CITY OF MURRIETA

MURRIETA CHILDREN'S LIBRARY EXPANSION PROJECT
CITY PROJECT 23-458
CIP 21027

PLANS, SPECIFICATIONS, AND
CONTRACT DOCUMENTS

ADDENDUM NO. 1

Posted to PlanetBids on July 8, 2025

The Bid Date and Time remains unchanged on:

Monday, July 14, 2025, before 5:00 pm

This file, plus the Addendum 1 Plan Set, constitute the entirety of Addendum 1.

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1. Clarifications:

   A. Insurance Requirements:

Insurance requirements are addressed in several places through the Final Bid Packet, and in some cases are contradictory. Prospective Bidders must adhere to the following

00 21 00 Instruction to Bidders, 15. Insurance, pages 14-16

Add the following to requirements to this section and provide in your bid:

F. Builders Risk Course of Construction Insurance: Such coverage shall:

1. Insure against damage from perils covered by the Causes-of-Loss Special Form (ISO form CP 10 30), and be endorsed to include earthquake, flood, ordinance or law coverage, coverage for temporary offsite storage, debris removal, pollutant cleanup and removal, testing, preservation of property, excavation costs, landscaping, shrubs and plants and full collapse coverage during construction (without restricting collapse coverage to specified perils).

2. If Contractor's work involves testing air conditioning systems, boilers, pressure vessels, major machinery or major electrical panels, policy shall include coverage for such testing.
3. Be written on a completed-value basis and cover the entire value of the construction Project, including City-furnished materials and equipment, against loss or damage until completion and acceptance by the City.

00 72 00 General Conditions, <u>45. Insurance Coverage Requirements - Types and Limits</u>, pages 77-78

Delete this section in its entirety.

00 73 00 Supplementary Conditions, <u>7. Insurance Coverage Requirements - Types and Limits</u>, pages 92-93

Delete this section in its entirety.

2. The following sections contains answers to Prospective Bidder questions submitted via PlanetBids; a supplemental document regarding Bioretention Soil Media; and changes reflected in Addendum 1 Plan Set.

City of Murrieta
Q & A for Project MURRIETA CHILDREN'S LIBRARY EXPANSION (CIP 21027/PROJECT #23-458)

Submitted By	Submit Date	Question	Answer
Blackstone Builders Inc.	06/16/2025 2:43:31 PM	Are there any prequalification requirements for the general contractor?	No.
AMG & Associates, Inc.	06/17/2025 12:03:00 PM	There was no Bid Bond form provided, can we use our own surety Bid Bond form?	The surety Bid Bond form is addressed several times. Please see the Instructions to Bidders section.
AMG & Associates, Inc.	06/17/2025 12:03:00 PM	After reading the insurance requirements, I am confuse whether Builder's Risk coverage is required. Please confirm if builder's risk insurance is required, as this will incur addition cost to our bid.	Yes. Builders Risk is required.
OptimaRPM	06/19/2025 9:51:22 AM	Could you please confirm the engineer's estimate for this project? Specifically, we would like to clarify whether it is $5,000,000 or $5,960,000.	Please use $5,960,000.
OptimaRPM	06/19/2025 11:08:41 AM	Could you please confirm if site utilities (sewer, domestic water, and fire water) fall under our scope, as they are mentioned in the plans for reference only?	Yes they fall under scope.
Bedrock Group, Inc.	06/21/2025 10:16:15 PM	Why downloading a set of plans require $75? This limits the bidders and subcontractors which essentially is not to the benefits of the city!	This has been addressed before. The fee goes to PlanetBids, not the City.
Abboud Diamond Construction Inc.	06/23/2025 2:23:18 PM	On A13.1 finish floor plan, there are going to be 3 VCT's used in Multipurpose Room 2 [100C] and Multipurpose Room 1 [100B]. Which are labeled V-1, V-2, & V-3. Looks like V-1 is going to take up the majority of the flooring for both rooms but we cannot differentiate between both V-2 & V-3 on the plans. How much of V-2 & V-3 will be used for Multipurpose Room 2 [100C] and Multipurpose Room 1 [100B]? Also, on finish legend A13.1, B1 calls out for General Wall Base - FLEXCO: 4" Wall Base; 078 Umber. But, on A54.1 materials board, B-1 calls out for Johnsonite Wall Base, Charcoal 20. Which of the two bases is the correct spec?	50% of V-2 & 50% of V-3 for both MPR 2 [100C] & MPR 1 [100B]. The wall base will be as noted on the Finish Legend on A-13.1 - Flexco: 4" Wall Base; 078 Umber
Karcher Environmental	06/25/2025 3:47:55 PM	I am looking into the Murrieta Children's Library project and wanted to ask if a hazardous materials report had been furnished or is being furnished for this project?	No.
Marcon Engineering, INC	06/26/2025 8:09:59 AM	Is this project PLA required?	No.
Ace Electric Inc	06/30/2025 10:13:52 AM	There is no specification for the fire alarm. Will one be provided? What is the existing system we would be connecting to? Thanks.	Fire alarm specifications provided on sheet FA-0.1. System will be connected to the existing Gamewell-FCI system.
Abboud Diamond Construction Inc.	06/30/2025 11:11:50 AM	Please clarify if this project is federally funded, state funded, etc. What type of funds are being used on this project?	A portion ($1.5 million) of the funding is furnished by the California State Library. The remainder is City funded using a variety of sources.
Marina Landscape Inc.	07/01/2025 9:37:46 AM	please provide Sign in sheet from Mandatory prebid	This has been provided.
MTM Construction, Inc.	07/01/2025 11:13:37 AM	Is there a self-performance requirement ? Bid documents only state that bidder must perform work themselves if they fail to specify a subcontractor for any portion of work in excess of one-half percent of the total bid.	Yes, the self-performance requirement is 40% of the total dollar amount of the base bid.
Mountain West Landscape, Inc.	7/2/2025 9:41	Please confirm all 4” SDR drainage pipe at each tree needs to be tied into the storm drain and that all SDR draining pipe is required even if soil percolates.	All 4" SDR PEFORATED pipe at tree is required and is tied to the stormdrain drain system as shown per plan.
Mountain West Landscape, Inc.	07/02/2025 9:42:24 AM	Please confirm locations of storm drain where 4” SDR drainage pipe is to be connected to if required. We could not	All 4" SDR PEFORATED pipe at tree is required and is tied to the stormdrain drain system as shown per plan.
Marina Landscape Inc.	07/02/2025 9:42:46 AM	There is no detail provided for the 48B tree. Please confirm that the tree whether shall use the guying system like the 36B tree detail or use the detail S/ L6.401 which shows no staking or guying system.	Tree shall use tree guying system similar to Detail T, Tree Guying 36" Box Sheet L6.401
Marina Landscape Inc.	07/02/2025 9:42:46 AM	Soil amendments for shrubs and sod are mentioned in Note 7 / Soil Amendment Note on Sheet L.6001. However, Section 329200-2.3 (Turf and Grasses) specifies different soil amendments. Clarify which specification should be followed? If Section 329200-2.3 is to be used, provide the application rates.	Both the specifications and the drawings have soil amendments for bid purposes only and the actual soil amendments should follow the agronomic soils report directions. No agronomic soils report has been done at this time.

