



**Elizabeth Unger**  
Purchasing Agent

# City of Cambridge

PURCHASING DEPARTMENT

**SHUO WANG**  
Assistant Purchasing Agent for  
Goods & Services

**NATALIE SULLIVAN**  
Assistant Purchasing Agent for  
Design & Construction

**TO: All Bidders**

**FROM: City of Cambridge**

**DATE: May 09, 2024**

**RE: File No. 11536 – Danehy Park Field 4 Field and Track Improvements - Addendum No. 1**

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**This addendum is comprised of the following:**

- 1. Questions and Answers**
- 2. Justification Memo (Attached)**
- 3. Pre-Bid sign in sheet (Attached)**
- 4. Changes to the Drawings (Attached)**

**The following questions were asked and answered:**

**Question 1: Is there any space identified for laydown and storage?**

**Answer: Yes. Per the Cover Sheet, there is space identified in the lower parking lot off New Street. Contractor can work with the City to determine how much space is needed in that area. Storage area should be fenced with temporary 6-ft chain link fence per note # 6 on Sheet C-1.**

**Question 2: Is there any irrigation in the work area that needs to be addressed?**

**Answer: See reference drawings attached that identify irrigation in the area.**

**Question 3: Are there any images of inside the electrical cabinet we are connecting to?**

**Answer: See attached images below.**

## **CHANGES TO THE DRAWINGS**

- 1. REPLACE Sheet C-1 REMOVALS AND EROSION AND SEDIMENTATION CONTROL AND PLAN with the attached plan with the following modifications:**
  - a. “EXCAVATE ONE 5-FT DEEP TEST PIT IN CENTER OF NEW DISCUS CAGE, IN THE PRESENCE OF THE ENGINEER. REPLACE EXCVATED MATERIAL IN THE TEST PIT HOLE. COMPACT IN 1-FT LIFTS.**
  - b. In the area of the new shot put, adjust limits of clearing and grubbing.**
  - c. At south of the track and field, adjust limits and location of the compost filter sock.**



2. **REPLACE sheet E-1-ELECTRICAL SITE PLAN with the attached plan with the following modifications:**
  - a. **Detail A- Change gravel backfill to in-situ material.**
  - b. **Detail B – Modification of electrical handhole detail.**
  
3. **ADD two attached drawings “R-1” and R-2” for exiting irrigation system reference.**

**All other details remain the same.**

**Elizabeth Unger  
Purchasing Agent**

**Addendum No. 1**





## Memorandum

**To:** Adam Corbeil, Director of Recreation, Cambridge, MA

**From:** Scott W. Landgren, RLA

**Date:** April 11, 2024

**Subject:** Danehy Park Field 4 Proprietary Specification Justification

### Overview

The field and track at Danehy Park-Field 4 were last updated in 2011. Both are scheduled for replacement in the summer of 2024. This memorandum is regarding product investigations for synthetic turf and infill material replacement, that City staff conducted with the assistance of CDM Smith, and the justification for the proprietary specification of these products.

### Review of Synthetic Turf Products

Various meetings were held in 2022 with City staff, CDM Smith, and various synthetic turf manufacturers, to review replacement synthetic turf product options for Danehy Park Field 4. Prior to the manufacturer's presentations, CDM Smith communicated the City's concerns related to surface temperatures of the turf during summer months, the desire to utilize a natural infill product, PFAS-free products, end of life recyclability, and inclusion of a resilient shock pad for overall safety of the system. Each manufacturer presented their recommended products based on these various factors and the anticipated sports played on the field.

In June 2022, City Staff and members of CDM Smith met with synthetic turf manufacturers Astroturf and Fieldturf-Tarkett to review their synthetic turf products. In October 2022, City Staff and CDM Smith met with additional manufacturers Greensfields and Shaw, as well as a representative from Brock USA. The group also conducted site visits to various fields to view the installed turf systems.

After these investigations and meeting with the four turf companies, review of their available products and testing data and the on-site visits, staff members expressed a preference for the following specific products based on their overall performance characteristics:

- Greenfield's - IronTurf Synthetic Turf
- Brock USA - Brockfill Organic Infill
- Brock USA – Powerbase YSR Resilient Shock Pad

### Proprietary Specification for Public Bid

Based on above, we believe that specifying the Greensfields IronTurf synthetic turf product, the Brock USA Brockfill Organic Infill product and the Brock Powerbase Resilient Shock Pad will provide the City

with the best overall replacement system for the existing synthetic turf field. This is based upon the following:

- The GreensFields Iron Turf synthetic turf product has shown there are no PFAS chemicals of concern by submission of their third-party scientific testing. The product is constructed in a way that makes it more recyclable at its end of life. Greensfields is a Tencate product and through this association, can provide full recyclability of the existing turf through Tencate Turf Recycling Solutions. The product is warranted for 10 years, whereas many other products carry an 8-year warranty.
- The Brockfill system provides a viable natural infill system (in lieu of the current crumb rubber system or alternative rubber infill systems). Brockfill is an engineered virgin natural pine infill that has been third-party tested and found to not contain any of 30 PFAS compounds for which it was tested. As a natural infill, Brockfill does not require irrigation. The system also provides impact reduction for users, better traction and measurable surface temperature reduction at the turf surface. Brockfill is manufactured in the United States and is warranted for 10 years and is a Cradle-to-Cradle certified product.
- The Brock YSR Resilient Shock Pad provides shock attenuating properties for use with the natural infill system. This product has also been third-party tested and found to not contain any of 30 PFAS compounds for which it was tested. The product is manufactured in the United States in an ISO 9000 certified facility and is warranted for 25 years and is a Cradle-to-Cradle certified product.

Per M.G.L. c. 30, § 39M(b), the proprietary specification language still necessitates the “or equal” clause which will be included as part of the project specifications.









