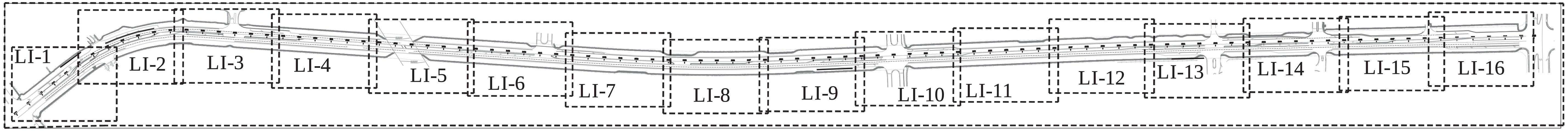


IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
EST LCS RCS CST SST	IRRITROL I-PRO600 15 STRIP SERIES 15 STRIP SERIES 6" POP-UP BODY WITH NOZZLE, NO SIDE INLET, WITH 1/2" SWING JOINT ASSEMBLY TORO, SPFA-5125, ½"X12".
Q T H F	IRRITROL I-PRO600 15 STRIP SERIES 8 SERIES MPR 6" POP-UP BODY WITH NOZZLE, NO SIDE INLET, WITH 1/2" SWING JOINT ASSEMBLY TORO, SPFA-5125, ½"X12".
Q T H F	IRRITROL I-PRO600 15 STRIP SERIES 10 SERIES MPR 6" POP-UP BODY WITH NOZZLE, NO SIDE INLET, WITH 1/2" SWING JOINT ASSEMBLY TORO, SPFA-5125, ½"X12".
Q T H TQ F	IRRITROL I-PRO600 15 STRIP SERIES 12 SERIES MPR 6" POP-UP BODY WITH NOZZLE, NO SIDE INLET, WITH 1/2" SWING JOINT ASSEMBLY TORO, SPFA-5125, ½"X12".
Q T H TQ F	IRRITROL I-PRO600 15 STRIP SERIES 15 SERIES MPR 6" POP-UP BODY WITH NOZZLE, NO SIDE INLET, WITH 1/2" SWING JOINT ASSEMBLY TORO, SPFA-5125, ½"X12".
4V 6V 18V	IRRITROL I-PRO600 15 STRIP SERIES ADJ 6" POP-UP BODY WITH NOZZLE, NO SIDE INLET, WITH 1/2" SWING JOINT ASSEMBLY TORO, SPFA-5125, ½"X12".
08HE-VAN 12HE-VAN 10HE-VAN 15HE-VAN	IRRITROL I-PRO600 15 STRIP SERIES HE-VAN SERIES 6" POP-UP BODY WITH NOZZLE, NO SIDE INLET, WITH 1/2" SWING JOINT ASSEMBLY TORO, SPFA-5125, ½"X12".
EST LCS RCS CST SST	IRRITROL I-PR1200 15 STRIP SERIES 15 STRIP SERIES 12" POP-UP BODY WITH NOZZLE, NO SIDE INLET, WITH SWING JOINT ASSEMBLY TORO, SPFA-5125, ½"X12".
Q T H F	IRRITROL I-PR1200 15 STRIP SERIES 8 SERIES MPR 12" POP-UP BODY WITH NOZZLE, NO SIDE INLET, WITH SWING JOINT ASSEMBLY TORO, SPFA-5125, ½"X12".
Q T H F	IRRITROL I-PR1200 15 STRIP SERIES 10 SERIES MPR 12" POP-UP BODY WITH NOZZLE, NO SIDE INLET, WITH SWING JOINT ASSEMBLY TORO, SPFA-5125, ½"X12".
Q T H TQ F	IRRITROL I-PR1200 15 STRIP SERIES 12 SERIES MPR 12" POP-UP BODY WITH NOZZLE, NO SIDE INLET, WITH SWING JOINT ASSEMBLY TORO, SPFA-5125, ½"X12".
Q T H TQ F	IRRITROL I-PR1200 15 STRIP SERIES 15 SERIES MPR 12" POP-UP BODY WITH NOZZLE, NO SIDE INLET, WITH SWING JOINT ASSEMBLY TORO, SPFA-5125, ½"X12".
4 6 18	IRRITROL I-PR1200 15 STRIP SERIES ADJ 12" POP-UP BODY WITH NOZZLE, NO SIDE INLET, WITH SWING JOINT ASSEMBLY TORO, SPFA-5125, ½"X12".
08HE-VAN 12HE-VAN 10HE-VAN 15HE-VAN	IRRITROL I-PR1200 15 STRIP SERIES HE-VAN SERIES 12" POP-UP BODY WITH NOZZLE, NO SIDE INLET, WITH SWING JOINT ASSEMBLY TORO, SPFA-5125, ½"X12".

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
	TORO P220 1", 1-1/2", 2" PLASTIC INDUSTRIAL VALVES. LOW FLOW OPERATING CAPABILITY, GLOBE & ANGLE CONFIGURATION.
	NIBCO P-619-RW 2" TO 12" CAST IRON GATE VALVE, SAME SIZE AS MAINLINE PIPE WHERE LOCATED. RESILIENT WEDGE NON-RISING STEM FLOW CONTROL WITH IPS PUSH-ON ENDS.
M1	TORO P220 3" MASTER VALVE 3" 3" GLASS FILLED NYLON MASTER VALVE, WITH GLOBE & ANGLE CONFIGURATION.
M2	TORO P220 3" MASTER VALVE 3" 3" GLASS FILLED NYLON MASTER VALVE, WITH GLOBE & ANGLE CONFIGURATION.
M3	TORO P220 3" MASTER VALVE 3" 3" GLASS FILLED NYLON MASTER VALVE, WITH GLOBE & ANGLE CONFIGURATION.
C1	TORO SBAPP1U SENTINEL TORO CONTROLLERS IN PLASTIC GOLF PEDESTAL DENT RESISTANT.
C2	TORO SBAPP1U SENTINEL TORO CONTROLLERS IN PLASTIC GOLF PEDESTAL DENT RESISTANT.
C3	TORO SBAPP1U SENTINEL TORO CONTROLLERS IN PLASTIC GOLF PEDESTAL DENT RESISTANT.
CM	TORO CELL MODEM 4G VERIZON CELL MODEM MODEULE.
SA	TORO SB-BLA TORO TWO-WIRE SURGE ARRESTOR
M	TORO SB-DA-1 MV DIRECT BURIAL MASTER VALVE DECODER.
B1	TORO SB-DAC-1 SINGLE STATION DIRECT BURIAL DECODER
FD	TORO SB-DAC-FLOW DIRECT BURIAL STANDARD FLOW SENSOR/METER DECODER
MP	TORO SB-DAC-SOIL DECODER - SOIL MOISTURE SENSOR
R2	TORO SHHR SENTINEL HAND HELD RADIO
F1	CREATIVE SENSOR TECHNOLOGY FSI-S40-001 4" PVC SADDLE TYPE FLOW SENSOR, CUSTOM MOUNTING SADDLE AND ULTRA-LIGHTWEIGHT IMPELLER ENHANCES LOW FLOW MEASUREMENT. 2 WIRE DIGITAL OUTPUT COMPATIBLE W/ALL IRRIGATION CONTROLLERS. FLOW RANGE: 10-480 GPM.
F2	CREATIVE SENSOR TECHNOLOGY FSI-S40-001 4" PVC SADDLE TYPE FLOW SENSOR, CUSTOM MOUNTING SADDLE AND ULTRA-LIGHTWEIGHT IMPELLER ENHANCES LOW FLOW MEASUREMENT. 2 WIRE DIGITAL OUTPUT COMPATIBLE W/ALL IRRIGATION CONTROLLERS. FLOW RANGE: 10-480 GPM.
F3	CREATIVE SENSOR TECHNOLOGY FSI-S40-001 4" PVC SADDLE TYPE FLOW SENSOR, CUSTOM MOUNTING SADDLE AND ULTRA-LIGHTWEIGHT IMPELLER ENHANCES LOW FLOW MEASUREMENT. 2 WIRE DIGITAL OUTPUT COMPATIBLE W/ALL IRRIGATION CONTROLLERS. FLOW RANGE: 10-480 GPM.

IRRIGATION SCHEDULE CONT...

SYMBOL	DESCRIPTION
P1	BOOSTER PUMP SULLIVAN ELECTRIC 25 HP @ 90 PSI, SEE DETAILS
P2	BOOSTER PUMP SULLIVAN ELECTRIC 25 HP @ 90 PSI, SEE DETAILS
P3	BOOSTER PUMP SULLIVAN ELECTRIC 25 HP @ 90 PSI, SEE DETAILS
F	FILTRATION STATION (ORIVAL FILTER COMPANY) MODEL # ORG/B-040-LS AUTOMATIC BACK FLUSH FILTER
HR	HARCO FITTING TO PIPE RESTRAINT HARCO FITTINGS, CL-200 PVC, PUSH-ON, GASKET TYPE FITTINGS, TEE'S AND ELBOWS, BENDS OF 45. 22.5, AND 11.25, AS MFG BY HARRINGTON CORP., PH 434-845-7094.
2W	CABLE FUSE DEVICE 2-WAY PAIGE ELECTRIC - WITH SURGE PROTECTION BUILT INTO THE DEVICE.
1W	CABLE FUSE DEVICE ONE-WAY PAIGE ELECTRIC - WITH SURGE PROTECTION BUILT INTO THE DEVICE.
DP	DRAINAGE PIT DRAIN PIT FOR AUTOMATICA BACKFLUSH FILTER, 5' X 5' X 5', GRAVEL PACKED. INSTALL FILTER FABRIC ON BOTTOM, UP ALL SIDES AND ACROSS TOP TO KEEP SOIL OUT OF THE PIT.
GP	GROUND PLATE FOR CONTROLLER COPPER STRIP - 4" X 96" X 0.0625", (LXWXT) WITH 25' OF # 6 AWG WIRE.
CG	GROUND ROD FOR CONTROLLER 5/8" X 10', COPPER CLAD GROUND ROD BY PAIGE WIRE,
SG	GROUND ROD FOR SURGE PROTECTION 5/8" X 8', COPPER CLAD GROUND ROD BY PAIGE WIRE,
PB	PULL BOX RAIN BIRD 12" STANDARD VALVE BOX
BS	TORO DATAPLAN 1 YEAR SUBSCRIPTION - 10 YEARS DURATION.
B2	TORO SB-DAC-2 TWO STATION DE-CODER TO OPERATE TWO (2) SEPARATE ZONE VALVES.
WW1	WATER WELL WITH SUBMERSIBLE PUMP SUBMERSIBLE PUMP 25HP @ 90 P.S.I.
WW2	WATER WELL WITH SUBMERSIBLE PUMP SUBMERSIBLE PUMP 25HP @ 90 P.S.I.
WW3	WATER WELL WITH SUBMERSIBLE PUMP SUBMERSIBLE PUMP 25HP @ 90 P.S.I.
	IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21
	IRRIGATION MAINLINE: PVC CLASS 200 SDR 21-NP
	PIPE SLEEVE: PVC CLASS 200 SDR 21
	PIPE SLEEVE: PVC SCHEDULE 40

Valve Callout: Valve Number, Valve Flow, Valve Size

1) DESIGN CRITERION: THIS SPRINKLER SYSTEM WAS DESIGNED WITH TORO P-220 VALVES, TORO SENTINEL CONTROLS, IRRITROL I-PRO-SPRAY HEAD AND TORO DB-30-PC BUBBLERS.

2) PRODUCT SUBSTITUTION TYPICALLY WILL NOT BE APPROVED AS EQUAL WITHOUT AUTHORIZATION FROM THE OWNER, OR OTHERWISE PRODUCTS THE CONTRACTOR WANTS TO BE CONSIDERED AS "OR EQUAL". THE CONTRACTOR SHALL SUBMIT A REQUEST IN WRITING TO THE LANDSCAPE ARCHITECT, ALONG WITH A SAMPLE OF EACH PRODUCT, THE SAMPLE WILL NOT BE RETURNED. THE IRRITGATION CONTRACTOR SHALL CHECK WITH THE LANDSCAPE ARCHITECT AS THERE MAY BE A MATERIAL SUBSTITUTION CHARGE TO REVIEW A MATERIAL SUBSTITUTION REQUEST, THE FEE TO REVIEW EACH ITEM FOR SUBSTITUTION MAY COST UP TO OR AS MUCH AS $300 DOLLAR'S PER EACH ITEM, WITH ABSOLUTELY NO GUARANTEE THE SUBSTITUTED ITEM REQUEST WILL BE APPROVED. THE FEE FOR APPROVAL OF A MATERIAL SUBSTITUTION SHALL BE PAID FOR TO THE LANDSCAPE ARCHITECT IN ADVANCE OF REVIEWING EACH ITEM BEING REQUESTED TO BE SUBSTITUTED. THESE PLANS INCLUDE A LIST OF APPROVED OR SPECIFIED MANUFACTURER'S PRODUCTS.

3) 2-WIRE PATH CONTROL WIRE SHALL BE, MAXI-WIRE, # 14-2 AWG, 600V, MANUFACTURED BY PAIGE ELECTRIC, PHONE# (559) 431-2346. ALL WIRE, ON THIS PROJECT, ON THE 2-WIRE PATH, <u>SHALL BE INSTALLED INSIDE (1 1/2", SCH40 GRAY ELECTRIC CONDUIT WITH LONG SWEEP ELBOWS)</u>. ALL IRRIGATION 24V WIRE, ON THE 2-WIRE PATH SHALL BE ENCLOSED INSIDE 1 1/2" GRAY PVC ELECTRICAL CONDUIT, IF ANY WIRE IS FOUND NOT INSTALLED AND/OR ENCLOSED INSIDE THE 1 1/2" ELECTRICAL CONDUIT THE OWNER SHALL ORDER IT TO BE REMOVED AND REPLACED, COMPLETELY AT THE EXPENSE OF THE IRRIGATION CONTRACTOR AND AT ABSOLUTELY NO ADDITIONAL COST TO THE OWNER. SINCE FAILURE TO INSTALL THE 2-WIRE PATH WIRING INSIDE THE 1 1/2" ELECTRICAL CONDUIT SHALL BE CONSIDERED A BREECH OF CONTRACT. THE OWNER SHALL PERMIT OR ALLOW THE IRRIGATION CONTRACTOR A 14 DAY PERIOD OF TIME TO REMOVE AND REPLACE THIS WIRING, IF THE 2-WIRE PATH IS NOT REPLACED INSIDE THE GREY 1 1/2" ELECTRICAL CONDUIT WITHIN 14 DAY TIME PERIOD THE OWNER SHALL DECLARE THE CONTRACT HAS BEEN "BREECHED" AND DECLARE THE CONTRACT NULL AND VOID, AT WHICH TIME THE IRRIGATION CONTRACTOR AND HIS CREW AND ALL OF HIS EQUIPMENT SHALL BE ESCORTED OFF THE PROJECT SIDE BY POLICE, ALL MONIES DUE AND PAYABLE TO THE IRRIGATION CONTRACTOR SHALL BECOME FROZEN AND WILL BE FORFEITED. ALL SUCH FORFEITED MONIES SHALL BE PAID DIRECTLY TO THE REPLACEMENT IRRIGATION CONTRACTOR WHO WILL CONTRACTUALLY AGREE TO INSTALL THIS WORK AS IT WAS DESIGNED AND SPECIFIED, WITH THE PRODUCTS AS SHOWN ON THESE PLANS. NO OTHER EXCEPTIONS WILL BE CONSIDERED TO THIS STIPULATION.

4) IRRIGATION CONTRACTOR SHALL INSTALL A MINIMUM OF 31 MOISTURE SENSOR'S ON THIS PROJECT, LOCATIONS ARE SHOWN ON PLANS.

DESIGN NOTE:
THIS IRRIGATION SYSTEM HAS BEEN DESIGNED TO ELIMINATE THE APPLICATION OF WATER BROADCAST ONTO IMPERVIOUS AREAS INCLUDING ROADS, DRIVES, AND OTHER MOTOR VEHICLE USE AREAS. INSTALLER SHALL VERIFY ALL NOZZLES ARE DIRECTED TOWARD PLANTING BEDS ONLY, DO NOT THROW WATER ONTO ANY IMPERVIOUS AREA.

⚠ 10-18-2019

CRITICAL ANALYSIS PUMP 1

P.O.C. NUMBER: 01	
Water Source Information:	SUBMERSIBLE PUMP 25HP @ 90 P.S.I.
FLOW AVAILABLE	
Custom Max Flow:	300.00 gpm
Flow Available:	300.00 gpm
PRESSURE AVAILABLE	
Static Pressure at POC:	0.00 psi
Booster Pump pressure provided:	75.00 psi
Pressure Available:	75.00 psi
DESIGN ANALYSIS	
Maximum Multi-valve Flow:	300.00 gpm
Flow Available at POC:	300.00 gpm
Residual Flow Available:	0.00 gpm
Critical Station:	A01
Design Pressure:	30.00 psi
Friction Loss:	2.62 psi
Fittings Loss:	0.38 psi
Elevation Loss:	0.00 psi
Loss through Valve:	9.15 psi
Pressure Req. at Critical Station:	42.15 psi
Loss for Fittings:	2.08 psi
Loss for Main Line:	13.84 psi
Loss for POC to Valve Elevation:	0.00 psi
Loss for Backflow:	0.00 psi
Loss for Master Valve:	4.90 psi
Critical Station Pressure at POC:	62.97 psi
Pressure Available:	75.00 psi
Residual Pressure Available:	12.03 psi

CRITICAL ANALYSIS

P.O.C. NUMBER: 02	
Water Source Information:	SUBMERSIBLE PUMP 25HP @ 90 P.S.I.
FLOW AVAILABLE	
Custom Max Flow:	300.00 gpm
Flow Available:	300.00 gpm
PRESSURE AVAILABLE	
Static Pressure at POC:	0.00 psi
Booster Pump pressure provided:	75.00 psi
Pressure Available:	75.00 psi
DESIGN ANALYSIS	
Maximum Multi-valve Flow:	300.00 gpm
Flow Available at POC:	300.00 gpm
Residual Flow Available:	0.00 gpm
Critical Station:	E05
Design Pressure:	30.00 psi
Friction Loss:	2.60 psi
Fittings Loss:	0.40 psi
Elevation Loss:	0.00 psi
Loss through Valve:	3.52 psi
Pressure Req. at Critical Station:	36.52 psi
Loss for Fittings:	1.92 psi
Loss for Main Line:	12.82 psi
Loss for POC to Valve Elevation:	0.00 psi
Loss for Backflow:	0.00 psi
Loss for Master Valve:	4.90 psi
Critical Station Pressure at POC:	56.16 psi
Pressure Available:	75.00 psi
Residual Pressure Available:	18.84 psi

CRITICAL ANALYSIS

P.O.C. NUMBER: 03	
Water Source Information:	SUBMERSIBLE PUMP 25HP @ 90 P.S.I.
FLOW AVAILABLE	
Custom Max Flow:	300.00 gpm
Flow Available:	300.00 gpm
PRESSURE AVAILABLE	
Static Pressure at POC:	0.00 psi
Booster Pump pressure provided:	75.00 psi
Pressure Available:	75.00 psi
DESIGN ANALYSIS	
Maximum Multi-valve Flow:	300.00 gpm
Flow Available at POC:	300.00 gpm
Residual Flow Available:	0.00 gpm
Critical Station:	I04
Design Pressure:	30.00 psi
Friction Loss:	2.86 psi
Fittings Loss:	0.42 psi
Elevation Loss:	0.00 psi
Loss through Valve:	10.18 psi
Pressure Req. at Critical Station:	43.45 psi
Loss for Fittings:	2.05 psi
Loss for Main Line:	13.64 psi
Loss for POC to Valve Elevation:	0.00 psi
Loss for Backflow:	0.00 psi
Loss for Master Valve:	4.90 psi
Critical Station Pressure at POC:	64.04 psi
Pressure Available:	75.00 psi
Residual Pressure Available:	10.96 psi

SPRINKLER EQUIPMENT MFG CONSIDERED AS EQUAL'S:

	MANUFACTURER'S NAME:	CONTACT:	PHONE #
1)	Rain Bird Sprinkler Co.	Bob Diersing	(239) 771-2420
2)	Toro Sprinkler Co.	Bruce Funnell	(616) 450-6618
3)	Irritrol	Bruce Funnell	(616) 450-6618
4)	Hit Products	George Cook	(559) 799-7020

SHEET INDEX

LATERAL LINE
PVC MAINLINE
DUE TO LACK OF SPACE ON THE PLAN "JUMPERS" ARE NOT USED TO CROSS THE MAINLINE OVER LATERAL LINE.

UNDERGROUND CABLE LOCATE
CALL BEFORE
CALL: TOLL FREE
1-800 432-4770
OR
811
TWO WORKING DAYS BEFORE YOU DIG

<u>THIS PROJECT REQUIRES, THREE (3)</u> 8" WATER WELL'S, WHICH WILL SUPPLY SUFFICIENT WATER TO PROPERLY IRRIGATE THIS LANDSCAPED AREA. THE PUMP STATIONS SPECIFIED MUST HAVE ALL THE ITEMS SPECIFIED ON THE PUMP DETAIL SHEET, I.E. SHEET LI-21. THE THREE (3) SUBMERSIBLE PUMPS SHALL BE 25 H.P., RATED TO SUPPLY 300 G.P.M. AT A MINIMUM OF 75 P.S.I.

SUPPLIERS SHALL BE APPROVED AS "OR EQUAL" AND MUST RECEIVE APPROVAL IN WRITING FROM THE LANDSCAPE ARCHITECT. THE TWO (2) RECOMMENDED SOURCES FOR THE PUMP STATIONS AND CONTROLS ARE:

1. <u>HOOVER PUMPS</u>
   a) OFFICE PHONE: (954) 275-6731
   b) CONTACT: MR. KEVIN CAVAIOLI
2. <u>SULLIVAN ELECTRIC PUMPS</u>
   a) OFFICE PHONE: (561) 5886
   b) CONTACT: MR. GARY SULLIVAN

<u>THIS PROJECT REQUIRES, TWO (2)</u>

1. TWO (2), 2-WIRE PATH, 200 STATION EACH CONTROLLER.
2. CONTROLLER'S SHALL BE CAPABLE OF SUPPORTING A MINIMUM OF 25 MOISTURE SENSOR PROBES EACH FOR A TOTAL OF 50 PROBES.
3. CONTROLLER SPECIFICATIONS ARE SUCH THAT ONLY TWO (2) FACTORIES ARE EQUAL. THE SUPPLIERS SHALL HAVE AN "OR EQUAL" APPROVED RATING AND MUST RECEIVE APPROVAL FROM THE LANDSCAPE ARCHITECT.
4. <u>BASELINE 3200 CONTROLLER:</u>
   a) OFFICE PHONE:(256) 2630-0094
   b) CONTACT: MR. IDRAL BOWEN
5. <u>TUCOR IRRIGATION CONTROLLER:</u>
   a) OFFICE PHONE: (800) 272-7472
   b) CONTACT: MR. LARRY SARVER

REFERENCE NOTES SCHEDULE

SYMBOL	DESCRIPTION
1	DUE TO LACK OF SPACE ON PLANS, SPRINKLER COMPONENTS, I.E., P.O.C., PUMP, FILTER, MASTER VALVE, FLOW SENSOR, SHUT OFF VALVE, SHOWN IN THIS AREA SHALL BE INSTALLED IN THE PLANTER BED.
2	DUE TO LACK OF SPACE ON PLANS, SPRINKLER PVC PIPE, LATERAL & MAINLINE, SHOWN OUTSIDE OF THE PLANTER BEDS SHALL BE INSTALLED INSIDE PLANTER BEDS WHEN EVER POSSIBLE; SLEEVE ALL PVC PIPE THAT WILL BE INSTALLED OUTSIDE OF PLANTER BEDS.
3	WIRE SLEEVE FOR ROAD CROSSINGS, FOR 24V, 2-WIRE PATH CONTROL WIRE, SHALL BE 1 1/2" SCH40 PVC PIPE. THE CONTRACTOR SHALL INSTALL ALL THE 2-WIRE MAXI-CABLE INSIDE SCH40 GREY PVC ELEC CONDUIT .

IRRIGATION ANCILLARY MATERIALS SCHEDULE

	MATERIAL DESCRIPTION	MODEL #	SIZE	MFG.	PHONE #
1.	PVC PIPE CEMENT	RED HOT BLUE	QT. OR GALLON CAN	T. CHRISTY'S	(800) 258-4583
2.	PVC PIPE PRIMER	PURPLE PRIMER	QT. OR GALLON CAN	T. CHRISTY'S	(800) 258-4583
3.	TEFLON TAPE	TEFLON-075	3/4"x520 INCHES	T. CHRISTY'S	(800) 258-4583
4.	VALVE MARKING I.D. TAGS	ID-STD-Y-2	BOTH SIDES	T. CHRISTY'S	(800) 258-4583
5.	ELECT WARNING TAPE INSTALL OVER WIRES	TA-DT-2-RE	2"x1000'	T. CHRISTY'S	(800) 258-4583
6.	CEMENT/SOLVENT DAUBER	RH-D32	QUART CAN	T. CHRISTY'S	(800) 258-4583
7.	AUTO BACKFLUSH SCREEN FILTER STATION	ORG-40-LS	FILTERS UP TO 350 G.P.M.	ORIVAL FILTERS	(800) 567-9767
8.	IRRIGATION EQUIPMENT MARKING FLAGS	2 1/2" x 3 1/2"	15-1/2 GA STEEL- MULTI COLORED	BLACKBURN	(800) 942-5816
9.	PVC FITTING'S (GLUE-ON SCH40/80 FITTING'S)	SCH 40 & SCH 80	(DO NOT INSTALL ON MAINLINE)	LASCO	(800) 327-6390
10.	IRRIGATION SYSTEM CONTROL PACKAGE	BL-3200-P SERIES	UP TO 200 STATIONS	BASELINE	(208) 639-8742
11.	IRRIGATION SYSTEM MOISTURE SENSOR PROBE	BL-5315	25 SENSOR PROBE'S PER/CLOCK	BASELINE	(208) 639-8742
12.	SWING JOINT FOR SPRAY SPRINKLER HEADS	SPFA-5125	1/2" MPT ENDS W/12" LAY LENGTH	TORO	(616) 450-6618
13.	VALVE BOX 10" ROUND	VB-10RND	10" ROUND BODY & GREEN LID	RAIN BIRD	(800) 724-6247
14.	VALVE BOX 12" STANDARD WITH GREEN LID	VB-STD	12" STANDARD BODY & GREEN LID	RAIN BIRD	(800) 724-6247
15.	VALVE BOX 6" EXTENSION BOX	VBSTD6EXTB	6" EXTENSION BOX WITHOUT LID	RAIN BIRD	(800) 724-6247
16.	VALVE BOX JUMBO (BODY AND GREEN LID)	VB-JMBP	JUMBO BODY WITH GREEN LID	RAIN BIRD	(800) 724-6247
17.	VALVE BOX JUMBO 6" EXTENSION BOX	VBJMB6EXTB:	6"JUMBO EXTENSION BOX	RAIN BIRD	(800) 724-6247
18.	MAXI-WIRE, UL/UF, 600 V DIRECT BURIAL	# 12-2 RED JACKET	UL/UF AWG SOLID WIRE	PAIGE ELECT.	(559) 431-2346
19.	WATERPROOF WIRE SPLICES GEL FILLED	DBR/Y-6	18 GA TO 12 GA	PAIGE ELECT.	(559) 431-2346
20.	GROUND ROD FOR CONTROLLER COPPER CLAD	182007	COPPER CLAD 5/8"x10' LENGTH	PAIGE ELECT.	(559) 431-2346
21.	GROUND ROD FOR SURGE PROTECTION	182000	COPPER CLAD 5/8"x8' LENGTH	PAIGE ELECT.	(559) 431-2346
22.	GROUND PLATE, 4"x8' SOLID COPPER W/WIRE	182199IC	4"x96"x.0625", WITH 25' OF #6 AWG	PAIGE ELECT.	(559) 431-2346
23.	POWERSET, EARTH CONTACT MATERIAL	1820058	HARDING MATERIAL	PAIGE ELECT.	(559) 431-2346
22.	POWERFILL, EARTH CONTACT MATERIAL	1820059	NON-HARDING	PAIGE ELECT.	(559) 431-2346
23.	HARCO CL-200 FITTINGS & JOINT RESTRAINT	ALL MAINLINE FITG	AT CHANGE IN MAINLINE DIRECTION	HARCO FITG'S	(559) 431-2346
	JOINT RESTRAINT'S FOR CL200 PVC FITTINGS	UFR1360 SERIES	SIZE PER/PLANS (FORD METER BOX)	FORD METER	(260) 563-3171
	RECOMMENDED SUPPLIER'S FOR SUBMERSIBLE PUMP STATIONS:				
24.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	HOOVER PUMPS	(954) 971-7350
25.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	SULLIVAN PUMPS	(800) 991-2770
26.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	WATERTORNICS	(800) 356-6686
	RECOMMENDED SUPPLIER'S FOR IRRIGATION TIMER CONTROL SYSTEM CONSIDERED "OR EQUAL":				
27.	TORO SENTINEL 2-WIRE CONTROLLER	200 STATIONS	3 CLOCKS & 31 MOISTURE SENSORS	TORO	(616) 450-6618
28.	BASELINE 2-WIRE CONTROLLER	200 STATIONS	2 CLOCKS & 31 MOISTURE SENSORS	BASELINE	(256) 630-0094
29.	TUCOR 2-WIRE CONTROLLER	200 STATIONS	2 CLOCKS & 31 MOISTURE SENSORS	TUCOR	(800) 272-7472
30.	DO NOT INSTALL SCH40 OR SCH80 PVC FITTINGS ON THIS MAINLINE. <u>INSTALL ONLY HARCO, "CL-200 PVC PUSH-ON FITTINGS"</u>, WITH FORD METER BOX JOINT RESTRAINT'S, AT ALL CHANGE IN DIRECTION OF THE MAINLINE. IF SCH40 OR SCH80 FITTINGS ARE FOUND INSTALLED ON THE MAINLINE THEY WILL BE REJECTED; ALL SCH40 & SCH80 FITTINGS SHALL BE ORDERED TO BE REMOVED BY THE IRRIGATION CONTRACTOR & REPLACED WITH THE HARCO CL-200 PVC FITTINGS & RESTRAINTS AT THE EXPENSE OF THE IRRIGATION CONTRACTOR AND AT NO ADDITIONAL COST TO THE OWNER.				

REVISION NOTE: ⚠ 10-18-2019
-Revised irrigation information and types to match updated irrigation due to landscape base plan changes.

DETAIL REPORT

NUMBER	TITLE	DETAIL
01/LI-17	MAINLINE EQUIPMENT LAYOUT INCLUDING D.I. FITTINGS	328420.10-08
02/LI-17	SENTINEL TWO-WIRE PEDESTAL CONTROLLER	328498.01-02
03/LI-17	TYPICAL 2-WIRE CONTROLLER LAYOUT	328498.01-03
04/LI-17	SB-BLA LIGHTNING ARRESTOR INSTALLATION & WIRING	328498.01-04
05/LI-17	BL-5315B BISENSOR SOIL MOISTURE SENSOR	328410.75-04
06/LI-17	PULL BOX - FOR 2-WIRE PATH CONTROLLERS	328480.81-03
07/LI-17	PUMP START/STOP RELAY	328498.75-01
08/LI-17	6" POP-UP SPRINKLER - IRRITROL	328498.10-01
09/LI-17	12" POP-UP SPRINKLER - IRRITROL	328498.10-02
10/LI-17	PIPE RESTRAINT SYSTEM	328422.01-20
11/LI-18	TREE BUBBLER MOUNTED ON SCH 80 RISER	328403.23-17
12/LI-18	JOINT RESTRAINT DETAIL	328422.01-21
13/LI-18	"Z" DROP DOWN PIPE CONNECT PUMP TO MAINLINE	328422.42-01
14/LI-18	DUCTILE IRON PIPE RESTRAINT JOINT SCHEDULE	328422.56-01
15/LI-18	PAIGE ELECT DBR WIRE SPLICE CONNECTORS	328480.02-01
16/LI-18	RAIN SHUT OFF ON POLE MOUNT	328411-33
17/LI-18	ISOLATION VALVE WITH JOINT RESTRAINTS	328406.33-05
18/LI-18	WR-2 SERIES WIRELESS RAIN SENSOR	328411-38
19/LI-18	ORIVAL AUTOMATIC BACKFLUSH FILTER	328414.30-01
20/LI-18	DRAINAGE PIT	328414.30-04
21/LI-19	RESTRAINING JOINT ASSEMBLY INSTRUCTIONS	328422.01-23
22/LI-19	TORO REMOTE CONTROL ZONE VALVE	328406.05-26
23/LI-19	GENERAL TRENCHING	328477.01-31
24/LI-19	SLEEVE UNDER PAVEMENT	328477.01-32
25/LI-19	ROAD CROSSING INSTALLATION	328477.01-33
26/LI-19	MASTER VALVE TORO # 252 SERIES WITH BALL VALVE	328498.05-02
27/LI-19	PULL BOX	328477.20-14
28/LI-19	GROUNDING DETAIL FOR BASELINE 3200 SERIES CONTROLLER	328480.50-27
29/LI-19	CONTROLLER GROUNDING	328480.50-26
30/LI-19	PVC SADDLE MOUNT FLOW METER	328485.01-51
31/LI-20	PAIGE ELECTRIC DECODER CABLE FUSE DEVICE (DCFD) ™	328480.01-01
32/LI-20	PAIGE ELECTRIC DECODER CABLE FUSE DEVICE (DCFD) ™	328480.01-02
33/LI-20	PAIGE ELECTRIC SURGE GUARD PROTECTION FOR 2-WIRE	328480.01-03
34/LI-20	PAIGE ELECTRIC SOLENOID PROTECTION FROM LIGHTENING	328480.01-04
35/LI-20	METERING PUMP COMPONENT DIAGRAM	328481-02
36/LI-20	RID-O-RUST NOTES AND PRICING	328481-08
37/LI-20	SOLUTION TANK WITH AUTOMATIC TIMER (CONTROLLER)	328481-07
39/LI-22	IRRIGATION SPECIFICATIONS	328489.01-26
40/LI-23	BASELINE EQUIPMENT NEEDED FOR 3200 SERIES CONTROLLER	328410.75-10
41/LI-23	TORO EQUIPMENT NEEDED FOR SENTINEL CONTROLLER	328498.01-01
42/LI-23	FLOW SENSOR - MASTER VALVE COMBINATION	328498.05-01
43/LI-23	SHRUB AND GROUND COVER DETAIL FOR 12" HI-POP SPRAY	328403.30-10
44/LI-23	SHRUB RISER RAINBIRD SPRAY SPRINKLER	328403.22-01
45/LI-24	PUMP STATION CONCRETE PAD DETAIL	328487.01-07
	RAIN SHUT OFF ON POLE MOUNT	328411-20

BRUCE HOWARD & ASSOCIATES, INC.
Landscape Architects, Site Planners & Golf Course Designers

PROJECT:
ESTERO PARKWAY
VILLAGE OF ESTERO

DRAWING TITLE:
IRRIGATION KEY PLAN

NORTH

SCALE: N.T.S

PROJECT NUMBER

DATE: 07-03-2019

⚠ 10-18-2019

Digitally signed by Bruce J Howard
Date: 2019.10.21 19:29:46 -04'00'
REGISTERED LANDSCAPE ARCHITECT BRUCE JAYCE HOWARD LA 6667467 STATE OF FLORIDA
Bruce J. Howard
License #: LA0000371

SHEET NUMBER:
LI-0
OF:

4872 S.W. 72nd Avenue
Miami, Florida 33155
(305)668-3196
Fax(305)668-2871

IRRIGATION NOTES

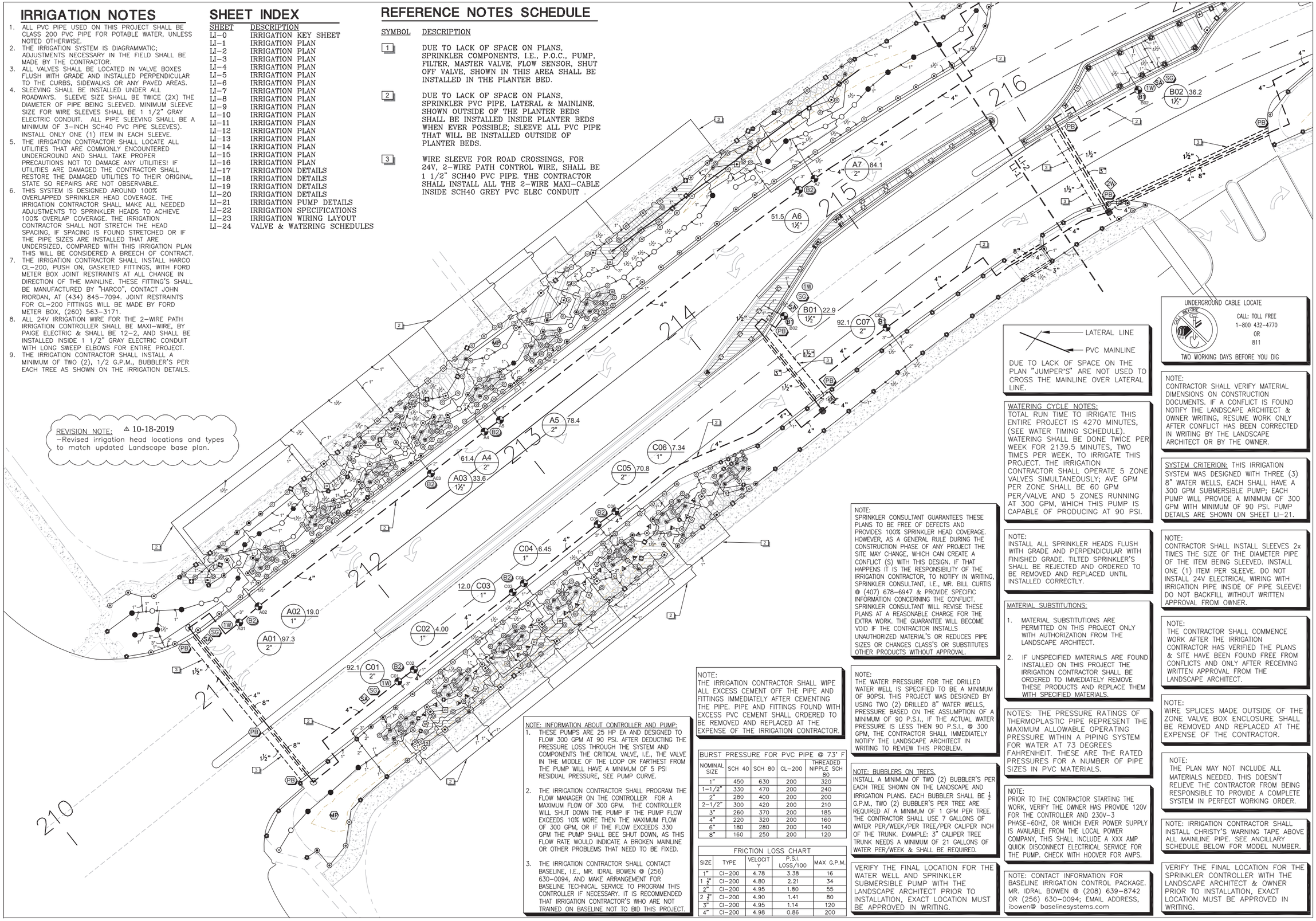
1. ALL PVC PIPE USED ON THIS PROJECT SHALL BE CLASS 200 PVC PIPE FOR POTABLE WATER, UNLESS NOTED OTHERWISE.
2. THE IRRIGATION SYSTEM IS DIAGRAMMATIC; ADJUSTMENTS NECESSARY IN THE FIELD SHALL BE MADE BY THE CONTRACTOR.
3. ALL VALVES SHALL BE LOCATED IN VALVE BOXES FLUSH WITH GRADE AND INSTALLED PERPENDICULAR TO THE CURBS, SIDEWALKS OR ANY PAVED AREAS.
4. SLEEVING SHALL BE INSTALLED UNDER ALL ROADWAYS. SLEEVE SIZE SHALL BE TWICE (2X) THE DIAMETER OF PIPE BEING SLEEVED. MINIMUM SLEEVE SIZE FOR WIRE SLEEVES SHALL BE 1 1/2" GRAY ELECTRIC CONDUIT. ALL PIPE SLEEVING SHALL BE A MINIMUM OF 3-INCH SCH40 PVC PIPE SLEEVES). INSTALL ONLY ONE (1) ITEM IN EACH SLEEVE.
5. THE IRRIGATION CONTRACTOR SHALL LOCATE ALL UTILITIES THAT ARE COMMONLY ENCOUNTERED UNDERGROUND AND SHALL TAKE PROPER PRECAUTIONS NOT TO DAMAGE ANY UTILITIES! IF UTILITIES ARE DAMAGED THE CONTRACTOR SHALL RESTORE THE DAMAGED UTILITIES TO THEIR ORIGINAL STATE SO REPAIRS ARE NOT OBSERVABLE.
6. THIS SYSTEM IS DESIGNED AROUND 100% OVERLAPPED SPRINKLER HEAD COVERAGE. THE IRRIGATION CONTRACTOR SHALL MAKE ALL NEEDED ADJUSTMENTS TO SPRINKLER HEADS TO ACHIEVE 100% OVERLAP COVERAGE. THE IRRIGATION CONTRACTOR SHALL NOT STRETCH THE HEAD SPACING, IF SPACING IS FOUND STRETCHED OR IF THE PIPE SIZES ARE INSTALLED THAT ARE UNDERSIZED, COMPARED WITH THIS IRRIGATION PLAN THIS WILL BE CONSIDERED A BREECH OF CONTRACT.
7. THE IRRIGATION CONTRACTOR SHALL INSTALL HARCO CL-200, PUSH ON, GASKETED FITTINGS, WITH FORD METER BOX JOINT RESTRAINTS AT ALL CHANGE IN DIRECTION OF THE MAINLINE. THESE FITTING'S SHALL BE MANUFACTURED BY "HARCO", CONTACT JOHN RIORDAN, AT (434) 845-7094. JOINT RESTRAINTS FOR CL-200 FITTINGS WILL BE MADE BY FORD METER BOX, (260) 563-3171.
8. ALL 24V IRRIGATION WIRE FOR THE 2-WIRE PATH IRRIGATION CONTROLLER SHALL BE MAXI-WIRE, BY PAIGE ELECTRIC & SHALL BE 12-2, AND SHALL BE INSTALLED INSIDE 1 1/2" GRAY ELECTRIC CONDUIT WITH LONG SWEEP ELBOWS FOR ENTIRE PROJECT.
9. THE IRRIGATION CONTRACTOR SHALL INSTALL A MINIMUM OF TWO (2), 1/2 G.P.M., BUBBLER'S PER EACH TREE AS SHOWN ON THE IRRIGATION DETAILS.

REVISION NOTE: △ 10-18-2019
-Revised irrigation head locations and types to match updated Landscape base plan.

SHEET INDEX

REFERENCE NOTES SCHEDULE

SYMBOL	DESCRIPTION
1	DUE TO LACK OF SPACE ON PLANS, SPRINKLER COMPONENTS, I.E., P.O.C., PUMP, FILTER, MASTER VALVE, FLOW SENSOR, SHUT OFF VALVE, SHOWN IN THIS AREA SHALL BE INSTALLED IN THE PLANTER BED.
2	DUE TO LACK OF SPACE ON PLANS, SPRINKLER PVC PIPE, LATERAL & MAINLINE, SHOWN OUTSIDE OF THE PLANTER BEDS SHALL BE INSTALLED INSIDE PLANTER BEDS WHEN EVER POSSIBLE; SLEEVE ALL PVC PIPE THAT WILL BE INSTALLED OUTSIDE OF PLANTER BEDS.
3	WIRE SLEEVE FOR ROAD CROSSINGS, FOR 24V, 2-WIRE PATH CONTROL WIRE, SHALL BE 1 1/2" SCH40 PVC PIPE. THE CONTRACTOR SHALL INSTALL ALL THE 2-WIRE MAXI-CABLE INSIDE SCH40 GREY PVC ELEC CONDUIT .



UNDERGROUND CABLE LOCATE
CALL TOLL FREE 1-800 432-4770 OR 811
TWO WORKING DAYS BEFORE YOU DIG

NOTE:
CONTRACTOR SHALL VERIFY MATERIAL DIMENSIONS ON CONSTRUCTION DOCUMENTS. IF A CONFLICT IS FOUND NOTIFY THE LANDSCAPE ARCHITECT & OWNER WRITING, RESUME WORK ONLY AFTER CONFLICT HAS BEEN CORRECTED IN WRITING BY THE LANDSCAPE ARCHITECT OR BY THE OWNER.

WATERING CYCLE NOTES:
TOTAL RUN TIME TO IRRIGATE THIS ENTIRE PROJECT IS 4270 MINUTES, (SEE WATER TIMING SCHEDULE). WATERING SHALL BE DONE TWICE PER WEEK FOR 2139.5 MINUTES, TWO TIMES PER WEEK, TO IRRIGATE THIS PROJECT. THE IRRIGATION CONTRACTOR SHALL OPERATE 5 ZONE VALVES SIMULTANEOUSLY; AVE GPM PER ZONE SHALL BE 60 GPM PER/VALVE AND 5 ZONES RUNNING AT 300 GPM, WHICH THIS PUMP IS CAPABLE OF PRODUCING AT 90 PSI.

SYSTEM CRITERION: THIS IRRIGATION SYSTEM WAS DESIGNED WITH THREE (3) 8" WATER WELLS, EACH SHALL HAVE A 300 GPM SUBMERSIBLE PUMP; EACH PUMP WILL PROVIDE A MINIMUM OF 300 GPM WITH MINIMUM OF 90 PSI. PUMP DETAILS ARE SHOWN ON SHEET LI-21.

NOTE:
SPRINKLER CONSULTANT GUARANTEES THESE PLANS TO BE FREE OF DEFECTS AND PROVIDES 100% SPRINKLER HEAD COVERAGE. HOWEVER, AS A GENERAL RULE DURING THE CONSTRUCTION PHASE OF ANY PROJECT THE SITE MAY CHANGE, WHICH CAN CREATE A CONFLICT (S) WITH THIS DESIGN. IF THAT HAPPENS IT IS THE RESPONSIBILITY OF THE IRRIGATION CONTRACTOR, TO NOTIFY IN WRITING, SPRINKLER CONSULTANT, I.E., MR. BILL CURTIS @ (407) 678-6947 & PROVIDE SPECIFIC INFORMATION CONCERNING THE CONFLICT. SPRINKLER CONSULTANT WILL REVISE THESE PLANS AT A REASONABLE CHARGE FOR THE EXTRA WORK. THE GUARANTEE WILL BECOME VOID IF THE CONTRACTOR INSTALLS UNAUTHORIZED MATERIAL'S OR REDUCES PIPE SIZES OR CHANGES CLASS'S OR SUBSTITUTES OTHER PRODUCTS WITHOUT APPROVAL.

NOTE:
INSTALL ALL SPRINKLER HEADS FLUSH WITH GRADE AND PERPENDICULAR WITH FINISHED GRADE. TILTED SPRINKLER'S SHALL BE REJECTED AND ORDERED TO BE REMOVED AND REPLACED UNTIL INSTALLED CORRECTLY.

NOTE: INFORMATION ABOUT CONTROLLER AND PUMP:
1. THESE PUMPS ARE 25 HP EA AND DESIGNED TO FLOW 300 GPM AT 90 PSI. AFTER DEDUCTING THE PRESSURE LOSS THROUGH THE SYSTEM AND COMPONENTS THE CRITICAL VALVE, I.E., THE VALVE IN THE MIDDLE OF THE LOOP OR FARTHEST FROM THE PUMP WILL HAVE A MINIMUM OF 5 PSI RESIDUAL PRESSURE, SEE PUMP CURVE.
2. THE IRRIGATION CONTRACTOR SHALL PROGRAM THE FLOW MANAGER ON THE CONTROLLER FOR A MAXIMUM FLOW OF 300 GPM. THE CONTROLLER WILL SHUT DOWN THE PUMP IF THE PUMP FLOW EXCEEDS 10% MORE THEN THE MAXIMUM FLOW OF 300 GPM, OR IF THE FLOW EXCEEDS 330 GPM THE PUMP SHALL BEE SHUT DOWN, AS THIS FLOW RATE WOULD INDICATE A BROKEN MAINLINE OR OTHER PROBLEMS THAT NEED TO BE FIXED.
3. THE IRRIGATION CONTRACTOR SHALL CONTACT BASELINE, I.E., MR. IDRAL BOWEN @ (256) 630-0094, AND MAKE ARRANGEMENT FOR BASELINE TECHNICAL SERVICE TO PROGRAM THIS CONTROLLER IF NECESSARY. IT IS RECOMMENDED THAT IRRIGATION CONTRACTOR'S WHO ARE NOT TRAINED ON BASELINE NOT TO BID THIS PROJECT.

NOTE:
THE IRRIGATION CONTRACTOR SHALL WIPE ALL EXCESS CEMENT OFF THE PIPE AND FITTINGS IMMEDIATELY AFTER CEMENTING THE PIPE. PIPE AND FITTINGS FOUND WITH EXCESS PVC CEMENT SHALL ORDERED TO BE REMOVED AND REPLACED AT THE EXPENSE OF THE IRRIGATION CONTRACTOR.

NOTE:
THE WATER PRESSURE FOR THE DRILLED WATER WELL IS SPECIFIED TO BE A MINIMUM OF 90PSI. THIS PROJECT WAS DESIGNED BY USING TWO (2) DRILLED 8" WATER WELLS, PRESSURE BASED ON THE ASSUMPTION OF A MINIMUM OF 90 P.S.I., IF THE ACTUAL WATER PRESSURE IS LESS THEN 90 P.S.I., @ 300 GPM, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE LANDSCAPE ARCHITECT IN WRITING TO REVIEW THIS PROBLEM.

MATERIAL SUBSTITUTIONS:
1. MATERIAL SUBSTITUTIONS ARE PERMITTED ON THIS PROJECT ONLY WITH AUTHORIZATION FROM THE LANDSCAPE ARCHITECT.
2. IF UNSPECIFIED MATERIALS ARE FOUND INSTALLED ON THIS PROJECT THE IRRIGATION CONTRACTOR SHALL BE ORDERED TO IMMEDIATELY REMOVE THESE PRODUCTS AND REPLACE THEM WITH SPECIFIED MATERIALS.

NOTE:
CONTRACTOR SHALL INSTALL SLEEVES 2x TIMES THE SIZE OF THE DIAMETER PIPE OF THE ITEM BEING SLEEVED. INSTALL ONE (1) ITEM PER SLEEVE. DO NOT INSTALL 24V ELECTRICAL WIRING WITH IRRIGATION PIPE INSIDE OF PIPE SLEEVE! DO NOT BACKFILL WITHOUT WRITTEN APPROVAL FROM OWNER.

NOTE:
THE CONTRACTOR SHALL COMMENCE WORK AFTER THE IRRIGATION CONTRACTOR HAS VERIFIED THE PLANS & SITE HAVE BEEN FOUND FREE FROM CONFLICTS AND ONLY AFTER RECEIVING WRITTEN APPROVAL FROM THE LANDSCAPE ARCHITECT.

NOTE:
WIRE SPLICES MADE OUTSIDE OF THE ZONE VALVE BOX ENCLOSURE SHALL BE REMOVED AND REPLACED AT THE EXPENSE OF THE CONTRACTOR.

NOTE:
THE PLAN MAY NOT INCLUDE ALL MATERIALS NEEDED. THIS DOESN'T RELIEVE THE CONTRACTOR FROM BEING RESPONSIBLE TO PROVIDE A COMPLETE SYSTEM IN PERFECT WORKING ORDER.

NOTE: IRRIGATION CONTRACTOR SHALL INSTALL CHRISTY'S WARNING TAPE ABOVE ALL MAINLINE PIPE. SEE ANCILLARY SCHEDULE BELOW FOR MODEL NUMBER.

BURST PRESSURE FOR PVC PIPE @ 73° F				
NOMINAL SIZE	SCH 40	SCH 80	CL-200	THREADED NIPPLE SCH 80
1"	450	630	200	320
1-1/2"	330	470	200	240
2"	280	400	200	200
2-1/2"	300	420	200	210
3"	260	370	200	185
4"	220	320	200	160
6"	180	280	200	140
8"	160	250	200	120

FRICTION LOSS CHART				
SIZE	TYPE	VELOCITY	P.S.I. LOSS/100	MAX G.P.M.
1"	CI-200	4.78	3.38	16
1 ½"	CI-200	4.80	2.21	34
2"	CI-200	4.95	1.80	55
2 ½"	CI-200	4.90	1.41	80
3"	CI-200	4.95	1.14	120
4"	CI-200	4.98	0.86	200

NOTE:
NOTE: THE PRESSURE RATINGS OF THERMOPLASTIC PIPE REPRESENT THE MAXIMUM ALLOWABLE OPERATING PRESSURE WITHIN A PIPING SYSTEM FOR WATER AT 73 DEGREES FAHRENHEIT. THESE ARE THE RATED PRESSURES FOR A NUMBER OF PIPE SIZES IN PVC MATERIALS.

NOTE:
PRIOR TO THE CONTRACTOR STARTING THE WORK, VERIFY THE OWNER HAS PROVIDE 120V FOR THE CONTROLLER AND 230V-3 PHASE-60HZ, OR WHICH EVER POWER SUPPLY IS AVAILABLE FROM THE LOCAL POWER COMPANY, THIS SHALL INCLUDE A XXX AMP QUICK DISCONNECT ELECTRICAL SERVICE FOR THE PUMP. CHECK WITH HOOVER FOR AMPS.

NOTE: CONTACT INFORMATION FOR BASELINE IRRIGATION CONTROL PACKAGE. MR. IDRAL BOWEN @ (208) 639-8742 OR (256) 630-0094; EMAIL ADDRESS, ibowen@ baselinesystems.com

NOTE: NOTE: BUBBLERS ON TREES.
INSTALL A MINIMUM OF TWO (2) BUBBLER'S PER EACH TREE SHOWN ON THE LANDSCAPE AND IRRIGATION PLANS. EACH BUBBLER SHALL BE ½ G.P.M., TWO (2) BUBBLER'S PER TREE ARE REQUIRED AT A MINIMUM OF 1 GPM PER TREE. THE CONTRACTOR SHALL USE 7 GALLONS OF WATER PER/WEEK/PER TREE/PER CALIPER INCH OF THE TRUNK. EXAMPLE; 3" CALIPER TREE TRUNK NEEDS A MINIMUM OF 21 GALLONS OF WATER PER/WEEK & SHALL BE REQUIRED.

VERIFY THE FINAL LOCATION FOR THE WATER WELL AND SPRINKLER SUBMERSIBLE PUMP WITH THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION, EXACT LOCATION MUST BE APPROVED IN WRITING.

VERIFY THE FINAL LOCATION FOR THE SPRINKLER CONTROLLER WITH THE LANDSCAPE ARCHITECT & OWNER PRIOR TO INSTALLATION, EXACT LOCATION MUST BE APPROVED IN WRITING.

BRUCE HOWARD & ASSOCIATES, INC.
Landscape Architects, Site Planners & Golf Course Designers

PROJECT:
ESTERO PARKWAY
VILLAGE OF ESTERO

DRAWING TITLE:
IRRIGATION PLAN

NORTH

SCALE: 1" = 20' - 0"

PROJECT NUMBER

DATE: 07-03-2019

△ 10-18-2019

Digitally signed by Bruce J Howard
Date: 2019.10.21 19:30:06 -04'00'
Bruce J. Howard
License #: LA0000371

SHEET NUMBER: LI-1
OF:

4872 S.W. 72nd Avenue
Miami, Florida 33155
(305)668-3196
Fax(305)668-2871

REFERENCE NOTES SCHEDULE

SYMBOL	DESCRIPTION
1	DUE TO LACK OF SPACE ON PLANS, SPRINKLER COMPONENTS, I.E., P.O.C., PUMP, FILTER, MASTER VALVE, FLOW SENSOR, SHUT OFF VALVE, SHOWN IN THIS AREA SHALL BE INSTALLED IN THE PLANTER BED.
2	DUE TO LACK OF SPACE ON PLANS, SPRINKLER PVC PIPE, LATERAL & MAINLINE, SHOWN OUTSIDE OF THE PLANTER BEDS SHALL BE INSTALLED INSIDE PLANTER BEDS WHEN EVER POSSIBLE; SLEEVE ALL PVC PIPE THAT WILL BE INSTALLED OUTSIDE OF PLANTER BEDS.
3	WIRE SLEEVE FOR ROAD CROSSINGS, FOR 24V, 2-WIRE PATH CONTROL WIRE, SHALL BE 1 1/2" SCH40 PVC PIPE. THE CONTRACTOR SHALL INSTALL ALL THE 2-WIRE MAXI-CABLE INSIDE SCH40 GREY PVC ELEC CONDUIT .

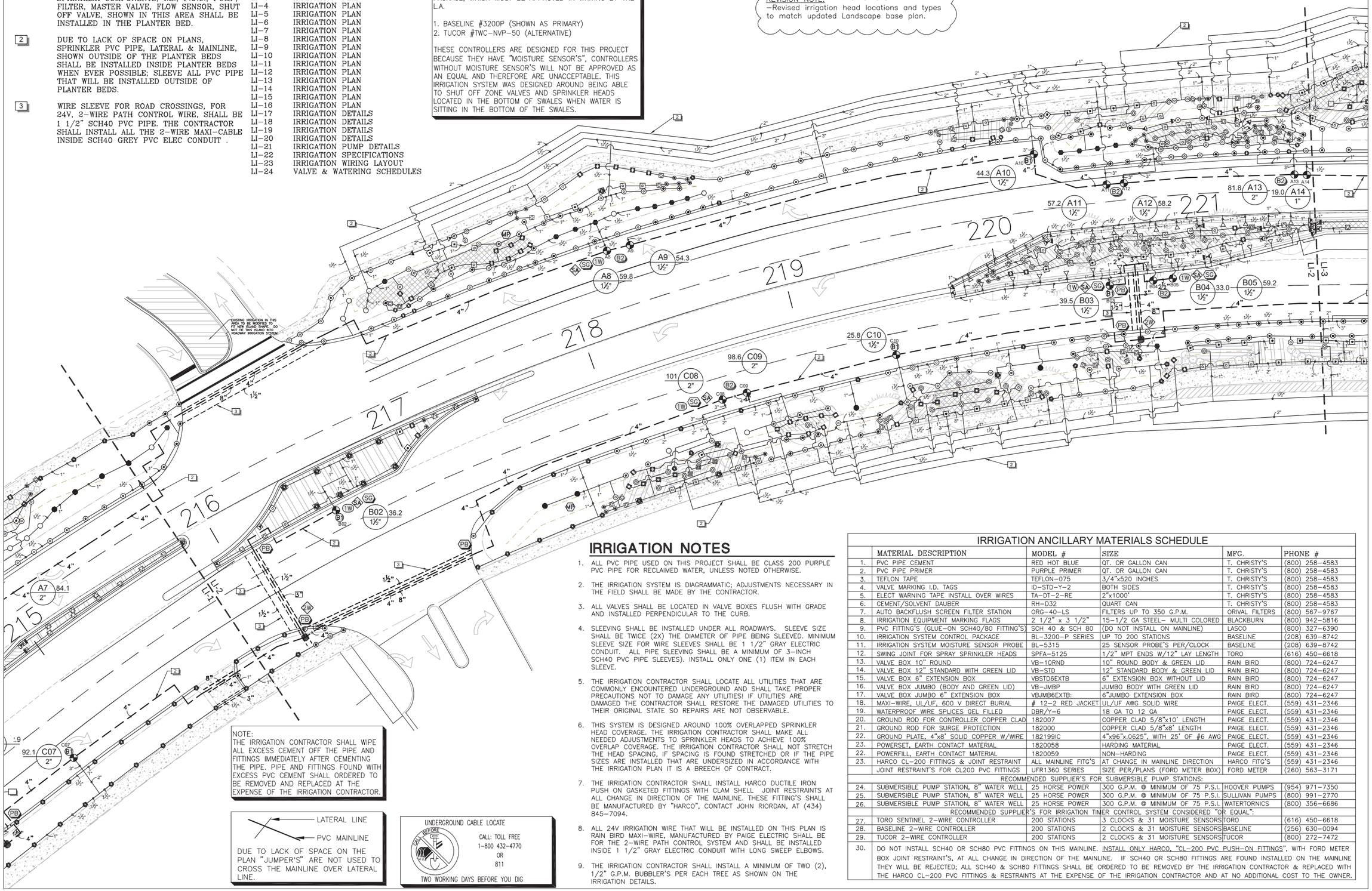
SHEET INDEX

NOTE:
THERE ARE TWO (2) CONTROL PACKAGES RATED AS "OR EQUAL" SUBSTITUTE ON THIS PROJECT, AND BOTH ARE DEPENDANT UPON THE APPROVAL FROM THE LANDSCAPE ARCHITECT. THE CONTRACTOR SHALL SUBMIT IN WRITING TO THE LANDSCAPE ARCHITECT HIS CHOICE OF CONTROL PACKAGE, WHICH MUST BE APPROVED IN WRITING BY THE L.A.

