GENERAL REQUIREMENTS

1. All best management practices (BMPs) for stormwater infiltration and water quality improvements placed in the public right of way shall conform to the details and requirements specified in this standard plan and other applicable standard plans. The best management practice (BMP) means any program, technology, process, sitting criteria, operational methods or measures, or engineered systems, which when implemented prevent, control, remove or reduce pollution. A project site can be installed with a single or a series of the BMPs. All works shall also conform with the standards of the Americans with Disabilities Act (ADA), the standard specifications for the public works construction (SSPWC) as amended by Los Angeles City Brown Book, Latest Edition and any other applicable regulations. If any conflict occurs, the most stringent requirements shall govern.

2. Except in the projects constructed by city forces, all BMPs and their works, materials and products must be shown on the project plans and/or the specifications submitted to the city engineer for review and approval and all works must be performed and inspected under the approved type B work permits in accordance with the Los Angeles city municipal code section 62.105. Additional reviews and approvals, including but not necessarily limited to, the watershed protection division (WPD) of the bureau of sanitation (BOS) (http://www.cityofla.org/watershed_protection/contact_us.htm), the urban forestry division (UFD) of the bureau of street services (BSS) (http://bss.cityofla.org/UrbanForestryDivision/), the department of transportation (DOT) (http://www.dot.ca.gov/UrbanForestryDivision/). May also be required. All additional reviews and approvals shall be prerequisite to the city engineer’s approval. Implementation of the BMPs as specified on the city standard plans without conformance to the criteria established herein does not constitute an approval of the project by the city engineer. All project plans must be stamped by a civil engineer or a licensed architect registered in the state of California certifying that the plans and the BMPs meet the established criteria.

3. The project plans and/or the specifications shall contain the following, but not necessarily limited to:

   A. The design requirements for applying the practice to achieve its intended use; site conditions including the adjacent local stormwater conveyance systems; the type and the intent (treatment and/or infiltration) of BMP to be used; materials and construction processes; locations, sizes and elevations of the new and existing facilities; the overflow or by-pass conveyance system and all components of the BMP.

   (1) The BMP shall comply with all general site, infiltration and design requirements specified herein.

   (2) The existing site conditions shall also include all surface improvements and infrastructure to be protected, relocated and/or reinstalled. Project plans shall include sidewalks, curbs and gutters and other street pavements that are affected by the works, their stations and new elevations.

   (3) Product information and/or specifications for all the materials intended to be used including their sizes or gradations, their sources or origins. All materials must be approved by the city engineer prior to the installation.

   B. Site survey if necessary to support the design and installation. Site survey shall be prepared by a surveyor licensed in the state of California.

   C. Soil report. A soil report must be prepared by the geotechnical engineer licensed in the state of California.

   (1) The soil report must provide necessary soil data, prepared by a qualified and experienced local approved soil testing laboratory, including the soil type, the depth to the groundwater, the liquefaction potential, the presence of existing or removed underground storage tanks and soil and/or groundwater contamination (including heavy metals, arsenic, lead, cadmium, chromium, hydrocarbon, asbestos, polychlorinated biphenyl (PCB), and etc.) as defined in applicable sections of the code of federal regulations (CFR) and California code of regulations (CCR).

   (2) The soil report must contain the recommendations of the following:

      (A) Whether the site is suitable for the proposed BMP and statements regarding the effects of the water infiltration on foundation settlement and on hydrostatic pressure.

      (B) Whether the geotextile with the opening size as described in article 5.6.13 are suitable for the existing subgrade soil and proposed topsoil and whether a replacement is recommended.

   (3) The soil report must contain the results of the water percolation test and the testing method used, the recommended relative compaction efforts for the installation of the BMP and the relocation of utilities and/or structures,

      (A) The soil report must also include the testing results of the agricultural soil suitability and fertility analysis tests of the existing and/or imported soil if approved by the city engineer.

      (B) For projects where relocation of utilities and/or structures is required, obtain additional soil samples, and conduct testing in accordance with ASTM G 57—Standard Test Method for Field Measurement of Soil Resistivity Using the Wenner Four Electrode Method. Submit testing report to each applicable utility owner as part of the reviews and approvals.
D. LANDSCAPING AND IRRIGATION PLANS. FOR BMPs CONTAINING LANDSCAPING, SUBMIT LANDSCAPING PLANS WITH ALL NECESSARY DETAILS INCLUDING ALL PLANTING MATERIALS, TYPE OF MULCH, PLANT LAYOUTS AND SEED PLACEMENT, PLANTING TIME OF THE YEAR, RECOMMENDED PROTECTION FROM OTHER STRESSES SUCH AS WIND AND SUN TO MAXIMIZE PLANT GROWTH AND SURVIVAL, RECOMMENDED SOIL AMENDMENTS AND FERTILIZERS. THE USE OF PESTICIDES AND QUICK RELEASE SYNTHETIC FERTILIZERS SHALL BE MINIMIZED AND THE PRINCIPLES OF INTEGRATED PEST MANAGEMENT (IPM) SHALL BE FOLLOWED. THE IRRIGATION PLANS SHALL SPECIFY TYPES AND THE LOCATIONS OF ALL EQUIPMENTS, VALVES, DRIP METERS OR LOW FLOW OR MICROSPRAY HEAD LOCATIONS, CONTROLLERS AND WIRING, RAIN SHUT OFF UNITS, APPROVED BACKFLOW DEVICE, PIPE AND PIPE SLEEVE LOCATIONS AND THEIR SIZES, AND RECOMMENDED WATERING SCHEDULES. PLANTS SHALL BE THE NATIVE, DROUGHT AND INUNDATION TOLERANT PLANTS OF SPECIES APPROVED BY THE UFD.

E. UTILITY PLANS. ALL UTILITIES INCLUDING ALL WATER LINES, ELECTRICAL CABLES AND CONDUITS, BELOW GRADE STRUCTURES, SEWERS AND STORM DRAIN FACILITIES, STREET LIGHTING STANDARDS AND CONDUITS, TRAFFIC CONTROLS AND CONDUITS, POWER POLES AND CONDUITS AND CABLES, TELEPHONE AND OTHER TELECOMMUNICATION CABLES, GAS PIPES, FIRE HYDRANTS, ETC. SHALL BE PROTECTED, RELOCATED AND REINSTALLED IN ACCORDANCE WITH THE UTILITY OWNERS’ RECOMMENDED DROUGHT AND INUNDATION TOLERANT PLANTS OF SPECIES APPROVED BY THE UFD. FERTILIZERS SHALL BE MINIMIZED AND THE PRINCIPLES OF INTEGRATED PEST MANAGEMENT (IPM) SHALL BE MAINTAINED, REINFORCEMENT. MINIMUM 10 FEET CLEARANCE SHALL BE MAINTAINED WITH THE FACILITIES.

