MODULAR WETLAND SYSTEMS - LINEAR CURB TYPE

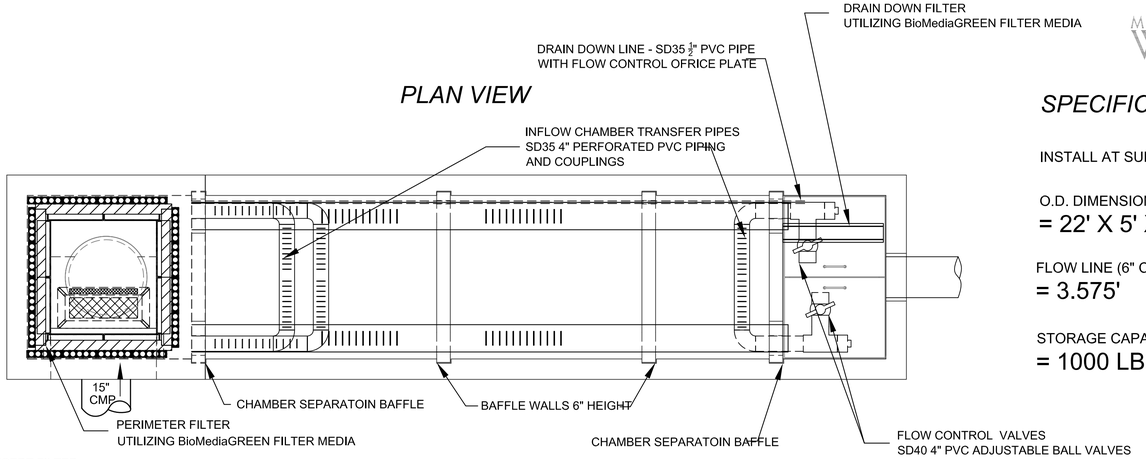
*FLOW BASED DESIGN

FLOW RATES

PRIMARY PEAK
TREATMENT FLOW RATE
= .27 CFS OR 120 GPM

PEAK BYPASS FLOW RATE
= 2.01 CFS OR 902.5 GPM

PLAN VIEW



SPECIFICATIONS

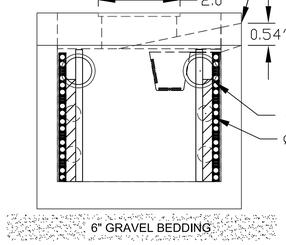
INSTALL AT SURFACE

O.D. DIMENSIONS
= 22' X 5' X 4.8'

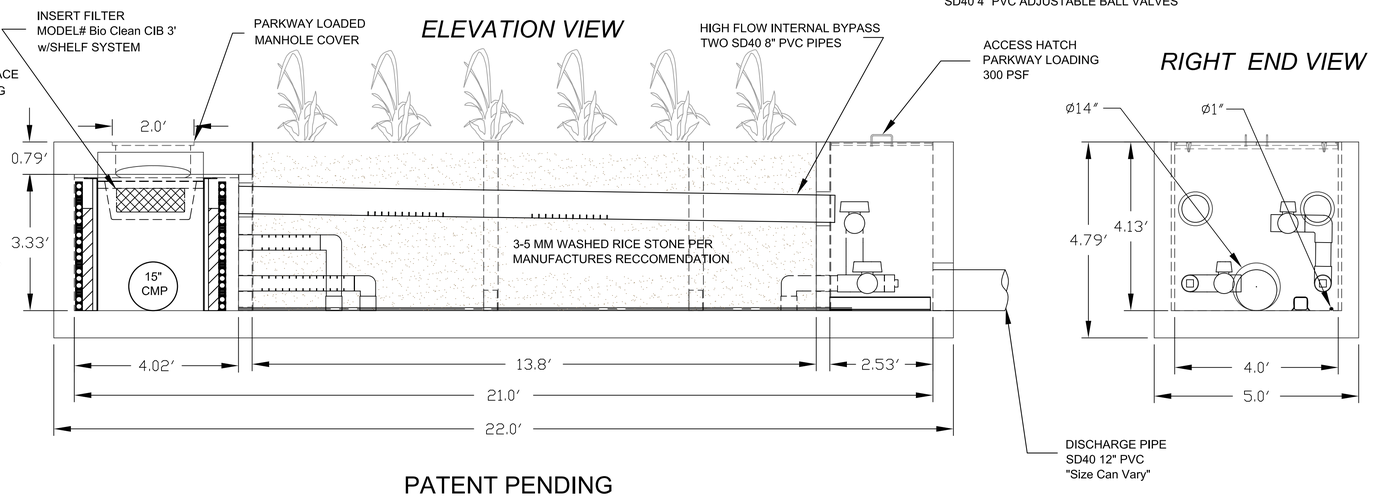
FLOW LINE (6" CURB) TO INVERT OUT
= 3.575'

