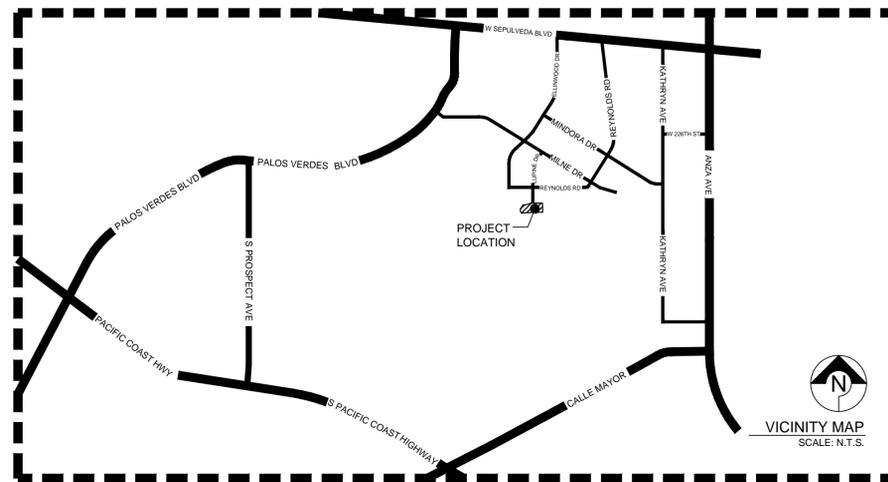


# SEA AIRE GOLF COURSE

## IRRIGATION RETROFIT

# IRRIGATION CONSTRUCTION PLANS

VICINITY MAP N.T.S.





**WATER PRESSURE LOSS CALCULATIONS**

WATER METER NUMBER		WATER METER SIZE (Inches)	
HYDRAULIC GRADE LINE (FT)		WATER METER ELEVATION (FT)	
ELEVATION DIFFERENCE (FT)		STATIC PRESSURE (PSI)	60.0
REMOTE CONTROL VALVE #	49	REMOTE CONTROL VALVE SIZE (In.)	2.00
R.C.V. DEMAND (GPM)	78	TOTAL DEMAND (GPM)	78
HIGHEST HEAD SERVED (FT)		STATIC PRESSURE AT HIGHEST HEAD	


**sweeney + associates**  
 IRRIGATION DESIGN AND CONSULTING

PRESSURE LOSS CALCULATION IS PROVIDED FOR THIS PROJECT BY SWEENEY & ASSOCIATES, INC. UNAUTHORIZED USE BY ANY OTHER PERSON, COMPANY OR PROJECT IS FORBIDDEN WITHOUT WRITTEN PERMISSION.

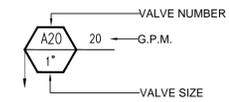
SIZE (Inches)	DESCRIPTION	FLOW	#	LOSS	PSI	
N/A	SERVICE LINE (50 FT OF TYPE K COPPER)	N/A	1	0.00	PSI	
N/A	WATER METER (XXXX TYPE)	N/A	2	0.00	PSI	
2.00	BACKFLOW PREVENTER (R/P TYPE)	78	3	13.50	PSI	
2.00	FILTRATION (WYFE FILTER)	78	4	1.25	PSI	
N/A	PRESSURE REGULATOR (WILKINS 500HLR)	N/A	5	0.00	PSI	
2.00	BFD ASSEMBLY PIPING (BRASS W/ 4 ELLS)	78	6	3.52	PSI	
2.00	MASTER CONTROL VALVE	78	7	1.98	PSI	
1.50	FLOW SENSOR	78	8	1.00	PSI	
3.00	ISOLATION VALVES (BALL TYPE)	78	9	1.00	PSI	
3.00	300 FEET OF MAINLINE: CL 200 PVC	78	10	1.49	PSI	
N/A	X XXX FEET OF MAINLINE: CL 315 PVC	N/A	11	0.00	PSI	
N/A	X XXX FEET OF MAINLINE: CL 315 PVC	N/A	12	0.00	PSI	
3.00	4 - 90 DEGREE ELBOWS	78	13	0.34	PSI	
2.00	REMOTE CONTROL VALVE ASSEMBLY	78	14	2.56	PSI	
10%	LATERAL LINE LOSSES	78	15	4.00	PSI	
20%	FITTING LOSS (IN ADDITION TO ELBOWS SHOWN)	N/A	16	0.30	PSI	
0.00	ELEVATION CHANGE (P.O.C. TO HIGHEST HEAD)	N/A	17	0.00	PSI	
TOTAL SYSTEM PRESSURE LOSS (SUM OF #1 THRU #17)				18	30.9	PSI
PRESSURE REQUIRED AT HEAD (OPERATING PRESSURE)				19	40.0	PSI
TOTAL PRESSURE REQUIRED (SUM OF #18 AND #19)				20	70.9	PSI
STATIC WATER PRESSURE (FROM ABOVE)				21	60.0	PSI
RESIDUAL PRESSURE (SUBTRACT #20 FROM #21)				22	-10.9	PSI
SET PRV OR MCV AT (#20 PLUS 10 PSI)				23	N/A	PSI
PRESSURE BOOST, IF REQUIRED (SET TO ACHIEVE 20 PSI RESIDUAL)				24	30.9	PSI

