



CITY OF PROVIDENCE, RHODE ISLAND

Department: Parks

RFP Title: Re-Bid Site Improvements at Gano St

Park Opening Date: 3/10/2025

Addendum #: 1

Issue Date: 2/21/2025

The purpose of this addendum

is: see attached . Change

opening date to 3/10/2025



WENDY NILSSON
Superintendent of Parks

BRETT P. SMILEY
Mayor

Addendum # 1

Re-Bid Site Improvements at Gano St Park

February 21, 2025

Total Pages Including Cover (22 Pages)

Acknowledge Addenda on Bid Form

**** BID DUE DATE MONDAY, February 24, 2025, AT 2:15PM ****

Attachments:

1. Addendum Cover Sheet (1 Page)
2. Pre-Bid Sign in Sheet (1 Page)
3. Layout Plan L-7 (1 Page)
4. Construction Details 2 L-9 (1 Page)
5. Planting Irrigation (324800) Technical Specifications (18 Pages)

Questions/Clarifications:

1. Q: "Please clarify if the Dugouts are supposed to be 5' W x 30' L or 5' W x 20' L?
A: Dugouts should be 8' wide x 32' long.
Please refer to Layout Plan L-7 and Construction Details 2 L-9, which have been amended to reflect changes to the dugouts.
2. Q: Planting Irrigation technical specifications have drip irrigation included in them. Please clarify if drip irrigation is needed.
A: The Planting Irrigation specifications have been updated to reflect Parks' most recent standardization and provide potential vendors for the products and materials listed, which should be referenced from the Irrigation Plan L-5 and Irrigation Details L-12.

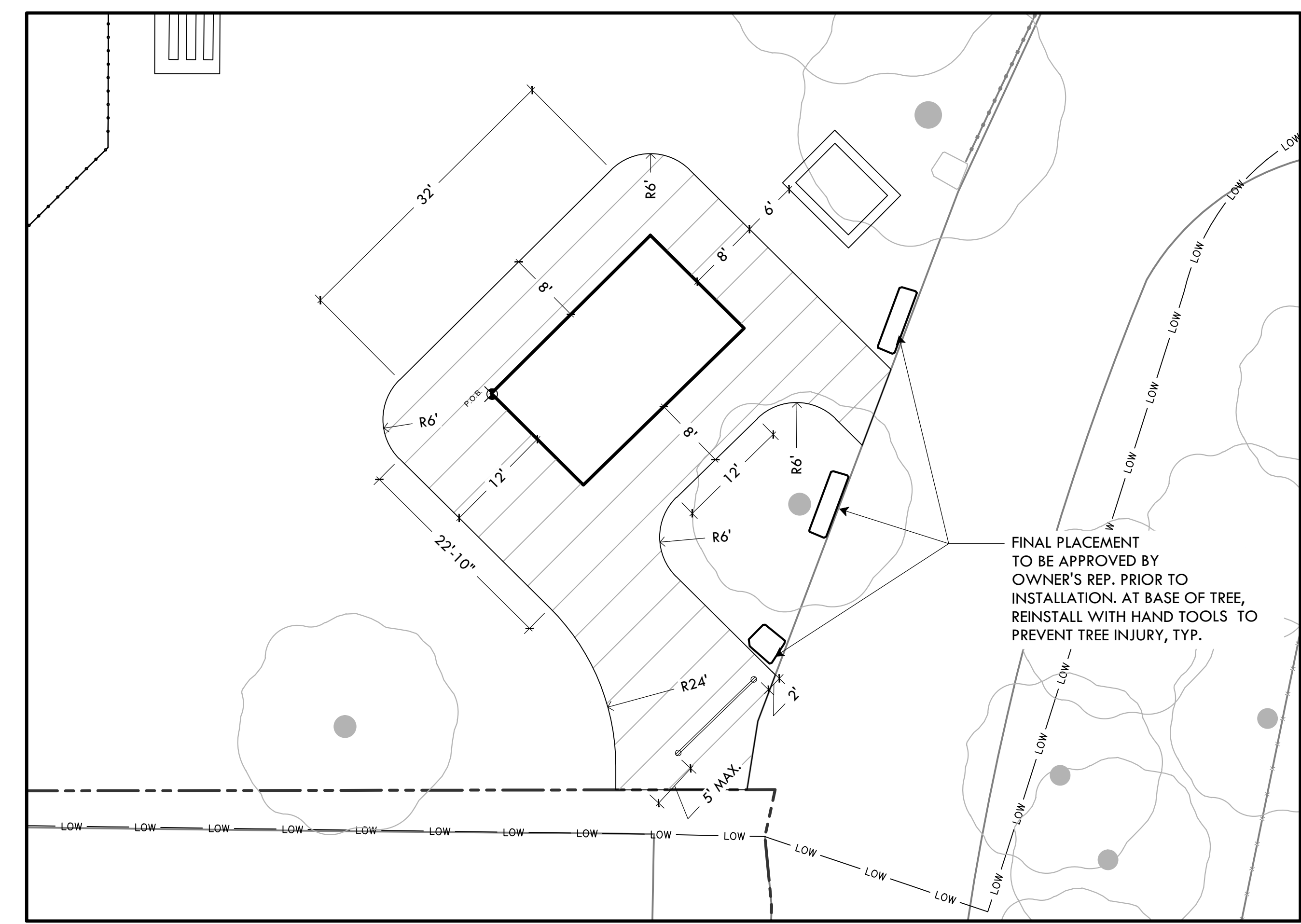
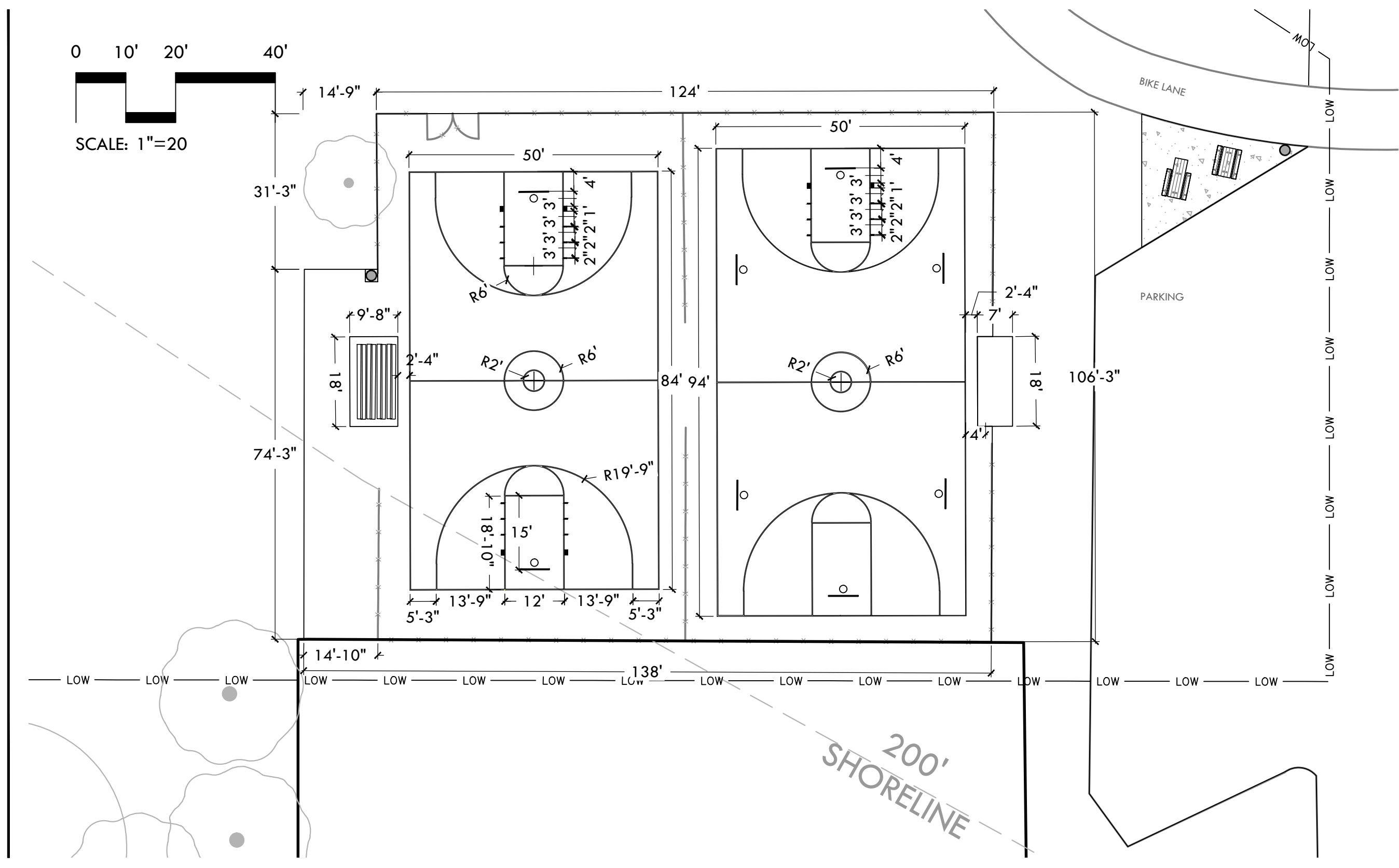
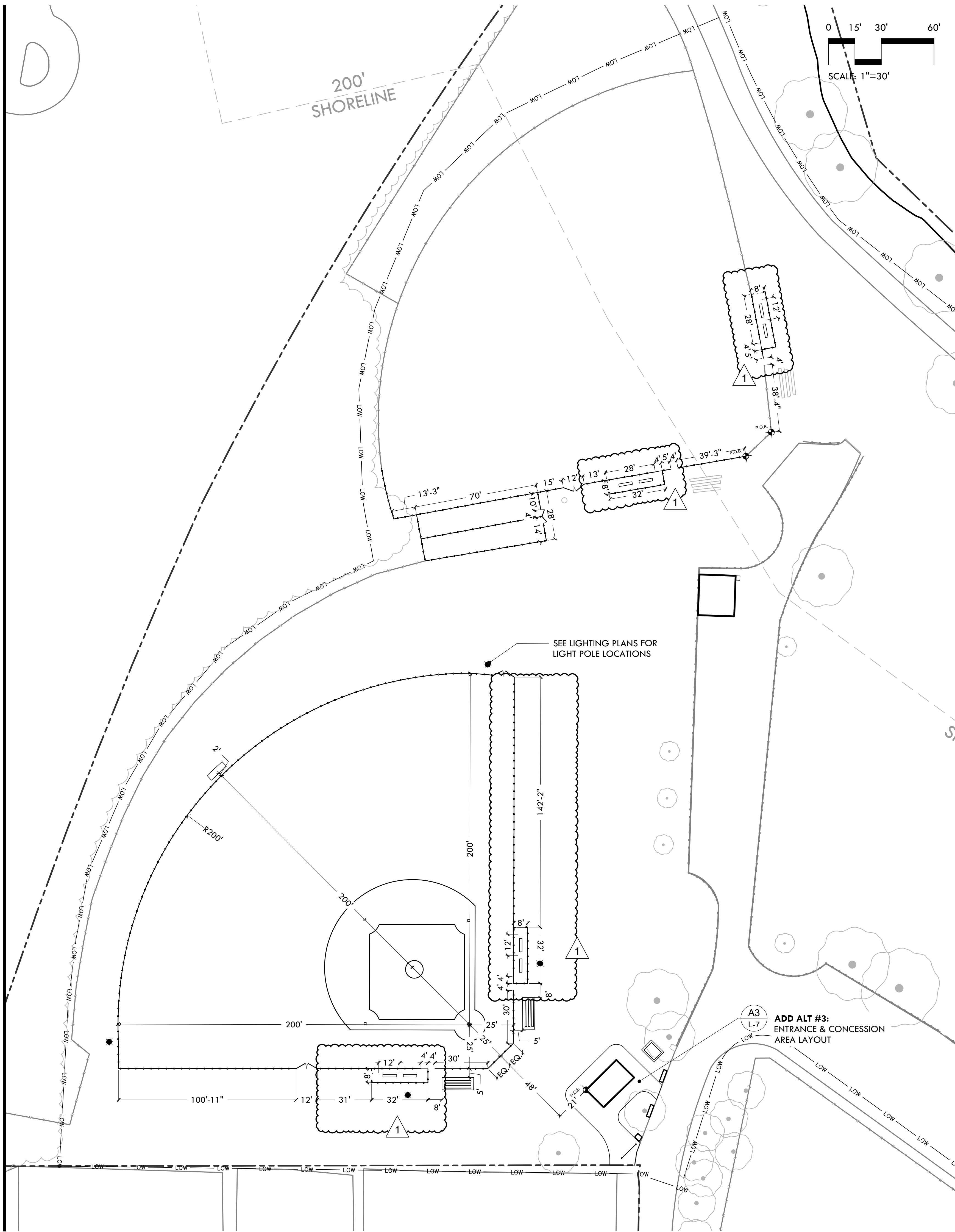
Sign-In Sheet

Non-Mandatory Pre-Bid Meeting

Tuesday, 2/11/25, 2025 at 10 AM – Gano St Park (Site)

Project: Re-Bid Site Improvements at Gano St Park

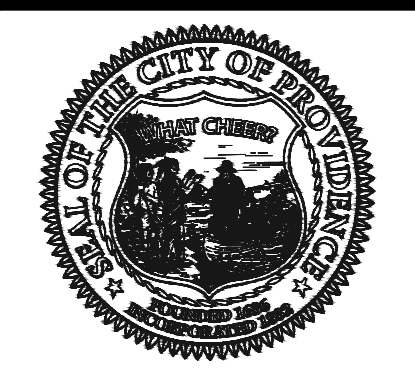
NAME	COMPANY	E-MAIL	PHONE
CHRIS SEGER	MILL CITY	CSEGER@MILL-CITY.COM	401-766-3100
ALAN GRADY	MUSCO LIGHTING	ALAN.GRADY@MUSCO.COM	207-604-8748
KRISTEN NEY	GRAY & PAPER	kheitert@graypaper.com	860-130-0635
PAUL CHAVES	P+G IRRIGATION	paulchaves71@gmail.com	508 252 9523
David Lucena	Lucena Bros.	dauid@lucenabros.com	407 762 - 5400
Leandro Castillo	Chelsey's Home Reno.	ChelseysHomeRenovations@gmail.com	401-808-1559



A3 ADD ALT #3: ENTRANCE & CONCESSION AREA LAYOUT
SCALE: 1"=10'

LAYOUT LEGEND

- POINT OF BEGINNING
- CENTERLINE
- DIMENSION



PROVIDENCE PARKS DEPARTMENT
DALRYMPLE BOATHOUSE
ROGER WILLIAMS PARK
PROVIDENCE, RI 02905



COPYRIGHT (C) CITY OF PROVIDENCE PARKS DEPARTMENT, ALL RIGHTS RESERVED 2025.

NO PART OF THIS DOCUMENT MAY BE REPRODUCED, STORED IN A RETRIEVAL SYSTEM OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC, MECHANICAL, PHOTOCOPYING, RECORDING OR OTHERWISE WITHOUT THE PRIOR WRITTEN PERMISSION OF THE CITY OF PROVIDENCE PARKS DEPARTMENT. ANY MODIFICATIONS TO THIS DOCUMENT WITHOUT THE WRITTEN PERMISSION OF THE CITY OF PROVIDENCE PARKS DEPARTMENT SHALL RENDER IT INVALID AND UNUSABLE.

STAMP

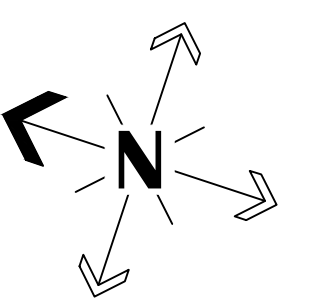
PROJECT:

Re-Bid Site Improvements at Gano St Park
87 Fremont St
Providence, RI 02906

REVISIONS:

Date	Issued For:
2/21/2025	Addendum 1

NORTH ARROW



SCALE

DRAWING INFO

DATE ISSUED: 01/16/25
PROJECT NO: GSPK.24.01
DRAWN BY: SH, II
CHECKED BY: MG

SHEET TITLE

Layout Plan

L-7

7 OF 19

FILE: GSPK24.01 - REBID.dwg



PROVIDENCE PARKS DEPARTMENT
DALRYMPLE BOATHOUSE
ROGER WILLIAMS PARK
PROVIDENCE, RI 02905



COPYRIGHT (C) CITY OF PROVIDENCE PARKS DEPARTMENT, ALL RIGHTS RESERVED 2025.
NO PART OF THIS DOCUMENT MAY BE REPRODUCED, STORED IN A RETRIEVAL SYSTEM OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC, MECHANICAL, PHOTOCOPYING, RECORDING OR OTHERWISE WITHOUT THE PRIOR WRITTEN PERMISSION OF THE CITY OF PROVIDENCE PARKS DEPARTMENT. ANY MODIFICATIONS TO THIS DOCUMENT WITHOUT THE WRITTEN PERMISSION OF THE CITY OF PROVIDENCE PARKS DEPARTMENT SHALL RENDER IT INVALID AND UNUSABLE.

STAMP

PROJECT:
Re-Bid Site Improvements at Gano St Park
87 Fremont St
Providence, RI 02906

REVISIONS:
Date Issued For:
2/21/2025 Addendum 1

NORTH ARROW

SCALE

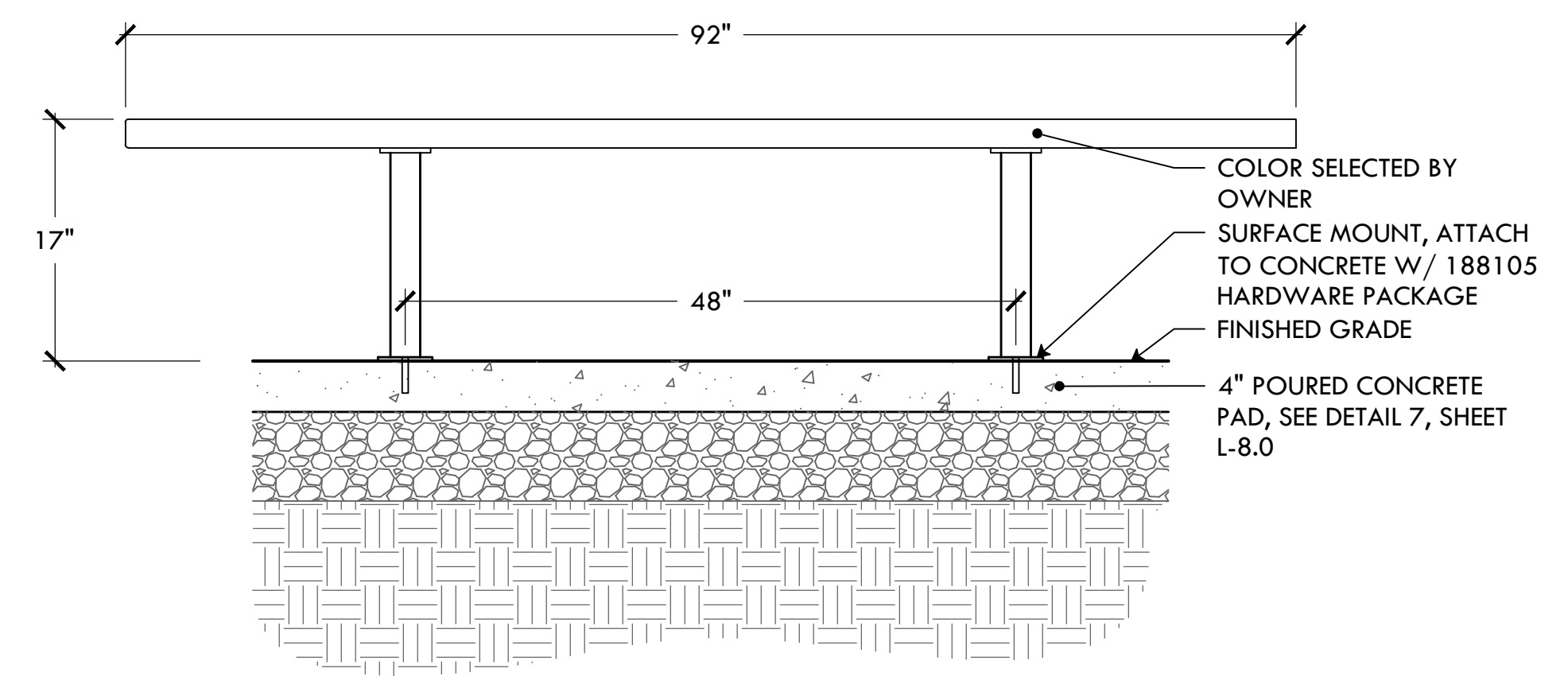
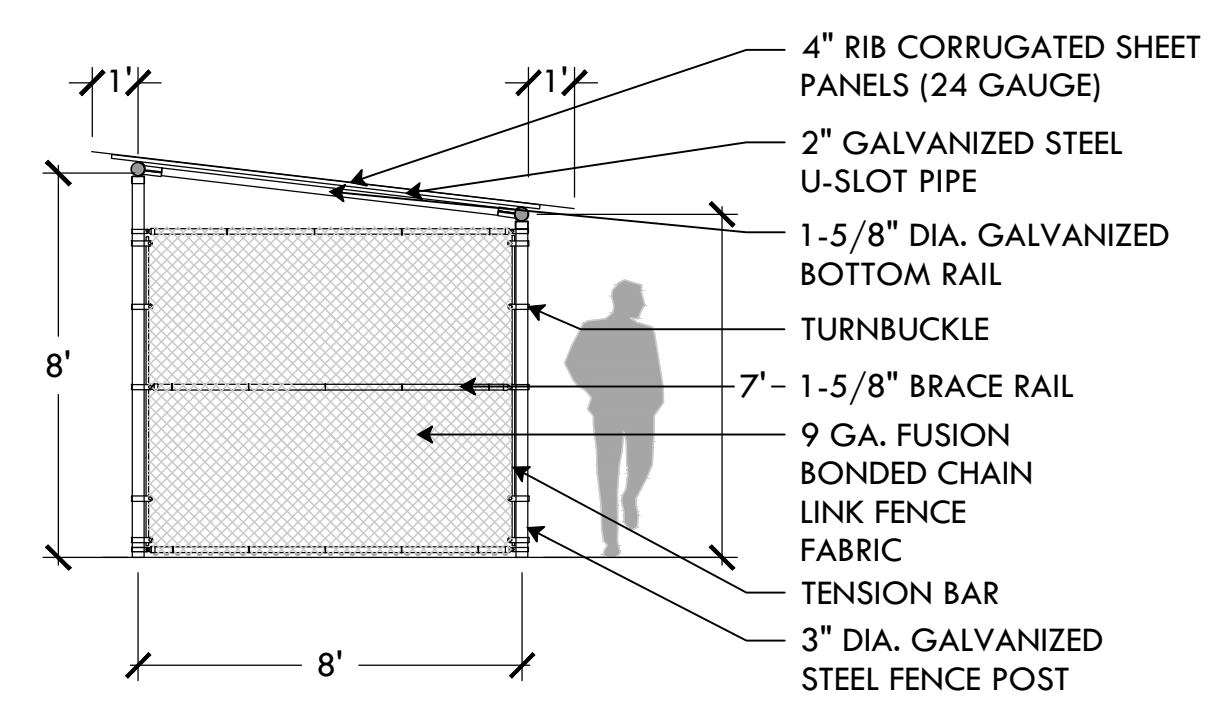
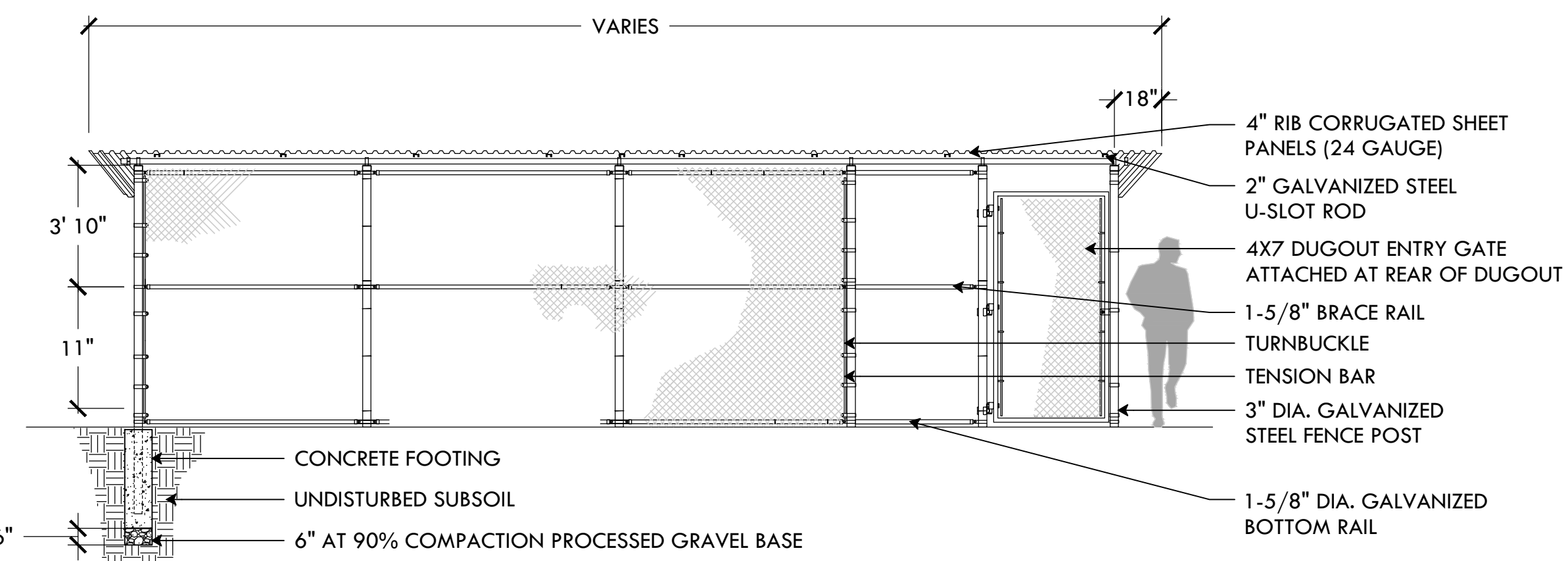
DRAWING INFO
DATE ISSUED: 01/16/25
PROJECT NO: GSPK.24.01
DRAWN BY: SH, II
CHECKED BY: MG

SHEET TITLE
Construction Details 2

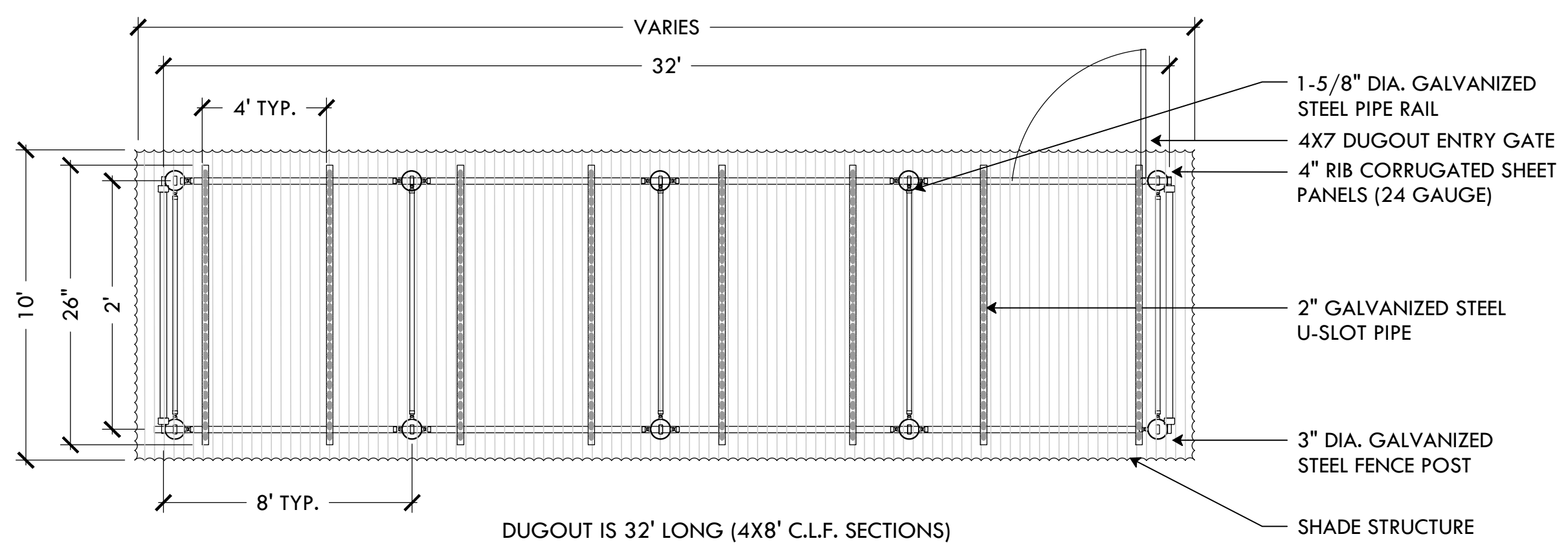
L-9

9 OF 19

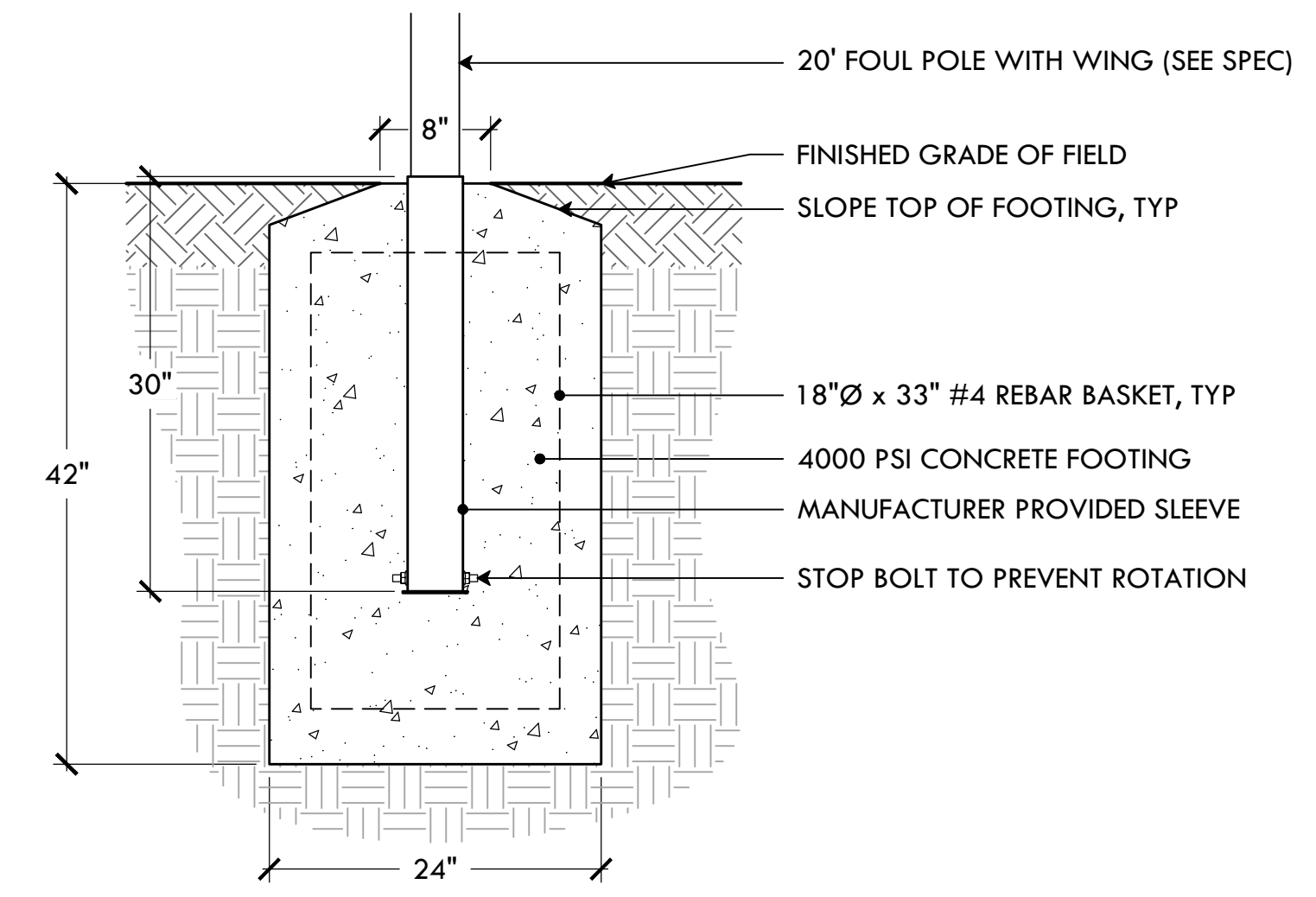
FILE: GSPK24.01 - REBID.rvt



12 DUGOUT BENCH
NTS

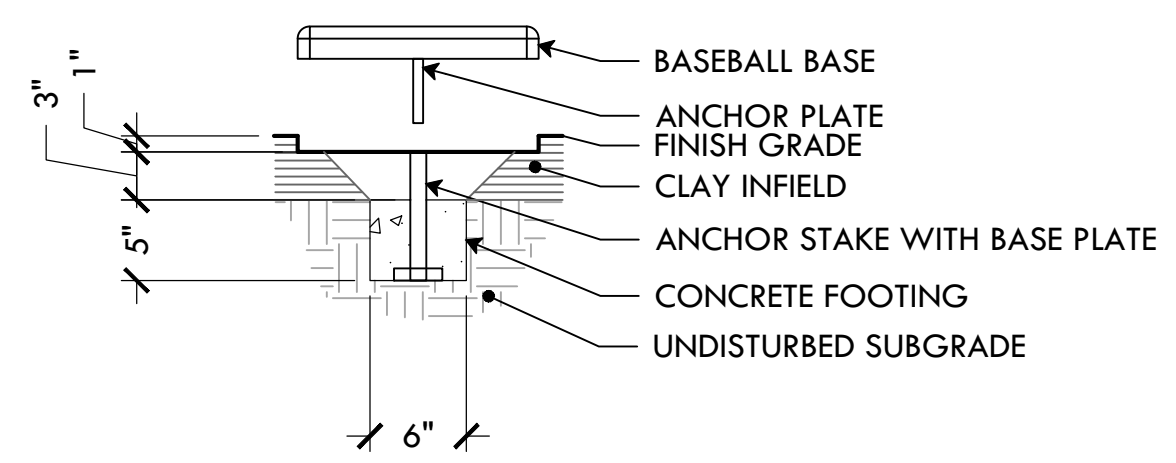


CONSTRUCTION NOTES:
FOOTING WIDTH TO BE (4)X POST WIDTH, MINIMUM DEPTH 36"
DUGOUT WILL BE 32' IN LENGTH WITH POST 8' O/C=3" SCHEDULE 40 GALVANIZED. HEIGHT IN FRONT OF DUGOUT WILL BE 8' ABOVE GRADE ELEVATION
ALL POSTS, RAILS, BRACES AND ACCESSORIES SHALL BE GALVANIZED STEEL WITH A PROTECTED ZINC COATING



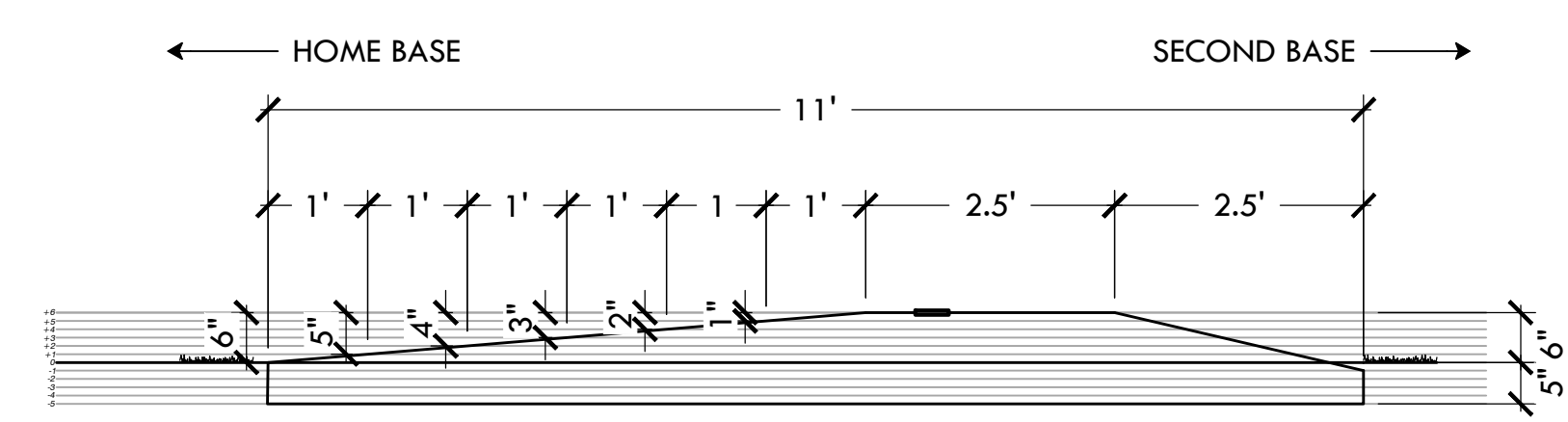
13 FOUL POLE FOOTING
NTS

11 DUGOUT W/ CORRUGATED ROOF
NTS

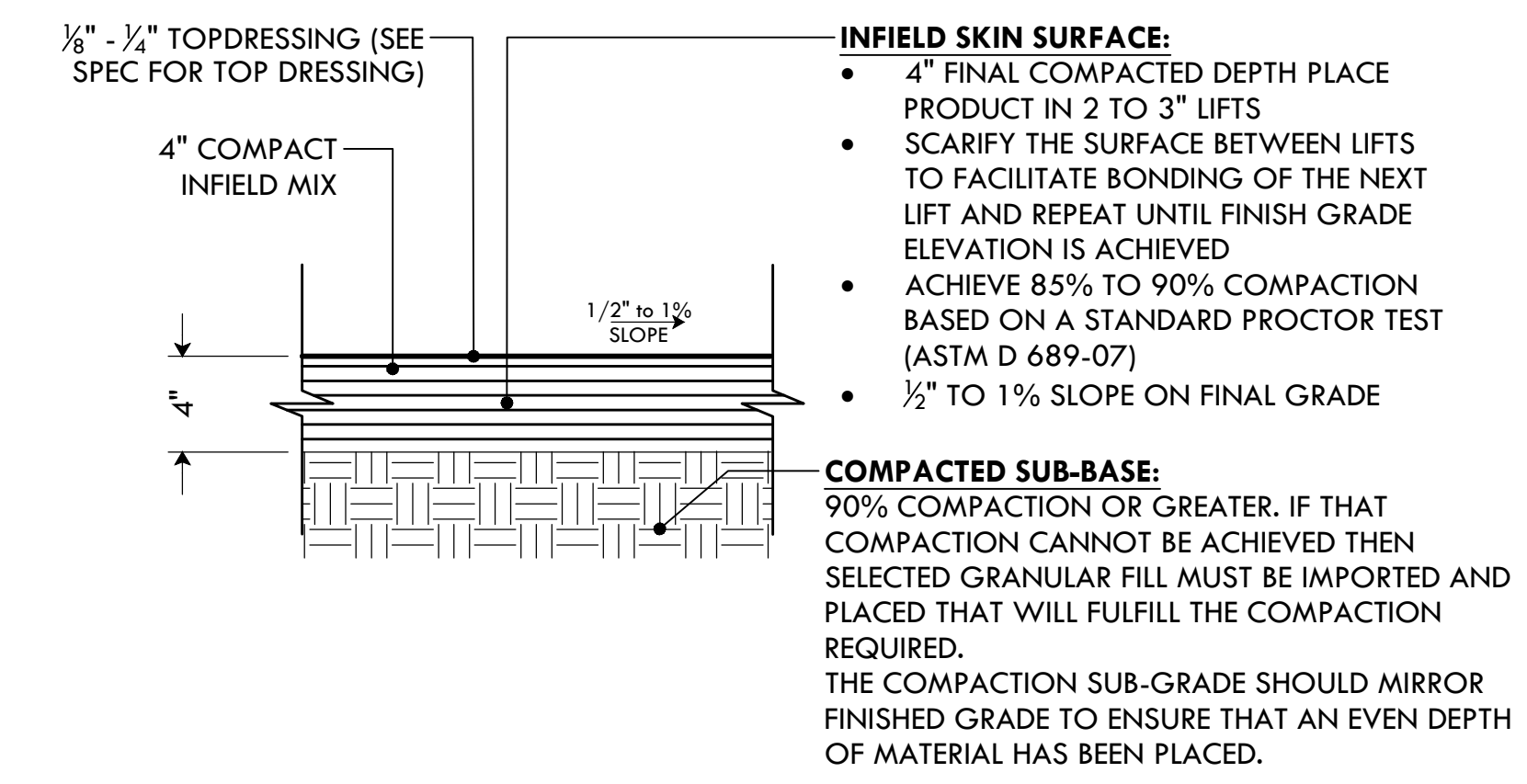


NOTES:
1. DETAIL DOES NOT APPLY TO HOME PLATE.
2. CONCRETE ANCHOR FOOTING SHALL HAVE MIN. 24 HOURS FOR CURING PROCESS PRIOR TO INSTALLING ANCHOR STAKE & BASE.
3. BASEBALL DIAMOND TO BE LEVEL BEFORE EXCAVATING FOOTING LOCATION.
4. EXCAVATE FOOTING LOCATION MIN. DEPTH 9" FROM GROUND LEVEL. TOP EDGE OF THE ANCHOR STAKE SHALL BE MIN 1" BELOW FINISH GRADE LEVEL. ANCHOR STAKE SHALL BE PERPENDICULAR TO LEVEL GROUND.
5. FILL IN THE HOLE BY TAMPING SOIL SOLIDLY AROUND ANCHOR STAKE FOOTING. ALLOW AN AREA THE SIZE OF THE BASE TO BE 1" BELOW THE GROUND LEVEL. POSITION BASE OVER FOOTING. INSTALL INTO PLACE WITH ANCHOR STAKE SLIDING INTO ANCHOR PLATE ON THE BACKSIDE OF BASE. THE TOP OF THE BASE PLATE SHALL BE 2" HIGHER THAN THE LEVEL GRADE.

14 BASEBALL BASE PLATE
NTS



15 BASEBALL PITCHER'S MOUND
NTS



NOTES
1. SAND: 70% TO 75% OF THE TOTAL SAND CONTENT, 50% SHALL BE COMPOSED OF MEDIUM, COARSE, AND VERY COARSE SAND PARTICLES.
2. SILT & CLAY: THE COMBINED AMOUNT OF SILT AND CLAY SHALL BE BETWEEN 25% AND 30%. THE SILT-TO-CLAY RATIO, SHALL BE BETWEEN 0.5 AND 1.0.

16 INFIELD MIX
NTS



SECTION 328400 - PLANTING IRRIGATION

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:

1. Piping.
2. Encasement for piping.
3. Pressure-reducing valves.
4. Automatic control valves.
5. Automatic drain valves.
6. Transition fittings.
7. Miscellaneous piping specialties.
8. Quick couplers.
9. Controllers.
10. Boxes for automatic control valves.
11. Glass.

- B. Sprinklers.

- C. Related Sections:

1. Section 220519 "Meters and Gages for Plumbing Piping" for water metering requirements.
2. Section 230923.14 "Flow Instruments" for water metering equipment.

1.3 DEFINITIONS

- A. Circuit Piping: Downstream from control valves to sprinklers, specialties, and drain valves. Piping is under pressure during flow.
- B. Drain Piping: Downstream from circuit-piping drain valves. Piping is not under pressure.
- C. ET Controllers: EvapoTranspiration Controllers. Irrigation controllers which use some method of weather-based adjustment of irrigation. These adjusting methods include use of historical monthly averages of ET; broadcasting of ET measurements; or use of on-site sensors to track ET.



- D. Main Piping: Downstream from point of connection to water distribution piping to, and including, control valves. Piping is under water-distribution-system pressure.
- E. Low Voltage: As defined in NFPA 70 for circuits and equipment operating at less than 50 V or for remote-control, signaling power-limited circuits.

1.4 PERFORMANCE REQUIREMENTS

- A. Irrigation zone control shall be automatic operation with controller and automatic control manual operation with manual valves.
- B. Location of Sprinklers and Specialties: Design location is approximate. Make minor adjustments necessary to avoid plantings and obstructions such as signs and light standards. Maintain 100 percent irrigation coverage of areas indicated.
- C. Minimum Working Pressures: The following are minimum pressure requirements for piping, valves, and specialties unless otherwise indicated:
 - 1. Irrigation Main Piping: 200 PSI.
 - 2. Circuit Piping: 150 PSI.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories.
- B. Wiring Diagrams: For power, signal, and control wiring.

1.6 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Irrigation systems, drawn to scale, on which components are shown and coordinated with each other, using input from Installers of the items involved. Also include adjustments necessary to avoid plantings and obstructions such as signs and light standards.
- B. Qualification Data: For qualified Installer.
- C. Zoning Chart: Show each irrigation zone and its control valve.
- D. Controller Timing Schedule: Indicate timing settings for each automatic controller zone.



1.7 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For sprinklers controllers and automatic control valves to include in operation and maintenance manuals.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Control Valves: (2) Each
 - 2. Control Valve Boxes: (2) Each
 - 3. Quick Coupling Valves: (1) Each
 - 4. Quick Coupling Valve Boxes: (1) Each
 - 5. Sprinklers (of each type): (5) Each

1.9 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers that include a Licensed Master Irrigator .
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent -end damage and to prevent entrance of dirt, debris, and moisture.
- B. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

1.11 PROJECT CONDITIONS

- A. Interruption of Existing Water Service: Do not interrupt water service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water service according to requirements indicated:
 - 1. Notify Construction Manager no fewer than two days in advance of proposed interruption of water service.
 - 2. Do not proceed with interruption of water service without Owner's written permission.



PART 2 - PRODUCTS

2.1 PIPES, TUBES, AND FITTINGS

- A. Comply with requirements in the piping schedule for applications of pipe, tube, and fitting materials, and for joining methods for specific services, service locations, and pipe sizes.
- B. Galvanized-Steel Pipe: ASTM A 53/A 53M, Standard Weight, Type E, Grade B.
 - 1. Galvanized-Steel Pipe Nipples: ASTM A 733, made of ASTM A 53/A 53M or ASTM A 106/A 106M, Standard Weight, seamless-steel pipe with threaded ends.
 - 2. Galvanized, Gray-Iron Threaded Fittings: ASME B16.4, Class 125, standard pattern.
 - 3. Malleable-Iron Unions: ASME B16.39, Class 150, hexagonal-stock body with ball-and-socket, metal-to-metal, bronze seating surface, and female threaded ends.
 - 4. Cast-Iron Flanges: ASME B16.1, Class 125.
- C. Soft Copper Tube: water tube, annealed temper.
 - 1. Copper Pressure Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper solder-joint fittings. Furnish wrought-copper fittings if indicated.
 - 2. Bronze Flanges: ASME B16.24, Class 150, with solder-joint end.
 - 3. Copper Unions: MSS SP-123, cast-copper-alloy, hexagonal-stock body, with ball-and-socket, metal-to-metal seating surfaces and solder-joint or threaded ends.
- D. Hard Copper Tube: **ASTM B 88, Type M**, water tube, drawn temper.
 - 1. Copper Pressure Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper solder-joint fittings. Furnish wrought-copper fittings if indicated.
 - 2. Bronze Flanges: ASME B16.24, Class 150, with solder-joint end.
 - 3. Copper Unions: MSS SP-123, cast-copper-alloy, hexagonal-stock body, with ball-and-socket, metal-to-metal seating surfaces and solder-joint or threaded ends.
- E. PE Pipe with Controlled ID: ASTM F 771, PE 3408 compound; SIDR 15.
 - 1. Insert Fittings for PE Pipe: ASTM D 2609, nylon or propylene plastic with barbed ends. Include bands or other fasteners.
- F. PE Pipe with Controlled OD: ASTM F 771, PE 3408 compound, SDR 11.
 - 1. PE Butt, Heat-Fusion Fittings: ASTM D 3261.
 - 2. PE Socket-Type Fittings: ASTM D 2683.
- G. PE Pressure Pipe: AWWA C906, with DR of 7.3, 9, or 9.3 and PE compound number required to give pressure rating not less than **160 psig**.
 - 1. PE Socket-Type Fittings: ASTM D 2683.



- H. PVC Pipe: ASTM D 1785, PVC 1120 compound, Schedule 40.
 - 1. PVC Socket Fittings: ASTM D 2466, Schedules 40 and 80.
 - 2. PVC Threaded Fittings: ASTM D 2464, Schedule 80.
 - 3. PVC Socket Unions: Construction similar to MSS SP-107, except both headpiece and tailpiece shall be PVC with socket ends.
- I. PVC Pipe, Pressure Rated: ASTM D 2241, PVC 1120 compound, SDR 21 and SDR 26.
 - 1. PVC Socket Fittings: ASTM D 2467, Schedule 80.
 - 2. PVC Socket Unions: Construction similar to MSS SP-107, except both headpiece and tailpiece shall be PVC with socket or threaded ends.

2.2 PIPING JOINING MATERIALS

- A. Pipe-Flange Gasket Materials: AWWA C110, rubber, flat face, **1/8 inch** thick unless otherwise indicated; full-face or ring type unless otherwise indicated.
- B. Metal, Pipe-Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.
- C. Brazing Filler Metals: AWS A5.8/A5.8M, BCuP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.
- D. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.
- E. Solvent Cements for Joining PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.
- F. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer unless otherwise indicated.

2.3 MANUAL VALVES

- A. Bronze Ball Valves:
 - 1. **Manufacturers:** Subject to compliance with requirements, undefined:
 - a. Apollo Flow Controls; Conbraco Industries, Inc.
 - b. NIBCO INC.
 - c. WATTS.
 - d. Zurn Industries, LLC.
 - e. Or Approved Equal
 - 2. Description:
 - a. Standard: MSS SP-110.
 - b. SWP Rating: **150 psig**.



- c. CWP Rating: **600 psig**.
- d. Body Design: Two piece.
- e. Body Material: Bronze.
- f. Ends: Threaded or solder joint if indicated.
- g. Seats: PTFE or TFE.
- h. Stem: Bronze.
- i. Ball: Chrome-plated brass.
- j. Port: Full or regular, but not reduced.

B. Plastic Ball Valves:

1. **Manufacturers:** Subject to compliance with requirements, undefined:
 - a. NIBCO INC.
 - b. Spears Manufacturing Company.
 - c. WATTS.
 - d. Or Approved Equal
2. Description:
 - a. Standard: MSS SP-122.
 - b. Pressure Rating: **125 psig** minimum .
 - c. Body Material: PVC.
 - d. Type: Union.
 - e. End Connections: Socket or threaded.
 - f. Port: Full.

2.4 PRESSURE-REDUCING VALVES

A. Water Regulators:

1. **Manufacturers:** Subject to compliance with requirements, undefined:
 - a. Apollo Flow Controls; Conbraco Industries, Inc.
 - b. WATTS.
 - c. Or Approved Equal
2. Description:
 - a. Standard: ASSE 1003.
 - b. Body Material: Bronze for **NPS 2** and smaller; cast iron for **NPS 2-1/2 and NPS 3**.
 - c. Pressure Rating: Initial pressure of **150 psig**.
 - d. End Connections: Threaded for **NPS 2** and smaller; flanged for **NPS 2-1/2 and NPS 3**.
3. Capacities and Characteristics:
 - a. Size: **NPS**.
 - b. Design Flow Rate: **gpm**.
 - c. Design Inlet Pressure: **psig**.
 - d. Design Outlet Pressure Setting: **psig**.

B. Flow Sensors Valves:



1. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
 - a. Rain Bird FS Series (FS200P)
 - b. Or Approved Equal
2. Description: Operate with impellers to sense flow and send flow rate data to central control or stand-alone controller systems for precise and accurate flow monitoring - NPT

2.5 AUTOMATIC CONTROL VALVES

A. Plastic, Automatic Control Valves:

1. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
 - a. Hunter Industries Incorporated.
 - b. Rain Bird PGA
 - c. Approved Equal
2. Description: Molded-plastic body, normally closed, diaphragm type with manual-flow adjustment, and operated by 24-V ac solenoid.

2.6 MISCELLANEOUS PIPING SPECIALTIES

- A. Water Hammer Arresters: ASSE 1010 or PDI WH 201, with bellows or piston-type pressurized cushioning chamber and in sizes complying with PDI WH 201, Sizes A to F.
- B. Pressure Gages: ASME B40.1. Include **4-1/2-inch-** diameter dial, dial range of two times system operating pressure, and bottom outlet.

2.7 SPRINKLERS

- A. General Requirements: Designed for uniform coverage over the entire spray area indicated at available water pressure.
- B. Plastic, Pop-up, Gear-Drive Rotary Sprinklers:
 1. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
 - a. Hunter Industries Incorporated.
 - b. Or Approved Equal
 2. Description:
 - a. Body Material: ABS.
 - b. Nozzle: ABS.
 - c. Retraction Spring: Stainless steel.
 - d. Internal Parts: Corrosion resistant.



C. Metal, Pop-up, Impact-Drive Rotary Sprinklers:

1. **Manufacturers:** Subject to compliance with requirements, provide products by the following:
 - a. Hunter Industries – I-25 SS
 - b. Or Approved Equal
2. Description:
 - a. Case: Brass.
 - b. Body Material: Stainless Steel Sleeve
 - c. Pop-up Height: **4 inches** aboveground to nozzle.
 - d. Sprinkler Construction: Brass and other corrosion-resistant metals.

D. Plastic, Surface Spray Sprinklers:

1. **Manufacturers:** Subject to compliance with requirements, provide products by the following:
 - a. Rain Bird 1800 Series (1804)
 - b. Or Approved Equal
2. Description:
 - a. Body Material and Flange: ABS.
 - b. Pattern: Fixed, with flow adjustment.
 - c. Pattern: Fixed, with flow adjustment.

2.8 QUICK COUPLERS

A. **Manufacturers:** Subject to compliance with requirements, provide products by the following:

1. Rain Bird Corporation (33-LRC).
2. Or Approved Equal

B. Description: Factory-fabricated, bronze or brass, two-piece assembly. Include coupler water-seal valve; removable upper body with spring-loaded or weighted, rubber-covered cap; hose swivel with ASME B1.20.7, 3/4-11.5NH threads for garden hose on outlet; and operating key.

1. Locking-Top Option: Vandal-resistant locking feature. Include one matching key(s).

2.9 DRIP IRRIGATION SPECIALTIES

A. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:

1. Netafim USA.
2. Rain Bird Corporation.
3. Or Approved Equal



- B. Freestanding Emitters: Device to deliver water at approximately 20 psig.
 - 1. Body Material: PE or vinyl, with flow control.
 - 2. Riser to Emitter: PE or PVC flexible tubing.
- C. Manifold Emitter Systems: Manifold with tubing and emitters.
 - 1. Manifold: With multiple outlets to deliver water to emitters.
 - a. Body Material: Plastic.
 - b. Outlet Caps: Plastic, for outlets without installed tubing.
 - c. Operation: Automatic pressure compensating.
 - 2. Tubing: PE or PVC; 1/8-inch minimum ID.
 - 3. Emitter: Device to deliver water at approximately 20 psig.
 - a. Body Material: PE or vinyl, with flow control.
- D. Multiple-Outlet Emitter Systems: Emitter with tubing and button-type outlets.
 - 1. Emitter: With multiple outlets to deliver water to remote outlets.
 - a. Body Material: Plastic, with flow control.
 - b. Outlet Caps: Plastic, for outlets without installed tubing.
 - c. Operation: Automatic pressure compensating.
 - d. Emitters: Devices to deliver water at approximately 20 psig
 - 2. Tubing: PE or PVC; 1/8-inch minimum ID.
- E. Drip Tubes with Direct-Attached Emitters:
 - 1. Tubing: Flexible PE or PVC with plugged end.
 - 2. Emitters: Devices to deliver water at approximately 20 psig.
 - a. Body Material: PE or vinyl, with flow control.
 - b. Mounting: Inserted into tubing at set intervals.
- F. Drip Tubes with Remote Discharge:
 - 1. Tubing: Flexible PE or PVC with plugged end.
 - 2. Emitters: Devices to deliver water at approximately 20 psig.
 - a. Body Material: PE or vinyl, with flow control.
 - b. Mounting: Inserted into tubing at set intervals.
 - 3. Capacities and Characteristics:
 - a. Tubing Size: NPS 3/4.
 - b. Length: 12 inches.
 - c. Emitter Spacing: 12 inches.
 - d. Emitter Flow: 1/2 gph.
 - e. Branch Tubing Size: NPS 1/4 with button-type outlet.
 - f. Branch Tubing Length: 12inches.
- G. Off-Ground Supports: Plastic stakes.



- H. Application Pressure Regulators: Brass or plastic housing, **NPS 3/4**, with corrosion-resistant internal parts; capable of controlling outlet pressure to approximately **20 psig**.
- I. Filter Units: Brass or plastic housing, with corrosion-resistant internal parts; of size and capacity required for devices downstream from unit.
- J. Air Relief Valves: Brass or plastic housing, with corrosion-resistant internal parts.
- K. Vacuum Relief Valves: Brass or plastic housing, with corrosion-resistant internal parts.

2.10 CONTROLLERS

- A. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
 - 1. Rain Bird Corporation – ESP-Series.
 - 2. Or Approved Equal
- B. Description:
 - 1. Controller Stations for Automatic Control Valves: Each station is variable from approximately 5 to 60 minutes. Include switch for manual or automatic operation of each station.
 - 2. Exterior Control Enclosures: NEMA 250, Type 4, weatherproof, with locking cover and two matching keys; include provision for grounding.
 - a. Body Material: Enameled-steel sheet metal.
 - b. Mounting: Freestanding type for concrete base.
 - 3. Interior Control Enclosures: NEMA 250, Type 12, drip proof, with locking cover and two matching keys.
 - a. Body Material: Molded plastic.
 - b. Mounting: Surface type for wall.
 - 4. Control Transformer: 24-V secondary, with primary fuse.
 - 5. Timing Device: Adjustable, 24-hour, 14-day clock, with automatic operations to skip operation any day in timer period, to operate every other day, or to operate two or more times daily.
 - a. Manual or Semiautomatic Operation: Allows this mode without disturbing preset automatic operation.
 - b. Nickel-Cadmium Battery and Trickle Charger: Automatically powers timing device during power outages.
 - c. Surge Protection: Metal-oxide-varistor type on each station and primary power.
 - 6. Moisture Sensor: Adjustable from one to seven days, to shut off water flow during rain.
 - 7. Smart Controllers: Use ET, tested in accordance with IA SWAT Climatological Based Controllers 8th Draft Testing Protocol and compliant with ASHRAE Standard 189.1.
 - 8. Wiring: UL 493, Type UF multiconductor, with solid-copper conductors; insulated cable; suitable for direct burial.



- a. Feeder-Circuit Cables: No. 12 AWG minimum, between building and controllers.
 - b. Low-Voltage, Branch-Circuit Cables: No. 14 AWG minimum, between controllers and automatic control valves; color-coded different from feeder-circuit-cable jacket color; with jackets of different colors for multiple-cable installation in same trench.
 - c. Splicing Materials: Manufacturer's packaged kit consisting of insulating, spring-type connector or crimped joint and epoxy resin moisture seal; suitable for direct burial.
9. Ground Wire (12GA – White); Zone Wire (14GA – Red) and Spare Wire (14GA - Blue)
 10. (1) Spare wire shall be looped into every valve box and terminate at each end of the main line(s)
 11. Concrete Base: Reinforced precast concrete not less than **36 by 24 by 4 inches** thick, and **6 inches** greater in each direction than overall dimensions of controller. Include opening for wiring.
 12. Wall mount – as directed

2.11 RAIN SENSOR

1. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
 - a. Hunter Industries – Mini-Clik
 - b. Or Approved Equal

2.12 BOXES FOR AUTOMATIC CONTROL VALVES

A. Plastic Boxes:

1. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
 - a. Ametec.
 - b. Carson.
 - c. Or Approved Equal
2. Description: Box and cover, with open bottom and openings for piping; designed for installing flush with grade.
 - a. Size: As required for valves and service.
 - b. Shape: Rectangular.
 - c. Sidewall Material: PE, ABS, or FRP.
 - d. Cover Material: PE, ABS, or FRP.
 - 1) Lettering: " IRRIGATION."

- ##### B. Drainage Backfill: Cleaned gravel or crushed stone, graded from **3/4 inch** minimum to **3 inches** maximum.



PART 3 - EXECUTION

3.1 EARTHWORK

- A. Excavating, trenching, and backfilling are specified in Section 312000 "Earth Moving."
- B. Drain Pockets: Excavate to sizes indicated. Backfill with cleaned gravel or crushed stone, graded from **3/4 to 3 inches** to **12 inches** below grade. Cover gravel or crushed stone with sheet of asphalt-saturated felt and backfill remainder with excavated material.
- C. Provide minimum cover over top of underground piping according to the following:
 - 1. Irrigation Main Piping: Minimum depth of 18 inches below finished grade, or not less than
 - 2. Circuit Piping: **12 inches**.
 - 3. Drain Piping: **12 inches**.
 - 4. Sleeves: 18 inches.

3.2 PREPARATION

- A. Set stakes to identify locations of proposed irrigation system. Obtain Architect's approval before excavation.

3.3 PIPING INSTALLATION

- A. Location and Arrangement: Drawings indicate location and arrangement of piping systems. Install piping as indicated unless deviations are approved on Coordination Drawings.
- B. Install piping free of sags and bends.
- C. Install groups of pipes parallel to each other, spaced to permit valve servicing.
- D. Install fittings for changes in direction and branch connections.
- E. Install unions adjacent to valves and to final connections to other components with **NPS 2** or smaller pipe connection.
- F. Install underground thermoplastic piping according to ASTM D 2774.
- G. Install expansion loops in control-valve boxes for plastic piping.
- H. Lay piping on solid subbase, uniformly sloped without humps or depressions.
- I. Install ductile-iron piping according to AWWA C600.



- J. Install PVC piping in dry weather when temperature is above 40 deg F. Allow joints to cure at least 24 hours at temperatures above 40 deg F before testing.
- K. Install water regulators with shutoff valve and strainer on inlet and pressure gage on outlet. Install shutoff valve on outlet. Install aboveground or in control-valve boxes.
- L. Water Hammer Arresters: Install between connection to building main and circuit valves aboveground or in control-valve boxes.
- M. Install piping in sleeves under parking lots, roadways, and sidewalks.
- N. Install sleeves made of Schedule 40 PVC pipe and socket fittings, and solvent-cemented joints.
- O. Install transition fittings for plastic-to-metal pipe connections according to the following:
 - 1. Underground Piping:
 - a. NPS 1-1/2 and Smaller: Plastic-to-metal transition fittings.
 - b. NPS 2 and Larger: AWWA transition couplings.
 - 2. Aboveground Piping:
 - a. NPS 2 and Smaller: Plastic-to-metal transition fittings.
 - b. NPS 2 and Larger: Use dielectric flange kits with one plastic flange.

3.4 JOINT CONSTRUCTION

- A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
 - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- D. Flanged Joints: Select rubber gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.
- E. Ductile-Iron Piping Gasketed Joints: Comply with AWWA C600 and AWWA M41.
- F. Copper-Tubing Brazed Joints: Construct joints according to CDA's "Copper Tube Handbook," using copper-phosphorus brazing filler metal.



- G. Copper-Tubing Soldered Joints: Apply ASTM B 813 water-flushable flux to tube end unless otherwise indicated. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy (0.20 percent maximum lead content) complying with ASTM B 32.
- H. PE Piping Fastener Joints: Join with insert fittings and bands or fasteners according to piping manufacturer's written instructions.
- I. PE Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657.
 - 1. Plain-End PE Pipe and Fittings: Use butt fusion.
 - 2. Plain-End PE Pipe and Socket Fittings: Use socket fusion.
- J. PVC Piping Solvent-Cemented Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
 - 1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
 - 2. PVC Pressure Piping: Join schedule number, ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
 - 3. PVC Nonpressure Piping: Join according to ASTM D 2855.

3.5 VALVE INSTALLATION

- A. Underground Curb Valves: Install in curb-valve casings with tops flush with grade.
- B. Underground Iron Gate Valves, Resilient Seat: Comply with AWWA C600 and AWWA M44. Install in valve casing with top flush with grade.
 - 1. Install valves and PVC pipe with restrained, gasketed joints.
- C. Aboveground Valves: Install as components of connected piping system.
- D. Pressure-Reducing Valves: Install in boxes for automatic control valves or aboveground between shutoff valves.
- E. Throttling Valves: Install in underground piping in boxes for automatic control valves.
- F. Drain Valves: Install in underground piping in boxes for automatic control valves.

3.6 SPRINKLER INSTALLATION

- A. Install sprinklers after hydrostatic test is completed.



- B. Install sprinklers at manufacturer's recommended heights.
- C. Locate part-circle sprinklers to maintain a minimum distance of **4 inches** from walls and **2 inches** from other boundaries unless otherwise indicated.

3.7 DRIP IRRIGATION SPECIALTY INSTALLATION

- A. Install freestanding emitters on pipe riser to mounting height indicated.
- B. Install manifold emitter systems with tubing to emitters. Plug unused manifold outlets. Install emitters on off-ground supports at height indicated.
- C. Install multiple-outlet emitter systems with tubing to outlets. Plug unused emitter outlets. Install outlets on off-ground supports at height indicated.
- D. Install drip tubes with direct-attached emitters on ground.
- E. Install drip tubes with remote-discharge on ground with outlets on off-ground supports at height indicated.
- F. Install off-ground supports of length required for indicated mounted height of device.
- G. Install application pressure regulators and filter units in piping near device being protected, and in control-valve boxes.
- H. Install air relief valves and vacuum relief valves in piping, and in control-valve boxes.

3.8 AUTOMATIC IRRIGATION-CONTROL SYSTEM INSTALLATION

- A. Equipment Mounting: Install interior controllers on wall.
 - 1. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 2. Install anchor bolts to elevations required for proper attachment to supported equipment.
- B. Equipment Mounting: Install exterior freestanding controllers on precast concrete bases.
 - 1. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 2. Install anchor bolts to elevations required for proper attachment to supported equipment.
- C. Install control cable in same trench as irrigation piping and at least **2 inches** below or beside piping. Provide conductors of size not smaller than recommended by controller manufacturer. Install cable in separate sleeve under paved areas.



3.9 CONNECTIONS

- A. Comply with requirements for piping specified in Section 221113 "Facility Water Distribution Piping" for water supply from exterior water service piping, water meters, protective enclosures, and backflow preventers. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to equipment, valves, and devices to allow service and maintenance.
- C. Connect wiring between controllers and automatic control valves.

3.10 IDENTIFICATION

- A. Identify system components. Comply with requirements for identification specified in Section 220553 "Identification for Plumbing Piping and Equipment."
- B. Equipment Nameplates and Signs: Install engraved plastic-laminate equipment nameplates and signs on each automatic controller.
 - 1. Text: In addition to identifying unit, distinguish between multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations.
- C. Warning Tapes: Arrange for installation of continuous, underground, detectable warning tapes over underground piping during backfilling of trenches. See Section 312000 "Earth Moving" for warning tapes.

3.11 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
 - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- B. Tests and Inspections:
 - 1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
 - 2. Operational Test: After electrical circuitry has been energized, operate controllers and automatic control valves to confirm proper system operation.
 - 3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- C. Any irrigation product will be considered defective if it does not pass tests and inspections.



- D. Prepare test and inspection reports.

3.12 STARTUP SERVICE AND WINTERIZATION

- A. Perform startup service.
 - 1. Complete installation and startup checks according to manufacturer's written instructions.
 - 2. Verify that controllers are installed and connected according to the Contract Documents.
 - 3. Verify that electrical wiring installation complies with manufacturer's submittal.
- B. Perform winterization Service
 - 1. Complete (1) system shut-down with training

3.13 ADJUSTING

- A. Adjust settings of controllers.
- B. Adjust automatic control valves to provide flow rate at rated operating pressure required for each sprinkler circuit.
- C. Adjust sprinklers and devices, except those intended to be mounted aboveground, so they will be flush with, or not more than 1/4 inch above, finish grade.

3.14 CLEANING

- A. Flush dirt and debris from piping before installing sprinklers and other devices.

3.15 DEMONSTRATION

- A. Train Owner's maintenance personnel to adjust, operate, and maintain automatic control valves and controllers.

3.16 PIPING SCHEDULE

- A. Install components having pressure rating equal to or greater than system operating pressure.
- B. Piping in control-valve boxes and aboveground may be joined with flanges or unions instead of joints indicated.
- C. Underground irrigation main piping, 3 inch to 2-1/2 inch, shall be the following:



1. Schedule 40, PVC Gasket Joint pipe and socket fittings
- D. Circuit piping, 1 inch to 2 inch, shall be one of the following:
1. PE, controlled ID pipe; insert fittings for PE pipe; and fastener joints.
 2. PE, controlled OD pipe; PE butt, heat-fusion, or PE socket-type fittings; and heat-fusion joints.
 3. Schedule 40, PVC pipe and socket fittings; and solvent-cemented joints.
 4. SDR 26, PVC, pressure-rated pipe; Schedule 40, PVC socket fittings; and solvent-cemented joints.
- E. Underground Branches and Offsets at Sprinklers and Devices: Schedule 80, PVC pipe; threaded PVC fittings; and threaded joints.
1. Option: Plastic swing-joint assemblies, with offsets for flexible joints, manufactured for this application.
- F. Risers to Aboveground Sprinklers and Specialties: hard copper tube, wrought-copper fittings, and soldered joints.
- G. Risers to Aboveground Sprinklers and Specialties: Schedule 80, PVC pipe and socket fittings; and solvent-cemented joints.
- H. Drain piping shall be one of the following:
1. SDR 21, 26, or 32.5, PVC, pressure-rated pipe; Schedule 40, PVC socket fittings; and solvent-cemented joints.

3.17 VALVE SCHEDULE

- A. Underground, Shutoff-Duty Valves: Use the following:
1. **NPS 2** and Smaller: Curb valve, curb-valve casing, and shutoff rod.
 2. **NPS 3** and Larger: Iron gate valve, resilient seated; iron gate valve casing; and operating wrench(es).

END OF SECTION 328400