

**Irrigation Management Plan Narrative
For
Weston Estates Subdivision**

Date: 02 * ~ • 06 2011

Prepared by: Stephen E. Swindell, P.E.
Vortex Engineering & Architecture, Inc
861 Rood Ave
Grand Junction, CO 81501

Submitted To: City of Fruita
Division of Engineering
325 E. Aspen Avenue
Fruita, Colorado 81521

Type of Design: New Residential Subdivision

Owner/Applicant: M & D ENTERPRISES LLC
1058 23 Rd
Grand Junction, CO 81505

Property Address: North West Corner of 19 and J Roads
Fruita, CO 81521

Tax Schedule No.: 2697-164-00-050
2697-164-00-074
2697-164-00-129

Irrigation Management Plan Narrative

Background

The Weston Estates Subdivision was recently annexed into the City of Fruita. The total size of the project is approximately 27.7 acres. This project will provide approximately 113 areas depending on the final configuration.

The applicant owns twenty-five (25) shares of Grand Valley Irrigation Company (GVIC) irrigation water. The applicant plans to transfer all 25 shares of GVIC stock for this development. Based on the GVIC allotment of 4.6 gallons per minute (gpm) per Class A share and 25 shares, the Subdivision would have a total allotment of approximately 115 gpm.

Currently the property is provided with GVIC irrigation water through Headgate ML 440. This head gate provides a total of 1,560 shares of irrigation water. A copy of the Headgate report is included in Exhibit A. A discussion of the impacts of this subdivision on the existing irrigation conveyance facility is presented below.

The subdivision will be served by a designed pressurized underground system. The Homeowners Association (HOA) covenants will encourage water conservation and will prohibit irrigation by flooding.

Existing Irrigation Conveyance Facilities

The existing conveyance facilities from Head Gate ML 440 are a concrete channel along J 2/10 Road. Irrigation water flows in a westerly direction from the Main Line Canal, which is located approximately 1 mile north of the site.

The existing site receives irrigation water at an irrigation box located in the northeast corner of the site. Tail water is collected into a ditch along the southerly border of this site.

Proposed Relocations of Irrigation Laterals along J Road and J.2 Road

Existing concrete trapezoidal channels along both J Road and J.2 Road will be relocated out of the street Right-of-Way. Both will be placed in 18" pvc culverts that will be located in irrigation easements adjacent to the streets and parallel to their original alignment. Existing grades will be closely approximated. At this point in the design, both relocations will maintain their existing grade and will not become siphons. All new irrigation pipes will be 18" diameter C900 pvc pipe and all trenches within the public Right-of-Way will be backfilled with 'flowfill' to the road base material. Please note the J Road irrigation line does cross J Road near the Adel Drive intersection in an existing culvert. This crossing will be extended and will include a 'flat top' manhole built to City of Fruita's standards.

Subdivision Irrigation Demand

Each lot will need approximately 15 gpm. Based on 113 areas, the total demand of 150 gpm will exceed the share allocation of 115 gpm. To mitigate this, the subdivision plans to minimize the total irrigation demand by requiring an “odd / even” and zoned watering schedule. For example, half of the subdivision (odd addresses) will be able to irrigate on Monday, Wednesday, and Friday while the other half (even addresses) will be able to water on Tuesday, Thursday, and Saturday.

The average size lot in Weston Subdivision is approximately 7,300 square feet. Based on the City of Fruita maximum lot coverage of 40 percent (buildings and pavement), there will be an average of approximately 4,400 square feet per lot for landscaped areas. Irrigation taps will be limited to 15 gpm. The total maximum demand will be 150 gpm. This peak demand will not be a continuous demand, as irrigation scheduling will provide for down times with minimal or zero demand. Water management recommendations and estimate of demands is included in Exhibit B.

Proposed Irrigation Conveyance and Modifications to Existing J 2/10 Road Turnout

To best utilize the irrigation water, Weston Subdivision proposes the following:

- Remove the existing irrigation channel along the north side of the subdivision and relocate a new line approximately 2.5 feet north of the curb.
- Install a 15,000-gallon storage vault in the northeast corner of the property fed by a 6-inch pipe from the new irrigation line.
- Pump the irrigation water to the individual lots by way of a pressurized distribution system.
- The pumps will be designed to convey 200 GPM at 50-60 pounds per square inch (psi).
- This work will be coordinated with adjacent landowners receiving water from head gate ML 440. If necessary, the tie in will be completed during the non irrigation season.

Exhibit C depicts the proposed pumping plan and irrigation system and modifications to the existing irrigation line along the north side.

Operation and Maintenance

Currently, this system delivers water to the existing property and properties to the south. The Weston Subdivision HOA will be responsible for operation and maintenance of the irrigation system to the point of delivery to individual lots.

The Weston Subdivision HOA also needs to be aware that delivery of the irrigation water is through a lateral from head gate ML 440. This lateral is approximately one mile long to the point of delivery and is an incorporated lateral. Individual lateral users perform upstream maintenance on an as needed basis. Maintenance may include cleaning the head gate, fixing broken pipe, and concrete ditches. In summary, there is no guarantee of water delivery through the lateral when maintenance is required, or upstream users use more water than allocated. Neither GVIC nor the City of Fruita (nor any other agency) takes responsibility for the maintenance of the lateral or enforcement of the usage.

The current president of the Lateral Association is Larry Palmer.

General Maintenance Items include the following:

- Occasional cleaning of the delivery head gate (ML 440).
- Annual startup of system in spring, exercise all valves, check for leaks in pipelines. Notify homeowners to close individual valves.
- Control algae in storage vault. Apply algaecide such as “Cutrine Plus” as directed by manufacturer. Follow all safety procedures recommended by manufacturer and store chemicals properly in a safe secure location.
- Annual shutdown of system in fall. Notify all homeowners to close individual valves. Flush mainline by opening valve in southwest corner of subdivision. Remove any sediment in pipeline and then blow water out of mainline to prevent freezing and breakage. Drain the pump and remove water in storage vault by sump pump. Clean storage vault of sediment (hand removal).

Conclusion

The size of the concrete vault to supply the proposed lots will be approximately 15,000 gallons. The irrigation tract will be enclosed with a 6 feet high fence.

EXHIBIT A

HEAD GATE ML 440 REPORT

Headgate Report

June 09, 2022

	OWNER	USER	RENTED	ORDEROUT
51084	Randy D & J. Heather Albrecht 999 20 Rd Fruita, CO 81521		No	ML410 6
4535	Glen I. Alexander 1965 J Rd Fruita, CO 81521		No	ML410 14
52461	All Energy Recovery Organization LLC PO Box 4170 Gr Jct, CO 81502	999 20 Road	No	ML410 5
53146	Miguel Ambriz Yaneth Gutierrez 2065 H 3/4 Road Fruita, CO 81521-9128		No	ML410 12
42111	Gordon F. Ashurst Sandra E. Ashurst 1976 I 3/10 Road Fruita, CO 81521		No	ML410 5
53034	Jonathon Atzman Celeste Atzman 1859 J 2/10 Rd Fruita, CO 81521		No	ML410 4
49404	Martin & Donna Azcarraga PO Box 2072 Gr Jct, CO 81502		No	ML410 131
52404	Scott W Barteck Connie K Barteck 898 20 Rd Fruita, CO 81521		No	ML410 5
53050	Jack E. Beach 897 20 Road Fruita, CO 81521		No	ML410 13
52730	Shane & Alisha Bean 949 19 1/2 Road Fruita, CO 81521	949 19 1/2 Rd	No	ML410 11

	OWNER	USER	RENTED	ORDEROUT
5790	Ralph Allen Bergen Pamela Grace Bergen 868 20 1/2 Road Fruita, CO 81521		No	ML410 5
5548	Kyle E & Helen Bice 1984 I 3/10 Road Fruita, CO 81521		No	ML410 5
53047	Bettina Bigelow Neal Palmer 2024 I Road Fruita, CO 81524		No	ML410 10
52486	Leroy C & Nickole M Brown 2020 H 3/4 Rd Fruita, CO 81521		No	ML410 15
53829	Steven Evans Brown 970 20 Rd Fruita, CO 81521		No	ML410 3
5794	Carl C & Katherine L Cahill 2015 J Road Fruita, CO 81521		No	ML410 1
53067	Christopher Estates Hoa P.O. Box 162 Fruita, CO 81521		No	ML410 27
53484	Benn Yancy Conner Kathleen Ann Conner 934 20 Road Fruita, CO 81521-9307		No	ML410 3
51978	County of Mesa State of Colorado c/o Facilities/Parks Dept PO Box 20000-5024 Gr Jct, CO 81502-5001	Erbisch Prop	No	ML410 9
52262	Anthony L Creamer 930 19 1/2 Rd Fruita, CO 81521		No	ML410 5
52394	Sophia Crews Chance Wiltfang 976 20 Rd Fruita, CO 81521		No	ML410 0

	OWNER	USER	RENTED	ORDEROUT
50974	Stephen C & Andrea R Datz 2073 I Rd Fruita, CO 81521		No	ML410 10
40042	Michael T. Davison Julia Marie Davison 1980 I.3 Road Fruita, CO 81521		No	ML410 5
52772	Denise Denning etal 494 Chatfield Circle Gr Jct, CO 81504		No	ML410 16
52285	Karen E & Wade H Dickinson 915 20 Rd Fruita, CO 81521		No	ML410 2
52555	Doc & Momma Doc's Farm LLC c/o George Lloyd 484 Canyon Creek Dr Glenwood Spgs, CO 81601		No	ML410 147
32041	Ralph A. Dodson Joyce A. Dodson 924 20 1/2 Road Fruita, CO 81521		No	ML410 13
4950	Lynn Carlene Eastridge 867 20.5 Road Fruita, CO 81521		No	ML410 13
5475	Robert C Erbisch PO Box 69 Fruita, CO 81521		No	ML410 5
50704	Phillip T & Karen W Farnsworth 849 20 1/2 Rd Fruita, CO 81521		No	ML410 5
50581	Don W & Betsy Fears 903 20 Rd Fruita, CO 81521		No	ML410 4
49475	Miguel A & Bertha Flores 2014 I Rd Fruita, CO 81521		No	ML410 13

	OWNER	USER	RENTED	ORDEROUT
37681	Ricky Lee Franklin Lora Lee Franklin 940 20 Road Fruita, CO 81521		No	ML410 29
51185	Jerry Golden Kimberly Whittaker 974 20 Rd Fruita, CO 81521		No	ML410 7
51926	Margaret Gonzalez 2063 J Rd Fruita, CO 81521		No	ML410 32
50500	J Cruz & Maria Gonzalez 960 20 1/2 Rd Fruita, CO 81521	960 & 964 20 1/2 Rd	No	ML410 15
50500	J Cruz & Maria Gonzalez 960 20 1/2 Rd Fruita, CO 81521	977 20 1/2 Rd	No	ML410 1
52622	Kirk L Graham Dana L. Graham 938 19 1/2 Rd Fruita, CO 81521		No	ML410 5
51462	James C Griffin 880 20 Rd Fruita, CO 81521		No	ML410 10
53240	Brad R. Grose LaDonna Lynn Grose 985 20 1/2 Road Fruita, CO 81521		No	ML410 10
38272	Loren & Julie Haller 2058 H 3/4 Road Fruita, CO 81521		No	ML410 5
53828	David Dion Hanson Jodie Hanson 2054 I Rd Fruita, CO 81521		No	ML410 3
53716	Levi & Samatha Harvey 2049 J Rd Fruita, CO 81521		No	ML410 22

