



**WELL 5 EMERGENCY REPLACEMENT PROJECT-
PRELIMINARY ENGINEERING REPORT**
FRAZIER PARK PUBLIC UTILITY DISTRICT
FRAZIER PARK, CALIFORNIA

Curtis Skaggs/Dee Jaspar & Associates, Inc.

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**Preliminary Engineering Report
Well 5 Emergency Well Replacement Project**

**Frazier Park Public Utility District
Frazier Park, California**

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Prepared For: Jonnie Allison, General Manager
Frazier Park Public Utility District
4020 Park Drive
Frazier Park, California 93225

Prepared By: Dee Jaspar & Associates, Inc.
2730 Unicorn Rd.
Bakersfield, California 93308
Phone: (661) 393-4796

Principal-in-Charge: Curtis Skaggs, PE.

This Preliminary Engineering Report (PER) was prepared by Dee Jaspar & Associates, Inc., as per the U.S. Department of Agriculture Rural Utilities Service Bulletin 1780-2: *Preliminary Engineering Reports for the Water and Wastewater Disposal Program (January 2019-CA)*.



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EXECUTIVE SUMMARY

This Preliminary Engineering Report for the Frazier Park Public Utility District (District) evaluates the replacement of the existing District Well No. 5 which is 53 years old and supplies drinking water to the community of Frazier Park. The well is in imminent danger of failing. The well is approximately 465-ft in total depth and perforated from approximately 97-ft to 464-ft. A well video performed in the first quarter of 2019 revealed several holes in the casing and the storage tank that the well discharges into had a significant amount of sand in it. The gravel pack has been lost where the holes exist in the casing and the well is pumping sand. The District recently installed swage patches inside the existing well casing from a depth of 95-ft to 135-ft and from 215-ft to 230-ft. The District spent approximately \$97,000 for this temporary fix so that the well would be operational to meet the summer demand and meet maximum day demand. However this is only a temporary fix and the old, failing well requires replacement.

The best alternative is to replace the well with a new well. It is proposed to drill a new replacement well to a similar depth and be of similar construction since the Well No. 5 water quality meets all current drinking water standards. The new well can be drilled at the westerly side of or southerly end of the existing well site. This will allow the District to relocate the existing pump and motor to the new well, install new well discharge piping to convey the water to the existing on-site storage tank, and re-use the existing booster pump station. The existing electrical and controls will also be utilized, however new conduit and wire will need to be installed over to the new well pump and motor. In addition, a wood building enclosure will need to be constructed around the new well pump and motor in order to protect the facilities from the elements.

The cost to drill, construct, and develop a new replacement well is estimated at \$408,480.00. The cost to equip the new well with a pump, motor, discharge piping, electrical, and all appurtenances is estimated at \$226,900.00. The total project cost including 15% contingency, engineering, bid administration, and construction inspection is \$972,542.00.

1.0 PROJECT PLANNING

1.1 Project Location

A location and boundary map for Frazier Park is shown in the figure below. Figure 1 illustrates the location of Frazier Park which is in southern Kern County, just north of the Ventura County line, and 3 miles west of Interstate 5. The construction of the Well No. 5 replacement well will be located at the existing Well No. 5 site. Upon completion of the new well project, the existing well will be abandoned and destroyed in accordance with Kern County Well Destruction standards. The well site location is owned by the Frazier Park Public Utility District and is an approximate 0.28 acre lot.

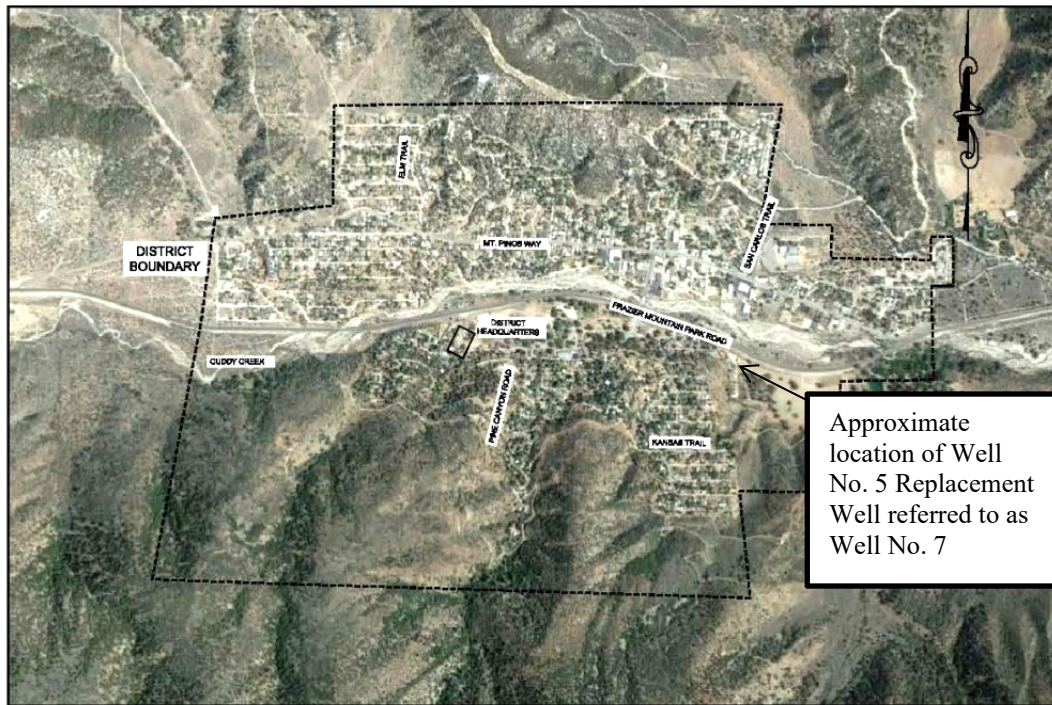


Figure 1: Location Map

A topographic map of the Frazier Park area is shown below and illustrates the topography of the region.

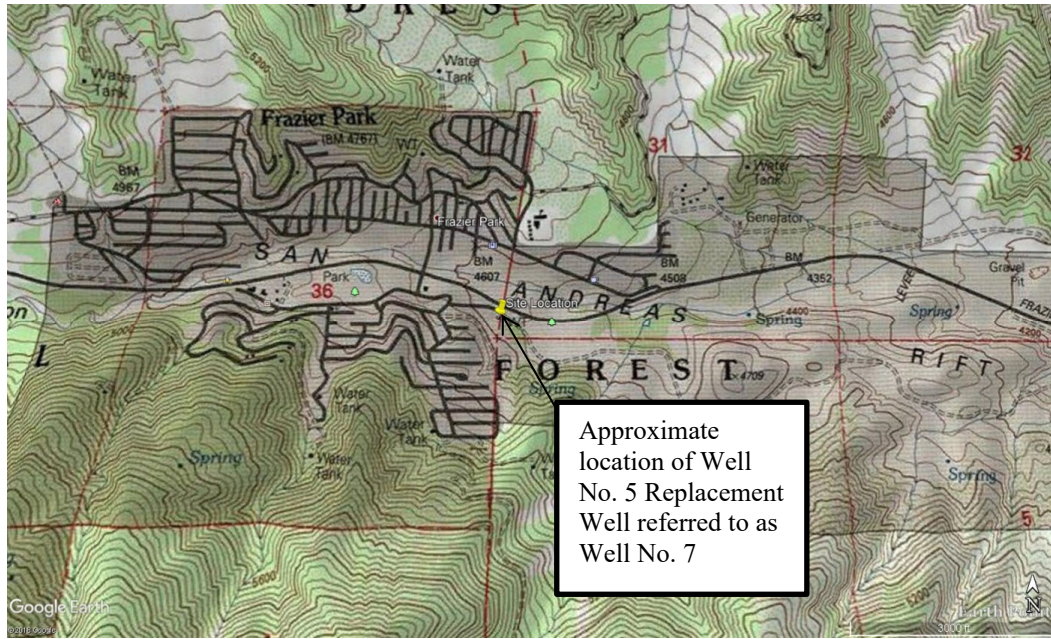


Figure 2: Topographic Map

1.2 Environmental Resources Present

No known environmental resources are present at the project area. The project area is an existing well site within and nearby to a residential area of the Frazier Park PUD. Due to the frequent traffic in the area and the District’s operation and maintenance activities at the well site, there are no known environmental resources around the well site.

1.3 Population Trends

According to the Census Bureau the population of Frazier Park in 2000 was approximately 2,348 people and the population in 2010 was approximately 2,691 people. This equates to a population increase of approximately 1.5% per year, or 34 people per year, over a ten year period. A linear projection of the growth of Frazier Park is shown in the table below. This shows past data and estimated data for the next 20 years.

**Table 1
Frazier Park, Population Projection**

2000	2010	2020	2030	2040
2348	2691	3123	3624	4206



1.4 Community Engagement

The Frazier Park PUD is encouraging wise use and conservation of water in the community in order to reduce the demand on the current well. This project is considered an emergency project because if the District loses the existing Well No. 5, the District will not have enough capacity to meet current water demands within the community.

The community newspaper has published articles on the problem with Well No. 5 and public meetings have been held to discuss the Well No. 5 failure. At the public meetings, the District encouraged water conservation and outlined the District efforts to replace the well.

2.0 EXISTING FACILITIES

2.1 Facilities Layout Map

The District supplies municipal drinking water to approximately 1,303 service connections. The existing sources of supply for the District are Well No. 5 and Well No. 6. Well No. 4 and Well No. 6 are both located at the District Headquarters, however they negatively influence each other when operating at the same time, and Well No. 4's discharge contains significant amounts of entrained air, therefore Well No. 4 is a standby well. The Monte Vista Well is also a standby well for the District as it is normally at or above the maximum contaminant level (MCL) for Fluoride. However, currently the Monte Vista Well is not even functional.

These wells supply several storage tanks throughout the District that then feed the seven different pressure zones throughout the mountain community of Frazier Park, see Figure 3 below. These tanks include:

- Elm Tank
- Forestry Tank
- Harrison Flats Tank
- McGee Tank
- Parcel B Tank
- Pine Canyon No. 1 Tank
- Pine Canyon No. 2 Tank
- Sam Young Tank
- Wolfe Tank

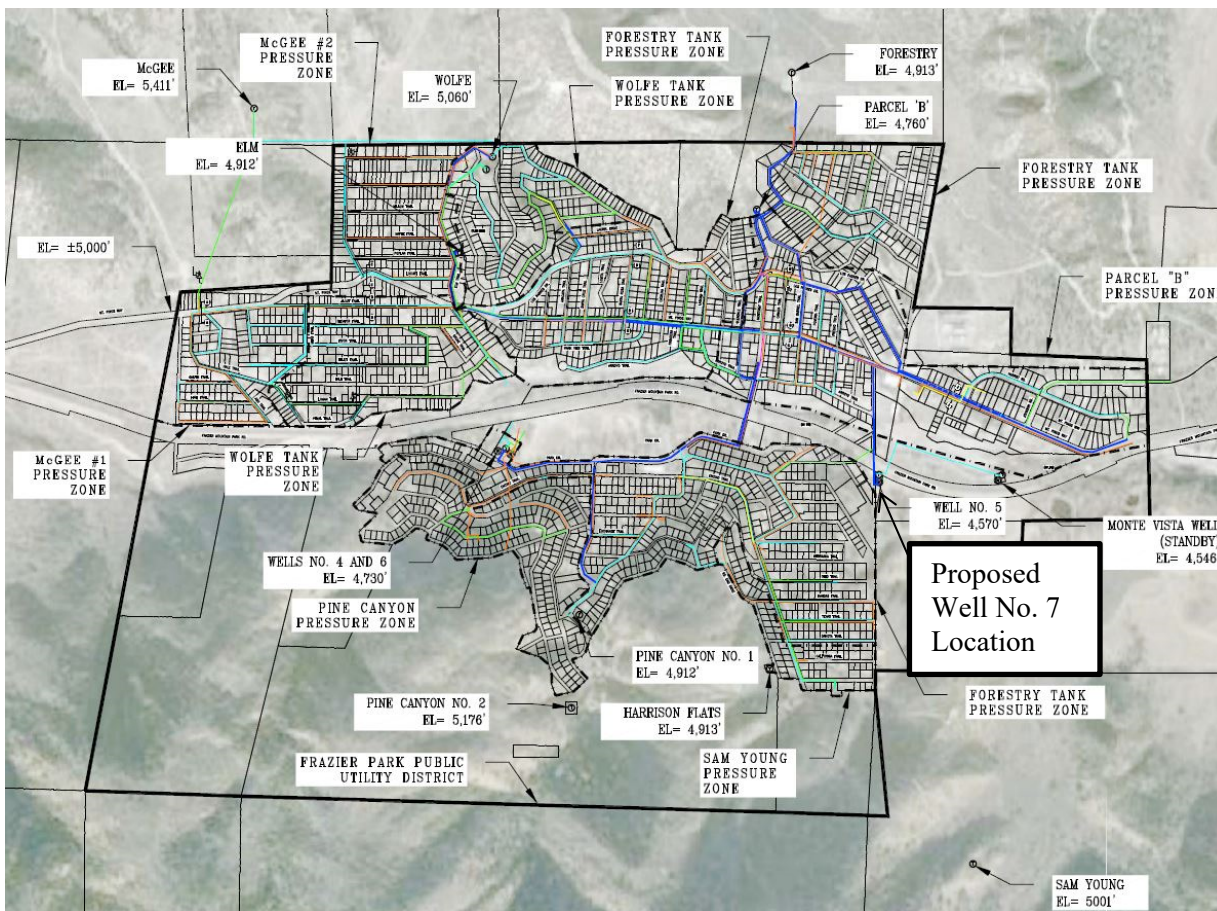


Figure 3: District Map

The replacement well project is intended to be constructed at the existing Well No. 5 well site. The existing facilities at this well site include Well No. 5, the existing electrical system, a storage tank, and a booster pump station with enclosure building. The existing Well No. 5 also has a wood building enclosure to protect it from the elements. The building over the existing well is approximately 8-ft by 10-ft. The well conveys the water to an existing welded steel water storage tank. The water tank is approximately 24-ft tall by 29-ft in diameter with a nominal capacity of 125,387 gallons. This water tank will remain and will be used for the new proposed well. The water from the storage tank is then boosted by the pump station into the distribution system. The booster pump station has a wood building enclosure. The pump station and building enclosure will remain.

2.1.1 Location

The location of the existing Well No. 5 is on the same property as the location of the proposed replacement facilities. A map illustrating the proposed well site layout is shown in Figure 4 below.



Figure 4: Well No. 5 Site Layout

2.2 History

The major system components for the District are Well No. 5 and Well No. 6. Well No. 4 and Well No. 6 are both located at the District Headquarters, however they negatively influence each other when operating at the same time, and Well No. 4 discharges a significant amount of entrained air, therefore Well No. 4 is a standby well. The Monte Vista Well is also a standby well for the District as it is normally at or above the maximum contaminant level (MCL) for Fluoride. However, currently the Monte Vista Well is not even functional.



Table 2
District Supply Sources

Well Name and Date Drilled	Flow Rate (gpm)	Status	Point of Discharge
Monte Vista Well / 1980	0 ¹	Standby	Well 5 Tank
Well 4 / 1961	220 ²	Active-Standby	Distribution System
Well 5 / 1966	250 ³	Active	Well 5 Tank
Well 6 / 2016	200 ⁴	Active	Distribution System
Total Active Source Capacity	450⁵	As of August 2019	

Notes:

1. Monte Vista Well over the MCL for fluoride and currently not providing any water (not functional).
2. Well 4 is a standby well for Well 6, which was placed on-line in 2016.
3. Well 5 is in imminent danger of failing due to casing collapse and the capacity has reduced to 250 gpm..
4. Well 6 was drilled in 2015 and placed on-line in 2016.
5. Capacity of Wells 5 and 6. Without Well 5 the District's Active Well capacity is 200 gpm.

Below is monthly water production and consumption for the last seven years. This data is the most appropriate as it reflects water conservation efforts that were established during and after the prolonged drought between 2011 to 2015.

