

Recording Requested By:
First American Title Insurance Company
National Commercial Services

When Recorded Mail To:
CITY OF WATSONVILLE
Community Development Dept/Engineering
250 Main Street
Watsonville, CA 95076
Attn: City Clerk
[Recording Fees Exempt Under Govt. Code Sec. 6103]

ASSESSOR'S PARCEL NOS: 018-741-1 through 018-741-30, inclusive, and 018-372-014 (affects a portion)

CITY OF WATSONVILLE

**COVENANT RUNNING WITH THE LAND,
STORMWATER CONTROL MEASURES (SCMs), STORMWATER TREATMENT
AND DETENTION FACILITY OPERATIONS
AND MAINTENANCE AGREEMENT, AND RIGHT OF ENTRY
(Subdivisions with Homeowners' Association)**

PROJECT: HILLCREST ESTATES

OWNER NAME: LANDCO Hillcrest, LLC

**ASSESSOR'S PARCEL NUMBERS: 018-741-1 through 018-741-30, inclusive,
and 018-372-014 (affects a portion)**

**COVENANT RUNNING WITH THE LAND,
STORMWATER CONTROL MEASURES (SCMs), STORMWATER TREATMENT AND
DETENTION FACILITY OPERATIONS
AND MAINTENANCE AGREEMENT, AND RIGHT OF ENTRY**

This Covenant Running with the Land, Stormwater Control Measures (SCMs), Stormwater Treatment and Detention Facility Operations and Maintenance Agreement, and Right of Entry (“**Agreement**”) is made and entered into this ___ day of _____, 2024, (“**Effective Date**”) by and between LANDCO Hillcrest, LLC, a California limited liability company (“**Property Owner**”) and The City of Watsonville, a municipal corporation (“**City**”).

RECITALS

- A. Property Owner is the owner of real property commonly known as Hillcrest Estates, which is the real property located at 511 Ohlone Parkway, Watsonville, California (Assessor’s Parcel Nos. 018-741-1 through 018-741-30, inclusive, and 018-372-014 (affects a portion), more particularly as described on the Map entitled “Tract Number 1607, Hillcrest,” filed for record December 16, 2022 in Book 136 of Maps, at Page 20, in the Office of the County Recorder, County of Santa Cruz, California, including any subsequently-recorded amended final maps, parcel maps, certificates of correction, lot-line adjustments, and/or records of survey (“**Property**”), as more particularly described in the attached Exhibit A.
- B. On May 18, 2021, Property Owner submitted an application to City for a Major Modification to the approved Sunshine Vista residential development project. The proposed modifications included the reduction in the total number of units from 150 to 144, modification of the tentative map and grading plans, parking and project phasing, and minor modifications to landscaping, circulation, programming of common open space, building design and floor plans. In addition, an application to enter into a Development Agreement was submitted for review.
- C. On July 6, 2021, the City Council adopted Resolution No. 210-21 (CM) amending the Tentative Map for Tract No. 1607, Hillcrest Estates Subdivision, Resolution No. 211-21 (CM) approving a Major Modification to the Special Use Permit with Design Review and Specific Development Plan, and Resolution No. 212-21 (CM) approving Addendum No. 3 to the previously certified Environmental Impact Report. Tentative Map Condition of Approval Nos. 15 and 16 require the Property Owner to prepare Covenants, Conditions, and Restrictions (“**CC&Rs**”) that include provisions for the establishment of a Homeowners Association to maintain the Property’s common areas, including access easements, stormwater control measures and detention pond facilities. Tentative Map Condition of Approval No. 38 requires the Property Owner to submit a Stormwater Control Plan (“**SWCP**”) to the City for review and approval.
- D. On July 13, 2021, the Planning Commission adopted Resolution No. 9-21 (CM), recommending that the City Council adopt an uncodified ordinance establishing a Development Agreement for the Hillcrest Estates development.
- E. On May 10, 2022 the City Council adopted an ordinance approving a Development Agreement (P155) (“**DA**”) between the Property Owner and the City for the Hillcrest Estates development. Among other things, the DA requires the HOA, once established, to regularly monitor and maintain the Property’s common areas, including access easements, stormwater management and detention pond facilities.

F. Consistent with the Tentative Map Conditions of Approval as well the DA, an HOA shall be formed and shall be responsible, in perpetuity, for the operation, maintenance, repair, and replacement of, among other things, the access easements, detention facilities and all permanent stormwater control measures included in the City-approved SWCP (defined below) and the SWCP's Stormwater Treatment Operations and Maintenance Plan ("**O&M Plan**") (defined below).

G. Property Owner is the "Declarant" under those certain conditions, covenants and restrictions for the Property entitled Declaration of Covenants, Conditions and Restrictions for Hillcrest, a Planned Development ("**CC&Rs**"), which are to be recorded on Property simultaneously with this Agreement in the official records of the Santa Cruz County Recorder, California.

H. City maintains certain streets, storm drains, and other real property interests in the City of Watsonville, California, including the Watsonville Slough in the vicinity of the Property.

I. City is subject to the State Water Resources Control Board's National Pollutant Discharge Elimination System General Permit No. CAS000004, as amended, and as may be superseded by subsequent NPDES permits that are reissued from time to time ("**NPDES Permit**").

J. Stormwater control measures ("**SCMs**") include and are not limited to stormwater treatment and detention facilities shown on the improvement plans and the project stormwater report.

K. The NPDES Permit requires the permittee public agencies to provide minimum verification and access assurances that all SCMs be adequately operated and maintained by persons and entities responsible therefor. The SCMs and treatment systems that must be installed, constructed, and maintained on or about the Property ("**Stormwater Facilities**") are more particularly described on the legible reduced-scale copy of the improvement plans for these Stormwater Facilities attached hereto as Exhibit B ("**Improvement Plans**"); full-scale plans and any amendments thereto are on file with City's Public Works Division). The defined term "**Stormwater Facilities**" includes all pipes, channels or other conveyances built to convey stormwater to the SCMs, as well as all structures, improvements, basins, bioretention facilities, special soils, and vegetation provided to control the quantity and quality of the stormwater, all as set forth in the Improvement Plans.

L. City is the permittee public agency with jurisdiction over the Property.

M. Property Owner is subject to the State Water Resources Control Board Division of Water Quality Permit No. WDID 3 44C380348, as amended, and as may be superseded by subsequent Construction General Permits from time to time ("**Construction General Permit**").

N. The NPDES Permit, Construction General Permit, City Municipal Code, stormwater related guidelines, criteria and other written directions, and any amendments thereto (collectively, "**Stormwater Regulations**"), development conditions of approval, DA, and the health, safety and welfare of the public, require that the Stormwater Facilities be properly constructed, and adequately operated and maintained on the Property by the Property Owner.

O. City has approved Property Owner's submitted SWCP prepared by Ramsey Civil Engineering, Inc. dated May 2024 (the "**SWCP**," attached hereto as Exhibit C). The SWCP includes a detailed description of and schedule for long-term maintenance activities of the Stormwater Facilities (the "**O&M Plan**") as Appendix G. The O&M Plan may be subsequently modified from time to time, subject to City's prior written approval.

P. This Agreement memorializes Property Owner's maintenance, operations, and inspection obligations with respect to the Stormwater Facilities.

AGREEMENT

NOW, THEREFORE, in consideration of the foregoing premises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

1. Construction. The Stormwater Facilities shall be constructed by the undersigned Property Owner in strict accordance with the approved plans and specifications identified for the Property and any other requirements thereto which have been approved by City in conformance with Stormwater Regulations. Among other things, the Stormwater Facilities shall accept, treat, and convey public and private stormwater runoff. Property Owner will make available copies of the City-approved Improvement Plans, SWCP, O&M Plan, and any amendments thereto (collectively, "**Plans**") at the Property and with the facility or property manager (if any). Property Owner (as that term is defined in Section 12) must maintain the Stormwater Facilities in good working condition acceptable to City for the life of the Property in compliance with the Stormwater Regulations and the Plans.
2. Inspection and Annual Report. The undersigned Property Owner is required to form the homeowners association ("**Association**") and record the CC&Rs against the entire Property; such formation is further described in the CC&Rs ("**Formation**"). Upon Formation, Property Owner shall provide the Association with a copy of this Agreement and the then-current Plans, and shall promptly notify City in writing of the name of the Association, the Association's manager (if any), and the Association address to be used for notices hereunder (see Section 13 below). Before Formation, the undersigned Property Owner shall fully bear all responsibilities under this Agreement. After Formation, references in this Agreement to "**Property Owner**" shall mean the Association. Property Owner shall have a qualified inspector conduct a minimum of one (1) annual inspection of the Stormwater Facilities before the wet season, between August 1st and September 30th each year. City shall notify Property Owner if more frequent inspections are required. The inspections shall conform to the procedures and requirements set forth in the SWCP, including the recordation of the inspection on an "**Inspection and Maintenance Checklist**" (form provided in the O&M Plan), and an Annual Operation and Maintenance Inspection Report ("**Annual Report**"), which Property Owner shall complete annually in order to verify that inspection and maintenance of the Stormwater Facilities have been conducted pursuant to this Agreement and the SWCP. The Annual Report shall include all completed Inspection and Maintenance Checklists for the reporting period. The Annual Report shall be submitted no later than November 30th of each year, to the City at the address in Section 13, below, or to another member of City staff if and as directed by City in writing.
3. Responsibility. Notwithstanding anything herein or in the CC&Rs to the contrary, regardless of whether Association delegates the O&M of any components of the Stormwater Facilities to the extent allowed by law, as of Formation, the Association shall bear primary responsibility for the O&M (defined below) of any and all Facilities and associated inspection and reporting, provided that such Association obligations are not intended and shall not be construed to diminish any Property Owner's obligations hereunder or under the CC&Rs. This Agreement shall serve as the signed statement by the undersigned Property Owner for itself and on behalf of the Association, accepting responsibility for the O&M of the Stormwater Facilities as set forth in this Agreement until the responsibility is legally transferred to another person or entity. Before all or any responsibilities under this Agreement are transferred to another person or entity, and before all or any portion of the Property is legally transferred

to another person or entity, Property Owner shall provide to City one or more of the following (as determined by City):

- a. Written conditions in the sales or lease agreement requiring the buyer or lessee to assume responsibility for O&M consistent with this provision, which conditions, in the case of purchase and sale agreements, shall be written to survive beyond the close of escrow; and/or
- b. In the case of a transfer to any Association, Property Owner must provide City with written text in the CC&Rs assigning O&M responsibilities to the Association; and/or
- c. Any other legally enforceable agreement or mechanism that assigns responsibility for the O&M.

Any and all such text, conditions, and agreements shall be subject to the approval of the City Engineer and the City Attorney. Other provisions regarding Property transfer are set forth in Section 12 below.

4. Maintenance. No Property Owner shall destroy or remove (or allow destruction or removal of) the Stormwater Facilities from the Property or modify (or allow modification of) them in a manner that lessens their effectiveness. Property Owner, at its sole cost expense, shall operate, maintain, repair, and replace, to the City's reasonable satisfaction, the Stormwater Facilities in good working order so that they continue to operate as intended, designed and approved in accordance with the Plans and the "**Stormwater Regulations**". This includes all pipes, channels or other conveyances built to convey stormwater to the Stormwater Facilities as well as all structures, improvements, basins, bioretention facilities, special soils, and vegetation provided to control the quantity and quality of the stormwater, all as set forth in the Plans.

5. Sediment Management. Sediment accumulation resulting from the normal operation of the Stormwater Treatment Systems will be managed appropriately by Property Owner. Property Owner will provide for the removal and disposal of accumulated sediments, trash, and debris. Disposal of accumulated sediments shall not occur on the Property unless provided for in the O&M Plan. Any disposal or removal of accumulated sediments, trash, or debris shall be in compliance with all federal, state and local law and regulations and any amendments thereto.

6. Necessary Changes and Modifications. In order to ensure that the Stormwater Facilities are adequately maintained and continue to operate as intended, designed and approved, Property Owner, at its sole cost and expense, shall make changes or modifications to the Stormwater Facilities and/or SWCP as City determines reasonably necessary.

7. Access to the Property. Property Owner hereby grants permission to the City of Watsonville, County Environmental Health Department, the State Water Quality Control Board, the Santa Cruz County Mosquito Abatement and Vector Control District, the City, and each of their respective officers, officials, volunteers, agents, employees successors, and assigns (each, an "**Inspecting Entity**" and collectively "**Inspecting Entities**") to enter upon the Property at reasonable times and in a reasonable manner to inspect, assess, or observe the Stormwater Facilities and the Property in order to ensure that the Stormwater Facilities are being adequately maintained and are continuing to perform in an adequate manner to protect water quality and the public health and safety. This includes the right to (a) inspect and copy records related to stormwater compliance, and to collect samples and take measurements, and (b) enter upon the

Property whenever there is a reasonable basis to believe that a violation of this Agreement or Stormwater Regulations, is occurring, has occurred, or threatens to occur. Each Inspecting Entity also has a right to enter the Property when necessary for abatement of a public nuisance or correction of a violation of any Stormwater Regulations. The applicable Inspecting Entity/ies shall endeavor to provide forty-eight (48) hours advance notice to Property Owner, provided, however, that advance notice will not be necessary if emergency conditions require immediate remedial action.

8. Failure to Install, Operate, and/or Maintain. In the event Property Owner fails to install, operate and/or maintain the Stormwater Facilities in good working order acceptable to City and in accordance with this Agreement, the Plans and the Stormwater Regulations, City, and its authorized agents and employees may (but are not obligated to) enter the Property and take whatever steps it deems necessary and appropriate to return the Stormwater Facilities to good working order. Such work shall be at Property Owner's sole cost and expense as set forth in Section 9, below. City will provide reasonable (as may be appropriate for the particular circumstances) advance notice to Property Owner; provided, however that advance notice will not be necessary if emergency conditions require immediate remedial action. This provision shall not be construed to allow City to erect any structure of a permanent nature on the Property. It is expressly understood and agreed that City is under no obligation to maintain or repair the Stormwater Facilities and in no event shall this Agreement be construed to impose any such obligation on City. City may require Property Owner to provide a performance bond, security, or other financial assurance providing for the maintenance of the Stormwater Facilities.

9. Reimbursement and Payment of Costs. In the event City performs work of any nature (direct or indirect), including work under **Section 8**, above, any inspections/re-inspections, or other actions City deems necessary or appropriate to return the Stormwater Facilities to good working order, or incurs any direct or indirect costs or expends any funds in or related thereto (including the performance of said work for labor, use of equipment, supplies, materials, and the like); or any penalties, fees, fines, and other monetary and non-monetary penalties, reparations, or mitigations arising out of or related to Property Owner's failure to inspect and maintain and submit reports for the Stormwater Facilities, are imposed on or assessed against City (the foregoing are collectively referred to herein as "**Costs**"), Property Owner shall reimburse City for such Costs within thirty (30) days of receipt of City's written demand, and/or shall forfeit any required bond upon demand. If the Costs are not paid within the prescribed time period, City may assess Property Owner for the Costs and applicable penalties. Said assessment shall be a lien against the Property or may be placed on the property tax bill and collected at the same time and in the same manner as ordinary municipal taxes are collected as provided in Government Code § 38773.5. The actions described in this **Section 9** are in addition to, and not in lieu of, any and all legal remedies as provided in the CC&Rs, by law or equity, or otherwise available to City as a result of failure to maintain the Stormwater Facilities.

10. Indemnification. Property Owner shall indemnify, hold harmless, and defend each of the Inspecting Entities from and against any and all claims, demands, suits, damages, liabilities, losses, accidents, casualties, occurrences, judgments, costs, payments, and fees (including attorney fees), personal injury, death, or property damage, claimed or which might arise or be asserted against any Inspecting Entity that are alleged or proven to result or arise from the (a) entry onto the Property by any Inspecting Entity under this Agreement, or (b) the Stormwater Facilities (including construction, presence, existence, non-existence, operation, non-operation, repair, disrepair, maintenance, lack of maintenance, inspection, or failure to inspect, whether by Property Owner, any Inspecting Entity, or any third party). Each of the foregoing is referred to herein as a "**Claim**." In the event a Claim is asserted against City, City will promptly notify Property Owner and Property Owner shall defend at its own expense any suit based on such Claim. If any Claim against any

Inspecting Entity shall be allowed, Property Owner shall pay for all costs and expenses in connection herewith. Property Owner's indemnification obligation as to a particular Inspecting Entity shall not apply to any Claim arising from the sole or active negligence or willful misconduct of the Inspecting Entity against whom that Claim is asserted.

11. No Additional Liability. It is the intent of this Agreement to insure the O&M by Property Owner; provided, however, that this Agreement shall not be deemed to create any additional liability not otherwise provided by law for damage alleged to result from or caused by stormwater runoff.

12. Scope of Responsibility; Transfer of Property.

a. This Agreement runs with the land and any portion thereof, and applies to and shall bind and be obligatory on the Declarant, the Association, and all present and subsequent owners of the Property or any portion thereof, including their respective successor and assignee owner(s). Each such person or entity is a "Property Owner" responsible in perpetuity with respect to the extent of his, her or its ownership of the Property or any portion thereof, provided, however, that after Formation, the Association shall be considered the "Property Owner" with respect to the entire Property for purposes of the obligations under this Agreement. To the extent allowed by law and consistent with the Conditions of Approval and the DA, it is the parties' intent that the Association be primarily liable for any and all acts or omissions, including those of any owner of the Property or a portion thereof (such as an individual lot), under this Agreement. The Association shall have such remedies against the potentially responsible parties as are described in the CC&Rs.

b. The Formation and continued existence of an Association is a condition to City approval. Notwithstanding the foregoing, if the Association is dissolved or otherwise terminates its operations for any reason, the owners of the Property or any portion thereof (e.g., a lot) automatically shall assume all of the rights and duties of the Property Owner under this Agreement. In this event, each such Property Owner shall bear primary responsibility for the O&M of any and all Stormwater Facilities and associated inspection and reporting with respect to the owner's Property. Upon transfer of the Property or any portion thereof, the transferor Property Owner(s) shall provide the transferee Property Owner(s) with a copy this Agreement, the then-current Plans, and an Inspection and Maintenance Checklist that is complete and current as of the transfer date, and shall promptly notify City in writing of the transfer and name(s) of the transferee Property Owner(s) and the address(es) to be used for notices hereunder (see **Section 13**). Upon such transfer, the transferee Property Owner(s) shall be responsible for complying with the terms and conditions of this Agreement, and the transferor of Property Owner(s) shall bear no future responsibility for inspection or reporting under this Agreement, provided, however, that no transfer of the Property or any portion thereof is intended or shall be construed to release any transferor or transferee Property Owner from any obligations or liabilities with respect to the Stormwater Facilities (including O&M) that accrued or arose out of acts or omissions during its/their period of ownership. Nothing in this Agreement is intended or shall be construed to allow any responsibilities under this Agreement to be transferred separate and apart from the Property or any portion(s) thereof.

13. Notices. Except as otherwise stated, all notices given under this Agreement must be in writing. Such notices shall be addressed to City and to the then-current Property Owner at the address indicated below.

City:

City of Watsonville
Attention: City Engineer
250 Main Street
Watsonville, CA 95076

Property Owner (before Formation):

LANDCO Hillcrest, LLC
Twenty Park Road Suite G,
Burlingame, CA 94010
Telephone: (650) 638-0900
Email: mlester@landcorealestate.com

Property Owner (after Formation):

Hillcrest Community Homeowners
Association
Twenty Park Road Suite G,
Burlingame, CA 94010
Telephone: (650) 638-0900
Email: mlester@landcorealestate.com

14. Choice of Law. This Agreement shall be construed and interpreted in accordance with the laws of the State of California, excluding any choice of law rules which may direct the application of the laws of another jurisdiction. Any action at law or in equity brought by any of the parties for the purpose of enforcing a right or rights provided for by this Agreement shall be held exclusively in a state court in Santa Cruz County, California, and the parties waive all provisions of law providing for a change of venue in these proceedings to any other county. Property Owner shall comply with all applicable federal, state, and local laws, rules, and regulations, and any amendments thereto, and shall obtain all applicable licenses and permits.

15. Interpretation. Headings are for convenience only. The recitals and any exhibits attached to this Agreement are incorporated by reference as though fully restated herein. The words “include” and “including” shall be interpreted as though followed by the words “without limitation.” This Agreement shall be interpreted as though it was a product of a joint drafting effort and no provisions shall be interpreted against a party on the ground that said party was solely or primarily responsible for drafting the language to be interpreted. Waiver by either party of any breach of any term, covenant, or condition contained in this Agreement, or any default in their performance of any obligations under this Agreement shall not be deemed to be a waiver of any other breach or default of the same or any other term, covenant, condition, or obligation, nor shall any waiver of any incident of breach of default constitute a continuing waiver of same. To the extent there is any conflict between this Agreement and the CC&Rs, this Agreement shall control.

16. Severability. The provisions of this Agreement shall be severable and if any phrase, clause, section, subsection, paragraph, subdivision, sentence or provision is adjudged invalid or unconstitutional by a court of competent jurisdiction, or the applicability to any party is held invalid, this shall not affect or invalidate the remainder of any phrase, clause, section, subsection, paragraph, subdivision, sentence, or provision of this Agreement.

17. Covenant Running with the Land, Recordation. This Agreement shall be recorded by City in Santa Cruz County Recorder's Office at Property Owner's expense. The covenants and agreements contained herein shall be deemed to be covenants running with the Property or any portion thereof for the benefit of City, as well as affected streets, storm drains, waterways, bodies of water, each and every part thereof, and the successors and assigns in ownership of all or any part of the foregoing. Property Owner agrees for itself and its successors and assigns, that in the event a court of competent jurisdiction determines that the covenants in this Agreement do not run with the Property such covenants shall be recorded as equitable servitudes against the Property and the project in favor of City.

18. Legal Advice; Authority. Property Owner represents and warrants to City that: (a) Property Owner has carefully read this Agreement, and in signing this Agreement, does so with full knowledge of any right which Property Owner may have; (b) Property Owner has received independent legal advice from its legal counsel as to the matters set forth in this Agreement, or has knowingly chosen not to consult legal counsel as to the matters set forth in this Agreement; and (c) Property Owner has freely signed this Agreement without any reliance upon any agreement, promise, statement or representation by or on behalf of City or any City Party except as specifically set forth in this Agreement, and without duress or coercion, whether economic or otherwise. Each individual or entity executing this Agreement on behalf of Property Owner represents and warrants that he or she or it is duly authorized to execute and deliver this Agreement on behalf of Property Owner and that such execution is binding upon Property Owner.

19. No Agency Relationship. Neither the Property Owner nor any of the Property Owner's agents, contractors or subcontractors are or shall be considered to be agents of City in connection with the performance of any of the Property Owner's obligations under this Agreement. Nor shall City and Property Owner, be deemed to have become a partner of each other in the conduct of their respective business or otherwise a joint venture.

20. Counterparts. This Agreement may be executed in any number of counterparts which together shall constitute the contract of the parties.

21. Effective Date and Modification. This Agreement is effective as of the Effective Date. This Agreement shall not be modified except by written instrument executed by City and the Association, or the then-current Property Owner(s) if the Association has ceased to exist. Modifications shall be effective upon the date of execution and shall be recorded against the Property.

[signatures follow on next page]

Recommended for approval:

City of Watsonville:

City Engineer

City Manager

Reviewed by:

Attest:

City Attorney

City Clerk

Property Owner:

LANDCO HILLCREST, LLC,
a California limited liability company

By: Mark D. Lester

Name: Mark D. Lester

Title: Managing Member, LANDCO Hillcrest GP, LLC
Managing Member, LANDCO Hillcrest, LLC

Attachments: Acknowledgement

Exhibit A – Legal Description

Exhibit B – Improvement Plans

Exhibit C – SWCP

ALL PURPOSE ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA)

COUNTY OF SAN MATEO)

On MAY 10, 2024 before me, RORY BRENNAN, a Notary Public, personally appeared MARK D. LESTER who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal

Signature of Notary Public

Rory Brennan
My commission expires: 05.10.2024

RB

(SEAL)

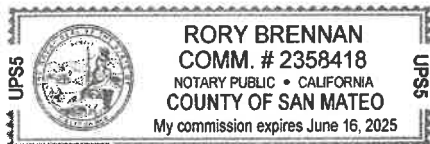


EXHIBIT A
Legal Description of Property

All of that certain real property located in the City of Watsonville, County of Santa Cruz ("County"), State of California, more particularly as described on the Map entitled "Tract Number 1607, Hillcrest Stage 1," filed for record December 16, 2022 in Book 136 of Maps, at Page 20, in the Office of the County Recorder, County of Santa Cruz, California.

[APN: 018-741-1 through 018-741-30, inclusive, and 018-372-014 (affects a portion)]

**EXHIBIT B
IMPROVEMENT PLANS
STORMWATER FACILITIES ONLY**

ABBREVIATIONS

AB	AGGREGATE BASE	L	LANDING
AC	AIR CONDITIONER UNIT	LF	LINEAR FOOT
APN	ASSESSORS PARCEL NUMBER	LIP	LIP OF GUTTER
APV	AIR RELEASE VALVE	LOG	LOG
BF	BASEMENT FLOOR	LP	LOW POINT
BFP	BACKFLOW PREVENTER	LVC	LENGTH OF VERTICAL CURVE
BO	BLOW-OFF VALVE	M	MANHOLE
BSW	BACK OF SIDEWALK	MI	MINIMUM
BTM	BOTTOM	N	NORTH
BVC	BEGIN VERTICAL CURVE	NE	NORTHEAST
BVC	BEGIN VERTICAL CURVE ELEVATION	NTS	NOT TO SCALE
BVC	BEGIN VERTICAL CURVE STATION	OC	ON CENTER
BSW	BOTTOM OF WALL	OCW	ON CENTER, EACH WAY
CB	CATCH BASIN	OH	OVERHEAD
CBS	CALIFORNIA BUILDING CODE	PAE	PUBLIC ACCESS EASEMENT
CI	CURB INLET	PC	PORTLAND CEMENT CONCRETE
CIP	CAST IRON PIPE	PC	POINT OF CONNECTION
CL	CENTERLINE	PP	POINT, PRESSURE, TREATED
CMP	CORRUGATED METAL PIPE	PL	PROPERTY LINE
CMU	CONCRETE MASONRY UNIT	PRC	POINT OF REVERSE CURVE
CO	CLEANOUT	PS	PLANTING STRIP
COA	CONDITIONS OF APPROVAL	PRDE	PRIVATE STORM DRAIN EASEMENT
COMC	CONCRETE	PSE	PUBLIC SERVICE EASEMENT
COTO	CLEANOUT TO GRADE	PSSE	PRIVATE SANITARY SEWER EASEMENT
DIP	DURTYLE IRON PIPE	PUE	PUBLIC UTILITY EASEMENT
DS	DOWNSPOUT	PV	PAVEMENT
DTL	DETAIL	PVI	POINT OF VERTICAL INFLECTION
DWG	DRAWING	PVC	POLYVINYL CHLORIDE PIPE
DWY	DRIVEWAY	R	RADIUS
E	EAST, ELECTRICAL	RC	RELATIVE COMPACTION
ELEV	EXISTING GROUND ELEVATION	RC	REINFORCED CONCRETE PIPE
EP	EDGE OF PAVEMENT	ROW	RIGHT-OF-WAY
EQ	EXISTING	RPPB	REDUCE PRESSURE PRINCIPLE BACKFLOW
EQ	EQUAL	RSD	REAR SETBACK
EVAE	EMERGENCY VEHICLE ACCESS EASEMENT	RV	RECYCLED WATER
EVE	END VERTICAL CURVE ELEVATION	S	SOUTH, SLOPE
EVC	END VERTICAL CURVE STATION	SD	STORM DRAIN
EX	EXISTING	SE	SOUTHEAST
FC	FACE OF CURB	SDM	STORM DRAIN MANHOLE
FDC	FIRE DEPARTMENT CONNECTION	SE	SANITARY SEWER EASEMENT
FG	FINISH GRADE	SE	SANITARY SEWER MANHOLE
FF	FINISH FLOOR	SL	STREET LIGHT
FI	FIRE HYDRANT	SS	SANITARY SEWER
FL	FLOWLINE	SSB	SANITARY SEWER BACKFLOW
FNC	FENCE	SSE	SANITARY SEWER EASEMENT
FO	FIBER OPTIC	SSM	SANITARY SEWER MANHOLE
FS	FINISHED SURFACE	STA	STATION
FSS	FRONT SETBACK	STD	STANDARD
FT	FOOTCUT	STW	SIDEWALK & TRAIL MAINTENANCE EASEMENT
FW	FIRE WATER	SW	SIDEWALK, SOUTHWEST
G	GAS	SW	SIDEWALK EASEMENT
GB	GRADE BREAK	T	TELEPHONE
GF	GARAGE FLOOR	TC	TOP OF CURB
GV	GATE VALVE	TH	THREHOLD
HT	HEIGHT	TRAN	TRANSFORMER
HDPE	HIGH-DENSITY POLYETHYLENE	TRW	TOP OF TOP OF RETAINING WALL
HOA	HOME OWNERS ASSOCIATION	TW	TOP OF WALL
HP	HIGH POINT	USA	UNDERGROUND SERVICE ALERT
INTX	INTERSECTION	W	WEST, WATER
IRV	INVERT	WM	WATER METER
IRR	IRRIGATION	WW	WATER VALVE
J	JUNCTION BOX		
JT	JOINT TRENCH		

LEGEND

---	PROPERTY LINE	1	AIR RELEASE VALVE
---	PROPERTY LINE-ADJACENT	2	BLOW-OFF VALVE
---	PROPOSED EASEMENT	3	CATCH BASIN
---	ROADWAY CENTERLINE	4	CURB INLET
---	FENCE	5	CLEANOUT STRUCTURE
---	SOUND WALL	6	FIRE HYDRANT
---	TOP OR TOE OF SLOPE	7	GUY ANCHOR
---	ELECTRICAL LINE	8	MANHOLE STRUCTURE
---	FIBER OPTIC LINE	9	WATER METER
---	FIRE WATER LINE	10	WATER METER W/TRAFFIC RATED LID
---	GAS LINE	11	WATER VALVE
---	IRRIGATION LINE	12	FLOW DIRECTION
---	JOINT TRENCH LINE	13	CONC SPLASH BLOCKS
---	OVERHEAD LINE	14	POLE PAD MOUNTED TRANSFORMER PER JT PLANS
---	RECYCLED WATER LINE	15	PAD MOUNTED JUNCTION PER JT PLANS
---	STORM DRAIN LINE	16	POLE SERVICE BOX PER JT PLANS
---	SS LATERAL, CAP & COTO	17	PRIVATE STREET LIGHT
---	TELEPHONE LINE	18	STREET SIGN
---	CABLE TV LINE	19	BUILDING DOOR
---	WATER LINE	20	ELECTRIC METER
---	WATER LINE CAP	21	GAS METER
---	SWALE		
---	LOG		
---	BVC		
---	BL		
---	EVC		
---	BL		
---	EVC		
---	UNDERGROUND ELECTRIC LINE		
---	RETAINING WALL		
---	BACKFLOW PREVENTER		
---	TREE/BUSH PER LS PLANS		
---	METERED SERVICE PEDISTAL PER JT PLANS		

STAGE 1 - IMPROVEMENT PLANS FOR HILLCREST 511 OHLONE PARKWAY WATSONVILLE, CALIFORNIA 95076



VICINITY MAP
N.T.S.

