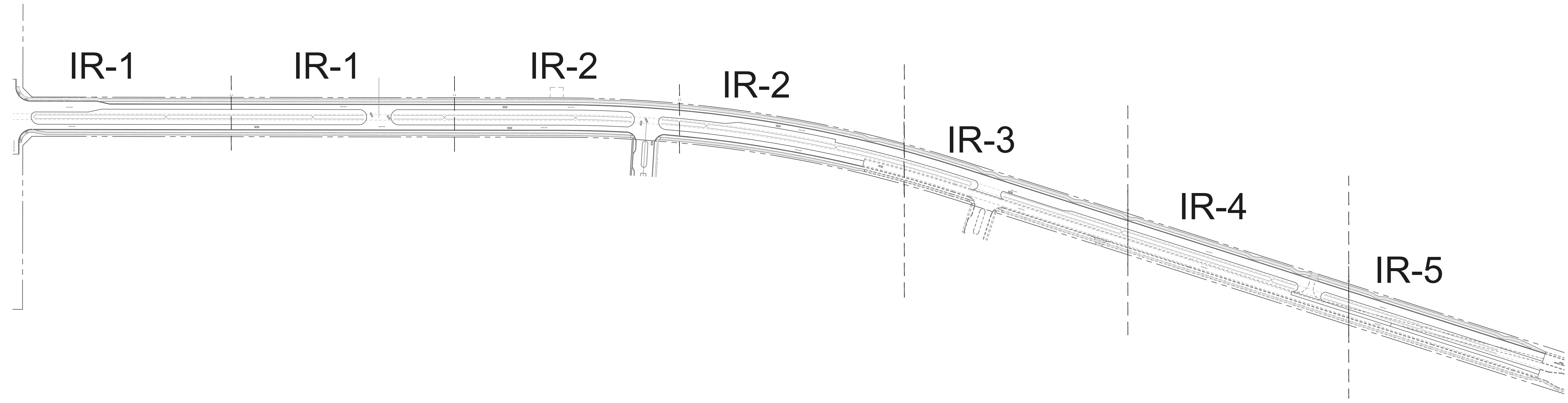


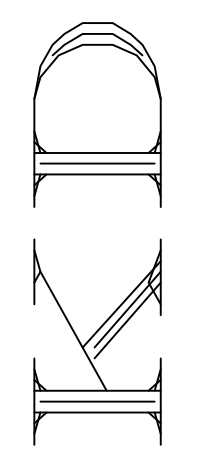
SHEET INDEX: IRRIGATION PLANS

IR-0	COVER SHEET
IR-1	R.O.W IRRIGATION PLAN - STATION 125+35 TO 141+40
IR-2	R.O.W IRRIGATION PLAN - STATION 141+40 TO 158+60
IR-3	R.O.W IRRIGATION PLAN - STATION 158+60 TO 167+90
IR-4	R.O.W IRRIGATION PLAN - STATION 167+90 TO 176+80
IR-5	R.O.W IRRIGATION PLAN - STATION 176+80 TO 184+50
IR-6	LEGEND, NOTES, AND DETAILS
IR-7	PUMP STATION DETAIL AND SPECIFICATIONS



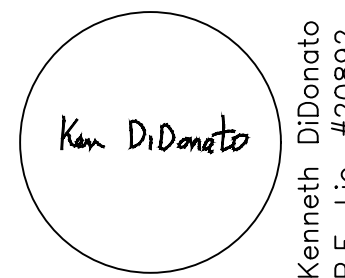
IRRIGATION PLAN
SCALE: 1" = 200'

Kenneth DiDonato, P.E.
CONSULTING ENGINEER
GOLF COURSE & COMMERCIAL IRRIGATION DESIGN
2910 HOLLYWOOD BLVD., HOLLYWOOD, FLORIDA 33020
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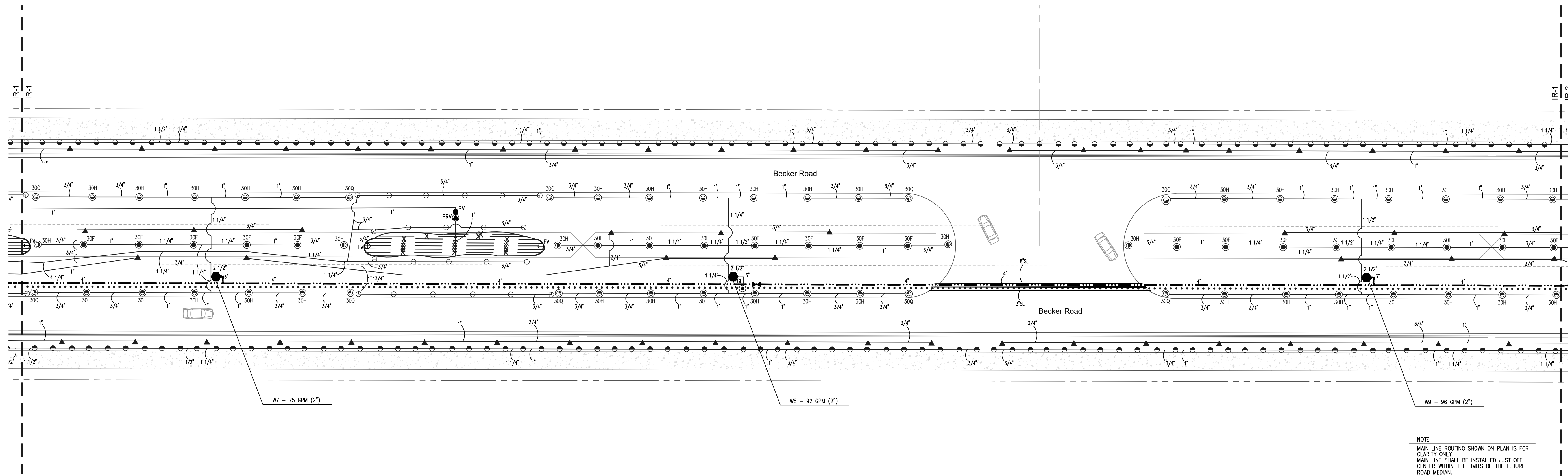
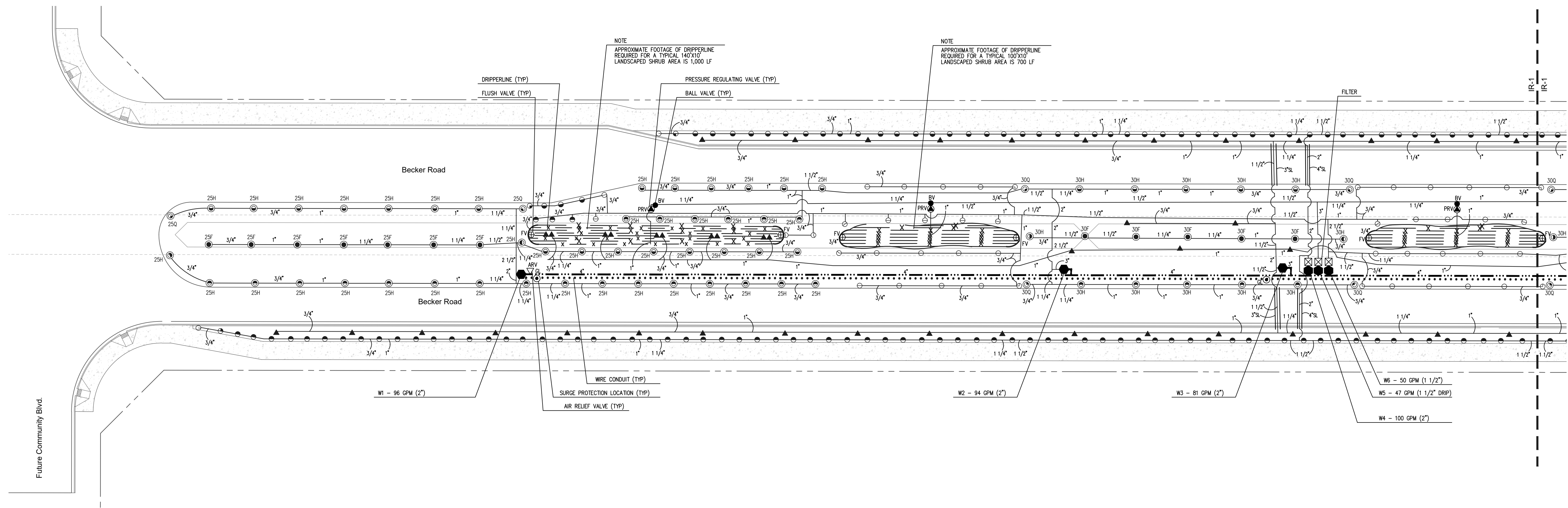
PROJECT TITLE : BECKER ROAD EXTENTION
CITY OF PORT ST. LUCIE, FLORIDA
IRRIGATION COVER SHEET

SEAL



Kenneth DiDonato
P.E., Lic. #20892

PROJECT NO. 2023-11
DRAWN BY KMD
DESIGNED BY KMD
SCALE: 1"=200'-0"
DATE : FEBRUARY 2023
DWG. NO. IR-0
SHT. NO. of
REVISIONS :



