

GRANT APPLICATION

WaterSMART Grants Program:
Water and Energy Efficiency Grants for Fiscal Year 2021
Funding Opportunity Announcement No. BOR-DO-21-F001

PROJECT TITLE: "Sicard Pipeline Project"



Submitted by the Yuba Water Agency
To the US Department of the Interior, Bureau of Reclamation

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TABLE OF CONTENTS

| | |
|--|-----------|
| I. Technical Proposal and Evaluation Criteria | 1 |
| 1. Executive Summary | 1 |
| 2. Project Location..... | 1 |
| 3. Technical Project Description | 4 |
| 4. Evaluation Criteria | 4 |
| A. Evaluation Criterion A – Quantifiable Water Savings..... | 4 |
| B. Evaluation Criterion B – Water Supply Reliability..... | 8 |
| C. Evaluation Criterion E – Dept of Interior and Bureau of Reclamation Priorities..... | 18 |
| D. Evaluation Criterion F – Implementation and Results | 19 |
| E. Evaluation Criterion G – Nexus to Reclamation Project Activities..... | 28 |
| F. Evaluation Criterion H – Additional Non-Federal Funding..... | 29 |
| II. Project Budget..... | 30 |
| 1. Funding Plan and Letters of Commitment..... | 30 |
| 2. Budget Proposal..... | 30 |
| 3. Budget Narrative | 32 |
| III. Environmental and Cultural Resources Compliance | 35 |
| IV. Required Permits or Approvals..... | 38 |
| V. Letters of Commitment and Support..... | 39 |
| VI. Official Resolution | 39 |

APPENDICES

- A – Letters of Commitment and Support
- B – Engineer’s Estimate for Pipe Materials
- C – Fusion Machine Rental Quotation
- D – Technical Specifications and Plans for 60% Design

ACRONYMS

| | |
|----------|---|
| APE | Area of Potential Effects |
| BVID | Browns Valley Irrigation District |
| Cal Fire | California Department of Forestry and Fire Protection |
| CDFW | California Department of Fish and Wildlife |
| CEQA | California Environmental Quality Act |
| cfs | cubic feet per second |
| CRHR | California Register of Historical Resources |
| CWA | Clean Water Act |
| EWMP | Efficient Water Management Practice |
| HDPE | high-density polyethylene |
| IRWM | Integrated Regional Water Management |
| LF | lineal feet |
| NEPA | National Environmental Policy Act |
| NOE | Notice of Exemption |
| SDR | standard dimension ratio |
| USFWS | US Fish and Wildlife Service |

I. Technical Proposal and Evaluation Criteria

1. Executive Summary

This application to the WaterSMART Water and Energy Grant Program for the project, “Sicard Pipeline Project,” is submitted by the Yuba Water Agency, City of Marysville, Yuba County, California. The Yuba Water Agency is acting as lead applicant on behalf of the Browns Valley Irrigation District (BVID, or District). Collaboration and mutual support amongst Yuba Water Agency and its Member Units, of which BVID is one, is critical for continued reliability of water supplies in Yuba County for all uses. The Sicard Pipeline Project will benefit the BVID service area, and BVID will be responsible for all aspects of its construction.

The proposed Sicard Pipeline Project, located within the BVID service area approximately 55 miles north of Sacramento, California, will convert 9.3 miles of failing, porous ditch to 9.6 miles of high-density polyethylene (HDPE) pipeline. Replacing the leaky Sicard Flat Ditch with efficient HDPE pipe will save 2,880 acre-feet of irrigation water each year, equivalent to six (6) percent of the usable storage capacity of the reservoir from which BVID draws its supply. These water savings are significant for the Browns Valley region, which are susceptible to water shortages due to drought. The project will also enable BVID to avoid a major risk associated with the current ditch alignment. The Sicard Flat Ditch passes through a very narrow, unreinforced tunnel that is extremely susceptible to collapse. A collapse of this tunnel would be catastrophic, cutting off service for many customers and potentially requiring millions of dollars and many years to repair. The project proposes to abandon the tunnel with a new alignment that will eliminate this risk altogether. The Sicard Pipeline Project will vastly improve water system efficiency and water supply reliability for BVID, and will enable the District to avoid costly consequences associated with the potential calamitous collapse of the Sicard Tunnel.

The project duration is three (3) years, with grant-funded activities beginning on October 1, 2021 and ending September 30, 2024. The Sicard Pipeline Project is not located on a Federal facility. Date of submission of this application is September 10, 2020.

2. Project Location

The proposed Sicard Pipeline Project is located within the BVID service area, 12 miles northeast of the City of Marysville and 55 miles north of the City of Sacramento. The BVID service area encompasses approximately 55,000 acres. The latitude of the project is 39.254300 (39° 15’ 15.48”); the longitude is -121.344546 (-121° 20’ 40.365”).

The proposed Sicard Pipeline will extend approximately 9.6-miles in length, generally located along a portion of the existing Sicard Flat Ditch, as well as various roadways that are located along, and off of, Scott Forbes Road, north of State Route 20, and east of the community of

Browns Valley, in Yuba County, California. Figure 1 below provides a vicinity map. Figure 2 depicts the BVID service area boundary, with key features including the Upper District and Lower District, Collins Lake, Dry Creek, and the Sicard Flat Ditch (shown as “BVID Main Ditches” below the Sicard Flat Ditch Diversion).

Figure 1. Sicard Pipeline Project – Vicinity Map

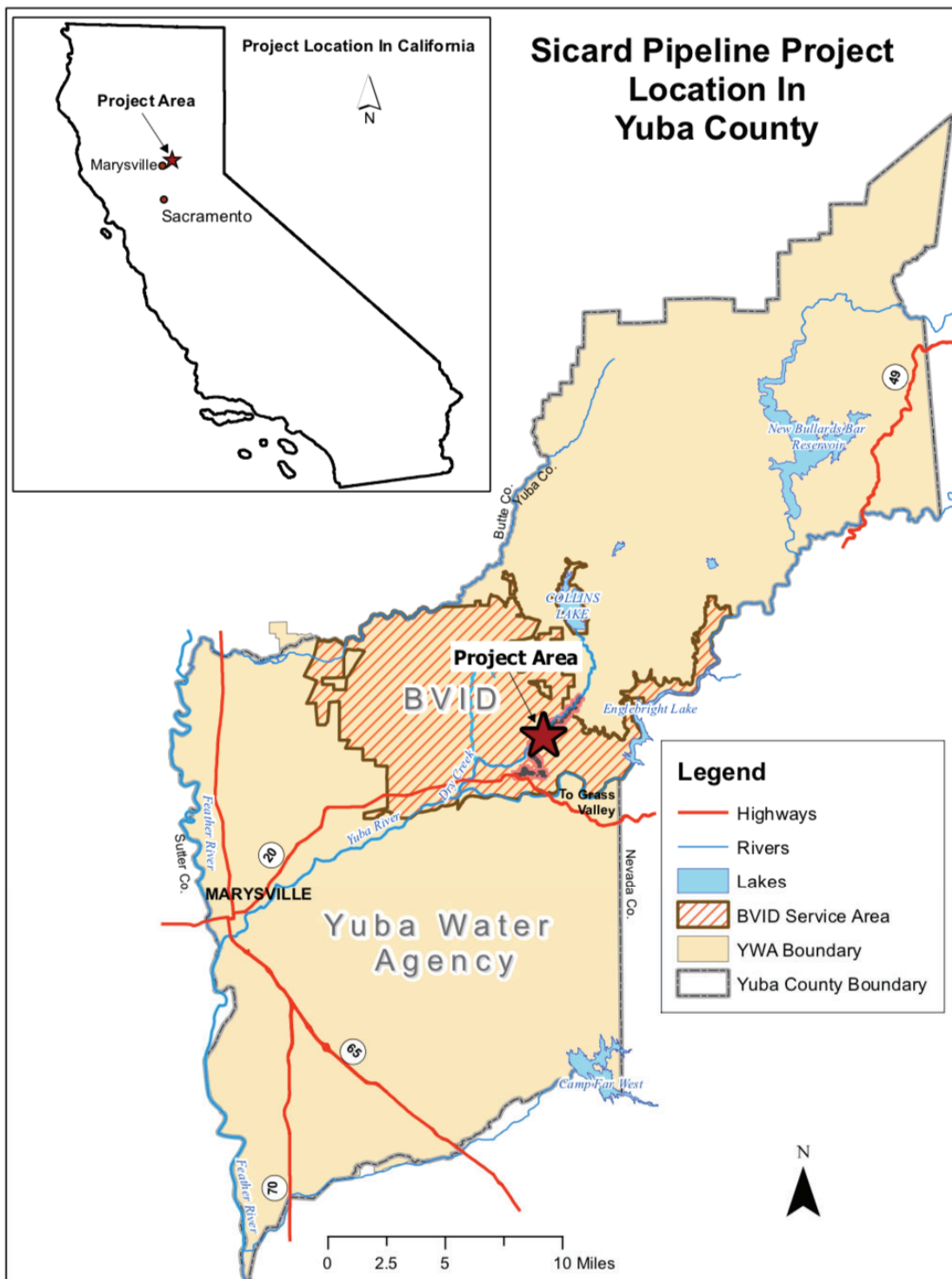
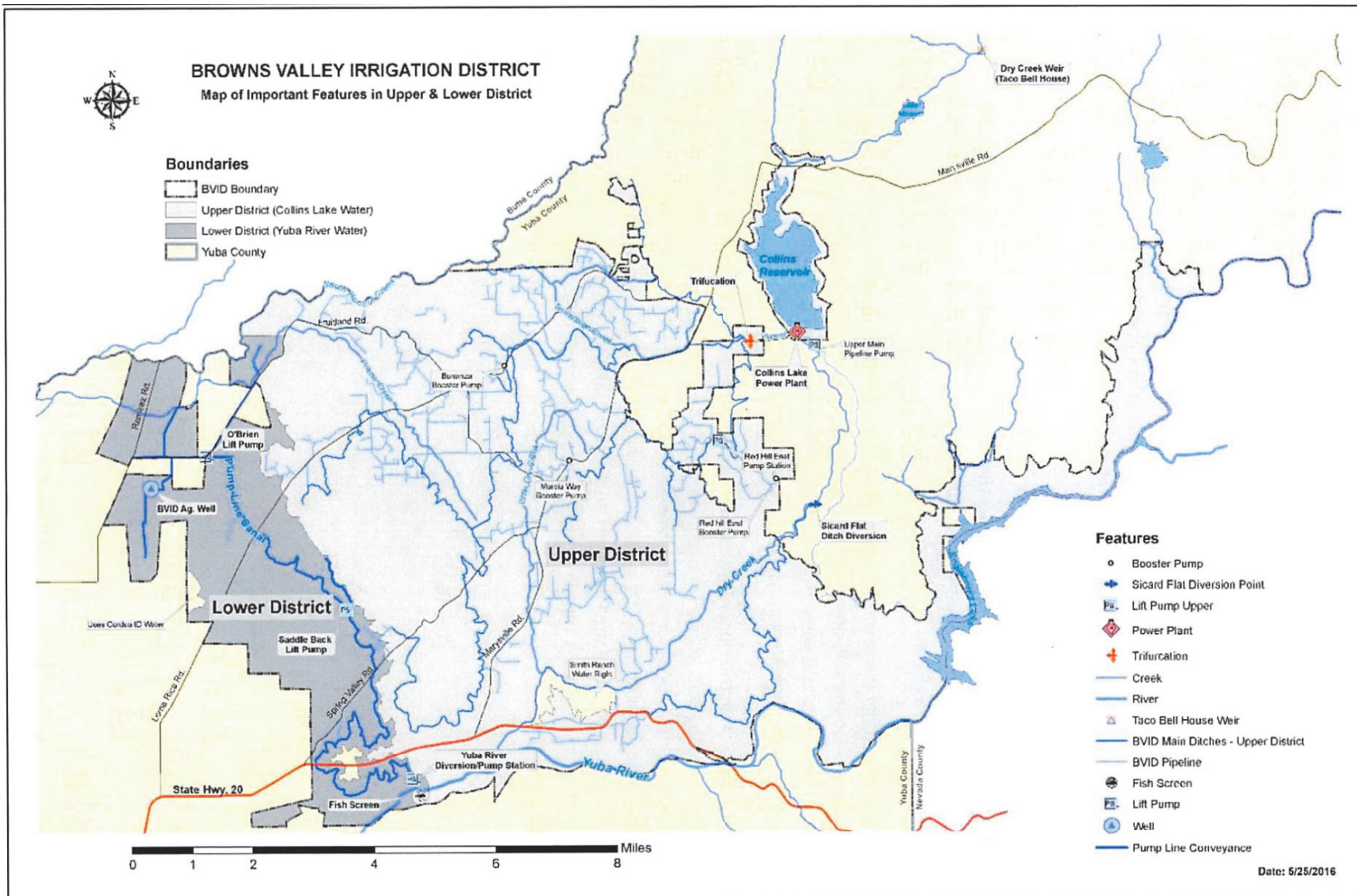


Figure 2. Browns Valley Irrigation District Service Area Boundary



Source: Browns Valley Irrigation District Agricultural Water Management Plan, 2015.

3. Technical Project Description

Browns Valley Irrigation District is one of the oldest continuously operating irrigation districts in the state of California. The District was established in 1888. BVID provides irrigation water to approximately 14,000 acres¹ and to about 1,350 customers in the rural communities of Browns Valley and Loma Rica. The water is used for agricultural purposes, including rice and pasture, and non-production agricultural uses on small parcels (10-acres or less).

The project proposed in this application, the Sicard Pipeline Project, is BVID's most ambitious project since the District constructed Collins Lake reservoir in the 1960s. The Sicard Pipeline Project will convert 9.3 miles of failing irrigation ditch to 9.6 miles of high-density polyethylene (HDPE) pipeline in a more preferred alignment. The project will result in an annual water savings of 2,880 acre-feet, which is equivalent to 6% of the usable storage in Collins Lake.

A major source of water loss, as well as a potential for catastrophic failure, the Sicard Flat Ditch is BVID's longest and most problematic conveyance system. Constructed in the 1850s, the Sicard Flat Ditch is diverted at Dry Creek 4 miles below the Virginia Ranch Dam (Collins Lake) and extends 9.3 miles through much of Browns Valley to Highway 20 near Peoria Road. Much of its length is constructed directly into blasted rock, making it extremely porous and susceptible to leaks. The Sicard Pipeline Project will replace the porous, leaky ditch with durable HDPE pipe, entirely eliminating leakage along the entire length of existing ditch.

While the Sicard Pipeline Project is a massive undertaking, the project itself is not technically complicated. The project will be constructed entirely by BVID staff in several phases, based around BVID's irrigation season. The HDPE pipe will be delivered in 25 to 50 foot sections and welded onsite to create one continuous length. The pipe will be attached to existing infrastructure with fittings, while the length of pipe itself will be mated together by welding. The entire length of pipe will be buried underground. The Scope of Work in Section II of this application provides details related to the phasing and approach for this project.

4. Evaluation Criteria

A. Evaluation Criterion A – Quantifiable Water Savings

1. Describe the amount of estimated water savings.

The estimated amount of water expected to be conserved through the Sicard Pipeline Project is 2,880 acre-feet/year. This volume represents 6% of the usable storage capacity of Collins Lake, the reservoir from which BVID draws its water supply. The project is equivalent to increasing the lake elevation at Collins Lake by three (3) feet.

¹ BVID Agricultural Water Management Plan, 2015, p. 7.

2. Describe current losses.

The Sicard Flat Ditch was constructed in the 1850s. Much of its length was constructed directly into blasted rock, making it extremely porous and susceptible to leaks. Current losses from the ditch are estimated to equal 2,880 acre-feet/year. This estimate has been calculated as follows.

BVID diverts an average of 11 cubic feet per second (cfs) at the head of Sicard Flat Ditch but recovers only 2 cfs at the end of the ditch, where the ditch enters the “Too Handy” and “Valley of the Eagles” pipelines. The amount of water delivered to customers along the ditch (above the pipelines) is a known quantity, equaling approximately 1 cfs (530 gallons per minute, or 1.17 cfs, at maximum delivery – though delivery rarely reaches the maximum amount). It can therefore be assumed that a total of 8 cfs is being lost to leakage in the ditch at any given time: 11 cfs diverted at top of ditch – 1 cfs delivered to customers along the ditch – 2 cfs recovered at end of ditch = 8 cfs lost to leakage.

The loss of 8 cfs over an approximate 180-day irrigation season equals about 2,880 acre-feet/year:

$$\begin{aligned} 1 \text{ cfs} &= 1.983 \text{ acre-feet/day} \\ 8 \text{ cfs} &= 8 \times 1.983 \text{ acre-feet/day} = 15.864 \text{ acre-feet/day} \\ 15.864 \text{ acre-feet/day} \times 182 \text{ days} &= 2,887 \text{ acre-feet/year} \end{aligned}$$

Most of the water that is lost from Sicard Flat Ditch seeps directly into the ground. Because the underlying geologic formation throughout that area is fractured rock, the seepage does not benefit underlying aquifers. And since this area is well outside of Yuba Groundwater Subbasins recharge zones, there is also no possibility of seepage from the ditch providing benefit to those important subbasins. The current water losses also provide no known benefit to wetlands or vernal pools.

It is possible that some water leaked from Sicard Flat Ditch may make its way into natural drainages and return to Dry Creek, which would benefit aquatic species; however, it is presumed that the vast majority of water lost from Sicard Flat Ditch simply seeps into the ground and is not put to beneficial use.

3. Describe the support/documentation of estimated water savings.

BVID expects that the amount of water saved through construction of the HDPE pipeline will exactly equal the amount of water lost from the ditch. BVID expects zero leakage to occur with the new, nonporous HDPE pipe material. Therefore, the expected water savings will exactly equal the current water loss, which is estimated at 2,880 acre-feet/year.

Note that BVID has already installed the first 2,000 lineal feet (LF) of pipeline as Phase 1 of the Sicard Pipeline Project (not part of this grant request), and has measured water savings of 1,080 acre-feet over the course of an irrigation season. Phases 4 - 5, constructed through the proposed project, will yield an additional water savings of 2,880 acre-feet/year.

4. Please address the following questions according to the type of infrastructure improvement you are proposing for funding: Canal Lining/Piping.
 - a. How has the estimated average annual water savings that will result from the project been determined? Please provide all relevant calculations, assumptions, and supporting data.

BVID expects that the amount of water saved through construction of the HDPE pipeline will exactly equal the amount of water currently being lost through the ditch. The amount of water loss has been estimated diagnostically. Since BVID puts in 11 cfs at the top of the ditch and recovers 2 cfs at the end, with 1 cfs in known deliveries to customers in the middle, it is assumed that 8 cfs is being lost through leakage over the 9.3-mile length of ditch. The loss of 8 cfs over an approximate 180-day irrigation season equals about 2,880 acre-feet/year, as shown above.

- b. How have average annual canal seepage losses been determined? Have ponding and/or inflow/outflow tests been conducted to determine seepage rates under varying conditions? If so, please provide detailed descriptions of testing methods and all results. If not, please provide an explanation of the method(s) used to calculate seepage losses. All estimates should be supported with multiple sets of data/measurements from representative sections of canals.

BVID provides a continuous delivery of raw water supplies to small parcels (10 acres or less) for irrigation purposes during the irrigation season. There are no varying conditions. All continuous deliveries are regulated through orifice plates which are appropriately sized based on the number of units listed in each customer's annual water order. One unit is approximately equal to 10 gallons per minute.

BVID currently provides a continuous delivery of 11 cfs in order to meet a customer demand of 3 cfs, which includes about 1 cfs for customers along the Sicard Flat Ditch and an additional 2 cfs for customers below the ditch (served by the "Too Handy" and "Valley of the Eagles" pipelines). BVID puts in 11 cfs at the top of the ditch and recovers 2 cfs at the end of the ditch; 1 cfs is delivered to customers along the way (a known amount) and 8 cfs is presumed lost to leakage.

The amount of water diverted at the top of the ditch at the Dry Creek diversion, 4 miles below the Virginia Ranch Dam, is controlled by a weir, which also precisely controls the measurement (11 cfs). A gauging station at the end of the ditch, before the ditch enters the "Too Handy" and "Valley of the Eagles" pipelines, takes measurements on a weekly basis at minimum. These two

monitoring points are sufficient for the District to know exactly how much water is being lost over the 9.3-mile length of ditch since the only customers above that point are known quantities (equal to 530 gallons per minute, or 1.17 cfs at maximum delivery).

- c. What are the expected post-project seepage/leakage losses and how were these estimates determined (e.g., can data specific to the type of material being used in the project be provided)?

The expected post-project leakage is zero from the new Sicard Pipeline. HDPE pipe is recognized in the industry for its zero leakage rate, high performance, and long life expectancy. BVID expects to have little to no maintenance issues. HDPE pipe has excellent corrosion resistance against electrolytic or galvanic corrosion or any known corrosive soil or water condition. HDPE is lightweight, flexible, and durable. Because of its flexible nature, it reduces the use of fittings resulting in fewer potential opportunities for failure. There will be no evaporative loss and no seepage from the HDPE pipe material. This high level of confidence is based on the extensive use of HDPE pipe in this country for water conveyance purposes since the 1950s, and its broad acceptance by the water industry for this use.

- d. What are the anticipated annual transit loss reductions in terms of acre-feet per mile for the overall project and for each section of canal included in the project?

The annual transit loss reduction is expected to be approximately 310 acre-feet per mile for the overall project:

$$2,880 \text{ acre-feet loss reduction} / 9.3 \text{ miles of ditch} = 310 \text{ acre-feet per mile}$$

The level of annual transit loss reduction for each section of the pipeline is very difficult to quantify. The leaks cannot be physically identified other than by audibly hearing the water escape. BVID has tried to repair many of the leaks and has had very little success since it is so difficult to pinpoint where the leaks originate. In addition, there are no measuring devices between the different sections of ditch to indicate the magnitude of losses other than a cumulative total over the entire length.

- e. How will actual canal loss seepage reductions be verified?

Actual seepage reductions will be verified by measuring the volumetric flow rate (in cfs) of water diverted from Dry Creek (i.e., top of the new Sicard Pipeline) and comparing that with the volumetric flow rate available at the end of the Sicard Pipeline, before it joins the other pipelines. If the difference between those two amounts is zero (taking into account the customer delivery of approximately 1 cfs along the way), then the expectation of zero water loss will have been verified.

Monitoring will occur by means of gauging stations located at the top and at the end of the Sicard Pipeline. The weir at the top of the pipeline will continue to serve as a measuring device and BVID will also be installing a monitoring station at the top of the pipeline per requirements of Senate Bill 88. BVID will be monitoring the amount of water that is being diverted into the pipeline once every hour. BVID will monitor the quantity of water at the end of the Sicard Pipeline before it joins the other pipelines on at least a weekly basis during the irrigation season.

- f. Include a detailed description of the materials being used.

The material for the pipeline consists of HDPE pipe. The pipe will be attached to existing infrastructure with fittings, while the length of pipe itself will be mated together by welding. Table 1 outlines the diameters, standard dimension ratio (SDR), and lengths of pipe material that will be purchased to complete Phases 2 - 5 of the Sicard Pipeline Project.

Table 1. Description of Pipe Materials

| HDPE Pipe aterial | F |
|-------------------|---------------|
| 48" SDR 21 Pipe | 8,490 |
| 48" SDR 17 Pipe | 749 |
| 42" SDR 21 Pipe | 5,436 |
| 42" SDR 17 Pipe | 716 |
| 42" SDR 13.5 Pipe | 10,457 |
| 36" SDR 21 Pipe | 7,289 |
| 36" SDR 17 Pipe | 135 |
| 22" SDR 21 Pipe | 312 |
| 10" SDR 17 Pipe | 1,086 |
| 8" SDR 21 Pipe | 1,750 |
| TOTAL LF | 36,420 |

B. Evaluation Criterion B – Water Supply Reliability

1. Will the project address a specific water reliability concern?
 - a. Explain and provide detail of the specific issue(s) in the area that is impacting water reliability, such as shortages due to drought, increased demand, or reduced deliveries. Will the project directly address a heightened competition for finite water supplies and over-allocation (e.g., population growth)?

The Sicard Pipeline Project will address two critical water reliability concerns: (1) shortages due to drought, and (2) the threat of catastrophic infrastructure collapse.

BVID's sole water supply source for the vast majority of its customers is the Collins Lake reservoir. Collins Lake was created by BVID in 1963 via construction of the Virginia Ranch Dam on Dry Creek. The Collins Lake reservoir has a total capacity of 57,000 acre-feet with a

usable capacity of 49,500 acre-feet, and encompasses 1,009 surface acres. Collins Lake provides irrigation water supply for most of BVID's customers, including all of its customers in the Upper District; in 2019, the reservoir provided irrigation water for 1,320 of BVID's 1,337 customers.

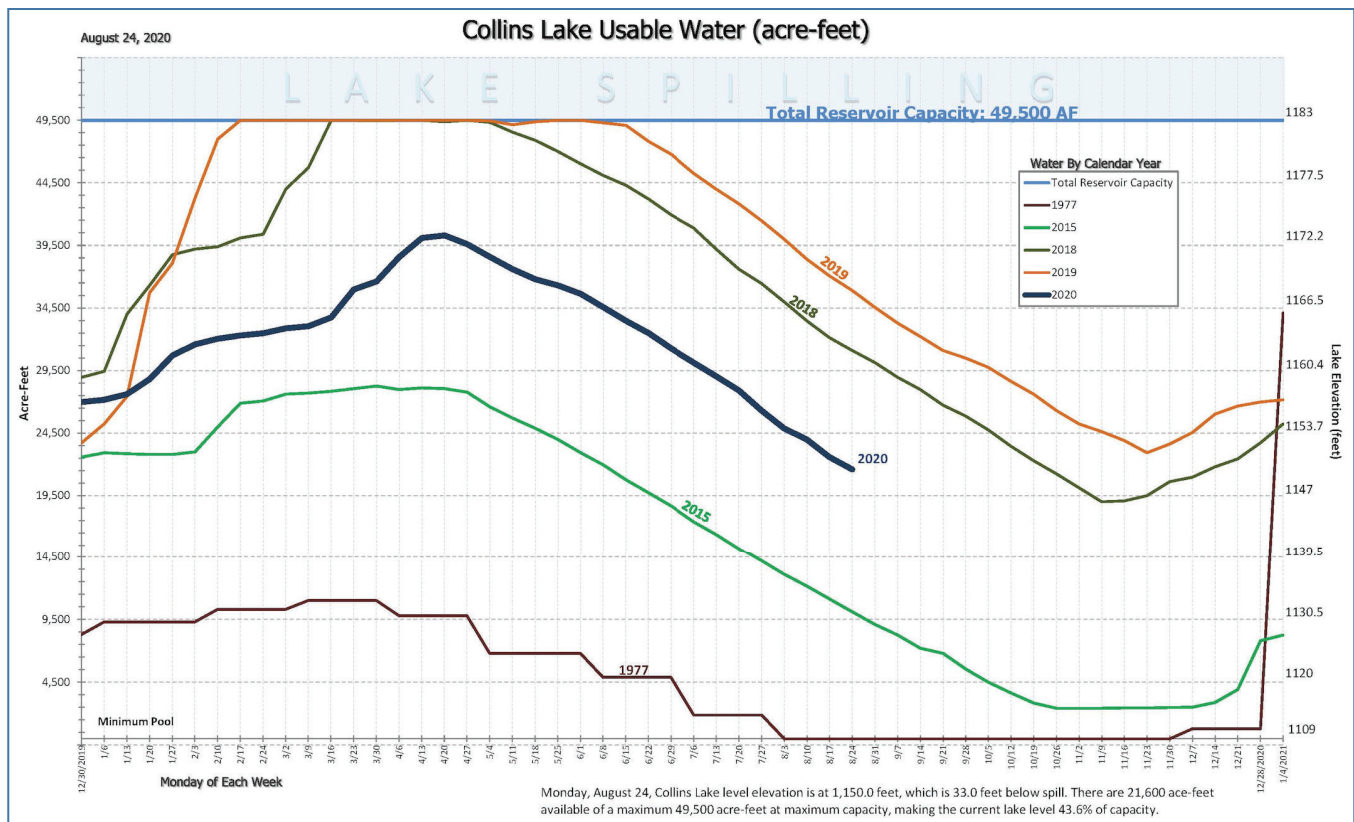
As surface water storage, Collins Lake reservoir is a finite supply. And like many surface water storage supplies in California, Collins Lake is prone to shortages during drought. As noted in BVID's Drought Ordinance, the maximum demands on water supplies from Collins Lake are already closely matched to maximum available supplies in most water year types. The BVID Board has adopted a policy of maintaining a minimum of 7,800 acre-feet of carry-over storage in Collins Lake. The administrative dead pool of Collins Lake is 7,500 acre-feet.² During conditions of severe drought, the Collins Lake water supply is insufficient to meet irrigation water needs in the Upper District, and there is no alternative supply. While BVID has water rights and a water delivery agreement with Yuba Water Agency for water from the Yuba River, that water source serves BVID's Lower District, and there are no interties between the two systems. When severe drought occurs, the irrigation water needs in the Upper District are simply not met. The BVID Board had to declare Water Emergencies for both the 2014 and 2015 irrigation seasons, enacting water conservation measures as provided in the Drought Ordinance.³

The vulnerability of Collins Lake to drought is illustrated in Figure 3. Lake level trend lines show water levels perilously low during drought years 1977 and 2015, with levels near or below minimum pool. When lake levels dip below minimum pool, customers who depend on this water source for their irrigation supply simply do not receive water.

² BVID Agricultural Water Management Plan, 2015, p. 17.

³ Ibid.

Figure 3. Lake Level Historic Trends in Collins Lake (Acre-Feet), as of August 25, 2020.

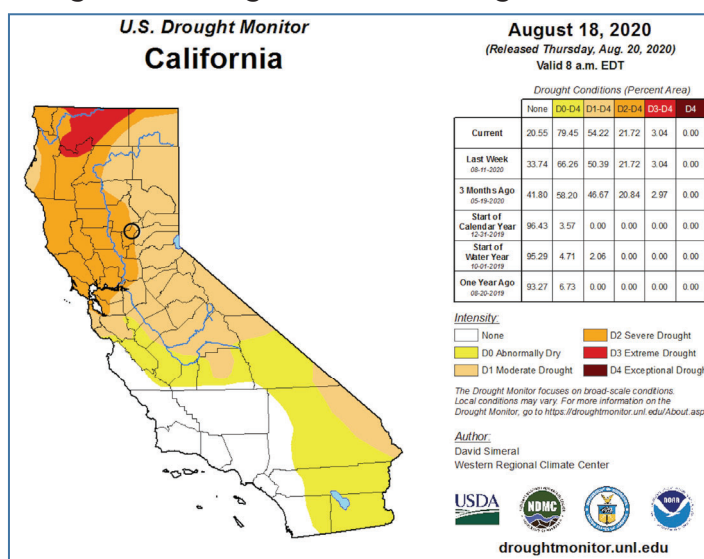


Increased development is also creating increased demand on Collins Lake reservoir. An increased population coupled with drought is an especially worrisome scenario, given the finite water supply of Collins Lake. The 2030 Yuba County General Plan anticipates substantial growth in the foothills, where the BVID service area is located. The General Plan establishes a build-out estimate for the Loma Rica/Browns Valley area of 2,500 – 3,400 new individuals, and 1,000 – 1,400 new housing units.⁴ This represents a significant increase in population, compared with the current population of about 5,000. BVID is obligated to provide a “pro rata” share of water to any property owner in the District. As new people move in and parcels subdivide, this creates an increased burden on water supply. According to BVID General Manager Ryan McNally, the Browns Valley and Loma Rica communities have experienced a notable influx of population just recently due to COVID-19, with people emigrating from cities to rural areas. A growing population puts additional demands on BVID’s limited water supplies, making water conservation all the more critical for this region.

⁴ Yuba County 2030 General Plan, p. Community Development-20. The build-out estimate is based on past recorded development activity, regional and statewide population and employment growth forecasts, and other factors.

Figure 4. Drought Conditions August 25, 2015

Figure 5. Drought Conditions August 18, 2020



⁶ Office of Emergency Services, Yuba County Multi-Jurisdictional Multi-Hazard Mitigation Plan, Yuba County, CA (2015).

A collapse of Sicard Tunnel would be catastrophic to the District and would entirely cut off service for approximately 100 customers. Buried under 90 feet of rock, recovery of a failed Sicard Tunnel could potentially take millions of dollars and several years to repair. Customers would be without service until the tunnel was repaired as there is no other way to serve water to those parcels.

- b. Describe how the project will address the water reliability concern? In your response, please address where the conserved water will go and how it will be used, including whether the conserved water will be used to offset groundwater pumping, used to reduce diversions, used to address shortages that impact diversions or reduce deliveries, made available for transfer, left in the river system, or used to meet another intended use.

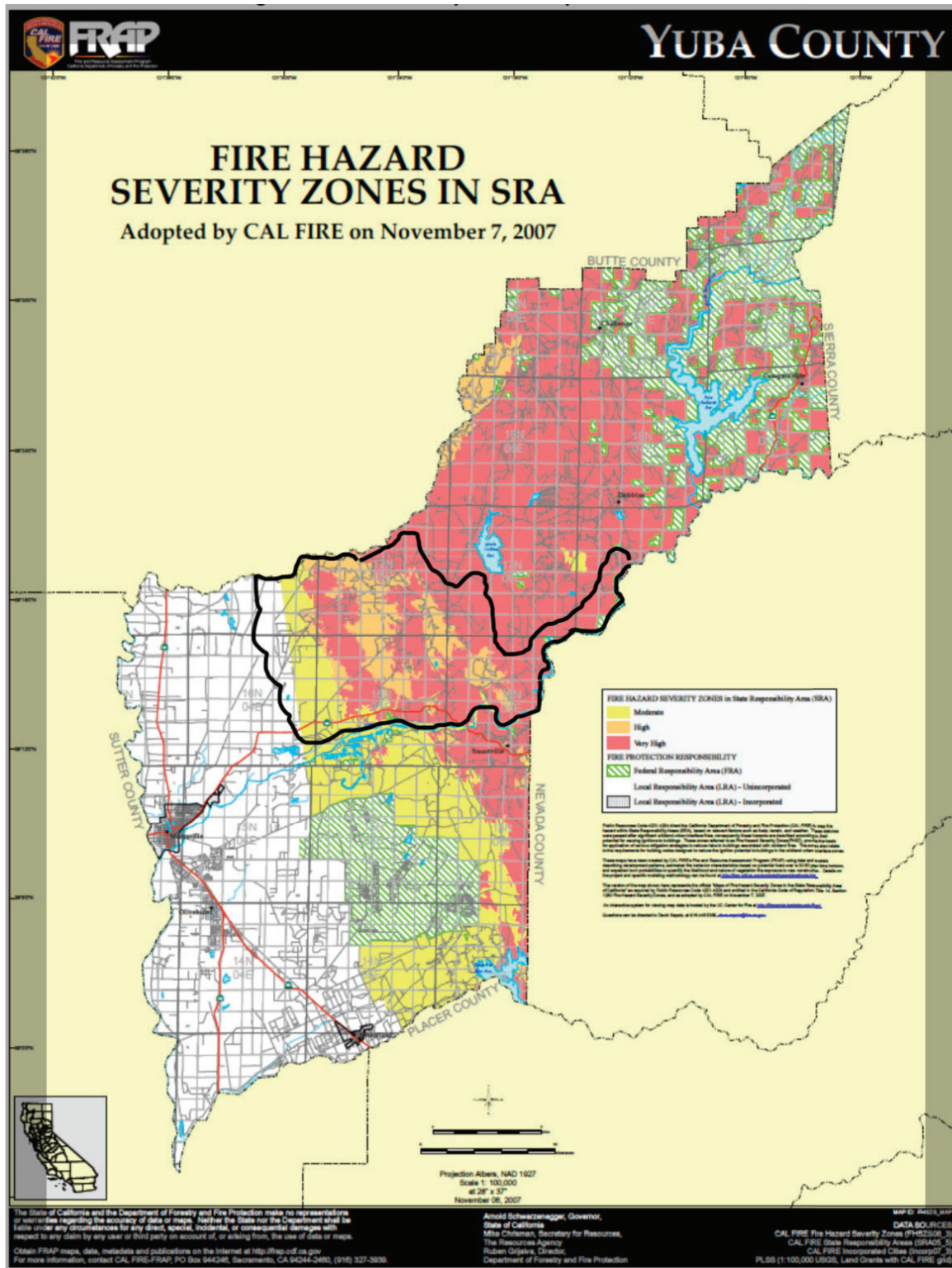
The proposed Sicard Pipeline Project will address the water shortage concern by conserving an average 2,880 acre-feet of water annually. The conserved water will be stored in the Collins Lake reservoir and made available in times of drought. Storing an additional 2,880 acre-feet of water in Collins Lake is equivalent to raising the dam three (3) feet in height. This volume of conserved water will go a long way towards increasing the District's drought resiliency.

Importantly, the proposed Sicard Pipeline Project will enable the District to avoid the calamitous water supply and financial consequences associated with the potential – most say imminent – collapse of the old Sicard Tunnel. The proposed project will eliminate this risk by abandoning the tunnel altogether in favor of an alternative, better alignment.

The conserved water stored in Collins Lake will also provide an important reserve for firefighting. As noted in the *Yuba County Multi-Jurisdictional Local Hazard Mitigation Plan* (2015), wildfire is an ongoing concern for Yuba County and is becoming even more of a concern with climate change.⁷ The BVID service area, being located in the foothills in what is known as a “wildland urban interface” area, is considered especially vulnerable. Figure 6 shows Fire Hazard Severity Zones adopted by Cal Fire in 2007. The black encircled area roughly designates the region served by BVID. The map shows the BVID service area to be at “high” and “very high” risk for wildfire, and the neighboring communities to the east as being at “very high” risk.

⁷ *Yuba County Multi-Jurisdictional Local Hazard Mitigation Plan*, Including the participating jurisdictions of the City of Marysville, City of Wheatland and the Yuba County Water Agency, March 2015, p. 102.

Figure 6. Yuba County Fire Severity Zones



The black encircled area roughly designates the BVID service area. Source: Cal Fire, as shown on p. 107 of the *Yuba County Multi-Jurisdictional Local Hazard Mitigation Plan*.

During fire season, access to water is limited in many areas for fighting fires that may occur in Cal Fire's Fire Protection Districts. The Fire Protection Districts do, however, have written agreements with a few water districts, including BVID, allowing Cal Fire to use water for firefighting and suppression. Some BVID pipelines have wharf valve connections that can be used as water fills for firefighting. Water from Collins Lake can also be accessed through aerial pickup. BVID permits Cal Fire to use its water supply on an emergency basis for firefighting purposes, providing there is sufficient water in the Collins Lake reservoir. The proposed project will help ensure that there is sufficient water in Collins Lake for firefighting.

- c. Provide a description of the mechanism that will be used, if necessary, to put the conserved water to the intended use.

The mechanism that will be used to put the conserved water to the intended use is simply to leave the conserved water in Collins Lake, available for use as needed.

- d. Indicate the quantity of conserved water that will be used for the intended purpose.

The entire 2,880 acre-feet of conserved water will be used for the intended purpose of storage/buffer.

- 2. Will the project make water available to achieve multiple benefits or to benefit multiple water users?

- a. Will the project benefit multiple sectors and/or users (e.g., agriculture, municipal and industrial, environmental, recreation, or others)?
 - o Will the project benefit species (e.g., federally threatened or endangered, a federally recognized candidate species, a state listed species, or a species of particular recreational, or economic importance)? Please describe the relationship of the species to the water supply, and whether the species is adversely affected by a Reclamation project.
 - o Will the project benefit a larger initiative to address water reliability?

The proposed Sicard Pipeline Project will benefit multiple sectors and users. Water savings from the pipeline project will substantially improve BVID's drought resiliency, providing a buffer of storage in Collins Lake. That buffer of storage will benefit BVID's irrigation customers for agricultural use. The conserved water will also benefit recreational uses and environmental water needs as described below.

Collins Lake is a very popular recreation area for Yuba County residents and a strong draw for tourists from outside the county. Collins Lake has the largest private fish planting program north of Sacramento with more than 50,000 trout being planted every spring. Habitat areas for bass, crappie, bluegill, and catfish have been created to keep the fish plentiful and to keep Collins Lake amongst the best fishing lakes in the northern part of the state. The recreational area also

provides boating, swimming, camping, and many other activities. In 2015, during the most recent drought, Collins Lake saw a sharp reduction in use as the lake turned into a “mud puddle.” The 2,880 acre-feet in water savings that will be conserved annually from the proposed project will be stored in the reservoir, with accumulative benefit over the years. Increased water storage in the reservoir will help maintain Collins Lake as an attractive recreational destination – which benefits both the region’s economy and overall well-being.

The proposed project will also provide important environmental benefits. Dry Creek and the Yuba River (to which Dry Creek flows) historically supported Spring-run Chinook salmon (*Oncorhynchus tshawytscha*) and California Central Valley steelhead trout (*Oncorhynchus mykiss*). Both of these species are listed as threatened under the federal Endangered Species Act. Yuba River continues to support steelhead. And while Dry Creek does not currently support either of these species, Dry Creek along with the Yuba River have been designated as critical habitat for both Spring-run Chinook salmon and California Central Valley steelhead trout.⁸ Dry Creek also provides habitat for native species such as bass and catfish, which as mentioned above are popular for sport fishing.

In 1972, BVID entered into an agreement with the California Department of Fish and Game that establishes flow bypass requirements for fish on Dry Creek. The required bypass is 3.3 cfs or the inflow to Collins Lake (whichever is less), below the Sicard Flat Ditch; however, whenever Collins Lake does not fill, the required bypass is reduced to 1 cfs or inflow until the Collins Lake fills and spills. The proposed project will provide direct benefits for threatened steelhead, and may help support the eventual re-introduction of Spring-run Chinook salmon in the Yuba River, by increasing storage volume sufficiently in Collins Lake to allow for the greater release of fish flows. Increased stream flow in Dry Creek will also benefit other aquatic species and will provide a more reliable source of drinking water for terrestrial wildlife.

Note that none of these species are known to be adversely affected by a Reclamation project.

b. Will the project benefit Indian tribes?

There are no Indian Tribes located within the BVID district boundaries; therefore the project will not benefit Indian Tribes.

c. Will the project benefit rural or economically disadvantaged communities?

BVID serves the communities of Browns Valley and Loma Rica with a combined population of about 5,000 people. The community is not considered economically disadvantaged but it is quite rural, characterized primarily by agricultural farms and ranchettes. Marysville, a small urbanized

⁸ National Marine Fisheries Service, 2014, Recovery Plan for the Evolutionarily Significant Units of Sacramento River Winter-run Chinook Salmon and Central Valley Spring-run Chinook Salmon and the Distinct Population Segment of California Central Valley Steelhead.

area (population 12,500) is located about 12 miles away. The nearest large urbanized area is Sacramento, located about an hour away.

- d. Describe how the project will help to achieve these multiple benefits. In your response, please address where the conserved water will go and where it will be used, including whether the conserved water will be used to offset groundwater pumping, used to reduce diversions, used to address shortages that impact diversions or reduce deliveries, made available for transfer, left in the river system, or used to meet another intended use.

The proposed project will enable BVID to reduce its diversion from Dry Creek by 8 cfs, or about 2,880 acre-feet, annually. The conserved water will remain in Collins Lake for storage, or will be released to the Dry Creek river system. The water stored in Collins Lake will be used as a buffer in times of drought for the delivery of irrigation water to BVID's customers, and will help ensure sufficient water supply available to Cal Fire for firefighting. The conserved water stored in the reservoir will also serve to enhance recreational activities at Collins Lake. The conserved water released into the river system will support fisheries and other habitat needs, as described in Section 4.B.2.a above.

3. Does the project promote and encourage collaboration among parties in a way that helps increase the reliability of the water supply?
 - a. Is there widespread support for the project?

There is widespread support for the project, as evidenced by a generous commitment of over \$2 million toward the project by the Yuba Water Agency. BVID is one of eight "Member Units" of the Yuba Water Agency. Member Units are those purveyors that have entered into a contract with the Agency for the delivery of surface water or repayment for infrastructure to deliver water. Yuba Water Agency provides water to eight Member Units representing approximately 80,000 gross acres.⁹ Other Member Units in the area have also expressed support for the project as improving regional water supply reliability and benefiting the residents and economy of Yuba County. Please see letters of support attached in Appendix A.

- b. What is the significance of the collaboration/support?

Collaboration and mutual support amongst Member Units and the Yuba Water Agency is critical for ensuring continued reliability of water supplies in Yuba County for irrigation, municipal, and environmental uses. Water transfer agreements between the Member Units and Yuba Water Agency and conjunctive groundwater/surface water use help maintain regional water supply reliability, and will help improve future water supply resilience under changing climate conditions.

⁹ Yuba Water Agency, 2015, Agricultural Water Management Plan.

- c. Is the possibility of future water conservation improvements by other water users enhanced by completion of this project?

The proposed Sicard Pipeline Project is BVID's most ambitious project since constructing the Virginia Ranch Dam in the 1960s. Constructing a project of this magnitude with the primary goal of water conservation sets a positive example for neighboring water districts and sends a strong message to BVID's agricultural customers about the importance of conserving water.

- d. Will the project help to prevent a water-related crisis or conflict? Is there frequently tension or litigation over water in the basin?

The project will very much help to prevent a water-related crisis. Should the Sicard Tunnel collapse, which appears to be imminent, water service to the approximately 100 customers served by that portion of the ditch would be completely cut off. There would be no way of providing alternative supplies to those customers; they would have no irrigation water until the tunnel was repaired, which might take several years. It would also be a financial catastrophe for the District, costing millions of dollars for repair. The proposed pipeline project will prevent this potential crisis by routing the pipeline in an alternative alignment, completely avoiding the tunnel and eliminating all associated risk.

- e. Describe the roles of any partners in the process. Please attach any relevant supporting documents.

The Sicard Pipeline Project is located within the Browns Valley Irrigation District, which is located within the Yuba Water Agency service area in Yuba County, California. Yuba Water Agency is acting as lead applicant and fiscal sponsor for the proposed project. BVID will be fully responsible for all aspects of construction.

Yuba Water Agency was created in 1959 to reduce flood risk and ensure a reliable and sustainable water supply for the economic benefit of the county. The Agency is willing to commit more than \$2.1 million toward the construction of the Sicard Pipeline because the project strongly supports two of the Agency's strategic priorities, as outlined in its *Strategic Plan 2017 – 2022*:

- Strategic Priority #2: Maintain and enhance the delivery of a reliable water supply for the people of Yuba County.
 - Strategy #5: Ensure long-term water-supply planning and water-use efficiency.
- Strategic Priority #6: Proactively engage in developing a robust, diverse Yuba County economy and improve the overall well-being of Yuba County residents.
 - Objective 1: Assist in infrastructure projects, including flood management and water supply management, to ensure safety and security, and improve emergency

response for the residents and businesses of Yuba County, consistent with Yuba Water Agency's mission.

The relationship between Browns Valley Irrigation District and Yuba Water Agency extends beyond the District's location within the Agency's service area; BVID has been a Member Unit of the Agency since 1981, and as such has been working collaboratively with the Agency toward water reliability solutions for nearly 40 years.

It should be noted that there is no connection between the Sicard Pipeline Project and BVID's water agreement with Yuba Water Agency. The Browns Valley Irrigation District is generally divided into two service areas: the "Lower District" consisting of the flat lands on the valley floor in the southwest portion of the District (approx. 10,400 acres) and served by Yuba River water; and the "Upper District" consisting of the foothill lands (approximately 44,600 acres) within the eastern portion of the District, served from Dry Creek and Collins Lake. The conveyance systems serving the Lower District and the Upper District are not interconnected.¹⁰ The Sicard Pipeline Project will provide water from Collins Lake to Upper District customers, with no connection, physical or otherwise, to the water agreements with Yuba Water Agency in the Lower District.¹¹

4. Will the project address water supply reliability in other ways not described above?

The foregoing sections fully describe how the project will address water supply reliability.

C. Evaluation Criterion E – Department of the Interior and Bureau of Reclamation Priorities

The proposed Sicard Pipeline Project addresses four Bureau of Reclamation priorities:

1. Increase Water Supplies, Storage, and Reliability under WIIN and other Authorities
3. Leverage Science and Technology to Improve Water Supply Reliability to Communities
4. Address Ongoing Drought
6. Improve Water Supplies for Tribal and Rural Communities

The proposed project may also be said to address the following Department of Interior Priorities:

1. Creating a conservation stewardship legacy second only to Teddy Roosevelt

¹⁰ Ibid, p. 6.

¹¹ BVID's agreement with Yuba Water Agency provides for up to 9,500 acre-feet/year of Yuba River water, which is in addition to the quantities BVID is entitled to under its own pre-1914 water rights. For perspective, only 17 of BVID's 1,337 customers received water from the Yuba River supply in 2019; that water was diverted primarily through BVID's own water rights rather than through the District's agreement with Yuba Water Agency. BVID's remaining 1,320 customers received water from Collins Lake.

- a. Utilize science to identify best practices to manage land and water resources and adapt to changes in the environment.
- 5. Modernizing our infrastructure
 - a. Support the White House Public/Private Partnership Initiative to modernize U.S. infrastructure.

The proposed Sicard Pipeline Project addresses the above priorities by using science and current technology (HDPE pipe) to replace old, outdated, failing water conveyance infrastructure. The project will address drought by modernizing the Sicard conveyance system to eliminate leakage, saving an estimated 2,880 acre-feet of water annually. The result will be increased water storage in Collins Lake, increased water supplies, improved water efficiency, improved resiliency against drought, and improved water reliability for BVID and the rural communities of Browns Valley and Loma Rica that the District serves.

D. Evaluation Criterion F – Implementation and Results

Subcriterion F.1 – Project Planning

The Sicard Pipeline Project carries out the goals and objectives of several regional plans and supports the District’s Drought Ordinance. Rather than attaching those documents as appendices (due to excessive length), BVID self-certifies that these plans and the Drought Ordinance are in place. The sections below provide links to the websites where each of the documents may be accessed.

Browns Valley Irrigation District Agricultural Water Management Plan 2015

BVID’s *Agricultural Water Management Plan 2015* emphasizes the importance of water conservation and refers numerous times to the Sicard Flat Ditch pipeline replacement project as being notable for its significant potential water savings. Piping the Sicard Flat Ditch is highlighted as a future project under “Efficient Water Management Practice (EWMP) No. 7: Infrastructure Improvements,” citing an expected water savings of 15 cfs from all project phases (equivalent to about 5,355 AFY, based on an approximately 180-day irrigation season).¹² BVID’s *Agricultural Water Management Plan 2015* may be accessed at:
https://www.bvid.org/files/final_bvid_awmp_20160623.pdf

Browns Valley Irrigation District Drought Ordinance

The Browns Valley Irrigation District Board of Directors adopted a Drought Ordinance on March 27, 2014 (Ordinance No. 2014-01). The Intent and Findings Section 2(b)(iv) states:

¹² Browns Valley Irrigation District, 2015, Agriculture Water Management Plan 2015, p. 45.

The maximum demands on water supplies from Collins Reservoir are already closely matched to maximum available supplies in most water year types. In times when Collins Reservoir does not fill, there is a significant chance that the District will be required to impose the water conservation measures detailed in this ordinance on customers in the area served by Collins Reservoir in order to ensure that each customer receives the maximum quantity of water that the District can safely make available and still ensure a reasonable level of carryover storage for the succeeding year.

Section 5 of the ordinance outlines the “Prohibition on Water Waste.” While the Drought Ordinance is directed toward customers rather than to the District itself, the substantial leakage that occurs on an ongoing basis from Sicard Flat Ditch is clearly at odds with the intent of this ordinance. The proposed Sicard Pipeline Project will enable the District to address this major loss of water to help ensure sufficient water supply in times of drought. The Drought Ordinance may be accessed at: https://bvid.org/files/Drought_Ordinance_2014.pdf

Yuba Water Agency Strategic Plan 2017 – 2022

Section B.3.e above (which explains roles of partners) describes how the proposed Sicard Pipeline Project helps achieve strategies outlined in Yuba Water Agency’s *Strategic Plan 2017 – 2022*. The proposed pipeline project addresses Strategic Priorities #2 and #6 by increasing reliability of surface water supply (Collins Lake) and improving water use efficiency, thereby ensuring a more reliable delivery of irrigation water for customers in the BVID service area. The Agency’s generous contribution of over \$2.1 million toward construction of the pipeline is a testament to its strong support for this project, based on the project’s potential contribution to the Agency’s strategic priorities. The *Yuba Water Agency Strategic Plan 2017 – 2022* may be accessed at: <https://www.yubawater.org/DocumentCenter/View/654/Strategic-Plan-2017-2022-PDF>

Yuba County Integrated Regional Water Management Plan 2018 Update

The Sicard Pipeline Project is specifically named in the *Yuba County Integrated Regional Water Management Plan 2018 Update* (IRWM Plan). IRWM Plans serve as comprehensive planning documents that encourage regional strategies and cooperative solutions for issues of water quality, water quantity, and watershed health. The Yuba County IRWM planning effort supports all aspects of water management in Yuba County. Both Yuba Water Agency and BVID are active partners in the IRWM Regional Water Management Group, and are committed to the successful implementation of the Yuba County IRWM Plan.

The Yuba County IRWM Plan was initially developed in 2008. The IRWM Plan 2018 Update provides a framework for water resource entities in Yuba County for addressing current water management issues and challenges. While the IRWM Plan does not prioritize projects, the Sicard Pipeline Project addresses many of the plan’s goals and objectives, including:

Goal 1. Ensure adequate and reliable water supply that meets the diverse needs of the region

- 1.1 Improve water supply system capacity, flexibility, and efficiency, including, but not limited to, optimizing existing water storage, upgrading and retrofitting aging infrastructure, and developing new infrastructure, where necessary
- 1.2 Promote water conservation and water use efficiency by instituting various techniques including, but not limited to, groundwater recharge, conjunctive management, irrigation efficiencies, municipal water conservation, water recycling and reuse
- 1.3 Protect and restore water supplies that support watershed health
- 1.4 Promote disaster preparedness and conservation planning efforts
- 1.6 Preserve water supplies that support recreational opportunities, ecosystem services, and agricultural uses

Goal 2. Protect, restore, and enhance water quality for water users and in support of healthy watersheds

- 2.5 Maintain and improve water quality required to restore and protect freshwater ecosystems and fisheries

Goal 4. Enhance regional economic development by supporting recreational opportunities and sustainable agriculture

- 4.5 Protect and restore working landscapes, particularly ranch/ag lands, and the watershed benefits they provide

Goal 5. Protect public safety through emergency and drought preparedness and integrated flood management

- 5.2 Support regional and interregional collaboration to improve drought and emergency preparedness

The proposed pipeline project achieves these goals and objectives by replacing a leaky, failing water conveyance ditch with durable, leak-proof HDPE pipeline, entirely eliminating leaks and saving an estimated 2,880 acre-feet of water annually. The project will increase water system capacity, improve water system efficiency, increase water supply, optimize water storage, and enable the region to be better prepared for drought and wildfire emergencies, while supporting agriculture, enhancing recreational opportunities at Collins Lake, and potentially providing increased flow for downstream fisheries. The *Yuba County Integrated Regional Water Management Plan 2018 Update* may be accessed at: <https://yubairwmp.org/>

Yuba County Multi-Jurisdictional Local Hazard Mitigation Plan

The *Yuba County Multi-Jurisdictional Local Hazard Mitigation Plan* was developed in 2007 and updated in 2015. While the Sicard Pipeline Project is not named specifically in the plan, the project will help mitigate two hazards discussed in the plan: drought and wildfire. The 2,880 acre-feet of annual water savings will provide an important storage buffer for drought. As

discussed above in Section B.1.b (Evaluation Criterion B – Water Supply Reliability), the water savings will also help ensure sufficient water supply for Cal Fire to fight wildfires not only within the BVID service area but in the neighboring foothill communities, which are at especially high risk. The *Yuba County Multi-Jurisdictional Local Hazard Mitigation Plan* may be accessed at:

<https://www.yuba.org/Yuba%20County/Emergency%20Services/Multi-Hazard%20Mitigation/YubaMHMP.pdf>

Subcriterion F.2 – Performance Measures

Performance measures for this project will consist simply of comparing the amount of water that is diverted from Dry Creek at the top of the pipeline with the amount of water available at the end of the pipeline. The project will be a success if the volume of water available at the end of the pipeline exactly equals the volume of water put in at the top, minus the quantity delivered in between (which is a known and verifiable quantity equal to 530 gallons per minute at maximum delivery). While BVID currently must divert 11 cfs of water from Dry Creek to meet a total customer demand of 3 cfs, with the new pipeline BVID will divert 3 cfs from Dry Creek to meet the customer demand of 3 cfs: 1 cfs will be delivered to customers along the Sicard Pipeline, and 2 cfs will be available for customers below the Sicard Pipeline. In numbers, success looks like:

3 cfs (water put in at top) – 1 cfs (water delivered to customers along Sicard Pipeline) = 2 cfs (water available at the end of Sicard Pipeline for customer deliveries below)

Achieving this equation will indicate that zero leakage is occurring through the new Sicard Pipeline and that a total of 2,880 acre-feet of water is being saved on an annual basis. BVID is fully confident that this outcome will be achieved.

Monitoring will occur by means of gauging stations located at the top and at the end of the Sicard Pipeline, before the Sicard Pipeline joins the “Too Handy” and “Valley of the Eagles” pipelines. The weir at the top of the pipeline controls the volumetric flow and serves as a measuring device. BVID will also be installing a monitoring station at the top of the ditch per requirements of Senate Bill 88. BVID will monitor the amount of water (cfs) that is being diverted into the pipeline once every hour. BVID will monitor the quantity of water at the end of Sicard Pipeline before it joins the other pipelines on at least a weekly basis during the irrigation season (six months).

While monitoring will continue for an indefinite period of time after the project ends (per SB 88 requirements and BVID’s own monitoring protocols), BVID will be able to fully report on its success to Reclamation at the end of the stated project period.

Subcriterion F.3 – Readiness to Proceed

BVID and its partners have been preparing for the Sicard Pipeline project for quite some time. All of the planning work is nearly complete, including the design, environmental and conservation studies. The project proposed in this application constitutes Phases 2 - 5 of the Sicard Pipeline Project. Phase 1 of the pipeline project was completed in spring of 2015. Figure 7 on the following page illustrates the proposed pipeline alignment along with the construction phases of the project.

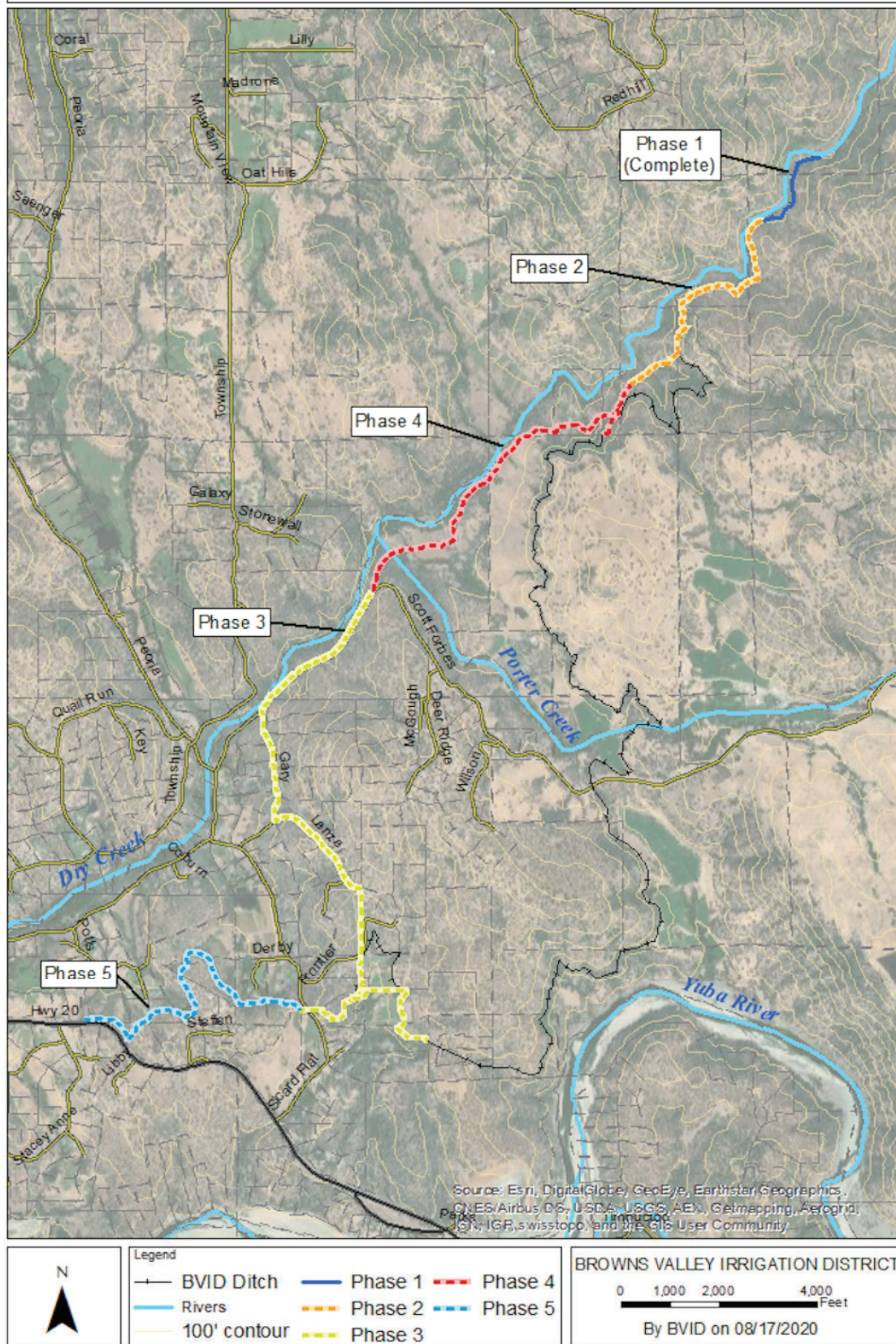
Project: Current Status

Phase 1 of pipeline construction was completed in the spring of 2015, when BVID installed its first portion of 30" HDPE pipe in the Sicard Flat Ditch at a cost of \$135,000. The HDPE pipe was connected to an existing ductile iron pipe at the beginning of the ditch and extends 2,000 feet downstream, ultimately saving around 3 cfs, or 1,080 acre-feet from leaking over the course of an irrigation season. This was a remarkable first step toward the long-term goal of eventually replacing the failing ditch with pipe to make it as efficient as possible. Although this first step was a success, substantial leaks, as well as the potential for catastrophic loss, remain along the Sicard Flat Ditch.

BVID, with generous funding support from Yuba Water Agency, is currently in the process of completing preliminary planning required for subsequent phases of the Sicard Pipeline, including engineering, design, and environmental compliance under California Environmental Quality Act (CEQA). Engineering includes a needs assessment, pipe sizing, material costs, and specifications for the remaining phases. The design is nearly complete (90% design plans are expected presently), pending a few considerations for final routing and easements. The Technical Specifications and 60% Design Plans, dated March 2020, are attached to this application as Appendix D.

All permitting requirements have been completed, and the requisite environmental work under CEQA, including biological and archaeological reports associated with filing a Mitigated Negative Declaration, is nearly complete with only the final alignment in a few remaining areas pending the final design. When the final design is complete, a Mitigated Negative Declaration will be filed within six weeks.

Figure 7. Sicard Pipeline Alignment and Project Phases



The Scope of Work below describes the work plan for Phases 2 - 5 of the Sicard Pipeline Project. Following the Scope of Work is the Project Schedule.

Scope of Work

Task 1. Grant Administration

The lead agency for this project is the Yuba Water Agency. Kurtis Crawford, Finance Manager, has been authorized by the Yuba Water Agency Board of Directors to act as Project Manager for this project. Task 1 includes all activities related to grant administration, including execution of the grant agreement, development and execution of subcontracts, quarterly invoicing, payment of invoices, reporting (including financial reports, semi-annual Interim Performance Reports, and the Final Performance Report), and other requirements as outlined in the grant agreement. Also included in this task are three annual Single Audits as required by the Office of Management and Budget; the audits will be conducted by an external auditor.

Milestones/Deliverables: Executed Grant Agreement. Executed subcontracts. Quarterly invoices and associated backup material. Semi-annual SF-425 Federal Financial Reports. Semi-annual Interim Performance Reports. Final Performance Report.

Task 2. Environmental Compliance

This task has been added to the Scope of Work as a placeholder for environmental and cultural resources compliance related to the National Environmental Policy Act (NEPA). Note that CEQA (Mitigated Negative Declaration) and all other permitting requirements will have been completed prior to grant award.

Milestones/Deliverables: Written notification from Reclamation of NEPA compliance.

Task 3. Construction

Construction activities will be implemented in accordance with technical specifications outlined in the design. The 90% design is nearly complete; attached to this application are the 60% technical specifications and design (Appendix D). Construction will generally consist of the following:

- 1) Mobilization and De-mobilization: This will include setting up construction equipment at the various locations and lay down of necessary materials.
- 2) Site Preparation: Site preparation will include excavation, grading, and erosion best management measures, as applicable. The project involves digging into soil; the project will not involve blasting of any rock material.

- 3) Pipe Installation: The HDPE pipe will be delivered in 25 to 50 foot sections and welded onsite to create one continuous length, using very few fittings. The pipe will be attached to existing infrastructure with fittings, while the length of pipe itself will be mated together by welding. The HDPE pipe will be buried underground in several sections at a time in a manner that “follows” the welding process. The pipe that has been buried will be backfilled and returned to native condition, and any open trenches will be covered appropriately at the end of each construction day.

The District has broken the project into phases that are more or less in chronological order. The requested Reclamation grant funds will implement Phases 2 - 5 of the project (with Phase 1 having been completed in spring of 2015). The construction activities described above will apply separately to each phase as it occurs. Phases 2 - 5 are described as follows:

Phase 2 will consist of approximately 6,200 feet of 48-inch pipe and 300 feet of 22-inch pipe for a total phase length of 6,800 lineal feet. The proposed alignment will connect to the end of the pipeline from Phase 1 and follows the ditch for approximately 4,500 feet before leaving the ditch and for another approximately 2,000 feet, at which point the 48-inch pipe is capped until connection to Phase 4 and a 22-inch tee is installed. Approximately 300 feet of 22-inch pipe will extend from the tee and follow an unimproved road to supply water back into the rest of the Sicard Flat Ditch. This temporary connection to the Sicard Flat Ditch will be required for service until Phase 4 is complete and is needed to serve several properties.

Phase 3 will consist of approximately 100 feet of 48-inch pipe, 11,800 feet of 42-inch pipe, 150 feet of 36-inch pipe, 1,100 feet of 10-inch pipe, and 1,750 feet of 8-inch pipe for a total phase length of 14,900 lineal feet. The proposed alignment for Phase 3 begins at the terminus of Phase 4 and follows Yuba County roadways for approximately 2,300 feet along Scott Forbes Road, onto Gary Drive, and then Lanza Lane. It will then go 400 feet up a driveway before turning and traveling approximately 1,500 feet cross-country before crossing Frontier Trail and returning to the ditch. The alignment will then follow the Sicard Flat Ditch for approximately 2,500 feet until it reaches the siphon at Sicard Flat Road, where it will cross to the other side, transitioning into Phase 5. Phase 3 also contains a 10-inch branch line that will tee off from the pipeline, travel approximately 1,100 feet cross-country and return to the ditch upstream of the 42-inch pipe already installed where it will tee to serve several existing customers through the existing ditch.

Phase 4 will consist of approximately 3,000 feet of 48-inch pipe and 4,850 feet of 42-inch pipe for a total phase length of 7,850 lineal feet. The proposed alignment for Phase 4 begins at the tie-in point from Phase 2 and follows an existing unimproved driveway its entire length until it reaches Scott Forbes Road.

Phase 5 will consist of approximately 7,300 feet of 36-inch pipe that is proposed to be constructed entirely within the current ditch alignment from Sicard Flat Road (terminus of Phase 3) to the end of the existing Sicard Flat Ditch near Highway 20.

Project Schedule

The project schedule assumes an award notification date of April 1, 2021. The schedule allows six months for contract negotiations with Reclamation and for environmental compliance activities related to NEPA. The executed Grant Agreement and NEPA clearance from Reclamation are expected by October 1, 2021.

The grant period will thus begin October 1, 2021 and run through September 30, 2024, for a total duration of 36 months (three years), as described below. The anticipated schedule is shown in Table 2 below.

Task 1. Grant Administration: This task will occur throughout the pre-project and project period, from notification of funding award April 1, 2021 to submission of the Final Project Report by September 30, 2024. Three months have been allocated following the completion of construction for final reporting and grant close out. Milestones include: the executed Grant Agreement, anticipated by October 1, 2021; five (5) semi-annual project and financial reports, due to Reclamation in April and October 2022, April and October 2023, and April 2024; and a Final Project Report due to Reclamation by September 30, 2024.

Task 2. Environmental Compliance: Compliance with CEQA and all permitting requirements will be completed prior to the project start date (and almost certainly prior to funding notification). Task 2 is reserved for any actions requested by Reclamation to demonstrate compliance with NEPA. Six months has been allocated for this task: April 1, 2021 – September 30, 2021.

Task 3. Construction: Construction will begin immediately upon Reclamation's issuance of a Notice to Proceed. Each phase of construction will begin with mobilization and site preparation, followed by pipe installation, cleanup (backfill and return to native condition), and demobilization. The timing and/or order of phasing may change depending on the actual project start date, so as not to conflict with the irrigation season (April through October). The anticipated schedule for each phase is as follows:

- Phase 2: October 1, 2021 – May 31, 2022
- Phase 3: June 1, 2022 – February 28, 2023
- Phase 4: March 1, 2023 – October 31, 2023
- Phase 5: November 1, 2023 – June 30, 2024

Table 2. Project Schedule (Grant Period Oct 1, 2021 – Sep 30, 2024)

| Task | 2021 | | | | | | | | | 2022 | | | | | | | | | | | |
|------------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| Task 1 - Grant Admin | | | | | | | | | | | | | | | | | | | | | |
| <i>Milestones:</i> | | | | | | | | | | | | | | | | | | | | | |
| Grant Agreement | | | | | | | X | | | | | | | | | | | | | | |
| Semi-annual Reports | | | | | | | | | | | | | X | | | | | | X | | |
| Final Project Report | | | | | | | | | | | | | | | | | | | | | |
| Task 2 - Environmental | | | | | | | | | | | | | | | | | | | | | |
| Task 3 - Construction | | | | | | | | | | | | | | | | | | | | | |
| Phase 2 construction | | | | | | | | | | | | | | | | | | | | | |
| Phase 3 construction | | | | | | | | | | | | | | | | | | | | | |
| Phase 4 construction | | | | | | | | | | | | | | | | | | | | | |
| Phase 5 construction | | | | | | | | | | | | | | | | | | | | | |

| | 2023 | | | | | | | | | | | | 2024 | | | | | | | | | |
|------------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Task | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | |
| Task 1 - Grant Admin | | | | | | | | | | | | | | | | | | | | | | |
| Milestones: | | | | | | | | | | | | | | | | | | | | | | |
| Grant Agreement | | | | | | | | | | | | | | | | | | | | | | |
| Semi-annual Reports | | | | X | | | | | | X | | | | | | X | | | | | | |
| Final Project Report | | | | | | | | | | | | | | | | | | | | | X | |
| Task 2 - Environmental | | | | | | | | | | | | | | | | | | | | | | |
| Task 3 - Construction | | | | | | | | | | | | | | | | | | | | | | |
| Phase 2 construction | | | | | | | | | | | | | | | | | | | | | | |
| Phase 3 construction | | | | | | | | | | | | | | | | | | | | | | |
| Phase 4 construction | | | | | | | | | | | | | | | | | | | | | | |
| Phase 5 construction | | | | | | | | | | | | | | | | | | | | | | |

E. Evaluation Criterion G – Nexus to Reclamation Project Activities

There is no known nexus to current Reclamation activities. However, the Bureau of Reclamation provided the loan to BVID that enabled construction of Virginia Ranch Dam, which created Collins Lake.

In 1950, a permit was issued to build Virginia Ranch Dam and store water. The original request was for a 1,870 foot-long dam with a height of 105 feet and 10 feet freeboard. The proposed dam would have created a lake with 175 surface acres and a capacity of 35,000 acre-feet. The

estimated cost to build this dam was \$1.36 billion with an expected project completion date of 1955. Lack of finances prevented the dam from being built at that time.

In September 1960, BVID voters authorized a Bureau of Reclamation loan for construction of Virginia Ranch Dam and approved a tax for the repayment of the loan, operation of the dam, and irrigation system. The interest-free loan from Reclamation was for \$4,839,371. The dam was completed and put into service in 1963. The dam as completed is more than one-third larger than the original design proposed in 1950. The Virginia Ranch Dam is a 2,800-long earthen dam with a height of 152 feet and 13.5 feet of freeboard. The reservoir created by the dam has a capacity of 57,000 acre-feet of water.

F. Evaluation Criterion H – Additional Non-Federal Funding

The percentage of non-Federal funding provided by this proposal is 74.4%:

$$\$5,798,022 / \$7,798,022 = 74.4\%$$

II. Project Budget

1. Funding Plan and Letters of Commitment

Yuba Water Agency is requesting \$2 million in federal grant funds. The total non-federal cost share is \$5,798,022. The total project cost is \$7,798,022.

Yuba Water Agency (applicant) will provide a monetary contribution of \$2 million toward the purchase of supplies/materials. These funds will be provided through the Agency's Non-Routine & Capital Project reserves. In addition, Yuba Water Agency will provide an in-kind contribution of \$108,980 for grant administration (which includes \$75,000 for annual Single Audits). All match is secure.

It should be noted that Yuba Water Agency has already provided more than \$637,000 in grant funds to BVID to support the preliminary planning phase of this project, including design plans and environmental studies for CEQA compliance. These preliminary planning costs are not shown in the budget, and are not included as part of the non-federal match.

Browns Valley Irrigation District (third-party contributor), which will be responsible for implementing the proposed pipeline project, will provide additional non-federal cost share in the amount of \$3,689,042. This includes a monetary contribution of \$954,850 for equipment rental and \$13,224 toward supplies/materials. It also includes an in-kind contribution of \$1,659,545 for BVID equipment usage and \$1,061,423 for BVID staff labor for construction. These funds will be provided through BVID's General Fund. All match is secure. Please see a letter of commitment from BVID's Board of Directors attached in Appendix A.

We anticipate a project start date of October 1, 2021. We assume notification of award will occur by April 1, 2021 and are allowing six months for environmental clearance from Reclamation and for execution of the Grant Agreement. The only project costs that will be incurred prior to grant award are Yuba Water Agency in-kind staff costs for negotiation of the Grant Agreement, estimated at \$7,830 (40 hours for Yuba Water Agency Project Manager Kurtis Crawford and 40 hours for the Yuba Water Agency Accounting Supervisor).

2. Budget Proposal

Table 3 shows the total project budget broken out by requested Reclamation funds, non-federal cost share, and third-party contributions. Table 4 shows a more detailed budget broken out by budget category.

Table 3. Total Project Cost Table

| Funding Source | Amount |
|---|--------------------|
| Requested Reclamation Funding | \$2,000,000 |
| Non-Federal Costs to be Paid by Applicant | \$2,108,980 |
| Value of Third-Party Contributions | \$3,689,042 |
| Total | \$7,798,022 |

Table 4. Proposed Budget

| BUDGET ITEM DESCRIPTION | COMPUTATION | | QUANTITY TYPE | TOTAL COST |
|--|--------------------|-----------------|----------------------|-------------------|
| | \$/UNIT | QUANTITY | | |
| Salaries and Wages | | | | |
| Finance Manager Kurtis Crawford | \$81.88 | 60 | hours | \$4,913 |
| Project Coordinator | \$85.81 | 70 | hours | \$6,007 |
| Accounting Supervisor | \$44.35 | 248 | hours | \$10,999 |
| Fringe Benefits | | | | |
| Finance Manager Kurtis Crawford | \$45.12 | 60 | hours | \$2,707 |
| Project Coordinator | \$47.19 | 70 | hours | \$3,303 |
| Accounting Supervisor | \$24.40 | 248 | hours | \$6,051 |
| Environmental/Regulatory Compliance | | | | |
| NEPA Compliance | - | - | - | - |
| Equipment | | | | |
| Light Duty Pickup (Ford F-150) | \$32.00 | 14,600 | hours | \$467,200 |
| Medium Duty Pickup (Ford F-250) | \$33.57 | 4,200 | hours | \$140,994 |
| Heavy Duty Truck (Ford F-350 W/ Flatbed) | \$34.63 | 2,100 | hours | \$72,723 |
| Heavy Duty Truck (Ford F-550 w/ Dump Bed) | \$47.24 | 2,100 | hours | \$99,204 |
| Large Excavator (John Deere 160D) | \$85.24 | 3,000 | hours | \$255,720 |
| Medium Excavator (Cat 307) | \$35.27 | 2,000 | hours | \$70,540 |
| Small Excavator (Kubota 121/Bobcat 331) | \$17.40 | 2,500 | hours | \$43,500 |
| Loader (Cat IT14B) | \$50.25 | 2,000 | hours | \$100,500 |
| Dump Truck (Freightliner) | \$97.42 | 4,200 | hours | \$409,164 |
| Pipe Fusion Machine (Rental) | \$565.00 | 1,690 | hours | \$954,850 |
| Supplies and Materials | | | | |
| 48" SDR 21 Pipe | \$130.00 | 8,490 | F | \$1,103,700 |
| 48" SDR 17 Pipe | \$159.00 | 749 | F | \$119,091 |
| 42" SDR 21 Pipe | \$100.00 | 5,436 | F | \$543,600 |
| 42" SDR 17 Pipe | \$122.00 | 716 | F | \$87,352 |
| 42" SDR 13.5 Pipe | \$151.00 | 10,457 | F | \$1,579,007 |
| 36" SDR 21 Pipe | \$73.00 | 7,289 | F | \$532,097 |
| 36" SDR 17 Pipe | \$89.00 | 135 | F | \$12,015 |
| 22" SDR 21 Pipe | \$27.00 | 312 | F | \$8,424 |
| 10" SDR 17 Pipe | \$8.00 | 1,086 | F | \$8,688 |
| 8" SDR 21 Pipe | \$11.00 | 1,750 | F | \$19,250 |

| BUDGET TEM DESCRIPTION | COMPUTATION | | QUANTITY TYPE | TOTAL COST |
|--|-------------|----------|------------------|--------------------|
| | \$/UNIT | QUANTITY | | |
| Third-Party Contributions: BVID | | | | |
| Salaries and Wages | | | | |
| BVID Operations Manager Kevin Shrader | \$44.74 | 2,000 | hours | \$89,480 |
| BVID Lead Utility Worker | \$38.02 | 4,200 | hours | \$159,684 |
| BVID Utility Worker II | \$28.85 | 8,400 | hours | \$242,340 |
| BVID Utility Worker I | \$27.49 | 4,200 | hours | \$115,458 |
| Fringe Benefits | | | | |
| BVID Operations Manager Kevin Shrader | \$35.79 | 2,000 | hours | \$71,584 |
| BVID Lead Utility Worker | \$24.71 | 4,200 | hours | \$103,795 |
| BVID Utility Worker II | \$22.50 | 8,400 | hours | \$189,025 |
| BVID Utility Worker I | \$21.44 | 4,200 | hours | \$90,057 |
| Other | | | | |
| YWA Single Annual Audit | \$25,000 | 3 | years | \$75,000 |
| TOTAL ESTIMATED PROJECT COSTS | | | | \$7,798,022 |

3. Budget Narrative

The proposed Sicard Pipeline Project consists of three tasks: Grant Administration, Environmental and Regulatory Compliance, and Construction.

Task 1 – Grant Administration

The estimated cost for Grant Administration is \$108,980, which includes personnel (\$33,980) plus payment to an external auditor for three annual Single Audits (\$75,000). This cost will be contributed entirely by Yuba Water Agency as non-federal in-kind cost share.

The budget categories for the Grant Administration task consist of Salaries and Wages, Fringe Benefits, and Other.

Salaries/Wages and Fringe Benefits

Personnel costs for Yuba Water Agency staff total \$33,980. Personnel costs for Grant Administration have been allocated based on the following assumptions: Grant Agreement execution (80 hours), invoicing (150 hours total for monthly invoicing over 30 months, plus 48 hours for preparation of 12 quarterly invoice packages to Reclamation), preparation of five semi-annual reports (60 hours), and preparation of the final project report (40 hours). It should be noted that BVID will share responsibility for drafting the semi-annual and final project reports (estimated at an additional 120 hours), though BVID has chosen not to include its administrative staff time as cost share for this grant application.

The Project Manager for the proposed project is Kurtis Crawford, Yuba Water Agency Finance Manager. Mr. Crawford will spend an estimated 60 hours at a benefited rate of \$127/hr (\$81.88/hr base rate plus \$45.12/hr benefits), for a total of \$7,620. Additional Yuba Water Agency staff will assist with invoicing and reporting: Project Coordinator JoAnna Lessard will spend an estimated 70 hours at a benefited rate of \$133/hr (\$85.81/hr base rate plus \$47.19/hr benefits), for a total of \$9,310. Accounting Supervisor Jack Winship will spend an estimated 248 hours at a benefited rate of \$68.75/hr (\$44.35/hr base rate plus \$24.40/hr benefits), for a total of \$17,050.

Yuba Water Agency uses a standard 55% factor for calculating benefits. Fringe benefits include: healthcare, including dental and vision; life insurance; employer paid CalPERS pension contribution; and employer paid deferred compensation contribution.

Other

A total of \$75,000 has been budgeted to cover three annual Single Audits. A Single Audit is required by the Office of Management and Budget for entities receiving more than \$750,000 in federal funds in any given year. The basis for this estimate is the average of two years of Single Audits that Yuba Water Agency recently completed for a different federal grant program. The \$25,000 represents the fee paid to the external auditor for each year.

Task 2 – Environmental and Regulatory Compliance

This task is a placeholder pending Reclamation's determination with regard to NEPA compliance. No budget has been allocated at this time.

Task 3 – Construction

The total estimated cost for construction is \$7,689,042. These costs represent a combination of requested federal grant funds (\$2,000,000), non-federal cost share contributed by the applicant (a monetary contribution of \$2,000,000), and third-party contributions (both in-kind and monetary contributions, totaling \$3,689,042) by Browns Valley Irrigation District, which is solely responsible for implementing the Construction task.

The budget categories for this task consist of Supplies and Materials, Equipment, and Third Party Contributions.

Supplies and Materials

The total estimated cost for supplies and materials is \$4,013,224. This cost consists entirely of purchasing HDPE pipe material for the Sicard Pipeline, totaling 36,420 lineal feet of pipe. The various diameters and thicknesses of pipe material are summarized in Table 4 above. The

estimated cost for the pipe material is based on the engineer's estimate, attached to this application as Appendix B.