F. OPERATION AND MAINTENANCE (O & M) PLANS. THE OPERATION AND MAINTENANCE PLANS FOR THE BMPs SHALL BE PREPARED AND THE RESPONSIBLE PARTY SHALL BE IDENTIFIED. THE PLANS SHALL INCLUDE THE INSPECTION SCHEDULES; CLEANING AND MAINTENANCE REQUIREMENTS, REMOVAL AND REPAIR ACTIVITIES AND REQUIRED DISPOSAL PLANS; OPERATION MANUAL FOR ANY MANUFACTURED SYSTEM; COMPLIANCE PROCEDURES IF MAINTENANCE IS NEGLECTED OR ANY CONVENTIONAL MAINTENANCE TASKS THAT SHOULD BE AVOIDED, AND FORM OR LOG TO BE USED. THE CITY ENGINEER HAS THE RIGHT TO SUSPEND ANY APPROVAL OF THE INSTALLATION OF THE BMP WHEN THE BMP IS IMPOSSIBLE TO MAINTAIN. THE CITY PERSONNEL HAS THE RIGHT TO ENTER, MAKE NECESSARY ALTERATION AND REPAIR TO ANY BMP TO PROVIDE NECESSARY MAINTENANCE. A COPY OF THE APPROVED PLANS AND REPORTS, THE PERMITS ON THE MAINTENANCE OF THE BMPs. EXCEPT PROJECTS CONSTRUCTED BY THE CITY FORCES, SUBMIT C & A WITH O & M PLAN TO THE WPD FOR APPROVAL AND SIGNATURE. THE C & A CAN BE VIEWED AND DOWNLOADED FROM THE FOLLOWING WEB ADDRESS:


IN THE EVENT ADEQUATE MAINTENANCE IS NOT CONDUCTED AND FOR THE BEST INTEREST OF THE CITY, THE CITY MAY TAKE NECESSARY STEPS TO RESTORE THE TREATMENT FACILITY TO GOOD WORKING ORDER. THE PROPERTY OWNERS WILL BE RESPONSIBLE TO REIMBURSE THE CITY FOR EXPENDITURES ASSOCIATED WITH THE RESTORATION WORKS.

THE CITY ENGINEER HAS THE RIGHT TO SUSPEND ANY APPROVAL OF THE INSTALLATION OF THE BMP WHEN THE BMP IS DISCOVERED OR DETECTED WITH FLAWS, DAMAGES OR DEFECTS WHICH MAY CAUSE HARM TO THE PUBLIC 30 DAYS AFTER THE CITY'S CORRECTION NOTIFICATION AND THE PROPERTY OWNER'S REFUSAL OR FAILURE OF ANY CORRECTION ACTION.

THE CITY PERSONNEL HAS THE RIGHT TO ENTER, MAKE NECESSARY ALTERATION AND REPAIR TO ANY BMP TO PROVIDE NECESSARY STREET WIDENING OR UTILITY INSTALLATION WITH NO ADDITIONAL MONETARY COMPENSATION TO THE PROPERTY OWNER.

4. GENERAL SITE AND INFILTRATION REQUIREMENTS.

A. UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER, NO BMP SHALL BE ALLOWED IN ANY PROJECT SITES CONTAINING ANY ONE OF THE FOLLOWING CONDITIONS:

1. SITES LOCATED IN THE CITY OF LOS ANGELES DESIGNATED "LANDSLIDE" OR "HILLSIDE GRADING" AREAS AS SPECIFIED BY THE DEPARTMENT OF CITY PLANNING’S ZONE INFORMATION AND MAP ACCESS SYSTEM (ZIMAS) AND/OR WITH SLOPE STEEPER THAN 5% (20:1, HORIZONTAL TO VERTICAL).

2. SITES WITH PRIMARY STRUCTURAL COMPACTED FILL, UNLESS IT IS VERIFIED BY AN APPROVED CERTIFIED COMPACTION REPORT SIGNED BY THE SOIL ENGINEER/GEOTECHNICAL ENGINEER THAT IT IS IN CONFORMANCE WITH THE SOIL PERMEABILITY REQUIREMENTS AS SPECIFIED HEREIN WITHOUT ANY NEGATIVE IMPACTS TO THE STRUCTURAL SUPPORT.

3. SITES LESS THAN 50 FEET DOWNGRADIENT OF ANY STORMWATER CATCH BASIN.

4. SITES WITH DISTANCE LESS THAN 100 FEET FROM ANY BRIDGE, OVER OR UNDER PASS, TUNNEL, RAIL ROAD, AND/OR RETAINING WALL.

5. SITES WITH DISTANCE LESS THAN 1000 FEET FROM ANY WATER SUPPORT OR DRINKING WELL.

6. SITES WITH HISTORIC HIGH GROUNDWATER WITHIN 10 FEET OF EXISTING GRADE.

7. ON OR UP-GRADIENT OF SITES WITH THE PRESENCE OF SOIL AND/OR GROUNDWATER CONTAMINATION, EXISTING AND/OR REMOVED SEPTIC OR UNDERGROUND STORAGE TANKS. THE CONTAMINATED SITES SHALL BE DOCUMENTED BY CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) OR NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) ENVIRONMENTAL REPORTS, APPROVED SOIL REPORTS, THE PERMITS ON FILE WITH THE CITY OR A REVIEW OF THE STATE OF CALIFORNIA GEOTRACKER WEBSITE.

8. SITES LOCATED IN THE UPPER LOS ANGELES RIVER AREA (ULARA) WITHOUT THE APPROVAL OF THE ULLARA WATERMASTER. PERMITS MAY BE REQUIRED FOR THE BMPs.

9. SITES WITH STRUCTURAL ELEMENTS SUCH AS MAJOR TRAFFIC SIGNS, GATEWAY AND ARCH, MONUMENT OR STATUE, FOUNTAIN, FLAG POLE AND ETC. TO BE INCLUDED IN THE BMP WITHOUT ANY STRUCTURAL RETROFITTING OR REINFORCEMENT. MINIMUM 10 FEET CLEARANCE SHALL BE MAINTAINED WITH THE FACILITIES.

10. SITES WITH EXISTING TREES THAT ARE REQUIRED TO REMAIN BY UFD AND THESE TREES CANNOT BE REMOVED OR RELOCATED DUE TO THE POTENTIAL FOR MORTALITY, EXCESSIVE ROOT CUTTING OR PRUNING. MAINTAIN MINIMUM THREE FEET CLEARANCE BETWEEN THE BMPs AND ANY PART OF THE TREEWELLS AND/OR TREEWELL GRATES.
5. GENERAL DESIGN REQUIREMENTS. ALL THE BMPs SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE DETAILS AND REQUIREMENTS AS SPECIFIED HEREIN AND OTHER APPLICABLE STANDARD PLANS.

A. NO BMPs SHALL ALTER OR INTERFERE WITH FLOOD CONTROL FUNCTIONS OF EXISTING CONVEYANCE SYSTEMS OR DETENTION STRUCTURE.

B. ALL BMPs MUST HAVE ADEQUATE DESIGN, MEASUREMENT AND REQUIREMENTS AS SPECIFIED HEREIN AND OTHER APPLICABLE STANDARD PLANS.

C. FOR BMPs WITH INFILTRATION CAPABILITIES, NO RUNOFF SHOULD ERODE THE BMP OR DISLODGE, RESUSPEND OR FLUSH OUT ANY SEDIMENTS OR POLLUTANTS THAT HAVE BEEN ACCUMULATED OR CAUSE ANY ADVERSE IMPACT TO ADJACENT OR DOWN–GRADIENT SITES OR PROPERTIES.