	OWNER	USER	RENTED	ORDEROUT
51912	Rodger Hatfield 953 20 Rd Fruita, CO 81521		No	ML410 2
50379	Tere Hayward 1088 20 Rd Fruita, CO 81521	Wilborn, 934 19 1/2 Rd	Yes	ML410 5
50397	Robert Herrera 998 20 Rd Fruita, CO 81521		No	ML410 5
26141	Arthur W& Donna Hoisington 912 19 1/2 Road, Rt 2 Fruita, CO 81521		No	ML410 19
52237	Jo Holcomb Jeff Cook 1983 J Rd Fruita, CO 81521		No	ML410 7
51791	Michelle C Houlne 2029 I Rd Fruita, CO 81521		No	ML410 4
53456	Teresa K. Howitt Myron K. Howitt 2019 J Road Fruita, CO 81521		No	ML410 6
49266	Mark A & Kim L Hyatt 1988 I 3/10 Rd Fruita, CO 81521		No	ML410 5
49271	James M & Mary Ann Jensen 871 20 1/2 Rd Fruita, CO 81521		No	ML410 4
53849	JLM Development LLC 595 20 3/4 Road Grand Junction, CO 81507		No	ML410 7
30412	Joe A & Dolly J Johnston 958 20 Rd Fruita, CO 81521		No	ML410 4

	OWNER	USER	RENTED	ORDEROUT
50661	Gaylen & Nancy Kettle 893 20 Rd Fruita, CO 81521		No	ML410 123
51146	Ronald C & Mortisha A Key 2043 H 3/4 Rd Fruita, CO 81521		No	ML410 2
53289	Bernard or Theresa Lammers 907 S. Mud Springs Road Payson, AZ 85547		No	ML410 1
53068	Le Chateau LLC 1063 21 1/2 Road Grand Junction, CO 81505		No	ML410 27
52733	L-J Holdings LLC etal 940 19 1/2 Rd Fruita, CO 81521		No	ML410 30
40101	Arthur & Janet Lloyd 950 20 Rd Fruita, CO 81521		No	ML410 10
53791	Joshua Mather Charla & Craig Hill 948 20 Rd Fruita, CO 81521		No	ML410 3
51055	Dan McWilliams 921 20 Rd Fruita, CO 81521		No	ML410 2
53021	Blake Menge Nina Menge 2020 I Road Fruita, CO 81521		No	ML410 24
50271	Clark R & Shawna M Milsap 922 20 Rd Fruita, CO 81521		No	ML410 5
50380	Phyllis Newby 11145 W 17th #3-102 Lakewood, CO 80215		No	ML410 48

	OWNER	USER	RENTED	ORDEROUT
52571	Christopher S & Stephanie M Nocks 947 19 1/2 Rd Fruita, CO 81521		No	ML410 6
4075	Lory O. Noyes Sandra M. Noyes 963 20 Road Fruita, CO 81521		No	ML410 40
51451	Penelope Powell 964 20 Rd Fruita, CO 81521-9307		No	ML410 13
51346	Walt A & Joan M Proulx 933 20 Rd Fruita, CO 81521		No	ML410 5
4726	Ralph B. Quarles Carol Ann Quarles 2053 I Road Fruita, CO 81521		No	ML410 5
6169	Harold L Raff 927 19 1/2 Rd Fruita, CO 81521		No	ML410 10
49946	Errol R& Patricia A Raley 844 20 1/2 Rd Fruita, CO 81521		No	ML410 47
51425	Steven & Tammy Robison 1975 I 3/10 Rd Fruita, CO 81521		No	ML410 14
52159	Jesse F & Betty M Rogers 18137 County Rd V Sanford, CO 81151	2070 I Rd	No	ML410 19
52757	Karen K Rose 2049 I Rd Fruita, CO 81521		No	ML410 6
52919	Robert N & Sharon Kay Schnepfe 887 20 1/2 Rd Fruita, CO 81521		No	ML410 5

	OWNER	USER	RENTED	ORDEROUT
4085	Kirt D & Marina H Schultz P.O. Box 3406 Grand Junction, CO 81502		No	ML410 5
50771	Martin D Seely 1395 W Safford Bryce Rd. Safford, AZ 85546	Bochmann, 2013 J Rd	Yes	ML410 1
49490	Kenneth R Sills 659 1/2 Colony Ct Clifton, CO 81520	970-250-0889	No	ML410 6
52929	Ryan T Smith 890 20 1/2 Rd Fruita, CO 81521		No	ML410 2
51472	Ty David Soderquist 880 20 1/2 Rd Fruita, CO 81521		No	ML410 10
51873	David Timothy Spach Janet Tucker Spach 862 20 1/2 Rd #B Fruita, CO 81521		No	ML410 5
50499	Frank & Janine L Sparks 2059 H 3/4 Rd Fruita, CO 81521		No	ML410 5
50676	Martin William Stafford 927 20 Rd Fruita, CO 81521		No	ML410 4
50466	Ward B & Priscilla M Studt 1063 21 1/2 Rd Gr Jct, CO 81505	TDR	No	ML410 25
50132	Brigitte Sundermann 2070 H 3/4 Rd Fruita, CO 81521		No	ML410 10
49183	Thomas W & Sheila K Sylvester 925 20 Rd Fruita, CO 81521		No	ML410 1

	OWNER	USER	RENTED	ORDEROUT
5409	Michael W Termentozzi etal 948 19 1/2 Rd Fruita, CO 81521		No	ML410 8
52220	Deborah L Thacker 2035 I Rd Fruita, CO 81521		No	ML410 3
50310	Clayton L & Heidi F Thygerson 997 20 Rd Fruita, CO 81521-9352		No	ML410 5
53335	David K. Ungaro 935 19 1/2 Road Fruita, CO 81521-9378		No	ML410 1
51845	Regina Lee Valentine 982 20 Rd Fruita, CO 81521		No	ML410 16
53139	William & Debbie Varecha Trust 203 Grand Ave. Grand Junction, CO 81501		No	ML410 3
3491	Juan Vertiz 1998 I.3 Road Fruita, CO 81521		No	ML410 10
49935	Theodore A & Deborah E Von Feldt 1981 J Rd Fruita, CO 81521		No	ML410 10
52735	Kenneth R Watkins Nancy C Watkins 2071 J Road Fruita, CO 81521		No	ML410 55
53637	Keith R Watson Kim Watson 2052 I Rd Fruita, CO 81521		No	ML410 3
3108	Ronald E. Wilborn Rhea Dawn Wilborn 955 19 1/2 Road Fruita, CO 81521		No	ML410 22

	OWNER	USER	RENTED	ORDEROUT
53761	Debra Rae Wilkins 897 20 Rd Fruita, CO 81521		No	ML410 5
53837	Williams Farm Subdivision HOA 2027 J Rd Fruita, CO 81521		No	ML410 28
53564	Chance R Wiltfang Sophia L Wiltfang 976 20 Rd Fruita, CO 81521		No	ML410 16
52927	Peggy S. Wimmer 891 20 1/2 Rd. Fruita, CO 81521		No	ML410 5
49983	Donald L & Shelly L Woolery Sr 2027 I Rd Fruita, CO 81521		No	ML410 3
50394	Roy A Yates Jennifer Hibpshman 2033 J Rd Fruita, CO 81521		No	ML410 5
			Total:	1446

EXHIBIT B

CALCULATIONS

Grey shading indicates an output cell:

Irrigated Area

Total Irrigated Area (A) 15.40 acres

Weekly Irrigation Demand

Total # of Lots/Taps (n) 113
 inches of water per week (z) 3.00
 Demand 3.849 acre-feet
 Demand 167,660 cubic feet
 Demand (D_V) 1,254,181 gallons (Eq. 1)

Irrigation Periods

of periods (zones) per day (a) 6
 A given lot receives water once for every (b) 2 days
 # of waterings per lot per week (c) 3
 Average Irrigation Demand per Period (D_{PA}) 34,838 gallons (Eq. 2)
 Average Number of Lots/Taps per Period (n_{PA}) 9.42 (Eq. 3)
 Design Number of Lots/Taps per Period - Rounded up (n_{PD}) 10
 Design Irrigation Demand per Period (D_{PD}) 36,996 gallons (Eq. 4)

Flow in / Flow out

of shares supplied 25
 gallons per minute per share 4.6 gpm
 Flow in (Q_{in}) 115 gpm
 Supplied Flow per Lot/Tap (Q_L) 15 gpm
 Design Flow out (Q_{out}) 150.0 gpm (Eq. 5)
 Required Irrigation Period Duration (t_P) 4.11 hours (Eq. 6)
 Net loss during an irrigation period (V_R) 8,633 gallons (Eq. 7)
 Required Recharge time (t_R) 1.25 hours (Eq. 8)
 Sum of Irrigation Periods and Recharge Times (t_T) (Invalid if >24) 32.17 hours (Eq. 9)

Vault Sizing

Minimum Required Storage Volume (Net Loss) (V_R) 8,633 gallons
 Length (l) 10
 Width (w) 20
 Working Volume Depth from Full Elevation to Intake*(d_i) 7
 Provided Storage Volume (Design Volume V_D) 10,473 gallons
 Percent of Minimum Storage Provided 121%

*Do not include total vault depth in design calculations if a sump is used for sediment collection

Equation 1: $D_V = \left(\frac{Z}{12}\right) (A \times 43560) \times 7.4805$

Equation 2: $D_{PA} = \frac{D_V}{a \times b \times c}$

Equation 3: $n_{PA} = \frac{n}{a \times b}$

Equation 4: $D_{PD} = \left(\frac{D_{PA}}{n_{PA}}\right) \times n_{PD}$

Equation 5: $Q_{out} = n_{PD} \times Q_L$

Equation 6: $t_P = \left(\frac{D_{PD}}{Q_{out}}\right) \div 60$

Equation 7: $V_R = 60 \times t_P (Q_{out} - Q_{in})$

Equation 8: $t_R = \left(\frac{V_R}{Q_{in}}\right) \div 60$

Equation 9: $t_T = a(t_P + t_R)$

Equation 10: $v = \frac{Q_{out} \div (60 \times 7.4805)}{\pi \left(\frac{D}{2 \times 12}\right)^2}$

Equation 11: $H_v = \frac{v^2}{2 \times 32.2}$

Equation 12: $H_p = \text{operating pressure (psi)} \times 2.31$

Equation 13: $d_h = \frac{4 \times \text{Cross - section area}}{\text{Wetted Perimeter}} = \frac{4\pi \left(\frac{D}{2}\right)^2}{2\pi \frac{D}{2}}$

Equation 14: $h_{100ft} = \frac{0.2083 \left(\frac{100}{C}\right)^{1.852} \times Q_{out}^{1.852}}{d_h^{4.8655}}$

Equation 15: $H_{fr} = \frac{L}{100} \times h_{100ft}$

Equation 16: $H_m = K(H_v)$

Equation 17: $H_{pump} = H_e + H_v + H_p + H_{fr} + H_m$

Equation 18: $hp_D = \frac{Q_{out} + H_{pump}}{3960}$

Irrigation Period Input Guide

of periods per day (a)

-Simple am/pm: a = 2

-am/mid/pm: a = 3

-Four periods per day: a = 4

A given lot receives water...(b)

-Typical odd/even: b = 2

-watering a lot every day of the week: b = 1

-watering a lot only twice a week (rare): b=3

of waterings per lot per week (c)

-Typical odd/even: c = 3

-watering a lot every day of the week: c = 7

-watering a lot only twice a week

Grey shading indicates an output cell:

System Flow

Unit Flow provided per Lot/Tap (Q_L)	15 gpm	
Max number of taps per irrigation period (n_{PD})	10	
Design system flow (Q_{out})	150 gpm	

Elevation Head

Highest point in the line	4743	
Pump Intake Elevation	4736.5	
Elevation Head (H_e)	6.5 ft	

Velocity Head

Pipe Diameter (D)	6 in	
Velocity (v)	1.702 ft/s	(Eq. 10)
Velocity Head (H_v)	0.045 ft	(Eq. 11)

Pressure Head

Operating Pressure	50 psi	
Pressure Head (H_p)	116 ft	(Eq. 12)

Head Loss to Friction

(Hazen Williams)		
Roughness Coefficient (C)	140	
Hydraulic Diameter (d_h)	6 in	(Eq. 13)
Head Loss per 100 ft (h_{100ft})	0.196 ft/100ft	(Eq. 14)
Maximum Leg Length of System (L)	3000 ft	
Total Head Loss to Friction (H_{fr})	5.88	(Eq. 15)

