NOTICE OF APPROVAL

The Department of Community Planning & Building of the City of Carmel-by-the-Sea has approved a Project pursuant to the City's Municipal Code. Persons interested in the project may review additional materials available at the Department of Community Planning & Building located at City Hall on Monte Verde Street between Ocean and 7th Avenues, phone number 831-620-2010.

The decision to approve this project may be appealed within 10 days from the date of this by filing a written appeal with the Department of Community Planning & Building.

Planning Case #: Design Study 22063

Owner Name: CARTER ANN BARRIER TR

Case Planner: Marnie R. Waffle, AICP, Principal Planner

Date Posted: _____

Date Approved: 05/13/2022

Project Location: 1 Sand & Sea

APN #: 010321023000 **BLOCK/LOT:** SS/1

Applicant: Kyle Lambdin, Landscape Architect

Project Description: Approval of Design Study, DS 22-063 (Carter) authorizes replacement of the concrete paver driveway with monolithic stone pavers surrounded by native grass; replacement of a concrete utility pad with gravel; replacement of the horizontal board utility enclosure with a vertical cedar wood enclosure; new landscape throughout; and, an irrigation system. The project is located at Sand & Sea Lot 1 in the Single-Family Residential (R-1) District, Archaeological Significance (AS) Overlay District, Park (P) Overlay District, and Beach & Riparian (BR) Overlay District. All work shall be completed as depicted in the plans prepared by Ground Studio Landscape Architecture stamped approved and on file in the Community Planning & Building Department, unless modified by the conditions of approval.

Can this project be appealed to the Coastal Commission? *Yes* ☐ *No* ☑

Upon completion of the 10 calendar-day appeal period, please return this form, along with the Affidavit of Posting, to the case planner noted above.

CONDITIONS OF APPROVAL		
No.	Standard Conditions	
1.	**Authorization.** Approval of Design Study, DS 22-063 (Carter) authorizes replacement of the concrete paver driveway with monolithic stone pavers surrounded by native grass; replacement of a concrete utility pad with gravel; replacement of the horizontal board utility enclosure with a vertical cedar wood enclosure; new landscape throughout; and, an irrigation system. The project is located at Sand & Sea Lot 1 in the Single-Family Residential (R-1) District, Archaeological Significance (AS) Overlay District, Park (P) Overlay District, and Beach & Riparian (BR) Overlay District. All work shall be completed as depicted in the plans prepared by Ground Studio Landscape Architecture stamped approved and on file in the Community Planning & Building Department, unless modified by the conditions of approval contained herein.	✓
2.	**Codes and Ordinances.** The project shall be constructed in conformance with all requirements of the R-1 zoning district and all applicable overlay districts. All adopted building and fire codes shall be adhered to in preparing the working drawings. If any codes or ordinances require design elements to be changed, or if any other changes are requested at the time such plans are submitted, such changes may require additional environmental review and subsequent approval by the Planning Commission.	✓
3.	**Permit Validity.** This approval shall be valid for a period of one year from the date of action unless an active building permit has been issued and maintained for the proposed construction.	✓
4.	**Water Use**. Approval of this application does not permit an increase in water use on the project site without adequate supply. Should the Monterey Peninsula Water Management District determine that adequate water is not available for this site, this permit will be scheduled for reconsideration and appropriate findings prepared for review and adoption by the Planning Commission.	✓
5.	**Modifications.** The applicant shall submit in writing, with revised plans, to the Community Planning and Building staff any proposed changes to the approved project plans prior to incorporating those changes. If the applicant changes the project without first obtaining City approval, the applicant will be required to submit the change in writing, with revised plans, within 2 weeks of the City being notified. A cease work order may be issued any time at the discretion of the Director of Community Planning and Building until: a) either the Planning Commission or Staff has approved the change, or b) the property owner has eliminated the change and submitted the proposed change in writing, with revised plans, for review. The project will be reviewed for its compliance to the approved plans prior to final inspection.	✓
	Landscape Conditions	
6.	**Tree Removal.** Trees on the site shall only be removed upon the approval of the City Forester or Forest and Beach Commission, as appropriate; all remaining trees shall be protected during construction by methods approved by the City Forester.	✓
7.	**Tree Protection Measures.** Requirements for tree preservation shall adhere to the following tree protection measures on the construction site.	✓

	● Prior to grading, excavation, or construction, the developer shall clearly tag or mark all trees to be preserved. ● Excavation within 6 feet of a tree trunk is not permitted. ● No attachments or wires of any kind, other than those of a protective nature shall be attached to any tree. ● Per Municipal Code Chapter 17.48.110 no material may be stored within the dripline of a protected tree to include the drip lines of trees on neighboring parcels. ● Tree Protection Zone -- The Tree Protection Zone shall be equal to dripline or 18 inches radially from the tree for every one inch of trunk diameter at 4.5 feet above the soil line, whichever is greater. A minimum of 4-foot-high transparent fencing is required unless otherwise approved by the City Forester. Tree protection shall not be resized, modified, removed, or altered in any manner without written approval. The fencing must be maintained upright and taught for the duration of the project. No more than 4 inches of wood mulch shall be installed within the Tree Protection Zone. When the Tree Protection Zone is at or within the drip line, no less than 6 inches of wood mulch shall be installed 18 inches radially from the tree for every one inch of trunk diameter at 4.5 feet above the soil line outside of the fencing. ● The Structural Root Zone -- Structural Root Zone shall be 6 feet from the trunk or 6 inches radially from the tree for every one inch of trunk diameter at 4.5' above the soil line, whichever is greater. Any excavation or changes to the grade shall be approved by the City Forester prior to work. Excavation within the Structural Root Zone shall be performed with a pneumatic excavator, hydro-vac at low pressure, or another method that does not sever roots. ● If roots greater than 2 inches in diameter or larger are encountered within the approved Structural Root Zone the City Forester shall be contacted for approval to make any root cuts or alterations to structures to prevent roots from being damaged. ● If roots larger than 2 inches in diameter are cut without prior City Forester approval or any significant tree is endangered as a result of construction activity, the building permit will be suspended and all work stopped until an investigation by the City Forester has been completed and mitigation measures have been put in place.	
8.	Indemnification. The applicant agrees, at his or her sole expense, to defend, indemnify, and hold harmless the City, its public officials, officers, employees, and assigns, from any liability; and shall reimburse the City for any expense incurred, resulting from, or in connection with any project approvals. This includes any appeal, claim, suit, or other legal proceeding, to attack, set aside, void, or annul any project approval. The City shall promptly notify the applicant of any legal proceeding, and shall cooperate fully in the defense. The City may, at its sole discretion, participate in any such legal action, but participation shall not relieve the applicant of any obligation under this condition. Should any party bring any legal action in connection with this project, the Superior Court of the County of Monterey, California, shall be the situs and have jurisdiction for the resolution of all such actions by the parties hereto.	✓

9.	**Driveway.** The driveway material shall extend beyond the property line into the public right of way as needed to connect to the paved street edge. A minimal asphalt connection at the street edge may be required by the Superintendent of Streets or the Building Official, depending on site conditions, to accommodate the drainage flow line of the street. The driveway material and asphalt connection shall be clearly identified on the construction drawings submitted with the building permit application. If a driveway is proposed to be sand set a dimensioned construction detail showing the base material shall be included in the construction drawings.	✓
10.	**Cultural Resources.** All new construction involving excavation shall immediately cease if cultural resources are discovered on the site, and the applicant shall notify the Community Planning & Building Department within 24 hours. Work shall not be permitted to recommence until such resources are properly evaluated for significance by a qualified archaeologist. If the resources are determined to be significant, prior to resumption of work, a mitigation and monitoring plan shall be prepared by a qualified archaeologist and reviewed and approved by the Community Planning and Building Director. In addition, if human remains are unearthed during excavation, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and distribution pursuant to California Public Resources Code (PRC) Section 5097.98.	✓
11.	**USA North 811.** Prior to any excavation or digging, the applicant shall contact the appropriate regional notification center (USA North 811) at least two working days, but not more than 14 calendar days, prior to commencing that excavation or digging. No digging or excavation is authorized to occur on site until the applicant has obtained a Ticket Number and all utility members have positively responded to the dig request. (Visit USANorth811.org for more information)	✓
	SPECIAL CONDITIONS	
12.	**Notice of Authorized Work.** Prior to commencement of work, the applicant shall obtain a Notice of Authorized Work from the Community Planning & Building Department.	✓
13.	**Final Inspection Required.** Following completion of the project, the applicant shall schedule final inspections with the City Forester (831) 620-2073, Environmental Compliance Manager (831) 620-2078, and project Planner (831) 620-2057.	

Acknowledgement and acceptance of conditions of approval:

_____ _____ _____

Property Owner Signature Printed Name Date

Once signed, please email to mwaffle@ci.carmel.ca.us.

GROUND STUDIO
LANDSCAPE ARCHITECTURE

O/ 831.655.1414
F/ 831.655.3462
537 Houston Street
Monterey, CA 93940
GROUNDSTUDIO.COM

(E) CONDITIONS

(E) CONDITIONS

(E) CONDITIONS

SCOPE OF WORK:

Existing concrete paver driveway to be demolished and replaced with monolithic stone pavers. Existing wood utility enclosure and concrete pad to be demolished and replaced with a new wood utility enclosure and gravel paving. Existing understory planting to be removed and replaced with drought-tolerant, native, and mediterranean species. No additional lighting is proposed.

DRAWING INDEX

CARMEL-BY-THE-SEA
PLANNING DEPARTMENT
APPROVED

Permit #: DS 22-063 (Carter)
Date Approved: 5/13/2022
Planner: M. Waffle

Carter Residence

1 Sand and Sea,
Carmel-By-The-Sea, CA 93923

APN: 010-321-023

Issue set: City of Carmel
Planning Application
Issue date: 05.10.2022

Revisions:

REV.	DESCRIPTION	DATE
2	Plan Check	05.10.2022
1	Plan Check	04.20.2022

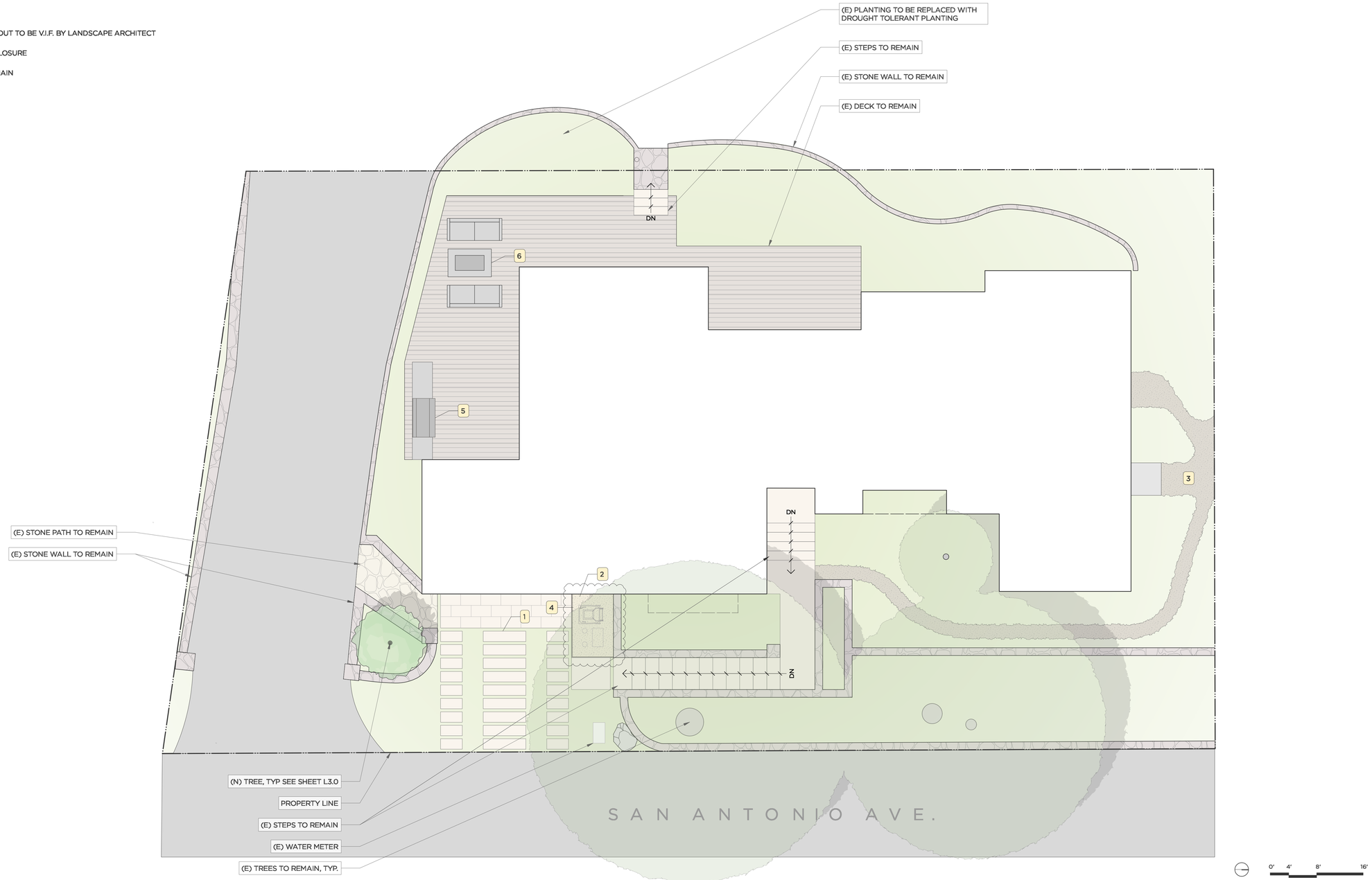
Cover

Scale:
Drawn by: GE

L0.0

LEGEND

1. (N) MONOLITHIC STONE PAVERS ON CONCRETE PADS
2. GRAVEL PAVING
3. (N) 18" WIDE MULCH PATH, LAYOUT TO BE V.I.F. BY LANDSCAPE ARCHITECT
4. (N) WOOD FENCE UTILITY ENCLOSURE
5. (E) OUTDOOR KITCHEN TO REMAIN
6. (E) FIREPIT TO REMAIN



0' 4' 8' 16'

CARMEL-BY-THE-SEA
PLANNING DEPARTMENT
APPROVED

Permit #: DS 22-063 (Carter)
Date Approved: 5/13/2022
Planner: M. Waffle

GROUND STUDIO
LANDSCAPE ARCHITECTURE

O/ 831.655.1414
F/ 831.655.3462
537 Houston Street
Monterey, CA 93940
GROUNDSTUDIO.COM

Carter Residence

1 Sand and Sea,
Carmel-By-The-Sea, CA 93923

APN: 010-321-023

Issue set: City of Carmel
Planning Application
Issue date: 05.10.2022

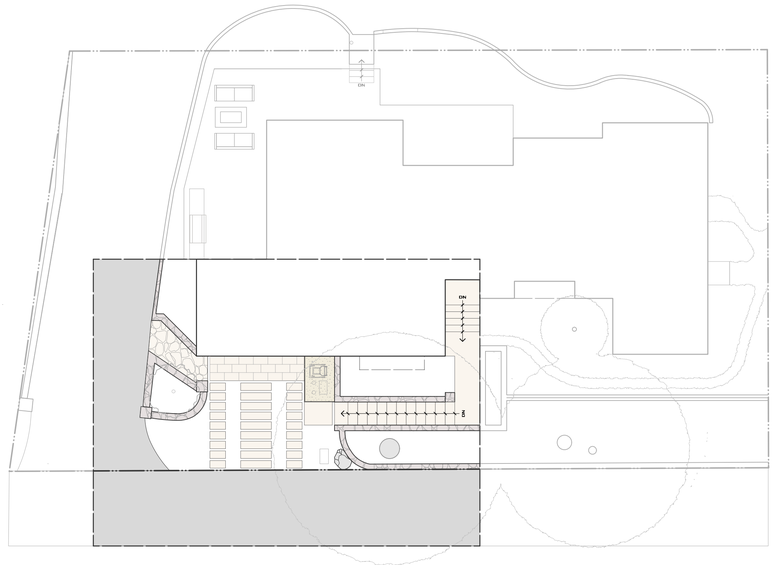
Revisions:

REV.	DESCRIPTION	DATE
2	Plan Check	05.10.2022
1	Plan Check	04.20.2022

Site Plan

Scale: 3/16" = 1'0"
Drawn by: KL

L1.0

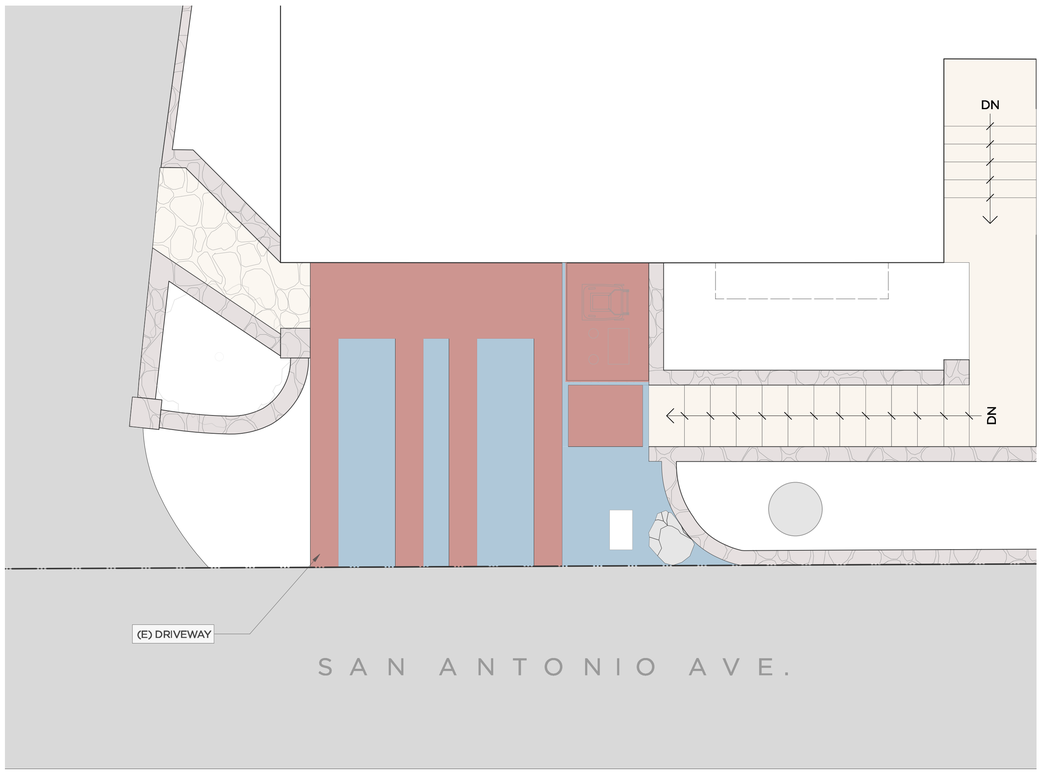


KEY PLAN:

0' 10' 20' 40'

LEGEND

SYMBOL	PERMEABILITY AREAS	SQ. FT
	(E) PERMEABLE AREAS	137 sq. ft.
	(E) NON-PERMEABLE AREAS	186 sq. ft.



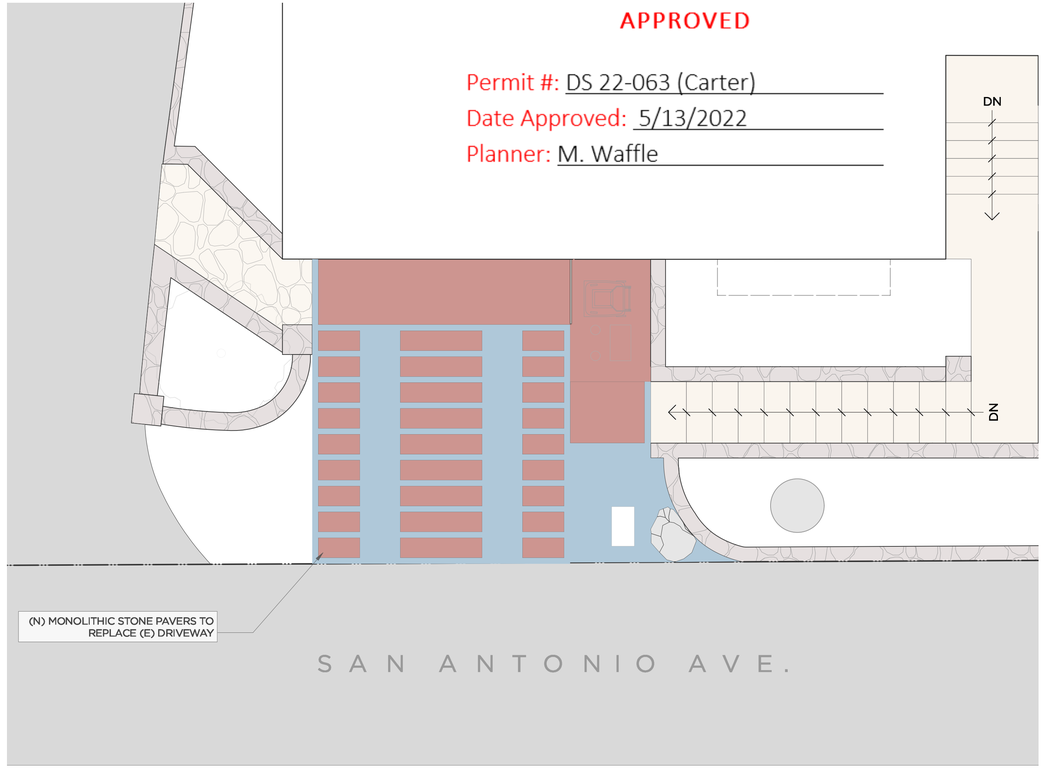
PERMEABILITY DIAGRAM: EXISTING DRIVEWAY

0' 2' 4' 8'

LEGEND

SYMBOL	PERMEABILITY AREAS	SQ. FT
	(N) PERMEABLE AREAS	133 sq. ft.
	(N) NON-PERMEABLE AREAS	190 sq. ft.