MAP DATA © 000000

INDEX OF SHEETS

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C1.0	COVER SHEET
C1.1-C1.3	CONDITIONS OF APPROVAL
C2.0	NOTES
C3.0	STAGE 1 - PARCEL MAP
C4.0-C4.5	SITE PLAN
C4.6	PAVING, STRIPPING, & SIGNAGE PLAN
C4.6-C4.8	GRADING & DRAINAGE PLANS
C5.0-C5.8	GRADING PLAN SCM-1 & SCM-2
C5.9	OUTFALL PLANS
C5.10-C5.16	SECTIONS
C6.0	ALIGNMENT LAYOUTS
C6.1-C6.7	STREET A - PLAN AND PROFILES
C6.8-C6.10	STREET B - PLAN AND PROFILES
C6.11	WALK ACCESS & 2 - PLAN AND PROFILE
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C10.0-C10.8	DETAILS
C11.0	EROSION CONTROL PLAN
C11.1-C11.2	EROSION CONTROL NOTES & DETAILS

STRUCTURAL PLANS

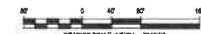
SW-1	WALL 'B' DETAILS (LOMA VISTA ENTRANCE)
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LANDSCAPE PLANS

T.I.	EXISTING TREES
L1.0	STAGE 1 - LANDSCAPE & FENCING PLAN
L1.1	LANDSCAPE TREE IMAGES
L1.2	LANDSCAPE TREE IMAGES
L1.3	LANDSCAPE PLANT IMAGES
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L3.0	STAGE 1 HYDROZONE MAP & WATER USE CALCULATIONS
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L3.2	IRRIGATION DETAILS & NOTES

JOINT TRENCH PLANS

JT1	JOINT TRENCH COMPOSITE TITLE SHEET
JT2	JOINT TRENCH GENERAL NOTES AND DETAILS
JT3	JOINT TRENCH DETAILS
JT4	JOINT TRENCH SECTIONS AND DETAILS
JT5-JT7	JOINT TRENCH COMPOSITE PLAN
SL1-SL2	STREET LIGHTING GENERAL NOTES AND DETAILS
SL3	STREET LIGHTING SITE PLAN - STAGE 1
PE-1	STREET LIGHT PHOTOMETRIC ANALYSIS - STAGE 1



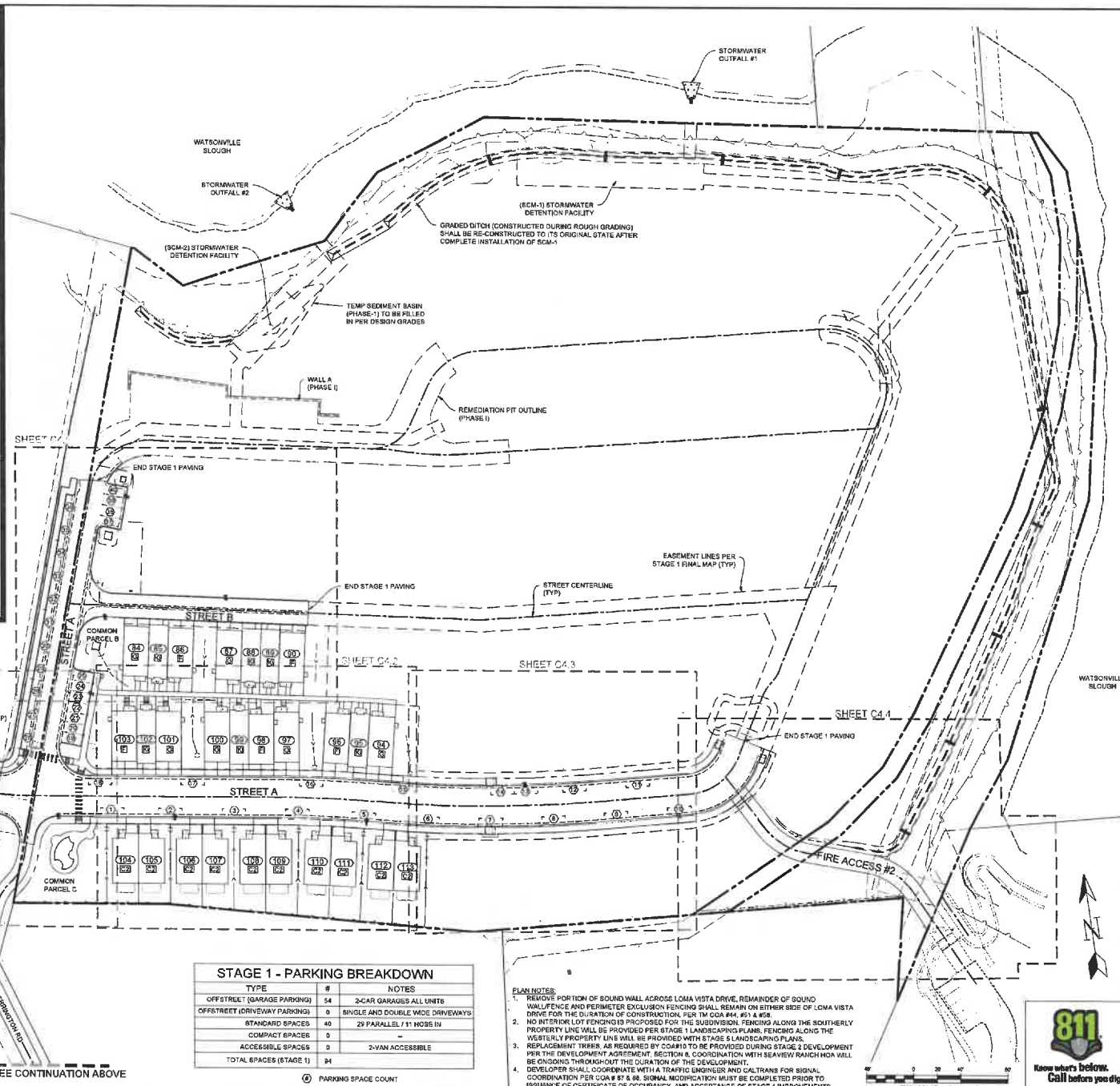
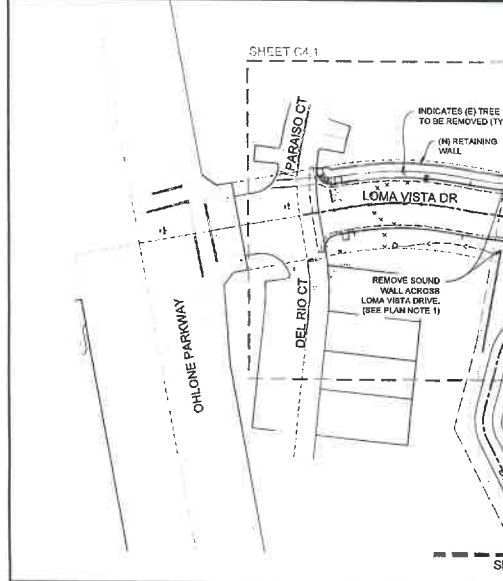
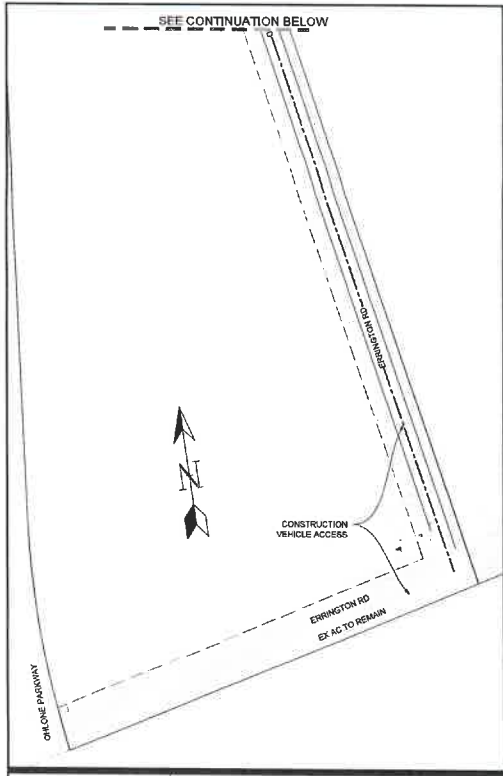
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 DESIGNED BY: OS
 DATE: 02/20/2023
 SCALE: AS NOTED
 PROJECT NO: 204201
 SHEET: C1.0

COVER SHEET
HILLCREST
 511 OHLONE PARKWAY, WATSONVILLE, CA, 95076

STAGE 1 - IMPROVEMENT PLANS
 REVISION BLOCK

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 STATE OF CALIFORNIA
 DAVID RAMSEY
 KCB 73735



STAGE 1 - PARKING BREAKDOWN		
TYPE	#	NOTES
OFFSTREET (GARAGE PARKING)	54	2-CAR GARAGES ALL UNITS
OFFSTREET (DRIVEWAY PARKING)	0	SINGLE AND DOUBLE WIDE DRIVEWAYS
STANDARD SPACES	40	24 PARALLEL / 16 NOSE IN
COMPACT SPACES	0	-
ACCESSIBLE SPACES	0	2-VAN ACCESSIBLE
TOTAL SPACES (STAGE 1)		94

② PARKING SPACE COUNT

- PLAN NOTES:
- REMOVE PORTION OF SOUND WALL ACROSS LOMA VISTA DRIVE, REMAINDER OF SOUND WALL/FENCE AND PERIMETER EXCLUSION FENCING SHALL REMAIN ON EITHER SIDE OF LOMA VISTA DRIVE FOR THE DURATION OF CONSTRUCTION, PER TM COA #4, #51 & #58.
 - NO INTERIOR LOT FENCING IS PROVIDED FOR THIS SUBDIVISION. FENCING ALONG THE SOUTHERLY PROPERTY LINE WILL BE PROVIDED PER STAGE 1 LANDSCAPING PLANS. FENCING ALONG THE WASTERLY PROPERTY LINE WILL BE PROVIDED WITH STAGE 8 LANDSCAPING PLANS.
 - REPLACEMENT TREES, AS REQUIRED BY COA TO BE PROVIDED DURING STAGE 2 DEVELOPMENT PER THE DEVELOPMENT AGREEMENT, SECTION 8, COORDINATION WITH SEAVIEW RANCH HOA WILL BE ONGOING THROUGHOUT THE DURATION OF THE DEVELOPMENT.
 - DEVELOPER SHALL COORDINATE WITH A TRAFFIC ENGINEER AND CALTRANS FOR SIGNAL COORDINATION PER COA # 87 & 88. SIGNAL MODIFICATION MUST BE COMPLETED PRIOR TO ISSUANCE OF CERTIFICATE OF OCCUPANCY, AND ACCEPTANCE OF STAGE 1 IMPROVEMENTS.



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 PROJECT MANAGEMENT
 CONSTRUCTION SUPPORT
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 TEL: (831) 462-2009
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 RCEP 73735

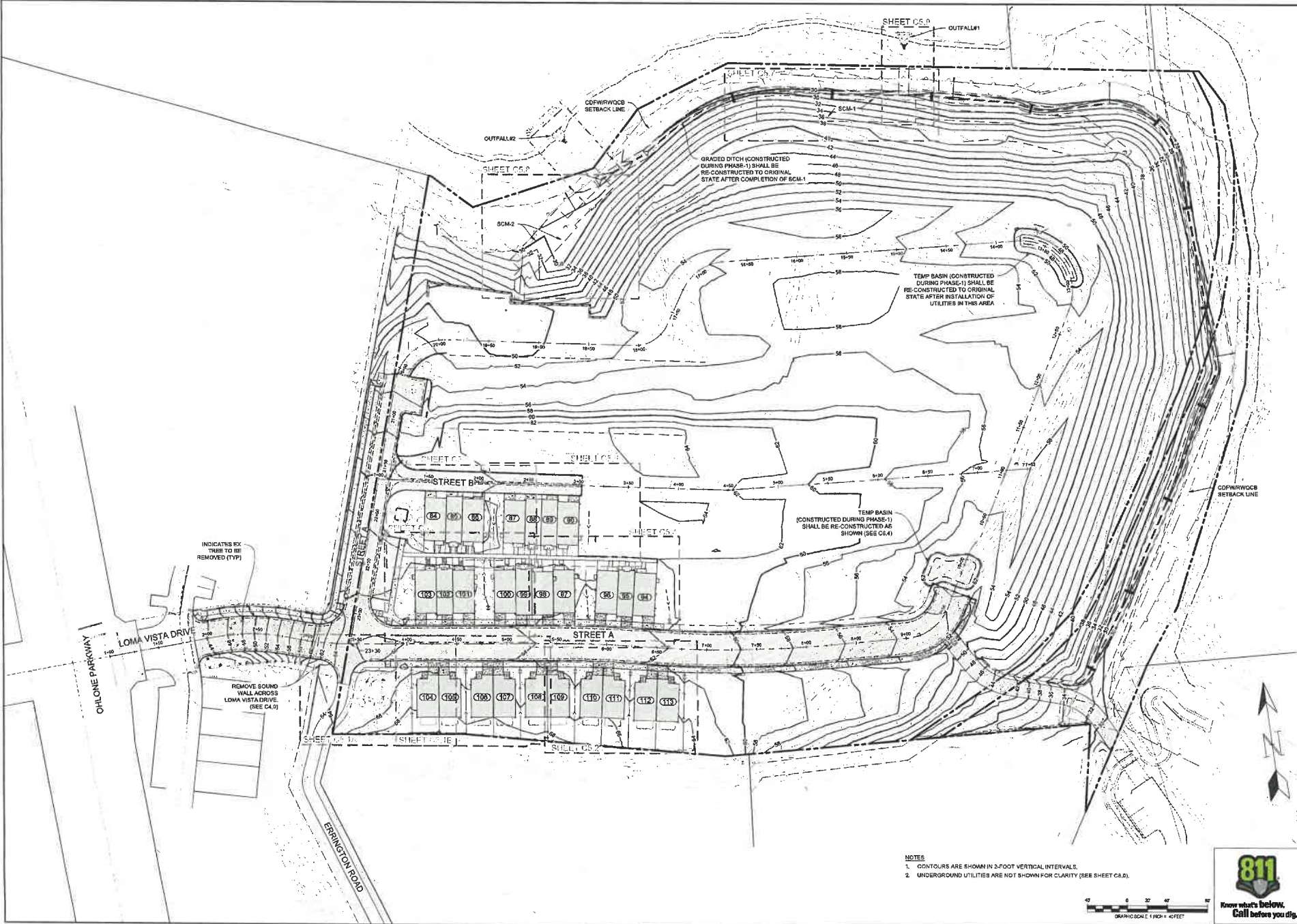
APN# 018-372-14
 PLAN TYPE
 RESIDENTIAL
 SUBDIVISION

OVERALL SITE PLAN
HILLCREST
 511 OHLONE PARKWAY, WATSONVILLE, CA, 95076

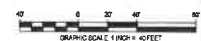
STAGE 1 - IMPROVEMENT PLANS

NO.	REVISION	DATE
1	REVISION 1 - PER PLAN COMMENTS	05/10/2023
2	REVISION 2 - PER PLAN COMMENTS	05/10/2023
3	REVISION 3 - PER PLAN COMMENTS	05/10/2023
4	REVISION 4 - PER PLAN COMMENTS	05/10/2023
5	REVISION 5 - PER PLAN COMMENTS	05/10/2023
6	REVISION 6 - PER PLAN COMMENTS	05/10/2023
7	REVISION 7 - PER PLAN COMMENTS	05/10/2023
8	REVISION 8 - PER PLAN COMMENTS	05/10/2023
9	REVISION 9 - PER PLAN COMMENTS	05/10/2023
10	REVISION 10 - PER PLAN COMMENTS	05/10/2023

DRAWN BY: DSR
 DESIGNED BY: DSR
 DATE: 05/10/2023
 SCALE: AS NOTED
 PROJECT NO: 23-010
 SHEET: C4.0



- NOTES
1. CONTOURS ARE SHOWN IN 3-FOOT VERTICAL INTERVALS.
 2. UNDERGROUND UTILITIES ARE NOT SHOWN FOR CLARITY (SEE SHEET C6.8).



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PROJECT MANAGEMENT
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SANTA CRUZ, CA 95065
TEL (831) 462-2505
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DAVID RAMSEY
RCE 73735 10/17/2022

APN# 016-372-14
PLAN TYPE
RESIDENTIAL
SUBDIVISION

FULL SITE GRADING & DRAINAGE PLAN
HILLCREST
511 OHLONE PARKWAY, WATSONVILLE, CA, 95076

STAGE 1 - IMPROVEMENT PLANS			
NO.	DESCRIPTION	DATE	BY
1	ROUND 1 - FIELD-DRAWN COMMENTS	11/09/2022	DS
2	ROUND 2 - FIELD-DRAWN COMMENTS	11/09/2022	DS
3	ROUND 3 - FIELD-DRAWN COMMENTS	11/09/2022	DS
4	ROUND 4 - FIELD-DRAWN COMMENTS	11/09/2022	DS
5	ROUND 5 - FIELD-DRAWN COMMENTS	11/09/2022	DS
6	ROUND 6 - FIELD-DRAWN COMMENTS	11/09/2022	DS
7	ROUND 7 - FIELD-DRAWN COMMENTS	11/09/2022	DS
8	ROUND 8 - FIELD-DRAWN COMMENTS	11/09/2022	DS
9	ROUND 9 - FIELD-DRAWN COMMENTS	11/09/2022	DS
10	ROUND 10 - FIELD-DRAWN COMMENTS	11/09/2022	DS
11	ROUND 11 - FIELD-DRAWN COMMENTS	11/09/2022	DS
12	ROUND 12 - FIELD-DRAWN COMMENTS	11/09/2022	DS
13	ROUND 13 - FIELD-DRAWN COMMENTS	11/09/2022	DS
14	ROUND 14 - FIELD-DRAWN COMMENTS	11/09/2022	DS
15	ROUND 15 - FIELD-DRAWN COMMENTS	11/09/2022	DS
16	ROUND 16 - FIELD-DRAWN COMMENTS	11/09/2022	DS
17	ROUND 17 - FIELD-DRAWN COMMENTS	11/09/2022	DS
18	ROUND 18 - FIELD-DRAWN COMMENTS	11/09/2022	DS
19	ROUND 19 - FIELD-DRAWN COMMENTS	11/09/2022	DS
20	ROUND 20 - FIELD-DRAWN COMMENTS	11/09/2022	DS
21	ROUND 21 - FIELD-DRAWN COMMENTS	11/09/2022	DS
22	ROUND 22 - FIELD-DRAWN COMMENTS	11/09/2022	DS
23	ROUND 23 - FIELD-DRAWN COMMENTS	11/09/2022	DS
24	ROUND 24 - FIELD-DRAWN COMMENTS	11/09/2022	DS
25	ROUND 25 - FIELD-DRAWN COMMENTS	11/09/2022	DS
26	ROUND 26 - FIELD-DRAWN COMMENTS	11/09/2022	DS
27	ROUND 27 - FIELD-DRAWN COMMENTS	11/09/2022	DS
28	ROUND 28 - FIELD-DRAWN COMMENTS	11/09/2022	DS
29	ROUND 29 - FIELD-DRAWN COMMENTS	11/09/2022	DS
30	ROUND 30 - FIELD-DRAWN COMMENTS	11/09/2022	DS
31	ROUND 31 - FIELD-DRAWN COMMENTS	11/09/2022	DS
32	ROUND 32 - FIELD-DRAWN COMMENTS	11/09/2022	DS
33	ROUND 33 - FIELD-DRAWN COMMENTS	11/09/2022	DS
34	ROUND 34 - FIELD-DRAWN COMMENTS	11/09/2022	DS
35	ROUND 35 - FIELD-DRAWN COMMENTS	11/09/2022	DS
36	ROUND 36 - FIELD-DRAWN COMMENTS	11/09/2022	DS
37	ROUND 37 - FIELD-DRAWN COMMENTS	11/09/2022	DS
38	ROUND 38 - FIELD-DRAWN COMMENTS	11/09/2022	DS
39	ROUND 39 - FIELD-DRAWN COMMENTS	11/09/2022	DS
40	ROUND 40 - FIELD-DRAWN COMMENTS	11/09/2022	DS
41	ROUND 41 - FIELD-DRAWN COMMENTS	11/09/2022	DS
42	ROUND 42 - FIELD-DRAWN COMMENTS	11/09/2022	DS
43	ROUND 43 - FIELD-DRAWN COMMENTS	11/09/2022	DS
44	ROUND 44 - FIELD-DRAWN COMMENTS	11/09/2022	DS
45	ROUND 45 - FIELD-DRAWN COMMENTS	11/09/2022	DS
46	ROUND 46 - FIELD-DRAWN COMMENTS	11/09/2022	DS
47	ROUND 47 - FIELD-DRAWN COMMENTS	11/09/2022	DS
48	ROUND 48 - FIELD-DRAWN COMMENTS	11/09/2022	DS
49	ROUND 49 - FIELD-DRAWN COMMENTS	11/09/2022	DS
50	ROUND 50 - FIELD-DRAWN COMMENTS	11/09/2022	DS
51	ROUND 51 - FIELD-DRAWN COMMENTS	11/09/2022	DS
52	ROUND 52 - FIELD-DRAWN COMMENTS	11/09/2022	DS
53	ROUND 53 - FIELD-DRAWN COMMENTS	11/09/2022	DS
54	ROUND 54 - FIELD-DRAWN COMMENTS	11/09/2022	DS
55	ROUND 55 - FIELD-DRAWN COMMENTS	11/09/2022	DS
56	ROUND 56 - FIELD-DRAWN COMMENTS	11/09/2022	DS
57	ROUND 57 - FIELD-DRAWN COMMENTS	11/09/2022	DS
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59	ROUND 59 - FIELD-DRAWN COMMENTS	11/09/2022	DS
60	ROUND 60 - FIELD-DRAWN COMMENTS	11/09/2022	DS
61	ROUND 61 - FIELD-DRAWN COMMENTS	11/09/2022	DS
62	ROUND 62 - FIELD-DRAWN COMMENTS	11/09/2022	DS
63	ROUND 63 - FIELD-DRAWN COMMENTS	11/09/2022	DS
64	ROUND 64 - FIELD-DRAWN COMMENTS	11/09/2022	DS
65	ROUND 65 - FIELD-DRAWN COMMENTS	11/09/2022	DS
66	ROUND 66 - FIELD-DRAWN COMMENTS	11/09/2022	DS
67	ROUND 67 - FIELD-DRAWN COMMENTS	11/09/2022	DS
68	ROUND 68 - FIELD-DRAWN COMMENTS	11/09/2022	DS
69	ROUND 69 - FIELD-DRAWN COMMENTS	11/09/2022	DS
70	ROUND 70 - FIELD-DRAWN COMMENTS	11/09/2022	DS
71	ROUND 71 - FIELD-DRAWN COMMENTS	11/09/2022	DS
72	ROUND 72 - FIELD-DRAWN COMMENTS	11/09/2022	DS
73	ROUND 73 - FIELD-DRAWN COMMENTS	11/09/2022	DS
74	ROUND 74 - FIELD-DRAWN COMMENTS	11/09/2022	DS
75	ROUND 75 - FIELD-DRAWN COMMENTS	11/09/2022	DS
76	ROUND 76 - FIELD-DRAWN COMMENTS	11/09/2022	DS
77	ROUND 77 - FIELD-DRAWN COMMENTS	11/09/2022	DS
78	ROUND 78 - FIELD-DRAWN COMMENTS	11/09/2022	DS
79	ROUND 79 - FIELD-DRAWN COMMENTS	11/09/2022	DS
80	ROUND 80 - FIELD-DRAWN COMMENTS	11/09/2022	DS
81	ROUND 81 - FIELD-DRAWN COMMENTS	11/09/2022	DS
82	ROUND 82 - FIELD-DRAWN COMMENTS	11/09/2022	DS
83	ROUND 83 - FIELD-DRAWN COMMENTS	11/09/2022	DS
84	ROUND 84 - FIELD-DRAWN COMMENTS	11/09/2022	DS
85	ROUND 85 - FIELD-DRAWN COMMENTS	11/09/2022	DS
86	ROUND 86 - FIELD-DRAWN COMMENTS	11/09/2022	DS
87	ROUND 87 - FIELD-DRAWN COMMENTS	11/09/2022	DS
88	ROUND 88 - FIELD-DRAWN COMMENTS	11/09/2022	DS
89	ROUND 89 - FIELD-DRAWN COMMENTS	11/09/2022	DS
90	ROUND 90 - FIELD-DRAWN COMMENTS	11/09/2022	DS
91	ROUND 91 - FIELD-DRAWN COMMENTS	11/09/2022	DS
92	ROUND 92 - FIELD-DRAWN COMMENTS	11/09/2022	DS
93	ROUND 93 - FIELD-DRAWN COMMENTS	11/09/2022	DS
94	ROUND 94 - FIELD-DRAWN COMMENTS	11/09/2022	DS
95	ROUND 95 - FIELD-DRAWN COMMENTS	11/09/2022	DS
96	ROUND 96 - FIELD-DRAWN COMMENTS	11/09/2022	DS
97	ROUND 97 - FIELD-DRAWN COMMENTS	11/09/2022	DS
98	ROUND 98 - FIELD-DRAWN COMMENTS	11/09/2022	DS
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100	ROUND 100 - FIELD-DRAWN COMMENTS	11/09/2022	DS