Minor Losses

Assumed K (sum of minor loss coefficients) (K)	100	
Minor Losses (H_m)	4.50 ft	(Eq. 16)

Required Pump Specifications

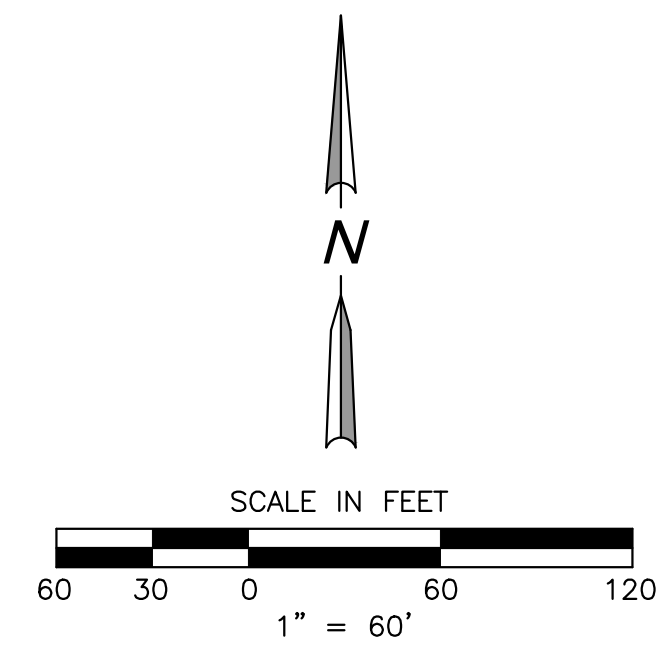
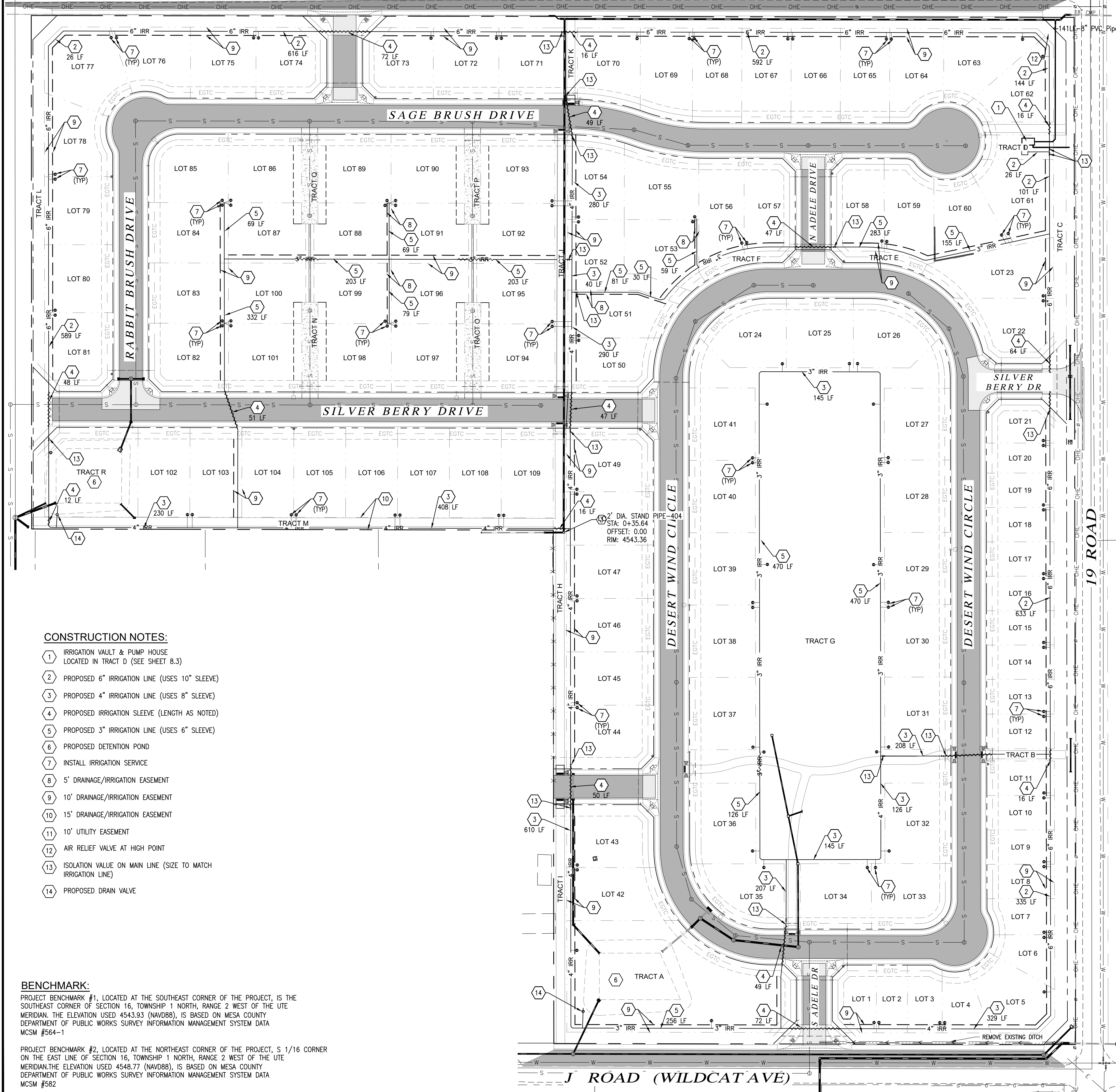
Required Pump Head (H_{pump})	132.4 ft	(Eq. 17)
Calculated Pump Horsepower (hp_D)	5.02 hp	(Eq. 18)
Assumed efficiency	80%	
Horsepower Required	6.27 hp	

EXHIBIT C

IRRIGATION PLAN

J ROAD IRRIGATION RELOCATION PLAN

J.2 ROAD IRRIGATION RELOCATION PLAN



CONSTRUCTION NOTES:

- 1 IRRIGATION VAULT & PUMP HOUSE LOCATED IN TRACT D (SEE SHEET B.3)
- 2 PROPOSED 6" IRRIGATION LINE (USES 10" SLEEVE)
- 3 PROPOSED 4" IRRIGATION LINE (USES 8" SLEEVE)
- 4 PROPOSED IRRIGATION SLEEVE (LENGTH AS NOTED)
- 5 PROPOSED 3" IRRIGATION LINE (USES 6" SLEEVE)
- 6 PROPOSED DETENTION POND
- 7 INSTALL IRRIGATION SERVICE
- 8 5' DRAINAGE/IRRIGATION EASEMENT
- 9 10' DRAINAGE/IRRIGATION EASEMENT
- 10 15' DRAINAGE/IRRIGATION EASEMENT
- 11 10' UTILITY EASEMENT
- 12 AIR RELIEF VALVE AT HIGH POINT
- 13 ISOLATION VALVE ON MAIN LINE (SIZE TO MATCH IRRIGATION LINE)
- 14 PROPOSED DRAIN VALVE

BENCHMARK:

PROJECT BENCHMARK #1, LOCATED AT THE SOUTHEAST CORNER OF THE PROJECT, IS THE SOUTHEAST CORNER OF SECTION 16, TOWNSHIP 1 NORTH, RANGE 2 WEST OF THE UTE MERIDIAN. THE ELEVATION USED 4543.93 (NAVD88), IS BASED ON MESA COUNTY DEPARTMENT OF PUBLIC WORKS SURVEY INFORMATION MANAGEMENT SYSTEM DATA MCSM #564-1

PROJECT BENCHMARK #2, LOCATED AT THE NORTHEAST CORNER OF THE PROJECT, S 1/16 CORNER ON THE EAST LINE OF SECTION 16, TOWNSHIP 1 NORTH, RANGE 2 WEST OF THE UTE MERIDIAN. THE ELEVATION USED 4548.77 (NAVD88), IS BASED ON MESA COUNTY DEPARTMENT OF PUBLIC WORKS SURVEY INFORMATION MANAGEMENT SYSTEM DATA MCSM #582

IRRIGATION SYSTEM NOTES:

1. IRRIGATION PIPING SHALL CONSIST OF THE FOLLOWING:
 - IRRIGATION SYSTEM SHALL BE MINIMAL CLASS 160 PVC.
 - MINIMUM OF 2 FEET OF COVER.
 - IRRIGATION LINES BENEATH ROADWAYS AND DRIVEWAYS SHALL BE PLACED IN A SLEEVE EXTENDING A MINIMUM OF 3 FEET BEYOND PAVING.
 - A 90 DEGREE CHANGE IN DIRECTION SHALL BE CONSTRUCTED WITH 2 - 45 DEGREE BENDS.
 - BURIED VALVES SHALL BE STANDARD EPOXY COATED CAST-IRON GLOBE VALVES WITH VALVE BOX.
 - IRRIGATION SYSTEM SHALL BE PRESSURE TESTED AT 80 PSI, LEAKAGE (L) IN GALLONS PER HOUR SHALL NOT EXCEED THE FOLLOWING:
 $L = (S \times D \times (P^{0.5})) / 133,200$
 S = LENGTH IN FEET, D = DIAMETER IN INCHES, P TEST PRESSURE IN PSI
 - ALL IRRIGATION LINES SHALL HAVE TRACER WIRE EXTENDED TO GRADE AT ALL CLEANOUTS, VALVES, & RISERS.
 - INSTALL THRUST BLOCKS ON TEES, BENDS, FITTINGS, AND DEAD-ENDS ON ALL DISTRIBUTION PIPING. (PRESSURIZED AND GRAVITY FEED LINES)
 - INSTALL AIR VAC AT IRRIGATION LINE HIGH POINTS
2. ALL IRRIGATION PIPE TO HAVE CAUTION TAPE AND TRACER WIRE, CAUTION TAPE TO BE 12" ±4" ABOVE BURIED PIPE.
3. INSTALL THRUST BLOCKS AT AREAS WHERE WATER CHANGES DIRECTION ON ALL FEED LINES.
4. EACH LOT SERVICE CONNECTION TO HAVE INSTALLED A 10 G.P.M. FLOW CONTROL VALVE.
5. PAINT EXPOSED PVC WITH BLUE LATEX PAINT.

UTILITY PROVIDERS INFORMATION

UTILITY	PROVIDER	PHONE NUMBER
SANITARY SEWER	CITY OF FRUITA	970-858-9558
DRAINAGE	GRAND VALLEY DRAINAGE DISTRICT	970-242-4343
DOMESTIC WATER	UTE WATER CONSERVANCY DISTRICT	970-242-7491
IRRIGATION	GRAND VALLEY IRRIGATION	970-242-2762
ELECTRICITY	GRAND VALLEY RURAL POWER	970-242-0040
NATURAL GAS	XCEL ENERGY	800-895-4999
TELEPHONE	CENTURYLINK	800-603-6000
CABLE TELEVISION	CHARTER COMMUNICATIONS	877-273-7626

FOR REVIEW - NOT FOR CONSTRUCTION

Irrigation Plan - Overall
 Subdivision Plans
 Weston Estates
 1877 J 2/10 ROAD
 FRUITA, COLORADO 81521

PROJECT NO: F20-052
DATE: 12/16/2022

weston estates irrigation.dwg

~SHEET~
C8.0

VORTEX ENGINEERING, INC.
 CONSTRUCTION MANAGERS & SITE PLANNERS
 PROJECT MANAGERS
 CIVIL & CONSULTING ENGINEERS
 861 Rood Avenue
 Grand Junction, CO 81501
 Phone: (970) 245-9051