Electrical Cabinet





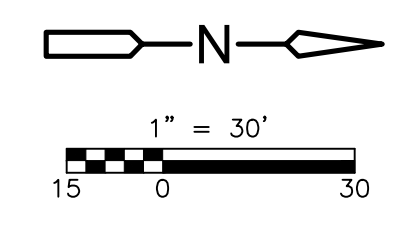
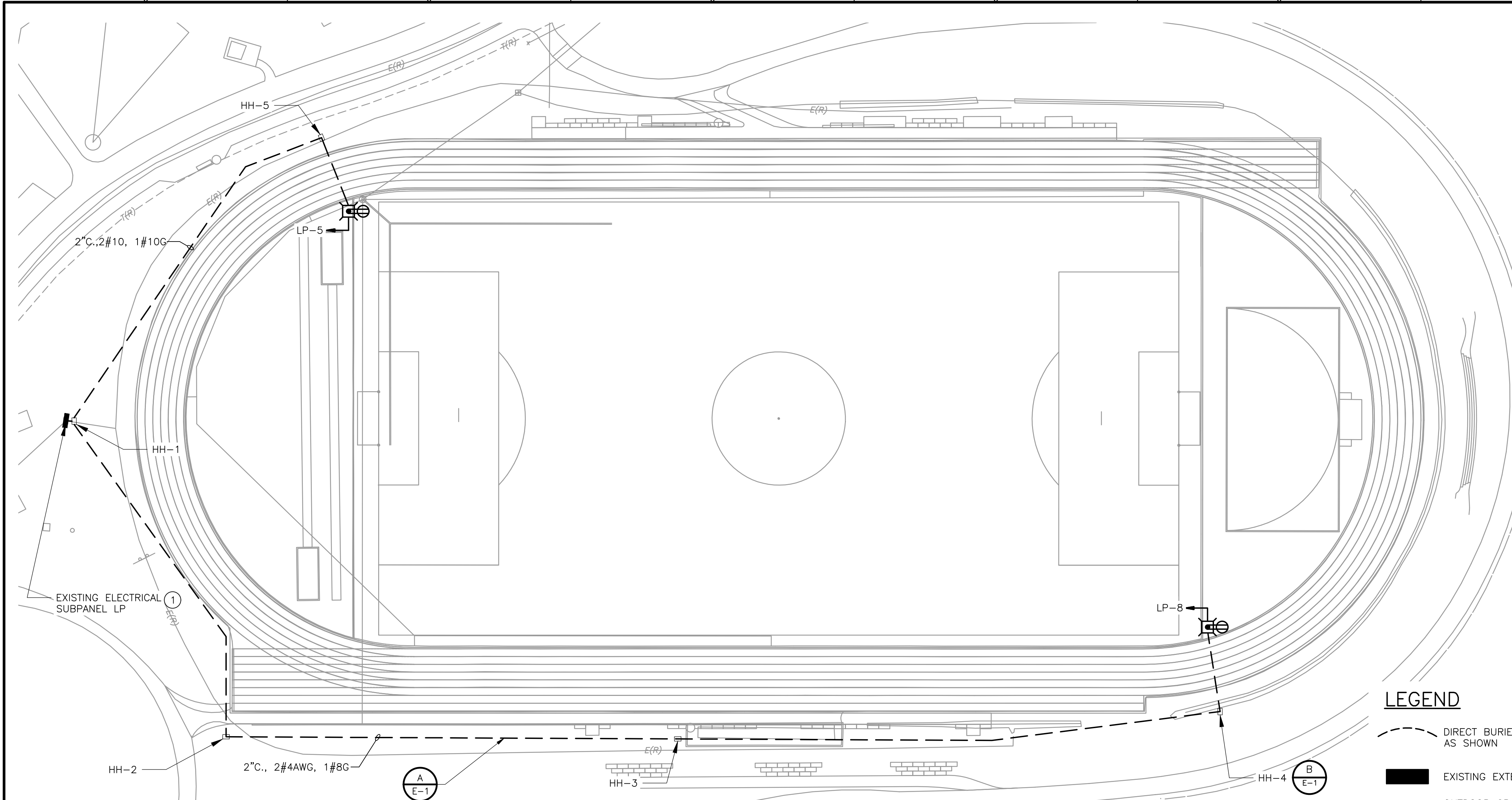
Electrical Cabinet Base



Electrical Cabinet Panel



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**GENERAL NOTES:**

- ELECTRICAL DRAWINGS ARE INTENDED TO SHOW THE GENERAL LAYOUT OF WORK TO BE INSTALLED UNDER THIS CONTRACT WITHOUT ATTEMPTING TO SHOW ALL DETAILS. FURNISH LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS REQUIRED FOR A COMPLETE AND OPERATIONAL ELECTRICAL SYSTEM AS SHOWN ON THE CONTRACT DOCUMENTS.
- COORDINATE WORK WITH OTHER TRADES AND THE OWNER.
- POWER INTERRUPTIONS TO ELECTRICAL EQUIPMENT SHALL BE AT OWNER'S CONVENIENCE WITH 72 HOURS MINIMUM NOTICE. EACH INTERRUPTION SHALL HAVE PRIOR WRITTEN APPROVAL.
- FIELD VERIFY EXISTING UNDERGROUND ELECTRICAL CONDUIT, CONCRETE DUCT BANKS, MANHOLES, PULL BOXES, ETC. AND MECHANICAL PIPING. CONTRACTOR SHALL INCLUDE IN BID COSTS ASSOCIATED WITH RELOCATION OR REMOVAL OF UNDERGROUND EQUIPMENT AS REQUIRED BY THIS CONTRACT. USE DUE CARE IN CONGESTED AREAS TO AVOID DAMAGE TO EXISTING UNDERGROUND UTILITIES.
- CONTRACTOR'S WORK SHALL INCLUDE COMPLETE TESTING OF EQUIPMENT AND WIRING INCLUDING MAKING MINOR CORRECTIONS, CHANGES, OR ADJUSTMENTS NECESSARY FOR THE PROPER FUNCTIONING OF THE SYSTEM AND EQUIPMENT. WORKMANSHIP SHALL BE OF THE HIGHEST QUALITY; SUBSTANDARD WORK WILL BE REJECTED.
- DO NOT SCALE ELECTRICAL DRAWINGS. REFER TO MECHANICAL, STRUCTURAL DRAWINGS, AND APPROVED MANUFACTURER'S SHOP DRAWINGS FOR EXACT LOCATION OF EQUIPMENT. EXCEPT WHERE DIMENSIONS ARE SHOWN, LOCATIONS OF EQUIPMENT, FIXTURES, OUTLETS, AND SIMILAR DEVICES ARE APPROXIMATE.
- WORK SHALL COMPLY WITH NEC AND LOCAL CODES.
- DO NOT SPLICE CONDUCTORS UNLESS APPROVED BY ENGINEER.
- POWER AND CONTROL CONDUITS SHALL HAVE AN EQUIPMENT GROUNDING CONDUCTOR WIRE SIZED PER TABLE 250.122 OF THE NEC (UON).
- REPAIR, IN ACCORDANCE WITH SPECIFICATIONS, SIDEWALKS, WALLS, ROADWAYS, ETC. DISTURBED BY CONSTRUCTION ACTIVITIES WHETHER OR NOT SHOWN FOR REPAIR/REPAVING ON CIVIL DRAWINGS.