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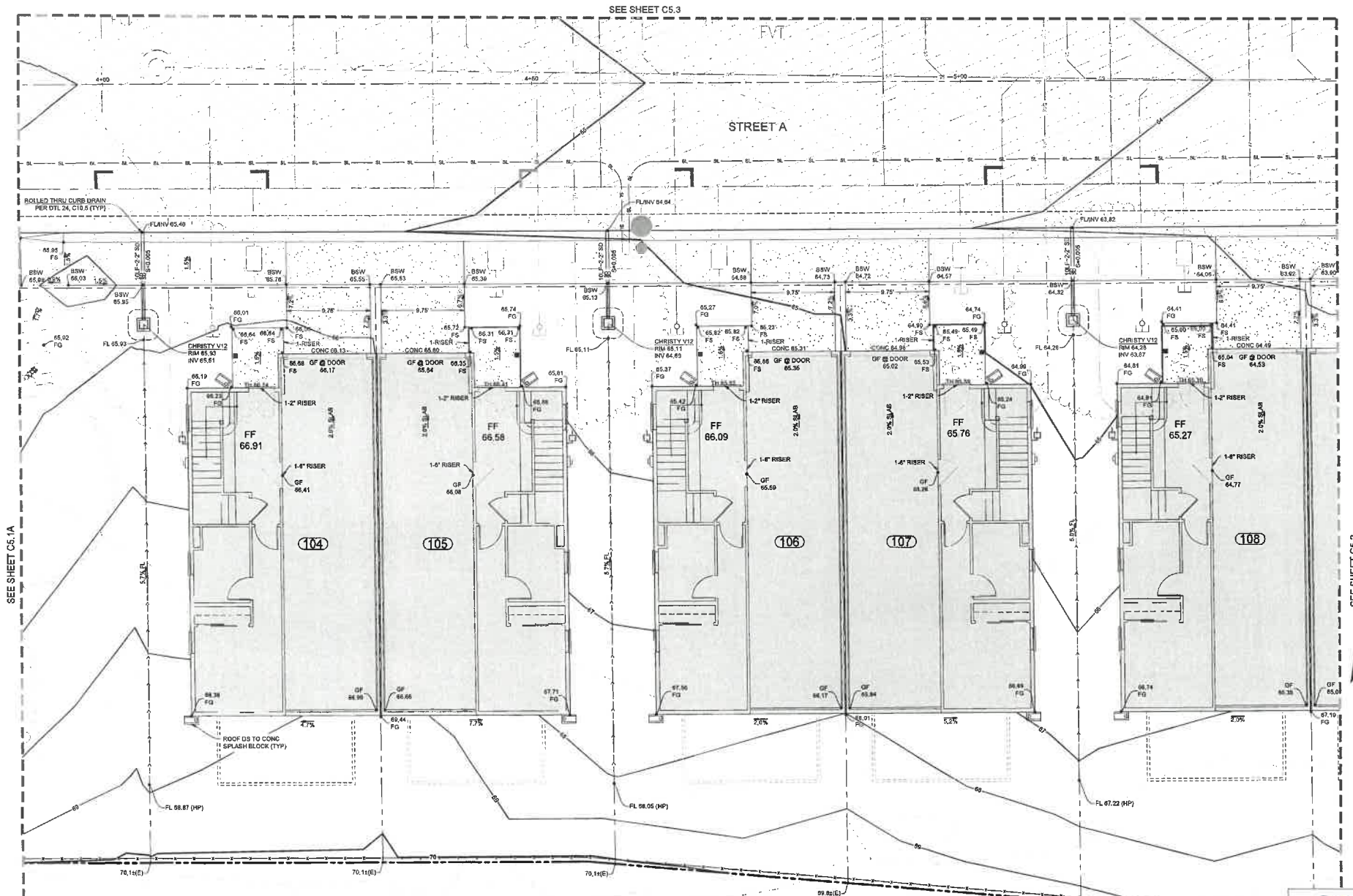
DESIGNED BY: DMR

DATE: 05/19/2022

SCALE: AS NOTED

PROJECT NO: 20-021

SHEET: C5.0



GRADING NOTE:
 PROVIDE STEM WALLS AT ALL LOCATIONS WHERE EXTERIOR GRADE IS WITHIN 6 INCHES
 OR LESS OF FF ELEVATION. STEM WALL SHALL BE PROVIDED AND COORDINATED WITH
 ARCHITECT AND STRUCTURAL ENGINEER DURING BUILDING PERMIT PHASE.



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DAVID RAMSEY
 RCE# 73735 DATE 10/17/2022

APN# 016-372-14

PLAN TYPE
 RESIDENTIAL
 SUBDIVISION

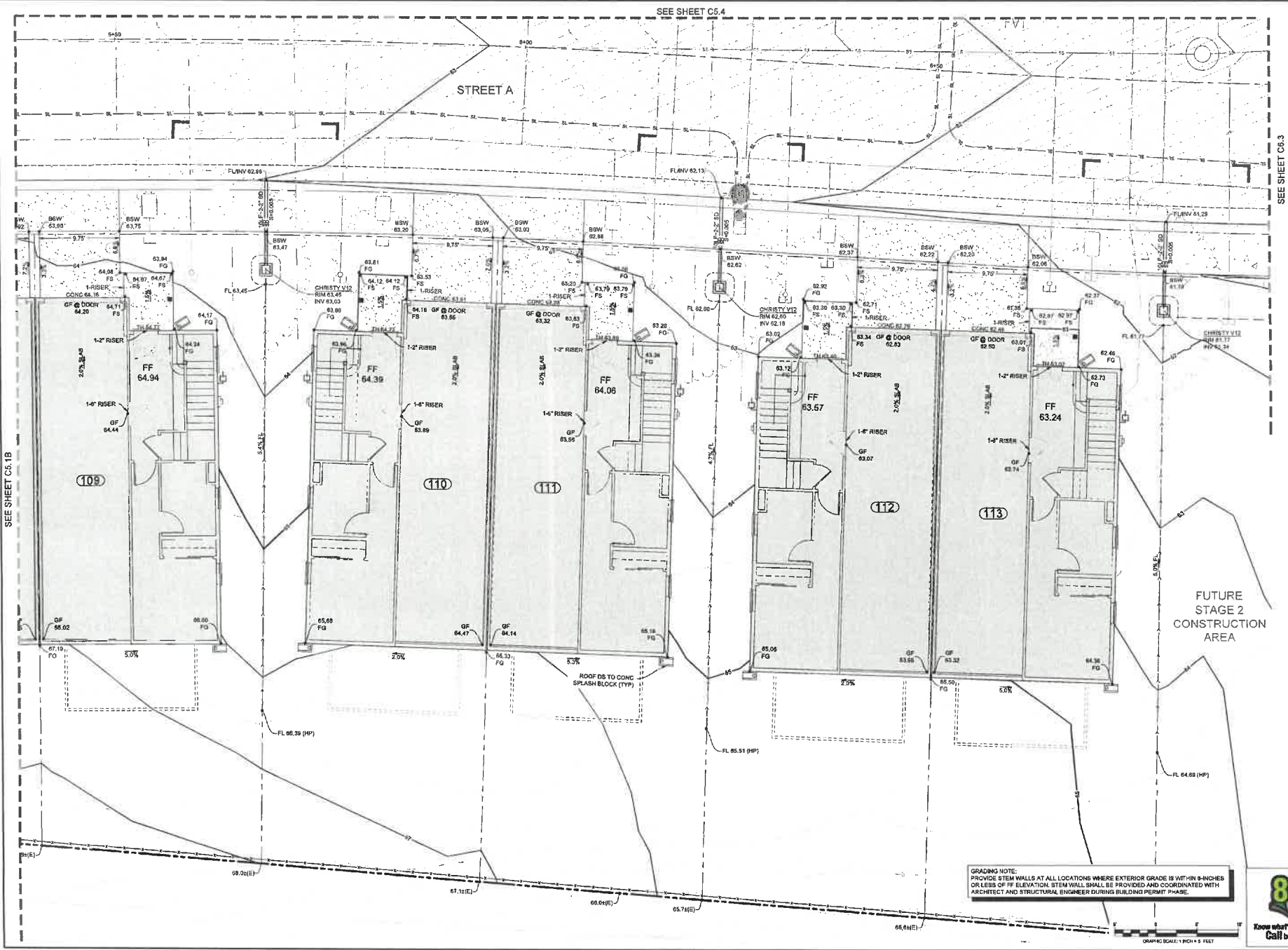
GRADING & DRAINAGE PLAN

HILLCREST
 511 OHLONE PARKWAY, WATSONVILLE, CA, 95076

STAGE 1 - IMPROVEMENT PLANS	
NO.	DESCRIPTION
1	11/14/2022
2	ROUND 1 - RESPONSE COMMENTS
3	DATE
4	ROUND 1 - RESPONSE COMMENTS
5	DATE
6	REVISION BLOCK

DRAWN BY: GS
 DESIGNED BY: CMT
 DATE: 05/10/2022
 SCALE: AS NOTED
 PROJECT NO: 20-021
 SHEET

C5.1B



SEE SHEET C5.1B

SEE SHEET C5.4

SEE SHEET C6.3

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DAVID RAMSEY
CIVIL ENGINEER
NO. 027876
STATE OF CALIFORNIA

APN# 016-372-14
PLAN TYPE
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SUBDIVISION

GRADING & DRAINAGE PLAN
HILLCREST
511 OHLONE PARKWAY, WATSONVILLE, CA 95076

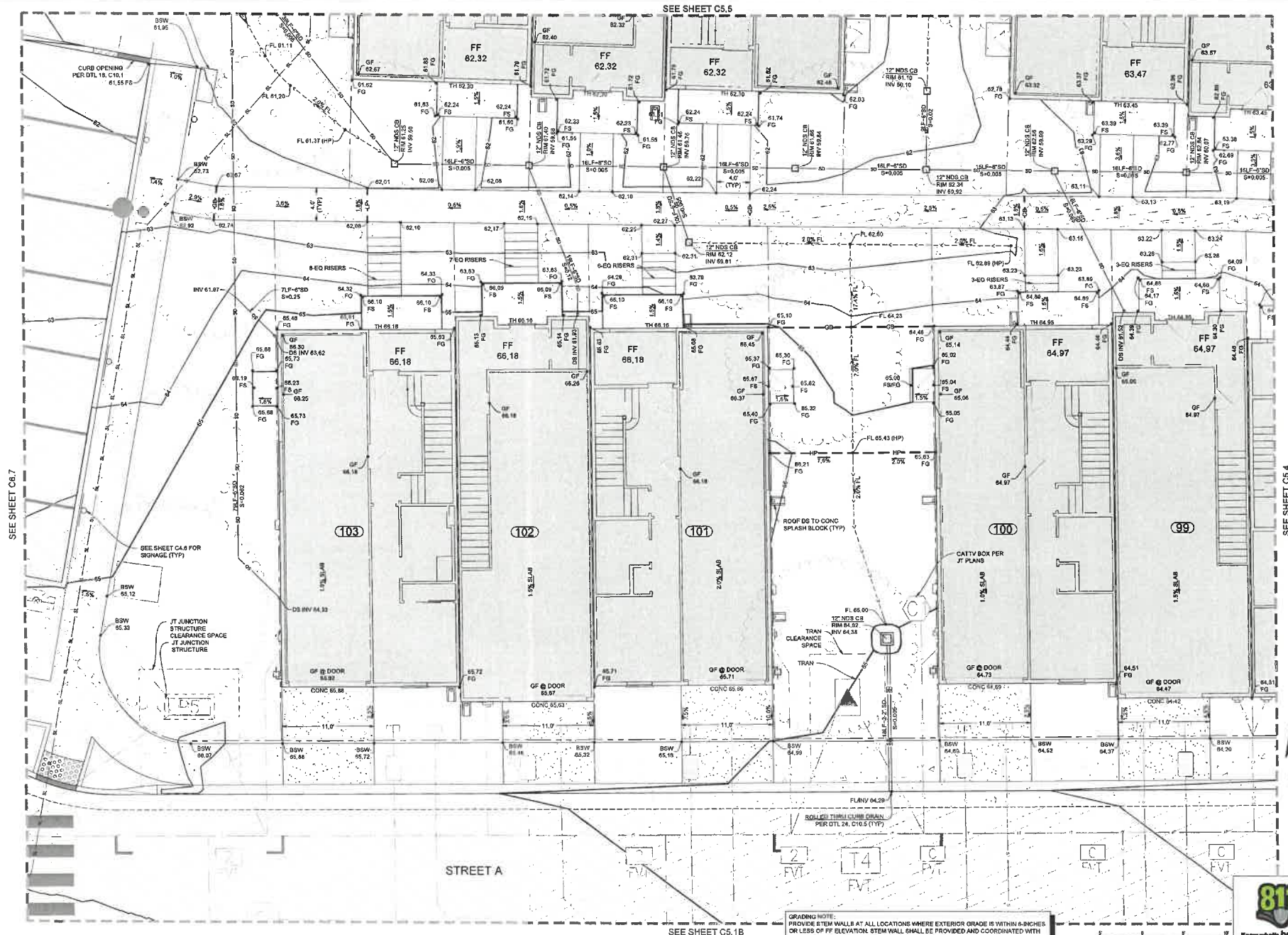
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2	10/10/2022	REVISION COMMENTS	DAVE
3	10/10/2022	REVISION COMMENTS	DAVE
4	10/10/2022	REVISION COMMENTS	DAVE

Know what's below.
Call before you dig.

STAGE 1 - IMPROVEMENT PLANS

NO.	DATE	DESCRIPTION	BY
1	10/10/2022	INITIALS	DAVE
2	10/10/2022	REVISION COMMENTS	DAVE
3	10/10/2022	REVISION COMMENTS	DAVE
4	10/10/2022	REVISION COMMENTS	DAVE

DRAWN BY: GS
DESIGNED BY: CMM
DATE: 05/10/2022
SCALE: AS NOTED
PROJECT NO: 20-001
SHEET: C5.2



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DAVID RAMSEY
 RCE 73735
 DATE 10/17/2022

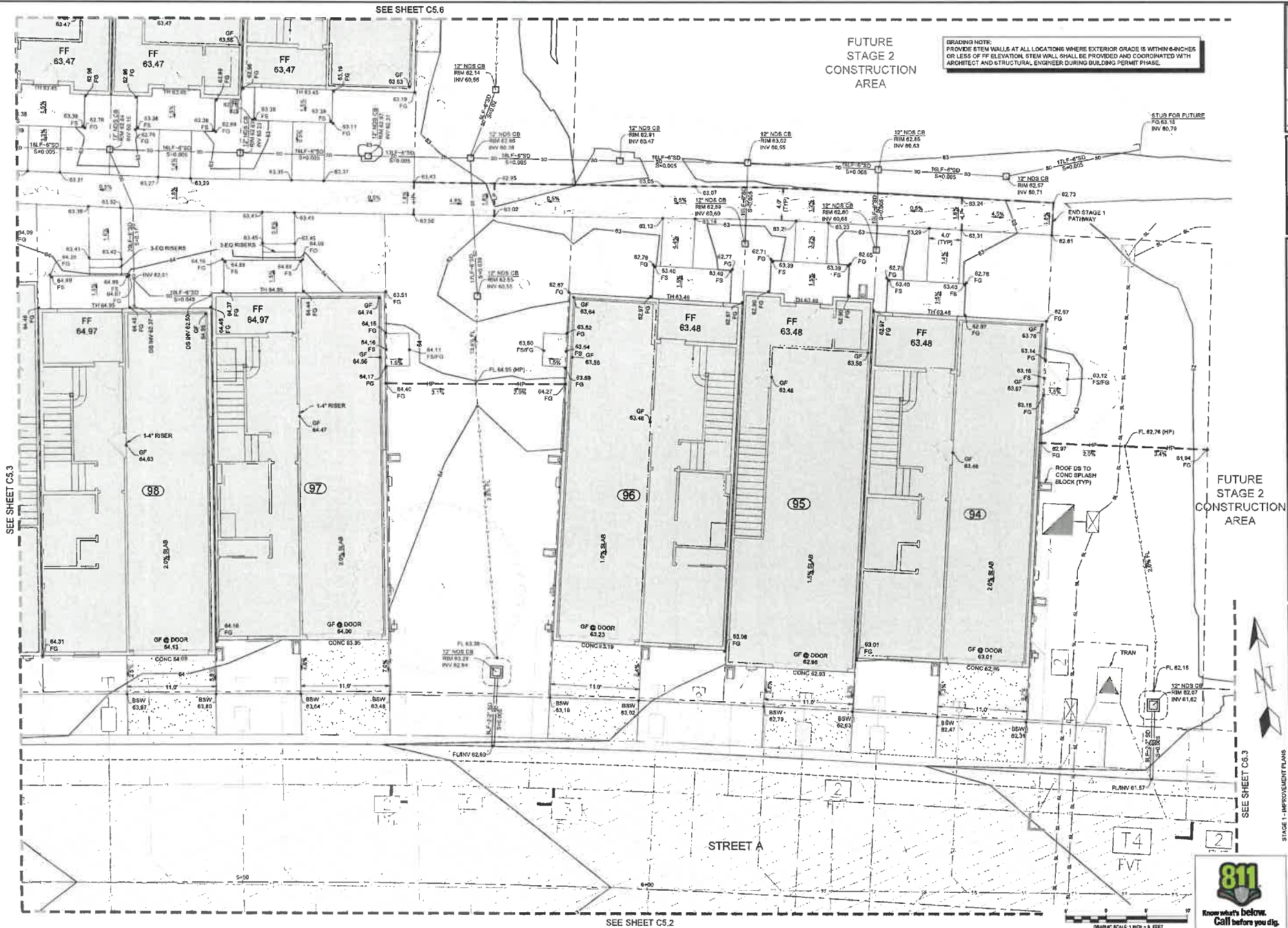
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 PLAN TYPE
 RESIDENTIAL
 SUBDIVISION

GRADING & DRAINAGE PLAN
HILLCREST
 511 OHLONE PARKWAY, WATSONVILLE, CA, 95076

NO.	REVISION	DATE	BY	DESCRIPTION
1	ISSUED FOR PERMIT	10/17/2022	DR	REVISION BLOCK

811
 Know what's below.
 Call before you dig.

C5.3



GRADING NOTE:
 PROVIDE STEM WALLS AT ALL LOCATIONS WHERE EXTERIOR GRADE IS WITHIN 6 INCHES
 OR LESS OF FF ELEVATION. STEM WALL SHALL BE PROVIDED AND COORDINATED WITH
 ARCHITECT AND STRUCTURAL ENGINEER DURING BUILDING PERMIT PHASE.

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DAVID RAMSEY
 RCEH 75735 DATE: 09/17/2022

APHN 018-372-14

PLAN TYPE:
 RESIDENTIAL
 SUBDIVISION

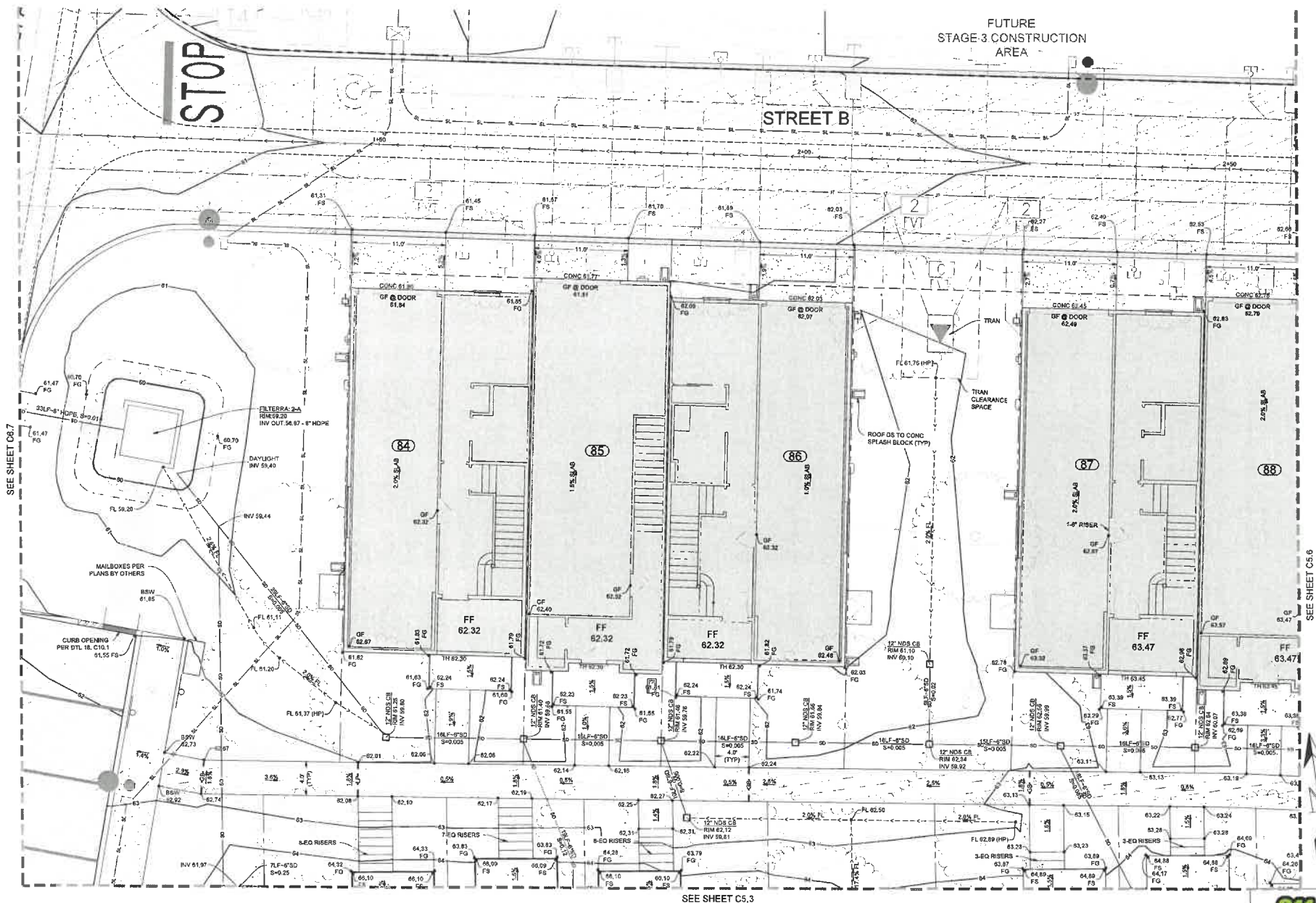
GRADING & DRAINAGE PLAN

HILLCREST
 511 OHLONE PARKWAY, WATSONVILLE, CA, 95076

STAGE 1 - IMPROVEMENT PLANS		REVISION BLOCK	
NO.	DATE	BY	REVISION
1	10/09/22	DNM	ISSUED FOR PERMIT
2	10/14/22	DNM	REVISION COMMENTS
3	10/17/22	DNM	REVISION COMMENTS
4	10/17/22	DNM	REVISION COMMENTS

DRAWN BY: GJS
 DESIGNED BY: DNM
 DATE: 09/15/2022
 SCALE: AS NOTED
 PROJECT NO: 20-021
 SHEET: C5.4

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www.ramseyengineering.com

DAVID RAMSEY
RCEP 73735

APN# 016-372-14
PLAN TYPE
RESIDENTIAL
SUBDIVISION

GRADING & DRAINAGE PLAN
HILLCREST
511 OHLONE PARKWAY, WATSONVILLE, CA, 95076

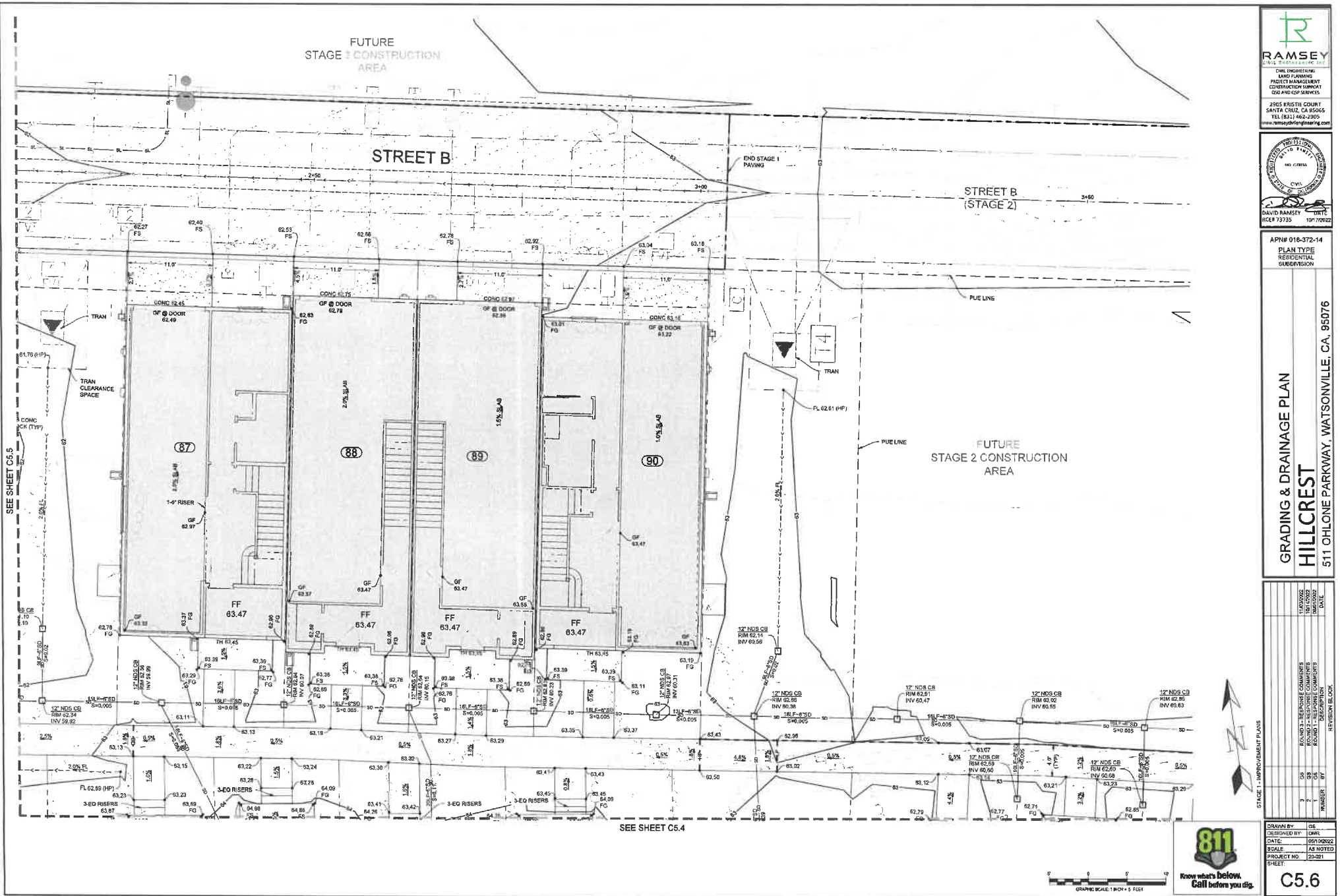
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2	11/02/2022	REVISION COMMENTS	DMR		
3	11/02/2022	REVISION COMMENTS	DMR		
4	11/02/2022	REVISION COMMENTS	DMR		
5	11/02/2022	REVISION COMMENTS	DMR		