Marina Landscape Inc.	07/02/2025 9:42:46 AM	Please provide the depth for the rip rap at the biofiltration	Refer to detail 1 on sheet 16 under rip rap notes for type of rock (3"-5" cobblestone) and embedment into the dirt. "...embedded 4" of concrete".
Marina Landscape Inc.	07/02/2025 9:42:46 AM	Note 18/ General irrigation notes on sheet L5.001 indicates installing an additional pilot wire. However, according to the Irrigation point-of -connection notes, there will be no new control wires to be run, and existing wires shall be reused. Please clarify if the contractor still has to install the additional wire or not.	The plan is to reuse the existing conventional wires. No pilot wire is required.
Marina Landscape Inc.	07/02/2025 9:42:46 AM	The model of the flush valve is MDCF-COUP and MDCF-CAP. However, detail I/ L5.401 which is for the flush valve indicates an air relief valve. Please clarify. Furthermore, It appears that on Sheet L5.001, the symbols for the flush valve and air relief valve have been swapped.	SVA to adjust the legend to swap the two symbols. We will also include a detail for a MDCF-COUP and CAP flush valve.
Marina Landscape Inc.	07/02/2025 9:42:46 AM	According to the legend on sheet L5.001, the valve box for the flush valve and air relief valve is shown to be 6 inches round. However, section 328400/ 2.9 indicates 10 inches round box. Please clarify.	The valve box and Air relief valve should be 6" round, per Irrigation Legend Sheet L5.001.
Marina Landscape Inc.	07/02/2025 9:42:46 AM	The model of the air relief valve in the legend on sheet L5.001 is ARV050 manufactured by Rainbird. However, section 328400/ 2.10 C indicates the model as 65AR1B1-B. Please clarify.	The air relief valve should be ARV050, per Irrigation Legend Sheet L5.001.
Marina Landscape Inc.	07/02/2025 9:42:46 AM	According to section 328400/ 2.9, the manufacturer of the valve box for the flush valve and air relief valve is Carson. Meanwhile, detail C/ L5.402, the valve box for the RCV is shown to be manufactured by Rainbird. Confirm what valve box manufacturer shall be used for DRCV, QCV and gate valves.	The manufacturer for the valve boxes shall be N.D.S or approved equal.
Marina Landscape Inc.	07/02/2025 9:42:46 AM	Detail D/ L5.401 indicates the pipe depth at the vehicular and landscape depth. Please clarify if the contractor shall have to burry all pipes at the pedestrian and vehicular with different depths.	The contractor shall burry all pipes at different depths for vehicular and pedestrian paths, as indicated on Detail D, Sheet L5.401.
Marina Landscape Inc.	07/02/2025 9:42:46 AM	The wire sleeve stated in sleeving notes to be 1 inch minimum in size. However, detail D/ L5.401 states the size to be 2 inches minimum in size. Furthermore, the detail also states the wiring system is 2-wire, whereas the extra wire note states the wiring to be conventional. Please clarify	Wire sleeve to be 1"minimum, per Sleeving Notes Sheet L5.001 but should be 2x the wire bundle being sleeved per the sleeving legend. Wiring to match existing irrigation and that is understood to be conventional.
Marina Landscape Inc.	7/2/2025 9:42	The fittings to be installed at drip tubing zones are Rainbird as specified in the legend on sheet L5.001. However, detail K and L on sheet L5.401 indicates PLD or PLD-LOC fittings. Please clarify.	Rainbird to be fitting manufacturer to match Rainbird components.
Marina Landscape Inc.	07/02/2025 9:42:46 AM	Model XFD-06-18, the emitter spacing shown on the manufacturer's website is 18 inches, whereas the legend indicates 12 inches. Please clarify.	Emitter and line spacing to be 18" apart.
Marina Landscape Inc.	07/02/2025 9:42:46 AM	The model of the root watering system is RWS-B-C, while detail O on sheet L5.401 indicates RWS-MBC. Please clarify.	Use Model RWS-B-C per Irrigation Legend Sheet L5.001.Detail will be updated.
Marina Landscape Inc.	07/02/2025 9:42:46 AM	The drip indicator model in legend on sheet L.5001 is Operind. However, notes in detail S on sheet L5.401 indicates Eco-indicator. Please clarify	Use Operind as noted in legend.
Marina Landscape Inc.	07/02/2025 9:42:46 AM	Please confirm the size of the gate valve shall be linesize	Linesize the gate valve.
Marina Landscape Inc.	07/02/2025 9:42:46 AM	The depth of mainline in legend on sheet L5.001 is 24 inches minimum. However, section 328400/ 3.5A states the depth to be 18 minimum. Kindly confirm the correct depth for the mainline.	Depth of mainline to be 24" per Irrigation Legend, Sheet L5.001.
Marina Landscape Inc.	07/02/2025 9:42:46 AM	Detail D on sheet L5.401 indicates the depth for mainline backfill as 6 inches cover and 2 inches under. However, section 328400/ 3.5B indicates 6 inches minimum for the cover and under. Kindly clarify this discrepancy.	Follow detail direction as being 6" cover and 2" under.
Marina Landscape Inc.	07/02/2025 9:42:46 AM	The material of the lateral line in the legend on sheet L5.001 is sch40. However, general irrigation note on sheet L5.501, note E states the material to be CL200. Kindly confirm the correct material.	Schedule 40 for laterals.
Marina Landscape Inc.	07/02/2025 9:42:46 AM	The material of the sleeve in the legend on sheet L5.001 is sch40. However, general irrigation note on sheet L5.501, note Y states the material to be CL315. Kindly confirm the correct material.	Schedule 40 for laterals.

