BID/ RFP ADDENDUM
DATE: 01/29/2026
BID/RFP No: 2026-01
BID/ RFP TITLE: MC Farm Irrigation Main Campus Project

MERCED COMMUNITY COLLEGE DISTRICT
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ADDENDUM 1

This addendum contains clarification and additional information, which modifies the conditions of the above referenced BID/RFP as follows:

1. **Question**: System Flushing: Are we responsible for installing the tubing and performing the final flush of the lines, or will that be handled by the college?

   Answer: Yes, contractor is responsible.

2. **Question**: Air Vents: The plans specify two air vents, but only one is visible on the map. Where should the second vent be located?

   Answer: Please see attached revised map.

3. **Question**: Toro Hydraulic Valves: Should these be installed at the roadside on the north side of the permanent crops prior to entering the field for each respective crop?

   Answer: Yes

4. **Question**: Olive Block Pipeline: During the walkthrough, it was mentioned that we should install the control valve and cap it. However, the design shows a full pipeline installation. Please confirm if the area will be strawed and ready to trench or if we should stick to the walkthrough instructions.

   Answer: Trench and install

5. **Question**: Backflush Drainage: Where is the specific installation point for the backflush water returning from the filter station to the reservoir?

   Answer: 10’ north of pump/filter station

6. **Question**: Backflush Control System: Do the sand media filters have an Alextronix system or the Toro 12V DC control panel in the Toro quote?.

All other bidding contract, construction drawing documents and stipulations remain unchanged, in full effect and by reference become a part of this addendum.

Answer: The Toro part number is YFCS4804S12VDC-AT, and DESC is SMF48"X4(S)CS 12VDCCONT ATCONT BWKIT

7. **Question**: Pump Specifications: What is the pump column length and are there any additional technical details available?

   Answer: General Electric Pump, Model: 5KS324DAJ6008D2 It is 12’ in length.

8. **Question**: Sprinkler Assemblies: Are the sprinklers pre-assembled and on a lead? If so, what is the length of the lead?

   Answer: Yes, on a 36” lead

9. **Question**: Pipeline Positioning: The 15" inlet and 10" dump line are currently very close to each other. Would it be permissible to separate them further (e.g., the 15" on the southeast side and the 10" on the southwest side)? Yes, that would be permissible

   Answer: Yes, that would be permissible.

10. **Question**: K-Curls (Vineyard): These are missing from the parts list. Will these be attached to the trellis with a line above ground per row? If so, should we include the cost of the K-curls to attach the drip line to the wire, or will they be provided?

    Answer: No, drip line will be on ground.

11. **Question**: Flow Meter Hardware: There is no bolt list provided for the district flow meter. Should we plan to reuse existing bolts, or should new hardware be added to our bid?

    Answer: Add new hardware to bid.

12. **Question**: North Future Row Crop: The design shows stub-outs being installed for this area, but they are not on the parts list. Please confirm if these should be included or if theses are the 2" Stub out section.

    Answer: Last page of parts list was not on bid doc. Please see the revised list attached below.

13. **Question**: 2" Stub-outs: The design indicates two locations, but the parts list calls for four. Could you clarify the placement of the additional two units?

    Answer: There are four locations, all on the east side of the crop.

All other bidding contract, construction drawing documents and stipulations remain unchanged, in full effect and by reference become a part of this addendum.

14. **Question**: Pending Addendum: Is there an update regarding the addendum that was expected to be provided?

    Answer: Project specifications, updated Master Parts List labeling responsibilities for procurement, and the electrical layout diagram have been attached below.

15. **Question**: Bid Deadline: Since the additional information has not yet been uploaded for our review, can you confirm if the bid submission date is still February 2?

    Answer: The District has extended the **bid due** date to **Monday, February 9, 2026, at 2 pm**. Additionally, the **last day for questions** has also been extended to **February 3, 2026, at 12pm.**

SPECIAL NOTE:

It is the responsibility of each Bidder to acknowledge all addenda by signing below and submitting a copy of each addendum with their respective bid.

I HAVE READ AND UNDERSTAND THESE MODIFICATIONS TO THE ABOVE BID:

_____

All other bidding contract, construction drawing documents and stipulations remain unchanged, in full effect and by reference become a part of this addendum.

Merced College -- Farm Irrigation Improvements

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SECTION 03 11 01 – CONCRETE FORMING

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes formwork and related accessories for cast-in-place concrete pads supporting media filters, transformer, and associated equipment.

1.2 RELATED SECTIONS

A. Section 03 20 00 – Concrete Reinforcement.

B. Section 03 30 00 – Cast-in-Place Concrete.

C. Section 31 20 00 – Earthwork.

1.3 REFERENCES

A. ACI 117 – Tolerances for Concrete Construction.

B. ACI 301 – Specifications for Structural Concrete.

C. ACI 347 – Guide to Formwork for Concrete.

1.4 QUALITY ASSURANCE

A. Comply with applicable ACI standards and local building code requirements.

B. Formwork design shall support all construction loads without excessive deflection.

PART 2 – PRODUCTS

2.1 FORMWORK MATERIALS

A. Forms: Plywood, lumber, or metal forms suitable to produce specified dimensions and finish.

B. Form Ties: Snap-off or break-back type, leaving no metal closer than 1 inch from surfaces to be exposed.

C. Form Release Agent: Non-staining, compatible with coatings or finishes scheduled.

PART 3 – EXECUTION

3.1 FORM ERECTION

A. Erect forms true to line and grade to produce concrete pads to dimensions shown.

B. Provide sufficient bracing and shoring to maintain alignment during concrete placement.

C. Coordinate openings, blockouts, and embedded items with other trades.

3.2 J-BOLT AND EMBED COORDINATION

A. For transformer pad, set cast-in-place anchor bolts using templates furnished by equipment supplier or as shown.

B. Secure templates to prevent displacement during concrete placement.

C. Protect threads from damage and contamination.

3.3 TOLERANCES

A. Pad top elevation: ±1/4 inch.

B. Anchor bolt location: ±1/8 inch in plan; vertical plumb within 1/4 inch over projection.

3.4 FORM REMOVAL

A. Remove forms without damaging concrete surfaces after concrete has attained sufficient strength to support loads.

B. Patch minor surface defects as directed.

END OF SECTION 03 11 01

SECTION 03 15 14 – DRILLED ANCHORS

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes post-installed adhesive anchors for securing media filter equipment and associated supports to cast-in-place concrete pads.

1.2 RELATED SECTIONS

A. Section 03 30 00 – Cast-in-Place Concrete.

1.3 REFERENCES

A. ACI 318 – Building Code Requirements for Structural Concrete, Chapter on Anchoring to Concrete.

B. ICC-ES Evaluation Reports for adhesive anchor systems.

1.4 SUBMITTALS

A. Product data and current ICC-ES report for adhesive anchoring system.

B. Installation instructions including hole diameter, embedment, curing time, and load capacities.

PART 2 – PRODUCTS

2.1 ADHESIVE ANCHOR SYSTEMS

A. Manufacturers: Hilti, Simpson Strong-Tie, or approved equal.

B. Adhesive: Two-component epoxy or hybrid adhesive suitable for cracked concrete and sustained loads.

C. Anchor Rods: ASTM F1554 or ASTM A193 steel, hot-dip galvanized for exterior exposure.

PART 3 – EXECUTION

3.1 PREPARATION

A. Verify concrete has reached minimum 3000 psi compressive strength prior to drilling anchors.

B. Layout anchor locations per approved shop drawings for media filter skid.

3.2 DRILLING AND CLEANING

A. Drill holes to required diameter and embedment depth using rotary hammer or core drill.

B. Clean holes by brushing and blowing in accordance with adhesive manufacturer’s instructions.

3.3 INSTALLATION

A. Inject adhesive in hole using manufacturer’s approved dispenser and nozzle.

B. Insert anchor rod with slow twisting motion to ensure full adhesive contact.

C. Do not disturb anchors until full curing time has elapsed.

3.4 FIELD QUALITY CONTROL

A. Visually verify embedment depth and adhesive fill.

B. Perform proof loading of selected anchors if required by Owner.

END OF SECTION 03 15 14

SECTION 03 20 00 – CONCRETE REINFORCEMENT

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes reinforcing steel for cast-in-place concrete pads supporting media filters, transformer, and associated equipment.

1.2 REFERENCES

A. ACI 318 – Building Code Requirements for Structural Concrete.

B. ASTM A615 – Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.

PART 2 – PRODUCTS

2.1 REINFORCING STEEL

A. Reinforcing Bars: ASTM A615 Grade 60 deformed bars.

B. Ties and Accessories: Wire ties, chairs, and supports suitable for maintaining required cover and position.

PART 3 – EXECUTION

3.1 FABRICATION

A. Fabricate reinforcing in accordance with ACI 318 and approved placing drawings.

B. Bend bars cold; do not heat-bend reinforcement.

3.2 PLACING

A. Place reinforcement as shown with minimum concrete cover in accordance with ACI 318.

B. Typical pad reinforcing: minimum #4 bars at 12 inches on center each way, unless noted otherwise.

C. Support reinforcement on bar chairs or dobies to maintain position during concrete placement.

3.3 SPLICING

A. Lap splices in accordance with ACI 318; do not splice at points of maximum stress where avoidable.

3.4 CLEANLINESS

A. Reinforcement shall be free from mud, oil, or other nonmetallic coatings that may reduce bond.

END OF SECTION 03 20 00

SECTION 03 30 00 – CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes cast-in-place concrete for media filter pads, transformer pad, and associated foundations.

1.2 RELATED SECTIONS

A. Section 03 11 01 – Concrete Forming.

B. Section 03 20 00 – Concrete Reinforcement.

C. Section 03 15 14 – Drilled Anchors.

D. Section 31 20 00 – Earthwork.

1.3 REFERENCES

A. ACI 301 – Specifications for Structural Concrete.

B. ASTM C94 – Ready-Mixed Concrete.

C. ASTM C33 – Concrete Aggregates.

PART 2 – PRODUCTS

2.1 CONCRETE MATERIALS

A. Portland Cement: ASTM C150, Type II/V.

B. Aggregates: ASTM C33, normal weight.

C. Mixing Water: Clean, potable.

2.2 CONCRETE MIXES

A. Exterior Equipment Pads:

1. Minimum 28-day compressive strength f'c = 3000 psi.

2. Maximum water-cement ratio 0.50.

3. Slump at placement: 3 to 5 inches, unless otherwise approved.

2.3 SUBBASE

A. Class 2 Aggregate Base compacted to minimum 95 percent of maximum dry density per ASTM D1557, minimum 4 inches thick unless noted otherwise.