STEPHEN E. SWINDELL
 PROFESSIONAL ENGINEER
 COLORADO LICENSE No. 57688

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NO.	REV. DATE	BY	REVISION
1	07/11/23	DLS	REVISION SET COMMENT

NO.	DATE	BY	REVISION
1	07/11/23	DLS	REVISED PLAN SET COMMENT

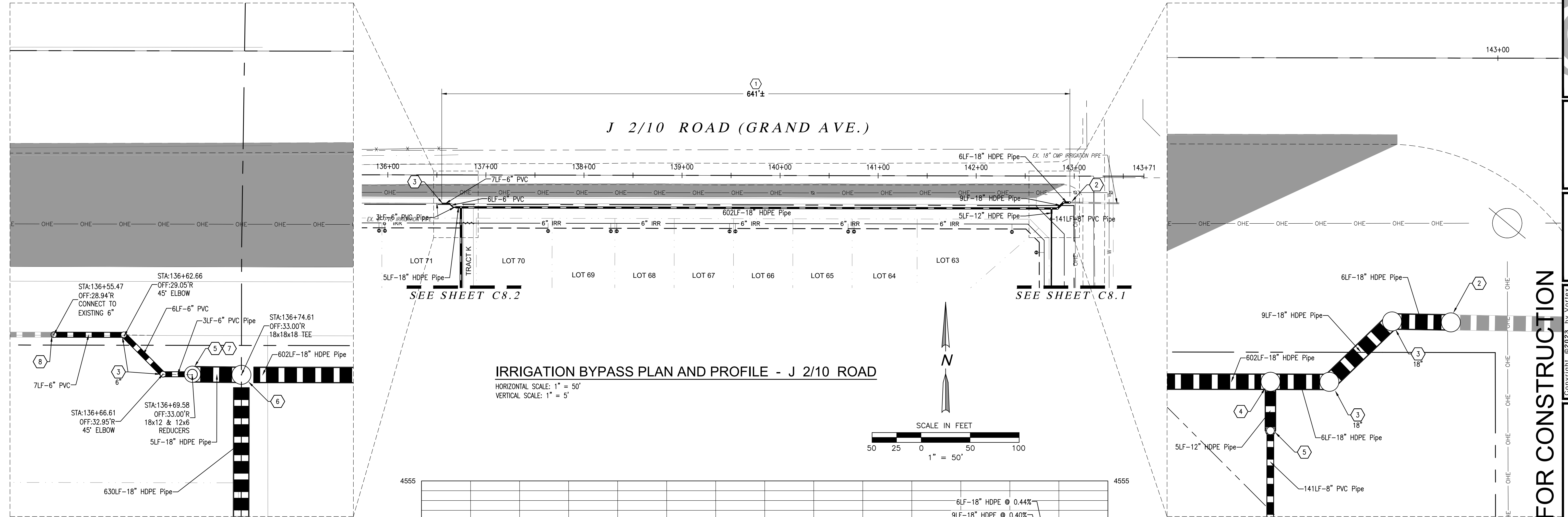
Irrigation Bypass Plan & Profile - J 2/10 Road
Subdivision Plans
Weston Estates
1877 J 2/10 ROAD
FRUITA, COLORADO 81521

PROJECT NO: F20-052
DATE: 12/16/2022

weston estates irrigation.dwg

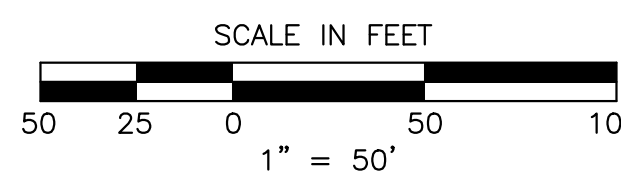
~SHEET~

C8.1



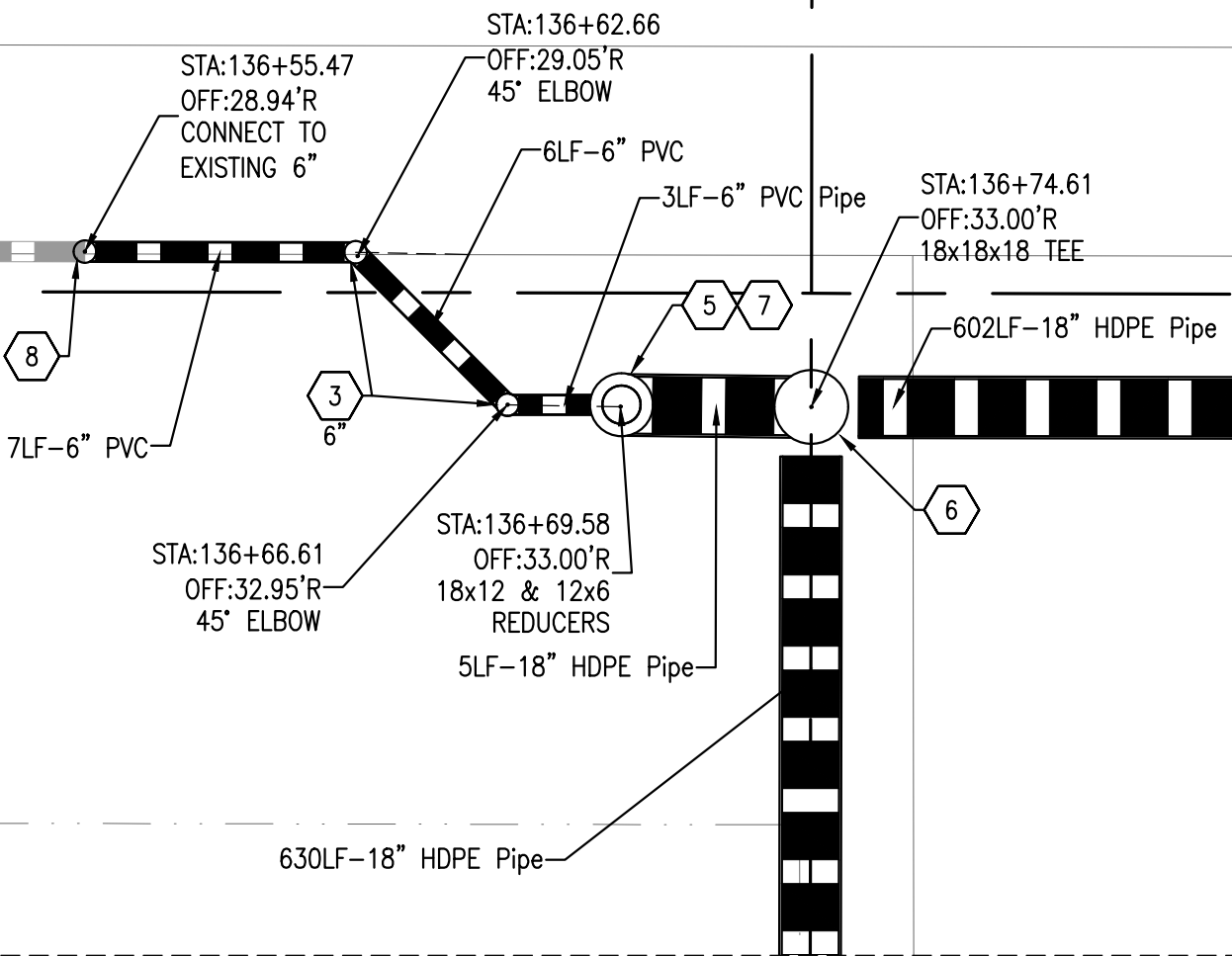
IRRIGATION BYPASS PLAN AND PROFILE - J 2/10 ROAD

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



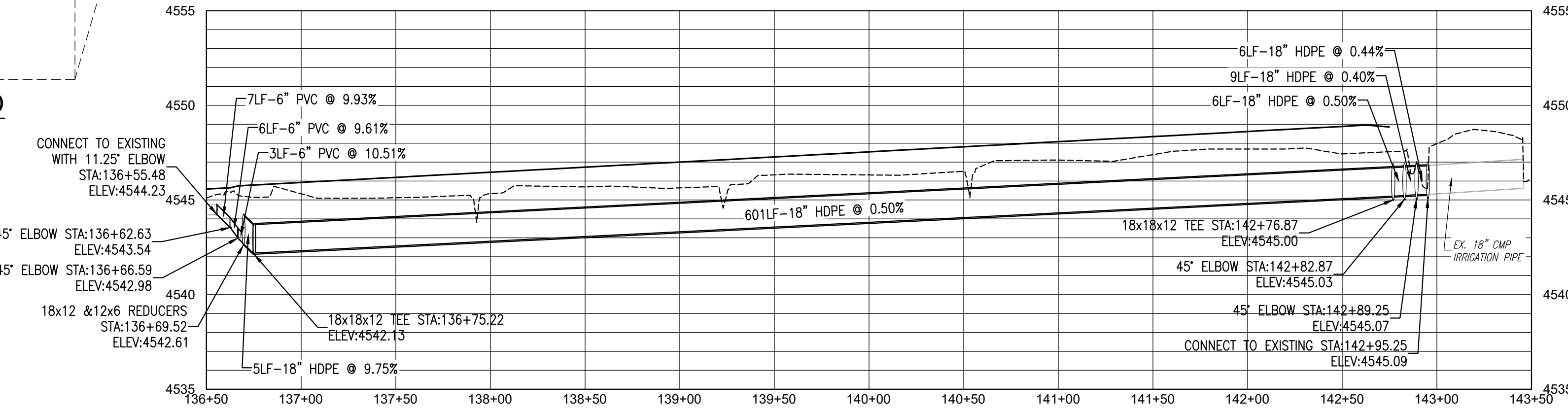
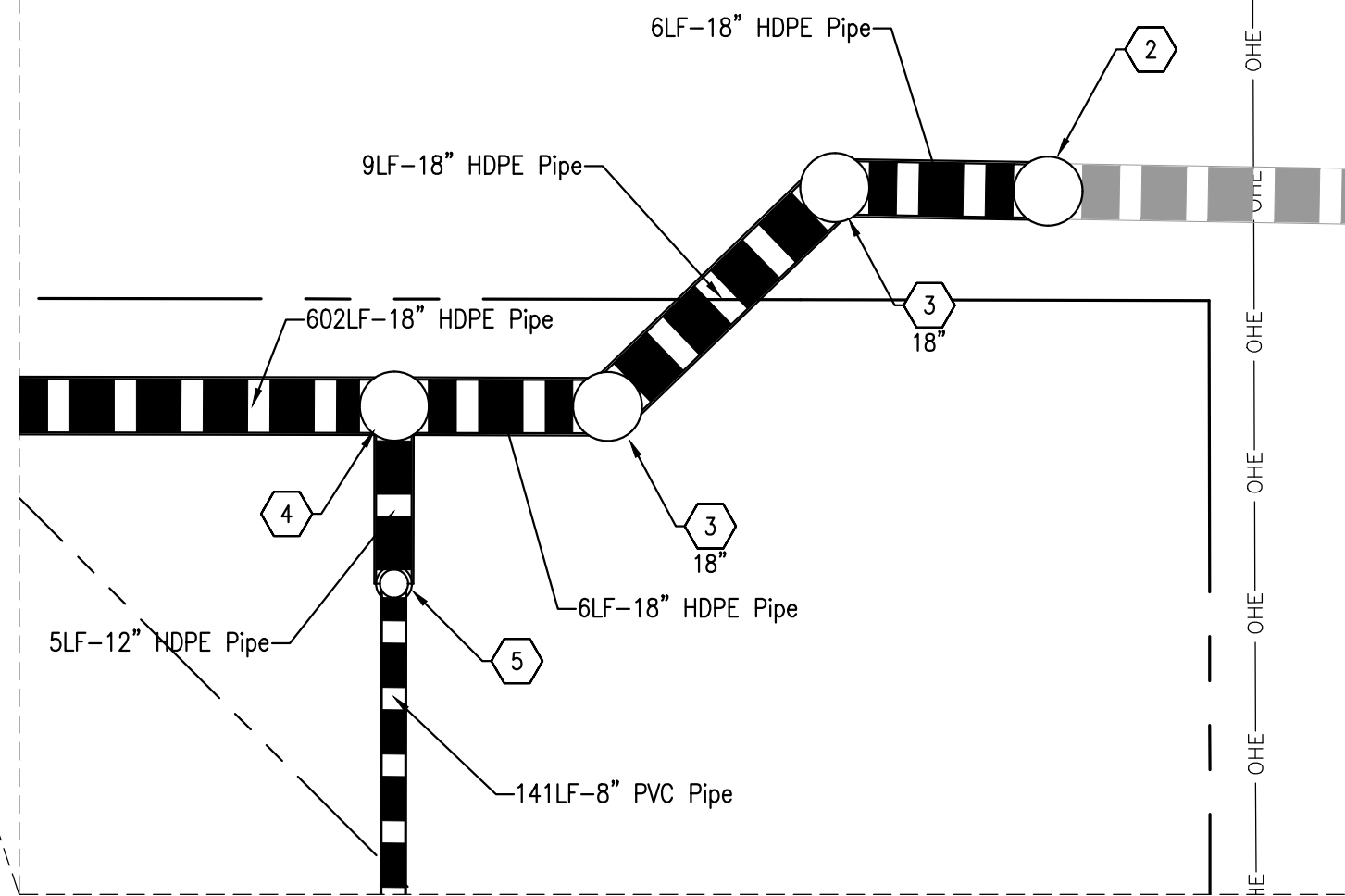
IRRIGATION BYPASS DETAIL - WEST END

