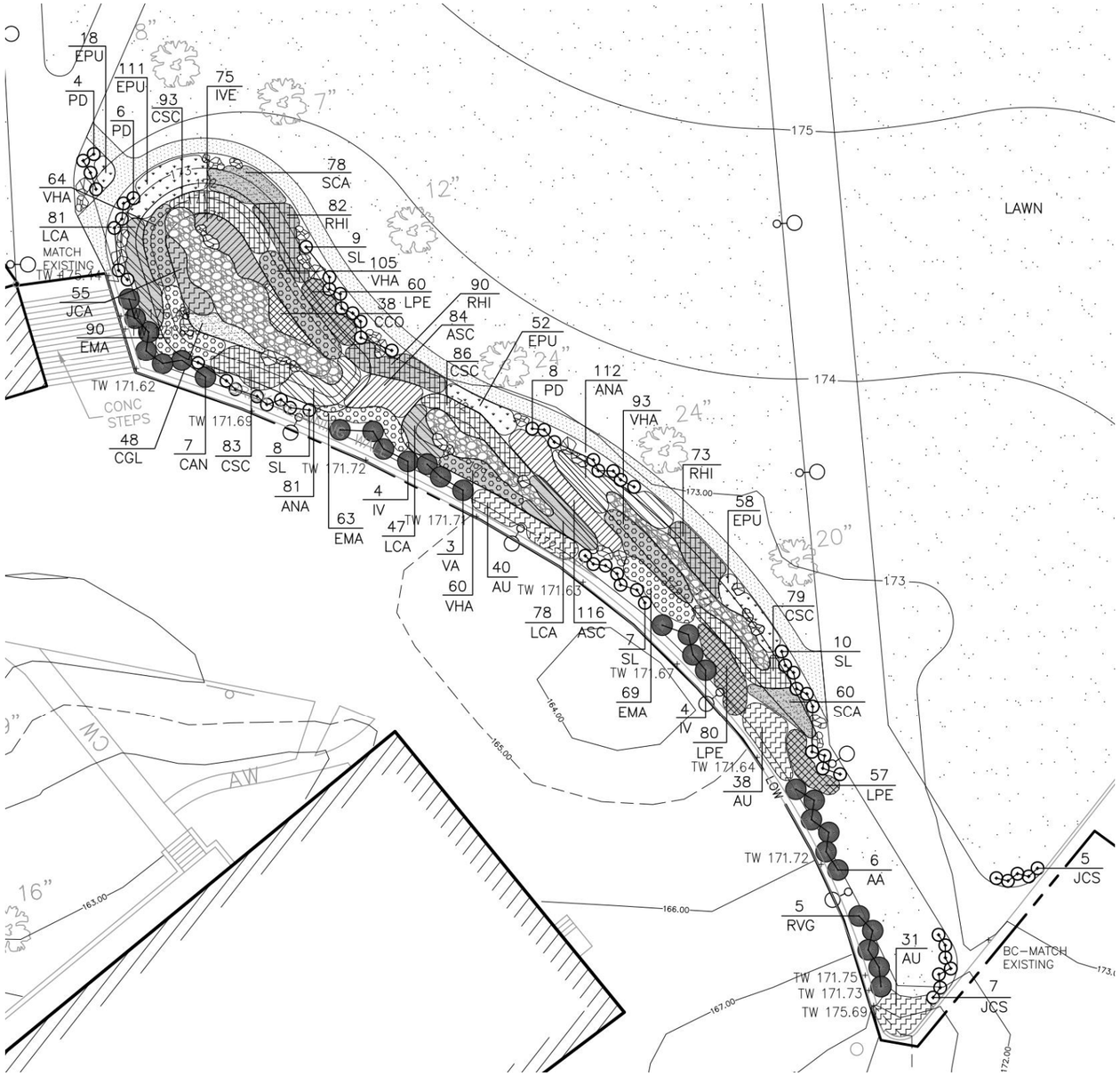
SLAVIN CENTER BIORETENTION

DESCRIPTION

The Slavin Center expansion was the first project to include an integrated sustainable building practices approach to new construction. The project included an 8,000 square-foot, two-level addition and renovation of existing space on the south side of the school's student center. It also included a bioretention basin system designed to capture and filter stormwater runoff from a 3.5 acre subwatershed, including the Slavin Center lobby roof, walkways and landscape areas on the south side of Slavin Center, and half of Hendricken Field. In 2014 Hendricken Field was reconstructed with its own stormwater management system, reducing the overall subwatershed area directed to the Slavin Center Bioretention system.