Table 3
Water Production & Consumption Data

2013 Water Usage							
Date	Water Produced (cf)	Water Produced (Gallons)	Water Produced (gpd)	Water Sold (cf)	Water Sold (Gallons)	Water Sold (gpd)	% Loss
Jan-13	959,584	7,177,688	231,538	690,700	5,166,436	166,659	28%
Feb-13	1,188,959	8,893,413	306,669	567,300	4,243,404	146,324	52%
Mar-13	1,440,922	10,778,097	347,681	982,400	7,348,352	237,044	32%
Apr-13	1,440,922	10,778,097	359,270	982,400	7,348,352	244,945	32%
May-13	1,440,922	10,778,097	347,681	982,400	7,348,352	237,044	32%
Jun-13	1,692,886	12,662,787	422,093	1,397,500	10,453,300	348,443	17%
Jul-13	1,908,806	14,277,869	460,576	1,591,800	11,906,664	384,086	17%
Aug-13	3,426,159	25,627,669	826,699	1,864,000	13,942,720	449,765	46%
Sep-13	1,452,643	10,865,770	362,192	1,633,900	12,221,572	407,386	-12%
Oct-13	1,827,322	13,668,369	440,915	1,456,500	10,894,620	351,439	20%
Nov-13	1,196,275	8,948,137	298,271	950,200	7,107,496	236,917	21%
Dec-13	730,209	5,461,963	176,192	814,100	6,089,468	196,434	-11%
	18,705,609	139,917,955		13,913,200	104,070,736		
	ADD	826,699	574		449,765	312	
	MDD	1,240,049	861		674,648	469	
	PKH	1,860,073	1,292		1,011,972	703	



2014 Water Usage							
Date	Water Produced (cf)	Water Produced (Gallons)	Water Produced (gpd)	Water Sold (cf)	Water Sold (Gallons)	Water Sold (gpd)	% Loss
Jan-14	1,058,534	7,917,834	255,414	912,200	6,823,256	220,105	14%
Feb-14	890,197	6,658,674	229,609	828,800	6,199,424	213,773	7%
Mar-14	936,300	7,003,524	225,920	754,000	5,639,920	181,933	19%
Apr-14	937,112	7,009,598	233,653	773,900	5,788,772	192,959	17%
May-14	1,439,096	10,764,438	347,240	1,176,700	8,801,716	283,926	18%
Jun-14	977,450	7,311,326	243,711	907,200	6,785,856	226,195	7%
Jul-14	1,366,404	10,220,700	329,700	894,559	6,691,300	215,848	35%
Aug-14	2,889,813	21,615,800	697,284	1,996,243	14,931,900	481,674	31%
Sep-14	1,403,168	10,495,700	349,857	1,155,361	8,642,100	288,070	18%
Oct-14	1,674,586	12,525,900	404,061	1,065,067	7,966,700	256,990	36%
Nov-14	1,091,444	8,164,000	272,133	792,473	5,927,700	197,590	27%
Dec-14	873,783	6,535,900	210,835	907,286	6,786,500	218,919	-4%
		116,223,394			90,985,144		
	ADD	697,284	484		481,674	334	
	MDD	1,045,926	726		722,511	502	
	PKH	1,568,889	1,090		1,083,767	753	

2015 Water Usage							
Date	Water Produced (cf)	Water Produced (Gallons)	Water Produced (gpd)	Water Sold (cf)	Water Sold (Gallons)	Water Sold (gpd)	% Loss
Jan-15	809,100	6,052,068	195,228	722,072	5,401,100	174,229	11%
Feb-15	648,588	4,851,438	167,291	664,799	4,972,700	171,472	-2%
Mar-15	853,984	6,387,798	206,058	829,626	6,205,600	200,181	3%
Apr-15	920,849	6,887,952	229,598	865,695	6,475,400	215,847	6%
May-15	945,964	7,075,812	228,252	749,024	5,602,700	180,732	21%
Jun-15	1,035,184	7,743,180	258,106	808,797	6,049,800	201,660	22%
Jul-15	1,420,836	10,627,854	342,834	1,288,516	9,638,100	310,906	9%
Aug-15	807,670	6,041,373	194,883	801,404	5,994,500	193,371	1%
Sep-15	1,276,972	9,551,751	318,392	1,104,626	8,262,600	275,420	13%
Oct-15	1,008,503	7,543,602	243,342	697,660	5,218,500	168,339	31%
Nov-15	839,723	6,281,127	209,371	582,928	4,360,300	145,343	31%
Dec-15	817,007	6,111,216	197,136	571,457	4,274,500	137,887	30%
		85,155,171			72,455,800		
	ADD	342,834	238		310,906	216	
	MDD	514,251	357		466,360	324	
	PKH	771,377	536		699,540	486	

2016 Water Usage							
Date	Water Produced (cf)	Water Produced (Gallons)	Water Produced (gpd)	Water Sold (cf)	Water Sold (Gallons)	Water Sold (gpd)	% Loss
Jan-16	839,693	6,280,900	202,610	685,829	5,130,000	165,484	18%
Feb-16	840,922	6,290,100	216,900	626,591	4,686,900	161,617	25%
Mar-16	779,465	5,830,400	188,077	617,888	4,621,800	149,090	21%
Apr-16	843,596	6,310,100	210,337	597,553	4,469,700	148,990	29%
May-16	916,537	6,855,700	221,152	674,479	5,045,100	162,745	26%
Jun-16	1,216,297	9,097,900	303,263	768,683	5,749,747	191,658	37%
Jul-16	1,388,262	10,384,200	334,974	862,887	6,454,394	208,206	38%
Aug-16	1,046,056	7,824,500	252,403	1,245,495	9,316,300	300,526	-19%
Sep-16	2,275,709	17,022,300	567,410	1,568,329	11,731,100	391,037	31%
Oct-16	1,228,476	9,189,000	296,419	979,866	7,329,400	236,432	20%
Nov-16	846,791	6,334,000	211,133	674,866	5,048,000	168,267	20%
Dec-16	882,487	6,601,000	212,935	676,217	5,058,100	163,165	23%
		98,020,100			44,937,294		
	ADD	567,410	394		391,037	272	
	MDD	851,115	591		586,555	407	
	PKH	1,276,673	887		879,833	611	



2017 Water Usage							
Date	Water Produced (cf)	Water Produced (Gallons)	Water Produced (gpd)	Water Sold (cf)	Water Sold (Gallons)	Water Sold (gpd)	% Loss
Jan-17	903,964	6,761,651	218,118	714,100	5,341,468	172,305	21%
Feb-17	863,700	6,460,476	222,775	676,100	5,057,228	174,387	22%
Mar-17	925,257	6,920,922	223,256	632,300	4,729,604	152,568	32%
Apr-17	688,665	5,151,214	171,707	637,700	4,769,996	159,000	7%
May-17	793,197	5,933,114	191,391	742,700	5,555,396	179,206	6%
Jun-17	1,377,423	10,303,124	343,437	1,192,900	8,922,892	297,430	13%
Jul-17	1,410,159	10,547,989	340,258	1,285,200	9,613,296	310,106	9%
Aug-17	887,220	6,636,406	214,078	804,200	6,015,416	194,046	9%
Sep-17	1,399,557	10,468,686	348,956	1,182,200	8,842,856	294,762	16%
Oct-17	1,030,626	7,709,082	248,680	916,800	6,857,664	221,215	11%
Nov-17	903,402	6,757,447	225,248	762,000	5,699,760	189,992	16%
Dec-17	944,229	7,062,833	227,833	752,100	5,625,708	181,474	20%
	12,127,399	90,712,945		10,298,300	77,031,284		
	ADD	340,258	236		310,106	215	
	MDD	510,387	354		465,159	323	
	PKH	765,580	532		697,739	485	

2018 Water Usage							
Date	Water Produced (cf)	Water Produced (Gallons)	Water Produced (gpd)	Water Sold (cf)	Water Sold (Gallons)	Water Sold (gpd)	% Loss
Jan 18	944,229	7,062,833	227,833	752,100	5,625,708	181,474	20%
Feb-18	970,455	7,259,003	250,310	760,300	5,687,044	196,105	22%
Mar-18	957,807	7,164,396	231,110	787,450	5,890,126	190,004	18%
Apr-18	957,807	7,164,396	238,813	787,450	5,890,126	196,338	18%
May-18	945,159	7,069,789	228,058	814,600	6,093,208	196,555	14%
Jun-18	1,159,524	8,673,240	289,108	1,028,200	7,690,936	256,365	11%
Jul-18	1,172,079	8,767,151	282,811	1,065,100	7,966,948	256,998	9%
Aug-18	1,386,723	10,372,688	334,603	1,182,800	8,847,344	285,398	15%
Sep-18	1,238,202	9,261,751	308,725	1,080,800	8,084,384	269,479	13%
Oct-18	983,382	7,355,697	237,281	786,900	5,886,012	189,871	20%
Nov-18	1,061,409	7,939,339	264,645	909,668	6,804,317	226,811	14%
Dec-18	742,233	5,551,903	179,094	651,342	4,872,038	157,163	12%
	8,688,711	93,642,187		7,519,410	79,338,191		
	ADD	334,603	232		285,398	198	
	MDD	501,904	349		428,097	297	
	PKH	752,856	523		642,146	446	

2019 Water Usage							
Date	Water Produced (cf)	Water Produced (Gallons)	Water Produced (gpd)	Water Sold (cf)	Water Sold (Gallons)	Water Sold (gpd)	% Loss
Jan-19	720,657	5,390,514	173,888	696,437	5,209,349	168,044	3%
Feb-19	816,447	6,107,024	210,587	666,737	4,987,193	171,972	18%
Mar-19	826,724	6,183,896	199,481	673,137	5,035,065	162,421	19%
Apr-19	837,000	6,260,760	208,692	679,536	5,082,929	169,431	19%
May-19	1,057,410	7,909,427	255,143	942,423	7,049,324	227,398	11%
Jun-19	1,159,989	8,676,718	289,224	909,167	6,800,569	226,686	22%
Jul-19	971,089	7,263,746	234,314	1,083,840	8,107,123	261,520	-12%
Aug-19	2,467,152	18,454,300	595,300	2,086,690	15,608,441	503,498	15%
Sep-19	1,292,747	9,669,748	322,325	1,589,490	11,889,385	396,313	-23%
Oct-19	1,078,893	8,070,120	260,326	1,092,290	8,170,329	263,559	-1%
Nov-19	1,109,304	8,297,594	276,586	931,380	6,966,722	232,224	16%
Dec-19	914,980	6,844,050	220,776	813,909	6,088,039	196,388	11%
	13,252,392	99,127,895		12,165,036	90,994,469		
	ADD	595,300	413		503,498	350	
	MDD	892,950	620		755,247	524	
	PKH	1,339,425	930		1,132,871	787	

The red numbers within the above spreadsheets represent numbers that had to be estimated. These estimates were determined by calculating the average of the previous month and the following month. The percent water loss is the difference between the water produced (well production) and the water sold (service meters). There are some large losses shown, however some of this is attributed to when the meters are read and the amount of water stored in the storage tanks as the District has about 2,000,000 gallons of storage. The District has begun accounting for this the last two years therefore the average water loss is estimated to be approximately 10% to 20%.



Chapter 16 Section 64554 states that if monthly water usage data is available that the month with the highest usage (maximum month) should be used. The highest month of the last seven years is August of 2013 where the wells produced approximately 25,627,669 gallons of water or approximately 826,699 gallons per day. The total water sold during the same month was approximately 13,942,720 gallons or approximately 449,765 gallons per day (312 gpm). This is considered the average daily demand (ADD).

The maximum day demand (MDD) is calculated using a peaking factor of 1.5. This equates to approximately 674,648 gallons per day or 468 gpm. The peak hour demand (PHD) is calculated using a peaking factor of 1.5 times the MDD. The PHD equates to approximately 1,011,972 gallons per day or 703 gpm. This peak hour demand can be met from storage and pumping. Currently the two wells, Well No. 5 and No. 6 can provide approximately 450 gpm. The remaining demand of 253 gpm (703 gpm – 450 gpm) can be provided from storage (i.e., 253 gpm x 60 min x 4 hrs = 60,720 gallons < 2,000,000 gallons). A new Well No. 7 to replace Well No. 5 is anticipated to provide a total pumping capacity of 700 gpm (Well No. 6 = 200 gpm and Well No. 7 = 500 gpm) which will enable the District to meet the current peak hour demand entirely from well pumping if necessary.

Three of the four existing source water wells have issues. The Monte Vista Well is approximately 40 years old and exceeds the MCL for Fluoride, therefore it cannot be used except for emergencies. Well No. 4 is approximately 58 years old, which is greater than the typical well useful life of 50 years. Furthermore it cannot be pumped at the same time as Well No. 6 since they are on the same property, in close proximity, and negatively influence each other when pumping simultaneously. Well No. 5 is approximately 53 years old and has served its useful life and is now failing. This is the reason for needing to replace the existing Well No. 5.

In the event Well No. 5 fails, then the District can only utilize Well No. 6 which has a capacity of 200 gpm. This is insufficient to meet the District's maximum daily demand of approximately 468 gpm.

2.3 Condition of Existing Facilities

The District had four supply wells and two springs prior to 2016, however the conditions of these facilities are such that the only reliable water sources that meet drinking water standards are Well No. 5 and Well No. 6. However as discussed herein, Well No. 5 is in danger of failing.

Table 4
Condition of District Facilities

Well Name and Date Drilled	Flow Rate (gpm)	Status	Condition
Monte Vista Well / 1980	0 ¹	Standby	Exceeds MCL for Fluoride
Pine Canyon Spring / 1927	25 ²	Inactive	Subject to Bacteria and Drying Up
Sam Young Spring / 1933	25 ²	Inactive	Subject to Bacteria and Drying Up
Well 3 / 1955	0 ³	Destroyed	Destroyed
Well 4 / 1961	220 ⁴	Active- Standby	Cannot Operate Simultaneously with Well 6
Well 5 / 1966	250 ⁵	Active	Casing Failure
Well 6 / 2016	200	Active	New
Total Active Source Capacity	450	As of August 2019	

Notes:

1. Monte Vista Well over the MCL for fluoride and currently not providing any water (not functional).
2. Pine Canyon and Sam Young Springs are subject to bacteria contamination and drought conditions.
3. Well 3 was replaced in 2016 by Well No. 6.
4. Well 4 is subject to interference from Well 6. Both are located in the District's Maintenance Yard.
5. Well 5 is remote from Wells 4 and 6 however the capacity has been reduced as a result of the swage patching.

The Well No. 5 casing was installed in 1965-66 and is an 8-inch diameter steel casing. The steel casing is 8 gauge (0.165") and exhibits numerous holes and enlarged slots. A well video from March 5, 2019 is available. The well has been producing sand which caused the well pump to fail and the well itself is in imminent danger of failing. This past summer the District installed swage patches inside the existing well casing from a depth of 95-ft to 135-ft and from 215-ft to 230-ft. The District spent approximately \$97,000 for this temporary fix so that the well would be operational to meet the summer demand and meet maximum day demand. However this is only a temporary fix and the old, failing well requires replacement.

The total current well depth based on the most recent well video indicates a depth of 465-ft. The static water level was observed at approximately 63-ft. The pump setting is at 200-ft with a 6-inch Peerless Pump and a 30 hp GE motor. However due to the current condition of the well casing and the amount of sand being pumped, this pump and the well itself are not expected to last more than a year.

The active wells, Well No. 5 and Well No. 6, are equipped with flow meters. In addition, all service connections are metered as well.

2.4 Financial Status of Any Existing Facilities

The water rates for the District were increased ten percent on January 1, 2019. These are shown in the figures below. The rates are subject to a 10 percent increase every year until



2021 at the discretion of the Frazier Park PUD Board of Directors. The rates can be found at www.frazierparkwater.com. The average monthly residential water bill is \$89.44.

Residential	Monthly Base Rate	New Connection Fee
¾" meter	\$66.55	\$8,000
1" meter	\$111.32	\$9,000
Business		
1" meter	\$111.32	\$10,000
1 ½" meter	\$221.43	\$11,000
2" meter	\$354.53	\$12,000
3" meter	\$701.80	\$13,000
4" meter	\$1101.10	\$13,000
6" meter	\$2216.72	\$14,000

Water Consumption Fee	\$2.36 per 100 cubic feet of water (Equivalent of \$3.15 per 1,000 gallons)
Late Charge	10% of amount billed at the first of the month
Return Check Fee	\$35
Ownership Transfer Fee	\$50
Owner Tenant Transfer Fee	\$35
48-hour Notice Posting Fee	\$25
Reconnection Fee	\$100
Service Update from ¾" to 1"	\$1000
Convenience Fee to Turn on Water During Regular Business Hours (8am – 5pm Monday through Thursday)	\$20
Convenience Fee to Turn off Water During Regular Business Hours (8am – 5pm Monday through Thursday)	\$20
Convenience Fee for After Hours/ Weekends Turn On Water	\$100
Convenience Fee for After Hours/ Weekends Turn Off Water	\$100
3 Days Activation and Lock off (Locked off Accounts)	\$100
Abandonment/ Reconnection Fee	\$750
Emergency Shut Off to avoid further damage to personal property (any time)	No Charge
Will Serve Deposit If entire New Connection fee is paid within six months from date of application, the deposit will be deducted from the Connection Fee.	\$200
Cutting Off Locks/curb stops/valves/Vandalism (Minutes of October 12, 2004) per CA Penal Code 498 (stealing water) and/or 594 (vandalism)	\$200 each occurrence
Stand-By Fee Collected via Kern County Tax Assessor's Office, for any unimproved properties without service or property with service locked off	\$5 per parcel per year

for more than 6 months. Per government code section 54984	
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All data is from Frazier Park PUD Website.

The annual O&M costs for the 2018-19 fiscal year are outlined below:

Pumping Costs / Energy Costs	\$49,196.55
Uniforms, etc.	\$1,201.62
Distribution System Maintenance	\$110,943.31
Tools Expense	\$1,768.55
Fuel – Vehicles & Equipment	\$10,468.82
Environmental Fees	\$1,803.72
Testing & Lab Fees	\$8,367.00
Equipment Rental	\$911.82
Maintenance & Repairs	\$31,665.08
Wages & Payroll Related Expense	\$436,506.01
Directors Fees	\$8,100.00
Dues, Education, & Training	\$9,908.63
Insurance	\$19,867.87
Licenses, Fees, & Permits	\$8,409.50
Office Expenses	\$33,597.76
Professional Services	\$33,537.50
Property Taxes	\$86.36
Telephone, Travel, & Utilities	\$15,900.29
Miscellaneous	\$1,854.86
<i>Subtotal Annual O&M Expense:</i>	<i>\$784,095.25</i>
USDA Principal Payment	\$56,000.00
USDA Reserve	\$21,058.42
USDA Replacement Fund	\$17,057.24
Interest Expense	\$98,343.12
<i>Subtotal Debt Repayments:</i>	<i>\$192,458.78</i>
Capital Improvement Projects Fund	\$425,000.00
<i>Subtotal CIP Fund:</i>	<i>\$425,000.00</i>
<i>Total Annual O&M Expense:</i>	<i>\$1,401,554.03</i>

The income for the 2018-19 fiscal year was \$1,393,623.05. The total expenses equated to \$1,401,554.03.

The current capital improvement projects for the District are the Regional Water Supply Planning Study for consolidation of the Lake of the Woods Mutual Water Company and some other small water systems with the District and the Meter Replacement Project to furnish and install remote read meters throughout the District.

The District currently has three loans from the USDA. These are listed below with the current figures as of July 2019:

1. \$400,000 Loan (Loan #3) – USDA Reserve & Replacement Account
The current debt service is approximately \$18,818.74 with an annual replacement payment of approximately \$1,971.36. The current total reserves amount is approximately \$27,559.14.
2. \$1,000,000 Loan (Loan #4) – USDA Reserve & Replacement Account

The current debt service is approximately \$54,850.00 with an annual replacement payment of approximately \$5,166.96. The current total reserves amount is approximately \$70,697.96.