D. NO PORTION OF BMPs SHALL BE ALLOWED TO FALL INTO THE COMPLETE SHADES OF ADJACENT BUILDINGS OR TREES THROUGHOUT THE ENTIRE DAY AS THIS WILL CAUSE POOR PLANT GROWTH. NO NEW TREES SHALL BE ALLOWED IN THE BMPs UNLESS THEIR SHADOWS WOULD NOT COVER THE BMPs AND BLOCK OUT THE SUNLIGHT AND PREVENT THE GROWTH OF OTHER PLANTS OR VEGETATION. TREES AND SHRUBS MUST FOLLOW THE RELEVANT STANDARD PLANS AS AMENDED BY THE BROWN BOOK AND THE STANDARD PLAN S-601, LATEST EDITION.

E. FOR PERVIOUS OR PERMEABLE PAVING TYPE OF BMPs LOCATED IN THE SIDEWALK AND STREET PAVEMENT INCLUDING ANY APPlicable Vehicular TRAFFIC AREA, THEY SHALL CONFORM TO THE APPLICABLE Vehicular AND PEDESTRIAN LOADING REQUIREMENTS AND OTHER REQUIREMENTS AS DETERMINED BY THE CITY ENGINEER. THEY SHALL BE PROVIDED WITH RIGID PAVEMENT OR FLEXIBLE PAVEMENT DESIGN, WHICHEVER IS APPLICABLE, CONFORMING TO THE BUREAU OF ENGINEERING STREET PAVEMENT DESIGN REQUIREMENTS. ALL PERVIOUS OR PERMEABLE PAVING TYPE OF BMPs SHALL BE DESIGNED AND CONSTRUCTED AS STORMWATER PRETREATMENT SYSTEM WITH RUNOFF EXFILTRATED THROUGH A DRAINAGE OR BYPASS PIPE TO THE STORMWATER CONVEYANCE SYSTEM. UNLESS OTHERWISE SPECIFIED BY THE CITY ENGINEER, PERVIOUS OR PERMEABLE PAVING TYPE OF BMPs SHALL NOT BE ALLOWED IN ANY AREA HAVING AVERAGE DAILY TRIPS (ADT) GREATER THAN 100.

F. UNLESS OTHERWISE SPECIFIED, A MINIMUM 48 INCHES WIDE SIDEWALK ACCESS OR OTHER CLEARANCE AS SPECIFIED HEREIN, WHICHEVER IS THE MOST STRINGENT, MUST BE PROVIDED AT EACH END OF THE BMPs FROM THE SIDEWALK TO THE STREET CURB. ALL FINAL OR FINISHED SURFACES OF THE BMPs THAT ARE SUBJECT TO PEDESTRIAN OR VEHICULAR TRAFFIC SHALL HAVE ADEQUATE AND APPROVED PROTECTIVE, SLIP AND/OR SKID RESISTANT FINISHES IN ACCORDANCE WITH ADA, THE SSPWC AS AMENDED BY THE BROWN BOOK AND THE STANDARD PLAN S–601, LATEST EDITION.

G. FOR BMPs THAT INCLUDE LANDSCAPING/VEGETATION, THE EXISTING SOILS AND/OR AMENDED TOP SOILS AND/OR PERMEABLE AGGREGATE BASES USED TO RETAIN AND TREAT RUNOFF BY FILTRATION OR POLLUTANT REMOVAL AND TO TEMPORARILY STORE THE RUNOFF BEFORE ALLOWING IT INFILTRATE INTO THE SUBSOILS, SHALL CONFORM TO THE FOLLOWING:

1. SOIL INFILTRATION. SOILS IN PROJECT SITE SHALL BE GROUP A, LOAM SAND SOIL, WITH LESS THAN 5% CLAY CONTENT, AS CLASSIFIED BY THE U.S. DEPARTMENT OF AGRICULTURE. NATURE RESOURCES CONSERVATION SERVICE (NRCS) (FORMERLY THE SOIL CONSERVATION SERVICE). OR 5M OR 60 SOIL AS CLASSIFIED IN UNIFIED SOIL CLASSIFICATION SYSTEM, RESPECTIVELY. THE INFILTRATION OR PERCOLATION RATES OF THE SOILS WITHIN 10 FEET OF THE EXISTING GRADE SHALL BE MINIMUM 0.5 INCH PER HOUR AND MAXIMUM 2.40 INCHES PER HOUR. NO BMPs WITH STORMWATER INFILTRATION OBJECTIVES SHALL BE PLACED IN EXISTING SOILS WITH LOWER SOIL CLASSIFICATIONS SUCH AS GROUPS B, C OR D SOILS AS CLASSIFIED BY NRCS.
THE SOILS SHOULD BE CERTIFIED BY A QUALIFIED GEOTECHNICAL ENGINEER LICENSED IN STATE OF CALIFORNIA AS REQUIRED IN ARTICLE 3.C.

(2) TOP SOILS. EXISTING SOILS OR IMPORTED SOILS USED AS THE TOP SOILS FOR PLANTING SHALL BE FERTILE AND FRIABLE GARDEN SOIL SUITABLE FOR SUSTAINING AND PROMOTING THE GROWTH OF THE SPECIFIED PLANTS. THE TOP SOILS SHALL CONFORM TO THE SOIL PROPERTIES AND INfiltrATION AS SPECIFIED IN ARTICLE 5.6.1 TOP SOILS SHALL BE FREE OF ROOTS, CLods, STONE LARGER THAN ONE INCH IN THE GREATEST DIMENSION, Pockets of COARSE SAND, NOXIOUS WEEDS, STICKS, LUMBER BRUSH AND OTHER LITTER BEFORE BEING MIXED OR AMENDED. THE SOILS SHALL BE FREE OF NEMATODES OR ANY OTHER UNDESIRABLE DISEASE-CAUSING ORGANISMS SUCH AS INSECT PESTS AND PLANT PATHOGENS.

(3) THE BMPs SHALL SEEK TO MINIMIZE OR TO COMPLETELY AVOID THE USE OF FERTILIZERS OR PESTICIDES. SOIL CONDITIONING MATERIALS IF USED SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF THE STATE AGRICULTURAL CODE AND THE DETAILS OF THE APPROVED LANDSCAPING PLANS. ALL MATERIALS SHALL BE PACKAGED, FIRST GRADE, COMMERCIAL QUALITY ORGANIC PRODUCTS AND SHALL NOT CONTAIN ANY INORGANIC FERTILIZERS, TOXIC INGREDIENTS, PESTICIDES OR OTHER FILLERS IN QUANTITIES THAT MAY BE HARMFUL TO HUMAN, ANIMAL, OR PLANT LIFE.

(4) ANY IMPORT OR EXISTING SOILS USED AS TOP SOILS SHALL BE COMPLETELY AMENDED TO COMPLY WITH THE FOLLOWING.

50% CONSTRUCTION SAND
20-30% TOP SOIL WITH LESS THAN 5% MAXIMUM CLAY CONTENT
20-30% ORGANIC LEAF COMPOST

(5) CONSTRUCTION SAND. CONSTRUCTION SAND SHALL BE COARSE S(0.02--0.04 INCH), CLEANED TO REMOVE CLAY AND SILT PARTICLES AND SHALL MEET ASTM C 33 -SPECIFICATIONS OF CONCRETE AGGREGATE.