**IRRIGATION CONTROLLER RUN TIMES**

POC or Controller	MONTHS												Total / Avg.				
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC					
<b>A</b>	ETo / Month (Inches):	2.20	2.70	3.70	4.70	5.50	5.80	6.20	5.90	5.00	3.90	2.60	1.90	<b>50.10</b>			
	ETo / Day (Inches):	0.07	0.10	0.12	0.16	0.18	0.19	0.20	0.19	0.17	0.13	0.09	0.06	<b>0.14</b>			
	Irrigation Days / Week:	6	6	6	6	6	6	6	6	6	6	6	6	<b>6</b>			
Plant / Irrig. Type	AKc	Pr Rate	IE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		
<b>Turf</b>	0.80	0.72	0.80	6.9	9.4	11.6	15.2	17.2	18.8	19.4	18.5	16.2	12.2	8.4	6.0	Min./Day/Zone	
<b>Rotors</b>	Number of Zones:			21	144.9	196.9	243.7	319.9	362.2	394.7	408.3	388.6	340.3	266.9	176.9	125.1	Total Min./Day
<b>Turf</b>	0.80	0.72	0.80	6.9	9.4	11.6	15.2	17.2	18.8	19.4	18.5	16.2	12.2	8.4	6.0	Min./Day/Zone	
<b>VIH</b>	Number of Zones:			92	634.8	862.5	1067.6	1401.3	1586.9	1729.3	1788.9	1702.3	1490.7	1125.3	775.2	548.2	Total Min./Day
<b>Turf</b>	0.80	0.39	0.80	12.7	17.3	21.4	28.1	31.8	34.7	35.9	34.2	29.9	22.6	15.6	11.0	Min./Day/Zone	
<b>MP Rotator</b>	Number of Zones:			2	25.5	34.6	42.8	56.2	63.7	69.4	71.8	68.3	59.8	45.2	31.1	22.0	Total Min./Day
<b>Shrubs</b>	0.40	0.39	0.80	6.4	8.7	10.7	14.1	15.9	17.4	17.9	17.1	15.0	11.3	7.8	5.5	Min./Day/Zone	
<b>MP Rotator</b>	Number of Zones:			5	31.8	43.3	53.6	70.3	79.6	86.8	89.7	85.4	74.8	56.5	38.9	27.5	Total Min./Day
<b>Turf</b>	0.80	1.74	0.65	3.5	4.8	5.9	7.8	8.8	9.6	9.9	9.4	8.3	6.2	4.3	3.0	Min./Day/Zone	
<b>Spray</b>	Number of Zones:			2	7.0	9.5	11.8	15.5	17.6	19.1	19.8	18.8	16.5	12.5	8.6	6.1	Total Min./Day
<b>Total Number of Zones:</b>				<b>122</b>	844	1147	1419	1863	2110	2299	2379	2263	1982	1496	1031	729	Total Min./Day
<b>Total Controller Run Time in Hours:</b>				<b>14.07</b>	<b>19.11</b>	<b>23.66</b>	<b>31.05</b>	<b>35.17</b>	<b>38.32</b>	<b>39.64</b>	<b>37.72</b>	<b>33.04</b>	<b>24.94</b>	<b>17.18</b>	<b>12.15</b>	<b>12.15</b>	Total Hrs./Day
				JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		