CARMEL-BY-THE-SEA
PLANNING DEPARTMENT
APPROVED
Permit #: DS 22-063 (Carter)
Date Approved: 5/13/2022
Planner: M. Waffle



PERMEABILITY DIAGRAM: PROPOSED DRIVEWAY

0' 2' 4' 8'

GROUND STUDIO
LANDSCAPE ARCHITECTURE

O/ 831.655.1414
F/ 831.655.3462
537 Houston Street
Monterey, CA 93940
GROUNDSTUDIO.COM

Carter Residence

1 Sand and Sea,
Carmel-By-The-Sea, CA 93923

APN: 010-321-023

Issue set: City of Carmel
Planning Application
Issue date: 05.10.2022

Revisions:

REV.	DESCRIPTION	DATE
2	Plan Check	05.10.2022
1	Plan Check	04.20.2022

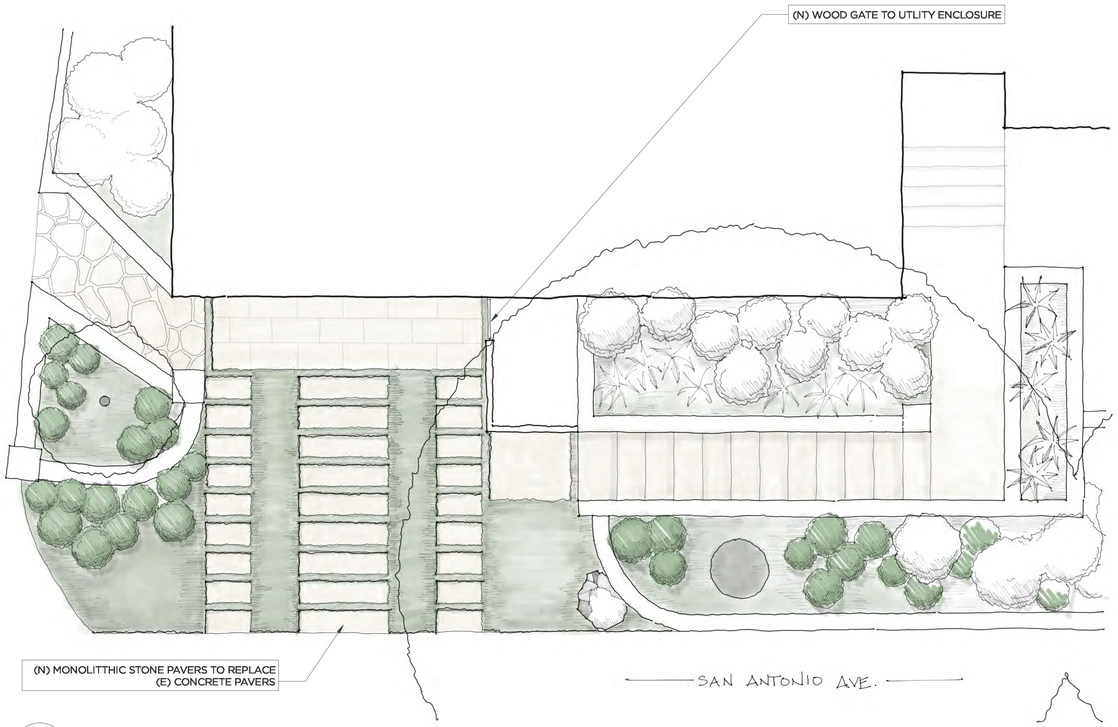
Permeability Landscape Plan

Scale: As Shown
Drawn by: GE

L1.2

CARMEL-BY-THE-SEA
PLANNING DEPARTMENT
APPROVED

Permit #: DS 22-063 (Carter)
Date Approved: 5/13/2022
Planner: M. Waffle



2 PLAN: PROPOSED DRIVEWAY

3 SITE PHOTO: EXISTING DRIVEWAY

1 PERSPECTIVE: PROPOSED DRIVEWAY

GROUND STUDIO
LANDSCAPE ARCHITECTURE

O/ 831.655.1414
F/ 831.655.3462
537 Houston Street
Monterey, CA 93940
GROUNDSTUDIO.COM

Carter Residence

1 Sand and Sea,
Carmel-By-The-Sea, CA 93923

APN: 010-321-023

Issue set: City of Carmel
Planning Application
Issue date: 05.10.2022

Revisions:

REV.	DESCRIPTION	DATE
2	Plan Check	05.10.2022
1	Plan Check	04.20.2022

Landscape Perspectives

Scale: NTS
Drawn by: GE

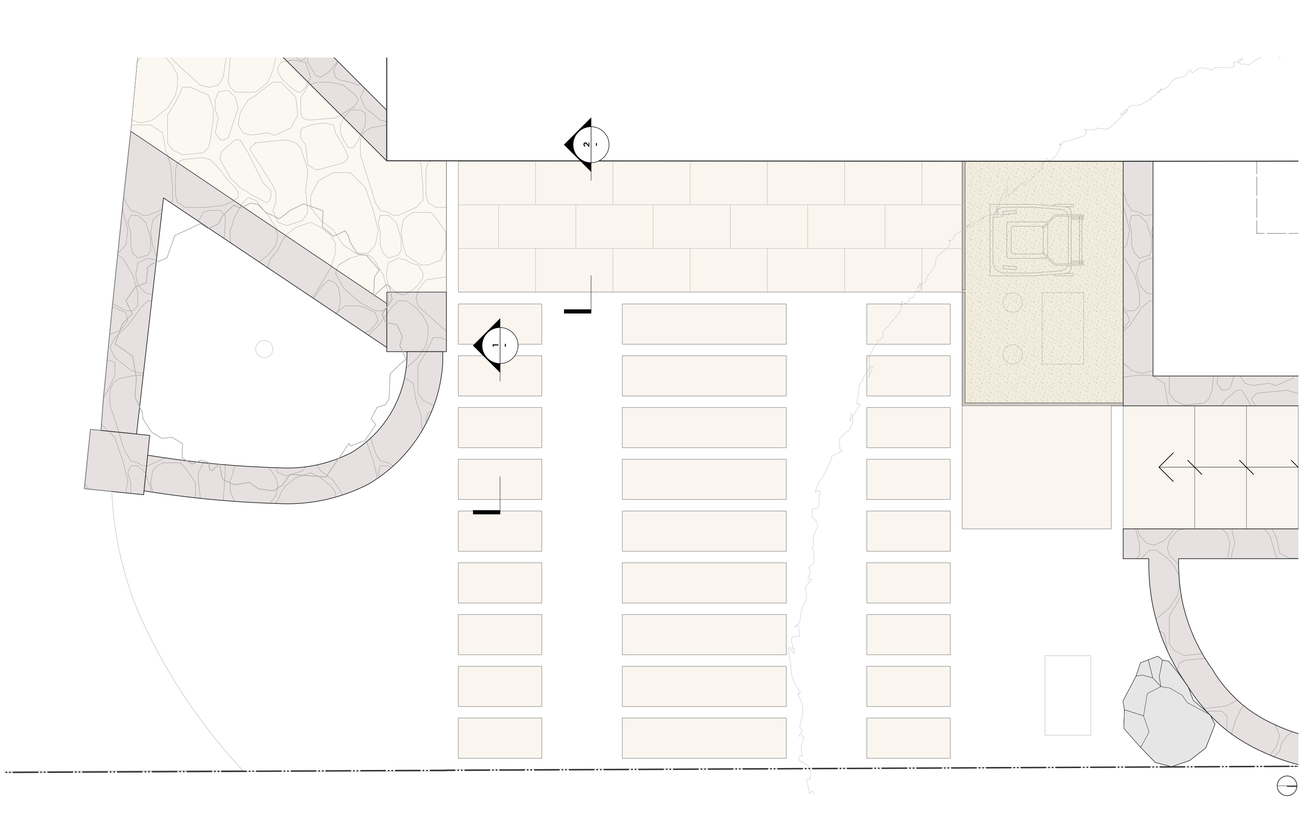
L1.3

GROUND STUDIO
LANDSCAPE ARCHITECTURE

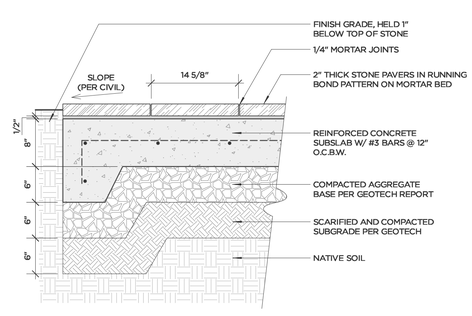
O/ 831.655.1414
F/ 831.655.3462
537 Houston Street
Monterey, CA 93940
GROUNDSTUDIO.COM

CARMEL-BY-THE-SEA
PLANNING DEPARTMENT
APPROVED

Permit #: DS 22-063 (Carter)
Date Approved: 5/13/2022
Planner: M. Waffle



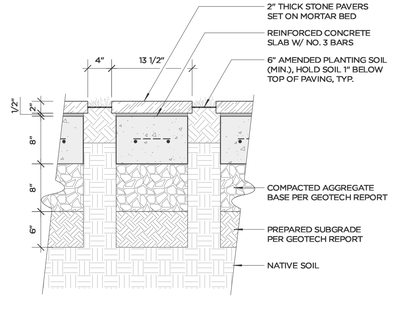
3 KEY PLAN
1/2" = 1'-0"



2 SECTION DETAIL: STONE PAVING ON SLAB W/ TIGHT JOINTS
1" = 1'-0"

GENERAL NOTE:

1. REMOVE ALL EXCESS BASEROCK FROM GAPS AND DEBRIS BETWEEN PAVERS PRIOR TO FILLING WITH PLANTING MIX



1 SECTION DETAIL: STONE PAVING ON SLAB W/ PLANTED JOINTS
1" = 1'-0"

Carter Residence

1 Sand and Sea,
Carmel-By-The-Sea, CA 93923

APN: 010-321-023

Issue set: City of Carmel
Planning Application
Issue date: 05.10.2022

Revisions:

REV.	DESCRIPTION	DATE
2	Plan Check	05.10.2022
1	Plan Check	04.20.2022

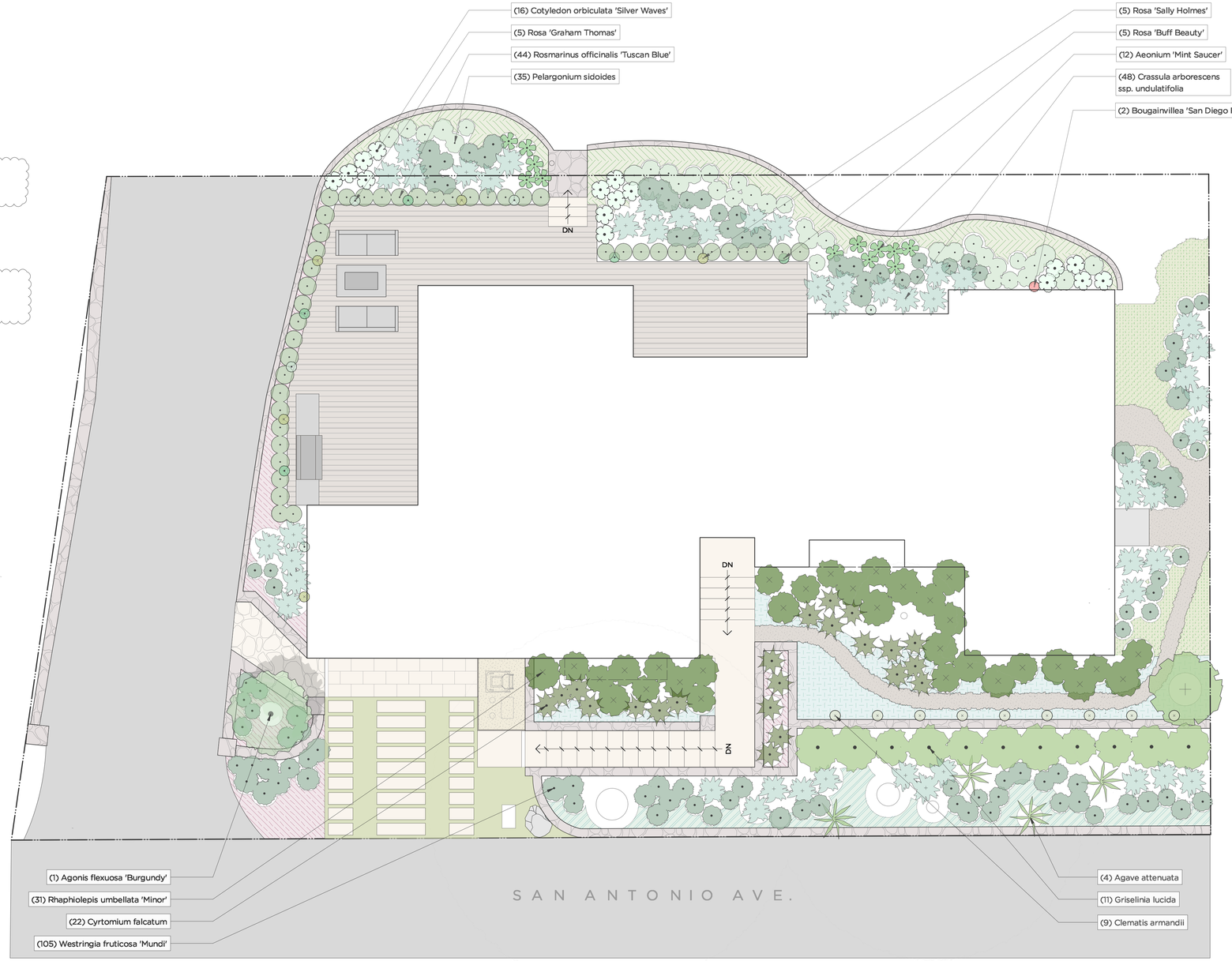
Paving Details

Scale: See Detail
Drawn by: KL

L2.0

PLANT LEGEND

Symbol	Quantity	Botanical Name	Common Name	Container Size	Notes
TREES					
	1	Agonis flexuosa 'Burgundy'	Burgundy Peppermint Willow	36" box	as shown
SHRUBS					
	4	Agave attenuata	Fox Tail Agave	5 gal	as shown
	48	Crassula arborescens ssp. undulatifolia	Ripple Jade	5 gal	As Shown
	22	Cyrtomium falcatum	Holly Fern	5 gal	as shown
	11	Griselinia lucida	Puka	15 gal	as shown
	1	Leptospermum laevigatum	Australian Tea Tree	24" box	as shown
	35	Pelargonium sidoides	Kalwerbossie Geranium	1 gal	as shown
	31	Rhaphiolepis umbellata 'Minor'	Dwarf Yeddo Hawthorn	50% 5 gal 50% 15 gal	as shown
	44	Rosmarinus officinalis 'Tuscan Blue'	Tuscan Blue Rosemary	50% 1 gal 50% 5 gal	as shown
	105	Westringia fruticosa 'Mundi'	Low Coast Rosemary	50% 5 gal 50% 15 gal	as shown
ACCENTS					
	12	Aeonium 'Mint Saucer	Green Aeonium	1 gal	as shown
	1	Bougainvillea 'San Diego Red'	Bougainvillea	15 gal	as shown
	9	Clematis armandii	Evergreen Clematis	1 gal	as shown
	16	Cotyledon orbiculata 'Silver Waves'	Cotyledon 'Silver Waves'	1 gal	as shown
	5	Rosa 'Buff Beauty'	Rose 'Buff Beauty'	5 gal	as shown
	5	Rosa 'Graham Thomas'	Rose 'Graham Thomas'	5 gal	as shown
	5	Rosa 'Sally Holmes'	Rose 'Sally Holmes'	5 gal	as shown
GROUNDCOVER					
	27	Campanula 'Blue Waterfall'	Serbian Bellflower	1 gal	18" O.C.
	131	Carex pansa	California Meadow Sedge	plugs	9" O.C.
	52	Crassula multicava	Fairy Crassula	1 gal	18" O.C.
	33	Crassula multicava + Erigeron	Fairy Crassula + Daisy	1 gal	18" O.C.
	39	Thymus spp. + Papaver spp.	Thymes + Poppy Mix		
	39	Viola hederacea	Australian violet	1 gal	18" O.C.



CARMEL-BY-THE-SEA
PLANNING DEPARTMENT
APPROVED

Permit #: DS 22-063 (Carter)
Date Approved: 5/13/2022
Planner: M. Waffle

GROUND STUDIO
LANDSCAPE ARCHITECTURE

O/ 831.655.1414
F/ 831.655.3462
537 Houston Street
Monterey, CA 93940
GROUNDSTUDIO.COM

Carter Residence

1 Sand and Sea,
Carmel-By-The-Sea, CA 93923

APN: 010-321-023

Issue set: City of Carmel
Planning Application
Issue date: 05.10.2022

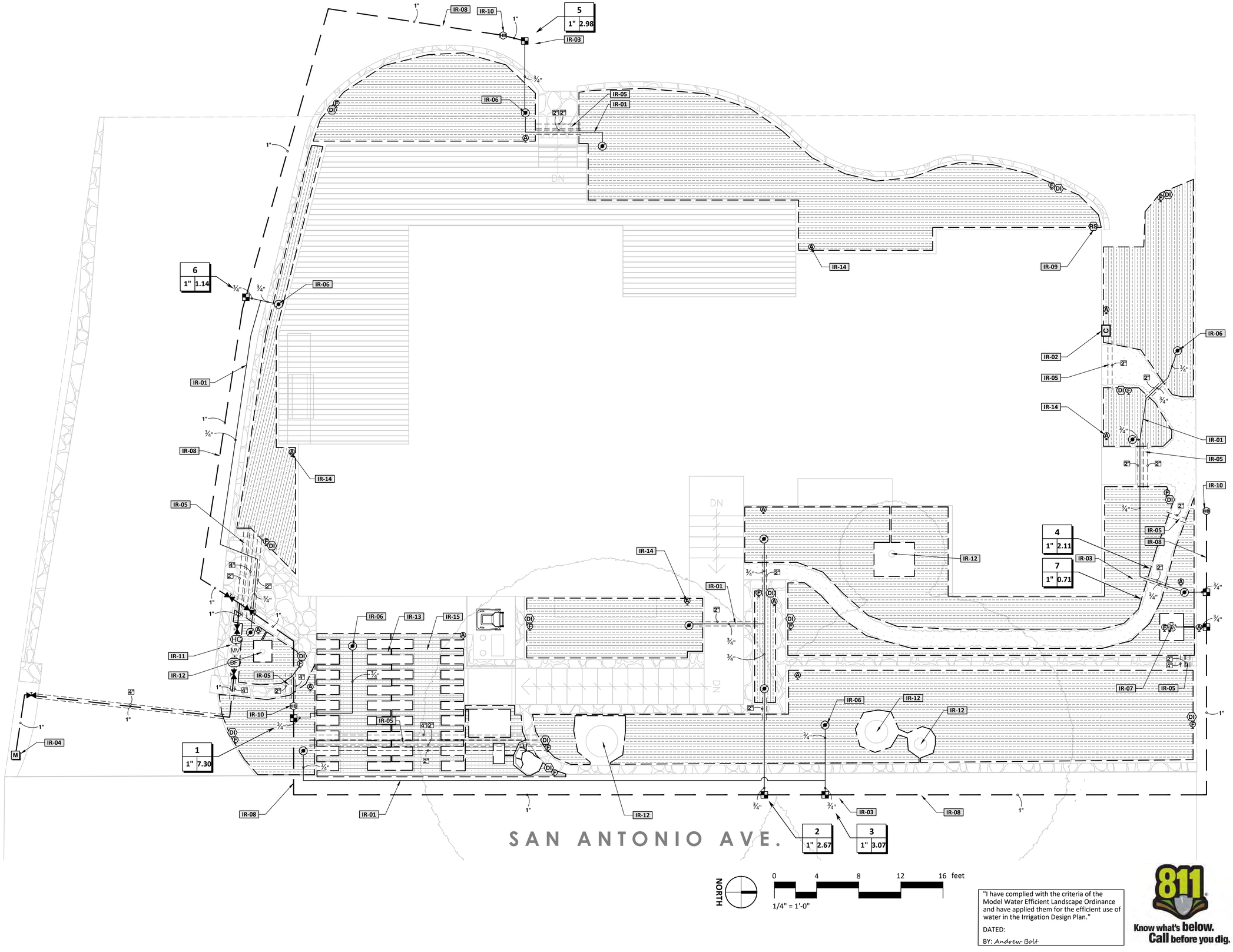
Revisions:

REV.	DESCRIPTION	DATE
2	Plan Check	05.10.2022
1	Plan Check	04.20.2022

Planting Plan

Scale: 3/16" = 1'0"
Drawn by: GE

L3.0



"I have complied with the criteria of the Model Water Efficient Landscape Ordinance and have applied them for the efficient use of water in the Irrigation Design Plan."

DATED:

BY: Andrew Bolt

Know what's below. Call before you dig.

GROUND STUDIO
LANDSCAPE ARCHITECTURE

O/ 831.655.1414
F/ 831.655.3462
537 Houston Street
Monterey, CA 93940
GROUNDSTUDIO.COM

4Binc Select Certified IRRIGATION ASSOCIATION — Assessment, Architecture, Efficient solutions — LIC# 1012730—IA CERTIFICATION # 57436 — ASIC

Carter Residence

1 Sand and Sea,
Carmel-By-The-Sea, CA 93923

APN: 010-321-023

Issue set: City of Carmel
Planning Application
Issue date: 05.10.2022

Revisions:

REV.	DESCRIPTION	DATE
2	Plan Check	05.10.2022
1	Plan Check	04.20.2022

Irrigation Plan

Scale: 1/4" = 1'0"
Drawn by: 4Binc.

L4.0

IRRIGATION NOTES:

POINT OF CONNECTION (P.O.C).

1. CONNECT IRRIGATION MAINLINE TO MAIN WATER SUPPLY (SEE CIVIL OR ARCHITECTURAL DRAWINGS FOR LOCATION). LANDSCAPE CONTRACTOR TO VERIFY LOCATION, SIZE, FLOW AND PRESSURES AVAILABLE AND TO NOTIFY LANDSCAPE ARCHITECT OF ANY NECESSARY CHANGES NEEDED TO BE MADE SO THAT THE IRRIGATION SYSTEM PERFORMS TO AN IRRIGATION EFFICIENCY OF A MINIMUM OF 81 PERCENT.
2. SYSTEM MAXIMUM OPERATING PRESSURE: 80 PSI (AT P.O.C) INSTALL PRESSURE REDUCER IF PRESSURES EXCEED EQUIPMENT MANUFACTURERS SUGGESTED MAXIMUM OPERATING PRESSURES.
3. SYSTEM MINIMUM OPERATING PRESSURE: 60 PSI (AT P.O.C)

IRRIGATING AROUND EXISTING TREES.

ANY IRRIGATION (MAINLINE OR LATERALS) WITHIN DRIP LINES OF EXISTING TREES SHALL BE FIELD APPROVED BY CONSULTING ARBORIST AND OR LANDSCAPE ARCHITECT PRIOR TO ANY TRENCHING WORK COMMENCES. HAND TRENCH AND OR FOLLOW ALL ARBORISTS/LANDSCAPE ARCHITECTS RECOMMENDATIONS.

DO NOT STACK OR STORE ANY MATERIALS, EQUIPMENT OR MACHINERY UNDER DRIP LINE OF EXISTING TREES.

MWELO NOTES

CERTIFICATION OF COMPLETION REQUIREMENTS

1. UPON COMPLETION OF LANDSCAPE AND IRRIGATION INSTALLATION THE LANDSCAPE CONTRACTOR SHALL SUBMIT THE FOLLOWING AS REQUIRED BY CALIFORNIA MODEL CERTIFICATION FROM LANDSCAPE ARCHITECT FOR INSTALLATION ACCORDING TO THE APPROVED LANDSCAPE DOCUMENTATION PACKAGE.
2. SOIL MANAGEMENT REPORT AND RECEIPTS FOR SOIL IMPROVEMENT PRODUCTS.
3. LANDSCAPE MAINTENANCE MANAGEMENT REPORT.
4. IRRIGATION MAINTENANCE MANAGEMENT REPORT.
5. IRRIGATION SCHEDULE FOR NEW AND ESTABLISHED PLANT MATERIALS
6. IRRIGATION AUDIT REPORT INDICATING SITE IRRIGATION EFFICIENCY,
7. IRRIGATION DISTRIBUTION UNIFORMITY, ALL INSTALLED EQUIPMENT COMPLIES WITH APPROVED MWELO GUIDELINES.
8. CERTIFICATE OF COMPLETION (COC) FORM.