1. BASELINE #3200P (SHOWN AS PRIMARY)
2. TUCOR #TWC-NVP-50 (ALTERNATIVE)

THESE CONTROLLERS ARE DESIGNED FOR THIS PROJECT BECAUSE THEY HAVE "MOISTURE SENSOR'S", CONTROLLERS WITHOUT MOISTURE SENSOR'S WILL NOT BE APPROVED AS AN EQUAL AND THEREFORE ARE UNACCEPTABLE. THIS IRRIGATION SYSTEM WAS DESIGNED AROUND BEING ABLE TO SHUT OFF ZONE VALVES AND SPRINKLER HEADS LOCATED IN THE BOTTOM OF SWALES WHEN WATER IS SITTING IN THE BOTTOM OF THE SWALES.

REVISION NOTE: ⚠ 10-18-2019
-Revised irrigation head locations and types to match updated Landscape base plan.



NOTE:
THE IRRIGATION CONTRACTOR SHALL WIPE ALL EXCESS CEMENT OFF THE PIPE AND FITTINGS IMMEDIATELY AFTER CEMENTING THE PIPE. PIPE AND FITTINGS FOUND WITH EXCESS PVC CEMENT SHALL ORDERED TO BE REMOVED AND REPLACED AT THE EXPENSE OF THE IRRIGATION CONTRACTOR.

LATERAL LINE
PVC MAINLINE
DUE TO LACK OF SPACE ON THE PLAN "JUMPER'S" ARE NOT USED TO CROSS THE MAINLINE OVER LATERAL LINE.

UNDERGROUND CABLE LOCATE
CALL BEFORE YOU DIG
CALL: TOLL FREE
1-800 432-4770
OR
811
TWO WORKING DAYS BEFORE YOU DIG

IRRIGATION NOTES

1. ALL PVC PIPE USED ON THIS PROJECT SHALL BE CLASS 200 PURPLE PVC PIPE FOR RECLAIMED WATER, UNLESS NOTED OTHERWISE.
2. THE IRRIGATION SYSTEM IS DIAGRAMMATIC; ADJUSTMENTS NECESSARY IN THE FIELD SHALL BE MADE BY THE CONTRACTOR.
3. ALL VALVES SHALL BE LOCATED IN VALVE BOXES FLUSH WITH GRADE AND INSTALLED PERPENDICULAR TO THE CURB.
4. SLEEVING SHALL BE INSTALLED UNDER ALL ROADWAYS. SLEEVE SIZE SHALL BE TWICE (2X) THE DIAMETER OF PIPE BEING SLEEVED. MINIMUM SLEEVE SIZE FOR WIRE SLEEVES SHALL BE 1 1/2" GRAY ELECTRIC CONDUIT. ALL PIPE SLEEVING SHALL BE A MINIMUM OF 3-INCH SCH40 PVC PIPE SLEEVES). INSTALL ONLY ONE (1) ITEM IN EACH SLEEVE.
5. THE IRRIGATION CONTRACTOR SHALL LOCATE ALL UTILITIES THAT ARE COMMONLY ENCOUNTERED UNDERGROUND AND SHALL TAKE PROPER PRECAUTIONS NOT TO DAMAGE ANY UTILITIES! IF UTILITIES ARE DAMAGED THE CONTRACTOR SHALL RESTORE THE DAMAGED UTILITIES TO THEIR ORIGINAL STATE SO REPAIRS ARE NOT OBSERVABLE.
6. THIS SYSTEM IS DESIGNED AROUND 100% OVERLAPPED SPRINKLER HEAD COVERAGE. THE IRRIGATION CONTRACTOR SHALL MAKE ALL NEEDED ADJUSTMENTS TO SPRINKLER HEADS TO ACHIEVE 100% OVERLAP COVERAGE. THE IRRIGATION CONTRACTOR SHALL NOT STRETCH THE HEAD SPACING, IF SPACING IS FOUND STRETCHED OR IF THE PIPE SIZES ARE INSTALLED THAT ARE UNDERSIZED IN ACCORDANCE WITH THE IRRIGATION PLAN IT IS A BREECH OF CONTRACT.
7. THE IRRIGATION CONTRACTOR SHALL INSTALL HARCO DUCTILE IRON PUSH ON GASKETED FITTINGS WITH CLAM SHELL JOINT RESTRAINTS AT ALL CHANGE IN DIRECTION OF THE MAINLINE. THESE FITTING'S SHALL BE MANUFACTURED BY "HARCO", CONTACT JOHN RIORDAN, AT (434) 845-7094.
8. ALL 24V IRRIGATION WIRE THAT WILL BE INSTALLED ON THIS PLAN IS RAIN BIRD MAXI-WIRE, MANUFACTURED BY PAIGE ELECTRIC SHALL BE FOR THE 2-WIRE PATH CONTROL SYSTEM AND SHALL BE INSTALLED INSIDE 1 1/2" GRAY ELECTRIC CONDUIT WITH LONG SWEEP ELBOWS.
9. THE IRRIGATION CONTRACTOR SHALL INSTALL A MINIMUM OF TWO (2), 1/2" G.P.M. BUBBLER'S PER EACH TREE AS SHOWN ON THE IRRIGATION DETAILS.

IRRIGATION ANCILLARY MATERIALS SCHEDULE

	MATERIAL DESCRIPTION	MODEL #	SIZE	MFG.	PHONE #
1.	PVC PIPE CEMENT	RED HOT BLUE	QT. OR GALLON CAN	T. CHRISTY'S	(800) 258-4583
2.	PVC PIPE PRIMER	PURPLE PRIMER	QT. OR GALLON CAN	T. CHRISTY'S	(800) 258-4583
3.	TEFLON TAPE	TEFLON-075	3/4"x520 INCHES	T. CHRISTY'S	(800) 258-4583
4.	VALVE MARKING I.D. TAGS	ID-STD-Y-2	BOTH SIDES	T. CHRISTY'S	(800) 258-4583
5.	ELECT WARNING TAPE INSTALL OVER WIRES	TA-DT-2-RE	2"x1000'	T. CHRISTY'S	(800) 258-4583
6.	CEMENT/SOLVENT DAUBER	RH-D32	QUART CAN	T. CHRISTY'S	(800) 258-4583
7.	AUTO BACKFLUSH SCREEN FILTER STATION	ORG-40-LS	FILTERS UP TO 350 G.P.M.	ORIVAL FILTERS	(800) 567-9767
8.	IRRIGATION EQUIPMENT MARKING FLAGS	2 1/2" x 3 1/2"	15-1/2 GA STEEL- MULTI COLORED	BLACKBURN	(800) 942-5816
9.	PVC FITTING'S (GLUE-ON SCH40/80 FITTING'S)	SCH 40 & SCH 80	(DO NOT INSTALL ON MAINLINE)	LASCO	(800) 327-6390
10.	IRRIGATION SYSTEM CONTROL PACKAGE	BL-3200-P SERIES	UP TO 200 STATIONS	BASELINE	(208) 639-8742
11.	IRRIGATION SYSTEM MOISTURE SENSOR PROBE	BL-5315	25 SENSOR PROBE'S PER/CLOCK	BASELINE	(208) 639-8742
12.	SWING JOINT FOR SPRAY SPRINKLER HEADS	SPFA-5125	1/2" MPT ENDS W/12" LAY LENGTH	TORO	(616) 450-6618
13.	VALVE BOX 10" ROUND	VB-10RND	10" ROUND BODY & GREEN LID	RAIN BIRD	(800) 724-6247
14.	VALVE BOX 12" STANDARD WITH GREEN LID	VB-STD	12" STANDARD BODY & GREEN LID	RAIN BIRD	(800) 724-6247
15.	VALVE BOX 6" EXTENSION BOX	VBSTD6EXTB	6" EXTENSION BOX WITHOUT LID	RAIN BIRD	(800) 724-6247
16.	VALVE BOX JUMBO (BODY AND GREEN LID)	VB-JMBP	JUMBO BODY WITH GREEN LID	RAIN BIRD	(800) 724-6247
17.	VALVE BOX JUMBO 6" EXTENSION BOX	VBJMB6EXTB:	6"JUMBO EXTENSION BOX	RAIN BIRD	(800) 724-6247
18.	MAXI-WIRE, UL/UF, 600 V DIRECT BURIAL	# 12-2 RED JACKET	UL/UF AWG SOLID WIRE	PAIGE ELECT.	(559) 431-2346
19.	WATERPROOF WIRE SPLICES GEL FILLED	DBR/Y-6	18 GA TO 12 GA	PAIGE ELECT.	(559) 431-2346
20.	GROUND ROD FOR CONTROLLER COPPER CLAD	182007	COPPER CLAD 5/8"x10' LENGTH	PAIGE ELECT.	(559) 431-2346
21.	GROUND ROD FOR SURGE PROTECTION	182000	COPPER CLAD 5/8"x8' LENGTH	PAIGE ELECT.	(559) 431-2346
22.	GROUND PLATE, 4"x8' SOLID COPPER W/WIRE	182199IC	4"x96"x.0625", WITH 25' OF #6 AWG	PAIGE ELECT.	(559) 431-2346
23.	POWERSET, EARTH CONTACT MATERIAL	1820058	HARDING MATERIAL	PAIGE ELECT.	(559) 431-2346
22.	POWERFILL, EARTH CONTACT MATERIAL	1820059	NON-HARDING	PAIGE ELECT.	(559) 431-2346
23.	HARCO CL-200 FITTINGS & JOINT RESTRAINT	ALL MAINLINE FITG'S	AT CHANGE IN MAINLINE DIRECTION	HARCO FITG'S	(559) 431-2346
	JOINT RESTRAINT'S FOR CL200 PVC FITTINGS	UFR1360 SERIES	SIZE PER/PLANS (FORD METER BOX)	FORD METER	(260) 563-3171
	RECOMMENDED SUPPLIER'S FOR SUBMERSIBLE PUMP STATIONS:				
24.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	HOOVER PUMPS	(954) 971-7350
25.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	SULLIVAN PUMPS	(800) 991-2770
26.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	WATERTORNICS	(800) 356-6686
	RECOMMENDED SUPPLIER'S FOR IRRIGATION TIMER CONTROL SYSTEM CONSIDERED "OR EQUAL":				
27.	TORO SENTINEL 2-WIRE CONTROLLER	200 STATIONS	3 CLOCKS & 31 MOISTURE SENSORS	TORO	(616) 450-6618
28.	BASELINE 2-WIRE CONTROLLER	200 STATIONS	2 CLOCKS & 31 MOISTURE SENSORS	BASELINE	(256) 630-0094
29.	TUCOR 2-WIRE CONTROLLER	200 STATIONS	2 CLOCKS & 31 MOISTURE SENSORS	TUCOR	(800) 272-7472
30.	DO NOT INSTALL SCH40 OR SCH80 PVC FITTINGS ON THIS MAINLINE. INSTALL ONLY HARCO, "CL-200 PVC PUSH-ON FITTINGS", WITH FORD METER BOX JOINT RESTRAINT'S, AT ALL CHANGE IN DIRECTION OF THE MAINLINE. IF SCH40 OR SCH80 FITTINGS ARE FOUND INSTALLED ON THE MAINLINE THEY WILL BE REJECTED; ALL SCH40 & SCH80 FITTINGS SHALL BE ORDERED TO BE REMOVED BY THE IRRIGATION CONTRACTOR & REPLACED WITH THE HARCO CL-200 PVC FITTINGS & RESTRAINTS AT THE EXPENSE OF THE IRRIGATION CONTRACTOR AND AT NO ADDITIONAL COST TO THE OWNER.				

BRUCE HOWARD & ASSOCIATES, INC.
Landscape Architects, Site Planners & Golf Course Designers

PROJECT:
ESTERO PARKWAY
VILLAGE OF ESTERO

DRAWING TITLE:
IRRIGATION PLAN

NORTH

SCALE:
1" = 20' - 0"

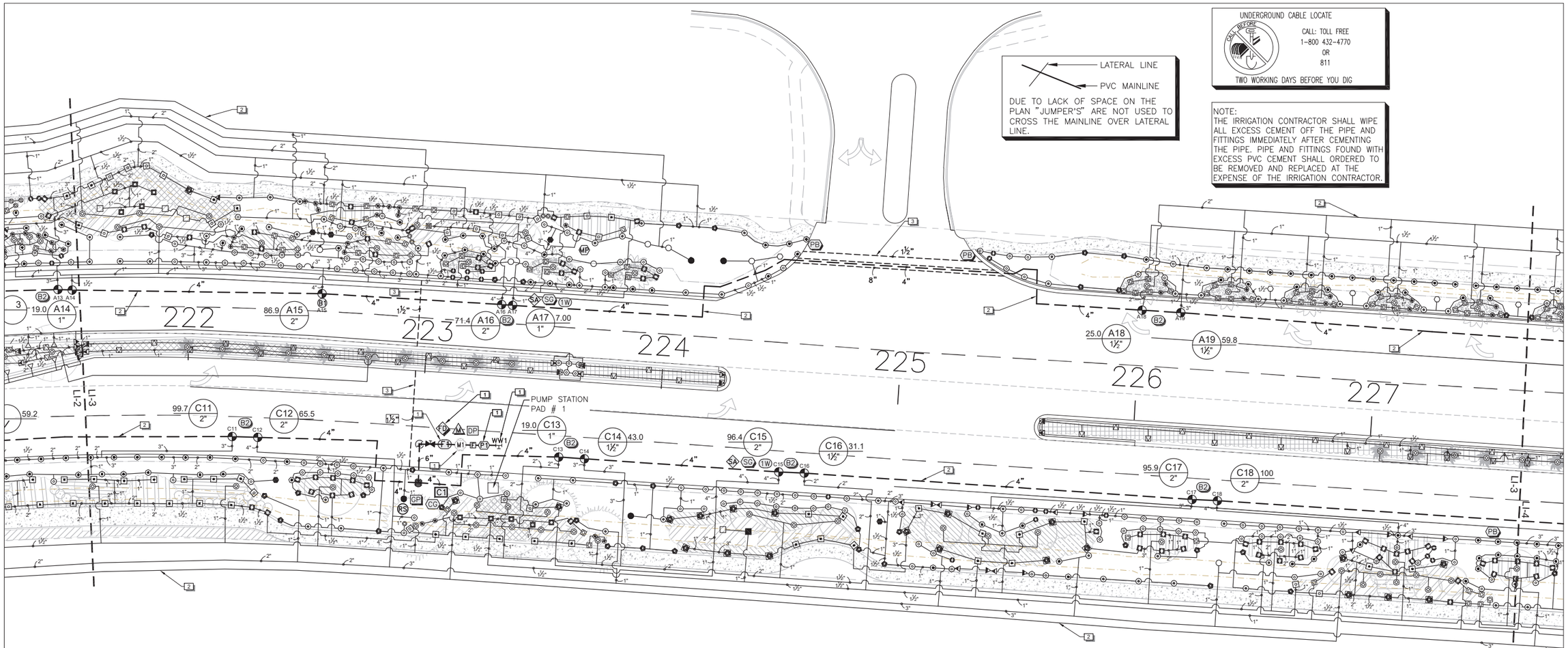
PROJECT NUMBER

DATE:
07-03-2019
⚠ 10-18-2019

Digitally signed by Bruce J Howard
Date: 2019.10.21 19:30:27 -04'00'
Bruce J. Howard
License #: LA0000371

SHEET NUMBER:
LI-2
OF:

4872 S.W. 72nd Avenue
Miami, Florida 33155
(305)668-3196
Fax(305)668-2871



REFERENCE NOTES SCHEDULE

SYMBOL	DESCRIPTION
1	DUE TO LACK OF SPACE ON PLANS, SPRINKLER COMPONENTS, I.E., P.O.C., PUMP, FILTER, MASTER VALVE, FLOW SENSOR, SHUT OFF VALVE, SHOWN IN THIS AREA SHALL BE INSTALLED IN THE PLANTER BED.
2	DUE TO LACK OF SPACE ON PLANS, SPRINKLER PVC PIPE, LATERAL & MAINLINE, SHOWN OUTSIDE OF THE PLANTER BEDS SHALL BE INSTALLED INSIDE PLANTER BEDS WHEN EVER POSSIBLE; SLEEVE ALL PVC PIPE THAT WILL BE INSTALLED OUTSIDE OF PLANTER BEDS.
3	WIRE SLEEVE FOR ROAD CROSSINGS, FOR 24V, 2-WIRE PATH CONTROL WIRE, SHALL BE 1 1/2" SCH40 PVC PIPE. THE CONTRACTOR SHALL INSTALL ALL THE 2-WIRE MAXI-CABLE INSIDE SCH40 GREY PVC ELEC CONDUIT .

SHEET INDEX

REVISION NOTE: ⚠ 10-18-2019
-Revised irrigation head locations and types to match updated Landscape base plan.

IRRIGATION NOTES

1. ALL PVC PIPE USED ON THIS PROJECT SHALL BE CLASS 200 PURPLE PVC PIPE FOR RECLAIMED WATER, UNLESS NOTED OTHERWISE.
2. THE IRRIGATION SYSTEM IS DIAGRAMMATIC; ADJUSTMENTS NECESSARY IN THE FIELD SHALL BE MADE BY THE CONTRACTOR.
3. ALL VALVES SHALL BE LOCATED IN VALVE BOXES FLUSH WITH GRADE AND INSTALLED PERPENDICULAR TO THE CURB.
4. SLEEVING SHALL BE INSTALLED UNDER ALL ROADWAYS. SLEEVE SIZE SHALL BE TWICE (2X) THE DIAMETER OF PIPE BEING SLEEVED. MINIMUM SLEEVE SIZE FOR WIRE SLEEVES SHALL BE 1 1/2" GRAY ELECTRIC CONDUIT. ALL PIPE SLEEVING SHALL BE A MINIMUM OF 3-INCH SCH40 PVC PIPE SLEEVES). INSTALL ONLY ONE (1) ITEM IN EACH SLEEVE.
5. THE IRRIGATION CONTRACTOR SHALL LOCATE ALL UTILITIES THAT ARE COMMONLY ENCOUNTERED UNDERGROUND AND SHALL TAKE PROPER PRECAUTIONS NOT TO DAMAGE ANY UTILITIES! IF UTILITIES ARE DAMAGED THE CONTRACTOR SHALL RESTORE THE DAMAGED UTILITIES TO THEIR ORIGINAL STATE SO REPAIRS ARE NOT OBSERVABLE.
6. THIS SYSTEM IS DESIGNED AROUND 100% OVERLAPPED SPRINKLER HEAD COVERAGE. THE IRRIGATION CONTRACTOR SHALL MAKE ALL NEEDED ADJUSTMENTS TO SPRINKLER HEADS TO ACHIEVE 100% OVERLAP COVERAGE. THE IRRIGATION CONTRACTOR SHALL NOT STRETCH THE HEAD SPACING, IF SPACING IS FOUND STRETCHED OR IF THE PIPE SIZES ARE INSTALLED THAT ARE UNDERSIZED IN ACCORDANCE WITH THE IRRIGATION PLAN IT IS A BREECH OF CONTRACT.
7. THE IRRIGATION CONTRACTOR SHALL INSTALL HARCO DUCTILE IRON PUSH ON GASKETED FITTINGS WITH CLAM SHELL JOINT RESTRAINTS AT ALL CHANGE IN DIRECTION OF THE MAINLINE. THESE FITTING'S SHALL BE MANUFACTURED BY "HARCO", CONTACT JOHN RIORDAN, AT (434) 845-7094.
8. ALL 24V IRRIGATION WIRE THAT WILL BE INSTALLED ON THIS PLAN IS RAIN BIRD MAXI-WIRE, MANUFACTURED BY PAIGE ELECTRIC SHALL BE FOR THE 2-WIRE PATH CONTROL SYSTEM AND SHALL BE INSTALLED INSIDE 1 1/2" GRAY ELECTRIC CONDUIT WITH LONG SWEEP ELBOWS.
9. THE IRRIGATION CONTRACTOR SHALL INSTALL A MINIMUM OF TWO (2), 1/2" G.P.M. BUBBLER'S PER EACH TREE AS SHOWN ON THE IRRIGATION DETAILS.

IRRIGATION ANCILLARY MATERIALS SCHEDULE

	MATERIAL DESCRIPTION	MODEL #	SIZE	MFG.	PHONE #
1.	PVC PIPE CEMENT	RED HOT BLUE	QT. OR GALLON CAN	T. CHRISTY'S	(800) 258-4583
2.	PVC PIPE PRIMER	PURPLE PRIMER	QT. OR GALLON CAN	T. CHRISTY'S	(800) 258-4583
3.	TEFLON TAPE	TEFLON-075	3/4"x520 INCHES	T. CHRISTY'S	(800) 258-4583
4.	VALVE MARKING I.D. TAGS	ID-STD-Y-2	BOTH SIDES	T. CHRISTY'S	(800) 258-4583
5.	ELECT WARNING TAPE INSTALL OVER WIRES	TA-DT-2-RE	2"x1000'	T. CHRISTY'S	(800) 258-4583
6.	CEMENT/SOLVENT DAUBER	RH-D32	QUART CAN	T. CHRISTY'S	(800) 258-4583
7.	AUTO BACKFLUSH SCREEN FILTER STATION	ORG-40-LS	FILTERS UP TO 350 G.P.M.	ORIVAL FILTERS	(800) 567-9767
8.	IRRIGATION EQUIPMENT MARKING FLAGS	2 1/2" x 3 1/2"	15-1/2 GA STEEL- MULTI COLORED	BLACKBURN	(800) 942-5816
9.	PVC FITTING'S (GLUE-ON SCH40/80 FITTING'S)	SCH 40 & SCH 80	(DO NOT INSTALL ON MAINLINE)	LASCO	(800) 327-6390
10.	IRRIGATION SYSTEM CONTROL PACKAGE	BL-3200-P SERIES	UP TO 200 STATIONS	BASELINE	(208) 639-8742
11.	IRRIGATION SYSTEM MOISTURE SENSOR PROBE	BL-5315	25 SENSOR PROBE'S PER/CLOCK	BASELINE	(208) 639-8742
12.	SWING JOINT FOR SPRAY SPRINKLER HEADS	SPFA-5125	1/2" MPT ENDS W/12" LAY LENGTH	TORO	(616) 450-6618
13.	VALVE BOX 10" ROUND	VB-10RND	10" ROUND BODY & GREEN LID	RAIN BIRD	(800) 724-6247
14.	VALVE BOX 12" STANDARD WITH GREEN LID	VB-STD	12" STANDARD BODY & GREEN LID	RAIN BIRD	(800) 724-6247
15.	VALVE BOX 6" EXTENSION BOX	VBSTD6EXTB	6" EXTENSION BOX WITHOUT LID	RAIN BIRD	(800) 724-6247
16.	VALVE BOX JUMBO (BODY AND GREEN LID)	VB-JMBP	JUMBO BODY WITH GREEN LID	RAIN BIRD	(800) 724-6247
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18.	MAXI-WIRE, UL/UF, 600 V DIRECT BURIAL	# 12-2 RED JACKET	UL/UF AWG SOLID WIRE	PAIGE ELECT.	(559) 431-2346
19.	WATERPROOF WIRE SPLICES GEL FILLED	DBR/Y-6	18 GA TO 12 GA	PAIGE ELECT.	(559) 431-2346
20.	GROUND ROD FOR CONTROLLER COPPER CLAD	182007	COPPER CLAD 5/8"x10' LENGTH	PAIGE ELECT.	(559) 431-2346
21.	GROUND ROD FOR SURGE PROTECTION	182000	COPPER CLAD 5/8"x8' LENGTH	PAIGE ELECT.	(559) 431-2346
22.	GROUND PLATE, 4"x8' SOLID COPPER W/WIRE	182199IC	4"x96"x.0625", WITH 25' OF #6 AWG	PAIGE ELECT.	(559) 431-2346
23.	POWERSET, EARTH CONTACT MATERIAL	1820058	HARDING MATERIAL	PAIGE ELECT.	(559) 431-2346
22.	POWERFILL, EARTH CONTACT MATERIAL	1820059	NON-HARDING	PAIGE ELECT.	(559) 431-2346
23.	HARCO CL-200 FITTINGS & JOINT RESTRAINT	ALL MAINLINE FITG'S	AT CHANGE IN MAINLINE DIRECTION	HARCO FITG'S	(559) 431-2346
	JOINT RESTRAINT'S FOR CL200 PVC FITTINGS	UFR1360 SERIES	SIZE PER/PLANS (FORD METER BOX)	FORD METER	(260) 563-3171
	RECOMMENDED SUPPLIER'S FOR SUBMERSIBLE PUMP STATIONS:				
24.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	HOOVER PUMPS	(954) 971-7350
25.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	SULLIVAN PUMPS	(800) 991-2770
26.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	WATERTORNICS	(800) 356-6686
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27.	TORO SENTINEL 2-WIRE CONTROLLER	200 STATIONS	3 CLOCKS & 31 MOISTURE SENSORS	TORO	(616) 450-6618
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29.	TUCOR 2-WIRE CONTROLLER	200 STATIONS	2 CLOCKS & 31 MOISTURE SENSORS	TUCOR	(800) 272-7472
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ESTERO PARKWAY
VILLAGE OF ESTERO

DRAWING TITLE:
IRRIGATION PLAN

NORTH

SCALE: 1" = 20' - 0"

PROJECT NUMBER

DATE: 07-03-2019

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Digitally signed by Bruce J Howard
Date: 2019.10.21 19:30:44 -04'00'
Bruce J. Howard
License #: LA0000371

SHEET NUMBER: LI-3
OF:

4872 S.W. 72nd Avenue
Miami, Florida 33155
(305)668-3196
Fax(305)668-2871

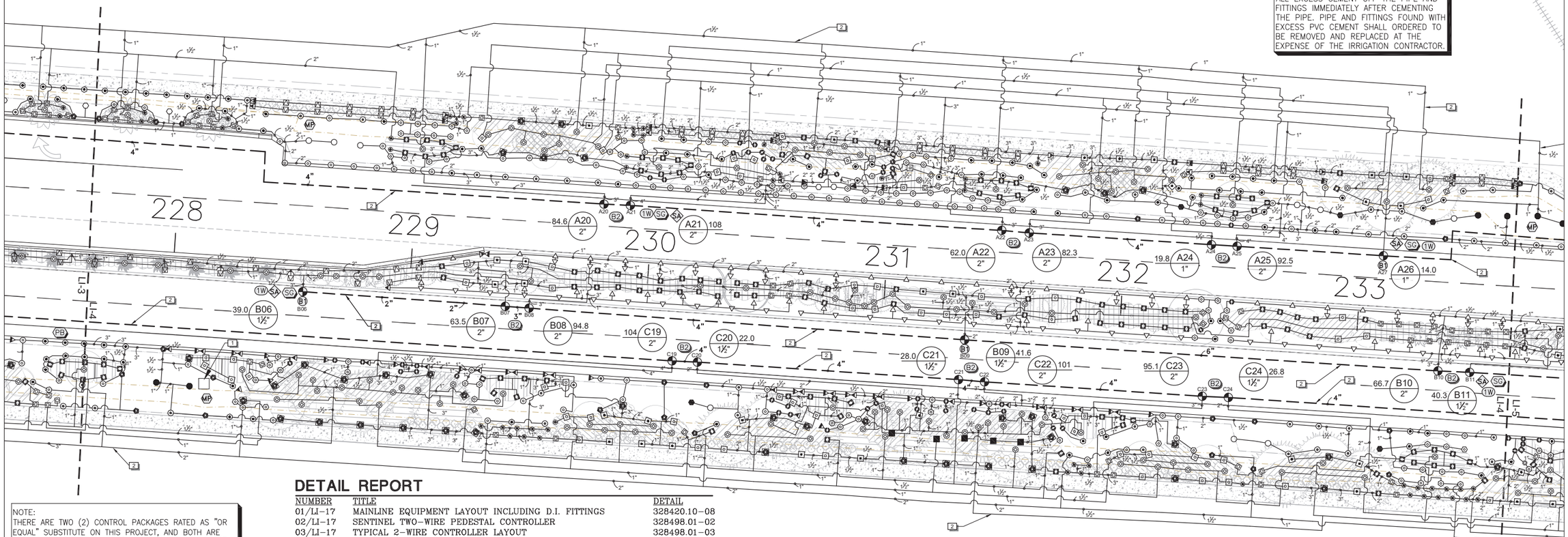
REVISION NOTE: ⚠ 10-18-2019
–Revised irrigation head locations and types to match updated Landscape base plan.

LATERAL LINE
PVC MAINLINE

DUE TO LACK OF SPACE ON THE PLAN "JUMPER'S" ARE NOT USED TO CROSS THE MAINLINE OVER LATERAL LINE.

UNDERGROUND CABLE LOCATE
CALL BEFORE YOU DIG
CALL: TOLL FREE
1–800 432–4770
OR
811
TWO WORKING DAYS BEFORE YOU DIG

NOTE:
THE IRRIGATION CONTRACTOR SHALL WIPE ALL EXCESS CEMENT OFF THE PIPE AND FITTINGS IMMEDIATELY AFTER CEMENTING THE PIPE. PIPE AND FITTINGS FOUND WITH EXCESS PVC CEMENT SHALL ORDERED TO BE REMOVED AND REPLACED AT THE EXPENSE OF THE IRRIGATION CONTRACTOR.



NOTE:
THERE ARE TWO (2) CONTROL PACKAGES RATED AS "OR EQUAL" SUBSTITUTE ON THIS PROJECT, AND BOTH ARE DEPENDANT UPON THE APPROVAL FROM THE LANDSCAPE ARCHITECT. THE CONTRACTOR SHALL SUBMIT IN WRITING TO THE LANDSCAPE ARCHITECT HIS CHOICE OF CONTROL PACKAGE, WHICH MUST BE APPROVED IN WRITING BY THE L.A.

1. BASELINE #3200P (SHOWN AS PRIMARY)
2. TUCOR #TWC–NVP–50 (ALTERNATIVE)

THESE CONTROLLERS ARE DESIGNED FOR THIS PROJECT BECAUSE THEY HAVE "MOISTURE SENSOR'S", CONTROLLERS WITHOUT MOISTURE SENSOR'S WILL NOT BE APPROVED AS AN EQUAL AND THEREFORE ARE UNACCEPTABLE. THIS IRRIGATION SYSTEM WAS DESIGNED AROUND BEING ABLE TO SHUT OFF ZONE VALVES AND SPRINKLER HEADS LOCATED IN THE BOTTOM OF SWALES WHEN WATER IS SITTING IN THE BOTTOM OF THE SWALES.

REFERENCE NOTES SCHEDULE

SYMBOL	DESCRIPTION
1	DUE TO LACK OF SPACE ON PLANS, SPRINKLER COMPONENTS, I.E., P.O.C., PUMP, FILTER, MASTER VALVE, FLOW SENSOR, SHUT OFF VALVE, SHOWN IN THIS AREA SHALL BE INSTALLED IN THE PLANTER BED.
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3	WIRE SLEEVE FOR ROAD CROSSINGS, FOR 24V, 2–WIRE PATH CONTROL WIRE, SHALL BE 1 1/2" SCH40 PVC PIPE. THE CONTRACTOR SHALL INSTALL ALL THE 2–WIRE MAXI–CABLE INSIDE SCH40 GREY PVC ELEC CONDUIT .

DETAIL REPORT

NUMBER	TITLE	DETAIL
01/LI–17	MAINLINE EQUIPMENT LAYOUT INCLUDING D.I. FITTINGS	328420.10–08
02/LI–17	SENTINEL TWO–WIRE PEDESTAL CONTROLLER	328498.01–02
03/LI–17	TYPICAL 2–WIRE CONTROLLER LAYOUT	328498.01–03
04/LI–17	SB–BLA LIGHTNING ARRESTOR INSTALLATION & WIRING	328498.01–04
05/LI–17	BL–5315B BISENSOR SOIL MOISTURE SENSOR	328410.75–04
06/LI–17	PULL BOX – FOR 2–WIRE PATH CONTROLLERS	328480.81–03
07/LI–17	PUMP START/STOP RELAY	328498.75–01
08/LI–17	6" POP–UP SPRINKLER – IRRITROL	328498.10–01
09/LI–17	12" POP–UP SPRINKLER – IRRITROL	328498.10–02
10/LI–17	PIPE RESTRAINT SYSTEM	328422.01–20
11/LI–18	TREE BUBBLER MOUNTED ON SCH 80 RISER	328403.23–17
12/LI–18	JOINT RESTRAINT DETAIL	328422.01–21
13/LI–18	"Z" DROP DOWN PIPE CONNECT PUMP TO MAINLINE	328422.42–01
14/LI–18	DUCTILE IRON PIPE RESTRAINT JOINT SCHEDULE	328422.56–01
15/LI–18	PAIGE ELECT DBR WIRE SPLICE CONNECTORS	328480.02–01
16/LI–18	RAIN SHUT OFF ON POLE MOUNT	328411–33
17/LI–18	ISOLATION VALVE WITH JOINT RESTRAINTS	328406.33–05
18/LI–18	WR–2 SERIES WIRELESS RAIN SENSOR	328411–38
19/LI–18	ORIVAL AUTOMATIC BACKFLUSH FILTER	328414.30–01
20/LI–18	DRAINAGE PIT	328414.30–04
21/LI–19	RESTRAINING JOINT ASSEMBLY INSTRUCTIONS	328422.01–23
22/LI–19	TORO REMOTE CONTROL ZONE VALVE	328406.05–26
23/LI–19	GENERAL TRENCHING	328477.01–31
24/LI–19	SLEEVE UNDER PAVEMENT	328477.01–32
25/LI–19	ROAD CROSSING INSTALLATION	328477.01–33
26/LI–19	MASTER VALVE TORO # 252 SERIES WITH BALL VALVE	328498.05–02
27/LI–19	PULL BOX	328477.20–14
28/LI–19	GROUNDING DETAIL FOR BASELINE 3200 SERIES CONTROLLER	328480.50–27
29/LI–19	CONTROLLER GROUNDING	328480.50–26
30/LI–19	PVC SADDLE MOUNT FLOW METER	328485.01–51
31/LI–20	PAIGE ELECTRIC DECODER CABLE FUSE DEVICE (DCFD) ™	328480.01–01
32/LI–20	PAIGE ELECTRIC DECODER CABLE FUSE DEVICE (DCFD) ™	328480.01–02
33/LI–20	PAIGE ELECTRIC SURGE GUARD PROTECTION FOR 2–WIRE	328480.01–03
34/LI–20	PAIGE ELECTRIC SOLENOID PROTECTION FROM LIGHTENING	328480.01–04
35/LI–20	METERING PUMP COMPONENT DIAGRAM	328481–02
36/LI–20	RID–O–RUST NOTES AND PRICING	328481–08
37/LI–20	SOLUTION TANK WITH AUTOMATIC TIMER (CONTROLLER)	328481–07
39/LI–22	IRRIGATION SPECIFICATIONS	328489.01–26
40/LI–23	BASELINE EQUIPMENT NEEDED FOR 3200 SERIES CONTROLLER	328410.75–10
41/LI–23	TORO EQUIPMENT NEEDED FOR SENTINEL CONTROLLER	328498.01–01
42/LI–23	FLOW SENSOR – MASTER VALVE COMBINATION	328498.05–01
43/LI–23	SHRUB AND GROUND COVER DETAIL FOR 12" HI–POP SPRAY	328403.30–10
44/LI–23	SHRUB RISER RAINBIRD SPRAY SPRINKLER	328403.22–01
45/LI–24	PUMP STATION CONCRETE PAD DETAIL	328487.01–07

SHEET INDEX

IRRIGATION ANCILLARY MATERIALS SCHEDULE

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5.	ELECT WARNING TAPE INSTALL OVER WIRES	TA–DT–2–RE	2"x1000'	T. CHRISTY'S	(800) 258–4583
6.	CEMENT/SOLVENT DAUBER	RH–D32	QUART CAN	T. CHRISTY'S	(800) 258–4583
7.	AUTO BACKFLUSH SCREEN FILTER STATION	ORG–40–LS	FILTERS UP TO 350 G.P.M.	ORIVAL FILTERS	(800) 567–9767
8.	IRRIGATION EQUIPMENT MARKING FLAGS	2 1/2" x 3 1/2"	15–1/2 GA STEEL– MULTI COLORED	BLACKBURN	(800) 942–5816
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DATE:
07-03-2019
⚠ 10-18-2019

Digitally signed by Bruce J Howard
Date: 2019.10.21 19:31:04 -04'00'
Bruce J. Howard
License #: LA0000371

SHEET NUMBER:
LI-4
OF:

4872 S.W. 72nd Avenue
Miami, Florida 33155
(305)668-3196
Fax(305)668-2871

LATERAL LINE

PVC MAINLINE

DUE TO LACK OF SPACE ON THE PLAN "JUMPER'S" ARE NOT USED TO CROSS THE MAINLINE OVER LATERAL LINE.

UNDERGROUND CABLE LOCATE

CALL: TOLL FREE
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OR
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TWO WORKING DAYS BEFORE YOU DIG

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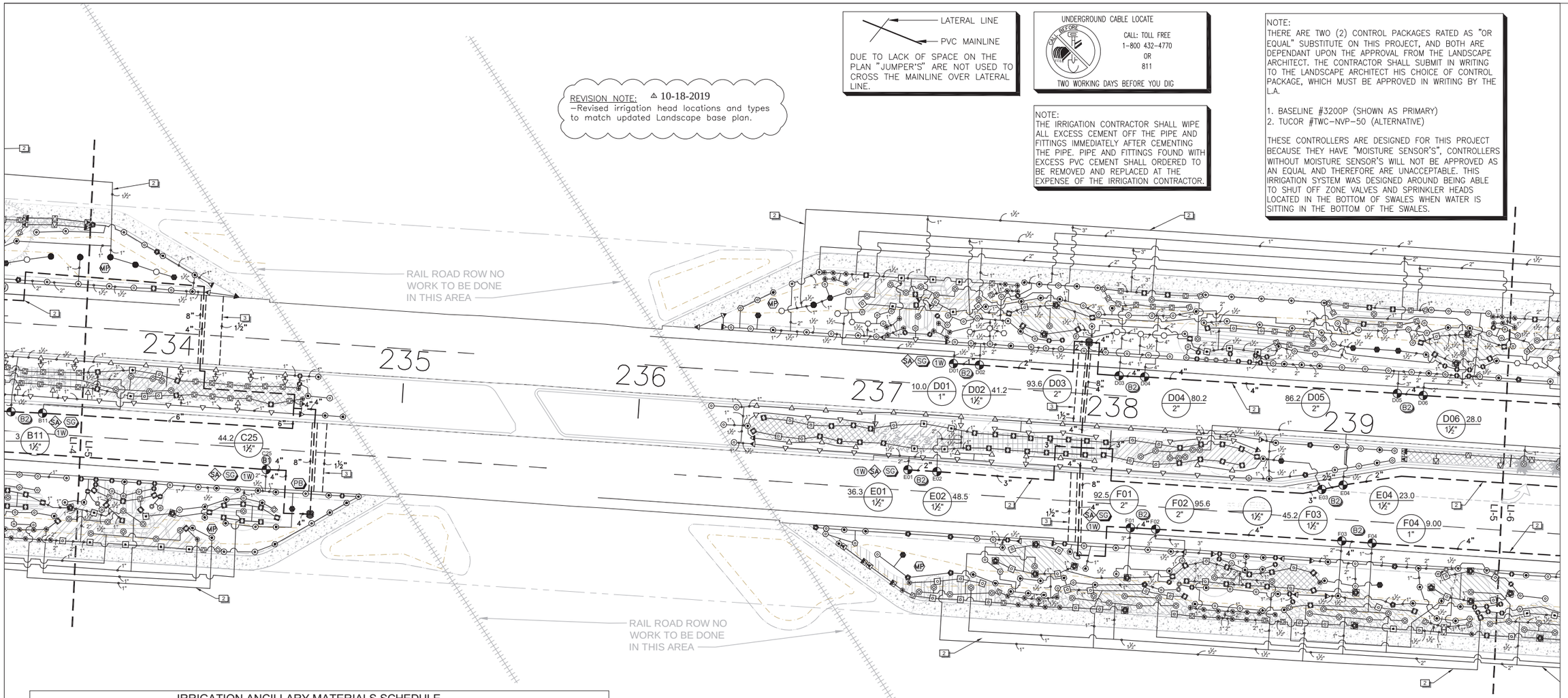

IRRIGATION ANCILLARY MATERIALS SCHEDULE

	MATERIAL DESCRIPTION	MODEL #	SIZE	MFG.	PHONE #
1.	PVC PIPE CEMENT	RED HOT BLUE	QT. OR GALLON CAN	T. CHRISTY'S	(800) 258-4583
2.	PVC PIPE PRIMER	PURPLE PRIMER	QT. OR GALLON CAN	T. CHRISTY'S	(800) 258-4583
3.	TEFLON TAPE	TEFLON-075	3/4"x520 INCHES	T. CHRISTY'S	(800) 258-4583
4.	VALVE MARKING I.D. TAGS	ID-STD-Y-2	BOTH SIDES	T. CHRISTY'S	(800) 258-4583
5.	ELECT WARNING TAPE INSTALL OVER WIRES	TA-DT-2-RE	2"x1000'	T. CHRISTY'S	(800) 258-4583
6.	CEMENT/SOLVENT DAUBER	RH-D32	QUART CAN	T. CHRISTY'S	(800) 258-4583
7.	AUTO BACKFLUSH SCREEN FILTER STATION	ORG-40-LS	FILTERS UP TO 350 G.P.M.	ORIVAL FILTERS	(800) 567-9767
8.	IRRIGATION EQUIPMENT MARKING FLAGS	2 1/2" x 3 1/2"	15-1/2 GA STEEL- MULTI COLORED	BLACKBURN	(800) 942-5816
9.	PVC FITTING'S (GLUE-ON SCH40/80 FITTING'S)	SCH 40 & SCH 80	(DO NOT INSTALL ON MAINLINE)	LASCO	(800) 327-6390
10.	IRRIGATION SYSTEM CONTROL PACKAGE	BL-3200-P SERIES	UP TO 200 STATIONS	BASELINE	(208) 639-8742
11.	IRRIGATION SYSTEM MOISTURE SENSOR PROBE	BL-5315	25 SENSOR PROBE'S PER/CLOCK	BASELINE	(208) 639-8742
12.	SWING JOINT FOR SPRAY SPRINKLER HEADS	SPFA-5125	1/2" MPT ENDS W/12" LAY LENGTH	TORO	(616) 450-6618
13.	VALVE BOX 10" ROUND	VB-10RND	10" ROUND BODY & GREEN LID	RAIN BIRD	(800) 724-6247
14.	VALVE BOX 12" STANDARD WITH GREEN LID	VB-STD	12" STANDARD BODY & GREEN LID	RAIN BIRD	(800) 724-6247
15.	VALVE BOX 6" EXTENSION BOX	VBSTD6EXTB	6" EXTENSION BOX WITHOUT LID	RAIN BIRD	(800) 724-6247
16.	VALVE BOX JUMBO (BODY AND GREEN LID)	VB-JMBP	JUMBO BODY WITH GREEN LID	RAIN BIRD	(800) 724-6247
17.	VALVE BOX JUMBO 6" EXTENSION BOX	VBJMB6EXTB:	6"JUMBO EXTENSION BOX	RAIN BIRD	(800) 724-6247
18.	MAXI-WIRE, UL/UF, 600 V DIRECT BURIAL	# 12-2 RED JACKET	UL/UF AWG SOLID WIRE	PAIGE ELECT.	(559) 431-2346
19.	WATERPROOF WIRE SPLICES GEL FILLED	DBR/Y-6	18 GA TO 12 GA	PAIGE ELECT.	(559) 431-2346
20.	GROUND ROD FOR CONTROLLER COPPER CLAD	182007	COPPER CLAD 5/8"x10' LENGTH	PAIGE ELECT.	(559) 431-2346
21.	GROUND ROD FOR SURGE PROTECTION	182000	COPPER CLAD 5/8"x8' LENGTH	PAIGE ELECT.	(559) 431-2346
22.	GROUND PLATE, 4"x8' SOLID COPPER W/WIRE	182199IC	4"x96"x.0625", WITH 25' OF #6 AWG	PAIGE ELECT.	(559) 431-2346
23.	POWERSET, EARTH CONTACT MATERIAL	1820058	HARDING MATERIAL	PAIGE ELECT.	(559) 431-2346
22.	POWERFILL, EARTH CONTACT MATERIAL	1820059	NON-HARDING	PAIGE ELECT.	(559) 431-2346
23.	HARCO CL-200 FITTINGS & JOINT RESTRAINT	ALL MAINLINE FITG'S	AT CHANGE IN MAINLINE DIRECTION	HARCO FITG'S	(559) 431-2346
	JOINT RESTRAINT'S FOR CL200 PVC FITTINGS	UFR1360 SERIES	SIZE PER/PLANS (FORD METER BOX)	FORD METER	(260) 563-3171
	RECOMMENDED SUPPLIER'S FOR SUBMERSIBLE PUMP STATIONS:				
24.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	HOOVER PUMPS	(954) 971-7350
25.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	SULLIVAN PUMPS	(800) 991-2770
26.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	WATERTORNICS	(800) 356-6686
	RECOMMENDED SUPPLIER'S FOR IRRIGATION TIMER CONTROL SYSTEM CONSIDERED "OR EQUAL":				
27.	TORO SENTINEL 2-WIRE CONTROLLER	200 STATIONS	3 CLOCKS & 31 MOISTURE SENSORS	TORO	(616) 450-6618
28.	BASELINE 2-WIRE CONTROLLER	200 STATIONS	2 CLOCKS & 31 MOISTURE SENSORS	BASELINE	(256) 630-0094
29.	TUCOR 2-WIRE CONTROLLER	200 STATIONS	2 CLOCKS & 31 MOISTURE SENSORS	TUCOR	(800) 272-7472
30.	DO NOT INSTALL SCH40 OR SCH80 PVC FITTINGS ON THIS MAINLINE. INSTALL ONLY HARCO, "CL-200 PVC PUSH-ON FITTINGS", WITH FORD METER BOX JOINT RESTRAINT'S, AT ALL CHANGE IN DIRECTION OF THE MAINLINE. IF SCH40 OR SCH80 FITTINGS ARE FOUND INSTALLED ON THE MAINLINE THEY WILL BE REJECTED; ALL SCH40 & SCH80 FITTINGS SHALL BE ORDERED TO BE REMOVED BY THE IRRIGATION CONTRACTOR & REPLACED WITH THE HARCO CL-200 PVC FITTINGS & RESTRAINTS AT THE EXPENSE OF THE IRRIGATION CONTRACTOR AND AT NO ADDITIONAL COST TO THE OWNER.				

IRRIGATION NOTES

1. ALL PVC PIPE USED ON THIS PROJECT SHALL BE CLASS 200 PURPLE PVC PIPE FOR RECLAIMED WATER, UNLESS NOTED OTHERWISE.
2. THE IRRIGATION SYSTEM IS DIAGRAMMATIC; ADJUSTMENTS NECESSARY IN THE FIELD SHALL BE MADE BY THE CONTRACTOR.
3. ALL VALVES SHALL BE LOCATED IN VALVE BOXES FLUSH WITH GRADE AND INSTALLED PERPENDICULAR TO THE CURB.
4. SLEEVING SHALL BE INSTALLED UNDER ALL ROADWAYS. SLEEVE SIZE SHALL BE TWICE (2X) THE DIAMETER OF PIPE BEING SLEEVED. MINIMUM SLEEVE SIZE FOR WIRE SLEEVES SHALL BE 1 1/2" GRAY ELECTRIC CONDUIT. ALL PIPE SLEEVING SHALL BE A MINIMUM OF 3-INCH SCH40 PVC PIPE SLEEVES). INSTALL ONLY ONE (1) ITEM IN EACH SLEEVE.
5. THE IRRIGATION CONTRACTOR SHALL LOCATE ALL UTILITIES THAT ARE COMMONLY ENCOUNTERED UNDERGROUND AND SHALL TAKE PROPER PRECAUTIONS NOT TO DAMAGE ANY UTILITIES! IF UTILITIES ARE DAMAGED THE CONTRACTOR SHALL RESTORE THE DAMAGED UTILITIES TO THEIR ORIGINAL STATE SO REPAIRS ARE NOT OBSERVABLE.
6. THIS SYSTEM IS DESIGNED AROUND 100% OVERLAPPED SPRINKLER HEAD COVERAGE. THE IRRIGATION CONTRACTOR SHALL MAKE ALL NEEDED ADJUSTMENTS TO SPRINKLER HEADS TO ACHIEVE 100% OVERLAP COVERAGE. THE IRRIGATION CONTRACTOR SHALL NOT STRETCH THE HEAD SPACING, IF SPACING IS FOUND STRETCHED OR IF THE PIPE SIZES ARE INSTALLED THAT ARE UNDERSIZED IN ACCORDANCE WITH THE IRRIGATION PLAN IT IS A BREECH OF CONTRACT.
7. THE IRRIGATION CONTRACTOR SHALL INSTALL HARCO DUCTILE IRON PUSH ON GASKETED FITTINGS WITH CLAM SHELL JOINT RESTRAINTS AT ALL CHANGE IN DIRECTION OF THE MAINLINE. THESE FITTING'S SHALL BE MANUFACTURED BY "HARCO", CONTACT JOHN RIORDAN, AT (434) 845-7094.
8. ALL 24V IRRIGATION WIRE THAT WILL BE INSTALLED ON THIS PLAN IS RAIN BIRD MAXI-WIRE, MANUFACTURED BY PAIGE ELECTRIC SHALL BE FOR THE 2-WIRE PATH CONTROL SYSTEM AND SHALL BE INSTALLED INSIDE 1 1/2" GRAY ELECTRIC CONDUIT WITH LONG SWEEP ELBOWS.
9. THE IRRIGATION CONTRACTOR SHALL INSTALL A MINIMUM OF TWO (2), 1/2" G.P.M. BUBBLER'S PER EACH TREE AS SHOWN ON THE IRRIGATION DETAILS.

REFERENCE NOTES SCHEDULE

SYMBOL	DESCRIPTION
1	DUE TO LACK OF SPACE ON PLANS, SPRINKLER COMPONENTS, I.E., P.O.C., PUMP, FILTER, MASTER VALVE, FLOW SENSOR, SHUT OFF VALVE, SHOWN IN THIS AREA SHALL BE INSTALLED IN THE PLANTER BED.
2	DUE TO LACK OF SPACE ON PLANS, SPRINKLER PVC PIPE, LATERAL & MAINLINE, SHOWN OUTSIDE OF THE PLANTER BEDS SHALL BE INSTALLED INSIDE PLANTER BEDS WHEN EVER POSSIBLE; SLEEVE ALL PVC PIPE THAT WILL BE INSTALLED OUTSIDE OF PLANTER BEDS.
3	WIRE SLEEVE FOR ROAD CROSSINGS, FOR 24V, 2-WIRE PATH CONTROL WIRE, SHALL BE 1 1/2" SCH40 PVC PIPE. THE CONTRACTOR SHALL INSTALL ALL THE 2-WIRE MAXI-CABLE INSIDE SCH40 GREY PVC ELEC CONDUIT .