**IRRIGATION MATERIAL LEGEND**

SYMBOL	MANUFACT.	MODEL NO. / DESCRIPTION	GPM	PSI	RADIUS	PR (TRI.)	DETAIL
	RAIN BIRD	1806-SAM-PRS-NP POP-UP TURF HEAD W/ 5Q/5H NOZZLES	.12, .23		30	5 FT	2.05 IN./HR. A
	RAIN BIRD	1806-SAM-PRS-NP POP-UP TURF HEAD W/ 8Q/8T/8H/8F NOZZLES	.24, .32, .47, .97		30	8 FT	1.69 IN./HR. A
	RAIN BIRD	1806-SAM-PRS-NP POP-UP TURF HEAD W/ 10Q/10T/10H/10F NOZZLES	.42, .57, .88, 1.59		30	10 FT	1.77 IN./HR. A
	RAIN BIRD	1806-SAM-PRS-NP POP-UP TURF HEAD W/ 12Q/12T/12H/12F NOZZLES	.67, .89, 1.30, 2.70		30	12 FT	2.09 IN./HR. A
	RAIN BIRD	1806-SAM-PRS-NP POP-UP TURF HEAD W/ 15Q/15T/15H/15F NOZZLES	.97, 1.30, 1.86, 3.75		30	15 FT	1.85 IN./HR. A
	RAIN BIRD	1806-SAM-PRS-NP POP-UP TURF HEAD W/ LCS/RCS/SS530 NOZZLES	.65, .65, 1.30		30	4X15 FT 4X30 FT	2.41 IN./HR. A
	RAIN BIRD	1812-SAM-PRS-NP POP-UP SHRUB HEAD W/ 5Q/5H NOZZLES	.12, .23		30	5 FT	2.05 IN./HR. A
	RAIN BIRD	1812-SAM-PRS-NP POP-UP SHRUB HEAD W/ 8Q/8T/8H/8F NOZZLES	.24, .32, .47, .97		30	8 FT	1.69 IN./HR. A
	RAIN BIRD	1812-SAM-PRS-NP POP-UP SHRUB HEAD W/ 10Q/10T/10H/10F NOZZLES	.42, .57, .88, 1.59		30	10 FT	1.77 IN./HR. A
	RAIN BIRD	1812-SAM-PRS-NP POP-UP SHRUB HEAD W/ 12Q/12T/12H/12F NOZZLES	.67, .89, 1.30, 2.70		30	12 FT	2.09 IN./HR. A
	RAIN BIRD	1812-SAM-PRS-NP POP-UP SHRUB HEAD W/ 15Q/15T/15H/15F NOZZLES	.97, 1.30, 1.86, 3.75		30	15 FT	1.85 IN./HR. A
	RAIN BIRD	1812-SAM-PRS-NP POP-UP SHRUB HEAD W/ LCS/RCS/SS530 NOZZLES	.65, .65, 1.30		30	4X15 FT 4X30 FT	2.41 IN./HR. A
	RAIN BIRD	1812-SAM-PRS-NP POP-UP POP-UP SHRUB HEAD W/ MP2000 NOZZLE	.40, .74		40	20 FT	0.39 IN./HR. A
	RAIN BIRD	1806-SAM-PRS-NP POP-UP TURF HEAD W/ MP1000 NOZZLE	.19, .37, .75		40	14 FT	0.39 IN./HR. A
	RAIN BIRD	1806-SAM-PRS-NP POP-UP TURF HEAD W/ MP2000 NOZZLE	.40, .74, 1.47		40	20 FT	0.39 IN./HR. A
	RAIN BIRD	1806-SAM-PRS-NP POP-UP TURF HEAD W/ MP3000 NOZZLE	.86, 1.82, 3.64		40	30 FT	0.39 IN./HR. A
	HUNTER	I-20-06-5-R W/ NOZZLES 5.0 POP-UP TURF ROTOR HEAD	5.0		45	40 FT	0.72 IN./HR. A
	HUNTER	I-20-06-XX-R W/ NOZZLES .75SR/1.5SR/3.0SR POP-UP TURF ROTOR HEAD	0.68, 1.30, 2.70		40	20 FT	0.75 IN./HR. A
	HUNTER	I-20-06-XX-R W/ NOZZLES 1.5/2.5/5.0 POP-UP TURF ROTOR HEAD	1.45, 2.30, 4.75		40	27 FT	0.73 IN./HR. A
	HUNTER	I-20-06-XX-R W/ NOZZLES 2.0/4.0/8.0 POP-UP TURF ROTOR HEAD	1.85, 3.75, 7.50		40	34 FT	0.72 IN./HR. A
	HUNTER	G835D-8-P5 VALVE IN HEAD ROTOR WITH BUILT-IN HUNTER DECODER	8.0		50	39 FT	XX IN./HR. (Q) B
	J.D.G.T.	IRRIGATION BOOSTER PUMP MODEL PAR-14G25-243. SEE DETAIL. INSTALL PER MANUFACTURER'S RECOMMENDATIONS ASSEMBLED BY JOHN DEERE GREEN TECH, CONTACT RYAN GRIFFIN (949) 836-7940.					Q
	WILKINS	475 SERIES, 3" R/P BACKFLOW PREVENTION ASSEMBLY W/ MODEL MJFS VALVE SETTER ASSEMBLY					R
	BUCKNER/SUPERIOR	MODEL 3200 2" NORMALLY CLOSED, BRASS MASTER CONTROL VALVE. INSTALL ONE HUNTER DECODER AT THE MASTER VALVE LOCATION. CONNECT MASTER VALVE AND DECODER TO THE TWO-WIRE PATH TO THE CONTROLLER. MASTER CONTROL VALVE SHALL BE INSTALLED IN A SINGLE STANDARD SIZED RECTANGULAR VALVE BOX.					C
	HUNTER	FCI-300 3" PVC FLOW SENSOR W/ ICD-SEN, INSTALL PER MANUFACTURER'S RECOMMENDATIONS AND WIRE TO CONTROLLER					D