3. \$2,100,000 Loan (Loan #6) – USDA Reserve & Replacement Account
The current debt service is approximately \$85,171.26 with an annual reserve payment of approximately \$7,885.92 and a replacement payment of \$9,905.00. The current total reserves amount is approximately \$131,332.86.

2.5 Water/Energy/Waste Audits

At this time there are not any water, waste water, or energy loss audits or analysis available that are directly correlated to this proposed project, project location, existing facilities or structures.

3.0 PROJECT PURPOSE AND NEED

3.1 Health, Sanitation, and Security

Frazier Park Public Utility District has only two active public water supply wells (Well No. 5 and Well No. 6). If Well No. 5 fails and becomes inoperable, the District's active well production capacity will be reduced to 200 gpm which is insufficient to meet their daily water demands and will result in very poor system pressure. If the District loses Well No. 5 they will not be able to keep the storage tanks full that are located in the upper pressure zones, some upper pressure zones may be without water, and others may experience low water pressures. This will also cripple the District's ability to meet fire flow requirements.

However, the District does not currently have any system violations.

3.2 Infrastructure Issues

The District's water system is aging and in need of replacement. The active water well sources are all over 50 years old with the exception of Well No. 6 which was constructed in 2016 with USDA Funds. Well No. 5 is experiencing casing failure and is pumping sand and needs to be replaced immediately.

There are several other proposed Capital Improvement Projects that the District has planned in order to address their aging infrastructure. A list of Capital Improvement Projects is attached in Appendix B. The priority projects include:

- Replacement of old steel pipelines
- Replacement of the 125,000 gallon Wolfe Tank
- Replacement of the Elm Booster Pump Station
- Replacement of Four Pressure Reducing Valve Stations
- Furnish & Install Emergency Stand-By Generators for the Elm Tank Site, Harrison Flats Tank Site, and Wolfe Tank Site.
- Meter Replacement Project



3.3 Reasonable Design Capacity

Well No. 5 has historically supplied approximately 500 gpm. It is anticipated that a replacement well of similar design and construction will also yield approximately 500 gpm.

This would provide the District a water supply capacity of approximately 700 gpm between a replacement Well No. 5 (Well No. 7) and Well No. 6. This is greater than the Maximum Day Demand of 500 gpm noted above in Section 2.2. The current Maximum Day Demand equates to approximately 216 gallons per day per person. The estimated population growth over the next 20 years is estimated to add approximately 1,083 people (4,206 – 3,123). Based upon a Maximum Day Demand of 216 gpcd, the projected water demand equates to approximately 630 gpm. Therefore a replacement Well No. 5 (Well No. 7) and Well No. 6 would have enough capacity for the projected growth over the next 20 years since the growth is anticipated to be relatively small. Peaking capacity would need to be supplemented from the District water storage tanks.

4.0 ALTERNATIVE ASSESSMENT

4.1 Project Need and Solution

As described above the existing Well No. 5 is experiencing casing failure, pumping excessive amounts of sand, and is beyond its useful life. Well No. 5 is in danger of imminent failure despite recent repairs.

Well No. 5 is a critical source of capacity for the District water system providing approximately 500 gpm or two-thirds of the District capacity. If this well fails, the District will not have enough source capacity to meet maximum day demands and will experience low water pressure and water rationing.

The best solution is to drill a replacement well – Well No. 7. The new well can be located on the present site of Well No. 5, which produces water that meets current domestic water quality standards. Well No. 5 is also located in the most favorable portion of the Cuddy Creek Valley, being located in deposits that are 400-plus feet thick. Well No. 5 is located in a suspected fault-bound graben structure and is anticipated to provide approximately 500 gpm.

4.2 Alternative No. 1 – No Project

Alternative No. 1 involves a “no project” alternative whereby the District does not address the issue. This alternative is not a viable option. If the District does not address the issue they will have a serious maintenance issue with pump replacements from pumping excessive amounts of sand and will experience a complete well failure in the near future. When the Well No. 5 fails, the District will not have an adequate water supply to meet maximum day demands and will experience low pressure problems and customer complaints.



4.3 Alternative No. 2 – Connect to another Water System

Alternative No. 2 involves connecting to another water system. The next nearby water system is approximately 2.5-miles to 3-miles away from the westerly boundary of the Frazier Park PUD. This water system is the Lake of the Woods Mutual Water Company. There is already discussion of connecting these two water systems, however FPPUD would be the surviving water system as Lake of the Woods does not have an adequate water supply or acceptable water quality (Nitrate and Flouride contamination). The other nearby water system is the Lebec County Water District which is approximately 2.5-miles to the east of Frazier Park, however it lacks capacity to supply even its own needs.

4.4 Alternative No. 3 - Casing Repair

The existing Well No. 5 is an 8-inch steel casing. One of the options for casing repair is the installation of casing swage patches as outlined below.

- a) Description:
The installation of swage patches has been completed to cover up holes in the casing and reduce the amount of sand infiltration into the well casing. The well patches are thin-walled corrugated steel that are pressed against the existing casing in five foot intervals.
- b) Design Criteria:
The casing patches have already been installed as a temporary fix to allow the District to make it through the peak summer demands this year. Patches were installed from 95-ft to 135-ft and from 215-ft to 230-ft. The installation of more patches will begin to have a significant impact on the well production capacity.
- c) Map:
Not applicable.
- d) Environmental Impacts:
This alternative does not have any environmental impacts. The well is existing and all construction work would take place downhole in the confines of the existing well. All surface work and equipment would remain on the existing, disturbed well site.
- e) Land Requirements:
This alternative does not require additional land or easements.
- f) Potential Construction Problems:
The repair utilizing casing patches is considered a temporary fix. Recently the installation of swage patches was completed to cover up holes in the casing and reduced the amount of sand infiltration into the well casing; however the gravel pack has already been lost where the existing holes are located and the extent of gravel loss is unknown. There is a good chance that there is a lot of formation directly up against the perforated interval and even with patches the well will continue to pump sand. Furthermore, many of the well casing louvers are enlarged thereby letting in sand and gravel, but the District cannot patch the entire well otherwise there will be very little production capacity.



- g) Sustainability Considerations:
This alternative does not include any sustainability measures.
- h) Cost Estimates:

Table 5
Swage Patching Cost Estimate – Alternate No. 3

Frazier Park Public Utility District					
Well No. 5 Swage Patching Project					
Item No.	Description	Unit	Qty.	Engineer's Estimate	
				Unit Price	Total Amount
1	Mobilization, Demobilization, and Cleanup	1	EA	\$ 15,000.00	\$ 15,000.00
2	Remove Existing Pump & Motor	1	LS	\$ 10,000.00	\$ 10,000.00
3	Well Video	1	LS	\$ 2,500.00	\$ 2,500.00
4	Furnish and Install Casing Patches	155	LF	\$ 750.00	\$ 116,250.00
5	Well Video	1	LS	\$ 2,500.00	\$ 2,500.00
6	Re-Install Pump & Motor	1	LS	\$ 10,000.00	\$ 10,000.00
7	Electrical & Controls	1	LS	\$ 20,000.00	\$ 20,000.00
Construction Estimate Subtotal:					\$ 176,250.00
10% Contingency:					\$ 17,625.00
Engineering/Bid Administration/Construction Inspection:					\$30,000.00
Total Project Estimate:					\$ 223,875.00

4.5 Alternative No. 4 – Casing Liner (Prepack Screen)

The existing Well No. 5 is an 8-inch steel casing. The other option for casing repair is the installation of an interior steel liner as outlined below.

- i) Description:
The installation of an interior liner would likely require a 5x7 Muni-Pak Screened liner. This pre-packed screen would be the largest casing liner (7.7" O.D.) that could be installed and it might need to be even smaller if there is too much deviation in the existing casing alignment. This diameter liner (5" I.D.) then limits the size of the pump that can be installed to 2" or 3" diameter and this will greatly reduce the capacity of the well. The well will not be able to provide the 500 gpm needed.
- j) Design Criteria:
The liner would be a maximum 5x7 Muni-Pak screen installed for the full depth of the well and include a bottom cap. The liner would be perforated from approximately 95-ft to 460-ft and have an approximate 1-inch thick gravel pack installed between the two casings for the full depth of the well.
- k) Map:
Not applicable.
- l) Environmental Impacts:



This alternative does not have any environmental impacts. The well is existing and all construction work would take place downhole in the confines of the existing well. All surface work and equipment would remain on the existing, disturbed well site.

m) Land Requirements:

This alternative does not require additional land or easements.

n) Potential Construction Problems:

The interior casing liner is considered a temporary fix. As discussed above the installation of a casing liner will greatly reduce the capacity of the well and pump and will not be enough water for the District. Furthermore, it is common for bacterial growth to occur as the original casing continues to deteriorate and the new liner and gravel pack restricts the ability to effectively treat and clean the well when this occurs. Eventually these types of fixes begin to plug up and the well capacity becomes greatly diminished.

o) Sustainability Considerations:

This alternative does not include any sustainability measures.

p) Cost Estimates:

Table 6
Casing Liner Cost Estimate – Alternate No. 4

Frazier Park Public Utility District					
Well No. 5 Casing Liner Project					
Item No.	Description	Unit	Qty.	<i>Engineer's Estimate</i>	
				Unit Price	Total Amount
1	Mobilization, Demobilization, and Cleanup	1	EA	\$ 15,000.00	\$ 15,000.00
2	Remove Existing Pump & Motor	1	LS	\$ 10,000.00	\$ 10,000.00
3	Well Video	1	LS	\$ 2,500.00	\$ 2,500.00
4	5x7 Muni-Pak Screen	365	LF	\$ 400.00	\$ 146,000.00
5	Screen Installation	365	LF	\$ 50.00	\$ 18,250.00
6	Gravel Pack Installation	20	LF	\$ 60.00	\$ 1,200.00
7	Cement Seal Installation	75	LF	\$ 60.00	\$ 4,500.00
8	Well Video	1	LS	\$ 2,500.00	\$ 2,500.00
9	Re-Install Pump & Motor	1	LS	\$ 10,000.00	\$ 10,000.00
10	Electrical & Controls	1	LS	\$ 20,000.00	\$ 20,000.00
					\$ 229,950.00
	Construction Estimate Subtotal:				\$ 229,950.00
	10% Contingency:				\$ 22,995.00
	Engineering/Bid Administration/Construction Inspection:				\$15,000.00
	Total Project Estimate:				\$ 267,945.00



4.6 Alternative No. 5- Well Replacement

This alternative is to drill, construct, develop, and equip a Well No. 5 replacement well.

a) Description:

The replacement well will be drilled at the existing well site and every effort made to utilize the existing well site electrical, storage, and distribution infrastructure. The alternative includes the construction of a new well, however the existing pump and motor will be utilized. A brief shutdown period will be required to move the pump and motor from the existing well to the new well. This work will need to be performed before the summer demands. The alternative also includes a new well building enclosure to protect it from the elements, new well discharge piping and appurtenances to connect the new well to the existing water storage tank, and new underground electrical conduit and wiring. The existing Well No. 5 will be abandoned after Well No. 7 is completed and operational.

b) Design Criteria:

The well construction will be in accordance with Kern County Water Well Standards and AWWA A100-15. The well drilling will require a Kern County Well Drilling Permit. Upon completion of the replacement well, the existing well will be destroyed. This will require a well destruction permit from the County of Kern.

c) Map:

See the preliminary plans attached in Appendix A.

d) Environmental Impacts:

This alternative does not have any environmental impacts. The well site is existing and all construction work will take place on the existing, disturbed well site.

e) Land Requirements:

This alternative does not require additional land or easements.

f) Potential Construction Problems:

The work is taking place on an existing well site which is small, therefore space is limited and it will be difficult. In addition, the work will need to take place in the winter and spring time since the existing well will have to be out-of-service. It will be critical to have the construction work completed and the new well operational by the summer of 2020.

g) Sustainability Considerations:

This alternative does not include any sustainability measures.

h) Cost Estimate:

Table 7
Well Replacement Cost Estimate – Alternate No. 5

Frazier Park Public Utility District					
Well No. 5 Replacement Project - Well No. 7					
Item No.	Description	Unit	Qty.	<i>Engineer's Estimate</i>	
				Unit Price	Total Amount
1	Mobilization, Demobilization, and Cleanup	1	EA	\$ 50,000.00	\$ 50,000.00
2	Conductor Casing	50	LF	\$ 575.00	\$ 28,750.00
3	Drill 22" Diameter Hole to 520'	470	LF	\$ 275.00	\$ 129,250.00
4	Furnish and Install 12" Roscoe Moss Blank Casing	120	LF	\$ 130.00	\$ 15,600.00
5	Furnish and Install 12" Roscoe Moss Louvered Casing	380	LF	\$ 205.00	\$ 77,900.00
6	Furnish and Install 3" Gravel Feed Tube	75	LF	\$ 28.00	\$ 2,100.00
7	Furnish and Install 2" Sounding Tube	95	LF	\$ 24.00	\$ 2,280.00
8	Furnish and Install 8x16 SFI Gravel	450	LF	\$ 60.00	\$ 27,000.00
9	Furnish and Install Cement Annular Seal	70	LF	\$ 70.00	\$ 4,900.00
10	Conduct Preliminary Well Development by Airlifting & Swabbing	60	HRS	\$ 550.00	\$ 33,000.00
11	Conduct Well Development by Pumping & Surging	48	HRS	\$ 475.00	\$ 22,800.00
12	Conduct Well Production Test Pumping	24	HRS	\$ 475.00	\$ 11,400.00
13	Well Video	1	EA	\$ 3,500.00	\$ 3,500.00
				Subtotal:	\$ 408,480.00
14	Mobilization, Demobilization, and Cleanup	1	EA	\$ 17,000.00	\$ 17,000.00
15	Re-Install Existing Pump and Motor from Well #5	1	LS	\$ 20,000.00	\$ 20,000.00
16	Well Concrete Foundation & Modify Tubing	1	LS	\$ 15,000.00	\$ 15,000.00
17	Furnish & Install Well Discharge Piping	1	LS	\$ 50,000.00	\$ 50,000.00
18	Remove & Re-Install Chlorine Equipment	1	LS	\$ 5,000.00	\$ 5,000.00
19	Furnish & Install a Well Pump and Motor Building	1	LS	\$ 25,000.00	\$ 25,000.00
20	Concrete Pipe Supports	2	EA	\$ 500.00	\$ 1,000.00
21	Pressure Gauges	2	EA	\$ 250.00	\$ 500.00
22	Sample Ports	2	EA	\$ 200.00	\$ 400.00
23	Furnish & Install PVC Well Connection Piping to Tank	115	LF	\$ 200.00	\$ 23,000.00
24	Site Painting	1	LS	\$ 5,000.00	\$ 5,000.00
25	Underground Electrical	1	LS	\$ 45,000.00	\$ 45,000.00
26	Well #5 Destruction	1	LS	\$ 20,000.00	\$ 20,000.00
					\$ 226,900.00
	Construction Estimate Subtotal:				\$ 635,380.00
	15% Contingency:				\$ 95,307.00
	Well #5 Swage Patch Repairs				\$ 97,000.00
	PER & Engineering Design:				\$ 46,400.00
	Bid Administration/Construction Inspection:				\$ 98,455.00
	Total Project Estimate:				\$ 972,542.00

The annual O&M costs associated with Alternative No. 5 – Well Replacement, should remain about the same as the current O&M costs for the District. This well is planned to replace an existing well at the same well site location and be of similar size and capacity. Therefore the annual O&M costs are not expected to increase for the District.



5.0 SELECTION OF ALTERNATIVE

5.1 Life Cycle Cost Analysis

A life cycle cost analysis is illustrated below for the Alternative No. 5 – Well Replacement. A life cycle analysis has not been performed for Alternatives No. 3 and 4 because the solutions associated with those alternatives are only temporary and the end result of Alternatives No. 3 and 4 will still be well replacement. The total capital cost including non-construction costs is \$972,542.00. The O&M costs are estimated at \$27,350.00 and include the estimated pumping costs and the chlorine purchase costs for the new well.

Table 8
Present Worth Analysis

Frazier Park Public Utility District						
Well #7 Project - Life Cycle Cost Analysis						
Project Component Alternatives	Capital Cost	Annual O&M	<u>P.W. O&M</u> <u>P/A, 1.2%, 20</u> <u>yrs</u>	Salvage Value	<u>P.W. Salvage</u> <u>P/F, 1.2%, 20 yrs</u>	Net Present Worth
Alt 5 - Well Replacement	\$ 972,542.00	\$ 27,350.00	\$ 483,903.55	\$ 229,725.33	\$ 181,207.34	\$ 1,637,652.89

5.2 Non-Monetary Factors

This project is located at an existing facility and does not have many non-monetary factors. The abandonment of the existing well will not affect the area around the well and the construction of the new well will not have significant issues either.

6.0 PROPOSED PROJECT (RECOMMENDED ALTERNATIVE)

6.1 Preliminary Project Design

The new well will provide a replacement water supply for the District. The replacement well is anticipated to have a production capacity of approximately 500 gpm and meet all Title 22 Drinking Water Standards since the well will be constructed near the existing Well No. 5.

The new well will be constructed at the existing Well No. 5 site and will make use of the existing storage tank, electrical, chlorine injection, and booster pump station.

6.2 Project Schedule

The project schedule is as follows:

Prepare Project Plans and Specifications:	February 2020
Advertise for Bids for Well Drilling:	March 2020
Obtain Well Drilling Permit:	March 2020



Well Drilling Contract Award:	April 2020
Drill and Construct Water Well:	May 2020 – July 2020
Advertise for Bids for Well Equipping:	June 2020
Well Equipping Contract Award:	July 2020
Well Equipping Construction:	August 2020 – October 2020
Final Completion:	November 2020

6.3 Permit Requirements

The drilling of a replacement well will require a Well Drilling Permit from the County of Kern. In addition, the existing Well No. 5 will need to be abandoned and destroyed in accordance with the Kern County Well Destruction Standards. This will require a Well Destruction Permit from the County of Kern.