STAGE 1 - IMPROVEMENT PLANS

DESIGNED BY: DMR
DATE: 05/10/2022
SCALE: AS NOTED
PROJECT NO: 20-021
SHEET

C5.5

GRAPHIC SCALE: 1 INCH = 5 FEET



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CIVIL ENGINEERING
LAND PLANNING
PROJECT MANAGEMENT
CONSTRUCTION SUPPORT
EEO AND EDP SERVICES
2805 RUSTLE COUNTRY
SANTA CRUZ, CA 95065
TEL (831) 462-2305
www.ramseycivilengineering.com

DAVID RAMSEY
REGISTERED CIVIL ENGINEER
NO. 73735
DATE 10/17/2022

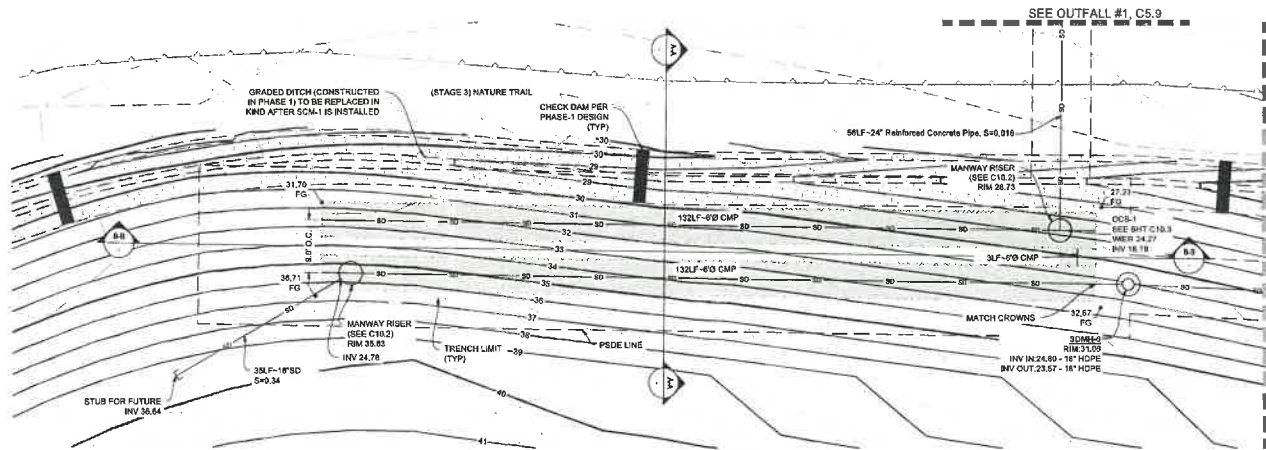
APN# 016-372-14
PLAN TYPE
RESIDENTIAL
SUBDIVISION

GRADING & DRAINAGE PLAN
HILLCREST
511 OHLONE PARKWAY, WATSONVILLE, CA, 95076

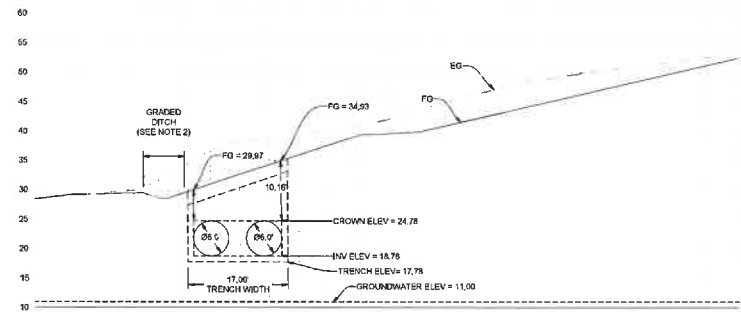
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5	10/17/2022	REVISIONS
6	10/17/2022	REVISIONS
7	10/17/2022	REVISIONS
8	10/17/2022	REVISIONS
9	10/17/2022	REVISIONS
10	10/17/2022	REVISIONS

DATE	BY	DESCRIPTION
10/17/2022	DRM	ISSUED FOR PERMITS
10/17/2022	DRM	REVISIONS
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10/17/2022	DRM	REVISIONS
10/17/2022	DRM	REVISIONS
10/17/2022	DRM	REVISIONS
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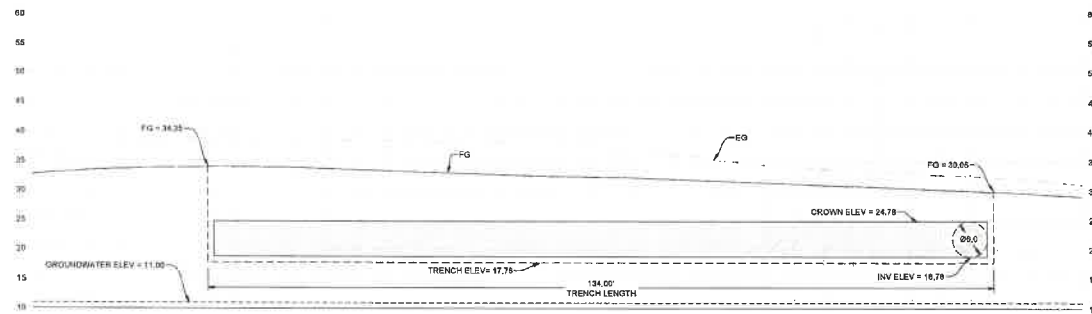
811
Know what's below.
Call before you dig.
C5.6



SCM-1 - PLAN VIEW



SCM-1 - SECTION - AA
1"=10' (H)
1"=10' (V)



SCM-1 - SECTION BB
1"=10' (H)
1"=10' (V)

NOTES:

1. REFER TO SHEET C10.2-C10.3 FOR ADDITIONAL CMP DETAILS.
2. GRADED DITCH TO BE RE-CONSTRUCTED TO ORIGINAL STATE (PER PHASE-1 DESIGN) AFTER INSTALLATION OF SCM-1



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DAVID RAMSEY
REGISTERED PROFESSIONAL ENGINEER
NO. 00706
STATE OF CALIFORNIA
DATE 10/17/2022

APRM 018-372-14
PLAN TYPE:
RESIDENTIAL
SUBDIVISION

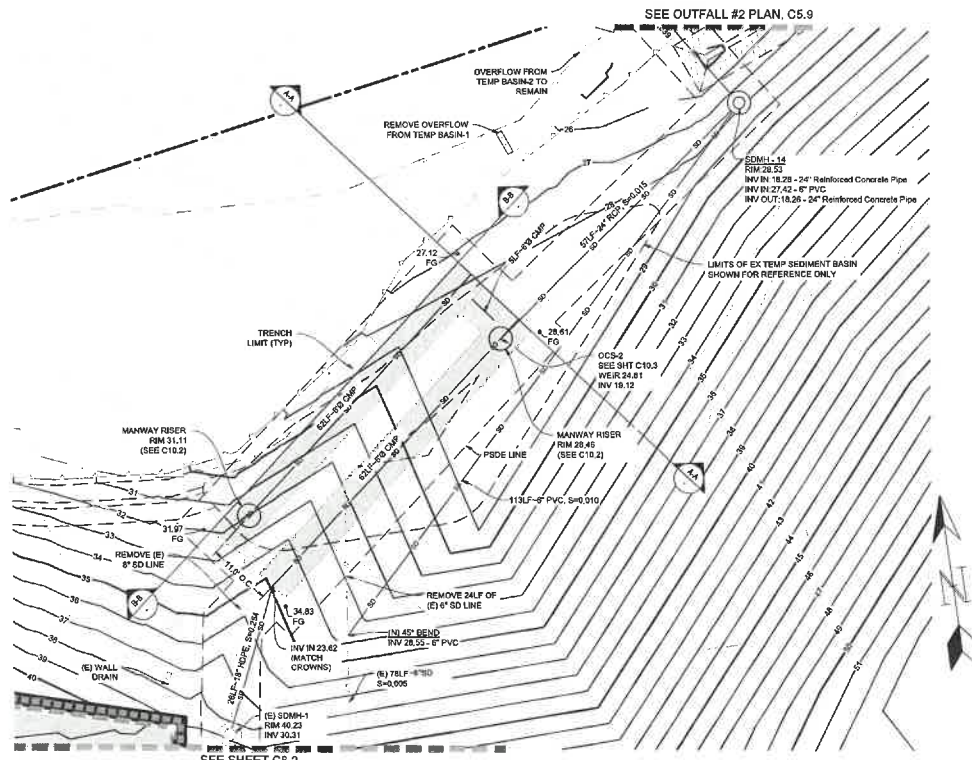
GRADING PLAN - SCM-1
HILLCREST
511 OHLONE PARKWAY, WATSONVILLE, CA, 95076

REVISION BLOCK			
NO.	DATE	BY	REVISION
1	10/18/2022	DS	ISSUED FOR PERMITS
2	10/18/2022	DS	ROUND 2 - RESPONSE COMMENTS
3	10/18/2022	DS	ROUND 3 - RESPONSE COMMENTS

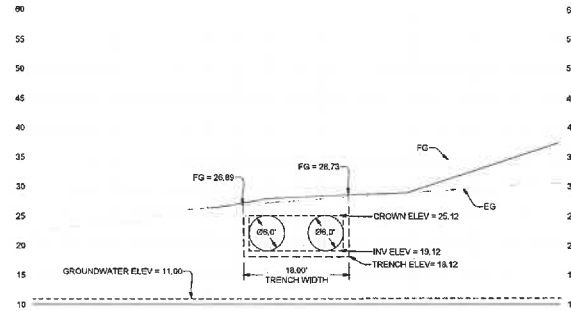
STAGE 1 - IMPROVEMENT PLANS

DESIGNED BY:	DS
DESIGNED BY:	DS
DATE:	06/16/2022
SCALE:	AS NOTED
PROJECT NO:	20-021
SHEET:	C5.7

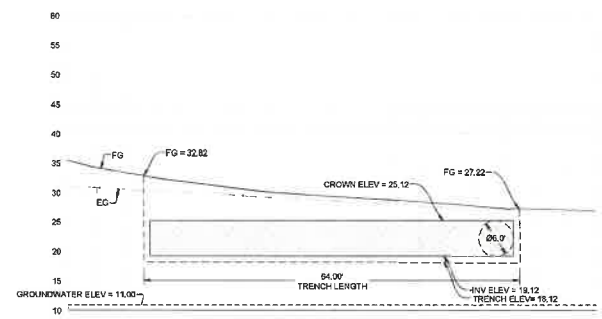
811
Know what's below.
Call before you dig.



SCM-2 - PLAN VIEW



SCM-2 - SECTION AA
1"=10' (H)
1"=10' (V)



SCM-2 - SECTION BB
1"=10' (H)
1"=10' (V)

NOTES:
1. REFER TO SHEET C10.2&10.3 FOR ADDITIONAL CMP DETAILS.



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APRN 018-372-14
 PLAN TYPE
 RESIDENTIAL
 SUBDIVISION

GRADING PLAN - SCM 2

HILLCREST

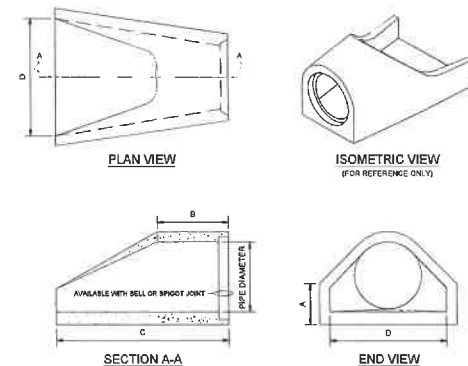
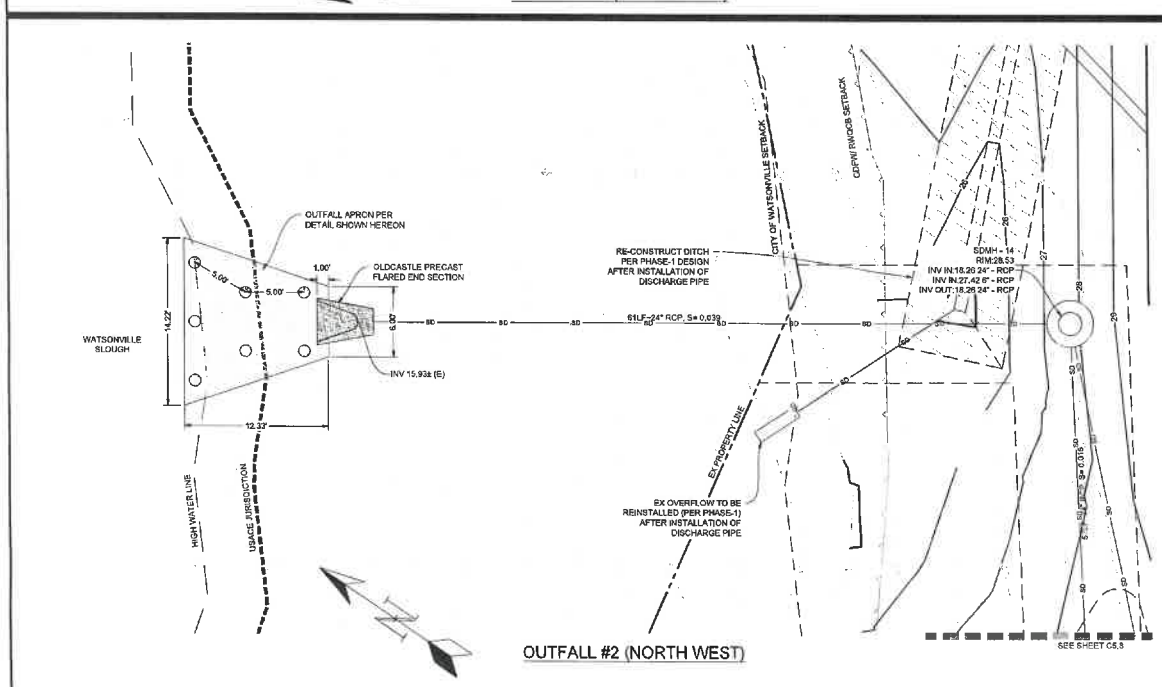
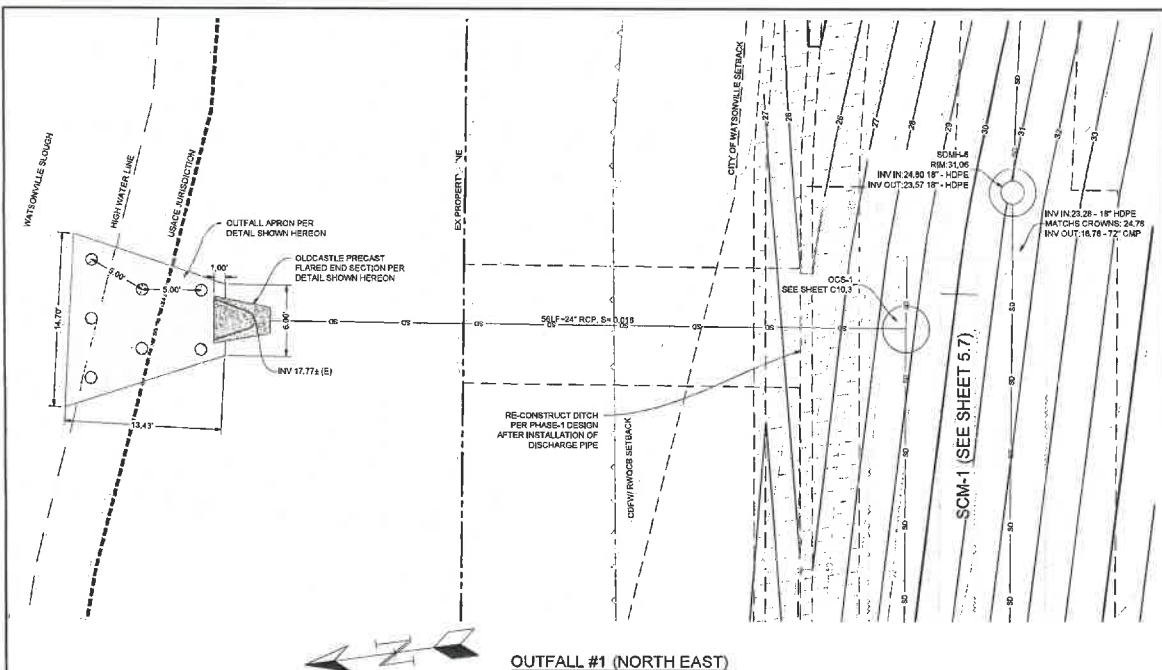
511 OHLONE PARKWAY, WATSONVILLE, CA, 95076

REVISION BLOCK	
NO.	DESCRIPTION
1	11/05/2022 ROUND 1 - RESPONSE COMMENTS DATE: 05/07/2022 BY: [Signature]
2	05/07/2022 ROUND 1 - RESPONSE COMMENTS DATE: 05/07/2022 BY: [Signature]
3	05/07/2022 ROUND 1 - RESPONSE COMMENTS DATE: 05/07/2022 BY: [Signature]

STAGE 1 - IMPROVEMENT PLANS
 DRAWN BY: GE
 DESIGNED BY: OMR
 DATE: 05/07/2022
 SCALE: AS NOTED
 PROJECT NO: 20-0421
 SHEET:

C5.8

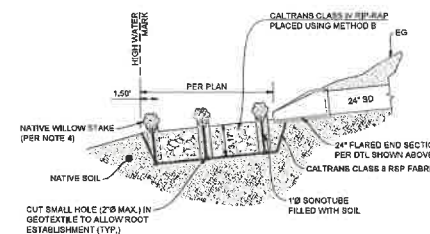
C5.8



PIPE DIA. (IN.)	DIMENSION A (IN.)	BARREL LENGTH B (IN.)	LAY LENGTH C (IN.)	FLAIR WIDTH D (IN.)	WEIGHT (LBS.)
24"	12.0"	30.00"	73.50"	48.8"	3060 lbs.

- NOTES:
1. INSTALL PER MANUFACTURER SPECIFICATIONS.
 2. SEE WWW.OLDCASTLEPRECAST.COM/GREATPLAINS/WEBSITE FOR ADDITIONAL INFORMATION

CIRCULAR FLARED END SECTION DETAIL



- NOTES:
1. RCP-RAP SIZE BASED UPON CALTRANS HIGHWAY DESIGN MANUAL CHAPTER 820, CALTRANS HIGHWAY DESIGN MANUAL 870, AND FEDERAL HIGHWAY ADMINISTRATION HYDRAULIC ENGINEERING CIRCULAR (HEC) NO. 14.
 2. CLASS 8 RCP FABRIC PER SECTION 9A, CALTRANS STANDARD SPECIFICATIONS 2015 EDITION.
 3. RCP-RAP GRADATION PER TABLE 873.3A & 873.3B IN THE CALTRANS HIGHWAY DESIGN MANUAL.
 4. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF WILLOW STAKES WITH THE PROJECT BIOLOGIST.
 5. WILLOW STAKES SHALL BE HARVESTED DURING THE DORMANT SEASON (WINTER). AFTER RAIN HAS SATURATED THE ADJACENT SOIL, HARVEST CUTTINGS FROM NUMEROUS TREES TO PROVIDE DIVERSE GENETIC MATERIAL. ONLY NATIVE SPECIES OF WILLOW SHALL BE HARVESTED, AND THEY SHALL BE TAKEN FROM A NATURAL STAND WITHIN 40 MILES OF THE PROJECT SITE. TAKE NO MORE THAN 10% OF THE CANOPY OF ANY SINGLE PLANT. CUTTINGS SHALL BE 30 TO 45 INCHES IN LENGTH AND 0.75 TO 3 INCHES IN DIAMETER. THE BOTTOM END SHALL BE CLEANLY CUT AT A 45° ANGLE, AND THE TOP SHOULD BE CUT SQUARE. CLEARLY REMOVE ALL SIDE BRANCHES FROM THE CUTTING. FOLLOWING HARVEST, CUTTINGS SHALL BE STORED SUBMERGED FROM 1 TO 3 OF THE TOTAL LENGTH IN A BUCKET OF WATER, AND INSTALLED WITHIN 48 HOURS OF HARVEST. TO INSTALL STAKES, A PUNCH BAR OR ALGURR SHALL BE USED TO CREATE A PILOT HOLE CLOSE IN SIZE TO THE WILLOW STAKE. INSERT WILLOW STAKE, LEAVING 2 BUDS OR BUD SCARS ABOVE GROUND (APPROXIMATELY 3 TO 6 INCHES). HAND TAMP SOIL TO ENSURE NO VOIDS ARE PRESENT BETWEEN SOIL AND STAKE. CUTTINGS SHALL NOT BE DRIVEN INTO THE GROUND USING A Mallet OR HAMMER. STAKES THAT ARE SPLIT OR DAMAGED DURING INSTALLATION SHALL BE REMOVED AND REPLACED.
 6. WILLOW STAKE DESIGN BASED UPON DEFENSE TECHNICAL INFORMATION CENTER (DTIC) AND US ARMY CORPS OF ENGINEERS (USACE) TECHNICAL REPORT "LIVE STAKING AND JOINT PLANTING FOR STREAMBANK EROSION CONTROL", BY ROBBIN S. BOTT AND J. CRAIG FRECHOWSKI, DATED NOVEMBER 2007.

OUTFALL APRON DETAIL



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www.ramseylandengineering.com

DAVID RAMSEY
CEC# 73735

APR# 018-372-14

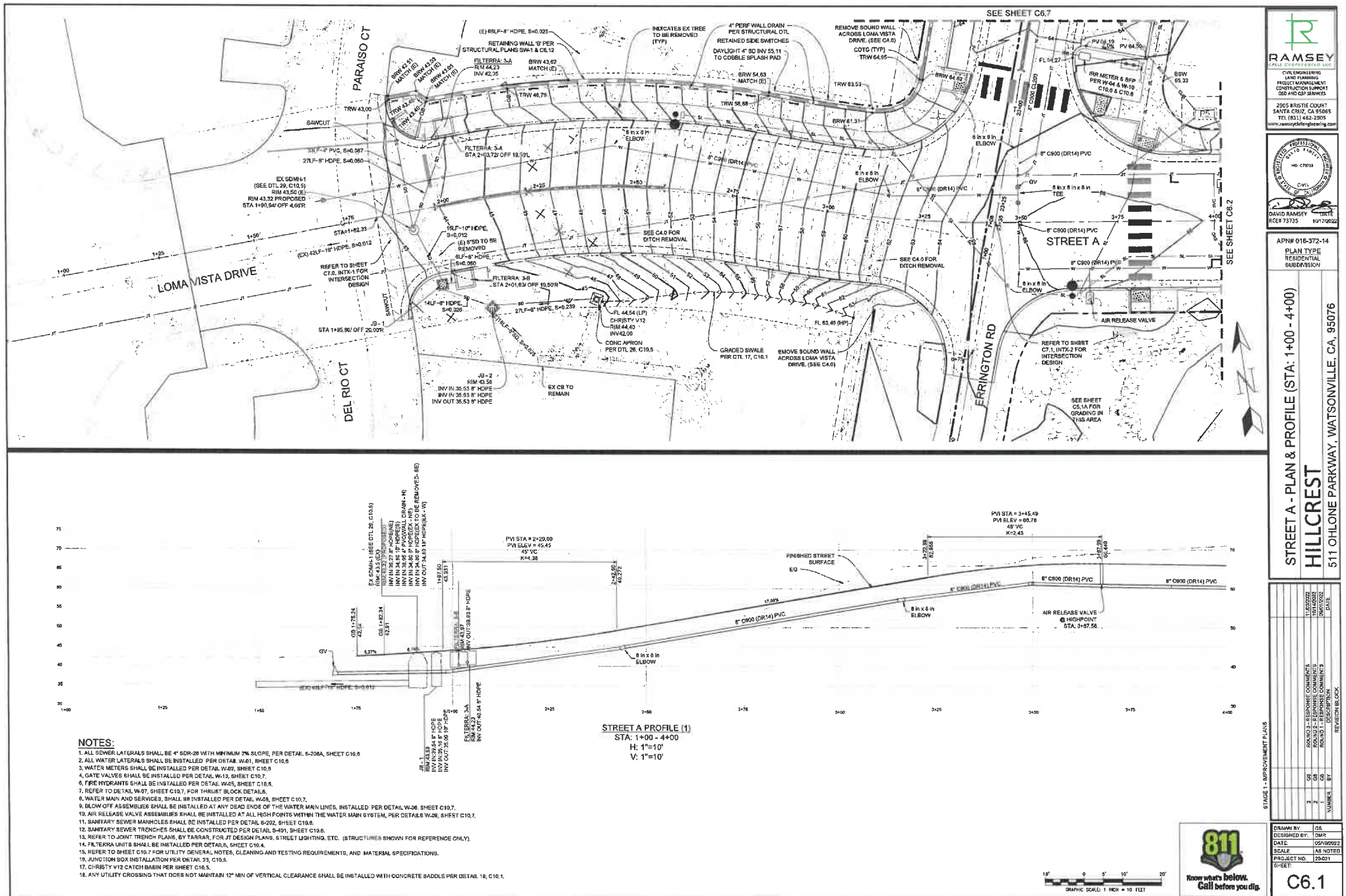
PLAN TYPE
RESIDENTIAL
SUBDIVISION

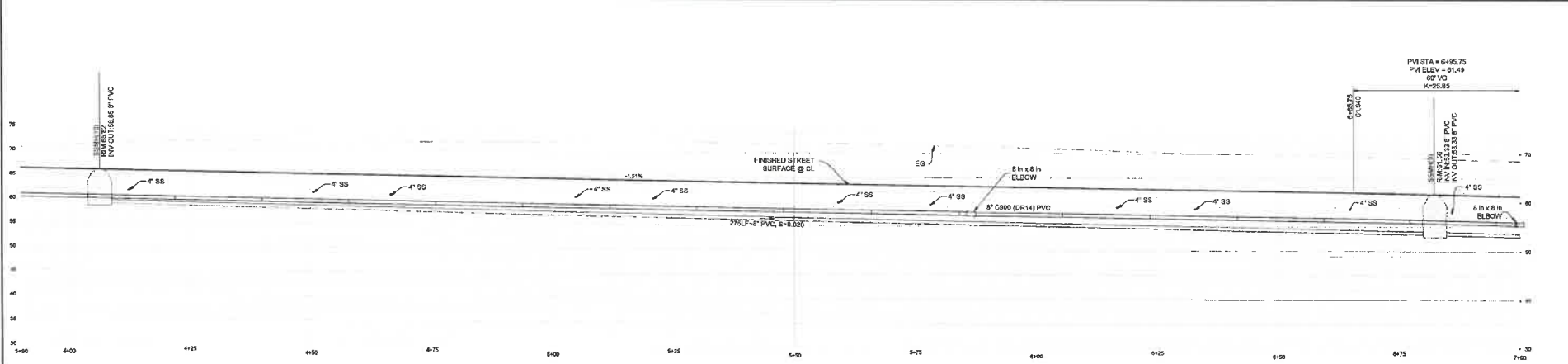
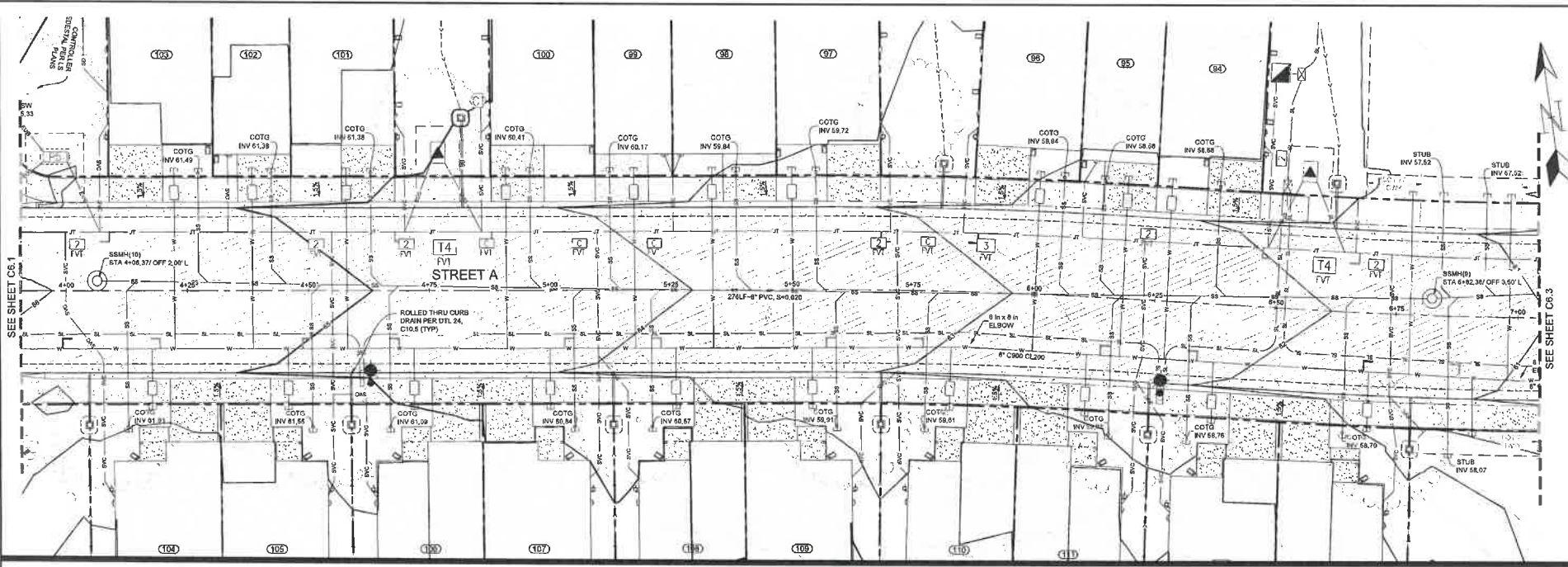
OUTFALL PLANS
HILLCREST
511 OHLONE PARKWAY, WATSONVILLE, CA, 95076

NO.	DATE	DESCRIPTION
1	11/06/2022	10% RFP
2	02/02/2023	20% RFP
3	03/02/2023	30% RFP
4	04/02/2023	40% RFP
5	05/02/2023	50% RFP
6	06/02/2023	60% RFP
7	07/02/2023	70% RFP

STAGE 1 - IMPROVEMENT PLANS

DRAWN BY: DS
DESIGNED BY: DMR
DATE: 06/20/2023
SCALE: AS NOTED
PROJECT NO: 20421
SHEET: C5.9

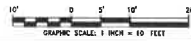




STREET A PROFILE (2)
 STA: 3+90 - 7+00
 H: 1"=10'
 V: 1"=10'

NOTE:
 1. SEWER LATERAL INVERTS ARE SHOWN AT THE LOCATION OF THE WATER MAIN CROSSING.