STORAGE CAPACITY
= 1000 LBS OR 23.5 CF

LEFT END VIEW



ELEVATION VIEW



RIGHT END VIEW

PATENT PENDING

INSTALLATION NOTES:

1. INSTALL UNIT ON LEVEL BED OF GRAVEL OF AT LEAST 6" IN DEPTH.
2. CONCRETE 28 DAY COMPRESSIVE STRENGTH fc=5,000 PSI.
3. REINFORCING:ASTM A-615, GRADE 60.
4. RATED FOR PARKWAY LOADING 300 PSF.
5. ALL WALLS ARE 6" THICK, BAFFLES ARE 4" THICK
   BOTTOM 8" THICK, TOP 10" THICK.
6. JOINT SEALANT: BUTYL RUBBER SS-S-00210

MODULAR WETLAND SYSTEMS INC.
P.O. BOX 869
OCEANSIDE, CA 92049
www.ModularWetlands.com

	NAME	DATE
DRAWN	P. Ashoff	7.23.07
EDITED		

COMMENTS:

TITLE: MWS LINEAR - CURB TYPE

SIZE	DWG. NO.	REV
A	MWS-L-C	

SCALE: N.T.S. | UNITS = N/A | SHEET 1 OF 1

TYPICAL SCHEMATIC MODULAR WETLAND SYSTEMS
(LINEAR CURB TYPE)
NOT TO SCALE

SPECIFICATIONS - MWS- LINEAR

TRACK RECORD: THE MWS- LINEAR HYBRID STORMWATER TREATMENT SYSTEM IS MANUFACTURED BY A COMPANY WHOM IS REGULARLY EN GAGED IN THE ENGINEERING DESIGN AND PRODUCTION OF TREATMENT SYSTEMS FOR STORMWATER.

COVERAGE: THE MWS- LINEAR IS DESIGNED TO TREAT THE WATER QUALITY VOLUME OR WATER QUALITY FLOW. FOR FLOW BASED DESIGN, HIGH FLOW BYPASS IS INTERNAL. FOR VOLUME BASED DESIGN, HIGH FLOW BYPASS IS EXTERNAL AND PRIOR TO PRE-DETENTION SYSTEM. FOR OFFLINE VOLUME BASED DESIGNS THE MWS - LINEAR HAS THE ABILITY TO TREAT THE ENTIRE WATER QUALITY VOLUME WHEN USED WITH PRE-STORAGE AND PROPERLY SIZED.

NON-CORROSIVE MATERIALS: THE MWS - LINEAR IS DESIGNED WITH NON-CORROSIVE MATERIA LS. ALL INTERNAL PIPING IS SD35 PVC. CATCH BASIN FILTER COMPONENTS, INCLUDING MOUNTIN G HARDWARE, FASTENERS, SUPPORT BRACKETS, FILTRATION MATERIAL, AND SUPPORT FRAME ARE CONSTRUCTED OF NON-CORROSIVE MATERIALS (316 STAINLESS STEEL, AND UV PROTECTED/MARINE GRADE FIBERGLASS), FASTENERS ARE STAINLESS STEEL. PRIMARY FILTER MESH IS 316 STAINLESS STEEL WELDED SCREENS. FILTRATION BASKET SCREENS FOR COARSE, MEDIUM AND FINE FILTRATION IS ½" X 1 ½"EXPANDED, 10 X 10 MESH, AND 35 X 35 MESH, RESPECTIVELY. NO POLYPROPYLENE, MONOFILAMENT NETTING OR FABRICS SHALL BE USED IN THIS SYSTEM. MEDIA PROTECTIVE PA NELS ARE CONSTRUCTED OF UV PROTECTED/MARINE GRADE FIBERGLASS. MOUNTS ARE CONSTRUCTED OF STAINLESS STEEL. BIOMEDIAGREEN IS AN INERT ROCK SUBSTRATE AND IS NON-CORROSIVE. PERIMETER FILTER STRUCTURE IS CONSTRUCTED OF LIGHTWEIGHT INJECTION MOLDED PLASTIC. MOUNTIN G BRACKETS ARE CONSTRUCTED OF SD40 PVC AND ARE MOUNTED WITH 3/8 " DIMETER STAINLESS STEEL REDHEADS. DRAIN DOWN FILTER COVER IS CONSTRUC TED OF UV PROTECTED/MARINE GRADE FIBERGLASS AND STAINLESS STEEL HINGE AND MOUNT.