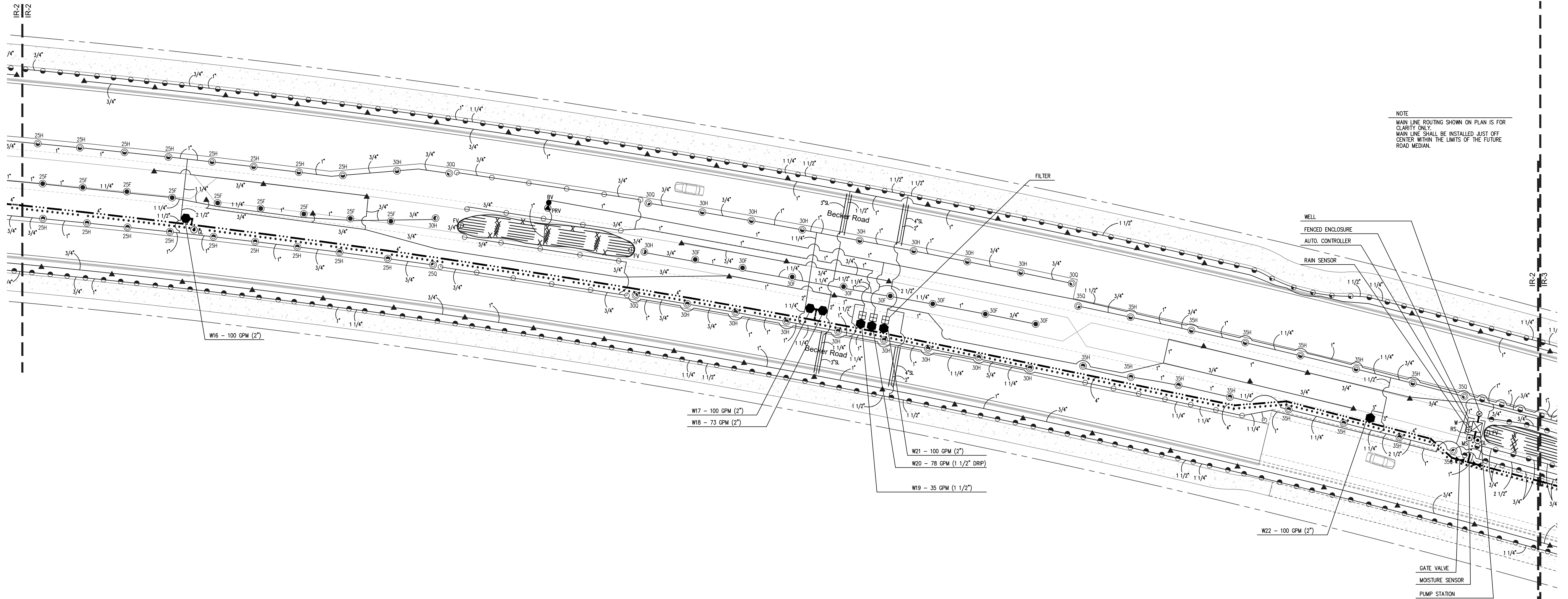
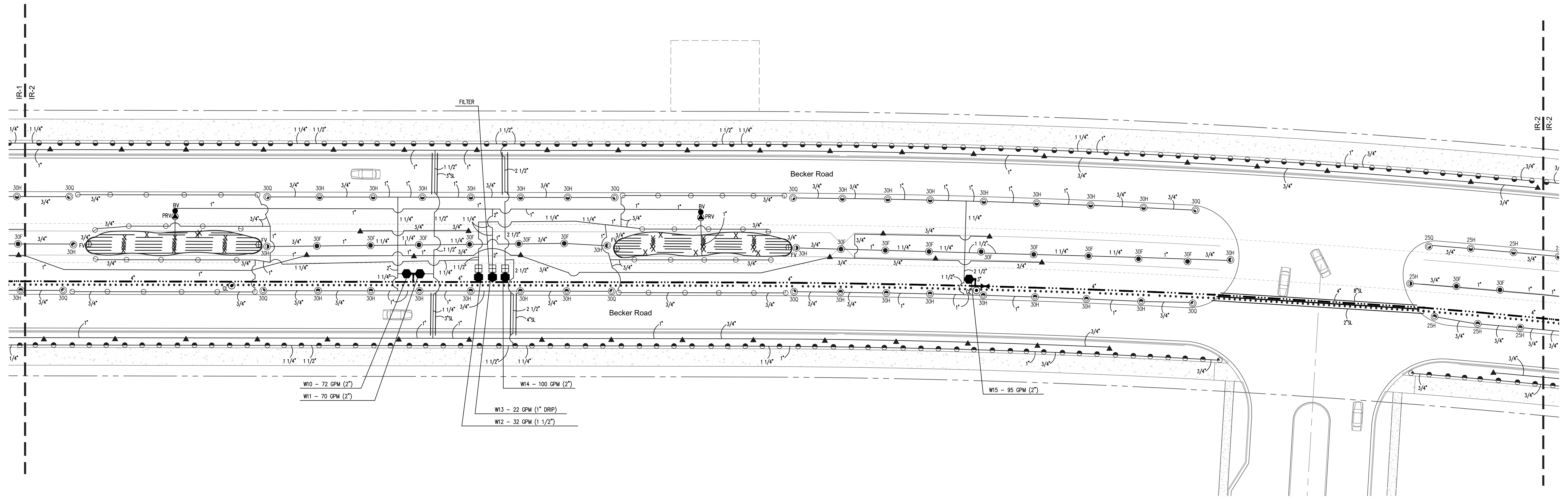
NOTE: MAIN LINE ROUTING SHOWN ON PLAN IS FOR CLARITY ONLY. MAIN LINE SHALL BE INSTALLED JUST OFF CENTER WITHIN THE LIMITS OF THE FUTURE ROAD MEDIAN.

PROJECT TITLE : BECKER ROAD EXTENTION
CITY OF PORT ST. LUCIE, FLORIDA
IRRIGATION PLAN

Kenneth DiDonato, P.E.
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SEAL
Ken DiDonato
Kenneth DiDonato
P.E. Lic. #20892

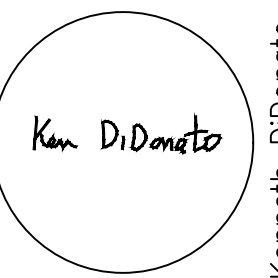
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DRAWN BY KMD
DESIGNED BY KMD
SCALE: 1"=30'-0"
DATE : FEBRUARY 2023
DWG. NO. IR-1
SHT. NO. of
REVISIONS : 2/2/2024



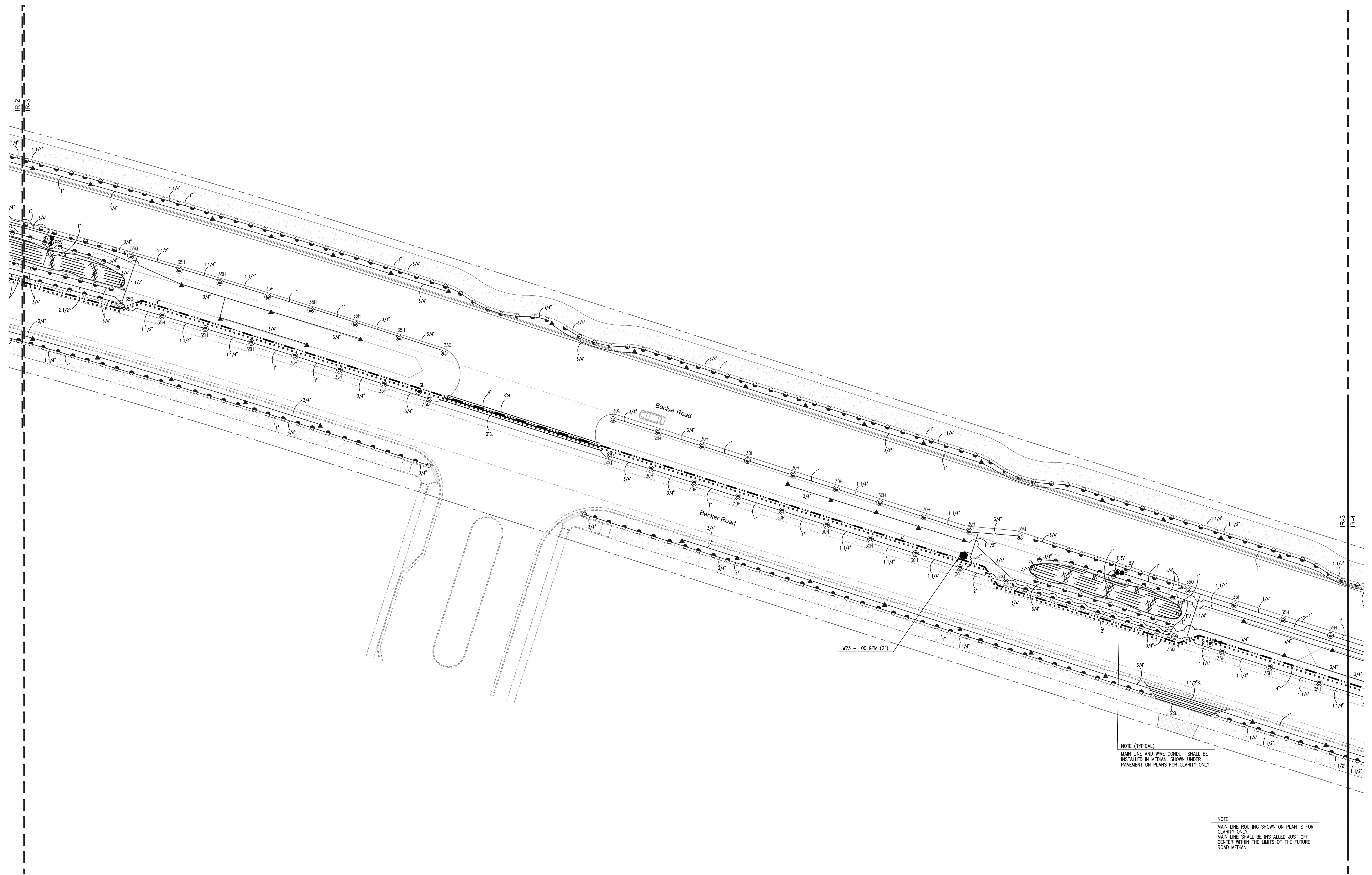
NOTE
 MAIN LINE ROUTING SHOWN ON PLAN IS FOR CLARITY ONLY.
 MAIN LINE SHALL BE INSTALLED JUST OFF CENTER WITHIN THE LIMITS OF THE FUTURE ROAD MEDIAN.