BRUCE HOWARD & ASSOCIATES, INC.
Landscape Architects, Site Planners & Golf Course Designers

PROJECT:
ESTERO PARKWAY
VILLAGE OF ESTERO

DRAWING TITLE:
IRRIGATION PLAN

NORTH

SCALE:
1" = 20' - 0"

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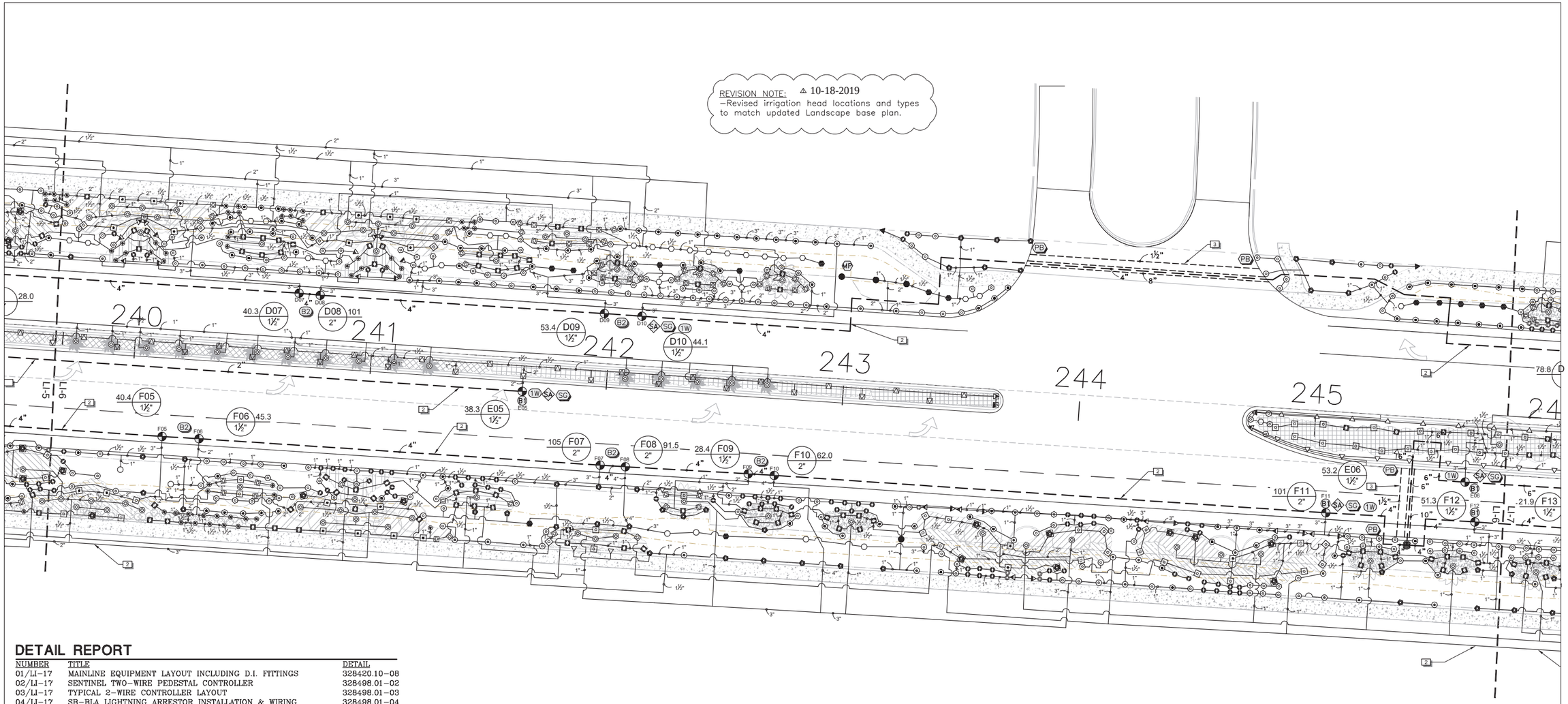

DETAIL REPORT

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01/LI–17	MAINLINE EQUIPMENT LAYOUT INCLUDING D.I. FITTINGS	328420.10–08
02/LI–17	SENTINEL TWO–WIRE PEDESTAL CONTROLLER	328498.01–02
03/LI–17	TYPICAL 2–WIRE CONTROLLER LAYOUT	328498.01–03
04/LI–17	SB–BLA LIGHTNING ARRESTOR INSTALLATION & WIRING	328498.01–04
05/LI–17	BL–5315B BISENSOR SOIL MOISTURE SENSOR	328410.75–04
06/LI–17	PULL BOX – FOR 2–WIRE PATH CONTROLLERS	328480.81–03
07/LI–17	PUMP START/STOP RELAY	328498.75–01
08/LI–17	6" POP–UP SPRINKLER – IRRITROL	328498.10–01
09/LI–17	12" POP–UP SPRINKLER – IRRITROL	328498.10–02
10/LI–17	PIPE RESTRAINT SYSTEM	328422.01–20
11/LI–18	TREE BUBBLER MOUNTED ON SCH 80 RISER	328403.23–17
12/LI–18	JOINT RESTRAINT DETAIL	328422.01–21
13/LI–18	"Z" DROP DOWN PIPE CONNECT PUMP TO MAINLINE	328422.42–01
14/LI–18	DUCTILE IRON PIPE RESTRAINT JOINT SCHEDULE	328422.56–01
15/LI–18	PAIGE ELECT DBR WIRE SPLICE CONNECTORS	328480.02–01
16/LI–18	RAIN SHUT OFF ON POLE MOUNT	328411–33
17/LI–18	ISOLATION VALVE WITH JOINT RESTRAINTS	328406.33–05
18/LI–18	WR–2 SERIES WIRELESS RAIN SENSOR	328411–38
19/LI–18	ORIVAL AUTOMATIC BACKFLUSH FILTER	328414.30–01
20/LI–18	DRAINAGE PIT	328414.30–04
21/LI–19	RESTRAINING JOINT ASSEMBLY INSTRUCTIONS	328422.01–23
22/LI–19	TORO REMOTE CONTROL ZONE VALVE	328406.05–26
23/LI–19	GENERAL TRENCHING	328477.01–31
24/LI–19	SLEEVE UNDER PAVEMENT	328477.01–32
25/LI–19	ROAD CROSSING INSTALLATION	328477.01–33
26/LI–19	MASTER VALVE TORO # 252 SERIES WITH BALL VALVE	328498.05–02
27/LI–19	PULL BOX	328477.20–14
28/LI–19	GROUNDING DETAIL FOR BASELINE 3200 SERIES CONTROLLER	328480.50–27
29/LI–19	CONTROLLER GROUNDING	328480.50–26
30/LI–19	PVC SADDLE MOUNT FLOW METER	328485.01–51
31/LI–20	PAIGE ELECTRIC DECODER CABLE FUSE DEVICE (DCFD) ™	328480.01–01
32/LI–20	PAIGE ELECTRIC DECODER CABLE FUSE DEVICE (DCFD) ™	328480.01–02
33/LI–20	PAIGE ELECTRIC SURGE GUARD PROTECTION FOR 2–WIRE	328480.01–03
34/LI–20	PAIGE ELECTRIC SOLENOID PROTECTION FROM LIGHTENING	328480.01–04
35/LI–20	METERING PUMP COMPONENT DIAGRAM	328481–02
36/LI–20	RID–O–RUST NOTES AND PRICING	328481–08
37/LI–20	SOLUTION TANK WITH AUTOMATIC TIMER (CONTROLLER)	328481–07
39/LI–22	IRRIGATION SPECIFICATIONS	328489.01–26
40/LI–23	BASELINE EQUIPMENT NEEDED FOR 3200 SERIES CONTROLLER	328410.75–10
41/LI–23	TORO EQUIPMENT NEEDED FOR SENTINEL CONTROLLER	328498.01–01
42/LI–23	FLOW SENSOR – MASTER VALVE COMBINATION	328498.05–01
43/LI–23	SHRUB AND GROUND COVER DETAIL FOR 12" HI–POP SPRAY	328403.30–10
44/LI–23	SHRUB RISER RAINBIRD SPRAY SPRINKLER	328403.22–01
45/LI–24	PUMP STATION CONCRETE PAD DETAIL	328487.01–07

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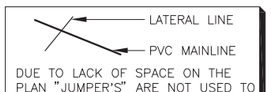

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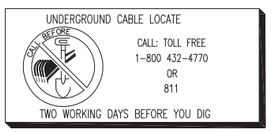

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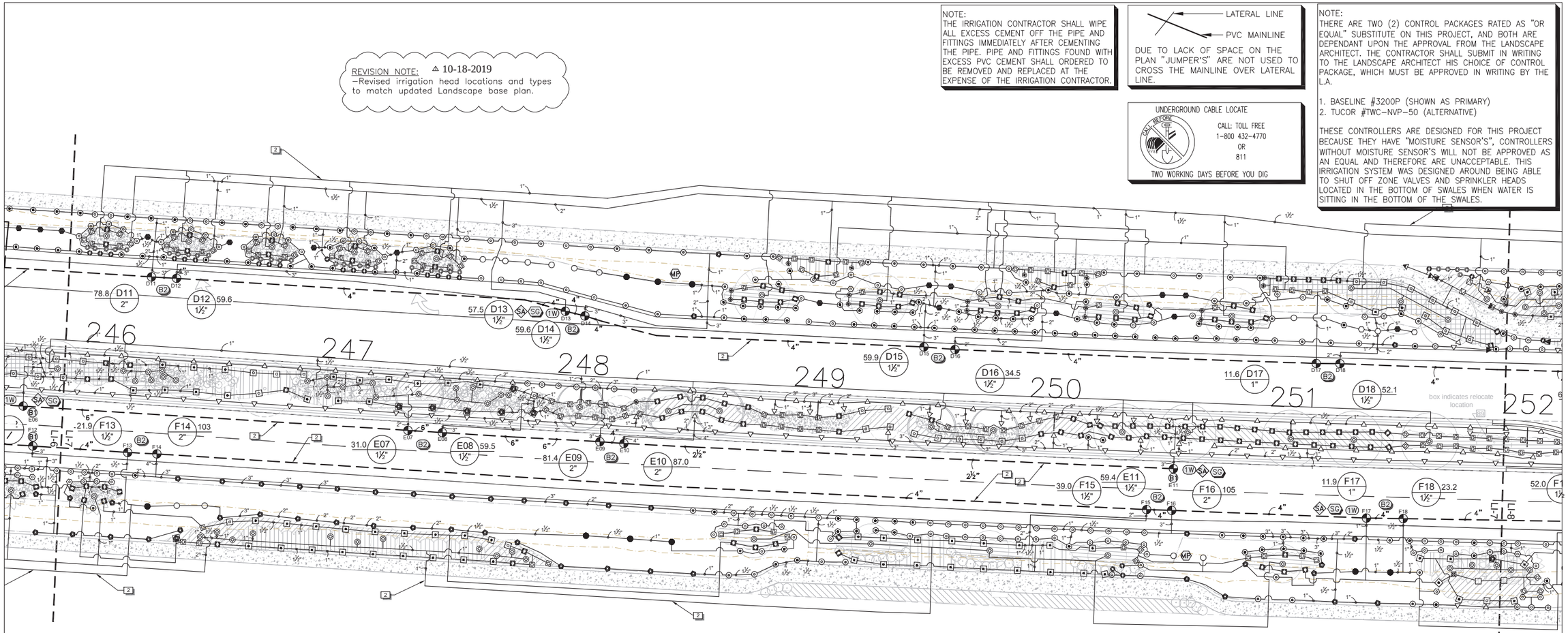

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43/LI–23	SHRUB AND GROUND COVER DETAIL FOR 12" HI–POP SPRAY	328403.30–10
44/LI–23	SHRUB RISER RAINBIRD SPRAY SPRINKLER	328403.22–01
45/LI–24	PUMP STATION CONCRETE PAD DETAIL	328487.01–07

IRRIGATION ANCILLARY MATERIALS SCHEDULE

	MATERIAL DESCRIPTION	MODEL #	SIZE	MFG.	PHONE #
1.	PVC PIPE CEMENT	RED HOT BLUE	QT. OR GALLON CAN	T. CHRISTY'S	(800) 258–4583
2.	PVC PIPE PRIMER	PURPLE PRIMER	QT. OR GALLON CAN	T. CHRISTY'S	(800) 258–4583
3.	TEFLON TAPE	TEFLON–075	3/4"x520 INCHES	T. CHRISTY'S	(800) 258–4583
4.	VALVE MARKING I.D. TAGS	ID–STD–Y–2	BOTH SIDES	T. CHRISTY'S	(800) 258–4583
5.	ELECT WARNING TAPE INSTALL OVER WIRES	TA–DT–2–RE	2"x1000'	T. CHRISTY'S	(800) 258–4583
6.	CEMENT/SOLVENT DAUBER	RH–D32	QUART CAN	T. CHRISTY'S	(800) 258–4583
7.	AUTO BACKFLUSH SCREEN FILTER STATION	ORG–40–LS	FILTERS UP TO 350 G.P.M.	ORIVAL FILTERS	(800) 567–9767
8.	IRRIGATION EQUIPMENT MARKING FLAGS	2 1/2" x 3 1/2"	15–1/2 GA STEEL– MULTI COLORED	BLACKBURN	(800) 942–5816
9.	PVC FITTING'S (GLUE–ON SCH40/80 FITTING'S)	SCH 40 & SCH 80	(DO NOT INSTALL ON MAINLINE)	LASCO	(800) 327–6390
10.	IRRIGATION SYSTEM CONTROL PACKAGE	BL–3200–P SERIES	UP TO 200 STATIONS	BASELINE	(208) 639–8742
11.	IRRIGATION SYSTEM MOISTURE SENSOR PROBE	BL–5315	25 SENSOR PROBE'S PER/CLOCK	BASELINE	(208) 639–8742
12.	SWING JOINT FOR SPRAY SPRINKLER HEADS	SPFA–5125	1/2" MPT ENDS W/12" LAY LENGTH	TORO	(616) 450–6618
13.	VALVE BOX 10" ROUND	VB–10RND	10" ROUND BODY & GREEN LID	RAIN BIRD	(800) 724–6247
14.	VALVE BOX 12" STANDARD WITH GREEN LID	VB–STD	12" STANDARD BODY & GREEN LID	RAIN BIRD	(800) 724–6247
15.	VALVE BOX 6" EXTENSION BOX	VBSTD6EXTB	6" EXTENSION BOX WITHOUT LID	RAIN BIRD	(800) 724–6247
16.	VALVE BOX JUMBO (BODY AND GREEN LID)	VB–JMBP	JUMBO BODY WITH GREEN LID	RAIN BIRD	(800) 724–6247
17.	VALVE BOX JUMBO 6" EXTENSION BOX	VBJMB6EXTB:	6"JUMBO EXTENSION BOX	RAIN BIRD	(800) 724–6247
18.	MAXI–WIRE, UL/UF, 600 V DIRECT BURIAL	# 12–2 RED JACKET	UL/UF AWG SOLID WIRE	PAIGE ELECT.	(559) 431–2346
19.	WATERPROOF WIRE SPLICES GEL FILLED	DBR/Y–6	18 GA TO 12 GA	PAIGE ELECT.	(559) 431–2346
20.	GROUND ROD FOR CONTROLLER COPPER CLAD	182007	COPPER CLAD 5/8"x10' LENGTH	PAIGE ELECT.	(559) 431–2346
21.	GROUND ROD FOR SURGE PROTECTION	182000	COPPER CLAD 5/8"x8' LENGTH	PAIGE ELECT.	(559) 431–2346
22.	GROUND PLATE, 4"x8' SOLID COPPER W/WIRE	182199IC	4"x96"x.0625", WITH 25' OF #6 AWG	PAIGE ELECT.	(559) 431–2346
23.	POWERSET, EARTH CONTACT MATERIAL	1820058	HARDING MATERIAL	PAIGE ELECT.	(559) 431–2346
22.	POWERFILL, EARTH CONTACT MATERIAL	1820059	NON–HARDING	PAIGE ELECT.	(559) 431–2346
23.	HARCO CL–200 FITTINGS & JOINT RESTRAINT	ALL MAINLINE FITG'S	AT CHANGE IN MAINLINE DIRECTION	HARCO FITG'S	(559) 431–2346
	JOINT RESTRAINT'S FOR CL200 PVC FITTINGS	UFR1360 SERIES	SIZE PER/PLANS (FORD METER BOX)	FORD METER	(260) 563–3171
	RECOMMENDED SUPPLIER'S FOR SUBMERSIBLE PUMP STATIONS:				
24.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	HOOVER PUMPS	(954) 971–7350
25.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	SULLIVAN PUMPS	(800) 991–2770
26.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	WATERTORNICS	(800) 356–6686
	RECOMMENDED SUPPLIER'S FOR IRRIGATION TIMER CONTROL SYSTEM CONSIDERED "OR EQUAL":				
27.	TORO SENTINEL 2–WIRE CONTROLLER	200 STATIONS	3 CLOCKS & 31 MOISTURE SENSORS	TORO	(616) 450–6618
28.	BASELINE 2–WIRE CONTROLLER	200 STATIONS	2 CLOCKS & 31 MOISTURE SENSORS	BASELINE	(256) 630–0094
29.	TUCOR 2–WIRE CONTROLLER	200 STATIONS	2 CLOCKS & 31 MOISTURE SENSORS	TUCOR	(800) 272–7472
30.	DO NOT INSTALL SCH40 OR SCH80 PVC FITTINGS ON THIS MAINLINE. INSTALL ONLY HARCO, "CL–200 PVC PUSH–ON FITTINGS", WITH FORD METER BOX JOINT RESTRAINT'S, AT ALL CHANGE IN DIRECTION OF THE MAINLINE. IF SCH40 OR SCH80 FITTINGS ARE FOUND INSTALLED ON THE MAINLINE THEY WILL BE REJECTED; ALL SCH40 & SCH80 FITTINGS SHALL BE ORDERED TO BE REMOVED BY THE IRRIGATION CONTRACTOR & REPLACED WITH THE HARCO CL–200 PVC FITTINGS & RESTRAINTS AT THE EXPENSE OF THE IRRIGATION CONTRACTOR AND AT NO ADDITIONAL COST TO THE OWNER.				

REFERENCE NOTES SCHEDULE

SYMBOL	DESCRIPTION
1	DUE TO LACK OF SPACE ON PLANS, SPRINKLER COMPONENTS, I.E., P.O.C., PUMP, FILTER, MASTER VALVE, FLOW SENSOR, SHUT OFF VALVE, SHOWN IN THIS AREA SHALL BE INSTALLED IN THE PLANTER BED.
2	DUE TO LACK OF SPACE ON PLANS, SPRINKLER PVC PIPE, LATERAL & MAINLINE, SHOWN OUTSIDE OF THE PLANTER BEDS SHALL BE INSTALLED INSIDE PLANTER BEDS WHEN EVER POSSIBLE; SLEEVE ALL PVC PIPE THAT WILL BE INSTALLED OUTSIDE OF PLANTER BEDS.
3	WIRE SLEEVE FOR ROAD CROSSINGS, FOR 24V, 2–WIRE PATH CONTROL WIRE, SHALL BE 1 1/2" SCH40 PVC PIPE. THE CONTRACTOR SHALL INSTALL ALL THE 2–WIRE MAXI–CABLE INSIDE SCH40 GREY PVC ELEC CONDUIT .

BRUCE HOWARD & ASSOCIATES, INC.
Landscape Architects, Site Planners & Golf Course Designers

PROJECT:
ESTERO PARKWAY
VILLAGE OF ESTERO

DRAWING TITLE:
IRRIGATION PLAN

NORTH

SCALE: 1" = 20' - 0"

PROJECT NUMBER

DATE: 07-03-2019

⚠ 10-18-2019

Digitally signed by Bruce J Howard
Date: 2019.10.21 19:32:11 -04'00'
Bruce J. Howard
License #: LA0000371

SHEET NUMBER: LI-7
OF:

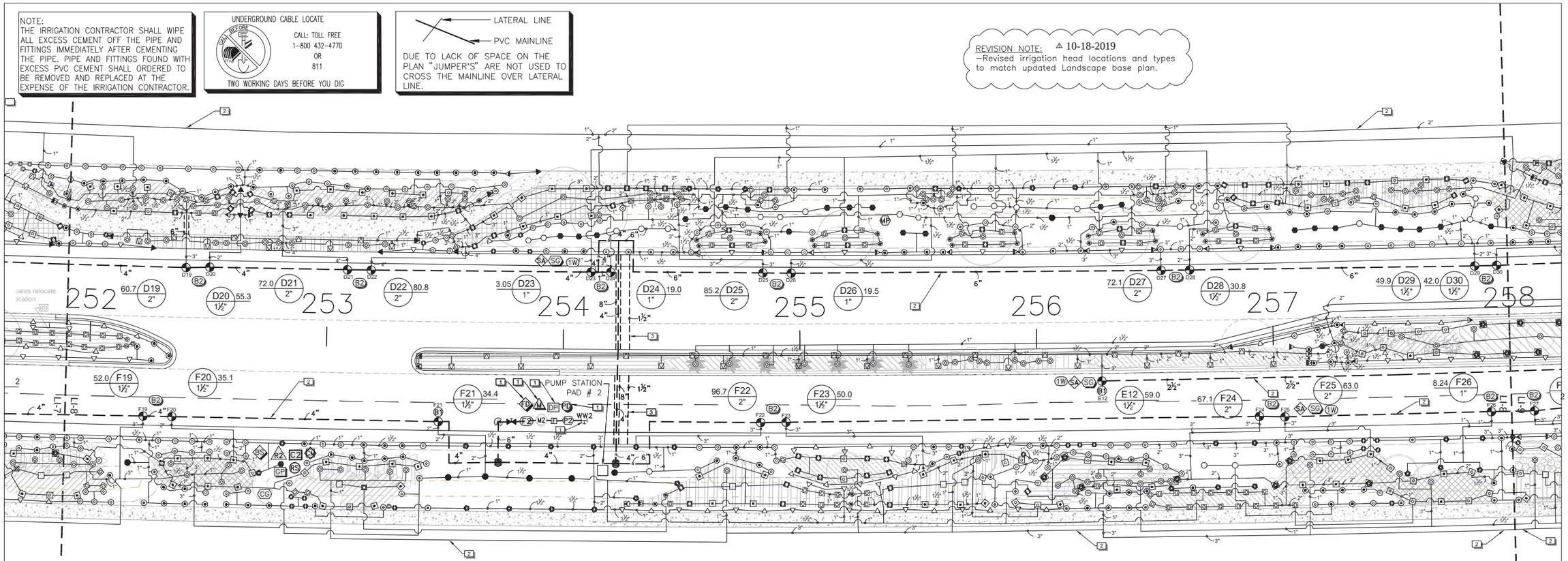
4872 S.W. 72nd Avenue
Miami, Florida 33155
(305)668-3196
Fax(305)668-2871

NOTE:
THE IRRIGATION CONTRACTOR SHALL WIPE ALL EXCESS CEMENT OFF THE PIPE AND FITTINGS IMMEDIATELY AFTER CEMENTING THE PIPE. PIPE AND FITTINGS FOUND WITH EXCESS PVC CEMENT SHALL ORDERED TO BE REMOVED AND REPLACED AT THE EXPENSE OF THE IRRIGATION CONTRACTOR.

UNDERGROUND CABLE LOCATE
CALL BEFORE YOU DIG
CALL: TOLL FREE
1-800 432-4770
OR
811
TWO WORKING DAYS BEFORE YOU DIG

LATERAL LINE
PVC MAINLINE
DUE TO LACK OF SPACE ON THE PLAN "JUMPER'S" ARE NOT USED TO CROSS THE MAINLINE OVER LATERAL LINE.

REVISION NOTE: ⚠ 10-18-2019
-Revised irrigation head locations and types to match updated Landscape base plan.



IRRIGATION ANCILLARY MATERIALS SCHEDULE

	MATERIAL DESCRIPTION	MODEL #	SIZE	MFG.	PHONE #
1.	PVC PIPE CEMENT	RED HOT BLUE	QT. OR GALLON CAN	T. CHRISTY'S	(800) 258-4583
2.	PVC PIPE PRIMER	PURPLE PRIMER	QT. OR GALLON CAN	T. CHRISTY'S	(800) 258-4583
3.	TEFLON TAPE	TEFLON-075	3/4"x520 INCHES	T. CHRISTY'S	(800) 258-4583
4.	VALVE MARKING I.D. TAGS	ID-STD-Y-2	BOTH SIDES	T. CHRISTY'S	(800) 258-4583
5.	ELECT WARNING TAPE INSTALL OVER WIRES	TA-DT-2-RE	2"x1000'	T. CHRISTY'S	(800) 258-4583
6.	CEMENT/SOLVENT DAUBER	RH-D32	QUART CAN	T. CHRISTY'S	(800) 258-4583
7.	AUTO BACKFLUSH SCREEN FILTER STATION	ORG-40-LS	FILTERS UP TO 350 G.P.M.	ORIVAL FILTERS	(800) 567-9767
8.	IRRIGATION EQUIPMENT MARKING FLAGS	2 1/2" x 3 1/2"	15-1/2 GA STEEL- MULTI COLORED	BLACKBURN	(800) 942-5816
9.	PVC FITTING'S (GLUE-ON SCH40/80 FITTING'S)	SCH 40 & SCH 80	(DO NOT INSTALL ON MAINLINE)	LASCO	(800) 327-6390
10.	IRRIGATION SYSTEM CONTROL PACKAGE	BL-3200-P SERIES	UP TO 200 STATIONS	BASELINE	(208) 639-8742
11.	IRRIGATION SYSTEM MOISTURE SENSOR PROBE	BL-5315	25 SENSOR PROBE'S PER/CLOCK	BASELINE	(208) 639-8742
12.	SWING JOINT FOR SPRAY SPRINKLER HEADS	SPFA-5125	1/2" MPT ENDS W/12" LAY LENGTH	TORO	(616) 450-6618
13.	VALVE BOX 10" ROUND	VB-10RND	10" ROUND BODY & GREEN LID	RAIN BIRD	(800) 724-6247
14.	VALVE BOX 12" STANDARD WITH GREEN LID	VB-STD	12" STANDARD BODY & GREEN LID	RAIN BIRD	(800) 724-6247
15.	VALVE BOX 6" EXTENSION BOX	VBSTD6EXTB	6" EXTENSION BOX WITHOUT LID	RAIN BIRD	(800) 724-6247
16.	VALVE BOX JUMBO (BODY AND GREEN LID)	VB-JMBP	JUMBO BODY WITH GREEN LID	RAIN BIRD	(800) 724-6247
17.	VALVE BOX JUMBO 6" EXTENSION BOX	VBJMB6EXTB:	6"JUMBO EXTENSION BOX	RAIN BIRD	(800) 724-6247
18.	MAXI-WIRE, UL/UF, 600 V DIRECT BURIAL	# 12-2 RED JACKET	UL/UF AWG SOLID WIRE	PAIGE ELECT.	(559) 431-2346
19.	WATERPROOF WIRE SPLICES GEL FILLED	DBR/Y-6	18 GA TO 12 GA	PAIGE ELECT.	(559) 431-2346
20.	GROUND ROD FOR CONTROLLER COPPER CLAD	182007	COPPER CLAD 5/8"x10' LENGTH	PAIGE ELECT.	(559) 431-2346
21.	GROUND ROD FOR SURGE PROTECTION	182000	COPPER CLAD 5/8"x8' LENGTH	PAIGE ELECT.	(559) 431-2346
22.	GROUND PLATE, 4"x8' SOLID COPPER W/WIRE	182199IC	4"x96"x.0625", WITH 25' OF #6 AWG	PAIGE ELECT.	(559) 431-2346
23.	POWERSET, EARTH CONTACT MATERIAL	1820058	HARDING MATERIAL	PAIGE ELECT.	(559) 431-2346
22.	POWERFILL, EARTH CONTACT MATERIAL	1820059	NON-HARDING	PAIGE ELECT.	(559) 431-2346
23.	HARCO CL-200 FITTINGS & JOINT RESTRAINT	ALL MAINLINE FITG'S	AT CHANGE IN MAINLINE DIRECTION	HARCO FITG'S	(559) 431-2346
	JOINT RESTRAINT'S FOR CL200 PVC FITTINGS	UFR1360 SERIES	SIZE PER/PLANS (FORD METER BOX)	FORD METER	(260) 563-3171
	RECOMMENDED SUPPLIER'S FOR SUBMERSIBLE PUMP STATIONS:				
24.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	HOOVER PUMPS	(954) 971-7350
25.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	SULLIVAN PUMPS	(800) 991-2770
26.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	WATERTORNICS	(800) 356-6686
	RECOMMENDED SUPPLIER'S FOR IRRIGATION TIMER CONTROL SYSTEM CONSIDERED "OR EQUAL":				
27.	TORO SENTINEL 2-WIRE CONTROLLER	200 STATIONS	3 CLOCKS & 31 MOISTURE SENSORS	TORO	(616) 450-6618
28.	BASELINE 2-WIRE CONTROLLER	200 STATIONS	2 CLOCKS & 31 MOISTURE SENSORS	BASELINE	(256) 630-0094
29.	TUCOR 2-WIRE CONTROLLER	200 STATIONS	2 CLOCKS & 31 MOISTURE SENSORS	TUCOR	(800) 272-7472
30.	DO NOT INSTALL SCH40 OR SCH80 PVC FITTINGS ON THIS MAINLINE. INSTALL ONLY HARCO, "CL-200 PVC PUSH-ON FITTINGS", WITH FORD METER BOX JOINT RESTRAINT'S, AT ALL CHANGE IN DIRECTION OF THE MAINLINE. IF SCH40 OR SCH80 FITTINGS ARE FOUND INSTALLED ON THE MAINLINE THEY WILL BE REJECTED; ALL SCH40 & SCH80 FITTINGS SHALL BE ORDERED TO BE REMOVED BY THE IRRIGATION CONTRACTOR & REPLACED WITH THE HARCO CL-200 PVC FITTINGS & RESTRAINTS AT THE EXPENSE OF THE IRRIGATION CONTRACTOR AND AT NO ADDITIONAL COST TO THE OWNER.				

DETAIL REPORT

NUMBER	TITLE	DETAIL
01/LI-17	MAINLINE EQUIPMENT LAYOUT INCLUDING D.I. FITTINGS	328420.10-08
02/LI-17	SENTINEL TWO-WIRE PEDESTAL CONTROLLER	328498.01-02
03/LI-17	TYPICAL 2-WIRE CONTROLLER LAYOUT	328498.01-03
04/LI-17	SB-3LA LIGHTNING ARRESTOR INSTALLATION & WIRING	328498.01-04
05/LI-17	BL-5315B BISENSOR SOIL MOISTURE SENSOR	328410.75-04
06/LI-17	PULL BOX - FOR 2-WIRE PATH CONTROLLERS	328480.81-03
07/LI-17	PUMP START/STOP RELAY	328498.75-01
08/LI-17	6" POP-UP SPRINKLER - IRRITROL	328498.10-01
09/LI-17	12" POP-UP SPRINKLER - IRRITROL	328498.10-02
10/LI-17	PIPE RESTRAINT SYSTEM	328422.01-20
11/LI-18	TREE BUBBLER MOUNTED ON SCH 80 RISER	328403.23-17
12/LI-18	JOINT RESTRAINT DETAIL	328422.01-21
13/LI-18	"Z" DROP DOWN PIPE CONNECT PUMP TO MAINLINE	328422.42-01
14/LI-18	DUCTILE IRON PIPE RESTRAINT JOINT SCHEDULE	328422.56-01
15/LI-18	PAIGE ELECT DBR WIRE SPLICE CONNECTORS	328480.02-01
16/LI-18	RAIN SHUT OFF ON POLE MOUNT	328411-33
17/LI-18	ISOLATION VALVE WITH JOINT RESTRAINTS	328406.33-05
18/LI-18	WR-2 SERIES WIRELESS RAIN SENSOR	328411-38
19/LI-18	ORIVAL AUTOMATIC BACKFLUSH FILTER	328414.30-01
20/LI-18	DRAINAGE PIT	328414.30-04
21/LI-19	RESTRAINING JOINT ASSEMBLY INSTRUCTIONS	328422.01-23
22/LI-19	TORO REMOTE CONTROL ZONE VALVE	328406.05-26
23/LI-19	GENERAL TRENCHING	328477.01-31
24/LI-19	SLEEVE UNDER PAVEMENT	328477.01-32
25/LI-19	ROAD CROSSING INSTALLATION	328477.01-33
26/LI-19	MASTER VALVE TORO # 252 SERIES WITH BALL VALVE	328498.05-02
27/LI-19	PULL BOX	328477.20-14
28/LI-19	GROUNDING DETAIL FOR BASELINE 3200 SERIES CONTROLLER	328480.50-27
29/LI-19	CONTROLLER GROUNDING	328480.50-26
30/LI-19	PVC SADDLE MOUNT FLOW METER	328485.01-51
31/LI-20	PAIGE ELECTRIC DECODER CABLE FUSE DEVICE (DCFD) ™	328480.01-01
32/LI-20	PAIGE ELECTRIC DECODER CABLE FUSE DEVICE (DCFD) ™	328480.01-02
33/LI-20	PAIGE ELECTRIC SURGE GUARD PROTECTION FOR 2-WIRE	328480.01-03
34/LI-20	PAIGE ELECTRIC SOLENOID PROTECTION FROM LIGHTENING	328480.01-04
35/LI-20	METERING PUMP COMPONENT DIAGRAM	328481-02
36/LI-20	RID-O-RUST NOTES AND PRICING	328481-08
37/LI-20	SOLUTION TANK WITH AUTOMATIC TIMER (CONTROLLER)	328481-07
39/LI-22	IRRIGATION SPECIFICATIONS	328489.01-26
40/LI-23	BASELINE EQUIPMENT NEEDED FOR 3200 SERIES CONTROLLER	328410.75-10
41/LI-23	TORO EQUIPMENT NEEDED FOR SENTINEL CONTROLLER	328498.01-01
42/LI-23	FLOW SENSOR - MASTER VALVE COMBINATION	328498.05-01
43/LI-23	SHRUB AND GROUND COVER DETAIL FOR 12" HI-POP SPRAY	328403.30-10
44/LI-23	SHRUB RISER RAINBIRD SPRAY SPRINKLER	328403.22-01
45/LI-24	PUMP STATION CONCRETE PAD DETAIL	328487.01-07

NOTE:
THERE ARE TWO (2) CONTROL PACKAGES RATED AS "OR EQUAL" SUBSTITUTE ON THIS PROJECT, AND BOTH ARE DEPENDANT UPON THE APPROVAL FROM THE LANDSCAPE ARCHITECT. THE CONTRACTOR SHALL SUBMIT IN WRITING TO THE LANDSCAPE ARCHITECT HIS CHOICE OF CONTROL PACKAGE, WHICH MUST BE APPROVED IN WRITING BY THE L.A.

1. BASELINE #3200P (SHOWN AS PRIMARY)
2. TUCOR #TWC-NVP-50 (ALTERNATIVE)

THESE CONTROLLERS ARE DESIGNED FOR THIS PROJECT BECAUSE THEY HAVE "MOISTURE SENSOR'S", CONTROLLERS WITHOUT MOISTURE SENSOR'S WILL NOT BE APPROVED AS AN EQUAL AND THEREFORE ARE UNACCEPTABLE. THIS IRRIGATION SYSTEM WAS DESIGNED AROUND BEING ABLE TO SHUT OFF ZONE VALVES AND SPRINKLER HEADS LOCATED IN THE BOTTOM OF SWALES WHEN WATER IS SITTING IN THE BOTTOM OF THE SWALES.

REFERENCE NOTES SCHEDULE

SYMBOL	DESCRIPTION
1	DUE TO LACK OF SPACE ON PLANS, SPRINKLER COMPONENTS, I.E., P.O.C., PUMP, FILTER, MASTER VALVE, FLOW SENSOR, SHUT OFF VALVE, SHOWN IN THIS AREA SHALL BE INSTALLED IN THE PLANTER BED.
2	DUE TO LACK OF SPACE ON PLANS, SPRINKLER PVC PIPE, LATERAL & MAINLINE, SHOWN OUTSIDE OF THE PLANTER BEDS SHALL BE INSTALLED INSIDE PLANTER BEDS WHEN EVER POSSIBLE; SLEEVE ALL PVC PIPE THAT WILL BE INSTALLED OUTSIDE OF PLANTER BEDS.
3	WIRE SLEEVE FOR ROAD CROSSINGS, FOR 24V, 2-WIRE PATH CONTROL WIRE, SHALL BE 1 1/2" SCH40 PVC PIPE. THE CONTRACTOR SHALL INSTALL ALL THE 2-WIRE MAXI-CABLE INSIDE SCH40 GREY PVC ELEC CONDUIT .

BRUCE HOWARD & ASSOCIATES, INC.
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PROJECT:
ESTERO PARKWAY
VILLAGE OF ESTERO

DRAWING TITLE:
IRRIGATION PLAN

NORTH

SCALE:
1" = 20' - 0"

PROJECT NUMBER

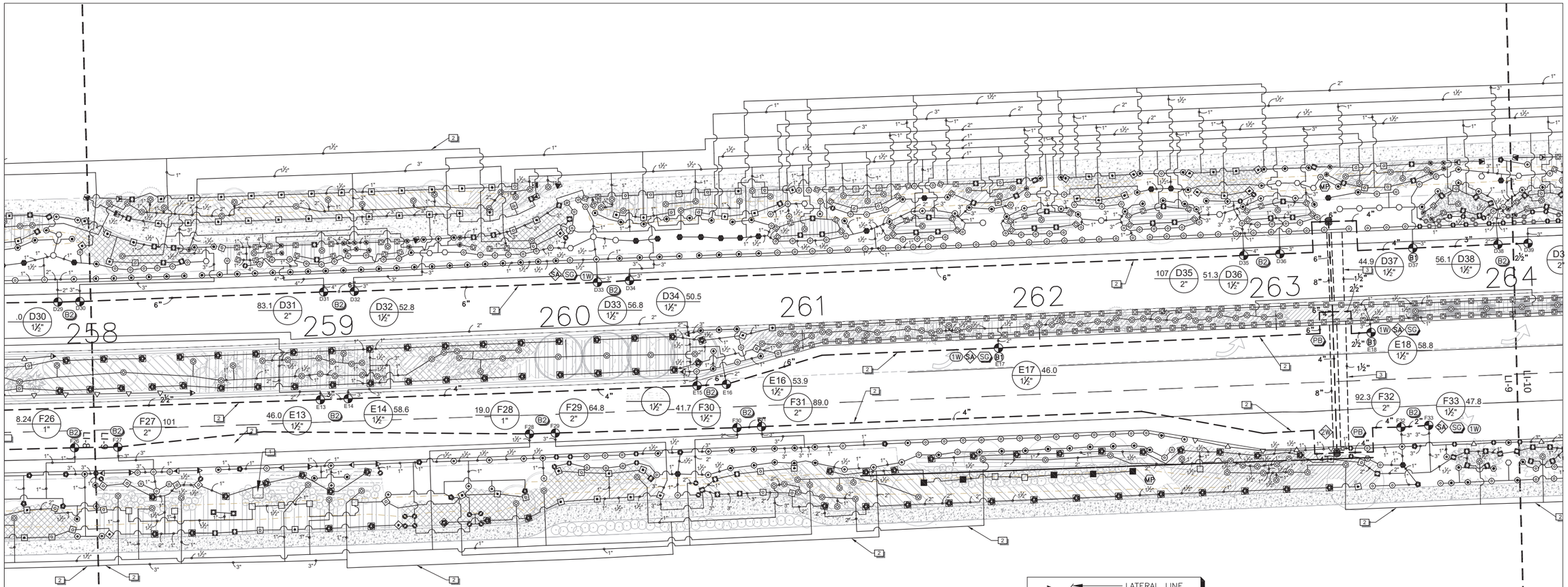
DATE:
07-03-2019

⚠ 10-18-2019

Digitally signed by Bruce J Howard
Date: 2019.10.21 19:32:34 -04'00'
Bruce J. Howard
License #: LA0000371

SHEET NUMBER:
LI-8
OF:

4872 S.W. 72nd Avenue
Miami, Florida 33155
(305)668-3196
Fax(305)668-2871



DETAIL REPORT

NUMBER	TITLE	DETAIL
01/LI-17	MAINLINE EQUIPMENT LAYOUT INCLUDING D.I. FITTINGS	328420.10-08
02/LI-17	SENTINEL TWO-WIRE PEDESTAL CONTROLLER	328498.01-02
03/LI-17	TYPICAL 2-WIRE CONTROLLER LAYOUT	328498.01-03
04/LI-17	SB-BLA LIGHTNING ARRESTOR INSTALLATION & WIRING	328498.01-04
05/LI-17	BL-5315B BISENSOR SOIL MOISTURE SENSOR	328410.75-04
06/LI-17	PULL BOX - FOR 2-WIRE PATH CONTROLLERS	328480.81-03
07/LI-17	PUMP START/STOP RELAY	328498.75-01
08/LI-17	6" POP-UP SPRINKLER - IRRITROL	328498.10-01
09/LI-17	12" POP-UP SPRINKLER - IRRITROL	328498.10-02
10/LI-17	PIPE RESTRAINT SYSTEM	328422.01-20
11/LI-18	TREE BUBBLER MOUNTED ON SCH 80 RISER	328403.23-17
12/LI-18	JOINT RESTRAINT DETAIL	328422.01-21
13/LI-18	"Z" DROP DOWN PIPE CONNECT PUMP TO MAINLINE	328422.42-01
14/LI-18	DUCTILE IRON PIPE RESTRAINT JOINT SCHEDULE	328422.56-01
15/LI-18	PAIGE ELECT DBR WIRE SPLICE CONNECTORS	328480.02-01
16/LI-18	RAIN SHUT OFF ON POLE MOUNT	328411-33
17/LI-18	ISOLATION VALVE WITH JOINT RESTRAINTS	328406.33-05
18/LI-18	WR-2 SERIES WIRELESS RAIN SENSOR	328411-38
19/LI-18	ORIVAL AUTOMATIC BACKFLUSH FILTER	328414.30-01
20/LI-18	DRAINAGE PIT	328414.30-04
21/LI-19	RESTRAINING JOINT ASSEMBLY INSTRUCTIONS	328422.01-23
22/LI-19	TORO REMOTE CONTROL ZONE VALVE	328406.05-26
23/LI-19	GENERAL TRENCHING	328477.01-31
24/LI-19	SLEEVE UNDER PAVEMENT	328477.01-32
25/LI-19	ROAD CROSSING INSTALLATION	328477.01-33
26/LI-19	MASTER VALVE TORO # 252 SERIES WITH BALL VALVE	328498.05-02
27/LI-19	PULL BOX	328477.20-14
28/LI-19	GROUNDING DETAIL FOR BASELINE 3200 SERIES CONTROLLER	328480.50-27
29/LI-19	CONTROLLER GROUNDING	328480.50-26
30/LI-19	PVC SADDLE MOUNT FLOW METER	328485.01-51
31/LI-20	PAIGE ELECTRIC DECODER CABLE FUSE DEVICE (DCFD) ™	328480.01-01
32/LI-20	PAIGE ELECTRIC DECODER CABLE FUSE DEVICE (DCFD) ™	328480.01-02
33/LI-20	PAIGE ELECTRIC SURGE GUARD PROTECTION FOR 2-WIRE	328480.01-03
34/LI-20	PAIGE ELECTRIC SOLENOID PROTECTION FROM LIGHTENING	328480.01-04
35/LI-20	METERING PUMP COMPONENT DIAGRAM	328481-02
36/LI-20	RID-O-RUST NOTES AND PRICING	328481-08
37/LI-20	SOLUTION TANK WITH AUTOMATIC TIMER (CONTROLLER)	328481-07
39/LI-22	IRRIGATION SPECIFICATIONS	328489.01-26
40/LI-23	BASELINE EQUIPMENT NEEDED FOR 3200 SERIES CONTROLLER	328410.75-10
41/LI-23	TORO EQUIPMENT NEEDED FOR SENTINEL CONTROLLER	328498.01-01
42/LI-23	FLOW SENSOR - MASTER VALVE COMBINATION	328498.05-01
43/LI-23	SHRUB AND GROUND COVER DETAIL FOR 12" HI-POP SPRAY	328403.30-10
44/LI-23	SHRUB RISER RAINBIRD SPRAY SPRINKLER	328403.22-01
45/LI-24	PUMP STATION CONCRETE PAD DETAIL	328487.01-07

IRRIGATION NOTES

1. ALL PVC PIPE USED ON THIS PROJECT SHALL BE CLASS 200 PURPLE PVC PIPE FOR RECLAIMED WATER, UNLESS NOTED OTHERWISE.
2. THE IRRIGATION SYSTEM IS DIAGRAMMATIC; ADJUSTMENTS NECESSARY IN THE FIELD SHALL BE MADE BY THE CONTRACTOR.
3. ALL VALVES SHALL BE LOCATED IN VALVE BOXES FLUSH WITH GRADE AND INSTALLED PERPENDICULAR TO THE CURB.
4. SLEEVING SHALL BE INSTALLED UNDER ALL ROADWAYS. SLEEVE SIZE SHALL BE TWICE (2X) THE DIAMETER OF PIPE BEING SLEEVED. MINIMUM SLEEVE SIZE FOR WIRE SLEEVES SHALL BE 1 1/2" GRAY ELECTRIC CONDUIT. ALL PIPE SLEEVING SHALL BE A MINIMUM OF 3-INCH SCH40 PVC PIPE SLEEVES). INSTALL ONLY ONE (1) ITEM IN EACH SLEEVE.
5. THE IRRIGATION CONTRACTOR SHALL LOCATE ALL UTILITIES THAT ARE COMMONLY ENCOUNTERED UNDERGROUND AND SHALL TAKE PROPER PRECAUTIONS NOT TO DAMAGE ANY UTILITIES. IF UTILITIES ARE DAMAGED THE CONTRACTOR SHALL RESTORE THE DAMAGED UTILITIES TO THEIR ORIGINAL STATE SO REPAIRS ARE NOT OBSERVABLE.
6. THIS SYSTEM IS DESIGNED AROUND 100% OVERLAPPED SPRINKLER HEAD COVERAGE. THE IRRIGATION CONTRACTOR SHALL MAKE ALL NEEDED ADJUSTMENTS TO SPRINKLER HEADS TO ACHIEVE 100% OVERLAP COVERAGE. THE IRRIGATION CONTRACTOR SHALL NOT STRETCH THE HEAD SPACING, IF SPACING IS FOUND STRETCHED OR IF THE PIPE SIZES ARE INSTALLED THAT ARE UNDERSIZED IN ACCORDANCE WITH THE IRRIGATION PLAN IT IS A BREECH OF CONTRACT.
7. THE IRRIGATION CONTRACTOR SHALL INSTALL HARCO DUCTILE IRON PUSH ON GASKETED FITTINGS WITH CLAM SHELL JOINT RESTRAINTS AT ALL CHANGE IN DIRECTION OF THE MAINLINE. THESE FITTING'S SHALL BE MANUFACTURED BY "HARCO", CONTACT JOHN RIORDAN, AT (434) 845-7094.
8. ALL 24V IRRIGATION WIRE THAT WILL BE INSTALLED ON THIS PLAN IS RAIN BIRD MAXI-WIRE, MANUFACTURED BY PAIGE ELECTRIC SHALL BE FOR THE 2-WIRE PATH CONTROL SYSTEM AND SHALL BE INSTALLED INSIDE 1 1/2" GRAY ELECTRIC CONDUIT WITH LONG SWEEP ELBOWS.
9. THE IRRIGATION CONTRACTOR SHALL INSTALL A MINIMUM OF TWO (2), 1/2" G.P.M. BUBBLER'S PER EACH TREE AS SHOWN ON THE IRRIGATION DETAILS.

LATERAL LINE
PVC MAINLINE

DUE TO LACK OF SPACE ON THE PLAN "JUMPER'S" ARE NOT USED TO CROSS THE MAINLINE OVER LATERAL LINE.

UNDERGROUND CABLE LOCATE
CALL BEFORE YOU DIG
CALL: TOLL FREE
1-800 432-4770
OR
811
TWO WORKING DAYS BEFORE YOU DIG

NOTE:
THE IRRIGATION CONTRACTOR SHALL WIPE ALL EXCESS CEMENT OFF THE PIPE AND FITTINGS IMMEDIATELY AFTER CEMENTING THE PIPE. PIPE AND FITTINGS FOUND WITH EXCESS PVC CEMENT SHALL ORDERED TO BE REMOVED AND REPLACED AT THE EXPENSE OF THE IRRIGATION CONTRACTOR.

NOTE:
THERE ARE TWO (2) CONTROL PACKAGES RATED AS "OR EQUAL" SUBSTITUTE ON THIS PROJECT, AND BOTH ARE DEPENDANT UPON THE APPROVAL FROM THE LANDSCAPE ARCHITECT. THE CONTRACTOR SHALL SUBMIT IN WRITING TO THE LANDSCAPE ARCHITECT HIS CHOICE OF CONTROL PACKAGE, WHICH MUST BE APPROVED IN WRITING BY THE L.A.

1. BASELINE #3200P (SHOWN AS PRIMARY)
2. TUCOR #TWC-NVP-50 (ALTERNATIVE)

THESE CONTROLLERS ARE DESIGNED FOR THIS PROJECT BECAUSE THEY HAVE "MOISTURE SENSOR'S", CONTROLLERS WITHOUT MOISTURE SENSOR'S WILL NOT BE APPROVED AS AN EQUAL AND THEREFORE ARE UNACCEPTABLE. THIS IRRIGATION SYSTEM WAS DESIGNED AROUND BEING ABLE TO SHUT OFF ZONE VALVES AND SPRINKLER HEADS LOCATED IN THE BOTTOM OF SWALES WHEN WATER IS SITTING IN THE BOTTOM OF THE SWALES.

REVISION NOTE: △ 10-18-2019
-Revised irrigation head locations and types to match updated Landscape base plan.

REFERENCE NOTES SCHEDULE

SYMBOL	DESCRIPTION
1	DUE TO LACK OF SPACE ON PLANS, SPRINKLER COMPONENTS, I.E., P.O.C., PUMP, FILTER, MASTER VALVE, FLOW SENSOR, SHUT OFF VALVE, SHOWN IN THIS AREA SHALL BE INSTALLED IN THE PLANTER BED.
2	DUE TO LACK OF SPACE ON PLANS, SPRINKLER PVC PIPE, LATERAL & MAINLINE, SHOWN OUTSIDE OF THE PLANTER BEDS SHALL BE INSTALLED INSIDE PLANTER BEDS WHEN EVER POSSIBLE; SLEEVE ALL PVC PIPE THAT WILL BE INSTALLED OUTSIDE OF PLANTER BEDS.
3	WIRE SLEEVE FOR ROAD CROSSINGS, FOR 24V, 2-WIRE PATH CONTROL WIRE, SHALL BE 1 1/2" SCH40 PVC PIPE. THE CONTRACTOR SHALL INSTALL ALL THE 2-WIRE MAXI-CABLE INSIDE SCH40 GREY PVC ELEC CONDUIT .

BRUCE HOWARD & ASSOCIATES, INC.
Landscape Architects, Site Planners & Golf Course Designers

PROJECT:
ESTERO PARKWAY
VILLAGE OF ESTERO

DRAWING TITLE:
IRRIGATION PLAN

NORTH

SCALE: 1" = 20' - 0"

PROJECT NUMBER

DATE: 07-03-2019

△ 10-18-2019

Digitally signed by Bruce J Howard
Date: 2019.10.21 19:33:02 -04'00'
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License #: LA0000371

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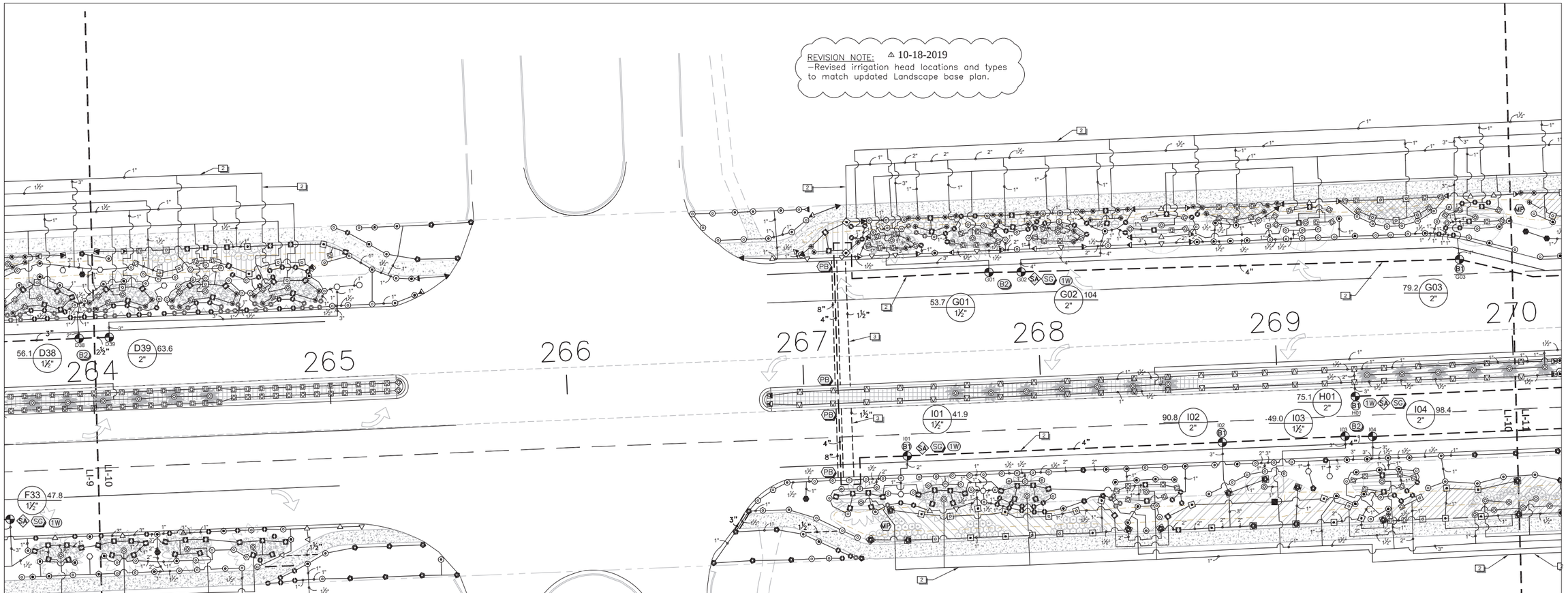

IRRIGATION ANCILLARY MATERIALS SCHEDULE

	MATERIAL DESCRIPTION	MODEL #	SIZE	MFG.	PHONE #
1.	PVC PIPE CEMENT	RED HOT BLUE	QT. OR GALLON CAN	T. CHRISTY'S	(800) 258-4583
2.	PVC PIPE PRIMER	PURPLE PRIMER	QT. OR GALLON CAN	T. CHRISTY'S	(800) 258-4583
3.	TEFLON TAPE	TEFLON-075	3/4"x520 INCHES	T. CHRISTY'S	(800) 258-4583
4.	VALVE MARKING I.D. TAGS	ID-STD-Y-2	BOTH SIDES	T. CHRISTY'S	(800) 258-4583
5.	ELECT. WARNING TAPE INSTALL OVER WIRES	TA-DT-2-RE	2"x1000'	T. CHRISTY'S	(800) 258-4583
6.	CEMENT/SOLVENT DAUBER	RH-D32	QUART CAN	T. CHRISTY'S	(800) 258-4583
7.	AUTO BACKFLUSH SCREEN FILTER STATION	ORG-40-LS	FILTERS UP TO 350 G.P.M.	ORIVAL FILTERS	(800) 567-9767
8.	IRRIGATION EQUIPMENT MARKING FLAGS	2 1/2" x 3 1/2"	15-1/2 GA STEEL- MULTI COLORED	BLACKBURN	(800) 942-5816
9.	PVC FITTING'S (GLUE-ON SCH40/80 FITTING'S)	SCH 40 & SCH 80	(DO NOT INSTALL ON MAINLINE)	LASCO	(800) 327-6390
10.	IRRIGATION SYSTEM CONTROL PACKAGE	BL-3200-P SERIES	UP TO 200 STATIONS	BASELINE	(208) 639-8742
11.	IRRIGATION SYSTEM MOISTURE SENSOR PROBE	BL-5315	25 SENSOR PROBE'S PER/CLOCK	BASELINE	(208) 639-8742
12.	SWING JOINT FOR SPRAY SPRINKLER HEADS	SPFA-5125	1/2" MPT ENDS W/12" LAY LENGTH	TORO	(616) 450-6618
13.	VALVE BOX 10" ROUND	VB-10RND	10" ROUND BODY & GREEN LID	RAIN BIRD	(800) 724-6247
14.	VALVE BOX 12" STANDARD WITH GREEN LID	VB-STD	12" STANDARD BODY & GREEN LID	RAIN BIRD	(800) 724-6247
15.	VALVE BOX 6" EXTENSION BOX	VBSTD6EXTB	6" EXTENSION BOX WITHOUT LID	RAIN BIRD	(800) 724-6247
16.	VALVE BOX JUMBO (BODY AND GREEN LID)	VB-JMBP	JUMBO BODY WITH GREEN LID	RAIN BIRD	(800) 724-6247
17.	VALVE BOX JUMBO 6" EXTENSION BOX	VBJMB6EXTB:	6"JUMBO EXTENSION BOX	RAIN BIRD	(800) 724-6247
18.	MAXI-WIRE, UL/UF, 600 V DIRECT BURIAL	# 12-2 RED JACKET	UL/UF AWG SOLID WIRE	PAIGE ELECT.	(559) 431-2346
19.	WATERPROOF WIRE SPLICES GEL FILLED	DBR/Y-6	18 GA TO 12 GA	PAIGE ELECT.	(559) 431-2346
20.	GROUND ROD FOR CONTROLLER COPPER CLAD	182007	COPPER CLAD 5/8"x10' LENGTH	PAIGE ELECT.	(559) 431-2346
21.	GROUND ROD FOR SURGE PROTECTION	182000	COPPER CLAD 5/8"x8' LENGTH	PAIGE ELECT.	(559) 431-2346
22.	GROUND PLATE, 4"x8' SOLID COPPER W/WIRE	182199IC	4"x96"x.0625", WITH 25' OF #6 AWG	PAIGE ELECT.	(559) 431-2346
23.	POWERSET, EARTH CONTACT MATERIAL	1820058	HARDING MATERIAL	PAIGE ELECT.	(559) 431-2346
22.	POWERFILL, EARTH CONTACT MATERIAL	1820059	NON-HARDING	PAIGE ELECT.	(559) 431-2346
23.	HARCO CL-200 FITTINGS & JOINT RESTRAINT	ALL MAINLINE FITG'S	AT CHANGE IN MAINLINE DIRECTION	HARCO FITG'S	(559) 431-2346
	JOINT RESTRAINT'S FOR CL200 PVC FITTINGS	UFR1360 SERIES	SIZE PER/PLANS (FORD METER BOX)	FORD METER	(260) 563-3171
	RECOMMENDED SUPPLIER'S FOR SUBMERSIBLE PUMP STATIONS:				
24.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	HOOVER PUMPS	(954) 971-7350
25.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	SULLIVAN PUMPS	(800) 991-2770
26.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	WATERTORNICS	(800) 356-6686
	RECOMMENDED SUPPLIER'S FOR IRRIGATION TIMER CONTROL SYSTEM CONSIDERED "OR EQUAL":				
27.	TORO SENTINEL 2-WIRE CONTROLLER	200 STATIONS	3 CLOCKS & 31 MOISTURE SENSORS	TORO	(616) 450-6618
28.	BASELINE 2-WIRE CONTROLLER	200 STATIONS	2 CLOCKS & 31 MOISTURE SENSORS	BASELINE	(256) 630-0094
29.	TUCOR 2-WIRE CONTROLLER	200 STATIONS	2 CLOCKS & 31 MOISTURE SENSORS	TUCOR	(800) 272-7472
30.	DO NOT INSTALL SCH40 OR SCH80 PVC FITTINGS ON THIS MAINLINE. INSTALL ONLY HARCO, "CL-200 PVC PUSH-ON FITTINGS", WITH FORD METER BOX JOINT RESTRAINT'S, AT ALL CHANGE IN DIRECTION OF THE MAINLINE. IF SCH40 OR SCH80 FITTINGS ARE FOUND INSTALLED ON THE MAINLINE THEY WILL BE REJECTED; ALL SCH40 & SCH80 FITTINGS SHALL BE ORDERED TO BE REMOVED BY THE IRRIGATION CONTRACTOR & REPLACED WITH THE HARCO CL-200 PVC FITTINGS & RESTRAINTS AT THE EXPENSE OF THE IRRIGATION CONTRACTOR AND AT NO ADDITIONAL COST TO THE OWNER.				