WEIGHT: EACH COMPLETE UNIT WEIGHS APPROXIMATELY 29,000 TO 40,000 POUNDS AND REQ UIRES A BOOM CRANE TO INSTALL. DETAILS OF THIS ARE PROVIDED IN THE INSTALLATION SECTION OF THE MWS-LINEAR DESIGN KIT.
TRANSPORTATION: THE MODULAR WETLAND SYSTEM - LINEAR IS DESIGNED TO BE TRANSPORTED ON A STANDARD FLAT BED TRUCK. THE UNIT EASILY FITS ON A FLAT BED TRUCK WITHOUT THE NEED OF SPECIAL PERMITTING.

ALTERNATIVE TECHNOLOGY CONFIGURATIONS: THE MODULAR WETLAND SYSTEM - LINEAR IS MODULAR IS DESIGN. EACH MODULE WILL BE UP TO 22 FEET LONG AND 5 FEET WIDE. THE SYSTEM CAN BE MADE IN LENGTHS VARYING FROM 13 TO 100S OF FEET LONG. FOR LENGTHS LONGER THAN 22 FEET THE SYSTEM WILL SHIPPED IN MODULES AND ASSEMBLED ON SITE. THE MODULAR WETLAN D SYSTEM - LINEAR HAS MANY ALTERNATIVE CONFIGURATIONS. THIS ALLOWS THE SYSTEM TO BE ADAPTED TO MANY SITE CONDITIONS. RU NOFF CAN ENTER THE SYSTEM THROUGH A PIPE, AND/OR A BUILT IN CURB OR GRATE TYPE OPENING.

ENERGY REQUIREMENTS: THE MODULAR WETLAND SYSTEM - LINEAR IS COMPLETELY PASSIVE AND REQUIRES NO EXTERNAL ENERGY SOURCES.

BUOYANCY ISSUES: BUOYANCY IS ONLY A AN ISSUE WHEN GROUND WATER LEVELS RISE ABOVE T HE BOTTOM OF THE MODULAR WETLAND SYSTEM - LINEAR'S CONCRETE STRUCTURE, WITH 8.5 CUBIC YARDS OF WETLAND MEDIA THERE IS NO CONCERN OF FLOA TATION. AS A PRECAUTION A FOOTING CAN ALSO BE BUILT INTO THE SYSTEMS CONCRETE STRUCTURE.

DURABILITY: THE STRUCTURE OF THE BOX WILL BE PRECAST CONCRETE. THE CONCRETE WILL BE 28 DAY COMPRESSIVE STRENGTH FC = 5,000 PSI. STEEL REINFORCING WILL BE ASTM A - C857. STRUCTU RE WILL SUPPORT AN H20 LOADING AS INDICTED BY AASHTO. THE JOINT BETWEEN THE CONCRETE SECTIONS WILL SHIP LAP AND JOINT SEALED WITH RAM-NEK. FILTER (EXCLUDING OIL ABSORBENT MEDIA) AND SUPPORT STRUCTURES ARE OF PROVEN DURABILITY. THE FILTER AND MOUNTING STRUCTURES ARE OF SUFFICIENT STRENGTH TO SUPPORT WATER, SEDIMENT, AND DEBRIS LOADS WHEN THE FILTER IS FULL, WITH NO SLIPPAGE, BREAKING, OR TEARING. ALL FILTERS ARE WARRANTED FOR A MINIMUM OF FIVE (5) YEARS.

OIL ABSORBENT MEDIA: THE MWS - LINEAR UTILIZES BOTH PHYSICAL AND BIOLOGICAL MECHANISMS TO CAPTURE AND FILTER OIL AND GREASE. A SKIMMER AND BOOM SYSTEM WILL B E POSITIONED ON THE INTERNAL PERIMETER OF THE CATCH BASIN INSERT. THE PRIMARY FILTRATION MEDIA, BIOMEDIAGREEN, UTILIZED IN THE PERIMETER AND DRAIN DOWN FILTERS, HAS EXCELLENT HYDROCARBON REMOVAL ABILITIES. WITHIN THE WETLAND FILTER BIOLOGICAL PROCESSES CAPTURE AND BREAK DOWN OIL AND GREASE. MUCH OF THE BREAKDOWN AND TRANSFORMATION OF OIL AND GREASE IS PERFORMED BY NATURAL OCCURRING BACTERIA.

OVERFLOW PROTECTION: THE GRATE AND CURB TYPE MWS - LINEAR ARE DESIGNED WITH AN INTERNAL BYPASS CONSISTING OF TWO SD PVC PIPES WHICH DIRECT HIGH FLOWS AROUND THE PERIMETER AND WETLAND FILTER, DIRECTLY INTO THE DISCHARGE CHAMBER. FOR THE VOLUME BASED VAULT TYPE CONFIGURATION, BYPASS SHOULD BE LOCATED PRIOR TO THE PRE-DETENTIO N SYSTEM. FOR PEAK FLOWS THAT EXCEED INTERNAL BYPASS CAPACITY, EXTERNAL BYPASS IS USE.