(6) PEA GRAVEL. IF PEA GRAVEL OR ANGULAR CRUSHED PEBBLE IS SPECIFIED TO SEPARATE TOPSOIL FROM DRAIN ROCK/PERMEABLE AGGREGATE BASE, THE MATERIAL SHALL BE 1/4 TO 3/4 INCHES, CLEAN, WASHED AND FREE OF ORGANIC MATERIALS.

(7) DRAIN ROCK/PERMEABLE AGGREGATE BASE. THE DRAIN ROCK/PERMEABLE BASE SHALL BE NO. 4 AGGREGATES WITH THE GRADATION IN ACCORDANCE, WITH THE ASTM D 448-CLASSIFICATION FOR SIZES OF AGGREGATE FOR ROAD AND BRIDGE CONSTRUCTION. THE AGGREGATES SHALL BE DURABLE, CRUSHED ANGULAR AGGREGATES WITH MORE THAN TWO FRACTURED FACES. THE AGGREGATES SHALL BE, CLEAN AND FREE OF ALL FINES AND ORGANIC.

ASTM D 448 NO. 4 AGGREGATE (1 1/2 INCH TO 3/4 INCH)

NO. 4 (3/16") 0-5
NO. 8 (3/32")

THE AGGREGATES SHALL HAVE LOS ANGELES ABRASION WEAR NOT TO EXCEED 45% AS DETERMINED BY AASHTO T96-RESISTANCE TO ABRASION OF SMALL SIZE COURSE AGGREGATE BY USE OF THE LOS ANGELES MACHINE. THE SOUNDNESS PERCENT LOSS SHOULD NOT EXCEED 12 OR 18 PERCENT AS DETERMINED BY CALIFORNIA TEST METHOD NO. 214 OR THE SODIUM SULFATE OR MAGNESIUM SULFATE TESTS. CONDUCTED IN ACCORDANCE WITH AASHTO T104.

THE COEFFICIENT OF UNIFORMITY RATIO OF THE D60 PARTICLE SIZE TO THE D10 PARTICLE SIZE, (Cu=D60/D10), OF THE AGGREGATE SHOULD BE GREATER THAN FOUR TO PROVIDE THE REQUIRED STABILITY DURING CONSTRUCTION.

D60 SHALL MEAN PARTICLE SIZE (mm) THAT HAS 60% PASSING
D10 SHALL MEAN PARTICLE SIZE (mm) THAT HAS 10% PASSING

(9) COMPOST. THE COMPOST SHALL BE A MIXTURE THAT CONSISTS LARGELY OF AEROBICALLY DECAYED ORGANIC LEAF WASTE THAT CONSISTS OF GLASS, METAL, PLASTIC, HERBICIDES, TOXIC TRASH, UNCOMPOSTED RESIDUAL SEED MATERIALS OR PATHOGENS, HEAVY METALS OR OTHER POLLUTANTS AND COMPOUNDS SUCH AS AMMONIA AND ORGANIC ACID, IN CONCENTRATIONS TOXIC TO PLANT GROWTH. THE COMPOST SHALL BE RESISTANT TO FURTHER DECOMPOSITION. THE COMPOST SHALL HAVE PARTICLE SIZE WITH 98% OF THE COMPOST PASSING THROUGH A 0.75 INCH SIEVE SCREEN. THE COMPOST SHALL HAVE AT LEAST 40% ORGANIC MATTER, LESS THAN 60% ASH CONTENT AND pH BETWEEN 6 AND 8. FOR BMP WITHOUT PERMEABLE AGGREGATE BASE, COMPOST CAN BE INCORPORATED INTO THE EXISTING SOIL USING A CHISEL FLOW OR ROTARY DEVICE WITH THE CAPABILITY OF REACHING 12 INCHES BELOW THE EXISTING SURFACE.

(10) PLANTS AND VEGETATION. THE PLANTS AND THE VEGETATION USED IN ANY BMP SHALL BE NATIVE, NON--INVASIVE, FIRE RESISTANT, DEEP ROOTED PLANTS OR VEGETATION INCLUDED IN THE LANDSCAPE PLAN AND THE C&A APPROVED BY THE UFD AND THE CITY ENGINEER. CHOOSE PLANTS THAT MINIMIZE OR ELIMINATE THE USE OF FERTILIZERS OR PESTICIDES AND THAT ARE ABLE TO SUSTAIN GROWTH WHERE THE CONTINUOUS LOW BASE FLOW AND FLAT SLOPES ARE LIABLE TO RESULT IN SATURATED SOIL CONDITIONS, USE SPECIES THAT WOULD BE ABLE TO WITHSTAND PERIODIC WETTING, INCLUDING TOTAL SUBMERGENCE FOR SHORT PERIODS IN SUMMER AND CONTINUED WETTING AND OCCASIONAL PERIODS OF SUBMERGENCE IN WINTER TIME.

NO PLANT MATERIAL USED IN ANY BMP SHALL EXCEED THE HEIGHT OF 36 INCHES FROM THE FINISH ELEVATIONS OF ADJACENT ROADWAY SURFACES OR TO ANY HEIGHT THAT WOULD CAUSE OBSTRUCTION TO THE LINE OF SIGHT VERTICALLY IF THE BMP IS LOCATED WITHIN THE 45 FEET OF THE VISIBILITY TRIANGLE AREAS AT TYPICAL STREET INTERSECTIONS AS DEFINED IN LOS ANGELES CITY MUNICIPAL CODE SECTION 62.200. IT SHALL BE A MINIMUM ONE FOOT CLEARANCE BETWEEN THE PLANT MATERIALS IN THE BMPs AND THE SIDEWALKS.

(11) IRRIGATION SYSTEM. IMPLEMENT IRRIGATION PLANS WITH IRRIGATION SYSTEMS DESIGNED TO EACH LANDSCAPE AREA'S SPECIFIC WATER REQUIREMENTS WITH THEIR MAXIMUM APPLIED WATER ALLOWANCES (MAWA) AND THE ESTIMATED TOTAL WATER USES (ETUW) APPROVED BY THE CITY ENGINEER. PROJECTS, LOCATED NEAR ACTIVE SEISMIC FAULTS, NEED TO INCORPORATE SPECIAL DESIGN FEATURES TO ALLOW THE PIPES TO BE BUILT ACROSS THE FAULTS AND TO ACCOMMODATE THE GRADUAL MOVEMENT OF THE TEGULAR PLATES THAT EFFECT THE FAULT LINE. THE PLANS SHALL BE CONSISTENT WITH THE CALIFORNIA STATE MODEL WATER EFFICIENT LANDSCAPE ORDINANCE AND OTHER LOCAL WATER CONSERVATION ORDINANCE. THE IRRIGATION SYSTEMS SHALL HAVE RAIN OR MOISTURE TRIGGERED SENSORS AND SHUT OFF DEVICES TO PREVENT IRRIGATION AFTER PRECIPITATION. THE IRRIGATION SYSTEMS SHALL ALSO HAVE PROGRAMMABLE IRRIGATION CONTROLLER WHICH HAS THE FOLLOWING MINIMUM FEATURES:

- THREE INDEPENDENT PROGRAMS
- THREE START TIMES PER PROGRAMS

STANDARD PLAN NO. S-480-0 B-4643 SHEET 4 OF 9 SHEETS
STANDARD PLAN NO. S-480-0 B-4643

H. IMPERMEABLE


THE GEOTEXTILE SHALL BE NEEDLE PUNCH, NON-WOVEN, AND ULTRA VIOLET LIGHT RESISTIVE. THE GEOTEXTILE SHALL BE MADE OF POLYPROPYLENE AND SHALL HAVE MINIMUM THICKNESS OF 130 MILS AND MINIMUM WEIGHT OF 10 OZ/ SQ YARD. THE GEOTEXTILE SHALL HAVE FLOW RATE GREATER 125 GPM/SQ. FT. AND APPARENT OPENING SIZE US #70 OR #80 SIEVES AND WITH THE FOLLOWING PHYSICAL STRENGTHS:

<table>
<thead>
<tr>
<th>STRENGTH REQUIREMENTS</th>
<th>CLASS A</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRAB STRENGTH (ASTM D 4632)</td>
<td>250 LBS</td>
</tr>
<tr>
<td>GRAB ELONGATION AT BREAK (ASTM D 4632)</td>
<td>50%</td>
</tr>
<tr>
<td>SEAM BREAKING STRENGTH (ASTM D 4632)</td>
<td>160 LBS</td>
</tr>
<tr>
<td>PUNCTURE STRENGTH (ASTM D 4833)</td>
<td>150 LBS</td>
</tr>
<tr>
<td>MULLEN BURST STRENGTH (ASTM D 3768)</td>
<td>290 LBS</td>
</tr>
<tr>
<td>TRAPEZOIDAL TEAR (ASTM D 4355)</td>
<td>100 LBS</td>
</tr>
<tr>
<td>UV RESISTANCE AT 1500 HRS (ASTM D 4355)</td>
<td>70%</td>
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</tbody>
</table>

NOTE: ASTM D 3768—METHOD FOR TESTING MICROCELLULAR URETHANES—FLEXURAL RECOVERY
ASTM D 4355—TEST METHOD FOR DETERIORATION OF GEOTEXTILES FROM EXPOSURE TO ULTRAVIOLET LIGHT AND WATER
ASTM D 4632—TEST METHOD FOR GRAB BREAKING LOAD AND ELONGATION OF GEOTEXTILES.
ASTM D 4833—TEST METHOD FOR INDEX PUNCTURE RESISTANCE OF GEOTEXTILES, GEOMEMBRANES AND RELATED PRODUCTS.


<table>
<thead>
<tr>
<th>STRENGTH REQUIREMENTS</th>
<th>CLASS A</th>
</tr>
</thead>
<tbody>
<tr>
<td>TENSILE STRENGTH AT BREAK (ASTM D 882)</td>
<td>73 LBS/IN</td>
</tr>
<tr>
<td>ELONGATION AT BREAK (ASTM D 882)</td>
<td>380 %</td>
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<tr>
<td>TEAR STRENGTH (ASTM D 1004)</td>
<td>88 LBS/IN</td>
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<tr>
<td>SHEAR STRENGTH ON SEAM (ASTM D 882)</td>
<td>58.4 LBS/IN</td>
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<tr>
<td>PEEL STRENGTH ON SEAM (ASTM D 882)</td>
<td>15 LBS/IN</td>
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<tr>
<td>HYDROSTATIC RESISTANCE (ASTM D 751)</td>
<td>100 PSI</td>
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</tbody>
</table>

NOTE: ASTM D 751—METHOD OF TESTING COATED FABRICS
ASTM D 882— TEST METHODS FOR TENSILE PROPERTIES OF THIN PLASTIC SHEETING
ASTM D 1004— TEST METHOD FOR INITIAL TEAR RESISTANCE OF PLASTIC FILM AND SHEETING

I. OBSERVATION WELLS. IT IS RECOMMENDED TO INSTALL IN ALL BMPs A MINIMUM OF ONE OBSERVATION WELL MADE OF TWO INCH DIAMETER PVC SDR 35 PERFORATED PIPE WRAPPED WITH GEOTEXTILE IN FULL DEPTH AT A LOCATION NEAR THE CENTER OF THE BMP. EACH OBSERVATION WELL SHALL HAVE CAP SECURED WITH A LOCK. FOR OBSERVATION WELL LOCATED WITHIN PERVIOUS OR PERMEABLE PAVING, OBSERVATION WELL SHALL BE ENCLOSED WITHIN A CITY APPROVED TRAFFIC RATED PULL/VALVE BOX AND COVER.

J. TRASH SCREEN. IF BMP IS INSTALLED IN LOCATION DEFINED BY BOS AS A HIGH TRASH GENERATION AREA OR WITH FREQUENT LITTER NUISANCE AND DIRECTED BY THE CITY ENGINEER, INSTALL A TRASH SCREEN COVER AT CURB INLET. TRASH SCREEN COVER SHALL BE MANUFACTURED FROM ASTM A36 STEEL, HOT DIPPED GALVANIZED EXPANDED METAL WITH DIAMOND SHAPE OPENINGS SIZED ONE INCH LONGITUDINAL BY 3/4 INCH VERTICAL AND SHALL HAVE A SMOOTH EDGE AROUND THE PERIMETER WITH NO PRONGS OR JAGGED EDGES. TRASH SCREEN COVER SHALL SPAN THE ENTIRE LENGTH OF THE CURB OPENING AND HEIGHT AND FASTENED OVER STAINLESS STEEL ANCHOR INSERTS, MINIMUM TWO ON EACH SIDE, WITH STAINLESS STEEL FASTENERS. IF TRASH SCREEN COVER IS USED, THE WARDED GUTTER IN FRONT OF THE CURB INLET MAY NO LONGER BE REQUIRED.
6. NON-STANDARD PLAN BMPs, OR BMPs LOCATED IN AN UN-DEVELOPED AREA, OR NO EXISTING STORMWATER CONVEYANCE SYSTEM EXISTED. THE PROJECT PLANS AND SPECIFICATIONS FOR BMPs DESCRIBED IN THIS ARTICLE SHALL HAVE THE DESIGN REQUIREMENTS AS SPECIFIED HEREINBEFORE AND THE FOLLOWING:

A. STORMWATER RUNOFF/HYDROLOGICAL DESIGN. THE HYDROLOGICAL DESIGN WITH THE TOTAL STORMWATER RUNOFF AND THE TRIBUTARY AREAS, THE TREATMENT OR DRAINAGE AREA (INCLUDING ALL THE PERVERS AND THE IMPERVIOUS AREA AND OTHER OFF SITE OR SELF TREATING AREA) MUST BE DETERMINED IN ACCORDANCE WITH THE LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS (LADPW) HYDROLOGY MANUAL, AND/OR LADPW SEDIMENTATION MANUAL, LATEST EDITION. (SEE http://www.ladpw.org/rd/Publication/index.cfm, OR THE SUSMPs OR OTHER METHOD APPROVED BY THE CITY ENGINEER. FLOW CALCULATIONS WORKSHEET SHALL ALSO BE SUBMITTED.