PART 3 – EXECUTION

3.1 SUBGRADE PREPARATION

A. Prepare subgrade and subbase in accordance with Section 31 20 00.

B. Proof-roll and recompact soft areas prior to concrete placement.

3.2 PLACING

A. Place concrete in a continuous operation for each pad.

B. Consolidate concrete by rodding or mechanical vibration to eliminate voids.

3.3 FINISHING

A. Strike off and float to achieve required elevations and slopes.

B. Provide light broom finish perpendicular to primary drainage direction.

C. Provide 3/8 inch chamfer at exposed pad edges where indicated.

3.4 CURING

A. Begin curing immediately after finishing using moist curing or curing compound in accordance with ACI 308.

B. Protect concrete from premature drying, freezing, and mechanical damage.

3.5 JOINTS

A. Provide control joints where shown; if not shown, provide joints to limit panel size to approximately 10 feet by 10 feet for large slabs.

3.6 TRANSFORMER PAD ANCHORS

A. Install cast-in-place anchor bolts at transformer pad using templates furnished by equipment supplier or as shown.

B. Verify bolt locations and projection prior to concrete placement.

3.7 ACCEPTANCE

A. Concrete will be considered defective if it fails to meet strength, finish, or dimensional requirements.

END OF SECTION 03 30 00

SECTION 23 17 10 – VARIABLE FREQUENCY DRIVE (IRRIGATION PUMP)

PART 1 – GENERAL

1.1 SUMMARY
A. Provide a complete Variable Frequency Drive (VFD) system for agricultural irrigation pump control.
B. Work includes equipment selection, supply, installation, testing, commissioning, and coordination with turbine pump and filter station controls.
C. VFD shall be backboard-mounted with other electrical enclosures at the irrigation control station.
D. Power architecture shall be: District-Supplied Switch (Upstream) → Contractor-Furnished 480V 100A Safety Switch → VFD → Pump Motor.
1.2 SYSTEM DESCRIPTION
A. Application: irrigation booster/turbine pump feeding sand media filters.
B. Pump Motor: 40 HP, 480V, 3-phase induction motor.
C. VFD Sizing: 50 HP minimum (upsized for torque and continuous duty).
D. Operating Mode: variable speed/pressure modulation for irrigation system head requirements.
E. The VFD shall receive power from a District-supplied upstream switch feeding a Contractor-furnished 480V 100A safety switch.
1.3 QUALITY ASSURANCE
A. Manufacturer shall have minimum 10 years experience manufacturing VFDs in this HP range.
B. Preferred Supplier: Mitchell Lewis & Staver or approved equal.
C. Installer Qualifications: licensed electrical contractor experienced with VFD irrigation pump installations.
1.4 SUBMITTALS
A. Product Data: VFD catalog cuts, derating curves, environmental ratings, and harmonic data.
B. Shop Drawings: enclosure layout, conduit entry, heat dissipation requirements.
C. Wiring Diagrams: control, power, I/O, and safety switch connections.
D. Test Reports: factory performance verification and field commissioning logs.
1.5 ENVIRONMENTAL / LOCATION REQUIREMENTS
A. Installation location: outdoor at irrigation filter station.
B. Enclosure Rating: NEMA 3R minimum for outdoor vertical surface mounting.
C. Ambient Conditions: 0°C to 40°C, up to 95% humidity non-condensing.
D. VFD shall be mounted on a backboard composed of GRC posts with Unistrut framing.
1.6 WARRANTY
A. Minimum three-year warranty from date of commissioning covering power electronics, control boards, cooling systems, and interface hardware.
1.7 COORDINATION
A. Coordinate with District for location and termination point of the District-supplied switch.
B. Contractor shall verify phase, voltage, and available fault current at the District-supplied switch prior to selecting equipment.
C. Contractor shall furnish and install a 480V, 100A safety switch upstream of the VFD.
D. Contractor shall provide line-side conductors from District switch to Contractor switch and load-side conductors from Contractor switch to VFD.

PART 2 – PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Mitchell Lewis & Staver supplied VFD packages (preferred).

2.2 PERFORMANCE REQUIREMENTS

A. Minimum HP rating: 50 HP for 40 HP motor.
B. Voltage: 480V, 3-phase, 60 Hz.
C. Overload Rating: 130% for 60 seconds.
D. Harmonic Mitigation: provide line reactor or DC choke.
E. Output Filtering: provide output reactor or dV/dt filter as required by lead length.

2.3 CONTROL FEATURES

A. HOA (Hand-Off-Auto) switch on enclosure.
B. Pressure transducer input (4-20mA) for PID pressure control.
C. Run feedback and fault alarm dry contacts.

2.4 ENCLOSURES

A. NEMA 3R minimum, suitable for outdoor mounting on Unistrut backboard.
B. Enclosure ventilation shall not require rear clearance.
C. Bottom or side conduit entry suitable for drip loops.

2.5 BACKBOARD STRUCTURE

A. Posts: 4" GRC (Galvanized Rigid Conduit) installed plumb.
B. Footings: 16" diameter × 24" deep, 3,000 psi concrete on compacted subgrade.
C. Framing: 1-5/8" Unistrut channel secured to GRC posts.
D. Hardware: Stainless or galvanized fasteners and clamps.
E. Grounding: Bond GRC posts to grounding electrode system per NEC 250.

2.6 CONDUITS AND WIRING METHODS

A. Power Conduit: RMC, IMC, or PVC-coated steel; Schedule 80 PVC acceptable underground.
B. Control Conduit: EMT, RNC, or LFNC for low-voltage signals.
C. Power conductors: XHHW-2 or THWN-2, 600V minimum.
D. Control conductors: Shielded twisted pair for 4-20mA signals.

2.7 UPSTREAM SWITCHING & DISCONNECTS

A. District-Supplied Switch: District shall furnish upstream switch.
B. Contractor-Furnished Safety Switch: 480V, 3-phase, 100A, NEMA 3R, HP-rated, lockable in OFF position.
C. Acceptable Types: Fusible (Class J) or non-fusible if upstream OCPD meets NEC 430.52.
D. SCCR: Switch and VFD assembly shall be rated for available fault current.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify compatibility of VFD with 40 HP turbine motor.
B. Verify voltage, phase, and available fault current at District-supplied switch.

3.2 INSTALLATION

A. Mount VFD on Unistrut backboard assembly.
B. Mount Contractor-furnished 480V 100A safety switch on backboard assembly.
C. Provide line-side conductors from District switch to safety switch and load-side conductors to VFD.
D. Maintain 36" front working clearance per NEC 110.26.
E. Provide drip loops and bottom/side conduit entry.
F. Ground all equipment per NEC Article 250.

3.3 FIELD QUALITY CONTROL

A. Startup by factory technician or qualified supplier.
B. Verify correct motor rotation and PID pressure tuning.
C. Test protection functions: overcurrent, undervoltage, phase loss, dry-run.

3.4 TRAINING

A. Provide operator training on HOA control, fault reset, and seasonal adjustments.

3.5 CLOSEOUT DOCUMENTS
A. Provide O&M; manuals, wiring diagrams, and parameter settings.
B. Provide backboard layout, conduit routing, and equipment elevations.
3.6 CONDUIT ROUTING & SEPARATION
A. Maintain 12" horizontal separation between power and control conduits in parallel.
B. Cross power and control at 90 degrees when necessary.
C. VFD output leads shall not share conduit with control conductors.
D. Control cable shields shall be grounded at one end only.

SECTION 26 05 00 – COMMON WORK RESULTS FOR ELECTRICAL

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes requirements common to Division 26 electrical work including, but not limited to:

1. Raceways, fittings, and supports.
2. Boxes, enclosures, and cabinets.
3. Conductors and wiring.
4. Distribution equipment, panels, and disconnects.
5. Transformers and related appurtenances.
6. Grounding and bonding.
7. Supporting hardware and mounting materials.
8. Requirements for submittals, handling, quality, and execution.

B. Coordination:

1. Coordinate work with other trades to eliminate conflicts.
2. Field verify locations and existing conditions.

1.3 SYSTEM DESCRIPTION

A. Electrical work shall be installed to comply with applicable codes, standards, and referenced documents.

B. Maintain required clearances per CEC Article 110 and other applicable articles.

C. Report discrepancies or conflicts to the Architect/Engineer for resolution prior to installation.

1.4 SUBMITTALS

A. Submit product data and shop drawings for components and materials used under Division 26 as required by Division 01.

B. Submittals shall demonstrate compliance with applicable codes and these Specifications.

C. Materials procured without required review shall be at the Contractor’s risk.

1.5 QUALITY ASSURANCE

A. Install materials in accordance with manufacturer’s published instructions and recognized industry standards.

B. Provide qualified journeyman electricians in accordance with State requirements.

C. All materials shall be listed, labeled, or certified by a nationally recognized testing laboratory.

D. Materials and equipment shall be new and current standard production models.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original unbroken packaging.

B. Store to prevent damage, corrosion, or contamination.

C. Damaged materials shall not be installed and shall be replaced at no cost to the Owner.

PART 2 – PRODUCTS

2.1 GENERAL

A. Materials and equipment shall be new, free from defects, and suitable for the intended electrical application.

B. Materials shall conform to applicable NEMA, ANSI, NFPA, UL, and CEC requirements.

C. Substitutions shall comply with Division 01 and require written approval.

2.2 SUPPORTING DEVICES

A. Provide hangers, channel supports, concrete inserts, pipe straps, and fasteners as required for proper support of electrical systems.

B. Supports shall comply with seismic requirements applicable to the project’s structural design category when required.

C. Supporting devices shall provide a minimum safety factor of four times the load supported.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Perform work in a neat, workmanlike, and orderly manner.

B. Install materials in accordance with manufacturer’s instructions, applicable codes, and recognized trade practices.

C. Coordinate with building construction to avoid unnecessary cutting, drilling, or patching; repair damage caused by electrical installation.

D. Do not use supports of other trades for mounting electrical equipment without written approval.

E. Provide independent supports for all raceways, equipment, and enclosures.

3.2 IDENTIFICATION

A. Identify electrical equipment, enclosures, and devices as required by Division 26 Identification Sections and the CEC.