For purchase of pipe material, Yuba Water Agency is requesting \$2,000,000 in federal grant funds and is contributing \$2,000,000 as match (non-federal monetary contribution). BVID (third party contributor) will provide an additional \$13,224 toward the purchase of pipe materials as a non-federal monetary contribution.

Equipment

The total estimated cost for equipment is \$2,614,395. This entire cost will be contributed by BVID (third party contributor) as non-federal match.

BVID will provide use of its heavy equipment (pickup and flatbed trucks, excavators, loader, and dump truck) for construction of the pipeline throughout the duration of the project. The usage of equipment will be contributed as an in-kind cost valued at \$1,659,545, as outlined in Table 4. Note that the usage rates listed in Table 4 fall within the equipment usage rates outlined by the United States Army Corps of Engineers within their Construction Equipment Ownership and Operating Expense Schedule (EP 1110-1-8).

BVID will contribute an additional \$954,850 toward rental of a pipe fusion machine (non-federal monetary cost contribution). The rental rate is based on the pipe manufacturer's estimate (attached in Appendix C). The total estimated cost (\$954,850) was calculated by estimating an hourly rental rate multiplied by the number of joints to be welded, which average about an hour each: \$565/hour x 1,690 hours = \$954,850.

Third Party Contributions

Construction of the Sicard Pipeline will be implemented entirely by BVID staff. BVID will contribute a total of \$1,061,423 in personnel costs as in-kind cost share for construction.

The BVID Operation Manager Kevin Shrader will spend a total of 2,000 hours at a benefited rate of \$80.53/hr (base rate of \$44.74/hr plus benefit rate of \$35.79/hr), for a total cost of \$161,064 over the three-year project period. One BVID Lead Utility Worker will spend a total of 4,200 hours at a benefited rate of \$62.73/hr (base rate of \$38.02/hr plus benefit rate of \$24.71/hr), for a total cost of \$263,479 over the project period. BVID will employ two staff at the BVID Utility Worker II level, each of whom will spend 4,200 hours at a benefited rate of \$51.35/hr (base rate of \$28.85/hr plus benefit rate of \$22.50/hr), for a total cost of \$431,365 over the project period. In addition, BVID will employ two staff at the BVID Utility Worker I level, each of whom will spend 2,100 hours at a benefited rate of \$48.93/hr (base rate of \$27.49/hr plus benefit rate of \$21.44/hr), for a total cost of \$205,515 over the project period. (Note that hourly rates for BVID staff were calculated based on annual salaries, with the resulting hourly rates showing four

decimal places. The small discrepancies in the total costs for BVID staff labor, shown here and in Table 4, are due to associated rounding errors.)

BVID uses a variable rate in calculating fringe benefits, depending on several factors including duration of employment at BVID. Fringe benefits include: holidays, vacation leave, sick leave, unemployment, workers comp, retirement, healthcare, life insurance, and CalPERS Unfunded Liability.

III. Environmental and Cultural Resources Compliance

1. Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.

The proposed pipeline project will have minor impacts on the surrounding environment. Trenches will be dug into the soil (no blasting), and piping material will be brought in and laid in the trenches. This work will involve the use of heavy equipment, which may have noise and air quality impacts.

Mitigation for potential impacts will be required as part of the work plan. Plant life, lawns, and other features will be protected. Benchmarks, existing structures, fences, sidewalks, paving, and curbs will be protected from excavating equipment and vehicular traffic. Soil erosion and sediment control measurements will be implemented onsite. The pipe that is buried will be backfilled and returned to native condition, and any open trenches will be covered appropriately at the end of each construction day to prevent danger to the public.

BVID is nearing completion of a Mitigated Negative Declaration with CEQA, pending final alignment of the pipeline. CEQA compliance is expected well before the project start date.

2. Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?

A Biological Assessment and Wetland Determination for the portion of the proposed Sicard Pipeline that bisects Porter Creek, which is an ephemeral tributary to Dry Creek, was completed in March 2020. The “Action Area” in the report refers to the area directly or indirectly affected by the proposed action (i.e., project). With pipeline crossing construction projects, the proposed action is defined downstream by any area that may be affected by elevated turbidity or sediment

deposition. The portion of Porter Creek in the Action Area is characterized by a narrow band of scrub riparian vegetation adjacent to open grazing land in the foothills of Yuba County. There are no federally listed anadromous or semi-anadromous fish species known to use Porter Creek, or Dry Creek, a short distance northwest of the Action Area.

The US Fish and Wildlife Service (USFWS) identified several federally listed species that have a potential to occur near the proposed Action Area:

- California red-legged frog (*Rana draytonii*): Threatened (May 23, 1996, FR 61 (101) 25813- 25833)
- Giant garter snake (*Thamnophis gigas*): Threatened (October 20, 1993, 58 FR 54053)
- Delta smelt (*Hypomesus transpacificus*): Threatened (March 5, 1993, 58 FR 12863)
- Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*): Threatened (August 8, 1980, FR 45: 52803-52807)
- Vernal pool fairy shrimp (*Branchinecta lynchi*): Threatened (September 19, 1994, 59 FR 48136)

The report concluded that the proposed action may affect, but is not likely to adversely affect, federally listed threatened California red-legged frog, *Rana draytonii* (along with the state threatened California black rail, *Laterallus jamaicensis coturniculus*). In addition, the report determined that due to the ephemeral nature of Porter Creek, the proposed action will not adversely affect Essential Fish Habitat of Pacific salmon under section 305(b)(2) of the Magnuson-Stevens Fisher Conservation and Management Act.

3. Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as “Waters of the United States?” If so, please describe and estimate any impacts the proposed project may have.

The following surface waters within the project boundaries fall under Clean Water Act (CWA) jurisdiction as “Waters of the United States”: Dry Creek, Porter Creek, and possibly a wetland where the pipeline will cross Porter Creek. Only minimal impacts, if any, are expected to occur from the proposed project. The US Army Corps of Engineers has determined that the Porter Creek crossing portion of the project is exempt under Section 404 of the Federal CWA (determination letter dated May 18, 2020). BVID is nearing completion of environmental clearance for the full Sicard Pipeline Project, and will be filing a Mitigated Negative Declaration.

4. When was the water delivery system constructed?

The Sicard Flat Ditch is believed to have been constructed in the 1850s. BVID purchased the ditch from the South Feather Power and Mining company in the early 20th century as a remnant of their gold mining infrastructure – assumed to date back to the 1850s since the company started in 1852.

5. Will the proposed project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.

The project will entirely replace the Sicard Flat Ditch with a new HDPE pipeline. As noted above, the ditch was most likely constructed in the 1850s. The construction of the Virginia Ranch Dam in the 1960s included improvements to that ditch to accommodate more water from Collins Lake. These improvements were done by blasting, with the unforeseen effect of worsening the ditch's integrity due to fracturing the rock in which the ditch traveled. No modifications aside from maintenance have occurred since the "improvements" made to increase capacity in the 1960s.

6. Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local Reclamation office or the State Historic Preservation Office can assist in answering this question.

There are no buildings, structures, or features in the project area that are eligible for listing on the National Register of Historic Places.

7. Are there any known archeological sites in the proposed project area?

Archaeological sites have been found to exist in the proposed project area. A Cultural Resources Inventory Survey was performed by Sean Michael Jensen of the Genesis Society and submitted to BVID on March 18, 2020. The survey found three (3) cultural resources to be located within the Area of Potential Effects (APE). All three resources were subjected to California Register of Historical Resources (CRHR) eligibility evaluations, and all three were recommended not eligible for inclusion on the CRHR.

One caveat to the identified resources, representing a prehistoric and historic-era site, was noted. Because cultural material has been observed and recorded in the general vicinity of the APE but not within the APE, it was recommended that any ground disturbance within 200 feet of that particular site be conducted while in the presence of a qualified professional archaeologist.

Aside from the recommended treatment options for that one site, archaeological clearance was recommended for the remainder of the project/undertaking.

8. Will the proposed project have a disproportionately high and adverse effect on low income or minority populations?

The proposed project will not have a disproportionately high or adverse effect on low-income or minority populations.

9. Will the proposed project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?

The proposed project will not limit access to, or ceremonial use of, Indian sacred sites or result in other impacts on Tribal lands.

10. Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?

The proposed project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species.

IV. Required Permits or Approvals

All permitting requirements for the Sicard Pipeline Project have been completed. The requisite environmental work under CEQA, including biological and archaeological reports associated with filing a Mitigated Negative Declaration, is nearly complete, with only the final alignment in a few remaining areas pending the final design. When the final design is complete, a Mitigated Negative Declaration will be filed within six weeks.

Porter Creek Crossing: Separate permitting, CEQA Notice of Exemption, Biological Assessment, and Archaeological Report have been completed for one section of the pipeline that bisects Porter Creek, an ephemeral tributary to Dry Creek, due to the potential for impacts to wetlands. All of these permits and reports will be folded into the final CEQA Mitigated Negative Declaration for the Sicard Pipeline Project. Below is a summary of the permitting and the environmental and cultural resources reports.

Permits: Exemptions were issued for the following permits:

- Streambed Alteration Permit: Letter from California Department of Fish and Wildlife (CDFW) dated June 10, 2020.
- 401 Water Quality Certification: Letter from Central Valley Regional Water Quality Control Board dated June 2, 2020.
- Clean Water Act 404(f): Letter from US Army Corps of Engineers dated May 18, 2020.

CEQA: A CEQA Notice of Exemption (NOE) for the Porter Creek pipeline crossing was submitted to CDFW on March 16, 2020.

Archaeological Report: Recommendation of archaeological clearance, dated January 24, 2020, performed by Sean Michael Jensen of the Genesis Society.

Biological Assessment and Wetland Determination (dated March 2020): The biological staff of Marcus H. Bole & Associates determined that the proposed project may affect, but is not likely to adversely affect, federally listed threatened California red-legged frog, *Rana draytonii*, and the state threatened California black rail, *Laterallus jamaicensis coturniculus*. In addition, staff has determined that due to the ephemeral nature of Porter Creek, the proposed project will not adversely affect Essential Fish Habitat of Pacific salmon under section 305(b)(2) of the Magnuson-Stevens Fisher Conservation and Management Act.

V. Letters of Commitment and Support

Letters of commitment and support are attached in Appendix A. Letters of financial commitment are attached from Yuba Water Agency and from BVID. Letters of support are attached from the Yuba Subbasins Groundwater Sustainability Committee, from Yuba County, and from three water districts that are also Member Units. Letters of commitment and support are attached in the order shown below:

1. Yuba Water Agency: Willie Whittlesey, General Manager
2. Browns Valley Irrigation District: Ryan McNally, General Manager
3. Yuba Subbasins Groundwater Sustainability Committee: Al Lassaga, Chairman, and Mike Filice, Vice Chairman
4. Yuba County: Michael Lee, Public Works Director
5. Yuba River Endowment: Stephen Waltz, Board Member
6. Hallwood Irrigation Company: Steve Springer, President
7. Ramirez Water District: Charlie Engs, President
8. Cordua Irrigation District: Charley Mathews, Jr., Chairman

VI. Official Resolution

Submittal of this grant application for WaterSMART Water and Energy Efficiency grant funds was approved by resolution of the Yuba Water Agency Board of Directors (Resolution No. 2020-07) adopted on August 18, 2020. The resolution is attached immediately below.



RESOLUTION NO. 2020-07

**A RESOLUTION OF THE YUBA COUNTY WATER AGENCY BOARD OF DIRECTORS
AUTHORIZING THE AGENCY TO APPLY FOR BUREAU OF RECLAMATION GRANT FUNDS
AND APPROVE BUREAU GRANT AGREEMENT
FOR THE BVID SICARD PIPELINE PROJECT**

BE IT RESOLVED by the Board of Directors of the Yuba County Water Agency as follows:

1. Recitals. This resolution is adopted with reference to the following background recitals:

a. The Agency desires to support projects within Yuba County that further its mission and strategic objectives, and that benefit its member units.

b. The Browns Valley Irrigation District (BVID) seeks funding to support the purchase of materials for the construction of the Sicard Pipeline Project (Project), which will replace 9.7 miles of leaky ditch with HDPE pipe and which will result in significant water savings and potential financial benefit for BVID, including: (1) water savings of an estimated 2,880 acre feet/year of water; (2) increased water supply reliability; and (3) potentially millions of dollars saved in avoided costs, should the unreinforced, highly vulnerable Sicard tunnel collapse.

c. The Agency desires and intends to act as the grant applicant on behalf of BVID for a grant application to the U.S. Department of the Interior, Bureau of Reclamation (Bureau), for Funding Opportunity Announcement (FOA) No. BOR-DO-21-F001 under the Bureau WaterSMART Water and Energy Efficiency Grant program.

d. The Agency intends to commit \$2 million as non-federal cost share toward the Project under this FOA.

2. Grant Application and Agreement Authorization. The Board of Directors has reviewed and supports and approves the submittal of a grant application to the Bureau for a \$2 million grant under the WaterSMART Water and Energy Efficiency Grant program to fund the purchase of material for the Project in accordance with the terms of the FOA. The Board commits the Agency to the financial and legal obligations associated with receipt of a financial assistance award from the Bureau under the FOA. The Agency Finance Manager (the "Authorized Representative") is hereby authorized and directed to approve, sign, and submit the Bureau grant application and, if the grant is awarded, to approve, enter into, and sign a grant or cooperative agreement with the Bureau under the FOA. The Authorized Representative, or designee, is designated to represent the Agency in carrying out the Agency's responsibilities under the application and grant or cooperative agreement, including reviewing the application submitted and verifying support for the application, certifying disbursement requests, and compliance with applicable state and federal laws. The Agency agrees and commits to work with the Bureau to meet established deadlines for entering into a grant or cooperative agreement.

3. Local Cost Share. The Agency represents and commits that it has the capability to provide the \$2 million non-federal cost share as specified in the Project funding plan.

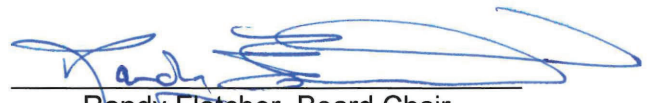
PASSED AND ADOPTED by the Board of Directors of the Yuba County Water Agency on the 18th day of August 2020 by the following vote:

AYES: Directors Bradford, Fletcher, Hastey, Leahy, Lofton, Mathews, Vasquez

NOES: None

ABSTAIN: None

ABSENT: None



Randy Fletcher, Board Chair



Attest: James Mitrisin, Clerk of the Board

APPENDIX A

Letters of Commitment and Support

September 10, 2020
Bureau of Reclamation

Financial Assistance Operations

WaterSMART Water and Energy Efficiency Grant Program

P.O. Box 25007

Denver, CO 80225

Re: Yuba Water Agency's Commitment of Funds for WaterSMART Water and Energy Efficiency Grant Application

Dear Sir or Madam,

The Yuba Water Agency is pleased to be acting as both lead applicant and fiscal sponsor for the project entitled "Sicard Pipeline Project," being submitted for WaterSMART Water and Energy Efficiency Grant funds on behalf of the Browns Valley Irrigation District. Yuba Water Agency is a strong proponent of this pipeline project. The project supports two of the Agency's strategic priorities as outlined in the Agency's *Strategic Plan 2017 – 2022*, and will vastly improve water reliability in the region.

Yuba Water Agency will commit a total of \$2,108,980 in non-Federal matching funds toward the Sicard Pipeline Project, as proposed in the Water and Energy Efficiency grant application. These matching funds include \$2 million as a monetary cost contribution and an additional \$108,980 in in-kind staff costs. Yuba Water Agency is fully capable of providing these funds, as specified in the funding plan.

The proposed Sicard Pipeline Project will increase water system efficiency, improve water reliability, improve resilience to drought, and eliminate a serious risk to the region's water infrastructure. Yuba Water Agency is excited to be a part of this project and urges the Bureau of Reclamation to support this very worthy proposal.

Sincerely,

A handwritten signature in black ink, appearing to read "Willie Whittlesey", with a stylized flourish at the end.

Willie Whittlesey
General Manager
Yuba Water Agency

Browns Valley Irrigation District

Post Office Box 6, Browns Valley, CA 95918

Business Office:

530/743-5703

FAX:

530/743-0445

Water Operations Office:

530/742-6044

August 28, 2020

RE: WaterSMART Program – Sicard Pipeline Project

To Who it May Concern,

On behalf of the Browns Valley Irrigation District Board of Directors, who wholeheartedly support this project, I am submitting this letter of commitment to assert our readiness, resources and capability to begin the incredible Sicard Pipeline Project. We are also very grateful for Yuba Water Agency's partnership, who is acting as the lead and fiscal agent for this project while we implement the construction phase.

This project will save nearly 3,000 acre feet of water each year, but equally important, it will create a tremendous increase in reliability for many of BVID's customers as well as eliminate one of the District's biggest threats to local surface water supply by bypassing a vulnerable tunnel dating back to the 1850's.

The District and its partners have been preparing for this project for some time and all the planning work is nearly complete, including the design, environmental and conservation studies. The District has received 90% submittals for the design and engineering, which are expected to be entirely complete prior to the grant's award.

This project represents the District's most ambitious conservation project since the construction of the Virginia Ranch Dam in 1966 and when complete, the District will realize a water savings equivalent to increasing the dam elevation by three feet. The Board and I are excited for this opportunity and are ready to begin construction of this incredibly valuable project.

BVID's in-kind match share of the project is estimated at \$3,689,042.00, of which the District has immediately available in reserves, with no constraints or other contingencies. If awarded the grant, the District will commit these funds in the form of force account labor and equipment over a three-year period consistent with the grant program.

If there are any questions or concerns, please do not hesitate to contact me as the District is absolutely committed to the success of this project.

Sincerely,



Ryan McNally
General Manager

September 3, 2020

Bureau of Reclamation
Financial Assistance Operations
WaterSMART Water and Energy Efficiency Grant Program
P.O. Box 25007
Denver, CO 80225

Re: Support for Yuba Water Agency Grant Application for WaterSMART Water and Energy Efficiency Grant Funds

Dear Sir or Madam,

On behalf of the Yuba Groundwater Sustainability Committee (GSC), we are writing to express strong support for the project entitled "Sicard Pipeline Project," submitted by the Yuba Water Agency for WaterSMART Water and Energy Efficiency grant funds. The Yuba GSC is a 17-member body composed of irrigation districts, water companies, and municipalities within the North and South Yuba Groundwater Subbasins.


The Sicard Pipeline Project, which will be implemented by the Browns Valley Irrigation District (District), will convert 9.3 miles of failing ditch to High-Density Polyethylene (HDPE) pipeline, saving nearly 3,000 acre-feet of irrigation water each year. These water savings, equivalent to 6 percent of the storage capacity of the reservoir from which the District draws its supply, are significant for this region. The project will address crippling water losses from the Sicard Ditch and will vastly improve water supply reliability for the Browns Valley area in Yuba County. The project will also enable the District to avoid a major risk associated with the current ditch alignment. The Sicard Ditch passes through a very narrow, unreinforced tunnel that is extremely susceptible to collapse. A collapse of this tunnel would be catastrophic, cutting off service for many customers and potentially requiring millions of dollars and many years to repair. The Sicard Pipeline Project proposes to abandon the tunnel with a new alignment that will eliminate this threat altogether.

Improved water use efficiency and supply resilience are paramount to the long-term sustainable management of both surface water and groundwater in the Yuba Subbasins, therefore this project is consistent with the Yuba Subbasins Groundwater Sustainability Plan.

The Yuba GSC strongly supports this project and urges the Bureau of Reclamation to award grant funding to the Yuba Water Agency for its WaterSMART Water and Energy Efficiency grant proposal.

Sincerely,


Al Lassaga, Yuba GSC Chair
allassaga@gmail.com


Mike Filice, Yuba GSC Vice-Chair
mfilice@northtreefire.com

The County of Yuba

Community Development & Services Agency

Kevin Mallen, Director

Phone – (530) 749-5430 • Fax – (530) 749-5434

915 8th Street, Suite 123

Marysville, California 95901

www.co.yuba.ca.us



BUILDING
749-5440 • Fax 749-5616

CODE ENFORCEMENT
749-5455 • Fax 749-5464

ENVIRONMENTAL HEALTH • CU
749-5450 • Fax 749-5454

PLANNING
749-5470 • Fax 749-5434

PUBLIC WORKS • SURVEY OF
749-5420 • Fax 749-5424

FINANCE AND ADMINISTRATION
749-5430 • Fax 749-5434

August 31, 2020
Bureau of Reclamation
Financial Assistance Operations
WaterSMART Water and Energy Efficiency Grant Program
P.O. Box 25007
Denver, CO 80225

Re: Support for Yuba Water Agency Application for WaterSMART Water and Energy Efficiency Grant Funds

Dear Sir or Madam,

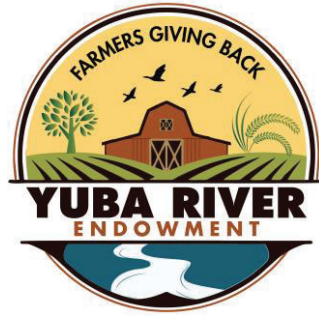
I am Director of Public Works for Yuba County. On behalf of the County, I am writing to express strong support for the project entitled "Sicard Pipeline Project," submitted by Yuba Water Agency for WaterSMART Water and Energy Efficiency grant funds.

The Sicard Pipeline Project, which will be implemented by the Browns Valley Irrigation District (District), will convert 9.3 miles of failing ditch to high-density polyethylene (HDPE) pipeline, saving nearly 3,000 acre-feet of irrigation water each year. These water savings, equivalent to 6 percent of the storage capacity of the reservoir from which the District draws its supply, are significant for this region, which suffers regularly from water shortages due to drought. The project will address crippling water losses from the Sicard Ditch and will vastly improve water supply reliability for the Browns Valley area in Yuba County. The project will also enable the District to avoid a major risk associated with the current ditch alignment. The Sicard Ditch passes through a very narrow, unreinforced tunnel that is extremely susceptible to collapse. A collapse of this tunnel would be catastrophic, cutting off service for many customers and potentially requiring millions of dollars and many years to repair. The Sicard Pipeline Project proposes to abandon the tunnel with a new alignment that will eliminate this threat altogether.

Yuba County recognizes the Sicard Pipeline Project for its contribution to increasing regional water supply reliability and resilience, improving water efficiency, and reducing risk. Yuba County strongly supports this project and urges the Bureau of Reclamation to award grant funding to the Yuba Water Agency for its WaterSMART Water and Energy Efficiency grant proposal.

Sincerely,

Michael Lee
Public Works Director



August 17, 2020

Bureau of Reclamation
Financial Assistance Operations
WaterSMART Water and Energy Efficiency Grant Program
P.O. Box 25007
Denver, CO 80225

Re: Support for Yuba Water Agency Grant Application for WaterSMART Water and Energy Efficiency Grant Funds

Dear Sir or Madam,

On behalf of the Yuba River Endowment, I am writing to express strong support for the project entitled "Sicard Pipeline Project," submitted by Yuba Water Agency for WaterSMART Water and Energy Efficiency grant funds. The Yuba River Endowment is a non-profit organization created by Yuba County farmers to benefit Yuba County residents. Our board is made up of representatives from seven different Yuba County water districts.

The Sicard Pipeline Project, which will be implemented by the Browns Valley Irrigation District (District), will convert 9.3 miles of failing ditch to high-density polyethylene (HDPE) pipeline, saving nearly 3,000 acre-feet of irrigation water each year. These water savings, equivalent to 6 percent of the storage capacity of the reservoir from which the District draws its supply, are significant for this region, which suffers regularly from water shortages due to drought. The project will address crippling water losses from the Sicard Ditch and will vastly improve water supply reliability for the Browns Valley area in Yuba County. The project will also enable the District to avoid a major risk associated with the current ditch alignment. The Sicard Ditch passes through a very narrow, unreinforced tunnel that is extremely susceptible to collapse. A collapse of this tunnel would be catastrophic, cutting off service for many customers and potentially requiring millions of dollars and many years to repair. The Sicard Pipeline project proposes to abandon the tunnel with a new alignment that will eliminate this threat altogether.

The Yuba River Endowment strongly supports this project and urges the Bureau of Reclamation to award grant funding to the Yuba Water Agency for its WaterSMART Water and Energy Efficiency grant proposal.

Sincerely,

A handwritten signature in black ink that reads "Stephen Waltz". The signature is written in a cursive, flowing style.

Stephen Waltz
Yuba River Endowment Board Member

HALLWOOD IRRIGATION COMPANY

***P.O. Box 1349
Marysville, CA 95901***

Phone: (530) 755-1244

August 25, 2020

Bureau of Reclamation
Financial Assistance Operations
WaterSMART Water and Energy Efficiency Grant Program
P.O. Box 25007
Denver, CO 80225

Re: Support for Yuba Water Agency Grant Application for WaterSMART water and Energy Efficiency Grant Funds

Dear Sir or Madam,

On behalf of Hallwood Irrigation Company, I am writing to express strong support for the project entitled "Sicard Pipeline Project," submitted by Yuba Water Agency for WaterSMART Water and Energy Efficiency grant funds.

The Sicard Pipeline Project, which will be implemented by the Browns Valley Irrigation District (District), will convert 9.3 miles of failing ditch to high-density polyethylene (HDPE) pipeline, saving nearly 3,000-acre feet of irrigation water each year. These water savings, equivalent to 6 percent of the storage capacity of the reservoir from which the District draws its supply, are significant for this region, which suffers regularly from water shortages due to drought. The project will address crippling water losses from the Sicard Ditch and will vastly improve water supply reliability for the Browns Valley area in Yuba County. The project will also enable the District to avoid a major risk associated with the current ditch alignment. The Sicard Ditch passes through a very narrow, unreinforced tunnel that is extremely susceptible to collapse. A collapse of this tunnel would be catastrophic, cutting off service for many customers and potentially requiring millions of dollars and many years to repair. The Sicard Pipeline Project proposes to abandon the tunnel with a new alignment that will eliminate this threat altogether.

Hallwood Irrigation Company has been supplying irrigation water to its landowners since 1910 and like its neighboring irrigation District, Browns Valley, understands full well the importance of improving infrastructure, eliminating risk and conserving water within Yuba County.

The Hallwood Irrigation Company strongly supports this project and urges the Bureau of Reclamation to award grant funding to the Yuba Water Agency for its Water SMART Water and Energy Efficiency grant proposal.

Sincerely,



Steve Springer,
President Hallwood Irrigation Company

R
W
D

Telephone
(530) 674-4211

FAX
(530) 674-4215

**RAMIREZ WATER DISTRICT
POST OFFICE BOX 124
MARYSVILLE, CA 95901-0124**

August 17th, 2020

Bureau of Reclamation
Financial Assistance Operations
WaterSMART Water and Energy Efficiency Grant Program
P.O. Box 25007
Denver, CO 80225

Re: Support for Yuba Water Agency Grant Application for WaterSMART Water and Energy Efficiency Grant Funds

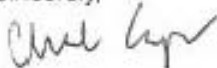
Dear Sir or Madam,

My Name is Charlie Engs and I am President of the Ramirez Water District. I am writing to express RWD's strong support for the project entitled "Sicard Pipeline Project," submitted by Yuba Water Agency for WaterSMART Water and Energy Efficiency grant funds. The Ramirez Water District provides irrigation water supplies to a service area of approximately 6,000 acres in northern Yuba County.

The Sicard Pipeline Project, which will be implemented by the Browns Valley Irrigation District (District), will convert 9.3 miles of failing ditch to high-density polyethylene (HDPE) pipeline, saving nearly 3,000 acre-feet of irrigation water each year. These water savings, equivalent to 6 percent of the storage capacity of the reservoir from which the District draws its supply, are significant for this region, which suffers regularly from water shortages due to drought. The project will address crippling water losses from the Sicard Ditch and will vastly improve water supply reliability for the Browns Valley area in Yuba County. The project will also enable the District to avoid a major risk associated with the current ditch alignment. The Sicard Ditch passes through a very narrow, unreinforced tunnel that is extremely susceptible to collapse. A collapse of this tunnel would be catastrophic, cutting off service for many customers and potentially requiring millions of dollars and many years to repair. The Sicard Pipeline Project proposes to abandon the tunnel with a new alignment that will eliminate this threat altogether.

Collectively YWA, RWD, and the other member units are aware of the importance of water conveyance and clean water for all its users. Once again, Ramirez Water District strongly supports this project and urges the Bureau of Reclamation to award grant funding to the Yuba Water Agency for its WaterSMART Water and Energy Efficiency grant proposal.

Sincerely,



Charlie Engs, President of Ramirez Water District

September 9, 2020

Bureau of Reclamation
Financial Assistance Operations
WaterSMART Water and Energy Efficiency Grant Program
P.O. Box 25007
Denver, CO 80225

Re: Support for Yuba Water Agency Grant Application for WaterSMART Water and Energy Efficiency Grant Funds

Dear Sir or Madam,

I am Chairman of the Cordua Irrigation District. On behalf of the District, I am writing to express strong support for the project entitled "Sicard Pipeline Project," submitted by Yuba Water Agency for WaterSMART Water and Energy Efficiency grant funds.

The Sicard Pipeline Project, which will be implemented by the Browns Valley Irrigation District (District), will convert 9.3 miles of failing ditch to high-density polyethylene (HDPE) pipeline, saving nearly 3,000 acre-feet of irrigation water each year. These water savings, equivalent to 6 percent of the storage capacity of the reservoir from which the District draws its supply, are significant for this region, which suffers regularly from water shortages due to drought. The project will address crippling water losses from the Sicard Ditch and will vastly improve water supply reliability for the Browns Valley area in Yuba County. The project will also enable the District to avoid a major risk associated with the current ditch alignment. The Sicard Ditch passes through a very narrow, unreinforced tunnel that is extremely susceptible to collapse. A collapse of this tunnel would be catastrophic, cutting off service for many customers and potentially requiring millions of dollars and many years to repair. The Sicard Pipeline Project proposes to abandon the tunnel with a new alignment that will eliminate this threat altogether.

The Cordua Irrigation District recognizes the Sicard Pipeline Project for its contribution to increasing regional water supply reliability and resilience, improving water efficiency, and reducing risk. Cordua strongly supports this project and urges the Bureau of Reclamation to award grant funding to the Yuba Water Agency for its WaterSMART Water and Energy Efficiency grant proposal.

Sincerely,

A handwritten signature in black ink, appearing to read "Charley Mathews, Jr.", with a stylized flourish at the end.

Charley Mathews, Jr.
Chairman
Cordua Irrigation District

APPENDIX B

Engineer's Estimate for Pipe Materials



PROJECT: Sicard Flat Pipeline
OWNER: Browns Valley Irrigation District
LOCATION: Browns Valley

Estimator: IDP
Reviewed By: DMM/KBB

DESCRIPTION OF WORK: Sicard Flat Pipeline

DATE: 7/21/2020

| Pipe Material Only Costs | | | | | |
|---------------------------|------------------------------------|------|----------|--------------|------------------|
| ITEM | DESCRIPTION | UNIT | EST. QTY | UNIT PRICE | Subtotal Rounded |
| 1 | Phase 2 | | | | |
| | 48" SDR 21 Pipe | LF | 6,201 | \$ 130 | \$ 807,600 |
| | 22" SDR 21 Pipe | LF | 312 | \$ 27 | \$ 8,500 |
| | Phase 2 Subtotal | | | | \$ 816,100 |
| | Phase 2 SUBTOTAL w/0% Contingency | LS | 1 | \$ 816,100 | \$ 816,100 |
| 2 | Phase 3 | | | | |
| | 48" SDR 17 Pipe | LF | 68 | \$ 159 | \$ 10,700 |
| | 42" SDR 21 Pipe | LF | 5,436 | \$ 100 | \$ 542,000 |
| | 42" SDR 17 Pipe | LF | 716 | \$ 122 | \$ 87,100 |
| | 42" SDR 13.5 Pipe | LF | 5,620 | \$ 151 | \$ 846,000 |
| | 36" SDR 17 Pipe | LF | 135 | \$ 89 | \$ 12,100 |
| | 10" SDR 17 Pipe | LF | 1,086 | \$ 8 | \$ 8,600 |
| | 8" SDR 21 Pipe | LF | 1,750 | \$ 11 | \$ 19,400 |
| | Phase 3 Subtotal | | | | \$ 1,525,900 |
| | Phase 3 SUBTOTAL w/0% Contingency | LS | 1 | \$ 1,525,900 | \$ 1,525,900 |
| 3 | Phase 4 | | | | |
| | 48" SDR 21 Pipe | LF | 2,289 | \$ 130 | \$ 298,000 |
| | 48" SDR 17 Pipe | LF | 681 | \$ 159 | \$ 108,200 |
| | 42" SDR 13.5 Pipe | LF | 4,837 | \$ 151 | \$ 728,100 |
| | Phase 4 Subtotal | | | | \$ 1,134,300 |
| | Phase 4 SUBTOTAL w/0% Contingency | LS | 1 | \$ 1,134,300 | \$ 1,134,300 |
| 4 | Phase 5 | | | | |
| | 36" SDR 21 Pipe | LF | 7,289 | \$ 73 | \$ 533,900 |
| | Phase 5 Subtotal | | | | \$ 533,900 |
| | Phase 5 SUBTOTAL w/0% Contingency | LS | 1 | \$ 533,900 | \$ 533,900 |
| 5 | Phase 6A | | | | |
| | 6" SDR 17 Pipe | LF | 237 | \$ 3 | \$ 700 |
| | 6" SDR 13.5 Pipe | LF | 4,114 | \$ 4 | \$ 15,400 |
| | Phase 6A Subtotal | | | | \$ 16,100 |
| | Phase 6A SUBTOTAL w/0% Contingency | LS | 1 | \$ 16,100 | \$ 16,100 |
| 6 | Phase 6B | | | | |
| | 8" SDR 21 Pipe | LF | 1,417 | \$ 11 | \$ 15,700 |
| | Phase 6B Subtotal | | | | \$ 15,700 |
| | Phase 6B SUBTOTAL w/0% Contingency | LS | 1 | \$ 15,700 | \$ 15,700 |
| 7 | Phase 7 | | | | |
| | 8" SDR 21 Pipe | LF | 1,844 | \$ 11 | \$ 20,400 |
| | 8" SDR 17 Pipe | LF | 502 | \$ 14 | \$ 6,800 |
| | 6" SDR 21 Pipe | LF | 3,349 | \$ 2 | \$ 8,300 |
| | 4" SDR 21 Pipe | LF | 1,456 | \$ 1 | \$ 1,700 |
| | Phase 7 Subtotal | | | | \$ 37,200 |
| | Phase 7 SUBTOTAL w/0% Contingency | LS | 1 | \$ 37,200 | \$ 37,200 |
| Material Cost - Subtotal | | | | | \$ 4,079,200 |
| OPINION OF PROBABLE COSTS | | | | | \$ 4,079,200 |

Notes: 1) Pipe material cost is \$0.80 per pound per quote received on 07/2020, plus 5% delivery, plus 8% sales tax.
2) This estimate does NOT contain any contingency due to the recent pipe materials quote.
3) The Opinion of Probable Cost above is based on the 90% Design Documents. PBI has no control over the sourcing method, cost of labor, materials, equipment, the Contractors' methods of determining bid prices, or other competitive bidding markets. Prices may vary from the opinion of cost due to bidding climate, competition, and materials escalation by the time the project is let out for bid and construction. PBI does not assume responsibility for the use of these costs in budget analysis and will not be held liable for capital improvement cost increases associated with the development of this project.

APPENDIX C

Fusion Machine Rental Quotation

R & B COMPANY - RENTALS
A CORE & MAIN COMPANY
1160 N. 13th Street
SAN JOSE, CA 95112
Phone 408-885-1467
Fax 408-885-1495

Quotation

| | |
|---|--------------|
| EXPIRATION DATE | QUOTE NUMBER |
| 09/12/2020 | S1961526 |
| R & B COMPANY - RENTALS A CORE & MAIN COMPANY 1160 N. 13th Street SAN JOSE, CA 95112 Phone 408-885-1467 Fax 408-885-1495 | PAGE NO. |
| | 1 of 2 |

QUOTE TO:

SHIP TO:

BROWNS VALLEY IRRIGATION DISTRICT
P.O. BOX 6
BROWNS VALLEY, CA 95918

BROWNS VALLEY IRRIGATION DISTRICT
9370 BROWNS VALLEY SCHOOL RD.
BROWNS VALLEY, CA 95918

| CUSTOMER NUMBER | CUSTOMER PO NUMBER | JOB NAME / RELEASE NUMBER | SALESPERSON | |
|-----------------|---|---------------------------|---------------|-----------------|
| 12398 | | | Daniel Inouye | |
| WRITER | SHIP VIA | TERMS | SHIP DATE | FREIGHT ALLOWED |
| Daniel Inouye | BID | Net 30 Days | 08/13/2020 | No |
| ORDER QTY | DESCRIPTION | | UNIT PRICE | EXT PRICE |
| 1mo | *CUSTOMER WILL BE REQUIRED TO CARRY INSURANCE ON THIS MACHINE *EACH RENTAL COMES WITH 2 ROLLERS FREE OF CHARGE T1200 FUSION MACHINE RENTAL FEE PER MONTH ***** R&B TECH REQUIRED TO FUSE WITH T1200 UNLESS CONTRACTOR HAS MCELROY CERTIFICATION CARD FOR T1200. ***** Pn: 126430 | | 18600.000/ea | 18600.00 |
| 1wk | T1200 FUSION MACHINE RENTAL FEE PER WEEK ***** R&B TECH REQUIRED TO FUSE WITH T1200 UNLESS CONTRACTOR HAS MCELROY CERTIFICATION CARD FOR T1200. ***** Pn: 128531 | | 6200.000/ea | 6200.00 |
| 1mo | MCELROY #618 TRACK UNIT RENTAL FEE PER MONTH Pn: 95572 | | 5520.000/ea | 5520.00 |
| 1wk | MCELROY #618 TRACK UNIT RENTAL FEE PER WEEK Pn: 95571 | | 1840.000/ea | 1840.00 |

** Continued on Next Page **

R & B COMPANY - RENTALS
A CORE & MAIN COMPANY
1160 N. 13th Street
SAN JOSE, CA 95112
Phone 408-885-1467
Fax 408-885-1495

Quotation

| EXPIRATION DATE | QUOTE NUMBER | PAGE NO. |
|-----------------|--------------|----------|
| 09/12/2020 | S1961526 | 2 of 2 |

| ORDER QTY | DESCRIPTION | UNIT PRICE | EXT PRICE |
|---|---|-------------|-----------|
| 1da | FUSION LABOR PER DAY NON-TAXABLE MISC ***** INCLUDES TECHNICIAN; SERVICE TRUCK; HAND TOOLS & HDPE PIPE CUTTING EQUIPMENT. 8 HOURS OF FUSION; CERTIFIED PAYROLL; MILEAGE & PER-DIEM. OVER TIME PAY APPLYS OVER 8 OR SATURDAYS; ADDITIONAL RATE PER HOUR IS \$225.00. TECHNICAN RATESS OVER 12 HOURS; SUNDAYS OR HOLIDAYS ADDITIONAL RATE PER HOUR IS \$300.00 ***** Pn: 85060 | 1500.000/ea | 1500.00 |
| 1ea | EQUIPMENT MOBILIZATION Pn: 135994 | 1200.000/ea | 1200.00 |
| 1ea | EQUIPMENT DE-MOBILIZATION Pn: 135995 | 1200.000/ea | 1200.00 |
| Price are firm for 30 days. Subject to change without notice after 30 days. Applicable taxes extra. | | Subtotal | 36060.00 |
| | | S&H Charges | 0.00 |
| | | Amount Due | 36060.00 |



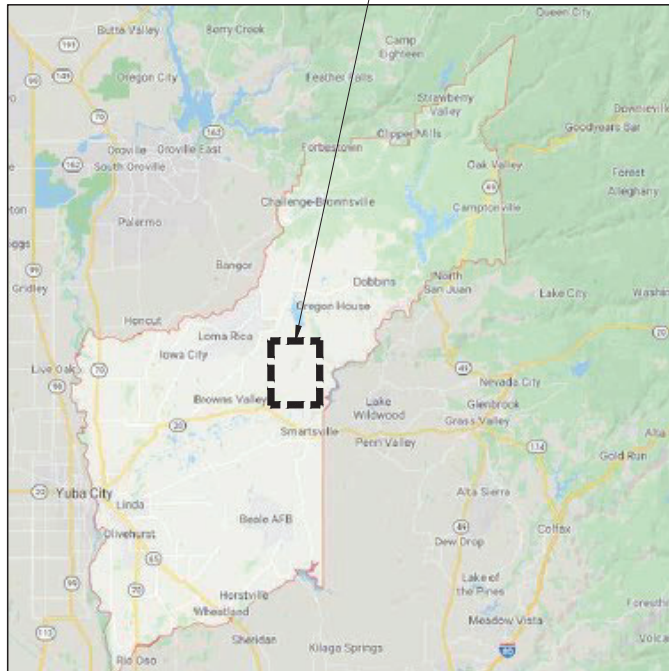
WARNING: CONTRACTOR TO USE EXTREME CAUTION. EXACT DEPTH AND LOCATION OF UNDERGROUND UTILITIES ARE UNKNOWN. CONTRACTOR TO FIELD VERIFY LOCATIONS AND DEPTH OF EXISTING UTILITIES PRIOR TO CONSTRUCTION AND SHALL NOTIFY ENGINEER OF ANY CONFLICT. CONTRACTOR SHALL CALL USA AT 1-800-227-2600 AT LEAST TWO WORKING DAYS BEFORE DIGGING.

BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT

COUNTY OF YUBA
STATE OF CALIFORNIA

ALL INFORMATION SHOWN ON THESE PLANS HAS BEEN PREPARED BY, OR UNDER DIRECTION OF, THE UNDERSIGNED ENGINEER. ADJUSTMENTS MADE IN THE FIELD DURING CONSTRUCTION ARE INCLUDED HEREIN AND ARE BASED UPON FIELD OBSERVATIONS MADE UNDER THE DIRECTION OF OR BY THE UNDERSIGNED AND/OR INFORMATION RECEIVED FROM THE PROJECT OWNER, PROJECT CONTRACTORS, AND PUBLIC AGENCIES WHEN THE ENGINEER IS ADVISED IN WRITING OF SUCH CHANGE. THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, CHANGES TO THESE PLANS NOT AUTHORIZED BY THE ENGINEER.

PROJECT LOCATION



VICINITY MAP
NTS

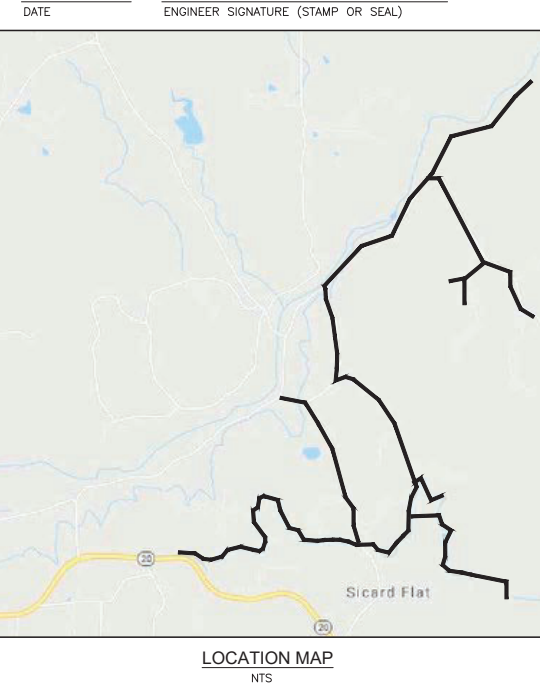
MICHAEL LEE - DIRECTOR OF PUBLIC WORKS
TE

RYAN MCNALLY
BROWNS VALLEY IRRIGATION DISTRICT
TE

KARL BRUSTAD, P.E. - PBI
TE

| SHEET INDEX | | |
|-------------|---------|-----------------------------------|
| SHEET NO | PHASE | SHEET TITLE |
| G001 | | TITLE SHEET |
| G002 | | ABBREVIATIONS, SYMBOLS, AND NOTES |
| G003 | | CONSTRUCTION PHASING |
| C101 | | STANDARD DETAILS 1 |
| C102 | | STANDARD DETAILS 2 |
| C111 | | SITE DETAILS 1 |
| C112 | | SITE DETAILS 2 |
| C200 | PHASE 2 | SHEET INDEX |
| C201 | PHASE 2 | STA 2001+00 TO STA 2006+00 |
| C202 | PHASE 2 | STA 2006+00 TO STA 2011+40 |
| C203 | PHASE 2 | STA 2011+40 TO STA 2016+50 |
| C204 | PHASE 2 | STA 2016+50 TO STA 2021+50 |
| C205 | PHASE 2 | STA 2021+50 TO STA 2027+00 |
| C206 | PHASE 2 | STA 2027+00 TO STA 2032+20 |
| C207 | PHASE 2 | STA 2032+20 TO STA 2037+40 |
| C208 | PHASE 2 | STA 2037+40 TO STA 2041+70 |
| C209 | PHASE 2 | STA 2041+70 TO STA 2047+50 |
| C210 | PHASE 2 | STA 2047+50 TO STA 2053+00 |
| C211 | PHASE 2 | STA 2053+00 TO STA 2057+00 |
| C212 | PHASE 2 | STA 2057+00 TO STA 2060+37 |
| C300A | PHASE 3 | SHEET INDEX I |
| C300B | PHASE 3 | SHEET INDEX II |
| C301 | PHASE 3 | STA 3001+00 TO STA 3006+24 |
| C302 | PHASE 3 | STA 3006+24 TO STA 3011+48 |
| C303 | PHASE 3 | STA 3011+48 TO STA 3016+67 |
| C304 | PHASE 3 | STA 3016+67 TO STA 3021+91 |
| C305 | PHASE 3 | STA 3021+91 TO STA 3027+17 |
| C306 | PHASE 3 | STA 3027+17 TO STA 3032+41 |
| C307 | PHASE 3 | STA 3032+41 TO STA 3037+65 |
| C308 | PHASE 3 | STA 3037+65 TO STA 3042+91 |
| C309 | PHASE 3 | STA 3042+91 TO STA 3048+15 |
| C310 | PHASE 3 | STA 3048+15 TO STA 3053+40 |
| C311 | PHASE 3 | STA 3053+40 TO STA 3058+64 |
| C312 | PHASE 3 | STA 3058+64 TO STA 3063+88 |
| C313 | PHASE 3 | STA 3063+88 TO STA 3068+70 |
| C314 | PHASE 3 | STA 3068+70 TO STA 3074+00 |
| C315 | PHASE 3 | STA 3074+00 TO STA 3079+30 |
| C316 | PHASE 3 | STA 3079+30 TO STA 3084+50 |
| C317 | PHASE 3 | STA 3084+50 TO STA 3089+77 |
| C318 | PHASE 3 | STA 3089+77 TO STA 3095+00 |
| C319 | PHASE 3 | STA 3095+00 TO STA 3100+25 |
| C320 | PHASE 3 | STA 3100+25 TO STA 3105+50 |
| C321 | PHASE 3 | STA 3105+50 TO STA 3110+73 |
| C322 | PHASE 3 | STA 3110+73 TO STA 3116+00 |
| C323 | PHASE 3 | STA 3116+00 TO STA 3121+25 |
| C324 | PHASE 3 | STA 3121+25 TO STA 3126+00 |
| C325 | PHASE 3 | STA 3126+00 TO STA 3131+70 |
| C326 | PHASE 3 | STA 3131+70 TO STA 3137+00 |
| C327 | PHASE 3 | STA 3137+00 TO STA 3142+73 |
| C328 | PHASE 3 | STA 3142+73 TO STA 3148+00 |
| C329 | PHASE 3 | STA 3148+00 TO STA 3153+23 |
| C330 | PHASE 3 | STA 3153+23 TO STA 3158+52 |
| C331 | PHASE 3 | STA 3158+52 TO STA 3164+85 |
| C400 | PHASE 4 | SHEET INDEX |
| C401 | PHASE 4 | STA 4000+80 TO STA 4006+30 |
| C402 | PHASE 4 | STA 4006+30 TO STA 4011+50 |

| | | |
|-------|---------|----------------------------|
| C403 | PHASE 4 | STA 4011+50 TO STA 4016+70 |
| C404 | PHASE 4 | STA 4016+70 TO STA 4022+00 |
| C405 | PHASE 4 | STA 4022+00 TO STA 4027+30 |
| C406 | PHASE 4 | STA 4027+30 TO STA 4032+40 |
| C407 | PHASE 4 | STA 4032+40 TO STA 4037+60 |
| C408 | PHASE 4 | STA 4037+60 TO STA 4042+80 |
| C409 | PHASE 4 | STA 4042+80 TO STA 4048+00 |
| C410 | PHASE 4 | STA 4048+00 TO STA 4053+20 |
| C411 | PHASE 4 | STA 4053+20 TO STA 4058+40 |
| C412 | PHASE 4 | STA 4058+40 TO STA 4063+60 |
| C413 | PHASE 4 | STA 4063+60 TO STA 4068+80 |
| C414 | PHASE 4 | STA 4068+80 TO STA 4074+00 |
| C415 | PHASE 4 | STA 4074+00 TO STA 4079+20 |
| C500 | PHASE 5 | SHEET INDEX |
| C501 | PHASE 5 | STA 5001+00 TO STA 5006+00 |
| C502 | PHASE 5 | STA 5006+00 TO STA 5011+50 |
| C503 | PHASE 5 | STA 5011+50 TO STA 5017+00 |
| C504 | PHASE 5 | STA 5017+00 TO STA 5022+00 |
| C505 | PHASE 5 | STA 5022+00 TO STA 5027+50 |
| C506 | PHASE 5 | STA 5027+50 TO STA 5032+50 |
| C507 | PHASE 5 | STA 5032+50 TO STA 5037+50 |
| C508 | PHASE 5 | STA 5037+50 TO STA 5043+00 |
| C509 | PHASE 5 | STA 5043+00 TO STA 5048+00 |
| C510 | PHASE 5 | STA 5048+00 TO STA 5053+60 |
| C511 | PHASE 5 | STA 5053+60 TO STA 5059+50 |
| C512 | PHASE 5 | STA 5059+50 TO STA 5065+50 |
| C513 | PHASE 5 | STA 5065+50 TO STA 5071+50 |
| C514 | PHASE 5 | STA 5071+50 TO STA 5073+90 |
| C600 | PHASE 6 | SHEET INDEX |
| C601 | PHASE 6 | STA 6001+00 TO STA 6006+24 |
| C602 | PHASE 6 | STA 6006+24 TO STA 6011+48 |
| C603 | PHASE 6 | STA 6011+48 TO STA 6016+72 |
| C604 | PHASE 6 | STA 6016+72 TO STA 6021+96 |
| C605 | PHASE 6 | STA 6021+96 TO STA 6027+20 |
| C606 | PHASE 6 | STA 6027+20 TO STA 6032+44 |
| C607 | PHASE 6 | STA 6032+44 TO STA 6037+68 |
| C608 | PHASE 6 | STA 6037+68 TO STA 6042+92 |
| C609 | PHASE 6 | STA 6042+92 TO STA 6048+16 |
| C610 | PHASE 6 | STA 6048+16 TO STA 6053+40 |
| C611 | PHASE 6 | STA 6053+40 TO STA 6104+25 |
| C612 | PHASE 6 | STA 6104+25 TO STA 6114+25 |
| C700A | PHASE 7 | SHEET INDEX I |
| C701B | PHASE 7 | SHEET INDEX II |
| C701 | PHASE 7 | STA 7000+80 TO STA 7006+20 |
| C702 | PHASE 7 | STA 7006+20 TO STA 7011+80 |
| C703 | PHASE 7 | STA 7011+80 TO STA 7017+00 |
| C704 | PHASE 7 | STA 7017+00 TO STA 7022+20 |
| C705 | PHASE 7 | STA 7022+20 TO STA 7027+40 |
| C706 | PHASE 7 | STA 7027+40 TO STA 7032+60 |
| C707 | PHASE 7 | STA 7032+60 TO STA 7038+00 |
| C708 | PHASE 7 | STA 7038+00 TO STA 7043+20 |
| C709 | PHASE 7 | STA 7043+20 TO STA 7048+40 |
| C710 | PHASE 7 | STA 7048+40 TO STA 7052+60 |
| C711 | PHASE 7 | STA 7052+60 TO STA 7106+20 |
| C712 | PHASE 7 | STA 7106+20 TO STA 7111+40 |
| C713 | PHASE 7 | STA 7111+40 TO STA 7115+50 |
| C714 | PHASE 7 | STA 7115+50 TO STA 7206+20 |
| C715 | PHASE 7 | STA 7206+20 TO STA 7208+60 |



LOCATION MAP
NTS

UTILITY CONTACTS

| PUBLIC / UTILITY SERVICE | REPRESENTATIVE | TELEPHONE |
|--------------------------|-----------------|--------------|
| AT&T | LEE NIETO | 916-484-2384 |
| PACIFIC GAS & ELECTRIC | PG&E DELINIAION | 877-743-7782 |

60% SUBMITTAL - NOT FOR CONSTRUCTION

| REV | DATE | BY | DESCRIPTION |
|-----|------|----|-------------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

SCALE:
AS NOTED
DATE:
FEBRUARY 2020

WARNING
0 1/2"
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED - DMM
DRAWN - BTS/JMR/AAS
CHECKED - KBB

ASHLEY SMITH
PROJECT ENGINEER
86512
R.C.E. NO.
03/31/21
EXP. DATE

KARL BRUSTAD
PROJECT MANAGER
57869
R.C.E. NO.
06/30/20
EXP. DATE



PBI
80 Blue Ravine Rd, Suite 280
Folsom, CA 95630
PH: 916-608-2212
Fax: 916-608-2232



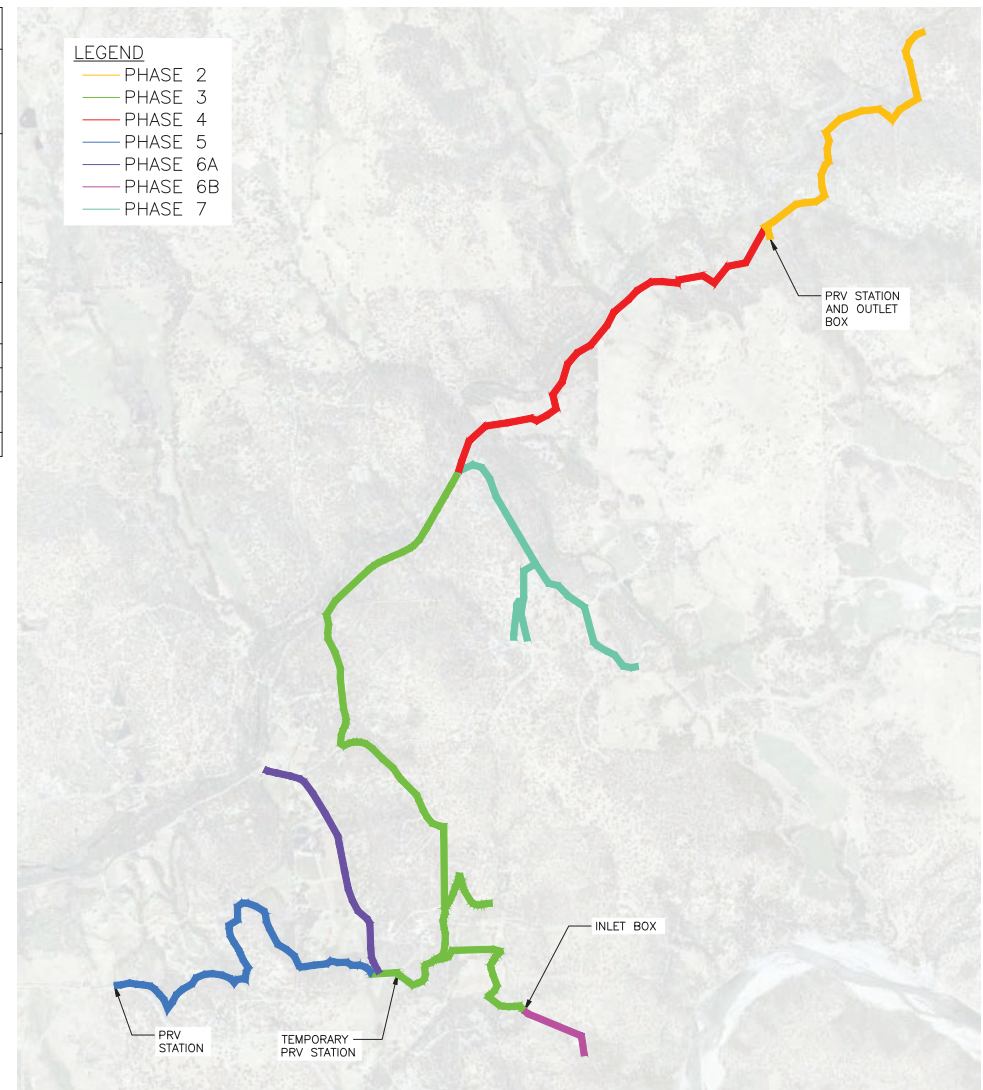
| BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET |
|--|--|------------------|
| TITLE SHEET | | G001 |
| | | SHEET 001 OF 114 |

P:\BWD\Stand Pipeline\05 Drawings\5.1 CAD\General (2018).dwg 3--02--20 04:43:34 PM jrw

| COUNTY NOTES | | | | SITE PLAN SYMBOLOGY | | GENERAL SYMBOLOGY | | DESIGN CRITERIA | |
|---|--|--|--|--|--|--|--|---|--|
| <div><div>1. COUNTY REQUIREMENTS ONLY APPLY TO WORK WITHIN COUNTY ROW</div><div>2. ALL CONSTRUCTION MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE LATEST EDITION OF THE YUBA COUNTY IMPROVEMENT STANDARDS, THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS DATED MAY 2006 OR LATEST EDITION AND ANY OTHER AGENCIES' STANDARDS AS APPLICABLE.</div><div>3. CONTRACTOR SHALL HAVE APPROVED PLANS IN HIS POSSESSION AND SHALL SCHEDULE PRECONSTRUCTION MEETING PRIOR TO CONSTRUCTION.</div><div>4. TO SCHEDULE A PUBLIC WORKS INSPECTION, CALL (530) 749-5656 AT LEAST TWO (2) WORKING DAYS PRIOR TO INSPECTION, EXCLUDING WEEKENDS AND HOLIDAYS.</div><div>5. IF WORK IS BEING DONE WITHIN THE COUNTY RIGHT OF WAY, CONTRACTOR SHALL OBTAIN AN ENCROACHMENT PERMIT FROM PUBLIC WORKS PRIOR TO COMMENCEMENT OF CONSTRUCTION.</div><div>6. CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN TO PUBLIC WORKS FOR APPROVAL AT LEAST TWO (2) WORKING DAYS PRIOR TO PRECONSTRUCTION MEETING, EXCLUDING WEEKENDS AND HOLIDAYS. ANY CHANGES TO THE TRAFFIC CONTROL PLAN SHALL BE SUBMITTED TO PUBLIC WORKS FOR APPROVAL PRIOR TO CONSTRUCTION.</div><div>7. CONTRACTOR SHALL PROVIDE FOR PUBLIC SAFETY AND TRAFFIC CONTROL IN ACCORDANCE WITH STATE OF CALIFORNIA MANUAL OF TRAFFIC CONTROLS. CONTRACTOR SHALL PROVIDE FOR SAFE VEHICULAR AND PEDESTRIAN ACCESS AT ALL TIMES DURING CONSTRUCTION.</div><div>8. CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES FOR VERIFICATION OF THE LOCATIONS OF ALL UNDERGROUND FACILITIES. CALL UNDERGROUND SERVICE ALERT (USA) AT 1-800-227-2600 TWO (2) WORKING DAYS BEFORE ANY EXCAVATION. THE CONTRACTOR SHALL CONTACT THE PUBLIC WORKS DEPARTMENT 8 WORKING DAYS PRIOR TO ANY WORK NEAR COUNTY OPERATED TRAFFIC SIGNALS FOR WARNING OUT FACILITIES. IF THE CONTRACTOR FAILS TO NOTIFY THE COUNTY AND DAMAGES TO TRAFFIC SIGNAL FACILITIES OCCUR, THE CONTRACTOR WILL BE RESPONSIBLE TO PAY ALL COSTS TO REPAIR THE DAMAGED FACILITIES.</div><div>9. THE CONTRACTOR IS RESPONSIBLE FOR THE PRESERVATION OF PROPERTY PER SECTION 7-1.11, 8-1.10 AND 15-1.02 OF THE STATE'S STANDARD SPECIFICATION.</div><div>10. CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING MONUMENTS AND OTHER SURVEY MARKERS. MONUMENTS AND SURVEY MARKERS DESTROYED DURING CONSTRUCTION SHALL BE REPLACED BY A LICENSED LAND SURVEYOR AT THE CONTRACTOR'S EXPENSE. CONTRACTOR SHALL PROVIDE COUNTY SURVEYOR WITH 2 WORKING DAYS NOTICE PRIOR TO MONUMENT REPLACEMENT.</div><div>11. THE PRIME CONTRACTOR SHALL DESIGNATE A PERSON(S) WHO SHALL HAVE THE AUTHORITY TO REPRESENT AND ACT FOR THE CONTRACTOR ON THE JOB SITE DURING ALL WORKING AND NON-WORKING HOURS AND PROVIDE PUBLIC WORKS WITH CONTACT AND EMERGENCY CONTACT PHONE INFORMATION.</div><div>12. CONTRACTOR SHALL HAVE APPROVED PLANS AVAILABLE ON SITE DURING CONSTRUCTION AND CONTRACTOR SHALL CONSTRUCT ALL IMPROVEMENTS TO THE LINE AND GRADE SHOWN ON THE PLANS. ANY DEVIATION FROM THE PLANS SHALL REQUIRE THE WRITTEN APPROVAL OF PUBLIC WORKS.</div><div>13. THE CONTRACTOR SHALL BE IN COMPLIANCE WITH DUST CONTROL PER SECTION 10, STATE OF CALIFORNIA STANDARD SPECIFICATIONS AND AS REQUIRED BY THE FEATHER RIVER AIR QUALITY MANAGEMENT DISTRICT.</div><div>14. WHERE WORK IS TO BE DONE IN AN OFF-SITE EASEMENT, THE CONTRACTOR SHALL NOTIFY THE PROPERTY OWNER IN WRITING AT LEAST 2 WORKING DAYS PRIOR TO COMMENCING WORK.</div><div>15. CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF EXISTING TRAFFIC DELINEATION AND SIGNS. ANY TRAFFIC DELINEATION OR SIGNS DAMAGED DURING ROAD CONSTRUCTION SHALL BE REPLACED WITH LIKE KIND OR AS APPROVED BY PUBLIC WORKS AT THE CONTRACTORS EXPENSE.</div><div>16. EROSION AND SEDIMENT CONTROL MEASURES FOR THIS PROJECT SHALL BE IN COMPLIANCE WITH THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) PREPARED FOR THE PROJECT IN ACCORDANCE WITH THE STATE'S GENERAL PERMIT FOR CONSTRUCTION ACTIVITIES AND THE COUNTY ACCEPTED EROSION AND SEDIMENT CONTROL PLAN. ACCORDING TO STATE LAW, IT IS THE RESPONSIBILITY OF THE PROPERTY OWNER THAT THE SWPPP BMP'S AND BINDER ARE KEPT UP TO DATE TO REFLECT CHANGING SITE CONDITIONS AND THE BINDER IS AVAILABLE ON THE PROJECT SITE AT ALL TIMES FOR REVIEW BY LOCAL AND STATE INSPECTORS.</div><div>17. THERE SHALL BE A ONE (1) YEAR MAINTENANCE PERIOD AFTER THE IMPROVEMENTS ARE ACCEPTED. THERE SHALL BE AN ADDITIONAL ONE (1) YEAR MAINTENANCE PERIOD FOR ANY ITEMS NEEDING REPAIRS AT THE END OF THE MAINTENANCE PERIOD.</div></div> | | | | <div><div><div>50.5</div><div>—</div><div>CONTOUR</div></div><div><div>—T—</div><div>TELEPHONE LINE</div></div><div><div><div>—</div><div>TOE OF DITCH</div></div></div><div><div><div>—○—</div><div>FENCE</div></div></div><div><div><div>—</div><div>EXISTING EASEMENT</div></div></div><div><div><div>—</div><div>PROPERTY LINE</div></div></div><div><div><div>—</div><div>PIPELINE</div></div></div><div><div><div>—</div><div>OVERHEAD WIRE</div></div></div><div><div><div>—</div><div>TOP OF BANK</div></div></div><div><div><div>—</div><div>EDGE OF PAVEMENT</div></div></div></div> | | <div><div>PLAN (SCALE AS NOTED)</div><div>ARROW INDICATES DIRECTION OF PLAN NORTH</div><div>INDICATES SECTION I.D. NUMBER</div><div>SECTION 3/8"=1'-0"</div><div>INDICATES SHEET WHERE SECTION WAS CUT (-) INDICATES SECTION FOUND ON SAME SHEET</div><div>INDICATES DETAIL I.D. NUMBER</div><div>DETAIL 3"=1'-0"</div><div>INDICATES SHEET WHERE DETAIL APPLIES (-) INDICATES DETAIL FOUND ON SAME SHEET</div><div>INDICATES ELEVATION OR PHOTO I.D. NUMBER</div><div>ELEVATION (OR PHOTO) 3"=1'-0"</div><div>INDICATES SHEET WHERE POINT OF VIEW MARKER CAN BE FOUND (-) INDICATES MARKER TO BE FOUND ON SAME SHIT</div><div>ARROW AND/OR FLAG INDICATES DIRECTION OF SECTION CUT</div><div>INDICATES SECTION I.D. LETTER</div><div>INDICATES SHEET WHERE SECTION IS LOCATED</div><div>SECTION CUT MARKER</div><div>INDICATES DETAIL I.D. NUMBER</div><div>INDICATES SHEET WHERE DETAIL IS LOCATED</div><div>DETAIL MARKER</div><div>INDICATES ELEVATION OR PHOTO I.D. NUMBER</div><div>ARROW INDICATES POINT OF VIEW OF ELEVATION OR PHOTOGRAPH</div><div>INDICATES SHEET WHERE ELEVATION OR PHOTO IS LOCATED</div><div>ELEVATION OR PHOTO MARKER</div></div> | | <div>SURVEY INFORMATION</div> <div>ABBREVIATIONS</div> <div>MATERIALS IN PLAN/SECTION</div> <div>60% SUBMITTAL - NOT FOR CONSTRUCTION</div> | |
| <div><div>EARTHWORK:</div><div>1. ALL EXCAVATION EMBANKMENT, AND BACKFILL SHALL CONFORM TO THE PROVISIONS IN SECTION 19, "EARTHWORK" OF THE STATE STANDARD SPECIFICATIONS.</div><div>2. CLEARING AND GRUBBING SHALL CONFORM TO THE PROVISIONS OF SECTION 16 OF THE STATE STANDARD SPECIFICATIONS.</div><div>3. CONSTRUCTION ACTIVITIES OCCURRING BETWEEN OCTOBER 1 AND APRIL 30 SHALL TREAT THE SUBGRADE FOR STABILIZATION AS PROPOSED BY GEOTECHNICAL ENGINEER AND AS APPROVED BY PUBLIC WORKS.</div><div>4. FROM OCTOBER 1 TO APRIL 30, NO MORE THAN 300' OF OPEN TRENCHES ARE ALLOWED THROUGHOUT PROJECT SITE AT ONE TIME AND ALL TRENCHES SHALL BE BACKFILLED PRIOR TO RAIN EVENTS..</div><div>5. CONTRACTOR IS NOTIFIED THAT JETTING IS NOT ALLOWED IN ANY TRENCHES.</div><div>6. ANY TRENCHES IN THE SECTION FROM BACK OF CURB TO BACK OF SIDEWALK SHALL BE BACKFILLED WITH NATIVE MATERIAL AND COMPACTED TO 90% RELATIVE COMPACTION.</div><div>7. ALL COMPACTION TESTS SHALL BE CERTIFIED BY A REGISTERED CIVIL ENGINEER PRIOR TO SUBMITTING TEST RESULTS TO THE PUBLIC WORKS DEPARTMENT.</div><div>8. IF COMPACTION REQUIREMENTS CAN NOT BE MET, THEN A RECOMMENDATION FROM A GEOTECHNICAL ENGINEER SHALL BE SUBMITTED FOR APPROVAL BY THE PUBLIC WORKS DEPARTMENT.</div></div> | | | | <div><div>PIPING SYMBOLOGY</div><div>VALVES</div><div>— — GATE VALVE</div><div>— — AVRV</div><div>— — BLOW OFF</div><div>MISCELLANEOUS</div><div>— — PIPE IN SECTION</div></div> | | <div>0 AB AGG APPROX AVRV BF COND DIA DIM DIST EL EW (E) EX HDPE IE IPS INV NPT NTS OC OH OHW PVC PRV PSI PVC SCE SDR STD</div> <div>AT AGGREGATE BASE AGG AGGREGATE APPROX APPROXIMATELY AVRV AIR VACUUM RELEASE VALVE BF BLIND FLANGE, BOTTOM FLAT COND CONDITION DIA Ø DIAMETER DIM DIMENSION DIST DISTANCE EL ELEV ELEVATION EXIST EW EACH WAY (E) EXISTING EX EXISTING HDPE HIGH DENSITY POLYETHYLENE IE INVERT ELEVATION IPS IRON PIPE SIZE INV INVERT NPT NATIONAL PIPE THREAD NTS NOT TO SCALE OC ON CENTER OH OVERHEAD OHW OVERHEAD WIRE PVC POLYVINYL CHLORIDE PRV PRESSURE RELIEF VALVE PSI POUNDS PER SQUARE INCH PVC POLYVINYL CHLORIDE SCE SCHEDULE SDR STANDARD DIMENSION RATIO STD STANDARD</div> <div>DEMOLITION (FEATURES AS INDICATED ON PLANS) CONCRETE ASPHALT (IN PLAN) GRANULAR FILL SAND (IN SECTION) EARTH GRATING (PLAN) AB SURFACING</div> | | | |
| <div><div>PAVING:</div><div>1. AB SHALL CONFORM TO THE PROVISIONS OF SECTION 26 OF THE STATE STANDARD SPECIFICATIONS FOR CLASS 2 AGGREGATE BASE.</div><div>2. AC SHALL CONFORM TO THE STATE'S STANDARD SPECIFICATIONS PG 64-10 (VALLEY) OR PG 64-28 (FOOTHILLS), ½ INCH MINIMUM TO ¾ INCH MAXIMUM. PRIME COAT SHALL BE 50-70 AND SHALL BE APPLIED IF AGGREGATE BASE IS SUBJECT TO TRAFFIC OR INCLEMENT WEATHER PRIOR TO PAVING.</div><div>3. FOR PAVEMENT WIDENING, AC SURFACES SHALL BE SAWCUT A MINIMUM OF ONE FOOT INSIDE THE EP TO A NEAT, STRAIGHT LINE AND REMOVED AS DETERMINED BY PUBLIC WORKS. ASPHALT EMULSION SHALL BE APPLIED TO THE EXPOSED EDGE PRIOR TO PAVING. THE EXPOSED BASE MATERIAL SHALL BE GRADED AND RECOMPACTED PRIOR TO PAVING.</div><div>4. FROM OCTOBER 1 TO APRIL 30, PRIOR TO PAVING, ALL BACK OF CURB SHALL BE BACKFILLED TO WITHIN 1 INCH OF CURB AND SHALL BE SLOPED AWAY FROM CURB UNLESS APPROVED BY PUBLIC WORKS AND SHALL BE MAINTAINED UNTIL LANDSCAPING IS IN PLACE.</div><div>5. THE FINISHED GRADE OF AC SHALL BE PLACED 0.25" ABOVE THE LIP OF GUTTER.</div><div>6. PRIOR TO ACCEPTANCE OF IMPROVEMENTS, IF THE FINISHED PAVEMENT SURFACE REQUIRES SAW CUTTING FOR REPAIRS, THE PAVEMENT SHALL BE GROUND FROM LIP OF GUTTER LIP OF GUTTER AND FROM INTERSECTION TO INTERSECTION AND SHALL BE REPAVED OR AS DETERMINED BY PUBLIC WORKS.</div></div> | | | | <div>DESIGNED _DMM_ ASHLEY SMITH 86512 03/31/21 PROJECT ENGINEER R.C.E. NO. EXP. DATE</div> <div>DRAWN _BTS/JMR/AAS_ KARL BRUSTAD 57869 06/30/20 PROJECT MANAGER R.C.E. NO. EXP. DATE</div> <div>CHECKED _KBB_ KARL BRUSTAD 57869 06/30/20 PROJECT MANAGER R.C.E. NO. EXP. DATE</div> | | <div>ROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT</div> <div>REVIATIONS AND SYMBOL LEGEND</div> <div>G002</div> <div>SHEET 002 OF 114</div> | | | |

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| PHASE | CONSTRUCTION SEQUENCE |
|-------|---|
| 2 | CONSTRUCT THE PORTION OF THE ALIGNMENT IN THE DITCH DURING THE OFF-SEASON (APPROX STA 2015+50 TO 2060+00); RECONNECT TO THE DITCH AT APPROX 2003+50 TO CONTINUE SERVICE VIA THE DITCH UNTIL PHASE 4 IS COMPLETED. |
| 3 | CONSTRUCT THE PORTION OF THE ALIGNMENT IN THE DITCH DURING THE OFF-SEASON (APPROX STA 3001+00 TO 3025+50, STA 3200+00 TO 3211+50, STA 3300+00 TO 3316+00); RECONNECT TO THE DITCH AT APPROX STA 3211+50 TO CONTINUE SERVICE VIA THE DITCH UNTIL PHASE 4 IS COMPLETED; MANEY PROPERTY TO BE SERVED FROM BRANCH AT APPROX STA 3211+50 AFTER PHASE 4 CONSTRUCTION IS COMPLETED; ELLYSON PROPERTY TO BE SERVED FROM BRANCH AT APPROX STA 3314+81 AFTER PHASE 4 CONSTRUCTION IS COMPLETED. |
| 4 | CONSTRUCT ANY TIME BECAUSE THE ALIGNMENT IS IN THE ROAD; REQUIRES CONTINUED FLOW INTO THE DITCH TO SERVE THE UC AND BEYER PROPERTIES; BEYER SERVICE TO BE RELOCATED IN PHASE 7. |
| 5 | CONSTRUCT DURING THE OFF-SEASON BECAUSE THE ALIGNMENT IS IN THE DITCH. |
| 6A | CONSTRUCT ANY TIME BECAUSE THE ALIGNMENT IS IN THE ROAD. |
| 6B | CONSTRUCT ANY TIME BECAUSE THE ALIGNMENT IS IN THE ABANDONED DITCH OR CROSS-COUNTRY. |
| 7 | CONSTRUCT ANY TIME BECAUSE THE ALIGNMENT IS IN THE ROAD. |



LOCATION MAP
NTS

60% SUBMITTAL - NOT FOR CONSTRUCTION

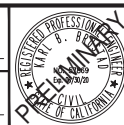
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| SCALE: |
| AS NOTED |
| DATE: |
| FEBRUARY 2020 |

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| WARNING |
| 0 1/2" |
| IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. |

| |
|--------------------|
| DESIGNED: DMM |
| DRAWN: BTS/JMR/AAS |
| CHECKED: KBB |

| | | |
|------------------|------------|-----------|
| ASHLEY SMITH | 86512 | 03/31/21 |
| PROJECT ENGINEER | R.C.E. NO. | EXP. DATE |
| KARL BRUSTAD | 57869 | 06/30/20 |
| PROJECT MANAGER | R.C.E. NO. | EXP. DATE |



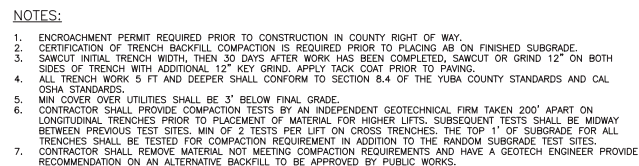
PBI

80 Blue Ravine Rd, Suite 280
Folsom, CA 95630
PH: 916-608-2212
Fax: 916-608-2232



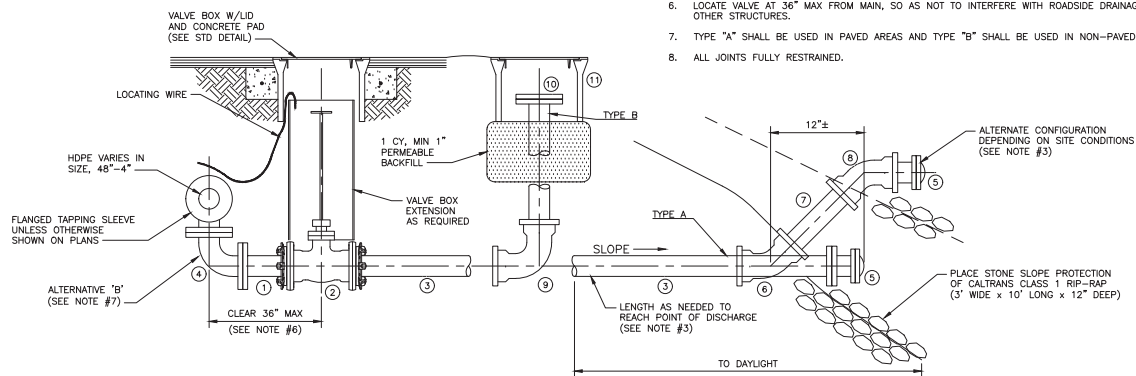
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| ROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT |
| CONSTRUCTION PHASING |

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| SHEET |
| G003 |
| SHEET 003 OF 114 |

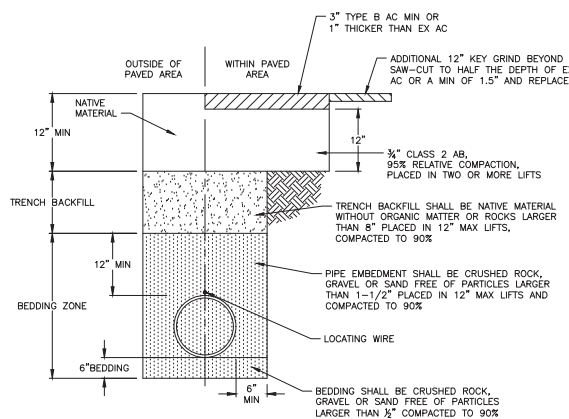


TYPICAL INSIDE YUBA COUNTY R/W PIPE TRENCH DETAIL

- ① 4" OR 6" DUCTILE IRON SPOOL BETWEEN TAPPING SLEEVE AND GATE VALVE, SEE NOTE #6
- ② 4" OR 6" MJ X MJ GATE VALVE
- ③ 4" OR 6" MJ DUCTILE IRON PIPE W/RESTRAINED JOINTS, LENGTH AS REQUIRED
- ④ 4" OR 6" FLG'D 90° ELBOW
- ⑤ 4" OR 6" FLG'D FLAP VALVE W/SERIES 2100 EBAA MEGAFLANGE
- ⑥ 4" OR 6" MJ ELBOW W/RESTRAINED JOINTS (45° OR LESS)
- ⑦ 4" OR 6" DUCTILE IRON SPOOL, LENGTH AS REQUIRED
- ⑧ 4" OR 6" MJ ELBOW (45° OR LESS)
- ⑨ 4" OR 6" MJ 90° ELBOW W/RESTRAINED JOINTS
- ⑩ BLIND FLANGE W/2" PLUG, FLG AND FLANGE BOLTS
- ⑪ VALVE BOXES SHALL BE CHRISTY G5 FOR 4" AND CHRISTY G8 FOR 6" BLOWOFF VALVES



4" OR LARGER RAW WATER BLOWOFF ASSEMBLY DETAIL



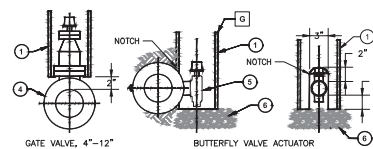
TYPICAL OUTSIDE YUBA COUNTY R/W PIPE TRENCH DETAIL

- NOTES:

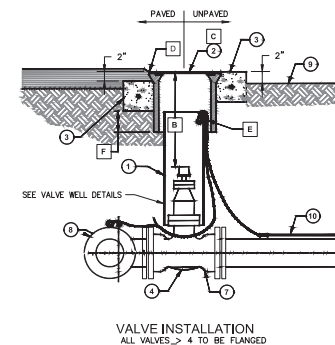
1. ALL TRENCH WORK 5 FT AND DEEPER SHALL CONFORM TO CAL OSHA STANDARDS.
2. MIN COVER OVER UTILITIES SHALL BE 3' BELOW FINAL GRADE.