CONTACT LOCAL ENFORCING AGENCY FOR APPROVED SUBMITTAL FORMS AND PROCEDURES.

MWELO GENERAL NOTES:

- A CERTIFICATE OF COMPLETION SHALL BE COMPLETED BY EITHER THE OWNER, THE DESIGNER OF THE LANDSCAPE PLANS OR BY THE LICENSED INSTALLING CONTRACTOR.
- AN AS BUILT DIAGRAM OF THE INSTALLED IRRIGATION SHOWING NUMBERED ZONES, VALVE LOCATION, MAINLINE LOCATION, IRRIGATION CONTROLLER AND P.O.C LOCATION SHALL BE KEPT WITH THE CONTROLLER FOR SUBSEQUENT MANAGEMENT PURPOSES.
- CHECK VALVES ARE REQUIRED ON ALL SPRINKLER HEADS WHERE LOW HEAD DRAINAGE COULD OCCUR.
- PRESSURE REGULATING DEVICES ARE REQUIRED IF WATER OPTIMUM PRESSURE OF THE SPECIFIED IRRIGATION DEVICE PRESSURE EXCEEDS THE OPERATING RECOMMENDATIONS.
- NO OVERHEAD IRRIGATION IS PERMITTED IN LANDSCAPE AREAS THAT ARE LESS THAN 10' WIDE. DRIP OR LOW FLOW BUBBLER IRRIGATION MUST BE USED AS AN ALTERNATIVE.
- INSTALLING CONTRACTOR IS RESPONSIBLE FOR INSTALLING AND PROGRAMMING ALL SELF ADJUSTING WEATHER/SOIL MOISTURE SENSING BASED CONTROLLERS. RAIN SENSORS ARE TO BE INSTALLED WITH ANY CONTROLLER WHERE AN OFFSITE WEATHER STATION IS USED.
- ALL SPECIFIED FLOW SENSORS AND MASTER VALVES MUST BE INSTALLED AND PROGRAMMED AS PER MANUFACTURERS REQUIREMENTS.
- AN IRRIGATION AUDIT AND COMMISSIONING IS REQUIRED ON ALL PROJECTS. CONTACT ANDREW BOLT 209-404-1746 TO SET UP.
- THESE PLANS HAVE BEEN PREPARED BY A CERTIFIED PROFESSIONAL AND ARE MEANT AS A GUIDE ONLY. PIPING AND VALVE PLACEMENT ARE DIAGRAMTIC ONLY. ALL PIPING UNDER HARDSCAPES MUST BE SLEEVED WITH SPECIFIED SLEEVING MATERIALS.
- PROTECT ALL EXISTING TREES DURING IRRIGATION TRENCHING AND PIPE INSTALLATION. CONSULT WITH LANDSCAPE ARCHITECT BEFORE CUTTING ANY ROOTS.
- NOTE TO CONTRACTOR: ALL IRRIGATION ZONES HAVE BEEN LAYED OUT AND APPROVED BY THE CITY OR COUNTY BASED ON PLANT WATER USE. SHOULD THE INSTALLING CONTRACTOR CHANGE OR MODIFY THE APPROVED IRRIGATION LAYOUT IN ANYWAY WITHOUT PRIOR AUTHORIZATION THE CONTRACTOR WILL ASSUME ALL LIABILITY AND COST OF ALL CHANGES TO THE IRRIGATION LAYOUT AND ALL ADDITIONAL WATER USAGE OVER AND ABOVE FOR THE LIFE OF THE IRRIGATION SYSTEM(S) AND ALL COSTS THAT ARE ASSOCIATED WITH OVER WATER USAGE.

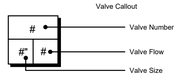
WATER EFFICIENT LANDSCAPE ORDINANCE
NOTIFICATION OF COMPLIANCE
REQUIRED OF IRRIGATION CONTRACTORS

THE IRRIGATION CONTRACTOR IS REQUIRED TO FULLY COMPLY WITH THE IRRIGATION PLANS DURING INSTALLATION OF THE IRRIGATION SYSTEM. ALL FIELD CHANGES SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT/LANDSCAPE IRRIGATION AUDITOR. ANY WORK NOT INSTALLED IN STRICT CONFORMANCE WITH THE LANDSCAPE IRRIGATION AUDITORS REQUIREMENTS SHALL BE REMOVED AND REINSTALLED AT THE CONTRACTORS EXPENSE. THE CONTRACTOR AND OWNER SHALL REFER TO THE IRRIGATION NOTES SHEET FOR IRRIGATION CONTRACTOR'S WORK RESPONSIBILITIES AND THE LANDSCAPE ARCHITECT'S REQUIRED FIELD OBSERVATION SCHEDULE.

IRRIGATION LEGEND

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
	TORO DZK-700 LOW FLOW DRIP CONTROL VALVE KIT. WITH 1" IRRITROL 700 ULTRAFLOW INLINE VALVE, TORO Y-FILTER, PRESSURE REGULATOR AND FITTINGS. .10 GPM-30 GPM. REGULATED PRESSURE AT 40PSI
	PIPE TRANSITION POINT PVC-PLOY PIPE TRANSITION POINT.
P	TORO T-FCH-H-FIPT FLUSH VALVE FLUSH VALVE, PLUMBED TO FLUSH MANIFOLD AT LOW POINT. INSTALL IN 6" VALVE BOX WITH LOCKING LID.
A	TORO T-YD-500-34 1/2" AIR VENT- MIPT AIR RELEASE AND VACUUM RELIEF VALVE
DI	RAIN BIRD OPERIND DRIP SYSTEM OPERATION INDICATOR, STEM RISES 6" FOR CLEAR VISIBILITY WHEN DRIP SYSTEM IS CHARGED TO A MINIMUM OF 20PSI. INCLUDES 16" OF 1/4" DISTRIBUTION TUBING WITH CONNECTION FITTING PRE-INSTALLED. INSTALL MINIMUM TWO PER DRIP ZONE, PLACE NEXT TO FLUSH VALVE.
TR	TREE DRIP RING 1.0 GPH TREE DRIP RING TORO RGP-212 / 1.0 GPH. INSTALL PER DETAIL. 3 RINGS = 42.5 GPH, 4 RINGS = 69.5 GPH. INSTALL (2) ROOTWELL 318-C EVENLY AROUND THE ROOT BALL OF EVERY PROPOSED TREE
	AREA TO RECEIVE DRIPLINE TORO RGP-218 SUB-SURFACE PRESSURE COMPENSATING LANDSCAPE DRIPLINE WITH ROOTGUARD TECHNOLOGY. 0.53 GPH EMITTERS AT 18" O.C. DRIPLINE LATERALS SPACED AT 18" APART, WITH EMITTERS OFFSET FOR TRIANGULAR PATTERN.
	AREA TO RECEIVE DRIPLINE TORO RGP-412 SUB-SURFACE PRESSURE COMPENSATING LANDSCAPE DRIPLINE WITH ROOTGUARD TECHNOLOGY. 1.00 GPH EMITTERS AT 12" O.C. DRIPLINE LATERALS SPACED AT 12" APART, WITH EMITTERS OFFSET FOR TRIANGULAR PATTERN.
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
HB	BUCKNER-SUPERIOR I400 HB INVERTED NOSE GARDEN VALVE. 3/4" X 1/2" FEMALE NPT HOSE BIBB, RED BRASS. INSTALL BELOW GRADE WITHIN A 1416 VALVE BOX, TYPICAL
	MATCO-NORCA 759 BRASS SHUT OFF BALL VALVE, 1/2" TO 4". TWO PIECE BODY, BLOW-OUT PROOF STEM, CHROME PLATED SOLID BRASS BALL, THREADED, WITH PTFE SEATS. SAME SIZE AS MAINLINE PIPE.
MV	BUCKNER-SUPERIOR 3200 1" NORMALLY CLOSED BRASS MASTER VALVE THAT PROVIDES DIRTY WATER PROTECTION AND NO MINIMUM FLOW FEATURE, WHICH ENSURES RELIABLE OPENING AND CLOSING OF THE VALVE IN EXTREME HIGH OR LOW FLOW SCENARIOS. AVAILABLE IN 3/4",1"1-1/2",2",2-1/2" AND 3".
BF	FEBCO 825YA 1" REDUCED PRESSURE BACKFLOW PREVENTER WITH FREEZE BLANKET PER CITY STANDARDS.
C	HUNTER HCC-1600-M 16 STATION OUTDOOR WI-FI ENABLED, FULL-FUNCTIONING CONTROLLER WITH TOUCHSCREEN & ONE ICM-800 MODULE. COMMERCIAL USE. METAL CABINET.
RS	HUNTER WRF-CLIK RAIN/FREEZE SENSOR, INSTALL WITHIN 1000 FT OF CONTROLLER, IN LINE OF SIGHT. 22-28 VAC/VDC 100 MA POWER FROM TIMER TRANSFORMER. MOUNT AS NOTED. INCLUDES GUTTER MOUNT.
HC	HUNTER HC-100-FLOW 1" FLOW METER FOR USE WITH HYDRAWISE ENABLED CONTROLLER TO MONITOR FLOW AND PROVIDE SYSTEM ALERTS. ALSO FUNCTIONS AS STAND ALONE FLOW TOTALIZER/SUB METER ON ANY RESIDENTIAL OR COMMERCIAL IRRIGATION SYSTEM.
M	WATER METER 3/4"
	IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21 INSTALL ALL LATERAL LINES TO A DEPTH OF 12" BELOW FINISH GRADE. BACKFILL WITH CLEAN FILL, NO ROCKS OVER 1/2" IN SIZE.
	IRRIGATION MAINLINE: PVC SCHEDULE 40 INSTALL ALL MAINLINE TO A DEPTH OF 18" UNLESS OTHERWISE NOTED. BACKFILL WITH CLEAN FILL, NO ROCKS OVER 1/2" IN SIZE. NOTE ALL MAINLINE LOCATION ON AS-BUILT PLANS.
	PIPE SLEEVE: PVC SCHEDULE 40 INSTALL SLEEVE 12" PAST EDGE OF HARDSCAPE TO A DEPTH OF 24" FOR MAINLINE AND 18" FOR LATERAL LINES. ALL OTHER SLEEVING INSTALL TO A DEPTH OF 12".

Valve Callout



CRITICAL ANALYSIS

Generated:	2022-01-17 19:37
P.O.C. NUMBER: 01	
Water Source Information:	
FLOW AVAILABLE	
Water Meter Size:	3/4"
Flow Available	19.62 GPM
PRESSURE AVAILABLE	
Static Pressure at POC:	65.00 PSI
Elevation Change:	5.00 ft
Service Line Size:	1"
Length of Service Line:	20 ft
Pressure Available:	61.00 psi
DESIGN ANALYSIS	
Maximum Station Flow:	7.3 GPM
Flow Available at POC:	19.62 GPM
Residual Flow Available:	12.32 GPM
Critical Station:	3
Design Pressure:	40 PSI
Friction Loss:	0.03 PSI
Fittings Loss:	0 PSI
Elevation Loss:	0 PSI
Loss through Valve:	7.44 PSI
Pressure Req. at Critical Station:	47.47 PSI
Loss for Fittings:	0.03 PSI
Loss for Main Line:	0.31 PSI
Loss for POC to Valve Elevation:	0 PSI
Loss for Backflow:	11 PSI
Loss for Master Valve:	0.07 PSI
Loss for Water Meter:	0.5 PSI
Critical Station Pressure at POC:	59.38 PSI
Pressure Available:	61 PSI
Residual Pressure Available:	1.62 PSI

REFERENCE NOTES

SYMBOL	IRRIGATION DESCRIPTION
IR-01	LATERAL LINES- ALL LATERALS ARE SIZED 3/4" UNLESS OTHERWISE NOTED.
IR-02	CONTROLLER LOCATION- CONTRACTOR TO CONFIRM LOCATION WITH OWNER OR GENERAL CONTRACTOR. INSTALL ON WALL FOR FULL MAINTENANCE ACCESS. ELECTRICAL SERVICE TO BE 110V SUPPLIED BY ELECTRICAL SUBCONTRACTOR.
IR-03	SCHEMATIC VALVE BOX LOCATION- INSTALL ALL VALVE BOXES IN PLANTER AREAS AND SET BACK 2 FEET FROM ANY PATHS, ROADS OR OTHER HARDSCAPE AREAS.
IR-04	POINT OF CONNECTION- CONTRACTOR TO CONFIRM POC LOCATION, STATIC PRESSURE AND FLOWS THAT ARE AVAILABLE. IF LOCATION IS DIFFERENT INDICATE ON AS-BUILT PLANS. IF METER SIZE IS DIFFERENT OR STATIC PRESSURE AVAILABLE IS UNDER 60 PSI NOTIFY LANDSCAPE ARCHITECT PRIOR TO PROCEEDING WITH IRRIGATION INSTALLATION.
IR-05	CONDUIT- FOR CONTROL VALVE WIRE RUN(S) TO CONTROLLER, SIZE PER PLAN
IR-06	INLINE DRIP SUPPLY AND EXHAUST HEADERS- CONTRACTOR MUST INSTALL PVC SUPPLY AND EXHAUST HEADERS ON ALL DRIP SYSTEMS PER DETALS ON THE IRRIGAITON DETAIL SHEET(S). ALL SUBSURFACE DRIP MUST TERMINATE IN A PVC EXHAUST HEADER. PLANS ONLY SHOW SUPPLY TAP-IN LOCAITON.
IR-07	TREE DRIP RINGS- FOR PROPOSED TREES
IR-08	MAIN LINE- INSTALL MAIN LINE IN PLANTER AREAS WITHIN THE SITES PROPERTY BOUNDARIES AND SET BACK 2 FEET FROM ANY PATHS, ROADS OR OTHER HARDSCAPE AREAS. THE PROPOSED MAIN LINE LOCATION(S) IS DIAGRAMMATIC.
IR-09	WEATHER BASED SENSOR LOCATION- INSTALL PER PLAN LOCATION, ON SIDE OF BUIDLING WITH NO OVERHANG OBSTRUCTIONS.
IR-10	HOSE BIB - INSTALL IN VALVE BOX BELOW GRADE
IR-11	HUNTER HC FLOW & MASTER VALVE - INSTALLING CONTRACTOR IS RESPONSIBLE FOR INSTALLING AND PROGRAMMING HUNTER HC FLOW AND MASTER VALLVE AT THE IRRIGATION CONTROLLER. CONTACT MANUFACTURER FOR ASSISTANCE WITH SET-UP.
IR-12	(E) TREES- EXISTING TREES TO REMAIN ON THIS SITE, CONTRACTOR CANNOT USE ANY MECHANICAL EQUIPMENT FOR IRRIGATION PIPE(S) INSTALLATION, ETC. CONTRACTOR CAN ONLY HAND DIG NEAR ALL (E) TREES. REFER TO ARBORIST REPORT FOR ADDITIONAL INFORMATION.
IR-13	DRIP BETWEEN PAVING STONES- INSTALL INLINE SUBSURFACE DRIP TUBING BETWEEN HARDSCAPE EDGES PER PLAN.
IR-14	DRIP AIR RELIEF VALVES- TO BE INSTALLED AT THE HIGHEST ELEVATION PER ZONE, REFER TO DETAIL. REFER TO CIVIL ENGINEER'S GRADING PLAN FOR SPOT ELEVATIONS.
IR-15	CAREX DRIP AREA- CONTRACTOR TO HAND WATER CAREX AREA UNTIL ROOTS ARE FOUR INCHES DEEP AND A HEALTH STAND IS ESTABLISHED

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

GROUND STUDIO
LANDSCAPE ARCHITECTURE

O/ 831.655.1414
F/ 831.655.3462
537 Houston Street
Monterey, CA 93940
GROUNDSTUDIO.COM

4Binc Select Certified IRRIGATION ASSOCIATION — LIC# 1012730—IA CERTIFICATION # 57436 — ASIC PROFESSIONAL MEMBER

Carter Residence

1 Sand and Sea,
Carmel-By-The-Sea, CA 93923

APN: 010-321-023

Issue set: City of Carmel Planning Application
Issue date: 05.10.2022

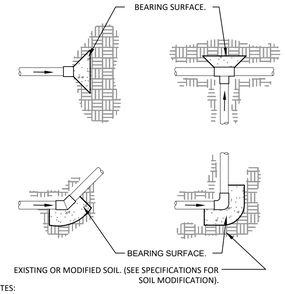
Revisions:

REV.	DESCRIPTION	DATE
2	Plan Check	05.10.2022
1	Plan Check	04.20.2022

Irrigation Legend

Scale: NTS
Drawn by: 4Binc.

L4.1



MINIMUM BEARING SURFACE AREA

PIPE SIZE	TEE AND PLUG	90° BEND	45° BEND
1-1/2"	0.45 FEET ²	0.63 FEET ²	0.34 FEET ²
2"	0.69 FEET ²	0.97 FEET ²	0.53 FEET ²
2-1/2"	1.0 FEET ²	1.41 FEET ²	0.77 FEET ²
3"	1.48 FEET ²	2.10 FEET ²	1.14 FEET ²
4"	2.43 FEET ²	3.45 FEET ²	1.87 FEET ²
6"	5.25 FEET ²	7.41 FEET ²	4.02 FEET ²
8"	9.08 FEET ²	12.83 FEET ²	6.96 FEET ²
10"	14.93 FEET ²	21.07 FEET ²	11.44 FEET ²

NOTES:
1- SIZE THRUST BLOCKS SHALL BE SPECIFIED AS SHOW IN THE TABLE ABOVE.

2- CONTROL WIRES SHALL NOT BE ENCASED IN CONCRETE.

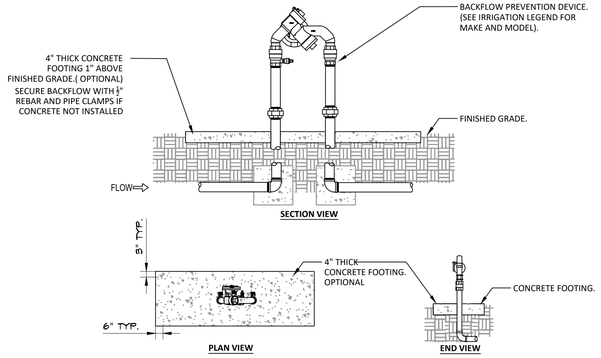
3- ALL FITTINGS SHALL BE WRAPPED WITH POLYETHYLENE TO PREVENT CONCRETE FROM ADHERING TO PIPE, FITTINGS OR BOLTS.

4- JOINTS AND BOLTS SHALL BE ACCESSIBLE FOR REPAIRS.

5- THRUST BLOCKS SHALL BE A MINIMUM OF 6" THICK.

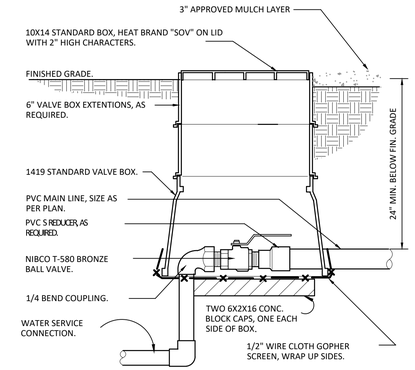
6- ONE 80 LBS. SACK OF CONCRETE SHALL COVER .6 FT.³

3 THRUST BLOCK (2)
NTS



NOTES:
1- INSTALL BACKFLOW FREEZE BLANKET PER MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
2- SEE BACKFLOW PREVENTION DEVICE DETAIL FOR REFERENCE.

2 BACKFLOW FEBCO 825YA PREVENTER (INSTALL BACKFLOW PREVENTER IF ONE IS NOT EXISTING)
NTS AB-IR-BAC-02



WATER SERVICE SHUT OFF VALVE

1 WATER SERVICE CONNECTION
NTS AB-IR-POC-10

6 BRASS BALL ISOLATION VALVE
NTS AB-IR-VAL-ISOL-328406-67

LEGEND
1. WATER METER. REFER TO CIVIL AND/OR IRRIGATION PLANS FOR SIZE & LOCATION
2. TEE OFF OF DOMESTIC WATER LINE
3. BALL VALVE
4. BACKFLOW PREVENTER- CONCRETE PAD OPTIONAL
5. MASTER VALVE & HUNTER HC FLOW METER (LANDSCAPE SUB WATER METER)
6. FERTILIZER INJECTOR (REFER TO IRRIGATION PLAN AND LEGEND - IF APPLICABLE)
7. BALL VALVE, MAIN LINE TO IRRIGATION VALVES

NOTE: REFER TO IRRIGATION LAYOUT AND EQUIPMENT SCHEDULE FOR ALL EQUIPMENT LOCATION, TYPE AND SIZES.

5 POC & IRRIGATION EQUIPMENT LAYOUT
NTS

NOTE:
1- LOCATE VALVE BOX WITHIN 24" OF PAVEMENT EDGE IN PLANTING AREA WHERE EASILY ACCESSIBLE WHENEVER POSSIBLE.

2- COMMON WIRE AND CONTROLLER WIRE SHALL BE DIRECT BURIAL 14 AWG OR LARGER. COLOR: COMMON (WHITE), CONTROLLER WIRE FOR TURF (BLUE), AND CONTROLLER WIRE FOR SHRUBS (RED). (SEE SPECIFICATIONS FOR 2-WIRE CONTROLLERS).

3- ALL WIRE RUNS SHALL BE CONTINUOUS WITHOUT ANY SPLICES UNLESS APPROVED BY THE OWNER'S REPRESENTATIVE. SEE SPLICE BOX DETAIL. WIRE CONNECTIONS SHALL BE MADE USING DBRY-6 CONNECTORS OR APPROVED EQUAL.

4-VALVE BOX SHALL BE WRAPPED WITH MIN. 3 MIL THICK PLASTIC AND SECURE IT USING DUCT TAPE OR ELECTRICAL TAPE.

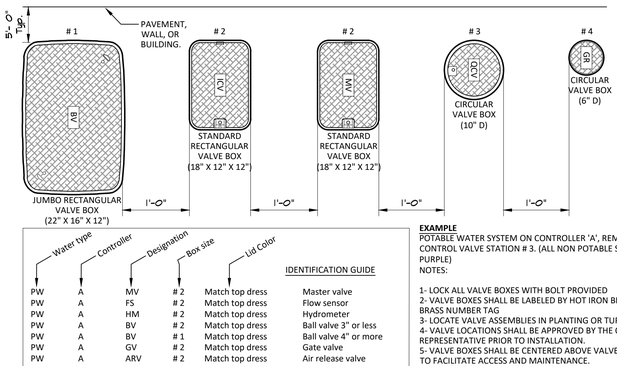
5- MAINLINES 4" OR LARGER SHALL USE SADDLES AT THE CONNECTIONS POINTS TO THE IRRIGATION VALVE. (SEE SPECIFICATIONS FOR IRRIGATIONS SADDLES).