PROJECT TITLE : **BECKER ROAD EXTENTION**
CITY OF PORT ST. LUCIE, FLORIDA
IRRIGATION PLAN

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SEAL

 Kenneth DiDonato
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PROJECT NO. 2023-11
 DRAWN BY KMD
 DESIGNED BY KMD
 SCALE: 1"=30'-0"
 DATE : FEBRUARY 2023
 DWG. NO. **IR-2**
 SHT. NO. _____ of _____
 REVISIONS :
 2/2/2024



NOTE (TYPICAL)
 MAIN LINE AND WIRE CONDUIT SHALL BE
 INSTALLED IN MEDIAN SHOWN UNDER
 PAVEMENT ON PLANS FOR CLARITY ONLY.

NOTE
 MAIN LINE ROUTING SHOWN ON PLAN IS FOR
 CLARITY ONLY.
 MAIN LINE SHALL BE INSTALLED JUST OFF
 CENTER WITHIN THE LIMITS OF THE FUTURE
 ROAD MEDIAN.

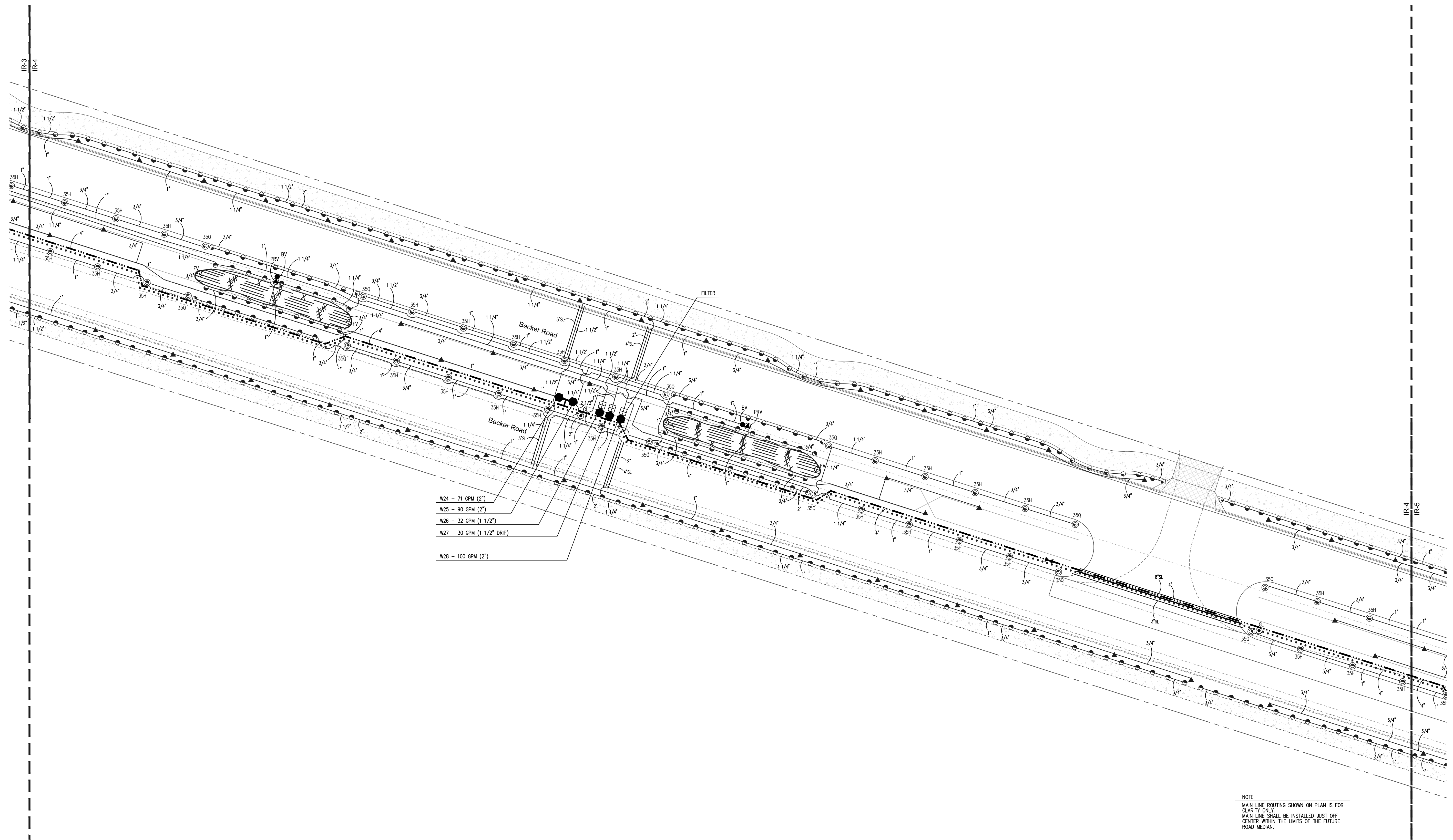
PROJECT TITLE : **BECKER ROAD EXTENSION**
CITY OF PORT ST. LUCIE, FLORIDA
IRRIGATION PLAN

SEAL

 Ken DiDonato
 Kenneth DiDonato
 P.E. Lic. #20892

PROJECT NO. 2023-11
 DRAWN BY KMD
 DESIGNED BY KMD
 SCALE: 1"=30'-0"
 DATE : FEBRUARY 2023
 DWG. NO. **IR-3**
 SHT. NO. _____ of _____
 REVISIONS :
 2/2/2024

FILE:



PROJECT TITLE : **BECKER ROAD EXTENSION**
CITY OF PORT ST. LUCIE, FLORIDA
IRRIGATION PLAN

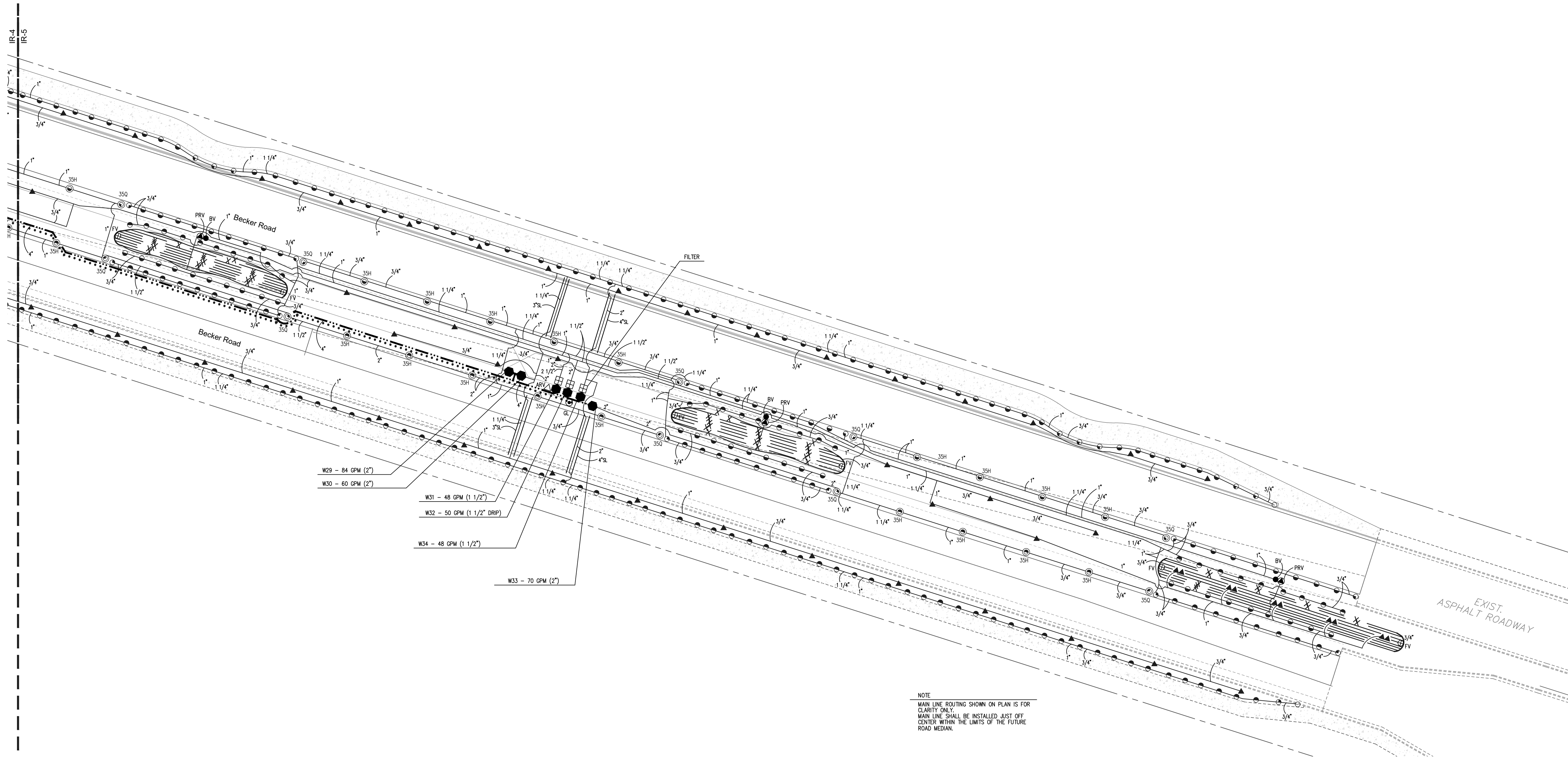
SEAL

 Ken DiDonato
 Kenneth DiDonato
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PROJECT NO. 2023-11
 DRAWN BY KMD
 DESIGNED BY KMD
 SCALE: 1"=30'-0"
 DATE : FEBRUARY 2023
 DWG. NO. **IR-4**
 SHT. NO. ___ of ___
 REVISIONS :
 2/2/2024