**MATERIALS AND EQUIPMENT:**

- PROVIDE NEW MATERIALS AND EQUIPMENT UNLESS SPECIFICALLY NOTED OTHERWISE.
- ELECTRICAL EQUIPMENT AND MATERIALS SHALL BE LISTED BY UNDERWRITER'S LABORATORIES, INC., AND SHALL BEAR APPROPRIATE UL LISTING MARK OR CLASSIFICATION MARKING. EQUIPMENT, MATERIALS, ETC. UTILIZED NOT BEARING A UL CERTIFICATION SHALL BE FIELD OR FACTORY UL CERTIFIED PRIOR TO EQUIPMENT ACCEPTANCE AND USE.
- ALL CIRCUITS NOT EXCEEDING 150V TO GROUND SHALL BE NEC TYPE XHHW-2 AS MANUFACTURED BY SOUTHWIRE CO., OR EQUAL.
- CONDUITS, FITTINGS & HARDWARE:
  - UNDERGROUND RACEWAYS SHALL BE 2\"/>
- RECEPTACLES SHALL BE HEAVY DUTY, WEATHER PROOF, 20A, 125V.
- RECEPTACLES INSTALLED OUTDOORS SHALL BE INSTALLED INSIDE OF A LEGRAND WIREMOLD OUTDOOR GROUND BOX OR EQUAL.

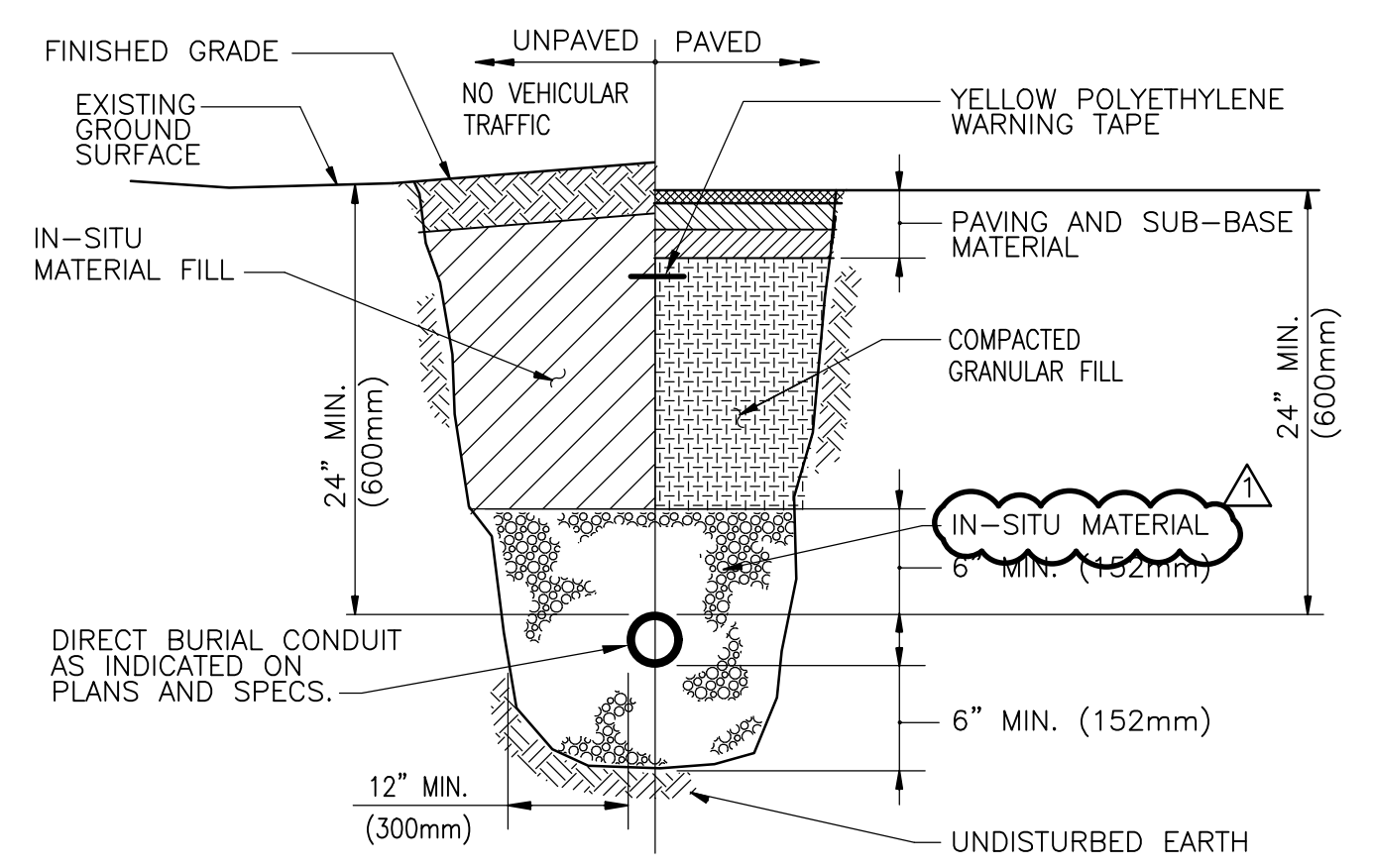
**LEGEND**

- DIRECT BURIED UNDERGROUND CONDUIT, SIZED AS SHOWN
- EXISTING EXTERIOR PANELBOARD
- OUTDOOR GROUND BOX WITH (2) 5-20R DUPLEX RECEPTACLES, SIMILAR TO LEGRAND XB814C520BK SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