- NOTES:

- ☐ A SHOWN AS FLANGED GATE VALVE. 2" ☐
- ☐ B IF VALVE NUT IS MORE THAN 30" BELOW FINISHED GRADE, INSTALL AN OPERATING EXTENSION. ☐
- ☐ C PROVIDE MAG ANODE. ☐
- ☐ D SET VALVE BOX AT OR $\frac{1}{4}$ " BELOW PAVEMENT. ☐
- ☐ E NOTCH EXTENSION TO PLACE WIRE. ☐
- ☐ F 6" MIN OVERLAP BETWEEN GS AND VALVE WELL EXTENSION. ☐
- ☐ G CENTER VALVE WELL EXTENSION OVER VALVE NUT. ☐



VALVE WELL DETAILS



VALVE INSTALLATION
ALL VALVES > 4 TO BE FLANGED

- ITEM DESCRIPTION

- 1 8" SDR 35 PVC VALVE WELL EXTENSION
(ONE CONTINUOUS LENGTH OF PIPE)
- 2 CONCRETE VALVE BOX W/CAST IRON
TRAFFIC LID
- 3 6"x6" CONCRETE PAD W/#4 REBAR
- 4 GATE VALVE
- 5 ACTUATOR
- 6 1 CUBIC FOOT CRUSHED ROCK
- 7 MxFLG ADAPTER
- 8 TEE
- 9 FINISHED GRADE
- 10 LOCATING WIRE

VALVE AND WELL INSTALLATION DETAIL

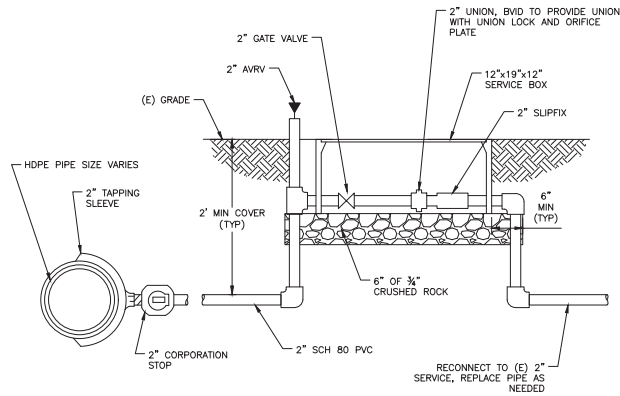
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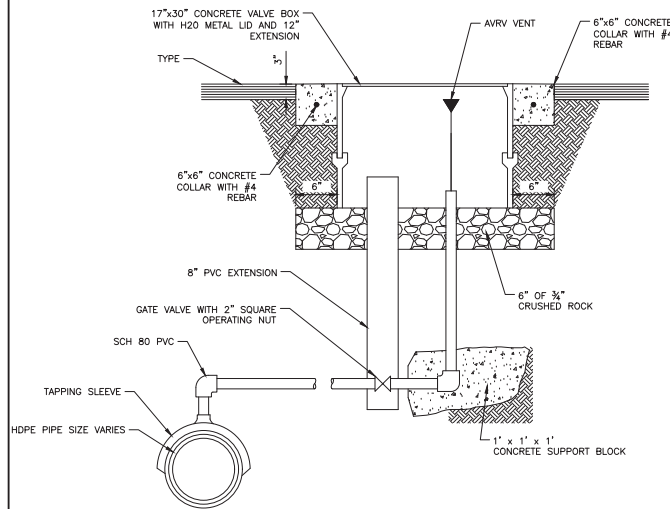
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TYPICAL SERVICE CONNECTION DETAIL 1
NTS TYP



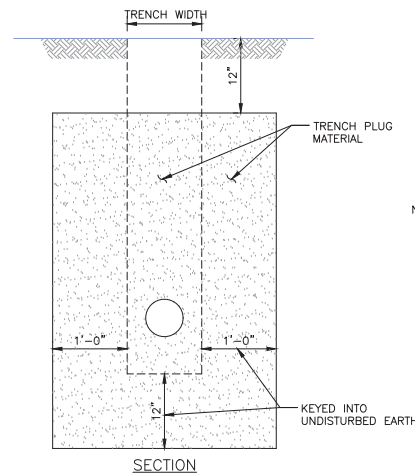
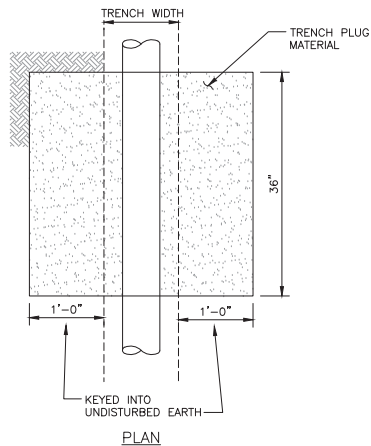
AVRV DETAIL 2
NTS TYP

TABLE A

| DIAMETER | AVRV | PVC PIPE | GATE VALVE |
|----------|------|----------|------------|
| 8" | 2" | 2" | 2" |
| 12" | 2" | 2" | 2" |
| 22" | 2" | 2" | 2" |
| 36" | 3" | 3" | 3" |
| 42" | 3" | 3" | 3" |
| 48" | 3" | 3" | 3" |

NOTES:

1. SIZE OF TAPPING SLEEVE, PVC PIPE, AVRV, AND GATE VALVE PER TABLE A.



TRENCH PLUG DETAIL 3
NTS TYP

NOTES:

1. TRENCH PLUG MATERIAL SHALL BE SOIL CEMENT (270# CEMENT/CU.YD.) OR BENTONITE SLURRY.
2. ALL MATERIAL TO BE APPROVED BY INSPECTOR PRIOR TO PLACING.
3. CLAY PLUG EXTENDS 1 FOOT BELOW BEDDING UNLESS ROCK IS ENCOUNTERED.
4. INSTALL TRENCH PLUGS TO A DEPTH OF 1.5 FEET BELOW FINISHED GRADE OR 2 FEET ABOVE THE PIPE, WHICHEVER IS LESS.

60% SUBMITTAL - NOT FOR CONSTRUCTION

| REV | DATE | BY | DESCRIPTION |
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SCALE:
AS NOTED
DATE:
FEBRUARY 2020

WARNING
0 1/2
IF THIS BAR DOES
NOT MEASURE 1"
THEN DRAWING IS
NOT TO SCALE.

DESIGNED: DMM
DRAWN: BTS/JMR/AAS
CHECKED: KRB

ASHLEY SMITH
PROJECT ENGINEER
86512
R.C.E. NO.
03/31/21
EXP. DATE
KARL BRUSTAD
PROJECT MANAGER
57869
R.C.E. NO.
06/30/20
EXP. DATE

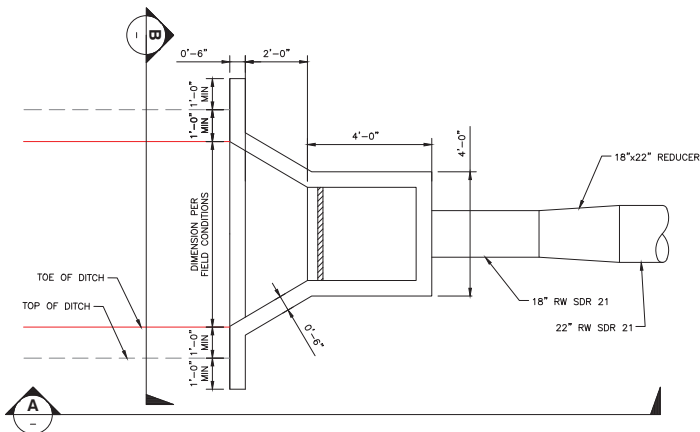


PBI
80 Blue Ravine Rd, Suite 280
Folsom, CA 95630
PH: 916-608-2212
Fax: 916-608-2232

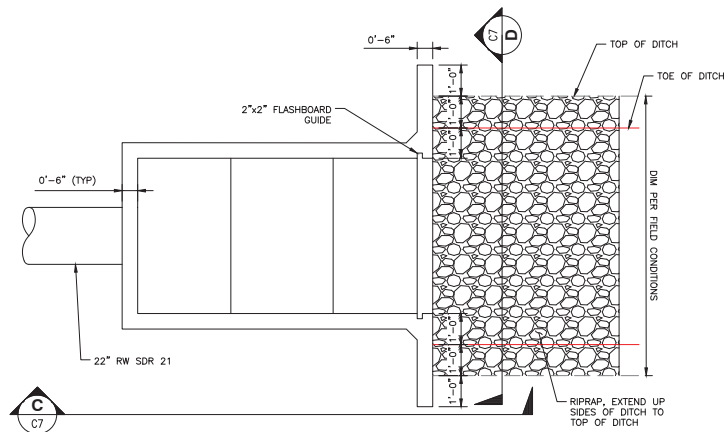


ROWNS VALLEY IRRIGATION DISTRICT
SICARD PIPELINE PROJECT
STANDARD DETAILS 2

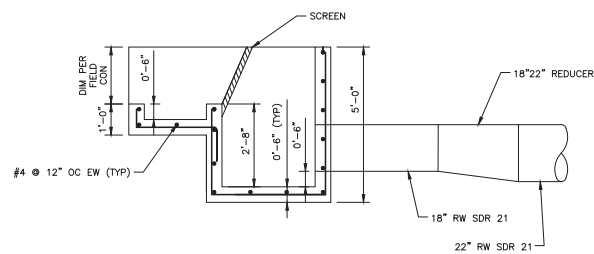
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SHEET 005 OF 114



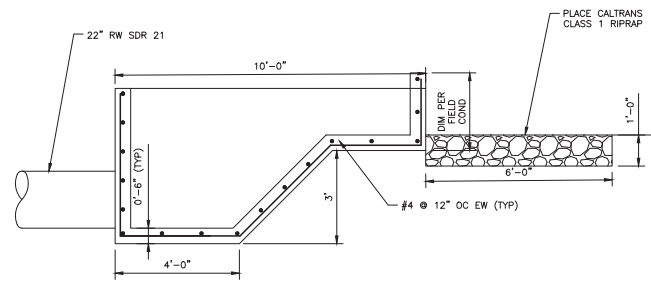
PHASE 3 INLET PLAN 1
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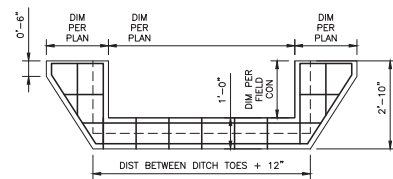
PHASE 2 OUTLET PLAN 2
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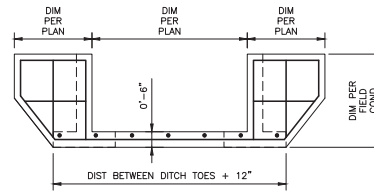
PHASE 3 INLET SECTION A
1"=2' -



PHASE 2 OUTLET SECTION C
1"=2'



PHASE 3 INLET SECTION (B)

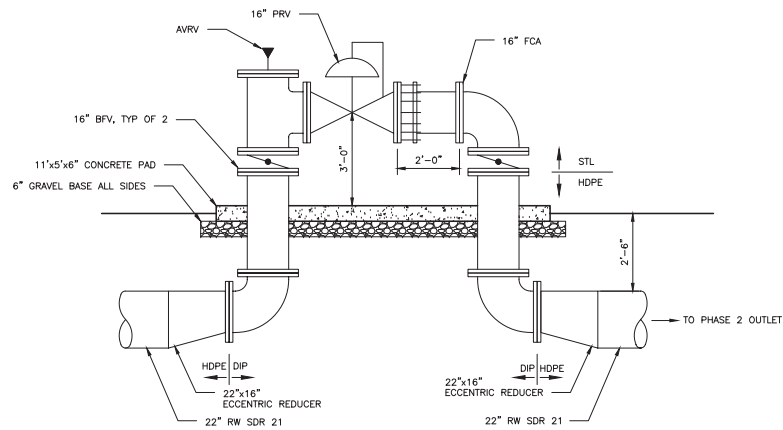


PHASE 2 OUTLET SECTION D
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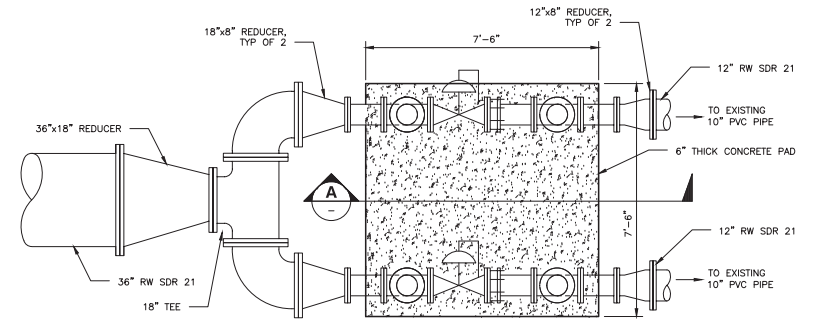
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|-----|------|----|-------------|---------------|---|--------------------|--------------|-------|----------|----------|---|---|---|---|------------------|
| | | | | SCALE: | WARNING | DESIGNED _DMM | ASHLEY SMITH | | 86512 | 03/31/21 |  |  |  | ROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | SHEET |
| | | | | AS NOTED |  | | | | | | | | | | |
| | | | | DATE: | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN _BTS/JMR/AAS | | | | | | | | | |
| REV | DATE | BY | DESCRIPTION | FEBRUARY 2020 | | CHECKED _KBB | KARL BRUSTAD | 57869 | 06/30/20 | | | 80 Blue Ravine Rd, Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax: 916-608-2232 | | SITE DETAILS 1 | C111 |
| | | | | | | | | | | | | | | | SHEET 006 OF 114 |

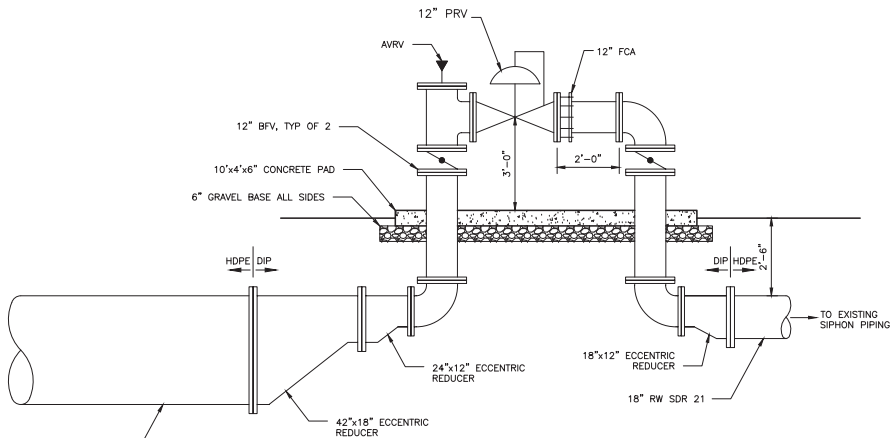
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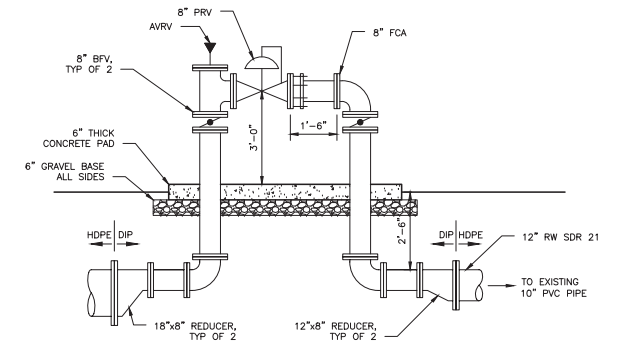
PHASE 2 OUTLET PRV DETAIL 1
1"=2'



PHASE 5 PRV STATION PLAN 2
1"=2'



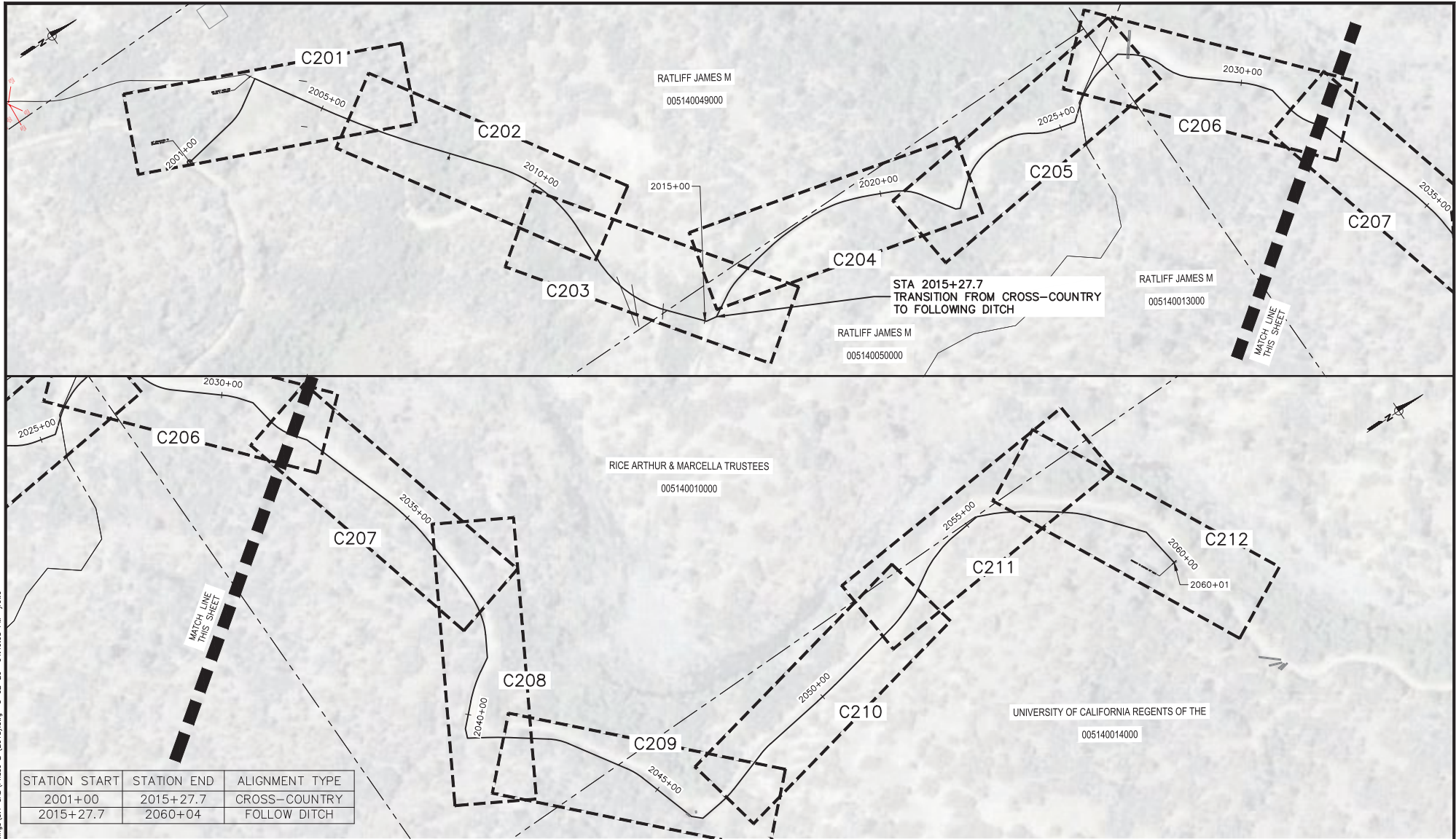
PHASE 3 OUTLET TEMPORARY PRV DETAIL 3
1"=2'



PHASE 5 PRV STATION SECTION A
1"=2'

60% SUBMITTAL - NOT FOR CONSTRUCTION

| | | | | | | | | | | | | | | | | | | |
|-----|------|----|-------------|------------------------|--|---|--|--------------------|--|--|--|--|--|--|--|------------------|-------|--|
| | | | | SCALE: AS NOTED | | <div>WARNING</div> <div>0 1/2</div> | | DESIGNED _DMM | | ASHLEY SMITH 86512 03/31/21 PROJECT ENGINEER R.C.E. NO. EXP. DATE | | <div>REGISTERED PROFESSIONAL PE No. 916-008-2232 STATE OF CALIFORNIA</div> | <div>PBI</div> <div>80 Blue Ravine Rd, Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax: 916-608-2232</div> | <div><div>Browns Valley IRRIGATION DISTRICT</div><div></div></div> | ROWS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET | |
| | | | | DATE: FEBRUARY 2020 | | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | | DRAWN _BTS/JMR/AAS | | KARL BRUSTAD 57869 06/30/20 PROJECT MANAGER R.C.E. NO. EXP. DATE | | | | | SITE DETAILS 2 | | C112 | |
| REV | DATE | BY | DESCRIPTION | | | | | CHECKED _KBB | | | | | | | | SHEET 007 OF 114 | | |

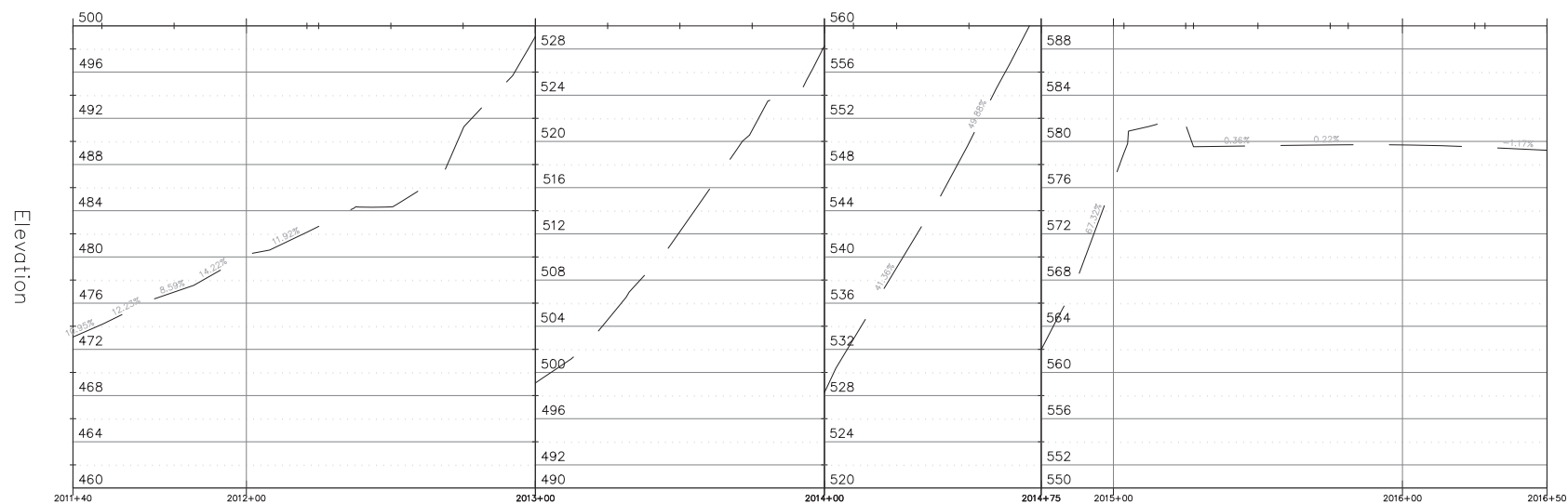


| STATION START | STATION END | ALIGNMENT TYPE |
|---------------|-------------|----------------|
| 2001+00 | 2015+27.7 | CROSS-COUNTRY |
| 2015+27.7 | 2060+04 | FOLLOW DITCH |

60% SUBMITTAL - NOT FOR CONSTRUCTION

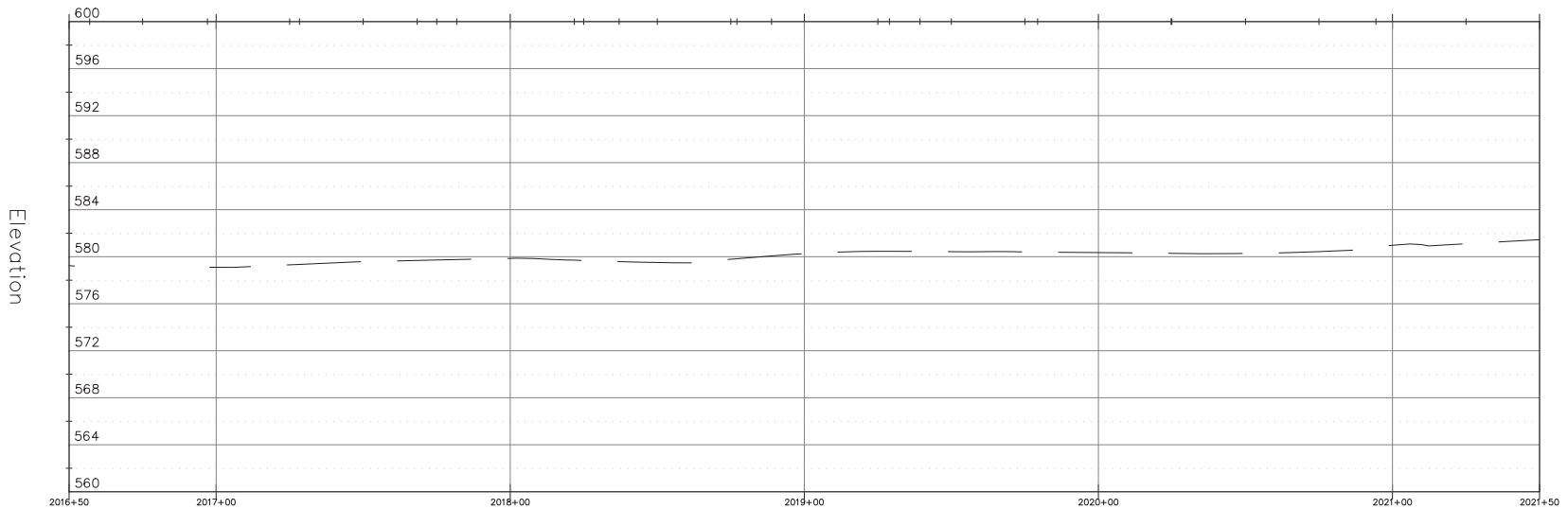
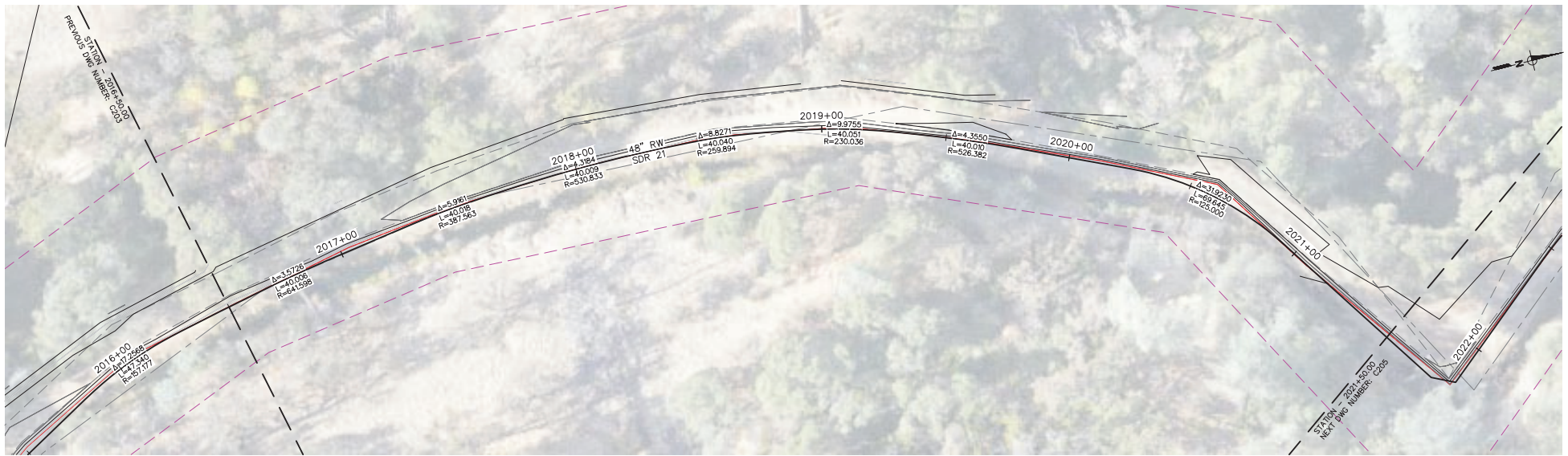
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| <table border="1"> <tr> <td>REV</td> <td>DATE</td> <td>BY</td> <td>DESCRIPTION</td> </tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table> | | | | REV | DATE | BY | DESCRIPTION | | | | | | | | | | | | | | | | | | | | | SCALE: 1"=100' DATE: FEBRUARY 2020 | WARNING | DESIGNED: DMM ASHLEY SMITH PROJECT ENGINEER 86512 R.C.E. NO. 03/31/21 EXP. DATE | DRAWN: BTS/JMR/AAS KARL BRUSTAD PROJECT MANAGER 57869 R.C.E. NO. 06/30/20 EXP. DATE | | 80 Blue Ravine Rd., Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax: 916-608-2232 | | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT PHASE 2 SHEET INDEX | SHEET C200 SHEET 008 OF 114 |
| REV | DATE | BY | DESCRIPTION | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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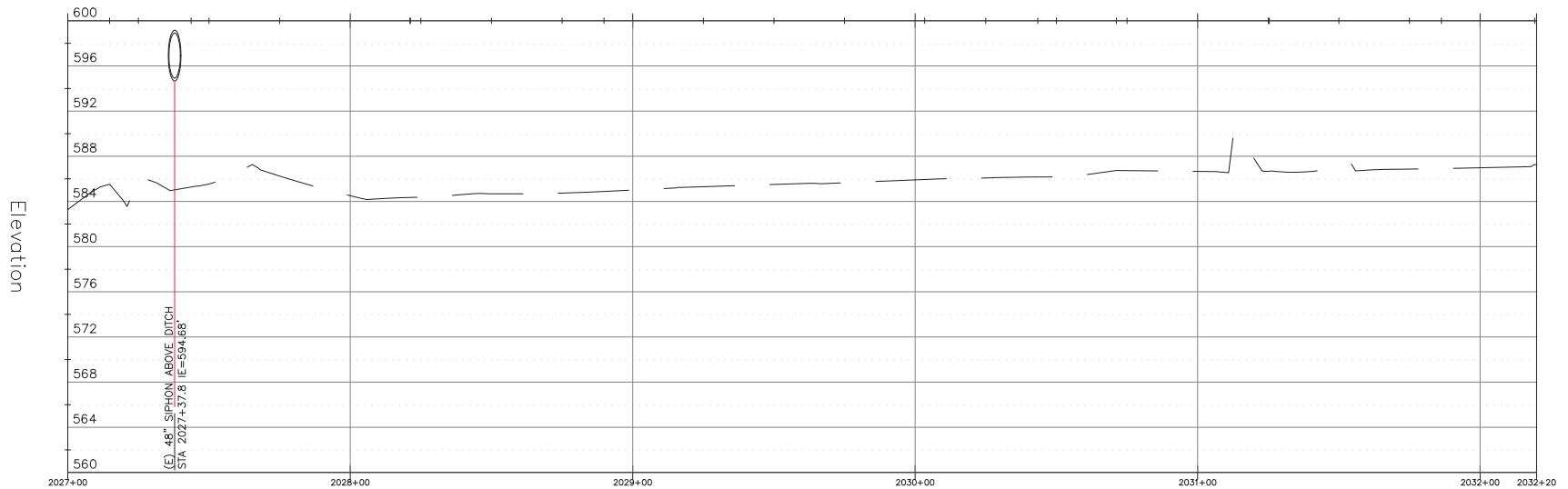
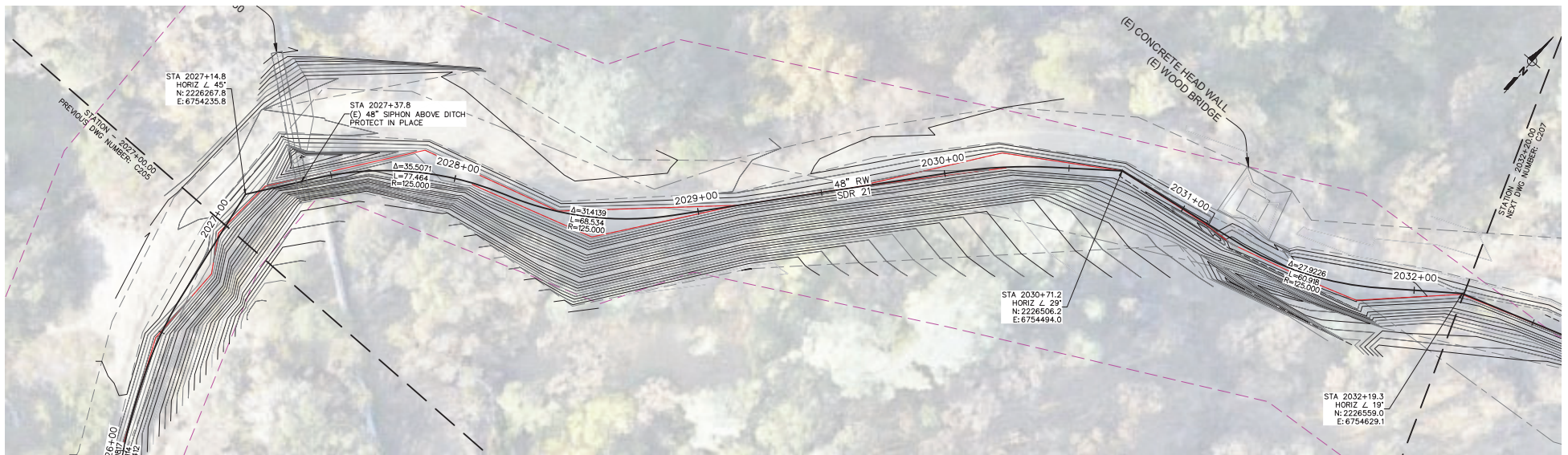
60% SUBMITTAL - NOT FOR CONSTRUCTION

| | | | | | | | | | | |
|-----|------|----|-------------|------------------------|---|---|---------------------------|------------------|------------|------------|
| | | | | SCALE: 1"=20' | <div>WARNING</div> <div><div>01/2</div></div> | DESIGNED: <u>DMM</u> | ASHLEY SMITH | | 86512 | 03/31/21 |
| | | | | DATE: FEBRUARY 2020 | | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN: <u>BTS/JMR/AAS</u> | PROJECT ENGINEER | | R.C.E. NO. |
| | | | | | | CHECKED: <u>KBB</u> | KARL BRUSTAD | | 57869 | 06/30/20 |
| | | | | | | | PROJECT MANAGER | | R.C.E. NO. | EXP. DATE |
| | | | | | | <div><div>REGISTERED PROFESSIONAL ENGINEER</div><div>STATE OF CALIFORNIA</div><div>NO. 90939</div></div> | | | | |
| | | | | | | <div><div>PBI</div><div><div><div></div></div></div><div>80 Blue Ravine Rd, Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax: 916-608-2232</div></div> | | | | |
| | | | | | | <div><div><div>Browns Valley</div><div>IRRIGATION DISTRICT</div></div><div><div></div></div></div> | | | | |
| | | | | | | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | | | |
| | | | | | | PHASE 2 STA 2011+40 TO STA 2016+50 | | | | |
| | | | | | | SHEET | | | | |
| | | | | | | C203 | | | | |
| | | | | | | SHEET 011 OF 114 | | | | |
| REV | DATE | BY | DESCRIPTION | | | | | | | |



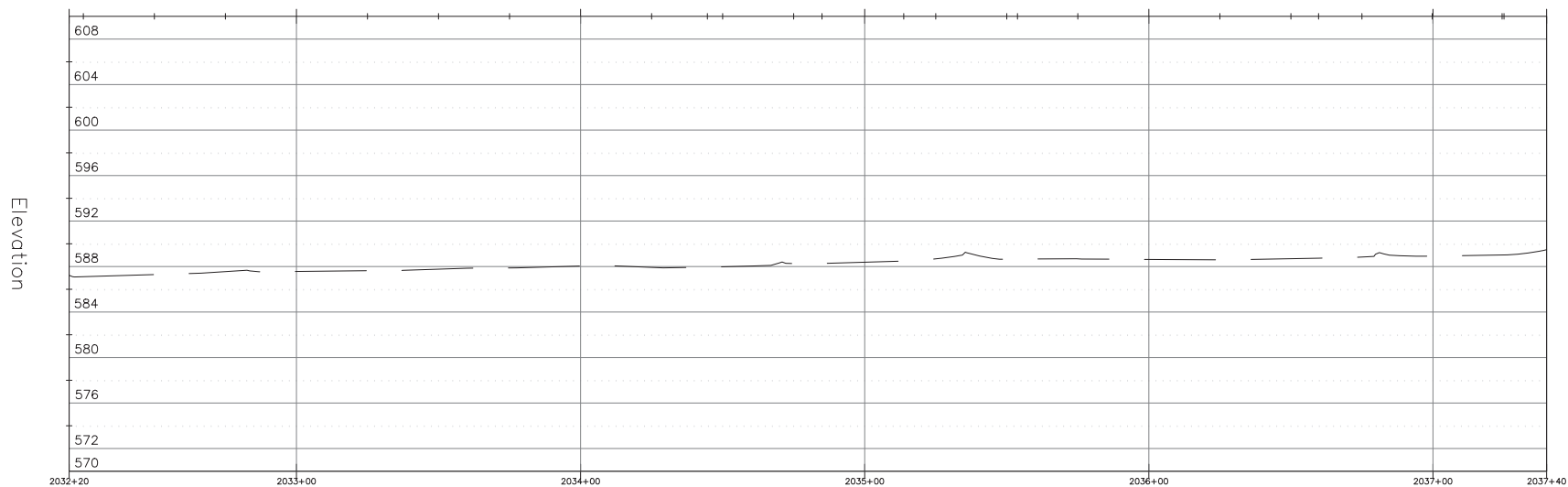
60% SUBMITTAL - NOT FOR CONSTRUCTION

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|-----|------|----|-------------|------------------------|---|--------------------|--|--|---|--|---|--|-------|
| | | | | SCALE: 1"=20' | <div>WARNING</div> <div></div> | DESIGNED _DMM | ASHLEY SMITH 86512 03/31/21 PROJECT ENGINEER R.C.E. NO. EXP. DATE | |  |  80 Blue Ravine Rd, Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax: 916-608-2232 |  | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | SHEET |
| | | | | DATE: FEBRUARY 2020 | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN _BTS/JMR/AAS | KARL BRUSTAD 57869 06/30/20 PROJECT MANAGER R.C.E. NO. EXP. DATE | | | | | PHASE 2 STA 2016+50 TO STA 2021+50 | C204 |
| REV | DATE | BY | DESCRIPTION | SHEET 012 OF 114 | | | | | | | | | |





60% SUBMITTAL - NOT FOR CONSTRUCTION

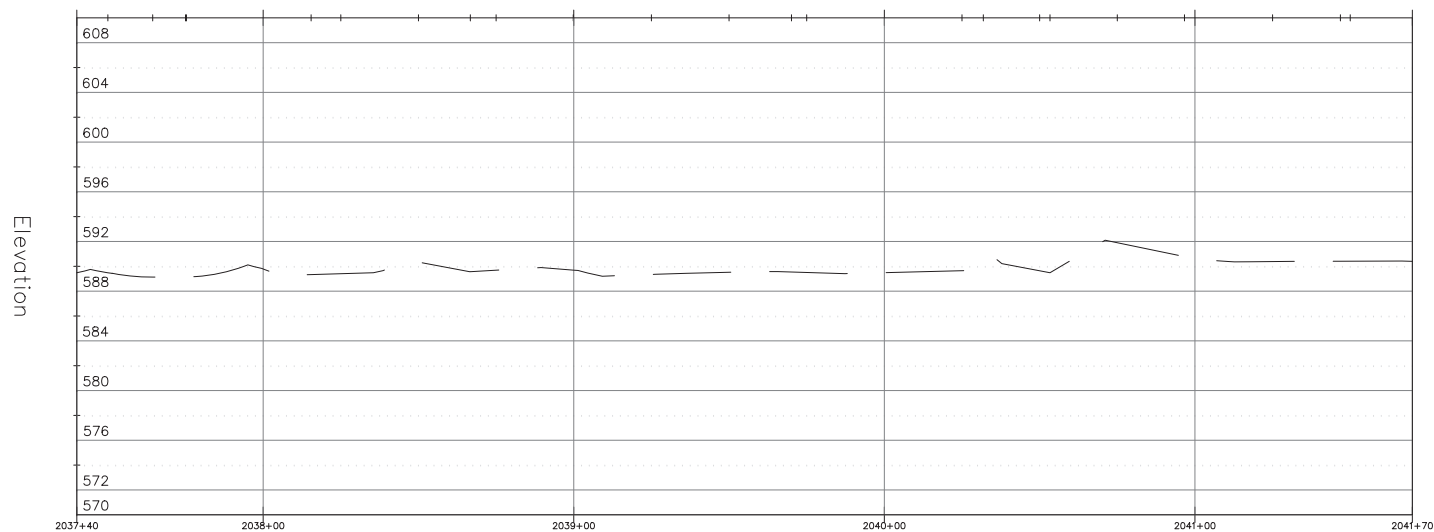
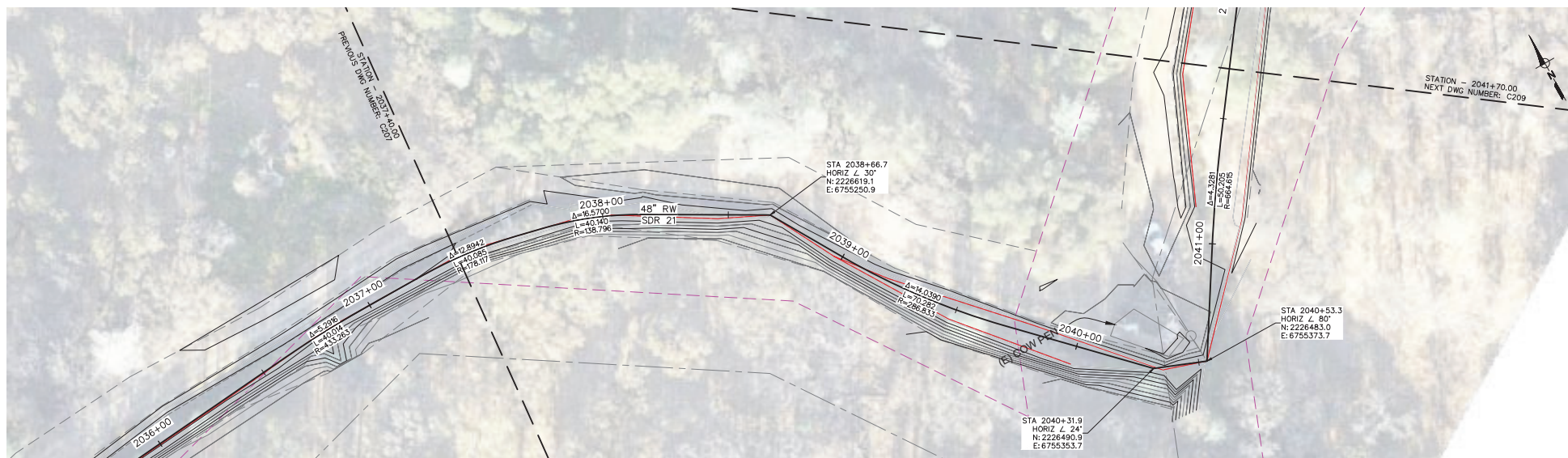
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| | | | | DATE: FEBRUARY 2020 | | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | | DRAWN <u>BTS/JMR/AAS</u> | | KARL BRUSTAD PROJECT MANAGER | | 57869 R.C.E. NO. | | 06/30/20 EXP. DATE | | | | | PHASE 2 STA 2027+00 TO STA 2032+20 | | C206 | |
| REV | DATE | BY | DESCRIPTION | | | | | CHECKED <u>KBB</u> | | | | | | | | | | STA 2027+00 TO STA 2032+20 | | SHEET 214 OF 114 | | |



60% SUBMITTAL - NOT FOR CONSTRUCTION

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|-----|------|----|-------------|------------------------|--|--------------------------------------|---------------------------------------|--|---|---|---|--|--|-----------------|
| | | | | SCALE: 1"=20' | <div>WARNING</div> <div></div> <div>IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.</div> | DESIGNED: <u>DMM</u> | ASHLEY SMITH 86512 03/31/21 | |  |  |  | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET |
| | | | | DATE: FEBRUARY 2020 | | DRAWN: <u>BTS/JMR/AAS</u> | PROJECT ENGINEER R.C.E. NO. EXP. DATE | | | | | PHASE 2 STA 2032+20 TO STA 2037+40 | | C207 |
| REV | DATE | BY | DESCRIPTION | | | CHECKED: <u>KBB</u> | KARL BRUSTAD 57869 06/30/20 | | | | | | | SHEET 015 OF 11 |
| | | | | | | PROJECT MANAGER R.C.E. NO. EXP. DATE | | | | | | | | |

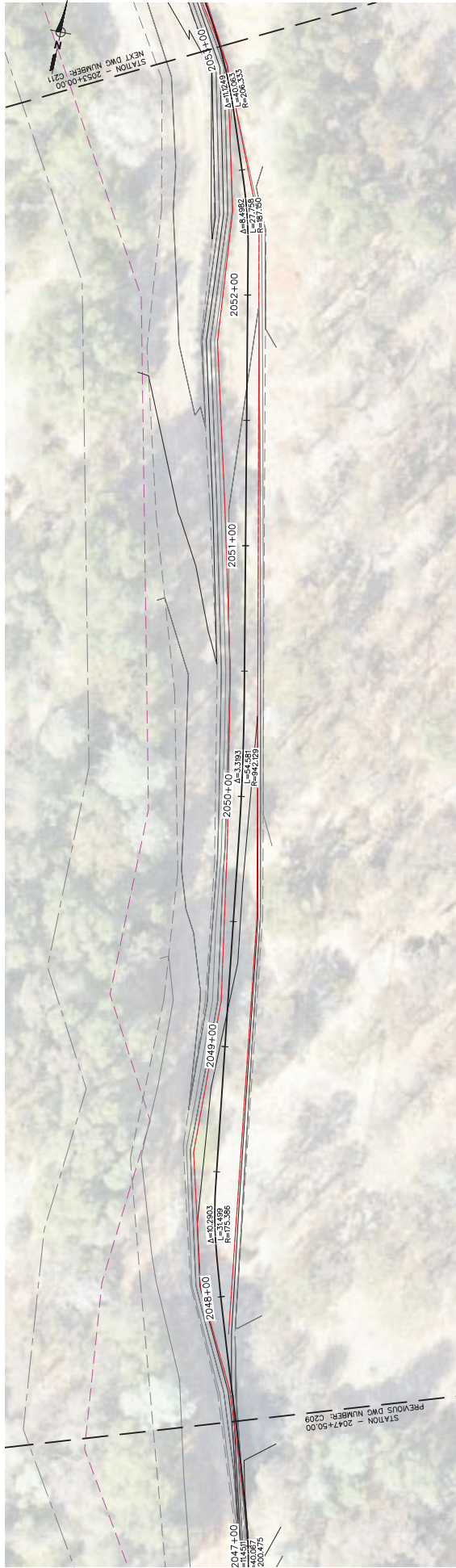
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60% SUBMITTAL - NOT FOR CONSTRUCTION

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|-----|------|----|-------------|------------------------|--|---|----------------------------------|-----------------------|-----------------------|--|--|--|--|-------|
| | | | | SCALE: 1"=20' | WARNING 0 1/2 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DESIGNED: DMM DRAWN: BTS/JMR/AAS | ASHLEY SMITH PROJECT ENGINEER | 86512 R.C.E. NO. | 03/31/21 EXP. DATE | | 80 Blue Ravine Rd., Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax: 916-608-2232 | | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | SHEET |
| REV | DATE | BY | DESCRIPTION | DATE: FEBRUARY 2020 | | CHECKED: KBB KARL BRUSTAD PROJECT MANAGER | 57869 R.C.E. NO. | 06/30/20 EXP. DATE | | | | | PHASE 2 STA 2037+40 TO STA 2041+70 | C208 |

SHEET 016 OF 114



| Elevation | | 2047+50 | 2048+00 | 2049+00 | 2050+00 | 2051+00 | 2052+00 | 2053+00 |
|-----------|--|---------|---------|---------|---------|---------|---------|---------|
| 608 | | | | | | | | |
| 604 | | | | | | | | |
| 600 | | | | | | | | |
| 596 | | | | | | | | |
| 592 | | | | | | | | |
| 588 | | | | | | | | |
| 584 | | | | | | | | |
| 580 | | | | | | | | |
| 576 | | | | | | | | |
| 572 | | | | | | | | |
| 570 | | | | | | | | |




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BROWNS VALLEY IRRIGATION DISTRICT
SICARD PIPELINE PROJECT

PHASE 2
STA 2047+50 TO STA 2053+00

C210

SHEET 03 OF 114



ASHLEY SMITH
PROJECT ENGINEER

86512
R.C.E. NO.

03/31/21
EXP. DATE

KARL BRUSTAD
PROJECT MANAGER

57969
R.C.E. NO.

06/30/20
EXP. DATE

DESIGNED: DMM

DRAWN: BJS/AMZ/AS

CHECKED: KBB

WARNING
0 1/2"

IF THIS BAR DOES NOT MEASURE 1" NOT TO SCALE

SCALE
1"=20'

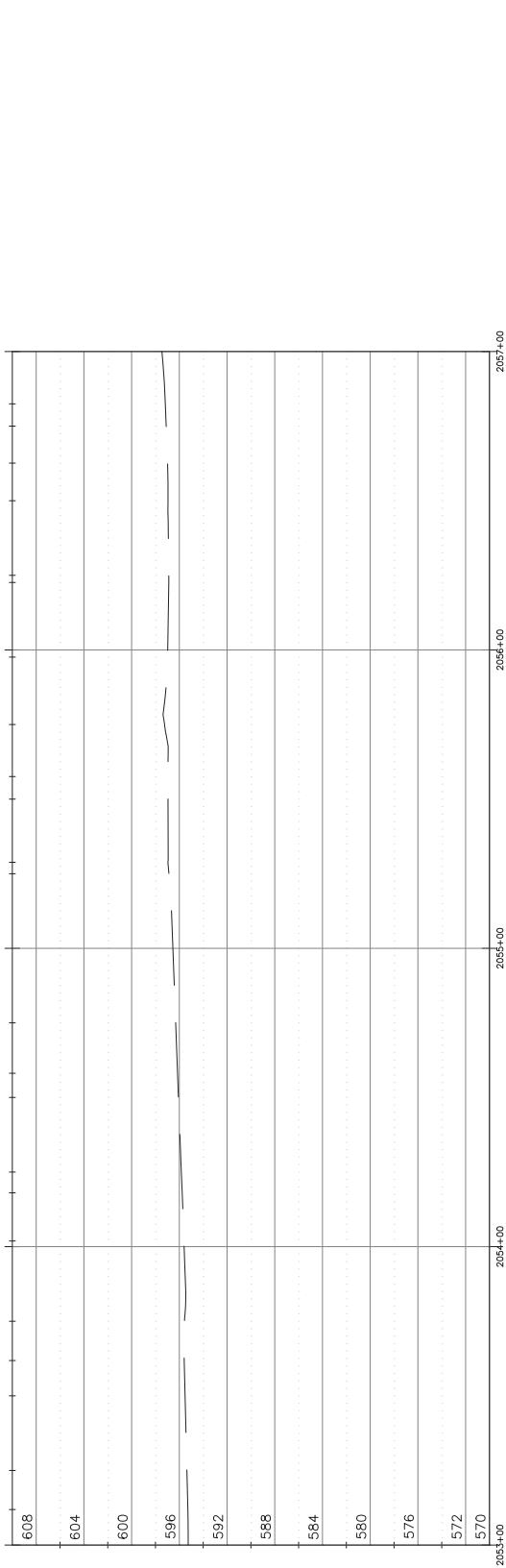
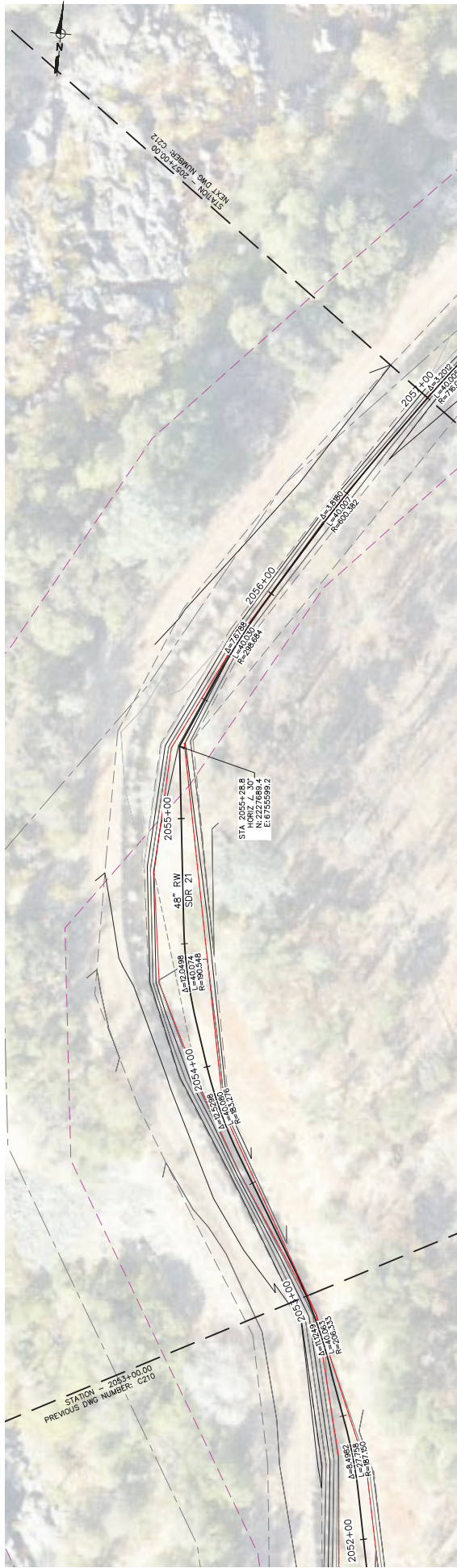
DATE:
FEBRUARY 2020

REV

DATE

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DESCRIPTION



60% SUBMITTAL - NOT FOR CONSTRUCTION

BROWNS VALLEY IRRIGATION DISTRICT
SICARD PIPELINE PROJECT

PHASE 2
STA 2053+00 TO STA 2057+00

C211

SHEET 09 OF 114

SCALE

1"=20'

WARNING

0 1/2"

IF THIS BAR DOES NOT MEASURE 1" NOT TO SCALE

DESIGNED: DMM

PROJECT ENGINEER

ASHLEY SMITH

DRAWN: BITS/AMZ/AS

CHECKED: KBB

PROJECT MANAGER

KARL BRUSTAD

DATE:

FEBRUARY 2020

REV

DATE

BY

DESCRIPTION

86512

03/31/21

EXP. DATE

57969

06/30/20

EXP. DATE

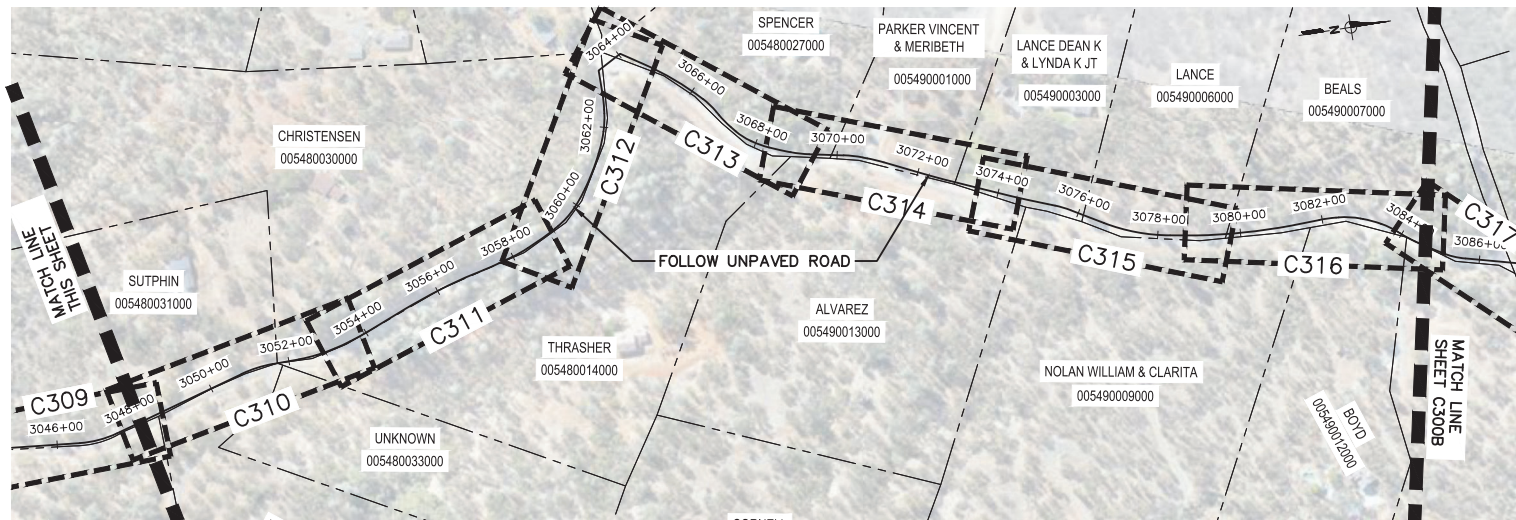
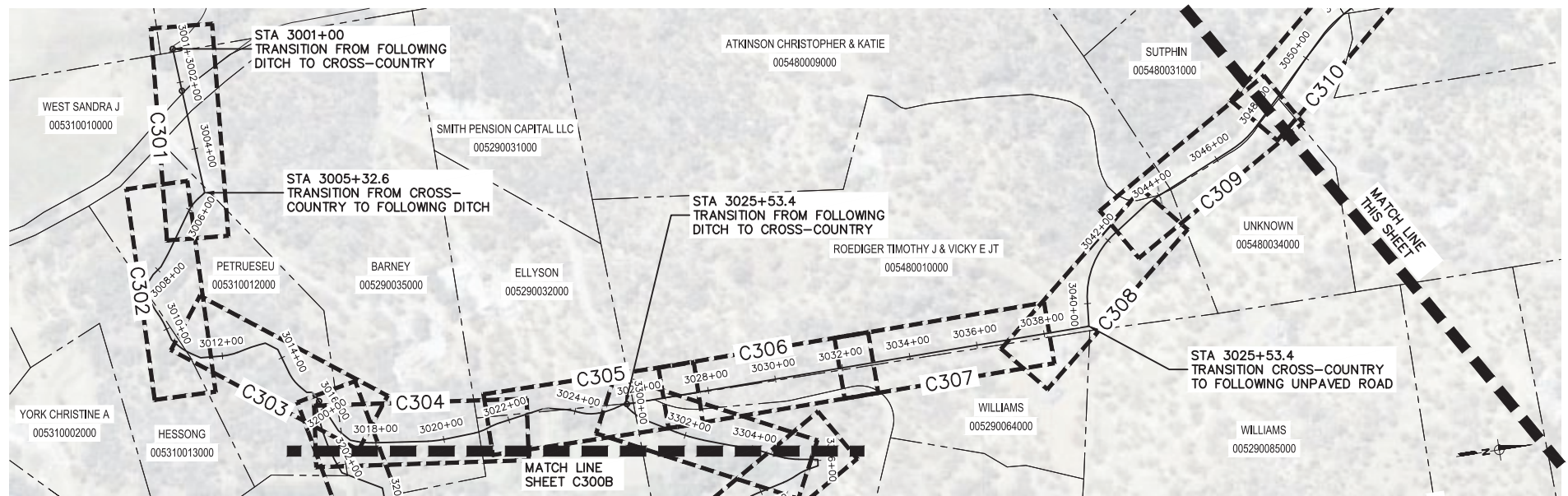
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80 Blue Ravine Rd, Suite 280
Browns Valley, CA 95924
PH: 916-608-2212
Fax: 916-608-2232

Browns Valley

IRRIGATION DISTRICT

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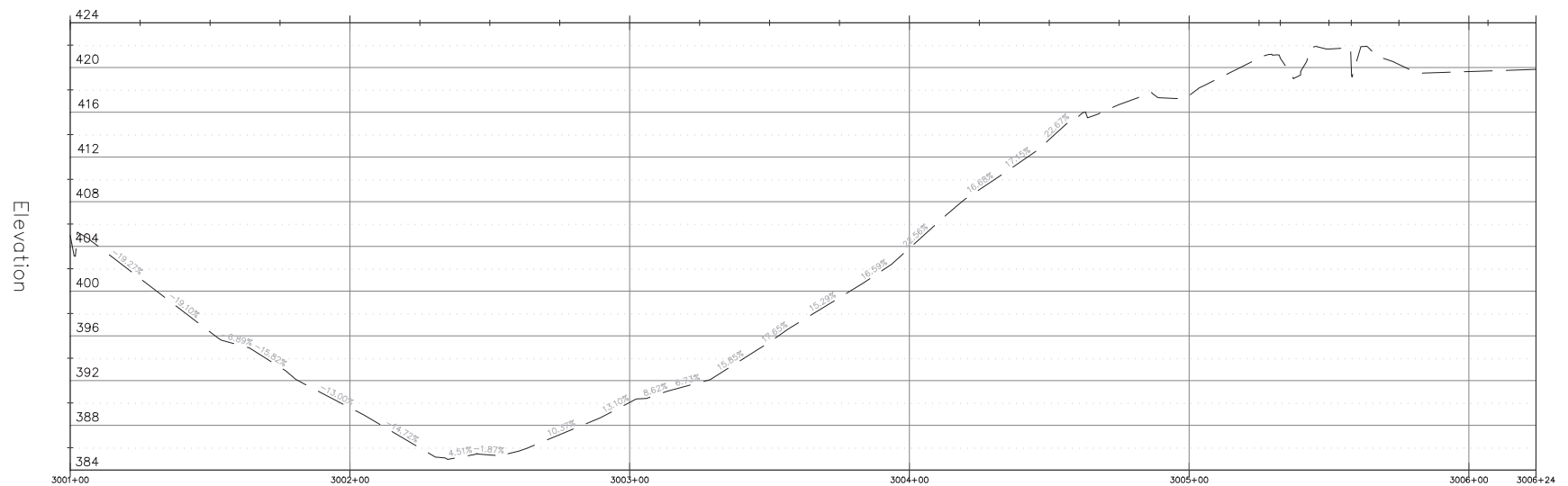
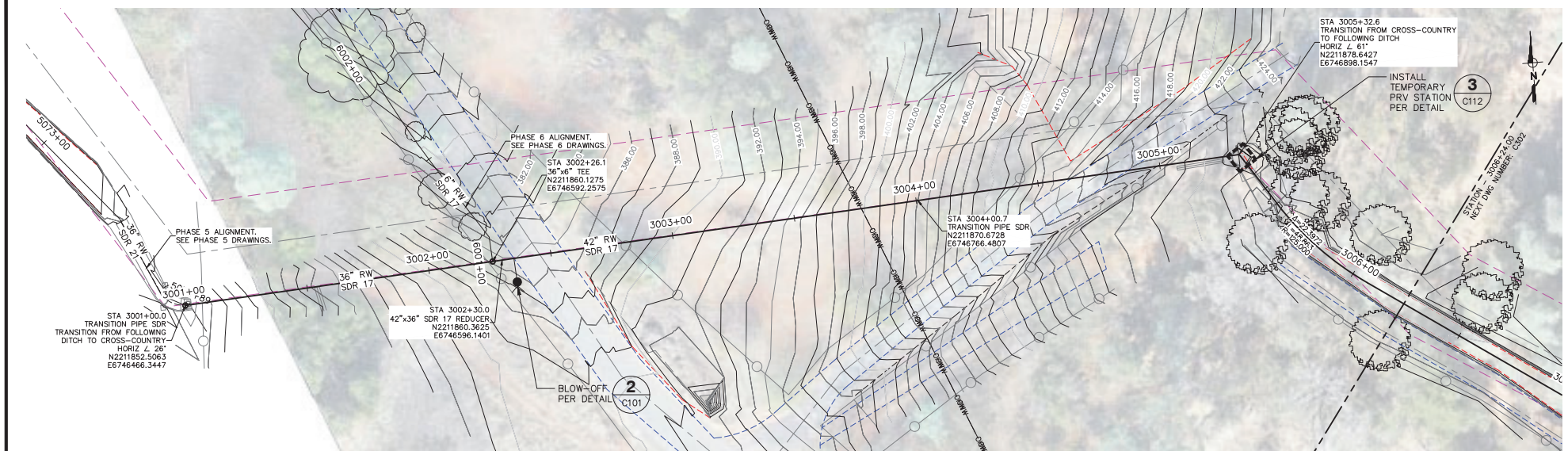


| STATION | | ALIGNMENT |
|-----------|------------|---------------------|
| START | END | TYPE |
| 3001+00 | 3005+32.6 | CROSS-COUNTRY |
| 3005+32.6 | 3025+53.4 | FOLLOW DITCH |
| 3025+53.4 | 3039+33.3 | CROSS-COUNTRY |
| 3039+33.3 | 3086+91 | FOLLOW UNPAVED ROAD |
| 3086+91 | 3121+12.93 | FOLLOW PAVED ROAD |
| 3200+00 | 3211+25.8 | CROSS-COUNTRY |
| 3211+25.8 | 3228+21.86 | FOLLOW DITCH |
| 3300+00 | 3314+81 | FOLLOW DITCH |

60% SUBMITTAL - NOT FOR CONSTRUCTION

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| REV | DATE | BY | DESCRIPTION | SCALE: 1"=150' | WARNING 0 1/2 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. FEBRUARY 2020 | DESIGNED: DMM DRAWN: BTS/JMR/AAS CHECKED: KRB | ASHLEY SMITH PROJECT ENGINEER KARL BRUSTAD PROJECT MANAGER | 86512 R.C.E. NO. 57869 R.C.E. NO. | 03/31/21 EXP. DATE 06/30/20 EXP. DATE | | 80 Blue Ravine Rd, Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax: 916-608-2232 | | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT PHASE 3 SHEET INDEX I | SHEET C300A SHEET 021 OF 114 |
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60% SUBMITTAL - NOT FOR CONSTRUCTION

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SCALE:
1"=20'

DATE:
FEBRUARY 2020

WARNING
0 1/2
IF THIS BAR DOES
NOT MEASURE 1"
THEN DRAWING IS
NOT TO SCALE.

DESIGNED: DMM
DRAWN: BTS/JMR/AAS
CHECKED: KBB

| | | |
|----------------------------------|---------------------|-----------------------|
| ASHLEY SMITH PROJECT ENGINEER | 86512 R.C.E. NO. | 03/31/21 EXP. DATE |
| KARL BRUSTAD PROJECT MANAGER | 57869 R.C.E. NO. | 06/30/20 EXP. DATE |



PBI
80 Blue Ravine Rd, Suite 260
Folsom, CA 95630
PH: 916-608-2212
Fax: 916-608-2232

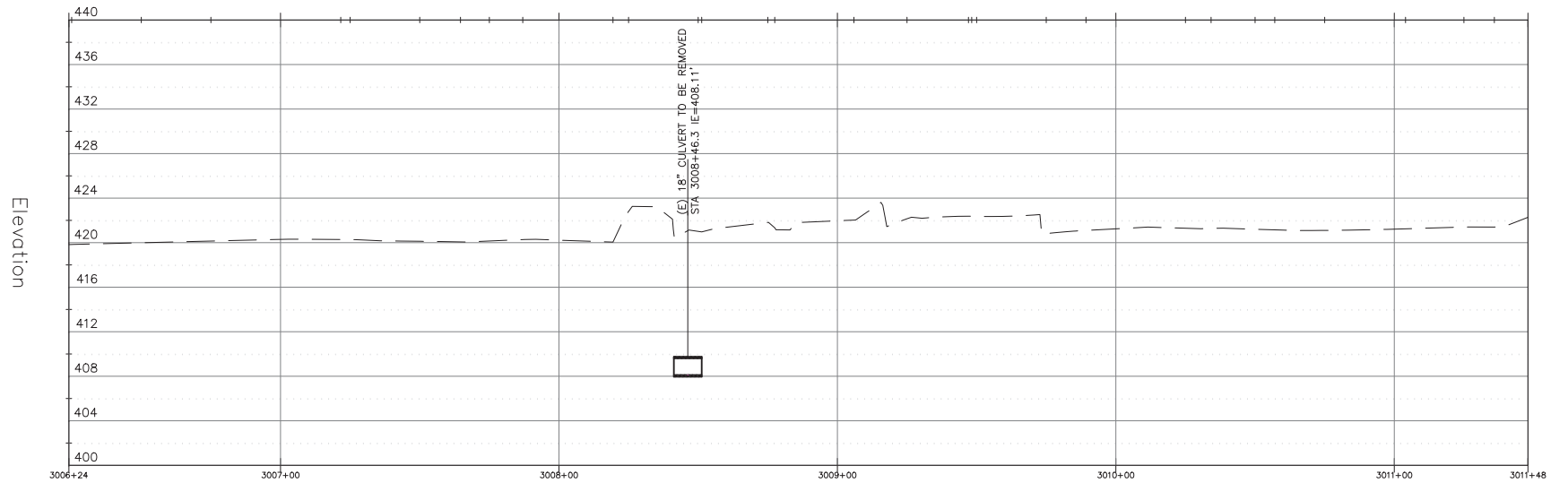
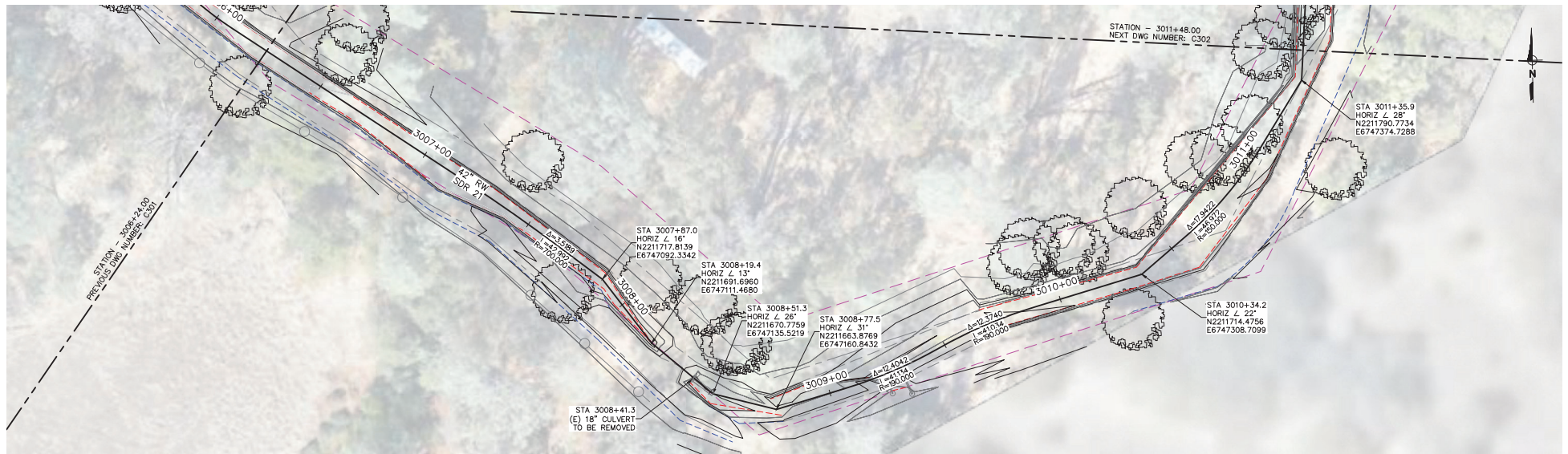


BROWNS VALLEY IRRIGATION DISTRICT
SICARD PIPELINE PROJECT

PHASE 3
STA 3001+00 TO STA 3006+24

SHEET
C301
SHEET 023 OF 114

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60% SUBMITTAL - NOT FOR CONSTRUCTION

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SCALE:
1"=20'

DATE:
FEBRUARY 2020

WARNING
0 1/2
IF THIS BAR DOES
NOT MEASURE 1"
THEN DRAWING IS
NOT TO SCALE.

DESIGNED: DMM
DRAWN: BTS/JMR/AAS
CHECKED: KBB

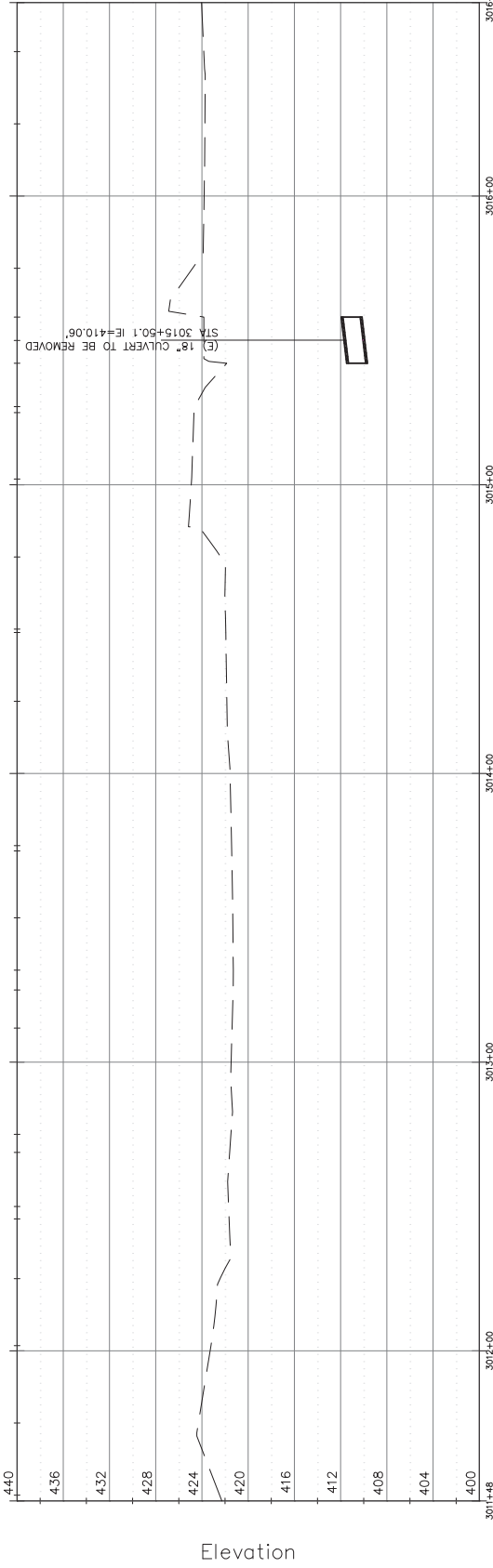
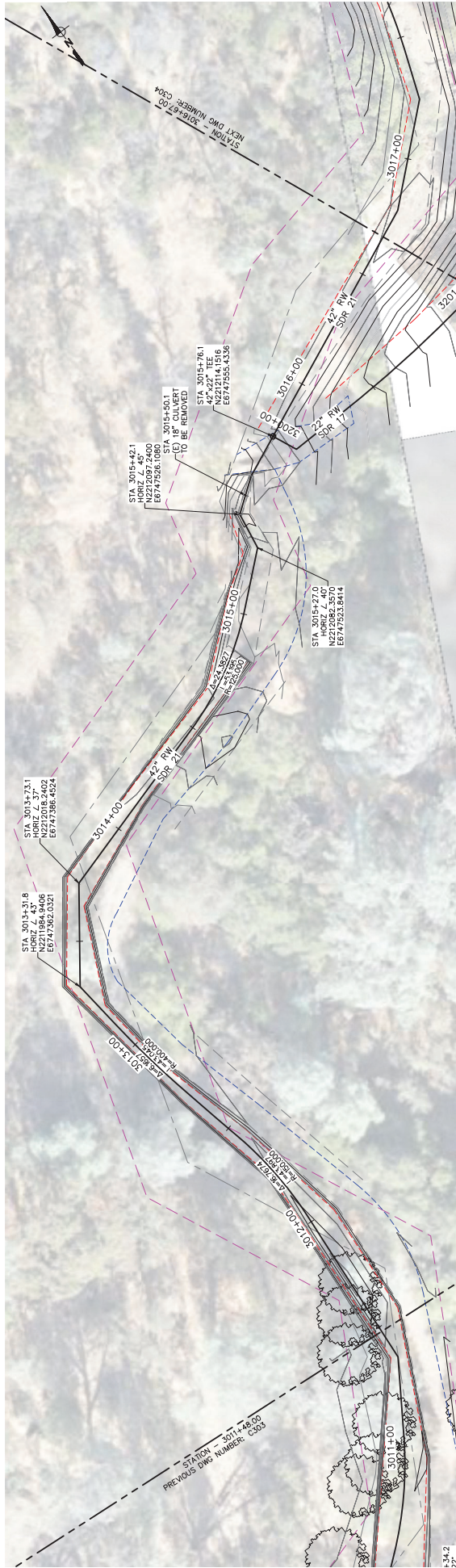
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| ASHLEY SMITH | 86512 | 03/31/21 |
| PROJECT ENGINEER | R.C.E. NO. | EXP. DATE |
| KARL BRUSTAD | 57869 | 06/30/20 |
| PROJECT MANAGER | R.C.E. NO. | EXP. DATE |



BROWNS VALLEY IRRIGATION DISTRICT
SICARD PIPELINE PROJECT

PHASE 3
STA 3006+24 TO STA 3011+48

SHEET
C302
SHEET 024 OF 114



60% SUBMITTAL - NOT FOR CONSTRUCTION

SHEET

C303

PHASE 3
STA 3011+48 TO STA 3016+67

SHEET 05 OF 114



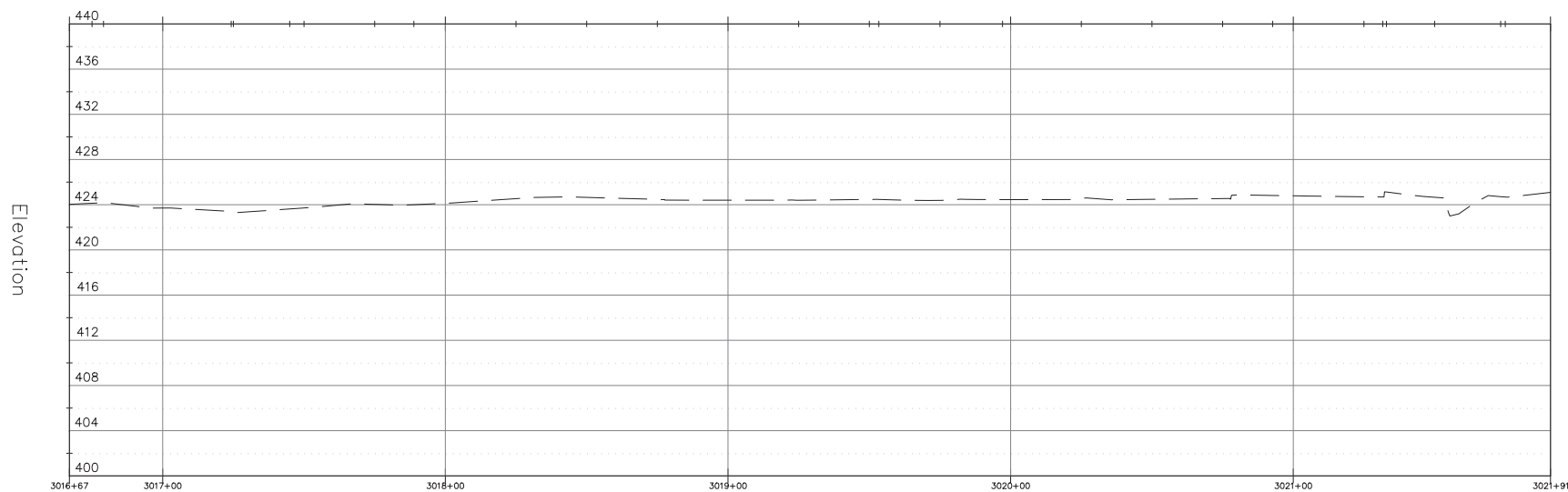
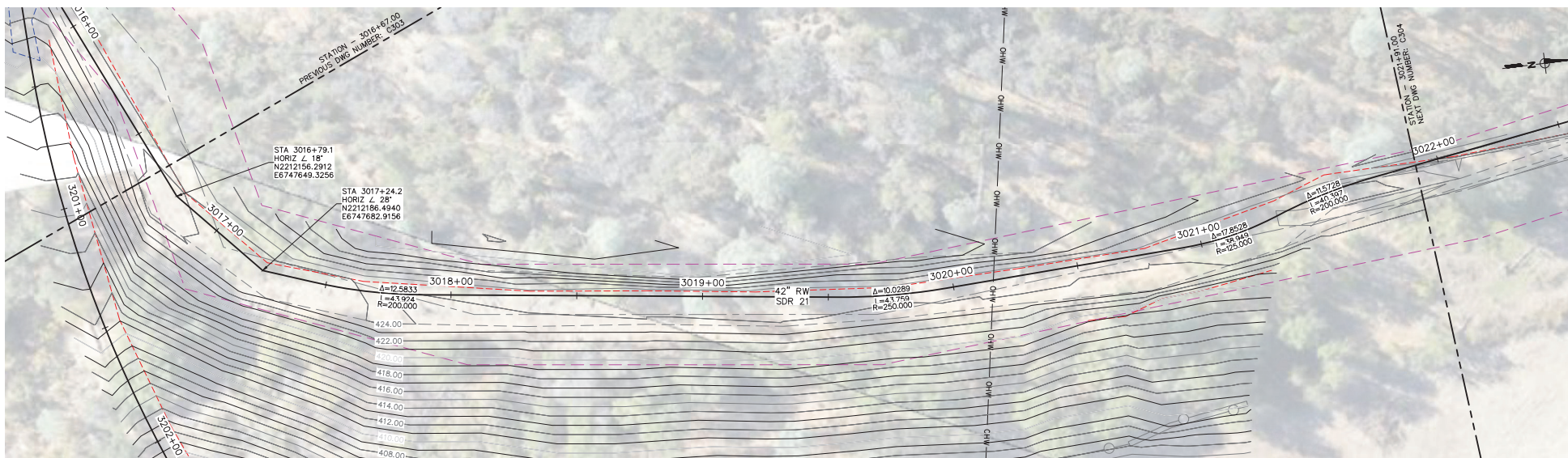
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| PROJECT ENGINEER | ASHLEY SMITH | R.C.E. NO. | 86512 | EXP. DATE | 03/31/21 |
| PROJECT MANAGER | KARL BRUSTAD | R.C.E. NO. | 57969 | EXP. DATE | 06/30/20 |

| | |
|-------------------|--------------|
| DESIGNED: DMM | CHECKED: KBB |
| DRAWN: BJS/AMZ/AS | |

| | |
|---------|------------------------------------|
| WARNING | IF THIS BAR DOES NOT MEASURE 1\"/> |
|---------|------------------------------------|

| | |
|-------|-------|
| SCALE | 1\"/> |
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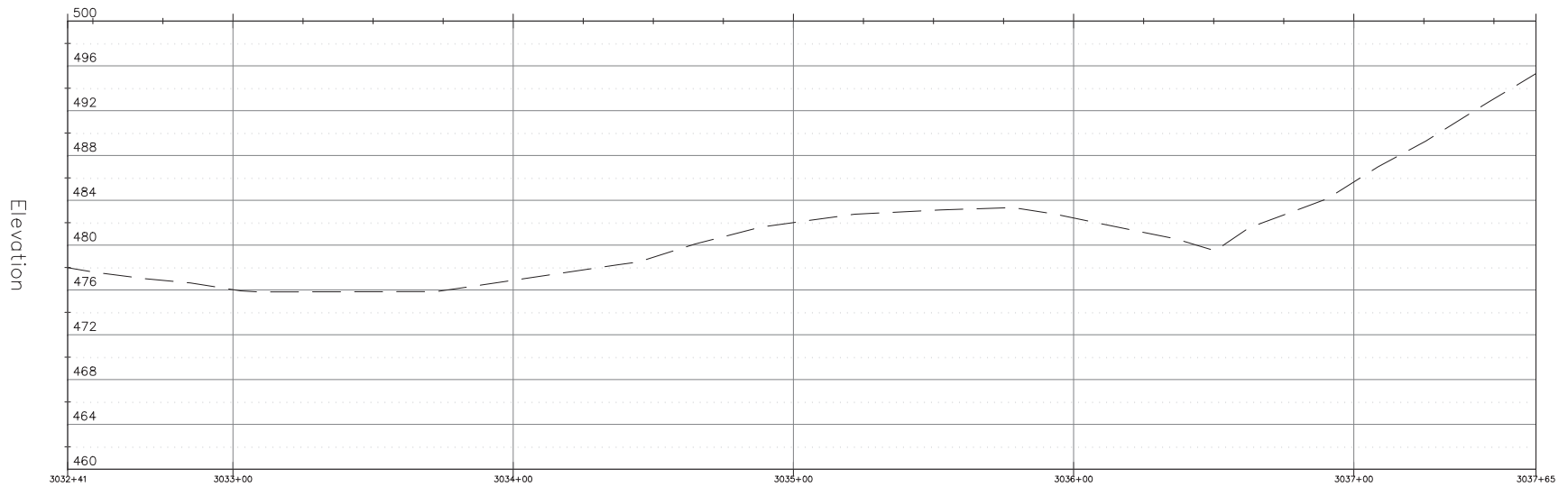
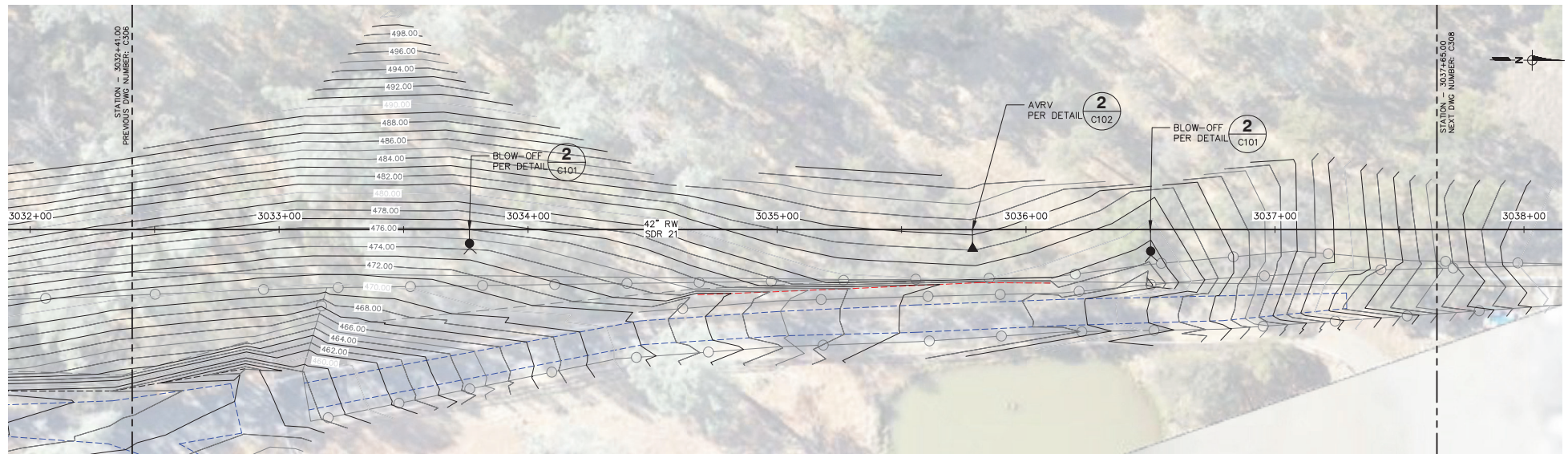
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60% SUBMITTAL - NOT FOR CONSTRUCTION