REFER TO SHEET C6.1 FOR
 UTILITY INSTALLATION NOTES
 AND DETAIL REFERENCES.



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DAVID RAMSEY
 CIVIL ENGINEER
 NO. C-7076
 EXPIRE 12/31/2022

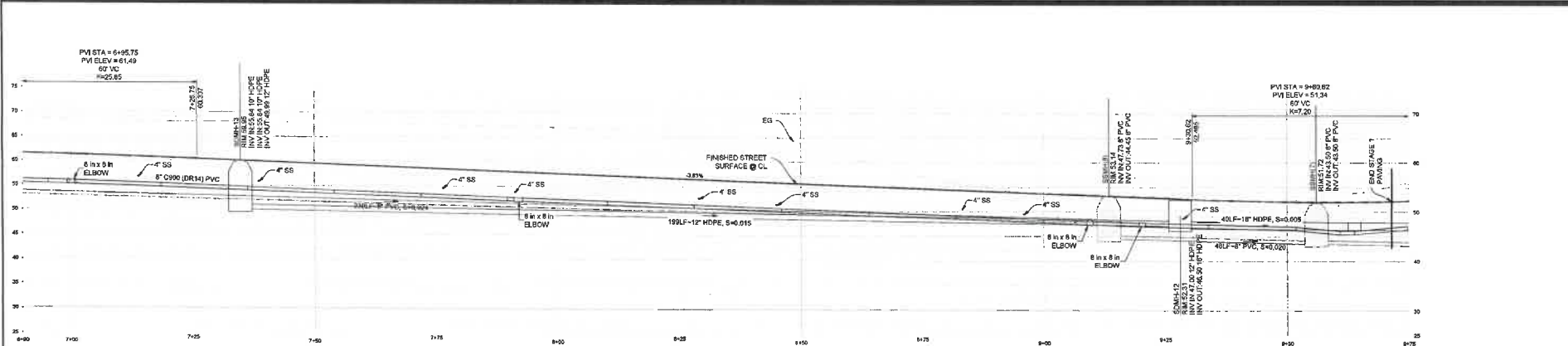
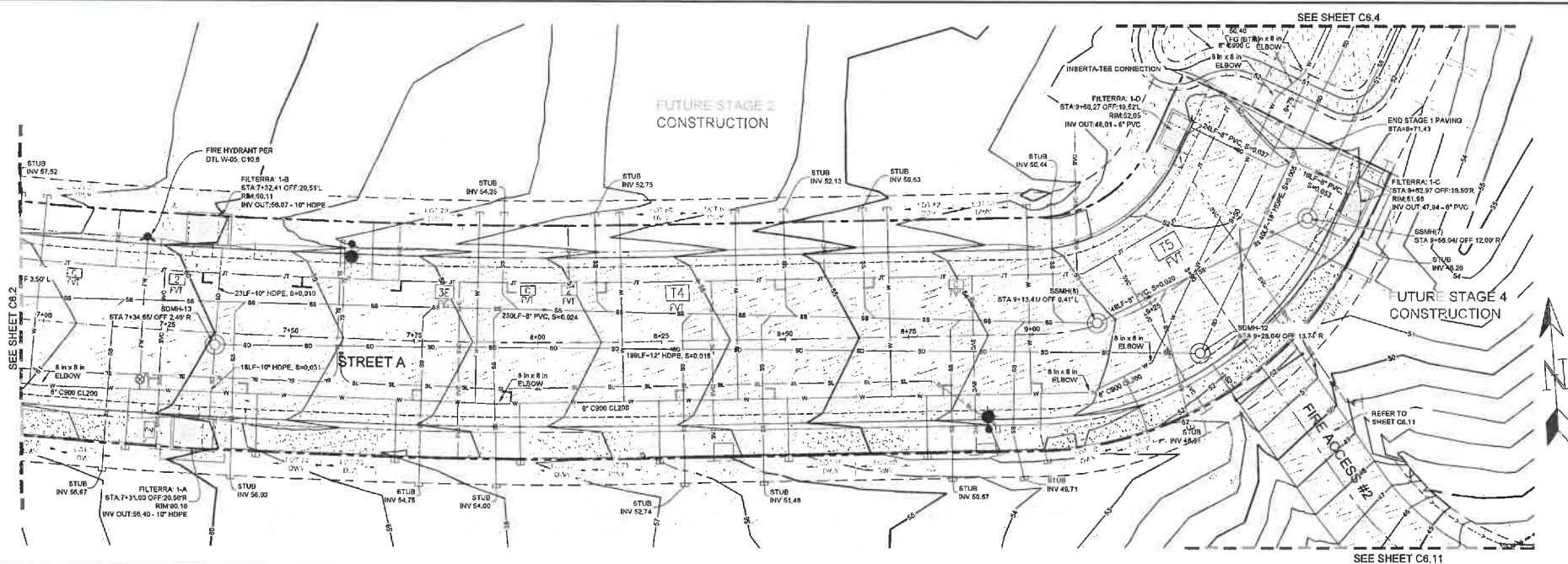
APN# 018-372-14
 PLAN TYPE
 RESIDENTIAL
 SUBDIVISION

STREET A - PLAN & PROFILE (STA: 3+90 - 7+00)
HILLCREST
 511 OHLENE PARKWAY, WATSONVILLE, CA, 95076

STAGE 1 - IMPROVEMENT PLANS			
NO.	DATE	BY	REVISION/DESCRIPTION
1	10/10/2022	DAVID RAMSEY	ISSUED FOR PERMITS
2	10/10/2022	DAVID RAMSEY	REVISED PER COMMENTS
3	10/10/2022	DAVID RAMSEY	REVISED PER COMMENTS

DRAWN BY: DB
 DESIGNED BY: DBR
 DATE: 05/10/2022
 SCALE: AS NOTED
 PROJECT NO: 26201
 SHEET:

C6.2



STREET A PROFILE (3)
 STA: 6+90 - 8+75
 H: 1"=10'
 V: 1"=10'

NOTE:
 1. SEWER LATERAL INVERTS ARE SHOWN AT THE LOCATION OF THE WATER MAIN CROSSING.

REFER TO SHEET C6.1 FOR
 UTILITY INSTALLATION NOTES
 AND DETAIL REFERENCES.



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DAVID RAMSEY
 RCEN 73735 DATE 10/17/2022

APN# 018-372-14

PLAN TYPE
 RESIDENTIAL
 SUBDIVISION

STREET A - PLAN & PROFILE (STA: 6+90-9+75)

HILLCREST

511 OHLONE PARKWAY, WATSONVILLE, CA, 95076

STAGE 1 - IMPROVEMENT PLANS			
NO.	REVISION	DATE	BY
1	ISSUED FOR PERMITS	10/17/2022	GS
2	REVISED - RESPONSE COMMENTS	10/17/2022	GS
3	REVISED - RESPONSE COMMENTS	10/17/2022	GS
4	REVISED - RESPONSE COMMENTS	10/17/2022	GS

DRAWN BY: GS

DESIGNED BY: DMR

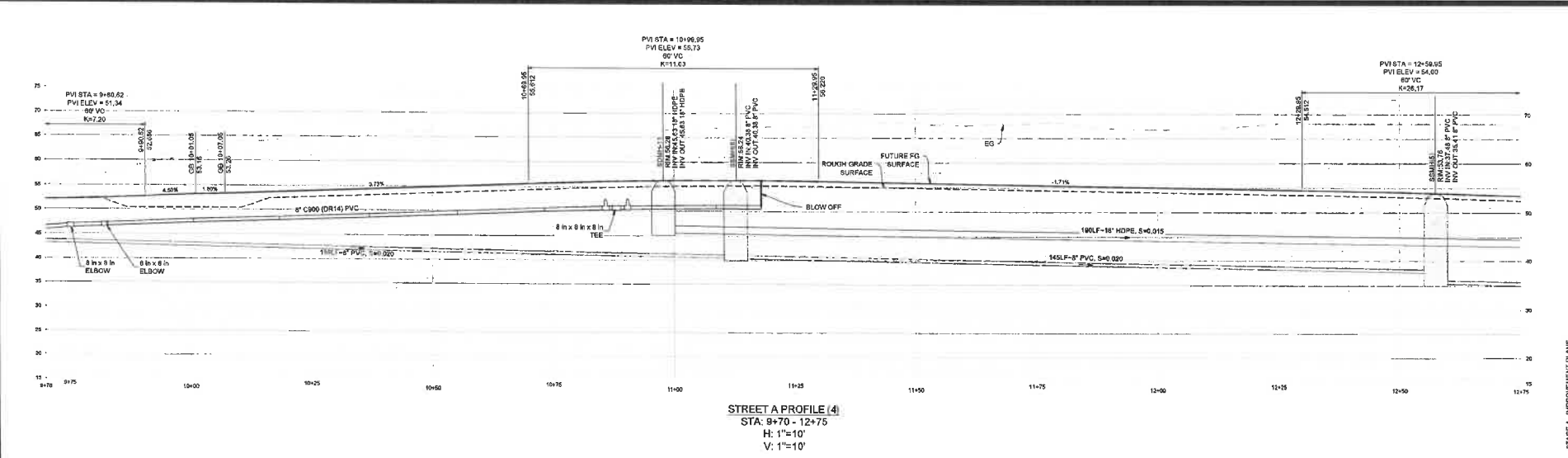
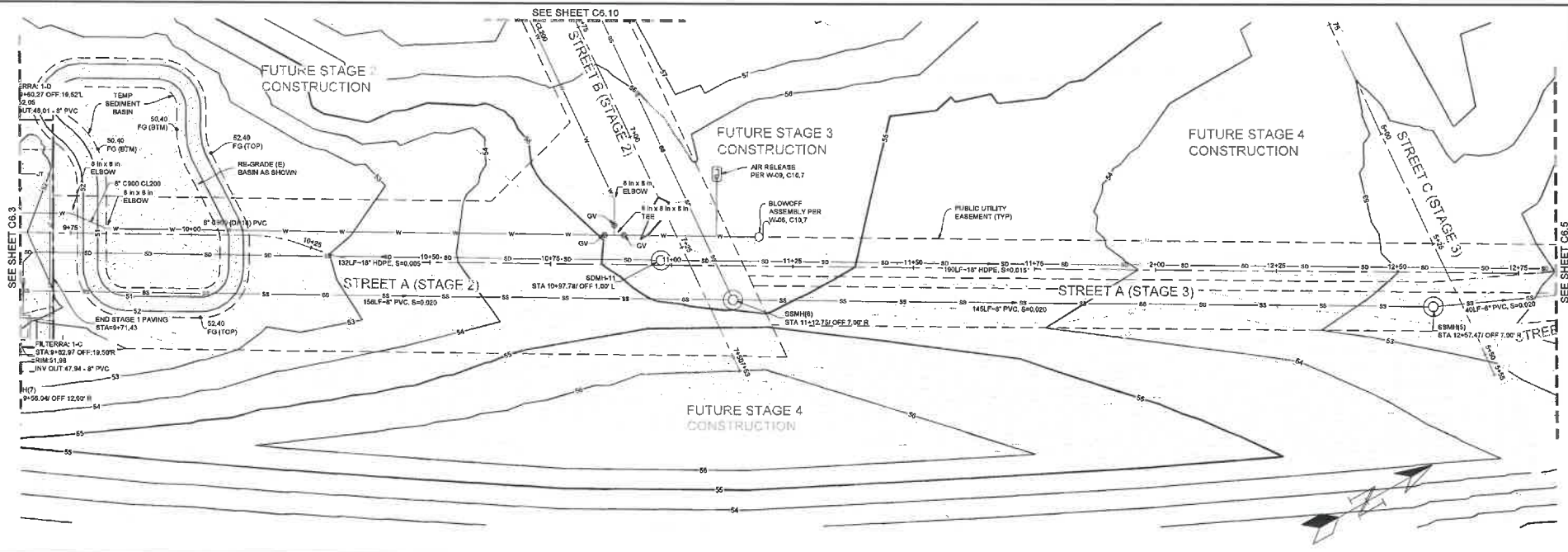
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SCALE: AS NOTED

PROJECT NO: 22451

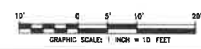
SHEET:

C6.3



STREET A PROFILE (4)
STA: 9+70 - 12+75
H: 1"=10'
V: 1"=10'

REFER TO SHEET C6.1 FOR
UTILITY INSTALLATION NOTES
AND DETAIL REFERENCES.



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WWW.RAMSEYENGINEERING.COM

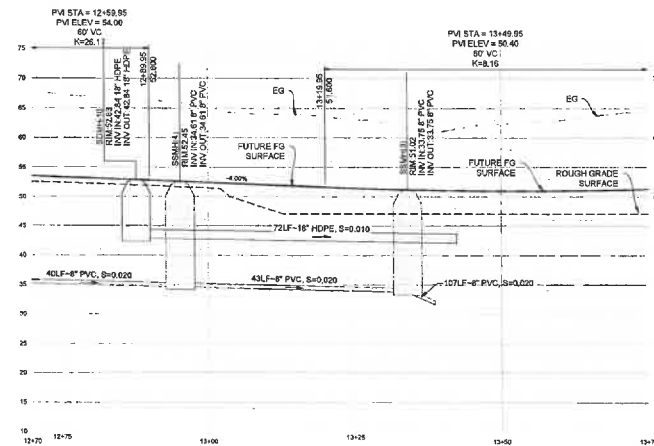
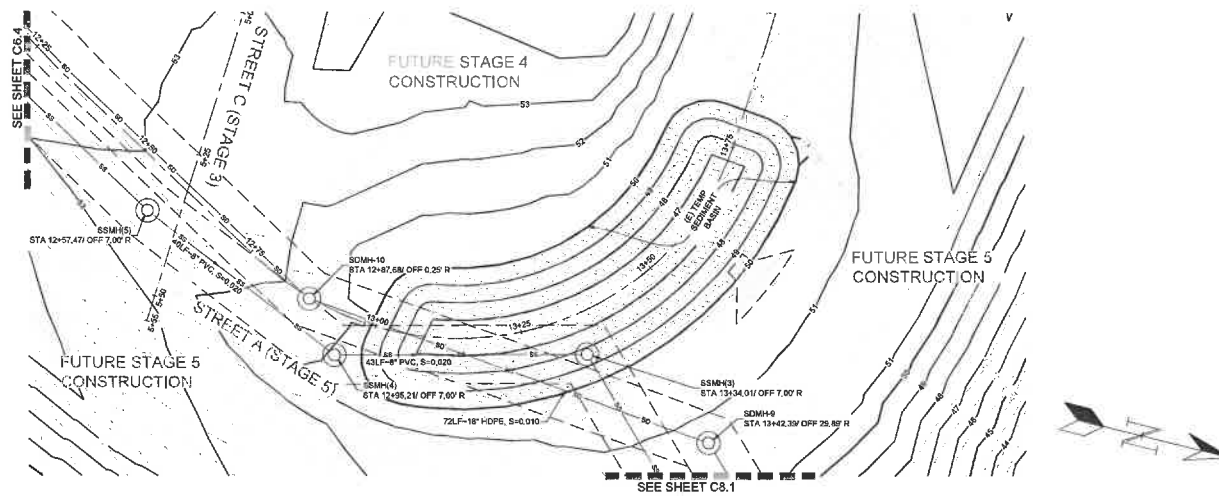
DAVID RAMSEY
REGISTERED PROFESSIONAL ENGINEER
NO. 12735
CIVIL
10/17/2022

APN# 018-372-14
PLAN TYPE
RESIDENTIAL
SUBDIVISION

STREET A - PLAN & PROFILE (STA: 9+70-12+75)
HILLCREST
511 OHLONE PARKWAY, WATSONVILLE, CA, 95076

DATE	BY	REVISION
11/02/22	OS	1. REVISION BLOCK
11/02/22	OS	2. REVISION BLOCK
11/02/22	OS	3. REVISION BLOCK
11/02/22	OS	4. REVISION BLOCK
11/02/22	OS	5. REVISION BLOCK
11/02/22	OS	6. REVISION BLOCK
11/02/22	OS	7. REVISION BLOCK
11/02/22	OS	8. REVISION BLOCK
11/02/22	OS	9. REVISION BLOCK
11/02/22	OS	10. REVISION BLOCK

DESIGNED BY: OS
DATE: 05/11/2022
SCALE: AS NOTED
PROJECT NO: 20-021
SHEET: C6.4



STREET A PROFILE (5)
STA: 12+70 - 13+75
H: 1"=10'
V: 1"=10'

REFER TO SHEET C6.1 FOR
UTILITY INSTALLATION NOTES
AND DETAIL REFERENCES.



STAGE 1 - IMPROVEMENT PLANS

DRAWN BY: GS
DESIGNED BY: DMK
DATE: 06/18/2020
SCALE: AS NOTED
PROJECT NO: 204021
SHEET:

C6.5

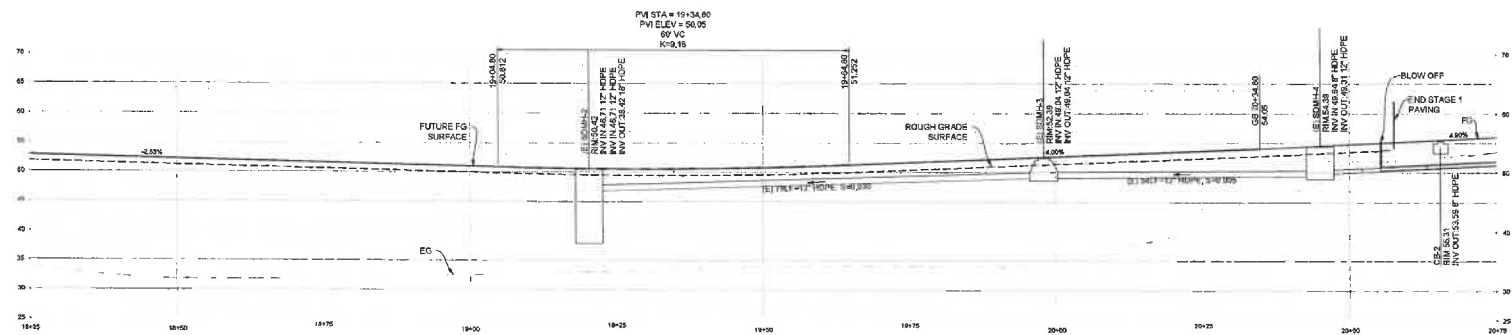
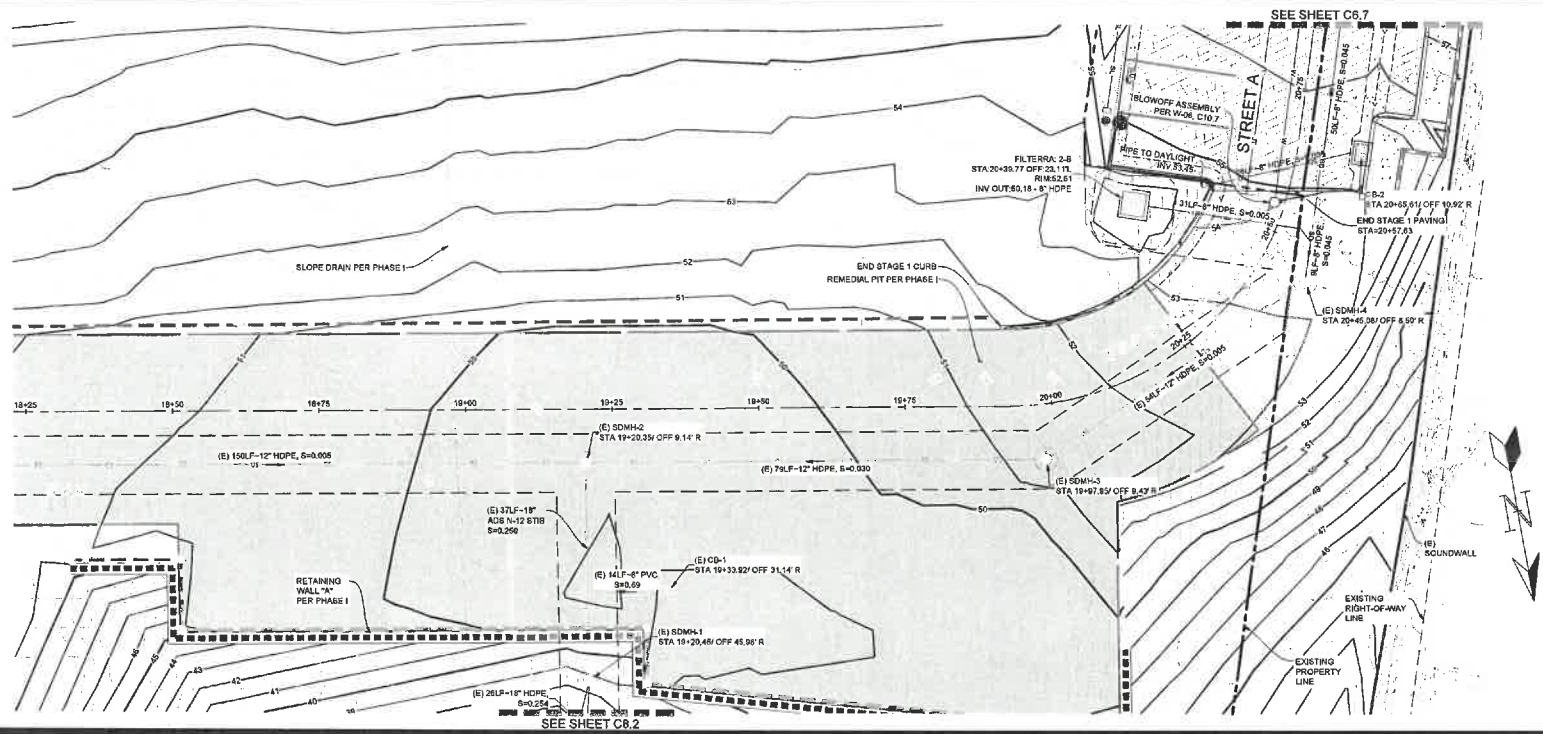
NUMBER	BY	DATE	REVISION BLOCK
1	GS	11/03/2019	REVISION 1 - UTILITY COLUMN 13
2	GS	10/14/2020	REVISION 2 - RESPONSE COMMENTS
3	GS	06/18/2020	REVISION 3 - RESPONSE COMMENTS

STREET A - PLAN & PROFILE (STA: 12+70-13+75)
HILLCREST
511 OHLONE PARKWAY, WATSONVILLE, CA. 95076

APN# 018-372-14
PLAN TYPE:
RESIDENTIAL
SUBDIVISION

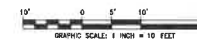
DAVID RAMSEY
RCEN 73735
DATE
10/17/2022

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GIS AND GPS SERVICES
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STREET A PROFILE (B)
 STA: 18+25 - 20+75
 H: 1"=10'
 V: 1"=10'

REFER TO SHEET C6.1 FOR
 UTILITY INSTALLATION NOTES
 AND DETAIL REFERENCES.