Marina Landscape Inc.	07/02/2025 9:42:46 AM	The size of the QCV according to the legend on sheet L5.001 is 3/4 inches. However, the detail C on sheet L5.401 clearly indicates all fittings to connect to the QCV are 1 inch. Please clarify.	QCV to be 3/4" per Irrigation Legend, Sheet L5.001
Marina Landscape Inc.	07/02/2025 9:42:46 AM	The sod material according to legend on sheet L6.001 is Tiffway II. However, section 329200/ 2.1B the material is Dwarf Tall Fescue. Kindly confirm the correct material.	Sod material to be Tiffway II per Legend Sheet L6.001
Mountain West Landscape, Inc.	07/02/2025 9:42:55 AM	Per tree root barrier detail on sheet L6.401 it does not state what type of root barrier to use. Please provide make and model of root barrier to be used.	Use Biobarrier from SiteOne or approved equal.
Mountain West Landscape, Inc.	07/02/2025 9:43:16 AM	Per tree root barrier detail on sheet L6.401 its tates to provide minimun of 20’ of root barrier per tree. Please advise if this is 10’ per each side of the tree (20’ total) and not 10’ on each centerline of tree on each side (40’ total)?	Tree root barrier to be 10' per side of the tree for a total of 20'. Where only one side requires root barrier, 10' is the total.
Mountain West Landscape, Inc.	07/02/2025 9:43:38 AM	Per note 7 and 8 it calls out for soil amendments both prior and during planting. Please confirm both soil preps have to occur or if note 7 is for a square footage bais and note 8 per plant or tree basis.	Note 7 refers to turf and groundcover so the application is uniform. Note 8 refers to individual planting like trees, shrubs, and ornamental grasses. Both scenarios occur on this project.
Mountain West Landscape, Inc.	07/02/2025 9:43:53 AM	Per plans and specs it calls out for specific vendors for the rock and mulch. Is the contractor allowed to subsitute vendors and long as it is an as equal product?	Yes. We will approve via the submittal process.
Mountain West Landscape, Inc.	07/02/2025 9:44:24 AM	Per irrigation note P in the general irrigation notes on sheet L5.501. it states to have 4 spare wires of a different color to the end of each mainline. Per the extra wire note on sheet L5.001 it states to have 2 yellow in color. Per note 2 of the irrigation point of connection notes on sheet L5.001 it states no new wires to be run from controller to the projects site. If we are not to add any wire to the controller do we need to account for spare wires? If so please advise where spare wires are to start and end.	Use 2 extra wires, yellow in color as directed on sheet L5.001 notes. Despite reusing the conventional wire system, we still want spare wires run from the start of our new mainline to the end of the new mainline, this is a precaution incase any wires need to be replaced within our limit of work.
Mountain West Landscape, Inc.	07/02/2025 9:44:47 AM	Per note 5 on detail L on sheet L5.501. Its says riser – length as required. Please confirm this is blank drip tubing as note 2 calles out for a PLD or PLD-Loc fitting	Blank tubing to be used for the riser.
Mountain West Landscape, Inc.	07/02/2025 9:45:07 AM	Per subsurface irrigation notes it states to use rainbird fittings for all drip. Per all drip details it says to use Hunter PLD or PLD-Loc fittings. Please confirm what manufacturer’s drip fittings to use and if they are LOC fittins or barbed as there is a significant price difference between the two.	Rainbird to be fitting manufacturer to match Rainbird components.
Mountain West Landscape, Inc.	07/02/2025 9:45:26 AM	Per irrigation legend on sheet L5.001 it states irrigatigation mainline to be class 315 but does not mention if fittings are schedule 40 or sch 80. Please confirm that mainline fittings are sch 40 per note H in the general irrigation notes on sheet L5.501.	Yes, Schedule 40.
Mountain West Landscape, Inc.	07/02/2025 9:45:51 AM	Per note 2 of the irrigation point of connection notes on sheet L5.001 it states no new wires to be run from controller to the projects site. It also states all existing control wires to be protected and reused. Please confirm this statement means keep all the RCV’s not on project site to remain functional from the controller during construction. Please also confirm we can use a pull box at the limit of the project limits and spice the wire from the controller to the new wires installed for the project.	All valves outside of our limit of work that use the same controller as our site shall remain operational during construction. Splicing the wires is acceptable. The use of a splice box to house all splices is confirmed. Size wire appropriately and verify the valves will operate after the splice and voltage drop occur.
Mountain West Landscape, Inc.	07/02/2025 9:46:08 AM	Per irrigation piping notes on sheet L5.001 on it states that a pressure relief valve shall be installed at all dead endsd and right angles. Please provide make, model, and detail for the mainline pressure relief valve.	Use Netafim Guardian Air Vent or approved equal. This should be used in conjunction with thrust blocks.
Mountain West Landscape, Inc.	07/02/2025 9:46:28 AM	Per water pressure not on sheet L5.001 it states pressure test minimum of 150 PSI. Please confirm this is for the mainline and no lateral lines will be pressure tested.	This test is only for Mainline and static pressure systems/components only.
Mountain West Landscape, Inc.	07/02/2025 9:48:58 AM	Per detail R on sheet L4.01wood bridge detail it calls out for geothermal fabric. Please provide make and model of fabric.	We rely on the contractor for submittal of their preferred fabric. We recommend US fabric or equal.