FILTER BYPASS: RUNOFF WILL BYPASS FILTRATION (BIOMEDIAGREEN AND WETLAND FILTER) COMPONENTS OF THE MWS - LINEAR. THE SYSTEM WILL STILL PROVIDE SCREENING AND SETTLING DURING HIGHER FLOW RATES FOR INTERNALLY BYPASSED FLOWS. EXTERNAL BYPASS WILL BYPASS OF TREATMENT PROCESSES.

POLLUTANT REMOVAL EFFICIENCY: THE MWS - LINEAR IS CAPABLE OF REMOVING OVER 90% OF THE NET ANNUAL TOTAL SUSPENDED SOLIDS (TSS) LOAD BASED ON A 20-MICRON PARTICLE SI ZE. ANNUAL TSS REMOVAL EFFICIENCY MODELS ARE BASED ON DOCUMENTED REMOVAL EFFICIENCY PERFORMANCE FROM FULL-SCALE LABORATORY TESTS ON BIOMEDIAGR EEN AND QUARTER-SCALE LABORATORY TESTS ON THE MWS - LINEAR FLOW BASED SYSTEM.

POLLUTANT FICIENCY REMOVAL EF TRASH & LITTER 99% TPH (MG/L) 99% TSS (MG/L) 98% E. COLI (MPN/100ML) 60% TURBIDITY (NTU) 92% DISSOLVED METALS (MG/L) 76% SIL-CO-SIL 106. MEAN PARTICLE DIAMETER = 19 MICRONS

NON-SCOURING: DURING HEAVY STORM EVENTS THE RUNOFF BYPASSES PERIMETER AND WETLAND FILTER COMPONENTS. THE SYSTEM WILL NOT RE-SUSPEND SOLIDS AT DESIGN FLOWS.

UNIQUENESS: THE MODULAR WETLAND SYSTEM - LINEAR IS A COMPLETE SELF CONTAIN ED TREATMENT TRAIN THAT INCORPORATES CAPTURE, SCREENING, SEDIMENTATION, FILTRATION, BIORETENTION, HIGH FLOW BYPASS, AND FLOW CONTROL INTO A SINGLE MODULAR STRUCTURE. THIS SYSTEM PROVIDES FOUR STAGES OF TREATMENT MAKING IT THE ONLY 4 STAGE TREATMENT TRAIN STORMWATER FILTRATION SYSTEM. THEREFORE MAKING IT UNIQUE TO THE INDUSTRY. OTHER S YSTEMS DONOT INCORPORATE ALL THE NECESSARY ATTRIBUTES TO MAKE IT A COMPLETE STORMWATER MANAGEMENT DEVICE AS WITH THE MODULAR WETLAND SYSTEM - LINEAR. THEREFORE, NO EQUAL EXISTS FOR THIS SYSTEM.

PRETREATMENT & PRECONDITIONING: SINCE THE MODULAR WETLAND SYSTEM - LINEAR IS A COMPLETE CAPTURE AND TREATMENT TRAIN STORMWA TER MANAGEMENT SYSTEM NO EXTERNAL PRETREATMENT OF PRECONDITIONING IS NECESSARY.

NOTE:
CONCRETE STRUCTURE SHALL BE PRECAST BY AN APPROVED MANUFACTURER. PRECAST MANUFACTURE SHALL BE RESPONSIBLE FOR ALL STRUCTURAL DESIGN AND DIRECT COORDINATION WITH MODULAR WETLANDS. SHOP DRAWINGS SIGNED AND SEALED BY A LICENSED MARYLAND PROFESSIONAL ENGINEER SHALL BE SUBMITTED TO THE ENGINEER, OWNER, AND MODULAR WETLANDS FOR REVIEW AND APPROVAL PRIOR TO THE MANUFACTURE.

PROJECT: TAKOMA PARK LINDEN AVE WATER QUALITY RETROFIT & RETAINING WALL REMEDIATION

TITLE: STORMWATER MANAGEMENT DETAILS

T.E.SCOTT+ASSOCIATES
LANDSCAPE | STORMWATER | ENVIRONMENT
128 Cockeysville Road, Ste 200 p: 410.458.2651
Hunt Valley, MD 21030 f: 443.269.0216
tes@mdswm.com www.mdswm.com

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE No. 32602, EXPIRATION DATE: 1-15-2010.

Designed By: TES/WRK	Scale: AS SHOWN	Proj. No. 0901
Drawn By: TAM	Date 6/29/09	
Checked By: TES	Approved	SHEET 10 OF 11