3.3 FIELD QUALITY CONTROL

A. Maintain field record drawings of electrical work installed, noting routing, deviations, and concealed conditions.

B. Submit record drawings at completion prior to final acceptance.

3.4 CLEANING

A. Remove debris and packaging materials at completion of work.

B. Clean exposed surfaces of electrical equipment and components.

3.5 WARRANTY

A. Electrical equipment and installation labor shall be warranted free from defects for one year from date of final acceptance unless greater warranty periods are specified elsewhere.

END OF SECTION 26 05 00

SECTION 26 05 19 – LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes:

1. Wires and cables.
2. Connectors.
3. Lugs and pads.

1.3 SYSTEM DESCRIPTION

A. Provide wires, cables, connectors, lugs, and related accessories for a complete operational electrical system.

1.4 SUBMITTALS

A. Provide product data for:

1. Wires.
2. Cables.
3. Connectors.
4. Lugs.
5. Splice kits.
6. Strain relief fittings.
7. Cable racking and insulators.

B. Provide insulation testing documentation at project closeout per Division 01 requirements.

1.5 REGULATORY REQUIREMENTS

A. Conform to requirements of the CEC as amended by the AHJ.

B. Furnish UL-listed products or equal acceptable to the AHJ.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Wire and Cable: General Cable, Okonite, Southwire, or approved equal.

B. Connectors: Burndy, Ilsco, Thomas & Betts, or approved equal.

2.2 CONDUCTORS

A. Conductors shall be copper, 600-volt rated.

B. Sizes #14–#10 AWG may be solid or stranded; #8 AWG and larger shall be stranded.

C. Minimum conductor size #12 AWG unless otherwise indicated.

D. Insulation shall be THWN, THHN, or XHHW rated 90°C minimum for branch circuits.

E. All conductors shall be copper unless otherwise noted.

F. Conductor jacket and insulation types shall be appropriate for environmental conditions (dry, damp, wet).

2.3 COLOR CODING

A. Phase identification shall be consistent at all terminations as follows:

System A Phase B Phase C Phase Neutral Ground

208V Black Red Blue White Green

480V Brown Orange Yellow White/Stripe Green

Tape permitted on conductors #6 and larger.

2.4 CONNECTORS, LUGS, AND PADS

A. Connectors shall be solderless, UL-listed for size and quantity of conductors.

B. Branch circuit splices: Ideal, Scotch-Lock, 3M, or approved equal.

C. Feeder splices: Compression barrel type.

D. Lugs: Indent/compression type suitable for stranded conductors.

E. Pads shall match equipment termination ampacity.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Do not install conductors until raceways are complete and clean.

B. Use non-hardening pulling lubricant where required.

C. Provide pull boxes where total bends exceed 300 degrees.

D. Seal underground raceways to prevent moisture intrusion.

3.2 ENVIRONMENTAL CONDITIONS

A. Use insulation rated for wet locations below grade or slab. Non-waterproof cabling is not permitted in wet environments.

3.3 SPLICES

A. Splices at or below grade shall be watertight and made with approved mechanical connectors and encapsulation kits.

B. Below grade feeder splices require prior approval.

3.4 LABELING

A. Label conductors in panels, cabinets, pull boxes, and vaults with permanent markers indicating circuit identification.

B. Identification shall be per Section 26 05 53.

3.5 HANDLING & FABRICATION

A. Install without damaging insulation.

B. Do not exceed pulling tension recommended by manufacturer.

C. Train and bundle conductors neatly within enclosures.

3.6 MINIMUMS

A. No conductors smaller than #12 AWG unless specifically shown.

B. Provide all conductors required for a complete system.

3.7 NEUTRALS

A. Provide dedicated neutrals for electronic circuits where required.

END OF SECTION 26 05 19

SECTION 26 05 26 – GROUNDING AND BONDING FOR ELECTRICAL

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes equipment grounding conductors, bonding jumpers, grounding electrode conductors, and related accessories.

1.3 SUBMITTALS

A. Product data for grounding conductors, connectors, lugs, and bonding hardware.

1.4 QUALITY ASSURANCE

A. Comply with CEC, NFPA 70, UL 467, and applicable local codes.

B. Provide listed, labeled products suitable for purpose.

PART 2 – PRODUCTS

2.1 CONDUCTORS

A. Copper, stranded for #8 AWG and larger, solid or stranded for #10 AWG and smaller.

B. Insulation type shall match environmental conditions.

2.2 CONNECTORS

A. Ground lugs, clamps, exothermic weld kits, and bonding jumpers shall be listed for grounding use.

B. Manufacturers: Burndy, Ilsco, Thomas & Betts, or approved equal.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Provide equipment grounding conductor with all feeders and branch circuits.

B. Bond all metallic raceways, enclosures, and structural steel where required.

C. Terminate grounding conductors with listed lugs or compression fittings.

3.2 TESTING

A. Verify continuity and torque connections per manufacturer requirements.

END OF SECTION 26 05 26

SECTION 26 05 33 – RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract apply.

1.2 SUMMARY

A. Section includes conduits, fittings, junction boxes, pull boxes, and supports.

1.3 SUBMITTALS

A. Product data for conduits, fittings, supports, boxes, and accessories.

PART 2 – PRODUCTS

2.1 CONDUITS

A. Underground: PVC Schedule 40 minimum, Schedule 80 at risers.

B. Above grade: EMT, IMC, RMC, or FMC as permitted by code.

C. Liquidtight flexible where subject to moisture or vibration.

2.2 FITTINGS & BOXES

A. Conduit fittings compatible with raceway type.

B. Pull/junction boxes NEMA rated for environment.

2.3 SUPPORTS

A. Unistrut channel, pipe straps, hangers, threaded rod as required.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install raceways concealed unless otherwise noted.

B. Install pull boxes where total bends exceed 360°.

C. Seal underground conduits to prevent moisture intrusion.

3.2 COORDINATION

A. Coordinate routing to avoid conflicts with other trades.

END OF SECTION 26 05 33

SECTION 26 05 53 – IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, general conditions, Division 01 apply.

1.2 SUMMARY

A. Section includes labeling of equipment, raceways, conductors, and panel directories.

PART 2 – PRODUCTS

2.1 NAMEPLATES

A. Phenolic, engraved, mechanical fasteners or rivets.

2.2 CONDUCTOR IDENTIFICATION

A. Color coding per CEC for voltage systems.

B. Labeling sleeves or markers for feeder circuits.

2.3 PANEL DIRECTORIES

A. Typewritten directories indicating circuit loads.

PART 3 – EXECUTION

3.1 IDENTIFICATION REQUIREMENTS

A. Label panelboards, disconnects, transformers, VFDs, and control devices.

B. Identify raceways for voltage system where exposed.

C. Identify conductors in enclosures, vaults, and pull boxes.

END OF SECTION 26 05 53

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SECTION 31 20 00 – EARTHWORK

PART 1 — GENERAL

1.1 SUMMARY

A. Section includes requirements for earthwork associated with utility trenching, site grading, subgrade preparation, fill placement, and related activities required to complete work shown on the plans.

B. Related Work:

1. Div 01 – General Requirements

2. Section 31 23 33 – Trench Excavation and Backfill

1.2 SUBMITTALS

A. Materials Source Information:

1. Import fill source and classification.

2. Sand backfill source and gradation.

B. Testing Data (if required by Owner or AHJ):

1. Soil classification (ASTM D2487).

2. Modified Proctor compaction results (ASTM D1557).

3. In-place density testing results.

1.3 QUALITY ASSURANCE

A. Perform earthwork in accordance with the California Building Code (CBC), applicable CAL/OSHA excavation safety standards, and requirements of local AHJ.

B. Installer Qualifications: Contractor experienced with similar site utility and grading work.

1.4 PROJECT CONDITIONS

A. Examine site and verify conditions prior to earthwork.

B. Locate and identify utilities using USA (“811 – Call Before You Dig”) prior to excavation.

C. Environmental Controls:

1. Control dust using water in accordance with local air district rules.

2. Maintain stormwater controls per SWPPP (if applicable).

3. No on-site burning permitted.

D. Protection:

1. Maintain excavations free of water.

2. Protect cut/fill slopes from erosion.

3. Protect utilities to remain.

PART 2 — PRODUCTS

2.1 MATERIALS

A. Earth Fill:

1. Non-expansive granular soil, free of organics, debris, and oversized rocks (>3").

2. On-site materials may be reused if suitable.

B. Engineered Fill:

1. Granular soils meeting percent passing limits and plasticity required for compaction.

2. Import material only if approved by Owner or testing agency.

C. Sand Backfill:

1. Clean, washed sand conforming to ASTM C33.

D. Finish Fill (Topsoil):

1. Granular material free of deleterious material for landscape finish surfaces.

2.2 SOURCE QUALITY CONTROL

A. Testing laboratory may verify soil classification and compaction performance.

PART 3 — EXECUTION

3.1 EXAMINATION

A. Verify grades, benchmarks, and existing conditions.

B. Do not proceed until unsuitable conditions are corrected.

3.2 SITE PREPARATION

A. Strip and remove surface organics and debris.

B. Remove unsuitable soils including loose, saturated, or organic soils to sound subgrade.

C. Prepare areas to receive fill by scarifying 8"–12" and moisture conditioning.

3.3 EXCAVATION & FILL

A. Over-excavation:

1. Remove unsuitable soils to depth shown on plans or directed.

B. Fill Placement:

1. Place fill in lifts not exceeding 6–8" loose thickness.

2. Moisture condition to achieve specified compaction.

3. Compaction Requirements (ASTM D1557):

a. Utility trench backfill: per 31 23 33

b. Structural / pavement subgrade: 90–95% max dry density

c. Non-structural fills: 85–90% max dry density

3.4 GRADING

A. Grade to drain away from structures at ≥2% minimum slope unless otherwise shown.

B. Provide smooth, compacted subgrade free of irregularities.

3.5 FIELD QUALITY CONTROL

A. In-place density tests may be performed to verify compaction.

3.6 CLEANING

A. Remove excess soils not reused on site.

B. Leave area clean, graded, and ready for subsequent work.

END OF SECTION 31 20 00

SECTION 31 23 33 – TRENCH EXCAVATION AND BACKFILL

PART 1 — GENERAL

1.1 RELATED DOCUMENTS

A. Div 00, Div 01, and Contract Documents apply to this Section.

1.2 SUMMARY

A. Section includes trench excavation, utility bedding, pipe zone backfill, compaction, and surface restoration for electrical, irrigation, and other utilities.