HORIZONTAL SCALE: 1" = 5'



IRRIGATION BYPASS DETAIL - EAST END

HORIZONTAL SCALE: 1" = 5'



CONSTRUCTION NOTES:

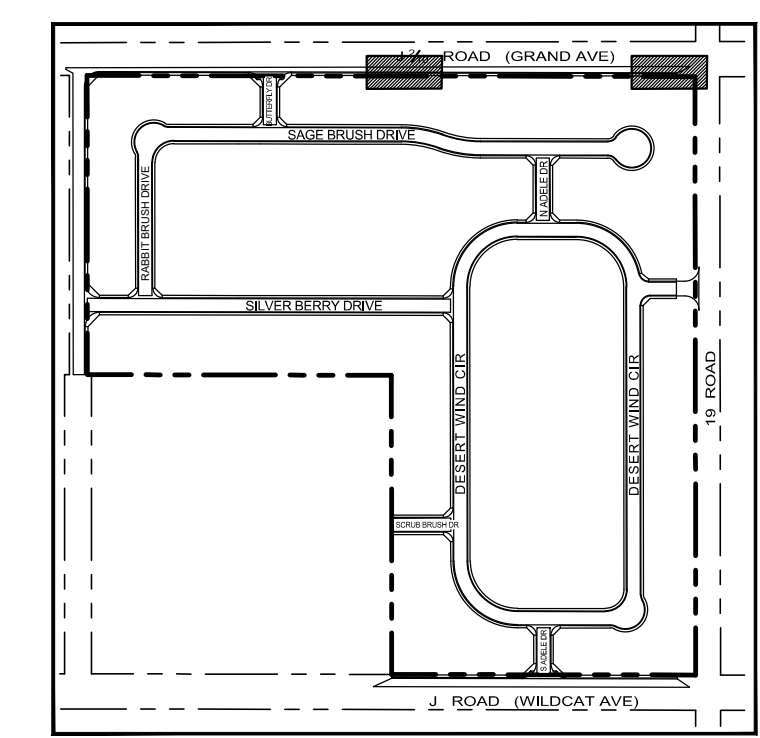
- 1 REMOVE & DISPOSE OF EXISTING CONCRETE IRRIGATION CHANNEL
RE: SHEET C0.1 PROJECT NOTES
- 2 CONNECT TO EXISTING 18" CMP IRRIGATION PIPE
- 3 45° ELBOW WITH THRUST BLOCK
DIAMETER NOTED
- 4 18"x18"x12" TEE WITH THRUST BLOCK
- 5 12"x8" REDUCER
- 6 18"x18"x18" TEE WITH THRUST BLOCK
- 7 18"x12" REDUCER
- 8 11.25" ELBOW WITH THRUST BLOCK
CONNECT TO EXISTING 6" PVC IRRIGATION PIPE

NOTES:

1. REFERENCE SHEET C0.1 FOR ADDITIONAL NOTES.
2. NO DIMENSIONS TO BE SCALED FROM THESE DRAWINGS.
3. STATIONS ARE IN REFERENCE TO CENTER LINE OF ROAD, UNLESS OTHERWISE INDICATED.
4. ALL MANHOLE RIM ELEVATIONS ARE APPROXIMATE. CONTRACTOR SHALL ADJUST RIMS TO FINISH GRADE BEFORE FINAL LIFT OF PAVEMENT.

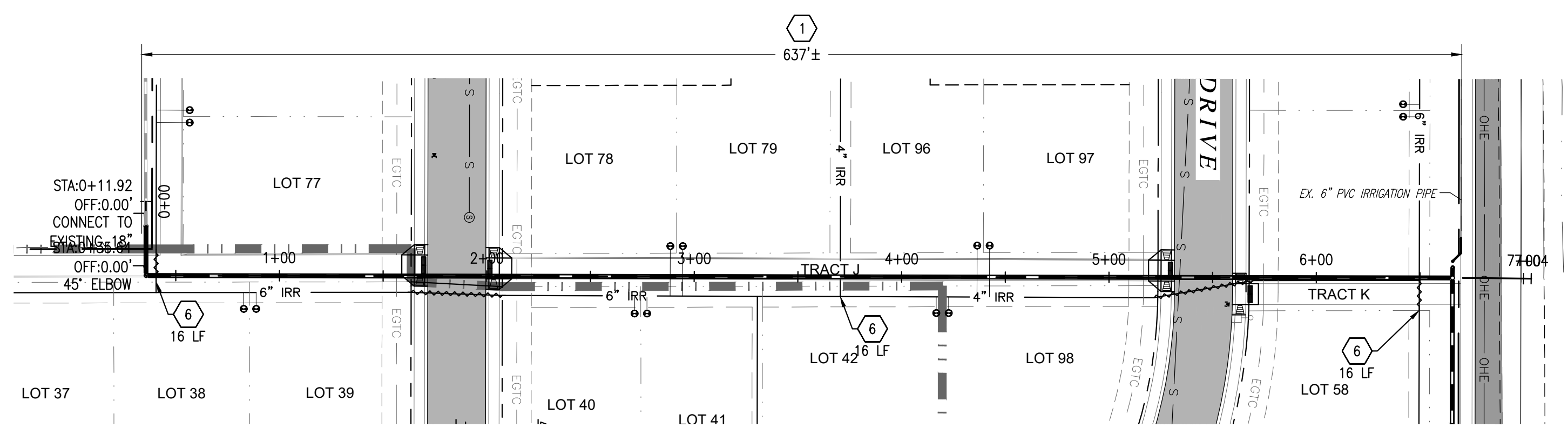
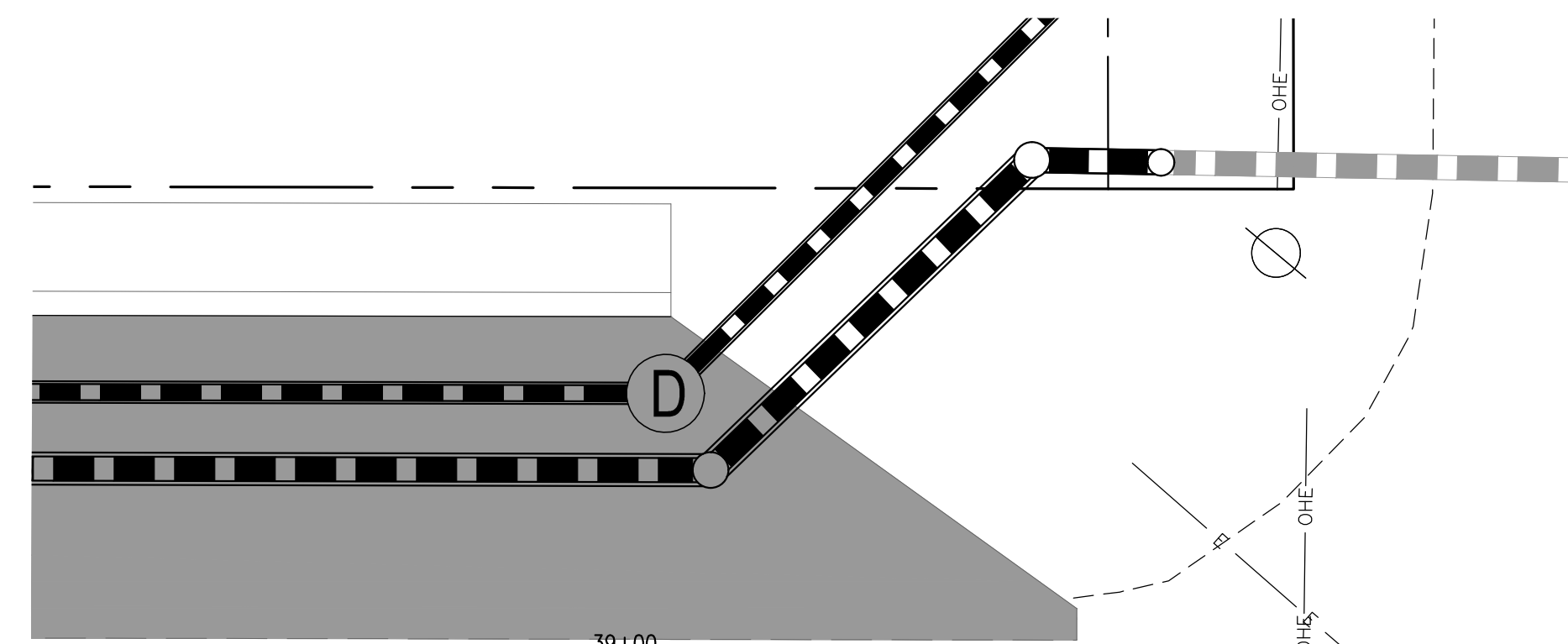
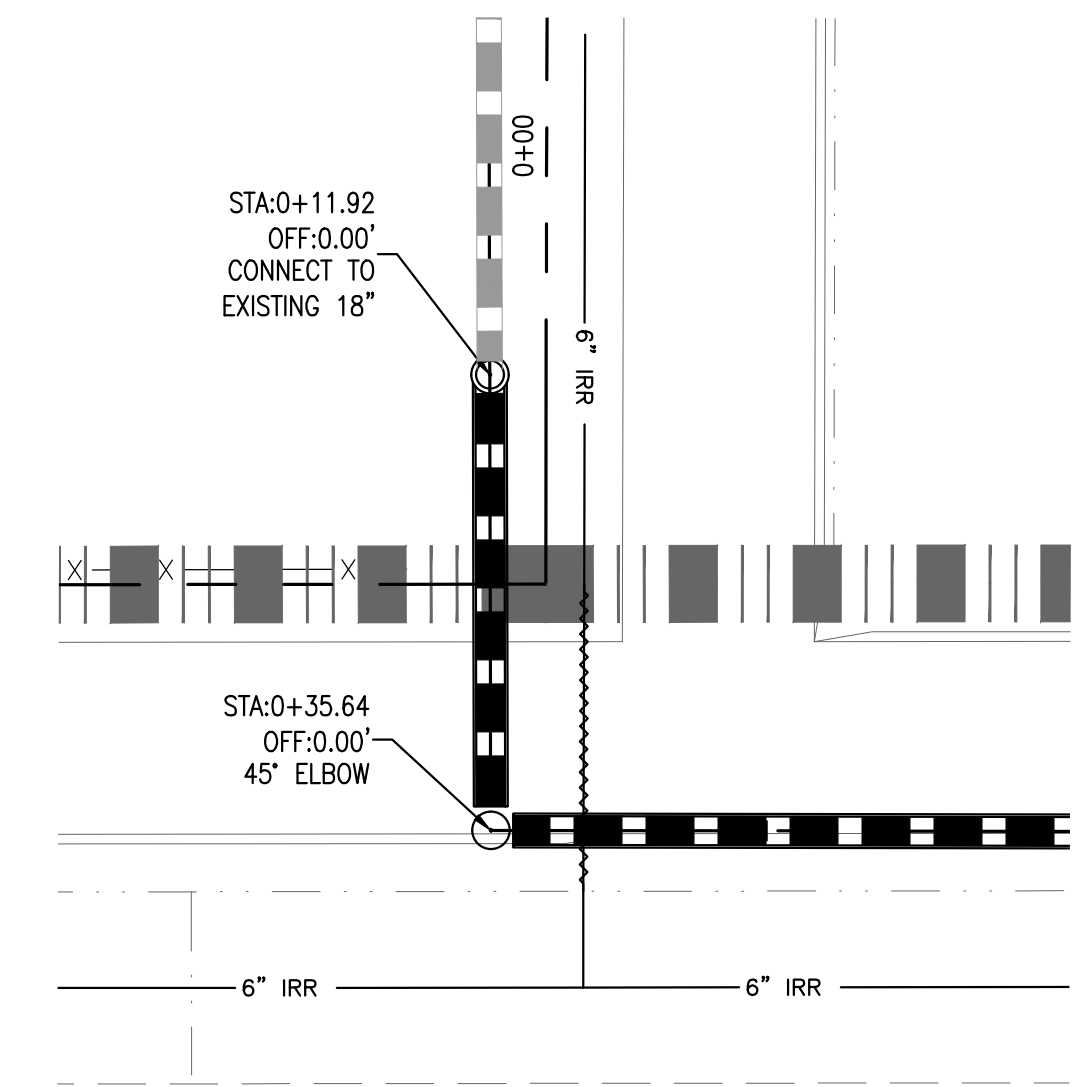
BENCHMARK:
PROJECT BENCHMARK #1, LOCATED AT THE SOUTHEAST CORNER OF THE PROJECT, IS THE SOUTHEAST CORNER OF SECTION 16, TOWNSHIP 1 NORTH, RANGE 2 WEST OF THE UTE MERIDIAN. THE ELEVATION USED 4543.93 (NAVD88), IS BASED ON MESA COUNTY DEPARTMENT OF PUBLIC WORKS SURVEY INFORMATION MANAGEMENT SYSTEM DATA MCSM #564-1