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 WWW.RAMSEYENGINEERING.COM

DAVID RAMSEY
 REG. 73725 10/17/2021

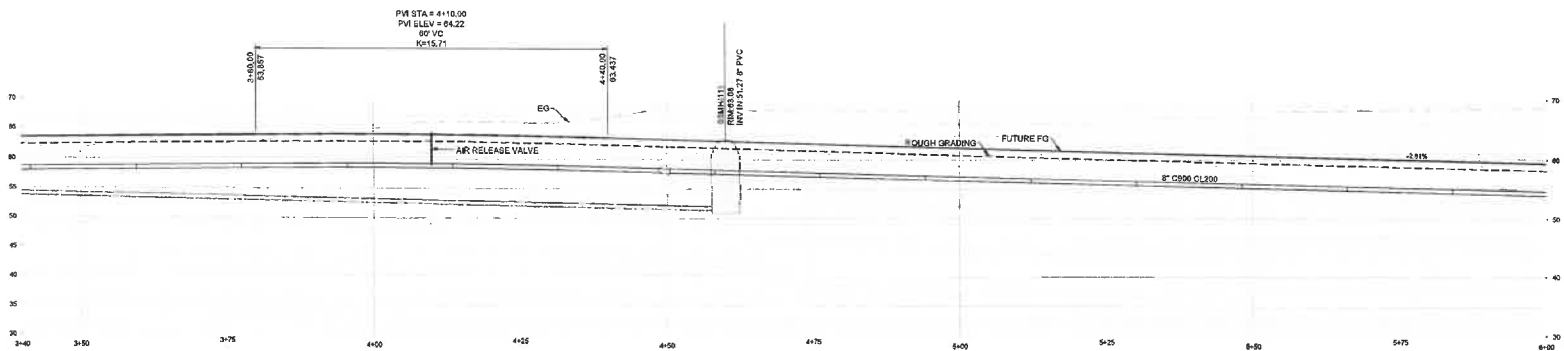
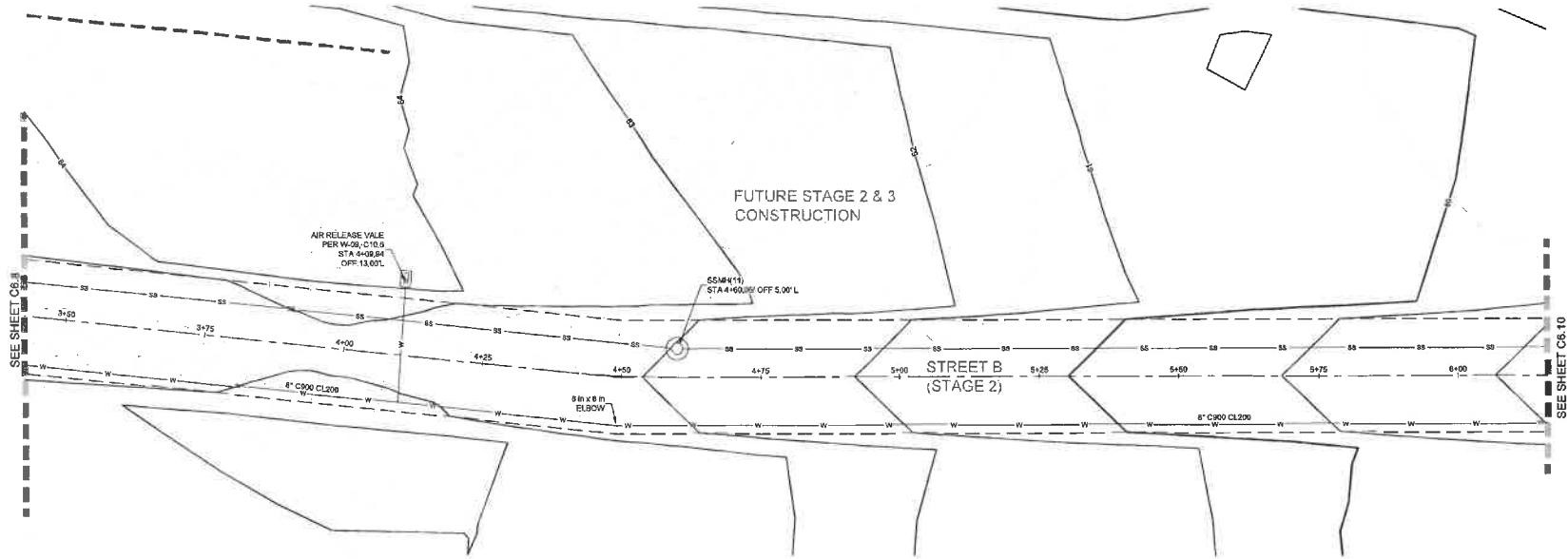
APRW 018-372-14
PLAN TYPE
 RESIDENTIAL
 SUBDIVISION

STREET A - PLAN & PROFILE (STA: 18+25-20+75)
HILLCREST
 511 OHLONE PARKWAY, WATSONVILLE, CA. 95076

DATE	BY	REVISION
10/16/2022	CS	ISSUED FOR PERMITS
10/16/2022	CS	ISSUED FOR PERMITS
08/17/2022	CS	ISSUED FOR PERMITS
08/17/2022	CS	ISSUED FOR PERMITS

STAGE 1 - IMPROVEMENT PLANS

DESIGNED BY:	CS
DATE:	05/19/2022
SCALE:	AS NOTED
PROJECT NO:	20-001
SHEET:	C6.6



STREET B - PROFILE (2)
STA: 3+40 - 6+00
H: 1"=10'
V: 1"=10'

REFER TO SHEET C6.1 FOR
UTILITY INSTALLATION NOTES
AND DETAIL REFERENCES.



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DAVID RAMSEY
REGISTERED PROFESSIONAL ENGINEER
NO. 67858
STATE OF CALIFORNIA
DATE 10/10/2022

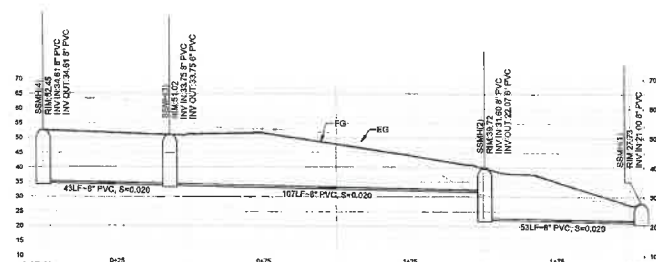
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PLAN TYPE
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SUBDIVISION

STREET B - PLAN & PROFILE (STA: 3+40-6+00)
HILLCREST
511 OHLONE PARKWAY, WATSONVILLE, CA, 95076

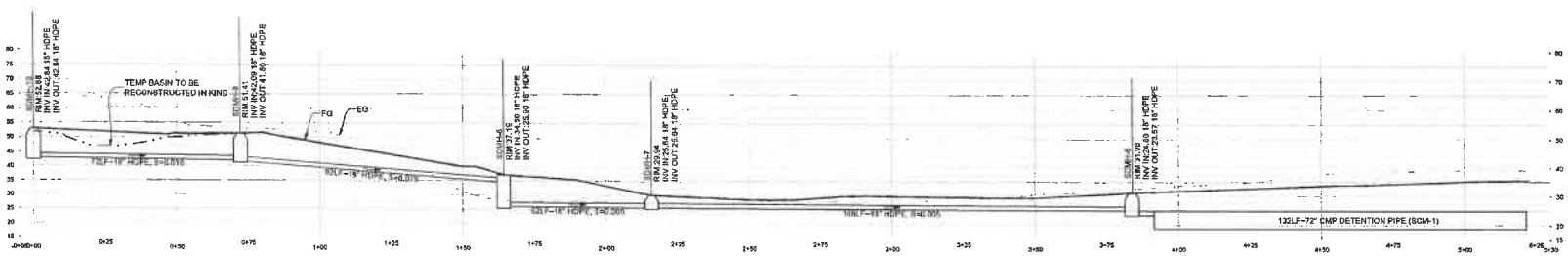
STAGE 1 - IMPROVEMENT PLANS

NO.	REVISION	DATE
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2	REVISIONS TO PERMITS	10/10/2022
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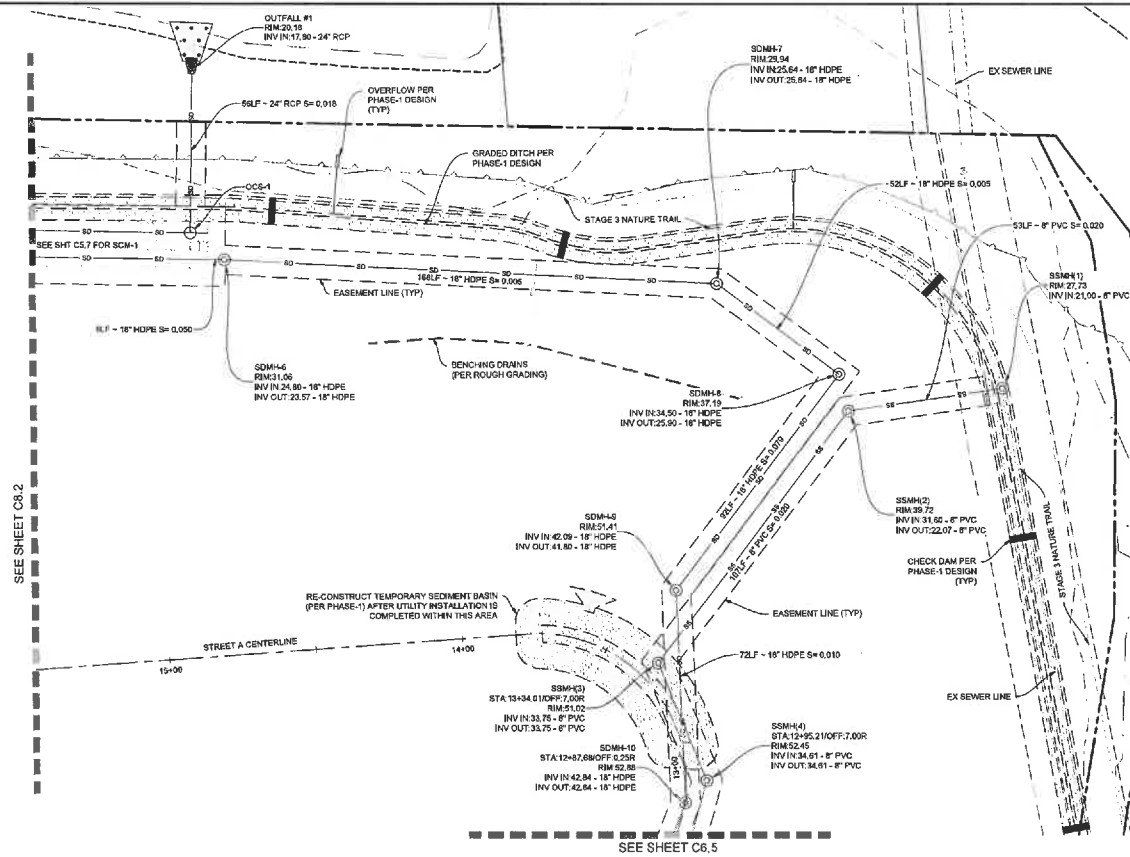
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DATE: 10/10/2022
SCALE: AS NOTED
PROJECT NO: 20-021
SHEET: C6.9



SEWER - END SECTION
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V: 1"=20'

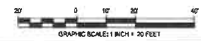


STORM (1) - END SECTION
STA: -0+05 - 5+30
H: 1"=20'
V: 1"=20'



SEE SHEET C8.2

SEE SHEET C6.5





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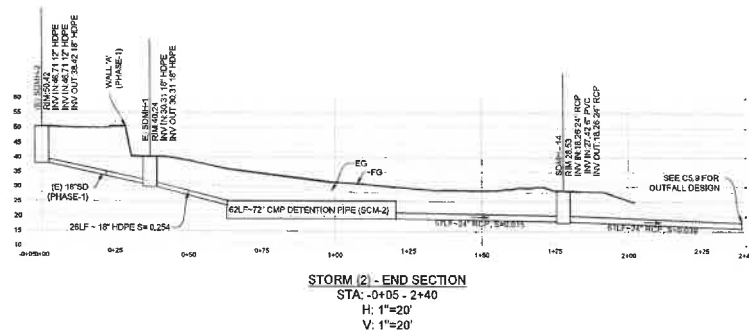
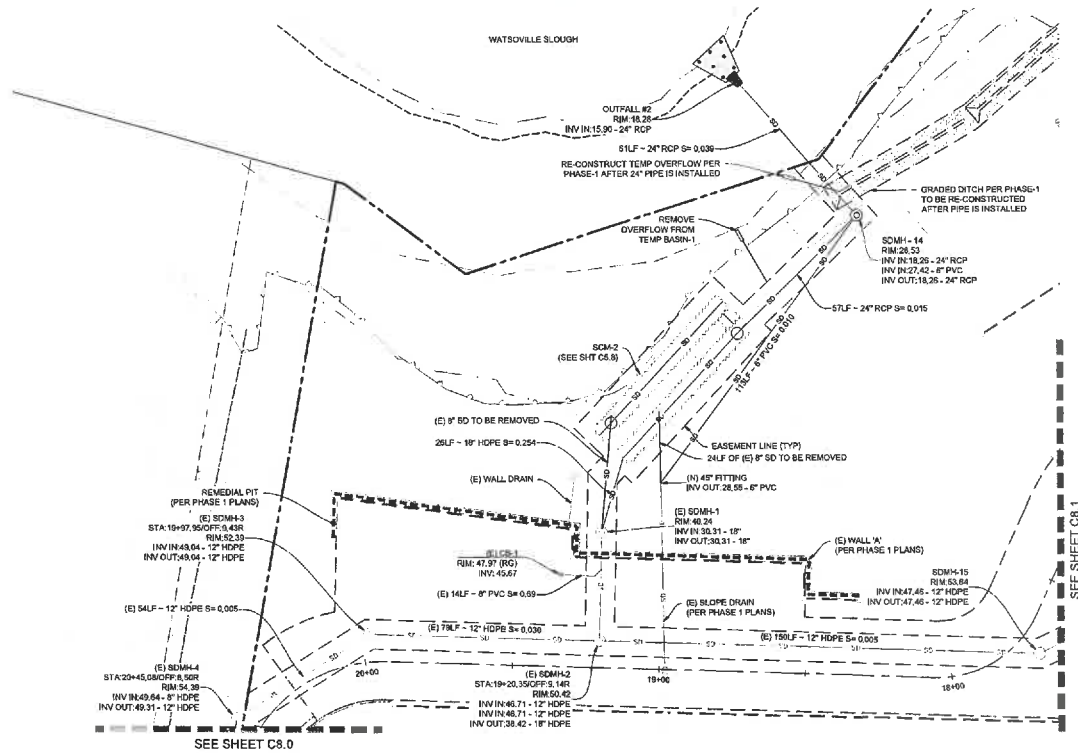
APN# 010-372-14
PLAN TYPE
RESIDENTIAL
SUBDIVISION

UTILITY PLAN
HILLCREST
511 OHLONE PARKWAY, WATSONVILLE, CA, 95076

NO.	DATE	BY	DESCRIPTION
1	11/05/2022	GS	ROUND 2 - RESPONSE COMMENTS
2	09/16/2022	GS	ROUND 1 - RESPONSE COMMENTS
3	08/10/2022	GS	DESIGN

DRAWN BY: GS
DESIGNED BY: DMF
DATE: 09/16/2022
SCALE: AS SHOWN
PROJECT NO: 20421
SHEET:

C8.1





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DAVID RAMSEY
RCE # 73735

APN# 018-372-14
PLAN TYPE
RESIDENTIAL
SURVEY/DESIGN

**UTILITY PLAN
HILLCREST**
511 OHLONE PARKWAY, WATSONVILLE, CA, 95076

STAGE - IMPROVEMENT PLANS		REVISION LOG	
NO.	DATE	DESCRIPTION	BY
1	11/09/2022	ROAD 2 - LANE WIDENING COMMENTS	CMR
2	11/09/2022	ROAD 1 - LANE WIDENING COMMENTS	CMR
3	11/09/2022	ROAD 1 - LANE WIDENING COMMENTS	CMR

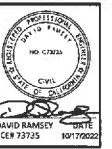
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SCALE: AS NOTED
PROJECT NO: 26-01
SHEET:

88
C8.2



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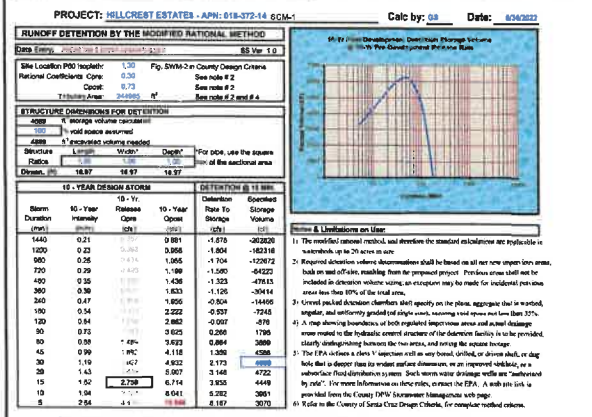
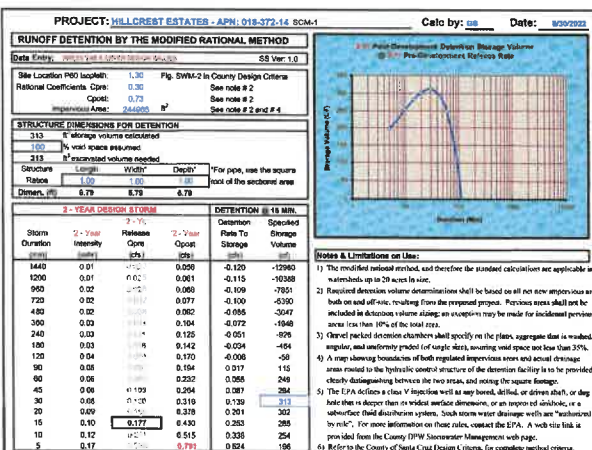
APN# 018-372-14
PLAN TYPE
RESIDENTIAL
SUBDIVISION

STORMWATER CONTROL PLAN - DMA AREAS
HILLCREST
511 OHLONE PARKWAY, WATSONVILLE, CA, 95076

REVISION BLOCK	DATE	BY	DESCRIPTION
1	11/03/2022	DAW	REVISION BLOCK
2	09/18/2022	DAW	REVISION BLOCK
3	09/18/2022	DAW	REVISION BLOCK
4	09/18/2022	DAW	REVISION BLOCK
5	09/18/2022	DAW	REVISION BLOCK
6	09/18/2022	DAW	REVISION BLOCK
7	09/18/2022	DAW	REVISION BLOCK
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17	09/18/2022	DAW	REVISION BLOCK
18	09/18/2022	DAW	REVISION BLOCK
19	09/18/2022	DAW	REVISION BLOCK
20	09/18/2022	DAW	REVISION BLOCK

911
Know what's below.
Call before you dig.

C9.0



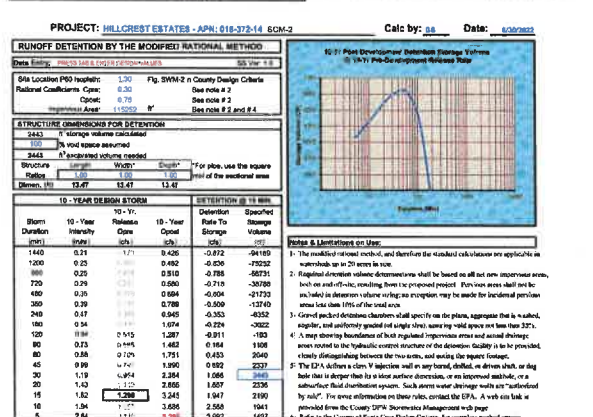
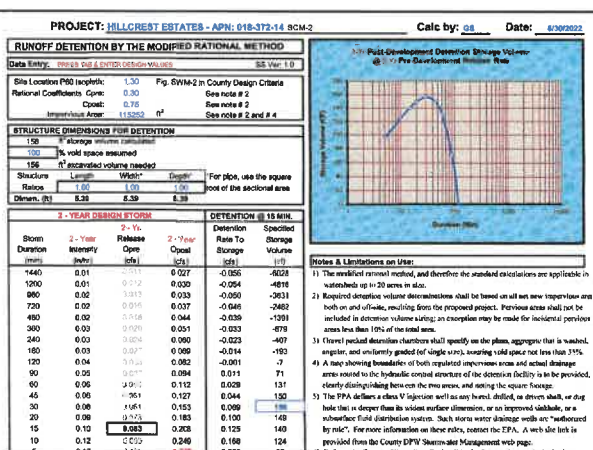
The spreadsheet formulas and format are copy protected to prevent alteration.
Any modified spreadsheet may be rejected, unless the changes made and the author are clearly identified, and the format is recognizably different.

FORM 1 - DETENTION VOLUME			
AREA	AREA	AREA	AREA
IMPERVIOUS AREA	24,600 SF	1.00	1.00
LANDSCAPE AREA	2,460 SF	0.10	0.10
TOTAL	27,060 SF	1.10	1.10

FORM 2 - 10-YR DETENTION VOLUME			
10-YR DETENTION VOLUME	1,500 CFS	1.00	1.00
10-YR PRE-RELEASE RATE	1.074 CFS	0.72	0.72
10-YR POST-RELEASE RATE	2.726 CFS	1.80	1.80

FORM 3 - 10-YR DETENTION VOLUME			
10-YR DETENTION VOLUME	1,500 CFS	1.00	1.00
10-YR PRE-RELEASE RATE	1.074 CFS	0.72	0.72
10-YR POST-RELEASE RATE	2.726 CFS	1.80	1.80

NOTES:
1. SEE SUPPLEMENTAL SWM-17 SPREADSHEETS FOR CALC.



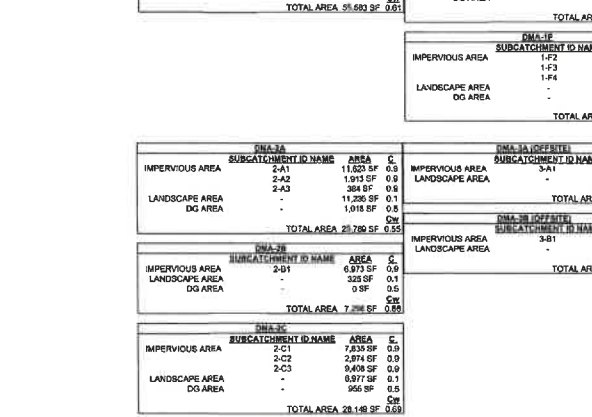
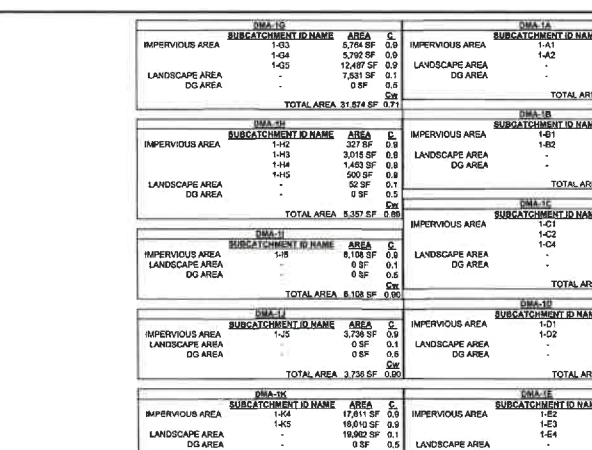
The spreadsheet formulas and format are copy protected to prevent alteration.
Any modified spreadsheet may be rejected, unless the changes made and the author are clearly identified, and the format is recognizably different.

FORM 1 - DETENTION VOLUME			
AREA	AREA	AREA	AREA
IMPERVIOUS AREA	11,520 SF	1.00	1.00
LANDSCAPE AREA	1,152 SF	0.10	0.10
TOTAL	12,672 SF	1.10	1.10

FORM 2 - 10-YR DETENTION VOLUME			
10-YR DETENTION VOLUME	750 CFS	1.00	1.00
10-YR PRE-RELEASE RATE	0.537 CFS	0.72	0.72
10-YR POST-RELEASE RATE	1.363 CFS	1.80	1.80

FORM 3 - 10-YR DETENTION VOLUME			
10-YR DETENTION VOLUME	750 CFS	1.00	1.00
10-YR PRE-RELEASE RATE	0.537 CFS	0.72	0.72
10-YR POST-RELEASE RATE	1.363 CFS	1.80	1.80

NOTES:
1. 10% RULE APPLIED TO TECHNICAL INFRASTRUCTURE FOR INFILTRATION
2. 10% RULE APPLIED TO 10% PERCENTILE STORM



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Any modified spreadsheet may be rejected, unless the changes made and the author are clearly identified, and the format is recognizably different.

FORM 1 - DETENTION VOLUME			
AREA	AREA	AREA	AREA
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2. 10% RULE APPLIED TO 10% PERCENTILE STORM

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PLAN TYPE:
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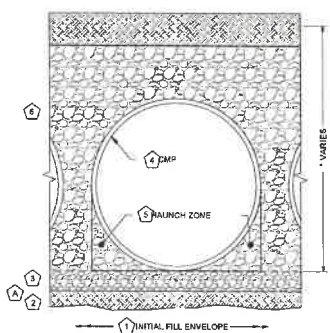
HILLCREST

511 OHLONE PARKWAY, WATSONVILLE, CA, 95076

STAGE 1 - IMPROVEMENT PLANS

DRAWN BY: GS
DESIGNED BY: DMR
DATE: 06/30/2022
SCALE: AS NOTED
PROJECT NO: 20-021
SHEET:

C9.1



- MINIMUM WIDTH DEPENDS ON SITE CONDITIONS AND ENGINEERING JUDGEMENT.
- PRIORITY TO PLACING THE BEDDING. THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION, THEY SHALL BE REMOVED AND BROUGHT BACK TO THE GRADE WITH A FILL MATERIAL AS APPROVED BY THE ENGINEER.
- HAUNCH ZONE MATERIAL SHALL BE PLACED AND UNIFORMLY COMPACTED WITHOUT SOFT SPOTS.

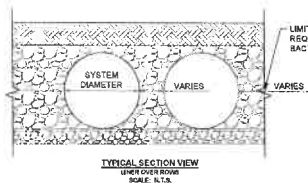
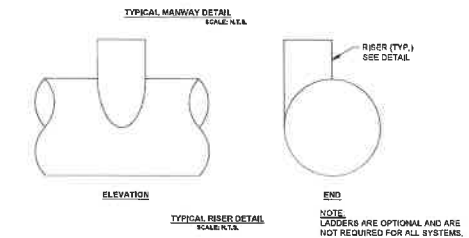
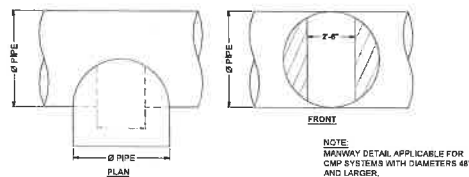
BACKFILL
MATERIAL SHALL BE PLACED IN 8"-10" MAXIMUM LIFTS. INADEQUATE COMPACTION CAN LEAD TO EXCESSIVE DEFLECTIONS WITHIN THE SYSTEM AND SETTLEMENT OF THE SOILS OVER THE SYSTEM. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A TWO-LIFT DIFFERENCE BETWEEN THE SIDES OF ANY PIPE IN THE SYSTEM AT ALL TIMES DURING THE BACKFILL PROCESS. BACKFILL SHALL BE ADVANCED ALONG THE LENGTH OF THE SYSTEM AT THE SAME RATE TO AVOID DIFFERENTIAL LOADING ON ANY PIPES IN THE SYSTEM.

EQUIPMENT USED TO PLACE AND COMPACT THE BACKFILL SHALL BE OF A SIZE AND TYPE SO AS NOT TO DISTORT, DAMAGE, OR DISPLACE THE PIPE. ATTENTION MUST BE GIVEN TO PROVIDING ADEQUATE MINIMUM COVER FOR EACH EQUIPMENT. MAINTAIN BALANCED LOADING ON ALL PIPES IN THE SYSTEM DURING ALL SUCH OPERATIONS.

OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS. REFER TO TYPICAL BACKFILL DETAIL FOR MATERIAL REQUIRED.

CMP Drainage Pipe			
Material Location	Description	Material Designation	Designation
Backfill	An open graded, free draining stone, with a particle size of 1/2" to 1 1/2" maximum is recommended.	ASHTO M 140, A-1 or ASHTO M 43, 3, 4	Material shall be worked into the pipe haunches by means of shovel-slicing, rodding, air tamper, vibratory rod, or other effective methods. Compaction of all placed fill material is necessary and shall be completed externally when no further settling of the material is observed under the compactor, or under foot, and the Project Engineer or the representative is satisfied with the level of compaction.
Bedding Base	Well graded granular bedding material conforming to the following specifications:	ASHTO M 63, 3, 357, 4, 487, 5, 56, 57	For well proportioned larger than 20" or dedicated bedding base is not required for CMP. Pipes may be placed on the bedding base composed of rock or other suitable material. For 20" and smaller pipes, bedding base shall be composed of a relatively uniform, well graded granular material. For 20" and smaller pipes, bedding base shall be composed of a relatively uniform, well graded granular material. For 20" and smaller pipes, bedding base shall be composed of a relatively uniform, well graded granular material.
Geotextile Layer	None	None	Geotextile does not recommend geotextiles be placed under the level of infiltration surface due to the propensity for geotextiles to slip over time.

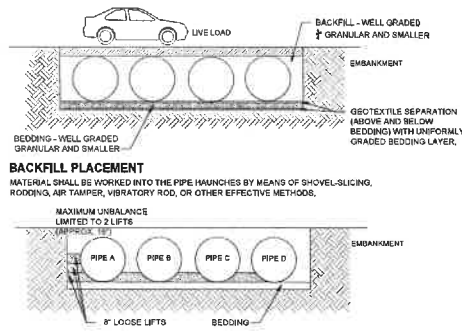
Note: The listed ASHTO designations are for gradation only. The stone must also be angular and clean.