Mountain West Landscape, Inc.	07/02/2025 9:50:20 AM	Please confirm there is a landscape maintenance or establishment period for this job and how long it is.	Secton 32 01 90 Operation and Maintenance specifies a 90day maintenance period.
Mountain West Landscape, Inc.	07/02/2025 9:52:16 AM	Per note 59 on sheet 25 it calls out for yellow detectable tape. Please advise if detectable tape is needed for the irrigation mainline and if so what make and model it is if it is not the one called out for on the note.	Use Christy's or approved equal.
Mountain West Landscape, Inc.	07/02/2025 9:55:16 AM	Per note 1 the landscape contractor is to pay for inspection fees for a final walk. Please confirm this in the only time that fees will be incurred and what the cost is?	Refer to the City of Murrieta Planning Department's for permit fees.
Mountain West Landscape, Inc.	07/02/2025 9:56:47 AM	Please confirm storm drain pipe is the corrrugatated drainage pipe.	Stormdrain is corrugated drainage pipe.
Mountain West Landscape, Inc.	07/02/2025 9:58:09 AM	Please provide what type of sand and what type of choker layer is to be used for the biofiltration area on sheet 18 detail 1.	For Choker Layer, please use pea gravel. For Sand, please refer to "Sand for BSM" per attached PDF document.
Mountain West Landscape, Inc.	07/02/2025 9:59:21 AM	Please confirm there is no landscape edging on this job. A note was found on a civil plan that referred to edging on the landscape plan and we could not find it.	There is no edging being shown on the landscape plans.
Marcon Engineering, INC	06/26/2025 8:09:39 AM	What is the self-performance % for this project?	The prime contractor's self-performance requirement for the project is 40% of the base bid. This requirement will be formalized in a future Addendum that will incorporate answers to all submitted questions and requests for clarifying information. We wanted to provide the answer to this specific question now, since it will determine the participation of some prospective bidders.
Marcon Engineering, INC	06/26/2025 7:45:45 AM	what is the self-performance on this project?	The prime contractor's self-performance requirement for the project is 40% of the base bid. This requirement will be formalized in a future Addendum that will incorporate answers to all submitted questions and requests for clarifying information. We wanted to provide the answer to this specific question now, since it will determine the participation of some prospective bidders.
Far West Contractors	06/18/2025 1:50:54 PM	Is there a self performance requirement for the project?	The prime contractor's self-performance requirement for the project is 40% of the base bid. This requirement will be formalized in a future Addendum that will incorporate answers to all submitted questions and requests for clarifying information. We wanted to provide the answer to this specific question now, since it will determine the participation of some prospective bidders.

3.8 Bioretention/Biofiltration Soil Media and Drainage Aggregates

Type of BMP	For Use with Bioretention, Biofiltration with Partial Infiltration, and Biofiltration with No Infiltration
Treatment Mechanisms	Biofiltration
Other Names	Engineered Soil Media

Description

Bioretention Soil Media (BSM) is a formulated soil mixture that filters pollutants from stormwater, retains moisture, and supports healthy vegetation. It is used in LID BMPs including Bioretention, Biofiltration with Partial Infiltration, and Biofiltration with No Infiltration. BSM consists of **60-80% sand, up to 20% topsoil, and 20% of an organic amendment**, by volume.

BSM must support healthy plant growth and should provide filtering of runoff. When used in Biofiltration BMPs that discharge filtered runoff to surface waters, BSM should be specially formulated to enhance filtering of runoff, reduce the risk of pollutant leaching from BSM, and limit the potential for clogging.

All areas within the Santa Margarita Region (SMR) of Riverside County drain to the Santa Margarita River and Santa Margarita Estuary, both of which are listed as impaired for nutrients under the approved 2010 303(d) list. Accordingly, **all BSM should be formulated to reduce the potential for nutrient leaching, especially when used in flow-through Biofiltration BMPs.** Where a BMP may discharge to a waterbody that is impaired for other pollutants, BSM should be formulated to reduce leaching of those pollutants as well.