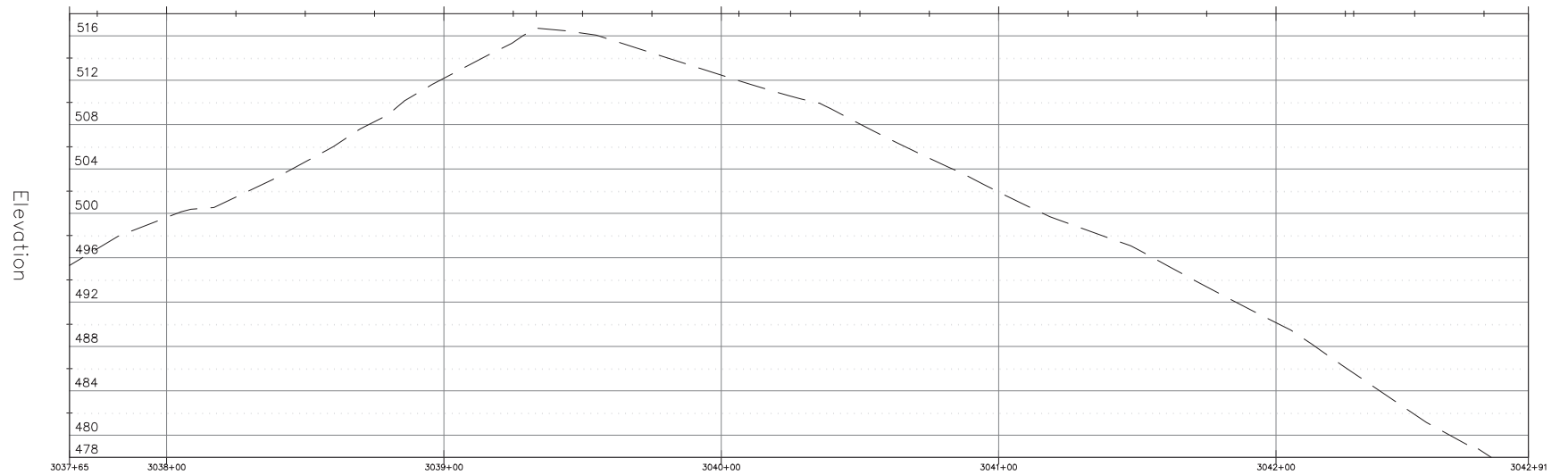
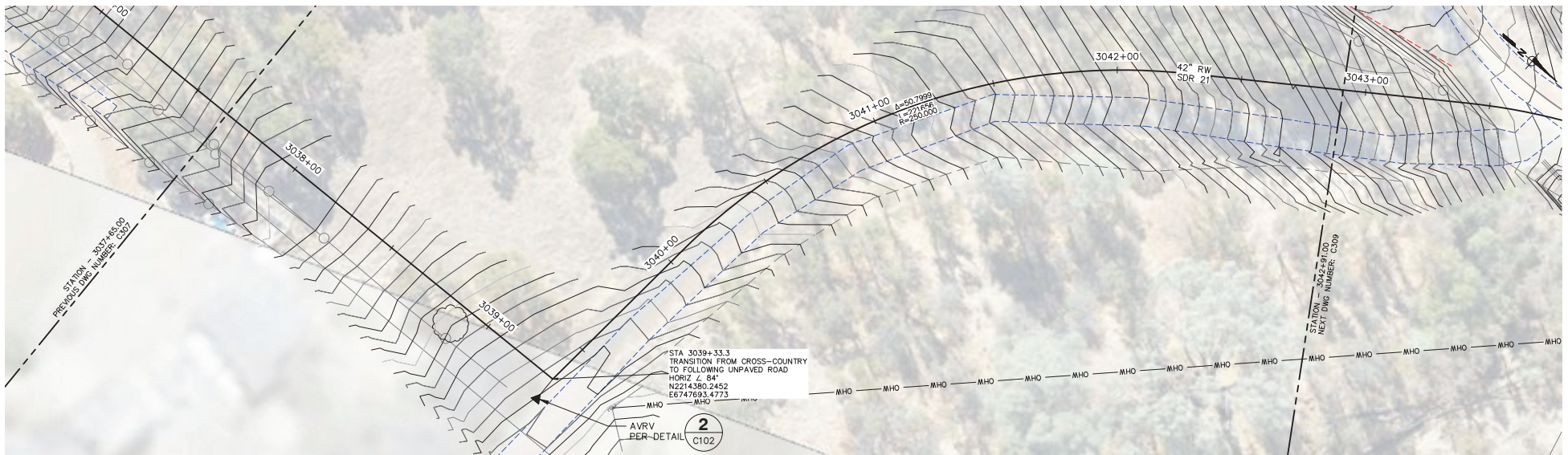
| REV | DATE | BY | DESCRIPTION | SCALE: | WARNING | DESIGNED: DMM | PROJECT ENGINEER | R.C.E. NO. | EXP. DATE | PHASE 3 | SHEET |
|-----|------|----|-------------|--------|---|--------------------|------------------|------------|-----------|----------------------------|-------|
| | | | | 1"=20' | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | ASHLEY SMITH | 86512 | 03/31/21 | | STA 3016+67 TO STA 3021+91 | C304 |
| | | | | | | DRAWN: BTS/JMR/AAS | KARL BRUSTAD | 57869 | 06/30/20 | | |
| | | | | | | CHECKED: KBB | PROJECT MANAGER | | | | |

P:\BVID\Bcard Pipeline\05 Drawings\3.1 CAD\Phase 3 (2018).dwg 3-02-20 04:56:23 PM jrowe



60% SUBMITTAL - NOT FOR CONSTRUCTION

| | | | | | | | | | | | | | | | | | | | | | | | | |
|-----|------|----|-------------|---|--|---|--|----------------------|--|--------------|--|-----------|--|---------------------------------------|--|---|---|---|--|------|-------|--|--|--|
| | | | | SCALE: 1"=20' | | <div>WARNING</div> <div></div> | | DESIGNED: <u>DMM</u> | | ASHLEY SMITH | | 86512 | | 03/31/21 | |  |  |  | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET | | | |
| | | | | DATE: FEBRUARY 2020 | | DRAWN: <u>BTS/JMR/AAS</u> | | PROJECT ENGINEER | | R.C.E. NO. | | EXP. DATE | | PHASE 3 STA 3032+41 TO STA 3037+65 | | | | | | C307 | | | | |
| | | | | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | | CHECKED: <u>KBB</u> | | KARL BRUSTAD | | 57869 | | 06/30/20 | | | | | | | | | | | | |
| REV | DATE | BY | DESCRIPTION | | | | | PROJECT MANAGER | | R.C.E. NO. | | EXP. DATE | | SHEET 029 OF 114 | | | | | | | | | | |



60% SUBMITTAL - NOT FOR CONSTRUCTION

| REV | DATE | BY | DESCRIPTION |
|-----|------|----|-------------|
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SCALE:
1"=20'

DATE:
FEBRUARY 2020

WARNING
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED: DMM
DRAWN: BTS/JMR/AAS
CHECKED: KBB

| | | |
|----------------------------------|---------------------|-----------------------|
| ASHLEY SMITH PROJECT ENGINEER | 86512 R.C.E. NO. | 03/31/21 EXP. DATE |
| KARL BRUSTAD PROJECT MANAGER | 57869 R.C.E. NO. | 06/30/20 EXP. DATE |



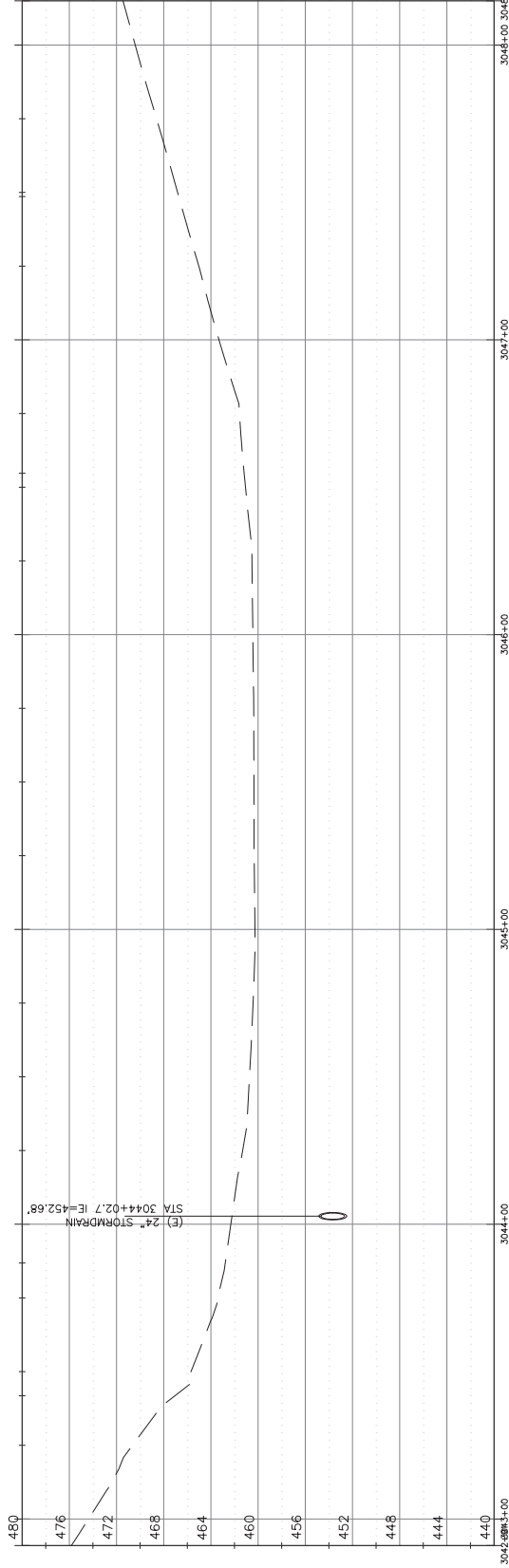
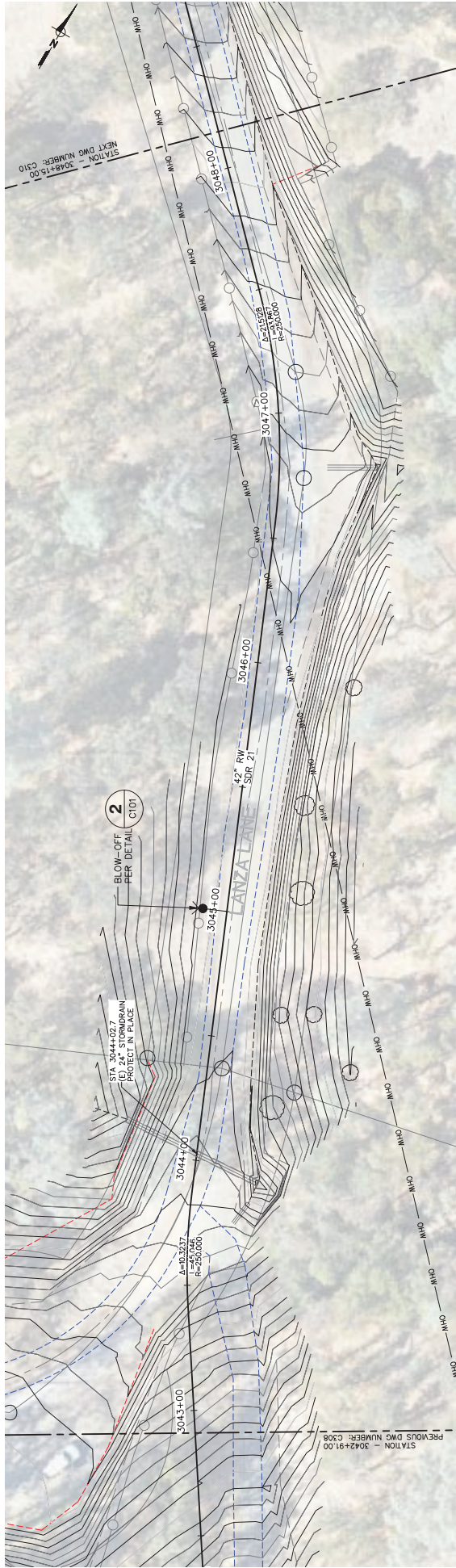
PBI
80 Blue Ravine Rd, Suite 280
Folsom, CA 95630
PH: 916-608-2212
Fax: 916-608-2232



BROWNS VALLEY IRRIGATION DISTRICT
SICARD PIPELINE PROJECT

PHASE 3
STA 3037+65 TO STA 3042+91

SHEET
C308
SHEET 030 OF 114



60% SUBMITTAL - NOT FOR CONSTRUCTION

BROWNS VALLEY IRRIGATION DISTRICT
SICARD PIPELINE PROJECT



| | | | | |
|-------------------|------------------|-------|----------|-----------|
| DESIGNED: DMM | PROJECT ENGINEER | 86512 | 03/31/21 | EXP. DATE |
| DRAWN: BJS/AMZ/AS | R.C.E. NO. | | | |
| CHECKED: KBB | PROJECT MANAGER | 57969 | 06/30/20 | EXP. DATE |
| | R.C.E. NO. | | | |

| | |
|--|---------------|
| SCALE | 1"=20' |
| WARNING | 0 1/2 |
| IF THIS BAR DOES NOT MEASURE 1" NOT TO SCALE | |
| DATE: | FEBRUARY 2020 |

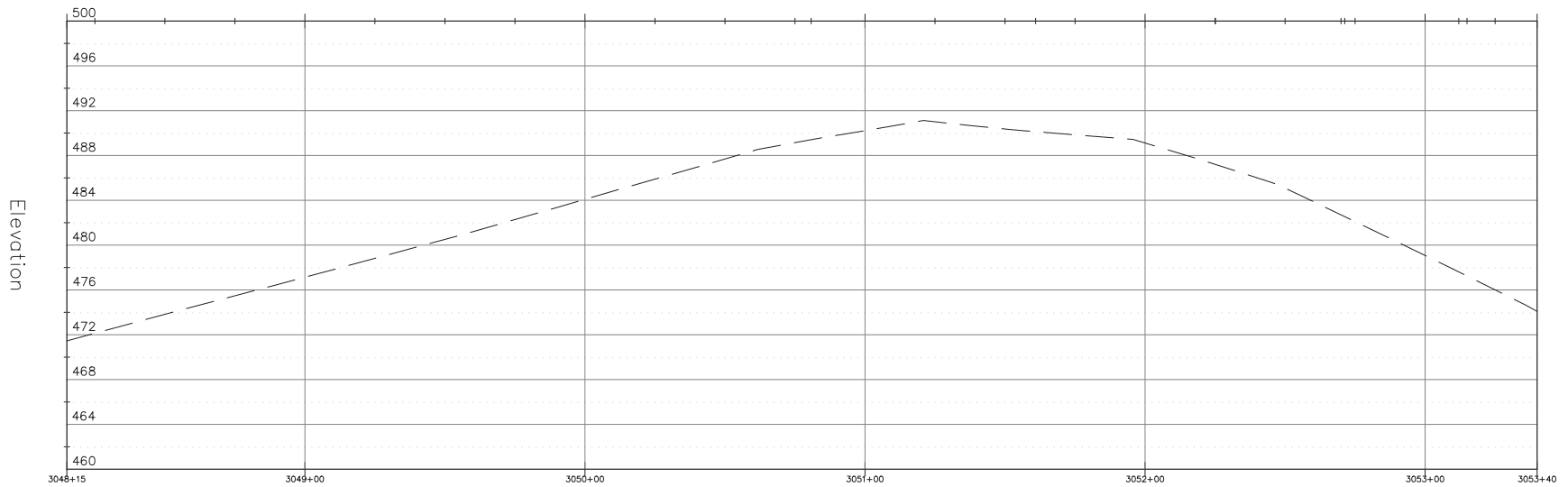
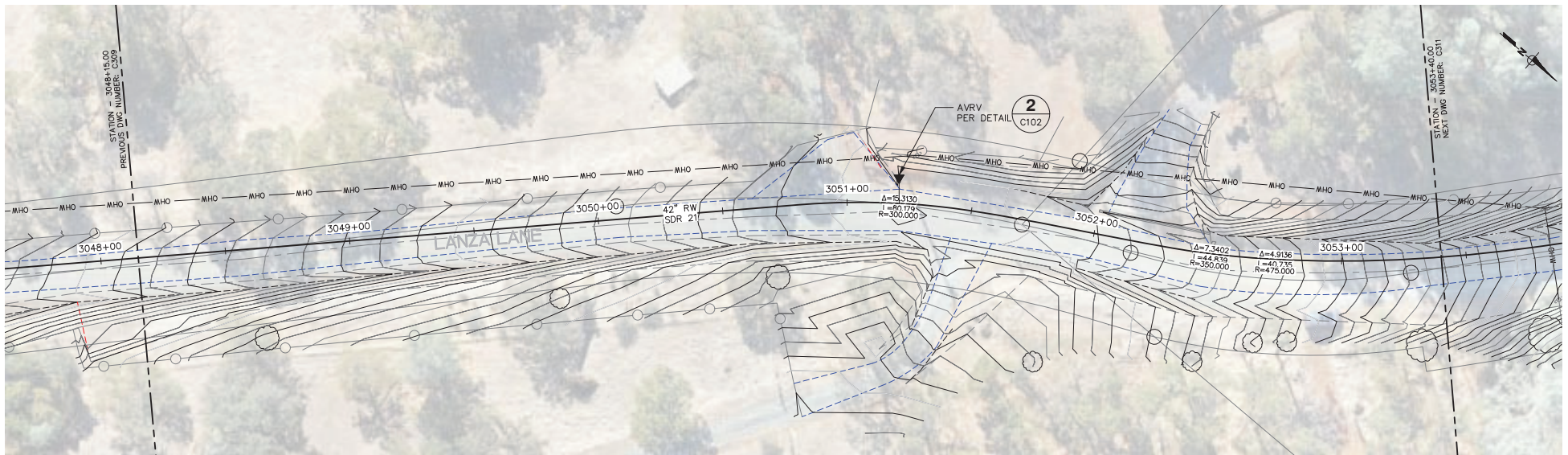
| REV | DATE | BY | DESCRIPTION |
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C309

PHASE 3

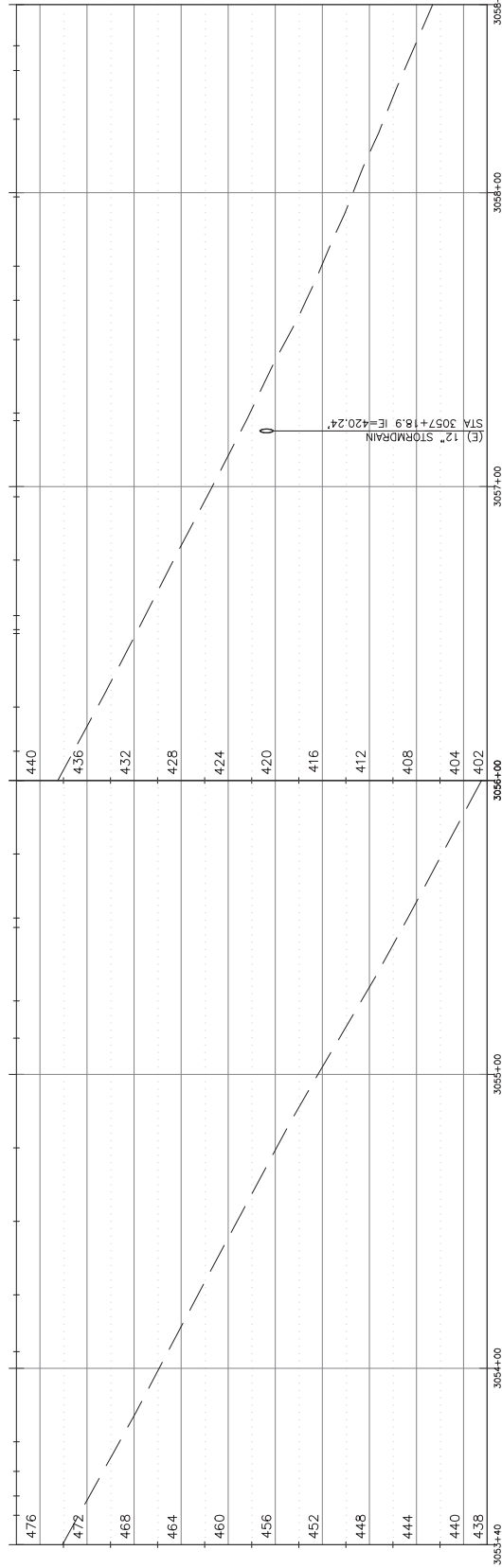
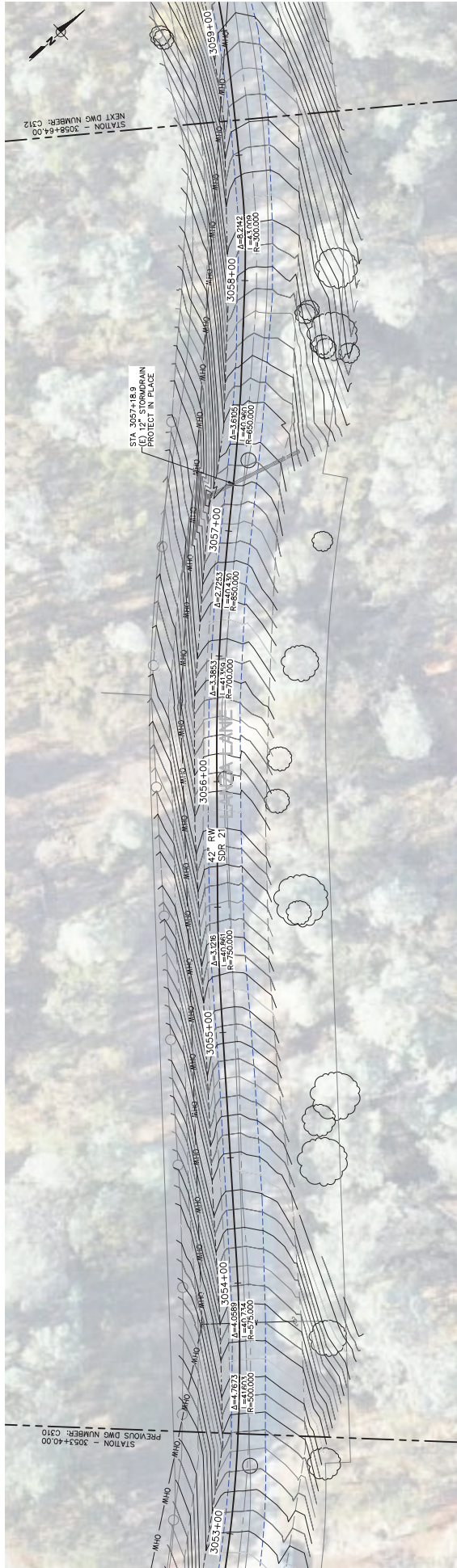
STA 3042+91 TO STA 3048+15

SHEET 03 OF 114



60% SUBMITTAL - NOT FOR CONSTRUCTION

| | | | | | | | | |
|-----|------|----|-------------|------------------------|---|--|--------------------------------------|---------------------------------------|
| | | | | SCALE: 1"=20' | <div>WARNING</div> <div><div>01/2</div></div> | DESIGNED _DMM | ASHLEY SMITH8651203/31/21 | |
| | | | | DATE: FEBRUARY 2020 | | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN _BTS/JMR/AAS | PROJECT ENGINEER R.C.E. NO. EXP. DATE |
| | | | | | | CHECKED _KBB | KARL BRUSTAD5786906/30/20 | |
| | | | | | | | PROJECT MANAGER R.C.E. NO. EXP. DATE | |
| | | | | | | <div><div>REGISTERED PROFESSIONAL ENGINEER</div><div>STATE OF CALIFORNIA</div><div>PRELIMINARY</div></div> | | |
| | | | | | | <div><div>PBI</div><div>80 Blue Ravine Rd., Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax: 916-608-2232</div></div> | | |
| | | | | | | <div><div><div>Browns Valley IRRIGATION DISTRICT</div><div></div></div></div> | | |
| | | | | | | <div><div>BROWNS VALLEY IRRIGATION DISTRICT</div><div>SICARD PIPELINE PROJECT</div><div>PHASE 3</div><div>STA 3048+15 TO STA 3053+40</div></div> | | |
| | | | | | | <div>SHEET</div> <div>C310</div> <div>SHEET 002 OF 114</div> | | |
| REV | DATE | BY | DESCRIPTION | | | | | |



60% SUBMITTAL - NOT FOR CONSTRUCTION

SHEET

C311

PHASE 3
STA 3053+40 TO STA 3058+64

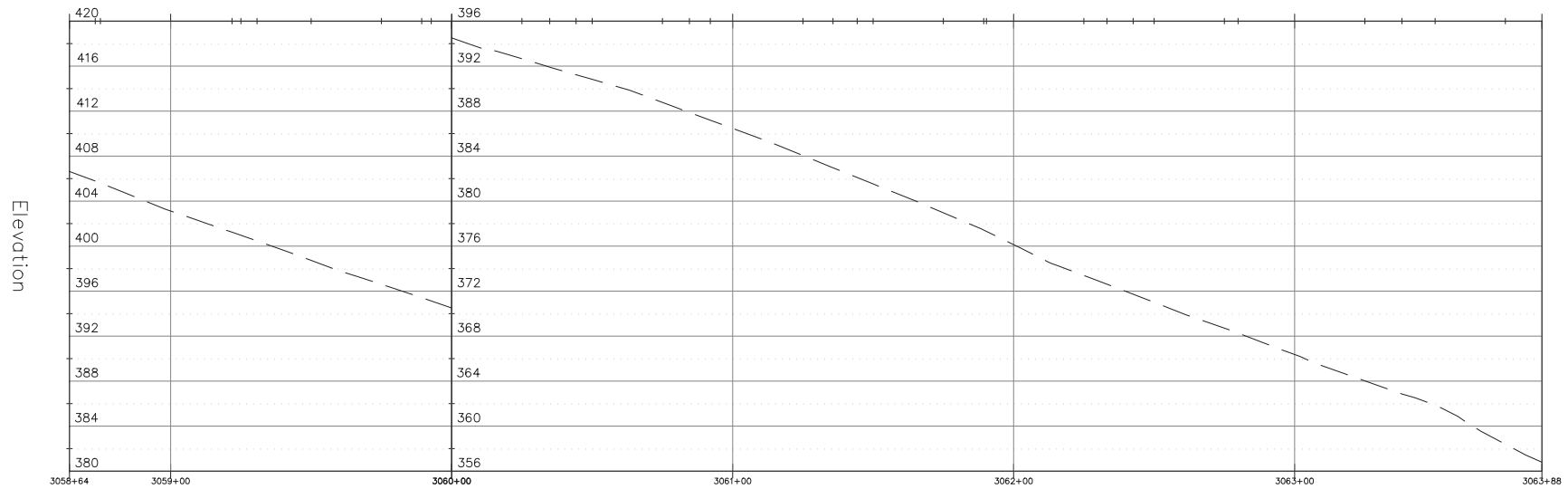
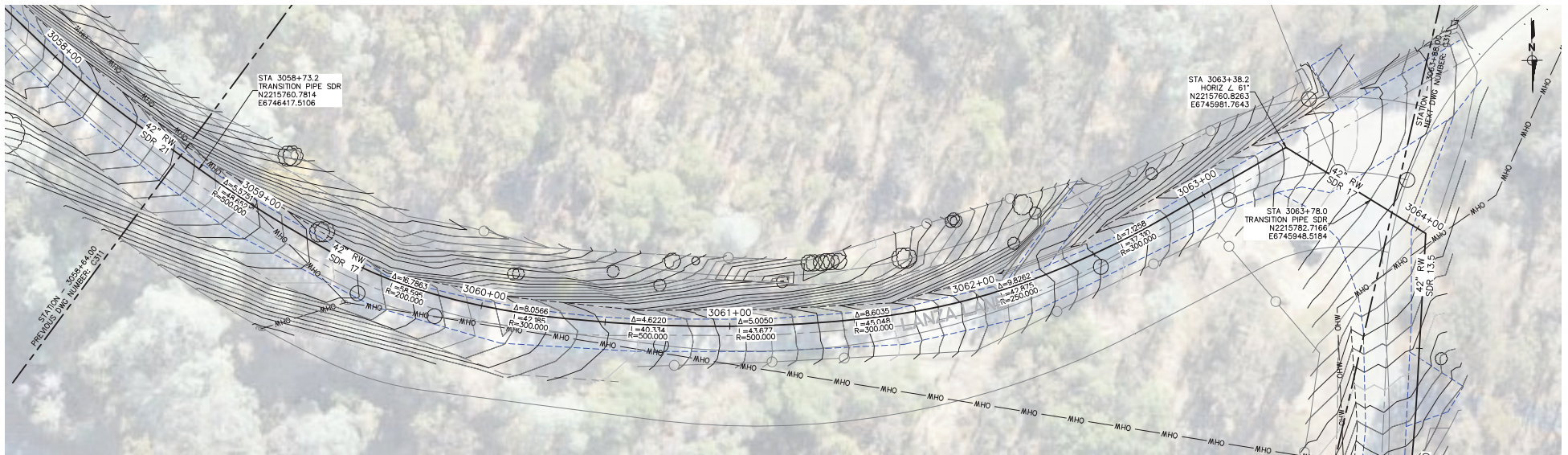
SHEET 033 OF 114



| | | | | |
|-------------------|------------------|------------|-----------|-----------|
| DESIGNED: DMM | PROJECT ENGINEER | 86512 | 03/31/21 | EXP. DATE |
| DRAWN: BJS/AMZ/AS | PROJECT ENGINEER | R.C.E. NO. | EXP. DATE | |
| CHECKED: KBB | PROJECT MANAGER | 57969 | 06/30/20 | EXP. DATE |

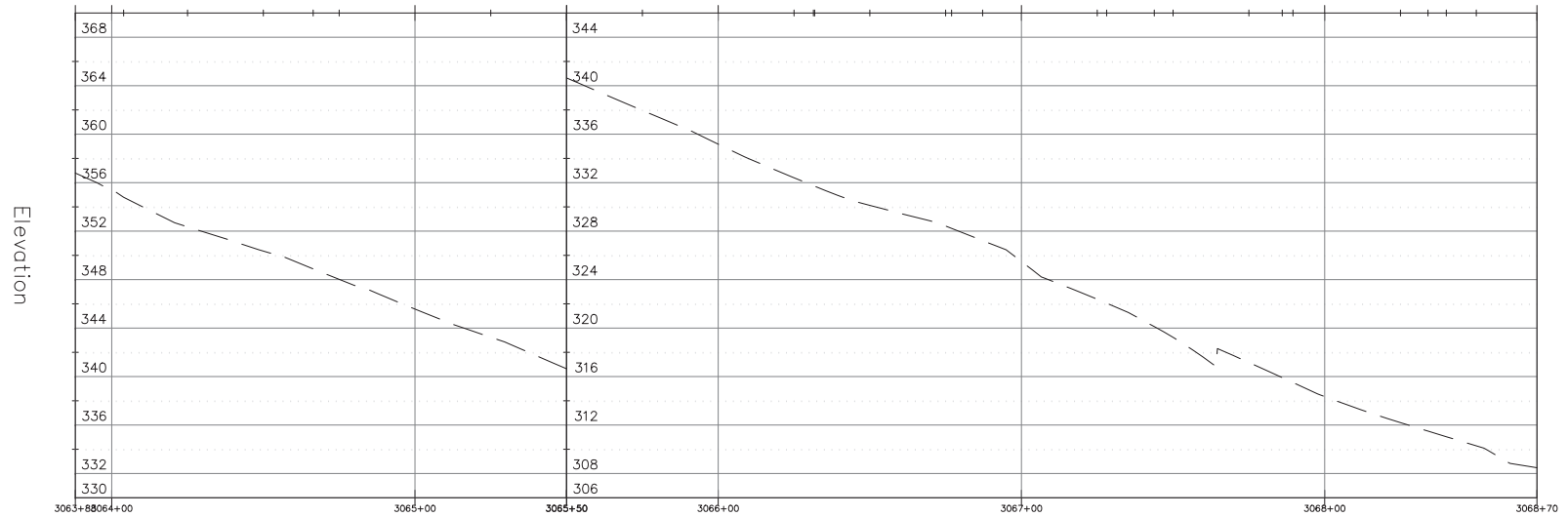
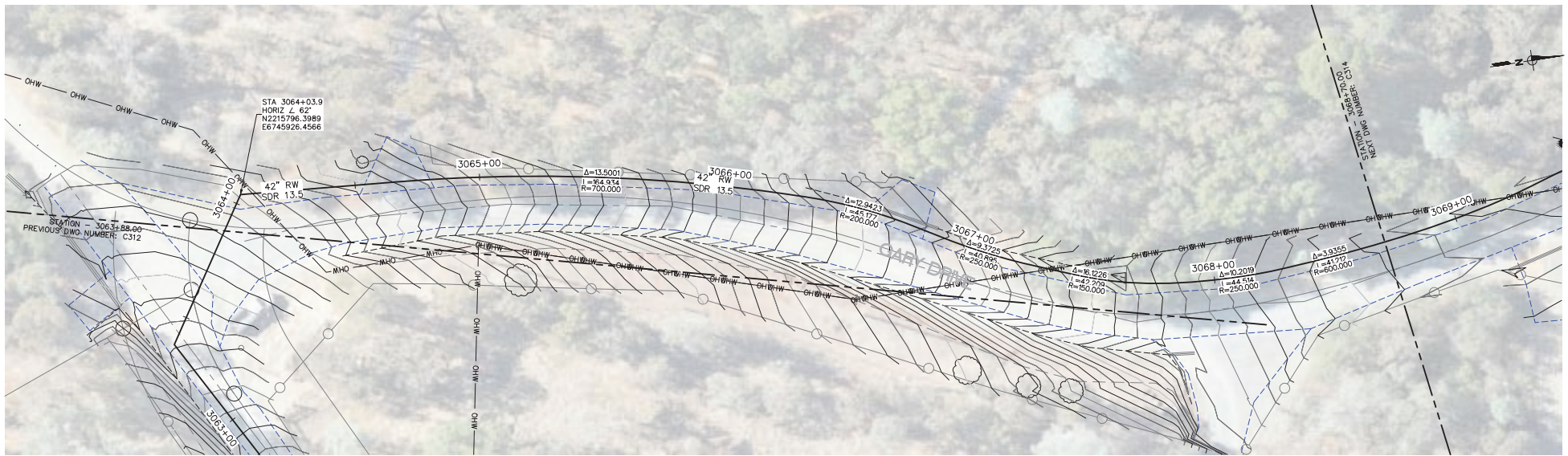
| | | |
|--|--------|---------------|
| WARNING | SCALE | DATE |
| 0 1/2" | 1"=20' | FEBRUARY 2020 |
| IF THIS BAR DOES NOT MEASURE 1" NOT TO SCALE | | |

| REV | DATE | BY | DESCRIPTION |
|-----|------|----|-------------|
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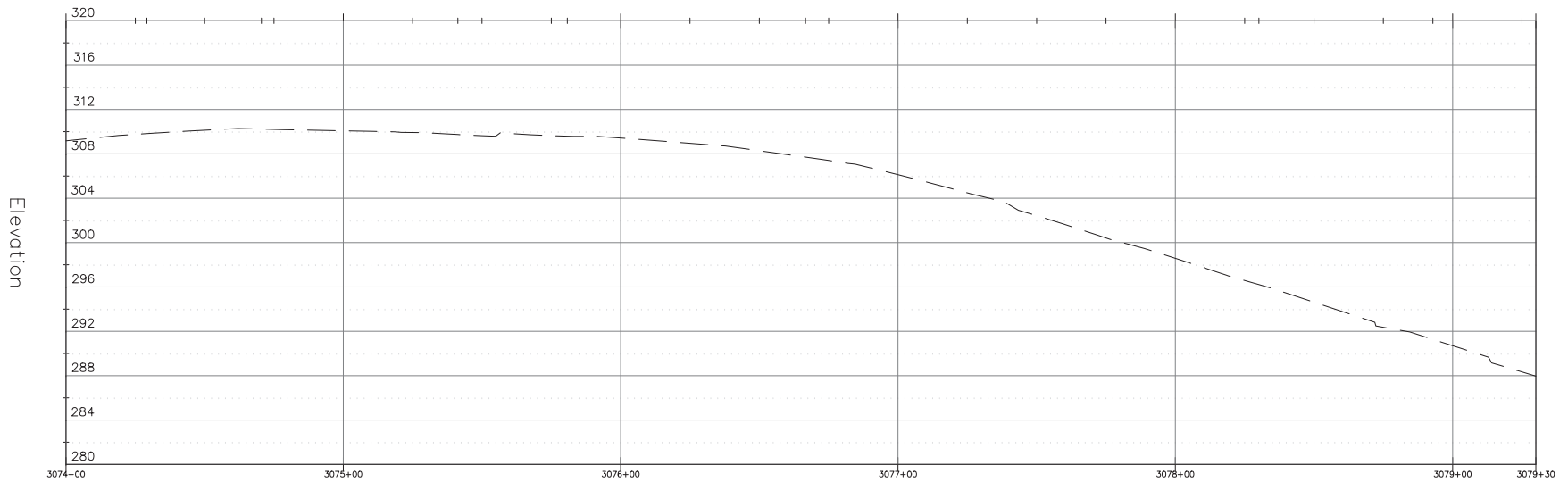
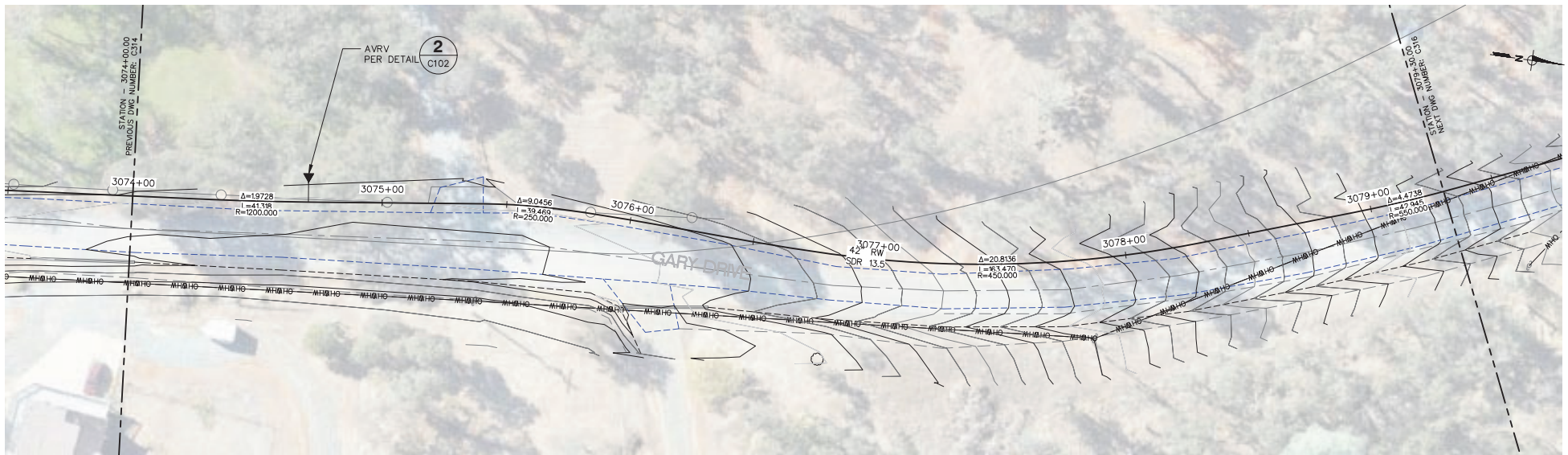
60% SUBMITTAL - NOT FOR CONSTRUCTION

| | | | | | | | | | | | | | |
|-----|------|----|-------------|---------------|---|--------------------|-----------------|------------|---|--|---|-----------------------------------|----------------------------|
| | | | | SCALE: | <div>WARNING</div> <div><div>01/2</div></div> | DESIGNED _DMM | | | <div><div>REGISTERED PROFESSIONAL ENGINEER</div><div>KARL BRUSTAD</div><div>NO. 57869</div><div>STATE OF CALIFORNIA</div></div> | <div><div>PBI</div><div><div>80 Blue Ravine Rd, Suite 280</div><div>Folsom, CA 95630</div><div>PH: 916-608-2212</div><div>Fax 916-608-2232</div></div></div> | <div><div>Browns Valley</div><div>IRRIGATION DISTRICT</div></div> | BROWNS VALLEY IRRIGATION DISTRICT | SHEET |
| | | | | 1"=20" | | DRAWN _BTS/JMR/AAS | ASHLEY SMITH | 86512 | | | | 03/31/21 | SICARD PIPELINE PROJECT |
| | | | | DATE: | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | CHECKED _KBB | KARL BRUSTAD | 57869 | 06/30/20 | | | PHASE 3 | STA 3058+64 TO STA 3063+88 |
| | | | | FEBRUARY 2020 | | | PROJECT MANAGER | R.C.E. NO. | EXP. DATE | | | | |
| REV | DATE | BY | DESCRIPTION | | | | | | | | | | |



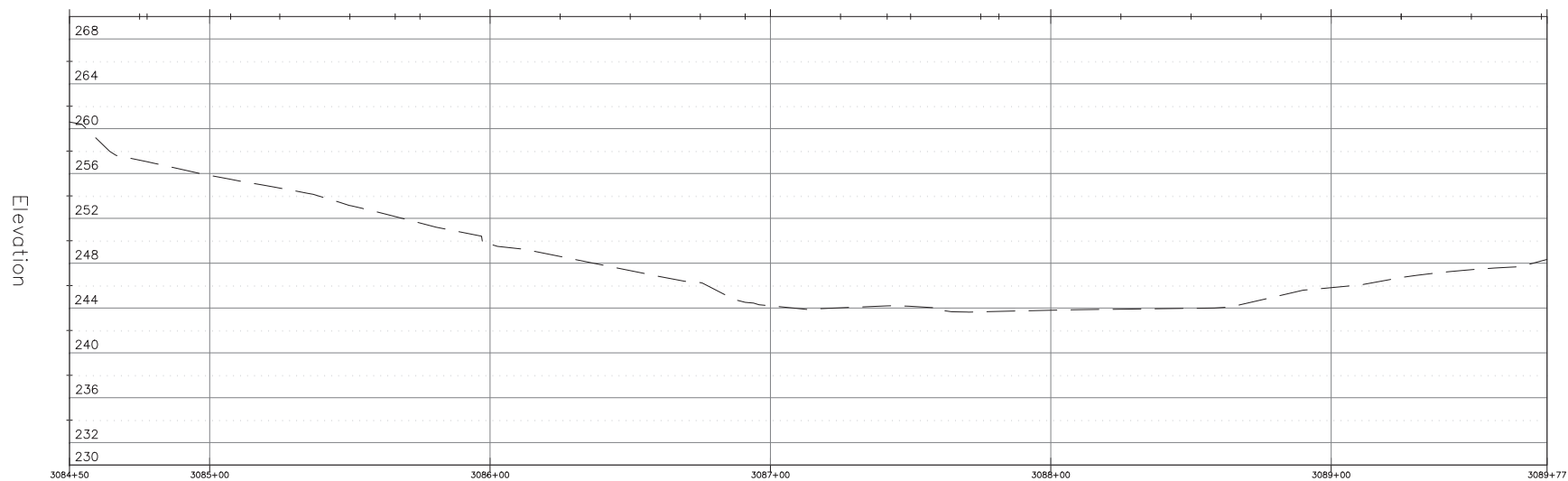
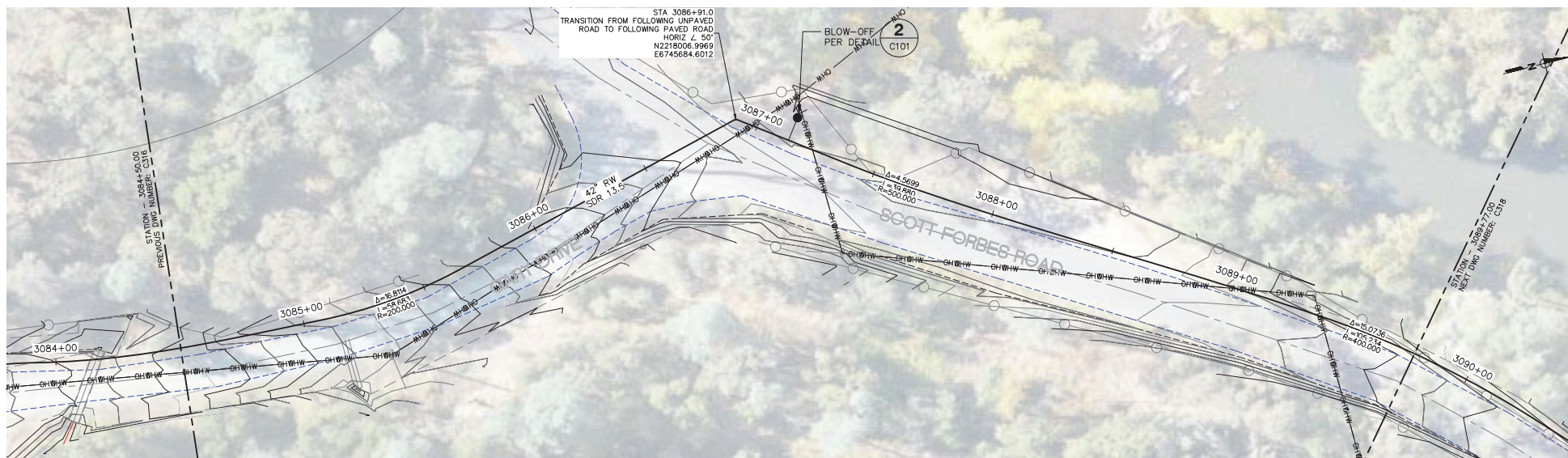
60% SUBMITTAL - NOT FOR CONSTRUCTION

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|-----|------|----|-------------|------------------------|---|--------------------|----------------------------------|---------------------|-----------------------|---------------------------------------|---|---|---|--|--|-------|
| | | | | SCALE: 1"=20' | <div>WARNING</div> <div></div> | DESIGNED _DMM | | | | |  |  |  | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET |
| | | | | DATE: FEBRUARY 2020 | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN _BTS/JMR/AAS | ASHLEY SMITH PROJECT ENGINEER | 86512 R.C.E. NO. | 03/31/21 EXP. DATE | PHASE 3 STA 3063+88 TO STA 3068+70 | | | | C313 | | |
| REV | DATE | BY | DESCRIPTION | | | CHECKED _KBB | KARL BRUSTAD PROJECT MANAGER | 57869 R.C.E. NO. | 06/30/20 EXP. DATE | | | | | SHEET 035 OF 114 | | |






60% SUBMITTAL - NOT FOR CONSTRUCTION

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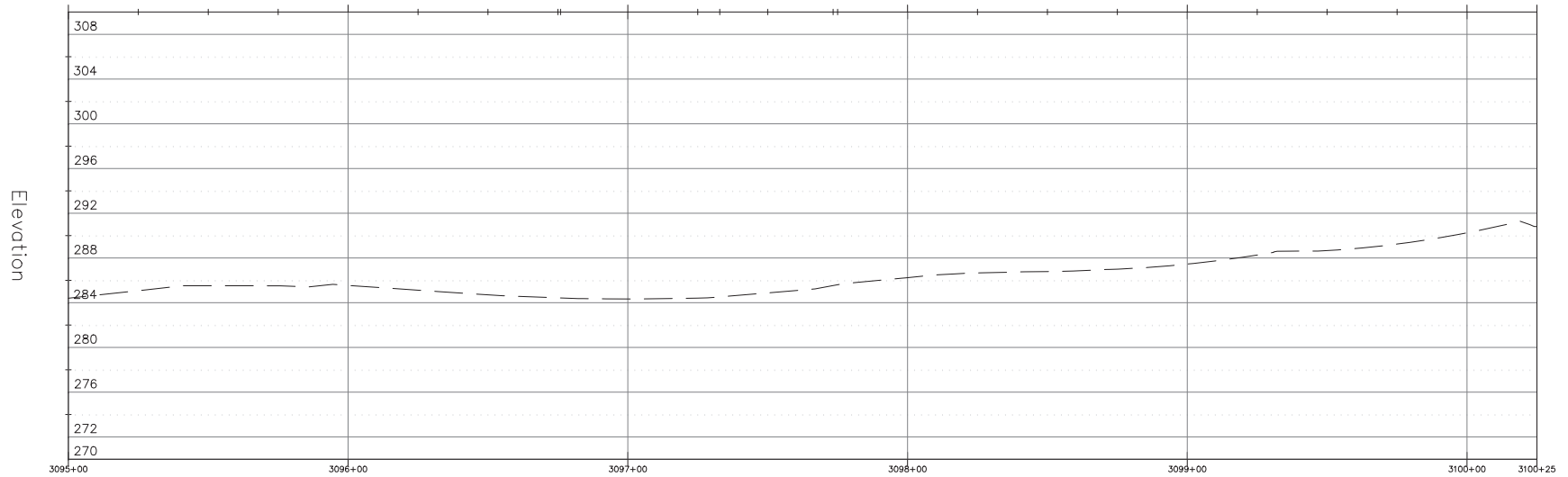
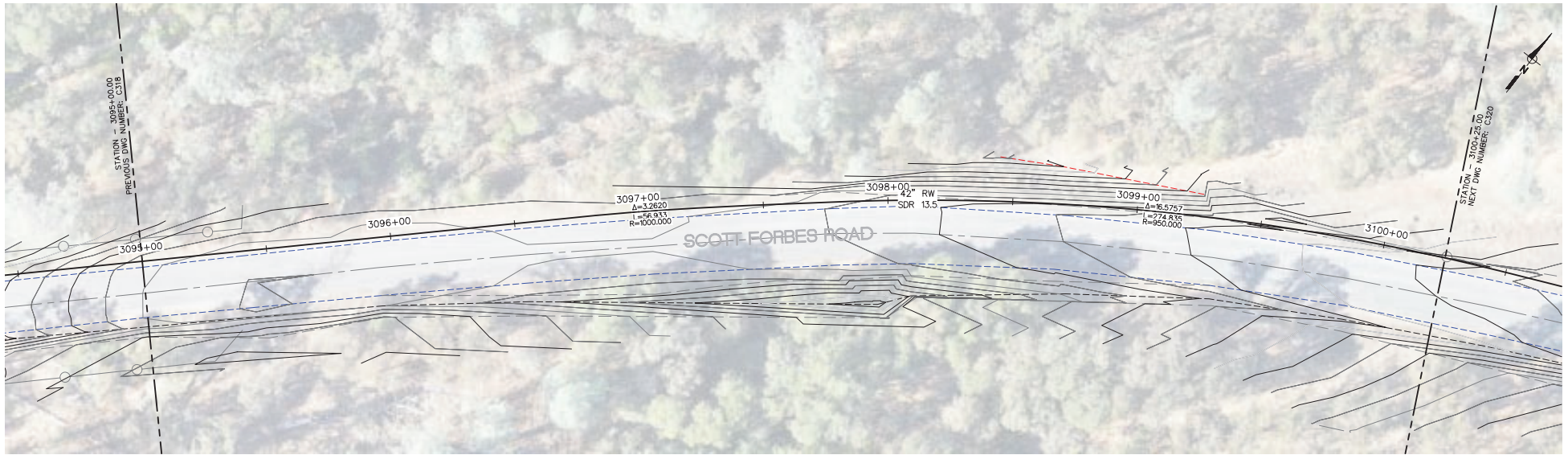
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| | | | | SCALE: 1"=20' | <div>WARNING</div> <div></div> | | DESIGNED: <u>DMM</u> | ASHLEY SMITH | | 86512 | 03/31/21 |  |  |  | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET |
| | | | | DATE: FEBRUARY 2020 | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN: <u>BTS/JMR/AAS</u> | PROJECT ENGINEER | | R.C.E. NO. | EXP. DATE | 80 Blue Ravine Rd, Suite 280 Folsom, CA 95630 Tel. 916-608-2212 Fax 916-608-2232 | | | | PHASE 3 STA 3084+50 to STA 3089+77 | C317 | SHEET 039 OF 114 |
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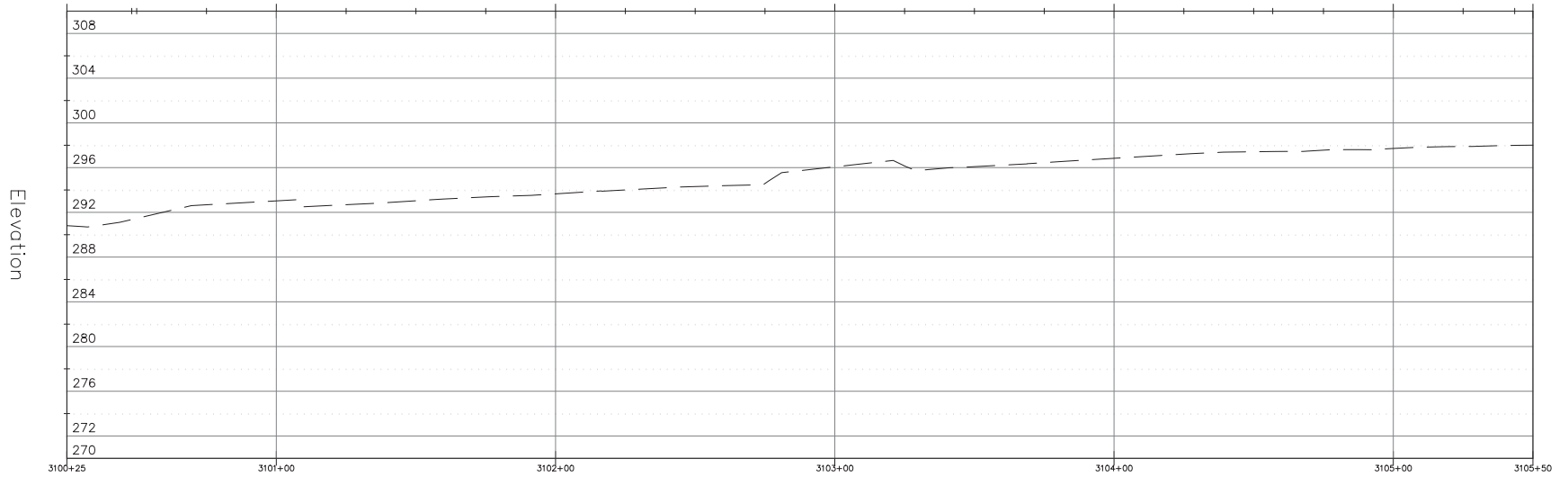
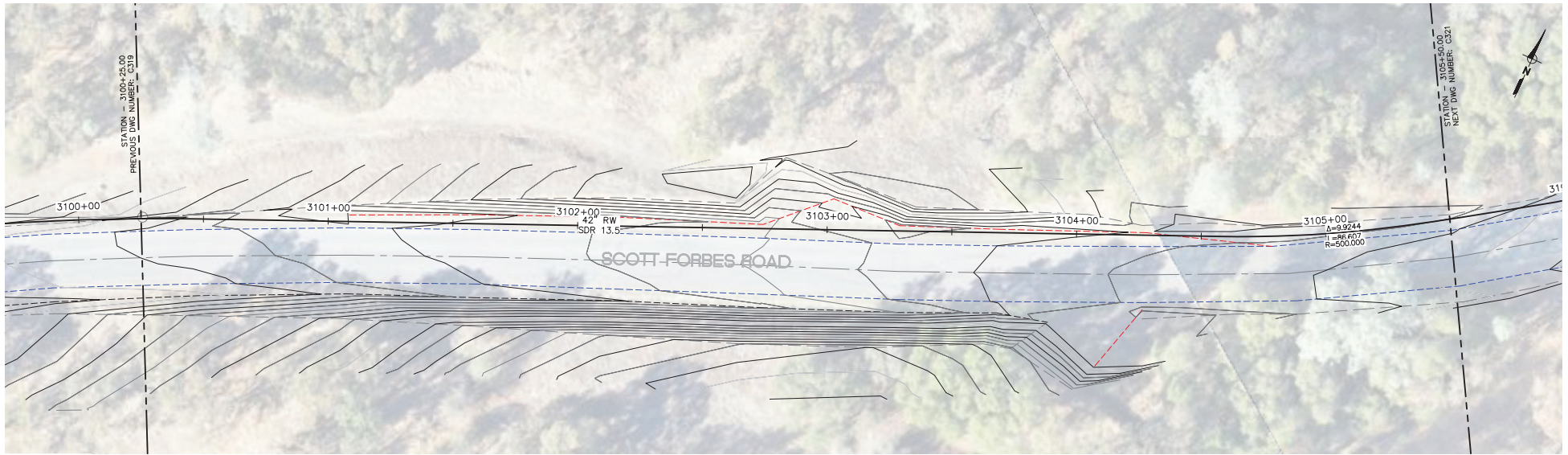


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| | | | | DATE: FEBRUARY 2020 | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN _BTS/JMR/AAS | ASHLEY SMITH PROJECT ENGINEER | 86512 R.C.E. NO. | | | | 03/31/21 EXP. DATE | PHASE 3 STA 3095+00 TO STA 3100+25 | |
| REV | DATE | BY | DESCRIPTION | | | CHECKED _KBB | KARL BRUSTAD PROJECT MANAGER | 57869 R.C.E. NO. | 06/30/20 EXP. DATE | | | SHEET 041 OF 114 | | |

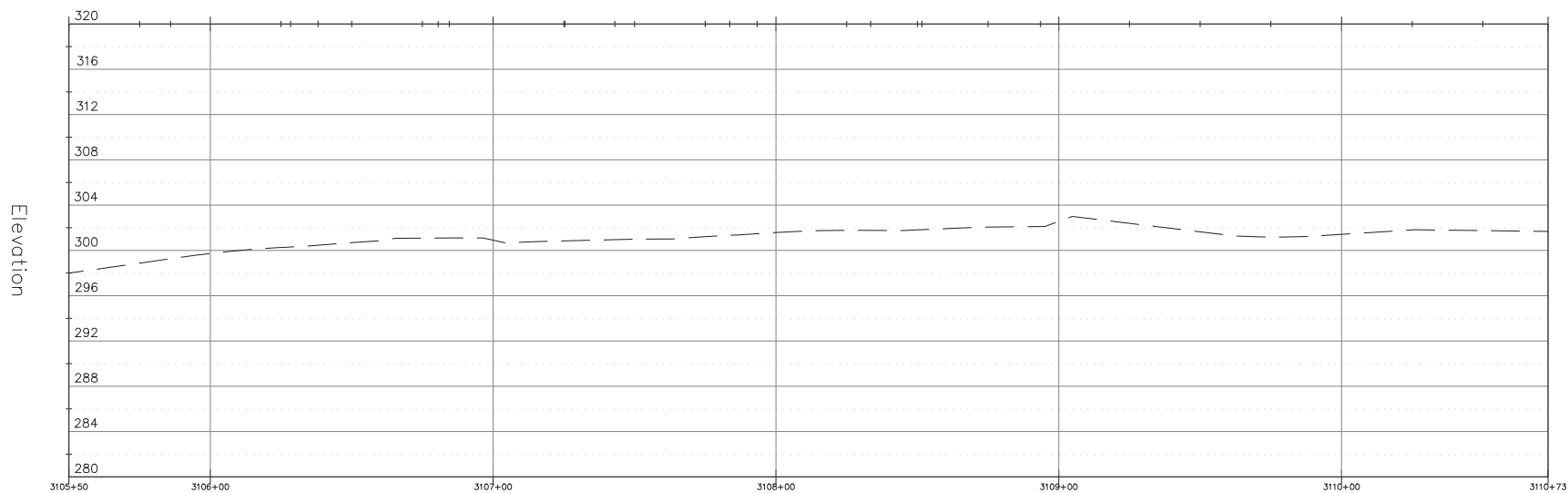
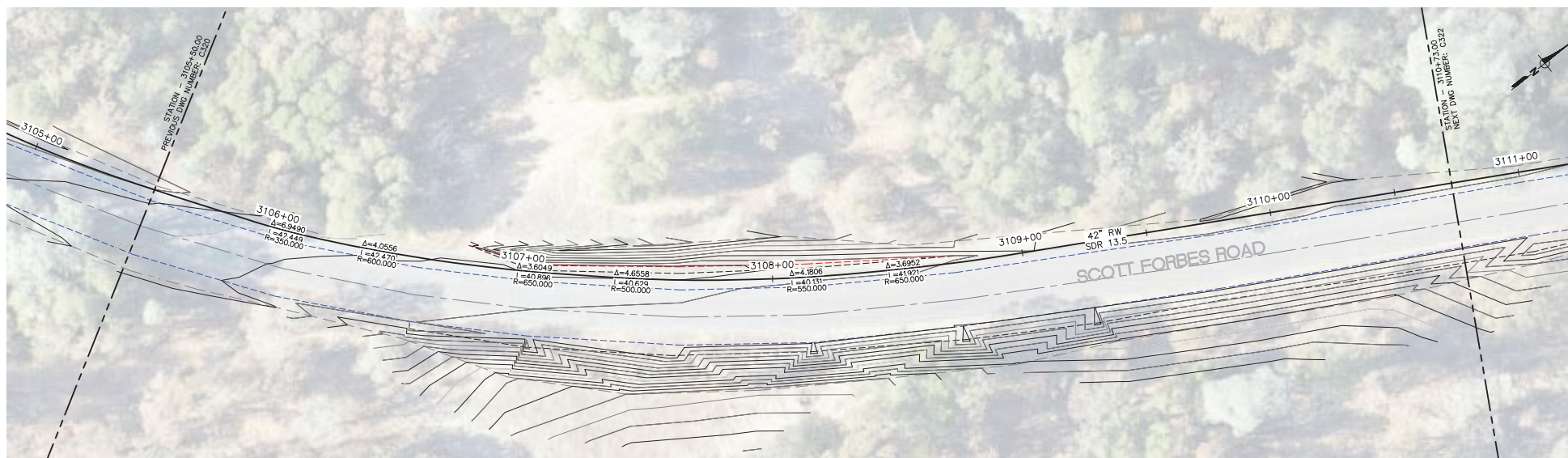


60% SUBMITTAL - NOT FOR CONSTRUCTION

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|-----|------|----|-------------|------------------------|--|---------------------|--|--|---|---|---|--|------------------|-------|
| | | | | SCALE: 1"=20' | WARNING  | DESIGNED _DMM_ | ASHLEY SMITH 86512 03/31/21 PROJECT ENGINEER R.C.E. NO. EXP. DATE | |  |  |  | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET |
| | | | | DATE: FEBRUARY 2020 | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN _BTS/JMR/AAS_ | | | | | | PHASE 3 STA 3100+25 TO STA 3105+50 | | C320 |
| REV | DATE | BY | DESCRIPTION | | | CHECKED _KBB_ | KARL BRUSTAD 57869 06/30/20 PROJECT MANAGER R.C.E. NO. EXP. DATE | | | | | | SHEET 042 OF 114 | |

SHEET 042 OF 114

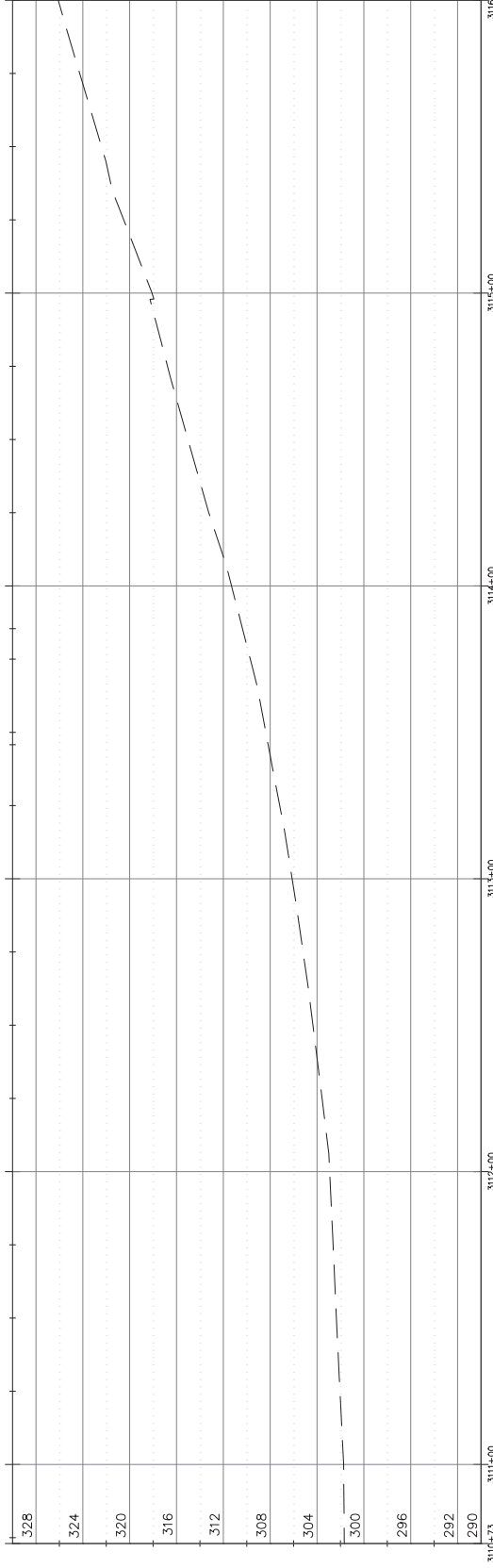
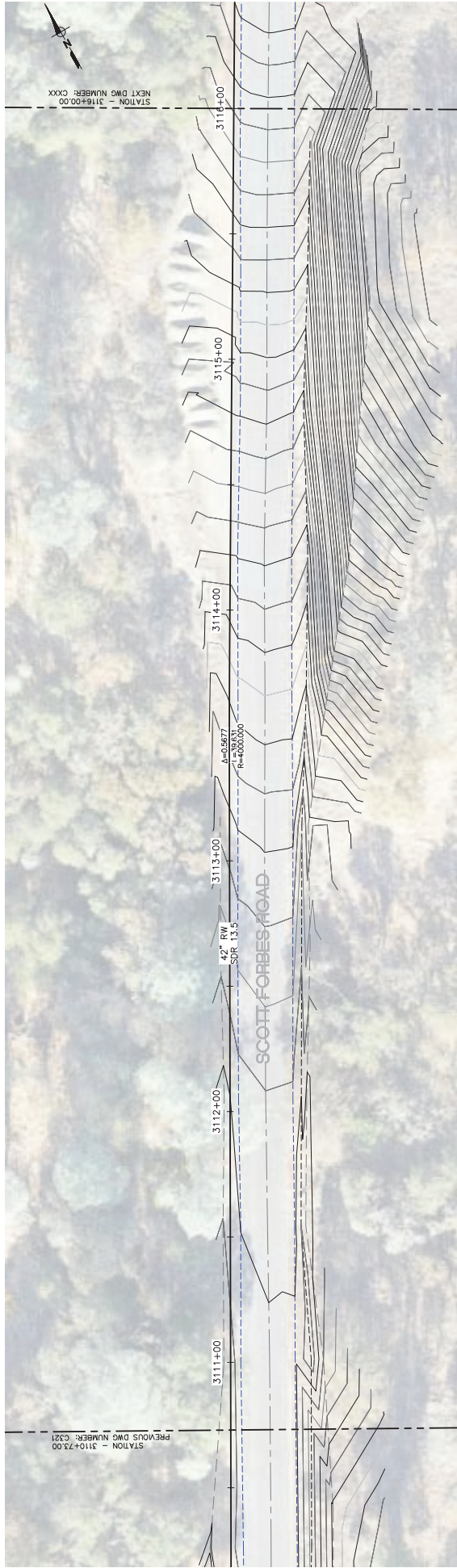
P:\BVD\Scard Pipeline\05 Drawings\5.1 CAD\Phase 3 (2018).dwg 3-02-20 04:58:43 PM rowe



60% SUBMITTAL - NOT FOR CONSTRUCTION

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|-----|------|----|-------------|------------------------|--|-------------------------------------|----------------------------------|---------------------|-----------------------|--|--|--|--|--|-------|
| | | | | SCALE: 1"=20' | WARNING 0 1/2 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DESIGNED: DMM DRAWN: BTS/JMR/AAS | ASHLEY SMITH PROJECT ENGINEER | 86512 R.C.E. NO. | 03/31/21 EXP. DATE | | 80 Blue Ravine Rd., Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax: 916-608-2232 | | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET |
| REV | DATE | BY | DESCRIPTION | DATE: FEBRUARY 2020 | | CHECKED: KBB | KARL BRUSTAD PROJECT MANAGER | 57869 R.C.E. NO. | 06/30/20 EXP. DATE | | | | PHASE 3 STA 3105+50 TO STA 3110+73 | | C321 |

SHEET 043 OF 114



Elevation

60% SUBMITTAL - NOT FOR CONSTRUCTION

SHEET

BROWNS VALLEY IRRIGATION DISTRICT
SICARD PIPELINE PROJECT

C322

PHASE 3

STA 3110+73 TO STA 3116+00

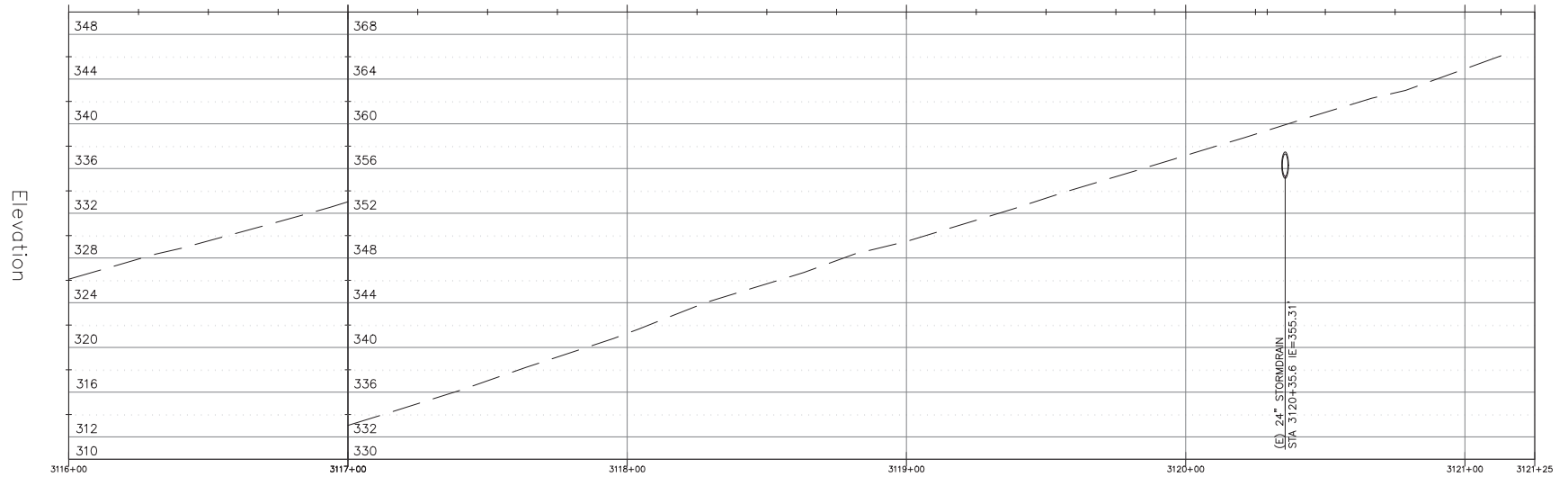
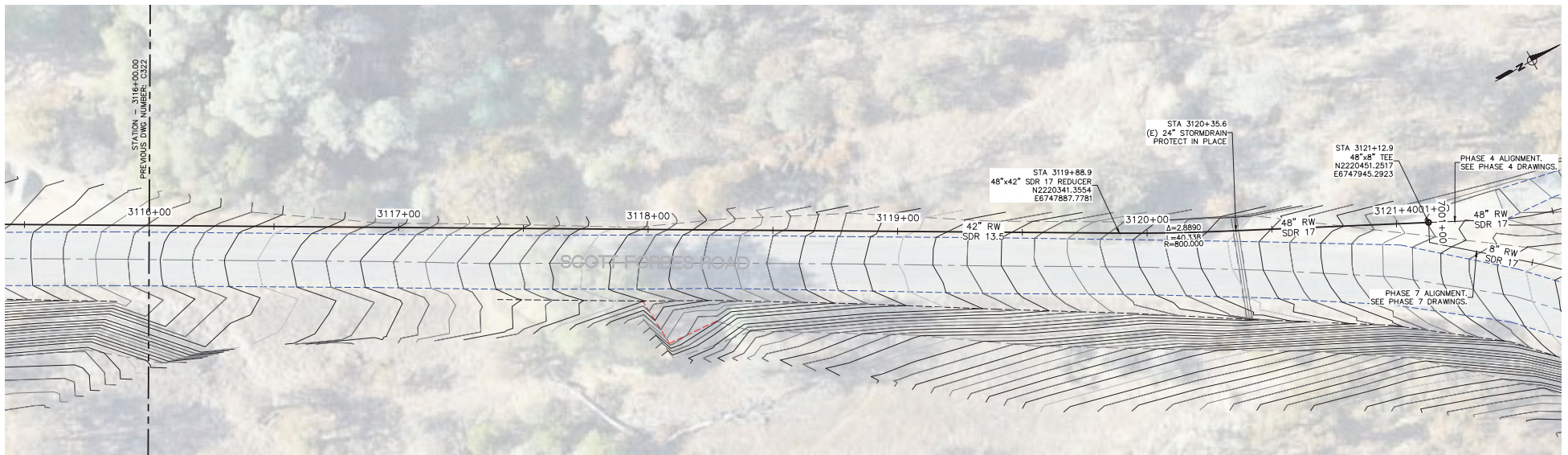
SHEET 04 OF 114



| | | | |
|-------------------|------------------|------------|-----------|
| DESIGNED: DMM | PROJECT ENGINEER | 86512 | 03/31/21 |
| DRAWN: BJS/AMZ/AS | R.C.E. NO. | | EXP. DATE |
| CHECKED: KBB | PROJECT MANAGER | 57969 | 06/30/20 |
| | | R.C.E. NO. | EXP. DATE |

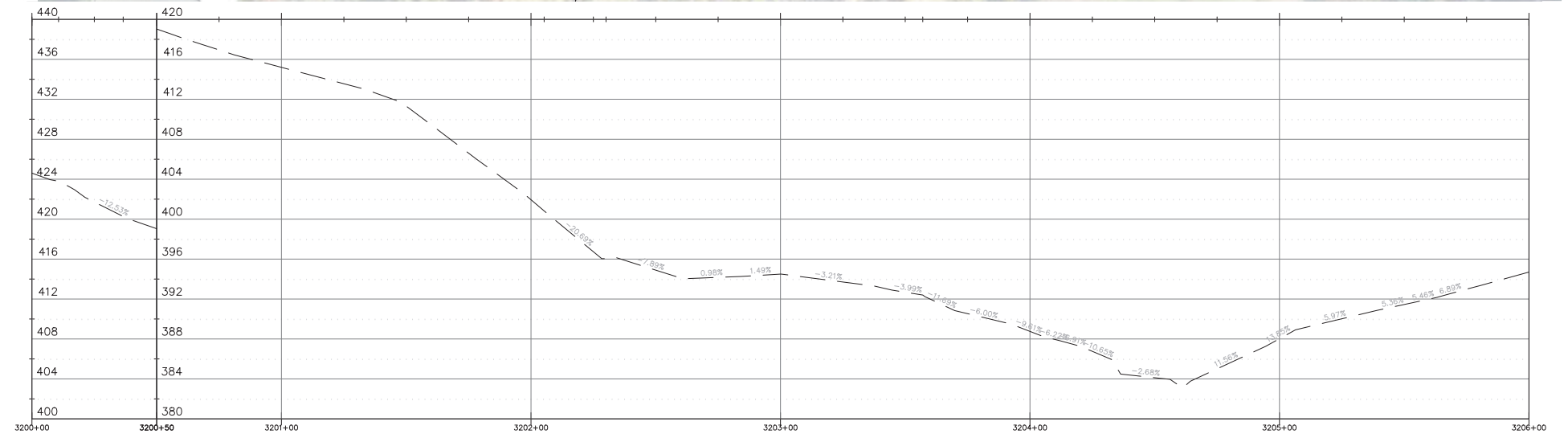
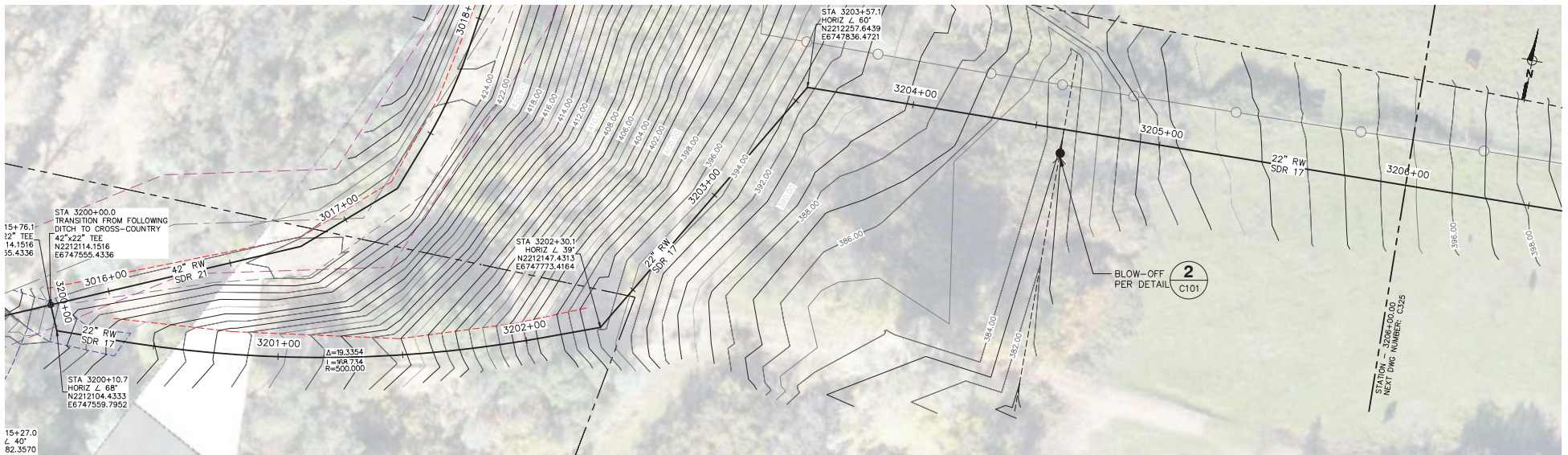
| | | |
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| WARNING | SCALE | DATE |
| 0 1/2 | 1"=20' | FEBRUARY 2020 |
| IF THIS BAR DOES NOT MEASURE 1" NOT TO SCALE | | |

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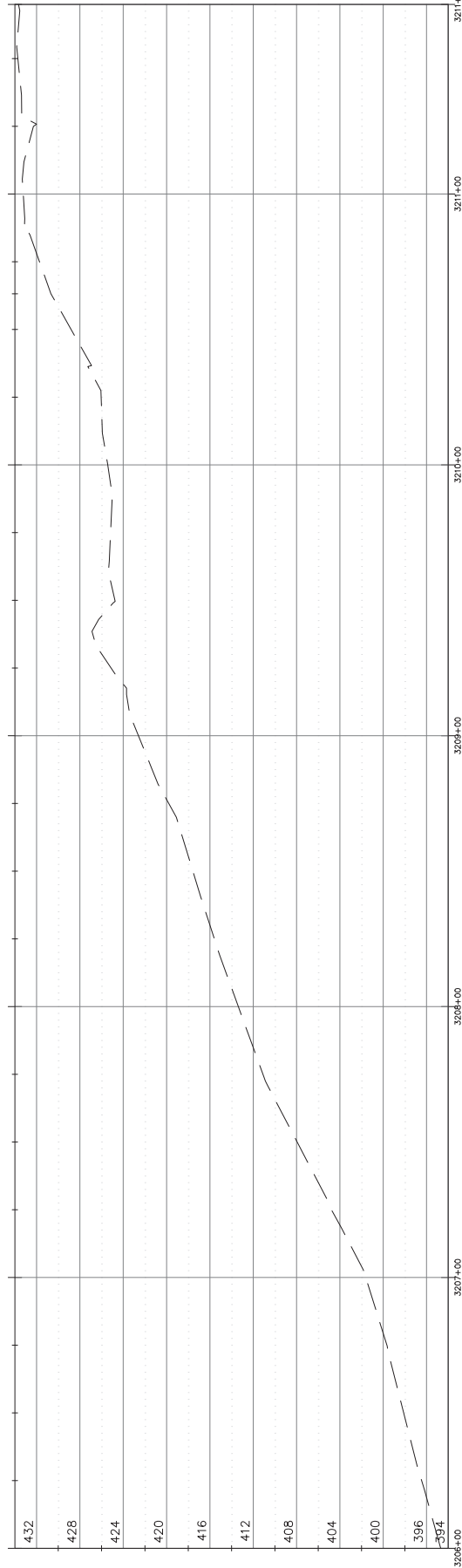
60% SUBMITTAL - NOT FOR CONSTRUCTION