	NIBCO	T-590-Y THREE PIECE THREADED BRONZE BALL VALVE - 3" IN SIZE					E
	RAIN BIRD	44NP (1") QUICK COUPLER VALVE, INSTALL WITHIN 10" ROUND VALVE BOX					F
	HUNTER	ICV-XX1G-AS-R (1", 1 1/2", 2") SERIES PRESSURE REGULATED, PLASTIC REMOTE CONTROL VALVE, SIZE AS SHOWN ALL RCV'S SHALL BE CONNECTED TO A RAIN MASTER TW-D DECODER, EITHER A SINGLE STATION OR A MULTIPLE STATION UNIT, SEE DECODER SYMBOL.					G
	HUNTER	ICD-X00 DECODERS IN 1,2,4 STATION COUNTS. NUMBER IN THE SYMBOL REPRESENTS THE STATION COUNT OF THE DECODER. CONNECT ADJACENT RCV'S TO THE MULTIPLE STATION DECODER AS SHOWN IN THE DETAILS. OPEN STATIONS MAY OCCUR ON MULTIPLE STATION DECODERS. DO NOT RUN MORE THAN 100 FEET AWAY FROM ANY DECODER. SYMBOL WITH A "G" INDICATES REQUIRED GROUND LOCATION.					H,J,K
	HUNTER	SYMBOL REPRESENTS TWO ACC-99D-HFS-SS TWO WIRE PATH DECODER BASED CONTROLLERS IN WALL MOUNT STAINLESS STEEL ENCLOSURES WITH HUNTER MASTER VALVE AND FLOW SENSOR RELAY TO INSURE BOTH CONTROLLERS UTILIZE ONE MASTER VALVE AND ONE FLOW SENSOR. CONTRACTOR SHALL ALSO PURCHASE (2) ICD-HF DECODER PROGRAMMERS AND (2) ICR-KITS FOR REMOTE VALVE ACTIVATION.					K,L
	HUNTER	SOLAR SYNC, MOUNT PER MANUFACTURER'S SPECIFICATIONS IN FULL SUN EXPOSURE AND WIRE TO CONTROLLER					N/A
	N/A	240 VOLT (ONE) PHASE ELECTRICAL POWER FOR BOOSTER PUMP SYSTEM, PROVIDED BY ELECTRICIAN, VERIFY ACTUAL LOCATION IN FIELD					N/A
	N/A	120 VOLT ELECTRICAL POWER, PROVIDED BY ELECTRICIAN, VERIFY ACTUAL LOCATION IN FIELD					N/A
	AS APPROVED	PURPLE "RECYCLED WATER" PVC PIPE 3/4" - 3" SCH. 40 AS LATERAL LINES 12" BELOW GRADE					M
	AS APPROVED	PURPLE "RECYCLED WATER" PVC PIPE 3" CL. 315 W/ SOLVENT WELD SCH.80 FITTINGS, AS MAINLINES 24" BELOW GRADE, ALL MAINLINE SHALL RECEIVE THRUST BLOCKS					M,P
	AS APPROVED	PVC PIPE SCH. 40 AS SLEEVING, 2.5 TIMES THE DIAMETER OF PIPE OR WIRE BUNDLE CARRIED PLACE BELOW ALL PAVING, HARDSCAPE ETC. AND AS DIRECTED BY OWNER'S AUTHORIZED REPRESENTATIVE.					N
	HUNTER	IDWIRE1 IRRIGATION COMMUNICATION CONTROL WIRE #14GAUGE (U.L. APPROVED)					M,N,O
	HUNTER	DBY-6 DIRECT BURIAL WATER-PROOF WIRE CONNECTORS FOR USE ON ALL WIRE CONNECTIONS (U.L. APPROVED)					O
	K.B.I.	KSC-XXX-S SWING CHECK VALVE, LINE SIZE, 1 DOWNSTREAM OF EACH RCV WHEN RCV IS LOWER THAN THE SPRINKLERS INSTALL WITHIN SPRINKLER/DRIP ZONES AS REQUIRED TO PREVENT LOW HEAD/EMITTER DRAINAGE.					N/A
	K.B.I.	KC-XXX-S SPRING CHECK VALVE, LINE SIZE, 1 DOWNSTREAM OF EACH RCV IMMEDIATELY ABOVE FIRST LATERAL LINE TEE WHEN RCV IS HIGHER THAN THE SPRINKLERS, INSTALL WITHIN SPRINKLER/DRIP ZONES AS REQUIRED TO PREVENT LOW HEAD/EMITTER DRAINAGE.					N/A
	CARSON	VALVE BOXES, SIZE PER EQUIPMENT LEGEND, WITH T-COVER LIDS AND CAPTIVE BOLT AND LOC-KIT. FOR ROUND FLUSH VALVES AND AIR RELIEF VALVES USE MODEL 708, 10" ROUND SHALL BE MODEL 910, 12" STANDARD RECT. SHALL BE MODEL 1419, 12" JUMBO RECT. SHALL BE MODEL 1220, SUPER JUMBO SHALL BE MODEL 1324, AND SUPER JUMBO XL SHALL BE MODEL 1730. VALVE BOXES SHALL HAVE GREEN BODIES AND GREEN LIDS. DO NOT INSTALL IN CONCRETE OR ASPHALT					N/A
	AS APPROVED	TRENCHES WITHIN TURF AREAS SHALL BE RE-SEEDED WITH SEED MIXES APPROVED BY THE CITY OF TORRANCE					