6- ALL SCH. 80 PVC TO SCH. 40 PVC THREADED CONNECTIONS SHALL BE MADE USING TEFLON TAPE.

7- VALVE BOXES SHALL BE LOCATED IN PLANTING AREAS.

8- FLOW METER CONNECTS TO HUNTER HC CONTROLLER SERIES ONLY.

4 MASTER CONTROL VALVE & HUNTER HC FLOW METER
1" = 1'-0"



Water type	Controller	Designation	Box size	Lid Color	IDENTIFICATION GUIDE
PW	A	MV	# 2	Match top dress	Master valve
PW	A	FS	# 2	Match top dress	Flow sensor
PW	A	HM	# 2	Match top dress	Hydrometer
PW	A	BV	# 2	Match top dress	Ball valve 3" or less
PW	A	BV	# 1	Match top dress	Ball valve 4" or more
PW	A	GV	# 2	Match top dress	Gate valve
PW	A	ARV	# 2	Match top dress	Air release valve
PW	A	QCV	# 3	Match top dress	Quick coupler valve
PW	A	RCV	# 2	Match top dress	Remote control valve
PW	A	MS	# 2	Match top dress	Moisture sensor
PW	A	GR	# 4	Match top dress	Grounding rod
PW	A	SB	# 3	Match top dress	Splice box
PW	A	FC	# 3	Match top dress	Future connection

EXAMPLE
POTABLE WATER SYSTEM ON CONTROLLER 'A', REMOTE CONTROL VALVE STATION # 3. (ALL NON POTABLE SHALL BE PURPLE)
NOTES:

1- LOCK ALL VALVE BOXES WITH BOLT PROVIDED
2- VALVE BOXES SHALL BE LABELED BY HOT IRON BRANDING OR BRASS NUMBER TAG
3- LOCATE VALVE ASSEMBLIES IN PLANTING OR TURF AREA.
4- VALVE LOCATIONS SHALL BE APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.
5- VALVE BOXES SHALL BE CENTERED ABOVE VALVE ASSEMBLIES TO FACILITATE ACCESS AND MAINTENANCE.
6- VALVE BOXES SHALL BE FLUSH WITH TURF OR 3" ABOVE GRADE FOR MULCH INSTALLATION.
7- VALVE BOXES SHALL BE SET PARALLEL TO EACH OTHER AND PERPENDICULAR TO THE EDGE OF PAVEMENT.
8- SEE OTHER IRRIGATION DETAILS FOR FURTHER INFORMATION.

8 RESIDENTIAL VALVE BOX LAYOUT
DO NOT SCALE AB-IR-VAL-VALV-10

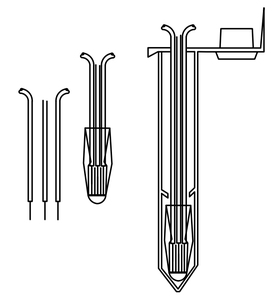
STEP 1: STRIP WIRES ½" FROM ENDS.

STEP 2: APPLY SIZED WIRE NUT AND TURN CLOCKWISE DIRECTION.

STEP 3: INSERT SPLICE INTO 3M GEL FILLED CLEAR TUBE. PUSH SO THAT THE WIRE NIT MAKES CONTACT WITH END OF TUBE.

STEP 4: POSITION WIRES IN CHANNELS AND CLOSE TUBE COVER.

NOTE: MAXIMUM WIRES PER CONNECTOR ARE THREE EACH # 14's OR TWO EACH # 12's.



7 3M-DBYR WIRE SPLICES
NTS AB-IR-VAL-16

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

GROUND STUDIO LANDSCAPE ARCHITECTURE

O/ 831.655.1414
F/ 831.655.3462
537 Houston Street
Monterey, CA 93940
GROUNDSTUDIO.COM

4Binc Select Certified IRRIGATION ASSOCIATION Passionate about Irrigation. Effective solutions. LIC# 1012730—IA CERTIFICATION # 57436 ASIC PROFESSIONAL PARTNER

Carter Residence

1 Sand and Sea,
Carmel-By-The-Sea, CA 93923

APN: 010-321-023

Issue set: City of Carmel Planning Application
Issue date: 05.10.2022

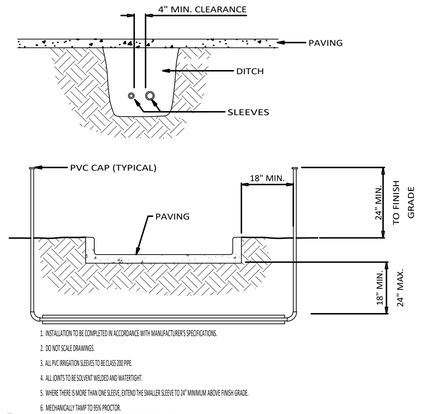
Revisions:

REV.	DESCRIPTION	DATE
2	Plan Check	05.10.2022
1	Plan Check	04.20.2022

Irrigation Details

Scale: NTS
Drawn by: 4Binc.

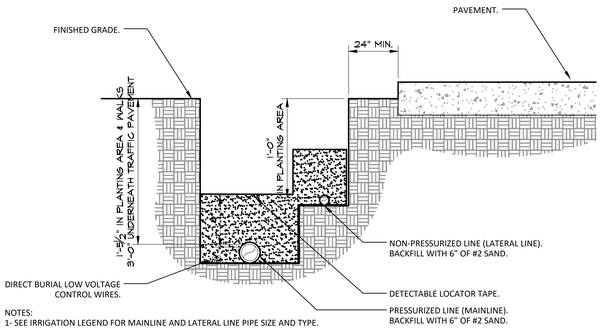
L4.2



1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. DO NOT SCALE DRAWINGS.
3. ALL PVC IRRIGATION SLEEVES TO BE CLASS 200 PIPE.
4. ALL JOINTS TO BE SOLVENT WELDED AND WATERTIGHT.
5. WHERE THERE IS MORE THAN ONE SLEEVE, EXTEND THE SMALLER SLEEVE TO 24" MINIMUM ABOVE FINISH GRADE.
6. MECHANICALLY TAMP TO 95% PROCTOR.

3 SLEEVING DETAIL

NTS AB-IR-MAI-328409-06



NOTES:
1- SEE IRRIGATION LEGEND FOR MAINLINE AND LATERAL LINE PIPE SIZE AND TYPE.

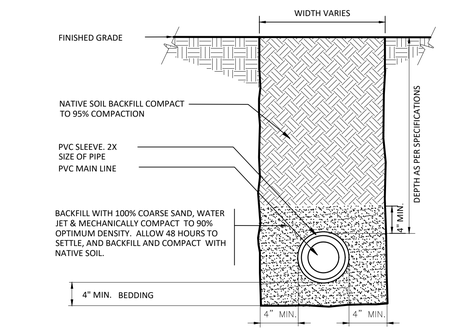
2- DIRECT BURIAL CONTROL WIRES SHALL BE INSTALLED IN SCH. 40 PVC ELECTRICAL CONDUIT IF REQUIRED.

3- 2-WIRE IRRIGATION WIRE SHALL BE INSTALLED IN SCH. 40 PVC ELECTRICAL CONDUIT.

4- DETECTABLE LOCATOR TAPE SHALL BE LOCATED SIX INCHES (6") ABOVE THE ENTIRE MAINLINE RUN.

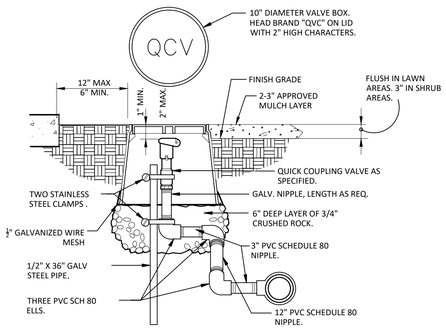
2 IRRIGATION TRENCHING

NTS AB-IR-MAI-08



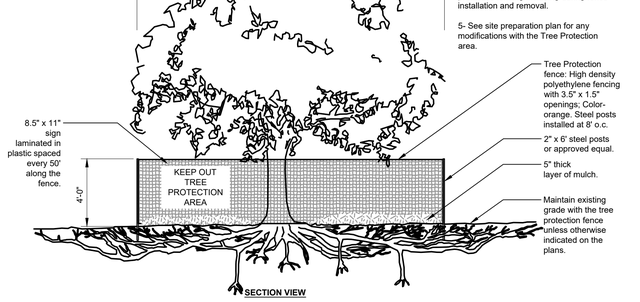
1 MAINLINE & SLEEVING

1 1/2" = 1'-0" AB-IR-MAI-07



6 QUICK COUPLING VALVE IN BOX

NTS



Notes:
1- See specifications for additional tree protection requirements.

2- If there is no existing irrigation, see specifications for watering requirements.

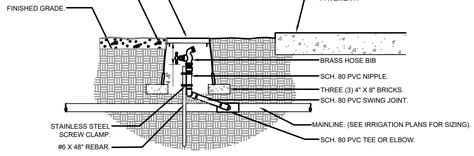
3- No pruning shall be performed except by approved arborist.

4- No equipment shall operate inside the protective fencing including during fence installation and removal.

5- See site preparation plan for any modifications with the Tree Protection area.

5 TREE PROTECTION

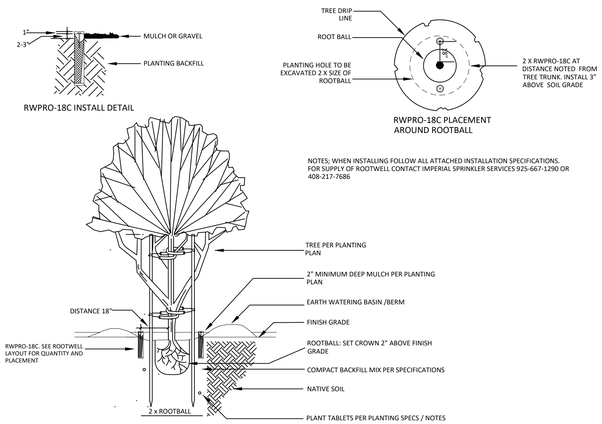
NTS



NOTES:
1- ALL THREADED CONNECTIONS SHALL BE INSTALLED USING TEFLON TAPE.
2- VALVE BOX SHALL BE WRAPPED WITH A MINIMUM 3 MIL THICK PLASTIC AND SECURED TO THE VALVE BOX USING DUCT TAPE OR ELECTRICAL TAPE.
3- ALL QUICK COUPLERS SHALL BE INSTALLED A MINIMUM OF 18" OFF OF THE MAINLINE.
4- VALVE BOXES SHALL BE LOCATED IN PLANTING AREAS.

4 HOSE BIB IN VALVE BOX DETAIL

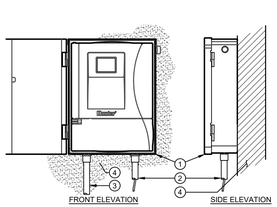
NTS



NOTES; WHEN INSTALLING FOLLOW ALL ATTACHED INSTALLATION SPECIFICATIONS. FOR SUPPLY OF ROOTWELL CONTACT IMPERIAL SPRINKLER SERVICES 925-667-1290 OR 408-217-7686

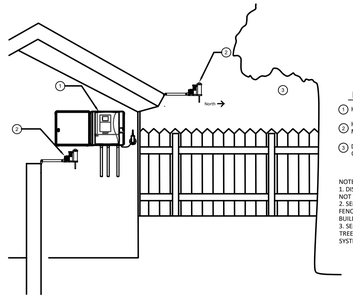
8 ROOTWELL PLACEMENT - 15 GALLON TREE

NTS



LEGEND:
1. IRRIGATION CONTROLLER (HCC-800-M) PER PLAN
2. IRRIGATION CONTROL WIRE IN CONDUIT - SIZE AND TYPE PER LOCAL CODES
3. ELECTRICAL SUPPLY CONDUIT - CONNECT TO POWER SOURCE. J-BOX INSIDE CONTROLLER
4. ADJACENT SURFACE TO MOUNT CONTROLLER PER PLAN

NOTES:
1. CONTROLLER ACCEPTS 120 VOLTS A.C. OR 230 VOLTS A.C. (INTERNATIONAL MODEL).
2. MOUNT CONTROLLER LCD SCREEN AT EYE LEVEL. CONTROLLER SHALL BE HARD-WIRED TO GROUNDED 110 VAC POWER SOURCE.
3. REFER TO THE HUNTER HCC INSTALLATION GUIDE FOR FURTHER INSTRUCTIONS.



LEGEND:
1. HUNTER CONTROLLER
2. HUNTER SENSOR RECOMMENDED MOUNTING SITE
3. DO NOT PLACE UNDER TREE OR OVERHANG OR ON FENCE

NOTES:
1. DISTANCE FROM SENSOR TO CONTROLLER NOT TO EXCEED 500 LF.
2. SENSOR MAY BE SECURELY MOUNTED ON FENCE OR STEEL POST OR ON EAVE OF BUILDING.
3. SENSOR SHOULD NOT BE MOUNTED UNDER TREES, IN AREAS AFFECTED BY SPRINKLER SYSTEM OR UNDER EAVE OF HOUSE.

7 HUNTER HCC w Wi-Fi CONTROLLER WITH RAIN CLIK

NTS

Know what's below. Call before you dig.

GROUND STUDIO
LANDSCAPE ARCHITECTURE

O/ 831.655.1414
F/ 831.655.3462
537 Houston Street
Monterey, CA 93940
GROUNDSTUDIO.COM

4Binc Select Certified IRRIGATION ASSOCIATION Experienced. Professional. Effective solutions. LIC# 1012730—IA CERTIFICATION # 57436 ASIC PROFESSIONAL PARTNER

Carter Residence

1 Sand and Sea,
Carmel-By-The-Sea, CA 93923

APN: 010-321-023

Issue set: City of Carmel Planning Application
Issue date: 05.10.2022

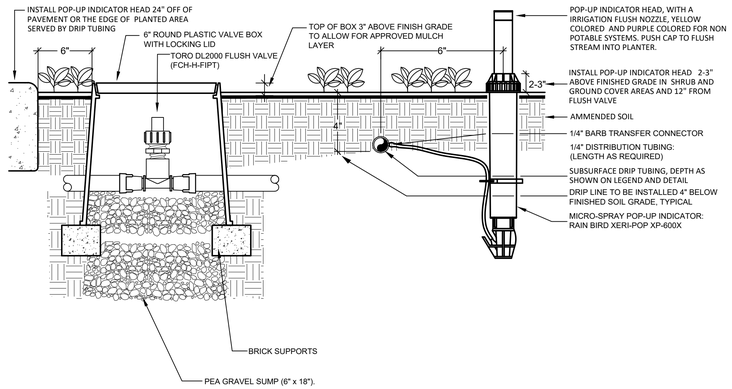
Revisions:

REV.	DESCRIPTION	DATE
2	Plan Check	05.10.2022
1	Plan Check	04.20.2022

Irrigation Details

Scale: NTS
Drawn by: 4Binc.

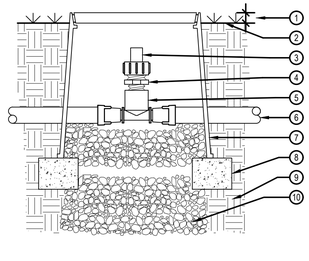
L4.3



NOTE: INSTALL INDICATOR HEAD 24" MAX FROM THE EDGE OF PAVING OR THE PLANTER EDGE. INSTALL YELLOW COLORED INDICATOR CAP ON XERI POP HEAD. FOR RECYCLED WATER USE A PURPLE IRRIGATION CAP.

3 RAIN BIRD XERI POP XP 600X DRIP INDICATOR OFF OF DRIP LINE

1" = 1"



SECTION/ELEVATION

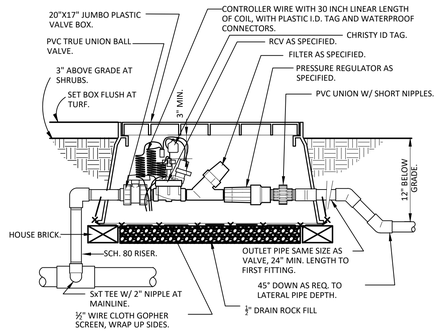
LEGEND

1. 3" ABOVE FINISH GRADE.
2. FINISH GRADE.
3. TORO DL2000 FLUSH VALVE (FCH-H-FIPT).
4. PVC SCH 40 REDUCING NIPPLE, 3/4"-1/2" (TxT).
5. TORO LOC-EZE X 1/2" FPT TEE (FTF16).
6. DRIP TUBING
7. 6" ROUND PLASTIC VALVE BOX .
8. BRICK SUPPORTS
9. NATIVE SOIL PER SPECIFICATIONS.
10. PEA GRAVEL SUMP (6" x 18").

NOTES:
1. USE ONE FLUSH VALVE FOR EVERY 7 GPM PER ZONE. LOCATE AT LOW POINTS. FLUSH RATE IS 0.8 GPM. FLUSH PRESSURE IS 2 PSI. REFER TO TORO PUBLICATION #ALT111 FOR SPECIFICATIONS.
2. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
3. DO NOT SCALE DRAWING.

2 TORO DRIP FLUSH VALVE

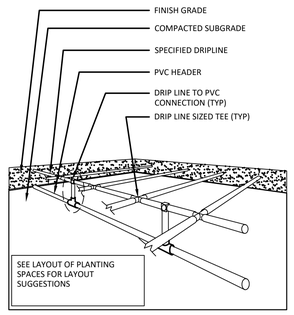
NTS



1 1" DRIP VALVE/FILTER/REGULATOR

1 1/2" = 1'-0"

AB-IR-DRI-VALV-328413-02

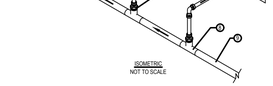


NOTE:
1. SEE PLANS AND LEGEND FOR ALL DIMENSIONS AND DRIPLINE SPACING.
2. RATIO OF DRIPLINES TO START CONNECTIONS IS SHOWN AT 2:1, BUT MAY VARY PER HYDRAULIC DEMAND ON START CONNECTIONS. SEE PLANS AND LEGEND.

6 SUB SURFACE HEADER INSTALLATION

NTS

AB-IR-DRI-INLI-11



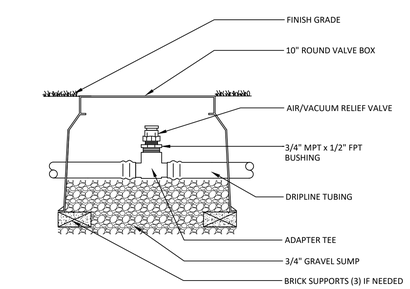
1. FINISH GRADE.
2. DEPTH OF TUBING PER SPECIFICATIONS
3. DEPTH OF PVC SUPPLY MANIFOLD PER - 12"
4. TORO LOC-EZE TEE.
5. DRIPLINE LATERAL
6. POLY TUBING, LENGTH AS NECESSARY.
7. TORO LOC-EZE X 1/2" MTP ADAPTER (FAM16).
8. PVC TEE (SxSxT) WITH 1/2" FPT OUTLET.
9. PVC SUPPLY MANIFOLD FROM DRIP ZONE KIT.

NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. DO NOT SCALE DRAWINGS.
3. ALL DIMENSIONS ARE CONSIDERED TRUE AND REFLECT MANUFACTURER'S SPECIFICATIONS.
4. CONTRACTOR'S NOTE: CONSULT MANUFACTURER FOR INSTALLATION RECOMMENDATIONS

5 DRIP END FEED HEADER

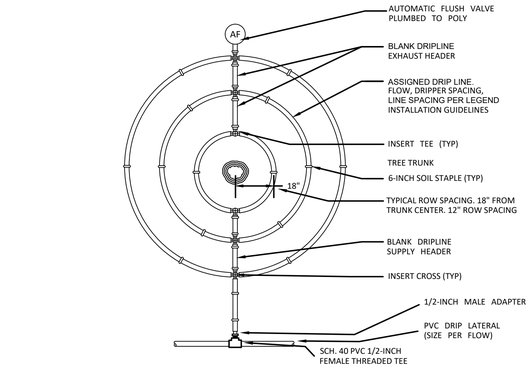
MANIFOLD END FEED
NTS

AB-IR-DRI-INLI-06



4 AIR RELIEF VALVE

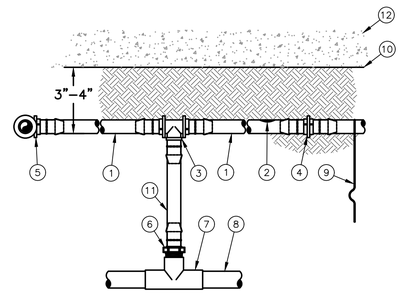
1 1/2" = 1'-0"



NOTES TO INSTALLER:
1. INSTALL FIRST DRIP LINE LOOP 18-INCHES FROM CENTER OF TREE TRUNK. INSTALL EACH ADDITIONAL LOOP 12" APART.
2. INSTALL DRIP LINE ON SURFACE TO MAXIMUM OF 6-INCHES BELOW GRADE, STAPLE IN PLACE PER MANUFACTURER'S RECOMMENDATIONS, BACKFILL AND SPREAD SURFACE TREATMENT AS DIRECTED BY OTHERS.
3. INSTALL DRIP LINE IN ACCORDANCE WITH MANUFACTURERS INSTALLATION GUIDELINES.
4. DRIP RINGS MUST BE 0.9 GPH 12" O.C EMITTER SPACING
5. TOTAL FLOW OF
   2 DRIP RINGS IS 6 GPH (1.44"/H)
   3 DRIP RINGS IS 18 GPH (1.44"/H)
   4 DRIP RINGS IS 24 GPH (1.44"/H)

8 DRIP LINE TREE RING DETAIL

1" = 1"



1. ON–SURFACE DRIPLINE:
2. INLINE DRIP EMITTER OUTLET, SEE IRRIGATION LEGEND FOR DRIPLINE OUTLET SPACING.
3. BARB OR TWIST TEE
4. BARB OR TWIST LOCK COUPLING
5. BARB OR TWIST LOCK ELBOW
6. BARB OR TWIST LOCK MALE ADAPTER
7. PVC TEE SxSxT
8. PVC LATERAL SUPPLY HEADER
9. TIE DOWN STAKE:
10. FINISH GRADE
11. BLANK TUBING LENGTH AS REQUIRED
12. 3" LAYER OF MULCH

NOTES:
1. PLACE TIE DOWN STAKES EVERY TWO FEET IN SAND, THREE FEET IN LOAM, AND FOUR FEET IN CLAY.
2. AT FITTINGS WHERE THERE IS A CHANGE OF DIRECTION SUCH AS TEES OR ELBOWS, USE TIE–DOWN STAKES ON EACH LEG OF THE CHANGE OF DIRECTION.

7 PVC SUPPLY LINE TO DRIP LINE TRANSITION DETAIL

NTS

AB-IR-DRI-13

Know what's below. Call before you dig.