Well Permit requirements can be found at: <https://kernpublichealth.com/well-permit-site-plan-requirements/>.

6.4 Sustainability Considerations

The pumping of excessive sand is harmful to the deep well pump and is a maintenance issue for the District with respect to the storage tank and its distribution system. This project will protect the well pump and District equipment from sand and provide an efficient replacement water supply source. In addition, all new equipment installed will be premium efficiency.

6.5 Total Project Cost Estimate

The estimated total cost for the Well Replacement Project (Well No. 7) is approximately \$972,542.00. A breakdown of the estimates for well construction, furnishing and installation is shown below.



Table 9
Project Cost Estimate

Frazier Park Public Utility District		
Project Cost Estimate		
ITEM		Amount
Property Purchase / Lease Agreements		\$ -
Easement Acquisition / Right of Way / Water Rights Agreements		\$ -
Bond Counsel		\$ 17,500.00
Legal Counsel		\$ 7,500.00
Interim Financing Expense		\$ -
Environmental Report Services		\$ 2,500.00
Engineering Services	Subtotal	
Study and Report Phase ¹	\$ 14,792.00	
Design Phase ²	\$ 31,608.00	
Bidding/Negotiating Phase	\$ 4,000.00	
Construction Phase	\$ 10,395.00	
Post Construction Phase	\$ 1,500.00	
Resident Project Representative	\$ 46,560.00	
	Total - Engineering Services:	\$ 108,855.00
Owner Direct Procurement Agreements	Subtotal	
Materials Testing Lab (Construction Phase)	\$ 3,500.00	
Electrical Power Service Fee for New Connection	\$ -	
Well No. 5 Swage Patch Repairs ³	\$ 97,000.00	
Other (Describe) - Water Quality Testing	\$ 5,000.00	\$ 105,500.00
	Total - Direct Procurement:	\$ -
Construction Contract (attached construction cost breakdown)		\$ 635,380.00
Contingency		\$ 95,307.00
	Total Project Cost Estimate:	\$ 972,542.00
* ² Funded by DWR/IRWMP.		
* ³ Funded by the Frazier Park PUD although seeking reimbursement.		
"The estimated project cost is based on the understanding that the project is required to be in compliance with the USDA Rural Development American Iron and Steel (AIS) requirements."		

The District has received some project funds from other sources already and these are outlined below:

Table 10
Summary of Funding Sources

Frazier Park Public Utility District		
Well No. 5 Replacement Project		
Anticipated Funding Allocation		
Item Description	Funding Amount	Funding Entity
Preparation of PER (Study & Report Phase)	\$ 14,792.00	IRWMP through County of Tulare
Project Design (Preparation of Plans, Specs, & Estimate)	\$ 31,608.00	IRWMP through County of Tulare
Well Casing Swage Patch Work	\$ 97,000.00	District Funded
Project Bid Process, Legal, and Construction Phase	\$ 829,142.00	USDA Funding Request



6.6 Annual Operating Budget

The estimated annual operating budget is not expected to change based on the implementation of Alternative No. 5 – Well Replacement. This well will replace an existing well, of similar size and capacity, and therefore the annual operating budget is expected to remain relatively the same. Below is an annual operating budget (Income, Expense, and Debt Repayments) for the District with the proposed project.



Income	
Water Sales - Residential	\$1,118,902.00
Water Sales - Business	\$125,915.00
Water Sales - Bulk	\$0.00
Late & Other Fees	\$23,123.00
Re-Connection Fees	\$8,700.00
Credit Card Fees Income	\$9,190.00
New Connection Fees	\$200.00
Administrative Fee Income	\$24,109.00
Taxes Kern County Fund	\$50,602.00
Standby Assessment Kern County Fund	\$5,019.00
Delinquent Assessments Kern County	\$3,171.00
Property Lease/Rental Income	\$23,792.00
Miscellaneous	\$900.00
Total Annual Income:	\$1,393,623.00

Total Expense & Debt Repayments	
Pumping Costs / Energy Costs	\$49,197.00
Uniforms, etc.	\$1,202.00
Distribution System Maintenance	\$110,943.00
Tools Expense	\$1,769.00
Fuel – Vehicles & Equipment	\$10,469.00
Environmental Fees	\$1,804.00
Testing & Lab Fees	\$8,367.00
Equipment Rental	\$912.00
Maintenance & Repairs	\$31,665.00
Wages & Payroll Related Expense	\$436,506.00
Directors Fees	\$8,100.00
Dues, Education, & Training	\$9,909.00
Insurance	\$19,868.00
Licenses, Fees, & Permits	\$8,410.00
Office Expenses	\$33,598.00
Professional Services	\$33,538.00
Property Taxes	\$86.00
Telephone, Travel, & Utilities	\$15,900.00
Miscellaneous	\$1,855.00
<i>Subtotal Annual Expense:</i>	<i>\$784,098.00</i>
Loan Payment #3, #4, & #6 Principal	\$63,000.00
Interest Expense	\$95,840.00
Reserve Fund	\$15,884.00
Replacement Fund	\$17,043.00
<i>Subtotal Debt Repayments:</i>	<i>\$191,767.00</i>
Proposed Loan/Grant Principal	\$12,646.00
Proposed Loan/Grant Interest	\$19,692.00
Proposed Reserve Fund	\$3,234.00
Proposed Replacement Fund	\$3,117.83
<i>Subtotal Proposed Debt Repayments:</i>	<i>\$38,689.83</i>
Capital Improvement Projects Fund	\$350,000.00
Total Expense & Debt Repayment:	\$1,367,788.83



Debt Repayments	
<i>Proposed Project Loan/Grant Debt Service</i>	\$32,338.00
<i>Proposed Project Loan/Grant Reserve</i>	\$6,351.83
Capital Improvement Projects Fund	\$350,000.00
USDA Loan #3 Principal Payment	\$5,000.00
USDA Loan #4 Principal Payment	\$20,000.00
USDA Loan #6 Principal Payment	\$38,000.00
USDA Loan #3, #4, & #6 Interest Payment	\$95,840.00
USDA Reserve – Loan 2 (USDA Loan #6)	\$7,886.00
USDA Replacement Fund	\$17,043.00
Total:	\$577,000.33

The District currently makes the following annual payments for debt service and reserve plus replacement. These amounts are current as of July 2019.

Loan #3, Loan Amount \$400,000.00:

Principal Payment	\$5,000 per year
Interest Payment	\$13,818.74
Total Debt Service	\$18,818.74
Replacement Requirement	\$1,971.36
Total Reserves and Replacement	\$27,559.14

Loan #4, Loan Amount \$1,000,000.00:

Principal Payment	\$20,000 per year
Interest Payment	\$34,850.00
Total Debt Service	\$54,850.00
Replacement Requirement	\$5,166.96
Total Reserves and Replacement	\$70,697.96

Loan #6, Loan Amount \$2,100,000.00:

Principal Payment	\$38,000 per year
Interest Payment	\$47,171.26
Total Debt Service	\$85,171.26
Replacement Requirement	\$9,905.00
Reserve Requirement	\$7,885.92
Total Reserves and Replacement	\$131,332.86

Proposed Loan/Grant Amount \$829,142.00^{1,2}:

<i>Principal Payment</i>	<i>\$12,646.00 per year</i>
<i>Interest Payment</i>	<i>\$19,692.00</i>
<i>Total Debt Service</i>	<i>\$32,338.00</i>
<i>Replacement Requirement</i>	<i>\$3,117.83</i>
<i>Reserve Requirement</i>	<i>\$3,234.00</i>

¹The IRWM grant amount has been removed which includes the PER and Design Engineering costs from the project total since these costs are funded by a DWR/IRWMP grant.

²In addition the \$97,000.00 has been removed from the project cost per the USDA. However the District is requesting that this amount be included in the USDA Loan/Grant as they would like to receive reimbursement of these funds.

Table 11
Short-Lived Asset Reserve

Frazier Park Public Utility District			
Well #7 Project - Short-Lived Asset Reserve			
<u>Infrastructure</u>	<u>Useful Life (years)</u>	<u>Replacement Cost</u>	<u>Annual Reserve</u>
Deep Well Pump	15	\$ 30,000.00	\$ 2,000.00
Deep Well Motor	15	\$ 6,000.00	\$ 400.00
Pressure Transducer	10	\$ 3,500.00	\$ 350.00
High Pressure Switch	10	\$ 1,500.00	\$ 150.00
Flow Meter	10	\$ 2,500.00	\$ 250.00
Pump Controls	15	\$ 5,000.00	\$ 333.33
		Total:	\$ 3,483.33

7.0 CONCLUSIONS AND RECOMMENDATIONS

The District is experiencing failure of the Well No. 5 well casing. This is a critical source of supply for the District water system and it must be replaced before they lose the existing Well No. 5 entirely. A temporary fix has been installed by performing swage patching, however this was primarily to keep the well active through the peak summer period and needed for development of the new well. Based on the findings in this report, it is recommended that a replacement well, Well #7, be drilled and constructed at the existing Well No. 5 facility.

APPENDICES

Appendix A

DRAWINGS: SHEETS 1 – 7

Appendix B

CAPITAL IMPROVEMENT PROJECTS LIST

References

"Current Rates & Fees." Frazier Park Public Utility District. Accessed July 19, 2019.
<https://www.frazierparkwater.com/current-rates-fees>.



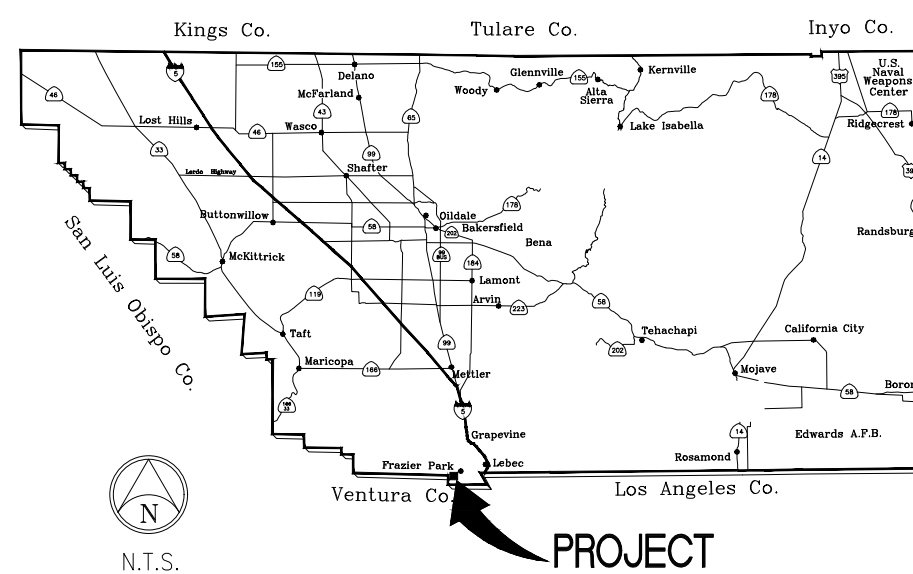
Appendix A

DRAWINGS: SHEETS 1 – 7

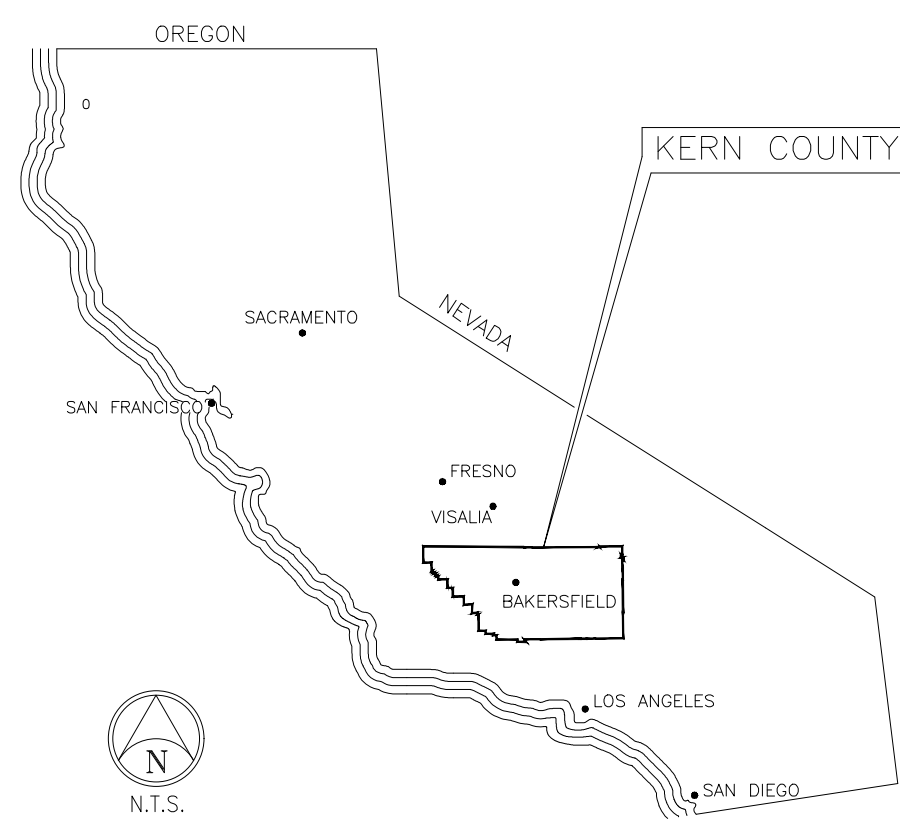
WELL NO. 5 REPLACEMENT PROJECT

CAUTION:
CONTRACTOR SHALL CALL U.S.A. FOR
LOCATION OF UNDERGROUND UTILITIES
PRIOR TO EXCAVATION.
CALL 1-800-642-2444 48 HRS.

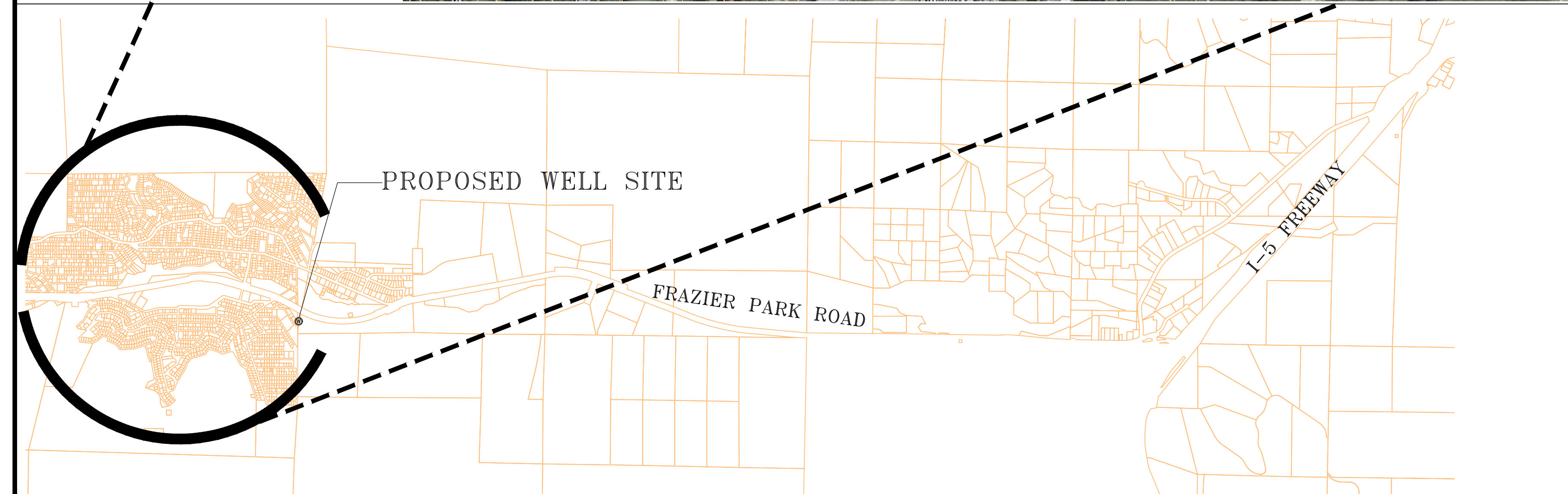
NOTE:
THE ENGINEER HAS MADE A DILIGENT SEARCH OF RECORDS, CONTACTED UTILITY COMPANIES AND OTHERWISE ENDEAVORED TO INDICATE ON THE DRAWINGS ALL UTILITIES WHICH EXIST WITHIN THE LIMITS OF THE WORK OF THIS PROJECT. HOWEVER, THE ENGINEER DOES NOT ASSUME RESPONSIBILITY FOR ERRORS OR OMISSIONS. THE CONTRACTOR SHALL CONTACT THE OWNERS OF THE UNDERGROUND FACILITIES AND REQUEST THEY LOCATE AND MARK ON THE GROUND THEIR FACILITIES PRIOR TO BEGINNING WORK. PRIOR TO DELIVERY OF ANY MATERIALS OR BEGINNING EXCAVATION FOR ANY CONSTRUCTION INCLUDING BUT NOT LIMITED TO SEWER LINES, WATER LINES, STORM DRAINS, STREETS, ETC. AND PRIOR TO BRINGING ANY ADDITIONAL MEN OR EQUIPMENT ON THE JOB, THE CONTRACTOR SHALL EXPOSE AND CONFIRM THE EXACT LOCATION AND ANY POSSIBLE CONFLICT WITH THE WORK TO BE PERFORMED. THE ENGINEER SHALL THEN DETERMINE IF ANY REVISIONS TO THE DESIGN ARE REQUIRED AND PREPARE ANY NECESSARY REVISIONS TO THE PLANS PRIOR TO THE CONTRACTOR PROCEEDING WITH ANY WORK ON OR AROUND THE AFFECTED LINE OR LINES. NO EXTRA COMPENSATION WILL BE ALLOWED FOR EXTRA COSTS INCURRED DUE TO THE CONTRACTOR'S FAILURE TO STRICTLY FOLLOW THIS PROCEDURE. IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THIS REQUIREMENT APPLIES CONTINUOUSLY AND IS NOT LIMITED TO NORMAL WORKING HOURS. CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE DESIGN PROFESSIONAL(S) HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE DESIGN PROFESSIONAL(S).