**Underground Service Alert**  
 Call: TOLL FREE  
**1-800-227-2600**  
 TWO WORKING DAYS BEFORE YOU DIG

**CAUTION:** Remember that the USA Center notifies only those utilities belonging to the center. There could be other utilities present at the work site. The center will inform you of whom they will notify.

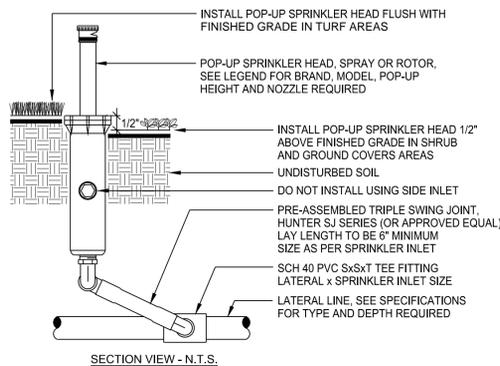


SHEET TITLE:  
**IRRIGATION LEGEND**

PROJECT/CLIENT:  
**SEA AIRE GOLF COURSE**  
 CITY OF TORRANCE  
 22730 LUPINE DRIVE  
 TORRANCE, CA 90505  
 www.TorranceCA.gov

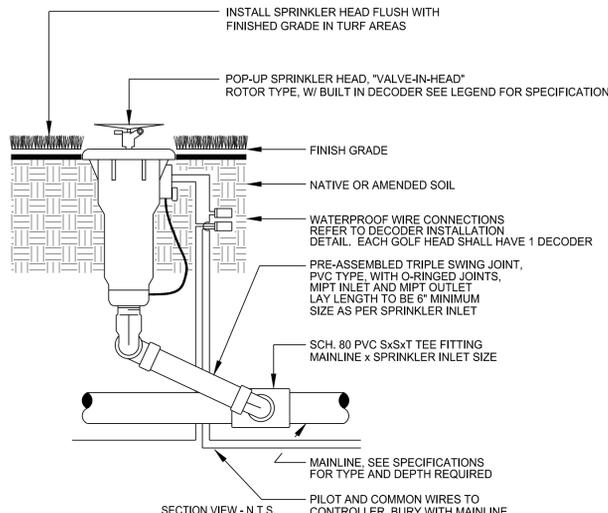
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100% 8-21-12	
BID SET 10-08-12	
DRAWN	S4
APPROVED	
PLOT DATE	10-08-2012
JOB NO.	0712-0134
DATE	07-23-2012
SCALE	SEE SHEET

**LI-02**

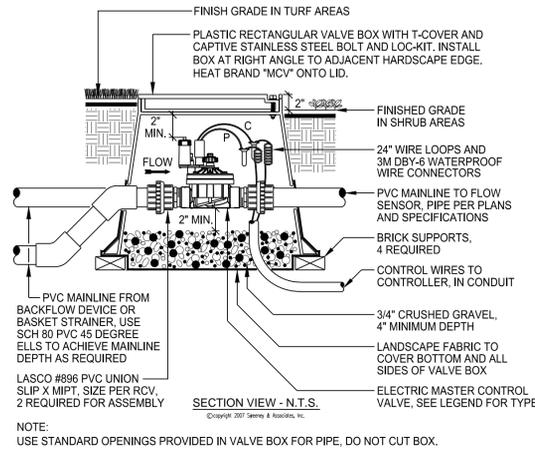


NOTE:  
 INSTALL SPRINKLER HEADS 6" FROM PAVING EDGE IN SHRUB AND GROUND COVER AREAS.  
 INSTALL SPRINKLER HEADS 12" FROM THE FACE OF BUILDING WALLS OR WINDOWS.  
 INSTALL SPRINKLER HEADS 4" FROM PAVING EDGE IN TURF AREAS.  
 INSTALL SPRINKLER HEADS PLUMB. ADJUST SPRAYS OR NOZZLE STREAM TO COVER LANDSCAPE AREA WITHOUT OVERSPRAY ONTO PAVING, FENCES, WALLS OR BUILDINGS.