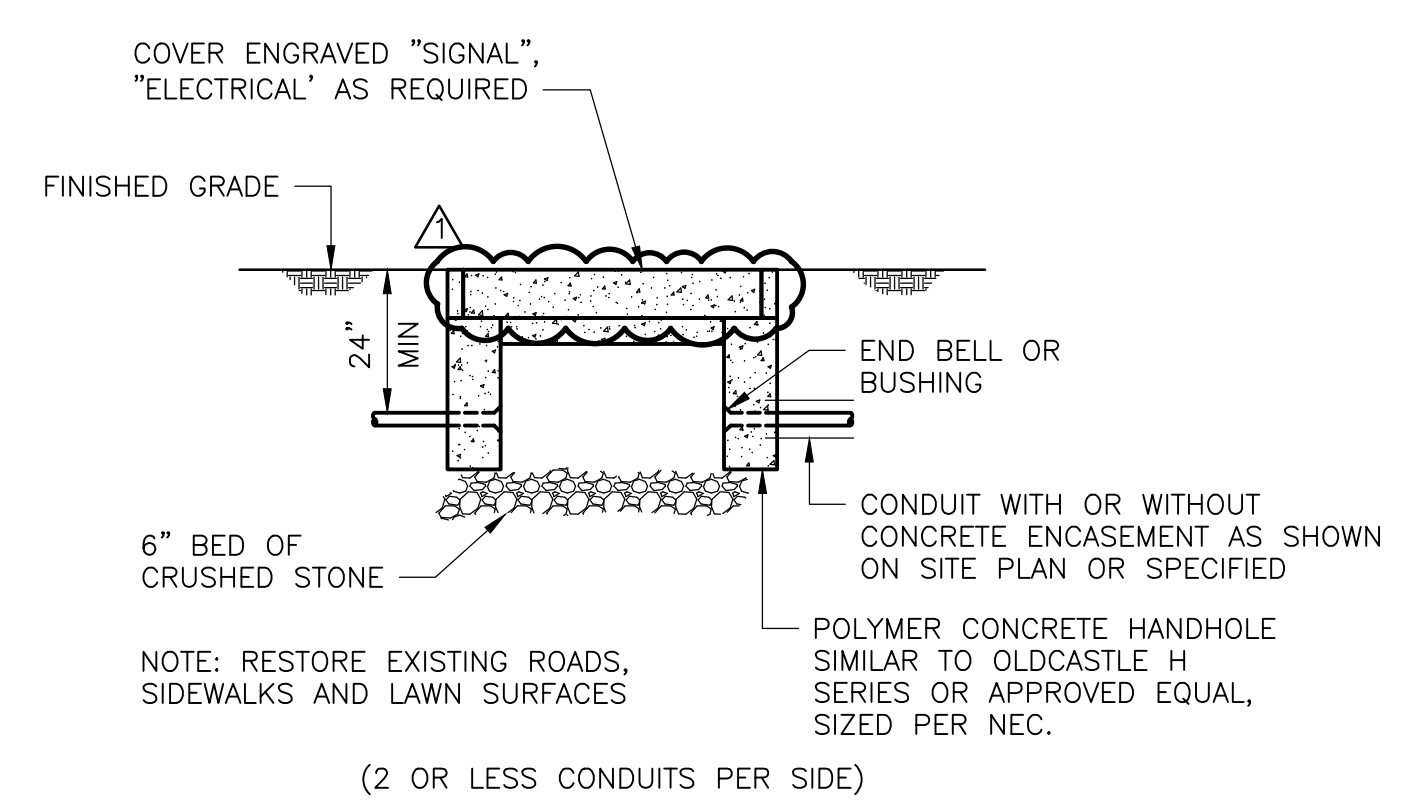
**KEYED NOTES:**

- PRINT NEW PANELBOARD SCHEDULE TO INCLUDE NEW ADDED LOADS.

**ELECTRICAL SITE PLAN**  
1" = 30'



**TYPICAL DIRECT BURIAL CONDUIT INSTALLATION DETAIL**  
N.T.S.



**ELECTRICAL HANDHOLE DETAIL**  
N.T.S.

AMP MAIN BREAKER				PANELBOARD LP (EXISTING)				LOCATION: AS SHOWN			
EXISTING AMP BUS RATING 120/240 VOLTS				10 KA SHORT CIRCUIT RATING ELECTRONIC GRADE: NO				ENCLOSURE RATING: MOUNTING: SURFACE			
8 POLES				1 PHASE 3 WIRE				60 Hz.			
CIRCUIT NO.	DESCRIPTION	LOAD KVA		BREAKER AMPS/POLES	NOTES	CIRCUIT NO.	DESCRIPTION	LOAD KVA		BREAKER AMPS/POLES	NOTES
		LINE 1	LINE 2					LINE 1	LINE 2		
1	EXISTING CIRCUIT			20 /1		2	EXISTING CIRCUIT			20 /1	
3	EXISTING CIRCUIT			20 /1		4	EXISTING CIRCUIT			20 /1	
5	SOUTH FIELD RECEPTACLE	0.36		20 /1	2,5	6	EXISTING CIRCUIT			20 /1	
7	SPACE			20 /1		8	NORTH FIELD RECEPTACLE		0.36	20 /1	2,6
TOTAL LINE KVA THIS SIDE				0.36	0	TOTAL LINE KVA THIS SIDE		0	0.36		
						TOTAL KVA PER LINE		0.36	0.36		
						TOTAL KVA			0.72		

- NOTES:
- PROVIDE LOCKING HARDWARE
  - 5 ma GROUND FAULT INTERRUPTER (GFI) CIRCUIT BREAKER
  - 30 ma GFI CIRCUIT BREAKER FOR EQUIPMENT PROTECTION ONLY (HEAT TRACE)
  - PROVIDE LOCKING HARDWARE & PAINT BREAKER HANDLE RED (FACP)
  - BRANCH CIRCUIT WIRING: 2\"/>

DESIGNED BY: J. KLEINOT	DRWN: J. KLEINOT	CHK'D BY: S. JONG	CROSS CHK'D BY: S. LANDGREN	APPROVED BY: S. JONG	DATE: APRIL 2024
REV. NO.	DATE	DRWN	CHKD	REMARKS	
5/24		JK	SJ	ADDENDUM 1	

DESIGNED BY: J. KLEINOT  
 DRAWN BY: J. KLEINOT  
 SHEET CHK'D BY: S. JONG  
 CROSS CHK'D BY: S. LANDGREN  
 APPROVED BY: S. JONG  
 DATE: APRIL 2024