The Slavin Center Bioretention is a filtering stormwater management practice. Filtering systems capture and temporarily store the water quality volume prior to filtering it though a soil media. This bioretention system has the capacity to capture and filter a run-off volume of about 1,204 cubic feet (9,275 gallons) per storm event. The system receives stormwater that is piped from the Slavin Center lobby roof drains and collected overland flow from the south side of the building. Collected stormwater filters through wetland plantings (see planting schedule) and bioretention soil (see soil composition) that removes pollutants (see pollutant removal efficiency). Filtered stormwater is collected in an underdrain (see detail) and discharged to a storm drain pipe towards River Avenue. Larger storm events will produce stormwater faster than the infiltration rate of the bioretention basin soil (2.41 in/hr) and cause the ponding depth within the basin to rise until stormwater is discharged through the overflow structure (see detail). Stormwater collected by the overflow structure will be discharged to the same storm drain towards River Avenue. Due to the proximity of the system to a retaining wall, the system includes an impermeable liner to prevent infiltration and therefore does not contribute to groundwater recharge.

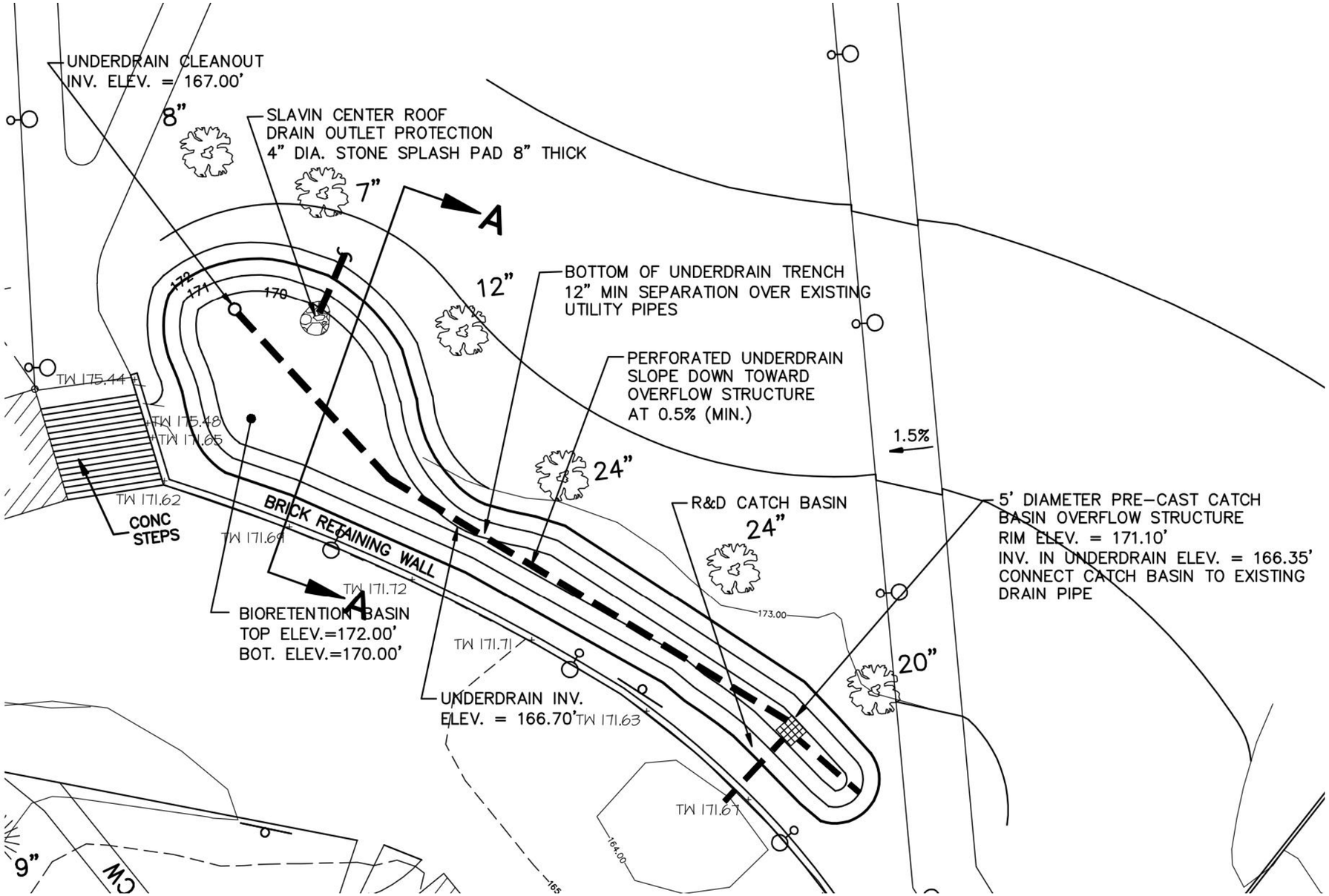
KEY DESIGN FEATURES	
Treatment Type	Filter
Drainage Area	86,250 ft^2 (1.98 ac.)
Drainage Area Imperviousness	23.7%
Design Storm	25-year
Water Quality Volume (WQv)	1,706 ft^3 (12,762 gal.)
Treatment Volume (WQ storm)	1,706 ft^3 (12,762 gal.)



