CITY OF GOLETA

APPENDIX E
COMMUNITY DEVELOPMENT BLOCK GRANT (CDBG) SPECIAL PROVISIONS

FOR

MATHILDA PARK IMPROVEMENTS PROJECT

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CDBG CONTRACT SPECIAL PROVISIONS

1.Definitions: For purposes of this Contract, the following terms shall have the meanings set forth below:

(a)“Assistance” means the CDBG grant funds provided, or to be provided, to the Grantee by the City, pursuant to the Grant Award Agreement.

(b)“CDBG” means Community Development Block Grant.

(c)“Contract” means the contractual agreement between the City and the Contractor to which these Contract Special Provisions have been incorporated and made a part there of.

(d)“Contractor” means the contractor whose services are retained pursuant to the Contract.

(e)“Grantee” means the unit of local government designated as the recipient of the Assistance in the Grant Award and signing the acceptance provision of the Grant Award.

(f)“HUD” means U.S. Department of Housing and Urban Development, which is the federal agency that awards and has authority over CDBG funding to the City.

(g)“City” means the Grantee or Subrecipient, as applicable.

(h)“Project” means the project for which the services of the Contractor have been retained pursuant to the Contract which are funded, in whole or in part, with CDBG funds.

(i)“Subrecipient” means the agent of the unit of local government as designated by an agreement.

(j)“Labor Surplus Area” means a civil jurisdiction that has an unemployment rate at least20% above the average unemployment rate for all states, the District of Columbia, and Puerto Rico during the previous two calendar years. The Department of Labor issues the labor surplus area list on a fiscal year basis.

2. Prime Contractor Responsibilities: The Contractor is required to assume sole responsibility for the complete effort and enforcement of laws and regulations under this Contract. The City will consider the Contractor to be the sole point of contact with regard to contractual matters. All contractors, including subcontractors must be registered in SAM and eligible to receive federal contracts.

3. Federal and State Laws: The Contractor agrees to comply with all CDBG requirements as well as other federal and state laws, regulations, or Executive Orders. The City reserves the right to add or delete terms and conditions of this Contract as may be required by revisions and additions or changes in the requirements, regulations, and laws governing the CDBG Program.

4. Procurement and Contracting: In accordance with 2 CFR Part 200, the cost plus a percentage of cost and percentage of construction cost methods of contracting shall not be

used. This provision shall supersede any conflicting provision in an executed contract document or agreement funded in whole or in part with CDBG funds.

5. Ownership: Ownership of all real or personal property, acquired in whole or in part with CDBG funds for use on this Project, shall be vested in the Grantee, unless otherwise authorized by the City. When the Grantee determines that the property is no longer required for the purposes of this Project, the Grantee must notify the City and obtain approval for disposition of the property in accordance with applicable guidelines.

6. Copyright: Except as otherwise provided in the terms and conditions of this Contract, the Contractor paid through this Contract is free to copyright any books, publications or other copyrightable materials developed in the course of the Project and under this Contract. However, HUD and the City reserve a royalty-free, non-exclusive and irrevocable license to reproduce, publish or otherwise use and to authorize others to use, for Federal government and City purposes:

(a) the copyright in any work developed under this Contract; and
(b) any rights of copyright to which a subcontractor purchases ownership with grant support.

The Federal government's rights and the City's rights identified above must be conveyed to the publisher and the language of the publisher's release form must insure the preservation of these rights.

7. Reporting Requirements: The Contractor agrees to complete and submit all reports, in such form and according to such schedule, as may be required by the City or HUD. Further, the Contractor agrees to require any subcontractors to submit reports that may be required and to incorporate such language in its agreements. Failure to meet deadlines with the required information could result in sanctions.

8. Access to Records: All records with respect to all matters covered by this Contract shall be made available at any time for audit and inspection by HUD, the City or the Grantee or their representatives upon their request.

9. Maintenance of Records: Records for non-expendable property purchased totally or partially with Federal funds must be retained for five years after final close-out of the grant. All other pertinent contract records including financial records, supporting documents and statistical records shall be retained for a minimum of five years after the final close-out report. However, if any litigation, claim, or audit is started before the expiration of the five-year period, then records must be retained for five years after the litigation, claim or audit is resolved.

10. Confidential Information: Any reports, information, data, etc., given to, prepared by, or assembled by the Contractor under this Contract, which the Grantee or the City requests to be kept confidential, shall not be made available to any individual or organization by the Contractor without prior written approval of the Grantee or the City, as applicable.

11. Reporting of Fraudulent Activity: If at any time during the term of this Contract anyone has reason to believe by whatever means that, under this or any other program administered by the City, a recipient of funds has improperly or fraudulently applied for or received benefits,

monies or services pursuant to this Contract or any other contract, such information shall be reported immediately to the appropriate authorities.

12. Conflicts of Interest and Ethical Standards:
The following provisions regarding “conflicts of interest” apply to the use and expenditure of CDBG funds by the Grantee and its subrecipients, including the Contractor.

In cases not governed by the above, such as the acquisition and disposition of real property and the provision of CDBG assistance to individuals, businesses and other private entities, the following provisions shall apply.

Except for eligible administrative or personnel costs, the general rule is that no person who is an employee, agent, consultant, officer, or elected or appointed official of the City or a unit of general local government or any designated public agencies or subrecipient which are receiving CDBG funds who exercise or have exercised any function or responsibilities with respect to CDBG activities assisted herein or are in a position to participate in a decision making process or gain inside information with regard to such activities, may obtain a financial interest or benefit from the activity, or have an interest in any contract, subcontract or agreement with respect thereto, or the proceeds thereunder either for themselves or those with whom they have family or business ties during their tenure or for one year thereafter. Exceptions may be granted by the City on a case-by-case basis as requested upon full disclosure in writing. The City may undertake any administrative remedies it deems appropriate, where there is a breach of ethical standards or conflict of interest under the regulations governing the CDBG Program and the City policies.

13. Applicable Law: In addition to the applicable Federal laws and regulations, this Contract is also made under and shall be construed in accordance with the laws of the State. By execution of this Contract, the Contractor agrees to submit to the jurisdiction of the City for all matters arising or to arise hereunder, including but not limited to performance of said Contract and payment of all licenses and taxes of whatever kind or nature applicable hereto.

14. Limitation of Liability: The Contractor will not assert in any legal action by claim or defense, or take the position in any administrative or legal procedures that he is an agent or employee of the City. This provision is not applicable to contracts for CDBG administration services where the Contractor is a Council of Government. The City shall not be liable for failure on the part of the Grantee or any other party to perform all work in accordance with all applicable laws and regulations. The Grantee agrees to defend, indemnify, and hold harmless the City from and against all claims, demands, judgments, damages, actions, causes of actions, injuries, administrative orders, consent agreement and orders, liabilities, penalties, costs, and expenses of any kind whatsoever, including, without limitation, claims arising out of loss of life, injury to persons, property, or business or damage to natural resources in connection with the activities of the Grantee and any other third parties in a contractual relationship with the Grantee, or a subsidiary, whether or not occasioned wholly or in part by any condition, accident, or event caused by any act or omission of the City as a result of the Assistance.

15. Legal Services: No attorney-at-law shall be engaged through the use of any funds provided under this Contract in any legal action or proceeding against the City, the Grantee, any local public body or any political subdivision.

16.Contract: If any provision in this Contract shall be held to be invalid or unenforceable, the remaining portions shall remain in effect. In the event such invalid or unenforceable provision is considered an essential element of this Contract, the parties shall promptly negotiate a replacement provision, which addresses the intent of such provision.

17. Amendments: Any changes to this Contract affecting the scope of work of the Project must be approved, in writing, by the City and the Contractor and shall be incorporated in writing into this Contract. Any amendments of the original contract must have written approval by the City prior to execution.

18.Termination for Convenience: This Contract may be terminated for convenience in accordance with 2 CFR Part 200.

19. Sanctions: If the Contractor fails or refuses to comply with the provisions set forth herein, the City may take any or all of the following actions: cancel, terminate or suspend in whole or in any part the contract, or refrain from extending any further funds to the Contractor until such time as the Contractor is in full compliance.

20. Subcontracting: If any part of the work covered by this Contract is to be subcontracted, the Contractor shall identify the subcontracting organization and the contractual arrangements made therewith to the City. All subcontracts must be approved by the City to insure they are not debarred or suspended by the Federal or State governments and to insure the City understands the arrangements.

21.Subcontracting with Small and Minority Firms, Women's Business Enterprise and Labor Surplus Areas: It is national policy to award a fair share of contracts to disadvantaged business enterprises (DBEs), small business enterprises (SBEs), minority business enterprises (MBEs) and women's business enterprises (WBEs). Accordingly, affirmative steps must be taken to assure that DBEs, SBEs, MBEs and WBEs are utilized when possible as sources of supplies, equipment, construction and services. Affirmative steps shall include the following:

(a) Including qualified DBEs, SBEs, MBEs and WBEs on solicitation lists;
(b) Assuring that DBEs, SBEs, MBEs and WBEs are solicited whenever they are potential sources;
(c) Whenever economically feasible, dividing total requirements into smaller tasks or quantities so as to permit maximum participation by DBEs, SBEs, MBEs and WBEs;
(d) Where the requirement permits, establishing delivery schedules which will encourage participation by DBEs, SBEs, MBEs and WBEs;
(e) Using the services and assistance of the Small Business Administration, Minority Business Development Agency, the State Office of Small and Minority Business Assistance, the U.S. Department of Commerce and the Community Services Administration as required; and
(f) Requiring the subcontractor, if any, to take the affirmative actions outlined in (1) – (5) above.

22.Debarment Certification: The Contractor must comply with Executive Orders 12549 and12689 regarding Federal debarment and suspension regulations prior to entering into a financial agreement for any transaction as outlined below:

(a) Any procurement contract for goods and services, regardless of type, expected to equal or exceed the Federal procurement small purchase threshold (which is $100,000 and is cumulative amount from all federal funding sources).

(b) Any procurement contract for goods and services, regardless of amount, under which the Contractor will have a critical influence on or substantive control over the transaction.

In addition, no contract may be awarded to any contractors who are ineligible to receive contracts under any applicable regulations of the City.

24.Equal Employment Opportunity: The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the City.

In carrying out the Project, the Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor must take affirmative action to insure that applicants for employment are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor shall post in conspicuous places, available to employees and applicants for employment, notices to be provided by the City setting forth the provisions of this non-discrimination clause. The Contractor shall state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin. The Contractor will, in all solicitations or advertisements for employees by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin. The Contractor shall incorporate the foregoing requirements of this paragraph in all of its subcontracts for the Project unless exempted by rules, regulations, or orders of the City issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor.

The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided by the City advising the said labor union or workers' representatives of the Contractor's commitment under this Section and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by the rules, regulations, and orders of the City, or pursuant thereto, and will permit access to its books, records, and accounts by HUD and the City for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

In the event of the Contractor's noncompliance with the non-discrimination clauses of this Contract or with any of such rules, regulations, or orders, this Contract may be canceled, terminated or suspended in whole or in part and the Contractor may be declared ineligible for further City government contracts or federally assisted construction contract procedures authorized in Executive Order 11246 of September 24, 1965, or by rules, regulations, or orders of the City, or as otherwise provided by law.

25. Age Discrimination: In accordance with 45 CFR, Parts 90 and 91, the Contractor agrees there shall be no bias or age discrimination as to benefits and participation under this Contract.

26. Section 109 of the Housing and Community Development Act of 1974: No person in the United States shall on the grounds of race, color, national origin or sex be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity funded in whole or in part with funds made available under the CDBG program of the City.

27. Section 504 of the Rehabilitation Act of 1973, as amended: The Contractor agrees that no otherwise qualified individual with disabilities shall, solely by reason of his disability, be denied the benefits, or be subjected to discrimination including discrimination in employment, any program or activity that receives the benefits from the Assistance.

28. Section 3, Compliance and Provision of Training, Employment and Business Opportunities: The work to be performed under this Contract is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, (12 USC § 1701u). The purpose of Section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by Section 3 shall, to the greatest extent feasible be directed to low and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

The parties to this said Contract agree to comply with HUD's regulations in 24 CFR Part 135, which implement Section 3. As evidenced by their execution of this Contract, the parties to this Contract certify that they are under no contractual or other impediment that would prevent them from complying with the 24 CFR Part 135 regulations.

The contractor agrees to send to each labor organization or representative of workers with which the Contractor has a collective bargaining agreement or other understanding, if any, a notice advising the organization or workers' representative of the contractor's commitments under this Section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the Section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions; the qualifications for each; and the name and location of person(s) taking applications for each of the positions; and the anticipated date the work shall begin. The Contractor agrees to include this Section 3 clause in every subcontract subject to compliance with regulations in 24 CFR Part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this Section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR Part 135. The Contractor will not subcontract with

any subcontractor where the Contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR Part 135.

The Contractor will certify that any vacant employment positions including training positions, that are filled (1) after the Contractor is selected but before this Contract has been executed, and (2) with persons other than those to whom the regulations of 24 CFR Part 135 require employment opportunities to be directed, were not filled to circumvent the Contractor's obligations under 24 CFR Part 135.

The Contractor agrees to submit such reports as required to document compliance with 24 CFR Part 135. Noncompliance with the regulations in 24 CFR Part 135 may result in sanctions, termination of this Contract for default, and debarment or suspension from future HUD assisted contracts.

29. Lead-Based Paint: The construction or rehabilitation of residential structures with any portion of the Assistance is subject to the HUD Lead-Based Paint regulations found at 24 CFR Part 35. Any grants or loans made by the Grantee for the rehabilitation of residential structures with any portion of the Assistance shall be made subject to the provisions for the elimination of lead-base paint hazards under subpart B of said regulations, and the Grantee shall be responsible for the inspections and certifications required under Section 35.14(f) thereof.

30.Compliance with Air and Water Acts: (Applicable to construction contracts and related subcontracts exceeding $100,000) This Contract is subject to the requirements of the Clean Air Act, as amended, 42 USC § 7401 et seq., the Federal Water Pollution Control Act (Clean Water Act), as amended, 33 USC § 1251 et seq., and the regulations of the Environmental Protection Agency with respect to 40 CFR Part 15, as amended from time to time. In particular, the following are required:

(a) A stipulation by the Contractor or subcontractor that any facility to be utilized in the performance of any nonexempt contract or subcontract is not listed on the List of Violating Facilities, issued by the Environmental Protection Agency (EPA) pursuant to 40 CFR § 15.20.

(b) Agreement by the Contractor to comply with all the requirements of Section 114 of the Clean Air Act, as amended (42 USC § 7414) and Section 308 of the Federal Water Pollution Control Act, as amended (33 USC § 1318) relating to inspection, monitoring, entry, reports and information, as well as all other requirements specified in said Sections 114 and 308, and all regulations and guidelines issued thereunder.

(c) A stipulation that as a condition of award of contract prompt notice will be given of any notification received from the Director, Office of Federal Activities, EPA, indicating that a facility utilized or to be utilized for the contract under consideration is to be listed on the EPA list of Violating Facilities.

(d) Agreement by the Contractor that the Contractor will include or cause to be included the criteria and requirements in these subparagraphs (1) through (4), in every

nonexempt subcontract and requiring that the Contractor will take such action as the City may direct as a means of enforcing such provisions.

In no event shall any amount of the Assistance be utilized with respect to a facility which has given rise to a conviction under section 113(c)(1) of the Clean Air Act or Section 309(c) of the Federal Water Pollution Control Act.

31.Federal Labor Standards Provisions: *(Applicable to construction contracts in excess of $2,000 or residential rehabilitation contracts involving more than eight units)*

The Project or program to which the construction work covered by this Contract pertains is being assisted by the United States of America and the Federal Labor Standards Provisions as set forth on Attachment 1 are included in this Contract pursuant to the provisions applicable to such Federal assistance. These provisions must be complied with or sanctions will be instituted.

Attachment 1

U.S. Department of Housing and Urban Development, Office of Labor Relations form HUD-4010 (06/2009) ref. Handbook 1344.1

A. 1. (i) Minimum Wages. All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached thereto and made a part thereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section l(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5 (a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period.
Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification of the time actually work therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification an wage rates conformed under 29 CFR 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible, place where it can be easily seen by the workers.

(ii) (a) Any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(b) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and

Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

(c) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1214-0140.)

(d) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii)(b) or (c) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

2. Withholding. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federal-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice trainee or helper, employed or working on the site of the work, all or part of the wages required by the contract, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or City, take such action as may be necessary to cause the suspension or any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the contractor, disburse such amounts withheld for an on account of the contractor or subcontractor to the

respective employees to whom they are due. The Comptroller General shall make such disbursements in the case of direct Davis-Bacon Act contracts.

3. (i) Payrolls and basic records. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section l (b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions make and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5 (a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section l(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment of provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices and trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs. (Approved by the Office of Management and Budget under OMB Control Numbers 1215-0140 and 1215-0017.)

(ii) (a) the contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or City, as the case may be, for transmission to HUD or its designee. The payrolls submitted shall set our accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i). This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, DC 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. (Approved by the Office of Management and Budget Under OMB Control Number 1215-0129.)

(b) Each payroll submitted shall be accompanied by a “Statement of Compliance,” signed by the contractor or subcontractor or his or her agent who pays for supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be maintained under 29 CFR 5.5 (a)(3)(i) and that such information is correct and complete;

(2) That each laborer or mechanic (including each apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(c) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the “Statement of Compliance” required by subparagraph A.3.(ii)(b).

(d) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.
(iii) The contractor or subcontractor shall make the records required under subparagraph A.3.(i) available for inspection, copying, or transcription by authorized representatives of HUD or its designee or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the contractor, sponsor, applicant or City, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and Trainees.
(i) **Apprentices**. Apprentices will be permitted to work at less than the predetermined rate for the work they perform when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment Training Administration, Office of Apprenticeship Training, Employer and Training Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen in any craft classification shall not be greater than the ratio permitted to the contractor as to his entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as state above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ration permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.
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(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for work performed unless they are employed pursuant to

and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every Trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.
(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under 29 CFR Part 5 shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR Part 3 which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor will insert in any subcontracts the clauses contained in subparagraphs 1 through 11 of this paragraph A and such other clauses as HUD or its designee may by appropriate instructions require, and a copy of the applicable prevailing wage decision, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this paragraph.

7. Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act Requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any if its subcontractors) and HUD or its designee, the U.S. Department of Labor, or the employees or their representatives.

10. (i) Certification of Eligibility. By entering into this contract the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.
(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a government contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.
(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001. Additionally, U.S. Criminal Code, Section 1 01 0, Title 18, U.S.C., "Federal Housing Administration transactions", provided in part: "Whoever, for the purpose of . . . influencing in any way the action of such Administration….. makes, utters or publishes any statement knowing the same to be false….. shall be fined not more than $5,000 or imprisoned not more than two years, or both."

11. Complaints, Proceedings, or Testimony by Employees. No laborer or mechanic to whom the wage, salary, or other labor standards provisions of this Contract are applicable shall be discharged or in any other manner discriminated against by the Contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable under this Contract to his employer.

B. Contract Work Hours and Safety Standards Act. The provisions of this paragraph B are applicable only where the amount of the prime contract exceeds $100,000. As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.
(1) Overtime Requirements. No Contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of 40 hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of 40 hours in such workweek.
(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in subparagraph (1) of this paragraph, the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violations of the clause set forth in subparagraph (1) of this paragraph, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by the clause set forth in sub paragraph (1) of this paragraph.
(3) **Withholding for unpaid wages and liquidated damages.** HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract, or any other Federal contract with the same prime contract, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act which is held by the same prime contractor such sums as may be determined to be necessary to satisfy any liabilities of such contractor

or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (2)of this paragraph.
(4) **Subcontracts.** The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph (1) through (4) of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime Contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in subparagraphs (1) through (4) of this paragraph.

C. Health and Safety. The provisions of this paragraph C are applicable only where the amount of the prime contract exceeds $100,000.

(1) No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to this health and safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.
(2) The Contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29 Part 1926 and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act, 40 USC 3701 et. seq.
(3) The Contractor shall include the provisions of this paragraph in every subcontract so that such provisions will be binding on each subcontractor. The Contractor shall take such action with respect to any subcontract as the Secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions.

CITY OF GOLETA

APPENDIX F
SAMPLE DOOR HANGER NOTIFICATION

FOR

MATHILDA PARK IMPROVEMENTS PROJECT

Back of Cover Sheet

Sample Door Hanger

Project Name

The City of Goleta is pleased to inform you that the PROJECT NAME is about to begin. Our contractor, CONTRACTOR NAME, will be working over the next LENGTH OF PROJECT to construct this project. During that time, CONTRACTOR will be DESCRIPTION OF WORK. We apologize for any inconvenience this may cause and ask for your patience and cooperation so that we may complete this work as soon as possible.

Sign up for email/text notifications from the City on this project here: https://public.govdelivery.com/accounts/CAGOLETA/subscriber/ new**.**

WORK HOURS/PARKING: The work will generally be performed between the hours of 7:30 a.m. and 4:30 p.m. However, there are work hour restrictions in some instances. Local access will be maintained during most of the work. However, parking restrictions will be necessary and will be posted a minimum of 72-hours in advance of the work. Cars will be towed if parked during the no parking dates posted on your street.

TIMELINE: Some or all of the following activities will be performed on your street:

- DESCRIPTION OF ACTIVITY DATE
- DESCRIPTION OF ACTIVITY DATE
- DESCRIPTION OF ACTIVITY DATE

CONTACTS: If you have any questions or need information, please contact:

NAME OF CITY CONTACT PHONE NUMBER

NAME OF CONTRACT CONTACT PHONE NUMBER

CITY OF GOLETA

APPENDIX G
TEMPORARY NO PARKING SIGN

FOR

MATHILDA PARK IMPROVEMENTS PROJECT

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TOW-AWAY
TEMPORARY
NO PARKING
TIME: _____
DATES: _____
REASON: _____
CONTRACTOR'S
NAME: _____
PHONE NUMBER: _____
(LOCAL OR 800#)

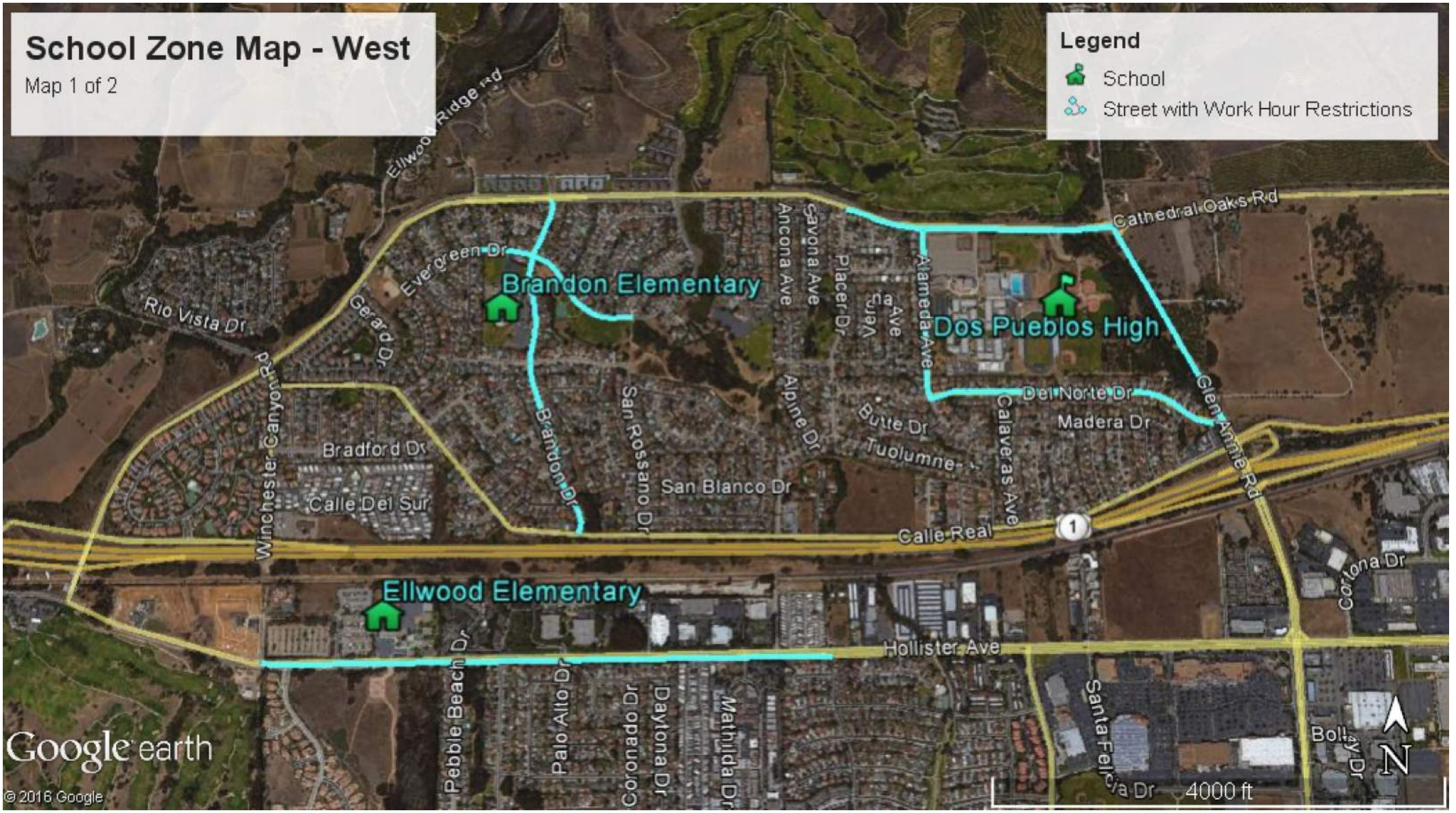
CITY OF GOLETA

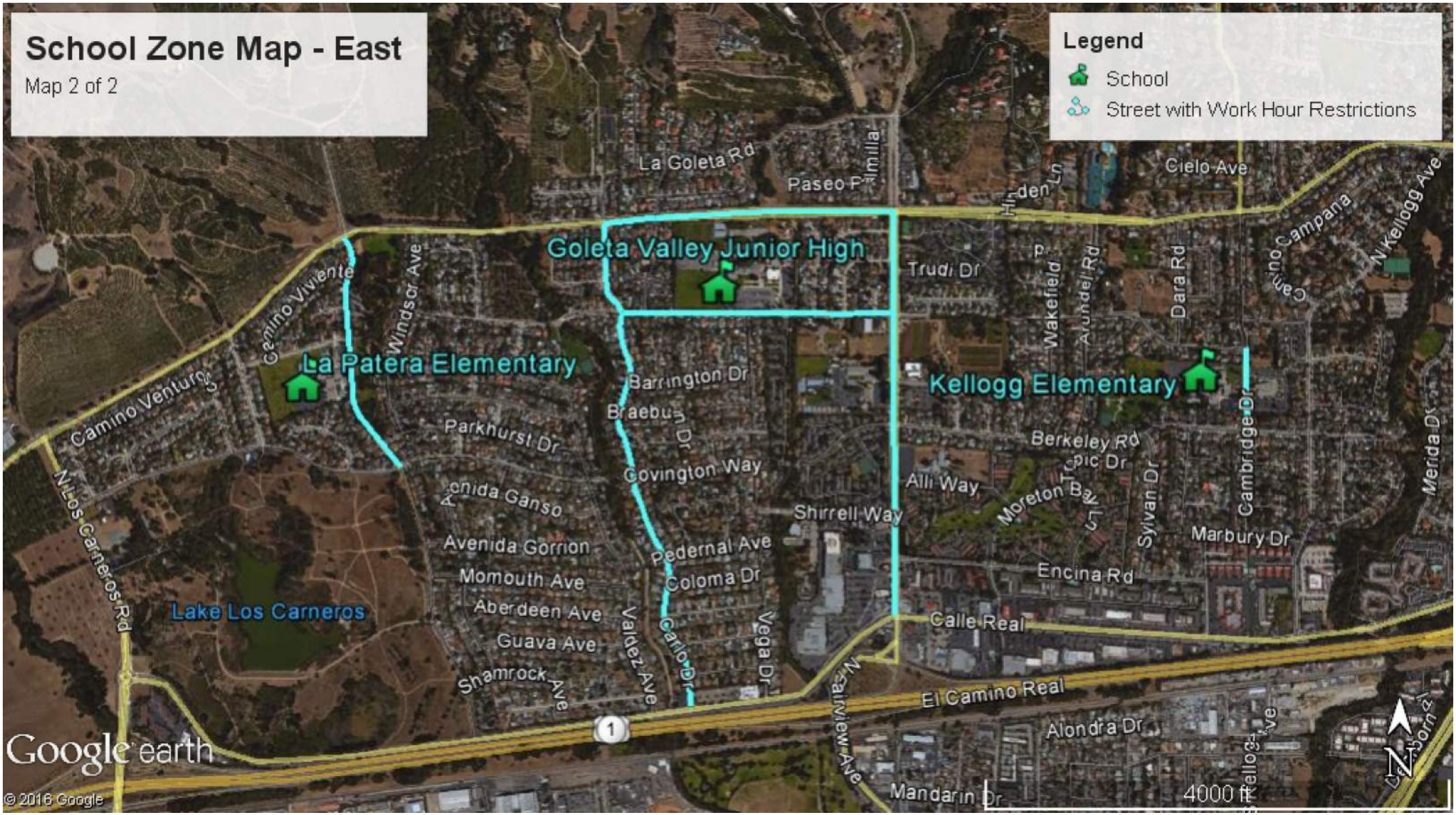
APPENDIX H
SCHOOL ZONE WORK HOUR RESTRICTION MAP

FOR

MATHILDA PARK IMPROVEMENTS PROJECT

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School Zone Map - West
Map 1 of 2
Legend
School
Street with Work Hour Restrictions
Brandon Elementary
Dos Pueblos High
Ellwood Elementary
Evergreen Dr
Rio Vista Dr
Gerard Dr
Winchester Canyon Rd
Bradford Dr
Calle Del Sur
Brandon Dr
San Rossano Dr
San Blanco Dr
Alpine Dr
Ancona Ave
Savona Ave
Placer Dr
Alameda Ave
Cathedral Oaks Rd
Del Norte Dr
Madera Dr
Butte Dr
Tuolumne
Calaveras Ave
Glen Annie Rd
Calle Real
Hollister Ave
Pebble Beach Dr
Palo Alto Dr
Coronado Dr
Daytona Dr
Mathilda Dr
Santa Felicia Dr
Bollay Dr
Corona Dr
Google earth
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4000 ft
N


School Zone Map - East
Map 2 of 2
Legend
School
Street with Work Hour Restrictions
Goleta Valley Junior High
La Patera Elementary
Kellogg Elementary
La Goleta Rd
Paseo Pimilla
Cielo Ave
Camino Viviente
Windsor Ave
Camino Ventura
Barrington Dr
Braebus Dr
Parkhurst Dr
Covington Way
Avenida Ganso
Avenida Gorrion
Momouth Ave
Aberdeen Ave
Guava Ave
Shamrock Ave
Pedernal Ave
Coloma Dr
Valdez Ave
Carlo Dr
Vega Dr
Shirrell Way
Trudi Dr
Wakefield
Arundel Rd
Dara Rd
Berkeley Rd
Alli Way
Sylvan Dr
Cambridge Dr
Marbury Dr
Encina Rd
Calle Real
Merida Dr
N Kellogg Ave
N Los Carneros Rd
Lake Los Carneros
El Camino Real
Alondra Dr
Mandarin Dr
N Fairview Ave
4000 ft
Google earth
© 2016 Google

CITY OF GOLETA

APPENDIX I
WEEKLY STATEMENT OF WORKING DAYS

FOR

MATHILDA PARK IMPROVEMENTS PROJECT

Back of Cover Sheet

Exhibit 16-A: WEEKLY STATEMENT OF WORKING DAYS

JOB STAMP

REPORT NUMBER:

CONTRACTOR: WEEK ENDING (month, day, year):

	Date (A)	Day (B)	Weather Conditions or Other Explanation[1] (C)	Working Day (D)	Nonworking Day (E)	Working Day No Work Done on Controlling Activity[6] (F)
1						
2		Monday				
3		Tuesday				
4		Wednesday				
5		Thursday				
6		Friday				
7						
8	Days this week (total lines 1D thru 7D)					
9	Days previously reported (take from previous week's report)					
10	Total working days to date (lines 8D + 9D)					

	Change Order Time Adjustments	Change Order Days Approved	Change Order Numbers[2]
11	Days this report		
12	Days previously reported (taken from previous week's report)		
13	Total change order days to date (lines 11D + 12D)		

	Computation of Extended Date for Completion	Number of Days	Numbered Day[4]	Date
14	First working day			
15	Original working days specified in contract			
16	COMPUTED DATE FOR COMPLETION (line 14E + line 15D minus 1)			
17	Total change order days approved to date (from line 13)			
18	Total Nonworking days to date[3] (from box 10E)			
19	EXTENDED DATE FOR COMPLETION (line 16E + line 17D + line 18D)			
20	Revised working days for contract (line 15D + line 17D)			
21	Total working days to date (from box 10D)			
22	WORKING DAYS REMAINING (line 20D – line 21D)			

CONTROLLING ACTIVITY(IES)[5]:

REMARKS:

The contractor will be allowed fifteen (15) days in which to protest in writing the correctness of the statement; otherwise, the statement shall be deemed to have been accepted by the contractor as correct.

NOTE: ***Footnote Instructions to Resident Engineer are on page 2.***

RESIDENT ENGINEER SIGNATURE: DATE:

Distribution: Original -- Contractor; Copy -- Resident Engineer

Exhibit 16-A: WEEKLY STATEMENT OF WORKING DAYS

FOOTNOTE INSTRUCTIONS TO RESIDENT ENGINEER

1. When determining if the day is a working day or non-working day, first determine the controlling operation (taken from the critical path of the updated approved project schedule.), second, If you determine the day is a "nonworking day", provide the contractual reason -for example, "clear-wet grade" to describe conditions when the weather is clear, but the grade is too wet. Do not list days merely as "Unworkable". When recording nonworking days due to "other", provide explanation contract lane closure restrictions, State of emergency, area-wide labor strike, etc.

2. List numbers of change orders providing for time extensions.

3. Do not include nonworking days which occur after expiration of the **Extended Date of Completion**. On contracts that are overtime, the total under Working Days Shall not be greater than the total of revised Working Days (line7). After approved total of working days has been reached, continue recording working and nonworking days but do not add into the totals. Make a statement under Remarks that working and nonworking days are shown for record only since the contact time has elapsed.

   If an extension of time is subsequently approved, determine the new **Extended Date** by taking into account all nonworking days that are reachable.

4. From the calendar issued by the Division of Construction with working days numbered for convenience in computations.

5. Determine the controlling activity from the updated approved contract schedule. If the controlling activity is completed in the middle of the week and a new one begins, make this clear. For example, "Class 2 base -M, T, W; HMA -Th, Fri." This is not the place to list all the operations the contractor worked on for the week. Record that information in the Daily Report or under "remarks" if you wish.

6. Column F (lines 1-10) is informational only and tracks those days determined in column D to be working days, but the Contractor failed to work on the controlling operation.

CITY OF GOLETA

APPENDIX J
CITY OF GOLETA MONTHLY PROJECT PAYMENT ESTIMATE FORMS

FOR

MATHILDA PARK IMPROVEMENTS PROJECT

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MATHILDA PARK IMPROVEMENTS PROJECT
CITY PROJECT NO. 9113
APPENDIX J

CITY OF GOLETA

Department of Public Works
130 Cremona Drive, Suite B
Goleta, CA 93117

MONTHLY PROJECT PAYMENT ESTIMATE SUMMARY

Payment Estimate No: _____

Work Performed Through: _____

Contractor: _____ Project: _____

Address: _____ Acct.No: _____

Contract Summary	
Original Contract Amount:	
Approved Change Orders through #: _____	
Quantity Changes (Requires Project Engineer/Inspector verification):	
Total Contract Amount to Date:	

Payment Summary	CURRENT PAY PERIOD AMOUNT	PREVIOUS AMOUNT	TO DATE AMOUNT
Original Contract Payments			
Change Order Payments			
Total Earnings			
Less: Retention (5%)			
Less: Administrative Deductions			
Net Amounts			

The undersigned Contractor or Contractor's Authorized Representative certifies that to the best of thier knowledge, information, and belief, the work covered in this application for payment has been completed in accordance with the contract documents and the costs shown are true and correct.

Resident Engineer:	**Project Engineer:**	**Contractor:**
Date:	**Date:**	**Date:**

CITY OF GOLETA

Department of Public Works
130 Cremona Drive, Suite B
Goleta, CA 93117

Project: _____

Acct.No: _____

Contractor: _____

_____

PROJECT PAYMENT ESTIMATE

Payment Estimate No: _____

Work Performed Through: _____

Item No.	Item Description	Unit	Estimated Quantity	Unit Cost	Contract Amount	This Estimate		Previous Estimates		Work Completed		Work Remaining	
						Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount

Form CC 2 REV: 03/2023

CITY OF GOLETA

Department of Public Works
130 Cremona Drive, Suite B
Goleta, CA 93117

Project: _____

Project No: _____

Contractor: _____

_____

QUANTITY ADJUSTMENT FORM

Payment Estimate No: _____

Work Performed Through: _____

INSTRUCTIONS

This form is to accompany Progress Payments or the Final Payment where there are quantity changes (variations in quantities) authorized by the Department of Public Works that adjust the Total Contract Amount.

Quantity Changes in the amount of:
Accompanying Progress Payment # (or Final Payment) _____ have been reviewed and the actual quantities verified.

Item No.	Item Description	Unit	Unit Cost	Contract Quantity Adjustments								
				This Estimate			Previous Estimates			To-Date Totals		
				Quantity	Increase (Decrease)	Amount	Quantity	Increase (Decrease)	Amount	Quantity	Increase (Decrease)	Amount
						$0.00			$0.00			$0.00
						$0.00			$0.00			$0.00
						$0.00			$0.00			$0.00
						$0.00			$0.00			$0.00
						$0.00			$0.00			$0.00
						$0.00			$0.00			$0.00
						$0.00			$0.00			$0.00
						$0.00			$0.00			$0.00
						$0.00			$0.00			$0.00

Contractor Signature **Date**

Resident Engineer Signature **Date**

CONSTRUCTION CONTRACT
FINAL RELEASE

130 Cremona Drive, Suite B
Goleta, CA 93117

From: _____
Contractor

_____

_____
Address

Date: _____

Payment Request No: _____

Acct.No: _____

Project Name:

_____

_____

To: CITY OF GOLETA
Department of Public Works
CIP Division
130 Cremona Drive, Suite B
Goleta, CA 93117

Upon receipt by the undersigned of a check from the City of Goleta in the sum of

_____

payable to _____

_____

This release covers the final payment to the undersigned for all labor, services, equipment or material furnished on the job, including the work of or all materials furnished for all subcontractors, suppliers, or other agents acting on behalf of the undersigned on this work. There are no disputed claims for additional work.

Contractor Signature: _____

Print Name: _____

Title: _____

Date: _____

CONTRACT CHANGE ORDER MEMO

Department of Public Works
130 Cremona Drive, Suite B
Goleta, CA 93117

Change Order No. _____

Date Prepared: _____

Project No.: _____

Contractor: _____

Project: _____

Address: _____

_____

DESCRIPTION OF ITEMS INCLUDED IN CONTRACT CHANGE ORDER-03:
Modifications to the Project listed in CCO-XX have been due to the following:

What is the change:

Who initiated the change:

Where is the change located:

How will the change be implemented:

Method of Payment:

Time Adjustment:
A time adjustment of X working days is included as part of this change order.

CONTRACT CHANGE ORDER-XX FINANCIAL IMPACT:

Original Contract Amount:		
Total Change Order Authority Approved by Council:		
Total Change By Previous Change Orders:		
Contract Amount Prior to This Change Order:	$	-
Amount to be Increased By This Change Order:		
Adjusted Contract Amount Including This Change Order:	**$**	**-**
Total Remaining Change Order Authority:	$	-
Contract Period Increase Due to This Change Order:		Days
Final Contract Completion Date Including This Change Order:		Days

By: _____

Name: John Plummer, Resident Engineer

CITY OF GOLETA

CONTRACT CHANGE ORDER

Department of Public Works
130 Cremona Drive, Suite B
Goleta, CA 93117

Change Order No. _____

Date Prepared: _____

Project No.: _____

Contractor: _____

Project: _____

Address: _____

_____

You are directed to make the following changes from the plans and specifications or do the following described work not included in the plans and specifications for this contract.

Description of work to be done, estimate of quantities, and prices to be paid:
In accordance with Section 4-1.05 CHANGES AND EXTRA WORK of the 2023 Standard Specifications, the Contractor shall...

For this work, the Contractor is compensated $X,XXX.XX.This sum, measured in accordance with the Standard Specifications constitutes full and complete compensation, for providing all labor, materials, equipment, tools, and incidentals, including all markups for this change.

(Database Code; XXX) Total This Item:

X Working Days Added

	Estimated Cost:	***Decrease***	***Increase***

By reason of this order, the time of completion will be adjusted as follows: XXX (X) working days added.

Original Contract Amount:	
Total Change by Previous Change Orders and/or Quantity Adjustment:	
Contract Amount Prior to this Change Order:	$ -
Contract Amount to be *Increased/Decreased* by this Change Order:	
Adjusted Contract Amount Including this Change Order:	$ -

SIGNATURE	(PRINT NAME & TITLE)	DATE

REVIEWED BY:

SIGNATURE	(PRINT NAME & TITLE)	DATE
	John Plummer, Senior Engineer	

APPROVAL RECOMMENDED BY:

SIGNATURE	(PRINT NAME & TITLE)	DATE
	Andrew Fuller, Principal Engineer	

CITY OF GOLETA

CONTRACT CHANGE ORDER

Department of Public Works
130 Cremona Drive, Suite B
Goleta, CA 93117

Change Order No. _____

Date Prepared: _____

Project No.: _____

Contractor: _____

Project: _____

CITY APPROVAL BY:

SIGNATURE	(PRINT NAME & TITLE)	DATE
	Nina Buelna, Public Works Director	

We, the undersigned contractor, have given careful consideration to the change proposed and agree, if this proposal is approved, that we will provide all equipment, furnish the materials, except as may otherwise be noted above, and perform all services necessary for the work above specified, and will accept as full payment, therefore, the prices shown above. **NOTE: If you, the contractor, do not sign acceptance of this order, your attention is directed to the requirements of the specifications as to proceeding with the ordered work and filing a written protest within the time therein specified.**

CONTRACTOR ACCEPTANCE BY:

SIGNATURE	(PRINT NAME & TITLE)	DATE

CITY OF GOLETA

APPENDIX K
BEST MANAGEMENT PRACTICES (BMP) DEVICES

FOR

MATHILDA PARK IMPROVEMENTS PROJECT

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MATHILDA PARK IMPROVEMENTS PROJECT
CITY PROJECT NO. 9113
APPENDIX K



Construction Site Best Management Practices (BMP) Manual

CTSW-RT-17-314.18.1

May 2017

California Department of Transportation
Division of Environmental Analysis, Stormwater Program
1120 N Street
Sacramento, California 95814
http://www.dot.ca.gov/hg/env/stormwater/index.htm

For individuals with sensory disabilities, this document is available in alternate formats upon request.

Please call or write to:

Stormwater Liaison, Caltrans Division of Environmental Analysis

MS 27, P.O. Box 942874, Sacramento, CA 94274-0001

(916) 653-8896 Voice or dial 711 to use a relay service.

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CALTRANS Technical Report Documentation Page

1. Report No. CTSW-RT-17-314.18.1	2. Type of Report Guidance Manual	3. Report Phase and Edition Final
4. Title and Subtitle Construction Site Best Management Practices (BMP) Manual		5. Report Date May 2017
6. Copyright Owner(s) California Department of Transportation		7. Caltrans Project Coordinator Hamid Hakim
8. Performing Organization Names and Addresses Brown and Caldwell 201 North Civic Drive, Suite 115 Walnut Creek, CA 94596 WRECO 1243 Alpine Road, Suite 108 Walnut Creek, CA 94596		9. Task Order No. 18 10. Contract No. 43A0314
11. Sponsoring Agency Name and Address California Department of Transportation Stormwater Program MS-27 1120 N Street Sacramento, California 95814		12. Caltrans Functional Reviewers: Greg Balzer, Jack Broadbent Kim Christmann, Mark Doroudian Johnathan Fitzgerald, Dave Fredrickson Hamid Hakim, Dave Meress Sean Penders, Ben Rubio Hamzeh Ramadan, Tom Rutsch Tom Yi, Walter Yu
13. Supplementary Notes		14. External Reviewers

15. Abstract

The Manual presents guidance for California Department of Transportation (Caltrans) staff, consultants and Contractors to use to determine applicability of Best Management Practices for implementation in construction projects.

16. Key Words Stormwater, guidance, manual, BMPs, installation, maintenance SWPPP, WPCP	17. Distribution Statement	18. No. of pages 318

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List of Abbreviations

ASBS	Areas of Special Biological Significance
ATS	Active Treatment System
BAT	Best Available Technology
BCT	Best Conventional Technology
BMP	Best Management Practice
Caltrans	State of California, Department of Transportation
CASQA	California Stormwater Quality Association
CEQA	California Environmental Quality Act
CCS	Cellular Confinement System
CFR	Code of Federal Regulations
CGP	Construction General Permit
CPESC	Certified Professional in Erosion and Sediment Control
CSBMP	Construction Site Best Management Practices
CWA	Clean Water Act
DFW	Department of Fish and Wildlife
DSA	Disturbed Soil Area
DTSC	Department of Toxic Substance Control
DEA	Division of Environmental Analysis
DWQ	Division of Water Quality
EPA	Environmental Protection Agency
ESA	Environmentally Sensitive Area
HQ	Headquarters
IC/ID	Illegal Connection/Illicit Discharge
IH	Information Handout
LRP	Legally Responsible Person
LTCGP	Lake Tahoe Hydrologic Unit Construction General Permit
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm Sewer System
NAL	Numeric Action Level
NEL	Numeric Effluent Limitation
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NTU	Nephelometric Turbidity Units
NWS	National Weather Service
OHSD	Office of Hydraulics and Stormwater Design
O&M	Operation and Maintenance
PRDs	Permit Registration Documents
QSD	Qualified SWPPP Developer
QSP	Qualified SWPPP Practitioner
RE	Resident Engineer
REAP	Rain Event Action Plan
RECP	rolled erosion control products
RW	Receiving Water
RWQCB	Regional Water Quality Control Board
SDS	Safety Data Sheet
SAP	Sampling and Analysis Plan
SMARTS	Storm Water Multiple Application Reporting and Tracking System
SS	Settleable Solids
SSC	Suspended Sediment Concentration
SSPs	Standard Special Provisions
SWMP	Stormwater Management Program
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
USACOE	U.S. Army Corps of Engineers
USGS	United States Geological Service
H:V	Horizontal versus Vertical
WDID	Waste Discharger Identification Number
WDR	Waste Discharge Requirement
WQS	Water Quality Certification
WQS	Water Quality Standards
WPC Manager	Water Pollution Control Manager
WPCD	Water Pollution Control Drawing
WPCP	Water Pollution Control Program
WPCS	Water Pollution Control Schedule

Section 1
Introduction

1.1 Overview

This Construction Site Best Management Practices (CSBMP) Manual (Manual) provides guidance on the selection and implementation of Best Management Practices (BMPs) into construction projects within the Caltrans right-of-way.

The primary objective of this CSBMP Manual is to provide the overall process for selecting, installing, and maintaining temporary BMPs in Caltrans construction projects. The CSBMP Manual provides a general background of stormwater documents and references to other stormwater manuals, includes a flowchart showing applicable BMP triggers for each of the six Construction Site BMP categories, and detailed guidance for the selection, installation, and required maintenance for individual BMPs. The Manual ties into the Caltrans 2015 Standard Specifications applicable to BMP installation and maintenance frequency,

This Manual is organized as follows:

Section 1 – Introduction

This section provides a background on regulations and stormwater permits, and relevant stormwater guidance documents and websites.

Section 2 – Caltrans Construction Stormwater Program Requirements

provides a description of general documents prepared for or related to the construction phase of the project, instructions for the selection and implementation of Construction Site BMPs and details the minimum BMP inspections required for construction sites.

Section 3 – Temporary Soil Stabilization BMPs

provides an overview of the Soil Stabilization BMP category and a listing and working details for Caltrans Construction Site BMPs for Temporary Soil Stabilization.

Section 4 – Temporary Sediment Control BMPs

provides an overview of the Sediment Control BMP category and a listing and working details for Caltrans Construction Site BMPs for Temporary Sediment Control.

Section 5 - Wind Erosion Control BMPs

provides an overview of the Wind Erosion BMP category and a listing and working details for Caltrans Construction Site BMPs for Wind Erosion Control.

Section 6 - Tracking Control BMPs

provides an overview of the Tracking Control BMP category and a listing and working details for Caltrans Construction Site BMPs for Tracking Control.

Section 7 - Non-Stormwater Management BMPs

provides an overview of the Non- Stormwater Management BMP category and a listing and working details for Caltrans Construction Site BMPs for Non-Stormwater Management.

Section 8 - Waste Management and Material Pollution Control BMPs

provides an overview of the Waste Management and Materials Pollution Control BMP category and a listing and working details for Caltrans Construction Site BMPs for Waste Management and Materials Pollution Control.

Appendix A - provides definitions of terms used throughout this Manual.

Appendix B - provides guidance on the selection of temporary soil stabilization controls.

Appendix C - provides guidance on the requirements for the implementation of Active Treatment System (ATS) to comply with the CGP or the LTCGP.

1.2 Regulations and Stormwater Permits

Federal Regulations

The Clean Water Act is a Federal regulation that deals in part with controlling discharges of pollutants from Municipal Separate Storm Sewer Systems (MS4s), construction sites, and industrial activities as part of the National Pollutant Discharge Elimination System (NPDES) permit process. In 1990, the Environmental Protection Agency (EPA) promulgated federal stormwater regulations requiring municipal, construction and industrial stormwater discharges to comply with an NPDES permit.

In California, the EPA delegated its authority to issue NPDES permits to the State Water Resources Control Board (SWRCB). The State Board has nine regional water quality control boards across the State. Figure 1-1 presents a depiction of the nine regional board boundaries in relation to the Caltrans Districts.

Caltrans NPDES Statewide Permit and NPDES Construction General Permits

On July 15, 1999, the SWRCB issued the first “NPDES Permit, Statewide Stormwater Permit and Waste Discharge Requirements (WDRs) for the State of California, Department of Transportation (Caltrans)” (NPDES No. CAS000003) hereby called “Caltrans Permit.” The Caltrans Permit requires the preparation and implementation of the Caltrans Statewide Stormwater Management Plan (SWMP). The SWMP describes how Caltrans plans to implement the Caltrans Permit requirements and describes Caltrans’ program addressing stormwater pollution control related to various activities, including planning, design, construction, maintenance, and operation of roadways and facilities.

The Caltrans Permit regulates stormwater discharges from Caltrans properties, facilities, and activities, and requires that Caltrans’ construction program comply with the requirements of the “NPDES General Permit, WDRs for Discharges of Stormwater Runoff Associated with Construction Activity” (NPDES No. CAS000002) (Construction General Permit) issued by the SWRCB.

Both the Caltrans Permit and the Construction General Permit (CGP) have been reissued since 2009. The current Caltrans Permit Order 2012-0011-DWQ became effective July 1, 2013 and requires construction projects with one acre or more of soil disturbance to comply with the CGP Order 2009-009-DWQ and amendments thereto. There are a small number of Caltrans projects that are situated in the Lake Tahoe Regional Board area; those projects are subject to the Lake Tahoe Construction General Permit (LTCGP) Order No.R6T-1016-0010. The CGP and the LTCGP require SWPPP projects to upload the authorized SWPPP and all other relevant documents and data to the State Board’s Stormwater Multiple Application and Report Tracking System (SMARTS).

Other NPDES Permits

There are other Permits that might be applicable to Caltrans construction projects depending on the specific activities. Any construction project might trigger the Statewide Industrial Permit coverage if there is a proposed batch plant or other industrial activities as outlined below. In addition, if there is any dewatering being proposed, there are specific Regional Permits that might be applicable.

Industrial Permit

Industrial Activities are not covered under the Caltrans Permit. The Statewide Permit for Stormwater Discharges Associated with Industrial Activities (IGP) (Order 2014-0057-DWQ) regulates nine broad categories of industrial activities. There are certain activities that might occur ancillary to construction projects; for those operations, the industrial permit is triggered. Caltrans contracts include language requiring the Contractor to implement BMPs and seek coverage as required under the IGP.

Dewatering Permit

Dewatering discharge requirements vary among the nine regional boards. Caltrans has developed a Dewatering Manual that should be referred to determine appropriate requirements for the individual construction site. The Dewatering Manual can be accessed via the website link included in Table 1-4.

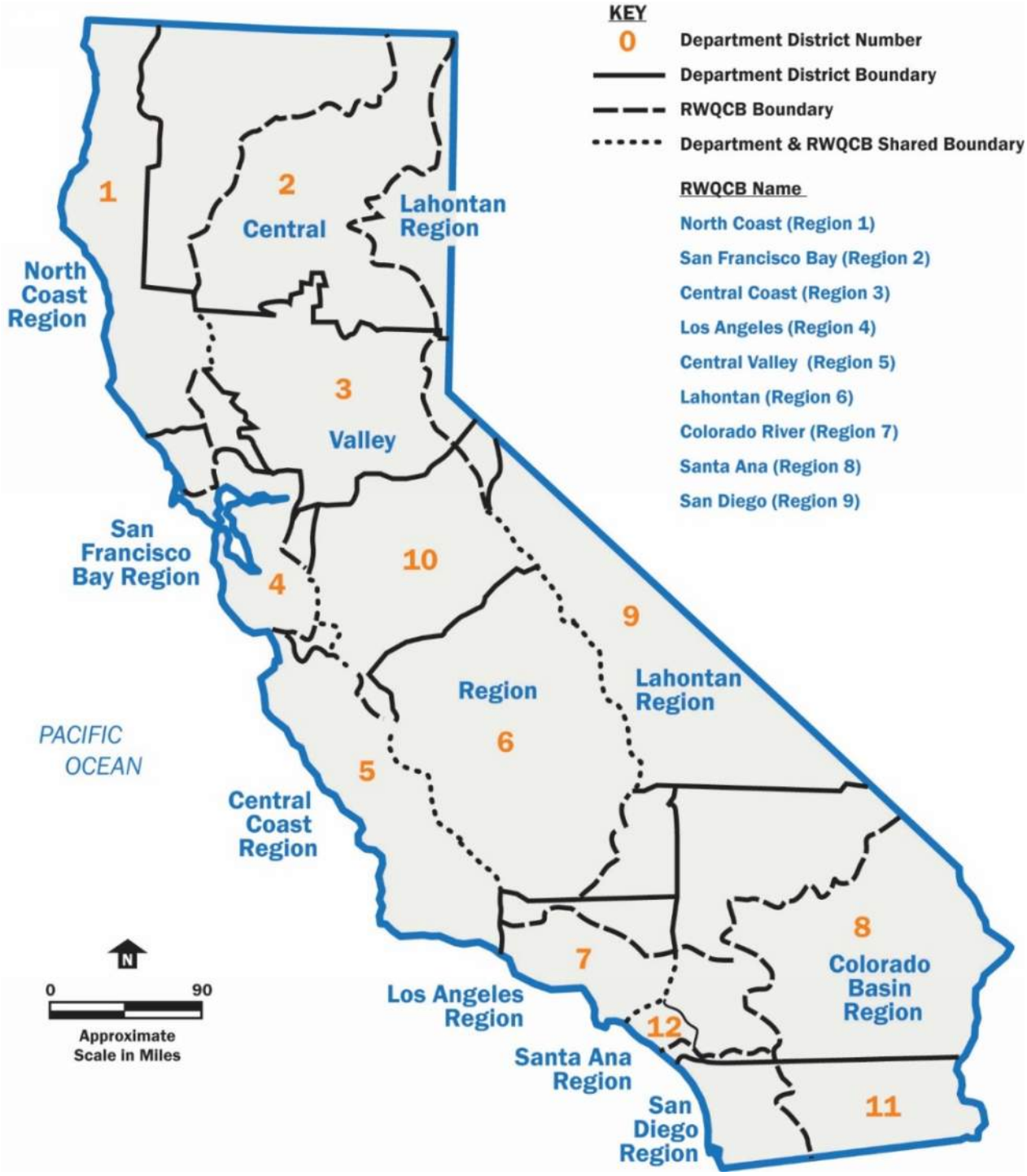


Figure 1-1. Map of California with Regional Water Quality Control Boards and Caltrans Districts

1.3 Caltrans Stormwater Manuals and Websites

Caltrans has devised a comprehensive stormwater program to comply with Caltrans Permit requirements. In addition to the 2016 SWMP, Caltrans has developed several stormwater guidance manuals that are available on their website for staff, consultants and anyone in the public to use to implement appropriate BMPs.

Table 1-3 presents a list of the primary reference material to be used for determining applicable permit requirements and specific compliance mechanisms developed by Caltrans. This Manual is intended to be used in conjunction with the SWPPP/WPCP Preparation Manual as both are directly related to water pollution control when performing construction operations within Caltrans projects and/or rights of way.

Table 1-3. Relevant Caltrans Stormwater Documents, Manuals and their Purpose [1]

Date	Document	Purpose
July 2016	Caltrans Stormwater Management Plan (SWMP)	Describes how Caltrans plans to implement the Caltrans Permit requirements. The SWMP describes Caltrans' program and addresses stormwater pollution control related to various activities, including planning, design, construction, maintenance, and operation of roadways and facilities.
February 2016	Stormwater Quality Handbooks: Project Planning and Design Guide (PPDG)	Guides project planning staff in preparing and selecting appropriate Best Management Practices for inclusion into Contract Plans. Includes step-by-step guidance for documenting the selection and implementation of BMPs.
	Appendix E - Stormwater Data Report (SWDR)	Document prepared by the Project Engineer or Landscape Architect which forms basis for ensuring compliance with the Caltrans Permit requirements for the Design Division. Determination of SWPPP/WPCP applicability based on DSA and BMP line items included as part of the Contract Plans.
June 2016	Stormwater Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual	Guides Contractors and Caltrans staff through the process of preparing a SWPPP and WPCP. This manual provides detailed step-by-step procedures, instructions, sample text and a template that Contractors must use to prepare the SWPPP/WPCP. Templates conform to CGP requirements based on risk level, LTCGP requirements including deviations from CGP language, and Caltrans requirements for preparing WPCPs.
August 2013	Construction Site Monitoring Program Guidance Manual	This manual presents guidance for Caltrans staff and Contractors to use in the planning and implementation of stormwater monitoring programs at construction sites. Describes and provides guidance on developing Sampling and Analysis Plans, standard operating procedures for pH and turbidity sampling and other requirements of the CGP and LTCGP.
July 2003	Guidance for Temporary Soil Stabilization	The main purpose of this document is to help direct the planning, selection, and implementation of Caltrans-approved temporary soil stabilization BMPs.
July 2014	Field Guide to Construction Site Dewatering	The purpose of this Dewatering Guide is to inform and guide intended users in selecting, implementing, and monitoring construction site dewatering operations.
September 2008	Erosion Prediction Procedure Manual	Describes the method established and approved by headquarters (HQ) Office of Hydraulics and Stormwater Design (OHSD) for the prediction of erosion rates before, during, and after construction of Caltrans projects to meet the erosion and sediment control requirements identified in the Caltrans Permit, the CGP and the LTCGP.

Table 1-4 presents website links for Caltrans Manuals, procedures and other documents along with other websites that can be used to either gain a deeper understanding of stormwater requirements or as

[1] There may be other relevant Manuals that pertain to specific enforcement or general criteria, see Table 1-4 for additional Manuals and links

guidance when preparing stormwater documents and selecting appropriate temporary construction site BMPs.

Table 1-4. Stormwater Related Websites

Description		Websites
EPA Agency	U.S. Environmental Protection Agency (EPA)	http://www.epa.gov
Laws/ Regulations	Code of Federal Regulations (CFR)	http://www.gpo.gov/fdsys/browse/collectionCfr.action?collectionCode=CFR
NPDES Permits	Caltrans NPDES Statewide Stormwater Permit (Caltrans Permit)	http://www.swrcb.ca.gov/water_issues/programs/stormwater/caltrans.shtml
	Construction General Permit (CGP)	http://www.swrcb.ca.gov/water_issues/programs/stormwater/construction.shtml
	Lake Tahoe Construction General Permit (LTCGP)	http://www.waterboards.ca.gov/lahontan/water_issues/programs/storm_water/docs/r6t_2016_0010_cgp_combined.pdf
	Industrial General Permit (IGP)	http://www.swrcb.ca.gov/water_issues/programs/stormwater/industrial.shtml
Caltrans Stormwater Program	Caltrans Statewide Stormwater Program – HQ DEA (contains links such as SWMP, Annual Report)	http://www.dot.ca.gov/hq/env/stormwater/index.htm
State Water Resources Control Board	State Water Resources Control Board website, particularly Stormwater Multiple Application and Report Tracking System (SMARTS)	https://smarts.waterboards.ca.gov/smarts/faces/SwSmartsLogin.xhtml
Caltrans Stormwater Manuals	Division of Construction - Stormwater Quality Link. Contains links to resources for developing SWPPP, WPCP, Construction Site Dewatering and other Manuals and resources.	http://www.dot.ca.gov/hq/construc/stormwater/
	Caltrans Construction Stormwater Quality Manuals and Handbooks	http://www.dot.ca.gov/hq/construc/stormwater/manuals.htm
Caltrans SSP and Stormwater Costs Estimating Guidance	Caltrans Construction Contract Standards Specifications, Plans, Standard Special Provisions (SSPs)[2]	http://www.dot.ca.gov/hq/esc/oe/specs_html/index.html
	Caltrans Cost estimating guidance	http://www.dot.ca.gov/hq/oppd/costest/costest.htm

[2] Contract Documents could include specific project requirements such as specific monitoring requirements under CWA 401 or 404 Permit or others included in the Informational Handout.

Section 2
Caltrans Construction Stormwater Management Program Requirements

2.1 Stormwater Pollution Prevention Plan and Water Pollution Control Program

Caltrans requires Contractors to prepare and implement a program to effectively control water pollution during the construction of all projects (see Standard Specification Section 13 Water Pollution Control). Projects resulting in one acre or more of disturbed soil area (DSA) are subject to the CGP or the LTCGP depending on the project location. Caltrans Standard Specifications require that for these projects, Contractors prepare and submit a SWPPP.

If two or more small projects [less than one acre of soil disturbance] in the same corridor are part of a larger common plan of development [one acre or more], then these small projects are also subject to the requirements of the CGP or the LTCGP to develop and implement a SWPPP. There also might be instances where a SWPPP is required even when there is less than one acre of DSA, if it is determined that the project poses a significant water quality risk; this determination will be made by the District/Regional NPDES Coordinator or the Construction Stormwater Coordinator or if mandated by the RWQCB or SWRCB or another regulatory agency. Potential examples when this might occur could be work over a 303d waterbody, water implosions, etc.

Caltrans requires that a WPCP addressing control measures be prepared and implemented by the construction Contractor for projects resulting in soil disturbance of less than one acre. The specific requirements and detailed instructions are included in Section 4 of the SWPPP/WPCP Preparation Manual. These general requirements are included in the Construction BMP Applicability Flowchart, Figure 2-1 of this Manual.

Projects that have a DSA between one and less than five acres may qualify for a rainfall erosivity waiver under the CGP if the rainfall erosivity factor (R factor) is less than a value of five. The R factor takes into account project location, length of construction period, and time of year so projects that begin and complete construction within a short period are likely to qualify for a rainfall erosivity waiver. To calculate the R value, refer to Section 1.4.2.1 of the SWPPP/WPCP Preparation Manual, a link to the manual is provided in Table 1-4.

Projects that qualify for a rainfall erosivity waiver do not need to prepare a SWPPP but are required to submit proper documentation via SMARTS (to be exempted from the CGP) as well as prepare and implement a site-specific Water Pollution Control Program (WPCP).

2.2 Construction BMP Applicability

The flowchart presented in Figure 2-1 guides the user as to whether the project triggers a SWPPP or a WPCP and where to find additional information, if needed. The flowchart also includes general questions to determine applicability of BMP categories that are described in Sections 3-8 of this Manual.

The steps described below correspond to the steps shown in Figure 2-1.

Step 1 - Start

The Contractor, the Water Pollution Control (WPC) Manager, the Qualified SWPPP Developer (QSD) or the Qualified SWPPP Practitioner (QSP) should use Figure 2-1, the guidance provided in this section, and the SWPPP/WPCP Preparation Manual to determine the project's entire BMP selection and applicability for the duration of the construction phase.

Step 2 - Is a Construction project being proposed?

A construction project is defined as any activity, including, but not limited to, clearing, grading, grubbing, or excavation. Routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility is not deemed a construction activity that requires a SWPPP or a WPCP.

If the project qualifies as a construction project, proceed to step 3.

If the project does not meet the definition of construction, then the project is subject to Maintenance BMPs, refer to the Caltrans July 2016 SWMP or the Caltrans Maintenance Staff Guide.

Step 3 - Will the project create one acre or more of Disturbed Soil Area?

If the construction project will disturb more than one acre of soil, it is subject to either the CGP or the LTCGP depending on its location and must prepare and maintain an up to date SWPPP during the entire duration of the project.

If the project disturbs less than an acre of soil, the project must have a WPCP prepared and implemented, see Section 4 of the SWPPP/WPCP Preparation Manual for specific instructions.

Step 4 - Can the construction project qualify for a Rainfall Erosivity Waiver?

If a project will be a short duration and is more than one acre but less than five acres of soil disturbance, it might qualify for an EPA rainfall erosivity waiver as discussed in Section 1.4.2 of the SWPPP/WPCP Preparation Manual.

If you answered yes, the project does not need coverage under the CGP but it still requires some paperwork to be filed via SMARTS. In addition, a WPCP must be prepared and implemented.

If you answered no, then project is subject to SWPPP requirements. See Section 3 of the SWPPP/WPCP Preparation Manual for further guidance on preparing a SWPPP.

Step 5 - Are any soil areas expected to be exposed and need stabilization as part of the project or is there a need to stabilize concentrated flow conveyances?

Any project subject to CGP or LTCGP is required to implement appropriate controls year-round. If the project has exposed soil areas or unlined conveyances, the WPC Manager or QSP must be diligent in ensuring appropriate BMPs are implemented. See Section 3 of this Manual for specific BMP factsheets and proceed to Step 6. For further guidance on proper selection and costs, see Appendix B of this Manual.

If there are no soil areas needing stabilization and no unstable conveyances, then proceed to Step 6.

Step 6 - Will the project require temporary controls to intercept/slowdown onsite or offsite flows?

If the project has areas where offsite flows are coming onto the project area, flows must be conveyed and the WPC Manager or QSP must ensure that no materials or contaminants including soil are being carried by the offsite flows. Onsite flows must be conveyed via lined or vegetated channels to reduce potential for turbid flows. See Section 4 of this Manual for specific BMP factsheets to control sediment-laden runoff.

Step 7 - Will the project require a dust control plan or is there a potential for dust control BMPs to be applicable?

Utilize Section 5 of this Manual for specific BMP factsheets if the contract documents require the preparation and implementation of a Dust Control Plan or if there is a potential for dust to be generated at any time during the duration of the construction project.

Step 8 - Will the project require tracking controls in any area within project limits?

Any areas where construction vehicles are entering or exiting the project must be stabilized to prevent tracking of sediment or other materials. See Section 6 of this Manual for specific BMP factsheets for tracking control. Additionally, SC-7, Street Sweeping should be evaluated and implemented either standalone or in combination to ensure compliance with all permits and contract documents.

Step 9 - Will the project day to day operations require good housekeeping practices or have a need for non-stormwater BMPs?

Section 7 of this Manual includes a list of source control BMPs that prevent pollution by limiting or reducing potential pollutants at their source before they come in contact with stormwater.

Step 10 - Will the project include storage of materials, spill prevention needs, waste management or other housekeeping practices?

All materials or wastes either stored or generated during the construction phase must be properly stored and disposed of. Section 8 of this Manual includes lists of BMPs that must be utilized at the Contractor's yard, where the materials are stored, or where construction activities are being conducted to ensure proper usage, containment, and disposal of materials and waste products.

END - Specific BMP factsheets should be reviewed and the Project's SWPPP or WPCP text and tables along with the Water Pollution Control Drawings (WPCDs) should be modified to ensure appropriate controls are implemented year-round

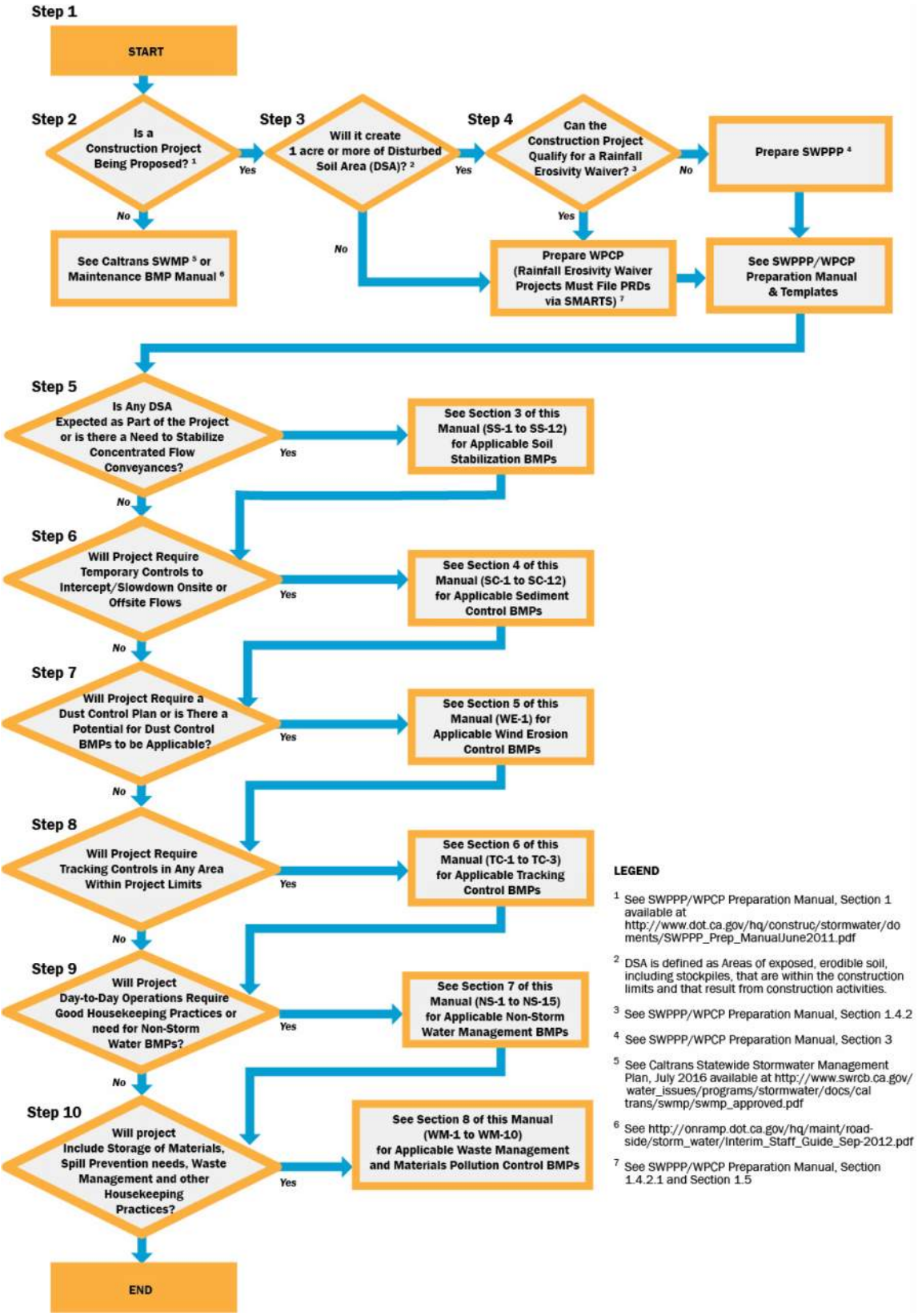


Figure 2-2. Construction Site BMP Applicability Flowchart

2.3 Minimum Construction BMPs

This section provides the minimum construction BMPs required for a project subject to the CGP or the LTCGP or one that requires the preparation and implementation of a WPCP. It is important to note that the requirements of this Section are minimum requirements, and that Caltrans contracts may impose more stringent requirements. Working details of Construction Site BMPs are presented in Sections 3 through 8 of this Manual.

Construction Site BMPs (also sometimes called temporary control practices or BMPs) are best conventional technology/best available technology (BCT/BAT)-based BMPs that are consistent with the BMPs and control practices required under the CGP and the LTCGP. Caltrans Construction Site BMPs are divided into six categories as shown in Table 2-1.

Stormwater pollution control requirements are intended to be implemented on a year-round basis at an appropriate level. The requirements must be implemented in a proactive manner during all seasons while construction is ongoing. Appropriate water pollution control includes the implementation of an effective combination of both soil stabilization and sediment controls, implementation of wind erosion, tracking controls, non-stormwater and waste management, and material pollution BMPs. Some BMPs can be implemented as a stand-alone device while others can be combined to improve effectiveness and compliance.

Section 2 of the SWPPP/WPCP Preparation Manual describes in detail specific requirements under the applicable CGP. The CGP and LTCGP both require minimum controls and require BMPs based on the projects' calculated risk level to apply linear sediment controls along the toe of the slope, face of the slope, and at the grade breaks of exposed slopes to comply with sheet flow lengths.

Table 2-1. Construction Site BMPs

ID	BMP Name	Minimum Requirement	
		CGP	LTCGP
Temporary Soil Stabilization			
SS-1	Scheduling	X	X
SS-2	Preservation of Existing Vegetation	X	X
SS-3	Hydraulic Mulch	X[1]	X[1]
SS-4	Hydroseeding		
SS-5	Soil Binders		
SS-6	Straw Mulch		
SS-7	Temporary Cover and Rolled Erosion Control Products (RECP)		
SS-8	Wood Mulching		
SS-9	Earth Dikes/Drainage Swales & Lined Ditches	-	-
SS-10	Outlet Protection/Velocity Dissipation Devices[2]	X	X
SS-11	Slope Drains	-	-
SS-12	Streambank Stabilization	-	-
Temporary Sediment Control			
SC-1	Silt Fence	X[1]	X[1]
SC-2	Sediment/Desilting Basin	-	-

Table 2-1. Construction Site BMPs			
		Minimum Requirement	
ID	BMP Name	CGP	LTCGP
SC-3	Sediment Trap/Curb Cutback	-	-
SC-4	Check Dam	-	-
SC-5	Fiber Rolls	X[1]	X[1]
SC-6	Gravel Bag/Earthen Berm		
SC-7	Street Sweeping	X	-
SC-8	Sandbag Barrier	X	X
SC-9	Straw Bale Barrier	X[1]	X[1]
SC-10	Temporary Drainage Inlet Protection	X	X
SC-11	Compost Sock	X[1]	X[1]
SC-12	Flexible Sediment Barrier		
Wind Erosion Control			
WE-1	Wind Erosion Control	X	X
Tracking Control			
TC-1	Temporary Construction Entrance/Exit	X	X
TC-2	Temporary Construction Roadway	-	-
TC-3	Temporary Entrance/Outlet Tire Wash	-	-
Non-Stormwater Management			
NS-1	Water Conservation Practices	-	-
NS-2	Dewatering Operations	-	X[3]
NS-3	Paving, Sealing, Sawcutting and Grinding Operations	X	X
NS-4	Temporary Stream Crossing	-	-
NS-5	Clear Water Diversion	-	-
NS-6	Illegal Connection and Illicit Discharge Detection and Reporting	X	X
NS-7	Potable Water/Irrigation	-	-
NS-8	Vehicle and Equipment Cleaning	X	X
NS-9	Vehicle and Equipment Fueling	X	X
NS-10	Vehicle and Equipment Maintenance	X	X
NS-11	Pile Driving Operations	-	-
NS-12	Concrete Curing	-	-
NS-13	Material and Equipment Use Over Water	-	-
NS-14	Concrete Finishing	-	-
NS-15	Structure Demolition/Removal Over or Adjacent to Water	-	-

Table 2-1. Construction Site BMPs			
ID	BMP Name	Minimum Requirement	
		CGP	LTCGP
Waste Management and Materials Pollution Control			
WM-1	Material Delivery and Storage	X	X
WM-2	Material Use	X	X
WM-3	Stockpile Management	X	X
WM-4	Spill Prevention and Control	X	X
WM-5	Solid Waste Management	X	X
WM-6	Hazardous Waste Management	X	X
WM-7	Contaminated Soil Management	X	X
WM-8	Concrete Waste Management	X	X
WM-9	Sanitary and Septic Waste Management	X	X
WM-10	Liquid Waste Management	X	X

[1] Can be selected as a standalone BMP or a combination of temporary soil stabilization BMPs is selected depending on site conditions, minimum requirement is met when the individual BMP or the combination is properly implemented.
[2] Only applicable when outlet protection/velocity dissipation is required.
[3] When dewatering is expected, must have a dewatering and/or diversion plan as required under LTCGP Section N.

2.4 BMP Inspection Frequency

The SWPPP or WPCP implemented on Caltrans construction projects includes specific visual monitoring requirements to comply with the CGP, LTCGP, and/or Caltrans Permit. All BMPs deployed on construction sites must be inspected on a frequency as described below. Improperly installed or damaged BMPs must be corrected immediately, or by a later date and time if requested by the Contractor and approved by the Resident Engineer (RE) in writing. Corrections must be made before the onset of forecasted rain events. Inspections of Construction Site BMPs are to be conducted at a minimum as follows:

- Prior to a forecast storm event
- After a qualified rain event that causes runoff from the construction site
- At 24-hour intervals during extended rain events
- Weekly throughout the duration of the construction project

Table 2-2 shows the monitoring requirements for projects subject to CGP or LTCGP. The SWPPP/WPCP Preparation Manual includes more details on what each inspection should include.

Table 2-2. Monitoring Requirements for CGP and LTCGP

Risk Level		Visual Inspections					Sampling		
			Pre-Storm			Post Storm			
		Quarterly Non-stormwater Discharge	Baseline	REAP	Daily Storm BMP	Post Storm	Non-visible Pollutant	Stormwater Discharge	Receiving Water
CGP	1	X	X		X	X	X		
	2	X	X	X	X	X	X	X	
	3	X	X	X	X	X	X	X	X
LTCGP	N/A	X	X	X	X	X	X	X	X

Section 3
Temporary Soil Stabilization BMP

3.1 Temporary Soil Stabilization

Temporary soil stabilization consists of preparing the soil surface and applying one of the BMPs shown in Table 3-1, or combination thereof, to disturbed soil areas. Temporary soil stabilization must be applied to disturbed soil areas of construction projects in conformance with contract documents and this Manual. Refer to Appendix B for additional guidance on the selection of temporary soil stabilization controls.

3.2 Temporary Concentrated Flow Conveyance Controls

Temporary concentrated flow conveyance controls consist of a system of measures or BMPs that are used alone or in combination to intercept, divert, convey and discharge concentrated flows with a minimum of soil erosion, both on-site and downstream (off-site). Temporary concentrated flow conveyance controls may be required to direct run-on around or through the project in a non-erodible fashion. Temporary concentrated flow conveyance controls include the following BMPs:

- Earth Dikes/Drainage Swales & Lined Ditches
- Outlet Protection/Velocity Dissipation Devices
- Slope Drains

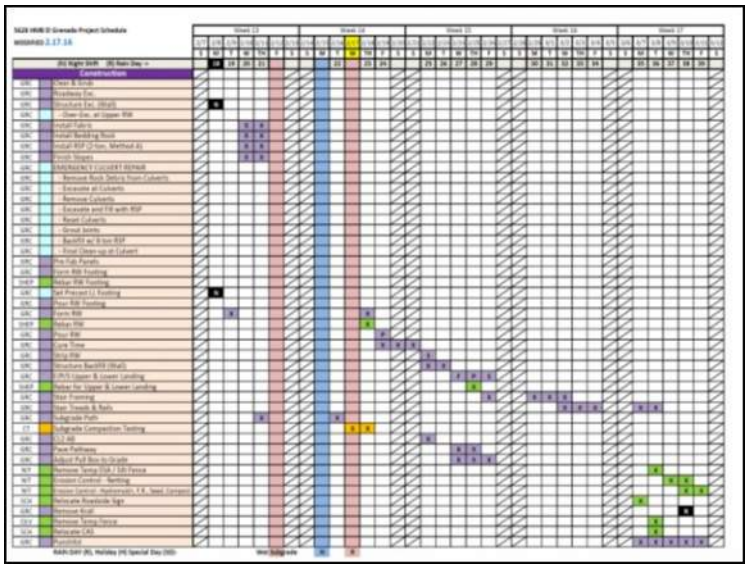
Table 3-1. Temporary Soil Stabilization BMPs

ID	BMP Name
SS-1	Scheduling
SS-2	Preservation of Existing Vegetation
SS-3	Hydraulic Mulch
SS-4	Hydroseeding
SS-5	Soil Binders
SS-6	Straw Mulch
SS-7	Temporary Cover and Rolled Erosion Control Products (RECP)
SS-8	Wood Mulching
Temporary Concentrated Flow Conveyance Controls	
SS-9	Earth Dikes/Drainage Swales & Lined Ditches
SS-10	Outlet Protection/Velocity Dissipation Devices
SS-11	Slope Drains
SS-12	Streambank Stabilization

The remainder of this section shows the working details for each of the BMPs.

Scheduling

SS-1





Standard Symbol

BMP Objectives

Soil Stabilization	☑
Sediment Control	☑
Tracking Control	☑
Wind Erosion Control	☑
Non-Stormwater Management	☐
Materials and Waste Management	☐

Definition and Purpose

This BMP involves developing, for every project, a schedule that includes sequencing of construction activities with the implementation of construction site BMPs such as temporary soil stabilization and temporary sediment control measures. The purpose is to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking, and to perform the construction activities and control practices in accordance with the planned schedule.

Appropriate Applications

Construction sequencing should be scheduled to minimize land disturbance during the wetter months for all projects. In addition, any construction windows required by regulatory permits, and any winter suspension work should be described in the schedule. Appropriate BMPs must be implemented year-round.

Limitations

Environmental constraints such as nesting season prohibitions reduce the full capabilities of this BMP.

Standards and Specifications

General Requirements

Developing a schedule and planning the project operations to minimize erosion and the potential to discharge pollutants to stormwater are the very first steps in an effective stormwater program. The construction schedule must be incorporated into the SWPPP or WPCP. Refer to Section 8 and 13 of the Standard Specifications.

The schedule should clearly show when work activities that could pollute stormwater with sediment or other contaminants would occur (e.g., grading, move-in, move-out, stockpiling, pile driving), and when soil stabilization, sediment control, and other BMPs associated with each phase of construction would be implemented.

The schedule should include details on the implementation and deployment of:

- Temporary and permanent soil stabilization BMPs
- Temporary sediment control BMPs
- Tracking control BMPs
- Wind erosion control BMPs
- Non-stormwater BMPs, and
- Waste management and materials pollution control BMPs

The schedule should also include dates for significant long-term operations or activities that may have planned non-stormwater discharges such as dewatering, sawcutting, grinding, drilling, boring, crushing, blasting, painting, hydro-demolition, mortar mixing, bridge cleaning, etc.

The construction schedule should reflect requirements for in-water work and other construction activity with potential to disturb water and biological resources contained in regulatory agency permits and approvals (RWQCB 401 WQC, USACE 404 permit, DFG 1602 permit, etc.).

Recommendations

Schedule work to minimize soil disturbing activities during predicted rain events. Consider rescheduling activities for dry periods to minimize maintenance requirements.

Develop the sequencing and timetable for the start and completion of each item such as site clearing and grubbing, grading, excavation, paving, pouring foundations, installing utilities, etc., to minimize the active construction area.

Schedule major grading operations during dryer months when practical.

Stabilize inactive areas within 15 days from the cessation of soil-disturbing activities or one day prior to the onset of precipitation, whichever occurs first. Must consider manufacturers recommendation for the selected soil stabilization BMP to ensure they meet the minimum dry time required. See Appendix B of this Manual for additional guidance.

Monitor the weather forecast for storm events, which are storms that produce or are forecasted to produce at least 0.1 inch of precipitation within a 24-hour period. When rainfall is predicted, adjust the construction schedule to allow the implementation of soil stabilization, sediment controls, and, if applicable, sediment treatment controls on all disturbed areas prior to the onset of rain.

Ensure ample supply of BMP materials are on site in order to quickly mobilize and implement required BMPs, particularly ahead of rain events when materials may be in short supply or back order.

Be prepared year-round to deploy soil stabilization and sediment control practices. Erosion may be caused during dry seasons by unseasonal rainfall, wind, and vehicle tracking. Keep the site stabilized year-round, and retain and maintain sediment trapping devices in operational condition.

Sequence trenching activities so that most open portions are closed before new trenching begins. Trenched material should be stored on the upstream side of the trenches.

Incorporate staged seeding and re-vegetation of graded slopes as work progresses.

Consider the early planting and establishment of permanent vegetation in the schedule to maximize plant establishment success and minimize irrigation and continuous maintenance needs.

Apply permanent erosion control to areas deemed substantially complete during the project's defined seeding window.

Maintenance and Inspection

Verify that work is progressing in accordance with the schedule. If progress deviates, take corrective actions.

Keep the schedule up to date and ensure it is consistent with the contractor's three-week look ahead, or other routine schedule submitted to the RE under the contract.

Amend the schedule when changes are warranted or when directed by the RE.

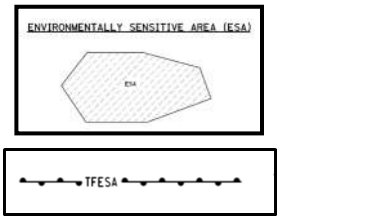
SWPPP or WPCP

A Water Pollution Control Schedule (WPCS) must include construction operations and BMP implementation for the entire duration of the project. The WPCS is to be included as an attachment and discussed in section 500.7 of the SWPPP or Section 30.5 of the WPCP.

Preservation of Existing Vegetation

SS-2





Standard Symbol

BMP Objectives

Soil Stabilization	☑
Sediment Control	☐
Tracking Control	☐
Wind Erosion Control	☐
Non-Stormwater Management	☐
Materials and Waste Management	☐

Definition and Purpose

Preservation of existing vegetation is the identification and protection of desirable vegetation that provides erosion and sediment control benefits.

Appropriate Applications

Preserve existing vegetation at areas on a site where no construction activity is planned or will occur at a later date. This BMP is very applicable for multi-year or multiple location projects, where existing vegetation can be preserved until the area becomes active.

On a year-round basis, temporary fencing shall be provided prior to the commencement of clearing and grubbing operations or other soil-disturbing activities in areas.

Clearing and grubbing operations should be staged to preserve existing vegetation.

Areas where natural vegetation exists and is designated for preservation. Such areas often include steep slopes, watercourse, and building sites in wooded areas.

Areas where local, state, and federal government require preservation, such as vernal pools, wetlands, marshes, certain oak trees, etc.

Clearly marking and leaving a buffer area around these unique areas during construction will help to preserve these areas as well as take advantage of natural erosion prevention and sediment trapping.

During clearing and grubbing do not injure standing trees, plants, and improvements shown in the plans to be protected.

For any trenching or tunneling. Trenching shall be as far away from tree trunks as possible, usually outside of the tree drip line or canopy. Curve trenches around trees to avoid large roots or root concentrations. If roots are encountered, consider tunneling under them.

When trenching and/or tunneling near or under trees to be retained, tunnels shall be at least 8 in below the ground surface, and not below the tree center to minimize impact on the roots. Tree roots shall not be left exposed to air; they shall be covered with soil as soon as possible, protected, and kept moistened with wet burlap or peat moss until the tunnel and/or trench can be completed.

Limitations

Protection of existing vegetation requires planning, and may limit the area available for construction activities.

For sites with diverse topography, it is often difficult and expensive to save existing trees while grading the site satisfactory for the construction project.

Preservation of Existing Vegetation SS-2

Standards and Specifications

General Requirements

Specifications for preservation of existing vegetation can be found in Standard Specifications Section 5-1.36A.

Section 14 "Environmental Stewardship" of the Standard Specifications specifies the requirements related to environmental compliance and resource management, including requirements related to Environmentally Sensitive Areas (ESAs).

Refer to Section 16-2.03 of the Standard Specifications for "High-Visibility Fences" used to delineate ESAs.

Refer to 16-2.04 of the Standard Specifications for "Temporary Construction Mats" used to protect wetlands and other areas.

Schedule

Preservation of existing vegetation must be provided prior to the commencement of clearing and grubbing operations or other soil-disturbing activities in areas identified on the plans to be preserved, including areas designated as ESAs.

Preservation of existing vegetation should conform to scheduling requirements set forth in the special provisions.

Design and Layout

Mark areas to be preserved with temporary fencing (Type ESA). The temporary fencing must be made of high visibility fabric secured with 6 foot (minimum) posts. Refer to Section 16-2.03B of the Standard Specifications for more information on temporary high-visibility fence materials.

Fence posts can be either wood or steel, at the Contractor's discretion, as appropriate for the intended purpose. The post spacing must be 8 feet center-to-center (maximum) and embedded at least 16 inches into the ground to completely support the fence in an upright position.

See Standard Plan T65 for "Temporary Fence (Type ESA)."

Installation

Construction materials, equipment storage, and parking areas should be located where they will not cause damage to vegetation designated for preservation. This could include: keeping equipment away from trees to prevent trunk and root damage, considering the impact of grade changes to existing vegetation and the root zone, and minimizing disturbed areas by avoiding stands of trees and shrubs and following existing contours to reduce cutting and filling for temporary roads.

Maintain existing irrigation systems.

Employees and subcontractors must be instructed to honor protective devices. No heavy equipment, vehicular traffic, or storage piles of any construction materials is permitted within the drip line of any tree to be retained. Removed trees should not be felled, pushed, or pulled into any retained trees. Fires should not be permitted within 100 ft of the drip line of any retained trees. Any fires must be of limited size, and must be kept under continual surveillance. No toxic or construction materials (including paint, acid, nails, gypsum board, chemicals, fuels, and lubricants) should be stored within 50 feet of the drip line of any retained trees, nor disposed of in any way which would injure vegetation.

After all other work is complete, fences and barriers must be removed last. This is because protected trees may be destroyed by carelessness during the final cleanup and landscaping.

Maintenance and Inspection

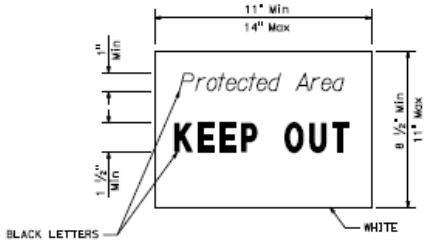
During the entire construction phase, the limits of disturbance must remain clearly marked to avoid damage to the existing vegetation during site cleanup and stabilization. Irrigation or maintenance of existing vegetation must conform to the requirements in the landscaping plan. If damage to protected trees still occurs, maintenance guidelines described below must be followed:

- Serious tree injuries must be attended to by an arborist.
- During construction, the District Environmental Branch must be contacted to ensure that ESAs are protected and any environmental regulations are followed.
- Existing Vegetated Areas to be Preserved must be clearly demarcated in the WPCDs.

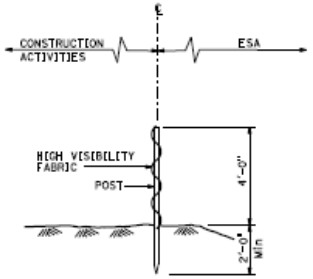
SWPPP or WPCP

Preservation of Existing Vegetation must be discussed in Section 500.3 of the SWPPP or Section 30.2 of the WPCP.

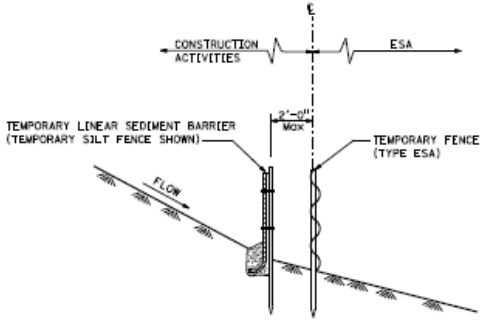
Preservation of Existing Vegetation **SS-2**



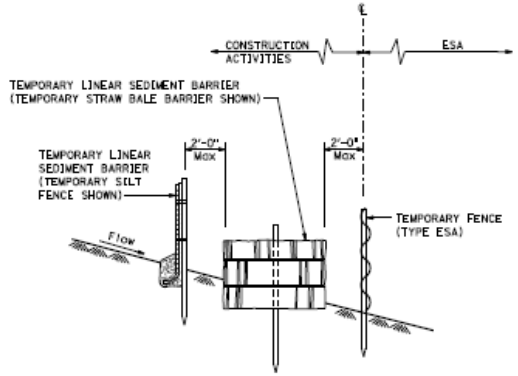
SIGN DETAIL



SECTION
TEMPORARY FENCE (TYPE ESA)



SECTION
PLACEMENT DETAIL
FOR TEMPORARY LINEAR SEDIMENT BARRIER
USED WITH TEMPORARY
FENCE (TYPE ESA)



SECTION
PLACEMENT DETAIL
FOR TEMPORARY SILT FENCE
AND TEMPORARY STRAW BALE BARRIER
USED WITH TEMPORARY FENCE (TYPE ESA)

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

LICENSED LANDSCAPE ARCHITECT

October 30, 2015
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

2015 STANDARD PLAN T65

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WATER POLLUTION CONTROL DETAILS [TEMPORARY FENCE (TYPE ESA)]

NO SCALE

T65

Hydraulic Mulch

SS-3





Standard Symbol

BMP Objectives	
Soil Stabilization	☑
Sediment Control	☐
Tracking Control	☐
Wind Erosion Control	☑
Non-Stormwater Management	☐
Materials and Waste Management	☐

Definition and Purpose

Hydraulic mulch consists of applying a mixture of natural fibers and a stabilizing compound with hydroseeding equipment to temporarily protect exposed soil from erosion by raindrop impact or wind. This is one of five temporary soil stabilization alternatives to consider.

Appropriate Applications

Hydraulic mulch is applied to disturbed areas requiring temporary protection until permanent vegetation is established, or disturbed areas that must be re-disturbed following an extended period of inactivity.

Limitations

Wood fiber hydraulic mulches are generally short-lived (only last a part of a growing season) and require (24 hours or more) time to dry before rainfall occurs to be effective.

Paper mulches are not permitted.

Avoid use in areas where the mulch would be incompatible with immediate future earthwork activities and would have to be removed.

Cellulose fiber mulches alone may not perform well on steep slopes or in coarse soils.

Standards and Specifications

General Requirements

See Standard Specifications Section 13-5.03D to 13-5.03G for placing various types of hydraulic mulch.

Standard Specifications Section 21-2.02D and 21-2.02E contain material specifications for fiber and tackifier, respectively.

A certificate of compliance, as required under Standard Specifications Section 21-2.01C(4), is required for tackifier and bonded fiber matrix (BFM).

Hydraulic matrices require time to dry before rainfall occurs to be effective. Refer to the manufacturer's specifications for drying times.

Avoid mulch over-spray onto the traveled way, sidewalks, lined drainage channels, and existing vegetation.

Selection of hydraulic mulches by the Contractor must be approved by a licensed professional.

Prior to application, roughen embankment and fill areas by rolling with a crimping or punching type roller or by track walking. Track walking should only be used where other methods are impractical.

Temporary Hydraulic Mulch

Temporary hydraulic mulch contains mixtures of fiber and tackifier that is applied to soil with hydraulic spray equipment.

Fiber for temporary hydraulic mulch must be at least 50 percent wood fiber. The remaining percentage must be cellulose fiber, alternate fiber, or a combination of these fibers.

Temporary hydraulic mulch application rates must follow the manufacturer's recommendations. If not provided, apply at a rate of 2,000 lb/ac.

Tackifier should be applied per the manufacturer's instructions for the slope, soil, and wind conditions

Temporary BFM Hydraulic Mulch

BFM contains 100% wood fiber and tackifier, sometimes combined with seed and fertilizer that is applied to soil hydraulically.

BFM applications rates must follow the manufacturer's recommendations. If not provided, apply at a rate of 3,500 lb/ac.

Tackifier used for BFM must be:

- Bonded to the fiber or prepackaged with the fiber by the manufacturer
- Contain a minimum of 10 percent of the combined weight of the dry fiber, activating agents, and additives
- Organic, high viscosity colloidal polysaccharide with activating agents or a blended hydrocolloid-based binder

Temporary Cementitious Binder Hydraulic Mulch

Temporary cementitious binder hydraulic mulch is a mixture of fiber and a cementitious binder that is applied to soil with hydraulic spray equipment.

Application rates of temporary cementitious binder hydraulic mulch must be according to the manufacturer's specifications. If not provided, apply at a rate of 2,000 lb/ac and cementitious binder at 4,000 lb/ac.

Additional standards for cementitious binder are provided in Section 13 5.03G.

Additional guidance on the selection of soil stabilization BMPs can be found in Appendix B of this Manual.

Maintenance and Inspection

A certificate of compliance under Standard Specifications Section 21-2.01C(4) for the applicable BMP must be submitted to the RE prior to application to ensure proper mix is being used.

It is recommended that a small test area/mock-up occurs prior to large area application to verify sufficient cover for the approved mix.

Maintain an unbroken, temporary mulched ground cover throughout the period of construction when the soils are not being reworked. Inspect before expected rain storms and repair any damaged ground cover and re mulch exposed areas of bare soil.

After any rainfall event, the Contractor is responsible for maintaining all slopes to prevent erosion.

Areas where Hydraulic Mulch will be implemented must be shown in the WPCDs and match site conditions.

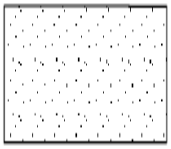
SWPPP or WPCP

Hydraulic Mulch, Temporary BFM Hydraulic Mulch or Temporary Cementitious Hydraulic Mulch must be discussed in Section 500.3 of the SWPPP or Section 30.2 of the WP

Hydroseeding

SS-4





Standard Symbol

BMP Objectives

Soil Stabilization	☑
Sediment Control	☐
Tracking Control	☐
Wind Erosion Control	☑
Non-Stormwater Management	☐
Materials and Waste Management	☐

Definition and Purpose

Hydroseeding typically consists of applying a mixture of wood, fiber, seed, fertilizer, and stabilizing emulsion with hydromulch equipment, which temporarily protects exposed soils from erosion by water and wind.

Appropriate Applications

Hydroseeding is applied on disturbed soil areas requiring temporary protection until permanent vegetation is established or disturbed soil areas that must be re-disturbed following an extended period of inactivity.

Can be used in conjunction with other rolled erosion control products.

Limitations

Hydroseeding may be used alone only when there is sufficient time in the season to ensure adequate vegetation establishment and erosion control. Otherwise, hydroseeding must be used in conjunction with a soil binder or mulch, such as SS-5 “Soil Binders” and SS-6 “Straw Mulch.”

Steep slopes are difficult to protect with temporary seeding.

Temporary seeding may not be appropriate in dry periods without supplemental irrigation.

Temporary vegetation may have to be removed before permanent vegetation is applied.

Temporary vegetation is not appropriate for short-term inactivity.

Hydroseeding should not be used in areas subject to heavy traffic.

Could trigger non-visible sampling if the appropriate application timeframe (before a rain event) and manufacturer recommendations are not followed.

Standards and Specifications

General Requirements

Refer to Standard Specifications Section 13-5.03I "Temporary Hydroseed."

To select appropriate hydroseeding mixtures, an evaluation of site conditions shall be performed with respect to:

Soil conditions Maintenance requirements

Site topography– Sensitive adjacent areas

Season and climate – Water availability

Vegetation types– Plans for permanent vegetation

Selection of hydroseeding mixtures must be approved by the licensed professional.

Seed mix must comply with Standard Specifications Section 21-2.02F "Seed," and the project's special provisions.

Seed may be dry applied to small areas not accessible by hydroseeding equipment if authorized.

Seeds must not contain seeds of prohibited noxious weeds and more than 1.0% total weed seed by weight. Seeds must be delivered to the project site with each species in separate, unopened containers with the seed tag attached. Measure individual seed species and mix in the presence of the RE.

Fiber must be at least 50 percent wood fiber. The remaining percentage must be cellulose fiber, alternate fiber, or a combination of these fibers.

Commercial fertilizer must conform to the requirements of the California Food and Agricultural Code. Fertilizer can be pelleted or granular form.

Application Procedures

Prior to application, roughen the slope, fill area, or area to be seeded with the furrows trending along the contours. Rolling with a crimping or punching type roller or track walking is required on all slopes prior to hydroseeding. Track walking should only be used where other methods are impractical.

Add water to hydroseed materials as recommended by the manufacturer and mix sufficiently to ensure an even application. A dispersing agent may be added to the mixture if authorized.

Equipment must have a built-in continuous agitation and discharge system capable of producing a homogeneous mixture and a uniform application rate. The tank must have a minimum capacity of 1,000 gallons. A smaller tank can be used if authorized by the RE.

Apply temporary hydroseed at the following rates:

- Apply seed at rates specified in the project's erosion control plans.
- Apply fiber at 2,000 lb/ac.
- Apply tackifier according to manufacturer's recommendations for the slope, soil, and wind conditions.
- Apply materials in locations, rates, and number of applications shown and as follows:
- Start application within 60 minutes after adding seed to the tank.
- Apply in successive passes as necessary to achieve the specified application rate.
- Apply all hydroseed materials shown for a single area within 72 hours.

If hydroseed materials are applied to areas covered by Rolled Erosion Control Products (RECP), apply hydroseed materials to the RECP as follows:

- Verify the RECP is in uniform contact with the slope surface.
- Spray materials into the RECP perpendicular to the slope and integrate well.
- Do not displace or damage the RECP.
- After the final application, do not allow pedestrians or equipment on the treated areas.
- Follow-up applications shall be made as needed to cover weak spots, and to maintain adequate soil protection.
- Avoid over-spray onto the traveled way, sidewalks, lined drainage channels, and existing vegetation.

Additional guidance on the selection of soil stabilization BMPs can be found in Appendix B of this Manual.

Maintenance and Inspection

All seeded areas must be inspected for failures and re-seeded, fertilized, and mulched within the planting season, using not less than half the original application rates. Any temporary revegetation efforts that do not provide adequate cover must be reapplied at a scheduled recommended by the licensed professional.

A certificate of compliance under Standard Specifications Section 21-2.01C(4) for the applicable BMP must be submitted to the RE prior to application to ensure proper mix is being used.

It is recommended that a small test area/mock-up occurs prior to large area application to verify sufficient cover for the approved mix.

After any rain event, the Contractor is responsible for maintaining all slopes to prevent erosion.

Areas where Hydroseeding will be implemented must be shown in the WPCDs. Application timeframes (dates) must be included in the WPCS.

Must ensure correct application rates and passes (different directions) take place to ensure adequate coverage.

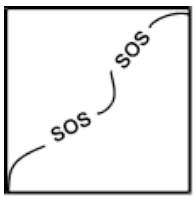
SWPPP or WPCP

Hydroseeding must be discussed in Section 500.3.2 of SWPPP or Section 30.2 of the WPCP.

Soil Binders

SS-5





Standard Symbol



Definition and Purpose

Soil binders consist of applying and maintaining a soil stabilizer to exposed soil surfaces. Soil binders are materials applied to the soil surface to temporarily prevent water-induced erosion of exposed soils on construction sites. Soil binders also provide temporary dust, wind, and soil stabilization (erosion control) benefits. This is one of five temporary soil stabilization alternatives to consider.

Appropriate Applications

Soil binders are typically applied to disturbed areas requiring short-term temporary protection. Because soil binders can often be incorporated into the work, they may be a good choice for areas where grading activities will soon resume. Application on stockpiles to prevent water and wind erosion.

Limitations

Soil binders are temporary in nature and may need reapplication.

Soil binders require a minimum curing time until fully effective, as prescribed by the manufacturer. Soil binders may need reapplication after a storm event.

Soil binders will generally experience spot failures during heavy rainfall events. If runoff penetrates the soil at the top of a slope treated with a soil binder, it is likely that the runoff will undercut the stabilized soil layer and discharge at a point further down slope.

Soil binders do not hold up to pedestrian or vehicular traffic across treated areas.

Soil binders may not penetrate soil surfaces made up primarily of silt and clay, particularly when compacted.

Some soil binders may not perform well with low relative humidity. Under rainy conditions, some agents may become slippery or leach out of the soil.

May not cure if low temperatures occur within 24 hours of application.

Standards and Specifications

General Requirements

Site-specific soil types will dictate appropriate soil binders to be used.

A soil binder must be environmentally benign (non-toxic to plant and animal life), easy to apply, easy to maintain, economical, and shall not stain paved or painted surfaces, refer to Standard Specifications Section 13,18 and 21.

Some soil binders are compatible with existing vegetation.

Performance of soil binders depends on temperature, humidity, and traffic across treated areas.

Avoid over-spray onto the traveled way, sidewalks, lined drainage channels, and existing vegetation.

Storm water quality runoff sampling is required for many soil binders. Per table 5-1, footnote 7, of the 2013 Construction Site Monitoring Program Guidance Manual the following copolymers/polymers do not discharge pollutants and water quality sampling and analysis is not required Super Tak, M-binder, Fish Stik, Pro40dc, Fisch-Bond, Soil Master WR and EarthGuard.

Soil Binders Applications

After selecting an appropriate soil binder, the untreated soil surface must be prepared before applying the soil binder. The untreated soil surface must contain sufficient moisture to assist the agent in achieving uniform distribution. In general, the following steps shall be followed::

- Follow manufacturer's recommendations for application rates, pre-wetting of application area, and cleaning of equipment after use.
- Prior to application, roughen embankment and fill areas by rolling with a crimping or punching type roller or by track walking. Track walking shall only be used where rolling is impractical.
- Consider the drying time for the selected soil binder and apply with sufficient time before anticipated rainfall. Soil binders shall not be applied during or immediately before rainfall.
- Avoid over-spray onto the traveled way, sidewalks, lined drainage channels, sound walls, and existing vegetation.
- Soil binders shall not be applied to frozen soil, areas with standing water, under freezing or rainy conditions, or when the air temperature is below 4oC (40oF) during the curing period.

- More than one treatment is often necessary, although the second treatment may be diluted or have a lower application rate.
- Generally, soil binders require a minimum curing time of 24 hours before they are fully effective. Refer to manufacturer's instructions for specific cure times.

For liquid agents:

- Crown or slope ground to avoid ponding.
- Uniformly pre-wet ground at0.03 to 0.3 gal/yd2 or according to manufacturer's recommendations.
- Apply solution under pressure. Overlap solution 6 to 12 in.
- Allow treated area to cure for the time recommended by the manufacturer; typically, at least 24 hours.
- In low humidities, reactivate chemicals by re-wetting with water at 0.1 to 0.2 gal/yd2.

Selecting a Soil Binder

Properties of common soil binders used for erosion control are provided in Table 1 and Appendix B. Use Table 1 to select an appropriate soil binder.

Table 1
Properties of Soil Binders for Erosion Control

Chemicals	Plant Material Based (Short Lived)	Plant Material Based (Long Lived)	Polymeric Emulsion Blends	Cementitious-Based Binders
Relative Cost	Low	Low	Low	Low
Resistance to Leaching	High	High	Low to Moderate	Moderate
Resistance to Abrasion	Moderate	Low	Moderate to High	Moderate to High
Longevity	Short to Medium	Medium	Medium to Long	Medium
Minimum Curing Time before Rain	9 to 18 hours	19 to 24 hours	0 to 24 hours	4 to 8 hours
Compatibility with Existing Vegetation	Good	Poor	Poor	Poor
Mode of Degradation	Biodegradable	Biodegradable	Photodegradable/ Chemically Degradable	Photodegradable/ Chemically Degradable
Labor Intensive	No	No	No	No
Specialized Application Equipment	Water Truck or Hydraulic Mulcher	Water Truck or Hydraulic Mulcher	Water Truck or Hydraulic Mulcher	Water Truck or Hydraulic Mulcher
Liquid/Powder	Powder	Liquid	Liquid/Powder	Powder
Surface Crusting	Yes, but dissolves on rewetting	Yes	Yes, but dissolves on rewetting	Yes
Clean-Up	Water	Water	Water	Water
Erosion Control Application Rate	Varies (1)	Varies (1)	Varies (1)	4,500 to 13,500 kg/ha

(1) Dependent upon product, soil type, and slope inclination

Factors to consider when selecting a soil binder include the following:

- Suitability to situation - Consider where the soil binder will be applied; determine if it needs a high resistance to leaching or abrasion, and whether it needs to be compatible with any existing vegetation. Determine the length of time soil stabilization will be needed, and if the soil binder will be placed in an area where it will degrade rapidly. In general, slope steepness is not a discriminating factor for the listed soil binders.
- Soil types and surface materials - Fines and moisture content are key properties of surface materials. Consider a soil binder's ability to penetrate, likelihood of leaching, and ability to form a surface crust on the surface materials.
- Frequency of application - The frequency of application can be affected by subgrade conditions, surface type, climate, and maintenance schedule. Frequent applications could lead to high costs. Application frequency may be minimized if the soil binder has good penetration, low evaporation, and good longevity. Consider also that frequent application will require frequent equipment clean-up.

After considering the above factors, the soil binders in Table 1 will be generally appropriate as follows:

Plant Material Based (Short Lived)

Guar: Guar gum based tackifier must be derived from the ground endosperm of the guar plant, *Cyanmopsis tetragonolobus*. It must be treated with dispersing agents for easy mixing.. It shall be diluted at the rate of 1 to 5 lb per 100 gallons of water, depending on application machine capacity. Recommended minimum application rates are as follows:

Application Rates for Guar Soil Stabilizer					
Slope (V:H):	**Flat**	**1:4**	**1:3**	**1:2**	**1:1**
Kg/Ha:	45	50	56	67	78
lb/ac	40	45	50	60	70

Psyllium: Psyllium is composed of the finely ground muciloid coating of plantago seeds that is applied as a dry powder or in a wet slurry to the surface of the soil. It dries to form a firm but rewettable membrane that binds soil particles together but permits germination and growth of seed. Psyllium requires 12 to 18 hours drying time. Psyllium shall be applied at a rate of 80 to 200 lb/ac, with enough water in solution to allow for a uniform slurry flow.

Starch: Starch is non-ionic, water soluble granular cornstarch. The material is mixed with water and applied at the rate of 150 lb/ac. Approximate drying time is 9 to 12 hours.

Plant Material Based (Long Lived)

Pitch and Rosin Emulsion: Generally, a non-ionic pitch and rosin emulsion has a minimum solids content of 48%. The rosin shall be a minimum of 26% of the total solids content. The soil stabilizer shall be non-

corrosive, water-dilutable emulsion that upon application cures to a water insoluble binding and cementing agent. For soil erosion control applications, the emulsion is diluted and shall be applied as follows:

For clayey soil: 5 parts water to 1 part emulsion

For sandy soil: 10 parts water to 1 part emulsion

Application can be by water truck or hydraulic seeder with the emulsion/product mixture applied at the rate specified by the manufacturer. Approximate drying time is 19 to 24 hours.

Polymeric Emulsion Blends

Acrylic Copolymers and Polymers: Polymeric soil stabilizers shall consist of a liquid or solid polymer or copolymer with an acrylic base that contains a minimum of 55% solids. The polymeric compound shall be handled and mixed in a manner that will not cause foaming or shall contain an anti-foaming agent. The polymeric emulsion shall not exceed its shelf life or expiration date; manufacturers shall provide the expiration date. Polymeric soil stabilizer shall be readily miscible in water, non-injurious to seed or animal life, non-flammable, shall provide surface soil stabilization for various soil types without totally inhibiting water infiltration, and shall not re-emulsify when cured. The applied compound shall air cure within a maximum of 36 to 48 hours. Liquid copolymer shall be diluted at a rate of 10 parts water to 1 part polymer and applied to soil at a rate of 1,175 gal/ac.

Liquid Polymers of Methacrylates and Acrylates: This material consists of a tackifier/sealer that is a liquid polymer of methacrylates and acrylates. It is an aqueous 100% acrylic emulsion blend of 40% solids by volume that is free from styrene, acetate, vinyl, ethoxylated surfactants or silicates. For soil stabilization applications, it is diluted with water in accordance with manufacturer's recommendations, and applied with a hydraulic seeder at the rate of 20 gal/ac. Drying time is 12 to 18 hours after application.

Copolymers of Sodium Acrylates and Acrylamides: These materials are non-toxic, dry powders that are copolymers of sodium acrylate and acrylamide. They are mixed with water and applied to the soil surface for erosion control at rates that are determined by slope gradient:

Slope Gradient (V:H)	kg/ha (lb/ac)
Flat to 1:5	3-5
1:5 to 1:3	5-10
1:2 to 1:1	10-20

Poly-Acrylamide and Copolymer of Acrylamide: Linear copolymer polyacrylamide is packaged as a dry-flowable solid. When used as a stand-alone stabilizer, it is diluted at a rate of 1 lb/100 gal of water and applied at the rate of 5 lb/ac.

Hydro-Colloid Polymers: Hydro-Colloid Polymers are various combinations of dry-flowable poly-acrylamides, copolymers and hydro-colloid polymers that are mixed with water and applied to the soil surface at rates of 53 to 62 lb/ac. Drying times are 0 to 4 hours.

Cementitious Based Binders

Gypsum: This is a formulated gypsum-based product that readily mixes with water and mulch to form a thin protective crust on the soil surface. It is composed of high purity gypsum that is ground, calcined and processed into calcium sulfate hemihydrate with a minimum purity of 86%. It is mixed in a hydraulic seeder and applied at rates 4,000 to 12,000 lb/ac. Drying time is 4 to 8 hours.

Additional guidance on the selection of soil stabilization BMPs can be found in Appendix B of this Manual.

Maintenance and Inspection

Reapplying the selected soil binder may be needed for proper maintenance. High traffic areas shall be inspected daily, and lower traffic areas shall be inspected weekly.

A certificate of compliance under Standard Specifications Section 21-2.01C(4) must be submitted to the RE prior to application.

It is recommended that a small test area/mock-up occurs prior to large area application to verify sufficient cover for the approved mix.

After any rainfall event, the Contractor is responsible for maintaining all slopes to prevent erosion.

Maintain an unbroken, temporary stabilized area while DSAs are inactive. Repair any damaged stabilized area and re-apply soil binder to exposed areas.

Cleaning of equipment must be done in a designated area that can collect the water to prevent triggering of non-visible and non-stormwater requirements.

SWPPP or WPCP

Soil Binders must be discussed in Section 500.3.2 of the SWPPP or Section 30.2 of the WPCP.

Straw Mulch

SS-6





Standard Symbol



Definition and Purpose

Straw mulch consists of placing a uniform layer of straw and incorporating it into the soil with a studded roller, or anchoring it with a tackifier or Rolled Erosion Control Product (RECP). This is one of the temporary soil stabilization alternatives to consider.

Appropriate Applications

Straw mulch is typically used for soil stabilization as a temporary surface cover on disturbed areas until soils can be prepared for revegetation and permanent vegetation is established.

Also typically used in combination with temporary and/or permanent seeding strategies to enhance plant establishment.

Limitations

Availability of erosion control contractors and straw may be limited prior to the rain events due to high demand.

There is a potential for introduction of weed-seed and unwanted plant material.

Straw mulch applied by hand is more time intensive and potentially costly.

May have to be removed prior to permanent seeding or soil stabilization.

"Punching" of straw does not work in sandy soils, must use a tackifier.

Standards and Specifications

General Requirements

Straw and tackifier must conform to Standard Specifications Sections 21-2.02H, 21.2-03G and 21-2.02E.

Submit a certificate of compliance for straw before application. If weed-free straw is used, the certificate of compliance must include the certificate of quarantine compliance.

Straw must be derived from wheat, rice, or barley.

A tackifier is the preferred method for anchoring straw mulch to the soil on slopes.

Selected tackifier must be environmentally benign (non-toxic to plants and animal life) and does not pose a threat to water quality.

Crimping, "punch" roller-type rollers, or track-walking may also be used to incorporate straw mulch into the soil on slopes. Track walking shall only be used where other methods are impractical.

Avoid placing straw onto the traveled way, sidewalks, lined drainage channels, sound walls, and existing vegetation.

Straw mulch with tackifier should not be applied during or immediately before a rain event.

Application Procedures

Apply loose straw at the rate indicated either by machine or by hand distribution.

The straw mulch must be evenly distributed on the soil surface.

Straw may be anchored in place by incorporating it into soil or using a tackifier. Additionally, in small areas and/or steep slopes, straw mulch can also be held in place using Rolled Erosion Control Product. Refer to BMP SS-7, "Temporary Cover and Rolled Erosion Control Products."

If a tackifier will be used to anchor the straw mulch in lieu of incorporation, roughen embankment or fill areas by rolling with a crimping or punching-type roller. Track walking should only be used where rolling is impractical.

A tackifier acts to glue the straw fibers together and to the soil surface. Factors influencing tackifier selection include longevity and ability to hold the fibers in place.

Apply tackifier according to the manufacturer's instructed rate for the slope, soil, and wind conditions.

If incorporation of straw mulch into soil is the selected method for anchoring, then do as follows:

- A spade or shovel can be used to incorporate straw into soil in small areas.

- On slopes with soils that are stable enough and of sufficient gradient to safely support construction equipment without contributing to compaction and instability problems, straw can be "punched" into the ground using a knife-blade roller or a straight bladed coulter, known commercially as a "crimper" under Section 21-2.03J of the Standard Specifications.

Maintenance and Inspection

Straw needs to last long enough to achieve erosion control objectives.

Maintain an unbroken, temporary mulched ground cover while DSAs are inactive. Repair any damaged ground cover and re-mulch exposed areas.

Reapplication of straw mulch and tackifier may be required by the RE to maintain effective soil stabilization over disturbed areas and slopes.

After any rainfall event, the Contractor is responsible for maintaining all slopes to prevent erosion.

SWPPP or WPCP

Straw Mulch must be discussed in Section 500.3.2 of the SWPPP or Section 30.2 of the WPCP.

Temporary Cover and Rolled Erosion Control Products

SS-7





Standard Symbol

BMP Objectives	
Soil Stabilization	☑
Sediment Control	☐
Tracking Control	☐
Wind Erosion Control	☑
Non-Stormwater Management	☐
Materials and Waste Management	☐

Definition and Purpose

This BMP involves the placement of geosynthetics, turf reinforcement mats, plastic covers, or rolled erosion control products (RECPs), including erosion control blankets, to stabilize disturbed soil areas and protect soils from erosion by wind or water. This is one of the temporary soil stabilization alternatives to consider.

Appropriate Applications

These measures are used when disturbed soils may be particularly difficult to stabilize, including the following situations:

- Steep slopes, generally steeper than 3:1 (H:V).
- Slopes where the erosion potential is high.
- Slopes and disturbed soils where mulch must be anchored.
- Disturbed areas where plants are slow to develop.
- Channels with flows exceeding 3 ft/s.
- Channels to be vegetated.
- Slopes adjacent to receiving waters or ESAs.

Standards for plastic sheeting used for stockpile covers are provided in Section 14-11.05A of the Standard Specifications.

Temporary Cover and Rolled Erosion Control Products

SS-7

Limitations

Blankets and mats are typically more expensive than other erosion control measures, due to labor and material costs. This usually limits their application to areas inaccessible to hydraulic equipment, or where other measures are not applicable, such as channels.

May delay seed germination due to reduction in soil temperature.

Plastic netting should not be used when regulatory permits prohibit their use or if there is a potential for plastic netting to endanger wildlife.

Blankets and mats are generally not suitable for excessively rocky sites or areas where the final vegetation will be mowed (since staples and netting can catch in mowers).

Blankets and mats should be removed and disposed of prior to application of permanent soil stabilization measures as required by the contract plans. Long-term erosion control blankets must be Class 8 Rock Slope Protection fabric.

Plastic sheeting is easily vandalized, easily torn, photodegradable, and must be disposed of at a landfill and requires extensive inspection and maintenance.

Plastic results in 100 percent runoff, which may cause serious erosion problems in the downstream areas receiving the increased flow.

The use of plastic should be limited to covering stockpiles, or very small graded areas for short periods of time (such as through one imminent storm event), until alternative measures, such as seeding and mulching, can be installed.

Geosynthetics, mats, plastic covers, and RECPs have maximum flow rate limitations; consult the manufacturer for proper selection.

Additional guidance for selection of soil stabilization BMPs is provided in Appendix B of this Manual.

Standards and Specifications

Material Selection

There are many types of temporary cover material and RECPs, and selection of the appropriate type is based on the specific type of application and site conditions. Selection(s) made by the Contractor must be approved by the Resident Engineer; certification of compliance must be in accordance with Standard Specifications Sections 6-2 and 21-2.01C and 21-2.02O.

Temporary Cover: Geosynthetics

Material shall be a woven polypropylene fabric with minimum thickness of 0.06 inch, minimum width of 12 feet and meet all requirements of Standard Specification Section 96-1 Temporary Cover. Material shall have

a minimum tensile strength of 150 lb (warp) and 80 lbs (fill) in conformance with the requirements in ASTM Designation: D 4632. The permittivity of the fabric must be approximately 0.07 sec –1 in conformance with the requirements in ASTM Designation: D4491. The fabric must have an ultraviolet (UV) stability of 70 percent in conformance with the requirements in ASTM designation: D4355. Geotextile blankets should be secured in place with wire staples or sandbags and by keying into tops of slopes and edges to prevent infiltration of surface water. Staples should be made of minimum 16 gauge steel wire and be U-shaped with 8-inch legs and 2-inch crown.

Geotextiles may be reused if, in the opinion of the RE, they are suitable for the use intended.

Submit a certificate of compliance for each type of geosynthetic material used.

Temporary Cover: Plastic Sheeting

Plastic sheeting shall comply with Standard Specification Section 13-5 and 96-1 which requires a minimum thickness of 0.39 inches, and be keyed in at the top of slope and firmly held in place with gravel-filled bags placed no more than 6 feet apart or other weights authorized by the RE. Seams are typically taped or weighted down their entire length, and there should be at least a 12 to 24 inches overlap of all seams. Edges must be embedded a minimum of 6 inches in soil.

All sheeting must be inspected periodically after installation and after rain events to check for erosion, undermining, and anchorage failure. Any failures must be repaired immediately. If washout or breakages occurs, the material should be re-installed after repairing the damage to the slope or area.

Rolled Erosion Control Products

RECPs are typically composed of jute fibers, curled wood fibers, straw, coconut fiber, or a combination of these materials. For an RECP to be considered 100 percent biodegradable, the netting, sewing or adhesive system that holds the biodegradable mulch fibers together must also be biodegradable.

- Jute mesh is made from a natural fiber that is spun into a yarn, then loosely woven into a biodegradable mesh. It is designed to be used in conjunction with vegetation and has longevity of approximately one year. The material is supplied in rolled strips that are secured to the soil with steel U-shaped staples. Jute mesh shall comply with all requirements of Jute mesh table included in Standard Specification Section 21-2.
- Erosion control blanket is a machine-produced mat made of processed natural fibers that are bound together to form a continuous matrix surrounded by two natural nets. The processed natural fibers comprising the matrix of the blanket may be a mixture of straw (70 percent) and coconut (30 percent), woven coir (100 percent), or excelsior (curled wood fiber) (80 percent). Erosion control blankets must be furnished in rolled strips a minimum of 72 inches wide, and secured in place with steel U-shaped staples. Erosion control blankets must also comply with Section 21-2.02O(4) of the Standard Specifications.

- Netting consists of pure coconut fibers, or coir, woven into a matrix. Coir netting must be furnished in rolled strips a minimum of 72 to 158 inches in width and 0.3 inches thick. There are three classes of coir netting: Type A, Type B, and Type C. See Section 21-2.02O(3) of the Standard Specifications for the minimum requirements for each type of netting.

Non-biodegradable RECPs are typically composed of polypropylene, polyethylene, nylon or other synthetic fibers. In some cases, a combination of biodegradable and synthetic fibers is used to construct the RECP. Netting used to hold these fibers together is typically non-biodegradable as well. Check contract special provisions to determine whether non-biodegradable products are not to be used based on regulatory requirements.

- Turf reinforcement mat is a nondegradable, open-weave textile made of synthetic fibers, filaments, nets, wire mesh, or other elements processed into a permanent three-dimensional matrix. Turf reinforcement mats must be a minimum of 72 inches in width and 0.25 inches thick. There are three classes of turf reinforcement mat: Type A, Type B, and Type C. See section 21-2.02O(5) of the Standard Specifications for the minimum requirements for each type of netting.
- Plastic netting is a lightweight biaxially-oriented netting designed for securing loose mulches like straw to soil surfaces to establish vegetation. The netting is photodegradable. The netting is supplied in rolled strips, which should be secured with U-shaped staples or stakes in accordance with manufacturers' recommendations.
- Plastic mesh is an open-weave geotextile that is composed of an extruded synthetic fiber woven into a mesh with an opening size of less than 0.25 inch. It is used with revegetation or may be used to secure loose fiber such as straw to the ground. The material is supplied in rolled strips, which should be secured to the soil with U-shaped staples or stakes in accordance with manufacturers' recommendations.
- Synthetic fiber with netting is a mat that is composed of durable synthetic fibers treated to resist chemicals and ultraviolet light. The mat is a dense, three-dimensional mesh of synthetic (typically polyolefin) fibers stitched between two polypropylene nets. The mats are designed to be revegetated and provide a permanent composite system of soil, roots, and geomatrix. The material is furnished in rolled strips, which should be secured with U-shaped staples or stakes in accordance with manufacturers' recommendations.
- Bonded synthetic fibers consist of a three-dimensional geomatrix nylon (or other synthetic) matting. Typically it has more than 90 percent open area, which facilitates root growth. Its tough root-reinforcing system anchors vegetation and protects against hydraulic lift and shear forces created by high volume discharges. It can be installed over prepared soil, followed by seeding into the mat. Once vegetated, it becomes an invisible composite system of soil, roots, and geomatrix. The material is furnished in rolled strips that should be secured with U-shaped staples or stakes in accordance with manufacturers' recommendations.
- Combination synthetic and biodegradable RECPs consist of biodegradable fibers, such as wood fiber or coconut fiber, with a heavy polypropylene net stitched to the top and a high-strength continuous-filament geomatrix or net stitched to the bottom. The material is designed to enhance revegetation.

The material is furnished in rolled strips, which should be secured with U-shaped staples or stakes in accordance with manufacturers' recommendations.

Site Preparation

Proper site preparation is essential to ensure complete contact of the blanket or matting with the soil.

Grade and shape the area of installation.

Remove all rocks, clods, vegetation or other obstructions larger than 1 inch in size. Fill voids or depressions.

Proper site preparation ensures that the products and covers will have complete, direct contact with the soil.

Seeding

If applicable, seed the area before RECP installation for erosion control and revegetation.

Check all slots and other areas disturbed during installation must be re-seeded.

For turf reinforcement mats, seeding is often specified to occur after installation.

Anchoring

U-shaped wire staples, metal stake pins, triangular wooden stakes, or fasteners recommended by manufacturers can be used to anchor mats and blankets to the ground surface in conformance with Standard Specification section 13-10.

Staples should be made of minimum 16 gauge steel wire and be U-shaped with 8-inch legs and 2-inch crown.

Metal stake pins should be 0.188 inch diameter steel with a 1.5 inch steel washer at the head of the pin, and 8 inch in length.

Wire staples and metal stakes should be driven flush to the soil surface.

All anchors should be 6 inch to 18 inch long and have sufficient ground penetration to resist pullout. Longer anchors may be required for loose soils.

Installation on Slopes

Refer to Standard Plans T53 and T54 for details regarding installation on slopes for temporary uses, and H52 for permanent uses.

Installation in Channels

Refer to Standard Plan T55 for details regarding installation in channels.

Installation shall be in accordance with the manufacturer's recommendations. In general, these will be as follows:

- Dig initial anchor trench 12 in deep and 6 in wide across the channel at the lower end of the project area.
- Excavate intermittent check slots, 6 in deep and 6 in wide across the channel at 25 ft to 30 ft intervals along the channels.
- Cut longitudinal channel anchor slots 4 in deep and 4 in wide along each side of the installation to bury edges of matting, whenever possible extend matting 2 in to 3 in above the crest of the channel side slopes.
- Beginning at the downstream end and in the center of the channel, place the initial end of the first roll in the anchor trench and secure with fastening devices at 12 in intervals. Note: matting will initially be upside down in anchor trench.
- In the same manner, position adjacent rolls in anchor trench, overlapping the preceding roll a minimum of 3 in.
- Secure these initial ends of mats with anchors at 12 in intervals, backfill and compact soil.
- Unroll center strip of matting upstream. Stop at next check slot or terminal anchor trench. Unroll adjacent mats upstream in similar fashion, maintaining a 3 in overlap.
- Fold and secure all rolls of matting snugly into all transverse check slots. Lay mat in the bottom of the slot then fold back against itself. Anchor through both layers of mat at 12 in intervals, then backfill and compact soil. Continue rolling all mat widths upstream to the next check slot or terminal anchor trench.
- Alternate method for non critical installations: Place two rows of anchors on 6 in centers at 25 ft to 30 ft intervals in lieu of excavated check slots.
- Shingle lap spliced ends by a minimum of 12 in apart on 12 in intervals.
- Place edges of outside mats in previously excavated longitudinal slots, anchor using prescribed staple pattern, backfill and compact soil.
- Anchor, fill and compact upstream end of mat in a 12 in by 6 in terminal trench.
- Secure mat to ground surface using U-shaped wire staples, geotextile pins, or wooden stakes.
- Seed and fill turf reinforcement matting with soil, if specified.

Soil Filling (if specified for turf reinforcement)

Always consult the manufacturer's recommendations for installation.

Do not drive tracked or heavy equipment over mat.

Avoid any traffic over matting if loose or wet soil conditions exist.

Use shovels, rakes or brooms for fine grading and touch up.

Smooth out soil filling, just exposing top netting of mat.

Temporary Soil Stabilization Removal

When no longer required for the work, temporary soil stabilization becomes the property of the Contractor.

Temporary soil stabilization removed from the site of the work must be disposed of outside the highway right-of-way in conformance with the provisions in Standard Specifications Section 14-10. If approved by the RE, the contractor may leave the temporary soil stabilizer in place.

Maintenance and Inspection

Areas treated with temporary soil stabilization must be inspected as specified in the Standard Specifications and special provisions. Areas treated with temporary soil stabilization must be maintained to provide adequate erosion control. Temporary soil stabilization should be reapplied or replaced on exposed soils when area becomes exposed or exhibits visible erosion.

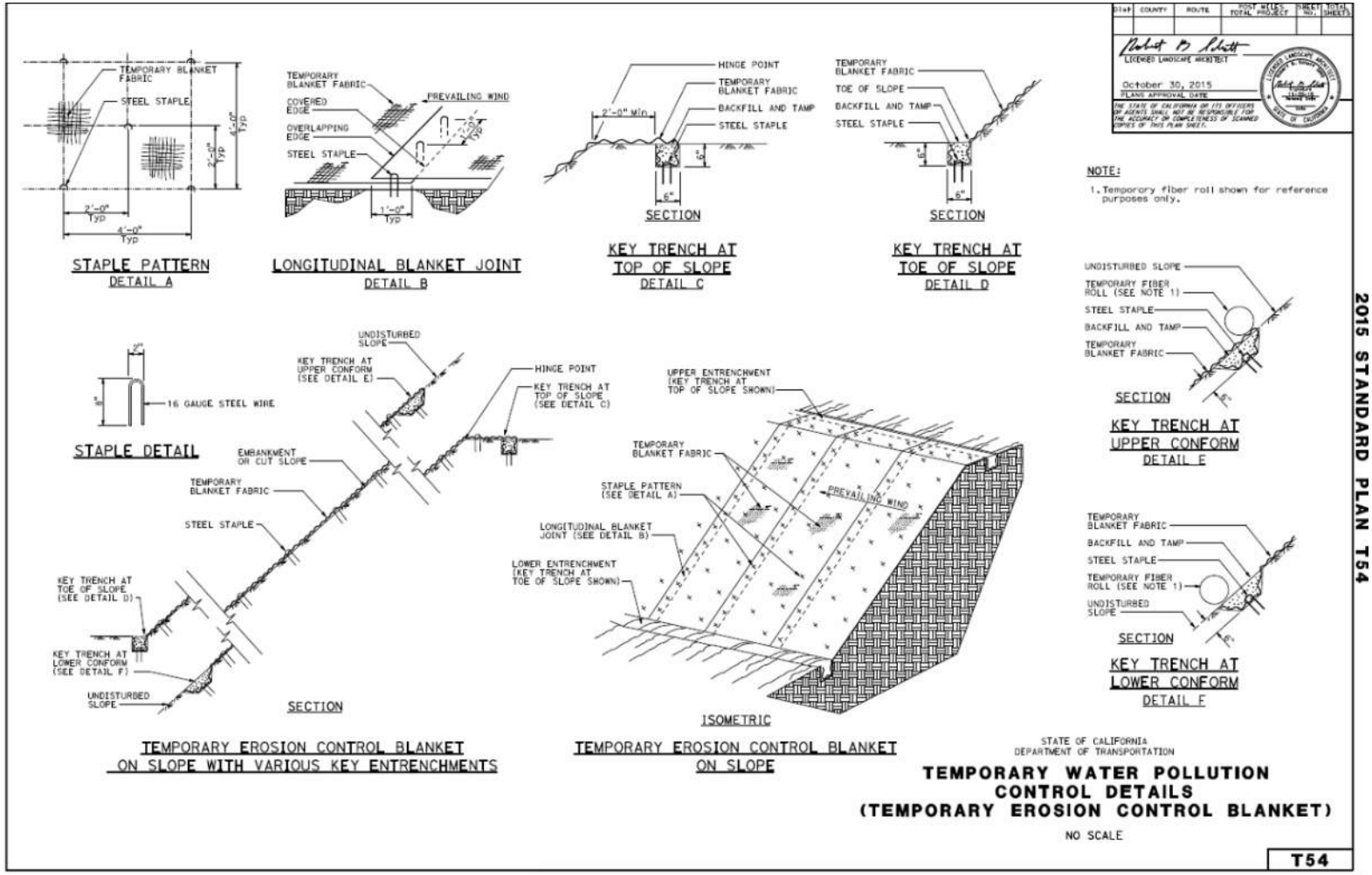
- All blankets and mats must be inspected periodically after installation.
- Installation should be inspected after significant rain events to check for erosion and undermining. Any failures must be repaired immediately.
- If washout or breakage occurs, re-install the material after repairing the damage to the slope or channel.

SWPPP or WPCP

RECP must be discussed in Section 500.3.2 of the SWPPP or Section 30.2 of the WPCP.

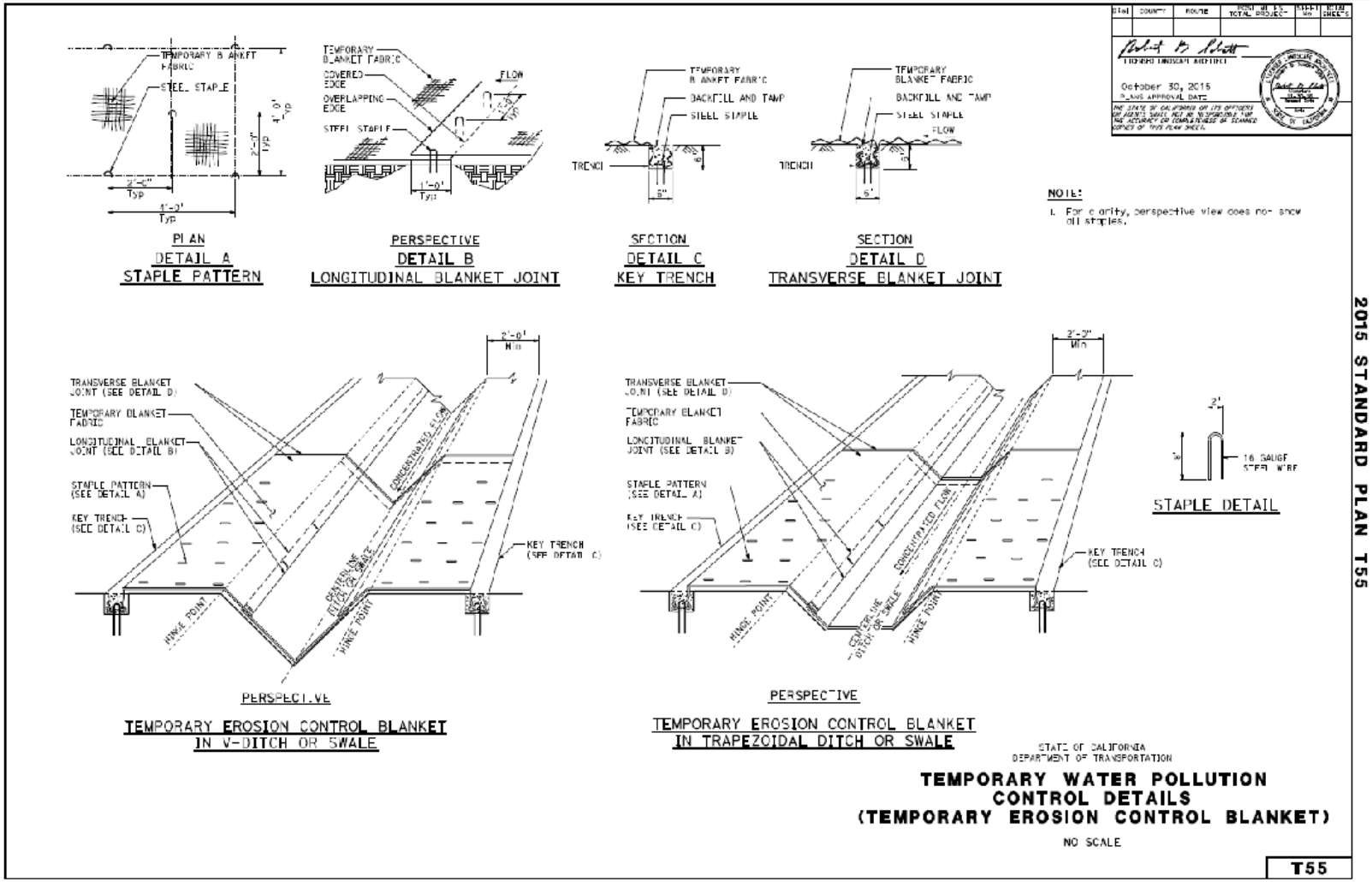
Temporary Cover and Rolled Erosion Control Products

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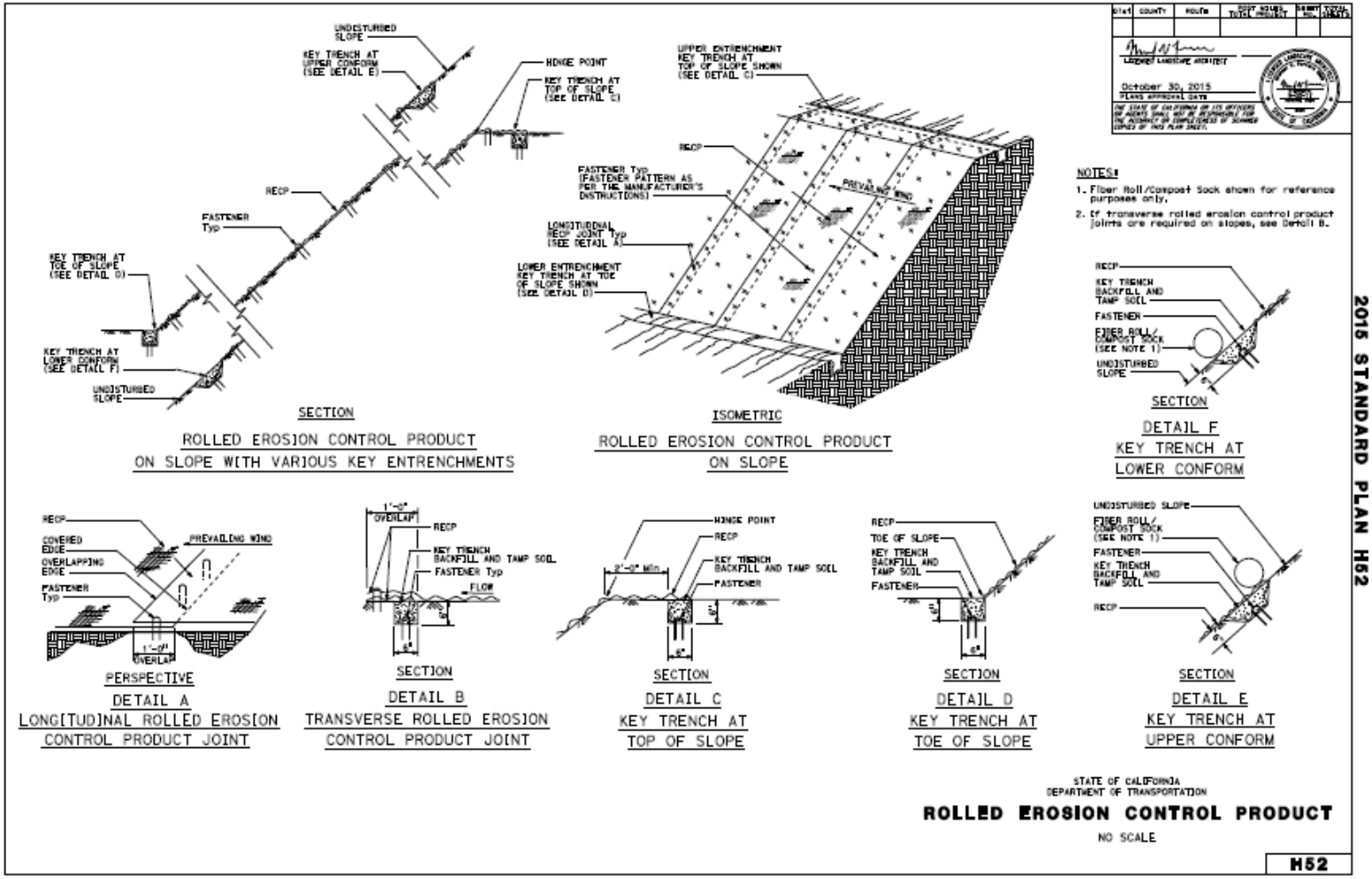
Temporary Cover and Rolled Erosion Control Products

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Temporary Cover and Rolled Erosion Control Products

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Wood Mulching

SS-8





Standard Symbol



Definition and Purpose

Wood mulching consist of applying a mixture of shredded bark, wood chips, or tree trimmings on top of soil. Wood mulch is mostly applicable to landscape projects.

The primary function of wood mulching is to reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing runoff.

Appropriate Applications

Wood mulching is considered a temporary soil stabilization alternative in the following situations:

- As a stand-alone temporary surface cover on disturbed areas until soils can be prepared for revegetation and permanent vegetative cover can be established.
- As short term, non-vegetative ground cover on slopes to reduce rainfall impact, decrease the velocity of sheet flow, settle out sediment and reduce wind erosion.
- In combination with other BMPs, mulch may be used to stabilize roadway embankment slopes and control wind erosion.

Limitations

Wood mulch may introduce unwanted species of vegetation.

Shredded wood does not withstand concentrated flows and is prone to sheet erosion.

Green material has the potential for the presence of unwanted weeds and other plant materials. Delivery system is primarily by manual labor, although pneumatic application equipment is available.

Mulch may need to be removed prior to further earthwork.

Mulch should not be used alone to stabilize embankments or sides of swales where concentrated flows could mobilize the material.

Standards and Specifications

Mulch Selection

There are many types of mulches, including tree bark mulch, wood chip mulch, shredded bark mulch, and tree trimming mulch. Selection of the appropriate type should be based on the type of application and site conditions. Prior to use of wood mulches, obtain concurrence with the District Landscape Architect because some mulch used on construction projects may not be compatible with planned or future projects.

Selection of wood mulches must comply with Standard Specifications Section 20-5.03E, and must be approved by the RE.

Tree Bark Mulch

Tree bark mulch must be derived from cedar, Douglas fir, or redwood tree species.

Tree bark mulch must be ground such that at least 95 percent of the material by volume is less than 2 inches in any direction and no more than 30 percent by volume is less than 1 inch in any direction.

Wood Chip Mulch

Wood chip mulch must be derived from clean wood, and it may not contain leaves or small twigs.

Wood chip mulch must contain at least 95 percent wood strands by volume with an average thickness of 1/8 to 1-1/2 inches in any direction and 2 to 8 inches in length.

Shredded Bark Mulch

Shredded bark mulch must be derived from trees. The mulch must be a blend or loose, long, thin wood or bark pieces.

Shredded bark mulch must contain at least 95 percent wood strands by volume with an average thickness of 1/8 to 1-1/2 inches in any direction and 2 to 8 inches in length

Tree Trimming Mulch

Tree trimming mulch is derived from chipped trees and may contain leaves, small twigs, and green material.

Tree trimming mulch must contain at least 95 percent material by volume less than 3 inches and no more than 30 percent by volume less than 1 inch

Application Procedures

Do not use soil sterilant or filter fabric.

Mulch should be placed uniformly from the outside edge of area designated for mulch. Permanent, landscape mulch should be placed after vegetation has been installed.

Mulch may be installed by manual application or with pneumatic devices.

Do not place mulch within 4 ft of the flow line of drainage ditches or other channels, or the edge of paved roads.

All material must be removed before re-starting work on the slopes.

Maintenance and Inspection

Wood mulch needs to last long enough to achieve erosion-control objectives. If the mulch is applied as a stand-alone erosion control method over disturbed areas (without seed), it should last the length of time the site will remain barren or until final re-grading and revegetation. Additional information is provided in Appendix B of this Manual.

Where vegetation is not the ultimate cover, such as ornamental and landscape applications of bark or wood chips, inspection and maintenance should focus on longevity and integrity of the mulch.

May require reapplication when bare soil becomes visible.

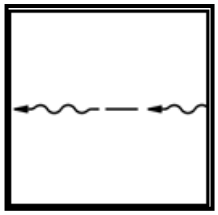
SWPPP or WPCP

Wood Mulch must be discussed in Section 500.3 of the SWPPP or Section 30.2 of the WPCP.

Earth Dikes/Drainage Swales and Lined Ditches

SS-9





Standard Symbol



Definition and Purpose

These are structures that intercept, divert and convey surface run-on, generally sheet flow, to prevent erosion.

