



Stormwater Management Requirements for CZU Lightning Complex Fire Residential Replacement Structures

The requirements below apply only for the replacement of legal structures and site improvements destroyed as part of the CZU Lightning Complex Fire. Please fill out and answer all questions in Sections 1-3, and provide plans that include the information described in Sections 4 and 5. This completed document and the plan sheet(s) are required to be submitted with the building permit application.

Section 1: Pre-Disaster and Proposed Project Information

Indicate the legal / permitted square footage of pre-fire and proposed aspects of your site:				
	Pre-disaster		Proposed	
• Structure(s) footprint		SF		SF
• Paving (impervious)		SF		SF
• Paving (semi-impervious ^a)		SF		SF
• Other impervious surfaces (sidewalks, patios, etc.)		SF		SF
• Other semi-impervious surfaces ^a (sidewalks, patios, etc.)		SF		SF
Total Impervious		SF		SF
Total Semi-impervious		SF		SF
Total Impervious + ½(Total Semi-impervious)^b		SF		SF

- a. Semi-impervious examples include pavers, porous pavements, baserock, etc. Structures, concrete and asphalt are considered to be impervious. See Part 3, Section B -Definitions of the [County of Santa Cruz Design Criteria](#) for definitions of impervious and semi-pervious surfaces.
- b. Projects where the “Proposed” is greater than 10% of “Pre-disaster” are not considered for review / permitting under the requirements of this document. Please refer to the [County of Santa Cruz Design Criteria](#) for Stormwater requirements to be included with the application.

Section 2: Project Design Questions

1	Will the project maintain pre-disaster runoff patterns and rates? ^c	<input type="checkbox"/> Yes	<input type="checkbox"/> No
2	Have the site drainage patterns, including impacts from driveways, been assessed and has it been determined that there are no existing stormwater (drainage) issues on or near the proposed improvements site? ^d	<input type="checkbox"/> Yes	<input type="checkbox"/> No
3	Has the proposed project incorporated any of the following design strategies? ^e	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	• Limited disturbance of creeks and channels?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	• Minimizing compaction of highly permeable soils?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	• Limited clearing and grading of native vegetation to the minimum area needed to build the project? (Exception made for vegetation removal to increase or re-establish fire protection perimeters)	<input type="checkbox"/> Yes	<input type="checkbox"/> No

	<ul style="list-style-type: none"> Minimized impervious surfaces by concentrating improvements on the least sensitive portions of the site, while leaving the remaining land in a natural undisturbed state? 	<input type="checkbox"/> Yes	<input type="checkbox"/> No
5	Has the project implemented the following design measures to minimize stormwater runoff? ^e		
	<ul style="list-style-type: none"> Direct hardscape and roof runoff to biofiltration, infiltration trenches, stable vegetated areas, or another mitigation (no directly connected impervious area offsite OR to a channel/waterbody). 	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	<ul style="list-style-type: none"> Direction of roof runoff into cisterns or rain barrels for reuse? 	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	<ul style="list-style-type: none"> Direction of roof runoff onto vegetated areas safely away from building foundations and footings, consistent with the California Building Code? 	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	<ul style="list-style-type: none"> Direction of runoff from sidewalks, walkways, and or patios onto vegetated areas safely away from building foundations and footings, consistent with the California Building Code? 	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	<ul style="list-style-type: none"> Direction of runoff from driveways and / or uncovered parking lots onto vegetated areas safely away from building foundations and footings, consistent with the California Building Code? 	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	<ul style="list-style-type: none"> Permeable surfaces for driveways, uncovered parking areas, sidewalks, walkways or patios designed as self-mitigating or semi-impervious? 	<input type="checkbox"/> Yes	<input type="checkbox"/> No
6	Has the project been designed to safely accommodate upstream runoff that flows to and through the site? ^f	<input type="checkbox"/> Yes	<input type="checkbox"/> No
7	Is concentrated runoff and stormwater mitigations setback a minimum of 25 feet from all water wells and septic systems?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