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|-----|------|----|-------------|------------------------|---|---|---------------------|-----------------------|--|--|--|---|--|
| | | | | SCALE: 1"=20' | WARNING 0 1/2 | DESIGNED: DMM ASHLEY SMITH PROJECT ENGINEER | 86512 R.C.E. NO. | 03/31/21 EXP. DATE | | | | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT PHASE 3 STA 3116+00 TO STA 3121+25 | SHEET C323 SHEET 045 OF 114 |
| REV | DATE | BY | DESCRIPTION | DATE: FEBRUARY 2020 | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | CHECKED: KBB KARL BRUSTAD PROJECT MANAGER | 57869 R.C.E. NO. | 06/30/20 EXP. DATE | | | | | |



60% SUBMITTAL - NOT FOR CONSTRUCTION

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|-----|------|----|-------------|------------------------|--|---|---------------------|-----------------------|---|---|---|--|--|-------|------------------|
| | | | | SCALE: 1"=20' | <div>WARNING </div> | DESIGNED: DMM ASHLEY SMITH PROJECT ENGINEER | 86512 R.C.E. NO. | 03/31/21 EXP. DATE |  |  |  | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET | |
| | | | | DATE: FEBRUARY 2020 | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | CHECKED: KBB KARL BRUSTAD PROJECT MANAGER | 57869 R.C.E. NO. | 06/30/20 EXP. DATE | | | | PHASE 3 STA 3200+00 TO STA 3206+00 | | C324 | |
| REV | DATE | BY | DESCRIPTION | | | | | | | | | | | | SHEET 046 OF 114 |



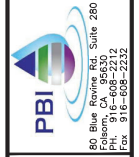
60% SUBMITTAL - NOT FOR CONSTRUCTION

SHEET

C325

PHASE 3

STA 3206+00 TO STA 3211+70

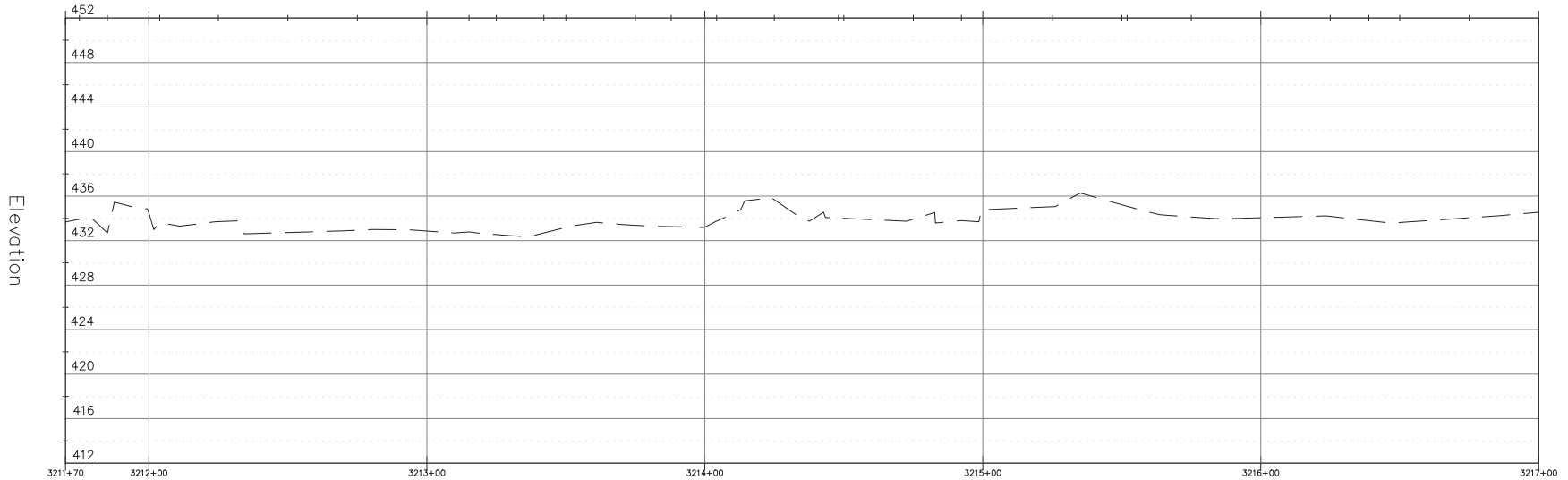
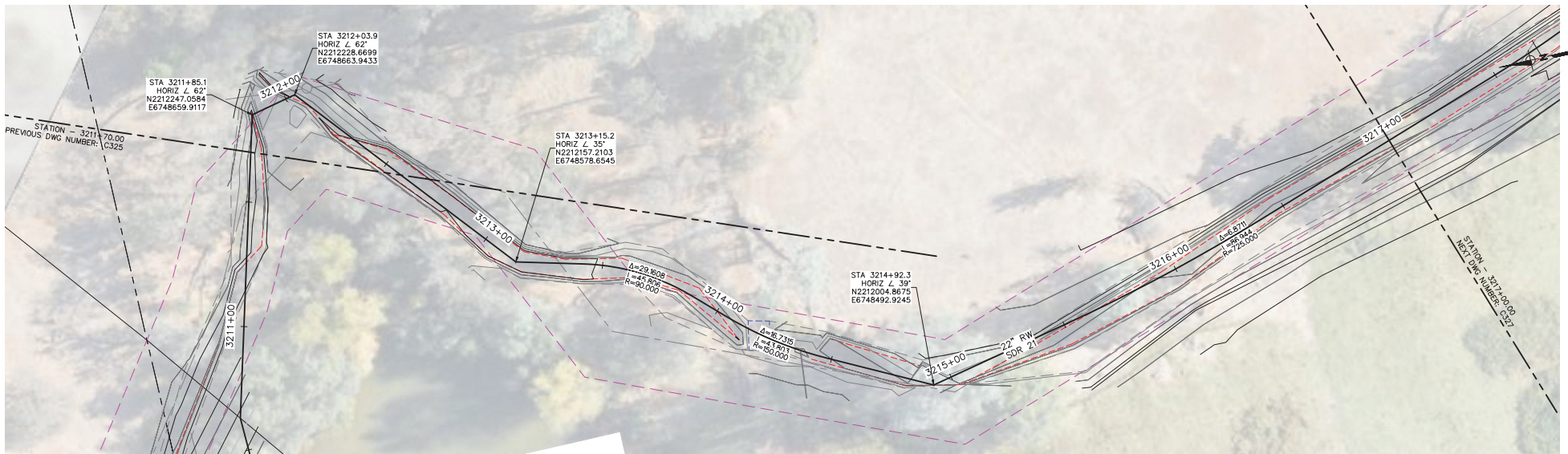


| | | | |
|-------------------|--------------------------------|-------------------|---------------------|
| DESIGNED: DMM | PROJECT ENGINEER: ASHLEY SMITH | R.C.E. NO.: 86512 | EXP. DATE: 03/31/21 |
| DRAWN: BJS/AMZ/AS | PROJECT MANAGER: KARL BRUSTAD | R.C.E. NO.: 57969 | EXP. DATE: 06/30/20 |
| CHECKED: KBB | | | |

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| WARNING: 0 1/2" | IF THIS BAR DOES NOT MEASURE 1" NOT TO SCALE |
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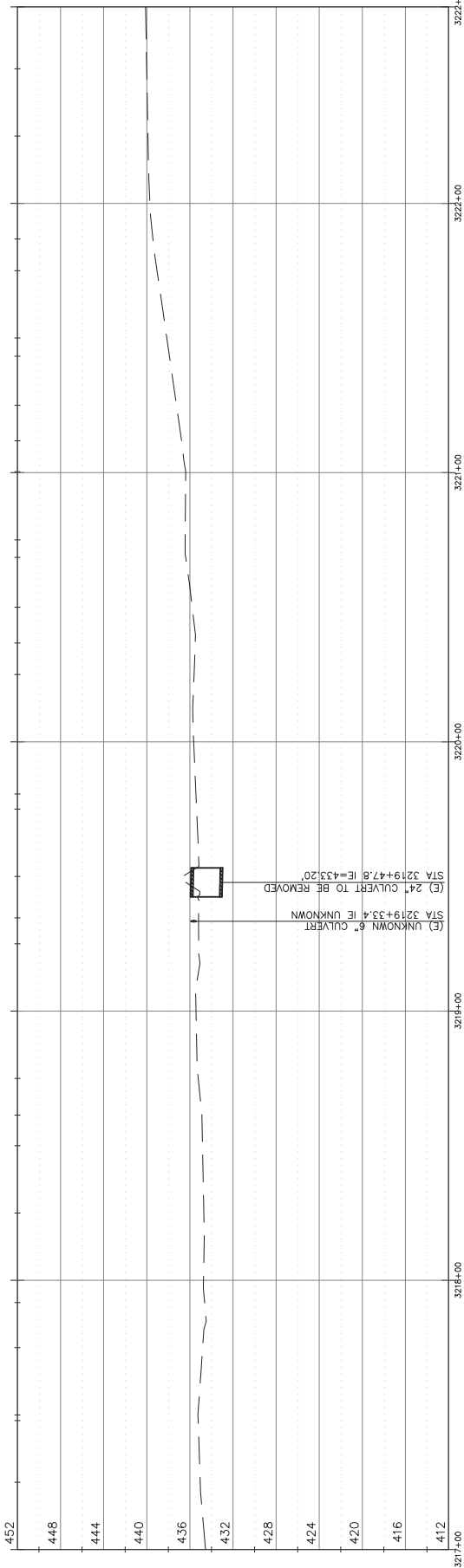
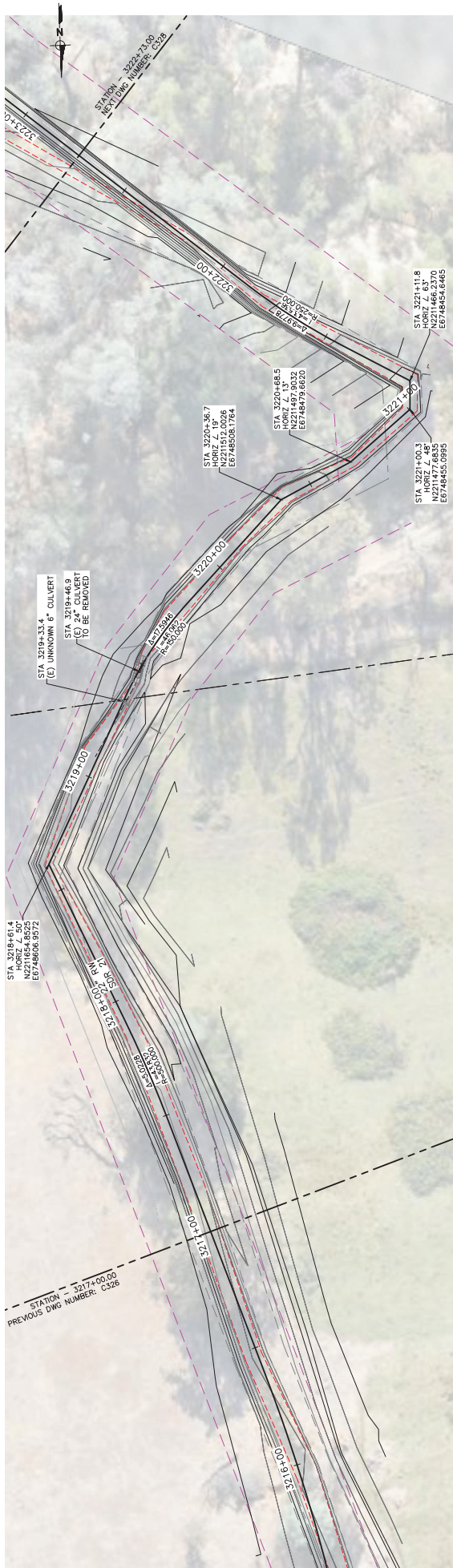
| | |
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| SCALE: 1"=20' | DATE: FEBRUARY 2020 |
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60% SUBMITTAL - NOT FOR CONSTRUCTION

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|-----|------|----|-------------|---|--|---|--|----------------------------------|--|---|--|---|---|---|--|------------------|---------------------------------------|--|
| | | | | SCALE: 1"=20' | | <div>WARNING</div> <div></div> | | DESIGNED _DMM_ | | <div>86512 03/31/21</div> <div>R.C.E. NO. EXP. DATE</div> | |  |  |  | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET | |
| | | | | DATE: FEBRUARY 2020 | | DRAWN _BTS/JMR/AAS_ | | ASHLEY SMITH PROJECT ENGINEER | | | | | | | 80 Blue Ravine Rd, Suite 280 Folsom, CA 95630 Ph: 916-608-2212 Fax 916-608-2232 | | PHASE 3 STA 3211+70 TO STA 3217+00 | |
| REV | DATE | BY | DESCRIPTION | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | | CHECKED _KBB_ | | KARL BRUSTAD PROJECT MANAGER | | 57869 06/30/20 R.C.E. NO. EXP. DATE | | | | | | SHEET 048 OF 114 | | |



Elevation

60% SUBMITTAL - NOT FOR CONSTRUCTION

BROWNS VALLEY IRRIGATION DISTRICT
SICARD PIPELINE PROJECT



| | | | | |
|-------------------|------------------|-------|----------|-----------|
| DESIGNED: DMM | PROJECT ENGINEER | 86512 | 03/31/21 | EXP. DATE |
| DRAWN: BJS/AMZ/AS | R.S.E. NO. | | | |
| CHECKED: KBB | PROJECT MANAGER | 57969 | 06/30/20 | EXP. DATE |

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| SCALE: 1"=20' | WARNING: 0 1/2 | IF THIS BAR DOES NOT MEASURE 1" NOT TO SCALE |
| DATE: FEBRUARY 2020 | | |

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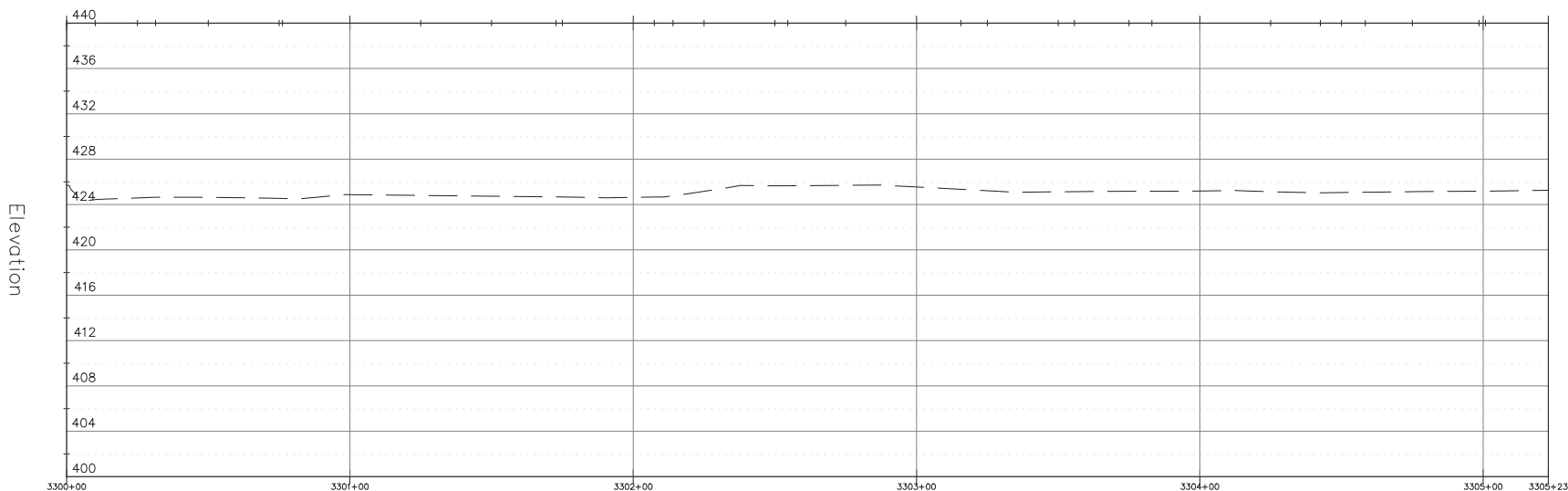
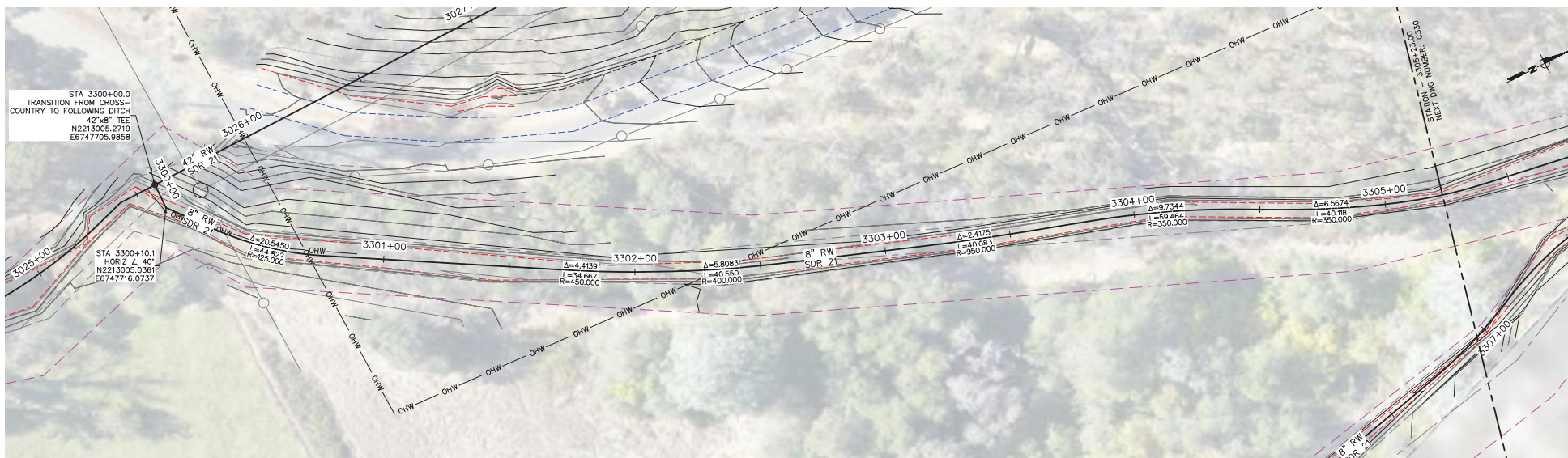
C327

PHASE 3

STA 3217+00 TO STA 3222+73

SHEET

SHEET 88 OF 114



60% SUBMITTAL - NOT FOR CONSTRUCTION

| REV | DATE | BY | DESCRIPTION | SCALE: | WARNING | DESIGNED: DMM | PROJECT ENGINEER | R.C.E. NO. | EXP. DATE | PHASE 3 | SHEET |
|-----|------|----|-------------|--------|---|--------------------|------------------|------------|-----------|----------------------------|-------|
| | | | | 1"=20' | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | ASHLEY SMITH | 86512 | 03/31/21 | | STA 3222+73 TO STA 3228+50 | C329 |
| | | | | | | DRAWN: BTS/JMR/AAS | KARL BRUSTAD | 57869 | 06/30/20 | | |
| | | | | | | CHECKED: KBB | PROJECT MANAGER | | | | |

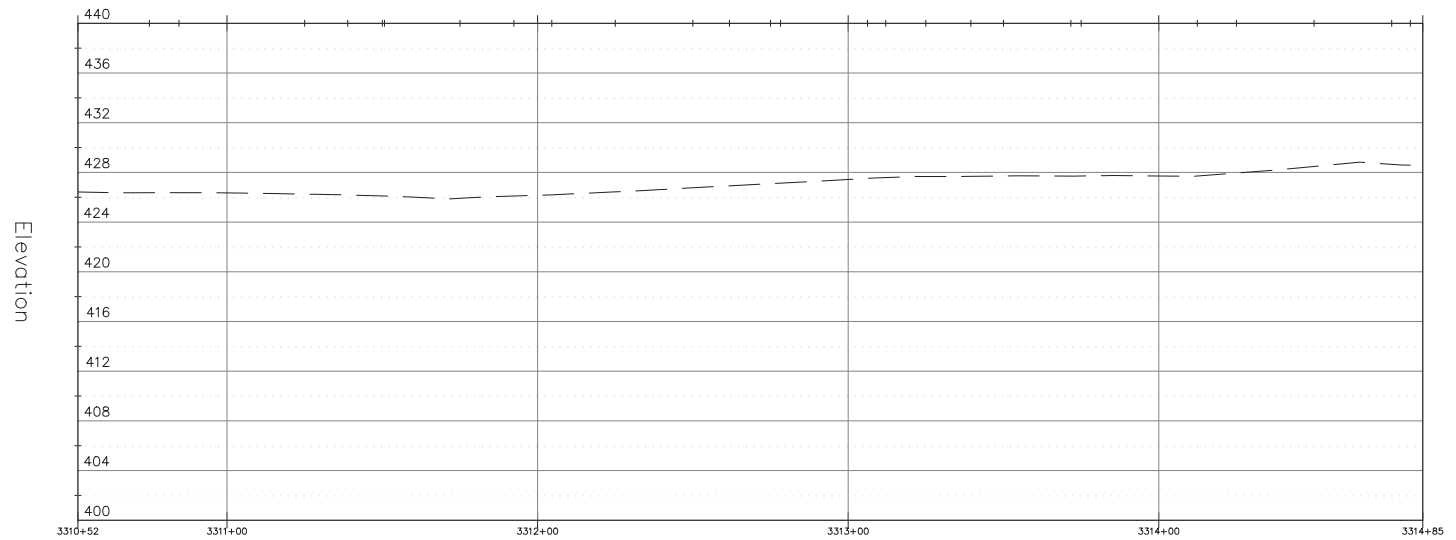
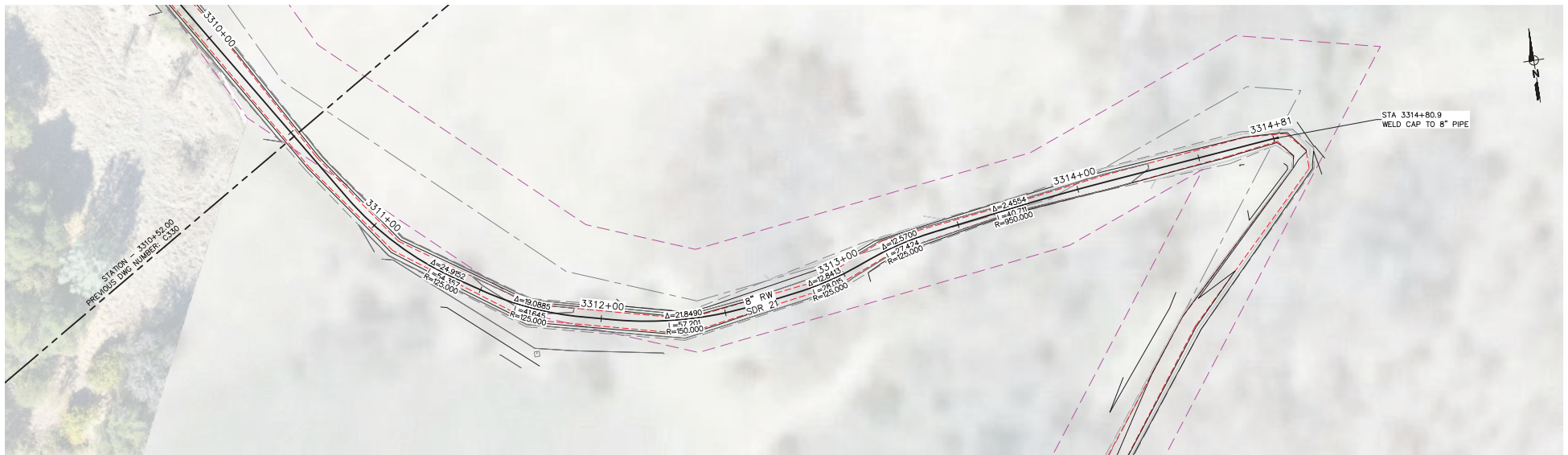


BROWNS VALLEY IRRIGATION DISTRICT
SICARD PIPELINE PROJECT

SHEET

C329

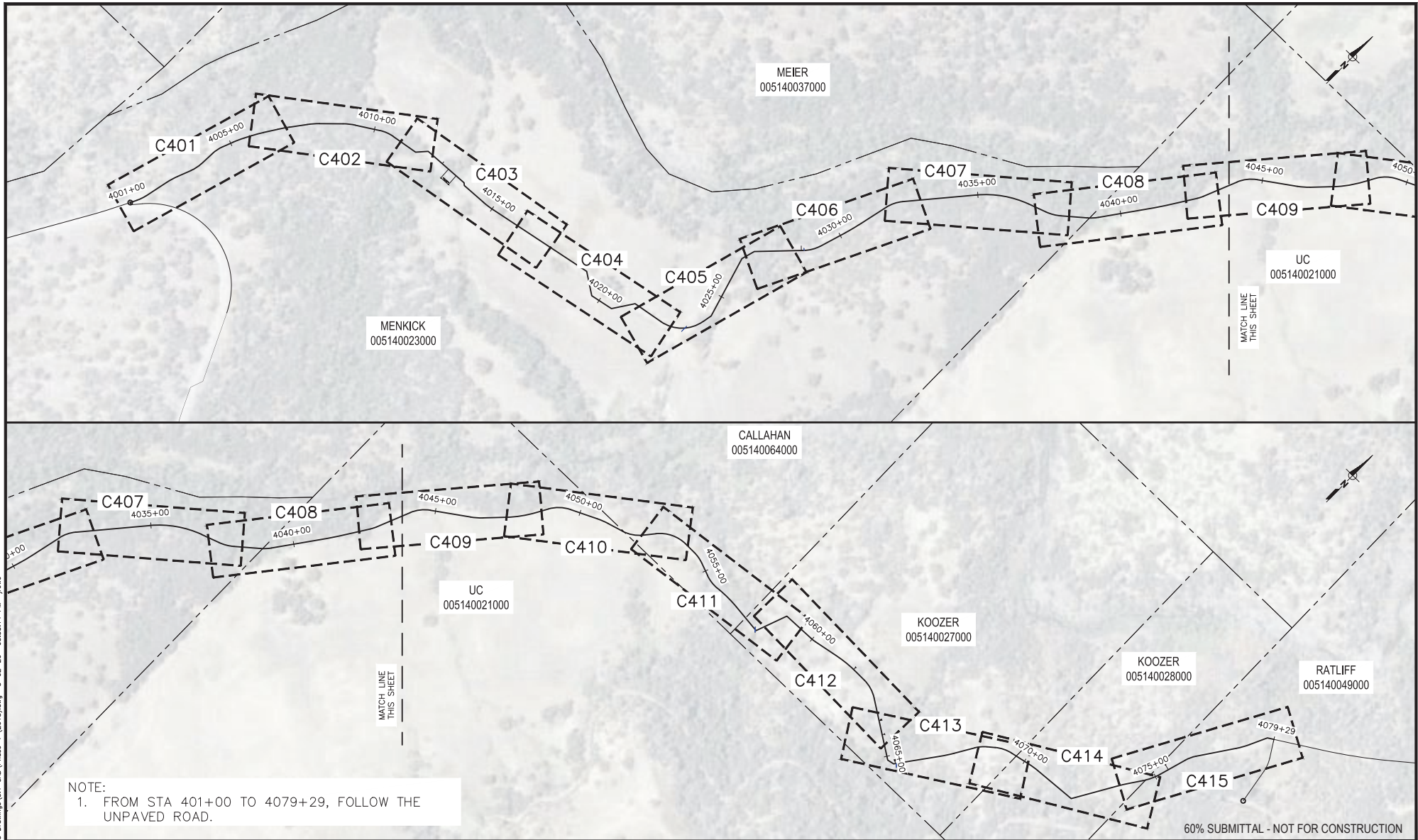
SHEET 051 OF 114



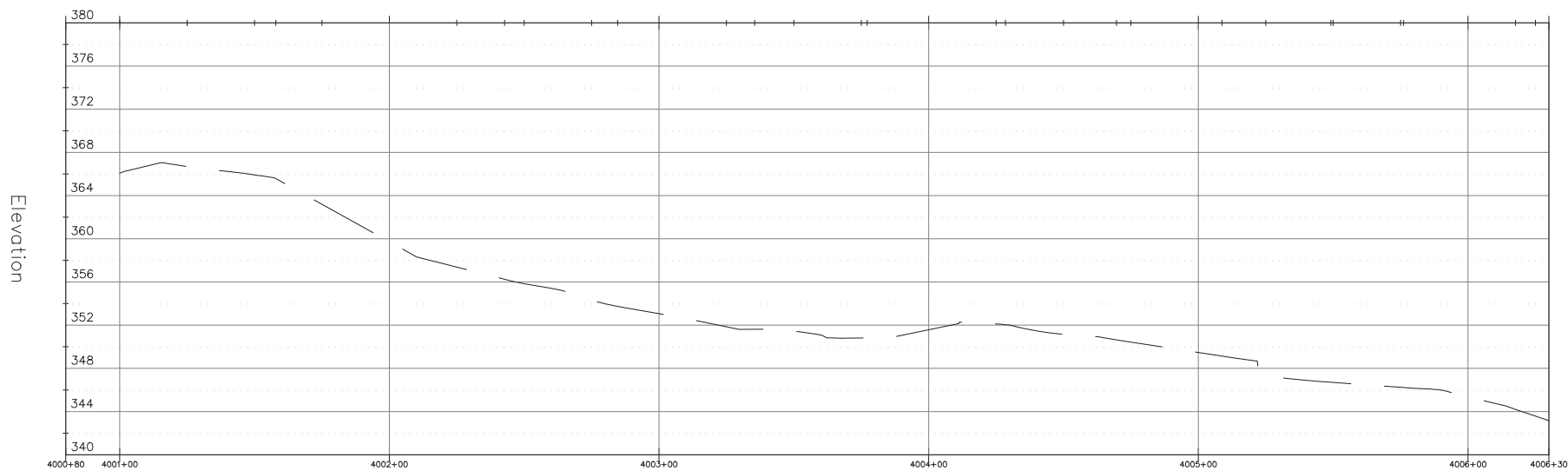
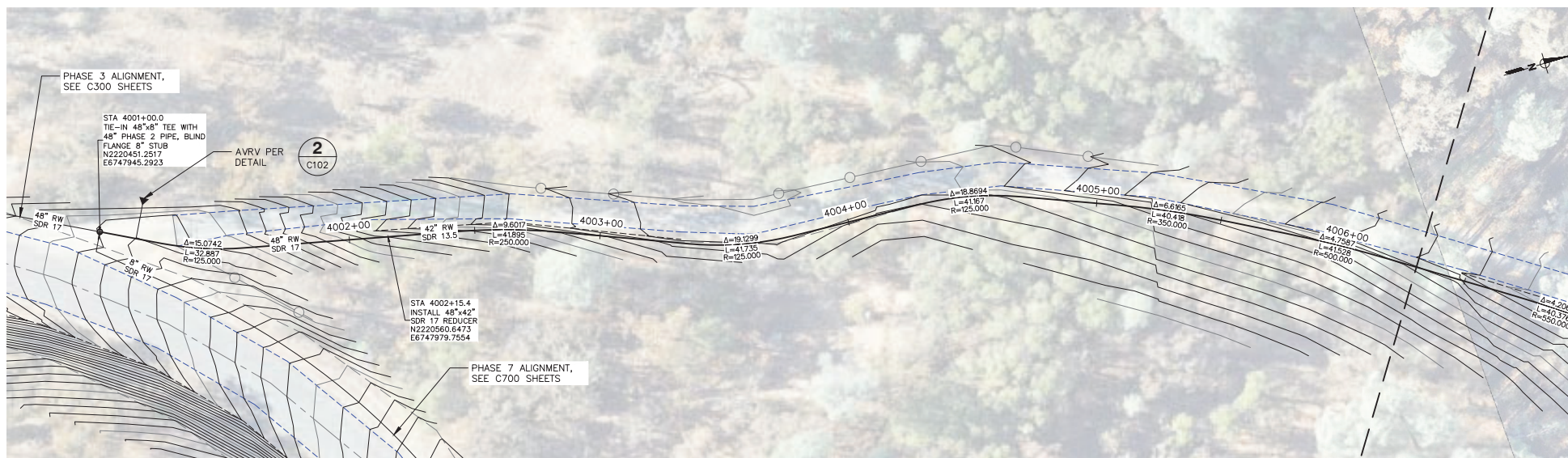
60% SUBMITTAL - NOT FOR CONSTRUCTION

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| | | | | SCALE: 1"=20' | WARNING 0 1/2 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DESIGNED: DMM DRAWN: BTS/JMR/AAS | ASHLEY SMITH PROJECT ENGINEER | 86512 R.C.E. NO. | 03/31/21 EXP. DATE | | | | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET |
| REV | DATE | BY | DESCRIPTION | DATE: FEBRUARY 2020 | | CHECKED: KBB | KARL BRUSTAD PROJECT MANAGER | 57869 R.C.E. NO. | 06/30/20 EXP. DATE | | | | PHASE 3 STA 3310+52 TO STA 3314+85 | | C331 |



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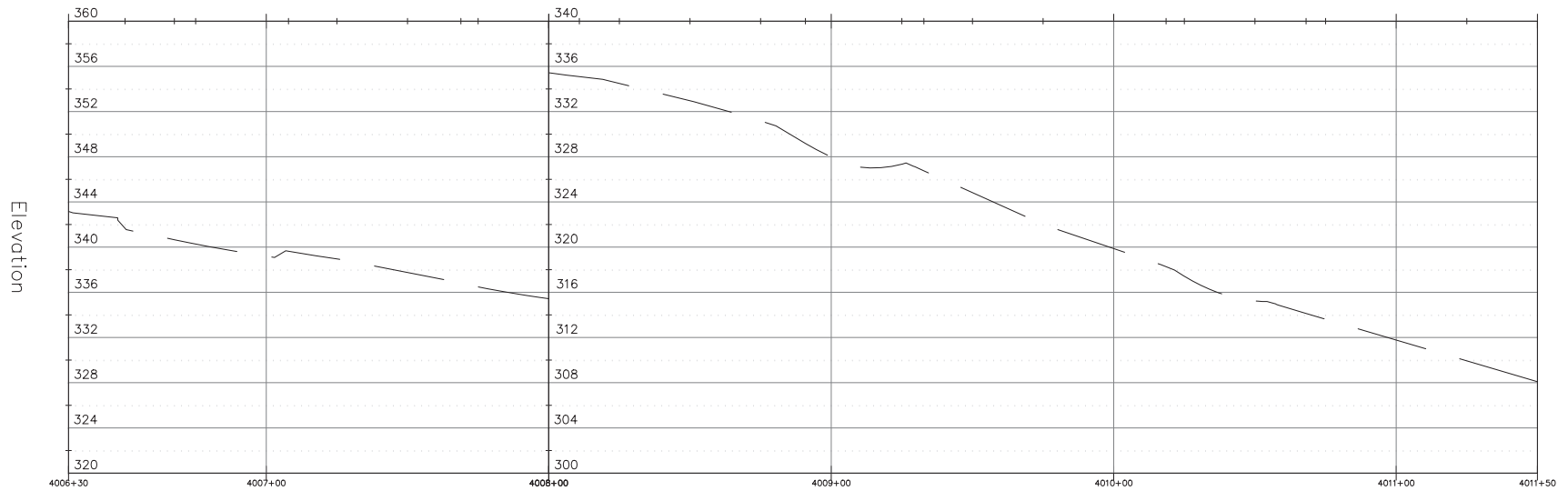
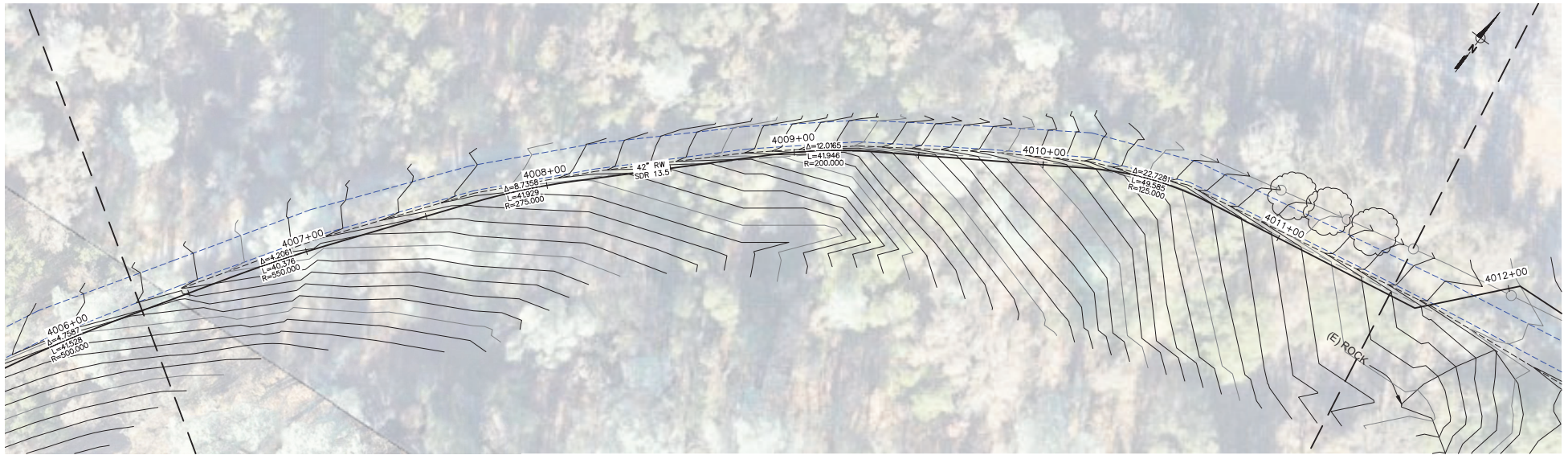


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| | | | | SCALE: 1"=150' | WARNING 0 1/2 | DESIGNED: DMM ASHLEY SMITH PROJECT ENGINEER | 86512 R.C.E. NO. | 03/31/21 EXP. DATE | | 80 Blue Ravine Rd, Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax: 916-608-2232 | | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET C400 |
| REV | DATE | BY | DESCRIPTION | DATE: FEBRUARY 2020 | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | CHECKED: KBB KARL BRUSTAD PROJECT MANAGER | 57869 R.C.E. NO. | 06/30/20 EXP. DATE | | | | PHASE 4 SHEET INDEX | | SHEET 84 OF 114 |



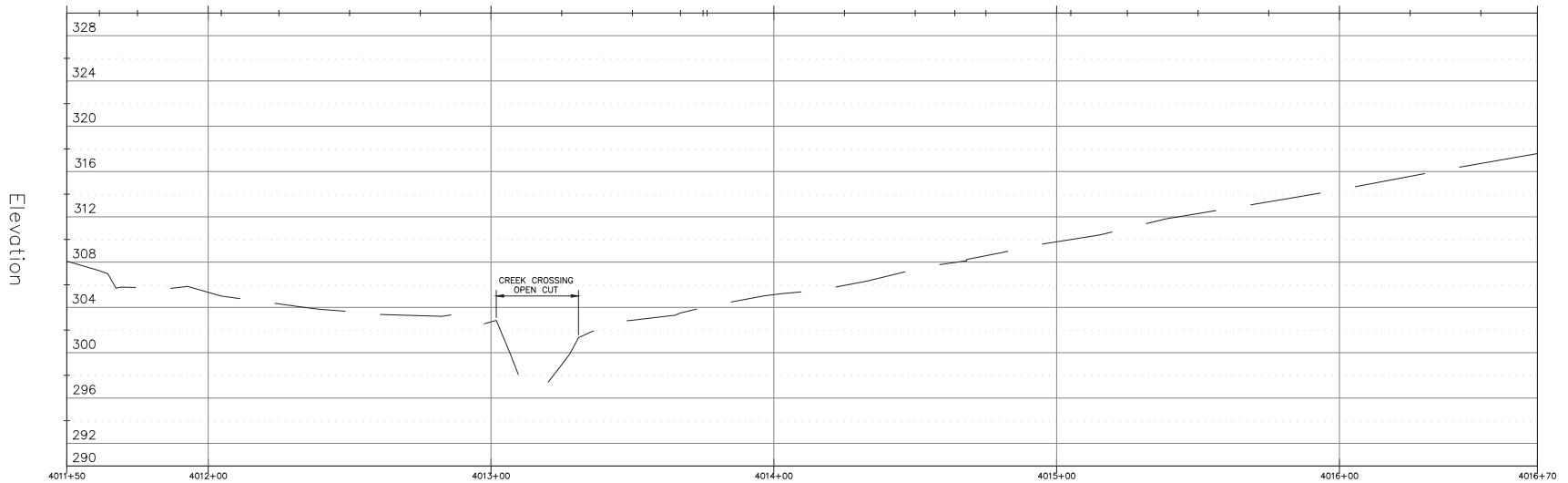
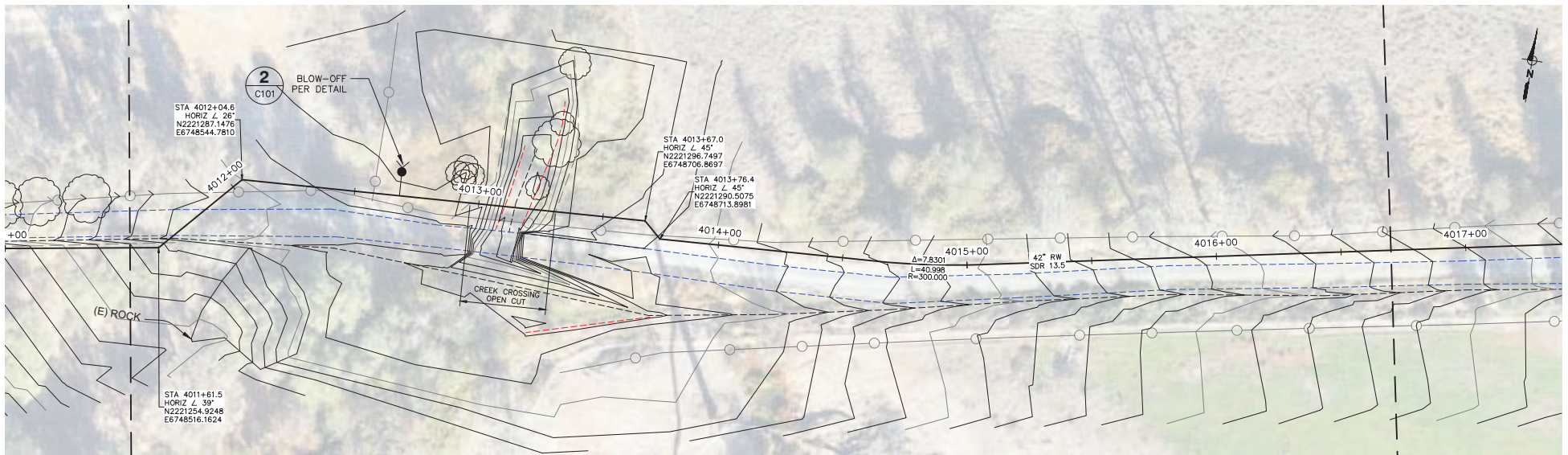
60% SUBMITTAL - NOT FOR CONSTRUCTION

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| | | | | SCALE: 1"=20' | | <div>WARNING</div> <div></div> | | DESIGNED: <u>DMM</u> | | ASHLEY SMITH PROJECT ENGINEER | | 86512 R.C.E. NO. | | 03/31/21 EXP. DATE | | <div></div> | <div></div> <div>80 Blue Ravine Rd, Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax: 916-608-2232</div> | <div></div> | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET | |
| | | | | DATE: FEBRUARY 2020 | | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | | DRAWN: <u>BTS/JMR/AAS</u> | | | | | | PHASE 4 STA 4000+80 TO STA 4006+30 | | | | | C401 | | | |
| | | | | | | | | CHECKED: <u>KBB</u> | | KARL BRUSTAD PROJECT MANAGER | | 57869 R.C.E. NO. | | 06/30/20 EXP. DATE | | | | | | | | |
| REV DATE BY DESCRIPTION | | | | | | | | | | | | | | | | | | | | | SHEET 055 OF 114 | |



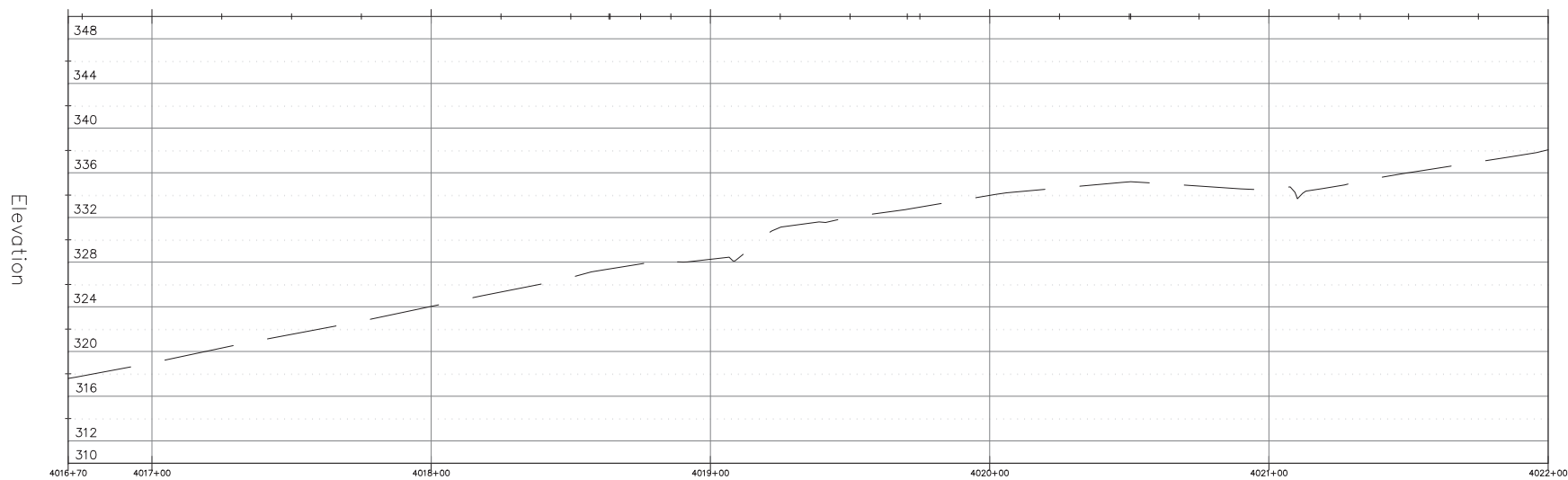
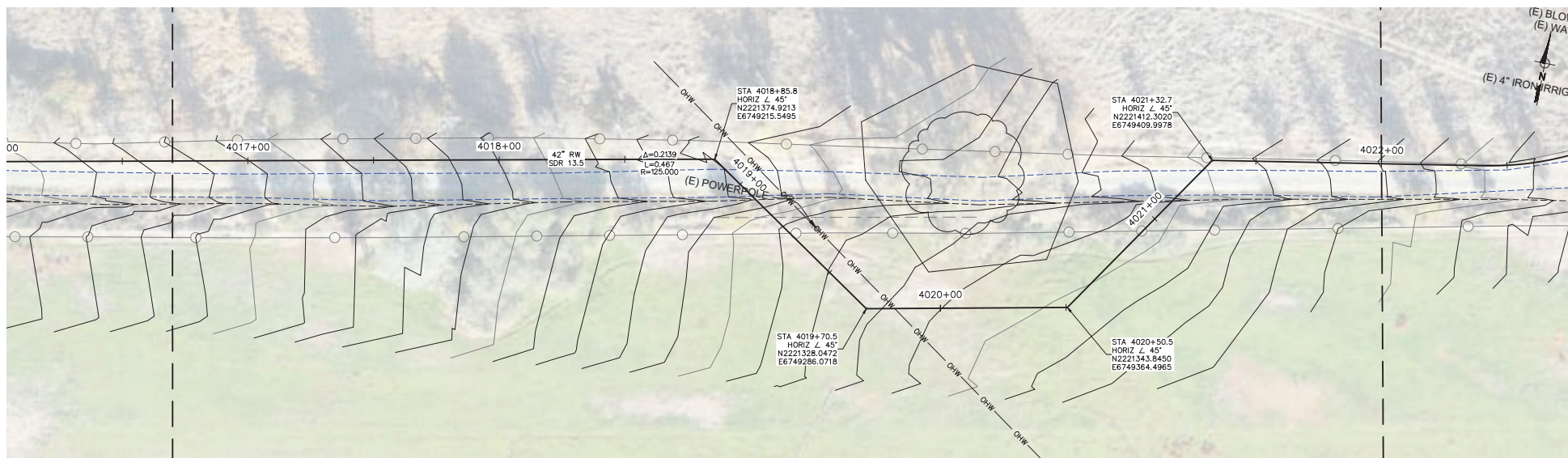
60% SUBMITTAL - NOT FOR CONSTRUCTION

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| | | | | SCALE: | <div>WARNING</div> <div>0 1/2</div> | DESIGNED: <u>DMM</u> | ASHLEY SMITH 86512 03/31/21 | | <div><div>REGISTERED PROFESSIONAL</div><div>LAND SURVEYOR</div><div>NO. 10099</div><div>STATE OF CALIFORNIA</div></div> | <div><div>PBI</div><div></div><div>80 Blue Ravine Rd, Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax: 916-608-2232</div></div> | <div><div></div><div>Browns Valley IRRIGATION DISTRICT</div></div> | BROWNS VALLEY IRRIGATION DISTRICT | SHEET |
| | | | | 1"=20' | | DRAWN: <u>BTS/JMR/AAS</u> | PROJECT ENGINEER R.C.E. NO. EXP. DATE | | | | | SICARD PIPELINE PROJECT | C402 |
| | | | | DATE: | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | CHECKED: <u>KBB</u> | KARL BRUSTAD 57869 06/30/20 | | | | PHASE 4 | STA 4006+30 TO STA 4011+50 | |
| | | | | FEBRUARY 2020 | | PROJECT MANAGER R.C.E. NO. EXP. DATE | PROJECT MANAGER R.C.E. NO. EXP. DATE | | | | | | |
| REV | DATE | BY | DESCRIPTION | | | | | | | | | | |



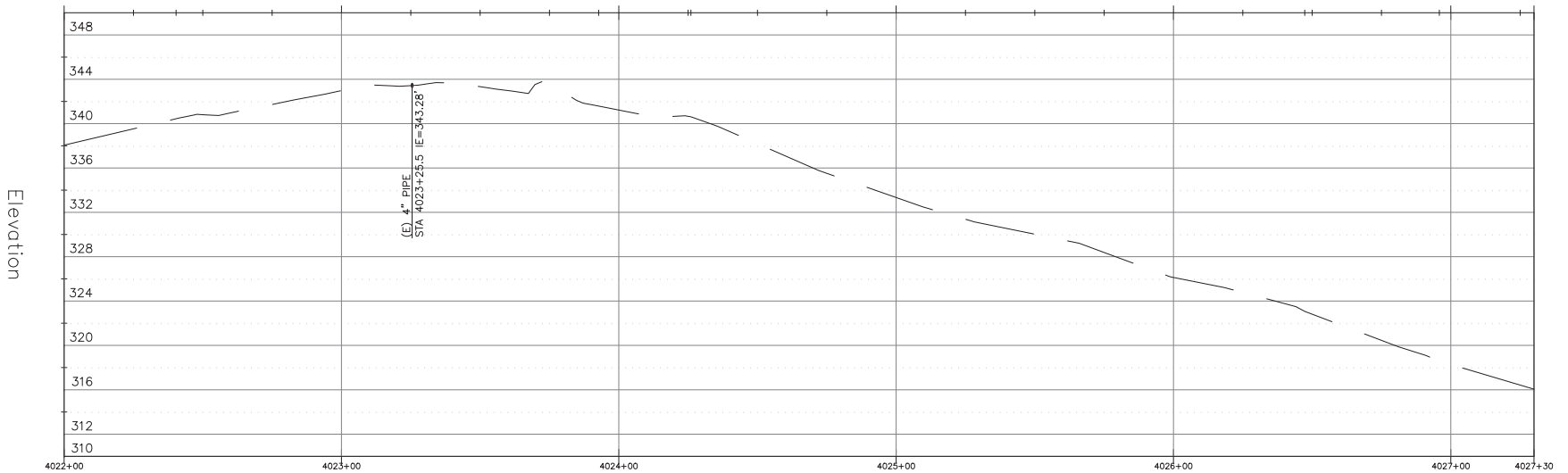
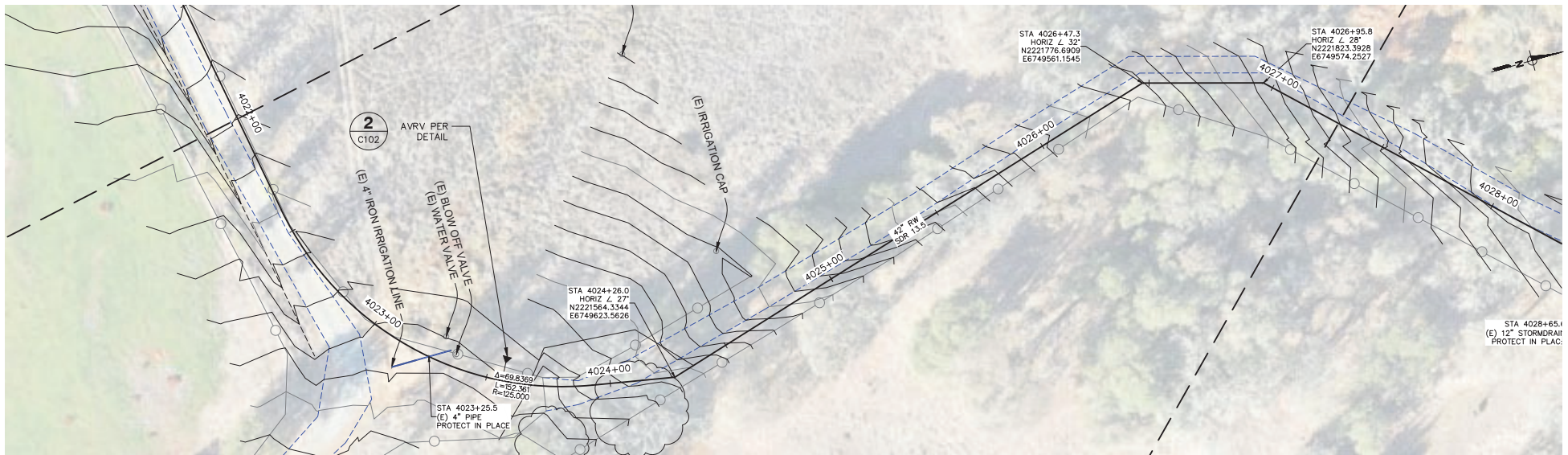
60% SUBMITTAL - NOT FOR CONSTRUCTION

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| | | | | SCALE: 1"=20' | <div>WARNING</div> <div></div> | DESIGNED _DMM | ASHLEY SMITH 86512 03/31/21 PROJECT ENGINEER R.C.E. NO. EXP. DATE | |  |  |  | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET |
| | | | | DATE: FEBRUARY 2020 | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN _BTS/JMR/AAS | KARL BRUSTAD 57869 06/30/20 PROJECT MANAGER R.C.E. NO. EXP. DATE | | | | | PHASE 4 STA 4011+50 TO STA 4016+70 | | C403 |
| REV | DATE | BY | DESCRIPTION | SHEET 057 OF 114 | | | | | | | | | | |



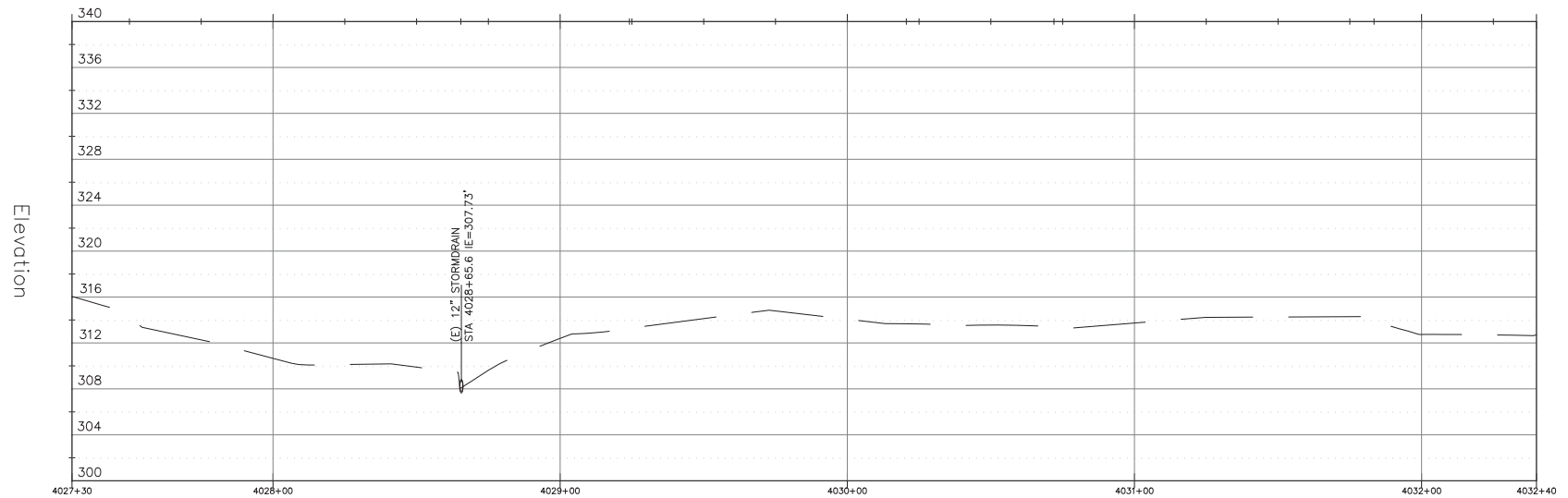
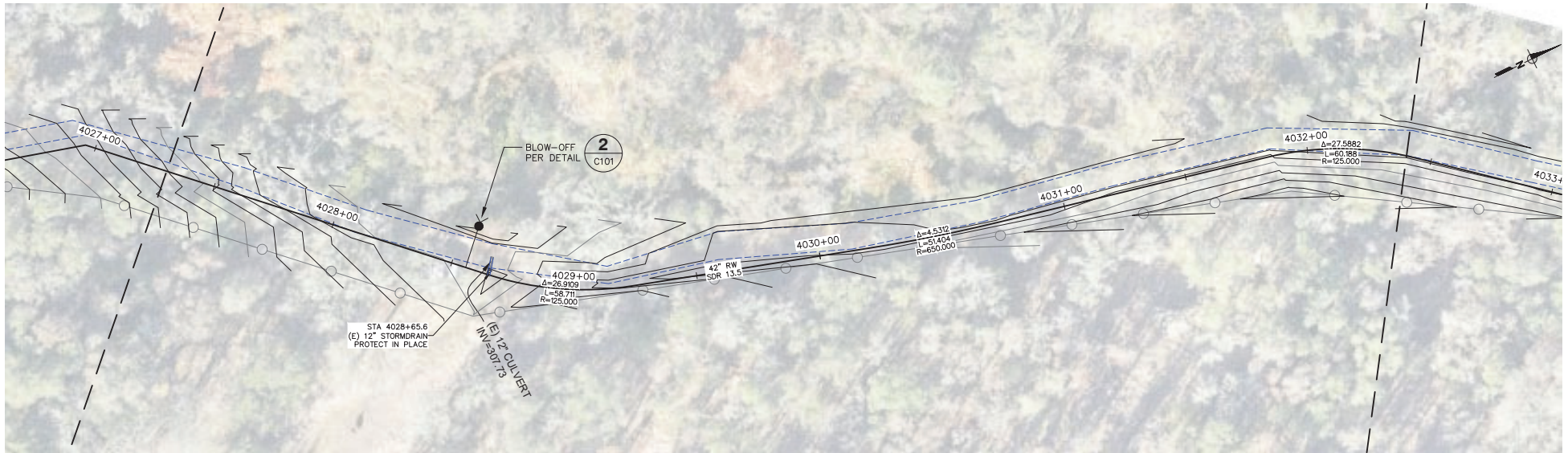
60% SUBMITTAL - NOT FOR CONSTRUCTION

| REV | DATE | BY | DESCRIPTION | SCALE: | WARNING | DESIGNED: DMM | PROJECT ENGINEER | 86512 | 03/31/21 | REGISTERED PROFESSIONAL ENGINEER | PBI | Browns Valley Irrigation District | SHEET |
|-----|------|----|-------------|---------------|---|--------------------|------------------|------------|-----------|----------------------------------|---|--|------------------|
| | | | | 1"=20' | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN: BTS/JMR/AAS | ASHLEY SMITH | R.C.E. NO. | EXP. DATE | PEL 1909/20 | 80 Blue Ravine Rd. Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax: 916-608-2232 | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | C404 |
| | | | | DATE: | | CHECKED: KBB | KARL BRUSTAD | 57869 | 06/30/20 | PEL 09/20 | | PHASE 4 STA 4016+70 TO STA 4022+00 | SHEET 008 OF 114 |
| | | | | FEBRUARY 2020 | | | PROJECT MANAGER | R.C.E. NO. | EXP. DATE | | | | |



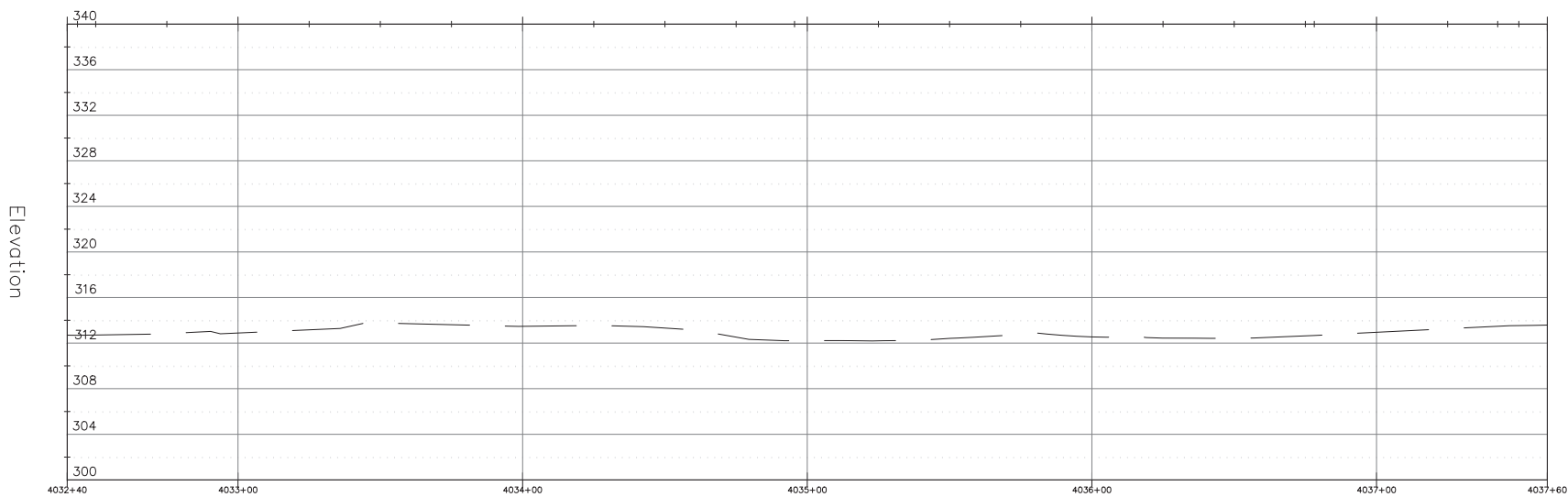
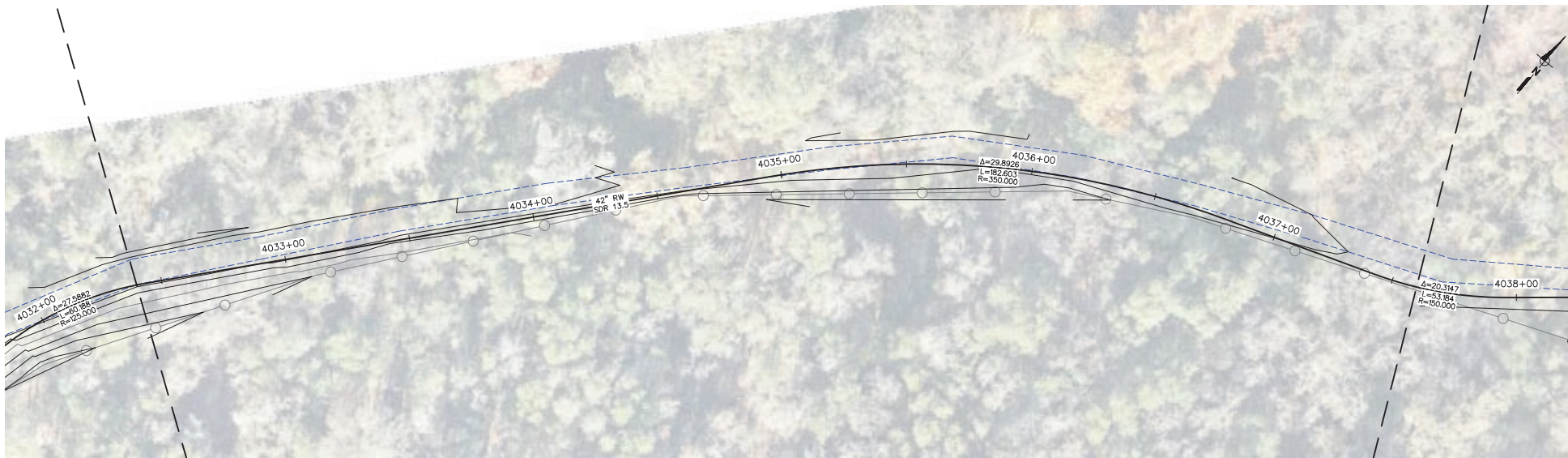
60% SUBMITTAL - NOT FOR CONSTRUCTION

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| | | | | SCALE: 1"=20' | WARNING 0 1/2 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DESIGNED: DMM ASHLEY SMITH PROJECT ENGINEER | 86512 R.C.E. NO. | 03/31/21 EXP. DATE | | | | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT PHASE 4 STA 4022+00 TO STA 4027+30 | SHEET C405 SHEET 009 OF 114 |
| REV | DATE | BY | DESCRIPTION | DATE: FEBRUARY 2020 | | CHECKED: KBB KARL BRUSTAD PROJECT MANAGER | 57869 R.C.E. NO. | 06/30/20 EXP. DATE | | | | | |



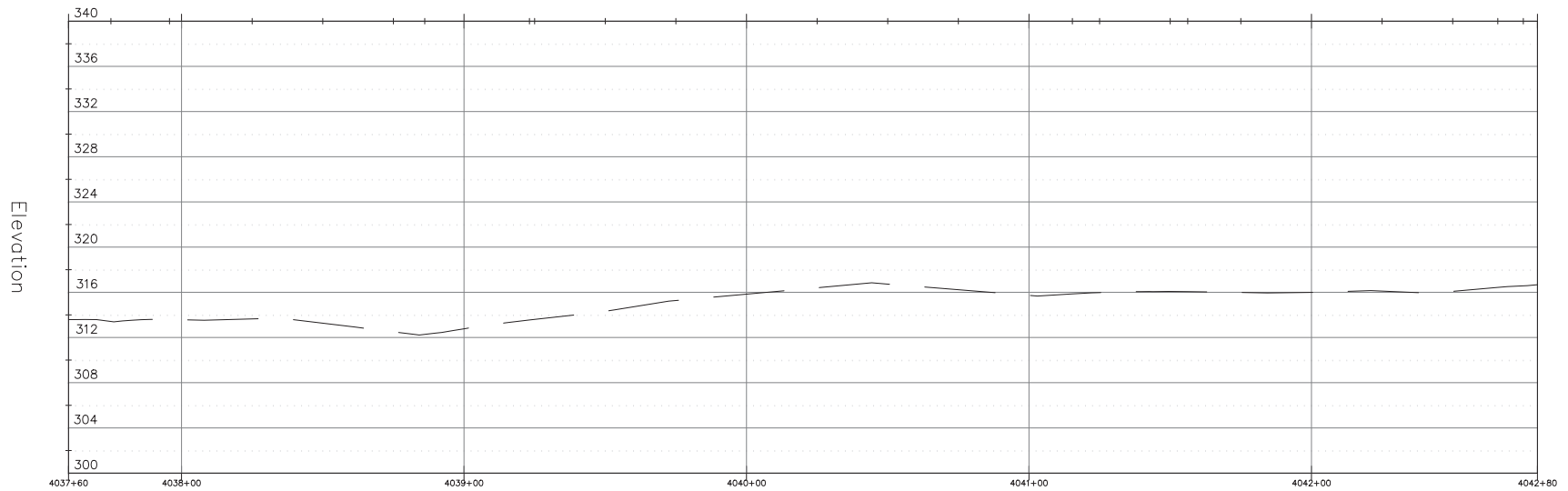
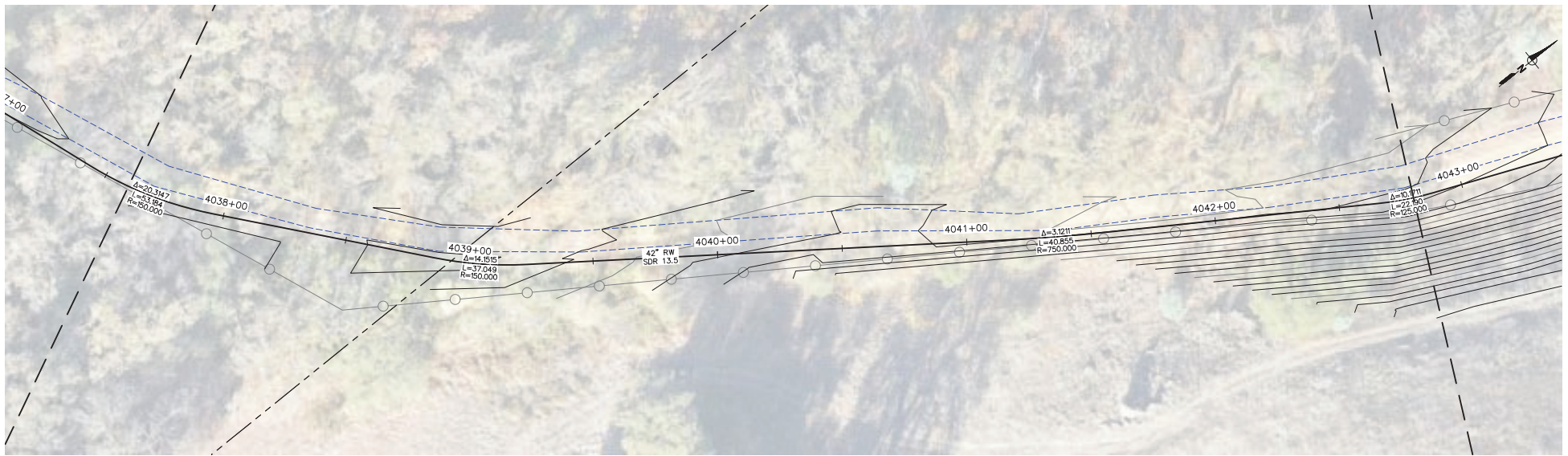
60% SUBMITTAL - NOT FOR CONSTRUCTION

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| | | | | SCALE: 1"=20' | <div>WARNING </div> | DESIGNED <u>DM</u> | ASHLEY SMITH PROJECT ENGINEER | | 86512 R.C.E. NO. | 03/31/21 EXP. DATE |  |  |  | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET |
| | | | | DATE: FEBRUARY 2020 | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN <u>BTS/JMR/AAS</u> | KARL BRUSTAD PROJECT MANAGER | | 57869 R.C.E. NO. | 06/30/20 EXP. DATE | | | | PHASE 4 STA 4027+30 TO STA 4032+40 | | C406 |
| REV | DATE | BY | DESCRIPTION | | | | | | | | | | | | | SHEET 080 OF 114 |



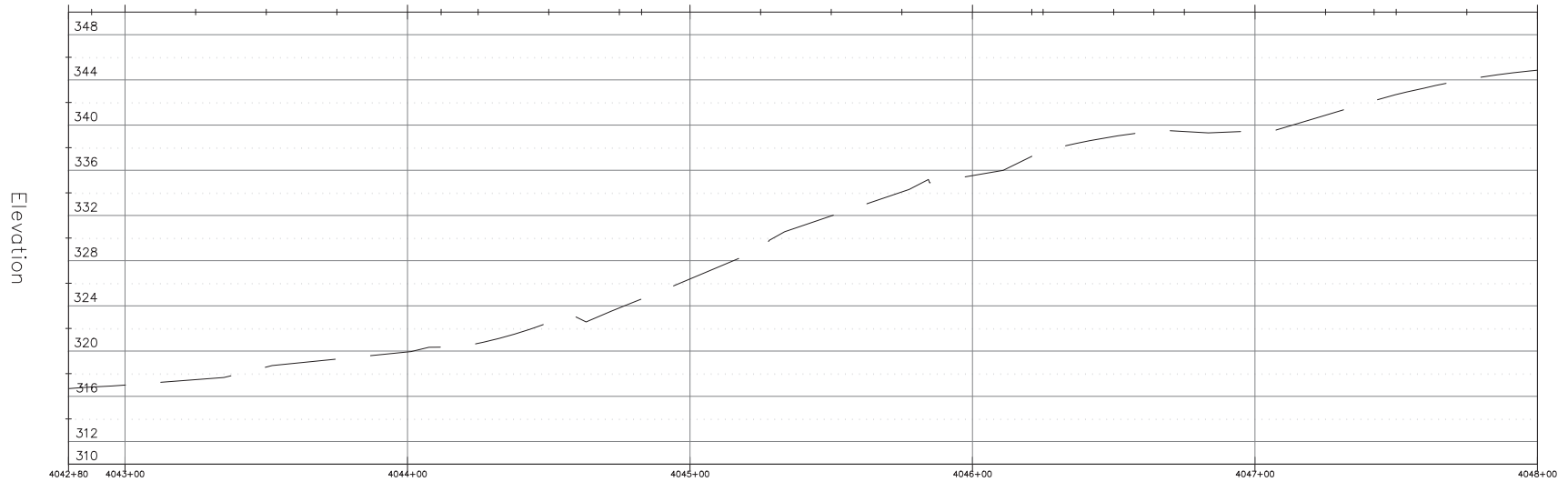
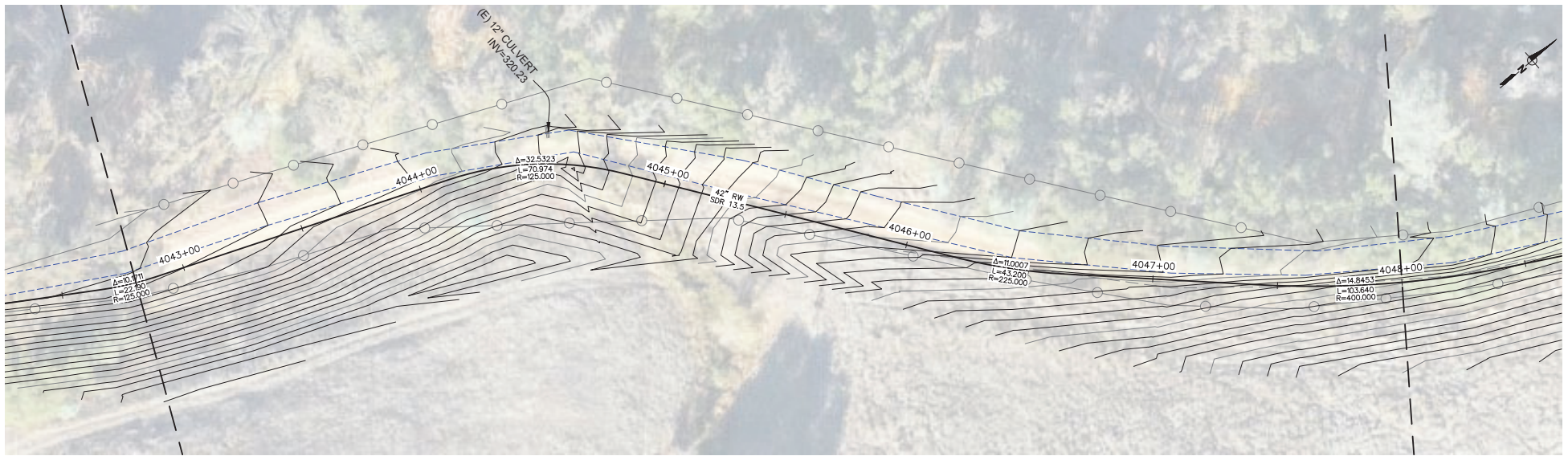
60% SUBMITTAL - NOT FOR CONSTRUCTION

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|-----|------|----|-------------|------------------------|---|---|--|-----------------------------|------------|---|--|--|--|--|--|-------|
| | | | | SCALE: 1"=20' | <div>WARNING</div> <div><div>01/2</div></div> | DESIGNED: <u>DMM</u> | ASHLEY SMITH 86512 03/31/21 | | | | | | | | | |
| | | | | DATE: FEBRUARY 2020 | | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN: <u>BTS/JMR/AAS</u> | PROJECT ENGINEER | R.C.E. NO. | EXP. DATE | | | | | | |
| | | | | | | | CHECKED: <u>KBB</u> | KARL BRUSTAD 57869 06/30/20 | | | | | | | | |
| | | | | | | | PROJECT MANAGER | R.C.E. NO. | EXP. DATE | | | | | | | |
| | | | | | | | <div><div><div>PROFESSIONAL ENGINEER</div><div>ASHLEY G. SMITH</div><div>86512</div><div>03/31/21</div><div>EXPIRATION DATE</div></div><div><div>REGISTERED PROFESSIONAL</div><div>CIVIL</div><div>STATE OF CALIFORNIA</div></div></div> | | | <div><div><div>PBI</div><div><div></div></div></div><div>80 Blue Ravine Rd, Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax: 916-608-2232</div></div> | | <div><div><div>Browns Valley</div><div>IRRIGATION DISTRICT</div></div><div><div></div></div></div> | | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET |
| | | | | | | | | | | PHASE 4 STA 4032+40 TO STA 4037+60 | | C407 | | | | |
| | | | | | | | | | | | | SHEET 061 OF 114 | | | | |
| REV | DATE | BY | DESCRIPTION | | | | | | | | | | | | | |



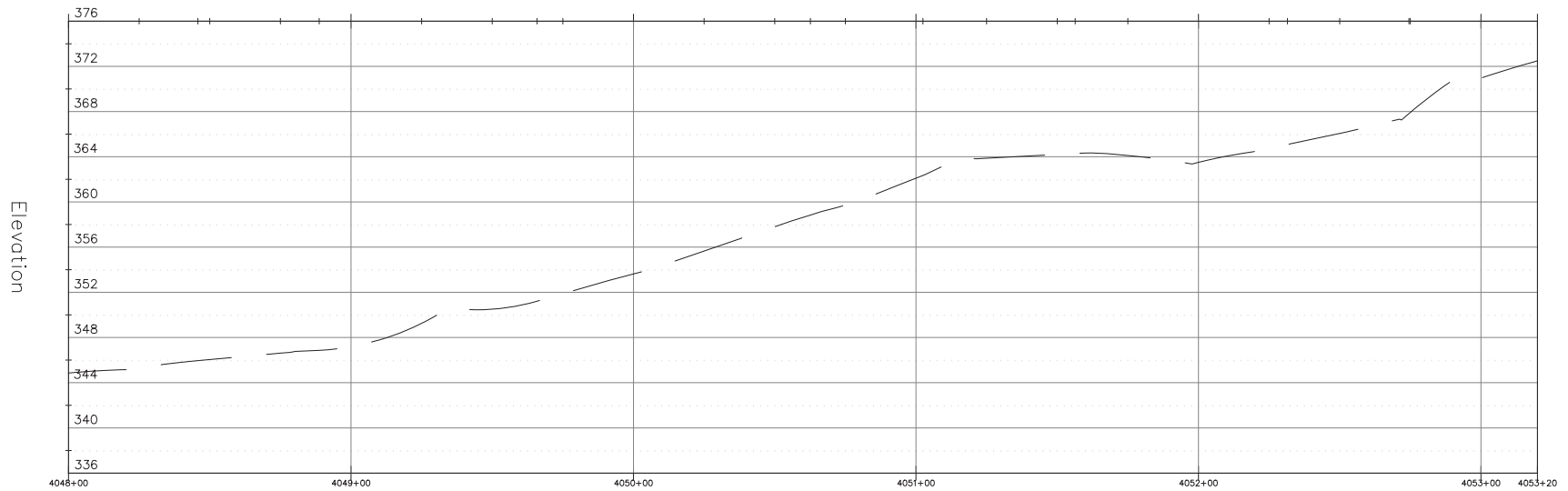
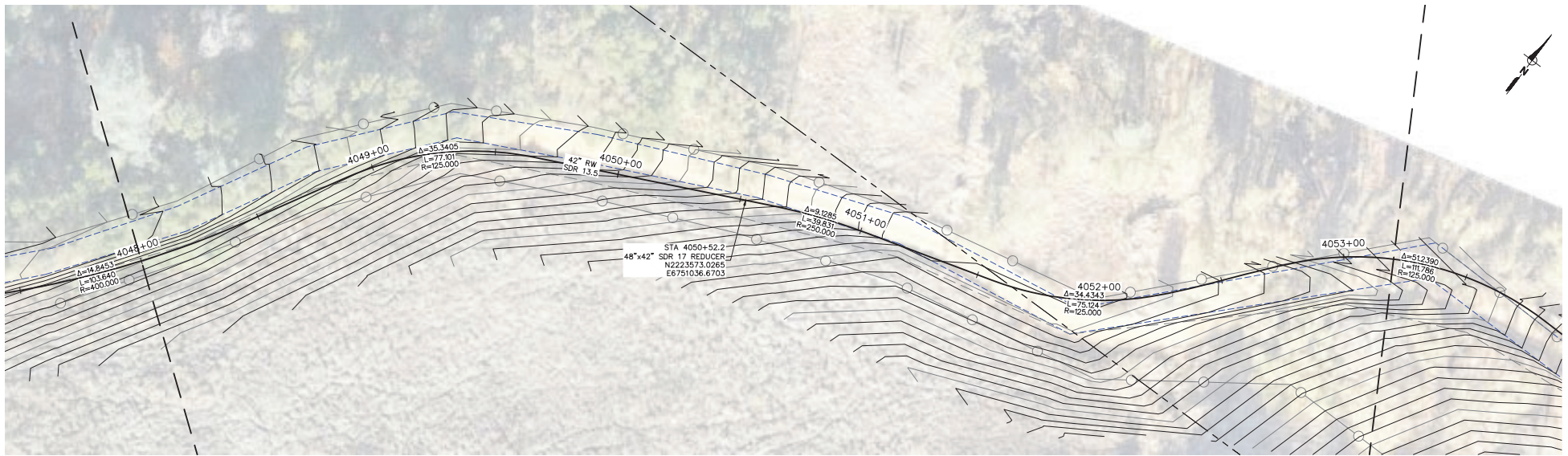
60% SUBMITTAL - NOT FOR CONSTRUCTION