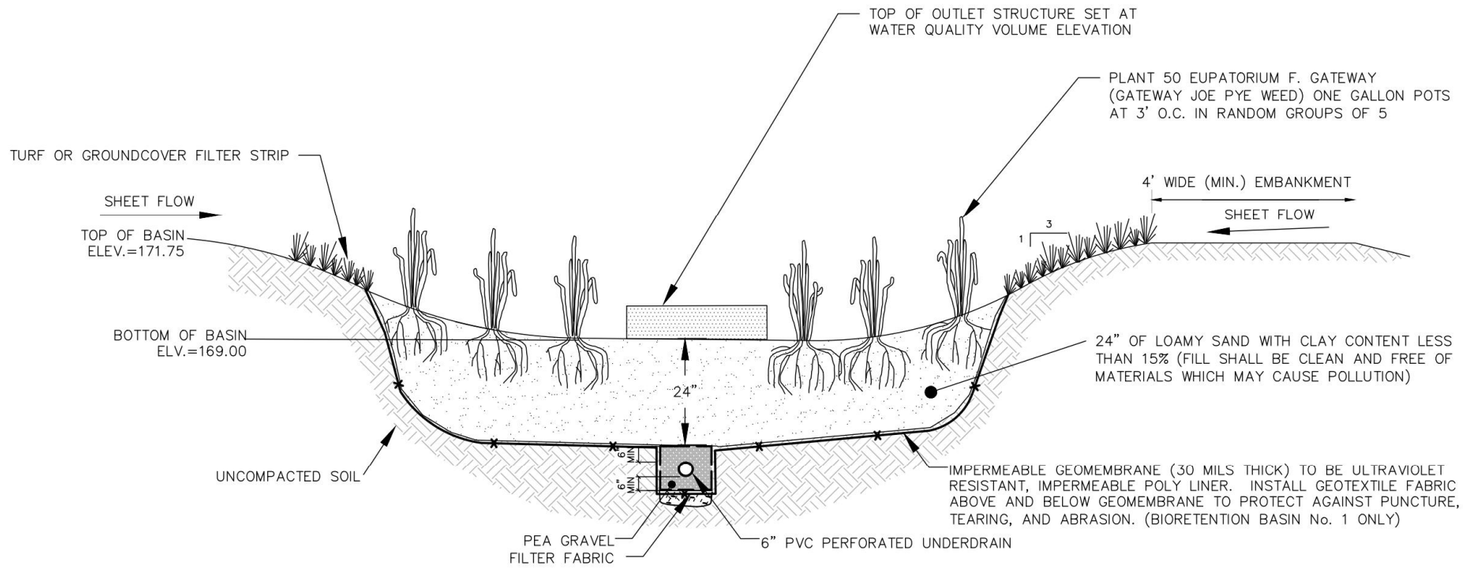
Planting Plan

PLANT SCHEDULE

QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
TREES					
10	CF	CORNUS FLORIDA 'CHEROKEE PRINCESS'	CHEROKEE PRINCESS DOGWOOD	2 1/2"–3" CAL.	
1	FG	FAGUS GRANDIFOLIA	AMERICAN BEECH	5"– 6" CAL.	
5	FP	FRAXINUS PENNSYLVANICA 'CIMMARON'	CIMMARON ASH	3"–3 1/2" CAL.	
6	GT	GLEDITSIA TRIACANTHOS 'SKYLINE'	SKYLINE HONEYLOCUST	3"–3 1/2" CAL.	
2	REL	RELOCATED FLOWERING CHERRY			
SHRUBS					
6	AA	ARONIA ARBUTIFOLIA	RED CHOKECHERRY	3'–4' HT.	
6	AZ	AZALEA 'PINK CLUSTERS'	PINK CLUSTERS AZALEA	24" HT.	
7	CAN	CLETHRA ALNIFOLIA	SUMMERSWEET	2'–3' HT.	
12	ICH	ILEX CRENATA 'HELLERI'	HELLER'S JAPANESE HOLLY	24" HT.	
8	IV	ILEX VERTICILLATA 'WINTER RED'	WINTERBERRY	3'–4' HT.	1 MALE 'JIM DANDY' PLANT PER GROUP
19	JCS	JUNIPERUS CHINENSIS 'SEAGREEN'	SEAGREEN JUNIPER	24" HT.	
18	PD	PRUNUS DEPRESSA	SAND CHERRY	24" HT.	
5	RVG	ROSA VIRGINIANA	VIRGINIA ROSE	2'–3' HT.	
34	SL	SPIRAEA LATIFOLIA	MEADOWSWEET	24" HT.	
3	VA	VIBURNUM ACERFOLIUM	MAPLE LEAF VIBURNUM	3'–4' HT.	
GROUNDCOVERS					
375	AU	ARCTOSTAPHYLOS UVA–URSI	BEARBERRY	#1 POT	X" O.C.
149	GO	GALIUM ODORATUM	SWEET WOODRUFF	#1 POT	X" O.C.
30	HEM	HEMEROCALLIS 'HAPPY RETURNS'	HAPPY RETURNS DAYLILLIES	#2 POT	X" O.C.
HERBACIOUS PLANTS					
200	ASC	ANDROPOGON SCOPARIUS	LITTLE BLUESTEM	2" PLUGS	12" O.C.
193	ANA	ASTER NOVAE–ANGLIAE	NEW ENGLAND ASTER	2" PLUGS	12" O.C.
38	CCO	CAREX COMOSA	BEARDED SEDGE	2" PLUGS	12" O.C.
341	CSC	CAREX SCOPARIA	BROOM SEDGE	2" PLUGS	12" O.C.