**CDM Smith**  
 75 State Street, Suite 701  
 Boston, MA 02109  
 Tel: (617) 452-6000

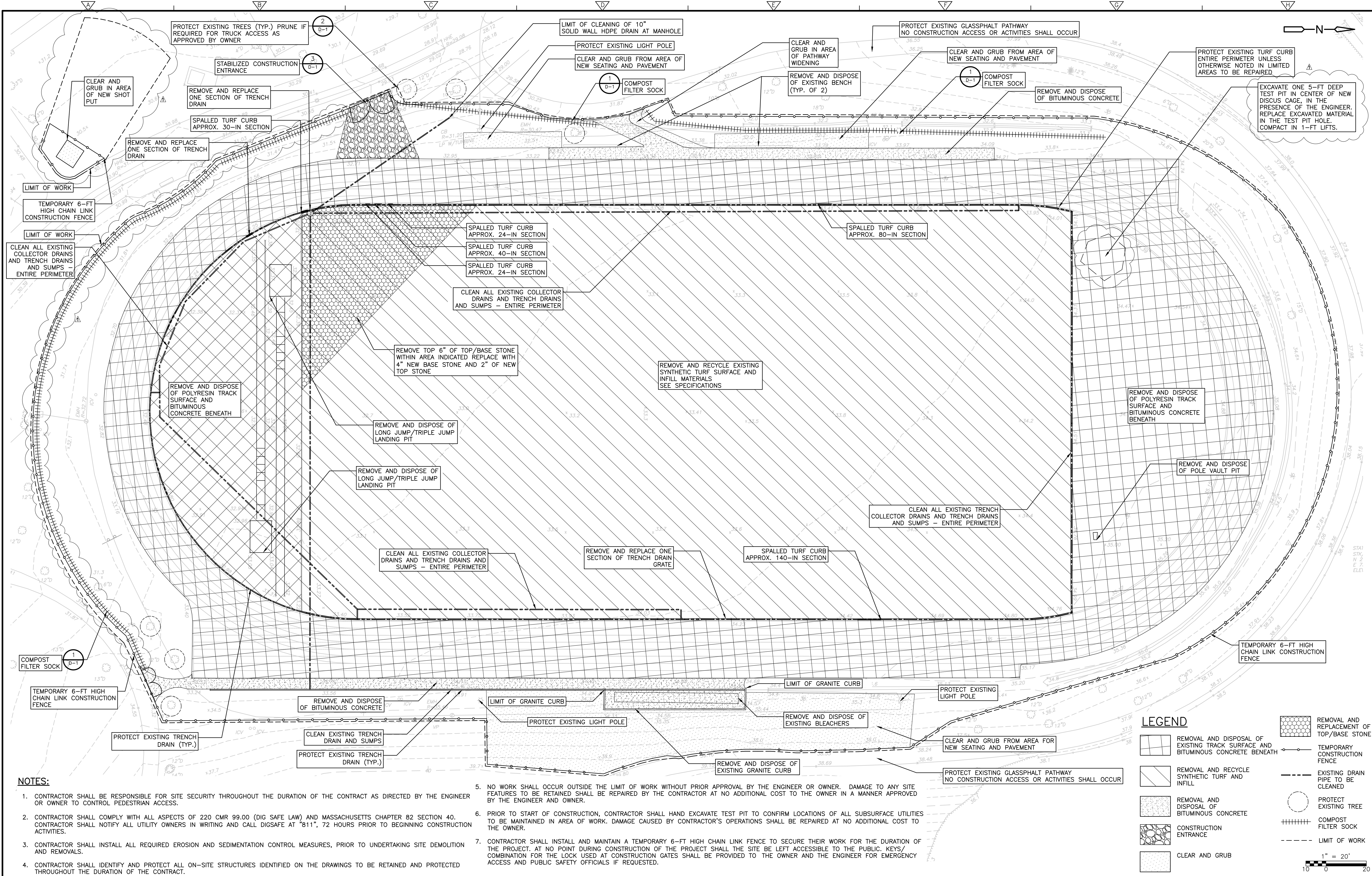
CITY OF CAMBRIDGE  
 DANEHY PARK FIELD 4  
 FIELD AND TRACK IMPROVEMENTS

**ELECTRICAL SITE PLAN**

PROJECT NO. 0139-291021  
 FILE NAME: E001STPL.dwg  
 SHEET NO. E-1



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**NOTES:**

- CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY THROUGHOUT THE DURATION OF THE CONTRACT AS DIRECTED BY THE ENGINEER OR OWNER TO CONTROL PEDESTRIAN ACCESS.
- CONTRACTOR SHALL COMPLY WITH ALL ASPECTS OF 220 CMR 99.00 (DIG SAFE LAW) AND MASSACHUSETTS CHAPTER 82 SECTION 40. CONTRACTOR SHALL NOTIFY ALL UTILITY OWNERS IN WRITING AND CALL DIGSAFE AT "811", 72 HOURS PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES.
- CONTRACTOR SHALL INSTALL ALL REQUIRED EROSION AND SEDIMENTATION CONTROL MEASURES, PRIOR TO UNDERTAKING SITE DEMOLITION AND REMOVALS.
- CONTRACTOR SHALL IDENTIFY AND PROTECT ALL ON-SITE STRUCTURES IDENTIFIED ON THE DRAWINGS TO BE RETAINED AND PROTECTED THROUGHOUT THE DURATION OF THE CONTRACT.
- NO WORK SHALL OCCUR OUTSIDE THE LIMIT OF WORK WITHOUT PRIOR APPROVAL BY THE ENGINEER OR OWNER. DAMAGE TO ANY SITE FEATURES TO BE RETAINED SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER IN A MANNER APPROVED BY THE ENGINEER AND OWNER.
- PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL HAND EXCAVATE TEST PIT TO CONFIRM LOCATIONS OF ALL SUBSURFACE UTILITIES TO BE MAINTAINED IN AREA OF WORK. DAMAGE CAUSED BY CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER.
- CONTRACTOR SHALL INSTALL AND MAINTAIN A TEMPORARY 6-FT HIGH CHAIN LINK FENCE TO SECURE THEIR WORK FOR THE DURATION OF THE PROJECT. AT NO POINT DURING CONSTRUCTION OF THE PROJECT SHALL THE SITE BE LEFT ACCESSIBLE TO THE PUBLIC. KEYS/COMBINATION FOR THE LOCK USED AT CONSTRUCTION GATES SHALL BE PROVIDED TO THE OWNER AND THE ENGINEER FOR EMERGENCY ACCESS AND PUBLIC SAFETY OFFICIALS IF REQUESTED.

**LEGEND**

- REMOVAL AND DISPOSAL OF EXISTING TRACK SURFACE AND BITUMINOUS CONCRETE BENEATH
- REMOVAL AND RECYCLE SYNTHETIC TURF AND INFILL
- REMOVAL AND DISPOSAL OF BITUMINOUS CONCRETE
- CONSTRUCTION ENTRANCE
- CLEAR AND GRUB
- REMOVAL AND REPLACEMENT OF TOP/BASE STONE
- TEMPORARY CONSTRUCTION FENCE
- EXISTING DRAIN PIPE TO BE CLEANED
- PROTECT EXISTING TREE
- COMPOST FILTER SOCK
- LIMIT OF WORK

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	5.07.24	SWL	-	ADJUSTED COMPOST FILTER SOCK; LIMITS AT SHOT PUT; TEST PIT FOR DISCUS

DESIGNED BY: S. LANDGREN  
 DRAWN BY: A. MURRAY  
 SHEET CHK'D BY: S. LANDGREN  
 CROSS CHK'D BY: G. HOWARD  
 APPROVED BY: S. LANDGREN  
 DATE: APRIL 2024



CITY OF CAMBRIDGE  
 DANEHY PARK FIELD 4  
 FIELD AND TRACK IMPROVEMENTS

REMOVALS AND EROSION AND SEDIMENTATION CONTROL PLAN

PROJECT NO. 0139-291021  
 FILE NAME: C001DMPL.dwg  
 SHEET NO. C-1



WHEN PROGRAMMING, RUN SEPARATE WIRES BACK TO THE CONTROLLER & COMBINE UP TO (2) SOLENOIDS TOGETHER ON ONE STATION, RUNNING WET WITH WET AREAS, DRY WITH DRY, HIGH TRAFFIC AREAS TOGETHER AT ONCE. THERE SHALL BE (39) TOTAL STATIONS USED. THERE ARE (63) TOTAL ACTUATORS AND (16) VALVES IN THIS AREA. THERE ARE (2) EXISTING (18) STATION CONTROLLERS. THERE ARE (48) EXISTING ACTUATORS. USE ALL (48) AND ADD (12) 286-66-01, (5) EXTRA FOR THIS SIDE. ALSO, ADD (1) TORO CUSTOM COMMAND CONTROLLER MODEL CC-M12.

IRRIGATION INSTALLER SHALL REMOVE THE MODEL 640 HEADS AND SWING JOINTS IN THIS AREA AND ABANDON REMOVE AND DISPOSE OF THE EXISTING PVC PIPE AND HYDRAULIC TUBE. THERE ARE (32) HEADS. ALL OF THE HEADS SHALL BE RE-INSTALLED IN OTHER PLACES AT THE PARK. INSTALL WITH NEW TUBING AND PIPING. RE-USE AS MANY EXISTING SWING JOINTS AS POSSIBLE. INSTALL NEW SWING JOINTS AS NECESSARY. ALSO RE-USE THE EXISTING ACTUATORS AND INSTALL NEW WHERE NECESSARY.

PIPING IS EXISTING AND ACTIVE. INSTALLER SHALL TAKE CARE WHEN INSTALLING NEW PIPE, WIRE, ETC. IF ANY EXISTING ITEM IS DAMAGED DURING THIS CONSTRUCTION, INSTALLER SHALL MAKE ALL NECESSARY REPAIRS.

WHEN PROGRAMMING, RUN SEPARATE WIRES BACK TO THE CONTROLLER & COMBINE UP TO (2) SOLENOIDS TOGETHER ON ONE STATION, RUNNING WET WITH WET AREAS, DRY WITH DRY, HIGH TRAFFIC AREAS TOGETHER AT ONCE. THERE SHALL BE (31) TOTAL STATIONS USED. THERE ARE (60) TOTAL ACTUATORS AND (1) VALVE IN THIS AREA. THERE ARE (2) EXISTING (18) STATION CONTROLLERS. THERE ARE (48) EXISTING ACTUATORS. USE ALL (48) AND ADD (12) 286-66-01, (5) EXTRA FOR THIS SIDE.

PIPING IS EXISTING. INSTALLER SHALL TAKE CARE WHEN INSTALLING NEW PIPE, WIRE, ETC. IF ANY EXISTING ITEM IS DAMAGED DURING THIS CONSTRUCTION, INSTALLER SHALL MAKE ALL NECESSARY REPAIRS.

GENERAL NOTES SHEETS C-3 THROUGH C-6

NOTES - THIS SHEET C-3

- IRRIGATION CONTRACTOR QUALIFICATIONS SHALL CONFORM WITH PARAGRAPH 4.02 OF SECTION 02800.
- ALL IRRIGATION IMPROVEMENTS WILL BE STAKED IN FIELD FOR APPROVAL BY ENGINEER AND OWNER PRIOR TO INSTALLATION.
- PATHWAY CROSSING LOCATIONS AND LIMITS OF DISTURBANCE MUST BE REVIEWED AND APPROVED PRIOR TO PATHWAY DISTURBANCE.
- CONTRACTOR SHALL SAW CUT ALL PATHWAY CROSSINGS AND BE RESPONSIBLE FOR BASE REPLACEMENT AND BINDER COURSE INSTALLATION UNDER IRRIGATION ITEM.
- CONTRACTOR SHALL IDENTIFY LOCATION AND ELEVATION OF ALL SUBSURFACE UTILITIES INCLUDING BUT NOT NECESSARILY LIMITED AND TELEPHONE, AND EXISTING IRRIGATION BEFORE COMMENCING WORK.
- THIS NOTE IS A BASIC OVERVIEW OF THE NEW WORK TO BE PROVIDED. THE EXISTING VALVE BOXES NEXT TO THE BACKFLOW ENCLOSURE SHALL BE DISMANTLED. THE EXISTING 3-WAY ACTUATORS SHALL BE REMOVED AND REPLACED AS A BANK OF (4) ACTUATORS ON A PIECE OF PLEXI GLASS IN VALVE BOX LOCATIONS AS SHOWN ON THIS DESIGN. NEW WIRES SHALL BE RUN FROM THE EXISTING CONTROLLERS TO THESE NEW 3 WAY LOCATIONS. ALSO, INSTALL A NEW TORO 220-27-00 3" PRESSURE REGULATING BRASS MASTER VALVE. RUN (3) #14/1 UF WIRES TO THE NEW MASTER VALVE. ADD ADDITIONAL AREAS USING EXISTING AND NEW PRODUCTS.
- THE EXISTING ACTUATORS IN THE VALVE BOX BY THE WATER SUPPLY ARE NOW MOUNTED ON THE SIDE WALL OF THE JUMBO VALVE BOX. THE ACTUATORS SHALL BE LEFT IN BANKS OF (4) AND MOUNTED ONTO A PRE CUT PIECE OF PLEXI GLASS. THE EXISTING BANKS OF (4) ACTUATORS SHALL THEN BE RELOCATED FROM THE EXISTING VALVE BOX TO NEW STANDARD VALVE BOXES AS SHOWN. A PLUG SHALL BE PLACED INTO THE DISCHARGE TUBING ON THE BANK FOR PROPER ACTUATION. LEAVE A CILIL OF 1/4" HYDRAULIC TUBING FOR EACH BANK IN THE BOTTOM OF THE VALVE BOX FOR EASY SERVICE. EACH ACTUATOR SHALL RUN 1 TO 3 HEADS. INSTALL ADDITIONAL TORO 286-66-01 3 WAY ACTUATORS WHERE NECESSARY (THE EXISTING SYSTEM RUNS 1 TO 3 HEADS FROM ONE ACTUATOR, UP TO 9 AT ONCE). INSTALL NEW BALL VALVES USING BRASS NIPPLES AND IN STANDARD VALVE BOXES WITH 6" EXTENSIONS FOR SERVICING THE LINES, AS SHOWN ON THE DESIGN. NOT ALL LATERALS WILL RECEIVE A NEW BALL VALVE.
- RUN NEW UF WIRES FROM THE EXISTING CONTROLLER TO THE NEW ACTUATOR LOCATIONS. RUN #14/1 RED FOR CONTROL, #12/1 WHITE FOR COMMON, AND RUN #14/1 BLUE SPARE WIRES, AS INDICATED ON THE DESIGN. USE DIRECT BURIED SPLICE KITS FOR ALL SPLICES.
- ABANDON, REMOVE AND DISPOSE OF ALL OF THE EXISTING HYDRAULIC TUBING CURRENTLY IN THE GROUND. RUN NEW 1/4" HYDRAULIC TUBING. RUN 1 TUBE PER HEAD BACK TO THE EXISTING BANK OF 4 ACTUATORS AND THE NEW 3 WAY ACTUATORS IN THE VALVE BOXES AS SHOWN. RUN 1 EXTRA TUBE FOR 5 HEAD LATERALS AND 2 EXTRA TUBES FOR LATERALS WITH MORE THAN 5 HEADS. FITTINGS AS NECESSARY.
- RELOCATE THE REMOVED MODEL 640 HEADS TO THIS AREA AND ADD NEW TORO MODEL S70 SPRAY HEADS ON FUNNY PIPE SWING JOINTS.
- REPLACE THE EXISTING TORO BRASS HYDRAULIC VALVES WITH TORO MODEL 252-26-06 1 1/2" PLASTIC VALVES WITH A GATE VALVE SERVICE SHUT-OFF. USE ALL NEW STANDARD VALVE BOXES. USE DBY SPLICE KITS.
- AVERAGE RUN TIMES PER ZONE SHALL BE DETERMINED BY THE END USER.
- IRRIGATION CONTRACTOR IS RESPONSIBLE FOR, BUT NOT LIMITED TO A FULLY FUNCTIONING ELECTRIC/ HYDRAULIC IRRIGATION SYSTEM. FOLLOW ALL APPLICABLE CODES. COORDINATE ALL WORK WITH THE CITY OF CAMBRIDGE PARK AND RECREATION DEPARTMENT.
- ATTACH A NEW 3" PVC MAIN AND RUN TO THESE ADDITIONAL AREAS. ALSO INSTALL A 1 1/4" PVC HYDRAULIC TUBING FEEDER AND A NEW SET OF CONTROL WIRES. CONTRACTOR SHALL FIELD LOCATE ALL ITEMS BASED ON THIS DESIGN. SEE OTHER DRAWINGS AS NECESSARY.
- THIS SYSTEM SHALL BE INSTALLED UNDER THE SUPERVISION OF THE CITY OF CAMBRIDGE AND WITH A MINIMUM OF (2) VISITS PER WEEK BY TURF PRODUCTS CORPORATION. ANY CHANGE TO THIS DESIGN SHALL BE SUBMITTED TO THE CITY OF CAMBRIDGE AND TO TURF PRODUCTS CORPORATION PRIOR TO THE COMMENCEMENT OF WORK. THIS DESIGN IS MERELY A GUIDE. ACTUAL WORK MAY SLIGHTLY VARY IN FIELD FIELD DUE TO UNSEEN OBSTRUCTIONS.
- ANY NEW PIPE SHALL BE BURIED TO A DEPTH OF 12" TO 18". INSTALL PIPES TOGETHER WHERE POSSIBLE. FOLLOW THE STANDARDS FOR APPLICATION WHEN INSTALLING THE PVC SLEEVES.
- UTILIZE EXISTING SUBSURFACE PIPE UNDERNEATH EXISTING "GLASSPALT" PATH. DO NOT EXCAVATE PATHWAY PAVEMENT IN THIS AREA.

REV. NO.	DATE	DRWN	CHKD	REMARKS

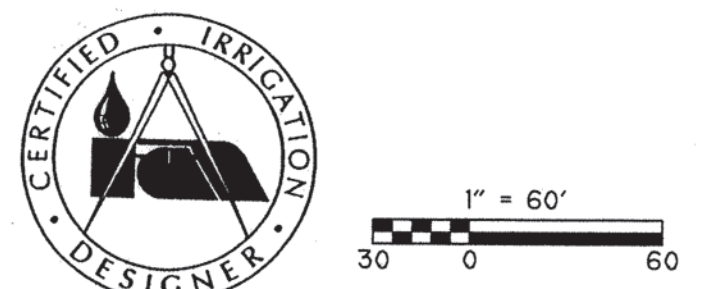
DESIGNED BY: TPC  
 DRAWN BY: TPC  
 SHEET CHK'D BY:  
 CROSS CHK'D BY:  
 APPROVED BY: TPC  
 DATE: AUGUST 7, 2000

DESIGNED BY:  
**tpc** turf products corporation  
 157 Moody Road 7 Gospage Drive  
 Enfield, CT 06082 Worcester, MA 01603  
 (203) 763-3581 (508) 781-2091

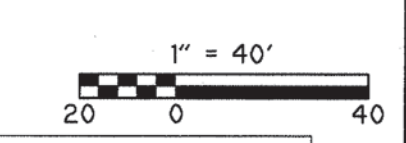
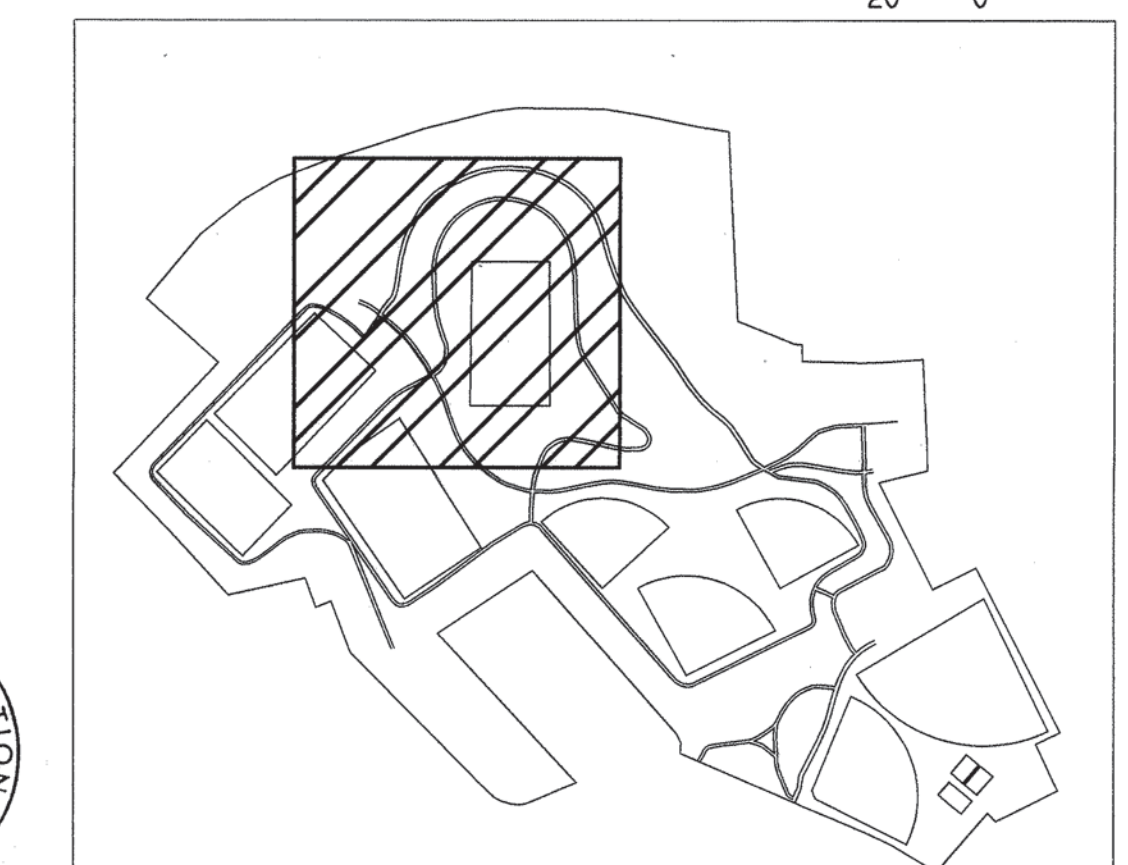
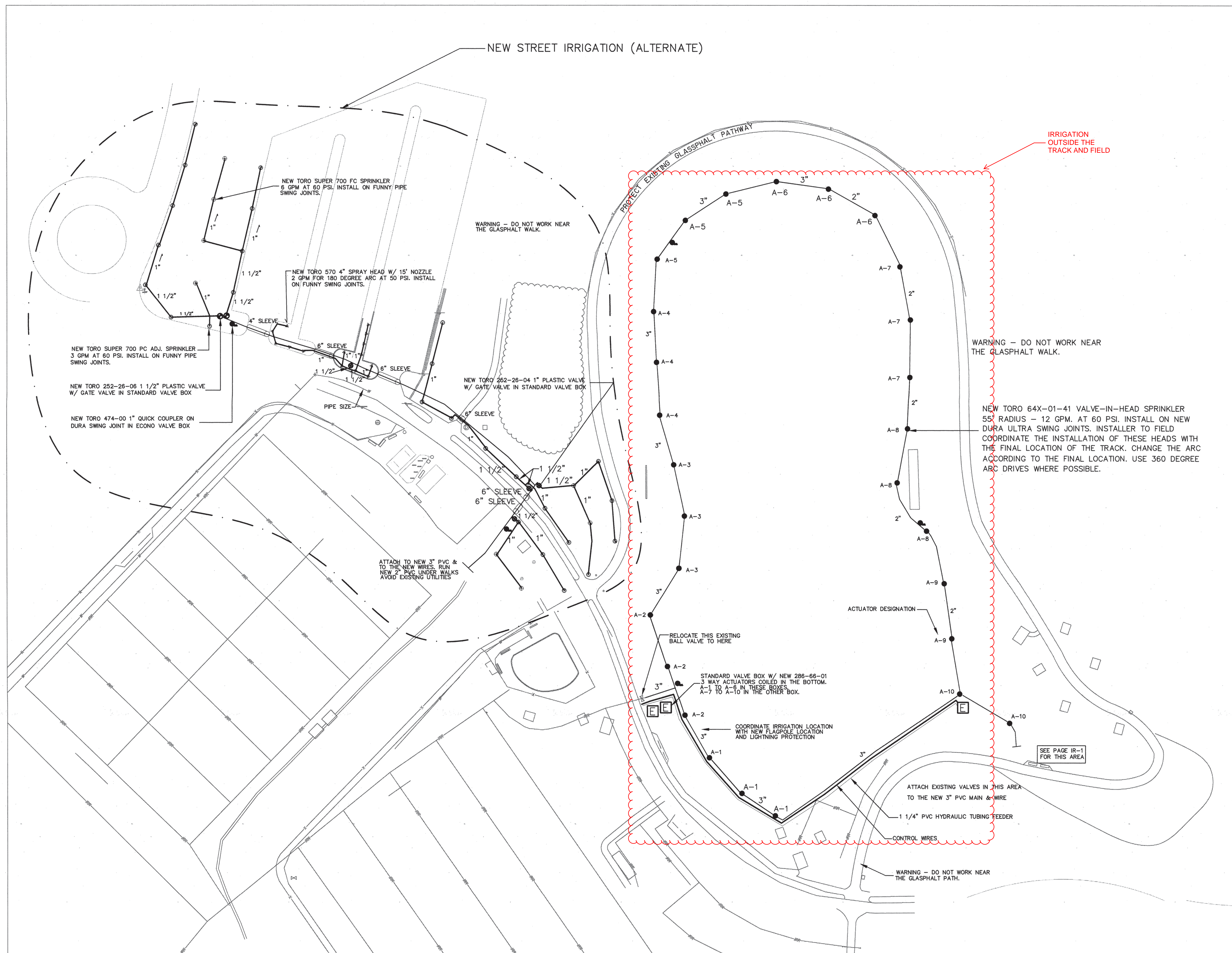
CITY OF CAMBRIDGE, MASSACHUSETTS  
 DANEHY PARK- RECREATION IMPROVEMENTS

IRRIGATION REFERENCE PLAN-1  
 SHEET NO. R-1

PROJECT NO. 0139-26040  
 FILE NAME: CRRPL001  
 SHEET NO. R-1  
 Accession No: 0139-60773







REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: TPC  
 DRAWN BY: TPC  
 SHEET CHK'D BY:  
 CROSS CHK'D BY:  
 APPROVED BY: TPC  
 DATE: AUGUST 7, 2000

DESIGNED BY:  
**tpc** turf products corporation  
 157 Moody Road  
 Enfield, CT 06032  
 (203) 763-2581

7 Coppage Drive  
 Worcester, MA 01603  
 (508) 791-2091

**CITY OF CAMBRIDGE, MASSACHUSETTS**  
**DANEHY PARK- RECREATION IMPROVEMENTS**

**IRRIGATION REFERENCE PLAN-2**

PROJECT NO. 0139-26040  
 FILE NAME: CIRRP1.004  
 SHEET NO. **R-2**