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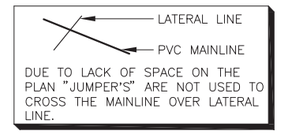

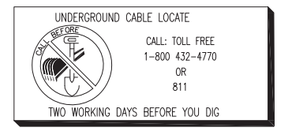

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PROJECT:
ESTERO PARKWAY
VILLAGE OF ESTERO

DRAWING TITLE:
IRRIGATION PLAN

NORTH

SCALE:
1" = 20' - 0"

PROJECT NUMBER

DATE:
07-03-2019

⚠ 10-18-2019

Digitally signed by Bruce J Howard
Date: 2019.10.21 19:33:31 -04'00'
Bruce J. Howard
License #: LA0000371

SHEET NUMBER:
LI-10
OF:

4872 S.W. 72nd Avenue
Miami, Florida 33155
(305)668-3196
Fax(305)668-2871

UNDERGROUND CABLE LOCATE

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OR
811

TWO WORKING DAYS BEFORE YOU DIG

LATERAL LINE

PVC MAINLINE

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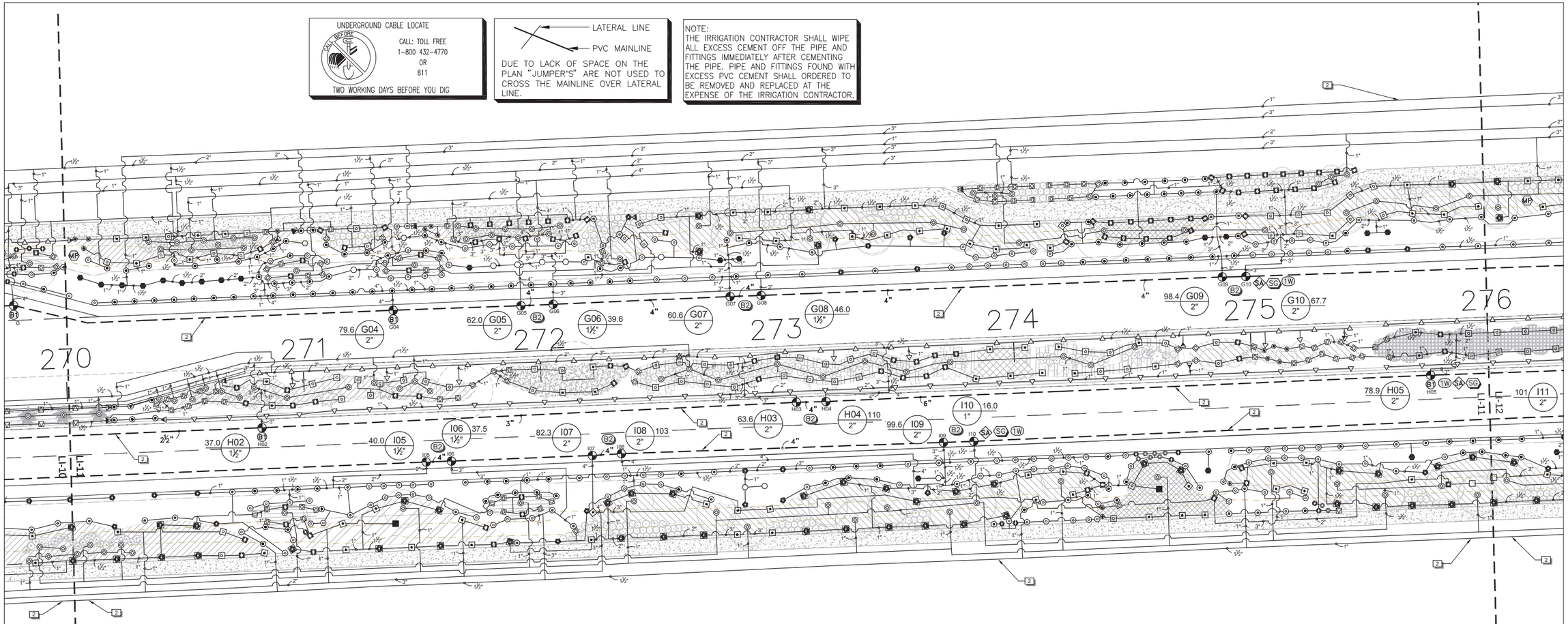

DETAIL REPORT

NUMBER	TITLE	DETAIL
01/LI-17	MAINLINE EQUIPMENT LAYOUT INCLUDING D.I. FITTINGS	328420.10-08
02/LI-17	SENTINEL TWO-WIRE PEDESTAL CONTROLLER	328498.01-02
03/LI-17	TYPICAL 2-WIRE CONTROLLER LAYOUT	328498.01-03
04/LI-17	SB-BLA LIGHTNING ARRESTOR INSTALLATION & WIRING	328498.01-04
05/LI-17	BL-5315B BISENSOR SOIL MOISTURE SENSOR	328410.75-04
06/LI-17	PULL BOX - FOR 2-WIRE PATH CONTROLLERS	328480.81-03
07/LI-17	PUMP START/STOP RELAY	328498.75-01
08/LI-17	6" POP-UP SPRINKLER - IRRITROL	328498.10-01
09/LI-17	12" POP-UP SPRINKLER - IRRITROL	328498.10-02
10/LI-17	PIPE RESTRAINT SYSTEM	328422.01-20
11/LI-18	TREE BUBBLER MOUNTED ON SCH 80 RISER	328403.23-17
12/LI-18	JOINT RESTRAINT DETAIL	328422.01-21
13/LI-18	"Z" DROP DOWN PIPE CONNECT PUMP TO MAINLINE	328422.42-01
14/LI-18	DUCTILE IRON PIPE RESTRAINT JOINT SCHEDULE	328422.56-01
15/LI-18	PAIGE ELECT DBR WIRE SPLICE CONNECTORS	328480.02-01
16/LI-18	RAIN SHUT OFF ON POLE MOUNT	328411-33
17/LI-18	ISOLATION VALVE WITH JOINT RESTRAINTS	328406.33-05
18/LI-18	WR-2 SERIES WIRELESS RAIN SENSOR	328411-38
19/LI-18	ORIVAL AUTOMATIC BACKFLUSH FILTER	328414.30-01
20/LI-18	DRAINAGE PIT	328414.30-04
21/LI-19	RESTRAINING JOINT ASSEMBLY INSTRUCTIONS	328422.01-23
22/LI-19	TORO REMOTE CONTROL ZONE VALVE	328406.05-26
23/LI-19	GENERAL TRENCHING	328477.01-31
24/LI-19	SLEEVE UNDER PAVEMENT	328477.01-32
25/LI-19	ROAD CROSSING INSTALLATION	328477.01-33
26/LI-19	MASTER VALVE TORO # 252 SERIES WITH BALL VALVE	328498.05-02
27/LI-19	PULL BOX	328477.20-14
28/LI-19	GROUNDING DETAIL FOR BASELINE 3200 SERIES CONTROLLER	328480.50-27
29/LI-19	CONTROLLER GROUNDING	328480.50-26
30/LI-19	PVC SADDLE MOUNT FLOW METER	328485.01-51
31/LI-20	PAIGE ELECTRIC DECODER CABLE FUSE DEVICE (DCFD) ™	328480.01-01
32/LI-20	PAIGE ELECTRIC DECODER CABLE FUSE DEVICE (DCFD) ™	328480.01-02
33/LI-20	PAIGE ELECTRIC SURGE GUARD PROTECTION FOR 2-WIRE	328480.01-03
34/LI-20	PAIGE ELECTRIC SOLENOID PROTECTION FROM LIGHTENING	328480.01-04
35/LI-20	METERING PUMP COMPONENT DIAGRAM	328481-02
36/LI-20	RID-O-RUST NOTES AND PRICING	328481-08
37/LI-20	SOLUTION TANK WITH AUTOMATIC TIMER (CONTROLLER)	328481-07
39/LI-22	IRRIGATION SPECIFICATIONS	328489.01-26
40/LI-23	BASELINE EQUIPMENT NEEDED FOR 3200 SERIES CONTROLLER	328410.75-10
41/LI-23	TORO EQUIPMENT NEEDED FOR SENTINEL CONTROLLER	328498.01-01
42/LI-23	FLOW SENSOR - MASTER VALVE COMBINATION	328498.05-01
43/LI-23	SHRUB AND GROUND COVER DETAIL FOR 12" HI-POP SPRAY	328403.30-10
44/LI-23	SHRUB RISER RAINBIRD SPRAY SPRINKLER	328403.22-01
45/LI-24	PUMP STATION CONCRETE PAD DETAIL	328487.01-07

IRRIGATION ANCILLARY MATERIALS SCHEDULE

	MATERIAL DESCRIPTION	MODEL #	SIZE	MFG.	PHONE #
1.	PVC PIPE CEMENT	RED HOT BLUE	QT. OR GALLON CAN	T. CHRISTY'S	(800) 258-4583
2.	PVC PIPE PRIMER	PURPLE PRIMER	QT. OR GALLON CAN	T. CHRISTY'S	(800) 258-4583
3.	TEFLON TAPE	TEFLON-075	3/4"x520 INCHES	T. CHRISTY'S	(800) 258-4583
4.	VALVE MARKING I.D. TAGS	ID-STD-Y-2	BOTH SIDES	T. CHRISTY'S	(800) 258-4583
5.	ELECT WARNING TAPE INSTALL OVER WIRES	TA-DT-2-RE	2"x1000'	T. CHRISTY'S	(800) 258-4583
6.	CEMENT/SOLVENT DAUBER	RH-D32	QUART CAN	T. CHRISTY'S	(800) 258-4583
7.	AUTO BACKFLUSH SCREEN FILTER STATION	ORG-40-LS	FILTERS UP TO 350 G.P.M.	ORIVAL FILTERS	(800) 567-9767
8.	IRRIGATION EQUIPMENT MARKING FLAGS	2 1/2" x 3 1/2"	15-1/2 GA STEEL- MULTI COLORED	BLACKBURN	(800) 942-5816
9.	PVC FITTING'S (GLUE-ON SCH40/80 FITTING'S)	SCH 40 & SCH 80	(DO NOT INSTALL ON MAINLINE)	LASCO	(800) 327-6390
10.	IRRIGATION SYSTEM CONTROL PACKAGE	BL-3200-P SERIES	UP TO 200 STATIONS	BASELINE	(208) 639-8742
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13.	VALVE BOX 10" ROUND	VB-10RND	10" ROUND BODY & GREEN LID	RAIN BIRD	(800) 724-6247
14.	VALVE BOX 12" STANDARD WITH GREEN LID	VB-STD	12" STANDARD BODY & GREEN LID	RAIN BIRD	(800) 724-6247
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18.	MAXI-WIRE, UL/UF, 600 V DIRECT BURIAL	# 12-2 RED JACKET	UL/UF AWG SOLID WIRE	PAIGE ELECT.	(559) 431-2346
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	RECOMMENDED SUPPLIER'S FOR SUBMERSIBLE PUMP STATIONS:				
24.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	HOOVER PUMPS	(954) 971-7350
25.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	SULLIVAN PUMPS	(800) 991-2770
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	RECOMMENDED SUPPLIER'S FOR IRRIGATION TIMER CONTROL SYSTEM CONSIDERED "OR EQUAL":				
27.	TORO SENTINEL 2-WIRE CONTROLLER	200 STATIONS	3 CLOCKS & 31 MOISTURE SENSORS	TORO	(616) 450-6618
28.	BASELINE 2-WIRE CONTROLLER	200 STATIONS	2 CLOCKS & 31 MOISTURE SENSORS	BASELINE	(256) 630-0094
29.	TUCOR 2-WIRE CONTROLLER	200 STATIONS	2 CLOCKS & 31 MOISTURE SENSORS	TUCOR	(800) 272-7472
30.	DO NOT INSTALL SCH40 OR SCH80 PVC FITTINGS ON THIS MAINLINE. INSTALL ONLY HARCO, "CL-200 PVC PUSH-ON FITTINGS", WITH FORD METER BOX JOINT RESTRAINT'S, AT ALL CHANGE IN DIRECTION OF THE MAINLINE. IF SCH40 OR SCH80 FITTINGS ARE FOUND INSTALLED ON THE MAINLINE THEY WILL BE REJECTED; ALL SCH40 & SCH80 FITTINGS SHALL BE ORDERED TO BE REMOVED BY THE IRRIGATION CONTRACTOR & REPLACED WITH THE HARCO CL-200 PVC FITTINGS & RESTRAINTS AT THE EXPENSE OF THE IRRIGATION CONTRACTOR AND AT NO ADDITIONAL COST TO THE OWNER.				

REVISION NOTE: ⚠ 10-18-2019
-Revised irrigation head locations and types to match updated Landscape base plan.

NOTE:
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1. BASELINE #3200P (SHOWN AS PRIMARY)
2. TUCOR #TWC-NVP-50 (ALTERNATIVE)

THESE CONTROLLERS ARE DESIGNED FOR THIS PROJECT BECAUSE THEY HAVE "MOISTURE SENSOR'S", CONTROLLERS WITHOUT MOISTURE SENSOR'S WILL NOT BE APPROVED AS AN EQUAL AND THEREFORE ARE UNACCEPTABLE. THIS IRRIGATION SYSTEM WAS DESIGNED AROUND BEING ABLE TO SHUT OFF ZONE VALVES AND SPRINKLER HEADS LOCATED IN THE BOTTOM OF SWALES WHEN WATER IS SITTING IN THE BOTTOM OF THE SWALES.

BRUCE HOWARD & ASSOCIATES, INC.
Landscape Architects, Site Planners & Golf Course Designers

PROJECT:
ESTERO PARKWAY
VILLAGE OF ESTERO

DRAWING TITLE:
IRRIGATION PLAN

NORTH

SCALE:
1" = 20' - 0"

PROJECT NUMBER

DATE:
07-03-2019

⚠ 10-18-2019

Digitally signed by Bruce J Howard
Date: 2019.10.21 19:34:01 -04'00'
Bruce J. Howard
License #: LA0000371

SHEET NUMBER:
LI-11
OF:

4872 S.W. 72nd Avenue
Miami, Florida 33155
(305)668-3196
Fax(305)668-2871

UNDERGROUND CABLE LOCATE

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CALL: TOLL FREE
1-800 432-4770
OR
811

TWO WORKING DAYS BEFORE YOU DIG

NOTE:
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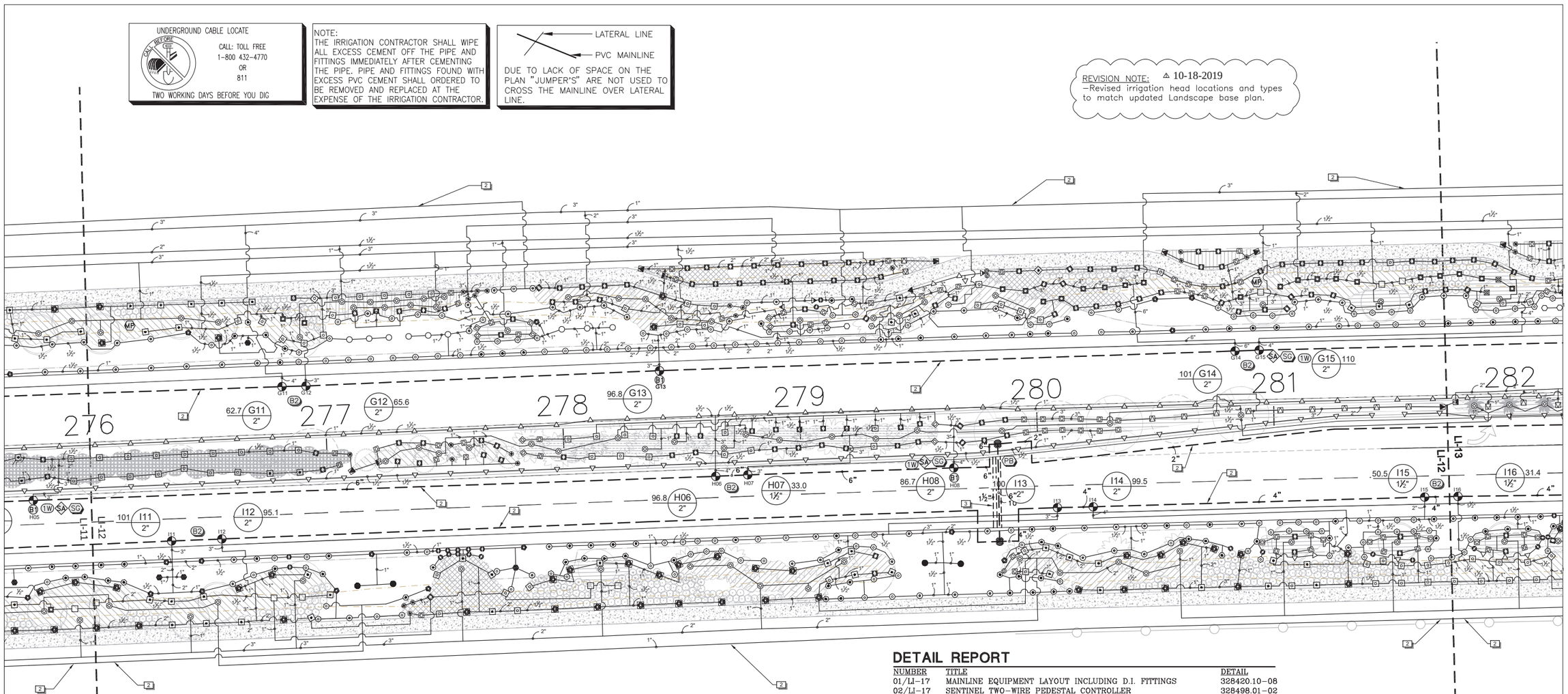
LATERAL LINE

PVC MAINLINE

DUE TO LACK OF SPACE ON THE PLAN "JUMPER'S" ARE NOT USED TO CROSS THE MAINLINE OVER LATERAL LINE.

REVISION NOTE: △ 10-18-2019
–Revised irrigation head locations and types to match updated Landscape base plan.



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IRRIGATION ANCILLARY MATERIALS SCHEDULE

	MATERIAL DESCRIPTION	MODEL #	SIZE	MFG.	PHONE #
1.	PVC PIPE CEMENT	RED HOT BLUE	QT. OR GALLON CAN	T. CHRISTY'S	(800) 258-4583
2.	PVC PIPE PRIMER	PURPLE PRIMER	QT. OR GALLON CAN	T. CHRISTY'S	(800) 258-4583
3.	TEFLON TAPE	TEFLON–075	3/4"x520 INCHES	T. CHRISTY'S	(800) 258-4583
4.	VALVE MARKING I.D. TAGS	ID–STD–Y–2	BOTH SIDES	T. CHRISTY'S	(800) 258-4583
5.	ELECT WARNING TAPE INSTALL OVER WIRES	TA–DT–2–RE	2"x1000'	T. CHRISTY'S	(800) 258-4583
6.	CEMENT/SOLVENT DAUBER	RH–032	QUART CAN	T. CHRISTY'S	(800) 258-4583
7.	AUTO BACKFLUSH SCREEN FILTER STATION	ORG–40–LS	FILTERS UP TO 350 G.P.M.	ORIVAL FILTERS	(800) 567–9767
8.	IRRIGATION EQUIPMENT MARKING FLAGS	2 1/2" x 3 1/2"	15–1/2 GA STEEL– MULTI COLORED	BLACKBURN	(800) 942–5816
9.	PVC FITTING'S (GLUE–ON SCH40/80 FITTING'S)	SCH 40 & SCH 80	(DO NOT INSTALL ON MAINLINE)	LASCO	(800) 327–6390
10.	IRRIGATION SYSTEM CONTROL PACKAGE	BL–3200–P SERIES	UP TO 200 STATIONS	BASELINE	(208) 639–8742
11.	IRRIGATION SYSTEM MOISTURE SENSOR PROBE	BL–5315	25 SENSOR PROBE'S PER/CLOCK	BASELINE	(208) 639–8742
12.	SWING JOINT FOR SPRAY SPRINKLER HEADS	SPFA–5125	1/2" MPT ENDS W/12" LAY LENGTH	TORO	(616) 450–6618
13.	VALVE BOX 10" ROUND	VB–10RND	10" ROUND BODY & GREEN LID	RAIN BIRD	(800) 724–6247
14.	VALVE BOX 12" STANDARD WITH GREEN LID	VB–STD	12" STANDARD BODY & GREEN LID	RAIN BIRD	(800) 724–6247
15.	VALVE BOX 6" EXTENSION BOX	VBSTD6EXTB	6" EXTENSION BOX WITHOUT LID	RAIN BIRD	(800) 724–6247
16.	VALVE BOX JUMBO (BODY AND GREEN LID)	VB–JMBP	JUMBO BODY WITH GREEN LID	RAIN BIRD	(800) 724–6247
17.	VALVE BOX JUMBO 6" EXTENSION BOX	VBJMB6EXTB:	6"JUMBO EXTENSION BOX	RAIN BIRD	(800) 724–6247
18.	MAXI–WIRE, UL/UF, 600 V DIRECT BURIAL	# 12–2 RED JACKET	UL/UF AWG SOLID WIRE	PAIGE ELECT.	(559) 431–2346
19.	WATERPROOF WIRE SPLICES GEL FILLED	DBR/Y–6	18 GA TO 12 GA	PAIGE ELECT.	(559) 431–2346
20.	GROUND ROD FOR CONTROLLER COPPER CLAD	182007	COPPER CLAD 5/8"x10' LENGTH	PAIGE ELECT.	(559) 431–2346
21.	GROUND ROD FOR SURGE PROTECTION	182000	COPPER CLAD 5/8"x8' LENGTH	PAIGE ELECT.	(559) 431–2346
22.	GROUND PLATE, 4"x8' SOLID COPPER W/WIRE	182199IC	4"x96"x.0625", WITH 25' OF #6 AWG	PAIGE ELECT.	(559) 431–2346
23.	POWERSET, EARTH CONTACT MATERIAL	1820058	HARDING MATERIAL	PAIGE ELECT.	(559) 431–2346
22.	POWERFILL, EARTH CONTACT MATERIAL	1820059	NON–HARDING	PAIGE ELECT.	(559) 431–2346
23.	HARCO CL–200 FITTINGS & JOINT RESTRAINT	ALL MAINLINE FITG'S	AT CHANGE IN MAINLINE DIRECTION	HARCO FITG'S	(559) 431–2346
	JOINT RESTRAINT'S FOR CL200 PVC FITTINGS	UFR1360 SERIES	SIZE PER/PLANS (FORD METER BOX)	FORD METER	(260) 563–3171
	RECOMMENDED SUPPLIER'S FOR SUBMERSIBLE PUMP STATIONS:				
24.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	HOOVER PUMPS	(954) 971–7350
25.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	SULLIVAN PUMPS	(800) 991–2770
26.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	WATERTORNICS	(800) 356–6686
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27.	TORO SENTINEL 2–WIRE CONTROLLER	200 STATIONS	3 CLOCKS & 31 MOISTURE SENSORS	TORO	(616) 450–6618
28.	BASELINE 2–WIRE CONTROLLER	200 STATIONS	2 CLOCKS & 31 MOISTURE SENSORS	BASELINE	(256) 630–0094
29.	TUCOR 2–WIRE CONTROLLER	200 STATIONS	2 CLOCKS & 31 MOISTURE SENSORS	TUCOR	(800) 272–7472
30.	DO NOT INSTALL SCH40 OR SCH80 PVC FITTINGS ON THIS MAINLINE. INSTALL ONLY HARCO, "CL–200 PVC PUSH–ON FITTINGS", WITH FORD METER BOX JOINT RESTRAINT'S, AT ALL CHANGE IN DIRECTION OF THE MAINLINE. IF SCH40 OR SCH80 FITTINGS ARE FOUND INSTALLED ON THE MAINLINE THEY WILL BE REJECTED; ALL SCH40 & SCH80 FITTINGS SHALL BE ORDERED TO BE REMOVED BY THE IRRIGATION CONTRACTOR & REPLACED WITH THE HARCO CL–200 PVC FITTINGS & RESTRAINTS AT THE EXPENSE OF THE IRRIGATION CONTRACTOR AND AT NO ADDITIONAL COST TO THE OWNER.				

DETAIL REPORT

NUMBER	TITLE	DETAIL
01/LI–17	MAINLINE EQUIPMENT LAYOUT INCLUDING D.I. FITTINGS	328420.10–08
02/LI–17	SENTINEL TWO–WIRE PEDESTAL CONTROLLER	328498.01–02
03/LI–17	TYPICAL 2–WIRE CONTROLLER LAYOUT	328498.01–03
04/LI–17	SB–BLA LIGHTNING ARRESTOR INSTALLATION & WIRING	328498.01–04
05/LI–17	BL–5315B BISENSOR SOIL MOISTURE SENSOR	328410.75–04
06/LI–17	PULL BOX – FOR 2–WIRE PATH CONTROLLERS	328480.81–03
07/LI–17	PUMP START/STOP RELAY	328498.75–01
08/LI–17	6" POP–UP SPRINKLER – IRRITROL	328498.10–01
09/LI–17	12" POP–UP SPRINKLER – IRRITROL	328498.10–02
10/LI–17	PIPE RESTRAINT SYSTEM	328422.01–20
11/LI–18	TREE BUBBLER MOUNTED ON SCH 80 RISER	328403.23–17
12/LI–18	JOINT RESTRAINT DETAIL	328422.01–21
13/LI–18	"Z" DROP DOWN PIPE CONNECT PUMP TO MAINLINE	328422.42–01
14/LI–18	DUCTILE IRON PIPE RESTRAINT JOINT SCHEDULE	328422.56–01
15/LI–18	PAIGE ELECT DBR WIRE SPLICE CONNECTORS	328480.02–01
16/LI–18	RAIN SHUT OFF ON POLE MOUNT	328411–33
17/LI–18	ISOLATION VALVE WITH JOINT RESTRAINTS	328406.33–05
18/LI–18	WR–2 SERIES WIRELESS RAIN SENSOR	328411–38
19/LI–18	ORIVAL AUTOMATIC BACKFLUSH FILTER	328414.30–01
20/LI–18	DRAINAGE PIT	328414.30–04
21/LI–19	RESTRAINING JOINT ASSEMBLY INSTRUCTIONS	328422.01–23
22/LI–19	TORO REMOTE CONTROL ZONE VALVE	328406.05–26
23/LI–19	GENERAL TRENCHING	328477.01–31
24/LI–19	SLEEVE UNDER PAVEMENT	328477.01–32
25/LI–19	ROAD CROSSING INSTALLATION	328477.01–33
26/LI–19	MASTER VALVE TORO # 252 SERIES WITH BALL VALVE	328498.05–02
27/LI–19	PULL BOX	328477.20–14
28/LI–19	GROUNDING DETAIL FOR BASELINE 3200 SERIES CONTROLLER	328480.50–27
29/LI–19	CONTROLLER GROUNDING	328480.50–26
30/LI–19	PVC SADDLE MOUNT FLOW METER	328485.01–51
31/LI–20	PAIGE ELECTRIC DECODER CABLE FUSE DEVICE (DCFD) ™	328480.01–01
32/LI–20	PAIGE ELECTRIC DECODER CABLE FUSE DEVICE (DCFD) ™	328480.01–02
33/LI–20	PAIGE ELECTRIC SURGE GUARD PROTECTION FOR 2–WIRE	328480.01–03
34/LI–20	PAIGE ELECTRIC SOLENOID PROTECTION FROM LIGHTENING	328480.01–04
35/LI–20	METERING PUMP COMPONENT DIAGRAM	328481–02
36/LI–20	RID–O–RUST NOTES AND PRICING	328481–08
37/LI–20	SOLUTION TANK WITH AUTOMATIC TIMER (CONTROLLER)	328481–07
39/LI–22	IRRIGATION SPECIFICATIONS	328489.01–26
40/LI–23	BASELINE EQUIPMENT NEEDED FOR 3200 SERIES CONTROLLER	328410.75–10
41/LI–23	TORO EQUIPMENT NEEDED FOR SENTINEL CONTROLLER	328498.01–01
42/LI–23	FLOW SENSOR – MASTER VALVE COMBINATION	328498.05–01
43/LI–23	SHRUB AND GROUND COVER DETAIL FOR 12" HI–POP SPRAY	328403.30–10
44/LI–23	SHRUB RISER RAINBIRD SPRAY SPRINKLER	328403.22–01
45/LI–24	PUMP STATION CONCRETE PAD DETAIL	328487.01–07

REFERENCE NOTES SCHEDULE

SYMBOL	DESCRIPTION
1	DUE TO LACK OF SPACE ON PLANS, SPRINKLER COMPONENTS, I.E., P.O.C., PUMP, FILTER, MASTER VALVE, FLOW SENSOR, SHUT OFF VALVE, SHOWN IN THIS AREA SHALL BE INSTALLED IN THE PLANTER BED.
2	DUE TO LACK OF SPACE ON PLANS, SPRINKLER PVC PIPE, LATERAL & MAINLINE, SHOWN OUTSIDE OF THE PLANTER BEDS SHALL BE INSTALLED INSIDE PLANTER BEDS WHEN EVER POSSIBLE; SLEEVE ALL PVC PIPE THAT WILL BE INSTALLED OUTSIDE OF PLANTER BEDS.
3	WIRE SLEEVE FOR ROAD CROSSINGS, FOR 24V, 2–WIRE PATH CONTROL WIRE, SHALL BE 1 1/2" SCH40 PVC PIPE. THE CONTRACTOR SHALL INSTALL ALL THE 2–WIRE MAXI–CABLE INSIDE SCH40 GREY PVC ELEC CONDUIT .

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PROJECT:
ESTERO PARKWAY
VILLAGE OF ESTERO

DRAWING TITLE:
IRRIGATION PLAN

NORTH

SCALE:
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DATE:
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Digitally signed by Bruce J Howard
Date: 2019.10.21 19:34:32 -04'00'
Bruce J. Howard
License #: LA0000371

SHEET NUMBER:
LI-12
OF:

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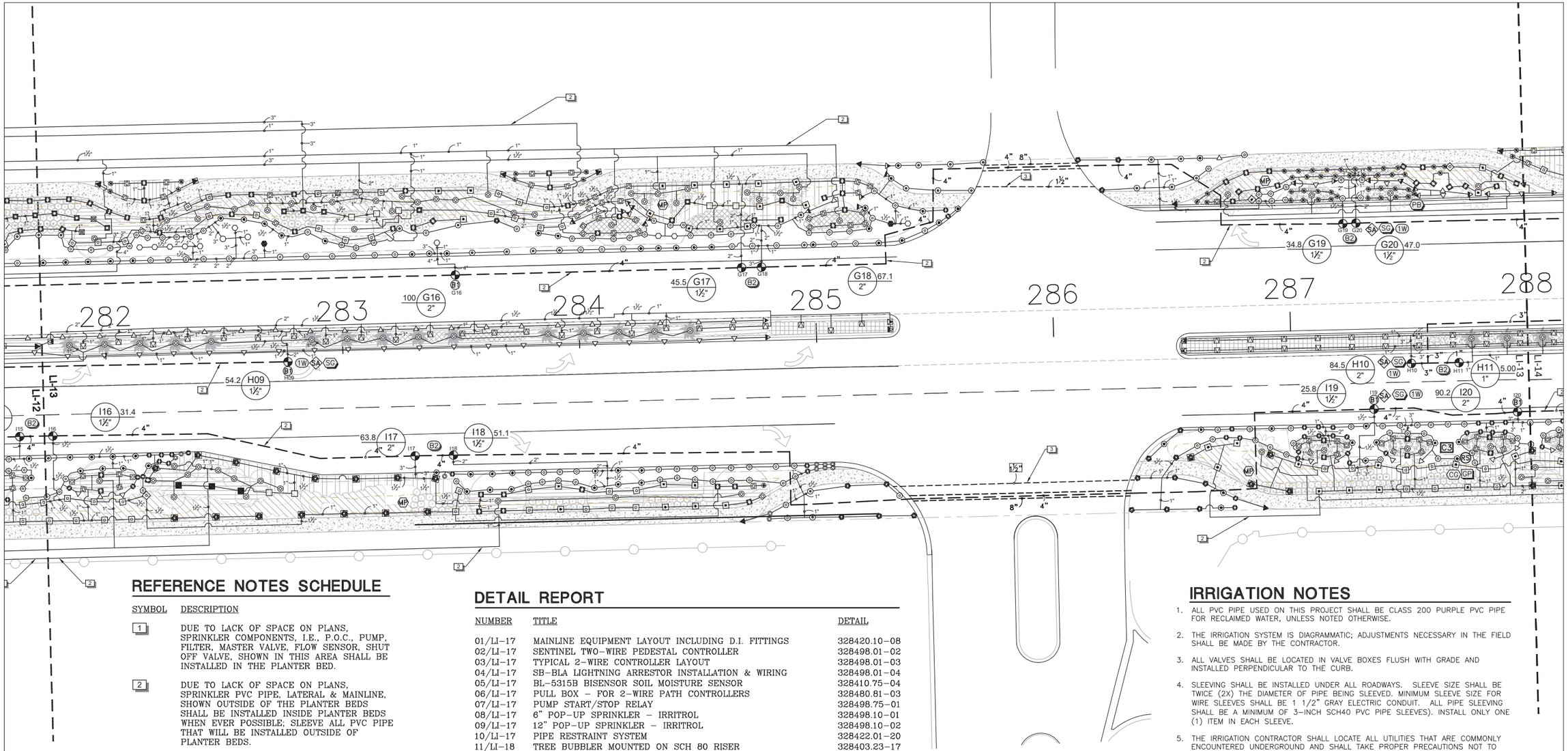
(305)668-3196
Fax(305)668-2871



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PVC MAINLINE

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UNDERGROUND CABLE LOCATE

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22/LI-19	TORO REMOTE CONTROL ZONE VALVE	328406.05-26
23/LI-19	GENERAL TRENCHING	328477.01-31
24/LI-19	SLEEVE UNDER PAVEMENT	328477.01-32
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36/LI-20	RID-O-RUST NOTES AND PRICING	328481-08
37/LI-20	SOLUTION TANK WITH AUTOMATIC TIMER (CONTROLLER)	328481-07
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40/LI-23	BASELINE EQUIPMENT NEEDED FOR 3200 SERIES CONTROLLER	328410.75-10
41/LI-23	TORO EQUIPMENT NEEDED FOR SENTINEL CONTROLLER	328498.01-01
42/LI-23	FLOW SENSOR - MASTER VALVE COMBINATION	328498.05-01
43/LI-23	SHRUB AND GROUND COVER DETAIL FOR 12" HI-POP SPRAY	328403.30-10
44/LI-23	SHRUB RISER RAINBIRD SPRAY SPRINKLER	328403.22-01
45/LI-24	PUMP STATION CONCRETE PAD DETAIL	328487.01-07

IRRIGATION NOTES

1. ALL PVC PIPE USED ON THIS PROJECT SHALL BE CLASS 200 PURPLE PVC PIPE FOR RECLAIMED WATER, UNLESS NOTED OTHERWISE.
2. THE IRRIGATION SYSTEM IS DIAGRAMMATIC; ADJUSTMENTS NECESSARY IN THE FIELD SHALL BE MADE BY THE CONTRACTOR.
3. ALL VALVES SHALL BE LOCATED IN VALVE BOXES FLUSH WITH GRADE AND INSTALLED PERPENDICULAR TO THE CURB.
4. SLEEVING SHALL BE INSTALLED UNDER ALL ROADWAYS. SLEEVE SIZE SHALL BE TWICE (2X) THE DIAMETER OF PIPE BEING SLEEVED. MINIMUM SLEEVE SIZE FOR WIRE SLEEVES SHALL BE 1 1/2" GRAY ELECTRIC CONDUIT. ALL PIPE SLEEVING SHALL BE A MINIMUM OF 3-INCH SCH40 PVC PIPE SLEEVES). INSTALL ONLY ONE (1) ITEM IN EACH SLEEVE.
5. THE IRRIGATION CONTRACTOR SHALL LOCATE ALL UTILITIES THAT ARE COMMONLY ENCOUNTERED UNDERGROUND AND SHALL TAKE PROPER PRECAUTIONS NOT TO DAMAGE ANY UTILITIES! IF UTILITIES ARE DAMAGED THE CONTRACTOR SHALL RESTORE THE DAMAGED UTILITIES TO THEIR ORIGINAL STATE SO REPAIRS ARE NOT OBSERVABLE.
6. THIS SYSTEM IS DESIGNED AROUND 100% OVERLAPPED SPRINKLER HEAD COVERAGE. THE IRRIGATION CONTRACTOR SHALL MAKE ALL NEEDED ADJUSTMENTS TO SPRINKLER HEADS TO ACHIEVE 100% OVERLAP COVERAGE. THE IRRIGATION CONTRACTOR SHALL NOT STRETCH THE HEAD SPACING, IF SPACING IS FOUND STRETCHED OR IF THE PIPE SIZES ARE INSTALLED THAT ARE UNDERSIZED IN ACCORDANCE WITH THE IRRIGATION PLAN IT IS A BREECH OF CONTRACT.
7. THE IRRIGATION CONTRACTOR SHALL INSTALL HARCO DUCTILE IRON PUSH ON GASKETED FITTINGS WITH CLAM SHELL JOINT RESTRAINTS AT ALL CHANGE IN DIRECTION OF THE MAINLINE. THESE FITTING'S SHALL BE MANUFACTURED BY "HARCO", CONTACT JOHN RIORDAN, AT (434) 845-7094.
8. ALL 24V IRRIGATION WIRE THAT WILL BE INSTALLED ON THIS PLAN IS RAIN BIRD MAXI-WIRE, MANUFACTURED BY PAIGE ELECTRIC SHALL BE FOR THE 2-WIRE PATH CONTROL SYSTEM AND SHALL BE INSTALLED INSIDE 1 1/2" GRAY ELECTRIC CONDUIT WITH LONG SWEEP ELBOWS.
9. THE IRRIGATION CONTRACTOR SHALL INSTALL A MINIMUM OF TWO (2), 1/2" G.P.M. BUBBLER'S PER EACH TREE AS SHOWN ON THE IRRIGATION DETAILS.

REVISION NOTE: ⚠ 10-18-2019
-Revised irrigation head locations and types to match updated Landscape base plan.

BRUCE HOWARD & ASSOCIATES, INC.
Landscape Architects, Site Planners & Golf Course Designers

PROJECT:
ESTERO PARKWAY
VILLAGE OF ESTERO

DRAWING TITLE:
IRRIGATION PLAN

NORTH

SCALE: 1" = 20' - 0"

PROJECT NUMBER

DATE: 07-03-2019

⚠ 10-18-2019

Digitally signed by Bruce J Howard
Date: 2019.10.21 19:35:05 -04'00'
Bruce J. Howard
License #: LA0000371

SHEET NUMBER: LI-13
OF:

4872 S.W. 72nd Avenue
Miami, Florida 33155
(305)668-3196
Fax(305)668-2871

NOTE:
THERE ARE TWO (2) CONTROL PACKAGES RATED AS "OR EQUAL" SUBSTITUTE ON THIS PROJECT, AND BOTH ARE DEPENDANT UPON THE APPROVAL FROM THE LANDSCAPE ARCHITECT. THE CONTRACTOR SHALL SUBMIT IN WRITING TO THE LANDSCAPE ARCHITECT HIS CHOICE OF CONTROL PACKAGE, WHICH MUST BE APPROVED IN WRITING BY THE L.A.

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UNDERGROUND CABLE LOCATE
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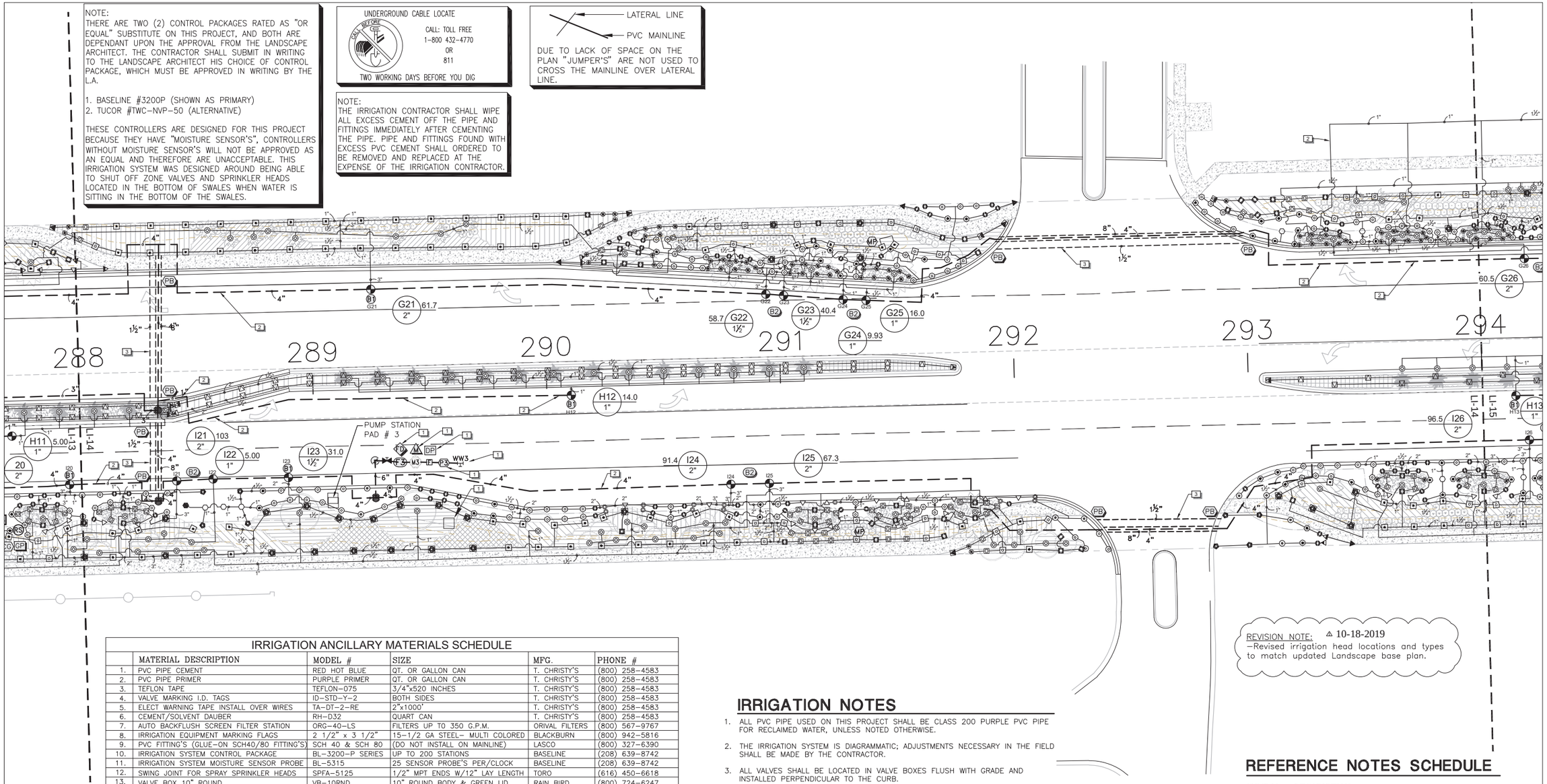
LATERAL LINE
PVC MAINLINE

DUE TO LACK OF SPACE ON THE PLAN "JUMPER'S" ARE NOT USED TO CROSS THE MAINLINE OVER LATERAL LINE.



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IRRIGATION ANCILLARY MATERIALS SCHEDULE

	MATERIAL DESCRIPTION	MODEL #	SIZE	MFG.	PHONE #
1.	PVC PIPE CEMENT	RED HOT BLUE	QT. OR GALLON CAN	T. CHRISTY'S	(800) 258-4583
2.	PVC PIPE PRIMER	PURPLE PRIMER	QT. OR GALLON CAN	T. CHRISTY'S	(800) 258-4583
3.	TEFLON TAPE	TEFLON-075	3/4"x520 INCHES	T. CHRISTY'S	(800) 258-4583
4.	VALVE MARKING I.D. TAGS	ID-STD-Y-2	BOTH SIDES	T. CHRISTY'S	(800) 258-4583
5.	ELECT WARNING TAPE INSTALL OVER WIRES	TA-DT-2-RE	2"x1000'	T. CHRISTY'S	(800) 258-4583
6.	CEMENT/SOLVENT DAUBER	RH-D32	QUART CAN	T. CHRISTY'S	(800) 258-4583
7.	AUTO BACKFLUSH SCREEN FILTER STATION	ORG-40-LS	FILTERS UP TO 350 G.P.M.	ORIVAL FILTERS	(800) 567-9767
8.	IRRIGATION EQUIPMENT MARKING FLAGS	2 1/2" x 3 1/2"	15-1/2 GA STEEL- MULTI COLORED	BLACKBURN	(800) 942-5816
9.	PVC FITTING'S (GLUE-ON SCH40/80 FITTING'S)	SCH 40 & SCH 80	(DO NOT INSTALL ON MAINLINE)	LASCO	(800) 327-6390
10.	IRRIGATION SYSTEM CONTROL PACKAGE	BL-3200-P SERIES	UP TO 200 STATIONS	BASELINE	(208) 639-8742
11.	IRRIGATION SYSTEM MOISTURE SENSOR PROBE	BL-5315	25 SENSOR PROBE'S PER/CLOCK	BASELINE	(208) 639-8742
12.	SWING JOINT FOR SPRAY SPRINKLER HEADS	SPFA-5125	1/2" MPT ENDS W/12" LAY LENGTH	TORO	(616) 450-6618
13.	VALVE BOX 10" ROUND	VB-10RND	10" ROUND BODY & GREEN LID	RAIN BIRD	(800) 724-6247
14.	VALVE BOX 12" STANDARD WITH GREEN LID	VB-STD	12" STANDARD BODY & GREEN LID	RAIN BIRD	(800) 724-6247
15.	VALVE BOX 6" EXTENSION BOX	VBSTD6EXTB	6" EXTENSION BOX WITHOUT LID	RAIN BIRD	(800) 724-6247
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18.	MAXI-WIRE, UL/UF, 600 V DIRECT BURIAL	# 12-2 RED JACKET	UL/UF AWG SOLID WIRE	PAIGE ELECT.	(559) 431-2346
19.	WATERPROOF WIRE SPLICES GEL FILLED	DBR/Y-6	18 GA TO 12 GA	PAIGE ELECT.	(559) 431-2346
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21.	GROUND ROD FOR SURGE PROTECTION	182000	COPPER CLAD 5/8"x8' LENGTH	PAIGE ELECT.	(559) 431-2346
22.	GROUND PLATE, 4"x8' SOLID COPPER W/WIRE	182199IC	4"x96"x.0625", WITH 25' OF #6 AWG	PAIGE ELECT.	(559) 431-2346
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22.	POWERFILL, EARTH CONTACT MATERIAL	1820059	NON-HARDING	PAIGE ELECT.	(559) 431-2346
23.	HARCO CL-200 FITTINGS & JOINT RESTRAINT	ALL MAINLINE FITG'S	AT CHANGE IN MAINLINE DIRECTION	HARCO FITG'S	(559) 431-2346
	JOINT RESTRAINT'S FOR CL200 PVC FITTINGS	UFR1360 SERIES	SIZE PER/PLANS (FORD METER BOX)	FORD METER	(260) 563-3171
	RECOMMENDED SUPPLIER'S FOR SUBMERSIBLE PUMP STATIONS:				
24.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	HOOVER PUMPS	(954) 971-7350
25.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	SULLIVAN PUMPS	(800) 991-2770
26.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	WATERTORNICS	(800) 356-6686
	RECOMMENDED SUPPLIER'S FOR IRRIGATION TIMER CONTROL SYSTEM CONSIDERED "OR EQUAL":				
27.	TORO SENTINEL 2-WIRE CONTROLLER	200 STATIONS	3 CLOCKS & 31 MOISTURE SENSORS	TORO	(616) 450-6618
28.	BASELINE 2-WIRE CONTROLLER	200 STATIONS	2 CLOCKS & 31 MOISTURE SENSORS	BASELINE	(256) 630-0094
29.	TUCOR 2-WIRE CONTROLLER	200 STATIONS	2 CLOCKS & 31 MOISTURE SENSORS	TUCOR	(800) 272-7472
30.	DO NOT INSTALL SCH40 OR SCH80 PVC FITTINGS ON THIS MAINLINE. INSTALL ONLY HARCO, "CL-200 PVC PUSH-ON FITTINGS", WITH FORD METER BOX JOINT RESTRAINT'S, AT ALL CHANGE IN DIRECTION OF THE MAINLINE. IF SCH40 OR SCH80 FITTINGS ARE FOUND INSTALLED ON THE MAINLINE THEY WILL BE REJECTED; ALL SCH40 & SCH80 FITTINGS SHALL BE ORDERED TO BE REMOVED BY THE IRRIGATION CONTRACTOR & REPLACED WITH THE HARCO CL-200 PVC FITTINGS & RESTRAINTS AT THE EXPENSE OF THE IRRIGATION CONTRACTOR AND AT NO ADDITIONAL COST TO THE OWNER.				

IRRIGATION NOTES

1. ALL PVC PIPE USED ON THIS PROJECT SHALL BE CLASS 200 PURPLE PVC PIPE FOR RECLAIMED WATER, UNLESS NOTED OTHERWISE.
2. THE IRRIGATION SYSTEM IS DIAGRAMMATIC; ADJUSTMENTS NECESSARY IN THE FIELD SHALL BE MADE BY THE CONTRACTOR.
3. ALL VALVES SHALL BE LOCATED IN VALVE BOXES FLUSH WITH GRADE AND INSTALLED PERPENDICULAR TO THE CURB.
4. SLEEVING SHALL BE INSTALLED UNDER ALL ROADWAYS. SLEEVE SIZE SHALL BE TWICE (2X) THE DIAMETER OF PIPE BEING SLEEVED. MINIMUM SLEEVE SIZE FOR WIRE SLEEVES SHALL BE 1 1/2" GRAY ELECTRIC CONDUIT. ALL PIPE SLEEVING SHALL BE A MINIMUM OF 3-INCH SCH40 PVC PIPE SLEEVES). INSTALL ONLY ONE (1) ITEM IN EACH SLEEVE.
5. THE IRRIGATION CONTRACTOR SHALL LOCATE ALL UTILITIES THAT ARE COMMONLY ENCOUNTERED UNDERGROUND AND SHALL TAKE PROPER PRECAUTIONS NOT TO DAMAGE ANY UTILITIES! IF UTILITIES ARE DAMAGED THE CONTRACTOR SHALL RESTORE THE DAMAGED UTILITIES TO THEIR ORIGINAL STATE SO REPAIRS ARE NOT OBSERVABLE.
6. THIS SYSTEM IS DESIGNED AROUND 100% OVERLAPPED SPRINKLER HEAD COVERAGE. THE IRRIGATION CONTRACTOR SHALL MAKE ALL NEEDED ADJUSTMENTS TO SPRINKLER HEADS TO ACHIEVE 100% OVERLAP COVERAGE. THE IRRIGATION CONTRACTOR SHALL NOT STRETCH THE HEAD SPACING, IF SPACING IS FOUND STRETCHED OR IF THE PIPE SIZES ARE INSTALLED THAT ARE UNDERSIZED IN ACCORDANCE WITH THE IRRIGATION PLAN IT IS A BREECH OF CONTRACT.
7. THE IRRIGATION CONTRACTOR SHALL INSTALL HARCO DUCTILE IRON PUSH ON GASKETED FITTINGS WITH CLAM SHELL JOINT RESTRAINTS AT ALL CHANGE IN DIRECTION OF THE MAINLINE. THESE FITTING'S SHALL BE MANUFACTURED BY "HARCO", CONTACT JOHN RIORDAN, AT (434) 845-7094.
8. ALL 24V IRRIGATION WIRE THAT WILL BE INSTALLED ON THIS PLAN IS RAIN BIRD MAXI-WIRE, MANUFACTURED BY PAIGE ELECTRIC SHALL BE FOR THE 2-WIRE PATH CONTROL SYSTEM AND SHALL BE INSTALLED INSIDE 1 1/2" GRAY ELECTRIC CONDUIT WITH LONG SWEEP ELBOWS.
9. THE IRRIGATION CONTRACTOR SHALL INSTALL A MINIMUM OF TWO (2), 1/2" G.P.M. BUBBLER'S PER EACH TREE AS SHOWN ON THE IRRIGATION DETAILS.

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3	WIRE SLEEVE FOR ROAD CROSSINGS, FOR 24V, 2-WIRE PATH CONTROL WIRE, SHALL BE 1 1/2" SCH40 PVC PIPE. THE CONTRACTOR SHALL INSTALL ALL THE 2-WIRE MAXI-CABLE INSIDE SCH40 GREY PVC ELEC CONDUIT .

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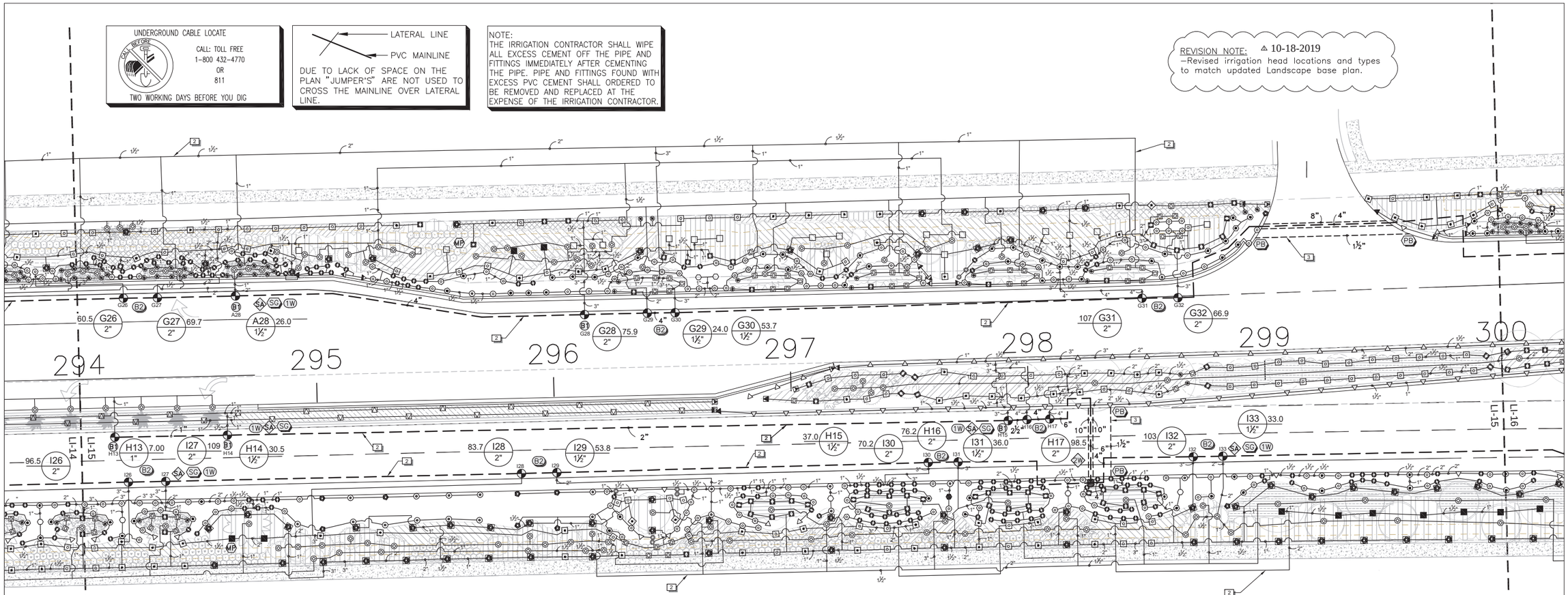

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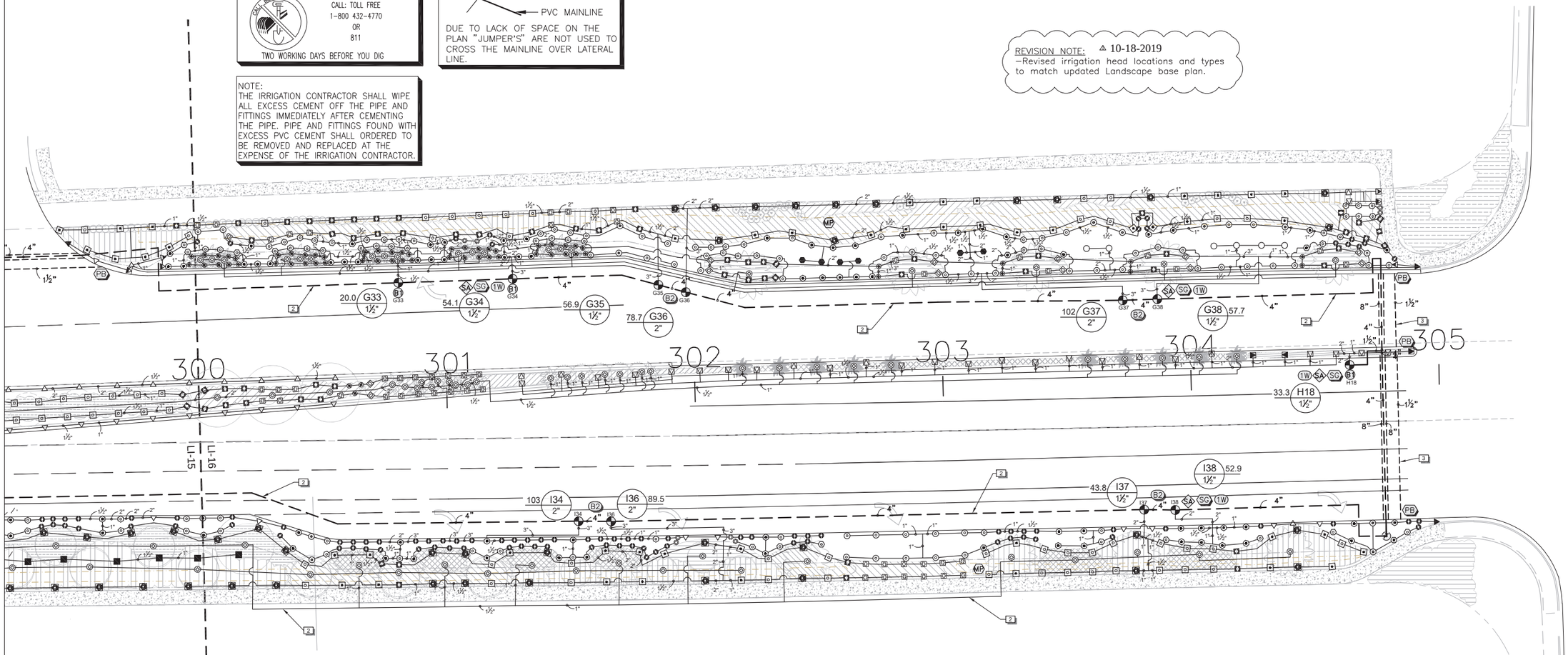

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3	WIRE SLEEVE FOR ROAD CROSSINGS, FOR 24V, 2-WIRE PATH CONTROL WIRE, SHALL BE 1 1/2" SCH40 PVC PIPE. THE CONTRACTOR SHALL INSTALL ALL THE 2-WIRE MAXI-CABLE INSIDE SCH40 GREY PVC ELEC CONDUIT .

NOTE:
THERE ARE TWO (2) CONTROL PACKAGES RATED AS "OR EQUAL" SUBSTITUTE ON THIS PROJECT, AND BOTH ARE DEPENDANT UPON THE APPROVAL FROM THE LANDSCAPE ARCHITECT. THE CONTRACTOR SHALL SUBMIT IN WRITING TO THE LANDSCAPE ARCHITECT HIS CHOICE OF CONTROL PACKAGE, WHICH MUST BE APPROVED IN WRITING BY THE L.A.

1. BASELINE #3200P (SHOWN AS PRIMARY)
2. TUCOR #TWC-NVP-50 (ALTERNATIVE)

THESE CONTROLLERS ARE DESIGNED FOR THIS PROJECT BECAUSE THEY HAVE "MOISTURE SENSOR'S", CONTROLLERS WITHOUT MOISTURE SENSOR'S WILL NOT BE APPROVED AS AN EQUAL AND THEREFORE ARE UNACCEPTABLE. THIS IRRIGATION SYSTEM WAS DESIGNED AROUND BEING ABLE TO SHUT OFF ZONE VALVES AND SPRINKLER HEADS LOCATED IN THE BOTTOM OF SWALES WHEN WATER IS SITTING IN THE BOTTOM OF THE SWALES.

IRRIGATION NOTES

1. ALL PVC PIPE USED ON THIS PROJECT SHALL BE CLASS 200 PURPLE PVC PIPE FOR RECLAIMED WATER, UNLESS NOTED OTHERWISE.
2. THE IRRIGATION SYSTEM IS DIAGRAMMATIC; ADJUSTMENTS NECESSARY IN THE FIELD SHALL BE MADE BY THE CONTRACTOR.
3. ALL VALVES SHALL BE LOCATED IN VALVE BOXES FLUSH WITH GRADE AND INSTALLED PERPENDICULAR TO THE CURB.
4. SLEEVING SHALL BE INSTALLED UNDER ALL ROADWAYS. SLEEVE SIZE SHALL BE TWICE (2X) THE DIAMETER OF PIPE BEING SLEEVED. MINIMUM SLEEVE SIZE FOR WIRE SLEEVES SHALL BE 1 1/2" GRAY ELECTRIC CONDUIT. ALL PIPE SLEEVING SHALL BE A MINIMUM OF 3-INCH SCH40 PVC PIPE SLEEVES). INSTALL ONLY ONE (1) ITEM IN EACH SLEEVE.
5. THE IRRIGATION CONTRACTOR SHALL LOCATE ALL UTILITIES THAT ARE COMMONLY ENCOUNTERED UNDERGROUND AND SHALL TAKE PROPER PRECAUTIONS NOT TO DAMAGE ANY UTILITIES! IF UTILITIES ARE DAMAGED THE CONTRACTOR SHALL RESTORE THE DAMAGED UTILITIES TO THEIR ORIGINAL STATE SO REPAIRS ARE NOT OBSERVABLE.
6. THIS SYSTEM IS DESIGNED AROUND 100% OVERLAPPED SPRINKLER HEAD COVERAGE. THE IRRIGATION CONTRACTOR SHALL MAKE ALL NEEDED ADJUSTMENTS TO SPRINKLER HEADS TO ACHIEVE 100% OVERLAP COVERAGE. THE IRRIGATION CONTRACTOR SHALL NOT STRETCH THE HEAD SPACING, IF SPACING IS FOUND STRETCHED OR IF THE PIPE SIZES ARE INSTALLED THAT ARE UNDERSIZED IN ACCORDANCE WITH THE IRRIGATION PLAN IT IS A BREECH OF CONTRACT.
7. THE IRRIGATION CONTRACTOR SHALL INSTALL HARCO DUCTILE IRON PUSH ON GASKETED FITTINGS WITH CLAM SHELL JOINT RESTRAINTS AT ALL CHANGE IN DIRECTION OF THE MAINLINE. THESE FITTING'S SHALL BE MANUFACTURED BY "HARCO", CONTACT JOHN RIORDAN, AT (434) 845-7094.
8. ALL 24V IRRIGATION WIRE THAT WILL BE INSTALLED ON THIS PLAN IS RAIN BIRD MAXI-WIRE, MANUFACTURED BY PAIGE ELECTRIC SHALL BE FOR THE 2-WIRE PATH CONTROL SYSTEM AND SHALL BE INSTALLED INSIDE 1 1/2" GRAY ELECTRIC CONDUIT WITH LONG SWEEP ELBOWS.
9. THE IRRIGATION CONTRACTOR SHALL INSTALL A MINIMUM OF TWO (2), 1/2" G.P.M. BUBBLER'S PER EACH TREE AS SHOWN ON THE IRRIGATION DETAILS.