FILE:

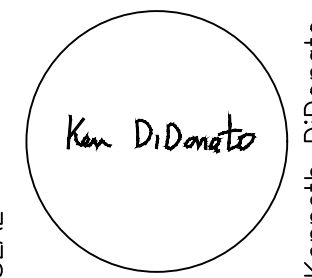
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 2210 HOLLYWOOD BLVD., HOLLYWOOD, FLORIDA 33020
 (954) 923-2858



- W29 - 84 GPM (2")
- W30 - 60 GPM (2")
- W31 - 48 GPM (1 1/2")
- W32 - 50 GPM (1 1/2" DRIP)
- W33 - 48 GPM (1 1/2")
- W34 - 70 GPM (2")

NOTE
 MAIN LINE ROUTING SHOWN ON PLAN IS FOR CLARITY ONLY.
 MAIN LINE SHALL BE INSTALLED JUST OFF CENTER WITHIN THE LIMITS OF THE FUTURE ROAD MEDIAN.

PROJECT TITLE : **BECKER ROAD EXTENSION**
CITY OF PORT ST. LUCIE, FLORIDA
IRRIGATION PLAN

SEAL

 Ken DiDonato
 Kenneth DiDonato
 P.E. Lic. #20892

PROJECT NO. 2023-11
 DRAWN BY KMD
 DESIGNED BY KMD
 SCALE: 1"=30'-0"
 DATE : FEBRUARY 2023
 DWG. NO. **IR-5**
 SHT. NO. _____ of _____
 REVISIONS :
 2/2/2024

FILE:

SYMBOL	MODEL NO.	DESCRIPTION	*EST. QUANTITY
1404		RAIN BIRD FLOOD BUBBLER	334
1800-SAM-PRSA-W/ROTOR		RAIN BIRD 6" POP-UP SPRAY/MP ROTOR NOZZLE	02
1800-SAM-PRSA-MP100-100		RAIN BIRD 6" POP-UP SPRAY/MP ROTOR NOZZLE	1240
1800-SAM-PRSA-MP100-150		RAIN BIRD 6" POP-UP SPRAY/MP ROTOR NOZZLE	1340
1800-SAM-PRSA-MP100-200		RAIN BIRD 6" POP-UP SPRAY/MP ROTOR NOZZLE	114
1800-SAM-PRSA-MP100-270		RAIN BIRD 6" POP-UP SPRAY/MP ROTOR NOZZLE	02
1800-SAM-PRSA-MP100-351		RAIN BIRD 6" POP-UP SPRAY/MP ROTOR NOZZLE	07
1800-SAM-PRSA-MP100-530		RAIN BIRD 6" POP-UP SPRAY/MP ROTOR NOZZLE	22
1-20-06-55-250		HUNTER 6" POP-UP ROTOR	05
1-20-06-55-25F		HUNTER 6" POP-UP ROTOR	66
1-20-06-55-300		HUNTER 6" POP-UP ROTOR	18
1-20-06-55-30H		HUNTER 6" POP-UP ROTOR	21
1-20-06-55-30F		HUNTER 6" POP-UP ROTOR	117
1-20-06-55-30F		HUNTER 6" POP-UP ROTOR	45
1-20-06-55-350		HUNTER 6" POP-UP ROTOR	31
1-20-06-55-35H		HUNTER 6" POP-UP ROTOR	84
TLV-CL-9-12		NETAFIM TECHLINE DRIPPER/LINE	11,000 LF
TLV		NETAFIM TECHLINE FLUSH VALVE	28
TL56		NETAFIM TECHLINE SOIL STARTLES	AS REQUIRED
TLACC		NETAFIM TECHLINE ACCESSORIES	AS REQUIRED
TLDF		NETAFIM TECHLINE DISC FILTER	15
TLPRV		NETAFIM TECHLINE PRESSURE REGULATING VALVE	14
ESP-40STE-PED-SS		RAIN BIRD SATELLITE CONTROLLER	01
RANGAUGE		RAIN BIRD RAIN SENSOR	01
S100		BASELINE SOIL MOISTURE SENSOR	01
TDI-F		TUCOR 2 WIRE DECODER INTERFACE	01
LD-050		TUCOR SINGLE LINE VALVE DECODER	34
SP-100		TUCOR LINE SURGE PROTECTION	12
#6AWG		TUCOR 2 WIRE CABLE	5,500 LF
ADJUSTABLE CONTROLLED MAIN LINE GATE VALVE		ADJUSTABLE CONTROLLED MAIN LINE GATE VALVE	05
T-113		NEBO ZONE ISOLATION GATE VALVE	34
H.D.P.E. MAIN LINE		H.D.P.E. MAIN LINE	5,400 LF
SCH 40 PVC WIRE CONDUIT		SCH 40 PVC WIRE CONDUIT	5,400 LF
SCH 40 PVC FITTINGS (LATERALS)		SCH 40 PVC FITTINGS (LATERALS)	AS REQUIRED
CLASS 200 PVC		CLASS 200 PVC	AS REQUIRED
LATERALS		LATERALS	AS REQUIRED
SLEEVES		SLEEVES	AS REQUIRED
AIR RELIEF VALVE		AIR RELIEF VALVE	02
CARSON 1220 VALVE BOX		CARSON 1220 VALVE BOX	41
BALL VALVE		BALL VALVE	14
CARSON 1017 SPRUCE BOX		CARSON 1017 SPRUCE BOX	AS REQUIRED
METALLIC MARKING TAPE		METALLIC MARKING TAPE	5,400 LF
GROUNDING LOCATION		GROUNDING LOCATION	01
WELL		WELL	01
PUMP STATION		PUMP STATION	01

NOTE: ABOVE QUANTITIES ARE FOR COMPARISON ONLY. CONTRACTOR SHALL VERIFY PRIOR TO SUBMITTING BID.

VALVE	SPRINKLER TYPE	TYPE	SIZE	WATER DEMAND	RUN TIME	WEEKLY USAGE
W1	ROTOR	2"	96 GPM	120 MIN/WK	11,520 GAL/WK	
W2	ROTOR	2"	94 GPM	120 MIN/WK	11,280 GAL/WK	
W3	BUBBLER	2"	81 GPM	40 MIN/WK	3,240 GAL/WK	
W4	MP ROTOR	2"	100 GPM	120 MIN/WK	12,000 GAL/WK	
W5	DRIP	1/2"	42 GPM	40 MIN/WK	1,680 GAL/WK	
W6	MP ROTOR	1/2"	50 GPM	120 MIN/WK	6,000 GAL/WK	
W7	ROTOR	2"	75 GPM	120 MIN/WK	9,000 GAL/WK	
W8	ROTOR	2"	96 GPM	120 MIN/WK	11,520 GAL/WK	
W9	ROTOR	2"	96 GPM	120 MIN/WK	11,520 GAL/WK	
W10	ROTOR	2"	72 GPM	120 MIN/WK	8,640 GAL/WK	
W11	BUBBLER	2"	70 GPM	40 MIN/WK	2,800 GAL/WK	
W12	MP ROTOR	1/2"	32 GPM	120 MIN/WK	3,840 GAL/WK	
W13	DRIP	1/2"	22 GPM	100 MIN/WK	2,200 GAL/WK	
W14	MP ROTOR	2"	100 GPM	120 MIN/WK	12,000 GAL/WK	
W15	ROTOR	2"	95 GPM	120 MIN/WK	11,400 GAL/WK	
W16	ROTOR	2"	100 GPM	120 MIN/WK	12,000 GAL/WK	
W17	ROTOR	2"	100 GPM	120 MIN/WK	12,000 GAL/WK	
W18	BUBBLER	2"	73 GPM	40 MIN/WK	2,920 GAL/WK	
W19	MP ROTOR	1/2"	35 GPM	120 MIN/WK	4,200 GAL/WK	
W20	DRIP	1"	20 GPM	100 MIN/WK	2,000 GAL/WK	
W21	MP ROTOR	2"	100 GPM	120 MIN/WK	12,000 GAL/WK	
W22	ROTOR	2"	100 GPM	120 MIN/WK	12,000 GAL/WK	
W23	ROTOR	2"	100 GPM	120 MIN/WK	12,000 GAL/WK	
W24	BUBBLER	2"	71 GPM	40 MIN/WK	2,840 GAL/WK	
W25	ROTOR	2"	90 GPM	120 MIN/WK	10,800 GAL/WK	
W26	MP ROTOR	1/2"	32 GPM	120 MIN/WK	3,840 GAL/WK	
W27	DRIP	1/2"	30 GPM	100 MIN/WK	3,000 GAL/WK	
W28	MP ROTOR	2"	100 GPM	120 MIN/WK	12,000 GAL/WK	
W29	ROTOR	2"	84 GPM	120 MIN/WK	10,080 GAL/WK	
W30	BUBBLER	2"	60 GPM	40 MIN/WK	2,400 GAL/WK	
W31	MP ROTOR	1/2"	48 GPM	120 MIN/WK	5,760 GAL/WK	
W32	BUBBLER	1/2"	50 GPM	40 MIN/WK	2,000 GAL/WK	
W33	MP ROTOR	2"	70 GPM	120 MIN/WK	8,400 GAL/WK	
W34	ROTOR	1/2"	48 GPM	120 MIN/WK	5,760 GAL/WK	
W35-40					257,660 GAL/WK	

*APPROXIMATE RUN TIME TO APPLY 1.0 IN/WK.