The applicability of BSM testing requirements and other provisions of this Fact Sheet depend on the type of BMP and BMP design guidelines as shown in Table 1.

Table 1. Applicability of BSM Specification and Testing Requirements.

Testing Element	Bioretention (full infiltration)	Biofiltration (Partial and No Infiltration)
General Criteria and Composition	X	X
Basic Testing of Mixed BSM	X	X
Hydraulic Evaluation of Mixed BSM		X
Chemical Suitability of Mixed BSM		X
Sand for BSM	X[1]	X[1]
Topsoil for BSM	X[1]	X[1]
Organic Amendments for BSM	X	X
Mulch for BSM	X	X

[1] – Elements of these specifications may be waived by the local jurisdiction if testing of mixed BSM is acceptable.

General Criteria and Composition

- **BSM should consist of 60-80% sand, up to 20% topsoil, and 20% of an organic amendment, by volume.** Both mixed BSM and BSM components are subject to specific testing requirements depending on BMP type and design elements (see Table 1). To meet applicable requirements, suggested BSM component fractions and types are presented in Table 2. These are suggestions only; **acceptance of BSM depends on BSM and BSM component testing results.**
- Alternative BSM components and proportions may be used if they meet all applicable testing requirements. Acceptance of any such alternative BSM is subject to approval from the local jurisdiction.
- BSM should support the growth of hardy drought-tolerant native vegetation, which is typically adapted to thrive in limited nutrient environments. Excessive levels of nutrients in BSM can increase the presence of weeds and other undesirable vegetation and can cause export of nutrients from BSM. Accordingly, **all BSM should be evaluated according to the "Basic Whole Mixture Testing Requirements"** section.
- Sand, topsoil, and organic amendment components of BSM, and mulch are subject to requirements contained in sections of this Fact Sheet titled "Sand for BSM", "Topsoil for BSM", "Organic Amendments for BSM", and "Mulch for BSM", respectively. Specifications for sand and top soil can be waived at the discretion of the local jurisdiction if whole mix texting shows acceptable properties.
- To reduce the potential for nutrient leaching from BSM, it should be formulated according to the following guidelines (Also presented in Table 2).
    - For Bioretention BMPs, nutrient-sensitive compost may be used as the organic amendment according to requirements in the "Organic Amendments" section of this Fact Sheet.
    - **For Biofiltration BMPs, mixed BSM must meet requirements in the "Chemical Suitability for Mixed BSM" section of this Fact Sheet.** To meet these requirements, it is suggested that compost not be used as an organic amendment due to its potential to leach nutrients, even when carefully sourced to reduce such leaching. Instead, coconut coir pith, peat moss, or other alternative organic amendments are recommended. For guidance on these and other alternative organic amendments see the "Alternative Organic Amendments" subsection of this Fact Sheet.
- BSM should be formulated to support the long-term design flow rate of a given BMP.
    - For Biofiltration BMPs, BSM plays a critical role in BMP hydraulic performance and should be formulated depending on whether underdrain outlet controls are used. **BSM for Biofiltration BMPs should be evaluated according to the "Hydraulic Evaluation of Mixed BSM" section of this Fact Sheet.** Meeting these requirements may require that the fines content of sand or top soil be limited (see Table 2). Some sources of top soil and sand may not provide adequate permeability.
- BSM should always be **blended before it is delivered to the site** using a mechanical mixing method (e.g. drum mixer) to ensure uniform mixing. Using a loader to mix materials on site is typically not adequate for uniform mixing and is discouraged. If sand or topsoil components are sourced from the Project site, mixing may be conducted using loaders.

- **Testing samples of the mixed BSM that is delivered to the site is highly recommended,** especially for larger BMPs. Prior testing from a material manufacturer may be acceptable in place of project-specific data if it is not more than 6 months old and represents the actual mix proportions and components in the BSM delivered to the site.
- Procurement, handling, and placement of BSM should adhere to guidelines in the "Construction Guidelines" section of this Fact Sheet.

Table 2. Recommended BSM mixture component proportions and types to meet applicable requirements.

Component Type	Bioretention	Biofiltration (Partial and No Infiltration)	
		Without outlet control	With outlet control
Sand Type	Washed	Washed	Washed
Sand Fraction, by volume	60%	60-80%	80%
Topsoil Type	Sandy Loam or Loamy Sand	Sandy Loam or Loamy Sand	NA
Topsoil Fraction, by volume	20%	Up to 20%	0%
Organic Type	Nutrient-sensitive compost	Coconut coir pith, peat, or low nutrient compost	Coconut coir pith, peat, or low nutrient compost
Organic Fraction, by volume	20%	20%	20%

Basic Testing for Mixed BSM

Basic whole mixture testing should be conducted for any BSM used in stormwater BMPs. This should ideally be completed for actual mixed BSM that is used in site BMPs, but may be from a representative sample analysis not more than 6 months old. Sample(s) should be submitted to an agronomic laboratory for analysis of all parameters listed in this section. Laboratory analytical reports must document that mixed BSM conforms to the following requirements:

- pH: 6.0 – 8.5
- Salinity: 0.5 to 3.0 mmho/cm as electrical conductivity.
- Sodium absorption ratio: < 6.0
- Chloride: < 800 ppm
- Cation Exchange Capacity (CEC): > 10 meq/100 g.
- Organic Matter: 2 to 5% on a dry weight basis.
- Carbon:Nitrogen Ratio: 12 to 40; preferably 15 to 40.
- Sieve Fractions: Should adhere to the sieve fractions presented in Table 3 based on particle size analysis by ASTM Method D422 or similar.