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|-----|------|----|-------------|------------------------|---|--------------------|--|--|---|---|---|--|--|-------|
| | | | | SCALE: 1"=20' | <div>WARNING</div> <div></div> | DESIGNED _DMM | ASHLEY SMITH 86512 03/31/21 PROJECT ENGINEER R.C.E. NO. EXP. DATE | |  |  |  | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET |
| | | | | DATE: FEBRUARY 2020 | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN _BTS/JMR/AAS | KARL BRUSTAD 57869 06/30/20 PROJECT MANAGER R.C.E. NO. EXP. DATE | | | | | PHASE 4 STA 4037+60 TO STA 4042+80 | | C408 |
| REV | DATE | BY | DESCRIPTION | SHEET 082 OF 114 | | | | | | | | | | |



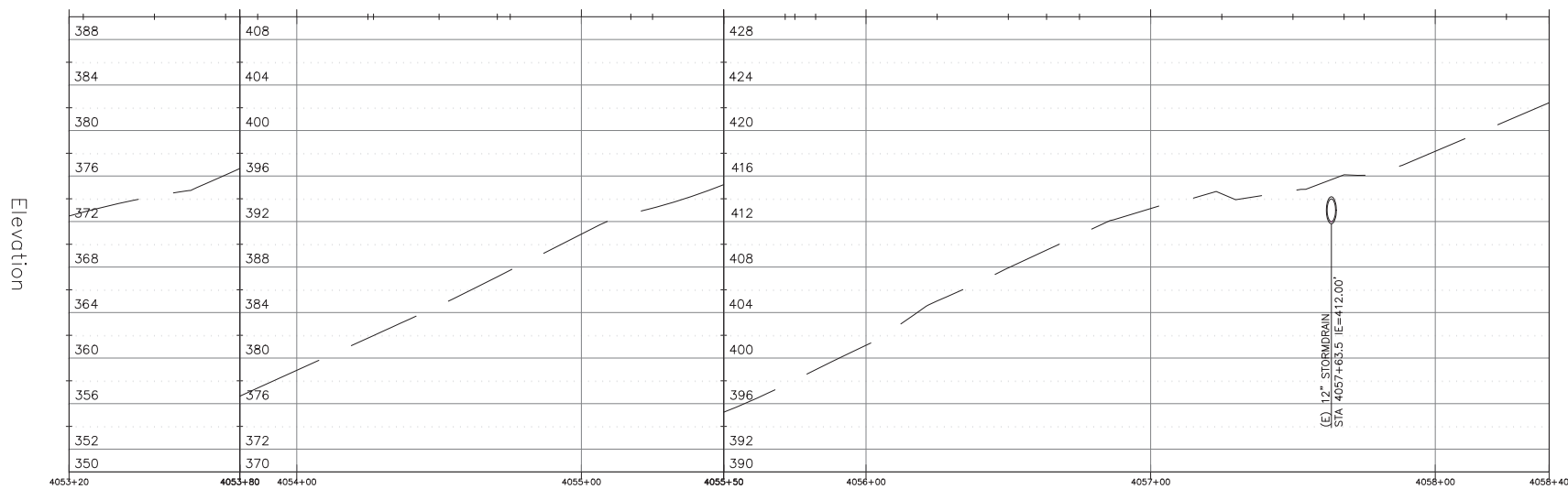
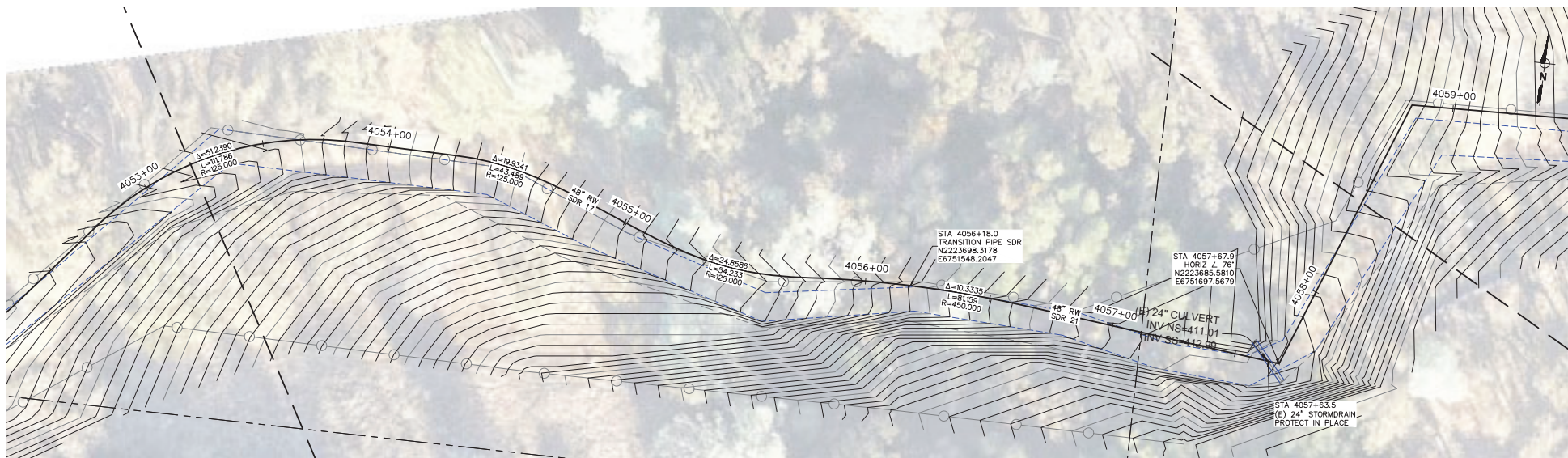
60% SUBMITTAL - NOT FOR CONSTRUCTION

| | | | | | | | | | | | |
|------------------|------|----|-------------|---------------------------------------|---|---|--|--|--|--|-------|
| | | | | SCALE: 1"=20' | <div>WARNING</div> <div></div> | <div>DESIGNED _DMM</div> <div>ASHLEY SMITH 86512 03/31/21 PROJECT ENGINEER R.C.E. NO. EXP. DATE</div> | | | | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | SHEET |
| | | | | DATE: FEBRUARY 2020 | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | CHECKED _KBB KARL BRUSTAD 57869 06/30/20 PROJECT MANAGER R.C.E. NO. EXP. DATE | | | | C409 | |
| REV | DATE | BY | DESCRIPTION | PHASE 4 STA 4042+80 TO STA 4048+00 | | | | | | | |
| SHEET 083 OF 114 | | | | | | | | | | | |







60% SUBMITTAL - NOT FOR CONSTRUCTION

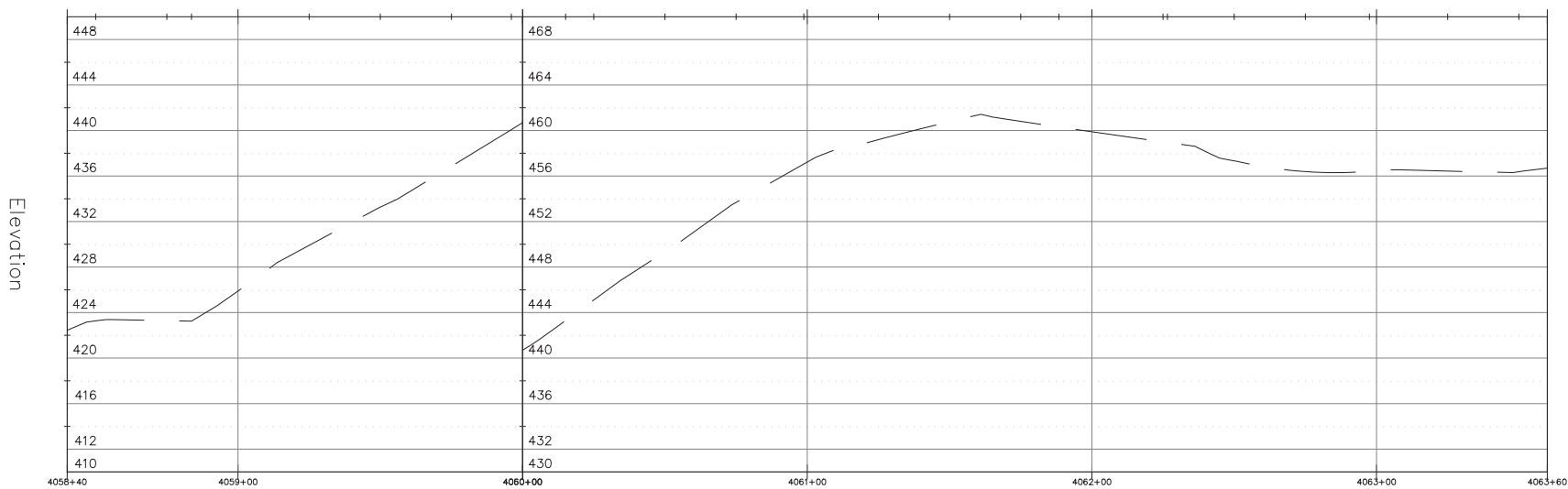
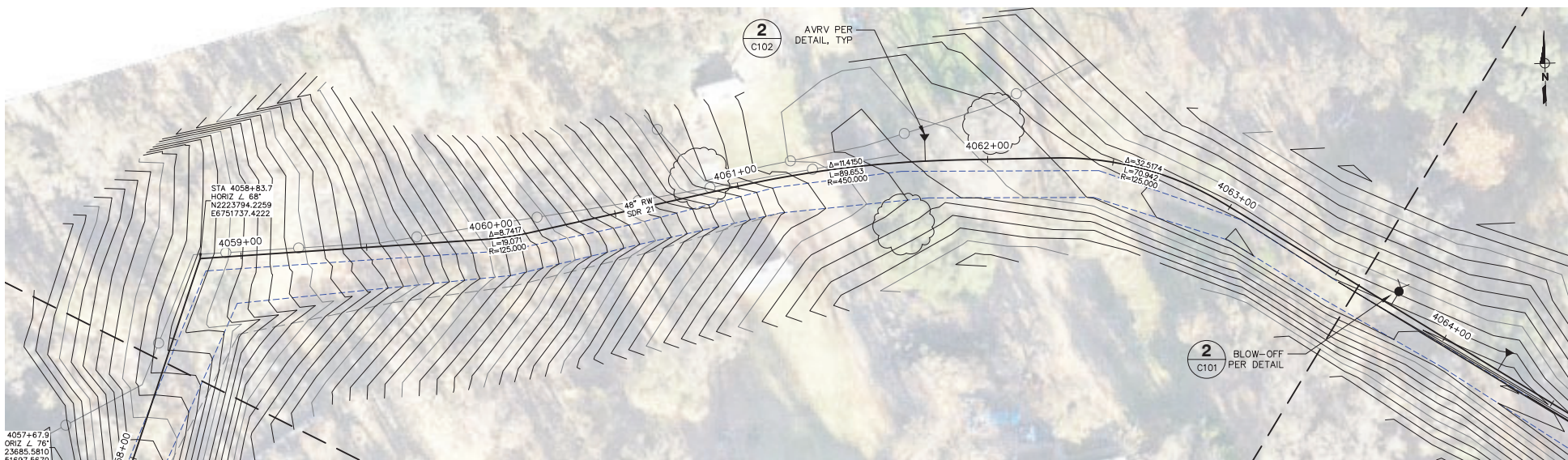
| | | | | | | | | | | | | | |
|-----|------|----|-------------|------------------------|---|--------------------|--|--|---|--|---|--|-------|
| | | | | SCALE: 1"=20' | <div>WARNING</div> <div></div> | DESIGNED _DMM | ASHLEY SMITH 86512 03/31/21 PROJECT ENGINEER R.C.E. NO. EXP. DATE | |  |  80 Blue Ravine Rd., Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax 916-608-2232 |  | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | SHEET |
| | | | | DATE: FEBRUARY 2020 | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN _BTS/JMR/AAS | KARL BRUSTAD 57869 06/30/20 PROJECT MANAGER R.C.E. NO. EXP. DATE | | | | | PHASE 4 STA 4048+00 TO STA 4053+20 | C410 |
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60% SUBMITTAL - NOT FOR CONSTRUCTION

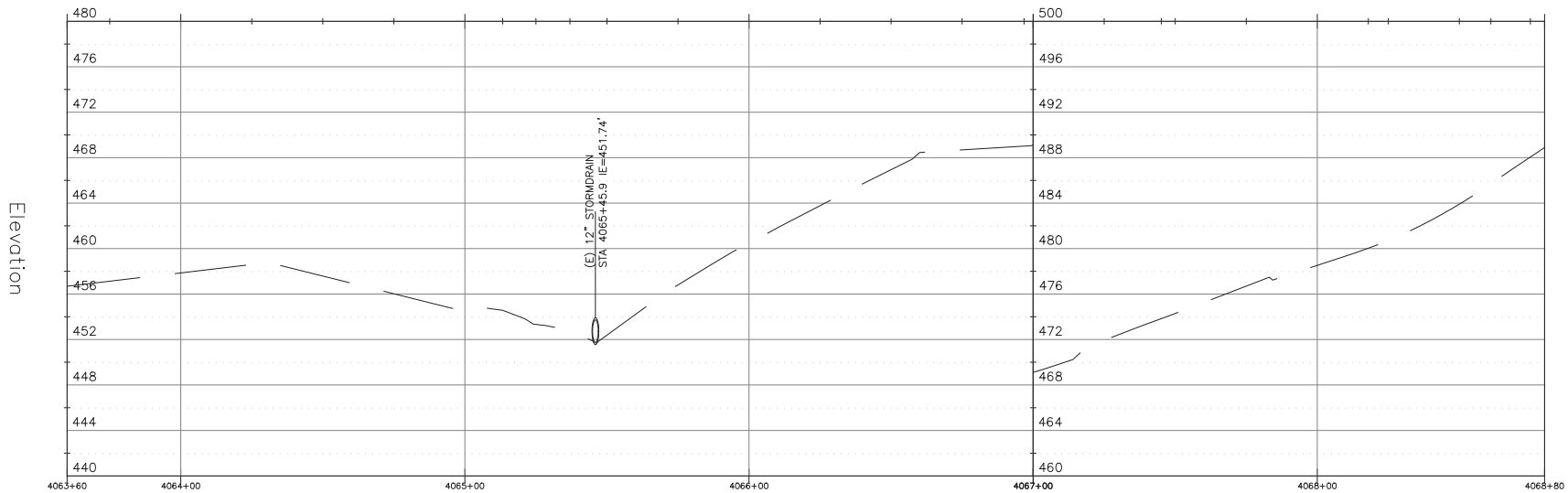
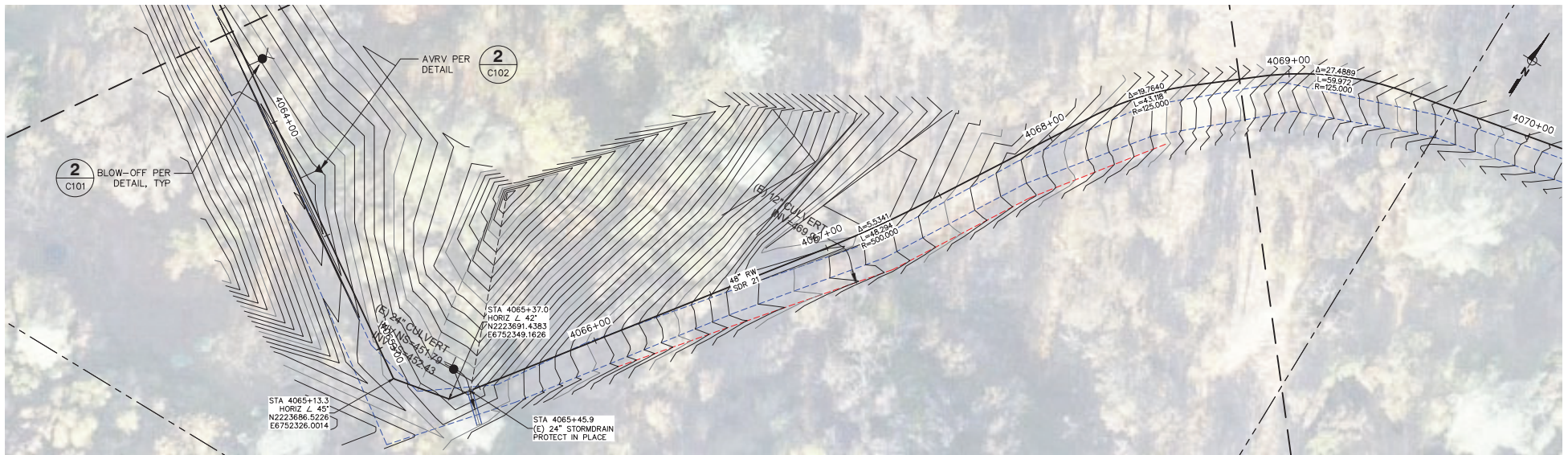
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|-----|------|----|-------------|------------------------|--|---|------------------|------------|-----------|--|--|--|--|
| | | | | SCALE: 1"=20' | WARNING  | DESIGNED: <u>DMM</u> | ASHLEY SMITH | 86512 | 03/31/21 | | | | |
| | | | | DATE: FEBRUARY 2020 | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN: <u>BTS/JMR/AAS</u> | PROJECT ENGINEER | R.C.E. NO. | EXP. DATE | | | | |
| | | | | | | CHECKED: <u>KBB</u> | KARL BRUSTAD | 57869 | 06/30/20 | | | | |
| | | | | | | | PROJECT MANAGER | R.C.E. NO. | EXP. DATE | | | | |
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| | | | | | |  | | | | | | | |
| | | | | | | 80 Blue Ravine Rd, Suite 280 Folsom, CA 95630 Tel. 916-608-2212 Fax 916-608-2232 | | | | | | | |
| | | | | | | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | | | | | | |
| | | | | | | PHASE 4 STA 4053+20 TO STA 4058+40 | | | | | | | |
| | | | | | | SHEET C411 | | | | | | | |
| | | | | | | SHEET 005 OF 114 | | | | | | | |
| REV | DATE | BY | DESCRIPTION | | | | | | | | | | |



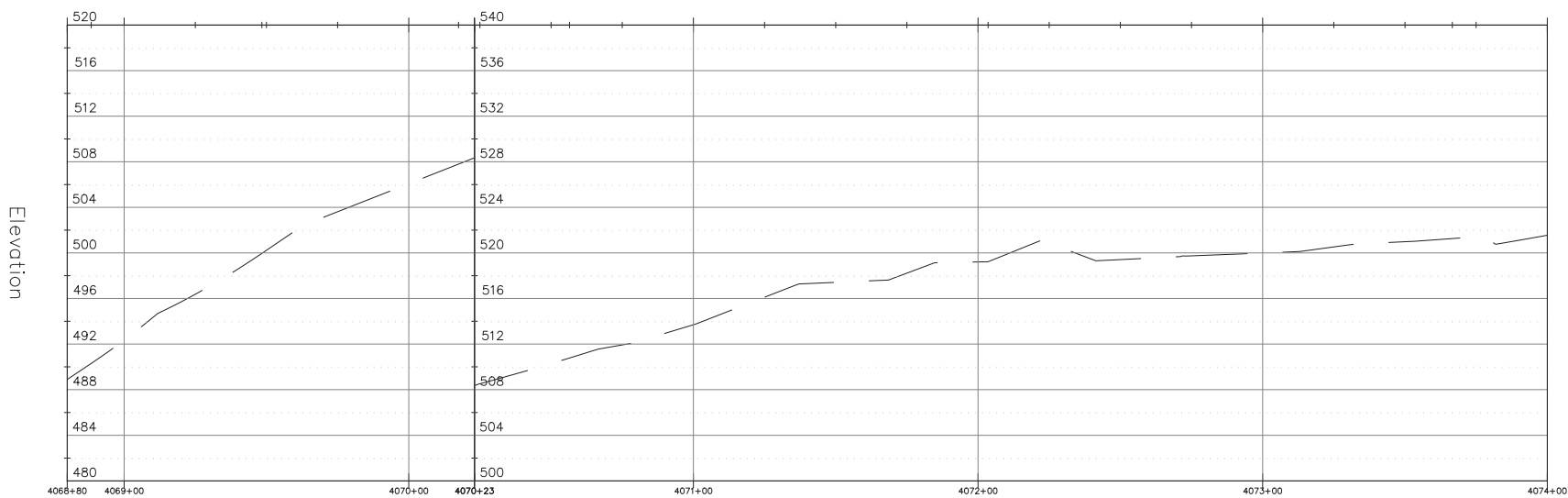
60% SUBMITTAL - NOT FOR CONSTRUCTION

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|-----|------|----|-------------|------------------------|--|---------------------------|--|--|---|---------------------------------------|--|------------------|--|--|-------|
| | | | | SCALE: 1"=20' | <div>WARNING</div> <div><div>01/2</div></div> <div>IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.</div> | DESIGNED: <u>DMM</u> | ASHLEY SMITH 86512 03/31/21 | | | | | | | | |
| | | | | DATE: FEBRUARY 2020 | | DRAWN: <u>BTS/JMR/AAS</u> | PROJECT ENGINEER R.C.E. NO. EXP. DATE | | | | | | | | |
| | | | | | | CHECKED: <u>KBB</u> | KARL BRUSTAD 57869 06/30/20 | | | | | | | | |
| | | | | | | | PROJECT MANAGER R.C.E. NO. EXP. DATE | | | | | | | | |
| REV | DATE | BY | DESCRIPTION | | | | <div><div>REGISTERED PROFESSIONAL CIVIL ENGINEER KARL O. BRUSTAD No. 57869 Exp. 06/30/20 STATE OF CALIFORNIA</div></div> | | <div><div>PBI</div><div>80 Blue Ravine Rd., Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax: 916-608-2232</div></div> | | <div><div>Browns Valley IRRIGATION DISTRICT</div><div></div></div> | | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET |
| | | | | | | | | | | PHASE 4 STA 4058+40 TO STA 4063+60 | | C412 | | | |
| | | | | | | | | | | | | SHEET 006 OF 114 | | | |







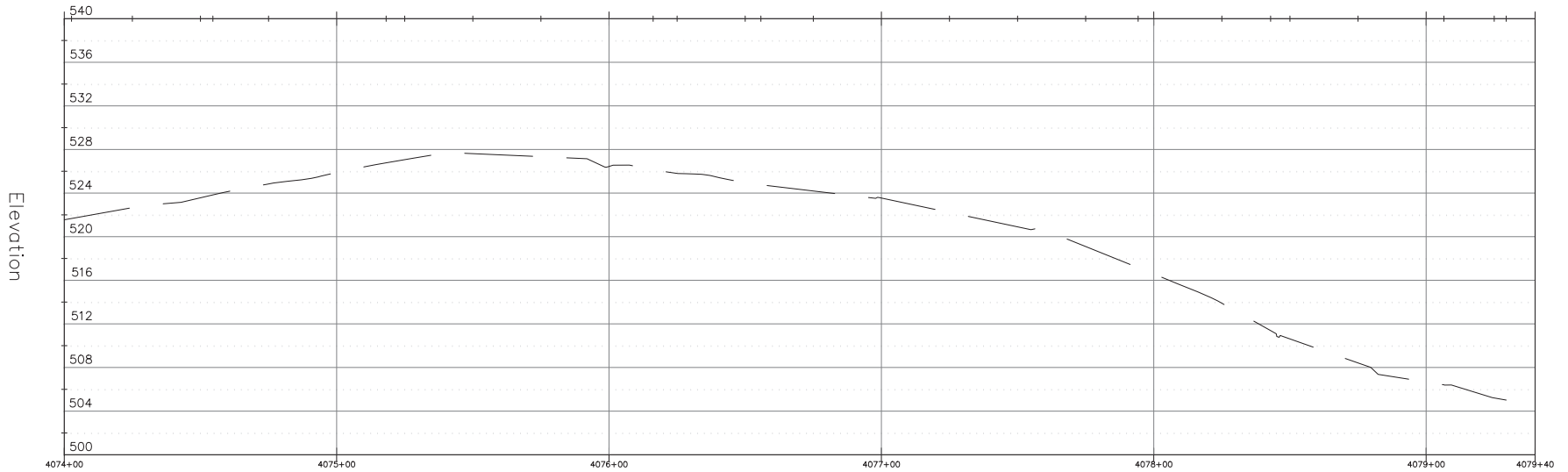
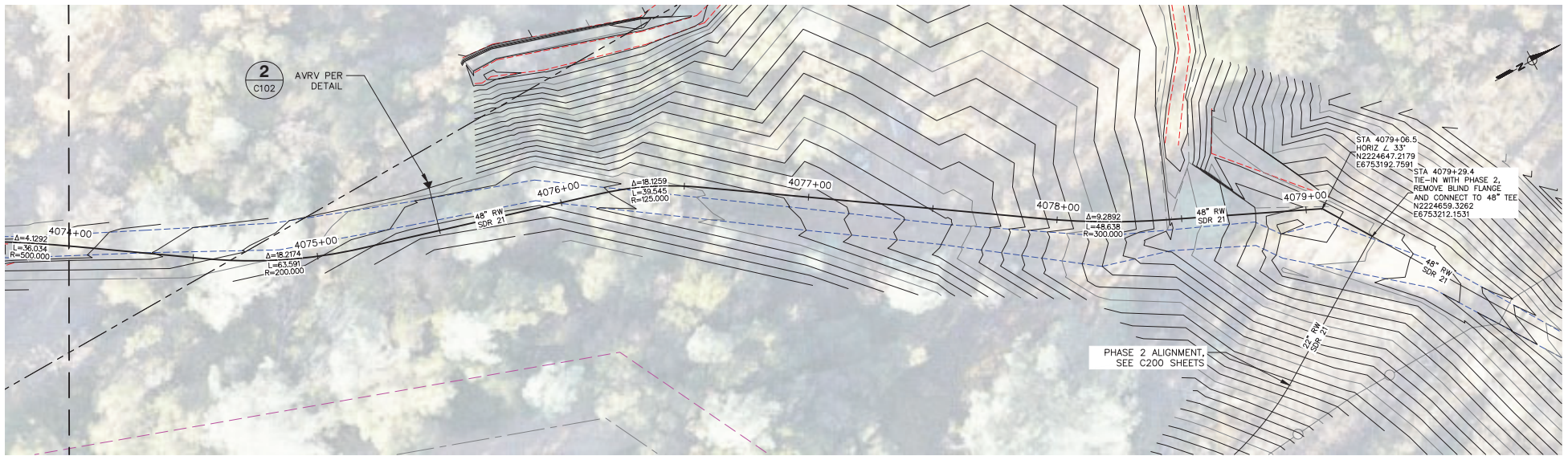
60% SUBMITTAL - NOT FOR CONSTRUCTION

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60% SUBMITTAL - NOT FOR CONSTRUCTION

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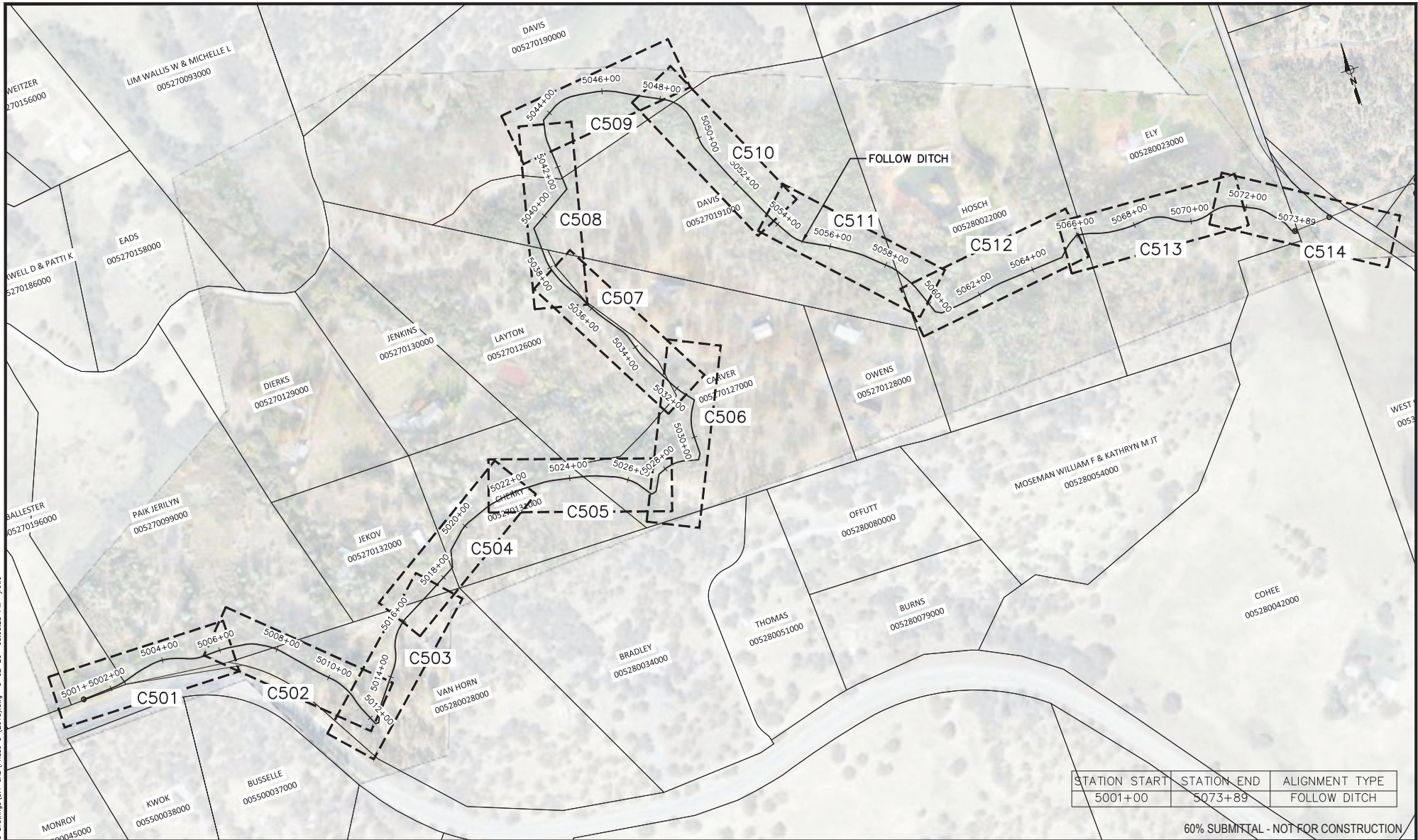


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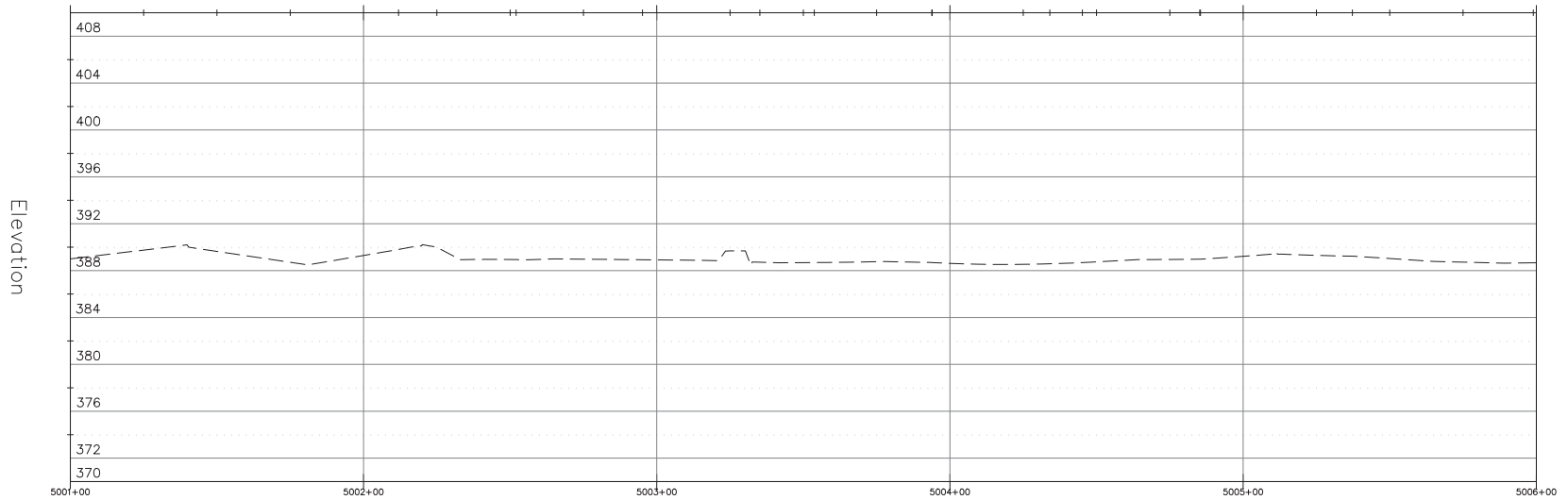
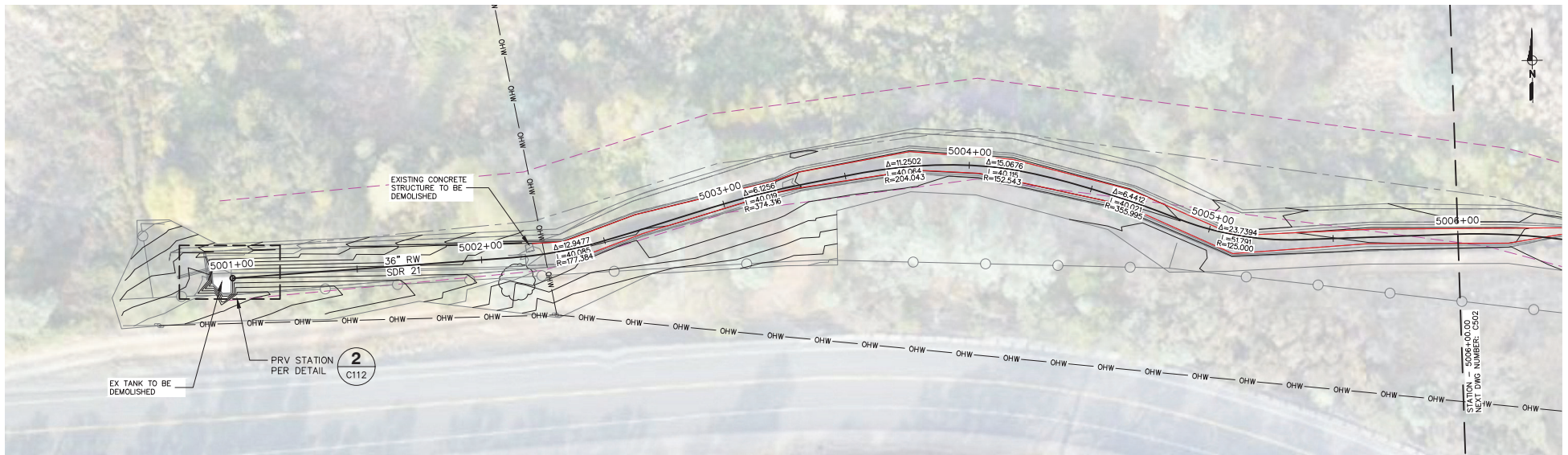
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BROWNS VALLEY IRRIGATION DISTRICT
SICARD PIPELINE PROJECT

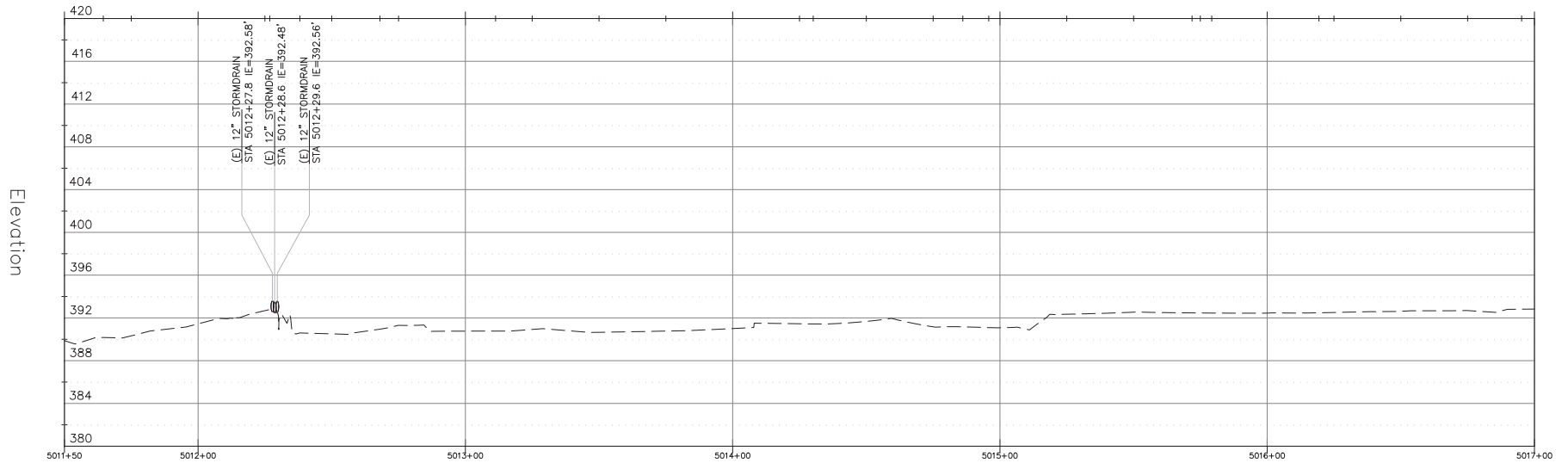
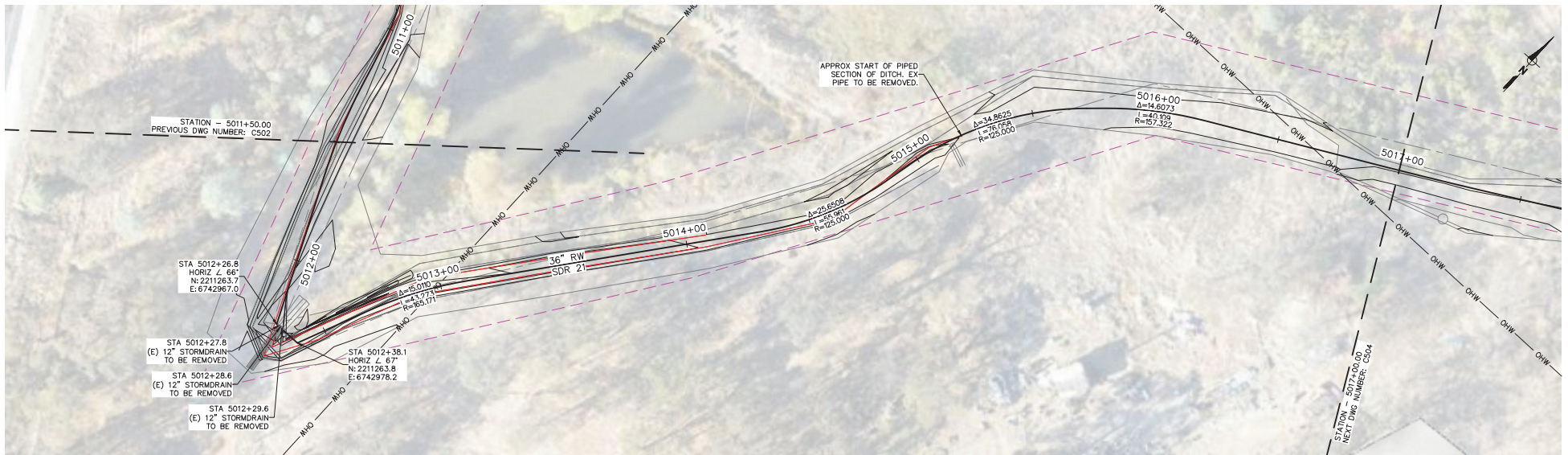
PHASE 5
SHEET INDEX

SHEET
C500
SHEET 070 OF 114



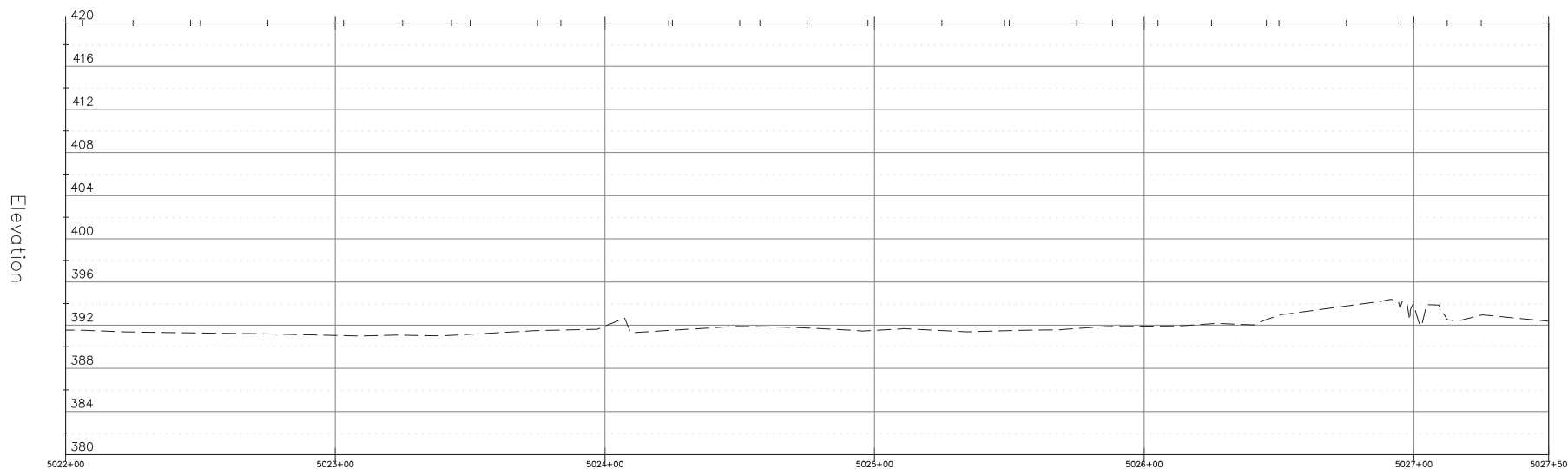
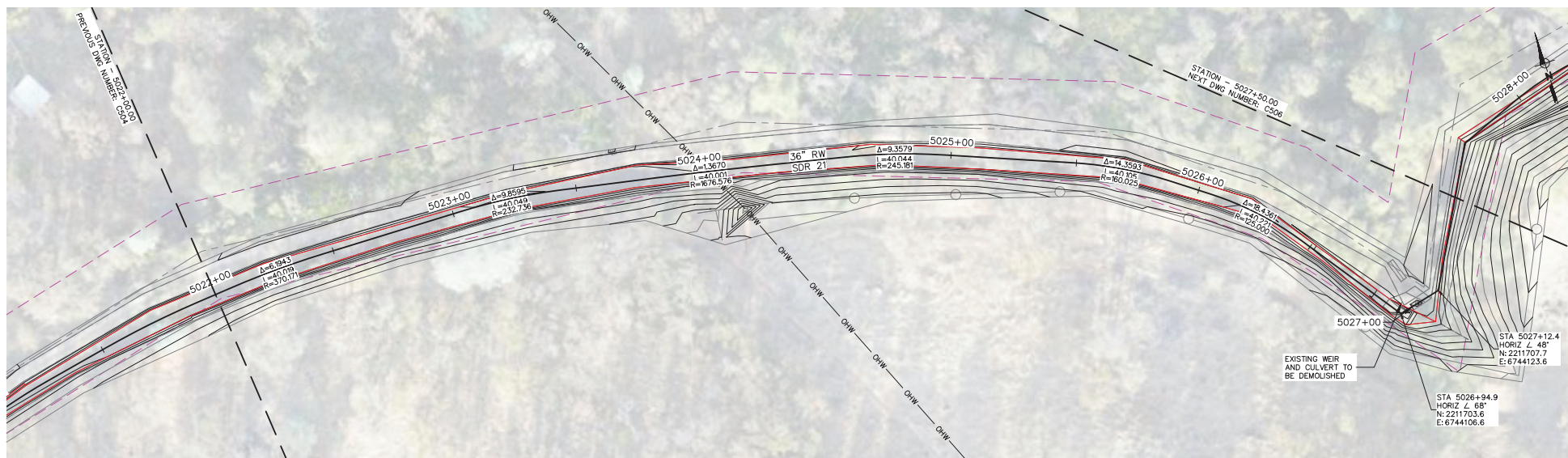
60% SUBMITTAL - NOT FOR CONSTRUCTION

| | | | | | | | | | | | | | | | | | | |
|-----|------|----|-------------|------------------------|--|---|--|--------------------|--|---|--|---|---|---|--|--|---------------------------------------|--|
| | | | | SCALE: 1"=20' | | <div>WARNING</div> <div><div>01/2</div></div> | | DESIGNED _DMM | | ASHLEY SMITH8651203/31/21 PROJECT ENGINEERR.C.E. NO. EXP. DATE | | <div><div>REGISTERED PROFESSIONAL ENGINEER STATE OF CALIFORNIA No. 86512 Mechanical</div><div>PRELIMINARY</div></div> | <div><div>PBI</div><div>80 Blue Ravine Rd, Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax 916-608-2232</div></div> | <div><div>Browns Valley IRRIGATION DISTRICT</div></div> | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET | |
| | | | | DATE: FEBRUARY 2020 | | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | | DRAWN _BTS/JMR/AAS | | CHECKED _KBB | | | | | KARL BRUSTAD5786906/30/20 PROJECT MANAGERR.C.E. NO. EXP. DATE | | PHASE 5 STA 5001+00 TO STA 5006+00 | |
| REV | DATE | BY | DESCRIPTION | | | | | | | | | | | | | | SHEET 071 OF 114 | |





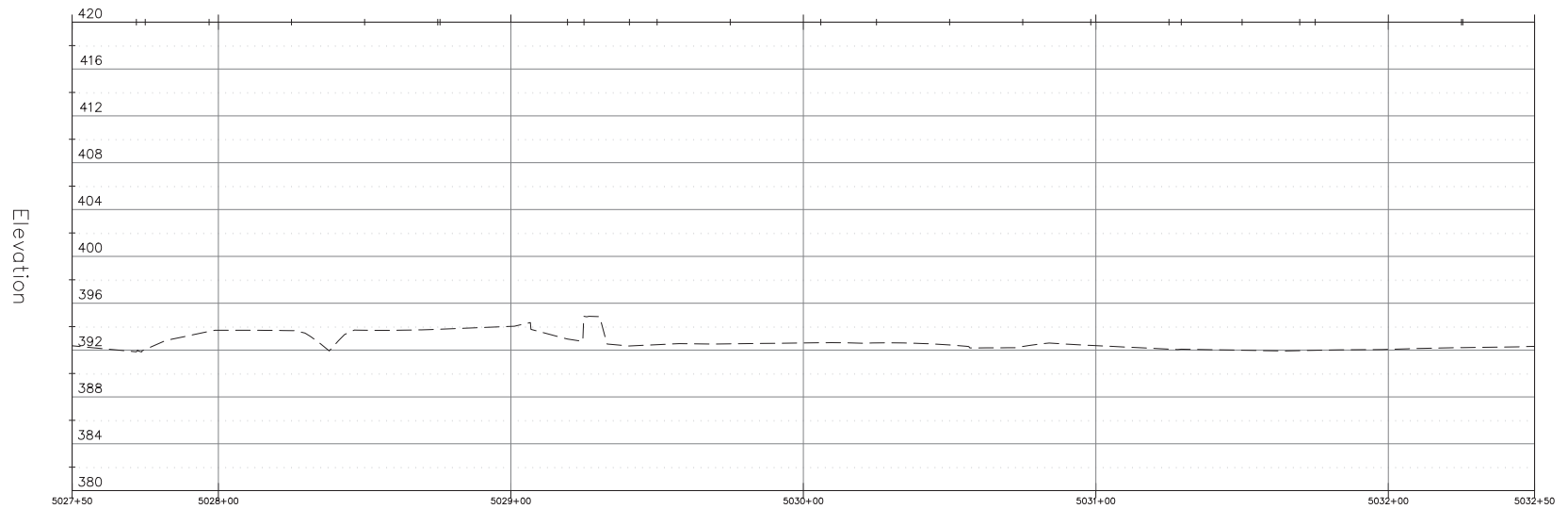
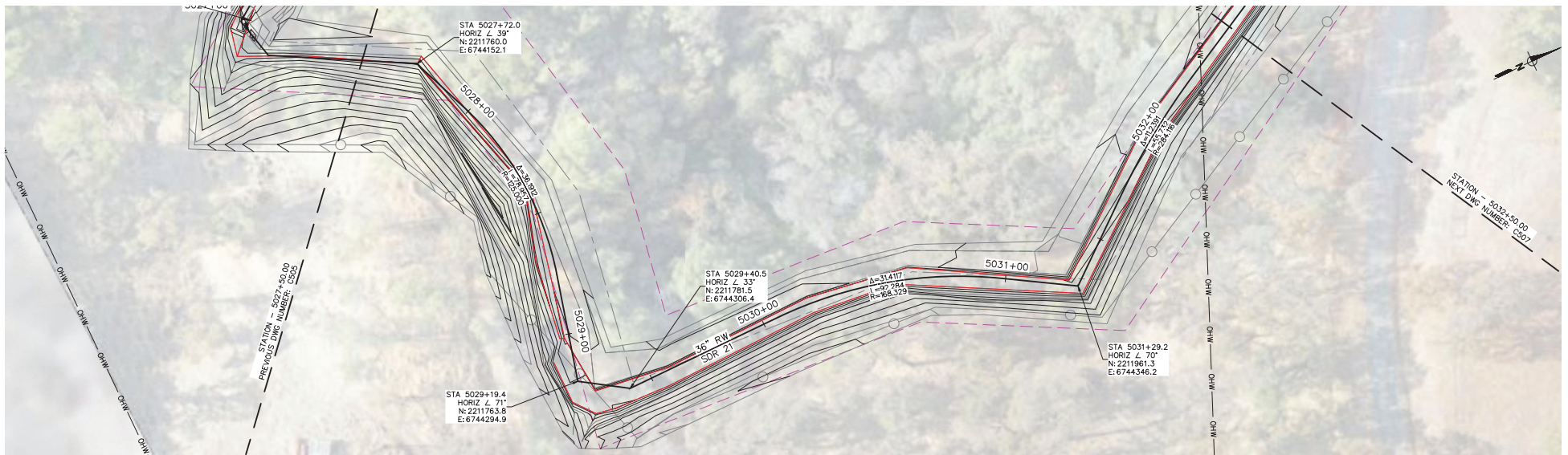
60% SUBMITTAL - NOT FOR CONSTRUCTION

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|----------------------------------|--|--|--|------------------------|---|--------------------|------------------|------------|-----------|--|--|--|--|--|-------|
| | | | | SCALE: 1"=20' | <div>WARNING</div> <div></div> | DESIGNED _DMM | ASHLEY SMITH | 86512 | 03/31/21 | <div></div> | <div></div> <div>80 Blue Ravine Rd, Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax: 916-608-2232</div> | <div></div> | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET |
| | | | | DATE: FEBRUARY 2020 | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN _BTS/JMR/AAS | PROJECT ENGINEER | R.C.E. NO. | EXP. DATE | | | | PHASE 5 STA 5011+50 TO STA 5017+00 | | C503 |
| REV DATE BY DESCRIPTION | | | | | | CHECKED _KBB | KARL BRUSTAD | 57869 | 06/30/20 | | | | | | |



60% SUBMITTAL - NOT FOR CONSTRUCTION

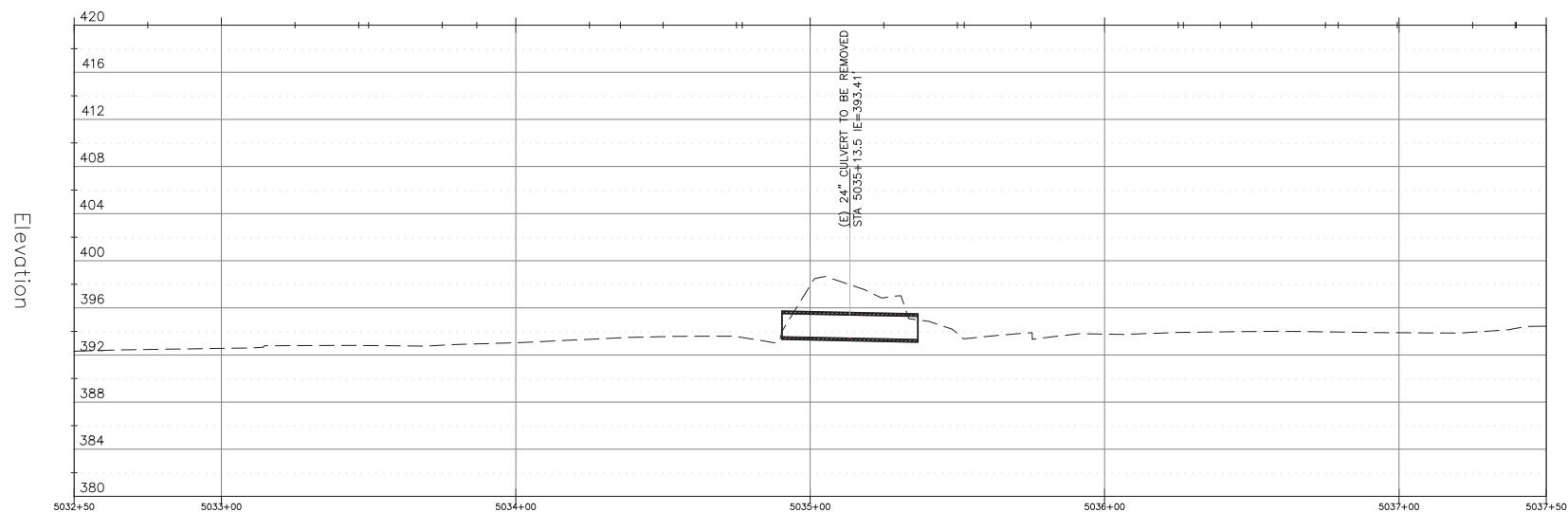
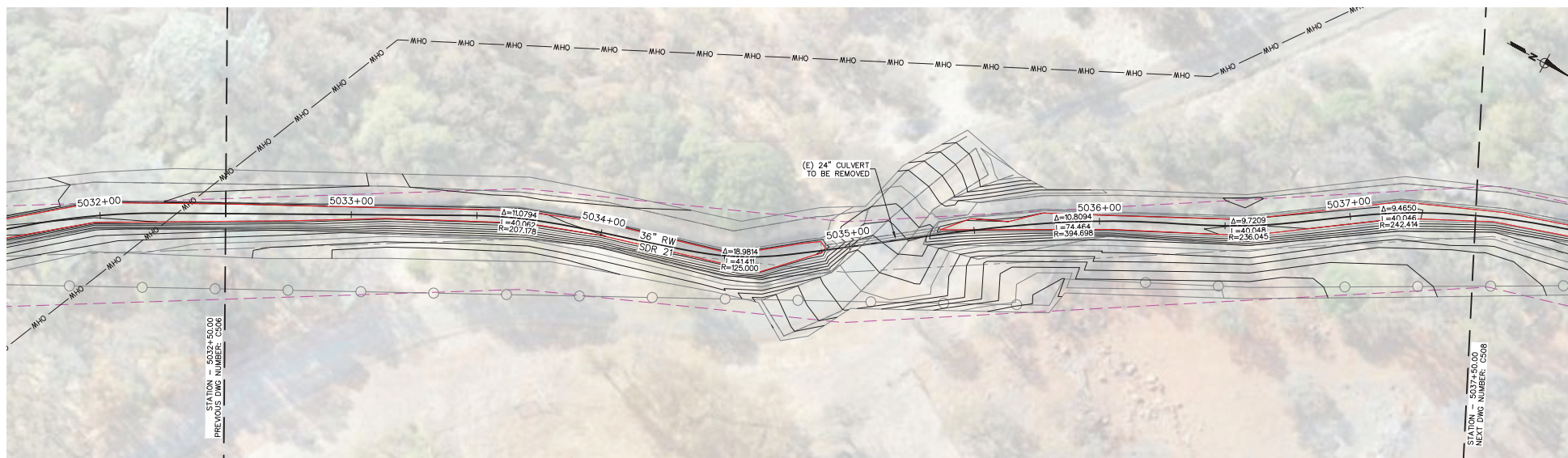
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|----------------------------------|--|--|--|------------------------|--|--------------------|----------------------------------|---------------------|-----------------------|---|--|---|--|--|------------------|
| | | | | SCALE: 1"=20' | WARNING  | DESIGNED: DMM | | | |  |  80 Blue Ravine Rd, Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax: 916-608-2232 |  | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET |
| | | | | DATE: FEBRUARY 2020 | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN: BTS/JMR/AAS | ASHLEY SMITH PROJECT ENGINEER | 86512 R.C.E. NO. | 03/31/21 EXP. DATE | | | | PHASE 5 STA 5022+00 TO STA 5027+50 | | C505 |
| REV DATE BY DESCRIPTION | | | | | | CHECKED: KRB | KARL BRUSTAD PROJECT MANAGER | 57869 R.C.E. NO. | 06/30/20 EXP. DATE | | | | | | SHEET 075 OF 114 |



60% SUBMITTAL - NOT FOR CONSTRUCTION

| | | | | | | | | | | | | | |
|-----|------|----|-------------|------------------------|---|--------------------|--|--|--|---|--|--|-------|
| | | | | SCALE: 1"=20' | <div>WARNING</div> <div></div> | DESIGNED _DMM | ASHLEY SMITH 86512 03/31/21 PROJECT ENGINEER R.C.E. NO. EXP. DATE | | | 80 Blue Ravine Rd, Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax: 916-608-2232 | | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | SHEET |
| | | | | DATE: FEBRUARY 2020 | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN _BTS/JMR/AAS | KARL BRUSTAD 57869 06/30/20 PROJECT MANAGER R.C.E. NO. EXP. DATE | | | | | PHASE 5 STA 5027+50 TO STA 5032+50 | C506 |
| REV | DATE | BY | DESCRIPTION | SHEET 076 OF 114 | | | | | | | | | |

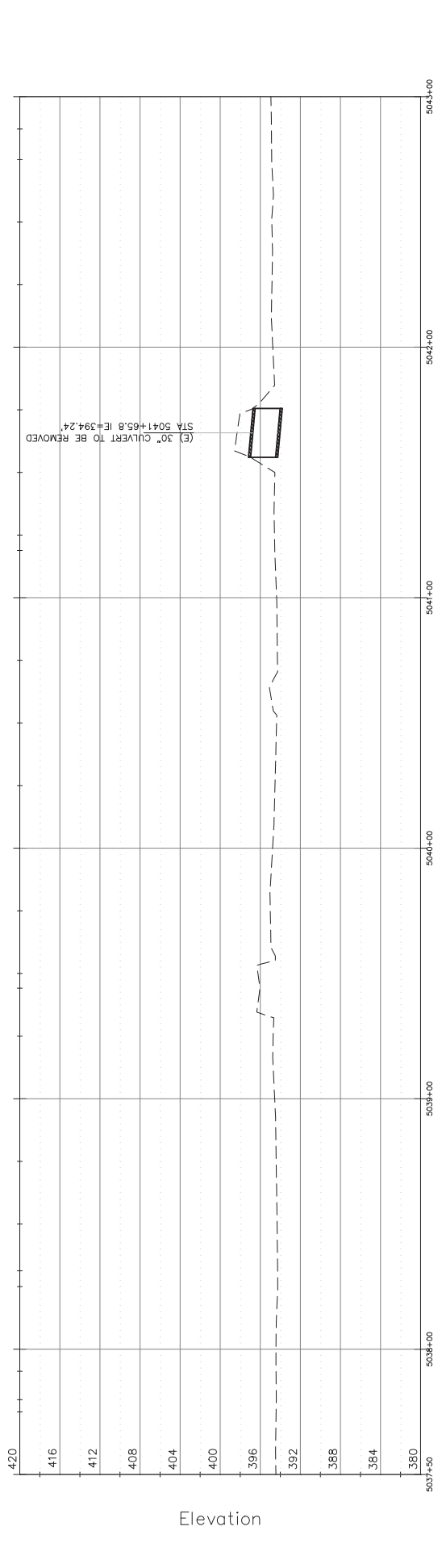
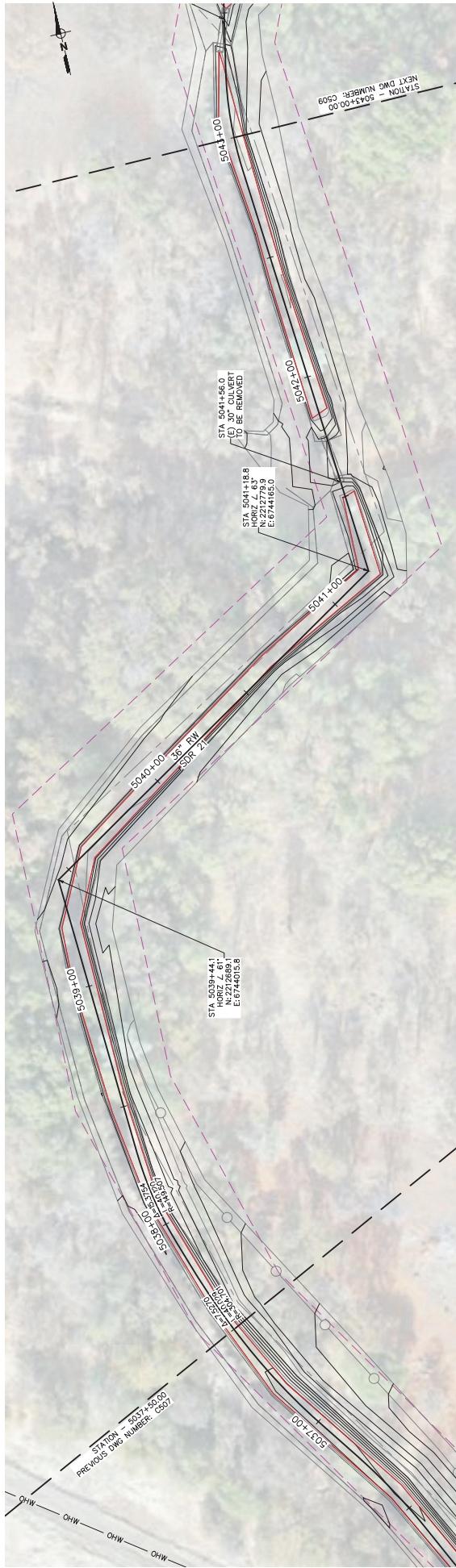
P:\BIDD\Secord Pipeline\05 Drawings\5.1 CAD\Phase 5 (2018).dwg 3-02-20 05:06:34 PM jrowe



60% SUBMITTAL - NOT FOR CONSTRUCTION

| | | | | | | | | | | | | | | |
|-----|------|----|-------------|------------------------|--|-----------------------------------|----------------------------------|-----------------------|-----------------------|--|--|--|--|-------|
| | | | | SCALE: 1"=20' | WARNING 0 1/2 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DESIGNED_DMM DRAWN_BTS/JMR/AAS | ASHLEY SMITH PROJECT ENGINEER | 86512 R.C.E. NO. | 03/31/21 EXP. DATE | | 80 Blue Ravine Rd., Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax: 916-608-2232 | | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | SHEET |
| REV | DATE | BY | DESCRIPTION | DATE: FEBRUARY 2020 | CHECKED_KBB | KARL BRUSTAD PROJECT MANAGER | 57869 R.C.E. NO. | 06/30/20 EXP. DATE | | | | | PHASE 5 STA 5032+50 TO STA 5037+50 | C507 |

SHEET 077 OF 114



60% SUBMITTAL - NOT FOR CONSTRUCTION

STATION - 5043+00.00
NEXT DWG NUMBER: C509

STATION - 5037+00.00
PREVIOUS DWG NUMBER: C507

STA 5039+44.1
HORIZ Z=61'
N=2212779.9
E=6744015.8

STA 5041+18.8
HORIZ Z=61'
N=2212779.9
E=6744015.8

STA 5041+56.0
HORIZ Z=61'
N=2212779.9
E=6744015.8

STA 5042+00.0
HORIZ Z=61'
N=2212779.9
E=6744015.8

5037+50

5038+00

5039+00

5040+00

5041+00

5042+00

5043+00

420

416

412

408

404

400

396

392

388

384

380

Elevation

SCALE
1"=20'

WARNING
0 1/2"
IF THIS BAR DOES NOT MEASURE 1" NOT TO SCALE

DESIGNED: DMM
DRAWN: BJS/AMZ/AS
CHECKED: KBB

PROJECT ENGINEER
ASHLEY SMITH
PROJECT MANAGER
KARL BRUSTAD

R.C.E. NO. 86512
R.C.E. NO. 57969

EXP. DATE 03/31/21
EXP. DATE 06/30/20

REV

DATE

BY

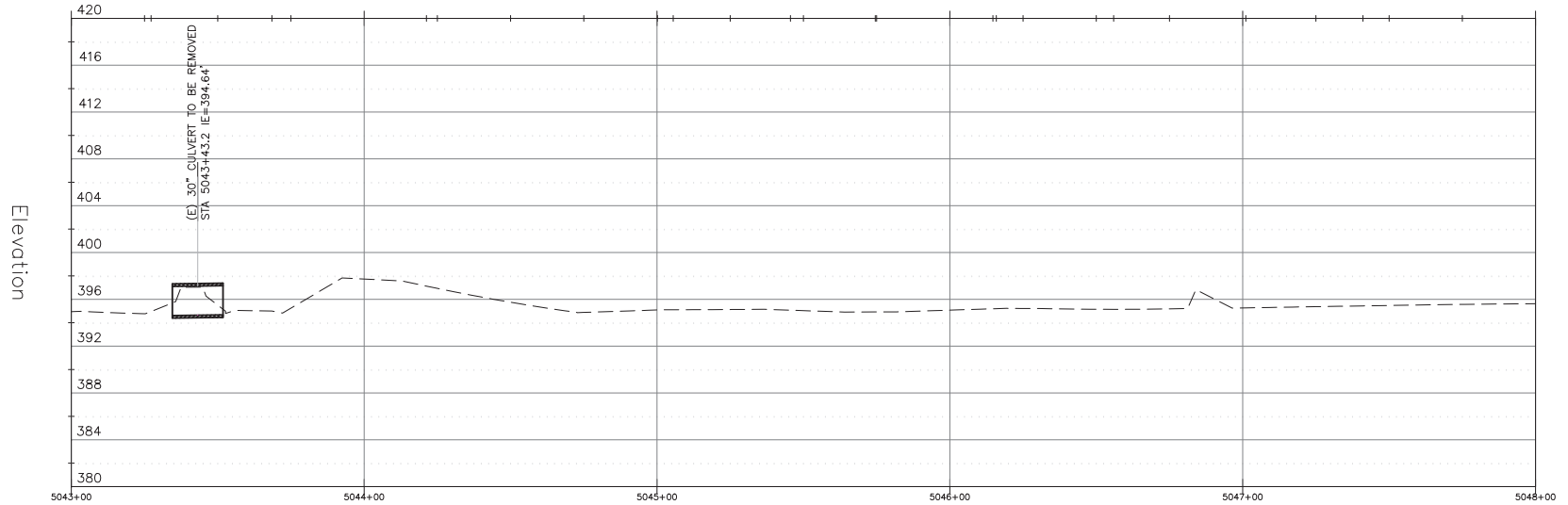
DESCRIPTION

Browns Valley IRRIGATION DISTRICT

PHASE 5
STA 5037+50 TO STA 5043+00

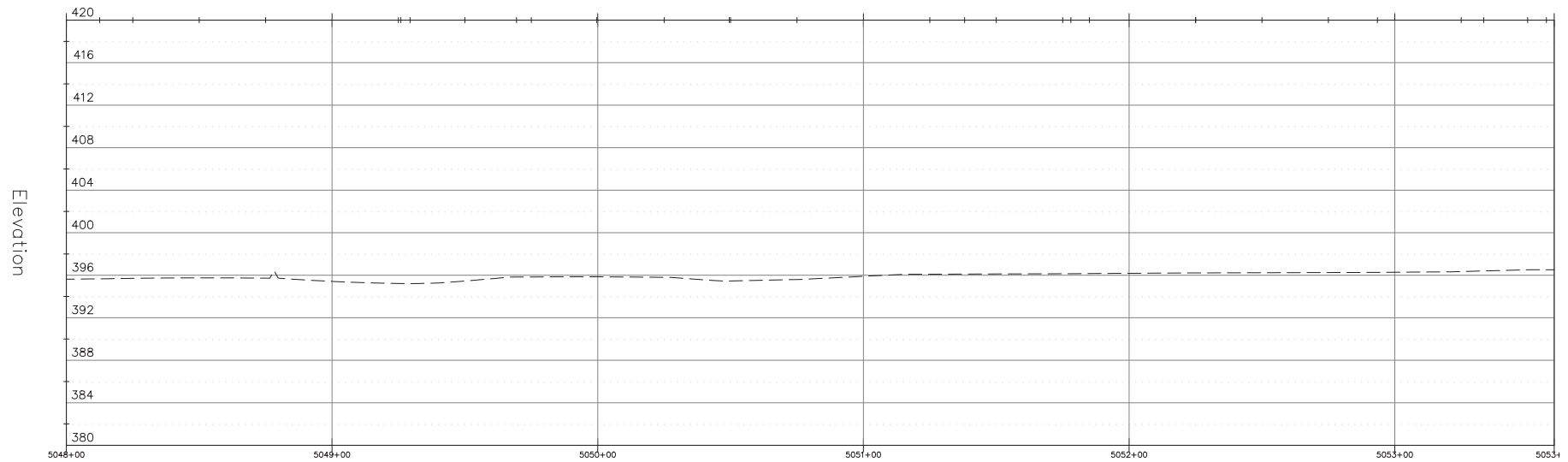
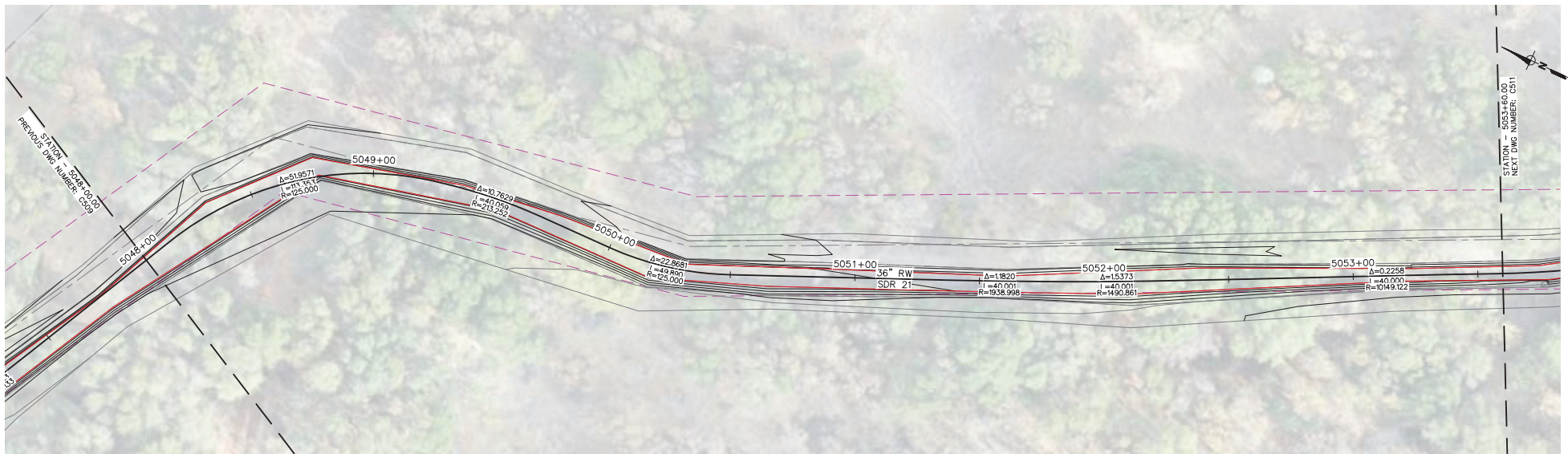
C508

SHEET 03 OF 114



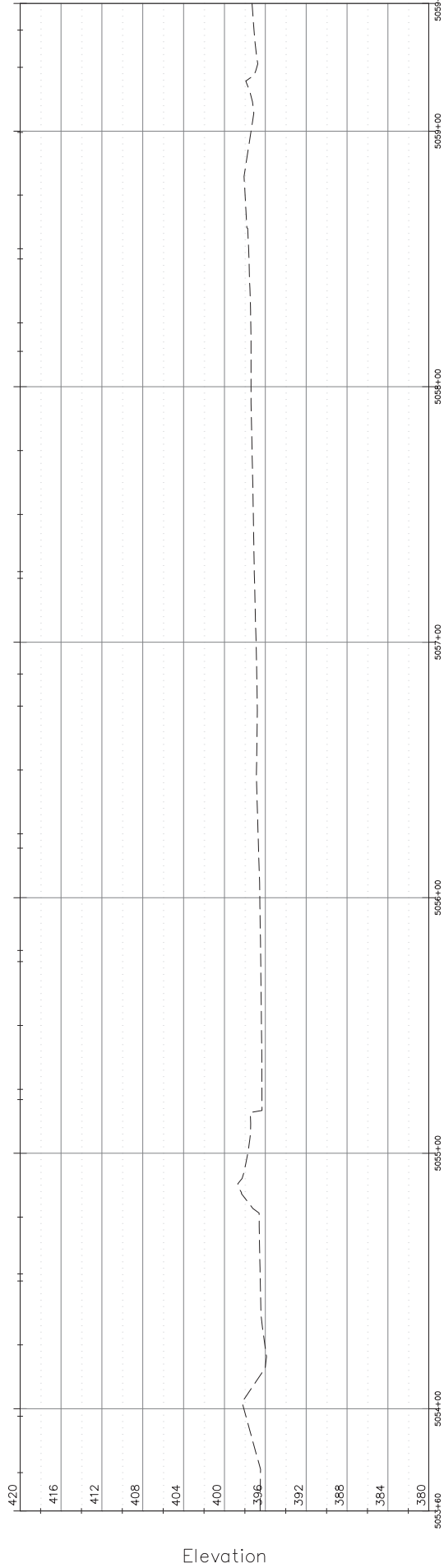
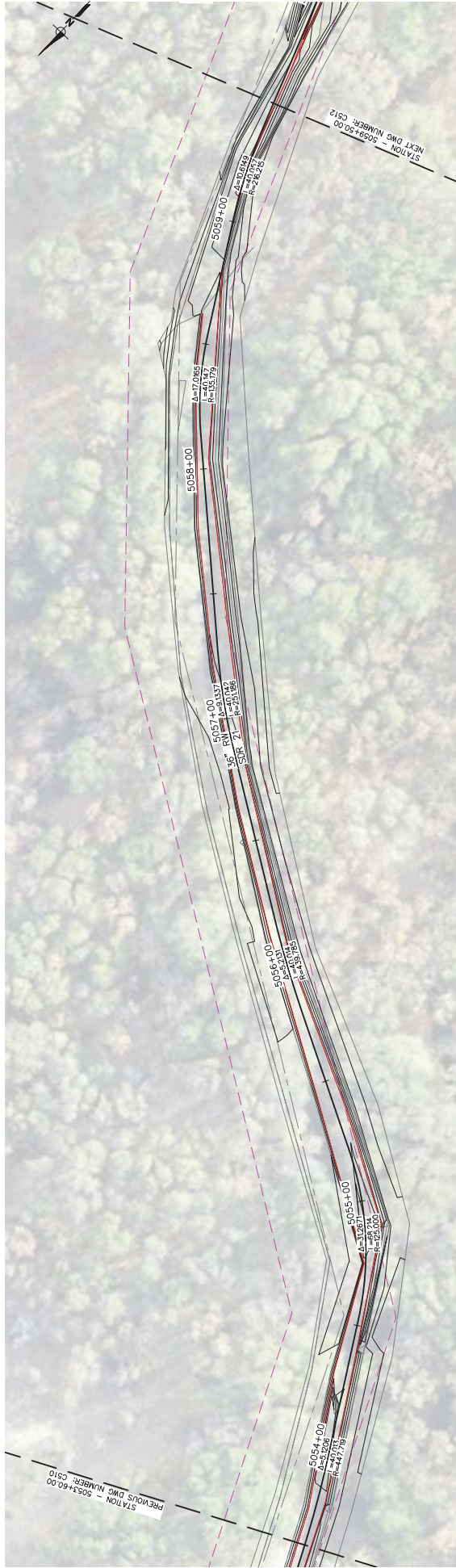
60% SUBMITTAL - NOT FOR CONSTRUCTION

| | | | | | | | | | | | | | | | |
|-------------------------|--|--|--|---------------|---|---------------------------------------|-----------------------------|--------------------------------------|-----------------|--|--|--|--|----------------------------|-------|
| | | | | SCALE: | <div>WARNING</div> <div>0 1/2</div> | | DESIGNED _DMM | ASHLEY SMITH 86512 03/31/21 | | <div></div> | <div></div> | <div></div> | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET |
| | | | | 1"=20' | | PROJECT ENGINEER R.C.E. NO. EXP. DATE | | | <div>C509</div> | | | | | | |
| | | | | DATE: | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN _BTS/JMR/AAS | | | | | | | PHASE 5 | STA 5043+00 TO STA 5048+00 | |
| REV DATE BY DESCRIPTION | | | | FEBRUARY 2020 | | CHECKED _KBB | KARL BRUSTAD 57869 06/30/20 | PROJECT MANAGER R.C.E. NO. EXP. DATE | | | | | SHEET 079 OF 114 | | |



60% SUBMITTAL - NOT FOR CONSTRUCTION

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|-----|------|----|-------------|------------------------|--|--------------------|--|--|---|--|---|--|-------|
| | | | | SCALE: 1"=20' | WARNING  | DESIGNED _DMM | ASHLEY SMITH 86512 03/31/21 PROJECT ENGINEER R.C.E. NO. EXP. DATE | |  |  80 Blue Ravine Rd., Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax 916-608-2232 |  | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | SHEET |
| | | | | DATE: FEBRUARY 2020 | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN _BTS/JMR/AAS | KARL BRUSTAD 57869 06/30/20 PROJECT MANAGER R.C.E. NO. EXP. DATE | | | | | PHASE 5 STA 5048+00 TO STA 5053+60 | C510 |
| REV | DATE | BY | DESCRIPTION | SHEET 080 OF 114 | | | | | | | | | |





60% SUBMITTAL - NOT FOR CONSTRUCTION

BROWNS VALLEY IRRIGATION DISTRICT
SICARD PIPELINE PROJECT

PHASE 5
STA 5053+60 TO STA 5059+50

C511



DESIGNED: DMM
DRAWN: BJS/AMZ/AS
CHECKED: KBB

PROJECT ENGINEER: ASHLEY SMITH
PROJECT MANAGER: KARL BRUSTAD

R.S.E. NO.: 86512
R.S.E. NO.: 57969

EXP. DATE: 03/31/21
EXP. DATE: 06/30/20

SCALE: 1"=20'

DATE: FEBRUARY 2020

WARNING: IF THIS BAR DOES NOT MEASURE 1" NOT DRAWING IS NOT TO SCALE.

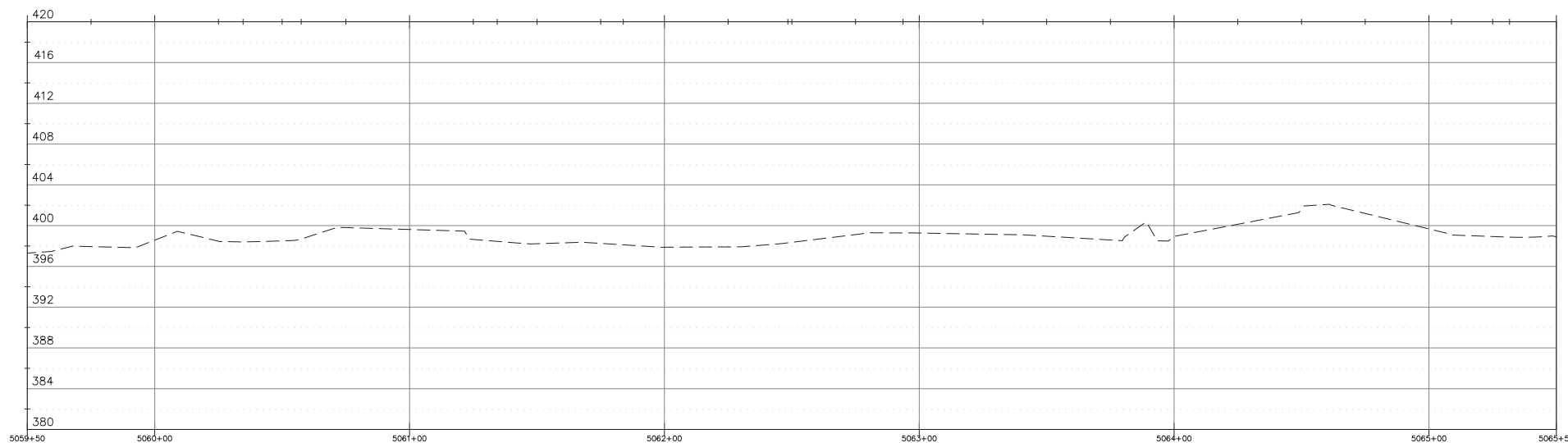
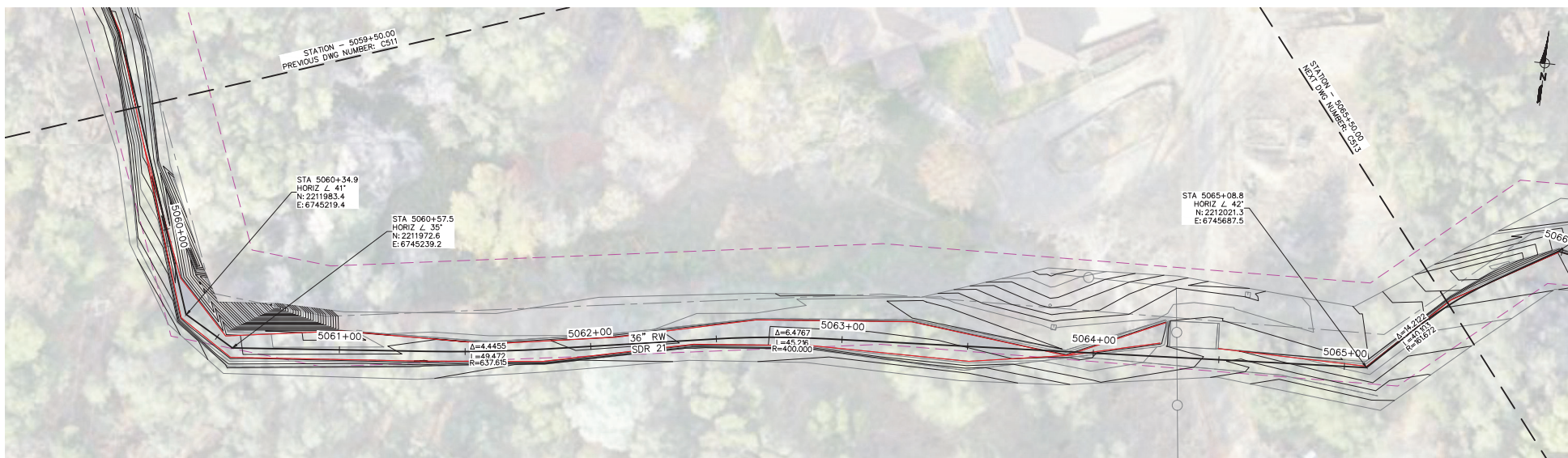
REV

DATE

BY

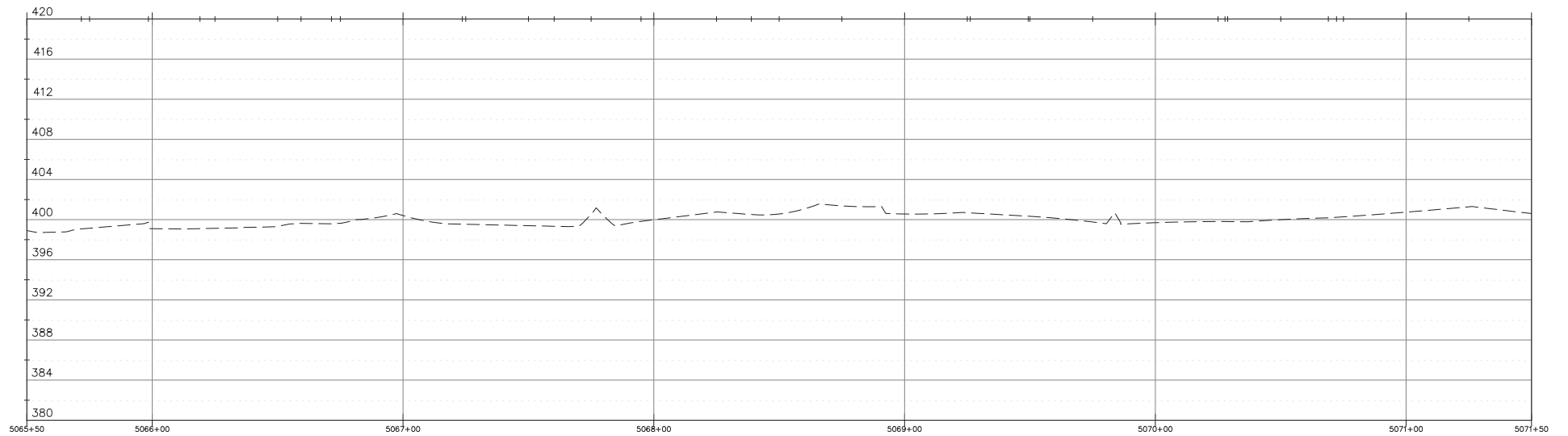
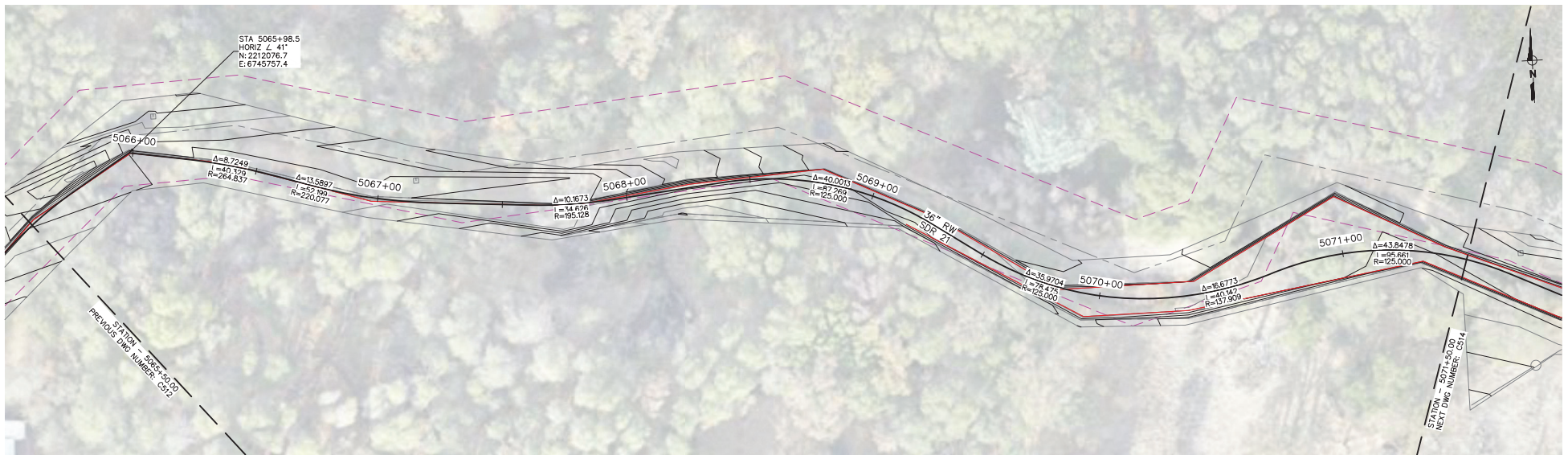
DESCRIPTION

P:\BVD\Sicard Pipeline\05 Drawings\5.1 CAD\Phase 5 (2018).dwg 3-02-20 05:07:15 PM jrowe



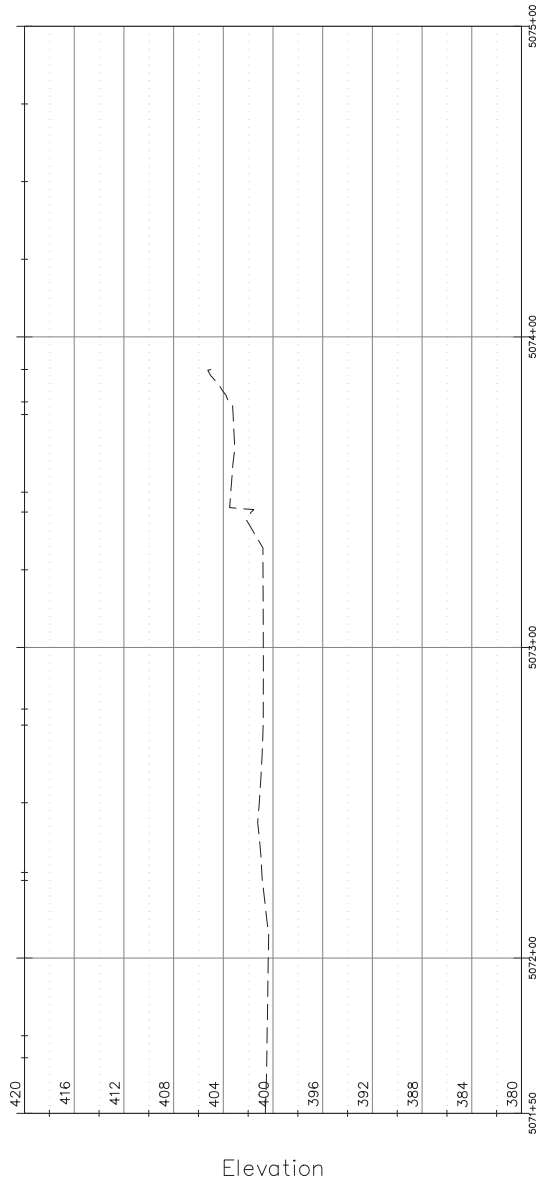
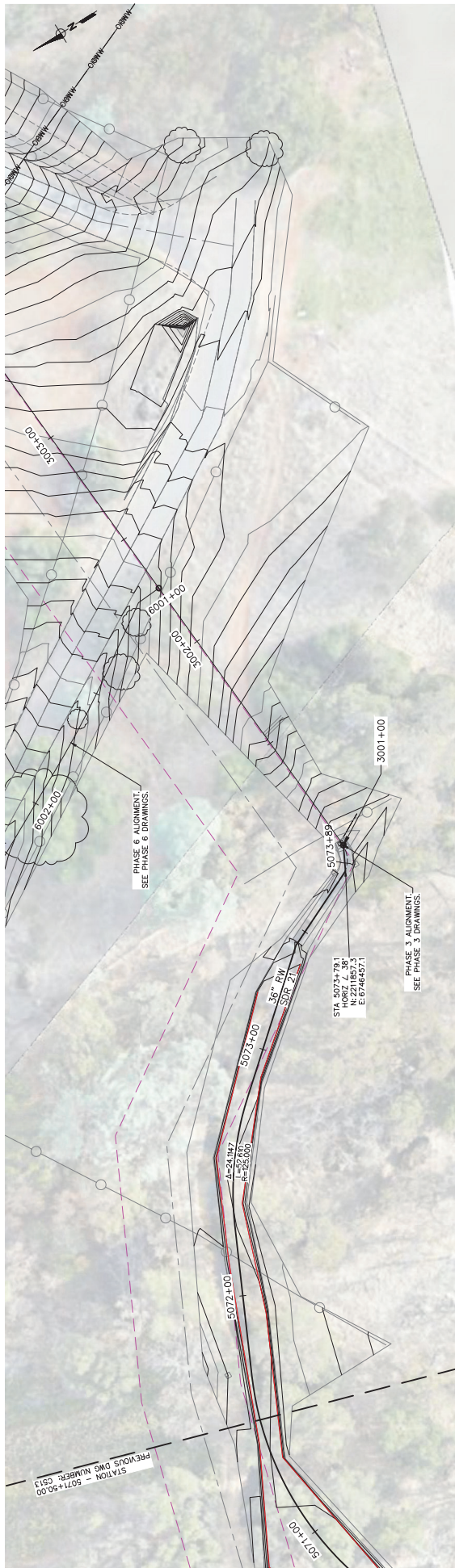
60% SUBMITTAL - NOT FOR CONSTRUCTION

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|-----|------|----|-------------|------------------------|--|---------------------------|----------------------------------|--|---------------------|-----------------------|---|---|---|--|--|-------|------------------|
| | | | | SCALE: 1"=20' | WARNING  | DESIGNED: <u>DMM</u> | ASHLEY SMITH PROJECT ENGINEER | | 86512 R.C.E. NO. | 03/31/21 EXP. DATE |  |  |  | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET | |
| | | | | DATE: FEBRUARY 2020 | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN: <u>BTS/JMR/AAS</u> | PROJECT MANAGER | | 57869 R.C.E. NO. | 06/30/20 EXP. DATE | | | | PHASE 5 STA 5059+50 TO STA 5065+50 | | C512 | |
| REV | DATE | BY | DESCRIPTION | | | | | | | | | | | | | | SHEET 082 OF 114 |



60% SUBMITTAL - NOT FOR CONSTRUCTION

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|-----|------|----|-------------|------------------------|-------------------------------------|---|---------------------------|------------------|------------|---|--|---|--|---------------------------------------|
| | | | | SCALE: 1"=20' | <div>WARNING</div> <div>0 1/2</div> | DESIGNED: <u>DMM</u> | ASHLEY SMITH | 86512 | 03/31/21 | <div>REGISTERED PROFESSIONAL ENGINEER STATE OF CALIFORNIA No. 86512 Exp. 03/31/21</div> | <div>PBI</div> <div>80 Blue Ravine Rd, Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax: 916-608-2232</div> | <div><div>Browns Valley IRRIGATION DISTRICT</div><div></div></div> | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | SHEET |
| | | | | DATE: FEBRUARY 2020 | | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN: <u>BTS/JMR/AAS</u> | PROJECT ENGINEER | R.C.E. NO. | | | | EXP. DATE | PHASE 5 STA 5065+50 TO STA 5071+50 |
| REV | DATE | BY | DESCRIPTION | | | CHECKED: <u>KBB</u> | KARL BRUSTAD | 57869 | 06/30/20 | | | | | SHEET 083 OF 114 |



60% SUBMITTAL - NOT FOR CONSTRUCTION

BROWNS VALLEY IRRIGATION DISTRICT
SICARD PIPELINE PROJECT

PHASE 5
STA 5071+50 TO STA 5073+80



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|--------------------|--------------------------------|-----------------|---------------------|
| DESIGNED: DMM | PROJECT ENGINEER: ASHLEY SMITH | R.E. NO.: 88512 | EXP. DATE: 03/31/21 |
| DRAWN: BITS/AMZ/AS | PROJECT ENGINEER: KARL BRUSTAD | R.E. NO.: 57969 | EXP. DATE: 06/30/20 |
| CHECKED: KBB | PROJECT MANAGER: KARL BRUSTAD | R.E. NO.: 57969 | EXP. DATE: 06/30/20 |

WARNING
0 1/2"
IF THIS BAR DOES NOT MEASURE 1" NOT TO SCALE

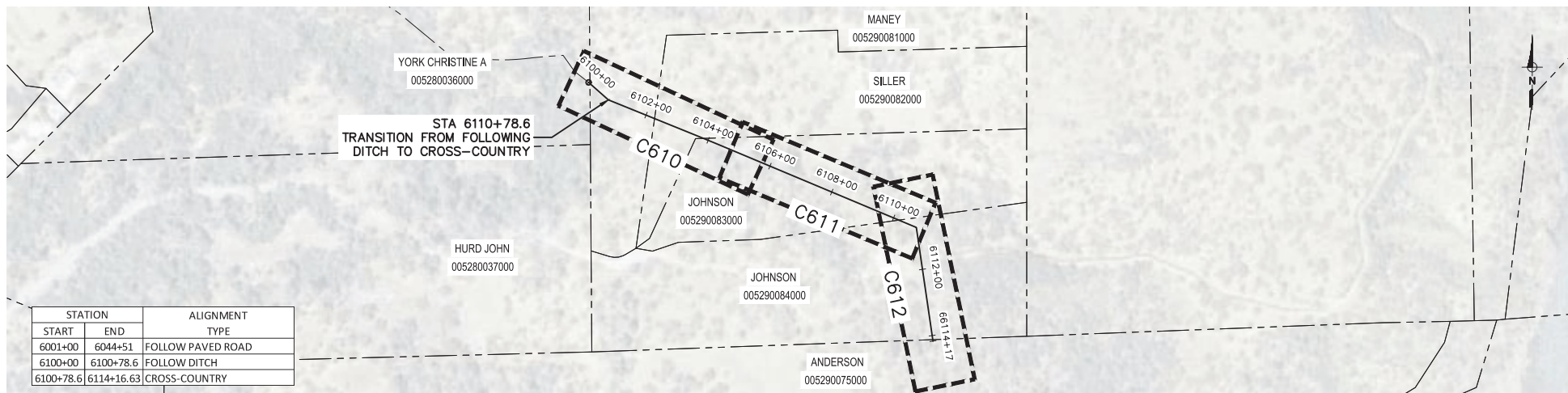
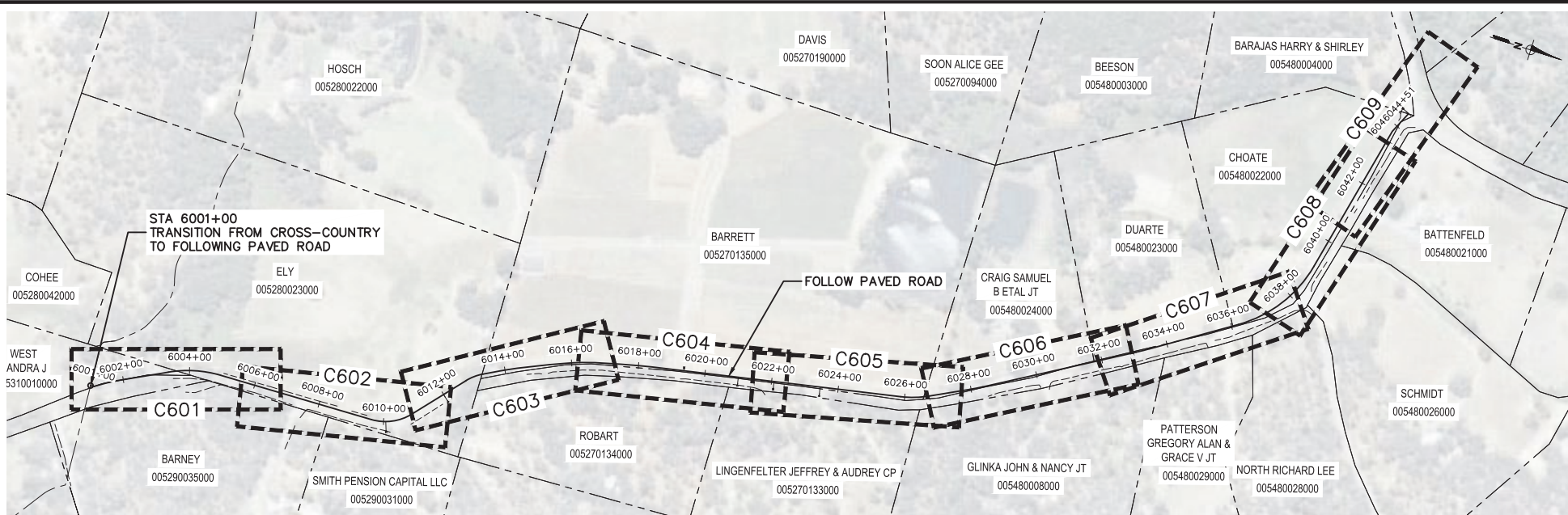
SCALE: 1"=20'
DATE: FEBRUARY 2020

| REV | DATE | BY | DESCRIPTION |
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C514

SHEET 88 OF 114

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60% SUBMITTAL - NOT FOR CONSTRUCTION

| REV | DATE | BY | DESCRIPTION |
|-----|------|----|-------------|
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SCALE:

1"=150'

WARNING

0 1/2

DATE:

FEBRUARY 2020

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED: DMM

DRAWN: BTS/JMR/AAS

CHECKED: KBB

ASHLEY SMITH

PROJECT ENGINEER

KARL BRUSTAD

PROJECT MANAGER

86512

R.C.E. NO.

57869

R.C.E. NO.

03/31/21

EXP. DATE

06/30/20

EXP. DATE



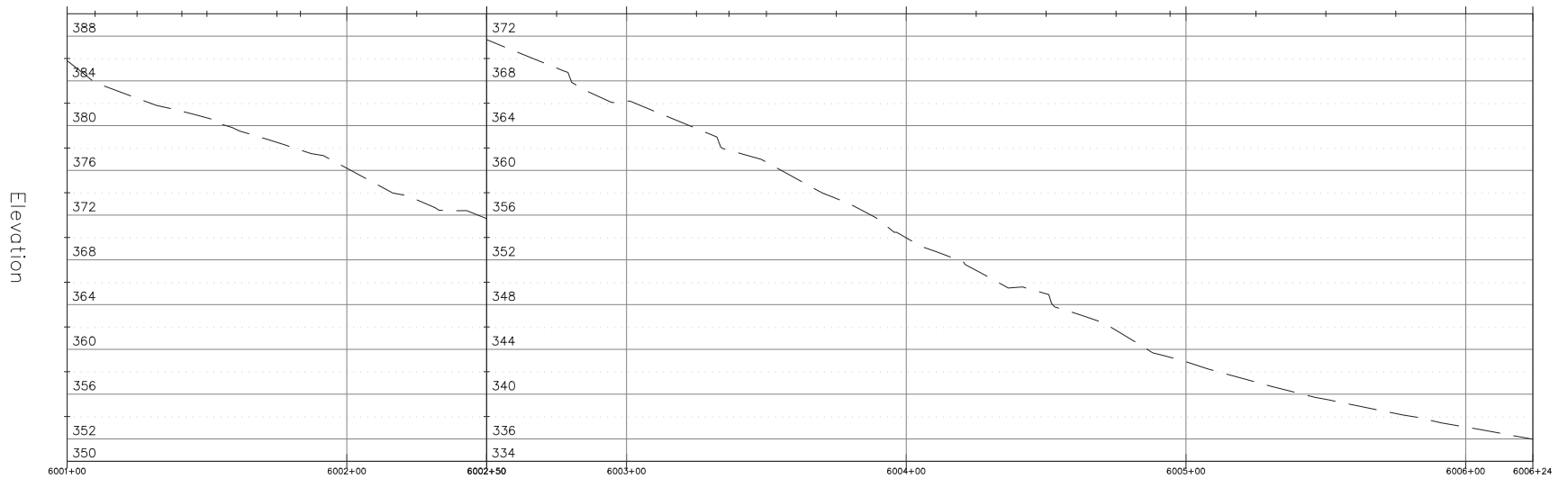
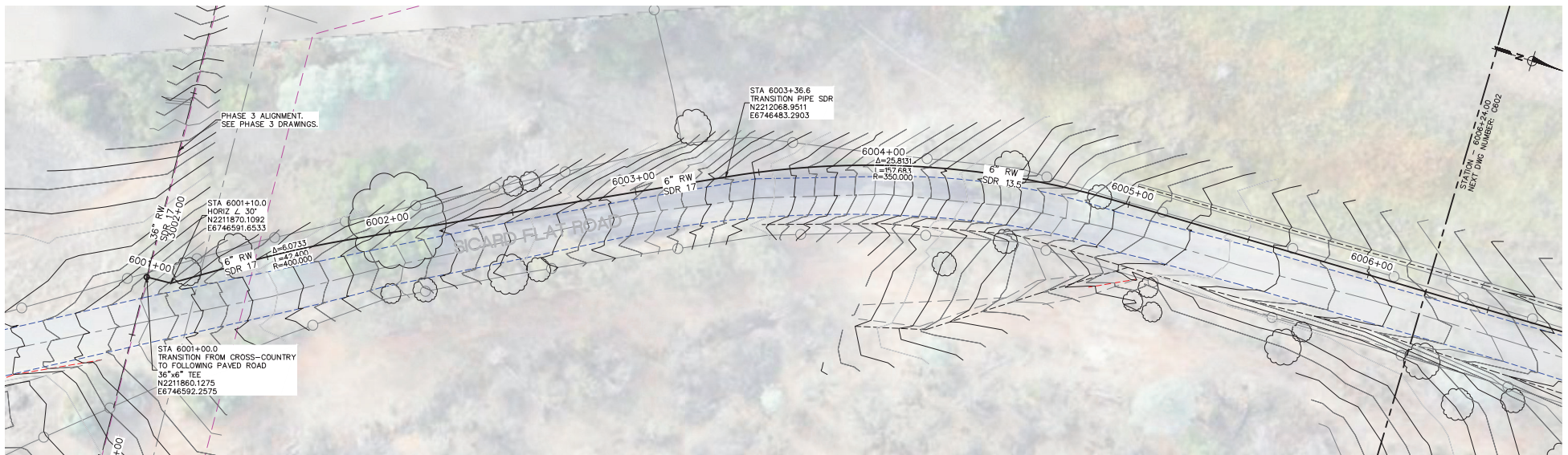
BROWNS VALLEY IRRIGATION DISTRICT
SICARD PIPELINE PROJECT

PHASE 6
SHEET INDEX

SHEET

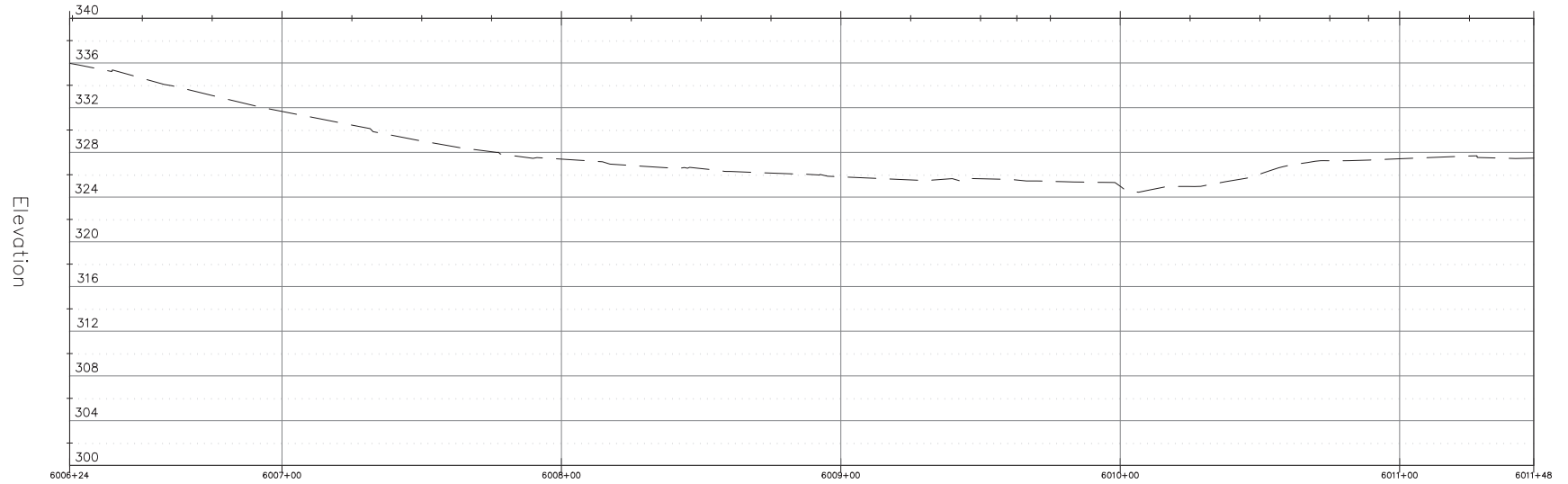
C600

SHEET 085 OF 114



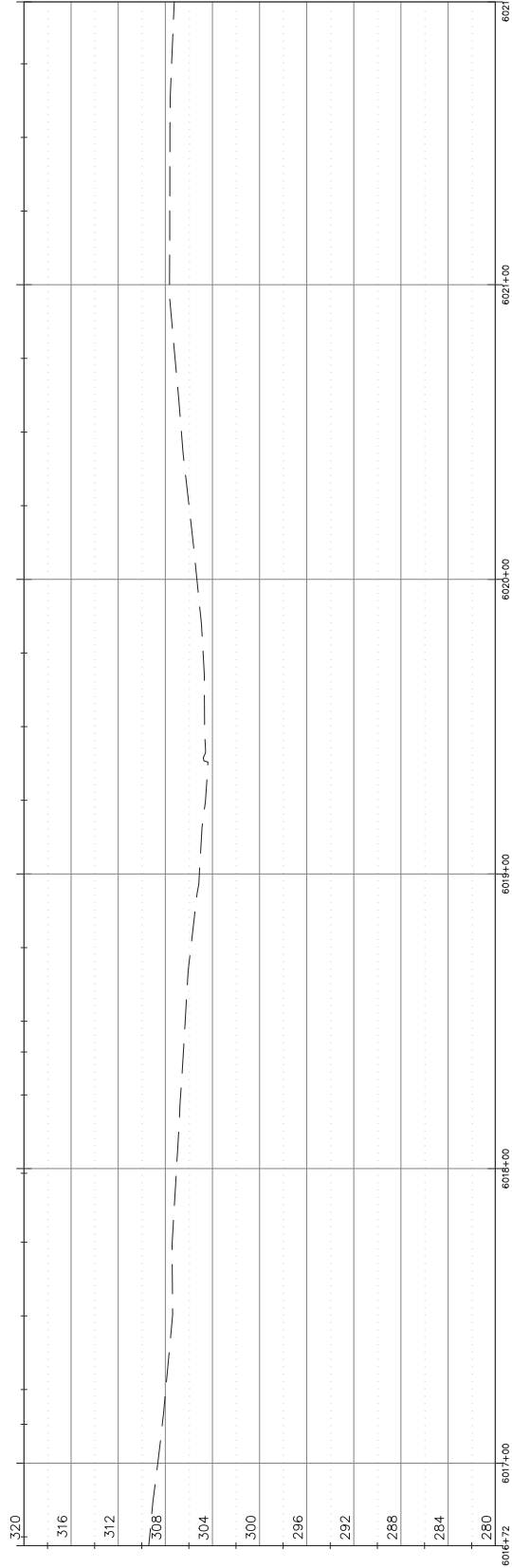
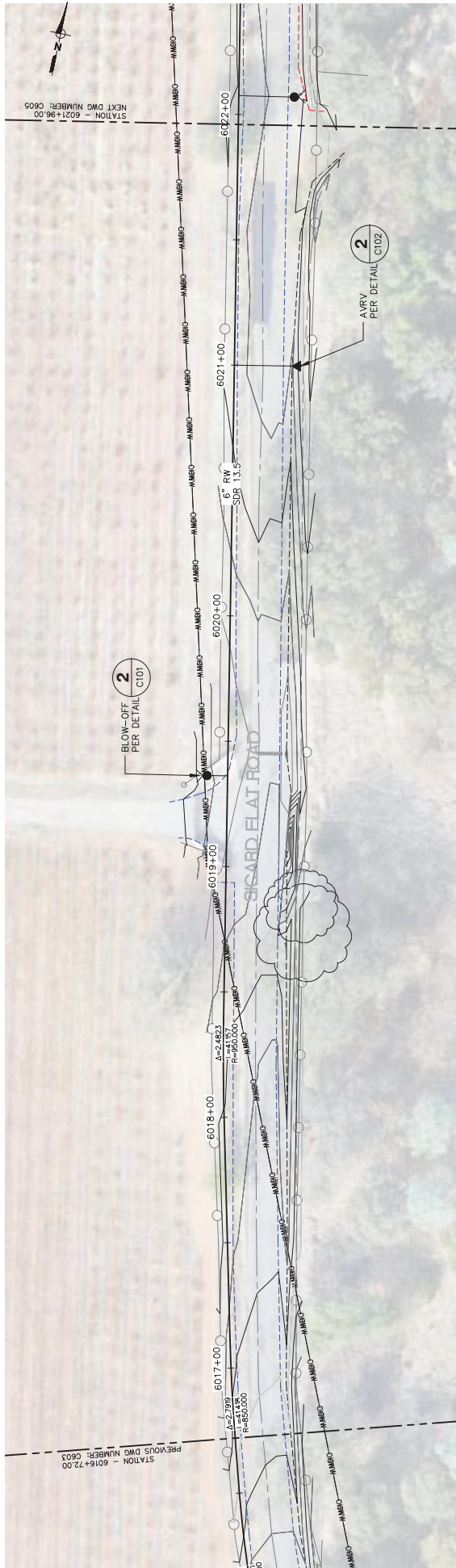
60% SUBMITTAL - NOT FOR CONSTRUCTION

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|-----|------|----|-------------|---------------------|--|---|--|---------------------|--|--|--|---|---|--|---|--|---------------------------------------|------------------|------|
| | | | | SCALE: 1"=20' | | <div>WARNING</div> <div><div>01/2</div></div> | | DESIGNED _DMM_ | | ASHLEY SMITH 86512 03/31/21 PROJECT ENGINEER R.C.E. NO. EXP. DATE | | <div><div>REGISTERED PROFESSIONAL ENGINEER</div><div>STATE OF CALIFORNIA</div><div>NO. 86512</div><div>EXPIRATION DATE 03/31/21</div></div> | <div><div>PBI</div><div>80 Blue Ravine Rd, Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax 916-608-2232</div></div> | <div><div>Browns Valley IRRIGATION DISTRICT</div><div></div></div> | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET | | |
| | | | | DATE: FEBRUARY 2020 | | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | | DRAWN _BTS/JMR/AAS_ | | CHECKED _KBB_ | | | | | KARL BRUSTAD 57869 06/30/20 PROJECT MANAGER R.C.E. NO. EXP. DATE | | PHASE 6 STA 6001+00 TO STA 6006+24 | | C601 |
| REV | DATE | BY | DESCRIPTION | FEBRUARY 2020 | | | | | | | | | | | | | | SHEET 085 OF 114 | |



60% SUBMITTAL - NOT FOR CONSTRUCTION

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|-------------------------|--|--|--|---------------|---|--------------------------------------|---------------------------------------|-----------------------------|-----------------|--|---|--|--|--|-------|
| | | | | SCALE: | <div>WARNING</div> <div>0 1/2"</div> | | DESIGNED: DMM | ASHLEY SMITH 86512 03/31/21 | | <div></div> | <div></div> <div>80 Blue Ravine Rd., Suite 260 Folsom, CA 95630 PH: 916-608-2212 Fax: 916-608-2232</div> | <div></div> | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET |
| | | | | 1"=20' | | | PROJECT ENGINEER R.C.E. NO. EXP. DATE | | <div>C602</div> | | | | | | |
| | | | | DATE: | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN: BTS/JMR/AAS | KARL BRUSTAD 57869 06/30/20 | | | | | | | | |
| REV DATE BY DESCRIPTION | | | | FEBRUARY 2020 | CHECKED: KBB | PROJECT MANAGER R.C.E. NO. EXP. DATE | | STA 6006+24 TO STA 6011+48 | | | | | SHEET 087 OF 114 | | |



Elevation

60% SUBMITTAL - NOT FOR CONSTRUCTION

SHEET

BROWNS VALLEY IRRIGATION DISTRICT
SICARD PIPELINE PROJECT

C604

PHASE 6

STA 6016+72 TO STA 6021+96

SHEET 005 OF 114



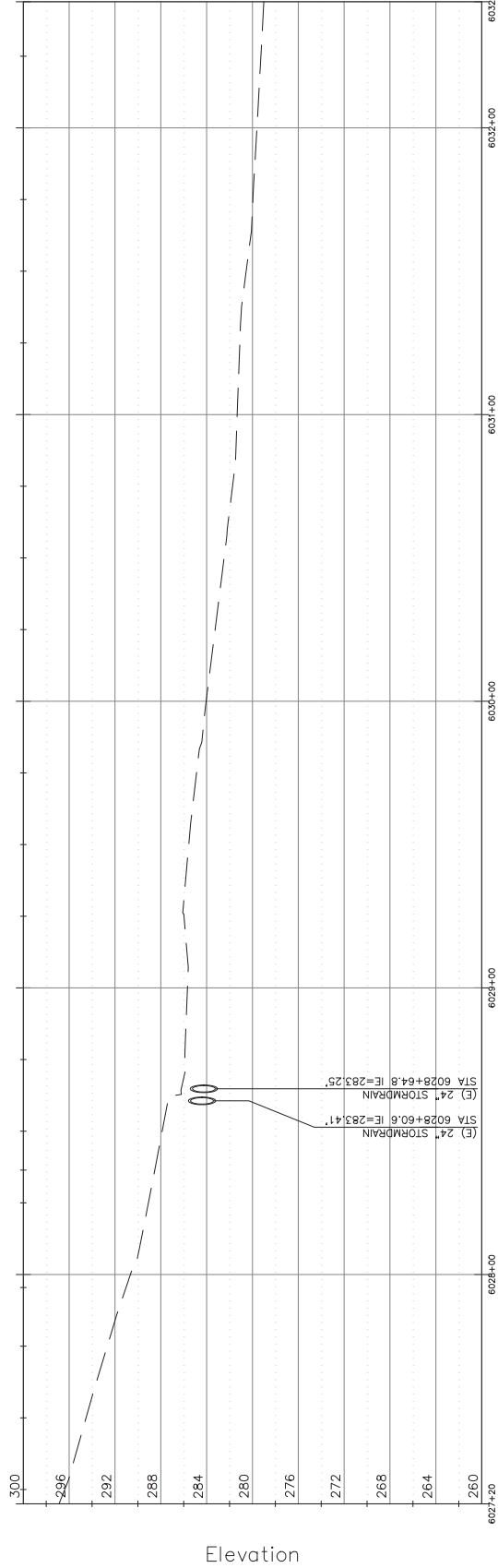
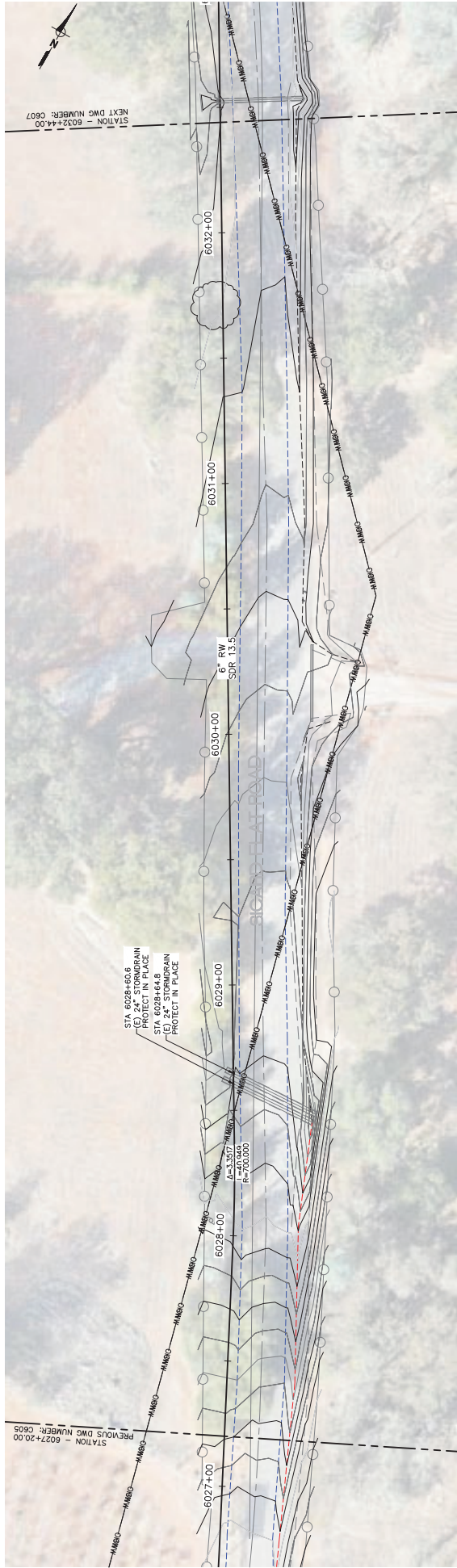
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| DESIGNED: DMM | PROJECT ENGINEER | 86512 | 03/31/21 |
| PROJECT ENGINEER | R.C.E. NO. | EXP. DATE | |
| KARL BRUSTAD | PROJECT MANAGER | 57969 | 06/30/20 |
| PROJECT MANAGER | R.C.E. NO. | EXP. DATE | |




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| DESIGNED: DMM | PROJECT ENGINEER |
| PROJECT ENGINEER | R.C.E. NO. |
| PROJECT MANAGER | R.C.E. NO. |

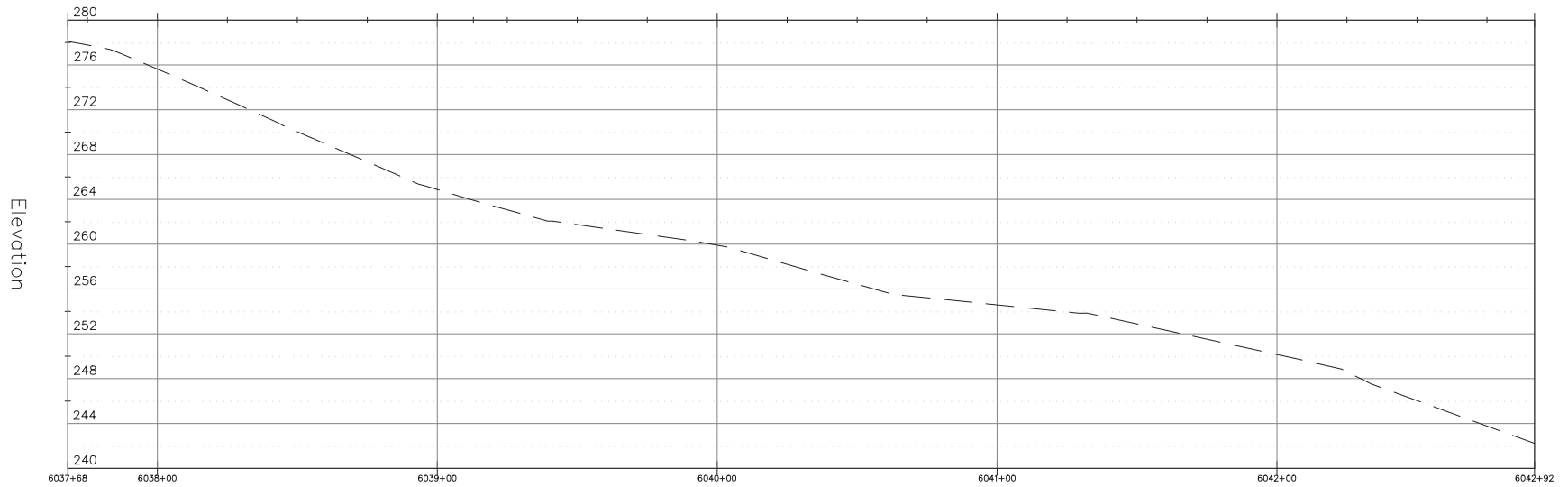
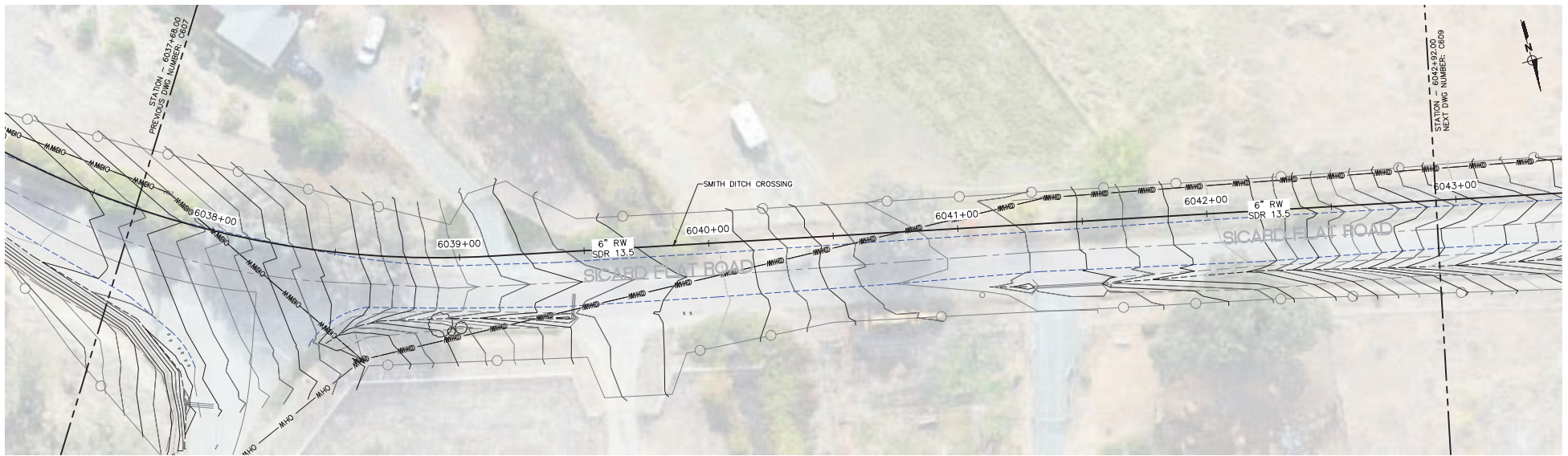
| | |
|--|---------------------|
| WARNING | SCALE |
| 0 1/2" | 1"=20' |
| IF THIS BAR DOES NOT MEASURE 1" NOT TO SCALE | DATE: FEBRUARY 2020 |

| | |
|---------------------|-------------|
| DATE: FEBRUARY 2020 | BY |
| BY | DESCRIPTION |

| | | | |
|-----|------|----|-------------|
| REV | DATE | BY | DESCRIPTION |
| | | | |
| | | | |
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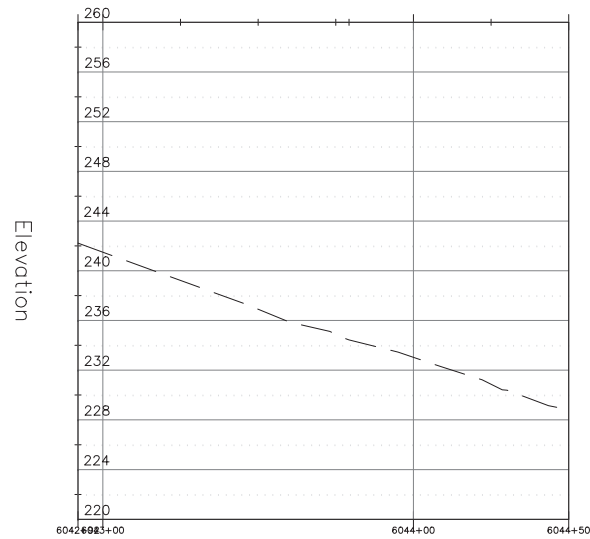
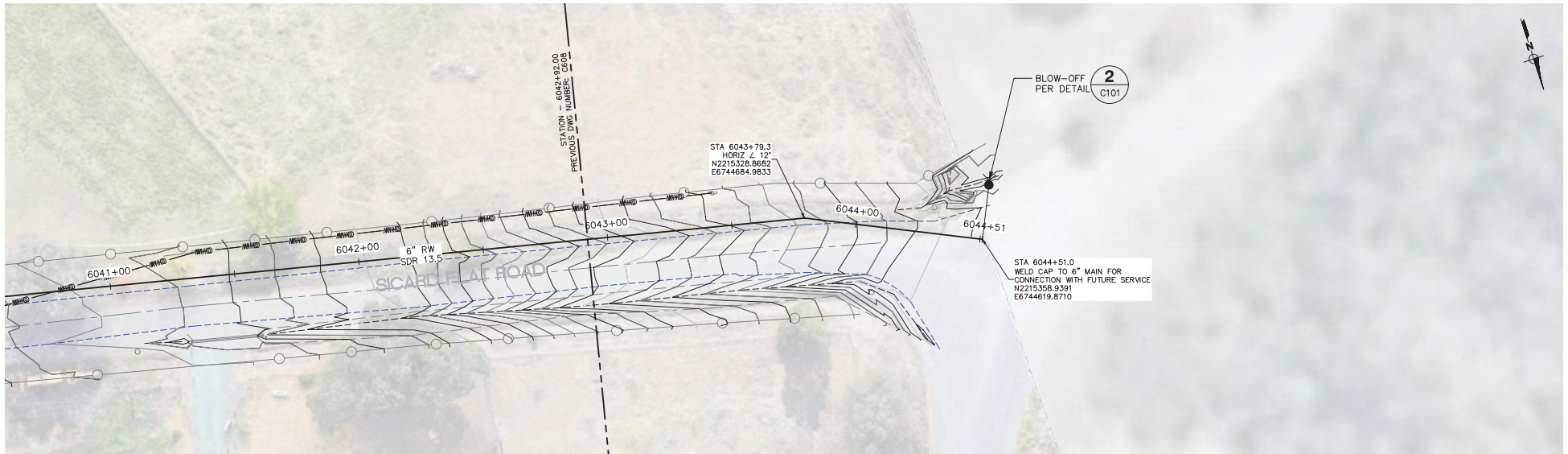


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|--|------|----|-------------|
| 60% SUBMITTAL - NOT FOR CONSTRUCTION | | | |
| BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | | |
| C606 | | | |
| PHASE 6 STA 6027+20 TO STA 6032+44 | | | |
| SHEET 087 OF 114 | | | |
|  | | | |
|  80 Blue Ravine Rd, Suite 280 Browns Valley, CA 95701 Phone: 916-608-2212 Fax: 916-608-2232 | | | |
|  | | | |
| PROJECT ENGINEER: ASHLEY SMITH PROJECT NO.: 86512 R.C.E. NO.: 03/31/21 EXP. DATE: 06/30/20 | | | |
| PROJECT MANAGER: KARL BRUSTAD R.C.E. NO.: 57969 EXP. DATE: 06/30/20 | | | |
| DESIGNED: DMM DRAWN: BITS/AMZ/AS CHECKED: KBB | | | |
| WARNING: IF THIS BAR DOES NOT MEASURE 1" NOT TO SCALE. | | | |
| SCALE: 1"=20' | | | |
| DATE: FEBRUARY 2020 | | | |
| REV | DATE | BY | DESCRIPTION |



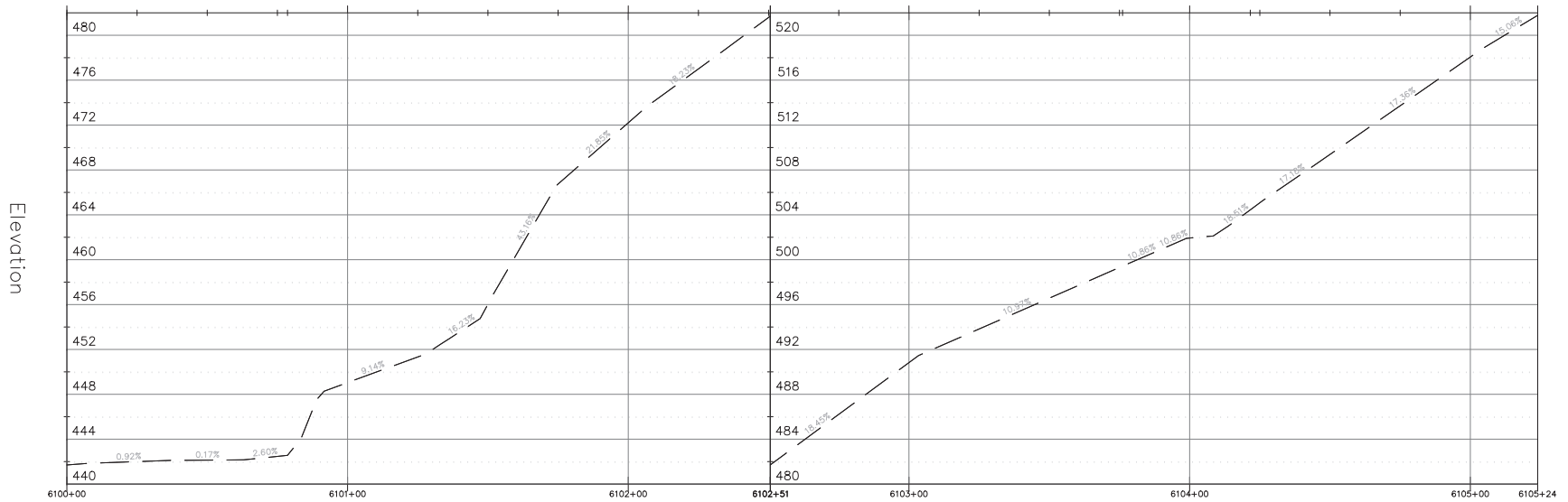
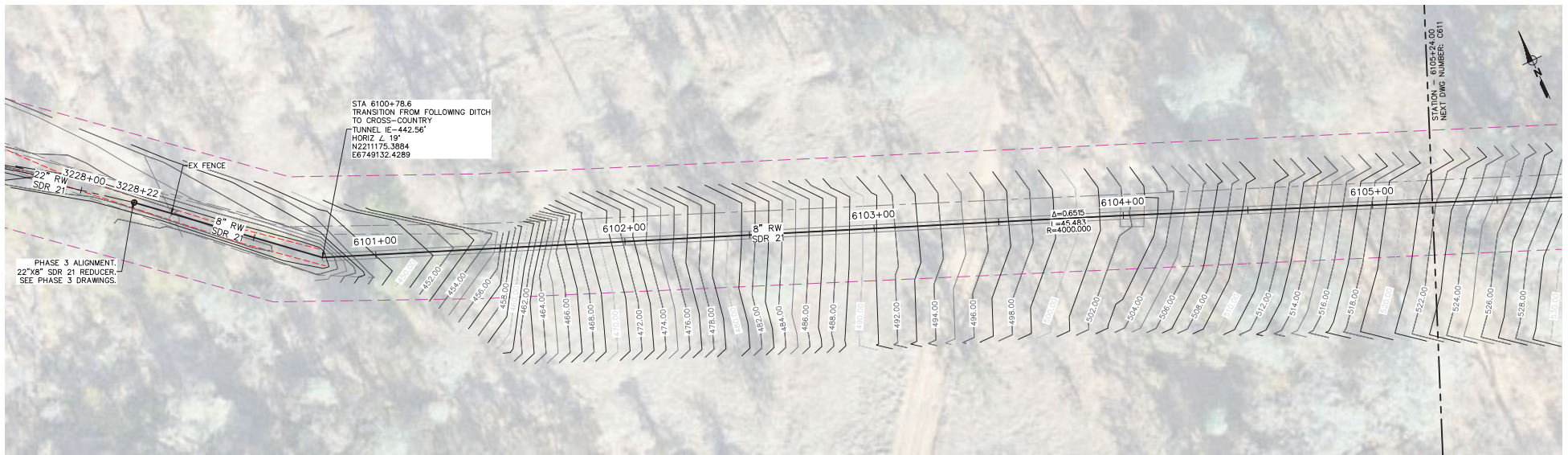
60% SUBMITTAL - NOT FOR CONSTRUCTION

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|-----|------|----|-------------|---------------|---|--|-----------------------------|--------------------------------------|---------------------------------------|--|---|---|---|-----------------------------------|--|------------------|---------|
| | | | | SCALE: | WARNING | | DESIGNED <u>DM</u> | | | |  |  |  | BROWNS VALLEY IRRIGATION DISTRICT | | SHEET | |
| | | | | 1"=20' |  | | ASHLEY SMITH 86512 03/31/21 | | | | | | | SICARD PIPELINE PROJECT | | C608 | |
| | | | | DATE: | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | | DRAWN <u>BTS/JMR/AAS</u> | | PROJECT ENGINEER R.C.E. NO. EXP. DATE | | | | | | | | PHASE 6 |
| | | | | FEBRUARY 2020 | | | CHECKED <u>KBB</u> | | KARL BRUSTAD 57869 06/30/20 | | | | | | | | |
| REV | DATE | BY | DESCRIPTION | | | | | PROJECT MANAGER R.C.E. NO. EXP. DATE | | | | | | | | SHEET 093 OF 114 | |



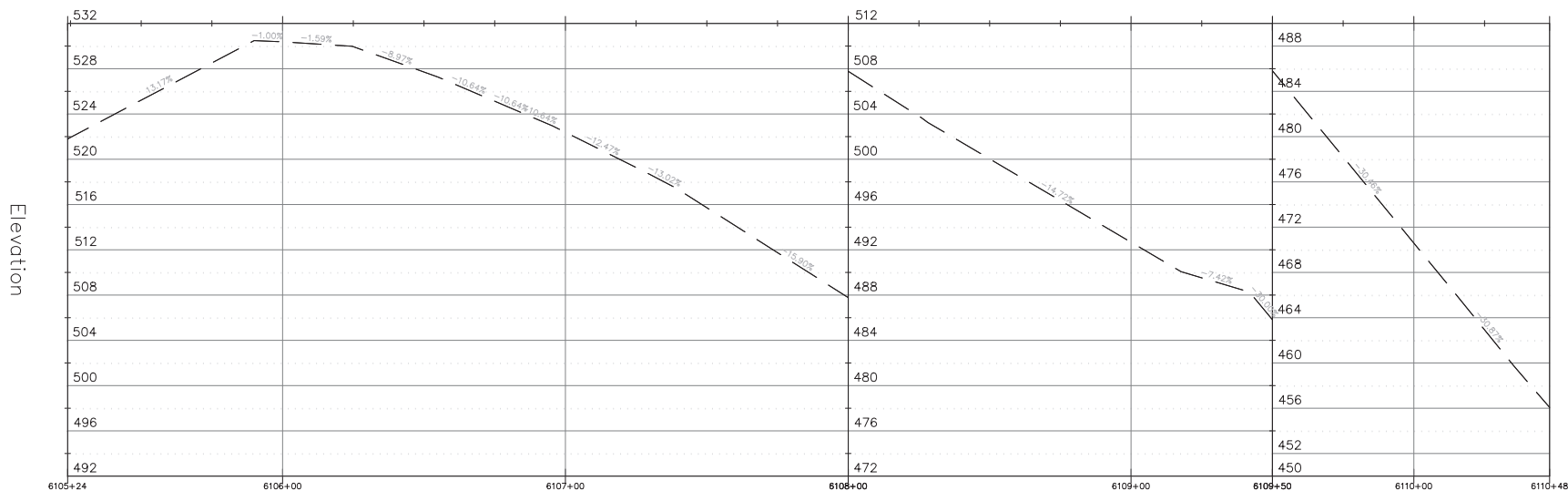
60% SUBMITTAL - NOT FOR CONSTRUCTION

| REV | DATE | BY | DESCRIPTION | SCALE: | WARNING | DESIGNED | PROJECT ENGINEER | R.C.E. NO. | EXP. DATE | PBI | Browns Valley Irrigation District | SHEET |
|-----|------|----|-------------|--------|---|--------------|------------------|------------|-----------|---|---------------------------------------|------------------|
| | | | | 1"=20' | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | ASHLEY SMITH | 86512 | 03/31/21 | | 80 Blue Ravine Rd, Suite 260 Folsom, CA 95630 PH: 916-608-2212 Fax: 916-608-2232 | PHASE 6 STA 6042+92 TO STA 6044+50 | C609 |
| | | | | | | KARL BRUSTAD | 57869 | 06/30/20 | | | | SHEET 104 OF 114 |



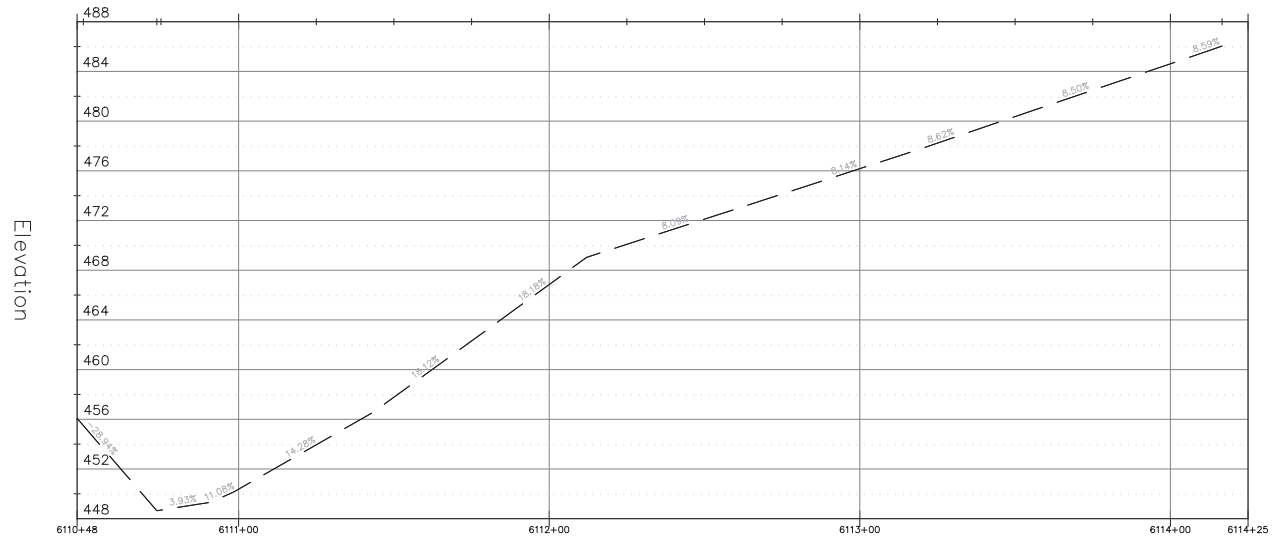
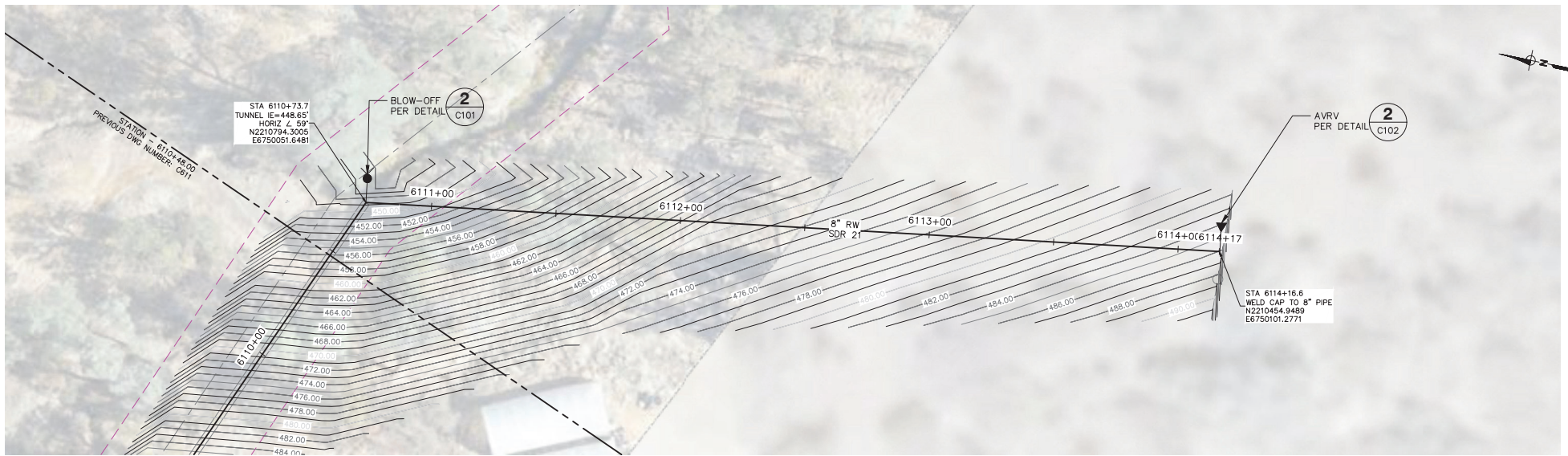
60% SUBMITTAL - NOT FOR CONSTRUCTION

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|-----|------|----|-------------|------------------------|---|--------------------|----------------------------------|--|---------------------|-----------------------|---|--|---|--|-------|
| | | | | SCALE: 1"=20' | <div>WARNING</div> <div></div> | DESIGNED _DMM | ASHLEY SMITH PROJECT ENGINEER | | 86512 R.C.E. NO. | 03/31/21 EXP. DATE |  |  80 Blue Ravine Rd, Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax: 916-608-2232 |  | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | SHEET |
| | | | | DATE: FEBRUARY 2020 | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN _BTS/JMR/AAS | KARL BRUSTAD PROJECT MANAGER | | 57869 R.C.E. NO. | 06/30/20 EXP. DATE | | | | PHASE 6 STA 6100+00 TO STA 6105+24 | C610 |
| REV | DATE | BY | DESCRIPTION | | | | | | | | | | | | |



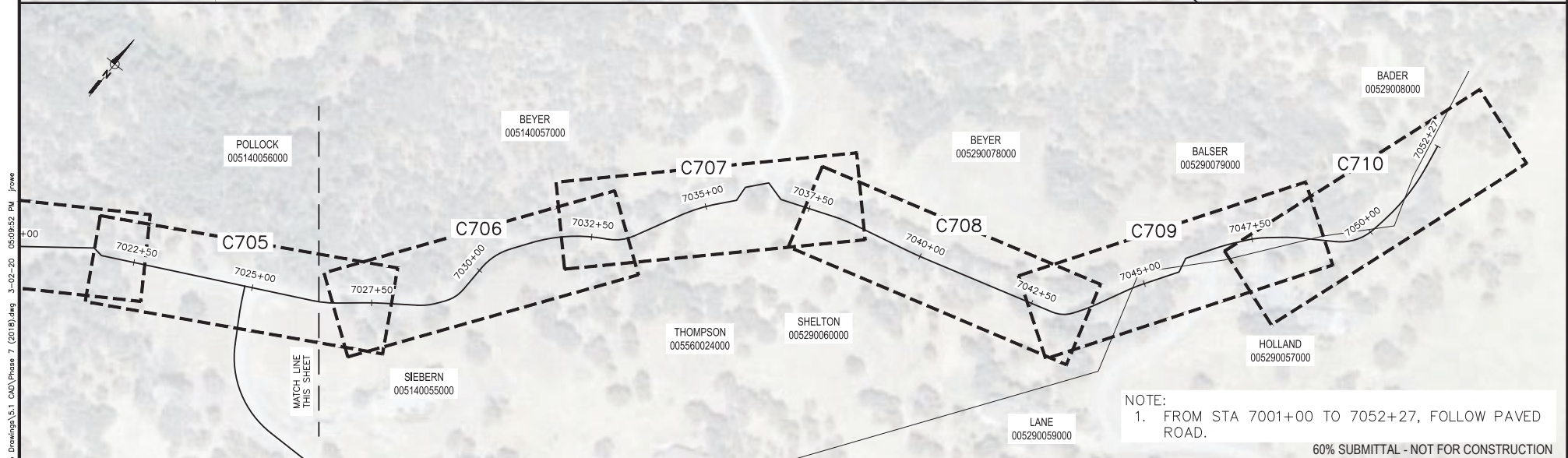
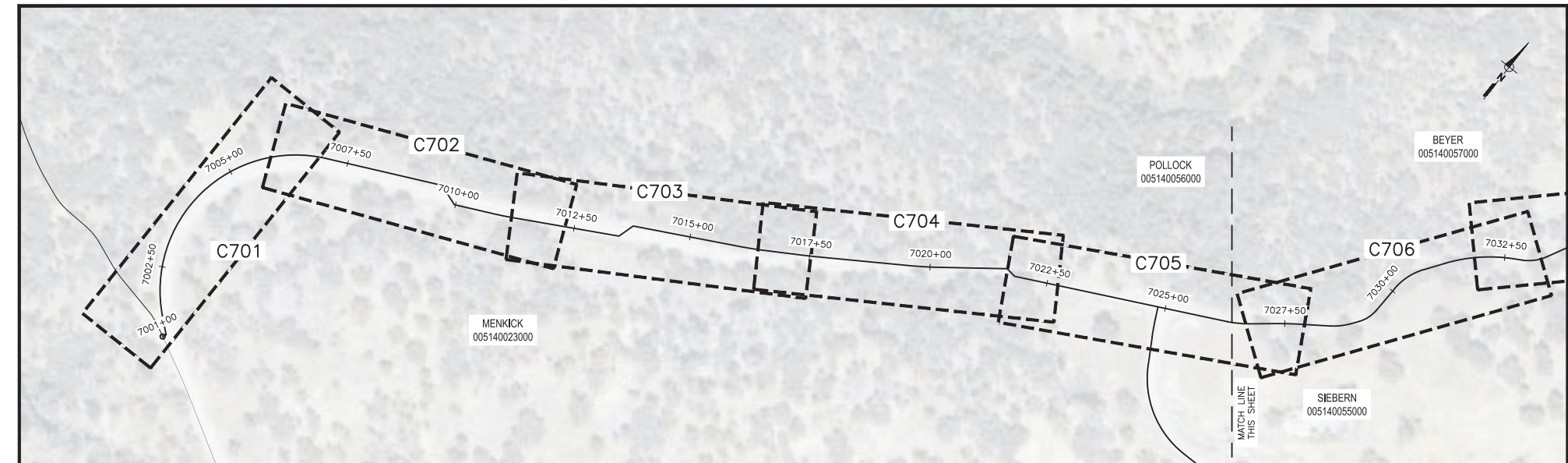
60% SUBMITTAL - NOT FOR CONSTRUCTION

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|-----|------|----|-------------|------------------------|---|---|---------------------------|--------------------------------------|--|---|---|---|--|--|------------------|
| | | | | SCALE: 1"=20' | <div>WARNING</div> <div><div>01/2</div></div> | DESIGNED: DMM | ASHLEY SMITH8651203/31/21 | | | <div><div>PROFESSIONAL ENGINEER</div><div>ASHLEY B. SMITH</div><div>NO. 86512</div><div>EXPIRATION DATE 03/31/21</div><div>STATE OF CALIFORNIA</div></div> | <div><div>PBI</div><div><div></div></div><div>80 Blue Ravine Rd., Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax: 916-608-2232</div></div> | <div><div>Browns Valley</div><div>IRRIGATION DISTRICT</div><div><div></div></div></div> | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET |
| | | | | DATE: FEBRUARY 2020 | | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN: BTS/JMR/AAS | PROJECT ENGINEERR.C.E. NO. EXP. DATE | | | | | PHASE 6 STA 6105+24 TO STA 6110+48 | | C611 |
| | | | | | | CHECKED: KBB | KARL BRUSTAD5786906/30/20 | | | <div><div>PROFESSIONAL CIVIL ENGINEER</div><div>KARL BRUSTAD</div><div>NO. 57869</div><div>EXPIRATION DATE 06/30/20</div><div>STATE OF CALIFORNIA</div></div> | | | | | |
| REV | DATE | BY | DESCRIPTION | | | PROJECT MANAGERR.C.E. NO. EXP. DATE | | | | | | | | | SHEET 096 OF 114 |






60% SUBMITTAL - NOT FOR CONSTRUCTION

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|-----|------|----|-------------|------------------------|---|--------------------|---------------------------------------|--|
| | | | | SCALE: 1"=20' | <div>WARNING</div> <div>0 1/2</div> | DESIGNED _DMM | ASHLEY SMITH 86512 03/31/21 | |
| | | | | DATE: FEBRUARY 2020 | | DRAWN _BTS/JMR/AAS | PROJECT ENGINEER R.C.E. NO. EXP. DATE | |
| | | | | | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | CHECKED _KBB | KARL BRUSTAD 57869 06/30/20 | |
| | | | | | | | PROJECT MANAGER R.C.E. NO. EXP. DATE | |
| REV | DATE | BY | DESCRIPTION | | | | | |



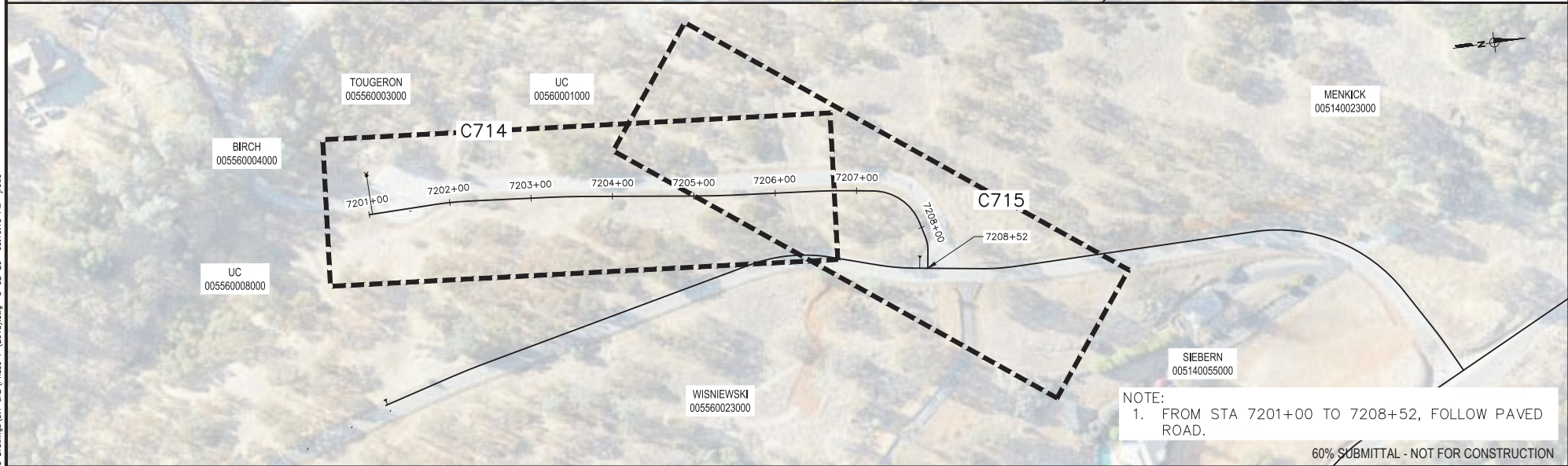
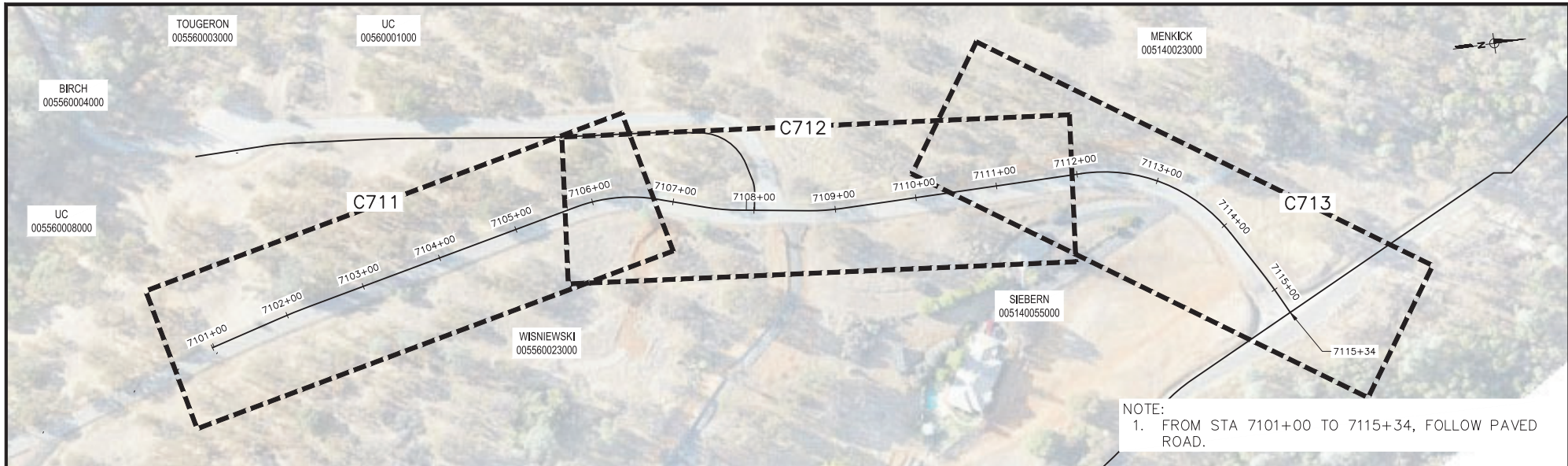
NOTE:
1. FROM STA 7001+00 TO 7052+27, FOLLOW PAVED ROAD.

60% SUBMITTAL - NOT FOR CONSTRUCTION

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|-----|------|----|-------------|------------------------|---|--|--------------------------------------|--|---------------------------------------|--|---|---|---|--|--|------------------|
| | | | | SCALE: 1"=100' | WARNING | | DESIGNED: DMM | | ASHLEY SMITH 86512 03/31/21 | |  |  |  | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET |
| | | | | DATE: FEBRUARY 2020 | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | | DRAWN: BTS/JMR/AAS | | PROJECT ENGINEER R.C.E. NO. EXP. DATE | | | | | PHASE 7 SHEET INDEX I | | C700A |
| | | | | | | | CHECKED: KBB | | KARL BRUSTAD 57869 06/30/20 | | | | | | | |
| | | | | | | | PROJECT MANAGER R.C.E. NO. EXP. DATE | | | | | | | | | |
| REV | DATE | BY | DESCRIPTION | | | | | | | | | | | | | SHEET 098 OF 114 |

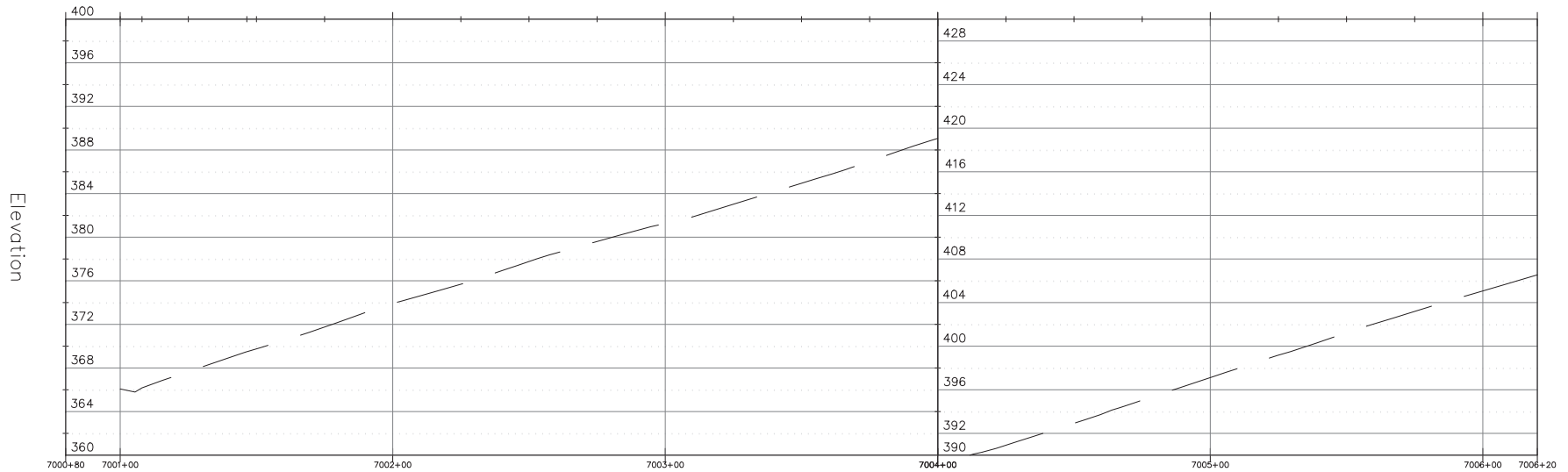
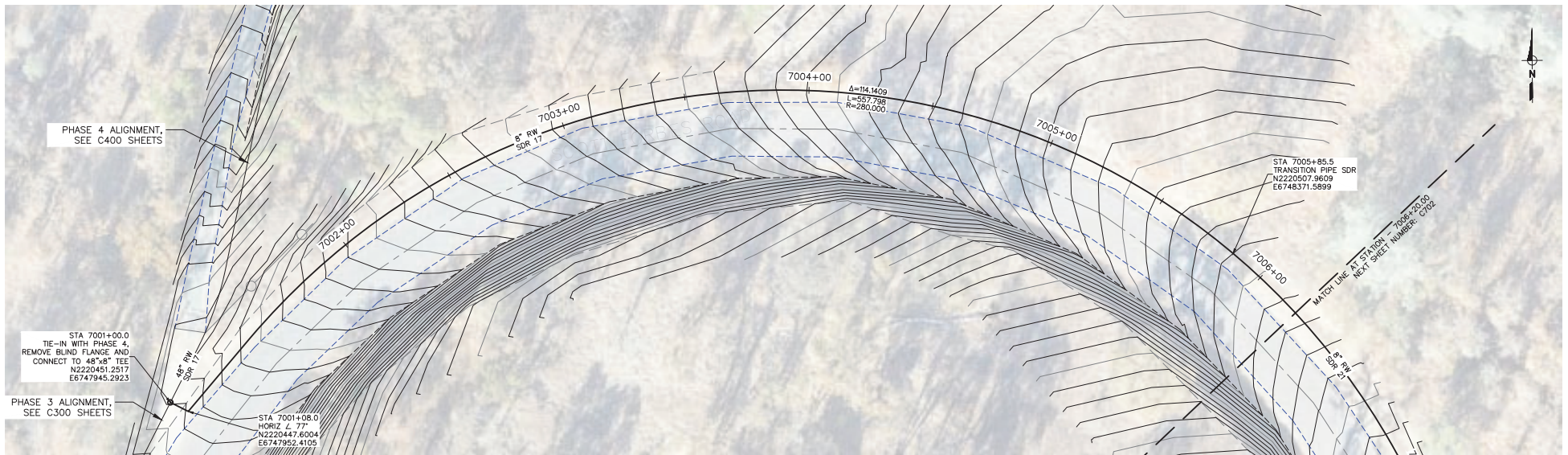
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P:\BVD\Standard Pipeline\05 Drawings\5.1 CAD\Phase 7 (2019).dwg 3--02--20 05:10:10 PM jrowe



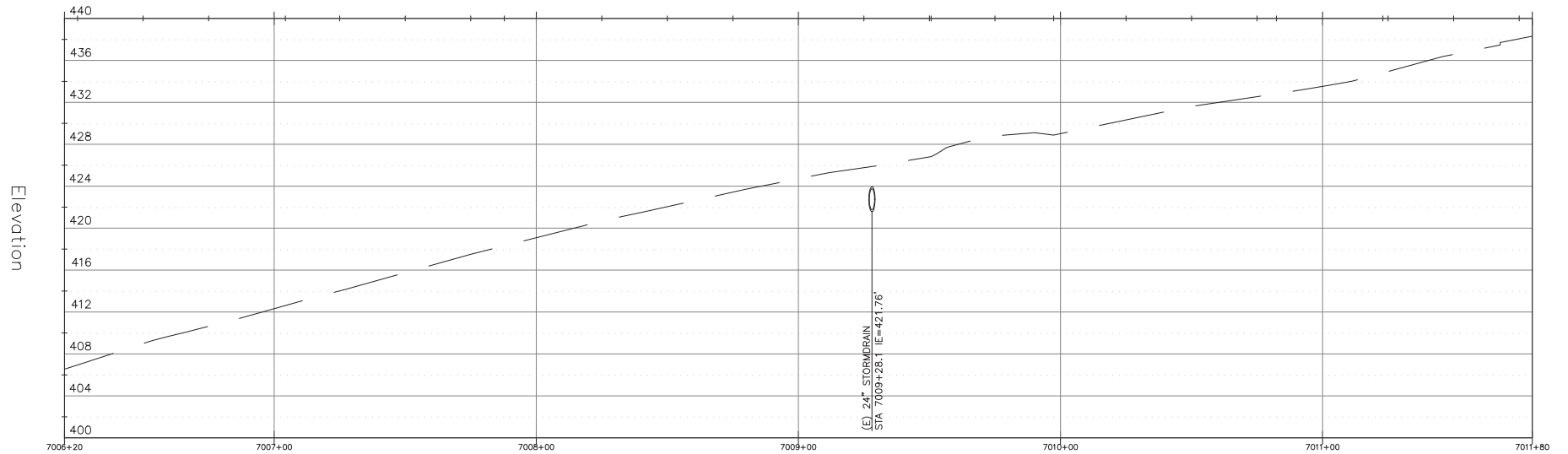
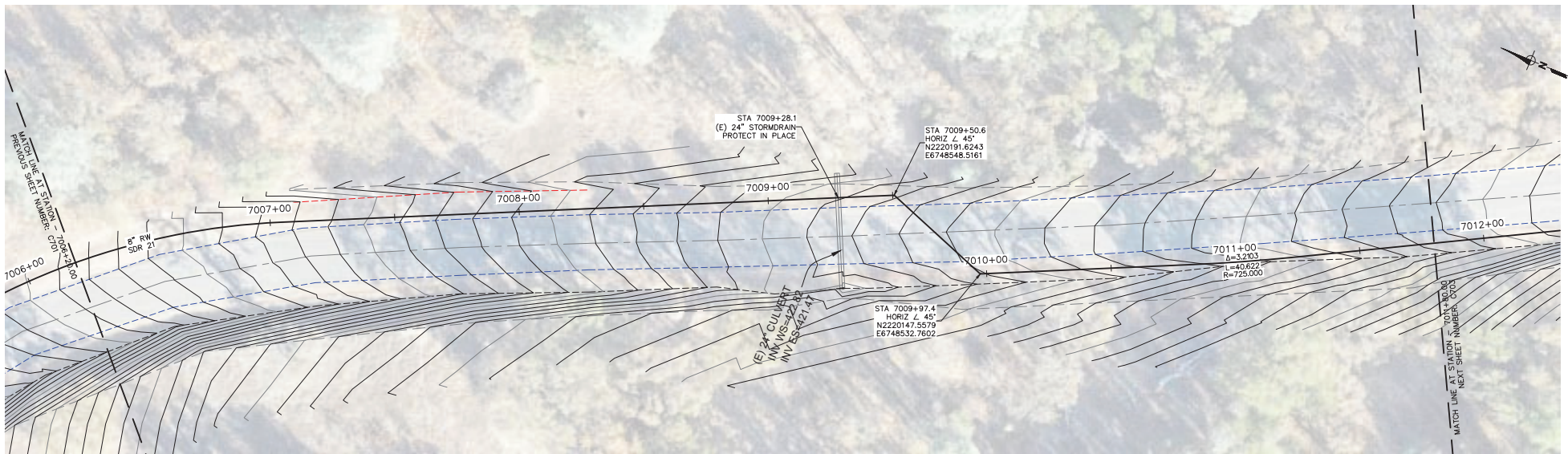
60% SUBMITTAL - NOT FOR CONSTRUCTION

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|------------------|------|----|-------------|------------------------|--|--------------------|--|--|---|---|---|--|--|-------|
| | | | | SCALE: 1"=60' | <div>WARNING </div> | DESIGNED: DMM | ASHLEY SMITH 86512 03/31/21 PROJECT ENGINEER R.C.E. NO. EXP. DATE | |  |  80 Blue Ravine Rd., Suite 280 Folsom, CA 95630 PH: 916-608-2212 Fax: 916-608-2232 |  | BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | | SHEET |
| REV | DATE | BY | DESCRIPTION | DATE: FEBRUARY 2020 | IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE. | DRAWN: BTS/JMR/AAS | KARL BRUSTAD 57869 06/30/20 PROJECT MANAGER R.C.E. NO. EXP. DATE | | | | | PHASE 7 SHEET INDEX II | | C701B |
| SHEET 099 OF 114 | | | | | | | | | | | | | | |



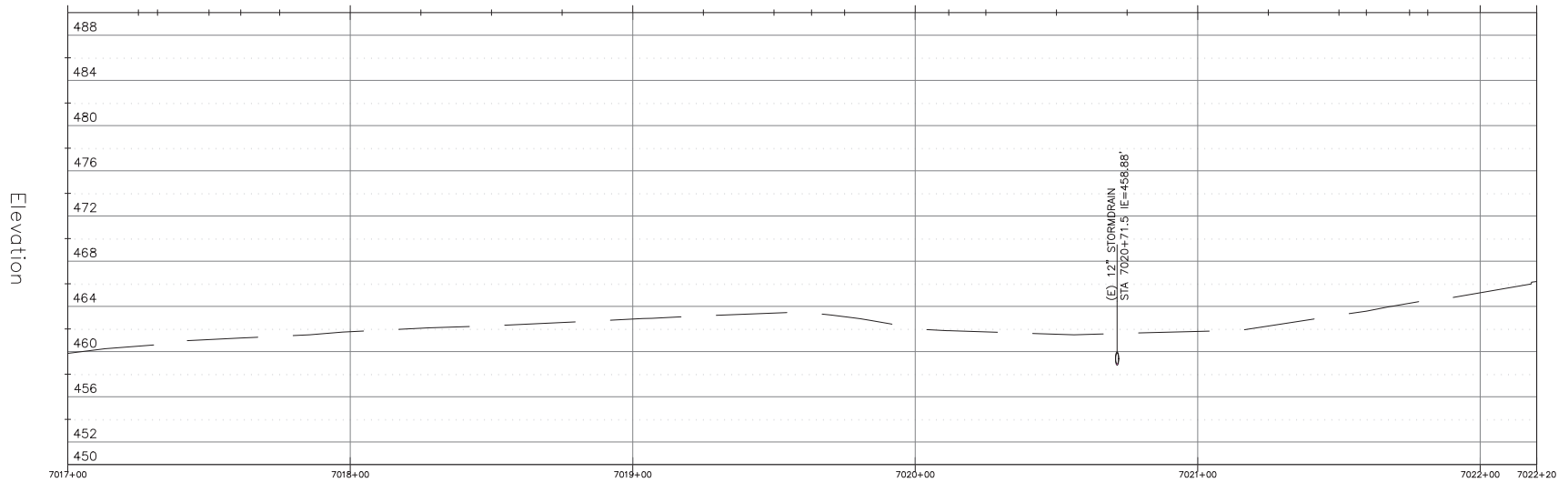
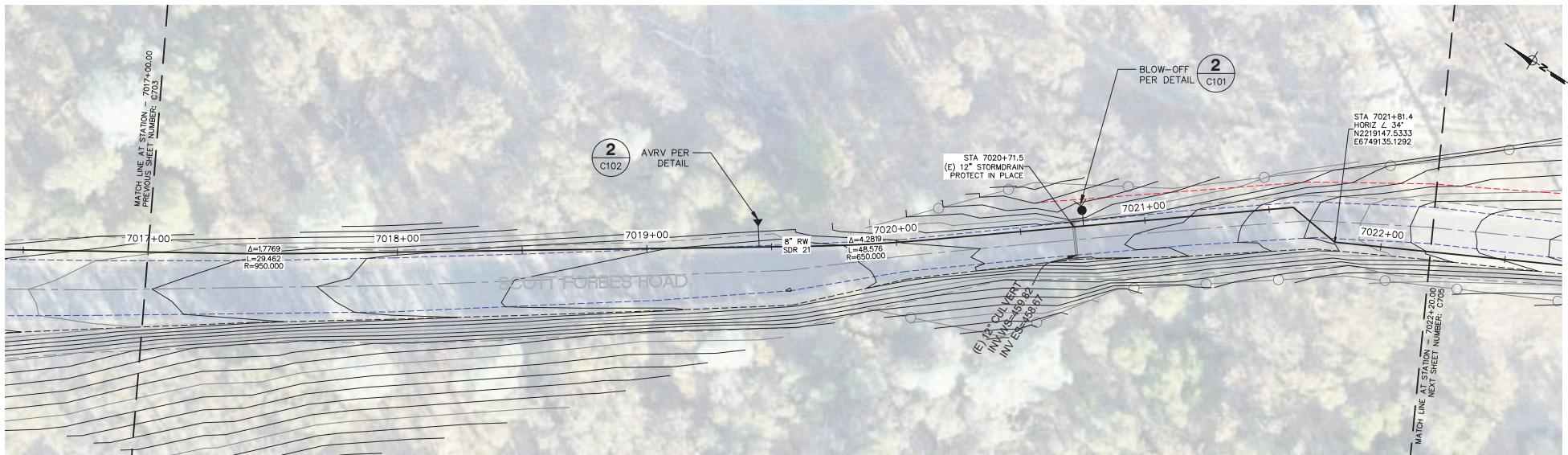
60% SUBMITTAL - NOT FOR CONSTRUCTION

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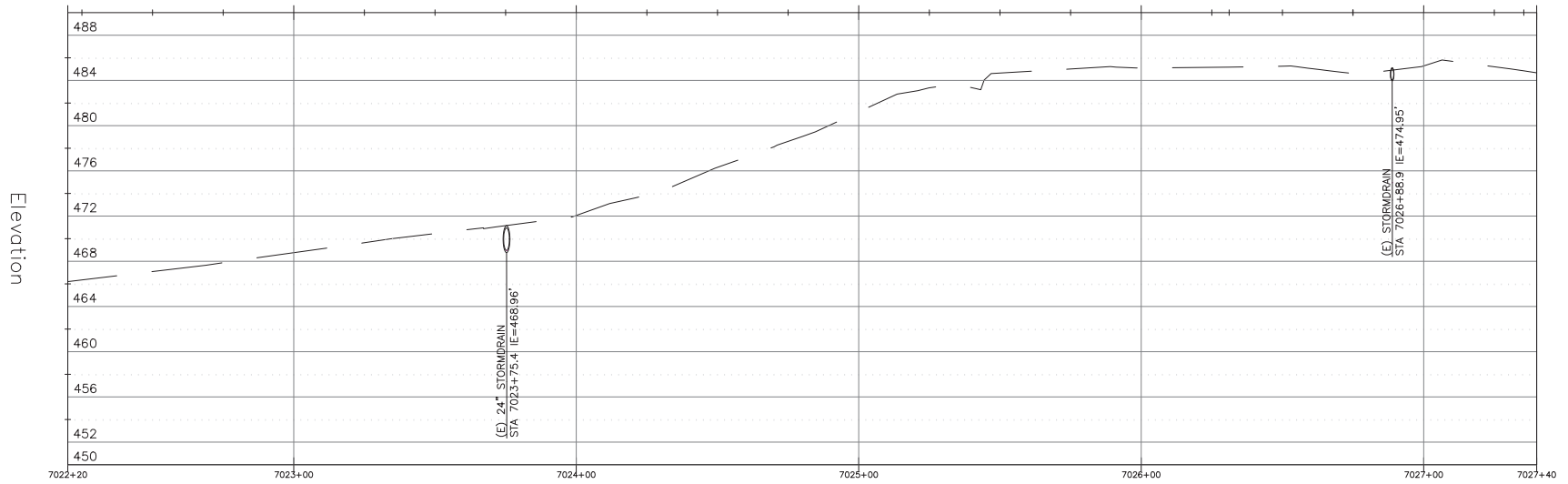
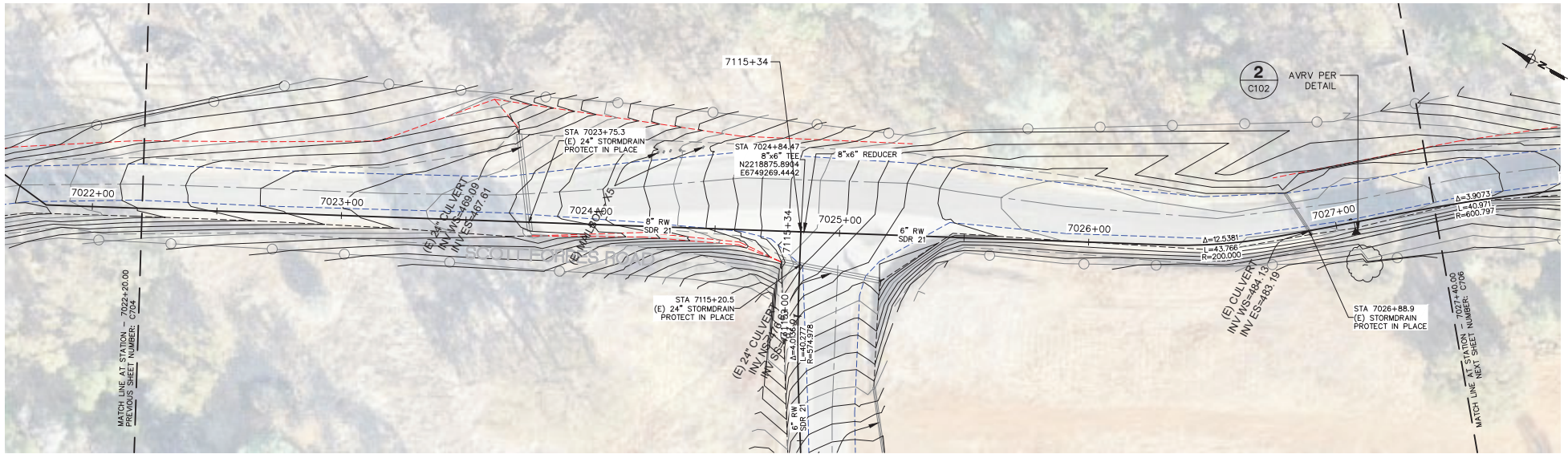
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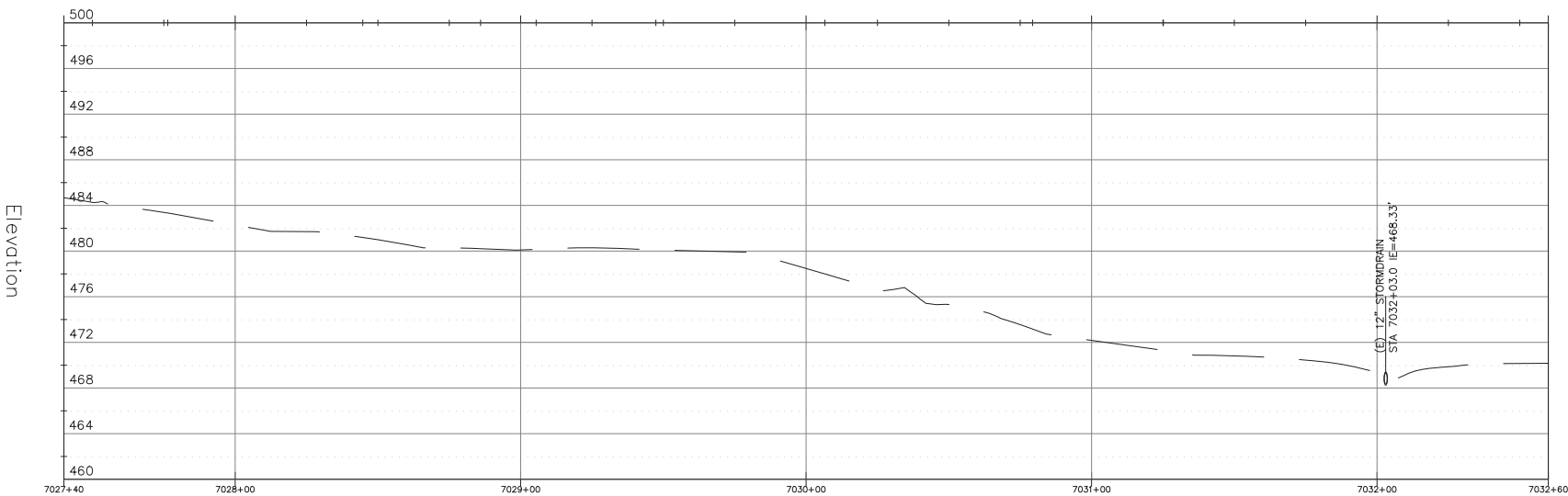
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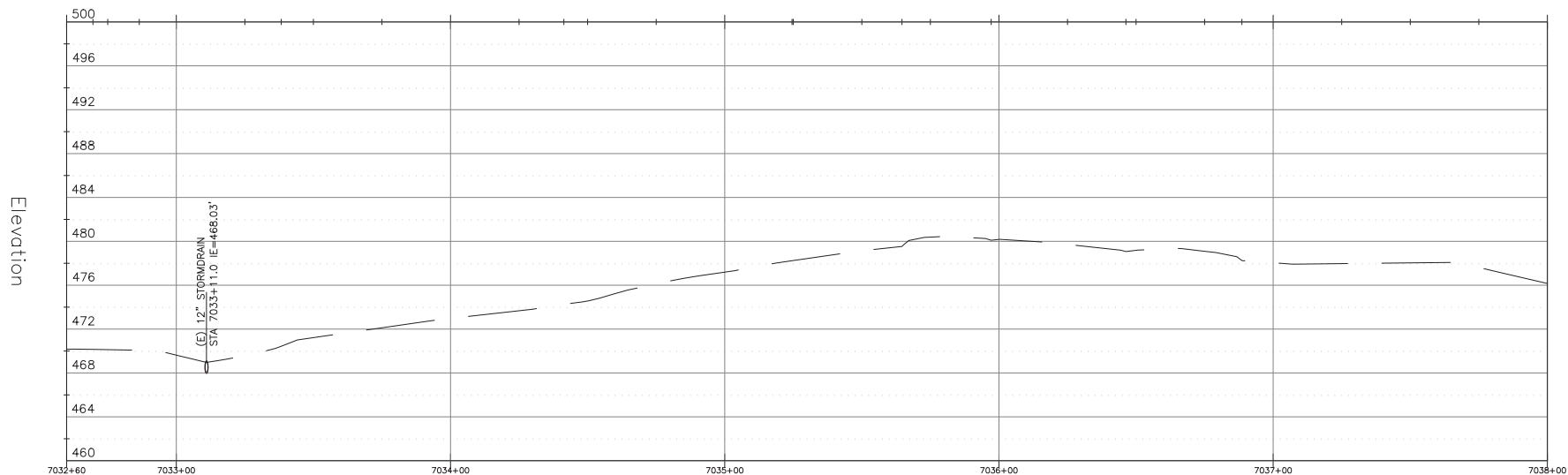
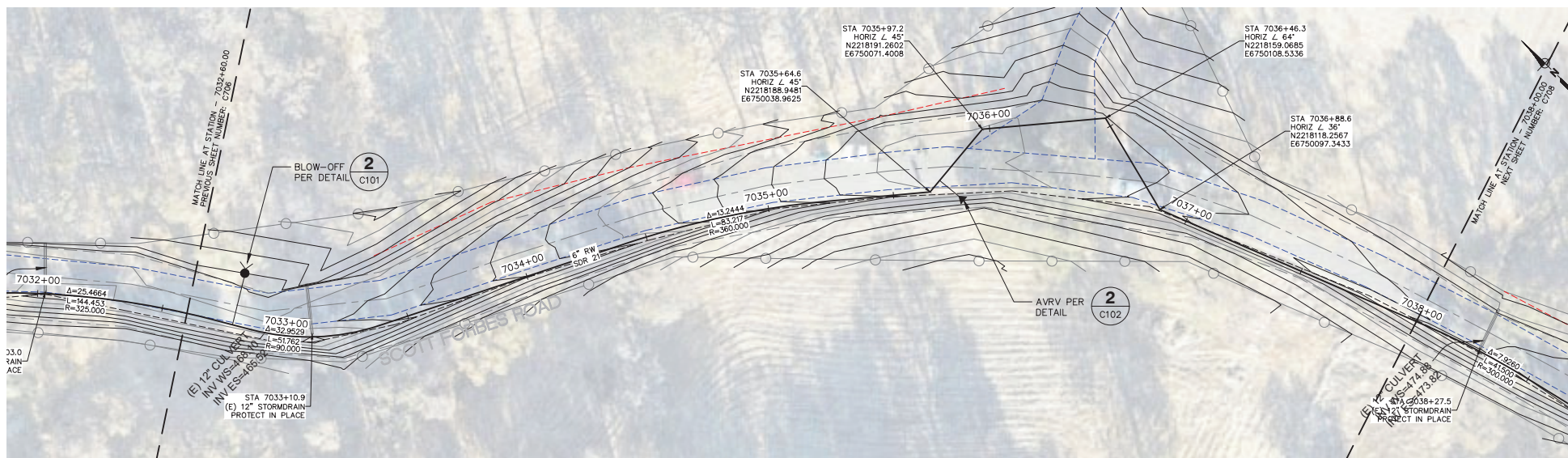
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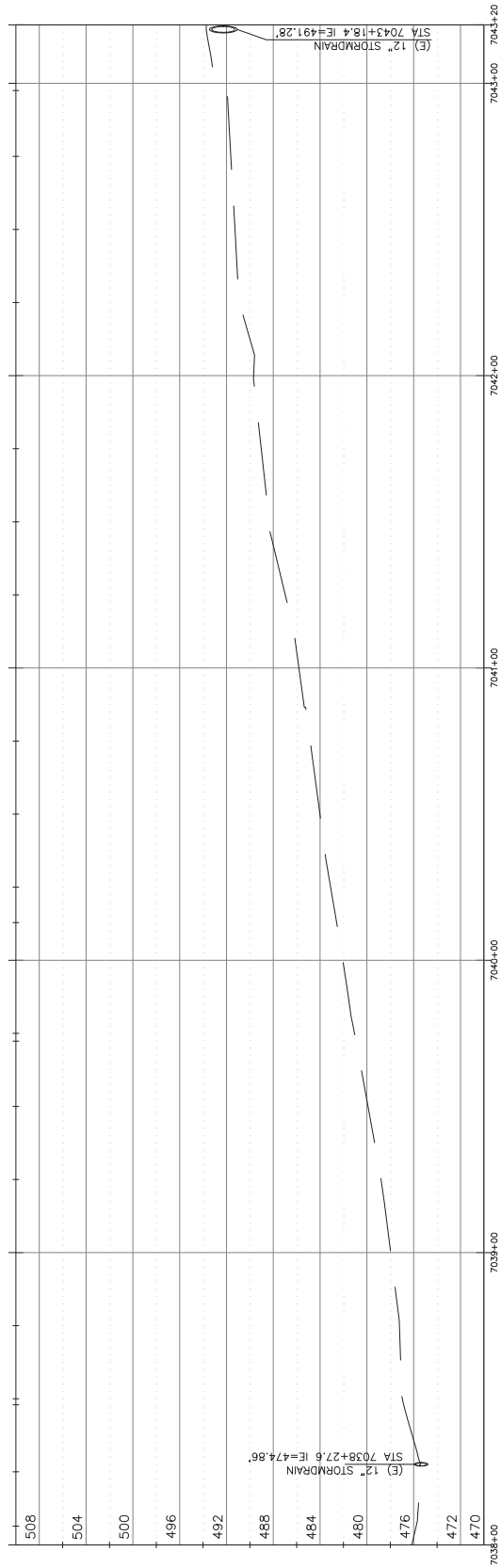
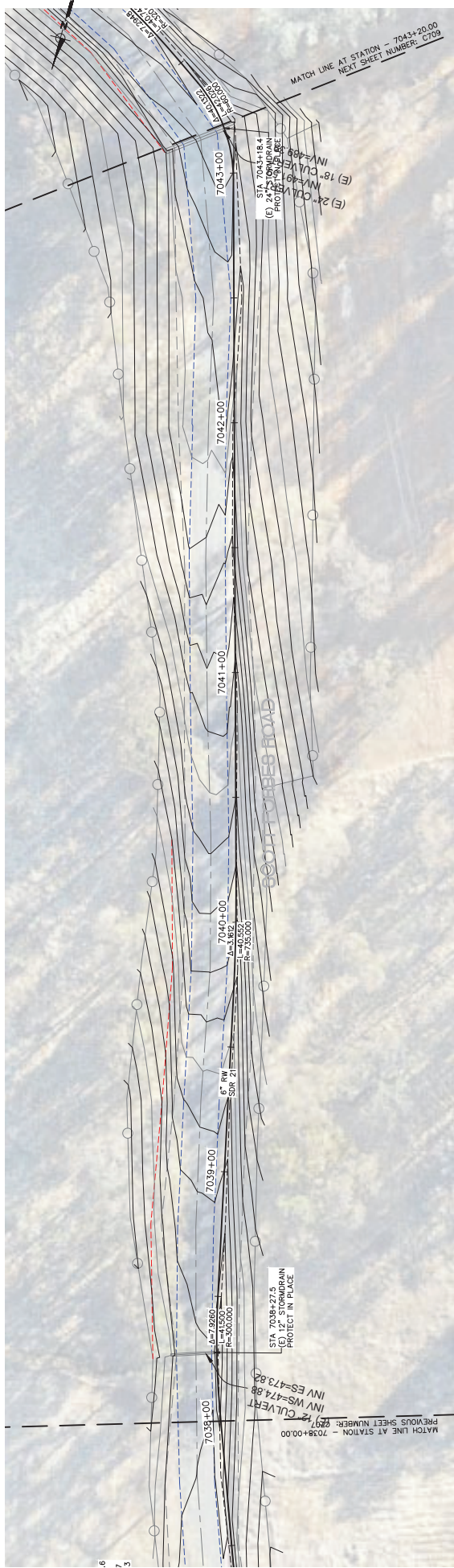
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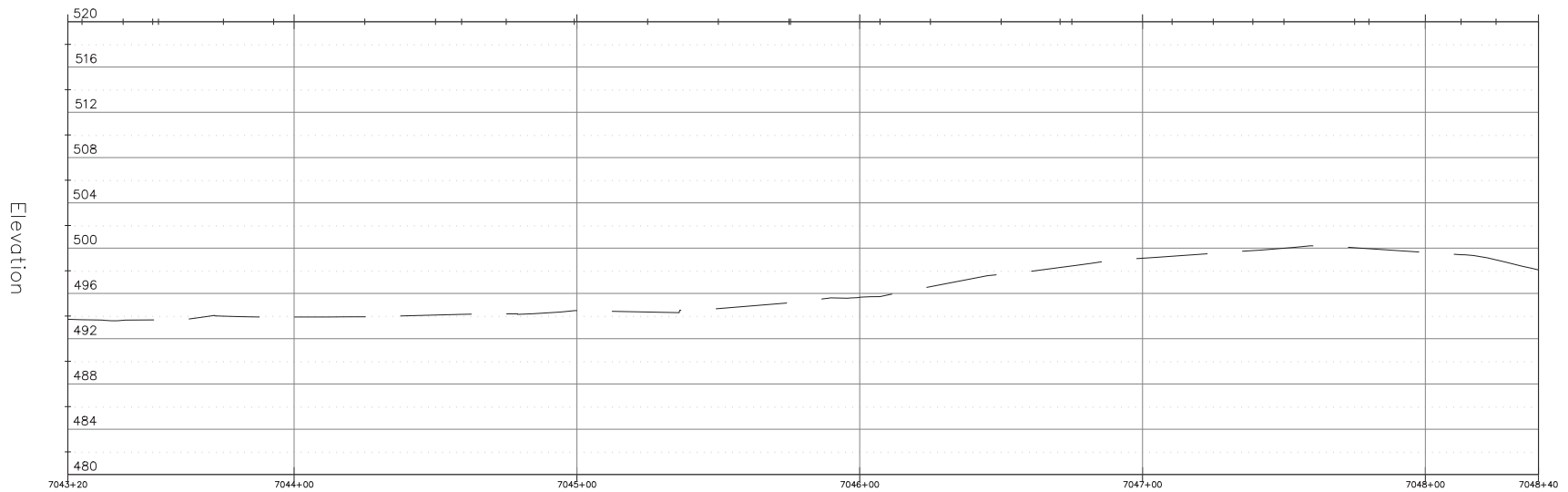
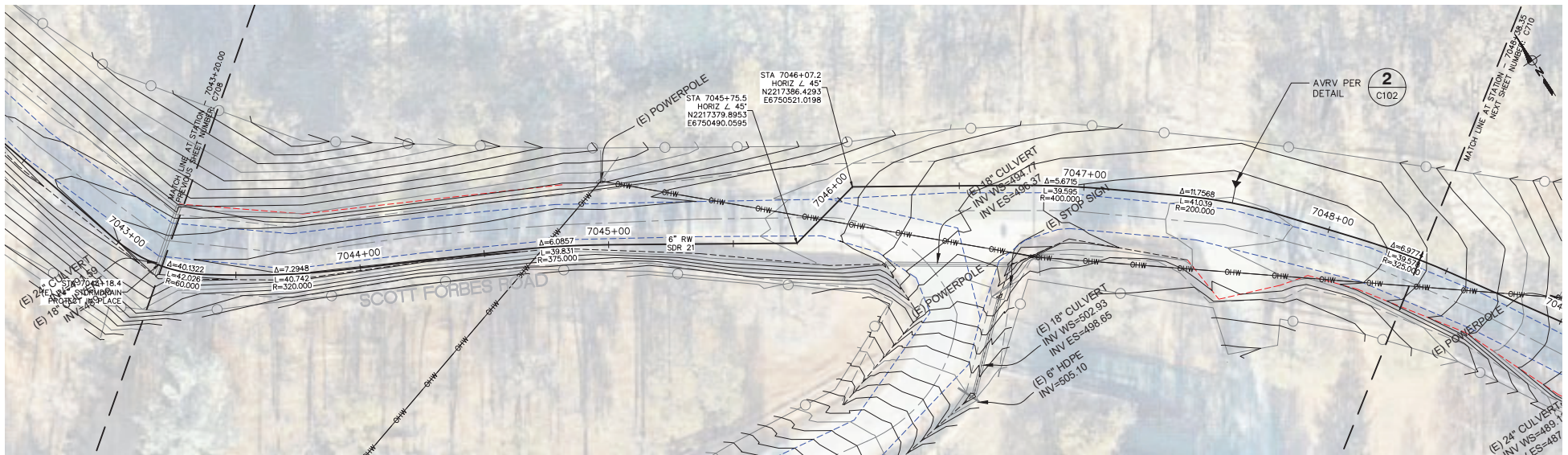
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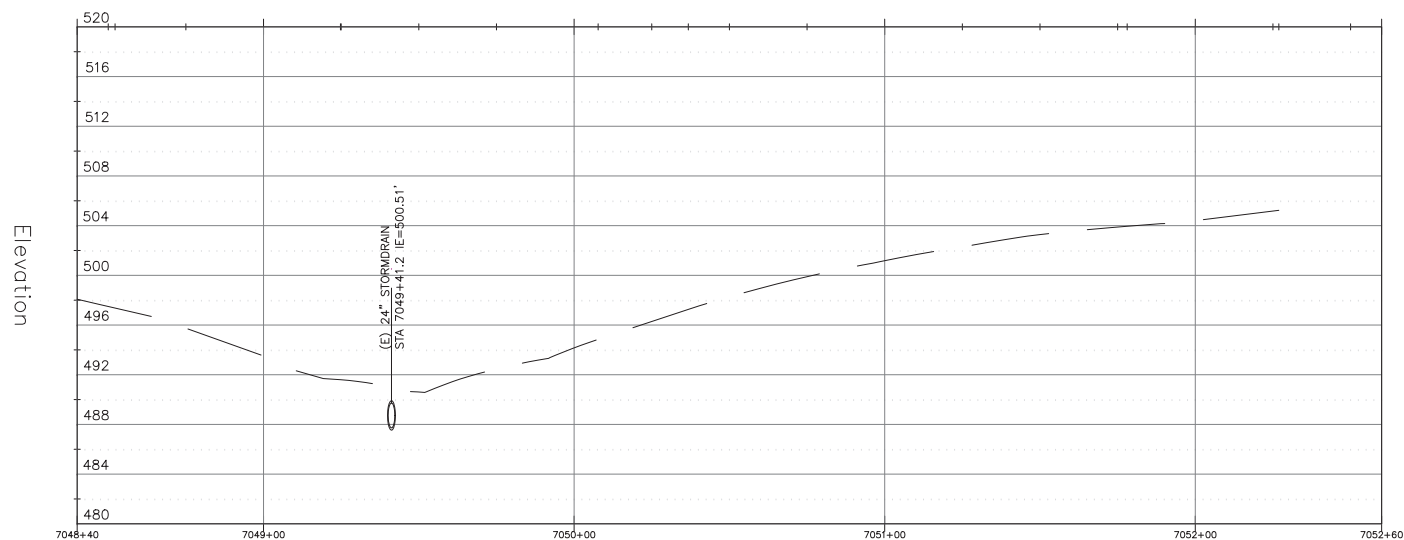
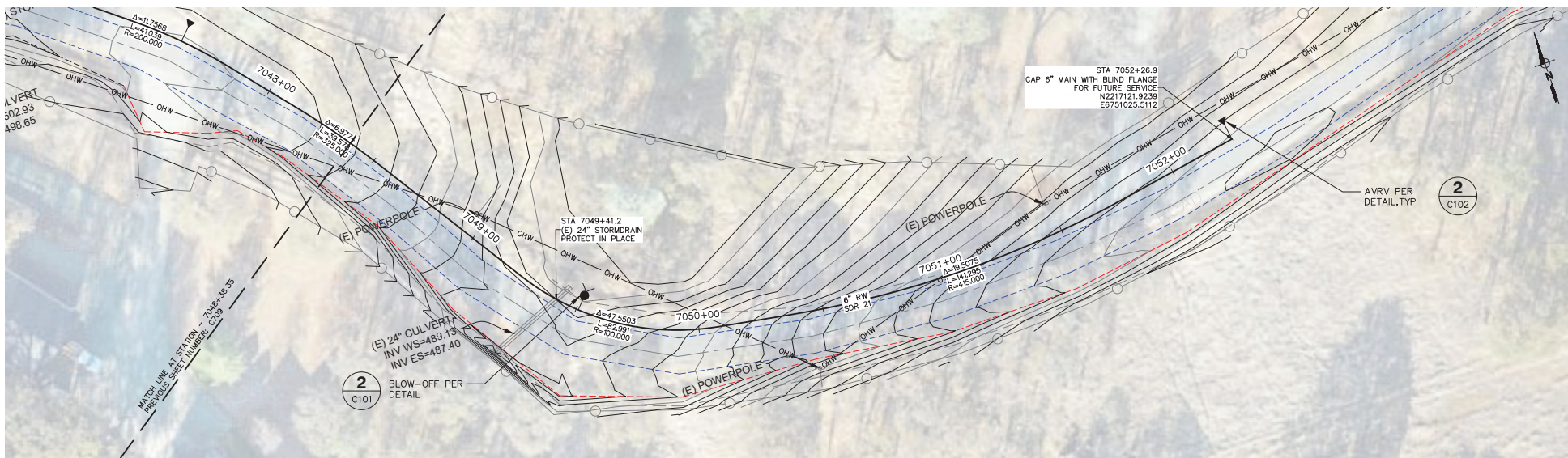
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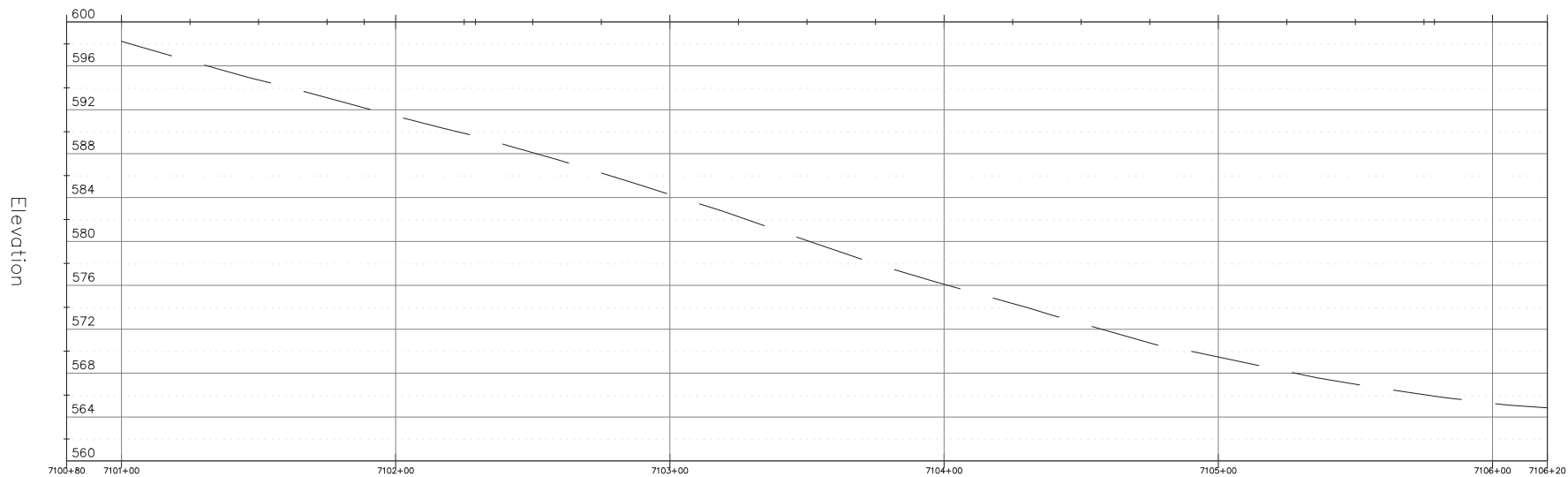
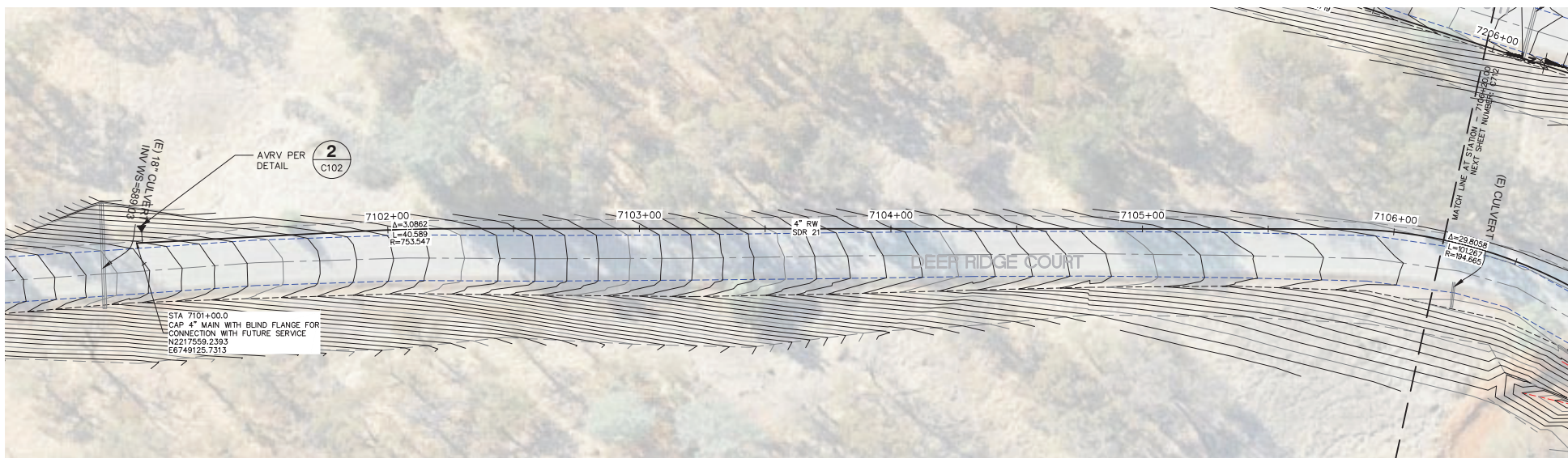
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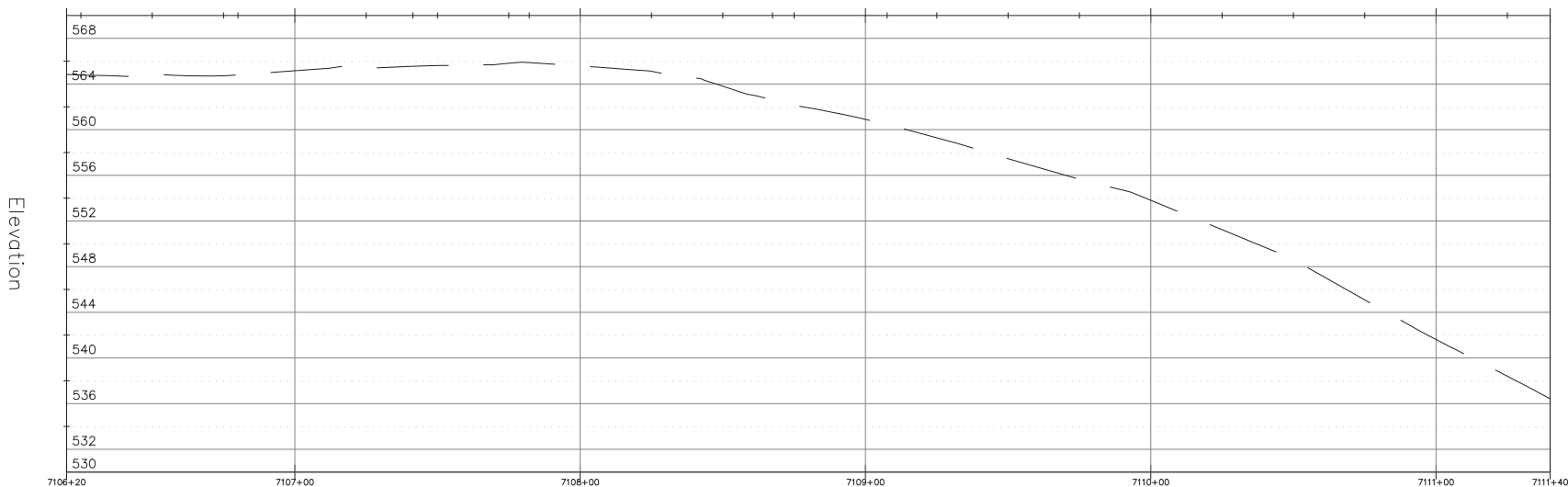
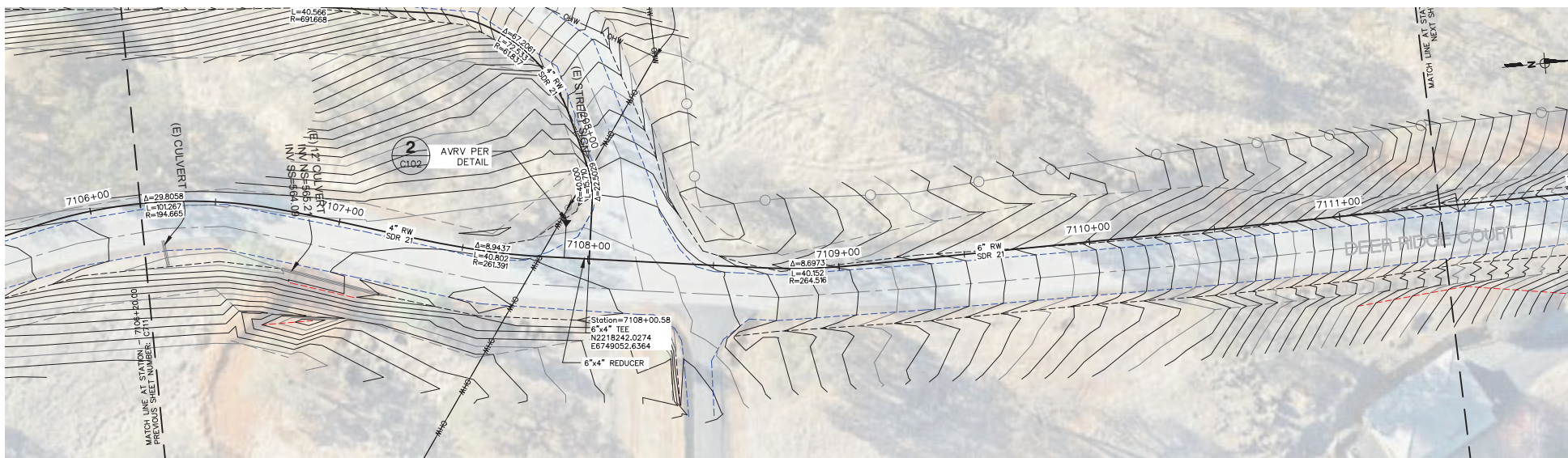
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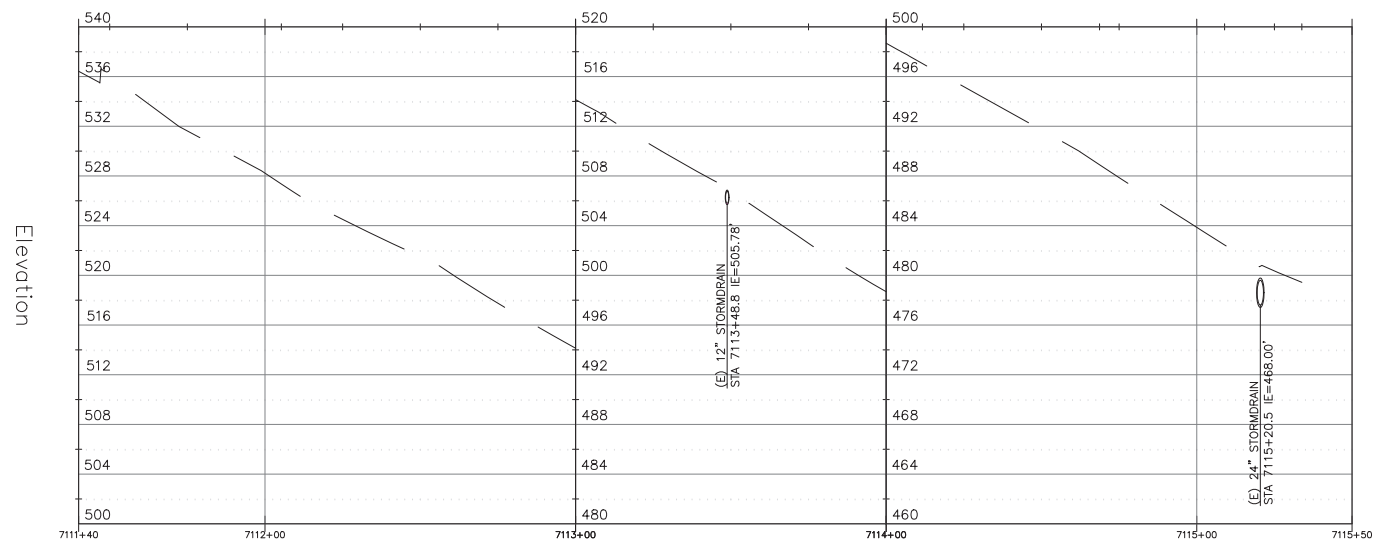
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| | | | | | | | PROJECT MANAGER R.C.E. NO. EXP. DATE | | | | | | |



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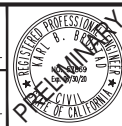
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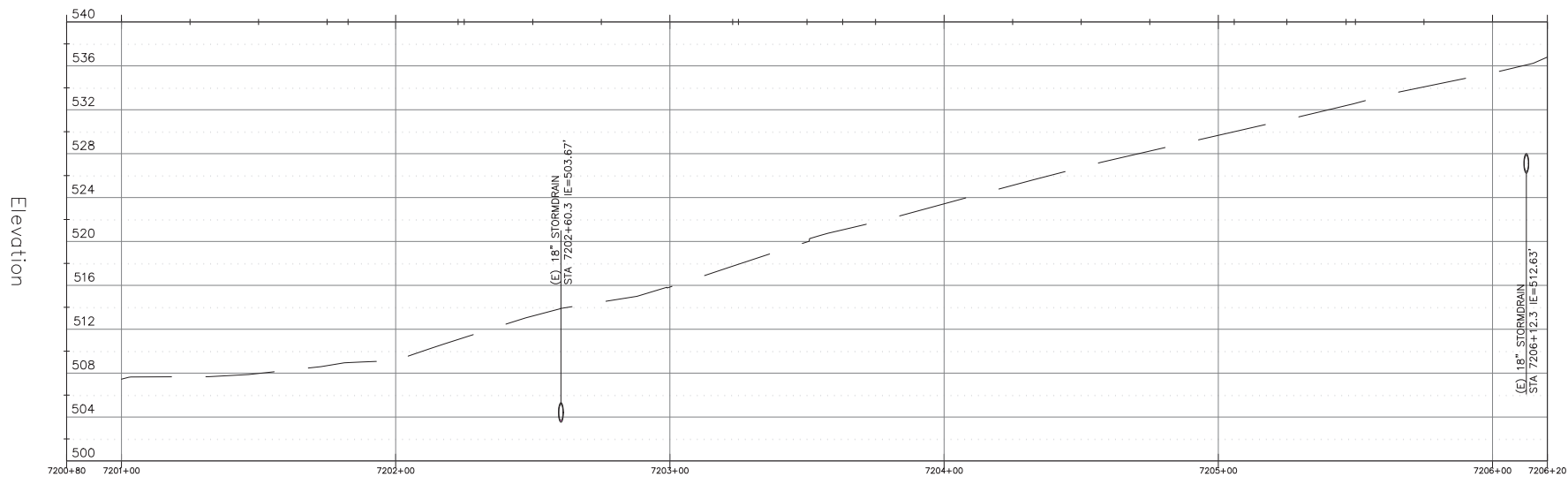
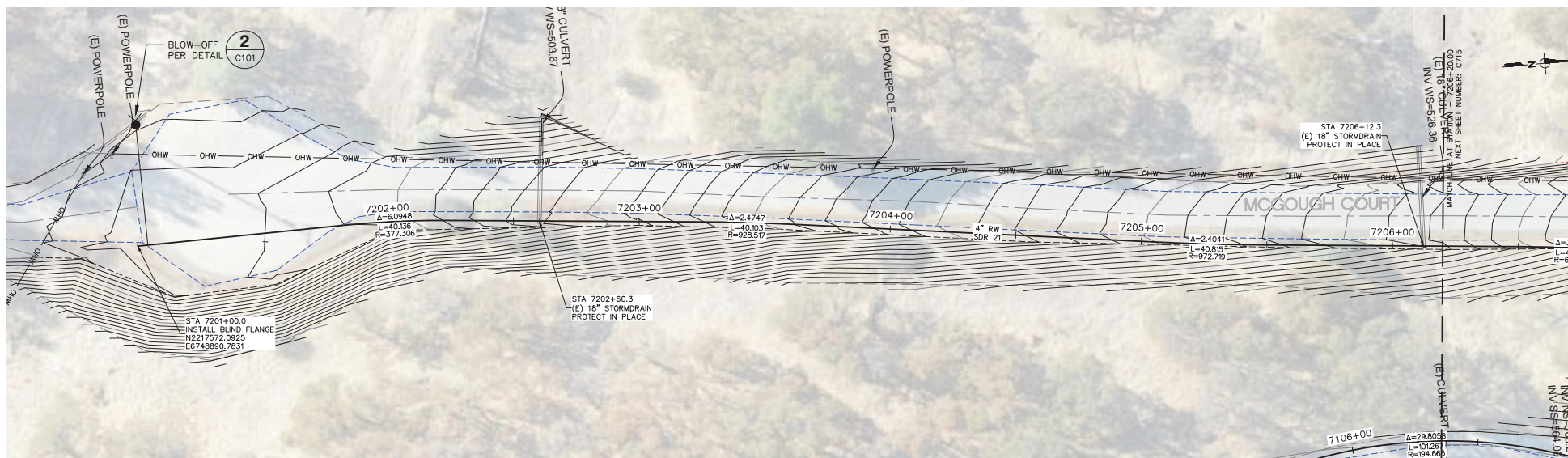


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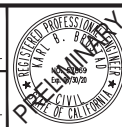
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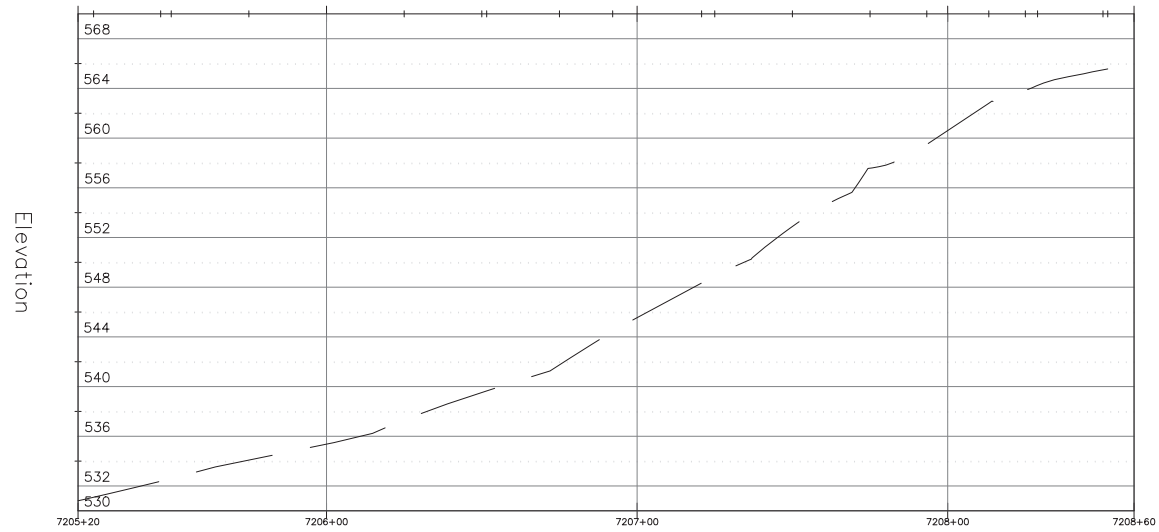
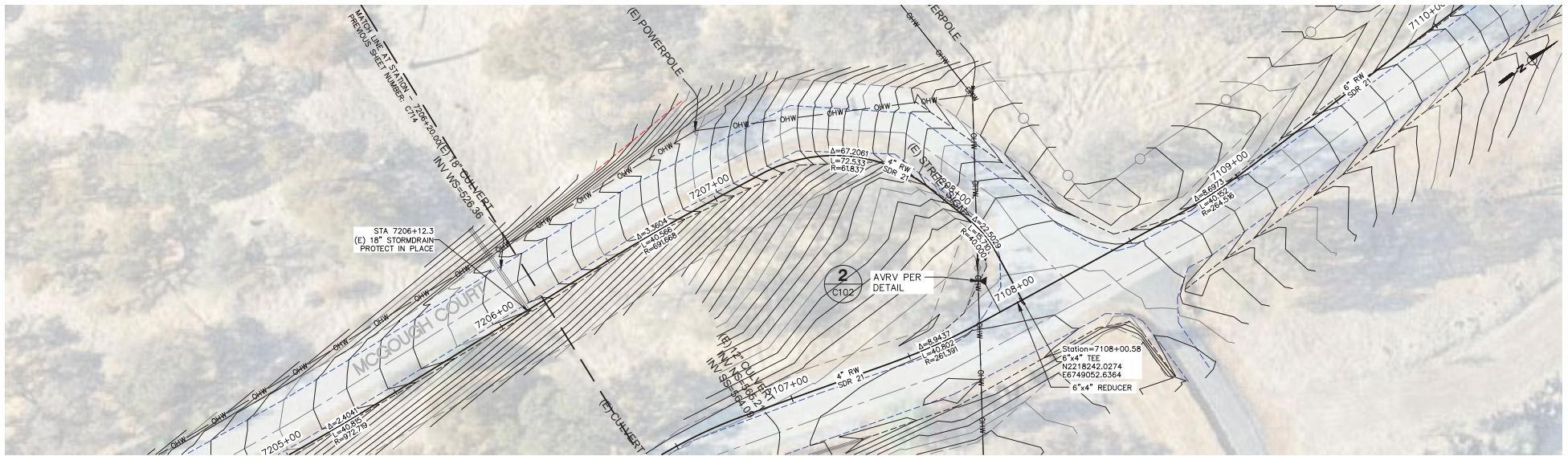
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| BROWNS VALLEY IRRIGATION DISTRICT SICARD PIPELINE PROJECT | SHEET C714 |
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TECHNICAL SPECIFICATIONS FOR CONSTRUCTION

Sicard Pipeline Project

60% Design

March 2020



Sicard Pipeline Project

60% Design

March 2020

BROWNS VALLEY IRRIGATION DISTRICT
SICARD PIPELINE PROJECT

TABLE OF CONTENTS

| Section | Title |
|---|----------------------------|
| TECHNICAL SPECIFICATIONS | |
| Division 31 – Earthwork | |
| 31 23 16.13 | Trenching |
| 31 23 16.16 | Rock Removal |
| Division 33 – Utilities | |
| 33 14 13 | Piping |
| 33 14 17 | Service Laterals |
| Division 40 – Process Interconnections | |
| 40 05 61 | Gate Valves |
| 40 05 64 | Butterfly Valves |
| 40 05 67.36 | Pressure Regulating Valves |
| 40 05 78.13 | Air-Vacuum Relief Valves |

SECTION 31 23 16.13 - TRENCHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Excavating trenches for utilities.
2. Compacted fill from top of utility bedding.
3. Backfilling and compaction.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Trenching and Trench Backfill Materials:

1. Price and Payment to be included with the pipe installation.

1.3 REFERENCES

A. ASTM International:

1. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort.

1.4 DEFINITIONS

- ##### A. Utility: Any buried pipe, duct, conduit, or cable.

1.5 SUBMITTALS

- ##### A. Section 013300 - Submittal Procedures: Requirements for submittals.

- ##### B. Excavation Protection Plan: Describe sheeting, shoring, and bracing materials and installation required to protect excavations and adjacent structures and property; include structural calculations prepared, stamped and signed by a California Professional Engineer to support plan.

1.6 QUALITY ASSURANCE

- ##### A. Labor Code 6705 – Protection of Workers in Excavations:

As required by Section 6705 of the California Labor Code and in addition thereto, whenever work under the Contract involves the excavation of any trench or trenches 5 feet or more in

depth, the Contractor shall submit for acceptance by the Owner or by a registered civil or structural engineer, employed by the Owner, to whom authority to accept has been delegated, in advance of excavation, a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for work protection from the hazard of caving ground during the excavation, of such trench or trenches. If such plan varies from the shoring system standards established by the Construction Safety Orders of the Division of Industrial Safety, the plan shall be prepared by a registered civil or structural engineer employed by the Contractor, and all costs therefore shall be included in the price named in the Contract for completion of the Work as set forth in the Contract Documents. Nothing in this Section shall be deemed to allow the use of a shoring, sloping, or other protective system less effective than that required by the Construction Safety Orders. Nothing in this Section shall be construed to impose tort liability on the Owner, or any of their officers, agents, representatives, or employees.

- B. Perform Work in accordance with Yuba County Department of Public Works requirements.

1.7 QUALIFICATIONS

- A. Prepare excavation protection plan under direct supervision of Professional Engineer experienced in design of this Work and licensed in the State of California.

1.8 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

PART 2 - PRODUCTS

2.1 TRENCH FILL MATERIALS

- A. Pipe Bedding Fill (6" below pipe):
 - 1. Inside Yuba County Right-of-Way:
 - a. Sand: Clean sand with 100 percent passing No. 4 sieve and less than 5 percent passing No. 200 sieve and effective size 0.10-0.30 mm. Sand equivalent of 30.
 - b. Compact bedding material to 95% relative compaction in roadways.
 - c. Bedding material shall be clean material, free of organic matter and clay.
 - 2. Outside of Yuba County Right-of-Way:
 - a. Crushed rock, gravel or sand free of particles larger than ½" compacted to 90%.
- B. Pipe Embedment Fill (bottom of pipe to 12" above pipe):
 - 1. Inside Yuba County Right-of-Way:
 - a. ¾" crushed rock.
 - b. Compact bedding material to 95% relative compaction in roadways.
 - c. Bedding material shall be clean material, free of organic matter and clay.
 - 2. Outside of Yuba County Right-of-Way:
 - a. Crushed rock, gravel or sand free of particles larger than 1½" compacted to 90%.
- C. Trench Backfill:
 - 1. Inside Yuba County Right-of-Way:

- a. ¾" Class 2 aggregate base.
 - b. Compact bedding material to 95% relative compaction in roadways.
 - c. Bedding material shall be clean material, free of organic matter and clay.
- 2. Outside of Yuba County Right-of-Way:
 - a. Excavated material without organic material or rocks larger than 8" compacted to 90%.

PART 3 - EXECUTION

3.1 LINES AND GRADES

- A. Lay pipes to lines and grades indicated on Drawings.
 - 1. **Owner** reserves right to make changes in lines, grades, and depths of utilities when changes are required for Project conditions.
- B. Use laser-beam instrument with qualified operator to establish lines and grades.

3.2 PREPARATION

- A. Call Local Utility Line Information service at 811 not less than three working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum locations.
- C. Protect plant life, lawns, and other features remaining as portion of final landscaping.
- D. Protect benchmarks, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- E. Maintain and protect above and below grade utilities indicated to remain.
- F. Establish temporary traffic control when trenching is performed in public right-of-way. Relocate controls as required during progress of Work.

3.3 TRENCHING

- A. Excavate subsoil required for raw water piping.
- B. Do not advance open trench more than **200 feet** ahead of installed pipe.
- C. Cut trenches sufficiently wide to enable installation and allow inspection. Remove water or materials that interfere with Work.
- D. Excavate bottom of trenches maximum **2 feet** wider than outside diameter of pipe.

- E. Excavate trenches to depth indicated on Drawings. Provide uniform and continuous bearing and support for bedding material and pipe.
- F. When Project conditions permit, slope side walls of excavation starting **2 feet** above top of pipe. When side walls cannot be sloped, provide sheeting and shoring to protect excavation as specified in this section.
- G. When subsurface materials at bottom of trench are loose or soft, notify Owner and request instructions.
- H. Stockpile subsoil in area designated on site and protect from erosion.

3.4 SHEETING AND SHORING

- A. Sheet, shore, and brace excavations to prevent danger to persons, structures and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil.
- B. Support trenches more than **5 feet** deep excavated through unstable, loose, or soft material. Provide sheeting, shoring, bracing, or other protection to maintain stability of excavation.
- C. Design sheeting and shoring to be removed at completion of excavation work.
- D. Repair damage caused by failure of the sheeting, shoring, or bracing and for settlement of filled excavations or adjacent soil.

3.5 BACKFILLING

- A. Backfill trenches to contours and elevations with unfrozen fill materials.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.
- C. Place material in continuous layers as follows:
 - 1. Trench Fill: Maximum **12 inches** compacted depth.
- D. Employ placement method that does not disturb or damage utilities in trench.
- E. Maintain optimum moisture content of fill materials to attain required compaction density.
- F. Do not leave more than **50 feet** of trench open at end of working day.
- G. Protect open trench to prevent danger to the public.

3.6 FIELD QUALITY CONTROL

- A. Section 017000 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

- B. Owner will pay for the first set of laboratory and field tests to determine compliance of in-place and backfill materials and compaction with the Specifications. If materials fail to meet specifications or compaction requirements, Contractor will pay for re-tests required until materials are in compliance with specifications or compaction requirements. Contractor to coordinate field sampling schedule with Resident Inspector to provide the specified number of locations for tests.
- C. Select test standards referenced in the following paragraph appropriate for fill materials and Project requirements.
- D. Perform laboratory material tests in accordance with ASTM D1557.
- E. Perform in place compaction tests in accordance with the following:
 - 1. Density Tests: ASTM D1556.
 - 2. Moisture Tests: ASTM D3017.
- F. When tests indicate Work does not meet specified requirements, remove Work, replace, compact, and retest.
- G. Frequency of Tests:
 - 1. Minimum of one (1) in-place compaction test for every two (2)-foot depth of backfill per 100-foot interval will be required.
 - 2. Contractor shall, when requested, excavate to the required depth so density tests may be taken and bring such excavations to required density after testing at no additional cost to the Owner.

3.7 PROTECTION OF FINISHED WORK

- A. Section 017000 - Execution and Closeout Requirements: Protecting finished work.
- B. Reshape and re-compact fills subjected to vehicular traffic during construction.

END OF SECTION 312316.13

SECTION 31 23 16.26 - ROCK REMOVAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Removing discovered rock during excavation.
2. Expansive tools to assist rock removal.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Trench Rock Removal:

1. Basis of Measurement: By **cubic yard** measured after removal.
2. Basis of Payment: Includes preparation of rock for removal, mechanical disintegration of rock, removal from position, loading and removing from site. For over excavation, payment will not be made for over excavated work nor for replacement materials.

1.4 DEFINITIONS

- A. Trench Rock: The Construction Manager or Resident Engineer will determine when rock excavation for unrippable rock is required per the definition below:

| Equipment Used ^(A) | Excavation Rate ^(B) | |
|--|---|-------------------|
| | Ordinary Excavation, including rippable rock | Unrippable rock |
| <u>General Excavation</u> – Caterpillar D8N or equivalent (Flywheel power \geq 285 HP, Vehicle Mass \geq 82,000 lbs) with single shank ripper | \geq 5 CY per hour | $<$ 5 CY per hour |
| <u>Trench Excavation</u> – Caterpillar 235C or equivalent (Flywheel power \geq 250 HP, Vehicle Mass \geq 92,000 lbs with a short to medium stick and a rock ripping bucket | \geq 5 CY per hour | $<$ 5 CY per hour |
| ^(A) Equipment shall be in good operating condition and operated by experienced personnel | | |
| ^(B) As witnessed by Construction Manager or Resident Engineer | | |

1.5 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Submittal procedures.

PART 2 - PRODUCTS (Not Used)

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify site conditions and note subsurface irregularities affecting Work of this section.

3.2 PREPARATION

- A. Identify required lines, levels, contours, and datum.

3.3 ROCK REMOVAL BY MECHANICAL METHOD

- A. Excavate and remove rock by mechanical method.
 - 1. Drill holes and use expansive tools to fracture rock.
- B. Cut away rock at bottom of excavation to form level bearing.
- C. In utility trenches, excavate to **6 inches** below invert elevation of pipe and **24 inches** wider than pipe diameter.
- D. Correct unauthorized rock removal as directed by Engineer.

END OF SECTION 31 23 16.26

SECTION 33 14 13 - PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pipe and fittings for raw water pipeline.
2. Service Saddles.
3. Tapping Sleeves.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Section 012000 - Price and Payment Procedures: Contract Sum/Price modification procedures.

B. Pipe and Fittings:

1. Basis of Measurement: By linear **foot**.
2. Basis of Payment: Includes excavation and backfill; pipe, fittings, and appurtenances; bedding; connection to raw water service piping.

C. Valves:

1. Basis of Measurement: By each.
2. Basis of Payment: Includes excavation, bedding, backfill, valve, fittings, and accessories.

D. Blow Offs:

1. Basis of Measurement: By each.
2. Basis of Payment: Includes excavation, bedding, backfill, valve, fittings, and accessories.

E. Air Vacuum Relief Valves:

1. Basis of Measurement: By each.
2. Basis of Payment: Includes excavation, bedding, backfill, valve, fittings, and accessories.

F. Taps:

1. Basis of Measurement: By each.
2. Basis of Payment: Includes tapping sleeve, tapping valves, and accessories.

1.3 REFERENCE STANDARDS

A. ASTM International:

1. ASTM D3035 - Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter.

2. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
- B. American Water Works Association:
 1. AWWA C200 - Steel Water Pipe, 6 In. (150 mm) and Larger.
 2. AWWA C207 - Steel Pipe Flanges for Waterworks Service, Sizes 4 In. Through 144 In. (100 mm Through 3,600 mm).

1.4 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit manufacturer information regarding pipe materials, pipe fittings, and valves.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

1.5 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of piping mains, valves, connections, and invert elevations.
- C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.6 QUALITY ASSURANCE

- A. Valves: Mark valve body with manufacturer's name and pressure rating.

1.7 EXISTING CONDITIONS

- A. Field Measurements:
 1. Verify field measurements prior to fabrication.
 2. Indicate field measurements on Shop Drawings.

1.8 WARRANTY

- A. Section 017000 - Execution and Closeout Requirements: Requirements for warranties.

PART 2 - PRODUCTS

2.1 RAW WATER PIPING

A. HDPE Pipe:

1. Comply with **ASTM D3035, SDR per drawings**
2. Color: Black.
3. Fittings:
 - a. Type: Fabricated.
4. Joints: Butt fusion.

B. PVC:

1. Comply with ASTM D1785. Pipe 2 IN and less to be solvent welded. Pipe larger than 2 IN may be either flanged or solvent welded unless shown otherwise on Drawings.
2. Schedule: 80.
3. Fittings: Provide ASTM D2467 PVC socket type fittings having the same pressure and temperature rating as the pipe.
4. Flanges/Unions: Furnish flanges and unions at locations shown on Drawings. Provide either flanges or unions at valves, penetrations through structures and equipment connections. For pipe larger than 2 IN, provide 150 LB socket type PVC flange. For pipe 2 IN and less, provide socket type PVC union with O-ring material to match pipe service.

C. Ductile-Iron Pipe:

1. Comply with AWWA C151.
2. Pipe Outside Coating:
 - a. Buried: bituminous coating, comply with AWWA C151.
 - b. Exposed: paint.
3. Pipe Mortar Lining:
 - a. Comply with AWWA C104.
 - b. Thickness: Double.
4. PE Encasement for buried pipe: Comply with AWWA C105.
5. Pipe Class:
 - a. Comply with AWWA C151.
 - b. Class 350.
6. Fittings:
 - a. Material: **Ductile** iron; comply with AWWA C110.
 - b. **Compact Fittings: Comply with AWWA C153.**
 - c. Coating and Lining:
 - 1) Bituminous Coating: Comply with AWWA C110 (buried only).

2) Cement-Mortar Lining: Comply with AWWA C104; double thickness.

7. Joints:

- a. Mechanical and Push-on Joints: Comply with AWWA C111.
- b. Flanged Joints: Comply with **AWWA C115**.

8. Flanged coupling adapters:

- a. 12-inches and under: Smith Blair "Type 912," Dresser "Style 127", or EBBA Iron Megaflange Series 2100, or equal.
- b. 14-inches and over: Smith Blair "Type 913," Dresser "Style 128", or equal.

2.2 TAPPING SLEEVES AND VALVES

A. Tapping Sleeves:

1. Manufacturers:

- a. JCM Industries.
- b. Or approved equal.

2. Description:

- a. Material: Fabricated carbon steel.
- b. Type: Full compression.
- c. Outlet: Threaded or flanged.

2.3 FINISHES

- A. Steel: Hot-dip galvanized after fabrication, according to ASTM A123/A123M.

3.1 EXAMINATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify that existing utility water main size, location, and invert are as indicated on Drawings.

3.2 PREPARATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Preconstruction Site Photos:
 - 1. As specified in Section 017000 - Execution and Closeout Requirements.

2. Take photographs along centerline of proposed pipe trench; minimum one photograph for each **100 feet** of pipe trench.
3. Show mailboxes, curbing, lawns, driveways, signs, culverts, and other existing Site features.
4. Include Project description, date taken, and sequential number on back of each photograph.

C. Pipe Cutting:

1. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, and remove burrs.
2. Use only equipment specifically designed for pipe cutting; use of chisels or hand saws is not permitted.

D. Remove scale and dirt on inside and outside before assembly.

3.3 INSTALLATION

A. Bedding:

1. Excavation:
 - a. As specified in Section **312316.13 - Trenching**.
 - b. Hand trim for accurate placement of pipe to elevations as indicated on Drawings.
2. Dewater excavations to maintain dry conditions and to preserve final grades at bottom of excavation.

B. Piping:

1. Handle and assemble pipe according to manufacturer instructions.
2. Prevent foreign material from entering pipe during placement.
3. Allow for expansion and contraction without stressing pipe or joints.
4. Close pipe openings with watertight plugs during Work stoppages.

C. Tapping Sleeves and Valves: As indicated on Shop Drawings and according to manufacturer instructions.

D. Service Connections: As specified in Section 33 14 17 - Service Laterals.

3.4 FIELD QUALITY CONTROL

A. Testing:

1. Pressure test piping system according to the following:
 - a. Test Pressure: Equal to pipe pressure rating measured at lowest point of the pipe segment being tested.
 - b. Conduct hydrostatic test for a minimum of **two** hours.
 - c. Slowly fill section to be tested with water; expel air from piping at high points.
 - d. Install corporation cocks at high points.
 - e. Close air vents and corporation cocks after air is expelled.
 - f. Raise pressure to specified test pressure.

- g. Observe joints, fittings, and valves under test.
- h. Remove and renew cracked pipes, joints, fittings, and valves showing visible leakage, and retest.
- i. Correct visible deficiencies and continue testing at same test pressure for additional two hours to determine leakage rate.
- j. Maintain pressure within 5 psi of test pressure to pass leakage test.

END OF SECTION 331413

SECTION 33 14 17 – SERVICE LATERALS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pipe and fittings for 2-inch raw water service connections.
2. Corporation stop assemblies.
3. Service boxes.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Section 012000 - Price and Payment Procedures: Contract Sum/Price modification procedures.

B. Service Connections:

1. Basis of Measurement: By unit.
2. Basis of Payment: Includes corporation stop, fittings, valves, service box and accessories.

1.3 REFERENCE STANDARDS

A. ASTM International:

1. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.

1.4 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit manufacturer information regarding pipe materials, pipe fittings, corporation stop assemblies, and accessories.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Manufacturer Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures.

E. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

1.5 CLOSEOUT SUBMITTALS

A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.

- B. Project Record Documents: Record actual locations of piping mains, curb stops, service connection and service box.

PART 2 - PRODUCTS

2.1 WATER SERVICE PIPING AND FITTINGS

- A. PVC Pipe:

- 1. See Section 31 14 13.

2.2 CORPORATION STOP ASSEMBLIES

- A. Manufacturers:

- 1. Mueller
 - 2. Ford
 - 3. Jones Company
 - 4. Or approved equal.

- B. Corporation Stops:

- 1. Comply with ASTM B62.
 - 2. Body: Brass or red brass alloy.
 - 3. Inlet End: Threaded for tapping according to AWWA C800.
 - 4. Outlet End: Threaded for connection to PVC pipe.

- C. Tapping Sleeves:

- 1. See Section 31 14 13.

2.3 SERVICE BOXES

- A. See Standard Detail Drawing.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.

3.2 PREPARATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Remove scale and dirt from inside and outside of piping before assembly.

3.3 INSTALLATION

- A. Corporation Stop Assemblies:
 - 1. Location:
 - a. Screw corporation stops directly into tapped and threaded iron main at 9- and 3-o'clock positions along main's circumference.
 - b. Locate and stagger corporation stops at least 12 inches apart longitudinally.
 - 2. Do not backfill and cover service connections until installation has been approved by Owner.
- B. Bedding, Pipe Embedment and Trench Backfill:
 - 1. See Section 312316.13 - Trenching

END OF SECTION 331417

SECTION 40 05 61 - GATE VALVES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Resilient-seated gate valves.
2. General duty gate valves for raw water services.

1.2 DEFINITIONS

- A. **OUTSIDE SCREW AND YOKE (OS&Y) VALVE:** A valve in which the operating screw is driven by a threaded nut that is built into the handle.

1.3 REFERENCE STANDARDS

A. American Water Works Association:

1. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service.

B. ASME International:

1. ASME B1.20.1 - Pipe Threads, General Purpose, Inch.

C. ASTM International:

1. ASTM A126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
2. ASTM B62 - Standard Specification for Composition Bronze or Ounce Metal Castings.
3. ASTM B584 - Standard Specification for Copper Alloy Sand Castings for General Applications.
4. ASTM D1784 - Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.

D. Manufacturers Standardization Society of the Valve and Fittings Industry:

1. MSS SP-80 - Bronze Gate, Globe, Angle and Check Valves.

PART 2 - PRODUCTS

2.1 RESILIENT-SEATED GATE VALVES

A. Manufacturers:

1. Clow Valve Company
 2. J & S Valve
 3. Or approved equal.
- B. Description:
1. Comply with AWWA C509.
 2. **Minimum** Working Pressure: **200 psig** .
- C. Operation:
1. Stem: **Nonrising**.
 2. Operator:
 - a. Exposed: Handwheel.
 - b. Buried: 2-inch nut.
- D. Materials:
1. Wedge: Resilient ASTM A126, cast iron, fully encapsulated with molded rubber.
 2. Body and Disc: ASTM A126, cast iron, rubber coated.
 3. Stem, Stem Nuts, Glands, and Bushings: ASTM B584, bronze.
 4. Connecting Hardware: Type 316 stainless steel.

2.2 GENERAL-DUTY GATE VALVES for RAW WATER SERVICES

- A. Manufacturers:
1. Nibco
 2. Or approved equal.
- B. **2 Inches** and Smaller:
1. Comply with MSS SP-80, Class 200.
 2. Body and Trim: Bronze, ASTM B62.
 3. Bonnet: Threaded.
 4. Stem: Non-rising.
 5. Operation: Handwheel.
 6. Inside screw with backseating stem.
 7. Wedge Disc:
 - a. Type: Solid.
 - b. Bronze, ASTM B62.
 8. End Connections: threaded.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General:
1. Install valves and accessories in accordance with manufacturer's recommendations.

2. Provide a union or flanged connection within 2 feet of each threaded end valve, unless the valve can otherwise be easily removed from piping.
3. Set valve and valve boxes plumb.
4. Install valve box directly over valve it serves with top of box flush with finish grade.
5. Provide concrete ring per valve box detail in contract Drawings.
6. Fill around box with earth and thoroughly tamp on all sides.

END OF SECTION 400561

SECTION 40 05 64 - BUTTERFLY VALVES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Rubber-seated butterfly valves.

1.2 REFERENCE STANDARDS

A. American Water Works Association:

1. AWWA C504 - Rubber-Seated Butterfly Valves.

PART 2 - PRODUCTS

2.1 RUBBER-SEATED BUTTERFLY VALVES

A. Manufacturers:

1. Dezurik.
2. Mueller.
3. Pratt.
4. Or approved equal.

B. Description:

1. Comply with AWWA C504, Class 150.
2. Minimum Working Pressure: 200 **psig**.
3. Style: Flanged.
4. Shaft: Self-lubricating.
5. Seats:
 - a. Mounting: On disc.
6. Packing: Replaceable without dismantling valve.
7. End Connections: Comply with ASME B16.1.

C. Operator:

1. Ten-position lever handle.

D. Materials:

1. Body: Cast iron, ASTM A126.
2. Stem: Carbon steel.
3. Disc: Cast iron, ASTM A126.
4. Seats:
 - a. Type: Resilient and replaceable.
 - b. Material: EPDM rubber.
5. Seating Surfaces: Type 316 stainless steel.

PART 3 - EXECUTION

3.1 General:

- A. Install valves and accessories in accordance with the manufacturer's recommendation.
- B. Install valves in closed position.
- C. Install valves with operator above or at side of valve.

3.2 3.2 ADJUSTMENTS

- A. Check and Adjust Valves and Accessories for Smooth Operation in Accordance with Manufacturer's Instructions.

END OF SECTION 400564

SECTION 40 05 67.36 - PRESSURE-REGULATING VALVES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pressure-reducing valves.
 - 2. Pressure-sustaining valves.

1.2 REFERENCE STANDARDS

- A. ASME International:
 - 1. ASME B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24 Metric/Inch Standard.
 - 2. ASME B16.42 - Ductile Iron Pipe Flanges and Flanged Fittings, Classes 150 and 300.
- B. ASTM International:
 - 1. ASTM A126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
 - 2. ASTM A536 - Standard Specification for Ductile Iron Castings.
- C. American Water Works Association:
 - 1. AWWA C550 - Protective Interior Coatings for Valves and Hydrants.

1.3 COORDINATION

- A. Coordinate with installation of process piping.

1.4 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit manufacturer catalog information.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Manufacturer Instructions: Submit special procedures and setting dimensions.

1.5 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.

- B. Project Record Documents: Record actual locations of pressure-regulating valves.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
- B. Store materials according to manufacturer instructions.
- C. Protection:
 - 1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
 - 2. Furnish temporary end caps and closures on piping and fittings and maintain in place until installation.
 - 3. Provide additional protection according to manufacturer instructions.

PART 2 - PRODUCTS

2.1 PRESSURE-REDUCING VALVES

- A. Manufacturers:
 - 1. Cla-Val
 - 2. Or approved equal.
- B. Description:
 - 1. Normally closed valves to maintain constant downstream pressure regardless of changing flow rate or varying inlet pressure, and to prevent backflow.
 - 2. Type: Pilot operated.
 - 3. Furnish V-ports for pressure control at low flows.
 - 4. Indicator Rod: Attached to piston for visual position indication.
- C. Pilot Valves:
 - 1. Type: Globe.
 - 2. Body: Ductile iron.
- D. End Connections:
 - 1. Flanged, ASME B16.42, Class 150.
- E. Performance and Design Criteria:
 - 1. See table below:

| Phase | Size | Quantity | Max Flow | Min Flow | Upstream Pressure | Downstream Pressure Setpoint |
|-------|------|----------|-----------|----------|-------------------|------------------------------|
| 2 | 16" | 1 | 7,000 gpm | 700 gpm | 50 psi | 10 psi |
| 3 | 16" | 1 | 7,000 gpm | 700 gpm | 100 psi | 10 psi |
| 5 | 8" | 2 | 2,500 gpm | 250 gpm | 100 psi | 10 psi |

F. Materials:

1. Body: Ductile iron, ASTM A536.
2. Disc and Diaphragm:
 - a. Buna-N rubber.
 - b. Disc Retainer and Diaphragm Washer: Cast iron.
3. Trim: Stainless steel.
4. Stem, Nut, and Spring: Stainless steel.
5. Packing: PTFE.
6. Control Piping: Bronze with Type 303 stainless-steel wetted trim.

G. Interior Coating: Coat cast-iron and ductile-iron surfaces with epoxy coating according to AWWA C550.

H. Accessories:

1. Externally mounted strainer with cocks.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.

3.2 PREPARATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Thoroughly clean end connections before installation.
- C. Close pipe and equipment openings with caps or plugs during installation.
- D. Cleaning: Clean surfaces to remove foreign substances.

3.3 INSTALLATION

- A. According to manufacturer instructions and local code requirements.
- B. Install with nameplate and test cock accessible.

3.4 FIELD QUALITY CONTROL

- A. Section 017000 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.
- B. After installation, inspect for interferences and proper supports.
- C. Testing:
 - 1. functional test on each valve to verify specified performance.
- D. Repair damaged coatings with material equal to original coating.

END OF SECTION 400567.36

SECTION 40 05 78.13 - AIR/VACUUM VALVES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Air release/vacuum breaker valves for raw water.

1.2 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit manufacturer catalog information.
- C. Shop Drawings: Indicate materials, dimensions, weights, and end connections on assembly drawings.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Manufacturer Instructions: Submit special procedures and setting dimensions.

1.3 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of air release/vacuum breaker valves.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
- B. Store materials according to manufacturer instructions.
- C. Protection:
 - 1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
 - 2. Furnish temporary end caps and closures on piping and fittings and maintain in place until installation.
 - 3. Provide additional protection according to manufacturer instructions.

PART 2 - PRODUCTS

2.1 AIR/VACUUM VALVES FOR WATER SERVICE

A. Manufacturers:

1. Fresno
2. Or approved equal.

D. Description:

1. Type: Fully automatic, float operated.
2. Comply with AWWA C512.
3. Size: As indicated on Drawings.
4. Suitable for raw water service.
5. Pressure Rating: 150 psig.

E. Materials:

1. Body and Cover: Cast aluminum.
2. O-ring: Buna-N.
3. Ball: Polypropylene.
4. Ball retainer: Cast aluminum.
5. Retaining screw: Stainless steel.

F. End Connections:

1. Size 2 and 3 Inches: Threaded, NPT.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Thoroughly clean end connections before installation.
- C. Close pipe and equipment openings with caps or plugs during installation.
- D. Surface Preparation: Clean surfaces to remove foreign substances.

3.2 INSTALLATION

- A. According to manufacturer instructions.

- B. Provide access for operation, removal, and maintenance, and to avoid discharge to occupied areas or other equipment.

END OF SECTION 400578.13