1.3 REFERENCES

A. ASTM D1557 — Modified Proctor Compaction

1.4 DEFINITIONS

A. Utility: Pipe, conduit, duct bank, cable, or related appurtenances.

1.5 QUALITY ASSURANCE

A. Contractor experienced with similar utility trenching work.

B. Comply with CAL/OSHA Trenching & Excavation Safety Standards.

1.6 COORDINATION

A. Coordinate trench routing with other work and utilities.

1.7 EXISTING UTILITIES

A. Contractor responsible for locating utilities via USA (811) and hand potholing.

B. Maintain utilities in service unless shutdowns are approved.

PART 2 — PRODUCTS

2.1 FILL MATERIALS

A. Pipe Bedding: Clean washed sand.

B. Trench Backfill: Suitable on-site fill or imported granular fill per Section 31 20 00.

C. Warning Tape: 6" detectable utility warning tape.

PART 3 — EXECUTION

3.1 PREPARATION

A. Protect existing structures, surface improvements, and utilities to remain.

B. Provide barricades and safety signage.

3.2 EXCAVATION

A. Excavate trenches to required depth, line, and grade.

B. Excavate by hand near utilities.

C. Over-excavate soft/unsuitable soils and replace with compacted granular fill.

D. Dewater excavations if required.

3.3 PROTECTION OF EXCAVATIONS

A. Provide shoring, bracing, or sloping per CAL/OSHA.

B. Maintain trenches free of water.

3.4 BACKFILLING

A. Bedding: Place sand bedding and compact around pipe haunches.

B. Initial Backfill (“Pipe Zone”):

1. Minimum 12" above pipe crown, compact to 90–92% (ASTM D1557).

C. Final Backfill:

1. Compact as follows (ASTM D1557):

a. Pavement areas: 95%

b. Concrete flatwork: 92%

c. Landscape: 85%

D. Maximum lift thickness: 8" loose.

E. Maintain moisture for compaction.

3.5 TOLERANCES

A. Top of backfill under pavement: ±0.02 ft.

B. General surface: Match adjacent grades.

3.6 FIELD QUALITY CONTROL

A. Density tests may be required for compaction verification.

3.7 PROGRESS AND PROSECUTION

A. Complete trench backfill same day where possible.

END OF SECTION 31 23 33

DIVISION 32 31 13 — CHAIN LINK FENCES AND GATES

PART 1 — GENERAL

1.1 SUMMARY

Provide labor, materials, equipment, and incidentals to install a galvanized chain link fence and gate enclosure surrounding irrigation equipment, including pump, transformer, VFD panel, and filtration equipment.

1.2 RELATED SECTIONS

Section 03 30 00 — Cast-in-Place Concrete (post footings).

Section 26 00 00 — Electrical (equipment clearances).

1.3 SUBMITTALS

Submit product data and shop drawings for fence fabric, posts, rails, gates, hardware, coatings, and concrete footings. Submit mill certifications for steel members.

1.4 QUALITY ASSURANCE

Comply with ASTM F567 for installation of chain link fence and ASTM F900 for gates. Steel pipe shall be Schedule 40 (SS40).

PART 2 — PRODUCTS

2.1 FENCE FABRIC

Height: 7 feet. Mesh: 2-inch diamond. Wire: 9 gauge minimum. Coating: Hot-dipped galvanized. Selvage: Twisted at top, knuckled at bottom. Barbed wire is not permitted.

2.2 FRAMEWORK

Line Posts: 2-1/2-inch O.D. SS40, spaced at 10 feet on center maximum.

Terminal/Corner/Gate Posts: 4-inch O.D. SS40.

Top Rail: 1-5/8-inch O.D. SS40, continuous with couplings.

2.3 GATES

Provide two (2) single-swing man gates, 6 feet wide each. Gate frames shall be tubular steel with galvanized hinges, latches, and stops.

2.4 FITTINGS AND COATINGS

All fittings and hardware shall be galvanized per ASTM A153. Fabric shall comply with ASTM A392. Structural shapes shall be galvanized per ASTM A123.

PART 3 — EXECUTION

3.1 INSTALLATION

Install posts plumb and true to line and grade. Stretch fabric taut and secure to posts and rails. Gates shall operate smoothly and open outward unless otherwise approved.

3.2 CONCRETE FOOTINGS

Line Posts: 30 inches deep by 10 inches diameter.

Terminal/Gate Posts: 36 inches deep by 12 inches diameter.

Concrete: 3000 psi minimum compressive strength.

3.3 CLEANING AND ADJUSTING

Adjust gates for proper operation and secure latching. Remove debris and clean adjacent surfaces.

END OF SECTION 32 31 13

SECTION 32 84 00 – IRRIGATION SYSTEM

PART 1 — GENERAL

1.1 SUMMARY

A. Work includes labor, equipment, testing, GIS/as-built documentation, and incidental materials for installation of an agricultural irrigation system consisting of pump and filtration headworks, flow measurement, PVC mains and submains, hydraulic and manual valves, air release valves, flush manifolds, dripline distribution, micro sprinkler distribution, and related appurtenances.

SECTION 32 31 13 – c

B. Payment: Work shall be paid on a lump-sum basis. No separate payment will be made for individual components, testing, GIS/as-builts, bedding, thrust restraint, or installation of District-furnished materials.

1.2 RELATED SECTIONS

A. Section 26 05 00 – Common Electrical Work (VFD and controls)

B. Section 31 20 00 – Earthwork

C. Section 31 23 33 – Trench Excavation and Backfill

1.3 REFERENCES

A. ASTM D1784 – Rigid PVC Compounds

B. ASTM D2241 – PVC Pressure Rated Pipe

C. AWWA C900/C905 – PVC Pressure Pipe

D. AWWA C605 – Underground Installation of PVC Pressure Pipe

E. CPC – California Plumbing Code

F. CALGreen Code §5.304

1.4 DEFINITIONS

A. Permanent Crops: Agricultural plantings requiring drip and micro sprinkler irrigation.

B. District-Furnished Materials: Materials provided by District for installation by Contractor.

1.5 DISTRICT-PROVIDED MATERIALS

A. District will furnish PVC PIP pipe, Toro hydraulic valves, air release valves, dripline, micro sprinklers, turbine pump, sand media filters, and flow meters. Contractor shall pick up, inspect, and protect materials.

1.6 CONTRACTOR-PROVIDED MATERIALS

A. Contractor shall furnish fittings, valves (other than District-provided), thrust blocks, tracer wire, marker tape, valve boxes, glue/primer, and other accessories.

1.7 SUBMITTALS

A. Product Data: Valves, fittings, tracer wire, marker tape, regulators, filters.

B. Shop Drawings: Valve assemblies, manifolds, thrust blocks, transitions.

C. GIS / As-Builts:

1. Submit ESRI Shapefile, FGDB, or CAD format.

2. Show pipe alignment, fittings, valves, and depths.

3. Horizontal accuracy ±1.0 ft; vertical ±0.2 ft.

D. QA Documentation:

1. Hydrotest logs

2. Flushing logs

1.8 QUALITY ASSURANCE

A. Contractor shall have minimum 5 years irrigation construction experience.

B. Contractor shall hold CA A or C-27 license.

C. Installer personnel experienced in irrigation installation and testing.

1.9 CLOSEOUT SUBMITTALS

A. GIS/As-Built package including metadata.

B. Testing records including hydrotest and flushing logs.

C. O&M; data for applicable components.

PART 2 — PRODUCTS

2.1 PIPE AND FITTINGS

A. PVC Pipe: PIP 80# for mains/submains; IPS CL125/CL100 for laterals; Sch40 for risers.

B. Fittings: Molded or fabricated tees, reducers, elbows; Sch40/80 adapters; steel/ductile flanges.

2.2 VALVES

A. Hydraulic Control Valves: Toro PRV/PRMEL series (District provided).

B. Manual Valves: Butterfly for mains; ball valves for isolation.

C. Air Release Valves: Toro Guardian (District provided).

2.3 FILTERS

A. Sand media filters (Contractor provided), installed on Contractor-built pads.

2.4 FLOW MEASUREMENT

A. Seametrics AG3000 electromagnetic or TechnoFlo PS32 propeller .

2.5 DRIPLINE AND MICRO SPRINKLERS

A. Toro dripline and micro sprinklers (District provided) with accessories.

2.6 TRACER WIRE SYSTEM

A. Conductor: 10 AWG copper, PE coated, direct-burial rated.

B. Connectors: Waterproof compression type.

2.7 DETECTABLE MARKER TAPE

A. 3-inch metallic-core, “CAUTION – IRRIGATION MAIN BELOW”.

2.8 ADHESIVES AND SPECIALTIES

A. Solvent Cement: Weld-On / Oatey 2717, 2719, 795 or equal.

B. Primer: Purple P70 or as required by AHJ.

PART 3 — EXECUTION

3.1 EXAMINATION

A. Verify trench excavation per Section 31 23 33 and electrical conduits for controls.

3.2 INSTALLATION — PIPE & FITTINGS

A. Install pipe per AWWA C605 and manufacturer instructions.

B. Joint solvent welding per manufacturer cure times.

3.3 TRENCHING AND BACKFILL

A. Minimum cover depths:

1. 36 inches typical

2. 30 inches in agricultural fields with District approval

B. Bedding: 4 inches granular beneath pipe.

C. Shading: to 12 inches above pipe crown.

3.4 INSTALLATION — VALVES AND APPURTENANCES

A. Install hydraulic valves per flow arrows and shop drawings.

B. Install air vents at high points or riser transitions.

3.5 DRIPLINE DISTRIBUTION

A. Install dripline parallel/perpendicular to crop rows; bury 1–4 inches unless surface-mounted.

B. Provide flushing manifolds at ends.

3.6 MICRO SPRINKLER DISTRIBUTION

A. Stake or riser-mount sprinklers per spacing schedules.

B. Provide lateral flush points.

3.7 TRACER WIRE INSTALLATION

A. Secure to top quadrant of pipe at 10-foot intervals.

B. Waterproof connections; minimize splicing.

C. Terminate with 2-foot loop at endpoints and valve clusters.

3.8 MARKER TAPE

A. Install 12 inches below finished grade centered above trench.

3.9 THRUST BLOCKS

A. Provide thrust blocks at fittings subject to thrust; do not encase joints.

3.10 FIELD QUALITY CONTROL

A. Hydrostatic test at 150 psi for 2 hours; zero leakage permitted.

B. Flush lines prior to commissioning.

3.11 GIS / AS-BUILT DOCUMENTATION

A. Record horizontal location every 50 feet and at fittings/valves.

B. Record depth of cover at each data point.

C. Submit ESRI Shapefile, FGDB, or CAD with metadata.

3.12 CLEANUP

A. Remove spoils, packaging, and excess materials; restore disturbed surfaces.

END OF SECTION 32 84 00

Job Number: 2025036		
Customer: MERCED COLLEGE		
Project: MERCED COLLEGE PROJECT		
Air Vent 8 Inch Pipe		
Total Qty	Description	Vendor
2	Fitting, Coupler, Sch40, 3"	Galt or Similar
4	Fitting, Elbow, 90, Sch40, 3"	Galt or Similar
2	Fitting, Reducer MSxMT, Sch40, 3"x2"	Galt or Similar
2	Fitting, Tee, Red, 100#, 8"x3"	Galt or Similar
40	Pipe, PVC, Sch40, 3"	PVC - CUSTOMER PROVIDED
2	Valve, Air Vent, Combination, 2"	TORO - CUSTOMER PROVIDED
Almond Valve 4 inch		
Total Qty	Description	Vendor
4	Fitting, Elbow, 90, 100#, 8"	Galt or Similar
2	Fitting, Ring Adapter, PIPxIPS, 100#, 8"	Galt or Similar
2	Fitting, Tee, Red, 100#, 8"x2"	Galt or Similar
2	Fitting, Tee, Red, 100#, 8"x4"	Galt or Similar
2	Fitting, TOE Nipple, Sch80, 2"x3"	Galt or Similar
2	Fitting, Groove, Coupler, 4"	Morrill
2	Fitting, Groove, GRxPE, PVC, 4"	Morrill
10	Pipe, PVC, PIP, 80#, 8"	PVC - CUSTOMER PROVIDED
2	Valve, Air Vent, Guardian, 2"	TORO - CUSTOMER PROVIDED
1	Valve, Hydraulic, Plastic, PRMEL, 4", Green 4R	TORO - CUSTOMER PROVIDED
Butterfly Valve - Vent Downstream - 10 Inch Reservoir Fill Pipe		
Total Qty	Description	Vendor
1	Concrete mud to connect to exsiting concrete pipe	Contractor
1	Fitting, Flange Bolts, Steel x BF x Steel 7/8" x 7", 10"	Frontier
1	Valve, Butterfly, Gear Op w/ Ext, 10"	FV&C
2	Fitting, Flange, PVC, 10"	Galt or Similar
1	Fitting, Male Adapter, Sch40, 2"	Galt or Similar
1	Fitting, Tee, Red, 100#, 10"x2"	Galt or Similar
20	Pipe, PVC, PIP, 80#, 10"	PVC - CUSTOMER PROVIDED
5	Pipe, PVC, Sch40, 2"	PVC - CUSTOMER PROVIDED
1	Valve, Air Vent, Guardian, 2"	TORO - CUSTOMER PROVIDED
Citrus Valve 2 Inch		
Total Qty	Description	Vendor
2	Fitting, Elbow, 90, Sch40, 3"	Galt or Similar
2	Fitting, Male Adapter, Sch40, 2"	Galt or Similar
2	Fitting, Tee, Red, Sch40, 3"x2"	Galt or Similar
6	Pipe, PVC, Sch40, 3"	PVC - CUSTOMER PROVIDED
2	Valve, Air Vent, Guardian, 2"	TORO - CUSTOMER PROVIDED
1	Valve, Hydraulic, Plastic, PRMEL, 2", Green	TORO - CUSTOMER PROVIDED
Concrete Box-PR		
Total Qty	Description	Vendor
1	Headworks, Box, Base, 4'x4'	May

All materials Contractor provided unless specified CUSTOMER PROVIDED

All materials Contractor provided unless specified CUSTOMER PROVIDED

5	Headworks, Box, Section, 4'x4'x4'	May
80	Headworks, Butyl Rope, Per Foot	May
District Flow Meter		
Total Qty	Description	Vendor
2	Fitting, Flange, Steel, 8"	Morrill
1	Flow Meter, Seametrics, AG3000, 8"	Technoflo
Dirty Water Pipeline		
Total Qty	Description	Vendor
6	Fitting, Elbow, 45, 100#, 10"	Galt or Similar
1	Fitting, Elbow, 45, 100#, 10"	Galt or Similar
2	Fitting, Elbow, 90, 100#, 10"	Galt or Similar
400	Pipe, PVC, PIP, 80#, 10"	PVC - CUSTOMER PROVIDED
Filter 4-48		
Total Qty	Description	Vendor
1	Valve, Pressure Relief, Plastic, 3L	Bermad
1	Filter, Hook Up Material, Paint Kit	Contractor
2	Filter, Hook Up Material, Pipe Support, Small	Contractor
1	Filter, Hook Up Material, Concrete Slab, 4-48"	Contractor
1	Fitting, Flange Bolts, Steel x x PVC 7/8" x 3.5", 10"	Frontier
4	Fitting, Flange Bolts, Steel x x Steel 3/4" x 2", 8"	Frontier
1	Fitting, Flange Bolts, Steel x BF x Steel 3/4" x 5", 8"	Frontier
52	Filter, Hook Up Material, Sand, #16-100lb	FV&C
1	Valve, Butterfly, Gear Op, 8"	FV&C
1	Valve, Check, Single Chem, 8"	FV&C
1	Fitting, Elbow, 90, 100#, 10"	Galt or Similar
1	Fitting, Flange, PVC, 10"	Galt or Similar
2	Fitting, Plug, Sch40, 2"	Galt or Similar
1	Fitting, Ring Adapter, PIPxIPS, 100#, 10"	Galt or Similar
1	Fitting, TBE Nipple, Sch80, 3"xCL	Galt or Similar
1	Fitting, Flange, Ring Gasket, 10"	Morrill
2	Fitting, Flange, Ring Gasket, 8"	Morrill
1	Fitting, Flange, Steel, 10"	Morrill
3	Fitting, Flange, Steel, 8"	Morrill
2	Fitting, Groove, Coupler, 8"	Morrill
2	Fitting, Groove, GRxPE, Steel, 8"	Morrill
1	Fitting, Steel, Con Red, 10"x8"	Morrill
3	Fitting, Steel, Elbow, 90, 8"	Morrill
4	Fitting, Steel, Merch Coupler , 2"	Morrill
1	Fitting, Steel, Merch Coupler , 3"	Morrill
20	Pipe, Steel, 0.188, 8"	Morrill
1	Flow Meter, Prop, PS32, 8"	Technoflo
1	Filter, Sand Media, Toro Carbon, 4-48"	TORO - CUSTOMER PROVIDED
2	Valve, Air Vent, Combination, 2"	TORO - CUSTOMER PROVIDED
Filter Flush 4 Inch		
Total Qty	Description	Vendor
2	Filter, Hook Up Material, Electrical	Contractor
1	Filter, Hook Up Material, View Tube, 4"	FV&C

All materials Contractor provided unless specified CUSTOMER PROVIDED

1	Valve, Gate, 514, 3"	FV&C
3	Fitting, Elbow, 90, Sch40, 4"	Galt or Similar
2	Fitting, Female Adapter, Sch40, 4"	Galt or Similar
2	Fitting, Reducer MSxMT, Sch40, 4"x3"	Galt or Similar
2	Fitting, Reducer, Sch40, 4"x2"	Galt or Similar
4	Fitting, Tee, Std, Sch40, 4"	Galt or Similar
2	Fitting, TOE Nipple, Sch40, 2"xCL	Galt or Similar
100	Pipe, PVC, IPS, CL 100, 4"	PVC - CUSTOMER PROVIDED
40	Pipe, PVC, Sch40, 4"	PVC - CUSTOMER PROVIDED
2	Valve, Air Vent, Guardian, 2"	TORO - CUSTOMER PROVIDED
Glue		
Total Qty	Description	Vendor
12	Glue, Thrust Block	Contractor
8	Glue, 2717, Pipe, GAL	Galt or Similar
4	Glue, 2719, Saddles, GAL	Galt or Similar
4	Glue, 795, Risers, PT	Galt or Similar
6	Glue, P70, Primer, GAL	Galt or Similar
1	Glue, Rubber Bands, #64, 300 ea	Galt or Similar
Grape valve 1.5 inch		
Total Qty	Description	Vendor
2	Fitting, Elbow, 90, Sch40, 2"	Galt or Similar
1	Fitting, Male Adapter, Sch40, 2"	Galt or Similar
2	Fitting, Reducer, Sch40, 2"x1"	Galt or Similar
2	Fitting, Tee, Red, Sch40, 2"x1.5"	Galt or Similar
8	Pipe, PVC, Sch40, 2"	PVC - CUSTOMER PROVIDED
1	Valve, Air Vent, Guardian, 1"	TORO - CUSTOMER PROVIDED
1	Valve, Hydraulic, Plastic, PRMEL, 1.5", Green	TORO - CUSTOMER PROVIDED
Main		
Total Qty	Description	Vendor
12	Glue, Thrust Block	Contractor
1	Fitting, Cap, 100#, 8"	Galt or Similar
2	Fitting, Cap, Sch40, 2"	Galt or Similar
4	Fitting, Elbow, 45, 100#, 10"	Galt or Similar
5	Fitting, Elbow, 45, 100#, 8"	Galt or Similar
1	Fitting, Elbow, 90, 100#, 10"	Galt or Similar
2	Fitting, Elbow, 90, 100#, 8"	Galt or Similar
2	Fitting, Reducer, 100#, 10"x8"	Galt or Similar
2	Fitting, Tee, Red, 100#, 10"x2"	Galt or Similar
1	Fitting, Tee, Red, 100#, 10"x3"	Galt or Similar
1	Fitting, Tee, Red, 100#, 8"x2"	Galt or Similar
6	Fitting, Tee, Red, 100#, 8"x3"	Galt or Similar
5	Fitting, Tee, Red, 100#, 8"x4"	Galt or Similar
1	Fitting, Tee, Std, 100#, 10"	Galt or Similar
1	Fitting, Tee, Std, 100#, 8"	Galt or Similar
12	Glue, 2719, Saddles, GAL	Galt or Similar
8	Glue, Dauber, Empty Can, GAL	Galt or Similar
8	Glue, Dauber, Empty Can, QT	Galt or Similar

All materials Contractor provided unless specified CUSTOMER PROVIDED

6	Glue, P70, Primer, GAL	Galt or Similar
4	Glue, Swab, 4020, Large	Galt or Similar
500	Pipe, PVC, PIP, 80#, 10"	PVC - CUSTOMER PROVIDED
3640	Pipe, PVC, PIP, 80#, 8"	PVC - CUSTOMER PROVIDED
Manifold		
Total Qty	Description	Vendor
1	Fitting, Cross, 100#, 8"x3"	Galt or Similar
1	Fitting, Cross, Sch40, 3"x2"	Galt or Similar
1	Fitting, Cross, Sch40, 4"x2"	Galt or Similar
3	Fitting, Elbow, 90, Sch40, 2"	Galt or Similar
1	Fitting, Reducer, 100#, 8"x6"	Galt or Similar
8	Fitting, Reducer, Sch40, 3"x2"	Galt or Similar
1	Fitting, Reducer, Sch40, 4"x3"	Galt or Similar
2	Fitting, Tee, Red, 100#, 6"x3"	Galt or Similar
1	Fitting, Tee, Red, Sch40, 3"x2"	Galt or Similar
1	Fitting, Tee, Std, 100#, 6"	Galt or Similar
1	Fitting, Tee, Std, Sch40, 2"	Galt or Similar
1	Fitting, Tee, Std, Sch40, 3"	Galt or Similar
300	Fitting, Hose, Figure 8, 700	HIT
150	Fitting, Hose, Swivel Tee, 700	HIT
150	Fitting, Riser Top, Hi Flow Ball Valve, 3/4"	HIT
150	Fitting, Riser Top, MHA, Slip x 3/4" MT	HIT
51	Fitting, Riser Top, MST, MHT x 3/4" SFHT	HIT
116	Fitting, Saddle, PVC, 3/4"", 2"	HIT
34	Fitting, Saddle, PVC, 3/4"", 3"	HIT
2300	Pipe, PVC, IPS, CL 125, 2"	PVC - CUSTOMER PROVIDED
1300	Pipe, PVC, IPS, CL 125, 3"	PVC - CUSTOMER PROVIDED
360	Pipe, PVC, PIP, 80#, 6"	PVC - CUSTOMER PROVIDED
200	Pipe, PVC, PIP, 80#, 8"	PVC - CUSTOMER PROVIDED
150	Fitting, Riser, IPS, 3/4"x 60" TALL RISERS	Tempo
Manifold Flush - 2 Inch		
Total Qty	Description	Vendor
15	Valve, Ball, PVC, Slip, 2"	FV&C
15	Fitting, Elbow, 90, Sch40, 2"	Galt or Similar
15	Fitting, Tee, Std, Sch40, 2"	Galt or Similar
15	Fitting, TOE Nipple, Sch40, 2"xCL	Galt or Similar
75	Pipe, PVC, Sch40, 2"	PVC - CUSTOMER PROVIDED
15	Valve, Air Vent, Guardian, 2"	TORO - CUSTOMER PROVIDED
Olive valve 1.5 inch		
Total Qty	Description	Vendor
2	Fitting, Elbow, 90, Sch40, 3"	Galt or Similar
1	Fitting, Male Adapter, Sch40, 1"	Galt or Similar
2	Fitting, Reducer, Sch40, 3"x1"	Galt or Similar
2	Fitting, Tee, Red, Sch40, 3"x1.5"	Galt or Similar
8	Pipe, PVC, Sch40, 3"	PVC - CUSTOMER PROVIDED
1	Valve, Air Vent, Guardian, 1"	TORO - CUSTOMER PROVIDED
1	Valve, Hydraulic, Plastic, PRMEL, 1.5", Green	TORO - CUSTOMER PROVIDED

All materials Contractor provided unless specified CUSTOMER PROVIDED

Pump		
Total Qty	Description	Vendor
1	Fabricated Pump Rails	Contractor
1	40 HP Short Couple Turbine Pump, 1000 gpm @ 50 psi	Pump - CUSTOMER PROVIDED
Reservoir Work		
Total Qty	Description	Vendor
1	Headworks, Intake, Concrete Base, 4'x4'	Contractor
1	Headworks, Intake, Stainless Steel Screen, 4'x4'	Contractor
1	Headworks, Spillway, Concrete, Standard	Contractor
2	Fitting, Elbow, 45, 100#, 15"	Galt or Similar
80	Pipe, PVC, PIP, 80#, 15"	PVC - CUSTOMER PROVIDED
Sprinkler Devices-PR		
Total Qty	Description	Vendor
11000	Emission Device, Dripline, 1.06 GPH @ 18" Spacing 20mm	TORO - CUSTOMER PROVIDED
25000	Emission Device, Dripline, 1.06 GPH @ 24" Spacing 20mm	TORO - CUSTOMER PROVIDED
28000	Emission Device, Poly Hose, 720x830 Blank	TORO - CUSTOMER PROVIDED
420	Emission Device, Sprinkler, 15.3 GPH Micro PC	TORO - CUSTOMER PROVIDED
1550	Emission Device, Sprinkler, 20.3 GPH Micro PC	TORO - CUSTOMER PROVIDED
75	Fitting, Hose, Coupler, 700	TORO - CUSTOMER PROVIDED
Stone Fruit Valve 3 Inch		
Total Qty	Description	Vendor
2	Fitting, Elbow, 90, Sch40, 4"	Galt or Similar
2	Fitting, Reducer MSxMT, Sch40, 3"x2"	Galt or Similar
2	Fitting, Reducer MTxFS, Sch40, 3"x2"	Galt or Similar
2	Fitting, Tee, Red, Sch40, 4"x3"	Galt or Similar
6	Pipe, PVC, Sch40, 4"	PVC - CUSTOMER PROVIDED
2	Valve, Air Vent, Guardian, 2"	TORO - CUSTOMER PROVIDED
1	Valve, Hydraulic, Plastic, PRMEL, 3", Green	TORO - CUSTOMER PROVIDED
Stub Out Valve 1.5 inch		
Total Qty	Description	Vendor
6	Fitting, Coupler, Sch40, 3"	Galt or Simliar
12	Fitting, Elbow, 90, Sch40, 3"	Galt or Simliar
12	Fitting, Reducer, Sch40, 3"x1"	Galt or Simliar
12	Fitting, Tee, Red, Sch40, 3"x1 1/2"	Galt or Simliar
12	Fitting, TOE Nipple, Sch40, 1 1/2"x2"	Galt or Simliar
6	Valve Box	NDS
48	Pipe, PVC, Sch40, 3"	PVC - CUSTOMER PROVIDED
12	Valve, Air Vent, Guardian, 1"	TORO - CUSTOMER PROVIDED
6	Valve, Hydraulic, Plastic, PRMEL, 1.5", Yellow	TORO - CUSTOMER PROVIDED
Stub Out Valve 2 Inch		
Total Qty	Description	Vendor
4	Fitting, Cap, Sch40, 4"	Galt or Similar
16	Fitting, Elbow, 90, Sch40, 4"	Galt or Similar
8	Fitting, Reducer, Sch40, 4"x2"	Galt or Similar
8	Fitting, Tee, Red, Sch40, 4"x2"	Galt or Similar
8	Fitting, TOE Nipple, Sch40, 2"x3"	Galt or Similar

4	Valve Box	NDS
40	Pipe, PVC, Sch40, 4"	PVC - CUSTOMER PROVIDED
8	Valve, Air Vent, Guardian, 2"	TORO - CUSTOMER PROVIDED
4	Valve, Hydraulic, Plastic, PRMEL, 2", Green	TORO - CUSTOMER PROVIDED

All materials Contractor provided unless specified CUSTOMER PROVIDED

LEGEND

- 21" PVC PIPE
- 18" PVC PIPE
- 15" PVC PIPE
- 12" PVC PIPE
- 10" PVC PIPE
- 8" PVC PIPE
- 6" PVC PIPE
- 4" PVC PIPE
- 3" PVC PIPE
- 2" PVC PIPE
- LATERALS
- MAINLINE PROTECTION
- 2" AIR VENT
- MANIFOLD CONTROL VALVE
- MANIFOLD FLUSH
- REDUCER
- TREE/VINE
- TREE — LENGTH OF HOSE RUN
- PUMP
- FILTER STATION

N

PROJECT NOTES:

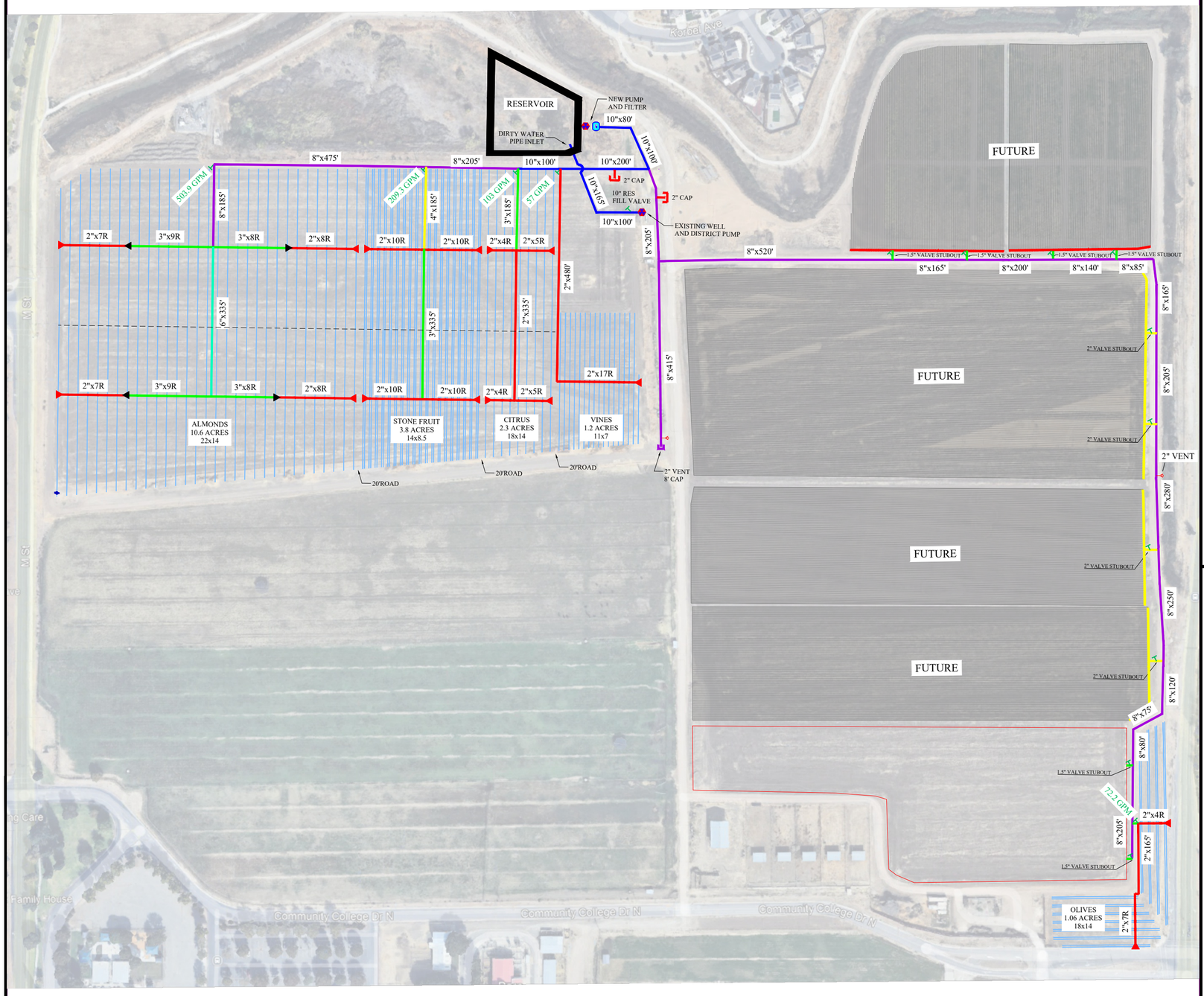
CROP:	ALMONDS
ACRES:	±10.6 ACRES
SPACING:	22'ROWS x 14'TREES
ROW DIRECTION:	NORTH/SOUTH
TREE COUNT:	1500
EMITTER:	20.3 GPH PC MICRO SPRINKLER SPACED 1 PER TREE
SETS:	1
SYSTEM FLOW:	503.9 GPM
HOSE SIZE:	0.720"ID POLYHOSE
GROSS APPLICATION RATE:	0.106"/HR
NET APPLICATION RATE:	0.079"/HR
GPM/AC:	47.85 GPM/AC

CROP:	STONE FRUIT
ACRES:	±3.8 ACRES
SPACING:	14'ROWS x 8.5'TREES
ROW DIRECTION:	NORTH/SOUTH
TREE COUNT:	1391
EMITTER:	1.06 GPH @ 24" PC DRIPLINE 2 LINES PER ROW
SETS:	1
SYSTEM FLOW:	209.3 GPM
HOSE SIZE:	0.720" ID POLYHOSE
GROSS APPLICATION RATE:	0.124"/HR
NET APPLICATION RATE:	0.093"/HR
GPM/AC:	56.13 GPM/AC

CROP:	CITRUS
ACRES:	±2.3 ACRES
SPACING:	18'ROWS x 14'TREES
ROW DIRECTION:	NORTH/SOUTH
TREE COUNT:	398
EMITTER:	15.3GPH PC MICRO SPRINKLER SPACED 1 PER TREE
SETS:	1
SYSTEM FLOW:	103 GPM
HOSE SIZE:	0.720" ID POLYHOSE
GROSS APPLICATION RATE:	0.115"/HR
NET APPLICATION RATE:	0.086"/HR
GPM/AC:	51.86 GPM/AC

CROP:	GRAPES
ACRES:	±1.2 ACRES
SPACING:	11'ROWS x 7'TREES
ROW DIRECTION:	NORTH/SOUTH
TREE COUNT:	679
EMITTER:	1.06 GPH @ 18" PC DRIPLINE 1 LINE PER ROW
SETS:	1
SYSTEM FLOW:	57 GPM
HOSE SIZE:	0.720" ID POLYHOSE
GROSS APPLICATION RATE:	0.103"/HR
NET APPLICATION RATE:	0.095"/HR
GPM/AC:	46.64 GPM/AC

CROP:	OLIVES
ACRES:	±1.06 ACRES
SPACING:	18'ROWS x 14'TREES
ROW DIRECTION:	NORTH/SOUTH, EAST/WEST
TREE COUNT:	183
EMITTER:	1.06 GPH @ 18" PC DRIPLINE 2 LINES PER ROW
SETS:	1
SYSTEM FLOW:	72.2 GPM
HOSE SIZE:	0.720" ID POLYHOSE
GROSS APPLICATION RATE:	0.126"/HR
NET APPLICATION RATE:	0.020"/HR
GPM/AC:	57.00 GPM/AC



MC FARM MAIN CAMPUS

CUSTOMER: MERCED COLLEGE

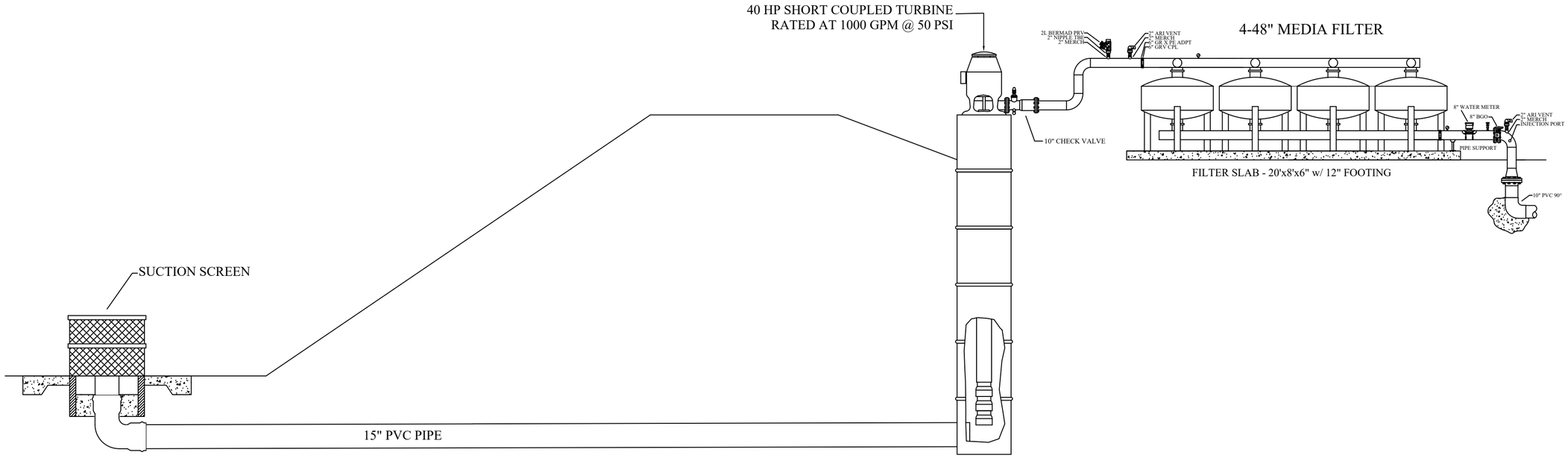
LOCATION: MERCED, CA

Armstrong Consulting

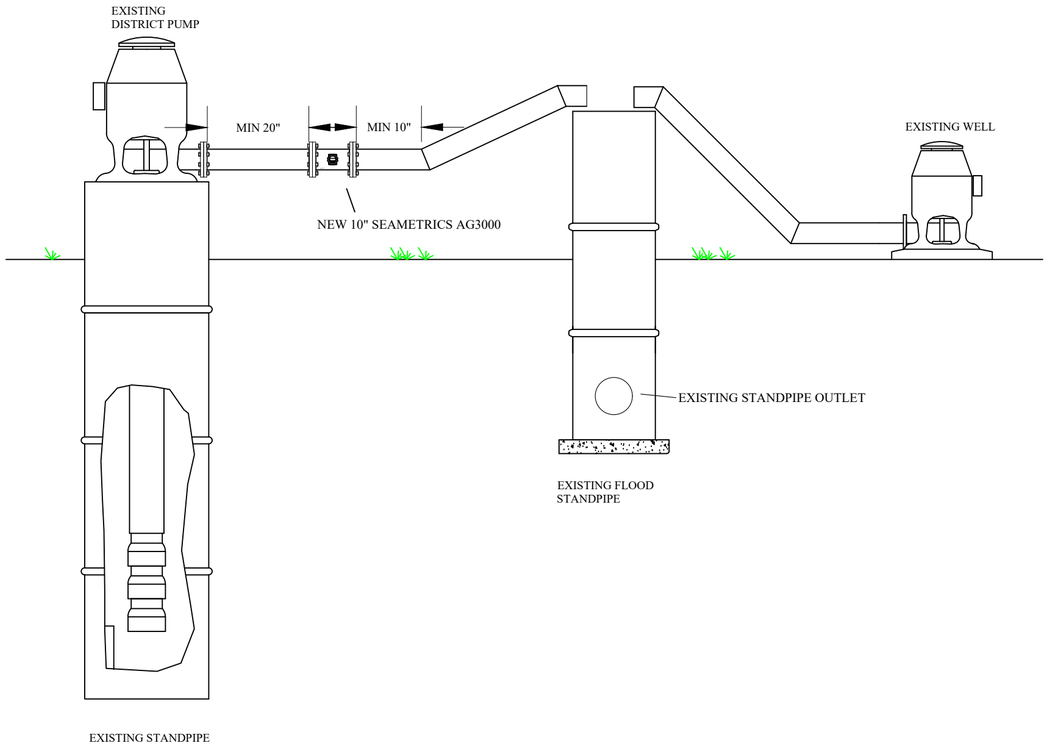
SHEET 1 of 3

FILE:	2025036-I MERCED COLL
DATE:	12/17/2025 11:34 AM
SCALE:	NTS
DESIGN BY:	BS
DRAWN BY:	BS

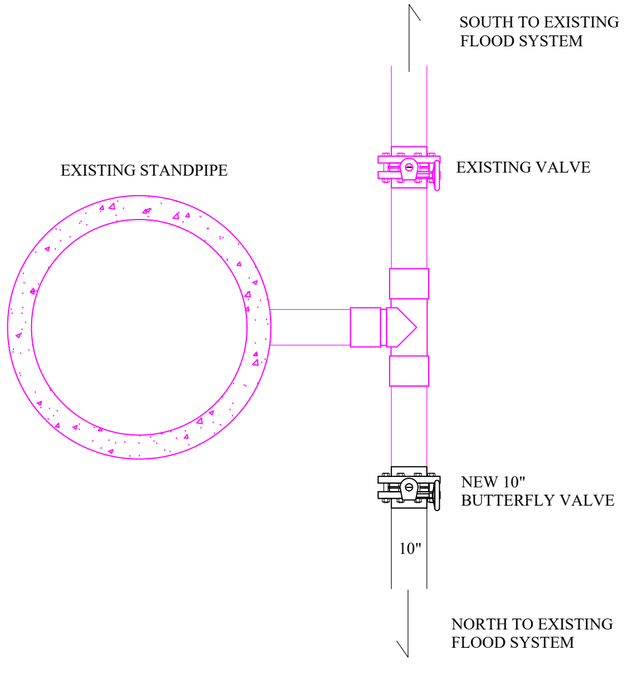
RESERVOIR INTAKE AND FILTER STATION



PUMP STATION SIDE VIEW



FLOOD PIPE PLAN VIEW



MC FARM MAIN CAMPUS

MERCED COLLEGE
MERCED, CA

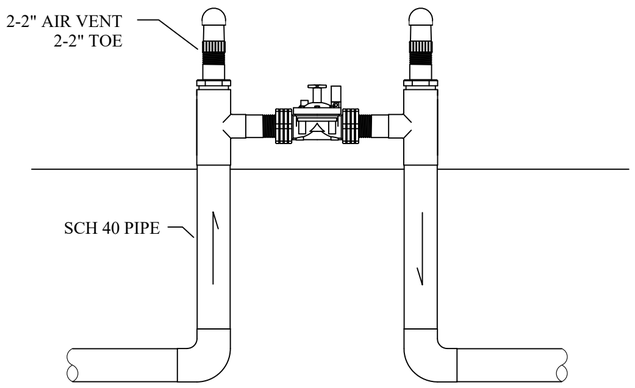
CUSTOMER:

LOCATION:

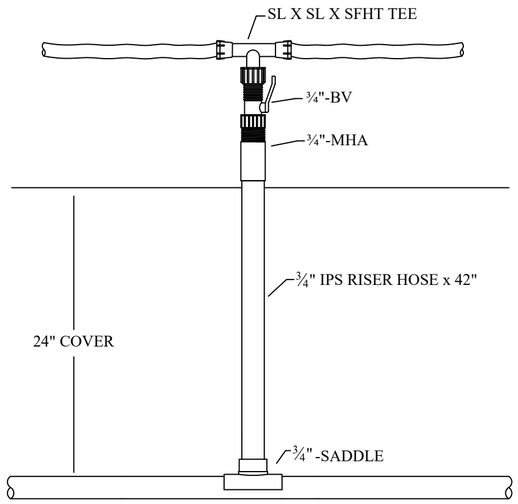
Armstrong Consulting

SHEET 2 of 3

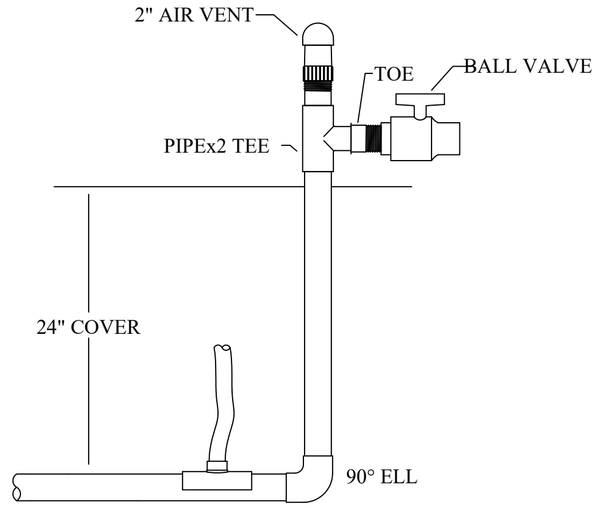
FILE: 2025036-I_MERCED COL
DATE: 01/28/26 15:20
SCALE: NTS
DESIGN BY: BS
DRAWN BY: BS



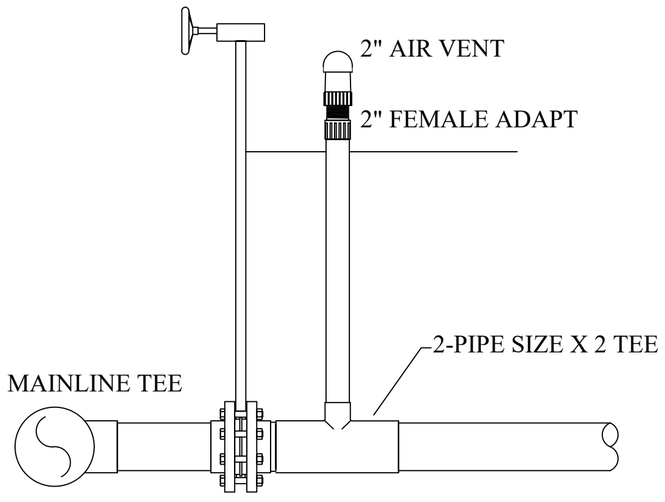
(1x) 4", (1x) 3", (5x) 2", (8x) 1.5"
CONTROL VALVE



TYPICAL RISER M1



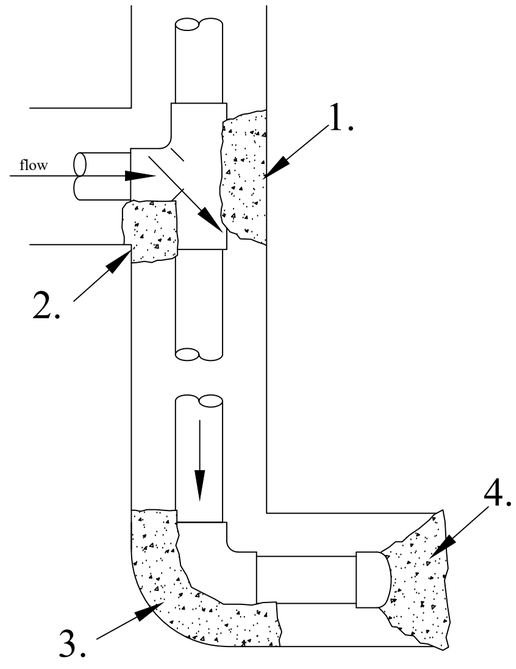
TYPICAL STANDARD FLUSH



10" BURIED BUTTERFLY VALVE

4" AND UP
THRUSTBLOCKS

1. TEES
2. PLUGGED END OF TEE
3. 90° ELBOW
4. END CAPS OR PLUGS



MC FARM MAIN CAMPUS

MERCED COLLEGE
MERCED, CA

CUSTOMER:

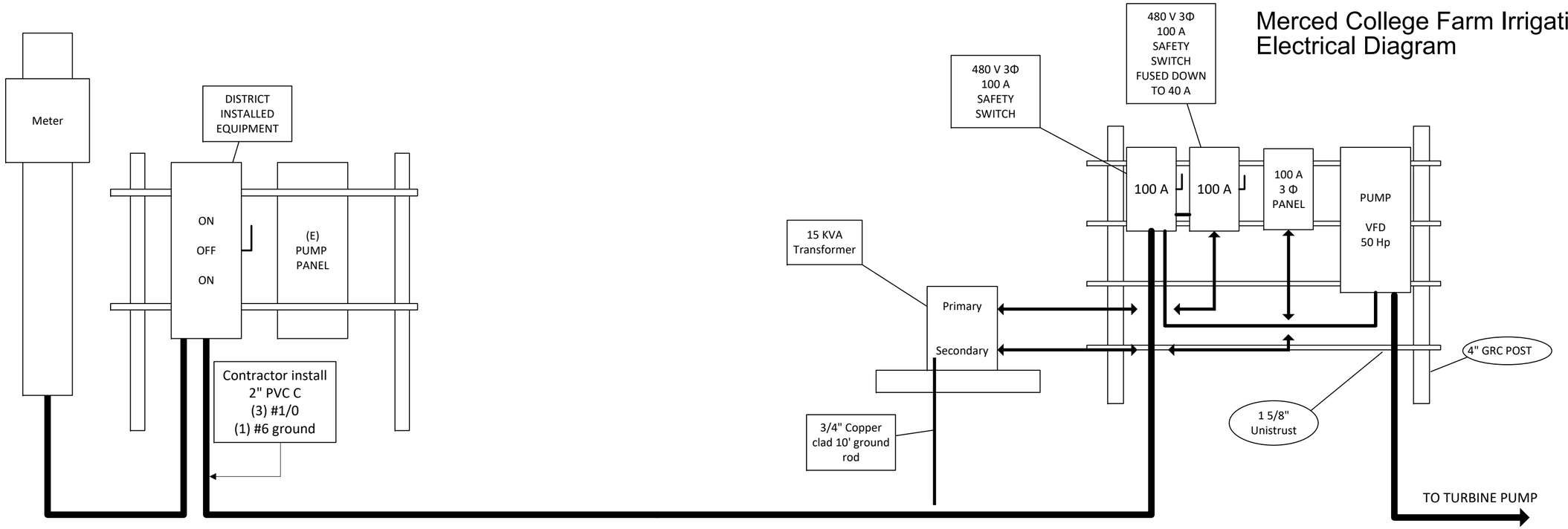
LOCATION:

Armstrong Consulting

SHEET 3 of 3

FILE: 2025036-I_MERCED COL
DATE:01/28/26 15:20
SCALE: NTS
DESIGN BY: BS
DRAWN BY: BS

Merced College Farm Irrigation Improvements
Electrical Diagram



**REFER TO PLAN SPECIFICATIONS FOR TRENCHING REQUIREMENTS

**GENERAL NOTE: REFER TO PLAN SPECIFICATIONS FOR ALL ELECTRICAL EQUIPMENT AND MOUNTING REQUIREMENTS