Appropriate Applications

Earth dikes/drainage swales and lined ditches may be used to:

- Convey surface runoff down sloping land.
- Intercept and divert runoff to avoid sheet flow over sloped surfaces.
- Divert and direct runoff towards a stabilized watercourse, drainage pipe or channel.
- Intercept runoff from paved surfaces.

Earth dikes/drainage swales and lined ditches also may be used:

- Below steep grades where runoff begins to concentrate.
- Along roadways and facility improvements subject to flood drainage.
- At the top of slopes to divert run-on from adjacent or undisturbed slopes.
- At bottom and mid-slope locations to intercept sheet flow and convey concentrated flows.

Limitations

Earth dikes/drainage swales and lined ditches are not suitable as sediment trapping devices.

May be necessary to use other soil stabilization and sediment controls, such as check dams, plastics, and blankets, to prevent scour and erosion in newly graded dikes, swales and ditches.

Earth Dikes/Drainage Swales and Lined Ditches

SS-9

Temporary swales and ditches should not or any other runoff diversion device should not adversely impact upstream or downstream properties.

Standards and Specifications

Standard Specification Section 19-6 "Embankment Construction," which covers allowable materials and construction procedures for dikes.

Standard Specification Section 72-5 "Concrete Slope Protection, Gutter, Ditch and Channel Lining" covers ditch and channel lining materials and construction procedures.

Care must be applied to correctly size and locate earth dikes, drainage swales and lined ditches. Excessively steep, unlined dikes and swales are subject to erosion and gully formation.

Must complete a careful evaluation of the risks due to erosion of the selected measure based on flow velocity, soil types, potential for over topping, flow backups, washouts, and drainage patterns for each BMP location.

Conveyances shall be stabilized. Consider using a lined ditch for high flow velocities to prevent scour. Compact any fills or backfills to prevent unequal settlement.

Do not divert runoff from the highway right-of-way onto other property.

When possible, install and utilize permanent dikes, swales and ditches early in the construction process.

Earthen berms should be 8 inches tall and 36 inches wide at a minimum. Earthen berms must be compacted either by hand or mechanical methods.

Provide stabilized outlets. Refer to SS-10, "Outlet Protection/Velocity/ Dissipation Devices."

Maintenance and Inspection

Inspect temporary measures prior to, daily during extended rain events post-storm and weekly year-round.

Inspect ditches and berms for washouts. Replace lost riprap, damaged linings or soil stabilizers as needed.

Inspect channel linings, embankments, and beds of ditches and berms for erosion and accumulation of debris and sediment.

Remove debris and sediment, and repair linings and embankments to ensure they function as intended.

Temporary conveyances should be completely removed as soon as the surrounding drainage area has been stabilized, or at the completion of construction.

Earth Dikes/Drainage Swales and Lined Ditches

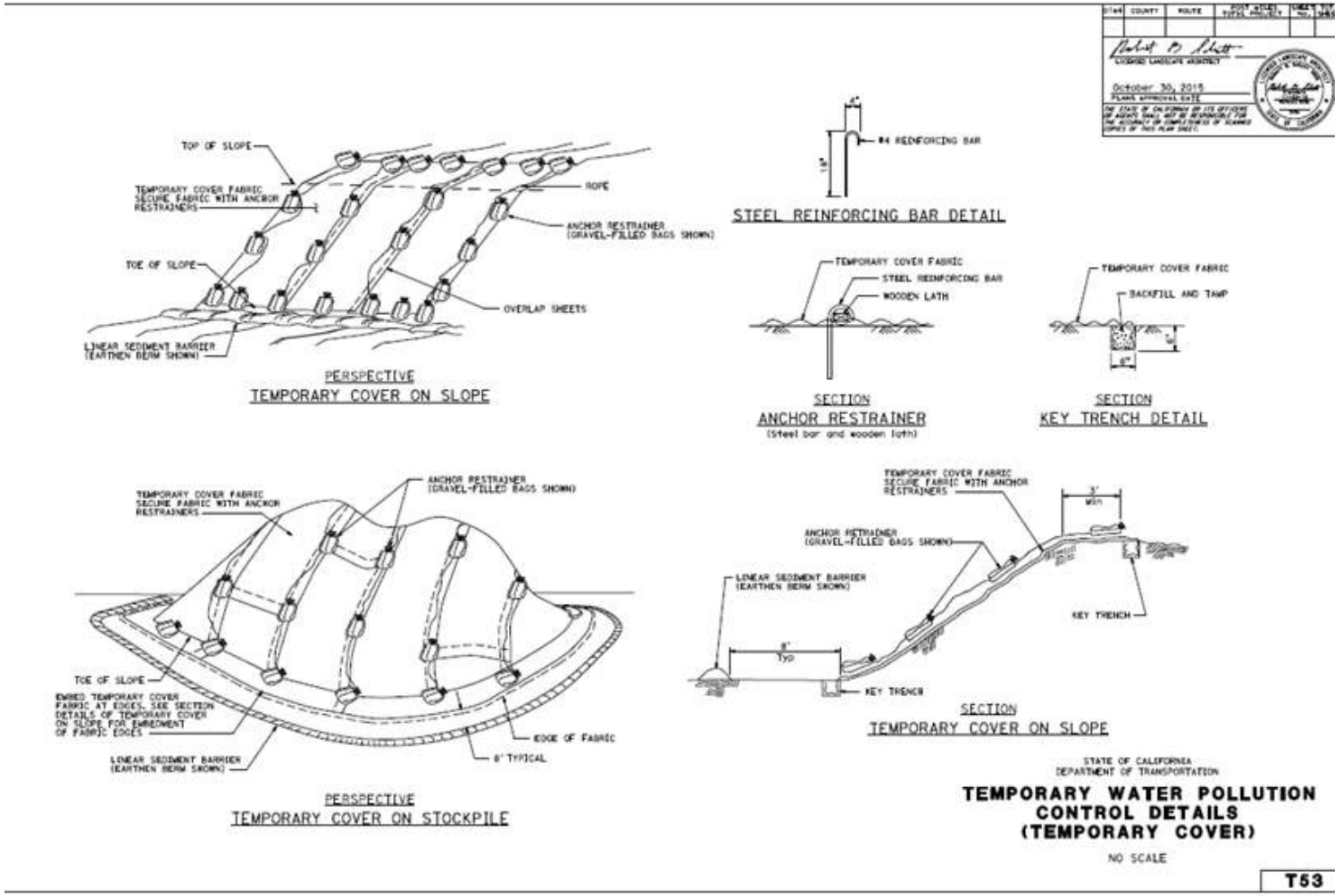
SS-9

SWPPP or WPCP

Earth Dikes/Drainage Swales and Lined Ditches must be discussed in Section 500.3.2 of SWPPP or Section 30.2 of the WPCP.

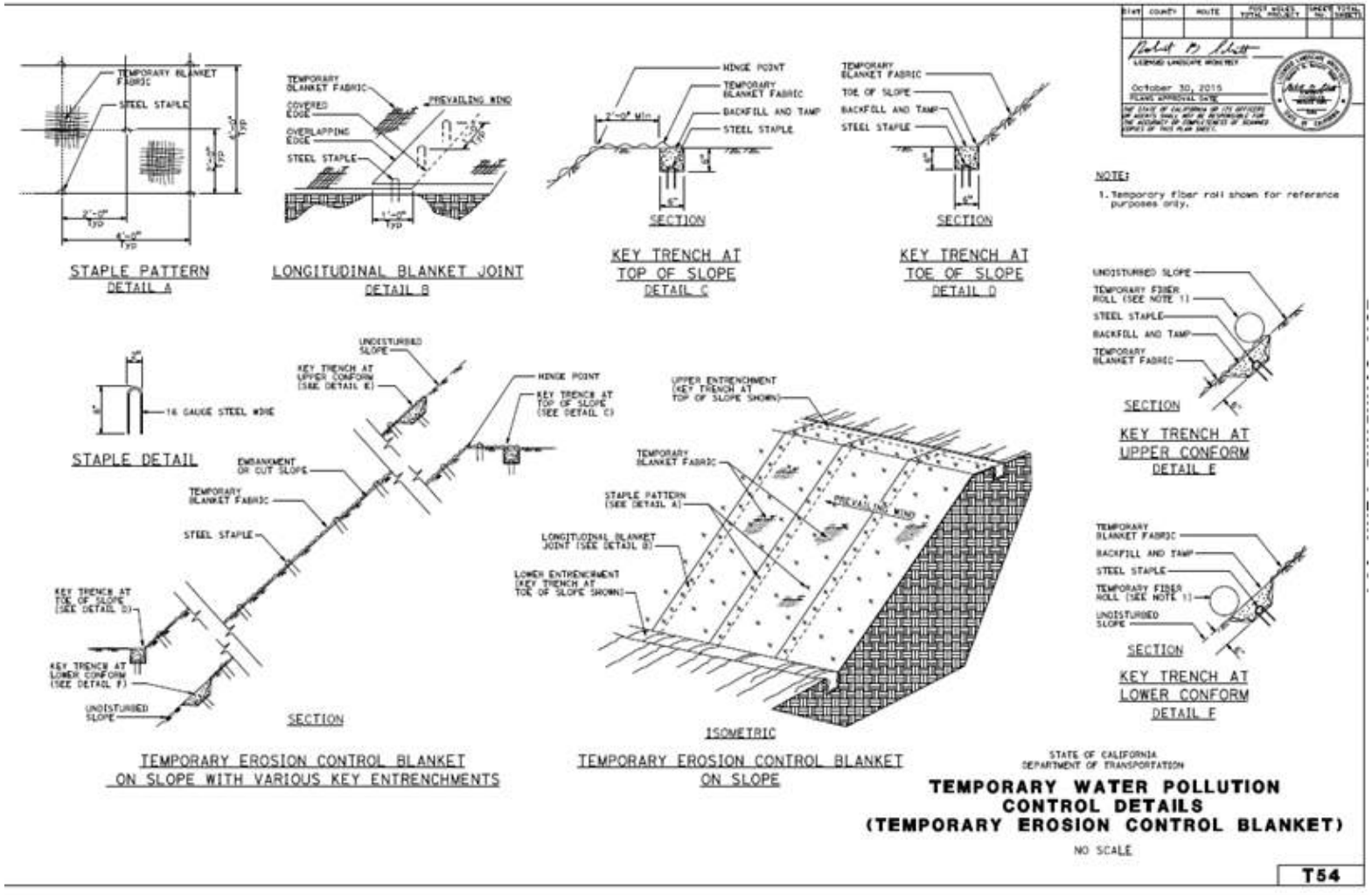
Earth Dikes/Drainage Swales and Lined Ditches

SS-9



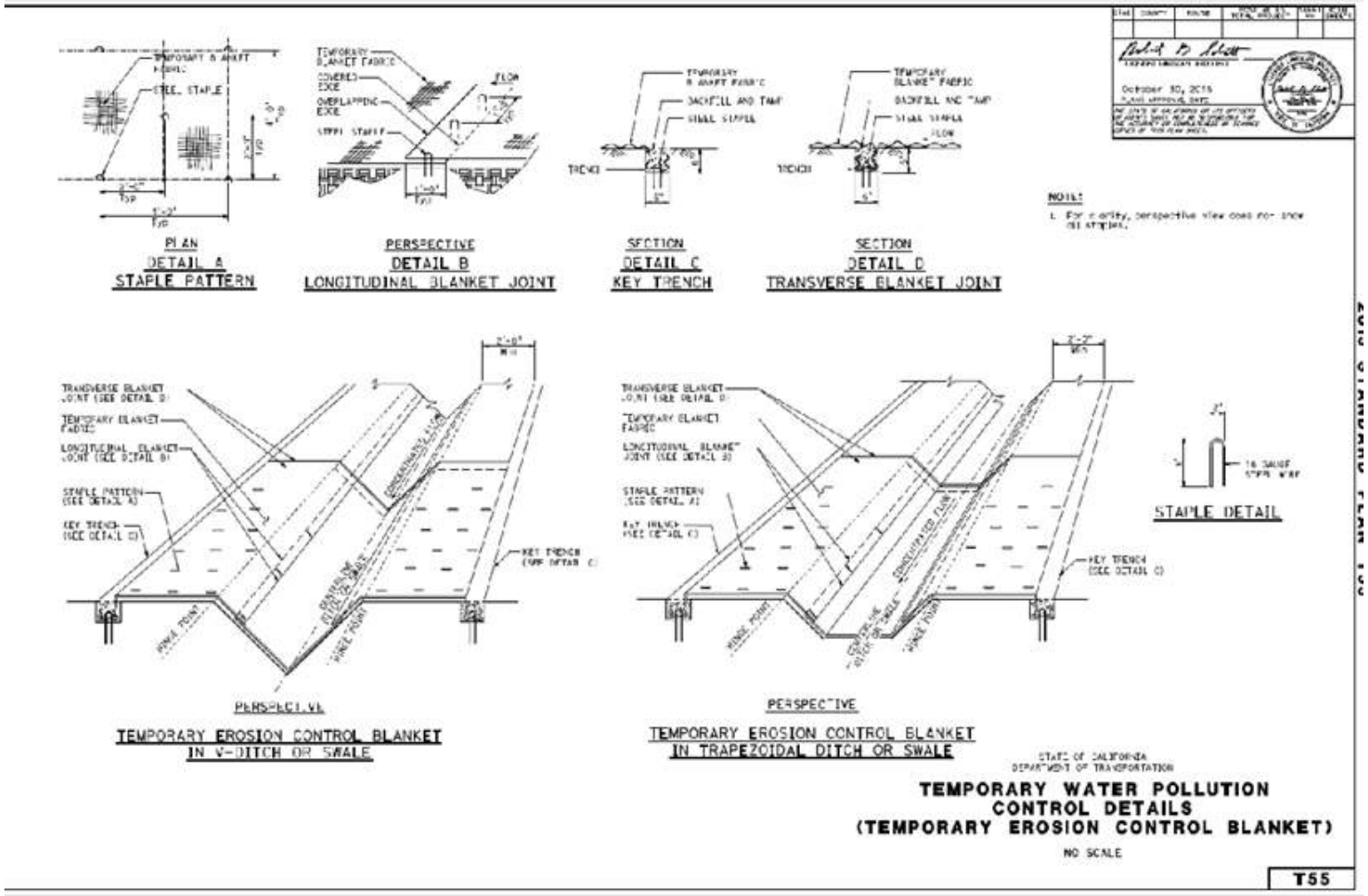
Earth Dikes/Drainage Swales and Lined Ditches

SS-9



Earth Dikes/Drainage Swales and Lined Ditches

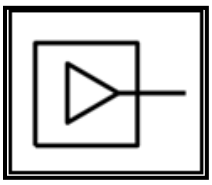
SS-9



Outlet Protection/Velocity Dissipation Devices

SS-10





Standard Symbol



Definition and Purpose

These devices are placed at pipe outlets to prevent scour and reduce the velocity and/or energy of stormwater flows.

Appropriate Applications

These devices may be used at the following locations:

- Outlets of pipes, drains, culverts, slope drains, diversion ditches, swales, conduits or channels.
- Outlets located at the bottom of mild to steep slopes.
- Discharge outlets that carry continuous flows of water.
- Outlets subject to short, intense flows of water, such as flash floods.
- Points where lined conveyances discharge to unlined conveyances.

Limitations

Loose rock may have stones washed away during high flows.

Grouted rock slope protection may break up in areas of freeze and thaw.

If there is not adequate drainage, and water builds up behind grouted rock slope protection, it may cause the grouted rock slope protection to break up due to the resulting hydrostatic pressure.

Outlet protection may negatively impact the channel habitat.

Outlet Protection/Velocity Dissipation Devices

SS-10

Standards and Specifications

There are many types of energy dissipaters; a flared end section and rock slope protection is shown in the figure on the previous page. Please note that this is only one example and the RE may approve other types of devices proposed by the contractor.

Flared end sections must comply with Standard Specification 70-5.02.

Rock slope protection must comply with Standard Specification Section 72.

Install rock slope protection, grouted rock slope protection, or concrete apron at selected outlet. Rock slope protection aprons are best suited for temporary use during construction.

Carefully place rock slope protection to avoid damaging the filter fabric.

For proper operation of apron:

- Align apron with receiving stream and keep straight throughout its length. If a curve is needed to fit site conditions, consider placing it in upper section of apron.
- If size of apron rock slope protection is large, consider protecting underlying filter fabric with a gravel blanket.

Outlets on slopes steeper than 10% should have additional protection.

Maintenance and Inspection

At a minimum, perform inspections weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.

Minimize areas of standing water by removing sediment blockages and filling scour depressions. If persistent, it might be necessary to have licensed professional re-evaluate size and type of device implemented.

Inspect apron for displacement of the rock slope protection and/or damage to the underlying fabric. Repair fabric and replace rock slope protection that has washed away.

Inspect for scour beneath the rock slope protection and around the outlet. Repair damage to slopes or underlying filter fabric immediately.

Temporary devices should be completely removed as soon as the surrounding drainage area has been stabilized, or at the completion of construction.

Outlet Protection/Velocity Dissipation Devices

SS-10

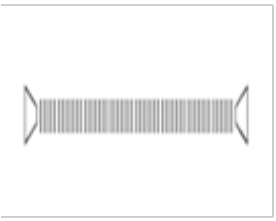
SWPPP or WPCP

Outlet Protection/Velocity Dissipation Devices must be discussed in Section 500.3.2 of SWPPP or Section 30.2 of the WPCP.

Slope Drains

SS-11





Standard Symbol



Definition and Purpose

A slope drain is a pipe used to intercept and direct surface runoff or groundwater into a stabilized watercourse, trapping device or stabilized area. Slope drains are used with lined ditches to intercept and direct surface flow away from slope areas to protect cut or fill slopes.

Appropriate Applications

Slope drains may be used on construction sites where slopes may be eroded by surface runoff.

Drainage for top of slope dikes or swales.

Drainage for top of cut and fill slopes where water can accumulate.

Emergency spillway for a sediment basin.

Limitations

Severe erosion may result when slope drains fail by overtopping, piping, or pipe separation.

Sediment accumulation, scour depressions, and/or persistent non-stormwater discharges in energy dissipaters associated with slope drain outlets can result in suitable areas for vector production.

Slope Drains

SS-11

Standards and Specifications

Maximum slope generally limited to 2:1 (H:V), as energy dissipation below steeper slopes is difficult.

Direct surface runoff to slope drains with interceptor dikes. See BMP SS 8, "Earth Dikes/Drainage Swales, and Lined Ditches."

Slope drains can be placed on or buried underneath the slope surface.

Recommended materials are plastic or corrugated metal, or comparable pipe.

When installing slope drains:

- Install slope drains perpendicular to slope contours.
- Compact soil around and under entrance, outlet, and along length of pipe.
- Securely anchor and stabilize pipe and appurtenances into soil.
- Check to ensure that pipe connections are water tight.
- Protect area around inlet with filter cloth. Protect outlet with rock slope protection or other energy dissipation device. For high energy discharges, reinforce rock slope protection with concrete or use reinforced concrete device.
- Protect inlet and outlet of slope drains; use standard flared end section at entrance and exit for pipe slope drains 12 in and larger.

Maintenance and Inspection

Inspect before, daily during and after each rain event, and weekly during the duration of the construction project. Inspect outlet for erosion and downstream scour.

If eroded, repair damage and install additional energy dissipation measures. If downstream scour is occurring, it may be necessary to reduce flows being discharged into the channel.

Inspect slope drainage for accumulations of debris and sediment.

Remove built-up sediment from entrances, outlets, and within drains as required.

Make sure stormwater is not ponding onto inappropriate areas (e.g., active traffic lanes, material storage areas, etc.).

SWPPP or WPCP

Slope Drains must be discussed in Section 500.3.2 of SWPPP or Section 30.2 of the WPCP.

Streambank Stabilization

SS-12





Standard Symbol

BMP Objectives	
Soil Stabilization	☑
Sediment Control	☑
Tracking Control	☐
Wind Erosion Control	☐
Non-Stormwater Management	☐
Materials and Waste Management	☐

Definition and Purpose

Drainage systems including the stream channel, streambank, and associated riparian areas, are dynamic and sensitive ecosystems that respond to changes in land use activity. Streambank and channel disturbance resulting from construction activities can increase the stream's sediment load, which can cause channel erosion or sedimentation and have adverse affects on the biotic system. BMPs can reduce the discharge of sediment and other pollutants and minimize the impact of construction activities on watercourses. Streams included on the 303(d) list by the State Water Resources Control Board (SWRCB) may require careful evaluation to prevent any increases in sedimentation, siltation and/or turbidity to the stream.

Appropriate Applications

These procedures typically apply to all construction projects that disturb or occur within stream channels and their associated riparian areas. Streambank stabilization typically consists of a combination of several BMPs to prevent destabilization and enhance stability of eroding streambanks.

Limitations

Specific permit requirements or mitigation measures such as Regional Water Quality Control Board (RWQCB) 401 Certification, U.S. Army Corps of Engineers 404 permit and approval by California Department of Fish and Wildlife Service may be included in contract documents. Specific requirements could include in-water work windows, vegetation species, seed mixes, stabilization measures, water quality monitoring protocols and specific reporting requirements. If numerical-based water quality standards are

mentioned in any of these and other related permits, testing and sampling may be required. Streams included on the 303(d) list by the SWRCB because of sediment, silt, or turbidity impairment are required to conduct sampling to verify that there is no net increase in sediment load due to construction activities.

Standards and Specifications

Planning

Proper planning, design, and construction techniques can minimize impacts normally associated with in-stream construction activities. Poor planning can adversely affect soil, fish, and wildlife resources, land uses, or land users. Planning should take into account: scheduling, avoidance of in-stream construction; minimizing disturbance area and construction time period; using pre-disturbed areas; selecting crossing location; selecting equipment and proper stabilization techniques once the activity is completed.

Scheduling (SS-1)

Construction activities should be scheduled according to the relative sensitivity of the environmental concerns and in accordance with SS-1, "Scheduling." Scheduling considerations will be different when working near perennial streams vs. ephemeral streams, and are as follows:

- Construction work near perennial streams should optimally be performed during the dry season (see below).
- When working in or near ephemeral, intermittent, or perennial streams, construction should be performed during the dry season and in accordance with regulatory agency permits and approvals. By their very nature, ephemeral and intermittent streams are usually dry in the summer, and therefore, in-stream construction activities will not cause significant water quality problems. For perennial streams, clear water diversion (see NS-5 for "Clear Water Diversion"), dewatering (see NS-2 for "Dewatering Operations"), and water quality monitoring may be required.
- When closing the site at the end of the job, wash any fines that were formed in-situ back into the channel the bed material, to decrease pollution from the first rainstorm ("first flush") of the season. When working near stream channels, erosion and sediment controls (see silt fences, straw bale barriers, etc.) should be implemented on the banks to keep sediment out of the stream channel.
- Regulatory permits might require or allow for the stockpiling of native bed material to be backfilled during stabilization.

Minimize Disturbance

Minimize disturbance through: selection of the narrowest crossing location; limiting the number of equipment trips across a stream during construction; and, minimizing the number and size of work areas (equipment staging areas and spoil storage areas). Provide stabilized access to the stream when in-stream work is required. Field reconnaissance should be conducted during the planning stage to identify work areas.

Comply with regulatory permit requirements, if none are applicable, then place work areas (stage area, active construction) at least 50 ft from the stream channel. Perform each of the following activities at least 100 feet

from a drainage course if it is performed within the floodplain, or at least 50 feet outside the floodplain: stockpiling materials, storing pile-driving equipment and liquid waste containers, washing vehicles and equipment, fueling and maintaining vehicles and equipment.

Locate access and staging areas in paved or pre-disturbed areas when possible. If not possible, select access and staging areas that minimizes disturbance to aquatic species, riparian vegetation, and habitat.

Avoid steep and unstable banks, highly erodible or saturated soils, or highly fractured rock, wherever possible.

Select equipment that reduces the amount of pressure exerted on the ground surface, and therefore, reduces erosion potential and/or use overhead or aerial access for transporting equipment across drainage channels. Use equipment that exerts ground pressures of less than 5 or 6 pounds per square inch (PSI), where possible. Low ground pressure equipment includes: wide or high flotation tires (34 to 72 inch wide); dual tires; bogie axle systems; tracked machines; lightweight equipment; and central tire inflation systems.

Streambank Stabilization: Preservation of Existing Vegetation (SS-2)

Preserve existing vegetation in accordance with SS-2, "Preservation of Existing Vegetation." In a streambank environment preservation of existing vegetation provides the following benefits:

Water Quality Protection

Vegetated buffers on slopes trap sediment and promote groundwater recharge. The buffer width needed to maintain water quality ranges from 15 to 100 feet. On gradual slopes, most of the filtering occurs within the first 30 feet of the buffer. Steeper slopes require a greater width of vegetative buffer to provide water quality benefits.

Streambank Stabilization

The root system of riparian vegetation stabilizes streambanks by increasing tensile strength in the soil. The presence of vegetation modifies the moisture condition of slopes (infiltration, evapotranspiraton, interception) and increases bank stability.

Riparian Habitat

Buffers of diverse riparian vegetation provide food, shelter, and shade for riparian and aquatic organisms. Minimizing impacts to fisheries habitat is a major concern when working near streams and rivers. Riparian vegetation provides shade, shelter, organic matter (leaf detritus and large woody debris), and other nutrients that are necessary for fish and other aquatic organisms. Buffer widths for habitat concerns are typically wider than those recommended for water quality concerns (100 to 1,500 feet).

When working near watercourses, it is important to understand the work site's placement in the watershed. Riparian vegetation in the headwater streams has a greater impact on overall water quality than vegetation in downstream reaches. Preserving existing vegetation in upstream areas is necessary to maintain water quality, minimize bank failure, and maximize riparian habitat downstream of the work site.

Local county and municipal ordinances regarding width, extent and type of vegetative buffer required may exceed the specifications provided here; these ordinances should be investigated prior to construction.

As a general rule, the width of a buffer strip between a road and the stream is recommended to be 50 feet plus four times the percent slope of the land, measured between the road and the top of stream bank.

Hydraulic Mulch (SS-3), Hydroseeding (SS-4), and Soil Binders (SS-5)

Apply hydraulic mulch, hydroseed, or soil binders on disturbed streambanks above the mean high water level to provide temporary soil stabilization.

Do not place hydraulic mulch, tackifiers, fertilizers, or soil binders below the mean high water level, as these materials could wash into the channel and impact water quality or possibly cause eutrophication.

Straw Mulch (SS-6)

Apply straw mulch to disturbed streambanks in accordance with SS-6, "Straw Mulch."

Do not place straw mulch or tackifiers below the mean high water level, as this material could wash into the channel and impact water quality.

Earth Dikes/Drainage Swales, and Lined Ditches (SS-9)

Convey, intercept, or divert runoff from disturbed streambanks using SS-9, "Earth Dikes/Drainage Swales, and Lined Ditches."

Do not place earth dikes in watercourses, as these structures are only suited for intercepting sheet flow, and should not be used to intercept concentrated flow.

Outlet Protection/Velocity Dissipation Devices (SS-10)

Place outlet protection or velocity dissipation devices at outlets of pipes, drains, culverts, slope drains, diversion ditches, swales, conduits or channels in accordance with SS-10.

Slope Drains (SS-11)

Use slope drains to intercept and direct surface runoff or groundwater into a stabilized watercourse, trapping device or stabilized area in accordance with SS-11, "Slope Drains." The use of slope drains minimizes potential streambank erosion from overland flows.

Streambank Sediment Control: Silt Fences (SC-1)

Install silt fences in accordance with SC-1, "Silt Fence" to control sediment. Silt fences should only be installed where sediment-laden water can pond, thus allowing the sediment to settle out.

Fiber Rolls (SC-5)

Install fiber rolls in accordance with SC-5, "Fiber Rolls" along slope contour above the high water level to intercept runoff, reduce flow velocity, release the runoff as sheet flow and provide removal of sediment from the runoff. In a stream environment, fiber rolls should be used in conjunction with other sediment control

methods such as SC-1, "Silt Fence" or SC-9, "Straw Bale Barrier." Install silt fence, straw bale barrier, or other erosion control methods along the toe of slope above the high water level. Typical fiber roll installation is illustrated at the end of this Section.

Gravel Bag Berm (SC-6)

A gravel bag berm or barrier can be utilized to intercept and slow the flow of sediment-laden sheet flow runoff in accordance with SC-6, "Gravel Bag Berm." In a stream environment gravel bag barriers can allow sediment to settle from runoff before water leaves the construction site and can be used to isolate the work area from the stream. Gravel bag barriers are not recommended as a perimeter sediment control practice around streams.

Straw Bale Barrier (SC-9)

Install straw bale barriers in accordance with SC-9, "Straw Bale Barrier" to control sediment. Straw bale barriers should only be installed where sediment-laden water can pond, thus allowing the sediment to settle out. Install a silt fence in accordance with SC-1, "Silt Fence" on the down-slope side of the straw bale barrier closest to stream channel to provide added sediment control.

Compost Stock (SC-8)

Compost socks are a mesh sock containing compost that act as three dimensional, biodegradable structures that intercept and filter sheet flow. Compost socks can filter runoff, retain sediment, and reduce sheet flow velocities. Compost may be pre-seeded to assist in the establishment of vegetation. Compost socks may be used as either a temporary or permanent sediment control measure.

Maintenance and Inspection

Inspect BMPs daily during construction.

Maintain and repair BMPs.

Remove accumulated sediment as necessary.

SWPPP or WPCP

Streambank Stabilization must be discussed in Section 500.3.2 of the SWPPP or Section 30.2 of the WPCP.

Section 4

Temporary Sediment Control BMP

4.1 Temporary Sediment Controls

Temporary sediment control practices include those practices that intercept and slow or detain the flow of stormwater to allow sediment to settle and be trapped. These practices can consist of installing temporary linear sediment barriers (such as silt fences, sandbag barriers, and straw bale barriers); providing fiber rolls, gravel bag berms, or check dams to break up slope length or flow; or constructing a temporary sediment/desilting basin on sediment trap. Linear sediment barriers are typically placed below the toe of exposed and erodible slopes, downslope of exposed soil areas, around temporary stockpiles, and at other appropriate locations along the site perimeter.

Temporary sediment control practices must be implemented in conformance with the criteria presented in Section 2 of this Manual and the SWPPP/WPCP Preparation Manual. Temporary sediment control practices include the BMPs listed in Table 4-1.

Table 4-1. Temporary Sediment Control BMPs

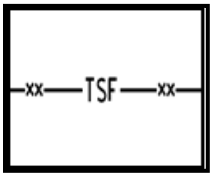
ID	BMP Name
SC-1	Silt Fence
SC-2	Sediment/Desilting Basin
SC-3	Sediment Trap/Curb Cutback
SC-4	Check Dam
SC-5	Fiber Rolls
SC-6	Gravel Bag Berm/Earthen Berm
SC-7	Street Sweeping
SC-8	Sandbag Barrier
SC-9	Straw Bale Barrier
SC-10	Temporary Drainage Inlet Protection
SC-11	Compost Sock
SC-12	Flexible Sediment Barrier

The remainder of this Section describe the working details for each of the temporary sediment control BMPs.

Temporary Silt Fence

SC-1





Standard Symbol



Definition and Purpose

A silt fence is a temporary linear sediment barrier of permeable fabric designed to intercept and slow the flow of sediment-laden sheet flow runoff. Silt fences allow sediment to settle from runoff before water leaves the construction site.

Appropriate Applications

Below the toe of exposed and erodible slopes.

Down-slope of exposed soil areas.

Around temporary stockpiles.

Along streams and channels.

Along the perimeter of a project.

Limitations

Not effective unless trenched and keyed in.

Not intended for use as mid-slope protection on slopes greater than 4:1 (H:V).

Must be maintained.

Must be removed and disposed of.

Don’t use below slopes subject to creep, slumping, or landslides.

Don't use in streams, channels, drain inlets, or anywhere flow is concentrated.

Don't use silt fences to divert flow.

Don't use in locations where ponded water may cause a flooding hazard.

Standards and Specifications

Design and Layout

The drainage area above any fence should not exceed a quarter of an acre, (100-feet of silt fence per 10,000 square feet of DSA).

Slope of area draining to silt fence should be less than 1:1 (H:V).

Silt fences must be placed parallel to the slope contour.

Silt fences rely on temporary ponding to encourage sediment deposition and achieve water quality benefits. Limit application to areas where ponding and deposition may occur on the uphill side of the silt fence.

Temporary silt fence fabrics generally have life spans ranging between five and eight months. Projects with longer durations may require replacing silt fence fabric.

Silt fences constructed across concentrated flows are susceptible to washout. Silt fences shall not be installed across concentrated flows.

For slopes adjacent to water bodies or Environmentally Sensitive Areas (ESAs), additional temporary soil stabilization BMPs should be used.

For any 50 foot section of silt fence, the elevation of the base of the fence may not vary by more than 1/3 of the fence height.

Install along a level contour, so water does not pond more than 1.5 ft at any point along the silt fence.

Join separate sections to form reaches not more than 500 feet without openings. Ensure there are no gaps between posts.

Reinforced Silt Fence

Temporary reinforced silt fence is typically used in areas affected by high winds. They are also often used on slopes steeper than 2:1 (H:V) that contain a high number of rocks or large dirt clods that tend to dislodge, or where area draining fence contains moderate sediment loads.

Temporary reinforced silt fence (type 2) may also be used to provide sediment control and delineate ESAs.

Materials

Silt fence fabric should be a woven or unwoven geosynthetic textile that complies with Section 96-1.02E of the Standard Specifications. The Contractor must submit a certificate of compliance for silt fence fabric in accordance with Standard Specifications Section 6-2.03C.

Wood posts should be untreated fir, redwood, cedar, or pine lumber. Each silt fence post should be at least 4 feet long, except reinforced silt fence posts should be at least 6 feet for Type 1 and 5 feet for Type 2 installations. Posts should be free from decay, splits or cracks longer than the thickness of the post or other defects that would weaken the posts and cause the posts to be structurally unsuitable. Steel posts may be used as well. Posts should comply with the requirements in Standard Specifications sections 16-2.03B and 13-10.02C.

Anchors may be used. Anchors consist of a number 4 steel reinforcing bar. End protection shall be provided for any exposed bar reinforcement.

Staples used to fasten the fence fabric to the posts and to join adjacent silt fence sections shall be U-shaped and have 1/2-inch legs and a 1-inch crown. Staples should be 1/16-inch in diameter. At least four staples should be installed on each silt fence post for adequate fastening, with a maximum of 8-inches between each staple.

Installation

Install in accordance with Pages 5 and 6 of this BMP (Standard Plans T51 “Temporary Silt Fence” and T60 “Temporary Reinforced Silt Fence”).

Generally, silt fences should be used in conjunction with soil stabilization source controls up slope to provide effective erosion and sediment control.

Excavate a trench that is 6-inches deep and 6-inches wide with a length consistent with the project design plans. Place the bottom of the silt fence fabric in the trench. Backfill the trench with soil over the base of the silt fence fabric. Compact the backfill soil by hand or mechanical methods.

Construct the length of each reach so that the change in base elevation along any 50-foot reach does not exceed 1/3 the height of the barrier; in no case should any reach of temporary silt fence exceed 500 feet in length.

Construct silt fences with a set-back of at least 3 feet from the toe of a slope. Where a silt fence is determined to be not practical with a 3 foot set-back from the toe due to specific site conditions, the silt fence may be constructed at the toe of the slope, but should be constructed as far from the toe of the slope as practical.

Maintenance and Inspection

Repair undercut silt fences.

Repair or replace split, torn, slumping, or weathered fabric.

Inspect silt fence when rain is forecast. Perform necessary maintenance, or maintenance required by the Engineer.

Inspect silt fence following rain events. Perform maintenance as necessary, or as required by the Engineer.

Maintain silt fences to provide an adequate sediment holding capacity. Sediment should be removed when the sediment accumulation reaches one-third (1/3) of the barrier height.

Silt fences that are damaged and become unsuitable for the intended purpose should be removed from the site of work, disposed of outside the highway right of way in conformance with the Standard Specifications, and replaced with new silt fence barriers.

Holes, depressions or other ground disturbance caused by the removal of the temporary silt fences should be backfilled and repaired in conformance with the Standard Specifications.

Remove silt fence when no longer needed. Fill and compact post holes and anchorage trench, remove sediment accumulation, and grade fence alignment to blend with adjacent ground.

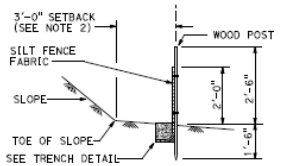
Silt Fence placement is to be shown in the WPCDs along with other BMPs.

SWPPP or WPCP

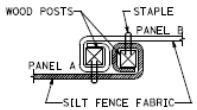
Temporary Silt Fence or Reinforced Silt Fence must be discussed in Section 500.3.3 of the SWPPP or Section 30.2.2 of the WPCP.

Temporary Silt Fence

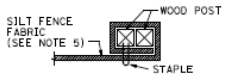
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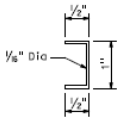
SECTION A-A
TEMPORARY SILT FENCE



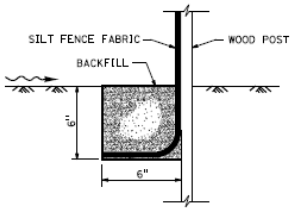
PLAN
POST AT JOINTS
(SEE NOTE 3)



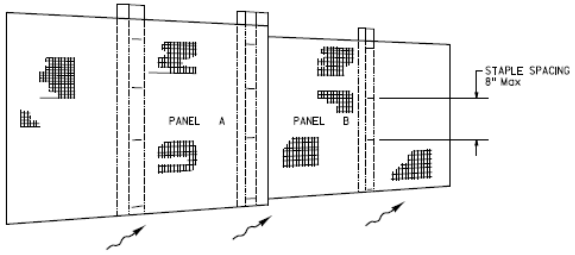
PLAN
END POST DETAIL



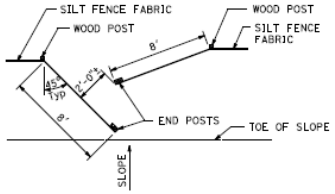
STAPLE DETAIL
(SEE NOTE 6)



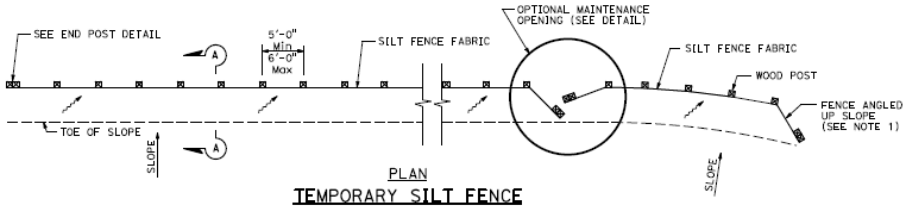
SECTION
TRENCH DETAIL



PERSPECTIVE
SILT FENCE PANELS AT JOINTS



PLAN
OPTIONAL MAINTENANCE OPENING DETAIL



PLAN
TEMPORARY SILT FENCE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Robert B Schutt
LICENSED LANDSCAPE ARCHITECT
October 30, 2015
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTES:

1. The down stream end of the temporary silt fence shall have the last 8' angled up slope.
2. Setback dimensions may vary to fit field conditions.
3. Posts to overlap and fence fabric to fold around each post one full turn. Secure fabric with 4 staples for each post.
4. Posts shall be driven tightly together to prevent potential flow-through of sediment at the joint. The tops of the posts shall be secured to each other with wire.
5. For each end post, fence fabric shall be folded around two posts one full turn and secured with 4 staples.
6. Minimum of 4 staples shall be installed per post. Dimensions shown are typical.
7. Maintenance openings shall be constructed in a manner to ensure that sediment is retained by the temporary silt fence.
8. Joint sections shall not be placed at sump locations.

LEGEND
- TAMPED BACKFILL
- SLOPE DIRECTION
- DIRECTION OF FLOW

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

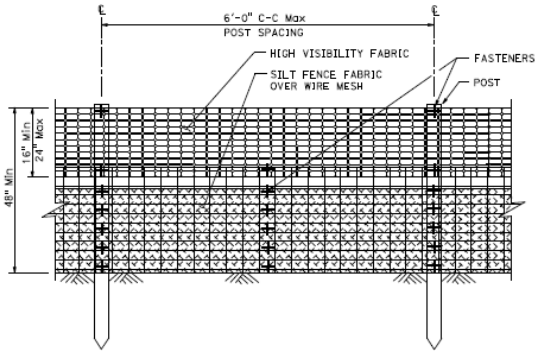
TEMPORARY WATER POLLUTION CONTROL DETAILS (TEMPORARY SILT FENCE)

NO SCALE

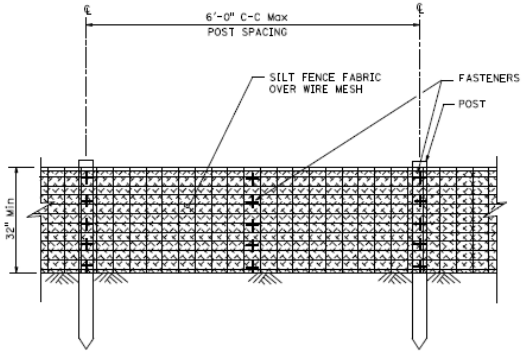
T51

Temporary Silt Fence

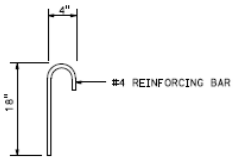
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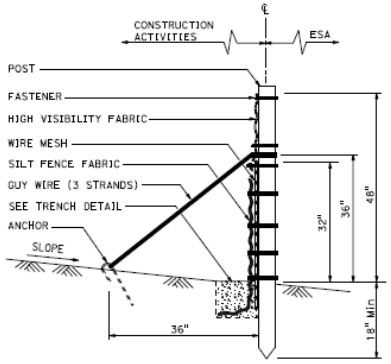
ELEVATION



ELEVATION

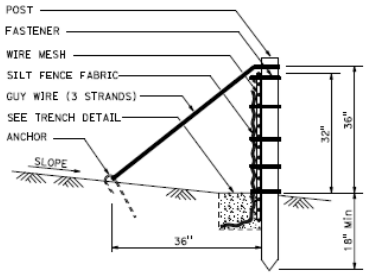


ANCHOR



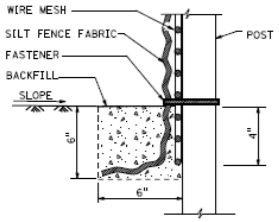
SECTION

TEMPORARY REINFORCED SILT FENCE (TYPE I)



SECTION

TEMPORARY REINFORCED SILT FENCE (TYPE 2)



SECTION

TRENCH DETAIL

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WATER POLLUTION CONTROL DETAILS (TEMPORARY REINFORCED SILT FENCE)

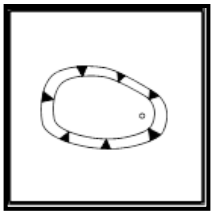
NO SCALE

T60

Sediment/Desilting Basin

SC-2





Standard Symbol

BMP Objectives	
Soil Stabilization	☐
Sediment Control	☑
Tracking Control	☐
Wind Erosion Control	☐
Non-Stormwater Management	☐
Materials and Waste Management	☐

Definition and Purpose

A sediment/desilting basin is a temporary basin formed by excavating and/or constructing an embankment so that sediment-laden runoff is temporarily detained under quiescent conditions, allowing sediment to settle out before the runoff is discharged (refer to Figures 1 through 4).

Appropriate Applications

Sediment basins shall be designed in accordance with the State of California NPDES General Permit for Storm Water Discharges Associated with Construction Activities (CGP). If there is insufficient area to construct a sediment basin in accordance with the CGP requirements, then the alternate desilting design standards specified herein may be used as approved by the RE.

Sediment/Desilting Basins should be considered for use:

- On construction projects with disturbed areas during the wetter months, typically October through May.
- Where sediment-laden water may enter the drainage system or watercourses.
- At drainage outlets of disturbed soil areas with areas between 5 and 10 ac.

Limitations

Alternative BMPs must be thoroughly investigated for erosion control before selecting temporary sediment/desilting basins.

Requires large surface areas to permit settling of sediment.

Size may be limited by availability of right-of-way.

Not appropriate for drainage areas greater than 75 ac.

Not to be located in live streams.

For safety reasons, basins should have protective fencing.

Not to be used as a standalone BMP, requires proper BMP implementation upstream and downstream of its location.

Standards and Specifications

General Requirements

Sediment basins should be designed in accordance with the methods referenced in the State of California NPDES General Permit for Storm Water Discharges Associated with Construction Activities (CGP).

Areas under embankments, structural works, and sediment basin must be cleared, stripped of vegetation in accordance with Standard Specifications Section 16 – "Temporary Facilities."

Earthwork should be in accordance with Standard Specifications Section 19 – "Earthwork." Contractor is specifically directed to Standard Specifications Sections 19 5, "Compaction," and 19 6, "Embankment Construction."

Chain link fencing should be provided around each sediment basin to prevent unauthorized entry to the basin or if safety is a concern. Fencing should be in accordance with Standard Specifications Section 80 – "Fences."

This BMP may be implemented on a project-by-project basis with other BMPs when determined necessary and feasible by the RE.

The outflow from the basins must have outlet protection to prevent erosion and scouring of the embankment and channel. See BMP SS-10, "Outlet Protection/Velocity Dissipation Devices."

Avoid dewatering of groundwater to the sediment basin during the wetter months. Insignificant quantities of accumulated precipitation may be dewatered to the sediment basin unless precipitation is forecasted within 24 hours. Refer to NS-2 "Dewatering Operations."

Other Considerations

Basin should be located: (1) by excavating a suitable area or where a low embankment can be constructed across a swale, (2) where post-construction (permanent) detention basins will be constructed, (3) where failure would not cause loss of life or property damage, (4) where the basins can be maintained on a year-round basis to provide access for maintenance, including sediment removal and sediment stockpiling in a protected area, and to maintain the basin to provide the required capacity.

Construct sediment basins prior to the rainy season and construction activities.

Sediment basins, regardless of size and storage volume, should include features to accommodate overflow or bypass flows that exceed the design storm event. The calculated basin volume and proposed location should be submitted to the RE for approval at least 3 days prior to the basin construction.

Construct an emergency spillway to accommodate flows not carried by the principal spillway. Spillway should consist of an open channel (earthen or vegetated) over undisturbed material (not fill) or constructed of a non-erodible rock slope protection.

The spillway control section, which is a level portion of the spillway channel at the highest elevation in the channel, should be a minimum of 20 ft in length.

Limit the contributing area to the sediment basin to only the runoff from disturbed soil areas. Use temporary concentrated flow conveyance controls to divert runoff from undisturbed areas away from the sediment basin.

A forebay, constructed upstream of the basin may be provided to allow debris and larger particles to settle out of suspension before entering the basin.

Basin inlets should be located to maximize travel distance to the basin outlet and resulting sediment deposition benefits.

Rock or vegetation should be used to protect the basin inlet and slopes against erosion.

The outlet structure should be placed on a firm, smooth foundation with the base securely anchored with concrete or other means to prevent floatation.

Discharge from the basin should be accomplished through a water quality outlet. An example is shown in Figure 3. The principal outlet should consist of a corrugated metal, high density polyethylene (HDPE), or reinforced concrete riser pipe with dewatering holes and an anti-vortex device and trash rack attached to the top of the riser, to prevent floating debris from flowing out of the basin or obstructing the system. This principal structure should be designed to accommodate the inflow design storm.

A rock pile or rock-filled gabions can serve as alternatives to the debris screen, although the designer should be aware of the potential for extra maintenance involved should the pore spaces in the rock pile clog.

Proper hydraulic design of the outlet is critical to achieving the desired performance of the basin. The water quality outlet should be designed to drain the basin within 24 to 96 hours (also referred to as “drawdown time”). (The 24-hour limit is specified to provide adequate settling time; the 96-hour limit is specified to avoid vector control concerns). Local agencies may have more stringent drawdown time requirements.

The two most common outlet problems that occur are: (1) the capacity of the outlet is too great resulting in only partial filling of the basin and drawdown time less than designed for; and (2) the outlet clogs because it is not adequately protected against trash and debris. To avoid these problems, the following outlet types are recommended for use: (1) a single orifice outlet with or without the protection of a riser pipe, and (2) perforated riser. Design guidance for single orifice and perforated riser outlets are as follows:

Flow Control Using a Single Orifice at the Bottom of the Basin (Figure 1)

The outlet control orifice should be sized using the following equation:

$$a = \frac{2A(H-Ho)^{0.5}}{3600CT(2g)^{0.5}} = \frac{(7x10^{-5})A(H-Ho)^{0.5}}{CT} \qquad \text{(Eq. 2)}$$

Where:

a = area of orifice (ft^2) (1 ft^2 =0.0929m^2)

A = surface area of the basin at mid elevation (ft^2)

C = orifice coefficient

T = drawdown time of full basin (hrs)

G = gravity (32.2 ft/s^2)

H = elevation when the basin is full (ft)

Ho = final elevation when basin is empty (ft)

With a drawdown time of 40 hours, the equation becomes:

$$a = \frac{(1.75x10^{-6})A(H-Ho)^{0.5}}{C} \qquad \text{(Eq. 3)}$$

Flow Control Using Multiple Orifices (See Figure 2)

$$a_t = \frac{2A(h_{\max})}{CT(2g[h_{\max} - h_{centroid\ of\ orifices}])^{0.5}} \qquad \text{(Eq. 4)}$$

With terms as described above except:

a_t = total area of orifices

h_{max} = maximum height from lowest orifice to the maximum water surface (ft)

$h_{centroid\ of\ orifices}$ = height from the lowest orifice to the centroid of the orifice configuration (ft)

Allocate the orifices evenly on two rows; separate the holes by 3x hole diameter vertically, and by 120 degrees horizontally (refer to Figure 3).

Because basins are not maintained for infiltration, water loss by infiltration should be disregarded when designing the hydraulic capacity of the outlet structure.

Care must be taken in the selection of "C"; 0.60 is most often recommended and used. However, based on actual tests, GKY (1989), "Outlet Hydraulics of Extended Detention Facilities for Northern Virginia Planning District Commission", recommends the following:

C = 0.66 for thin materials; where the thickness is equal to or less than the orifice diameter, or

C = 0.80 when the material is thicker than the orifice diameter

The Contractor should verify that the outlet is properly designed to handle the design and peak flows.

If rock is used for energy dissipation or to prevent erosion, it must comply with Highway Design Manual Chapter 860.

Attach riser pipe (watertight connection) to a horizontal pipe (barrel), which extends through the embankment to toe of fill. Provide anti-seep collars on the barrel.

Cleanout level should be clearly marked on the riser pipe.

Basins with an impounding levee greater than 5 ft tall, measured from the lowest point to the impounding area to the highest point of the levee, and basins capable of impounding more than 35,300 cubic feet, should be designed by a professional Civil Engineer registered with the state of California. The design must be submitted to the RE for approval at least 7 days prior to the basin construction. The design should include maintenance requirements, including sediment and vegetation removal, to ensure continuous function of the basin outlet and bypass structures.

Maintenance and Inspection

Inspect sediment basins before and after rainfall events and weekly year round. During extended rainfall events, inspect at least every 24 hours.

Examine basin banks for seepage and structural soundness.

Check inlet and outlet structures and spillway for any damage or obstructions. Repair damage and remove obstructions as needed.

Remove standing water from the basin within 72 hours after accumulation.

Check inlet and outlet area for erosion and stabilize if required.

Remove accumulated sediment when its volume reaches one-third the volume of the sediment storage. Properly dispose of sediment and debris removed from the basin.

Check fencing for damage and repair.

SWPPP or WPCP

Sediment/Desilting Basin must be discussed in Section 500.3.3 of the SWPPP or Section 30.2.2 of the WPCP.

Other

The drawings on subsequent pages were sourced from CASQA.

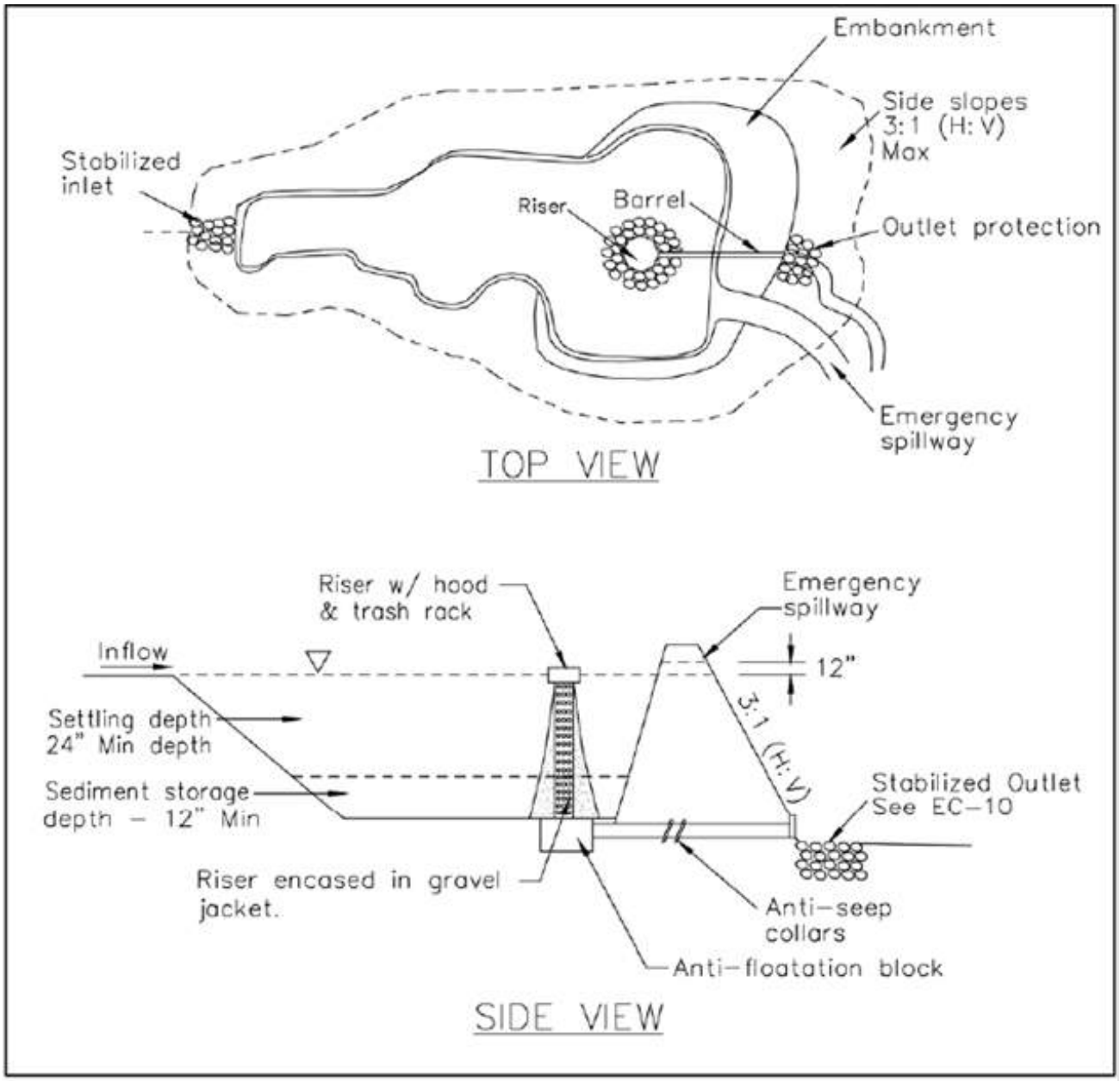


FIGURE 1: TYPICAL TEMPORARY SEDIMENT BASIN
MULTIPLE ORIFICE DESIGN
NOT TO SCALE

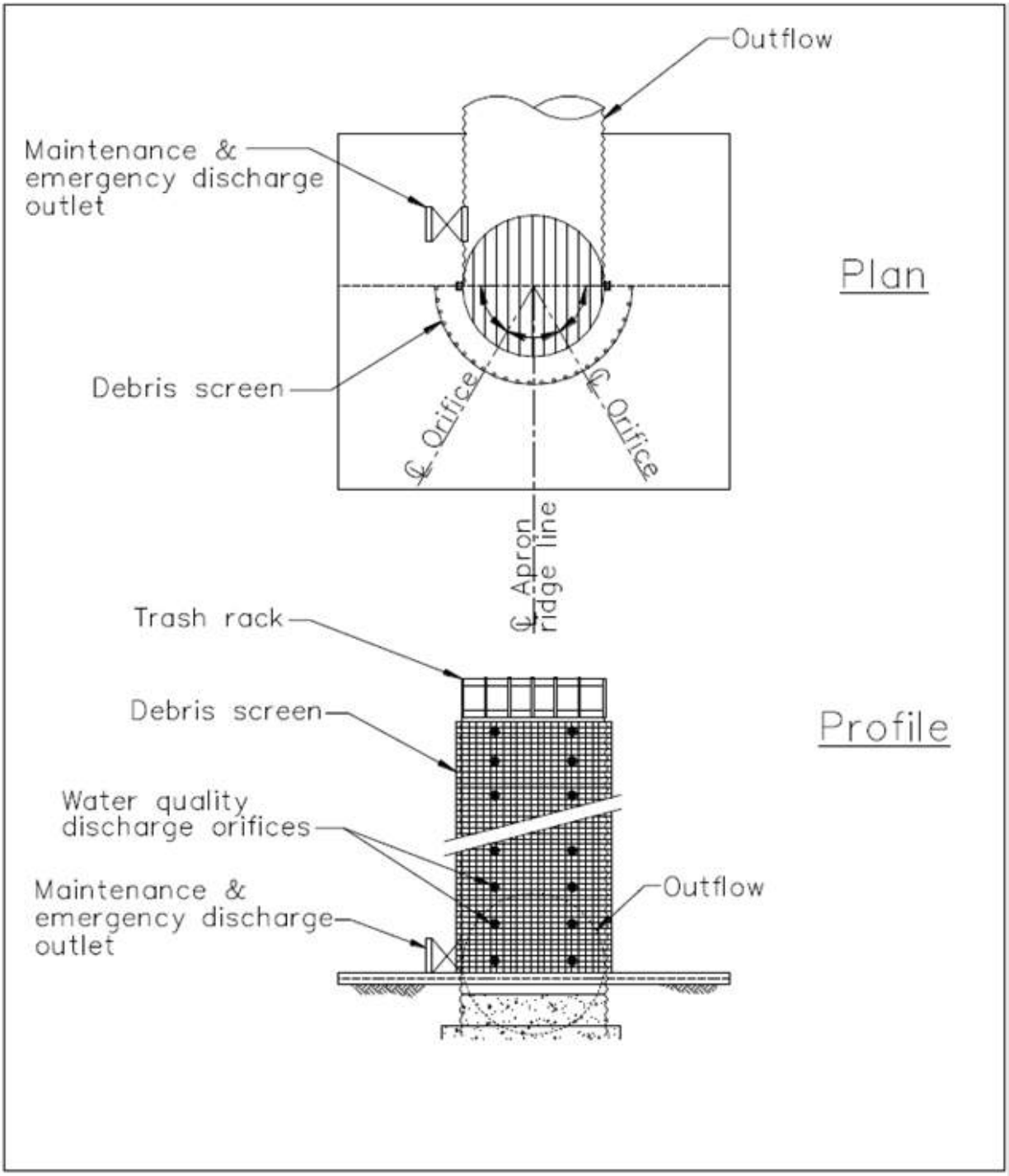


FIGURE 2: MULTIPLE ORIFICE OUTLET RISER

NOT TO SCALE

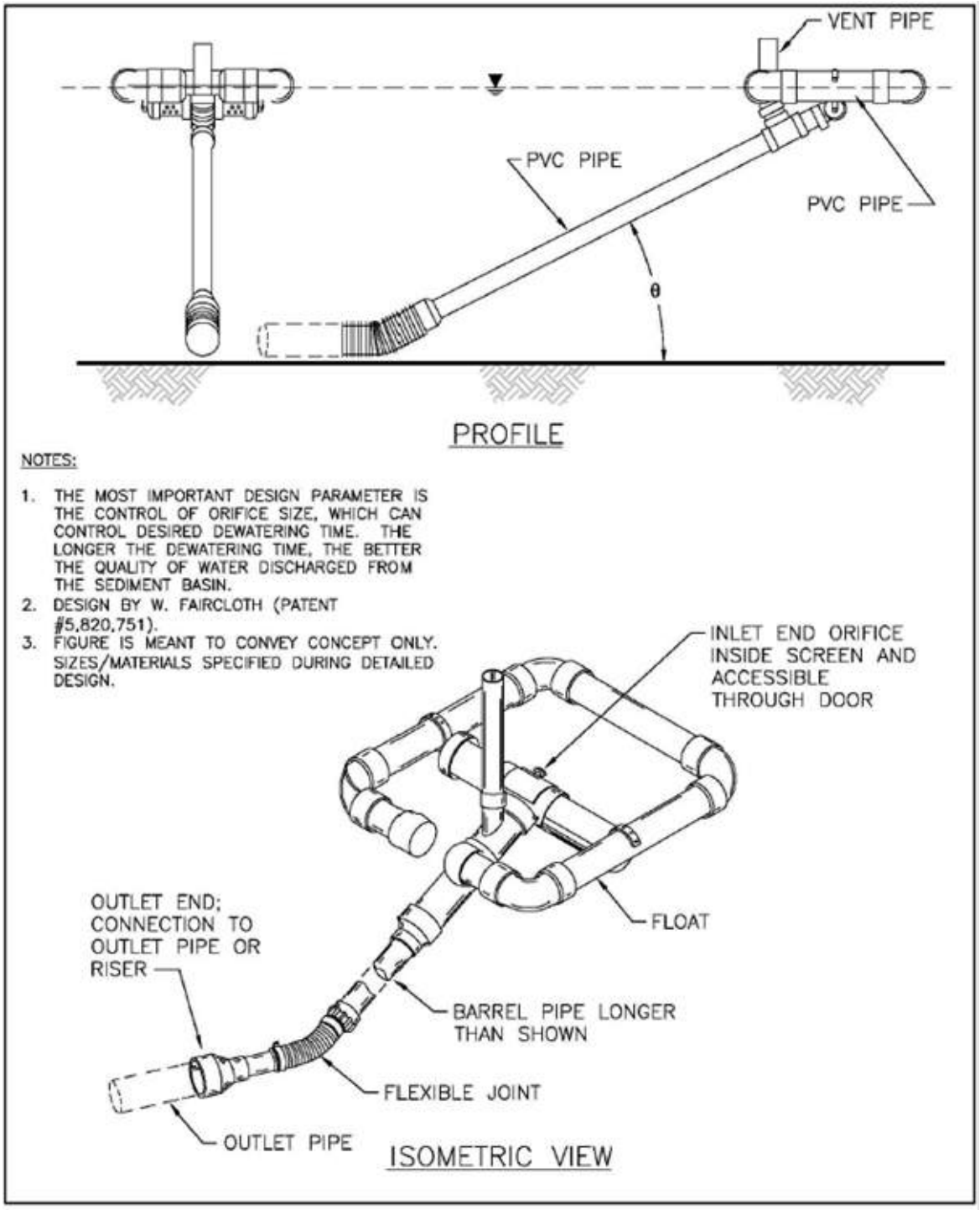


FIGURE 3: TYPICAL SKIMMER
NOT TO SCALE

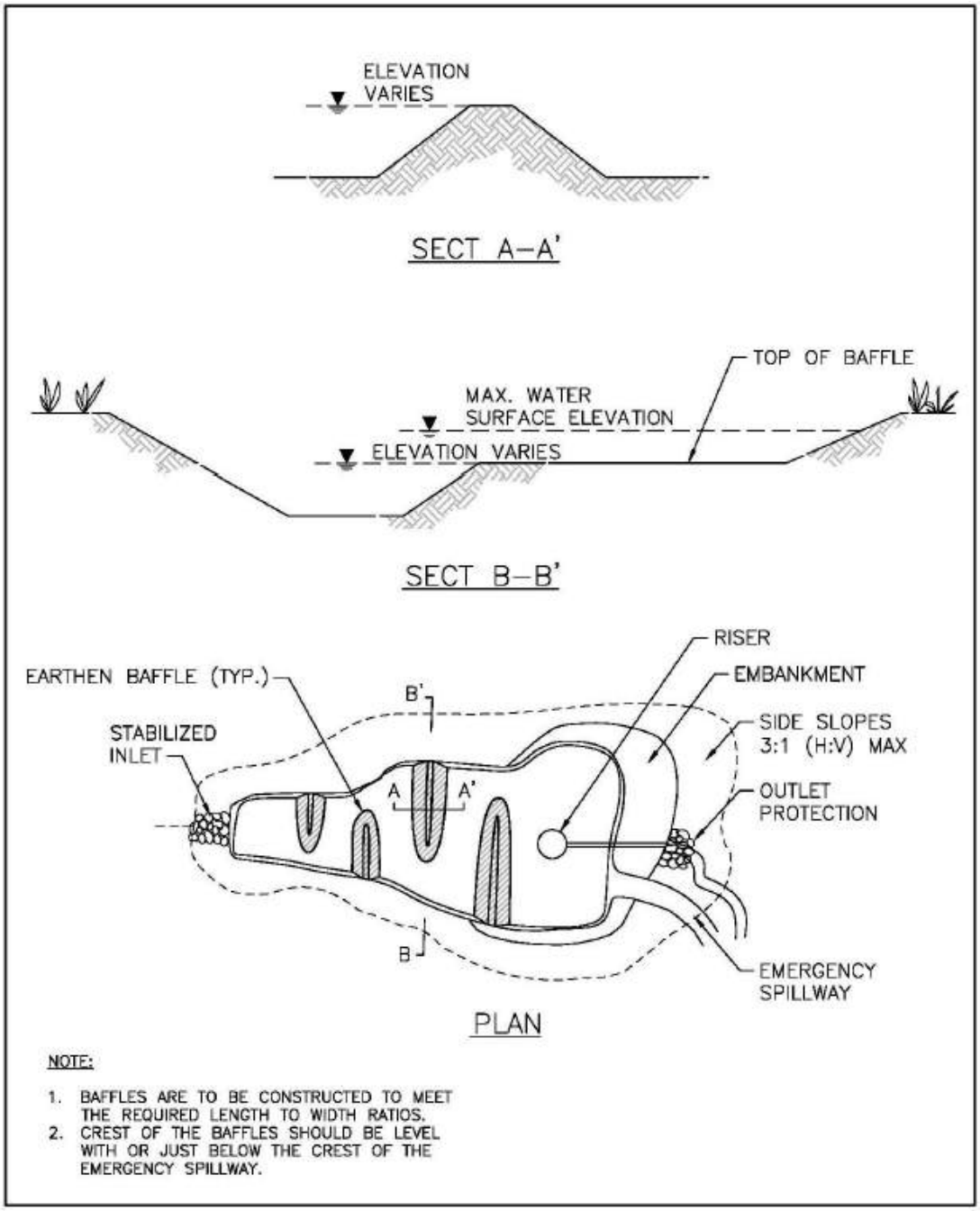
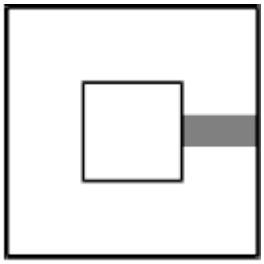


FIGURE 4: TYPICAL TEMPORARY SEDIMENT BASIN WITH BAFFLES
NOT TO SCALE

Temporary Sediment Trap/Curb Cutback

SC-3





Standard Symbol



Definition and Purpose

A sediment trap/curb cutback is a temporary containment area that allows sediment in collected storm water to settle out during infiltration or before the runoff is discharged through a stabilized spillway. Sediment traps are formed by excavating or constructing an earthen embankment.

Curb cutback is implemented when the construction project utilizes the removed section of pavement and uses the depression of the curb as a temporary containment to collect sediment before reaching a storm drain.

Appropriate Applications

Sediment traps may be used on construction projects where the drainage area is less than 5 ac. Traps should be placed where sediment-laden stormwater enters a storm drain or watercourse.

As a supplemental control, sediment traps provide additional protection for a water body or for reducing sediment before it enters a drainage system.

Limitations

Requires large surface areas to permit infiltration and settling of sediment.

Size may be limited by availability of right-of-way.

Not appropriate for drainage areas greater than 5 ac.

Temporary Sediment Trap/Curb Cutback

SC-3

Only removes large and medium sized particles and requires upstream erosion control.

Sediment traps may appear attractive and dangerous to children, requiring protective fencing.

Sediment traps should not to be located in live streams.

Curb cutback typically does not allow for a large storage area and therefore requires frequent maintenance to prevent sediment laden discharges.

Standards and Specifications

General Requirements

Areas under embankments, structural works, and sediment traps must be cleared and stripped of vegetation in accordance with Standard Specifications Section 17-2 – "Clearing and Grubbing."

Earthwork must be in accordance with Standard Specifications Section 19 – "Earthwork". Contractor is specifically directed to Standard Specifications Sections 19 5 and 19 6 entitled, "Compaction" and "Embankment Construction," respectively.

Fencing, in accordance with Standard Specifications Section 80 – "Fences," should be provided to prevent unauthorized entry.

Remove and dispose of deposited solids from sediment traps under Standard Specifications Section 14-10 – "Solid Waste Disposal and Recycling," unless another method is authorized.

This BMP may be implemented on a project-by-project basis with other BMPs when determined necessary and feasible by the RE.

The outflow from sediment traps may be provided with outlet protection to prevent erosion and scouring of the embankment and channel. See BMP SS-10, "Outlet Protection/Velocity Dissipation Devices."

For curb cutback, excavate soil from behind the curb, sidewalk, or roadway at least 3-4 inches down from the top of the hardscape and bring the soil back at a minimum 3-4 feet back from the hardscape. Site conditions might allow for increase in capacity.

Other Considerations

The sediment trap should be situated according to the following criteria: (1) by excavating a suitable area or where a low embankment can be constructed across a swale, (2) where failure would not cause loss of life or property damage, and (3) to provide access for maintenance, including sediment removal and sediment stockpiling in a protected area.

Sediment traps should be sized to accommodate a settling zone and sediment storage zone with recommended minimum volumes of 67 yd3/ac and 33 yd3/ac of contributing drainage area, respectively, based on 0.5 inch

of runoff volume over a 24-hour period. Multiple traps and/or additional volume may be required to accommodate site specific rainfall and soil conditions.

Use rock or vegetation to protect the trap outlets against erosion.

Traps with an impounding levee greater than 4.5 ft tall, measured from the lowest point to the impounding area to the highest point of the levee, and traps capable of impounding more than 35,000 cubic feet, must be designed by a Civil Engineer registered with the state of California. The design must be submitted to the RE for approval at least 7 days prior to the basin construction. The design should include maintenance requirements to ensure continuous function of the trap outlet and bypass structures.

Maintenance and Inspection

Inspect sediment traps/curbs before, during and after rainfall events and weekly year-round. During extended rainfall events, inspect sediment traps at least every 24 hours.

If captured runoff has not completely infiltrated within 96 hours, then the sediment trap must be dewatered.

Inspect trap banks for embankment seepage and structural soundness.

Inspect outlet structure and rock spillway for any damage or obstructions. Repair damage and remove obstructions as needed or as directed by the RE.

Inspect outlet area for erosion and stabilize if required, or as directed by the RE.

Remove accumulated sediment when the volume has reached one-third the original trap volume.

Inspect fencing for damage and repair as needed or as directed by the RE.

Temporary Sediment Trap/ Curb Cutback locations must be shown in the WPCDs along with other BMPs.

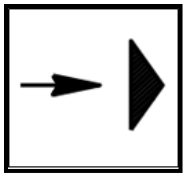
SWPPP or WPCP

Temporary Sediment Trap/ Curb Cutback must be discussed in Section 500.3.3 of the SWPPP or Section 30.2.2 of the WPCP.

Check Dams

SC-4





Standard Symbol



Definition and Purpose

Temporary check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, compost socks, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

Appropriate Applications

Check dams may be installed:

- In small open channels that drain 10 ac or less.
- In steep channels where storm water runoff velocities exceed 5 ft/sec.
- During the establishment of grass linings in drainage ditches or channels.
- In temporary ditches where the short length of service does not warrant establishment of erosion-resistant linings.

This BMP may be implemented on a project-by-project basis with other BMPs when determined necessary and feasible by the RE.

Limitations

Not to be used in live streams.

Not appropriate in channels that drain areas greater than 10 ac.

Not to be placed in channels that are already grass lined unless erosion is expected, as installation may damage vegetation.

Require extensive maintenance following high velocity flows.

Promotes sediment trapping, which can be re-suspended during subsequent storms or removal of the check dam.

Not to be constructed from straw bales or silt fence.

Standards and Specifications

General Requirements

Remove obstructions, rocks, clods, and debris greater than 1 inch in diameter from the ground before installing temporary check dams.

If check dams are used in combination with Rolled Erosion Control Product (RECP) or blanket, install the RECP or blanket first.

Place a temporary check dam perpendicular to the centerline of the ditch or drainage line.

Install the check dam with enough spillway depth to prevent flanking of a concentrated flow around its ends.

Type 1 or Type 2 check dams are appropriate for unlined ditches. Type 2 check dams are appropriate if the ditch is concrete lined.

Fiber Roll (Type 1) Check Dam

Refer to SC-5 “Fiber Rolls.”

Secure the fiber rolls with rope and notched wood stakes.

Drive the stakes into the soil until the notch is even with the top of the fiber roll.

Lace rope between the stakes and over the fiber roll. Knot the rope at each stake.

Tighten by driving the stakes further into the soil and forcing the fiber roll against the surface of the ditch or drainage line.

Gravel Filled Bag (Type 2) Check Dam

Bag Material:

Bags are a geosynthetic material, either polypropylene, polyethylene or polyamide woven fabric, minimum unit weight 4 ounces per yd2, mullen burst strength exceeding 300 psi in conformance with the requirements in ASTM designation D3786, and ultraviolet stability exceeding 70% in conformance with the requirements in ASTM designation D4355.

Bag Size:

Each gravel-filled bag shave a length of 24 in to 32 in, width of 16 in to 20 in, and thickness of 3 in. Alternative bag sizes must be submitted to the RE for approval prior to deployment.

Gravel:

Fill material is between 3/8 and 3/4 inch in diameter, and must be clean and free from clay balls, organic matter, and other deleterious materials. The opening of gravel-filled bags should be secured such that gravel does not escape. Gravel-filled bags are between 30 and 50 lb in weight. Fill material is subject to approval by the RE.

Place a Type 2 temporary check dam as a single layer of gravel-filled bags, placed end-to-end to eliminate gaps.

If you need to increase the height of the dam, add more layers of gravel-filled bags. Stack the bags in the upper row to overlap the joints in the lower row. Stabilize the rows by adding more rows of bags in the lower layers.

Tightly abut bags and stack gravel bags using a pyramid approach. Gravel bags should not be stacked any higher than 3 ft.

Upper rows of gravel bags should overlap joints in lower rows.

Other Considerations

Check dams should be placed at a distance and height to allow small pools to form behind them. Install the first check dam approximately 15 ft from the outfall device and at regular intervals based on slope gradient and soil type.

For multiple check dam installation, backwater from downstream check dam should reach the toe of the upstream dam.

High flows (typically a 2-year storm or larger) should safely flow over the check dam without an increase in upstream flooding or damage to the check dam.

Where grass is used to line ditches, check dams should be removed when grass has matured sufficiently to protect the ditch or swale from erosion.

Check dam materials should consist of biodegradable materials whenever feasible.

Rock check dams might be more applicable if concentrated flows might be a potential.

Maintenance and Inspection

Check dams must be inspected at a minimum weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.

Replace missing rock, bags, fiber rolls, etc. that have degraded or become damaged.

Remove sediment when depth reaches one-third of the check dam height.

Remove accumulated sediment prior to permanent seeding or soil stabilization.

Remove check dam and accumulated sediment when check dams are no longer needed or when directed by the RE.

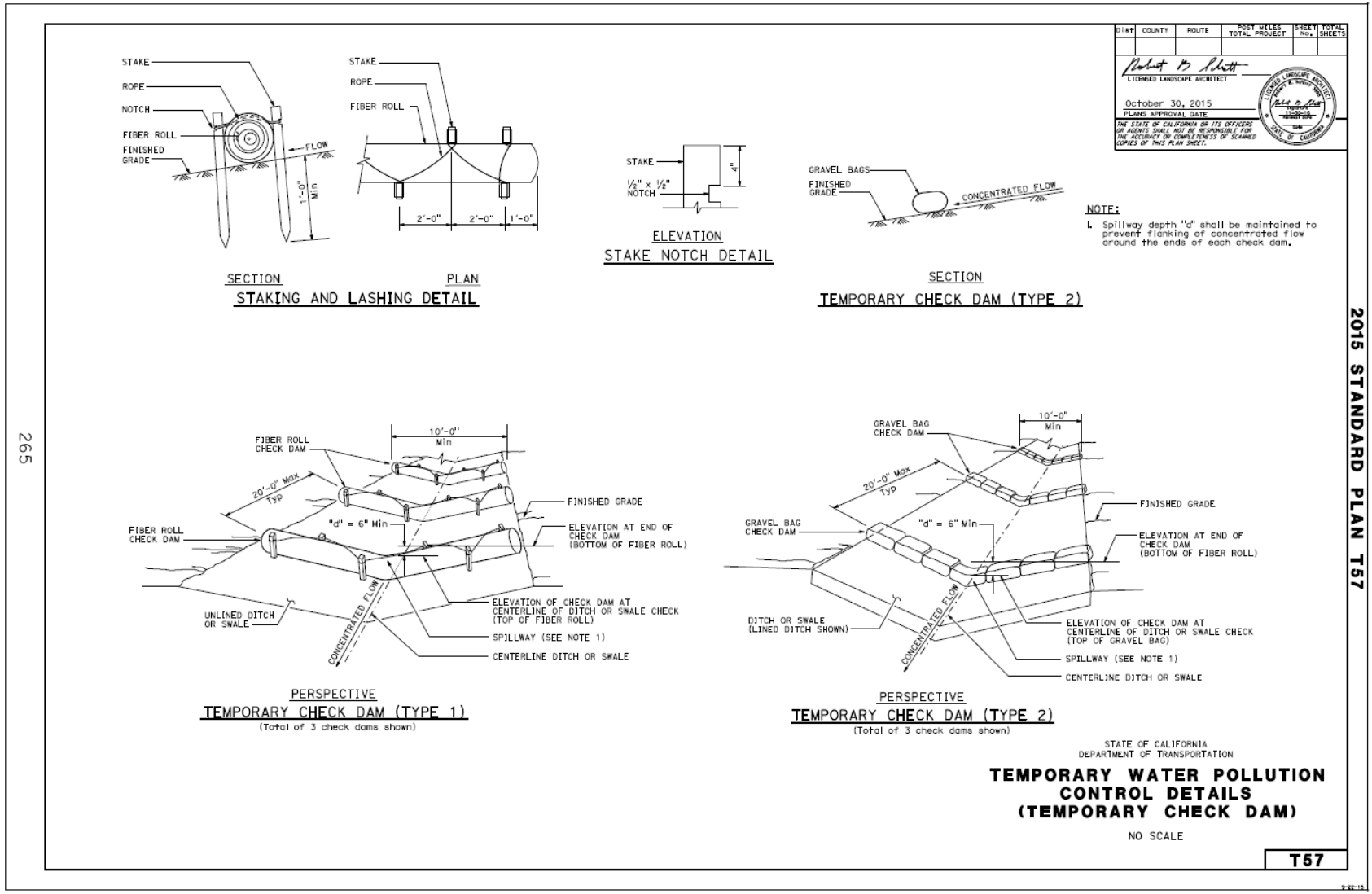
Removed sediment can be incorporated in the project at locations designated by the RE or disposed of outside the highway right of way in conformance with the Standard Specifications.

SWPPP or WPCP

Temporary Check Dams must be discussed in Section 500.3.3 of the SWPPP or Section 30.2.2 of the WPCP.

Check Dams

SC-4



Fiber Rolls

SC-5





Standard Symbol



Definition and Purpose

A fiber roll consists of wood excelsior, rice or wheat straw, or coconut fibers that is rolled or bound into a tight tubular roll and placed on the toe and face of slopes to intercept runoff, reduce its flow velocity, release the runoff as sheet flow and provide removal of sediment from the runoff. Fiber rolls may also be used for drainage inlet protection and as check dams under certain situations.

Appropriate Applications

This BMP may be implemented on a project-by-project basis with other BMPs when determined necessary and feasible by the RE.

Fiber rolls may be applied as both temporary and permanent sediment controls.

Along the toe, top, face, and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.

Below the toe of exposed and erodible slopes.

Fiber rolls may be used as check dams in unlined ditches or as temporary drainage inlet protection Down-slope of exposed soil areas.

Around temporary stockpiles.

Along the perimeter of a project.

Limitations

Runoff and erosion may occur if fiber roll is not adequately trenched in.

Fiber rolls at the toe of slopes greater than 5:1 (H:V) may require the use of a large sediment barrier as specified in Standard Specifications Section 13-10.03D Temporary Large Sediment Barrier or installations achieving the same protection (i.e., stacked smaller diameter fiber rolls, etc.).

Difficult to move once saturated.

Fiber rolls could be transported by high flows if not properly staked and trenched in.

Fiber rolls have limited sediment capture zone.

Do not use fiber rolls on slopes subject to creep, slumping, or landslide.

Plastic netting should not be used when regulatory permits prohibit their use or if there is a potential for plastic netting to endanger wildlife.

Plastic netting is only allowed where fiber rolls will be for short duration and will be removed.

Standards and Specifications

Materials

Fiber rolls must be premanufactured and filled with weed-free rice or wheat straw, wood excelsior, or coconut fiber. Fiber roll must be covered with biodegradable jute, sisal, or coir fiber netting secured tightly at each end.

Fiber rolls must have a minimum functional longevity of 1 year.

Fiber rolls must be:

- 8 to 10 inches in diameter and at least 1.1 lb/ft
- 10 to 12 inches in diameter and at least 3 lb/ft

Large sediment barriers are a subset of fiber rolls. Large sediment barriers must be:

- 18 to 22 inches in diameter
- At least 8 ft in length
- At least 6.5 lb/ft

Fiber rolls used within the jurisdiction of the Lahontan RWQCB must be made entirely of biodegradable materials if the project is near an ESA area, they are intended to be left in place after construction is completed or there are regulatory permits prohibiting the use of non-photo/biodegradable fiber rolls.

Submit a Certificate of Compliance for fiber rolls.

Rope to fasten fiber rolls must be 1/4 inch in diameter and biodegradable, such as sisal or manila.

Wood stakes must be untreated fir, redwood, cedar, or pine and cut from sound timber. The ends must be pointed for driving into the ground. Notched stakes must be at least 1 by 2 by 24 inches in size. Stakes without notches must be at least 1 by 1 by 24 inches.

Typical Fiber Roll Installation

Before installing fiber roll, remove obstructions from the ground, including rocks, clods, and debris greater than 1 inch in diameter.

For any 20-foot section of fiber roll, prevent the fiber roll from varying more than 5 percent from level.

Use the following spacing unless otherwise noted on the project plans or special provisions:

- 10 feet apart for slopes steeper than 2:1 (H:V)
- 15 feet apart for slopes from 2:1 to 4:1 (H:V)
- 20 feet apart for slopes from 4:1 to 10:1 (H:V)
- 50 feet apart for slopes flatter than 10:1 (H:V)

For Type 1 installations:

- Place in a furrow that is from 2 to 4 inches deep.
- Fasten with wood stakes every 4 feet along the length of the fiber roll.
- Fasten the ends of the fiber roll by placing a stake 6 inches from the end of the roll.
- Drive the stakes into the soil so the top of the stake is less than 2 inches above the top of the fiber roll.

For Type 2 installations:

- Fasten with notched wood stakes and rope.
- Drive stakes into the soil until the notch is even with the top of the fiber roll.
- Lace the rope between stakes and over the fiber roll. Knot the rope at each stake.
- Tighten the fiber roll to the surface of the slope by driving the stakes further into the soil.

If more than one fiber roll is placed in a row, the rolls should be overlapped; not abutted. Stagger overlapping joints in adjacent rows by 5 to 10 feet.

Typical Large Sediment Barrier Installation

Place a single row of fiber rolls end-to-end, approximately parallel with the slope contour. For any 20-foot section of fiber roll, do not allow the fiber roll to vary by more than 5 percent from level.

Place the fiber rolls in a furrow that is from 6 to 8 inches deep.

Secure the fiber rolls with wood stakes 4 feet apart.

Place a stake 18 inches from each end of each fiber roll.

Drive the stakes into the soil such that the top of the stakes are less than 2 inches above the top of the fiber rolls.

Angle the last 6 feet upslope at the downhill end of the run.

Removal

For permanent installations, do not remove fiber rolls. Fiber rolls will degrade over time, while underlying soils are stabilized by other BMPs.

For temporary installations, remove fiber rolls, collect and dispose of sediment accumulation, and fill and compact holes, trenches, depressions or any other ground disturbance to blend with adjacent ground.

Maintenance and Inspection

Remove sediment from behind the fiber roll if sediment is 1/3 of fiber roll height above ground.

Repair or adjust the fiber roll if rills or other evidence of concentrated runoff occur beneath the fiber roll.

Repair or replace the fiber roll if they become split, torn, or unraveled.

Add stakes if the fiber roll slumps or sags.

Replace broken or split wood stakes.

Remove sediment deposits, trash, and debris from fiber roll as needed. If removed sediment is deposited within project limits, it must be stabilized and not exposed to erosion by wind or water.

Perform maintenance as needed or as required by the RE or CGP or LTCGP requirements.

Inspect fiber rolls before and following rainfall events and a least daily during prolonged rainfall. Perform maintenance as needed or as required by the RE.

Maintain fiber rolls to provide an adequate sediment holding capacity and runoff velocity reduction.

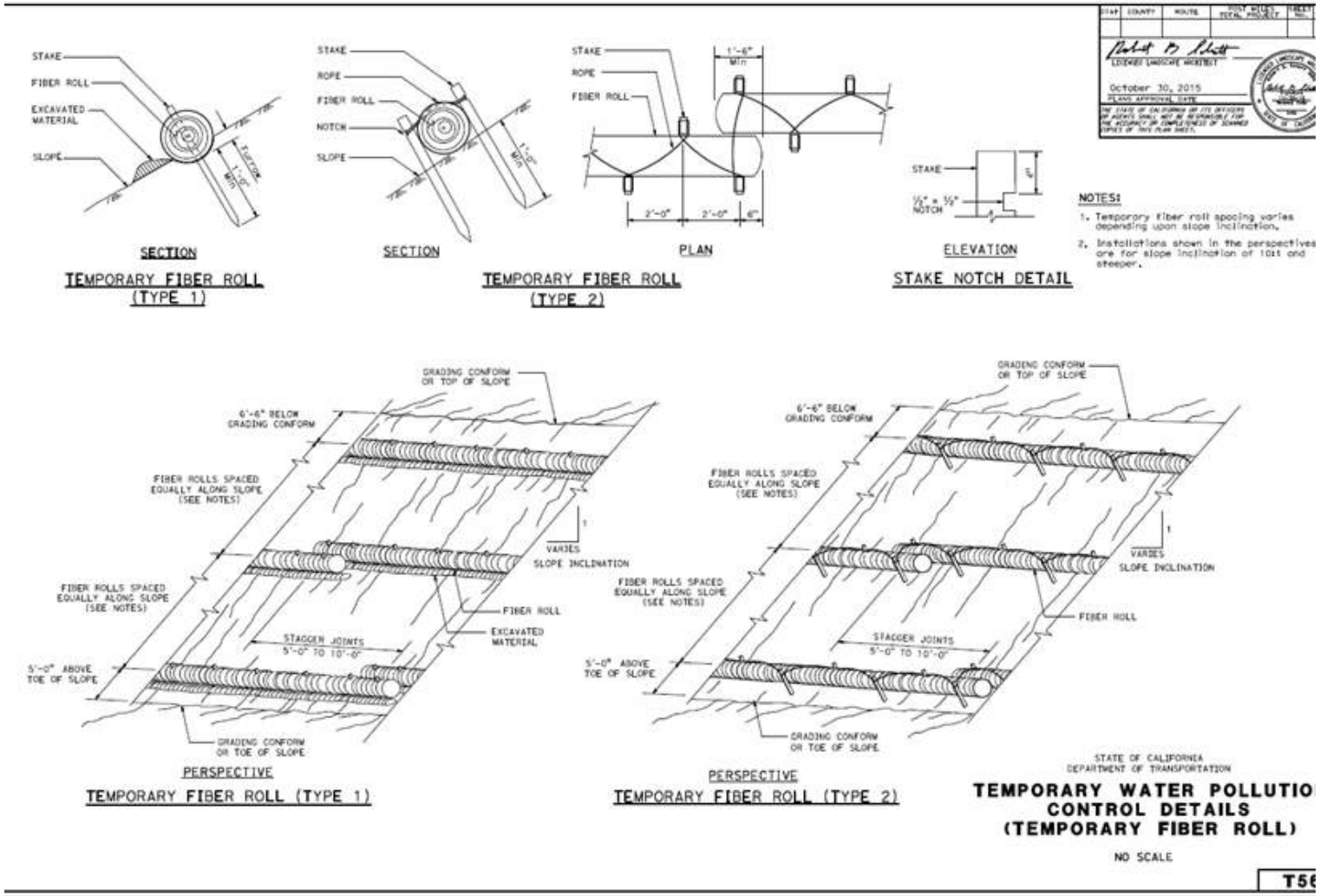
Fiber roll placement must be shown on the WPCDs.

SWPPP or WPCP

Fiber rolls must be discussed in Section 500.3 of the SWPPP or Section 30.2 of the WPCP.

Fiber Rolls

SC-5



STATE	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.

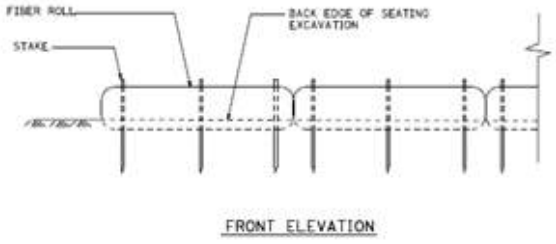
LICENSED LANDSCAPE ARCHITECT

October 30, 2015
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

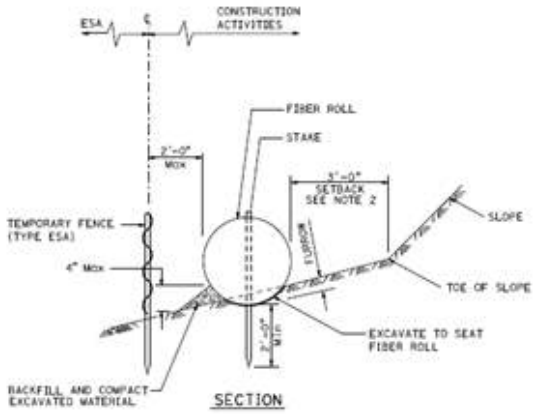
NOTES:

1. Temporary fence (Type ESA) shown for reference purposes only.
2. Setback dimension may vary according to field conditions or as designated on plans



FRONT ELEVATION

TEMPORARY LARGE SEDIMENT BARRIER



SECTION

PLACEMENT DETAIL
FOR TEMPORARY FENCE (TYPE ESA)
USED WITH TEMPORARY LARGE SEDIMENT BARRIER
(See Note 1)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WATER POLLUTION CONTROL DETAILS (TEMPORARY LARGE SEDIMENT BARRIER

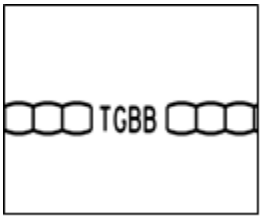
NO SCALE

T66

Gravel Bag/Earthen Berm

SC-6





Standard Symbol



Definition and Purpose

A gravel bag berm consists of a single row of gravel bags that are installed end to end to form a barrier across a slope to intercept runoff, reduce its flow velocity, release the runoff as sheet flow and provide some sediment removal. Gravel bags can be used where flows are moderately concentrated, such as ditches, swales, and storm drain inlets (see SC-10 "Drainage Inlet Protection") to divert and/or detain flows.

Earthen berms are linear sediment barriers designed to intercept sheet flows. Water gets impounded upstream of the earthen berm, allowing sediment to settle out and releasing runoff as sheet flow, preventing erosion.

Appropriate Applications

BMP may be implemented on a project-by-project basis with other BMPs when determined necessary and feasible by the RE.

Along streams and channels.

Below the toe of exposed and erodible slopes.

Down slope of exposed soil areas.

Around stockpiles.

Across channels to serve as a barrier for utility trenches or provide a temporary channel crossing for construction equipment, to reduce stream impacts.

Parallel to a roadway to keep sediment off paved areas.

At the top of slopes to divert roadway runoff away from disturbed slopes.

Along the perimeter of a site.

To divert or direct flow or create a temporary sediment basin.

During construction activities in stream beds when the contributing drainage area is less than 5 ac.

When extended construction period limits the use of either silt fences or straw bale barriers.

When site conditions or construction sequencing require adjustments or relocation of the barrier to meet changing field conditions and needs during construction.

At grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.

Limitations

Degraded gravel bags may rupture when removed, spilling contents.

Installation can be labor intensive.

Limited durability for long term projects.

When used to detain concentrated flows, maintenance requirements increase.

Earthen berms should not be used to intercept flows with moderate to high velocities that may erode the earthen berm.

Earthen berms are susceptible to erosion from concentrated flows.

Standards and Specifications

Materials

Bag Material

The gravel bag material must comply with Section 96-1.02F Gravel-Filled Bag of the Standard Specifications.

Bag Size

Each gravel-filled bag should have a length of 24 to 32 inches, width of 16 to 20 inches, and thickness of 3 inches. Alternative bag sizes must be submitted to the RE for approval prior to deployment.

Gravel

Fill material should be between 3/8 and 3/4 inch in diameter, and be clean and free from clay balls, organic matter, and other deleterious materials. The opening of gravel-filled bags must be secured such that gravel

does not escape. Gravel-filled bags are between 30 and 50 lb in weight. Fill material is subject to approval by the RE.

Earthen berms must comply with Standard Specifications Section 13-10.03I

Installation

When used as a linear control for sediment removal:

- Install along a level contour.
- Place gravel-filled bags end-to-end to eliminate gaps in a gravel bag berm.
- Angle the last 6 feet upslope at the downhill end of the run.
- Stack the bags such that the upper row overlaps the joints in the lower row.
- Add layers of gravel-filled bags to increase the height of a temporary gravel bag berm if needed. Stack the bags in the upper row to overlap the joints in the lower row. Stabilize the rows by adding rows of bags in the lower layers.

Generally, gravel bag barriers can be used in conjunction with temporary soil stabilization controls up slope.

Construct gravel bag barriers with a set-back from the toe of a slope. Where it is determined to be not practicable due to specific site conditions, the gravel bag barrier may be constructed at the toe of the slope, but be constructed as far from the toe of the slope as practicable.

Refer to SC-4 “Check Dams” when used for concentrated flows.

Submit a certificate of compliance for gravel-filled bag material.

Earthen berms are constructed with either native soil or an alternative selected material.

Earthen berms must be at least 8 inches in height and 36 inches in width.

Earthen berms must be compacted by manual or mechanical methods.

Maintenance and Inspection

Gravel bag/earthen berms must be inspected in accordance with CGP requirements for the associated project type and risk level or with LTCGP. At a minimum, BMPs must be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.

Reshape or replace gravel bags as needed, or as directed by the RE.

Repair washouts or other damages as needed, or as directed by the RE.

Inspect gravel bag/earthen berms for sediment accumulations and remove sediment when accumulation reaches one-third of the berm height. Removed sediment can be incorporated in the project at locations designated by the RE or disposed of outside the highway right of way in conformance with the Standard Specifications.

Remove gravel bag berms when no longer needed. Remove sediment accumulations and clean, re-grade, and stabilize the area.

If using earthen berm, ensure soil remains compacted through the duration of the berm

Maintain earthen berms to provide sediment-holding capacity and to reduce concentrated flow velocities.

Repair the berm if rills or other evidence of concentrated runoff over it.

Gravel Bag/Earthen Berm placement must be shown on the WPCDs and reflect site conditions.

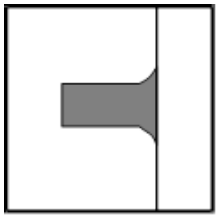
SWPPP or WPCP

Gravel Bag/Earthen Berm must be discussed in Section 500.3 SWPPP or Section 30.2 of the WPCP.

Street Sweeping

SC-7





Standard Symbol

BMP Objectives

Soil Stabilization	☐
Sediment Control	☑
Tracking Control	☑
Wind Erosion Control	☑
Non-Stormwater Management	☐
Materials and Waste Management	☐

Definition and Purpose

Practices to remove tracked sediment to prevent the sediment from entering a storm drain or receiving waters.

Appropriate Applications

These practices are implemented anywhere sediment is tracked from the project site onto public or private paved roads, typically at jobsite entrances and exits.

Limitations

Sweeping and vacuuming may not be effective when soil is wet or muddy.

Standards and Specifications

General Requirements

Sweep by hand or mechanical methods, such as vacuuming. Kick brooms or sweeper attachments may not be used.

At least one street sweeper in good working order must be at the job site at all times when street sweeping work is required.

Use one of the following types of street sweepers:

- Mechanical sweeper followed by a vacuum-assisted sweeper;
- Vacuum-assisted, dry, waterless, sweeper; or
- Regenerative-air sweeper.

Submit the number and type of street sweepers that will be used on the project for each activity at least 5 business days before starting the activities listed above. Keep and submit street sweeping activity records including sweeping times, locations, and the quantity of material collected.

Sweep paved roads at construction entrance and exit locations and onsite paved areas:

- During clearing and grubbing, earthwork, trenching, and pavement-structure construction activities.
- When vehicles are entering and leaving the job site.
- After soil-disturbing activities.
- After observing off-site tracking of material.

Sweep within 1 hour if sediment or debris is observed during the activities described above that require sweeping.

Sweep within 24 hours if sediment or debris is observed during activities that do not require sweeping.

Keep dust to a minimum during street sweeping activities. Use water for dust control or a vacuum whenever dust generation is excessive or sediment pickup is ineffective. Refer to WE-1 for "Wind Erosion Control" BMPs.

Remove collected material, including sediment, from paved shoulders, drainage inlets, curbs and dikes, and other drainage areas.

After sweeping is finished, collected material may be stockpiled. If not mixed with debris, trash or potentially hazardous objects, consider incorporating the removed sediment back into the project if approved by the RE. Otherwise, dispose of stockpiled material at least once per week according to Standard Specifications Section 14-10.

Street sweeping does not void the requirements for residue collection included in other work activities, such as grooving, grinding, or asphalt concrete planing.

Maintenance and Inspection

Inspect potential sediment tracking locations daily.

Monitor and inspect tracking control BMPs such as TC-1, "Temporary Construction Entrance/Exit," to reduce sediment accumulation on roads.

Be careful not to sweep up any unknown substance or any object that may be potentially hazardous.

Adjust brooms frequently; maximize efficiency of sweeping operations.

Sweeper material must be disposed in compliance with waste regulations.

Street Sweeping

SC-7

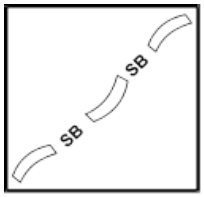
SWPPP or WPCP

Street Sweeping must be discussed in Section 500.3.4 and 600.2 of the SWPPP or Section 30.2.3 of the WPCP.

Sandbag Barrier

SC-8





Standard Symbol



Definition and Purpose

A sandbag barrier is a temporary linear sediment barrier consisting of stacked sandbags, designed to intercept and slow the flow of sediment-laden sheet flow runoff. Sandbag barriers allow sediment to settle from runoff before water leaves the construction site.

Appropriate Applications

Along the perimeter of a site.

Along streams and channels.

Below the toe of exposed and erodible slopes.

Down slope of exposed soil areas.

Around stockpiles.

Across channels to serve as a barrier for utility trenches or provide a temporary channel crossing for construction equipment, to reduce stream impacts.

Parallel to a roadway to keep sediment off paved areas.

At the top of slopes to divert roadway runoff away from disturbed slopes.

To divert or direct flow or create a temporary sediment/desilting basin.

During construction activities in stream beds when the contributing drainage area is less than 5 ac.

When extended construction, period limits the use of either silt fences or straw bale barriers.

Along the perimeter of vehicle and equipment fueling and maintenance areas or chemical storage areas.

To capture and detain non-stormwater flows until proper cleaning operations occur.

When site conditions or construction sequencing require adjustments or relocation of the barrier to meet changing field conditions and needs during construction.

To temporarily close or continue broken, damaged or incomplete curbs.

Limitations

Limit the drainage area upstream of the barrier to 5 ac.

Degraded sandbags may rupture when removed, spilling sand.

Installation can be labor intensive.

Limited durability for long-term projects.

When used to detain concentrated flows, maintenance requirements increase.

Consider using gravel bags whenever possible since they often do not require as much maintenance or impact wildlife when used near ESAs.

Standards and Specifications

Materials

Sandbag Material

Sandbag can be woven polypropylene, polyethylene or polyamide fabric, minimum unit weight four ounces per square yard, mullen burst strength exceeding 300 psi in conformance with the requirements in ASTM designation D3786, and ultraviolet stability exceeding 70% in conformance with the requirements in ASTM designation D4355. Use of burlap is not acceptable.

Sandbag Size

Each sand-filled bag should have a length of 18 in, width of 12 in, thickness of 3 in, and mass of approximately 33 lb. Bag dimensions are nominal, and may vary based on locally available materials. Alternative bag sizes must be submitted to the RE for approval prior to deployment.

Fill Material

All sandbag fill material can be non-cohesive, Class 1 or Class 2 permeable material free from clay and deleterious material, conforming to the provisions in Standard Specifications Section 47-2.02D “Permeable Material”. The requirements for the Durability Index and Sand Equivalent do not apply. Fill material is subject to approval by the RE.

Installation

When used as a linear sediment control:

- Install along a level contour.
- Turn ends of sandbag row up slope to prevent flow around the ends.
- Generally, sandbag barriers may be used in conjunction with temporary soil stabilization controls up slope to provide effective erosion and sediment control.

Construct sandbag barriers with a set-back of at least 3 ft from the toe of a slope. Where it is determined to be not practical due to specific site conditions, the sandbag barrier may be constructed at the toe of the slope, but should be constructed as far from the toe of the slope as practicable.

Maintenance and Inspection

Inspect sandbag barriers before and after each rainfall event, and weekly year round.

Reshape or replace sandbags as needed, or as directed by the RE.

Repair washouts or other damages as needed, or as directed by the RE.

Inspect sandbag barriers for sediment accumulations and remove sediments when accumulation reaches one-third the barrier height. Removed sediment can be incorporated in the project at locations designated by the RE or disposed of outside the highway right of way in conformance with the Standard Specifications 14-10.

Remove sandbags when no longer needed. Remove sediment accumulation, and clean, re-grade, and stabilized the area.

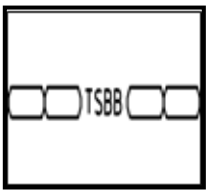
SWPPP or WPCP

Sandbag Barrier must be discussed in Section 500.3 of the SWPPP or Section 30.2 of the WPCP.

Straw Bale Barrier

SC-9





Standard Symbol



Definition and Purpose

A straw bale barrier is a temporary linear sediment barrier consisting of straw bales, designed to intercept and slow sediment-laden sheet flow runoff. Straw bale barriers allow sediment to settle from runoff before water leaves the construction site.

Appropriate Applications

Along the perimeter of a site.

Along streams and channels.

Below the toe of exposed and erodible slopes.

Down slope of exposed soil areas.

Around stockpiles.

Across minor swales or ditches with small catchments.

Around above grade type temporary concrete washouts (see WM-8, "Concrete Waste Management").

Parallel to a roadway to keep sediment off paved areas.

Limitations

Installation can be labor intensive.

Straw bale barriers are maintenance intensive.

Degraded straw bales may fall apart when removed or left in place for extended periods.

Can't be used on paved surfaces.

Not to be used for drain inlet protection.

Not to be used in areas of concentrated flow.

Can be an attractive food source for some animals.

May introduce undesirable non-native plants to the area.

Standards and Specifications

Materials

Straw must conform to the provisions in Standard Specifications Section 21-2.02H, "Straw."

Each straw bale should be a minimum of 14 in wide, 18 in high, 36 in long and shave a minimum weight of 50 lb.

The straw bale must be composed entirely of vegetative matter, except for the binding material.

Bales can be bound by either wire, nylon, or polypropylene string placed horizontally. Jute and cotton binding may not be used. Baling wire should be at least 16 gauge. Nylon or polypropylene string should have a diameter of approximately 0.08 in with a breaking strength of 80 lbs.

Wood or metal posts should be used as stakes. Posts for straw bale barriers must comply with Standard Specifications Section 16-2.03 "High-Visibility Fences."

Installation

Place a single row of straw bales end-to-end and parallel with the slope contour. For any 20-foot section of straw bale barrier, do not allow it to vary by more than 5% from level.

Place straw bales in a trench or key them into the slope. Place the bales such that the binding wire or string does not come in contact with the soil. Use wood or metal posts as stakes.

Secure each straw bale with two posts. The first post in each bale must be driven toward the previously laid bale to force the bales together. Drive the posts into the soil such that the top of the post is less than 2 in. above the top of the straw bale. The post must extend a minimum of 2 ft in the ground below the bottom of the straw bales.

Angle the last 6 feet upslope at the downhill end of the run.

See page 5 of this BMP for installation detail.

Other Considerations

Construct straw bale barriers with a set-back of at least 3 ft from the toe of a slope. Where it is determined to be not practical due to specific site conditions, the straw bale barrier may be constructed at the toe of the slope, but be constructed as far from the toe of the slope as practical.

This BMP may be implemented on a project-by-project basis in addition to other BMPs when determined necessary and feasible by the RE.

Straw bale barriers may be used in combination with a silt fence (see SC-2 "Silt Fence") for additional sediment control.

Maintenance and Inspection

At a minimum, BMPs must be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.

Inspect straw bale barriers for sediment accumulations and remove sediment when depth reaches one-third the barrier height. Removed sediment should be disposed of outside the highway right-of-way in conformance with the Standard Specifications.

Replace or repair damaged bales as needed or as directed by the RE.

Repair washouts or other damages as needed or as directed by the RE.

Remove straw bales when no longer needed. Remove sediment accumulation, and clean, re-grade, and stabilized the area.

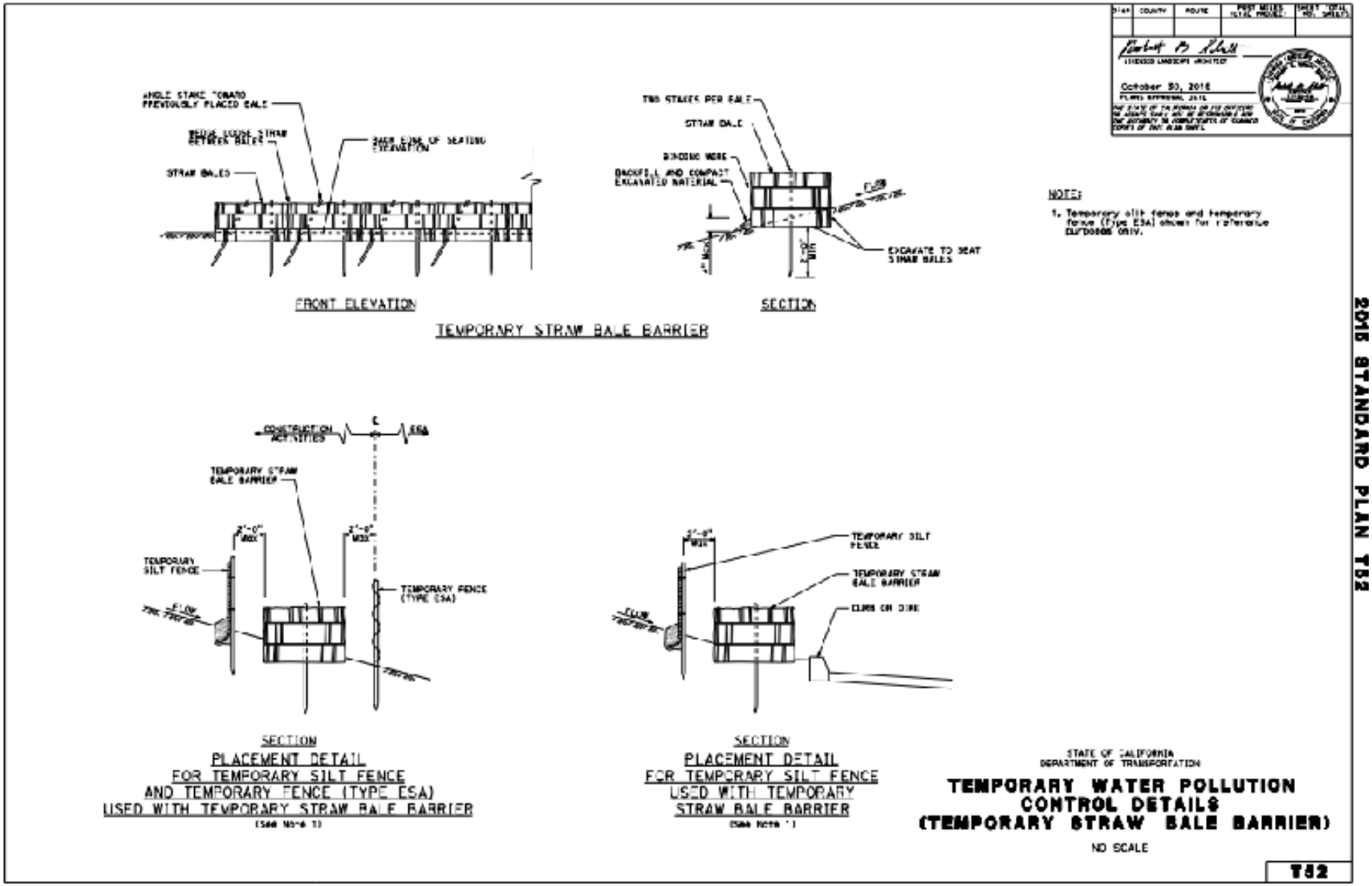
Straw Bale Barrier placement must be shown on the WPCDs and reflect current site conditions.

SWPPP or WPCP

Straw Bale Barrier must be discussed in Section 500.3 of the SWPPP or Section 30.2 of the WPCP.

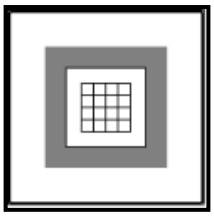
Straw Bale Barrier

SC-9



Temporary Drainage Inlet Protection SC-10





Standard Symbol



Definition and Purpose

Temporary drainage inlet protection consists of devices used at storm drain inlets that detain and/or filter sediment-laden runoff prior to discharge into storm drainage systems. This is achieved by allowing sediment to settle and/or filtering sediment upstream of a linear sediment barrier.

Appropriate Applications

Where ponding will not encroach into highway traffic.

Where sediment laden surface runoff may enter an inlet.

Where disturbed drainage areas have not yet been permanently stabilized.

Where the drainage area is 1 ac or less.

Used year-round.

Limitations

Requires an adequate area for water to pond without encroaching upon traveled way and should not present an obstacle to oncoming traffic.

May require other methods of temporary protection to prevent sediment-laden stormwater and non-stormwater discharges from entering the storm drain system.

Sediment removal may be difficult in high flow conditions or if runoff is heavily sediment laden. If high flow conditions are expected, use other on-site sediment trapping techniques, such as SC-4 “Check Dams,” in conjunction with temporary drainage inlet protection.

Frequent maintenance is required.

Silt fence inlet protection is appropriate in open areas that are subject to sheet flow and for flows not exceeding 0.5 cfs.

Gravel bag barriers for inlet protection are applicable when sheet flows or concentrated flows exceed 0.5 cfs, and it is necessary to allow for overtopping to prevent flooding.

Fiber rolls and foam barriers are not appropriate for locations where they cannot be properly anchored to the surface.

Excavated drop inlet sediment traps are appropriate where relatively heavy flows are expected and overflow capability is needed.

For drainage areas larger than 1 ac, runoff should be routed to a sediment trapping device designed for larger flows. See BMPs SC-2, "Sediment/Desilting Basin," and SC-3 "Sediment Trap/Curb Cutback."

Standards and Specifications

General Requirements

Refer to Standard Specifications Section 13-6.03C for "Temporary Drainage Inlet Protection" and 13-6.03F for "Rigid Plastic Barriers."

Identify existing and/or planned storm drain inlets that have the potential to receive sediment-laden surface runoff. Determine if storm drain inlet protection is needed, and which method or combination of methods to use. Update inlet protection as site conditions change.

Use a linear sediment barrier to redirect runoff and control ponding in order to prevent ponding from encroaching on the traveled way or overtopping the curb or dike.

Prior to installation, clear the area around each inlet of obstructions, including rocks, clods, and debris greater than 1-in. in diameter.

Install linear sediment barriers upstream of the inlet and parallel with the curb, dike, or flow line to keep sediment from entering the inlet.

Remove accumulated sediment according to Maintenance and Inspection recommendations. Accumulated sediment may be disposed of outside the highway right-of-way in conformance with the Standard Specifications Section 14-10.

Type 1: Silt Fence

This method should be used for drain inlets requiring protection in areas where finished grade is established and erosion control seeding has been applied or is pending. The silt fence (Type 1) protection is illustrated on Page 6. Do not place filter fabric underneath the inlet grate since the collected sediment may fall into the drain inlet when the fabric is removed or replaced.

Type 2 - Excavated Drop Inlet Sediment Trap

This method may be used for drainage inlets requiring protection in areas that have been cleared and grubbed, and where exposed soil areas are subject to grading. The excavated drop inlet sediment trap (Type 2) is illustrated on Page 7. Similar to constructing a temporary silt fence; see BMP SC-1, "Silt Fence." Size the excavated trap to provide a minimum storage capacity calculated at the rate of 67 yd3/ac of drainage area.

Type 3A: Gravel Bag Berm for Combined Inlets

This method may be used for drain inlets surrounded by AC or paved surfaces. The gravel bag berm for combined inlets (Type 3A) is illustrated on Pages 8-9. Flow from a severe storm must not overtop the curb. In areas of high clay and silts, use filter fabric and gravel as additional filter media. Construct gravel bags in accordance with BMP SC-6, "Gravel Bag Berm." Gravel bags are used due to their high permeability.

Type 3B: Gravel Bag Berm for Grate Inlets

This method may be used for drainage inlets surrounded by AC or paved surfaces. The gravel bag berm for grate inlets (Type 3B) is illustrated on Page 10. In areas of high clay and silts, use filter fabric and gravel as additional filter media. Place gravel bags in accordance with BMP SC-6, "Gravel Bag Berm." Gravel bags are used due to their high permeability.

Type 4A – Flexible Sediment Barrier for Grate Inlets

This method may be used for drainage inlets requiring protection in areas that have been cleared and grubbed, and where exposed soil areas subject to grading. Flexible Sediment Barrier for Grate Inlets (Type 4A) is placed around the inlet and keyed and anchored to the surface. Flexible Sediment Barriers are intended for use as inlet protection where the area around the inlet is unpaved and the foam barrier or fiber roll can be secured to the surface. Place fiber rolls over the erosion control blanket. RE or appropriate licensed professional approval is required.

Type 4B – Flexible Sediment Barrier for Combined Inlets

This method may be used for drainage inlets requiring protection in areas that have been cleared and grubbed, and where exposed soil areas subject to grading. Flexible Sediment Barrier for Combined Inlets (Type 4B) is placed in rows upstream of the inlet and along the curb or dike. The barriers are keyed and anchored to the surface. Flexible Sediment Barriers are intended for use as inlet protection where the area around the inlet is unpaved and the foam barrier or fiber roll can be secured to the surface. Place the barrier to provide a tight joint with the curb or dike. Cut the cover fabric or jacket to ensure a tight fit. RE and Construction Storm Coordinator approval is required.

Type 5 – Sediment Filter Bag

This method may be used in areas with vehicle and equipment traffic that could damage aboveground inlet protection devices. The Sediment Filter Bags are installed as follows: (1) Remove the drainage inlet grate, (2) Place the sediment filter bag in the opening, and (3) Replace the grate to secure the sediment filter bag in place.

Type 6A – Catch Basin with Grate

Catch Basin with Grate (Type 6A) is shown on page 16. Cover grate inlet with rigid plastic barrier and secure on each end with gravel-filled bags. If using a rigid sediment barrier and the grated inlet does not have a curb opening, placed the barrier using a gasket to prevent runoff from flowing under the barrier. Secure the barrier to the pavement with nails and adhesive, gavel-filled bags, or a combination of both.

Type 6B – Curb Inlet without Grate

Curb Inlet without Grate (Type 6B) is shown on page 16. Place the flexible sediment barrier across the curb inlet opening and secure with gravel-filled bags.

Maintenance and Inspection

General Requirements

Inspect all drainage inlet protection devices before and after every rainfall event and weekly year round. During extended rainfall events, inspect inlet protection devices at least once every 24 hours.

Inspect the storm drain inlet after severe storms to check for bypassed material.

Remove all drainage inlet protection devices within thirty days after the site is stabilized, or when the inlet protection is no longer needed.

- Bring the disturbed area to final grade and smooth and compact it. Appropriately stabilize all bare areas around the inlet.
- Clean and re-grade area around the inlet and clean the inside of the storm drain inlet as it must be free of sediment and debris at the time of final inspection.

Type 1 - Filter Fabric Fence

Make sure the stakes are securely driven in the ground and are structurally sound (i.e., not bent, cracked, or splintered, and are reasonably perpendicular to the ground). Replace damaged stakes.

Replace or clean the fabric when the fabric becomes clogged with sediment. Make sure the fabric does not have any holes or tears. Repair or replace fabric as needed or as directed by the RE.

At a minimum, remove the sediment behind the fabric fence when accumulation reaches one-third the height of the fence or barrier height.

Type 2 – Excavated Drop Inlet Sediment Trap

Remove sediment from basin when the volume of the basin has been reduced by one-half.

Type 3A - Gravel Bag Berm for Combined Inlets

Inspect bags for holes, gashes, and snags.

Check gravel bags for proper arrangement and displacement. Remove the sediment behind the barrier when it reaches one-third the height of the barrier.

Type 3B - Gravel Bag Berm for Grate Inlets

Inspect bags for holes, gashes, and snags.

Check gravel bags for proper arrangement and displacement. Remove the sediment behind the barrier when it reaches one-third the height of the barrier.

Type 4A Flexible Sediment Barrier for Grate Inlets

Check flexible sediment barrier for proper arrangement and displacement. Remove the sediment behind the barrier when it reaches one-third the height of the barrier.

Type 4B Flexible Sediment Barrier for Combined Inlets

Check flexible sediment barrier for proper arrangement and displacement. Remove the sediment behind the barrier when it reaches one-third the height of the barrier.

Type 5 Sediment Filter Bag

Change sediment filter bag carefully ensuring not to spill captured sediment into the drainage inlet.

Type 6A Catch Basin with Grate

Check barrier and gravel-filled bags for proper arrangement and displacement. Routinely remove accumulated sediment

Type 6B Curb Inlet without Grate

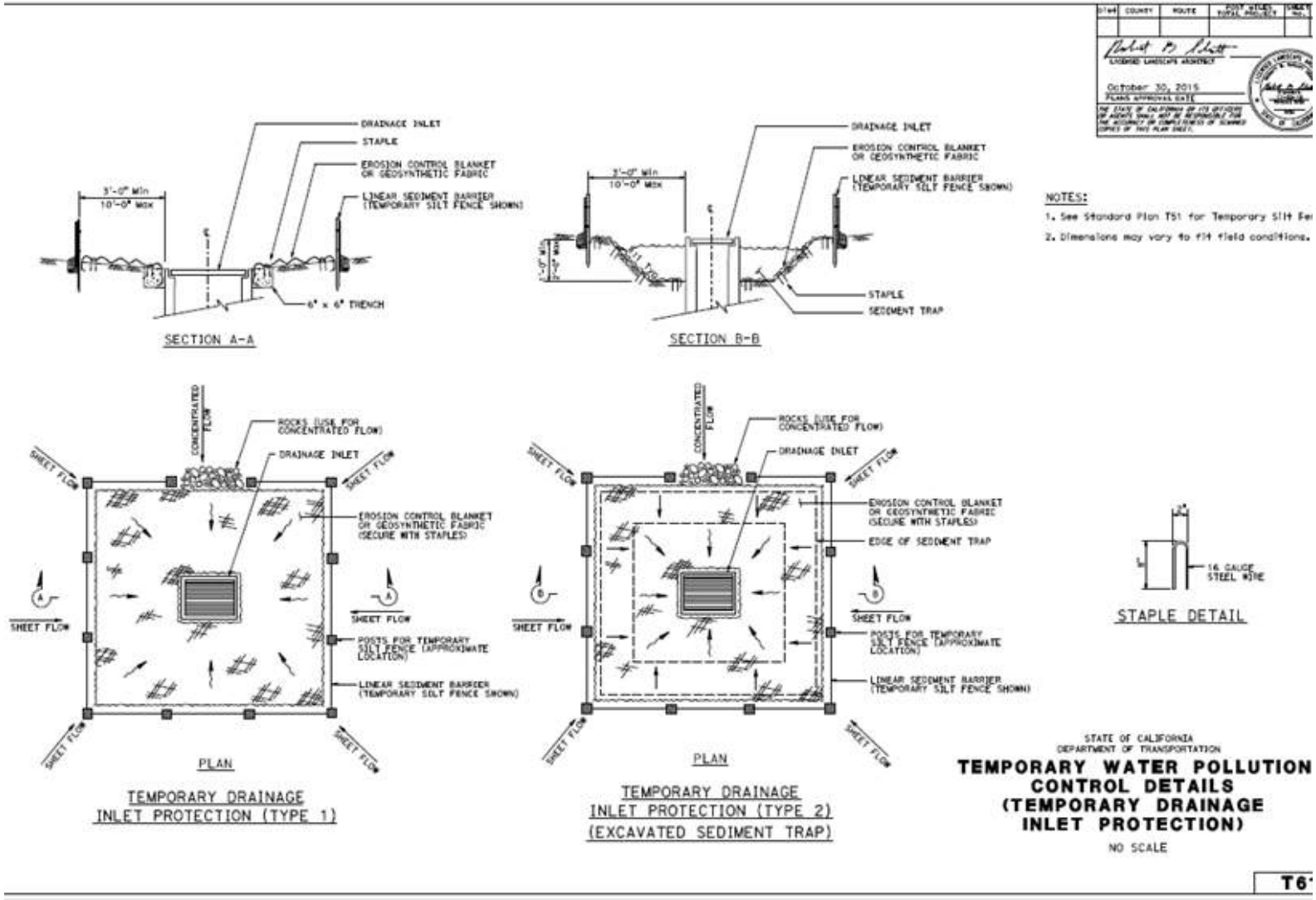
Check barrier and gravel-filled bags for proper arrangement and displacement.

Remove the sediment behind the barrier when it reaches one-third the height of the barrier.

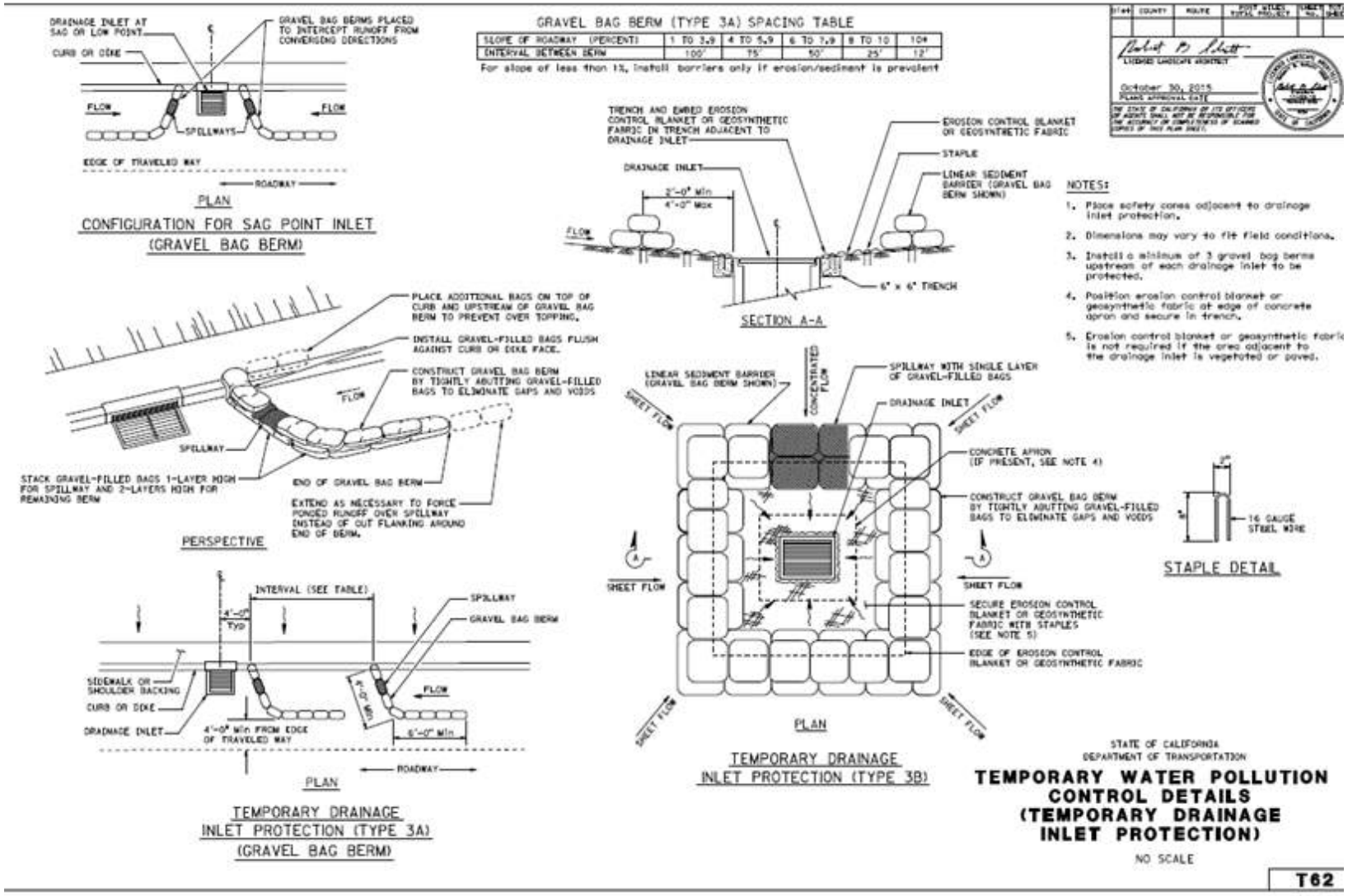
SWPPP or WPCP

Temporary Drainage Inlet Protection must be discussed in Section 500.3.2 of SWPPP and/or Section 30.2.2 of the WPCP. Temporary Drainage Inlet Protection placement type must be shown on the WPCDs and reflect site temporary conditions.

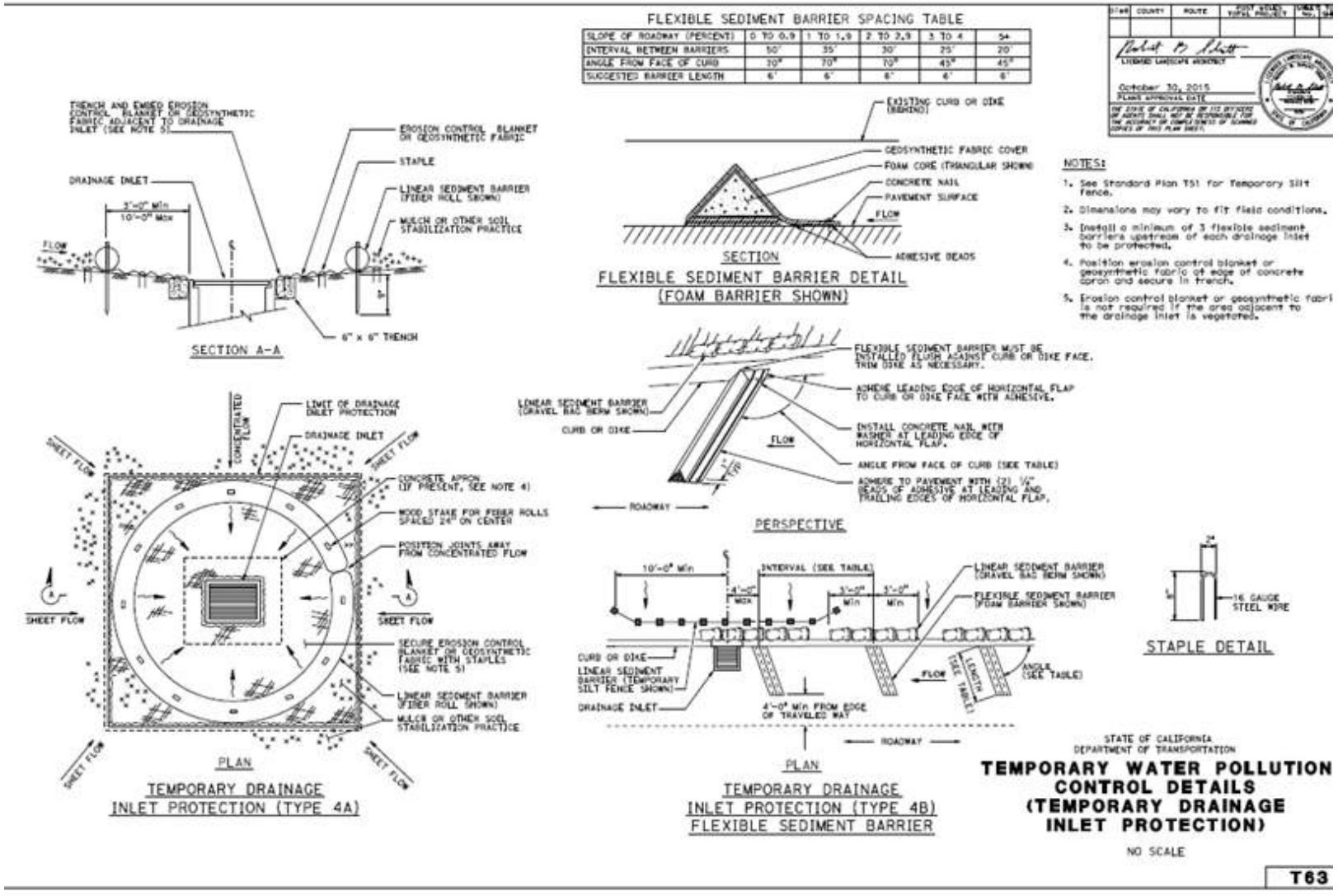
Temporary Drainage Inlet Protection SC-10



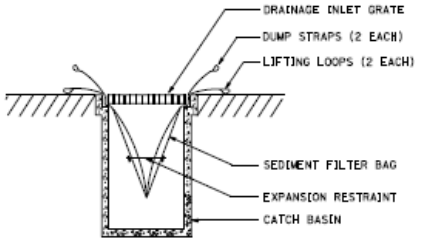
Temporary Drainage Inlet Protection SC-10



Temporary Drainage Inlet Protection SC-10

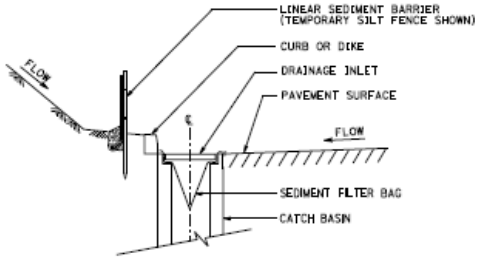


Temporary Drainage Inlet Protection **SC-10**

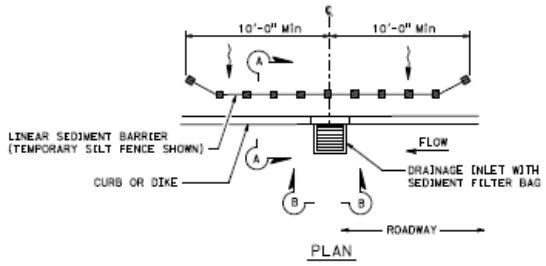


SECTION B-B

SEDIMENT FILTER BAG DETAIL

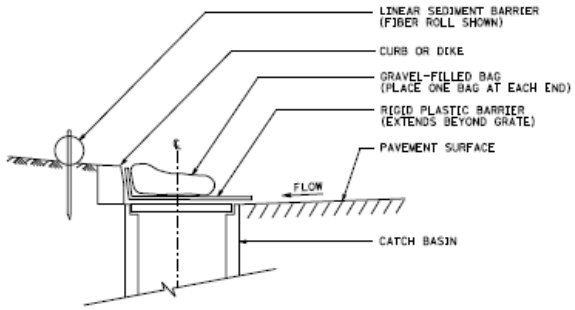


SECTION A-A



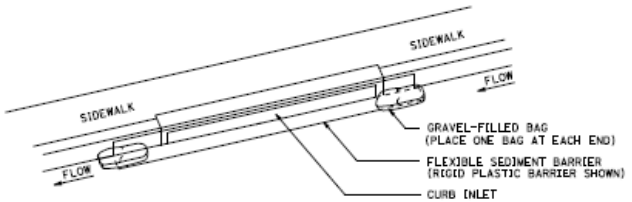
PLAN

TEMPORARY DRAINAGE
INLET PROTECTION (TYPE 5)
(SEDIMENT FILTER BAG)



SECTION

TEMPORARY DRAINAGE
INLET PROTECTION (TYPE 6A)
(CATCH BASIN WITH GRATE)



PERSPECTIVE

TEMPORARY DRAINAGE
INLET PROTECTION (TYPE 6B)
(CURB INLET WITHOUT GRATE)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Robert B. Schott
LICENSED LANDSCAPE ARCHITECT

October 30, 2015
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTES:
1. See Standard Plan T51 for Temporary Silt Fence.
2. Dimensions may vary to fit field conditions.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WATER POLLUTION CONTROL DETAILS (TEMPORARY DRAINAGE INLET PROTECTION)

NO SCALE

T64

2015 STANDARD PLAN T64

Compost Socks

SC-11





Standard Symbol



Definition and Purpose

Compost socks are a mesh sock containing compost that act as three dimensional, biodegradable structures that intercept and filter sheet flow. Compost socks can filter runoff, retain sediment, and reduce sheet flow velocities. Compost socks may be used as either a temporary or permanent sediment control measure.

Appropriate Applications

Compost socks may be applied as both temporary and permanent sediment controls.

Along the toe, top, face, and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.

Along the perimeter of a project.

As check dams in unlined ditches.

Down-slope of exposed soil areas.

At operational storm drains as a form of inlet protection.

Around temporary stockpiles.

Limitations

Compost can potentially leach nutrients into runoff and negatively affect water quality. Compost should not be used directly upstream from a nutrient-impaired water body.

Compost socks are susceptible to damage by traffic. Compost socks may be used around heavy machinery, but frequent disturbance decreases sock performance.

Standards and Specifications

General Requirements

Compost socks must comply with Standard Specifications 21-2.02Q and 21-2.03Q.

Compost for compost socks must comply with Standard Specifications Section 21-2.02K, except the particle size must be for coarse compost.

Compost sock installation is illustrated in Standard Plan H51.

Compost socks consist of a 12-inch diameter mesh tube that is filled with compost. The mesh tube must be composed of a natural biodegradable product such as cotton, jute, sisal, burlap, or coir. The mesh tube must be clean, evenly woven, and free of encrusted concrete or other contaminating materials, cuts, tears, broken or missing yarns, and thin, open, or weak places.

Compost socks must have a functional longevity of one year.

Installation

Before installing compost sock, remove obstructions from the ground including rocks, clods, and debris greater than 1 inch in diameter.

For any 20-foot section of compost sock, prevent the compost sock from varying more than 5 percent from level.

Use the following spacing unless otherwise noted on the project plans or special provisions:

- 10 feet apart for slopes steeper than 2:1 (H:V)
- 15 feet apart for slopes from 2:1 to 4:1 (H:V)
- 20 feet apart for slopes from 4:1 to 10:1 (H:V)
- 50 feet apart for slopes flatter than 10:1 (H:V)

Place mesh tube, secure the end, and fill uniformly with compost. Secure the remaining end.

For Type 1 installations:

- Place in a furrow that is from 2 to 4 inches deep.
- Fasten with wood stakes every 4 feet along the length of the compost sock.
- Fasten the ends of the compost sock by placing a stake 6 inches from the end of the sock.
- Drive the stakes into the soil so the top of the stake is less than 2 inches above the top of the compost sock.

For Type 2 installations:

- Fasten with notched wood stakes and rope.

- Drive stakes into the soil until the notch is even with the top of the compost sock.
- Lace the rope between stakes and over the compost sock. Knot the rope at each stake.
- Tighten the fiber roll to the surface of the slope by driving the stakes further into the soil.

If more than one compost sock is placed in a row, the socks should be overlapped; not abutted. Stagger overlapping joints in adjacent rows by 5 to 10 feet.

Removal

For permanent installations: do not remove compost socks. Compost socks will degrade over time.

For temporary installations: remove sock, rope and stakes if ordered by the RE. Cut sock and empty contents in place.

Other Considerations

Compost may be pre-seeded before placement into the mesh tube to assist in establishing vegetation. Once established, vegetation root systems provide additional soil stability and runoff filtration.

Permanent compost sock applications are particularly advantageous below embankments, especially adjacent streams, by limiting re-entry and the disturbance to sensitive areas.

Organic material in compost is important for pollutant removal and vegetation establishment. Organic content of the compost should range from 30 to 65% depending on site conditions.

Maintenance and Inspection

Inspect compost socks before and after each rainfall event, and weekly year round.

Remove sediment from behind the compost sock if sediment is 1/3 of compost sock height above ground.

Repair or adjust the compost sock if rills or other evidence of concentrated runoff occur beneath the sock.

Repair or replace compost socks if they become split, torn, or unraveled.

Add stakes if the compost sock slumps or sags.

Replace broken or split wood stakes.

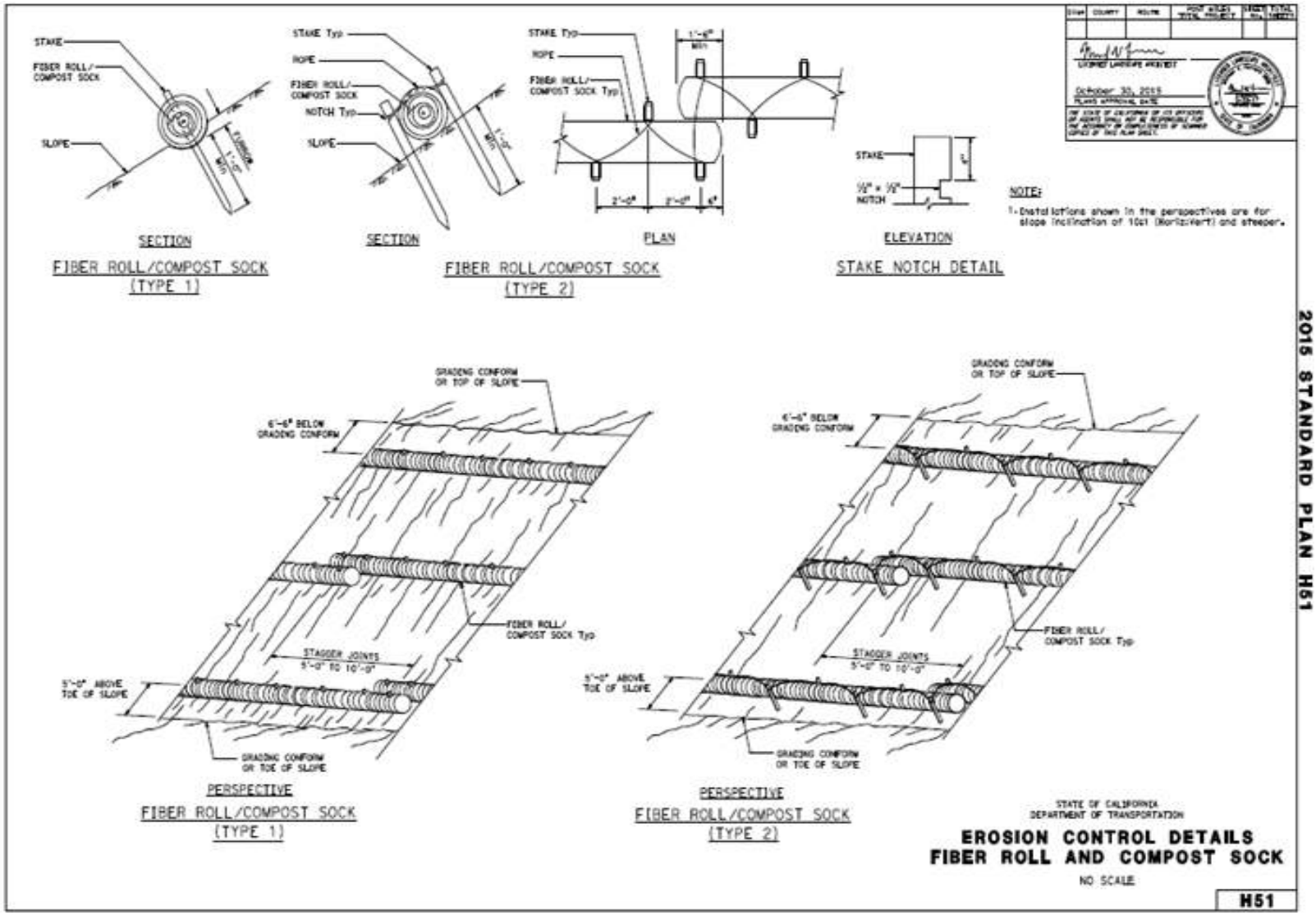
Maintain compost socks to provide an adequate sediment holding capacity and runoff velocity reduction.

SWPPP or WPCP

Compost Socks must be discussed in Section 500.3 of the SWPPP or Section 30.2 of the WPCP.

Compost Socks

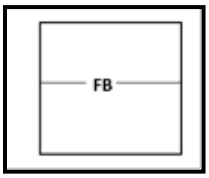
SC-11



Flexible Sediment Barrier

SC-12





Standard Symbol



Definition and Purpose

Flexible sediment barriers are synthetic alternatives to fiber rolls, compost socks, and straw bale barriers. Flexible sediment barriers consist of a geosynthetic fabric with a urethane foam-filled core and a fabric apron that helps to prevent undermining and scour. These synthetic linear sediment barriers are generally more robust sediment controls than standard fiber rolls, and may be appropriate for continuous use in stormwater collection areas.

Appropriate Applications

Along the perimeter of a project.

As check dams in ditches, channels, or other stormwater collection areas.

Down-slope of exposed soil areas.

At operational storm drains as a form of inlet protection.

Around temporary stockpiles.

On either paved surfaces or soil.

As a linear sediment control for SC-10 “Temporary Drain Inlet Protection.”

Limitations

Frequent maintenance is required if sediment-laden discharges are upstream of the BMP to maintain it operational.

Flexible Sediment Barrier SC-12

Standards and Specifications

General Requirements

Flexible sediment barriers must comply with Standard Specifications Sections 13-10.02I and 13-10.03H.

Flexible sediment barriers consist of:

- A urethane foam-filled core.
- Geosynthetic fabric cover and flap.
- Triangular, circular, or square cross section.
- Vertical height of at least 5 inches after installation.
- Horizontal flap at least 8 inches in width.
- Length of at least 4 feet per unit.
- Ability to interlock separate units into a long barrier such that water will not flow between units.

Geosynthetic fabric for flexible sediment barriers covers must have:

- Minimum grab break load of 200 lbs., per ASTM D4632.
- Minimum apparent elongation of 15%, per ASTM D4632.
- Average water flow rate of 100-150 gallons per minute per square foot, per ASTM D4491.
- Minimum permittivity of 0.05 1/sec, per ASTM D4491.
- Maximum apparent opening size of the 40 U.S. standard sieve size, per ASTM D4751.
- Minimum ultraviolet radiation resistance of 70% retained grab breaking load at 500 hours of exposure, per ASTM D4355.

Submit a certificate of compliance for flexible sediment barriers.

Installation

Remove obstructions, including rocks, clods, and debris greater than 1 inch in diameter, from the ground.

Secure flexible sediment barriers to pavement with:

1-inch concrete nails, 1-inch washers, and solvent-free adhesive,

Gravel-filled bags, or

A combination of both of the above methods.

Secure flexible sediment barriers to soil with 6-inch nails and 1-inch washers.

Secure connection points of two adjacent sections of flexible sediment barriers with 2 nails.

Do not pierce the foam core of the barrier with nails.

Maintenance and Inspection

Inspect flexible sediment barriers before and after each rainfall event, and weekly year round.

Maintain a flexible sediment barriers to provide sediment-holding capacity and to reduce concentrated flow velocities.

Repair or adjust the flexible sediment barriers if rills or other evidence of concentrated runoff occur beneath it.

Repair or replace split, torn, or unraveled material. Add or replace posts, stakes, or fasteners as needed to prevent sagging or slumping.

Reattach any flexible sediment barriers that detaches from the pavement.