IN-SITU TRENCH WALL

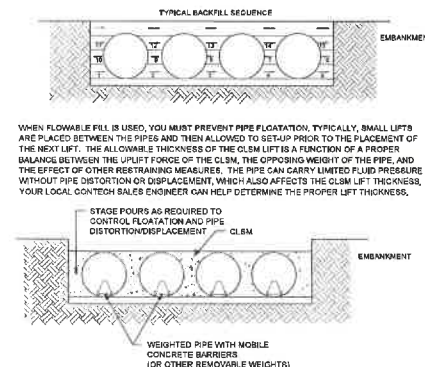
IF EXCAVATION IS REQUIRED, THE TRENCH WALL NEEDS TO BE CAPABLE OF SUPPORTING THE LOAD THAT THE PIPE EXERTS AS THE SYSTEM IS LOADED. IF SOILS ARE NOT CAPABLE OF SUPPORTING THESE LOADS, THE PIPE CAN DEFLECT. PERFORM A SIMPLE SOIL PRESSURE CHECK USING THE APPLIED LOADS TO DETERMINE THE LIMITS OF EXCAVATION BEYOND THE SPRING LINE OF THE OUTER MOST PIPES.

IN MOST CASES THE REQUIREMENTS FOR A SAFE WORK ENVIRONMENT AND PROPER BACKFILL PLACEMENT AND COMPACTION TAKE CARE OF THIS CONCERN.



IF ASHTO TEST PROCEDURES ARE DETERMINED INFEASIBLE BY THE GEOTECHNICAL ENGINEER OF RECORD, COMPACTION IS CONSIDERED WHEN NO FURTHER YIELDING OF THE MATERIAL IS OBSERVED UNDER THE COMPACTOR, OR UNDER FOOT, AND THE GEOTECHNICAL ENGINEER OF RECORD (OR REPRESENTATIVE THEREOF) IS SATISFIED WITH THE LEVEL OF COMPACTION.

FOR LARGE SYSTEMS, CONVEYOR SYSTEMS, BACKHOES WITH LONG REACHES OR DRAGLINES WITH LONG REACHES MAY BE USED TO PLACE BACKFILL. ONCE MINIMUM COVER FOR CONSTRUCTION LOADING ACROSS THE ENTIRE WIDTH OF THE SYSTEM IS REACHED, ADVANCE THE EQUIPMENT TO THE END OF THE RECENTLY PLACED LIFT, AND BEGIN THE SEQUENCE AGAIN UNTIL THE SYSTEM IS COMPLETELY BACKFILLED. THIS TYPE OF CONSTRUCTION SEQUENCE PROVIDES ROOM FOR STOCKPILED BACKFILL DIRECTLY BEHIND THE BACKHOES, AS WELL AS THE MOVEMENT OF CONSTRUCTION TRAFFIC. MATERIAL STOCKPILES ON TOP OF THE BACKFILLED DETENTION SYSTEM SHOULD BE LIMITED TO 8" TO 10" MAXIMUM AND MUST PROVIDE BALANCED LOADING ACROSS ALL BARRELS. TO DETERMINE THE PROPER COVER OVER THE PIPES TO ALLOW THE MOVEMENT OF CONSTRUCTION EQUIPMENT SEE TABLE 1, OR CONTACT YOUR LOCAL CONTECH SALES ENGINEER.

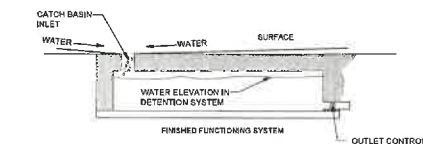


CONSTRUCTION LOADING

TYPICALLY, THE MINIMUM COVER SPECIFIED FOR A PROJECT ASSUMES A 20 LBS. LIVE LOAD, BECAUSE CONSTRUCTION LOADS OFTEN EXCEED DESIGN LIVE LOADS. INCREASED TEMPORARY MINIMUM COVER REQUIREMENTS ARE NECESSARY, SINCE CONSTRUCTION EQUIPMENT VARIATION FROM JOB TO JOB, IT IS BEST TO ADDRESS EQUIPMENT SPECIFIC MINIMUM COVER REQUIREMENTS WITH YOUR LOCAL CONTECH SALES ENGINEER DURING YOUR PRE-CONSTRUCTION MEETING.

ADDITIONAL CONSIDERATIONS

BECAUSE MOST SYSTEMS ARE CONSTRUCTED BELOW-GRADE, RAINFALL CAN RAPIDLY FILL THE EXCAVATION, POTENTIALLY CAUSING FLOATATION AND MOVEMENT OF THE PREVIOUSLY PLACED PIPES. TO HELP MITIGATE POTENTIAL PROBLEMS, IT IS BEST TO START THE INSTALLATION AT THE DOWNSTREAM END WITH THE OUTLET ALREADY CONSTRUCTED TO ALLOW A ROUTE FOR THE WATER TO ESCAPE. TEMPORARY DIVERSION MEASURES MAY BE REQUIRED FOR HIGH FLOWS DUE TO THE RESTRICTED NATURE OF THE OUTLET PIPE.



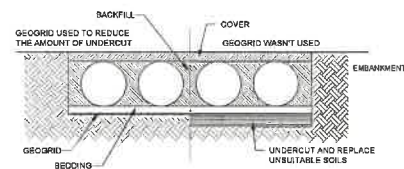
CMP DETENTION INSTALLATION GUIDE

PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THIS GUIDE, ARE APPROPRIATE FOR YOUR SITE.

FOUNDATION

CONSTRUCT A FOUNDATION THAT CAN SUPPORT THE DESIGN LOADING APPLIED BY THE PIPE AND ADJACENT BACKFILL WEIGHT AS WELL AS MAINTAIN ITS INTEGRITY DURING CONSTRUCTION.

IF SOFT OR UNSUITABLE SOILS ARE ENCOUNTERED, REMOVE THE POOR SOILS DOWN TO A SUITABLE DEPTH AND THEN BUILD UP TO THE APPROPRIATE ELEVATION WITH A COMPETENT BACKFILL MATERIAL. THE STRUCTURAL FILL MATERIAL, GRADATION SHOULD NOT ALLOW THE MIGRATION OF FINES, WHICH CAN CAUSE SETTLEMENT OF THE DETENTION SYSTEM OR PAVEMENT ABOVE. IF THE STRUCTURAL FILL MATERIAL IS NOT COMPATIBLE WITH THE UNDERLYING SOILS, AN ENGINEERING FABRIC SHOULD BE USED AS A SEPARATOR. IN SOME CASES, USING A BTFF REINFORCING GEOTEXTILE REDUCES OVER EXCAVATION AND REPLACEMENT FILL QUANTITIES.



GRADE THE FOUNDATION SUBGRADE TO A UNIFORM OR SLIGHTLY SLOPING GRADE. IF THE SUBGRADE IS CLAY OR RELATIVELY NON-POROUS AND THE CONSTRUCTION SEQUENCE WILL LAST FOR AN EXTENDED PERIOD OF TIME, IT IS BEST TO SLOPE THE GRADE TO ONE END OF THE SYSTEM. THIS WILL ALLOW EXCESS WATER TO DRAIN QUICKLY, PREVENTING SATURATION OF THE SUBGRADE.

CMP DETENTION SYSTEM INSPECTION AND MAINTENANCE

UNDERGROUND DETENTION SYSTEMS MUST BE INSPECTED AND MAINTAINED AT REGULAR INTERVALS FOR PURPOSES OF PERFORMANCE AND LONGEVITY.

INSPECTION

INSPECTION IS THE KEY TO EFFECTIVE MAINTENANCE OF CMP DETENTION SYSTEMS AND IS EARLY PERFORMED. CONTECH RECOMMENDS ONGOING ANNUAL INSPECTIONS. SITES WITH HIGH TRASH LOAD OR SMALL OUTLET CONTROL ORIFICES MAY NEED MORE FREQUENT INSPECTIONS. THE RATE AT WHICH THE SYSTEM COLLECTS POLLUTANTS WILL DEPEND MORE ON SITE SPECIFIC ACTIVITIES RATHER THAN THE SIZE OR CONFIGURATION OF THE SYSTEM.

INSPECTIONS SHOULD BE PERFORMED MORE OFTEN IN EQUIPMENT WASHDOWN AREAS, IN CLIMATES WHERE SANDING AND/OR SALTING OPERATIONS TAKE PLACE, AND IN OTHER VARIOUS INSTANCES IN WHICH ONE WOULD EXPECT HIGHER ACCUMULATIONS OF SEDIMENT OR ABRASIVE CORROSIVE CONDITIONS. A RECORD OF EACH INSPECTION IS TO BE MAINTAINED FOR THE LIFE OF THE SYSTEM.

MAINTENANCE

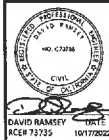
CMP DETENTION SYSTEMS SHOULD BE CLEANED WHEN AN INSPECTION REVEALS ACCUMULATED SEDIMENT OR TRASH IS CLOGGING THE DISCHARGE ORIFICE.

ACCUMULATED SEDIMENT AND TRASH CAN TYPICALLY BE EVACUATED THROUGH THE MANHOLE OVER THE OUTLET ORIFICE. IF MAINTENANCE IS NOT PERFORMED AS RECOMMENDED, SEDIMENT AND TRASH MAY ACCUMULATE IN FRONT OF THE OUTLET ORIFICE. MANHOLE COVERS SHOULD BE SECURELY SEALED FOLLOWING CLEANING ACTIVITIES. CONTECH SUGGESTS THAT ALL SYSTEMS BE DESIGNED WITH AN ACCESS/INSPECTION MANHOLE SITUATED AT OR NEAR THE INLET AND THE OUTLET ORIFICE. SHOULD IT BE NECESSARY TO GET INSIDE THE SYSTEM TO PERFORM MAINTENANCE ACTIVITIES, ALL APPROPRIATE PRECAUTIONS REGARDING CONFINED SPACE ENTRY AND OSHA REGULATIONS SHOULD BE FOLLOWED.

ANNUAL INSPECTIONS ARE BEST PRACTICE FOR ALL UNDERGROUND SYSTEMS. DURING THIS INSPECTION, IF EVIDENCE OF MALFUNCTIONING IS OBSERVED WITHIN THE SYSTEM, IT IS BEST PRACTICE FOR THE SYSTEM TO BE RINSED, INCLUDING ABOVE THE SPRING LINE SOON AFTER THE SPRING THAW AS PART OF THE MAINTENANCE PROGRAM FOR THE SYSTEM.

MAINTAINING AN UNDERGROUND DETENTION OR INFILTRATION SYSTEM IS EASIEST WHEN THERE IS NO FLOW ENTERING THE SYSTEM. FOR THIS REASON, IT IS A GOOD IDEA TO SCHEDULE THE CLEANOUT DURING DRY WEATHER.

THE FOREGOING INSPECTION AND MAINTENANCE EFFORTS HELP INSURE UNDERGROUND PIPE SYSTEMS USED FOR STORMWATER STORAGE CONTINUE TO FUNCTION AS INTENDED BY IDENTIFYING RECOMMENDED REGULAR INSPECTION AND MAINTENANCE PRACTICES. INSPECTION AND MAINTENANCE RELATED TO THE STRUCTURAL INTEGRITY OF THE PIPE, OR THE SOUNDNESS OF PIPE JOINT CONNECTIONS IS BEYOND THE SCOPE OF THIS GUIDE.



APN 018-372-14
PLAN TYPE
RESIDENTIAL
SUBDIVISION

DETECTION DETAILS
HILLCREST
511 OHLONE PARKWAY, WATSONVILLE, CA. 95076

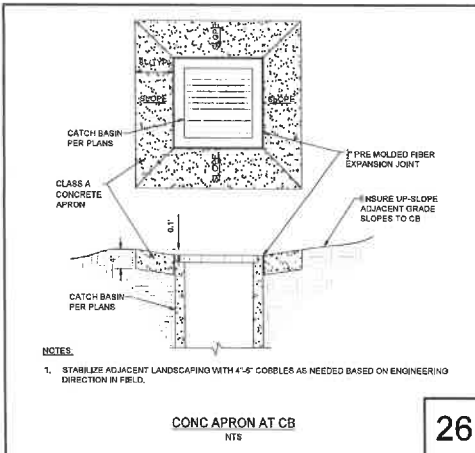
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DESIGNED BY: GMR
DATE: 05/10/2023
SCALE: AS NOTED
PROJECT NO: 26-021
SHEET:

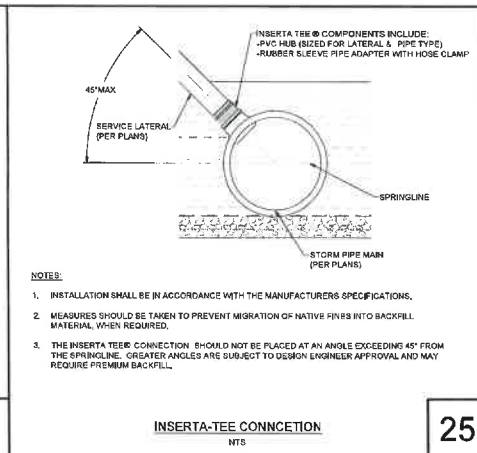
CONTECH
ENGINEERED SOLUTIONS LLC

8025 Centro Polaris Dr., Suite 400, West Chester, OH 45399
800.335.1122 610.645.7009 913.645.7893 FAX

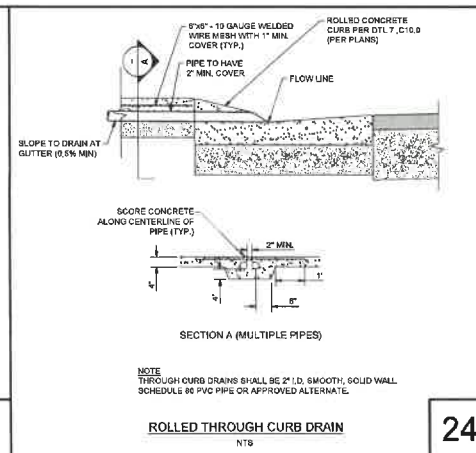
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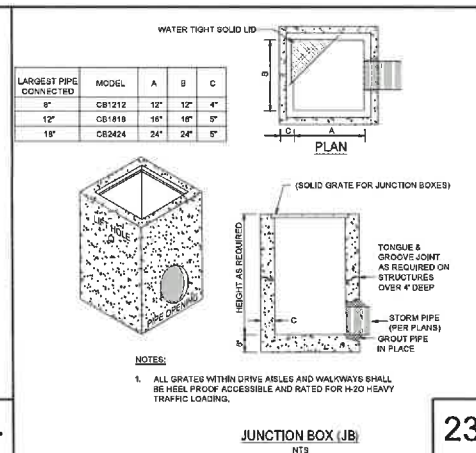
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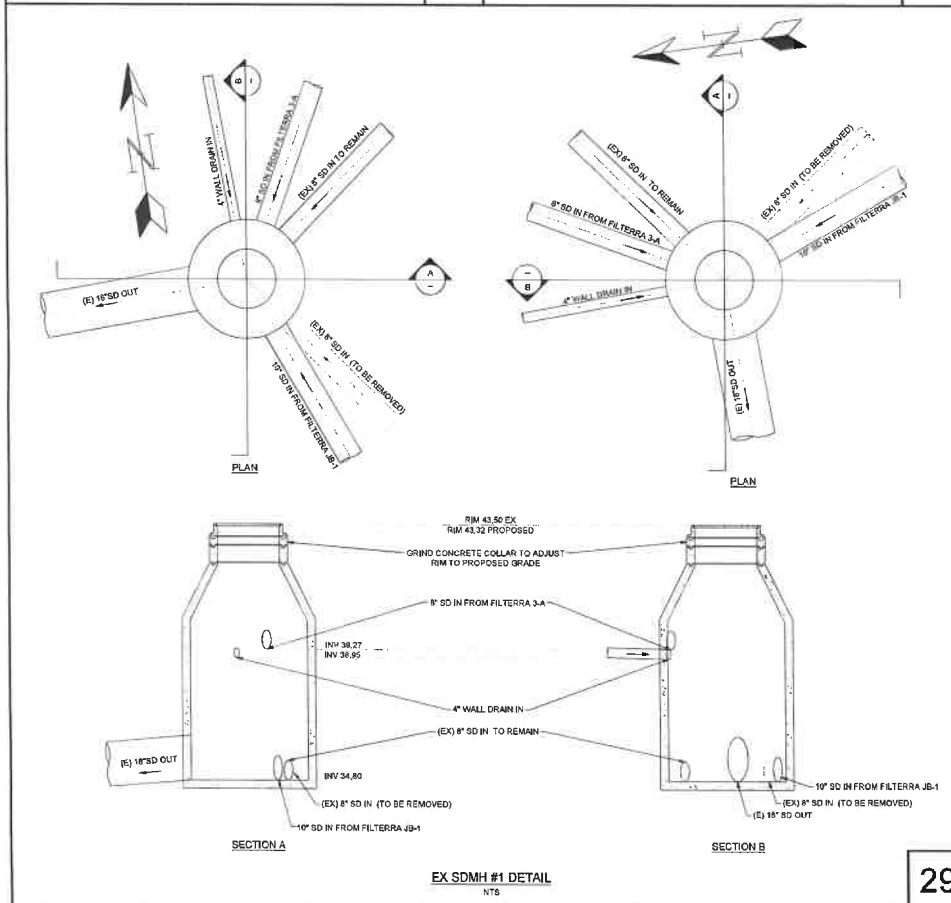
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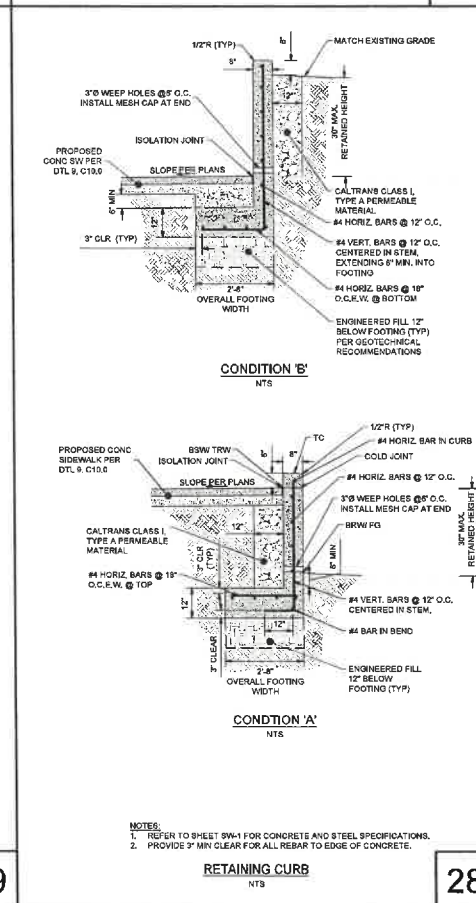
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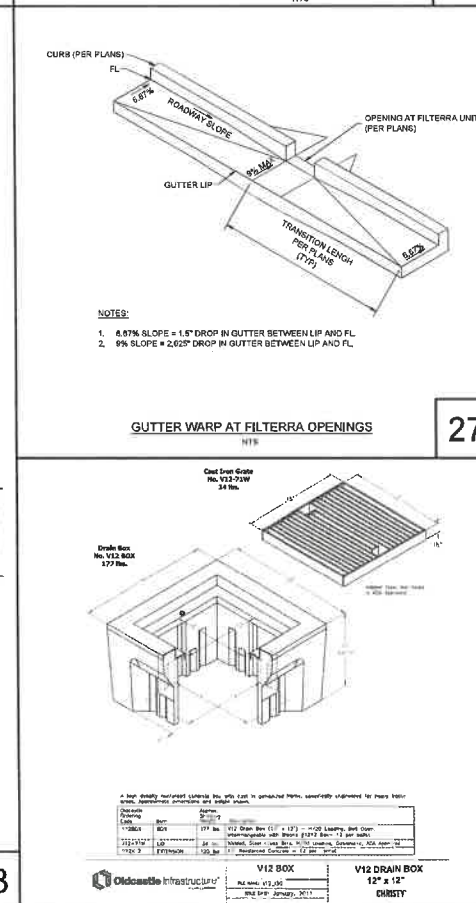
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RAMSEY
CIVIL ENGINEERING & ARCHITECTURE

2305 KINISTY COURT
SANTA CRUZ, CA 95065
TEL (831) 462-7905
www.ramseycivil.com

DAVID RAMSEY
RCEB 73735 10/17/2022

APRW 018-372-14

PLAN TYPE
RESIDENTIAL
SUBDIVISION

DETAILS

HILLCREST
511 OHLONE PARKWAY, WATSONVILLE, CA. 95076

STAGE 1 - IMPROVEMENT PLANS

REVISIONS

NO.	DATE	BY	REVISION
1	10/17/2022	DAVID RAMSEY	ISSUED FOR PERMIT
2	10/17/2022	DAVID RAMSEY	ISSUED FOR PERMIT
3	10/17/2022	DAVID RAMSEY	ISSUED FOR PERMIT

DESIGNED BY: DS

DATE: 10/17/2022

SCALE: AS NOTED

PROJECT NO: 20-051

SHEET: C10.5

EXHIBIT C
SWCP

**STORMWATER TREATMENT FACILITIES
OPERATION AND MAINTENANCE PLAN
for
Hillcrest Estates Development**

City of Watsonville
Santa Cruz County, California

May, 2024

Prepared by:

Ramsey CE, Inc.
2905 Kristie Ct
Santa Cruz CA 95065
831-462-2905



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Appendix A – BMP Facility Inspection and Maintenance Checklists & Logs

I. Maintenance Agreement

(REFER TO HOA STORMWATER MAINTENANANCE AGREEMENT)

II. Designation of Individuals Responsible for Stormwater Treatment BMP Operation and Maintenance

Date Completed:	
Facility Name:	
Facility Address:	
Property Owner's Designated Contact for Operation and Maintenance	
Name:	Title or Position:
Telephone:	Alternate Telephone:
Email:	
Property Owner's Off-Hours or Emergency Contact	
Name:	Title or Position:
Telephone:	Alternate Telephone:
Email:	

NOTE: This form must be updated every time the responsible individuals change

III. Introduction

The project site is located at 511 Ohlone Parkway, Watsonville California (APN: 018-372-14). This plan addresses the operation and maintenance of stormwater facilities constructed as part of the stage 1 development. The Stormwater Maintenance Agreement shall transfer with ownership of the subject property.

IV. Responsibility for Maintenance

The property owner is responsible for maintaining the private drainage system, including rain gutters, downspouts, areas drains, risers, inlets, catch basins, clean-outs, pipelines, pavements, Filterra units, stormwater detention chambers, and outfalls.

IV.A. Contact Information for Responsible Individuals

Contact information for each property owner's representative is shown on the designation forms in Section I. A new form must be completed and added to Section I whenever any of this information changes or is updated. When this occurs, a copy of the new table must be faxed or mailed to the City of Scotts Watsonville, Attention: Public Works Department.

IV.B. Funding for Operation and Maintenance

The funding for all operations and maintenance will be the sole responsibility of the property owner. The property owner shall perform regular inspection and routine maintenance on all stormwater BMPs in order to ensure continued function and effectiveness at managing flow and removing pollutants. The owner shall be responsible for the execution and documentation of the following: a maintenance procedure and schedule as well as inspection reports.

IV.C. Staff Training Program

Maintenance staff retained by the owner will familiarize themselves with the storm drain system. Maintenance staff shall locate and inspect every catch basin and stormwater BMP identified in the exhibit in order to perform routine cleaning and maintenance according to the schedules and checklists provided in Appendix A.

Keep safety considerations at the forefront of inspection procedures at all times. Likely hazards should be anticipated and avoided. Never enter a confined space (outlet structure, manhole, etc) without proper training or equipment. A confined space should never be entered without at least one additional person present.

If a highly toxic or flammable substance is discovered, the inspector(s) should leave the immediate area and contact 911. Never open an unknown sealed container to check its

contents. If any hazard is found within the facility area that poses an immediate threat to public safety, contact 911 immediately.

Vertical drops may be encountered in areas located within and around drainage facilities. Avoid walking on top of retaining walls or other structures that have a significant vertical drop.

V. Maintenance Schedule

The inspector shall use the checklists found in Appendix A to perform the necessary maintenance on the following inspection schedule at a minimum:

- Routine Maintenance Activities: The facilities will be examined bimonthly (from October 15th to April 15th)
- Following Significant Rain Events: A significant rain event will be considered to be one that produces approximately a half-inch or more rainfall in a 24-hour period.
- Prior to the start of the Rainy Season: by the end of September of each year
- Annually during Winter: at least once between December-February

VI. Source Control Measures

Below are the means and methods to controlling the listed pollutant generating activities that shall be controlled throughout both construction activities and completed project.

- Accidental spills & leaks - during construction the contractor shall have a spill response kit onsite at all times as well as a trained spill response team. All drains shall be marked with "No Dumping Drains To Bay" to prevent pollutants from entering the storm drain system. Post construction, the property manager shall be trained in spill & leak response and have the proper kit onsite to properly clean and remove any incidental spills.
- Interior floor drains – N/A.
- Parking/storage area maintenance - during construction, equipment storage area shall be protected with a 30 mil plastic liner as well wattles on the downhill side.
- Indoor & structural pest control - all pest control measures shall be performed to prevent any discharges into the storm drain system. Any required pest control activities shall submit a plan of action to the property manager specifying the means and methods to prevent any said discharges prior to performing treatment.
- Landscape/outdoor pesticide use - pesticides shall be used only if necessary and shall be limited to required treatment area. Spot treatment with handheld sprayer shall be used in low quantities.
- Refuse areas – N/A.
- Industrial processes – N/A.

- Outdoor storage of equipment or materials - all materials, construction or other, shall be stored indoors or within a covered (protected) area.
- Vehicle & equipment cleaning - all construction equipment and vehicles shall be cleaned offsite. Facility equipment can be cleaned onsite within the storage bays. Runoff shall be captured within an area drain directed to the sanitary sewer system. Discharge to storm drain inlet and pipes and/or stormwater mitigation facilities is prohibited.
- Vehicle & equipment repair & maintenance - all construction vehicles and equipment shall be repaired and maintained offsite at the contractor's yard. Facility equipment can be repaired and maintained onsite within designated storage bays. Runoff shall be captured within an area drain directed to the sanitary sewer system. Discharge to storm drain inlet and pipes and/or stormwater mitigation facilities is prohibited.
- Fire sprinkler test water - any water from fire sprinkler testing shall be directed to the sanitary sewer system. Discharge to storm drain inlet and pipes and/or stormwater mitigation facilities is prohibited.
- Drain or wash water from boiler drain lines, condensate drain lines, roof top equipment, drainage sumps & other sources - no drainage sumps are proposed onsite. All drainage from other described areas shall be directed to the sanitary sewer line. Discharge to storm drain inlet and pipes and/or stormwater mitigation facilities is prohibited.
- Unauthorized non-stormwater discharges - all unauthorized non-stormwater discharges, during and after construction, shall be reported to the City of Watsonville.
- Building & ground maintenance - any routine maintenance performed shall be completed to reduce or eliminate any non-stormwater discharges from the site. If necessary, a permit to discharge runoff from these activities to the sanitary sewer system shall be obtained from the City of Watsonville.

APPENDIX A

BMP Facility Inspection and Maintenance Checklists & Logs

Stormwater BMP Inspection and Maintenance Log

Facility Name	
Address	
Begin Date	End Date

Date	Inspected by:	Cause for Inspection	Exceptions Noted	Comments and Actions Taken

Instructions: Use this form as a summary of information after using the checklists and procedures listed on the following pages. Record all inspections and maintenance on this form. Use additional log sheets and/or attach extended comments or documentation as necessary. Submit a copy of the completed log with the annual independent inspectors' report to the municipality, and start a new log at that time.

Inspected by — Note all inspections and maintenance on this form, including the required independent annual inspection.

Cause for inspection — Note if the inspection is routine, pre-rainy-season, post-storm, annual, or in response to a noted problem or complaint.

Exceptions noted — Note any condition that requires correction or indicates a need for maintenance.

Comments and actions taken — Describe any maintenance done and need for follow-up.