GROUND STUDIO LANDSCAPE ARCHITECTURE

O/ 831.655.1414
F/ 831.655.3462
537 Houston Street
Monterey, CA 93940
GROUNDSTUDIO.COM

4Binc Select Certified IRRIGATION ASSOCIATION Passionate about Irrigation. Effective solutions. LIC# 1012730—IA CERTIFICATION # 57436 ASIC IRRIGATION PROFESSIONAL CERTIFIED

Carter Residence

1 Sand and Sea,
Carmel-By-The-Sea, CA 93923

APN: 010-321-023

Issue set: City of Carmel Planning Application
Issue date: 05.10.2022

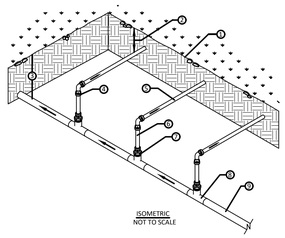
Revisions:

REV.	DESCRIPTION	DATE
2	Plan Check	05.10.2022
1	Plan Check	04.20.2022

Irrigation Details

Scale: NTS
Drawn by: 4Binc.

L4.4

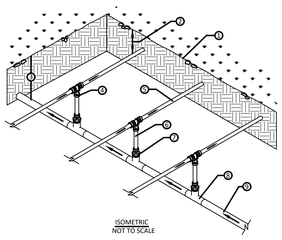


1. FINISH GRADE.
2. DEPTH OF TUBING PER SPECIFICATIONS
3. DEPTH OF PVC SUPPLY MANIFOLD PER - 12"
4. TORO LOC-EZE TEE.
5. DRIPLINE LATERAL
6. POLY TUBING, LENGTH AS NECESSARY.
7. TORO LOC-EZE X 1/2" MTP ADAPTER (FAM16).
8. PVC TEE (SxSxT) WITH 1/2" FPT OUTLET.
9. PVC SUPPLY MANIFOLD FROM DRIP ZONE KIT.

NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. DO NOT SCALE DRAWINGS.
3. ALL DIMENSIONS ARE CONSIDERED TRUE AND REFLECT MANUFACTURER'S SPECIFICATIONS.
4. CONTRACTOR'S NOTE: CONSULT MANUFACTURER FOR INSTALLATION RECOMMENDATIONS

3 DRIP END FEED HEADER

MANIFOLD END FEED
NTS

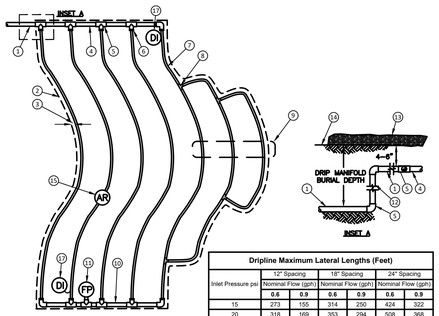


10. FINISH GRADE.
11. DEPTH OF TUBING PER SPECIFICATIONS.
12. DEPTH OF PVC SUPPLY MANIFOLD -12"
13. TORO LOC-EZE TEE.
14. DRIPLINE LATERAL.
15. POLY TUBING LENGTH AS NECESSARY.
16. TORO LOC-EZE X 1/2" MTP ADAPTER (FAM16).
17. PVC TEE (SxSxT) WITH 1/2" FPT OUTLET.
18. PVC SUPPLY MANIFOLD FROM DRIP ZONE KIT.

NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. DO NOT SCALE DRAWINGS.
3. ALL DIMENSIONS ARE CONSIDERED TRUE AND REFLECT MANUFACTURER'S SPECIFICATIONS.
4. CONTRACTOR'S NOTE: CONSULT MANUFACTURER FOR INSTALLATION RECOMMENDATIONS

2 DRIP LAYOUT IN ODD SHAPED PLANTER

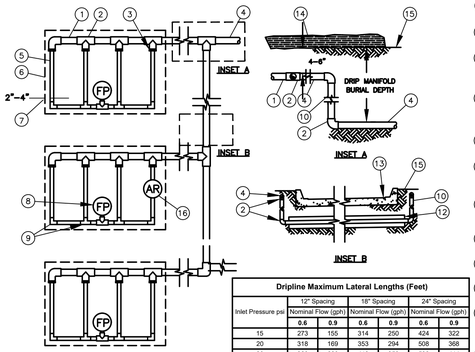
NTS
AB-IR-DRI-DRIP-09



Dripline Maximum Lateral Lengths (Feet)						
Inlet Pressure psi	12" Spacing		18" Spacing		24" Spacing	
	Nominal Flow (gph)		Nominal Flow (gph)		Nominal Flow (gph)	
	0.6	0.9	0.6	0.9	0.6	0.9
15	273	155	314	250	424	322
20	318	169	353	294	508	368
30	360	230	413	350	586	414
40	395	255	465	402	652	474
50	417	295	528	420	720	488
60	460	290	596	455	780	514

NOTES:
1. DISTANCE BETWEEN LATERAL ROWS AND EMITTER SPACING TO BE BASED ON SOIL TYPE, PLANT MATERIALS AND CHANGES IN ELEVATION.
2. LENGTH OF LONGEST DRIPLINE LATERAL SHOULD NOT EXCEED THE MAXIMUM SPACING SHOWN IN THE ACCOMPANYING TABLE.
3. INSTALL AIR RELIEF VALVE AT HIGH POINTS IN DRIP LATERAL.
4. WHEN USING BARBED INSERT FITTINGS WITH DESIGN PRESSURE OVER 50PSI, IT IS RECOMMENDED THAT STAINLESS STEEL CLAMPS BE INSTALLED ON EACH FITTING.

1. PVC SUPPLY PIPE FROM CONTROL ZONE KIT (SIZED TO MEET LATERAL FLOW DEMAND)
2. PERIMETER OF AREA
3. PERIMETER DRIPLINE PIPE TO BE INSTALLED 2"-4" FROM PERIMETER OF AREA
4. PVC SUPPLY MANIFOLD
5. PVC SCH 40 TEE OR EL (TYPICAL)
6. BARB X MALE FITTING
7. SUB-SURFACE DRIPLINE: SEE IRRIGATION LEGEND FOR SPECIFICATION
8. BARB X BARB INSERT TEE
9. TOTAL LENGTH OF SELECTED DRIPLINE SHOULD NOT EXCEED LENGTH SHOWN IN TABLE
10. PVC FLUSH HEADER
11. FLUSH POINT: SEE DETAILS FOR FLUSH POINT INSTALLATION
12. PVC RISER PIPE
13. TURF OR MULCH
14. FINISH GRADE
15. ½" AIR RELIEF VALVE: RAIN BIRD MODEL: SEE DETAILS FOR AIR RELIEF INSTALLATION
16. DRIP INDICATOR



Dripline Maximum Lateral Lengths (Feet)						
Inlet Pressure psi	12" Spacing		18" Spacing		24" Spacing	
	Nominal Flow (gph)		Nominal Flow (gph)		Nominal Flow (gph)	
	0.6	0.9	0.6	0.9	0.6	0.9
15	273	155	314	250	424	322
20	318	169	353	294	508	368
30	360	230	413	350	586	414
40	395	255	465	402	652	474
50	417	295	528	420	720	488
60	460	290	596	455	780	514

1. PVC SUPPLY HEADER
2. PVC SCH 40 TEE OR EL (TYPICAL)
3. BARB X MALE FITTING:
4. PVC DRIP MANIFOLD FROM CONTROL ZONE VALVE KIT (SIZED TO MEET LATERAL FLOW DEMAND)
5. SUB–SURFACE DRIPLINE: SEE IRRIGATION LEGEND FOR SPECIFICATIONS
6. PERIMETER OF AREA
7. PERIMETER DRIPLINE PIPE TO BE INSTALLED 2"–4" FROM PERIMETER OF AREA
8. FLUSH POINT (TYPICAL) – SEE DETAILS FOR FLUSH POINT INSTALLATION
9. BARB X BARB INSERT TEE OR ELBOW:
10. PVC RISER PIPE
11. PVC SUPPLY MANIFOLD
12. PVC SCH 40 SLEEVE PIPE SIZED TWICE THE SIZE OF MANIFOLD PIPE SIZE
13. PAVEMENT AND CURB
14. TURF OR MULCH
15. FINISH GRADE
16. ½" AIR RELIEF VALVE:

1 DRIP IRRIGATION IN PLANTER LAYOUT

NTS
AB-IR-DRI-DRIP-08

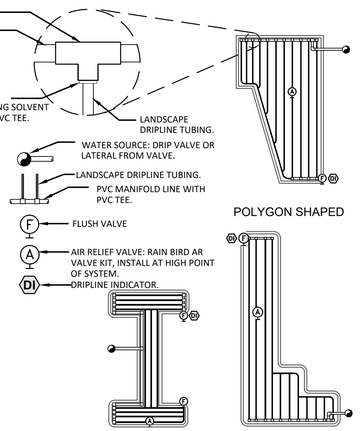
MAXIMUM LATERAL LENGTH (FEET)			
	EMITTER FLOW RATE GPH		
PSI	12" SPACING 0.6 0.9	18" SPACING 0.6 0.9	24" SPACING 0.6 0.9
10	125 96	175 135	218 171
20	249 191	350 171	442 340
30	307 236	434 333	550 422
40	350 268	495 380	627 171
50	125 96	175 135	218 171
60	125 96	175 135	218 171

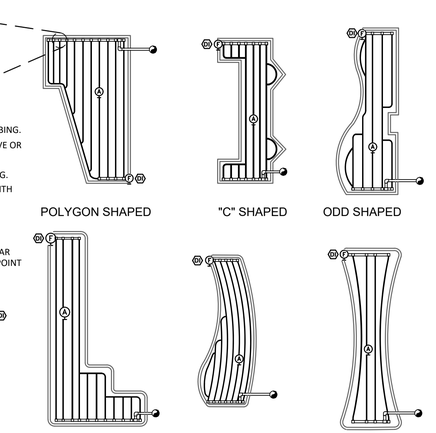
GRID PRECIPITATION RATES (IN/HR)			
EMITTER SPACING	LATERAL SPACING	EMITTER FLOW RATE 0.6	0.9
12	12	0.96	1.44
18	18	0.69	1.03
24	24	0.28	0.41

LATERAL FLOW PER 100 FT (GPM)			
EMITTER FLOW	12" SPACING	18" SPACING	24" SPACING
0.6 GPH	1.0 GPM	0.67 GPM	0.50 GPM
0.9 GPH	1.5 GPM	1.0 GPM	0.75 GPM

SLOPED CONDITION NOTE:
1. DRIPLINE LATERALS SHOULD FOLLOW THE CONTOURS OF THE SLOPE WHENEVER POSSIBLE.
2. INSTALL AIR RELIEF VALVE AT HIGHEST POINT.
3. NORMAL SPACING WITHIN THE TOP ⅓ OF SLOPE,
4. INSTALL DRIPLINE AT 25% GREATER SPACING AT THE BOTTOM ⅓ OF THE SLOPE.
5. WHEN ELEVATION CHANGE IS 10 FT OR MORE, ZONE THE BOTTOM ⅓ ON A SEPARATE VALVE.

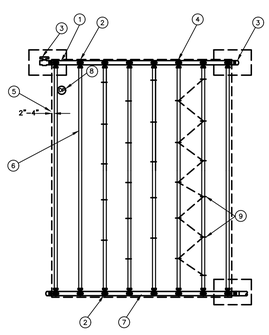
MAXIMUM FLOW PER ZONE	
MAX GPM	PSI LOSS
SCHEDULE 40 PVC HEADER SIZE	
1/2"	4.7 GPM 7.7 PSI
3/4"	8.3 GPM 5.6 PSI
1"	13.5 GPM 4.2 PSI
1-1/2"	33.9 GPM 2.9 PSI
2"	52.4 GPM 1.9 PSI
POLY PIPE HEADER SIZE	
1/2"	4.7 GPM 8.8 PSI
3/4"	8.3 GPM 6.3 PSI
1"	13.5 GPM 4.8 PSI
1-1/2"	31.8 GPM 2.9 PSI
2"	52.4 GPM 2.2 PSI





5 CENTER FEED DRIP HEADER

MANIFOLD CENTER FEED
NTS

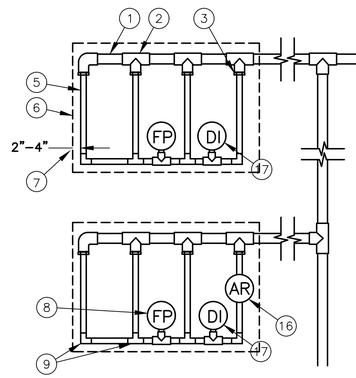


1. QF-FLUSH HEADER/PVC OR ¾" BLANK DRIP PIPE
2. PRE-INSTALLED BARB FITTING IF USING QF HEADER
3. FLUSH POINT WITH PVC CAP OR OPTIONAL PVC BALL VALVE
4. PERIMETER OF AREA
5. PERIMETER DRIPLINE PIPE TO BE INSTALLED 2"-4" FROM PERIMETER OF AREA
6. SPECIFIED DRIPLINE (TYPICAL)
7. QF-SUPPLY HEADER/PVC OR BLANK DRIP TUBING
8. OPERATION INDICATOR RAIN BIRD MODEL: DPERIND
9. SPECIFIED DRIP LINE GRID PATTERN WITH STAGGERED EMITTERS.

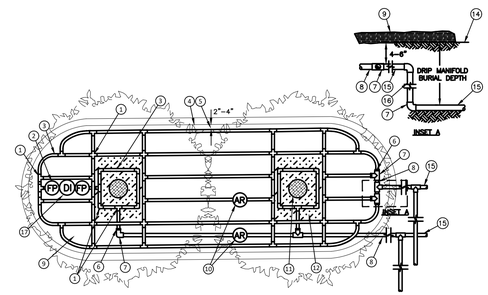
NOTES:
1. DISTANCE BETWEEN LATERAL ROWS AND EMITTER SPACING TO BE BASED ON SOIL TYPE, PLANT MATERIALS AND CHANGES IN ELEVATION.

4 TYPICAL DRIPLINE REQUIREMENTS

NTS
AB-IR-DRI-DRIP-19



1. PVC SUPPLY HEADER
2. PVC SCH 40 TEE OR EL (TYPICAL)
3. BARB X MALE FITTING:
4. PVC DRIP MANIFOLD FROM MOCONTROL ZONE VALVE KIT (SIZED TO MEET LATERAL FLOW DEMAND)
5. SUB-SURFACE DRIPLINE: SEE IRRIGATION LEGEND FOR SPECIFICATIONS
6. PERIMETER OF AREA
7. PERIMETER DRIPLINE PIPE TO BE INSTALLED 2"-4" FROM PERIMETER OF AREA
8. FLUSH POINT (TYPICAL) - SEE DETAILS FOR FLUSH POINT INSTALLATION
9. BARB X BARB INSERT TEE OR ELBOW
10. PVC RISER PIPE
11. PVC SUPPLY MANIFOLD
12. PVC SCH 40 SLEEVE PIPE SIZED TWICE THE SIZE OF MANIFOLD PIPE SIZE
13. PAVEMENT AND CURB
14. TURF OR MULCH
15. FINISH GRADE
16. ½" AIR RELIEF VALVE
17. DRIP INDICATOR



1. BARB X BARB INSERT EL, TEE OR CROSS
2. FLUSH POINT (TYPICAL) SEE DETAILS FOR FLUSH POINT INSTALLATION
3. SUB-SURFACE DRIPLINE PIPE:
4. PARKING ISLAND CURB
5. PERIMETER DRIPLINE PIPE TO BE INSTALLED 2"-4" FROM PARKING ISLAND CURB
6. BARB X MALE FITTING
7. PVC SCH 40 TEE OR EL (TYPICAL)
8. PVC SUPPLY MANIFOLD
9. TURF, SHRUB OR GROUNDCOVER BED
10. ½" AIR RELIEF VALVE: SEE DETAILS FOR AIR RELIEF INSTALLATION
11. TREE (TYPICAL) SEE IRRIGATION LEGEND FOR TREE IRRIGATION SPECIFICATIONS
12. MULCH BED FOR TREE
13. TURF OR MULCH MULCH
14. FINISH GRADE
15. PVC DRIP MANIFOLD FROM CONTROL ZONE VALVE KIT (SIZED TO MEET LATERAL FLOW DEMAND)
16. PVC RISER PIPE
17. DRIP INDICATOR

NOTES:
1. DISTANCE BETWEEN LATERAL ROWS AND EMITTER SPACING TO BE BASED ON SOIL TYPE, PLANT MATERIALS AND CHANGES IN ELEVATION.
2. LENGTH OF LONGEST DRIPLINE LATERAL SHOULD NOT EXCEED THE MAXIMUM SPACING SHOWN IN THE ACCOMPANYING TABLE.
3. INSTALL AIR RELIEF VALVE AT HIGH POINTS IN DRIP ZONE.
4. WHEN USING 17MM INSERT FITTINGS WITH DESIGN PRESSURE OVER 50PSI, IT IS RECOMMENDED THAT STAINLESS STEEL CLAMPS BE INSTALLED ON EACH FITTING.

8 STAGGERED DRIP LINE EMITTER PATTERN

NTS
AB-IR-DRI-DRIP-21

7 DRIP HEADER DETAIL

NTS
AB-IR-DRI-DRIP-15

6 DRIP LINE LAYOUT IN PLANTING ISLAND

NTS
AB-IR-DRI-DRIP-11

Know what's below. Call before you dig.

GROUND STUDIO
LANDSCAPE ARCHITECTURE

O/ 831.655.1414
F/ 831.655.3462
537 Houston Street
Monterey, CA 93940
GROUNDSTUDIO.COM

4Binc Select Certified IRRIGATION ASSOCIATION — Approved, professional, lifetime solutions — LIC# 1012730—IA CERTIFICATION # 57436 — ASIC Professional Member

Carter Residence

1 Sand and Sea,
Carmel-By-The-Sea, CA 93923

APN: 010-321-023

Issue set: City of Carmel
Planning Application
Issue date: 05.10.2022

Revisions:

REV.	DESCRIPTION	DATE
2	Plan Check	05.10.2022
1	Plan Check	04.20.2022

Irrigation Details

Scale: NTS
Drawn by: 4Binc.

L4.5

SECTION 32 8400
IRRIGATION

PART 1 GENERAL

1.1 SUMMARY

A. Irrigation system required for this work includes but is not limited to the furnishing of all labor, tools, materials, appliances, tests, permits, taxes, etc., necessary for the installation of a landscape irrigation system as herein specified and shown on the drawings, and the removal of all debris from the site.

1. Locate, purchase, deliver and install piping, conduit, sleeves, 120 volt and low voltage electrical and water connections, valves, backflow preventer devices, controllers, rain sensors, spray and bubbler heads, drip irrigation lines, and associated accessories for a fully operational automatic irrigation system.
2. Trenching and water settling of backfill material.
3. Testing and startup of the irrigation system.
4. Prepare an as built record set of drawings.
5. Training of the Owner's maintenance personnel in the operational requirements of the Irrigation system.
6. Clean up and disposal of all excess and surplus material.
7. Maintenance of the irrigation system during the proscribed maintenance period.

B. The system shall efficiently and evenly irrigate all areas and be complete in every respect and shall be left ready for operation to the satisfaction of the Owner's Representative.

C. Coordinate with other trades, as needed to complete work, including but not limited to Water Meter, Point of Connection (POC) and Backflow Preventer Device (BFPD) location and electrical hookups.

1.2 CONTRACT DOCUMENTS

A. Shall consist of specifications and its general conditions and the drawings. The intent of these documents is to include all labor, materials, and services necessary for the proper execution of the work. The documents are to be considered as one. Whatever is called for by any part shall be as binding as if called for in all parts.

1.3 RELATED DOCUMENTS AND REFERENCES

A. Related Documents: Refer to Landscape Documents or Landscape Architect provided documentation and specifications

References:

1. American Society of Testing Materials (ASTM): cited section numbers.
2. National Sanitation Foundation (NSF): rating system.
3. Irrigation Association: Turf & Landscape Irrigation Best Management Practices

1.4 VERIFICATION

A. Irrigation piping and related equipment are drawn diagrammatically. Scaled dimensions are approximate only. Before proceeding with work, carefully check and verify dimensions and immediately notify the Owner's Representative of discrepancies between the drawings or specifications and the actual conditions. Although sizes and locations of plants and or irrigation equipment are drawn to scale wherever possible, it is not within the scope of the drawings to show all necessary offsets, obstructions, or site conditions. The Contractor shall be responsible to install the work in such a manner that it will be in conformance to site conditions, complete, and in good working order.

B. Piping and equipment is to be located within the designated planting areas wherever possible unless specifically defined or dimensioned otherwise.

1.5 PERMITS AND REGULATIONS

A. The Contractor shall obtain and pay for all permits related to this section of the work unless previously excluded under provision of the contract or general conditions. The Contractor shall comply with all laws and ordinances bearing on the operation or conduct of the work as drawn and specified. If the Contractor observes that a conflict exists between permit requirements and the work outlined in the contract documents, the Contractor shall promptly notify the Owner's Representative in writing including a description of any necessary changes and changes to the contract price resulting from changes in the work.

B. Wherever references are made to standards or codes in accordance with which work is to be performed or tested, the edition or revision of the standards and codes current on the effective date of this contract shall apply, unless otherwise expressly set forth.

C. In case of conflict among any referenced standards or codes or between any referenced standards and codes and the specifications, the more restrictive standard shall apply or Owner's Representative shall determine which shall govern.

1.6 PROTECTION OF WORK, PROPERTY AND PERSON

A. The Contractor shall adequately protect the work, adjacent property, and the public, and shall be responsible for any damages or injury due to the Contractor's actions.

1.7 CHANGES IN THE WORK

A. The Owner's Representative may order changes in the work, and the contract sum being adjusted accordingly. All such orders and adjustments plus claims by the Contractor for extra compensation must be made and approved in writing before executing the work involved.

B. All changes in the work, notifications and Contractor's request for information (RFI) shall conform to the contract general condition requirements.

1.8 CORRECTION OF WORK

A. The Contractor shall re-execute any work that fails to conform to the requirements of the contract and shall remedy defects due to faulty materials or workmanship upon written notice from the Owner's Representative, at the soonest as possible time that can be coordinated with other work, and seasonal weather demands, but not more than 90 (ninety) days after notification.

1.9 DEFINITIONS

A. Owner's Representative: The person appointed by the Owner to represent their interest in the review and approval of the work and to serve as the contracting authority with the Contractor. The Owner's Representative may appoint other persons to review and approve any aspects of the work.

B. Substantial Completion Acceptance: The date at the end of the Planting, Planting Soil, and Irrigation installation where the Owner's Representative accepts that all work in these sections is complete and the Warranty period has begun. This date may be different that the date of substantial completion for the other sections of the project.

C. Final Acceptance: The date when the Owner's Representative accepts that the plants and work in this section meet all the requirements of specification. It is intended that the materials and workmanship warranty for Planting, Planting Soil, and Irrigation work run concurrently.