IRRIGATION NOTES & SPECIFICATIONS	REFER TO PLAN
AUTOMATIC IRRIGATION SYSTEM	WELL
WATER DEMAND / ZONE	70 PSI
WATER SOURCE	
PRESSURE REQUIRED	

GENERAL

IRRIGATION SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF PORT ST. LUCIE PUBLIC WORKS IRRIGATION SPECIFICATIONS SECTION 328400, CONTRACT DRAWINGS, AND APPENDIX "F" OF THE FLORIDA BUILDING CODE.

IRRIGATION DESIGN BASED ON LANDSCAPE ASSOCIATED "LANDSCAPE PLAN" DATED JAN. 17, 2023. CONTRACTOR SHALL REFER TO THESE PLANS TO COORDINATE SPRINKLER LOCATIONS AND PIPE ROUTING WITH NEW AND EXISTING PLANT LOCATIONS.

THIS IRRIGATION PLAN SHALL BE USED AS A GUIDE ONLY. CONTRACTOR SHALL INSTALL IRRIGATION TO MATCH ON SITE CONDITIONS AND TO OVERCOME THE INHERENT INACCURACIES THAT RESULT WHEN DESIGNING FROM BASE PLANS SCALED AT 1" = 30'. THE WATER SOURCE SHALL BE A PUMP DRAWING WATER FROM A WELL.

THIS IRRIGATION HAS BEEN DESIGNED AS A TYPICAL BLOCK VALVE TYPE USING NETAFIM DRIP EQUIPMENT, HUNTER ROTOR SPRINKLERS AND MP ROTOR NOZZLES, AND RAIN BIRD BUBBLERS, SPRAY SPRINKLERS, IN-LINE VALVES, AND MAIN CONTROL SYSTEM. A TUCOR INTERFACE SHALL BE INSTALLED TO CONVERT FROM CONVENTIONAL TO 2 WIRE OPERATION. WATER CONSERVATION EQUIPMENT SHALL BE INSTALLED.

IRRIGATION SHALL BE INSTALLED AND MAINTAINED TO MINIMIZE UNDESIRABLE OVERTHROW ONTO PAVEMENT AND SIDEWALKS.

CONTRACTOR IS ADVISED TO STUDY THE PLANS FOR ADDITIONAL INFORMATION AND TO VISIT THE SITE TO BECOME FAMILIAR WITH EXISTING CONDITIONS.

TO ENSURE PROPER OPERATION, PROGRAMMING, VALVE SIZES, ZONE CAPACITIES, SPRINKLER SPACING, PIPE AND WIRE SIZES, AND INSTALLATION NOTES AND DETAILS SHALL BE FOLLOWED AS SHOWN.

PIPING

PIPE ROUTING IS SCHEMATIC ONLY AND SHALL BE ADJUSTED FOR ON SITE CONDITIONS.

PIPE SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL CODES AND PIPE MANUFACTURER'S INSTRUCTIONS.

PIPE ROUTED UNDER HARDCAPPED AREAS SHALL BE SLEEVED IN SDR 21, CLASS 200 PVC. EACH SLEEVE SHALL BE: (1) BURIED TO A MINIMUM DEPTH OF 36"; (2) TWO PIPE SIZES LARGER THAN CARRIER PIPE; AND (3) EXTENDED 3' BEYOND HARDCAPPED AREA ON EACH END. CONTRACTOR SHALL VERIFY THE SIZE, DEPTH, AND LOCATION OF ALL EXISTING SLEEVES.

MAIN LINE PIPING SHALL BE DR 11-4710 H.D.P.E. WITH FUSION WELDED FITTINGS. ALL LATERAL PIPING SHALL BE SDR 21, CLASS 200 TYPE 1120 PVC SOLVENT WELD TYPE WITH SCH 40 PVC FITTINGS.

PIPE SIZED TO LIMIT FLOW VELOCITIES TO 5 FEET/SECOND AND TO LIMIT FRICTION LOSS IN THE PIPING NETWORK.

PIPE SHALL BE INSTALLED AT SUFFICIENT DEPTH BELOW GROUND TO PROTECT IT FROM HAZARD SUCH AS VEHICULAR TRAFFIC OR ROUTINE OCCURRENCES WHICH OCCUR IN THE NORMAL COURSE OF MAINTENANCE OF THE PROPERTY. DEPTHS OF COVER SHALL MEET OR EXCEED SCS CODE 430-0D. REFER TO THE APPROPRIATE DETAIL FOR ADDITIONAL INFORMATION.

BACKFILL SHALL BE OF SUITABLE MATERIAL, FREE OF ROCKS, STONES, AND OTHER DEBRIS THAT WOULD DAMAGE IRRIGATION SYSTEM COMPONENTS. BACKFILL AROUND ALL PIPE SHALL BE 6" OF CLEAN SAND.

GATE VALVES SHALL BE INSTALLED FOR MAIN LINE AND ZONE ISOLATION. EACH VALVE SHALL BE TO LINE SIZE AND INSTALLED IN A VALVE BOX. POROUS MATERIAL SHALL BE INSTALLED PER BOX TO PROMOTE DRAINAGE.

AIR RELIEF VALVES SHALL BE INSTALLED TO PROTECT THE PIPING NETWORK FROM EXCESSIVE PRESSURES THAT WOULD CAUSE PRESSURE ENTRAPPED AIR. EACH UNIT SHALL BE INSTALLED IN A VALVE BOX.

METALLIC MARKING TAPE SHALL BE INSTALLED IN ALL MAIN LINE TRENCHES.

SPRINKLERS

SPRINKLER LOCATIONS ARE SCHEMATIC ONLY AND SHALL BE ADJUSTED FOR LANDSCAPING, SITE LIGHTING, PREVAILING WIND DIRECTION, ETC. TO ENSURE PROPER COVERAGE WITH MINIMAL UNDESIRABLE OVERTHROW. A FRAME OBJECTIVE SHALL BE TO ELIMINATE OVERTHROW ONTO PAVEMENT AND SIDEWALKS.

SPRAY HEADS SHALL BE RAIN BIRD 1800 SERIES, SIX INCH POP-UP TYPE WHICH SHALL BE INSTALLED FLEXIBLE SWING JOINTS CONSISTING OF THICKWALLED POLY BUBBLER WITH IN-LINE ELBOWS.

BUBBLERS SHALL BE INSTALLED WITH THICKWALLED POLY PIPE. TWO BUBBLERS SHALL BE INSTALLED PER TREE.

EACH SPRAY HEAD SHALL BE EQUIPPED WITH THE APPROPRIATE HUNTER MP ROTOR NOZZLE AND SHALL BE PRESSURE REGULATED TO 40 PSI.

ROTOR HEADS SHALL BE HUNTER I-20, 6" POP-UP TYPE WHICH SHALL BE INSTALLED ON PVC SWING JOINTS.

ADJUSTMENT FEATURES OF SPRINKLERS SPECIFIED SHALL BE UTILIZED TO ENSURE PROPER COVERAGE WITH MINIMAL UNDESIRABLE OVERTHROW.

SPRINKLERS LOCATED ADJACENT TO HARDCAPPED AREAS SHALL BE INSTALLED AWAY FROM HARDCAPPED AREAS TO MINIMIZE OVERTHROW AND THE CHANCE OF DAMAGE BY VEHICLES, PEDESTRIANS, AND LAWN MAINTENANCE PERSONNEL. AS A GENERAL RULE, 6" POP-UP SPRAY HEADS SHALL BE INSTALLED IN 4", 4" SPACING. RAIN BIRD 1800 SERIES SHALL BE INSTALLED IN 4".

CONTROL SYSTEM

THE CONTROL SYSTEM SHALL BE A RAIN BIRD MAXICOM TYPE EQUIPPED WITH A TUCOR DECODER INTERFACE TO CONVERT TO 2 WIRE OPERATION. ONE 40 STATION SITE SATELLITE CONTROLLER SHALL ACTIVATE 34 IN-LINE VALVES. CONTROLLER SHALL COMMUNICATE WITH THE CITY'S CONTROL MONITORING COMPUTER VIA PHONE LINE, ETHERNET, CELL MODEM, OR FIBER OPTIC CABLE.

CONTROLLER SHALL BE INSTALLED AS A PEDESTAL MOUNT LOCATED AT THE PUMP STATION AND SHALL REQUIRE AN INDEPENDENT ELECTRIC SOURCE. A RAIN CAN AND MOISTURE SENSOR SHALL BE INSTALLED TO CONSERVE WATER.

CONTROLLER AND DECODERS SHALL BE GROUNDED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. LINE SURGE PROTECTIONS SHALL BE INSTALLED AT THE END OF EACH CABLE RUN AND AT 500 FEET INTERVALS ALONG THE CABLE.

DECODER CABLE SHALL BE #18 AWG 2-WIRE CABLE WHICH SHALL BE INSTALLED IN 1 1/2" PVC CONDUIT THROUGHOUT.