IRRIGATION ANCILLARY MATERIALS SCHEDULE

	MATERIAL DESCRIPTION	MODEL #	SIZE	MFG.	PHONE #
1.	PVC PIPE CEMENT	RED HOT BLUE	QT. OR GALLON CAN	T. CHRISTY'S	(800) 258-4583
2.	PVC PIPE PRIMER	PURPLE PRIMER	QT. OR GALLON CAN	T. CHRISTY'S	(800) 258-4583
3.	TEFLON TAPE	TEFLON-075	3/4"x520 INCHES	T. CHRISTY'S	(800) 258-4583
4.	VALVE MARKING I.D. TAGS	ID-STD-Y-2	BOTH SIDES	T. CHRISTY'S	(800) 258-4583
5.	ELECT WARNING TAPE INSTALL OVER WIRES	TA-DT-2-RE	2"x1000'	T. CHRISTY'S	(800) 258-4583
6.	CEMENT/SOLVENT DAUBER	RH-D32	QUART CAN	T. CHRISTY'S	(800) 258-4583
7.	AUTO BACKFLUSH SCREEN FILTER STATION	ORG-40-LS	FILTERS UP TO 350 G.P.M.	ORIVAL FILTERS	(800) 567-9767
8.	IRRIGATION EQUIPMENT MARKING FLAGS	2 1/2" x 3 1/2"	15-1/2 GA STEEL- MULTI COLORED	BLACKBURN	(800) 942-5816
9.	PVC FITTING'S (GLUE-ON SCH40/80 FITTING'S)	SCH 40 & SCH 80	(DO NOT INSTALL ON MAINLINE)	LASCO	(800) 327-6390
10.	IRRIGATION SYSTEM CONTROL PACKAGE	BL-3200-P SERIES	UP TO 200 STATIONS	BASELINE	(208) 639-8742
11.	IRRIGATION SYSTEM MOISTURE SENSOR PROBE	BL-5315	25 SENSOR PROBE'S PER/CLOCK	BASELINE	(208) 639-8742
12.	SWING JOINT FOR SPRAY SPRINKLER HEADS	SPFA-5125	1/2" MPT ENDS W/12" LAY LENGTH	TORO	(616) 450-6618
13.	VALVE BOX 10" ROUND	VB-10RND	10" ROUND BODY & GREEN LID	RAIN BIRD	(800) 724-6247
14.	VALVE BOX 12" STANDARD WITH GREEN LID	VB-STD	12" STANDARD BODY & GREEN LID	RAIN BIRD	(800) 724-6247
15.	VALVE BOX 6" EXTENSION BOX	VBSTD6EXTB	6" EXTENSION BOX WITHOUT LID	RAIN BIRD	(800) 724-6247
16.	VALVE BOX JUMBO (BODY AND GREEN LID)	VB-JMBP	JUMBO BODY WITH GREEN LID	RAIN BIRD	(800) 724-6247
17.	VALVE BOX JUMBO 6" EXTENSION BOX	VBJMB6EXTB:	6"JUMBO EXTENSION BOX	RAIN BIRD	(800) 724-6247
18.	MAXI-WIRE, UL/UF, 600 V DIRECT BURIAL	# 12-2 RED JACKET	UL/UF AWG SOLID WIRE	PAIGE ELECT.	(559) 431-2346
19.	WATERPROOF WIRE SPLICES GEL FILLED	DBR/Y-6	18 GA TO 12 GA	PAIGE ELECT.	(559) 431-2346
20.	GROUND ROD FOR CONTROLLER COPPER CLAD	182007	COPPER CLAD 5/8"x10' LENGTH	PAIGE ELECT.	(559) 431-2346
21.	GROUND ROD FOR SURGE PROTECTION	182000	COPPER CLAD 5/8"x8' LENGTH	PAIGE ELECT.	(559) 431-2346
22.	GROUND PLATE, 4"x8' SOLID COPPER W/WIRE	182199IC	4"x96"x.0625", WITH 25' OF #6 AWG	PAIGE ELECT.	(559) 431-2346
23.	POWERSET, EARTH CONTACT MATERIAL	1820058	HARDING MATERIAL	PAIGE ELECT.	(559) 431-2346
22.	POWERFILL, EARTH CONTACT MATERIAL	1820059	NON-HARDING	PAIGE ELECT.	(559) 431-2346
23.	HARCO CL-200 FITTINGS & JOINT RESTRAINT	ALL MAINLINE FITG'S	AT CHANGE IN MAINLINE DIRECTION	HARCO FITG'S	(559) 431-2346
	JOINT RESTRAINT'S FOR CL200 PVC FITTINGS	UFR1360 SERIES	SIZE PER/PLANS (FORD METER BOX)	FORD METER	(260) 563-3171
	RECOMMENDED SUPPLIER'S FOR SUBMERSIBLE PUMP STATIONS:				
24.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	HOOVER PUMPS	(954) 971-7350
25.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	SULLIVAN PUMPS	(800) 991-2770
26.	SUBMERSIBLE PUMP STATION, 8" WATER WELL	25 HORSE POWER	300 G.P.M. @ MINIMUM OF 75 P.S.I.	WATERTORNICS	(800) 356-6686
	RECOMMENDED SUPPLIER'S FOR IRRIGATION TIMER CONTROL SYSTEM CONSIDERED "OR EQUAL":				
27.	TORO SENTINEL 2-WIRE CONTROLLER	200 STATIONS	3 CLOCKS & 31 MOISTURE SENSORS	TORO	(616) 450-6618
28.	BASELINE 2-WIRE CONTROLLER	200 STATIONS	2 CLOCKS & 31 MOISTURE SENSORS	BASELINE	(256) 630-0094
29.	TUCOR 2-WIRE CONTROLLER	200 STATIONS	2 CLOCKS & 31 MOISTURE SENSORS	TUCOR	(800) 272-7472
30.	DO NOT INSTALL SCH40 OR SCH80 PVC FITTINGS ON THIS MAINLINE. INSTALL ONLY HARCO, "CL-200 PVC PUSH-ON FITTINGS", WITH FORD METER BOX JOINT RESTRAINT'S, AT ALL CHANGE IN DIRECTION OF THE MAINLINE. IF SCH40 OR SCH80 FITTINGS ARE FOUND INSTALLED ON THE MAINLINE THEY WILL BE REJECTED; ALL SCH40 & SCH80 FITTINGS SHALL BE ORDERED TO BE REMOVED BY THE IRRIGATION CONTRACTOR & REPLACED WITH THE HARCO CL-200 PVC FITTINGS & RESTRAINTS AT THE EXPENSE OF THE IRRIGATION CONTRACTOR AND AT NO ADDITIONAL COST TO THE OWNER.				

BRUCE HOWARD & ASSOCIATES, INC.
Landscape Architects, Site Planners & Golf Course Designers

PROJECT:
ESTERO PARKWAY
VILLAGE OF ESTERO

DRAWING TITLE:
IRRIGATION PLAN

NORTH

SCALE: 1" = 20' - 0"

PROJECT NUMBER

DATE: 07-03-2019

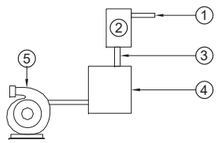
⚠ 10-18-2019

Digitally signed by Bruce J Howard
Date: 2019.10.21 19:36:55 -04'00'
Bruce J. Howard
License #: LA0000371

SHEET NUMBER: LI-16
OF:

4872 S.W. 72nd Avenue
Miami, Florida 33155
(305)668-3196
Fax(305)668-2871

NOTE: THE PURPOSE OF THE PUMP START RELAY IS TO START THE PUMP.



① VOLTAGE LINE IN
② FUSED DISCONNECT
③ CONDUIT BETWEEN BOXES
④ PUMP CONTROL & LINE CONTACTS FOR PUMP W/24V MAGNETIC RELAY
⑤ PUMP

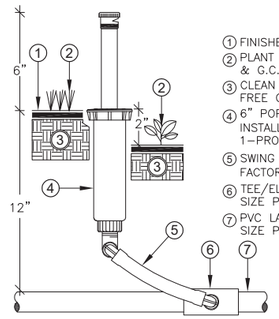
NOTE:
PUMP START RELAY IS BUILT INTO THE TORO CONTROLLER. IT IS UNNECESSARY TO SUPPLY A 2ND POWER SOURCE TO CLOSE RELAY CONTACTS FOR THIS PUMP START.

NOTE:
THE IRRIGATION CONTRACTOR SHALL REVIEW ALL TORO SPECIFICATIONS AND WIRING DIAGRAMS PRIOR TO INSTALLATION. THIS DETAIL SHALL NOT TO BE CONSIDERED, IN ANY WAY, A FINAL TORO WIRING DETAIL DIAGRAM.

07 PUMP START/STOP RELAY

N.T.S. 328498.75–Ø1

NOZZLE: MPR, VAN, HE VAN.



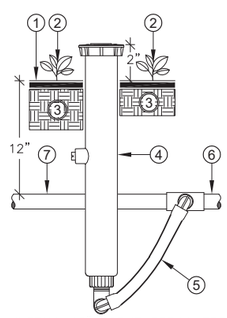
① FINISHED GRADE.
② PLANT MATERIAL, TURF, SHRUB & G.C.
③ CLEAN SOIL, AMENDED/NATIVE, FREE OF ROCK AND DEBRIS.
④ 6" POP–UP SPRAY SPRINKLER BODY, INSTALL IN TURF/SHRUB AREAS. IRRITROL 1–PRO600–PR.
⑤ SWING JOINT: TORO, 1/2"x12" LAY ARM, FACTORY ASSEMBLED # SPFA–5125.
⑥ TEE/EL, PVC SCH40 LINE SIZE, SIZE PER SPRINKLER INLET.
⑦ PVC LATERAL (NON–PRESSURE PIPE). SIZE PER PLAN.

INSTALL POPUP SPRAY SPRINKLERS:
1. PLUMB TO FINISHED GRADE, 4" FROM PAVED EDGE, BUILDINGS AND FENCE AREAS. INSTALL FLUSH TO GRADE (TURF) & 2" ABOVE GRADE (SHRUBS). ADJUST COVERAGE TO AVOID OVERSPRAY ONTO PAVED SURFACES, FENCES, BUILDINGS AND PARKING LOTS.
2. INSTALL WITH ONLY TEFLON SEALANT ON THREADED CONNECTIONS.

08 6" POP-UP SPRINKLER - IRRITROL

N.T.S. 328498.1Ø–Ø1

NOZZLE: MPR, VAN, HE VAN.

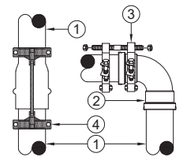


① FINISHED GRADE.
② PLANT MATERIAL (SHRUB & G.C.).
③ CLEAN SOIL, AMENDED/NATIVE, FREE OF ROCK AND DEBRIS.
④ 12" POP–UP SPRAY SPRINKLER BODY, INSTALL IN SHRUB AREAS. IRRITROL I–PRO1200–SI–PR.
⑤ SWING JOINT: RAINBIRD SA–125050, 1/2"x12" LAY ARM, FACTORY ASSEMBLED.
⑥ TEE/EL, PVC SCH40 LINE SIZE, SIZE PER SPRINKLER INLET.
⑦ PVC LATERAL (NON–PRESSURE PIPE). SIZE PER PLAN.

INSTALL 12" POPUP SPRINKLERS:
1. PLUMB TO FINISHED GRADE AND 4" FROM PAVED EDGE, BUILDINGS AND FENCE AREAS. INSTALL 2" ABOVE FINISHED GRADE, ADJUST COVERAGE TO AVOID OVERSPRAY ONTO PAVED SURFACES, FENCES, BUILDINGS AND PARKING LOTS.
2. INSTALL WITH ONLY TEFLON SEALANT ON THREADED CONNECTIONS.

09 12" POP-UP SPRINKLER - IRRITROL

N.T.S. 328498.1Ø–Ø2



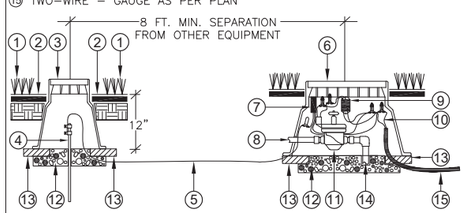
① IRRIGATION MAINLINE BELL AND GASKET TYPE PIPE, SEE LEGEND FOR SPECIFICATION.
② HARCO CL–200, GASKET, PUSH–ON FITTING
③ FORD METER BOX JOINT RESTRAINT SYSTEM.
④ HARCO PIPE TO PIPE JOINT RESTRAINT FITTING

1. INSTALL JOINT RESTRAINTS ON ALL BELL AND GASKET MAINLINE PIPE. INSTALL FORD METER BOX JOINT RESTRAINTS ON ALL FITTINGS AT DIRECTIONAL CHANGES IN MAINLINE PIPE AND AT ALL COUPLINGS WITHIN 60 FEET OF THE DIRECTIONAL CHANGE. USE FORD METER BOX PIPE RESTRAINTS AND HARCO CL–200 PVC PUSH–ON FITTINGS TO CONNECT ISOLATION VALVES, REMOTE CONTROL VALVES OR ANY OTHER TYPE OF IRRIGATION EQUIPMENT TO THE MAINLINE.
2. SIZE JOINT RESTRAINT PER PIPE AND FITTING SIZES BEING INSTALLED.
3. INSTALL JOINT RESTRAINTS FOR BELL AND GASKET JOINTS.
4. INSTALL JOINT RESTRAINTS FOR PVC PIPE TO PVC CL200 FITTINGS.
5. USE JOINT RESTRAINTS FOR BUTTERFLY AND GATE VALVES.
6. IT IS NOT NECESSARY TO THRUST BLOCK FITTING'S WHEN JOINT RESTRAINT'S ARE BEING USED ON GASKET FITTING'S AND PIPE.

10 PIPE RESTRAINT SYSTEM

N.T.S. 328422.Ø1–2Ø

① TURF GRASS OR GROUND COVER & SHRUBS
② FINISHED GRADE
③ ECONO VALVE BOX, 6" JUNCTION BOX
④ 8' GROUNDING ROD INSTALL PER CODE
⑤ #8 AWG SOLID BARE CU WIRE OR PER LOCAL CODE
⑥ RECTANGULAR STANDARD OR JUMBO VALVE BOX
⑦ SB–BLA SENTINEL LIGHTNING ARRESTOR
⑧ LATERAL LINE – SIZE PER PLANS
⑨ BASE LINE – biCODER
⑩ RED TO RED AND BLK TO BLK ENCAPSULATED IN MOISTURE–RESISTANT SPLICE CAP. 3M DBR/Y–6 OR EQUAL.
⑪ 24 VOLT REMOTE CONTROL VALVE
⑫ 3–INCH MIN. DEPTH OF 3/4–INCH, WASHED GRAVEL
⑬ SUPPORT BRICK – 4 REQUIRED
⑭ PRESSURE LINE – SIZE AS PER PLANS
⑮ TWO–WIRE – GAUGE AS PER PLAN

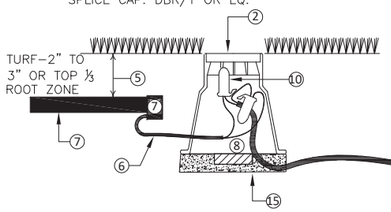


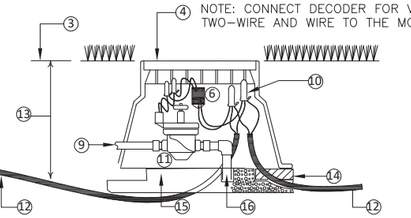
NOTES:
1. VALVE BOX #3 SHALL BE A RAIN BIRD 10" VALVE BOX.
2. VALVE BOX #6 SHALL BE EITHER A RAIN BIRD 12" STANDARD OR A JUMBO VALVE BOX.
3. IF A VALVE BOX HAS A CONTROL VALVE INSIDE, CONNECT DECODER FOR VALVES TO TWO–WIRE & WIRE & INSTALL IN EITHER A RAIN BIRD 12" STANDARD VALVE BOX OR A JUMBO VALVE BOX.
4. THE CONTRACTOR SHALL ENSURE THAT PVC PIPES GOING INTO THE VALVE BOX ARE NOT BENT AND/OR THERE ISN'T ANY STRESS BEING PUT ON THE PIPE.
5. THE CONTRACTOR SHALL ENSURE IRRIGATION EQUIPMENT INSTALLED INSIDE THE VALVE BOX MAY BE SERVICED SERVICED THROUGH THE TOP OF THE TOP OF THE VALVE BOX.

04 SB-BLA LIGHTNING ARRESTOR INSTALLATION & WIRING

N.T.S. 328498.Ø1–Ø4

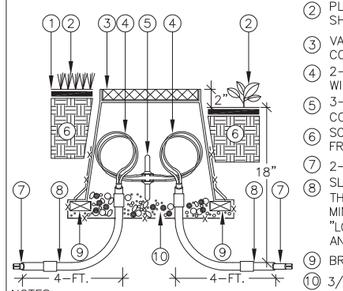
① LAWN OR SURFACE TREATMENT
② 6" ROUND JUNCTION BOX
③ FINISHED GRADE
④ RECTANGULAR STANDARD OR JUMBO VALVE BOX AS REQUIRED
⑤ BURY DEPTH – MOISTURE SENSOR
⑥ SLEEVED WIRE
⑦ MOISTURE SENSOR – SET LENGTH HORIZONTALLY AND BLADE IN VERTICAL POSITION WITH WIRES OUT OF BOTTOM
⑧ SUPPORT BLOCK – 2 REQUIRED
⑨ LATERAL – SIZE PER PLANS
⑩ RED TO RED AND BLK TO BLK IN WATER PROOF SPLICE CAP. DBR/Y OR EQ.
⑪ 24 VOLT REMOTE CONTROL VALVE
⑫ TWO–WIRE – GAUGE AS PER PLAN
⑬ 12" WIRE BURY OR PER NEC
⑭ SUPPORT BLOCK – TYPICAL EACH CORNER (4 REQUIRED)
⑮ GRANULAR MATERIAL FOR DRAINAGE 2" MINIMUM DEPTH
⑯ PRESSURE LINE – SIZE PER PLAN





05 SOIL MOISTURE SENSOR

N.T.S. TWO–WIRE INSTALLATION & WIRING DETAIL 328410.75–Ø4



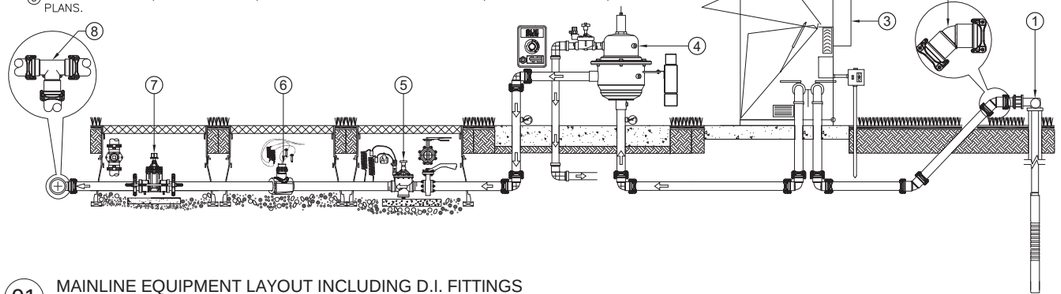
① FINISH GRADE OR TOP OF MULCH
② PLANT MATERIAL (TURF, SHRUB OR G.C.
③ VALVE BOX, 12" STANDARD. COVER, HEAT STAMPED, PB.
④ 2–WIRE CABLE, EXTRA 36" WIRE LOOP – MIN.
⑤ 3–M DBY–6 DIRECT BURIAL CONNECTOR. (QTY 2)
⑥ SOIL NATIVE/AMENDED – FREE OF ROCK & DEBRIS.
⑦ 2–WIRE #14 MAXI CABLE.
⑧ SLEEVE ALL MAXI–CABLE ON THIS PROJECT WITH 1 1/4" MIN, SCH 40 PVC, INSTALL "LONG SWEEP ELBOW'S" IN AND OUT OF VALVE BOX.
⑨ BRICK SUPPORTS 1 OF 4
⑩ 3/4" CRUSHED ROCK

NOTES:
MARK LOCATION OF PULL BOX ON AS–BUILT PLAN. INSTALL 1 1/4" MINIMUM, SCH40 PVC PIPE FOR SLEEVING OF ALL MAXI CABLE AND INTO AND OUT OF THE VALVE BOX, INSTALL WITH LONG SWEEP ELBOWS. THE WIRE COIL WILL BE THE MINIMUM OF 3–FT TO ENSURE BRINGING THE WIRE LOOP ABOVE GROUND FOR TROUBLE SHOOTING. INSTALL PULL BOX EVERY 500–FEET. INSTALL PULL BOX BOTH SIDES OF ALL ROAD CROSSINGS. PULL BOXES ARE NOT SHOWN ON DRAWINGS DUE TO LACK OF SPACE.

06 PULL BOX - FOR 2-WIRE PATH CONTROLLERS

N.T.S. 328480.81–Ø3

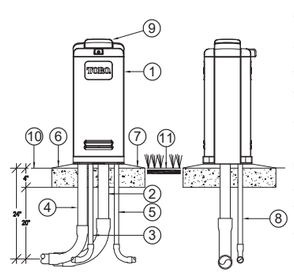
① 8" WATER WELL WITH 20 HP SUBMERSIBLE PUMP BY HOOVER PUMP COMPANY, MODEL NUMBER, "HSF–20 PDV–460/3–E96,M,R3,W,Z "; 200 GPM @ 85 PSI. TWO (2) PUMPS REQUIRED ON THIS PROJECT, SEE PLANS.
② DUCTILE IRON PIPE TO FITTING 45 DEGREE ELBOW, BY HARCO FITTING COMPANY.
③ HOOVER PUMP PANEL CONTROLS INSTALLED INSIDE A FIBERGLASS OUTDOOR ENCLOSURE. PAD SIZE IS 53"x53" SQ.
④ ORIVAL FILTER MODEL NUMBER ORG/B–040–LS, MAX 350 GPM, 4" INLET/OUTLET.
⑤ RAIN BIRD MASTER VALVE MODEL # 300 BPES WITH NIBCO BUTTERFLY SHUT OFF VALVE WITH LEVER HANDLE MODEL # B5–LGL, SIZE PER PLANS.
⑥ FLOW SENSOR, CREATIVE SENSOR TECHNOLOGY, 6" SADDLE TYPE FLOW METER, MODEL # FSI–S60–001.
⑦ SHUT OFF GATE VALVE, NIBCO MFG., CAST IRON, PUSH ON TYPE, SIZE PER MAINLINE, SEE PLANS.
⑧ TEE DUCTILE IRON, HARCO FITTINGS, WITH CLAM SHELL JOINT RESTRAINTS, SIZE PER MAINLINE, SEE PLANS.



01 MAINLINE EQUIPMENT LAYOUT INCLUDING D.I. FITTINGS

N.T.S.

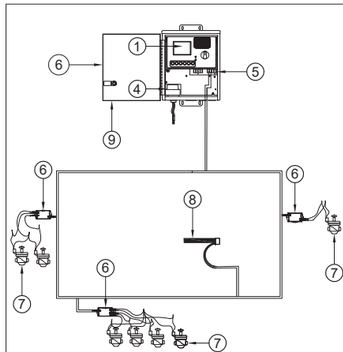
328420.1Ø–Ø8



① TORO SENTINEL PLASTIC PEDESTAL IRRIGATION TIMER.
② 4" CONDUIT FOR TWO–WIRE PATH.
③ 3/4" EARTH GROUND.
④ 1–1/2" OPTIONAL EXTERNAL ANTENNA.
⑤ 3/4" CONDUIT FOR INPUT POWER PER LOCAL AND NATIONAL ELECTRICAL CODES.
⑥ FINISHED SURFACE SLOPE TO DRAIN.
⑦ CONCRETE FLOORING.
⑧ 3/4" CONDUIT FOR SENSOR WIRES.
⑨ STANDARD 400MHZ ANTENNA FOR PRIMARY COMMUNICATION. MOUNTED BETWEEN COVER AND VENT CAP.
⑩ 900MHZ ANTENNA FOR OPTIONAL WIRELESS SOIL SENSOR ADD–ON. MODEL NO. TPS–RX MOUNTED INTERNALLY.
⑪ FINISH GRADE.

02 SENTINEL TWO-WIRE PEDESTAL CONTROLLER

N.T.S. 328498.Ø1–Ø2



① FACE PLATE W/DISPLAY
② MENU BUTTONS N/A
③ ROTARY DIAL N/A
④ TRANSFORMER
⑤ TWO–WIRE PORT
⑥ BASELINE – 1, 2, OR 4 VALVE DECODER
⑦ ZONE VALVE (TYP)
⑧ MOISTURE SENSOR
⑨ OUTDOOR ENCLOSURE

NOTE:
1. THE IRRIGATION CONTRACTOR SHALL REFER TO THE PLANS, DETAILS & SPECIFICATIONS TO DETERMINE THE EXACT CONTROLLER THAT WILL BE PURCHASED TO IRRIGATE THIS PROJECT.

03 TYPICAL 2-WIRE CONTROLLER LAYOUT

N.T.S. 328498.Ø1–Ø3

BRUCE HOWARD & ASSOCIATES, INC.
Landscape Architects, Site Planners & Golf Course Designers

PROJECT:
ESTERO PARKWAY
VILLAGE OF ESTERO

DRAWING TITLE:
IRRIGATION DETAILS

NORTH

SCALE: N.T.S

PROJECT NUMBER

DATE: 07-03-2019

Digitally signed by Bruce J Howard
Date: 2019.10.21 19:37:36 -04'00'
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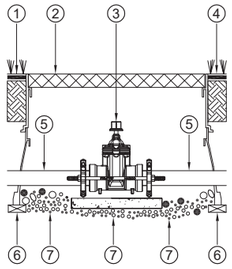
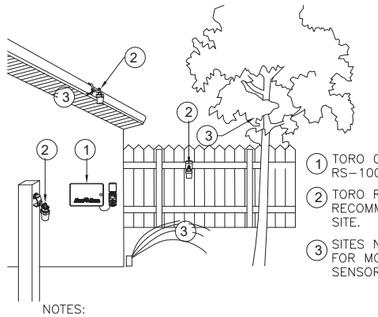


1. PLANT MATERIAL
2. JUMBO VALVE BOX WITH 6" JUMBO VALVE BOX EXTENSION
3. HARCO ISOLATION VALVE WITH 2" SQ OPERATING NUT AND HARCO JOINT RESTRAINTS. VALVE SHALL BE DUCTILE IRON EPOXY COATED
4. FINISHED GRADE
5. PVC MAINLINE PIPE, CLASS 200 UNLESS OTHERWISE NOTED
6. BRICK SHALL BE INSTALLED UNDER VALVE BOXES ON ALL CORNERS
7. WASHED PEA GRAVEL, FILL TO BOTTOM OF PVC PIPE

NOTE:
HARCO FITTINGS, CONTACT CUSTOMER SERVICE AT (434) 845-7904

17 ISOLATION VALVE WITH JOINT RESTRAINTS

N.T.S. 328406.33-05

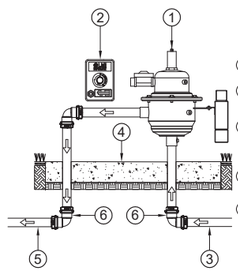


1. TORO CONTROLLER RS-1000 RAIN SENSOR.
2. TORO RS-1000 SENSOR RECOMMENDED MOUNTING SITE.
3. SITES NOT RECOMMENDED FOR MOUNTING RS-1000 SENSOR.

NOTES:
1. SENSOR MAY BE MOUNTED ON FENCE, FENCE POST OR ON GUTTER OF HOUSE.
2. SENSOR SHOULD NOT BE MOUNTED UNDER TREES, IN AREAS AFFECTED BY SPRINKLER SYSTEM OR UNDER EAVE OF HOUSE.

18 RS-1000 SERIES WIRELESS RAIN SENSOR

N.T.S. 328411-38



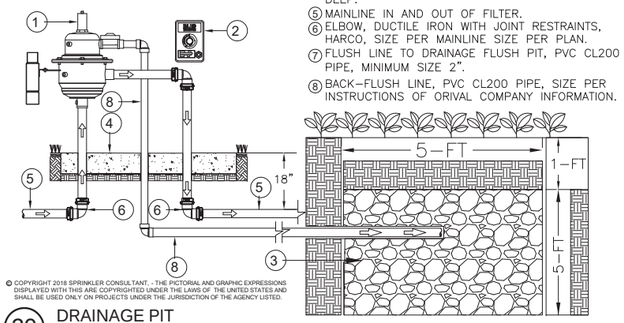
1. FILTER, ORIVAL MODEL # ORG/B-015-LE, 110 G.P.M. MAX, 120 MICRON/120 MESH FOR RAINBIRD INLINE DRIP EMITTER TUBING, .9 GPH EMITTERS SPACED 12" ON CENTER, "FLUX RATE 1.5 FOR WATER WELL", 65 GPM FOR FILTRATION AREA WATER WELL 54 SQ. INCHES, WITH 1" VALVE & BACKFLUSH LINE.
2. AUTOMATIC BACKFLUSH CONTROLLER.
3. MAINLINE, INLET, SEE LEGEND FOR TYPE AND PLAN FOR SIZE.
4. CONCRETE PAD, SIZE PER FILTER, CONTACT ORIVAL FOR PAD SIZE, MINIMUM 6" THICK DEEP.
5. MAINLINE DISCHARGE, SEE LEGEND FOR TYPE AND PLAN FOR SIZE.
6. ELBOW WITH JOINT RESTRAINTS, DUCTILE IRON, HARCO, SIZE PER INLET/OUTLET OF FILTER AND PER PLAN.

1. FILTER MADE BY "ORIVAL".
2. CONCRETE PAD SIZE, 36"x36", SEE PLAN FOR LOCATION.
3. ALL FITTINGS SHALL BE "HARCO DUCTILE IRON WITH JOINT RESTRAINTS", HARCO FITTINGS, "BY HARRINGTON CORP.". (804) 845-7094.
4. AUTOMATIC BACKFLUSH SCREEN FILTER, RAIN BIRD MODEL NUMBER: HS-G-03-LE FILTER DESIGNED FOR 175 GPM FLOW

19 "ORG-SERIES" AUTOMATIC BACKFLUSH FILTER

N.T.S. HYDRAULIC SUCTION SCANNING SCREEN FILTER 328414.30-01

NOTES:
1. SCREEN DRAINAGE PIT WITH SHRUBS.
2. INSTALL FILTER FABRIC ON BOTTOM, ALL SIDES AND TOP OF DRAINAGE PIT TO KEEP SOIL FROM GETTING INTO THE GRAVEL.
3. OPTION BACKFLUSH FILTERS TO RETENTION POND IF AVAILABLE.



1. FILTER, ORIVAL MODEL # ORG/B-020-LE, 110 G.P.M. MAX, 120 MICRON/120 MESH.
2. AUTOMATIC BACKFLUSH CONTROLLER.
3. DRAINAGE PIT TO BACKFLUSH ORIVAL FILTERS, MINIMUM 5' x 5' x 5', SQUARE PIT, 3/4" CRUSHED GRANITE PACKED, STARTING 12" BELOW FINISHED GRADE, PIT WILL BE DEPTH OF A MINIMUM 5-FT.
4. CONCRETE PAD, 36" LONG x 36", WIDE x 6" DEEP.
5. MAINLINE IN AND OUT OF FILTER.
6. ELBOW, DUCTILE IRON WITH JOINT RESTRAINTS, HARCO, SIZE PER MAINLINE SIZE PER PLAN.
7. FLUSH LINE TO DRAINAGE FLUSH PIT, PVC CL200 PIPE, MINIMUM SIZE 2".
8. BACK-FLUSH LINE, PVC CL200 PIPE, SIZE PER INSTRUCTIONS OF ORIVAL COMPANY INFORMATION.

20 DRAINAGE PIT

N.T.S. 328414.30-04

DUCTILE IRON PIPE RESTRAINT NOTES:

1. THIS SCHEDULE SHALL BE UTILIZED ON ALL WATER, SEWER FORCE MAIN OR RECLAIMED WATER SYSTEMS. ALL FITTINGS SHALL BE RESTRAINED TO LENGTHS INDICATED ON THE ABOVE SCHEDULE, AT A MINIMUM.
2. ASSUMPTIONS: PVC CL-200 PIPE, SAFETY FACTOR=1.5, TEST PRESSURE=150PSI, SOIL=GM OR SM, TRENCH TYPE 3, DEPTH OF COVER=30 INCHES FOR 20" AND SMALLER PIPE SIZE OR 36 INCHES FOR 24" AND LARGER PIPE SIZE. FOR D.I.P. W/POLY WRAP, USE RESTRAINT JOINT SCHEDULE FOR PVC PIPE.
3. BENDS AND VALVES: SHALL BE RESTRAINED ON EACH SIDE OF FITTING.
4. VERTICAL OFFSETS: ARE APPROX. 3 FEET COVER ON TOP AND APPROX. 8 FEET COVER ON BOTTOM. PER THE DETAILS, Lu IS THE RESTRAINED LENGTH FOR THE UPPER (TOP) LEVEL. Ll IS THE RESTRAINED LENGTH FOR THE LOWER (DEEPER) LEVEL. ASSUME 45 DEGREE BENDS.
5. TEES: TOTAL LENGTH BETWEEN FIRST JOINTS OR RESTRAINED LENGTH ON EITHER SIDE OF TEE (RUN) SHALL BE A TOTAL DISTANCE OF 30 FEET (MIN). SEE SCHEDULE ABOVE FOR RESTRAINT LENGTH ON TEE "BRANCH" LINE.
6. HDPE TO D.I.P. TRANSITIONS: THE D.I.P. PIPE SIDE SHALL BE RESTRAINED 35 FT (MIN).

LENGTH (L) TO BE RESTRAINED

NOMINAL PIPE SIZE (IN.)	HORIZONTAL BENDS				VERTICAL OFFSETS 45° BENDS (SEE NOTE 4)		VALVES OR DEAD ENDS
	90° BENDS L (FT.)	45° BENDS L (FT.)	22.5° BENDS L (FT.)	11.25° BENDS L (FT.)	UPPER L (FT.)	LOWER L (FT.)	L (FT.)
4	17	7	4	2	11	3	30
6	24	15	5	3	15	4	42
8	31	13	6	3	20	5	55
10	36	15	8	4	23	6	65
12	42	18	9	5	27	7	77
14	48	20	10	5	31	7	87
16	53	22	11	6	35	8	97
18	58	24	12	6	39	9	107
20	63	27	13	6	42	10	118
24	63	27	13	7	49	12	118
30	75	31	15	8	59	14	141
36	86	36	17	9	68	17	163
42	95	40	19	10	76	19	183
48	117	43	21	11	84	21	203

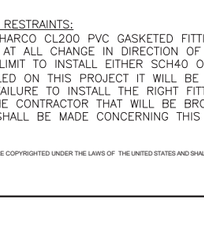
REDUCERS	
SIZE (IN.)	L (FT.)
6x4	22
8x6	23
8x4	39
10x8	22
10x6	40
12x10	23
12x8	41
16x12	42
16x10	58
20x18	22
20x16	42
20x12	74
24x20	36
24x18	51
24x16	64
30x24	50
30x20	77
36x30	50
36x24	89
42x36	48
42x30	89
48x42	48
48x36	88

TEE SEE NOTE 5		
RUN SIZE (IN.)	BRANCH SIZE (IN.)	L (FT.)
4	4	F.O.
4	6	6
	4 < LESS	F.O.
8	8	19
	6 < LESS	F.O.
10	10	29
	8	9
	6 < LESS	F.O.
12	12	40
	10	21
	8 < LESS	F.O.
16	16	60
	12	25
	10	3
	8 < LESS	F.O.
20	20	79
	16	48
	12	9
	10 < LESS	F.O.
24	24	79
	20	54
	16	23
	12 < LESS	F.O.
30	30	101
	24	66
	20	38
	16	4
	12 < LESS	F.O.
36	36	122
	30	90
	24	53
	20	21
	16	1
	12 < LESS	F.O.
42	42	141
	36	113
	30	79
	24	38
	20	3
	16	1
	12 < LESS	F.O.
48	48	160
	42	133
	36	103
	30	66
	24	22
	20 < LESS	F.O.

F.O. = FITTING ONLY

14 DUCTILE IRON PIPE RESTRAINT JOINT SCHEDULE

N.T.S. 328423.56-01



1. LOW VOLTAGE WIRES, 3 MAX
2. STRIP WIRE AND TWIST.
3. INSTALL SCOTCHLOK ELECTRICAL CONNECTOR AND TWIST IN A CLOCKWISE DIRECTION.
4. SPLICE CASE OF WIRE SPLICE WILL BE PREFILLED WITH MOISTURE-RESISTANT GEL. THE WIRE SPLICE MFG., WILL BE 3-M, DBO/B-6 AND DBR/Y-6 CONNECTORS ARE THE ONLY ACCEPTABLE WIRE SPLICE KITS ALLOWED ON THIS PROJECT, ALL OTHERS WILL BE REJECTED.
5. PUSH WIRE NUT TO THE BOTTOM OF CONNECTOR CASE UNTIL COMPLETELY COVERED BY THE GEL COMPOUND. WHEN WIRE'S ARE FULLY SEATED SNAP THE CAP CLOSED.

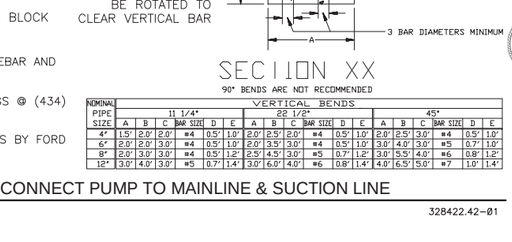
NOTES:

ALL WIRE ROUTED BETWEEN CONTROLLER AND REMOTE CONTROL VALVES WILL BE A CONTINUOUS RUN WITH NO WIRE SPLICES.

VALVE WIRE SPLICES WILL ONLY BE MADE AT THE ZONE VALVE INSIDE THE VALVE BOX ENCLOSURE. WIRE SPLICES FOUND MADE BETWEEN THE CONTROLLER AND THE VALVE WILL BE REJECTED AND THE CONTRACTOR WILL REMOVE AND REPLACE ALL OF THE WIRING AT HIS OWN EXPENSE! FINAL PAYMENT TO THE CONTRACTOR MAY BE WITH HELD BY THE "G.C.", OR THE OWNER UNLESS OR UNTIL ALL IRRIGATION WIRING HAS BEEN INSTALLED CORRECTLY. ALL WIRE SPLICES WILL BE CLEARLY MARKED ON THE AS-BUILT PLAN.

15 PAIGE ELECT DBR WIRE SPLICE CONNECTORS

N.T.S. 328480.02-01

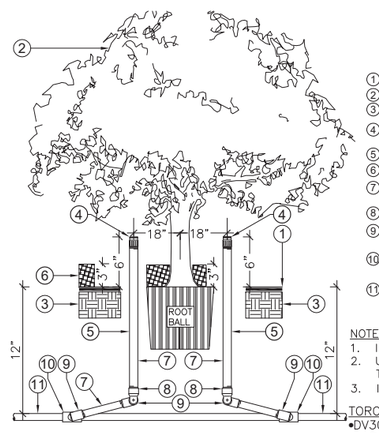


1. FINISHED GRADE OR TOP OF MULCH.
2. PLANT MATERIAL (TURF, SHRUB OR GROUND COVER)
3. PIPE - 3/4" GALVANIZED
4. EL 90', 3/4" GALVANIZED (1 OF 2)
5. COUPLING FEMALE , 3/4" GALVANIZED, (FIPT X FIPT)
6. RAIN SENSOR, TORO SHUTOFF RAIN SWITCH (TRS).
7. CONCRETE BASE 24" (L) x 6" (D).
8. 24V WIRE -14GA PVC JACKET- TO IRRIGATION CONTROLLER. DO NOT SPLICE WIRE BETWEEN RAIN SENSOR AND CONTROLLER.
9. SOIL, NATIVE/AMENDED, CLEAN FREE OF ROCK AND DEBRIS.

NOTE: THE CONTRACTOR WILL EXTEND GALVANIZED PIPE MINIMUM OF 6" BEYOND CONCRETE BASE. EXTEND GALVANIZED PIPE THE MINIMUM OF 10' ABOVE FINISHED GRADE.

16 RAIN SHUT OFF ON POLE MOUNT

N.T.S. 328411-33



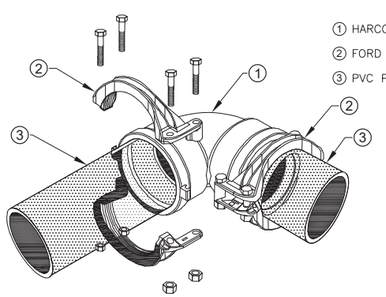
1. FINISH GRADE OR TOP OF MULCH.
2. PLANT MATERIAL, TREES.
3. CLEAN SOIL, AMENDED/NATIVE-FREE OF ROCK AND DEBRIS.
4. BUBBLER NOZZLE - DV BUBBLER-30PC 1/2" GALLON PER MINUTE BUBBLER.
5. SCH80 RISER, MOUNT TWO BUBBLERS (2 PER TREE).
6. MULCH LAYER 3" TO 4" THICK.
7. NIPPLE, 1/2" SCH 80 P.V.C., (THREADS BOTH ENDS) LENGTH AS REQUIRED, SIZE PER NOZZLE INLET.
8. ELBOW, SCH40 PVC, (FIPTxFIPT). SIZE PER NOZZLE INLET.
9. STREET ELBOW, SCH40 PVC, (FIPTxMIPT). SIZE PER NOZZLE INLET.
10. TEE, SCH 40 PVC, SIZE PER PLAN AND INLET SIZE PER BUBBLER.
11. PVC LATERAL, CL200 PVC (NON- PRESSURE PIPE), SEE PLAN FOR SIZE.

NOTES:
1. INSTALL TWO (2) BUBBLER'S PER/TREE IN TREE PIT AREAS.
2. USE A NON-HARDENING TEFLON PIPE SEALANT ON ALL THREADED CONNECTIONS.
3. INSTALL BUBBLER ON SCH80 RISER AND PAINT RISER "BLACK".

TORO DV-30-PC SERIES PRESSURE COMPENSATING BUBBLERS
•DV30-PC: 0.50 GPM FULL CIRCLE, TRICKLE PATTERN
EACH BUBBLER SHALL BE 1/2 G.P.M., MINIMUM, 2 PER TREE!

11 TREE BUBBLER MOUNTED ON SCH 80 RISER

N.T.S. 328403.23-17



1. HARCO CL-200 GASKET PVC TEE, SIZE PER PLAN, SEE DETAILS.
2. FORD METER BOX JOINT RESTRAINT, SIZE PER FITTING & PIPE.
3. PVC PIPE, SEE MATERIAL LEGEND FOR TYPE, SIZE PER PLAN.

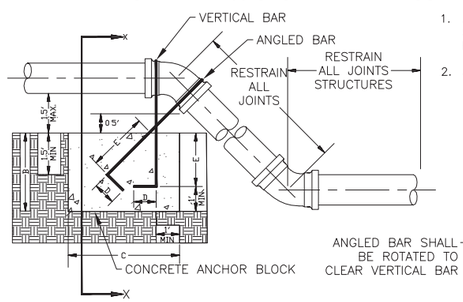
NOTES:
1) INSERT PVC PIPE INTO GASKETED FITTING.
2) INSTALL PIPE JOINT RESTRAINT AS SHOWN.
3) TIGHTEN BOLTS SNUGGLY SO THAT THE JOINT RESTRAINT BITES INTO THE PVC PIPE TO PREVENT THE PIPE FROM MOVING INSIDE THE FITTING.
4) IT IS UNNECESSARY TO INSTALL THRUST BLOCKING ON FITTING WITH JOINT RESTRAINTS.
5) HARCO, CL-200 PVC GASKET ELBOW, HARCO PHONE NUMBER (434) 845-7094.
6) FORD METER BOX PHONE NUMBER (260) 563-3171.

NOTES: CL200 PVC GASKETED FITTINGS WITH JOINT RESTRAINTS:
1) THE IRRIGATION CONTRACTOR SHALL INSTALL ONLY HARCO CL200 PVC GASKETED FITTING WITH FORD METER BOX DUCTILE IRON JOINT RESTRAINTS ON THIS PROJECT AT ALL CHANGE IN DIRECTION OF THE MAINLINE. THE PRESSURE ON THIS PROJECT IS FAR BEYOND THE LIMIT TO INSTALL EITHER SCH40 OR SCH80 PVC FITTINGS.
2) IF SCH40 OR 80 PVC FITTINGS ARE FOUND INSTALLED ON THIS PROJECT IT WILL BE CAUSE TO TERMINATE THIS CONTRACT. IF THE CONTRACT IS TERMINATED FOR FAILURE TO INSTALL THE RIGHT FITTINGS ALL MONIES DUE THE CONTRACTOR SHALL BE FORFEITED AND PAID TO THE CONTRACTOR THAT WILL BE BROUGHT IN TO COMPLETE THE PROJECT CORRECTLY. NO OTHER CONSIDERATIONS SHALL BE MADE CONCERNING THIS STIPULATION.

12 JOINT RESTRAINT DETAIL

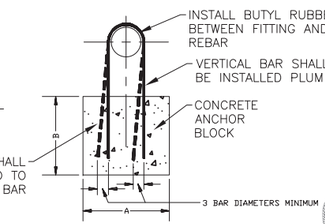
N.T.S. 328422.01-21

HARCO PVC CL-200 GASKETED FITTINGS WITHOUT JOINT RESTRAINTS



1. INSTALL BUTYL RUBBER BETWEEN REBAR AND THE FITTING.
2. HARCO, CL-200 PVC ELBOW FITTINGS @ (434) 845-7094.
3. INSTALL WITH JOINT RESTRAINTS BY FORD METER BOX @ (260) 563-3171.

1. ANGLE & VERTICAL BAR SHALL BE MINIMUM OF 5/8", SEE CHART BELOW. RE-BAR, SHALL BE BENT AT ANGLES SHOWN IN THIS DETAIL.
2. 3" MINIMUM COVER OVER ALL RE-BAR.



SECTION XX
90° BENDS ARE NOT RECOMMENDED

NOMINAL PIPE SIZE	VERTICAL BENDS 11 1/4°						22 1/2°						45°					
	A	B	C	BAR SIZE	D	E	A	B	C	BAR SIZE	D	E	A	B	C	BAR SIZE	D	E
4"	1.5'	2.0'	2.0'	#4	0.5'	1.0'	2.0'	2.5'	2.0'	#4	0.5'	1.0'	2.0'	2.5'	3.0'	#4	0.5'	1.0'
6"	2.0'	2.0'	3.0'	#4	0.5'	1.0'	2.0'	3.5'	3.0'	#4	0.5'	1.0'	3.0'	4.0'	3.0'	#5	0.7'	1.0'
8"	2.0'	3.0'	3.0'	#4	0.5'	1.2'	2.5'	4.5'	3.0'	#5	0.7'	1.2'	3.0'	5.5'	4.0'	#6	0.8'	1.2'
12"	3.0'	4.0'	3.0'	#5	0.7'	1.4'	3.0'	6.0'	4.0'	#6	0.8'	1.4'	4.0'	6.5'	5.0'	#7	1.0'	1.4'

13 "Z" DROP DOWN PIPE CONNECT PUMP TO MAINLINE & SUCTION LINE

N.T.S. 328422.42-01

BRUCE HOWARD & ASSOCIATES, INC.
Landscape Architects, Site Planners & Golf Course Designers

PROJECT:
ESTERO PARKWAY
VILLAGE OF ESTERO

DRAWING TITLE:
IRRIGATION DETAILS

NORTH

SCALE: N.T.S

PROJECT NUMBER

DATE: 07-03-2019

Digitally signed by Bruce J Howard
Date: 2019.10.21 19:38:22 -04'00'
Bruce J. Howard
License #: LA0000371

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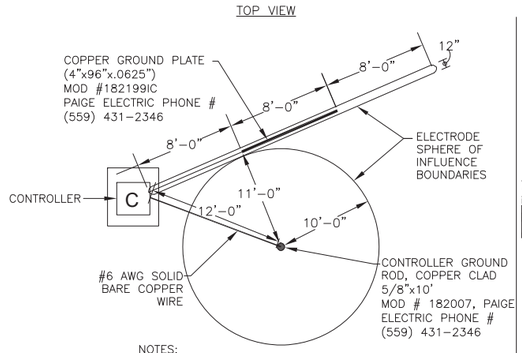
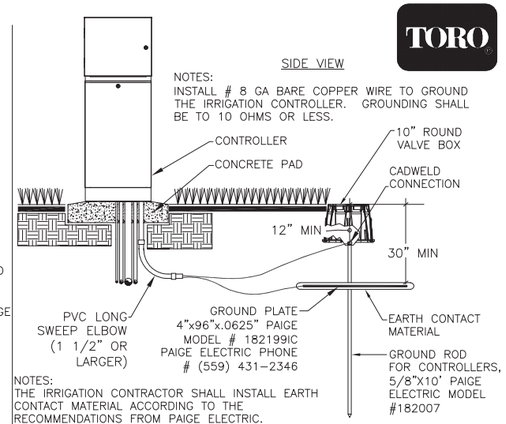
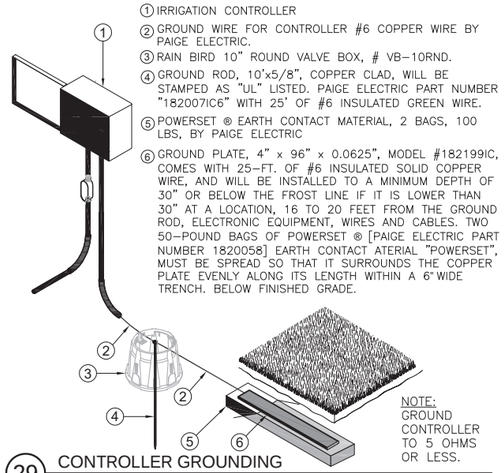




28 GROUNDING TORO SENTINEL SERIES CONTROLLER

N.T.S. 328480.50-27

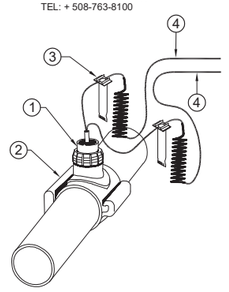


1. IRRIGATION CONTROLLER
2. GROUND WIRE FOR CONTROLLER #6 COPPER WIRE BY PAIGE ELECTRIC.
3. RAIN BIRD 10" ROUND VALVE BOX, # VB-10RND.
4. GROUND ROD, 10'x5/8", COPPER CLAD, WILL BE STAMPED AS "UL" LISTED. PAIGE ELECTRIC PART NUMBER "182007IC6" WITH 25' OF #6 INSULATED GREEN WIRE.
5. POWERSET ® EARTH CONTACT MATERIAL, 2 BAGS, 100 LBS, BY PAIGE ELECTRIC
6. GROUND PLATE, 4" x 96" x 0.0625", MODEL #182199IC, COMES WITH 25-FT. OF #6 INSULATED SOLID COPPER WIRE, AND WILL BE INSTALLED TO A MINIMUM DEPTH OF 30" OR BELOW THE FROST LINE IF IT IS LOWER THAN 30" AT A LOCATION, 16 TO 20 FEET FROM THE GROUND ROD, ELECTRONIC EQUIPMENT, WIRES AND CABLES. TWO 50-POUND BAGS OF POWERSET ® [PAIGE ELECTRIC PART NUMBER 1820058] EARTH CONTACT ATERIAL "POWERSET", MUST BE SPREAD SO THAT IT SURROUNDS THE COPPER PLATE EVENLY ALONG ITS LENGTH WITHIN A 6" WIDE TRENCH. BELOW FINISHED GRADE.

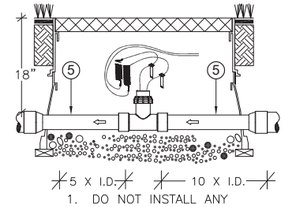
29 CONTROLLER GROUNDING

N.T.S. 328480.50-26

CST
Creative Sensor Technology
TEL: + 508-763-8100



1. FLOW SENSOR – CREATIVE SENSOR TECHNOLOGY SERIES FSI-SXX. SIZE FLOW SENSOR FOR GPM REQUIREMENTS OF SYSTEM. SEE SIZING CHART.
2. PVC SADDLE, SEE MATERIAL SCHEDULE ON PLANS FOR SIZE. CONTRACTOR WILL SPECIFY SIZE OF SADDLE WHEN ORDERING. USE 1 3/4-INCH HOLE SAW ONLY TO DRILL ENTRY HOLE IN PIPE.
3. WATERPROOF WIRE SPLICE, 3M SCOTCHPACK OF EQUIVALENT, 2 SPLICES ARE REQUIRED.
4. IRRIGATION 24V WIRE, FOR FLOW SENSOR, SEE MANUFACTURER SPECIFICATIONS FOR TYPE AND BRAND REQUIRED.
5. PVC MAINLINE PIPE, CLASS 200 UNLESS OTHERWISE NOTED

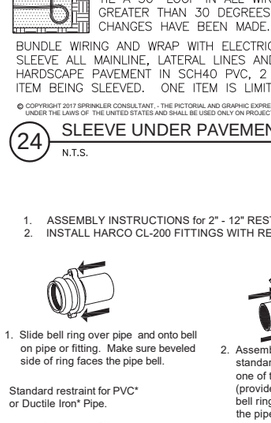


1. DO NOT INSTALL ANY FITTINGS INSIDE THIS AREA RESERVED FOR THE FLOW SENSOR.

INSTALL FLOW SENSOR, 5 PIPE DIAMETERS DOWNSTREAM OF SENSOR & 10 PIPE DIAMETERS UPSTREAM OF THE SENSOR.

30 PVC SADDLE MOUNT FLOW METER

N.T.S. 328485.01-51



1. FINISH GRADE OR TOP OF MULCH
2. PLANT MATERIAL
3. CONCRETE, ASPHALT OR D.G. PAVED SURFACE
4. NATIVE CLEAN SOIL, FREE OF ROCK AND DEBRIS.
5. CLEAN COMPACTED BACKFILL FREE OF ROCK AND DEBRIS
6. WASHED CONCRETE SAND FREE OF ROCK AND DEBRIS
7. 120 VOLT ELECTRICAL WIRE IN PVC SCH 40 CONDUIT (GREY)
8. LATERAL, PVC NON-PRESSURE PIPE, IN SCH 40 PVC SLEEVE
9. MAINLINE, PVC PRESSURE PIPE, IN SCH 40 PVC SLEEVE
10. CONTROL WIRES, IN SCH 40 PVC CONDUIT (GREY)

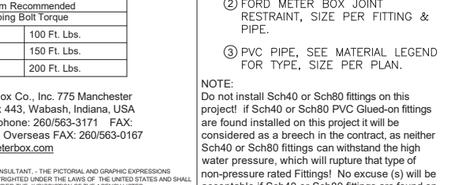
DIMENSION	A	B	C	D	E	F
BELOW GRADE	24"	36"	36"	30"	4"	6"

TIE A 36" LOOP IN ALL WIRING AT CHANGES OF DIRECTION GREATER THAN 30 DEGREES, UNTIE AFTER ALL DIRECTION CHANGES HAVE BEEN MADE.

BUNDLE WIRING AND WRAP WITH ELECTRICAL TAPE AT TEN FOOT INTERVALS. SLEEVE ALL MAINLINE, LATERAL LINES AND CONTROL WIRES BELOW ALL HARDSCAPE PAVEMENT IN SCH40 PVC, 2 DIAMETERS LARGER THEN THE ITEM BEING SLEEVED. ONE ITEM IS LIMITED PER SLEEVE.

24 SLEEVE UNDER PAVEMENT

N.T.S. 328477.01-32

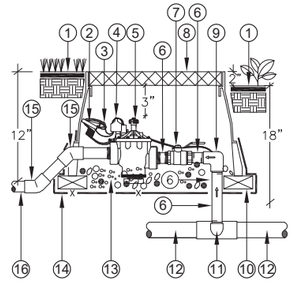


THE SLEEVING CONTRACTOR SHALL INSTALL ALL SLEEVES AS SHOWN ON THESE PLANS AND SHALL INSTALL ROAD CROSSING SLEEVES ON BOTH SIDES OF ALL PAVED ROAD CROSSINGS, WITH A 25'-0" CLEARANCE ON ONE SIDE OF PAVING WITH A 36" RISER ABOVE GRADE TO LOCATE THE SLEEVES AT A LATER DATE. FOR FUTURE IDENTIFICATION OF SLEEVES BY THE IRRIGATION CONTRACTOR, THE SLEEVING CONTRACTOR SHALL PAINT EACH RISER AND CAP USING THE FOLLOWING COLOR CODES, "MAINLINE-BLACK", "LATERAL LINE-BLUE" AND "CONTROL WIRE-RED". DO NOT GLUE CAPS ONTO SLEEVING. SIZE ALL SLEEVES PER THIS PLAN. PAINT PIPE RISERS WITH "KRYLON FUSION" SPRAY PAINT FOR PLASTIC, 2 COATS OF PAINT ARE REQUIRED.

THE IRRIGATION CONTRACTOR SHALL INSTALL (PULL BOX), I.E., 12" STANDARD RAIN BIRD VALVE BOX, ON BOTH SIDES OF ALL PAVED ROAD CROSSING. ELEVATED RISER'S SHALL BE REPLACED WITH PULL BOXES BY THE IRRIGATION CONTRACTOR WHEN THE WIRING IS INSTALLED. INSTALL A ROPE INSIDE OF SLEEVING TO ALLOW PULLING THE WIRE THROUGH THE SLEEVE AT THE TIME OF INSTALLATION.

25 ROAD CROSSING INSTALLATION

N.T.S. 328477.01-33

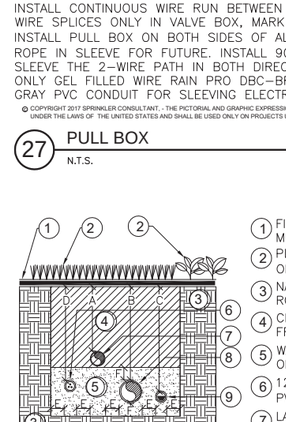


1. FINISH GRADE/TOP OF MULCH.
2. WIRE SPLICE DIRECT BURIAL, 3M- DBRY.
3. WIRE, COILED, 30-INCH LINEAR LENGTH.
4. ID TAG: CHRISTY'S NUMBERED BOTH SIDES.
5. MASTER VALVE: TORO P220 SERIES.
6. NIPPLE, SCH80 PVC, TBE – SIZE PER VALVE INLET.
7. BALL VALVE BRASS 3"
8. VALVE BOX WITH COVER: RAIN BIRD VB-STD.
9. ELBOW, PVC SCH 40, (FIPTxSLIP).
10. BRICK SUPPORTS (1 OF 4).
11. TEE/EL PVC SCH 40 SIZE PER VALVE INLET.
12. PVC MAINLINE PIPE, CL200 UNLESS OTHERWISE MARKED.
13. 3/4-INCH WASHED GRAVEL
14. 1/2" WIRE FILTER FABRIC, WRAP UP ALL SIDES.
15. ELBOW 45^, SCH 40 PVC, (SxS), SIZE-SEE PLAN.
16. PVC LATERAL PIPE, SIZE PER PLAN.