- c. If the answer is “No” , provide an engineer’s assessment demonstrating how the rebuild has been designed to either store or reuse stormwater on site so that the proposed runoff rates from the site will not exceed pre-disaster runoff rates for a range of storms (at a minimum the 2 through 10 year storms).
- d. If the answer is “No”, provide a professional civil or geotechnical engineer’s assessment of the issue (blocked or damaged driveway culverts/onsite piping/or other existing stormwater facilities, uncontrolled runoff, scouring or erosion) and design proposal for remedying/mitigating the issue.
- e. If the answers are “No” for all items in questions 4 or 5, provide a professional civil or geotechnical engineer’s analysis for the project site describing how the project has been designed to either infiltrate, evapotranspire, or store and reuse stormwater on site so that the proposed runoff rates from the site will not exceed pre-disaster runoff rates for a range of storms (at a minimum the 2 through 10 year storms).
- f. If the answer is “No”, the project design must be updated so that upstream runoff is safely accommodated.

Section 3: Owner Acknowledgement

By checking the boxes below and signing this document, the owner agrees to provide the following information to County permitting staff, prior to the final inspection:	
As-built plans that show the final (as-constructed) drainage information for the project, including locations and details which indicate how items in Section 2 of this document have been incorporated into the project.	<input type="checkbox"/> Agree
Signed acknowledgement that the property owner is responsible for maintaining all drainage facilities and patterns of runoff. (Use SWM-25A Maintenance Agreement, available on the DPW website at: http://dpw.co.santa-cruz.ca.us/Home/Permits/BuildingPermitGuidance.aspx)	<input type="checkbox"/> Agree

Signed final approval from the project geotechnical (or civil) engineer that all drainage facilities have been constructed consistent with Section 2 of this document and with the geotechnical recommendations for the project.		<input type="checkbox"/> Agree
A final tabulation table of all impervious and semi-impervious surfaces that have been created, replaced, and removed for final assessment and review.		<input type="checkbox"/> Agree
Owner Name (print)	Owner Signature	Date

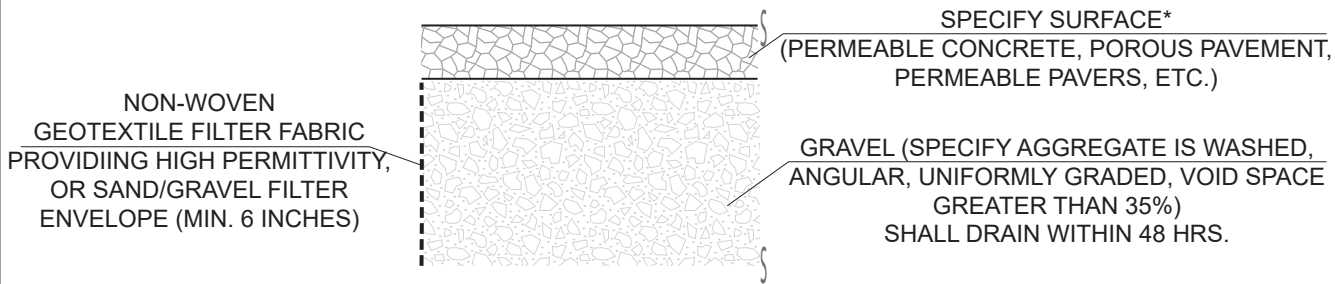
Section 4: Plan Requirements

The following minimum information is to be provided on a plan submitted with the application:

- Details to verify the information in Sections 1 and 2
- Natural and pre-existing drainage features including waterways, wetlands, ponds, streams, channels, ditches, and mapped FEMA floodplains within 100 feet of the building site
- On-site man-made drainage features (including cross-culverts, catch basins, or other mitigations)
- Spot elevations, contours, flow and/or slope arrows which clearly indicate the direction of stormwater runoff related to the building site
- Construction cross-section details (dimensions and diameters, slopes, invert elevations, compaction requirements, fabric type – if applicable, material type, and the overflow path/conveyance)
- Details of stormwater mitigations and devices

Section 5: Standard Details

The details provided in this document below are provided to assist property owners and design professionals. Selection and use of these details shall be made by the design professional and be appropriate for the site. Sites where redevelopment shall occur on slopes 15% or greater are strongly encouraged to consult with a licensed Geotechnical Engineer before formalizing the permit application due to potential soil stability and erosion control concerns.