1.10 SUBMITTALS

A. See the contract General Conditions for policy and procedures related to submittals.

B. Product data

1. Submit a minimum of (3) complete lists of all irrigation equipment to be used, manufacturer's brochures, maintenance manuals, warrantees and operating instructions, within 15 days after the notice to proceed.
   a. This submission may be done digitally and all documents shall be submitted in one PDF document.
2. The submittals shall be packaged and presented in an organized manner, in the quantity described in Division 1 of the specifications. Provide a table of contents of all submitted items.
3. Clearly identify on each submitted sheet by underlining or highlighting (on each copy) the specific product being submitted for approval. Failure to clearly identify the specific product being submitted will result in a rejection for the entire submittal. No substitutions of material or procedures shall be made concerning these documents without the written consent of an accepted equivalent by the Owner's Representative.
4. Equipment or materials installed or furnished without prior approval of the Owner's Representative, may be rejected by the Owner's Representative and the Contractor shall be required to remove such materials from the site at their own expense.
5. Approval of substitution of material and/or products, other than those specified shall not relieve the Contractor from complying with the requirements of the contract documents and specifications. The Contractor shall be responsible, at their own expense, for all changes that may result from the approved substitutions, which affect the installation or operations other items of their own work and/or the work of other Contractors.

C. Samples: Samples of the equipment may be required at the request of the Owner's Representative if the equipment is other than that specified.

D. Other Submittals: Submit for approval:

1. Documentation of the installer's qualifications.
2. As built record set of drawings.
3. Testing data from all required pressure testing.
4. Backflow prevention device certification: Certification from the manufacturer or their representative that the back flow prevention device has been installed correctly according to the manufactures requirements.
5. Booster pump certification: Certification from the manufacturer or their representative that the booster pump has been installed correctly according to the manufacturer's requirements.
6. Irrigation controller certification: Certification from the manufacturer or an authorized distributor that the Controller has been installed correctly according to the manufactures requirements.

1.11 OBSERVATION OF THE WORK

A. The Owner's Representative may inspect the work at any time. They may remove samples of materials for conformity to specifications. Rejected materials shall be immediately removed from the site and replaced at the Contractor's expense. The cost of testing materials not meeting specifications shall be paid by the Contractor.

B. The Owner's Representative shall be informed of the progress of the work so the work may be observed at the following key times in the construction process. The Owner's Representative shall be afforded sufficient time to schedule visit to the site. Failure of the Owner's Representative to make field observations shall not relieve the Contractor from meeting all the requirements of this specification.

1. Trenching, directional boring, and sleeving review.
2. Hydrostatic pressure testing.
3. Adjustment and coverage test.
4. Pre-maintenance observation.
5. Final acceptance / system malfunction corrections.

1.12 PRE-CONSTRUCTION CONFERENCE

A. Schedule a pre-construction meeting with the Owner's Representative at least seven (7) days before beginning work to review any questions the Contractor may have regarding the work, administrative procedures during construction and project work schedule.

1.13 QUALITY ASSURANCE

A. It is the intention of this specification to accomplish the work of installing an automatic irrigation system, which will operate in an efficient and satisfactory manner. The irrigation system shall be installed and made operational according to the workmanlike standards established for landscape installation and sprinkler irrigation operation as set forth by the most recent Best Management Practices (BMP) of the Irrigation Association.

B. The specification can only indicate the intent of the work to be performed rather than a detailed description of the performance of the work. It shall be the responsibility of the Contractor to install said materials and equipment in such a manner that they shall operate efficiently and evenly and support optimum plant growth and health.

C. The Owner's Representative shall be the sole judge of the true intent of the drawings and specifications and of the quality of all materials furnished in performance of the contract.

D. The Contractor shall keep one copy of all drawings and specifications on the work site, in good order. The Contractor shall make these documents available to the Owner's Representative when requested.

E. In the event of any discrepancies between the drawings and the specification, the final decision as to which shall be followed, shall be made by the Owner's Representative.

F. In the event the installation is contradictory to the direction of the Owner's Representative, the installation shall be rectified by the Contractor at no additional cost to the Owner. The Contractor shall immediately bring any such discrepancies to the attention of the Owner's Representative.

G. It shall be distinctly understood that no oral statement of any person shall be allowed in any manner to modify any of the contract provisions. Changes shall be made only on written authorization of the Owner's Representative.

H. Installer Qualifications: The installer shall be a firm having at least 5 years of successful experience of a scope similar to that required for the work.

a. Installer Field Supervision: The installer shall maintain on site an experienced full-time supervisor who can communicate in English with the Owner's Representative.
b. Submit the installer's qualifications for approval.

1.14 IRRIGATION SYSTEM WARRANTY:

A. The Contractor shall Warrantee all workmanship and materials for a period of 1year (s) following the acceptance of the work.

6. Any parts of the irrigation work that fails or is defective shall be replaced or reconstructed at no expense to the Owner including but not limited to: restoring grades that have settled in trenches and excavations related to the work. Reconstruction shall include any plantings, soil, mulch or other parts of the constructed landscape that may be damaged during the repair or that results from soil settlement.

B. The date of acceptance of the work and start of the Guarantee period shall be determined by the Owner's Representative, upon the finding that the entire irrigation system is installed as designed and specified, and found to be operating correctly, supplying water evenly to all planting and/or lawn areas.

C. The system controller shall be warranted by the equipment manufacturer against equipment malfunction and defects for a period of 5 years, following the acceptance of the work.

D. Neither the final acceptance nor any provision in the contract documents shall relieve the Contractor of responsibility for faulty materials or workmanship. The Contractor shall remedy any defects within a period of 7 days (s) from the date of notification of a defect.

1.15 SITE CONDITIONS

A. It is the responsibility of the Contractor to be aware of all surface and sub-surface conditions, and to notify the Owner's Representative, in writing, of any circumstances that would negatively impact the installation of the work. Do not proceed with work until unsatisfactory conditions have been corrected.

1.16 DELIVERY, STORAGE, AND HANDLING

A. All materials and equipment shall be stored properly and protected as required by the Contractor. The Contractor shall be entirely responsible for damages or loss by weather or other cause to work under the contract. Materials shall be furnished in ample quantities and at such times as to ensure uninterrupted progress of the work.

B. Deliver the products to the job site in their original unopened container with labels intact and legible at time of use.

C. Store in accordance with the manufacturers' recommendations.

1.17 PROTECTION

A. The Contractor shall continuously maintain adequate protection of all their work from damage, destruction, or loss, and shall protect the owner's property from damage arising in connection with this contract. Contractor shall make good any such damage, destruction, loss or injury. Contractor shall adequately protect adjacent property as provided by law and the contract documents.

B. The Contractor shall maintain sufficient safeguards, such as railings, temporary walks, lights, etc., against the occurrence of accidents, injuries or damage to any person or property resulting from their work, and shall alone be responsible for the same if such occurs.

C. All existing paving, structures, equipment or plant material shall be protected at all times, including the irrigation system related to plants, from damage by workers and equipment. The Contractor shall follow all protection requirements including plant protection provision of the general contract documents. All damages shall be repaired or replaced at the Contractor's expense. Repairs and or replacement shall be to the satisfaction of the Owner's Representative, including the selection of a Contractor to undertake the repair or maintenance. Repairs shall be at no cost to the owner.

1. For trees damaged to the point where they will not be expected to survive or which are severely disfigured and that are too large to replace, the cost of damages shall be as determined by the Owner's arborist using accepted tree value evaluation methods.

D. The Contractor shall refrain from trenching within the drip line of any existing tree to remain. The Owner's Representative may require the Contractor to relocate proposed irrigation work, bore lines beneath roots or use air spade technology to dig trenches through and under the root system to avoid damage to existing tree root areas.

1.18 EXCAVATING AROUND UTILITIES

A. Contractor shall carefully examine the civil, record, and survey drawings to become familiar with the existing underground conditions before digging.

1. Do not begin any excavation until all underground utilities have been located and marked.

Determine location of underground utilities and perform work in a manner that will avoid possible damage. Hand excavate, as required. Maintain stakes and or markings set by others until parties concerned mutually agree to their removal.

B. Notification to 811 is required for all excavation around utilities. The Contractor is responsible for knowing the location and avoiding utilities that are not covered by the *Local Utility Locator Service*.

C. Section 4216/4217 of the government code requires a dig-alert identification number be issued before a "permit to excavate" will be valid. For your dig-alert identification number call underground service alert toll free 1-800-422-4133 two working days before beginning construction.

1.19 POINT OF CONNECTION

Point of connection option 1 - Irrigation Contractor provided

A. The point of connection of the irrigation system to its electrical power sources shall be provided by the irrigation installer. All connections shall be made by a licensed electrical Contractor per governing codes at the location shown on the drawings.

B. The point of connection of the irrigation system to its potable and or non-potable water sources, including the main shutoff valve and backflow preventer shall be provided by the irrigation installer. All connections shall be made by a licensed Contractor per governing codes, at the location shown on the drawings.

Point of connection option 2 - General Contractor provided

A. The point of connection of the irrigation system to its electrical power sources shall be provided by the General Contractor's licensed electrical Contractor per governing codes at the location shown on the drawings. The irrigation Contractor will connect the power to provided junction box or grounded plug receptacle.

B. The point of connection of the irrigation system to its potable and or non-potable water sources, including the main shutoff valve and backflow preventer shall be provided by the General Contractor's licensed plumbing Contractor per governing codes at the location shown on the drawings. The minimum size and water pressure of the pressurized line will be as noted on the irrigation drawing.

1.20 TEMPORARY UTILITIES

A. All temporary piping, wiring, meters, panels and other related appurtenances required between source of supply and point of use shall be provided by the Contractor and coordinated with the Owner's Representative. Existing utilities may be used with the written permission of the owner.

1.21 CUTTING, PATCHING, TRENCHING AND DIGGING

A. The Contractor shall do all cutting, fitting, trenching or patching of their work that may be required to make its several parts come together as shown upon, or implied by, the drawings and specifications for the completed project.

B. Digging and trenching operations shall be suspended when the soil moisture is above field capacity.

1.22 USE OF PREMISES

A. The Contractor shall confine their apparatus; the storage of materials, and the operations of their workers to limits indicated by the law, ordinances, or permits and shall not unreasonably encumber the premises with their materials.

B. Contractor parking, and material and equipment storage shall in areas approved by the Owner's Representative.

1.23 AS BUILT RECORD SET OF DRAWINGS

A. Immediately upon the installation of any buried pipe or equipment, the Contractor shall indicate on the progress record drawings the locations of said pipe or equipment. The progress record drawings shall be made available at any time for review by the Owner's Representative.

B. Before final acceptance of work, the Contractor shall provide an as built record set of drawings showing the irrigation system work as built. The drawings shall be transmitted to the Owner's Representative in paper format and as a pdf file of each document on compact disk or flash drive. The drawings shall include all information shown on the original contract document and revised to reflect all changes in the work. The drawings shall include the following additional information

1. All valves shall be numbered by station and corresponding numbers shall be shown on the as built record set of drawings.
2. All main line pipe or irrigation equipment including sleeves, valves, controllers, irrigation wire runs which deviate from the mainline location, backflow preventers, remote control valves, grounding rods, shut-off valves, rain sensors, wire splice locations, and quick coupling valves shall be located by two (2) measured dimensions, to the nearest one-half foot. Dimensions shall be given from permanent objects such as buildings, sidewalks, curbs, walls, structures and driveways. All changes in direction and depth of main line pipe shall be noted exactly as installed. Dimensions for pipes shall be shown at no greater than a 50 ft. maximum interval.
3. As built record set of drawings shall be signed and dated by the Contractor attesting to and certifying the accuracy of the as built record set of drawings. As built record set of drawings shall have "As Built Record Set of Drawings", company name, address, phone number and the name of the person who created the drawing and the contact name (if different).

C. The Owner shall make the original contract drawing files available to the Contractor.

1.24 CONTROLLER CHARTS:

A. Provide one controller chart for each automatic controller installed.

1. On the inside surface of the cover of each automatic controller, prepare and mount a color-coded chart showing the valves, main line, and systems serviced by that particular controller. All valves shall be numbered to match the operation schedule and the drawings. Only those areas controlled by that controller shall be shown. This chart shall be a plot plan, entire or partial, showing building, walks, roads and walls. The plan, reduced as necessary and legible in all details, shall be made to a size that will fit into the controller cover. This print shall be approved by the Owner's Representative and shall be protected in laminated in a plastic cover and be secured to the inside back of the controller cabinet door.
2. The controller chart shall be completed and approved prior to acceptance of the work.

1.25 TESTING

A. Provide all required system testing with written reports as described in part 3.

1.26 OPERATION AND MAINTENANCE MANUALS AND GUARANTEES

A. Prepare and deliver to the Owner's Representative within ten calendar days prior to completion of construction, two 3-ring hard cover binders containing the following information:

1. Index sheet stating Contractor's address and telephone number, list of equipment with name and addresses of local manufacturers' representatives.
2. Catalog and parts sheets on all material and equipment.
3. Guarantee statement. The start of the guarantee period shall be the date the irrigation system is accepted by the Owner.
4. Complete operating and maintenance instruction for all major equipment.
5. Irrigation product manufacturers warrantees.

B. In addition to the above-mentioned maintenance manuals, provide the Owner's maintenance personnel with instructions for maintaining major equipment and show evidence in writing to the Owner's Representative at the conclusion of the project that this has been rendered.

PART 2 PRODUCTS

2.1 MATERIALS GENERAL

A. All materials shall be of standard, approved and first grade quality and shall be new and in perfect condition when installed and accepted.

B. See the parts schedule on the drawings for specific components and manufacturers. The use of a manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and configuration desired only. Other manufacturer's equipment may be submitted for approval with written approval by the Owner's Representative. Substituted equipment shall not substantially alter the operations of the system.

C. Approval of any items or substitutions indicates only that the product(s) apparently meet the requirements of the drawings and specifications on the basis of the information or samples submitted. The Contractor shall be responsible for the performance of substituted items. If the substitution proves to be unsatisfactory or not compatible with other parts of the system, the Contractor shall replace said items with the originally specified items, including all necessary work and modifications to replace the items, at no cost to the owner.

2.2 RECLAIMED WATER SYSTEM DESIGNATION

A. Where irrigation systems use reclaimed water, all products including valve boxes, lateral and main line pipe, etc. where applicable and/or required by local code shall have the reclaimed water purple color designation.

2.3 PIPING MATERIAL

A. Individual types of pipe and fittings supplied are to be of compatible manufacturer unless otherwise approved. Pipe sizes shown are nominal inside diameter unless otherwise noted.

B. Plastic pipe:

1. All pipe shall be free of blisters, internal striations, cracks, or any other defects or imperfections. The pipe shall be continuously and permanently marked with the following information: manufacturer's name or trade mark, size, class and type of pipe pressure rating, quality control identifications, date of extrusion, and National Sanitation Foundation (NSF) rating.
2. Pressure main line for piping upstream of remote control valves and quick coupling valves:
   a. Pipe smaller than 2 inch diameter shall be plastic pipe for use with solvent weld or threaded fittings. Shall be manufactured rigid virgin polyvinyl chloride (PVC) 1220, Type 1, Grade 2 conforming to ASTM D 1785, designated as Schedule 40.
   b. Pipe 2 - 3 inch diameter shall be manufactured rigid virgin polyvinyl chloride (PVC), Type 1, Grade 2 conforming to ASTM D 1785, designated as bell gasket Class 315.
   c. Pipe larger than 3 inch diameter shall be manufactured rigid virgin polyvinyl chloride (PVC), Type 1, Grade 2 conforming to ASTM D 1785, designated as bell gasket Class 200 PVC.
3. Non_pressure lateral line for piping downstream of remote control valves: plastic pipe for use with solvent weld or threaded fittings. Shall be manufactured rigid virgin polyvinyl chloride PVC 1220 (type 1, grade 2) conforming to ASTM d 1785, designated as Class 200, 3/4 minimum size.

C. Galvanized pipe shall be used for above ground connections to, backflow prevention device assemblies, hose bibs, and booster pumps and as shown on the plans and details.

1. Pipe shall be hot dip galvanized continuous welded, seamless, Schedule 40 conforming to applicable current ASTM standards.

2.4 FITTINGS AND CONNECTIONS:

A. Polyvinyl chloride pipe fittings and connections: Type II, Grade 1, Schedule 40, high impact molded fittings, manufactured from virgin compounds as specified for piping tapered socket or molded thread type, suitable for either solvent weld or screwed connections. Machine threaded fittings and plastic saddle and flange fittings are not acceptable. Furnish fittings permanently marked with following information: nominal pipe size, type and schedule of material, and National Sanitation Foundation (NSF) seal of approval. PVC fittings shall conform to ASTM D2464 and D2466.

B. Brass pipe fittings, unions and connections: standard 125 pound class 85% red brass fittings and connections. IPS threaded.

C. PVC Schedule 80 threaded risers and nipples: Type I, grade 1, Schedule 80, high impact molded, manufactured from virgin compounds as specified for piping and conforming to ASTM D-2464. Threaded ends shall be molded threads only. Machined threads are not acceptable.

D. Galvanized pipe fittings shall be galvanized malleable iron ground joint Schedule 40 conforming to applicable current ASTM standards.

2.5 SOLVENT CEMENTS AND THREAD LUBRICANT

A. Solvent cements shall comply with ASTM D2564. Socket joints shall be made per recommended procedures for joining PVC plastic pipe and fittings with PVC solvent cement and primer by the pipe and fitting manufacturer and procedures outlined in the appendix of ASTM D2564.

B. Thread lubricant shall be Teflon ribbon-type, or approved equal, suitable for threaded installations as per manufacturer's recommendations.

C. Pipe Joint Compound (Pipe dope) shall be used on all galvanized threaded connections. Pipe Joint Compound is a white colored, non-separating thread sealant compound designed to seal threaded connections against leakage due to internal pressure. It shall contain PTFE (Polytetrafluoroethylene) to permit a tighter assembly with lower torque, secure permanent sealing of all threaded connections and allow for easy disassembly without stripping or damaging threads.

2.6 BACKFLOW PREVENTION DEVICES

A. The backflow prevention device shall be certified to NSF/ANSI 372 shall be ASSE Listed 1013, rated to 180 degree F, and supplied with full port ball valves.

B. The main body and access covers shall be low lead bronze (ASTM B 584)

C. The seat ring and all internal polymers shall be NSF Listed Noryl and the seat disc elastomers shall be silicone.

D. Backflow Preventer shall be as indicated on the drawings.

2.7 PRESSURE REGULATOR

A. Pressure regulator shall certified to NSF/ANSI 372, consisting of low lead bronze body bell housing, a separate access cap shall be threaded to the body and shall not require the use of ferrous screws.

B. The main valve body shall be cast bronze (ASTM B 584).

C. The access covers shall be bronze (ASTM B 584 or Brass ASTM B 16)

D. The assembly shall be of the balanced piston design and shall reduce the pressure in both flow and no flow conditions.

E. Pressure regulator shall be as indicated on the drawings.

2.7. WYE STRAINER

A. Strainer shall conform to MIL -S-16293, and be ANSI 3rd party certified to comply with the states lead plumbing law 0.25% maximum weighted average lead content.

B. The main body shall be low lead bronze (ASTM B 584)

C. The access covers shall be yellow brass or cast bronze (ASTM B 16 or ASTM B 584)

D. Strainer screen shall be 300 series stainless steel available in 20, 40, 60, 80, or 100 mesh.

F. Wye strainer shall be as indicated on the plans.

G. 2.8 BACKFLOW PREVENTER CAGE & FROST BLANKET

H. A heavy-duty steel mesh cage with rust proof finish. The caging shall be sized to allow space for the entire piping assembly associated with the Backflow Preventer unit, and all associated equipment.

I. The cage shall include the manufacturers' standard tamper proof locking mechanism.

J. Provide a concrete base as detailed on the drawings.

K. Backflow Preventer Cage type, manufacturer and color shall be as indicated on the plans.

L. A Frost Blanket, manufacturer and color shall be as indicated on the plans.

2.9 BOOSTER PUMP (where applicable)

A. Booster pump shall be housed in a sturdy, locking, weather-resistant case, furnished for maximum exterior protection.

B. Booster pump shall be as indicated on the drawings. .

2.10 BALL VALVES

A. Ball valves for 3/4 inch through 2 - 1/2 inch shall be of PVC, block, tru-union design with EDPDM seals and o-ring.

B. Ball valves for 3 inch and larger shall be gate design and shall be iron body, brass or bronze mounted AWWA gate valves, and shall have a clear waterway equal to the full nominal diameter of the valve, and shall be rubber gasket, flanged or mechanical joint only, and shall be able to withstand a continuous working pressure of 150 PSI. Valve shall be equipped with a square-operating nut.

C. All ball valves located in a valve manifold shall be the same size as the main line (1-1/2 inch size minimum). Provide pipe-reducing adapters down stream of valves, as required. All ball valves in line shall be the same size as the pipe.

D. Ball valves shall be as indicated on the drawings.

2.11 CHECK VALVES

A. Swing check valves 2 inch and smaller shall be 200 lbs., W.O.G., bronze construction with replaceable composition, neoprene or rubber disc and shall meet or exceed federal specification WW-V-9d, class a, type iv.

B. Anti_drain valves shall be of heavy-duty virgin PVC construction with female iron pipe thread inlet and outlet. Internal parts shall be stainless steel and neoprene. Anti-drain valves shall be field adjustable against draw out from 5 to 40 feet of head.

C. Check valves shall be as indicated on the drawings.

2.12 REMOTE CONTROL VALVES

A. Remote control valves shall be electrically operated, single seat, normally closed configuration, equipped with flow control adjustment and capability for manual operation.

B. Valves shall be actuated by a normally closed low wattage solenoid using 24 volts, 50/60 cycle solenoid power requirement. Solenoid shall be epoxy encased. A union shall be installed on the discharge end.

C. Remote control valves shall be wired to controller in same numerical sequence as indicated on drawings.

D. Remote control valves shall be as indicated on the drawings.

2.13 MASTER CONTROL VALVES

E. Master Control Valve shall be compatible with the irrigation controller.

F. Master control valves shall be as indicated on the drawings.

2.14 FLOW SENSOR

A. Flow sensor shall be compatible with the irrigation controller.

B. Flow sensor shall be as indicated on the drawings.

2.15 HYDROMETER

C. Hydrometer shall be compatible with the irrigation controller.

D. Hydrometer shall be as indicated on the drawings.

2.16 QUICK COUPLER VALVES

A. Quick coupler valves shall be a one or two piece, heavy-duty brass construction with a working pressure of 150 PSI with a built in flow control and a self_closing valve.

B. Quick coupler shall be equipped with locking red brass cap covered with durable yellow thermo-plastic rubber cover. Key size shall be compatible with quick coupler and of same manufacturer.

C. Quick coupler valves shall be as indicated on the drawings.

2.17 SPRINKLER HEADS

D. All sprinkler heads shall have check valves installed.

E. All sprinkler heads shall be as indicated on the drawings.

F. Riser nipples for all sprinkler heads shall be the same size as the riser opening in the sprinkler body and fabricated as shown on the drawings.

2.18 AUTOMATIC CONTROLLER

A. Controller shall be housed in a sturdy, locking, weather_resistant case, furnished for maximum exterior protection.

B. Controller shall be equipped with evapo-transpiration (ET) sensor, which adjusts the controller programming based on local climatic conditions. The sensor shall also have a rain sensing shut-off switch, wind sensing shut off switch, and freeze sensing shut-off of switch.

1. If a moisture sensor is used in lieu of an evapo-transpiration sensor an additional sensor, which has a rain-sensing shut-off switch, wind sensing shut-off switch, and freeze sensing shut-off switch shall be provided.