C. ALL BMPs SHALL BE DESIGNED EITHER AS VOLUME BASED BMPs, FLOW BASED BMPs OR COMBINED VOLUME BASED AND FLOW BASE BMPs. THE SIZE OF THE BMP, MAXIMUM WATER OR FLOW DEPTH, FLOW VELOCITY, MINIMUM HYDRAULIC RESIDENCE TIME, DESIGNED SLOPES AND GRADES, STORAGE CAPACITY, OVER FLOW AND BY—PASS DRAIN OR STRUCTURE IF APPLICABLE, ETC. MUST BE PROVIDED.

D. UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER, ALL BMPs SHALL HAVE FLOW VELOCITY LESS THAN ONE FEET/SEC, MINIMUM HYDRAULIC RESIDENCE TIME NOT LESS THAN FIVE MINUTES AND THE FLOW DEPTH NOT TO EXCEEDED 2/3 OF THE HEIGHT OF THE VEGETATION.

E. DETENTION STRUCTURE TYPE OF BMPs SUCH AS SAND TRAP OR OIL/WATER SEPARATORS, STORMWATER, ETC. THAT MAY CONSIST OF ONE OR MORE CHAMBERS TO PROMOTE SEDIMENTATION OF COARSE MATERIALS AND SEPARATION OF FREE OIL OR OTHER POLLUTANTS FROM STORMWATER SHALL PROVIDE ADEQUATE STRUCTURAL SUPPORTS AS INDICATED IN THE STANDARD PLAN 6-G AND 6-H TO EACH OF THE ELEMENTS OF THE BMPs AND THEN SIZE THE ELEMENTS ACCORDINGLY.

F. ALL DETENTION STRUCTURE PERVIOUS OR PERMEABLE PAVING AND OTHER TYPES OF BMPs SHALL CONFORM WITH ANY ADDITIONAL TESTING REQUIREMENTS AND ACCEPTANCE CRITERIA AS DETERMINED BY THE CITY ENGINEER. THEY MUST BE REVIEWED, TESTED AND PRE-APPROVED BY THE CITY ENGINEER PRIOR TO INSTALLATION. ALL FASTENERS USED WITHIN THE DETENTION STRUCTURES MUST BE STAINLESS STEEL TO AVOID ANY GALVANIC CORROSION EFFECT AND MUST BE USED WITH WATER—TIGHT CONCRETE ANCHOR OR INSERT.

G. UNLESS OTHERWISE SPECIFIED BY THE CITY ENGINEER, THE RUNOFF VOLUME OF THE VOLUME BASED BMPs TO BE RETAINED OR TREATED SHALL BE DETERMINED BY ONE OF THE FOLLOWING METHODS, WHICHER BE THE MOST STRINGENT:

1) THE 85TH PERCENTILE OF THE VOLUME OF THE ANNUAL RUNOFF DURING A 24 HOUR PERIOD DETERMINED AS THE MAXIMIZED CAPTURE STORMWATER VOLUME FOR THE AREA, OR

2) THE VOLUME OF ANNUAL REPORT, BASED ON THE UNIT BASIN STORAGE WATER QUALITY VOLUME, TO ACHIEVE 80 PERCENTS OR MORE VOLUME TREATMENT BY THE METHOD RECOMMENDED IN CALIFORNIA STORMWATER BEST MANAGEMENT PRACTICE HANDBOOK, OR

3) THE VOLUME OF RUNOFF PRODUCED FROM A 0.75 INCH STORM EVENT PRIOR TO ITS DISCHARGE TO A STORMWATER CONVEYANCE SYSTEM, OR

4) THE VOLUME OF RUNOFF FROM A HISTORICAL RECORD BASED REFERENCE 24 HOUR RAINFALL CRITERION FOR TREATMENT 0.75 INCH AVERAGE FOR THE COUNTY OF LOS ANGELES AREA THAT ACHIEVES APPROXIMATELY THE SAME REDUCTION IN POLLUTANT LOADS ACHIEVED BY THE 85TH PERCENTILE 24 HOUR RUNOFF EVENT.

H. THE FLOW OF RUNOFF FOR THE FLOW BASE BMPs SHALL BE DETERMINED BY ONE OF THE FOLLOWING METHODS, WHICHER BE THE MOST STRINGENT:

1) FLOW OF RUNOFF PRODUCED FROM A RAIN EVENT EQUAL TO AT LEAST 0.2 INCH/HOUR INTENSITY, OR

2) FLOW OF RUNOFF PRODUCED FROM A RAIN EVENT EQUAL TO AT LEAST 2 TIMES THE 85TH PERCENTILE HOURS RAINFALL INTENSITY FOR THE COUNTY OF LOS ANGELES, OR

3) FLOW OF RUNOFF PRODUCED FROM A RAIN EVENT THAT WILL RESULT IN TREATMENT OF THE SAME PORTION OF RUNOFF AS TREATED USING VOLUMETRIC STANDARDS ABOVE.


7. CONSTRUCTION. ALL WORKS SHALL CONFORM WITH THE SSPWC AS AMENDED BY THE BROWN BOOK, THE WORK AREA TRAFFIC CONTROL HANDBOOK (WATCH), LATEST EDITION AND THE REQUIREMENTS OF OTHER LOCAL GOVERNING AGENCIES.


B. NO CONSTRUCTION WASTE OR RUNOFF SHALL ENTER INTO THE BMPs. THE BMPs SHALL BE PROTECTED FROM ANY RUNOFF OR SPILLAGE AT ALL TIME INCLUDING DURING THE PERIOD OF VEGETATION ESTABLISHMENT. SANDBAG INLETS FROM ANY UPSWEEPING FLOW OR APPLY OTHER APPROVED PRACTICE S AS NEEDED TO PROTECT FROM EROSION BEFORE VEGETATION ARE ESTABLISHED. WHERE RUNOFF DIVERSION IS NOT POSSIBLE, COVER GRADED AND SEEDED AREAS WITH SUITABLE EROSION CONTROL MATERIALS.

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C. For the BMPs constructed as part of a larger project development, the BMPs should be sequenced and constructed in a single operation, as one of the last items to be built on the site to avoid contamination by silt, pollutants or soil from the adjacent work areas.

D. Excavation. (The following shall not apply to detention structure type of BMPs which would require proper soil load bearing capacity and soil compaction. The excavation and compaction requirements for the detention structure type of BMPs shall be approved by city engineer.)

1. Excavation shall be limited to the installation of the BMPs and any utility relocation work. Excavate with care and do not over-excavate. Where possible, excavator or equipment should work from the sides and should not enter the BMPs. Excavation is required to the appropriate design depths and dimensions and in a manner to minimize or mitigate the effects of compaction to the bottom of excavation and to prevent any damage or compaction to the surfaces, subbases, subgrades or sidewalls of the BMPs. The excavated material shall be stockpiled away from the open excavation. All reusable native soils shall be free of deleterious materials as described in Article 5.G.2 apply effective herbicide to remove unwanted vegetation.

2. For BMPs with infiltration capabilities, the initial excavation should be conducted to within one foot of the final excavation of the invert of the BMPs. Final excavation to the finished grade should be deferred until all disturbed area in the upgradient have been stabilized or protected or completed. The final phase of excavation should remove all accumulated sediment. The native soils at the finished grade along the bottoms and sides of the BMPs should not be scarified, tilled or disturbed.