NOTES:
1. INSTALL 45 DEGREE ELBOWS TO ACHIEVE CORRECT DEPTH. USE A NON- HARDENING TEFLON PIPE SEALANT ALL THREADED CONNECTIONS. INSTALL VALVE BOX IN TURF AREAS FLUSH TO GRADE, IN SHRUB OR GROUND COVER AREAS INSTALL A MINIMUM OF 2" ABOVE GRADE.
2. WHEN INSTALLED ON RECLAIMED WATER PROJECTS: INSTALL WITH PURPLE I.D. TAGS AND ORDER MASTER VALVE WITH A PURPLE FLOW CONTROL HANDLE.

26 MASTER VALVE TORO # P220 SERIES WITH BALL VALVE

N.T.S. 328498.05-02



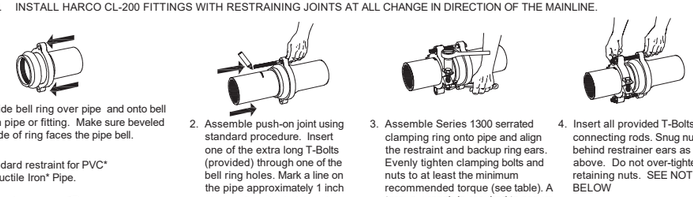
1. FINISH GRADE OR TOP OF MULCH
2. PLANT MATERIAL (TURF, SHRUB OR GROUND COVER)
3. VALVE BOX, 12" STANDARD. COVER, HEAT STAMPED "J.B." RAINBIRD VB-STD WITH HEX BOLT.
4. SOIL NATIVE/AMENDED – FREE OF ROCK & DEBRIS.
5. PVC ELECTRICAL SLEEVE 2" (MIN), GREY CONDUIT, SCH 40 PVC, WITH "LONG SWEEP ELBOW'S.
6. 36" (MIN) WIRE LOOP.
7. BRICK SUPPORTS 1 OF 4
8. 3/4" CRUSHED ROCK
9. 1/2" WIRE CLOTH GOPHER SCREEN, WRAP UP ALL SIDES.

NOTES:
INSTALL CONTINUOUS WIRE RUN BETWEEN CONTROLLER & VALVE. INSTALL WIRE SPLICES ONLY IN VALVE BOX, MARK LOCATION ON AS-BUILT PLAN. INSTALL PULL BOX ON BOTH SIDES OF ALL ROAD CROSSING'S WITH PULL ROPE IN SLEEVE FOR FUTURE. INSTALL 90^ LONG SWEEP ELBOWS, SLEEVE THE 2-WIRE PATH IN BOTH DIRECTIONS OF VALVE BOX. INSTALL ONLY GEL FILLED WIRE RAIN PRO DBC-BR SPLICES. INSTALL ONLY SCH40 GRAY PVC CONDUIT FOR SLEEVING ELECTRICAL WIRE FOR 2-WIRE PATH.

27 PULL BOX

N.T.S. 328477.20-14

1. ASSEMBLY INSTRUCTIONS for 2" - 12" RESTRAINING JOINTS FOR PVC PIPE AND CL-200 HARCO FITTINGS.
2. INSTALL HARCO CL-200 FITTINGS WITH RESTRAINING JOINTS AT ALL CHANGE IN DIRECTION OF THE MAINLINE.



1. Slide bell ring over pipe and onto bell on pipe or fitting. Make sure beveled side of ring faces the pipe bell.

Standard restraint for PVC* or Ductile Iron* Pipe.

1. Assemble spigot pipe end to bell end of pipe or fitting using standard procedure .

2. Assemble push-on joint using standard procedure. Insert one of the extra long T-Bolts (provided) through one of the bell ring holes. Mark a line on the pipe approximately 1 inch shorter than the bolt length.

3. Assemble Series 1300 serrated clamping ring onto pipe and align the restraint and backup ring ears. Evenly tighten clamping bolts and nuts to at least the minimum recommended torque (see table). A torque wrench is required to ensure proper torque.

4. Insert all provided T-Bolts and connecting rods. Snug nuts behind restrainer ears as shown above. Do not over-tighten retaining nuts. SEE NOTES BELOW

Minimum Recommended Clamping Bolt Torque	
2" through 6"	100 Ft. Lbs.
8"	150 Ft. Lbs.
10" and 12"	200 Ft. Lbs.

2. Assembly instructions for Series 1390 clamping rings onto spigot pipe and just behind bell end of pipe or fitting as shown.

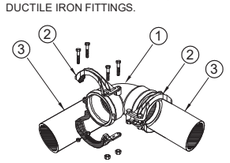
3. Insert all provided connecting rods and nuts as shown and tighten nuts behind restrainers. Do not over-tighten retaining nuts.

The Ford Meter Box Co., Inc. 775 Manchester Avenue, P.O. Box 443, Wabash, Indiana, USA 46992-0443 Telephone: 260/563-3171 FAX: 1-800-826-3487 Overseas FAX: 260/563-0167 http://www.fordmeterbox.com

21 RESTRAINING JOINT ASSEMBLY INSTRUCTIONS

N.T.S. 328422.01-23

ASSEMBLY INSTRUCTIONS for 2" - 12" RESTRAINING JOINTS FOR PVC PIPE AND DUCTILE IRON FITTINGS.

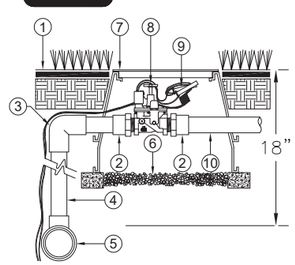


1. HARCO CL-200 GASKET PVC TEE, SIZE PER PLAN, SEE DETAILS.
2. FORD METER BOX JOINT RESTRAINT, SIZE PER FITTING & PIPE.
3. PVC PIPE, SEE MATERIAL LEGEND FOR TYPE, SIZE PER PLAN.

NOTE:
Do not install Sch40 or Sch80 fittings on this project! if Sch40 or Sch80 PVC Glued-on fittings are found installed on this project it will be considered as a breech in the contract, as neither Sch40 or Sch80 fittings can withstand the high water pressure, which will rupture that type of non-pressure rated Fittings! No excuse (s) will be acceptable if Sch40 or Sch80 fittings are found on this project and this Contract shall be terminated.

22 TORO REMOTE CONTROL ZONE VALVE

N.T.S. 328406.05-26



1. FINISHED GRADE
2. PVC MALE ADAPTER (TYP). SIZE PER VALVE INLET & OUTLET & PLAN.
3. ELBOW, SCH40 PVC, SIZE PER PLAN & VALVE INLET/OUTLET
4. PVC MAIN LINE CL200, LENGTH AS REQUIRED, SIZE PER PLAN.
5. PVC CL200 HARCO TEE OR ELBOW (TYP.), SIZE PER PLAN, LAST SERVICE TEE ON LINE INSTALL HARCO ELBOW WITH JOINT RESTRAINTS.
6. GRAVEL (1 CU. FT.)
7. VALVE BOX & COVER
8. ZONE VALVE, TORO P220 SERIES GLOBE REMOTE CONTROL VALVE WITH FLOW CONTROL, SIZE PER PLAN.
9. IRRIGATION CONTROL WIRE, WITH 36" SERVICE COIL AND WATERPROOF WIRE SPLICE CONNECTORS, SEE SPECIFICATION FOR WIRE SIZES.
10. LATERAL LINE, CL 200 PVC, SIZE PER PLAN.

NOTES:
1. USE A NON-HARDENING TEFLON PIPE SEALANT ON ALL THREADED CONNECTIONS.
2. INSTALL VALVE BOX (IN TURF FLUSH TO GRADE), (2" ABOVE GRADE IN SHRUB/G.C.) AND PARALLEL WITH SIDEWALKS AND OTHER PAVED AREAS.

SNAKE PLASTIC PIPE INTO TRENCHES. SEE MANUFACTURERS SPECIFICATIONS.

1. FINISHED GRADE OR TOP OF MULCH.
2. PLANT MATERIAL (TURF, SHRUB OR GROUND COVER).
3. NATIVE CLEAN SOIL, FREE OF ROCK AND DEBRIS.
4. CLEAN COMPACTED BACKFILL FREE OF ROCK AND DEBRIS.
5. WASHED CONCRETE SAND FREE OF ROCK AND DEBRIS.
6. 120 VOLT ELECTRICAL WIRE IN PVC SCH 40 CONDUIT (GREY).
7. LATERAL, PVC NON-PRESSURE PIPE, IN SCH 40 PVC SLEEVE.
8. MAINLINE, PVC PRESSURE PIPE, IN SCH 40 PVC SLEEVE.
9. CONTROL WIRES, IN SCH 40 PVC CONDUIT (GREY).

DIMENSION	A	B	C	D	E	F
1/2" TO 1 1/2" SIZE	12"	18"	18"	30"	4"	6"
2" TO 2 2 1/2" IN SIZE	12"	24"	24"	30"	4"	6"
3" TO 4" AND LARGER	18"	24"	24"	30"	6"	6"

23 GENERAL TRENCHING

N.T.S. 328477.01-31

BH&A
BRUCE HOWARD & ASSOCIATES, INC.
Landscape Architects, Site Planners & Golf Course Designers

PROJECT:
ESTERO PARKWAY
VILLAGE OF ESTERO

DRAWING TITLE:
IRRIGATION DETAILS

NORTH

SCALE:
N.T.S

PROJECT NUMBER

DATE:
07-03-2019

Digitally signed by Bruce J Howard
Date: 2019.10.21 19:40:03 -04'00'
Bruce J. Howard
License #: LA0000371

SHEET NUMBER:
LI-19
OF:

4872 S.W. 72nd Avenue
Miami, Florida 33155
(305)668-3196
Fax(305)668-2871

PUMPS N PARTS, LLC – WILL INSTALL EQUIPMENT FOR RUST REMOVAL. NOTE: THE IRRIGATION CONTRACTOR WILL NOT PARTICIPATE IN INSTALLING THIS PHASE OF THE WORK OTHER THAN TO CALL PUMPS–N–PARTS TO SCHEDULE THE INSTALLATION. HOWEVER, THE CONTRACTOR WILL INCLUDE THE IRON REMOVAL EQUIPMENT IN HIS BID PACKAGE.

1– CHEM–TAINER 165 GALLON VERTICAL BULK STORAGE TANK, 31" D X 58" H, COLOR GREEN, 1 YEAR WARRANTY PRICE $319.40

1– LMI UNI–DOSE U042–281TT CHEMICAL FEED PUMP, 30 GALLON PER DAY, 80 PSI, 240 VOLT, 1 YEAR WARRANTY PRICE $189.95
1– UN–5 5 GALLON CONTAINER OF UNRUST STAIN PREVENTER, WILL LAST AT LEAST 6 WEEKS PRICE $290.95
1– STATIC MIXER PRICE $150.00
TOTAL PACKAGE PRICE $950.30

(PRICES EXCLUDE ANY APPLICABLE TAX)

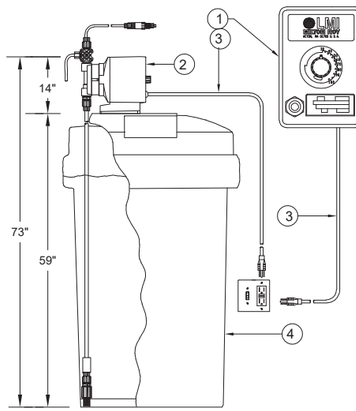
TAMPA BAY RUST SOLUTIONS, LLC WILL: INSTALL THE COMPLETE SYSTEM AS LISTED ABOVE AND PERFORM A WATER TEST FILL THE STORAGE TANK WITH THE APPROPRIATE AMOUNT OF UNRUST STAIN PREVENTER GIVE DETAILED INSTRUCTIONS ON HOW TO USE THE RUST PREVENTION SYSTEM 1 YEAR WARRANTY ON PARTS & LABOR. INSTALLATION PRICE $500.00
CONTACT: DAWN M. SMITH
PUMPS–N–PARTS @ (727) 289–6448

NOTE: THESE PRICES WERE OBTAINED BY THE IRRIGATION CONSULTANT WHICH ARE SUBJECT TO CHANGE AND INTENDED ONLY AS AN APPROXIMATE PRICE ONLY. THE IRRIGATION CONTRACTOR WILL CONTACT PUMPS–N–PARTS TO VERIFY THE EXACT COSTS.

THE IRRIGATION CONTRACTOR IS NOT PERMITTED TO INSTALL THIS EQUIPMENT, FAILURE TO COMPLY WITH THIS SPECIFICATION WILL RESULT GIVING THE OWNER JUST CAUSE TO WITH HOLD EITHER PROGRESS AND/OR FINAL PAYMENTS UNTIL OR UNLESS THIS SPECIFICATION IS FOLLOWED AND THIS EQUIPMENT IS INSTALLED CORRECTLY BY PUMPS–N–PARTS.

36 RID-O-RUST NOTES AND PRICING

N.T.S. 328481–08



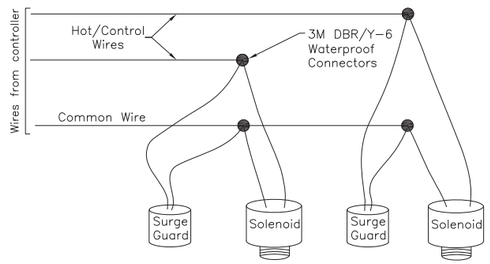
1. SERIES PO CONTROL PANEL (WALL MOUNT).
2. METERING PUMP HOUSING
3. POWER CORD
4. SOLUTION TANK FOR IRON REMOVAL CHEMICALS

NOTES:
1. CUT A PIECE OF SUCTION TUBING TO A LENGTH SO THAT THE FOOT VALVE HANGS JUST ABOVE THE BOTTOM OF THE SOLUTION TANK.
2. ATTACH THE FOOT VALVE TO ONE END OF SUCTION TUBING.
3. SLIDE THE CERAMIC WEIGHT OVER THE TUBING END UNTIL IT CONTACTS THE TOP OF THE FOOT VALVE COUPLING NUT.
4. PLACE FOOT VALVE AND TUBING INTO THE SOLUTION TANK. CHECK THAT THE FOOT VALVE IS VERTICAL AND APPROXIMATELY 2 INCHES FROM THE BOTTOM OF THE TANK OR DRUM. CONNECT THE OTHER END OF TUBING TO THE SUCTION SIDE OF (BOTTOM SIDE) OF THE PUMP HEAD (SEE TUBING CONNECTIONS).
5. SEE DETAIL FOR CONCRETE PAD.

37 SOLUTION TANK WITH AUTOMATIC TIMER (CONTROLLER)

N.T.S. 328481–07

SOLENOID PROTECTION:



This lightning arrester is designed to protect Irrigation solenoids from power and lightning surges.

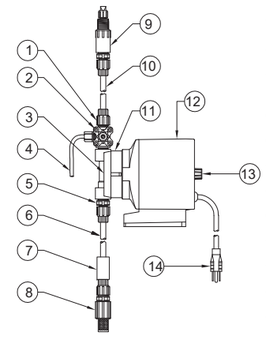
Irrigation industry solenoids were found to fail when exposed to an 8/20 micro–second pulse of 10,000 volts, or less. The addition of the Paige Electric Surge Guard allowed the same solenoids to survive a pulse of 20,000 volts.Features:

- The internal gas tube is ISO 9000 certified and conforms to the standards of UL 497B. Handles up to 10,000 amperes with an 8/20 micro–second pulse. Activates at 75 volts.
- Wired in parallel with solenoid(s), two–wire paths, or light fixtures as shown below. Can withstand several lightning hits.
- Paige part number: 270SSG

34 PAIGE ELECTRIC SOLENOID PROTECTION FROM LIGHTENING

N.T.S. 328480.01–04

ELECTRONIC METERING PUMP



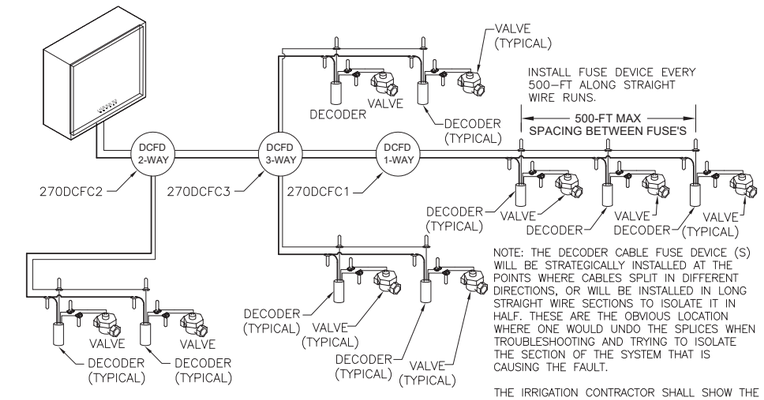
1. COUPLING NUT
2. (4) FOUR FUNCTION VALVE
3. PUMP HEAD
4. RETURN LINE (PRESSURE RELIEF)
5. SUCTION FITTING
6. SUCTION TUBING
7. WEIGHT
8. FOOT VALVE
9. INJECTION CHECK VALVE
10. DISCHARGE TUBING
11. SPACER, E.P.U.
12. METERING PUMP HOUSING
13. STROKE KNOB
14. POWER CORD

LMI MILTON ROY

METERING PUMP WILL BE INSTALLED AT TOP OF THE SOLUTION TANK FOR IRON REMOVAL FROM THE WELL WATER.

35 METERING PUMP COMPONENT DIAGRAM

N.T.S. 328481–02

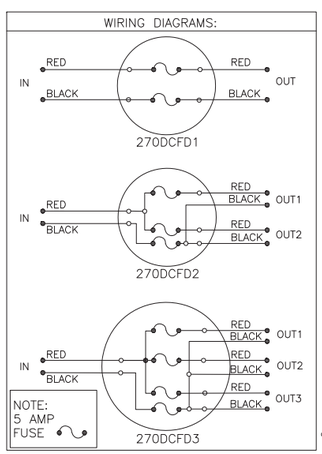


INSTALL FUSING DEVICES AT ALL WIRE SPLICE DIRECTIONAL CHANGES AND LONG STRAIGHT RUNS AND AT EVERY 500–FT SECTION OF WIRE RUNS.

31 PAIGE ELECTRIC DECODER CABLE FUSE DEVICE (DCFD) ™

N.T.S. 328480.01–01

WIRING DIAGRAMS:



QUICK–DISCONNECT DECODER CABLE FUSE DEVICE (DCFD):

SPLITS THE INCOMING SIGNAL FROM THE CENTRAL COMPUTER INTO SINGLE (270DCFD1), TWO (270DCFD) OR THREE (270DCFD3) DIRECTIONS. SEE WIRING DIAGRAMS.

WIRING DIAGRAMS:FUSES — STANDARD 5–AMP MINI AUTOMOTIVE FUSES ARE UTILIZED TO ACT AS CIRCUIT SWITCHES WHEN THEY ARE INSERTED (CLOSED/ON) OR REMOVED (OPEN/OFF.) THE FUSES ALSO PROVIDE LIGHTNING PROTECTION WHEN THE ELECTRICAL SURGES EXCEED THE CAPACITY OF THE 5–AMP FUSE(S.) THE ISOLATION OF CIRCUIT SECTIONS ELIMINATES OR MINIMIZES ELECTRONIC COMPONENT FAILURE.

TEST POSTS — THESE POSTS (SILVER DOTS IN THE WIRING DIAGRAMS TO THE RIGHT) ARE ACCESSIBLE WHEN THE THREADED CAP IS REMOVED. THIS ALLOWS THE MEASUREMENTS OF VOLTAGE AND CURRENT FLOW. IT MAY BE NECESSARY TO USE A "TRUE RMS" MULTI–METER TO PERFORM THESE TESTS. CONSULT WITH THE MANUFACTURER OF THE DECODER SYSTEM.

- VOLTAGE CAN BE MEASURED BY CONNECTING THE PROBES OF THE METER TO THE RED/BLACK POSTS
- CURRENT FLOW CAN BE MEASURED WHEN A FUSE IS REMOVED AND THE PROBES OF AN IN–LINE AMP METER ARE CONNECTED TO THE POSTS ON EACH SIDE OF THE EMPTY FUSE HOLDER.

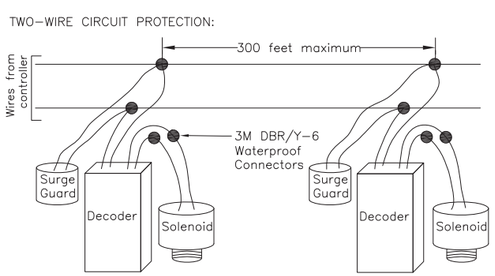
WATER TIGHT — A RESIN IS USED TO WATERPROOF THE WIRE LEADS.

WIRE LEADS — ALL WIRES ARE 14 AWG, TYPE UF/TWU DIRECT BURIAL, 36" LONG. THIS ALLOWS THE ASSEMBLY TO BE BROUGHT ABOVE GRADE WHEN TROUBLESHOOTING AND ACCESSING THE FUSES.

32 PAIGE ELECTRIC DECODER CABLE FUSE DEVICE (DCFD) ™

N.T.S. 328480.01–02

TWO–WIRE CIRCUIT PROTECTION:



THE IRRIGATION CONTRACTOR WILL INSTALL PAIGE ELECTRIC SURGE PROTECTION ON THIS PROJECT IN ACCORDANCE WITH THE SPECIFICATION OF PAIGE ELECTRIC.

THIS LIGHTNING ARRESTER IS DESIGNED TO PROTECT IRRIGATION DECODER TWO–WIRE PATHS AND SOLENOIDS FROM POWER AND LIGHTNING SURGES. IRRIGATION INDUSTRY SOLENOIDS WERE FOUND TO FAIL WHEN EXPOSED TO AN 8/20 MICRO–SECOND PULSE OF 10,000 VOLTS, OR LESS. THE ADDITION OF THE PAIGE ELECTRIC SURGE GUARD ALLOWED THE SAME SOLENOIDS TO SURVIVE A PULSE OF 20,000 VOLTS. WHEN USED IN IRRIGATION TWO–WIRE SYSTEMS, A SURGE GUARD DEVICE SHOULD BE INSTALLED ALONG THE PATH SO THAT NO DECODER IS MORE THAN 300 FEET AWAY FROM IT. FEATURES:

- THE INTERNAL GAS TUBE IS ISO 9000 CERTIFIED AND CONFORMS TO THE STANDARDS OF UL 497B. HANDLES UP TO 10,000 AMPERES WITH AN 8/20 MICRO–SECOND PULSE. ACTIVATES AT 75 VOLTS.
- WIRED IN PARALLEL WITH SOLENOID(S), TWO–WIRE PATHS, OR LIGHT FIXTURES AS SHOWN BELOW. CAN WITHSTAND SEVERAL LIGHTNING HITS.
- PAIGE PART NUMBER: 270SSG

33 PAIGE ELECTRIC SURGE GUARD PROTECTION FOR 2-WIRE

N.T.S. 328480.01–03

DETAIL REPORT

NUMBER	TITLE	DETAIL
01/LI–17	MAINLINE EQUIPMENT LAYOUT INCLUDING D.I. FITTINGS	328420.10–08
02/LI–17	SENTINEL TWO–WIRE PEDESTAL CONTROLLER	328498.01–02
03/LI–17	TYPICAL 2–WIRE CONTROLLER LAYOUT	328498.01–03
04/LI–17	SB–BLA LIGHTNING ARRESTOR INSTALLATION & WIRING	328498.01–04
05/LI–17	BL–5315B BISENSOR SOIL MOISTURE SENSOR	328410.75–04
06/LI–17	PULL BOX – FOR 2–WIRE PATH CONTROLLERS	328480.81–03
07/LI–17	PUMP START/STOP RELAY	328498.75–01
08/LI–17	6" POP–UP SPRINKLER – IRRITROL	328498.10–01
09/LI–17	12" POP–UP SPRINKLER – IRRITROL	328498.10–02
10/LI–17	PIPE RESTRAINT SYSTEM	328422.01–20
11/LI–18	TREE BUBBLER MOUNTED ON SCH 80 RISER	328403.23–17
12/LI–18	JOINT RESTRAINT DETAIL	328422.01–21
13/LI–18	"Z" DROP DOWN PIPE CONNECT PUMP TO MAINLINE	328422.42–01
14/LI–18	DUCTILE IRON PIPE RESTRAINT JOINT SCHEDULE	328422.56–01
15/LI–18	PAIGE ELECT DBR WIRE SPLICE CONNECTORS	328480.02–01
17/LI–18	ISOLATION VALVE WITH JOINT RESTRAINTS	328406.33–05
18/LI–18	WR–2 SERIES WIRELESS RAIN SENSOR	328411–38
19/LI–18	ORIVAL AUTOMATIC BACKFLUSH FILTER	328414.30–01
20/LI–18	DRAINAGE PIT	328414.30–04
21/LI–19	RESTRAINING JOINT ASSEMBLY INSTRUCTIONS	328422.01–23
22/LI–19	TORO REMOTE CONTROL ZONE VALVE	328406.05–26
23/LI–19	GENERAL TRENCHING	328477.01–31
24/LI–19	SLEEVE UNDER PAVEMENT	328477.01–32
25/LI–19	ROAD CROSSING INSTALLATION	328477.01–33
26/LI–19	MASTER VALVE TORO # 252 SERIES WITH BALL VALVE	328498.05–02
27/LI–19	PULL BOX	328477.20–14
28/LI–19	GROUNDING DETAIL FOR BASELINE 3200 SERIES CONTROLLER	328480.50–27
29/LI–19	CONTROLLER GROUNDING	328480.50–26
30/LI–19	PVC SADDLE MOUNT FLOW METER	328485.01–51
31/LI–20	PAIGE ELECTRIC DECODER CABLE FUSE DEVICE (DCFD) ™	328480.01–01
32/LI–20	PAIGE ELECTRIC DECODER CABLE FUSE DEVICE (DCFD) ™	328480.01–02
33/LI–20	PAIGE ELECTRIC SURGE GUARD PROTECTION FOR 2–WIRE	328480.01–03
34/LI–20	PAIGE ELECTRIC SOLENOID PROTECTION FROM LIGHTENING	328480.01–04
35/LI–20	METERING PUMP COMPONENT DIAGRAM	328481–02
36/LI–20	RID–O–RUST NOTES AND PRICING	328481–08
37/LI–20	SOLUTION TANK WITH AUTOMATIC TIMER (CONTROLLER)	328481–07
39/LI–22	IRRIGATION SPECIFICATIONS	328489.01–26
40/LI–23	BASELINE EQUIPMENT NEEDED FOR 3200 SERIES CONTROLLER	328410.75–10
41/LI–23	TORO EQUIPMENT NEEDED FOR SENTINEL CONTROLLER	328498.01–01
42/LI–23	FLOW SENSOR – MASTER VALVE COMBINATION	328498.05–01
43/LI–23	SHRUB AND GROUND COVER DETAIL FOR 12" HI–POP SPRAY	328403.30–10
44/LI–23	SHRUB RISER RAINBIRD SPRAY SPRINKLER	328403.22–01
45/LI–24	PUMP STATION CONCRETE PAD DETAIL	328487.01–07

RUST REMOVAL EQUIPMENT:
DUE TO THE FACT THE WATER SOURCE ON THIS PROJECT IS WATER WELLS IT MAY BE THE WELL'S WILL CONTAIN A HIGH DEGREE OF IRON, WHICH CAN STAIN THE PROPERTY. THE IRRIGATION CONTRACTOR SHALL ARRANGE AND PAY FOR A IRON WELL TEST THAT WILL SHOW IRON CONTENT, IF ANY, IN THE WATER WELL. IF THE IRON COUNT IS HIGH ENOUGH .3 PPM THE IRRIGATION CONTRACTOR SHALL INCLUDE ALL THE REQUIRED IRON REMOVAL EQUIPMENT RECOMMENDED BY PUMPS–N–PARTS, REMOVE THE IRON. PLEASE CONTACT MS. DAWN SMITH AT (727) 289–6448 AND ORDER AND PAY FOR A IRON TEST. THE IRRIGATION CONTRACTOR MAY CONTACT "RID–O–RUST" AT (866) 357–5063 AND GET THE NAME OF A WATER LABORATORY TO TEST FOR PARTS PER MILLION OF IRON IN THE WATER.

IF THE IRON TEST IS HIGH ENOUGH TO WARRANT THE INSTALLATION OF THE IRON REMOVAL EQUIPMENT THE IRRIGATION CONTRACTOR SHALL INCLUDE THIS AMOUNT ON THE INITIAL PROJECT BID AND SHALL INSTALL THIS EQUIPMENT PRIOR TO THE COMPLETION OF THIS PROJECT. THE IRRIGATION CONTRACTOR SHALL TURN OVER TO THE LANDSCAPE ARCHITECT THE IRON TEST AND INVOICE TO SUB–CONTRACT THE INSTALLATION OF THE IRON REMOVAL EQUIPMENT AND THE PAID INVOICE TO THE SUB–CONTRACTOR PRIOR TO THE FINAL WALK THROUGH INSPECTION.

BRUCE HOWARD & ASSOCIATES, INC.
Landscape Architects, Site Planners & Golf Course Designers

PROJECT:
ESTERO PARKWAY
VILLAGE OF ESTERO

DRAWING TITLE:
IRRIGATION DETAILS

NORTH

SCALE: N.T.S

PROJECT NUMBER

DATE: 07-03-2019

Digitally signed by Bruce J Howard
Date: 2019.10.21 19:40:53 -04'00'
Bruce J. Howard
License #: LA0000371

SHEET NUMBER: LI–20
OF:

4872 S.W. 72nd Avenue
Miami, Florida 33155
(305)668–3196
Fax(305)668–2871

NOTE: DISCHARGE PIPES & HEADER TO IRRIGATION MAIN SHALL BE SCHED 40 GALVANIZED STEEL PIPE WITH GALV. ROLL GROOVE FITTINGS. PUMP DROP PIPE SHALL BE HDPE HEAT FUSED OR SCHED 40 GALV. STEEL. SET PUMP 80' ON 3" PIPE. INSTALL MOTOR CABLE SPLICE BETWEEN MOTOR AND CONTROL PANEL IN NEMA 4X JUNCTION BOX ADJACENT TO WELL IN ACCORDANCE WITH ELECTRICAL CODES.

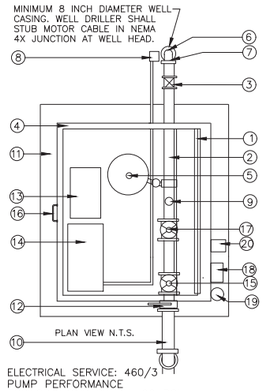
WELL DRILLER SHALL NOTIFY THE PUMP SYSTEM MANUFACTURER IN WRITING WITHIN 24 HOURS OF DEVELOPING THE WELL IF THE WELL PUMPING LEVEL IS GREATER THAN 60' BELOW FINISHED GRADE AFTER 8 HOURS OF CONTINUOUS PUMPING AT 125% OF THE DESIGN FLOW BELOW.

PROVIDE MINIMUM OF 4' CLEARANCE ON ALL SIDES OF PUMP SYSTEM HOOVER FLOWGUARD WELL SYSTEM REMOTE CONTROL, COMMUNICATION AND FEATURES: COMMUNICATION VIA CELLULAR MODEM. USER DEFINED INTERNET BASED CONTROL PARAMETERS USING STANDARD WEB BROWSER WITH EVENT LOGGING AND EMAIL ALERTS FOR WARNINGS AND ALARMS AS FOLLOWS:

- X HMI CONTROL INTERFACE AND DISPLAY ON CONTROL PANEL
- X MAXIMUM GALLON PER MINUTE USAGE WITH ADJUSTABLE TIME DELAY AND NUMBER OF RESTART ATTEMPTS
- X MINIMUM TOTAL DAILY WATER USAGE
- X DAILY, MONTHLY AND ANNUAL WATER USAGE BUDGETS
- X GRAPHING REAL TIME & HISTORICAL FLOW, AND PRESSURE LAKE LEVEL AND SYSTEM EVENTS WITH TIME AND DATE SHOWN
- X RAIN GAUGE PRECIPITATION REPORTING, ADJUSTABLE SHUTDOWN
- X HISTORIC WATER USAGE BY DAY AND MONTH
- X VFD FAULT/STARTER OVERLOAD FAULT SHUTDOWN
- X POWER OFF/ON ALERT
- X PUMP RAPID CYCLE
- X PUMP LOSS OF PRIME
- X WATER LEVEL CONTROL, GRAPHING, ALERTS AND ALARMS

PUMPS SHALL BE "OR EQUAL" SUPPLIERS:
TWO (2) RECOMMENDED OR EQUAL SUPPLIERS:

1. HOOVER PUMPS
   a) Contact: KEVIN CAVAIOLI
   b) Office Phone: (954) 971-7350
2. SULLIVAN ELECTRIC PUMPS
   a) Contact: GARY SULLIVAN
   b) Office Phone: (561) 588-5886



SAFETY FEATURES:
PRESSURE DEMAND:
1. TRANSIENT SURGE
2. LOSS OF PRIME
3. HIGH FLOW

1. 4' X 4' FIBERGLASS REINFORCED ENCLOSURE WITH FOREST GREEN GELCOAT FINISH
2. GALVANIZED STEEL DISCHARGE HEADER PIPE WITH GALVANIZED ROLL GROOVE FITTINGS
3. CHECK VALVE
4. 4' x 4' ALUMINUM SKID BOLTED TO CONCRETE PAD
5. PRESSURE TANK
6. 6" SUBMERSIBLE PUMP/MOTOR IN WELL 25 HP
7. WELL SEAL IN WELL
8. J-BOX WITH UL PVC CONDUIT TO CONTROL PANEL
9. PRESSURE TRANSDUCER
10. " X 36" PVC SCHED 40 PLAIN END PIPE FOR CONNECTION TO IRRIGATION MAIN
11. 3 1/2" X 53 1/2" X 4" REINFORCED CONCRETE PAD 4,000 PSI STRENGTH AT 28 DAYS
12. DISCHARGE BUTTERFLY VALVE
13. VARIABLE FREQUENCY DRIVE
14. CONTROL PANEL UL LISTED ASSEMBLY MAINTAIN 42" CLEARANCE
15. SHUTOFF VALVE CONNECTED TO HOOVER FLOWGUARD
16. LOCKABLE HANDLE
17. MAGNETIC FLOW SENSOR
18. FG3, 2 WIRE 96 STATION IRRIGATION CONTROLLER
19. FLOWGUARD RAIN GAUGE ON 8' POLE
20. ELECTRICAL SERVICE CHASEWAY TO CONTROL PANEL

ELECTRICAL SERVICE: 460/3
PUMP PERFORMANCE
300 GPM @ 250 TDH, 90 PSI

HOOVER PUMPING MODEL: HSF-25PDV-460/3-E96,M,R3,W,Z
Pompano Beach, Florida, Tel 954-971-7350

FILE: PN15140.DWG 03/28/19

ESTERO PARKWAY EAST AND WEST SUBMERSIBLE PUMP SYSTEM DETAIL FIBERGLASS ENCLOSED WELL SUCTION VARIABLE FREQUENCY DRIVE (VFD) PRESSURE DEMAND HOOVER FLOWGUARD®

HOOVER PUMPING SYSTEMS

Power & Minimum Wire Size Electrical Service Requirements

DATE: 8 March 2019
TO: William B. Curtis, Landscape Sprinkler Design
FROM: Kathleen VanKuren, Hoover Pumping Systems
RE: Estero Parkway East Pump System PN15140 - Irrigation Pump System Minimum Wire Size

Thank you for working with us to supply a Hoover Pumping Systems pump system specifically manufactured for the above referenced project. The Tables below show the electric service configurations required based on the voltage and phase in the order of preference. **This information must be given to the professional designing the pump system electrical service.**

Sign Approval	Voltage	Phase	Hertz	Panel Connections
	460	Three	60	4 Wires (A, B, C, Ground)

Approval Signature Print Name Date Company Name

The Hoover Pumping Systems pump station is supplied with an Underwriters Laboratories® listed enclosed Industrial Control Panel assembly. The Control Panel assembly contains all of the pump system controls, a main disconnect, and a ground connection. All panel penetrations by the installing electrician must use fittings and methods rated NEMA 4 or NEMA 4X. A separate service disconnect is required. Based on the information provided:

The **minimum** labeled wire size connection to the panel is: **#6** AWG [1] copper. Note that **larger** wires may be required to limit voltage drop. Our recommendation, for best operation, is to size conductors for **no more than 3% voltage drop** [2] at panel listed full load amperes of: **35** Amps.

The pump station will include the following pump motor and control loads:

Load	Horsepower	Amps [3]	Service Factor
Pump#1	20	31	1.15
Control Panel	N/A	4	N/A

The data here may be used for selection of appropriate electrical supply equipment, including feeder, branch circuit protection, and disconnects.

Please contact Hoover Pumping Systems at (954) 971-7350 for assistance with voltage drop or other application considerations. Thank you.

[1] ref. Underwriters Laboratories 28.3 125% of largest motor FLA plus 100% of all remaining loads and table 28.1
[2] ref. NFPA 70 - National Electrical Code (N.E.C.) 210.19(A) FPN No. 4, 215.2 FPN No. 2
[3] Pump motor Full Load Amps (FLA), larger of: variable frequency drive rated input current (ref. N.E.C. 430-122), or N.E.C. tables 430-148 & 430-150, or motor nameplate

2801 N. Powerline Road • Pompano Beach, Florida 33069 • (954) 971-7350 • Fax (954) 975-0791

CDI#1050 Rev. 1.7

PENTAIR BERKELEY

Pentair Electronic Catalog

Pump Performance Datasheet

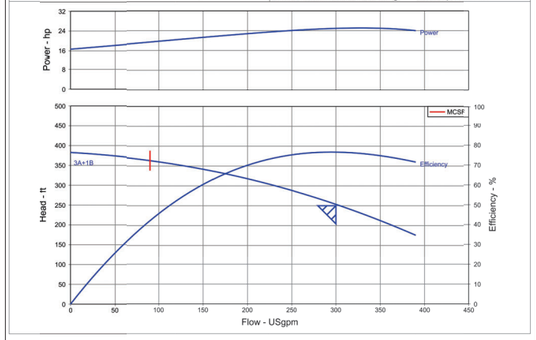
Customer	:	Quote number	:
Customer reference	:	Size	: 6TMH-300
Item number	: Default	Stages	: 4 (3 / 1x / 0x)
Service	:	Based on curve number	: 6TMH-300
Quantity	: 1	Date last saved	: 28 Mar 2019 10:13 AM

Operating Conditions		Liquid	
Flow, rated	: 300.0 USgpm	Liquid type	: --Water
Differential head / pressure, rated (requested)	: 250.0 ft	Additional liquid description	:
Differential head / pressure, rated (actual)	: 253.6 ft	Solids diameter, max	: 0.00 in
Suction pressure, rated / max	: 0.00 / 0.00 psi.g	Solids concentration, by volume	: 0.00 %
NPSH available, rated	: Ample	Temperature, max	: 68.00 deg F
Frequency	: 60 Hz	Fluid density, rated / max	: 1.000 / 1.000 SG
		Viscosity, rated	: 1.00 cP
		Vapor pressure, rated	: 0.00 psi.a

Performance		Material	
Speed, rated	: 3500 rpm	Material selected	: Standard
Impeller diameter, rated	: 3A+1B		
Impeller diameter, maximum	: A		
Impeller diameter, minimum	: C		
Efficiency	: 77.01 %		
NPSH required / margin required	: - / 0.00 ft		
nq (imp. eye flow) / S (imp. eye flow)	: 51 / - Metric units		
MCSF	: 90.00 USgpm		
Head, maximum, rated diameter	: 382.7 ft		
Head rise to shutoff	: 50.92 %		
Flow, best eff. point	: 294.9 USgpm		
Flow ratio, rated / BEP	: 101.73 %		
Diameter ratio (rated / max)	: 100.00 %		
Head ratio (rated dia / max dia)	: 96.56 %		
Cq/Ch^Ce/Cn [ANSI/HI 9.6.7-2013]	: 1.00 / 1.00 / 1.00 / 1.00		
Selection status	: Acceptable		

Pressure Data	
Maximum working pressure	: 165.7 psi.g
Maximum allowable working pressure	: N/A
Maximum allowable suction pressure	: N/A
Hydrostatic test pressure	: N/A

Driver & Power Data (@Max density)	
Driver sizing specification	: Rated power
Margin over specification	: 0.00 %
Service factor	: 1.15 (used)
Power, hydraulic	: 19.21 hp
Power, rated	: 24.94 hp
Power, maximum, rated diameter	: 25.10 hp
Minimum recommended motor rating	: 25.00 hp / 18.64 kW



BERKELEY Pumps / Pentair Water · 293 Wright Street · Delavan, Wisconsin 53115
phone: (888)782-7483 · fax: (800)426-9446 · www.berkeleypumps.com

WELL SPECIFICATIONS

PART 1 - WELL:
1.1 THE CONTRACTOR WILL DRIVE OR DRILL AN 8" WELL FOR THE OPERATION OF THIS IRRIGATION SYSTEM.
1.2 THE WATER WELL WILL PRODUCE 300 GALLONS PER MINUTE AND AT A MINIMUM OF 92 PSI AT THE WELL HEAD AT GROUND LEVEL OR FINISHED GRADE.
1.3 THE WATER WELL DRILLER WILL BE RESPONSIBLE FOR ALL FEES, PERMITS, LICENSES, INSURANCES AND BONDS, WHICH ARE REQUIRED BY STATE OR CITY ORDINANCE.

PART 2-PUMP
2.1 THE WATER WELL DRILLER WILL FURNISH AND INSTALL ONE SUBMERSIBLE PUMP IN THE WELL.
2.2 THE PUMP WILL BE CAPABLE OF PRODUCING 300 GALLONS PER MINUTE AT 90 PSI.
2.3 THE IRRIGATION CONTRACTOR WILL BE RESPONSIBLE TO FURNISH AND INSTALL ALL NECESSARY EQUIPMENT FOR THE OPERATION OF THE WELL PUMP AND ITS CONNECTIONS TO THE IRRIGATION SYSTEM, INCLUDING ITEMS THAT MAY NOT BE ON THE LIST BELOW.
2.5 THE PUMP STATION SHALL BE IN PERFECT WORKING ORDER.
2.6 THE IRRIGATION CONTRACTOR SHALL SUB-CONTRACT WITH THE WATER WELL DRILLER AND WITH A PUMP INSTALLATION CONTRACTOR (NAMES AS SHOWN ON NOTES ON PLANS). IRRIGATION CONTRACTOR, SHALL SUB-CONTRACT WITH A PUMP MFG., TO INSTALL THESE THREE (3) PUMP STATIONS, I.E., HOOVER PUMP COMPANY OR SULLIVAN ELECTRIC PUMPS.

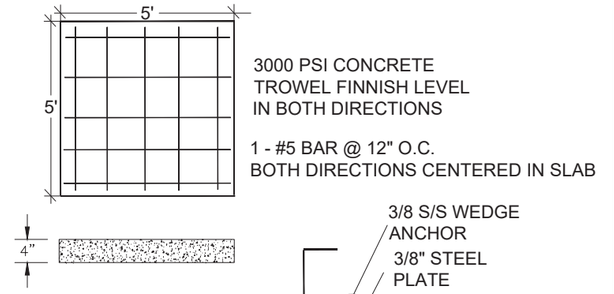
EQUIPMENT NEEDED ON THIS PROJECT:
A) SANITARY WELL SEAL (SEE MFG SPECIFICATIONS) THREE (3) SEALS ARE REQUIRED, ONE SEAL PER EACH PUMP.
B) GALVANIZED DROP PIPE, OR GET DOWN PIPE, SIZE AS REQUIRED - THREE (3) GET DOWN PIPE'S ARE REQUIRED, ONE PER EACH PUMP.
C) SUBMERSIBLE PUMP CABLE , SIZE AS REQUIRED - (SEE MFG SPECIFICATIONS) THREE (3) CABLES ARE REQUIRED, ONE PER EACH PUMP.
D) ALL NECESSARY GALVANIZED OR EPOXY PAINTED FITTINGS REQUIRED FOR THE CONNECTION OF THE SYSTEM. THREE (3) SETS OF FITTINGS, ONE SET PER EACH PUMP.
E) ALL ABOVE GROUND PIPING SHALL BE EITHER STAINLESS STEEL OR HDPE PIPE AND FITTINGS, 1 EACH, PER ONE PUMP SET.
F) ALL NECESSARY ELECTRICAL WIRE, SWITCHES AND CONDUIT, FOR ALL THREE (3) PUMPS, ONE SET EACH, PER EACH PUMP SET.
G) ISOLATION VALVE, ONE (1) ISOLATION VALVE PER EACH PUMP STATION SIZE PER PLAN.
H) SILENT CHECK VALVE, ONE (1) SILENT CHECK VALVE PER EACH PUMP STATION, 1 EACH PER ONE PUMP (1) SET PER EACH PUMP.
I) ABOVE GROUND CHECK VALVE, WHERE REQUIRED BY CODE, 1 EACH PER ONE SET PER EACH PUMP.
J) PUMP FIBERGLASS ENCLOSURE, PAINTED HUNTER GREEN, 48"x48", WITH A 60" x 60" x 4" CONCRETE PAD, WITH VFD, (VARIABLE FREQUENCY DRIVE) AND PUMP CONTROLS, MODEL #.

PART 3 - NOTES:
3.1 THE IRRIGATION CONTRACTOR WILL BE RESPONSIBLE FOR THE INSTALLATION AND CONNECTION OF ALL THE ABOVE EQUIPMENT AND THE CONNECTION TO THE IRRIGATION SYSTEM TO THE TOTAL SATISFACTION OF THE OWNER. POWER FOR THE OPERATION OF THE PUMPS WILL BE 230V THREE (3) PHASE, SUPPLIED TO A JUNCTION BOX AT THE PUMP LOCATION BY THE.
3.2 THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL POWER REQUIREMENTS WITH THE OWNER OR GENERAL CONTRACTOR.

PART 4-SITE CONDITIONS
4.1 THE WELL DRILLER SHALL BE RESPONSIBLE TO VISIT THE SITE AND BECOME FAMILIAR WITH THE SITE LOCATION OF EACH WATER WELL. IT WILL BE HIS RESPONSIBILITY TO NOTIFY THE OWNER IF HE THINKS THE LOCATION SHOULD BE MOVED. THE OWNER WILL NOT BE RESPONSIBLE TO PAY FOR ANY WELL OR PART OF A WELL THAT DOES NOT MEET THE FULL INTENT OF THESE SPECIFICATIONS.

PART 5-PUMP
5.1 THE PUMP SHALL BE MANUFACTURED BY: PENTAIR AND BERKELEY 230V ELECTRICAL SERVICE 3 PHASE. FOR INFORMATION ORDERING THE HOOVER PUMP CONTROLS & ENCLOSURE CONTACT MR. KEVIN CAVAIOLI @ (954) 275-6731 - OR - CONTACT MR. GARY SULLIVAN AT SULLIVAN ELECTRIC PUMPS AT (561) 588-5886, WHICH EVER PUMP STATION IS PURCHASED.
5.2 NOTE: PRIOR TO THE PUMP INSTALLATION THE IRRIGATION CONTRACTOR SHALL TURN OVER TO THE LANDSCAPE ARCHITECT ALL DOCUMENTATION THAT THE ELECTRICAL CONTRACTOR IS LICENSED, BONDED AND INSURED IN THE STATE OF FLORIDA. THE PUMP STATION INSTALLATION SHALL BE COORDINATED WITH TECHNICAL SUPPORT TEAM FROM THE IRRIGATION CONTROL MANUFACTURER SYSTEM PACKAGE.
5.4 TO ENSURE THE SOFTWARE PACKAGE HAS BEEN SET UP TO MEET THE REQUIREMENTS OF THE SPRINKLER SYSTEM AND IS BE ABLE TO SHUT DOWN IN THE EVENT OF AN OVERFLOW CONDITION SUCH AS A BROKEN MAINLINE, THE IRRIGATION CONTRACTOR SHALL SUB-CONTRACT WITH AND PAY THE CONTROLLER MFG., FOR ALL NEEDED TRAINING AND MAINTENANCE SCHOOLING WHICH IS NECESSARY.

CONCRETE SLAB SIZE
TYPICAL SLAB IS 5' x 5' x 4"



45 PUMP STATION CONCRETE PAD DETAIL
N.T.S. 328487.01-07

THIS PROJECT REQUIRES, THREE (3), EIGHT-INCH, (8") WATER WELL'S TO OPERATE THIS SPRINKLER SYSTEM CORRECTLY. PUMP STATIONS MUST HAVE ALL THE ITEMS SPECIFIED ON THE PUMP DETAIL SHEET, I.E. SHEET LI-23.

ESTERO PARKWAY EAST AND WEST PUMP SYSTEMS

SPECIFICATIONS

SINGLE SUBMERSIBLE PUMP SYSTEM
PRESSURE DEMAND FIBERGLASS ENCLOSED
VARIABLE FREQUENCY DRIVE (VFD)

PURPOSE.
To provide a complete prefabricated skid mounted variable frequency drive pressure demand submersible pump system from a sole source company, herein after referred to as the "manufacturer", whose primary business is the manufacture of prefabricated pump systems. The manufacturer will manufacture, install and warrant the system to meet all specified operating requirements described below and in the system detail. The system shall be a Model HSF-25 PDV-460/3-M,R3,W,Z as manufactured by Hoover Pumping Systems of Pompano Beach, Florida USA 954-971-7350 specified below and shown on the plan details. This specification describes the general components and minimal operating requirements and shall not be construed as a manufacturing guide or complete list of required system components and
The contractor shall submit seven (7) complete copies of the shop drawings to the designer for approval, prior to system order placement. The submittal shall contain cut sheets for all system components. To be considered an equal, 12 days prior to bid opening the contractor must submit the following: manufacturer brochure showing prefabricated pump systems manufacturing is the primary business of the manufacturer or division proposed to manufacture the system, written specifications, dimensioned layout detail, electrical schematic, product sheets for all main components, Underwriters Laboratory electrical control panel and "Packaged Pumping System" manufacturer's file numbers, list of 6 projects with similar operating systems with current name and phone number of person responsible for system operation, manufacturer's insurance certificate for general liability showing minimum coverage of $1 million, and written certification from the manufacturer stating the proposed system meets all requirements described in this specification, the detail and the bid documents.

If the data submitted is determined to be an equal by the designer the bidder will be notified prior to the bid date.

FIBERGLASS ENCLOSURE:
The pump station shall be protected by a fiberglass enclosure with chemical and ultraviolet resistant open mold resin with exterior finish that is uniform in color and texture, reinforced with fiberglass and stiffeners for rigidity. The enclosure shall open clear of the equipment for ease of service with the aid of gas filled struts, a stainless steel hinge and latching lockable handle. The enclosure shall be of dimensions adequate to contain the pump system mounted on the skid as shown on the system detail.

MOUNTING ASSEMBLY:
The pump station shall be mounted on a prefabricated aluminum or hot dipped galvanized skid. Pedestals shall be provided to mount the pump motor and control panel assemblies. The entire station shall be installed on a reinforced concrete slab sized as noted on the system detail.

PUMP STATION PERFORMANCE:
The required pump performance with a maximum of 60 feet of suction lift is as follows: a) discharge pressure of 80 psi, b) maximum required flow of 300 GPM each main pump, and c) minimum required flow of 35 GPM.

PUMP AND MOTOR:
The pump shall be a submersible type coupled to a submersible motor rated at 25 HP, voltage and phase to match site electric, 60 Hz. The pump system shall be designed for operation at 3450 RPM.

Submersible Pump 6" and larger: The pump bowls will be of close grained, cast iron ASTM A48 Class 30 with water passages lined to reduce friction losses and shall be free of holes and other detrimental defects. The pump discharge adapter shall be of close grain ductile iron; cast iron shall not be acceptable. The impellers shall be of bronze, enclosed type and dynamically balanced. Impellers shall be securely fastened to the shaft with steel tapered split bushings.

The pump shaft shall be of stainless steel A276 Grade 416 turned, ground and polished. It shall be supported by bronze bearings above and below each impeller. The size of the shaft shall be no less than that determined by ANSI/AWWA Specifications E101, Section A4.3 paragraph 4.3.3. The motor coupling shall be constructed of A276 type 416 stainless steel either keyed or splined as required to fit the motor shaft.

The power cable shall be sized such that the voltage drop will not exceed three percent at the motor rated full load current and voltage. Cables shall be designed specifically for submersible pump service and shall consist of either individually insulated conductors or individual conductors insulated and the whole covered with an outer jacket.

IRRIGATION PUMP CONTROL PANEL:
The control panel assembly shall be Underwriters Laboratories listed in accordance with section 508A for "enclosed industrial control panels." All control devices and electronic auto-sensory circuitry shall be housed in a self-contained weather-resistant NEMA 4 control cabinet. The control cabinet shall contain the following protection and control equipment:

Operation
This station operates as a Variable Frequency Drive (VFD) pressure demand start, reduced-flow retirement system. The station automatically maintains a constant discharge pressure from a pressure transducer input regardless of varying flow demands within the station operating range. The system is equipped with a 'Hand-Off-Auto' (H-O-A) selector switch, and a 'Reset-Normal-Override' selector switch. The self-diagnostic control panel assembly includes an 'Alarm' indicator light, and an operator interface for display of status and diagnostic messages, event lists, and operation history. The operator interface also allows for viewing of system setup parameters.

Hoover-Flow Software features include flow control of pump starts, sequencing and retirement automatic pump alternation; Loss of Prime/No-flow protection, High Pressure protection; diagnostic information, flow and pressure history, service counters, elapsed run time meters, date and time stamping; Phase Loss protection, Phase Unbalance protection, Voltage monitoring and protection, operating mode meters, Service required alerts; Remote Communication Link interface; Hoover Drive control; emergency bypass operation, cooling system control, self-cleaning intake screen control; Booster bypass control; fail-safe data protection.

Drive Fault
In case of a drive fault, including under or over voltage, over current, heatsink thermal, and ground fault, the affected pump will shut off, the 'Alarm' light will illuminate, and the operator interface will display 'Drive Fault'. The pump will remain off until the system is 'Reset'.

Hand – Off – Auto Switch
The pump is equipped with an H-O-A selector switch that operates as follows:

Position		Function
Hand	-	Manual pump start. This position overrides all protective features and start controls.
Off	-	Pump will not run.
Auto	-	Pump will start automatically. In this position, all start controls and protective features are active.

Normal – Override Switch

Operator Interface
A mobile device or PC HMI (Human Machine Interface) shall be provided with status display and control of operating mode, I/O status, system pressure, system flow, pressure and flow setpoints, elapsed run times, fault timer values and presets, display brightness, clock time, alarm and event logs with date and time stamps, and diagnostic information including counters and alarm indicators.

Protection Equipment
- Front operated main power disconnect
- Motor fuses for motor and drive short circuit and ground fault protection
- Metal oxide varistors (MOV) for transient voltage suppression per phase
- Fused control circuitry with blown fuse lighted indicator for each circuit

PENETRATION STANDARD REQUIREMENTS:
All control panel penetrations shall be performed by a licensed electrician to minimum NEMA 4X requirements, and compliant with International Electrotechnical Commissions (IEC) IP56 rating under its IP code, to protect against dust ingression and against any harmful effects from water projected in powerful jets from any direction and protection against corrosion.

VARIABLE FREQUENCY DRIVES (VFD):
Variable Frequency Drives with the following characteristics shall be provided for each main pump motor: 32-bit microprocessor controlled Pulse Width Modulated output, IGBT transistors, line reactors, built-in adjustable PID control, acceleration ramp up and down, forced-air ventilation, variable torque control, 32 character alpharumeric English full text parameter display, single function keys, block parameter access, dual analog outputs, automatic and manual reset, opto-isolated outputs, log of last 30 events retained in memory.

SHUTOFFVALVE:
The valve shall be 230 psi working pressure with the following features:
- Continuous duty industrial solenoid
- Large capacity disk filter on pilot control tubing
- 220 psi polyethylene control tubing with press-o-lock fittings
- Cast iron body and bonnet with polymer coating
- 316 Stainless steel nuts, bolts, washers, shaft and spring
- Stainless steel seat

For irrigation controller use, the solenoid shall be energized to open, the valve wires will be stubbed into a NEMA 4X junction box on the back of the pump system for connection to the controller by the irrigation contractor. For Hoover Flowguard® the solenoid shall be energized to close.

PRESSURE TRANSMITTER:
A 4-20mA-pressure transmitter shall provide a feedback signal to drive PID loops and for system pressure control. The transmitter shall be CE & UL recognized and built with an all stainless steel housing and pressure port, rated to NEMA 4, and able to withstand shock and vibration levels to MIL-STD-810E.

MAGNETIC FLOW METER:
A full-bore magnetic flow sensor shall be provided to control pump retirement and allow display of flow rate and total flow. The flow sensor shall have the following characteristics: no moving parts, unobstructed bore (no pressure loss), NEMA 5/IP 67 protection, international standard traceable calibration, stainless steel 1.4301 flow tube, 316 stainless steel electrodes, overall system accuracy for flows ≥ 1.5 fps of better than +/- 0.5% of actual rate, and for flows <1.5 fps of better than +/- 0.32/v[fps] % of actual rate.

DISCHARGE PIPE MANIFOLD:

The pipe discharge manifold shall be constructed of galvanized steel pipe with galvanized roll groove fittings. A flow-switch, pressure gauge and hose bib will be provided on the station discharge. A wafer type butterfly valve will be provided at pump station discharge.

PUMP DISCHARGE:
The minimum pump discharge size shall be 2" diameter or larger as required for a maximum of 15 feet per second velocity flow. The pipe shall be schedule 40 galvanized steel with galvanized roll groove or threaded fittings. Each discharge shall have a bronze poppet check valve for lines smaller than 3" and cast iron roll groove swing check valve for larger sizes located as shown on the system detail.

Well Source: Each pump will be placed in a separate well. The pump/motor assembly shall be placed directly in the well unless a flow inducer is required for adequate water velocity across the motor. The discharge pipe and submersible cable shall exit the well head through a well seal with a junction box as shown in the system detail.

FLOWGUARD COMMUNICATION LINK:
Hoover supplied communication
- High speed modem, antenna and broadband Data communication plans

THE HOOVER FLOWGUARD
An easy to use Internet based irrigation system management tool providing real time monitoring and control that include:

-- PROACTIVE TROUBLESHOOTING TOOLS
Solve minor irrigation problems before they escalate into major landscape issues.

-- LANDSCAPE MANAGEMENT TOOL
Supplement random "wet check" expense with specifically identified irrigation repairs.
Evaluate data that can be effectively used for troubleshooting performance issues.
Field manually bypass button to override a closed Flowguard shutoff valve in two (2) hour increments each time pressed by field service personnel.
Rain sensor

-- AUTOMATED COMPLIANCE TOOLS
Daily municipal water use restrictions.
Water Management District water usage reporting
Budget water usage to assure compliance with Consumptive Water Use Permit

-- AUTOMATIC E-MAIL ALARMS & WARNINGS
Receive automatic e-mail alarms & warnings when irrigation system problems occur.
Automatic adjustable alarm shut-downs with time delay between restarts.

-- REPORTS
Daily water usage
Specific events, a comprehensive list of alarms, warnings and pump operations

-- Hoover Optional High Speed Modem and Cellular Broadband service.

-- REMOTE CONTROL access to pump control and protection features, including: sequencing and retirement controls and setup parameters.

-- DIAGNOSTIC DATA: Real time and historical graphing of flow, pressure, source water level, water salinity, booster water source pressure, rain sensor, system status and maintenance alerts.

-- WATER USE MONITORING: Set and automatically monitor Daily, Monthly, and Annual water use volumes per Water Management District Use Permit. User - set alarms and warnings, with automatic and/or manual restarts.

BRUCE HOWARD & ASSOCIATES, INC.
Landscape Architects, Site Planners & Golf Course Designers

PROJECT:
ESTERO PARKWAY
VILLAGE OF ESTERO

DRAWING TITLE:
IRRIGATION DETAILS

NORTH

SCALE:
N.T.S

PROJECT NUMBER

DATE:
07-03-2019

Digitally signed by Bruce J Howard
Date: 2019.10.21 19:42:05 -04'00'
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SECTION 02810 – TECHNICAL SPECIAL PROVISION FOR IRRIGATION SYSTEM

1.0 PART 1 GENERAL

1. DOCUMENT, FURNISH AND INSTALL A FULLY AUTOMATIC IRRIGATION SYSTEM, INCLUDING ALL LABOR, MATERIALS, EQUIPMENT AND SERVICES REQUIRED TO PROVIDE A COMPLETE AND FULLY OPERATING SYSTEM, AS SPECIFIED HEREIN AND IN THE DRAWINGS, SPECIFICATIONS, DETAIL'S OR MATERIAL SCHEDULE. THE DRAWINGS, SPECIFICATIONS, DETAILS & MATERIAL SCHEDULE SHALL BE INTERPRETED AS ONE IN THE SAME AND ARE INTENDED TO COMPLEMENT EACH OTHER. FOR INSTANCE IF A DETAIL IS SHOWN, BUT NOT DESCRIBED IN THE WRITTEN SPECIFICATIONS, OR NOT FOUND IN THE MATERIAL LEGEND, ALL, I.E., DRAWINGS, SPECIFICATIONS, MATERIAL LEGEND & DETAILS SHALL BE CONSIDERED AS ONE AND THE SAME.
2. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL MATERIALS, WHICH IS REQUIRED BY THESE DRAWINGS AND DETAILS BUT OMITTED BY THE SPECIFICATIONS, OR VICE VERSA, JUST AS THOUGH ALL MATERIALS ARE REQUIRED BY THESE PLANS. SHOULD THERE APPEAR TO BE DISCREPANCIES OR QUESTIONS OF INTENT, THE CONTRACTOR SHALL REFER THE MATTER TO THE IRRIGATION DESIGNER FOR DECISION, AND THE DECISION OF THE IRRIGATION DESIGNER SHALL BE FINAL, CONCLUSIVE AND BINDING; SHOULD THE IRRIGATION CONTRACTOR HAVE ANY QUESTIONS OR CONCERNS OR CONFLICTS, PLEASE CONTACT THE IRRIGATION DESIGNER, MR. WILLIAM B. CURTIS – (407) 678-6947.
3. THE IRRIGATION CONTRACTOR SHALL REVIEW THE SITE, IRRIGATION DESIGN, DESIGN DETAILS, SPECIFICATIONS & MATERIAL LEGEND THOROUGHLY AS REQUEST FOR CHANGE ORDERS BY THE CONTRACTOR FOR ITEMS MISSED, LEFT OFF OR OMITTED FROM THE BID PACKAGE SHALL NOT BE CONSIDERED. CHANGE ORDER SHALL NOT BE ISSUED ON THIS PROJECT UNLESS A PRODUCT HAS BECOME OBSOLETE, IN WHICH CASE IT SHALL BE CERTIFIED "OBSOLETE" BY THE MANUFACTURER!
4. DESIGN STANDARDS: "AMERICAN SOCIETY OF IRRIGATION CONSULTANTS", IRRIGATION ASSOCIATION, FLORIDA IRRIGATION SOCIETY, ALL LOCAL, STATE AND FEDERAL CODES, STANDARDS & SPECIFICATIONS AND IF APPLICABLE FDOT STANDARDS.
5. THE IRRIGATION CONTRACTOR SHALL INSTALL ONLY IRRIGATION PRODUCTS FOUND ON THE SPECIFICATIONS ON THIS PLAN, OR FOUND ON THE MATERIAL SCHEDULE AND/OR IN THE ANCILLARY MATERIAL SCHEDULE, OR IN THE DETAILS; UNSPECIFIED PRODUCTS INSTALLED SHALL BE REJECTED AND ORDERED BY THE TO BE REMOVED AND REPLACED WITH THE SPECIFIED MATERIALS, AT THE EXPENSE OF THE IRRIGATION CONTRACTOR AND AT NO ADDITIONAL COST TO THE OWNER.

1.2 DESCRIPTION OF WORK:

6. THE WORK INCLUDES, BUT IS NOT LIMITED TO, FURNISHING & INSTALLING AN IRRIGATION SYSTEM AS DESCRIBED IN CONTRACT DOCUMENTS COMPLETE WITH ALL MATERIALS AND ACCESSORIES, SHOWN OR NOT SHOWN, WHICH ARE NECESSARY FOR PROPER FUNCTION.
7. THE AUTOMATIC IRRIGATION SYSTEM SHALL INCLUDE, BUT IS NOT LIMITED TO:
   a. ALL PIPING, PIPE & WIRE SLEEVING UNDER ALL PAVED ROAD CROSSINGS AND SIDEWALKS OR PAVED CROSSINGS OF ANY TYPE, FITTINGS, SPRINKLER HEADS, BUBBLERS, REMOTE CONTROL VALVES, INLINE DRIP PIPE AND EMITTER'S, CONTROLLERS, CONTROL WIRE, SURGE PROTECTION, GROUNDING, FLOW SENSOR, RAIN SHUT OFF SENSOR, REMOTE CONTROL VALVES, MASTER VALVE, QUICK COUPLER VALVES, YARD HYDRANTS, WATER FOUNTAINS (S), MAINLINE ISOLATION VALVES, FILTRATION AND IRON REMOVAL EQUIPMENT WHEN APPLICABLE AND ALL OTHER ANCILLARY MATERIALS NEEDED, THAT MAY BE SHOWN OR NOT SHOWN; TO PROVIDE COMPLETE 100% WATER COVERAGE FOR ALL LANDSCAPE MATERIALS SHOWN ON THESE PLANS AND ON THE LANDSCAPE PLANS.
   b. EXCAVATING AND BACKFILLING IRRIGATION TRENCHES FOR PIPE, WIRE AND FOR ALL REQUIRED SLEEVING FOR BOTH PVC PIPE AND WIRE UNDER ALL PAVED ROAD CROSSINGS.
   c. SITE INSPECTIONS, THIS IRRIGATION SYSTEM REQUIRES (1) PRE-CONSTRUCTION SITE MEETING WITH THE IRRIGATION CONTRACTOR, (3) SITE INSPECTIONS AND (1) FINAL WALK THROUGH INSPECTION. SITE INSPECTIONS SHALL VERIFY PIPE PRESSURE TESTING, 100% WATER COVERAGE AND SHALL CERTIFY THAT ALL SPRINKLER EQUIPMENT SPECIFIED HAS BEEN INSTALLED CORRECTLY. UNAUTHORIZED INSTALLED PRODUCTS SHALL BE ORDERED REMOVED AND REPLACED WITH ORIGINAL SPECIFIED MATERIALS AS SHOWN ON THESE PLANS. THE IRRIGATION CONTRACTOR SHALL CONFIRM THE SITE INSPECTIONS WITH THE LANDSCAPE ARCHITECT TO BE INCLUDED IN HIS BID PRICE TO INSTALL THIS SPRINKLER SYSTEM.
   d. REMOVAL OF ALL TRASH FROM THE SITE WHEN THE WORK HAS BEEN FINISHED.
4. FIVE DAYS IN ADVANCE OF THE WORK BEING COMPLETED THE IRRIGATION CONTRACTOR SHALL MAKE A REQUEST IN WRITING TO THE LANDSCAPE ARCHITECT FOR A FINAL WALK THROUGH SITE INSPECTION BE HELD TO OBTAIN ACCEPTANCE OF THIS WORK BY THE OWNER. AT THE TIME OF THE FINAL WALK THROUGH VISIT THE IRRIGATION CONTRACTOR SHALL TURN OVER ALL INFORMATION AND MATERIAL'S REQUIRED TO THE OWNER.
5. THE IRRIGATION CONTRACTOR SHALL FULLY FAMILIARIZE HIMSELF WITH THE EXISTING SITE CONDITIONS BEFORE SUBMITTING HIS BID. REGARDLESS OF THE SITE CONDITIONS ENCOUNTERED DURING THE ACTUAL WORK A CLAIM FOR EXTRA COMPENSATION SHALL BE DENIED DUE TO ACTUAL SITE CONDITIONS INCONSISTENT WITH THOSE ASSUMED AT THE TIME THE BID WAS SUBMITTED, AS THE IRRIGATION CONTRACTOR SHOULD HAVE CONSIDERED ANY SITE CHANGES IN ADVANCE.

1.3 SCHEDULING:

1. THE IRRIGATION CONTRACTOR SHALL COORDINATED SCHEDULE WITH ALL OTHER TRADES WORKING ON SITE.

1.4 SUBMITTALS AND SITE OBSERVATIONS:

1. SUBMIT PRODUCT CATALOG SHEETS FOR ALL MATERIALS TO BE INSTALLED ON THIS PROJECT, PRIOR TO COMMENCEMENT OF WORK. I.E., PIPE & FITTINGS, CONTROLLERS, RAIN SENSORS, WIRING AND GROUNDING, SURGE PROTECTION, REMOTE CONTROL & MASTER VALVE (S), FLOW SENSOR (S), VALVE BOXES, SPRINKLER HEADS, DIRECTIONAL BORES AND SLEEVES, INLINE DRIP TUBING AND DRIP EMITTERS, & OTHER ITEMS NEEDED SHALL BE SUBMITTED TO THE LANDSCAPE ARCHITECT.
2. THE CONTRACTOR SHALL NOT START WORK UNTIL OR UNLESS HE HAS RECEIVED IN WRITING APPROVAL FROM THE LANDSCAPE ARCHITECT THAT ALL ITEMS SUBMITTED HAVE BEEN REVIEWED AND ACCEPTED BY THE IRRIGATION CONSULTANT.
3. RECORD IRRIGATION DRAWINGS: THE CONTRACTOR SHALL FURNISH RECORD AS-BUILT DRAWINGS OF THE COMPLETE IRRIGATION SYSTEM INSTALLED IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS AND DETAILS SHOWN.
4. CONSTRUCTION DRAWINGS SHALL BE ON THE CONSTRUCTION SITE AT ALL TIMES WHILE THE IRRIGATION SYSTEM IS BEING INSTALLED. CONTRACTOR SHALL MAKE RECORD ALL WORK INSTALLED DURING EACH DAY. ACTUAL LOCATION OF ALL SPRINKLER HEADS, VALVES, CONTROLLERS, WIRING, WATER FOUNTAIN (S), HYDRANT (S), QUICK COUPLER VALVES AND ALL IRRIGATION PIPING AND/OR DRAINAGE PIPING SHALL BE SHOWN ON THE PLANS BY DIMENSIONS FROM EASILY IDENTIFIED BY PERMANENT FEATURES, SUCH AS BUILDINGS, CURBS, FENCES, WALKS OR PROPERTY LINES. SITE INSPECTIONS SHALL BE CANCELED, AND THE CONTRACTOR CHARGED FOR THE SITE INSPECTION, IF THE IRRIGATION DRAWINGS ARE NOT UP TO DATE OR AVAILABLE ON SITE AT THE TIME OF THE SITE VISIT. THE DRAWINGS SHALL BE TO SCALE AND ALL INDICATIONS SHALL BE RECORDED IN A NEAT, ORDERLY AND LEGIBLE WAY. THE RECORD SEPIA SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR OR OWNER 3 DAYS PRIOR TO THE FINAL WALK-THRU SITE OBSERVATION. THE IRRIGATION CONTRACTOR SHALL ALSO PROVIDE AN AS-BUILT PLAN TO THE GENERAL CONTRACTOR OR THE OWNER IN AUTOCAD 2019.
5. SITE INSPECTIONS: 1 PRE-INSTALLATION SITE MEETING IS REQUIRED BETWEEN THE SPRINKLER CONSULTANT AND CONTRACTOR, 2 SITE INSPECTION ARE REQUIRED FOR PIPE PRESSURE TEST, 1 SITE INSPECTION IS REQUIRED FOR SPRINKLER COVERAGE AND 1 FINAL WALK-THRU INSPECTION REQUIRED TO INSPECT THE OVERALL INSTALLATION. SITE INSPECTION ARE CONSIDERED PART OF THIS BID PACKAGE. SITE INSPECTION FEES ARE CHARGED AT A FLAT RATE OF $700 PER SITE VISIT PLUS $1.50 PER MILE FROM OFFICE TO SITE ROUND TRIP BACK TO OFFICE, THE MILEAGE FEE INCLUDES THE LABOR TIME FOR DRIVING. CONTACT SPRINKLER CONSULTANT, BILL CURTIS @ 407 830-7941 FOR SITE INSPECTION FEES.
6. THE IRRIGATION CONTRACTOR SHALL PROVIDE THE OWNER WITH WRITTEN RECOMMENDATIONS, OPERATING INSTRUCTIONS AND MAINTENANCE SCHEDULES FOR THE SYSTEM INCLUDING WATER APPLICATION RATES AND TIME SCHEDULE'S TO APPLY GIVEN PRECIPITATION RATES OF WATER APPLICATION FOR EACH ZONE THAT SHALL NOTE WHICH ZONE COVERS EACH AREA AND 3 WATERING TIME SCHEDULES THAT COVER CHANGES IN SEASONAL WATERING TIME USAGE FOR EACH SEASON.
7. TESTING AND INSPECTION CERTIFICATES SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR OR TO THE OWNER (3) THREE DAYS PRIOR TO FINAL WALK-THROUGH SITE INSPECTION.
8. SUBMIT MANUFACTURER'S OPERATING INSTRUCTIONS AND WARRANTEES TO OWNER (3) THREE DAYS PRIOR TO COMPLETION OF THE WORK, TO INCLUDE ALL EQUIPMENT INSTALLED.

PART 2 – MATERIALS:

1. SEE MATERIAL AND ANCILLARY SCHEDULES AND THE DETAIL SECTION FOR SPRINKLER SYSTEM PRODUCTS THAT ARE SPECIFIED, WHICH SHALL BE INSTALLED ON THIS PROJECT.
2. ALL MATERIALS INSTALLED SHALL BE NEW AND WITHOUT FLAWS OR DEFECTS AND SHALL BE THE MODEL NUMBER SPECIFIED ON THESE PLANS. MATERIAL SUBSTITUTIONS AND/OR USED OR REFURBISHED MATERIALS ARE UNACCEPTABLE.
3. ALL MATERIAL OVERAGES AT COMPLETION OF THIS WORK ARE THE PROPERTY OF THE OWNER AND SHALL NOT BE REMOVED FROM THE SITE, SEE GENERAL CONTRACTOR FOR LOCATION TO STORE ALL UNINSTALLED MATERIALS. THE IRRIGATION CONTRACTOR SHALL TURN OVER TO THE OWNER ALL MATERIALS NOT INSTALLED AT THE FINAL WALK THRU INSPECTION.
4. ALL PVC PIPE SHALL BE DOMESTICALLY PRODUCED RIGID POLYVINYL CHLORIDE & SHALL BEAR THE FOLLOWING MARKINGS: MANUFACTURER'S NAME, NOMINAL PIPE SIZE, SCHEDULE OR CLASS, PRESSURE RATING IN PSI, AND DATE OF EXTRUSION.
5. UNLESS NOTED ON MATERIAL SCHEDULE, PVC PIPE 2 1/2" AND SMALLER, INSTALLED ON PRESSURE SIDE OF VALVES, I.E., MAINLINE PIPE, SHALL BE, CLASS 200, TYPE 1120, CONFORMING TO ASTM D-2241, SDR-21 PVC, SOLVENT WIELD, PRESSURE PIPE.
6. UNLESS NOTED ON MATERIAL SCHEDULE, ALL PVC PIPE IN SIZES 3" AND LARGER SHALL BE CLASS 200, TYPE 1120, CONFORMING TO ASTM D-2241, SDR-21, GASKET BELL PRESSURE PIPE.
7. UNLESS NOTED ON MATERIAL SCHEDULE, ALL LATERAL PIPE 4" AND BELOW SHALL BE, CLASS 200, TYPE 1120, SDR-21 SOLVENT-WELD PVC, CONFORMING TO ASTM D-2241.
8. WHEN APPLICABLE AND NOTED ON IRRIGATION PLANS AND ON THE "MATERIAL SCHEDULE", INSTALL POLYETHYLENE PIPE 1 1/2" AND BELOW, SDR-15, CLASS 100 PSI, TYPE III, GRADE 3, CLASS C, CONFORMING TO ASTM D2239 WITH A MINIMUM OF 100 PSI RATING AND N.S.F. APPROVED, FOR LATERAL LINE PIPE.
9. POLYETHYLENE IRRIGATION FITTINGS:
   a. FITTINGS FOR POLYETHYLENE PIPE SHALL BE INSERT PVC FITTINGS. FITTINGS SHALL CONFORM TO NSF STANDARDS, ASTM D2609, AND SHALL BE ATTACHED WITH TWO (2) DOG-EARED STAINLESS STEEL CLAMPS PER PIPE TO FITTING CONNECTION. PVC SCH40 FITTING SHALL BE MANUFACTURED BY LASCO, STAINLESS STEEL CLAMPS SHALL BE MADE BY OETIKER.
8. POLYETHYLENE INLINE DRIP EMITTER TUBING FOR DRIP APPLICATIONS WHEN APPLICABLE AND SHOWN ON PLANS SHALL BE RAIN BIRD XF BLANK TUBING FOR DRIP APPLICATIONS THAT REQUIRE BLANK PIPE BETWEEN DRIPLINE IN PLANTER BEDS.
9. WHEN APPLICABLE, AND ONLY WHEN SPECIFIED OR NOTED ON PLANS, INSTALL RAIN BIRD XFS SUB-SURFACE INLINE DRIP-EMITTER TUBING MANUFACTURED BY RAIN BIRD SEE MATERIAL SCHEDULE.
10. SEE MATERIAL SCHEDULE FOR INLINE DRIP TUBING EMITTER GPH OUTPUT, ROW SPACING AND SPACING BETWEEN INLINE DRIP EMITTERS.
11. BUBBLERS FOR TREES, WHEN APPLICABLE, SHALL BE PRESSURE COMPENSATED TYPE, SEE MATERIAL SCHEDULE FOR TYPE, GPM AND MANUFACTURER, ALSO SEE DETAILS, INSTALL A MINIMUM OF TWO (2) BUBBLERS PER TREE UNLESS NOTED.
12. ALL DRIP IRRIGATION FITTINGS SHALL BE ANTELCO DB FITTINGS OR RAIN BIRD DRIPLINE FITTINGS, SEE MATERIAL SCHEDULE AND DETAILS FOR MORE INFORMATION.
13. SOLVENT-WELD FITTINGS:
   a. PVC PIPE FITTINGS, SHALL BE SCHEDULE 40, ASTM D2466 & D1785 FOR PVC PIPE, SOLVENT WELD FITTINGS SHALL BE MANUFACTURED BY LASCO INDUSTRIES.
   b. FITTINGS SHALL BEAR MANUFACTURER'S NAME OR TRADEMARK, MATERIAL DESIGNATION, SIZE, AND APPLICABLE I.P.S. SCHEDULE.
   c. PVC CEMENT SHALL MEET ASTM D-2564 AND FF493, NSF/ANSI 14 & 61 FOR POTABLE WATER. PVC SOLVENT CEMENT, CHRISTY'S RED HOT BLUE GLUE. (NO EQUAL)
   d. PVC PRIMER SHALL BE CHRISTY'S RED HOT PURPLE PRIMER, ASTM F-656 AND NSF/ANSI 14, NSF/ANSI 61. (NO EQUAL)
   e. THE IRRIGATION CONTRACTOR SHALL WIPE ALL EXCESS PVC CEMENT OFF THE PIPE AND FITTINGS. THE IRRIGATION CONSULTANT SHALL REJECT THE INSTALLATION OF THE PIPING NETWORK IF EXCESS PVC CEMENT IS NOT WIPED OF THE PIPE AND FITTINGS AND CONTRACTOR SHALL REMOVE AND REPLACE ALL SUCH PIPE & FITTINGS, AT HIS OWN EXPENSE AND AT NO ADDITIONAL COST TO THE OWNER.
15. PVC GASKETED FITTINGS, SHALL BE CLASS-200 AS MANUFACTURED BY THE HARRINGTON CORPORATION (HARCO). INSTALL CL-200 PVC GASKETED FITTINGS ON IRRIGATION SYSTEMS FROM THE POINT OF CONNECTION AT ALL CHANGE IN DIRECTION OF THE MAINLINE PIPE. IF SCH40 or SCH80 GLUED FITTINGS ARE FOUND INSTALLED ON THIS PROJECT THEY SHALL BE REJECTED, ORDERED REMOVED AND REPLACED WITH CL-200 HARCO PVC FITTINGS. NO EQUAL ACCEPTED.
16. DUCTILE IRON FITTINGS WITH JOINT RESTRAINTS, WHEN SPECIFIED ON THESE PLANS SHALL BE INSTALLED ON ALL IRRIGATION SYSTEMS. INSTALL DUCTILE IRON FITTINGS WITH JOINT RESTRAINTS AS MANUFACTURED BY THE HARRINGTON CORPORATION (HARCO) AT ALL CHANGE IN DIRECTION OF MAINLINE, NO EQUAL.
17. VALVE BOXES: INSTALL ONLY RAIN BIRD VALVE BOXES, WHICH ARE CONSTRUCTED TO WITHSTAND TRAFFIC LOADS. VALVE BOXES SHALL BE SIZED TO ALLOW MAINTENANCE OF THE ENCLOSED VALVES WITHOUT EXCAVATION. THE VALVE BOX LID SHALL BE TYPICALLY GREEN IN COLOR, FOR NON-POTABLE OR RECLAIMED WATER SYSTEMS INSTALL PURPLE VALVE BOXES WITH PURPLE LIDS, THE VALVE BOX SHALL BE HEAT STAMPED AND PERMANENTLY LABELED TO IDENTIFY ITS CONTENTS.
18. LOW VOLTAGE WIRING: LOW VOLTAGE WIRE THAT CONNECTS CONVENTIONAL IRRIGATION CONTROLLERS TO THE ZONE VALVES SHALL BE UL/UF LISTED, DIRECT BURIAL WIRE. 600V RATED, SINGLE STRAND SOLID WIRE. SEE THE ANCILLARY PRODUCT SCHEDULE FOR THE WIRE SIZE AND TYPE AS SPECIFIED ON PLANS. FOR 2-WIRE CONTROLLER INSTALL RAIN BIRD MAXI-COM WIRE, I.E., 14-2 AWG, WITH RED JACKET 1ST PR, YELLOW JACKET 2ND PR, BLUE 3RD PR & WHITE 4TH PR.
19. FOR CONVENTIONAL CONTROLLER'S INSTALL, COMMON WIRE, #12 GA. SINGLE STRAND (WHITE), AND HOT WIRE, #14 GA, SINGLE STRAND, (MULTI-COLORED), FROM PAIGE WIRE CO.
20. FOR 2-WIRE PATH CONTROLLER SYSTEMS, UNLESS OTHERWISE CALLED OUT IN THE ANCILLARY MATERIAL SCHEDULE, SHALL BE RAIN BIRD MAXI-CABLE (14-2).
21. FOR 2-WIRE PATH CONTROLLERS THE IRRIGATION CONTRACTOR SHALL INSTALL ALL MAXI-WIRE USED ON THIS PROJECT INSIDE A 1 1/2" GRAY ELECTRICAL SCH40 CONDUIT WITH SCH40 PVC GRAY LONG SWEEP ELECTRICAL ELBOWS.
22. THE IRRIGATION CONTRACTOR SHALL TURN OVER TO THE OWNER ONE (1) HAND HELD RADIO REMOTE (RAIN BIRD LIMR) ALONG WITH ALL EXTRA STOCK SHALL BE TURNED OVER TO THE OWNER UPON COMPLETION OF THE WORK:
   a. TWO (2) SPRINKLER HEADS OF EACH SIZE AND TYPE. b) TWO (2) VALVE KEYS FOR OPERATING VALVES. c) TWO (2) WRENCHES FOR EACH TYPE OF HEAD. d) TWO (2) SPARE CONTROLLER KEYS, e) TEN (10) WIRE SPLICE KITS.

CONTINUED...

PART 3 – EXECUTION

3.1 PRE-INSTALLATION:

1. OBTAIN LOCATION OF EXISTING UTILITIES FROM MUNICIPAL AND PRIVATE UTILITIES AND OBTAIN ALL NECESSARY PERMITS FOR THE GENERAL CONTRACTOR. INSPECT THE SITE FOR EXISTING CONDITIONS THAT MAY AFFECT THE IRRIGATION SYSTEM OPERATION, AND DEVELOP A STRATEGY TO MINIMIZE DISTURBANCE OF EXISTING STRUCTURES, LANDSCAPE MATERIALS AND TREES.
2. EXERCISE CAUTION IN TRENCHING AND OTHER WORK, SO AS NOT TO DAMAGE EXISTING WORK INCLUDING UNDERGROUND CABLES AND PIPES. ANY PAVEMENT CUT, BROKEN OR UNDERMINED DURING INSTALLATION OF THE IRRIGATION SYSTEM SHALL BE FULLY REPLACED WITH IDENTICAL MATERIALS SO THAT THERE IS NO VISIBLE INDICATION OF PATCHING OR REPAVING.
3. DAMAGED UTILITY: SHOULD THE CONTRACTOR DAMAGE ANY UTILITY THE CONTRACTOR SHALL NOTIFY THE RESPECTIVE UTILITY COMPANY AND SHALL BEAR THE FULL COST ACCRUED BY THE UTILITY COMPANY (LABOR AND MATERIAL PLUS DAMAGES IF APPLICABLE) FOR ITS REPAIR.
4. ANY OBJECTIONABLE MATERIALS SUCH AS OLD CONCRETE, BRICKS, OR OTHER DEBRIS ENCOUNTERED DURING THE INSTALLATION OPERATIONS SHALL BE REMOVED FROM THE SITE.

3.2 INSTALLATION

1. PIPE INSTALLATION: FLAG THE LOCATION OF ALL SPRINKLERS, VALVES, CONTROLLERS, SOURCE OF WATER AND ELECTRICAL COMPONENTS IN THE FIELD PRIOR TO INSTALLATION. CONDUCT ALL NECESSARY EXCAVATION FOR THE PROPER INSTALLATION OF PIPELINES AND ACCESSORIES, SEE TRENCHING DETAILS. AFTER INSTALLATION, BACKFILL AND COMPACT THE EXCAVATED SOIL TO ITS NATIVE DENSITY TO MINIMIZE POST-CONSTRUCTION SETTLEMENT IN THE PIPE TRENCH. DEWATER, SHORE AND BRACE AS NEEDED TO COMPLETELY INSTALL THE PIPE.

2. PIPE SHALL BE INSTALLED AT SUFFICIENT DEPTH BELOW GROUND TO PROTECT IT FROM HAZARDS SUCH AS VEHICULAR TRAFFIC. DEPTHS OF COVER SHALL CONFORM TO SCS CODE 430-DD, WATER CONVEYANCE, AS FOLLOWS:
3. VEHICLE TRAFFIC AREAS:
   A. PIPE SIZE IN INCHES, DEPTH OF COVER IN INCHES
      a. 1/2-2 1/2" — 18"-24"
      b. 3-4" — 24"-30"
      c. 6" & LARGER — 30"-36"

   NON-TRAFFIC AND NON-CULTIVATED AREAS:
4. PIPE SIZE IN INCHES, DEPTH OF COVER IN INCHES
      a. 1/2-1 1/4" — 6"-12"
      b. 1 1/2"-2" — 12"-18"
      c. 1/2-3" — 12"-18"
      d. 4" & LARGER — 24"-36"

5. SLEEVING: PROVIDE SEPARATE SLEEVES FOR PIPING AND ELECTRICAL WIRING. INSTALL PIPE SLEEVE WITH A MINIMUM WALL THICKNESS EQUAL TO THE THICKNESS OF SCHEDULE 40 PVC PIPE. WHEN APPLICABLE JACK AND BORE PIPING UNDER TRAFFIC AREAS, AVOID PLACEMENT OF JOINTS UNDER PAVEMENT. PROPER BACKFILL AND COMPACTION PROCEDURES SHALL BE FOLLOWED. INSTALL ONLY TEFLON PIPE SEALANT ON ALL THREADED CONNECTIONS. ALL SLEEVES SHALL BE TWICE THE DIAMETER OF THE PIPE OR WIRE BEING SLEEVED.
6. DUCTILE IRON FITTINGS WITH JOINT RESTRAINT: FOR IRRIGATION SYSTEMS WITH PRESSURE GREATER THAN 120 PSI AT THE P.O.C., ALL FITTINGS 2 1/2" AND ABOVE INSTALLED ON PVC BELL END GASKET MAINLINE SHALL BE MADE BY INSTALLING "HARCO" DUCTILE IRON FITTINGS WITH JOINT RESTRAINT'S AT ALL MAINLINE CHANGE IN DIRECTION. IT IS NOT REQUIRED TO THRUST BLOCK DUCTILE IRON FITTING INSTALLED WITH JOINT RESTRAINTS. WHEN MAINLINE PRESSURE IS BELOW 120 P.S.I., INSTALL AND HARCO PVC CL200 PUSH ON FITTINGS WITH FORD METER BOX RESTRAINT JOINTS, AT ALL CHANGE OF DIRECTION IN MAINLINE, AND FOR ALL SERVICE TEE'S THAT CONNECT ZONE VALVES FROM THE MAINLINE TO THE LATERAL LINES.
7. THRUST BLOCKS: THRUST BLOCK ALL MAINLINE PVC PIPE PIPE 3" AND LARGER AT ALL CHANGES IN DIRECTION ONLY IF THE FITTING DOES NOT USE JOINT RESTRAINTS. THE SIZE OF THE THRUST BLOCK IS DETERMINED BY THE WORKING PRESSURE, THE SIZE AND TYPE OF FITTING, AND THE SOIL CONDITIONS AT THE JOB SITE. SEE PIPE MANUFACTURER SPECIFICATIONS FOR THRUST BLOCKING ALL PIPE.
8. ALL TRENCHES THAT ARE TO BE OPENED DURING ANY PARTICULAR DAY SHALL BE CLOSED AND BACKFILLED THE SAME DAY OR SHALL BE ADEQUATELY BARRICADED AND MARKED TO ENSURE PROTECTION AND SAFETY. BACKFILL SHALL BE THOROUGHLY COMPACTED, BY COMPACTION EQUIPMENT AND EVENED OFF, CONSISTENT WITH AND ADJACENT TO EXISTING SOIL LEVEL. ALL EXCAVATIONS, BACKFILLING AND COMPACTION IS REQUIRED FOR COMPLETE INSTALLATION OF THE SYSTEM. COMPACTION SHALL BE MADE TO THE DENSITY OF THE ADJACENT NATIVE SOIL, NO EXCEPTIONS.
9. CONTROL VALVE INSTALLATION: VALVE INSTALLATION SHALL ALLOW ENOUGH CLEARANCE FOR PROPER OPERATION AND MAINTENANCE. AUTOMATIC CONTROL VALVES INSTALLED UNDERGROUND SHALL BE INSTALLED IN A (MINIMUM) OF A 12" STANDARD SIZE VALVE BOX, WITH 6" EXTENSION VALVE BOX, MASTER VALVE & FLOW METER SHALL BE INSTALLED IN A JUMBO VALVE BOX ENCLOSURE WITH A 6" EXTENSION BOX.
10. SPRINKLER INSTALLATION: ON FLAT LANDSCAPED AREAS, INSTALL SPRINKLER PLUMB, IN AREAS WHERE SPRINKLERS ARE INSTALLED ON SLOPES, SPRINKLERS MAY BE TILTED TO PREVENT EROSION. INSTALL ALL SPRINKLERS ON SWING JOINTS AS SHOWN IN THE DETAILS. SPRINKLERS SHALL BE ADJUSTED TO AVOID OVER-SPRAY ONTO PAVEMENTS, STRUCTURES AND FENCES. PIPING MUST BE THOROUGHLY FLUSHED BEFORE INSTALLING SPRINKLER HEADS. ALL SPRINKLER HEADS SHALL BE INSTALLED NO MORE THAN MAXIMUM SPACING OF 50% OF THE DIAMETER OF THROW, I.E., SQUARE SPACING DISTANCE SHOWN IN THE MANUFACTURER'S CATALOG. ADJUST NOZZLE DISTANCE AS NEEDED TO PROVIDE 100% COVERAGE OF ALL PLANT OR LANDSCAPE MATERIALS.
11. LOW VOLTAGE WIRE INSTALLATION: INSTALL LOW VOLTAGE WIRE (30 VOLTS OR LESS) WITH A MINIMUM DEPTH OF COVER OF 18 INCHES. INSTALL ONLY WIRE CONNECTORS THAT ARE APPROVED FOR DIRECT BURIAL. ALL WIRE CONNECTIONS SHALL BE MADE WITH MOISTURE PROOF WIRE CONNECTOR, I.E., 3M DBY OR DBR-6 SPLICE OR RAIN BIRD DB-SPLICE OR RAIN PRO DBC-BR WIRE SPLICES. PROVIDE A MINIMUM OF 36-48 INCHES COIL OF WIRE AT EACH CONNECTION OR CHANGE IN DIRECTION IN WIRE RUN TO ALLOW FOR EXPANSION/SHRINKAGE. ALL ABOVE GROUND WIRE RUNS AND WIRE ENTRIES INTO BUILDINGS AND PEDESTAL MOUNT IRRIGATION CONTROLLERS SHALL BE MADE IN SCH40 PVC (GRAY) ELECTRICAL CONDUIT WITH LONG SWEEP ELBOWS. WIRE RUNS SHALL BE CONTINUOUS AND SPLICES SHALL BE MADE INSIDE OF AN APPROVED VALVE BOX ENCLOSURE. WIRE SPLICES FOUND MADE OUTSIDE A VALVE BOX ENCLOSURE SHALL BE REJECTED AND THE IRRIGATION CONTRACTOR SHALL HAVE TO REMOVE AND REPLACE ALL SUCH WIRING AT HIS OWN EXPENSE. ALL WIRE SPLICES LOCATIONS MUST BE RECORDED ON AS-BUILT PLAN.
12. INSTALL ELECTRICAL WARNING TAPE 6" ABOVE ALL ELECTRICAL WIRING.

3.3 TESTING AND INSPECTIONS:

1. ALL PVC CEMENTED JOINTS SHALL CURE A MINIMUM OF 24 HOURS. FLUSH OUT LINES AND HYDROSTATICALLY TEST ALL PVC PIPE, IN THE PRESENCE OF THE LANDSCAPE ARCHITECT OR OWNERS REPRESENTATIVE, TESTING SHALL BE PREFORMED AT 150% OF SPECIFIED WORKING PRESSURE FOR 4 HOURS WITH NO LEAKS. A MAXIMUM LOSS SHALL BE 0.8 GALLONS/INCH PIPE DIAMETER/1000 FEET.
2. PRESSURE TESTING SHALL BE WITNESSED BY THE OWNER'S ENGINEER. IF LEAKAGE OCCURS, THE PVC PIPE SHALL BE REPAIRED AND RETESTED AS MANY TIMES AS NECESSARY UNTIL SATISFACTORY.
3. FINAL INSPECTION: DEMONSTRATE THE ENTIRE SYSTEM PROVING ALL VALVES ARE PROPERLY BALANCED, ALL HEADS ARE PROPERLY SPACED AND ADJUSTED FOR RADIUS WITHOUT OVERSPRAY.

3.4 MAINTENANCE:

1. MAINTENANCE RESPONSIBILITY OF THE IRRIGATION CONTRACTOR SHALL INCLUDE FULL OPERATION AND MAINTENANCE OF THE IRRIGATION SYSTEM THROUGHOUT MAINTENANCE PERIOD.
2. THE IRRIGATION CONTRACTOR SHALL PROVIDE SUFFICIENT FULL TIME PERSONNEL WHO ARE FULLY TRAINED IN IRRIGATION OPERATION AND MAINTENANCE PROCEDURES.
3. OPERATION AND MAINTENANCE SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
   a. CLEANING AND REPAIRING ALL EQUIPMENT, VALVES, SPRAY HEADS, BROKEN PIPE AND SEASONAL ADJUSTMENTS SHALL BE MADE TO THE AUTOMATIC IRRIGATION CONTROLLER.
4. MAKE ALL NECESSARY REPAIRS FOR PROPER OPERATION AND FUNCTIONING OF THE SYSTEM. MAINTAIN ALL SPRAY & ROTOR/ROTARY SPRINKLER HEADS AND INLINE DRIP EMITTER SYSTEMS TO ASSURE PROPER EMISSION OF DESIGNED WATER QUANTITIES. REPLACE ALL BROKEN, STOLEN OR MALFUNCTIONING EQUIPMENT WITH NEW EQUIPMENT AS FOUND IN THESE SPECIFICATIONS.
5. THE IRRIGATION CONTRACTOR SHALL PROVIDE 8 HOURS OF TRAINING TO THE OWNERS MAINTENANCE STAFF. TRAINING SHALL INCLUDE, BUT IS NOT LIMITED TO, SPRINKLER HEAD AND VALVE REPAIR, BROKEN PIPE REPAIR AND CONTROLLER PROGRAMMING OF VARIOUS SEASONAL WATERING SCHEDULES FOR THE AUTOMATIC IRRIGATION TIMER.
6. PRIOR TO COMPLETION OF THE WORK THE CONTRACTOR SHALL TURN OVER THE LIST OF NAMES TO THE OWNER OF HIS EMPLOYEES WHO HAVE BEEN TRAINED BY THE IRRIGATION CONTRACTOR AND ARE FULLY KNOWLEDGEABLE OF SPRINKLER SYSTEM MAINTENANCE.
7. PRIOR TO COMPLETION THE IRRIGATION CONTRACTOR SHALL PROVIDE THE GENERAL CONTRACTOR OR OWNER WITH THE NAMES, ADDRESSES AND PHONE NUMBERS OF A MINIMUM OF THREE (3) LOCAL IRRIGATION WHOLESALE SUPPLY DISTRIBUTORS.

3.5 GUARANTEE:

1. THE CONTRACTOR SHALL OBTAIN, "IN OWNERS NAME; THE STANDARD WRITTEN MANUFACTURER'S GUARANTEE OF ALL MATERIALS" FURNISHED UNDER THIS SECTION WHERE SUCH GUARANTEES ARE OFFERED BY THE MANUFACTURER'S PUBLISHED PRODUCT DATA. THE IRRIGATION CONTRACTOR SHALL PROVIDE TO THE OWNER THE ORIGINAL INVOICES FOR ALL THE MATERIALS FURNISHED AND INSTALLED ON THIS PROJECT FROM THE WHOLESALE IRRIGATION DISTRIBUTOR (S), SO THE OWNER HAS THE ORIGINAL DOCUMENT TO PROVE TO THE MANUFACTURER THE DATE THE MATERIALS WERE PURCHASED FOR THE PURPOSE OF ENSURING THAT THE OWNER SHALL BE PROVIDED A FULL LEGAL MATERIAL GUARANTEE GIVEN BY THE MANUFACTURER TO THE OWNER.
2. THE GUARANTEE OF THESE PLANS IS LIMITED, THE GUARANTEE IS APPLICABLE ONLY TO THE LANDSCAPE ARCHITECT THAT COMMISSIONED THIS IRRIGATION DESIGN FOR THIS LANDSCAPE PLAN.
   a. THE GUARANTEE SPECIFICALLY INCLUDES FULL 100% WATER COVERAGE TO ALL LANDSCAPE MATERIALS BASED ON INDUSTRY STANDARDS.
   b. IF AN ERROR OR AN OMISSION IS FOUND ON THESE PLANS, THE IRRIGATION CONTRACTOR SHALL IMMEDIATELY STOP WORK IN THAT AREA AND NOTIFY THE LANDSCAPE ARCHITECT IN WRITING OF THE ISSUE AND REQUEST THE PLAN BE CORRECTED. THIS GUARANTEE EXCLUDES SITE CHANGES, SITE CHANGES AFTER PLANS HAVE BEEN DESIGNED ARE CHARGED AS A CHANGE ORDER AND ARE EXTRA.
   c. THE IRRIGATION CONTRACTOR SHALL NOT RESUME WORK IN THAT AREA UNLESS OR UNTIL THE LANDSCAPE ARCHITECT HAS NOTIFIED THE IRRIGATION CONTRACTOR IN WRITING THAT THE ERROR OR OMISSION HAS BEEN RESOLVED AND ISSUED A "NOTICE TO PROCEED".
   d. THIS GUARANTEE DOES NOT COVER THE ACTIONS OF IRRIGATION CONTRACTOR OR HIS EMPLOYEES, OR THE INSTALLATION WORK DONE BY THE IRRIGATION CONTRACTOR. SINCE THE IRRIGATION DESIGNER HAS NO AUTHORITY OVER THE IRRIGATION CONTRACTING COMPANY OR HIS EMPLOYEES, THE IRRIGATION DESIGNER SHALL BE HELD HARMLESS FOR ANY ACTIONS OF THE IRRIGATION CONTRACTOR OR HIS STAFF. NEITHER SPRINKLER CONSULTANT NOR THE INSURANCE COMPANY WILL PAY ANY CLAIM IF THE CONTRACTOR FAILS TO FOLLOW THESE PLANS AND INSTALL THESE PLANS EXACTLY AS DESIGNED!
   e. THIS GUARANTEE BECOMES NULL AND VOID IF THE CONTRACTOR INSTALLS UNAUTHORIZED MATERIALS, UNDERSIZED PRODUCTS OR FAILS TO FOLLOW THESE PLANS AND/OR ASSEMBLY DETAILS AS SHOWN.

39 IRRIGATION SPECIFICATIONS
N.T.S.

328489.01-26

BRUCE HOWARD & ASSOCIATES, INC.
Landscape Architects, Site Planners & Golf Course Designers

PROJECT: ESTERO PARKWAY
VILLAGE OF ESTERO

DRAWING TITLE: IRRIGATION SPECIFICATIONS

NORTH

SCALE: N.T.S

PROJECT NUMBER

DATE: 07-03-2019

Digitally signed by Bruce J Howard
Date: 2019.10.21 19:42:49 -04'00'
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License #: LA0000371

SHEET NUMBER: LI-22
OF:

4872 S.W. 72nd Avenue
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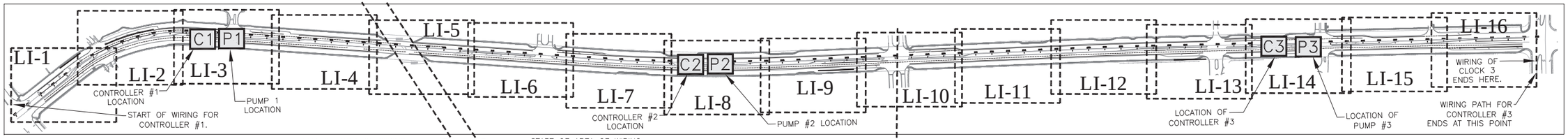
WIRING AREA OF COVERAGE FOR CONTROLLER #1 INCLUDES MAINLINE 1 & PUMP #1 . WIRING AREA OF COVERAGE FOR CONTROLLER #2, INCLUDES MAINLINE 2 & PUMP #2. WIRING AREA OF COVERAGE FOR CONTROLLER #3, INCLUDES MAINLINE 3 & PUMP #3.



WIRING NOTES:
THIS PROJECT HAS THREE (3) SUBMERSIBLE PUMPS AND THREE (3) IRRIGATION CLOCKS. IF THE CONTRACTOR HAS QUESTIONS ON WIRING LAYOUT CONTACT; BILL CURTIS @ (470) 678-6947

1) VALVE NUMBERS — LOCATION
a. A–1 TO A–27 — NORTH–WEST TO MIDDLE
b. B–1 TO B–12 — WEST MEDIAN TO MIDDLE
c. C–1 TO C–25 — SOUTH WEST TO MIDDLE

END OF AREA OF WIRING COVERAGE FOR CONTROLLER #1.

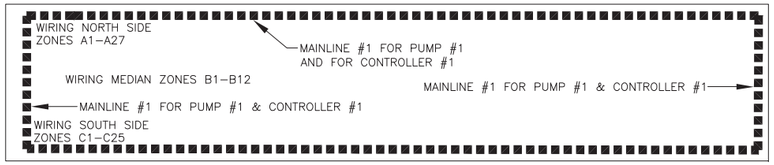
START OF AREA OF WIRING COVERAGE FOR CONTROLLER #2.

2) CONTROLLER #2–VALVES CONNECTED TO CLOCK 2.
VALVE NUMBERS — LOCATION:
a. D–1 TO D–39 — NORTH TO CENTER NORTHWEST/EAST
b. E–1 TO E–18 — MIDDLE CENTER
c. F–1 TO F–33 — SOUTH TO CENTER SOUTHWEST/EAST

END OF AREA OF WIRING COVERAGE FOR CONTROLLER #2E.

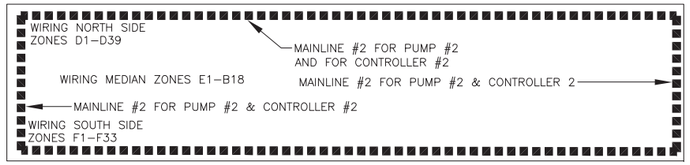
START OF AREA OF WIRING COVERAGE FOR CONTROLLER #3.

3) CONTROLLER #3–VALVES CONNECTED TO CLOCK 3.
VALVE NUMBERS — LOCATION:
a. D–1 TO D–39 — NORTH TO NORTHEAST
b. E–1 TO E–18 — MIDDLE CENTER TO EAST
c. F–1 TO F–33 — SOUTH TO SOUTHEAST



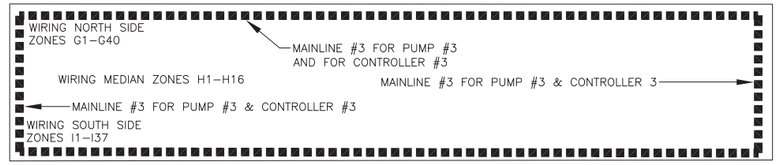
CONTROLLER #1 — C1 P1 — PUMP #1

PUMP #1, LEFT SIDE MAINLINE #1, ON CONTROLLER # 1.



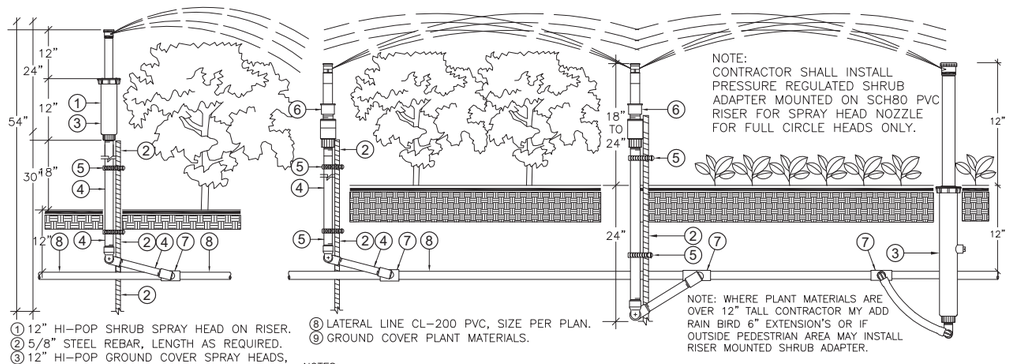
CONTROLLER #2 — C2 P2 — PUMP #2

PUMP #2, CENTER MAINLINE #2, ON CONTROLLER # 2



CONTROLLER #3 — C3 P3 — PUMP #3

PUMP #3, & RIGHT SIDE MAINLINE #3, ON CONTROLLER # 3



① 12" HI–POP SHRUB SPRAY HEAD ON RISER.
② 5/8" STEEL REBAR, LENGTH AS REQUIRED.
③ 12" HI–POP GROUND COVER SPRAY HEADS,
④ RISER, SCH80 PVC, LENGTH AS REQUIRED.
⑤ STAINLESS STEEL GEAR CLAMP, 2 REQUIRED.
⑥ PRESSURE REGULATING SHRUB ADAPTER, MOUNTED ON SCH80 PVC NIPPLE/RISER.
⑦ TEE, SCH40 PVC, SIZE PER PLAN AND PER SPRINKLER HEAD INLET.
⑧ LATERAL LINE CL–200 PVC, SIZE PER PLAN.
⑨ GROUND COVER PLANT MATERIALS.

NOTES:
1. INSTALL HEADS FLUSH/PLUMB TO GRADE, A MINIMUM OF 4" FROM PAVED EDGE OR SIDEWALKS & BUILDINGS.
2. INSTALL THREADED FITTINGS WITH VIRGIN TEFLON PASTE.
3. PLANTER BEDS 4–FT, NEED 1 ROW, OVER 6–FT NEED DOUBLE ROW OF SPRAY HEADS.

WARNING NOTE:
DO NOT INSTALL SPRINKLER'S MOUNTED ON A PVC RISER ABOVE GRADE IN PEDESTRIAN WALK–WAYS OR OTHER PEDESTRIAN AREA, AS THIS WILL VIOLATE INDUSTRY STANDARDS AND IS CONSIDERED A HEALTH HAZARD. ALL ABOVE GRADE RISERS MUST BE INSTALLED IN AREA'S WHERE PEOPLE DO NOT WALK SO THEY CAN NOT BE INJURED.

43 SHRUB AND GROUND COVER DETAIL FOR 12" HI-POP SPRAY
N.T.S. 328403.30–10

1. PROVIDE FOR A MINIMUM OF 3 DAYS TRAINING FOR A TORO INSTRUCTOR TO TRAIN THE OWNER'S MAINTENANCE PERSONNEL. THE MAINTENANCE REPRESENTATIVE SHALL PASS A BASIC TORO FUNDAMENTAL TEST TO CONFIRM TO THE OWNER MAINTENANCE HAS A WORKING PROFICIENCY USING THE TORO CONTROLLER PRODUCTS. CONTACT TORO SALES MGR., MR. BRUCE FUNNELL AT (616) 450–6618, TO ACQUIRE INFORMATION OF HOW TO GO ONLINE, TO THE TORO TRAINING PORTAL, AND SHALL TAKE AND SHALL PASS, THE **"TORO FUNDAMENTAL TRAINING COURSE"**.

CONTROLLER #1:
1) CONTROLLER #1– (VALVES CONNECTED TO CLOCK 1)
VALVE NUMBERS — LOCATION
a. A–1 TO A–27 — NORTH–WEST TO MIDDLE
b. B–1 TO B–12 — WEST MEDIAN TO MIDDLE
c. C–1 TO C–25 — SOUTH WEST TO MIDDLE

2) CONTROLLER #2– (VALVES CONNECTED TO CLOCK 2)
VALVE NUMBERS — LOCATION:
a. D–1 TO D–39 — NORTH TO NORTH/WEST
b. E–1 TO E–18 — MIDDLE TO CENTER/WEST
c. F–1 TO F–33 — SOUTH TO SOUTH/WEST

3) CONTROLLER #3– (VALVES CONNECTED TO CLOCK 3)
VALVE NUMBERS — LOCATION:
a. G–1 TO G–40 — NORTH TO NORTH/EAST
b. H–1 TO H–16 — MIDDLE TO CENTER/EAST
c. I–1 TO I–37 — SOUTH TO SOUTH/EAST

PUMP NOTES:
4) DESCRIPTION — GPM — PSI — HP
a. PUMP #1 — 300 — 75 — 25
b. PUMP #2 — 300 — 75 — 25
c. PUMP #3 — 300 — 75 — 25

IRRIGATION CONTROLLER LAYOUTS CONT...

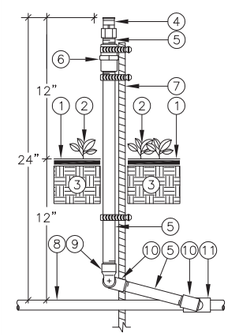
WATERING SCHEDULE NOTES:
1) PRIOR TO PROGRAMMING THE WATERING SCHEDULE INTO EACH OF THE 3 CONTROLLER'S, THE IRRIGATION CONTRACTOR SHALL REVIEW THE CITY OR LOCAL WATERING RESTRICTIONS REGULATIONS.

2) THIS IRRIGATION SYSTEM WAS DESIGNED AROUND 2 WATERING DAYS PER WEEK, WITH 8 HOURS MAXIMUM ALLOWED WATERING TIME PER DAY.

3) IN ORDER TO ACCOMPLISH WATERING THE ENTIRE PROJECT, WITHIN 8 HOURS PER DAY, TWICE PER WEEK, THE IRRIGATION CONTRACTOR SHALL PROGRAM THE CONTROLLER'S TO OPERATE (OR RUN) UP TO 8 ZONE VALVES SIMULTANEOUSLY.

4) WATERING SCHEDULE – USE ONLY AS AN EXAMPLE: THE IRRIGATION CONTRACTOR SHALL PROGRAM VALVE NUMBERS INTO THE CONTROLLER BY ASSIGNING EACH VALVE NUMBER TO A STATION NUMBER ON THE CONTROLLER, AND/OR BY ENTERING IN THE START TIMES FOR EACH VALVE BY TURNING ON ZONE VALVE'S, 1 THRU 8, TO OPERATE ON STATION 1 FOR 22 MINUTES. NOTE: CONTROLLERS ARE CAPABLE OF OPERATING 8 ZONE VALVES AT ANY ONE TIME.)

5) NEXT, GO TO STATION 2, ON THE CONTROLLER AND TURN ON, (OR OTHERWISE RUN VALVES) 9–16 FOR INSTANCE, (OR ANY NUMBER) FOR 22 MINUTES EACH, REPEAT THIS PROCESS UNTIL THE WATERING CYCLE HAS COMPLETED WATERING THE ENTIRE PROJECT. SEE WATERING TIME EXAMPLE SCHEDULE.



① FINISH GRADE OR TOP OF MULCH
② PLANT MATERIAL, (SHRUB OR GROUND COVER).
③ CLEAN SOIL, AMENDED/NATIVE – FREE OF ROCK AND DEBRIS
④ SPRAY NOZZLE MOUNTED ON ½" FIPT, TORO, PLASTIC SHRUB ADAPTER # 570S.
⑤ NIPPLE, SCH 80 P.V.C., (TBE) LENGTH AS REQUIRED. SIZE PER SPK INLET.
⑥ SPRING TYPE ANTI–DRAIN VALVE. INSTALL WHEN NEEDED TO PREVENT LOW HEAD DRAINAGE.
⑦ GALVANIZED PIPE, 1/2" X 30", WITH THREE VANDAL–PROOF STAINLESS STEEL GEAR CLAMPS.
⑧ PVC LATERAL (NON–PRESSURE PIPE), SEE PLAN FOR SIZE.
⑨ ELBOW, SCH40, (FIPTxFIPT). SIZE PER SPRINKLER INLET.
⑩ STREET ELBOW, SCH40, SIZE PER SPRINKLER INLET, 2 REQ'D.
⑪ RED. TEE/ELBOW, SCH40 PVC, (SxSxFIPT). SIZE PER SPRINKLER INLET.

NOTES:
MINIMUM HEIGHT OF RISER WILL BE 12–INCHES ABOVE FINISHED GRADE OR TOP OF MULCH. AVOID OVERSPRAY, INSTALL "ADJUSTABLE ARC NOZZLES". USE A NON–HARDENING TEFLON PIPE SEALANT ON ALL THREADED CONNECTIONS. PAINT RISER "BLACK".

44 SHRUB RISER RAINBIRD SPRAY SPRINKLER
N.T.S. 328403.22–01

BASE·LINE

PART #	QTY	DESCRIPTION OF EQUIPMENT REQUIRED FOR BASELINE CONTROLLER 3200 SERIES
BL–3200WF–P	2	2.4 GHZ WI–FI MODULE FOR BL–3200 CONTROLLERS IN STAINLESS–STEEL PEDESTAL.
BL–SUBSTN–P	2	TWO–WIRE ONLY SUBSTATION IN 16–GAUGE STAINLESS–STEEL PEDESTAL
BL–CM4G–P–AT	1	4G AT&T CELL MODEM MODULE FOR BL–1000 AND BL–3200 CONTROLLERS IN PEDESTAL. FIRST YEAR'S DATA SERVICE INCLUDED.
BL–ETH–SW	1	RUGGEDIZED 5–PORT ETHERNET SWITCH
BL–5201	336	1–STATION DIRECT BURIAL BICODER
BL–5315B	50	1.5' DIRECT BURIAL BISENSOR WITH 50' CONNECTION WIRES
BL–5402	2	DIRECT BURIAL EVENT BICODER FOR RAIN SHUT OFF SWITCH
BL–5309	3	DIRECT BURIAL STANDARD FLOW SENSOR/METER BICODER FOR USE WITH SELF–POWERED FLOW METERS SUCH AS MAG METERS
BL–5201MV	3	DIRECT BURIAL MASTER VALVE BICODER
BL–LA01	83	DIRECT BURIAL SURGE ARRESTOR
BL–BMW2–PLUS	10	10/1 YEAR BASEMANAGER SUBSCRIPTION SERVICES FOR BASELINE CONTROLLER'S
BL–XC–LA–P	2	LIGHTNING ARRESTER
BL–CX–CEL 50	2	ANTENNA CABLE COAXIAL 50'
BL–ER–OMNI	1	ANTENNA
BL–ER–YAGI	1	ANTENNA
BL–FLOSTN–P	1	FLOW STATION
BL–ER–P	2	RADIO
BL–INSTL–4	4	BASELINE FOR MAINTENANCE DEPT TRAINING (4 DAYS) @ (8 HRS PER DAY)
GROUND ROD	3	PAIGE COPPER CLAD GROUND ROD 5/8" x 10–FT, PAIGE PHONE # (800) 228–7137
ELECT CONDUIT	24000	ELECTRIC GRAY 1 1/2", CONDUIT, SCH40 PVC WITH LONG SWEEP ELBOWS
MAXI–WIRE	24000	14–2, JACKETED MAXI–WIRE, RED, BLUE & ORANGE, 14 AWG, 600V, DIRECT BURIAL

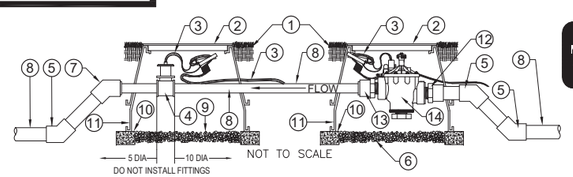
40 EQUIPMENT NEEDED FOR BASELINE 3200 SERIES CONTROLLER
N.T.S. 328410.75–10

USE THIS PARTS BREAKDOWN IF THE TORO – SENTINEL CONTROLLER IS PURCHASED FOR CONTROL PACKAGE.

TORO

TORO – SENTINEL CONTROLLER EQUIPMENT REQUIRED		
PART #	QTY	DESCRIPTION OF EQUIPMENT REQUIRED FOR BASELINE CONTROLLER 3200 SERIES
COMPUTER	1	MICROSOFT SURFACE GO WITH KEY PAD & EXTENDED WARRANTEE
SBAPP1U	3	SENTINEL AC 2–WIRE PLASTIC PEDESTAL (GOLF DENT RESISTANT)
CELL MODEM	1	4G AT&T CELL MODEM MODULE.
DATA PLAN	10	DATA PLAN 1 YEAR EACH (SPECIFIED TEN (10), ONE (1) YEAR PLANS).
SB–DAC–1	41	1–STATION (ZONE VALVE DECODER DIRECT BURIAL).
SB–DAC–2	103	2–STATION (ZONE VALVE DECODER DIRECT BURIAL).
SB–DAC–FLOW	3	DIRECT BURIAL STANDARD FLOW SENSOR DECODER.
SB–DAC–1	3	1–STATION (MASTER VALVE DECODER DIRECT BURIAL).
SB–BLA	55	DIRECT BURIAL SURGE ARRESTOR INSTALL EVERY 600' OR AS NOTED ON PLANS.
SB–DAC–SOIL	31	SOIL MOISTURE SENSOR DECODER.
SHHR	1	HAND–HELD RADIO.
TRAINING	1	TORO FOR MAINTENANCE DEPT TRAINING; (4 DAYS) @ (8 HRS PER DAY) NO COST.
GROUND ROD	55	PAIGE COPPER CLAD GROUND ROD 5/8" x 8–FT, PAIGE PHONE # (800) 228–7137
GROUND PLATE	3	PAIGE COPPER GROUND PLATE, 4"x96"x.0625", PAIGE PHONE # (800) 228–7137
GROUND ROD	3	PAIGE COPPER CLAD GROUND ROD 5/8" x 10–FT, PAIGE PHONE # (800) 228–7137
ELECT CONDUIT	24000	ELECTRIC GRAY 1 1/2", CONDUIT, SCH40 PVC WITH LONG SWEEP ELBOWS
MAXI–WIRE	24000	14–2, JACKETED MAXI–WIRE, RED, BLUE & ORANGE, 14 AWG, 600V, DIRECT BURIAL

41 TORO EQUIPMENT NEEDED FOR SENTINEL CONTROLLER
N.T.S. 328498.01–01



TORO

① FINISH GRADE
② JUMBO VALVE BOX & COVER
③ CONTROL WIRES WITH 12" MIN. SERVICE COIL & WATERPROOF WIRE SPLICE CONNECTORS
④ FLOW SENSOR PER SPECIFICATIONS
⑤ PVC 45 DEGREE ELL (TYP.)
⑥ MINIMUM 10x PIPE DIAMETER UPSTREAM & MINIMUM 5x PIPE DIAMETER DOWNSTREAM OF STRAIGHT PIPE
⑦ PVC 45 DEGREE ELL (TYP.) BUSH DOWN TO FLOW METER SIZE AS NECESSARY
⑧ PVC MAINLINE – LENGTH AS REQUIRED – SEE SPECIFICATIONS FOR TYPE AND DEPTH
⑨ GRAVEL (1 CU. FT.)
⑩ BRICK SUPPORTS
⑪ VALVE BOX EXTENSIONS AS REQUIRED
⑫ PVC MALE ADAPTER
⑬ PVC MALE ADAPTER – BUSH DOWN TO FLOW METER SIZE AS NECESSARY
⑭ TORO REMOTE CONTROL ELECTRIC GLOBE VALVE WITH FLOW CONTROL MODEL NO. 220–27–XX (SEE SPECS.)

NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY.
3. INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED.

42 FLOW SENSOR - MASTER VALVE COMBINATION
N.T.S. 328498.05–01

BRUCE HOWARD & ASSOCIATES, INC.
Landscape Architects, Site Planners & Golf Course Designers

PROJECT:
ESTERO PARKWAY
VILLAGE OF ESTERO

DRAWING TITLE:
IRRIGATION SPECIFICATIONS

NORTH

SCALE: N.T.S

PROJECT NUMBER

DATE: 07-03-2019

Digitally signed by Bruce J Howard
Date: 2019.10.21 19:43:38 -04'00'
Bruce J. Howard License #: LA0000371

SHEET NUMBER: LI-23 OF:

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Miami, Florida 33155
(305)668-3196
Fax(305)668-2871

VALVE SCHEDULE PUMP 1

NUMBER	MODEL	SIZE	TYPE	GPM
A01	TORO P220	2"	TURF SPRAY	97.34
A02	TORO P220	1"	BUBBLER	19.00
A03	TORO P220	1-1/2"	SHRUB SPRAY	33.64
A4	TORO P220	2"	SHRUB SPRAY	61.40
A5	TORO P220	2"	TURF SPRAY	78.41
A6	TORO P220	1-1/2"	TURF SPRAY	51.47
A7	TORO P220	2"	TURF SPRAY	84.14
A8	TORO P220	1-1/2"	TURF SPRAY	59.83
A9	TORO P220	1-1/2"	TURF SPRAY	54.28
A10	TORO P220	1-1/2"	SHRUB SPRAY	44.33
A11	TORO P220	1-1/2"	SHRUB SPRAY	57.21
A12	TORO P220	1-1/2"	TURF SPRAY	58.17
A13	TORO P220	2"	SHRUB SPRAY	81.84
A14	TORO P220	1"	BUBBLER	19.00
A15	TORO P220	2"	TURF SPRAY	86.88
A16	TORO P220	2"	TURF SPRAY	71.38
A17	TORO P220	1"	BUBBLER	7.00
A18	TORO P220	1-1/2"	BUBBLER	25.00
A19	TORO P220	1-1/2"	TURF SPRAY	59.84
A20	TORO P220	2"	SHRUB SPRAY	84.59
A21	TORO P220	2"	TURF SPRAY	108.49
A22	TORO P220	2"	TURF SPRAY	62.01
A23	TORO P220	2"	SHRUB SPRAY	82.33
A24	TORO P220	1"	SHRUB SPRAY	19.80
A25	TORO P220	2"	TURF SPRAY	92.53
A26	TORO P220	1"	BUBBLER	14.00
B01	TORO P220	1-1/2"	SHRUB SPRAY	22.91
B02	TORO P220	1-1/2"	SHRUB SPRAY	36.16
B03	TORO P220	1-1/2"	TURF SPRAY	39.46
B04	TORO P220	1-1/2"	BUBBLER	33.00
B05	TORO P220	1-1/2"	SHRUB SPRAY	59.20
B06	TORO P220	1-1/2"	BUBBLER	38.00
B07	TORO P220	2"	SHRUB SPRAY	63.48
B08	TORO P220	2"	TURF SPRAY	94.84
B09	TORO P220	1-1/2"	SHRUB SPRAY	41.57
B10	TORO P220	2"	TURF SPRAY	66.68
B11	TORO P220	1-1/2"	SHRUB SPRAY	40.32
C01	TORO P220	2"	TURF SPRAY	92.13
C02	TORO P220	1"	BUBBLER	4.00
C03	TORO P220	1"	BUBBLER	12.00
C04	TORO P220	1"	SHRUB SPRAY	6.45
C05	TORO P220	2"	SHRUB SPRAY	70.80
C06	TORO P220	1"	TURF SPRAY	7.34
C07	TORO P220	2"	TURF SPRAY	92.10
C08	TORO P220	2"	TURF SPRAY	100.53
C09	TORO P220	2"	SHRUB SPRAY	98.58
C10	TORO P220	1-1/2"	SHRUB SPRAY	25.81
C11	TORO P220	2"	TURF SPRAY	99.67
C12	TORO P220	2"	TURF SPRAY	65.48
C13	TORO P220	1"	BUBBLER	19.00
C14	TORO P220	1-1/2"	BUBBLER	43.00
C15	TORO P220	2"	SHRUB SPRAY	96.41
C16	TORO P220	1-1/2"	SHRUB SPRAY	31.14
C17	TORO P220	2"	TURF SPRAY	95.86
C18	TORO P220	2"	TURF SPRAY	100.15
C19	TORO P220	2"	SHRUB SPRAY	104.35
C20	TORO P220	1-1/2"	BUBBLER	22.00
C21	TORO P220	1-1/2"	BUBBLER	28.00
C22	TORO P220	2"	TURF SPRAY	101.10
C23	TORO P220	2"	SHRUB SPRAY	95.12
C24	TORO P220	1-1/2"	SHRUB SPRAY	26.85
C25	TORO P220	1-1/2"	TURF SPRAY	44.16

VALVE SCHEDULE PUMP 2

NUMBER	MODEL	SIZE	TYPE	GPM
D01	TORO P220	1"	BUBBLER	10.00
D02	TORO P220	1-1/2"	TURF SPRAY	41.17
D03	TORO P220	2"	SHRUB SPRAY	93.64
D04	TORO P220	2"	TURF SPRAY	80.24
D05	TORO P220	2"	TURF SPRAY	86.18
D06	TORO P220	1-1/2"	BUBBLER	28.00
D07	TORO P220	1-1/2"	SHRUB SPRAY	40.33
D08	TORO P220	2"	TURF SPRAY	101.30
D09	TORO P220	1-1/2"	SHRUB SPRAY	53.41
D10	TORO P220	1-1/2"	TURF SPRAY	44.15
D11	TORO P220	2"	TURF SPRAY	78.83
D12	TORO P220	1-1/2"	TURF SPRAY	59.62
D13	TORO P220	1-1/2"	SHRUB SPRAY	57.55
D14	TORO P220	1-1/2"	TURF SPRAY	59.58
D15	TORO P220	1-1/2"	TURF SPRAY	59.92
D16	TORO P220	1-1/2"	TURF SPRAY	34.55
D17	TORO P220	1"	SHRUB SPRAY	11.58
D18	TORO P220	1-1/2"	TURF SPRAY	52.12
D19	TORO P220	2"	SHRUB SPRAY	60.66
D20	TORO P220	1-1/2"	TURF SPRAY	55.27
D21	TORO P220	2"	BUBBLER	74.00
D22	TORO P220	2"	SHRUB SPRAY	80.79
D23	TORO P220	1"	SHRUB SPRAY	3.05
D24	TORO P220	1"	BUBBLER	17.00
D25	TORO P220	2"	TURF SPRAY	85.21
D26	TORO P220	1"	TURF SPRAY	19.46
D27	TORO P220	2"	TURF SPRAY	72.14
D28	TORO P220	1-1/2"	SHRUB SPRAY	30.81
D29	TORO P220	1-1/2"	TURF SPRAY	49.88
D30	TORO P220	1-1/2"	BUBBLER	42.00
D31	TORO P220	2"	SHRUB SPRAY	83.11
D32	TORO P220	1-1/2"	SHRUB SPRAY	52.77
D33	TORO P220	1-1/2"	TURF SPRAY	56.77
D34	TORO P220	1-1/2"	SHRUB SPRAY	50.55
D35	TORO P220	2"	TURF SPRAY	107.15
D36	TORO P220	1-1/2"	SHRUB SPRAY	51.33
D37	TORO P220	1-1/2"	TURF SPRAY	44.86
D38	TORO P220	1-1/2"	TURF SPRAY	56.06
D39	TORO P220	2"	TURF SPRAY	63.64
E01	TORO P220	1-1/2"	TURF SPRAY	36.32
E02	TORO P220	1-1/2"	SHRUB SPRAY	48.45
E03	TORO P220	1-1/2"	TURF SPRAY	53.62
E04	TORO P220	1-1/2"	BUBBLER	23.00
E05	TORO P220	1-1/2"	SHRUB SPRAY	38.26
E06	TORO P220	1-1/2"	SHRUB SPRAY	53.21
E07	TORO P220	1-1/2"	BUBBLER	31.00
E08	TORO P220	1-1/2"	SHRUB SPRAY	59.50
E09	TORO P220	2"	TURF SPRAY	81.38
E10	TORO P220	2"	TURF SPRAY	87.03
E11	TORO P220	1-1/2"	SHRUB SPRAY	59.40
E12	TORO P220	1-1/2"	SHRUB SPRAY	58.99
E13	TORO P220	1-1/2"	BUBBLER	47.00
E14	TORO P220	1-1/2"	SHRUB SPRAY	58.61
E15	TORO P220	1-1/2"	TURF SPRAY	39.29
E16	TORO P220	1-1/2"	SHRUB SPRAY	53.95
E17	TORO P220	1-1/2"	BUBBLER	46.00
E18	TORO P220	1-1/2"	SHRUB SPRAY	58.84
F01	TORO P220	2"	SHRUB SPRAY	92.53
F02	TORO P220	2"	TURF SPRAY	95.60
F03	TORO P220	1-1/2"	TURF SPRAY	45.19
F04	TORO P220	1"	BUBBLER	9.00
F05	TORO P220	1-1/2"	SHRUB SPRAY	40.35
F06	TORO P220	1-1/2"	SHRUB SPRAY	45.27
F07	TORO P220	2"	TURF SPRAY	105.26
F08	TORO P220	2"	TURF SPRAY	91.54
F09	TORO P220	1-1/2"	SHRUB SPRAY	28.40
F10	TORO P220	2"	BUBBLER	62.00
F11	TORO P220	2"	TURF SPRAY	100.51
F12	TORO P220	1-1/2"	SHRUB SPRAY	51.26

VALVE SCHEDULE PUMP 2 CONT...

NUMBER	MODEL	SIZE	TYPE	GPM
F13	TORO P220	1-1/2"	SHRUB SPRAY	21.86
F14	TORO P220	2"	TURF SPRAY	103.04
F15	TORO P220	1-1/2"	SHRUB SPRAY	38.95
F16	TORO P220	2"	TURF SPRAY	104.61
F17	TORO P220	1"	SHRUB SPRAY	11.86
F18	TORO P220	1-1/2"	TURF SPRAY	23.16
F19	TORO P220	1-1/2"	BUBBLER	52.00
F20	TORO P220	1-1/2"	SHRUB SPRAY	35.07
F21	TORO P220	1-1/2"	TURF SPRAY	34.40
F22	TORO P220	2"	TURF SPRAY	96.73
F23	TORO P220	1-1/2"	SHRUB SPRAY	50.05
F24	TORO P220	2"	SHRUB SPRAY	67.06
F25	TORO P220	2"	SHRUB SPRAY	63.02
F26	TORO P220	1"	TURF SPRAY	8.24
F27	TORO P220	2"	TURF SPRAY	101.45
F28	TORO P220	1"	BUBBLER	19.00
F29	TORO P220	2"	SHRUB SPRAY	64.82
F30	TORO P220	1-1/2"	TURF SPRAY	41.71
F31	TORO P220	2"	TURF SPRAY	89.00
F32	TORO P220	2"	TURF SPRAY	92.25
F33	TORO P220	1-1/2"	SHRUB SPRAY	47.75

VALVE SCHEDULE PUMP 3

NUMBER	MODEL	SIZE	TYPE	GPM
A28	TORO P220	1-1/2"	BUBBLER	26.00
G01	TORO P220	1-1/2"	SHRUB SPRAY	53.75
G02	TORO P220	2"	TURF SPRAY	103.72
G03	TORO P220	2"	SHRUB SPRAY	79.18
G04	TORO P220	2"	TURF SPRAY	79.61
G05	TORO P220	2"	BUBBLER	67.00
G06	TORO P220	1-1/2"	SHRUB SPRAY	39.61
G07	TORO P220	2"	TURF SPRAY	60.57
G08	TORO P220	1-1/2"	BUBBLER	47.00
G09	TORO P220	2"	TURF SPRAY	98.38
G10	TORO P220	2"	SHRUB SPRAY	67.74
G11	TORO P220	2"	TURF SPRAY	62.72
G12	TORO P220	2"	SHRUB SPRAY	65.64
G13	TORO P220	2"	TURF SPRAY	96.80
G14	TORO P220	2"	SHRUB SPRAY	100.83
G15	TORO P220	2"	SHRUB SPRAY	109.94
G16	TORO P220	2"	TURF SPRAY	100.13
G17	TORO P220	1-1/2"	SHRUB SPRAY	45.49
G18	TORO P220	2"	TURF SPRAY	67.14
G19	TORO P220	1-1/2"	TURF SPRAY	34.83
G20	TORO P220	1-1/2"	SHRUB SPRAY	47.00
G21	TORO P220	2"	SHRUB SPRAY	61.73
G22	TORO P220	1-1/2"	SHRUB SPRAY	58.74
G23	TORO P220	1-1/2"	TURF SPRAY	40.44
G24	TORO P220	1"	SHRUB SPRAY	9.93
G25	TORO P220	1"	BUBBLER	16.00
G26	TORO P220	2"	TURF SPRAY	60.52
G27	TORO P220	2"	SHRUB SPRAY	69.65
G28	TORO P220	2"	SHRUB SPRAY	75.94
G29	TORO P220	1-1/2"	BUBBLER	25.00
G30	TORO P220	1-1/2"	SHRUB SPRAY	53.69
G31	TORO P220	2"	TURF SPRAY	107.00
G32	TORO P220	2"	SHRUB SPRAY	66.87
G33	TORO P220	1-1/2"	BUBBLER	20.00
G34	TORO P220	1-1/2"	TURF SPRAY	54.10
G35	TORO P220	1-1/2"	SHRUB SPRAY	56.90
G36	TORO P220	2"	SHRUB SPRAY	78.74
G37	TORO P220	2"	TURF SPRAY	101.96
G38	TORO P220	1-1/2"	SHRUB SPRAY	57.70
H01	TORO P220	2"	SHRUB SPRAY	75.13
H02	TORO P220	1-1/2"	BUBBLER	37.00
H03	TORO P220	2"	SHRUB SPRAY	63.57
H04	TORO P220	2"	TURF SPRAY	109.64
H05	TORO P220	2"	SHRUB SPRAY	78.95
H06	TORO P220	2"	TURF SPRAY	96.80
H07	TORO P220	1-1/2"	BUBBLER	33.00
H08	TORO P220	2"	SHRUB SPRAY	86.75
H09	TORO P220	1-1/2"	TURF SPRAY	54.22
H10	TORO P220	2"	SHRUB SPRAY	84.50
H11	TORO P220	1"	BUBBLER	5.00
H12	TORO P220	1"	BUBBLER	14.00
H13	TORO P220	1"	BUBBLER	7.00
H14	TORO P220	1-1/2"	SHRUB SPRAY	30.51
H15	TORO P220	1-1/2"	BUBBLER	37.00
H16	TORO P220	2"	TURF SPRAY	76.18
H17	TORO P220	2"	SHRUB SPRAY	98.52
H18	TORO P220	1-1/2"	SHRUB SPRAY	33.29
I01	TORO P220	1-1/2"	TURF SPRAY	41.94
I02	TORO P220	2"	SHRUB SPRAY	90.80
I03	TORO P220	1-1/2"	BUBBLER	49.00
I04	TORO P220	2"	TURF SPRAY	98.36
I05	TORO P220	1-1/2"	TURF SPRAY	40.02
I06	TORO P220	1-1/2"	TURF SPRAY	37.51
I07	TORO P220	2"	SHRUB SPRAY	82.32
I08	TORO P220	2"	SHRUB SPRAY	102.88
I09	TORO P220	2"	TURF SPRAY	99.61
I10	TORO P220	1"	BUBBLER	16.00
I11	TORO P220	2"	TURF SPRAY	100.56
I12	TORO P220	2"	SHRUB SPRAY	95.13
I13	TORO P220	2"	TURF SPRAY	100.32
I14	TORO P220	2"	SHRUB SPRAY	99.50
I15	TORO P220	1-1/2"	TURF SPRAY	50.54
I16	TORO P220	1-1/2"	SHRUB SPRAY	31.45
I17	TORO P220	2"	SHRUB SPRAY	63.85
I18	TORO P220	1-1/2"	TURF SPRAY	51.06
I19	TORO P220	1-1/2"	SHRUB SPRAY	25.81
I20	TORO P220	2"	TURF SPRAY	90.23
I21	TORO P220	2"	SHRUB SPRAY	103.20
I22	TORO P220	1"	BUBBLER	5.00
I23	TORO P220	1-1/2"	BUBBLER	31.00
I24	TORO P220	2"	TURF SPRAY	91.40
I25	TORO P220	2"	SHRUB SPRAY	67.34
I26	TORO P220	2"	SHRUB SPRAY	96.53
I27	TORO P220	2"	TURF SPRAY	109.48
I28	TORO P220	2"	SHRUB SPRAY	83.72
I29	TORO P220	1-1/2"	TURF SPRAY	53.81
I30	TORO P220	2"	TURF SPRAY	70.20
I31	TORO P220	1-1/2"	BUBBLER	36.00
I32	TORO P220	2"	SHRUB SPRAY	102.94
I33	TORO P220	1-1/2"	BUBBLER	33.00
I34	TORO P220	2"	TURF SPRAY	102.87
I36	TORO P220	2"	SHRUB SPRAY	89.55
I37	TORO P220	1-1/2"	SHRUB SPRAY	43.82
I38	TORO P220	1-1/2"	TURF SPRAY	52.92

IRRIGATION VALVE SCHEDULE NOTES:

THE ABOVE VALVE SCHEDULES REFLECT THE ZONE VALVE NUMBER AND THE GALLONS PER MINUTE (G.P.M.) THAT EACH ZONE VALVE IS FLOWING WHEN IN OPERATION, IT ALSO REFLECTS THE PRESSURE NEEDED TO OPERATE THAT ZONE OF SPRINKLER HEADS.

ALL THE IRRIGATION ZONE VALVES DESIGNED FOR USE ON THIS SPRINKLER SYSTEM ARE SHOWN ON THESE SCHEDULES AND ACCURATELY REFLECTS THE EXACT FLOW THROUGH EACH ZONE VALVE.

EXAMPLE ONLY CONCERNING THE WATER TIMING SCHEDULE:

THIS SCHEDULE IS TO BE USED ONLY AS AN EXAMPLE, IT IS NOT TO BE CONSIDERED OR USED AS A WATERING SCHEDULE FOR THIS PROJECT. THE IRRIGATION CONTRACTOR SHALL CREATE A WATERING SCHEDULE, FOR EACH PUMP & MAINLINE, AND CONTROLLER BY FOLLOWING THIS EXAMPLE. FOR A REASONABLE FEE, THE IRRIGATION CONTRACTOR MAY ASK THE TORO FIELD MANAGER FOR ASSISTANCE IN PROGRAMMING THE IRRIGATION CONTROLLER WATERING/TIMING SCHEDULE. PLEASE CONTACT MR. BRUCE FUNNELL (TORO SPECIFICATIONS MANAGER, SOUTHEAST) @ (616) 450-6618. WARNING - DO NOT EXCEED 303 GPM, PER EACH PUMP, AS THIS IS THE MAXIMUM AMOUNT OF FLOW EACH PUMP HAS BEEN SCHEDULED TO PROVIDE.

ZONE	VALVE #	MODEL	TYPE	PRECIP	IN./WEEK	MIN./WEEK	GAL./WEEK	GAL./DAY	GPM
1	A02	TORO P220	BUBBLER	3.4	1.3	23	413	206	18
	C19	TORO P220	SHRUB SPRAY	1.35	0.5	22	2319	1159	104
	A15	TORO P220	BUBBLER	3.45	1.3	23	430	215	19
	A10	TORO P220	TURF SPRAY	1	1.3	78	4233	2117	54
	A19	TORO P220	BUBBLER	3.4	1.3	23	574	287	25
	A27	TORO P220	BUBBLER	3.4	1.3	23	321	161	14
	B05	TORO P220	BUBBLER	3.47	1.3	22	629	315	28
	B07	TORO P220	BUBBLER	3.44	1.3	23	839	419	37
								TOTAL GPM FLOW	300

ZONE	VALVE #	MODEL	TYPE	PRECIP	IN./WEEK	MIN./WEEK	GAL./WEEK	GAL./DAY	GPM
2	A18	TORO P220	BUBBLER	3.4	1.3	23	161	80	7
	A21	TORO P220	SHRUB SPRAY	1.7	0.5	18	1493	746	85
	C13	TORO P220	BUBBLER	3.4	1.3	23	436	218	19
	C14	TORO P220	BUBBLER	3.43	1.3	23	978	489	43
	C20	TORO P220	BUBBLER	3.44	1.3	23	499	249	22
	C21	TORO P220	BUBBLER	3.4	1.3	23	642	321	28
	A04	TORO P220	SHRUB SPRAY	0.98	0.5	31	1030	515	34
	A05	TORO P220	SHRUB SPRAY	1.31	0.5	23	1406	703	61
								TOTAL GPM FLOW	299

ZONE	VALVE #	MODEL	TYPE	PRECIP	IN./WEEK	MIN./WEEK	GAL./WEEK	GAL./DAY	GPM
3	C04	TORO P220	SHRUB SPRAY	0.55	0.5	55	352	176	6
	C02	TORO P220	BUBBLER	3.4	1.3	23	184	92	8
	A11	TORO P220	SHRUB SPRAY	1.62	0.5	19	821	410	44
	A12	TORO P220	SHRUB SPRAY	1.02	0.5	29	1683	841	57
	A14	TORO P220	SHRUB SPRAY	1.54	0.5	19	1594	797	82
	A24	TORO P220	SHRUB SPRAY	1.74	0.5	17	1420	710	82
	A25	TORO P220	SHRUB SPRAY	0.75	0.5	40	792	396	20
								TOTAL GPM FLOW	300

ZONE	VALVE #	MODEL	TYPE	PRECIP	IN./WEEK	MIN./WEEK	GAL./WEEK	GAL./DAY	GPM
4	C24	TORO P220	SHRUB SPRAY	0.84	0.5	36	959	479	27
	A03	TORO P220	BUBBLER	3.4	1.3	23	46	23	2
	B02	TORO P220	SHRUB SPRAY	2.11	0.5	14	326	163	23
	B03	TORO P220	SHRUB SPRAY	2	0.5	15	542	271	36
	B06	TORO P220	SHRUB SPRAY	1.71	0.5	18	1102	551	63
	B08	TORO P220	SHRUB SPRAY	1.7	0.5	18	1142	571	65
	B10	TORO P220	SHRUB SPRAY	1.81	0.5	17	689	345	42
	B12	TORO P220	SHRUB SPRAY	1.76	0.5	17	687	344	40
								TOTAL GPM FLOW	297

ZONE	VALVE #	MODEL	TYPE	PRECIP	IN./WEEK	MIN./WEEK	GAL./WEEK	GAL./DAY	GPM
5	B01	TORO P220	TURF SPRAY	3.25	1.3	24	552	276	23
	C03	TORO P220	BUBBLER	3.46	1.3	23	316	158	14
	C09	TORO P220	SHRUB SPRAY	1.56	0.5	19	1896	948	99
	C10	TORO P220	SHRUB SPRAY	0.94	0.5	32	824	412	26
	A22	TORO P220	TURF SPRAY	1.8	1.3	43	4701	2351	108
	C16	TORO P220	SHRUB SPRAY	0.85	0.5	35	1099	549	31
								TOTAL GPM FLOW	301

ZONE	VALVE #	MODEL	TYPE	PRECIP	IN./WEEK	MIN./WEEK	GAL./WEEK	GAL./DAY	GPM
6	C23	TORO P220	SHRUB SPRAY	1.59	0.5	19	1795	897	95
	C05	TORO P220	SHRUB SPRAY	1.88	0.5	16	1130	565	71
	A07	TORO P220	TURF SPRAY	0.9	1.3	87	4461	2230	51
	A08	TORO P220	TURF SPRAY	1.68	1.3	46	3907	1953	84
								TOTAL GPM FLOW	302

ZONE	VALVE #	MODEL	TYPE	PRECIP	IN./WEEK	MIN./WEEK	GAL./WEEK	GAL./DAY	GPM
7	A06	TORO P220	TURF SPRAY	1.48	1.3	53	4133	2066	78
	C06	TORO P220	TURF SPRAY	0.87	1.3	90	658	329	7
	B11	TORO P220	TURF SPRAY	2.13	1.3	37	2442	1221	67
	A16	TORO P220	TURF SPRAY	1.61	1.3	48	4209	2105	87
	A20	TORO P220	TURF SPRAY	1.95	1.3	40	2394	1197	60
								TOTAL GPM FLOW	299

ZONE	VALVE #	MODEL	TYPE	PRECIP	IN./WEEK	MIN./WEEK	GAL./WEEK	GAL./DAY	GPM
8	B04	TORO P220	TURF SPRAY	2.56	1.3	30	1202	601	39
	A17	TORO P220	TURF SPRAY	1.13	1.3	69	4927	2463	71
	C07	TORO P220	TURF SPRAY	1.9	1.3	41	3781	1890	92
	A01	TORO P220	TURF SPRAY	1.86	1.3	42	4082	2041	97
								TOTAL GPM FLOW	300

ZONE	VALVE #	MODEL	TYPE	PRECIP	IN./WEEK	MIN./WEEK	GAL./WEEK	GAL./DAY	GPM
9	A13	TORO P220	TURF SPRAY	1.63	1.3	48	2784	1392	58
	A09	TORO P220	TURF SPRAY	1.38	1.3	57	3382	1691	60
	C01	TORO P220	TURF SPRAY	1.62	1.3	48	4436	2218	92
	A26	TORO P220	TURF SPRAY	1.74	1.3	45	4148	2074	93
								TOTAL GPM FLOW	303

ZONE	VALVE #	MODEL	TYPE	PRECIP	IN./WEEK	MIN./WEEK	GAL./WEEK	GAL./DAY	GPM
10	A23	TORO P220	TURF SPRAY	1.26	1.3	62	3839	1919	62
	B09	TORO P220	TURF SPRAY	2.16	1.3	36	3425	1712	95
	C25	TORO P220	TURF SPRAY	1.94	1.3	40	1776	888	44
	C08	TORO P220	TURF SPRAY	1.43	1.3	55	5483	2742	101
								TOTAL GPM FLOW	302

ZONE	VALVE #	MODEL	TYPE	PRECIP	IN./WEEK	MIN./WEEK	GAL./WEEK	GAL./DAY	GPM
11	C15	TORO P220	SHRUB SPRAY	1.43	0.5	21	2023	1011	96
	C11	TORO P220	TURF SPRAY	1.7	1.3	46	4573	2286	100
	C17	TORO P220	TURF SPRAY	1.6	1.3	49	4673	2337	96
								TOTAL GPM FLOW	292

ZONE	VALVE #	MODEL	TYPE	PRECIP	IN./WEEK	MIN./WEEK	GAL./WEEK	GAL./DAY	GPM
12	C12	TORO P220	TURF SPRAY	0.68	1.3	115	7511	3756	65
	C18	TORO P220	TURF SPRAY	1.57	1.3	50	4976	2488	100
	C22	TORO P220	TURF SPRAY	1.63	1.3	48	4838	2419	101
								TOTAL GPM FLOW	267
			TOTALS:			2293	135113	67557	

WATERING SCHEDULE CLOCK 1 ON PUMP 1

NUMBER	MODEL	TYPE	PRECIP	IN./WEEK	MIN./WEEK	GAL./WEEK	GAL./DAY
A01	TORO P220	TURF SPRAY	1.86 in/h	1.30	42	4,088	2,044
A02	TORO P220	BUBBLER	3.40 in/h	1.30	23	437	218.5
A03	TORO P220	SHRUB SPRAY	0.98 in/h	0.50	31	1,043	521.4
A4	TORO P220	SHRUB SPRAY	1.31 in/h	0.50	23	1,412	706.0
A5	TORO P220	TURF SPRAY	1.48 in/h	1.30	53	4,156	2,078
A6	TORO P220	TURF SPRAY	0.90 in/h	1.30	87	4,478	2,239
A7	TORO P220	TURF SPRAY	1.68 in/h	1.30	47	3,955	1,977
A8	TORO P220	TURF SPRAY	1.38 in/h	1.30	57	3,410	1,705
A9	TORO P220	TURF SPRAY	1.00 in/h	1.30	79	4,288	2,144
A10	TORO P220	SHRUB SPRAY	1.62 in/h	0.50	19	842.3	421.2
A11	TORO P220	SHRUB SPRAY	1.02 in/h	0.50	30	1,716	858.2
A12	TORO P220	TURF SPRAY	1.63 in/h	1.30	48	2,792	1,396
A13	TORO P220	SHRUB SPRAY	1.54 in/h	0.50	20	1,637	818.4
A14	TORO P220	BUBBLER	3.45 in/h	1.30	23	437	218.5
A15	TORO P220	TURF SPRAY	1.61 in/h	1.30	49	4,257	2,129
A16	TORO P220	TURF SPRAY	1.13 in/h	1.30	70	4,996	2,498
A17	TORO P220	BUBBLER	3.40 in/h	1.30	23	161	80.5
A18	TORO P220	BUBBLER	3.40 in/h	1.30	23	575	287.5
A19	TORO P220	TURF SPRAY	1.95 in/h	1.30	40	2,394	1,197
A20	TORO P220	SHRUB SPRAY	1.70 in/h	0.50	18	1,523	761.3
A21	TORO P220	TURF SPRAY	1.80 in/h	1.30	44	4,774	2,387
A22	TORO P220	TURF SPRAY	1.26 in/h	1.30	62	3,845	1,922
A23	TORO P220	SHRUB SPRAY	1.74 in/h	0.50	18	1,482	741.0
A24	TORO P220	SHRUB SPRAY	0.75 in/h	0.50	40	791.9	395.9
A25	TORO P220	TURF SPRAY	1.74 in/h	1.30	45	4,164	2,082
A26	TORO P220	BUBBLER	3.40 in/h	1.30	23	322	161
B01	TORO P220	SHRUB SPRAY	2.11 in/h	0.50	15	343.7	171.8
B02	TORO P220	SHRUB SPRAY	2.00 in/h	0.50	15	542.5	271.2
B03	TORO P220	TURF SPRAY	2.56 in/h	1.30	31	1,223	611.7
B04	TORO P220	BUBBLER	3.45 in/h	1.30	23	759	379.5
B05	TORO P220	SHRUB SPRAY	1.72 in/h	0.50	18	1,066	532.8
B06	TORO P220	BUBBLER	3.45 in/h	1.30	23	874	437
B07	TORO P220	SHRUB SPRAY	1.70 in/h	0.50	18	1,143	571.3
B08	TORO P220	TURF SPRAY	2.16 in/h	1.30	37	3,509	1,755
B09	TORO P220	SHRUB SPRAY	1.81 in/h	0.50	17	706.7	353.3
B10	TORO P220	TURF SPRAY	2.13 in/h	1.30	37	2,467	1,234
B11	TORO P220	SHRUB SPRAY	1.76 in/h	0.50	18	725.7	362.9
C01	TORO P220	TURF SPRAY	1.62 in/h	1.30	49	4,514	2,257
C02	TORO P220	BUBBLER	3.40 in/h	1.30	23	92	46
C03	TORO P220	BUBBLER	3.40 in/h	1.30	23	276	138
C04	TORO P220	SHRUB SPRAY	0.55 in/h	0.50	55	354.6	177.3
C05	TORO P220	SHRUB SPRAY	1.88 in/h	0.50	16	1,133	566.4
C06	TORO P220	TURF SPRAY	0.87 in/h	1.30	90	660.7	330.3
C07	TORO P220	TURF SPRAY	1.90 in/h	1.30	42	3,868	1,934
C08	TORO P220	TURF SPRAY	1.43 in/h	1.30	55	5,529	2,765
C09	TORO P220	SHRUB SPRAY	1.56 in/h	0.50	20	1,972	985.8
C10	TORO P220	SHRUB SPRAY	0.94 in/h	0.50	32	826.0	413.0
C11	TORO P220	TURF SPRAY	1.70 in/h	1.30	46	4,585	2,292
C12	TORO P220	TURF SPRAY	0.68 in/h	1.30	114	7,465	3,733
C13	TORO P220	BUBBLER	3.40 in/h	1.30	23	437	218.5
C14	TORO P220	BUBBLER	3.43 in/h	1.30	23	989	494.5
C15	TORO P220	SHRUB SPRAY	1.43 in/h	0.50	21	2,025	1,012
C16	TORO P220	SHRUB SPRAY	0.85 in/h	0.50	36	1,121	560.5
C17	TORO P220	TURF SPRAY	1.60 in/h	1.30	49	4,697	2,348
C18	TORO P220	TURF SPRAY	1.57 in/h	1.30	50	5,008	2,504
C19	TORO P220	SHRUB SPRAY	1.35 in/h	0.50	23	2,400	1,200
C20	TORO P220	BUBBLER	3.44 in/h	1.30	23	506	253
C21	TORO P220	BUBBLER	3.40 in/h	1.30	23	644	322
C22	TORO P220	TURF SPRAY	1.63 in/h	1.30	48	4,853	2,426
C23	TORO P220	SHRUB SPRAY	1.59 in/h	0.50	19	1,807	903.7
C24	TORO P220	SHRUB SPRAY	0.84 in/h	0.50	36	966.5	483.2
C25	TORO P220	TURF SPRAY	1.94 in/h	1.30	41	1,811	905.3
		TOTALS:			2,269	135,875	67,937

WATERING SCHEDULE CLOCK 2 ON PUMP 2

NUMBER	MODEL	TYPE	PRECIP	IN./WEEK	MIN./WEEK	GAL./WEEK	GAL./DAY
D01	TORO P220	BUBBLER	3.40 in/h	1.30	23	230	115
D02	TORO P220	TURF SPRAY	1.86 in/h	1.30	42	1,729	864.6
D03	TORO P220	SHRUB SPRAY	1.69 in/h	0.50	18	1,686	842.8
D04	TORO P220	TURF SPRAY	1.12 in/h	1.30	70	5,617	2,808
D05	TORO P220	TURF SPRAY	1.79 in/h	1.30	44	3,792	1,896
D06	TORO P220	BUBBLER	3.40 in/h	1.30	23	644	322
D07	TORO P220	SHRUB SPRAY	0.81 in/h	0.50	38	1,533	766.3
D08	TORO P220	TURF SPRAY	1.75 in/h	1.30	45	4,558	2,279
D09	TORO P220	SHRUB SPRAY	1.85 in/h	0.50	17	908.0	454.0
D10	TORO P220	TURF SPRAY	1.38 in/h	1.30	57	2,516	1,258
D11	TORO P220	TURF SPRAY	2.20 in/h	1.30	36	2,838	1,419
D12	TORO P220	TURF SPRAY	2.29 in/h	1.30	35	2,087	1,043
D13	TORO P220	SHRUB SPRAY	2.18 in/h	0.50	14	805.7	402.8
D14	TORO P220	TURF SPRAY	1.63 in/h	1.30	48	2,860	1,430
D15	TORO P220	TURF SPRAY	1.45 in/h	1.30	54	3,236	1,618
D16	TORO P220	TURF SPRAY	0.91 in/h	1.30	86	2,971	1,485
D17	TORO P220	SHRUB SPRAY	0.98 in/h	0.50	31	358.8	179.4
D18	TORO P220	TURF SPRAY	1.91 in/h	1.30	41	2,137	1,069
D19	TORO P220	SHRUB SPRAY	1.67 in/h	0.50	19	1,152	576.2
D20	TORO P220	TURF SPRAY	2.16 in/h	1.30	37	2,045	1,023
D21	TORO P220	BUBBLER	3.46 in/h	1.30	23	1,702	851
D22	TORO P220	SHRUB SPRAY	1.66 in/h	0.50	19	1,535	767.5
D23	TORO P220	SHRUB SPRAY	0.59 in/h	0.50	52	158.5	79.3
D24	TORO P220	BUBBLER	3.41 in/h	1.30	23	391	195.5
D25	TORO P220	TURF SPRAY	1.90 in/h	1.30	42	3,579	1,789
D26	TORO P220	TURF SPRAY	0.74 in/h	1.30	106	2,063	1,032
D27	TORO P220	TURF SPRAY	1.68 in/h	1.30	47	3,391	1,695
D28	TORO P220	SHRUB SPRAY	2.14 in/h	0.50	15	462.1	231.1
D29	TORO P220	TURF SPRAY	1.89 in/h	1.30	42	2,095	1,048
D30	TORO P220	BUBBLER	3.45 in/h	1.30	23	966	483
D31	TORO P220	SHRUB SPRAY	1.32 in/h	0.50	23	1,912	955.8
D32	TORO P220	SHRUB SPRAY	2.10 in/h	0.50	15	791.5	395.7
D33	TORO P220	TURF SPRAY	2.20 in/h	1.30	36	2,044	1,022
D34	TORO P220	SHRUB SPRAY	1.11 in/h	0.50	28	1,415	707.7
D35	TORO P220	TURF SPRAY	1.70 in/h	1.30	46	4,929	2,465
D36	TORO P220	SHRUB SPRAY	1.68 in/h	0.50	18	923.9	462.0
D37	TORO P220	TURF SPRAY	1.03 in/h	1.30	77	3,454	1,727
D38	TORO P220	TURF SPRAY	2.17 in/h	1.30	36	2,018	1,009
D39	TORO P220	TURF SPRAY	2.25 in/h	1.30	35	2,227	1,114
E01	TORO P220	TURF SPRAY	1.96 in/h	1.30	40	1,453	726.4
E02	TORO P220	SHRUB SPRAY	2.07 in/h	0.50	15	726.8	363.4
E03	TORO P220	TURF SPRAY	2.14 in/h	1.30	37	1,984	991.9
E04	TORO P220	BUBBLER	3.60 in/h	1.30	22	506	253
E05	TORO P220	SHRUB SPRAY	1.39 in/h	0.50	22	841.7	420.9
E06	TORO P220	SHRUB SPRAY	1.74 in/h	0.50	18	957.7	478.9
E07	TORO P220	BUBBLER	3.54 in/h	1.30	23	713	356.5
E08	TORO P220	SHRUB SPRAY	1.91 in/h	0.50	16	952.0	476.0
E09	TORO P220	TURF SPRAY	1.93 in/h	1.30	41	3,336	1,668
E10	TORO P220	TURF SPRAY	1.86 in/h	1.30	42	3,655	1,828
E11	TORO P220	SHRUB SPRAY	2.27 in/h	0.50	14	831.6	415.8
E12	TORO P220	SHRUB SPRAY	1.40 in/h	0.50	22	1,298	648.9
E13	TORO P220	BUBBLER	3.54 in/h	1.30	23	1,081	540.5
E14	TORO P220	SHRUB SPRAY	1.67 in/h	0.50	18	1,055	527.5
E15	TORO P220	TURF SPRAY	1.77 in/h	1.30	45	1,768	884.0
E16	TORO P220	SHRUB SPRAY	1.73 in/h	0.50	18	971.0	485.5
E17	TORO P220	BUBBLER	3.68 in/h	1.30	22	1,012	506
E18	TORO P220	SHRUB SPRAY	2.34 in/h	0.50	13	764.9	382.5
F01	TORO P220	SHRUB SPRAY	1.62 in/h	0.50	19	1,758	879.1
F02	TORO P220	TURF SPRAY	1.41 in/h	1.30	56	5,353	2,677
F03	TORO P220	TURF SPRAY	1.02 in/h	1.30	77	3,480	1,740
F04	TORO P220	BUBBLER	3.40 in/h	1.30	23	207	103.5
F05	TORO P220	SHRUB SPRAY	0.73 in/h	0.50	42	1,695	847.4
F06	TORO P220	SHRUB SPRAY	1.50 in/h	0.50	21	950.7	475.4
F07	TORO P220	TURF SPRAY	1.71 in/h	1.30	46	4,842	2,421
F08	TORO P220	TURF SPRAY	0.85 in/h	1.30	92	8,421	4,211
F09	TORO P220	SHRUB SPRAY	1.35 in/h	0.50	23	653.1	326.6
F10	TORO P220	BUBBLER	3.40 in/h	1.30	23	1,426	713
F11	TORO P220	TURF SPRAY	1.80 in/h	1.30	44	4,423	2,211
F12	TORO P220	SHRUB SPRAY	1.31 in/h	0.50	23	1,179	589.5
F13	TORO P220	SHRUB SPRAY	1.02 in/h	0.50	30	655.9	327.9
F14	TORO P220	TURF SPRAY	1.22 in/h	1.30	65	6,698	3,349
F15	TORO P220	SHRUB SPRAY	1.57 in/h	0.50	20	779.0	389.5

WATERING SCHEDULE CLOCK 2 ON PUMP 2 - CONTINUED...

NUMBER	MODEL	TYPE	PRECIP	IN./WEEK	MIN./WEEK	GAL./WEEK	GAL./DAY
F16	TORO P220	TURF SPRAY	1.63 in/h	1.30	48	5,021	2,511
F17	TORO P220	SHRUB SPRAY	0.92 in/h	0.50	33	391.4	195.7
F18	TORO P220	TURF SPRAY	0.82 in/h	1.30	96	2,223	1,112
F19	TORO P220	BUBBLER	3.45 in/h	1.30	23	1,196	598
F20	TORO P220	SHRUB SPRAY	1.30 in/h	0.50	24	841.8	420.9
F21	TORO P220	TURF SPRAY	0.76 in/h	1.30	103	3,544	1,772
F22	TORO P220	TURF SPRAY	1.52 in/h	1.30	52	5,030	2,515
F23	TORO P220	SHRUB SPRAY	1.24 in/h	0.50	25	1,251	625.6
F24	TORO P220	SHRUB SPRAY	0.78 in/h	0.50	39	2,615	1,308
F25	TORO P220	SHRUB SPRAY	1.24 in/h	0.50	25	1,575	787.7
F26	TORO P220	TURF SPRAY	0.87 in/h	1.30	90	741.8	370.9
F27	TORO P220	TURF SPRAY	1.72 in/h	1.30	46	4,667	2,333
F28	TORO P220	BUBBLER	3.47 in/h	1.30	23	437	218.5
F29	TORO P220	SHRUB SPRAY	1.00 in/h	0.50	30	1,945	972.4
F30	TORO P220	TURF SPRAY	0.80 in/h	1.30	98	4,088	2,044
F31	TORO P220	TURF SPRAY	1.65 in/h	1.30	48	4,272	2,136
F32	TORO P220	TURF SPRAY	2.06 in/h	1.30	38	3,506	1,753
F33	TORO P220	SHRUB SPRAY	1.03 in/h	0.50	30	1,433	716.3
		TOTALS:			3,410	190,965	95,483

WATERING SCHEDULE CLOCK 3 ON PUMP 3

NUMBER	MODEL	TYPE	PRECIP	IN./WEEK	MIN./WEEK	GAL./WEEK	GAL./DAY
A28	TORO P220	BUBBLER	3.43 in/h	1.30	23	598	299
G01	TORO P220	SHRUB SPRAY	2.17 in/h	0.50	14	752.5	376.2
G02	TORO P220	TURF SPRAY	2.22 in/h	1.30	36	3,734	1,867
G03	TORO P220	SHRUB SPRAY	1.26 in/h	0.50	24	1,900	950.1
G04	TORO P220	TURF SPRAY	1.60 in/h	1.30	49	3,901	1,950
G05	TORO P220	BUBBLER	3.41 in/h	1.30	23	1,541	770.5
G06	TORO P220	SHRUB SPRAY	0.84 in/h	0.50	36	1,426	712.9
G07	TORO P220	TURF SPRAY	1.75 in/h	1.30	45	2,726	1,363
G08	TORO P220	BUBBLER	3.40 in/h	1.30	23	1,081	540.5
G09	TORO P220	TURF SPRAY	1.74 in/h	1.30	45	4,427	2,214
G10	TORO P220	SHRUB SPRAY	1.47 in/h	0.50	21	1,422	711.2
G11	TORO P220	TURF SPRAY	1.14 in/h	1.30	69	4,328	2,164
G12	TORO P220	SHRUB SPRAY	1.32 in/h	0.50	23	1,510	754.8
G13	TORO P220	TURF SPRAY	1.85 in/h	1.30	43	4,162	2,081
G14	TORO P220	SHRUB SPRAY	0.94 in/h	0.50	32	3,227	1,613
G15	TORO P220	SHRUB SPRAY	1.48 in/h	0.50	21	2,309	1,154
G16	TORO P220	TURF SPRAY	1.92 in/h	1.30	41	4,105	2,053
G17	TORO P220	SHRUB SPRAY	1.34 in/h	0.50	23	1,046	523.2
G18	TORO P220	TURF SPRAY	2.08 in/h	1.30	38	2,551	1,276
G19	TORO P220	TURF SPRAY	1.90 in/h	1.30	42	1,463	731.5
G20	TORO P220	SHRUB SPRAY	2.76 in/h	0.50	11	517.0	258.5
G21	TORO P220	SHRUB SPRAY	1.73 in/h	0.50	18	1,111	555.5
G22	TORO P220	SHRUB SPRAY	2.01 in/h	0.50	15	881.1	440.5
G23	TORO P220	TURF SPRAY	2.33 in/h	1.30	34	1,375	687.5
G24	TORO P220	SHRUB SPRAY	0.99 in/h	0.50	31	307.8	153.9
G25	TORO P220	BUBBLER	3.40 in/h	1.30	23	368	184
G26	TORO P220	TURF SPRAY	2.96 in/h	1.30	27	1,634	817.0
G27	TORO P220	SHRUB SPRAY	1.63 in/h	0.50	19	1,323	661.7
G28	TORO P220	SHRUB SPRAY	1.63 in/h	0.50	19	1,443	721.4
G29	TORO P220	BUBBLER	3.41 in/h	1.30	23	575	287.5
G30	TORO P220	SHRUB SPRAY	2.47 in/h	0.50	13	698.0	349.0
G31	TORO P220	TURF SPRAY	2.46 in/h	1.30	32	3,424	1,712
G32	TORO P220	SHRUB SPRAY	1.80 in/h	0.50	17	1,137	568.4
G33	TORO P220	BUBBLER	3.57 in/h	1.30	22	440	220
G34	TORO P220	TURF SPRAY	2.24 in/h	1.30	35	1,894	946.8
G35	TORO P220	SHRUB SPRAY	0.87 in/h	0.50	35	1,991	995.7
G36	TORO P220	SHRUB SPRAY	1.13 in/h	0.50	27	2,126	1,063
G37	TORO P220	TURF SPRAY	2.19 in/h	1.30	36	3,670	1,835
G38	TORO P220	SHRUB SPRAY	2.83 in/h	0.50	11	634.8	317.4
H01	TORO P220	SHRUB SPRAY	1.95 in/h	0.50	16	1,202	601.0
H02	TORO P220	BUBBLER	3.40 in/h	1.30	23	851	425.5
H03	TORO P220	SHRUB SPRAY	1.70 in/h	0.50	18	1,144	572.1
H04	TORO P220	TURF SPRAY	1.88 in/h	1.30	42	4,605	2,302
H05	TORO P220	SHRUB SPRAY	1.81 in/h	0.50	17	1,342	671.0
H06	TORO P220	TURF SPRAY	1.79 in/h	1.30	44	4,259	2,130
H07	TORO P220	BUBBLER	3.40 in/h	1.30	23	759	379.5
H08	TORO P220	SHRUB SPRAY	1.73 in/h	0.50	18	1,561	780.7
H09	TORO P220	TURF SPRAY	1.76 in/h	1.30	45	2,440	1,220
H10	TORO P220	SHRUB SPRAY	2.67 in/h	0.50	12	1,014	507
H11	TORO P220	BUBBLER	3.40 in/h	1.30	23	115	57.5
H12	TORO P220	BUBBLER	3.40 in/h	1.30	23	322	161
H13	TORO P220	BUBBLER	3.40 in/h	1.30	23	161	80.5
H14	TORO P220	SHRUB SPRAY	1.58 in/h	0.50	20	610.2	305.1
H15	TORO P220	BUBBLER	3.63 in/h	1.30	22	814	407
H16	TORO P220	TURF SPRAY	1.91 in/h	1.30	41	3,123	1,562
H17	TORO P220	SHRUB SPRAY	2.04 in/h	0.50	15	1,478	738.9
H18	TORO P220	SHRUB SPRAY	1.95 in/h	0.50	16	532.6	266.3
I01	TORO P220	TURF SPRAY	1.79 in/h	1.30	44	1,845	922.6
I02	TORO P220	SHRUB SPRAY	1.35 in/h	0.50	23	2,088	1,044
I03	TORO P220	BUBBLER	3.40 in/h	1.30	23	1,127	563.5
I04	TORO P220	TURF SPRAY	1.88 in/h	1.30	42	4,131	2,066
I05	TORO P220	TURF SPRAY	1.49 in/h	1.30	53	2,121	1,061
I06	TORO P220	TURF SPRAY	1.08 in/h	1.30	72	2,701	1,350
I07	TORO P220	SHRUB SPRAY	0.70 in/h	0.50	43	3,540	1,770
I08	TORO P220	SHRUB SPRAY	1.45 in/h	0.50	21	2,161	1,080
I09	TORO P220	TURF SPRAY	1.65 in/h	1.30	48	4,781	2,391
I10	TORO P220	BUBBLER	3.40 in/h	1.30	23	368	184
I11	TORO P220	TURF SPRAY	1.82 in/h	1.30	43	4,324	2,162
I12	TORO P220	SHRUB SPRAY	1.35 in/h	0.50	23	2,188	1,094
I13	TORO P220	TURF SPRAY	1.74 in/h	1.30	45	4,514	2,257
I14	TORO P220	SHRUB SPRAY	1.41 in/h	0.50	22	2,189	1,095
I15	TORO P220	TURF SPRAY	2.14 in/h	1.30	37	1,870	934.9
I16	TORO P220	SHRUB SPRAY	0.83 in/h	0.50	36	1,132	566.1
I17	TORO P220	SHRUB SPRAY	1.36 in/h	0.50	23	1,469	734.3
I18	TORO P220	TURF SPRAY	2.07 in/h	1.30	38	1,940	970.2
I19	TORO P220	SHRUB SPRAY	0.96 in/h	0.50	32	826.0	413.0
I20	TORO P220	TURF SPRAY	2.16 in/h	1.30	37	3,339	1,669
I21	TORO P220	SHRUB SPRAY	1.50 in/h	0.50	21	2,167	1,084
I22	TORO P220	BUBBLER	3.40 in/h	1.30	23	115	57.5
I23	TORO P220	BUBBLER	3.41 in/h	1.30	23	713	356.5
I24	TORO P220	TURF SPRAY	2.00 in/h	1.30	40	3,656	1,828
I25	TORO P220	SHRUB SPRAY	1.90 in/h	0.50	16	1,077	538.7
I26	TORO P220	SHRUB SPRAY	1.37 in/h	0.50	22	2,124	1,062
I27	TORO P220	TURF SPRAY	2.23 in/h	1.30	35	3,832	1,916
I28	TORO P220	SHRUB SPRAY	0.74 in/h	0.50	41	3,432	1,716
I29	TORO P220	TURF SPRAY	2.03 in/h	1.30	39	2,099	1,049
I30	TORO P220	TURF SPRAY	3.19 in/h	1.30	25	1,755	877.5
I31	TORO P220	BUBBLER	3.40 in/h	1.30	23	828	414
I32	TORO P220	SHRUB SPRAY	1.29 in/h	0.50	24	2,471	1,235
I33	TORO P220	BUBBLER	3.40 in/h	1.30	23	759	379.5
I34	TORO P220	TURF SPRAY	2.79 in/h	1.30	28	2,880	1,440
I36	TORO P220	SHRUB SPRAY	1.58 in/h	0.50	19	1,701	850.7
I37	TORO P220	SHRUB SPRAY	1.84 in/h	0.50	17	744.9	372.5
I38	TORO P220	TURF SPRAY	2.14 in/h	1.30	37	1,958	979.0
		TOTALS:			2,744	181,060	90,530

IRRIGATION WATERING SCHEDULE NOTES:

THESE NOTES APPLY TO INSTALLING THE TORO SENTINEL IRRIGATION TIMER, DISREGARD IF ANOTHER BRAND IS INSTALLED. THE WATERING SCHEDULE SHOWN FOR CONTROLLER'S IS FOR DEMONSTRATION PURPOSES ONLY! IT IS THE RESPONSIBILITY OF THE IRRIGATION CONTRACTOR TO SET UP A WATERING SCHEDULE FOR ALL CONTROLLERS. THE IRRIGATION CONSULTANT RECOMMENDS PROGRAMING TO BE ABLE TO SHUT DOWN ONE, OR ALL PUMP STATIONS SIMULTANEOUSLY, IN THE EVENT THE FLOW PER EACH PUMP EXCEEDS 300 GPM. FLOW ABOVE 300 GPM, PER PUMP, MAY INDICATE A BROKEN MAINLINE, WHICH REQUIRES TO SHUT DOWN THE PUMP IMMEDIATELY! A TEXT MESSAGE SHALL BE IMMEDIATELY SENT TO THE MAINTENANCE DEPARTMENT, TO INFORM THEM A PUMP HAS FAILED, OR HAS BEEN SHUT DOWN. THE MAINTENANCE DEPARTMENT SHALL IMMEDIATELY FIND AND REPAIR THE FAULT THAT SHUT DOWN THE PUMP (S) AND SHALL RESET PUMPS AND CONTROLLERS TO RESUME SUPPLYING WATER TO THE SPRINKLER SYSTEM. THE IRRIGATION CONTRACTOR SHALL PROGRAM THE AUTOMATIC IRRIGATION CONTROLLERS TO OPERATE UP TO, BUT NOT MORE THEN EIGHT (8) ZONES AT ONE TIME, OR AS MANY ZONES AS POSSIBLE WHOSE FLOW ADDS UP TO, BUT DOES NOT EXCEED, 300 G.P.M., PER EACH PUMP. CONTROLLERS CAN ONLY ACTUATE AND OPERATE 8 ZONES AT ONE TIME! THE IRRIGATION CONTRACTOR SHALL CONNECT ALL MOISTURE SENSORS IN THE LOCATION SHOWN ON THE PLANS AND SHALL MARK ALL SUCH LOCATIONS ON THE AS BUILT PLAN. IF THE IRRIGATION CONTRACTOR FAILS TO MARK THE EXACT LOCATION OF THE MOISTURE SENSORS ON THE AS-BUILT PLAN THE OWNER SHALL FREEZE FINAL PAYMENT (S) UNTIL OR UNLESS ALL MOISTURE SENSORS HAS BEEN PLACED ON THE AS-BUILT PLANS. THE IRRIGATION CONTRACTOR SHALL TURN OVER TO THE LANDSCAPE ARCHITECT, 7 DAYS PRIOR TO THE FINAL WALK THRU INSPECTION, A SET OF AS-BUILT PLANS, WHICH SHALL SHOW ALL INSTALLED LOCATIONS OF MOISTURE SENSORS, PUMPS, CONTROLLERS, VALVES & SPRINKLER HEADS! NO EXCEPTIONS ALLOWED.

BRUCE HOWARD & ASSOCIATES, INC.
Landscape Architects, Site Planners & Golf Course Designers

PROJECT:
ESTERO PARKWAY
VILLAGE OF ESTERO

DRAWING TITLE:
IRRIGATION SCHEDULES FOR
GPM PER/VALVE & WATERING TIME

NORTH

N.T.S

PROJECT NUMBER

07-03-2019

REGISTERED LANDSCAPE ARCHITECT BRUCE JAYCE HOWARD LA 6667467 STATE OF FLORIDA
Digitally signed by Bruce J Howard
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