AUTOMATIC VALVE LOCATIONS ARE SCHEMATIC ONLY AND SHALL BE ADJUSTED FOR ON SITE CONDITIONS. EACH VALVE SHALL BE INSTALLED IN A VALVE BOX. A MINIMUM OF ONE CUBIC FOOT OF GRAVEL SHALL BE PROVIDED PER BOX TO PROMOTE DRAINAGE. A GATE VALVE SHALL BE INSTALLED WITH EACH ZONE VALVE FOR ISOLATION. A DECODER SHALL BE INSTALLED PER VALVE.

THE RAIN GAUGE AND MOISTURE SENSOR SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL CODES AND MANUFACTURER'S INSTRUCTIONS.

DRIP IRRIGATION

DRIP IRRIGATION SHALL BE INSTALLED TO IRRIGATE ALL AREAS LANDSCAPED WITH SHRUBS AND GROUNDCOVERS.

DRIP IRRIGATION SHALL CONSIST OF TECHLINE NETAFIM DRIPPER/LINE AND ACCESSORIES. FLUSH VALVES SHALL BE INSTALLED AS RECOMMENDED BY NETAFIM FOR ROUTINE MAINTENANCE.

DRIPPER/LINE WITH EMITTERS SPACED 12" ON CENTER WITH AN APPLICATION RATE OF 0.9 GPH SHALL BE SPACED A MAXIMUM OF 18" BETWEEN ROWS. DRIPPER/LINE SHALL ALSO BE INSTALLED TO MATCH PLANTING PATTERNS.

DRIP IRRIGATION SHALL BE PROPERLY FILTERED AND PRESSURE REGULATED TO ENSURE PROPER OPERATION. NETAFIM IN-LINE FILTERS SHALL BE INSTALLED AS SHOWN AND A PRESSURE REGULATOR SHALL BE INSTALLED PER VALVE.

DRIP IRRIGATION SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. THE DETAILS INCLUDED ON THE PLANS, AND UNDER THE SUPERVISION OF THE LANDSCAPE ARCHITECT.

PROGRAMMING

SYSTEM SHALL BE PROGRAMMED TO ENSURE THE CAPACITIES OF THE PIPING NETWORK AND PUMP STATION ARE NOT EXCEEDED.

SYSTEM SHALL ALSO BE PROGRAMMED TO OPERATE UNDER THE WATER RESTRICTION GUIDELINES ESTABLISHED BY LOCAL AUTHORITIES.

TIMING AND PRIORITIZATION

TIMING OF EACH STATION SHALL BE SET IN THE FIELD TO MATCH LOCAL REQUIREMENTS. REFER TO ZONE SUMMARY CHART FOR RECOMMENDED RUN TIMES.

PUMP STATION/WELL

LOCATION OF THE NEW PUMP STATION AND WELL SHALL BE VERIFIED ON SITE.

PUMP STATION SHALL BE A PRE-FABRICATED TYPE WITH A CAPACITY OF 200 GPM @ 162 FT.H.D. BASIC COMPONENTS SHALL INCLUDE:

- (1) A SUBMERSIBLE PUMP WITH THE CAPACITY NOTED
- (2) A 15 HP MOTOR TO MATCH ON SITE ELECTRIC
- (3) VARIABLE FREQUENCY DRIVE WITH INDUSTRIAL AIR CONDITIONER FOR A NEAR A CONTROL PANEL
- (4) MAGNETIC FLOW SENSOR
- (5) PRESSURE TANK
- (6) WELDED ALUMINUM SKID
- (7) FIBERGLASS ENCLOSURE
- (8) GATE AND CHECK VALVES
- (9) INHIBITOR SYSTEM
- (10) FLOW GUARD

STATION SHALL BE MANUFACTURED BY HOOVER PUMPING SYSTEMS OR APPROVED EQUAL. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL.

STATION SHALL BE MOUNTED ON A 6" THICK CONCRETE SLAB SIZED TO ACCOMMODATE EACH STATION AND ASSOCIATE EQUIPMENT. STATION SHALL BE INSTALLED IN A FENCED-IN ENCLOSURE. REFER TO CITY SPECIFICATIONS FOR ADDITIONAL INFORMATION REGARDING THE ENCLOSURE.

SUCTION LINE SHALL BE INSTALLED IN ACCORDANCE WITH PUMP STATION MANUFACTURER'S INSTRUCTIONS, AND SHALL BE PROPERLY SCREENED TO PREVENT THE INTAKE OF HARMFUL MATERIAL INTO THE SYSTEM.

THE WATER SOURCE SHALL BE A WELL WHICH SHALL BE DEVELOPED FOR A MINIMUM FLOW OF 225 GPM. THE WELL SHALL BE ESTABLISHED AT THE DEPTH REQUIRED TO ACCESS WATER MINIMAL RUST STAINING PROPERTIES. A RUST INHIBITOR SYSTEM SHALL BE INSTALLED IF NEEDED TO PREVENT STAINING.

PROGRAMMING

SYSTEM SHALL BE PROGRAMMED TO ENSURE THE CAPACITIES OF THE PIPING NETWORK AND PUMP STATION ARE NOT EXCEEDED.

SYSTEM SHALL ALSO BE PROGRAMMED TO OPERATE UNDER THE WATER RESTRICTION GUIDELINES ESTABLISHED BY LOCAL AUTHORITIES.

TIMING AND PRIORITIZATION

TIMING OF EACH STATION SHALL BE SET IN THE FIELD TO MATCH LOCAL REQUIREMENTS. REFER TO ZONE SUMMARY CHART FOR RECOMMENDED RUN TIMES.

IRRIGATION NOTES & SPECIFICATIONS

AUTOMATIC IRRIGATION SYSTEM

WATER DEMAND / ZONE

WATER SOURCE

PRESSURE REQUIRED

GENERAL

IRRIGATION SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF PORT ST. LUCIE PUBLIC WORKS IRRIGATION SPECIFICATIONS SECTION 328400, CONTRACT DRAWINGS, AND APPENDIX "F" OF THE FLORIDA BUILDING CODE.

IRRIGATION DESIGN BASED ON LANDSCAPE ASSOCIATED "LANDSCAPE PLAN" DATED JAN. 17, 2023. CONTRACTOR SHALL REFER TO THESE PLANS TO COORDINATE SPRINKLER LOCATIONS AND PIPE ROUTING WITH NEW AND EXISTING PLANT LOCATIONS.

THIS IRRIGATION PLAN SHALL BE USED AS A GUIDE ONLY. CONTRACTOR SHALL INSTALL IRRIGATION TO MATCH ON SITE CONDITIONS AND TO OVERCOME THE INHERENT INACCURACIES THAT RESULT WHEN DESIGNING FROM BASE PLANS SCALED AT 1" = 30'. THE WATER SOURCE SHALL BE A PUMP DRAWING WATER FROM A WELL.

THIS IRRIGATION HAS BEEN DESIGNED AS A TYPICAL BLOCK VALVE TYPE USING NETAFIM DRIP EQUIPMENT, HUNTER ROTOR SPRINKLERS AND MP ROTOR NOZZLES, AND RAIN BIRD BUBBLERS, SPRAY SPRINKLERS, IN-LINE VALVES, AND MAIN CONTROL SYSTEM. A TUCOR INTERFACE SHALL BE INSTALLED TO CONVERT FROM CONVENTIONAL TO 2 WIRE OPERATION. WATER CONSERVATION EQUIPMENT SHALL BE INSTALLED.

IRRIGATION SHALL BE INSTALLED AND MAINTAINED TO MINIMIZE UNDESIRABLE OVERTHROW ONTO PAVEMENT AND SIDEWALKS.

CONTRACTOR IS ADVISED TO STUDY THE PLANS FOR ADDITIONAL INFORMATION AND TO VISIT THE SITE TO BECOME FAMILIAR WITH EXISTING CONDITIONS.

TO ENSURE PROPER OPERATION, PROGRAMMING, VALVE SIZES, ZONE CAPACITIES, SPRINKLER SPACING, PIPE AND WIRE SIZES, AND INSTALLATION NOTES AND DETAILS SHALL BE FOLLOWED AS SHOWN.

PIPING

PIPE ROUTING IS SCHEMATIC ONLY AND SHALL BE ADJUSTED FOR ON SITE CONDITIONS.

PIPE SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL CODES AND PIPE MANUFACTURER'S INSTRUCTIONS.

PIPE ROUTED UNDER HARDCAPPED AREAS SHALL BE SLEEVED IN SDR 21, CLASS 200 PVC. EACH SLEEVE SHALL BE: (1) BURIED TO A MINIMUM DEPTH OF 36"; (2) TWO PIPE SIZES LARGER THAN CARRIER PIPE; AND (3) EXTENDED 3' BEYOND HARDCAPPED AREA ON EACH END. CONTRACTOR SHALL VERIFY THE SIZE, DEPTH, AND LOCATION OF ALL EXISTING SLEEVES.

MAIN LINE PIPING SHALL BE DR 11-4710 H.D.P.E. WITH FUSION WELDED FITTINGS. ALL LATERAL PIPING SHALL BE SDR 21, CLASS 200 TYPE 1120 PVC SOLVENT WELD TYPE WITH SCH 40 PVC FITTINGS.

PIPE SIZED TO LIMIT FLOW VELOCITIES TO 5 FEET/SECOND AND TO LIMIT FRICTION LOSS IN THE PIPING NETWORK.

PIPE SHALL BE INSTALLED AT SUFFICIENT DEPTH BELOW GROUND TO PROTECT IT FROM HAZARD SUCH AS VEHICULAR TRAFFIC OR ROUTINE OCCURRENCES WHICH OCCUR IN THE NORMAL COURSE OF MAINTENANCE OF THE PROPERTY. DEPTHS OF COVER SHALL MEET OR EXCEED SCS CODE 430-0D. REFER TO THE APPROPRIATE DETAIL FOR ADDITIONAL INFORMATION.