C. Automatic controller shall be as indicated on the drawings.

2.19 CONTROLLER DECODERS

D. All decoders shall be per the controller manufacturer's specifications.

E. Decoder model number shall be as shown on the drawings.

2.20 ELECTRICAL CONTROL WIRING

A. Low voltage

1. The electrical control wire shall be direct burial type UF, no. 14 AWG, solid, single conductor, copper wire UL approved or larger, if required to operate system as designed.
2. For 2-Wire controllers all irrigation wire for the controller, flow sensor, master valve, hydrometer, remote control valves and moisture sensors shall be per the controller manufacturer's specifications and recommendations.
3. Color code wires to each valve. Common wire shall be white.
4. If multiple controllers are being utilized, and wire paths of different controllers cross each other, both common and control wires from each controller to be of different colors.
5. Control wire splices: Splices are when required shall be placed in splice boxes.
6. Wire connections shall be per the controller manufacturer's specifications and recommendations.

B. High voltage

1. Shall be of type as required by local codes and ordinances.
2. Shall be of proper size to accommodate needs of equipment it is to serve.

2.21 VALVE BOXES AND MATERIALS

A. Valve boxes: valve boxes shall be constructed of ABS (acrylonitrile butadiene styrene) plastic, green in color, with rigid base and sides and shall be supplied with bolt lock cover secured with stainless steel bolts. Cover shall be identified as shown on drawings. Provide box extensions as required.

1. Master valves, flow sensors, remote control irrigation valves, gate valves, and ball valves 3 inch or less in size shall use a 14 inch x 19 inch x 12 inch rectangular box.
2. Quick coupler valves, wire splices, and grounding rods shall use a 10 inch circular box.

2.22 CONCRETE THRUST BLOCKS

A. Concrete thrust blocks shall be sized per the pipe manufactures requirement or as indicated on the drawings.

2.23 VALVE IDENTIFICATION TAGS

A. Valve Identification Tags shall be 2.25 inch x 2.65 inch polyurethane. Color: potable water; yellow / Non-potable water; purple. Tags shall be permanently attached to each remote control valve with tamper proof seals as indicated on the drawings.

2.24 EQUIPMENT TO BE FURNISHED TO OWNER

A. Two (2) sets of keys for each automatic controller.

B. Two (2) 48 inch tee wrenches for operating the gate valves.

C. Three (3) sets of special tools required for removing, disassembling and adjusting each type of sprinkler and valve supplied on this project.

D. Five (5) Extra sprinkler heads, nozzles, shrub adapters, nozzle filter screens, for each type used on the project.

E. Two (2) quick coupler keys to match manufacturer type of quick coupler.

2.25 INCIDENTAL MATERIALS AND EQUIPMENT

A. Furnish all materials and equipment not specified above, but which are necessary for completion of the work as intended.

2.26 MAIN LINE LOCATOR TAPE

A. 3 - inch wide plastic detectable locator tape.

2.27 MAIN LINE AND LATERAL LINE BEDDING SAND

A. Sand shall consist of natural or manufactured granular material, free of organic material, mica, loam, clay or other substances not suitable for the intended purpose.

B. Sand shall be masonry sand ASTM C 144 or coarse concrete sand, ASTM C 33.

Know what's below. Call before you dig.

GROUND STUDIO
LANDSCAPE ARCHITECTURE

O/ 831.655.1414
F/ 831.655.3462
537 Houston Street
Monterey, CA 93940
GROUNDSTUDIO.COM

4Binc Select Certified — IRRIGATION ASSOCIATION — Assessment and Professional Efficiency solutions — PROFESSIONAL PARTNER
LIC# 28127730—IA CERTIFICATION # 517436
ASIC

Carter Residence

1 Sand and Sea,
Carmel-By-The-Sea, CA 93923

APN: 010-321-023

Issue set: City of Carmel
Planning Application
Issue date: 05.10.2022

Revisions:

	REV.	DESCRIPTION	DATE
2	2	Plan Check	05.10.2022
	1	Plan Check	04.20.2022

Irrigation Notes

Scale: NTS
Drawn by: 4Binc.

L4.6

File Path: D:\C Files\YLA\New folder\ABNew folder\Carter Res Carmel\ir Plan\Carter Residence Irrigation Plan.dwg - Save Date: January 17, 2022 - Saved By: Seang

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

A. Code requirements shall be those of state and municipal codes and regulations locally governing this work, providing that any requirements of the drawings and specifications, not conflicting therewith, but exceeding the code requirements, shall govern unless written permission to the contrary is granted by the Owner's Representative.

B. Extreme care shall be exercised at all times by the Contractor in excavating and working in the project area due to existing utilities and irrigation systems to remain. Contractor shall be fully responsible for expenses incurred in the repair of damages caused by their operation.

1. The Contractor is responsible for identifying and maintaining existing irrigation main lines that supply water to areas on the site as noted on the drawings and outside of the proposed limit of work. The Contractor shall relocate or replace existing irrigation main line piping as required to provide a continuous supply of water to all areas of existing irrigation on site.
   a. Providing continuous water supply shall include hand watering and or the use of watering trucks to provide adequate water.

C. Plan locations of backflow preventers, valves, controllers, irrigation lines, sleeves, spray heads and other equipment are diagrammatic and indicate the spacing and relative locations of all installations. Final site conditions and existing and proposed plantings shall determine final locations and adjusted as necessary and as directed to meet existing and proposed conditions and obtain complete water coverage. Minor changes in locations of the above from locations shown shall be made as necessary to avoid existing and proposed trees, piping, utilities, structures, etc. at the Contractor's expense or when directed by the Owner's Representative.

1. The Contractor shall be held responsible for relocation of any items without first obtaining the Owner's Representative's approval. The Contractor shall remove and relocate such items at their expense if so directed by the Owner's Representative.

D. Prior to any work the Contractor shall stake out locations of all pipe, valves, equipment and irrigation heads and emitters using an approved staking method and maintain the staking of the approved layout in accordance with the drawings and any required modifications. Verify all horizontal and vertical site dimensions prior to staking of heads. Do not exceed spacing shown on drawings for any given area. If such modified spacing demand additional or less material than shown on the drawings, notify the Owner's Representative before beginning any work in the adjacent area.

E. Stub out main line at all end runs and as shown on drawings. Stub out wires for future connection where indicated on plan and as directed.

F. Point of connection shall be approximately as shown on drawings. Connect new underground piping and valves and provide all flanges, adapters or other necessary fittings for connection.

G. Permission to shut off any existing in-use water line must be obtained 48 hours in advance, in writing from the Owner. The Contractor shall receive instructions from the Owner's Representative as to the exact length of time of each shut-off.

H. No fittings shall be installed on pipe underneath pavement or walls.

I. Prior to starting any work, Contractor shall obtain a reading of existing static water pressure (no flow condition) at the designated point of connection and immediately submit written verification of pressure with date and time of recording to Owner's Representative.

3.2 TRENCHING, DIRECTIONAL BORING AND SLEEVING

A. Perform all trenching, directional boring, sleeving and excavations as required for the installation of the work included under this section, including shoring of earth banks to prevent cave_ins.

B. The Contractor may directional bore lines where it is practical or where required on the plans.

1. Extend the bore 1' past the edge of pavement unless noted differently on the plans
2. Cap ends of each bore and locate ends at finished grade using metal stakes.
3. All boring and sleeving shall have detectable locator tape placed at the ends of the pipe.

C. Make trenches for mains, laterals and control wiring straight and true to grade and free of protruding stones, roots or other material that would prevent proper bedding of pipe or wire.

D. Excavate trenches wide enough to allow a minimum of 4 - inch between parallel pipelines and 8 inch from lines of other trades. Maintain 3 - inch vertical clearance between irrigation lines. Minimum transverse angle is 45 degrees. All pipes shall be able to be serviced or replaced without disturbing the other pipes.

E. Trenches for pipelines shall be made of sufficient depth to provide the minimum cover from finished grade as follows:

4. Pressure main line: 18 inches below finish grade and 24-30 inches below paved areas in Schedule 40 PVC sleeves.
5. Reclaimed water constant pressure main lines shall cross at least twelve (12) inches below potable water lines.
   a. If a constant pressure reclaimed water main line must be installed above a potable water line or less than twelve (12) inches below a potable water line, then reclaimed water line shall be installed within an approved protective sleeve. The sleeve shall extend ten (10) feet from each side of the center of the potable line, for a total of twenty (20) feet. The sleeve shall be color-coded (purple) for use with reclaimed water.
3. Lateral lines: 12 inches below finish grade and 18 inches below paved areas in Schedule 40 PVC sleeves.
4. Control wiring: to the side of pressure main line and 24 inches below paved areas in Schedule 40 PVC sleeves.

F. On new on-site systems (post-meter), the required horizontal separation between potable water lines, reclaimed water constant pressure main lines and sewer lines shall be a minimum of four (4) feet apart as directed by the project engineer and/ or regulatory agency. Measurements shall be between facing surfaces, not pipe centerlines.

G. When trenching through areas of imported or modified soil, deposit imported or modified soils on one side of trench and subsoil on opposite side.

H. Backfill the trench per the requirements in paragraphs “Backfilling and Compacting” below.

3.3 PIPE INSTALLATION

A. General Pipe Installation

1. Exercise caution in handling, loading and storing, of plastic pipe and fittings to avoid damage.
   a. The pipe and fittings shall be stored under cover until using, and shall be transported in a vehicle with a bed long enough to allow the length of pipe to lay flat so as not to be subjected to undue bending or concentrated external load at any point.
   b. All pipe that has been dented or damaged shall be discarded unless such dent or damaged section is cut out and pipe rejoined with a coupling.
2. Trench depth shall be as specified above from the finish grade to the top of the pipe.
3. Install a detectable pipe locator tape 6 to 8 inches above all main line pipes.

B. Polyvinyl Chloride Pipe (PVC) Installation

1. Under no circumstance is pipe to rest on concrete, rock, wood blocks, construction debris or similar items.
2. No water shall be permitted in the pipe until a period of at least 24 hours has elapsed for solvent weld setting and curing.
3. Install assemblies and pipe to conform to respective details and where shown diagrammatically on drawings, using first class workmanship and best standard practices as approved. All fittings that are necessary for proper connections such as swing joints, offsets, and reducing bushings that are not shown on details shall be installed as necessary and directed as part of the work.
4. Dielectric bushings shall be used in any connections of dissimilar metals.
5. Gasketed plastic pipe: pipe-to-pipe joints or pipe to fittings shall be made in accordance with manufacturer's specifications.
6. Solvent weld or threaded plastic pipe:
   a. Installation of all pipe and fittings shall be in strict accordance with manufacturer's specifications.
   b. Pipe shall be cut using approved PVC pipe cutters only. Sawed joints are disallowed. All field cuts shall be beveled to remove burrs and excess before gluing.
   c. Welded joints shall be given a minimum of 15 minutes to set before moving or handling. Excess solvent on the exterior of the joint shall be wiped clean immediately after assembly.
   d. Plastic to metal connections shall be made with plastic adapters and if necessary, short (not close) brass threaded_nipples. Connection shall be made with two (2) wraps of Teflon tape and hand tightened plus one turn with a strap wrench.
   e. Snake pipe horizontally in trench to allow one (1) foot of expansion and contraction per 100 feet of straight run.
   f. Threaded pipe joints shall be made using Teflon tape. Solvent shall not be used with threaded joints. Pipe shall be protected from tool damage during assembly. All damaged pipe shall be removed and replaced. Take up threaded joints with light wrench pressure.
   g. No close nipples or risers are allowed. Cross connections in piping is disallowed.
   h. Center load pipe at 10 feet on center intervals with small amount of backfill to prevent arching and slipping under pressure. Other than this preliminary backfill all pipe joints, fittings and connections are to remain uncovered until successful completion of hydrostatic testing and written approval of the testing report.
   i. Concrete thrust blocks shall be constructed behind all pipe fittings 1-1/2 inch diameter and larger at all changes of direction of 45 degrees or more.

C. Galvanized Pipe Installation

1. All joints shall be threaded with pipe joint compound used on all threads.
2. Dielectric bushings shall be used in any connections of dissimilar metals.

3.4 TRENCHING, DIRECTIONAL BORING, AND SLEEVING REVIEW:

A. Upon completion and installation of all trenching, directional boring, and sleeving, all installed irrigation control wiring, lines and fittings shall be visually observed by the Owner's Representative unless otherwise authorized. Do not cover any wires, lines or fittings until they have been tested and observed by the Owner's Representative.

3.5 FLUSHING

A. Openings in piping system during installation are to be capped or plugged to prevent dirt and debris from entering pipe and equipment. Remove plugs when necessary to flush or complete system.

B. After completion and prior to the installation of any terminal fittings, the entire pipeline system shall be thoroughly flushed to remove dirt, debris or other material.

3.6 HYDROSTATIC PRESSURE TESTING

A. After flushing, and the installation of valves the following tests shall be conducted in the sequence listed below. The Contractor shall furnish all equipment; materials and labor necessary to perform the tests and all tests shall be conducted in the presence of the Owner's Representative.

B. Water pressure tests shall be performed on all pressure main lines before any couplings, fittings, valves and the like are concealed.

C. Immediately prior to testing, all irrigation lines shall be purged of all entrapped air or debris by adjusting control valves and installing temporary caps forcing water and debris to be discharged from a single outlet.

D. Test all pressure main line at 150 PSI. For a minimum of four (4) hours with an allowable loss of 5 PSI. Pressure and gauges shall be read in PSI, and calibrated such that accurate determination of potential pressure loss can be ascertained.

E. Re_test as required until the system meets the requirements. Any leaks, which occur during test period, will be repaired immediately following the test. All pipe shall be re_tested until final written acceptance.

F. The Contractor is responsible for proving documentation stating the weather conditions, date, the start time and initial water pressure readings, the finish time and final water pressure readings and the type of equipment used to perform the test. The documentation must be signed by a witness acceptable to the Owner, verifying all of the above-mentioned conditions.

G. Submit a written report of the pressure testing results with the other above required information to the Owner's Representative for approval.

3.7 BACKFLOW PREVENTER TESTING

A. The backflow preventer shall be tested according to procedures and results per the requirements of the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California or American Water Works Association whichever is more stringent.

B. Testing shall be performed by a Backflow Prevention Assembly Tester with a current certification from the American Backflow Preventer Association.

3.8 CONTROLLER AND BOOSTER PUMP TESTING AND CERTIFICATION

A. Controller and booster Pump shall be certified by a factory approved certified professional. Contact xxxxxxxx at xxx.xxx.xxxx.

3.9 BACKFILLING AND COMPACTING

A. Irrigation trenches shall be carefully backfilled with material approved for backfilling and free of rocks and debris one (1) inch in diameter and larger. When back filling trenches in areas of imported or modified planting soil, replace any excavated subsoil at the bottom and the imported soil or modified planting soil at the top of the trench.

B. Backfill shall be compacted with approved equipment to the following densities

1. Backfill under pavement and within 2 feet of the edge of pavement: Compact to 95% or greater of maximum dry density standard proctor.
2. Backfill of subsoil under imported planting mixes or modified existing planting soil: Between 85 and 90% of maximum dry density standard proctor.
3. Backfill of imported planting mixes or modified existing planting soil: Compact to the requirements of the adjacent planting mix or planting soil as specified in section “Planting Soil”.

C. Finish grade of all trenches shall conform to adjacent grades without dips or other irregularities. Dispose of excess soil or debris off site at Contractor's expense.

D. Any settling of backfill material during the maintenance or warranty period shall be repaired at the Contractor's expense, including any replacement or repair of soil, lawn, and plant material or paving surface.

3.10 RESURFACING PAVING OVER TRENCHES

A. Restore all surfaces and repair existing underground installations damaged or cut as a result of the excavation to their original condition, satisfactory to the Owner's Representative.

B. Trenches through paved areas shall be resurfaced with same materials quality and thickness as existing material. Paving restoration shall be performed by the project paving Sub-contractor or an approved Contractor skilled in paving work.

C. The cost of all paving restoration work shall be the responsibility of the irrigation Contractor unless the trenching thru the paving was, by previous agreement, part of the general project related construction.

3.11 INSTALLATION OF EQUIPMENT

A. General:

1. All equipment shall be installed to meet all installation requirements of the product manufacturer. In the event that the manufactures requirements cannot be implemented due to particular condition at the site or with other parts of the design, obtain the Owner's Representative's written authorization and approval for any modifications.
2. Install all equipment at the approximately at the location(s) and as designated and detailed on the drawings. Verify all locations with the Owner's Representative.
3. Install all valves within a valve box of sufficient size to accommodate the installation and servicing of the equipment. Group valves together where practical and locate in shrub planting areas.
4. All sprinkler irrigation systems that are using water from potable water systems shall require backflow prevention. All backflow prevention devices shall meet and be installed in accordance with requirements set forth by local codes and the health department.

B. Pressure regulator:

1. Set regulator for required PSI per manufacturer's specifications.

C. Check Valve:

1. Install check valves approximately at the locations necessary to prevent low head run off.

D. Remote control valves:

1. Install one remote control valve per valve box.
2. Remote control valve manifolds and quick coupler valves shall be separate allowing use of a quick coupler with all remote control valves shut off.
3. Install boxes no farther than 12 inches from edge of paving and perpendicular to edge of paving and parallel to each other. Allow 12 inches clearance between adjacent valve boxes.

E. Quick coupler valve:

1. Install each quick coupler valve in its own valve box.
2. Install thrust blocks on quick couplers.
3. Place no closer than 12 inches to adjacent paving.
4. Install 18 inches off set from main line.

F. Sprinkler heads:

1. All main lines and lateral lines, including risers, shall be flushed and pressure tested before installing sprinkler heads.
2. Install specified sprinkler heads as shown in details at locations shown on the drawings. Adjust layout for full coverage, spacing of heads shall not exceed the maximum spacing recommended by the manufacturer.
3. All sprinkler heads shall be set perpendicular to finish grade unless otherwise designated on the drawings or details.

G. Irrigation controllers:

1. Remote control valves shall be connected to controller in numerical sequence as shown on the drawings.
2. Controller shall be tested with complete electrical connections. The Contractor shall be responsible for temporary power to the controller for operation and testing purposes.
3. Connections to control wiring shall be made within the pedestal of the controller. All wire shall follow the pressure main insofar as possible.
4. Electrical wiring shall be in a rigid gray PVC plastic conduit from controller to electrical outlet. The electrical Contractor shall be responsible for installing all wiring to the controller, in order to complete this installation. A disconnect switch shall be included.

H. Wiring:

1. Low Voltage
   a. Control wiring between controller and electrical valves shall be installed in the same trench as the main line where practical. The wire shall be bundled and secured to the lower quadrant of the trench at 10 foot intervals with plastic electrical tape.
   b. When the control wiring cannot be installed in the same main line trench it shall be installed a minimum of 18 inches below finish grade and a bright colored plastic ribbon with suitable markings shall be installed in the trench 6 inches below grade directly over the wire.
   c. An expansion loop shall be provided every 500 feet in a box and inside each valve box. Expansion loop shall be formed by wrapping wire at least eight (8) times around a ¾ inch pipe and withdrawing pipe.
   d. Provide one control wire to service each valve in system.
   e. Provide 03 common wire(s) per controller, or as needed.
   f. Run two (2) spare #14 - 1 wires from controller along entire main line to last electric remote control valve on each and every leg of main line. Label spare wires at controller and wire stub to be located in a box.
   g. All control wire splices not occurring at control valve shall be installed in a separate splice valve box.
   h. Wire markers (sealed, 1 inch to 3 inch square) are to identify control wires at valves and at terminal strips of controller. At the terminal strip mark each wire clearly indicting valve circuit number.
2. High Voltage
   a. All electrical work shall conform to local codes, ordinances and any authorities having jurisdiction. All high voltage electrical work to be performed by licensed electrician.
   b. The Contractor shall provide 120-volt power connection to the automatic controller unless noted otherwise on drawings.

I. Valve boxes:

1. Install one valve box for each type of valve installed as per the details.
2. Gravel sump shall be installed after compaction of all trenches. Final portion of gravel shall be placed inside valve box after valve is backfilled and compacted.
3. Permanently label valve number and or controller letter on top of valve box lid using a method approved by the Owners Representative.

J. Tracer wire:

1. Tracer wire shall be installed with non_metallic plastic irrigation main lines where controller wires are not buried in the same trench as the main line.
2. The tracer wire shall be placed on the bottom of the trench under the vertical projection of the pipe with spliced joints soldered and covered with insulation type tape.
3. Tracer wire shall be of a color not used for valve wiring. Terminate wire in a valve box. Provide enough length of wire to make a loop and attach wire marker with the designation "tracer wire".

K. Drip Installation:

1. Clamp fittings with Oetiker clamps or approved equal when operating pressure exceeds specific drip tubing fitting requirements.
2. When installing drip tubing, install soil staples as listed below:
   a. Sandy Soil - One staple every three (3') feet and two (2) staples on each change of direction (tee, elbow, or cross).
   b. Loam Soil - One staple every four (4') feet and two (2) staples on each change of direction (tee, elbow, or cross).
   c. Clay Soil - One staple every five (5') feet and two (2) staples on each change of direction (tee, elbow, or cross).
3. Cap or plug all openings as soon as lines have been installed to prevent the intrusion of materials that would obstruct the pipe. Leave in place until removal is necessary for completion of installation.
4. Thoroughly flush all water lines before installing valves and other hydrants.

3.12 ADJUSTMENT AND COVERAGE TEST

A. Adjustment:

1. The Contractor shall flush and adjust all sprinkler heads, valves and all other equipment to ascertain that they function according to the manufacturer's data.
2. Adjust all sprinkler heads not to overspray onto walks, roadways and buildings when under maximum operating pressure and during times of normal prevailing winds.

B. Coverage test:

1. The Contractor shall perform the coverage test in the presence of the Owner's Representative after all sprinkler heads have been installed, flushed and adjusted. Each section is tested to demonstrate uniform and adequate coverage of the planting areas serviced.
2. Any systems that require adjustments for full and even coverage shall be done by the Contractor prior to final acceptance at the direction of the Owner's Representative at no additional cost. Adjustments may also include realignment of pipes, addition of extra heads, and changes in nozzle type or size.
3. The Contractor at no additional cost shall immediately correct all unauthorized changes or improper installation practices.
4. The entire irrigation system shall be operating properly with written approval of the installation by the Owner's representative prior to beginning any planting operations.

3.13 REPAIR OF PLANTING SOIL

A. Any areas of planting soil including imported or existing soils or modified planting soil which become compacted or disturbed or degraded as a result of the installation of the irrigation system shall be restored to the specified quality and compaction prior to beginning planting operations at no additional expense to the Owner. Restoration methods and depth of compaction remediation shall be approved by the Owner's Representative.

3.14 CLEAN-UP

A. During installation, keep the site free of trash, pavements reasonably clean and work area in an orderly condition at the end of each day. Remove trash and debris in containers from the site no less than once a week.
   a. Immediately clean up any spilled or tracked soil, fuel, oil, trash or debris deposited by the Contractor from all surfaces within the project or on public right of ways and neighboring property.

B. Once installation is complete, wash all soil from pavements and other structures.

1. Make all repairs to grades ruts, and damage to the work or other work at the site.
2. Remove and dispose of all excess soil, packaging, and other material brought to the site by the Contractor.

3.15 PROTECTION

A. The Contractor shall protect installed irrigation work from damage due to operations by other Contractors or trespassers.