48	CGL	CHELONE GLABRA	WHITE TURTLEHEAD	2" PLUGS	12" O.C.
239	EPU	ECHINACEA PURPUREA	PURPLE CONEFLOWER	2" PLUGS	12" O.C.
222	EMA	EUPATORIUM MACULATUM	JOE–PYE WEED	2" PLUGS	12" O.C.
75	IVE	IRIS VERSICOLOR	BLUE FLAG IRIS	2" PLUGS	12" O.C.
55	JCA	JUNCUS CANADENSIS	CANADA RUSH	2" PLUGS	12" O.C.
206	LCA	LOBELIA CARDINALIS	CARDINAL FLOWER	2" PLUGS	12" O.C.
197	LPE	LUPINUS PERENNIS	WILD BLUE LUPINE	2" PLUGS	12" O.C.
245	RHI	REDBECKIA HIRTA	BLACK–EYED SUSAN	2" PLUGS	12" O.C.
138	SCA	SOLIDAGO CAESIA	WOODLAND GOLDENROD	2" PLUGS	12" O.C.
322	VHA	VERBENA HASTATA	BLUE VERVAIN	2" PLUGS	12" O.C.
SEED MIXES					
NEW ENGLAND EROSION CONTROL/RESTORATION MIX– FOR DRY SITES					



Grading and Drainage Plan



SEED MIX – NEW ENGLAND CONS./WILDLIFE MIX FROM N.E. WETLAND PLANTS, INC. SPECIES INCLUDE BIG BLUESTEM (ANDROPOGON GERARDII), SWITCHGRASS (PANICUM VIRGATUM), LITTLE BLUESTEM (SCHIZACHYRIUM SCOPARIUM), CANADA WILD RYE (ELYMUS CANADENSIS), FOX SEDGE (CAREX VULPINOIDEA), PARTRIDGE PEA (CHAMAECRISTA FASCICULATA), FRINGED BROMEGRASS (BROMUS CILIATUS), PENNSYLVANIA SMARTWEED (POLYGONUM PENSYLAVNICUM), COMMON MILKWEED (ASCLEPIAS SYRIACA), NODDING BUR–MARIGOLD (BIDENS CERNUA), SHOWY TICK–TREFOIL (DESMODIUM CANADENSE), SILKY SMOOTH ASTER (ASTER LAEVIS), FLAT–TOP ASTER (ASTER UMBELLATUS), GRASS–LEAVED GOLDENROD (SOLIDAGO GRAMINIFOLIA), BONESET (EUPATORIUM PERFOLIATUM), NEW YORK ASTER (ASTER NOVI–BELGII), BLUE VERVAIN (VERBENA HASTATA).

BIORETENTION BASIN CROSS–SECTION

NOT TO SCALE

Cross-Section of Bioretention Filter Bed