BACKFILL SHALL BE OF SUITABLE MATERIAL, FREE OF ROCKS, STONES, AND OTHER DEBRIS THAT WOULD DAMAGE IRRIGATION SYSTEM COMPONENTS. BACKFILL AROUND ALL PIPE SHALL BE 6" OF CLEAN SAND.

GATE VALVES SHALL BE INSTALLED FOR MAIN LINE AND ZONE ISOLATION. EACH VALVE SHALL BE TO LINE SIZE AND INSTALLED IN A VALVE BOX. POROUS MATERIAL SHALL BE INSTALLED PER BOX TO PROMOTE DRAINAGE.

AIR RELIEF VALVES SHALL BE INSTALLED TO PROTECT THE PIPING NETWORK FROM EXCESSIVE PRESSURES THAT WOULD CAUSE PRESSURE ENTRAPPED AIR. EACH UNIT SHALL BE INSTALLED IN A VALVE BOX.

METALLIC MARKING TAPE SHALL BE INSTALLED IN ALL MAIN LINE TRENCHES.

SPRINKLERS

SPRINKLER LOCATIONS ARE SCHEMATIC ONLY AND SHALL BE ADJUSTED FOR LANDSCAPING, SITE LIGHTING, PREVAILING WIND DIRECTION, ETC. TO ENSURE PROPER COVERAGE WITH MINIMAL UNDESIRABLE OVERTHROW. A FRAME OBJECTIVE SHALL BE TO ELIMINATE OVERTHROW ONTO PAVEMENT AND SIDEWALKS.

SPRAY HEADS SHALL BE RAIN BIRD 1800 SERIES, SIX INCH POP-UP TYPE WHICH SHALL BE INSTALLED FLEXIBLE SWING JOINTS CONSISTING OF THICKWALLED POLY BUBBLER WITH IN-LINE ELBOWS.

BUBBLERS SHALL BE INSTALLED WITH THICKWALLED POLY PIPE. TWO BUBBLERS SHALL BE INSTALLED PER TREE.

EACH SPRAY HEAD SHALL BE EQUIPPED WITH THE APPROPRIATE HUNTER MP ROTOR NOZZLE AND SHALL BE PRESSURE REGULATED TO 40 PSI.

ROTOR HEADS SHALL BE HUNTER I-20, 6" POP-UP TYPE WHICH SHALL BE INSTALLED ON PVC SWING JOINTS.

ADJUSTMENT FEATURES OF SPRINKLERS SPECIFIED SHALL BE UTILIZED TO ENSURE PROPER COVERAGE WITH MINIMAL UNDESIRABLE OVERTHROW.

SPRINKLERS LOCATED ADJACENT TO HARDCAPPED AREAS SHALL BE INSTALLED AWAY FROM HARDCAPPED AREAS TO MINIMIZE OVERTHROW AND THE CHANCE OF DAMAGE BY VEHICLES, PEDESTRIANS, AND LAWN MAINTENANCE PERSONNEL. AS A GENERAL RULE, 6" POP-UP SPRAY HEADS SHALL BE INSTALLED IN 4", 4" SPACING. RAIN BIRD 1800 SERIES SHALL BE INSTALLED IN 4".

CONTROL SYSTEM

THE CONTROL SYSTEM SHALL BE A RAIN BIRD MAXICOM TYPE EQUIPPED WITH A TUCOR DECODER INTERFACE TO CONVERT TO 2 WIRE OPERATION. ONE 40 STATION SITE SATELLITE CONTROLLER SHALL ACTIVATE 34 IN-LINE VALVES. CONTROLLER SHALL COMMUNICATE WITH THE CITY'S CONTROL MONITORING COMPUTER VIA PHONE LINE, ETHERNET, CELL MODEM, OR FIBER OPTIC CABLE.

CONTROLLER SHALL BE INSTALLED AS A PEDESTAL MOUNT LOCATED AT THE PUMP STATION AND SHALL REQUIRE AN INDEPENDENT ELECTRIC SOURCE. A RAIN CAN AND MOISTURE SENSOR SHALL BE INSTALLED TO CONSERVE WATER.

CONTROLLER AND DECODERS SHALL BE GROUNDED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. LINE SURGE PROTECTIONS SHALL BE INSTALLED AT THE END OF EACH CABLE RUN AND AT 500 FEET INTERVALS ALONG THE CABLE.

DECODER CABLE SHALL BE #18 AWG 2-WIRE CABLE WHICH SHALL BE INSTALLED IN 1 1/2" PVC CONDUIT THROUGHOUT.

AUTOMATIC VALVE LOCATIONS ARE SCHEMATIC ONLY AND SHALL BE ADJUSTED FOR ON SITE CONDITIONS. EACH VALVE SHALL BE INSTALLED IN A VALVE BOX. A MINIMUM OF ONE CUBIC FOOT OF GRAVEL SHALL BE PROVIDED PER BOX TO PROMOTE DRAINAGE. A GATE VALVE SHALL BE INSTALLED WITH EACH ZONE VALVE FOR ISOLATION. A DECODER SHALL BE INSTALLED PER VALVE.

THE RAIN GAUGE AND MOISTURE SENSOR SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL CODES AND MANUFACTURER'S INSTRUCTIONS.

DRIP IRRIGATION

DRIP IRRIGATION SHALL BE INSTALLED TO IRRIGATE ALL AREAS LANDSCAPED WITH SHRUBS AND GROUNDCOVERS.

DRIP IRRIGATION SHALL CONSIST OF TECHLINE NETAFIM DRIPPER/LINE AND ACCESSORIES. FLUSH VALVES SHALL BE INSTALLED AS RECOMMENDED BY NETAFIM FOR ROUTINE MAINTENANCE.

DRIPPER/LINE WITH EMITTERS SPACED 12" ON CENTER WITH AN APPLICATION RATE OF 0.9 GPH SHALL BE SPACED A MAXIMUM OF 18" BETWEEN ROWS. DRIPPER/LINE SHALL ALSO BE INSTALLED TO MATCH PLANTING PATTERNS.

DRIP IRRIGATION SHALL BE PROPERLY FILTERED AND PRESSURE REGULATED TO ENSURE PROPER OPERATION. NETAFIM IN-LINE FILTERS SHALL BE INSTALLED AS SHOWN AND A PRESSURE REGULATOR SHALL BE INSTALLED PER VALVE.

DRIP IRRIGATION SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. THE DETAILS INCLUDED ON THE PLANS, AND UNDER THE SUPERVISION OF THE LANDSCAPE ARCHITECT.

PROGRAMMING

SYSTEM SHALL BE PROGRAMMED TO ENSURE THE CAPACITIES OF THE PIPING NETWORK AND PUMP STATION ARE NOT EXCEEDED.

SYSTEM SHALL ALSO BE PROGRAMMED TO OPERATE UNDER THE WATER RESTRICTION GUIDELINES ESTABLISHED BY LOCAL AUTHORITIES.

TIMING AND PRIORITIZATION

TIMING OF EACH STATION SHALL BE SET IN THE FIELD TO MATCH LOCAL REQUIREMENTS. REFER TO ZONE SUMMARY CHART FOR RECOMMENDED RUN TIMES.

IRRIGATION NOTES & SPECIFICATIONS

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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 60" ON 3" PIPE. INSTALL MOTOR CABLE SPACE BETWEEN MOTOR AND CONTROL PANEL IN NEMA 4X JUNCTION BOX ADJACENT TO WELL IN ACCORDANCE WITH ELECTRICAL CODES.

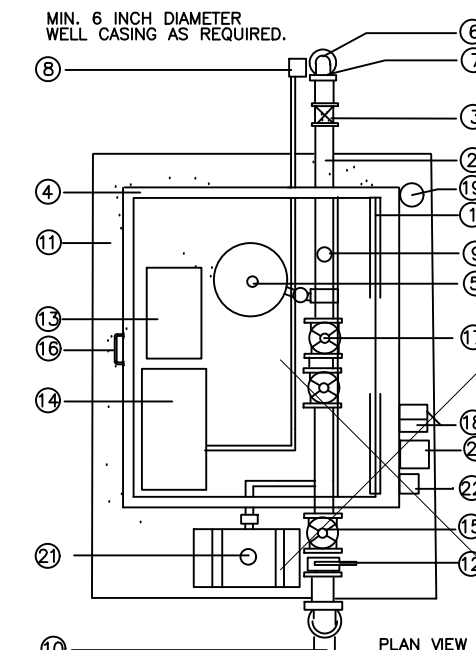
WELL DRILLER SHALL NOTIFY THE PUMP SYSTEM MANUFACTURER IN WRITING WITHIN 24 HOURS OF DEVELOPING THE WELL IF THE WELL PUMPING LEVEL IS GREATER THAN 40" BELOW FINISHED GRADE AFTER 8 HOURS OF CONTINUOUS PUMPING AT 125% OF THE DESIGN FLOW BELOW.