Table 3. Sieve analysis requirements for mixed BSM

Textural Class (ASTM D422)	Size Range	Mass Fraction
Gravel	Larger than 2 mm	0 to 25 percent of total sample
Clay	Smaller than 0.005 mm	0 to 5 percent of non-gravel fraction

Hydraulic Testing of Mixed BSM

BSM that is used in Biofiltration BMPs plays a critical role in controlling flow through BMPs. BSM that flows too quickly can result in short contact times and poor hydraulics for pollutant removal. BSM that flows too slowly can limit surface infiltration rates below design assumptions, resulting in bypass during storms smaller than the design storm.

Hydraulic Testing Requirements: Samples of mixed BSM used in Biofiltration BMPs should be submitted for laboratory analysis of hydraulic conductivity. BSM samples used in this analysis should preferably be sourced from the actual BSM batch that will be used in a given BMP but analytical results from a representative sample not more than 6 months old may also be accepted. Analysis of hydraulic conductivity may be conducted according to one of the following methods:

- Permeability of Granular Soils: ASTM D2434, or,
- Analysis of hydraulic conductivity by USDA Handbook 30 method 34b, or similar approved laboratory method.

Hydraulic conductivity must be within the limits presented in Table 4 for BSM acceptance.

Table 4. Hydraulic suitability requirements for BSM.

BMP Hydraulic Regime	Maximum K_{sat} (in/hr)	Minimum K_{sat} (in/hr)
Biofiltration with Unrestricted Outlet (media control)	8	24
Biofiltration with Restricted Outlet (outlet control)	20	80
Bioretention	NA – Hydraulic Testing Not Required	

Chemical Suitability for Mixed BSM

To reduce the potential for pollutant leaching to surface waters, a sample of BSM used in Biofiltration BMPs should be submitted for laboratory analysis for pollutant leaching potential. The BSM sample should be from the actual batch of BSM that is used in the BMP or from a representative sample not more than 6 months old. This analysis should be performed according to the "Saturated Media Extract" methods (USDA Agricultural Handbook No. 60), which is commonly performed by agronomic laboratories.

Pollutant leaching test results for BSM should comply with limits for nitrate, phosphorus, and copper:

- Nitrate: < 3 mg/L
- Phosphorus: < 1 mg/L
- Copper: < 0.025 mg/L

Testing may be performed after laboratory rinsing of media with up to 15 pore volumes of water. Alternative organic amendments, may be needed to meet these criteria. The above pollutant leaching criteria may be waived at the discretion of the local jurisdiction.

Mulch for BSM

Bioretention and Biofiltration planting areas should generally be covered with 2 to 3 inches of well-aged, double or triple shredded mulch at the time of construction. An additional 1 to 2 inches of mulch should be added annually. Mulch should be non-floating to avoid clogging overflow structures. Inorganic mulches, such as rock, may be used.

Sand for BSM

The requirements in this section may be waived at the discretion of the local jurisdiction if criteria are met for applicable whole mix testing.

Sand should meet requirements for ASTM C33 "fine aggregate concrete sand." It may be sourced from commercial soil suppliers or from natural soil deposits (such as may be found on site). Sand should conform to the following requirements:

- Be free of any waste, wood, coatings (e.g. clay, stone dust, carbonate, etc.), or any other deleterious materials.
- Conform to the particle size distribution requirements for ATSM C33 "fine aggregate concrete sand" in Table 5 based on sieve size analysis by ASTM Method D422 or similar. This should be documented by laboratory analysis results for the actual sand that was used in the BSM, or a representative sample analysis not more than 6 months old.
- All aggregate passing the #200 sieve should be non-plastic.

Table 5. Sieve size fractions for ASTM C33 "fine aggregate concrete sand".

Sieve Size (ASTM D422)	Sieve Size (mm)	Percent Passing (by weight)	
		Minimum	Maximum
3/8 inch	9.5	100	100
#4	4.8	95	100
#8	2.4	80	100
#16	1.2	50	85
#30	0.60	25	60
#50	0.42	5	30
#100	0.15	0	10
#200	0.08	0	5

Topsoil for BSM

Topsoil can be an important part of BSM and can improve pollutant filtering, nutrient retention, and water holding. Because of these benefits, it is generally recommended as a component of BSM for Bioretention BMPs. However, topsoil (especially the fine fraction) can limit flow of water through BSM, so it may not be suitable for BSM.

If topsoil is used as a component of BSM it should be a sandy loam or loamy sand that is free of hazardous materials. It may be sourced from regional soil suppliers or from the project site, providing that it meets all requirements in this Section. Decomposed granite and derivatives of decomposed granite are not considered to be topsoil. All topsoil should meet the following requirements as confirmed by laboratory analytical reports from samples used in the mixed BSM, or from a representative sample analysis not more than 6 months old:

- Texture: Sandy loam or loamy sand according to the US Department of Agriculture Textural Classification System.

Sieve Fractions: Should adhere to the sieve fractions presented in Table 6 based on particle size analysis by ASTM Method D422 or similar. *Sieve analysis may be waived at the discretion of the local jurisdiction if permeability criteria are met for applicable whole mix testing.*

Table 6. Sieve analysis requirements for topsoil used in BSM

Textural Class (ASTM D422)	Size Range	Mass Fraction
Gravel	Larger than 2 mm	0 to 25 percent of total sample
Clay	Smaller than 0.005 mm	0 to 15 percent of non-gravel fraction

Organic Amendments for BSM

Organic amendments are a critical component of BSM to help filter pollutants from runoff, retain moisture, and support healthy vegetation. However, organic amendments, especially compost, can be a source of nutrients and other pollutants that can impact receiving waters.

Nutrient leaching from organic amendments is a particular concern for BSM that is used in Biofiltration BMPs which can discharge directly to surface waters. Accordingly, BSM used in Biofiltrations BMPs must conform to requirements contained in the "Chemical Suitability of Mixed BSM" section of this Fact Sheet. Alternative Organic Amendments are recommended to comply with chemical suitability requirements.

Bioretention BMPs discharge treated water to groundwater, so they pose less risk from nutrient export from BSM.

All organic amendments should conform to the requirements in either "Compost for BSM" or "Alternative Organic Amendments for BSM".

Compost for BSM

Compost should be a well-decomposed, stable, weed-free organic source derived from waste materials including yard debris, wood wastes, crop residues, or other organic materials. It should not be derived from biosolids. Compost should preferably be certified through the US Composting Council (USCC) Seal of Testing Assurance (STA) Program.

Compost should comply with the requirements in the list below. Given the stringent nature of these requirements, it is expected that not all composts will comply with the requirements. All requirements should be confirmed by laboratory analytical reports from samples of the compost used in the mixed BSM, or from a representative sample analysis not more than 6 months old.

- Feedstock: Compost feedstock should be specified. Compost should not be derived, in whole or in part, from biosolids.
- Source: Compost should be sourced from a facility that is permitted through CalRecycle. It should also preferably be sourced from a facility that is certified through the USCC STA program.
- Physical contaminants: Not to exceed 1% by dry weight.
- Organic Matter: 35% - 75% on a dry weight basis.
- pH: 6.0 – 8.5
- Salinity: < 10 mmho/cm as electrical conductivity
- Carbon:Nitrogen Ratio: 12:1 – 40:1. Ideal C:N ratio is greater than 15:1 to reduce the potential for nutrient leaching, especially when compost is intended to be used as the organic amendment of BSM in Biofiltration BMPs.
- Maturity/Stability: Shall conform to either:
    - Solvita Maturity Index: ≥ 5.5
    - CO_2 Evolution: < 2.5 mg CO_2-C per g compost organic matter per day or < 5 mg CO_2-C per g compost C per day, whichever unit is reported.
- Select pathogens: Shall pass US EPA Class A Standard, 40 CFR Section 503.32(a).
- Trace metals: Shall pass US EPA Class A Standard, 40 CFR Section 503.13.

Alternative Organic Amendments for BSM

Amendments used as a substitute for compost should provide comparable pollutant filtration, water holding, and support for vegetation. Coconut coir pith and peat are two alternative organic amendments that have been successfully used to replace compost in BSM. If either of these amendments is used, they should conform to the requirements under the headers below.

If other organic amendments are used a certified agronomist should certify that they would provide substantially equivalent pollutant filtration (i.e. nutrient retention and cation exchange capacity), water holding capacity, and would help to support healthy vegetation. Acceptance of any other organic amendment is subject to approval by the local jurisdiction.

<u>Coconut Coir Pith:</u>

If coconut coir pith is used as a component of BSM it should conform to the following requirements:

- Production Regime: Must be rinsed with freshwater to reduce potential salt water residues and screened to remove coarse fibers.
- Aging: Must be aged a minimum of 6 months.
- Salinity: < 2.0 mmho/cm as electrical conductivity.
- Total Carbon: > 35% on a dry weight basis.
- Total Nitrogen: < 1.5% on a dry weight basis.
- C:N Ratio: > 40.

Sphagnum Peat:

If sphagnum peat is used as a component of BSM is should conform to the following requirements:

- Salinity: < 3.0 mmho/cm as electrical conductivity.
- Total Carbon: > 35% on a dry weight basis.
- Total Nitrogen: < 1.5% on a dry weight basis.

Aggregate Materials for BSM Drainage Layers

Drainage of BSM requires the use of specific aggregate materials for filter course (aka choking layer) materials and for an underlying drainage and storage layer. Open graded ASTM No 57 stone (1/2" to 1-1/2" gravel) is used as the drain rock layer. ASTM No. 8 stone (1/4 to 1/2"pea gravel) is placed on top of this layer in a 3 inch lift. Choker sand is placed on top of the pea gravel in a 3-inch lift immediately below the BSM.

Rock and sand products used in BMP drainage should comply with size classifications in Table 7 and Table 8. All sand and stone products used in BSM drainage layers shall be clean and should preferably be washed.

Table 7. Particle size requirements for rock products.

Sieve Size	Percent Passing Sieves	
	AASHTO No. 57	ASTM No. 8
3 in	-	-
2.5 in	-	-
2 in	-	-
1.5 in	100	-
1 in	95 – 100	-
0.75 in	-	-
0.5 in	25 – 60	100
0.375 in	-	85 – 100
No. 4	10 max.	10 – 30
No. 8	5 max.	0 – 10
No. 16		0 – 5
No. 50		-

Table 8. Particle size requirements for choker sand

Sieve Size	Percent Passing Sieves
	Choker Sand - ASTM C33
0.375 in	100
No. 4	95 – 100
No. 8	80 – 100
No. 16	50 – 85
No. 30	25 – 60
No. 50	5 – 30
No. 100	0 – 10
No. 200	0 – 3

Delivery, Storage, and Handling

BSM and Aggregates should not be delivered or placed in frozen, wet, or muddy conditions. The Contractor should protect materials from absorbing excess water and form erosion at all times. The Contractor shall not store materials unprotected during large rainfall events (>0.25 inches). If water is introduced into material while it is stockpiled, the Contractor shall allow the material to drain to an acceptable level before it is placed.