1. Maintain protection during installation until Acceptance. Treat, repair or replace damaged work immediately. The Owner's Representative shall determine when such treatment, replacement or repair is satisfactory.

3.16 PRE-MAINTENANCE OBSERVATION:

A. Once the entire system shall be completely installed and operational and all planting is installed, the Owner's Representative shall observe the system and prepare a written punch list indicating all items to be corrected and the beginning date of the maintenance period.

B. The irrigation/landscape contractor is responsible for scheduling an irrigation audit prior to general maintenance taking effect. The irrigation auditor must be CLIA certified, in good standing and must comply with all Irrigation Associations methods and code of ethics.

C. This is not final acceptance and does not relieve the Contractor from any of the responsibilities in the contract documents.

3.17 GENERAL MAINTENANCE AND THE MAINTENANCE PERIOD

A. General maintenance shall begin immediately after installation of irrigation system. The general maintenance and the maintenance period shall include the following:

1. On a weekly basis the Contractor shall keep the irrigation system in good running order and make observations on the entire system for proper operation and coverage. Repair and cleaning shall be done to keep the system in full operation.
2. Records of all timing changes to control valves from initial installation to time of final acceptance shall be kept and turned over to the Owner's Representative at the time of final acceptance.
3. During the last week of the maintenance period, provide equipment familiarization and instruction on the total operations of the system to the personnel who will assume responsibility for running the irrigation system.
4. At the end of the maintenance period, turn over all operations logs, manuals, instructions, schedules, keys and any other equipment necessary for operation of the irrigation system to the Owner's Representative who will assume responsibility for the operations and maintenance of the irrigation system.

B. The maintenance period for the irrigation system shall coincide with the maintenance period for the Planting. (See specification section “Planting”

3.18 SUBSTANTIAL COMPLETION ACCEPTANCE

A. Upon written notice from the Contractor, the Owners Representative shall review the work and make a determination if the work is substantially complete.

B. The date of substantial completion of the irrigation shall be the date when the Owner's Representative accepts that all work in Planting, Planting Soil, and Irrigation installation sections is complete.

3.19 FINAL ACCEPTANCE / SYSTEM MALFUNCTION CORRECTIONS

A. At the end of the Plant Warrantee and Maintenance period, (See specification section “Planting”) the Owner's Representative shall inspect the irrigation work and establish that all provisions of the irrigation system are complete and the system is working correctly.

1. Restore any soil settlement over trenches and other parts of the irrigation system.
2. Replace, repair or reset any malfunctioning parts of the irrigation system.

B. The Contractor shall show all corrections made from punch list. Any items deemed not acceptable shall be reworked and the maintenance period will be extended.

C. The Contractor shall show evidence that the Owner's Representative has received all charts, records, drawings, and extra equipment as required before final acceptance.

D. Failure to pass review: If the work fails to pass final review, any subsequent observations must be rescheduled as per above. The cost to the Owner for additional observations will be charged to the Contractor at the prevailing hourly rate of the reviewer.

END OF SECTION 32 8400

GROUND STUDIO
LANDSCAPE ARCHITECTURE

O / 831.655.1414
F / 831.655.3462
537 Houston Street
Monterey, CA 93940
GROUNDSTUDIO.COM

Carter Residence

1 Sand and Sea,
Carmel-By-The-Sea, CA 93923

APN: 010-321-023

Issue set: City of Carmel Planning Application
Issue date: 05.10.2022

Revisions:

REV.	DESCRIPTION	DATE
2	Plan Check	05.10.2022
1	Plan Check	04.20.2022

Irrigation Notes

Scale: NTS
Drawn by: 4Binc.

L4.7

- Irrigation/Watering Responsibility
  - It is the responsibility of the Maintenance Contractor to operate the irrigation system in an efficient manner and to minimize water waste. It is the Maintenance Contractor's responsibility to adjust the system to apply water in accordance with plant requirements based on weather, soil, and site conditions. The irrigation program shall be scheduled to minimize water waste through runoff, excessive irrigation run times, utilize CYCLE SOAK scheduling when applicable. It is the responsibility of the Maintenance Contractor to operate the irrigation system based on local municipal guidelines.
- Irrigation Activation
  - Activate irrigation system in spring (or when weather permits). Charge mainline in February or March to check for leaks and/or malfunctioning valves.
  - Turn on backflow preventers, open gate valves and activate booster pumps if installed.
  - Set the irrigation controller to RUN MODE and verify that all programs are activated and set up to be run in Self Adjusted mode.
  - Site verification and adjustments. This includes turning on each zone, monitoring for leaks or malfunctioning parts, cutting grass away from sprinkler heads and adjusting sprinklers for proper arc and maximum efficiency.
  - Verify that drip irrigation is functional and that distribution tubing has not been cut or broken during non operational period.
  - Service, clean and adjust and weather sensor system. This is critical for ALL self adjusting controllers.
  - If applicable service irrigation booster pump, this need to be completed by the manufacturers certified technician.
- Irrigation Monitoring/Landscape Watering
  - Check the ET/Weather Based self adjusting system programming, Flow Sensor and Master Valve operation and programming; adjust as required to ensure proper operation.
  - ALL Backflow Prevention Devices are to be maintained as per Local city or county codes.
  - All turf areas shall be monitored to determine the need for supplemental irrigation. Frequency and duration of each watering will be dependent on local weather conditions. To determine the need for watering, Landscape Maintenance Contractor shall use a soil probe to examine the first 6-12" of the soil profile. If the soil is cool, damp and holds its shape, watering is not necessary. Plant material roots should be encourage to root as deep as possible, this is accomplished by deep root watering, longer irrigation run times and utilizing CYLCE SOAK method. Frequent shallow irrigation scheduling is ineffective and will only promote shallow rooting and require excessive water waste.
  - Groundcover and shrub beds shall be watered using an automatic irrigation system. The entire groundcover/shrub bed shall be soaked to a depth to maximize healthy plant root growth. Irrigation run time to be based on irrigation device precipitation rate (not flow rate) and plant material irrigation demand. (Use WUCOLS reference for plant watering needs). In the event of establishing plants, or compromised soil profile, watering frequencies may be adjusted.
  - Establish time settings and intervals of irrigation water application for each valve of all irrigation zones. Make adjustments when necessary to correspond to variable watering requirements. Check for coverage and plugged emission/nozzle devices. Clean devices and adjust devices while maintaining the system in proper working order.
  - ALL automatic controllers will be programmed to apply water during hours as permitted by local town, city or county ordinances.
- Irrigation System Repair
  - Cleaning and adjusting the sprinklers heads are the Maintenance Contractor's responsibility. Repair and/or replacement of any vandalized or malfunctioning component beyond Maintenance Contractor's control is the responsibility of the Owner/Agent. Any damage caused by Maintenance Contractor will be repaired by Maintenance Contractor at no cost to the Owner/Agent.
  - All irrigation repaired or replaced MUST be in accordance with the original irrigation design, local city or county guidelines and must provide the maximum efficiency as possible so as NOT to waste water.
  - ALL Drip systems are to be manually flushed a minimum one time per year and filters to be cleaned on a regular basis.
  - All damaged and repaired pipe MUST be flushed of all debris. Maintenance Contractor to guarantee full operational and efficient performance of repaired systems.
  - Repairs to Backflow Prevention Devices must be conducted by a trained certified backflow technician.
  - It is recommended that ALL irrigation maintenance and repair be performed by California Licensed and/or Certified contractor. Not maintaining irrigation systems in an efficient manner will result in plant and landscape degradation and additional maintenance costs.
- Irrigation System Winterization
  - Where applicable, shut off and drain irrigation system(s) at the end of the irrigation season. Turn off all main supply valves, open all manual drain valves, and bleed valves on backflow prevention devices. Perform winterization prior to November 1st.
- Irrigation Start up
  - Flush all drip lines at flush points.
  - Remove and clean all filters and replace any damaged filters.
  - Check that all weathers sensors are functioning and replace batteries as needed.

IRRIGATION MAINTENANCE

EMITTER COUNT FOR 1" VALVE

GPM	GPH	GPH	GPM	DEVICES / 1" VALVE	FLOW GPM
0.25	15	0.5	0.01	1700	14.2
0.5	30	1	0.02	850	14.2
1	60	5	0.08	180	15.0
2	120	7	0.12	100	11.7
4	240	10	0.17	90	15.0
6	360	12	0.2	75	15.0
8	480	18	0.3	50	15.0
10	600	24	0.4	37	14.8
		30	0.5	30	15.0
		60	1	15	15.0
				1" VALVE BASED ON 15 GPM MAX	

DRIP LINE CHART

GPH	GPM	SPACING	SQUARE FOOTAGE	FLOW GPM	PRECIP RATE
0.27	0.0045	12x12	100	0.44	0.42
0.27	0.0045	12x18	100	0.29	0.28
0.27	0.0045	12x24	100	0.22	0.21
0.27	0.0045	18x18	100	0.19	0.19
0.27	0.0045	18x24	100	0.13	0.14
0.27	0.0045	24x24	100	0.11	0.1
0.4	0.066	12x12	100	0.65	0.64
0.4	0.066	12x18	100	0.43	0.43
0.4	0.066	12x24	100	0.33	0.32
0.4	0.066	18x18	100	0.29	0.29
0.4	0.066	18x24	100	0.20	0.21
0.4	0.066	24x24	100	0.16	0.16
0.6	0.01	12X12	100	0.99	0.96
0.6	0.01	12X18	100	0.66	0.64
0.6	0.01	12X24	100	0.50	0.48
0.6	0.01	18X18	100	0.44	0.43
0.6	0.01	18X24	100	0.33	0.32
0.6	0.01	24x24	100	0.25	0.24
0.9	0.015	12X12	100	1.48	1.44
0.9	0.015	12X18	100	0.99	0.96
0.9	0.015	12X24	100	0.75	0.72
0.9	0.015	18X18	100	0.66	0.64
0.9	0.015	18X24	100	0.50	0.48
0.9	0.015	24X24	100	0.38	0.36

INLINE FORMULA
PR= 231.1 x Emitter Flow /Emitter Spacing x Row Spacing

DRIP PRECIPITATION RATES

GPH	GPM	Wr	Cr	# Devices	WA	Precip Rate
1	0.017	1	1	1	3.1	0.51
2	0.033	1.5	1	1	7.1	0.45
5	0.083	2	1	1	12.6	0.64
7	0.117	2.5	1	1	19.6	0.57
10	0.167	3	1	1	28.3	0.57
12	0.2	3.5	1	1	38.5	0.50
18	0.3	4	1	1	50.2	0.58
24	0.4	4.5	1	1	63.6	0.61
30	0.5	5	1	1	78.5	0.61
60	1	7	1	1	153.9	0.63

WETTED AREA OF SOIL TYPES

SOIL TYPE	Cr (FT)	SOIL TYPE	Cr (FT)
CLAY	1.0	LOAM	0.7
CLAY LOAM	1.0	LOAMY SAND	0.4
COURSE SAND	0.2	SANDY LOAM	0.6
FINE SAND	0.3	SILT LOAM	0.9

LEGEND

Cr	Soil Coefficient
TWr	Total Wetted Area
WA	Wetted Area

BASIC INTAKE RATE

SOIL TYPE	BASIC INFILTRATION RATE
SANDY	Less than 1.5"/hr
SANDY LOAM	.75 - 1.25"/hr
LOAM	.75"/hr
CLAY LOAM	.40"/hr
CLAY	.20"/hr

TREE RINGS 12" O.C EMITTER SPACING. MIN 3 RINGS PER TREE

RADIUS	CIRCUMF	TOTAL LF	FLOW RATE	TOTAL FLOW	PRECIP RATE	TOTAL FLOW/RING COUNT
18"	3.14*DIA	9.42	0.6 GPH	5 GPH	0.96"/HR	3 RINGS@ .6 GPH = 29 GPH
30"	3.14*DIA	15.7	0.6 GPH	9 GPH	0.96"/HR	4 RINGS@ .6 GPH = 47 GPH
48"	3.14*DIA	25.12	0.6 GPH	15 GPH	0.96"/HR	
60"	3.14*DIA	31.4	0.6 GPH	18 GPH	0.96"/HR	
18"	3.14*DIA	9.42	0.9 GPH	7.5 GPH	1.44"/HR	3 RINGS@ .9 GPH = 42.5 GPH
30"	3.14*DIA	15.7	0.9 GPH	13 GPH	1.44"/HR	4 RINGS@ .9 GPH = 69.5 GPH
48"	3.14*DIA	25.12	0.9 GPH	22 GPH	1.44"/HR	
60"	3.14*DIA	31.4	0.9 GPH	27 GPH	1.44"/HR	

Formula A 96.25 x GPH / 60 /Wetted Area*Cr
Formula B 1.605 x GPH / Wetted Area *Cr

PRECIPITATION RATES & SOIL INTAKE RATES

Job Name: Carter Residence

Date: 01/17/22

California Water Efficient Landscape Worksheet

Reference Evapotranspiration (ET_o): 36 — Project Type: Residential — 0.55
Rain Fall (Inches): — Usable Rain Fall (Inches): 0

	Hydrozone # / Planting Description[a]	Plant Factor (PF)	Irrigation Method[b]	Irrigation Efficiency (IE)[c]	ETAF (PF/IE)	Landscape Area (Sq. Ft.)	ETAF x Area	Estimated Total Water Use (ETWU)[d]	Gallons Per Minute GPM	% Landscape Area
Zone#	**Regular Landscape Areas**									
1	GRASSES- MED	0.5	Drip	0.81	0.62	140	86	1929	7.30	7.45%
2	SHRUBS- MED	0.5	Drip	0.81	0.62	370	228	5098	2.67	19.68%
3	SHRUBS- LOW	0.2	Drip	0.81	0.25	470	116	2590	3.07	25.00%
4	SHRUBS- MED	0.5	Drip	0.81	0.62	240	148	3307	2.11	12.77%
5	SHRUBS- MED	0.5	Drip	0.81	0.62	500	309	6889	2.98	26.60%
6	SHRUBS- LOW	0.2	Drip	0.81	0.25	110	27	606	1.14	5.85%
7	TREES- LOW	0.2	Drip	0.81	0.25	50	12	276	0.71	2.66%
					Totals	**1880**	**927**	**20694**	**19.98**	**100.00%**
	Special Landscape Areas									
	[redacted]				0	0	0	0		0.00%
							0	0		0.00%
							0	0		0.00%
							0	0		0.00%
					Totals	0	0	0		
							ETWU Total	20694		
							Maximum Allowed Water Allowance (MAWA)[e]	23079		

ETAF Calculations

Regular Landscape Areas

Total ETAF x Area	927
Total Area	1880
Average ETAF	0.46

All Landscape Areas

Total ETAF x Area	927
Total Area	1880
Average ETAF	0.46

Average ETAF for Regular Landscape Areas must be 0.55 or below for residential areas, and 0.45 or below for non-residential areas.

ETWU ACRE FEET	**0.063508**
MAWA ACRE FEET	**0.070826**
% ETWU OF MAWA	**0.90**
PASS:	**YES**

SUMMARY HYDROZONE	
HYDROZONE	**AREA SQ FEET**
HIGH WATER USE / SLA	0
MODERATE WATER USE	1250
LOW WATER USE	630

MWELO CALCULATIONS

ESTABLISHED PLANT IRRIGATION SCHEDULE

CLIENT: Carter Residence — **July Eto:** 4.30 — **Site Annual Eto:** 36 — **Avg Plant Factor Et:** 0.4

Controller Hunter — **HCC** — **ET SOURCE** — **WiFi & Rain Sensor** — **Soil Type** SANDY LOAM 1 — **% Site Irrigation Effic:** 0.81

Zone #	Program	Plant Type	Plant Factor	ET Plant Factor x Eto	Plant Factor x Eto	Root Depth "	Shade Factor	Density Factor	Irrigation Equipment	Inches Precip Rate	% Dist Unif	Irri Water Requirement Inches	Total Period Run Time	Valve Cycle Time	Cycles	Totals Days Per July	Zone GPM	Total GPM	Total Run Days/Yr	Total Gallons/Yr
1	A	Grasses	Medium	0.5	2.2	6	1	1	Inline Drip	1.6	0.9	0.56	7	7	1	12	7.30	54	51	2,768.42
2	B	Shrub	Medium	0.5	2.2	12	0.5	1	Inline Drip	0.38	0.9	0.56	24	24	1	8	2.67	63	51	3,197.56
3	B	Shrub	Low	0.2	0.9	12	1	1	Inline Drip	0.38	0.9	0.22	19	19	1	8	3.07	58	51	2,941.28
4	B	Shrub	Medium	0.5	2.2	12	0.5	1	Inline Drip	0.38	0.9	0.56	24	24	1	8	2.11	50	51	2,526.91
5	B	Shrub	Medium	0.5	2.2	12	1	1	Inline Drip	0.38	0.9	0.56	47	47	1	8	2.98	141	51	7,137.62
6	B	Shrub	Low	0.2	0.9	12	1	1	Inline Drip	0.38	0.9	0.22	19	19	1	8	1.14	22	51	1,092.20
7	C	Tree	Low	0.2	0.9	18	0.5	1	Tree Rings	1.6	0.9	0.22	2	2	1	8	0.71	2	51	80.78
									Average Site % DU		0.90		142	Total Run Time						

Estimated Total Water Use: Gallons 19,806.96

IRRIGATION SCHEDULE

Know what's below. Call before you dig.

GROUND STUDIO
LANDSCAPE ARCHITECTURE

O/ 831.655.1414
F/ 831.655.3462
537 Houston Street
Monterey, CA 93940
GROUNDSTUDIO.COM

4Binc Select Certified IRRIGATION ASSOCIATION — Experienced, professional, Effective solutions — LIC# 1012730—IA CERTIFICATION # 57436 — ASIC PROFESSIONAL PARTNER

Carter Residence

1 Sand and Sea,
Carmel-By-The-Sea, CA 93923

APN: 010-321-023

Issue set: City of Carmel Planning Application
Issue date: 05.10.2022

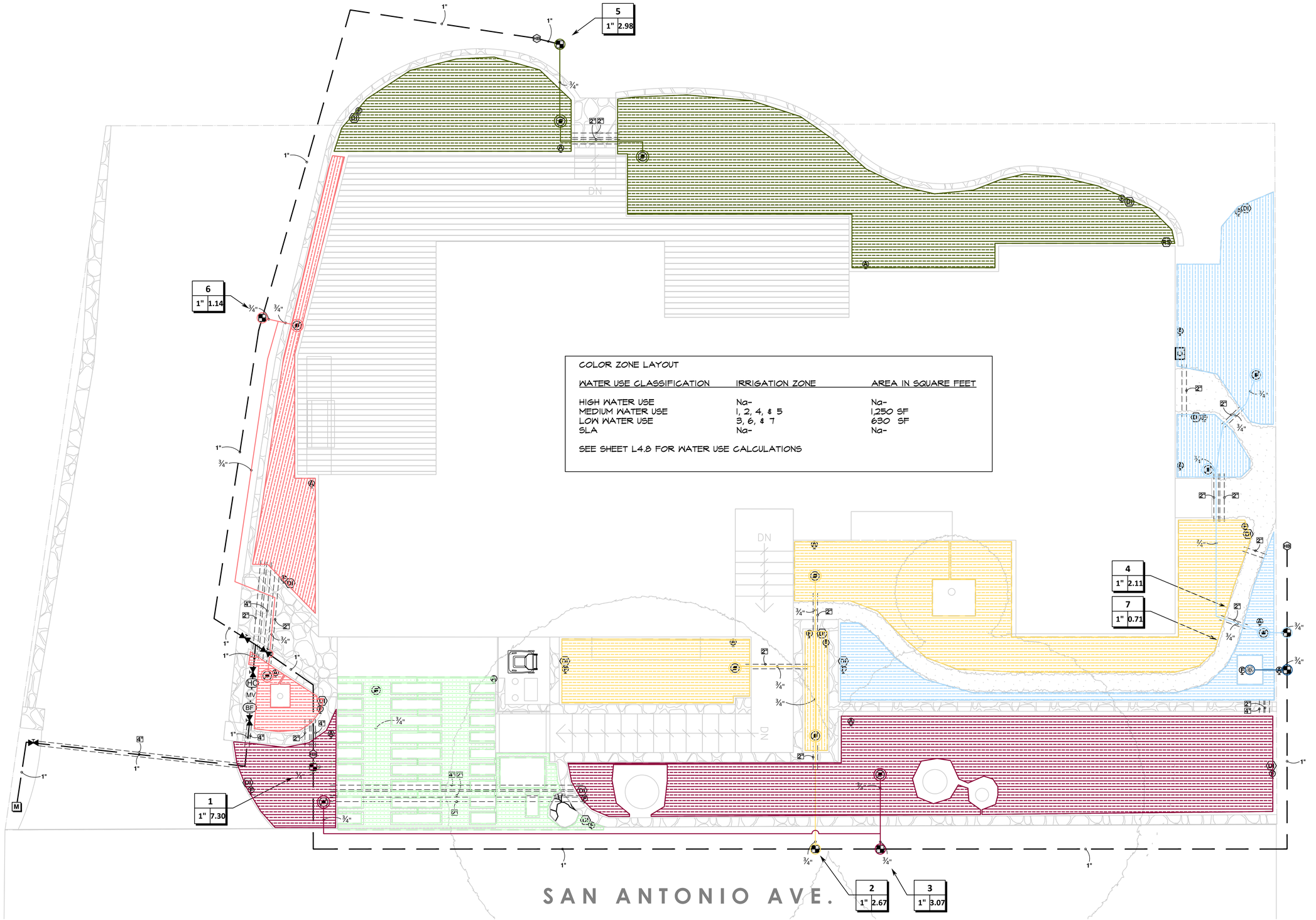
Revisions:

REV.	DESCRIPTION	DATE
2	Plan Check	05.10.2022
1	Plan Check	04.20.2022

Irrigation Calculations

Scale: NTS
Drawn by: 4Binc.

L4.8



COLOR ZONE LAYOUT

WATER USE CLASSIFICATION	IRRIGATION ZONE	AREA IN SQUARE FEET
HIGH WATER USE	Na-	Na-
MEDIUM WATER USE	1, 2, 4, & 5	1,250 SF
LOW WATER USE	3, 6, & 7	630 SF
SLA	Na-	Na-

SEE SHEET L4.8 FOR WATER USE CALCULATIONS

NORTH

0 4 8 12 16 feet

1/4" = 1'-0"

Know what's below. Call before you dig.

GROUND STUDIO
LANDSCAPE ARCHITECTURE

O/ 831.655.1414
F/ 831.655.3462
537 Houston Street
Monterey, CA 93940
GROUNDSTUDIO.COM

4Binc Select Certified IRRIGATION ASSOCIATION ASIC
LIC# 1012730—IA CERTIFICATION # 57436

Carter Residence

1 Sand and Sea,
Carmel-By-The-Sea, CA 93923

APN: 010-321-023

Issue set: City of Carmel
Planning Application
Issue date: 05.10.2022

Revisions:

REV.	DESCRIPTION	DATE
2	Plan Check	05.10.2022
1	Plan Check	04.20.2022

Hydrozone Plan

Scale: 1/4" = 1'0"
Drawn by: 4Binc.

L4.9