PROJECT
COUNTY OF KERN



STATE OF CALIFORNIA



VICINITY MAP
NOT TO SCALE
SECTION 36, T9N, R20W, M.D.B.&M.

SHEET INDEX

- 1 COVER SHEET
- 2 SITE PLAN
- 3 WELL CROSS SECTION
- 4 WELL PUMP AND MOTOR
- 5 WELL DISCHARGE PIPING
- 6 PVC CONVEYANCE PIPING
- 7 MISCELLANEOUS DETAILS
- 8 MISCELLANEOUS DETAILS
- 9 ELECTRICAL SITE PLAN

CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS INCLUDING, BUT NOT LIMITED TO, A WELL DRILLING PERMIT.

CONTRACTOR SHALL PERFORM A USA LOCATE PRIOR TO COMMENCING ANY CONSTRUCTION.

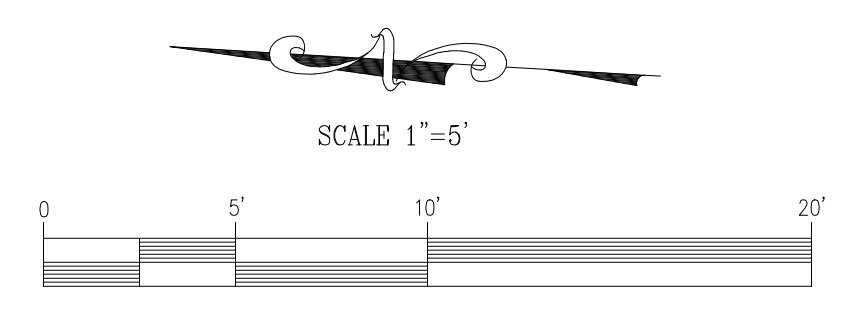
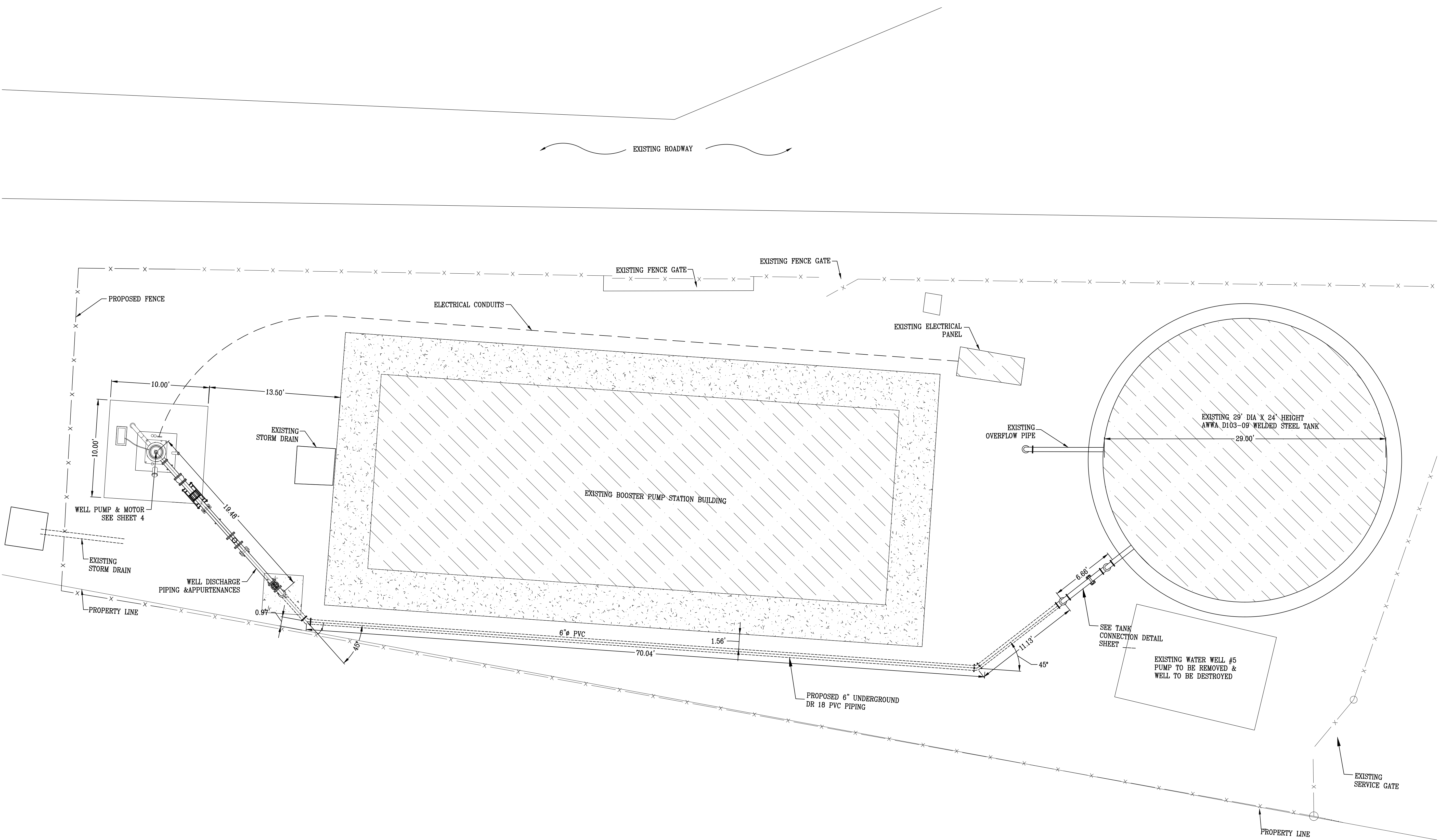
DEE JASPAR & ASSOCIATES, INC.
CIVIL ENGINEERS
2730 UNICORN ROAD, BLDG A
BAKERSFIELD, CALIFORNIA 93308
PHONE 661 393-4796
FAX 661 393-4799

DESIGNED BY: RCE 60960
CURTIS M. SKAGGS (12-31-20)

APPROVED BY: RCE 23042
DEE JASPAR (12-31-19)

FRAZIER PARK PUBLIC UTILITY DISTRICT KERN COUNTY, CALIFORNIA

MAY 2019



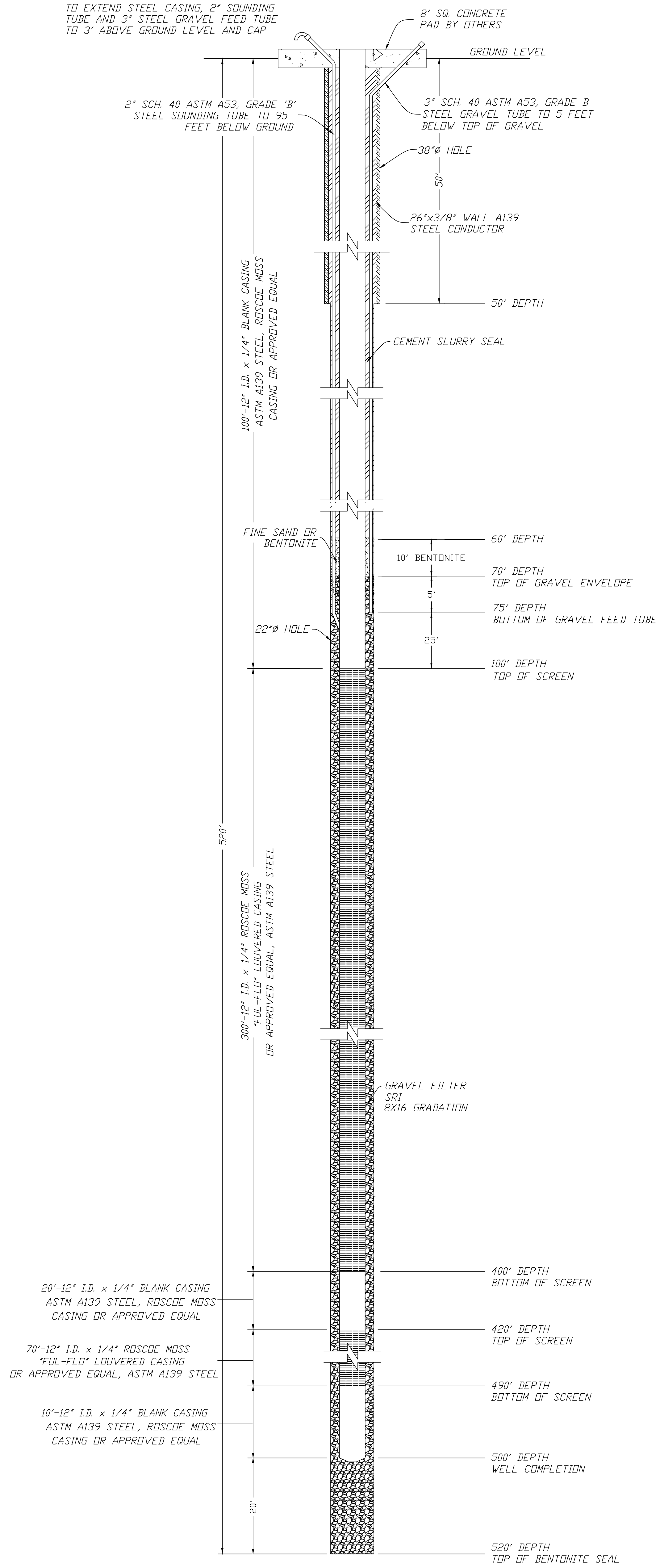
REVISION	BY

DEE JASPAR & ASSOCIATES, INC.
 CIVIL ENGINEERS
 2720 LINCOLN ROAD, BLDG. A
 SUITE 100
 PORTERVILLE, CALIFORNIA 95857
 PHONE 559-781-9286
 PHONE 559-781-9286
 FAX 559-781-9275

SITE PLAN
 WELL 5 REPLACEMENT PROJECT
 FRAZIER PARK PUBLIC UTILITY DISTRICT
 KERN COUNTY, CALIFORNIA

DRAWN	JSW
CHECKED	
DATE	9/3
SCALE	1"=5'
FILE	
JOB NO.	
SHEET	2
OF	7 SHEETS

NOTE: WELL DRILLING CONTRACTOR TO EXTEND STEEL CASING, 2" SOUNDING TUBE AND 3" STEEL GRAVEL FEED TUBE TO 3' ABOVE GROUND LEVEL AND CAP



CASING DESIGN
SEPTEMBER 24, 2019

WELL CROSS SECTION

WELL 5 REPLACEMENT PROJECT

FRAZIER PARK PUBLIC UTILITY DISTRICT
KERN COUNTY, CALIFORNIA

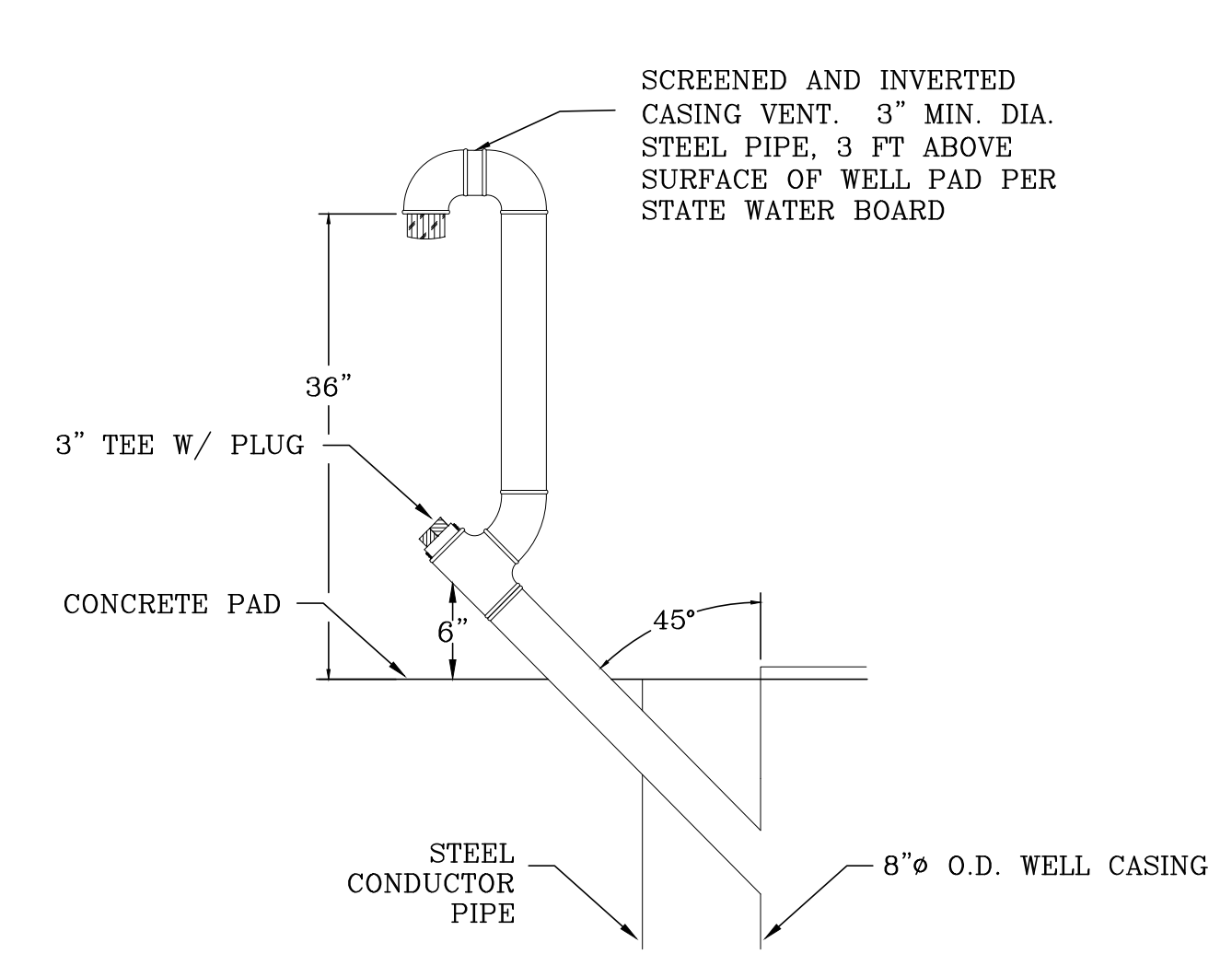
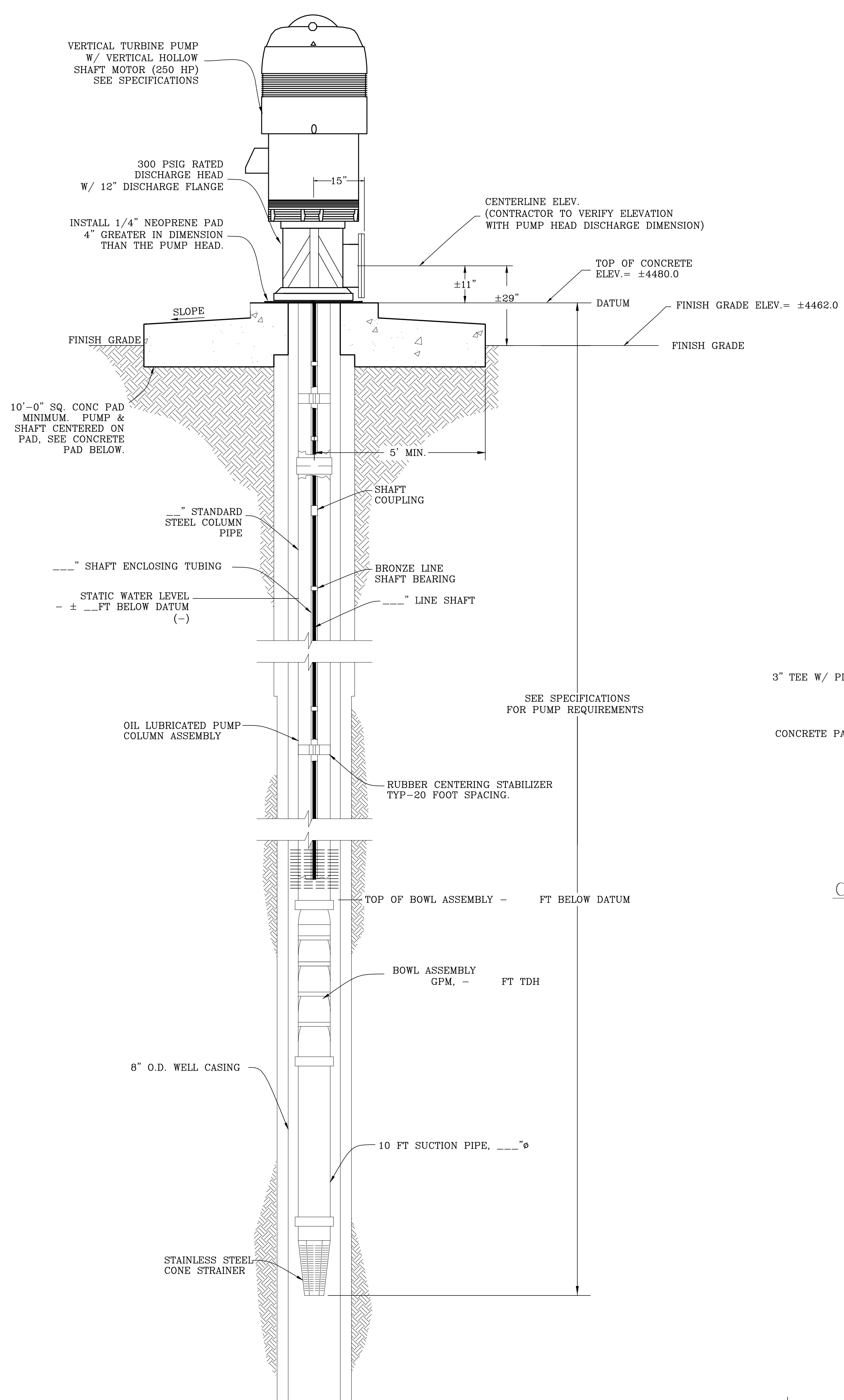
DEE JASPAR & ASSOCIATES, INC.
CIVIL ENGINEERS
3701 PEGASUS DRIVE, SUITE 101 BAKERSFIELD, CALIFORNIA 93308
PHONE 805 393-4298 FAX 805 393-4798