BSM shall be thoroughly mixed prior to delivery using mechanical mixing methods such as a drum mixer. BSM shall be lightly compacted and placed in loose lifts approximately 12 inches thick to ensure reasonable settlements without excessive compaction. Compaction within the BSM area should not exceed 75 to 85% standard proctor within the designated depth of BSM. Machinery shall not be used in the BSM area to place BSM. A conveyor or spray system shall be used for placement in large facilities. Low ground pressure equipment may be authorized for large facilities at the discretion of the local jurisdiction.

Placement methods and BSM quantities shall account for approximately 10% volume loss due to compaction and settling. Planting methods and timing shall account for settling of media without exposing plant root systems.

The local jurisdiction may request up to three double ring infiltrometer tests (ASTM D3385) or approved alternative tests to confirm that placed materials meet applicable hydraulic suitability criteria. If the infiltration rate of placed material does not meet applicable criteria, the local jurisdiction may require replacement and/or decompaction of materials.

Quality Control and Acceptance

Acceptance of materials will be based on test results that are certified by the Contractor to be representative of the materials that are delivered to the site. Laboratory testing should ideally be conducted on stockpiled materials prior to delivery to the site. Testing results may be from previously sampled materials if they are not more than 6 months old and if the Contractor certifies that they are representative of the materials that are actually delivered to the site.

Narrative:

Sheet 1 Title Sheet

- Revised Cut and Fill number.
- Revised sheet index.

Sheet 2 Legends and Abbreviations

- Revised Cut and Fill number.
- Revised to add additional notes per plan onto this sheet.
- Revised quantity take off numbers per latest plan.
- Revised keynote B to call out new stem wall per Architectural drawings in lieu of landscape edging. There is no longer landscape edging.

Sheet 3 Site Demolition Plan 1

- Updated keynote 20 note. Revised to be 1'-0" AC sawcut out.
- Added note regarding Contractor prior to doing work within public right of way for installation of the stormdrain line connecting to the main. "Contractor shall pothole and determine the existing invert elevation. Provide the information to the design team to confirm whether the new stormdrain line can connect to the existing storm drain line at the right of way. This verification must occur prior to any demolition work within the right of way".
- Revised the removal and replacement of the existing curb and AC pavement.

Sheet 4 Site Demolition Plan 2

- Revised keynote 20 note. Revised to be 1'-0" AC sawcut out.

Sheet 5 Site Demolition Plan 3

- Revised the existing stormdrain layout to match the as-builts. Revised size and layout.

Sheet 6 Site Plan 1

- Revised to remove and replace the existing curb and AC pavement (lesser scope).
- Graphically showed the stem wall at building.
- Revised the Pad elevation.
- Revised to descope gutter at the biofiltration area. It is only a curb at the biofiltration.
- Added concrete pad for the new backflow preventer.
- Revised keynote B to call out new stem wall per Architectural drawings in lieu of landscape edging. There is no longer landscape edging.

Sheet 7 Site Plan 2

- Revised to remove and replace the existing AC at curb.

Sheet 8 Site Control Plan

- Revised to add dim for the new curb transition and parkway drain.

Sheet 9 Site Grading Plan 1

- Revised to show elevation per the new site plan at the biofiltration area and south concrete walk, curb and AC pavement.
- Revised the Pad elevation.
- Revised to show stem wall at building and showed elevation of top of wall on plan.

Sheet 10 Site Grading Plan 2

- Revised elevation at the updated join limits for new AC at curb.

Sheet 11 Drainage Plan

- Delete the grading section sheet as it is no longer applicable to this project.
- Replaced sheet with drainage plan.
- Revised to include note for Contractor, “Contractor shall pothole and determine the existing invert elevation. Provide the information to the design team to confirm whether the new storm drain line can connect to the existing storm drain line at the right-of-way. This verification must occur prior to installation of new stormdrain line.”
- Revised to provide invert at the right of way.
- Revised the numbering system on the legend and notes on plan.
- Revised to include a new note for parkway drain.
- Revised the Pad elevation.
- Revised to show stem wall at building and showed elevation of top of wall on plan.

Sheet 12 Storm Drain Utility Profile

- Revised profile and notes.

Sheet 13 Sewer and Water Plan 1

- Revised to provide invert at the right of way.
- Revised the numbering system on the legend and notes on plan.
- Revised to include a new note for parkway drain.
- Revised the Pad elevation.
- Revised to show stem wall at building and showed elevation of top of wall on plan.

Sheet 14 Sewer and Water Plan 3

- Revised the existing stormdrain line to show correctly on this sheet.
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Sheet 15 Miscellaneous Details

- Revised detail 3 to show thickened edge at building for joint.
- Revised detail 6 to show a gravity curb only at the biofiltration section.
- Revised detail 8 to remove case D from project.

Sheet 16 Miscellaneous Details

- Removed curb slot detail 1. Move bubbler catch basin detail to be detail 1.

Sheet 17 Miscellaneous Details

- Revised biofiltration section with new curb only.

Sheet 22 Overexcavation Plan 1

- Revised layout of overexcavation per the revised site work.

WATER IMPROVEMENT PLAN:
Sheet 1 OF 1

- Revised to remove two new 12” gate valves as they aren’t required.
- Revised to hot tap in lieu of tee.