PROJECT BENCHMARK #2, LOCATED AT THE NORTHEAST CORNER OF THE PROJECT, S 1/16 CORNER ON THE EAST LINE OF SECTION 16, TOWNSHIP 1 NORTH, RANGE 2 WEST OF THE UTE MERIDIAN. THE ELEVATION USED 4548.77 (NAVD88), IS BASED ON MESA COUNTY DEPARTMENT OF PUBLIC WORKS SURVEY INFORMATION MANAGEMENT SYSTEM DATA MCSM #582



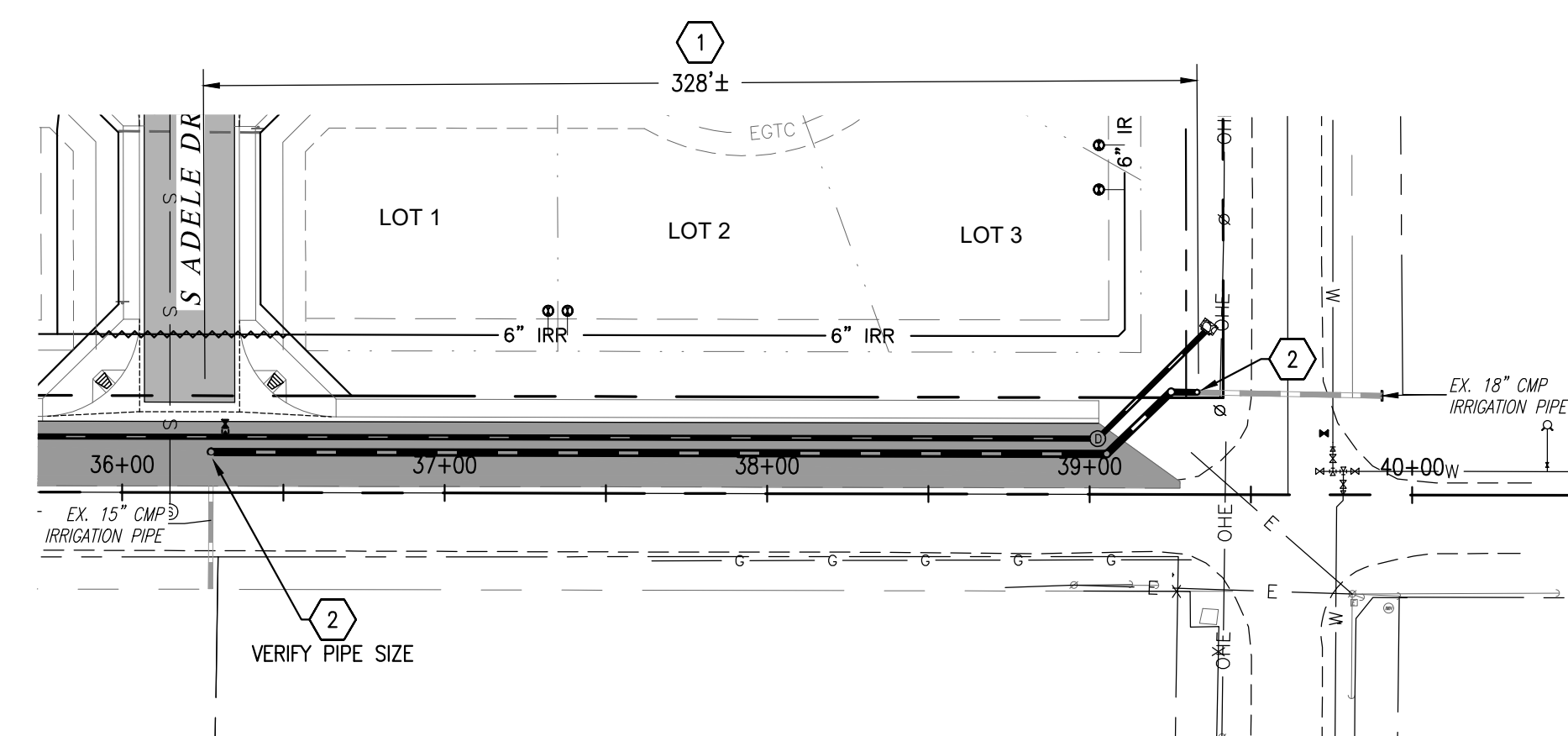
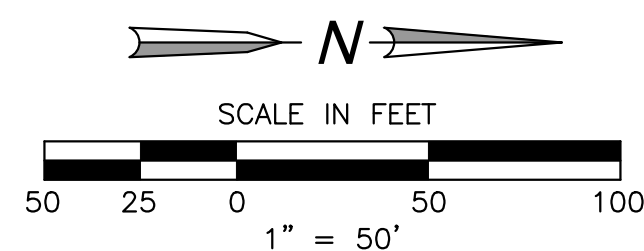
KEY MAP
N.T.S.

FOR REVIEW - NOT FOR CONSTRUCTION



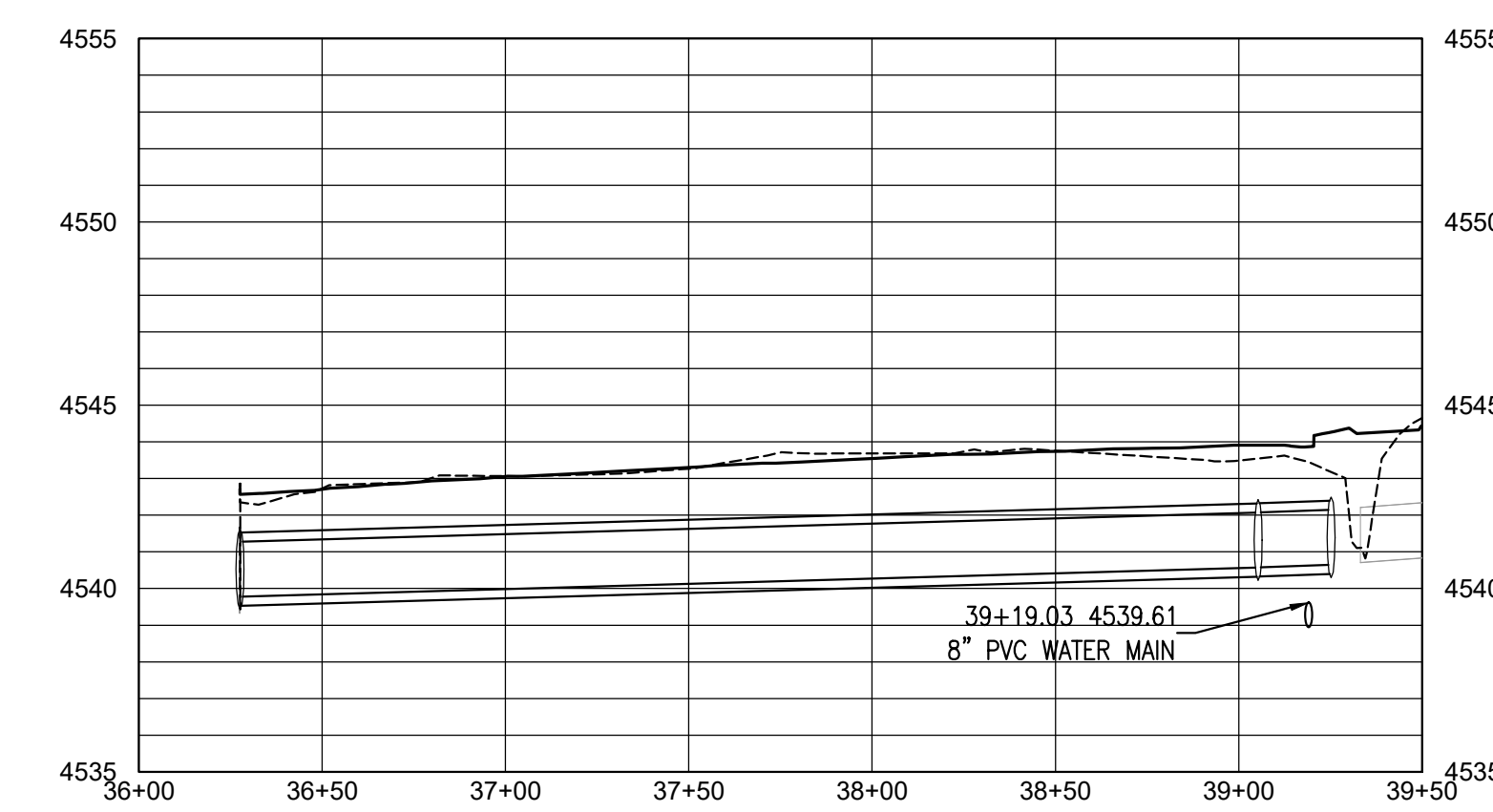
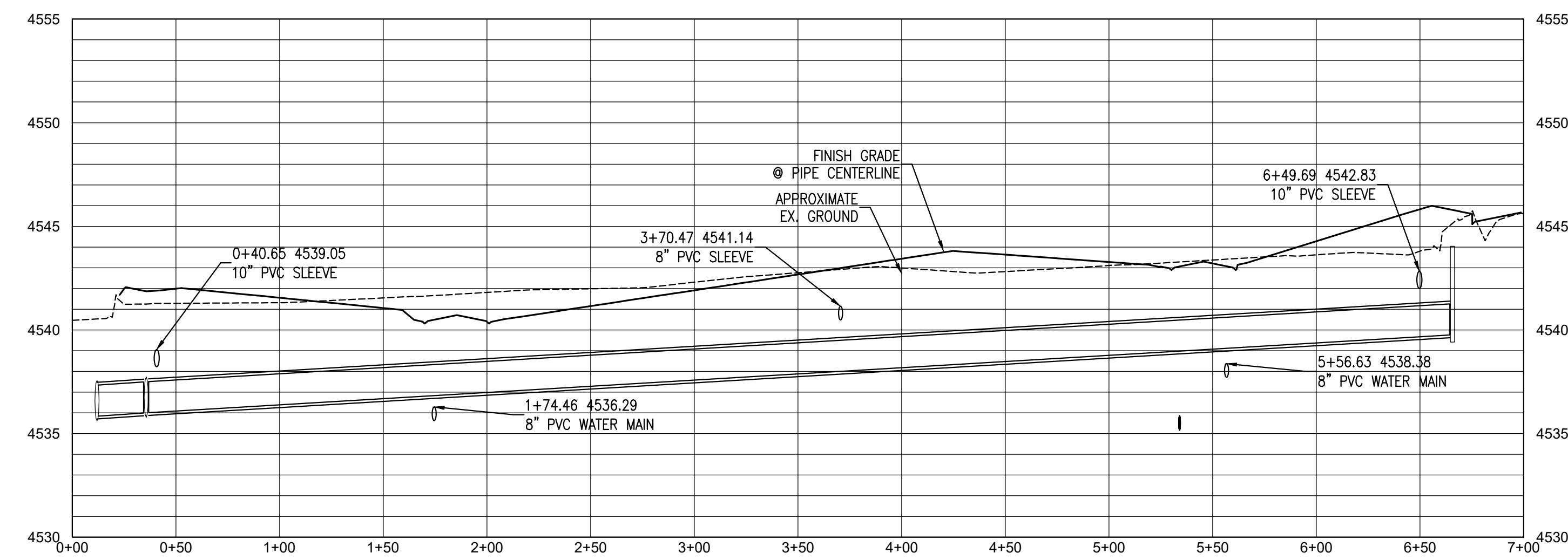
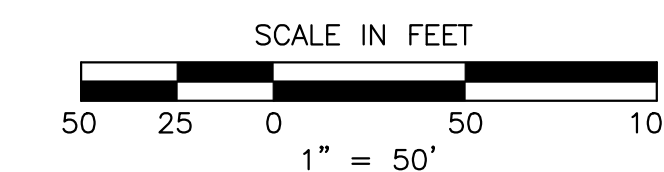
IRRIGATION PLAN AND PROFILE - SOUTH OF J 2/10 ROAD