REVISION
BY

S:\FRAZIER PARK PUBLIC UTILITY DISTRICT\WELL NO. 5 REPLACEMENT PROJECT\DRMANS\15. WELL PUMP AND MOTOR-RECOVERING 9/25/2019 5:45 PM

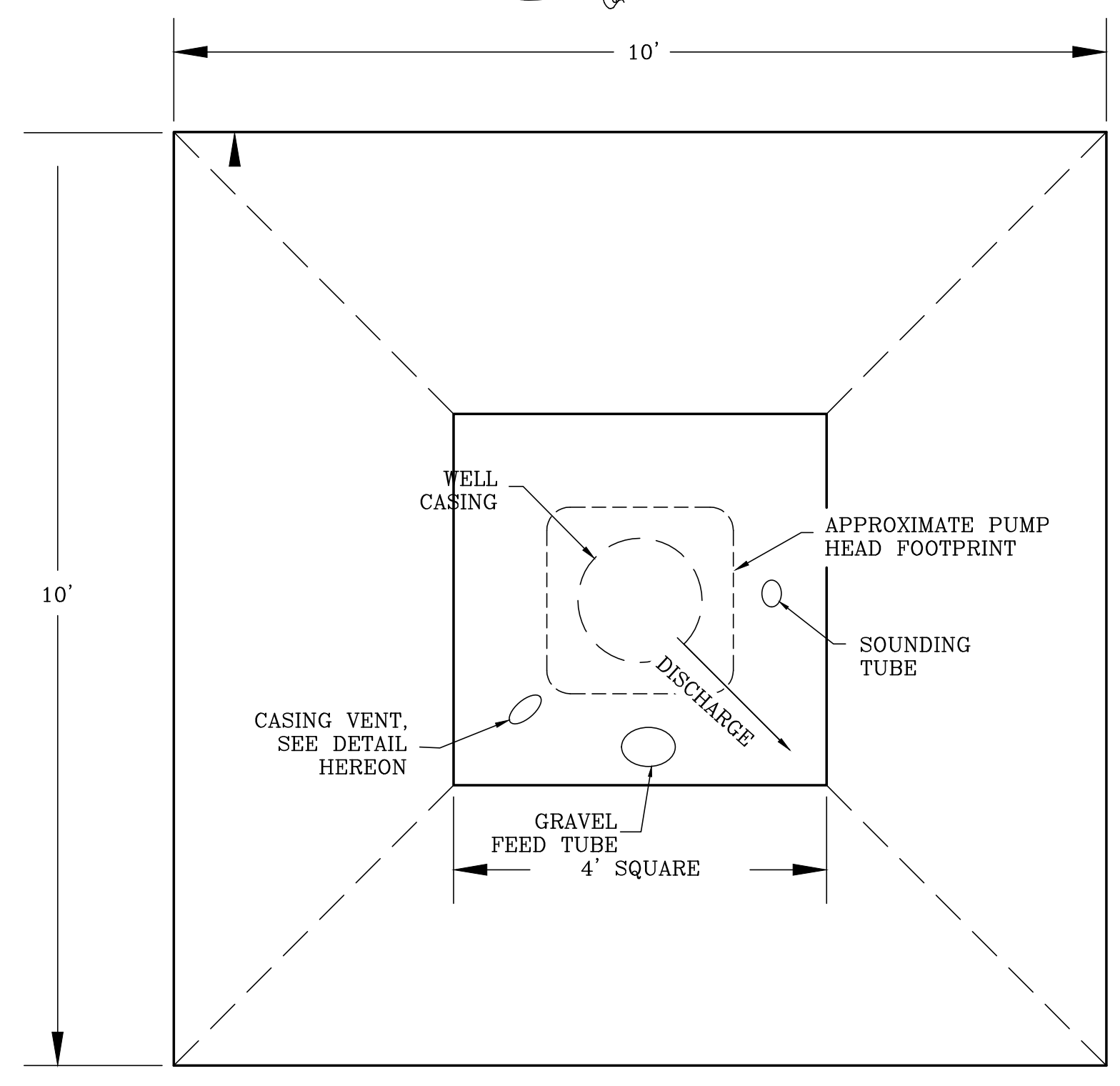
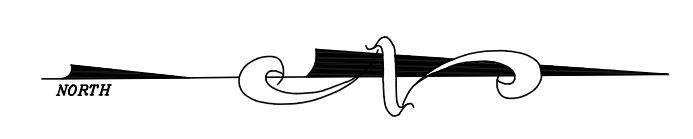
OF	7
SHEETS	3
DRAWN	DJA
CHECKED	
DATE	8/9/2019
SCALE	AS SHOWN
FILE	
JOB NO.	

NOTE: ELECTRICAL CONDUITS ARE NOT SHOWN HEREON. CONTRACTOR SHALL FURNISH A DRAWING SHOWING THE PROPOSED LOCATION OF ALL ELECTRICAL CONDUITS AT THE WELL HEAD FOR APPROVAL PRIOR TO INSTALLATION OF CONDUITS.

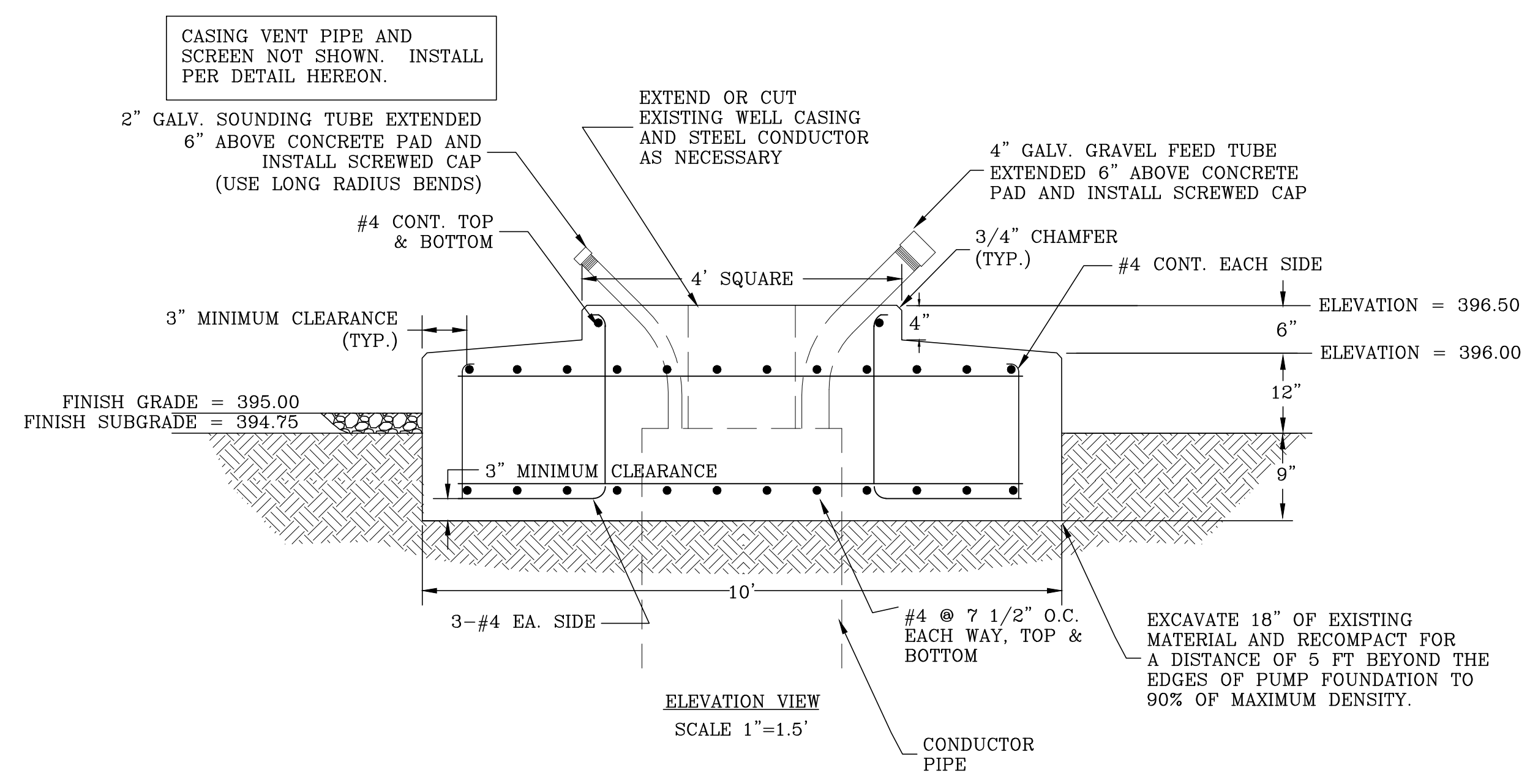


CASING VENT DETAIL
ELEVATION VIEW
NOT TO SCALE

DEEP WELL PUMP
ELEVATION VIEW
NOT TO SCALE



PLAN VIEW
SCALE 1\"/>



ELEVATION VIEW
SCALE 1\"/>

CONCRETE PUMP FOUNDATION

S:\FRAZIER PARK PUBLIC UTILITY DISTRICT\WELL NO. 5 REPLACEMENT PROJECT\DWG\WELL PUMP AND MOTOR-RECOVERING 9/25/2019 5:45 PM

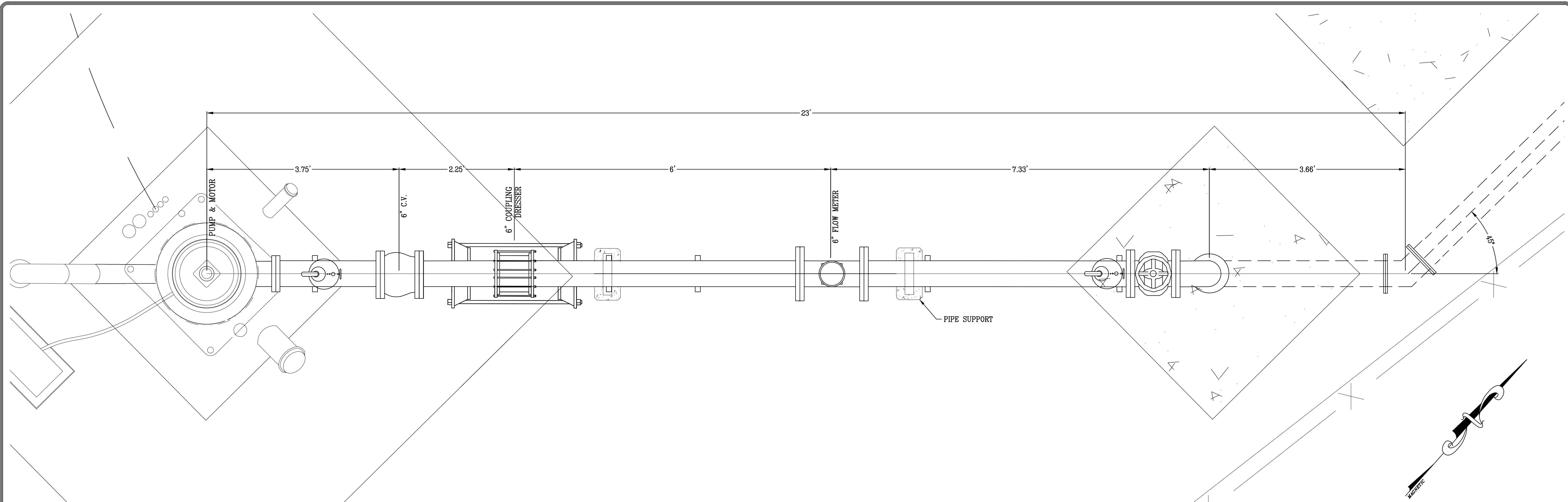
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SCALE	AS SHOWN
FILE	
JOB NO.	
SHEET	4
SHEETS	7

PUMP & MOTOR
WELL 5 REPLACEMENT PROJECT

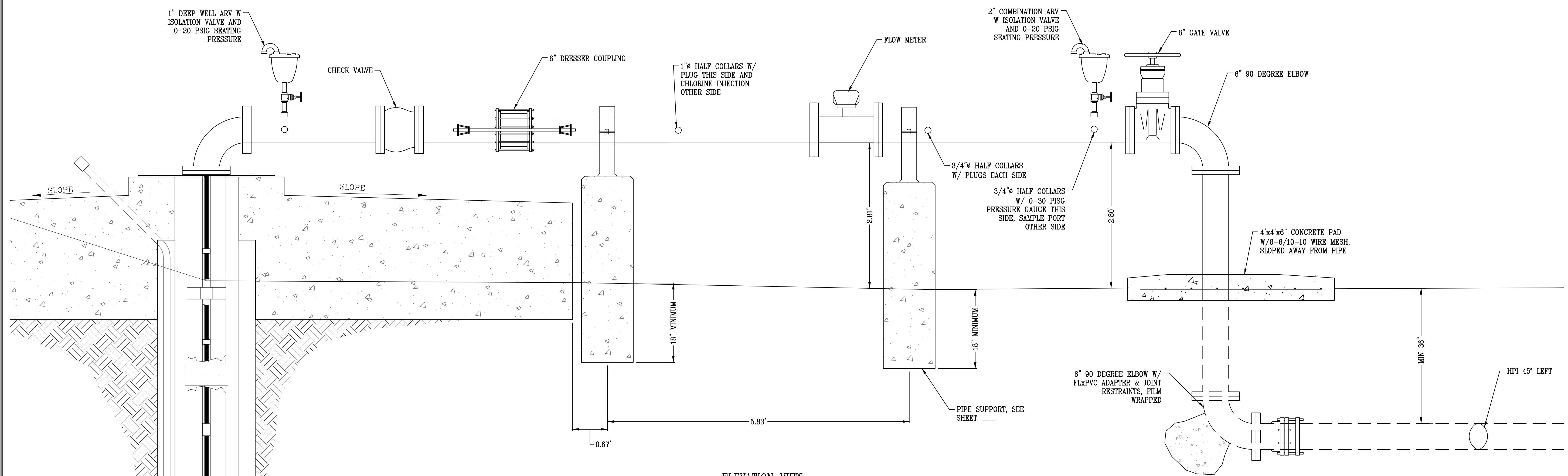
FRAZIER PARK PUBLIC UTILITY DISTRICT
KERN COUNTY, CALIFORNIA

DEE JASPAR & ASSOCIATES, INC.
CIVIL ENGINEERS
3701 PEGASUS DRIVE, SUITE 421
BAKERSFIELD, CALIFORNIA 93308
PHONE 805 393-4798
FAX 805 393-4799

REVISION	
BY	



PLAN VIEW
SCALE: 1"=7.5'



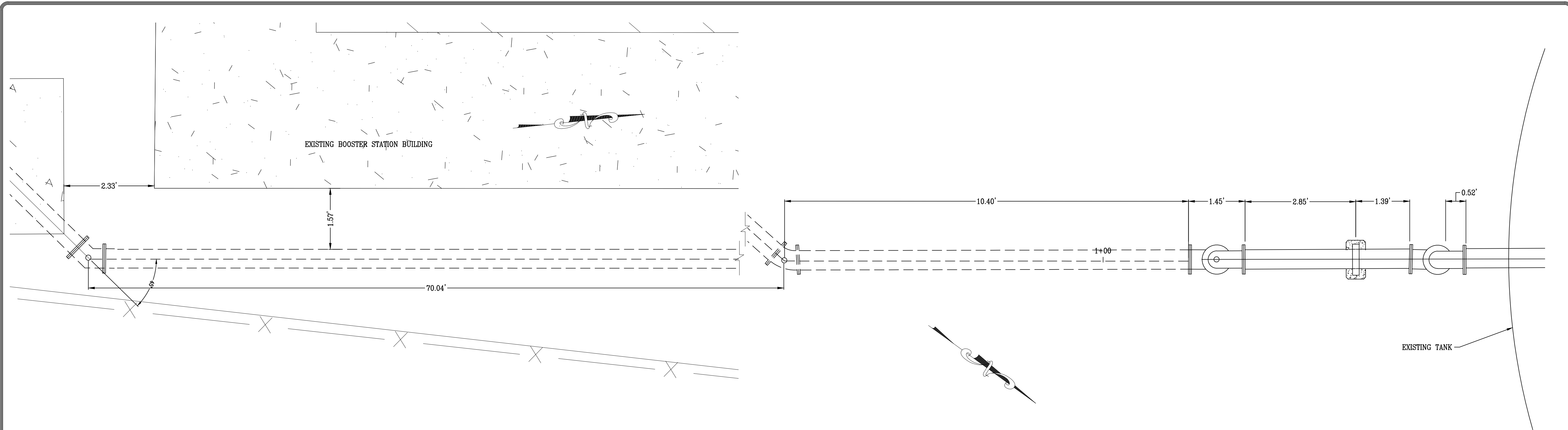
ELEVATION VIEW
SCALE: 1"=7.5'