3. Slightly rounded corners shall be provided in the trench where the geotextiles and/or IL/GM adjoin the trench so as to avoid any sharp bends in the geotextiles and/or IL/GM.

4. After excavation is completed, prevent sediment from entering the BMPs by first conveying the runoff water through an appropriate pretreatment system such as a pre-settling basin, wet pond, or sand filter. Provide all necessary cooperation and coordination.

5. The finished grade and constructed utilities shall be inspected by the inspector prior to backfill and placement of geotextiles and/or IL/GM.

E. Placement of geotextiles and/or IL/GM. Geotextiles and IL/GM shall be installed at the locations indicated on the project plans in accordance with the manufacturer's recommended instructions and the requirements described herein.

1. Prior to placement, the BMPs must have no standing water, mud, debris or excessive moisture. No geotextiles or IL/GM shall be placed on a subsoil water or overly dried until the subgrade has been properly reconditioned, restored and reinspected.

2. Approved methods shall be used to unfold the geotextiles and/or IL/GM without causing damages or wrinkles to the materials. If necessary, boots and shrouds made of same materials shall be used in all pipe or conduit penetrations.

3. The geotextiles and IL/GM shall be installed on the bottoms and the sides of the BMPs and/or on top of the permeable aggregate base and to the elevations in accordance with the plan details. All geotextiles and IL/GM shall have minimum two inches top soil and/or mulch covers and they shall not be exposed to any sunlight.

4. For the geotextiles, the appropriate side of the geotextiles shall be placed and facing the outside of the trench (or against the native soil).

5. The geotextiles shall have minimum longitudinal and vertical overlaps. Unless specified otherwise, when overlaps are required between rolls, the upstream roll shall overlap a minimum two feet over the downstream roll in order to provide a shingled effect.

6. Voids between the geotextiles, IL/GM and excavation sides must be prevented during construction. Removing boulders or other obstacles from the trench walls may create such voids. Natural soils should be placed in these voids at the most convenient time during the construction to ensure geotextiles completely and uniformly conform to the sides of the excavation.

7. At locations where containing pipe and conduit penetrations and the boot sleeves and/or the shrouds are used, the boot sleeves and the shrouds shall be aligned with the penetrations and properly welded to the adjacent surfaces. Stainless steel hose clamps shall be used on the boot sleeves and/or the shrouds to form a water tight seal over the piping and conduits.

8. No traffic or other equipment shall be allowed directly on the geotextiles, and IL/MG.

9. Excess geotextiles and/or IL/MG should not be trimmed until the site is fully stabilized.
(10) BEFORE COVERING, THE CONDITIONS OF THE GEOTEXILES AND/OR THE IL/GM INCLUDING ALL FACTORY SEAMS SHALL BE OBSERVED BY THE INSPECTORS TO DETERMINE THAT THERE ARE NO HOLES OR RIPS EXIST IN THE GEOTEXILES AND/OR THE ALL PIPING OR CONDUIT PENETRATIONS ARE PROPERLY SEALED AND WELDED. ALL SUCH OCCURRENCES SHALL BE REPAIRED BY PLACING A NEW LAYER OF SAME MATERIAL EXTENDING BEYOND THE DEFECT IN ALL DIRECTIONS A DISTANCE EQUAL TO THE MINIMUM OVERLAP REQUIRED FOR ADJACENT ROLLS.

F. PLACEMENT OF PERMEABLE AGGREGATE BASE AND PEA GRAVEL.

(1) THE PERMEABLE AGGREGATE BASE OR PEA GRAVEL SHALL BE MOISTENED AND SPREAD IN SIX INCH LIFTS TO THE DESIRED DEPTH ON THE GEOTEXTILE IN SUCH A MANNER AND THICKNESS THAT ANY WHEEL RUTTING OF AGGREGATE OR PEA GRAVEL OVER THE GEOTEXTILE IS LIMITED TO 1/2 INCH.

(2) COMPACT USING A VIBRATORY ROLLER IN STATIC MODE OR COMPACTION PLATE UNTIL THE PERMEABLE AGGREGATE BASE OR THE PEA GRAVEL IS STABLE AND THERE IS NO VISIBLE MOVEMENT OR RUTTING UNDER ANY TRAFFIC.

(3) DO NOT CRUSH THE PERMEABLE AGGREGATE BASE OR PEA GRAVEL WITH THE VIBRATORY ROLLER OR PLATE.

G. PLACEMENT OF Top SOILS.

(1) INSTALL AMENDED TOPSOILS IN A MANNER THAT ENSURES ADEQUATE INFILTRATION, PLACE IN TWO EQUAL LIFTS. LIFTS MAY BE LIGHTLY WATERED TO ENCOURAGE NATURAL COMPACTING AND LIGHTLY COMPACTED WITH A WATER FILLED LANDSCAPE ROLLER OR VIBRATORY PLATE TO ASSIST IN PREVENTING EROSION OR SETTLEMENT.

(2) OVERFILL THE TRENCH WITH ACCEPTABLE AMOUNT WITHOUT CAUSING ANY HAZARDS OR OVERSPILL ABOVE PROPOSED FINISHED GRADE AND TO ACCOMMODATE NATURAL SETTLEMENT.

H. PLANTING.

(1) AFTER INSTALLING THE IRRIGATION SYSTEM, GROUP PLANT MATERIALS WITH SIMILAR WATER USE REQUIREMENTS ON THE SAME VALVE TO REDUCE OVER AND UNDERWATERING AND HELP PREVENT EXCESS IRRIGATION RUNOFF. IRRIGATION SCHEDULES SHOULD BE ADJUSTED TO PROMOTE SURFACE FILTRATION. PLANTINGS SHALL BE INSTALLED WITHIN THE BMPs IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE SSPWC, STANDARD PLANS AND THE DETAILS AS SHOWN ON THE APPROVED LANDSCAPE PLANS

(2) THE NECESSARY EROSION CONTROL METHODS SHALL BE APPLIED TO DIVERT ANY EXCESS FLOWS AND SHALL BE MAINTAINED TO PROTECT ALL PLANTS, SEEDS AND MATERIALS AT ALL TIME AND TO AT LEAST 75 DAY AFTER THE FIRST RAINFALL OF THE RAINY SEASON.

(3) REMOVE ANY SEDIMENT AND CONFIRM THE COMPLETE ESTABLISHMENT OR REPLACEMENT OF ALL PLANNED VEGETATION UNTIL THE FINISH ACCEPTANCE OF THE PROJECT.

8. INSPECTION AND MAINTENANCE.

A. INSPECTIONS AND MAINTENANCE WORKS IN THE BMPs SHALL BE DONE IN ACCORDANCE WITH THE INDUSTRY STANDARDS AND PRACTICES, LOCAL AND STATE REQUIREMENTS AND THE APPROVED O & M PLANS. IF REQUIRED BY THE CITY ENGINEER, SUBMIT SEEPAGE ANALYSIS TO DETERMINE IF ANY ADVERSE EFFECTS MAY BE CAUSED ON ADJACENT PROPERTIES.

(1) INSPECTION AND REMOVAL OF DEBRIS SHOULD BE CONDUCTED ON A MONTHLY BASIS AND DEBRIS SHOULD BE REMOVED IMMEDIATELY OR WHENEVER IT IS OBSERVED ON SITE.