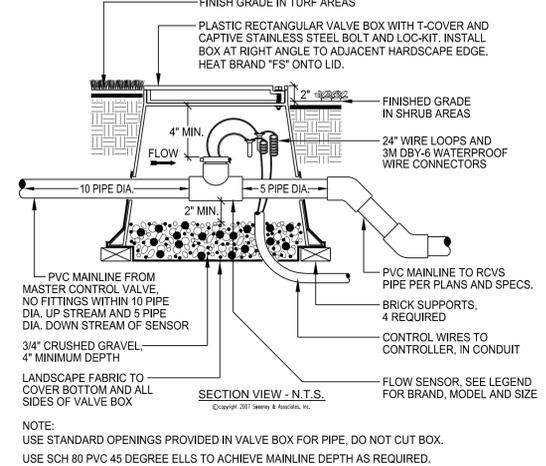
**A POP-UP SPRINKLER**



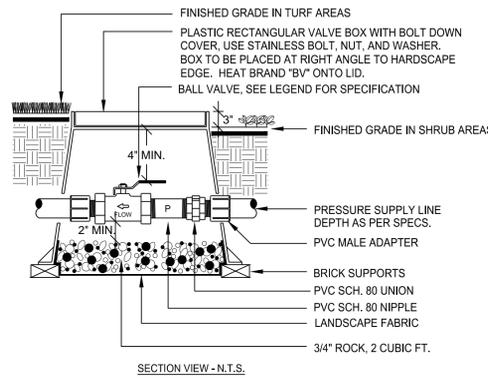
**B VALVE IN HEAD**



**C MASTER CONTROL VALVE**

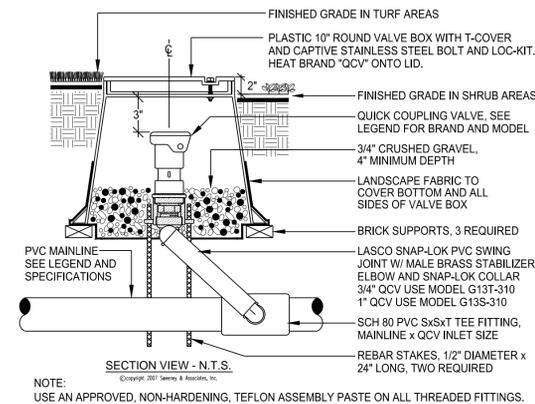


**D FLOW SENSOR**

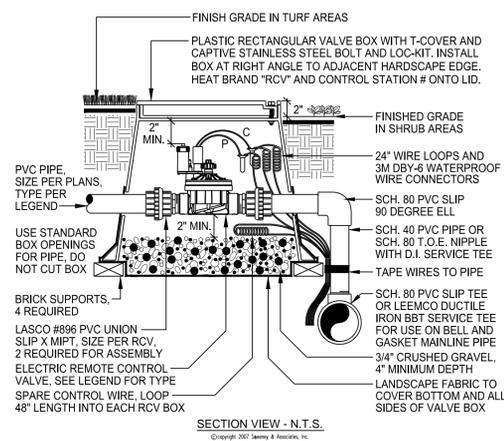


NOTE:  
 BOX TO BE INSTALLED AS TO ALLOW FOR PROPER OPERATION OF BALL VALVE  
 INSTALL AT RIGHT ANGLE TO HARDSCAPE EDGE, INSTALL VALVE OFF-CENTER IN BOX.  
 INSTALL VALVE BOX EXTENSIONS AS REQUIRED TO ACHIEVE PROPER VALVE INSTALLATION AT MAIN LINE DEPTH.

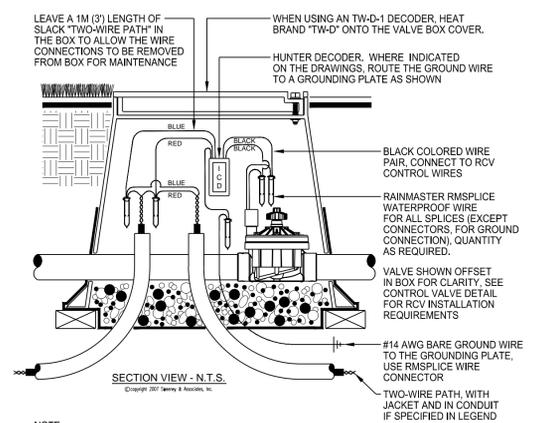
**E BALL VALVE**



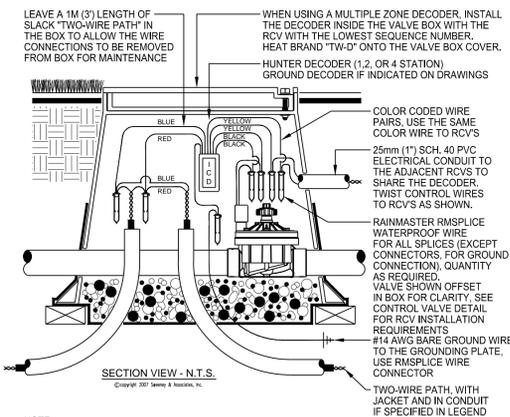
**F QUICK COUPLER VALVE**



**G REMOTE CONTROL VALVE**

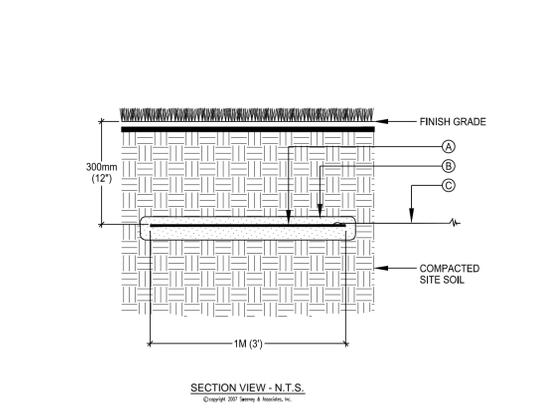


**H DECODER FOR SINGLE RCV**

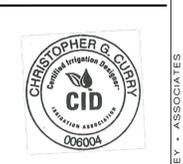
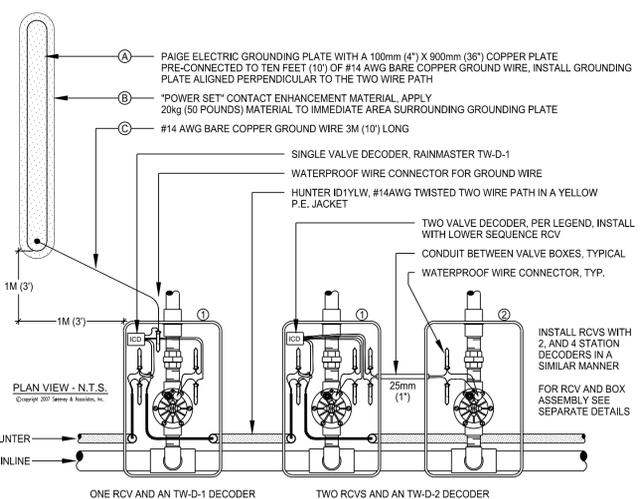


NOTE:  
 SEE DRAWINGS AND LEGEND FOR DECODER TYPE REQUIRED FOR EACH RCV OR GROUP OF RCV'S.  
 SEE LEGEND FOR \"TWO-WIRE PATH\" WIRE AND JACKET SPECIFICATION.  
 SEE LEGEND FOR CONDUIT REQUIREMENTS FOR THE \"TWO-WIRE PATH\".

**I DECODER FOR MULTIPLE RCV'S**



**J DECODER GROUNDING USING COPPER GROUND PLATE AND INSTALLATION**



SHEET TITLE:  
**IRRIGATION DETAILS**

PROJECT CLIENT:  
**SEA AIRE GOLF COURSE**  
 CITY OF TORRANCE  
 22730 LUPINE DRIVE  
 TORRANCE, CA 90505  
 www.TorranceCA.gov

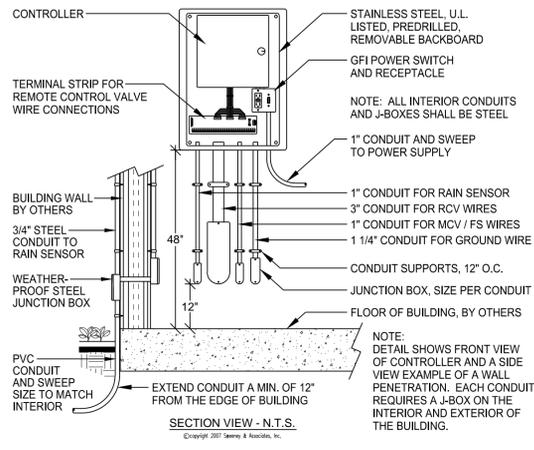
REVISIONS	
100% B-21-12	
BID SET 10-08-12	
APPROVED	S4
DRAWN	
PLOT DATE	10-08-2014
JOB NO.	0712-0134
DATE	07-23-2014
SCALE	SEE SHEET



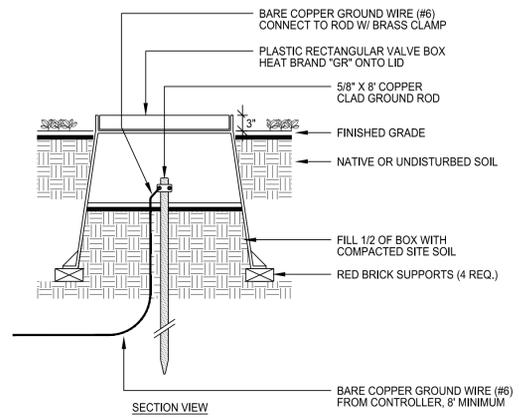
TWO WORKING DAYS BEFORE YOU DIG  
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**LI-03**

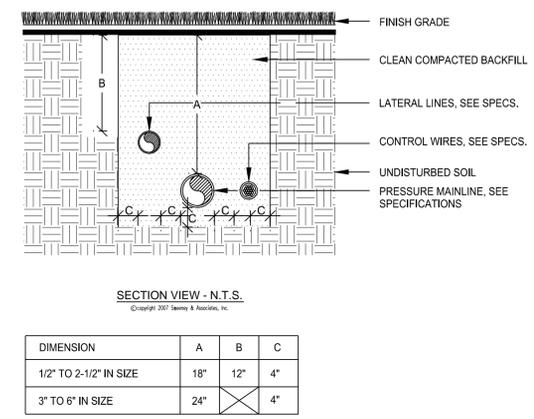
FILE NAME: X:\CITY OF TORRANCE\SEA AIRE GOLF COURSE\IRRG SHT.DWG



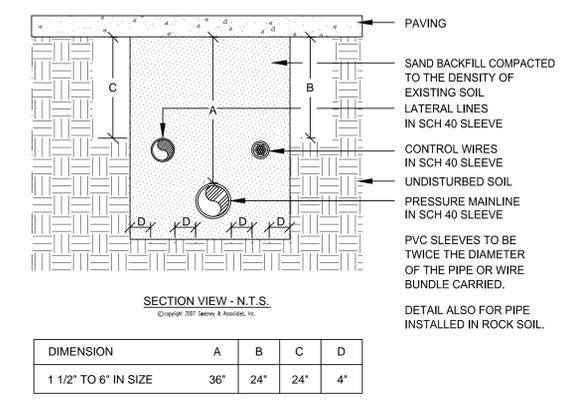
**K** CONTROLLER ENCLOSURE



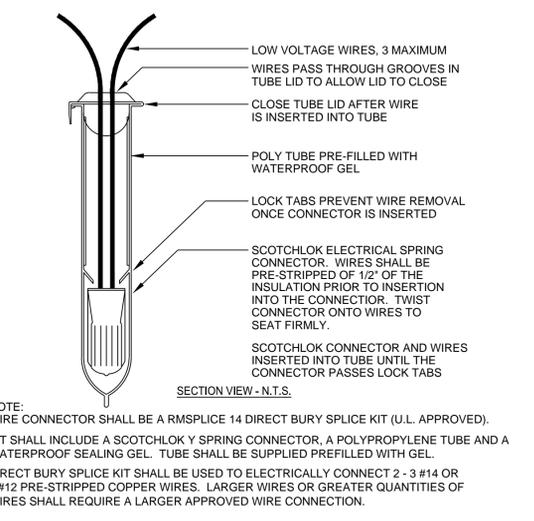
**L** GROUND ROD INSTALLTION



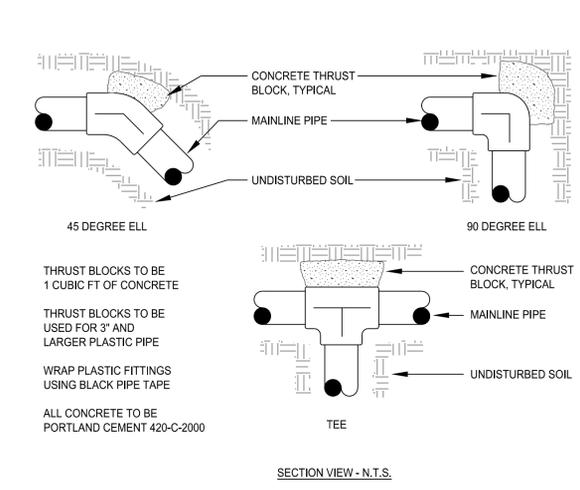
**M** PIPE INSTALLATION



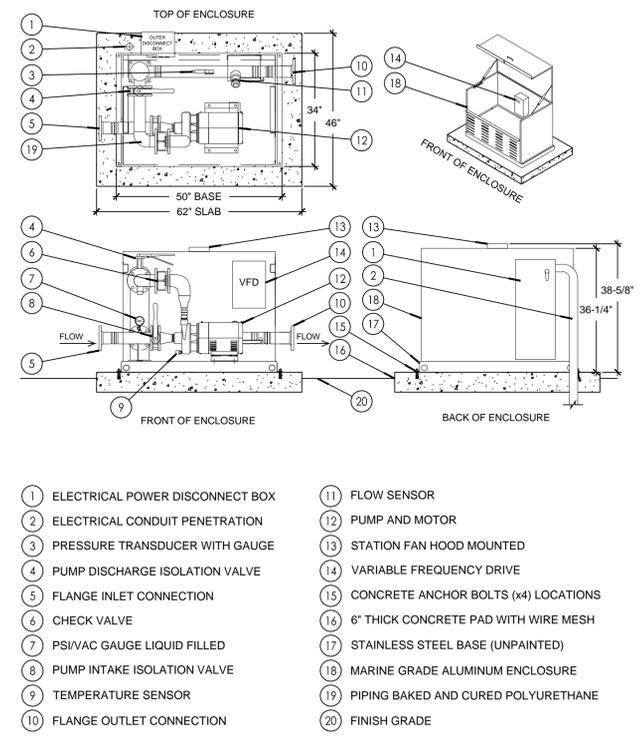
**N** SLEEVE INSTALLATION



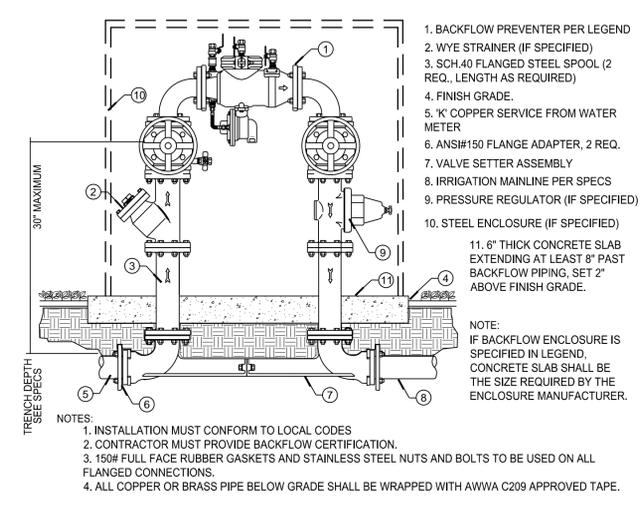
**O** WIRE CONNECTION



**P** THRUST BLOCKS



VFD MOTOR - MARINE GRADE ALUMINUM ENCLOSURE. SEE LEGEND FOR MODEL NUMBER.  
**Q** GREEN TECH PUMP ASSEMBLY (PA)



**R** BACKFLOW DEVICE



SHEET TITLE:  
**IRRIGATION DETAILS**

PROJECT/CLIENT:  
**SEA AIRE GOLF COURSE**  
CITY OF TORRANCE  
22730 LUPINE DRIVE  
TORRANCE, CA 90505  
www.torranceca.gov

REVISIONS	
100% 8-21-12	
BID SET 10-08-12	
A	
DRAWN	SA
APPROVED	CS
PLOT DATE	10-08-2012
JOB NO.	0712-0134
DATE	07-23-2012
SCALE	SEE SHEET

**Underground Service Alert**  
Call: TOLL FREE  
**1-800-227-2600**



TWO WORKING DAYS BEFORE YOU DIG  
"CAUTION": Remember that the USA Center notifies only those utilities belonging to the center. There could be other utilities present at the work site. The center will inform you of whom they will notify.

**LI-04**