FACILITY INSPECTION AND MAINTENANCE CHECKLISTS

Included in this appendix are a series of checklists that can be used by both inspectors and maintenance personnel to ensure that observed deficiencies in BMPs are maintained appropriately. The BMP Inspection/Maintenance Checklists are presented in the following order:

- 1. ROUTINE INSPECTION AND MAINTENANCE**
- 2. ANNUAL INSPECTION AND MAINTENANCE**
- 3. INSPECTION AND MAINTENANCE FOLLOWING A SIGNIFICANT RAIN EVENT**
- 4. VEGETATED SWALE FILTER**
- 5. DETENTION CHAMBERS**
- 6. CATCH BASINS AND DRAINAGE STRUCTURES**
- 7. FILTERRA TREATMENT DEVICES**

1.) Checklist for Routine Inspection and Maintenance of Drainage System Bimonthly (from October 15th to April 15th)

- ☐ Examine facilities for evidence of trash, graffiti, vandalism, debris
- ☐ Examine each catch basin for trash or debris and clean if necessary.
- ☐ Confirm there is no blockage in the storm drain lines.
- ☐ Check finish grade surrounding inlets and ensure no erosion or blockages are present.
- ☐ Fix any damaged or disconnected piping entering into the catch basins.
- ☐ Follow the individualized Facility Inspection and Maintenance checklists for each BMP (on the following sheets)

2.) Checklist for Annual Inspection and Maintenance of Drainage System (System Wide by end of September)

- ☐ All tasks listed in “routine maintenance”
- ☐ Remove any leaves or branches within 10 feet of the catch basins.
- ☐ Ensure that the finish grade adjacent to the catch basins is flush with the rims in order to allow positive drainage of storm run-off into the catch basins.
- ☐ Check for slope stability adjacent to discharge areas
- ☐ Clear roof gutters of leaves and debris

3.) Checklist for following Significant Rain Events

- ☐ Confirm there is no ponding on the surface
- ☐ Inspect inlets for trash or debris (to be removed, if found)
- ☐ Mulch or surface material will be raked smooth or replaced as needed
- ☐ Outlet structure will be inspected for any obstructions
- ☐ Check for any potential blockage in storm drain lines, remove if present
- ☐ Remove any fallen leaves or branches within 4 feet of outfall.
- ☐ Fix any damage or disconnected piping

4. Vegetated Swale Filter Inspection and Maintenance Checklist

Date: _____

Type of Inspection: : ☐ post-storm ☐ annual ☐ routine ☐ post-wet season ☐ pre-wet season

Facility: _____ Inspector(s): _____

Defect	Conditions When Maintenance Is Needed	Inspection Result (0, 1, or 2)	Date Maintenance Performed	Comments or Action(s) Taken to Resolve Issue
Appearance	Untidy			
Trash and Debris Accumulation	Trash and debris accumulated in the swale.			
Vegetation	When the grass becomes excessively tall (greater than 10-inches); when nuisance weeds and other vegetation start to take over.			
Excessive Shading	Vegetation growth is poor because sunlight does not reach swale. Evaluate vegetation suitability.			
Poor Vegetation Coverage	When vegetation is sparse or bare or eroded patches occur in more than 10% of the swale bottom. Evaluate vegetation suitability.			
Sediment Accumulation	Sediment depth exceeds 2 inches or covers more than 10% of design area.			
Standing Water	When water stands in the swale between storms and does not drain freely.			
Flow spreader or Check Dams	Flow spreader or check dams uneven or clogged so that flows are not uniformly distributed through entire swale width.			
Constant Baseflow	When small quantities of water continually flow through the swale, even when it has been dry for weeks and an eroded, muddy channel has formed in the swale bottom.			
Inlet/Outlet	Inlet/outlet areas clogged with sediment and/or debris.			
Erosion/ Scouring	Eroded or scoured swale bottom due to flow channelization, or higher flows. Eroded or rilled side slopes.			
	Eroded or undercut inlet/outlet structures			

*Enter 0 if satisfactory, 1 if maintenance is needed. Enter 2 if maintenance was performed same day.

5. Detention Basin Inspection and Maintenance Checklist

Date: _____

Type of Inspection: ☐ post-storm ☐ annual ☐ routine ☐ post-wet season ☐ pre-wet season

Facility: _____ Inspector(s): _____

Defect	Conditions When Maintenance Is Needed	Inspection Result (0, 1 or 2)*	Date Maintenance Performed	Comments or Action(s) Taken to Resolve Issue
GENERAL				
Appearance	Untidy, un-mown (if applicable)			
Vegetation	Access problems or hazards; dead or dying trees			
	Poisonous or nuisance vegetation or noxious weeds			
Insects	Insects such as wasps and hornets interfere with maintenance activities.			
Rodent Holes	Any evidence of rodent holes if facility is acting as a dam or berm, or any evidence of water piping through dam or berm via rodent holes			
Trash and Debris	Trash and debris > 5 cf/1,000 sf (one standard size garbage can).			
Pollutants	Any evidence of oil, gasoline, contaminants or other pollutants			
Inlet/Outlet Pipe	Inlet/Outlet pipe clogged with sediment and/or debris. Basin not draining.			
Erosion	Erosion of the basin's side slopes and/or scouring of the basin bottom that exceeds 2-inches, or where continued erosion is prevalent.			
Piping	Evidence of or visible water flow through basin berm.			
Settlement of Basin Dike/Berm	Any part of these components that has settled 4-inches or lower than the design elevation, or inspector determines dike/berm is unsound.			
Sediment Accumulation in Basin Bottom	Sediment accumulations in basin bottom that exceeds the depth of sediment zone plus 6-inches.			
Tree or shrub growth	Trees > 4 ft in height with potential blockage of inlet, outlet or spillway; or potential future bank stability problems			

*Enter 0 if satisfactory, 1 if maintenance is needed. Enter 2 if maintenance was performed same day.

6. Catch Basins & Drainage Structures Inspection and Maintenance Checklist

Date: _____

Type of Inspection: ☐ post-storm ☐ annual ☐ routine ☐ post-wet season ☐ pre-wet season

Facility: _____ Inspector(s): _____

Defect	Conditions When Maintenance Is Needed	Inspection Result (0,1, or 2)*	Date Maintenance Performed	Comments or Action(s) taken to resolve issue
Sediment Accumulation	Sediment depth exceeds 0.25-inches.			
Trash/Debris Accumulation	Trash and debris accumulated on compost filter bed.			
Sediment in Drain Pipes or Cleanouts	When drain pipes, clean-outs, become full with sediment and/or debris.			
Damaged Pipes	Any part of the inlet or outlet pipes that are crushed or damaged due to corrosion and/or settlement.			
Access Cover Damaged/Not Working	Cover cannot be opened; one person cannot open the cover using normal lifting pressure, corrosion/deformation of cover.			
Vault Structure Includes Cracks in Wall, Bottom, Damage to Frame and/or Top Slab	Cracks wider than 1/2-inch or evidence of soil particles entering the structure through the cracks, or maintenance/inspection personnel determine that the vault is not structurally sound.			
	Cracks wider than 1/2-inch at the joint of any inlet/outlet pipe or evidence of soil particles entering through the cracks.			

7. Filterra Inspection and Maintenance Checklist

Filterra Owner's Manual



filterra®
Bioretention Systems

CONTECH®
ENGINEERED SOLUTIONS



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Introduction	4
Activation Overview	4
Filterra Plant Selection Overview	6
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Routine Maintenance Guidelines.....	6
Maintenance Visit Procedure.....	9
Appendix 1 – Activation Checklist	12
Appendix 2 – Planting Requirements for Filterra Systems.....	13

Enclosed

Local Area Filterra Plant List



Introduction

Thank you for your purchase of the Filterra® Bioretention System. Filterra is a specially engineered stormwater treatment system incorporating high performance biofiltration media to remove pollutants from stormwater runoff. The system's biota (vegetation and soil microorganisms) then further breakdown and absorb captured pollutants. All components of the system work together to provide a sustainable long-term solution for treating stormwater runoff.

The Filterra system has been delivered to you with protection in place to resist intrusion of construction related sediment which can contaminate the biofiltration media and result in inadequate system performance. These protection devices are intended as a best practice and cannot fully prevent contamination. It is the purchaser's responsibility to provide adequate measures to prevent construction related runoff from entering the Filterra system.

Included with your purchase is Activation of the Filterra system by the manufacturer as well as a 1-year warranty from delivery of the system and 1-year of routine maintenance (mulch replacement, debris removal, and pruning of vegetation) up to twice during the first year after activation.

Design and Installation

Each project presents different scopes for the use of Filterra systems. Information and help may be provided to the design engineer during the planning process. Correct Filterra box sizing (by rainfall region) is essential to predict pollutant removal rates for a given area. The engineer shall submit calculations for approval by the local jurisdiction. The contractor is responsible for the correct installation of Filterra units as shown in approved plans. A comprehensive installation manual is available at www.ContechES.com.

Activation Overview

Activation of the Filterra system is a procedure completed by the manufacturer to place the system into working condition. This involves the following items:

- Removal of construction runoff protection devices
- Planting of the system's vegetation
- Placement of pretreatment mulch layer using mulch certified for use in Filterra systems.

Activation **MUST** be provided by the manufacturer to ensure proper site conditions are met for Activation, proper installation of the vegetation, and use of pretreatment mulch certified for use in Filterra systems.



Minimum Requirements

The minimum requirements for Filterra Activation are as follows:

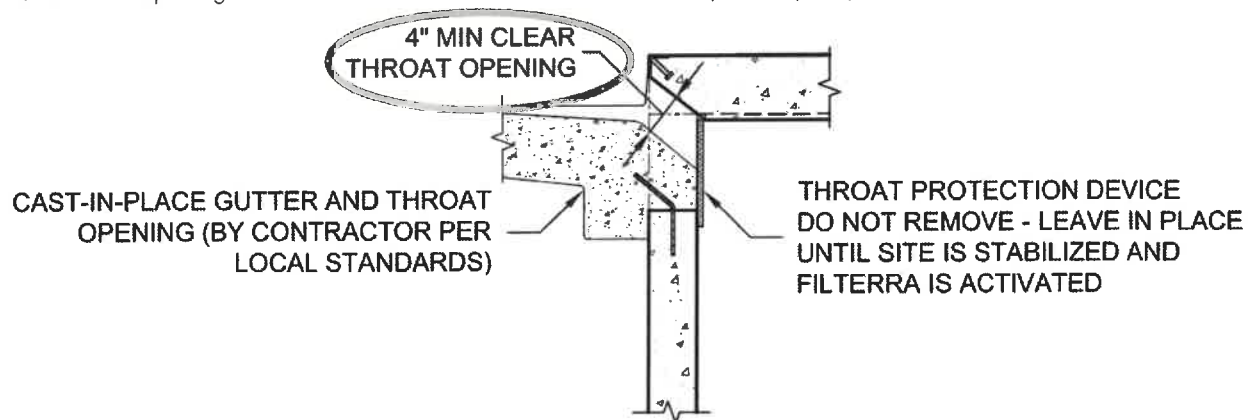
1. The site landscaping must be fully stabilized, i.e. full landscaping installed and some grass cover (not just straw and seed) is required to reduce sediment transport. Construction debris and materials should be removed from surrounding area.



2. Final paving must be completed. Final paving ensures that paving materials will not enter and contaminate the Filterra system during the paving process, and that the plant will receive runoff from the drainage area, assisting with plant survival for the Filterra system.



3. Filterra throat opening should be at least 4" in order to ensure adequate capacity for inflow and debris.



An Activation Checklist is included on page 12 to ensure proper conditions are met for Contech to perform the Activation services. A charge of \$500.00 will be invoiced for each Activation visit requested by Customer where Contech determines that the site does not meet the conditions required for Activation.

Filterra Plant Selection Overview

A Plant List has been enclosed with this packet highlighting recommended plants for Filterra systems in your area. Keep in mind that plants are subject to availability due to seasonality and required minimum size for the Filterra system. Plants installed in the Filterra system are container plants (max 15 gallon) from nursery stock and will be immature in height and spread at Activation.

It is the responsibility of the owner to provide adequate irrigation when necessary to the plant of the Filterra system.

The "Planting Requirements for Filterra Systems" document is included as an appendix and discusses proper selection and care of the plants within Filterra systems.

Warranty Overview

Refer to the Contech Engineered Solutions LLC Stormwater Treatment System LIMITED WARRANTY for further information. The following conditions may void the Filterra system's warranty and waive the manufacturer provided Activation and Maintenance services:

- Unauthorized activation or performance of any of the items listed in the activation overview
- Any tampering, modifications or damage to the Filterra system or runoff protection devices
- Removal of any Filterra system components
- Failure to prevent construction related runoff from entering the Filterra system
- Failure to properly store and protect any Filterra components (including media and underdrain stone) that may be shipped separately from the vault

Routine Maintenance Guidelines

With proper routine maintenance, the biofiltration media within the Filterra system should last as long as traditional bioretention media. Routine maintenance is included by the manufacturer on all Filterra systems for the first year after activation. This includes a maximum of 2 visits to remove debris, replace pretreatment mulch, and prune the vegetation. More information is provided in the Operations and Maintenance Guidelines. Some Filterra systems also contain pretreatment or outlet bays. Depending on site pollutant loading, these bays may require periodic removal of debris, however this is not included in the first year of maintenance, and would likely not be required within the first year of operation.

These services, as well as routine maintenance outside of the included first year, can be provided by certified maintenance providers listed on the Contech website. Training can also be provided to other stormwater maintenance or landscape providers.



Why Maintain?

All stormwater treatment systems require maintenance for effective operation. This necessity is often incorporated in your property's permitting process as a legally binding BMP maintenance agreement. Other reasons to maintain are:

- Avoiding legal challenges from your jurisdiction's maintenance enforcement program.
- Prolonging the expected lifespan of your Filterra media.
- Avoiding more costly media replacement.
- Helping reduce pollutant loads leaving your property.

Simple maintenance of the Filterra is required to continue effective pollutant removal from stormwater runoff before discharge into downstream waters. This procedure will also extend the longevity of the living biofilter system. The unit will recycle and accumulate pollutants within the biomass, but is also subjected to other materials entering the inlet. This may include trash, silt and leaves etc. which will be contained above the mulch layer. Too much silt may inhibit the Filterra's flow rate, which is the reason for site stabilization before activation. Regular replacement of the mulch stops accumulation of such sediment.

When to Maintain?

Contech includes a 1-year maintenance plan with each system purchase. Annual included maintenance consists of a maximum of two (2) scheduled visits. Additional maintenance may be necessary depending on sediment and trash loading (by Owner or at additional cost). The start of the maintenance plan begins when the system is activated.

Maintenance visits are scheduled seasonally; the spring visit aims to clean up after winter loads including salts and sands while the fall visit helps the system by removing excessive leaf litter.

It has been found that in regions which receive between 30-50 inches of annual rainfall, (2) two visits are generally required; regions with less rainfall often only require (1) one visit per annum. Varying land uses can affect maintenance frequency; e.g. some fast food restaurants require more frequent trash removal. Contributing drainage areas which are subject to new development wherein the recommended erosion and sediment control measures have not been implemented may require additional maintenance visits.

Some sites may be subjected to extreme sediment or trash loads, requiring more frequent maintenance visits. This is the reason for detailed notes of maintenance actions per unit, helping the Supplier and Owner predict future maintenance frequencies, reflecting individual site conditions.

Owners must promptly notify the (maintenance) Supplier of any damage to the plant(s), which constitute(s) an integral part of the bioretention technology. Owners should also advise other landscape or maintenance contractors to leave all maintenance to the Supplier (i.e. no pruning or fertilizing) during the first year.



Exclusion of Services

Clean up due to major contamination such as oils, chemicals, toxic spills, etc. will result in additional costs and are not covered under the Supplier maintenance contract. Should a major contamination event occur the Owner must block off the outlet pipe of the Filterra (where the cleaned runoff drains to, such as drop inlet) and block off the throat of the Filterra. The Supplier should be informed immediately.

Maintenance Visit Summary

Each maintenance visit consists of the following simple tasks (detailed instructions below).

1. Inspection of Filterra and surrounding area
2. Removal of tree grate and erosion control stones
3. Removal of debris, trash and mulch
4. Mulch replacement
5. Plant health evaluation and pruning or replacement as necessary
6. Clean area around Filterra
7. Complete paperwork

Maintenance Tools, Safety Equipment and Supplies

Ideal tools include: camera, bucket, shovel, broom, pruners, hoe/rake, and tape measure. Appropriate Personal Protective Equipment (PPE) should be used in accordance with local or company procedures. This may include impervious gloves where the type of trash is unknown, high visibility clothing and barricades when working in close proximity to traffic and also safety hats and shoes. A T-Bar or crowbar should be used for moving the tree grates (up to 170 lbs ea.). Most visits require minor trash removal and a full replacement of mulch. See below for actual number of bagged mulch that is required in each media bay size. Mulch should be a double shredded, hardwood variety. Some visits may require additional Filterra engineered soil media available from the Supplier.

Box Length	Box Width	Filter Surface Area (ft ²)	Volume at 3" (ft ³)	# of 2 ft ³ Mulch Bags
4	4	16	4	2
6	4	24	6	3
8	4	32	8	4
6	6	36	9	5
8	6	48	12	6
10	6	60	15	8
12	6	72	18	9
13	7	91	23	12

Maintenance Visit Procedure

Keep sufficient documentation of maintenance actions to predict location specific maintenance frequencies and needs. An example Maintenance Report is included in this manual.



1. Inspection of Filterra and surrounding area

- Record individual unit before maintenance with photograph (numbered). Record on Maintenance Report (see example in this document) the following:

Record on Maintenance Report the following:

Standing Water	yes no
Damage to Box Structure	yes no
Damage to Grate	yes no
Is Bypass Clear	yes no

If yes answered to any of these observations, record with close-up photograph (numbered).



2. Removal of tree grate and erosion control stones

- Remove cast iron grates for access into Filterra box.
- Dig out silt (if any) and mulch and remove trash & foreign items.

3. Removal of debris, trash and mulch

Record on Maintenance Report the following:

Silt/Clay	yes no
Cups/ Bags	yes no
Leaves	yes no
Buckets Removed	_____



- After removal of mulch and debris, measure distance from the top of the Filterra engineered media soil to the top of the top slab. Compare the measured distance to the distance shown on the approved Contract Drawings for the system. Add Filterra media (not top soil or other) to bring media up as needed to distance indicated on drawings.

Record on Maintenance Report the following:

Distance to Top of Top Slab (inches)	_____
Inches of Media Added	_____



4. Mulch replacement

- Add double shredded mulch evenly across the entire unit to a depth of 3".
- Refer to Filterra Mulch Specifications for information on acceptable sources.
- Ensure correct repositioning of erosion control stones by the Filterra inlet to allow for entry of trash during a storm event.
- Replace Filterra grates correctly using appropriate lifting or moving tools, taking care not to damage the plant.



5. Plant health evaluation and pruning or replacement as necessary

- Examine the plant's health and replace if necessary.
- Prune as necessary to encourage growth in the correct directions

Record on Maintenance Report the following:

Height above Grate	_____ (ft)
Width at Widest Point	_____ (ft)
Health	healthy unhealthy
Damage to Plant	yes no
Plant Replaced	yes no



6. Clean area around Filterra

- Clean area around unit and remove all refuse to be disposed of appropriately.



7. Complete paperwork

- Deliver Maintenance Report and photographs to appropriate location (normally Contech during maintenance contract period).
- Some jurisdictions may require submission of maintenance reports in accordance with approvals. It is the responsibility of the Owner to comply with local regulations.

Maintenance Checklist

Drainage System Failure	Problem	Conditions to Check	Condition that Should Exist	Actions
Inlet	Excessive sediment or trash accumulation.	Accumulated sediments or trash impair free flow of water into Filterra.	Inlet should be free of obstructions allowing free distributed flow of water into Filterra.	Sediments and/or trash should be removed.
Mulch Cover	Trash and floatable debris accumulation.	Excessive trash and/or debris accumulation.	Minimal trash or other debris on mulch cover.	Trash and debris should be removed and mulch cover raked level. Ensure bark nugget mulch is not used.
Mulch Cover	"Ponding" of water on mulch cover.	"Ponding" in unit could be indicative of clogging due to excessive fine sediment accumulation or spill of petroleum oils.	Stormwater should drain freely and evenly through mulch cover.	Recommend contact manufacturer and replace mulch as a minimum.
Vegetation	Plants not growing or in poor condition.	Soil/mulch too wet, evidence of spill. Incorrect plant selection. Pest infestation. Vandalism to plants.	Plants should be healthy and pest free.	Contact manufacturer for advice.
Vegetation	Plant growth excessive.	Plants should be appropriate to the species and location of Filterra.		Trim/prune plants in accordance with typical landscaping and safety needs.
Structure	Structure has visible cracks.	Cracks wider than 1/2 inch or evidence of soil particles entering the structure through the cracks.		Vault should be repaired.

Maintenance is ideally to be performed twice annually.

Filterra Inspection & Maintenance Log

Filterra System Size/Model: _____ Location: _____

Date	Mulch & Debris Removed	Depth of Mulch Added	Mulch Brand	Height of Vegetation Above Grate	Vegetation Species	Issues with System	Comments
1/1/17	5 – 5 gal Buckets	3"	Lowe's Premium Brown Mulch	4'	Galaxy Magnolia	- Standing water in downstream structure	- Removed blockage in downstream structure

Appendix 1 – Filterra® Activation Checklist



Project Name: _____ Company: _____

Site Contact Name: _____ Site Contact Phone/Email: _____

Site Owner/End User Name: _____ Site Owner/End User Phone/Email: _____

Preferred Activation Date: _____ (provide 2 weeks minimum from date this form is submitted)

Site Designation	System Size	Final Pavement / Top Coat Complete	Landscaping Complete / Grass Emerging	Construction materials / Piles / Debris Removed	Throat Opening Measures 4" Min. Height	Plant Species Requested
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
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		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Attach additional sheets as necessary.

NOTE: A charge of \$500.00 will be invoiced for each Activation visit requested by Customer where Contech determines that the site does not meet the conditions required for Activation. ONLY Contech authorized representatives can perform Activation of Filterra systems; unauthorized Activations will void the system warranty and waive manufacturer supplied Activation and 1st Year Maintenance.

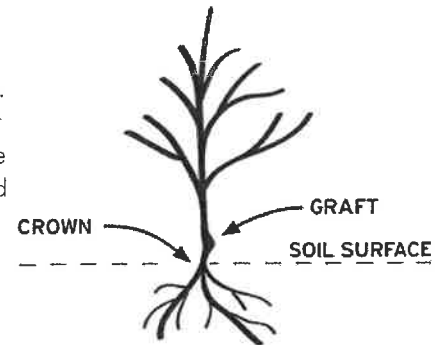
Signature _____

Date _____

Appendix 2 – Planting Requirements for Filterra® Systems

Plant Material Selection

- Select plant(s) as specified in the engineering plans and specifications.
- Select plant(s) with full root development but not to the point where root bound.
- Use local nursery container plants only. Ball and burlapped plants are not permitted.
- For precast Filterra systems with a tree grate, plant(s) must not have scaffold limbs at least 14 inches from the crown due to spacing between the top of the mulch and the tree grate. Lower branches can be pruned away provided there are sufficient scaffold branches for tree or shrub development.
- For precast Filterra systems with a tree grate, at the time of installation, it is required that plant(s) must be at least 6" above the tree grate opening at installation for all Filterra configurations. This DOES NOT apply to Full Grate Cover designs.
- Plant(s) shall not have a mature height greater than 25 feet.
- For standard 21" media depth, a 7 – 15 gallon container size shall be used. Media less than 21" (Filterra boxes only) will require smaller container plants.
- For precast Filterra systems, plant(s) should have a single trunk at installation, and pruning may be necessary at activation and maintenance for some of the faster growing species, or species known to produce basal sprouts.



Plant Installation

- During transport protect the plant leaves from wind and excessive jostling.
- Prior to removing the plant(s) from the container, ensure the soil moisture is sufficient to maintain the integrity of the root ball. If needed, pre-wet the container plant.
- Cut away any roots which are growing out of the container drain holes. Plants with excessive root growth from the drain holes should be rejected.
- Plant(s) should be carefully removed from the pot by gently pounding on the sides of the container with the fist to loosen root ball. Then carefully slide out. Do not lift plant(s) by trunk as this can break roots and cause soil to fall off. Extract the root ball in a horizontal position and support it to prevent it from breaking apart. Alternatively the pot can be cut away to minimize root ball disturbance.
- Remove any excess soil from above the root flare after removing plant(s) from container.
- Excavate a hole with a diameter 4" greater than the root ball, gently place the plant(s).
- If plant(s) have any circling roots from being pot bound, gently tease them loose without breaking them.
- If root ball has a root mat on the bottom, it should be shaved off with a knife just above the mat line.
- Plant the tree/shrub/grass with the top of the root ball 1" above surrounding media to allow for settling.
- All plants should have the main stem centered in the tree grate (where applicable) upon completion of installation.
- With all trees/shrubs, remove dead, diseased, crossed/rubbing, sharply crotched branches or branches growing excessively long or in wrong direction compared to majority of branches.
- To prevent transplant shock (especially if planting takes place in the hot season), it may be necessary to prune some of the foliage to compensate for reduced root uptake capacity. This is accomplished by pruning away some of the smaller secondary branches or a main scaffold branch if there are too many. Too much foliage relative to the root ball can dehydrate and damage the plant.
- Plant staking may be required.

Mulch Installation

- Only mulch that has been meeting Contech Engineered Solutions' mulch specifications can be used in the Filterra system.
- Mulch must be applied to a depth of 3" evenly over the surface of the media.

Irrigation Requirements

- Each Filterra system must receive adequate irrigation to ensure survival of the living system during periods of drier weather.
- Irrigation sources include rainfall runoff from downspouts and/or gutter flow, applied water through the tree grate or in some cases from an irrigation system with emitters installed during construction.
- At Activation: Apply about one (cool climates) to two (warm climates) gallons of water per inch of trunk diameter over the root ball.
- During Establishment: In common with all plants, each Filterra plant will require more frequent watering during the establishment period. One inch of applied water per week for the first three months is recommended for cooler climates (2 to 3 inches for warmer climates). If the system is receiving rainfall runoff from the drainage area, then irrigation may not be needed. Inspection of the soil moisture content can be evaluated by gently brushing aside the mulch layer and feeling the soil. Be sure to replace the mulch when the assessment is complete. Irrigate as needed**.
- Established Plants: Established plants have fully developed root systems and can access the entire water column in the media. Therefore irrigation is less frequent but requires more applied water when performed. For a mature system assume 3.5 inches of available water within the media matrix. Irrigation demand can be estimated as 1" of irrigation demand per week. Therefore if dry periods exceed 3 weeks, irrigation may be required. It is also important to recognize that plants which are exposed to windy areas and reflected heat from paved surfaces may need more frequent irrigation. Long term care should develop a history which is more site specific.

** Five gallons per square yard approximates 1 inch of water Therefore for a 6' by 6' Filterra approximately 20-60 gallons of water is needed. To ensure even distribution of water it needs to be evenly sprinkled over the entire surface of the filter bed, with special attention to make sure the root ball is completely wetted. NOTE: if needed, measure the time it takes to fill a five gallon bucket to estimate the applied water flow rate then calculate the time needed to irrigate the Filterra. For example, if the flow rate of the sprinkler is 5 gallons/minute then it would take 12 minutes to irrigate a 6' by 6' filter.



This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



9025 Centre Pointe Drive, Suite 400
West Chester, OH 45069
info@conteches.com | 800-338-1122
www.ContechES.com

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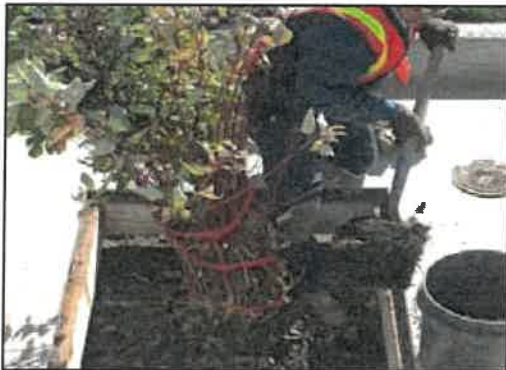
Filterra® Maintenance Steps



1. Inspection of Filterra and surrounding area



2. Removal of tree grate and erosion control stones



3. Removal of debris, trash and mulch



4. Mulch replacement



5. Clean area around Filterra



6. Complete paperwork and record plant height and width

Contech has created a network of Certified Maintenance Providers (CCMP's) to provide maintenance on Filterra systems. To find a CCMP in your area please visit www.conteches.com/maintenance