(2) INSPECTIONS AND MAINTENANCE SHALL BE CONDUCTED TO ENSURE THAT WATER INFILTRATES INTO THE SUBSURFACE COMPLETELY (RECOMMENDED PONDING RATE OF 72 HOURS OR LESS) AND THAT PLANTS, PONDING, INFILTRATION AND VEGETATION ARE CAREFULLY MANAGED TO PREVENT CREATING MOSQUITO AND OTHER VECTOR HABITATS.

(3) INSPECT THE SOIL MOISTURE AND ALL PARTS OF THE IRRIGATION SYSTEMS MONTHLY TO ENSURE THE RAIN OR MOISTURE SENSORS AND THE IRRIGATION CONTROLLER ARE FUNCTIONING PROPERLY AND IN ACCORDANCE WITH THE APPROVED IRRIGATION PLANS AND THE MANUFACTURING INSTRUCTIONS.

(4) INSPECT ALL PARTS OF THE BMPs AT LEAST TWICE ANNUALLY FOR EROSION AND DAMAGE TO VEGETATION. INSPECTION SHALL BE DONE PREFERABLY AT THE END OF THE WET SEASON IN ORDER TO SCHEDULE FOR SUMMER MAINTENANCE AND TO BE PREPARED FOR WINTER OR NEXT RAINY SEASON. INSPECTIONS FOR ANY DAMAGES ARE ALSO REQUIRED BEFORE AND AFTER ANY MAJOR RAIN EVENT.

(5) ALL DETENTION STRUCTURE TYPE OF BMPs SHALL BE INSPECTED BEFORE AND AFTER EACH MAJOR RAIN EVENT FOR ACCUMULATED SEDIMENTS, LITTERS AND FLOATABLE, AND TO ENSURE ALL INTERNAL BYPASS OR DIVERSION DEVICES CAN BE OPENED, CLOSED OR RESET.

(6) OBSERVE DRAIN TIME FOR THE DESIGN STORM AFTER COMPLETION OR MODIFICATION OF THE BMP TO CONFIRM THAT THE DESIRED DRAIN TIME HAS BEEN OBTAINED. USE THE OBSERVATION WELL TO OBSERVE OR MONITOR THE WATER LEVELS IN THE BMPs AND TO DETERMINE THE SECTIONS OF THE BMPs WHERE THE PARTIAL CLOG MAY EXIST AND REQUIRE REPAIRS.

9. MAINTENANCE WORKS FOR BMPs WITH INFILTRATION CAPABILITIES SHALL ALSO INCLUDE BUT NOT BE LIMITED TO ROUTINE, OR PERIODIC NEEDS OF PRUNING, RENOVATION OF BAR AREAS, REPLENISHMENT OF MULCH AND SEEDING, WEA CONTROL, WATERING DURING DROUGHT CONDITIONS, ELIMINATING THE USES OF THE PESTICIDES AND FERTILIZER AND REMOVAL OF THE DEBRIS AND SEDIMENTS.

A. MAINTENANCE SHOULD BE CONDUCTED EVERY SIX MONTHS OR AS NEEDED TO PREVENT CLOGGING WITHIN THE BMPs. ANY BMPs THAT MAINTAIN PERMANENT STANDING WATER MAY REQUIRE ROUTINE INSPECTIONS AND TREATMENTS BY LOCAL MOSQUITO AND VECTOR CONTROL AGENCIES TO SUPPRESS MOSQUITO PRODUCTION BEFORE THE REPAIR CAN BE MADE. IF ROUTINE CLEANING AND REPAIR DO NOT RESTORE INFILTRATION RATES, THE RECONSTRUCTION OF PART OR THE WHOLE OF THE BMPs MAY BE REQUIRED ALONG WITH AN OVERALL INCREASE OF THE DIMENSIONS OF THE BMP MAY ALSO BE REQUIRED TO PROVIDE A FRESH SURFACE FOR INFILTRATION.

B. IF THE BMPs DEVELOP RUTS OR HOLES, THEY SHOULD BE REPAIRED UTILIZING A SUITABLE SOIL THAT IS PROPERLY TAMED AND SEEDED.

C. GRASS OR VEGETATION SHALL NOT BE CUT OR TRIMMED SHORTER THAN THE DESIGN FLOW DEPTH OR MAXIMUM HEIGHT ALLOWED. VEGETATION SHALL BE TRIMMED DURING SUMMER OR AT THE BEGINNING AND THE END OF THE WET SEASON TO PREVENT ANY ESTABLISHMENT OF WOODY VEGETATION AND FOR AESTHETIC, FIRE AND VECTOR CONTROL REASONS. VEGETATION AND/OR SHRUBS SHALL BE TRIMMED BACK SO THAT THERE IS A MINIMUM ONE FEET CLEARANCE BETWEEN THE PLANTS AND THE SIDEWALK.
D. Accumulated sediment should be also removed to avoid clogging and concentrated flows in the BMPs. Sediment accumulation shall be hand removed, without any mechanical equipment, with minimum damage or disturbance to the vegetation. Avoid any compaction of the top soil in the BMPs during the sediment removal process. Repair and replace materials in damaged or eroded areas. Fill any eroded areas with new topsoil and reseeds.

E. Maintenance shall include keeping a log of all the maintenance activities and the amount of sediment collected and the date of removal. The log shall be readily available for inspection upon request by the city.

F. All inlets and outlets of the BMPs should be cleaned at least twice a year or as needed during the wet season, before and after periods of heavy rain.

G. All leaf litter and detritus shall be removed manually and not with leaf blowers which may expose the plant roots or create a hard-crusted soil surface of low permeability and high heat conduction that discourage surface roots. Reapply proper depth of mulching regularly and as needed to the soil surface to improve water retention.

H. All dead vegetations shall be removed and replaced within a specific timeframe indicated on the O & M plans or immediately if it is required to maintain cover density and to control erosion.

I. Damaged irrigation and overflow pipes shall be repaired or replaced upon discovery.

J. Removal of accumulated materials of all detention structure type of BMPs shall be made by an eductor truck at least once per year and as needed. Removal and disposal of floatable shall be made separately due to the presence of petroleum product or other pollutants considered as hazardous waste.

K. All pervious or permeable paving type of BMPs shall have dry weather sweeping minimum twice a year with at least one sweeping to be done in spring months. Sweeping shall be done by a vacuum sweeper that does not use water spray. Vacuum settings should be calibrated so that they would not pick up any paving aggregate and/or aggregate fillers.

L. All accumulated residuals including but not necessarily limited to trash, dead vegetation, sediments, floatable, etc. shall be properly disposed of. Residuals that are considered as contaminants or reaching the levels considered as hazardous waste shall be handled and disposed of in accordance with applicable sections of the Code of Federal Regulations (CFR), California Code of Regulations (CCR) and the local regulations. If used, copies of the manifest from the treatment, storage or disposal (TSD) facility where the waste has been sent shall be kept as record.

M. Any repair that may alter the original design of the BMP or the works as shown on the original approved plans must be performed and inspected under a new approved Type B work permit in accordance with the requirements specified herein before.

10. All works shall have fabrication and site inspections in accordance with sections 2 and 4 of the SSPWC and the Brown Book.

11. Submit final as-built drawings for recording prior to final inspection and project acceptance.