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



IRRIGATION PLAN AND PROFILE - J ROAD

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



CONSTRUCTION NOTES:

- 1 REMOVE & DISPOSE OF EXISTING CONCRETE IRRIGATION CHANNEL
RE: SHEET CO.1 PROJECT NOTES
- 2 TIE TO EXISTING 18" CMP IRRIGATION PIPE
- 3 INSTALL 48" MANHOLE
RE: CITY OF FRUITA STANDARDS & SPECIFICATIONS
- 4 CONSTRUCT SPLITTER BOX
RE: SHEET C8.3 FOR DETAILS
- 5 INSTALL 2'x2' CONCRETE DISCHARGE BOX
RE: DETAIL ON SHEET C8.3
- 6 UTILITY SLEEVE. SEE PROFILE FOR MORE INFO.

NOTES:

1. REFERENCE SHEET CO.1 FOR ADDITIONAL NOTES.
2. NO DIMENSIONS TO BE SCALED FROM THESE DRAWINGS.
3. STATIONS ARE IN REFERENCE TO CENTER LINE OF ROAD, UNLESS OTHERWISE INDICATED.
4. ALL MANHOLE RIM ELEVATIONS ARE APPROXIMATE. CONTRACTOR SHALL ADJUST RIMS TO FINISH GRADE BEFORE FINAL LIFT OF PAVEMENT.

BENCHMARK:
PROJECT BENCHMARK, LOCATED AT THE SOUTHEAST CORNER OF THE PROJECT, IS THE SOUTHEAST CORNER OF SECTION 16, TOWNSHIP 1 NORTH, RANGE 2 WEST OF THE UTE MERIDIAN. THE ELEVATION USED 4543.76 (NAVD88), IS BASED ON MESA COUNTY DEPARTMENT OF PUBLIC WORKS SURVEY INFORMATION MANAGEMENT SYSTEM DATA SHEET GPS ID NO. PD46

FOR REVIEW - NOT FOR CONSTRUCTION

NO.	REVISION	DATE	BY	COMMENT

Irrigation Bypass Plan & Profile - J Road
Final Plans
Weston Estates Subdivision
1877 J 2/10 ROAD
FRUITA, COLORADO 81521

PROJECT NO: F20-052
DATE: 5/09/22

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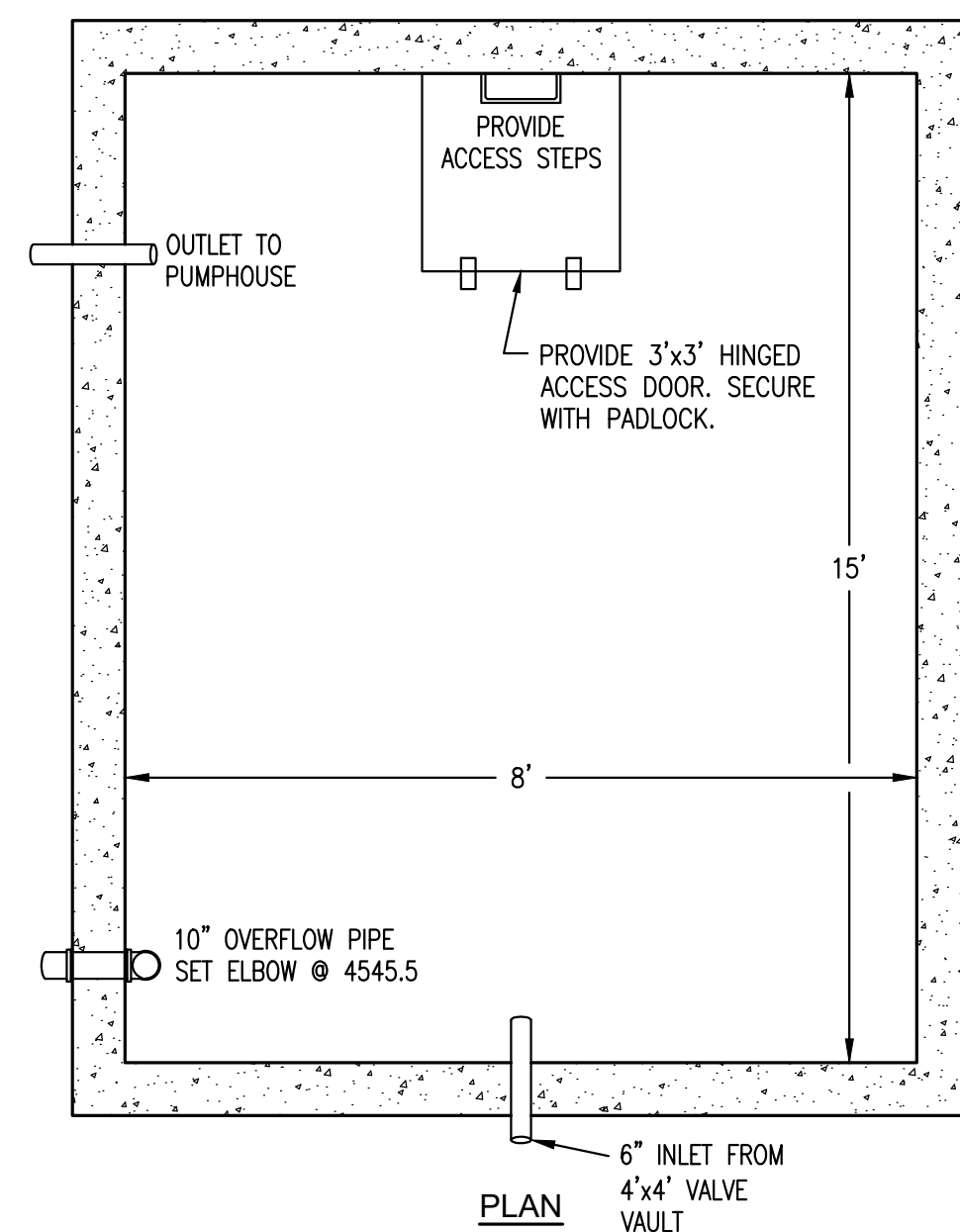
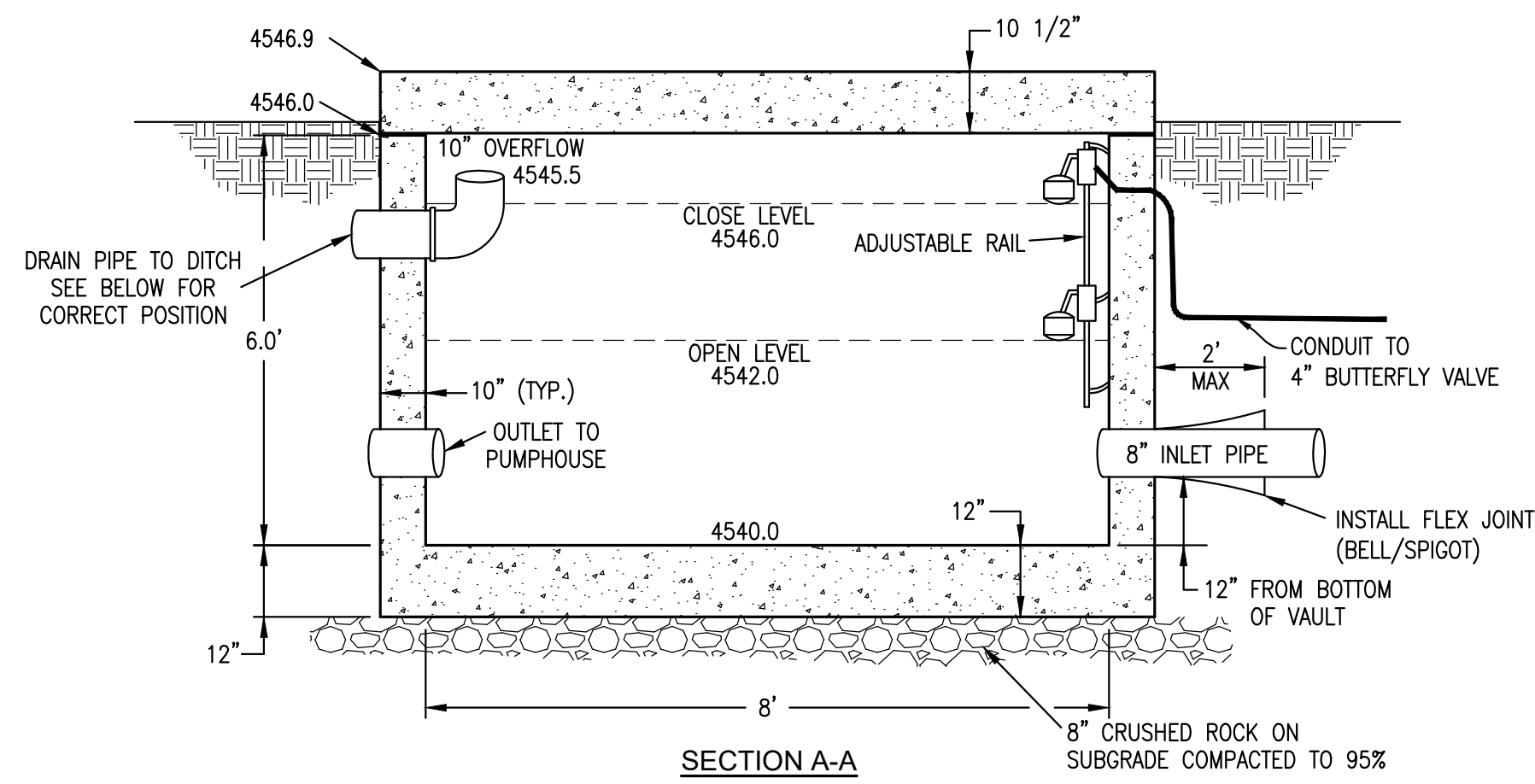
C8.2

IRRIGATION SYSTEM NOTES:

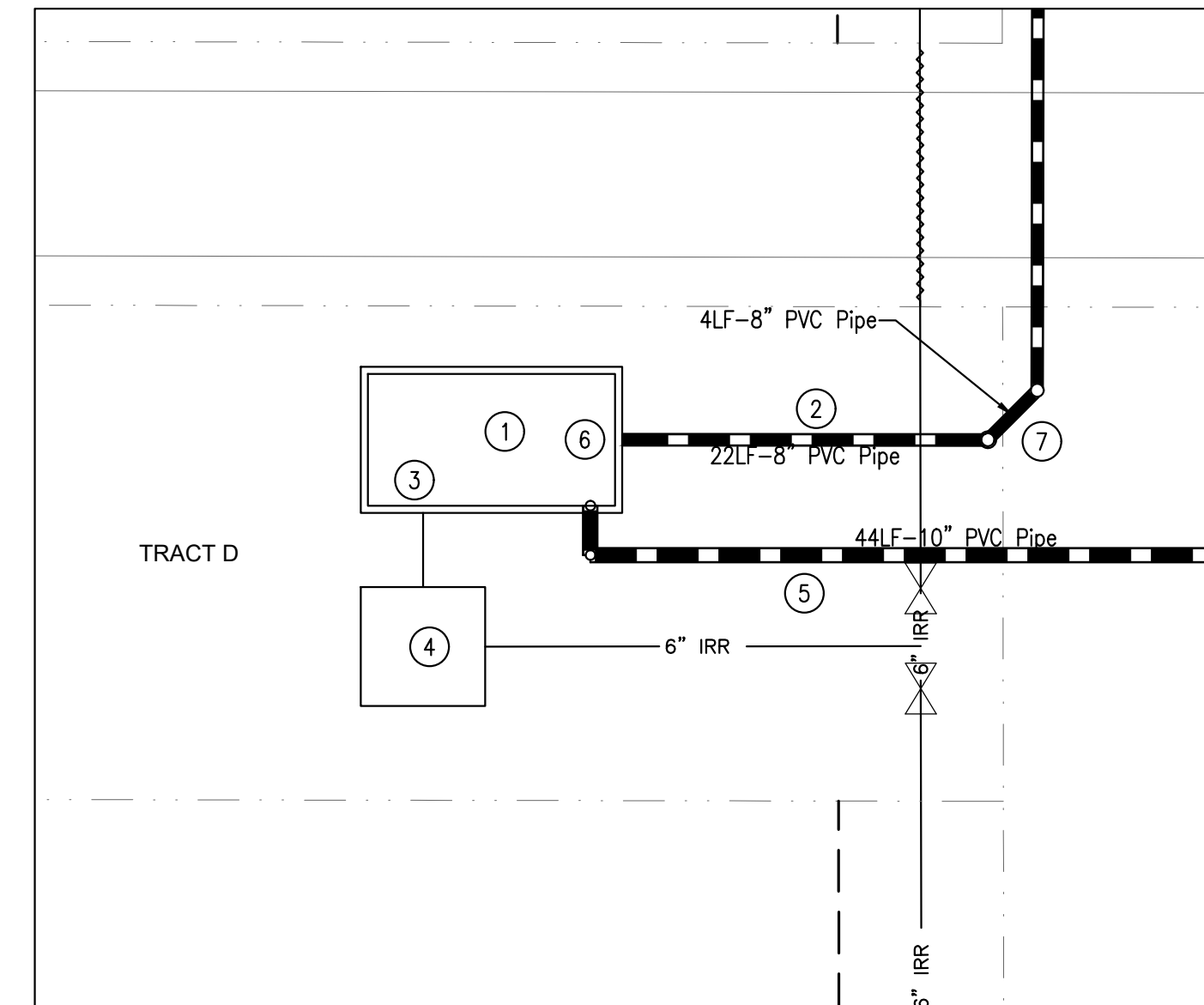
- IRRIGATION PIPING SHALL CONSIST OF THE FOLLOWING:
 - IRRIGATION SYSTEM SHALL BE MINIMAL CLASS 160 PVC.
 - MINIMUM OF 2 FEET OF COVER.
 - IRRIGATION LINES BENEATH ROADWAYS AND DRIVEWAYS SHALL BE PLACED IN A SLEEVE EXTENDING A MINIMUM OF 3 FEET BEYOND PAVING.
 - A 90 DEGREE CHANGE IN DIRECTION SHALL BE CONSTRUCTED WITH 2 - 45 DEGREE BENDS.
 - BURIED VALVES SHALL BE STANDARD EPOXY COATED CAST-IRON GLOBE VALVES WITH VALVE BOX
 - IRRIGATION SYSTEM SHALL BE PRESSURE TESTED AT 80 PSI, LEAKAGE (L) IN GALLONS PER HOUR SHALL NOT EXCEED THE FOLLOWING:
 $L = (S \times D \times (P \times 0.5)) / 133,200$
 S = LENGTH IN FEET, D = DIAMETER IN INCHES, P TEST PRESSURE IN PSI
 - ALL IRRIGATION LINES SHALL HAVE TRACER WIRE EXTENDED TO GRADE AT ALL CLEANOUTS, VALVES, & RISERS.
 - INSTALL THRUST BLOCKS ON TEES, BENDS, FITTINGS, AND DEAD-ENDS ON ALL DISTRIBUTION PIPING. (PRESSURIZED AND GRAVITY FEED LINES)
 - INSTALL AIR VAC AT IRRIGATION LINE HIGH POINTS
- ALL IRRIGATION PIPE TO HAVE CAUTION TAPE AND TRACER WIRE, CAUTION TAPE TO BE 12" ±4" ABOVE BURIED PIPE.
- INSTALL THRUST BLOCKS AT AREAS WHERE WATER CHANGES DIRECTION ON ALL FEED LINES.
- EACH LOT SERVICE CONNECTION TO HAVE INSTALLED A 15 G.P.M. FLOW CONTROL VALVE.
- PAINT EXPOSED PVC WITH BLUE LATEX PAINT.

NOTES:

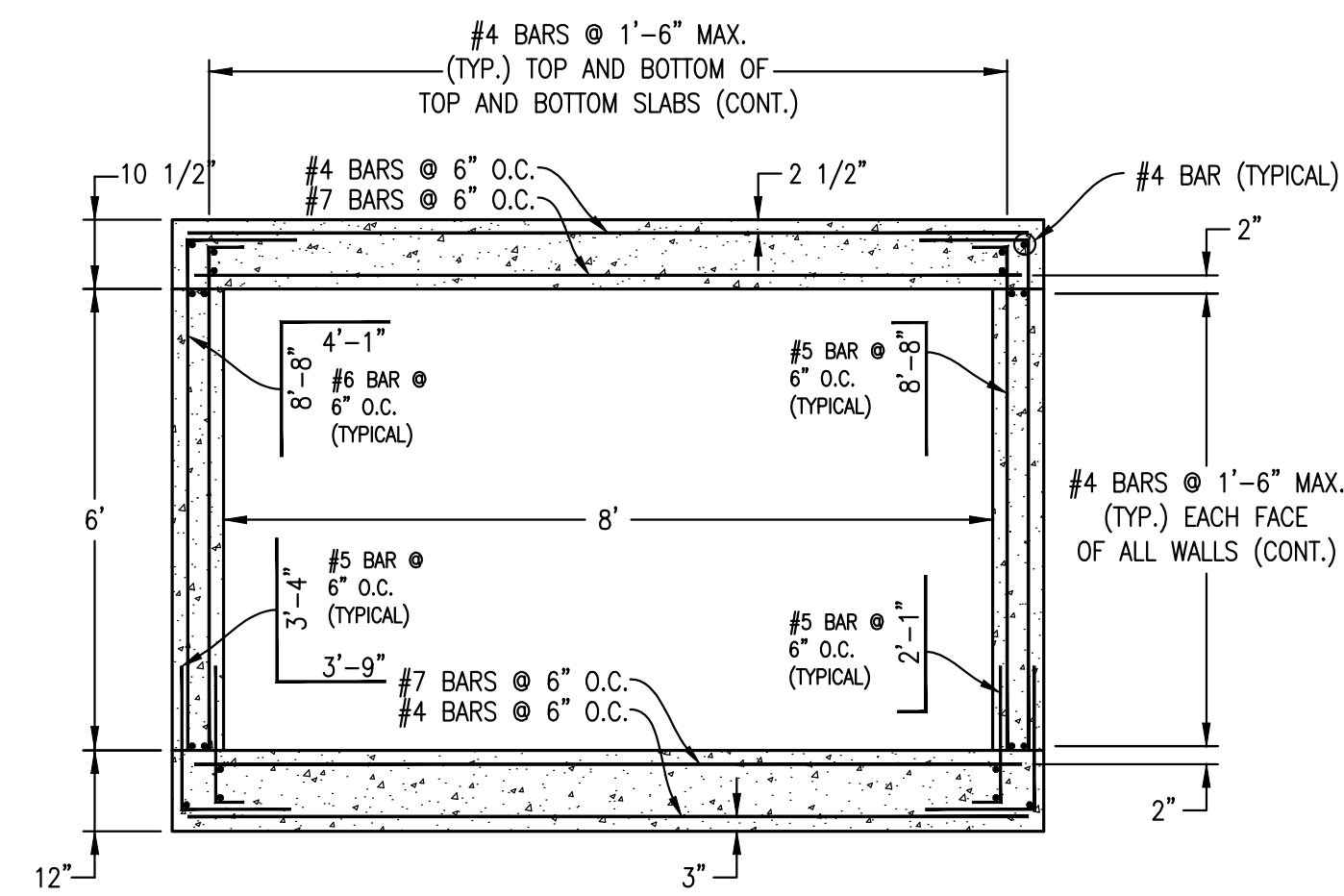
- 8'x15x6' I.D. IRRIGATION STORAGE VAULT
- 8" IRRIGATION SUPPLY LINE
- INSTALL 4" PUMP INTAKE LINE AND INSTALL FOOT VALVE & FILTER ON INTAKE. SEE DETAIL THIS SHEET.
- ENCLOSURE FOR 5 HP PUMP CAPABLE OF PUMPING 60 GPM @ 50 PSI. SEE DETAIL SHEET C8.4.
- 10" PVC TO ROADSIDE DITCH (TO RETURN VAULT OVERFLOW)
- INSTALL 8" ELECTRIC OPERATED BUTTERFLY VALVE CONTROL WITH FLOAT SWITCHES IN 4'x4' VAULT WITH COVER. SEE DETAIL THIS SHEET.
- 45° ELBOW WITH THRUST BLOCK



IRRIGATION VAULT DETAIL
N.T.S.



VAULT PLAN VIEW
SCALE: 1" = 10'



BENCHMARK:

PROJECT BENCHMARK #1, LOCATED AT THE SOUTHEAST CORNER OF THE PROJECT, IS THE SOUTHEAST CORNER OF SECTION 16, TOWNSHIP 1 NORTH, RANGE 2 WEST OF THE UTE MERIDIAN. THE ELEVATION USED 4543.93 (NAVD88), IS BASED ON MESA COUNTY DEPARTMENT OF PUBLIC WORKS SURVEY INFORMATION MANAGEMENT SYSTEM DATA MCSM #564-1

PROJECT BENCHMARK #2, LOCATED AT THE NORTHEAST CORNER OF THE PROJECT, S 1/16 CORNER ON THE EAST LINE OF SECTION 16, TOWNSHIP 1 NORTH, RANGE 2 WEST OF THE UTE MERIDIAN. THE ELEVATION USED 4548.77 (NAVD88), IS BASED ON MESA COUNTY DEPARTMENT OF PUBLIC WORKS SURVEY INFORMATION MANAGEMENT SYSTEM DATA MCSM #562



861 Rood Avenue
Grand Junction, CO 81501
Phone: (970) 245-9051

STEPHEN E. SWINDELL

PROFESSIONAL ENGINEER
COLORADO LICENSE No. 57888

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REV.	DATE	BY	COMMENT
1	07/11/23	DS	REVISED PLAN SET

FOR REVIEW - NOT FOR CONSTRUCTION

Irrigation Vault Details
Subdivision Plans
Weston Estates
1877 J 2/10 ROAD
FRUITA, COLORADO 81521

PROJECT NO: F20-052
DATE: 12/16/2022

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~SHEET~

C8.3