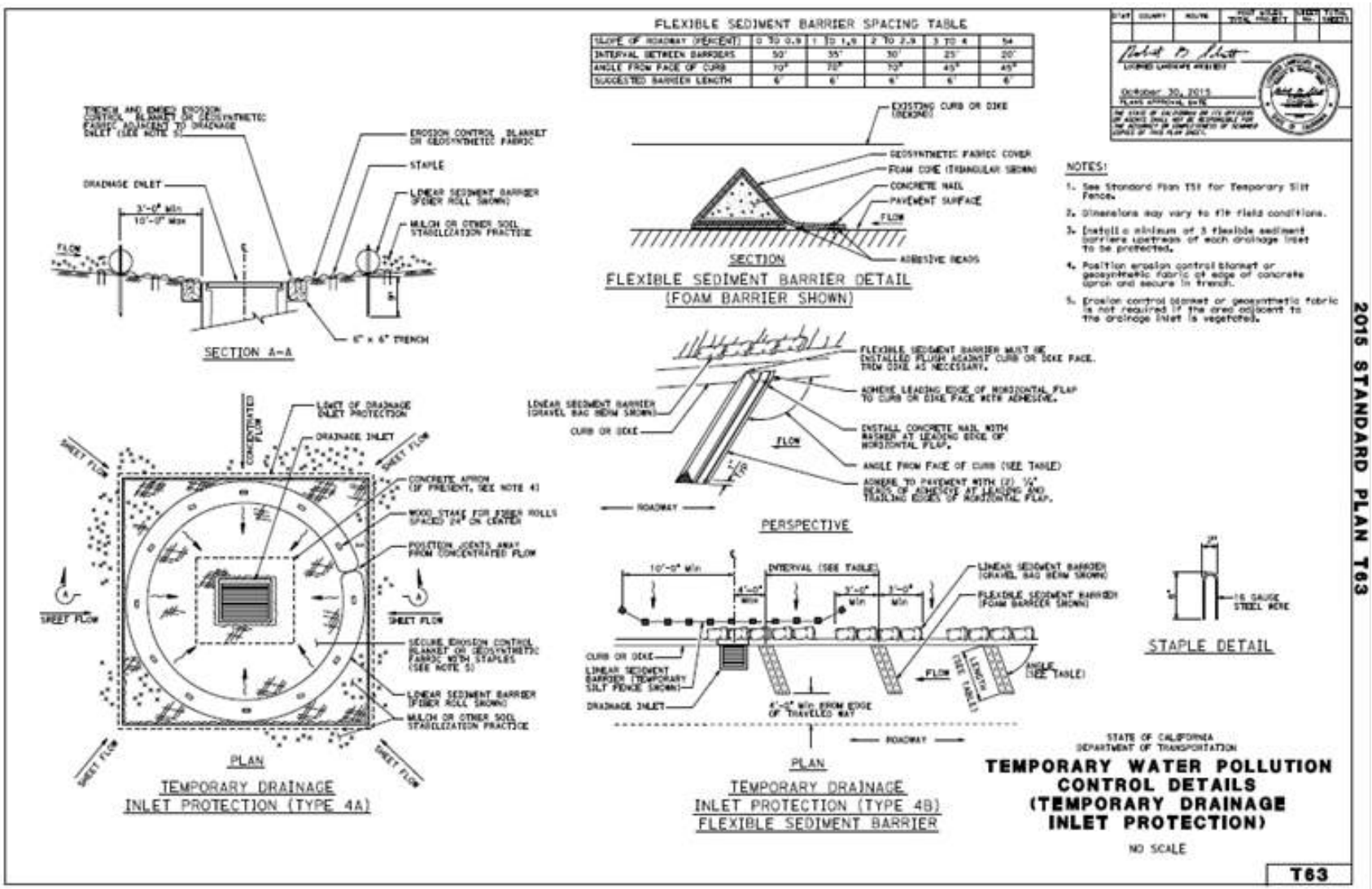
Remove sediment deposits if the sediment exceeds 1/3 of the height above the ground behind a foam barrier.

SWPPP or WPCP

Remove Flexible sediment barriers must be discussed in Section 500.3 of the SWPPP or Section 30.2 of the WPCP.

Flexible Sediment Barrier

SC-12



Section 5

Wind Erosion Control BMP

5.1 Wind Erosion Control

Wind erosion control consists of applying water or other dust palliatives as necessary to prevent or alleviate dust nuisance. Wind erosion control BMPs are shown in Table 5-1.

Table 5-1. Wind Erosion Control BMPs

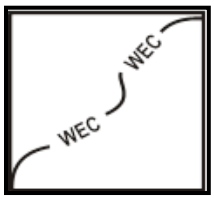
ID	BMP Name
WE-1	Wind Erosion Control

Other BMPs that are sometimes applied to disturbed soil areas to control wind erosion are BMPs SS-3 through SS-7, shown in Section 3 of this Manual; BMP TC-2, shown in Section 6; and BMP NS-7, shown in the Section 7. The remainder of this Section describe the working details for the Wind Erosion Control BMP.

Wind Erosion Control

WE-1





Standard Symbol



Definition and Purpose

Wind erosion control consists of applying water or other dust palliatives as necessary to prevent or alleviate erosion by the forces of wind. Dust control must be applied in accordance with Caltrans standard practices. Covering of small stockpiles or areas is an alternative to applying water or other dust palliatives; see SS-7 for "Temporary Cover and Rolled Erosion Control Products"

Must comply with local agencies such as Air Quality Management District's requiring dust control plans or dust control permits as well as any Air Clean Act requirements.

Appropriate Applications

This practice is generally implemented on all exposed soils subject to wind erosion.

Limitations

Effectiveness depends on soil, temperature, humidity and wind velocity.

Chemically treated subgrades could cause soil to become water repellant, preventing infiltration or the long-term re-vegetation of the site.

Standards and Specifications

Standard Specification Section 10-5 contains general requirements for "Dust Control."

Effective dust control is accomplished by applying dust palliatives, temporary Soil Stabilization BMPs, Tracking Controls and managing stockpiles.

"Dust Palliatives" are covered under Section 18 of the Standard Specifications. Acceptable dust palliatives include water, dust control binders, and dust suppressants. Dust control binders must comply with specifications for tackifier. Dust suppressants include petroleum-based organic product, nonpetroleum-based organic product, hygroscopic product, and synthetic polymer emulsion.

If a dust suppressant or tackifier is used, submit a Dust Treatment Plan. Submit a certificate of compliance for dust suppressants, tackifiers, and fibers.

Identify and stabilize key access points with the use of Tracking Control BMPs.

Minimize the impact of dust by anticipating the direction of prevailing winds.

Temporary soil stabilization BMPs, such as SS-3 "Hydraulic Mulch", SS-4 "Hydroseed, SS-5 "Soil Binders, also provide wind erosion control benefits.

Ensure proper implementation of BMPs WM-3, "Stockpile Management," and SC-7, "Street Sweeping," as these BMPs provide wind erosion control benefits.

Ensure that water is applied by means of pressure-type distributors or pipelines equipped with a spray system or hoses and nozzles to ensure even distribution.

All distribution equipment should be equipped with a positive means of shutoff.

Chemical dust suppression products could have environmental water quality impacts. Depending on the product and the time of application, water quality sampling for non-visible pollutants should be assessed when a storm even is forecasted.

For chemical or petroleum based organics stabilization, there are many products available. These products should not create any adverse effects on stormwater, plant life, groundwater and should meet all applicable regulatory requirements including inspection, documentation, monitoring and reporting requirements.

Unless water is applied by means of pipelines, at least one mobile unit should be available at all times to apply water or dust palliative to the project.

If reclaimed water is used, the sources and discharge must meet California Department of Health Services water reclamation criteria and the RWQCB requirements. Non-potable water must not be conveyed in tanks or drain pipes that will be used to convey potable water and there must be no connection between potable and non-potable supplies. Non-potable tanks, pipes and other conveyances must be marked "NON-POTABLE WATER - DO NOT DRINK."

Appendix B of this Manual includes additional information on selecting temporary soil stabilization products that could be used for Wind Erosion Control.

Maintenance and Inspection

Check areas where wind erosion controls have been implemented daily for erosion and visible dust.

Most water-based dust control measures require frequent application. Obtain vendor or independent information on longevity of chemical dust suppression.

SWPPP or WPCP

Wind Erosion Control must be discussed in Section 500.3.5 of the SWPPP or Section 30.2.4 of the WPCP.

Section 6
Tracking Control BMP

6.1 Tracking Control

Tracking control consists of preventing or reducing vehicle tracking from entering a storm drain or watercourse. Tracking control BMPs are shown in Table 6-1.

Table 6-1. Tracking Control BMPs

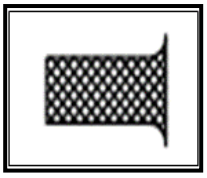
ID	BMP Name
TC-1	Temporary Construction Entrance/Exit
TC-2	Temporary Construction Roadway
TC-3	Entrance/Outlet Tire Wash

The remainder of this section describe the working details for the tracking control BMPs.

Temporary Construction Entrance/Exit

TC-1





Standard Symbol



Definition and Purpose

A temporary construction entrance/exit is defined by a point of entrance/exit to a construction site that is stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles.

Appropriate Applications

Where dirt or mud can be tracked onto public roads.

Adjacent to water bodies.

Where poor soils are encountered.

Where dust is a problem during dry weather conditions.

Limitations

Site conditions will dictate design and need.

Limit the points of entrance/exit to the construction site.

Limit speed of vehicles to control dust.

Standards and Specifications

General Requirements

Temporary construction entrance/exit must comply with Standard Specification Section 13-7.03 Temporary Construction Roadways and Entrances.

Corrugated steel panels must be pressed or shop welded. They should have a slot or hook for coupling the panels together.

Class 8 RSP fabric shall be used to line temporary construction entrance/exit. Do not drive on the fabric until the rock is spread. Repair damaged fabric by placing new fabric over the damaged area with at least an 18-inch overlap on all edges.

Type A rock should be used for a Type 1 temporary construction entrance/exit. Type A rock must comply with Section 13-7.03B (2) of the Standard Specifications.

Type B rock should be used for a Type 2 temporary construction entrance/exit. Type B rock must comply with Section 13-7.03B (2) of the Standard Specifications.

Submit details for alternative construction entrances at least 5 business days before installation. This may include alternatives for the sump and corrugated steel panels or to eliminate the sump.

Installation

Prepare the location for the temporary construction entrance/exit as follows:

- Remove vegetation and clear debris.
- Grade the ground to a uniform plane.
- Remove sharp objects that could damage the fabric.
- Compact the top 1.5 feet of soil to at least 90 percent relative compaction.

Construct the temporary construction entrance/exit as follows (standard plans attached below):

- Place the fabric along the length of the construction entrance/exit.
- Overlap fabric ends by at least 12 inches.
- Cover the fabric with rock within 24 hours.
- Spread rock over the fabric in the direction of traffic.
- Keep a 6-inch layer of rock over the fabric to prevent damage from the spreading equipment.

For a Type 2 temporary construction entrance/exit, place rock under the corrugated steel panels. Use at least 6 corrugated steel panels for each entrance. Couple the panels together to prevent movement.

If a sump is used, install it within 20 ft of the temporary construction entrance/exit.

Other Considerations

Implement BMP SC-7, “Street Sweeping” as required under Section 13-4.03F and 13-7 of the Standard Specifications.

Require all employees, subcontractors, and suppliers to utilize the temporary construction entrance/exit. If the construction entrance/exit has metal plates as part of the BMP, all vehicles must be required to utilize them.

Route runoff from temporary construction entrances/exits through a sediment-trapping device before discharge.

Design a temporary construction entrance/exit to support the heaviest vehicles and equipment that will use it.

The use of asphalt concrete (AC) grindings is not allowed (high potential for leaching hydrocarbons) unless it complies with Section 6.8 of the 2016 Caltrans SWMP. Designate combination or single purpose entrances and exits to the construction site to maintain smooth flow of traffic.

Maintenance and Inspection

Inspect before and after each rainfall event, and weekly year-round.

Inspect immediate site access roads daily, implement SC-7, "Street Sweeping" as needed.

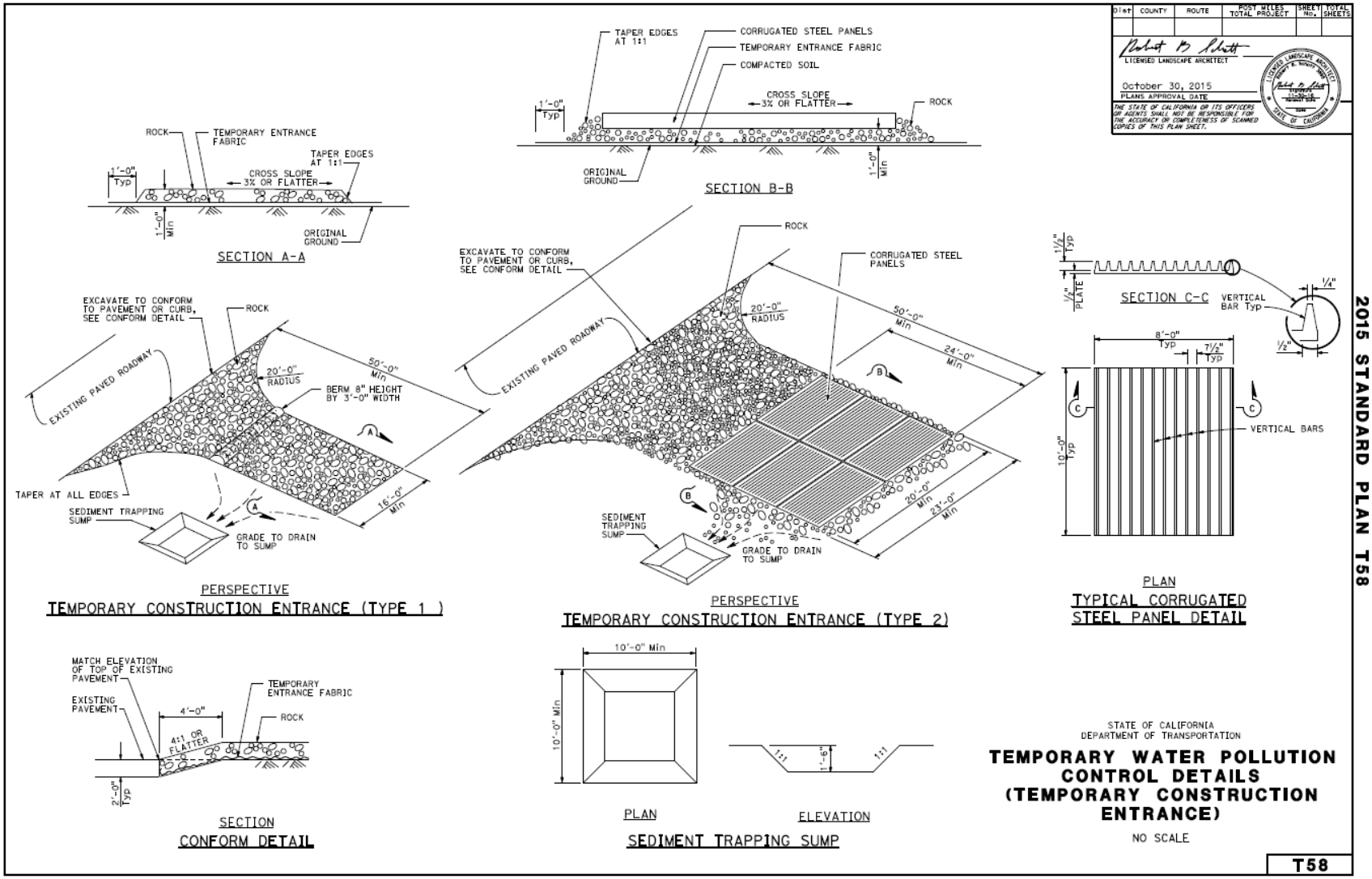
Remove aggregate, separate, and dispose of sediment if temporary construction entrance is clogged with sediment.

Keep all temporary construction entrance/exit ditches clear.

SWPPP or WPCP

Tracking Control BMPs are to be included and discussed in section 500.3.4 or Section 600.2 for SWPPP and Section 30.2.3 of the WPCP.

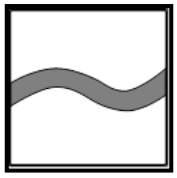
Temporary Construction Entrance/Exit **TC-1**



Temporary Construction Roadway

TC-2





Standard Symbol

BMP Objectives

Soil Stabilization	☑
Sediment Control	☐
Tracking Control	☑
Wind Erosion Control	☑
Non-Stormwater Management	☐
Materials and Waste Management	☐

Definition and Purpose

A temporary construction roadway is a stabilized access road. It is designed for the control of dust and erosion created by vehicular tracking.

Appropriate Applications

Use construction roadways and short-term detour roads:

- Where mud tracking is a problem during wet weather.
- Where dust is a problem during dry weather.
- When road is adjacent to water bodies.
- Where poor soils are encountered.
- Where there are steep grades and additional traction is needed.

Limitations

Materials will likely need to be removed prior to final grading and stabilization.

Site conditions will dictate design and need.

May not be applicable to very short duration projects.

Limit speed of vehicles to control dust.

Temporary Construction Roadway

TC-2

Standards and Specifications

General Requirements

Refer to Standard Specification Section 13-7.03 for temporary roadway standards.

Class 10 RSP fabric must be used to line temporary construction roadways. Do not drive on the fabric until the rock is spread. Repair damaged fabric by placing new fabric over the damaged area with at least an 18-inch overlap on all edges.

Type A or Type B rock may be used for temporary construction roadways. Type A and B rock must comply with Standard Specifications Section 13-7.03B(2). Coordinate materials with those used for stabilized construction entrance. Refer to TC-1, "Temporary Construction Entrance/Exit."

The use of cold mix asphalt, AC grindings, or blast furnace slag for stabilized construction roadway is not allowed (high potential to leach hydrocarbons) unless it complies with Section 6.8 of the 2016 Caltrans SWMP.

Installation

Prepare the location for the temporary roadway as follows:

- Remove vegetation and clear debris.
- Grade the ground to a uniform plane.
- Grade the ground surface to drain in a way that prevents runoff from leaving the construction site.
- Remove sharp objects that could damage the fabric.
- Compact the top 1.5 feet of soil to at least 90% relative compaction.

Construct the temporary construction roadway as follows (standard plans attached below):

- Place the fabric along the length of the roadway.
- Overlap fabric ends by at least 12 inches.
- Cover the fabric with rock within 24 hours.
- Spread rock over the fabric in the direction of traffic.
- Keep a 6-inch layer of rock over the fabric to prevent damage from the spreading equipment.

Other Considerations

Design stabilized access to support the heaviest vehicles and equipment that will use it.

Implement TC-1 "Temporary Construction Entrance/Exit" and TC-3 "Entrance/Outlet Tire Wash" in combination with temporary construction roadway for maximum tracking control.

Maintenance and Inspection

Inspect before and after each rainfall event, and weekly year-round.

Inspect immediate site access roads daily, implement SC-7, "Street Sweeping" as needed.

Keep all temporary roadway ditches clear.

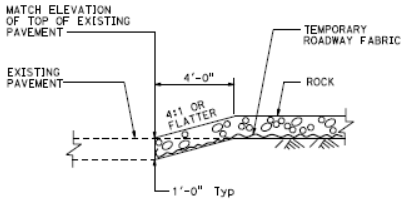
When no longer required, remove stabilized construction roadway and re-grade, re-vegetate and repair slopes.

SWPPP or WPCP

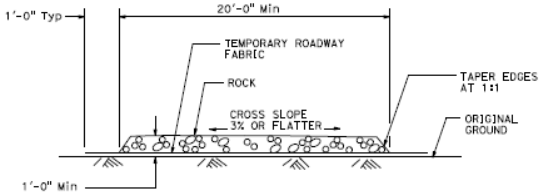
Tracking Control BMPs are to be included and discussed in Section 500.3.4 or Section 600.2 SWPPP or Section 30.2.3 of the WPCP.

Temporary Construction Roadway

TC-2



SECTION
CONFORM DETAIL



SECTION
TEMPORARY CONSTRUCTION ROADWAY

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

LICENSED LANDSCAPE ARCHITECT

October 30, 2015
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

2015 STANDARD PLAN T67

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WATER POLLUTION CONTROL DETAILS (TEMPORARY CONSTRUCTION ROADWAY)

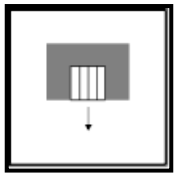
NO SCALE

T67

Temporary Entrance/Outlet Tire Wash

TC-3





Standard Symbol



Definition and Purpose

A tire wash is an area located at stabilized construction access points to remove sediment from tires and undercarriages, and to prevent sediment from being transported onto public roadways.

Appropriate Applications

Tire washes may be used on construction sites where construction vehicles may track dirt and mud onto public roads.

This BMP may be implemented on a project-by-project basis with other BMPs when determined necessary and feasible by the RE.

Limitations

Requires a supply of wash water and way to collect or capture tire wash area runoff.

Requires a turnout or doublewide exit to prevent entering vehicles from driving through the wash area.

Standards and Specifications

Require all employees, subcontractors, and others that leave the site with mud-caked tires and/or undercarriages to use the wash facility.

Incorporate with a temporary construction entrance/exit. See TC-1, “Temporary Construction Entrance/Exit.”

Construct on level ground when possible, on a pad of Type A or Type B rock. Either Class 8 or 10 RSP fabric should be placed below the rock.

Wash rack must be designed and constructed/manufactured for anticipated traffic loads.

Vehicle wash water is non-stormwater that requires management and disposal. See NS-8, "Vehicle and Equipment Cleaning."

Provide a drainage ditch that will convey the runoff from the wash area to a sediment trapping device or similar device. The drainage ditch should be of sufficient grade, width, and depth to carry the wash runoff.

Implement BMP SC-7, "Street Sweeping" as needed.

Refer to TC-1, "Temporary Construction Entrance/Exit," for details regarding design and installation of construction entrance and exits to the project site.

Maintenance and Inspection

Inspect before, daily during extended rain events, after each rain event, and weekly year round.

Inspect immediate site access roads daily, implement SC-7, "Street Sweeping" as needed.

Remove accumulated sediment in wash rack and/or sediment trap to maintain system capacity and performance.

Inspect routinely for damage and repair as needed. Document non-stormwater (sediment trapping device or similar device) in appropriate inspection form.

SWPPP or WPCP

Temporary Entrance/Outlet Tire Wash is to be included and discussed in section 500.3.4 or Section 600.2 for a SWPPP or Section 30.2.3 of the WPCP.

Section 7

Non-Storm Water Management BMP

7.1 Non-Storm Water Management

Non-stormwater management (BMPs) are source control BMPs that prevent pollution by limiting or reducing potential pollutants at their source before they come in contact with stormwater. These practices involve day-to-day operations of the construction site and are usually under the control of the Contractor. These BMPs are also referred to as “good housekeeping practices”, which involve keeping a clean, orderly construction site.

Table 7-1 lists the non-stormwater management BMPs. It is important to note that all these BMPs have been approved by Caltrans for statewide use and they must be implemented depending on the conditions/applicability of deployment described as part of the BMP.

Table 7-1. Non-Stormwater Management BMPs

ID	BMP Name
NS-1	Water Conservation Practices
NS-2	Dewatering Operations
NS-3	Paving, Sealing, Sawcutting and Grinding Operations
NS-4	Temporary Stream Crossing
NS-5	Clear Water Diversion
NS-6	Illegal Connection and Illicit Discharge Detection and Reporting
NS-7	Potable Water/Irrigation
NS-8	Vehicle and Equipment Cleaning
NS-9	Vehicle and Equipment Fueling
NS-10	Vehicle and Equipment Maintenance
NS-11	Pile Driving Operations
NS-12	Concrete Curing
NS-13	Material and Equipment Use Over Water
NS-14	Concrete Finishing
NS-15	Structure Demolition/Removal Over or Adjacent to Water

The remainder of this Section describe the working details for each of the non-stormwater management BMPs.

Water Conservation Practices

NS-1





Standard Symbol

BMP Objectives

Soil Stabilization	☐
Sediment Control	☐
Tracking Control	☐
Wind Erosion Control	☐
Non-Stormwater Management	☑
Materials and Waste Management	☐

Definition and Purpose

Water conservation practices are construction methods that minimize the use of water onsite or use water in a manner that avoids causing runoff, erosion and/or the discharge of pollutants to the storm drain system or receiving waters. Proper utilization of this BMP reduces or prevents non-stormwater discharges.

Appropriate Applications

Water conservation practices are implemented on all construction sites wherever water is used.

Limitations

If not implemented correctly, discharges may trigger reporting and monitoring requirements and delay construction work.

Standards and Specifications

Keep water equipment in good working condition.

Ensure tracking controls are implemented in, near and around water truck filling areas.

Repair water leaks promptly.

Authorization is required for activities that could potentially discharge water into a storm drain system or receiving waters.

Avoid using water to clean construction areas. Do not wash paved areas with water. Paved areas and roadways should be swept and vacuumed in accordance with SC-7 “Street Sweeping.”

Apply water for dust control in accordance with Standard Specifications Section 10-4 Water Usage and BMP WE-1, “Wind Erosion Control.”

Direct construction water runoff to areas where it can infiltrate into the ground or be collected and reused.

Manage run-on to minimize contact with job site.

Retain water spilled while filling water trucks within the designated water truck filling areas. Prevent tracking from water trucks and other equipment.

Report discharges to the RE and the WPC Manager immediately.

Maintenance and Inspection

Inspect water equipment areas at least weekly, prior to a forecasted rain event, daily during extended rain events and post-storm events.

Inspect non-stormwater BMPs daily when non-stormwater operations are ongoing.

Repair water equipment as needed.

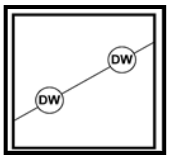
SWPPP or WPCP

Water Conservation Practices must be discussed in Section 500.3.5 of the SWPPP or Section 30.3.1 of the WPCP.

Dewatering Operations

NS-2





Standard Symbol

BMP Objectives

Soil Stabilization	☐
Sediment Control	☐
Tracking Control	☐
Wind Erosion Control	☐
Non-Stormwater Management	☑
Materials and Waste Management	☐

Definition and Purpose

Dewatering Operations are practices that manage the discharge of pollutants when non-stormwater and accumulated precipitation (stormwater) must be removed from a work location so that construction work may be accomplished.

Appropriate Applications

These practices are implemented for the collection and discharge of non-stormwater and stormwater (accumulated rain water) from excavations or temporary containment facilities. Non-stormwater includes, but is not limited to, groundwater, dewatering of piles, water from cofferdams, water diversions, and water used during construction activities that must be removed from a work area.

Practices identified in this section are also appropriate for implementation when managing the removal of accumulated precipitation (stormwater) from depressed areas at a construction site.

Stormwater mixed with non-stormwater should be managed as non-stormwater.

Limitations

Dewatering operations for non-stormwater will require, and must comply with, applicable local permits, project-specific permits, and regulations.

Site conditions will dictate design and use of dewatering operations.

Avoid dewatering discharges where possible by infiltrating, reusing the water for dust control, etc.

Standards and Specifications

General Requirements

Dewatering shall be conducted in accordance with the Caltrans Field Guide to Construction Site Dewatering Manual and Standard Specification Section 13-4.03G.

A dewatering and discharge work plan shall be submitted at least 15 days before the start of dewatering activities detailing the location of dewatering and discharge activities, quantity of water, equipment, and discharge point. The dewatering and discharge work plan must conform to Standard Specifications Section 13-4.01C.

Dewatering discharges must not cause erosion, scour, or sedimentation that could impact natural bedding materials.

Discharge the water within the project limits. Dispose of the water if it cannot be discharged within project limits due to site constraints or contamination.

Do not discharge stormwater or non-stormwater that has an odor, discoloration other than sediment, an oily sheen, or foam on the surface. Immediately notify the RE upon discovering any such condition.

The RWQCB may require a separate NPDES permit for a dewatering operation. These permits will have specific testing, monitoring, and discharge requirements.

Discharges must comply with regional and watershed-specific discharge requirements.

Additional permits or permissions from other agencies may be required for dewatering cofferdams or diversions.

Dewatering records shall be kept with the SWPPP or WPCP and maintained for a minimum of 3 years after the construction project is terminated.

The controls discussed in this BMP address sediment only. If the presence of polluted water with hazardous substances is identified in the contract, the contractor shall implement dewatering pollution controls as required by the contract documents. If the quality of water to be removed by dewatering is not identified as polluted in the contract documents, but is later determined by observation or testing to be polluted, the contractor shall notify the RE and comply with Standard Specifications Section 4-1.06, “Differing Site Conditions.”

Sediment Treatment

A variety of methods can be used to treat water during dewatering operations from the construction site. The size of particles present in the sediment and/or RWQCB Dewatering Permit or receiving water limitations on sediment are key considerations for selecting sediment treatment option(s); in some cases, the use of multiple devices may be appropriate.

Refer to the Sediment Treatment Options described in Appendix B of the Field Guide to Construction Site Dewatering to determine the optimal method to achieve sediment removal.

Refer to the applicable project dewatering and/or stormwater permit for monitoring and sampling forms and requirements.

Maintenance and Inspection

Inspect dewatering operation areas at least weekly, prior to a forecasted rain event, daily during extended rain events and post-storm events.

Accumulated sediment removed during the maintenance of a dewatering device may be disposed of outside the right-of-way in conformance with Standard Specifications Section 14-10 Solid Waste Disposal and Recycling.

Accumulated sediment that is commingled with other pollutants must be disposed of in accordance with all applicable laws and regulations.

The WPC Manager must take immediate action to prevent non-stormwater discharges from being discharged.

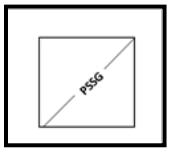
SWPPP or WPCP

Dewatering Operations must be discussed in Section 500.4.1 of SWPPP and specific sample collection, collection and parameters in Section 700.2.3.1 if required by a specific RWQCB Dewatering Permit or Section 30.3.1 of the WPCP.

Paving, Sealing, Sawcutting, and Grinding Operations

NS-3





Standard Symbol

BMP Objectives

Soil Stabilization	☐
Sediment Control	☐
Tracking Control	☐
Wind Erosion Control	☐
Non-Stormwater Management	☑
Materials and Waste Management	☑

Definition and Purpose

Procedures and practices for conducting paving, sealing, sawcutting, and grinding activities to minimize the transport of pollutants to the storm drain system or receiving water body.

Appropriate Applications

These procedures are implemented where operations such as paving, surfacing, resurfacing, grinding, coring, grooving, sealing and sawcutting generate spoils, residue, or process water that may pollute storm water runoff or discharge to the storm drain system or receiving water body.

Limitations

Activities related to paving, sealing, sawcutting, grooving, and grinding operations should be limited when precipitation is forecasted to prevent the triggering for visible and non-visible pollutant monitoring.

Discharges of freshly paved surfaces can raise pH and trigger permit violations.

Paving, Sealing, Sawcutting, and Grinding Operations

NS-3

Standards and Specifications

General Requirements

Refer to Standard Specifications Section 13-4.03E (7) Paving, Sealing, Sawcutting, Grooving, and Grinding Activities.

Do not allow the following materials to enter storm drain system and receiving waters: cementitious material, asphaltic material, aggregate or screenings, sawcutting, grooving, and grinding residue, pavement chunks, shoulder backing, methacrylate resin, and sandblasting residue. This list is not exhaustive.

Drainage inlets shall be protected and linear sediment barriers (such as silt fences, gravel bag berms, or fiber rolls) shall be used to protect receiving waters during operations related to paving, sealing, sawcutting, or grinding.

Drainage inlets and manholes shall be protected during application of seal coat, tack coat, slurry seal, and/or fog seal. Refer to SE-10, "Temporary Drainage Inlet Protection."

Whenever precipitation is forecasted, limit paving, sawcutting, and grinding to places where runoff can be captured. Grinding or grooving of pavement shall not be conducted when precipitation is forecasted unless runoff can be captured.

Seal coat, tack coat, slurry seal, or fog seal shall not be applied when precipitation is forecasted during the application or curing period.

Slurry shall be removed with a vacuum immediately after it is produced and shall be prevented from running off the pavement or into lanes open to traffic.

The residue from grooving and grinding activities shall be collected with a vacuum attachment on the grinding machine and shall be prevented from flowing across the pavement. See also WM-8, "Concrete Waste Management," and WM-10, "Liquid Waste Management."

Material removed from existing roadways may be stockpiled, if allowed, away from drainage inlets and receiving waters in accordance with BMP WM-3, "Stockpile Management" and Standard Specification 13-4.03C(3) Stockpile Management.

Drip pans or absorbent materials shall be placed under paving equipment when not in use. Refer to WM-4, "Spill Prevention and Control." Equipment shall be cleaned in accordance with NS-8, "Vehicle and Equipment Cleaning."

Do not coat asphalt trucks and equipment with substances that contain soap, foaming agents, or toxic chemicals.

Asphalt Concrete and Concrete Pavement Handling

Prevent sand and gravel from entering streets, storm drains, and receiving waters.

Paving, Sealing, Sawcutting, and Grinding Operations

NS-3

Substances used to coat asphalt transport trucks, asphalt trucks, and asphalt spreading equipment shall not contain soap, foaming agents, or toxic chemicals.

Asphalt spoils must be recycled or disposed of in accordance with WM-5, "Solid Waste Management," and/or WM-6, "Hazardous Waste Management."

AC and PCC grindings, pieces, or chunks approved by the RE for reuse in embankments or shoulder backing shall not be at risk of entering storm drain systems or receiving waters.

Temporarily protect inlets and receiving waters until the structure is stabilized or permanent controls are in place.

The reuse of AC or PCC grindings, pieces, or chunks as road base must be placed at least five feet above the seasonal high groundwater elevation with the approval of the RE. Shoulder backing containing Recycled Asphalt Pavement (RAP) shall not be placed within 100 feet measured horizontally from a culvert, watercourse, or bridge and must comply with the 2016 SWMP.

During chip seal application and sweeping operations, petroleum or petroleum covered aggregate must not be allowed to enter storm drains or receiving waters. Temporarily protect inlets and receiving waters until stabilized.

Clean asphalt-coated equipment off-site whenever possible. When cleaning dry, hardened asphalt from equipment, manage hardened asphalt debris in accordance with WM-5, "Solid Waste Management," and/or WM-6, "Hazardous Waste Management," and NS-8 "Vehicle and Equipment Cleaning" whichever is applicable.

Allow aggregate rinse to settle. Then, either allow rinse water to dry in a temporary pit as described in WM-8, "Concrete Waste Management," or dispose in accordance with WM-5, "Solid Waste Management."

Thermoplastic Striping and Pavement Markers

Contractor shall not pre-heat, transfer, or load thermoplastic within 50 feet of drainage inlets or receiving waters.

Do not unload, transfer, or load bituminous material for pavement markers within 50 feet of drainage inlets or receiving waters.

All thermoplastic striper and pre-heater equipment shutoff valves shall be inspected to ensure that they are working properly to prevent thermoplastic from leaking.

The pre-heater shall be filled carefully to prevent splashing or spilling of hot thermoplastic. Leave six inches of space at the top of the pre-heater container when filling thermoplastic to allow room for material to move when the vehicle is deadheaded.

Melting tanks shall be loaded with care, a minimum of six inches of freeboard in case of splashing when vehicle is deadheaded. When servicing or filling melting tanks, ensure all pressure is released before removing lids to avoid spills.

Immediately remove drips, overspray, improper markings, paint, and thermoplastic tracked by traffic with an authorized method.

Collect and dispose of bituminous material from the roadway after removal of markers in accordance with WM-5, "Solid Waste Management."

Clean truck beds daily of loose debris and melted thermoplastic. When possible, recycle thermoplastic material. Thermoplastic waste shall be disposed of in accordance with BMP WM-5, "Solid Waste Management" and/or WM-6, "Hazardous Waste Management, as applicable.

Maintenance and Inspection

Inspect and maintain machinery and BMPs regularly to minimize leaks and drips.

Ensure that employees and subcontractors are implementing appropriate measures during paving operations.

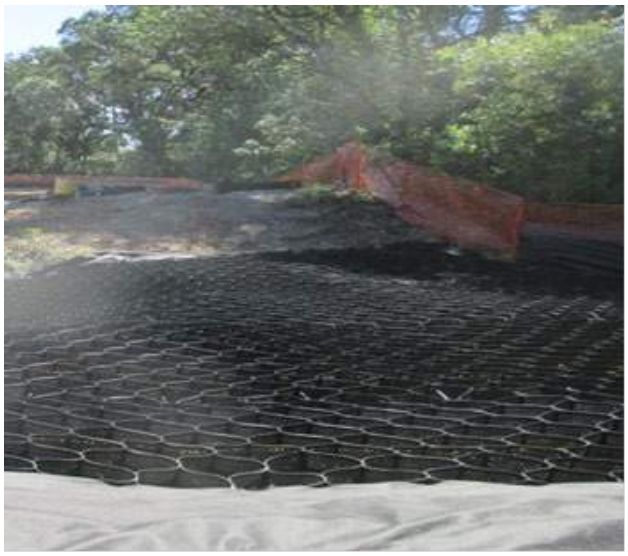
If project operations trigger the IGP (industrial operations located within project limits regardless of whether the facility is within or outside Caltrans' right-of-way and outside Caltrans' right-of-way but within project limits), ensure that any run-on or run-off from IGP activities does not have potential to create pollution onto Caltrans right-of-way. Refer to 2016 SWMP Section 7.2 for additional guidance.

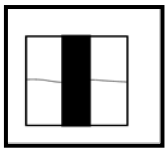
SWPPP or WPCP

Paving, Sealing, Sawcutting and Grinding Operations must be discussed in Section 500.4 of the SWPPP or Section 30.3.1 of the WPCP.

Temporary Stream Crossing

NS-4





Standard Symbol

BMP Objectives

Soil Stabilization	☑
Sediment Control	☐
Tracking Control	☐
Wind Erosion Control	☐
Non-Stormwater Management	☑
Materials and Waste Management	☐

Definition and Purpose

A temporary stream crossing is a structure placed across a stream or water body that allows vehicles to cross during construction and minimize, reduce, or manage erosion and downstream sedimentation caused by the vehicles.

Appropriate Applications

Where appropriate regulatory permits have been secured and requirements strictly followed.

Where construction equipment or vehicles need to frequently cross a waterway.

When alternate access routes impose significant constraints.

When crossing perennial streams or waterways causes significant erosion.

Where construction activities will not last longer than one year.

Limitations

Typically, stream crossings require regulatory permits such as RWQCB 401 Certification, U.S. Army Corps of Engineers 404 permit and approval by California Department of Fish and Wildlife.

If numerical-based water quality standards are mentioned in any of these regulatory permits, monitoring and water quality sampling may be required and must comply with Standard Specification 13-1.01C (4) Water Quality Monitoring or the contract special provisions. If monitoring related to these numerical-based water quality standards is not addressed in the contract documents, contact the RE.

Ensure that project specific requirements from regulatory permits for the installation, removal or restoration of creek banks are fully implemented.

Will usually disturb the waterway during installation and removal.

Installation may require dewatering or temporary diversion of the stream. See NS-2, "Dewatering Operations" and NS-5, "Clear Water Diversion."

May become a constriction in the waterway, which can obstruct flood flow and cause flow backups or washouts. If improperly designed, flow backups can increase the pollutant load through washouts and scouring.

Use of natural or other gravel in the stream for construction of Cellular Confinement System (CCS) ford crossing will be contingent upon approval by fisheries agencies.

Ford crossings may degrade water quality due to contact with vehicles and equipment.

CCS should not be used in excessively high or fast flows.

Upon completion of construction activities, CCS blocks must be removed from stream.

Standards and Specifications

General Requirements

Location of the temporary stream crossing shall address:

Site selection where erosion potential is low.

Areas where the side slopes from highway runoff will not spill into the side slopes of the crossing.

The following types of temporary stream crossings shall be considered:

- Culverts - Used on perennial and intermittent streams.
- Fords - Appropriate during the dry season in arid areas. Used on dry washes and ephemeral streams, and low flow perennial streams. CCS, a type of ford crossing is also appropriate for use in streams.
- Bridges - Appropriate for streams with high flow velocities, steep gradients and/or where temporary restrictions in the channel are not allowed.

Design and installation requires knowledge of stream flows and soil strength. Designs shall be prepared under direction of, and approved by, a registered civil and/or structural engineer. Both hydraulic and construction loading requirements shall be considered with the following:

- Comply with the requirements for culvert and bridge crossings, as contained in the Caltrans Highway Design Manual, particularly if the temporary stream crossing will remain during high flow periods.
- Provide stability in the crossing and adjacent areas to withstand the design flow. The design flow and safety factor shall be selected based on careful evaluation of the risks due to over topping, flow backups, or washout.

- Avoid using oil, AC or other potentially hazardous waste materials for the temporary traveled surface over the stream crossing.

Construction Considerations

Stabilize construction roadways, adjacent work area and stream bed against erosion.

Construct during dry periods to minimize stream disturbance and reduce costs.

Construct at or near the natural elevation of the stream bed to prevent potential flooding upstream of the crossing.

Install temporary sediment control BMPs in accordance with sediment control BMPs presented in Section 4 to minimize embankment scour due to f flow conditions.

Vehicles and equipment shall not be driven, operated, fueled, cleaned, maintained, or stored in the wet or dry portions of a water body where wetland vegetation, riparian vegetation, or aquatic organisms may be destroyed, except as authorized by the construction project regulatory permits, as necessary to complete the work.

Temporary water body crossings and encroachments shall be constructed to minimize scour. Cobbles used for temporary water body crossings or encroachments shall be clean, rounded river cobble.

The exterior of vehicles and equipment that will encroach on the water body within the project shall be maintained free of grease, oil, fuel, and residues.

Disturbance or removal of vegetation shall not exceed the minimum necessary to complete operations. Precautions shall be taken to avoid damage to vegetation. Disturbed vegetation shall be replaced with the appropriate soil stabilization measures. Appropriate use of ESA fencing should be conducted and maintain in accordance with SS-2 “Preservation of Existing Vegetation.”

Riparian vegetation, when removed pursuant to the provisions of the work, shall be cut off no lower than ground level to promote rapid re-growth. Access roads and work areas built over riparian vegetation shall be covered by a sufficient layer of clean river run cobble to prevent damage to the underlying soil and root structure. The cobble shall be removed upon completion of project activities.

Any temporary artificial obstruction placed within flowing water shall only be built from material, such as clean gravel, that will cause little or no siltation.

Drip pans shall be placed under all vehicles and equipment placed on docks, barges, or other structures over water bodies when the vehicle or equipment is planned to be idle for more than one hour.

Specific Considerations

Culverts are relatively easy to construct and able to support heavy equipment loads.

Fords are the least expensive of the crossings, with maximum load limits.

Temporary fords are not appropriate if construction will continue through a period of high flows if thunderstorms are likely, or if the stream is perennial.

CCS crossing structures consist of clean, washed gravel and cellular confinement system blocks. CCS are appropriate for streams that would benefit from an influx of gravel; for example, salmonid streams, streams or rivers below reservoirs, and urban, channelized streams. Many urban stream systems are gravel-deprived due to human influences, such as dams, gravel mines, and concrete channels.

CCS allow designers to use either angular or naturally-occurring, rounded gravel, because the cells provide the necessary structure and stability. In fact, natural gravel is optimal for this technique, because of the habitat improvement it will provide after removal of the CCS.

A gravel depth of 6 to 12 inches for a CCS structure is sufficient to support most construction equipment.

An advantage of a CCS crossing structure is that relatively little rock or gravel is needed, because the CCS provides the stability.

Bridges are generally more expensive to design and construct, but provide the least disturbance of the stream bed and constriction of the waterway flows.

Maintenance and Inspection

Periodic removal of debris behind fords, in culverts, and under bridges.

Replacement of lost protective aggregate from inlets and outlets of culverts.

Removal of temporary crossing promptly when it is no longer needed.

Inspection shall, at a minimum, occur weekly and after each significant rainfall, and include:

- Checking for blockage in the channel, debris buildup in culverts or behind fords, and under bridges.
- Checking for erosion of abutments, channel scour, riprap displacement, or piping in the soil.
- Checking for structural weakening of the temporary crossing, such as cracks, and undermining of foundations and abutments.

The WPC Manager or QSP must ensure that stream crossings do not create potential for sediment laden discharge or other materials onto the waterbody.

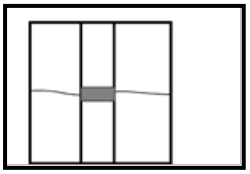
SWPPP or WPCP

Temporary Stream Crossing must be discussed in Section 500.4 of the SWPPP or Section 30.3 of the WPCP.

Clear Water Diversion

NS-5





Standard Symbol



Definition and Purpose

Clear water diversion consists of a system of structures and measures that intercept surface water runoff upstream of a project site, transport it around the work area, and discharge it downstream with minimal water quality degradation from either the project construction operations or the construction of the diversion. Clear water diversions are used to reduce sediment pollution from construction work occurring in or adjacent to water.

Isolation techniques are clear water diversion methods that isolate near shore work from a waterbody. Structures commonly used as part of this system include diversion ditches, berms, dikes, slope drains, rock, gravel bags, wood, sheet piles, aqua barriers, cofferdams, filter fabric or turbidity curtains, drainage and interceptor swales, pipes, or flumes.

Appropriate Applications

A clear water diversion is typically implemented where appropriate permits have been secured and work must be performed in a live stream or water body. Work in jurisdictional waters typically require the following, at a minimum, Clean Water Act Section 404, Clean Water Act Section 401 (RWQCB Water Quality Certification), and Fish and Game Code Section 1600 permits.

Clear water diversions are appropriate for isolating construction activities occurring within or near a water body such as streambank stabilization, or culvert, bridge, pier or abutment installation. They may also be used in combination with other methods, such as clear water bypasses and/or pumps.

Implement SS-12 “Streambank Stabilization” to minimize impacts to streambanks.

Where working areas encroach on live streams, barriers adequate to prevent the flow of muddy water into streams should be constructed and maintained between working areas and streams. During construction of the barriers, muddying of streams should be held to a minimum.

Channel diversions are appropriate for small stream where there is adequate right of way to create a temporary channel around a construction work area, and geosynthetics or rock can be used to handle the shear stresses associated with the expected flows.

Berms are appropriate for small perennial, intermittent, or ephemeral streams with temporary culverts or pipe diversions. Berms may also be used to shift flows to one side or the other within a channel.

Gravel bag berms (SC-6 "Gravel Bag Berms") are appropriate for smaller streams where the hydraulic forces and water pressure can be adequately addressed with the weight of gravel-filled bags and plastic sheeting. This method results in a cofferdam-like isolation from the receiving water.

Cofferdams are appropriate for small streams and lakes to confine flows to one side, create a dry work area, or to berm entire small streams. Typically, this terminology is used in association with structures at Caltrans, though some inflatable cofferdams may be used for smaller applications.

Pumped diversions are suitable for short-term projects in intermittent and low flow streams. Excavation of a temporary bypass channel, or passing the flow through a pipe (called a "flume") is appropriate for the diversion of streams less than 20 ft wide, with flow rates less than 100 cfs.

Piped diversions are appropriate for short-term projects with little base flow.

Water quality monitoring must typically be performed before and during in-water work, including the installation, operation, and removal of clear water diversions. Follow the requirements outlined in the Standard Specification or special provisions.

Limitations

Diversion/encroachment activities will usually disturb the waterway during installation and removal of diversion structures.

Specific permit requirements or mitigation measures, such as those required by the U.S. Army Corps of Engineers, California Department of Fish and Wildlife, Federal Emergency Management Agency (FEMA), Regional Water Quality Control Board (RWQCB), etc. may be included in contract documents because of clear water diversion/encroachment activities.

Diversion/encroachment activities may constrict the waterway, obstruct flood flows and cause flooding or washouts. Diversion structures should not be installed without identifying potential impacts to the stream channel.

Diversion or isolation activities should not completely dam streamflow.

The designer should consider the size, depth of water, and risks for temporary stream diversion. Use this BMP and specification for small streams and low risk projects.

Coffer dams and more elaborate systems should be designed by engineering services staff with the appropriate structural background or by the contractor. The design decision and design parameters should be coordinated by the PDT, so that all permitting and highway design requirements are met.

Dewatering and removal may require additional sediment control or water treatment (See NS-2, "Dewatering Operations").

Heavy equipment driven in wet portions of a water body to accomplish work should be completely clean of petroleum residue, and water levels should be below the gearboxes of the equipment in use, or lubricants and fuels are sealed such that inundation by water should not result in leaks.

Mechanical equipment operated in the water shall not be submerged to a point above any axle of said mechanical equipment.

Excavation equipment buckets may reach out into the water to remove or place fill materials. Only the bucket of the crane/ excavator/backhoe may operate in a water body. The main body of the crane/excavator/backhoe shall not enter the water body, except as necessary to cross the stream to access the work site.

Stationary equipment such as motors and pumps, located within or adjacent to a water body, shall be positioned over drip pans.

Equipment shall not be parked below the high-water mark unless allowed by a regulatory agency permit or approval.

Drip pans shall be placed under all vehicles and equipment placed on docks, barges, or other structures over water bodies when the vehicle or equipment is planned to be idle for more than one hour.

Where possible, avoid or minimize diversion/encroachment impacts by scheduling construction during periods of low flow or when the stream is dry. See also the project special provisions for scheduling requirements.

Scheduling shall also consider seasonal releases of water from dams, fish migration and spawning seasons, and water demands due to crop irrigation.

Materials and equipment should be moved from diversion work area prior to forecasted rain events to prevent non-storm water discharges.

Standards and Specifications

General Requirements

Most small stream diversions can be designed by the district and coordinated with the HQ OHSD. In many cases the diversion can be located on the plan sheet referencing the non-standard specification for Temporary Creek Diversion.

Many projects will have multiple culverts, so it may be appropriate to develop a table of the lump sum costs for each system, this should be provided to the RE to help review the Temporary Creek Diversion System Plan, to help them determine if all needed items are included.

The types of diversion for small to medium sized streams may include:

- Pumped systems
- Temporary culverts
- Inflatable coffer dams (Consult HQ OHSD for specification)

For larger (large rivers, lakes, bays, and ocean areas) temporary creek diversions that have a higher risk to worker safety and a more extensive design is required to address the forces for the depth and flow of the water, the district's structures representative should be consulted for the design (e.g., larger rivers where coffer dams are required). The engineer must consult and follow the Caltrans Engineering Services Shoring Guidance and consult with Construction as the owner of the specification.

- Diversion can be constructed from timber, soil, or steel. But in most cases are designed and constructed with steel sheet piles. Refer to 19-3.03C Cofferdams (sheet piles).
- Guidance: Caltrans Shoring Guide (Engineering Services)
  Dewatering: Field Guide to Construction Site Dewatering, NS-2 "Dewatering Operations," and Section 13-4.03G of the Standard Specifications for use with coffer dams or other large in-water work.
- May need to treat or control seepage water prior to discharge, consult appropriate requirements for treatment design needs.

When any artificial obstruction is being constructed, maintained, or placed in operation, sufficient water shall, at all times, be allowed to pass downstream to maintain aquatic life downstream.

Disturbance or removal of vegetation shall not exceed the minimum necessary to complete operations.

Disturbed vegetation shall be replaced with the appropriate soil stabilization measures and in accordance with the project's special provisions.

Riparian vegetation, when removed pursuant to the provisions of the work, shall be cut off no lower than ground level to promote rapid re-growth. Access roads and work areas built over riparian vegetation shall be covered by a sufficient layer of clean river run rock to prevent damage to the underlying soil and root structure. The rock shall be removed upon completion of project activities.

Construct diversion structures with materials free of potential pollutants such as soil, silt, sand, clay, grease, or oil.

Clear water diversions incorporating clean washed gravel may be appropriate for use in salmon spawning streams.

Coordination with a variety of functional units at the Department may be required to implement this BMP.

Design Considerations

Does the construction of the temporary diversion system cause more environmental damage to the riparian, wetland, or 100-year floodplain area, than to construct the project without the diversion BMP? This is a consideration for all projects, but is usually appropriate for short term construction projects for temporary or ephemeral streams, where scheduling of the project when the stream is dry, may be more effective than the construction of a large diversion system in a sensitive environmental area, where construction equipment could disturb fragile vegetation, roots, sensitive species, soil structure, and root systems.

Stream hydrology considerations include: Stream channel geometry, tributary watershed area, stream bed material, and predicted flow rates during construction. Follow methods in HDM Section 810 for the appropriate methods and rates for sizing the temporary diversion system.

Sizing the temporary diversion. In the past many temporary diversion system guidance documents required mandatory minimum return storms for sizing the systems, for example the 2-year, 5-year, or 10-year, 24-hour return period. This can result in temporary diversion system as large as the drainage system they are replacing and result in large impacts to the stream riparian zone, with large disturbed soil areas. Overly conservative approaches for the hydrology sizing to protect the environment can inadvertently cause other impacts to the environment for its construction. Each project should be sized for the appropriate risks and should be based on regulatory restrictions.

In coordination with District Hydraulics, consider the consequences for diversion exceedance including; public and work safety, environment, legal, regulatory permit requirements, costs, space, and schedule.

Hydrology Sizing Methods

The sizing of clear water diversion systems varies by the time of year, local hydrology, and duration of the diversion. If there is a prescriptive storm size in a permit document, then design to the required event size. A 2-year, 24-hour storm event has been used by many as a default event, but more recent studies have shown that this may oversize the system and cause more disturbance in the sensitive stream zone than is necessary.

Diversion structures must be adequately designed to accommodate fluctuations in water depth or flow volume due to tides, storms, flash floods, etc. Careful analysis of the local hydrology history and risk analysis is required to minimize the diversion impacts.

Temporary Diversions/Encroachments

Construct diversion channels in accordance with SS-9, “Earth Dikes/Drainage Swales, and Ditches.”

In high flow velocity areas, stabilize slopes of embankments and diversion ditches using an appropriate liner, in accordance with SS-12 “Streambank Stabilization,” and SS-7, “Plastic Covers & Rolled Erosion Control Products,” or use rock slope protection, as described in Standard Specifications Section 72 2, “Rock Slope Protection.”

Where appropriate, use natural streambed materials such as large cobbles and boulders for temporary embankment/slope protection, or other temporary soil stabilization methods.

Provide for velocity dissipation at transitions in the diversion, such as the point where the stream is diverted to the channel and the point where the diverted stream is returned to its natural channel. See also SS-10, "Outlet Protection/Velocity Dissipation Devices."

Temporary Dry Construction Areas

When dewatering behind temporary structures to create a temporary dry construction area, such as cofferdams, pass pumped water through a sediment settling device, such as a portable tank, settling basin, or Active Treatment System if necessary, before returning water to the water body; see NS-2, "Dewatering Operations" and Standard Specification 13-8 "Temporary Active Treatment System."

If the presence of polluted water or sediment is identified in the contract, the contractor shall implement dewatering pollution controls as required by the contract documents. If the quality of water or sediment to be removed while dewatering is not identified as polluted in the contract documents, but is later determined by observation or testing to be polluted, the contractor shall notify the RE and comply with Standard Specifications Section 4-1.06 "Differing Site Conditions."

Any substance used to assemble or maintain diversion structures, such as form oil, shall be non-toxic and non-hazardous.

Any material used to minimize seepage underneath diversion structures, such as grout, shall be non toxic, non hazardous, and as close to a neutral pH as possible.

Instream Construction Sediment Control

Instream Construction Sediment Control

There are three different options currently available for reducing turbidity while working in a stream or river. The stream can be:

- Isolated from the area in which work is occurring by means of a water barrier.
- The stream can be diverted around the work site through a pipe or temporary channel.
- One can employ construction practices that minimize sediment suspension.
- The highest hazard for sedimentation from instream construction generally occurs when the sediment control structure is being installed and when it is being removed. Generally, the best time to install the stream isolation or diversion structure is when the stream flow is low. Conversely, the optimum time to remove in-stream diversion or isolation structures may be during the rising limb of a storm hydrograph. A probable "worst time" to release high TSS into a stream system with diminishing aquatic habitat might be when the stream flow is very low; summer low flow, for example. During these times, the flow may be low while the biological activity in the stream is very high. On the other hand, the addition of short-term spike in TSS or sediment during a big storm discharge might have a relatively low impact on the aquatic habitat or turbidity because the stream is already turbid, and the stream energy is capable of transporting both suspended solids, and large quantities of bedload through the system.

Techniques to Minimize Total Suspended Solids (TSS)

Padding - Padding laid in the stream below the work site may trap some solids that are deposited in the stream during construction. After work is done, the padding is removed from the stream, and placed on the bank to assist in revegetation.

Clean, washed gravel - Using clean, washed gravel decreases solid suspension, as there are fewer small particles deposited in the stream.

Excavation using a large bucket - Each time a bucket of soil is placed in the stream a portion is suspended. Approximately the same amount is suspended whether a small amount of soil is placed in the stream, or a large amount. Therefore, using a large excavator bucket instead of a small one, will reduce the total amount of soil that washes downstream.

Use of dozer for backfilling - Using a dozer for backfilling instead of a backhoe follows the same principles – the fewer times soil is deposited in the stream, the less soil will be suspended.

Partial dewatering with a pump - Partially dewatering a stream with a pump reduces the amount of water, and thus the amount of water that can suspend sediment.

Washing Fines

Partial Washing fines is an "in-channel" sediment control method, which uses water, either from a water truck or hydrant, to wash any stream fines that were brought to the surface of the channel bed during restoration, back into the interstitial spaces of the gravel and cobbles. This technique is useful in both intermittent or ephemeral stream channels with gravelly to cobbely substrate and may be useful in perennial streams just prior to removing isolation structures.

The purpose of this technique is to reduce or eliminate the discharge of sediment from the channel bottom during the first seasonal flows, or "first flush." Sediment should not be allowed into stream channels; however, occasionally in-channel restoration work will involve moving or otherwise disturbing fines (sand and silt-sized particles) that are already in the stream, usually below bank-full discharge elevation. Subsequent re-watering (resumption of flows) of the channel can result in a plume of turbidity and sedimentation.

This technique washes the fines back into the channel bed. Bedload materials, including gravel cobbles, boulders and those fines, are naturally mobilized during higher storm flows. This technique is intended to delay the discharge until the fines would naturally be mobilized.

This technique should be used when construction work is required in channels. It is especially useful in intermittent or ephemeral streams in which work is performed "in the dry," and which subsequently become re-watered.

Prior to using this technique consider the following:

- The stream must have sufficient gravel and cobble substrate composition.
- The use of this technique requires consideration of time of year and timing of expected stream flows.

- The optimum time for the use of this technique is in the fall, prior to winter flows.
- Consultation with, and approval from the Department of Fish and Wildlife and the Regional Water Quality Control Board may be required.

The following items should be considered when preparing project plans and specifications when this technique is used:

- Apply sufficient water to wash fines, but not cause further erosion or runoff.
- Apply water slowly and evenly to prevent runoff and erosion.
- Consult with Department of Fish and Wildlife and the Regional Water Quality Control Board for specific water quality requirements of applied water (e.g., chlorine).

Isolation Techniques

Isolation techniques are methods that isolate near shore work from a waterbody. Techniques include sheet pile enclosures, inflatable cofferdams like Aqua Dam, berms or gravel bag berms (see SC-6, “Gravel Bag Berm") with impermeable membrane or plastic sheeting, gravel bags, cofferdams, and K-rail.

Filter Fabric Isolation Technique

A filter fabric isolation structure is a temporary structure built into a waterway to enclose a construction area and reduce sediment pollution from construction work in or adjacent to water. This structure is composed of filter fabric, gravel-filled bags, and steel t-posts.

Filter fabric may be used for construction activities such as streambank stabilization, or culvert, bridge, pier or abutment installation. It may also be used in combination with other methods, such as clean water bypasses and/or pumps.

This method involves placement of gravel bags or continuous berms to “key-in” the fabric, and subsequently staking the fabric in place.

If spawning gravel (gravel between 1 and 4 inches) is used, all other components of the isolation can be removed from the stream, and the gravel can be spread out and left as salmon spawning habitat if permitted in the project’s 404 permit. Whether spawning gravel or other types of gravel are used, only clean washed gravel should be used as infill for the gravel bags or continuous berm.

This is a method that should be used in relatively calm water, and can be used in smaller streams.

Prior to using this technique consider the following:

- Do not use if the installation, maintenance and removal of the structures will disturb sensitive aquatic species of concern.
- Not appropriate for projects where dewatering is necessary.
- Not appropriate to completely dam streamflow.

The following items should be considered when preparing project plans and specifications when this technique is used:

- For the filter fabric isolation method, a non-woven or heavy-duty fabric (refer to Standard Specifications Section 96-1.02B) is recommended over standard silt fence. Using rolled geotextiles allows non-standard widths to be used.
- Anchor filter fabric with gravel-filled bags filled with clean, washed gravel. Do not use sand. If a bag should split open, the gravel can be left in the stream if permitted under the project's 404 permit, where it can provide aquatic habitat benefits.
- Another anchor alternative is a continuous berm, made with the Continuous Berm Machine. This is a gravel-filled bag that can be made in very long segments. The length of the berms is usually limited to 20 ft for ease of handling.
- Place the fabric on the bottom of the stream, and place either a bag of clean, washed gravel or a continuous berm over the bottom of the fabric, such that a bag-width of fabric lies on the stream bottom. The bag should be placed on what will be the outside of the isolation area.
- Pull the fabric up, and place a metal t-post immediately behind the fabric, on the inside of the isolation area; attach the fabric to the post with three diagonal nylon ties.
- Continue placing fabric as described above until the entire work area has been isolated, staking the fabric at least every 6 ft.
- During construction, inspect daily during the workweek.
- Schedule additional inspections during storm events.
- Immediately repair any gaps, holes or scour.
- Remove sediment buildup.
- Ensure pipe diversion is properly anchored to prevent shifting or leaking during use.
- Remove BMP upon completion of construction activity. Recycle or re-use if applicable.
- Re-vegetate areas disturbed by BMP removal if needed.

Turbidity Curtain Isolation Technique

A turbidity curtain is a fabric barrier used to isolate the near shore work area. The barriers are intended to confine the suspended sediment. The curtain is a floating barrier, and thus does not prevent water from entering the isolated area; rather, it prevents suspended sediment from getting out.

Turbidity curtains should be used where sediment discharge to a stream is unavoidable. They are used when construction activities adjoin quiescent waters, such as lakes, ponds, lagoons, bays, and slow flowing rivers. The curtains are designed to deflect and contain sediment within a limited area and provide sufficient retention time so that the soil particles will fall out of suspension.

Prior to using this technique consider the following:

- Turbidity curtains should not be used in flowing water; they are best suited for use in quiescent ponds, lakes, lagoons, bays, and very slow-moving rivers.
- Turbidity curtains should not be placed across the entire width of a channel.
- Removing sediment that has been deflected and settled out by the curtain may create a discharge problem through the re-suspension of particles and by accidental dumping by the removal equipment.
- Turbidity curtains may require a higher level of maintenance, adjustments, and relocation when deployed in comparison to structural isolation methods. However, turbidity curtains consist of

flexible materials and may be repositioned and reconfigured as the limits of construction activity change.

The following items should be considered when preparing project plans and specifications when this technique is used:

- Turbidity curtains should be oriented parallel to the direction of flow wherever possible to avoid exerting excessive pressure on the fabric.
- The curtain should extend the entire depth of the watercourse in calm-water situations.
- In wave conditions, the curtain should extend to within 1 ft of the bottom of the watercourse, such that the curtain does not stir up sediment by hitting the bottom repeatedly. If it is desirable for the curtain to reach the bottom in an active-water situation, a pervious filter fabric may be used for the bottom 1 ft.
- The top of the curtain should consist of flexible flotation buoys, and the bottom shall be held down by a load line incorporated into the curtain fabric. The fabric shall be a brightly colored impervious mesh.
- The curtain shall be held in place by anchors placed at least every 100 ft, or as recommended by the manufacturer based on site-specific conditions, such as flow rate, wind speeds, currents, tidal influence, and wave action.
- First place the anchors, then tow the fabric out in a furled condition, and connect to the anchors. The anchors should be connected to the flotation devices, and not to the bottom of the curtain. Once in place, cut the furling lines, and allow the bottom of the curtain to sink. A second set of anchors may be required in tidally-influenced waters to secure the curtain against both the flood and ebb tides.
- Sediment that has been deflected and settled out by the curtain may be removed if so directed by the on-site inspector or the RE. Consideration must be given to the probable outcome of the removal procedure. It must be asked if it will create more of a sediment problem through re-suspension of the particles or by accidental dumping of material during removal. It is recommended that the soil particles trapped by the turbidity curtain only be removed if there has been a significant change in the original contours of the affected area in the watercourse.
- Particles should always be allowed to settle for a minimum of 6 to 12 hours prior to their removal or prior to removal of the turbidity curtain.
- The curtain should be inspected daily for holes or other problems, and any repairs needed should be made promptly.
- Allow sediment to settle for 6 to 12 hours prior to removal of sediment or curtain. This means that after removing sediment, wait an additional 6 to 12 hours before removing the curtain.
- To remove, install furling lines along the curtain, detach from anchors, and tow out of the water. Water quality monitoring is typically required before removing the turbidity curtain to verify that the entrained water, sediment, and other potential contaminants, such as sulfides, would not violate a water quality standard when released.

K-rail River Isolation

This is temporary sediment control, or stream isolation method that uses K-rails to form the sediment deposition area, or to isolate the in-stream or near-bank construction area.

Barriers are placed end-to-end in a pre-designed configuration and gravel-filled bags are used at the toe of the barrier and also at their abutting ends to seal and prevent movement of sediment beneath or through the barrier walls.

The K-rail isolation can be used in streams with higher water velocities than many other isolation techniques.

Prior to using this technique consider the following:

- The K-rail method does not allow for full dewatering.

The following items should be considered when preparing project plans and specifications when this technique is used:

- To create a floor for the K-rail, move large rocks and obstructions. Place washed gravel and gravel-filled bags to create a level surface for K-rail to sit.
- Place the bottom two K-rails adjacent to each other, and parallel to the direction of flow; fill the center portion with gravel bags. Then place the third K-rail on top of the bottom two; there should be sufficient gravel bags between the bottom K-rails such that the top one is supported by the gravel. Place plastic sheeting around the K-rails, and secure at the bottom with gravel bags.
- Further support can be added by pinning and cabling the K-rails together. Also, large riprap and boulders can be used to support either side of the K-rail, especially where there is strong current.
- The barrier should be inspected at least once daily, and any damage, movement or other problems should be addressed immediately.
- Sediment should be allowed to settle for at least 6 to 12 hours prior to removal of sediment, and for 6 to 12 hours prior to removal of the barrier.

Stream Diversions

Stream diversions consist of a system of structures and measures that intercept an existing stream upstream of the project and, transports it around the work area, and discharges it downstream. The selection of which stream diversion technique to use depends upon the type of work involved, physical characteristics of the site, and the volume of water flowing through the project.

Pumped diversions are appropriate in areas where de-watering is necessary.

Dam-type diversions may serve as temporary access to the site.

Where work areas require isolation from flows.

Prior to using this technique consider the following:

- Pumped diversions have limited flow capacity.
- Pumped diversion require frequent monitoring of pumps.
- Large flows during storm events can overtop dams.
- Flow diversion and re-direction with small dams involves in-stream disturbance and mobilization of sediment.

The following items should be considered when preparing project plans and specifications when this technique is used:

- Installation guidelines will vary based on existing site conditions and type of diversion used.
- Diversions shall be sized to convey design flood flows.
- Pump capacity must be sufficient for design flow; the upper limit is approximately 10 cfs (the capacity of two 8 inch pumps).
- Adequate energy dissipation must be provided at the outlet to minimize erosion.
- Dam materials used to create dams upstream and downstream of diversion should be erosion resistant; materials such as steel plate, sheetpile, sandbags, continuous berms, inflatable water bladders, etc. would be acceptable.
- When constructing a diversion channel, begin excavation of the channel at the proposed downstream end, and work upstream. Once the watercourse to be diverted is reached, and the excavated channel is stable, breach the upstream end, and allow water to flow down the new channel. Once flow has been established in the diversion channel, install the diversion weir in the main channel; this will force all water to be diverted from the main channel.
- Inspect diversion/encroachment structures before and after significant storms, and at least once per week while in service. Inspect daily during the construction.
- Pumped diversions require frequent monitoring of pumps.
- Inspect embankments and diversion channels before and after significant storms, and at least once per week while in service for damage to the linings, accumulating debris, sediment buildup, and adequacy of the slope protection. Remove debris and repair linings and slope protection as required. Repair holes, gaps, or scour.
- Upon completion of work, the diversion or isolation structure should be removed and flow should be re-directed through the new culvert or back into the original stream channel. Recycle or re-use if applicable.

SWPPP or WPCP

Clear Water Diversion must be discussed in Section 500.4 of the SWPPP or Section 30.3 of the WPCP.

Illegal Connection and Illicit Discharge Detection and Reporting

NS-6





Standard Symbol



Definition and Purpose

Procedures and practices designed for construction contractors to recognize illegal connections, illicit discharges or illegally dumped or discharged materials on a construction site and report incidents to the RE.

Appropriate Applications

Illegal connection and Illicit discharge detection and reporting is applicable anytime an illegal connection or illicit discharge is discovered, or illegally dumped material is found on the construction site.

This BMP applies to all construction projects.

Limitations

Illegal connection and Illicit discharge or dumping, for the purposes of this BMP, refer to discharges and dumping caused by parties other than the contractor.

Procedures and practices presented in this BMP are general. Contractor shall use extreme caution, immediately notify the RE when illicit connections or illegal dumping or discharges are discovered, and take no further action unless directed by the RE.

If pre-existing hazardous materials or wastes are known to exist onsite, the contractor's responsibility will be detailed in separate special provisions. Onsite area should be clearly marked and described in the SWPPP or WPCP.

Illegal Connection and Illicit Discharge Detection and Reporting

NS-6

Standards and Specifications

Inspection

Inspect site before beginning the job for evidence of Illegal connections or illicit dumping or discharges.

Illegal Connection and Illicit Discharge Detection and Reporting

Solids Look for debris or trash piles. Solid waste dumping often occurs on roadways with light traffic loads or in areas not easily visible from the traveled way.

Liquids – signs of illegal liquid dumping or discharge can include:

- Visible signs of staining or unusual colors to the pavement or surrounding adjacent soils.
- Pungent odors coming from the drainage systems.
- Discoloration or oily substances in the water or stains and residues detained within ditches, channels or drain boxes.
- Abnormal water flow during the dry weather season.

Urban Areas - Evidence of illegal connections or illicit discharges is typically detected at storm drain outfall locations or at manholes. Signs of an illegal connection or illicit discharge can include:

- Abnormal water flow during the dry weather season.
- Unusual flows in subdrain systems used for dewatering.
- Pungent odors coming from the drainage systems.
- Discoloration or oily substances in the water or stains and residues detained within ditches, channels or drain boxes.
- Excessive sediment deposits, particularly adjacent to or near active off-site construction projects.

Rural Areas - Illegal connections or illicit discharges involving irrigation drainage ditches are detected by visual inspections. Signs of an illicit discharge can include:

- Abnormal water flow during the dry weather season.
- Non-standard drainage junction structures.
- Broken concrete or other disturbances at or near junction structures.

Reporting

Notify the RE of any illegal connections and illicit dumping or discharge incidents at the time of discovery. Do not take further action unless ordered.

The RE will notify the District Construction Stormwater Coordinator, who should coordinate with the NPDES Coordinator for reporting.

Illegal Connection and Illicit Discharge Detection and Reporting

NS-6

Inspection, Cleanup, and Removal

Notify the RE of any illegal connections and illegal dumping or illicit discharge incidents at the time of discovery. Do not take further action unless ordered.

The contractor is not responsible for investigation and clean-up of illegal connections or dumping or illicit discharges not generated by the contractor. Caltrans may direct the contractor to clean up non-hazardous dumped or discharged material on the construction site. Assume that unlabeled or unidentifiable material is hazardous.

Inspect the entire project site at least weekly to check for illegal connections or illicit discharges.

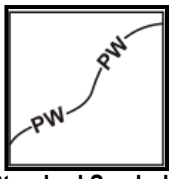
SWPPP or WPCP

Illegal Connection and Illicit Discharge Detection and Reporting must be discussed in Section 500.4.1 of the SWPPP or Section 30.3 of the WPCP.

Potable Water/Irrigation

NS-7





Standard Symbol



Definition and Purpose

Potable Water/Irrigation management consists of practices and procedures to manage the discharge of potential pollutants generated during discharges from irrigation water lines, landscape irrigation, lawn or garden watering, planned and unplanned discharges from potable water sources, water line flushing, and hydrant flushing.

Appropriate Applications

Implement this BMP whenever the above activities or discharges occur at or enter a construction site.

Limitations

None identified.

Standards and Specifications

Inspect irrigated areas within the construction limits for excess watering. Adjust watering times and schedules to ensure that the appropriate amount of water is being used and to minimize runoff. Consider factors such as soil structure, grade, relative compaction, time of year, and type of plant material in determining the proper amounts of water for a specific area.

Take precautions to prevent irrigation water from eroding soil, wetting vehicles and pavement, or otherwise causing sediment, hydrocarbons, and other non-visible pollutants that accumulate on those surfaces to discharge into a storm drain system or receiving waterbody.

Potable Water/Irrigation

NS-7

When possible, discharges from water line flushing or temporary Active Treatment Systems (see Appendix C "Temporary Active Treatment System) should be reused for landscaping purposes.

Resident Engineer (RE) approval is required prior to commencing any washing activities that could discharge to the storm drain or receiving waterbody.

Where possible, direct water from off-site sources around or through a construction site in a way that minimizes contact with the construction site.

Perform pressure tests on the irrigation system supply lines to test for leaks, which could result in erosion or runoff if breached.

Shut off the water source to broken lines, sprinklers, or valves as soon as possible to prevent excess water flow.

Protect downstream storm water drainage systems and receiving waters from water pumped or bailed from trenches excavated to repair water lines.

Maintenance and Inspection

Repair broken water lines as soon as possible or as directed by the RE.

Inspect irrigated areas regularly for signs of erosion and/or discharge.

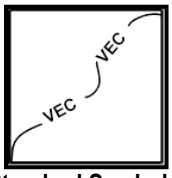
SWPPP or WPCP

Potable Water/Irrigation must be discussed in Section 500.4 of the SWPPP and/or Section 30.3 of the WPCP.

Vehicle and Equipment Cleaning

NS-8





Standard Symbol



Definition and Purpose

Vehicle and equipment cleaning procedures and practices are used to minimize or eliminate the discharge of pollutants from vehicle and equipment cleaning operations to storm drain systems or to watercourses.

Appropriate Applications

These procedures are applied on all construction sites where vehicle and equipment cleaning is performed.

Limitations

This BMP may be limited or disallowed under regulatory agency permits, particularly near Environmentally Sensitive Areas (ESAs).

Generates non-stormwater that requires management, and, in some cases, the disposal of hazardous waste.

Standards and Specifications

General Requirements

Limit vehicle and equipment cleaning or washing at the job site except for the safety and protection of the equipment and as needed to comply with regulatory agency permits and approvals.

Cleaning of vehicles and equipment with soap, solvents or steam shall not occur on the job site unless the RE has been notified in advance and the resulting wastes are fully contained in accordance with Standard Specifications Section 14-11 or 13-4.03D (5), whichever is applicable. Do not use diesel to clean vehicles and minimize the use of solvents.

Vehicle and Equipment Cleaning

NS-8

Vehicle and equipment wash water shall be contained for percolation or evaporative drying away from storm drain inlets or receiving waters and should not be discharged within the highway right-of-way. Apply other appropriate BMPs as applicable.

All vehicles/equipment that regularly enter and leave the construction site must be cleaned off-site.

Resulting wastes and by-products shall not be discharged or buried within the highway right-of-way, and must be captured and recycled or disposed according to the requirements of WM-10, "Liquid Waste Management" or WM-6, "Hazardous Waste Management," depending on the waste characteristics.

Implementation

When vehicle/equipment washing/cleaning must occur onsite, and the operation cannot be located within a structure or building equipped with appropriate disposal facilities, the outside cleaning area shall have the following characteristics, and shall be arranged with the WPC Manager, QSD, or QSP as well as the Construction Storm Water Coordinator:

- Located away from storm drain inlets, drainage facilities, or watercourses.
- Paved with concrete or asphalt and bermed to contain wash waters and to prevent run-on and runoff.
- Configured with a sump to allow collection and disposal of wash water.
- Wash waters shall not be discharged to storm drains or watercourses.
- Used only when necessary.

When cleaning vehicles/equipment with water:

- Use as little water as possible. High pressure sprayers may use less water than a hose, and shall be considered.
- Use positive shutoff valve to minimize water usage.
- Facility wash racks shall discharge to a sanitary sewer, recycle system or other approved discharge system and shall not discharge to the storm drainage system or watercourses.

Maintenance and Inspection

The control measure shall be inspected at least weekly, prior to a forecasted rain event, daily during extended rain events and post-storm events.

Inspect wash area and sump regularly. Remove liquids and sediment as needed or as directed by the RE.

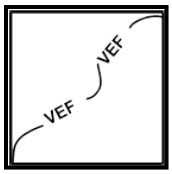
SWPPP or WPCP

Vehicle Equipment Cleaning must be discussed in Section 500.4.2 of the SWPPP or Section 30.3 of the WPCP.

Vehicle and Equipment Fueling

NS-9





Standard Symbol



Definition and Purpose

Vehicle and equipment fueling procedures and practices are designed to minimize or eliminate the discharge of fuel spills and leaks into storm drain systems or to receiving waters.

Appropriate Applications

These procedures are applied on all construction sites where vehicle and equipment fueling takes place.

Limitations

This BMP may be limited or disallowed under regulatory agency permits, particularly near Environmentally Sensitive Areas (ESAs).

Onsite vehicle and equipment fueling should only be used where it's impractical to send vehicles and equipment off-site for fueling.

Standards and Specifications

When fueling must occur onsite, the contractor shall select and designate an area or areas to be used, subject to approval of the RE.

Dedicated fueling areas shall be protected from stormwater run-on and runoff, and shall be located at least 50 feet from downstream drainage facilities and watercourses. Fueling must be performed on level-grade areas.

Protect fueling areas with berms or dikes to prevent run-on, runoff, and to contain spills.

For long-term projects, consider constructing roofs or using portable tents over maintenance and fueling areas.

Absorbent spill clean-up materials and spill kits shall be available in fueling areas and on fueling trucks and used on small spills instead of hosing down or burying techniques. Affected absorbent material and spill kits should be removed promptly and disposed of properly after use.

Drip pans or absorbent pads shall be readily available during vehicle and equipment fueling.

Vehicle and equipment fueling areas shall not be left unattended during fueling activities.

Nozzles used in vehicle and equipment fueling shall be equipped with an automatic shut-off to control drips.

Use vapor recovery nozzles to help control drips as well as air pollution where required by the Air Quality Management Districts.

Ensure the nozzle is secured upright when not in use.

Fuel tanks shall not be "topped-off."

Federal, state, and local requirements shall be observed for any stationary above ground storage tanks. Refer to WM-1, “Material Delivery and Storage” for specifics as to what needs to be included for BMP protection and documented in the SWPPP or WPCP.

Portable fuel canisters should be kept in a flammable cabinet when not in use.

Maintenance and Inspection

Vehicles and equipment shall be inspected on each day of use for leaks. Leaks shall be repaired immediately or problem vehicles or equipment shall be removed from the project site.

Fueling areas and storage tanks shall be inspected at least weekly, prior to a forecasted rain event, daily during extended rain events and post-storm events.

Immediately cleanup spills and properly dispose of contaminated soil and cleanup materials.

SWPPP or WPCP

Vehicle and Equipment Fueling must be discussed in Section 500.4.2 of the SWPPP or Section 30.3 of the WPCP.

Vehicle and Equipment Maintenance NS-10





Standard Symbol



Definition and Purpose

Procedures and practices to minimize or eliminate the discharge of pollutants to the storm drain systems or to receiving waters from vehicle and equipment maintenance activities.

Appropriate Applications

These procedures apply on all construction projects where an onsite uncovered yard area is necessary for storage and maintenance of heavy equipment and vehicles.

Limitations

This BMP may be limited or disallowed under regulatory agency permits, particularly near Environmentally Sensitive Areas (ESAs).

Onsite vehicle and equipment maintenance should only be used where it's impractical to send vehicles and equipment off-site for fueling.

Standards and Specifications

When maintenance must occur onsite, the contractor shall select and designate an area to be used, subject to approval of the RE and implement appropriate controls for the activities to be performed.

Dedicated maintenance areas shall be on level ground and protected from storm water run-on and runoff, and shall be located at least 50 ft from downstream drainage facilities and receiving waters.

Protect maintenance areas with berms or dikes to prevent run-on, runoff, and to contain spills.

For long-term projects, consider constructing roofs or using portable tents over maintenance areas.

Absorbent spill clean-up materials and spill kits shall be available in maintenance areas and used on small spills instead of hosing down or burying techniques. Affected absorbent material and spill kits should be removed promptly and disposed of properly after use.

Drip pans or absorbent pads shall be placed under vehicles and equipment when performing maintenance work that involves fluids. Vehicles and equipment maintenance areas shall not be left unattended during maintenance activities.

Drip pans or plastic sheeting shall be placed under all vehicles and equipment placed on docks, barges, or other structures over water bodies when the vehicle or equipment is planned to be idle for more than one hour.

Properly dispose or recycle used batteries and tires as well as any other vehicle or equipment parts.

Substances used to coat asphalt transport trucks and asphalt-spreading equipment shall be non-toxic.

Properly dispose of used oils, fluids, lubricants, and spill cleanup materials.

Do not dump fuels and lubricants onto the ground.

Do not place used oil in a dumpster or pour into a storm drain or watercourse.

Do not bury used tires.

Repair fluid and oil leaks immediately.

Provide spill containment dikes or secondary containment around stored oil and chemical drums. Refer to WM-1, "Material Delivery and Storage" for details.

Maintenance and Inspection

Vehicles and equipment shall be inspected on each day of use for leaks. Leaks shall be repaired immediately or removed from the project site.

Maintenance areas and storage tanks shall be inspected regularly.

Maintain waste fluid containers in leak proof condition.

Inspect equipment for damaged hoses and leaky gaskets routinely. Repair or replace as needed.

Inspection and Maintenance of these areas must be properly documented and the WPC Manager must ensure no potential for discharges occur from these areas as part of the non-visible monitoring requirements.

SWPPP or WPCP

Vehicle and Equipment Maintenance must be discussed in Section 500.4 of the SWPPP or Section 30.3 of the WPCP.

Pile Driving Operations

NS-11





Standard Symbol



Definition and Purpose

The construction and retrofit of bridges and retaining walls often include driving piles for foundation support and shoring operations. Driven piles are typically constructed of concrete, steel, or timber. Driven sheet piles are used for shoring and cofferdam construction. Proper control and use of equipment, materials, and waste products from pile driving operations will reduce the discharge of potential pollutants to the storm drain system or receiving waters.

Appropriate Applications

These procedures apply to construction sites near or adjacent to surface waters or groundwater where permanent and temporary pile driving operations (impact and vibratory) take place, including operations using pile shells for construction of cast-in-steel-shell and cast-in-drilled-hole piles.

Limitations

None identified.

Standards and Specifications

Have spill kits and cleanup materials available at all locations of pile driving. Refer to WM-4 "Spill Prevention and Control."

Place drip pans, absorbent pads, or plastic sheeting with absorbent material under vehicles and equipment performing pile driving activities. Refer to NS-9 "Vehicle and Equipment Fueling" and NS-10 "Vehicle and Equipment Maintenance."

Pile Driving Operations

NS-11

Protect pile driving equipment, including hammers and other hydraulic attachments, by parking them on plywood and covering it with plastic sheeting when precipitation is forecasted.

When not in use, store pile driving equipment on level ground away from concentrated flows of storm water, drainage courses, and inlets.

Use less hazardous vegetable oil instead of hydraulic fluid, when practicable.

Keep equipment that is in use in streambeds; or on docks, barges, or other structures over water bodies, leak free. The storage or use of equipment in streambeds or other bodies of water shall comply with all applicable regulatory permits. Refer to NS-13, "Material and Equipment Use Over Water."

Implement other BMPs as applicable, such as NS-2 "Dewatering Operations," WM-5 "Solid Waste Management," WM-6 "Hazardous Waste Management," and WM-10 "Liquid Waste Management."

Maintenance and Inspection

Inspect pile driving areas and equipment for leaks and spills daily when they are in operation or within or next to water.

Inspect pile driving areas and equipment for leaks and spills at least weekly, prior to a forecasted rain event, daily during extended rain events and post-storm events.

Inspect equipment routinely and repair equipment as needed (e.g., worn or damaged hoses, fittings, gaskets).

Inspection and Maintenance of these areas must be properly documented and the WPC Manager must ensure no potential for discharges occur from these areas as part of the non-visible monitoring requirements.

SWPPP or WPCP

Pile Driving Operations must be discussed in Section 500.4 and 600.2 of the SWPPP or Section 30 of the WPCP.

Concrete Curing

NS-12





Standard Symbol

BMP Objectives

Soil Stabilization	☐
Sediment Control	☐
Tracking Control	☐
Wind Erosion Control	☐
Non-Stormwater Management	☑
Materials and Waste Management	☑

Definition and Purpose

Concrete curing is used in the construction of structures such as bridges, retaining walls, and pump houses. Concrete curing includes the use of both chemical and water methods. Proper procedures to minimize any potential for runoff during concrete curing must take place.

Appropriate Applications

All concrete elements of a structure (e.g., footings, columns, abutments, stems, soffit, deck) are subject to curing requirements.

Limitations

None identified.

Standards and Specifications

Chemical Curing

Avoid over-spray of curing compounds.

Minimize the drift of chemical cure as much as possible by applying the curing compound close to the concrete surface. Apply an amount of compound that covers the surface, but does not allow any runoff of the compound.

Use proper storage and handling techniques for concrete curing compounds. Refer to WM-1, "Material Delivery and Storage."

Protect drain inlets prior to the application of curing compounds. Refer to SC-10, "Temporary Drainage Inlet Protection."

Implement WM-4, "Spill Prevention and Control.

Water Curing for Bridge Decks, Retaining Walls, and Other Structures

Direct cure water away from inlets and receiving waters to collection areas for removal as approved by the RE and in accordance with all applicable permits.

Collect cure water and transport or dispose of water in accordance with all applicable permits

Utilize wet blankets or a similar method that maintains moisture while minimizing the use and possible discharge of water.

Maintenance and Inspection

Ensure that employees and subcontractors implement appropriate measures for storage, handling, and use of curing compounds.

Inspect any temporary diversion devices, lined channels, or swales for washouts, erosion, runoff or debris. Replace lining and remove debris as necessary.

Inspect cure containers and spraying equipment for leaks. Also, inspect concrete curing areas daily when there are ongoing operations.

The WPC Manager or QSP must ensure no concrete curing activities occur when rain is forecasted that could lead to a discharge.

SWPPP or WPCP

Concrete Curing must be discussed in Section 500.4 of the SWPPP or Section 30.3 of the WPCP.

Material and Equipment Use Over Water

NS-13





Standard Symbol



Definition and Purpose

Procedures for the proper use, storage, and disposal of materials and equipment on barges, boats, temporary construction pads, or similar locations that minimize or eliminate the discharge of potential pollutants into storm drain inlets or receiving waters.

Appropriate Applications

These procedures shall be implemented for construction materials and wastes (solid and liquid) and any other materials that may be detrimental if released. Applies where materials and equipment are used on barges, boats, docks, and other platforms over or adjacent to a watercourse.

Limitations

Specific requirements may be included in the contract documents and permit documents associated with regulatory agencies such as the Regional Water Quality Control Board (RWQCB), U.S. Army Corps of Engineers, and California Department of Fish and Wildlife.

Standards and Specifications

Measures to prevent the discharge of potential pollutants into storm drain inlets or receiving waters while operating equipment or using materials over water are considered BMPs by the regulatory agencies and should be documented in the SWPPP.

Material and Equipment Use Over Water

NS-13

Implement this BMP in accordance with all necessary permits required for construction within or near receiving waters, such as RWQCB, U.S. Army Corps of Engineers, Department of Fish and Wildlife and other local permitting agencies.

Place drip pans and absorbent materials under equipment and vehicles and ensure that an adequate supply of spill cleanup materials is onsite in accordance with a spill response plan, if applicable. Ensure that staff are trained regarding the deployment of the spill response plan.

Drip pans shall be placed under all vehicles and equipment placed on docks, barges, or other structures over water bodies when the vehicle or equipment is expected to be idle for more than one hour.

Install watertight curbs or toe boards to contain spills and prevent materials, tools, and debris from falling off the barge, platform, dock, etc.

Secure all materials to prevent discharges to receiving waters via wind.

Discharges to receiving waters shall be reported to the RE and the WPC Manager immediately upon discovery.

Maintain vehicles and equipment in accordance with NS-10, "Vehicle and Equipment Maintenance." If a leaking line cannot be repaired, remove equipment from over the water and repair immediately.

Collect and contain demolished material in accordance with NS-15, "Structure Demolition/Removal Over or Adjacent to Water."

Refer to WM-1, "Material Delivery and Storage" and WM-4, "Spill Prevention and Control."

Ensure the timely and proper removal of accumulated wastes over water. Refer to WM-5, "Solid Waste Management" and WM-6, "Hazardous Waste Management."

Maintenance and Inspection

Inspect vehicles and equipment for leaks and spills daily when they are in operation, make necessary repairs.

Ensure that employees and subcontractors implement appropriate measures for storage and use of materials and equipment.

Inspect and maintain all associated BMPs and perimeter controls to ensure continuous protection of the watercourse.

Inspect materials and equipment for leaks and spills at least weekly, prior to a forecasted rain event, daily during extended rain events and post-storm events.

Inspect equipment routinely and repair equipment as needed (e.g., worn or damaged hoses, fittings, gaskets).

Material and Equipment Use Over Water

NS-13

Inspection and Maintenance of these areas must be properly documented and ensure no potential for discharges occur from these areas as part of the non-visible monitoring requirements.

SWPPP or WPCP

Material and Equipment Use Over Water must be discussed in Section 500.4.1 of the SWPPP or Section 30.3.1 of the WPCP.

Concrete Finishing

NS-14





Standard Symbol

BMP Objectives

Soil Stabilization	☐
Sediment Control	☐
Tracking Control	☐
Wind Erosion Control	☐
Non-Stormwater Management	☑
Materials and Waste Management	☑

Definition and Purpose

Concrete finishing methods are used for bridge deck rehabilitation, paint removal, curing compound removal, and final surface finish appearances. Methods include sand blasting, shot blasting, grinding, or high-pressure water blasting. Proper procedures minimize the impact that concrete finishing methods may have on runoff.

Appropriate Applications

These procedures apply to all construction locations where concrete finishing operations are performed.

Limitations

Specific permit requirements may be included in the contract documents for certain concrete finishing operations.

Standards and Specifications

General Requirements

Follow containment requirements stated in the project special provisions.

Collect and properly dispose of water and solid waste from high-pressure water blasting operations.

Collect and properly dispose of water from water blasting operations, sand and solid waste from sandblasting operations.

Protect drainage inlets within 50 feet of the sandblasting prior to beginning sandblasting operations. Refer to SC-10, “Temporary Drainage Inlet Protection.”

Implement SC-7, "Street Sweeping" within the sand blasting and surrounding area.

Minimize the drift of dust and blast material as much as possible by keeping the blasting nozzle close to the surface.

Discharges to waterways shall be reported to the RE by the WPC Manager immediately upon discovery.

Other Considerations

Direct water from blasting operations away from inlets and receiving waters to collection areas for removal (e.g., dewatering) as approved in advance by the RE and in accordance with applicable permits.

When blast residue contains a potentially hazardous waste, refer to WM-6, "Hazardous Waste Management."

Implement WM-8, "Concrete Waste Management" in combination with this BMP.

Maintenance and Inspection

At a minimum, inspect containment structures, if any, for damage or voids prior to use each day and prior to a likely forecasted rain event.

At the end of each work shift, remove and contain the liquid and solid wastes from containment structures, if any, and from the general work area.

Inspect concrete finishing areas at least weekly, prior to a forecasted rain event, daily during extended rain events and post-storm events.

Inspection and Maintenance of these areas must be properly documented and ensure no potential for discharges occur from these areas as part of the non-visible monitoring requirements.

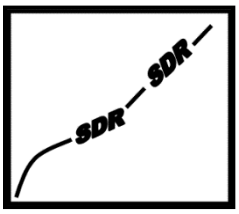
SWPPP or WPCP

Concrete Finishing must be discussed in Section 500.4 of the SWPPP or Section 30.3.1 of the WPCP.

Structure Demolition/Removal Over or Adjacent to Water

NS-15





Standard Symbol

BMP Objectives

Soil Stabilization	☐
Sediment Control	☐
Tracking Control	☐
Wind Erosion Control	☐
Non-Stormwater Management	☑
Materials and Waste Management	☐

Definition and Purpose

Procedures to protect water bodies from debris and wastes associated with structure demolition or removal over or adjacent to receiving waters.

Appropriate Applications

Full bridge demolition and removal projects.

Partial bridge removal (e.g., barrier rail, edge of deck) associated with bridge widening projects.

Projects that involve concrete channel removal.

Any other project with structure removal that could potentially affect water quality.

Limitations

Specific requirements may be included in the contract documents and permit documents associated with regulatory agencies such as the Regional Water Quality Control Board, U.S. Army Corps of Engineers, and California Department of Fish and Wildlife.

Structure Demolition/Removal Over or Adjacent to Water

NS-15

Standards and Specifications

General Requirements

A plan summarizing material containment, collection, and handling may be required to be submitted and fully implemented with the SWPPP.

Do not allow demolished material to enter storm drain systems and receiving waters. Use covers and platforms authorized by the RE to collect debris.

Collect and contain all demolished material within the containment system including process water and visible dust produced during demolition and cleaning operations daily. Handle debris according to Standard Specifications Section 13-4.03D.

Implement in combination with NS-13, "Material and Equipment Use Over Water" and WM-04 "Spill Prevention and Control," for handling of materials and equipment.

Routinely sweep and vacuum work area to remove excess dust and debris in accordance with SC-07, "Street Sweeping."

Use inlet protection in accordance with SC-10, "Temporary Drainage Inlet Protection," to protect storm drain inlets.

Refer to NS-5, "Clear Water Diversion" to direct water away from work areas.

Stockpile accumulated debris and waste generated during demolition away from drainage inlets and receiving waters and in accordance with WM-3, "Stockpile Management."

For structures containing hazardous materials (e.g., lead paint or asbestos) refer to WM-6, "Hazardous Waste Management." For demolition work involving soil excavation around lead-painted structures, refer to WM 7, "Contaminated Soil Management."

Discharges to drainage inlets and receiving waters shall be reported to the RE and WPC Manager immediately upon discovery. A written discharge notification must follow.

Keep adequate spill kit material onsite in accordance with a spill response plan, if applicable. Ensure that staff are trained regarding the deployment of the spill response plan.

Ensure safe passage of wildlife, refer to Standard Specifications 83-3 Concrete Barriers.

Other Considerations

Use attachments on construction equipment, such as backhoes and debris baskets, or barges to catch debris from demolition operations. Use plastic bibs to prevent hydraulic fuel leaks.

Install perimeter controls and secondary containment to prevent leaks and spills from entering receiving waters. Perimeter controls and secondary containment may include sealed plywood and/or plastic sheeting,

plastic liners and/or tarps, netting, silt fences, drip pans, containment booms and berms, and absorbent material.

Maintenance and Inspection

Contractor must inspect demolition areas and containment systems over or adjacent to receiving waters daily when operations are ongoing.

Any debris-catching devices and containment systems shall be emptied daily. Collected debris shall be removed and stored away from the drainage inlets and receiving waters and protected from run-on and runoff.

Inspect demolition and containment systems over or adjacent to for leaks and spills at least weekly, prior to a forecasted rain event, daily during extended rain events and post-storm events.

Inspection and Maintenance of these areas must be properly documented and ensure no potential for discharges occur from these areas as part of the non-visible monitoring requirements.

SWPPP or WPCP

Structure Demolition/Removal Over or Adjacent to Water must be discussed in Section 500.4.1 of the SWPPP or Section 30 of the WPCP.

Section 8

Waste Management and Materials Pollution Control BMPs

8.1 Waste Management and Materials Pollution Control

Waste management and materials pollution control BMPs, like non- stormwater management BMPs, are source control BMPs that prevent pollution by limiting or reducing potential pollutants at their source before they come in contact with stormwater. These BMPs also involve day-to-day operations of the construction site and are under the control of the Contractor, and are additional "good housekeeping practices," which involve keeping a clean, orderly construction site.

Waste Management BMPs

Waste management consists of implementing procedural and structural BMPs for handling, storing, and disposing of wastes generated by a construction project to prevent the release of waste materials into stormwater discharges.

Materials Pollution Control BMPs

Materials pollution control (also called materials handling) consists of implementing procedural and structural BMPs for handling, storing, and using construction materials to prevent the release of those materials into stormwater discharges. The objective is to reduce the opportunity for rainfall to come in contact with these materials. These controls must be implemented for all applicable activities, material usage and site conditions.

Table 8-1 lists the waste management and materials pollution control BMPs.

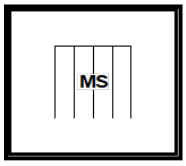
Table 8-1. Waste Management and Materials Pollution Control BMPs	
ID	BMP Name
WM-1	Material Delivery and Storage
WM-2	Material Use
WM-3	Stockpile Management
WM-4	Spill Prevention and Control
WM-5	Solid Waste Management
WM-6	Hazardous Waste Management
WM-7	Contaminated Soil Management
WM-8	Concrete Waste Management
WM-9	Sanitary and Septic Waste Management
WM-10	Liquid Waste Management

The remainder of this section shows the working details for each of the waste management and materials pollution control BMPs.

Material Delivery and Storage

WM-1





Standard Symbol



Definition and Purpose

Procedures and practices for the proper handling and storage of materials in a manner that minimizes or eliminates the discharge of these materials to the storm drain system or to receiving waters.

Appropriate Applications

These procedures are implemented at all construction sites with delivery and storage of the following:

- Hazardous chemicals such as:
  - Acids
  - Lime
  - Glues
  - Adhesives
  - Paints
  - Solvents
  - Curing compounds
- Soil stabilizers and binders
- Fertilizers
- Detergents
- Plaster
- Petroleum products such as fuel, oil, and grease
- Asphalt and concrete components
- Pesticides and herbicides
- Other materials that may be detrimental if released to the environment

Limitations

Space limitation may preclude indoor storage.

Storage sheds must meet building & fire code requirements and be leak free.

Standards and Specifications

General Requirements

Train employees and subcontractors on the proper material delivery and storage practices.

Temporary storage area shall be located away from vehicular traffic.

Safety Data Sheets (SDS) shall be supplied to the RE for all materials stored. Can be done at any time but at least 5 days prior to material being used or stored onsite.

Must comply with Caltrans Standard Specification 13-4, "Job Site Management", and 14-11, "Hazardous Waste and Contamination."

Material Storage Areas and Practices

Liquids, petroleum products, and substances listed in 40 CFR Parts 110, 117, or 302 shall be stored in approved containers and drums and shall be placed in temporary containment facilities for proper storage.

Each temporary containment facility shall have a permanent cover and side wind protection or be covered during non-working days and whenever a storm event is forecasted.

A temporary containment facility shall provide for a spill containment volume able to contain precipitation from a 24-hour, 25-year storm event, plus the greater of ten percent of the aggregate volume of all containers or 100 percent of the capacity of the largest container within its boundary, whichever is greater.

A temporary containment facility shall be impervious to the materials stored therein for a minimum contact time of 72 hours.

A temporary containment facility shall be maintained free of accumulated rainwater and spills. In the event of spills or leaks, accumulated rainwater and spills shall be collected and placed into drums. These liquids shall be handled as a hazardous waste unless testing determines them to be non-hazardous. All collected liquids or non-hazardous liquids shall be sent to an approved disposal site.

Sufficient separation shall be provided between stored containers to allow for spill cleanup and emergency response access.

Incompatible materials, such as chlorine and ammonia, shall not be stored in the same temporary containment facility.

Materials shall be stored in their original containers and the original product labels shall be maintained in place in a legible condition. Damaged or otherwise illegible labels shall be replaced immediately.

Bagged and boxed materials shall be stored on pallets and shall not be allowed to accumulate on the ground. To provide protection from wind and rain, bagged and boxed materials shall be covered during non-working days and prior to rain events.

Stockpiles shall be protected in accordance with WM-3, "Stockpile Management."

Have proper storage instructions posted at all times in an open and conspicuous location and include it as an informal training component of the tailgates and ongoing WPC training.

Do not store hazardous chemicals, drums, or bagged materials directly on the ground. Place these items on a pallet, under cover in secondary containment.

Keep ample supply of appropriate spill clean up material near storage areas.

Also, see WM-6, "Hazardous Waste Management," for storing of hazardous materials.

Material Delivery Practices

Keep an accurate, up-to-date inventory of material delivered and stored on-site.

Employees trained in emergency spill clean-up procedures shall be present when dangerous materials or liquid chemicals are unloaded.

Spill Clean-up

Contain and clean up any spill immediately.

If significant residual materials remain on the ground after construction is complete, properly remove and dispose any hazardous materials or contaminated soil.

See WM-4, "Spill Prevention and Control," for spills of chemicals and/or hazardous materials.

Maintenance and Inspection

Storage areas shall be kept clean, well-organized, and equipped with ample clean-up supplies as appropriate for the materials being stored.

Perimeter controls, containment structures, covers, and liners shall be repaired or replaced as needed to maintain proper function.

Inspect storage areas before, during and after rainfall events, and at least weekly during other times. Collect and place into drums any spills or accumulated rainwater and dispose of properly.

Material Delivery and Storage areas must be shown on the WPCDs and reflect current site conditions.

SWPPP or WPCP

Material delivery and storage must be discussed in Section 500.4.2 of the SWPPP or Section 30.3.2 of the WPCP.

Material Use

WM-2





Standard Symbol



Definition and Purpose

These are procedures and practices for use of construction materials in a manner that minimizes or eliminates the discharge of these materials to the storm drain system or to receiving waters.

Appropriate Applications

This BMP applies to all construction projects. These procedures apply when the following materials are used or prepared on site:

- Hazardous chemicals such as:
  - Acids
  - Lime
  - Glues
  - Adhesives
  - Paints
  - Solvents
  - Curing compounds
- Soil stabilizers and binders
- Fertilizers
- Detergents
- Plaster
- Petroleum products such as fuel, oil, and grease
- Asphalt and concrete components
- Pesticides and herbicides
- Other materials that may be detrimental if released to the environment

Material Use

WM-2

Limitations

Safer alternative building and construction products may not be available or suitable in every instance.

Standards and Specifications

Safety Data Sheets (SDS) shall be supplied to the RE for all materials.

Latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths, when thoroughly dry and are no longer hazardous, may be disposed of with other construction debris.

Do not remove the original product label, it contains important safety and disposal information. Use the entire product before disposing of the container.

Mix paint indoors, or in a containment area. Never clean paintbrushes or rinse paint containers into a street, gutter, storm drain or near a water body. Dispose of any paint thinners, residue and sludge(s), that cannot be recycled, as hazardous waste.

For water-based paint, clean brushes to the extent practical, and rinse to a drain leading to a sanitary sewer where permitted, or into a concrete washout pit. For oil-based paints, clean brushes to the extent practical and filter and reuse thinners and solvents.

Use recycled and less hazardous products when practical. Recycle residual paints, solvents, non-treated lumber, and other materials.

Use materials only where and when needed to complete the construction activity. Use safer alternative materials as much as possible.

Do not over-apply fertilizers and pesticides. Prepare only the amount needed. Strictly follow the recommended usage instructions.

Application of herbicides and pesticides shall be performed by a licensed applicator. Document the location, chemicals applied, applicants name and qualifications.

Contractors are required to complete the “Report of Chemical Spray Forms” when spraying herbicides and pesticides.

Keep an ample supply of spill clean-up material near use areas. Train employees in spill clean-up procedures.

Avoid exposing applied materials to rainfall and runoff unless sufficient time has been allowed for them to dry.

Maintenance and Inspection

Inspect storage areas before, during and after rainfall events, and at least weekly during other times. Collect and place into drums any spills or accumulated rainwater and dispose of properly.

Spot check employees and subcontractors throughout the job, include appropriate practices as part of the informal tailgate training.

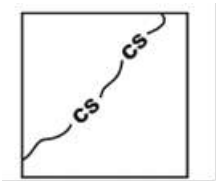
SWPPP or WPCP

Material Use must be discussed in Section 500.4 of the SWPPP or Section 30.3 of the WPCP.

Stockpile Management

WM-3





Standard Symbol



Definition and Purpose

Stockpile management procedures and practices are designed to reduce or eliminate air and storm water pollution from stockpiles of soil, and paving materials such as portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate subbase or pre-mixed aggregate, asphalt binder (so called "cold mix" asphalt) and pressure treated wood.

Appropriate Applications

Implemented in all projects that stockpile soil and other materials.

Limitations

Use of plastic cover might be restricted depending on the location of the site and regulatory permits.

Standards and Specifications

Stockpiles must comply with Standard Specification 13-4.03C (3) Stockpile Management.

Protection of stockpiles is a year-round requirement.

Locate stockpiles a minimum of 50 ft. away from concentrated flows of storm water, drainage courses, and inlets.

Utilize run-on and run-off BMPs to ensure stockpile materials are protected and do not have the potential to discharge material.

Implement wind erosion control practices as appropriate on all stockpiled material. For specific information see WE-1, "Wind Erosion Control."

Stockpiles of contaminated soil shall be managed in accordance with WM-7, "Contaminated Soil Management."

Bagged materials should be placed on pallets and under cover.

Protection of Inactive Stockpiles

Inactive stockpiles of the identified materials shall be protected further as follows:

- Soil stockpiles:
  - soil stockpiles shall be covered or protected with soil stabilization measures and a temporary perimeter sediment barrier at all times. If no longer needed, they should be removed and disposed of properly.
- Stockpiles of portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, or aggregate subbase:
  - the stockpiles shall be covered or protected with a temporary perimeter sediment barrier at all times. If no longer needed, they should be removed and disposed of properly.
- Stockpiles of "cold mix":
  - Cold mix stockpiles shall be placed on and covered with plastic or comparable material at all times and surround by a berm.
- Stockpiles/Storage of pressure treated wood with copper, chromium, and arsenic or ammonical, copper, zinc, and arsenate:
  - Treated wood shall be covered with plastic or comparable material and placed on pallets.

Protection of Active Stockpiles

Active stockpiles shall be protected further as follows:

- All stockpiles shall be covered, stabilized, or protected with a temporary linear sediment barrier prior to the onset of precipitation.
- Stockpiles of "cold mix" shall be placed on and covered with plastic or comparable material prior to the onset of precipitation.
- All Stockpiles should be removed from the site and disposed of properly.

Maintenance and Inspection

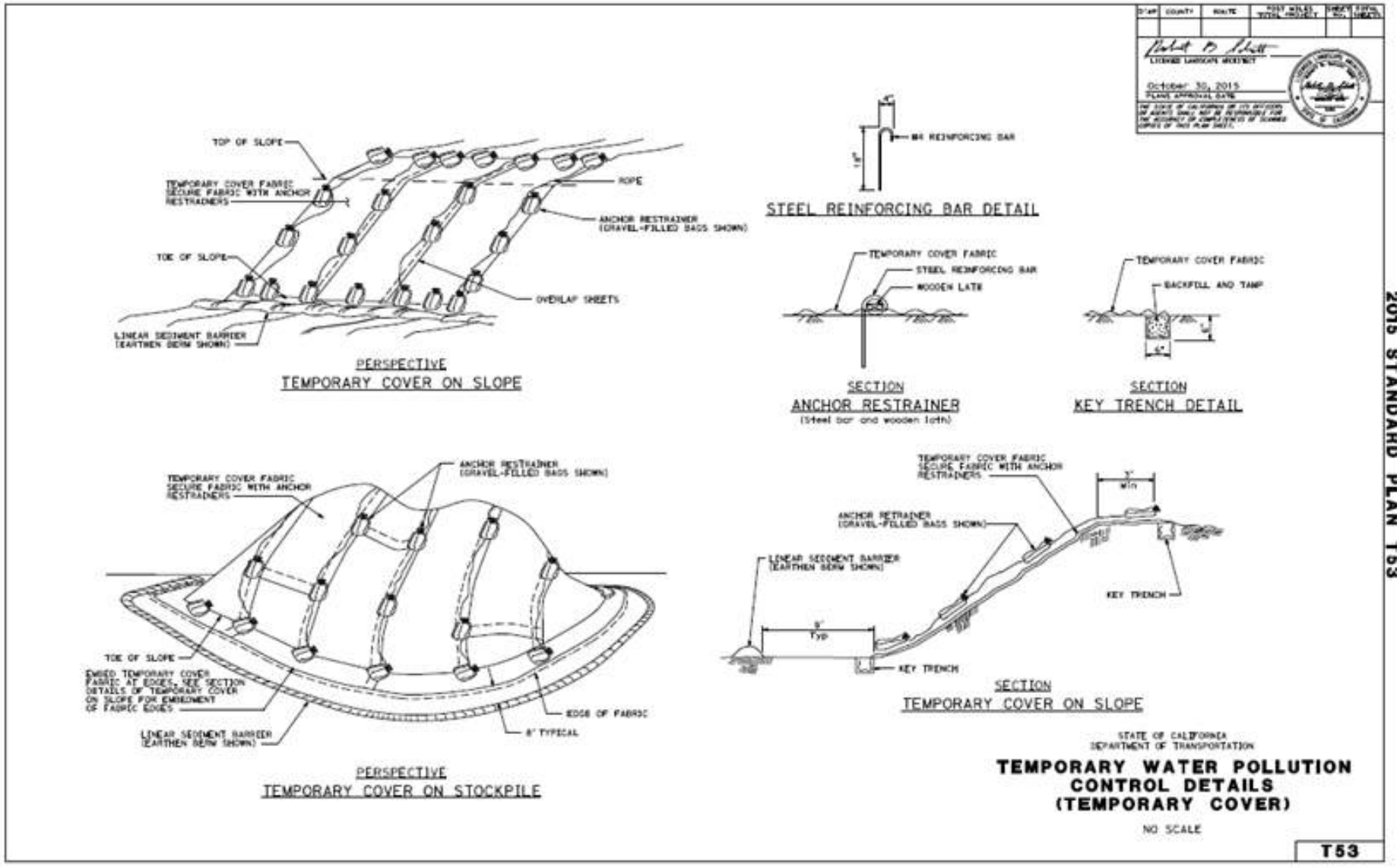
Inspect Stockpile Management areas before, during and after rainfall events, and at least weekly during other times.

Repair and/or replace perimeter controls and covers to keep Stockpile Management functioning properly.

Stockpile Management areas must be shown on the WPCDs and reflect site conditions.

SWPPP or WPCP

Stockpile Management must be discussed in Section 500.4.2 of the SWPPP or Section 30.3.2 of the WPCP.


TOP OF SLOPE
TEMPORARY COVER FABRIC SECURE FABRIC WITH ANCHOR RESTRAINERS
ROPE
ANCHOR RESTRAINER (GRAVEL-FILLED BAGS SHOWN)
TOE OF SLOPE
OVERLAP SHEETS
LINEAR SEDIMENT BARRIER (EARTHEN BERM SHOWN)
PERSPECTIVE
TEMPORARY COVER ON SLOPE
#4 REINFORCING BAR
STEEL REINFORCING BAR DETAIL
TEMPORARY COVER FABRIC
STEEL REINFORCING BAR
WOODEN LATH
SECTION
ANCHOR RESTRAINER
(Steel bar and wooden lath)
TEMPORARY COVER FABRIC
BACKFILL AND TAMP
SECTION
KEY TRENCH DETAIL
ANCHOR RESTRAINER (GRAVEL-FILLED BAGS SHOWN)
TEMPORARY COVER FABRIC SECURE FABRIC WITH ANCHOR RESTRAINERS
TOE OF SLOPE
EMBED TEMPORARY COVER FABRIC AT EDGES, SEE SECTION DETAILS OF TEMPORARY COVER ON SLOPE FOR EMBEDMENT OF FABRIC EDGES
EDGE OF FABRIC
8" TYPICAL
LINEAR SEDIMENT BARRIER (EARTHEN BERM SHOWN)
PERSPECTIVE
TEMPORARY COVER ON STOCKPILE
TEMPORARY COVER FABRIC SECURE FABRIC WITH ANCHOR RESTRAINERS
3" Min
ANCHOR RETRAINER (GRAVEL-FILLED BAGS SHOWN)
LINEAR SEDIMENT BARRIER (EARTHEN BERM SHOWN)
KEY TRENCH
8" Typ
KEY TRENCH
SECTION
TEMPORARY COVER ON SLOPE
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
TEMPORARY WATER POLLUTION CONTROL DETAILS (TEMPORARY COVER)
NO SCALE
T53
2015 STANDARD PLAN T53

Spill Prevention and Control

WM-4





Standard Symbol



Definition and Purpose

These procedures and practices are implemented to prevent and control spills in a manner that minimizes or prevents the discharge of spilled material to the drainage system or watercourses.

Appropriate Applications

This best management practice (BMP) applies to all construction projects. Spill control procedures are implemented anytime chemicals and/or hazardous substances are stored. Substances may include, but are not limited to:

- Soil stabilizers/binders.
- Dust Palliatives.
- Herbicides.
- Growth inhibitors.
- Fertilizers.
- Deicing/anti-icing chemicals.
- Fuels.
- Lubricants.
- Other petroleum distillates.

To the extent that the work can be accomplished safely, spills of oil, petroleum products, substances listed under 40 CFR parts 110, 117, and 302, and sanitary and septic wastes shall be contained and cleaned up immediately.

Limitations

This BMP only applies to spills caused by the contractor. Other spills or discharges observed or discovered must be reported to the RE.

Procedures and practices presented in this BMP are general. Contractor shall identify appropriate practices for the specific materials used or stored on-site and follow the appropriate Safety Data Sheets (SDS).

Standards and Specifications

Must comply with Caltrans Standard Specifications 13-4.03B Spill Prevention and Control.

To the extent that it doesn't compromise clean-up activities, spills shall be covered and protected from stormwater run-on.

Spills shall not be buried or washed with water. Potable water has chlorine and therefore should not be allowed to be discharged off the project site.

Used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose shall be stored and properly disposed of.

Water used for cleaning and decontamination shall not be allowed to enter storm drains or watercourses and shall be collected and disposed of in accordance with WM-10, "Liquid Waste Management."

Water overflow or minor water spillage shall be contained and shall not be allowed to discharge into drainage facilities or watercourses.

Proper storage, clean-up and spill reporting instruction for hazardous materials stored or used on the project site shall be posted at all times in an open, conspicuous and accessible location.

Waste storage areas shall be kept clean, well-organized and equipped with ample clean-up supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers and liners shall be repaired or replaced as needed to maintain proper function.

Education

Educate employees and subcontractors on what a "significant spill" is for each material they use, and what is the appropriate response for "significant" and "insignificant" spills.

Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.

Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).

Establish a continuing education program to indoctrinate new employees.

The WPC Manager shall oversee and enforce proper spill prevention and control measures.

The list of reportable quantities can be found at https://www.bnl.gov/esh/env/compliance/docs/SaraTitleList.pdf.

Cleanup and Storage Procedures

Minor Spills:

- Minor spills typically involve small quantities of oil, gasoline, paint, etc., which can be controlled by the first responder at the discovery of the spill.
- Use absorbent materials on small spills rather than hosing down or burying the spill.
- Remove the absorbent materials promptly and dispose of properly.
- The practice commonly followed for a minor spill is:
    - Contain the spread of the spill.
    - Recover spilled materials.
    - Clean the area and/or properly dispose of contaminated materials.

Semi-Significant Spills:

- Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities.

Clean-up spills immediately:

- Notify the WPC Manager immediately. The WPC Manager shall notify the RE and prepare the proper notifications as required.

Contain spread of the spill.

- If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials.
- If the spill occurs in dirt areas, immediately contain the spill. Dig up and properly dispose of contaminated soil.
- If the spill occurs during rain, cover spill with tarps to prevent contaminating runoff.

Significant/Hazardous Spills:

- For significant or hazardous spills that cannot be controlled by personnel in the immediate vicinity, the following steps shall be taken:
    - Notify the RE immediately and follow up with a written report.
    - Notify the local emergency response by dialing 911. In addition to 911, the contractor will notify the proper county officials. It is the contractor's responsibility to have all emergency phone numbers at the construction site.
    - Notify the Governor's Office of Emergency Services Warning Center, (800) 852-7550 or 1-916-845-8911.
    - For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor shall notify the National Response Center at (800) 424-8802.
    - Notification shall first be made by telephone and followed up with a written report. The reporting form is located at http://www.caloes.ca.gov/FireRescueSite/Documents/304%20-%20Written%20Report%20Form.pdf.

- The services of a spills contractor or a Haz-Mat team shall be obtained immediately. Construction personnel shall not attempt to clean up the spill until the appropriate and qualified staff have arrived at the job site.
- Other agencies which may need to be consulted include, but are not limited to, the Fire Department, the Public Works Department, the Coast Guard, the Highway Patrol, the City/County Police Department, Department of Toxic Substances, California Division of Oil and Gas, Cal/OSHA, RWQCB, etc.

Maintenance and Inspection

Verify weekly that spill control clean-up materials are located near material storage, unloading, and use areas.

Update spill prevention and control plans and stock appropriate clean-up materials when changes occur in the types of chemicals used or stored onsite.

Improper clean-up might trigger need for water quality or soil testing. The WPC Manager should be proactive in ensuring controls are in place and adequate to contain and prevent further issues.

SWPPP or WPCP

Spill Prevention and Control must be discussed in Section 500.4 of the SWPPP or Section 30.3.2 of the WPCP.

Solid Waste Management

WM-5





Standard Symbol



Definition and Purpose

Solid waste management procedures and practices are designed to minimize or eliminate the discharge of pollutants to the drainage system or to water bodies as a result of the creation, stockpiling, or removal of construction site wastes.

Appropriate Applications

Solid waste management procedures and practices are implemented on all construction projects that generate solid wastes.

Solid wastes include but are not limited to:

- Construction wastes including brick, mortar, timber, steel and metal scraps, sawdust, pipe and electrical cuttings, non-hazardous equipment parts, styrofoam and other materials used to transport and package construction materials.
- Highway planting wastes, including vegetative material, plant containers, and packaging materials.
- Litter, including food containers, beverage cans, coffee cups, paper bags, plastic wrappers, and smoking materials, including litter generated by the public.

Limitations

None identified.

Standards and Specifications

Education

The WPC Manager shall oversee and enforce proper solid waste procedures and practices.

Instruct employees and subcontractors on identification of solid waste and hazardous waste.

Educate employees and subcontractors on solid waste storage and disposal procedures.

Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings and tailgate sessions).

Require that employees and subcontractors follow solid waste handling and storage procedures.

Prohibit littering by employees, subcontractors, and visitors.

Wherever possible, minimize production of solid waste materials.

Must comply with Standard specification 14-10 Solid Waste Disposal and Recycling and 13-4 Job Site Handling.

Collection, Storage, and Disposal

Dumpsters of sufficient size and number shall be provided to contain the solid waste generated by the project and be properly serviced. Must ensure that containers are watertight and have a cover.

Littering on the project site shall be prohibited.

To prevent clogging of the storm drainage system, litter and debris removal from drainage grates, trash racks, and ditch lines shall be a priority.

Trash receptacles shall be provided in the Contractor's yard, field trailer areas, and at locations where workers congregate for lunch and break periods.

Construction debris and litter from work areas within the construction limits of the project site shall be collected and placed in watertight dumpsters at least weekly regardless of whether the litter was generated by the Contractor, the public, or others. Collected litter and debris shall not be placed in or next to drain inlets, storm water drainage systems or watercourses.

Full dumpsters shall be removed from the project site and the contents shall be disposed of outside the highway right-of-way in conformance with the provisions in the Standard Specifications Section 14-10 Solid Waste Disposal and Recycling.

Litter stored in collection areas and containers shall be handled and disposed of by trash hauling contractors.

Construction material visible to the public shall be stored or stacked in an orderly manner to the satisfaction of the RE.

Stormwater run-on shall be prevented from contacting stored solid waste by berms, dikes, or other temporary diversion structures or through the use of measures to elevate waste from site surfaces.

Solid waste storage areas shall be located at least 50 ft. from drainage facilities and watercourses and shall not be located in areas prone to flooding or ponding.

Except during fair weather, construction and highway planting waste not stored in watertight dumpsters shall be securely covered from wind and rain by covering the waste with tarps or plastic sheeting.

Dumpster washout on the project site is not allowed.

Notify trash hauling contractors that only watertight dumpsters are acceptable for use on-site.

Plan for additional containers during the demolition phase of construction.

Plan for more frequent pickup during the demolition phase of construction.

Construction waste shall be stored in a designated area and shown in the WPCDs.

Segregate potentially hazardous waste from non-hazardous construction site waste.

Keep the site clean of litter debris.

Make sure that toxic liquid wastes (e.g., used oils, solvents, and paints) and chemicals (e.g., acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.

Dispose of non-hazardous waste in accordance with Standard Specification 14-10 Solid Waste Disposal and Recycling.

For disposal of hazardous waste, see BMP WM-6, "Hazardous Waste Management." Have hazardous waste hauled to an appropriate disposal and/or recycling facility.

Salvage or recycle useful vegetation debris, packaging and/or surplus building materials when practical. For example, trees and shrubs from land clearing can be converted into wood chips, then used as mulch on graded areas. Wood pallets, cardboard boxes, and construction scraps can also be recycled.

Maintenance and Inspection

The WPC Manager shall monitor onsite solid waste storage and disposal procedures.

Specific locations for Solid Waste Storage or Containment must be shown in the WPCDs and must be inspected and maintained regularly.

SWPPP or WPCP

Solid Waste Management must be discussed in Section 500.4 of the SWPPP or Section 30.3.2 of the WPCP.

Hazardous Waste Management

WM-6



Standard Symbol

BMP Objectives	
Soil Stabilization	☐
Sediment Control	☐
Tracking Control	☐
Wind Erosion Control	☐
Non-Stormwater Management	☐
Materials and Waste Management	☑

Definition and Purpose

These are procedures and practices to minimize or eliminate the discharge of pollutants from construction site hazardous waste to the storm drain systems or to watercourses.

Appropriate Applications

This best management practice (BMP) applies to all construction projects.

Hazardous waste management practices are implemented on construction projects that generate waste from the use of:

- Petroleum Products
- Asphalt Products
- Concrete Curing Compounds
- Pesticides
- Palliatives
- Acids
- Paints
- Stains
- Solvents
- Septic Wastes
- Wood Preservatives
- Roofing Tar, or
- Any materials deemed a hazardous waste in California, Title 22 Division 4.5, or listed in 40 CFR Parts 110, 117, 261, or 302.

Limitations

Nothing in this BMP relieves the Contractor from responsibility for compliance with federal, state, and local laws regarding storage, handling, transportation, and disposal of hazardous wastes.

This BMP does not cover aerially deposited lead (ADL) soils. For ADL soils refer to WM-7, "Contaminated Soil Management," and the project special provisions.

Standards and Specifications

Education

Educate employees and subcontractors on hazardous waste storage and disposal procedures.

Educate employees and subcontractors on potential dangers to humans and the environment from hazardous wastes.

Instruct employees and subcontractors on safety procedures for common construction site hazardous wastes.

Instruct employees and subcontractors in identification of hazardous and solid waste.

Hold regular meetings to discuss and reinforce hazardous waste management procedures (incorporate into regular safety meetings and tailgate sessions).

The WPC Manager must oversee and enforce proper hazardous waste management procedures and practices.

Make sure that hazardous waste is collected, removed, and disposed of only at authorized disposal areas.

Storage Procedures

Wastes shall be stored in sealed containers constructed of a suitable material and shall be labeled as required by Title 22 CCR, Division 4.5 and 49 CFR Parts 172,173, 177 and 178, 179.

All hazardous waste shall be stored, transported, and disposed as required in Title 22 CCR, Division 4.5 and 49 CFR 261-263.

Waste containers shall be stored in temporary containment facilities that shall comply with the following requirements:

- Temporary containment facility shall provide for a spill containment volume able to contain precipitation from a 24-hour, 25-year storm event, plus the greater of ten percent of the aggregate volume of all containers or 100 percent of the capacity of the largest tank within its boundary, whichever is greater.
- Temporary containment facility shall be impervious to the materials stored there for a minimum contact time of 72 hours.
- Temporary containment facilities shall be maintained free of accumulated rainwater and spills. In the event of spills or leaks accumulated rainwater and spills shall be placed into drums after each rainfall. These liquids shall be handled as a hazardous waste unless testing determines them to be non-hazardous. Non-hazardous liquids shall be sent to an approved disposal site.
- Sufficient separation shall be provided between stored containers to allow for spill cleanup and emergency response access.

- Incompatible materials, such as chlorine and ammonia, shall not be stored in the same temporary containment facility.
- Temporary containment facilities shall be covered during non-working days, and prior to rain events. Covered facilities may include use of plastic tarps for small facilities or constructed roofs with overhangs. A storage facility having a solid cover and sides is preferred to a temporary tarp. Storage facilities shall be equipped with adequate ventilation.

Drums shall not be overfilled and wastes shall not be mixed.

Unless watertight, containers of dry waste shall be stored on pallets.

Paint brushes and equipment for water and oil based paints shall be cleaned within a contained area and shall not be allowed to contaminate site soils, watercourses or drainage systems. Waste paints, thinners, solvents, residues, and sludges that cannot be recycled or reused shall be disposed of as hazardous waste. When thoroughly dry, latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths shall be disposed of as solid waste.

Ensure that adequate hazardous waste storage volume is available.

Ensure that hazardous waste collection containers are conveniently located.

Designate hazardous waste storage areas on site away from storm drains or watercourses and away from moving vehicles and equipment to prevent accidental spills.

Minimize production or generation of hazardous materials and hazardous waste on the job site.

Use containment berms in fueling and maintenance areas and where the potential for spills is high.

Segregate potentially hazardous waste from non-hazardous construction site debris.

Keep liquid or semi-liquid hazardous waste in appropriate containers (closed drums or similar) and under cover.

Clearly label all hazardous waste containers with the waste being stored and the date of accumulation.

Place hazardous waste containers in secondary containment.

Do not allow potentially hazardous waste materials to accumulate on the ground.

Do not mix wastes.

Disposal Procedures

Waste shall be disposed of outside the highway right of way within 90 days of being generated, or as directed by the RE. In no case, shall hazardous waste storage exceed requirements in Title 22 CCR, Section 66262.34.

Waste shall be disposed of by a licensed hazardous waste transporter at an authorized and licensed disposal facility or recycling facility utilizing properly completed Uniform Hazardous Waste Manifest forms.

An ELAP accredited laboratory shall sample waste and analyze it to determine the appropriate disposal facility.

Make sure that toxic liquid wastes (e.g., used oils, solvents, and paints) and chemicals (e.g., acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for solid waste construction debris.

Properly dispose of rainwater in secondary containment that may have mixed with hazardous waste.

Recycle any useful material such as used oil or water-based paint when practical.

Attention is directed to "Hazardous Material", "Contaminated Material", and "Aerially Deposited Lead" of the contract documents regarding the handling and disposal of hazardous materials.

Maintenance and Inspection

The WPC Manager or QSP shall monitor on-site hazardous waste storage and disposal procedures.

Waste storage areas shall be kept clean, well-organized, and equipped with ample clean up supplies as appropriate for the materials being stored.

Storage areas shall be inspected in conformance with the provisions in the contract documents. At a minimum, storage areas must be inspected before, daily during extended storm event, after every storm event and weekly year-round. Perimeter controls, containment structures, covers, and liners shall be repaired or replaced as needed to maintain proper function.

Hazardous spills shall be cleaned up and reported in conformance with the applicable Safety Data Sheet (SDS) and the instructions posted at the project site.

The National Response Center, at (800) 424-8802, shall be notified of spills of Federal reportable quantities in conformance with the requirements in 40 CFR parts 110, 117, and 302.

Copy of the hazardous waste manifests shall be provided to the RE.

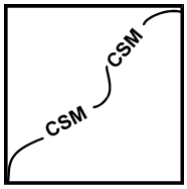
SWPPP or WPCP

Hazardous Waste Management must be discussed in Section 500.4 of the SWPPP or Section 30.3 of the WPCP.

Contaminated Soil Management

WM-7





Standard Symbol

BMP Objectives	
Soil Stabilization	☐
Sediment Control	☐
Tracking Control	☐
Wind Erosion Control	☐
Non-Stormwater Management	☐
Materials and Waste Management	☑

Definition and Purpose

These are procedures and practices to minimize or eliminate the discharges of pollutants to the drainage system or to receiving waters from contaminated soil.

Appropriate Applications

Contaminated soil management is implemented on construction projects where soil contamination may have occurred due to spills, illicit discharges, and leaks from underground storage tanks.

It may also apply to highway widening projects in older areas where median and shoulder soils may have been contaminated by aerially deposited lead (ADL).

Limitations

The procedures and practices presented in this best management practice (BMP) are general. The contractor shall identify appropriate practices and procedures consistent with the plans and specifications for the specific contaminants known to exist or discovered on site.

Standards and Specifications

Identifying Contaminated Areas

Contaminated soils are often identified during project planning and development with known locations identified in the plans and specifications. The contractor shall review applicable reports and examine applicable call-outs in the plans and specifications.

The contractor may discover contaminated soils not identified in the plans and specifications by observing:

Spills and leaks, discoloration, odors or abandoned underground tanks or pipes.

Spills and leaks caused by the contractor are the contractor's responsibility for removal, testing, and disposal.

If unanticipated asbestos or hazardous substances are discovered, that were not released by the contractor, the contractor shall stop work in that area and immediately notify the RE. The contractor shall not resume work in the area until directed to do so.

Education

Prior to performing any excavation work at the locations containing material classified as hazardous, employees and subcontractors shall complete a safety training program which meets 29 CFR 1910.120 and 8 CCR 5192 covering the potential hazards as identified.

Educate employees and subcontractors in identification of contaminated soil and on contaminated soil handling, containment and disposal procedures.

Hold regular meetings to discuss and reinforce contaminated soil handling, containment and disposal procedures (incorporate into regular safety meetings and tailgates).

Handling Procedures for Material with Aerially Deposited Lead (ADL)

Materials from areas designated as containing (ADL) may, if allowed by the contract special provisions, be excavated, transported, and used in the construction of embankments and/or backfill.

Must comply with Standard specification requirements outlined in Section 14-11 Hazardous Waste and Contamination.

Must comply with the DTSC ADL agreement for specific requirements regarding handling, stockpiling and hauling of material.

Excavation, transportation, and placement operations shall result in no visible dust.

Use caution to prevent spillage of lead containing material during transport.

Monitor the air quality during excavation of soils contaminated with lead.

Handling Procedures for Contaminated Soils

Contaminated soil shall be disposed of properly in compliance with the specifications and all applicable regulations. in Title 22, CCR, Division 4.5 and section 14-11 of the specifications.

If required by the specifications test contaminated soils at a SWRCB ELAP certified laboratory.

If the soil is contaminated, work with the local regulatory agencies to develop options for treatment and/or disposal.

Avoid temporary stockpiling of contaminated soils or hazardous material.

If temporary stockpiling is allowed by the specifications.

Place plastic sheeting or tarps underneath material and cover the stockpile with plastic sheeting or tarps if required by the specifications.

Install a berm around the stockpile to prevent run-on or run-off from leaving the area.

Do not stockpile in or near storm drains or receiving water.

Install berms or run-on controls to prevent stormwater from commingling with contaminated areas.

Contaminated material and hazardous material on exteriors of transport vehicles shall be removed and placed either into the current transport vehicle or the excavation prior to the vehicle leaving the exclusion zone.

Monitor the air quality during excavation operations if required.

Procure all permits and licenses, pay all charges and fees, and give all notices necessary and incident to the due and lawful prosecution of the work, including registration for transporting vehicles carrying the contaminated material and the hazardous material.

Collect water from decontamination procedures and treat and/or dispose of it at an appropriate disposal site.

Collect non-reusable protective equipment, once used by any personnel, and dispose of at an appropriate disposal site.

Install temporary security fence to surround and secure the exclusion zone. Remove fencing when no longer needed.

Excavation, transport, and disposal of contaminated material and hazardous material shall be in accordance with the rules and regulations of the following agencies (the specifications of these agencies supersede the procedures outlined in this BMP):

- United States Department of Transportation (USDOT).
- United States Environmental Protection Agency (USEPA).
- California Environmental Protection Agency (CAL-EPA).
- California Division of Occupation Safety and Health Administration (CAL-OSHA).
- Local regulatory agencies.

Procedures for Underground Storage Tank Removals

If an unknown underground storage tank is discovered, the contractor shall stop work in that area and immediately notify the RE. The contractor shall not resume work in the area until directed to do so.

If tank removal operations are required by the contract, follow the contract requirements for obtaining permits and approval from the federal, state, and local agencies, which have jurisdiction over such work.

If tank removal operations are required by the contract, the underground storage tank, any liquid and/or sludge found within the tank, and all contaminated substances and hazardous substances removed during the tank removal shall be transported to disposal facilities as required by the contract Specifications.

Water Control

Take all necessary precautions and preventive measures to prevent the flow of water, including ground water, from mixing with contaminated or hazardous materials or entering contaminated soil excavations. Such preventative measures may consist of, but are not limited to: berms, cofferdams, grout curtains, freeze walls, and seal course concrete or any combination thereof.

If water does enter an excavation and becomes contaminated, such water, when necessary to proceed with the work, shall be dewatered consistent with NS-2, “Dewatering Operations” and the Caltrans Field Guide to Construction Site Dewatering Manual, and in compliance with the specifications.

Maintenance and Inspection

The WPC Manager shall monitor on-site contaminated soil storage and disposal procedures.

Monitor the air quality during excavation operations if required

Manage contaminated soils and hazardous substances/waste under the appropriate federal, state, and local requirements.

Inspect stockpiles, hazardous waste receptacles and storage areas regularly.

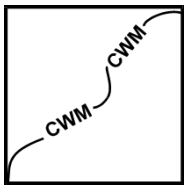
SWPPP or WPCP

Contaminated Soil Management must be discussed in Section 500.4 of the SWPPP or Section 30.3.2 of the WPCP.

Concrete Waste Management

WM-8





Standard Symbol



Definition and Purpose

These are procedures and practices that are designed to minimize or eliminate the discharge of concrete waste materials to the storm drain systems or watercourses.

Appropriate Applications

Concrete waste management procedures and practices are implemented on construction projects where concrete is used as a construction material or where concrete dust and debris result from demolition activities.

Where slurries containing portland cement concrete (PCC) or asphalt concrete (AC) are generated, such as from sawcutting, coring, grinding, grooving, and hydro-concrete demolition.

Where concrete trucks and other concrete-coated equipment are washed on site, when approved by the Resident Engineer (RE). See also NS-8, “Vehicle and Equipment Cleaning."

Where mortar-mixing stations exist.

Limitations

None identified.

Standards and Specifications

Education

Educate employees, subcontractors, and suppliers on the concrete waste management techniques described herein.

The WPC Manager shall oversee and enforce concrete waste management procedures.

Concrete Demolition Wastes

Stockpile concrete demolition wastes in accordance with BMP WM-3, "Stockpile Management."

Disposal of hardened PCC and AC waste shall be in conformance with Standard Specifications Section 14-10 Solid Waste Disposal and Recycling.

Concrete Slurry Waste Management and Disposal

PCC and AC waste shall not be allowed to enter storm drainage systems or watercourses.

A sign shall be installed adjacent to each temporary concrete washout facility to inform concrete equipment operators to utilize the proper facilities.

The WPCM must ensure that onsite concrete working tasks are being monitored, such as saw cutting, coring, grinding and grooving to ensure proper methods are implemented.

Residue from saw cutting, coring and grinding operations shall be picked up by means of a vacuum device. Residue shall not be allowed to flow across the pavement and shall not be left on the surface of the pavement. See also NS-3, "Paving and Grinding Operations."

Vacuumed slurry residue shall be disposed in accordance with WM-5, "Solid Waste Management" and Standard Specifications Section 7-1.13. Slurry residue shall be temporarily stored in a facility as described in "Onsite Temporary Concrete Washout Facility, Concrete Transit Truck Washout Procedures" below), or within an impermeable containment vessel or bin.

Collect and dispose of all residues from grooving and grinding operations in accordance with Standard Specifications Section 14-10 Solid Waste Disposal and Recycling and Standard Specifications 14-11 Hazardous Waste and Contamination.

Onsite Temporary Concrete Washout Facility, Concrete Transit Truck Washout Procedures

Temporary concrete washout facilities shall be located a minimum of 50 ft. from storm drain inlets, open drainage facilities, and watercourses, unless determined infeasible by the RE. Each facility shall be located away from construction traffic or access areas to prevent disturbance or tracking.

A sign shall be installed adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities. The sign shall be installed as shown on the plans and in conformance with the provisions in Standard Specifications Section 56 2, Overhead Sign Structure.

Temporary concrete washout facilities shall be constructed above grade or below grade at the option of the Contractor. Temporary concrete washout facilities shall be constructed and maintained in sufficient quantity and size to contain all liquid and concrete waste generated by washout operations.

Temporary washout facilities shall have a temporary pit or bermed areas of sufficient volume to completely contain all liquid and waste concrete materials generated during washout procedures.

Perform washout of concrete mixers, delivery trucks, and other delivery systems in designated areas only.

Wash concrete only from mixer chutes into approved concrete washout facility. Washout may be collected in an impermeable bag or other impermeable containment devices for disposal.

Pump excess concrete in concrete pump bin back into concrete mixer truck.

Concrete washout from concrete pumper bins can be washed into concrete pumper trucks and discharged into designated washout area or properly disposed offsite.

Once concrete wastes are washed into the designated area and allowed to harden, the concrete shall be broken up, removed, and disposed of in conformance with the provisions in Standard Specifications Section 7-1.13 or 15 3.02.

Temporary Concrete Washout Facility Type "Above Grade"

Temporary concrete washout facility Type "Above Grade" shall be constructed as shown on Page 6 or 7, with a recommended minimum length and minimum width of10 ft, but with sufficient quantity and volume to contain all liquid and concrete waste generated by washout operations. The length and width of a facility may be increased, at the Contractor's expense, upon approval from the RE.

Straw bales, wood stakes, and sandbag materials shall conform to the provisions in SC-9, "Straw Bale Barrier."

Plastic lining material shall be a minimum of 10-mil polyethylene sheeting and shall be free of holes, tears or other defects that compromise the impermeability of the material. Liner seams shall be installed in accordance with manufacturers' recommendations.

Portable delineators shall conform to the provisions in Standard Specifications Section 12 3.04, "Portable Delineators." The delineator bases shall be cemented to the pavement in the same manner as provided for cementing pavement markers to pavement. Portable delineators shall be applied only to a clean, dry surface.

Temporary Concrete Washout Facility (Type Below Grade)

Temporary concrete washout facility Type "Below Grade" shall be constructed as shown on page 6, with a recommended minimum length and minimum width of 10 ft. The quantity and volume shall be sufficient to contain all liquid and concrete waste generated by washout operations. The length and width of a facility may be increased, at the Contractor's expense, upon approval of the RE. Lath and flagging shall be commercial type.

Plastic lining material shall be a minimum of 10-mil polyethylene sheeting and shall be free of holes, tears or other defects that compromise the impermeability of the material. Liner seams shall be installed in accordance with manufacturers' recommendations.

The soil base shall be prepared free of rocks or other debris that may cause tears or holes in the plastic lining material.

Temporary washout facilities shall implement BMPs to prevent run-on and run-off from the facility.

Removal of Temporary Concrete Washout Facilities

When temporary concrete washout facilities are no longer required for the work, as determined by the RE, the hardened concrete shall be removed and disposed of. Disposal of PCC dried residues, slurries or liquid waste shall be disposed of outside the highway right-of-way in conformance with provisions of Standard Specifications Section 7-1-13. Materials used to construct temporary concrete washout facilities shall become

the property of the Contractor, shall be removed from the site of the work, and shall be disposed of outside the highway right-of-way.

Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities shall be backfilled and repaired in conformance with the provisions in Standard Specifications Section 15 1.02, "Preservation of Property."

Maintenance and Inspection

Inspect Concrete Waste Management areas before, during and after rainfall events, and at least weekly during other times.

The WPC Manager shall monitor concrete working tasks, such as sawcutting, coring, grinding and grooving daily to ensure proper methods are employed or as directed by the RE.

Temporary concrete washout facilities shall be maintained to provide adequate holding capacity with a minimum freeboard of 4 inches for above grade facilities and 12 inches for below grade facilities.

Maintaining temporary concrete washout facilities shall include removing and disposing of hardened concrete and returning the facilities to a functional condition.

Hardened concrete materials shall be removed and disposed of in conformance with the provisions in Standard Specifications Section 7-1.13 or 15 3.02.

Existing facilities must be cleaned, or new facilities must be constructed and ready for use once the washout is 75% full.

Temporary concrete washout facilities shall be inspected for damage (i.e. tears in polyethylene liner, missing sandbags, etc.). Damaged facilities shall be repaired.

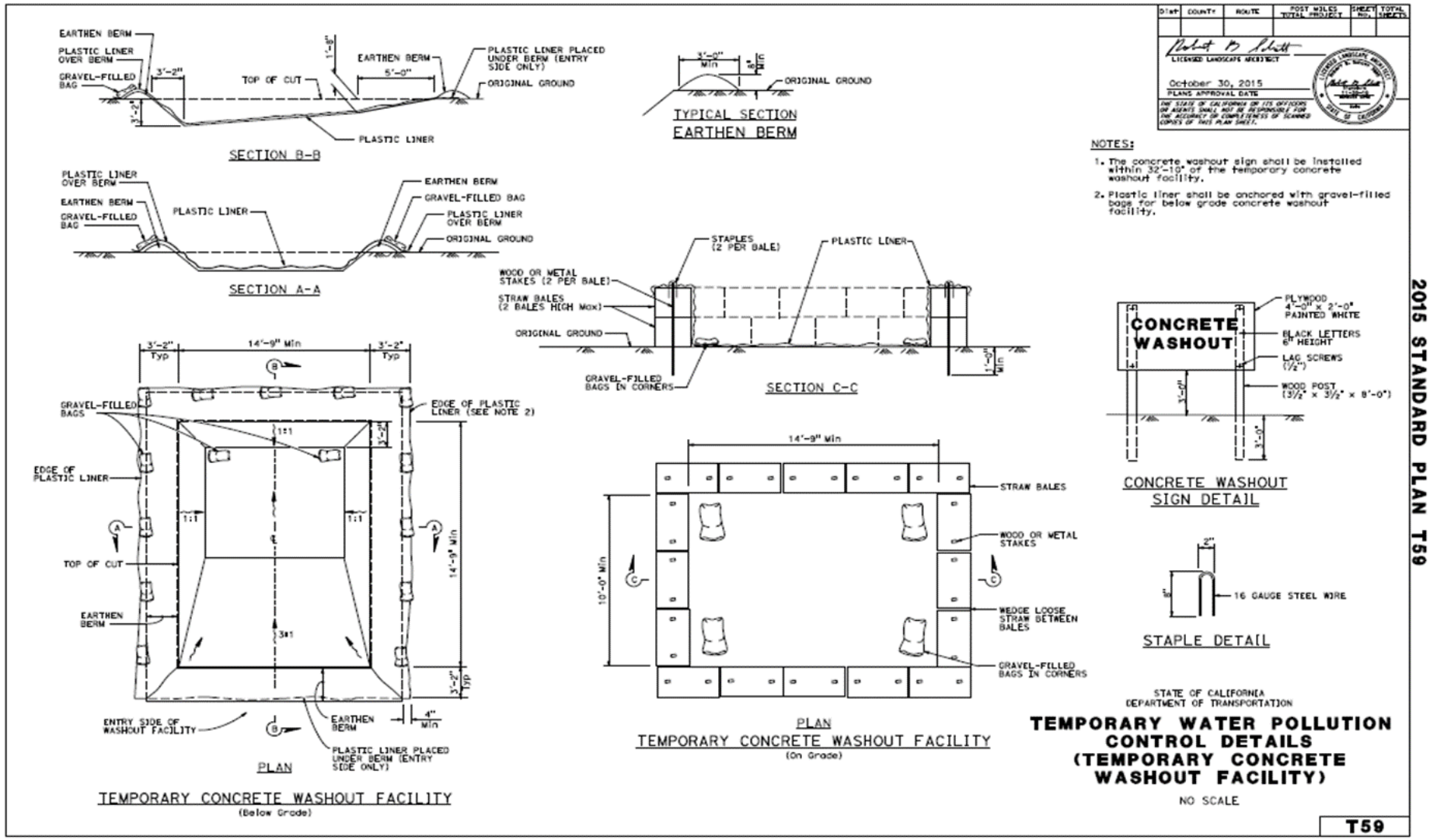
Inspection and Maintenance of these areas must be properly documented and ensure no potential for discharges occur from these areas as part of the non-visible monitoring requirements.

SWPPP or WPCP

Concrete Waste Management must be discussed in Section 500.4.2 of the SWPPP or Section 30.3.2 of the WPCP.

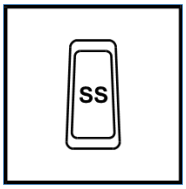
Concrete Waste Management

WM-8



Sanitary and Septic Waste Management WM-9





Standard Symbol

BMP Objectives	
Soil Stabilization	☐
Sediment Control	☐
Tracking Control	☐
Wind Erosion Control	☐
Non-Stormwater Management	☐
Materials and Waste Management	☑

Definition and Purpose

Procedures and practices to minimize or eliminate the discharge of construction site sanitary and septic waste materials to the storm drain system or to receiving waters.

Appropriate Applications

Sanitary/septic waste management practices are implemented on all construction sites that use temporary or portable sanitary and septic waste systems.

Limitations

None identified.

Standards and Specifications

Education

Educate employees, subcontractors, and suppliers on sanitary and septic waste storage and disposal procedures.

Educate employees, subcontractors, and suppliers of potential dangers to humans and the environment from sanitary/septic wastes.

Instruct employees, subcontractors, and suppliers in identification of sanitary/septic waste.

Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings and tailgates).

Establish a continuing education program to indoctrinate new employees.

Storage and Disposal Procedures

Temporary sanitary facilities shall be located away from drainage facilities, receiving waters, and from traffic circulation.

When subjected to high winds or risk for overtopping, temporary systems must be properly secured.

Wastewater shall not be discharged or buried within the highway right-of-way.

Sanitary and septic systems that discharge directly into sanitary sewer systems, where permissible, shall comply with the local health agency, city, county, and sewer district requirements.

If using an on-site disposal system, such as a septic system, comply with local health agency requirements.

Properly connect temporary sanitary facilities that discharge to the sanitary sewer system to avoid illicit discharges.

Ensure that sanitary and septic facilities are maintained in good working order by a licensed service.

Use only reputable, licensed sanitary/septic waste haulers.

Maintenance and Inspection

Inspect onsite sanitary and septic waste storage and disposal procedures at least weekly, prior to a forecasted rain event, daily during extended rain events and post-storm events.

Locations for portable Santiary Systems must be shown on the WPCDs and reflect current site conditions.

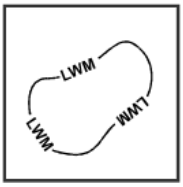
SWPPP or WPCP

Sanitary and Septic Waste Management must be discussed in Section 500.4.2 of the SWPPP or Section 30.3.2 of the WPCP.

Liquid Waste Management

WM-10





Standard Symbol



Definition and Purpose

Procedures and practices to prevent discharge of pollutants to the storm drain system or to receiving waters as a result of the creation, collection, and disposal of non-hazardous liquid wastes.

Appropriate Applications

Liquid waste management is applicable to construction projects that generate any of the following non-hazardous byproducts, residuals, or wastes:

- Drilling slurries and drilling fluids.
- Grease-free and oil-free wastewater and rinse water.
- Dredgings.
- Other non-storm water liquid discharges not permitted by separate permits.

Limitations

Disposal of some liquid wastes may be subject to specific laws and regulations, or to requirements of other permits secured for the construction project (e.g., NPDES permits, Army Corps permits, Coastal Commission permits, etc.).

Does not apply to dewatering operations (see NS-2, “Dewatering Operations”), solid waste management (see WM-5, “Solid Waste Management”), hazardous wastes (see WM-6, “Hazardous Waste Management”), or concrete slurry residue (see WM-8, “Concrete Waste Management”).

Does not apply to non-stormwater discharges permitted by any NPDES permit held by the pertinent Caltrans District, unless the discharge is determined by Caltrans to be a source of pollutants. Typical permitted non-stormwater discharges can include: water line flushing; landscape irrigation; diverted stream flows; rising ground waters; uncontaminated pumped ground water; discharges from potable water sources; foundation

drains; irrigation water; springs; water from crawl space pumps; footing drains; lawn watering; flows from riparian habitats and wetlands; and, discharges or flows from emergency firefighting activities. See 2016 SWMP for complete list of permitted non-stormwater discharges.

Standards and Specifications

General Practices

Must comply with Standard Specification 13-4.03 Spill Prevention and Control.

The WPC Manager shall oversee and enforce proper liquid waste management procedures and practices.

Instruct employees and subcontractors how to safely differentiate between non-hazardous liquid waste and potential or known hazardous liquid waste.

Instruct employees, subcontractors, and suppliers that it is unacceptable for any liquid waste to enter any storm drainage structure, waterway, or receiving water.

Educate employees and subcontractors on liquid waste generating activities, and liquid waste storage and disposal procedures.

Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings and tailgates).

Verify which non-stormwater discharges are permitted by the Caltrans NPDES permit; different regions might have different requirements not outlined in this permit. Some listed discharges may be prohibited if Caltrans determines the discharge to be a source of pollutants.

Apply the NS-8, "Vehicle and Equipment Cleaning" BMP for managing wash water and rinse water from vehicle and equipment cleaning operations.

Containing Liquid Wastes

Drilling residue and drilling fluids shall not be allowed to enter storm drains and receiving waters and shall be disposed of outside the highway right of way in conformance with the provisions in Standard Specifications.

If an appropriate location is available, as determined by the RE, drilling residue and drilling fluids that are exempt under California Code of Regulations (CCR) Title 23 §2511(g) may be dried by infiltration and evaporation in a containment facility constructed in conformance with the provisions concerning the Temporary Concrete Washout Facilities detailed in WM-08, "Concrete Waste Management."

Liquid wastes generated as part of an operational procedure, such as water-laden dredged material and drilling mud, shall be contained and not allowed to flow into drainage channels or receiving waters prior to treatment.

Contain liquid wastes in a controlled area, such as a holding pit, sediment basin, roll-off bin, or portable tank.

Containment devices must be structurally sound and leak free.

Containment devices must be of sufficient quantity or volume to completely contain the liquid wastes generated.

Take precautions to avoid spills or accidental releases of contained liquid wastes. Apply the education measures and spill response procedures outlined in WM-4, "Spill Prevention and Control."

Do not locate containment areas or devices where accidental release of the contained liquid can threaten health or safety, or discharge to water bodies, channels, or storm drains.

Capturing Liquid Wastes

Capture all liquid wastes running off a surface, which has the potential to affect the storm drainage system, such as wash water and rinse water from cleaning walls or pavement.

Do not allow liquid wastes to flow or discharge uncontrolled. Use temporary dikes or berms to intercept flows and direct them to a containment area or device for capture.

If the liquid waste is sediment laden, use a sediment trap SC-3, "Sediment Trap/Curb Cutback" for capturing and treating the liquid waste stream, or capture in a containment device and allow sediment to settle.

Disposing of Liquid Wastes

Typical method is to dewater the contained liquid waste, using procedures such as described in NS-2, "Dewatering Operations", and SC-2, "Sediment/Desilting Basin"; and dispose of resulting solids per WM-5, "Solid Waste Management."

Method of disposal for some liquid wastes may be prescribed in Water Quality Reports, NPDES permits, Environmental Impact Reports, 401 Water Quality Certifications or 404 permits, local agency discharge permits, etc., and may be defined elsewhere in the special provisions.

Liquid wastes, such as from dredged material, may require testing and certification whether it is hazardous or not before a disposal method can be determined.

For disposal of hazardous waste, see WM-6, "Hazardous Waste Management."

If necessary, further treat liquid wastes prior to disposal. Treatment may include, though is not limited to, sedimentation, filtration, and chemical neutralization.

Maintenance and Inspection

Inspect onsite sanitary and septic waste storage and disposal procedures at least weekly, prior to a forecasted rain event, daily during extended rain events and post-storm events.

Locations for portable Santiary Systems must be shown on the WPCDs and reflect current site conditions.

SWPPP or WPCP

Sanitary and Septic Waste Management must be discussed in Section 500.4.2 of the SWPPP or Section 30.3.2 of the WPCP.

Appendix A

Definition of Terms

Active Areas. An area where soil disturbing activities have occurred at least once within 14 days.

Areas of Construction. All areas subject to land surface disturbance activities related to the project including, but not limited to, project staging areas, immediate access areas and storage areas.

Active Treatment System (ATS). A treatment system that employs chemical coagulation, chemical flocculation, or electrocoagulation to aid in the reduction of turbidity caused by fine suspended sediment.

Air Deposition. Airborne particulates from construction activities.

Best Available Technology Economically Achievable (BAT). As defined by USEPA, BAT is a technology-based standard established by the CWA as the most appropriate means available on a national basis for controlling the direct discharge of toxic and nonconventional pollutants to navigable waters. The BAT effluent limitations guidelines, in general, represent the best existing performance of treatment technologies that are economically achievable within an industrial point source category or subcategory.

Best Conventional Pollutant Control Technology (BCT). As defined by USEPA, BCT is a technology-based standard for the discharge from existing industrial point sources of conventional pollutants including BOD, total suspended sediment (TSS), fecal coliform, pH, oil and grease.

Best Management Practices (BMPs). BMPs are scheduling of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants. BMPs also include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Caltrans Permit. The Caltrans Statewide NPDES Permit for discharges from Caltrans properties, facilities, and activities (Order No. 2012-011-DWQ, NPDES No. CAS000003), issues by the SWRCB.

Construction Activity. Includes clearing, grading, or excavation and Contractor activities that result in soil disturbance.

Construction Site. The area involved in a construction project as a whole.

Construction Site BMPs. Temporary control practices (BMPs) that are required only temporarily to address a short-term stormwater contamination threat as a result of construction activities. For example, silt fences are located near the base of newly graded slopes that have substantial area of exposed soil. Then, during rainfall, the silt fences allow capture of sediment from erosion of the slopes.

Contractor. Party responsible for carrying out the contract per plans and specifications. The Standard Specifications and contract special provisions contain stormwater protection requirements the Contractor must address.

Contractor-Support Facilities. Contractor-support facilities include: Staging areas, storage yards for equipment and materials, mobile operations, batch plants for Portland Cement Concrete and Hot Mix Asphalt, crushing plants for rock and aggregate, other facilities installed for Contractor convenience such as haul roads.

Debris. Litter, rubble, discarded refuse, and remains of destroyed inorganic anthropogenic waste.

Direct Discharge. When surface runoff directly enters the surface water body without first flowing through a municipal separate storm sewer system (MS4).

Discharge. Any release, spill, leak, pump, flow, escape, dumping, or disposal of any liquid, semi-solid or solid substance.

Disturbed Soil Areas (DSAs). Areas of exposed, erodible soil, including stockpiles, that are within the construction limits and that result from construction activities.

Drainage Area. The area of land that drains water, sediment, pollutants, and dissolved materials to a common outlet.

Effluent. Any discharge of water by a discharger either to the receiving water or beyond the property boundary controlled by the discharger.

Environmental Protection Agency (EPA). Agency that issued the regulations to control pollutants in stormwater runoff discharges (The Clean Water Act and NPDES permit requirements).

Erosion. The process, by which soil particles are detached and transported by the actions of wind, water, or gravity.

Erosion Control BMPs. Vegetation, such as grasses and wildflowers, and other materials, such as straw, fiber, stabilizing emulsion, protective blankets, etc., placed to stabilize areas of disturbed soils, reduce loss of soil due to the action of water or wind, and prevent water pollution.

Exempt Construction Activities. Activities exempt from the CGP, including routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility; and emergency construction activities required to protect public health and safety. Local permits may not exempt these activities.

Existing vegetation. Any vegetated area that has not already been cleared and grubbed.

Final Stabilization. All soil disturbing activities at each individual parcel within the site have been completed in a manner consistent with the requirements in this General Permit.

Forecasted Storm Event. A storm that produces or is forecasted to produce at least 0.10 inch of precipitation within a 24-hour period.

General Permit. The Construction General Permit for Storm Water Discharges Associated with Construction Activity (Order No. 2009-000-DWQ, NPDES Permit CAS000002) and amendments (Order No. 2010-0014-DWQ and Order No. 2012-0006-DWQ) issued by the SWRCB.

Good Housekeeping. A common practice related to the storage, use, or cleanup of materials, performed in a manner that minimizes the discharge of pollutants.

Good Housekeeping BMPs. BMPs designed to reduce or eliminate the addition of pollutants to construction site runoff through analysis of pollutant sources, implementation of proper handling/disposal practices, employee education, and other actions. Grading Phase (part of the Grading and Land Development Phase) includes reconfiguring the topography and slope including; alluvium removals; canyon cleanouts; rock undercuts; keyway excavations; land form grading; and stockpiling of select material for capping operations.

Illegal Connection. Discarding or disposal within the Caltrans right-of-way, properties or facilities, either intentionally or unintentionally, of trash or other wastes in non-designated areas that may contribute to stormwater pollution.

Illegal Dumping. An engineered conveyance that is connected to an MS4 without authorization by local, state, or federal statutes, ordinances, codes or regulations.

Illicit Discharge. Any discharge to an MS4 that is prohibited under local, state, or federal statutes, ordinances, codes or regulations. It includes all non-stormwater discharges except conditionally exempt non-stormwater discharges.

Inactive Construction Area. Any area not considered to be an active construction area. Active construction areas become inactive construction areas whenever construction activities are expected to be discontinued for a period of 14 days or longer.

Indirect Discharge. When surface runoff enters the surface water body through an MS4 stormwater conveyance system or unlisted tributary before reaching the surface water.

National Pollutant Discharge Elimination System (NPDES) Permit. A permit issued pursuant to the CWA that requires the discharge of pollutants to waters of the United States from stormwater be controlled.

Non-Storm Water Discharges. Non-Storm Water Discharges are discharges that do not originate from forecasted storm events. They can include, but are not limited to, discharges of process water, air conditioner condensate, non-contact cooling water, vehicle wash water, sanitary wastes, concrete washout water, paint wash water, irrigation water, or pipe testing water.

Non-Visible Pollutants. Pollutants associated with a specific site or activity that can have a negative impact on water quality, but cannot be seen though observation (ex: chlorine). Such pollutants being discharged are not authorized.

pH. Unit universally used to express the intensity of the acid or alkaline condition of a water sample. The pH of natural waters tends to range between 6 and 9, with neutral being 7. Extremes of pH can have deleterious effects on aquatic systems.

Pollution. The man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water. An alteration of the quality of the water of the state by waste to a degree, which unreasonably affects either the waters for beneficial uses or facilities that serve these beneficial uses.

Post-Construction BMPs. Structural and non-structural controls which detain, retain, or filter the release of pollutants to receiving waters after final stabilization is attained.

Qualified SWPPP Developer (QSD). Individual who is authorized to develop and revise SWPPPs.

Qualified SWPPP Practitioner (QSP). Individual assigned responsibility for non-storm water and storm water visual observations, sampling and analysis, and responsibility to ensure full compliance with the permit and implementation of all elements of the SWPPP, including the preparation of the annual compliance evaluation and the elimination of all unauthorized discharges.

Receiving Waters. All surface water bodies within the permit area.

Regional Water Quality Control Board (RWQCB). California agencies that implement and enforce CWA Section 402(p) NPDES permit requirements, and are issuers and administrators of these permits as delegated by USEPA. There are nine regional boards working with the SWRCB.

Resident Engineer (RE). The Caltrans representative charged with administration of construction contracts. The RE decides questions regarding acceptability of material furnished and work performed. The RE has "contractual authority" to direct the Contractor and impose sanctions if the Contractor fails to take prompt and appropriate action to correct deficiencies. The following contractual sanctions can be imposed by the RE: (a) withholding payments (or portions of payments), (b) suspending work, (c) bringing in a separate Contractor to complete work items (the Contractor is billed for such costs), (d) assessing liquidated damages including passing along fines for permit violations, (e) initiating cancellation of the construction contract.

Routine Maintenance. Activities intended to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Runoff Control BMPs. Measures used to divert run-on from off-site and runoff within the site.

Runoff Effect. The effect that a particular soil stabilization product has on the production of stormwater runoff. Runoff from an area protected by a particular product may be compared to the amount of runoff measured for bare soil

Run-on. Discharges that originate off-site and flow onto the property of a separate project site.

Sediment. Solid particulate matter, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity, or ice and has come to rest on the earth's surface either above or below sea level.

Sedimentation. Process of deposition of suspended matter carried by water, wastewater, or other liquids, by gravity. It is usually accomplished by reducing the velocity of the liquid below the point at which it can transport the suspended material.

Sediment Control BMPs. Practices that trap soil particles after they have been eroded by rain, flowing water, or wind. They include those practices that intercept and slow or detain the flow of storm water to allow sediment to settle and be trapped (e.g., silt fence, sediment basin, fiber rolls, etc.).

Sheet Flow. Flow of water that occurs overland in areas where there are no defined channels where the water spreads out over a large area at a uniform depth.

Soil Amendment. Any material that is added to the soil to change its chemical properties, engineering properties, or erosion resistance that could become mobilized by storm water.

State Water Resources Control Board (SWRCB). California agency that implements and enforces CWA Section 402(p) NPDES permit requirements, is issuer and administrator of these permits as delegated by EPA. Works with the nine Regional Water Quality Control Boards.

Storm Drain System. Streets, gutters, inlets, conduits, natural or artificial drains, channels and watercourses, or other facilities that are owned, operated, maintained and used for the purpose of collecting, storing, transporting, or disposing of stormwater.

Stormwater. Rainfall runoff, snow melt runoff, and surface runoff and drainage. It excludes infiltration and runoff from agricultural land.

Stormwater Pollution Prevention Plan (SWPPP). A plan required by the CGP or the LTCGP that includes site map(s), an identification of construction/contractor activities that could cause pollutants in the stormwater, and a description of measures or practices to control these pollutants. It must be prepared and authorized before construction begins. A SWPPP prepared in accordance with the Special Provisions and the Handbooks will satisfy Standard Specifications Section 13 Water Pollution Control

Temporary Construction Site BMPs. Construction Site BMPs that are required only temporarily to address a short-term stormwater contamination threat. For example, silt fences are located near the base of newly graded slopes that have a substantial area of exposed soil. Then, during rainfall, the silt fences filter and collect sediment from runoff flowing off the slope.

Water Pollution Control Manager (WPC Manager). The person responsible for the implementation of the SWPPPP or WPCP, whichever is applicable for the project. The WPC Manager must be a QSP whenever the project requires a WPCP. The WPC Manager must be a QSD whenever the project requires a SWPPP.

Water Pollution Control Program (WPCP). A WPCP is a plan to identify water quality management practices to be implemented that must be prepared for all construction projects that do not require preparation of a SWPPP. For Caltrans projects disturbing more than one acre, a SWPPP satisfies the requirement for a WPCP.

Waters of the United States. Generally, refers to surface waters, as defined by the federal Environmental Water quality objectives are defined in the California Water Code as limits or levels of water quality constituents or characteristics, which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area.

Appendix B: Selection of Temporary Soil Stabilization Controls

Appendix C: Active Treatment Systems

CITY OF GOLETA

APPENDIX L
WATER POLLUTION CONTROL PLAN

FOR

MATHILDA PARK IMPROVEMENTS PROJECT

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MATHILDA PARK IMPROVEMENTS PROJECT
CITY PROJECT NO. 9113
APPENDIX L

WATER POLLUTION CONTROL PLAN (WPCP)

for

Project Name

City of Goleta Project Number:

City Project Number

Prepared for:

City of Goleta
130 Cremona Drive, Suite B
Goleta, CA 93117
City's Project Engineer Name

Project Engineer's Telephone Number

Submitted by:

Address 1

Address 2

Contact Name

Contact Telephone Number

Project Site Address:

Job Site Address or Location Description

Job Site Telephone Number

Contractor's Water Pollution Control Manager:

Site Manager Name

Contact Telephone Number

WPCP Prepared by:

WPCP Company Name

WPCP Address 1

WPCP Address 2

WPCP Contact Name

WPCP Contact Telephone Number

WPCP Preparation Date

Date

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Attachment A .....Water Pollution Control Drawings

Section 10
WPCP Certification and Approval

10.1 Contractor's Certification

CONTRACTOR'S CERTIFICATION OF WPCP

"I certify under a penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature	Date
Name and Title	Telephone Number

Section 20
Project Information

1. Introduction and Project Description:

   Provide a brief description of the project.

   Describe the type(s) of work that will be performed.

   Provide a breif description of the project location, including descriptive items such as freeway and street names.

   Describe proximity to receiving waters to which the project will discharge, including surface waters, drainage channels, and drainage systems.

   Identify drainage system owners (municipality and/or agency)

2. Unique Site Features:

   Provide a brief description of any unique site features (water bodies, wetlands, environmentally sensitive area, endangered or protected species, etc.)

   Describe significant or high-risk activities that may impact stormwater quality. Include any unique features or activities within or adjacent to water bodies (such as dredging, re-use of aerially deposited lead material, and/or large excavations.)

3. Potential Pollutant Sources:

   Review the contract documents and associated environmental documents to determine the known site contaminants and list them in this section.

Section 30
Pollution Sources and Control Measures

30.1 Soil Stabilization (Erosion Control) and Sediment Control

30.1.1 Soil Stabilization (Erosion Control) BMPs

The following soil stabilization BMP implementation table indicates the BMPs that shall be implemented to control erosion on the construction site. Implementation and locations of temporary soil stabilization BMPs are shown on the WPCDs in Attachment A and described in this section. The BMP working details can also be found in Attachment A of this WPCP. The following list of BMPs and narrative explain how the selected BMPs will be incorporated into the project.

TEMPORARY SOIL STABILIZATION (EROSION CONTROL) BMPS				
BMP Name	**Minimum Requirement**	**BMP Used**		**If not used, state reason**
		Yes	No	
EC-1 Scheduling	☒	☐	☐	
EC-2 Preservation of Existing Vegetation	☒	☐	☐	
EC-3 Hydraulic Mulch	☐	☐	☐	
EC-4 Hydroseeding	☐	☐	☐	
EC-5 Soil Binders	☐	☐	☐	
EC-6 Straw Mulch	☐	☐	☐	
EC-7 Geotextiles & Mats	☐	☐	☐	
EC-8 Wood Mulching	☐	☐	☐	
EC-9 Earth Dikes and Drainage Swales	☐	☐	☐	
EC-10 Velocity Dissipation Devices	☐	☐	☐	
EC-11 Slope Drains	☐	☐	☐	
EC-12 Streambank Stabilization	☐	☐	☐	
EC-13 Polyacrylamide	☐	☐	☐	

ALTERNATIVE SOIL STABILIZATION BMPs USED		
☐ Yes ☐ No		
BMP Name	**BMP Description**	**If used, state reason**

30.1.2 Sediment Control BMPs

The following sediment control BMP implementation table indicates the BMPs that shall be implemented to control sediment on the construction site. Implementation and locations of temporary sediment control BMPs are shown on the WPCDs in Attachment A and described in this section. The BMP working details can also be found in Attachment A of this WPCP. The following list of BMPs and narrative explain how the selected BMPs will be incorporated into the project.

TEMPORARY SEDIMENT CONTROL BMPS				
BMP Name	**Minimum Require-ment**	**BMP Used**		**If not used, state reason**
		Yes	No	
SE-1 Silt Fence	☐	☐	☐	
SE-2 Sediment Basin	☐	☐	☐	
SE-3 Sediment Trap	☐	☐	☐	
SE-4 Check Dam	☐	☐	☐	
SE-5 Fiber Rolls	☐	☐	☐	
SE-6 Gravel Bag Berm	☐	☐	☐	
SE-7 Street Sweeping and Vacuuming	☒	☐	☐	
SE-8 Sandbag Barrier	☐	☐	☐	
SE-9 Straw Bale Barrier	☐	☐	☐	
SE-10 Storm Drain Inlet Protection	☒	☐	☐	
SE-11 Chemical Treatment	☐	☐	☐	

ALTERNATIVE SEDIMENT CONTROL BMPs USED		
☐ Yes ☐ No		
BMP Name	**BMP Description**	**If used, state reason**

30.1.3 Tracking Control BMPs

The following tracking control BMP implementation table indicates the BMPs that shall be implemented to reduce sediment tracking from the construction site onto private or public roads. Implementation and locations of tracking control BMPs are shown on the WPCDs in Attachment A and described in this section. The BMP working details can also be found in Attachment A of this WPCP. The following list of BMPs and narrative explain how the selected BMPs will be incorporated into the project.

TEMPORARY TRACKING CONTROL BMPS				
BMP Name	**Minimum Require-ment**	**BMP Used**		**If not used, state reason**
		Yes	No	
SE-7 Street Sweeping and Vacuuming	☒	☐	☐	
TC-1 Temporary Construction Entrance	☐	☐	☐	
TC-2 Stabilized Construction Roadway	☐	☐	☐	
TC-3 Temporary Entrance / Outlet Tire Wash	☐	☐	☐	

ALTERNATIVE TRACKING CONTROL BMPs USED		
☐ **Yes** ☐ **No**		
BMP Name	**BMP Description**	**If used, state reason**

30.1.4 Wind Erosion Control BMPs

The following wind erosion control BMP implementation table indicates the BMPs that shall be implemented to control wind erosion on the construction site. Implementation and locations of wind erosion control BMPs are shown on the WPCDs in Attachment A and/or described in this section. The BMP working details can be found in Attachment A. The following list of BMPs and narrative explain how the selected BMPs shall be incorporated into the project.

TEMPORARY WIND EROSION CONTROL BMPS				
BMP Name	**Minimum Require-ment**	**BMP Used**		**If not used, state reason**
		Yes	No	
WE-1 Wind Erosion Control	☐	☐	☐	
TC-1 Temporary Construction Entrance	☐	☐	☐	
TC-2 Stabilized Construction Roadway	☐	☐	☐	
All Soil Stabilization Measures Included in Section 30.1.1	☐	☐	☐	

ALTERNATIVE WIND EROSION BMPs USED		
☐ **Yes** ☐ **No**		
BMP Name	**BMP Description**	**If used, state reason**

30.2 Construction Site Management

30.2.1 Non-Stormwater Management BMPs

The following BMP implementation table indicates the BMPs that have been selected to control non-stormwater pollution on the construction site. Implementation and locations of non-stormwater control BMPs are shown on the WPCDs in Attachment A and described in this section. The BMP working details that will be adhered to are found in Attachment A of this WPCP.

TEMPORARY NON-STORMWATER POLLUTION CONTROL BMPS

BMP Name	Minimum Requirement	BMP Used		If not used, state reason
		Yes	No	
NS-1 Water Conservation Practices	☒	☐	☐	
NS-2 Dewatering Operations	☐	☐	☐	
NS-3 Paving and Grinding Operations	☐	☐	☐	
NS-4 Temporary Stream Crossing	☐	☐	☐	
NS-5 Clear Water Diversion	☐	☐	☐	
NS-6 Illicit Connection/Discharge	☒	☐	☐	
NS-7 Potable Water/Irrigation	☐	☐	☐	
NS-8 Vehicle and Equipment Cleaning	☐	☐	☐	
NS-9 Vehicle and Equipment Fueling	☐	☐	☐	
NS-10 Vehicle and Equipment Maintenance	☐	☐	☐	
NS-11 Pile Driving Operations	☐	☐	☐	
NS-12 Concrete Curing	☐	☐	☐	
NS-13 Concrete Finishing	☐	☐	☐	
NS-14 Material and Equipment Use	☐	☐	☐	
NS-15 Demolition Adjacent to Water	☐	☐	☐	

NS-16 Temporary Batch Plants	☐	☐	☐	

ALTERNATIVE NON-STORMWATER POLLUTION CONTROL BMPs USED		
☐ Yes ☐ No		
BMP Name	**BMP Description**	**If used, state reason**

30.2.2 Waste Management and Materials Pollution Control BMPs

The following BMP implementation table indicates the BMPs that have been selected to control construction site wastes and materials. Implementation and locations of materials handling and waste management BMPs are shown on the WPCDs in Attachment A. The BMP working details that will be adhered to are found in Attachment A of this WPCP. The following list of BMPs and narrative explain how the selected BMPs will be incorporated into the project.

TEMPORARY WASTE MANAGEMENT AND MATERIALS POLLUTION CONTROL BMPS				
BMP Name	**Minimum Require-ment**	**BMP Used**		**If not used, state reason**
		Yes	No	
WM-1 Material Delivery and Storage	☒	☐	☐	
WM-2 Material Use	☒	☐	☐	
WM-3 Stockpile Management	☒	☐	☐	
WM-4 Spill Prevention and Control	☒	☐	☐	
WM-5 Solid Waste Management	☒	☐	☐	
WM-6 Hazardous Waste Management	☐	☐	☐	
WM-7 Contaminated Soil Management	☐	☐	☐	
WM-8 Concrete Waste Management	☐	☐	☐	
WM-9 Sanitary/ Septic Waste Management	☐	☐	☐	
WM-10 Liquid Waste Management	☐	☐	☐	

ALTERNATIVE WASTE MANAGEMENT AND MATERIALS POLLUTION CONTROL BMPs USED		
☐ Yes ☐ No		
BMP Name	**BMP Description**	**If used, state reason**

30.3 Water Pollution Control Drawings (WPCDs)

The WPCDs are included as Attachment A to this Water Pollution Control Program.

30.4 Construction BMP Maintenance, Inspection, and Repair

Site inspections shall be conducted by the Contractor's WPCM at the following minimum frequencies:

- Prior to a forecast storm.
- After a rain event that causes runoff from the construction site.
- At 24-hour intervals during extended rain events.
- Weekly during the rainy season.
- Every 2 weeks during the non-rainy season; and
- At any other time(s) or intervals of time specified in the Contract Special Provisions.

A tracking or follow-up procedure shall follow any inspection that identifies deficiencies in BMPs.

30.5 Water Pollution Control Manager

The Water Pollution Control Manager (WPCM) assigned to this project is:

Insert WPCM's Name

Insert WPCM's Telephone Number

Insert Contractor's Company Name

The WPCM shall have primary responsibility and significant authority for the implementation, maintenance, inspection and amendments to the approved WPCP. The WPCM will be available at all times throughout duration of the project. Duties of the Contractor's WPCM include but are not limited to:

- Ensuring full compliance with the WPCP; and
- Implementing all elements of the WPCP.

The WPCM shall have the authority to mobilize crews in order to make immediate repairs to the water pollution control measures.

CITY OF GOLETA

APPENDIX M
PLAYGROUND EQUIPMENT OWNER'S MANUAL AND INSTALLATION GUIDELINES

FOR

MATHILDA PARK IMPROVEMENTS PROJECT

Back of Cover Sheet

MATHILDA PARK IMPROVEMENTS PROJECT
CITY PROJECT NO. 9113
APPENDIX M

UPRIGHT OCEAN | **ACCENT** ICE MINT | **DECK** BROWN | **PLASTIC** GRAY | **HDPE** BROWN | **HDPE2C** N/A | **SHADE** SILVER | **ROOF** N/A | **CABLE** N/A | **MAX/APEX** BROWN

MATHILDA PARK

GOLETA, CA

821-146018A

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play&park structures
A PLAYCORE Company

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CHATTANOOGA, TN 37402
800.727.1907
PLAYANDPARK.COM

UPRIGHT OCEAN | **ACCENT** ICE MINT | **DECK** BROWN | **PLASTIC** GRAY | **HDPE** BROWN | **HDPE2C** N/A | **SHADE** SILVER | **ROOF** N/A | **CABLE** N/A | **MAX/APEX** BROWN

MATHILDA PARK
GOLETA, CA

821-146018A

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UPRIGHT OCEAN | **ACCENT** ICE MINT | **DECK** BROWN | **PLASTIC** GREY | **HDPE** BROWN | **HDPE2C** N/A | **SHADE** SILVER | **ROOF** N/A | **CABLE** N/A | **MAX/APEX** BROWN

MATHILDA PARK

GOLETA, CA

821-146018A

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OWNERS MANUAL



Visit www.playcore.com/shipment or use the QR code to give feedback about the condition of the shipment, quality of the product, and installation feedback.
Please include pictures.

This document includes;

- Warranty Information
- Ground Plan
- Hardware Listing
- Assembly and Installation Instructions

IPEMA MEMBER · ASTM INTERNATIONAL · ISO 9001

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play&park structures®

A PLAYCORE Company

Dear Play & Park Customer,

Thank you for choosing to purchase and install a Play & Park Structures play system. We appreciate the confidence and trust you have placed in our company.

Your Play & Park Structures Installation Guide is enclosed. We designed this manual specifically for the products you have purchased. Included in this manual you will find the following documents:

- Product Installation Instructions
- 2-D Top View Drawing specific to your structure
- Ground Plan

If you have any questions concerning your new equipment, you can reach your recreation consultant by calling 1-800-727-1907. To contact a Play & Park Structures customer service representative, you may call 1-888-404-5737 or reach them online by sending an email to: customerservice@playandpark.com

For more information on Play & Park Structures products, please do not hesitate to call us, or visit us online at www.playandpark.com.

Thank you for your business; we look forward to working with you on future playground equipment projects!

Sincerely,

Play & Park Structures

Safety Guidelines

Maintaining your playground equipment as well as its surrounding area is essential to minimizing the risk of injury to users as well as maximizing its useful lifespan. Play & Park Structures STRONGLY recommends that you follow these Safety Guidelines in conjunction with conducting periodic maintenance inspections using the accompanying Playground Maintenance Checklist.
When installing, always consider local conditions and codes. Good common sense works hand-in-hand with the instructions.

LOCATING YOUR PLAY STRUCTURE

Comply with the following when choosing the location for your new equipment:

- Equipment should be placed to eliminate conflicting traffic patterns. As a general rule, allow at least 6' of free space around the entire structure, EXCEPT for slide exits, which require a distance X equal to highest point of sliding surface with a minimum of 72" and maximum of 96" from the edge of the slide. Example: a Slide from a 6' high deck requires 6' of clear space with resilient surfacing in front of and behind them for safe circulation. Example: a Swing with a 8' high beam requires 16' of free space in front, and another 16' behind it, for a total of 32'. These minimum areas should be filled with the appropriate resilient surface material. See below for resilient surfacing recommendations.
- If your equipment includes any metal slides, they should be positioned in a shaded area, or at least positioned to avoid the sun's direct rays.
- Never overlap the safety zones of adjacent equipment. All separate play equipment must have its own safety zone, and these cannot overlap. So, if you have an existing structure with a slide exit oriented toward your new one, add your minimum safety zone to that of the existing slide to determine how far away you need to be.
- Never install playground equipment near, around, or in conjunction with swimming pools, ponds, lakes or any other bodies of water.

CHOOSING RESILIENT SURFACING MATERIAL

Playground equipment must be installed on a soft, resilient, energy-absorbing ground surface.
NEVER INSTALL PLAY EQUIPMENT ON CONCRETE, ASPHALT, OR GRASS. A fall on a hard surface from even a low platform of 3' high can result in serious injury to the user. Refer to CPSC and ASTM F1292 for recommended surfacing depths and requirements.

Tip: If your surfacing material is of the loose variety, checking for proper depth over time can be made easy by applying a non-removable florescent tape or paint in a bright color at the proper level on each post. Thereafter, as the resilient surfacing material compacts or washes away, the person responsible for regular maintenance inspections can easily see it must be replenished as the marks become visible.

AFTER THE EQUIPMENT IS IN USE

- Never add components not intended for use with this product.
- Never install other play equipment, fencing, landscaping, etc., which encroach upon the safety zones of this equipment.
- Check to make sure that there are no overhead obstructions within the use zone of the playground equipment that are not part of the play structures (example: tree limbs). Any overhead obstructions should be at least 84" above each platform or designated play surface or 84" above the pivot point of swings. All overhead utility line clearances above the use zone area should comply with all local, state and national codes.
- Regularly inspect and maintain your playground equipment and its surrounding area. Proper maintenance of Play & Park Structures equipment includes using the accompanying Playground Maintenance Checklist to identify areas requiring repairs or replacement, and barricading the equipment to prevent use while corrections are being made.
- If your playground equipment includes any wood components, bolts may need to be re-tightened after initial use due to wood shrinkage. Check and re-tighten all fasteners after the first few days of use, and again after the first 3 weeks of use. Thereafter, exercise normal maintenance procedures. Using a thread-locking compound on the threads of bolts can help prevent persistent loosening.
- 'S' hooks must be completely closed. Replace all worn 'S' hooks, and never re-use 'S' hooks.
- Pipes should never be allowed to turn. In the case of wood playground equipment, make sure all collars are snugly flush against the inside of posts with set screws tightened and wood screws flush against the outside of the collar, and all flat head bolts and set screws are tight. In the case of steel playground equipment, check set screws for tightness.

For specific information regarding playground safety and your responsibilities as the owner of this equipment, please contact the Consumer Product Safety Commission (CPSC), Washington, DC. for the latest guidelines for your play area and this equipment.

If any conditions or damages are discovered in violation of these Safety Guidelines or the accompanying Playground Maintenance Checklist, the play equipment should be barricaded immediately and children should not be allowed to use it until the conditions are corrected.

Introduction to Installation Instructions

Revised 03.29.16

IMPORTANT! Please read the entire Installation Instructions packet before beginning the installation.

Play & Park Structures has designed the SuperMax, DuraMax, totmax, Skyline, Boulderscapes and Horizons Play Systems to take advantage of all Consumer Product Safety Commission (CPSC) Guidelines and ASTM standards in force at the time of purchase in an effort to help reduce the chance of playground accidents. However, because studies have shown most playground injuries result from accidental falls, you, as the new owner of this equipment, are responsible for providing and adequately maintaining ***resilient play surfacing*** under and around all playground equipment. Please refer to the accompanying Safety Guidelines as well as CPSC guidelines and this document for examples of such surfacing.

We would like to provide the following suggested guidelines for your play environment:

- Refer to the Footing Diagram and note the Minimum Area Required shown for this structure. This area must be filled with adequate resilient play surface material, and must be clear of all obstacles, including but not limited to trees, curbing, sidewalk, fence, other play equipment, rocks and landscaping, etc.

- Acceptable play surfaces include sand, wood mulch, fine gravel or ground belt-less tires, if installed at the appropriate depths per CPSC guidelines for play surfacing.

- When using sand, wood mulch, or ground belt-less tires, a minimum of 6" depth is recommended by the CPSC. Play & Park Structures recommends an additional 4", for a total of 10", to combat the fast compacting characteristics of these materials. Surfaces must be checked at least weekly for compacting, which reduces resiliency significantly.

- Paved surfaces such as asphalt, concrete, gravel or sod are not acceptable for use under playground equipment, or anywhere within the stated Minimum Area Required.

- Close supervision of children playing on or around the structure is strongly recommended, along with classroom and/or home instructions on acceptable behavior on the playground equipment. The full supervision of playgrounds is the responsibility of the owner once the play structure has been properly installed.

TOOLS REQUIRED:

Play & Park Structures supplies the special bits required to fasten the "tamper-resistant" bolts. You will need common tools such as wrenches, Allen key set, drill, string line, level, mallet, shovels, post hole digger, pry bar, washable felt tip marker and a tape measure.

INSTALLATION GUIDELINES:

1. Compare all parts received to the packaging list. Notify Play & Park Structures immediately of any missing parts. We are not responsible for parts discovered missing over 10 days after receipt of the shipment.

2. Refer to your Footing Diagram to ensure this structure will fit into your actual site area. Note the Minimum Area Required measurements to determine clear space required. A minimum of 6' clearance is required between any obstacles and your structure. EXCEPT for slide exits, which require a distance X equal to the highest point of sliding surface with a minimum of 6' and a maximum of 8' from the edge of the slide (example: A slide from a 6' high deck requires 6' of clear space with resilient surfacing in front of its exit).

3. Site selection should include considerations of what is a safe and appropriate play area:
   a. A level and clear site is ideal, free of power lines or electrical equipment.
   b. Do not install play equipment near any bodies of water.
   c. If adjacent to a street with traffic, ensure adequate fencing acts as a barrier to children running into danger.

4. Site layout should include accurate measurement and marking of all footings prior to any installation. Use the dimensions shown between footings on the Footing Diagram to plot out the actual footprint of the play structure before doing any digging. Also, locate any free-standing play equipment in the same way, providing the necessary clearance between the equipment as well as any fences, trees, etc. Ensure at this time that you have enough total space for the equipment to be installed.

5. Excavate holes as shown in the Footing Diagram using a string line. An optional string line level is very helpful. If a level and clear site is not possible, adjust the depth of the footings to maintain a minimum depth of 18 in. for support posts at the lowest grade. NOTE: if soil conditions are very loose or otherwise unstable, a larger diameter footing may be required. Consult with local contractors for appropriate recommendations.

6. Begin your SuperMax, DuraMax, totMax , Skyline, Horizons, and BoulderScapes Play Systems installation by erecting the decks as shown within the following instructions.
   IMPORTANT: Do not concrete product until installation is complete!
   Once all decks are installed, components such as slides, climbers, etc., can be connected per their respective assembly instructions. Note that connecting components between decks such as Horizontal Ladders, Crawl Tunnels, Trapeze Beams, etc., should be installed concurrently with the decks to ensure they meet accurately.

7. CPSC guidelines mandate that there should be no gaps present in the playground equipment which fall between 3 ½" and 9". The positioning of certain components by the installer can affect this criteria, so you should always measure distances created when attaching components by the installer, which can cause entrapment of a child using the equipment. Also, ASTM requires that no more than 2 threads of bolt can protrude from the nut. Any excess threads should be filed down and made smooth to the touch.

8. When concrete is poured, be sure to keep the top 4" below the grade, and sloped away from the post to promote good water drainage. Wash off any concrete, which may have splashed onto the post before it dries. Allow all concrete to harden a minimum of 48 hours before using equipment.

SAFETY DURING INSTALLATION:

1. Before doing any excavation, inquire about any existing underground utilities.

2. Do not leave the job site unattended without making sure that all fastening hardware on all equipment are tightened and all Drive Rivets are in place to prevent clamps from moving, in case of unauthorized use. **PLAY & PARK STRUCTURES CLAMPS ARE NOT DESIGNED TO SUPPORT HUMAN WEIGHT WITHOUT THE DRIVE RIVETS INSTALLED, AND SUCH USE COULD CAUSE INJURY TO THE USER AND/OR DAMAGE TO THE EQUIPMENT.** It is also strongly recommended that all installation areas be roped off with clearly marked warning signs posted. Any open footings should be covered with plywood or other suitable material. Even during installation, it has been found that children will use the unattended equipment, thereby risking accidents.

3. The installation area should remain roped off for at least 48 hours after the last concrete footer is poured. Children should not be allowed to use the equipment during this period so that concrete has a chance to fully set.

4. Do not attach swing chains, trapeze rings or similar moving components until after all construction is complete and resilient surfacing material has been installed. Remember that any equipment, which appears to be complete and functional will invite unauthorized use regardless of its actual state of readiness.

Finally, if you should have any questions regarding the proper installation of this equipment, please contact Play & Park Structures at:

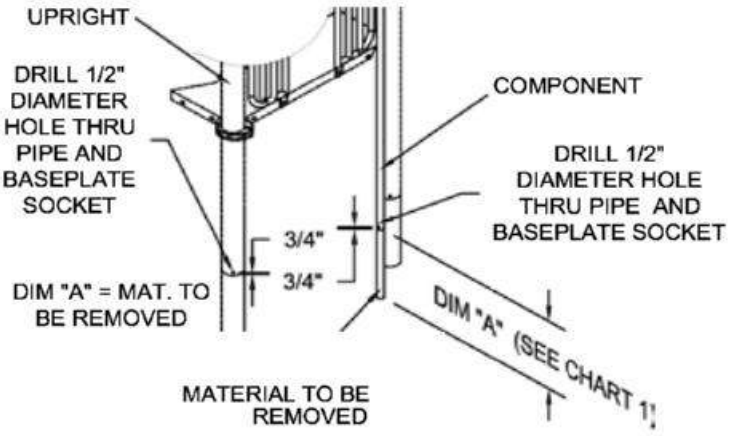
544 Chestnut Street, Chattanooga, TN 37402
TOLL Free: 800.727.1907 FAX: 423.425.3172
EMAIL: customerservice@playandpark.com
Visit our website: www.playandpark.com

play&park structures

60855 SURFACE MOUNT INSTALLATION INSTRUCTIONS FOR PARK STRUCTURES

ISSUED/REVISED: 08/07/14

NOTE: 2", 8", 10" LENGTH INDICATES THE SURFACING DEPTH. ALL COMPONENTS ARE SHIPPED AS STANDARD 30" INGROUND LENGTH. (20" DEEP HOLES & 10" SURFACING)



IMPORTANT: CHECK ALL GROUND MEMBER LOCATIONS TO COMPENSATE FOR SLOPE ***BEFORE*** CUTTING!

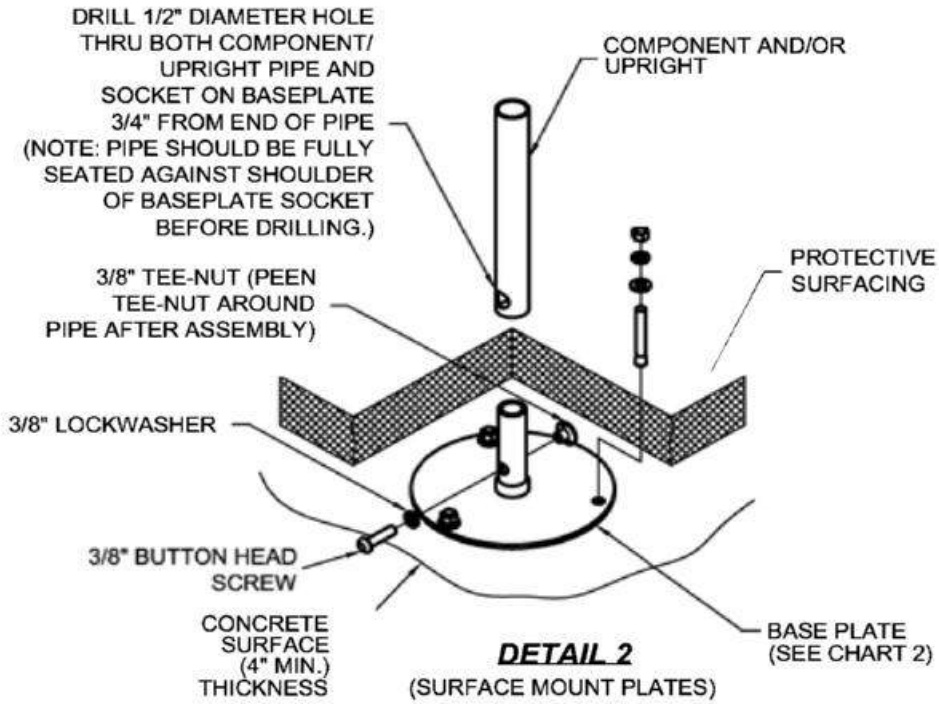
CHART 1

SURFACING DEPTH	MATERIAL TO BE REMOVED	
	W/OUT EXT.	W/6" EXT.
2"	28 11/16"	22 11/16"
8"	22 11/16"	16 11/16"
10"	20 11/16"	14 11/16"

NOTES:
1. DIM "A" = MATERIAL TO BE REMOVED.
2. SOME INGROUND COMPONENTS REQUIRE EXTENSIONS. REVIEW YOUR STANDARD INSTALLATION SHEET IF EXTENSIONS ARE REQUIRED. ADJUST MATERIAL TO BE REMOVED ACCORDINGLY.
i.e. A COMPONENT REQUIRING 6" EXTENSIONS, AND IF SURFACING DEPTH IS TO BE 2", MATERIAL TO BE REMOVED WILL BE 22 11/16"

DETAIL 1

(FOR SURFACE MOUNT INSTALLATIONS)

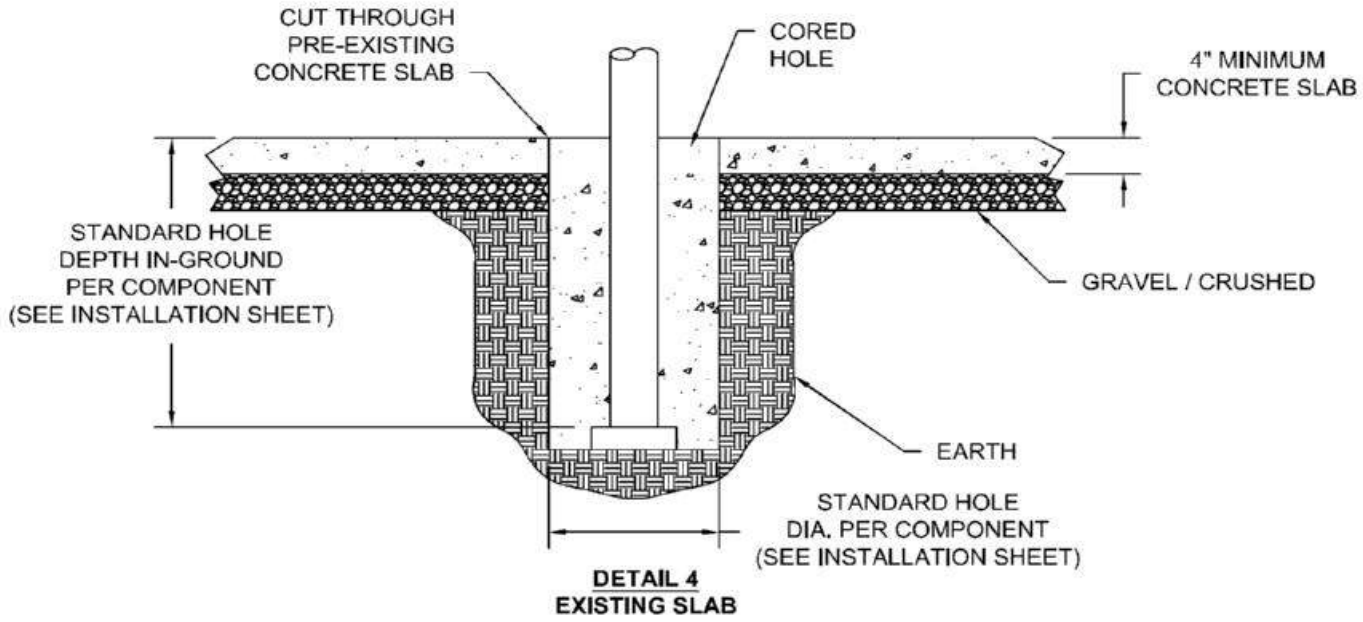


DETAIL 2

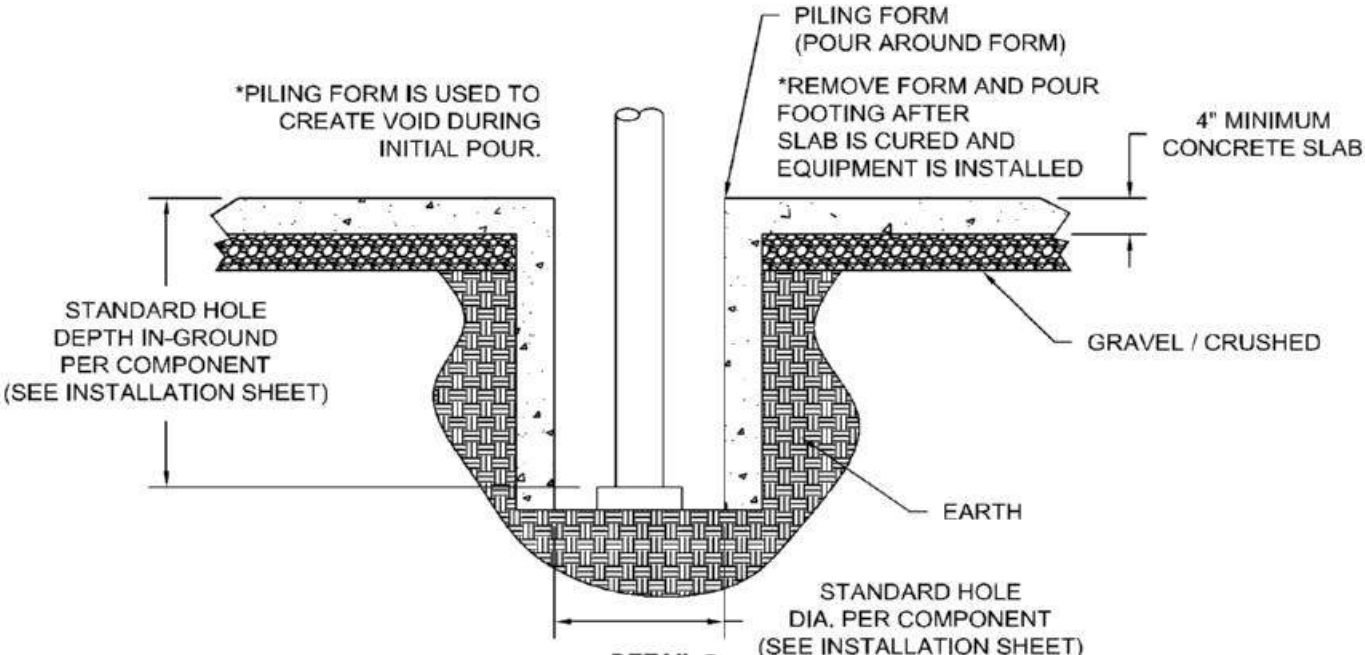
(SURFACE MOUNT PLATES)

CHART 2

NUMBER	O.D.	BASE PLATE
404765	1.029"	404764
60855	1 5/16"	152850
60856	1 5/8"	152851
60857	1 7/8"	152852
60858	2 3/8"	152853
60859	2 7/8"	152854
60860	3 1/2"	152856
60861	5"	152855



DETAIL 4
EXISTING SLAB



DETAIL 5
NEW SLAB

SURFACE MOUNT INSTALLATION INSTRUCTIONS

1. Before assembling this equipment, read the enclosed INSTALLATION INSTRUCTIONS in the installation booklet; follow all the instructions during installation.
2. Concrete requirements for Suface Mount shall be 4" minimum thickness w/ 3000 psi.
3. For Surface Mount, remove required length of component and/or upright as indicated in **DETAIL 1**. See ***CHART 1*** for the material length to be removed. (Required for 2", 8" or 10" surface mount only.) ***Note:*** Debur and remove any sharp edges on part after cut is made.
4. Drill 1/2" diameter hole thru component/uprights and baseplate socket 3/4" from end of pipe. The pipe should be fully seated against neck of socket before drilling holes.
5. Attach Component to base plate as shown in **DETAIL 2.** See ***CHART 2*** for the specific base plate required for the diameter pipe being used. (Required for 2", 8" or 12" Surface mount only.)

IMPORTANT: Some components such as slides, chinning bars, nets, climbers, etc. may require "cored" holes to help eliminate movement when installed. Refer to Ground Plan configuration to determine if "cored" holes are required.

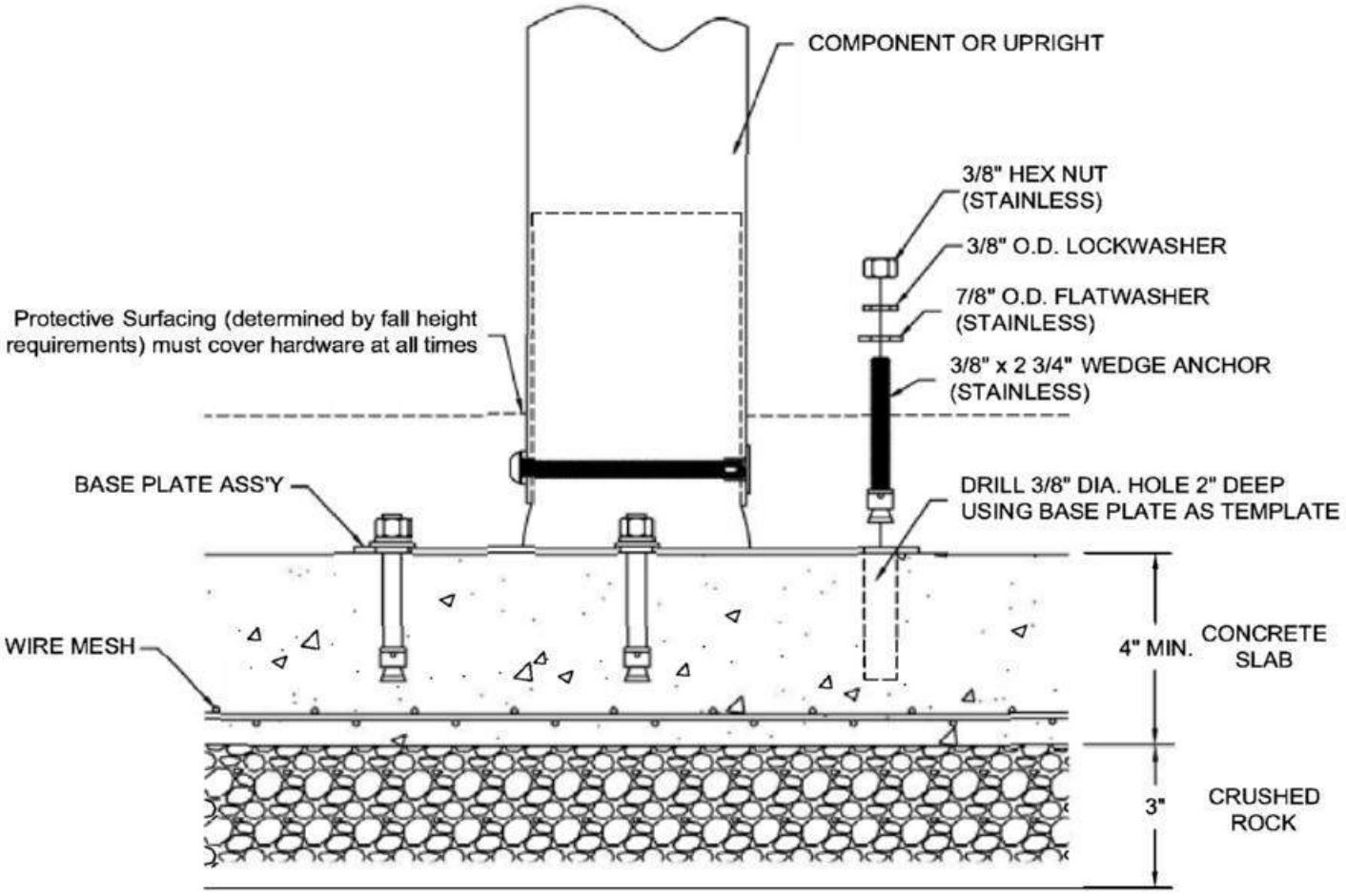
NOTE: If concrete slab is pre-existing and a cored hole is required it must be drilled through exisitng concrete to allow for concrete footing. Review your standard installation sheet for correct size and location of cored hole. See Detail 3.

NOTE: Cored holes can be created prior to concrete pour by using piling forms to create a void when pouring. See Detail 4.

NOTE: If a base plate interferes with an insert required for a below deck component that base plate will require a notch to be applied in the field.

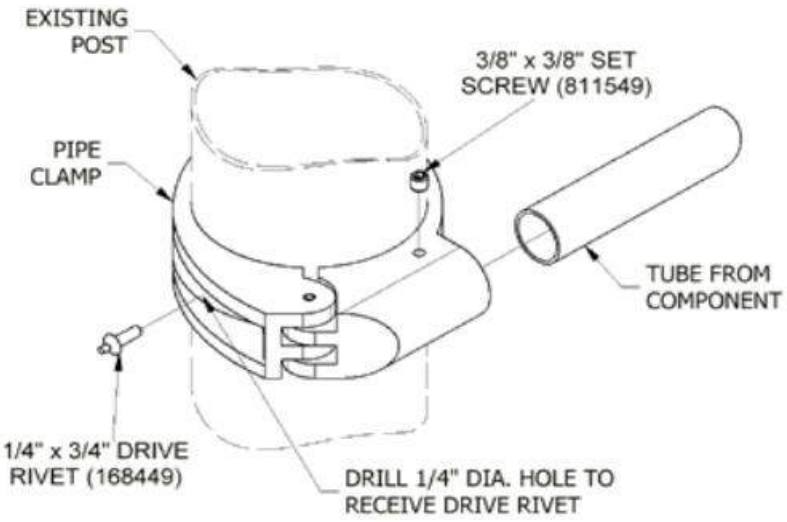
CONCRETE SPECIFICATIONS

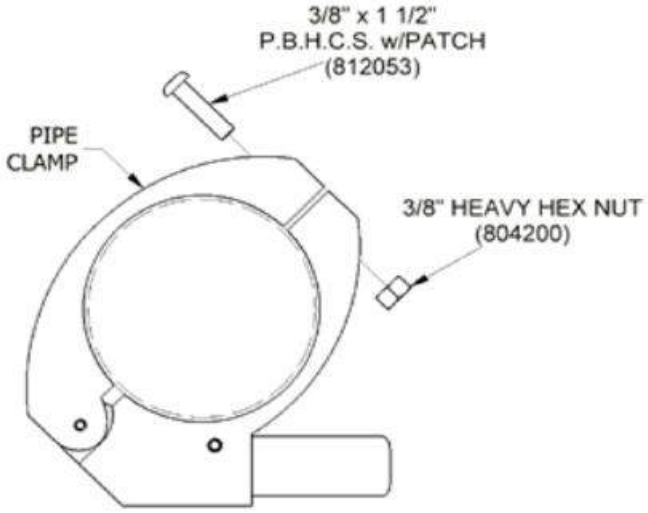
1. Depth of concrete must be 4" minimum with wire mesh reinforcement.
2. Base shall be 3" crushed rock over compacted subgrade.
3. Minimum 7 days cure-full cure after 28 days.
4. Concrete rating shall be 3,000 PSI (minimum), 28 days 3,500 PSI.



DETAIL 3
SIDE VIEW OF SURFACE MOUNT

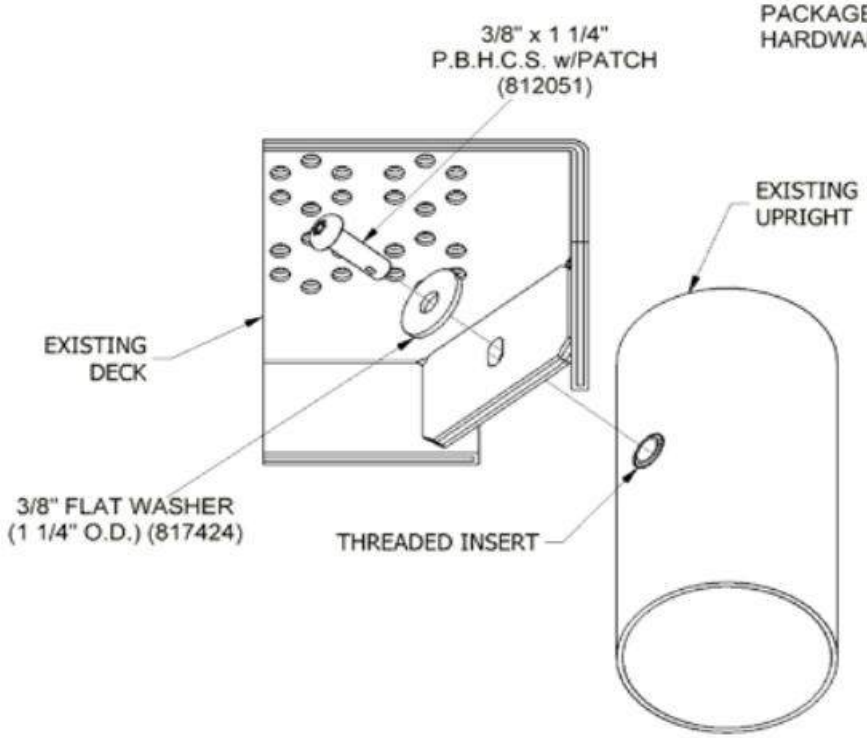
Clamp Assembly Details





TYPICAL DURAMAX PIPE CLAMP ASSEMBLY

NOTE: CLAMPS AND HARDWARE SHOWN ARE PACKAGED WITH INDIVIDUAL COMPONENT HARDWARE COMPLETE PACKAGES.

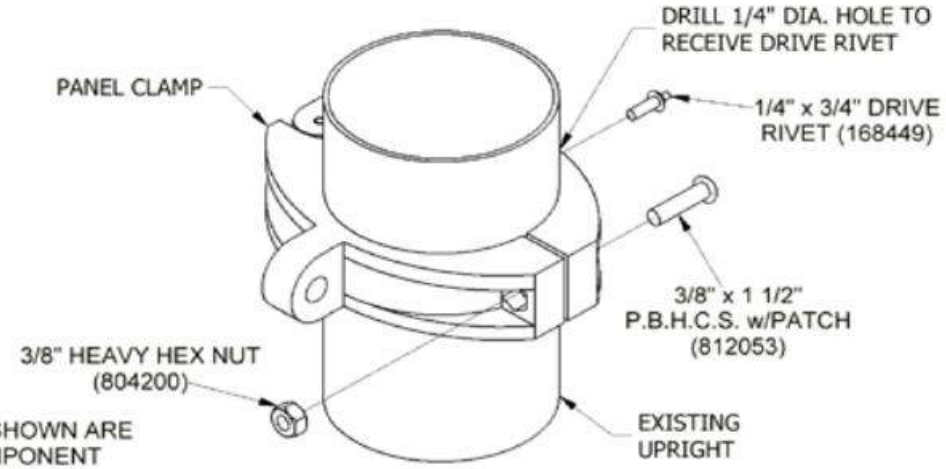


TYPICAL DURAMAX DECK CONNECTION

Issued/Revised: 4/4/2016

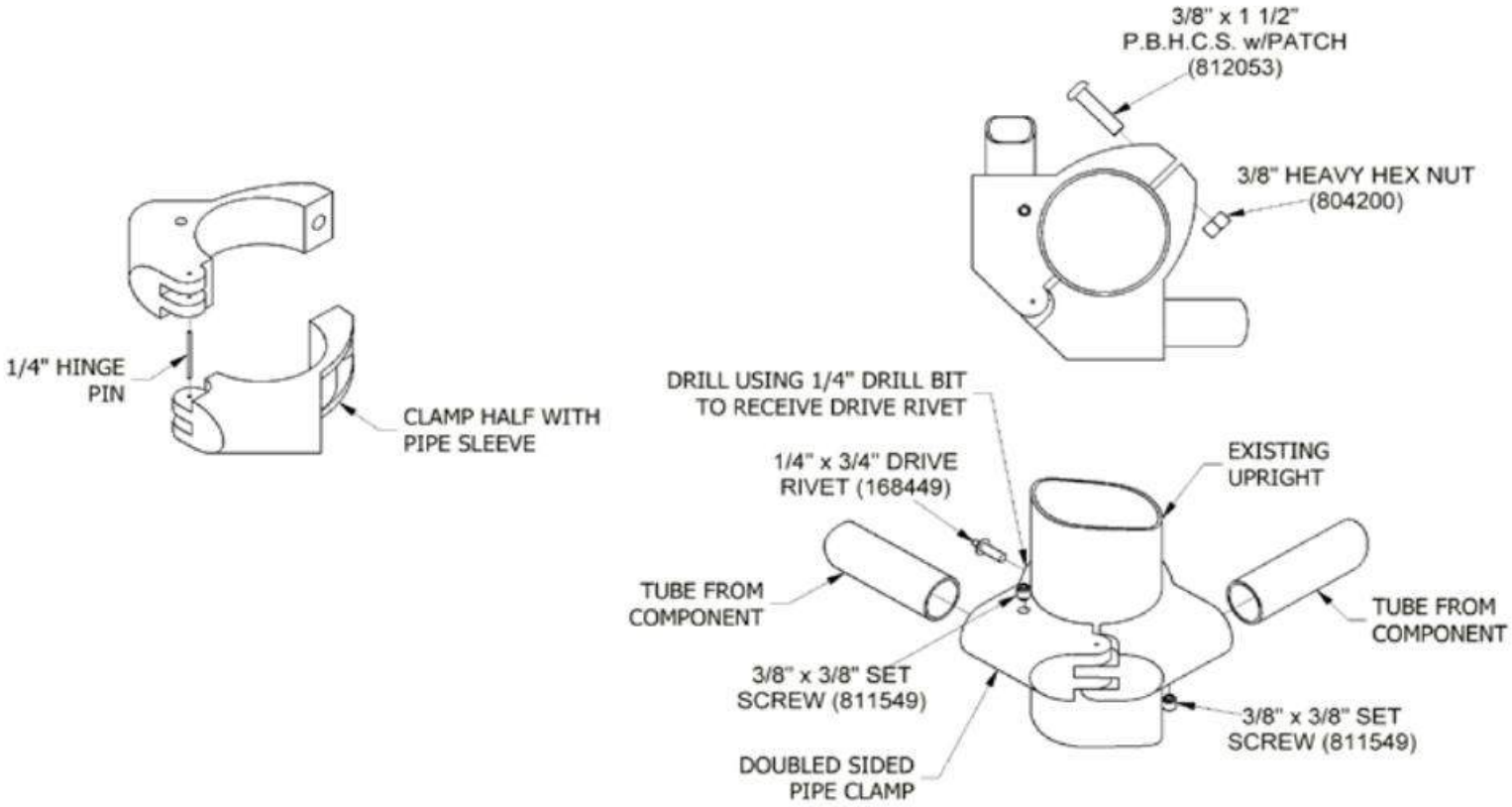
SHEET 1 OF 2

Clamp Assembly Details



NOTE: CLAMPS AND HARDWARE SHOWN ARE PACKAGED WITH INDIVIDUAL COMPONENT HARDWARE COMPLETE PACKAGES.

TYPICAL DURAMAX PANEL CLAMP ASSEMBLY



DURAMAX APPLICATION: To attach two components at 90 degrees to each other on the same square deck. Use when clamp conflicts do not allow you to use seperate clamps for each component.

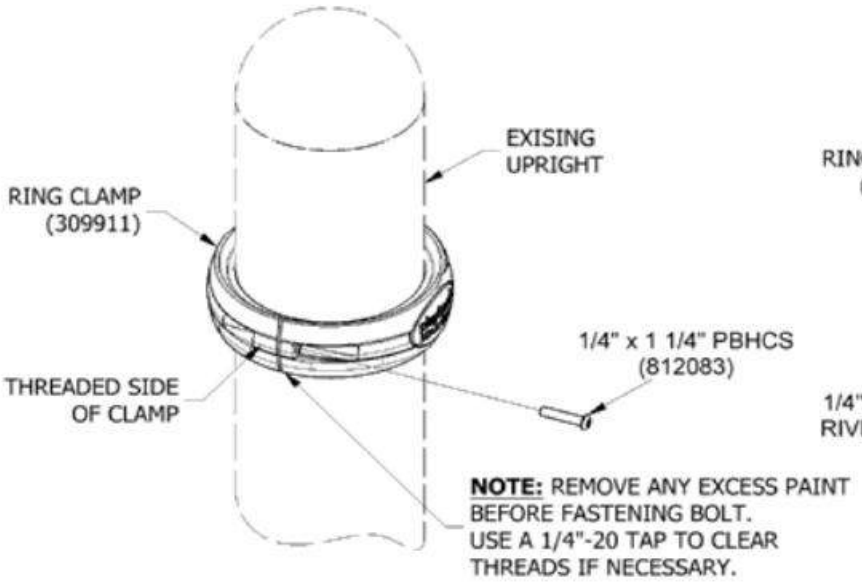
ASSEMBLY INSTRUCTIONS: Use two regular Pipe Clamps and remove hinge pins. Select clamps with pipe sleeves to create the Double Sided Pipe Clamp. Insert hinge pin back into clamps as shown above.

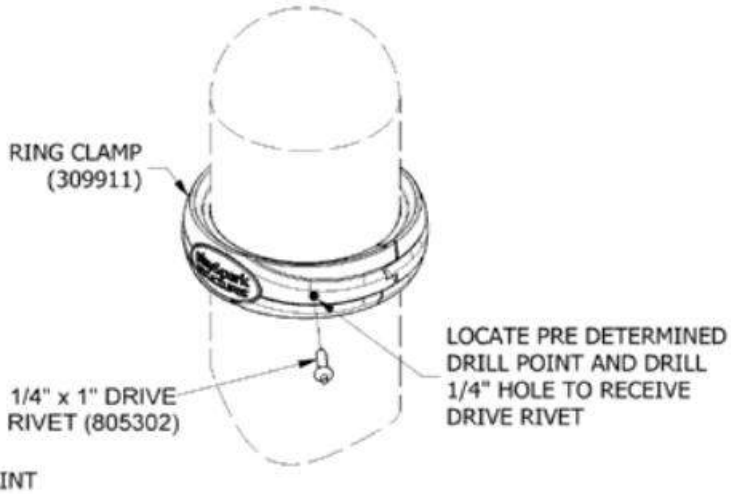
TYPICAL DURAMAX DOUBLE SIDED PIPE CLAMP ASSEMBLY

Issued/Revised: 4/4/2016

SHEET 2 OF 2

SUPERmax PLAY SYSTEMS Clamp Assembly Details





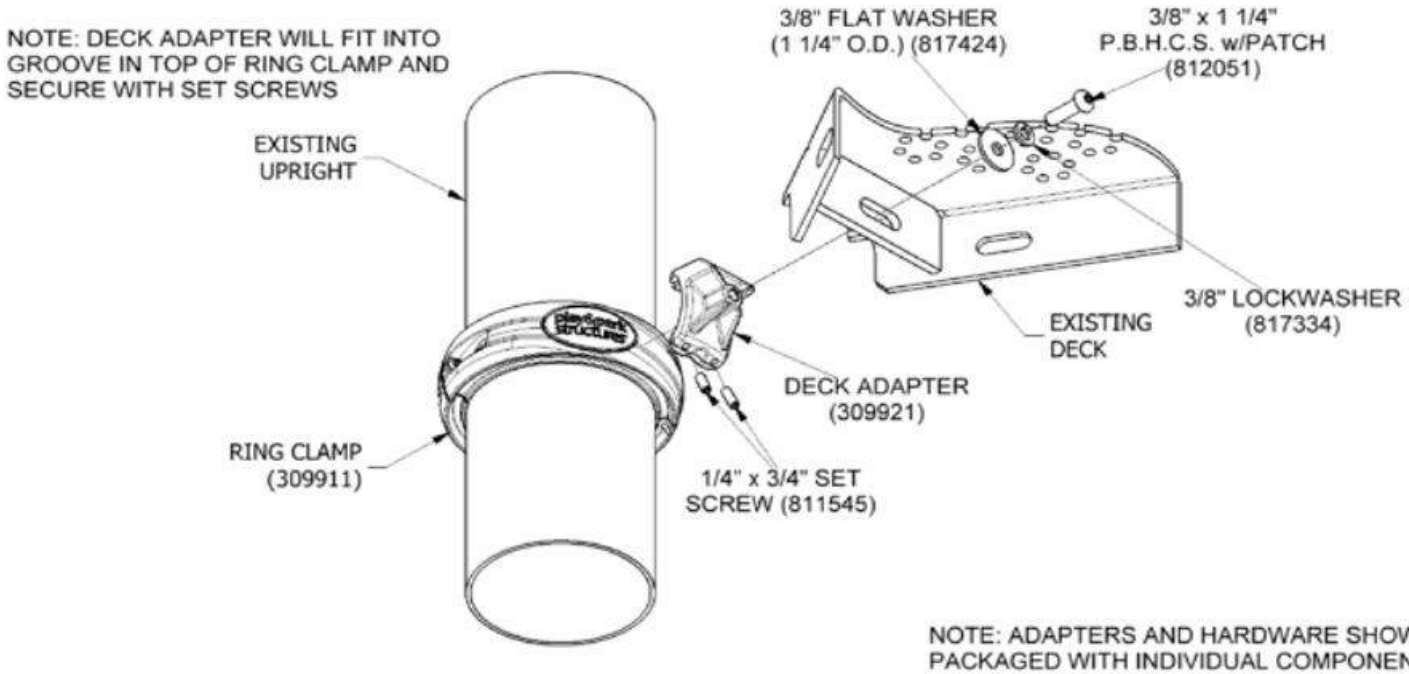
NOTE: THE USE OF LOCTITE IS IMPORTANT.

IMPORTANT: ORIENTATION OF BOLT IS CRITICAL.

NOTE: THE RING CLAMP WILL HAVE A SMALL GAP AT THE CONNECTION POINT AFTER ATTACHED. THE GAP IS DESIGNED FOR DRAINAGE AND TO ENSURE A PROPER FIT.

NOTE: MAKE SURE THE PLAY & PARK STRUCTURES LOGO IS ORIENTED CORRECTLY AND VISIBLE FROM GROUND LEVEL.

TYPICAL SUPERMAX RING CLAMP ASSEMBLY



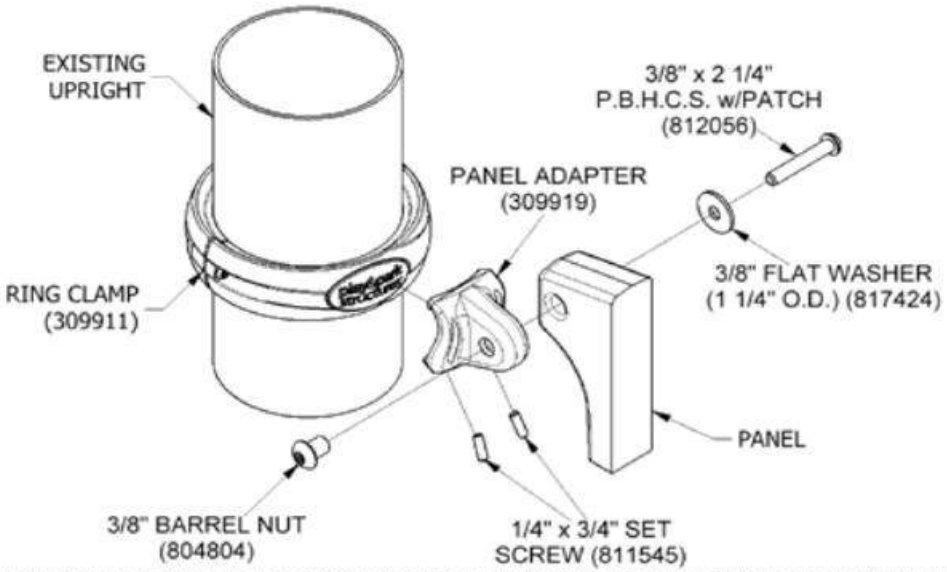
NOTE: ADAPTERS AND HARDWARE SHOWN ARE PACKAGED WITH INDIVIDUAL COMPONENT HARDWARE COMPLETE PACKAGES

Issued/Revised: 4/11/2016

TYPICAL SUPERMAX DECK CONNECTION

SHEET 1 OF 2

SUPERmax PLAY SYSTEMS Clamp Assembly Details

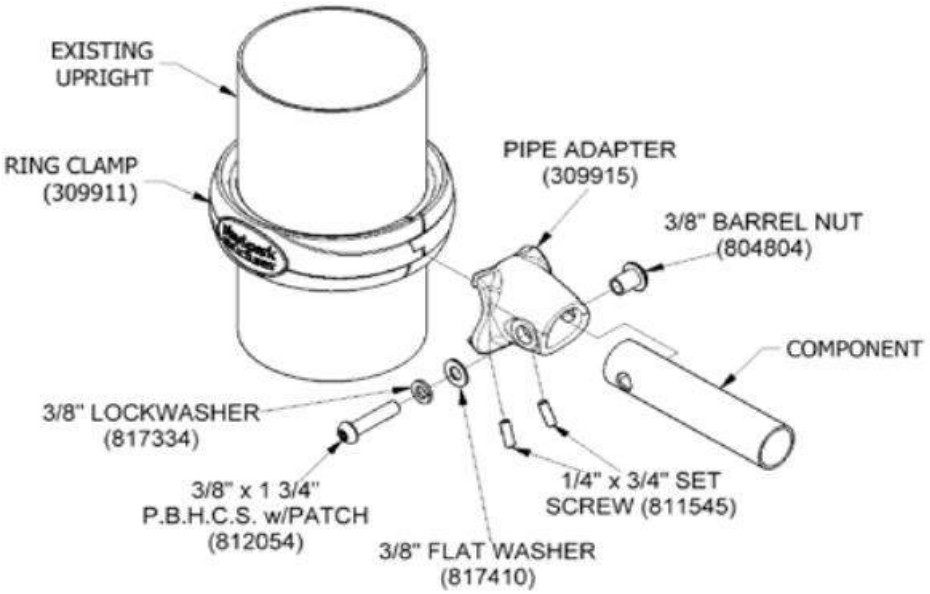


NOTE: PANEL ADAPTER WILL FIT INTO GROOVE IN TOP OF RING CLAMP AND SECURE WITH SET SCREWS.

PANEL MUST ATTACH TO THE DECK SIDE OF THE ADAPTER.

TYPICAL SUPERMAX PANEL ADAPTER ASSEMBLY

NOTE: PIPE ADAPTER WILL FIT INTO GROOVE IN TOP OF RING CLAMP AND SECURE WITH SET SCREWS.



TYPICAL SUPERMAX PIPE ADAPTER ASSEMBLY

Issued/Revised: 4/11/2016

SHEET 2 OF 2

DETAILED MAINTENANCE RECORD

play&park structures
A PLAYCORE Company

Play Area Site Name _____

Play Area Location or Description _____

Date _____ Inspector _____

Item Number	OK	Problem	Solution	Date Repaired	Initials

PLAYGROUND MAINTENANCE CHECKLIST

play&park structures
A PLAYCORE Company

Maintaining your playground equipment as well as its surrounding area is essential to minimizing the risk of injury to users as well as maximizing its useful lifespan. Play & Park Structures recommends the following maintenance procedures be followed:

On a daily basis: A responsible individual should conduct a brief visual check for structural defects, signs of vandalism and litter of foreign matter that needs to be removed.

On a weekly basis: A responsible individual should complete this checklist. Any required repairs should be detailed on the separate **Detailed Maintenance Record**, and once they are completed, both should be filed for future reference. A separate file and form should be kept for each play structure at each location.

IMPORTANT: Always refer to - and comply with - the separate *Safety Guidelines* and ASTM and CPSC Guidelines. The play structure(s) should be barricaded so that it cannot be used while repairs are being completed.

	Item to be Checked (use the following page to record a brief description of the necessary repairs)	**OK**	**Repairs Required**	**Date Repaired**
A.	**Play Structures in General**			
	Post and component footings are not exposed, cracked or loose			
	1. Clamps show no signs of slippage, cracking, or failure			
	2. Clamp drive rivets and hardware are secure			
	3. Welds are intact and free of cracks			
	a. Slide and Deck Enclosures			
	b. Overhead Activities			
	c. Climbers			
	4. No rust or corrosion			
	5. No splintered, cracked, gouged or otherwise deteriorated plastics; check for integrity of the plastic, keep plastic clean of any extraneous substances, verify that any deformation does not create an entrapment as specified on ASTM-F-1487 section 6.			
	6. No scratched, chipped, or peeling paint			
	7. Metal parts show no visible cracks, bending, warping or breakage			
	8. No missing bolts, nuts, etc.			
	9. All bolts, nuts, and fasteners are tight			
	10. All joints are secure (pay special attention to sectional slides, flush mounted decks, and pipe connections)			
	11. All swivels, bearings, grease fittings, and moving parts are well lubricated and not excessively worn (pay special attention to tire swings, tot swings, strap swings, track rides, and trapeze rings)			
	12. No broken or missing parts			
	13. No sharp edges or unsafe protrusions (check metal corners, bolts, etc.)			
	14. No exposed mechanisms, junctions of moving parts or components that will pose possible pinch or crush points			
B.	**Play Events**			
	1. Plastic is not cut or cracked			
	2. All slide supports/anchors are intact and secure			
	3. All 'S' hooks are closed and not excessively worn			
	4. Clatter bridge chain and connections are not excessively worn, especially at connection points			
	5. Connectors and Chain have free movement			
C.	**Surrounding Area**			
	1. Resilient surfacing material is not scattered or excessively worn			
	2. Resilient surfacing material is adequately deep and retains its fall absorbing abilities as specified at the time of installation			
	3. Border around playground is in good condition and has not come loose			
	4. No roots, rocks, or other objects that may cause a tripping or injury hazard			
	5. Area is clean of litter (no broken glass or bottles, etc .)			

SuperMax Play Systems

60059 (10'), 60060 (12'), 60088 (14'), 60102 (6'), 60178 (8'), 60946 (15'), 60947 (13'), 60948 (11'), 60949 (7'), 60956 (9'), 61538 (4'), 61539 (5') SUPERMAX POST w/ CAP

(ADD G PREFIX FOR GALV. POST)

Parts List									
DESCRIPTION	60059	G60059	60060	G60060	60088	G60088	60102	G60102	PART NUMBER
5" O.D. POST WITH CAP (ALUMINUM) 10'	1	0	0	0	0	0	0	0	300130
5" O.D. POST WITH CAP (GALVANIZED) 10'	0	1	0	0	0	0	0	0	G00130
5" O.D. POST WITH CAP (ALUMINUM) 12'	0	0	1	0	0	0	0	0	300059
5" O.D. POST WITH CAP (GALVANIZED) 12'	0	0	0	1	0	0	0	0	G00059
5" O.D. POST WITH CAP (ALUMINUM) 14'	0	0	0	0	1	0	0	0	300060
5" O.D. POST WITH CAP (GALVANIZED) 14'	0	0	0	0	0	1	0	0	G00060
5" O.D. POST WITH CAP (ALUMINUM) 6'	0	0	0	0	0	0	1	0	300057
5" O.D. POST WITH CAP (GALVANIZED) 6'	0	0	0	0	0	0	0	1	G00057

Parts List									
DESCRIPTION	60178	G60178	60946	G60946	60947	G60947	60948	G60948	PART NUMBER
5" O.D. POST WITH CAP (ALUMINUM) 8'	1	0	0	0	0	0	0	0	300521
5" O.D. POST WITH CAP (GALVANIZED) 8'	0	1	0	0	0	0	0	0	G00521
5" O.D. POST WITH CAP (ALUMINUM) 15'	0	0	1	0	0	0	0	0	305801
5" O.D. POST WITH CAP (GALVANIZED) 15'	0	0	0	1	0	0	0	0	G05801
5" O.D. POST WITH CAP (ALUMINUM) 13'	0	0	0	0	1	0	0	0	305803
5" O.D. POST WITH CAP (GALVANIZED) 13'	0	0	0	0	0	1	0	0	G05803
5" O.D. POST WITH CAP (ALUMINUM) 11'	0	0	0	0	0	0	1	0	305805
5" O.D. POST WITH CAP (GALVANIZED) 11'	0	0	0	0	0	0	0	1	G05805

Parts List									
DESCRIPTION	60949	G60949	60956	G60956	61538	G61538	61539	G61539	PART NUMBER
5" O.D. POST WITH CAP (ALUMINUM) 7'	1	0	0	0	0	0	0	0	305807
5" O.D. POST WITH CAP (GALVANIZED) 7'	0	1	0	0	0	0	0	0	G05807
5" O.D. POST WITH CAP (ALUMINUM) 9'	0	0	1	0	0	0	0	0	305810
5" O.D. POST WITH CAP (GALVANIZED) 9'	0	0	0	1	0	0	0	0	G05810
5" O.D. POST WITH CAP (ALUMINUM) 4'	0	0	0	0	1	0	0	0	304957
5" O.D. POST WITH CAP (GALVANIZED) 4'	0	0	0	0	0	1	0	0	G04957
5" O.D. POST WITH CAP (ALUMINUM) 5'	0	0	0	0	0	0	1	0	305615
5" O.D. POST WITH CAP (GALVANIZED) 5'	0	0	0	0	0	0	0	1	G05615

Unless Otherwise Specified, All Units of Measure are Each

**Items listed below Hardware Complete line are included with Hardware Complete Number*

Warning: During Installation, Hardware And Small Parts Are Choking Hazards For Young Children. Store Unused Parts Appropriately Until Assembly Is Completed. Once Assembly Is Completed, Remove Any Unused Parts From The Play Environment And Dispose/Save Them In A Secure Location. Any bolt end protruding more than two full threads beyond the face of the nut causes risk of clothing entanglement. Promptly cut-off flush, file smooth, and treat to prevent corrosion.

Note: Peen Tee-Nuts and Flatwashers to match radius of pipe after assembly is complete.

Note: Loctite (supplied by others) should be used on any non-patch hardware.

60059 (10'), 60060 (12'), 60088 (14'), 60102 (6'), 60178 (8'), 60946 (15'), 60947 (13'), 60948 (11'), 60949 (7'), 60956 (9'), 61538 (4'), 61539 (5') SUPERMAX POST w/ CAP

(ADD G PREFIX FOR GALV. POST)

INSTALLATION INSTRUCTIONS:

1. Component numbers are for one (1) Upright Post only. Please refer to your Plan Drawing and Footing Diagram to determine the proper quantity required and locations of Upright Posts.

2. Measure up from the lower end of each Upright Post and mark using a felt-tip marker 30" up from the end (optionally, this mark can be made with a fluorescent weather-proof naker of paint. It would become exposed as resilient surfacing wears away, thereby alerting maintenance personnel that it is time to replenish the surfacing). This should be your grade level once the post is in the ground and resilient surfacing is installed. To locate the finished ground level, you must decide how much resilient surface material you will be installing. (Refer to the Safety Guidelines to decide how much resilient surface to use, and note that a maximum total bury of 30" is provided per post, to include both the resilient surfacing and the concrete footer. See the accompanying diagram.) Place a mark below the 30" level to represent the finished ground level in the amount of resilient surface you will be instaling. Using your footing diagram and elevation view as a reference, move and dig holes accordingly.

3. Set the upright posts into the excavated footings in accordance with the footing diagram. Use a brick, small piece of plywood, or other blocking device (not supplied) at the bottom of each post to prevent the posts from sinking into the earth during plumbing and leveling.

4. Once the entire play structure is assembled, and all posts have been properly braced, re-check plumb and level. Pour concrete per the typical footing diagram only when all positions are correct. When pouring the footers, make sure the concrete has a downward slope of 45° at the top away from the post. Concrete that may have splashed onto the post should be washed off before it dries. Allow all concrete to harden a minimum of 48 hours before allowing children to play on the structures. Eliminate sharp points and sharp edges (burring) on installed hardware like nuts, bolts, etc.

MAINTENANCE PROCEDURE:

Periodically check hardware for tightness, and tighten as necessary. Always check all parts for breakage or wear, and immediately put equipment out of service until any faulty parts found are repaired or replaced. Also Check all metal parts for rust, paint loss and touch-up if necessary with paint. Check for welded areas and verify integrity. Check periodically resilient surfacing for appropriate depth and remove extraneous materials that could cause injury, infection, or disease. Maintain detailed installation, inspection, maintenance, and repair records for each public-use playground equipment.

SuperMax Play Systems

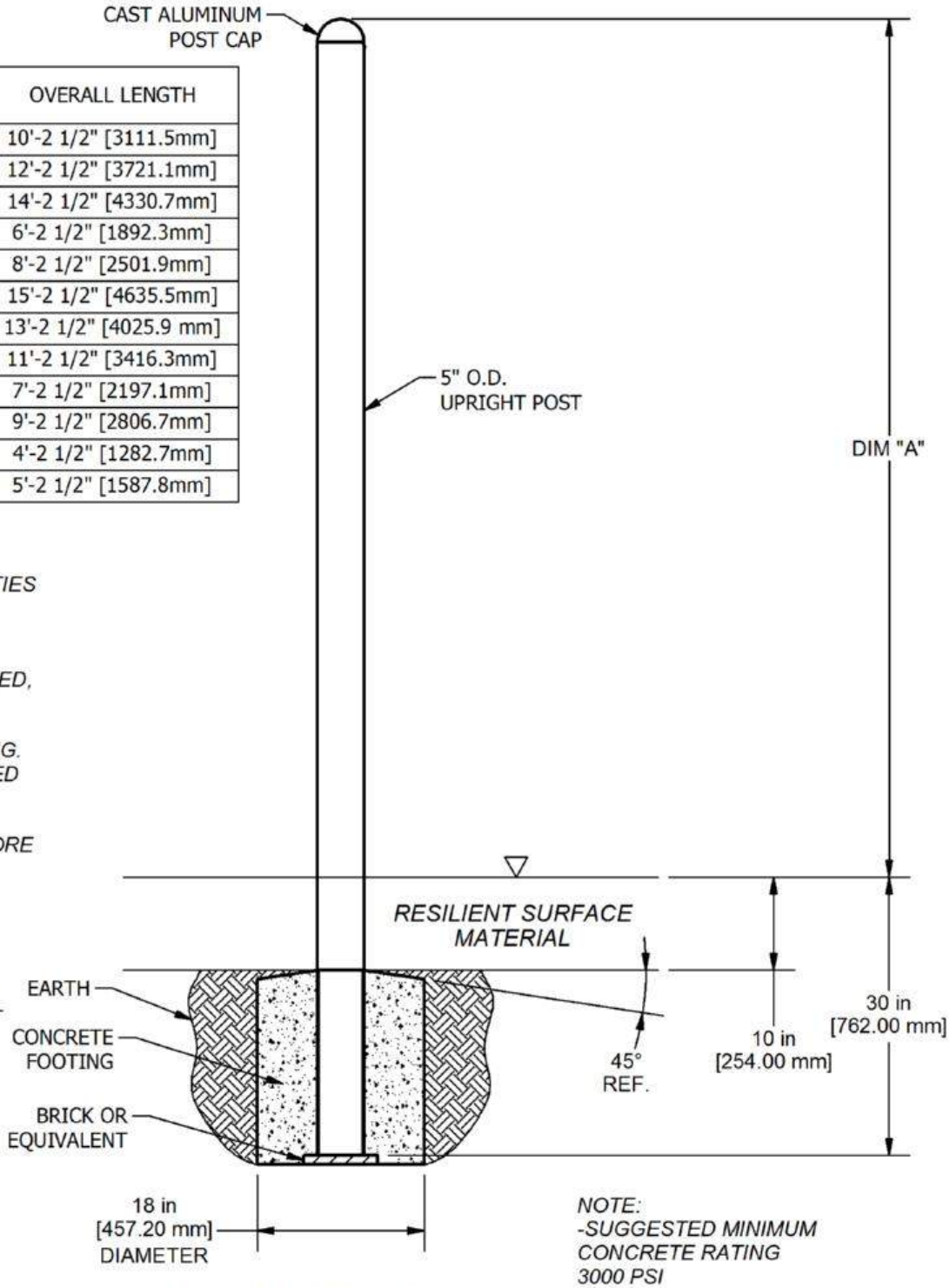
60059 (10'), 60060 (12'), 60088 (14'), 60102 (6'), 60178 (8'), 60946 (15'), 60947 (13'), 60948 (11'), 60949 (7'), 60956 (9'), 61538 (4'), 61539 (5') SUPERMAX POST w/ CAP

(ADD G PREFIX FOR GALV. POST)

NO.	DIM "A"	OVERALL LENGTH
60059	7'-8 1/2" [2349.5mm]	10'-2 1/2" [3111.5mm]
60060	9'-8 1/2" [2959.1mm]	12'-2 1/2" [3721.1mm]
60088	11'-8 1/2" [3568.7mm]	14'-2 1/2" [4330.7mm]
60102	3'-8 1/2" [1130.3mm]	6'-2 1/2" [1892.3mm]
60178	5'-8 1/2" [1739.9mm]	8'-2 1/2" [2501.9mm]
60946	12'-8 1/2" [3873.5 mm]	15'-2 1/2" [4635.5mm]
60947	10'-8 1/2" [3263.9mm]	13'-2 1/2" [4025.9 mm]
60948	8'-8 1/2" [2654.3mm]	11'-2 1/2" [3416.3mm]
60949	4'-8 1/2" [1435.1mm]	7'-2 1/2" [2197.1mm]
60956	6'-8 1/2" [2044.7mm]	9'-2 1/2" [2806.7mm]
61538	1'-8 1/2" [520.7mm]	4'-2 1/2" [1282.7mm]
61539	2'-8 1/2" [1282.7mm]	5'-2 1/2" [1587.8mm]

SHOCK ABSORBING PROPERTIES OF RESILIENT SURFACING MATERIALS VARY. IF YOU DETREMINE THAT LESS THAN 10" OF SURFACING IS REQUIRED, MAKE UP THE DIFFERENCE IN ELEVATION WITH EARTH BEFORE APPLYING SURFACING. IF MORE THAN 10" IS REQUIRED MAKE UP THE DIFFERENCE BY REDUCING THE DEPTH OF THE GROUND HOLE BY NO MORE THAN 2".

NOTE: STANDARD POST LENGTH ALLOWS A MAXIMUM 30" BURY, CONSISTING OF A COMBINATION OF RESILIENT SURFACE MATERIAL AND CONCRETE



NOTE:
-SUGGESTED MINIMUM CONCRETE RATING 3000 PSI

ELEVATION VIEW

Issued/Revised: 7/11/2019

SuperMax Play Systems

Model No: _____

Desc: _____

MODEL NO. 60061 Small Kickplate (For Deck Spaced 8" Apart)

PARTS LIST

DESCRIPTION	No. REQ'D	PART NUMBER
Small Kickplate	1	305742
Hardware Complete	1	302411
3/8" x 3/4" P.B.H.C.S. w/Patch	8	812052*
3/8" Lock Nut	8	804353*
3/8" Flat Washer (1 1/4" O.D.)	16	817424*

Unless Otherwise Specified, All Units of Measure are Each
***Included in Hardware**

Warning: Small parts and hardware items may present a potential choking hazard. Promptly remove all unused parts from play area. Any bolt end protruding more than two full threads beyond the face of the nut causes risk of clothing entanglement. Promptly cut-off flush, file smooth, and treat to prevent corrosion.

Note: Peen Tee-Nuts and Flatwashers to match radius of pipe after assembly is complete.
Note: Loctite (supplied by others) should be used on any non-patch hardware.

SPECIFICATIONS:

Kickplate measures 9-1/2" x 38" and is cut from galvanneal sheet metal with eight (8) 7/16" x 1" slotted holes punched to coincide with deck flange holes and receives a baked-on polyester powder-coat finish after fabrication.

Primary hardware is stainless steel.

INSTALLATION INSTRUCTIONS:

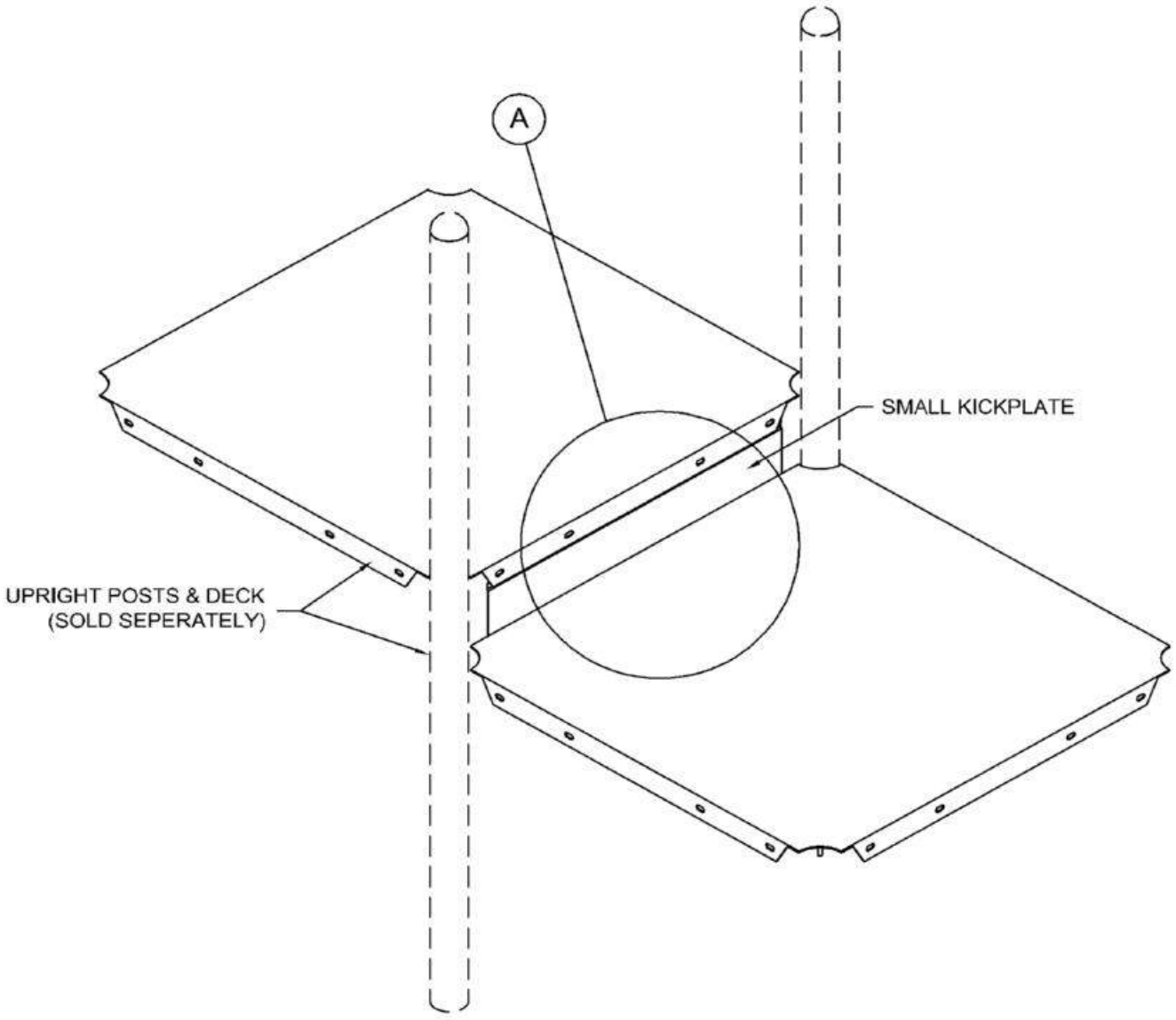
1. Refer to the main drawing to locate decks, which are spaced 8" apart. These will require Kickplate(s). Attach Kickplates after decks have been installed, but before deck clamps have been pinned, in case adjustment in deck heights is required to match up holes in deck flanges with holes in Kickplate.

2. Fasten the Kickplate between decks as shown in the drawing. No portion of the Kickplate should be protruding in a manner that could cause a user to receive a cut, scrape or trip over an edge. Any rough edges should be filed smooth, and any protruding corners should be flattened. Eliminate sharp points and sharp edges (burring) on installed hardware like bolts, nuts, etc.

MAINTENANCE PROCEDURE:

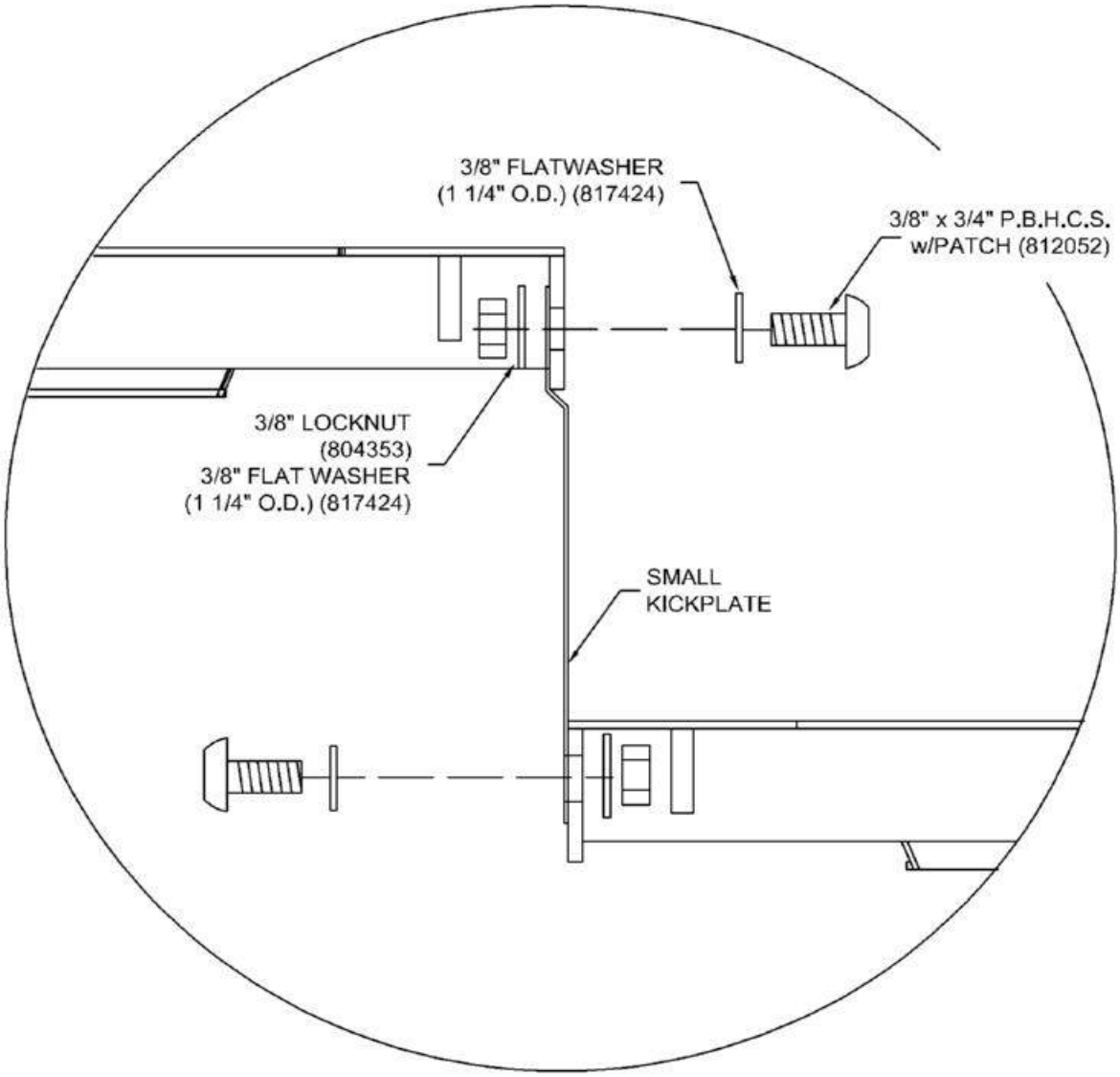
Periodically check hardware for tightness, and tighten as necessary. Always check all parts for breakage or wear, and immediately put equipment out of service until any faulty parts found are repaired or replaced. Also Check all metal parts for rust, paint loss and touch-up if necessary with paint. Check for welded areas and verify integrity. Check Plastisol-coating for bare spots and touch-up with Plastisol if necessary. Clear any trapped debris from deck perforations. Check periodically resilient surfacing for appropriate depth and remove extraneous materials that could cause injury, infection, or disease. Maintain detailed installation, inspection, maintenance, and repair records for each public-use playground equipment.

MODEL NO. 60061 Small Kickplate (For Deck Spaced 8" Apart)



FINISHED ASSEMBLY

MODEL NO. 60061 Small Kickplate (For Deck Spaced 8" Apart)



DETAIL "A"

MODEL NO. 60946 Aluminum 180" Post with Cap
MODEL NO. G60946 Galvanized 180" Post with Cap

PARTS LIST

DESCRIPTION	60946	G60946	PART NUMBER
5" O.D. Post with Cap (Aluminum)	1	0	305801
5" O.D. Post with Cap (Galvanized)	0	1	G05801

Warning: Small parts and hardware items may present a potential choking hazard. Promptly remove all unused parts from play area.

ALUMINUM SPECIFICATIONS:

Post is 5" O.D. x 180", 0.125" wall thickness 6005-T5 extruded seamless Aluminum tubing. Tensile strength is 38,000 psi, and yield strength is 35,000 psi. Entire post is polyester powder-coated after fabrication. A cast aluminum cap of matching color is factory rivited into the top end using two (2) aluminum rivets.

Weight: 34.75 lb. / 15.76 kg.

GALVANIZED SPECIFICATIONS:

Post is 5" O.D. 11-gauge galvanized steel tubing with a baked-on polyester powder-coated finish. A cast aluminum cap of matching color is factory rivited into the top end using two (2) aluminum rivets.

Weight: 94.81 lb. / 43 kg.

INSTALLATION INSTRUCTIONS:

1. The models 60946 and G60946 are for one (1) Upright Post only. Please refer to your plan drawing and footing diagram to determine the proper quantity required and locations of Upright Posts.

2. Measure from the lower end of each Upright Post and mark using a felt-tip maker 30" up from the end (optionally, this mark can be made with a fluorescent weather-proof maker of paint. It would become exposed as resilient surfacing wears away, thereby alerting maintenance personnel that it is time to replenish the surfacing). This should be your grade level once the post is in the ground and resilient surfacing is installed. To locate the finished ground level, you must decide how much resilient surface material you will be installing. (Refer to the Safety Guidelines to decide how much resilient surface to use, and note that a maximum total bury of 30" is provided per post, to include both the resilient surfacing and the concrete per post, to include both the resilient surfacing and the concrete footer. See the accompanying diagram.) Place a mark below the 30" level to represent the finished ground level in the amount of resilient surface you will be installing.

3. Run a string line along the side of a row of posts. Select a row of posts, which are common to a majority of the play structure. Using a string level, make sure the string line is at the projected finish grade mark. Now, measure and dig footings for posts along the string line according to the footing diagram. As you go along, you will want to run new string lines for each row of posts, and set posts so that the top mark on each post meets the string line.

4. Set the upright posts into the excavated footings in accordance with the footing diagram. Use a brick, small piece of plywood, or other blocking device (not supplied) at the bottom of each post to prevent the posts from sinking into the earth during plumbing and leveling.

5. Once the entire play structure is assembled, and all posts have been properly braced, re-check plumb and level. Pour concrete per the typical footing diagram only when all positions are correct. When pouring the footers, make sure the concrete level has a slight downward slope away from the post. Concrete that may have splashed onto the post should be washed off before it dries. Allow all concrete to harden a minimum of 48 hours before allowing children to play on the structures. Eliminate sharp points and sharp edges (burring) on installed hardware like bolts, nuts, etc.

MODEL NO. 60946 Aluminum 180" Post with Cap
MODEL NO. G60946 Galvanized 180" Post with Cap

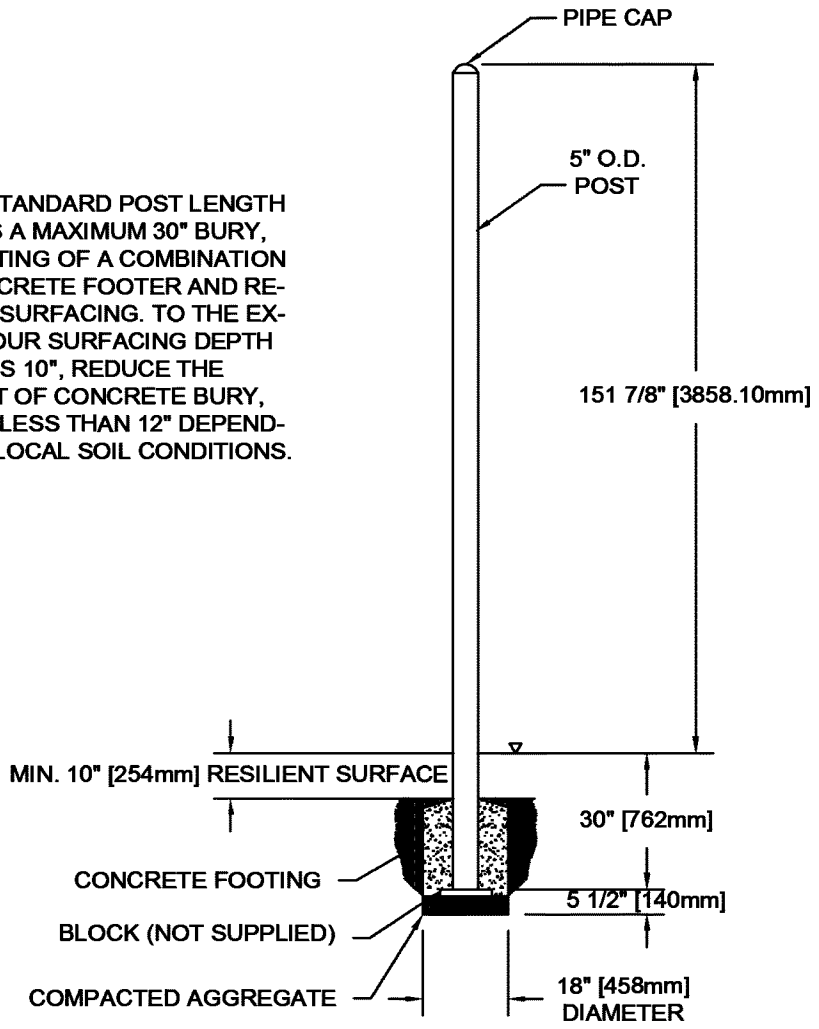
IMPORTANT:

To cushion accidental falls, park Structures strongly recommends that the area under and around the play structure be covered with a resilient material, such as sand, mulch, etc., to a minimum depth of 10", and as much as 12" for fall heights greater than 48". Approved rubber safety matting can also be used. Install resilient surfacing material within the use zone of play structure in accordance with ASTM specifications F1292 appropriate for the fall height of each structure. Refer to the Safety Guidelines provided within the assembly Instructions packet.

MAINTENANCE PROCEDURE:

Periodically check hardware for tightness, and tighten as necessary. Always check all parts for breakage or wear, and immediately put equipment out of service until any faulty parts are repaired or replaced. Check all decks for Plastisol-coating peeling and touch-up with Plastisol if necessary. Check for holes on deck, clean if necessary. Check periodically resilient surfacing for appropriate depth and remove extraneous materials that could cause injury, infection, or disease. Maintain detailed installation, inspection, maintenance, and repair
records for each public-use playground equipment.

NOTE: STANDARD POST LENGTH ALLOWS A MAXIMUM 30" BURY, CONSISTING OF A COMBINATION OF CONCRETE FOOTER AND RESILIENT SURFACING. TO THE EXTENT YOUR SURFACING DEPTH EXCEEDS 10", REDUCE THE AMOUNT OF CONCRETE BURY, BUT NO LESS THAN 12" DEPENDING ON LOCAL SOIL CONDITIONS.



MODEL NO. 60948 Aluminum 132" Post with Cap
MODEL NO. G60948 Galvanized 132" Post with Cap

PARTS LIST

DESCRIPTION	60948	G60948	PART NUMBER
5" O.D. Post with Cap (Aluminum)	1	0	305805
5" O.D. Post with Cap (Galvanized)	0	1	G05805

Warning: Small parts and hardware items may present a potential choking hazard. Promptly remove all unused parts from play area.

ALUMINUM SPECIFICATIONS:
Post is 5" O.D. x 132", 0.125" wall thickness 6005-T5 extruded seamless Aluminum tubing. Tensile strength is 38,000 psi, and yield strength is 35,000 psi. Entire post is polyesterpowder-coated after fabrication. A cast aluminum cap of matching color is factory rivited into the top end using two (2) aluminum rivets.

Weight: 25.75 lb. / 11.68 kg.

GALVANIZED SPECIFICATIONS:
Post is 5" O.D. 11-gauge galvanized steel tubing with a baked-on polyester powder-coated finish. A cast aluminum cap of matching color is factory rivited into the top end using two (2) aluminum rivets.

Weight: 69.79 lb. / 31.65 kg.

INSTALLATION INSTRUCTIONS:

1. The models 60948 and G60948 are for one (1) Upright Post only. Please refer to your plan drawing and footing diagram to determine the proper quantity required and locations of Upright Posts.

2. Measure from the lower end of each Upright Post and mark using a felt-tip maker 30" up from the end (optionally, this mark can be made with a fluorescent weather-proof maker of paint. It would become exposed as resilient surfacing wears away, thereby alerting maintenance personnel that itis time to replenish the surfacing). This should be your grade level once the post is in the ground and resilient surfacing is installed. To locate the finished ground level, you must decide how much resilient surface material you will beinstalling. (Refer to the Safety Guidelines to decide how much resilient surface to use, and note that a maximum total bury of 30" is provided per post, to include both the resilient surfacing and the concrete per post, to include both the resilient surfacing and the concrete footer. See the accompanying diagram.) Place a mark below the 30" level to represent the finished ground level in the amount of resilient surface you will be installing.

3. Run a string line along the side of a row of posts. Select a row of posts, which are common to a majority of the play structure. Using a string level, make sure the string line is at the projected finish grade mark. Now, measure and dig footings for posts along the string line according to the footing diagram. As you go along, you will want to run new string lines for each row of posts, and set posts so that the top mark on each post meets the string line.

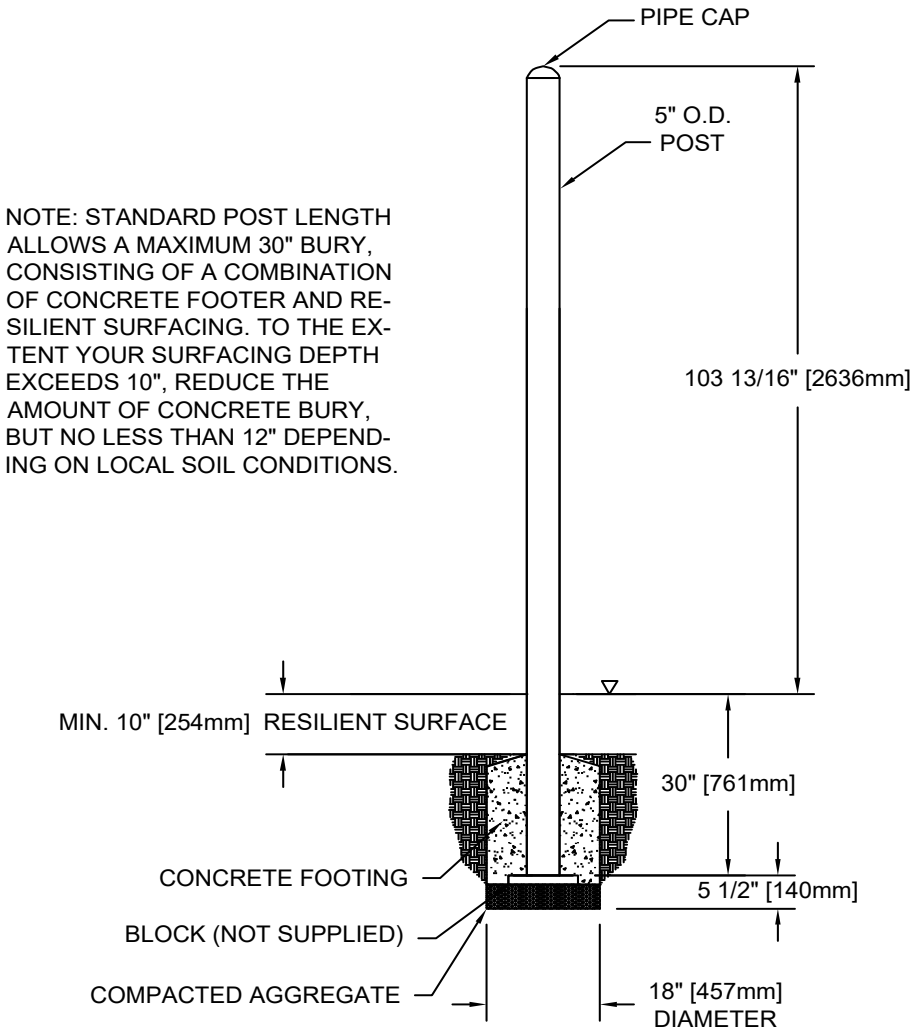
4. Set the upright posts into the excavated footings in accordance with the footing diagram. Use a brick, small piece of plywood, or other blocking device (not supplied) at the bottom of each post to prevent the posts from sinking into the earth during plumbing and leveling.

5. Once the entire play structure is assembled, and all posts have been properly braced, re-check plumb and level. Pour concrete per the typical footing diagram only whenall positions are correct. When pouring the footers, make sure the concrete level has a slight downward slope away from the post. Concrete that may have splashed onto the post should be washed off before it dries. Allow all concrete to harden a minimum of 48 hours before allowing children to play on the structures. Eliminate sharp points and sharp edges (burring) on installed hardware like bolts, nuts, etc.

MODEL NO. 60948 Aluminum 132" Post with Cap
MODEL NO. G60948 Galvanized 132" Post with Cap

IMPORTANT:
To cushion accidental falls, park Structures strongly recommends that the area under and around the play structure be covered with a resilient material, such as sand, mulch, etc., to a minimum depth of 10", and as much as 12" for fall heights greater than 48". Approved rubber safety matting can also be used. Install resilient surfacing material within the use zone of play structure in accordance with ASTM specifications F1292 appropriate for the fall height of each structure. Refer to the Safety Guidelines provided within the assembly Instructions packet.

MAINTENANCE PROCEDURE:
Periodically check hardware for tightness, and tighten as necessary. Always check all parts for breakage or wear, and immediately put equipment out of service until any faulty parts are repaired or replaced. Check all decks for Plastisol-coating peeling and touch-up with Plastisol if necessary. Check for hdes on deck, clean if necessary. Check periodically resilient surfacing for appropriate depth and remove extraneous materials that could cause injury, infection, or disease. Maintain detailed installation, inspection, maintenance, and repair
records for each public-use playground equipment.



MODEL NO. 61117 RETURN STEP

PARTS LIST

DESCRIPTION	No. REQ'D	PART NUMBER
Return Step	1	306825
Small Kick Plate	1	315031
Support Pipe	2	168470
Hardware Complete	1	307321
3/8" Lock Nut	4	804353*
3/8" Tee Nut	2	804556*
3/8" x 1" P.B.H.C.S. w/Patch	4	812050*
3/8" x 1 3/4" P.B.H.C.S. w/Patch	2	812054*
3/8" Lock Washer	2	817334*
3/8" Flat Washer (1 1/4" O.D.)	10	817424*

Unless Otherwise Specified, All Units of Measure are Each
****Included in Hardware***

Warning: Small parts and hardware items may present a potential choking hazard. Promptly remove all unused parts from play area. Any bolt end protruding more than two full threads beyond the face of the nut causes risk of clothing entanglement. Promptly cut-off flush, file smooth, and treat to prevent corrosion.

Note: Peen Tee-Nuts and Flatwashers to match radius of pipe after assembly is complete.
Note: Loctite (supplied by others) should be used on any non-patch hardware.

SPECIFICATIONS:

The Return Step shall be made from 12 gauge punched steel with a protective p&o finish. The Return Step shall be a one-piece welded assembly finished with the matte PVC coating. The Return step shall have a minimum of 355 square inches of area per step and shall descend in increments of 8" or less, as specified by the Americans with Disabilities Act (ADA). Platform Supports shall be fabricated from 1 5/16" O.D. x .083" (14 gauge) wall galvanized steel tubing, and 1 ¼" (14 gauge) pipe cap. Small Kickplate is cut from galvanneal sheet metal with slotted holes punched to coincide with deck flange holes. Edges are ground smooth and Kick plate is powder-coated after fabrication with a baked on polyester finish. Support Pipes shall be all-welded assemblies and shall be coated with a custom formula of TGIC polyester powder.

INSTALLATION INSTRUCTIONS:

1. Locate the Triangle Transfer Point to attach the Return Step.

2. Dig Holes to receive the Support Pipes according to dimensions shown in Plan Views. Footing Dimension is specified in Elevation View. Refer to proper configuration in the Plan Views.

3. Attach the Small Kick Plate to the Modular Platform using 3/8" x 1" P.B.H.C.S. w/Patch, 3/8" Flat Washer (1 ¼" O.D.) and 3/8" Lock Nut as shown in Detail 106. Note that the Small Kick Plate receded area goes on top and attaches behind deck or platform.

4. Attach the Return Step to the lower part of Small Kick Plate using the same hardware and Detail as in step 3. (Detail 106)

MODEL NO. 61117 RETURN STEP

5. Attach the Support Pipes to the lower slots on the sides of the Return Step with 3/8" x 1 3/4" P.B.H.C.S. w/Patch, 3/8" Lock Washer, 3/8" Flat Washer (1 ¼" O.D.), and 3/8" Tee Nut. See Detail 124.

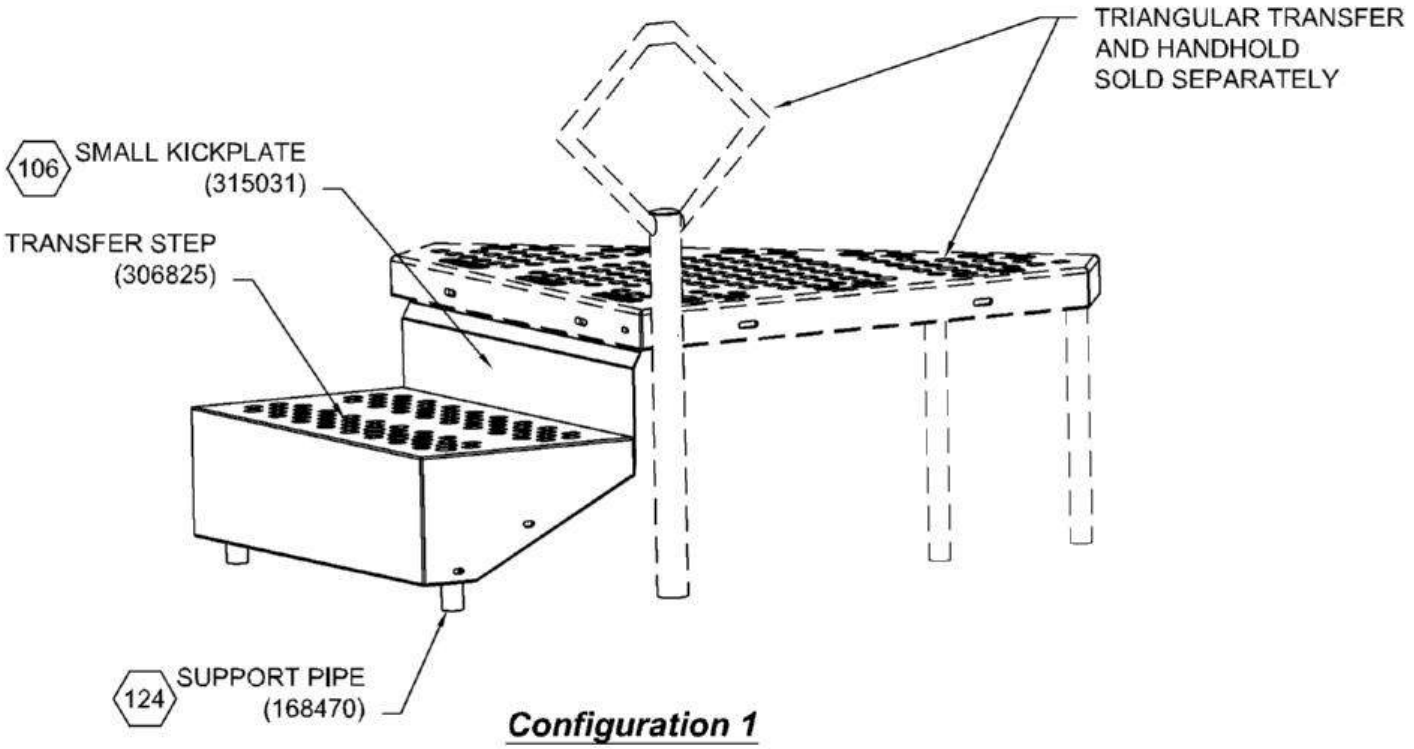
6. Plumb and level the entire assembly. Pour concrete footings within 4" to the top and taper away from supports to allow drainage. Allow to cure at least 48 hours before use.

7. Eliminate sharp points and sharp edges (burring) on installed hardware like bolts, nuts etc. Install resilient surfacing material within the use zone of play structure in accordance with ASTM specifications F1292 appropriate for the fall height of each structure. Refer to the Safety Guidelines.

MAINTENANCE PROCEDURE:

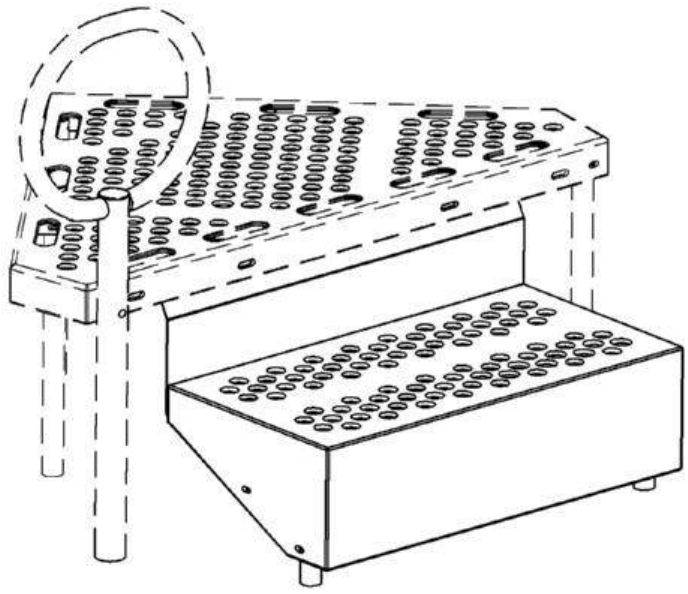
Periodically check hardware for tightness, and tighten as necessary, also check if the entrapments and protrusions still satisfactory. Always check all metal parts for paint peeling, corrosion and touch up if necessary. Check all parts for crack, breakage or wear, and immediately put equipment out of service until any faulty parts found are repaired or replaced. Check periodically resilient surfacing for appropriate depth and remove extraneous materials that could cause injury, infection, or disease. Maintain detailed installation, inspection, maintenance, and repair records for each public-use playground equipment.

MODEL NO. 61117 RETURN STEP



Configuration 1

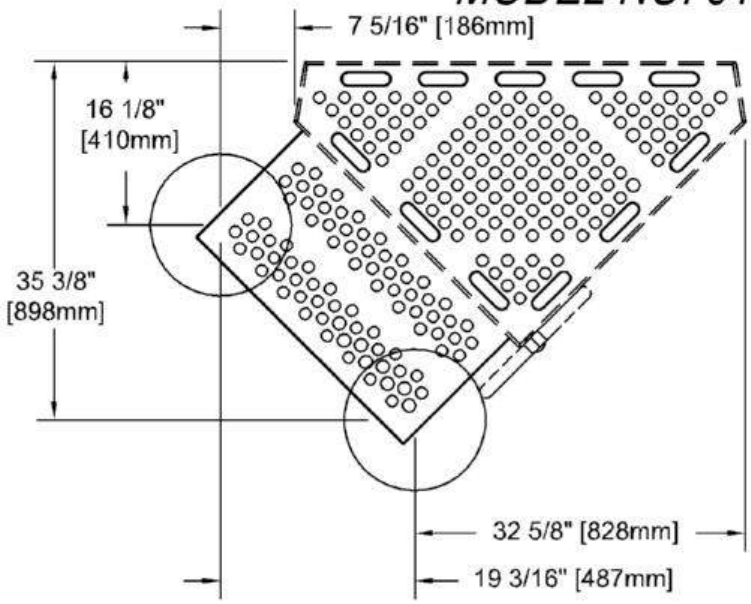
FINISHED ASSEMBLY



Configuration 2

⬡=INSTALLATION DETAIL

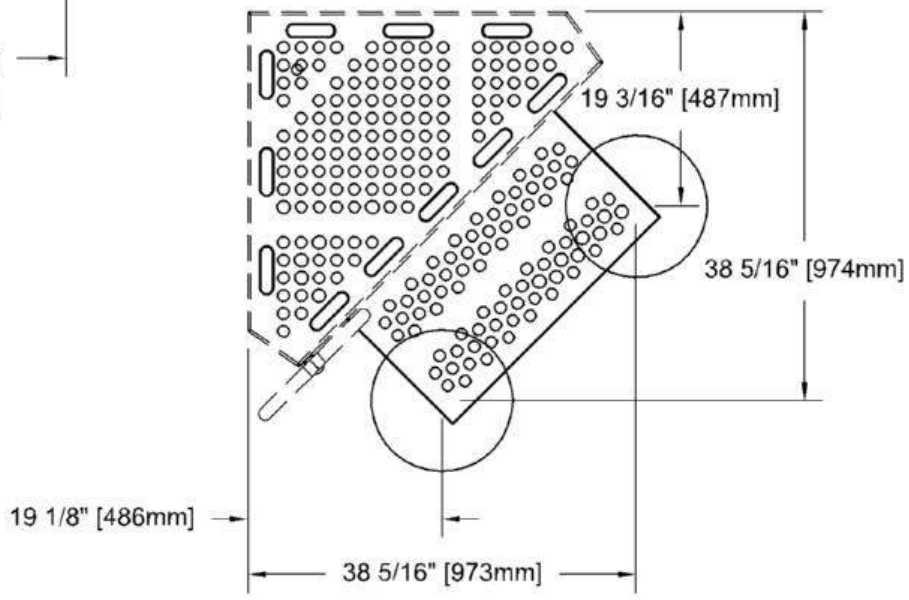
MODEL NO. 61117 RETURN STEP



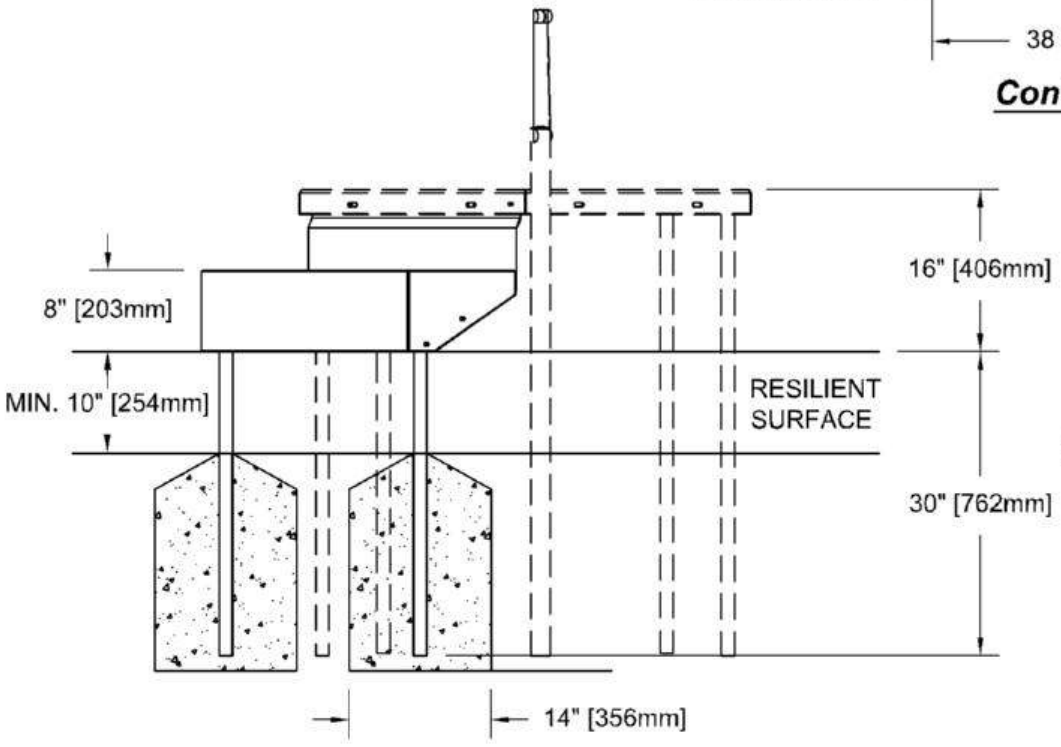
CONCRETE REQUIRED:
.20 CUBIC YARDS
[.15 CUBIC METERS]

Configuration 1

PLAN VIEWS

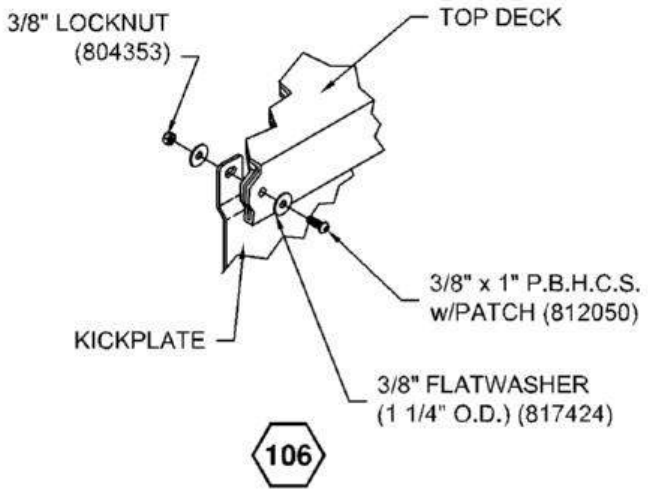


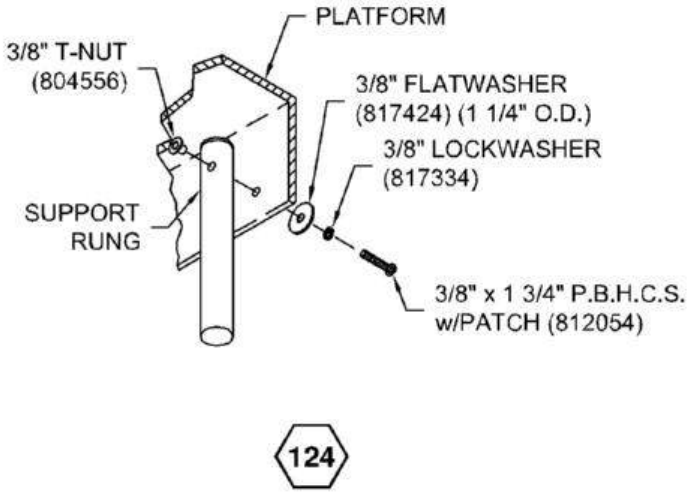
Configuration 2



ELEVATION VIEW

MODEL NO. 61117 RETURN STEP





SuperMax Play Systems

61384 Square Canopy Fabric Shade

PARTS LIST		
DESCRIPTION	QTY	PART NUMBER
TOP PLATE	1	200151
BOTTOM PLATE	1	200149
CANTILEVERED POST	4	179831
LONG CANOPY BRACE	4	179821
UPRIGHT EXTENSION	4	179824
INGROUND EXTENSION	4	200053
END CASTING	4	179789
FABRIC PACKAGE FOR SQUARE CANOPY FABRIC SHADE	1	214366
CABLE/CLAMP PACKAGE FOR SQUARE CANOPY FABRIC SHADE	1	214371
CABLE	1	
CABLE CLAMP	1	
HARDWARE COMPLETE	1	309451
5/8" x 2" HEX HEAD BOLT	4	801312*
5/8" LOCKWASHER	4	817350*
5/8" HEX NUT	4	804057*
1/2" X 1 1/4" HEX HEAD BOLT	8	801204*
1/2" LOCKWASHER	20	817342*
1/2" LOCKNUT	20	804355*
1/2" X 6 1/2" CARRIAGE BOLT	8	800376*
1/2" FLAT WASHER	8	817412*
1/2" ANCHOR ROD	8	135038*
3/8" x 5" P.B.H.C.S. w/PATCH	8	812078*
3/8" FLAT WASHER	8	817410*
3/8" LOCK WASHER	8	817334*
3/8" BARREL NUT	8	804804*
1/2" PIN-IN HEX KEY	1	812640*
1/2" x 5 1/2" HEX HEAD BOLT	4	801221*
#12 x 3/4" SS SELF DRILLING SCREW	8	810072*

Unless Otherwise Specified, All Units of Measure are Each
** Included in Hardware*

Warning: During Installation, Hardware And Small Parts Are Choking Hazards For Young Children. Store Unused Parts Appropriately Until Assembly Is Completed. Once Assembly Is Completed, Remove Any Unused Parts From The Play Environment And Dispose/Save Them In A Secure Location.

Note: Peen Tee-Nuts and Flatwashers to match radius of pipe after assembly is complete.

Note: Loctite (supplied by others) should be used on any non-patch hardware.

61384 Square Canopy Fabric Shade

INSTALLATION INSTRUCTIONS:

1. Installation of the shade must be done after the playground has been installed, and concrete has cured. Approximately 48 hrs. (Refer to Detail 370 for footing requirements of uprights that support shade).

2. Attach four Upright Extensions to the uprights using 3/8" x 5" P.B.H.C.S., 3/8" Lock Washer, 3/8" Flat Washer and 3/8" Barrel Nut. See Detail 373.

3. Attach four Long Canopy Braces to Upright Extensions using 1/2" x 1 1/4" Hex Head Bolt, 1/2" Lock Washer and 1/2" Lock Nut. ***Important:*** Do not tighten any bolts. Braces must be left loose so they can rotate into position to attach the Cantilevered Posts. See Detail 375.

4. Place four Shade End Castings in the Cantilevered Posts and attach using #12 x 3/4" Self Tapping Screw. See Detail 376. ***Note:*** Pin on the Casting must be positioned opposite from tabs on cantilevered posts.

5. Attach Cantilevered Posts to Upright Extensions using 5/8" x 2" Hex Head Bolt, 5/8" Lock Washer and 5/8" Hex Nut. See Detail 378.

6. Attach the loose end of the Long Canopy Braces to the Cantilevered Posts using 1/2" x 1 1/4" Hex Head Bolt, 1/2" Lock Washer and 1/2" Lock Nut. See Detail 375.

7. Attach Top Plate and Bottom Plate to four Cantilevered Posts using 1/2" x 6 1/2" Carriage Bolt, 1/2" Flat Washer, 1/2" Lock Washer and 1/2" Lock Nut. See Detail 379.

8. Identify the top of the Fabric. The logo will be on bottom of Fabric.

9. Starting at one corner, thread the steel cable into the jump-out hole beneath the loop of black fabric. NOTE: The starting corner (with the loose ends of cable) will be the only corner using the jump-out hole. At all other corners the cable will exit out the end of the fabric sleeve. Repeat until entire Fabric has been encircled. Leave a loop approximately 9 inches at each corner.

10. Spread the Fabric over the frame securing two opposite corners to the pins in the Shade End Castings. ***Note:*** The Steel Cable must always pass under the pin in each Casting.

11. Thread a piece of rope through the loop of Fabric below the eye of the remaining corners and pull the Fabric down over the pins. It may be necessary to flap the loose corners up and down to stretch the Fabric so that it fits over the pins. See Detail 930.

12. There should be approximately 2' of Steel Cable left after the completion of step #11. Attach a come-along to one end of the Steel Cable. Attach the other end of the come-along to the adjacent upright (place protective fabric between the come-along and the upright to protect the paint). Tension the come-along slightly. Check again to make sure the Steel Cable is still under the Shade End Casting pins.

13. Attach a second come-along to the other Steel Cable and to the opposite upright.

14. Take turns tensioning each come-along in small increments. Make sure that the Steel Cables cross each other at the corner where the Steel Cable ends. DO NOT OVER TENSION! You can test the tightness of the Fabric by hitting the perimeter Steel Cable with the palm of your hand to see how much it moves. If the Fabric does not move more than 6" up or down then you have the correct tension. If Fabric bounces and has a ripple affect then you may need to apply more tension.

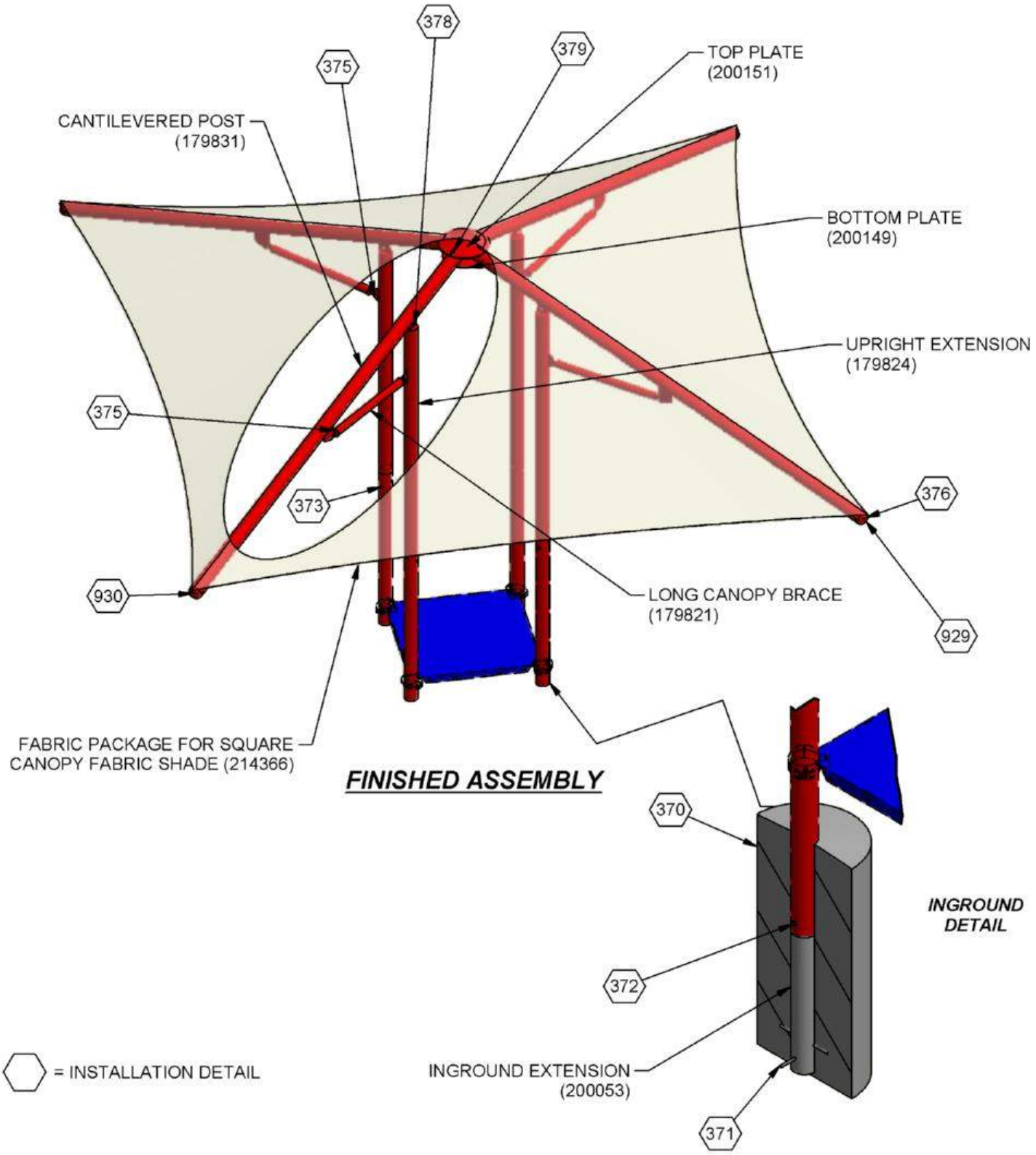
15. Using the clamps provided, fasten the Steel Cables together. Both clamps must be used. See Detail 929.

16. After clamps are tightened, thread the excess Steel Cable back into the sleeve in the Fabric. If any portion of the Steel Cable was bent/kinked during the tensioning process, it must be straightened by bending the Steel Cable back in the opposite direction of the bend.

MAINTENANCE PROCEDURE:

Periodically check hardware for tightness, and tighten as necessary. Always check all parts for breakage or wear, and immediately put equipment out of service until any faulty parts found are repaired or replaced. Also check all metal parts for rust, paint loss and touch-up if necessary with paint. Check for welded areas and verify integrity. Check periodically resilient surfacing for appropriate depth and remove extraneous materials that could cause injury, infection, or disease. Maintain detailed installation, inspection, maintenance, and repair records for each public-use playground equipment.

61384 Square Canopy Fabric Shade

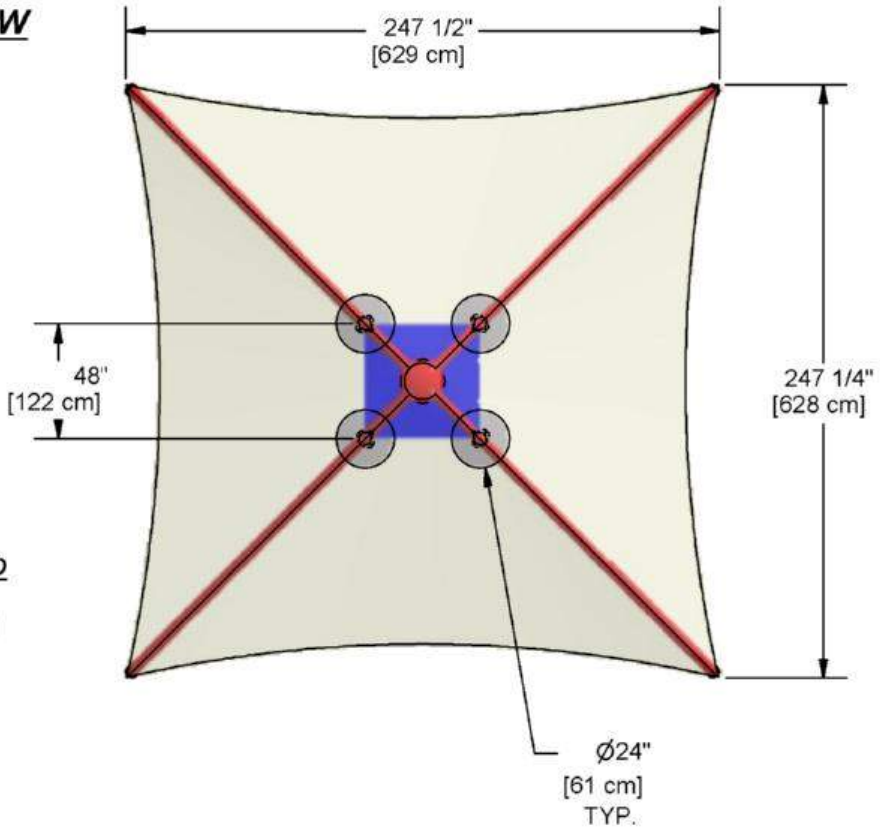


FINISHED ASSEMBLY

INGROUND DETAIL

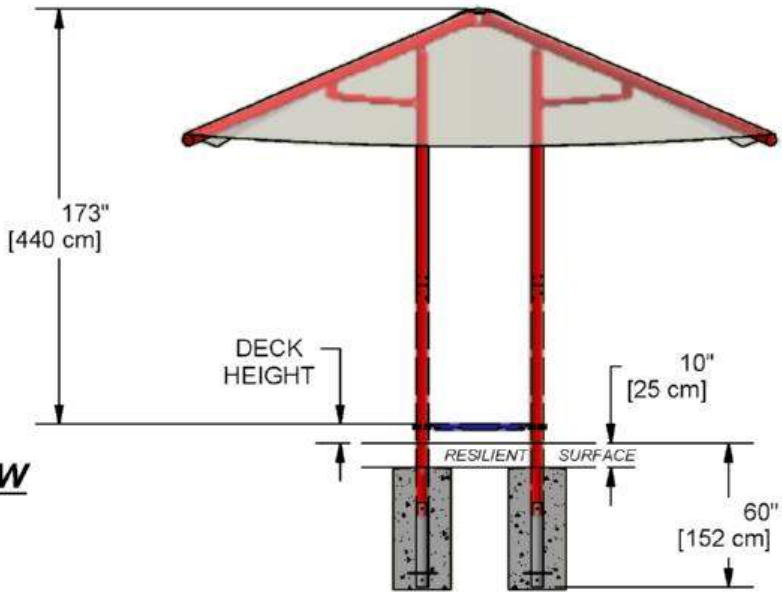
61384 Square Canopy Fabric Shade

PLAN VIEW



CONCRETE REQUIRED
1.94 CUBIC YARDS
[1.48 CUBIC METERS]

ELEVATION VIEW



61384 Square Canopy Fabric Shade

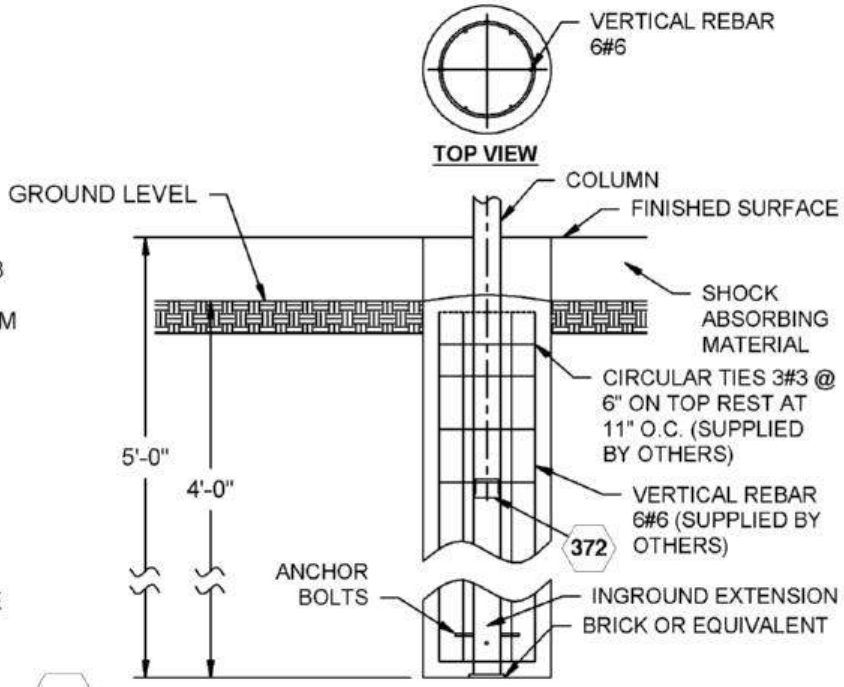
REINFORCED CONCRETE

1. CONCRETE WORK SHALL BE EXECUTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AMERICAN CONCRETE INSTITUTE BUILDING CODE. CONCRETE SPECIFICATIONS, SHALL BE AS FOLLOWS:
   - -28 DAY STRENGTH: 2500PSI
   - -SLUMP: 3-5
   - -PORTLAND CEMENT SHALL CONFORM TO C-150
   - -AGGREGATE SHALL CONFORM TO ASTM C-33

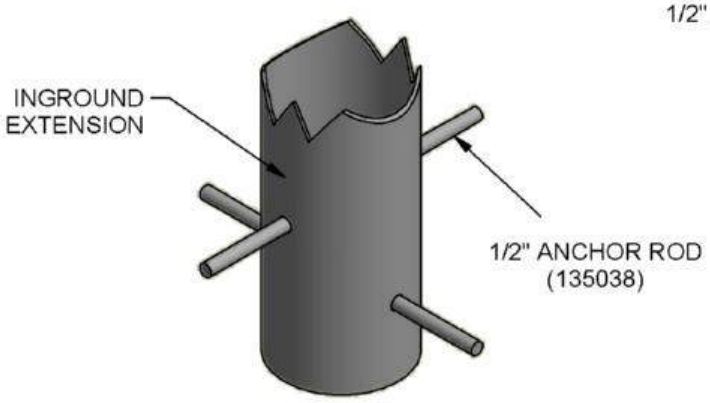
2. ALL REINFORCEMENT SHALL CONFORM TO ASTM A-615 GRADE 60
REINFORCING STEEL SHALL BE DETAILED, FABRICATED AND PLACED IN ACCORDANCE WITH THE LATEST ACI DETAILING MANUAL AND CRSI MANUAL OF STANDARD PRACTICE.

3. ALL ANCHOR BOLTS SET IN NEW CONCRETE (WHEN APPLICABLE) SHALL COMPLY WITH ASTM F-1554 GRADE 55 (GALVANIZED)

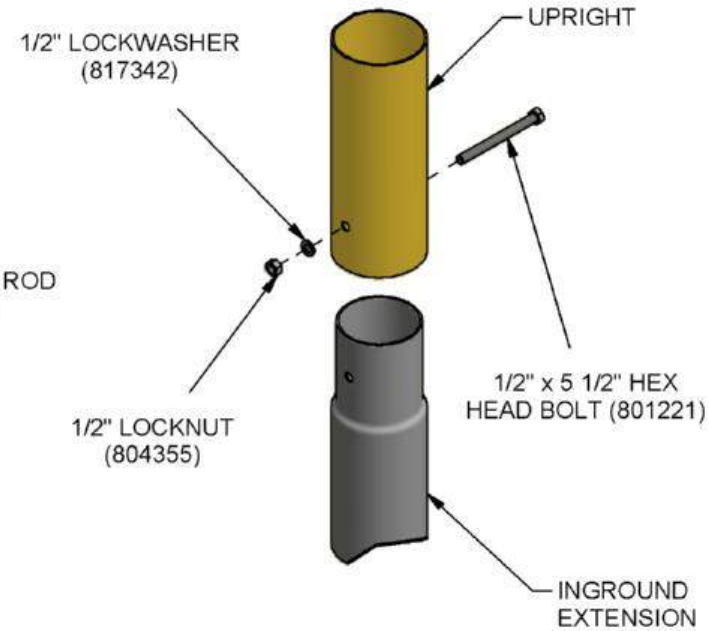
4. SOIL PARAMETERS FOR ANALYSIS TABLE 1804.2, CLASS : 5



370

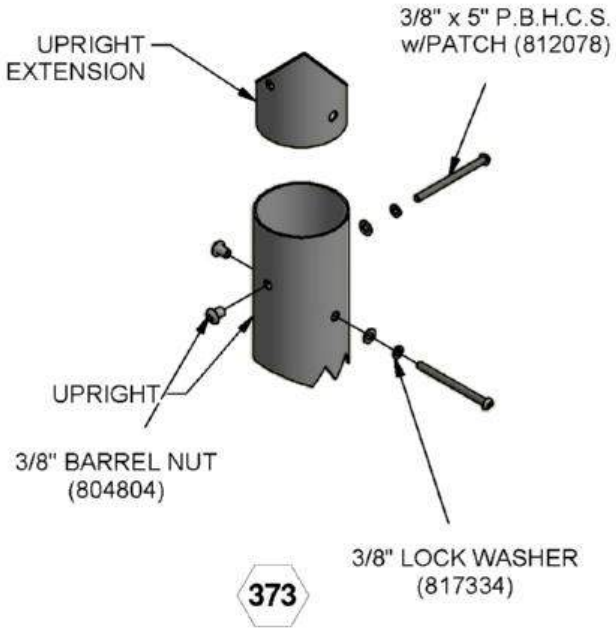


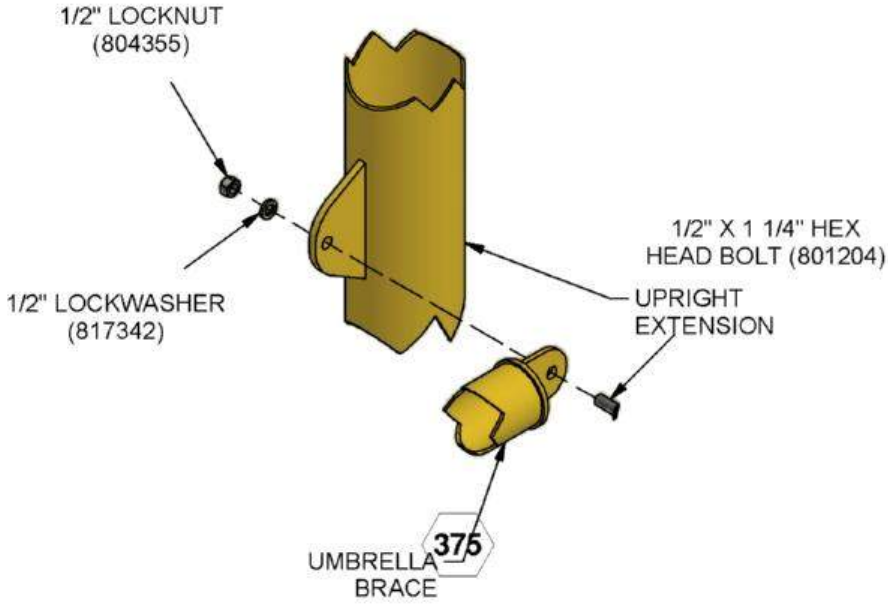
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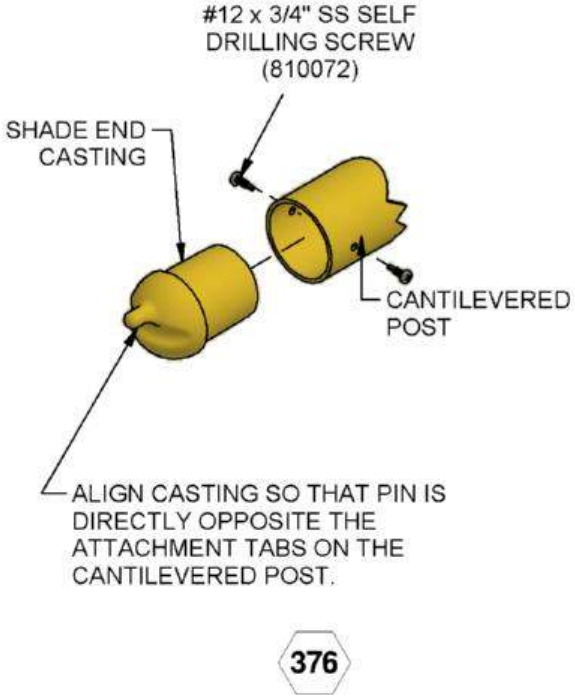


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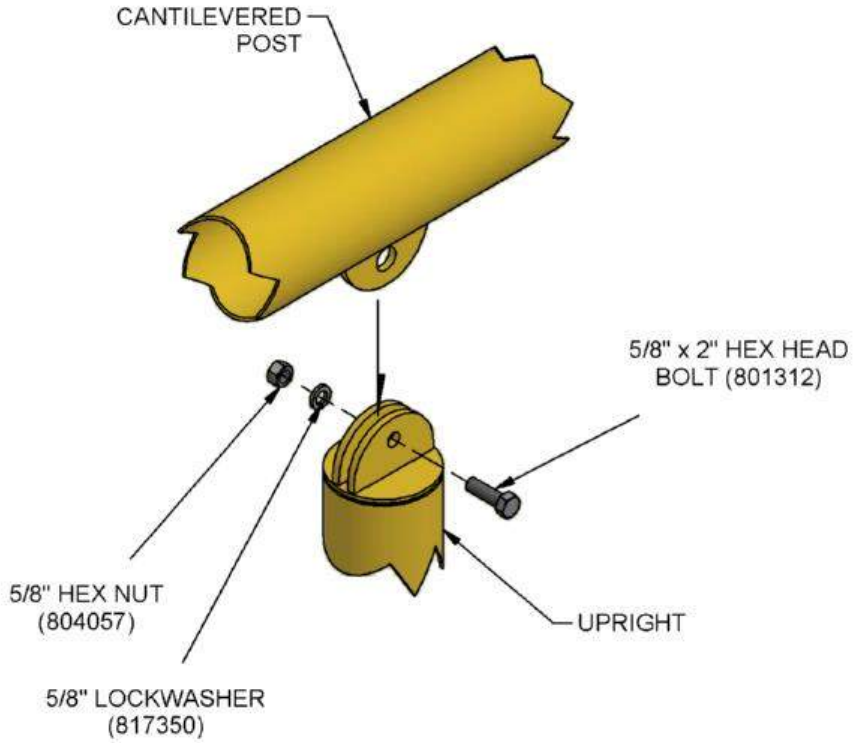
61384 Square Canopy Fabric Shade



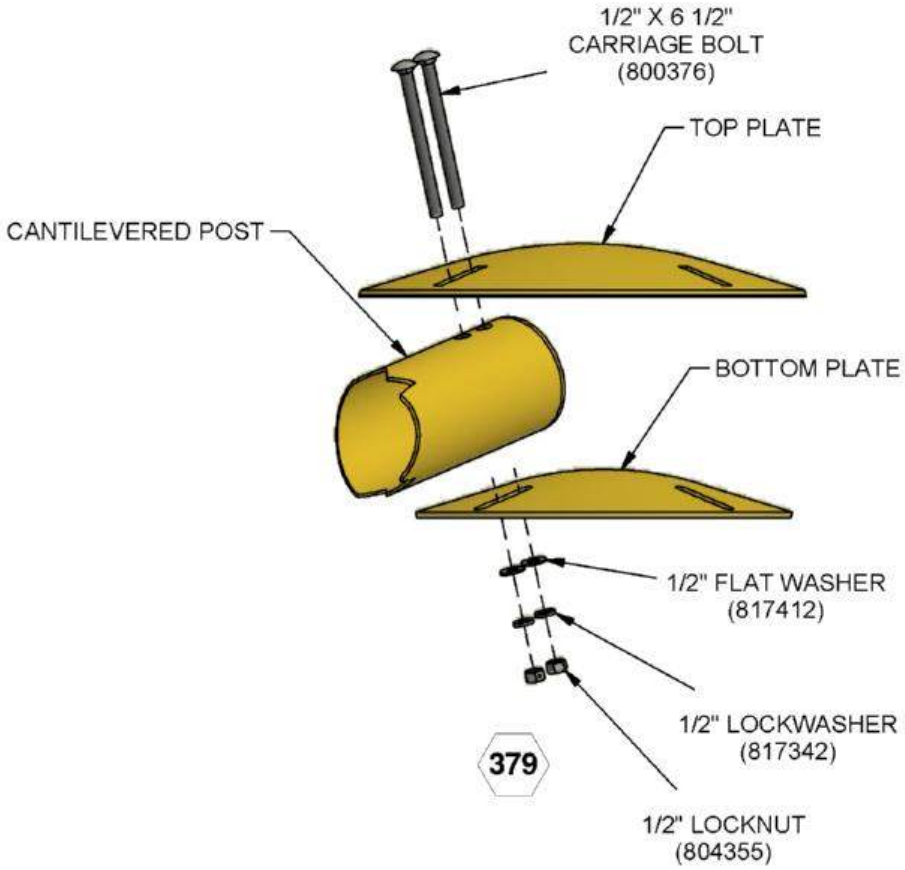




61384 Square Canopy Fabric Shade



378

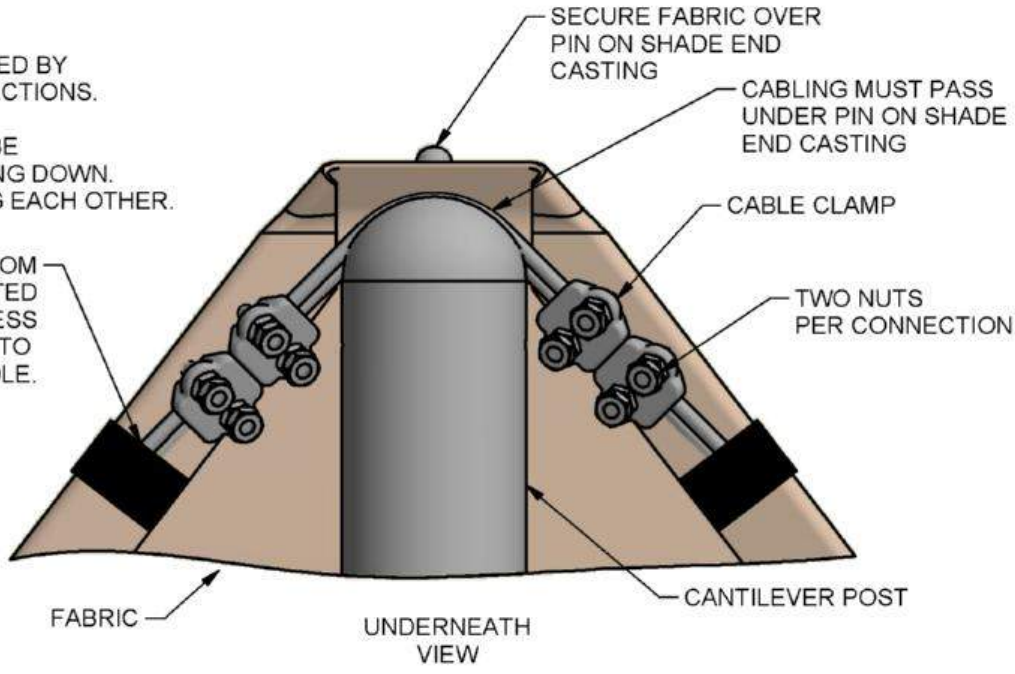


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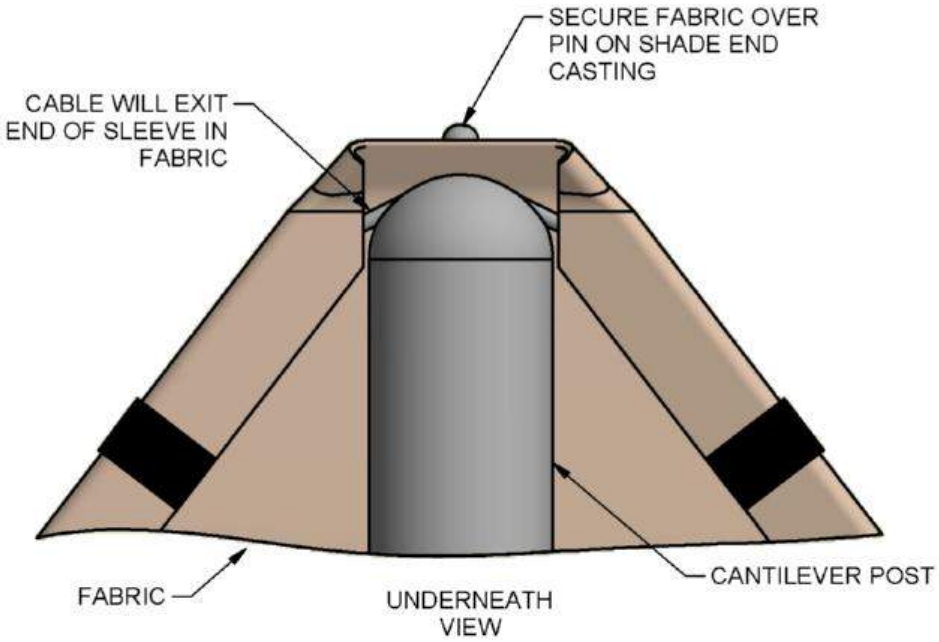
61384 Square Canopy Fabric Shade

NOTE: ADD LOCTITE (SUPPLIED BY OTHERS) TO BOLTED CONNECTIONS.

NOTE: CABLE CLAMP MUST BE INSTALLED WITH NUTS FACING DOWN. CLAMPS MUST BE TOUCHING EACH OTHER.



929



930

Horizons where fitness & fun meet Play Systems

68203 Overhead With Rounds

Parts List		
DESCRIPTION	QTY	PART NUMBER
OVERHEAD w/8" ROUNDS ASSEMBLY	1	309128
HARDWARE COMPLETE	1	309267
3/8" x 3 1/2" P.B.H.C.S. w/PATCH	4	812075*
3/8" x 3 3/4" P.B.H.C.S. w/PATCH	2	812076*
3/8" BARREL NUT	4	804804*
3/8" FLAT WASHER (1 1/4" O.D.)	4	817424*

Unless Otherwise Specified, All Units of Measure are Each
** Included in Hardware*

Warning: During Installation, Hardware And Small Parts Are Choking Hazards For Young Children. Store Unused Parts Appropriately Until Assembly Is Completed. Once Assembly Is Completed, Remove Any Unused Parts From The Play Environment And Dispose/Save Them In A Secure Location.
Note: Peen Tee-Nuts and Flatwashers to match radius of pipe after assembly is complete.
Note: Loctite (supplied by others) should be used on any non-patch hardware.

INSTALLATION INSTRUCTIONS:

1. Locate Uprights to receive Overhead w/8" Rounds Assembly.

2. Attach Overhead w/8" Rounds Assembly to Upright using 3/8" x 3 1/2" P.B.H.C.S. w/Patch, 3/8" Flat Washer and 3/8" Barrel Nut. Refer to Detail 737. NOTE: When attaching (2) overhead component together replace 3/8" x 3 1/2" P.B.H.C.S. w/Patch with 3/8" x 3 3/4" P.B.H.C.S. w/Patch. See Detail 738.

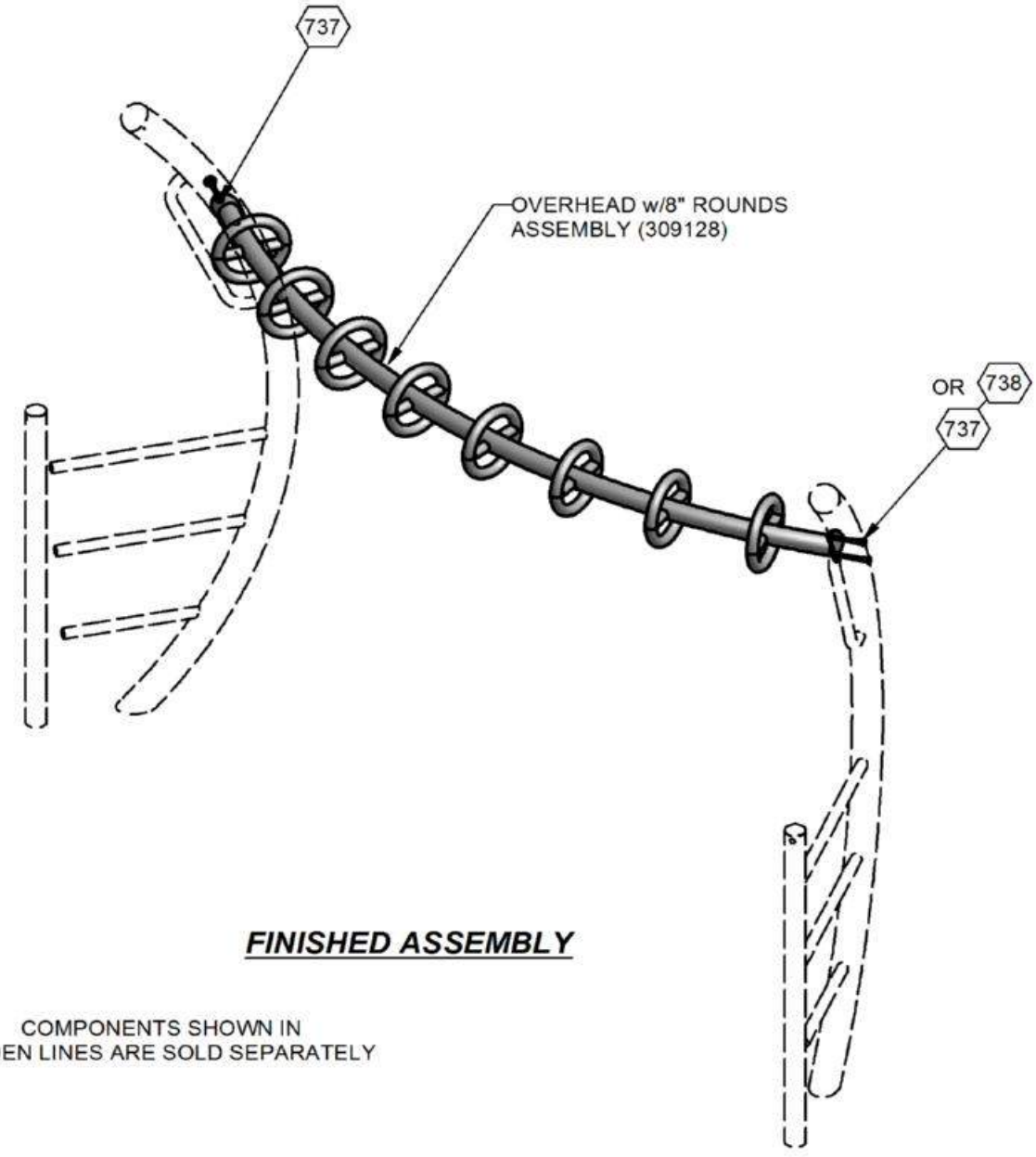
3. Plumb and level the entire assembly and tighten all fasteners.

4. When the structure is finished and satisfactory, eliminate sharp points and sharp edges (burring) on installed hardware like bolts, nuts etc. Install resilient surfacing material within the use zone of play structure in accordance with ASTM specifications F1292 appropriate for the fall height of each structure. Refer to the safety guidelines.

MAINTENANCE PROCEDURE:

Periodically check hardware for tightness, and tighten as necessary. Always check all parts for breakage or wear, and immediately put equipment out of service until any faulty parts found are repaired or replaced. Also check all metal parts for rust, paint loss and touch-up if necessary with paint. Check for welded areas and verify integrity. Check periodically resilient surfacing for appropriate depth and remove extraneous materials that could cause injury, infection, or disease. Maintain detailed installation, inspection, maintenance, and repair records for each public-use playground equipment.

68203 Overhead With Rounds



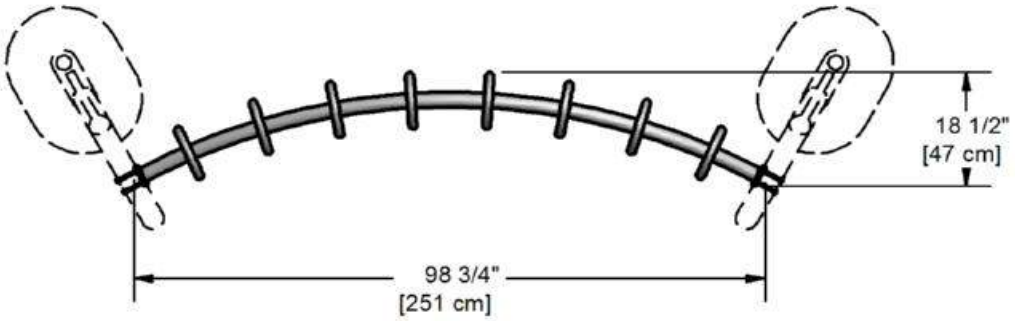
FINISHED ASSEMBLY

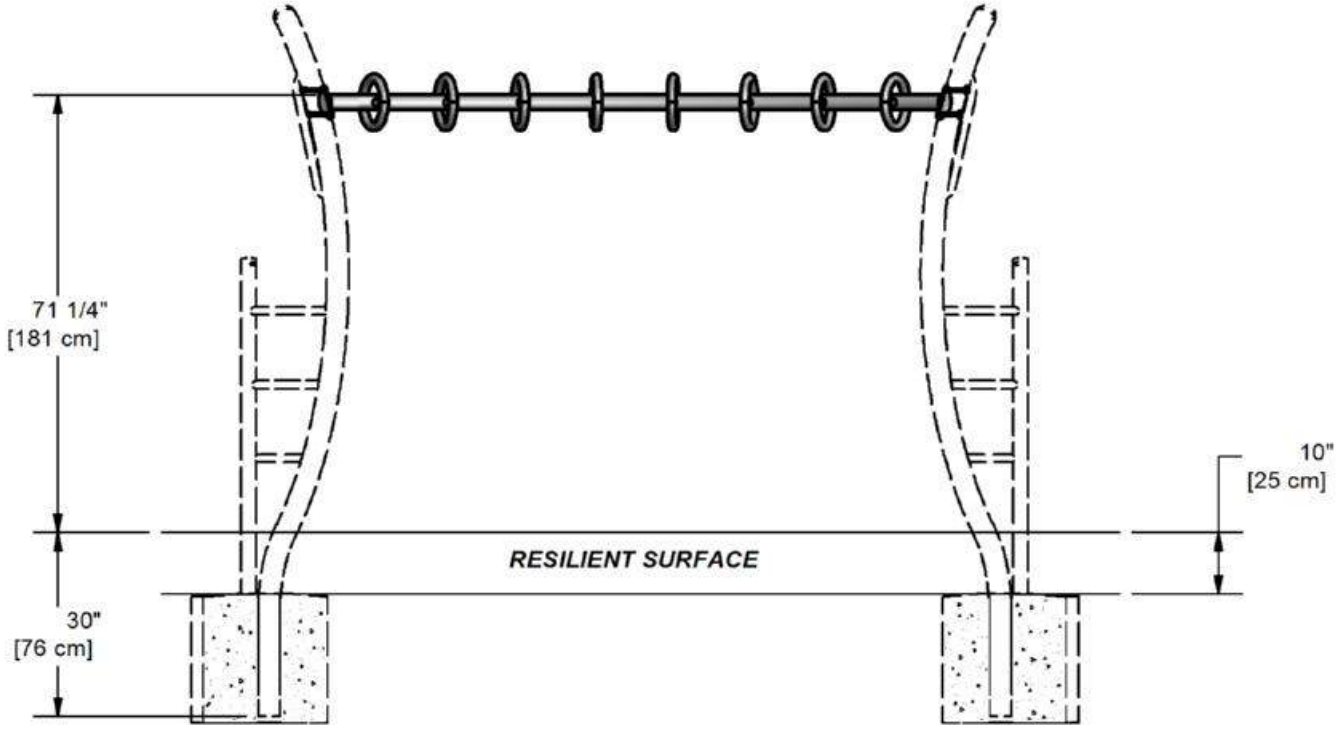
COMPONENTS SHOWN IN
HIDDEN LINES ARE SOLD SEPARATELY

⬡ = INSTALLATION DETAIL

68203 Overhead With Rounds

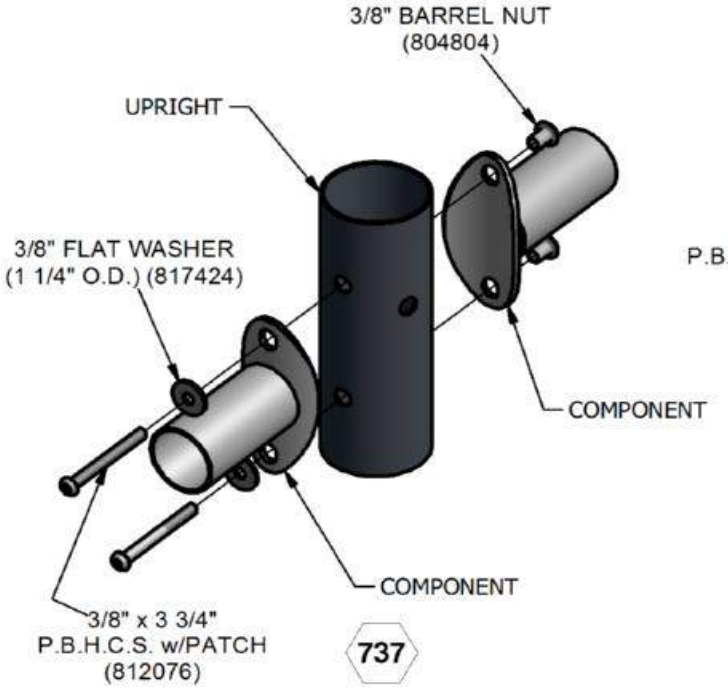
PLAN VIEW

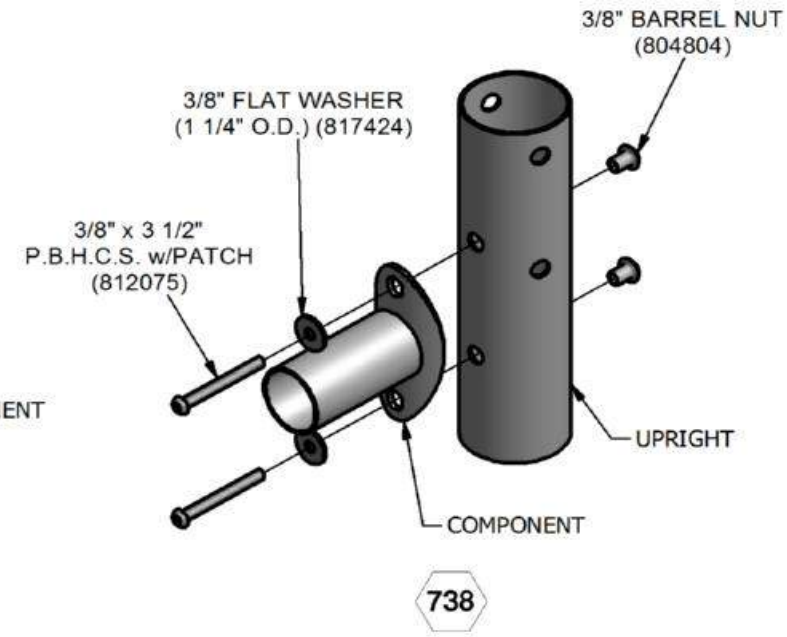




ELEVATION VIEW

68203 Overhead With Rounds





Horizons
where fitness & fun meet

Play Systems

68209 Sail Wall with Button Step

Parts List		
DESCRIPTION	QTY	PART NUMBER
3 1/2" DOME CAP	1	212995
BIG ROPE	1	308691
SAIL WALL CURVED UPRIGHT	1	309189
SAIL WALL w/BUTTON	1	309202
TOP CABLE	1	309260
BUTTON STEP	1	315509
FOOTBUCK 10"	1	316196
HARDWARE COMPLETE	1	309273
3/16" x 13/32" DRIVE RIVET	2	805366
3/8" x 1" P.B.H.C.S. w/PATCH	4	812050
3/8" x 2" P.B.H.C.S. w/PATCH	5	812055
3/8" x 3 1/2" P.B.H.C.S. w/PATCH	2	812075
3/8" LOCK WASHER	4	817334
3/8" FLAT WASHER	6	817410
3/8" FLAT WASHER (1 1/4" O.D.)	5	817424
3/8" BARREL NUT	7	804804
1 1/8" NYLON WASHER	8	309362

Unless Otherwise Specified, All Units of Measure are Each
Items listed below Hardware Complete line are included with Hardware Complete Number
Warning: During Installation, Hardware And Small Parts Are Choking Hazards
For Young Children. Store Unused Parts Appropriately Until Assembly Is Completed.
Once Assembly Is Completed, Remove Any Unused Parts From The Play Environment
And Dispose/Save Them In A Secure Location.
Note: Peen Tee-Nuts and Flatwashers to match radius of pipe after assembly is complete.
Note: Loctite (supplied by others) should be used on any non-patch hardware.

INSTALLATION INSTRUCTIONS:

1. Dig footing holes as shown in Plan and Elevation Views.

2. Attach Sail Wall Curved Upright to Sail Wall w/Button. See Detail 356.

3. Attach Cap to Curved Upright. See Detail 597.

4. Attach Sail Wall Curved Upright Assembly to Climbing Wall. See Detail 364, and specific Climbing Wall installation sheets.

5. Attach Mounting Post to Button Step. See Detail 1160.

6. Locate the Top Cable & Big Rope. Attach each Clevis to the correct tabs. Refer to Elevation and Plan Views for location. **Note:** 1 1/4" O.D. Nylon Washer must be on each side of tab. See Detail 355.

7. Plumb and level the entire assembly and tighten all fasteners.

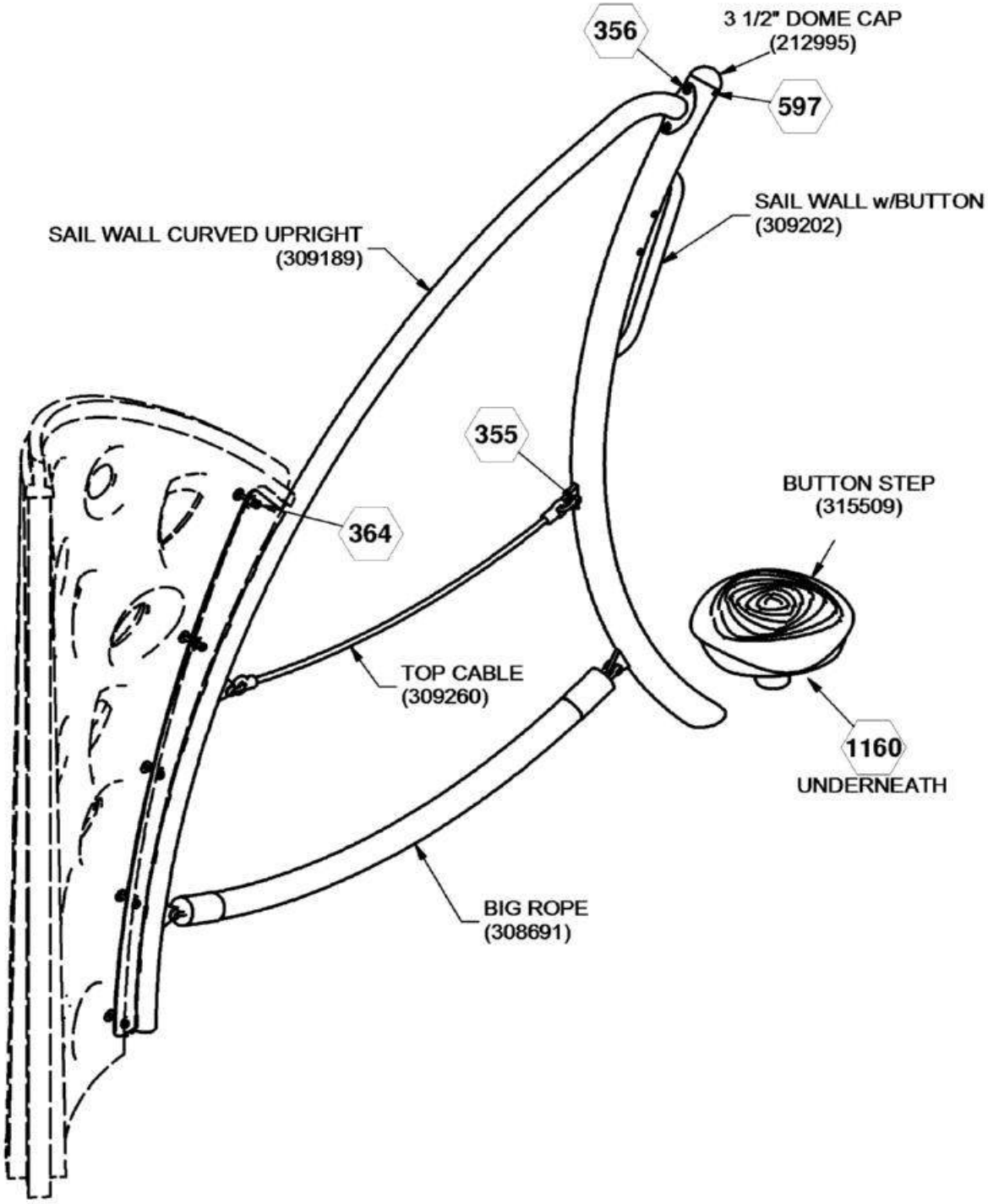
8. After entire unit is assembled pour concrete footings within 4" to the top and taper away from post for water drainage. Allow to cure at least 48 hours before use. **Note:** Temporary bracing may be required until concrete cures.

9. When the structure is finished and satisfactory, eliminate sharp points and sharp edges (burring) on installed hardware like bolts, nuts, etc. Install resilient surfacing material within the use zone of play structure in accordance with ASTM specifications F1292 appropriate for the fall height of each structure. Refer to the safety guidelines.

68209 Sail Wall with Button Step

MAINTENANCE PROCEDURE:

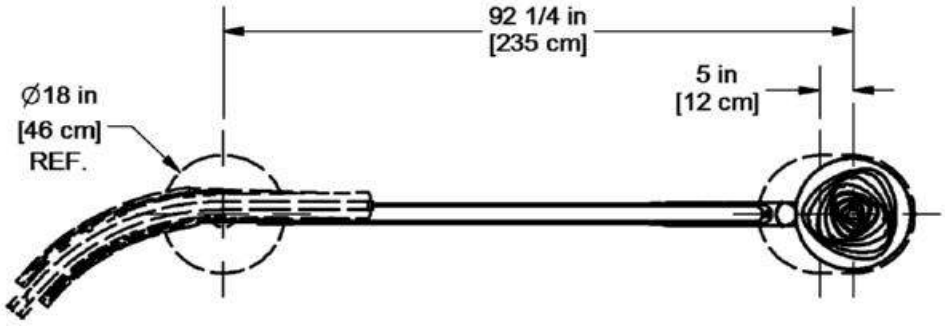
Periodically check hardware for tightness, and tighten as necessary. Always check all parts for breakage or wear, and immediately put equipment out of service until any faulty parts found are repaired or replaced. Also check all metal parts for rust, paint loss and touch-up if necessary with paint. Check for welded areas and verify integrity. Check periodically resilient surfacing for appropriate depth and remove extraneous materials that could cause injury, infection, or disease. Maintain detailed installation, inspection, maintenance, and repair records for each public-use playground equipment.



= INSTALLATION DETAIL

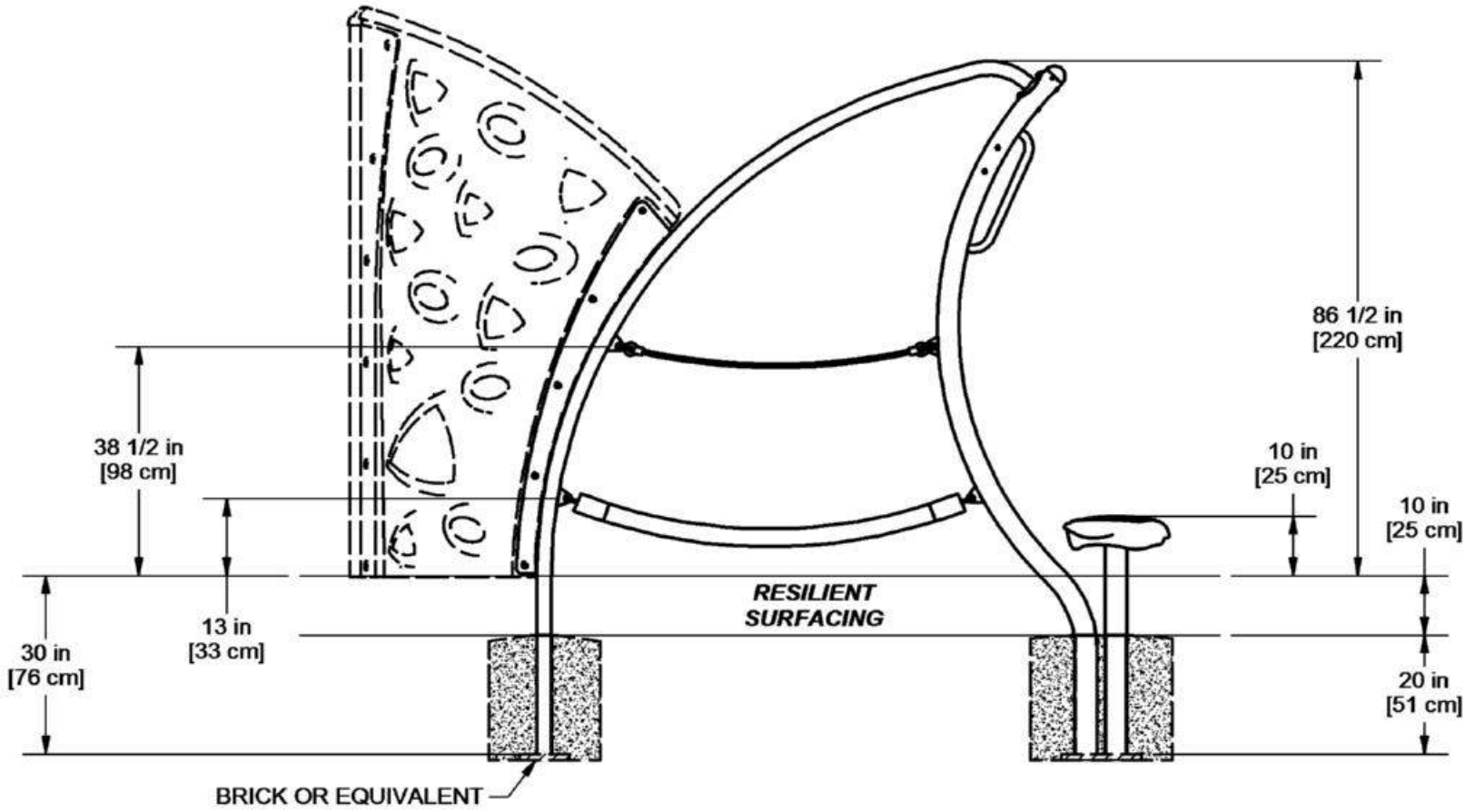
FINISHED ASSEMBLY

68209 Sail Wall with Button Step



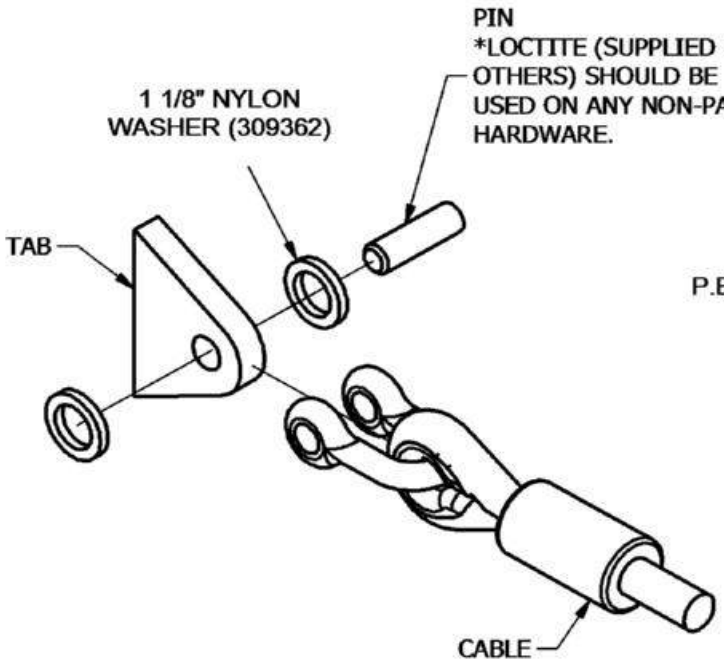
PLAN VIEW

CONCRETE REQUIRED
.26 CUBIC YARDS
[.20 CUBIC METERS]

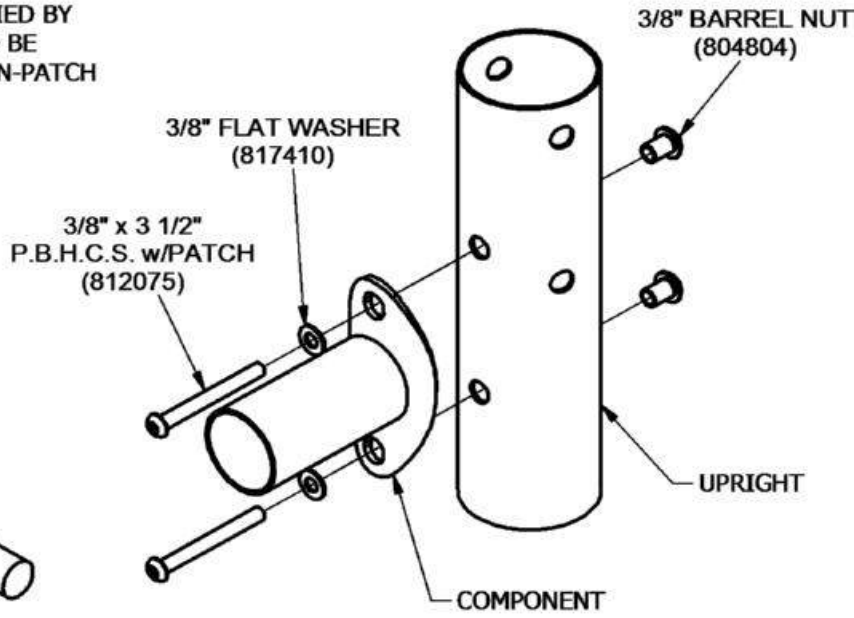


ELEVATION VIEW

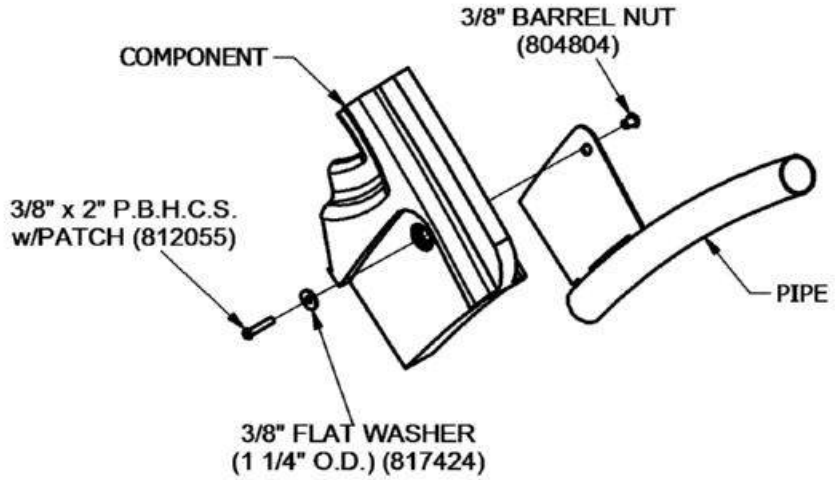
68209 Sail Wall with Button Step



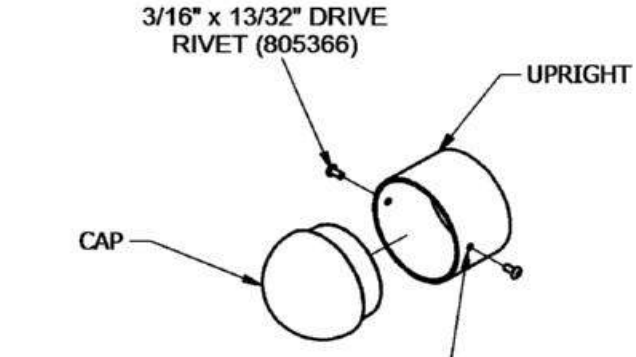
355



356

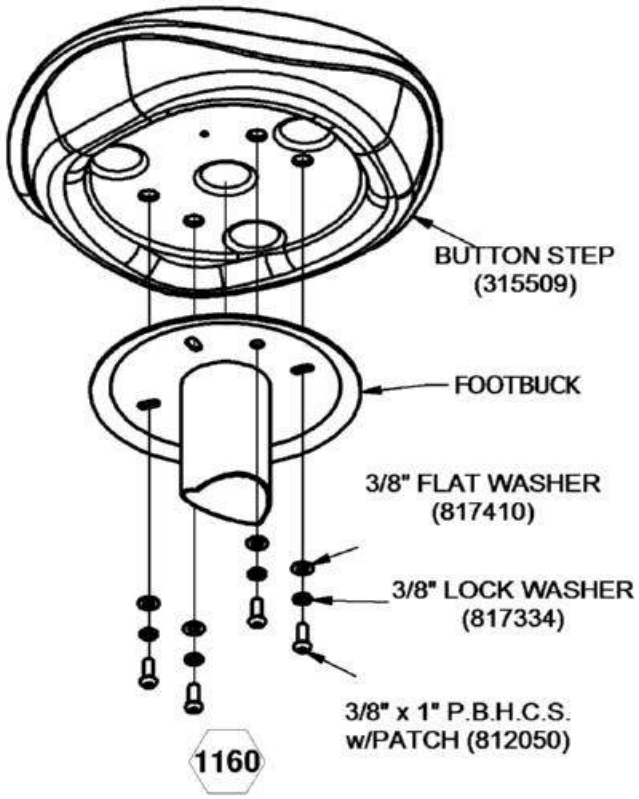


364



597

68209 Sail Wall With Button Step



Horizons where fitness & fun meet Play Systems

68212 Stratascend Wall with Climber

Parts List		
DESCRIPTION	QTY	PART NUMBER
STRATASCEND CLIMBER	1	309292
STRATASCEND WALL	1	309026
MIDDLE SUPPORT PIPE	1	309050
BOTTOM SUPPORT PIPE	1	309053
3 1/2" DOME CAP	1	212995
HARDWARE COMPLETE	1	309276
RUBBER PAD	3	309010*
EXTENSION PIPE	3	309046*
MOUNTING PLATE	3	309279*
3/8" x 1" P.B.H.C.S. w/PATCH	3	812050*
3/8" x 1 3/4" P.B.H.C.S. w/PATCH	9	812054*
3/8" x 2 3/4" P.B.H.C.S. w/PATCH	3	812058*
3/8" BARREL NUT	3	804804*
3/8" FLAT WASHER	15	817410*
PLASTIC WASHER	9	304073*
PLASTIC CAP	9	304074*
3/16" x 13/32" DRIVE RIVET	2	805366*

Unless Otherwise Specified, All Units of Measure are Each
** Included in Hardware*

Warning: During Installation, Hardware And Small Parts Are Choking Hazards For Young Children. Store Unused Parts Appropriately Until Assembly Is Completed. Once Assembly Is Completed, Remove Any Unused Parts From The Play Environment And Dispose/Save Them In A Secure Location.
Note: Peen Tee-Nuts and Flatwashers to match radius of pipe after assembly is complete.
Note: Loctite (supplied by others) should be used on any non-patch hardware.

INSTALLATION INSTRUCTIONS:

1. Dig footing holes as shown in Plan and Elevation View.

2. Attach the Extension Pipe to Mounting Plate using 3/8" x 1" P.B.H.C.S. w/Patch, and 3/8" Flat Washer. See Detail 360. ***Important:*** Tabs on Extension Pipe must be aligned in the same direction along the length of the Stratascend.

3. Attach Rubber Pad to Mounting Plate using Plastic Cap, 3/8" x 1 3/4" P.B.H.C.S. w/Patch, 3/8" Flat Washer and Plastic Washer. See Detail 360.

4. Attach Stratascend to Stratascend Wall, Middle Support and Bottom Support Pipe using 3/8" x 2 3/4" P.B.H.C.S. w/Patch, 3/8" Flat Washer and 3/8" Barrel Nut. See Detail 361. Attach Cap to Wall using 3/16" x 13/32" Drive Rivets as shown in Detail 597.

5. Plumb and level the entire assembly and tighten all fasteners.

6. After entire unit is assembled pour concrete footings within 4" to the top and taper away from post for water drainage. Allow to cure at least 48 hours before use. ***Note:*** Temporary bracing may be required until concrete cures.

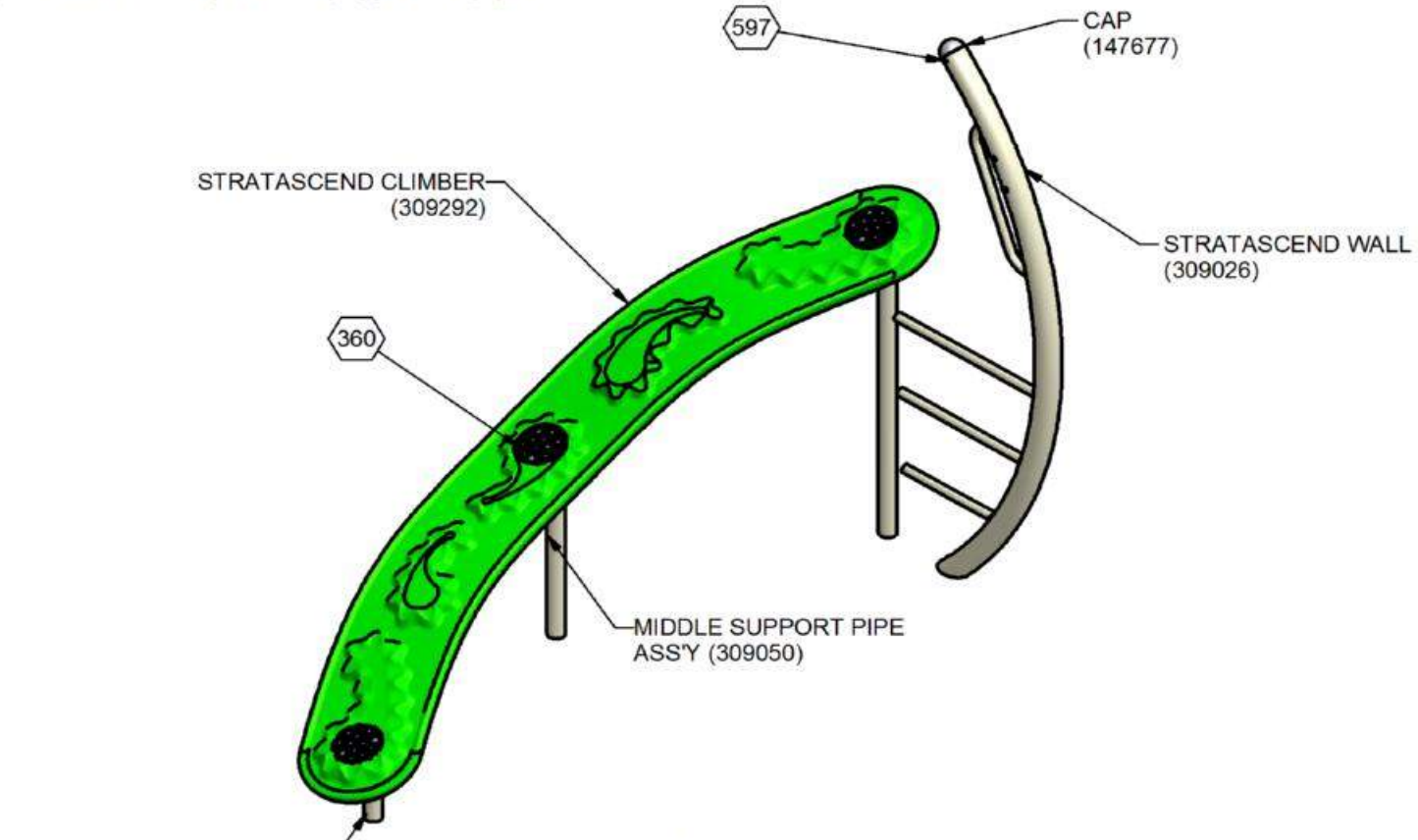
7. When the structure is finished and satisfactory, eliminate sharp points and sharp edges (burring) on installed hardware like bolts, nuts etc. Install resilient surfacing material within the use zone of play structure in accordance with ASTM specifications F1292 appropriate for the fall height of each structure. Refer to the safety guidelines.

Horizons where fitness & fun meet Play Systems

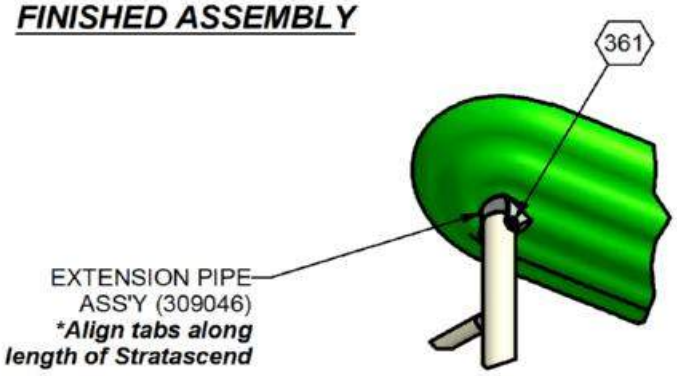
68212 Stratascend Wall with Climber

MAINTENANCE PROCEDURE:

Periodically check hardware for tightness, and tighten as necessary. Always check all parts for breakage or wear, and immediately put equipment out of service until any faulty parts found are repaired or replaced. Also check all metal parts for rust, paint loss and touch-up if necessary with paint. Check for welded areas and verify integrity. Check periodically resilient surfacing for appropriate depth and remove extraneous materials that could cause injury, infection, or disease. Maintain detailed installation, inspection, maintenance, and repair records for each public-use playground equipment.



FINISHED ASSEMBLY

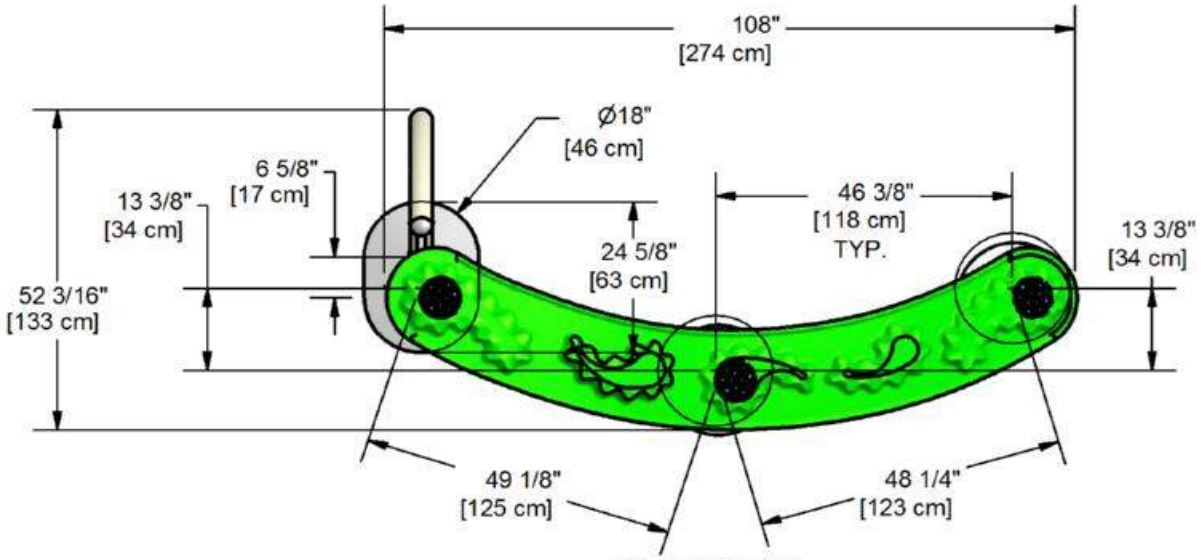


UNDERSIDE VIEW

⬡ = INSTALLATION DETAIL

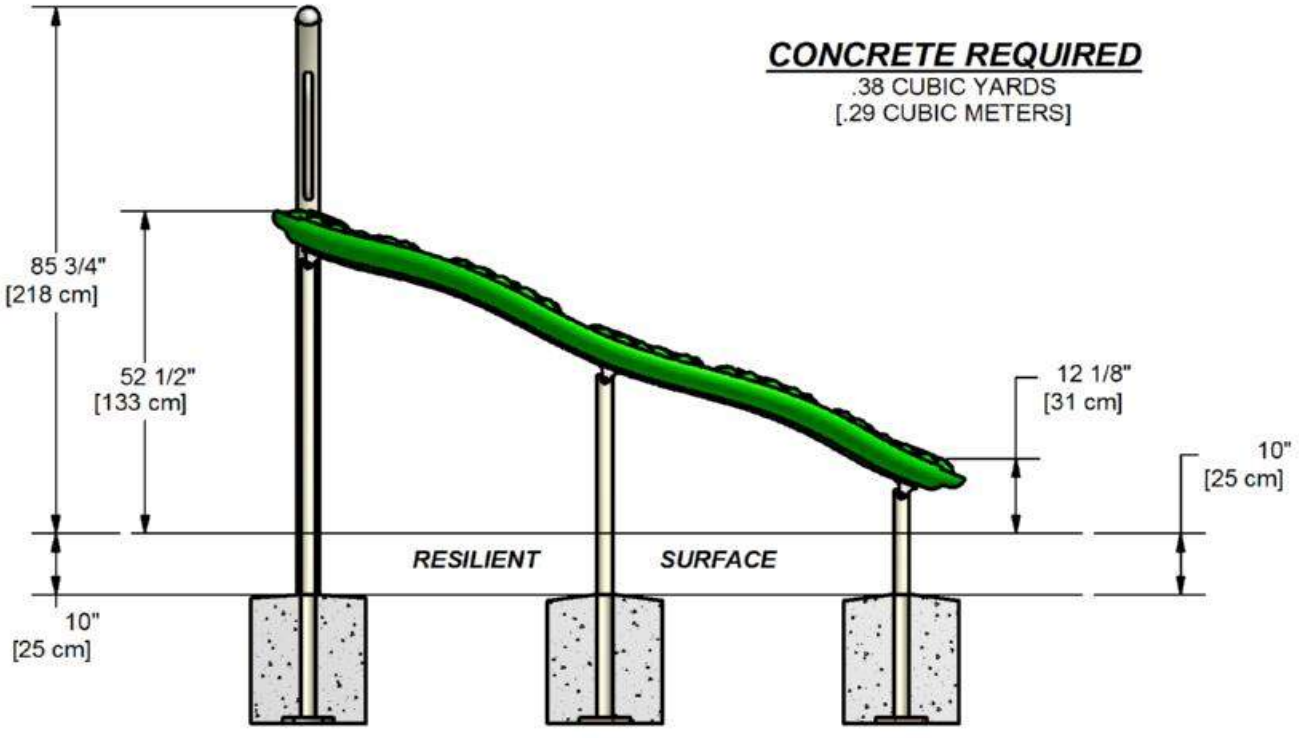
Horizons where fitness & fun meet Play Systems

68212 Stratascend Wall with Climber



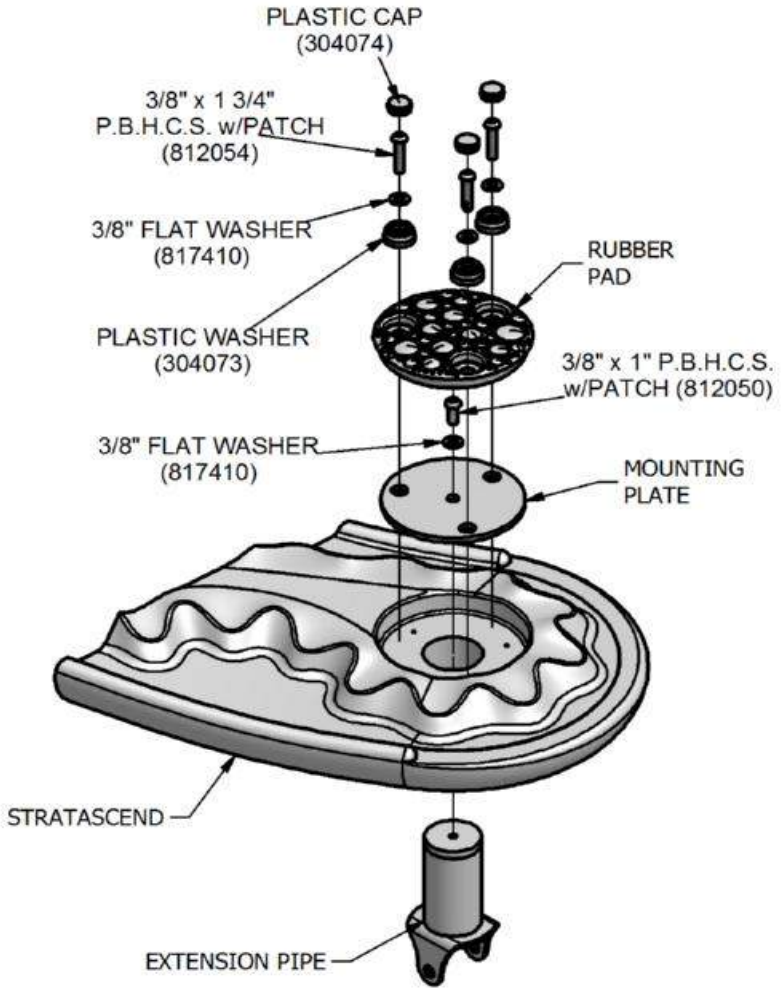
PLAN VIEW

CONCRETE REQUIRED
.38 CUBIC YARDS
[.29 CUBIC METERS]

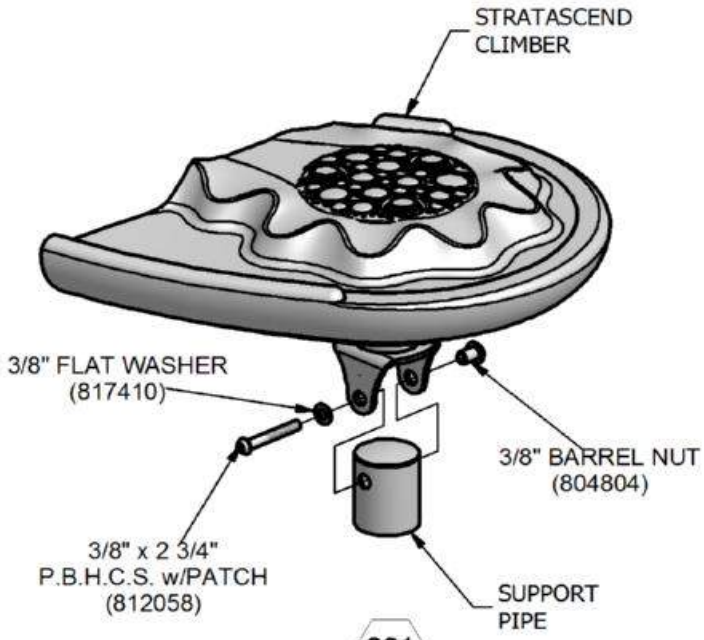


ELEVATION VIEW

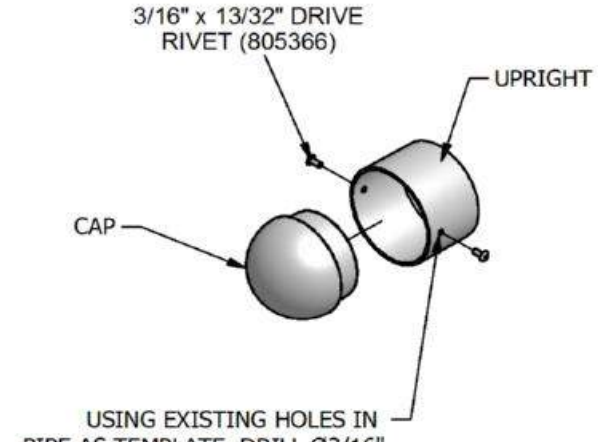
68212 Stratascend Wall with Climber



360



361



USING EXISTING HOLES IN PIPE AS TEMPLATE, DRILL Ø3/16" HOLES IN CAP AND INSTALL USING DRIVE RIVETS.

597

Horizons where fitness & fun meet Play Systems

68223 Hybrid Large Climbing Wall SM

PARTS LIST		
DESCRIPTION	QTY	PART NUMBER
OFFSET ENTRY ARCHWAY	1	310071
LONG TUBE ATTACHMENT	1	309373
FORMED LONG STRAIGHT PLATE	1	309374
LARGE CLIMBING WALL	1	305756
PIPE ADAPTER	2	309915
PANEL ADAPTER	2	309919
HARDWARE COMPLETE	1	313011
3/8" x 3/4" P.B.H.C.S. w/PATCH	3	812052*
3/8" x 2" P.B.H.C.S. w/PATCH	6	812055*
3/8" x 2 1/2" P.B.H.C.S. w/PATCH	3	812057*
3/8" FLAT WASHER	7	817410*
3/8" FLAT WASHER (1 1/4" O.D.)	8	817424*
3/8" LOCK NUT	1	804353*
3/8" BARREL NUT	13	804804*
1/4" X 3/4" SET SCREW	8	811545*
3/8" X 1 3/4" P.B.H.C.S. W/PATCH	1	812054*
3/8" LOCKWASHER	2	817334*

Unless Otherwise Specified, All Units of Measure are Each
** Included in Hardware*

Warning: During Installation, Hardware And Small Parts Are Choking Hazards For Young Children. Store Unused Parts Appropriately Until Assembly Is Completed. Once Assembly Is Completed, Remove Any Unused Parts From The Play Environment And Dispose/Save Them In A Secure Location.
Note: Peen Tee-Nuts and Flatwashers to match radius of pipe after assembly is complete.
Note: Loctite (supplied by others) should be used on any non-patch hardware.

INSTALLATION INSTRUCTIONS:

1. Dig footing hole as shown in Elevation and Plan Views.

2. Using a 7/16" drill bit, ream out any excess "Plastisol" coating from all holes used on the Deck. Be careful not to expose the steel.

3. Mark positions of Ring Clamps on Upright Posts at desired height. Loosely attach Ring Clamps to the uprights. Refer to the seperate Ring Clamp Installation sheet.

4. Slip Pipe Adapter ovr the ends of the offset archway and attach using 3/8" x 1 3/4" P.B.H.C.S w/Patch, 3/8" Lockwasher, 3/8" Flatwasher, and 3/8" Barrel Nut as shown in Detail 448.

5. Using Detail 026, attach Side Entry Archway to front of deck using 3/8" x 3/4" P.B.H.C.S. w/Patch, 3/8" Flat Washer (1 1/4" O.D.), and 3/8" Lock Nut.

68223 Hybrid Large Climbing Wall SM

7. Attach Long Tube Attachment to Formed Long Straight Plate using 3/8" x 2 1/2" P.B.H.C.S. w/Patch and 3/8" Barrel Nut as shown in Detail 073.

8. Attach assembled Straight Support to Large Climbing Wall using 3/8" x 2" P.B.H.C.S. w/Patch, 3/8" Flat Washer (1 1/4" O.D.), and 3/8" Barrel Nut. Refer to Detail 054.

9. Attach Panel Adapters to Ring Clamp using 1/4" x 3/4" Set Screws and assembled Support to Panel Adapters using 3/8" x 3/4" P.B.H.C.S. w/ Patch, 3/8" Flatwasher, and 3/8" Barrel Nut as shown in Detail 731.

10. Plumb and level the entire assembly and tighten all fasteners.

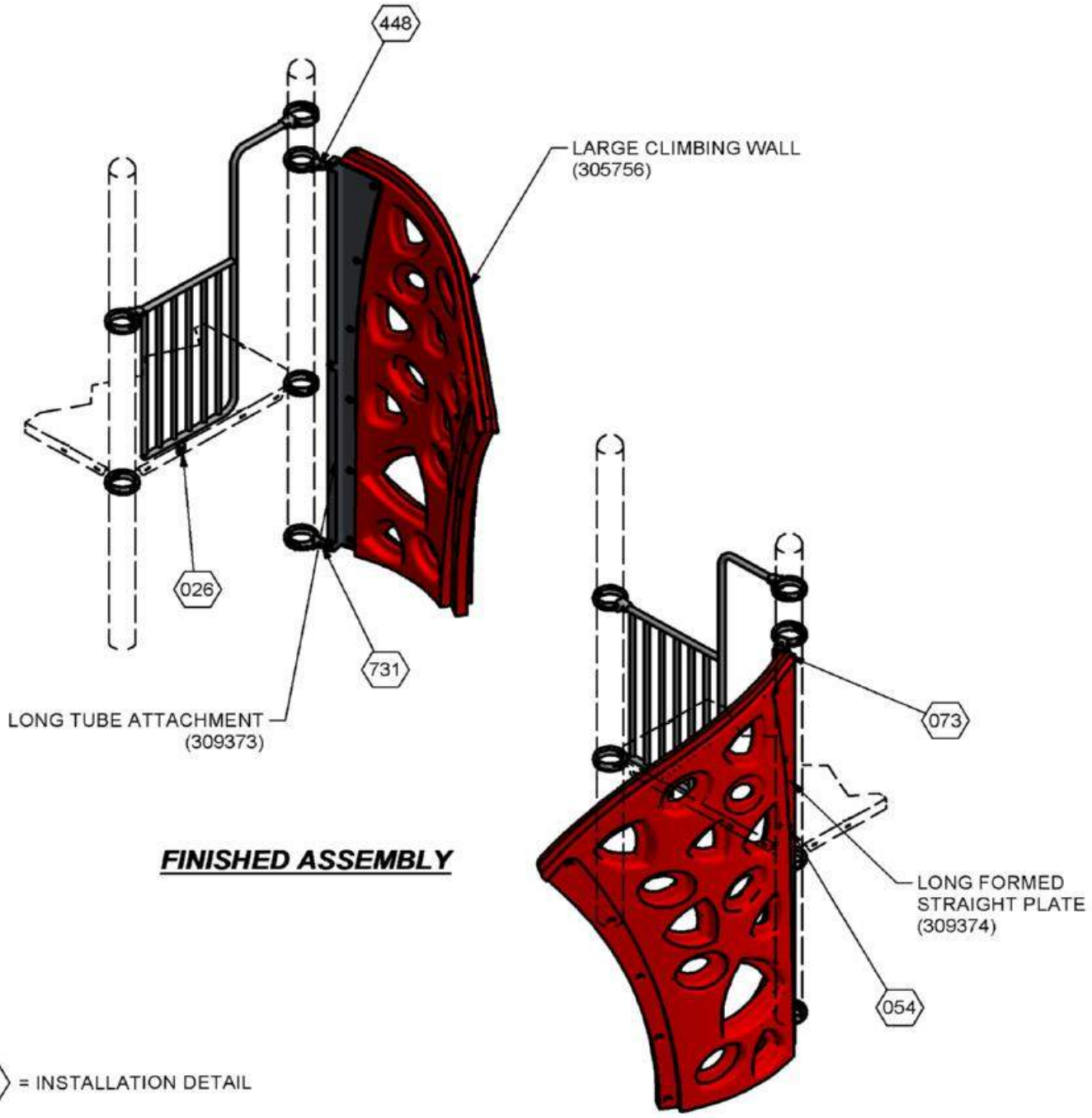
11. Pour concrete footings within 4" to the top and taper away from posts for water drainage. Allow to cure at least 48 hours before use. ***Note:*** temporary bracing may be required until concrete cures.

13. When the structure is finished and satisfactory, install 1/4" x 3/4" Drive Rivets in all Clamps to ensure Clamps cannot slide down posts, referring to Typ. Clamp Detail. Eliminate sharp points and sharp edges (burring) on installed hardware like bolts, nuts etc. ***It is very important that all Drive Rivets be installed prior to allowing use of equipment, as clamps are not designed to support substantial weight without them.*** Install resilient surfacing material within the use zone of play structure in accordance with ASTM specifications F1292 appropriate for the fall height of each structure. Refer to the Safety Guidelines.

MAINTENANCE PROCEDURE:

Periodically check hardware for tightness, and tighten as necessary. Always check all parts for breakage or wear, and immediately put equipment out of service until any faulty parts found are repaired or replaced. Also Check all metal parts for rust, paint loss and touch-up if necessary with paint. Check for welded areas and verify integrity. Check periodically resilient surfacing for appropriate depth and remove extraneous materials that could cause injury, infection, or disease. Maintain detailed installation, inspection, maintenance, and repair records for each public-use playground equipment.

68223 Hybrid Large Climbing Wall SM

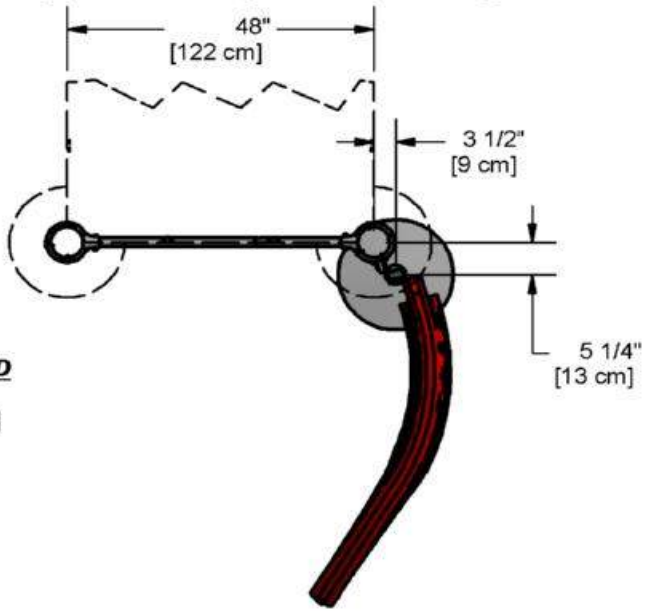


FINISHED ASSEMBLY

Horizons
where fitness & fun meet

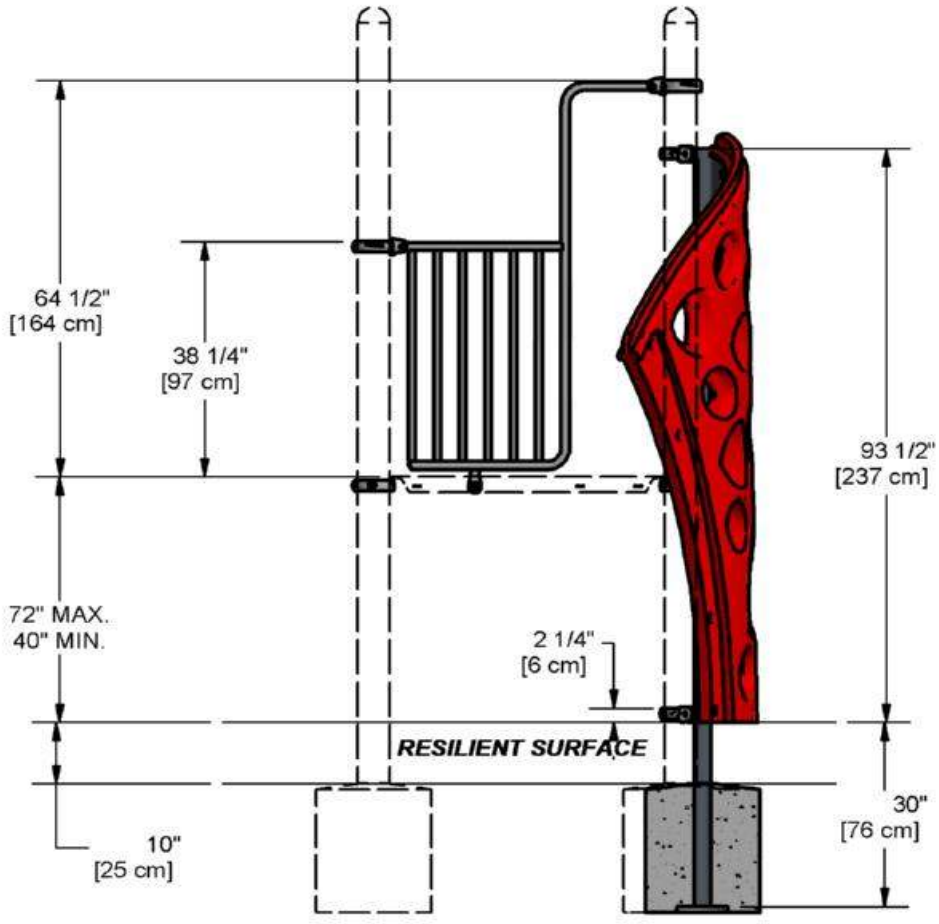
Play Systems

68223 Hybrid Large Climbing Wall SM



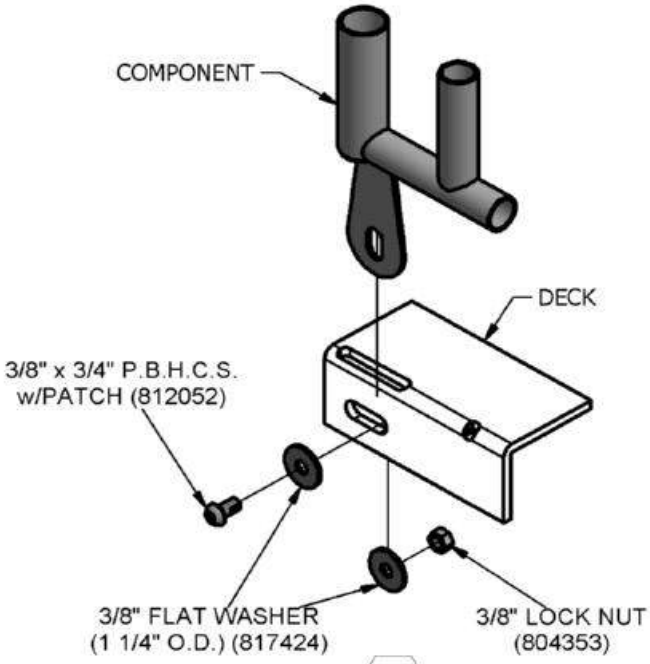
PLAN VIEW

CONCRETE REQUIRED
0.12 CUBIC YARDS
[0.08 CUBIC METERS]

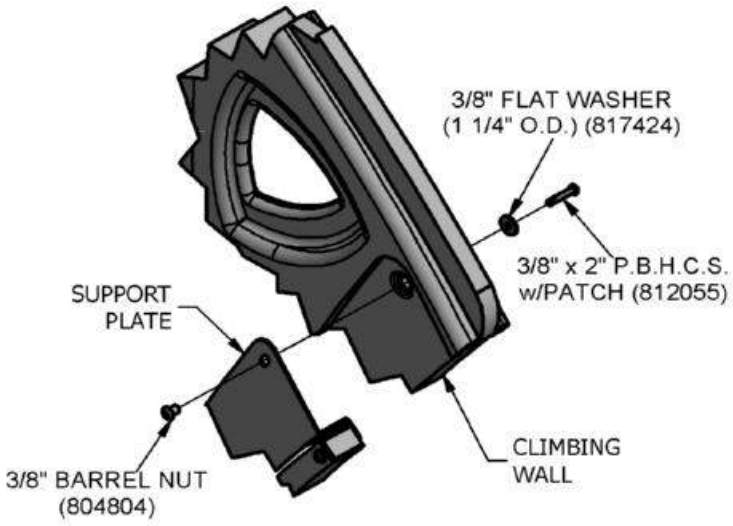


ELEVATION VIEW

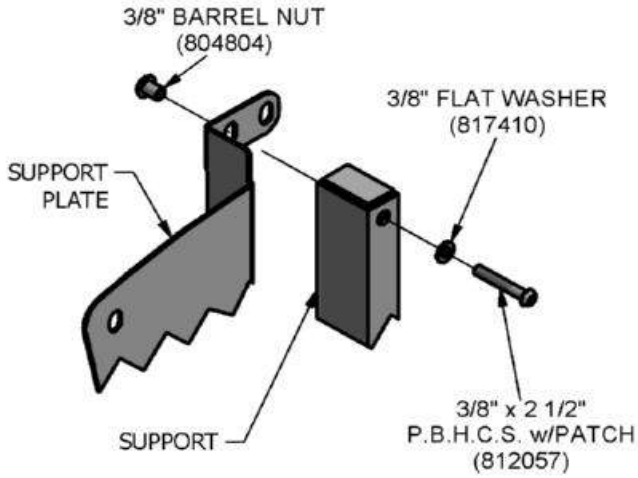
68223 Hybrid Large Climbing Wall SM



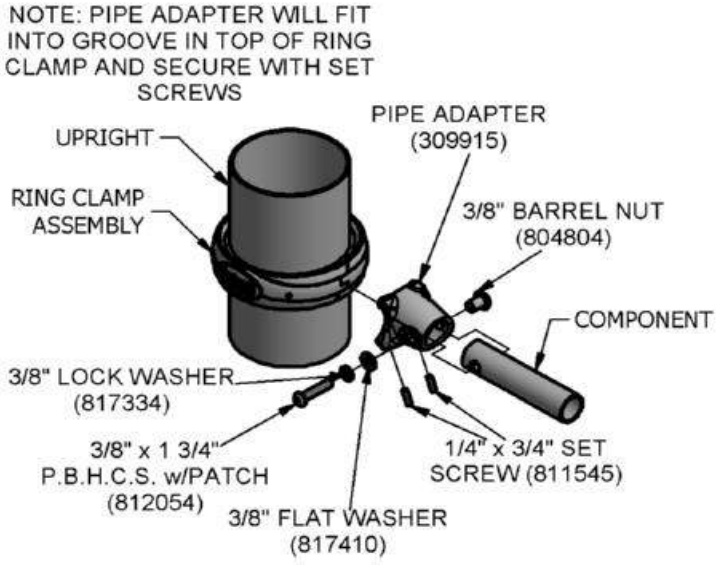
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054

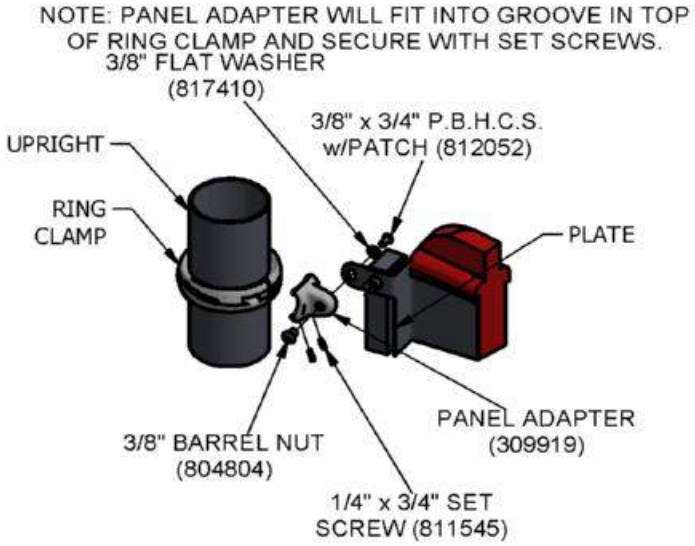


073



448

68223 Hybrid Large Climbing Wall SM



731

SuperMax Play Systems

71000 Square Deck; 71001 Triangle Deck; 71002 Isosceles Deck

Parts List				
DESCRIPTION	71000	71001	71002	PART NUMBER
DECK ADAPTER	4	3	3	309921
SQUARE DECK PLATFORM	1	0	0	309922
TRIANGLE DECK PLATFORM	0	1	0	309928
ISOSCELES TRIANGLE DECK PLATFORM	0	0	1	309932
HARDWARE COMPLETE	1	0	0	309927
HARDWARE COMPLETE	0	1	1	309931
1/4" x 3/4" SET SCREW	8	6	6	811545
3/8" x 3/4" P.B.H.C.S. w/PATCH	2	2	2	812052
3/8" x 1 1/4" P.B.H.C.S. w/PATCH	4	3	3	812051
3/8" LOCK WASHER	6	5	5	817334
3/8" FLAT WASHER (1 1/4" O.D.)	6	5	5	817424
3/8" T-NUT	2	2	2	804556

Unless Otherwise Specified, All Units of Measure are Each
Items listed below Hardware Complete line are included with Hardware Complete Number

Warning: During Installation, Hardware And Small Parts Are Choking Hazards For Young Children. Store Unused Parts Appropriately Until Assembly Is Completed. Once Assembly Is Completed, Remove Any Unused Parts From The Play Environment And Dispose/Save Them In A Secure Location. Any bolt end protruding more than two full threads beyond the face of the nut causes risk of clothing entanglement. Promptly cut-off flush, file smooth, and treat to prevent corrosion.

Note: Peen Tee-Nuts and Flatwashers to match radius of pipe after assembly is complete.
Note: Loctite (supplied by others) should be used on any non-patch hardware.

INSTALLATION INSTRUCTIONS:

1. Place Uprights in dug holes at appropriate height per Upright installation instructions. Get the height required for the deck from the Plan View Diagram. Use a felt-tip marker to mark the top of the Ring Clamp on all uprights.

2. Loosely attach all Ring Clamps to the uprights. Refer to the seperate Ring Clamp Installation sheet.

3. Attach Deck Adapters to the Ring Clamps using 1/4" x 3/4" set screw. Do not overly tighten set screws. Attach decks to the Deck Adapter using 3/8" x 1 1/4" P.B.H.C.S., 3/8" Flat Washer, and 3/8" Lock Washer as shown in Detail 447. Plumb and level uprights and brace in position.

4. Using a level, and holding one Ring Clamp as a constant, adjust the other clamps so that the deck is completely level. At this point, if you have more decks to attach, lay each succeeding deck on the ground against the previous deck's two posts, and mark the missing footings to be dug. Continue attaching decks in this manner. Tighten set screws after all decks are attached.

5. Attach side-by-side decks to one another using 3/8" x 3/4" P.B.H.C.S., 3/8" Lock Washer, 3/8" Flat Washer, and 3/8" T-Nut as shown in Detail 061.

6. When all decks are completed and correct, pour concrete footings within 4" to the top and taper away from support posts to allow water drainage. Allow curing at least 48 hours before use.

7. When the structure is finished and satisfactory, install Drive Rivets in all clamps to ensure clamps cannot slide down posts. See Ring Clamp subassembly sheets. Eliminate sharp points and sharp edges (burring) on installed hardware like bolts, nuts, etc. ***It is very important that all Drive Rivets be installed prior to allowing use of the equipment, as clamps are not designed to support substantial weight without them***. Install resilient surfacing material within the use zone of play structure in accordance with ASTM specifications F1292 appropriate for the fall height of each structure. Refer to the Safety Guidelines.

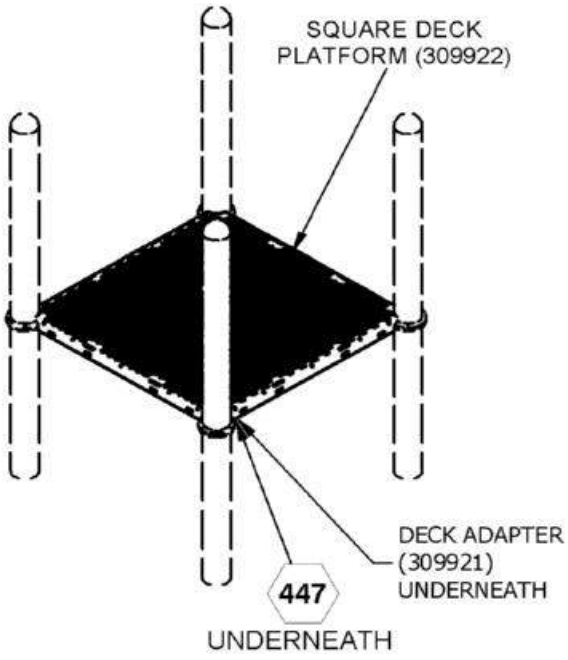
SuperMax Play Systems

71000 Square Deck; 71001 Triangle Deck; 71002 Isosceles Deck

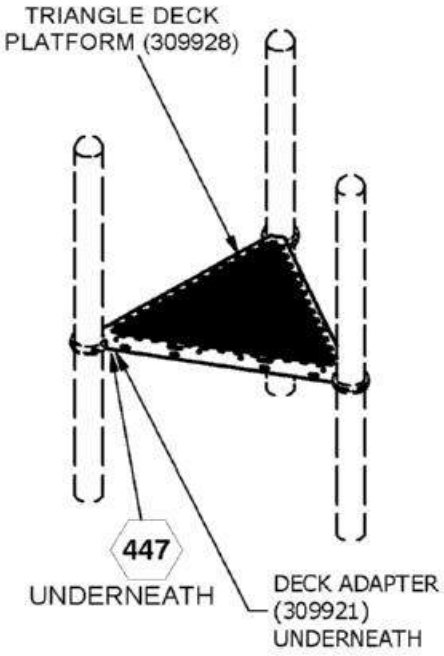
Note: To cushion accidental falls by children, it is strongly recommended that the area under and around the play structure must be covered with a resilient material, such as sand, mulch, etc., to a minimum depth of 10" for sand. Approved rubber safety matting can also be used. For details, please refer to your Safety Guidelines, provided within the assembly instruction packet.

MAINTENANCE PROCEDURE:

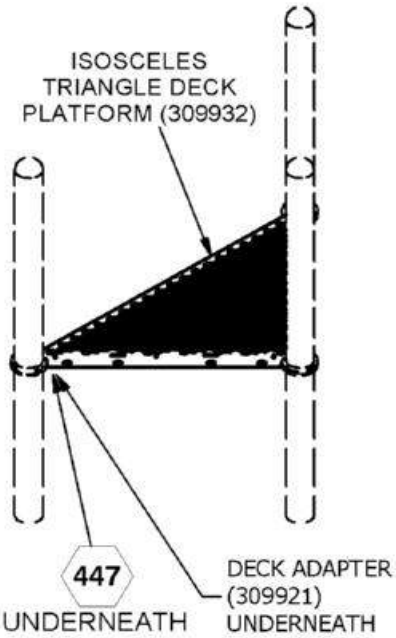
Periodically check hardware for tightness, and tighten as necessary. Always check all parts for breakage or wear, and immediately put equipment out of service until any faulty parts found are repaired or replaced. Also Check all metal parts for rust, paint loss and touch-up if necessary with paint. Check for welded areas and verify integrity. Check periodically resilient surfacing for appropriate depth and remove extraneous materials that could cause injury, infection, or disease. Maintain detailed installation, inspection, maintenance, and repair records for each public-use playground equipment.



SQUARE DECK



TRIANGLE DECK



ISOSCELES TRIANGLE DECK

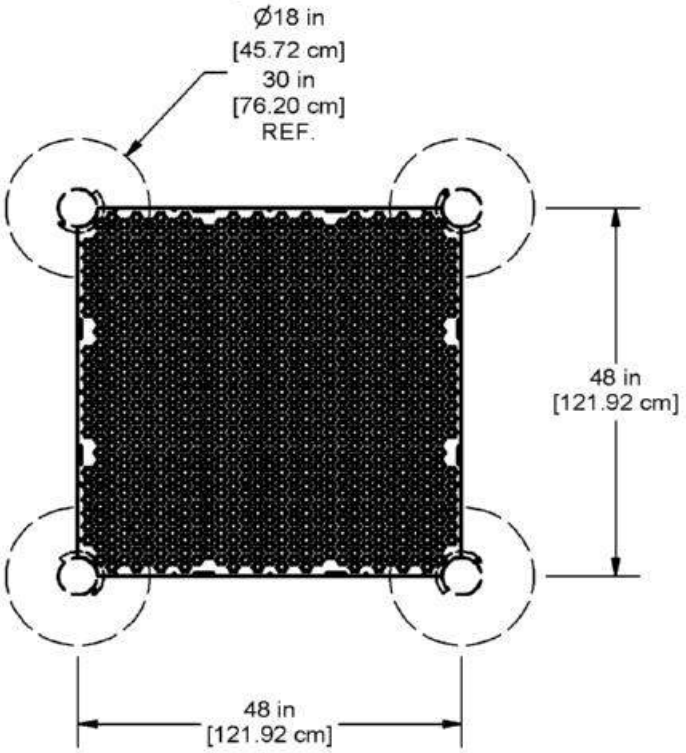
FINISHED ASSEMBLY

⬡ = INSTALLATION DETAIL

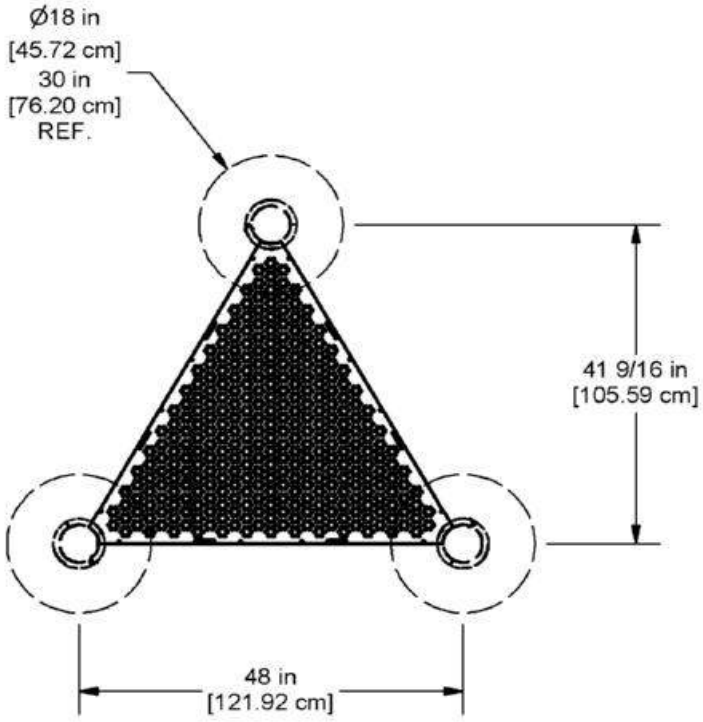
COMPONENTS SHOWN IN HIDDEN LINES ARE SOLD SEPARATELY

Issued/Revised: 7/13/2012

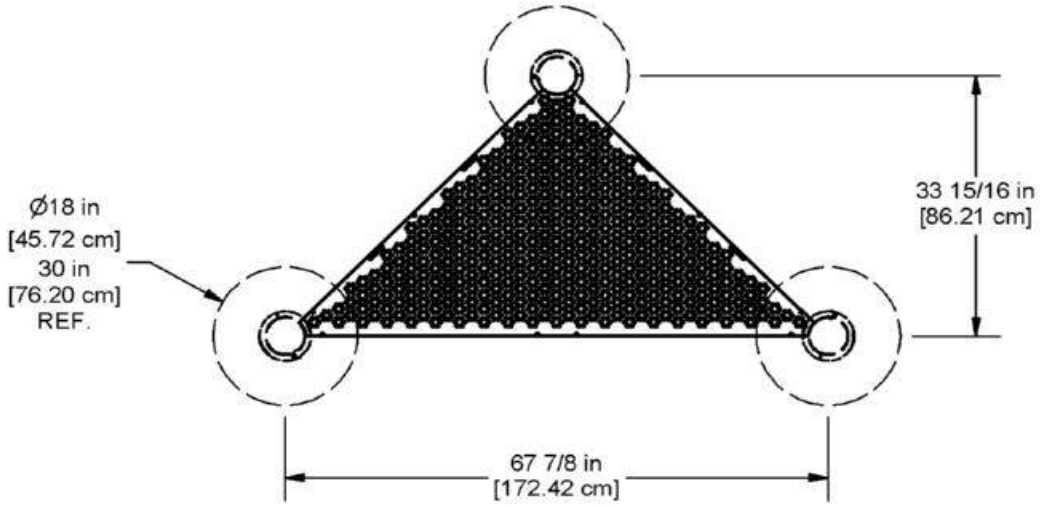
71000 Square Deck; 71001 Triangle Deck; 71002 Isosceles Deck



SQUARE DECK



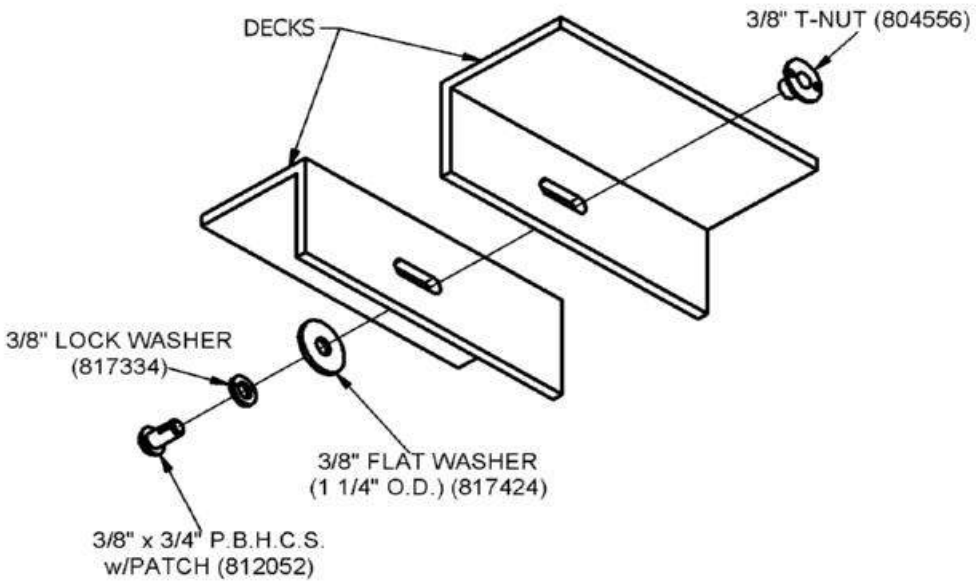
TRIANGLE DECK



ISOSCELES TRIANGLE DECK

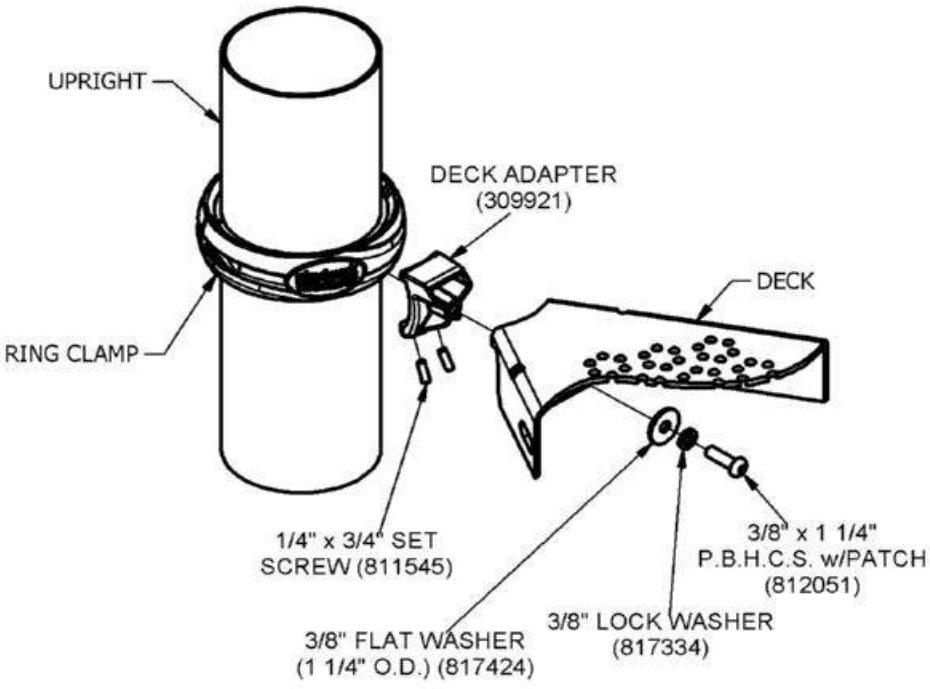
PLAN VIEW

71000 Square Deck; 71001 Triangle Deck; 71002 Isosceles Deck



061

NOTE: DECK ADAPTER WILL FIT INTO GROOVE IN TOP OF RING CLAMP AND SECURE WITH SET SCREWS



447

Issued/Revised: 7/13/2012

SuperMax Play Systems

Triangle Transfer Point w/Handhold 71006 (2'-8"); 71007 (3'-4"); 71008 (4')

Parts List				
DESCRIPTION	71006	71007	71008	PART NUMBER
PLATFORM SUPPORT	1	1	1	160662
HAND HOLD ASS'Y	1	1	1	306838
STAIRS	1	0	0	307252
STAIRS	0	1	0	307274
STAIRS	0	0	1	307281
PLATFORM	1	1	1	309853
PIPE ADAPTER	2	2	2	309915
HANDRAIL (32" DECK)	2	0	0	312656
HANDRAIL (40" DECK)	0	2	0	312659
HANDRAIL (48" DECK)	0	0	2	312662
ATTACHMENT RAIL	2	2	2	312672
------HARDWARE COMPLETE------	1	1	1	309959
1/4" x 3/4" SET SCREW	4	4	4	811545
3/8" x 3/4" P.B.H.C.S. w/PATCH	5	5	5	812052
3/8" x 1" P.B.H.C.S. w/PATCH	4	4	4	812050
3/8" x 1 3/4" P.B.H.C.S. w/PATCH	6	6	6	812054
3/8" x 2 1/4" P.B.H.C.S. w/PATCH	1	1	1	812056
3/8" x 2 1/2" P.B.H.C.S. w/PATCH	4	4	4	812057
3/8" LOCK WASHER	14	14	14	817334
3/8" FLAT WASHER	2	2	2	817410
3/8" FLAT WASHER (1 1/4" O.D.)	12	12	12	817424
3/8" LOCK NUT	6	6	6	804353
3/8" T-NUT	12	12	12	804556
3/8" BARREL NUT	2	2	2	804804
1/2" FLAT WASHER	4	4	4	817412

Unless Otherwise Specified, All Units of Measure are Each
Items listed below Hardware Complete line are included with Hardware Complete Number

Warning: During Installation, Hardware And Small Parts Are Choking Hazards For Young Children. Store Unused Parts Appropriately Until Assembly Is Completed. Once Assembly Is Completed, Remove Any Unused Parts From The Play Environment And Dispose/Save Them In A Secure Location. Any bolt end protruding more than two full threads beyond the face of the nut causes risk of clothing entanglement. Promptly cut-off flush, file smooth, and treat to prevent corrosion.

Note: Peen Tee-Nuts and Flatwashers to match radius of pipe after assembly is complete.
Note: Loctite (supplied by others) should be used on any non-patch hardware.

Triangle Transfer Point w/Handhold 71006 (2'-8"); 71007 (3'-4"); 71008 (4')

INSTALLATION INSTRUCTIONS:

1. Locate the appropriate deck to attach the Triangular Transfer Point.

2. Dig holes to receive the Platfom Support, Handhold and Handrails according to dimensions shown in Plan View. Footing Dimension is specified in Elevation View.

3. Attach Platform Support to the bottom of the Platform using 3/8" x 3/4" P.B.H.C.S. w/Patch, 3/8" Lock Washer, and 3/8" Tee Nut. See Detail 247.

4. Attach the Handhold to the Platform using the other outermost slot in the longest side of the platform with 3/8" x 2 1/4" P.B.H.C.S. w/Patch, 3/8" Lock Washer, and 3/8" Tee Nut. See Detail 125.

5. With sufficient manpower, lift the stair and fasten to deck and to the Platform using 3/8" x 1" P.B.H.C.S. w/Patch, 3/8" Flat Washer (1 1/4" O.D.), and 3/8" Lock Nut. See Detail 600 and 984. Provide additional temporary support to the Stair until the Handrails are fastened.

6. Attach two Ring Clamps to the Uprights. (See Ring Clamp Installation sheet)

7. Attach the two Attachment Rails to Ring Clamps with 3/8" x 1 3/4" P.B.H.C.S. w/Patch, 3/8" Flat Washer and 3/8" Barrel Nut. See Detail 448.

8. Attach the bottom tab of the Attachment rails to the decks with 3/8" x 3/4" P.B.H.C.S. w/Patch, 3/8" Flat Washer (1 1/4" O.D.), and 3/8" Lock Nut. See Detail 449.

9. Using Detail 145, fasten the Handrail to the Attachment Rails with 3/8" x 2 1/2" P.B.H.C.S. w/Patch, 3/8" Lock Washer, and 3/8" Tee Nut.

10. Fasten the Handrail to the Stair with 3/8" x 1 3/4" P.B.H.C.S. w/Patch at drilled holes, 3/8" Lock Washer, 1/2" Flat Washer and 3/8" Tee Nut according to Detail 599.

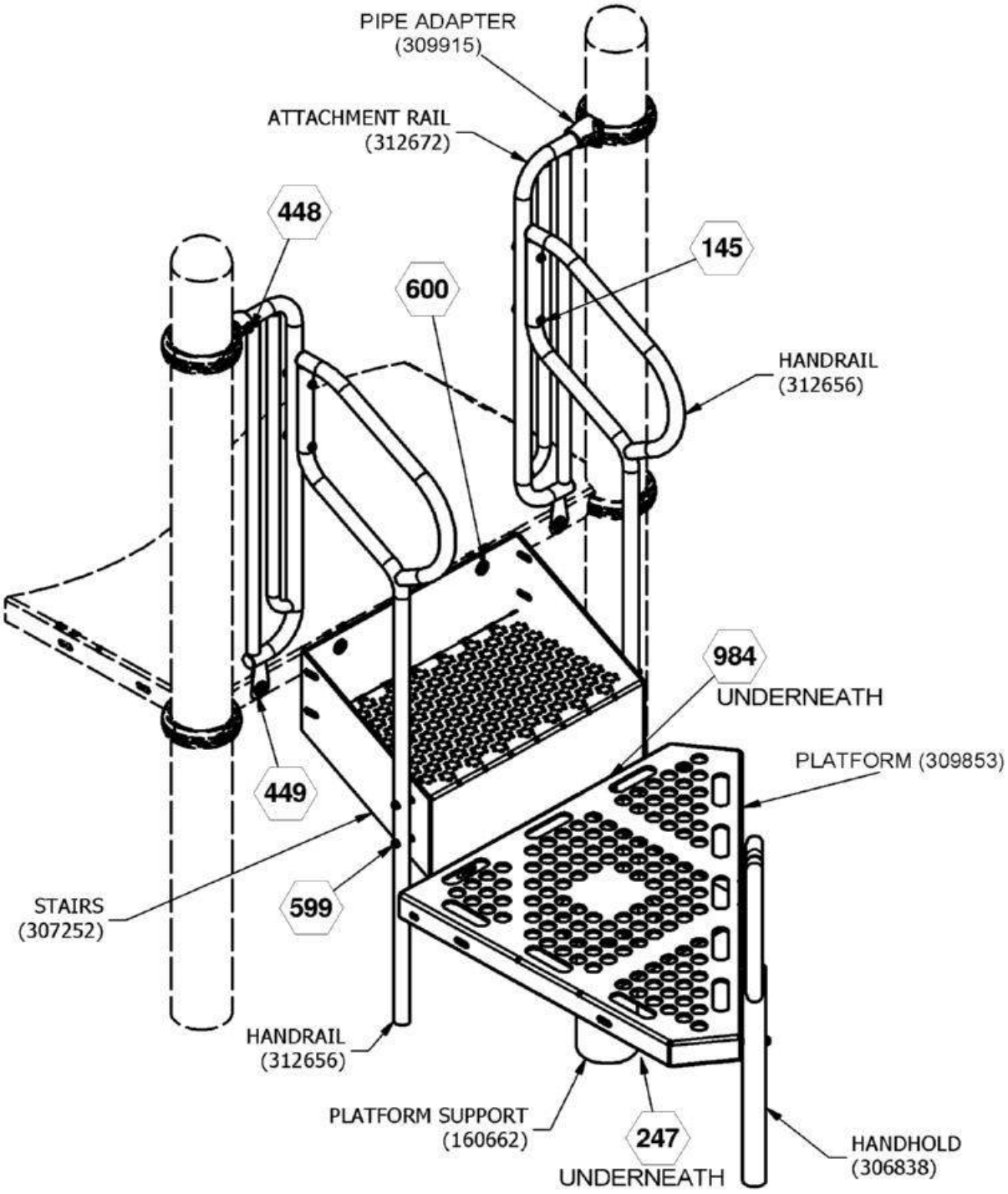
11. Plumb and Level the entire assembly. Pour concrete footings within 4" to the top and taper away from supports to allow drainage. Allow to cure at least 48 hours before use.

12. When structure is finished and satisfactory, tighten all fasteners and install Drive Rivets in all clamps to ensure clamps cannot slide down posts. See Pipe Clamp sub-assembly sheet. ***It is very important that all Drive Rivets be installed prior to allowing use of equipment, as clamps are not designed to support substantial weight without them.*** Also Eliminate sharp points and sharp edges (burring) on installed hardware like bolts, nuts etc. Install resilient surfacing material within the *use zone* of play structure in accordance with ASTM specifications F1292 appropriate for the fall height of each structure. Refer to the *Safety Guidelines*.

MAINTENANCE PROCEDURE:

Periodically check hardware for tightness, and tighten as necessary. Always check all parts for breakage or wear, and immediately put equipment out of service until any faulty parts found are repaired or replaced. Also Check all metal parts for rust, paint loss and touch-up if necessary with paint. Check for welded areas and verify integrity. Check periodically resilient surfacing for appropriate depth and remove extraneous materials that could cause injury, infection, or disease. Maintain detailed installation, inspection, maintenance, and repair records for each public-use playground equipment.

Triangle Transfer Point w/Handhold 71006 (2'-8"); 71007 (3'-4"); 71008 (4')



FINISHED ASSEMBLY
71006 SHOWN

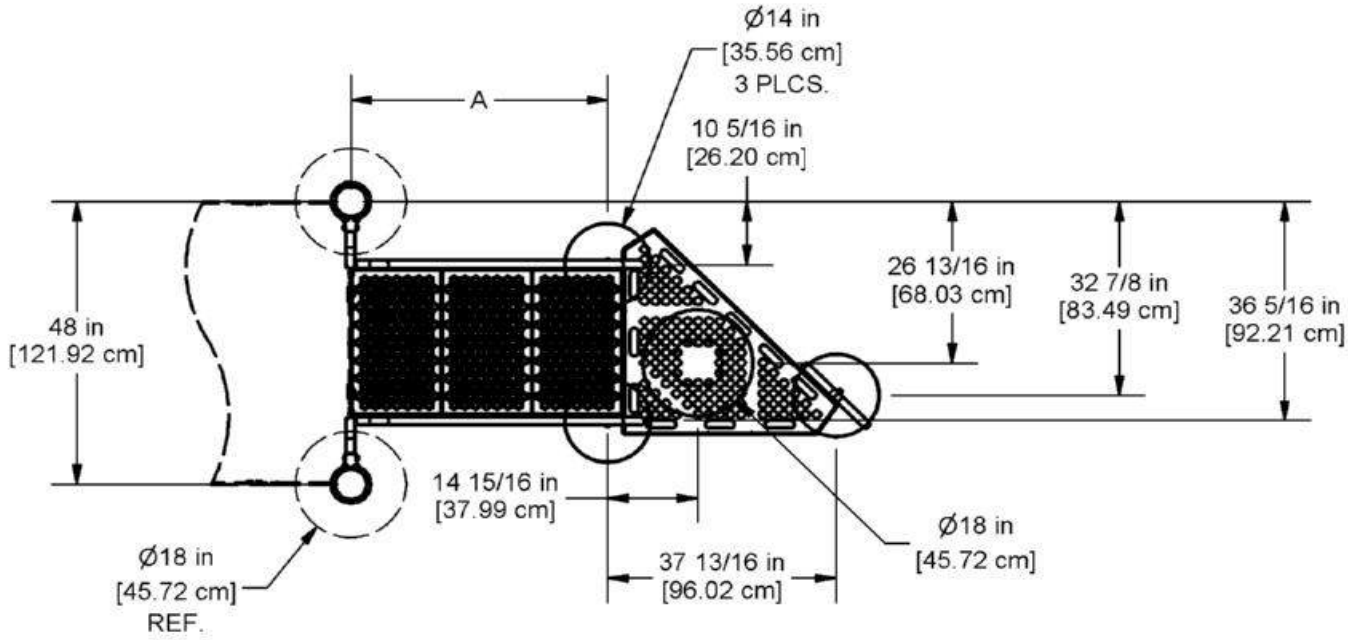
⬡ = INSTALLATION DETAIL

COMPONENTS SHOWN IN
HIDDEN LINES ARE SOLD SEPARATELY

Issued/Revised: 8/3/2023

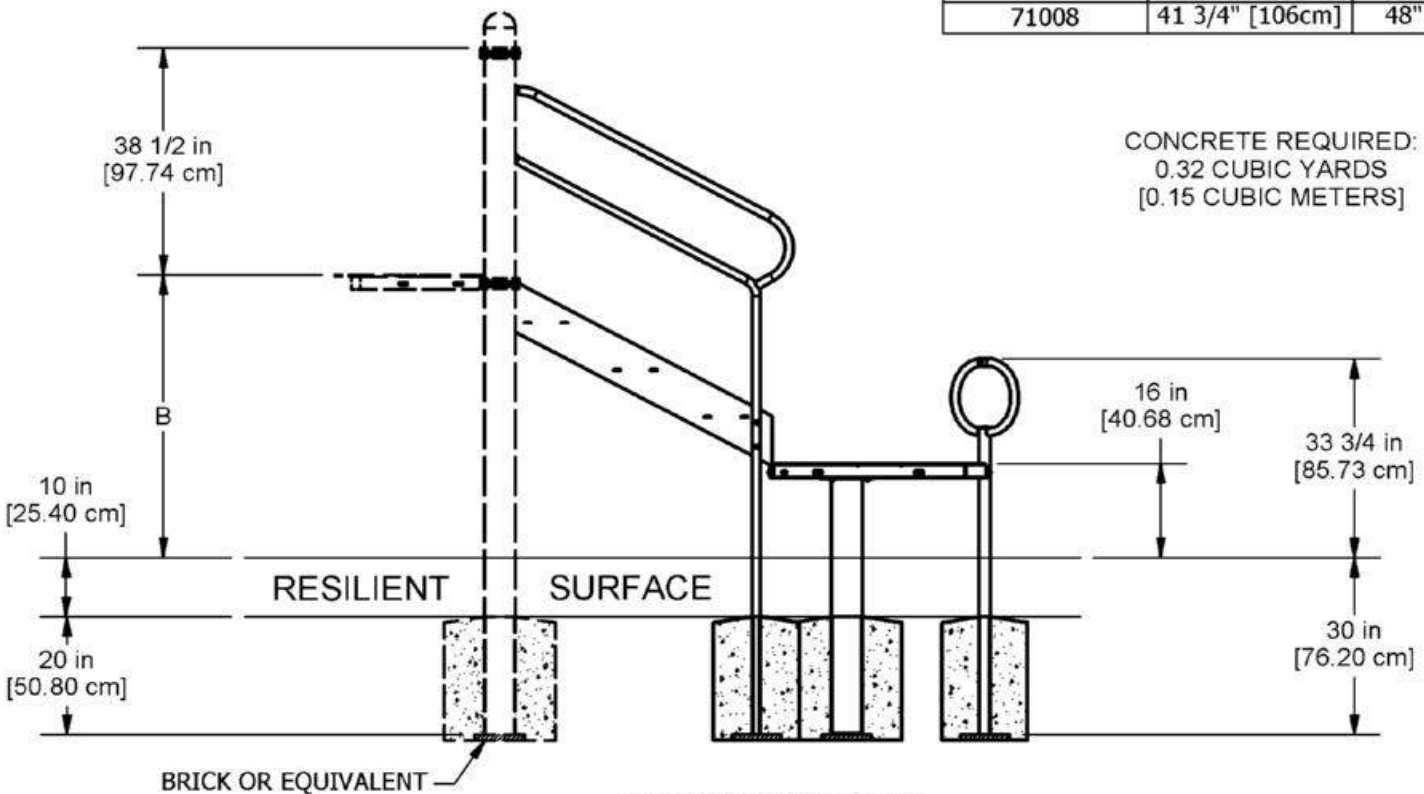
SuperMax Play Systems

Triangle Transfer Point w/Handhold 71006 (2'-8"); 71007 (3'-4"); 71008 (4')



PLAN VIEW

ASSEMBLY	DIM A	DIM B
71006	12 1/2" [31cm]	32" [81cm]
71007	27 1/4" [69cm]	40" [101cm]
71008	41 3/4" [106cm]	48" [121cm]

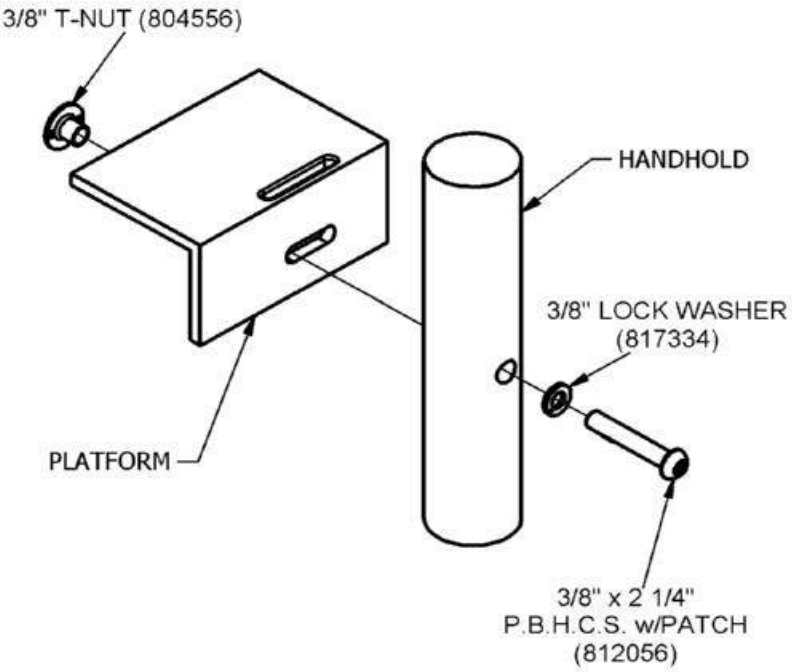


CONCRETE REQUIRED:
0.32 CUBIC YARDS
[0.15 CUBIC METERS]

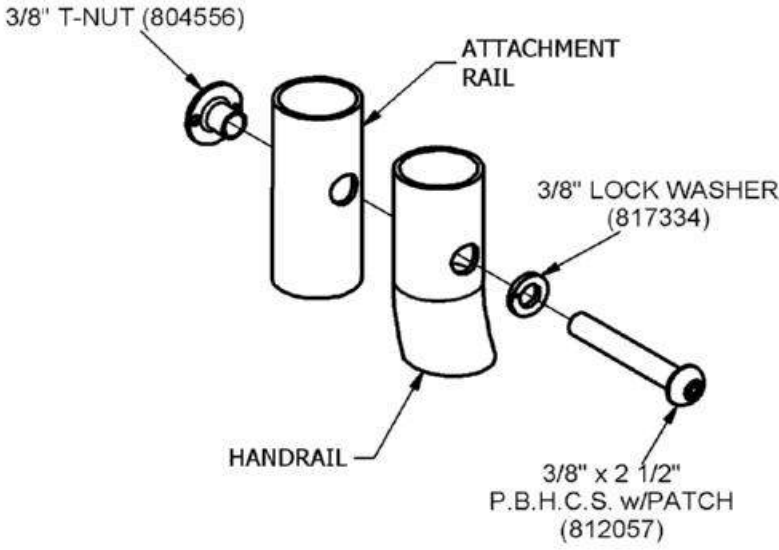
ELEVATION VIEW
71008 SHOWN

Issued/Revised: 8/3/2023

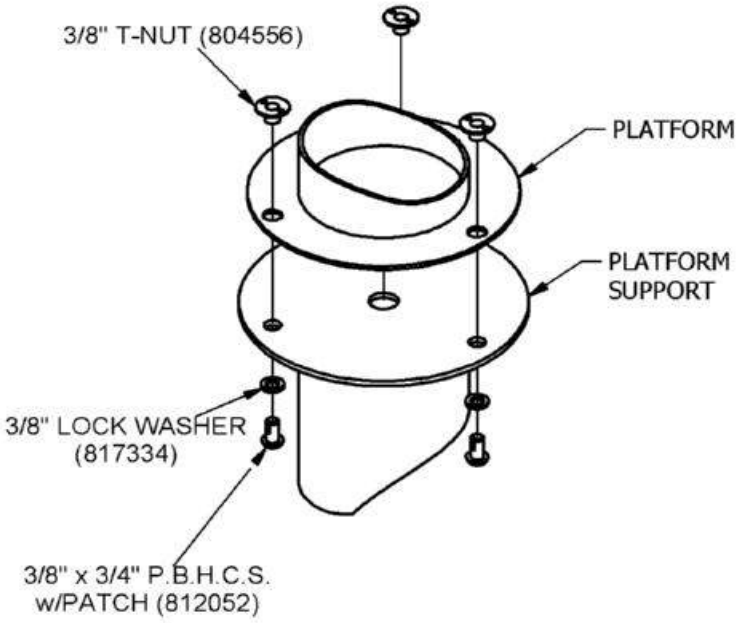
Triangle Transfer Point w/Handhold 71006 (2'-8"); 71007 (3'-4"); 71008 (4')



125

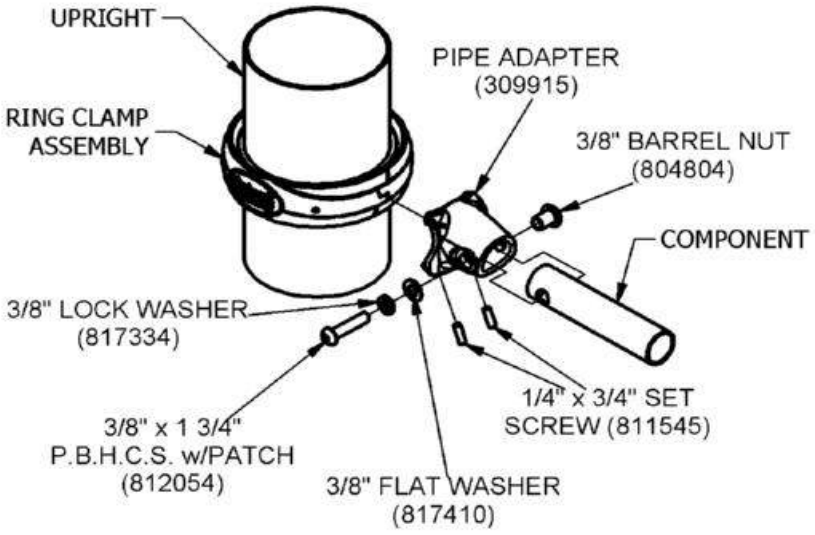


145



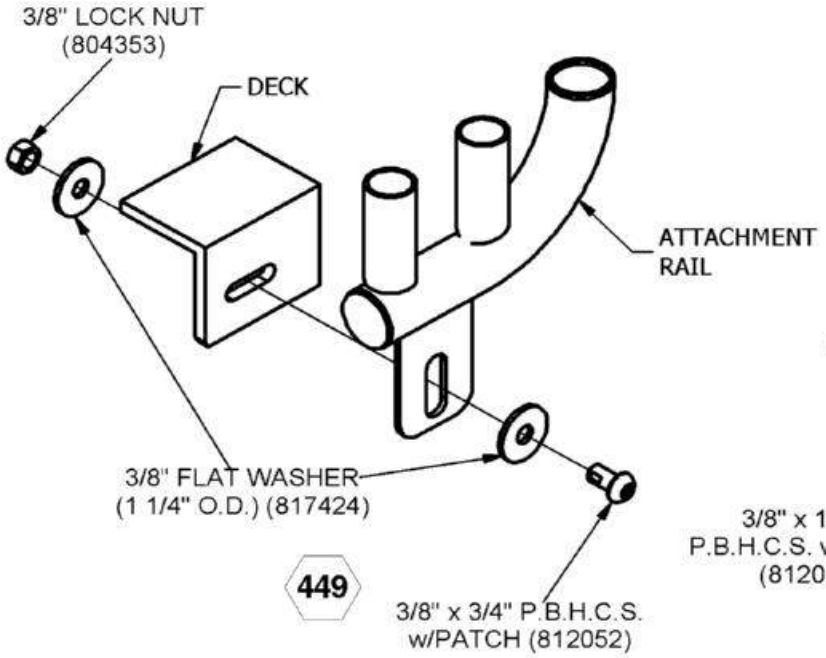
247

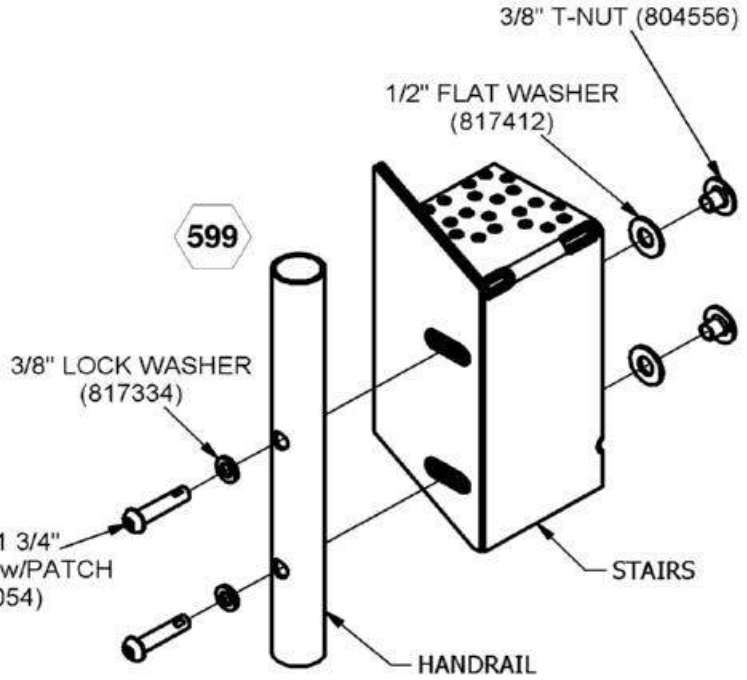
NOTE: PIPE ADAPTER WILL FIT INTO GROOVE IN TOP OF RING CLAMP AND SECURE WITH SET SCREWS

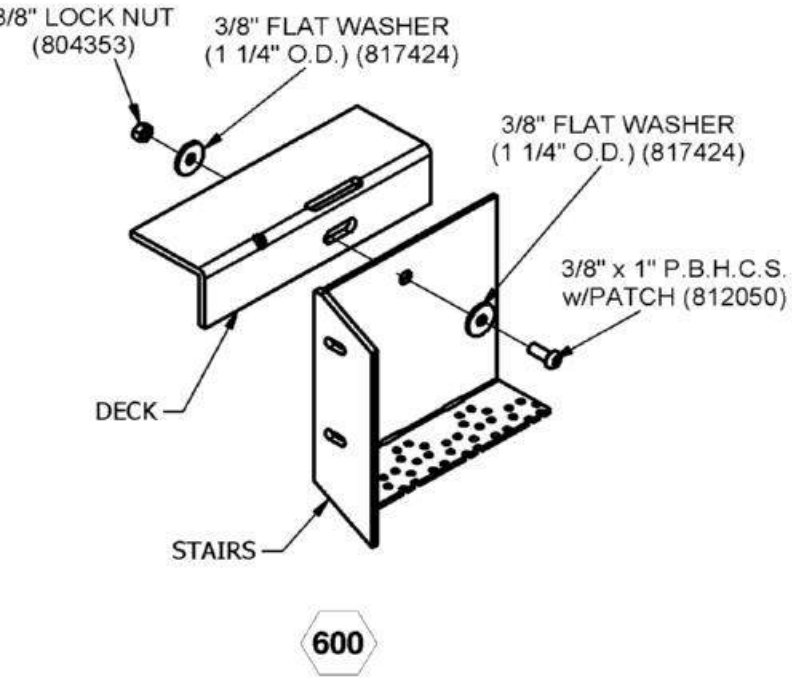


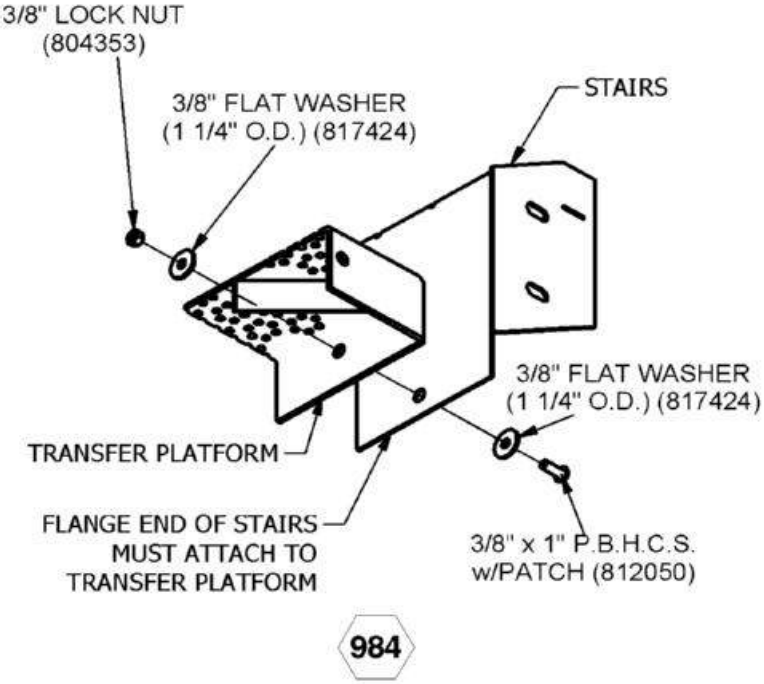
448

Triangle Transfer Point w/Handhold 71006 (2'-8"); 71007 (3'-4"); 71008 (4')









SuperMax Play Systems

71019 Telescope Panel

Parts List			
ITEM	DESCRIPTION	QTY	PART NUMBER
1	PIPE WALL	1	309972
2	PIPE ADAPTER	2	309915
	TELESCOPE ASS'Y	1	314712
	TELESCOPE SWIVEL CASTING	1	314703
	TELESCOPE HALF CLAMP CASTING	2	314705
	-----HARDWARE COMPLETE-----	1	314878
	1/4" x 3/4" SET SCREW	4	811545
	3/8" x 3/4" P.B.H.C.S. w/PATCH	2	812052
	3/8" x 1" P.B.H.C.S. w/PATCH	1	812050
	3/8" x 1 1/2" P.B.H.C.S. w/PATCH	1	812053
	3/8" x 1 3/4" P.B.H.C.S. w/PATCH	2	812054
	3/8" FLAT WASHER	5	817410
	3/8" FLAT WASHER (1 1/4" O.D.)	4	817424
	3/8" LOCK WASHER	4	817334
	3/8" BARREL NUT	4	804804
	3/8" LOCK NUT	2	804353
	1/2" FLAT WASHER	1	817412
	1/4" x 1" DRIVE RIVET	2	805302

Unless Otherwise Specified, All Units of Measure are Each
Items listed below Hardware Complete line are included with Hardware Complete Number

Warning: During Installation, Hardware And Small Parts Are Choking Hazards For Young Children. Store Unused Parts Appropriately Until Assembly Is Completed. Once Assembly Is Completed, Remove Any Unused Parts From The Play Environment And Dispose/Save Them In A Secure Location. Any bolt end protruding more than two full threads beyond the face of the nut causes risk of clothing entanglement. Promptly cut-off flush, file smooth, and treat to prevent corrosion.

Note: Peen Tee-Nuts and Flatwashers to match radius of pipe after assembly is complete.
Note: Loctite (supplied by others) should be used on any non-patch hardware.

INSTALLATION INSTRUCTIONS:

1. Loosely attach all Ring Clamps to the uprights. Refer to the seperate Ring Clamp Installation sheet.
2. Using a 7/16" drill bit, ream out any excess "Plastisol" coating from all holes used on the deck. Be careful not to expose the steel.
3. Put Pipe Wall tabs into slots on deck. Slip Pipe Adapters over Pipe Wall attachment pipes, then hook Pipe Adapters onto Ring Clamps and attach using 1/4" x 3/4" Set Screws as shown in Detail 448. Attach Pipe Adapter to Pipe Wall using 3/8" x 1 3/4" P.B.H.C.S. w/Patch, 3/8" Lockwasher, 3/8" Flat Washer, and 3/8" Barrel Nut as shown in Detail 448.
4. Attach tabs to deck using 3/8" x 1" P.B.H.C.S. w/Patch, 3/8" Flatwasher, and 3/8" Lock Nut as shown in Detail 026. After ensuring Pipe Wall is square and level, tighten all fasteners.
5. Attach Telescope to Pipe Wall as shown in Detail 959.

IMPORTANT! Avoid creating any gaps between the components which fall between 3-1/2" and 9". It has been shown that such gaps create entrapment points which can trap a child and cause injury.

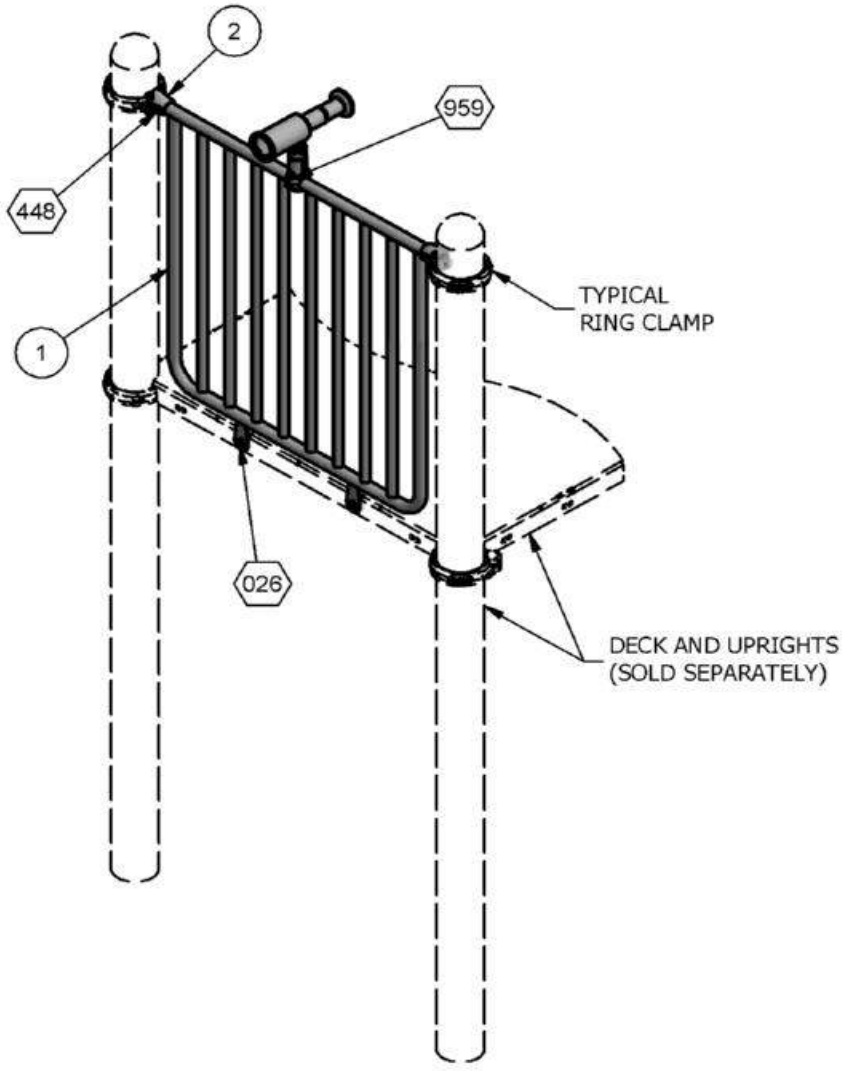
When the structure is finished and satisfactory, install Drive Rivets in all clamps to ensure clamps cannot slide down posts. See Ring Clamp subassembly sheets. ***It is very important that all Drive Rivets be installed prior to allowing use of the equipment, as clamps are not designed to support substantial weight without them***. Install resilient surfacing material within the use zone of play structure in accordance with ASTM specifications F1292 appropriate for the fall height of each structure. Refer to the ***Safety Guidelines***. Eliminate sharp points and sharp edges (burring) on installed hardware like bolts, nuts, etc.

71019 Telescope Panel

Note: To cushion accidental falls by children, it is strongly recommended that the area under and around the play structure must be covered with a resilient material, such as sand, mulch, etc., to a minimum depth of 10" for sand. Approved rubber safety matting can also be used. For details, please refer to your Safety Guidelines, provided within the assembly instruction packet.

MAINTENANCE PROCEDURE:

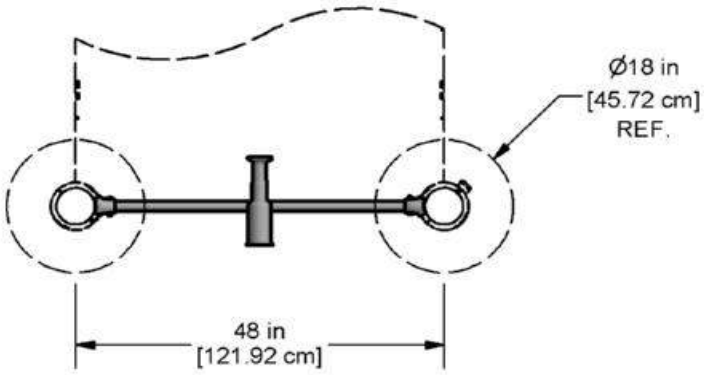
Periodically check hardware for tightness, and tighten as necessary. Always check all parts for breakage or wear, and immediately put equipment out of service until any faulty parts found are repaired or replaced. Check for rust or paint loss and touch-up if necessary with paint. Check welded areas and verify integrity. Check Plastisol-coating for bare spots and touch-up with Plastisol if necessary. Clear any trapped debris from deck perforations. Check periodically resilient surfacing for appropriate depth and remove extraneous materials that could cause injury, infection, or disease. Maintain detailed installation, inspection, maintenance, and repair records for each public-use playground equipment.



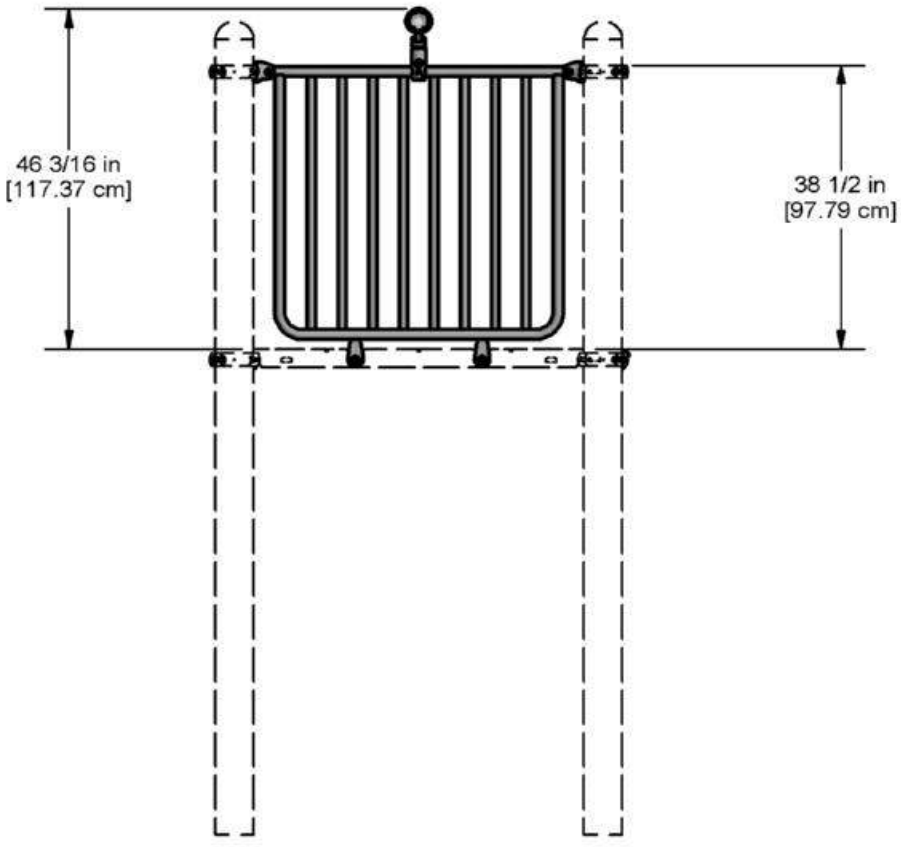
⬡ = INSTALLATION DETAIL

FINISHED ASSEMBLY

71019 Telescope Panel

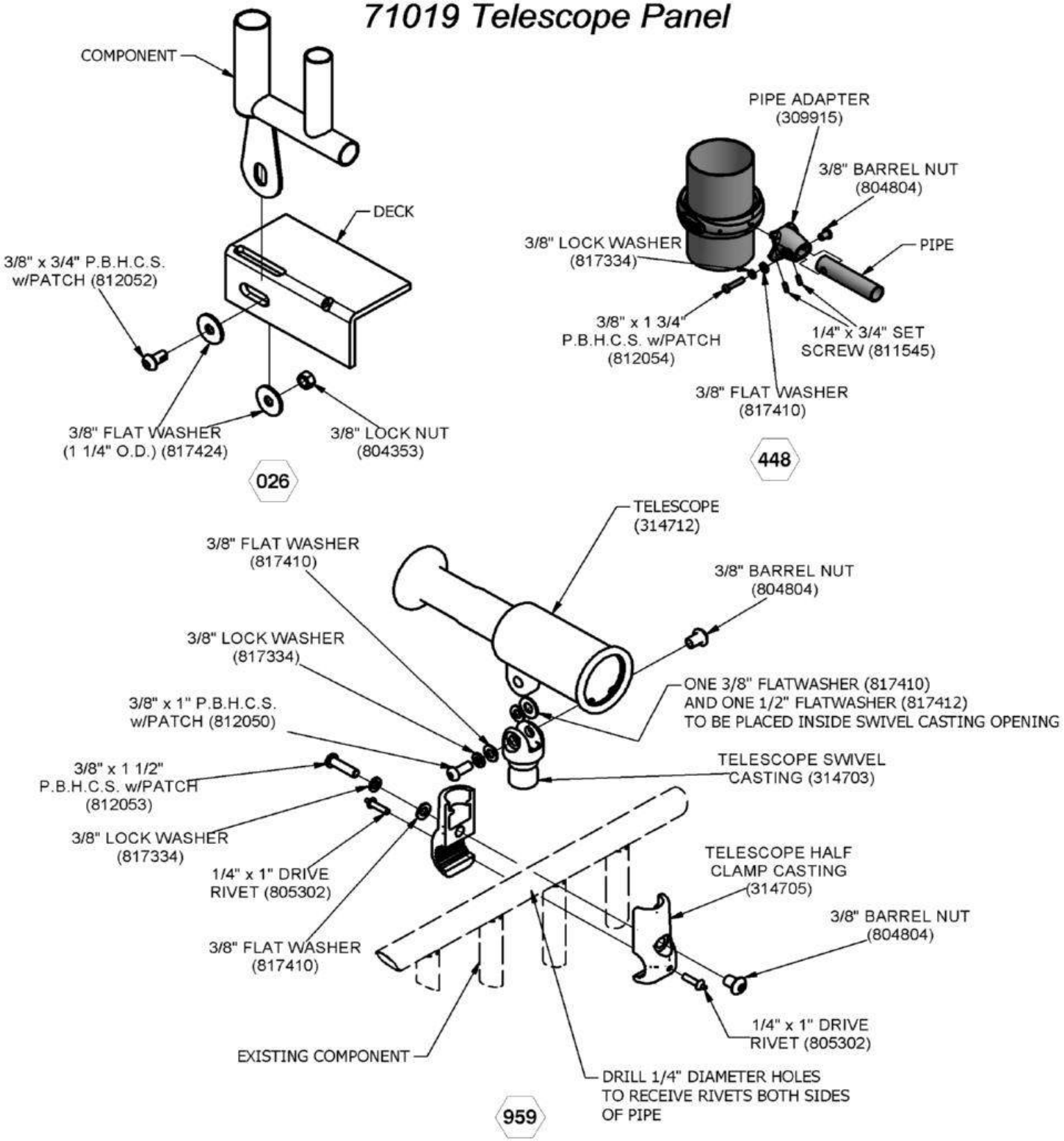


PLAN VIEW



ELEVATION VIEW

71019 Telescope Panel



SuperMax Play Systems

71031 RING CLAMP ASSEMBLY

Parts List		
DESCRIPTION	QTY	PART NUMBER
RING CLAMP	1	309911
HARDWARE COMPLETE	1	309998
1/4" x 1" DRIVE RIVET	1	805302*
1/4" x 1 1/4" P.B.H.C.S.	1	812083*

Unless Otherwise Specified, All Units of Measure are Each
Items listed below Hardware Complete line are included with Hardware Complete Number

Warning: During Installation, Hardware And Small Parts Are Choking Hazards For Young Children. Store Unused Parts Appropriately Until Assembly Is Completed. Once Assembly Is Completed, Remove Any Unused Parts From The Play Environment And Dispose/Save Them In A Secure Location. Any bolt end protruding more than two full threads beyond the face of the nut causes risk of clothing entanglement. Promptly cut-off flush, file smooth, and treat to prevent corrosion.

Note: Peen Tee-Nuts and Flatwashers to match radius of pipe after assembly is complete.
Note: Loctite (supplied by others) should be used on any non-patch hardware.

INSTALLATION INSTRUCTIONS:

1. Locate uprights to receive Ring Clamp Assemblies (Refer to individual component installation sheets for clamp heights).

2. Attach Ring Clamp to upright using 1/4" x 1 1/4" PBHCS. Tighten screw only enough to hold the clamps position on the upright. Adjustment may be neccasary. See Detail 452.
IMPORTANT: Orientation of bolt is critical.

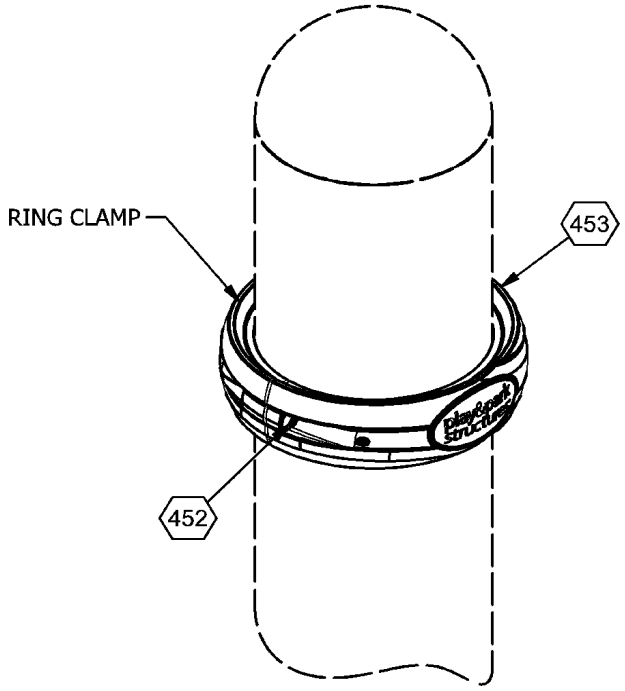
3. Install required components to the attaching to the Ring Clamp. See Top View and Seperate component installation sheets.

4. When structure is finished and satisfactory, tighten all fasteners and install Drive Rivets in all clamps to ensure clamps cannot slide down posts. A 1/4" diameter hole must be drilled into the clamp and upright to receive drive rivet. Use Pre-determined drill points on ring clamp. See Detail 453. ***It is very important that all Drive Rivets be installed prior to allowing use of equipment, as clamps are not designed to support substantial weight without them.*** Also Eliminate sharp points and sharp edges (burring) on installed hardware like bolts, nuts etc. Install resilient surfacing material within the *use zone* of play structure in accordance with ASTM specifications F1292 appropriate for the fall height of each structure. Refer to the *Safety Guidelines*.

MAINTENANCE PROCEDURE:

Periodically check hardware for tightness, and tighten as necessary. Always check parts for breakage or wear, and immediately put equipment out of service until any faulty parts are repaired or replaced. Check for rust, paint loss, and touch up if necessary with paint. Check for welded areas and verify integrity. Check all decks for peeling of Plastisol coating and touch up with Plastisol if necessary. Check for obstructed holes on deck, clean if necessary. Check for openings on plastic junctions and use clear silicone to fill. Check for cracks, gouges, or breakage on plastic. Check for integrity of plastic and keep plastic keep of any extraneous substances. Verify that any deformation does not create entrapment as specified on ASTM F1487 section 6. Periodically check resilient surfacing for appropriate depth, and remove extraneous materials that could cause injury, infection, or disease. Maintain detailed installation, inspection, maintenance, and repair records for each public-use playground equipment

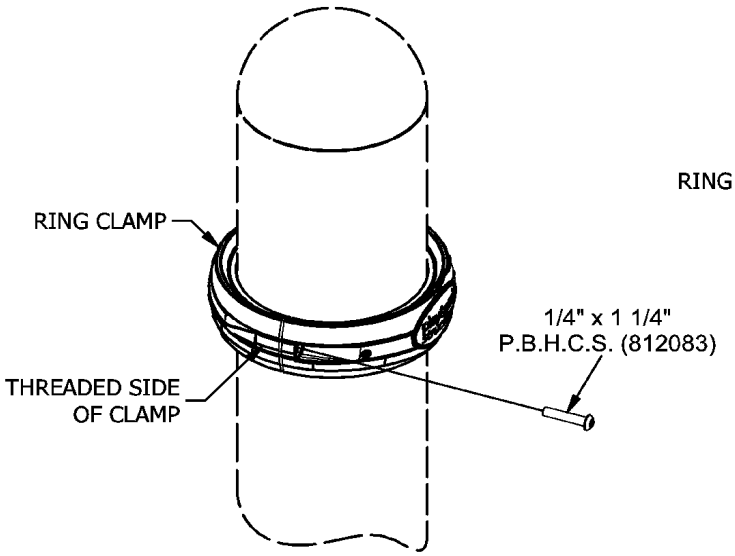
UPRIGHT AND CAP
SOLD SEPERATELY



FINISHED ASSEMBLY

⬡ = INSTALLATION DETAIL

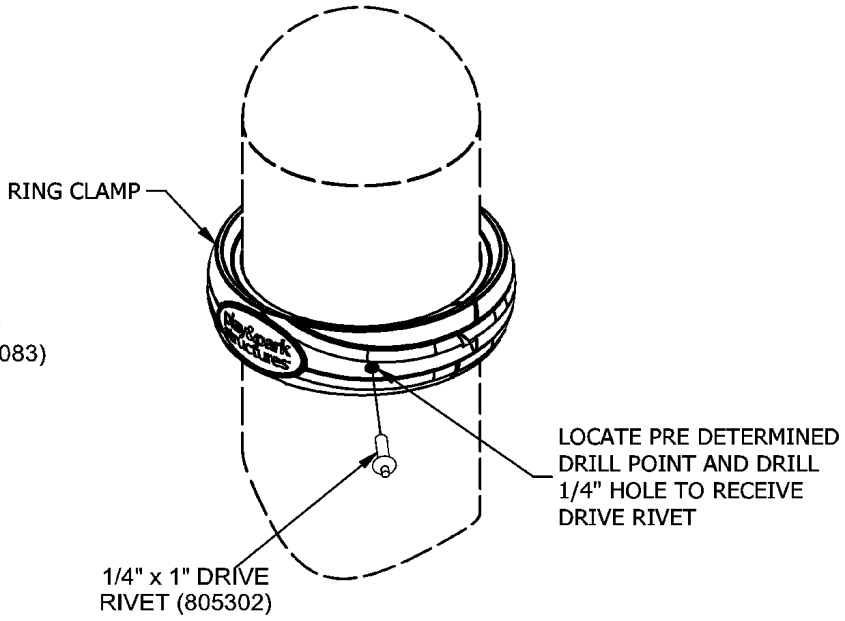
71031 RING CLAMP ASSEMBLY



NOTE: THE USE OF LOCTITE IS IMPORTANT.

IMPORTANT: ORIENTATION OF BOLT IS CRITICAL.

452



453

SuperMax Play Systems

Inclined Wall Climber 71101 (2'-0"); 71102 (2'-8"); 71103 (3'-4"); 71104 (4'-0"); 71105 (4'-8"); 71106 (5'-4"); 71107 (6'-0")

Parts List									
ITEM	DESCRIPTION	71101	71102	71103	71104	71105	71106	71107	PART NUMBER
1	ENTRY ARCHWAY	1	1	1	1	1	1	1	309984
2	INCLINED WALL PANEL	1	0	0	0	0	0	0	308475
2	INCLINED WALL PANEL	0	1	0	0	0	0	0	308308
2	INCLINED WALL PANEL	0	0	1	0	0	0	0	308480
2	INCLINED WALL PANEL	0	0	0	1	0	0	0	308313
2	INCLINED WALL PANEL	0	0	0	0	1	0	0	308485
2	INCLINED WALL PANEL	0	0	0	0	0	1	0	308318
2	INCLINED WALL PANEL	0	0	0	0	0	0	1	308323
3	INCLINED WALL FRAME	1	0	0	0	0	0	0	308471
3	INCLINED WALL FRAME	0	1	0	0	0	0	0	308513
3	INCLINED WALL FRAME	0	0	1	0	0	0	0	308477
3	INCLINED WALL FRAME	0	0	0	1	0	0	0	308516
3	INCLINED WALL FRAME	0	0	0	0	1	0	0	308482
3	INCLINED WALL FRAME	0	0	0	0	0	1	0	308519
3	INCLINED WALL FRAME	0	0	0	0	0	0	1	308522
4	PIPE ADAPTER	2	2	2	2	2	2	2	309915
	-----HARDWARE COMPLETE-----	1	0	0	0	0	0	0	315150
	-----HARDWARE COMPLETE-----	0	1	1	0	0	0	0	315151
	-----HARDWARE COMPLETE-----	0	0	0	1	0	0	0	315152
	-----HARDWARE COMPLETE-----	0	0	0	0	1	0	0	315153
	-----HARDWARE COMPLETE-----	0	0	0	0	0	1	0	315154
	-----HARDWARE COMPLETE-----	0	0	0	0	0	0	1	315155
	1/4" x 3/4" SET SCREW	4	4	4	4	4	4	4	811545
	3/8" x 1 3/4" P.B.H.C.S. w/PATCH	4	4	4	4	4	4	4	812054
	3/8" x 2" P.B.H.C.S. w/PATCH	6	8	8	10	12	14	16	812055
	3/8" FLAT WASHER	2	2	2	2	2	2	2	817410
	3/8" LOCK WASHER	10	12	12	14	16	18	20	817334
	3/8" BARREL NUT	8	10	10	12	14	16	18	804804
	3/8" T-NUT	2	2	2	2	2	2	2	804556

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Items listed below Hardware Complete line are included with Hardware Complete Number

Warning: During Installation, Hardware And Small Parts Are Choking Hazards For Young Children. Store Unused Parts Appropriately Until Assembly Is Completed. Once Assembly Is Completed, Remove Any Unused Parts From The Play Environment And Dispose/Save Them In A Secure Location.

Note: Peen Tee-Nuts and Flatwashers to match radius of pipe after assembly is complete.

Note: Loctite (supplied by others) should be used on any non-patch hardware.

Inclined Wall Climber 71101 (2'-0"); 71102 (2'-8"); 71103 (3'-4"); 71104 (4'-0"); 71105 (4'-8"); 71106 (5'-4"); 71107 (6'-0")

INSTALLATION INSTRUCTIONS:

1. Determine which deck is to receive the Inclined Wall Climber, refer to your overhead drawing for location. Dig footings at location and depth shown.

2. Using a 7/16" drill bit, ream out any excess "Plastisol" coating from any holes to be used on deck. Be careful not to expose the steel.

3. Loosely attach Ring Clamps to Uprights at noted height using information provided in Ring Clamp Installation Sheet.

4. Place the tabs at the bottom of the Entry Archway into the slots on the deck. Slip the Pipe Adapters onto the Entry Archway attachment pipes, then move the Entry Archway into position. Hook the Pipe Adapters onto the Ring Clamps and attach using 1/4" x 3/4" Set Screws as shown in Detail 448. Connect Entry Archway to Pipe Adapter using 3/8" x 1 3/4" P.B.H.C.S. w/Patch, 3/8" Lock Washer, 3/8" Flat Washers and 3/8" Barrel Nuts as shown in Detail 448.

5. Place Inclined Wall Frame into dug hole and secure Frame and tabs to deck using 3/8" x 1 3/4" P.B.H.C.S. w/Patch, 3/8" Lock Washer, and 3/8" T-Nut as shown in Detail 295. Make sure the Entry Archway is plumb.

6. Attach the Inclined Wall Panel to the Inclined Wall Frame using 3/8" x 2" P.B.H.C.S. with Patch, 3/8" Lock Washer, and 3/8" Barrel Nut as shown in Detail 983.

7. When the Inclined Wall Climber is plumb and level, tighten all fasteners and pour concrete footings within 4" to the top and taper away from support posts to allow water drainage. Allow to cure at least 48 hours before use.

IMPORTANT! Avoid creating any gaps between the components which fall between 3-1/2" and 9". It has been shown that such gaps create entrapment points which can trap a child and cause injury.

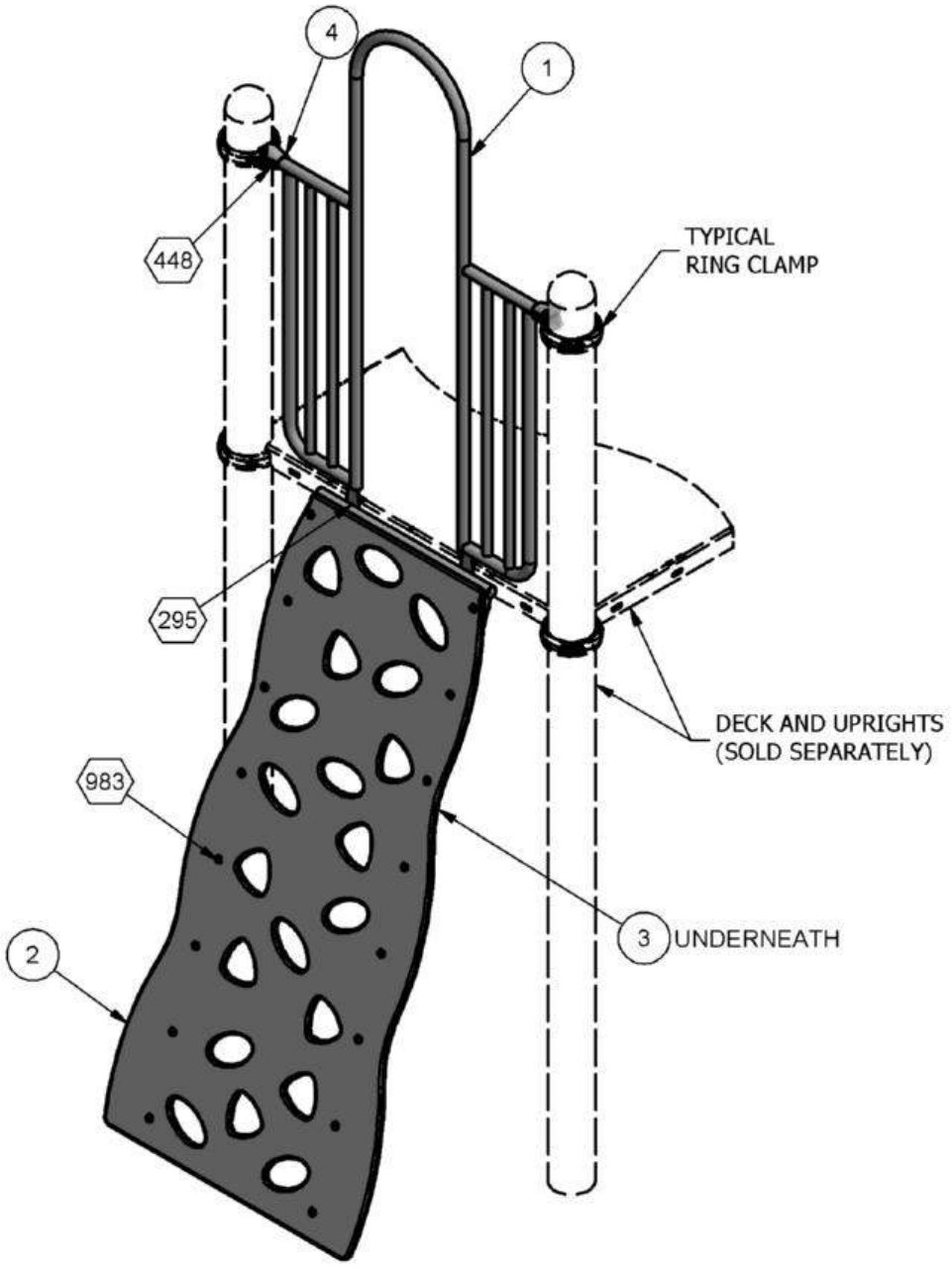
8. When the structure is finished and satisfactory, install Drive Rivets in all clamps to ensure clamps cannot slide down posts. See Ring Clamp subassembly sheets. ***It is very important that all Drive Rivets be installed prior to allowing use of the equipment, as clamps are not designed to support substantial weight without them***. Install resilient surfacing material within the use zone of play structure in accordance with ASTM specifications F1292 appropriate for the fall height of each structure. Refer to the *Safety Guidelines*. Eliminate sharp points and sharp edges (burring) on installed hardware like bolts, nuts, etc.

Note: To cushion accidental falls by children, it is strongly recommended that the area under and around the play structure must be covered with a resilient material, such as sand, mulch, etc., to a minimum depth of 10" for sand. Approved rubber safety matting can also be used. For details, please refer to your Safety Guidelines, provided within the assembly instruction packet.

MAINTENANCE PROCEDURE:

Periodically check hardware for tightness, and tighten as necessary. Always check parts for breakage or wear, and immediately put equipment out of service until any faulty parts are repaired or replaced. Check for rust, paint loss, and touch up if necessary with paint. Check for welded areas and verify integrity. Check all decks for peeling of Plastisol coating and touch up with Plastisol if necessary. Check for obstructed holes on deck, clean if necessary. Check for openings on plastic junctions and use clear silicone to fill. Check for cracks, gouges, or breakage on plastic. Check for integrity of plastic and keep plastic keep of any extraneous substances. Verify that any deformation does not create entrapment as specified on ASTM F1487 section 6. Periodically check resilient surfacing for appropriate depth, and remove extraneous materials that could cause injury, infection, or disease. Maintain detailed installation, inspection, maintenance, and repair records for each public-use playground equipment.

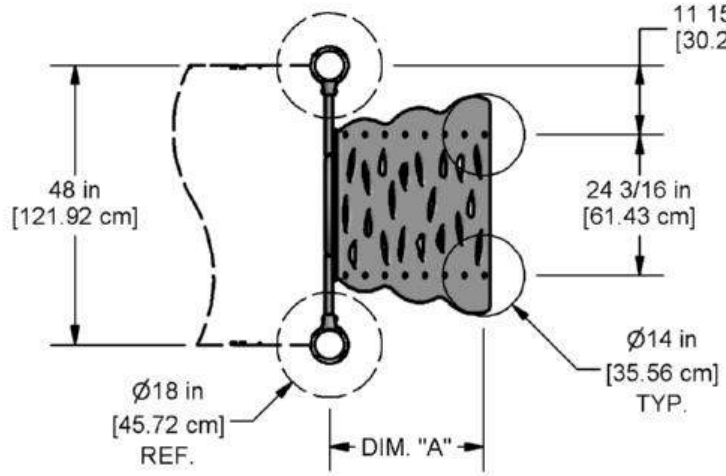
Inclined Wall Climber 71101 (2'-0"); 71102 (2'-8"); 71103 (3'-4"); 71104 (4'-0"); 71105 (4'-8"); 71106 (5'-4"); 71107 (6'-0")



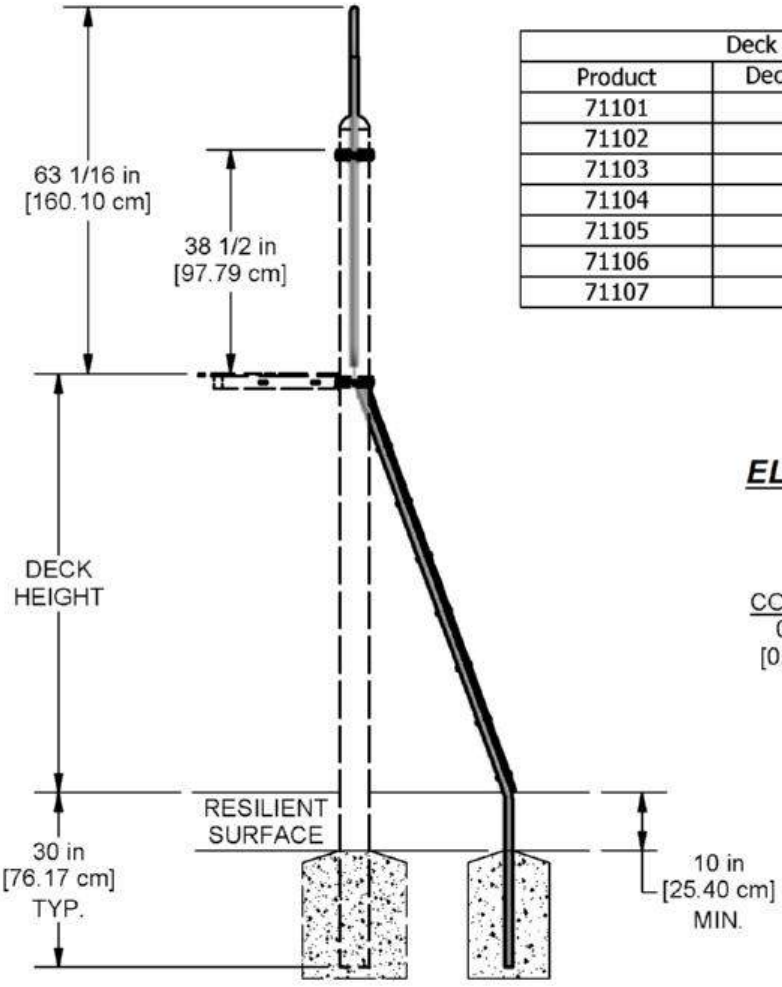
⬡ = INSTALLATION DETAIL

FINISHED ASSEMBLY
71107 - 6'-0" SHOWN

Inclined Wall Climber 71101 (2'-0"); 71102 (2'-8"); 71103 (3'-4"); 71104 (4'-0"); 71105 (4'-8"); 71106 (5'-4"); 71107 (6'-0")



PLAN VIEW

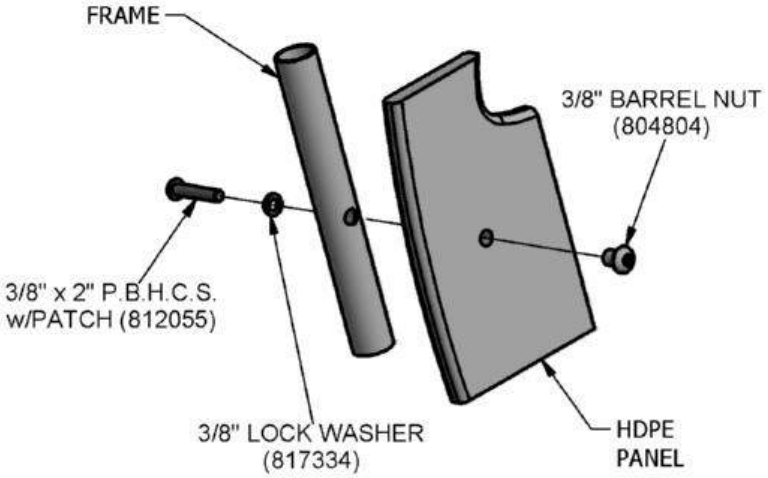


Deck Height Table		
Product	Deck Height	Dim. "A"
71101	2'-0"	9" [22.91cm]
71102	2'-8"	12" [30.30cm]
71103	3'-4"	15" [37.71cm]
71104	4'-0"	18" [45.11cm]
71105	4'-8"	20 1/2" [52.51cm]
71106	5'-4"	23 1/2" [59.91cm]
71107	6'-0"	26 1/2" [67.33cm]

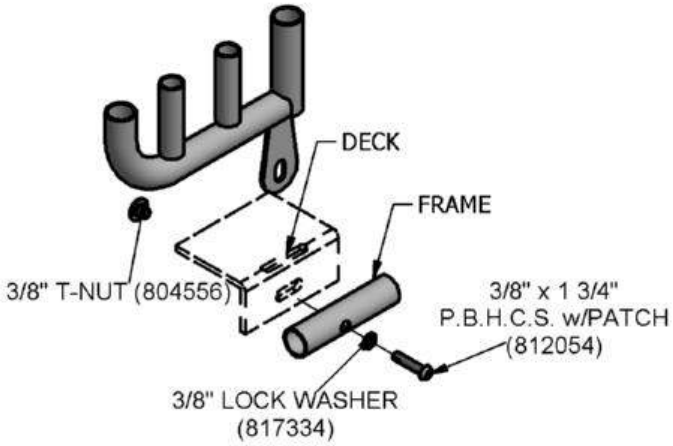
ELEVATION VIEW

CONCRETE REQUIRED
0.14 CUBIC YARDS
[0.10 CUBIC METERS]

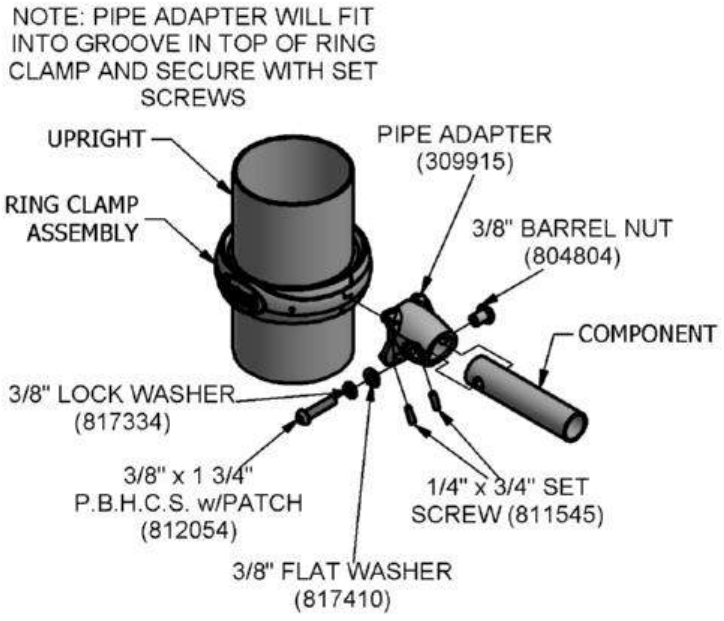
Inclined Wall Climber 71101 (2'-0"); 71102 (2'-8"); 71103 (3'-4"); 71104 (4'-0"); 71105 (4'-8"); 71106 (5'-4"); 71107 (6'-0")



983



295



448

SuperMax Play Systems

71249 Bench Seat

Parts List			
ITEM	DESCRIPTION	QTY	PART NUMBER
1	SEAT SUPPORT BEAM	1	302373
2	SEAT PANEL	1	302366
3	RING HALF CLAMP	2	309913
	-----HARDWARE COMPLETE-----	1	310705
	1/4" x 1" DRIVE RIVET	2	805302
	3/8" x 3/4" P.B.H.C.S. w/PATCH	4	812052
	3/8" x 1 1/4" P.B.H.C.S. w/PATCH	4	812051
	3/8" FLAT WASHER	8	817410
	3/8" FLAT WASHER (1 1/4" O.D.)	8	817424
	3/8" BARREL NUT	4	804804
	3/8" HEAVY HEX NUT	4	804200

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Note: Peen Tee-Nuts and Flatwashers to match radius of pipe after assembly is complete.
Note: Loctite (supplied by others) should be used on any non-patch hardware.

INSTALLATION INSTRUCTIONS:

1. Determine which uprights are to receive the Seat for Two and Table, refer to your overhead drawing for location. Dig footings at location and depth as shown.

2. Attach Seat Support Beam to Seat Panel using 3/8" x 3/4" P.B.H.C.S. w/Patch, 3/8" Flat Washers, and 3/8" Barrel Nuts as shown in Detail 517. Note: Counterbore holes are to be turned upwards to receive Barrel Nuts.

3. Fasten Seat Assembly to Upright Posts using Ring Half Clamps, 3/8" x 1 1/4" P.B.H.C.S. w/Patch, 3/8" Flat Washers, 3/8" Flat Washers (1 1/4" O.D.) and 3/8" Heavy Hex Nuts as shown in Detail 475.

4. When the entire assembly is plumb and level, tighten all fasteners and pour concrete footings within 4" to the top and taper away from support posts to allow water drainage. Allow to cure at least 48 hours before use.

IMPORTANT! Avoid creating any gaps between the components which fall between 3-1/2" and 9". It has been shown that such gaps create entrapment points which can trap a child and cause injury.

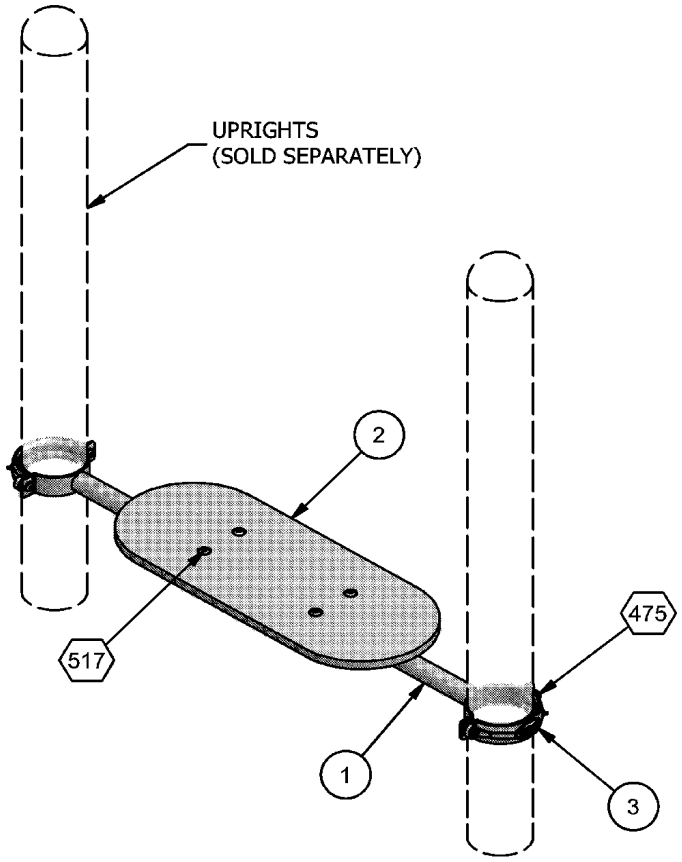
5. When the structure is finished and satisfactory, install Drive Rivets in all clamps to ensure clamps cannot slide down posts. See Ring Clamp subassembly sheets. ***It is very important that all Drive Rivets be installed prior to allowing use of the equipment, as clamps are not designed to support substantial weight without them***. Install resilient surfacing material within the use zone of play structure in accordance with ASTM specifications F1292 appropriate for the fall height of each structure. Refer to the *Safety Guidelines.* Eliminate sharp points and sharp edges (burring) on installed hardware like bolts, nuts, etc.

Note: To cushion accidental falls by children, Park Structures strongly recommends that the area under and around the play structure must be covered with a resilient material, such as sand, mulch, etc., to a minimum depth of 10" for sand. Approved rubber safety matting can also be used. For details, please refer to your Safety Guidelines, provided within the assembly instruction packet.

71249 Bench Seat

MAINTENANCE PROCEDURE:

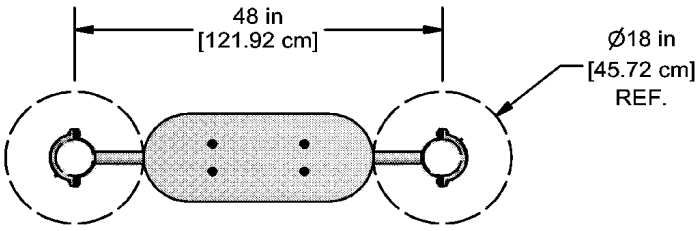
Periodically check hardware for tightness, and tighten as necessary. Always check parts for breakage or wear, and immediately put equipment out of service until any faulty parts are repaired or replaced. Check for rust, paint loss, and touch up if necessary with paint. Check for welded areas and verify integrity. Check all decks for peeling of Plastisol coating and touch up with Plastisol if necessary. Check for obstructed holes on deck, clean if necessary. Check for openings on plastic junctions and use clear silicone to fill. Check for cracks, gouges, or breakage on plastic. Check for integrity of plastic and keep plastic keep of any extraneous substances. Verify that any deformation does not create entrapment as specified on ASTM F1487 section 6. Periodically check resilient surfacing for appropriate depth, and remove extraneous materials that could cause injury, infection, or disease. Maintain detailed installation, inspection, maintenance, and repair records for each public-use playground equipment.



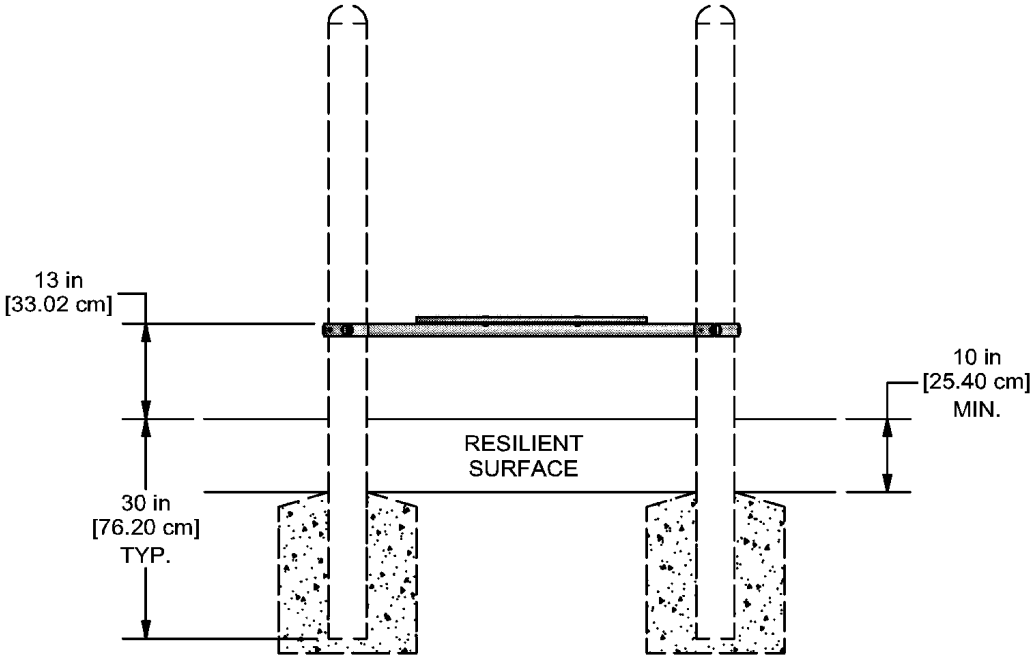
FINISHED ASSEMBLY

⬡ = INSTALLATION DETAIL

71249 Bench Seat

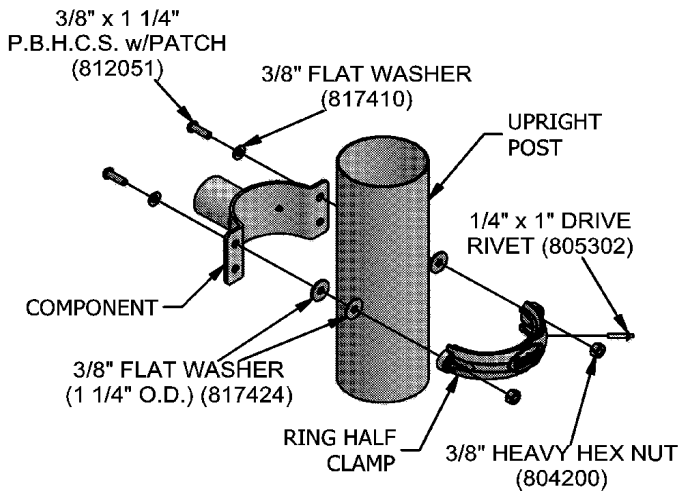


PLAN VIEW

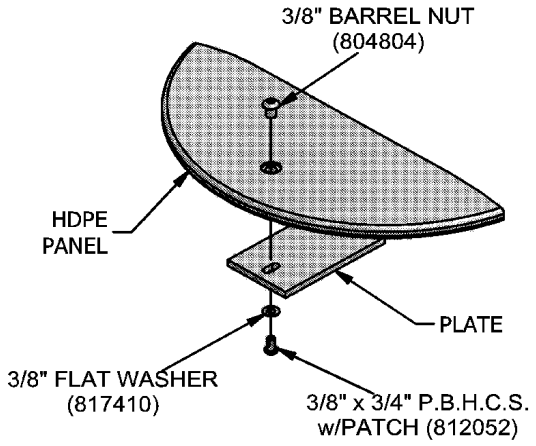


ELEVATION VIEW

71249 Bench Seat



475



517

SuperMax Play Systems

Vertical Access Ladder 71298 (2'-0"); 71299 (2'-8" & 3'-4"); 71300 (4'-0"); 71301 (4'-8" & 5'-4"); 71302 (6'-0")

Parts List							
ITEM	DESCRIPTION	71298	71299	71300	71301	71302	PART NUMBER
1	ENTRY ARCHWAY	1	1	1	1	1	309984
2	VERTICAL ACCESS LADDER	1	0	0	0	0	309816
2	VERTICAL ACCESS LADDER	0	1	0	0	0	309820
2	VERTICAL ACCESS LADDER	0	0	1	0	0	309823
2	VERTICAL ACCESS LADDER	0	0	0	1	0	309826
2	VERTICAL ACCESS LADDER	0	0	0	0	1	309829
3	PIPE ADAPTER	2	2	2	2	2	309915
	-----HARDWARE COMPLETE-----	1	0	1	0	1	310404
	-----HARDWARE COMPLETE-----	0	1	0	1	0	310405
4	EXTENSION	0	2	0	2	0	307623
	1/4" x 3/4" SET SCREW	4	4	4	4	4	811545
	3/8" x 1 1/4" P.B.H.C.S. w/PATCH	2	2	2	2	2	812051
	3/8" x 1 3/4" P.B.H.C.S. w/PATCH	2	2	2	2	2	812054
	3/8" x 2" HEX HEAD BOLT	0	2	0	2	0	801007
	3/8" FLAT WASHER	4	4	4	4	4	817410
	3/8" FLAT WASHER (1 1/4" O.D.)	2	2	2	2	2	817424
	3/8" LOCKWASHER	2	4	2	4	2	817334
	3/8" BARREL NUT	2	2	2	2	2	804804
	3/8" HEX NUT	0	2	0	2	0	804053
	3/8" LOCK NUT	2	2	2	2	2	804353

Unless Otherwise Specified, All Units of Measure are Each
Items listed below Hardware Complete line are included with Hardware Complete Number

Warning: During Installation, Hardware And Small Parts Are Choking Hazards For Young Children. Store Unused Parts Appropriately Until Assembly Is Completed. Once Assembly Is Completed, Remove Any Unused Parts From The Play Environment And Dispose/Save Them In A Secure Location. Any bolt end protruding more than two full threads beyond the face of the nut causes risk of clothing entanglement. Promptly cut-off flush, file smooth, and treat to prevent corrosion.

Note: Peen Tee-Nuts and Flatwashers to match radius of pipe after assembly is complete.
Note: Loctite (supplied by others) should be used on any non-patch hardware.

INSTALLATION INSTRUCTIONS:

1. Determine which deck is to receive the Vertical Access Ladder, refer to your overhead drawing for location. Dig footings at location and depth shown.

2. Using a 7/16" drill bit, ream out any excess "Plastisol" coating from any holes to be used on deck. Be careful not to expose the steel.

3. Loosely attach Ring Clamps to Uprights at noted height using information provided in Ring Clamp Installation Sheet.

4. Place the tabs at the bottom of the Entry Archway into the slots on the deck. Slip the Pipe Adapters onto the Entry Archway attachment pipes, then move the Entry Archway into position. Hook the Pipe Adapters onto the Ring Clamps and attach using 1/4" x 3/4" Set Screws as shown in Detail 448. Connect Entry Archway to Pipe Adapter using 3/8" x 1 3/4" P.B.H.C.S. w/Patch, 3/8" Lock Washer, 3/8" Flat Washers, and 3/8" Barrel Nuts as shown in Detail 448.

Vertical Access Ladder 71298 (2'-0"); 71299 (2'-8" & 3'-4"); 71300 (4'-0"); 71301 (4'-8" & 5'-4"); 71302 (6'-0")

5. Place Vertical Access Ladder into dug holes and attach to Entry Archway tabs and to the holes on the side of the deck using 3/8" x 1 1/4" P.B.H.C.S. w/Patch, 3/8" Flat Washers, 3/8" Flat Washers (1 1/4" O.D.), and 3/8" Lock Nuts as shown in Detail 439. Make sure the Entry Archway is plumb.

6. 71299 (3'-4") & 71301 (5'-4") Vertical Access Ladders must have Extension attached to the bottom of the legs. Attach Extensions to legs using 3/8" x 2" Hex Head Bolts, 3/8" Lock Washers, and 3/8" Hex Nuts as shown in Detail 095.

7. When the Vertical Access Ladder is plumb and level, tighten all fasteners and pour concrete footings within 4" to the top and taper away from support posts to allow water drainage. Allow to cure at least 48 hours before use.

IMPORTANT! Avoid creating any gaps between the components which fall between 3-1/2" and 9". It has been shown that such gaps create entrapment points which can trap a child and cause injury.

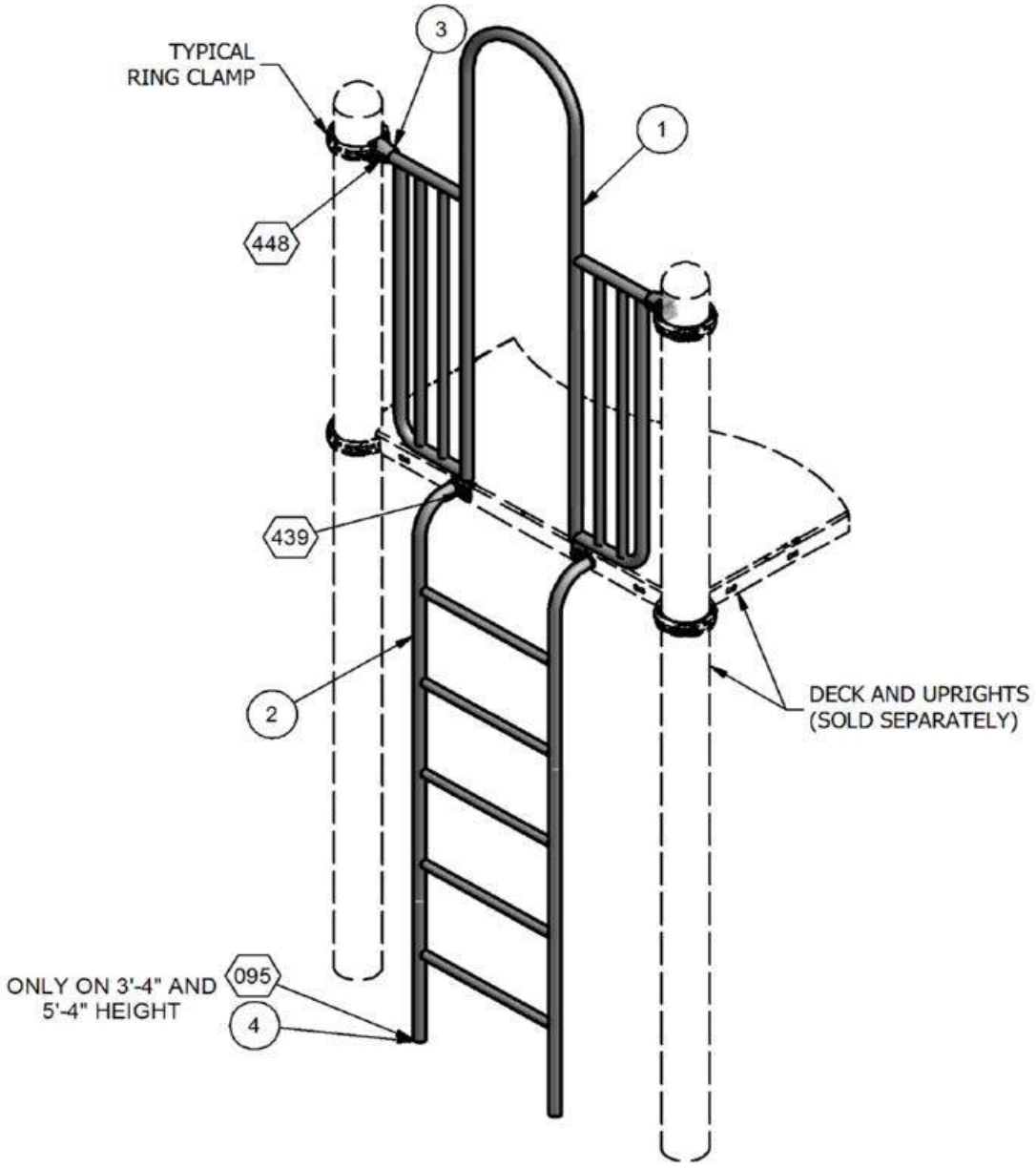
8. When the structure is finished and satisfactory, install Drive Rivets in all clamps to ensure clamps cannot slide down posts. See Ring Clamp subassembly sheets. ***It is very important that all Drive Rivets be installed prior to allowing use of the equipment, as clamps are not designed to support substantial weight without them***. Install resilient surfacing material within the use zone of play structure in accordance with ASTM specifications F1292 appropriate for the fall height of each structure. Refer to the *Safety Guidelines*. Eliminate sharp points and sharp edges (burring) on installed hardware like bolts, nuts, etc.

Note: To cushion accidental falls by children, it is strongly recommended that the area under and around the play structure must be covered with a resilient material, such as sand, mulch, etc., to a minimum depth of 10" for sand. Approved rubber safety matting can also be used. For details, please refer to your Safety Guidelines, provided within the assembly instruction packet.

MAINTENANCE PROCEDURE:

Periodically check hardware for tightness, and tighten as necessary. Always check parts for breakage or wear, and immediately put equipment out of service until any faulty parts are repaired or replaced. Check for rust, paint loss, and touch up if necessary with paint. Check for welded areas and verify integrity. Check all decks for peeling of Plastisol coating and touch up with Plastisol if necessary. Check for obstructed holes on deck, clean if necessary. Check for openings on plastic junctions and use clear silicone to fill. Check for cracks, gouges, or breakage on plastic. Check for integrity of plastic and keep plastic keep of any extraneous substances. Verify that any deformation does not create entrapment as specified on ASTM F1487 section 6. Periodically check resilient surfacing for appropriate depth, and remove extraneous materials that could cause injury, infection, or disease. Maintain detailed installation, inspection, maintenance, and repair records for each public-use playground equipment.

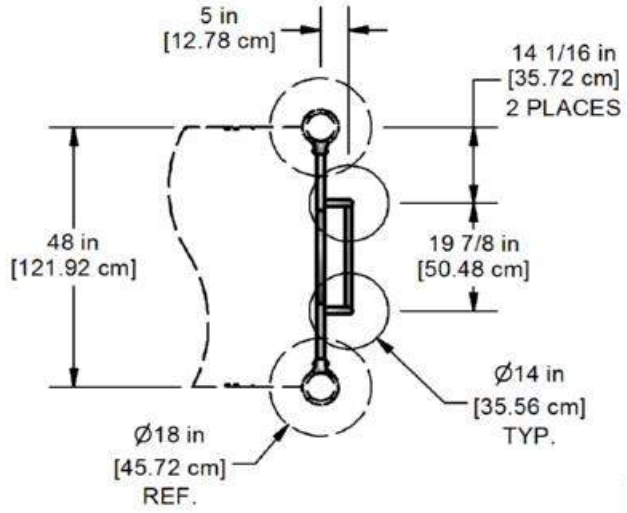
Vertical Access Ladder 71298 (2'-0"); 71299 (2'-8" & 3'-4"); 71300 (4'-0"); 71301 (4'-8" & 5'-4"); 71302 (6'-0")



⬡ = INSTALLATION DETAIL

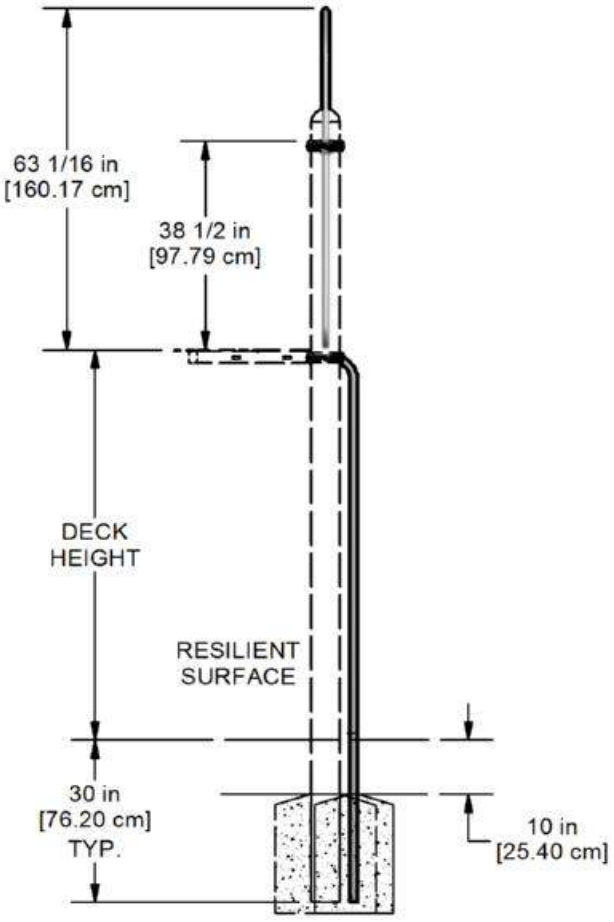
FINISHED ASSEMBLY
71302 - 6'-0" SHOWN

Vertical Access Ladder 71298 (2'-0"); 71299 (2'-8" & 3'-4"); 71300 (4'-0"); 71301 (4'-8" & 5'-4"); 71302 (6'-0")



PLAN VIEW

Deck Height Table	
Product	Deck Height
71298	2'-0"
71299	2'-8" or 3'-4"
71300	4'-0"
71301	4'-8" or 5'-4"
71302	6'-0"

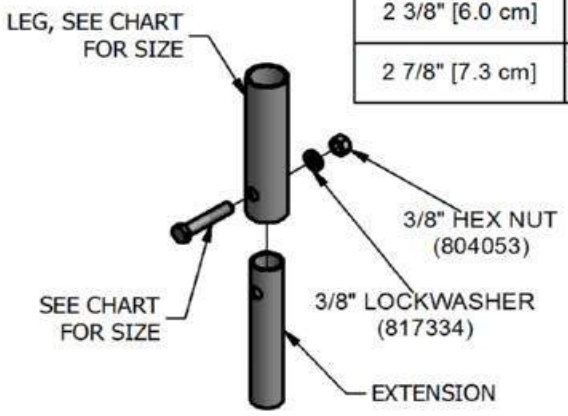


CONCRETE REQUIRED
0.14 CUBIC YARDS
[0.10 CUBIC METERS]

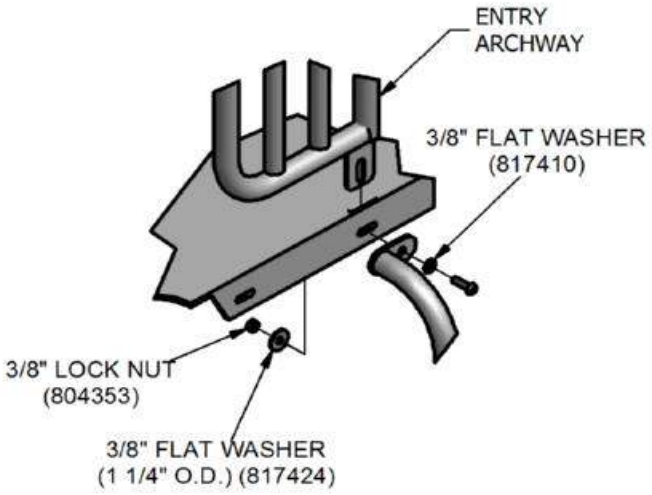
ELEVATION VIEW

Vertical Access Ladder 71298 (2'-0"); 71299 (2'-8" & 3'-4"); 71300 (4'-0"); 71301 (4'-8" & 5'-4"); 71302 (6'-0")

LEG (PIPE DIA.)	BOLT REQUIRED
1 5/16" [3.3 cm]	3/8" x 2" HEX HEAD (801007)
1 5/8" [4.1 cm]	3/8" x 2 1/2" HEX HEAD (801009)
1 7/8" [4.7 cm]	3/8" x 3" HEX HEAD (801011)
2 3/8" [6.0 cm]	3/8" x 3 1/2" HEX HEAD (801013)
2 7/8" [7.3 cm]	3/8" x 4" HEX HEAD (801015)

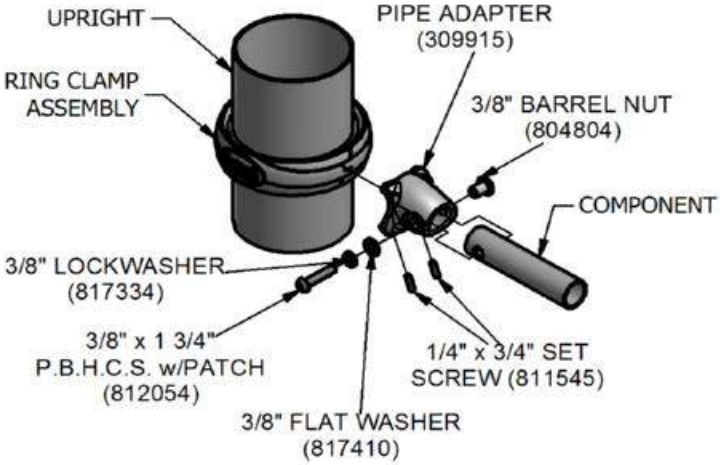


095



439

NOTE: PIPE ADAPTER WILL FIT INTO GROOVE IN TOP OF RING CLAMP AND SECURE WITH SET SCREWS



448

71674 1' STRAIGHT SECTION; 71715 2' STRAIGHT SECTION; 71675 CURVE LEFT SECTION; 71676 CURVE RIGHT SECTION; 71677 EXIT SECTION; 71678 SLIDE SUPPORT; 71902 SLIDE SUPPORT 2; 71903 LONG EXIT SECTION

Parts List									
DESCRIPTION	71674	71715	71675	71676	71677	71678	71902	71903	PART NUMBER
FOOTBUCK WELD ASS'Y	0	0	0	0	0	0	0	1	204879
1' STRAIGHT SECTION	1	0	0	0	0	0	0	0	205962
CURVED LEFT SECTION	0	0	1	0	0	0	0	0	205963
CURVED RIGHT SECTION	0	0	0	1	0	0	0	0	205964
SPIRAL SECTION	0	0	0	0	0	0	0	0	206170
EXIT SECTION	0	0	0	0	1	0	0	0	206179
2' STRAIGHT SECTION	0	1	0	0	0	0	0	0	207601
LONG EXIT SECTION	0	0	0	0	0	0	0	1	211303
SUPPORT ASS'Y 1	0	0	0	0	0	0	1	0	312634
SUPPORT ASS'Y 2	0	0	0	0	0	1	0	0	312637
FOOTBUCK	0	0	0	0	1	0	0	0	312779
HARDWARE COMPLETE	1	0	0	0	0	0	0	0	207032
HARDWARE COMPLETE	0	1	1	1	0	0	0	0	207033
HARDWARE COMPLETE	0	0	0	0	0	0	0	1	207035
HARDWARE COMPLETE	0	0	0	0	0	0	1	0	207036
HARDWARE COMPLETE	0	0	0	0	1	0	0	0	312781
HARDWARE COMPLETE	0	0	0	0	0	1	0	0	312782
6" EXTENSION	0	0	0	0	0	0	0	1	151080
EXTENSION LEG	0	0	0	0	0	0	1	0	152110
3/8" x 3/4" P.B.H.C.S. w/PATCH	0	0	0	0	4	0	0	4	812052
3/8" x 1" P.B.H.C.S. w/PATCH	2	4	4	4	0	2	2	0	812050
3/8" x 2 1/2" HEX HEAD BOLT	0	0	0	0	0	0	1	0	801009
3/8" x 3 1/2" HEX HEAD BOLT	0	0	0	0	0	0	0	1	801013
3/8" FLATWASHER	0	0	0	0	4	2	2	4	817410
3/8" HEX NUT	0	0	0	0	0	0	1	1	804053
3/8" BARREL NUT LONG	5	5	5	5	5	0	0	5	804820
1/2" FLAT WASHER (1 3/8" O.D.)	5	5	5	5	5	0	0	5	817425
3/8" x 2 1/4" P.B.H.C.S. w/PATCH	5	5	5	5	5	0	0	5	812056
3/8" FLAT WASHER (1 1/4" O.D.)	5	5	5	5	5	0	0	5	817424
3/8" LOCK WASHER	5	5	5	5	5	2	2	10	817334

Unless Otherwise Specified, All Units of Measure are Each

**Items listed below Hardware Complete line are included with Hardware Complete Number*

Warning: During Installation, Hardware And Small Parts Are Choking Hazards For Young Children. Store Unused Parts Appropriately Until Assembly Is Completed. Once Assembly Is Completed, Remove Any Unused Parts From The Play Environment And Dispose/Save Them In A Secure Location. Any bolt end protruding more than two full threads beyond the face of the nut causes risk of clothing entanglement. Promptly cut-off flush, file smooth, and treat to prevent corrosion.

Note: Peen Tee-Nuts and Flatwashers to match radius of pipe after assembly is complete.

Note: Loctite (supplied by others) should be used on any non-patch hardware.

71674 1' STRAIGHT SECTION; 71715 2' STRAIGHT SECTION; 71675 CURVE LEFT SECTION; 71676 CURVE RIGHT SECTION; 71677 EXIT SECTION; 71678 SLIDE SUPPORT; 71902 SLIDE SUPPORT 2; 71903 LONG EXIT SECTION

INSTALLATION INSTRUCTIONS:

1. Assemble slide sections on the ground. Bolt each section together using 3/8" Barrel Nut, 1/2" Lockwasher, 1/2" Flat Washer, 1/2" Flat Washer (1 3/8" O.D.), and 3/8" x 2 1/2" Threaded Stud. See Detail 787 and 852. **Note:** Hand tighten the five bolts that join each section. **Note:** Refer to your unit's top view for proper placement and orientation of each slide section.

2. Starting at the top section, tighten the five bolts with a wrench. Tighten the top 2 bolts first, the bottom single bolt second, then the remaining 2 bolts as shown, See Figure #1.

3. It is important that each seam between slide sections are as tight as possible. Be sure that the seams are flush or higher on the upper piece. See Figure #2.

4. After tightening all the pieces, if seam adjustment is necessary, slightly loosen the bolts in the area to be adjusted and repeat step 2 and 3 until seams are properly fitted.

5. Attach Footbuck to Exit Section using 3/8" x 3/4" P.B.H.C.S. w/Patch, 3/8" Lockwasher, and 3/8" Flatwasher. See Detail 195. **Note:** Check slide exit for proper water drainage before concrete is poured. **Note:** The slope of the exit region shall be between 0 and -10° as measured from a plane parallel to the underlying surface.

NOTE: Cut footbuck pipe and support pipe or adjust depth of footing holes to meet correct exit height as shown on exit height chart.

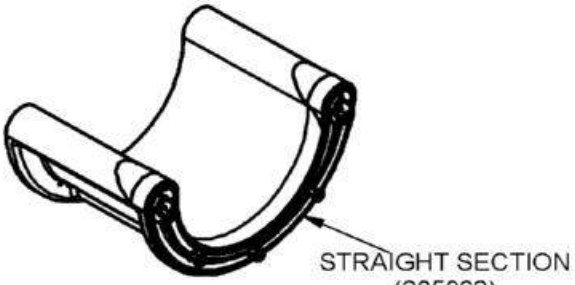
6. After the slide is adjusted and the bolts are tight, attach the slide supports (if required) using 3/8" x 1" P.B.H.C.S. w/Patch, 3/8" Lockwasher and 3/8" Flat Washer. See Detail 788. **NOTE: Refer to overall top view for slide support location.**

7. Use Detail 789 to plug inserts in Straight and Curved Sections as required with 3/8" x 1" P.B.H.C.S. w/Patch.

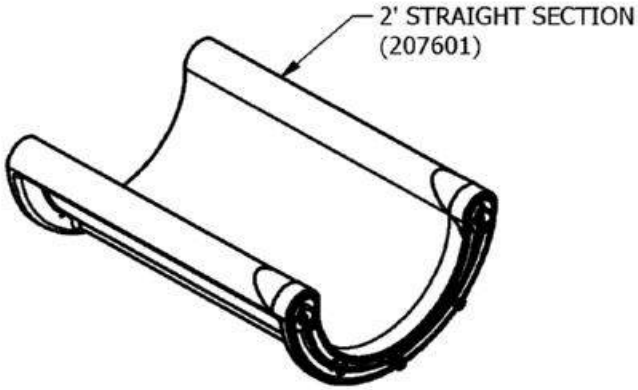
MAINTENANCE PROCEDURE:

Periodically check hardware for tightness, and tighten as necessary. Always check all parts for breakage or wear, and immediately put equipment out of service until any faulty parts found are repaired or replaced. Also Check all metal parts for rust, paint loss and touch-up if necessary with paint. Check for welded areas and verify integrity. Check periodically resilient surfacing for appropriate depth and remove extraneous materials that could cause injury, infection, or disease. Maintain detailed installation, inspection, maintenance, and repair records for each public-use playground equipment.

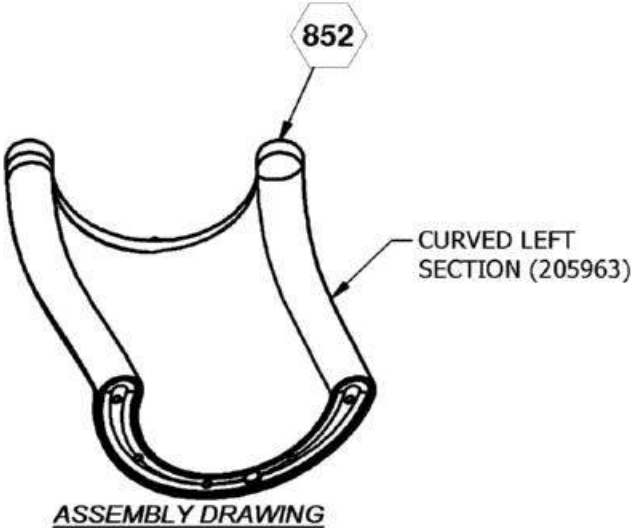
71674 1' STRAIGHT SECTION; 71715 2' STRAIGHT SECTION; 71675 CURVE LEFT SECTION; 71676 CURVE RIGHT SECTION; 71677 EXIT SECTION; 71678 SLIDE SUPPORT; 71902 SLIDE SUPPORT 2; 71903 LONG EXIT SECTION



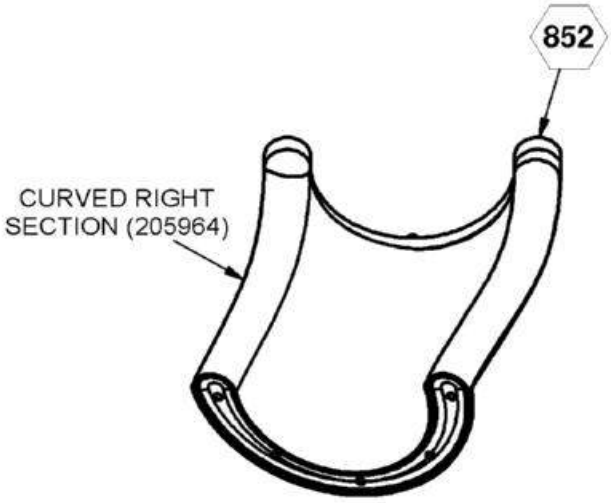
ASSEMBLY DRAWING
71674 SHOWN



ASSEMBLY DRAWING
71715 SHOWN



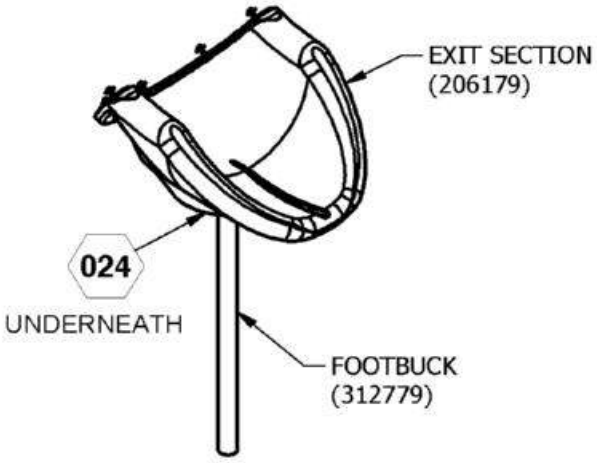
ASSEMBLY DRAWING
71675 SHOWN



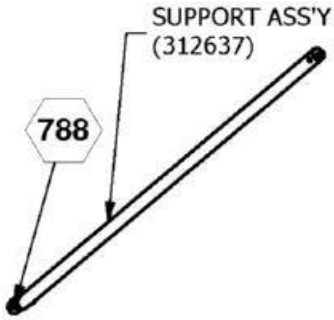
ASSEMBLY DRAWING
71676 SHOWN

⬡ = INSTALLATION DETAIL

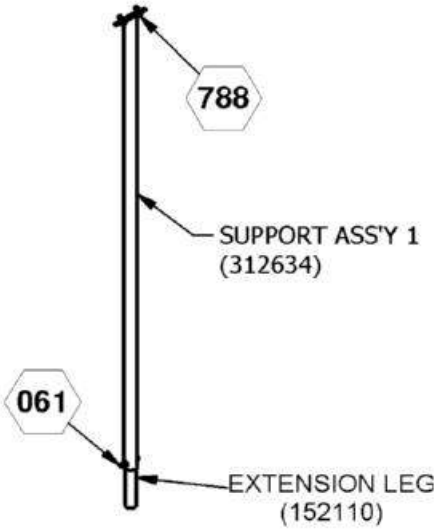
71674 1' STRAIGHT SECTION; 71715 2' STRAIGHT SECTION; 71675 CURVE LEFT SECTION; 71676 CURVE RIGHT SECTION; 71677 EXIT SECTION; 71678 SLIDE SUPPORT; 71902 SLIDE SUPPORT 2; 71903 LONG EXIT SECTION



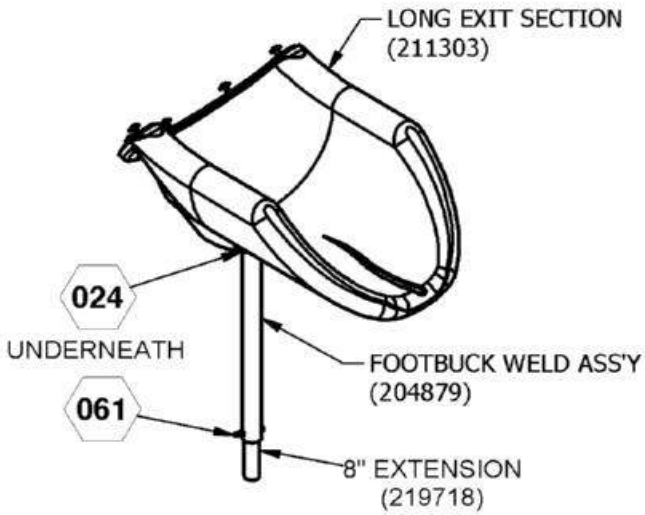
ASSEMBLY DRAWING
71677 SHOWN



ASSEMBLY DRAWING
71678 SHOWN



ASSEMBLY DRAWING
71902 SHOWN

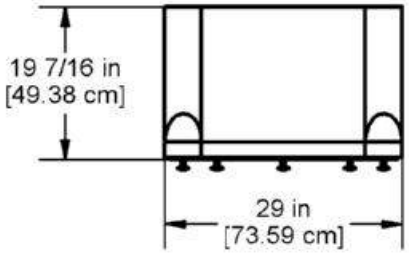


ASSEMBLY DRAWING
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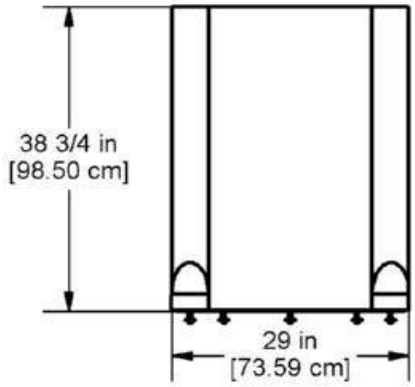
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Issued/Revised: 9/12/2022

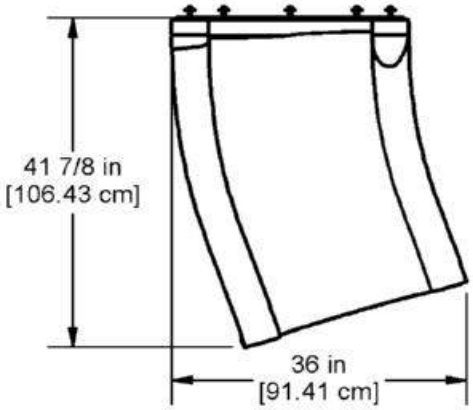
71674 1' STRAIGHT SECTION; 71715 2' STRAIGHT SECTION; 71675 CURVE LEFT SECTION; 71676 CURVE RIGHT SECTION; 71677 EXIT SECTION; 71678 SLIDE SUPPORT; 71902 SLIDE SUPPORT 2; 71903 LONG EXIT SECTION



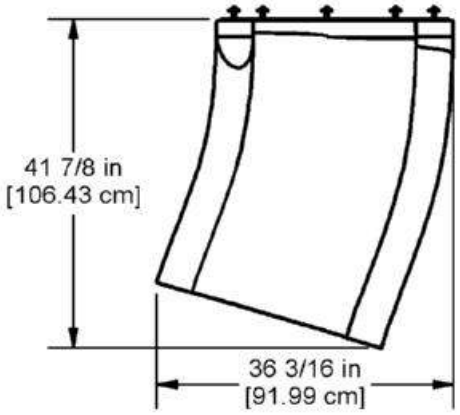
71674



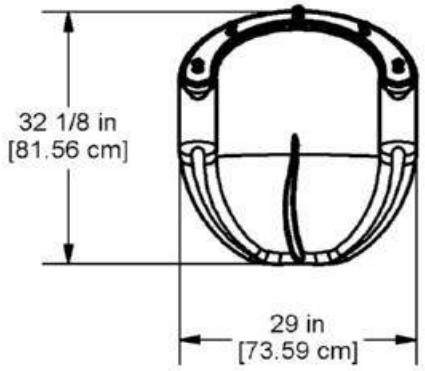
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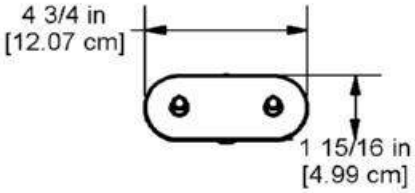
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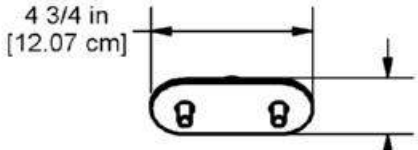
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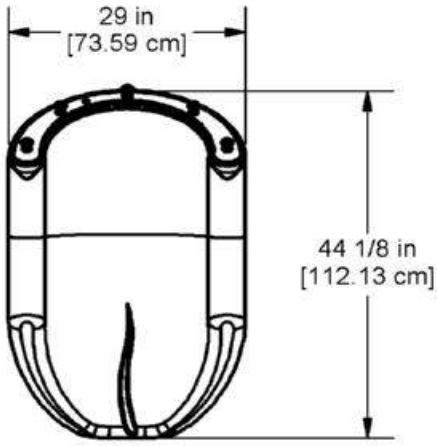
71677



71678



71902



71903

TOP VIEWS

71674 1' STRAIGHT SECTION; 71715 2' STRAIGHT SECTION; 71675 CURVE LEFT SECTION; 71676 CURVE RIGHT SECTION; 71677 EXIT SECTION; 71678 SLIDE SUPPORT; 71902 SLIDE SUPPORT 2; 71903 LONG EXIT SECTION

EXIT HEIGHT CHART -for- 4' and Under	
STANDARD	EXIT HEIGHT from SURFACING
ASTM	11" OR LESS
CSA	275mm OR LESS
EN	200mm OR LESS

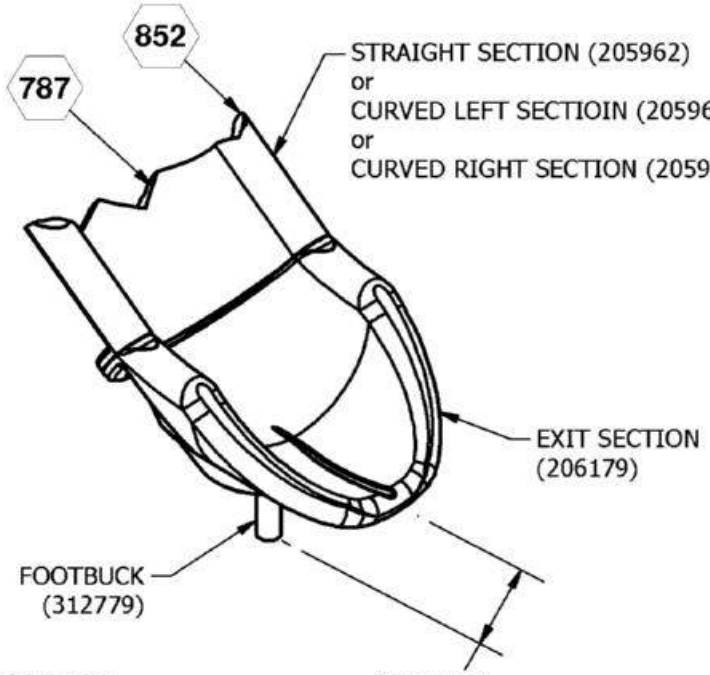
EXIT HEIGHT CHART -for- 4' 8" and Over	
STANDARD	EXIT HEIGHT from SURFACING
ASTM	7" TO 15"
CSA	175mm TO 380mm
EN	350mm OR LESS

NOTE: BEDWAY MUST NOT EXCEED 50° DOWNWARD ANGLE PER ASTM AND CSA STANDARD.

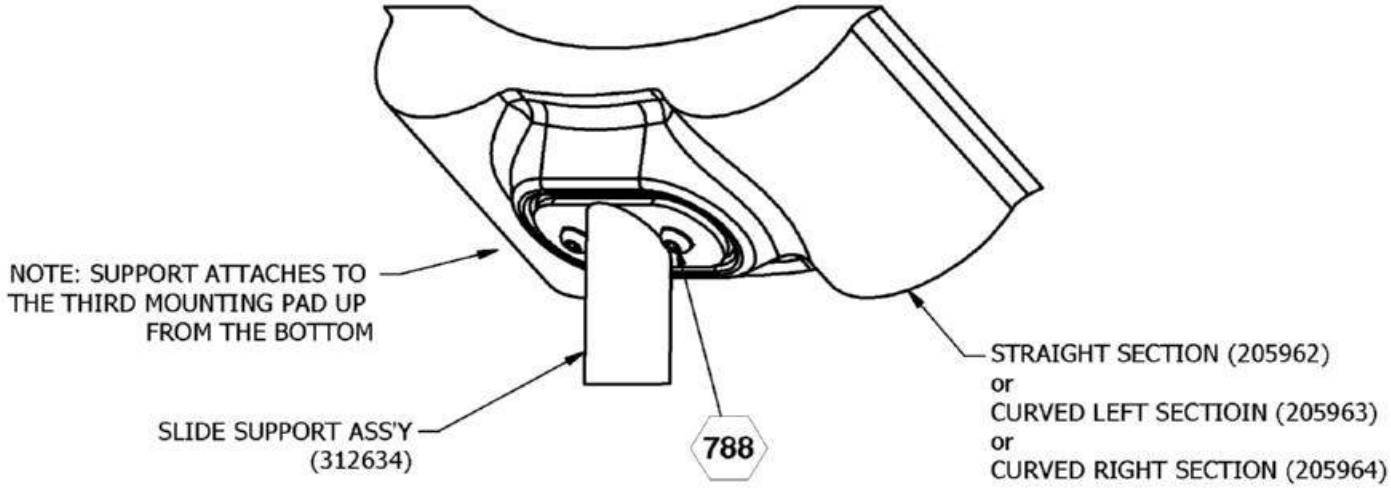
NOTE: THE SLOPE OF THE EXIT REGION SHALL BE BETWEEN 0 AND -10° AS MEASURED FROM A PLANE PARALLEL TO THE UNDERLYING SURFACE.

NOTE: CUT FOOTBUCK AND SUPPORT PIPE OR ADJUST DEPTH OF FOOTING HOLES TO MEET CORRECT EXIT HEIGHT AS SHOWN ON EXITH HEIGHT CHART.

NOTE: CHECK SLIDE EXIT FOR PROPER WATER DRAINAGE BEFORE CONCRETE IS POURED.



EXIT SECTION
ASSEMBLY DRAWING



SLIDE SUPPORT
ASSEMBLY DRAWING

71674 1' STRAIGHT SECTION; 71715 2' STRAIGHT SECTION; 71675 CURVE LEFT SECTION; 71676 CURVE RIGHT SECTION; 71677 EXIT SECTION; 71678 SLIDE SUPPORT; 71902 SLIDE SUPPORT 2; 71903 LONG EXIT SECTION

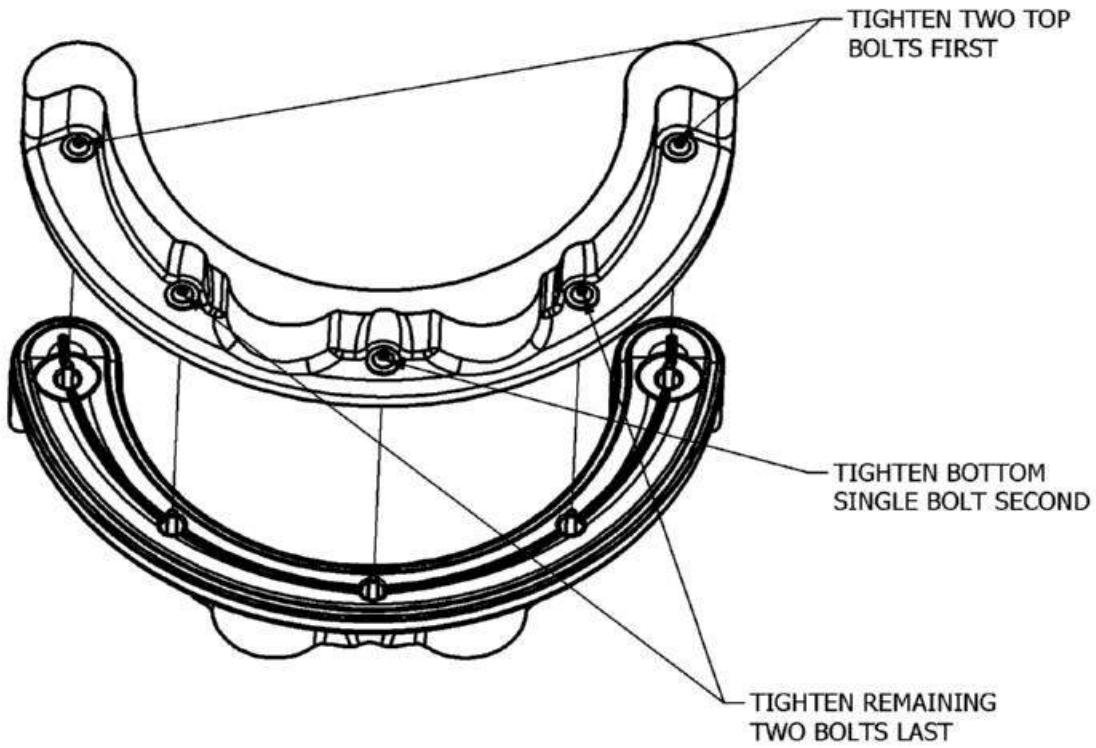


FIGURE #1

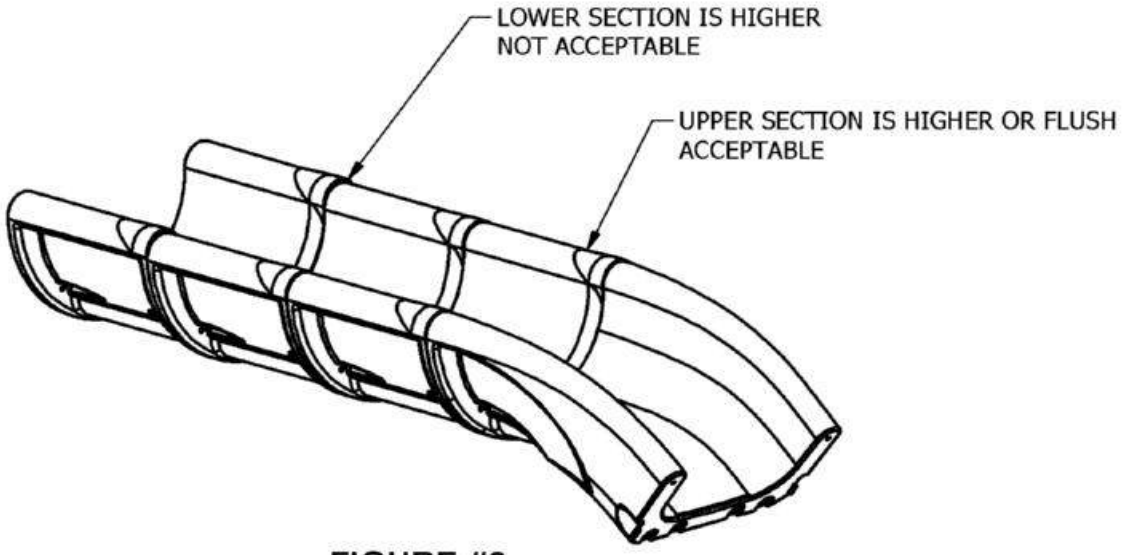
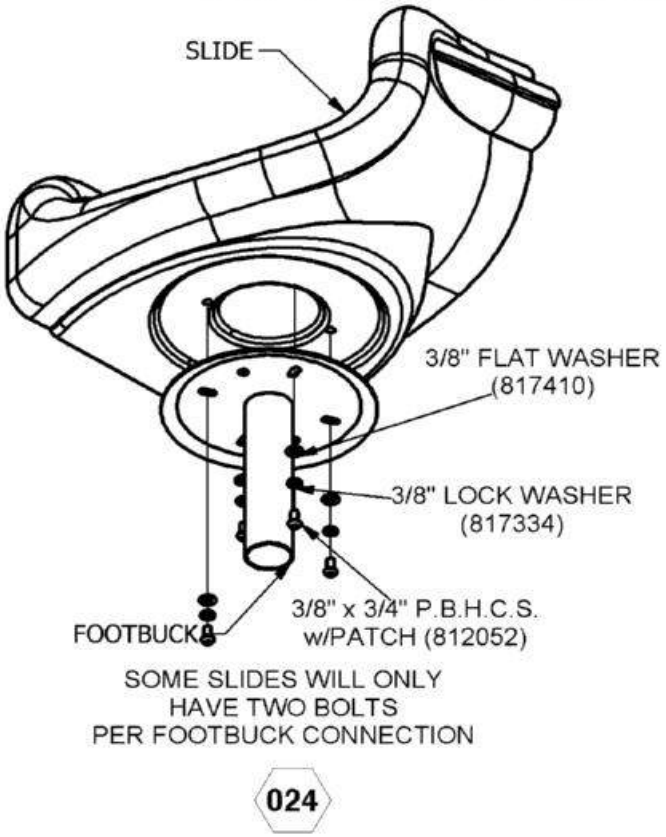


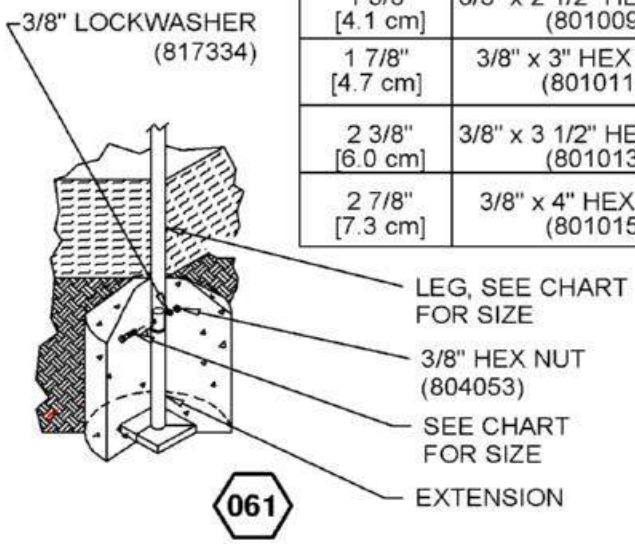
FIGURE #2

71674 1' STRAIGHT SECTION; 71715 2' STRAIGHT SECTION; 71675 CURVE LEFT SECTION; 71676 CURVE RIGHT SECTION; 71677 EXIT SECTION; 71678 SLIDE SUPPORT; 71902 SLIDE SUPPORT 2; 71903 LONG EXIT SECTION

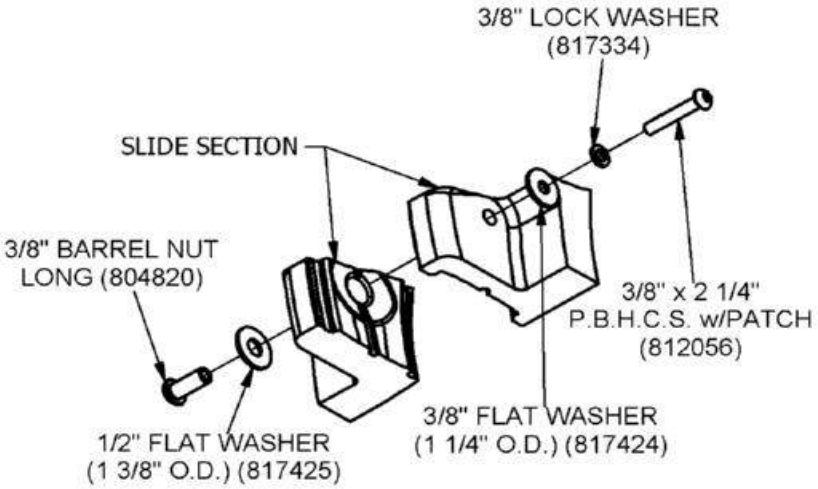


024

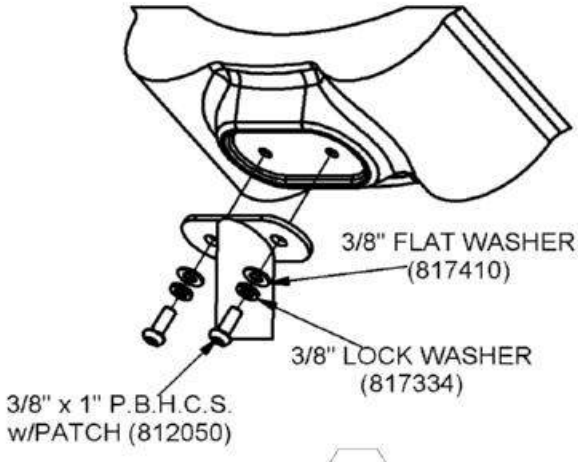
LEG (PIPE DIA.)	BOLT REQUIRED
1 5/16" [3.3 cm]	3/8" x 2" HEX HEAD (801007)
1 5/8" [4.1 cm]	3/8" x 2 1/2" HEX HEAD (801009)
1 7/8" [4.7 cm]	3/8" x 3" HEX HEAD (801011)
2 3/8" [6.0 cm]	3/8" x 3 1/2" HEX HEAD (801013)
2 7/8" [7.3 cm]	3/8" x 4" HEX HEAD (801015)



061

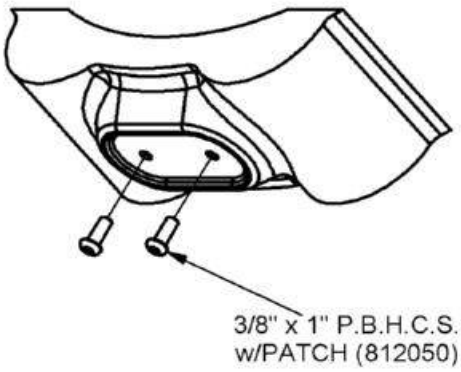


787

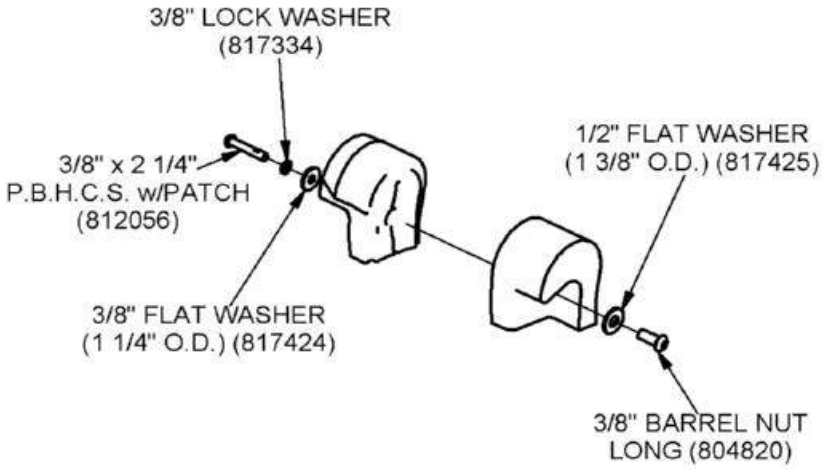


788

71674 1' STRAIGHT SECTION; 71715 2' STRAIGHT SECTION; 71675 CURVE LEFT SECTION; 71676 CURVE RIGHT SECTION; 71677 EXIT SECTION; 71678 SLIDE SUPPORT; 71902 SLIDE SUPPORT 2; 71903 LONG EXIT SECTION



789



852

SuperMax Play Systems

71718 TRIPLE SLIDE HOOD CASCADE

Parts List		
DESCRIPTION	QTY	PART NUMBER
TRIPLE ENTRANCE SECTION	1	206168
PIPE ADAPTER	2	309915
DECK ADAPTER	4	309921
AVALANCHE SEMI-HEX DECK	1	310851
DECK SUPPORT	1	310859
TRIPLE ENTRANCE SLIDEHOOD	1	312997
TRIPLE SLIDE SIDE ENCLOSURE	2	314614
HARDWARE COMPLETE	1	302747
1/4" x 3/4" SET SCREW	12	811545
3/8" x 3/4" P.B.H.C.S. w/PATCH	2	812052
3/8" x 1 1/4" P.B.H.C.S. w/PATCH	10	812051
3/8" x 1 3/4" P.B.H.C.S. w/PATCH	2	812054
3/8" x 2" THREADED ROD	2	803560
3/8" x 2 1/2" P.B.H.C.S. w/PATCH	2	812057
3/8" x 3 1/4" P.B.H.C.S. w/PATCH	1	812060
3/8" LOCK WASHER	7	817334
3/8" FLAT WASHER (1" O.D.)	2	817401
3/8" FLAT WASHER	2	817410
3/8" FLAT WASHER (1 1/4" O.D.)	15	817424
3/8" HEX NUT	1	804053
3/8" LOCK NUT	2	804353
3/8" BARREL NUT	2	804804

Unless Otherwise Specified, All Units of Measure are Each
**Items listed below Hardware Complete line are included with Hardware Complete Number*

Warning: During Installation, Hardware And Small Parts Are Choking Hazards For Young Children. Store Unused Parts Appropriately Until Assembly Is Completed. Once Assembly Is Completed, Remove Any Unused Parts From The Play Environment And Dispose/Save Them In A Secure Location. Any bolt end protruding more than two full threads beyond the face of the nut causes risk of clothing entanglement. Promptly cut-off flush, file smooth, and treat to prevent corrosion.

Note: Peen Tee-Nuts and Flatwashers to match radius of pipe after assembly is complete.
Note: Loctite (supplied by others) should be used on any non-patch hardware.

71718 TRIPLE SLIDE HOOD CASCADE

INSTALLATION INSTRUCTIONS:

1. Determine which deck is to receive the slide and dig footing at location shown in Top View. Refer to the Elevation View for footing depth.
2. Using a 7/16" drill bit, ream out any excess Plastisol coating from all holes used on deck. Be careful not to expose the steel.
3. Attach the Ring Clamps to the Uprights. See Ring Clamp Installation Sheet.
4. Attach Deck Adapters to the Ring Clamps using 1/4" x 3/4" Set Screw. Do not overtighten Set Screws. Deck Adapters should still rotate on Ring Clamp. See Detail 447.
5. Attach Avalanche Semi-Hex Deck to the Deck Adapters using 3/8" x 1 1/4" P.B.H.C.S. w/Patch, 3/8" Flat Washer (1 1/4" O.D.), and 3/8" Lock Washers shown in Detail 447. Plumb and level uprights and brace in position.
6. Locate Deck Support and remove material to match required deck height. See Deck Support Chart.
7. Attach Deck Support to underside of Avalanche Semi-Hex Deck using 3/8" x 3 1/4" P.B.H.C.S. w/Patch, 3/8" Flat Washer (1 1/4" O.D.), 3/8" Lock Washer, and 3/8" Hex Nut. See Detail 548.
8. Attach Triple Slide Side Enclosure to Triple Entrance Slidehood using 3/8" x 2" Threaded Rod. See Detail 705.
9. Attach Pipe Adapters to Triple Slide Side Enclosure using 3/8" x 1 3/4" P.B.H.C.S. w/Patch, 3/8" Lock Washer, 3/8" Flat Washer, and 3/8" Barrel Nut as shown in Detail 448. Be aware of orientation of Pipe Adapters as it is critical. Hook the Pipe Adapters onto the Ring Clamps and attach using 1/4" x 3/4" Set Screws. See Detail 448.
10. Attach Triple Slide Side Enclosure to Deck using 3/8" x 3/4" P.B.H.C.S. w/Patch, 3/8" Flat Washer (1 1/4" O.D.), and 3/8" Lock Nut. See Detail 449.
11. Attach Triple Entrance Section to Deck using 3/8" x 1 1/4" P.B.H.C.S. w/Patch and 3/8" Flat Washer (1 1/4" O.D.). See Detail 136.
12. Attach Triple Entrance Section to Triple Entrance Slidehood using 3/8" x 1 1/4" P.B.H.C.S. w/Patch and 3/8" Flat Washer (1 O.D.). See Detail 708.
13. When the Slide is plumb and level, tighten all fasteners and pour concrete footings within 4" to the top and taper away from supports to allow drainage. Allow to cure at least 48 hours before use.

IMPORTANT! Avoid creating any gaps between the components which fall between 3-1/2" and 9". It has been shown that such gaps create entrapment points which can trap a child and cause injury.

14. When structure is finished and satisfactory, tighten all fasteners and install Drive Rivets in all clamps to ensure clamps cannot slide down posts. See Pipe Clamp sub-assembly sheet. ***It is very important that all Drive Rivets be installed prior to allowing use of equipment, as clamps are not designed to support substantial weight without them.*** Also Eliminate sharp points and sharp edges (burring) on installed hardware like bolts, nuts, etc. Install resilient surfacing material within the use zone of play structure in accordance with ASTM specifications F1292 appropriate for the fall height of each structure. Refer to the Safety Guidelines.

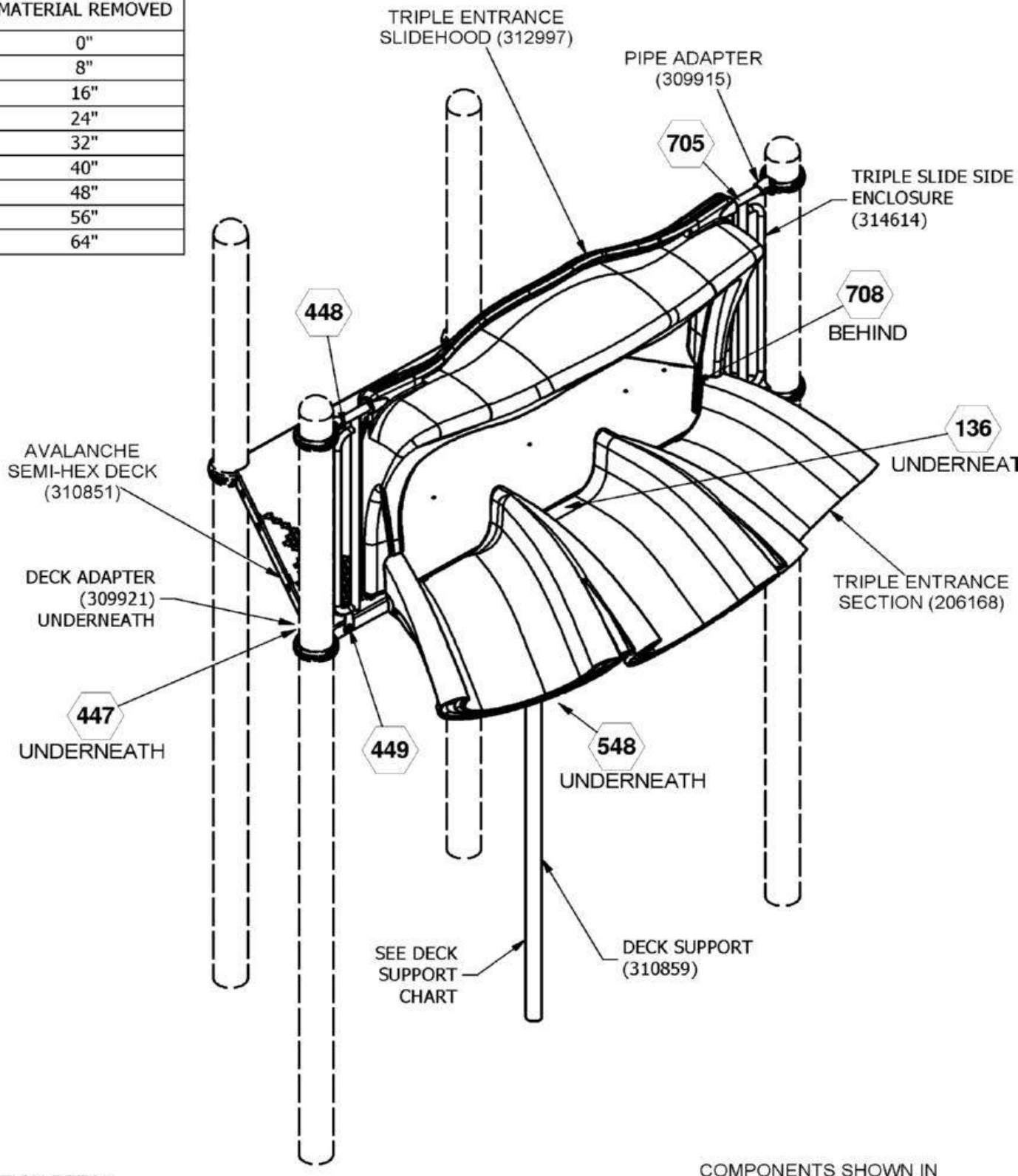
MAINTENANCE PROCEDURE:

Periodically check hardware for tightness, and tighten as necessary. Always check all parts for breakage or wear, and immediately put equipment out of service until any faulty parts found are repaired or replaced. Also Check all metal parts for rust, paint loss and touch-up if necessary with paint. Check for welded areas and verify integrity. Check periodically resilient surfacing for appropriate depth and remove extraneous materials that could cause injury, infection, or disease. Maintain detailed installation, inspection, maintenance, and repair records for each public-use playground equipment.

SuperMax Play Systems

71718 TRIPLE SLIDE HOOD CASCADE

DECK SUPPORT CHART	
DECK HEIGHT	MATERIAL REMOVED
8'	0"
7'-4"	8"
6'-8"	16"
6'-0"	24"
5'-4"	32"
4'-8"	40"
4'-0"	48"
3'-4"	56"
2'-8"	64"



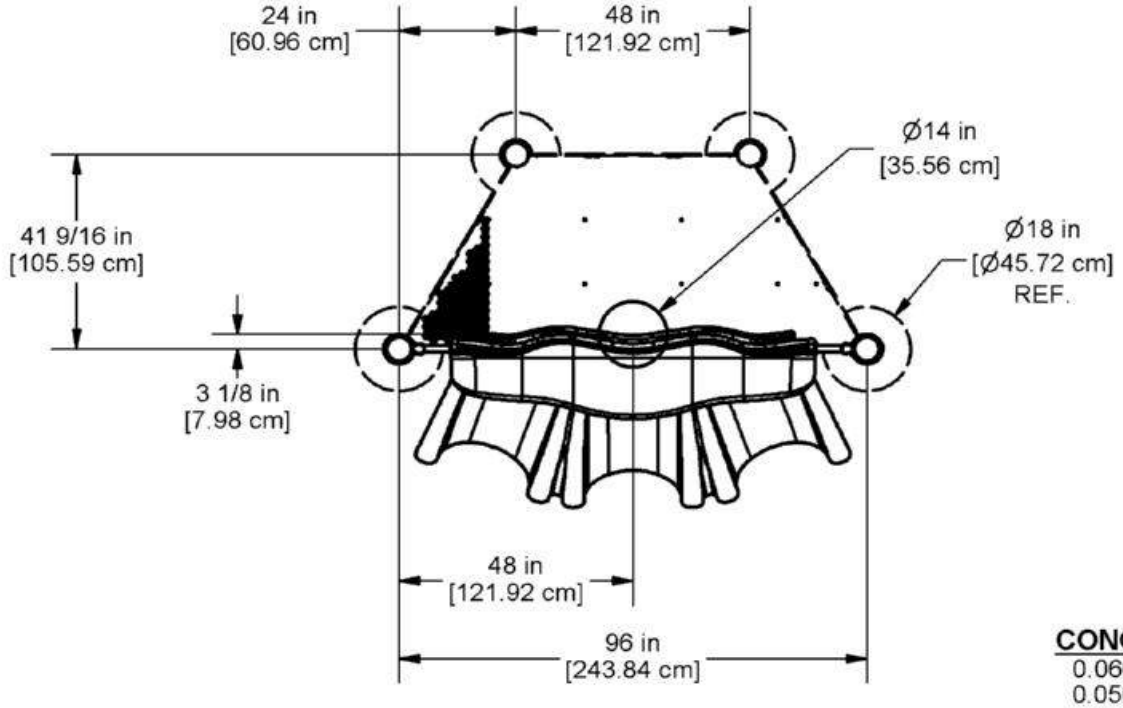
⬡ = INSTALLATION DETAIL

COMPONENTS SHOWN IN HIDDEN LINES ARE SOLD SEPARATELY

Issued/Revised: 8/4/2023

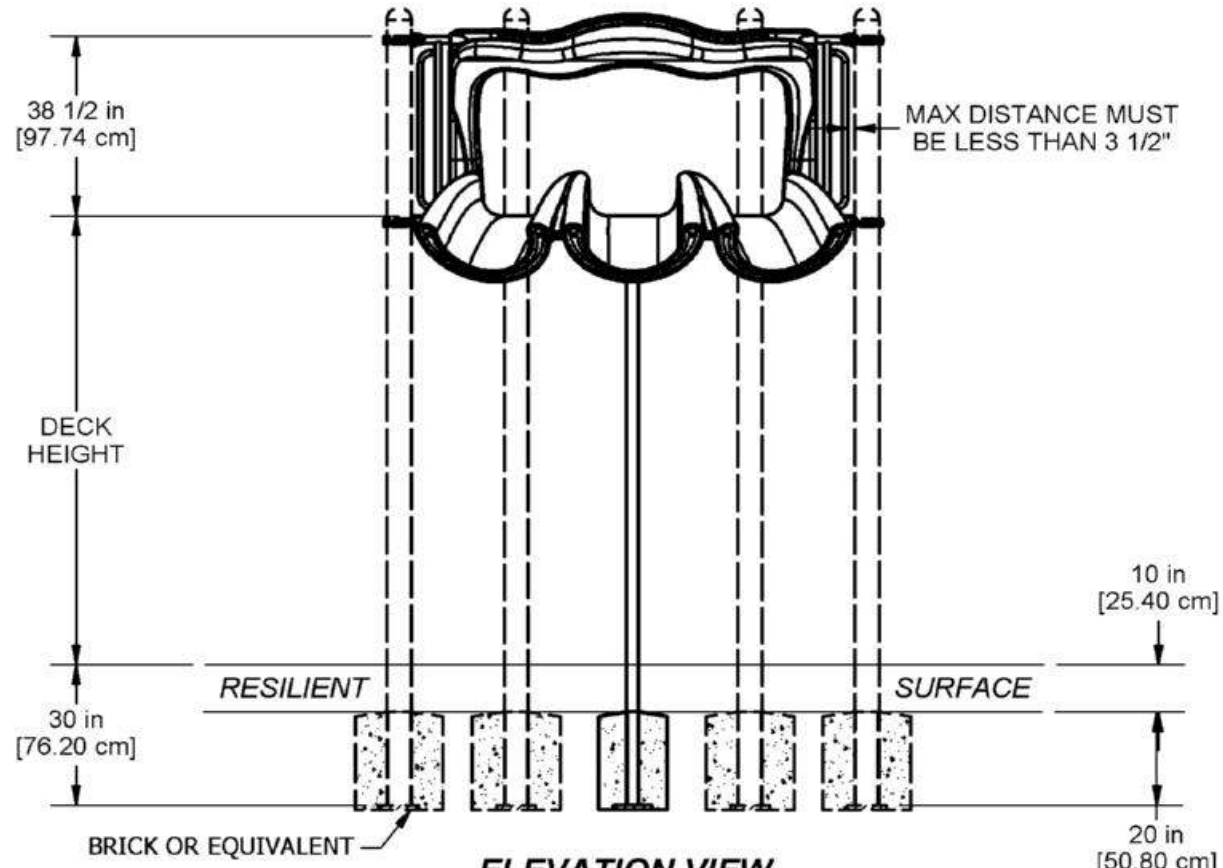
FINISHED ASSEMBLY

71718 TRIPLE SLIDE HOOD CASCADE



CONCRETE REQUIRED
0.066 CUBIC YARDS
0.050 [CUBIC METERS]

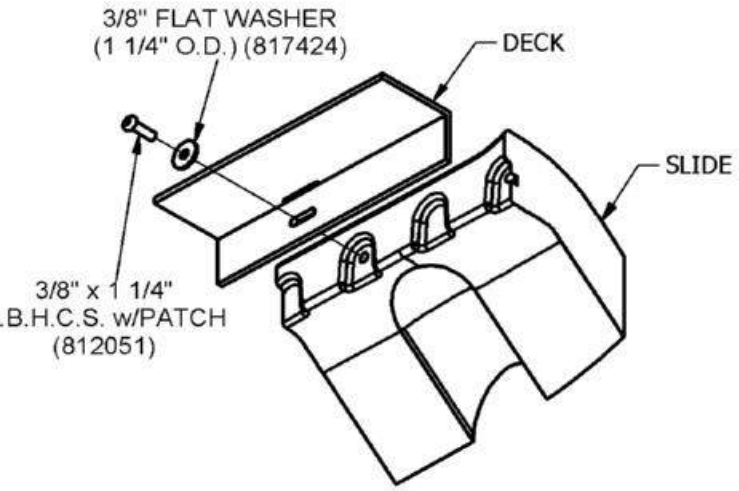
PLAN VIEW



ELEVATION VIEW

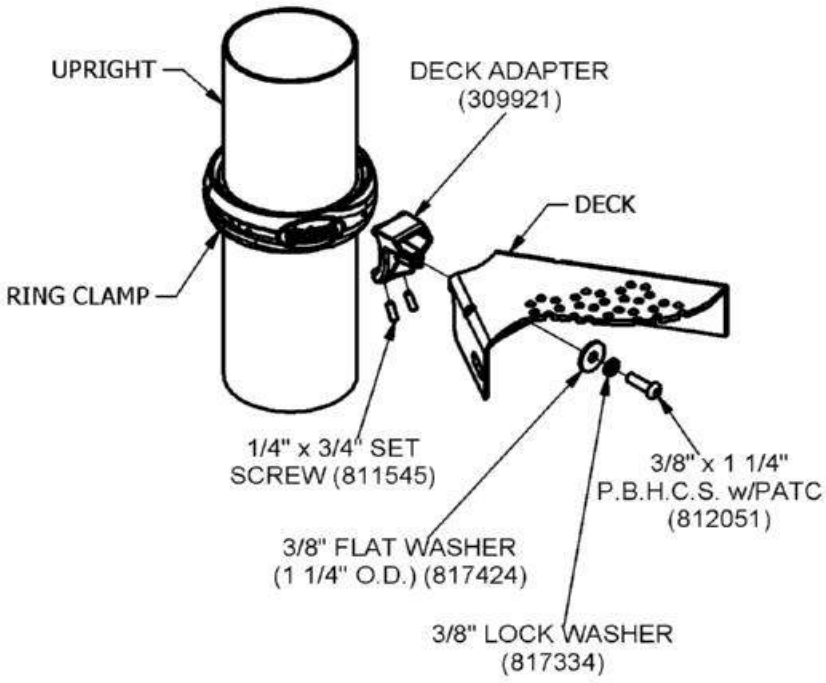
Issued/Revised: 8/4/2023

71718 TRIPLE SLIDE HOOD CASCADE



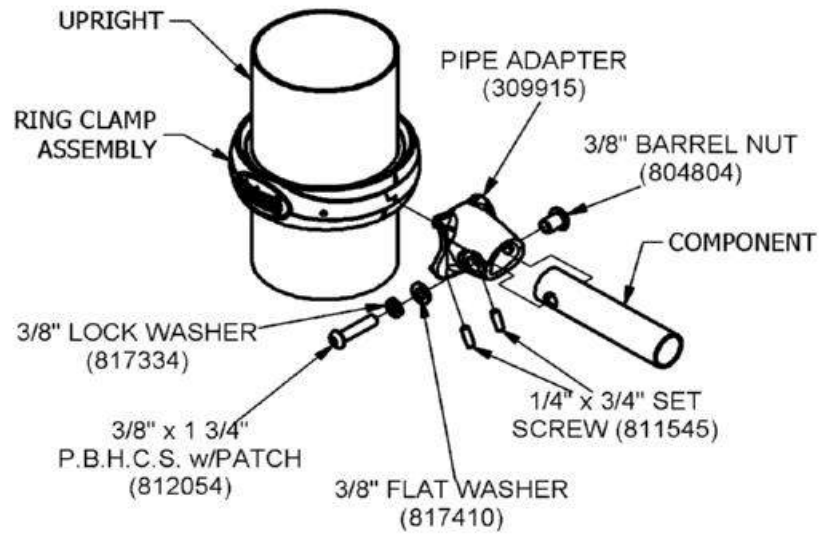
136

NOTE: DECK ADAPTER WILL FIT INTO GROOVE IN TOP OF RING CLAMP AND SECURE WITH SET SCREWS

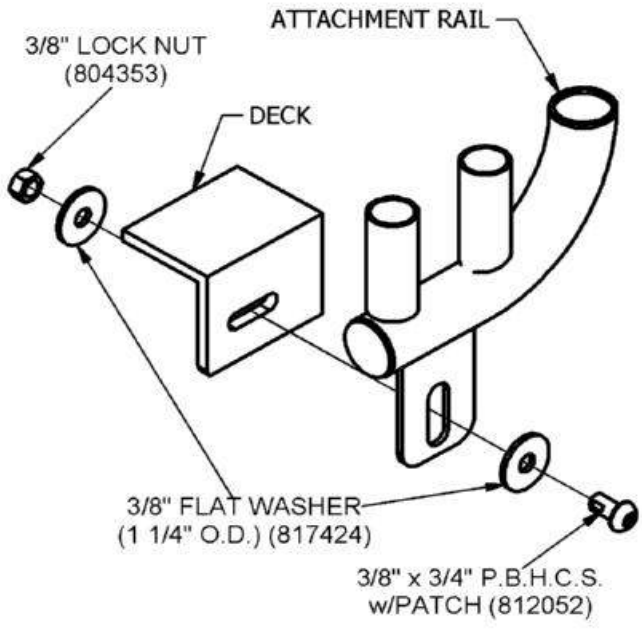


447

NOTE: PIPE ADAPTER WILL FIT INTO GROOVE IN TOP OF RING CLAMP AND SECURE WITH SET SCREWS

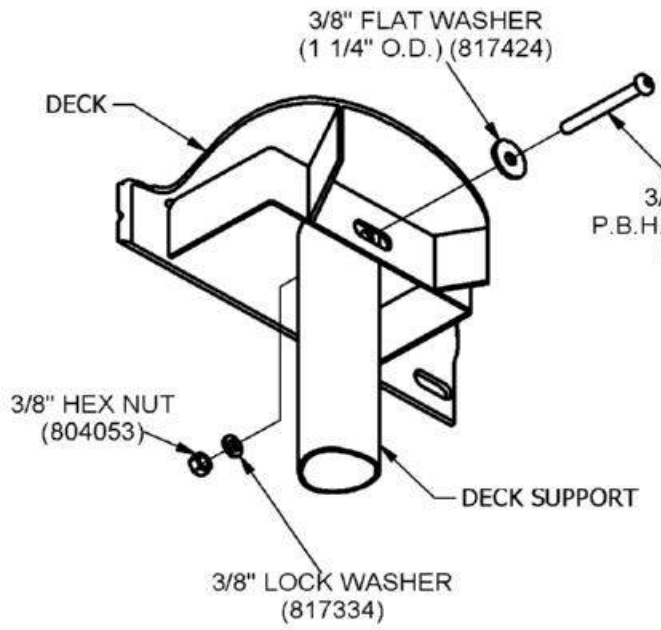


448

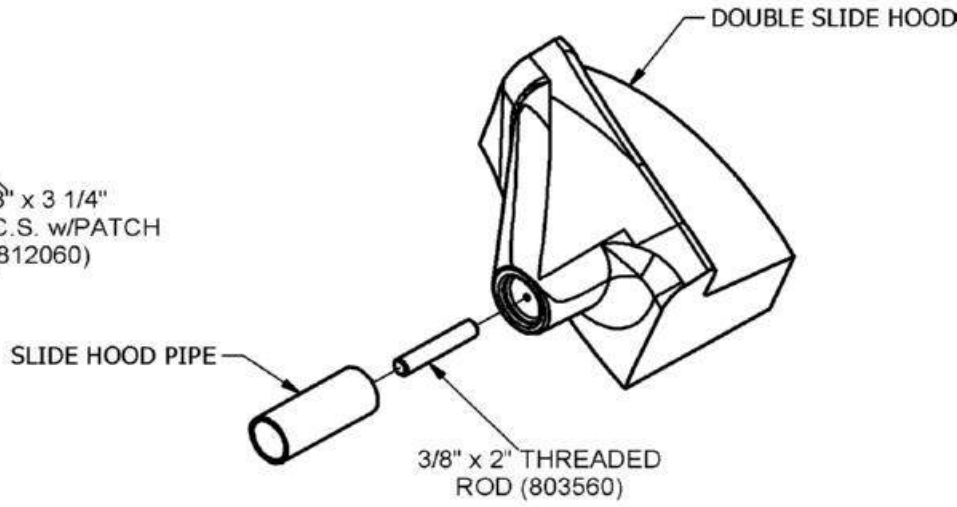


449

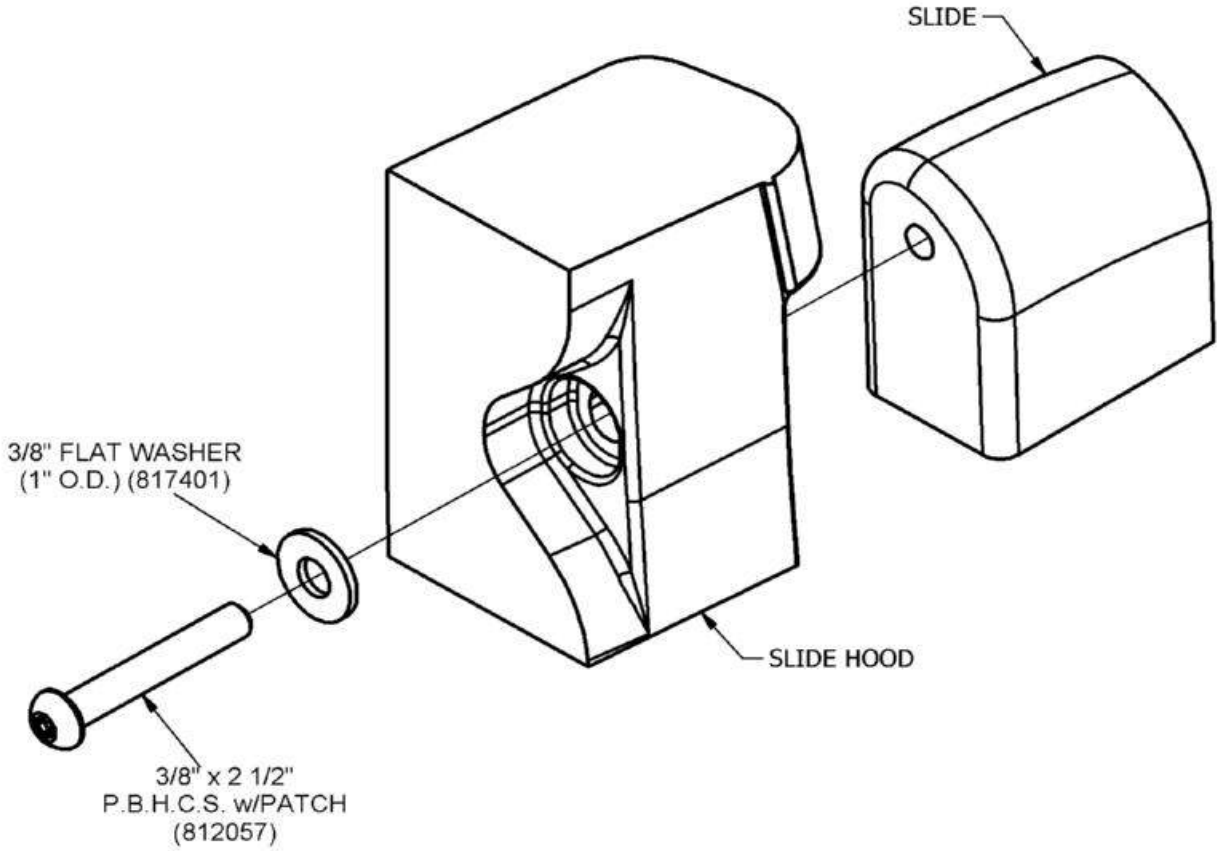
71718 TRIPLE SLIDE HOOD CASCADE



548



705



708

71748 BUZZ GAME PANEL ROTOGEN

Parts List		
DESCRIPTION	QTY	PART NUMBER
BUZZ REACTION GAME w/ BACK 20" ROTOGEN	1	218228
SUPPORT PIPE	2	307586
PANEL ADAPTER	2	309919
SM ACTIVITY PANEL	1	313586
HARDWARE COMPLETE	1	313459
1/4" x 3/4" SET SCREW	4	811545*
3/8" x 1" P.B.H.C.S. w/PATCH	2	812050*
3/8" x 2 1/4" P.B.H.C.S. w/PATCH	6	812056*
3/8" x 2 3/4" P.B.H.C.S. w/PATCH	4	812058*
3/8" FLAT WASHER	8	817410*
3/8" FLAT WASHER (1 1/4" O.D.)	6	817424*
3/8" LOCK NUT	2	804353*
3/8" BARREL NUT	10	804804*

Unless Otherwise Specified, All Units of Measure are Each
**Items listed below Hardware Complete line are included with Hardware Complete Number*

Warning: During Installation, Hardware And Small Parts Are Choking Hazards For Young Children. Store Unused Parts Appropriately Until Assembly Is Completed. Once Assembly Is Completed, Remove Any Unused Parts From The Play Environment And Dispose/Save Them In A Secure Location. Any bolt end protruding more than two full threads beyond the face of the nut causes risk of clothing entanglement. Promptly cut-off flush, file smooth, and treat to prevent corrosion.

Note: Peen Tee-Nuts and Flatwashers to match radius of pipe after assembly is complete.
Note: Loctite (supplied by others) should be used on any non-patch hardware.

71748 BUZZ GAME PANEL ROTOGEN

INSTALLATION INSTRUCTIONS:

1. Attach Buzz Game Panel Ass'y and the Two Half Rings to SM Activity Panel using 3/8" x 2 1/4" P.B.H.C.S. w/Patch, 3/8" Flat Washer, and 3/8" Barrel Nut. Make sure the recesses on the Half Rings face away from Activity Panel, and the 3/8" Barrel Nuts are placed in the recesses. See Detail 816.

2. Attach the 1/2" thick HDPE Buzz Game Back Cover to the Half Rings, SM Activity Panel and Buzz Game Panel using 3/8" x 2 3/4" P.B.H.C.S. w/Patch, 3/8" Flat Washer, and 3/8" Barrel Nut. as shown in Detail 817.

3. Attach Panel Adapter to Activity Panel using 3/8" x 2 1/4" P.B.H.C.S. w/Patch, 3/8" Flat Washer (1 1/4" O.D.), 1/4" x 3/4" Set Screw, and 3/8" Barrel Nut. See Detail 450.

4. Place Support Pipes in slots of deck and attach using 3/8" x 1" P.B.H.C.S. w/Patch, 3/8" Flat Washers (1 1/4" O.D.) and 3/8" Lock Nut. See Detail 188. Slide Activity Panel onto the Support Pipes. **Note:** Pipes are smashed to one side. Refer to Detail for orientation.

5. Slide Activity Panel onto the Support Pipes. Then attach 3 1/2" O.D. Deck Clamps to uprights using 3/8" x 1 1/2" P.B.H.C.S. w/Patch, 3/8" Heavy Hex Nut, and 1/4" x 3/4" Drive Rivet. See Detail 052.

6. Plumb and level the entire assembly and tighten all fasteners.

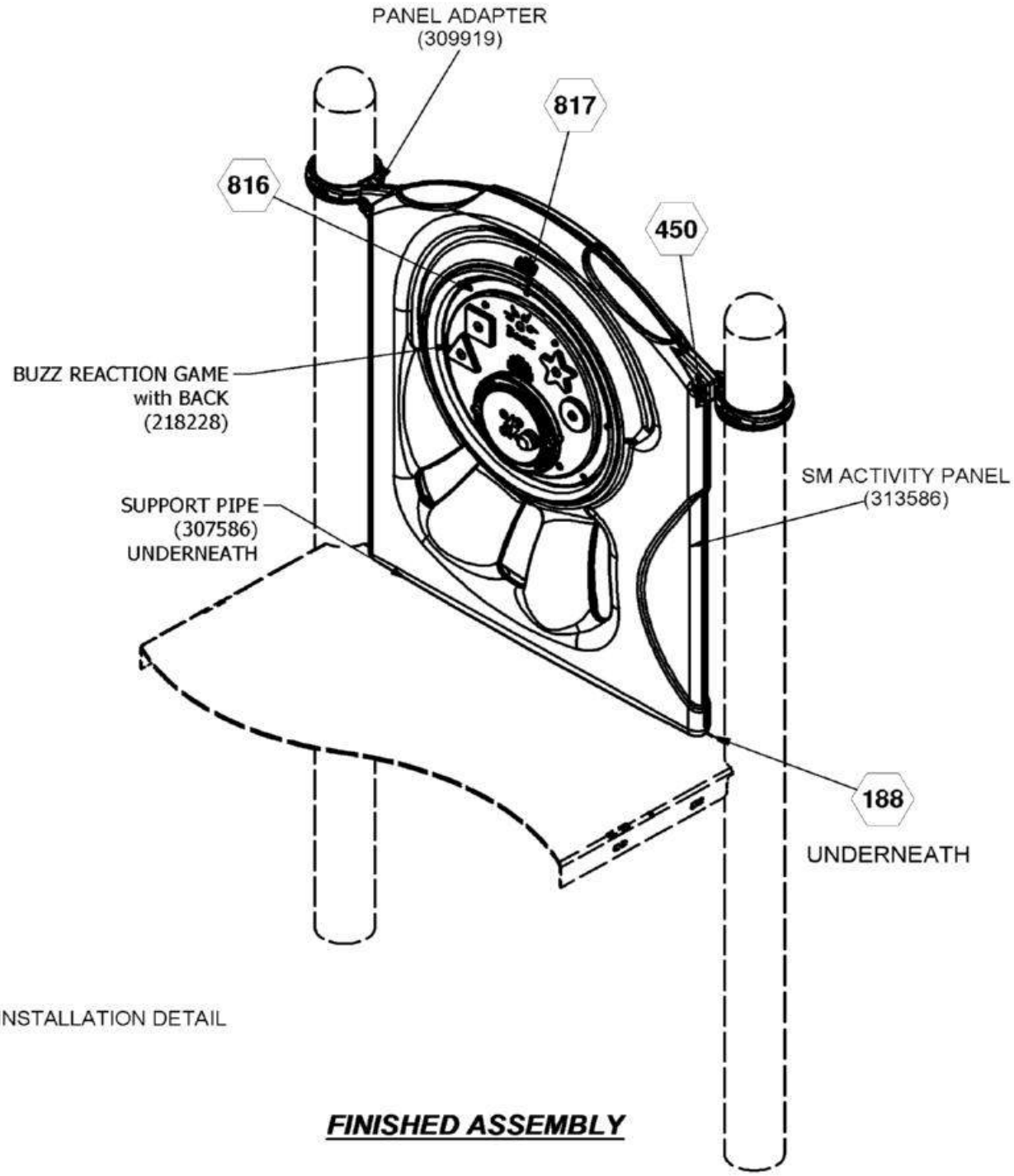
7. After entire unit is assembled pour concrete footings within 4' to the top and taper away from post for water drainage. Allow to cure at least 48 hours before use.

8. When structure is finished and satisfactory, tighten all fasteners and install Drive Rivets in all clamps to ensure clamps cannot slide down posts. See Pipe Clamp sub-assembly sheet. ***It is very important that all Drive Rivets be installed prior to allowing use of equipment, as clamps are not designed to support substantial weight without them.*** Also Eliminate sharp points and sharp edges (burring) on installed hardware like bolts, nuts, etc. Install resilient surfacing material within the use zone of play structure in accordance with ASTM specifications F1292 appropriate for the fall height of each structure. Refer to the Safety Guidelines.

MAINTENANCE PROCEDURE:

Periodically check hardware for tightness, and tighten as necessary. Always check all parts for breakage or wear, and immediately put equipment out of service until any faulty parts found are repaired or replaced. Also Check all metal parts for rust, paint loss and touch-up if necessary with paint. Check for welded areas and verify integrity. Check periodically resilient surfacing for appropriate depth and remove extraneous materials that could cause injury, infection, or disease. Maintain detailed installation, inspection, maintenance, and repair records for each public-use playground equipment.

71748 BUZZ GAME PANEL ROTOGEN

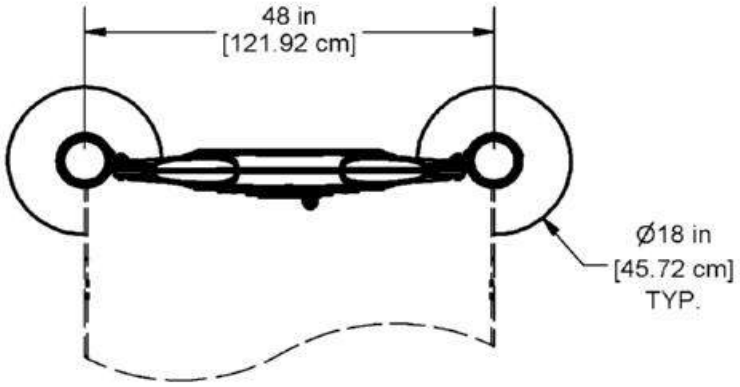


= INSTALLATION DETAIL

FINISHED ASSEMBLY

COMPONENTS SHOWN IN
HIDDEN LINES ARE SOLD SEPARATELY

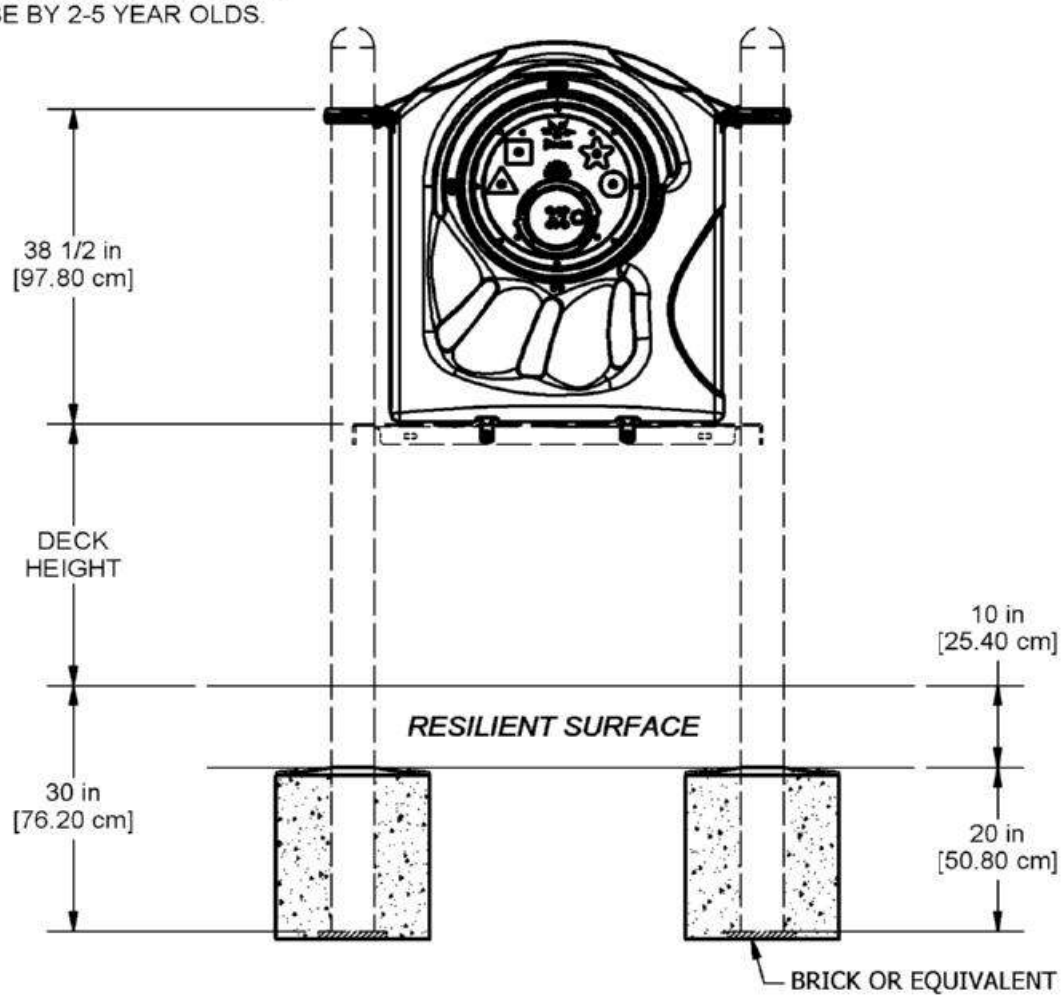
71748 BUZZ GAME PANEL ROTOGEN



NOTE:
TOP EDGE OF PANEL MUST BE 38" [965mm] OR GREATER ABOVE ELEVATED PLATFORM SURFACE FOR USE BY 5-12 YEAR OLDS.

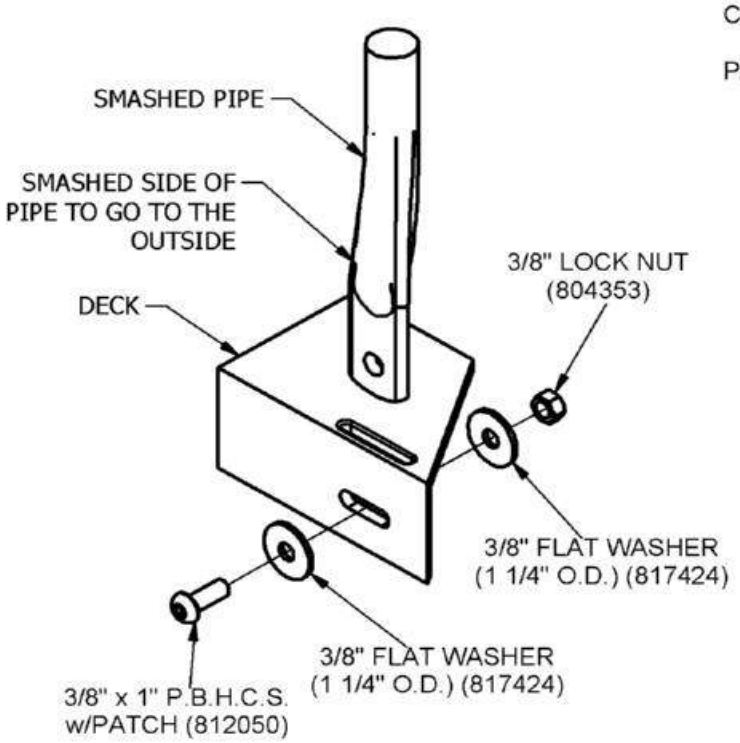
TOP EDGE OF PANEL MUST BE 29" [736mm] OR GREATER ABOVE ELEVATED PLATFORM SURFACE FOR USE BY 2-5 YEAR OLDS.

PLAN VIEW



ELEVATION VIEW

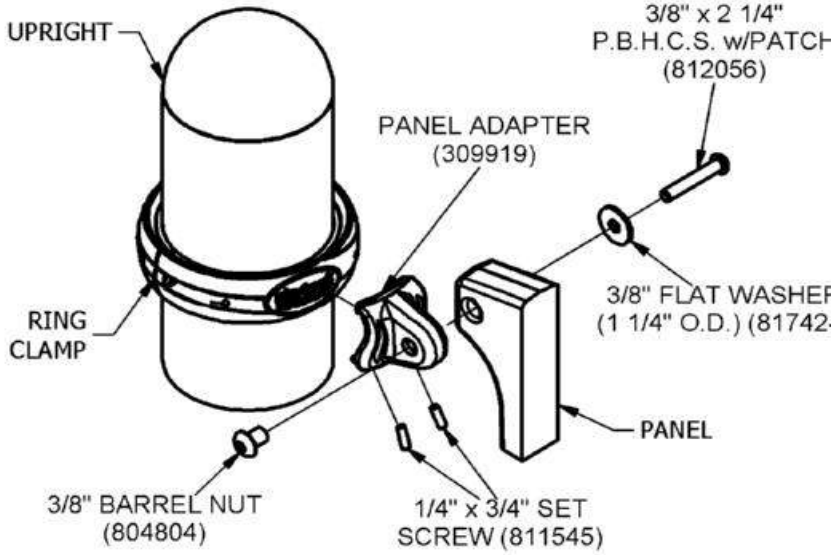
71748 BUZZ GAME PANEL ROTOGEN



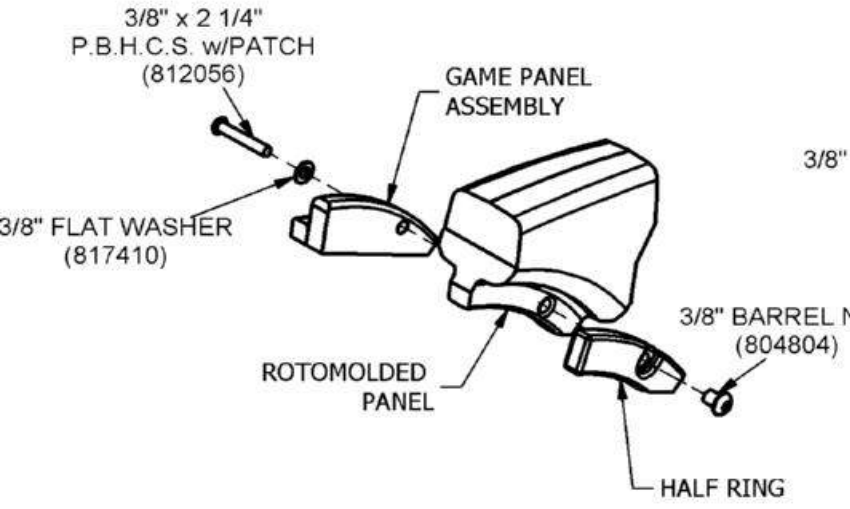
188

NOTE: PANEL ADAPTER WILL FIT INTO GROOVE IN TOP OF RING CLAMP AND SECURE WITH SET SCREWS.

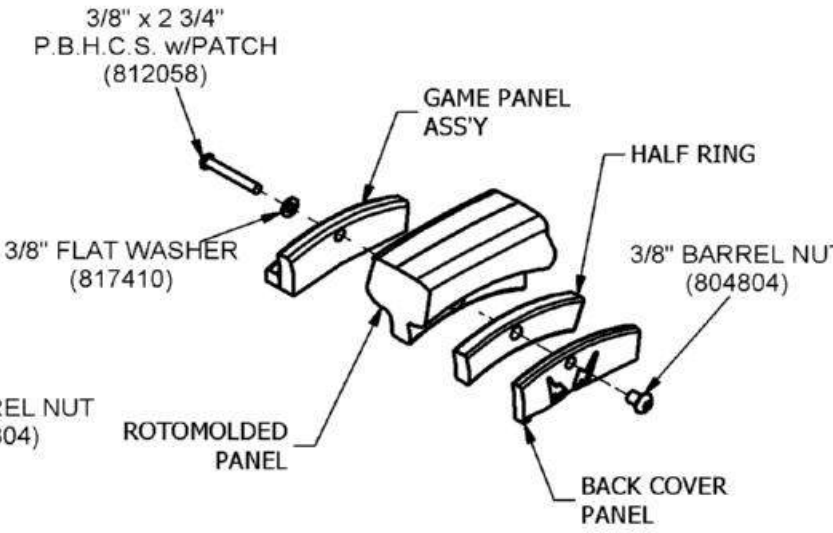
PANEL MUST ATTACH TO THE DECK SIDE OF THE ADAPTER.



450



816



817

SuperMax Play Systems

71750 MAZE PANEL

Parts List		
DESCRIPTION	QTY	PART NUMBER
SUPPORT PIPE	2	307586
PANEL ADAPTER	2	309919
MAZE PANEL ASS'Y	1	313569
SM ACTIVITY PANEL	1	313586
HARDWARE COMPLETE	1	313464
1/4" x 3/4" SET SCREW	4	811545*
3/8" x 1" P.B.H.C.S. w/PATCH	2	812050*
3/8" x 1 1/2" P.B.H.C.S. w/PATCH	8	812053*
3/8" x 2 1/4" P.B.H.C.S. w/PATCH	2	812056*
3/8" FLAT WASHER	8	817410*
3/8" FLAT WASHER (1 1/4" O.D.)	6	817424*
3/8" LOCK NUT	2	804353*
3/8" BARREL NUT	10	804804*

Unless Otherwise Specified, All Units of Measure are Each
**Items listed below Hardware Complete line are included with Hardware Complete Number*

Warning: During Installation, Hardware And Small Parts Are Choking Hazards For Young Children. Store Unused Parts Appropriately Until Assembly Is Completed. Once Assembly Is Completed, Remove Any Unused Parts From The Play Environment And Dispose/Save Them In A Secure Location. Any bolt end protruding more than two full threads beyond the face of the nut causes risk of clothing entanglement. Promptly cut-off flush, file smooth, and treat to prevent corrosion.

Note: Peen Tee-Nuts and Flatwashers to match radius of pipe after assembly is complete.
Note: Loctite (supplied by others) should be used on any non-patch hardware.

INSTALLATION INSTRUCTIONS:

1. Attach Maze Panel Ass'y to Activity Panel using 3/8" x 1 1/2" P.B.H.C.S. w/Patch, 3/8" Flat Washer, and 3/8" Barrel Nut. See Detail 795.

2. Attach Panel Adapter to Activity Panel using 3/8" x 2 1/4" P.B.H.C.S. w/Patch, 3/8" Flat Washer (1 1/4" O.D.), 1/4" x 3/4" Set Screw, and 3/8" Barrel Nut. See Detail 450.

3. Place Support Pipes in slots of deck and attach using 3/8" x 1" P.B.H.C.S. w/Patch, 3/8" Flat Washers (1 1/4" O.D.) and 3/8" Lock Nut. See Detail 188. Slide Activity Panel onto the Support Pipes. **Note:** Pipes are smashed to one side. Refer to Detail for orientation.

4. Plumb and level the entire assembly and tighten all fasteners.

5. After entire unit is assembled pour concrete footings within 4' to the top and taper away from post for water drainage. Allow to cure at least 48 hours before use.

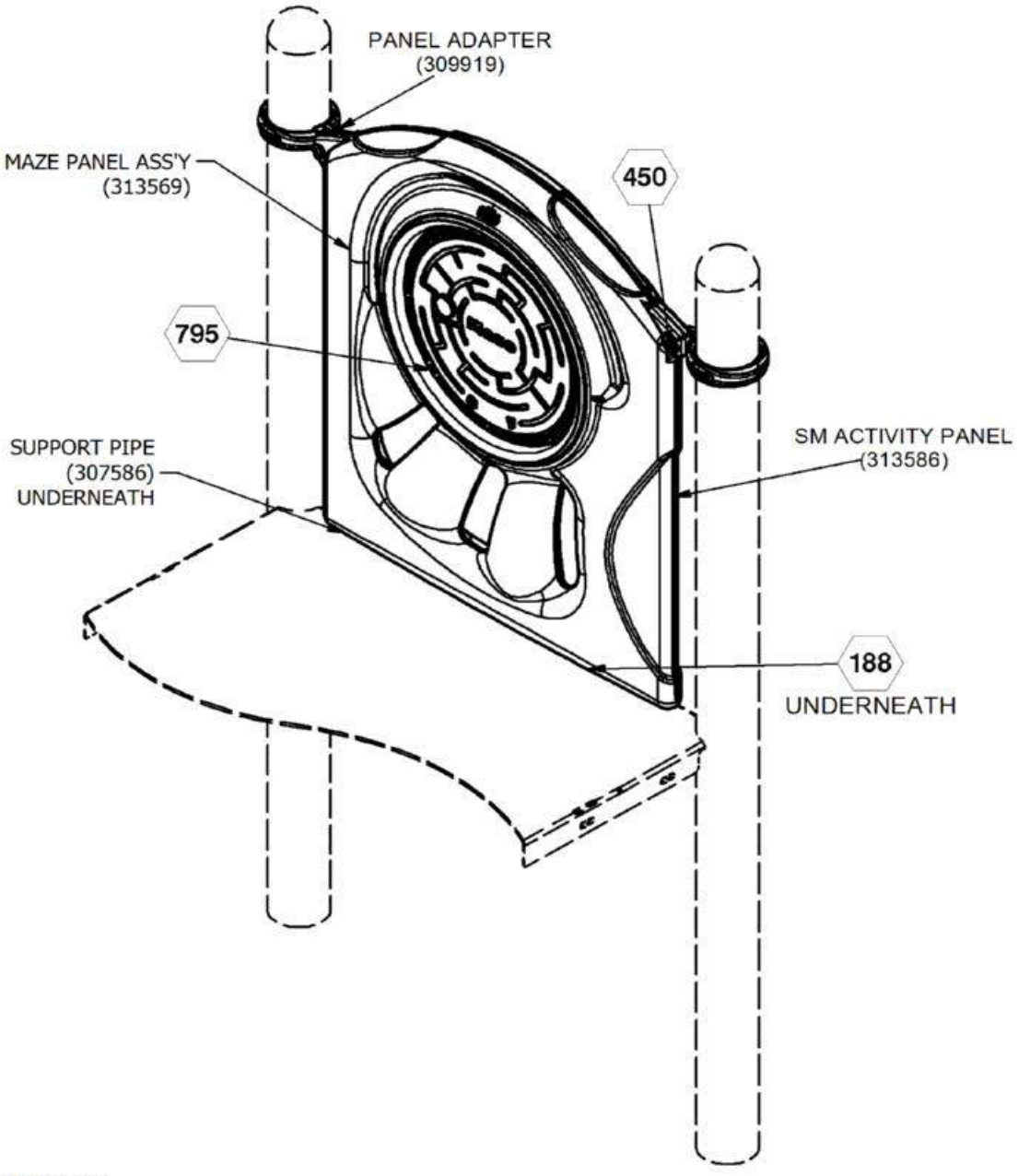
6. When structure is finished and satisfactory, tighten all fasteners and install Drive Rivets in all clamps to ensure clamps cannot slide down posts. See Pipe Clamp sub-assembly sheet. ***It is very important that all Drive Rivets be installed prior to allowing use of equipment, as clamps are not designed to support substantial weight without them.*** Also Eliminate sharp points and sharp edges (burring) on installed hardware like bolts, nuts, etc. Install resilient surfacing material within the use zone of play structure in accordance with ASTM specifications F1292 appropriate for the fall height of each structure. Refer to the Safety Guidelines.

SuperMax Play Systems

71750 MAZE PANEL

MAINTENANCE PROCEDURE:

Periodically check hardware for tightness, and tighten as necessary. Always check all parts for breakage or wear, and immediately put equipment out of service until any faulty parts found are repaired or replaced. Also Check all metal parts for rust, paint loss and touch-up if necessary with paint. Check for welded areas and verify integrity. Check periodically resilient surfacing for appropriate depth and remove extraneous materials that could cause injury, infection, or disease. Maintain detailed installation, inspection, maintenance, and repair records for each public-use playground equipment.

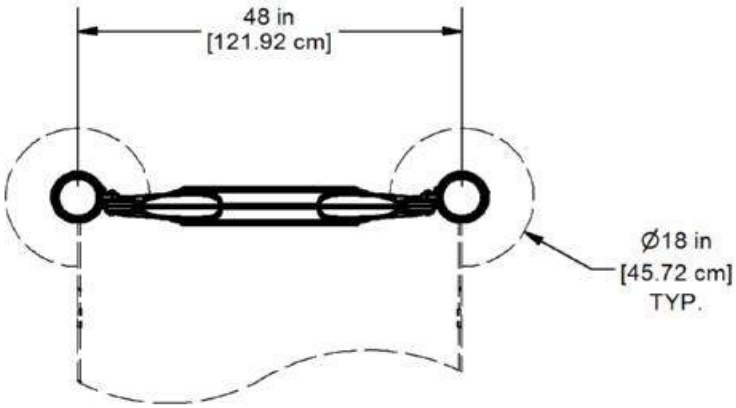


⬡ = INSTALLATION DETAIL

FINISHED ASSEMBLY

COMPONENTS SHOWN IN
HIDDEN LINES ARE SOLD SEPARATELY

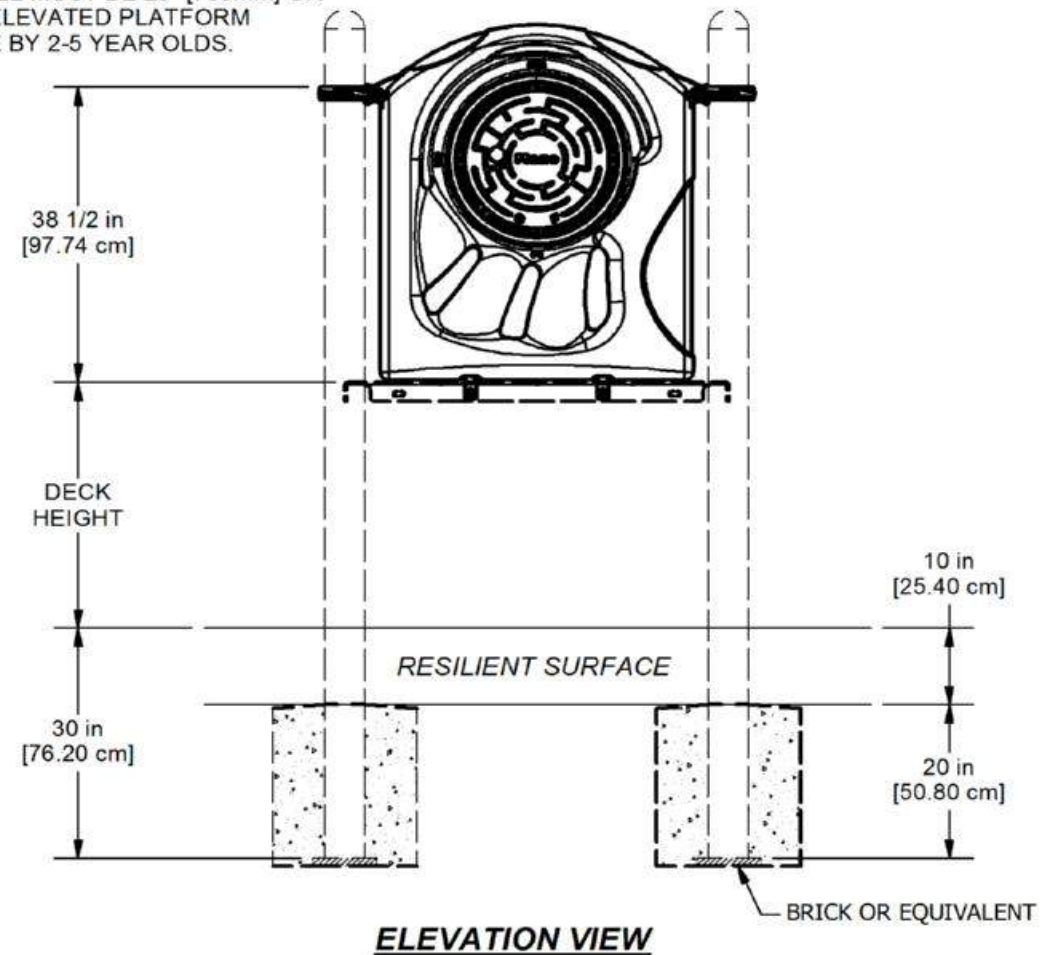
71750 MAZE PANEL



NOTE:
TOP EDGE OF PANEL MUST BE 38" [965mm] OR GREATER ABOVE ELEVATED PLATFORM SURFACE FOR USE BY 5-12 YEAR OLDS.

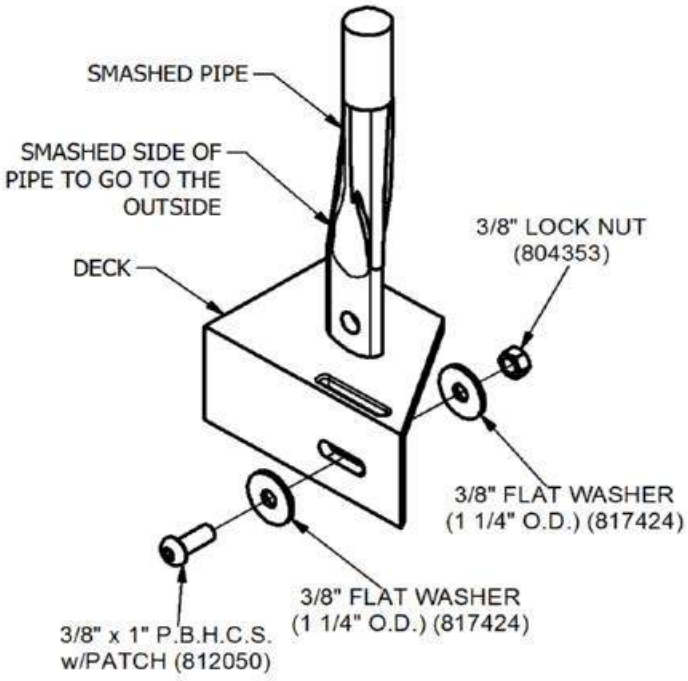
PLAN VIEW

TOP EDGE OF PANEL MUST BE 29" [736mm] OR GREATER ABOVE ELEVATED PLATFORM SURFACE FOR USE BY 2-5 YEAR OLDS.



ELEVATION VIEW

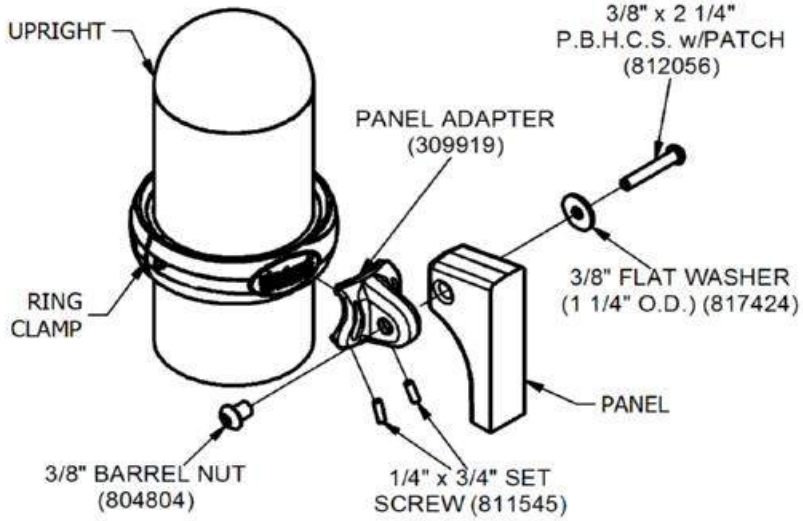
71750 MAZE PANEL



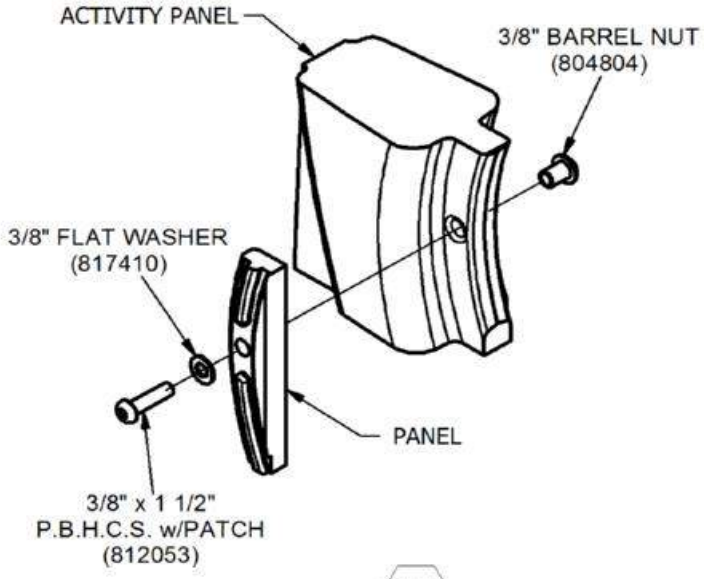
188

NOTE: PANEL ADAPTER WILL FIT INTO GROOVE IN TOP OF RING CLAMP AND SECURE WITH SET SCREWS.

PANEL MUST ATTACH TO THE DECK SIDE OF THE ADAPTER.



450



795

SuperMax Play Systems

71754 DOUBLE PINNACLE CLIMBER

Parts List		
DESCRIPTION	QTY	PART NUMBER
PIPE ADAPTER	2	309915
PINNACLE BARRIER ENTRANCE	1	313621
PINNACLE CLIMBER	2	313521
DOUBLE PINNACLE TAB	2	313580
DECK MOUNTING BAR ASS'Y	1	313546
BOTTOM FOOTBUCK	1	313598
T-BAR ASS'Y	2	313596
3 HOLE TAB ASS'Y	4	314962
HARDWARE COMPLETE	1	313631
1/4" x 3/4" SET SCREW	4	811545
3/8" x 1" P.B.H.C.S. w/PATCH	24	812050
3/8" x 1 1/4" P.B.H.C.S. w/PATCH	2	812051
3/8" x 1 3/4" P.B.H.C.S. w/PATCH	2	812054
3/8" x 2 1/4" P.B.H.C.S. w/PATCH	2	812056
3/8" x 2 3/4" P.B.H.C.S. w/PATCH	4	812058
3/8" FLAT WASHER (1 1/4" O.D.)	8	817424
3/8" LOCK WASHER	20	817334
3/8" FLAT WASHER	24	817410
3/8" BARREL NUT	10	804804
3/8" LOCK NUT	4	804353

Unless Otherwise Specified, All Units of Measure are Each
**Items listed below Hardware Complete line are included with Hardware Complete Number*

Warning: During Installation, Hardware And Small Parts Are Choking Hazards For Young Children. Store Unused Parts Appropriately Until Assembly Is Completed. Once Assembly Is Completed, Remove Any Unused Parts From The Play Environment And Dispose/Save Them In A Secure Location. Any bolt end protruding more than two full threads beyond the face of the nut causes risk of clothing entanglement. Promptly cut-off flush, file smooth, and treat to prevent corrosion.

Note: Peen Tee-Nuts and Flatwashers to match radius of pipe after assembly is complete.
Note: Loctite (supplied by others) should be used on any non-patch hardware.

71754 DOUBLE PINNACLE CLIMBER

INSTALLATION INSTRUCTIONS:

1. Locate deck opening to receive the Double Pinnacle Climber. See Plan and Elevation Views for clamp height and location. Dig footing holes as shown in Elevation View.
2. Attach Ring Clamps at required locations as shown in Elevation View. See Ring Clamp Installation Sheet.
3. Attach Pipe Adapters to the Ring Clamps using 1/4" x 3/4" Set Screws. See Detail 448.
4. Attach Pinnacle Barrier Entrance to Pipe Adapters using 3/8" x 1 3/4" P.B.H.C.S. w/Patch, 3/8" Lock Washer, 3/8" Flat Washer, and 3/8" Barrel Nut. See Detail 448.
5. Attach Pinnacle Barrier Entrance to Deck using 3/8" x 1" P.B.H.C.S. w/Patch, 3/8" Flat Washer (1 1/4" O.D.), and 3/8" Lock Nut. See Detail 318.
6. Attach Deck Mounting Bar Ass'y to Pinnacle Climber using 3/8" x 2 1/4" P.B.H.C.S. w/Patch and 3/8" Barrel Nut. See Detail 798.
7. Attach both Pinnacle Climbers together using 3/8" x 2 3/4" P.B.H.C.S. w/Patch, 3/8" Flat Washer, and 3/8" Barrel Nut. See Detail 819.
8. Fill bottom two holes that are not used with 3/8" x 1 1/4" P.B.H.C.S. w/Patch and 3/8" Barrel Nut. See Detail 801. *Refer to **Finished Assembly View** for location.*
9. Attach Deck Mounting Bar Ass'y and Pinnacle Climber to deck using 3/8" x 1" P.B.H.C.S. w/Patch, 3/8" Lock Washer, and 3/8" Flat Washer. See Detail 799.
10. Once Pinnacle Climbers are assembled, attach T-Bar Ass'y. T-Bar Ass'y will require field cutting. Hint: Place 3 Hole Tab on Pinnacle Climbers and measure from bottom hole of the 3 Hole Tab to the bottom of the footing hole to cut T-Bar Ass'y to length.
11. Attach T-Bar Ass'y to both Pinnacle Climbers using 3 Hole Tab Ass'y, 3/8" x 1" P.B.H.C.S. w/Patch, 3/8" Flat Washer and 3/8" Lock Washer. See Detail 820.
12. Attach Pinnacle Climber to Bottom Footbuck using Double Pinnacle Tab, 3/8" x 1" P.B.H.C.S. w/Patch, 3/8" Flat Washer, and 3/8" Lock Washer. See Detail 815.
13. Fill remaining unused holes inside Pinnacle Climber with 3/8" x 1" P.B.H.C.S. w/Patch. See Detail 800.
14. Plumb and level the entire assembly and tighten all fasteners.

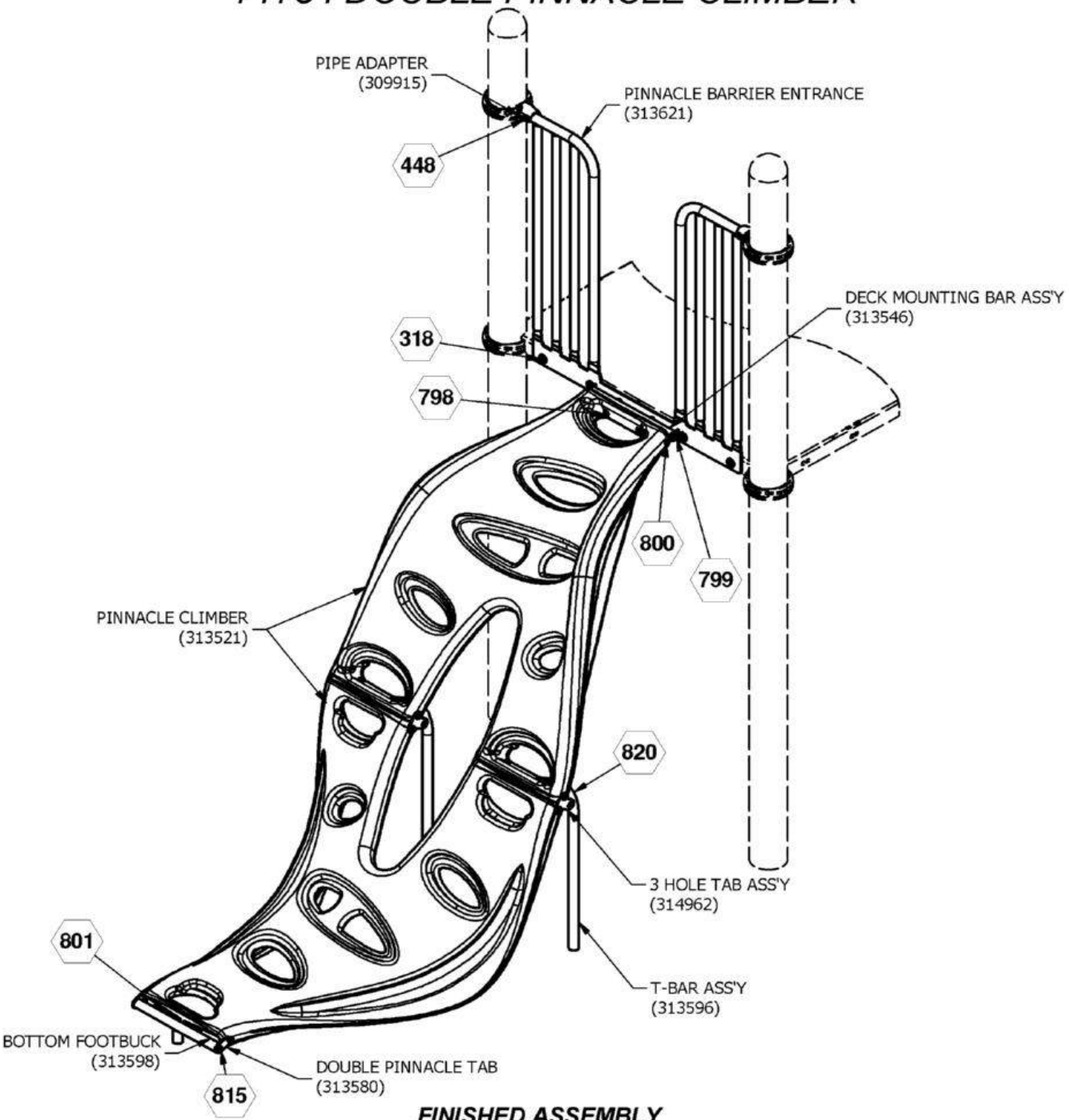
IMPORTANT! Avoid creating any gaps between the components which fall between 3-1/2" and 9". It has been shown that such gaps create entrapment points which can trap a child and cause injury.

15. Pour concrete footings within 4" to the top and taper away from posts for water drainage. Allow to cure at least 48 hours before use.
16. When the structure is finished and satisfactory, install 1/4" x 3/4" Drive Rivets in all Clamps to ensure Clamps cannot slide down posts, referring to Typ. Clamp Detail. Eliminate sharp points and sharp edges (burring) on installed hardware like bolts, nuts etc. ***It is very important that all Drive Rivets be installed prior to allowing use of equipment, as clamps are not designed to support substantial weight without them***. Install resilient surfacing material within the use zone of play structure in accordance with ASTM specifications F1292 appropriate for the fall height of each structure. Refer to the Safety Guidelines.

MAINTENANCE PROCEDURE:

Periodically check hardware for tightness, and tighten as necessary. Always check all parts for breakage or wear, and immediately put equipment out of service until any faulty parts found are repaired or replaced. Also Check all metal parts for rust, paint loss and touch-up if necessary with paint. Check for welded areas and verify integrity. Check periodically resilient surfacing for appropriate depth and remove extraneous materials that could cause injury, infection, or disease. Maintain detailed installation, inspection, maintenance, and repair records for each public-use playground equipment.

71754 DOUBLE PINNACLE CLIMBER



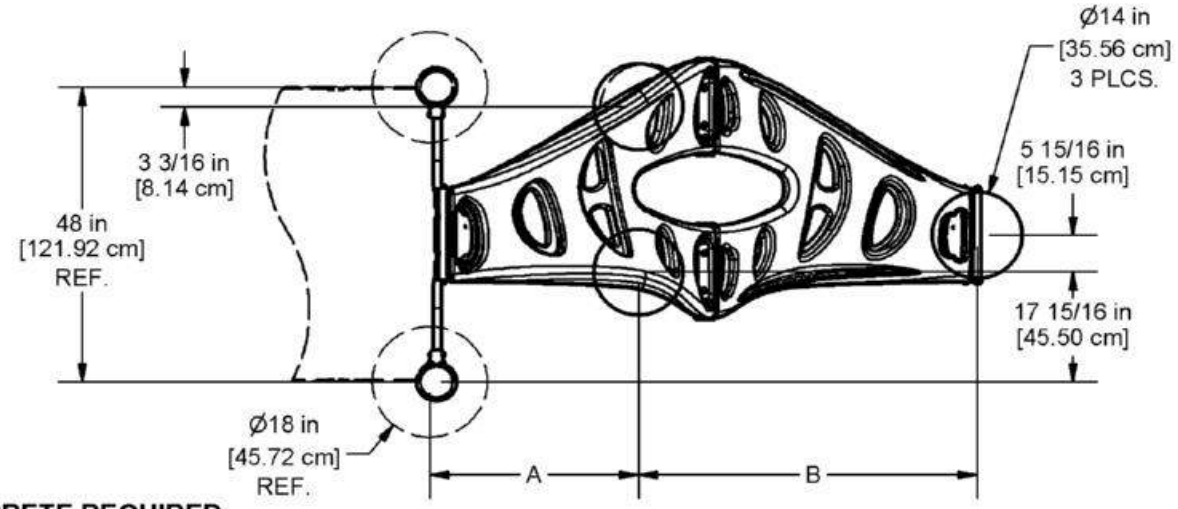
FINISHED ASSEMBLY
5'-4" DECK HEIGHT SHOWN

= INSTALLATION DETAIL

COMPONENTS SHOWN IN HIDDEN LINES ARE SOLD SEPARATELY

Issued/Revised: 8/24/2021

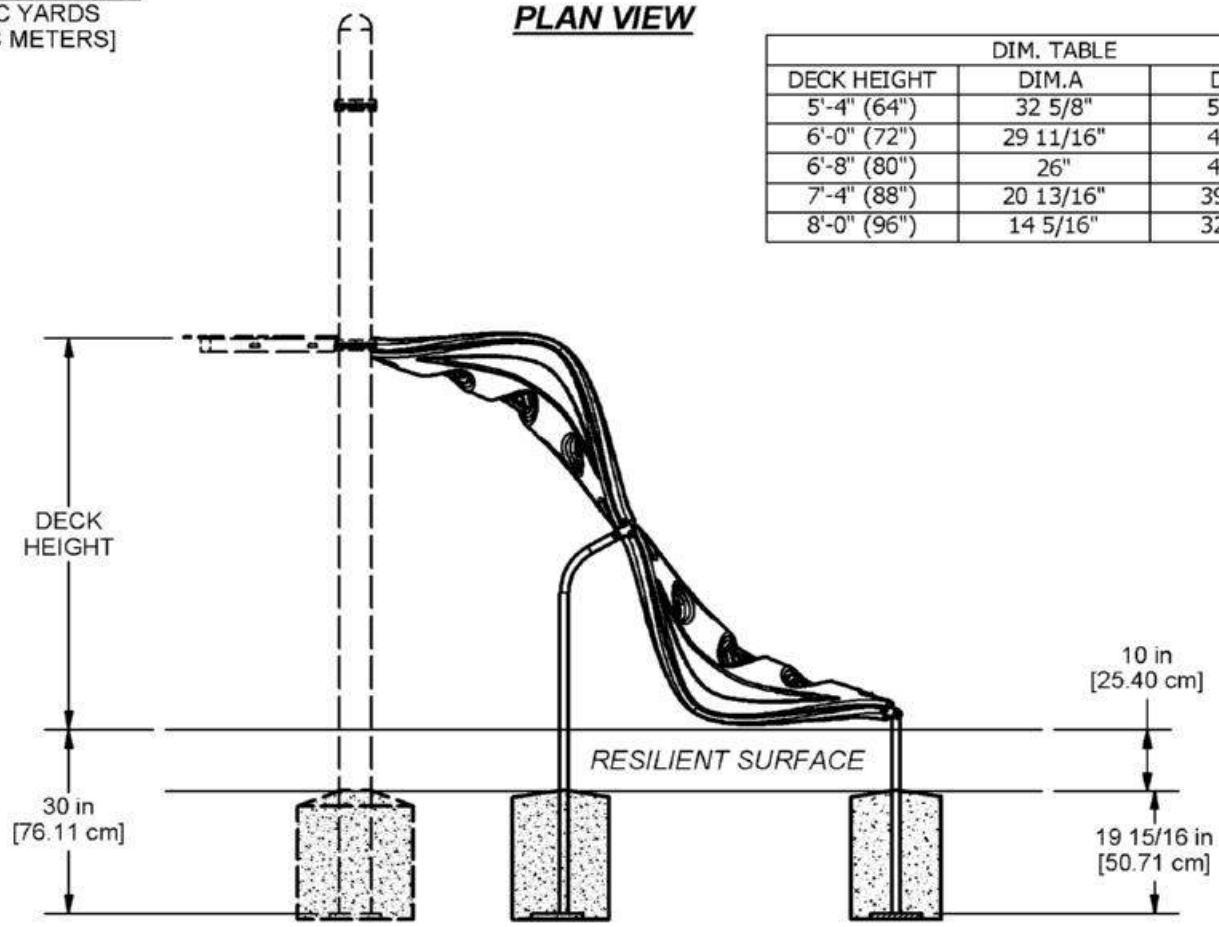
71754 DOUBLE PINNACLE CLIMBER



CONCRETE REQUIRED
0.18 CUBIC YARDS
[0.14 CUBIC METERS]

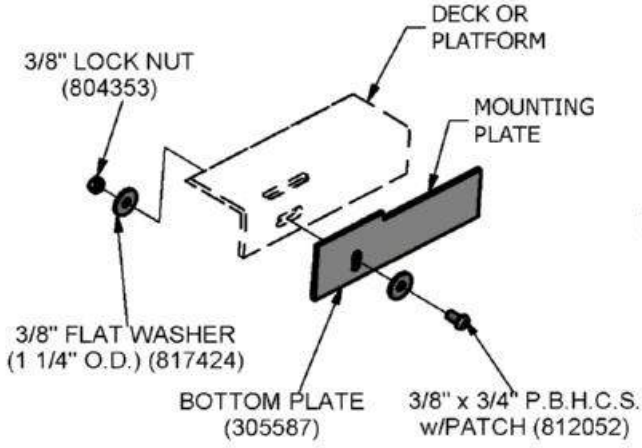
PLAN VIEW

DIM. TABLE		
DECK HEIGHT	DIM.A	DIM. B
5'-4" (64")	32 5/8"	51 7/8"
6'-0" (72")	29 11/16"	48 1/2"
6'-8" (80")	26"	43 7/8"
7'-4" (88")	20 13/16"	39 9/16"
8'-0" (96")	14 5/16"	32 9/16"



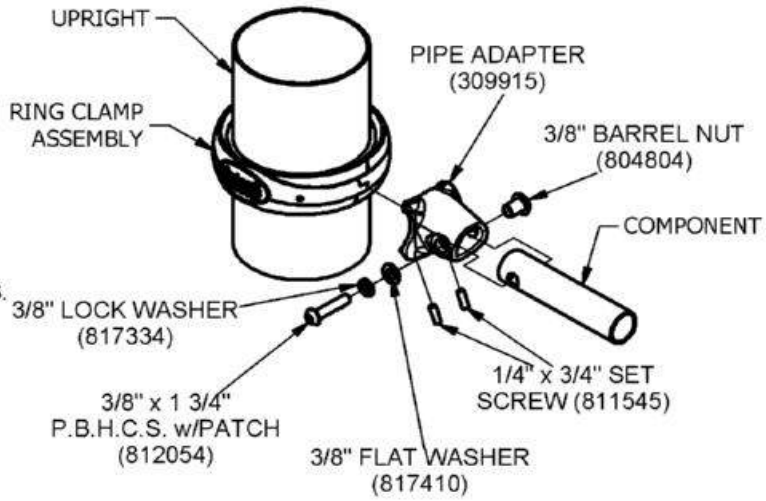
ELEVATION VIEW
5'-4" DECK HEIGHT SHOWN

71754 DOUBLE PINNACLE CLIMBER

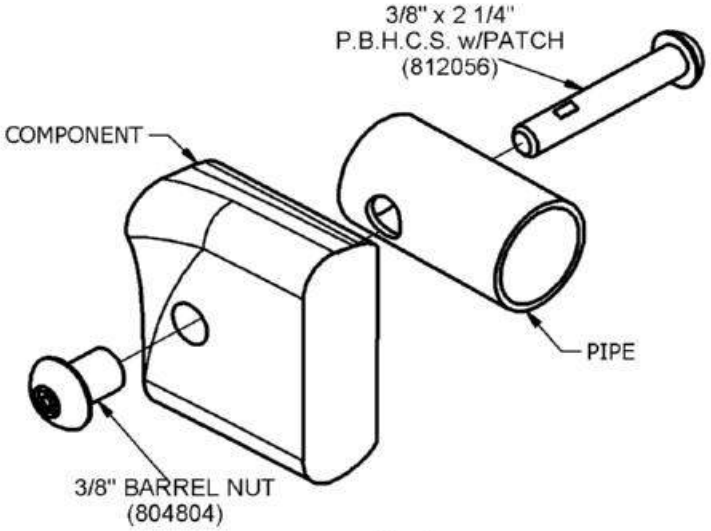


318

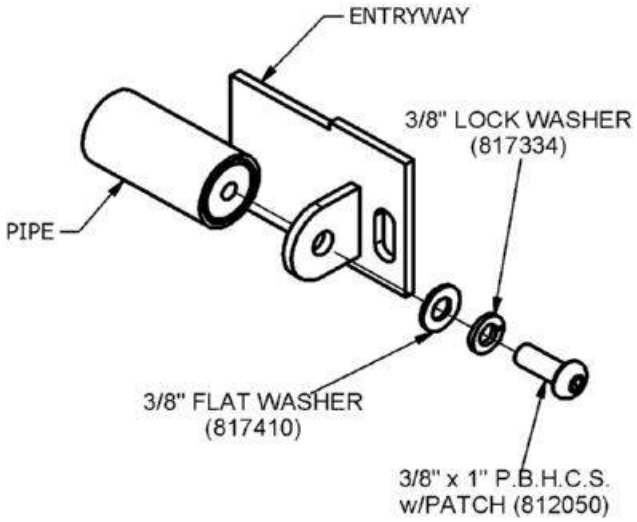
NOTE: PIPE ADAPTER WILL FIT INTO GROOVE IN TOP OF RING CLAMP AND SECURE WITH SET SCREWS



448

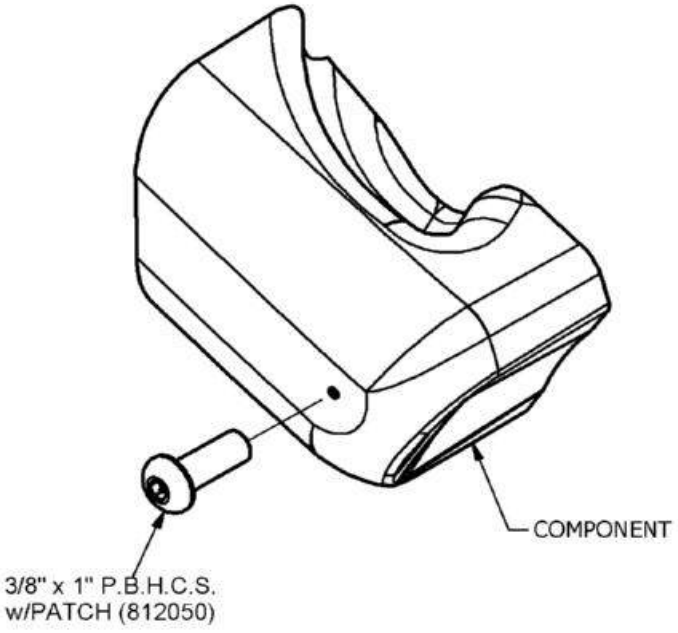


798

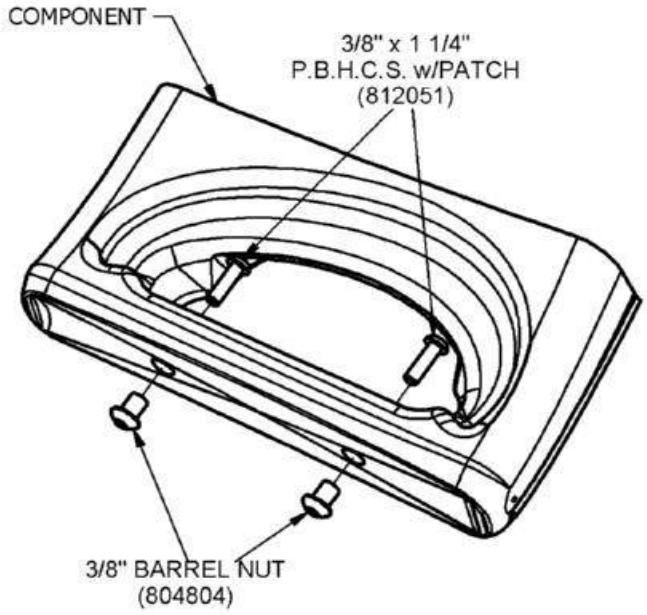


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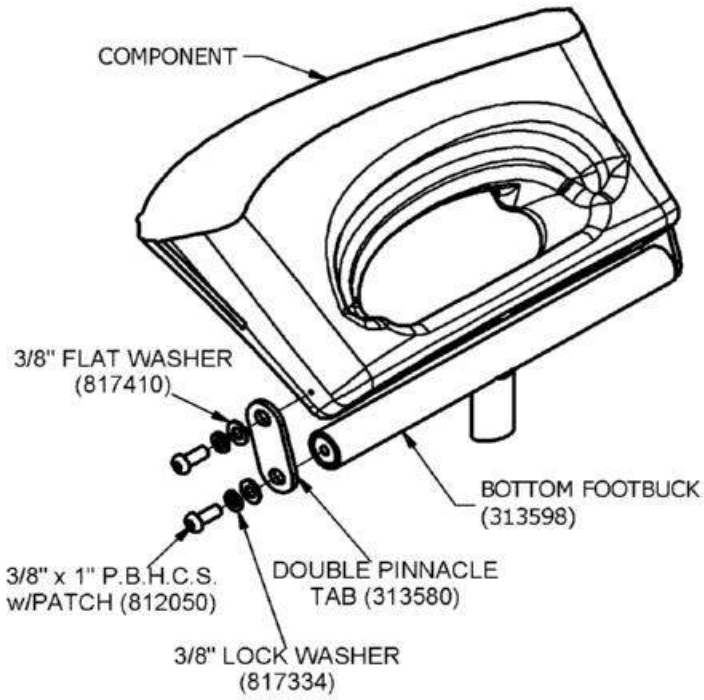
71754 DOUBLE PINNACLE CLIMBER



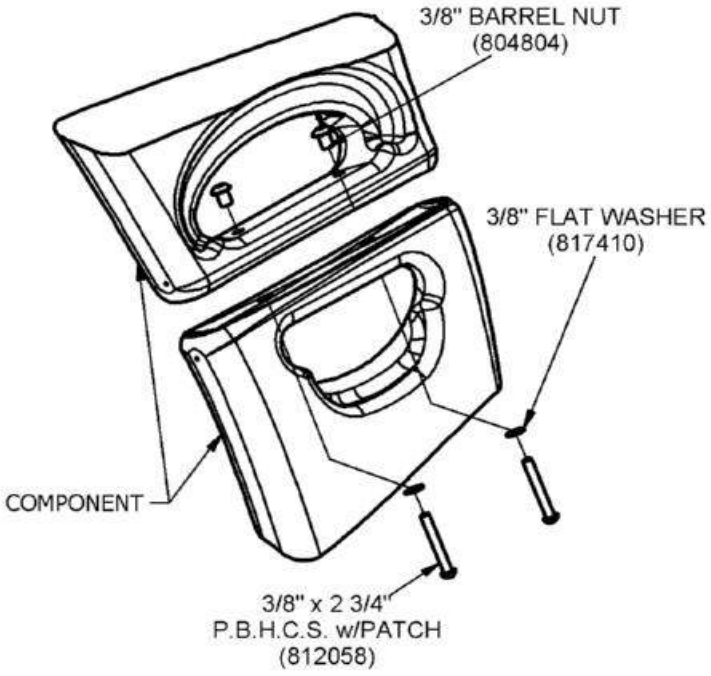
800



801

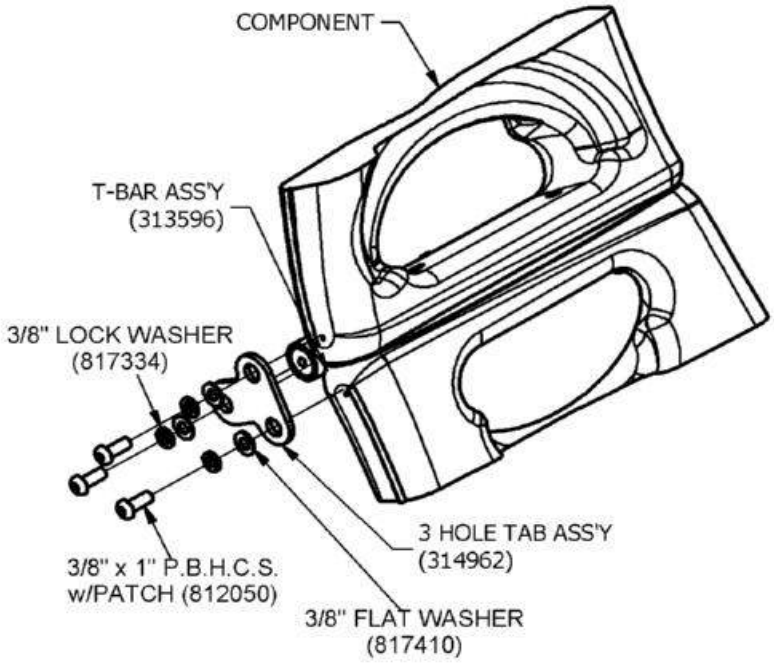


815



819

71754 DOUBLE PINNACLE CLIMBER



NOTE: Make sure the Filler Rod on the 3 Hole Tab Ass'y is not facing out.

820

71757 GEAR PANEL

Parts List		
DESCRIPTION	QTY	PART NUMBER
SUPPORT PIPE	2	307586
PANEL ADAPTER	2	309919
GEAR HANDLE	2	311800
GEAR 1	1	311801
GEAR 2	2	311802
GEAR 3	1	312566
GEAR PANEL WINDOW	2	313573
SM ACTIVITY PANEL	1	313586
HARDWARE COMPLETE	1	313465
PLASTIC WASHER	6	304073*
PLASTIC CAP	6	304074*
1/4" x 3/4" SET SCREW	4	811545*
3/8" x 1" P.B.H.C.S. w/PATCH	2	812050*
3/8" x 1 3/4" P.B.H.C.S. w/PATCH	8	812054*
3/8" x 2 1/4" P.B.H.C.S. w/PATCH	5	812056*
3/8" x 2 3/4" P.B.H.C.S. w/PATCH	2	812058*
3/8" FLAT WASHER	12	817410*
3/8" FLAT WASHER (1 1/4" O.D.)	6	817424*
3/8" ACORN NUT	8	804002*
3/8" HEX NUT	3	804053*
3/8" LOCK WASHER	3	817334*
3/8" LOCK NUT	2	804353*
3/8" BARREL NUT	4	804804*
1/2" FLAT WASHER (1 3/8" O.D.)	10	817425*
1" LG. SPACER	3	312851*
1 3/8" LG. SPACER	2	311805*
3/8" PLASTIC WASHER	16	817612*

Unless Otherwise Specified, All Units of Measure are Each

**Items listed below Hardware Complete line are included with Hardware Complete Number*

Warning: During Installation, Hardware And Small Parts Are Choking Hazards For Young Children. Store Unused Parts Appropriately Until Assembly Is Completed. Once Assembly Is Completed, Remove Any Unused Parts From The Play Environment And Dispose/Save Them In A Secure Location. Any bolt end protruding more than two full threads beyond the face of the nut causes risk of clothing entanglement. Promptly cut-off flush, file smooth, and treat to prevent corrosion.

Note: Peen Tee-Nuts and Flatwashers to match radius of pipe after assembly is complete.

Note: Loctite (supplied by others) should be used on any non-patch hardware.

71757 GEAR PANEL

INSTALLATION INSTRUCTIONS:

IMPORTANT: You must attach the Gear Panel Window, Gear Handle, Gear 1, 2, and 3 to Gear Panel at the same time.

1. Attach Gear 1 and Gear Handle to Gear Panel Window using 3/8" x 2 3/4" P.B.H.C.S. w/Patch, 3/8" Flat Washer, 1/2" Flat Washer, 1 3/8" Lg. Spacer, and 3/8" Barrel Nut. See Detail 615.

2. Attach Gears 2 and 3 to Gear Panel Window using Plastic Cap, 3/8" Hex Nut, 3/8" Flat Washer, Plastic Washer, 1/2" Flat Washer, 1 1/4" Lg. Spacer 2, and 3/8" x 2" P.B.H.C.S. w/Patch. See Detail 565.

3. Attach Gear Panel Windows to Activity Panel using 3/8" x 1 3/4" P.B.H.C.S. w/Patch, 3/8" Plastic Washers, and 3/8" Acorn Nut. See Detail 691.

4. Attach Panel Adapter to Activity Panel using 3/8" x 2 1/4" P.B.H.C.S. w/Patch, 3/8" Flat Washer (1 1/4" O.D.), 1/4" x 3/4" Set Screw, and 3/8" Barrel Nut. See Detail 450.

5. Place Support Pipes in slots of deck and attach using 3/8" x 1" P.B.H.C.S. w/Patch, 3/8" Flat Washers (1 1/4" O.D.) and 3/8" Lock Nut. See Detail 188. Slide Activity Panel onto the Support Pipes. **Note:** Pipes are smashed to one side. Refer to Detail for orientation.

6. Plumb and level the entire assembly and tighten all fasteners.

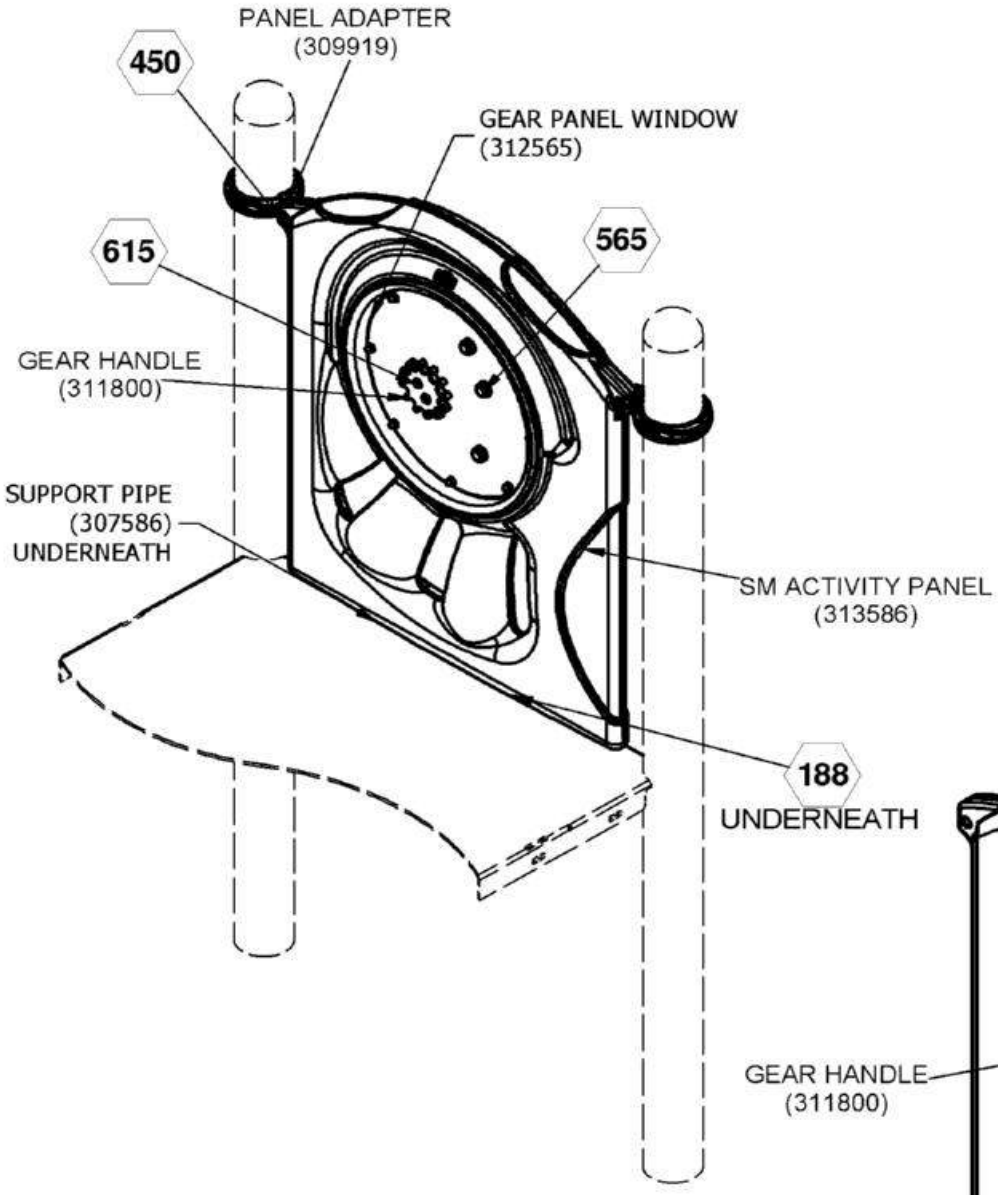
7. After entire unit is assembled pour concrete footings within 4' to the top and taper away from post for water drainage. Allow to cure at least 48 hours before use.

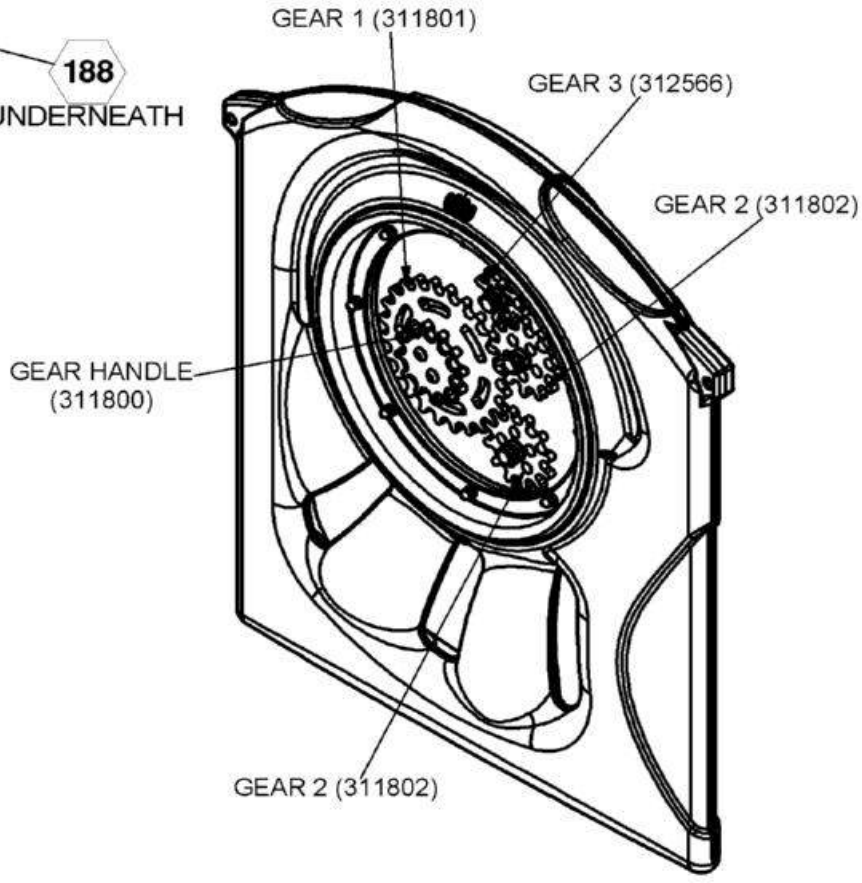
8. When structure is finished and satisfactory, tighten all fasteners and install Drive Rivets in all clamps to ensure clamps cannot slide down posts. See Pipe Clamp sub-assembly sheet. ***It is very important that all Drive Rivets be installed prior to allowing use of equipment, as clamps are not designed to support substantial weight without them.*** Also eliminate sharp points and sharp edges (burring) on installed hardware like bolts, nuts, etc. Install resilient surfacing material within the use zone of play structure in accordance with ASTM specifications F1292 appropriate for the fall height of each structure. Refer to the Safety Guidelines.

MAINTENANCE PROCEDURE:

Periodically check hardware for tightness, and tighten as necessary. Always check all parts for breakage or wear, and immediately put equipment out of service until any faulty parts found are repaired or replaced. Also Check all metal parts for rust, paint loss and touch-up if necessary with paint. Check for welded areas and verify integrity. Check periodically resilient surfacing for appropriate depth and remove extraneous materials that could cause injury, infection, or disease. Maintain detailed installation, inspection, maintenance, and repair records for each public-use playground equipment.

71757 GEAR PANEL





⬡ = INSTALLATION DETAIL

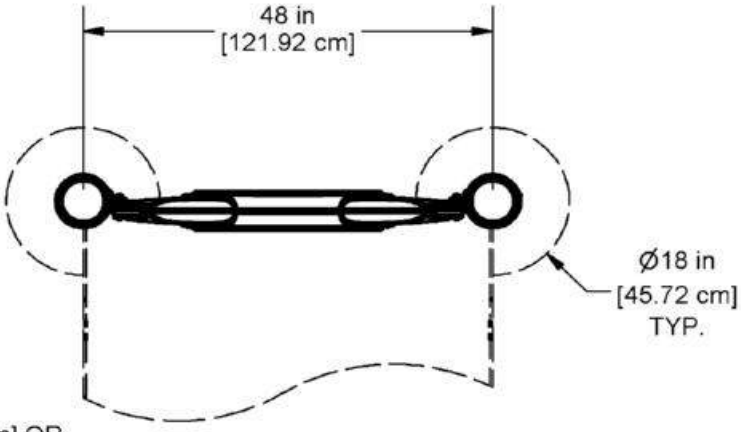
Issued/Revised: 12/10/2019

FINISHED ASSEMBLY

play&park structures
A PLAYCORE Company

COMPONENTS SHOWN IN
HIDDEN LINES ARE SOLD SEPARATELY

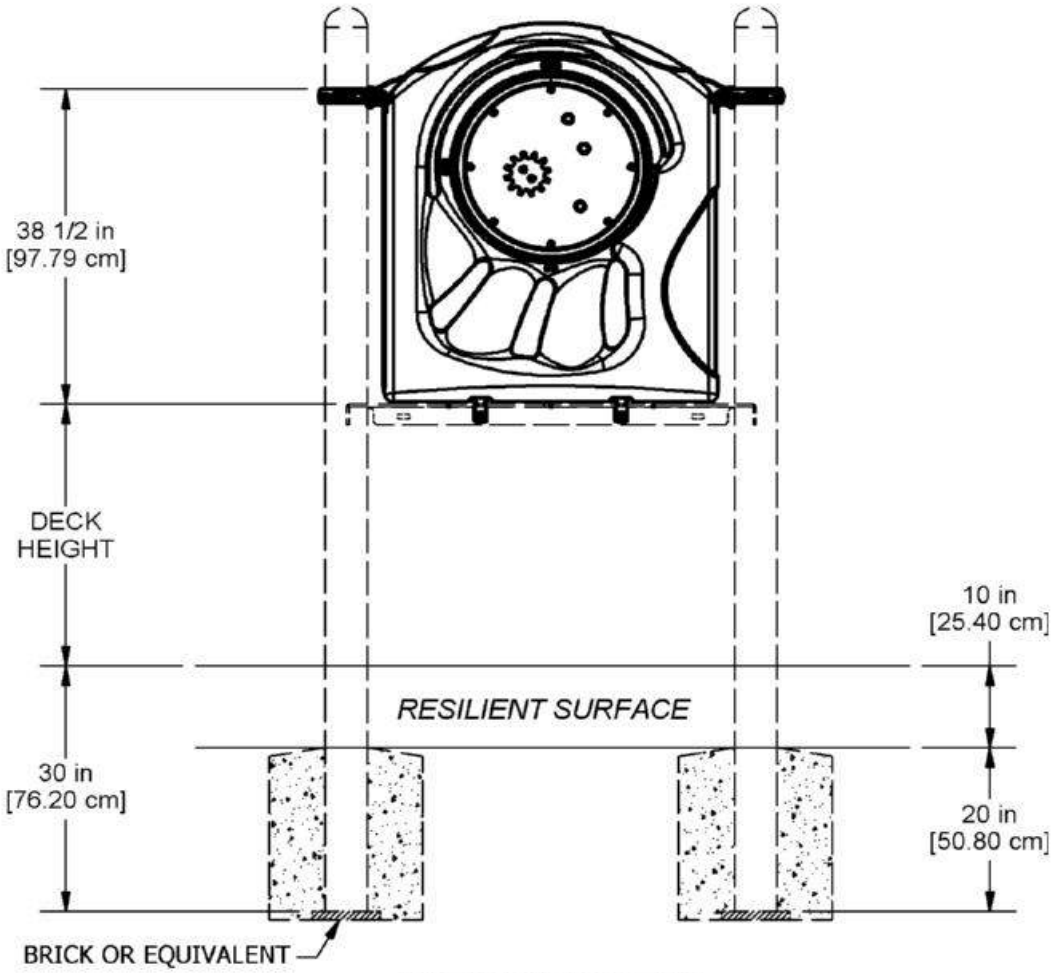
71757 GEAR PANEL



NOTE:
TOP EDGE OF PANEL MUST BE 38" [965mm] OR GREATER ABOVE ELEVATED PLATFORM SURFACE FOR USE BY 5-12 YEAR OLDS.

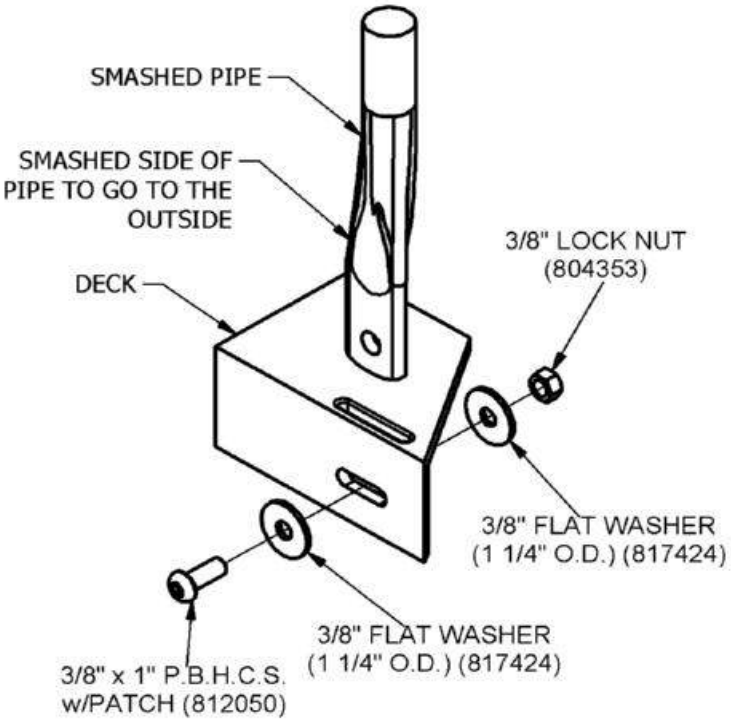
PLAN VIEW

TOP EDGE OF PANEL MUST BE 29" [736mm] OR GREATER ABOVE ELEVATED PLATFORM SURFACE FOR USE BY 2-5 YEAR OLDS.



ELEVATION VIEW

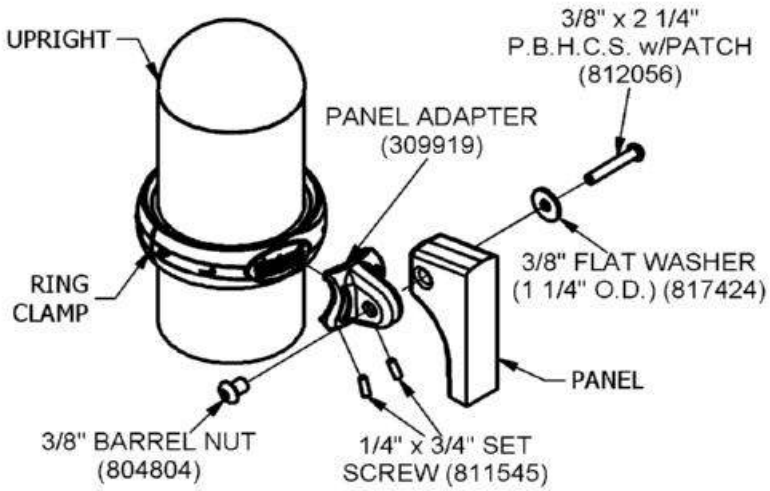
71757 GEAR PANEL



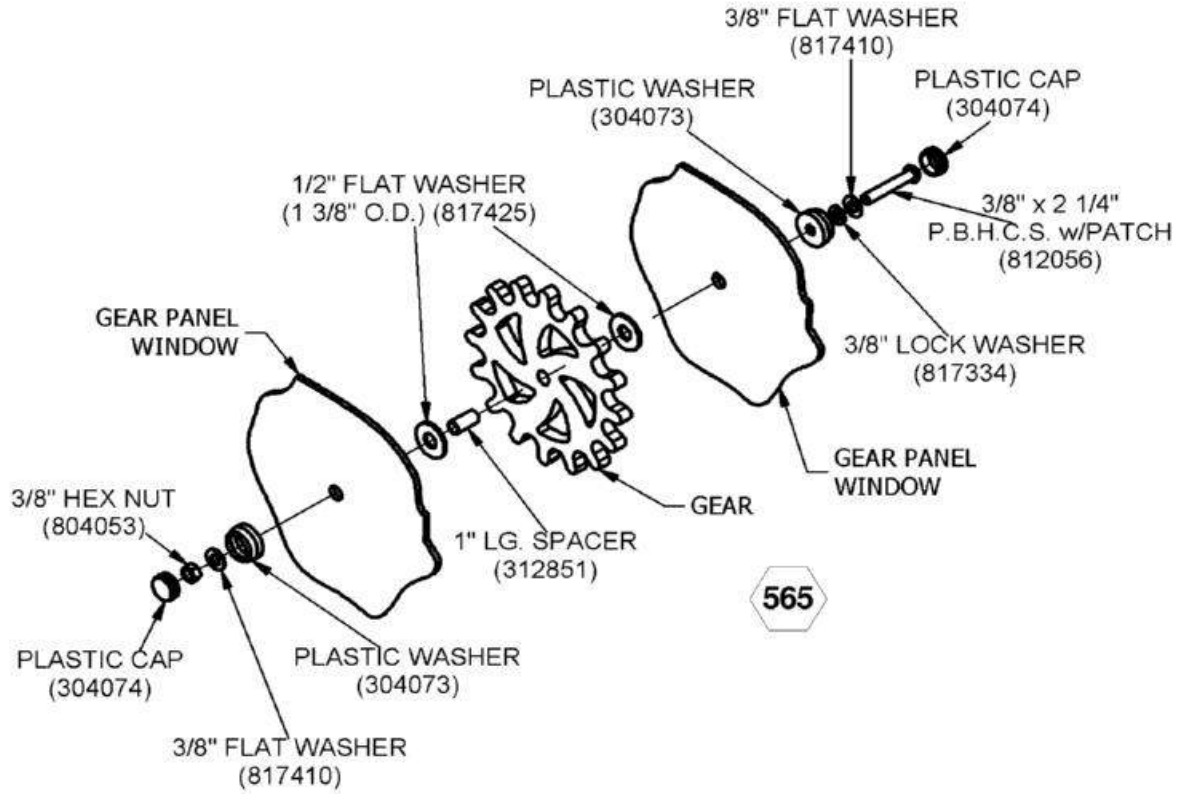
188

NOTE: PANEL ADAPTER WILL FIT INTO GROOVE IN TOP OF RING CLAMP AND SECURE WITH SET SCREWS.

PANEL MUST ATTACH TO THE DECK SIDE OF THE ADAPTER.

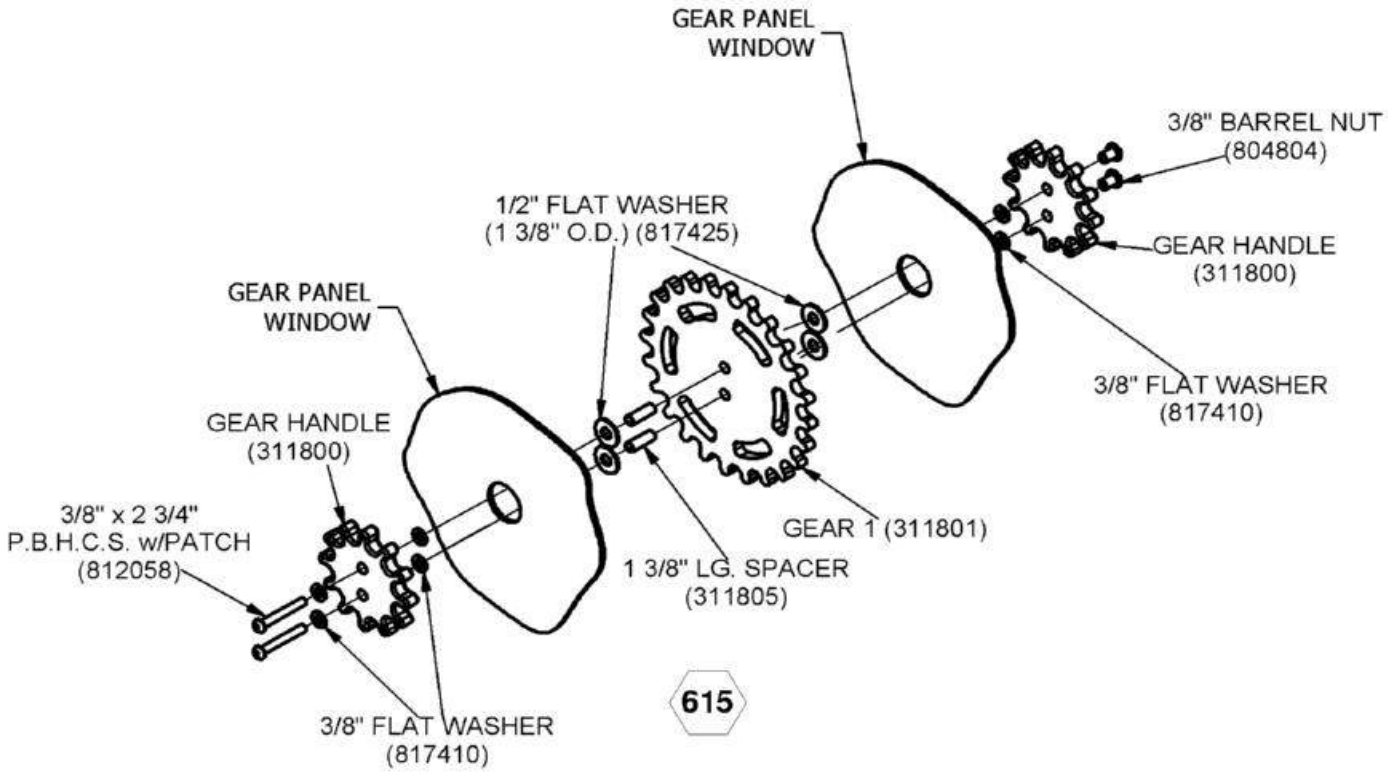


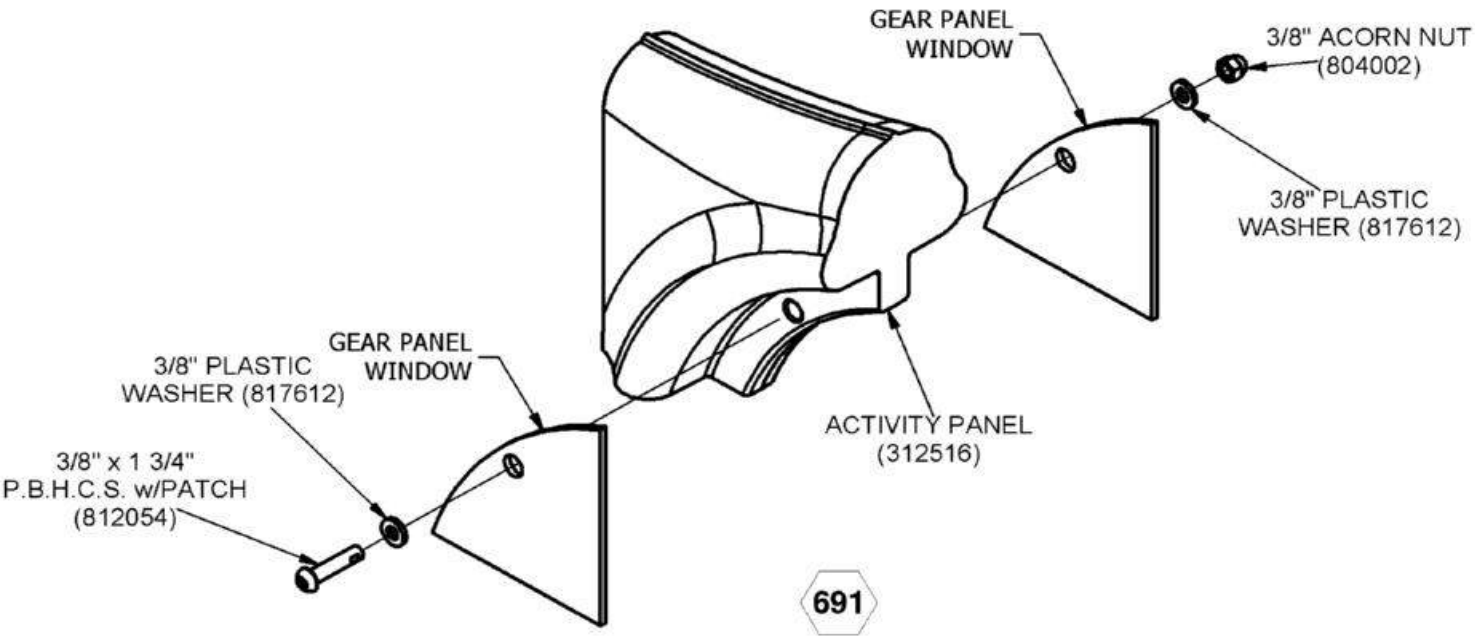
450



565

71757 GEAR PANEL





71968 SHOP PANEL

Parts List		
DESCRIPTION	QTY	PART NUMBER
90° ANGLE BRACKET	4	302334
PANEL ADAPTER	2	309919
SMASHED FOOTBUCK	2	314295
SHOP PANEL	1	315519
ORGANIC COUNTER PANEL	1	315520
HARDWARE COMPLETE	1	315521
1/4" x 3/4" SET SCREW	4	811545
3/8" x 3/4" CARRIAGE BOLT	8	800252
3/8" x 3/4" P.B.H.C.S. w/PATCH	2	812052
3/8" x 1 1/2" P.B.H.C.S. w/PATCH	2	812053
3/8" FLAT WASHER	4	817410
3/8" BARREL NUT	12	804804

Unless Otherwise Specified, All Units of Measure are Each
**Items listed below Hardware Complete line are included with Hardware Complete Number*

Warning: During Installation, Hardware And Small Parts Are Choking Hazards For Young Children. Store Unused Parts Appropriately Until Assembly Is Completed. Once Assembly Is Completed, Remove Any Unused Parts From The Play Environment And Dispose/Save Them In A Secure Location. Any bolt end protruding more than two full threads beyond the face of the nut causes risk of clothing entanglement. Promptly cut-off flush, file smooth, and treat to prevent corrosion.

Note: Peen Tee-Nuts and Flatwashers to match radius of pipe after assembly is complete.

Note: Loctite (supplied by others) should be used on any non-patch hardware.

INSTALLATION INSTRUCTIONS:

1. Determine which deck to to receive the Shop Panel. Refer to your overhead drawing for location.
2. Loosely attach Ring Clamps to Uprights at noted height using information provided in Ring Clamp Installation Sheet.
3. Hook the Panel Adapters onto the Ring Clamps and attach. See Detail 467.
4. Attach the Organic Counter Panel to the Shop Panel. See Detail 519.
5. Attach Footbucks to Shop Panel. Flat side of Smashed Footbuck should face the inside of the Shop Panel. See Detail 631.
6. Connect Shop Panel to Panel Adapters. See Detail 467.
7. When the entire assembly in plumb and level, tighten all fasteners and pour concrete footings within 4" to the top and taper away from support posts to allow water drainage. Allow to cure for at least 48 hours before use.

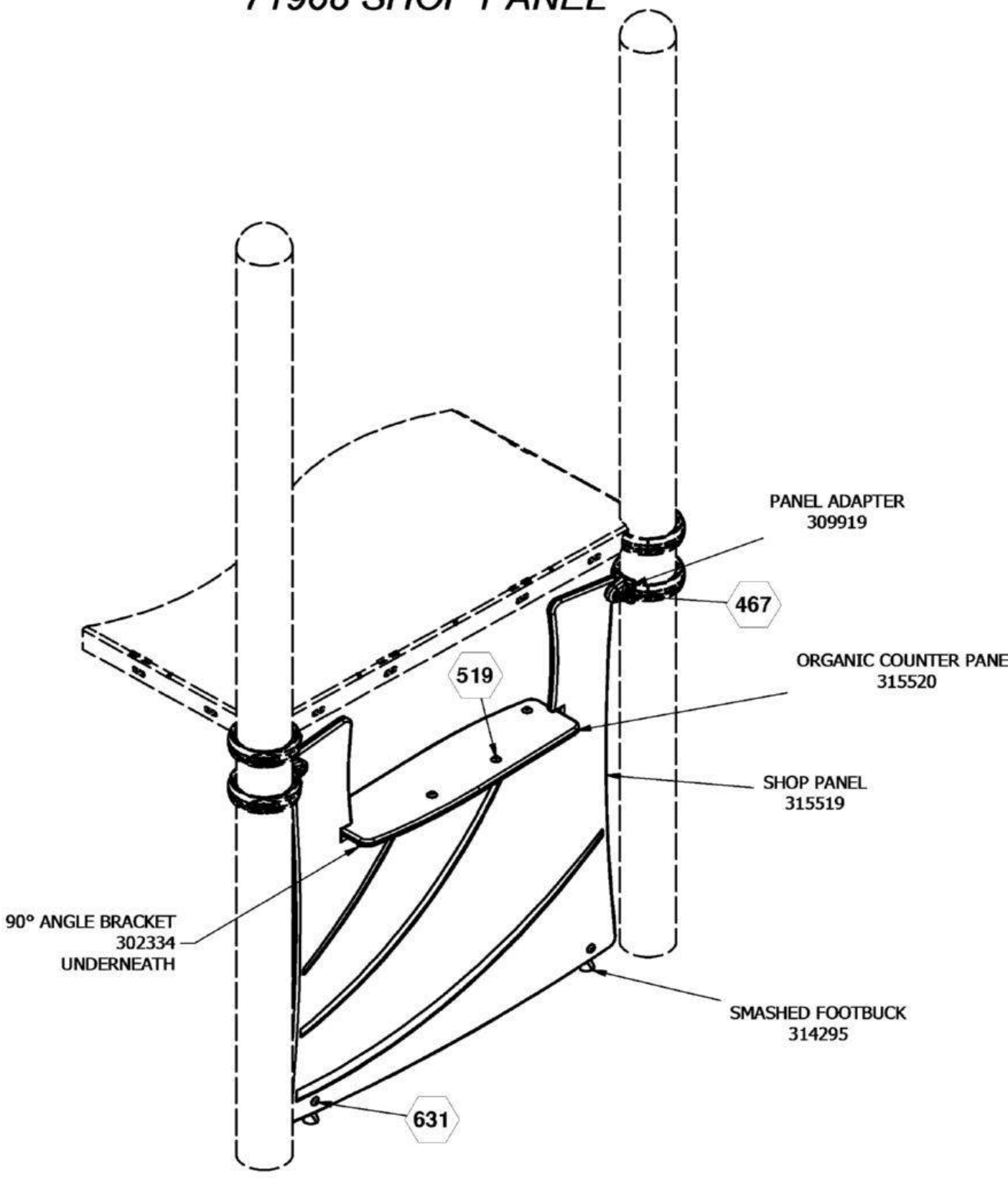
IMPORTANT! Avoid creating any gaps between the components which fall between 3-1/2" and 9". It has been shown that such gaps create entrapment points which can trap a child and cause injury.

8. When the structure is finished and satisfied, install Drive Rivets in all clamps to ensure clamps cannot slide down posts. See Ring Clamp subassembly sheets. ***It is very important that all Drive Rivets be installed prior to allowing use of the equipment, as clamps are not designed to support substantial weight without them.*** Install resilient surfacing material within the use zone (burring) on installed hardware like bolts, nuts, etc.

MAINTENANCE PROCEDURE:

Periodically check hardware for tightness, and tighten as necessary. Always check all parts for breakage or wear, and immediately put equipment out of service until any faulty parts found are repaired or replaced. Also check all metal parts for rust, paint loss and touch-up if necessary with paint. Check welded areas and verify integrity. Check periodically resilient surfacing for appropriate depth and remove extraneous materials that could cause injury, infection, or disease. Maintain detailed installation, inspection, maintenance, and repair records for each public-use playground equipment.

71968 SHOP PANEL



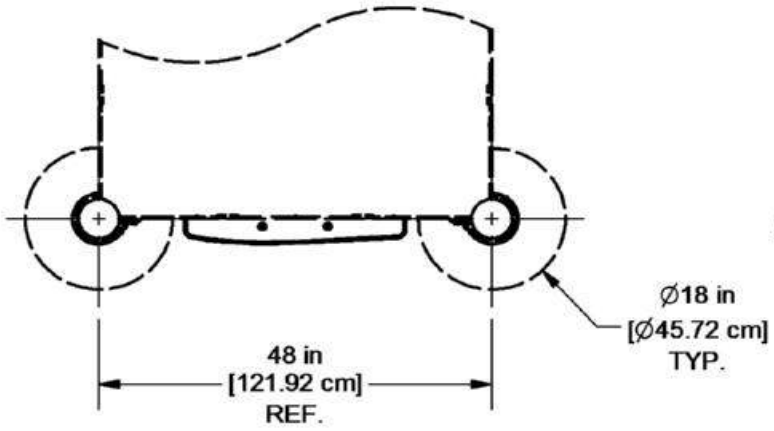
⬡ = INSTALLATION DETAIL

Issued/Revised: 2/15/2021

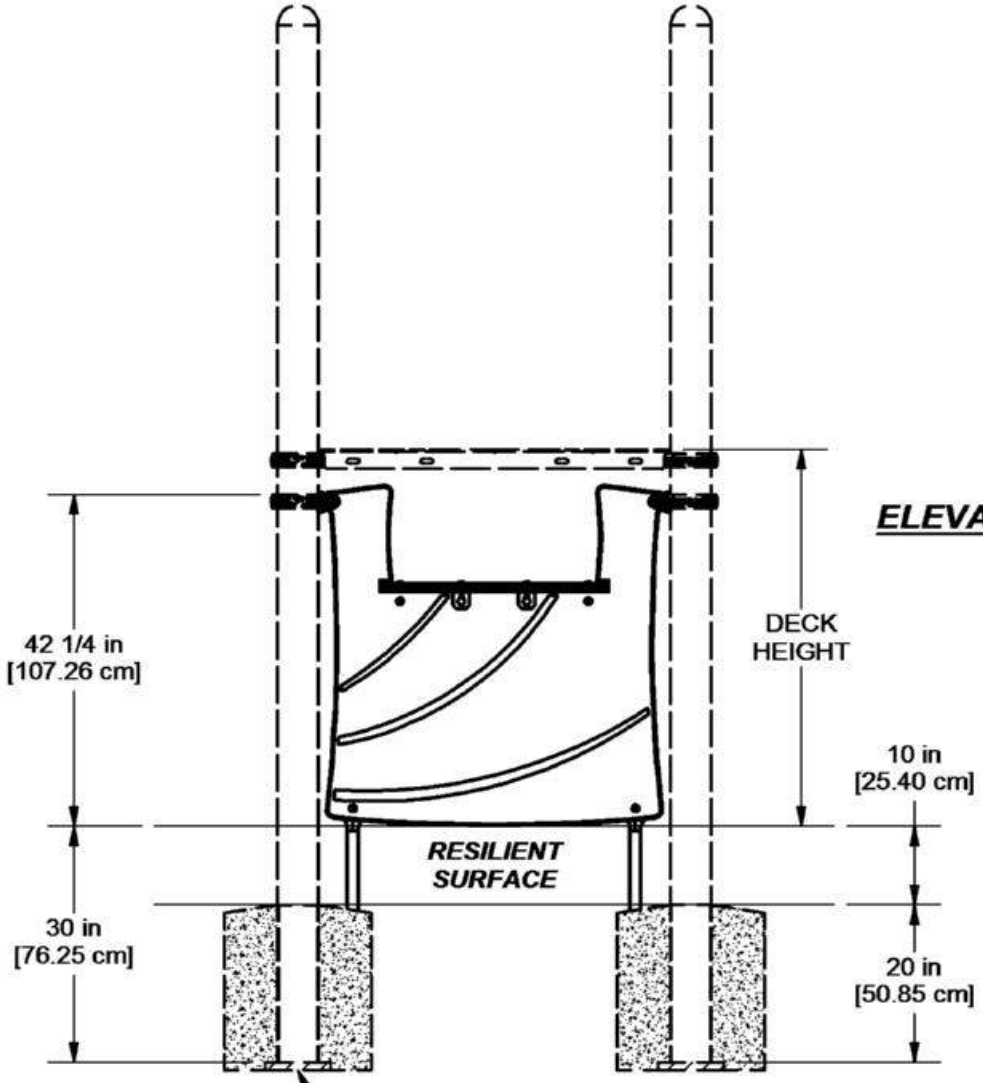
FINISHED ASSEMBLY

COMPONENTS SHOWN IN
HIDDEN LINES ARE SOLD SEPARATELY

71968 SHOP PANEL



PLAN VIEW

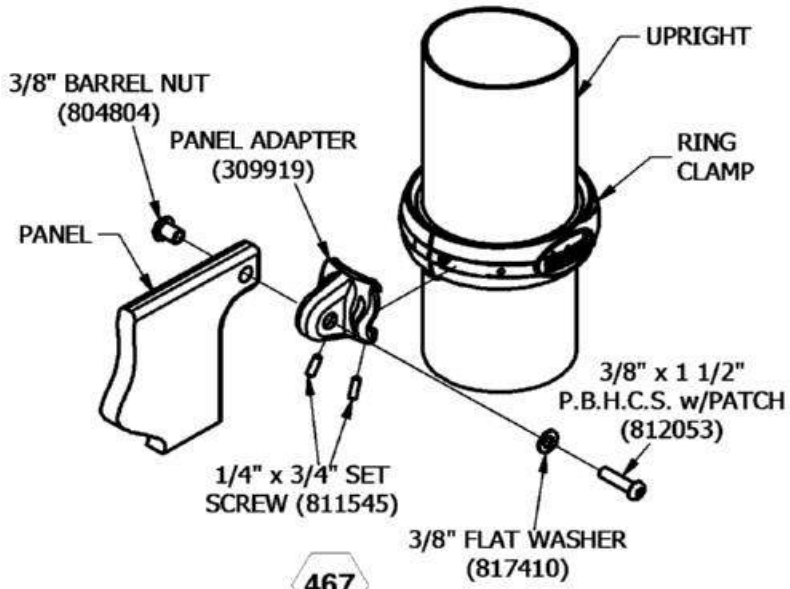


ELEVATION VIEW

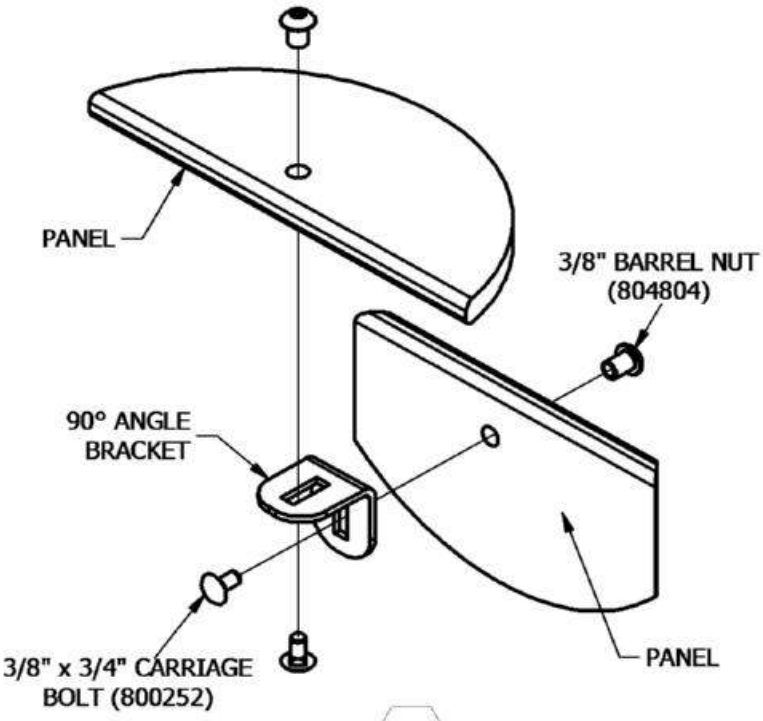
71968 SHOP PANEL

NOTE: PANEL ADAPTER WILL FIT INTO GROOVE IN TOP OF RING CLAMP AND SECURE WITH SET SCREWS.

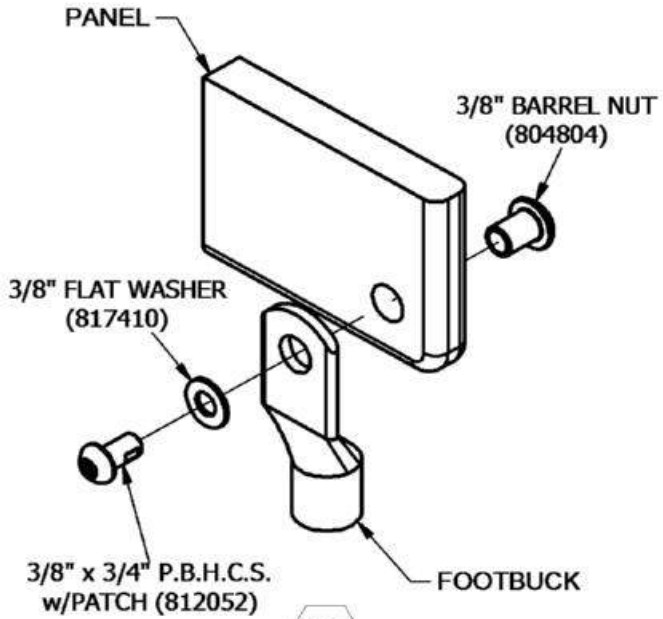
PANEL MUST ATTACH TO THE DECK SIDE OF THE ADAPTER.



467



519



631

Issued/Revised: 2/15/2021

SuperMax Play Systems

60040 (11'), 60041 (13'), 60042 (14'), 60089 (12'), 60246 (10'), 60944 (15'), 60945 (9'), 61540 (4'), & 61541 (5') SUPERMAX POST W/O CAP

(ADD G PREFIX FOT GALV. POST)

Parts List										
DESCRIPTION	60040	G60040	60041	G60041	60042	G60042	60089	G60089	60246	PART NUMBER
5" O.D. POST (ALUMINUM) 11'	1	0	0	0	0	0	0	0	0	302277
5" O.D. POST (GALVANIZED) 11'	0	1	0	0	0	0	0	0	0	G02277
5" O.D. POST (ALUMINUM) 13'	0	0	1	0	0	0	0	0	0	302278
5" O.D. POST (GALVANIZED) 13'	0	0	0	1	0	0	0	0	0	G02278
5" O.D. POST (ALUMINUM) 14'	0	0	0	0	1	0	0	0	0	302279
5" O.D. POST (GALVANIZED) 14'	0	0	0	0	0	1	0	0	0	G02279
5" O.D. POST (ALUMINUM) 12'	0	0	0	0	0	0	1	0	0	301921
5" O.D. POST (GALVANIZED) 12'	0	0	0	0	0	0	0	1	0	G01921
5" O.D. POST (ALUMINUM) 10'	0	0	0	0	0	0	0	0	1	301923

Parts List									
DESCRIPTION	G60246	60944	G60944	60945	G60945	61540	G61540	61541	G61541	PART NUMBER
5" O.D. POST (GALVANIZED) 10'	1	0	0	0	0	0	0	0	0	301922
5" O.D. POST (ALUMINUM) 15'	0	1	0	0	0	0	0	0	0	305797
5" O.D. POST (GALVANIZED) 15'	0	0	1	0	0	0	0	0	0	G05797
5" O.D. POST (ALUMINUM) 9'	0	0	0	1	0	0	0	0	0	305799
5" O.D. POST (GALVANIZED) 9'	0	0	0	0	1	0	0	0	0	G05799
5" O.D. POST (ALUMINUM) 4'	0	0	0	0	0	1	0	0	0	305616
5" O.D. POST (GALVANIZED) 4'	0	0	0	0	0	0	1	0	0	G05616
5" O.D. POST (ALUMINUM) 5'	0	0	0	0	0	0	0	1	0	305617
5" O.D. POST (GALVANIZED) 5'	0	0	0	0	0	0	0	0	1	G05617

Unless Otherwise Specified, All Units of Measure are Each

**Items listed below Hardware Complete line are included with Hardware Complete Number*

Warning: During Installation, Hardware And Small Parts Are Choking Hazards For Young Children. Store Unused Parts Appropriately Until Assembly Is Completed. Once Assembly Is Completed, Remove Any Unused Parts From The Play Environment And Dispose/Save Them In A Secure Location. Any bolt end protruding more than two full threads beyond the face of the nut causes risk of clothing entanglement. Promptly cut-off flush, file smooth, and treat to prevent corrosion.

Note: Peen Tee-Nuts and Flatwashers to match radius of pipe after assembly is complete.

Note: Loctite (supplied by others) should be used on any non-patch hardware.

60040 (11'), 60041 (13'), 60042 (14'), 60089 (12'), 60246 (10'), 60944 (15'), 60945 (9'), 61540 (4'), & 61541 (5') SUPERMAX POST W/O CAP

(ADD G PREFIX FOT GALV. POST)

INSTALLATION INSTRUCTIONS:

1. Component numbers are for one (1) Upright Post only. Please refer to your Plan Drawing and Footing Diagram to determine the proper quantity required and locations of Upright Posts.

2. Measure up from the lower end of each Upright Post and mark using a felt-tip marker 30" up from the end (optionally, this mark can be made with a fluorescent weather-proof naker of paint. It would become exposed as resilient surfacing wears away, thereby alerting maintenance personnel that it is time to replenish the surfacing). This should be your grade level once the post is in the ground and resilient surfacing is installed. To locate the finished ground level, you must decide how much resilient surface material you will be installing. (Refer to the Safety Guidelines to decide how much resilient surface to use, and note that a maximum total bury of 30" is provided per post, to include both the resilient surfacing and the concrete footer. See the accompanying diagram.) Place a mark below the 30" level to represent the finished ground level in the amount of resilient surface you will be instaling. Using your footing diagram and elevation view as a reference, move and dig holes accordingly.

3. Set the upright posts into the excavated footings in accordance with the footing diagram. Use a brick, small piece of plywood, or other blocking device (not supplied) at the bottom of each post to prevent the posts from sinking into the earth during plumbing and leveling.

4. Once the entire play structure is assembled, and all posts have been properly braced, re-check plumb and level. Pour concrete per the typical footing diagram only when all positions are correct. When pouring the footers, make sure the concrete has a downward slope of 45° at the top away from the post. Concrete that may have splashed onto the post should be washed off before it dries. Allow all concrete to harden a minimum of 48 hours before allowing children to play on the structures. Eliminate sharp points and sharp edges (burring) on installed hardware like nuts, bolts, etc.

MAINTENANCE PROCEDURE:

Periodically check hardware for tightness, and tighten as necessary. Always check all parts for breakage or wear, and immediately put equipment out of service until any faulty parts found are repaired or replaced. Also Check all metal parts for rust, paint loss and touch-up if necessary with paint. Check for welded areas and verify integrity. Check periodically resilient surfacing for appropriate depth and remove extraneous materials that could cause injury, infection, or disease. Maintain detailed installation, inspection, maintenance, and repair records for each public-use playground equipment.

SuperMax Play Systems

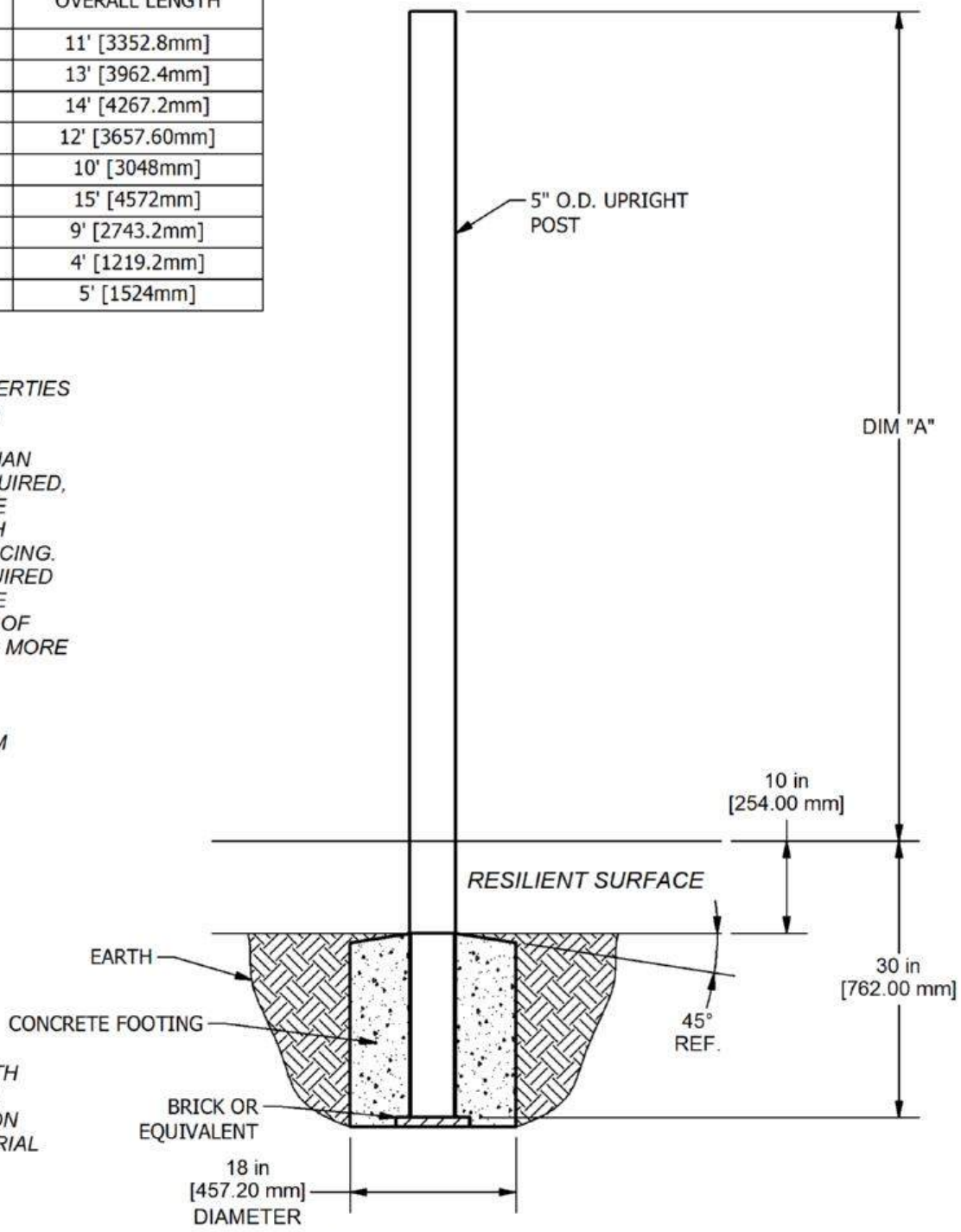
60040 (11'), 60041 (13'), 60042 (14'), 60089 (12'), 60246 (10'), 60944 (15'), 60945 (9'), 61540 (4'), & 61541 (5') SUPERMAX POST W/O CAP

(ADD G PREFIX FOT GALV. POST)

NO.	DIM "A"	OVERALL LENGTH
60040	8'-6" [2590.8mm]	11' [3352.8mm]
60041	10'-6" [3200.4mm]	13' [3962.4mm]
60042	11'-6" [3505.2mm]	14' [4267.2mm]
60089	9'-6" [2895.6mm]	12' [3657.60mm]
60246	7'-6" [2286mm]	10' [3048mm]
60944	12'-6" [3810mm]	15' [4572mm]
60945	6'-6" [1981.2mm]	9' [2743.2mm]
61540	1'-6" [457.2mm]	4' [1219.2mm]
61541	2'-6" [762mm]	5' [1524mm]

SHOCK ABSORBING PROPERTIES OF RESILIENT SURFACING MATERIALS VARY. IF YOU DETREMINE THAT LESS THAN 10" OF SURFACING IS REQUIRED, MAKE UP THE DIFFERENCE IN ELEVATION WITH EARTH BEFORE APPLYING SURFACING. IF MORE THAN 10" IS REQUIRED MAKE UP THE DIFFERENCE BY REDUCING THE DEPTH OF THE GROUND HOLE BY NO MORE THAN 2".

NOTE:
-SUGGESTED MINIMUM CONCRETE RATING 3000 PSI



NOTE: STANDARD POST LENGTH ALLOWS A MAXIMUM 30" BURY, CONSISTING OF A COMBINATION OF RESILIENT SURFACE MATERIAL AND CONCRETE

ELEVATION VIEW

Issued/Revised: 7/11/2019

City of Goleta
27 South La Patera Lane
Goleta, CA 93117

Play and Park Structures of Central Coast CA

This play equipment is recommended for children ages:
5-12

Minimum Area Required:
41'-7" x 36'-9"

Scale: 3/16" = 1'-0"
This drawing can be scaled only when in an 11" x 17" format

Drawn By:
Tiffanie Brown
Date:
11/15/23
Quote Number:
821-146018A

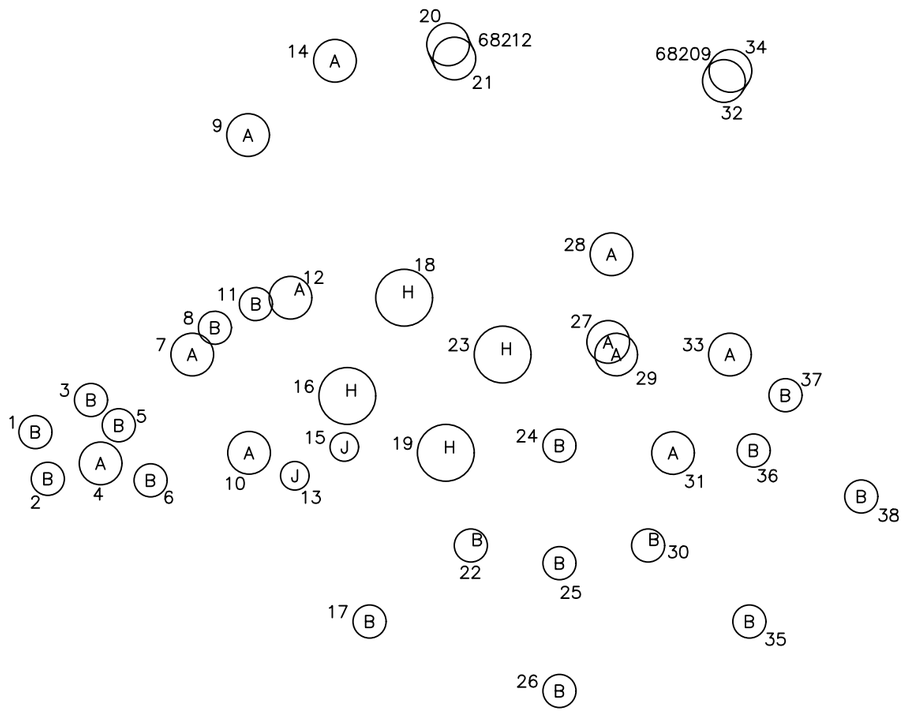
play&park structures
A PLAYCORE Company
544 Chestnut Street
Chattanooga, TN 37402
800-727-1907 / www.playandpark.com

Total Play Components	14			User Capacity
Elevated Play Components	9			40-50
Elevated Play Components Accessible by Ramp	0	Req.	0	Critical Fall Height
Elevated Components Accessible by Transfer	9	Req.	5	8'-0'
Accessible Ground Level Components Shown	5	Req.	3	
Different Types of Ground Level Components	3	Req.	3	

SUPERmax PLAY SYSTEMS

ISO 9001 CERTIFIED

Order 3325603



FOOTINGS TABLE			
TYPE	DIAMETER/SIDE	DEPTH	QTY.
A	1'–6" [45.72cm]	2'–6" [76.20cm]	15
B	1'–2" [35.56cm]	2'–6" [76.20cm]	17
J	1'–0" [30.48cm]	2'–0" [60.96cm]	2
H	(2'–0")² [45.72cm]	5'–0" [152.40cm]	4

FOOTINGS ORDINATE TABLE			
HOLE	X	Y	DIAG
1	–9'–0"	–4'–9"	10'–2"
2	–8'–6 1/2"	–6'–4 1/2"	10'–8"
3	–7'–0 1/2"	–3'–7"	7'–10 1/2"
4	–6'–8 1/2"	–5'–10"	8'–10 1/2"
5	–6'–0 1/2"	–4'–6"	7'–6 1/2"
6	–4'–11"	–6'–5"	8'–1"
7	–3'–5 1/2"	–2'–0"	4'–0"
8	–2'–8"	–1'–0 1/2"	2'–10 1/2"
9	–1'–6"	5'–8 1/2"	5'–11"
10	–1'–5 1/2"	–5'–5 1/2"	5'–8"
11	–1'–2 1/2"	–0'–2 1/2"	1'–3"
12	0'–0"	0'–0"	0'–0"
13	0'–2"	–6'–3"	6'–3"
14	1'–6 1/2"	8'–4"	8'–5 1/2"
15	1'–10 1/2"	–5'–3"	5'–7"
16	2'–0"	–3'–5 1/2"	4'–0"
17	2'–9 1/2"	–11'–5"	11'–9"
18	4'–0"	0'–0"	4'–0"
19	5'–5 1/2"	–5'–5 1/2"	7'–8 1/2"
20	5'–6 1/2"	8'–11"	10'–6"
21	5'–9"	8'–5"	10'–2 1/2"
22	6'–4"	–8'–8 1/2"	10'–9 1/2"
23	7'–5 1/2"	–2'–0"	7'–8 1/2"
24	9'–5 1/2"	–5'–2 1/2"	10'–9 1/2"
25	9'–5 1/2"	–9'–4"	13'–3 1/2"
26	9'–5 1/2"	–13'–10"	16'–9"
27	11'–2"	–1'–6 1/2"	11'–3 1/2"
28	11'–3 1/2"	1'–6 1/2"	11'–5"
29	11'–5 1/2"	–2'–0"	11'–7 1/2"
30	12'–7"	–8'–8 1/2"	15'–3 1/2"
31	13'–5 1/2"	–5'–5 1/2"	14'–6 1/2"
32	15'–3"	7'–7 1/2"	17'–0 1/2"
33	15'–5 1/2"	–2'–0"	15'–7"
34	15'–5 1/2"	7'–11 1/2"	17'–5"
35	16'–2"	–11'–4 1/2"	19'–9"
36	16'–3 1/2"	–5'–4 1/2"	17'–2"
37	17'–5"	–3'–5"	17'–9"
38	20'–1"	–7'–0"	21'–3"

IF FOOTING CONTAINS A COMPONENT NUMBER, REFERENCE THE INSTALLATION MANUAL FOR COMPONENT FOOTING SPECS.

It is the manufacturer's opinion that the structure shown herein complies with current ada standards concerning accessibility if used with proper accessible surfacing and together with other necessary ground level play equipment.
IMPORTANT: Never install play equipment over hard, unresilient surfaces such as asphalt, concrete, or compacted earth. It is the owner's responsibility to ensure the "minimum area required" contains an appropriate amount of resilient material to cushion accidental falls.

City of Goleta
27 South La Patera Lane
Goleta, CA 93117

Play and Park Structures of Central Coast CA

This play equipment is recommended for children ages:
5-12

Minimum Area Required:
41'-7" x 36'-9"

Scale: 1/8" = 1'-0"
This drawing can be scaled only when in an 11" x 17" format

Drawn By:
Tiffanie Brown
Date:
11/15/23
Quote Number:
821-146018A

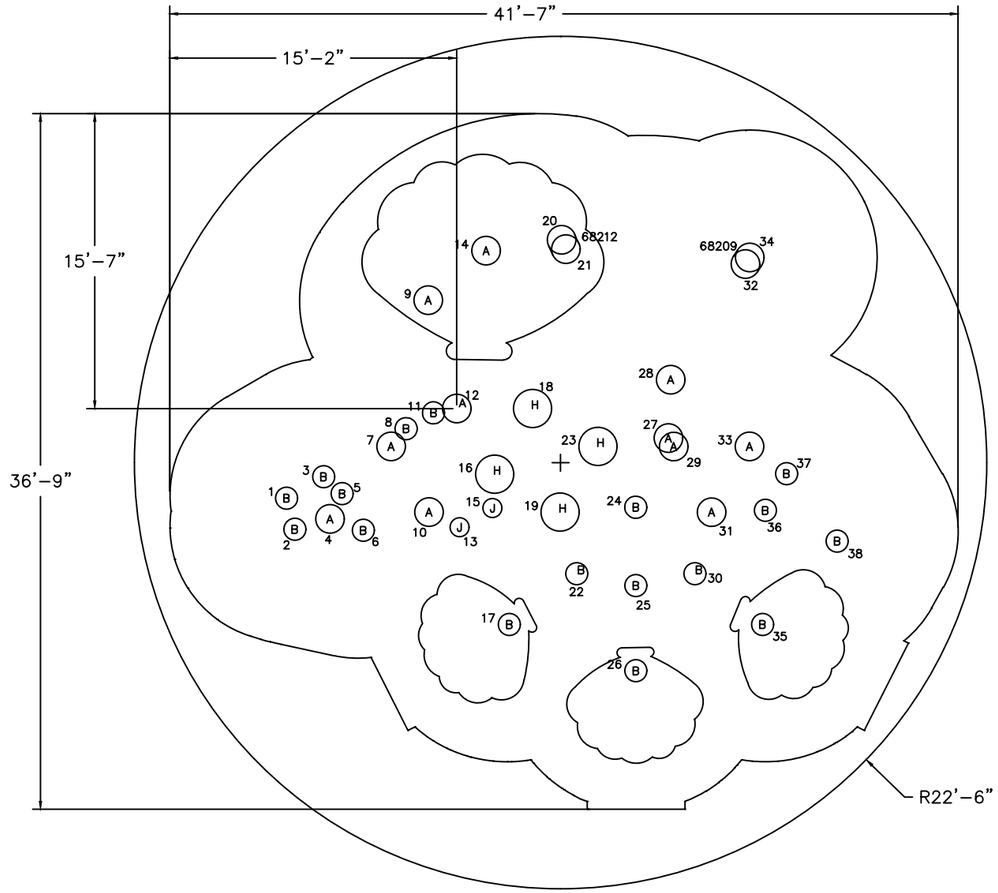
play&park structures
A PLAYCORE Company
544 Chestnut Street
Chattanooga, TN 37402
800-727-1907 / www.playandpark.com

Total Play Components	14			User Capacity
Elevated Play Components	9			40-50
Elevated Play Components Accessible by Ramp	0	Req.	0	Critical Fall Height
Elevated Components Accessible by Transfer	9	Req.	5	8'-0'
Accessible Ground Level Components Shown	5	Req.	3	
Different Types of Ground Level Components	3	Req.	3	

SUPERmax PLAY SYSTEMS

ISO 9001 CERTIFIED

Order 3325603



FOOTINGS TABLE			
TYPE	DIAMETER/SIDE	DEPTH	QTY.
A	1'–6" [45.72cm]	2'–6" [76.20cm]	15
B	1'–2" [35.56cm]	2'–6" [76.20cm]	17
J	1'–0" [30.48cm]	2'–0" [60.96cm]	2
H	(2'–0") [45.72cm]	5'–0" [152.40cm]	4

FOOTINGS ORDINATE TABLE			
HOLE	X	Y	DIAG
1	–9'–0"	–4'–9"	10'–2"
2	–8'–6 1/2"	–6'–4 1/2"	10'–8"
3	–7'–0 1/2"	–3'–7"	7'–10 1/2"
4	–6'–8 1/2"	–5'–10"	8'–10 1/2"
5	–6'–0 1/2"	–4'–6"	7'–6 1/2"
6	–4'–11"	–6'–5"	8'–1"
7	–3'–5 1/2"	–2'–0"	4'–0"
8	–2'–8"	–1'–0 1/2"	2'–10 1/2"
9	–1'–6"	5'–8 1/2"	5'–11"
10	–1'–5 1/2"	–5'–5 1/2"	5'–8"
11	–1'–2 1/2"	–0'–2 1/2"	1'–3"
12	0'–0"	0'–0"	0'–0"
13	0'–2"	–6'–3"	6'–3"
14	1'–6 1/2"	8'–4"	8'–5 1/2"
15	1'–10 1/2"	–5'–3"	5'–7"
16	2'–0"	–3'–5 1/2"	4'–0"
17	2'–9 1/2"	–11'–5"	11'–9"
18	4'–0"	0'–0"	4'–0"
19	5'–5 1/2"	–5'–5 1/2"	7'–8 1/2"
20	5'–6 1/2"	8'–11"	10'–6"
21	5'–9"	8'–5"	10'–2 1/2"
22	6'–4"	–8'–8 1/2"	10'–9 1/2"
23	7'–5 1/2"	–2'–0"	7'–8 1/2"
24	9'–5 1/2"	–5'–2 1/2"	10'–9 1/2"
25	9'–5 1/2"	–9'–4"	13'–3 1/2"
26	9'–5 1/2"	–13'–10"	16'–9"
27	11'–2"	–1'–6 1/2"	11'–3 1/2"
28	11'–3 1/2"	1'–6 1/2"	11'–5"
29	11'–5 1/2"	–2'–0"	11'–7 1/2"
30	12'–7"	–8'–8 1/2"	15'–3 1/2"
31	13'–5 1/2"	–5'–5 1/2"	14'–6 1/2"
32	15'–3"	7'–7 1/2"	17'–0 1/2"
33	15'–5 1/2"	–2'–0"	15'–7"
34	15'–5 1/2"	7'–11 1/2"	17'–5"
35	16'–2"	–11'–4 1/2"	19'–9"
36	16'–3 1/2"	–5'–4 1/2"	17'–2"
37	17'–5"	–3'–5"	17'–9"
38	20'–1"	–7'–0"	21'–3"

IF FOOTING CONTAINS A COMPONENT NUMBER, REFERENCE THE INSTALLATION MANUAL FOR COMPONENT FOOTING SPECS.

It is the manufacturer's opinion that the structure shown herein complies with current ada standards concerning accessibility if used with proper accessible surfacing and together with other necessary ground level play equipment.
IMPORTANT: Never install play equipment over hard, unresilient surfaces such as asphalt, concrete, or compacted earth. It is the owner's responsibility to ensure the "minimum area required" contains an appropriate amount of resilient material to cushion accidental falls.

City of Goleta
27 South La Patera Lane
Goleta, CA 93117

Play and Park Structures of Central Coast CA

This play equipment is recommended for children ages: 5-12

Minimum Area Required: 41'-7" x 36'-9"

Scale: 1/8" = 1'-0"
This drawing can be scaled only when in an 11" x 17" format

Drawn By: Tiffanie Brown
Date: 11/15/23
Quote Number: 821-146018A

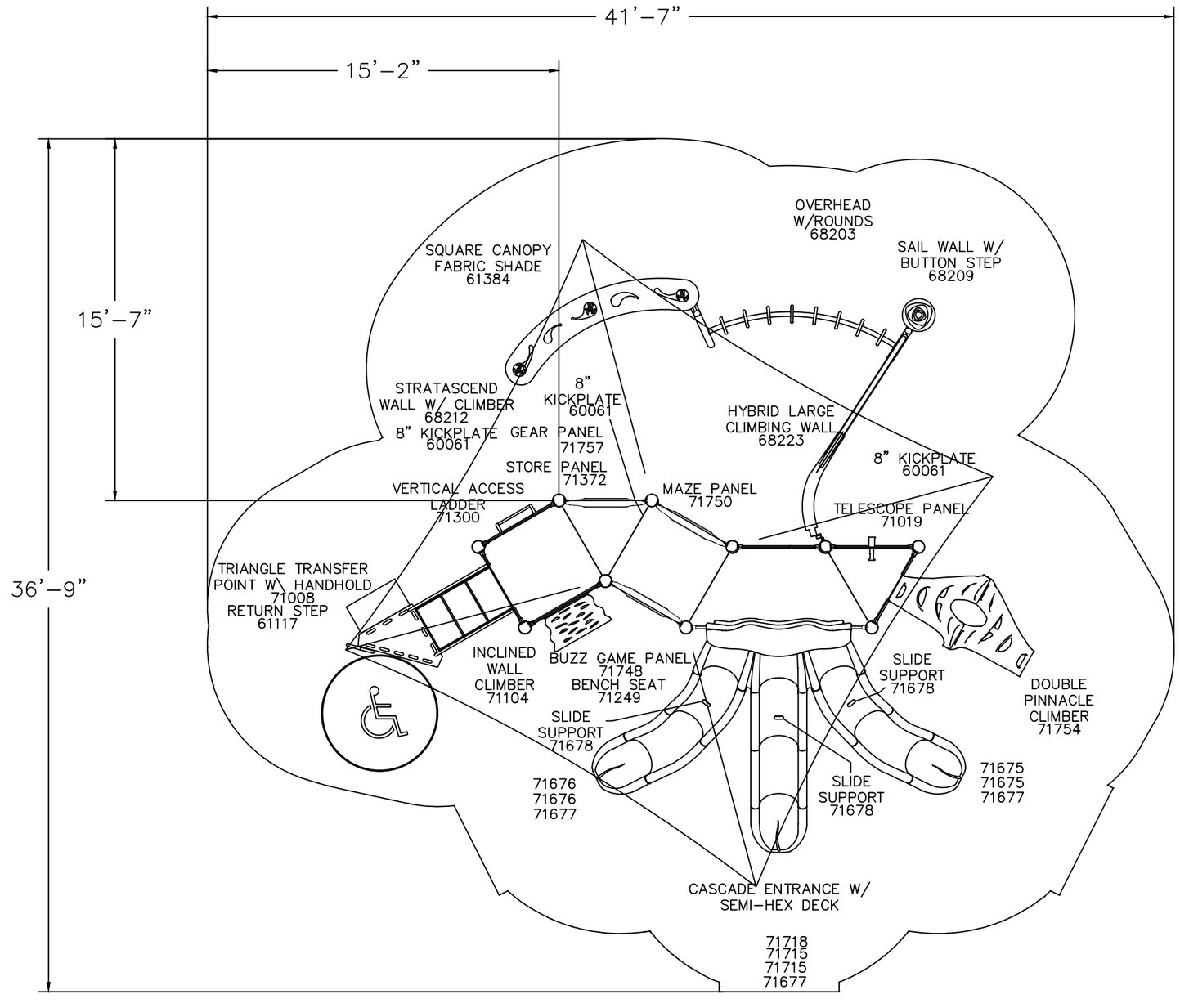
play&park structures
A PLAYCORE Company
544 Chestnut Street
Chattanooga, TN 37402
800-727-1907 / www.playandpark.com

Total Play Components	14			User Capacity
Elevated Play Components	9			40-50
Elevated Play Components Accessible by Ramp	0	Req.	0	Critical Fall Height
Elevated Components Accessible by Transfer	9	Req.	5	8'-0'
Accessible Ground Level Components Shown	5	Req.	3	
Different Types of Ground Level Components	3	Req.	3	

SUPERmax PLAY SYSTEMS

Order 3325603

ISO 9001 CERTIFIED



TOTAL OVERALL AREA
1591 SQ FT
142 LINEAR FT
TEAL: 190 SQ FT
BROWN: 1401 SQ FT

0 5 10 20

It is the manufacturer's opinion that the structure shown herein complies with current ada standards concerning accessibility if used with proper accessible surfacing and together with other necessary ground level play equipment.
IMPORTANT: Never install play equipment over hard, unresilient surfaces such as asphalt, concrete, or compacted earth. It is the owner's responsibility to ensure the "minimum area required" contains an appropriate amount of resilient material to cushion accidental falls.

City of Goleta
27 South La Patera Lane
Goleta, CA 93117

Play and Park Structures of Central Coast CA

This play equipment is recommended for children ages:
5-12

Minimum Area Required:
41'-7" x 36'-9"

Scale: 3/16" = 1'-0"
This drawing can be scaled only when in an 11" x 17" format

Drawn By:
Tiffanie Brown
Date:
11/15/23
Quote Number:
821-146018A

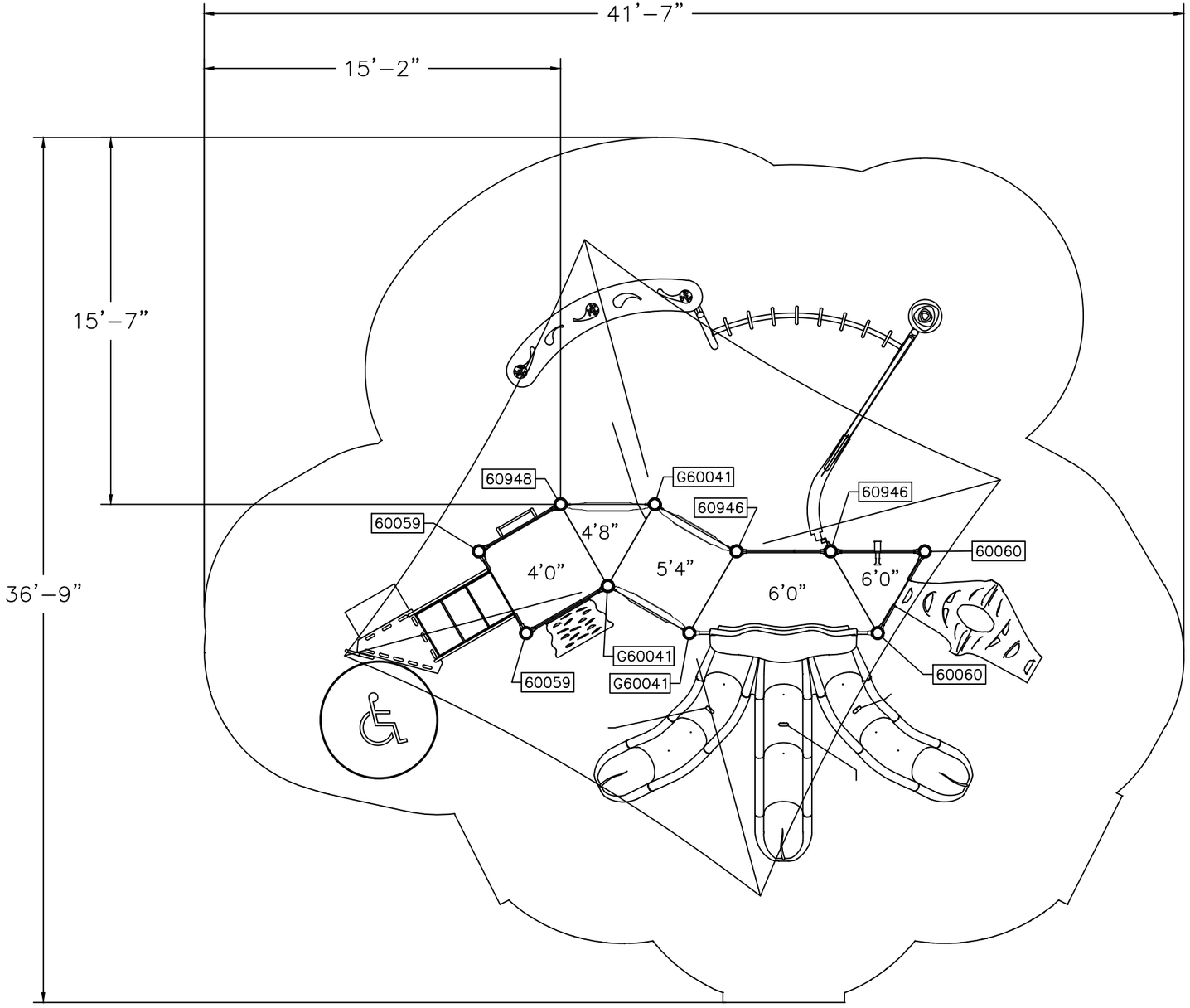
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Different Types of Ground Level Components	3	Req.	3	

SUPERmax PLAY SYSTEMS

ISO 9001 CERTIFIED

Order 3325603



UPRIGHT INFORMATION

UPRIGHT	DESCRIPTION
60059	10' GENERIC UPRIGHT w/CAP
60060	12' GENERIC UPRIGHT w/CAP
60946	15' GENERIC UPRIGHT w/CAP
60948	11' GENERIC UPRIGHT w/CAP
G60041	13' GENERIC UPRIGHT wo/CAP
G60060	12' GENERIC UPRIGHT w/CAP
G60946	15' GENERIC UPRIGHT w/CAP

TOTAL OVERALL AREA
1591 SQ FT
142 LINEAR FT
TEAL: 190 SQ FT
BROWN: 1401 SQ FT

0 5 10 20

It is the manufacturer's opinion that the structure shown herein complies with current ada standards concerning accessibility if used with proper accessible surfacing and together with other necessary ground level play equipment.
IMPORTANT: Never install play equipment over hard, unresilient surfaces such as asphalt, concrete, or compacted earth. It is the owner's responsibility to ensure the "minimum area required" contains an appropriate amount of resilient material to cushion accidental falls.

CITY OF GOLETA

APPENDIX N
POST-CONSTRUCTION WASTE REDUCTION & RECYCLING SUMMARY REPORT

FOR

MATHILDA PARK IMPROVEMENTS PROJECT

Back of Cover Sheet

MATHILDA PARK IMPROVEMENTS PROJECT
CITY PROJECT NO. 9113
APPENDIX N

CITY OF GOLETA

Public Works Department

Construction and Demolition Debris Recycling Program

Waste Reduction and Recycling Plan Guidance Document

March 2019

Getting Started with your Construction and Demolition Debris Recycling Program and the Post Construction Waste Reduction & Recycling Summary Report (WRRS)

Step 1 – Determine whether your project is subject to this requirement

The following regulated projects must complete and submit a Certificate of Implementation and a Waste Reduction and Recycling Summary Report:

1. All Commercial additions or alterations;
2. All Residential additions or alterations that add floor space/increase size.
3. All Demolition of any structure requiring a permit.
4. All New Construction (pursuant to the California Green Building Code)

Step 2 – Complete a Certificate Of Implementation:

- Submit to City for permit file.

Step 3 – Complete and submit a Post-Construction Waste Reduction & Recycling Summary Report (WRRS)

- Submit the Post-Construction WRRS report to the City for review. Package to include WRRS form, weight tickets, etc.
- WRRS shall be submitted at least five (5) days prior to final inspection and issuance of certificate of occupancy or temporary certificate of occupancy.
- A final Certificate of Occupancy cannot be issued until these requirements have been satisfied.

Certificate of Implementation
City's Implementation of State Law:
Construction and Demolition (C&D) Debris Recycling Program
State of California Green Building Code (CalGreen)

The California Green Building Code: Effective January 1, 2017, the 2016 CalGreen requires that all Commercial additions or alterations, all Residential additions or alterations that add floor space/increase size, all Demolition of any structure requiring a permit and all New Construction (pursuant to the California Green Building Code) are required to divert 65% of the construction materials generated during construction of the project. The City has therefore implemented a mandatory Construction and Demolition (C&D) Debris Recycling Program to divert at least 65% of these highly recoverable materials from the landfill in accordance with CalGreen. This Program shall as defined above.

_____ _____
Property Address Project Number (e.g. CDP, APR, OC, Permit)

_____ _____
Owner/Developer Name Phone#

E-mail address:_____

Proposed Solid Waste Hauler: _____
*** A change in hauler is permitted as long as applicant notifies City in writing.**

AFFIDAVIT OF PROJECT TYPE: (check one or more)
□ **The project involves new construction.** □ **The project involves commercial addition/alteration**.
□ **The project involves demolition.** □ **The project involves residential addition/alteration**.

For all projects: A Summary Report shall be submitted to the City detailing how a 65% or greater diversion **was met** to comply with CalGreen. Sign both the Affidavit and Certification below.

_____ _____ _____
Signature Printed Name Date
□ Property Owner/ Authorized Agent (circle which)
□ Licensed Contractor, License No._____

CERTIFICATION OF IMPLEMENTATION: C&D DEBRIS RECYCLING PROGRAM

This is to certify a C&D Recycling Program for the above-referenced address will be implemented to divert a minimum of 65% and a Summary Report (detailing how the diversion was met) shall be submitted to the City upon project completion, prior to obtaining a Certificate of Occupancy.

I declare that I have read and understand the requirements of the City's C&D Debris Recycling Program and that the foregoing is true and correct.

_____ _____ _____
Signature Printed Name Date

□ Property Owner/ Authorized Agent (circle which)
□ Licensed Contractor, License No. _____

Post-Construction
Waste Reduction & Recycling Summary Report (WRRS)

Pursuant to the California Green Building Code this form must be completed for the following types of projects:

- All Commercial additions or alterations;
- All Residential additions or alterations that add floor space/increase size.
- All Demolition of any structure requiring a permit.
- All New Construction

NOTE: Completed WRRS Reports shall be submitted to the City of Goleta Public Counter 5 days prior to Final Inspection and issuance of Certificate of Occupancy or Temporary Certificate of Occupancy. If you have questions, please call: 805-961-7575.

Building Permit#: _____ Date: _____

Project Address (Include floor, suite, etc.): _____

Contact Name: _____ Title: _____

Company Name: _____

Contact Mailing Address: _____

Phone: _____ Fax: _____

Email: _____

1. Type of Project: ☐New Construction ☐Addition/Alteration ☐Demolition
2. Type of Building: ☐Commercial ☐Single Family Residence ☐Apartment/Condominium
3. Tenant Improvement: ☐Yes ☐No
4. Size of Project: _____ sq. ft. Construction Valuation $ _____
5. Project Completion Date: _____
6. Briefly state how solid waste material was handled on your job site to ensure salvage/reuse or recycling.

_____

_____

_____

Please do not write below this line

Plan approve by: _____ Title: _____

Signature: _____ Date: _____

Post-Construction Waste Reduction & Recycling Summary Report

Diversion Requirement: Reduce quantity of materials disposed at landfills by 65% or more.

Column A: List estimated quantities of waste for each material type (in tons). To convert material quantities to tons, use the Materials Conversion Worksheet provided in your packet.
Columns B, C, D: List estimated quantities reused, recycled, or disposed.
Column E: State the name of all vendors or facilities to be used to reuse, recycle or dispose of material listed. See example below for cases where more than one facility will be used for a particular material type.
Column Totals: Add up all quantities listed in Column A. Do the same for Columns B, C and D.

Building Permit#: _____ Project Address: _____

Waste Reduction & Recycling Summary REPORT (WRRS Report)

Material Handling Methods - Indicate quantities (in tons only) for each material listed.					
Material Type	A Total Tons Generated (A=B+C+D)	B Quantity Salvaged or Reused	C Recycling	D Estimated Disposal	E Anticipated Material Destination(s) (R): Recycled; (D): Disposal
Example: Cardboard	2 tons		1.5	.5	(R) MarBorg (D) Tajiguas Landfill
Asphalt & Concrete					
Brick/Masonry/Tile					
Building Materials (doors, windows, fixtures, etc.)					
Carpet					
Carpet padding/Foam					
Cardboard					
Ceiling tile (acoustic)					
Dirt					
Drywall (used)					
Drywall (new, unpainted sheets or scrap)					
Landscape Debris (brush, trees, stumps, etc.)					
Scrap metal					
Unpainted Wood and Pallets					
Garbage/Trash					
Other					
Recycled mixed debris					
Column Totals					

7. To determine if the required 65% project waste reduction will be met, complete the following with the column totals:

(B _____ + C _____) / A _____ = _____ x 100 = _____ %

8. Is the percentage listed in #7 greater than or equal to 65%? ☐YES ☐NO - If "NO" please explain why:

_____

_____

9. Print Name: _____ Signature: _____ Date: ____/____/____

For Reference Only
MATERIALS CONVERSION WORKSHEET - SEPARATED MATERIALS[1]
(Total Tons Generated)

This worksheet lists materials typically generated from a construction or demolition project and provides formulas for converting common units (i.e. cubic yards, square feet and board feet) to tons. It can be used for preparing your WMP Report, which require that quantities be provided in tons. Step 1 - For your WMP, enter estimated quantity for each applicable material in Column I, based on units of cubic yards (cy), cubic foot (cu ft),square feet (sq ft), or board foot (bd ft). For your Summary Report, use the actual quantities, based on weight tags, gate receipts, or other documents. Step 2 - Multiply by Tons/Unit figure listed in Worksheet Column II. Enter the result for each material in Column III. Step 3 - Enter quantities for each separated material from Column C on the Worksheet into the corresponding section of Column A of your WMP Report.

Material Category		Column I Volume	Units	x	Column II Tons/unit	=	Column III Tons
Asphalt/Concrete	Asphalt (broken)		cy	x	.7	=	
	Concrete (broken)		cy	x	.9	=	
	Concrete (solid slab)		cy	x	1.2975	=	
Brick/Masonry/Tile	Brick (broken)		cy	x	.7	=	
	Brick (whole, palletized)		cy	x	1.512	=	
	Masonry Block (broken)		cy	x	.6	=	
	Tile		sq ft	x	.00175		
Building Materials (doors, windows, cabinets, etc.)			cy	x	.15	=	
Cardboard (flat)			cy	x	.05	=	
Carpet	(by square foot)		sq ft	x	.0005	=	
	(by cubic yard)		cy	x	.3	=	
Carpet Padding/Foam			sq ft	x	.000125	=	
Ceiling Tiles	(whole - palletized)		sq ft	x	.0003	=	
	(loose)		cy	x	.0875	=	
[2]Dirt			cu ft	x	.3852	=	
Drywall (new or used)	1/2“ (by square foot)		sq ft	x	.0008	=	
	5/8” (by square foot)		sq ft	x	.00105	=	
Drywall (demo/used)	(by cubic yard)		cy	x	.25	=	
Garbage/Trash			cy	x	.175	=	
Landscape Debris (brush trees, etc.)			cy	x	.15	=	
Scrap Metal			cy	x	.453	=	
Unpainted Wood & Pallets	(by board food)		bd ft	x	.001375	=	
	(by cubic yard)		cy	x	.15	=	
[3]Other				x		=	

cy = cubic yards cu ft= cubic foot sq ft = square foot bd ft = board foot

Total Tons =

[1] For additional conversion factors go to https://www2.calrecycle.ca.gov/Search/?q=conversion+factors

Sources:
[1]: City of Oakland PWD
[2] CalRecycle (factor averaged between 5 different types of dirt and converted to tons for consistency)
[3] For additional conversion factors go to https://www2.calrecycle.ca.gov/Search/?q=conversion+factors

ATTACHMENT 7

Mathilda Park Improvements Project Plans

CITY OF GOLETA

CITY OF GOLETA

MATHILDA PARK IMPROVEMENTS

MATHILDA PARK, GOLETA, CA

PROJECT DIRECTORY

PUBLIC WORKS
City of Goleta
130 Cremona Drive, Suite B — Phone: (805) 690-5139
Goleta, CA 93117 — Fax: (805) 685-2635
David Anaya

PARKS & RECREATION
City of Goleta
130 Cremona Drive, Suite B — Phone: (805) 562-5505
Goleta, CA 93117 — Fax: (805) 685-2635
JoAnne Plummer

PARKS & OPEN SPACE MANAGER
City of Goleta
130 Cremona Drive, Suite B — Phone: (805) 961-7578
Goleta, CA 93117 — Fax: (805) 685-2635
George Thomson

LANDSCAPE ARCHITECT
RRM Design Group
3765 South Higuera Street, Suite 102 — Phone: (805) 543-1794
San Luis Obispo, CA 93401 — Fax: (805) 543-4609
Contact: Chris Dufour

PROJECT DESCRIPTION

- THE PROJECT GENERALLY CONSISTS OF DEMOLITION OF EXISTING PLAY GROUND EQUIPMENT, SURFACING, CONCRETE WALKS, AND LANDSCAPING TO MAKE ROOM FOR NEW IMPROVEMENTS.
- NEW IMPROVEMENTS WILL GENERALLY INCLUDE MINOR GRADING, PLAY EQUIPMENT, RUBBER SURFACING, PEDESTRIAN WALKS, DRAINAGE, IRRIGATION AND LANDSCAPE IMPROVEMENTS FOR THE PARK.
- ALL IMPROVEMENTS SHALL MEET THE 2022 CALIFORNIA BUILDING CODE & 2010 ADA ACCESSIBILITY REQUIREMENTS.

LANDSCAPE SQUARE FOOTAGE

5,123 Sq. Ft. (INCLUDES TURF & PLANTER AREAS)

BASIS OF SURVEY

HORIZONTAL/VERTICAL DATUM:
THE HORIZONTAL DATUM FOR THIS PROJECT IS CALIFORNIA STATE PLANES, ZONE V (NAD83) AND VERTICAL DATUM FOR THIS PROJECT IS NORTH AMERICAN VERTICAL DATUM (NAVD) BASED ON GPS RTK USING SMARTNET REFERENCE STATION RTCM3229.

DIG ALERT

DIAL TOLL FREE

811

AT LEAST 2 DAYS BEFORE YOU DIG



VICINITY MAP

NOT TO SCALE

SHEET INDEX

G001	TITLE SHEET
G002	GENERAL NOTES AND ABBREVIATIONS
EC101	EROSION CONTROL PLAN
EC501	EROSION CONTROL DETAILS
LD101	DEMOLITION PLAN
GP101	SITE GRADING PLAN
LC001	CONSTRUCTION NOTES AND MATERIALS
LC101	SITE LAYOUT PLAN
LC501	SITE CONSTRUCTION DETAILS
LC502	SITE CONSTRUCITON DETAILS
LC701	PLAYGROUND LAYOUT - FOOTINGS
LC702	PLAYGROUND LAYOUT - FOOTINGS WITH SURFACING
LC703	PLAYGROUND LAYOUT - EQUIPMENT
LC704	PLAYGROUND LAYOUT - SURFACING
LI001	IRRIGATION NOTES AND LEGEND
LI101	IRRIGATION PLAN
LI501	IRRIGATION DETAILS
LI502	IRRIGATION DETAILS
LP101	PLANTING PLAN
LP501	PLANTING DETAILS

PLAYGROUND SUBMITTAL SPECIAL REQUIREMENTS

- CONTRACTOR SHALL PROVIDE A SHOP DRAWING OF THE FOLLOWING FOR THE PLAYGROUND COMPONENTS
  - HORIZONTAL CONTROL LAYOUT FOR PLAY EQUIPMENT POST AND FOOTING OVERLAID WITH SITE
  - SEE SPECIFICATIONS FOR ADDITIONAL SUBMITTAL REQUIREMENTS FOR CONTRACTOR QUALIFICATIONS

RECEIVED BY

CITY OF GOLETA

6/2/2025

LUZ "NINA" BUELNA — DATE
PUBLIC WORKS DIRECTOR

THE ENGINEERS WHOSE STAMP AND SIGNATURE APPEAR HEREIN ARE IN RESPONSIBLE CHARGE OF PREPARING THESE PLANS AND SPECIFICATIONS.

BID SET

rrm design group
rrmdesign.com | (805) 543-1794
3765 S. Higuera, San Luis Obispo, CA 93401

LICENSED LANDSCAPE ARCHITECT — CHRISTOPHER R. DUFOUR NO. 5937 — 08/30/26 — STATE OF CALIFORNIA

THE INCLUDED DRAWINGS, SPECIFICATIONS, IDEAS, DESIGNS, AND ARRANGEMENTS REPRESENTED THEREBY ARE AND SHALL REMAIN THE PROPERTY OF RRM DESIGN GROUP AND NO PART THEREOF SHALL BE COPIED, DISCLOSED TO OTHERS OR USED IN CONNECTION WITH ANY WORK OR PROJECT OTHER THAN THE SPECIFIED PROJECT FOR WHICH THEY HAVE BEEN PREPARED AND DEVELOPED WITHOUT THE WRITTEN CONSENT OF RRM DESIGN GROUP. VISUAL CONTACT WITH THESE DRAWINGS OR SPECIFICATIONS SHALL CONSTITUTE CONCLUSIVE EVIDENCE OF ACCEPTANCE OF THESE RESTRICTIONS. SUBMITTAL OF THESE DOCUMENTS FOR PUBLIC AGENCY REVIEW SHALL NOT BE CONSIDERED A WAIVER OF RRM DESIGN GROUP'S RIGHTS.
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RRM IS A CALIFORNIA CORPORATION

MATHILDA PARK IMPROVEMENTS
GOLETA CA 93117
TITLE SHEET

NO.	REVISION	DATE
1		
2		
3		
4		
5		
6		

PROJECT MANAGER
CHRIS DUFOUR

DRAWN BY	CHECKED BY
DK	CD

DATE
MAY 2025

PROJECT NUMBER
2019-01-RC21

SHEET
G001

N:\2000\2019-01-RC20-Mathilda-Park-Site-Improvement\Landscape-Architecture\Tasks-2-Con\Docs\Sheet-Files\2019-01-RC21.dwg, G001, May 14, 2025 11:21:om, ederistrom

ABBREVIATIONS

AB	AGGREGATE BASE OR ANCHOR BOLT
ABV	ABOVE
AC	ASPHALTIC CONCRETE
ACP	ASPHALTIC CONCRETE PAVING
ADJ	ADJACENT
AGG	AGGREGATE
ALT.	ALTERNATE
AP	ANGLE POINT
APPROX.	APPROXIMATE
ARCH	ARCHITECT (URAL)
AVE	AVENUE
BEL	BELOW
BEG	BEGIN
BLDG	BUILDING
BLK	BLOCK
BMP	BEST MANAGEMENT PRACTICES
BOT	BOTTOM
BOW	BACK OF WALK
BR	BOTTOM OF RAMP
BRG	BEARING
CB	CATCH BASIN
CF	CUBIC FOOT
CI	CAST IRON
CIP	CAST IN PLACE
C/L	CENTERLINE
CL	CENTERLINE
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
COL	COLUMN
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS, CONTINUE, CONTAINER SIZE
CP	CENTER POINT
CR	CURB RETURN
CTC	CENTER TO CENTER
CTR	CENTER
DAS	DIRECTION AS SHOWN
DET	DETAIL
DF	DRINKING FOUNTAIN
DI	DRAIN INLET
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DR	DRIVE
DS	DOWN SPOUT
DWG	DRAWING
EA	EACH
EB	ELECTRICAL BOX
EJ	EXPANSION JOINT
ELECT	ELECTRICAL
ELEV	ELEVATION
ENCL	ENCLOSURE
EQ	EQUAL
EQPT	EQUIPMENT
ESMT	EASEMENT
EWF	ENGINEERED WOOD FIBER
EX.,EXIST., (E)	EXISTING
FAB	FABRICATION
FBO	FURNISHED BY OTHERS
FF	FINISHED FLOOR
FFE	FINISHED FLOOR ELEVATION
FG	FINISHED GRADE
FIN	FINISH (ED)
FL	FLOWLINE
FOC	FACE OF CONCRETE
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOS	FACE OF STEP
FND	FOUNDATION
F.S.	FINISHED SURFACE
FST	FINISHED SURFACE TURF
FT	FOOT
FTG	FOOTING
FUT	FUTURE
FW	FACE OF WALL
GA	GAGE, GAUGE
GAL	GALLON
GALV.	GALVANIZED
GB	GRADE BREAK
GKT	GASKET
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GR	GRATE
HB	HOSE BIB
HC	HANDICAPPED
HCAP	HANDICAPPED
HDB	HEADBOARD
HEX	HEXAGONAL
HOR	HORIZONTAL
HP	HIGH POINT
HT	HEIGHT
ID	INSIDE DIAMETER
IRR	IRRIGATION BOX
INT	INTERSECTION
INV	INVERT
IV	IRRIGATION VALVE
JT	JOINT
L	LENGTH
LB	LAG BOLT
LH	LEFT HAND
LOC	LOCATION
LP	LOW POINT
LS	LAG SCREW
LT	LEFT
MANUF.	MANUFACTURE(R)
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MED	MEDIUM
MFG	MANUFACTURING
MIN.	MINIMUM
MISC	MISCELLANEOUS
ML	MAINLINE
(N)	NEW
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
OCEW	ON CENTER EACH WAY
OD	OUTSIDE DIAMETER
O.F.C.I.	OWNER FURNISHED, CONTRACTOR INSTALLED
OH	OVERHEAD
OPP	OPPOSITE
OPT	OPTIONAL
P/A	PLANTER AREA
PC	POINT OF CURVE
PERF	PERFORATE (D)
PERP	PERPENDICULAR
PFE	PUBLIC FACILITIES EASEMENT
PL	PROPERTY LINE
POB	POINT OF BEGINNING
POC	POINT OF CONNECTION
PRC	POINT OF REVERSE CURVE
PROP	PROPOSED
PSI	POUNDS PER SQUARE INCH
PT	POINT, POINT OF TANGENCY
PTDF	PRESSURE TREATED DOUGLAS FIR
PTL	PRESSURE TREATED LUMBER
PUE	PUBLIC UTLITIES EASEMENT
PVC	POLYVINYL CHLORIDE
Q.C.	QUICK COUPLER
QTY	QUANTITY
QCV	QUICK COUPLER
R, RAD	RADIUS
RD	ROAD
RDWD	REDWOOD
REBAR	REINFORCING BAR
REF	REFERENCE
REM	REMOVE
REQ'D	REQUIRED
REV	REVISION(S), REVISED
RH	RIGHT HAND
ROW	RIGHT OF WAY
RT	RIGHT
S	SLOPE
SCH	SCHEDULE
SD	STORM DRAIN
SF	SQUARE FEET
SHT	SHEET
SIM	SIMILAR
SL	SLOPE
SPEC	SPECIFICATION(S)
SQ	SQUARE
SS	SANITARY SEWER
S/S	STAINLESS STEEL
ST	STREET
STA	STATION
STD	STANDARD
STL	STEEL
STRUC	STRUCTURE/ STRUCTURAL
S X T	SLIP AND THREAD
SURF	SURFACE
SWCL	SIDEWALK CENTERLINE
SWPCP	STORMWATER POLLUTION CONTROL PLAN
SYS	SYSTEM
SYN	SYNTHETIC
TBC	TOP BACK OF CURB
TC	TOP OF CURB
TEL	TELEPHONE VAULT
TF	TOP OF FOOTING
TG	TOP OF GRATE
TP	TANGENT POINT
TR	TOP OF RAMP
TS	TOP OF STEP
TW	TOP OF WALL
TYP.	TYPICAL
UON	UNLESS OTHERWISE NOTED
VAR	VARIES
V.I.F.	VERIFY IN FIELD
VERT	VERTICAL
W	WATER
W/	WITH
W/O	WITHOUT
WM	WATER METER
WUCOLS	WATER USE CLASSIFICATION OF LANDSCAPE SPECIES
@	AT
℄	CENTERLINE
Ø	DIAMETER
SF	SQUARE FEET

GENERAL CONSTRUCTION NOTES

1. NO SWPCP WILL BE REQUIRED.
2. PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY ALL CONDITIONS WHERE NEW HARDSCAPE IMPROVEMENTS MEETS EXISTING FOR GRADING, DRAINAGE, AND UNDERGROUND FACILITIES, INCLUDING LOCATION AND ELEVATION OF EXISTING FACILITIES AT CROSSINGS WITH PROPOSED UNDERGROUND FACILITIES. IF CONDITIONS DIFFER FROM THOSE SHOWN ON THE PLANS, THE CONTRACTOR SHALL NOTIFY THE CITY'S AUTHORIZED REPRESENTATIVE AND SHALL NOT BEGIN CONSTRUCTION UNTIL THE CHANGED CONDITIONS HAVE BEEN EVALUATED AND RESOLVED.
3. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE PLANS AND SITE CONDITIONS PRIOR TO BEGINNING WORK. SHOULD CONFLICTING INFORMATION BE FOUND ON THE PLANS, THE CONTRACTOR SHALL NOTIFY AND RECEIVE DIRECTION FROM THE CITY'S AUTHORIZED REPRESENTATIVE BEFORE PROCEEDING WITH THE WORK IN QUESTION.
4. ONLY "APPROVED" STAMPED AND SIGNED DRAWINGS SHALL BE USED FOR THE CONSTRUCTION OF THIS PROJECT.
5. NO CHANGES OR MODIFICATIONS TO THE PLANS SHALL BE MADE WITHOUT THE PRIOR WRITTEN APPROVAL OF THE CITY'S AUTHORIZED REPRESENTATIVE.
6. CONSULT WITH WITH THE CITY'S ARBORIST PRIOR TO PRUNING OR WORKING WITHIN THE DRIPLINE OF ANY TREE. ALL PRUNING OF TREES SHALL BE KEPT TO A MINIMUM AND MUST FOLLOW CITY OF GOLETA STANDARDS.
7. NO TREES, OTHER THAN THOSE INDICATED ON THE DRAWINGS, SHALL BE REMOVED WITHOUT PRIOR APPROVAL OF THE CITY'S AUTHORIZED REPRESENTATIVE.
8. NO MATERIALS OR EQUIPMENT SHALL BE STORED WITHIN THE DRIPLINE OF ANY TREE.
9. ALL NUMERIC AND WRITTEN DIMENSIONS SHALL HAVE PRECEDENCE OVER ALL SCALE DIMENSIONS.
10. DETAILS AND NOTES ON THE DRAWINGS TAKE PRECEDENCE OVER TYPICAL DETAILS AND GENERAL NOTES.
11. ALL CONSTRUCTION SHALL CONFORM TO THE APPROVED PLANS AND SPECIFICATIONS. IN THE ABSENCE OF A SPECIFIED STANDARD OR SPECIFICATION, WORK SHALL CONFORM TO THE CURRENT CITY OF GOLETA STANDARDS. IF NONE EXISTS, 2018 EDITION OF CALTRANS STANDARD SPECIFICATIONS, SHALL APPLY.
12. CONTRACTOR SHALL TAKE ALL CARE TO PREVENT DISRUPTION OF PROJECT SITE IN AREAS OUTSIDE CONSTRUCTION ZONE.
13. PROPOSED DEVIATIONS FROM THE PLANS MUST BE SUBMITTED TO THE CITY'S AUTHORIZED REPRESENTATIVE FOR REVIEW AND APPROVAL, INCLUDING FIELD REVISIONS REQUESTED BY THE CITY'S AUTHORIZED REPRESENTATIVE.
14. THE CONTRACTOR SHALL EMPLOY ALL LABOR, EQUIPMENT, AND METHODS REQUIRED TO PREVENT HIS OPERATIONS FROM PRODUCING DUST IN AMOUNTS DAMAGING TO PROPERTY, CULTIVATED OR NATIVE VEGETATION, AND DOMESTIC AND NON-DOMESTIC ANIMALS OR CAUSING A NUISANCE TO PERSONS OCCUPYING BUILDINGS IN THE VICINITY OF THE JOB SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE CAUSED BY DUST RESULTING FROM HIS OPERATIONS.
15. CONSTRUCTION LINE AND GRADE STAKES SHALL BE SET BY A CIVIL ENGINEER OR SURVEYOR LICENSED IN THE STATE OF CALIFORNIA.
16. CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OR PROPER RESETTING OF ALL EXISTING MONUMENTS AND OTHER SURVEY MARKERS. ANY SURVEY MONUMENTS DESTROYED BY THE CONTRACTOR SHALL BE REPLACED IN ACCORDANCE WITH THE STATE LAND SURVEYORS ACT AT THE CONTRACTOR'S EXPENSE.
17. ALL PROTECTIVE DEVICES TO BE INSTALLED BY THE CONTRACTOR, SHALL BE IN PLACE AT THE END OF EACH WORK DAY. A SAFE AND ACCESSIBLE PEDESTRIAN PATH OF TRAVEL SHALL BE PROVIDED AT ALL TIMES TO AND FROM BUILDING ENTRANCES TO PARKING FACILITIES. COORDINATE PEDESTRIAN WALK CLOSURES WITH CITY'S AUTHORIZED REPRESENTATIVE PRIOR TO CONSTRUCTION.
18. CONTRACTOR SHALL REFER TO MATERIALS SPECIFICATIONS THROUGHOUT THE APPROVED PLAN SET AND SPECIFICATIONS. ANY SUBSTITUTIONS OF THE MATERIALS SPECIFIED IN THESE DOCUMENTS SHALL REQUIRE WRITTEN APPROVAL FROM THE CITY'S AUTHORIZED REPRESENTATIVE.
19. DURING THE COURSE OF WORK, THE CONTRACTOR SHALL BE RESPONSIBLE FOR CALLING THE CITY'S AUTHORIZED REPRESENTATIVE FOR TESTING AND INSPECTION 24 HOURS IN ADVANCE. WORK NOT PROPERLY TESTED AND INSPECTED WILL BE SUBJECT TO REJECTION.
20. WORK IN AND ALONG PUBLIC STREETS AND PARKING LOTS, ONCE BEGUN, SHALL PROCEED TO COMPLETION WITHOUT DELAY SO AS TO PROVIDE MINIMUM INCONVENIENCE TO THE PUBLIC.
21. CONTRACTOR SHALL BE RESPONSIBLE FOR THE VERIFICATION OF LOCATION OF ALL EXISTING UTILITIES IN THE FIELD PRIOR TO CONSTRUCTION. ALL UTILITIES SHALL BE PROTECTED AND REPAIRED BY THE CONTRACTOR IF DAMAGED.
22. CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFICATION OF ALL UTILITY COMPANIES 48 HOURS PRIOR TO THE BEGINNING OF WORK. BRING ANY CONFLICTS WITH NEW IMPROVEMENTS IMMEDIATELY TO THE ATTENTION OF THE CITY'S AUTHORIZED REPRESENTATIVE.
23. NOTIFY UNDERGROUND SERVICE ALERT (USA) TOLL FREE AT 811 A MINIMUM OF FORTY-EIGHT WORKING HOURS PRIOR TO THE START OF CONSTRUCTION.
24. CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR LOCATING OR HAVING LOCATED ALL UNDERGROUND UTILITIES AND RELATED FACILITIES AND FOR PROTECTING SAME DURING THE COURSE OF CONSTRUCTION. ALL UTILITIES THAT ARE NOT A MEMBER OF USA MUST ALSO BE NOTIFIED.
25. THIS PROJECT SHALL COMPLY WITH THE 2022 EDITIONS OF THE CALIFORNIA BUILDING CODE (CBC), CALIFORNIA PLUMBING CODE (CPC), CALIFORNIA ELECTRICAL CODE (CEC), ALL AMENDMENTS TO THE CA CODES ADOPTED BY THE CITY OF GOLETA CITY, AND ALL OTHER CODES, REGULATIONS, AND APPROVALS ESTABLISHED BY THE CITY OF GOLETA.
26. PRIOR TO START OF CONSTRUCTION, THE CONTRACTOR SHALL SCHEDULE A PRECONSTRUCTION CONFERENCE WITH ALL PARTIES INVOLVED AT THE PROJECT SITE TO REVIEW THE SPECIAL INSPECTION REQUIREMENTS, PROCEDURES, AND INDIVIDUAL SPECIAL INSPECTORS THAT WILL BE ASSIGNED TO THE PROJECT, AS WELL AS REQUIREMENTS FOR STRUCTURAL OBSERVATION. CONTRACTOR SHALL CONTACT THE CITY OF GOLETA BUILDING DIVISION TO CONFIRM AN ACCEPTABLE MEETING DATE AND TIME.