REVISION	BY

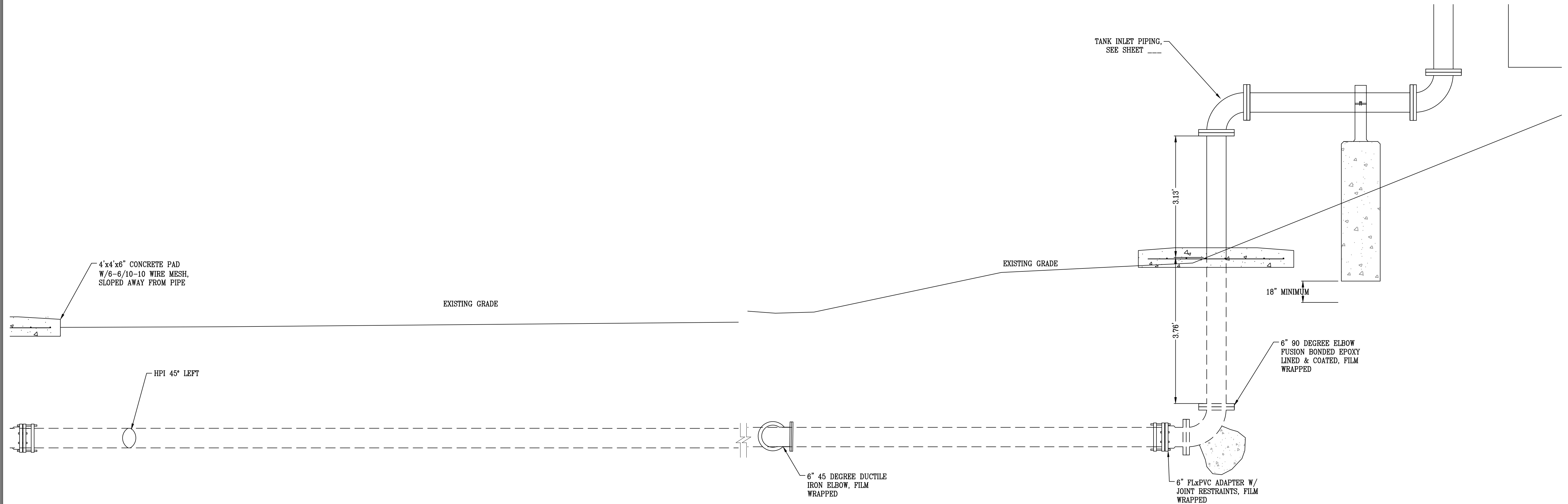
DEE JASPAR & ASSOCIATES, INC.
 CIVIL ENGINEERS
 2720 LINCOLN ROAD, BLDG. A
 SUITE 100
 PORTERVILLE, CALIFORNIA 95857
 PHONE 805 731-4786
 PHONE 805 731-9286
 FAX 805 731-9275

WELL DISCHARGE PIPING
 WELL 5 REPLACEMENT PROJECT
 FRAZIER PARK PUBLIC UTILITY DISTRICT
 KERN COUNTY, CALIFORNIA

DRAWN	JSW
CHECKED	
DATE	9/4/2019
SCALE	AS SHOWN
FILE	
JOB NO.	
SHEET	5
OF	7 SHEETS



PLAN VIEW
SCALE: 1"=7.5'



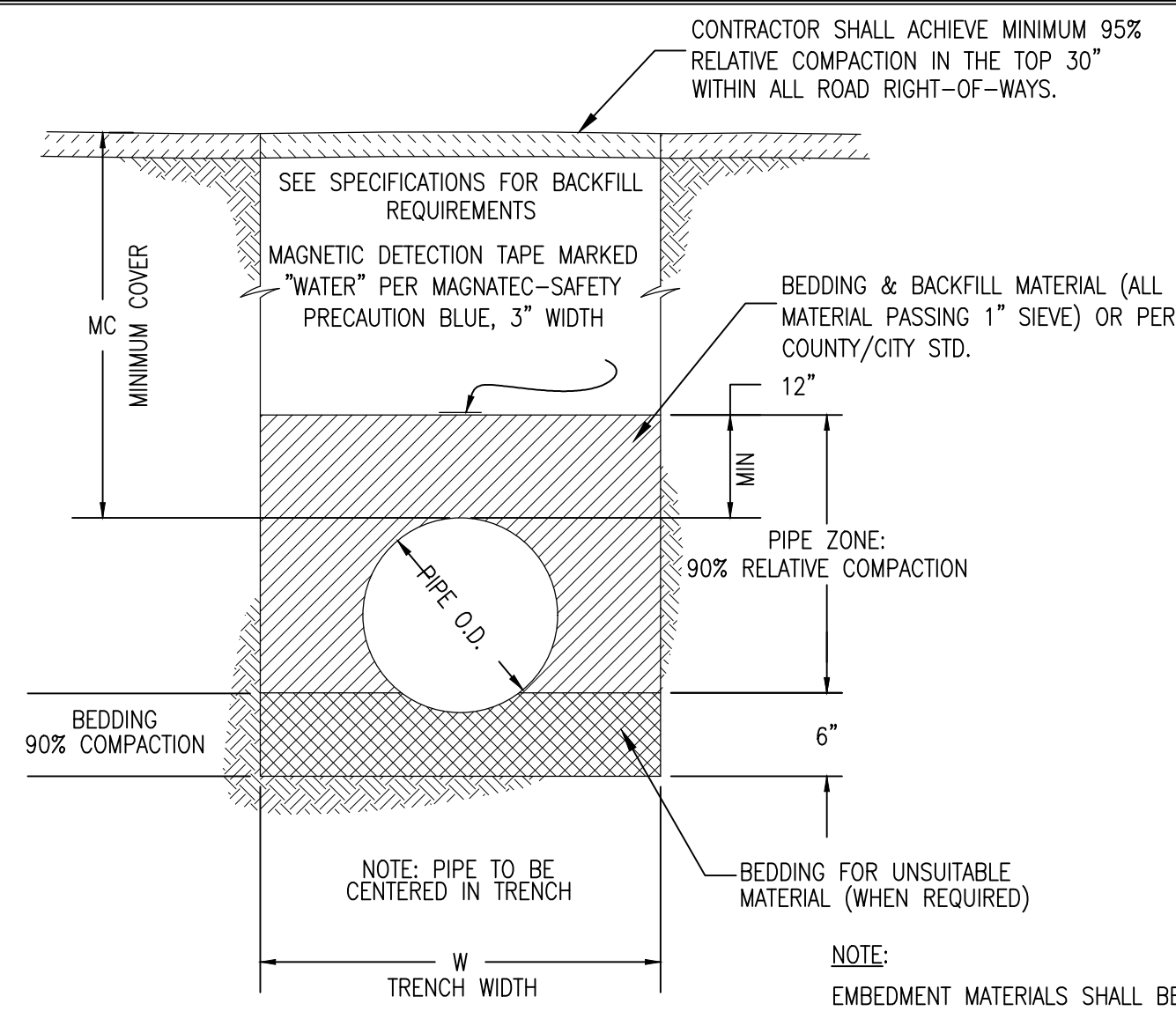
ELEVATION VIEW
SCALE: 1"=7.5'

REVISION	BY

DEE JASPAR & ASSOCIATES, INC.
 CIVIL ENGINEERS
 2720 LINCOLN ROAD, BLDG. A
 SUITE 100
 PORTERVILLE, CALIFORNIA 93257
 PHONE 805 731-9286
 PHONE 805 731-9286
 FAX 805 731-9275

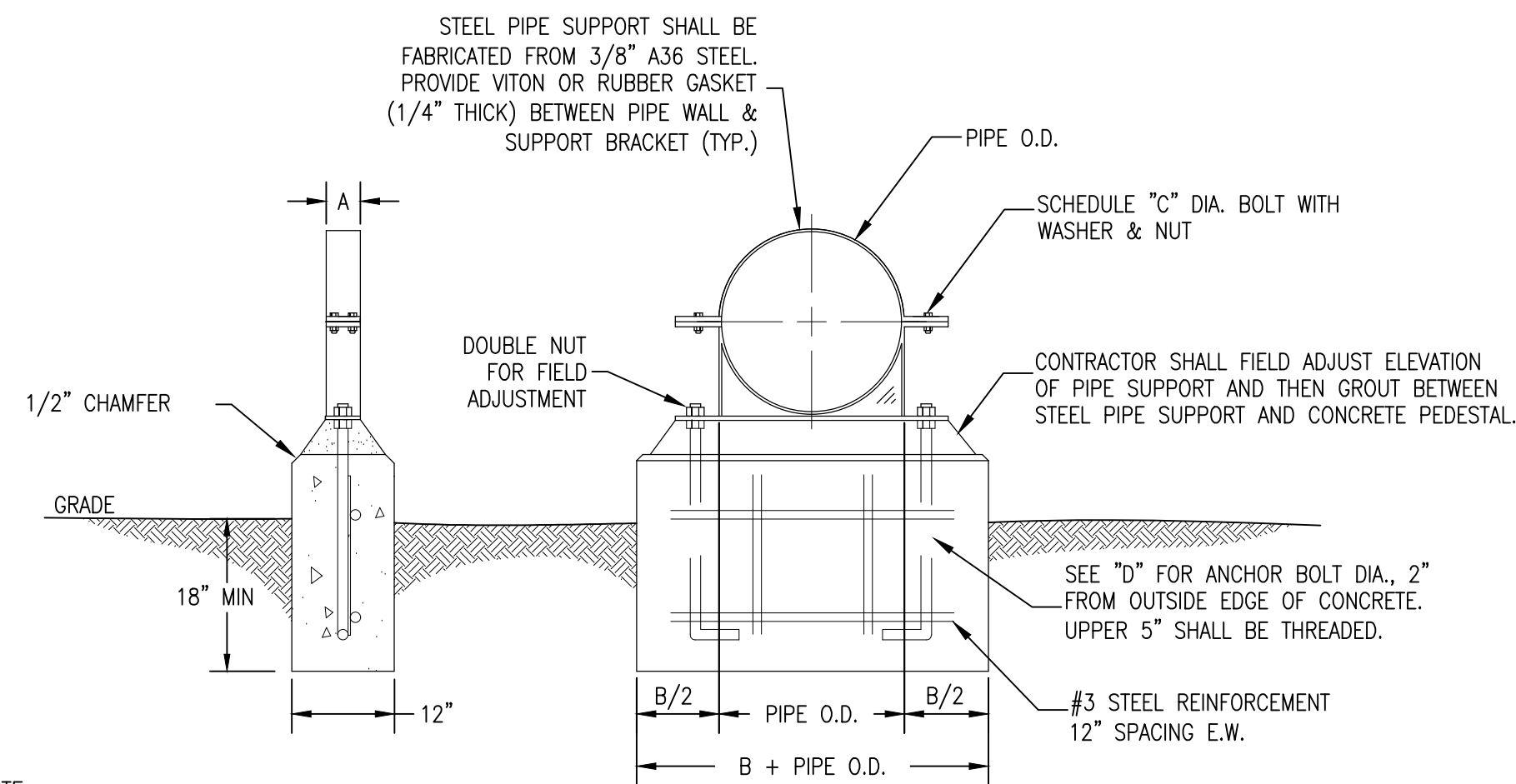
PVC CONVEYANCE PIPING
 WELL 5 REPLACEMENT PROJECT
 FRAZIER PARK PUBLIC UTILITY DISTRICT
 KERN COUNTY, CALIFORNIA

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CHECKED	
DATE	9/4/2019
SCALE	AS SHOWN
FILE	
JOB NO.	
SHEET	6
OF	7 SHEETS



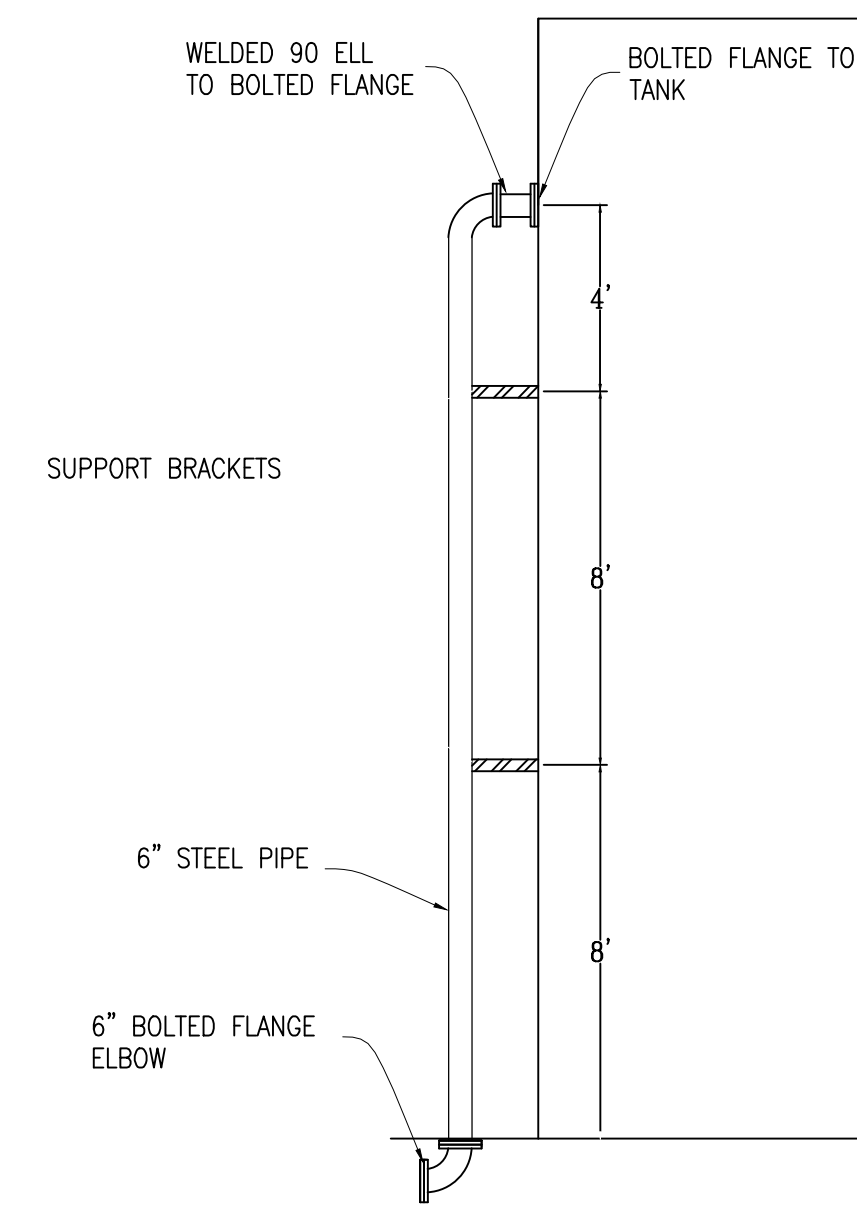
TRENCH DIMENSIONS		
PIPE SIZE	W	MC
6"	36"	30"

TRENCH DETAIL

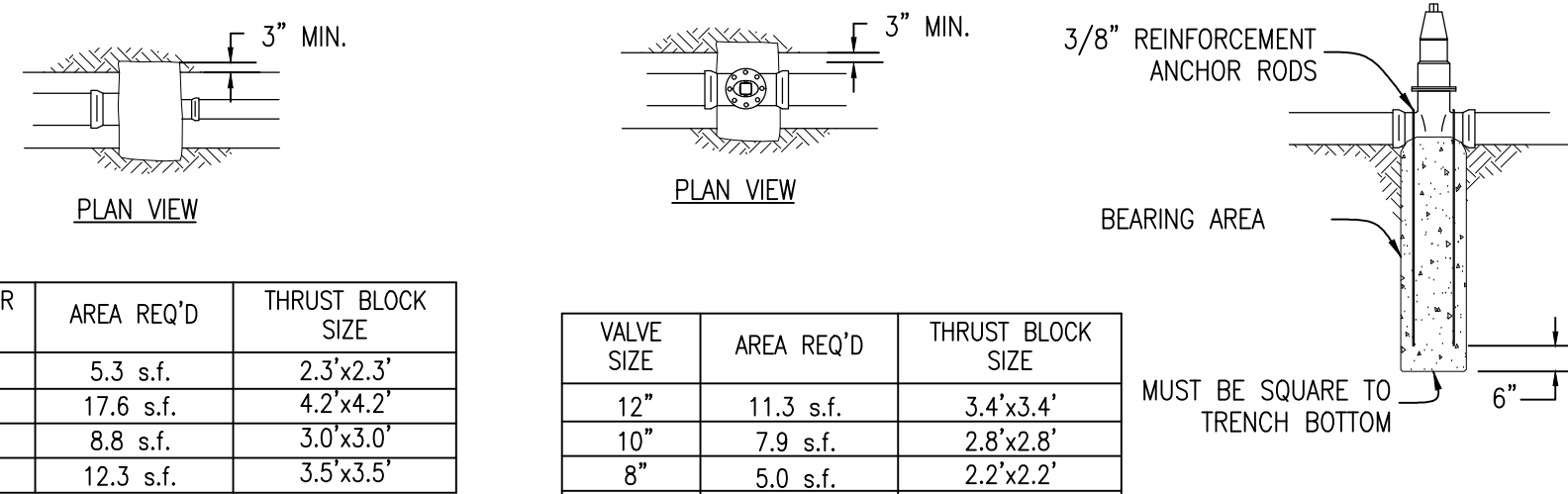


NOM. DIA.	A	B	C	D
6"	4"	10"	1/2"	5/8"