NO COMPACTION OF SOIL BENEATH (RIPPING/LOOSENING SOIL REQUIRED IF COMPACTED)

NO LINERS OR OTHER BARRIERS BENEATH THAT MAY INTERFERE WITH INFILTRATION

DETAIL SHALL SPECIFY DIMENSIONS

*ADDITIONAL DETAIL SHALL BE PROVIDED FOR CONSTRUCTION OF PERVIOUS SURFACE PER MANUFACTURER, CIVIL ENGINEER, AND/OR DESIGNER'S RECOMMENDATIONS

INSTRUCTIONS FOR DETERMINING DEPTH// THICKNESS OF STORAGE VOLUME BENEATH POROUS SURFACE:

• **PROVIDE DOCUMENTATION FOR SITE-SPECIFIC SATURATED SOIL PERMEABILITY.** VALUES MAY BE USED CONSERVATIVELY FROM THE PUBLISHED PHYSICAL PROPERTIES TABLE WITH THE USDA-NRCS SOIL SURVEY, OR USE ACTUAL TEST VALUES (SEE DESIGN CRITERIA FOR MORE INFORMATION).

** BASED UPON THE SATURATED SOIL PERMEABILITY, SEE TABLE BELOW FOR THICKNESS OF GRAVEL. PLEASE NOTE, IF SATURATED SOIL PERMEABILITY IS SLOWER THAN 1/2 IN./HR., THEN CALCULATIONS BY A CIVIL ENGINEER ARE REQUIRED TO SHOW AREA IS SELF-MITIGATING.

*** **PLEASE NOTE, IF SURFACE IS NOT SELF-MITIGATING, SEMI-IMPERVIOUS SURFACING SUCH AS PERMEABLE CONCRETE, POROUS PAVEMENT, PERMEABLE PAVERS, ETC. ARE STILL ENCOURAGED AND ARE CONSIDERED A MITIGATION**

SATURATED SOIL PERMEABILITY (IN./HR.)	MINIMUM THICKNESS OF GRAVEL OR AGGREGATE (INCHES) ***
> 1	4
1/2 - 1	15
< 1/2	**

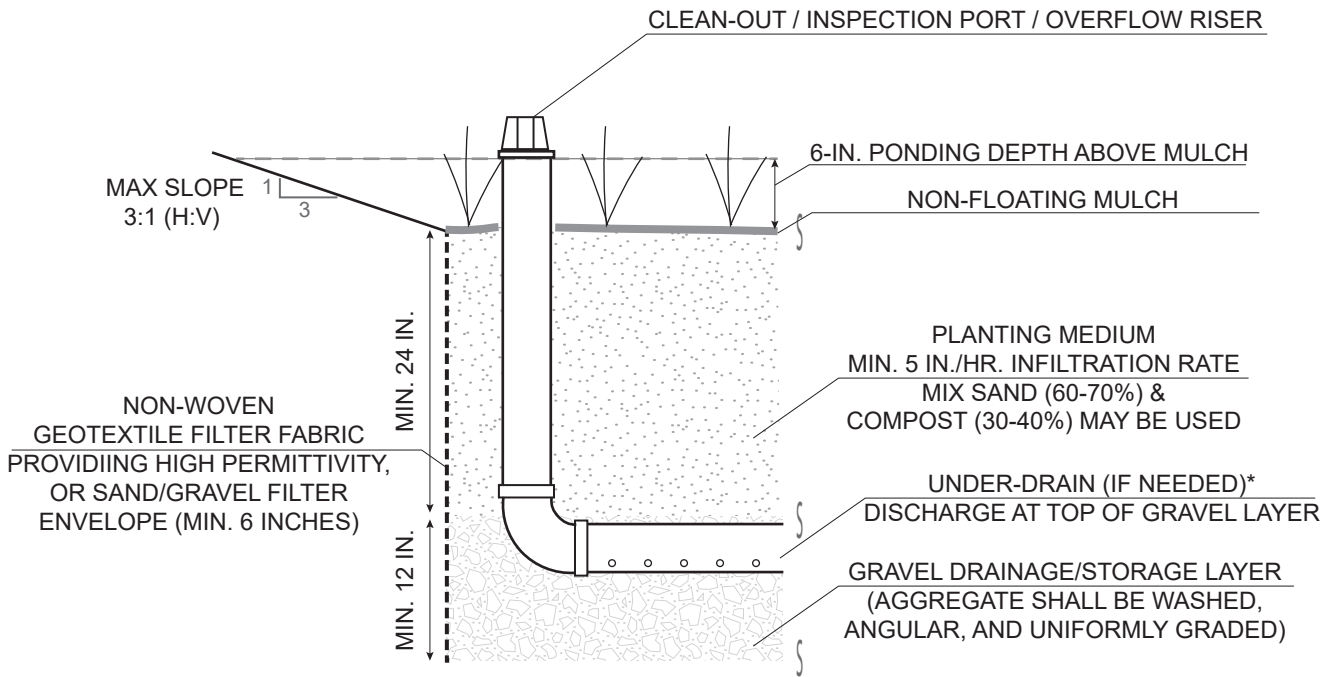
NOTES & LIMITATIONS ON USE:

- SELF-MITIGATING SURFACES DO NOT RECEIVE RUNOFF FROM OTHER AREAS
- SELF-MITIGATING SURFACES DO NOT HAVE SUBSURFACE PIPING
- SITE SELECTION AND DESIGN SHALL CONSIDER PATH OF EXCESS FLOW DOWNSTREAM OF SELF-MITIGATING / SEMI-IMPERVIOUS AREA (SAFE OVERFLOW; NO NEGATIVE IMPACTS TO NEIGHBORING PROPERTIES AND/OR DRAINAGE PATHWAYS)
- CONSULT WITH GEOTECHNICAL ENGINEER WHEN USING IN PROXIMITY OF SLOPES GREATER THAN 15%, WHERE WATER TABLE IS WITHIN 10 FEET OF BOTTOM OF TRENCH, OR WHERE SURROUNDING SOIL STRATUM IS UNSTABLE
- RETENTION SYSTEM SHALL BE LOCATED A MINIMUM OF 25 FEET FROM LEACH FIELDS AND 10 FEET FROM STRUCTURES, WHERE FEASIBLE

CZU FIRE REBUILD STORMWATER DETAIL
 SELF-MITIGATING / SEMI-IMPERVIOUS SURFACE

COUNTY OF SANTA CRUZ
 DEPT. OF PUBLIC WORKS





NO COMPACTION OF SOIL BENEATH (RIPPING/LOOSENING SOIL REQUIRED IF COMPACTED)

NO LINERS OR OTHER BARRIERS BENEATH THAT MAY INTERFERE WITH INFILTRATION

DETAIL SHALL SPECIFY TRENCH DIMENSIONS

*UNDER-DRAIN MAY BE NEEDED WHEN NATIVE SOIL PERMEABILITY IS LESS THAN 0.5 IN./HR. (SATURATED SOIL PERMEABILITY VALUES MAY BE USED CONSERVATIVELY FROM THE SOIL PROPERTIES TABLE WITHIN THE USDA-NRCS SOIL SURVEY, OR USE ACUTAL TEST VALUES FROM A STANDARDIZED TESTING PROCEDURE)

SELECT PROPER PLANTS (BIORETENTION PLANT LIST AVAILABLE FROM CENTRAL COAST LID INITIATIVE)

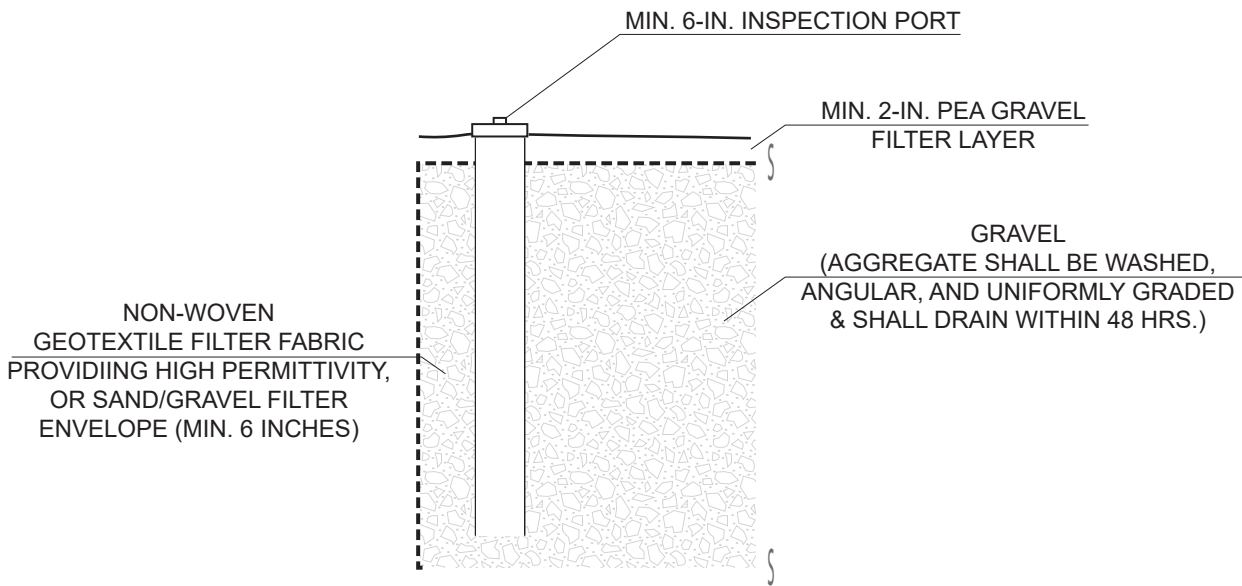
NOTES & LIMITATIONS ON USE:

- SITE SELECTION AND DESIGN SHALL CONSIDER PATH OF EXCESS FLOW DOWNSTREAM OF BIOFILTRATION TREATMENT AREA (SAFE OVERFLOW; NO NEGATIVE IMPACTS TO NEIGHBORING PROPERTIES AND/OR DRAINAGE PATHWAYS)
- CONSULT WITH GEOTECHNICAL ENGINEER WHEN USING IN PROXIMITY OF SLOPES GREATER THAN 15%, WHERE WATER TABLE IS WITHIN 10 FEET OF BOTTOM OF TRENCH, OR WHERE SURROUNDING SOIL STRATUM IS UNSTABLE
- BIOFILTRATION SYSTEM SHALL BE LOCATED A MINIMUM OF 25 FEET FROM LEACH FIELDS AND 10 FEET FROM STRUCTURES, WHERE FEASIBLE
- BIOFILTRATION SURFACE AREA SHALL BE APPROXIMATELY 4% OF IMPERVIOUS AREA DRAINING TO IT

CZU FIRE REBUILD STORMWATER DETAIL
BIOFILTRATION TREATMENT SYSTEM

COUNTY OF SANTA CRUZ
DEPT. OF PUBLIC WORKS





NO COMPACTION OF SOIL BENEATH (RIPPING/LOOSENING SOIL REQUIRED IF COMPACTED)
 NO LINERS OR OTHER BARRIERS BENEATH THAT MAY INTERFERE WITH INFILTRATION
 DETAIL SHALL SPECIFY TRENCH DIMENSIONS

NOTES & LIMITATIONS ON USE:

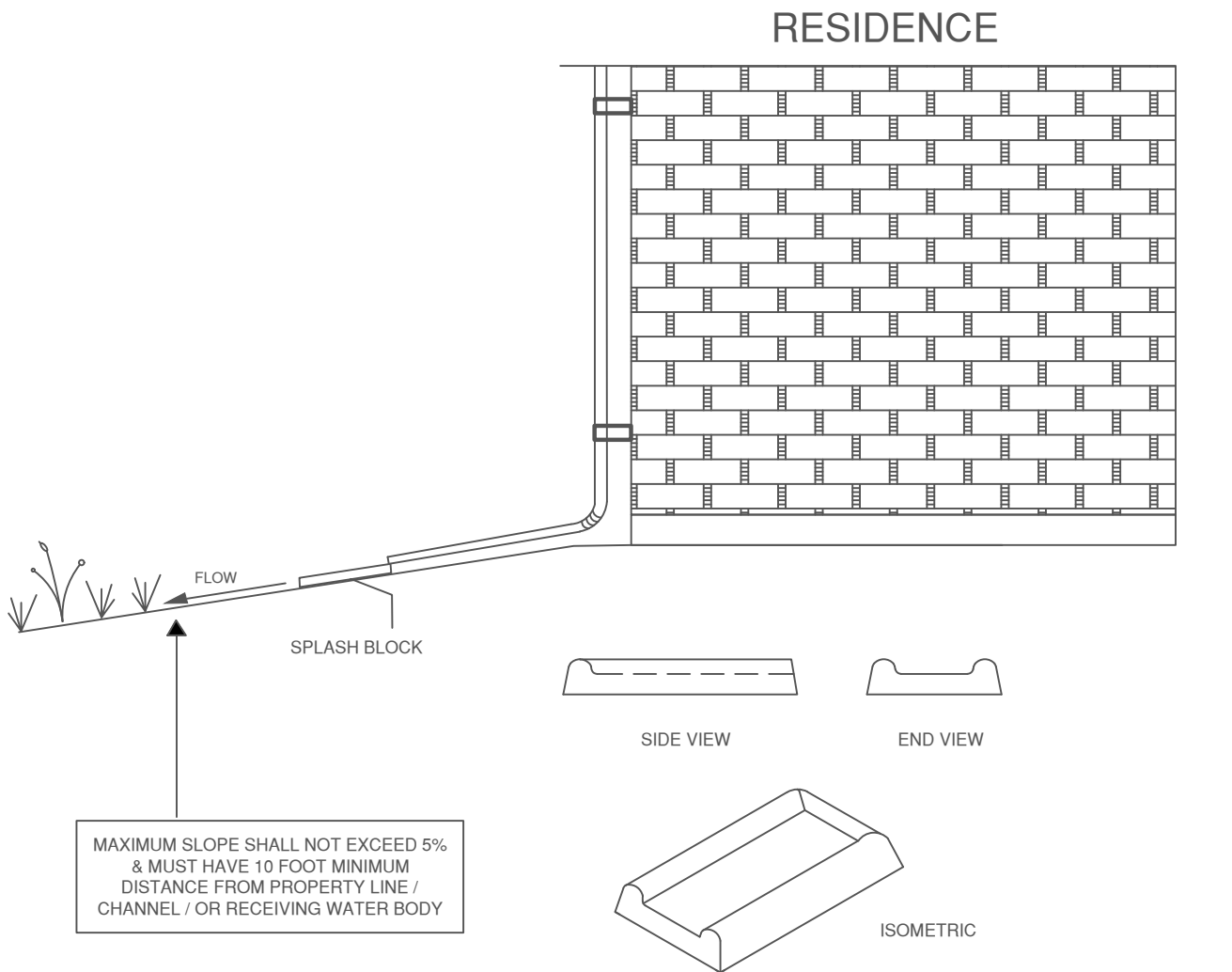
- SITE SELECTION AND DESIGN SHALL CONSIDER PATH OF EXCESS FLOW DOWNSTREAM OF RETENTION AREA (SAFE OVERFLOW; NO NEGATIVE IMPACTS TO NEIGHBORING PROPERTIES AND/OR DRAINAGE PATHWAYS)
- CONSULT WITH GEOTECHNICAL ENGINEER WHEN USING IN PROXIMITY OF SLOPES GREATER THAN 15%, WHERE WATER TABLE IS WITHIN 10 FEET OF BOTTOM OF TRENCH, OR WHERE SURROUNDING SOIL STRATUM IS UNSTABLE
- RETENTION SYSTEM SHALL BE LOCATED A MINIMUM OF 25 FEET FROM LEACH FIELDS AND 10 FEET FROM STRUCTURES, WHERE FEASIBLE

CZU FIRE REBUILD STORMWATER DETAIL
 RETENTION / INFILTRATION TRENCH

COUNTY OF SANTA CRUZ
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CZU FIRE REBUILD STORMWATER DETAIL
 DOWNSPOUTS TO SPLASH BLOCKS



NOT TO SCALE

NOTES & LIMITATIONS ON USE:

- DIMENSIONS FOR SPLASH BLOCK VARIES ACCORDING TO MANUFACTURER SPECIFICATIONS BUT SHALL COMPLY WITH THE CURRENT CALIFORNIA PLUMBING CODE. MINIMUM 24-INCH LENGTH SPLASH BLOCK.
- FINISHED GRADE FROM STRUCTURE SHALL COMPLY WITH CURRENT CALIFORNIA BUILDING CODE REQUIREMENTS
- SITE SELECTION AND DESIGN SHALL INCORPORATE A SAFE OVERFLOW PATH.
- CONCENTRATED RUNOFF SHALL BE LOCATED A MINIMUM OF 25 FEET FROM LEACH FIELDS AND 10 FEET FROM STRUCTURES, WHERE FEASIBLE

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