KEY TO SHEET NUMBERING

DRAWING SHEET NUMBERING AND ORGANIZATION IS ADAPTED FROM THE UNITED STATES NATIONAL CAD STANDARD.

DISCIPLINE DESIGNATORS - LEVEL 1 (Partial List)

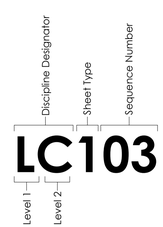
G	General
R	Resource (Existing Conditions)
H	Hazardous Materials
V	Survey/Mapping
B	Geotechnical
C	Civil
L	Landscape
S	Structural
A	Architectural
E	Electrical
Z	Contractor/Shop Drawings

DISCIPLINE DESIGNATORS - LEVEL 2 (Partial List)

D	Demolition
S	Site
G	Grading
E	Erosion Control
U	Utilities
C	Construction
I	Irrigation
P	Planting
L	Lighting
W	Stormwater
H	Horizontal Control

SHEET TYPES

0	General: Symbol legend, abbreviations, general notes.
1	Plans
2	Elevations
3	Sections
4	Large Scale Drawings: plans, elevations, sections (not details)
5	Details
6	Schedules and Diagrams
7	User Defined
8	User Defined
9	3D Drawings: isometric, perspective, photos



Example
Sheet number at left (LC103) is LANDSCAPE CONSTRUCTION PLAN, THIRD SHEET.

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LICENSED LANDSCAPE ARCHITECT
CHRISTOPHER R. DUFOUR No. 6191
08/30/26
Renewal Date
STATE OF CALIFORNIA

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GOLETA CA 93117

GENERAL NOTES AND ABBREVIATIONS

NO.	REVISION	DATE
1		
2		
3		
4		
5		
6		

PROJECT MANAGER
CHRIS DUFOUR

DRAWN BY	CHECKED BY
DK	CD

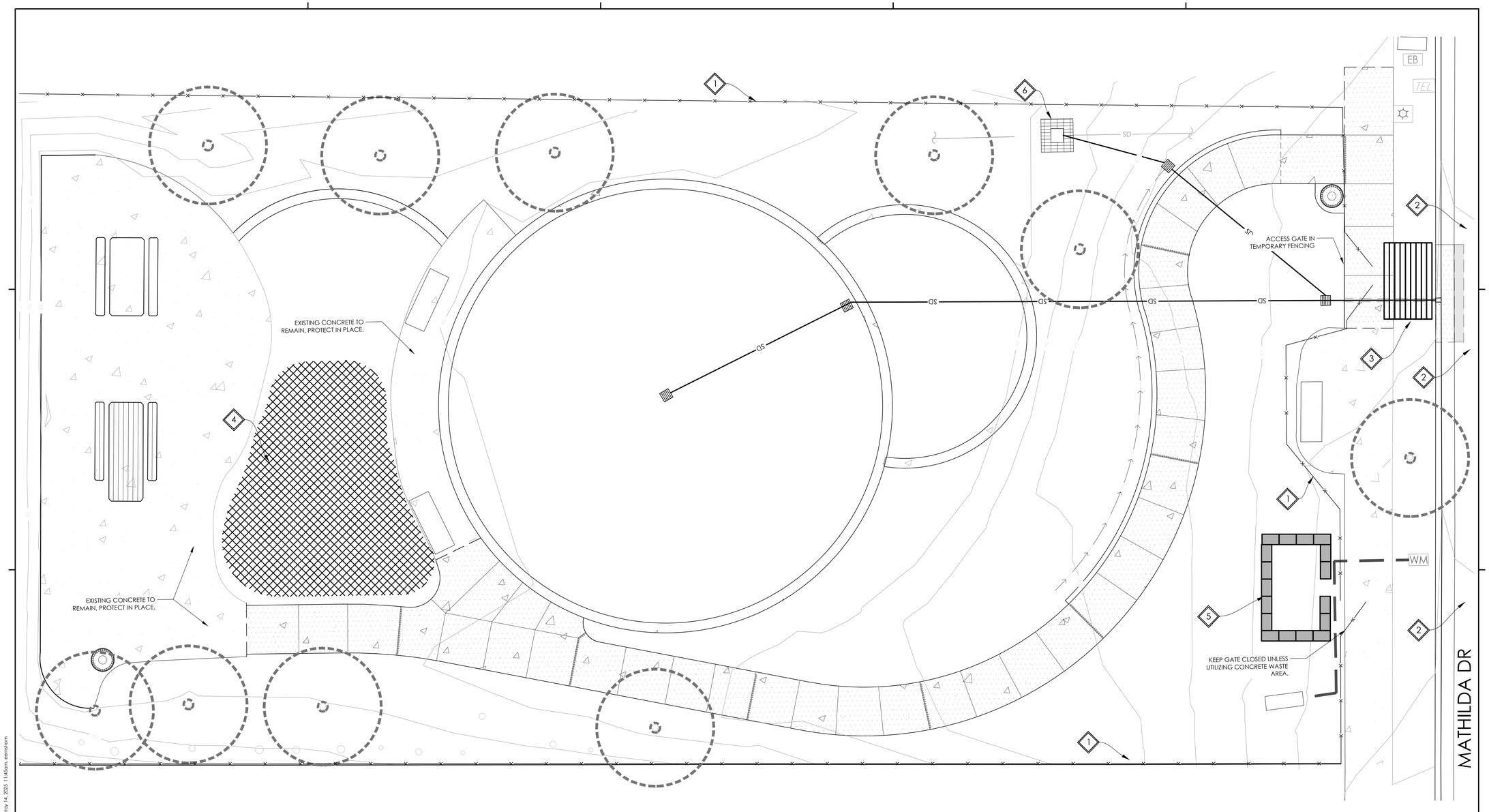
DATE
MAY 2025

PROJECT NUMBER
2019-01-RC21

SHEET
G002

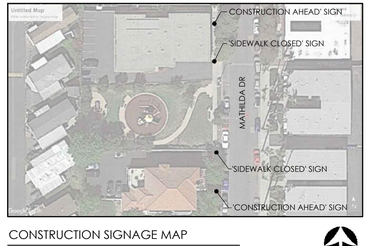
BID SET

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KEY NOTES

#	BMP		NAME	DETAIL
1	SE-1		INSTALL 6'-0" HIGH TEMPORARY CHAINLINK FENCE PANELS ON STANDS WITH MIN. 36" SILT FABRIC AT BASE	
2	SE-7		PROVIDE STREET SWEEPING & VACUUMING TO MAINTAIN CLEAN STREETS BY END OF EACH DAY	
3	TC-1		STABILIZED CONSTRUCTION ENTRANCE	EC501
4	WM-1		MATERIAL DELIVERY & STORAGE AREA - CONSTRUCTION STAGING AREA	
5	WM-8		CONCRETE WASTE MANAGEMENT	EC501
6	SC-10		STORM DRAIN INLET PROTECTION	EC501



CONSTRUCTION SIGNAGE MAP

SCALE: N.T.S.



CONSTRUCTION HAUL/DELIVERY ROUTE

SCALE: N.T.S.

NOTES:

1. FOR SYMBOL AND LINETYPE DESCRIPTIONS, SEE CONSTRUCTION LEGEND ON SHEET LC101.
2. BMP REFERS TO DESIGNATION GIVEN IN THE CASQA STORMWATER BEST MANAGEMENT PRACTICE CONSTRUCTION HANDBOOK.
3. SEE HANDBOOK FOR IMPLEMENTATION STRATEGIES.
4. CONTRACTOR TO PLACE AND MAINTAIN EROSION AND SEDIMENT CONTROL BMP'S IN CONFORMANCE WITH CALIFORNIA STATE WATER RESOURCES CONTROL BOARD (CSWRCB)'S CONSTRUCTION ACTIVITIES STORMWATER GENERAL PERMIT ORDER NO. 2009-0009-DWQ (JULY 1, 2010).
5. EROSION CONTROL PLANS ARE CONCEPTUAL IN NATURE AND ARE PROVIDED FOR BIDDING PURPOSES ONLY. THEY DO NOT REFLECT THE ONLY EROSION CONTROL BMP'S NECESSARY FOR THE WORK. THE CONTRACTOR SHALL PREPARE THEIR OWN EROSION CONTROL PLANS TO BE SUBMITTED FOR APPROVAL AND SHALL INCLUDE ALL NECESSARY BMP'S IN THE COST BREAKDOWN

NORTH

0 5 10 15 feet

1" = 5'-0"

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LICENSED LANDSCAPE ARCHITECT
CHRISTOPHER S. DUFOUR NO. 5191
08/30/25
Renewal Date
Date
STATE OF CALIFORNIA

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EROSION CONTROL PLAN

NO.	REVISION	DATE

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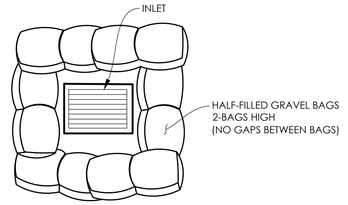
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DATE
MAY 2025

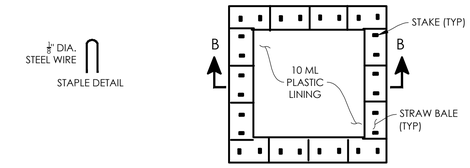
PROJECT NUMBER
2019-01-RC21

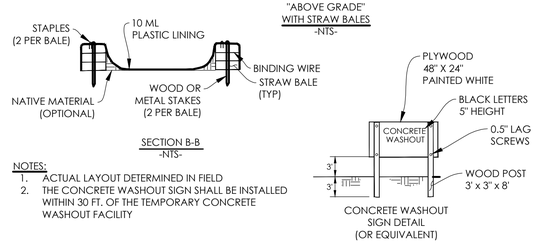
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EC101

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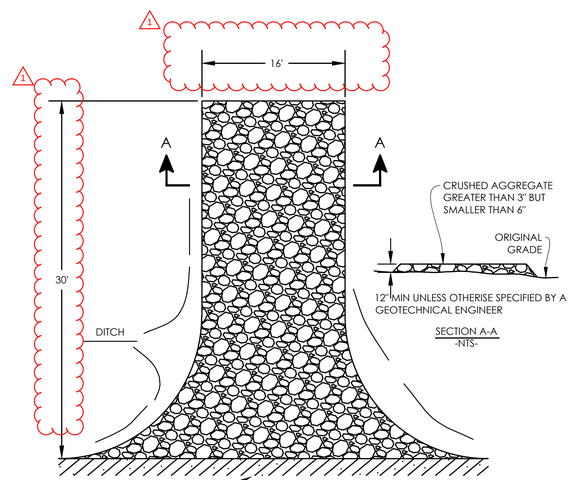


SC-10 STORM DRAIN INLET PROTECTION
-NTS-





WM-8 CONCRETE WASTE MANAGEMENT
-NTS-



TC-1 (TYPE 1) STABLIZED CONSTRUCTION ENTRANCE/EXIT
-NTS-

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GOLETA CA 93117

EROSION CONTROL DETAILS

NO.	REVISION	DATE
1	ADDENDA #1	08/04/25

PROJECT MANAGER
CHRIS DUFOUR

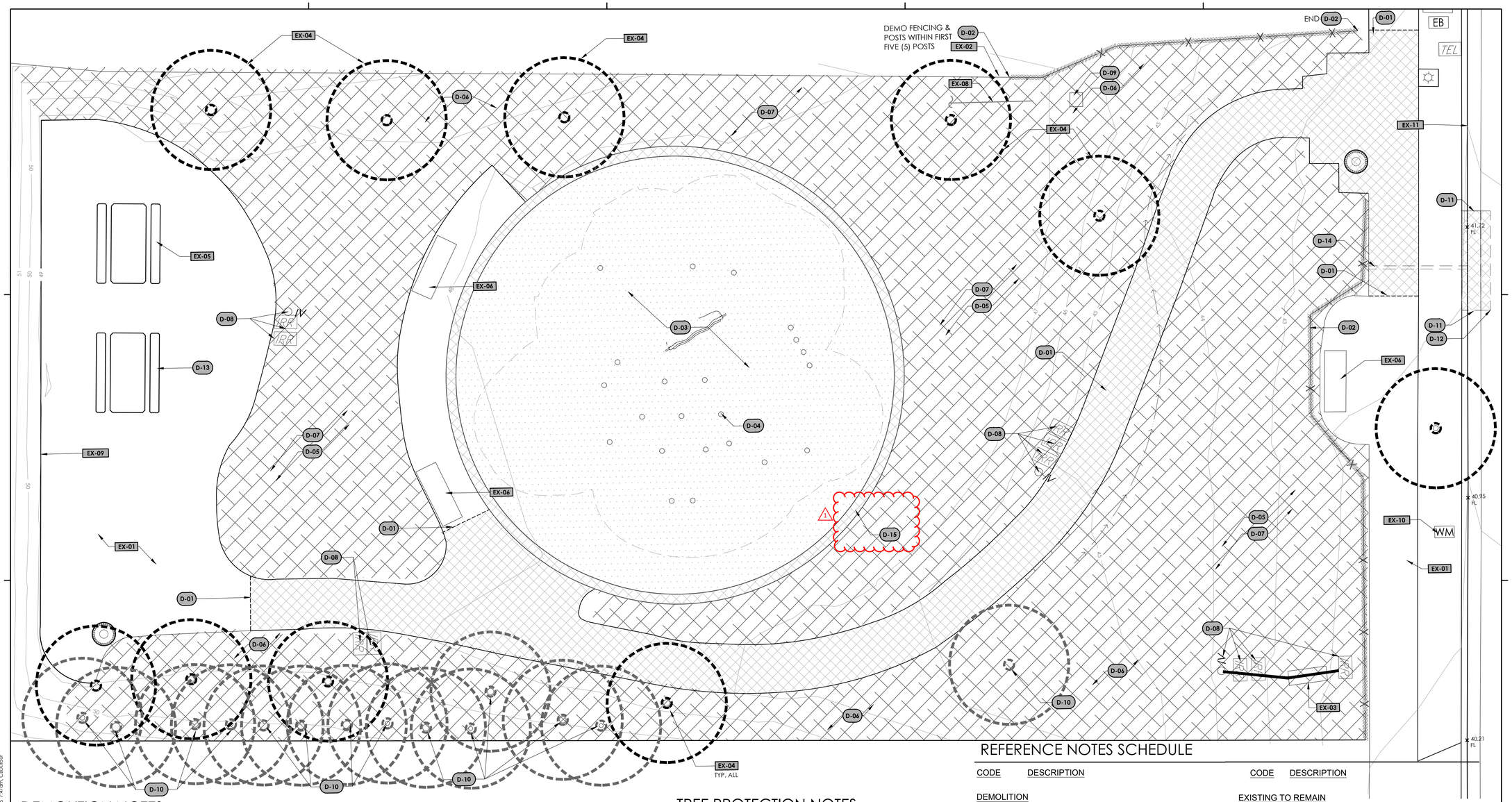
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DATE
MAY 2025

PROJECT NUMBER
2019-01-RC21

SHEET
EC501

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DEMOLITION NOTES

1. THIS DEMOLITION PLAN WAS PREPARED FOR THE CONVENIENCE OF THE CONTRACTOR. THE LANDSCAPE ARCHITECT AND THE ENGINEER DO NOT REPRESENT THAT ALL ITEMS WHICH MAY REQUIRE DEMOLITION AND REMOVAL HAVE BEEN SHOWN. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CAREFULLY EXAMINE THE SITE AND DETERMINE AND EXECUTE ALL DEMOLITIONS AND REMOVALS NECESSARY FOR THE CONSTRUCTION OF THE NEW WORK TO THE SPECIFIED LINES, GRADES, AND CONFIGURATIONS.
2. DEMOLITION WORK AND ABANDONMENT SHALL CONFORM TO THE 2022 CALIFORNIA BUILDING CODE, TITLE 24, AND ALL WORK SHALL BE SUBJECT TO THE APPROVAL OF THE CITY OF GOLETA.
3. NO DEMOLITION SHALL BE STARTED WITHOUT APPROVED PLANS. THE CITY SHALL BE NOTIFIED AT LEAST 48 HOURS PRIOR TO STARTING DEMOLITION.
4. THE PLANS DO NOT AUTHORIZE SITE DISTURBANCE BEYOND THE LIMITS OF THE DEMOLITION LIMIT LINES AS REPRESENTED ON THE PLANS UNLESS OTHERWISE NOTED.
5. ALL ITEMS NOT SCHEDULED FOR DEMOLITION WHICH ARE DAMAGED DURING DEMOLITION AND CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO ORIGINAL CONDITION OR TO THE SATISFACTION OF THE CITY.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER STORAGE AND TRANSPORTATION OF ANY ITEMS TO BE RELOCATED.
7. ALL DEBRIS FROM THE DEMOLITION PROCESS SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT THE CONTRACTOR'S EXPENSE UNLESS OTHERWISE NOTED.
8. ALL STREETS, ALLEYS, VEHICULAR WAYS, SIDEWALKS, AND HAUL ROUTES SHALL BE KEPT CLEAN AND CLEAR OF DEBRIS, DIRT AND DUST IN A MANNER ACCEPTABLE TO THE CITY. AT A MINIMUM, THESE AREAS SHALL BE CLEANED AT THE END OF EACH WORK DAY. FAILURE TO DO SO WILL RESULT IN A "STOP WORK" NOTICE. SAID NOTICE WILL NOT BE RELEASED UNTIL THE AREA HAS BEEN CLEANED TO THE SATISFACTION OF THE CITY. THE FLUSHING OF DIRT OR DEBRIS INTO SWALES, STORM DRAIN OR SANITARY SEWER FACILITIES SHALL NOT BE PERMITTED.
9. ALL ABANDONED IRRIGATION COMPONENTS SHALL BE MARKED IN THE FIELD AND LOCATED ON THE DRAWINGS OF RECORD BY THE CONTRACTOR. PROVIDE TWO COPIES OF RECORD DRAWINGS TO THE CITY AT THE CONCLUSION OF THE DEMOLITION WORK.
10. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATIONS OF ALL EXISTING UTILITIES PRIOR TO START OF CONSTRUCTION.
11. THE CONTRACTOR MUST NOTIFY ALL UTILITY COMPANIES PRIOR TO THE START OF CONSTRUCTION.
12. THE CONTRACTOR IS RESPONSIBLE TO TELEPHONE UNDERGROUND SERVICE ALERT (USA) TOLL FREE AT 811 A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. FOR BEST RESPONSE, PROVIDE AS MUCH NOTICE AS POSSIBLE, UP TO 10 WORKING DAYS.
13. CONTRACTOR SHALL NOT INTERRUPT ANY SERVICES OR DISRUPT UTILITY SERVICE TO RESIDENTIAL AREAS OR FACILITIES OUTSIDE THE LIMITS OF DEMOLITION.
14. PLANT MATERIAL SUCH AS CONTAINER STOCK DEMOLISHED OR DAMAGED DURING CONSTRUCTION SHALL BE REPLACED IN KIND WHERE PLANTERS AREAS REMAIN.
15. CONCRETE CUTTING REQUIRES COMPLETE RECOVERY OF THE SLURRY VIA VACUUM SYSTEM OR OTHER LIKE SYSTEM.
16. WHEN POURING OR PATCHING CONCRETE, WASHOUT IS REQUIRED TO BE USED ONSITE.
17. SAVE ALL FENCE MOUNTED SIGNAGE FOR REINSTALLATION ON NEW FENCING. INSTALL TEMPORARY 6' HIGH FENCE AND GATES TO SECURE SITE UNTIL NEW FENCE IS PLACED.
18. CONTRACTOR SHALL PROVIDE TEMPORARY FENCING DURING CONSTRUCTION PERIODS. COORDINATE LIMITS OF TEMPORARY CONSTRUCTION FENCING WITH CITY.
19. CONTRACTOR SHALL HAND TRENCH WITHIN EXISTING TREE DRIPLINES, AND WHERE UTILITIES ARE WITHIN 5 FT OF IMPROVEMENTS. CONTRACTOR IS RESPONSIBLE FOR VERIFYING UTILITY LOCATIONS WITH CITY.

TREE PROTECTION NOTES

1. ALL EXISTING TREES TO REMAIN SHALL BE PRESERVED, PROTECTED, AND MAINTAINED. THE CONTRACTOR SHALL CONSULT WITH THE CITY'S AUTHORIZED ARBORIST PRIOR TO PRUNING OR WORKING WITHIN THE DRIPLINE OF ANY TREE.
2. DURING CONSTRUCTION, FENCING OR PROTECTIVE BARRIERS SHALL BE PLACED AROUND AND SIX FEET OUTSIDE OF THE DRIPLINE OF ALL TREES LOCATED WITHIN AREAS OF DEVELOPMENT.
3. NO STORAGE OF HEAVY EQUIPMENT OR MATERIALS, OR CONSTRUCTION PARKING SHALL TAKE PLACE WITHIN SIX (6) FEET OF THE DRIPLINE OF ANY EXISTING TREE TO REMAIN.
4. GRADING WITHIN THE DRIPLINE OF EXISTING TREES TO REMAIN DURING CONSTRUCTION SHALL BE MINIMIZED AND SHALL BE DONE WITH LIGHT (ONE TON OR LESS) RUBBER-TIRED EQUIPMENT OR BY HAND.
6. DURING ANY GRADING OR EXCAVATION ADJACENT TO OR BENEATH THE DRIPLINE OF ANY EXISTING TREES TO REMAIN, ANY ROOTS ENCOUNTERED SHALL BE CLEANLY CUT AND SEALED WITH A TREE-SEAL COMPOUND.
7. ALL PRUNING OF TREES SHALL BE KEPT TO A MINIMUM. ROOTS IN EXCESS OF 1" SHALL BE REVIEWED BY CITY MAINTENANCE PRIOR TO CUTTING. ANY THINNING OR ROOT PRUNING AND TRIMMING SHALL BE DONE UNDER THE DIRECTION OF CITY'S AUTHORIZED ARBORIST. NOTIFY THE CITY AT LEAST ONE WEEK IN ADVANCE OF THINNING OR ROOT PRUNING AND TRIMMING OF EXISTING TREES TO ALLOW FOR CITY TO OBTAIN AN AUTHORIZED ARBORIST.

REFERENCE NOTES SCHEDULE

CODE	DESCRIPTION
DEMOLITION	
D-01	SAWCUT & REMOVE EXISTING PAVING
D-02	DEMOLISH EXISTING SPLIT RAIL FENCING, POSTS & FOOTINGS
D-03	DEMOLISH EXISTING RUBBER SAFETY SURFACING AND BASE SECTION
D-04	DEMOLISH & REMOVE EXISTING PLAY EQUIPMENT STRUCTURE, INCLUDING PLATFORMS, COMPONENTS, POSTS & FOOTINGS
D-05	CLEAR & GRUB EXISTING GRASS
D-06	CLEAR & GRUB EXISTING SHRUB AREA
D-07	REMOVE, CUT/CAP EXISTING IRRIGATION HEADS, WIRING, PIPING, & BOXES TO ACCOMMODATE NEW IMPROVEMENTS.
D-08	REMOVE EXISTING IRRIGATION VALVE
D-09	CLEANOUT EX. STORM DRAIN INLET.
D-10	REMOVE EXISTING TREE & GRIND STUMP
D-11	SAWCUT & REMOVE EX. CURB & GUTTER. LIMITS TO EXTEND FROM JOINT TO JOINT.
D-12	SAWCUT & REMOVE EX. ASPHALT PAVING
D-13	REMOVE EXISTING PICNIC TABLE. CONTRACTOR TO REMOVE AND DISPOSE.
D-14	REMOVE SIDEWALK UNDERDRAIN
D-15	SAWCUT & REMOVE EXISTING CONCRETE PLAYGROUND CURB EDGE

CODE	DESCRIPTION
EXISTING TO REMAIN	
EX-01	EXISTING CONCRETE PAVING. PROTECT IN PLACE.
EX-02	EXISTING FENCING. PROTECT IN PLACE.
EX-03	EXISTING IRRIGATION BACKFLOW PREVENTOR. PROTECT IN PLACE
EX-04	EXISTING TREE. PRUNE TO LIMB UP TO MEET ACCESSIBILITY REQUIREMENTS. SEE SPECIAL PROVISIONS
EX-05	TABLE - EXISTING PROTECT IN PLACE
EX-06	BENCH - EXISTING PROTECT IN PLACE
EX-08	STORM DRAIN PIPE. VERIFY SIZE & LOCATION IN FIELD.
EX-09	EXISTING WALL. PROTECT IN PLACE.
EX-10	EXISTING WATER METER. PROTECT IN PLACE
EX-11	EXISTING CURB & GUTTER. PROTECT IN PLACE. SAWCUT & REPLACE TO NEAREST JOINT IF DAMAGED

DEMOLITION LEGEND

SYMBOL	DESCRIPTION
	SAWCUT & DEMOLISH EXISTING CONCRETE/ASPHALT PAVING & CURB EDGES TO NEAREST JOINT (INCLUDING BASE)
	DEMOLISH & REMOVE EXISTING PLAYGROUND SURFACING & BASE SECTION

NORTH

0 5 10 15 feet

1" = 5'-0"

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LICENSED LANDSCAPE ARCHITECT
CHRISTOPHER S. DUFOUR NO. 5191
08/30/25
Renewal Date
Date
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GOLETA CA 93117

DEMOLITION PLAN

NO.	REVISION	DATE
1	ADDENDA #1	08/04/25

PROJECT MANAGER
CHRIS DUFOUR

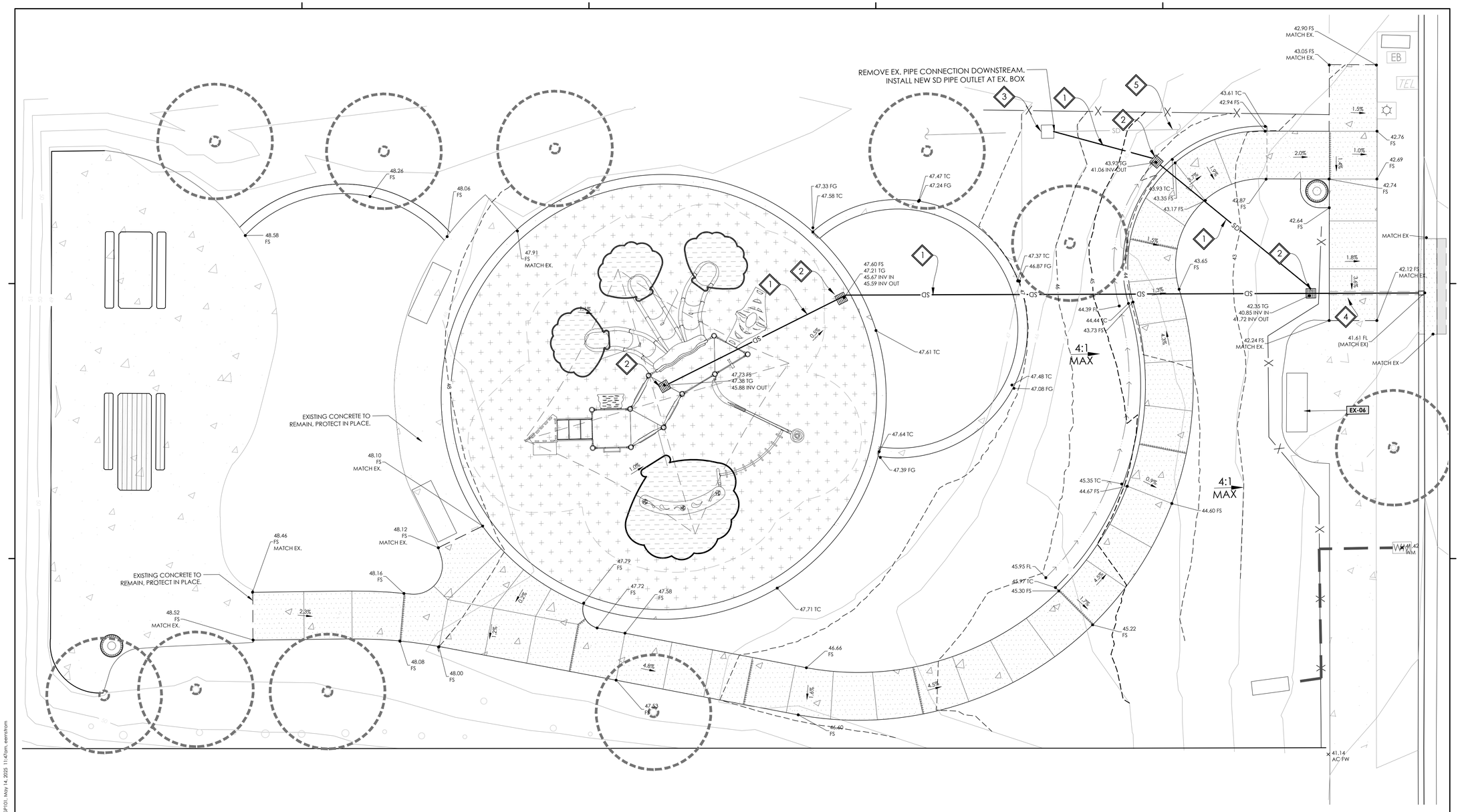
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CHECKED BY CD

DATE
MAY 2025

PROJECT NUMBER
2019-01-RC21

SHEET
LD101

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KEY NOTES

1. INSTALL 6" HDPE STORMDRAIN PIPE AT MIN 1.0%
2. MIDSTATE CONCRETE INLET BOX WITH OPEN BOTTOM, OR APPROVED EQUAL, (12" BOX). SEE DETAIL F/LC501 WHERE INSTALLED IN RUBBER SURFACING & A/LC502 IN LANDSCAPE AREAS
3. EXISTING DRAIN INLET. CLEANOUT DEBRIS
4. UNDERSIDEWALK DRAIN. SEE DETAIL C, SHEET LC502
5. CUT/CAP EX. STORM DRAIN PIPE DOWNSTREAM AND ABANDON. VERIFY IN FIELD

APPROXIMATE RAW QUANTITIES:

AREA OF DISTURBANCE: 6,300 SQFT

CUT/FILL EVALUATION	CUT(CY)	FILL(CY)	NET (CY)
SURFACE CUT:	9 CY		
CONCRETE FLATWORK	33.5 CY		
FILL:		29 CY	
FILL (15% SHRINKAGE):		5 CY	
NET:	42.5 CY	34 CY	8.5 CY <CUT>

THE APPROXIMTE RAW EARTHWORK QUANTITIES SHOWN HEREON REPRESENT THE ESTIMATED VOLUMETRIC DIFFERENCE CALCULATED BETWEEN THE PROPOSED SUBGRADE AND EXISTING GRADE SURFACE, AND ARE SUBJECT TO CHANGE. THESE ESTIMATES DO NOT INCLUDE CONSIDERATIONS FOR LOSSES OR BULKING DUE TO: SOIL AMENDMENTS, STABILIZATION, CONSTRUCTION TECHNIQUE, FOOTING & TRENCHING SPOILS, ETC. THESE CONSIDERATIONS, IN ADDITION TO ACTUAL FIELD CONDITIONS AND THE FINAL RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER IF AVAILABLE, MAY SIGNIFICANTLY EFFECT THE FINAL IMPORT/EXPORT QUANTITIES. APPROXIMATE QUANTITIES SHOWN ON THESE PLANS ARE FOR PERMITTING PURPOSES ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CALCULATE ACTUAL QUANTITIES FOR THE PURPOSE OF CONSTRUCTION AND COST ESTIMATES.

CONTRACTOR IS RESPONSIBLE FOR ADJUSTMENTS TO SLOPE HINGE POINTS IN ORDER TO PROVIDE GRADED PAD AREA ADJACENT TO PATHS, WALKWAYS, AND ROADS FOR UTILITY BOXES, TRANSFORMERS, AND ABOVE GROUND UTILITY INFRASTRUCTURE.

NORTH

0 5 10 15 feet

1" = 5'-0"

rrm design group

rrmdesign.com | (805) 543-1794
3765 S. Higuera, San Luis Obispo, CA 93401

LICENSED LANDSCAPE ARCHITECT
CHRISTOPHER S. DUFOUR NO. 5191
08/30/25
Renewal Date
STATE OF CALIFORNIA

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MATHILDA PARK IMPROVEMENTS
GOLETA, CA 93117

SITE GRADING PLAN

NO.	REVISION	DATE

PROJECT MANAGER
CHRIS DUFOUR

DRAWN BY SS
CHECKED BY CD

DATE
MAY 2025

PROJECT NUMBER
2019-01-RC21

SHEET
GP101

N:\2000\2019-01-RC20-Mathilda-Park-Site-Improvement\1 Landscape-Architecture\Task-L2-ConDocs\3 Sheet-Files\2019-01-GP.dwg, GP101, May 14, 2025 11:47pm, esmstrom

MATERIALS LIST

*CONTRACTOR TO SUBMIT SAMPLES OF ALL FOLLOWING ITEMS TO OWNER AND LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO ORDERING. LANDSCAPE ARCHITECT SHALL REVIEW AND APPROVE ANY ALTERNATE MATERIALS. CONTRACTOR SHALL PROVIDE PHYSICAL SAMPLES OF THOSE ALTERNATIVES FOR APPROVAL ALONG WITH SOURCE INFO PRIOR TO CONSTRUCTION:

EXPANSION JOINT:
LOCATE EXPANSION JOINTS ADJACENT TO ALL STRUCTURES (BUILDINGS, WALLS AND STEPS) AND AT MAXIMUM SPACING PER DETAIL C/LC501 AND SPECIFICATIONS.

CONCRETE PAVING:
MATERIAL: CONCRETE
COLOR: STANDARD GRAY
FINISH: MEDIUM BROOM FINISH
SEE SPECIFICATIONS.

BARK MULCH:
MATERIAL: 'WALK ON BARK MULCH' OR APPROVED EQUAL
APPLIED PER PLANTING NOTES AND SPECIFICATIONS.

RUBBER PLAY SURFACING
MATERIAL: TWO (2) COLORS PER SPECIAL PROVISION SECTION 903-2.2

ADA PICNIC TABLE
MANUFACTURER - BELSON OR APPROVED EQUAL
MODEL - RPD8H
COMPOSITE TO MATCH EXISTING
COLOR - MATCH EXISTING
SURFACE MOUNT TO PAVING

TRASH RECEPTACLES:
SKYLINE 2 STREAM WASTE/RECYCLE RECEPTACLE
MODEL: PS-920-AL-44-FT
COLOR: BLACK (AS APPROVED)
QTY: 2
HAUSER SITE FURNISHINGS (800) 268-7328 OR APPROVED EQUAL. SEE SPECIFICATIONS. SURFACE MOUNT PER MANUFACTURER'S RECOMMENDATION.

PLAY EQUIPMENT:
PLAYGROUND LAYOUT AND EQUIPMENT SHOWN ON PLANS IS BASED ON EQUIPMENT AND FALL ZONE LAYOUT PROVIDED BY PLAYCORE C/O PLAY & PARK STRUCTURES.

PLAY EQUIPMENT HAS BEEN PRE-PURCHASED BY CITY AND IS LOCATED AT CITY STORAGE YARD (27 SOUTH LA PATERA). CONTRACTOR SHALL PICKUP, INVENTORY AND INSTALL ALL PLAYGROUND EQUIPMENT COMPONENTS PER MANUFACTURER'S INSTRUCTIONS.

MANUFACTURER'S CONTACT: KATHY WIGGINS AT 661-964-7626.
REFERENCE QUOTE: 821-146018A (11/15/23)

PLAY EQUIPMENT SHALL BE LOCATED IN CONFORMANCE WITH MANUFACTURER'S INSTRUCTIONS AND FALL ZONE SAFETY REQUIREMENTS. NO ADJUSTMENTS TO THE LAYOUT OR EQUIPMENT SHALL BE MADE WITHOUT PRIOR APPROVAL BY THE LANDSCAPE ARCHITECT.

DRAINAGE STRUCTURES:
CATCH BASINS UNDER SURFACING
12" CATCH BASIN DRAIN INLET BOXES - MIDSTATE CONCRETE 1200BLKIT OR APPROVED EQUAL
SEE DETAILS LC502

LANDSCAPE DRAIN INLETS
DRAIN INLETS IN LANDSCAPE AREAS - NYOPLAST 12" INLET OR APPROVED EQUAL. SEE DETAILS LC502

CONSTRUCTION NOTES

1. APPROVED PLANS - NO CONSTRUCTION SHALL BE STARTED WITHOUT PLANS APPROVED BY OWNER. THE OWNER SHALL BE NOTIFIED AT LEAST 48 HOURS PRIOR TO STARTING CONSTRUCTION. ANY CONSTRUCTION DONE WITHOUT APPROVED PLANS OR WITHOUT NOTIFICATION TO THE OWNER MAY BE REJECTED AND WILL BE AT THE CONTRACTOR'S AND/OR OWNER'S RISK. THE CONTRACTOR SHALL HAVE COPIES OF THE APPROVED PLANS FOR THIS PROJECT ON THE SITE AT ALL TIMES, AND SHALL BE FAMILIAR WITH ALL APPLICABLE STANDARDS AND SPECIFICATIONS.

2. EXISTING UNDERGROUND UTILITIES - THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND FACILITIES, WHERE SHOWN ON THE PLANS ARE BASED ON AVAILABLE RECORDS, AND MAY NOT ACCURATELY REFLECT THE ACTUAL LOCATION OR ELEVATION, THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR LOCATING OR PROTECTING THE SAME DURING THE COURSE OF THE PROJECT. ANY DEVIATIONS FROM THE LOCATIONS SHOWN ON THE PLAN SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE CITY'S AUTHORIZED REPRESENTATIVE.

3. SAFETY - THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR SAFETY OF THE JOB SITE AND THE CONSTRUCTION WORK. THE CONTRACTOR SHALL DESIGN, CONSTRUCT, AND MAINTAIN ALL SAFETY DEVICES, AND SHALL BE SOLELY RESPONSIBLE FOR CONFORMING TO ALL LOCAL, STATE, AND FEDERAL SAFETY AND HEALTH STANDARDS, LAWS, AND REGULATIONS. THE CITY INSPECTOR MAY NOTIFY THE CONTRACTOR OF ANY UNSAFE CONDITIONS WHICH MAY BE OBSERVED, AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMMEDIATELY TAKING ALL SUCH MEASURES AS WILL CORRECT THE UNSAFE CONDITION.

4. PROTECTION OF PROPERTY - THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF PUBLIC AND PRIVATE PROPERTY IN THE VICINITY OF HIS WORK, AND SHALL EXERCISE DUE CAUTION TO ITS ORIGINAL CONDITION, ALL IMPROVEMENTS OR PROPERTY WHICH IS DAMAGED OR REMOVED (UNLESS DESIGNATED FOR REMOVAL ON THE PLANS) AS A RESULT OF HIS OPERATIONS.

5. SITE CONDITIONS - THE CONTRACTOR SHALL CONTINUALLY REVIEW JOB SITE CONDITIONS. CONDITIONS REQUIRING CONSTRUCTION DIFFERENT FROM THAT SHOWN ON THE PLANS SHALL BE REPORTED TO THE CITY'S AUTHORIZED REPRESENTATIVE. ALL SUCH CHANGES TO THE CONSTRUCTION SHALL BE APPROVED BY THE OWNER PRIOR TO PROCEEDING WITH THE CONSTRUCTION.

6. THE CONTRACTOR SHALL BE RESPONSIBLE DURING CONSTRUCTION FOR CLEANING CITY/STATE STREETS, CURBS, GUTTERS AND SIDEWALKS OF DIRT TRACKED FROM THE SUBJECT SITE. THE FLUSHING OF DIRT AND DEBRIS TO STORM DRAIN OR SANITARY SEWER FACILITIES SHALL NOT BE PERMITTED. THE CLEANING SHALL BE DONE AFTER EACH DAY'S WORK OR AS DIRECTED BY THE PROJECT INSPECTOR.

7. ALL LARGE CONSTRUCTION EQUIPMENT IS TO BE EQUIPPED WITH "CRITICAL" GRADE NOISE MUFFLERS. NOISE LEVEL REDUCTIONS ASSOCIATED WITH THE USE OF "CRITICAL" RATHER THAN "STOCK" GRADE MUFFLERS CAN BE AS HIGH AS 5dBA. ENGINES WILL BE TUNED TO INSURE LOWEST POSSIBLE NOISE LEVELS. BACK UP BEEPERS ARE TO BE TUNED TO INSURE LOWEST POSSIBLE NOISE LEVELS AS ALLOWED BY OSHA.

8. IN THE EVENT THAT GRADING OR OTHER OPERATIONS DO UNCOVER BURIED ARTIFACTS, ALL CONSTRUCTION ACTIVITIES SHALL BE HALTED TO PREVENT FURTHER DISRUPTION OF THE NEWLY DISCOVERED ARCHAEOLOGICAL SITE. A QUALIFIED ARCHAEOLOGIST SHOULD THEN EVALUATE THE DISCOVERY AND RECOMMEND THE APPROPRIATE DISPOSITION OF THE RESOURCES. THE CITY'S AUTHORIZED REPRESENTATIVE SHALL BE NOTIFIED. ALL STATE AND FEDERAL LAWS SHALL BE COMPLIED WITH.

9. CONCRETE CUTTING REQUIRES COMPLETE RECOVERY OF THE SLURRY VIA VACUUM SYSTEM OR OTHER LIKE SYSTEM.

10. ALL CONCRETE FLATWORK ON SITE SHALL MATCH EXISTING INTEGRAL COLOR AND TEXTURE OF ADJACENT FLATWORK. CONTRACTOR SHALL PROVIDE A 5'X5' MOCKUP OF CONCRETE TO CONFIRM COLOR MATCH WITH EXISTING. CITY HAS THE RIGHT TO REJECT WORK IN THE EVENT COLOR OR TEXTURE IS NOT A MATCH. MOCKUP MAY REMAIN AS PART OF FINAL CONSTRUCTION IF APPROVED.

11. WHEN POURING OR PATCHING CONCRETE, WASHOUT IS REQUIRED TO BE USED ONSITE.

BID SET

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LICENSED LANDSCAPE ARCHITECT
CHRISTOPHER S. DUFOUR NO. 5497
08/30/26
Renewal Date
Date
STATE OF CALIFORNIA

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GOLETA CA 93117

CONSTRUCTION NOTES AND MATERIALS

NO.	REVISION	DATE
1		
2		
3		
4		
5		
6		

PROJECT MANAGER
CHRIS DUFOUR

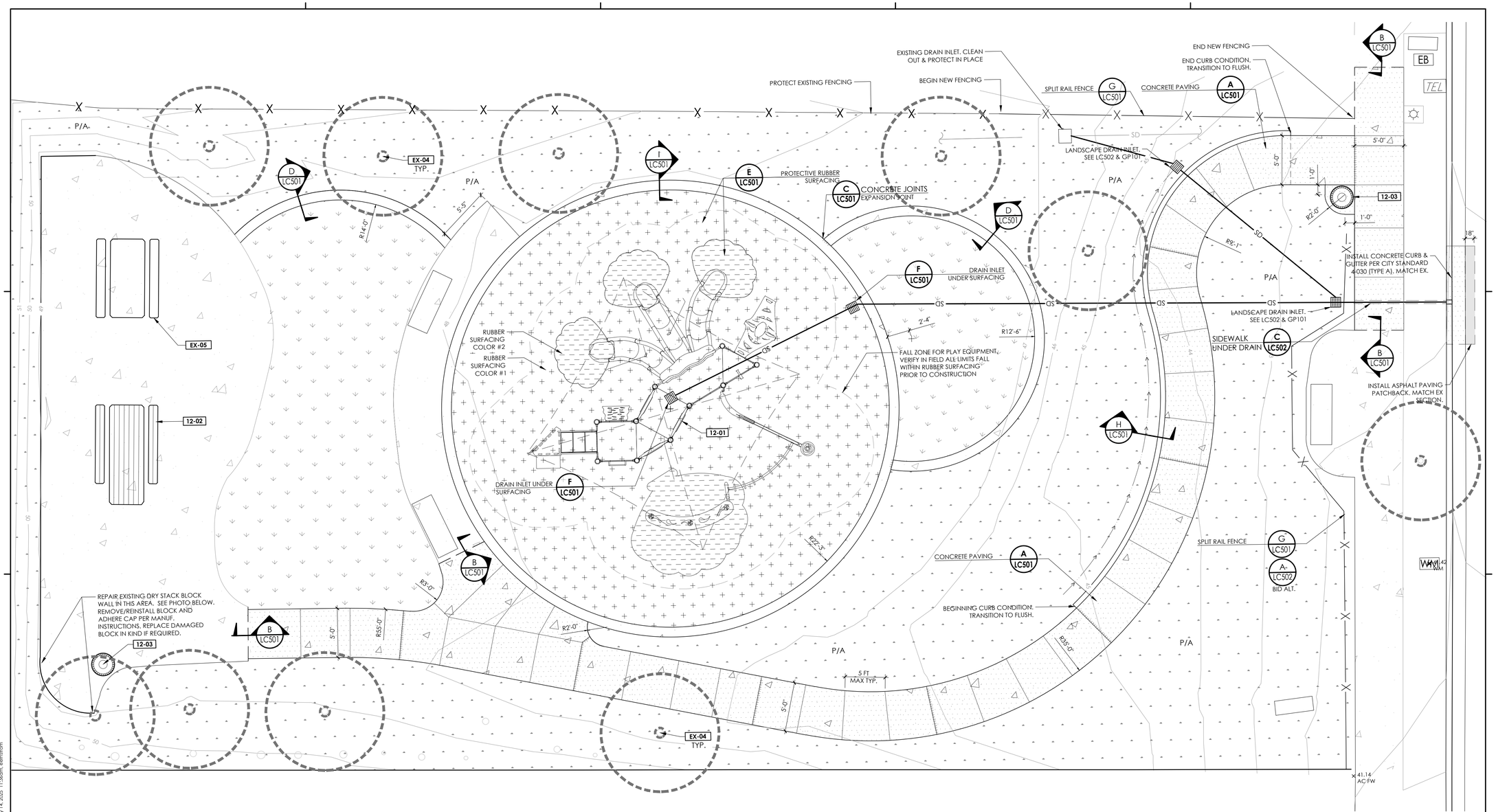
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DATE
MAY 2025

PROJECT NUMBER
2019-01-RC21

SHEET
LC001

N:\2009\2019-01-RC20-Mathilda-Park-Site-Improvements\Landscape-Architecture\Task-L2-ConDocs\Sheet-Files\2019-01-RC21.dwg, LC001, May 14, 2025, 11:36am, esmstrom



CONSTRUCTION LEGEND

REFER TO MATERIALS LIST SHEET LC001 FOR COLOR, TYPE, AND FINISH

SYMBOL	DESCRIPTION	DETAIL(S)
X / Y	DETAIL CALLOUT, WHERE 'X' IS THE DETAIL NUMBER AND 'Y' IS THE PAGE NUMBER	
	NEW CONCRETE PAVING SAWCUT JOINTS AS SHOWN ON PLAN	A LC501
COLOR 1 COLOR 2	NEW PLAYGROUND RUBBER SURFACING (COLOR 1 & 2)	E LC501
P/A	NEW PLANTER AREA	
	NEW GRASS PLAY AREA	
—X—	NEW SPLIT RAIL FENCE	G LC501 / A LC502 BID ALT.
	CONTRACTION JOINT	C LC501
	EXPANSION JOINT	C LC501
	NEW ADA PICNIC TABLE SEE SCHEDULE ON LC001	
	EXISTING TREE PROTECT IN PLACE	

REFERENCE NOTES SCHEDULE

CODE	DESCRIPTION
12 SITE FURNISHINGS	
12-01	NEW PLAYGROUND EQUIPMENT STRUCTURE SECURED BY CITY AT STORAGE YARD. RELOCATE TO SITE & INSTALL PER MANUFACTURER'S INSTRUCTIONS. SUBMIT MANUFACTURER'S SITE PLAN LAYOUT & STRUCTURAL ENGINEERING PLANS FOR APPROVAL
12-02	NEW ACCESSIBLE PICNIC TABLE, SURFACE MOUNT PER MANUFACTURER
12-03	TRASH RECEPTACLE - SURFACE MOUNT ON CONCRETE
EXISTING TO REMAIN	
EX-04	EXISTING TREE, PRUNE TO LIMB UP TO MEET ACCESSIBILITY REQUIREMENTS. SEE SPECIAL PROVISIONS
EX-05	TABLE - EXISTING PROTECT IN PLACE

EXISTING WALL REPAIRS



REPAIR DAMAGED RETAINING WALL

NORTH

0 5 10 15 feet

1" = 5'-0"

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SITE LAYOUT PLAN

NO.	REVISION	DATE

PROJECT MANAGER CHRIS DUFOUR

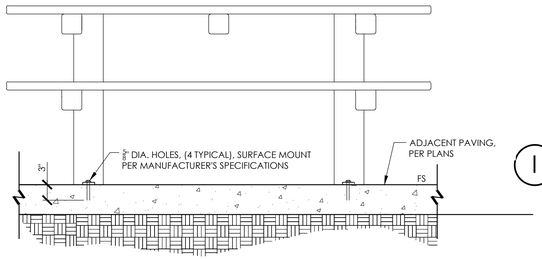
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DATE MAY 2025

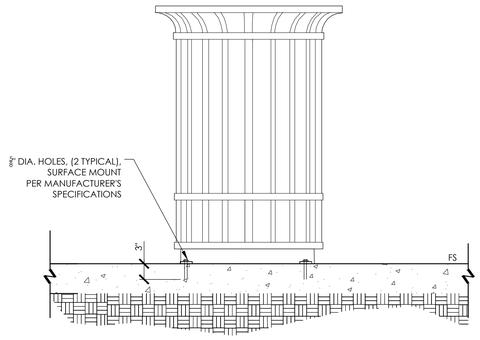
PROJECT NUMBER 2019-01-RC21

SHEET LC101

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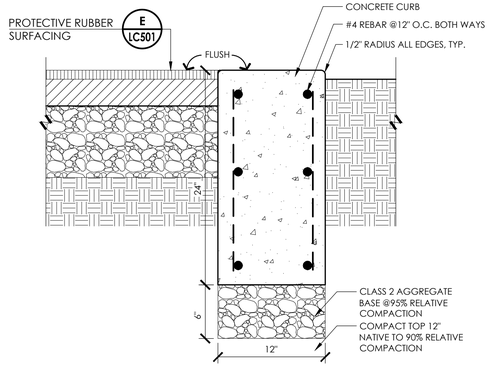
PICNIC TABLE



WASTE RECEPTACLE

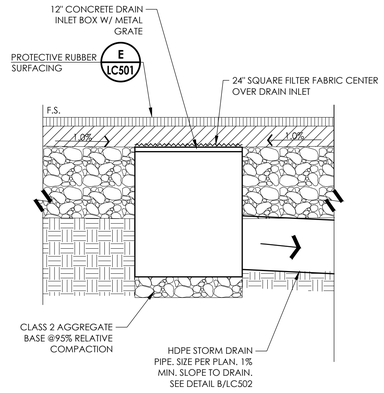
J SITE FURNITURE MOUNTING

1" = 1'-0" RRM-1900-1901.01-10



I CONCRETE CURB EDGE AT RUBBER SURFACING

1 1/2" = 1'-0" RRM-1900-1901.01-57

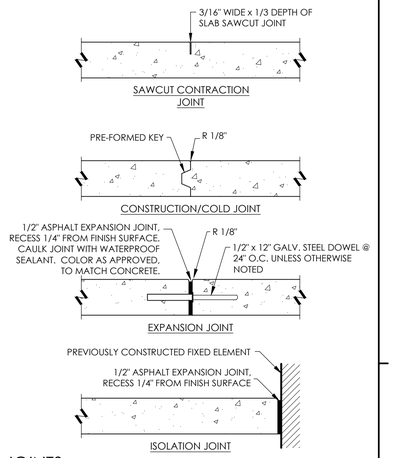


F DRAIN INLET UNDER SURFACING

1 1/2" = 1'-0" RRM-1900-1901.01-49

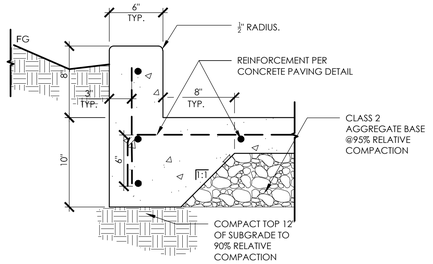
NOTES:

1. REFER TO CONSTRUCTION PLANS FOR JOINT LOCATIONS/LAYOUT.
2. PROVIDE ISOLATION JOINT AGAINST ALL PREVIOUSLY CONSTRUCTED FIXED ELEMENTS.
3. INSTALL MANUFACTURED DOWEL SYSTEMS PER MANUFACTURER'S INSTRUCTIONS.
4. SEAL ALL ISOLATION AND EXPANSION JOINTS PER MANUFACTURER'S INSTRUCTIONS.
5. JOINTS SHALL EXTEND COMPLETELY TO EDGE OF CONCRETE OR INTERSECTING JOINT(S).



C CONCRETE JOINTS

1 1/2" = 1'-0" RRM-1900-1901.01-04



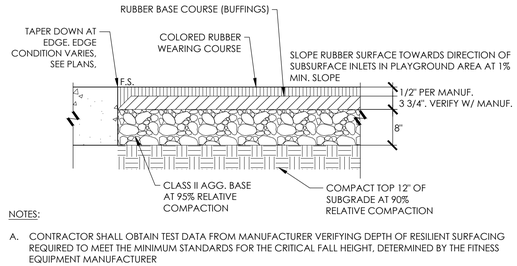
NOTES:

A. INSTALL CONCRETE CONTRACTION AND EXPANSION JOINTS CONTINUOUS THROUGH CURBING IN LINE WITH JOINTING IN PAVING

B. TRANSITION BEGINNING & ENDS OF CURB FROM 8" HEIGHT TO 0" OVER 36" LENGTH.

H RAISED CONCRETE CURBEDGE

1 1/2" = 1'-0" RRM-1900-1901.01-05



NOTES:

A. CONTRACTOR SHALL OBTAIN TEST DATA FROM MANUFACTURER VERIFYING DEPTH OF RESILIENT SURFACING REQUIRED TO MEET THE MINIMUM STANDARDS FOR THE CRITICAL FALL HEIGHT, DETERMINED BY THE FITNESS EQUIPMENT MANUFACTURER

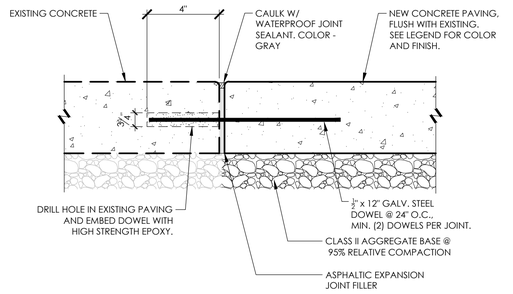
B. CONTRACTOR SHALL SUPPLY ALL TEST DATA TO THE CITY OR THE CITY'S AUTHORIZED REPRESENTATIVE FOR REVIEW PRIOR TO INSTALLATION.

C. THICKNESS OF CUSHIONED SEAMLESS FLOORING SYSTEM VARIES PER MANUFACTURER'S DETERMINATION.

D. SEE SPECIFICATIONS FOR COLOR SELECTIONS.

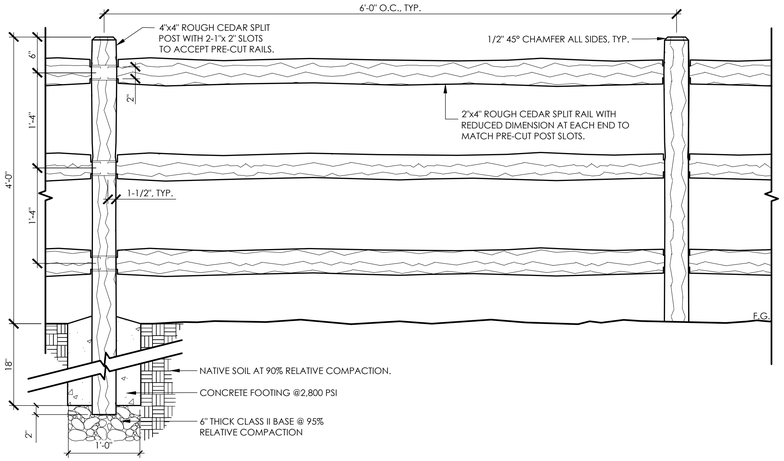
E PROTECTIVE RUBBER SURFACING

3/4" = 1'-0" RRM-1900-1901.01-41



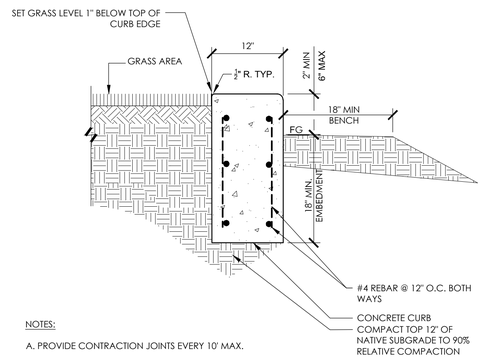
B CONCRETE PAVING - NEW TO EXISTING

3" = 1'-0" RRM-1900-1901.01-17



G SPLIT RAIL FENCE

1" = 1'-0" RRM-1900-1901.01-07



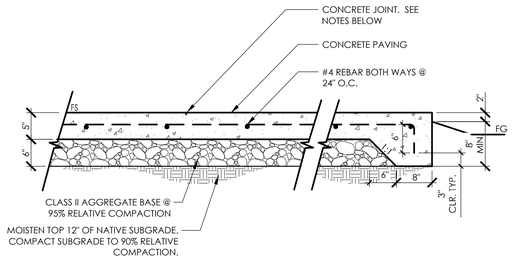
NOTES:

A. PROVIDE CONTRACTION JOINTS EVERY 10' MAX.

B. PROVIDE EXPANSION JOINTS EVERY 20' MAX.

D DEEPENED CURB EDGE

1" = 1'-0" RRM-1900-1901.01-28



NOTE:

1. SEE CONCRETE JOINTING DETAIL, THIS SHEET
2. SEE SUBMITTALS LIST FOR CONTRACTOR SUBMITTAL REQUIREMENTS

A CONCRETE PAVING

3/4" = 1'-0" RRM-1900-1901.01-06

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LICENSED LANDSCAPE ARCHITECT — CHRISTOPHER S. DUFOUR NO. 5491 — Exp. 08/30/26 — STATE OF CALIFORNIA

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MATHILDA PARK IMPROVEMENTS

GOLETA CA 93117

SITE CONSTRUCTION DETAILS

NO.	REVISION	DATE

PROJECT MANAGER CHRIS DUFOUR

DRAWN BY SS | **CHECKED BY** CD

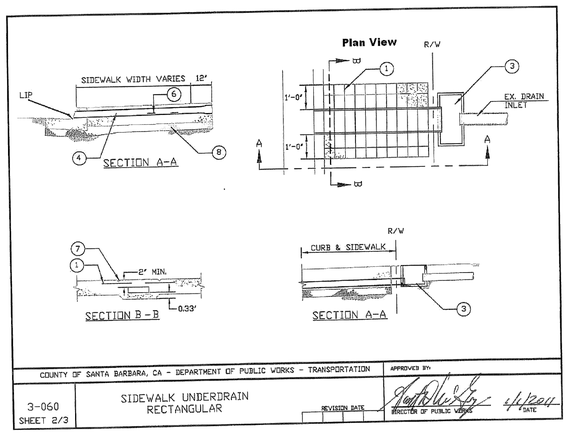
DATE MAY 2025

PROJECT NUMBER 2019-01-RC21

SHEET LC501

BID SET

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1. 6 IN. X 6 IN. SPACING GALVANIZED MESH SHALL EXTEND 1'-0" BEYOND CENTERLINE OF PIPE OR SHALL EXTEND 1'-0" BEYOND OUTER EDGE OF RECTANGULAR CAST IRON CONDUIT.

2. 3" PVC PIPE SCHEDULE 40 (MINIMUM) OR APPROVED EQUAL OR BETTER, PIPE SLOPE SHALL BE 2% AND SHALL BE PARALLEL WITH SIDEWALK SURFACE AND CENTERED ON CONTROL JOINTS.

3. WHEN A DRAIN PIPE FROM A PROPERTY OWNER IS LARGER THAN 3" DIA., A CLEANOUT BOX SHALL BE USED UPSTREAM OF THE SIDEWALK DRAIN AND OUTSIDE OF THE COUNTY'S RIGHT-OF-WAY. NOTE: WHEN A SINGLE 3" MINIMUM SIZE PIPE IS USED BY THE PROPERTY OWNER, A CLEANOUT BOX IS NOT REQUIRED.

4. 3"x12.5" (MAXIMUM) RECTANGULAR CAST IRON CONDUIT- ALHAMBRA, A-470, OR APPROVED EQUAL.

5. CORING FACE OF CURB SHALL BE REQUIRED. NOTE: CORING IS REQUIRED WHEN MONOLITHIC POUR IS NOT PROVIDED. DRY PACK GROUT AROUND PIPE TO FILL THE GAP.

6. MAXIMUM ONE DRAIN PER SITE, MAXIMUM OF 2 CUBIC FEET PER SECOND (FLOW RATE) AND 2 FEET PER SECOND (VELOCITY) MAXIMUM ALLOWED AT OUTLET.

7. DEEP CONTROL JOINTS AT LOCATION SHOWN.

8. 4" COMPACTED CLASS II BASE, 90% RELATIVE COMPACTION OR APPROVED NATIVE.

OTHER NOTES:

UNDERDRAIN SHALL NOT BE WITHIN 5' OF A DRIVEWAY APRON OR CURB RETURN.

IF SIDEWALK REMOVAL IS REQUIRED, A FULL PANEL SHALL BE REPLACED JOINT TO JOINT.

SUBGRADE SHALL BE EXCAVATED SO THAT 4 INCHES OF CONCRETE WILL BE UNDER THE DRAIN AND A MINIMUM OF 2 INCHES OF CONCRETE COVERAGE.

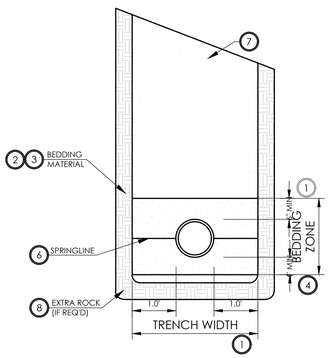
CONCRETE SHALL BE CALTRANS CLASS 3 OR BETTER WITH 25% FLY-ASH.

COUNTY OF SANTA BARBARA, CA - DEPARTMENT OF PUBLIC WORKS - TRANSPORTATION — APPROVED BY:
3-060 SHEET 3/3 — SIDEWALK UNDERDRAIN — REVISION DATE — DIRECTOR OF PUBLIC WORKS — 4/1/2011 DATE

C SIDEWALK UNDER DRAIN

1/2" = 1'-0"

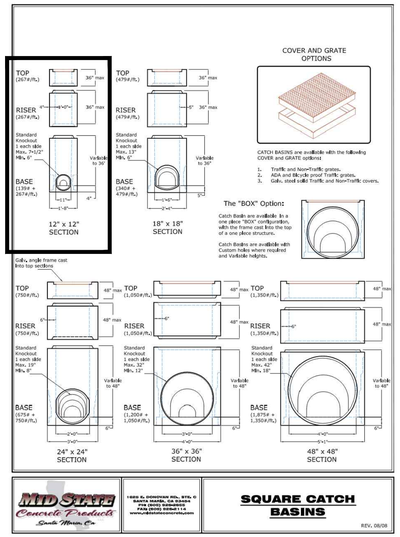
334946-02



1. TRENCH WIDTH SHALL BE SUFFICIENT TO FULLY ENCLOSE THE PIPE AND ALLOW COMPACTION TESTING AT THE SPRING LINE.
2. BEDDING MATERIAL FOR STORM DRAIN TRENCHES SHALL MEET THE STANDARDS OF THE PIPE MANUFACTURER (ADS)
3. BEDDING MATERIAL FOR HDPE SHALL FOLLOW THE MANUFACTURER'S RECOMMENDATIONS AND SHALL BE COMPACTED TO 95% RELATIVE COMPACTION, FILL MUST BE PLACED IN LIFTS NO LARGER THAN 8" TO FACILITATE COMPACTION
4. THE THICKNESS OF THE LAYER OF BEDDING UNDER THE PIPE SHALL BE AT LEAST 4" OR 10% OF THE PIPE DIAMETER, WHICHEVER IS LARGER.
5. BEDDING MATERIAL SHALL COMPLETELY COVER THE PIPE TO A MINIMUM HEIGHT OF 6" AFTER COMPACTION.
6. CARE MUST BE TAKEN TO PLACE THE BEDDING EVENLY UNDER THE LENGTH OF THE PIPE TO ASSURE ADEQUATE SUPPORT. COMPACTION TESTING IS REQUIRED AT THE SPRINGLINE OF THE PIPE WHEN SAND IS USED AS BEDDING MATERIAL.
7. BACKFILL MATERIAL SHALL BE NATIVE, IMPORT, OR A MIXTURE OF THE TWO CONFORMING TO SECTION 64-2.02B OF THE CALTRANS SPECIFICATIONS.

B STORM DRAIN PIPE TRENCHING

NTS



A 12" CONCRETE CATCH BASIN

NTS

rrm design group
rrmdesign.com | (805) 543-1794
3765 S. Higuera, San Luis Obispo, CA 93401

LICENSED LANDSCAPE ARCHITECT — CHRISTOPHER A. DUFOUR NO. 5491 — 08/30/26 Renewal Date — STATE OF CALIFORNIA

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MATHILDA PARK IMPROVEMENTS

GOLETA CA 93117

SITE CONSTRUCTION DETAILS

NO.	REVISION	DATE

PROJECT MANAGER: CHRIS DUFOUR
DRAWN BY: SS
CHECKED BY: CD
DATE: MAY 2025
PROJECT NUMBER: 2019-01-RC21
SHEET: LC502

BID SET

H:\2000\2019-01-RC29-Mathilda Park Site Improvements\Landscape Architecture\Task 12 CorDocs\Sheet Files\2019-01-CP.dwg, LC502, May 14, 2025 11:37am, eamstrom

City of Goleta
27 South La Patera Lane
Goleta, CA 93117

Play and Park Structures of Central Coast CA

This play equipment is recommended for children ages:
5-12

Minimum Area Required:
41'-7" x 36'-9"

Scale: 3/16" = 1'-0"
This drawing can be scaled only when in an 11" x 17" format

Drawn By:
Tiffanie Brown
Date:
11/15/23
Quote Number:
821-146018A

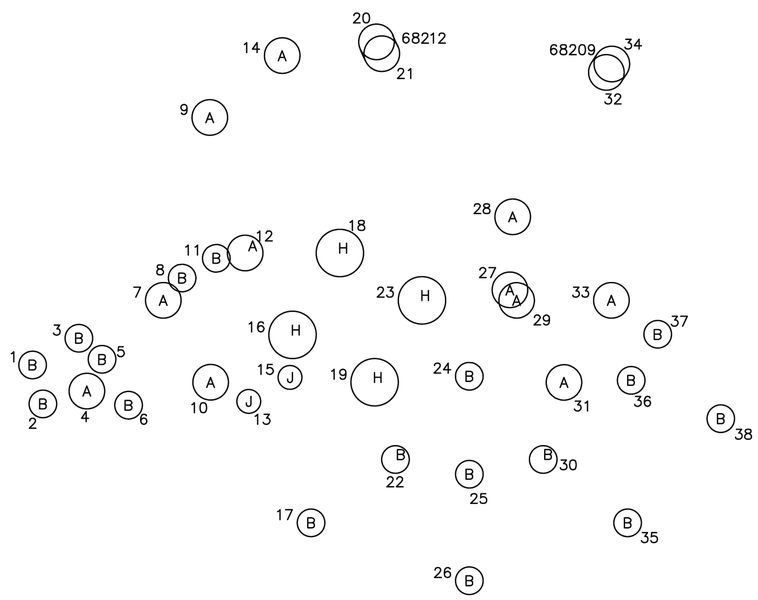
play&park structures
A PLAYCORE Company
544 Chestnut Street
Chattanooga, TN 37402
800-727-1907 / www.playandpark.com

Total Play Components	14				
Elevated Play Components	9				User Capacity
Elevated Play Components Accessible by Ramp	0	Req.	0		40-50
Elevated Components Accessible by Transfer	9	Req.	5		Critical Fall Height
Accessible Ground Level Components Shown	5	Req.	3		8'-0'
Different Types of Ground Level Components	3	Req.	3		

SUPERmax PLAY SYSTEMS

Order 3325603

ISO 9001 CERTIFIED



FOOTINGS TABLE			
TYPE	DIAMETER/SIDE	DEPTH	QTY.
A	1'–6" [45.72cm]	2'–6" [76.20cm]	15
B	1'–2" [35.56cm]	2'–6" [76.20cm]	17
J	1'–0" [30.48cm]	2'–0" [60.96cm]	2
H	(2'–0")² [45.72cm]	5'–0" [152.40cm]	4

FOOTINGS ORDINATE TABLE			
HOLE	X	Y	DIAG
1	–9'–0"	–4'–9"	10'–2"
2	–8'–6 1/2"	–6'–4 1/2"	10'–8"
3	–7'–0 1/2"	–3'–7"	7'–10 1/2"
4	–6'–8 1/2"	–5'–10"	8'–10 1/2"
5	–6'–0 1/2"	–4'–6"	7'–6 1/2"
6	–4'–11"	–6'–5"	8'–1"
7	–3'–5 1/2"	–2'–0"	4'–0"
8	–2'–8"	–1'–0 1/2"	2'–10 1/2"
9	–1'–6"	5'–8 1/2"	5'–11"
10	–1'–5 1/2"	–5'–5 1/2"	5'–8"
11	–1'–2 1/2"	–0'–2 1/2"	1'–3"
12	0'–0"	0'–0"	0'–0"
13	0'–2"	–6'–3"	6'–3"
14	1'–6 1/2"	8'–4"	8'–5 1/2"
15	1'–10 1/2"	–5'–3"	5'–7"
16	2'–0"	–3'–5 1/2"	4'–0"
17	2'–9 1/2"	–11'–5"	11'–9"
18	4'–0"	0'–0"	4'–0"
19	5'–5 1/2"	–5'–5 1/2"	7'–8 1/2"
20	5'–6 1/2"	8'–11"	10'–6"
21	5'–9"	8'–5"	10'–2 1/2"
22	6'–4"	–8'–8 1/2"	10'–9 1/2"
23	7'–5 1/2"	–2'–0"	7'–8 1/2"
24	9'–5 1/2"	–5'–2 1/2"	10'–9 1/2"
25	9'–5 1/2"	–9'–4"	13'–3 1/2"
26	9'–5 1/2"	–13'–10"	16'–9"
27	11'–2"	–1'–6 1/2"	11'–3 1/2"
28	11'–3 1/2"	1'–6 1/2"	11'–5"
29	11'–5 1/2"	–2'–0"	11'–7 1/2"
30	12'–7"	–8'–8 1/2"	15'–3 1/2"
31	13'–5 1/2"	–5'–5 1/2"	14'–6 1/2"
32	15'–3"	7'–7 1/2"	17'–0 1/2"
33	15'–5 1/2"	–2'–0"	15'–7"
34	15'–5 1/2"	7'–11 1/2"	17'–5"
35	16'–2"	–11'–4 1/2"	19'–9"
36	16'–3 1/2"	–5'–4 1/2"	17'–2"
37	17'–5"	–3'–5"	17'–9"
38	20'–1"	–7'–0"	21'–3"

IF FOOTING CONTAINS A COMPONENT NUMBER, REFERENCE THE INSTALLATION MANUAL FOR COMPONENT FOOTING SPECS.

It is the manufacturer's opinion that the structure shown herein complies with current ada standards concerning accessibility if used with proper accessible surfacing and together with other necessary ground level play equipment.
IMPORTANT: Never install play equipment over hard, unresilient surfaces such as asphalt, concrete, or compacted earth. It is the owner's responsibility to ensure the "minimum area required" contains an appropriate amount of resilient material to cushion accidental falls.

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3765 S. Higuera, San Luis Obispo, CA 93401

LICENSED LANDSCAPE ARCHITECT
CHRISTOPHER S. DUFOUR NO. 5971
08/30/26
Renewal Date
STATE OF CALIFORNIA

MATHILDA PARK IMPROVEMENTS
GOLETA, CA 93117

PLAYGROUND LAYOUT - FOOTINGS

NO.	REVISION	DATE

PROJECT MANAGER
CHRIS DUFOUR
DRAWN BY: SS
CHECKED BY: CD
DATE
MAY 2025
PROJECT NUMBER
2019-01-RC21
SHEET
LC701

BID SET

H:\2000\2019-01-RC20-Mathilda Park Site Improvement\1\Landscape Architecture\Task-L2-ConDocs\Sheet Files\2019-01-C7.dwg, LC701, May 14, 2025, 11:38am, eamstrom

City of Goleta
27 South La Patera Lane
Goleta, CA 93117

Play and Park Structures of Central Coast CA

This play equipment is recommended for children ages:
5-12

Minimum Area Required:
41'-7" x 36'-9"

Scale: 1/8" = 1'-0"
This drawing can be scaled only when in an 11" x 17" format

Drawn By:
Tiffanie Brown
Date:
11/15/23
Quote Number:
821-146018A

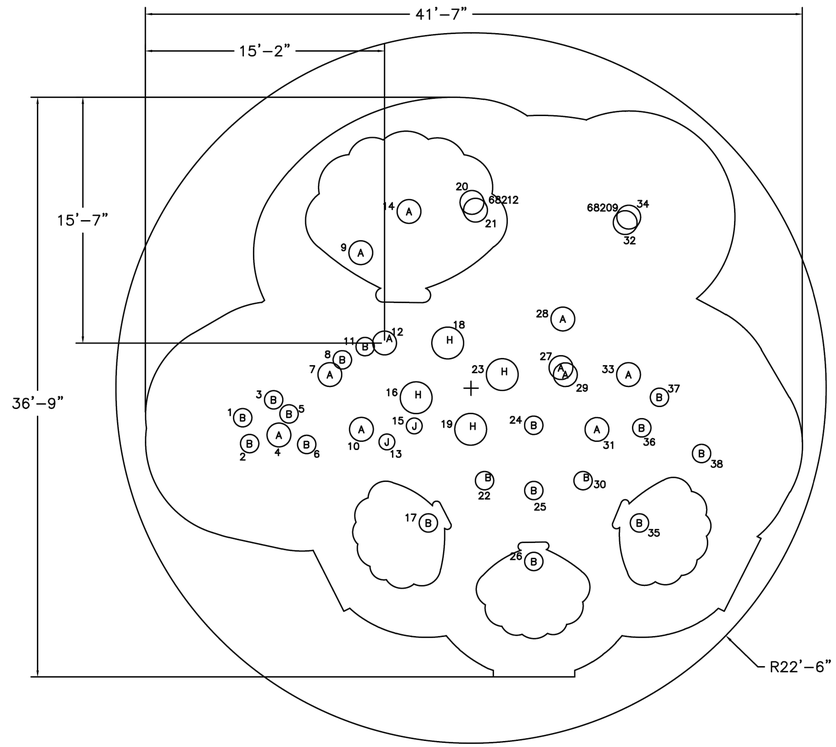
play&park structures
A PLAYCORE Company
544 Chestnut Street
Chattanooga, TN 37402
800-727-1907 / www.playandpark.com

Total Play Components	14			
Elevated Play Components	9			
Elevated Play Components Accessible by Ramp	0	Req.	0	User Capacity
Elevated Components Accessible by Transfer	9	Req.	5	40-50
Accessible Ground Level Components Shown	5	Req.	3	Critical Fall Height
Different Types of Ground Level Components	3	Req.	3	8'-0'

SUPERmax PLAY SYSTEMS

Order 3325603

ISO 9001 CERTIFIED



FOOTINGS TABLE			
TYPE	DIAMETER/SIDE	DEPTH	QTY.
A	1'–6" [45.72cm]	2'–6" [76.20cm]	15
B	1'–2" [35.56cm]	2'–6" [76.20cm]	17
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H	(2'–0")* [45.72cm]	5'–0" [152.40cm]	4

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HOLE	X	Y	DIAG
1	–9'–0"	–4'–9"	10'–2"
2	–8'–8 1/2"	–6'–4 1/2"	10'–8"
3	–7'–0 1/2"	–3'–7"	7'–10 1/2"
4	–6'–8 1/2"	–5'–10"	8'–10 1/2"
5	–6'–0 1/2"	–4'–6"	7'–6 1/2"
6	–4'–11"	–6'–5"	8'–1"
7	–3'–5 1/2"	–2'–0"	4'–0"
8	–2'–8"	–1'–0 1/2"	2'–10 1/2"
9	–1'–6"	5'–8 1/2"	5'–11"
10	–1'–5 1/2"	–5'–5 1/2"	5'–8"
11	–1'–2 1/2"	–0'–2 1/2"	1'–3"
12	0'–0"	0'–0"	0'–0"
13	0'–2"	–6'–3"	6'–3"
14	1'–6 1/2"	8'–4"	8'–5 1/2"
15	1'–10 1/2"	–5'–3"	5'–7"
16	2'–0"	–3'–5 1/2"	4'–0"
17	2'–9 1/2"	–11'–5"	11'–9"
18	4'–0"	0'–0"	4'–0"
19	5'–5 1/2"	–5'–5 1/2"	7'–8 1/2"
20	5'–6 1/2"	8'–11"	10'–6"
21	5'–9"	8'–5"	10'–2 1/2"
22	6'–4"	–8'–8 1/2"	10'–9 1/2"
23	7'–5 1/2"	–2'–0"	7'–8 1/2"
24	9'–5 1/2"	–5'–2 1/2"	10'–9 1/2"
25	9'–5 1/2"	–9'–4"	13'–3 1/2"
26	9'–5 1/2"	–13'–10"	16'–9"
27	11'–2"	–1'–6 1/2"	11'–3 1/2"
28	11'–3 1/2"	1'–6 1/2"	11'–5"
29	11'–5 1/2"	–2'–0"	11'–7 1/2"
30	12'–7"	–8'–8 1/2"	15'–3 1/2"
31	13'–5 1/2"	–5'–5 1/2"	14'–6 1/2"
32	15'–3"	7'–7 1/2"	17'–0 1/2"
33	15'–5 1/2"	–2'–0"	15'–7"
34	15'–5 1/2"	7'–11 1/2"	17'–5"
35	16'–2"	–11'–4 1/2"	19'–9"
36	16'–3 1/2"	–5'–4 1/2"	17'–2"
37	17'–5"	–3'–5"	17'–9"
38	20'–1"	–7'–0"	21'–3"

IF FOOTING CONTAINS A COMPONENT NUMBER, REFERENCE THE INSTALLATION MANUAL FOR COMPONENT FOOTING SPECS.

It is the manufacturer's opinion that the structure shown herein complies with current ada standards concerning accessibility if used with proper accessible surfacing and together with other necessary ground level play equipment.
IMPORTANT: Never install play equipment over hard, unresilient surfaces such as asphalt, concrete, or compacted earth. It is the owner's responsibility to ensure the "minimum area required" contains an appropriate amount of resilient material to cushion accidental falls.

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rrmdesign.com | (805) 543-1794
3765 S. Higuera, San Luis Obispo, CA 93401

LICENSED LANDSCAPE ARCHITECT
CHRISTOPHER S. DUFOUR NO. 5191
08/30/26
Renewal Date
STATE OF CALIFORNIA

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BID SET

MATHILDA PARK IMPROVEMENTS
GOLETA CA 93117

PLAYGROUND LAYOUT - FOOTINGS WITH SURFACING

NO.	REVISION	DATE

PROJECT MANAGER
CHRIS DUFOUR
DRAWN BY: SS
CHECKED BY: CD
DATE
MAY 2025
PROJECT NUMBER
2019-01-RC21
SHEET
LC702

N:\2000\2019-01-RC21-Mathilda Park Site Improvements\Landscape Architecture\Task 12-CorDoc\1Sheet Files\2019-01-C7.dwg, LC702, May 14, 2025 11:38am, eemstrom

City of Goleta
27 South La Patera Lane
Goleta, CA 93117

Play and Park Structures of Central Coast CA

This play equipment is recommended for children ages:
5-12

Minimum Area Required:
41'-7" x 36'-9"

Scale: 1/8" = 1'-0"
This drawing can be scaled only when in an 11" x 17" format

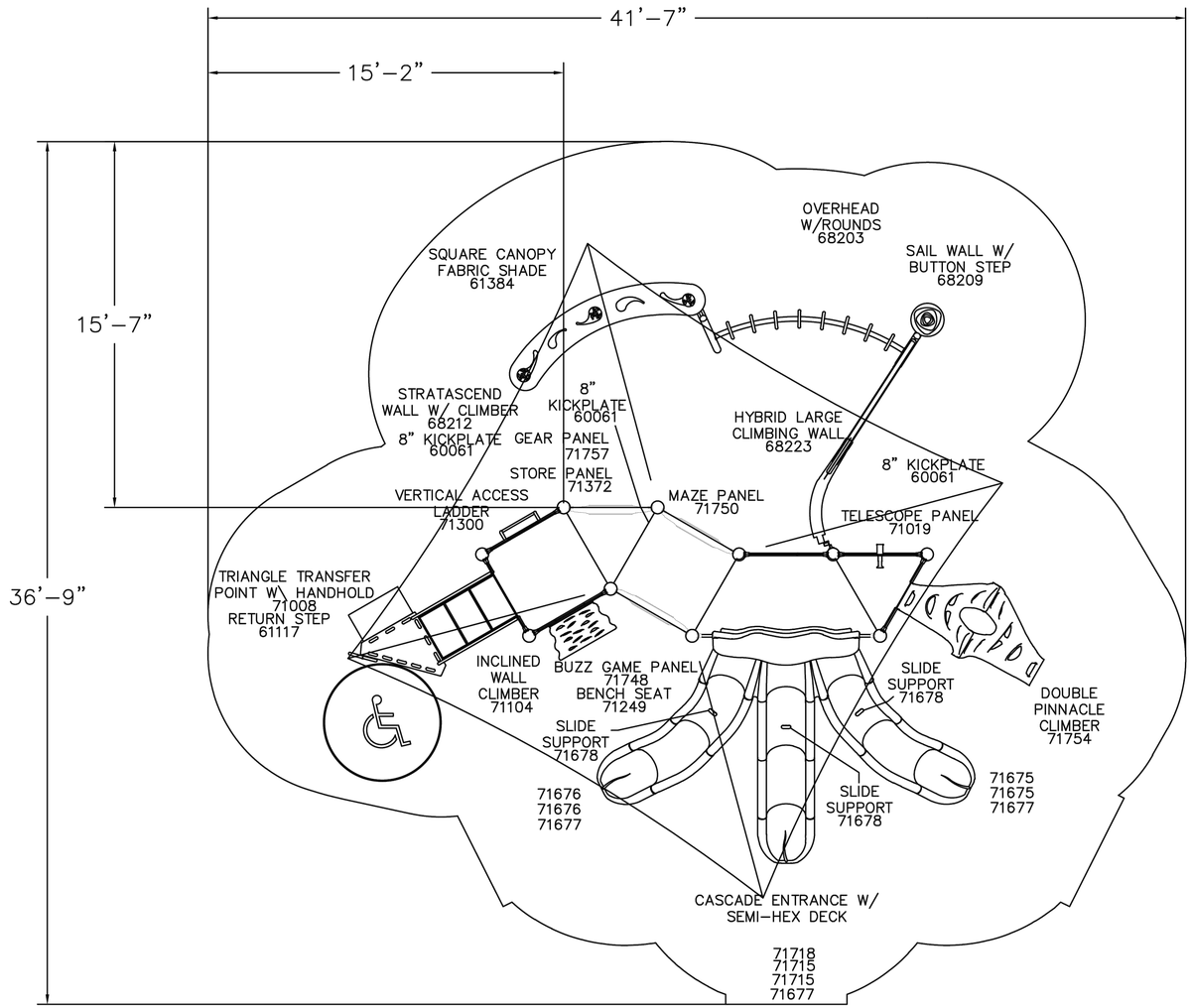
Drawn By:
Tiffanie Brown
Date:
11/15/23
Quote Number:
821-146018A

play&park structures
A PLAYCORE Company
544 Chestnut Street
Chattanooga, TN 37402
800-727-1907 / www.playandpark.com

Total Play Components	14				User Capacity
Elevated Play Components	9				40-50
Elevated Play Components Accessible by Ramp	0	Req.	0		Critical Fall Height
Elevated Components Accessible by Transfer	9	Req.	5		8'-0'
Accessible Ground Level Components Shown	5	Req.	3		
Different Types of Ground Level Components	3	Req.	3		

SUPERmax PLAY SYSTEMS

Order 3325603 ISO 9001 CERTIFIED



TOTAL OVERALL AREA
1591 SQ FT
142 LINEAR FT
TEAL: 190 SQ FT
BROWN: 1401 SQ FT

0 5 10 20

It is the manufacturer's opinion that the structure shown herein complies with current ada standards concerning accessibility if used with proper accessible surfacing and together with other necessary ground level play equipment.
IMPORTANT: Never install play equipment over hard, unresilient surfaces such as asphalt, concrete, or compacted earth. It is the owner's responsibility to ensure the "minimum area required" contains an appropriate amount of resilient material to cushion accidental falls.

rrm design group
rrmdesign.com | (805) 543-1794
3765 S. Higuera, San Luis Obispo, CA 93401

LICENSED LANDSCAPE ARCHITECT
CHRISTOPHER D. DUFOUR NO. 5971
08/30/25
Renewal Date
STATE OF CALIFORNIA

THE INCLUDED DRAWINGS, SPECIFICATIONS, IDEAS, DESIGNS AND ARRANGEMENTS REPRESENTED THEREBY ARE AND SHALL REMAIN THE PROPERTY OF RRM DESIGN GROUP AND NO PART THEREOF SHALL BE COPIED, DISCLOSED TO OTHERS OR USED IN CONNECTION WITH ANY WORK OR PROJECT OTHER THAN THE SPECIFIED PROJECT FOR WHICH THEY HAVE BEEN PREPARED WITHOUT THE PRIOR WRITTEN CONSENT OF RRM DESIGN GROUP. VISUAL CONTACT WITH THESE DRAWINGS OR SPECIFICATIONS SHALL CONSTITUTE CONCLUSIVE EVIDENCE OF ACCEPTANCE OF THESE RESTRICTIONS. SUBMITTAL OF THESE DOCUMENTS FOR PUBLIC AGENCY REVIEW SHALL NOT BE CONSIDERED AS A PUBLICATION OF RRM DESIGN GROUP.
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MATHILDA PARK IMPROVEMENTS
GOLETA, CA 93117

PLAYGROUND LAYOUT - EQUIPMENT

NO.	REVISION	DATE
1		
2		
3		
4		
5		
6		

PROJECT MANAGER: CHRIS DUFOUR
DRAWN BY: SS
CHECKED BY: CD
DATE: MAY 2025
PROJECT NUMBER: 2019-01-RC21
SHEET: LC703

BID SET

N:\2000\2019-01-RC20-Mathilda Park Site Improvement\1 Landscape Architecture\Task 4 2- Cont Docs\3 Sheet Files\2019-01-LC7*.dwg, LC703, May 14, 2025 11:39am, esmithon

Mathilda Park (UPDATED SURFACING)
130 Cremona Avenue
Goleta, California

Play and Park Structures of Central Coast CA

This play equipment is recommended for children ages:
5-12

Minimum Area Required:
41'-7" x 36'-9"

Scale: 5/32" = 1'-0"
This drawing can be scaled only when in an 11" x 17" format

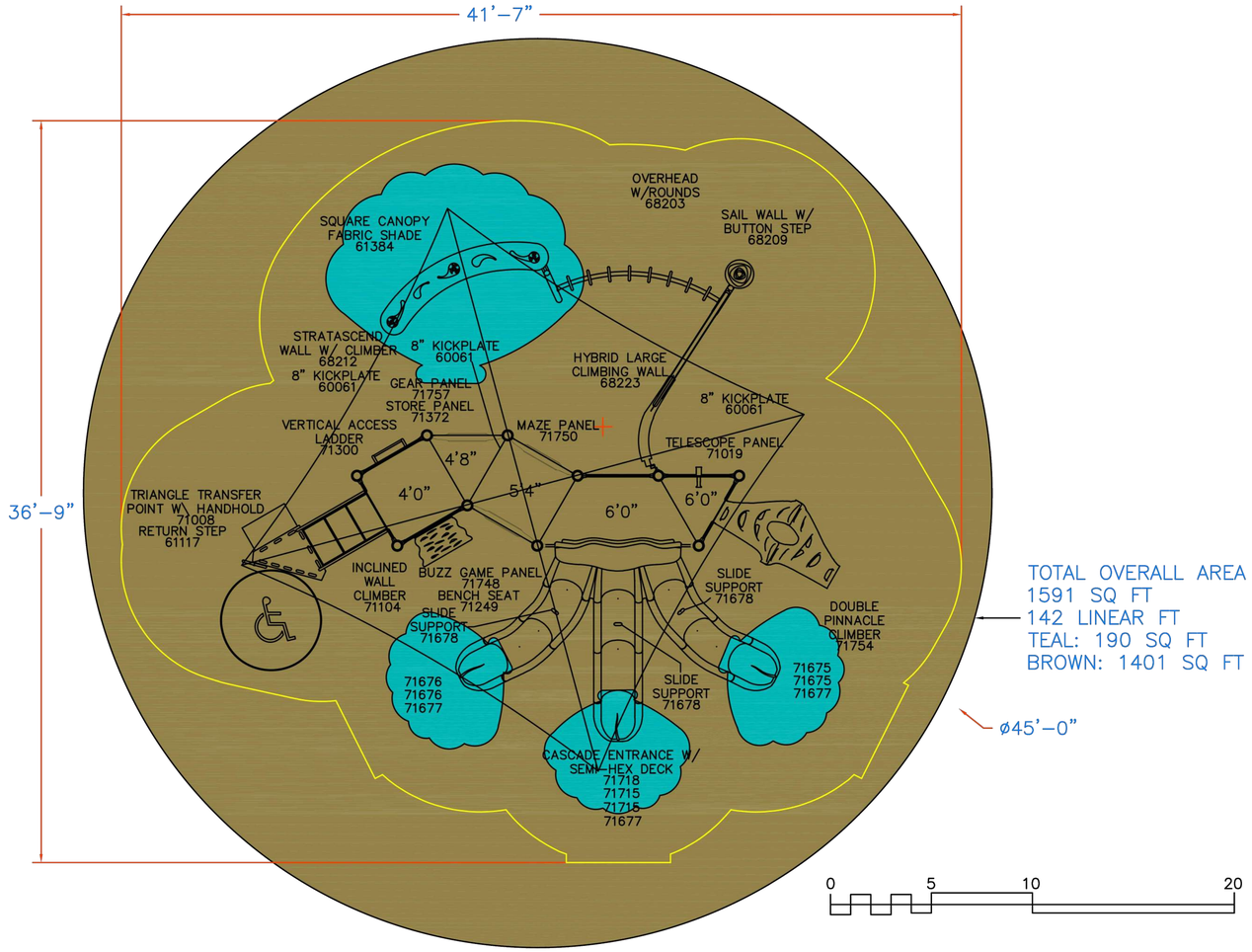
Drawn By:
Tiffanie Brown
Date:
11/15/23
Quote Number:
821-146018A

play&park structures
A PLAYCORE Company
544 Chestnut Street
Chattanooga, TN 37402
800-727-1907 / www.playandpark.com

Total Play Components	14			
Elevated Play Components	9			User Capacity
Elevated Play Components Accessible by Ramp	0	Req.	0	40-50
Elevated Components Accessible by Transfer	9	Req.	5	Critical Fall Height
Accessible Ground Level Components Shown	5	Req.	3	8'-0'
Different Types of Ground Level Components	3	Req.	3	

SUPERmax PLAY SYSTEMS

ISO 9001 CERTIFIED



It is the manufacturer's opinion that the structure shown herein complies with current ada standards concerning accessibility if used with proper accessible surfacing and together with other necessary ground level play equipment.
IMPORTANT: Never install play equipment over hard, unresilient surfaces such as asphalt, concrete, or compacted earth. It is the owner's responsibility to ensure the "minimum area required" contains an appropriate amount of resilient material to cushion accidental falls.

BID SET

rrm design group
rrmdesign.com | (805) 543-1794
3765 S. Higuera, San Luis Obispo, CA 93401

LICENSED LANDSCAPE ARCHITECT — CHRISTOPHER S. DUFOUR No. 5191 — 08/30/25 — STATE OF CALIFORNIA

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MATHILDA PARK IMPROVEMENTS
GOLETA CA 93117

PLAYGROUND LAYOUT - SURFACING

NO.	REVISION	DATE
1		
2		
3		
4		
5		
6		

PROJECT MANAGER: CHRIS DUFOUR
DRAWN BY: SS
CHECKED BY: CD
DATE: MAY 2025
PROJECT NUMBER: 2019-01-RC21
SHEET: LC704

N:\2000\2019-01-RC20-Mathilda Park Site Improvement\1 Landscape Architecture\Task 4 2- Cont Docs\3 Sheet Files\2019-01-LCP .dwg, LC704, May 14, 2025 11:40am, esmithon

COMPLIANCE WITH MWELO

1. PROJECT INFORMATION - SEE COVER PAGE OF THIS DRAWING SET FOR ALL INFORMATION INCLUDING, DATE, PROJECT APPLICANT AND CITY, AND ADDRESS.

   TOTAL LANDSCAPE AREA: 4,888
   SHRUBS GROUNDCOVER AND TREES - 3,888
   TURF - 1,000 SF
2. PROJECT TYPE - LANDSCAPE REMODEL
3. WATER SUPPLY - DOMESTIC WATER
4. CHECKLIST OF ALL DOCUMENTS IN LANDSCAPE DOCUMENT PACKAGE:
   X LANDSCAPE DESIGN PLAN - INCLUDED IN THESE LANDSCAPE DRAWINGS
   X IRRIGATION DESIGN PLAN - INCLUDED IN THESE LANDSCAPE DRAWINGS
   X GRADING DESIGN PLAN - INCLUDED IN THESE LANDSCAPE DRAWINGS
5. WATER BUDGET CALCULATIONS (MAWA) AND (ETWU). SEE CALCULATIONS.
6. I HAVE COMPLIED WITH THE CRITERIA OF THE ORDINANCE AND APPLIED THEM ACCORDINGLY FOR THE EFFICIENT USE OF WATER IN THE IRRIGATION DESIGN PLAN.

CHRISTOPHER DUFOUR, LANDSCAPE ARCHITECT | CA LICENSE NUMBER #4993

CONTRACTOR IS RESPONSIBLE FOR THE FOLLOWING ITEMS:
http://www.water.ca.gov/wateruseefficiency/docs/MWELO09-10-09.pdf

1. COMPOSTING
   Incorporate compost at a rate of at least four cubic yards per 1,000 square feet to a depth of six inches into landscape area - unless contradicted by a soils report.
2. PLANT MATERIAL
   Climate adapted plants that require occasional, little or no summer water (average WUCOLs plant factor 0.3) will be installed in 75% of the plant area.
3. IRRIGATION SYSTEM
   Shall comply with the following:
   - Automatic irrigation controllers are required and must use evapotranspiration or soil moisture sensor data and utilize a rain sensor.
   - Irrigation controllers shall be a type which does not lose programming data in the event the primary power source is interrupted.
   - All irrigation emission devices must meet the requirements set in the ANSI standard, ASABE/ICC 802-2014 "Landscape Irrigation Sprinkler and Emitter Standard," All sprinkler heads installed in the landscape must document a distribution uniformity low quarter of 0.65 or higher using the protocol defined in ASABE/ICC 802-2014.
   - Areas less than ten (10) feet in width in any direction shall be irrigated with subsurface irrigation or other means that produces no runoff or overspray.
   - Controller charts shall be prepared by the contractor and approved by the City's authorized representative. The controller charts shall be placed in the controllers before commencing service. The total time required to water the entire irrigated landscape area shall not exceed 9 hours in any 24-hour period, preferably run between the hours of 6 p.m. and 6 a.m.
4. FINAL INSPECTION
   At the time of final inspection, the contractor must provide the City's authorized representative, of the property with a certificate of completion, certificate of installation, controller charts, irrigation schedule and a schedule of landscape and irrigation maintenance.

WATER CALCULATIONS

Appendix B - Sample Water Efficient Landscape Worksheet

WATER EFFICIENT LANDSCAPE WORKSHEET

This worksheet is filled out by the project applicant and it is a required element of the Landscape Document Package

Reference Evapotranspiration (Eto) 49.7

Hydrozone # /Planting Description*	Plant Factor (PF)	Irrigation Method	Irrigation Efficiency (IE)	ETAF (PF/IE)	Landscape Area (Sq. ft)	ETAF x Area	Estimated Total Water Use (ETWU) GAL/YEAR
Regular Landscape Areas							
1 - DT Shrubs	0.25	Drip	0.91	0.27	3,888	1068.13	32,913
2-DT Trees	0.25	Bubbler	0.8	0.31	0	0.00	0
3-Mod Shrubs	0.5	Drip	0.91	0.55	0	0.00	0
4 - Mod Trees	0.5	Bubbler	0.8	0.63	0	0.00	0
5 - Turf	0.9	Spray	0.71	1.27	1000	1267.61	39,060
				Totals	4888	1068.13	32,913
Special Landscape Areas							
Recreation/Recycled				1	0		0
Edibles				1	0		0
Other				1	0		0
				Totals	0		0
					ETWU Total	**32,913**	GAL/YEAR
				Maximum Allowed Water Allowance (MAWA)		**67,778**	GAL/YEAR

IRRIGATION NOTES

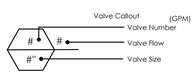
1. REFER TO SHEET LI501 FOR FOR DETAILS.
2. IRRIGATION PLAN IS DIAGRAMMATIC. FINAL LOCATION OF PIPING WILL BE DETERMINED AT THE TIME OF INSTALLATION. MAINLINE AND LATERALS SHALL BE PLACED IN THE SAME TRENCH WHEN POSSIBLE. ALL Q.C. VALVES ARE TO BE LOCATED 12" FROM SIDEWALKS, CURBS, ASPHALT & CONCRETE SURFACES.
3. ALL EQUIPMENT REQUIRED BUT NOT SPECIFIED ON THE DRAWING, TO COMPLETE THE WORK, SHALL BE PROVIDED BY THE IRRIGATION CONTRACTOR.
4. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND/OR SPECIFICATIONS.
5. CONTRACTOR SHALL COORDINATE CONNECTION TO EXISTING CONTROLLER AND CONFIRM THAT STATIONS ARE AVAILABLE FOR USE FOR THIS PROJECT. NOTIFY LANDSCAPE ARCHITECT IMMEDIATELY IF NOT AVAILABLE.
6. CONTRACTOR SHALL BECOME FAMILIAR WITH THE PLANS AND SITE CONDITIONS PRIOR TO BEGINNING WORK. SHOULD CONFLICTING INFORMATION BE FOUND ON THE PLANS, THE CONTRACTOR SHALL NOTIFY THE PROJECT LANDSCAPE ARCHITECT BEFORE PROCEEDING WITH THE WORK IN QUESTION.
7. DO NOT WILLFULLY INSTALL THE IRRIGATION SYSTEM AS SHOWN ON THE DRAWINGS WHEN IT IS OBVIOUS IN THE FIELD THAT OBSTRUCTIONS, GRADE DIFFERENCES OR DIFFERENCES IN THE AREA DIMENSIONS EXIST THAT MIGHT NOT HAVE BEEN CONSIDERED IN THE ENGINEERING. SUCH OBSTRUCTIONS OR DIFFERENCES SHOULD BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT. IN THE EVENT THIS NOTIFICATION IS NOT PERFORMED, THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY REVISIONS NECESSARY AT NO EXPENSE TO THE CITY.
8. CONTRACTOR SHALL ADJUST HEADS AS NEEDED TO MINIMIZE OVERSPRAY ONTO HARDSCAPE AREAS.
9. SPLICING OF 24 VOLT WIRES WILL NOT BE PERMITTED EXCEPT IN VALVE BOXES. LEAVE A 24" COIL OF EXCESS WIRE AT EACH SPLICE. LABEL ALL WIRES W/ WATERPROOF MARKERS AT ALL SPLICES AND VALVE MANIFOLDS.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF ALL MATERIAL APPEARING ON PLAN.
11. PROVIDE A SHUTOFF VALVE FOR EACH VALVE BANK.
12. ALL EXISTING UTILITIES, WATER LINES AND FIRE HYDRANTS SHALL REMAIN CONNECTED AND IN FULL CONTINUOUS OPERATION DURING AND FOLLOWING ALL CONTRACT WORK.
13. CONTRACTOR SHALL MAKE ALL NECESSARY ADJUSTMENTS TO THE IRRIGATION SYSTEM FOLLOWING A PRECIPITATION TEST PER THE CITY. ADJUSTMENTS SHALL INCLUDE BUT WILL NOT BE LIMITED TO: HEAD RELOCATION, CHANGING NOZZLES, AND ADJUSTING ARC PATTERNS TO ATTAIN 65% EFFICIENT UNIFORMITY AS REQUIRED BY THE CITY.
14. CONTRACTOR SHALL SLEEVE ALL PIPE CROSSINGS UNDER HARDSCAPE WITH SCH 40 PVC AT 2X PIPE DIAMETER SIZE. ALL SLEEVES UNDER PAVING SHALL RECEIVE IDENTIFYING MARK ON TOP OF HARDSCAPE AT EDGE OF PLANTER TO INDICATE LOCATION OF SLEEVE. EXTEND ALL SLEEVES 18" BEYOND EDGE OF HARDSCAPE, TYP.
15. FOR ALL DRIP AREAS: CONTRACTOR TO INSTALL AIR RELIEF VALVES, OPERATION INDICATORS AND FLUSH VALVES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
16. ALL CONTROL VALVES SHALL BE TAGGED WITH IDENTIFICATION TAGS TO INDICATE VALVE NUMBER ASSOCIATED WITH CONTROLLER.
17. CONTRACTOR SHALL NOT INSTALL ANY PLANTING UNTIL THE FOLLOWING ARE COMPLETED:
    17.1. THE IRRIGATION SYSTEM SHALL BE FULLY OPERATIONAL.
    17.2. HYDROSTATIC PRESSURE TESTS SHALL BE PERFORMED ON MAIN AND LATERAL LINES.
    17.3. ALL ZONES SHALL PASS A COVERAGE TEST.
    17.4. CONTROLLER SHALL BE FULLY OPERATIONAL.

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	PSI
1006	HUNTER MP1000 PROS-06-PRS40-CV-F TURF ROTATOR, 6" POP-UP WITH CHECK VALVE, FLOGUARD, PRESSURE REGULATED TO 40 PSI, MP ROTATOR NOZZLE ON PRS40 BODY. M=MAROON ADJ ARC 90 TO 210, L=LIGHT BLUE 210 TO 270 ARC, O=OLIVE 360 ARC.	45
1004 1006 1008	HUNTER MP1000 PROS-12-PRS40-CV-F SHRUB ROTATOR, 12IN. POP-UP WITH CHECK VALVE, FLOGUARD, PRESSURE REGULATED TO 40 PSI, MP ROTATOR NOZZLE. M=MAROON ADJ ARC 90 TO 210, L=LIGHT BLUE 210 TO 270 ARC, O=OLIVE 360 ARC ON PRS40 BODY.	40
1401 1402 1404 1408	RAIN BIRD 1802-1400 FLOOD 1401 FLOOD BUBBLER 2" POPUP	30

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
	RAIN BIRD XCZ-100-PRF MEDIUM FLOW DRIP CONTROL KIT, 1" DV VALVE, 1" PRESSURE REGULATING FILTER, 40PSI PRESSURE REGULATOR. 3 GPM-15 GPM.
	PIPE TRANSITION POINT IN DRIP BOX PIPE TRANSITION POINT FROM PVC LATERAL TO DRIP TUBING WITH RISER IN 6" (150MM) DRIP BOX.
	AREA TO RECEIVE DRIP EMITTERS RAIN BIRD PC-DIFF SINGLE OUTLET, PRESSURE COMPENSATING 1/2" THREADED DRIP EMITTERS INSTALLED ON FLEXIBLE MARLEX RISERS HARD PIPED TO EACH PLANT PER DETAIL. Emitter Notes: PC-07 emitters (1 assigned to each 1 gal plant) PC-07 emitters (1 assigned to each 5 gal plant)

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
	RAIN BIRD EFB-CP-PRS-D 1IN., 1-1/2IN., 2IN, BRASS REMOTE CONTROL VALVE, THAT IS CONTAMINATION PROOF W/SELF-FLUSHING FILTER SCREEN. GLOBE CONFIGURATION, RECLAIMED WATER COMPATIBLE, AND PURPLE HANDLE COVER DESIGNATES NON-POTABLE WATER USE.
	HUNTER HQ-44LRC QUICK COUPLER VALVE, YELLOW RUBBER LOCKING COVER, RED BRASS AND STAINLESS STEEL, WITH 1IN, NPT INLET, 2-PIECE BODY.
	SPEARS TRUE UNION 2000 SOCKET PVC SHUT OFF BALL VALVE, 1/2" TO 4". CHEMICAL & CORROSION RESISTANT PVC OR CPVC CONSTRUCTION, INTERCHANGEABLE WITH ALL TRUE UNION 2000 VALVES, MATES WITH UNION 2000 PIPE UNIONS, SCHEDULE 80 FULL-BORE DESIGN, STRONG, BUTTRESS THREAD UNION NUTS, SINGLE O-RING SAFE-T-SHEAR STEM DESIGN.
M	BUCKNER-SUPERIOR 3200 1-1/2" NORMALLY CLOSED BRASS MASTER VALVE THAT PROVIDES DIRTY WATER PROTECTION AND NO MINIMUM FLOW FEATURE, WHICH ENSURES RELIABLE OPENING AND CLOSING OF THE VALVE IN EXTREME HIGH OR LOW FLOW SCENARIOS. AVAILABLE IN 3/4IN., 1IN.1-1/2IN.,2IN.,2-1/2IN. AND 3IN..
BF	EXISTING - BACKFLOW PREVENTOR 1-1/2" PROTECT IN PLACE
C	WEATHERMATIC SOLAR POWERED CONTROLLER ITS# ICA2-WM3-12/SP/SLR1/POLE-4-15/WMSL5/WMSPF SOLAR 12-ZONE SYSTEM, INTERNAL 120VAC/230VAC TRANSFORMER, LARGE BACKLIT LCD DISPLAY, WIRELESS WEATHER SENSOR FOR ET BASED WATERING, 900 MHZ RANGE, SMARTLINK AIRCARD WITH FLOW WITH 1-YEAR SERVICE PLAN PLUS EXTENDED WARRANTY SWAT TESTED
SA	WEATHERMATIC SOLAR POWERED CONTROLLER ITS# ICA2-WM3-12/SP/SLR1/POLE-4-15/WMSL5/WMSPF SOLAR 12-ZONE SYSTEM, INTERNAL 120VAC/230VAC TRANSFORMER, LARGE BACKLIT LCD DISPLAY, WIRELESS WEATHER SENSOR FOR ET BASED WATERING, 900 MHZ RANGE, SMARTLINK AIRCARD WITH FLOW WITH 1-YEAR SERVICE PLAN PLUS EXTENDED WARRANTY SWAT TESTED
FS	CREATIVE SENSOR TECHNOLOGY FSI-T10-001 1IN. PVC TEE TYPE FLOW SENSOR W/SOCKET ENDS, CUSTOM MOUNTING TEE AND ULTRA-LIGHTWEIGHT IMPELLER ENHANCES LOW FLOW MEASUREMENT. 2 WIRE DIGITAL OUTPUT COMPATIBLE W/ALL IRRIGATION CONTROLLERS. FLOW RANGE: .86 GPM - 52 GPM.
	IRRIGATION LATERAL LINE: PVC SCHEDULE 40
	IRRIGATION MAINLINE: PVC SCHEDULE 40
	PIPE SLEEVE: PVC SCHEDULE 40



rrm design group
rrmdesign.com | (805) 543-1794
3765 S. Higuera, San Luis Obispo, CA 93401

LICENSED LANDSCAPE ARCHITECT
CHRISTOPHER S. DUFOUR NO. 4993
08/30/26
Renewal Date
STATE OF CALIFORNIA

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MATHILDA PARK IMPROVEMENTS
GOLETA CA 93117

IRRIGATION NOTES AND LEGEND

NO.	REVISION	DATE

PROJECT MANAGER
CHRIS DUFOUR

DRAWN BY SS/DK
CHECKED BY CD

DATE
MAY 2025

PROJECT NUMBER
2019-01-RC21

SHEET
LI001

BID SET

N:\2000\2019-01-RC21-Mathilda Park Site Improvements\Landscape Architecture\Task 12 CorDoc\1Sheet Files\2019-01 LI-Dwg, LI001, May 14, 2025, 11:31am, eamstrom

PROTECT EXISTING IRRIGATION FOR THIS AREA. REPLACE EXISTING VALVE FOR THIS AREA ON NEW MAINLINE AND RECONNECT EX. IRRIGATION TO VALVE

9 - 1"

6.06 8 1"

7 0.25 1"

6 3.01 1"

5 4.77 1"

4 9.42 1"

3 1.5 1"

2 - 1"

8.01 1 1"

INSTALL IRRIGATION CONTROLLER IN PEDESTAL ENCLOSURE. CONNECT POWER FROM SOLAR ARRAY.

INSTALL SOLAR ARRAY ON POST PER DETAIL A/LI502. VERIFY LOCATION IN FIELD AWAY FOR SOLAR OBSTRUCTIONS.

TIE NEW MAINLINE INTO EXISTING DOWNSTREAM OF BACKFLOW PREVENTOR

POINT OF CONNECTION (EX. MAINLINE)
MAXIMUM DEMAND: 11.9 GPM
DESIGN PRESSURE: 65 PSI (REQUIRED)

REPLACE EX SHUT OFF VALVE IN KIND UPSTREAM OF BACKFLOW PREVENTOR. INSTALL IN NEW VALVE BOX

EX WATER METER

IRRIGATION LEGEND & NOTES

REFER TO SHEET LI001 FOR IRRIGATION LEGEND AND NOTES

NORTH

0 5 10 15 feet

1" = 5'-0"

BID SET

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LICENSED LANDSCAPE ARCHITECT
CHRISTOPHER S. DUFOUR NO. 5191
08/30/26
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STATE OF CALIFORNIA

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MATHILDA PARK IMPROVEMENTS
GOLETA CA 93117

IRRIGATION PLAN

NO.	REVISION	DATE

PROJECT MANAGER
CHRIS DUFOUR

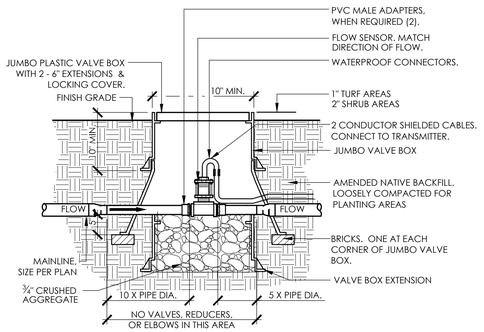
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CHECKED BY CD

DATE
MAY 2025

PROJECT NUMBER
2019-01-RC21

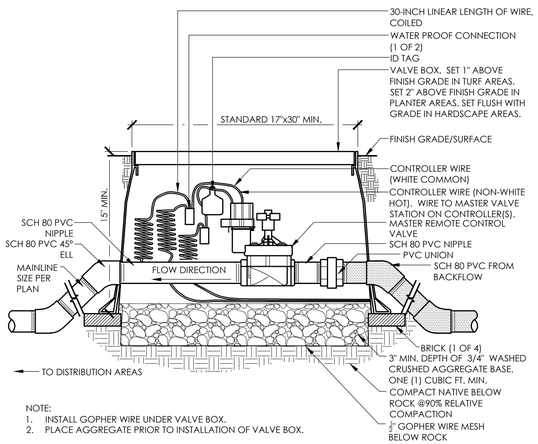
SHEET
LI101

N:\2000\2019-01-RC20-Mathilda Park-Site Improvement\1 Landscape Architecture\Task 4.2- Cons Docs\3 Sheet Files\2019-01 LI.dwg, LI101, May 14, 2025 11:31am, eamstrom



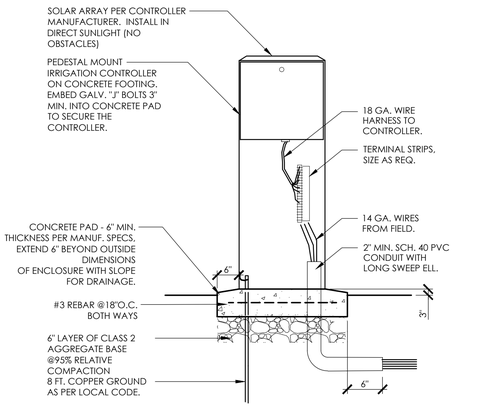
NOTES:
1. CONTRACTOR SHALL WIRE FLOW SENSOR TO IRRIGATION CONTROLLER IF CONTROLLER ALLOWS.
2. FLOW SENSOR MAKE AND MODEL SHALL BE COMPATIBLE WITH IRRIGATION CONTROLLER.
3. INSTALL GOPHER WIRE UNDER CRUSHED AGGREGATE SECTION

I FLOW SENSOR
3/4" = 1'-0" RRM-1700-1725.02-21

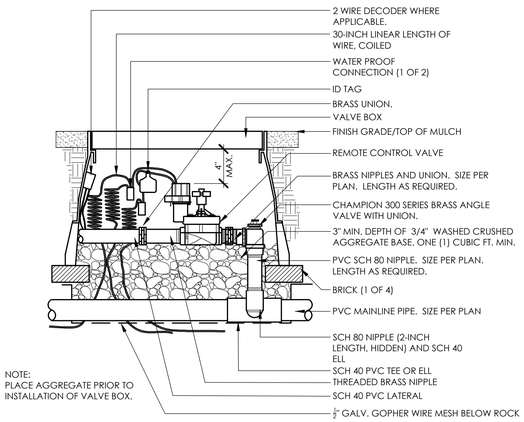


NOTE:
1. INSTALL GOPHER WIRE UNDER VALVE BOX.
2. PLACE AGGREGATE PRIOR TO INSTALLATION OF VALVE BOX.

H MASTER VALVE
3/4" = 1'-0" RRM-1700-1725.02-50

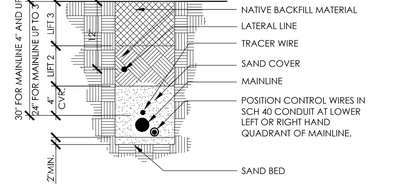


F SOLAR POWERED CONTROLLER IN PEDESTAL
1" = 1'-0" RRM-1700-1725.02-55

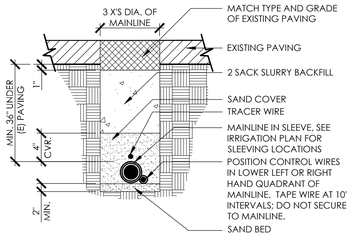


NOTE:
PLACE AGGREGATE PRIOR TO INSTALLATION OF VALVE BOX.

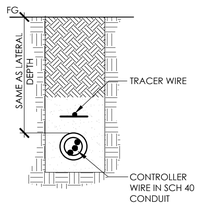
C REMOTE CONTROL VALVE
1" = 1'-0" RRM-0801-KN-10



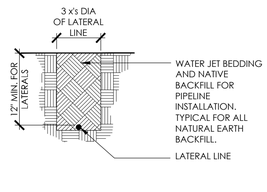
MAINLINE COMBINED WITH LATERAL LINE



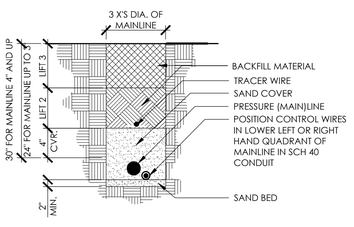
MAINLINE WITH CONTROL WIRE BELOW EXISTING PAVING



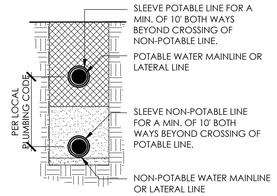
CONTROL WIRE SEPARATE FROM PIPE



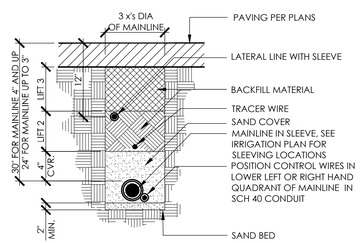
LATERAL LINE



MAINLINE WITH CONTROL WIRE



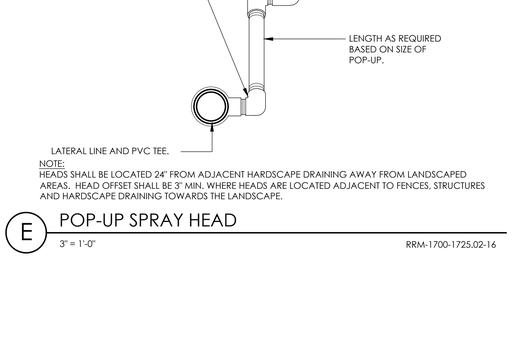
RECLAIMED WATER & POTABLE WATER PIPE



MAINLINE COMBINED WITH LATERAL LINE UNDER PAVEMENT

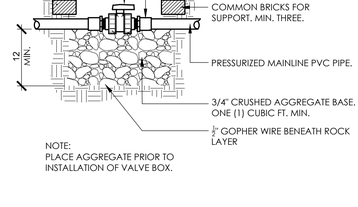
NOTES:
1. PIPE BEDDING AND BACKFILL SHALL BE WATER JETTED TO ACHIEVE PROPER DENSIFICATION.
2. PIPE AND CONTROL WIRE CROSSING VEHICULAR ROADWAY SHALL BE SLEEVED PER PLANS AND THIS DETAIL
3. ELECTRICAL SLEEVE: 3" MIN; LARGER IF REQUIRED BY INSPECTOR.
4. IRRIGATION SLEEVE: TWO PIPE SIZES LARGER THAN WATER PIPE SIZE.
5. SHOW ALIGNMENT OF ALL CONTROL WIRE NOT INSTALLED WITH MAINLINE ON AS-BUILT DRAWINGS.

G TRENCHING
1" = 1'-0" RRM-1700-1725.02-24



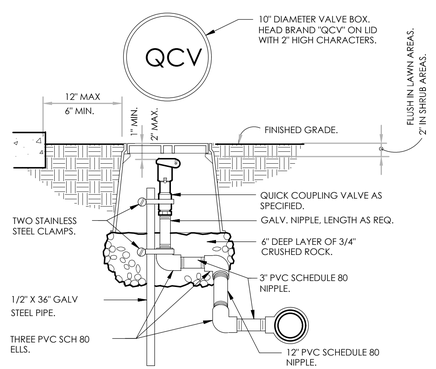
NOTE:
HEADS SHALL BE LOCATED 24" FROM ADJACENT HARDSCAPE DRAINING AWAY FROM LANDSCAPED AREAS. HEAD OFFSET SHALL BE 3" MIN. WHERE HEADS ARE LOCATED ADJACENT TO FENCES, STRUCTURES AND HARDSCAPE DRAINING TOWARDS THE LANDSCAPE.

E POP-UP SPRAY HEAD
3" = 1'-0" RRM-1700-1725.02-16

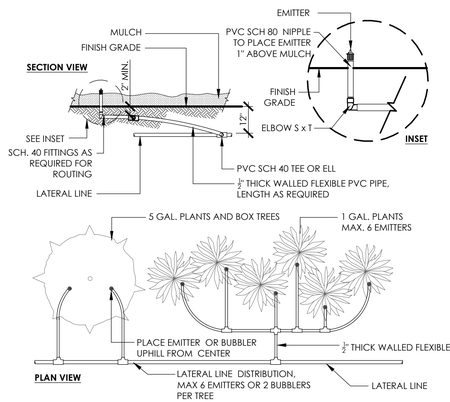


NOTE:
PLACE AGGREGATE PRIOR TO INSTALLATION OF VALVE BOX.

B BALL VALVE
1" = 1'-0" RRM-1900-1901.01-11



D QUICK COUPLING VALVE IN BOX
1 1/2" = 1'-0" RRM-1900-1901.01-08



A SINGLE OUTLET EMITTER
3/4" = 1'-0" RRM-1700-1725.02-52

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LICENSED LANDSCAPE ARCHITECT
CHRISTOPHER S. DUFOUR NO. 5971
08/30/25
Renewal Date
STATE OF CALIFORNIA

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MATHILDA PARK IMPROVEMENTS
GOLETA CA 93117

IRRIGATION DETAILS

NO.	REVISION	DATE

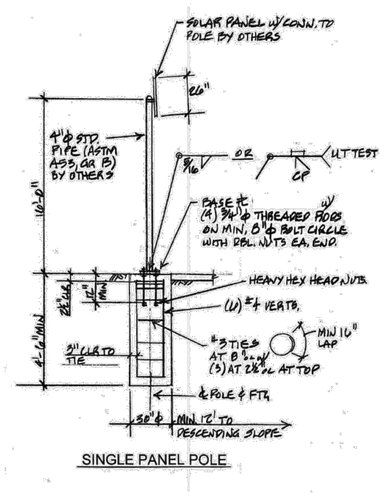
PROJECT MANAGER CHRIS DUFOUR
DRAWN BY SS | **CHECKED BY** CD
DATE MAY 2025
PROJECT NUMBER 2019-01-RC21
SHEET LI501

BID SET

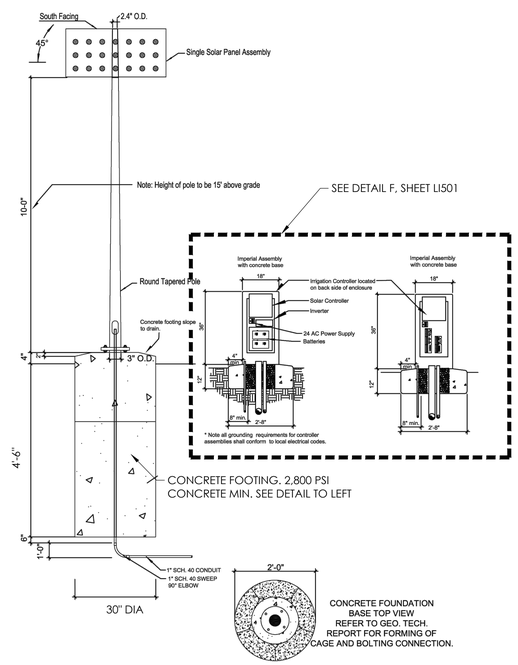
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3. **Design of elements for Gravity Loads**

1. **SINGLE PANEL AT TOP**



SINGLE PANEL POLE



A SOLAR ARRAY FOR IRRIGATION CONTROLLER
NTS

rrm design group

rrmdesign.com | (805) 543-1794
3765 S. Higuera, San Luis Obispo, CA 93401

LICENSED LANDSCAPE ARCHITECT
CHRISTOPHER B. DUFOUR NO. 5191
08/30/25
Renewal Date
Date
STATE OF CALIFORNIA

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GOLETA CA 93117

IRRIGATION DETAILS

NO.	REVISION	DATE
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PROJECT MANAGER
CHRIS DUFOUR

DRAWN BY SS/DK
CHECKED BY CD

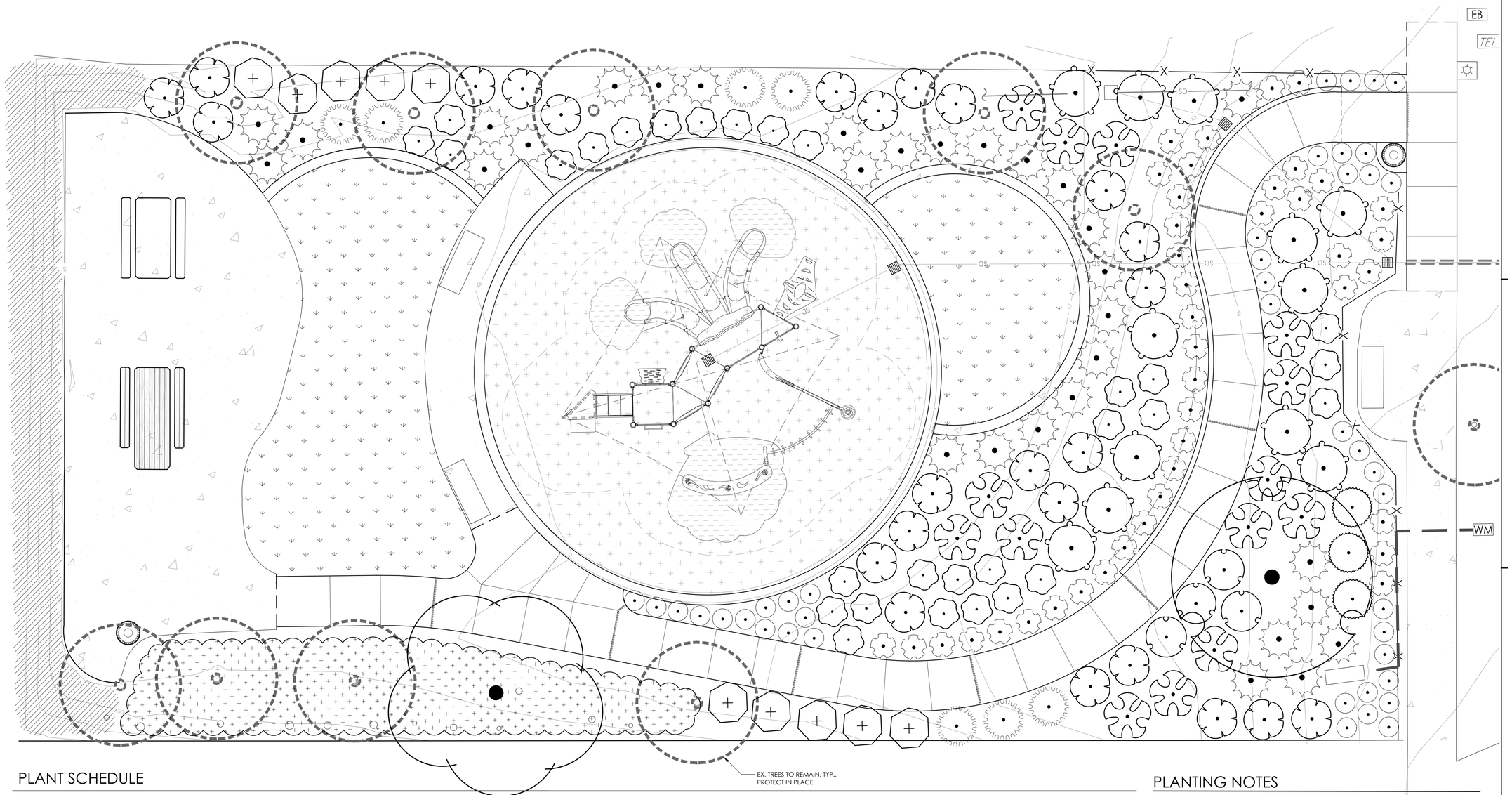
DATE
MAY 2025

PROJECT NUMBER
2019-01-RC21

SHEET
LI502

BID SET

N:\2000\2019\01-RC21-Mathilda Park Site Improvements\Landscape Architecture\Task 2-5 Con Docs\Sheet Files\2019-01-LI.dwg, LI502, May 14, 2025, 11:18am, eamstrom



PLANT SCHEDULE

SYMBOL	BOTANICAL NAME	COMMON NAME	CONT	WUCOLS	QTY	DETAIL
TREES						
	QUERCUS AGRIFOLIA	COAST LIVE OAK MULTI-TRUNK	24"BOX	VERY LOW	1	D/LP501
	QUERCUS SUBER	CORK OAK	24"BOX	LOW	1	D/LP501
SHRUBS						
	ADENANTHOS CUNEATUS 'CORAL DRIFT'	CORAL DRIFT FLAMEBUSH	5 GAL	LOW	3	A/LP501
	ALOE PLICATILIS	FAN ALOE	5 GAL	LOW	14	A/LP501
	ARCTOSTAPHYLOS X `HOWARD MCMINN`	HOWARD MCMINN MANZANITA	15 GAL	LOW	12	A/LP501
	ARCTOSTAPHYLOS X 'EMERALD CARPET'	EMERALD CARPET MANZANITA	5 GAL	LOW	4	A/LP501
	ASTERISCUS MARITIMUS	GOLD COIN DAISY	1 GAL	LOW	41	A/LP501
	CORREA ALBA	WHITE CORREA	1 GAL	LOW	10	A/LP501
	ENCELIA CALIFORNICA	CALIFORNIA ENCELIA	1 GAL	LOW	25	A/LP501
	KNIPHOFIA UVARIA 'ECHO DUO'	ECHO DUO RED HOT POKER	5 GAL	LOW	7	A/LP501

SHRUBS						
	LOMANDRA LONGIFOLIA 'BREEZE' TM	BREEZE MAT RUSH	1 GAL	LOW	31	A/LP501
	SALVIA CHAMAEDRYOIDES	MEXICAN BLUE SAGE	1 GAL	LOW	29	A/LP501
	SENECIO MANDRALISCAE 'BLUE CHALK STICKS'	SENECIO	1 GAL	LOW	41	A/LP501

SYMBOL	BOTANICAL NAME	COMMON NAME	CONT	WUCOLS	SPACING	QTY	DETAIL
SHRUB AREAS							
	ARCTOSTAPHYLOS X 'EMERALD CARPET'	EMERALD CARPET MANZANITA	5 GAL	LOW	60" o.c.	20	B/LP501

SYMBOL	BOTANICAL NAME	COMMON NAME	CONT	WUCOLS	SPACING	QTY	
GROUND COVERS							
	(E) GROUNDCOVER	EXISTING GROUNDCOVER	N/A			388 SF	
	TURF MARATHON II	MARATHON II	SOD	HIGH		1,034 SF	E/LP501

PLANTING NOTES

1. PLANT LIST IS FOR CONVENIENCE OF CONTRACTOR ONLY. IN CASE OF DISCREPANCIES BETWEEN THE PLANS AND THE LIST, PLANS SHALL PREVAIL.
2. PLANT LOCATIONS SHOWN ON THE PLANS ARE DIAGRAMMATIC. CONTRACTOR SHALL FLAG ALL PLANT LOCATIONS FOR VERIFICATION WITH CITY'S AUTHORIZED REPRESENTATIVE PRIOR TO INSTALLATION
3. ALL GROUNDCOVER SHALL BE TRIANGULARLY SPACED UNLESS OTHERWISE NOTED.
4. CONTRACTOR SHALL INSTALL A 3" THICK LAYER OF WALK ON BARK MULCH (U.N.O.) IN SHRUB, GROUND COVER AND TREE AREAS.
5. CONTRACTOR SHALL TAG ALL TREES FOR SELECTION BY THE CITY'S AUTHORIZED REPRESENTATIVE.
6. ALL PLANT MATERIAL SHALL BE LOCALLY GROWN WITHIN 50 MILES OF THE PROJECT SITE.
7. INSTALL SHRUBS ON SLOPES PER DETAIL C/LP501 WHERE GRADES EXCEED 3:1

NORTH

0 5 10 15 feet

1" = 5'-0"

BID SET

rrm design group

rrmdesign.com | (805) 543-1794

3765 S. Higuera, San Luis Obispo, CA 93401

LICENSED LANDSCAPE ARCHITECT
CHRISTOPHER B. DUFOUR NO. 5191
08/30/26
Renewal Date
Date
STATE OF CALIFORNIA

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MATHILDA PARK IMPROVEMENTS

GOLETA CA 93117

PLANTING PLAN

NO.	REVISION	DATE

PROJECT MANAGER
CHRIS DUFOUR

DRAWN BY
SS/DK

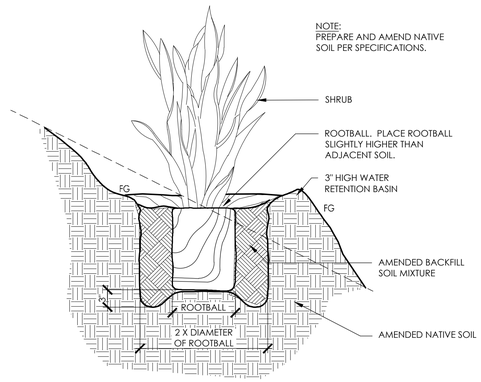
CHECKED BY
CD

DATE
MAY 2025

PROJECT NUMBER
2019-01-RC21

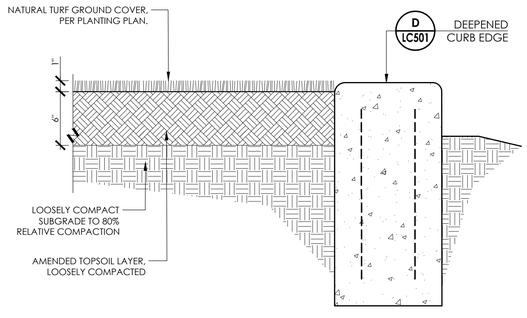
SHEET
LP101

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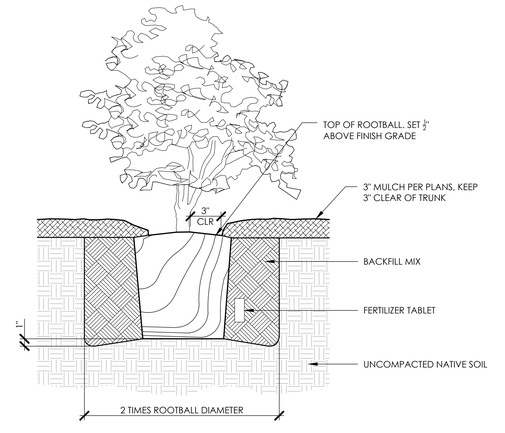
C SHRUB PLANTING ON SLOPE

1" = 1'-0" RRM-1900-1901.01-09



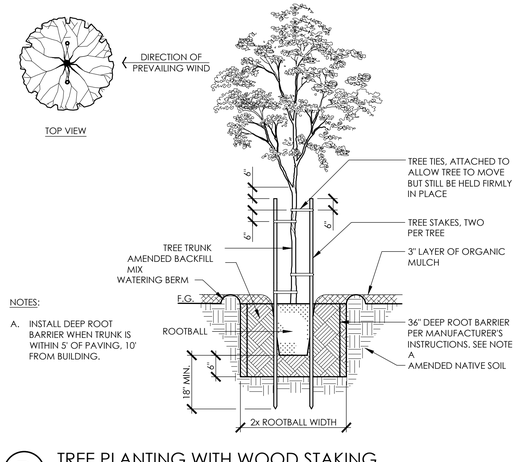
E NATURAL TURF GROUNDCOVER

1 1/2" = 1'-0" RRM-1900-1901.01-65



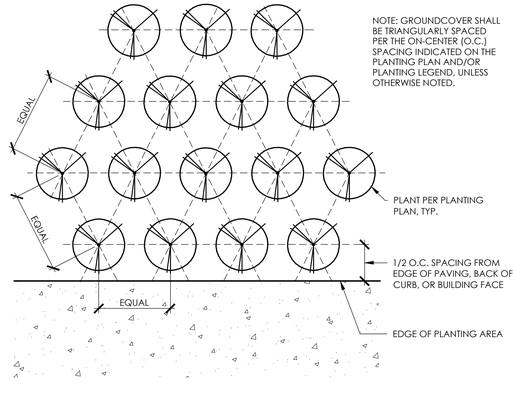
B SHRUB PLANTING

1 1/2" = 1'-0" RRM-1900-1901.01-75



D TREE PLANTING WITH WOOD STAKING

1/2" = 1'-0" RRM-1900-1901.01-03



A SHRUB & GROUND COVER SPACING

1 1/2" = 1'-0" RRM-1900-1901.01-37

BID SET

rrm design group
rrmdesign.com | (805) 543-1794
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MATHILDA PARK IMPROVEMENTS
GOLETA CA 93117

PLANTING DETAILS

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PROJECT MANAGER
CHRIS DUFOUR

DRAWN BY SS/DK
CHECKED BY CD

DATE
MAY 2025

PROJECT NUMBER
2019-01-RC21

SHEET
LP501

N:\2000\2019-01-RC20 Mathilda Park Site Improvements\Landscape Architecture\Task L2 ConDocs\Sheet Files\2019-01 LP.dwg, LP501, May 14, 2025 11:42am, eernstrom

ATTACHMENT 8

Mathilda Park Improvements Project Award Presentation

Bid Protest and Recommendation to Award Construction Contract and CMIT Contract for the Mathilda Park Improvements Project

Tuesday, October 7, 2025

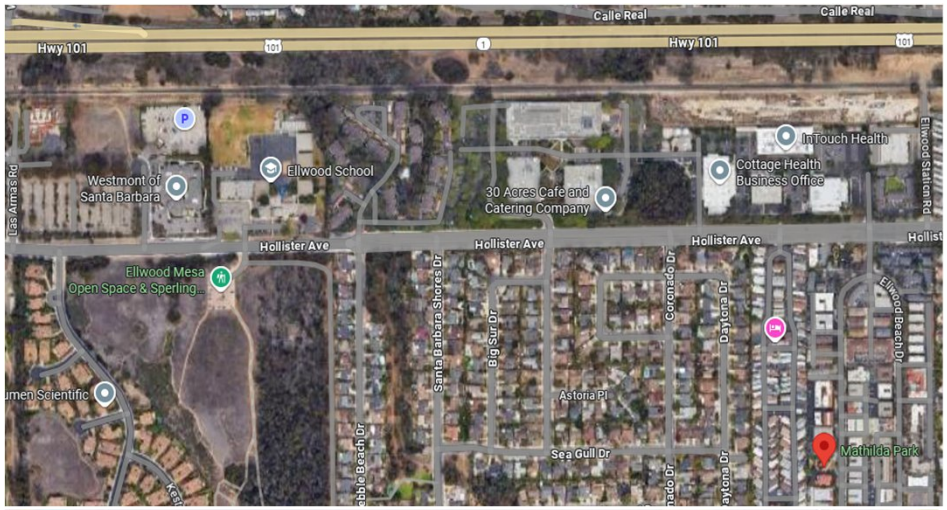
City Council Meeting

CITY OF GOLETA

Outline

- Project Background
- Bid Results
- Bid Protest & Staff Findings
- Council Actions

Project Background







CITY OF GOLETA

Bid Results

Engineer's Estimate	$528,044.00
KYA Services, LLC	$404,897.57
Western State Builders, Inc.	$490,695.10
RE Schultz Construction, Inc.	$496,025.00
Hanly General Engineering Corp.	$549,543.86
RCH Construction	$608,715.46

Low bid is 23.3% below the Engineer's Estimate

Bid Protest & Staff Findings

- Bid Protest and supplemental information was received on August 15, 2025 from Western State Builders, Inc.
  1. Prime contractor self-performance percentage not being met.
  2. Playground subcontractor does not have a certification from Play & Park Structures; and
  3. Playground subcontractor does not hold the appropriate licenses to perform the work.

- Staff Findings
  1. No self-performance requirement in California Public Contract Code.
  2. The playground subcontractor has a certification from Play & Park Structures.
  3. The prime contractor has the appropriate license to perform the work.

CITY OF GOLETA

Council Actions

- Conduct a public hearing to take verbal and written testimony regarding a bid protest filed by Western State Builders Inc.; and

- After considering the testimony presented during the public hearing, adopt Resolution 25-__, entitled, "A Resolution of the City Council of the City of Goleta, California, Rejecting Bid Protest and Awarding Construction Contract for Mathilda Park Improvements Project"; and

- Approve the Plans and Specifications for the Mathilda Park Improvements Project; and

- Award and authorize the City Manager to execute a Construction Contract with KYA Services, LLC., for the Mathilda Park Improvements Project in the not-to-exceed amount of $404,897.57, subject to the requirements of the contract documents; and

- Authorize the Public Works Director to approve contract change orders for the Mathilda Park Improvements Project, if necessary, in the not-to-exceed amount of $80,979.00; and

- Award and authorize the City Manager to execute a Professional Services Agreement with Vanir Construction Management, Inc. in the not-to-exceed amount of $100,275.00 for Construction Management, Inspection, and Material Testing services with a June 30, 2026, termination date.

CITY OF GOLETA

Questions/Comments