PIPE SUPPORT



EXISTING CONNECTION MAIN TO TANK
ELEVATION VIEW
NOT TO SCALE

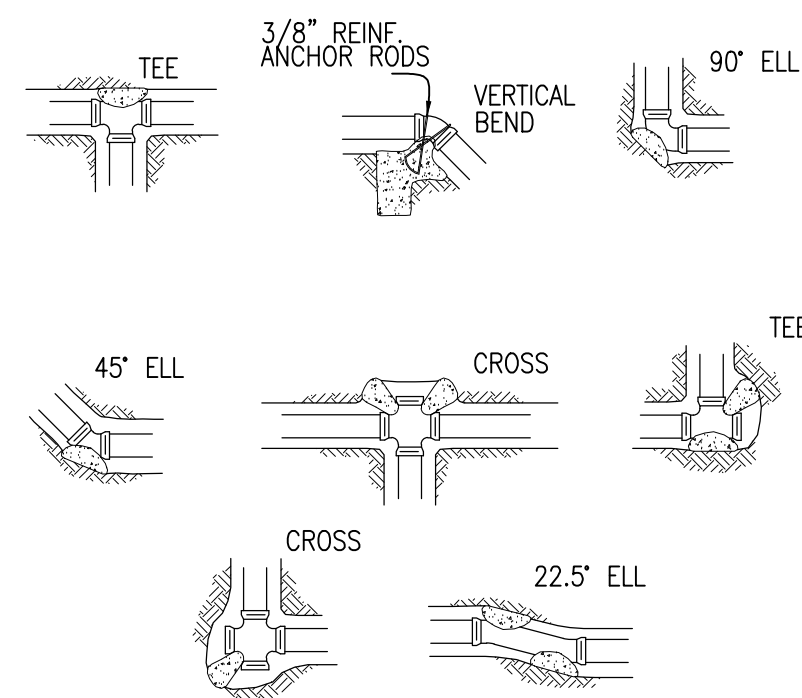


REDUCER SIZE	AREA REQ'D	THRUST BLOCK SIZE
18x16	5.3 s.f.	2.3'x2.3'
18x10	17.6 s.f.	4.2'x4.2'
16x12	8.8 s.f.	3.0'x3.0'
16x10	12.3 s.f.	3.5'x3.5'

VALVE SIZE	AREA REQ'D	THRUST BLOCK SIZE
12"	11.3 s.f.	3.4'x3.4'
10"	7.9 s.f.	2.8'x2.8'
8"	5.0 s.f.	2.2'x2.2'
6"	2.8 s.f.	1.7'x1.7'

REDUCER

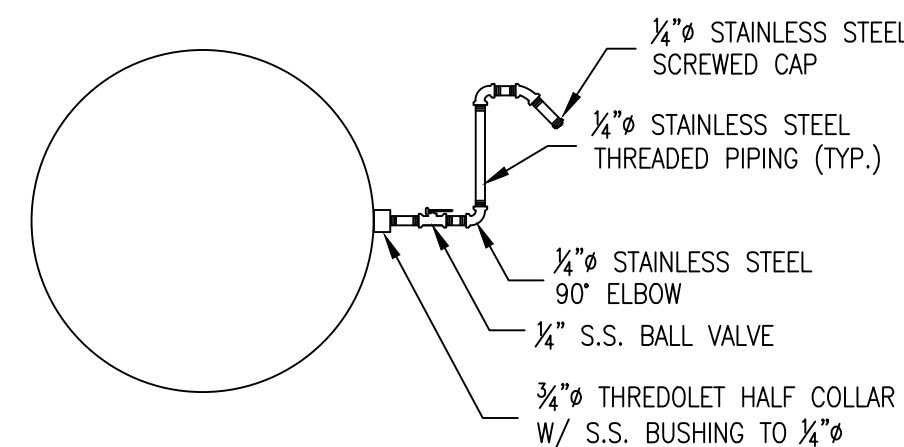
VALVE ANCHORS



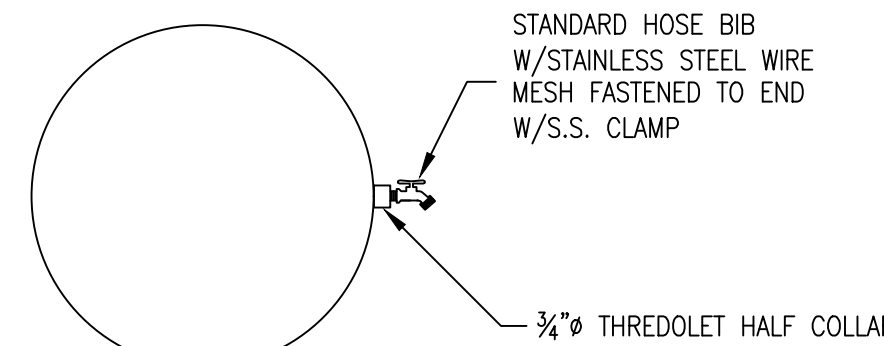
PIPE SIZE	BEARING AREA (SQ. FT.)			
	TEE OR PLUG	90° ELL OR HYDRANT	45° ELL	22.5° ELL
4"	2	3	1	1
6"	3	4	2	2
8"	5	7	4	2
10"	8	11	6	3
12"	11	16	8	4
16"	13	19	10.2	7

THRUST BLOCK DETAIL

NOTE:
1. ALL BALL VALVES AND ISOLATION VALVES SHALL BE STAINLESS STEEL VALVES, AS NOTED.

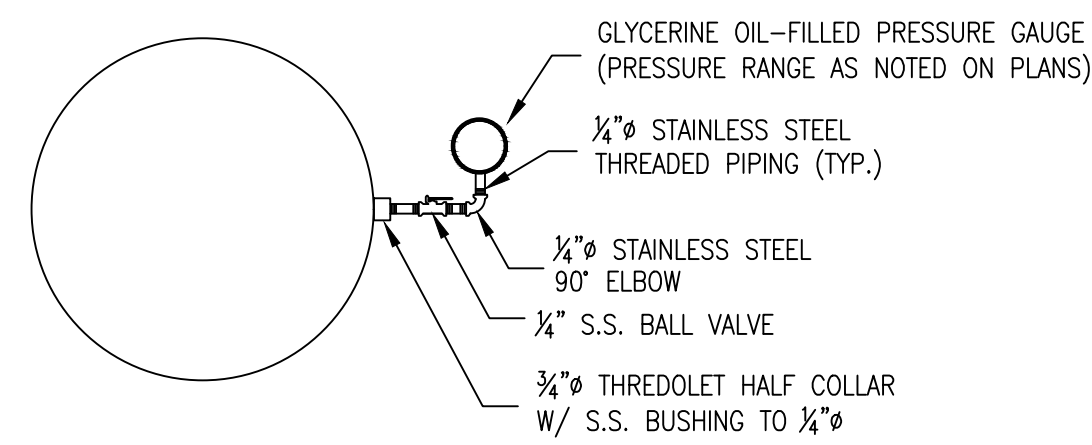


SAMPLE PORT DETAIL

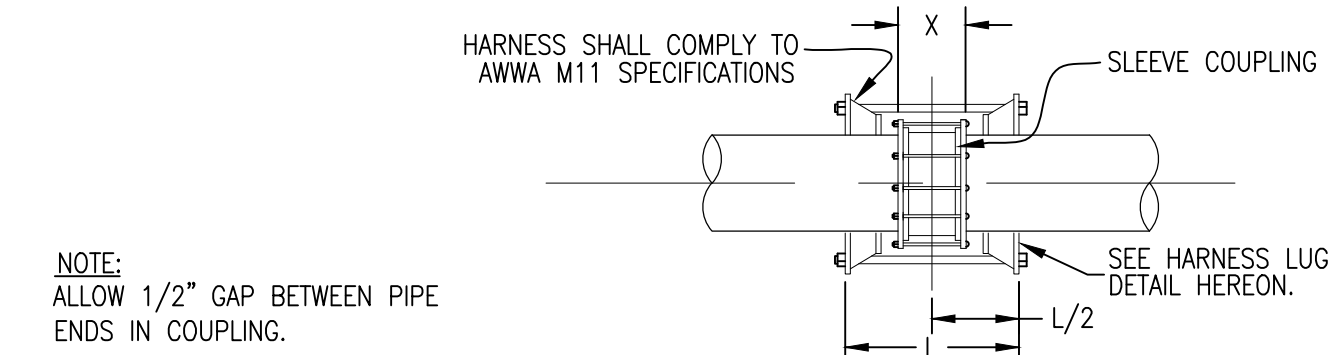


HOSE BIB DETAIL

NOTE:
1. ALL PRESSURE GAUGES SHALL BE INSTALLED WITH A DIAPHRAGM TO PREVENT BACK FLOW OF OIL INTO WATER SYSTEM (TYP.)
2. ALL PRESSURE GAUGES SHALL BE ASHCROFT PRESSURE GAUGES. 0-160 PSI GAUGES SHALL BE 2 1/2\"/>

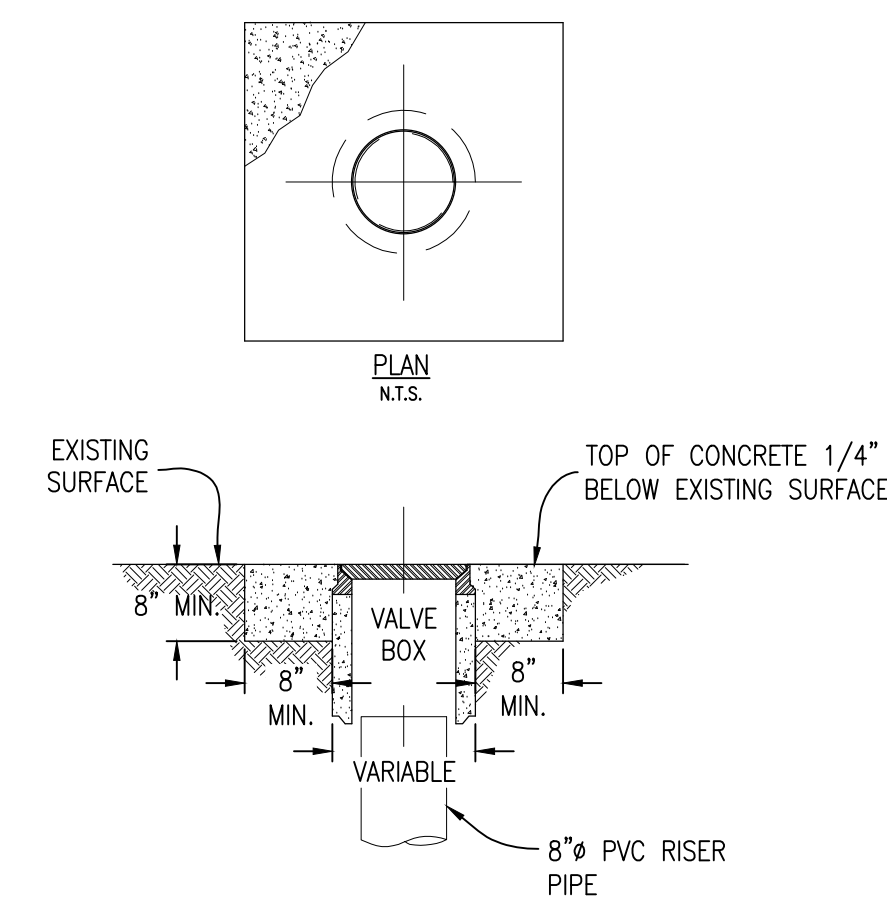


PRESSURE GAUGE DETAIL



PIPE O.D.	X	L/2	L
6"	8.875"	12.3125"	24.625"

DRESSER COUPLING DETAIL



VALVE BOX DETAIL

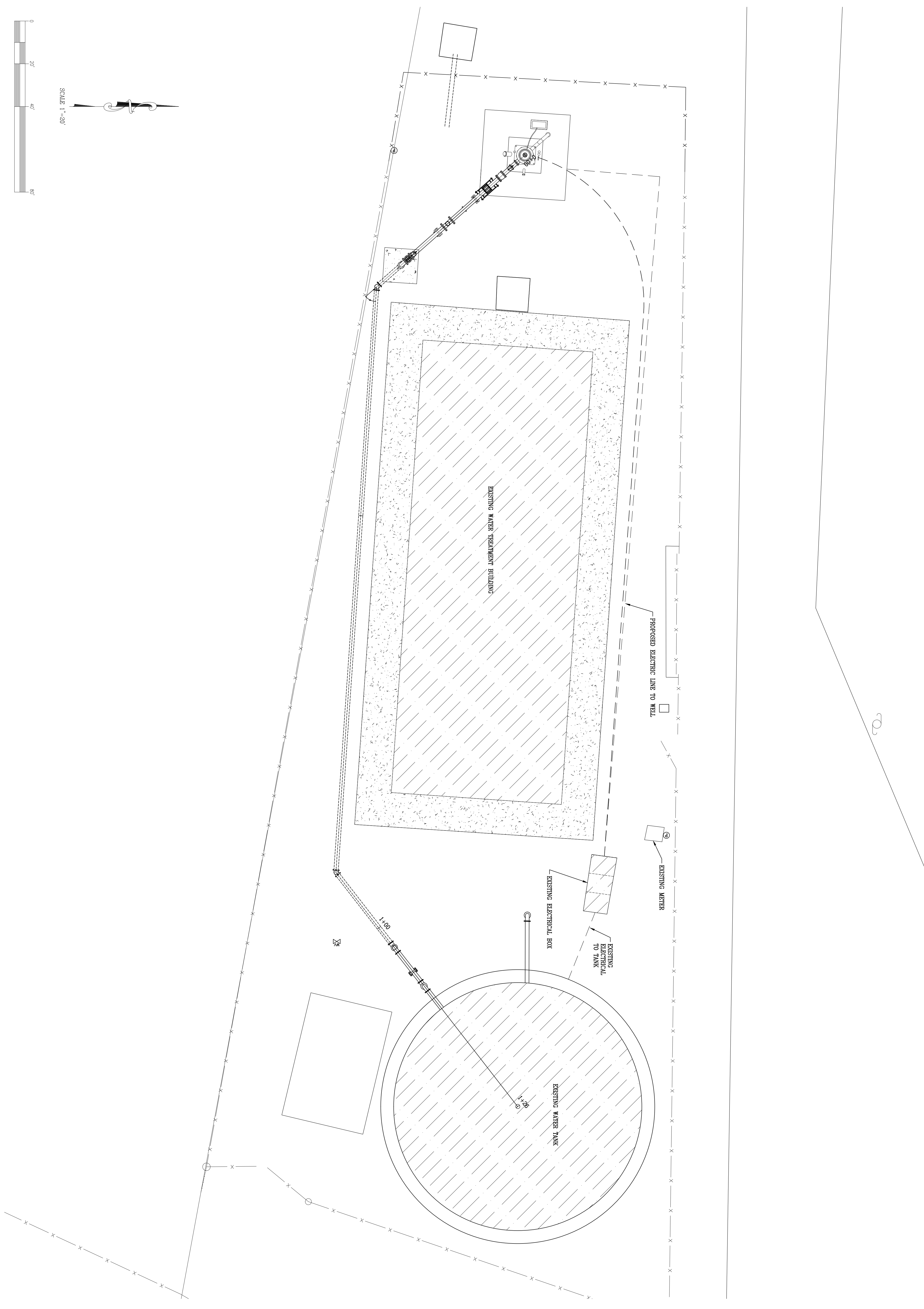
NOTES:
1. DIMENSIONS TO BE SAME FOR ALL SIZES OR TYPES OF OPENINGS.
2. CONCRETE TO BE CLASS "A" (SIX SACK).
3. CONCRETE TO BE BARRICADED FOR THREE DAYS AFTER POURING.
4. CONCRETE CURE TO BE IN ACCORDANCE WITH SECTION 90-7 "CURING CONCRETE" OF THE CALTRANS STANDARDS SPECIFICATIONS OR PER DISTRICT REQUIREMENTS.

REV.	DATE	DESCRIPTION
1		
2		
3		
4		
5		
6		
7		

DEE JASPAR & ASSOCIATES, INC.
CIVIL ENGINEERS
3701 PEGASUS DRIVE, SUITE 101
GRANDEVALLE, CALIFORNIA 93327
PHONE 866-301-4798
FAX 866-301-4798

WELL NO. 5 - MISCELLANEOUS DETAILS
WELL #5 REPLACEMENT PROJECT
EQUIPPING OF A MUNICIPAL WATER WELL
FRAZIER PARK PUD
KERN COUNTY, CALIFORNIA

DRAWN JSW
CHECKED CMS
DATE 8/9/2019
SCALE AS SHOWN
JOB NO.
SHEET 7
OF 6 SHEETS



S:\PROJECTS\FRAZIER PARK PUBLIC UTILITY DEPARTMENT\WELL NO. 5 REPLACEMENT PROJECT\DRAWINGS\ELECTRICAL\DRAWINGS

ELECTRICAL PLAN
 WELL NO. 5 REPLACEMENT PROJECT
 FRAZIER PARK PUBLIC UTILITY DEPARTMENT
 FRAZIER PARK PUD
 KERN COUNTY, CALIFORNIA

DEE JASPAR & ASSOCIATES, INC.
 CIVIL ENGINEERS
 8730 UNICORN ROAD, BLDG. 3
 BAKERSFIELD, CALIFORNIA 93308
 838 N. MAIN STREET, #B
 PORTERVILLE, CALIFORNIA 93257

PHONE 805 393-4796
 FAX 805 393-4799
 PHONE 559 781-9286
 FAX 559 783-9275

REV.	DATE	DESCRIPTION	BY
1			
2			
3			
4			
5			
6			

DRAWN	JSW
CHECKED	DJA
DATE	
SCALE	1"=5'
JOB NO.	
SHEET	8
OF	8
SHEETS	



Appendix B

CAPITAL IMPROVEMENT PROJECTS LIST

Frazier Park Public Utility District
Capital Improvement Project Priority List

<u>CIP No.</u>	<u>CIP Description</u>	<u>Estimated Project Cost</u>	<u>Estimated Project Commencement Date</u>
1	Replacement of Old Steel Pipelines	\$4,416,331.00	2023
2	Replacement of 125,000 Gallon Wolfe Tank	\$214,728.00	2021
3	Replacement of the Elm Booster Station	\$73,748.00	2022
4	Replacement of Pressure Reducing Valve Stations	\$100,000.00	2022
5	Furnish & Install Emergency Standby Generators	\$297,978.00	2021
6	Water Meter Replacement Project	\$2,620,300.00	2021

* A capital improvement list is attached that encompasses the District projects and the anticipated reserves to be set aside.