PROVIDE MINIMUM OF 4" CLEARANCE ON ALL SIDES OF PUMP SYSTEM

HOOPER FLOWGUARD WELL SYSTEM REMOTE CONTROL, COMMUNICATION AND FEATURES: COMMUNICATION VIA CELLULAR MODEM CONNECTION PROVIDED BY HOOPER. 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 MINIMUM GALLON PER MINUTE USAGE WITH ADJUSTABLE TIME DELAY AND NUMBER OF RESET ATTEMPTS
- X MINIMUM TOTAL DAILY WATER USAGE
- X DAILY WORKING HOURS AND HISTORICAL FLOW, INCOMING AND DISCHARGE PRESSURE
- X DISCHARGE OF HOSE TIME AND HISTORICAL FLOW, INCOMING AND DISCHARGE PRESSURE
- X 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 TRIPPER OVERLOAD FAULT SHUTDOWN
- X POWER OFF/ON ALERT
- X PUMP RATED CYCLE
- X PUMP LOSS OF PRIME

SAFETY FEATURES:
 PRESSURE DEMAND
 -TRANSIENT SURGE
 -LOSS OF PRIME
 -HIGH FLOW



- 1 4" x 4" FIBERGLASS REINFORCED ENCLOSURE WITH FOREST GREEN GELCOAT FINISH
- 2 GALV. STEEL DISCHARGE HEADER PIPE WITH GALV. ROLL GROOVE FITTINGS
- 3 CHECK VALVE
- 4 4" x 4" ALUMINUM SKID BOLTED TO CONCRETE PAD
- 5 PRESSURE TANK
- 6 5" SUBMERSIBLE PUMP/MOTOR IN WELL 15 HP
- 7 WELL SEAL
- 8 J-BOX WITH UL PVC CONDUIT TO CONTROL PANEL
- 9 PRESSURE TRANSDUCER
- 10 4" x 36" PVC SCHED 40 GROOVED END PIPE FOR CONNECTION TO IRRIGATION MAIN
- 11 4" x 4" x 4" THICK PRECAST REINFORCED CONCRETE PAD 4,000 PSI STRENGTH AT 28 DAYS
- 12 DISCHARGE BUTTERFLY VALVE
- 13 VARIABLE FREQUENCY DRIVE
- 14 CONTROL PANEL ASSEMBLY UL LISTED 304 STAINLESS STEEL ENCLOSURE MAINTAIN 42" CLEARANCE
- 15 MASTER SHUTOFF VALVE CONNECTED TO HOOPER FLOWGUARD & IRRIGATION CONTROLLER
- 16 LOCKABLE HANDLE
- 17 MAGNETIC FLOW METER
- 18 JUNCTION BOXES WITH 110VAC POWER AND MV CIRCUIT FOR IRRIGATION CONTRACTORS FURNISHED AND INSTALLED IRRIGATION CONTROLLER
- 19 FLOWGUARD RAIN GAUGE ON 8' POLE
- 20 ELECTRIC SERVICE CHASEWAY TO CONTROL PANEL FOR CONNECTION TO ELECTRIC SERVICE BY ELECTRICIAN
- 21 35 GALLON INJECTOR TANK AND PUMP STRAPPED & ANCHOR BOLTED TO 7" x 5" x 4" THICK PRECAST PAD - OPTION
- 22 2ND MAG METER AS FLOW SENSOR OUTPUT IN JUNCTION BOX OUTSIDE ENCLOSURE FOR MAXI CONTROLLER CONNECTION BY IRRIGATION CONTRACTOR

NOTE: CITY OF PORT ST. LUCIE REQUIRES A 6 FT HT CHAIN LINK FENCE AROUND PUMP SYSTEM

ELECTRIC SERVICE TO BE IN ORDER OF PREFERENCE:
 460V 3-PHASE, 230V CLOSED-DELTA 3-PHASE,
 208V WYE 3-PHASE, 230 OPEN-DELTA 3-PHASE,
 230V 1-PHASE, 208V 1-PHASE

PUMP PERFORMANCE:
 250 GPM @ 220 TDH, 70 PSI

HOOPER PUMPING MODEL: HSF-15PDV-230/3-M,R3,W,Z FILE: P16645.DWG 03/23
 Pompano Beach, Florida, Tel: 954-971-7350

**SOUTHWEST VILLAGE PKWY & BECKER ROAD MATTAMY HOMES
 SUBMERSIBLE PUMP SYSTEM DETAIL
 FIBERGLASS ENCLOSED WELL SUCTION
 VARIABLE FREQUENCY DRIVE (VFD) PRESSURE DEMAND
 HOOPER FLOWGUARD®**

**CITY OF PORT ST LUCIE SW VILLAGE PKWY AND BECKER ROAD
 MATTAMY HOMES**

SPECIFICATIONS

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

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-15 PDV-230/3-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 shall not be construed as a manufacturing guide or complete list of required system components and apurtenances.

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, 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 structural skid. Aluminum pedestals shall be provided to mount the control panel assemblies. The entire station shall be delivered and/or installed on a reinforced concrete slab size as noted on the system detail.

PUMP AND MOTOR:

The pump shall be a submersible type coupled to a submersible motor rated at 15 HP, voltage and phase to match 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 stainless steel 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, Low Pressure 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.

Reset - Normal - Override Switch

The station is equipped with an Override selector switch that operates as follows:

Position	Function
Reset	- Resets all system failures.
Normal	- Low Pressure protection is active.
Override	- Low Pressure protection is disabled.

Operator Interface

A NEMA 4X 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
- Full voltage class 10 IEC motor starters for emergency bypass operation
- Metal oxide varistors (MOV) for transient voltage suppression per phase
- Fused control circuitry with blown fuse lighted indicator for each circuit

Specification

Electric service to be, in order of preference:
 460V 3-Phase (A, B, C, Ground)
 230V Closed-Delta 3-Phase (A, B, C, Neutral, Ground)
 208V Wye 3-Phase (A, B, C, Neutral, Ground)
 230V 1-Phase (A, B, Neutral, Ground)
 208V 1-Phase (A, B, Neutral, Ground)
 230V Open-Delta 3-Phase (A, B, C, Neutral, Ground).

Selection of 230V Open-Delta 3-Phase may require an increase in electrical equipment size to meet desired performance criteria.

PENETRATION STANDARD REQUIREMENTS:

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

VARIABLE FREQUENCY DRIVES (VFD):

Variable Frequency Drive with the following characteristics shall be provided for the pump motor: 32-bit microprocessor controlled Pulse Width Modulated output, IGBT transistors, line reactors, built-in adjustable PID control, and acceleration ramp up and down, single pump VFD systems 25 hp or less NEMA 4 VFD with forced-air cooling. All other VFD system cooling is by industrial air conditioner. Variable torque control, 32 character alphanumeric 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.

MASTER/SHUTOFF VALVE:

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 prest-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. The transmitter sensor element will provide a signal over 0-150 PSIG range while rated for 600-PSI overpressure minimum. Conformity error will be less than or equal to 0.50% and the transmitter shall be capable of operation from -40 to +120C.

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.

FLOWGUARD/MAXI-COM MAGNETIC FLOW METER/SHUT-OFF VALVE CONVERTER ASSEMBLY

Flowguard/Maxi-Com Magnetic Flow Meter/Shut-Off Valve converter Assembly

DISCHARGE PIPE MANIFOLD:

The pipe discharge manifold shall be constructed of galvanized steel pipe with galvanized roll groove fittings. A wafer type butterfly valve or bronze ballvalve 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 HOOPER 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

-- COMMUNICATION via customer provided T1, DSL, WIFI or 900 MHz radio communication line with STATIC IP ADDRESS complete with connection to the RS232 port on the Flowguard controller OR 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.

-- WATER USE REPORTS: Print Reports for Daily, Monthly, and Annual flow volume history. View and print reports for graphing, logs, usage, audit trails, and maintenance status.

-- SECURITY ACCESS CONTROL: Multi-user capability with User ID and password protection.

-- USER TRAINING provides new user classes, support and phone assistance to set up initial parameters such as Water Windows, budgets and other user - set functions.

FLOWGUARD3 RAIN GAUGE:

The rain gauge with the following features:
 - Remotely adjustable Shutoff and Restart levels, and remotely settable drying rate.
 - Measurement of rainfall, with one-hundredth of an inch resolution.
 - Recording of daily rainfall amounts.
 - Display of today's total rainfall.
 - Display of estimated time to restart when system shuts-down due to rain.

WARRANTIES:

Prior to shipping, the manufacturer shall flow test the system and submit a certified report to the designer stating the system is within 1% + or - of the specified flow rate and pressure, and meets the operational requirements.

The manufacturer of the pumping station shall warrant all components for a period of one (1) year from date of manufacture.

PN16645

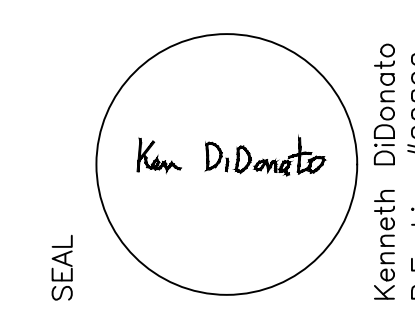
OPTION:

INJECTION SYSTEM:

An adjustable rate positive displacement pump shall be located inside the pump enclosure or adjacent to the chemical tank connected to the pump system control panel and discharge pipe. The pump will have a pumping capacity of 6 to 30 gallons per day at up to 80 psi. The pump motor will be thermally protected and will stop pumping if the system backpressure exceeds the pump capacity. The tank will be made of polypropylene and have a capacity of 35 gallons with a refill hatch located on a concrete pad.

PROJECT TITLE : BECKER ROAD EXTENTION
 CITY OF PORT ST. LUCIE, FLORIDA
 IRRIGATION PUMP STATION

Kenneth DiDonato, P.E.
 CONSULTING ENGINEER
 GOLF COURSE & COMMERCIAL IRRIGATION DESIGN
 2210 HOLLYWOOD BLVD., HOLLYWOOD, FLORIDA 33020
 (954) 923-2855



PROJECT NO. 2023-11
 DRAWN BY KMD
 DESIGNED BY KMD
 SCALE: N.T.S.
 DATE : FEBRUARY 2023
 DWG. NO. IR-7
 SHT. NO. of
 REVISIONS :
 FILE: