LAKE VIEW PLAYGROUND IMPROVEMENTS

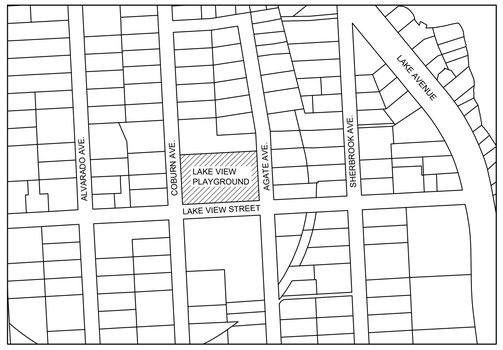
125 COBURN AVENUE, WORCESTER, MASSACHUSETTS
CITY OF WORCESTER, DEPARTMENT OF PARKS, RECREATION & CEMETERY

CONSTRUCTION DOCUMENTS - SPRING 2026

ERIC D. BATISTA, CITY MANAGER

ROBERT C. ANTONELLI, JR., COMMISSIONER
DEPARTMENT OF PARKS, RECREATION, AND CEMETERY

PLANS PREPARED BY:



LOCUS MAP NOT TO SCALE

NORTH

INDEX OF DRAWINGS:

LANDSCAPE ARCHITECT:

earthdesign
LANDSCAPE ARCHITECTURE

280 BEVERLY ROAD
WORCESTER, MA 01605
508-852-2644 • www.edlandarch.com

CIVIL ENGINEER:

QUINN
ENGINEERING, INC.
P.O. Box 107
Paxton, Massachusetts 01612
(508)753-7999 Fax:(508)795-0939

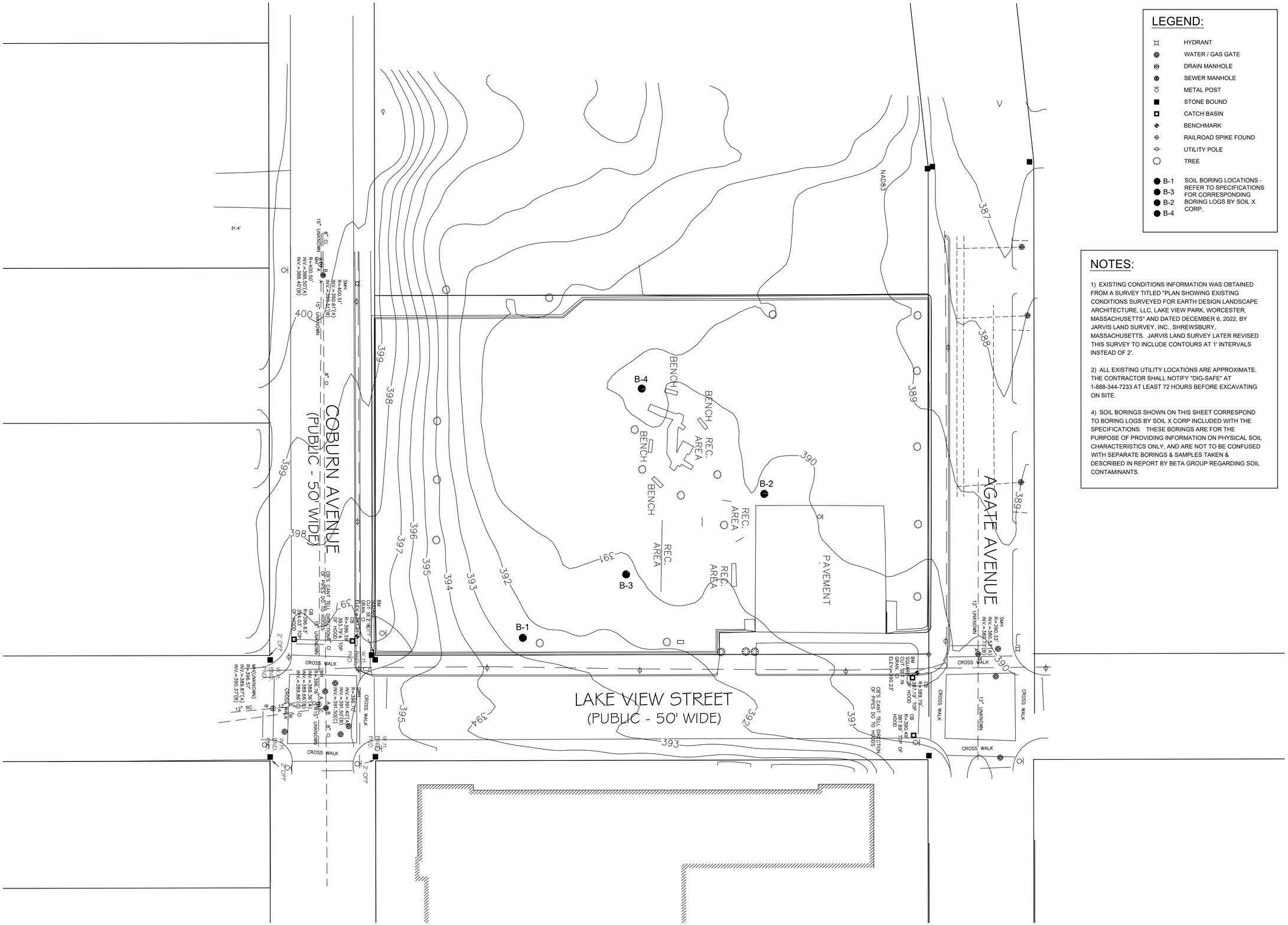
ELECTRICAL ENGINEER:

ART Engineering
we build the future.

IRRIGATION DESIGNER:

Irrigation Consulting, Inc.
Providing innovative design solutions for irrigation worldwide.

LAKE VIEW PLAYGROUND IMPROVEMENTS • CONSTRUCTION DOCUMENTS • 11/22/2024



LEGEND:

- HYDRANT
- WATER / GAS GATE
- DRAIN MANHOLE
- SEWER MANHOLE
- METAL POST
- STONE BOUND
- CATCH BASIN
- BENCHMARK
- RAILROAD SPIKE FOUND
- UTILITY POLE
- TREE
- B-1, B-3, B-2, B-4 — SOIL BORING LOCATIONS - REFER TO SPECIFICATIONS FOR CORRESPONDING BORING LOGS BY SOIL X CORP.

NOTES:

1) EXISTING CONDITIONS INFORMATION WAS OBTAINED FROM A SURVEY TITLED "PLAN SHOWING EXISTING CONDITIONS SURVEYED FOR EARTH DESIGN LANDSCAPE ARCHITECTURE, LLC, LAKE VIEW PARK, WORCESTER, MASSACHUSETTS" AND DATED DECEMBER 6, 2022, BY JARVIS LAND SURVEY, INC., SHREWSBURY, MASSACHUSETTS. JARVIS LAND SURVEY LATER REVISED THIS SURVEY TO INCLUDE CONTOURS AT 1' INTERVALS INSTEAD OF 2'.

2) ALL EXISTING UTILITY LOCATIONS ARE APPROXIMATE. THE CONTRACTOR SHALL NOTIFY "DIG-SAFE" AT 1-888-344-7233 AT LEAST 72 HOURS BEFORE EXCAVATING ON SITE.

4) SOIL BORINGS SHOWN ON THIS SHEET CORRESPOND TO BORING LOGS BY SOIL X CORP INCLUDED WITH THE SPECIFICATIONS. THESE BORINGS ARE FOR THE PURPOSE OF PROVIDING INFORMATION ON PHYSICAL SOIL CHARACTERISTICS ONLY, AND ARE NOT TO BE CONFUSED WITH SEPARATE BORINGS & SAMPLES TAKEN & DESCRIBED IN REPORT BY BETA GROUP REGARDING SOIL CONTAMINANTS.

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD ▫ WORCESTER, MA 01605
508-852-2644 ▫ info@edlandarch.com

ALICE WEBB
REGISTERED LANDSCAPE ARCHITECT
NO. 1404
MASSACHUSETTS

PROJECT:
LAKE VIEW
PLAYGROUND

CLIENT:
CITY OF
WORCESTER

DATE: 11-22-24

REVISIONS:

NO.	DATE	DESCRIPTION

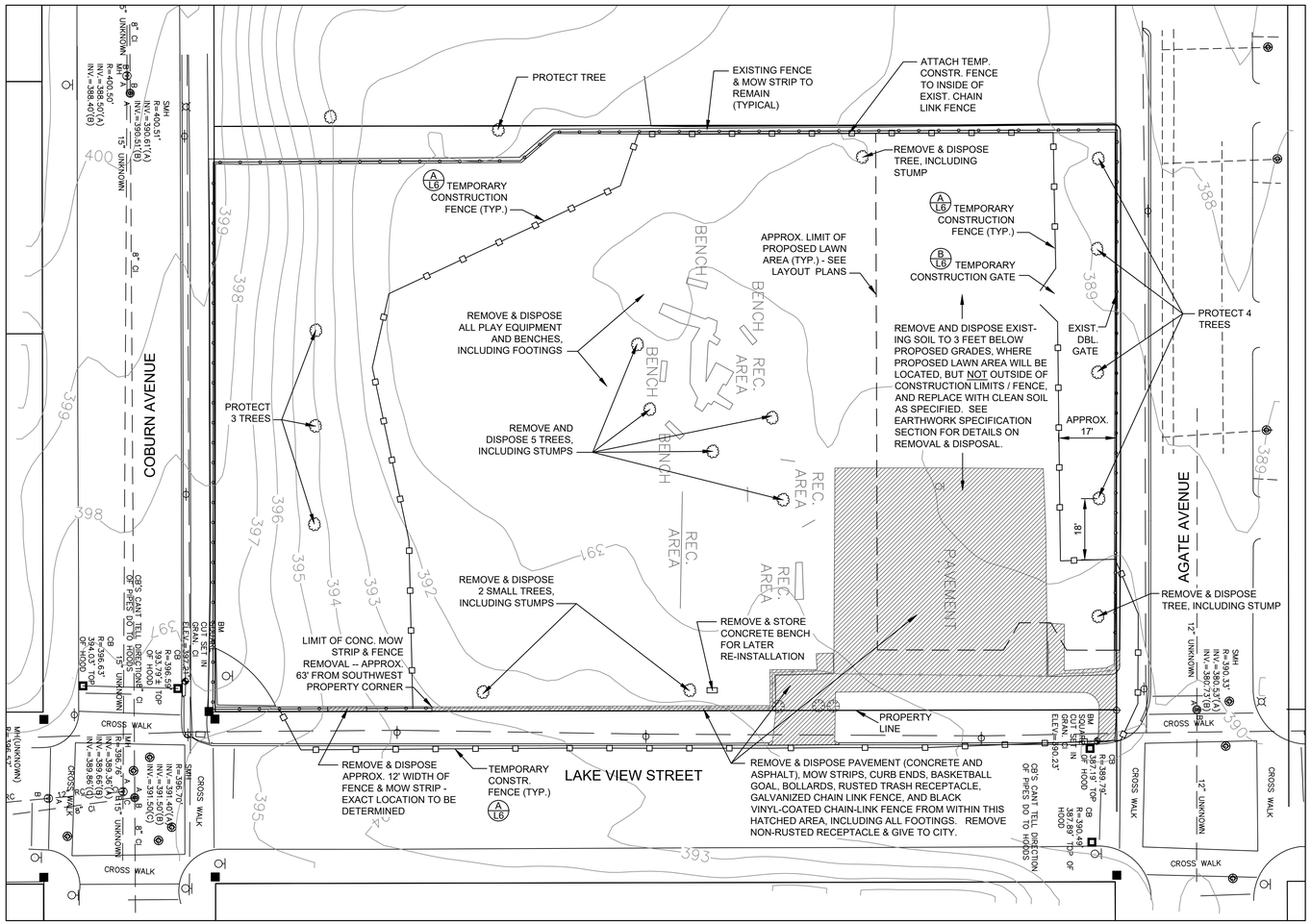
N

SCALE: 1" = 20'

0' 10' 20' 40'

EXISTING
CONDITIONS

SHEET L-1



LEGEND:

EXISTING:

PROPOSED:

- C / L6 — DETAIL NUMBER / SHEET NUMBER
- TEMPORARY CONSTRUCTION FENCE
- TYP. — TYPICAL
- HYDRANT
- WATER / GAS GATE
- DRAIN MANHOLE
- SEWER MANHOLE
- METAL POST
- STONE BOUND
- CATCH BASIN
- BENCHMARK
- RAILROAD SPIKE FOUND
- UTILITY POLE
- TREE
- CHAIN LINK FENCE
- PAVEMENT TO REMOVE

NOTES:

1) ALL ITEMS INDICATED TO BE REMOVED SHALL BE LEGALLY DISPOSED OF OFF SITE, EXCEPT FOR ANY ITEMS THAT ARE NOTED BE STORED FOR RE-INSTALLATION.

2) THE CONTRACTOR SHALL FILL AND COMPACT SOIL IN HOLES LEFT BY REMOVAL OF EXISTING OBJECTS.

3) TEMPORARY CONSTRUCTION FENCING SHALL BE INSTALLED BEFORE DEMOLITION OPERATIONS BEGIN, AND SHALL REMAIN IN PLACE THROUGH CONSTRUCTION UNLESS OTHERWISE NOTED.

4) SEE CIVIL PLANS FOR TEMPORARY EROSION CONTROL MEASURES.

5) FOR TREES INDICATED TO BE REMOVED, DISPOSE OF ALL WOOD IN ACCORDANCE WITH ASIAN LONG-HORNED BEETLE QUARANTINE REGULATIONS.

6) ACCESS TO THE SITE SHALL BE THROUGH THE EXISTING DOUBLE GATE OFF AGATE AVE.

7) IF EXISTING PAVEMENT, CURBING, OR STRUCTURES IN THE STREET RIGHTS-OF-WAY, OR ANYWHERE ELSE OUTSIDE THE LIMITS OF WORK, ARE DAMAGED BY THE CONTRACTOR, THESE ITEMS SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR TO THE CONDITION THEY WERE PRIOR TO CONSTRUCTION WORK.

8) THE PURPOSE OF REMOVAL OF SOIL FROM THE PROPOSED LAWN AREA (SEE NOTATION ON PLAN) IS DUE TO ELEVATED ARSENIC CONCENTRATIONS. SEE EARTHWORK SECTION OF SPECIFICATIONS FOR FURTHER INFORMATION AND REQUIREMENTS.

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD ▯ WORCESTER, MA 01605
508-852-2644 ▯ info@edlandarch.com

ALICE WEBB — MASSACHUSETTS REGISTERED LANDSCAPE ARCHITECT NO. 1404

PROJECT:
LAKE VIEW PLAYGROUND

CLIENT:
CITY OF WORCESTER

DATE: 11-22-24

REVISIONS:

NO.	DATE	DESCRIPTION

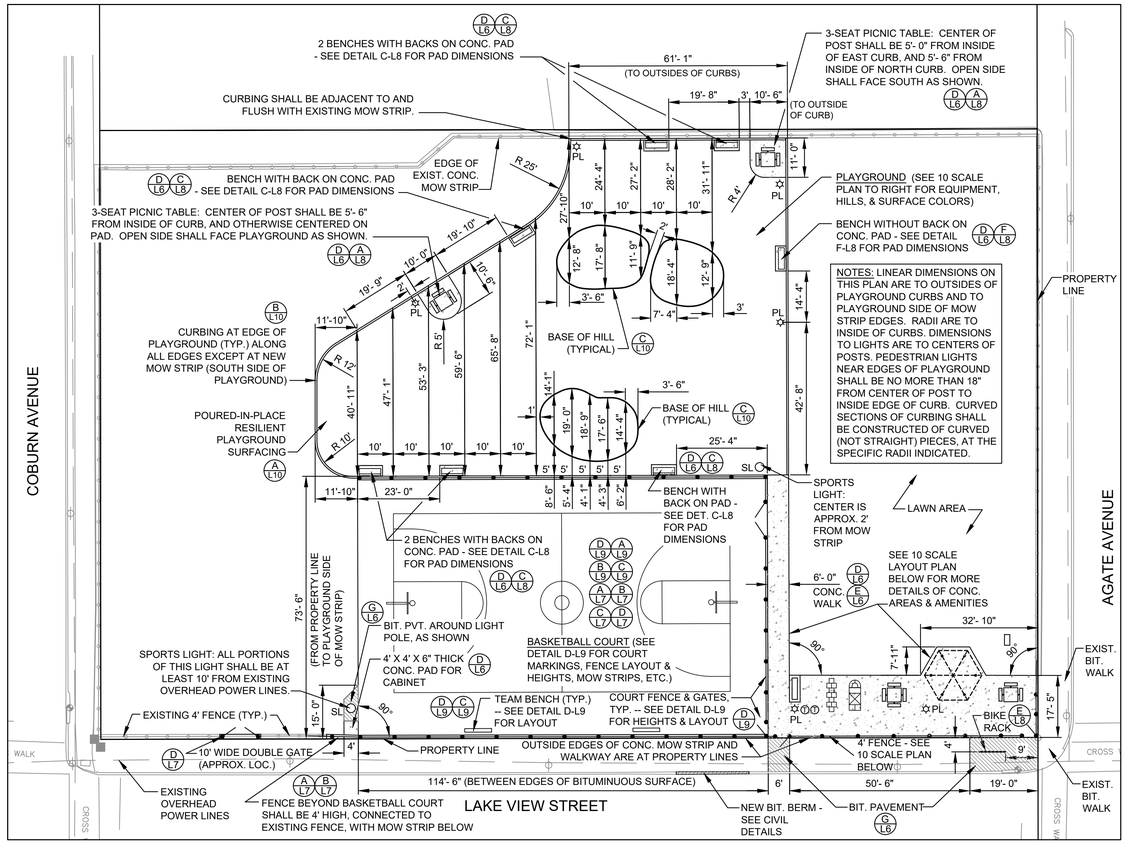
N

SCALE: 1" = 20'

0' 10' 20' 40'

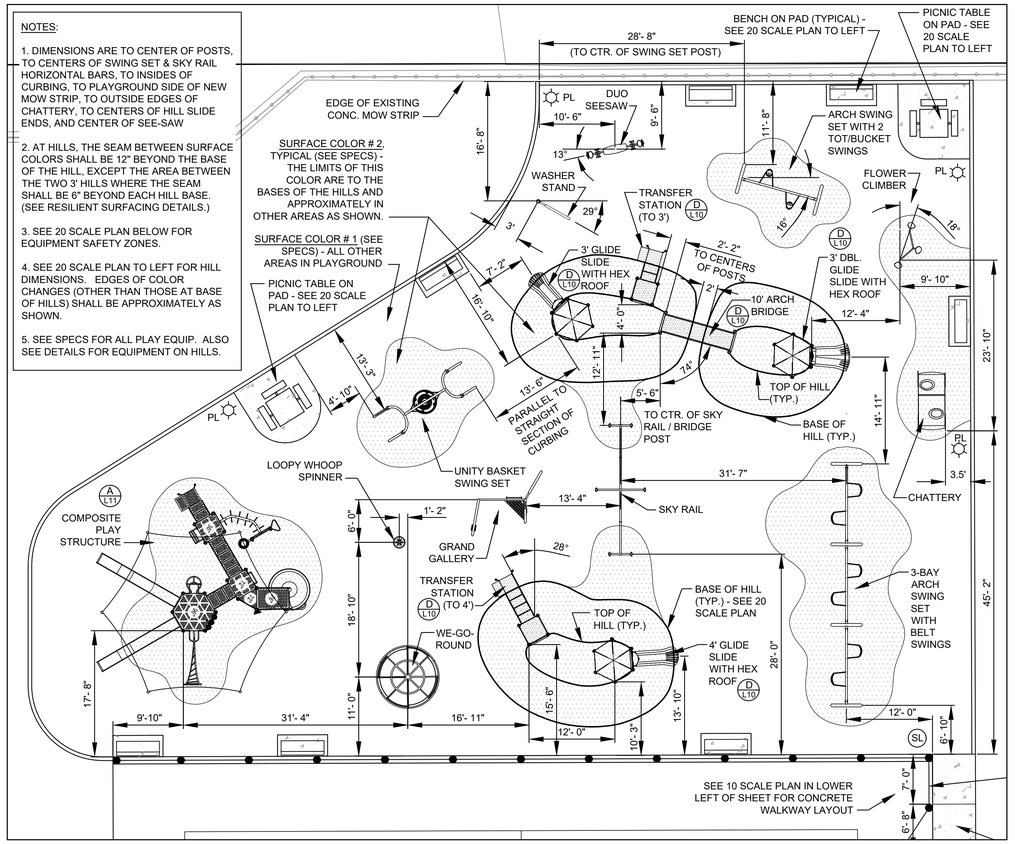
SITE PREPARATION & DEMOLITION PLAN

SHEET L-2



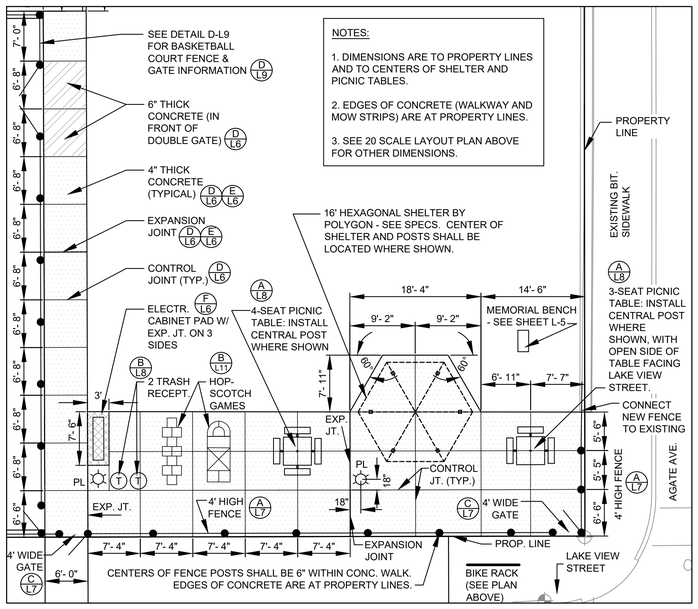
LAYOUT & MATERIALS PLAN - TOTAL SITE

SCALE: 1" = 20'



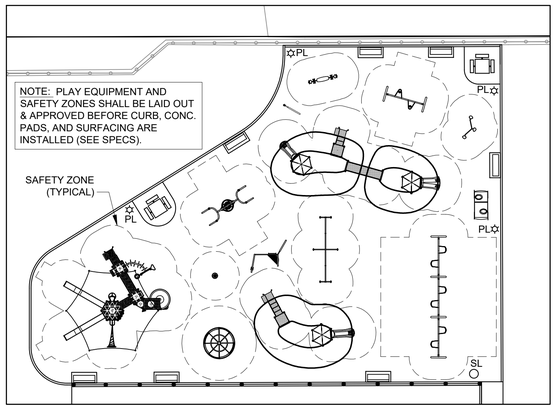
LAYOUT PLAN - PLAY EQUIPMENT & SURFACING PATTERN

SCALE: 1" = 10'



LAYOUT & MATERIALS PLAN - CONCRETE WALKWAY AREAS & AMENITIES

SCALE: 1" = 10'



LAYOUT PLAN - PLAY STRUCTURE SAFETY ZONES

SCALE: 1" = 20'

GENERAL NOTES:

1) POINT OF BEGINNING FOR LAYOUT IS SOUTHEAST PROPERTY CORNER.

2) THE CONTRACTOR SHALL CONTACT OWNER'S REPRESENTATIVE TO INSPECT ALL LAYOUT STAKING PRIOR TO CONSTRUCTION.

3) THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON THE GROUND AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE OWNER'S REPRESENTATIVE.

4) THE CONTRACTOR SHALL AVOID ROUTING UTILITIES BENEATH FURNISHINGS AND EQUIPMENT THAT INCLUDE FOOTINGS.

5) SEE INDIVIDUAL PLAN VIEWS FOR ADDITIONAL NOTES.

LEGEND:

EXISTING (TO REMAIN):	PROPOSED:	
	A / L8	DETAIL NUMBER / SHEET NUMBER
		P.C. CONCRETE SURFACE (ON LAYOUT & MATERIALS PLAN FOR TOTAL SITE)
		BITUMINOUS SURFACE (BEYOND COURT - ON LAYOUT & MATERIALS PLAN FOR TOTAL SITE)
		4" THICK CONCRETE (ON L&M PLAN FOR CONCRETE AREAS & AMENITIES)
		6" THICK CONCRETE (ON L&M PLAN FOR CONCRETE AREAS & AMENITIES)
		ELECTRICAL CABINET PAD (ON L&M PLAN FOR CONCRETE AREAS & AMENITIES - FOR THICKNESS SEE DETAIL D-L6)
	R	RADIUS
	TYP.	TYPICAL
	EXP. JT.	EXPANSION JOINT
		FENCE WITH MOW STRIP
		FENCE WITHOUT MOW STRIP
	SL	SPORTS LIGHT POST
	PL	PATHWAY LIGHT POST
		UTILITY POLE (IN RIGHT-OF-WAY)

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD ▫ WORCESTER, MA 01605
508-852-2644 ▫ info@edlandarch.com

MASSACHUSETTS ALICE WEBB REGISTERED LANDSCAPE ARCHITECT NO. 1404

PROJECT:
LAKE VIEW PLAYGROUND

CLIENT:
CITY OF WORCESTER

DATE: 11-22-24

REVISIONS:

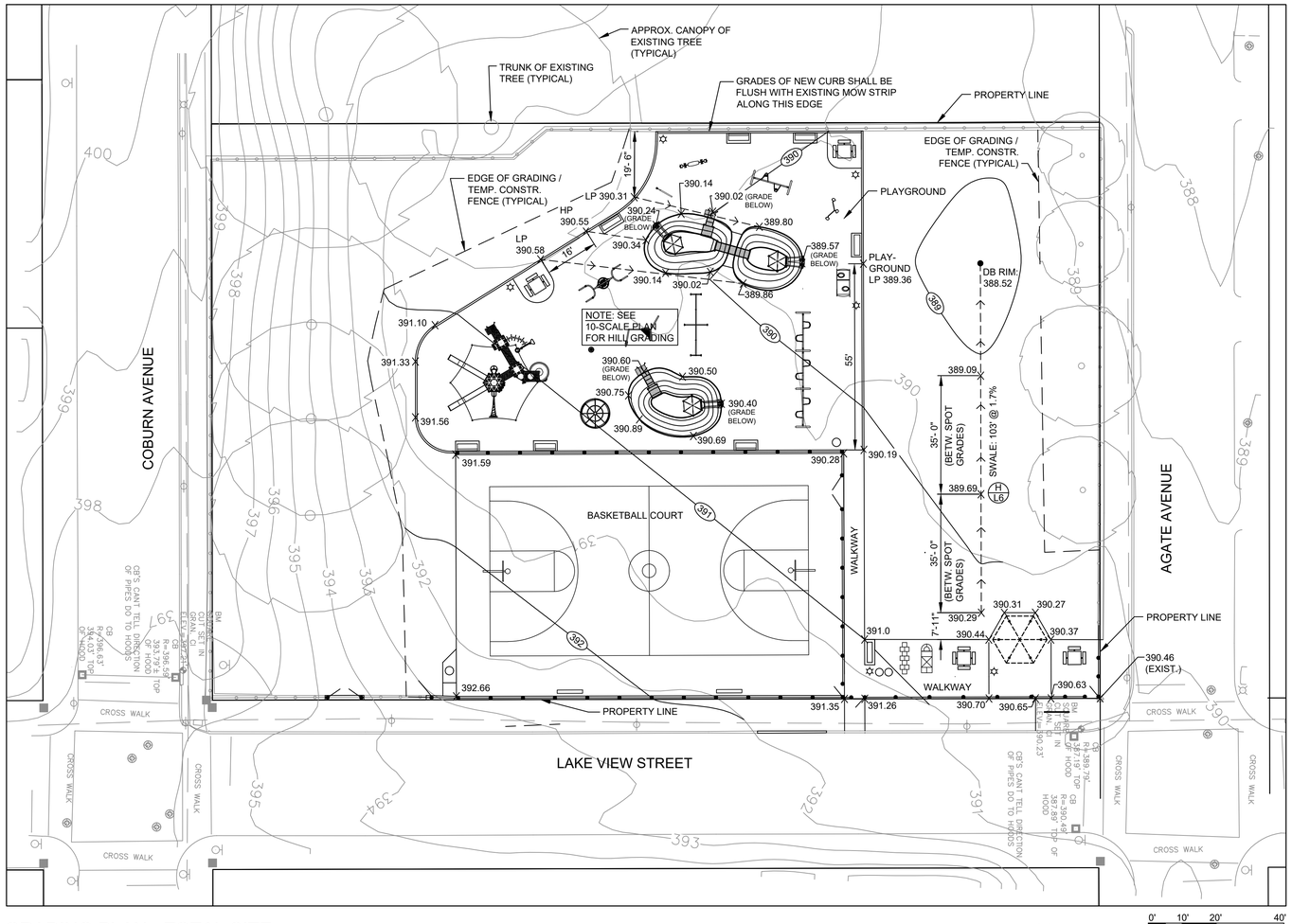
NO.	DATE	DESCRIPTION

N

SCALE: VARIES

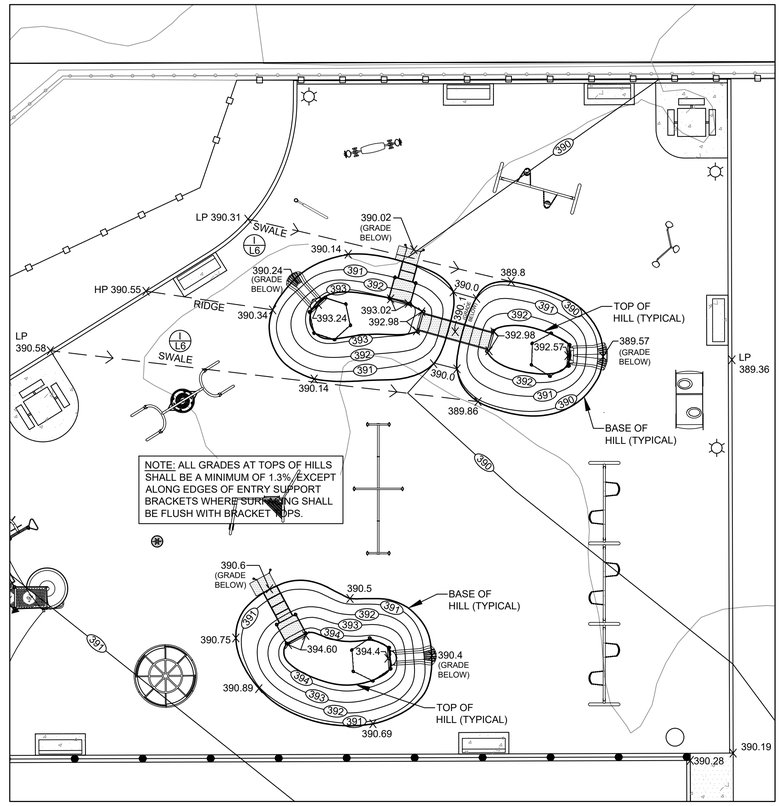
LAYOUT AND MATERIALS PLANS

SHEET L-3



GRADING PLAN - TOTAL SITE

SCALE: 1" = 20' 0' 10' 20' 40'



GRADING PLAN - PLAYGROUND HILLS

SCALE: 1" = 10' 0' 5' 10' 20'

NOTES:

1) THE CONTRACTOR SHALL CONTACT THE OWNER'S REPRESENTATIVE TO CHECK ROUGH AND FINAL GRADES.

2) THE CONTRACTOR SHALL VERIFY ALL GRADES ON THE GROUND AND REPORT ANY DISCREPANCIES TO THE OWNER'S REPRESENTATIVE.

3) ALL GRADING SHALL BE SMOOTH AND CONTINUOUS WHERE PROPOSED GRADES MEET EXISTING GRADES

4) SEE CIVIL PLANS FOR STORM DRAINAGE AND EROSION CONTROL.

5) SEE SHEET L-5 FOR LOAMING AND SODDING.

6) SEE SHEET L-2 FOR REMOVAL & DISPOSAL OF EXISTING SOIL FROM PROPOSED LAWN AREA. IN ADDITION TO THE LAWN SOIL, ALL EXCESS SOIL SHALL BE REMOVED FROM THE SITE AND DISPOSED IN ACCORDANCE WITH THE EARTHWORK SECTION OF THE SPECIFICATIONS. (ALL EXISTING SOIL CONTAINS ELEVATED ARSENIC CONCENTRATIONS.)

LEGEND:

EXISTING:	PROPOSED:	
	H / L6	DETAIL NUMBER / SHEET NUMBER
	TYP.	TYPICAL
	HP	HIGH POINT
	LP	LOW POINT
	X 390.69	SPOT GRADE
391	391	CONTOUR
		SWALE (H / L6)
		HYDRANT
		WATER / GAS GATE
		DRAIN MANHOLE
		SEWER MANHOLE
		METAL POST
		STONE BOUND
	●	CATCH BASIN / DRAIN BASIN (DB)
		BENCHMARK
		RAILROAD SPIKE FOUND
		UTILITY POLE
		FENCE WITH MOW STRIP
		FENCE WITHOUT MOW STRIP

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD ▫ WORCESTER, MA 01605
508-852-2644 ▫ info@edlandarch.com

MASSACHUSETTS ALICE WEBB REGISTERED LANDSCAPE ARCHITECT NO. 1404

PROJECT:
LAKE VIEW PLAYGROUND IMPROVEMENTS

CLIENT:
CITY OF WORCESTER

DATE: 11-22-24

REVISIONS:

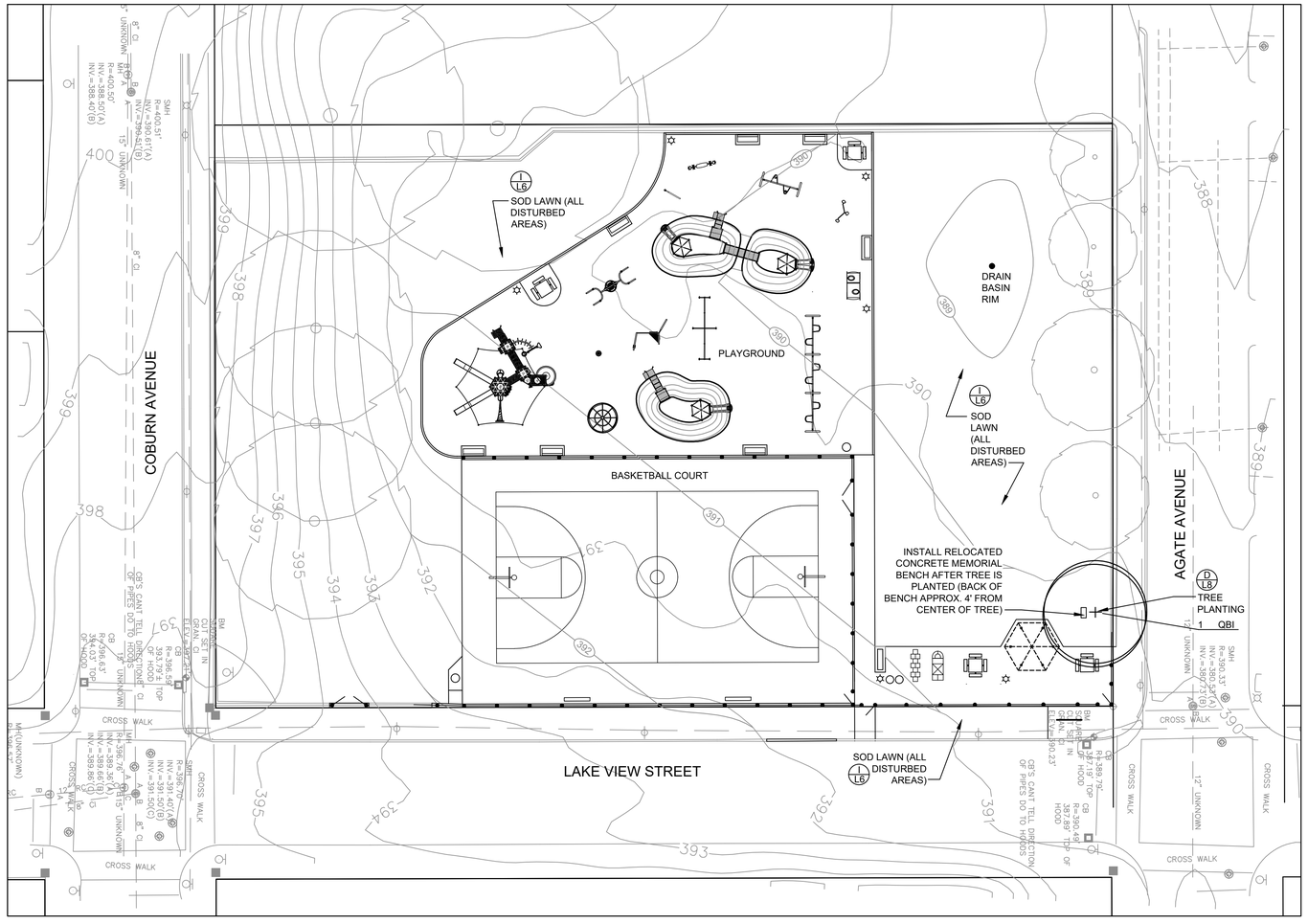
NO.	DATE	DESCRIPTION

N

SCALE: VARIES

GRADING PLANS

SHEET L-4



LEGEND:

EXISTING:

PROPOSED:

D / L8 — DETAIL NUMBER / SHEET NUMBER

TYP. — TYPICAL

TREE D / L8

NOTES:

1. PLANT SPECIES, CULTIVARS, SIZES, AND LOCATIONS SHALL NOT BE CHANGED EXCEPT BY PERMISSION OF THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE. THE CONTRACTOR SHALL CHECK PLANT MATERIAL FROM NURSERIES BEFORE ACCEPTING PLANTS, TO MAKE SURE THERE ARE NO UNAUTHORIZED SUBSTITUTES. ALTERNATE CULTIVARS OF THE SAME SPECIES SHALL NOT BE SUBSTITUTED WITHOUT LANDSCAPE ARCHITECT'S OR OWNER'S REPRESENTATIVE'S APPROVAL.

2. LOAM & SOD ALL AREAS DISTURBED BY CONSTRUCTION, WHERE OTHER SURFACE MATERIALS ARE NOT SPECIFIED. SEE SPECIFICATIONS FOR REQUIREMENTS.

3. SEE DETAIL SHEETS FOR TREE PLANTING REQUIREMENTS, IN ADDITION TO SPECIFICATIONS.

4. CONTRACTOR SHALL MOW EXISTING LAWN AREAS IN THE PARK THAT ARE OUTSIDE OF THE CONSTRUCTION LIMITS AT LEAST EVERY 2 WEEKS EXCEPT IN WINTER, THROUGHOUT THE CONSTRUCTION PERIOD.

PLANT SCHEDULE

SYMBOL	QTY.	BOTANICAL NAME	COMMON NAME	MINIMUM SIZE AT PLANTING	PLANT SPACING & NOTES
TREES:					
QBI	1	QUERCUS BICOLOR	SWAMP WHITE OAK	3.5" CAL.	B&B, PLANT 34' FROM NEAREST EXISTING TREE

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD ▫ WORCESTER, MA 01605
508-852-2644 ▫ info@edlandarch.com

MASSACHUSETTS ALICE WEBB REGISTERED LANDSCAPE ARCHITECT NO. 1404

PROJECT:
LAKE VIEW PLAYGROUND

CLIENT:
CITY OF WORCESTER

DATE: 11-22-24

REVISIONS:

NO.	DATE	DESCRIPTION

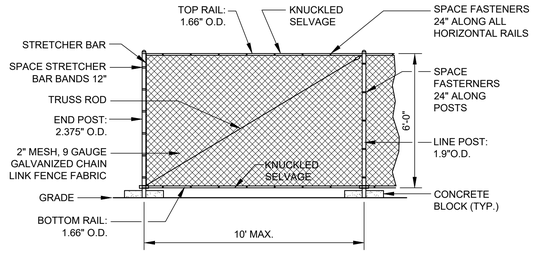
N

SCALE: 1" = 20'

0' 10' 20' 40'

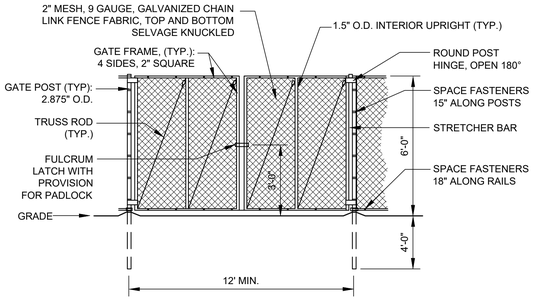
PLANTING AND SODDING PLAN

SHEET L-5



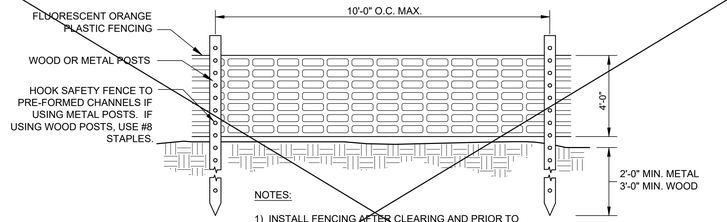
A L6 TEMPORARY CONSTRUCTION FENCE

ELEVATION NOT TO SCALE



B L6 TEMPORARY CONSTRUCTION GATE - DOUBLE

ELEVATION NOT TO SCALE



NOT IN CONTRACT

NOTES:

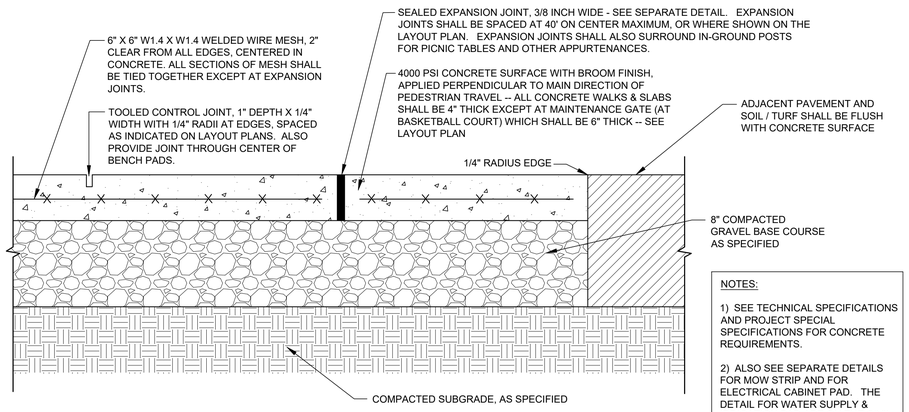
1) INSTALL FENCING AFTER CLEARING AND PRIOR TO ROUGH GRADING, WHERE SHOWN ON PLANS.

2) NO GRADING, DUMPING, STORAGE, OR VEHICULAR TRAFFIC ARE PERMITTED IN AREAS DELINEATED BY TREE PROTECTION FENCING.

3) REMOVE FENCING AFTER ALL CONSTRUCTION OPERATIONS ARE COMPLETE EXCEPT LANDSCAPING.

C L6 TEMPORARY TREE PROTECTION FENCE

NOT TO SCALE



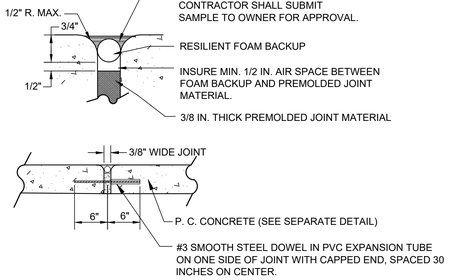
NOTES:

1) SEE TECHNICAL SPECIFICATIONS AND PROJECT SPECIAL SPECIFICATIONS FOR CONCRETE REQUIREMENTS.

2) ALSO SEE SEPARATE DETAILS FOR MOW STRIP AND FOR ELECTRICAL CABINET PAD. THE DETAIL FOR WATER SUPPLY & IRRIGATION PAD ARE ON THE CIVIL SHEETS.

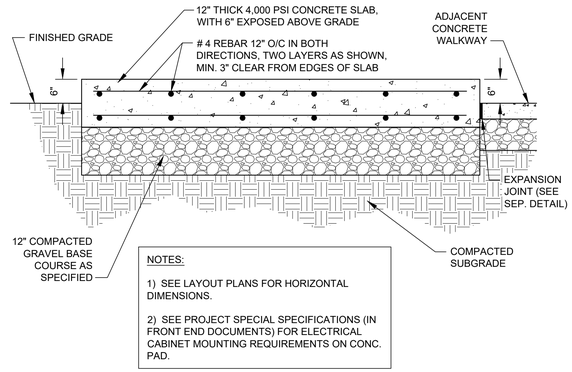
D L6 PORTLAND CEMENT CONCRETE PAVEMENT

NOT TO SCALE



E L6 EXPANSION JOINT

SECTIONS NOT TO SCALE



NOTES:

1) SEE LAYOUT PLANS FOR HORIZONTAL DIMENSIONS.

2) SEE PROJECT SPECIAL SPECIFICATIONS (IN FRONT END DOCUMENTS) FOR ELECTRICAL CABINET MOUNTING REQUIREMENTS ON CONC. PAD.

F L6 ELECTRICAL CABINET CONCRETE PAD

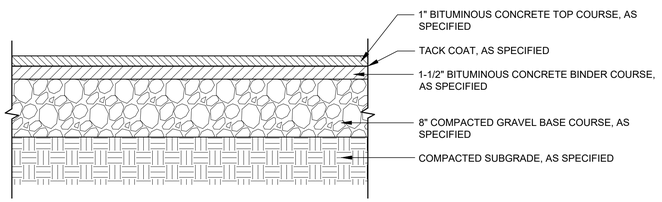
SECTION NOT TO SCALE

NOTES:

1) TACK COAT IS REQUIRED IF BINDER COURSE HAS BEEN IN PLACE FOR MORE THAN 48 HOURS.

2) ADJACENT GRADES SHALL BE FLUSH WITH EDGES OF WALKWAY.

3) SEE SEPARATE DETAIL FOR BASKETBALL COURT SURFACING.



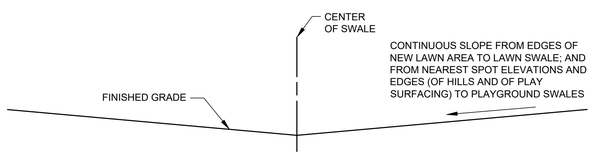
G L6 BITUMINOUS PEDESTRIAN PAVEMENT

SECTION NOT TO SCALE

NOTES:

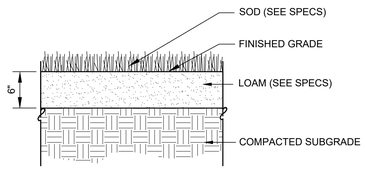
1) SLOPES GRADIENTS VARY - SEE SPOT ELEVATIONS ON GRADING PLAN.

2) LAWNS WILL RECEIVE SOD, SO NO EROSION CONTROL BLANKET IS NEEDED.



H L6 SWALE (IN LAWN AREA AND PLAYGROUND)

SECTION NOT TO SCALE



I L6 SOD PROFILE

SECTION NOT TO SCALE

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD ▯ WORCESTER, MA 01605
508-852-2644 ▯ info@edlandarch.com

MASSACHUSETTS ALICE WEBB REGISTERED LANDSCAPE ARCHITECT NO. 1404

PROJECT:
LAKE VIEW PLAYGROUND

CLIENT:
CITY OF WORCESTER

DATE: 11-22-24

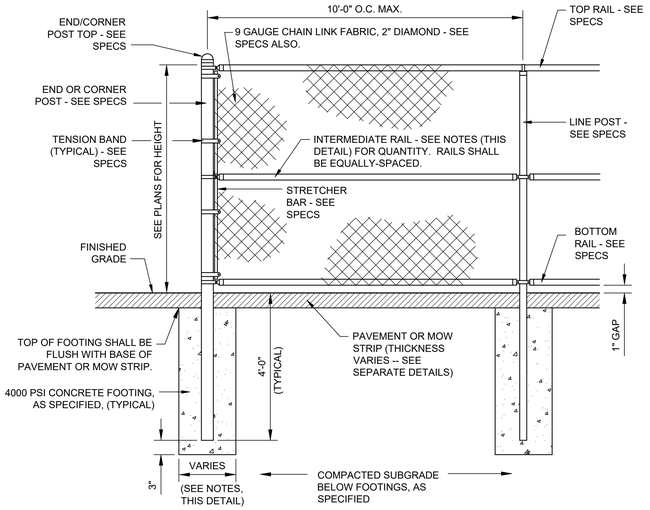
REVISIONS:

NO.	DATE	DESCRIPTION

SCALE: NONE

DETAILS

SHEET L-6



NOTES:

1) ALL PORTIONS OF FENCING SHALL BE PVC COATED, BLACK COLOR, AS SPECIFIED.

2) INSTALL FENCE FABRIC ON STREET SIDE WHERE FENCING IS NEAR PROPERTY LINES; AND ON OUTSIDE OF BASKETBALL COURT ELSEWHERE.

3) WIRE TIES SHALL BE SPACED 12" ALONG RAILS AND LINE POSTS.

4) POST FOOTING DIAMETER SHALL BE 12" FOR POSTS LESS THAN 4" DIA.; AND 16" FOR 4" DIA. POSTS.

5) FOR FENCES LOWER THAN 6' HEIGHT, NO INTERMEDIATE RAIL IS REQUIRED. FOR FENCES AT LEAST 6' HIGH BUT LESS THAN 8', 1 INTERMEDIATE RAIL IS REQUIRED. FOR FENCES 8' TO 10' HIGH, 2 INTERMEDIATE RAILS ARE REQUIRED.

6) ATTACH NEW FENCE TO EXISTING FENCE AT PROPERTY EDGES

7) ALSO SEE SPECIFICATIONS.

A L7 VINYL-COATED CHAIN LINK FENCE

SECTION

NOT TO SCALE

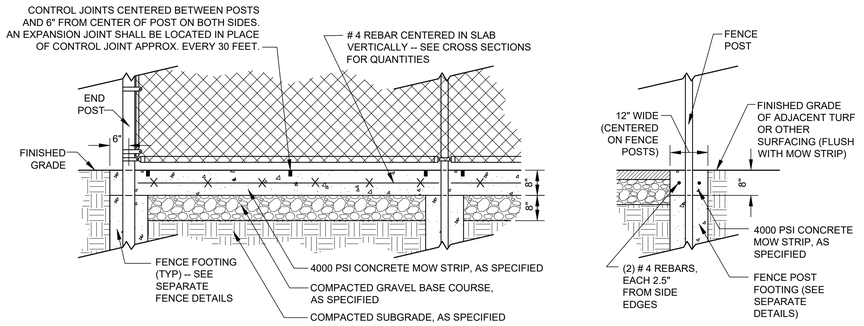
NOTES:

1) MOW STRIPS ARE ONLY INCLUDED BELOW 10' HIGH FENCES ON NORTH AND SOUTH SIDES OF BASKETBALL COURT. (OTHER FENCING IS WITHIN ASPHALT OR CONCRETE SURFACE AREAS.) SEE DETAIL D-L9 FOR LAYOUT OF THESE FENCES / MOW STRIPS.

2) ALSO SEE SEPARATE DETAILS FOR CHAIN LINK FENCE AND FOR CONCRETE JOINTS (P.C. CONCRETE PAVEMENT AND EXPANSION JOINT DETAILS).

3) SLOPE ACROSS MOW STRIP SHALL BE 1.5%, IN DIRECTION OF SLOPE PROPOSED FOR ADJACENT AREA OF PARK -- SEE GRADING PLAN.

4) DO NOT EXTEND REBAR THROUGH EXPANSION JOINTS.



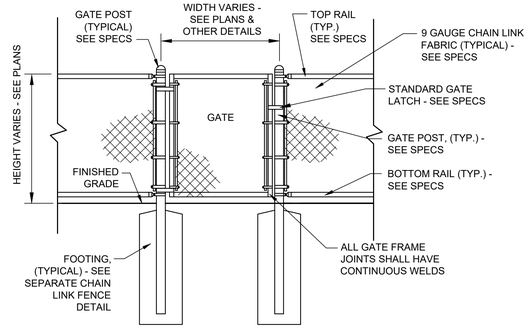
LONGITUDINAL SECTION VIEW

CROSS SECTION VIEW

B L7 MOW STRIP AT FENCE

SECTIONS

NOT TO SCALE



NOTES:

1) SEE VINYL-COATED CHAIN LINK FENCE DETAIL FOR ADDITIONAL REQUIREMENTS

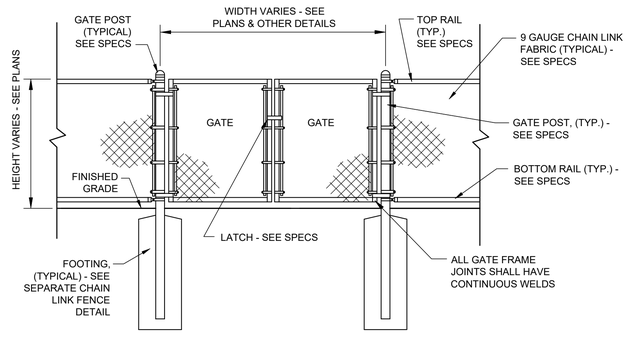
2) ALL PORTIONS OF FENCING SHALL BE PVC COATED, BLACK COLOR, AS SPECIFIED.

3) SEE PLANS FOR GATE SWING ORIENTATION.

C L7 SINGLE GATE -- VINYL-COATED CHAIN LINK FENCE

ELEVATION

NOT TO SCALE



NOTES:

1) SEE VINYL-COATED CHAIN LINK FENCE DETAIL FOR ADDITIONAL REQUIREMENTS

2) ALL PORTIONS OF FENCING SHALL BE PVC COATED, BLACK COLOR, AS SPECIFIED.

3) SEE PLANS FOR GATE SWING ORIENTATION.

D L7 DOUBLE GATE -- VINYL-COATED CHAIN LINK FENCE

ELEVATION

NOT TO SCALE

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD ▫ WORCESTER, MA 01605
508-852-2644 ▫ info@edlandarch.com

MASSACHUSETTS ALICE WEBB NO. 1404 REGISTERED LANDSCAPE ARCHITECT

PROJECT:
LAKE VIEW PLAYGROUND

CLIENT:
CITY OF WORCESTER

DATE: 11-22-24

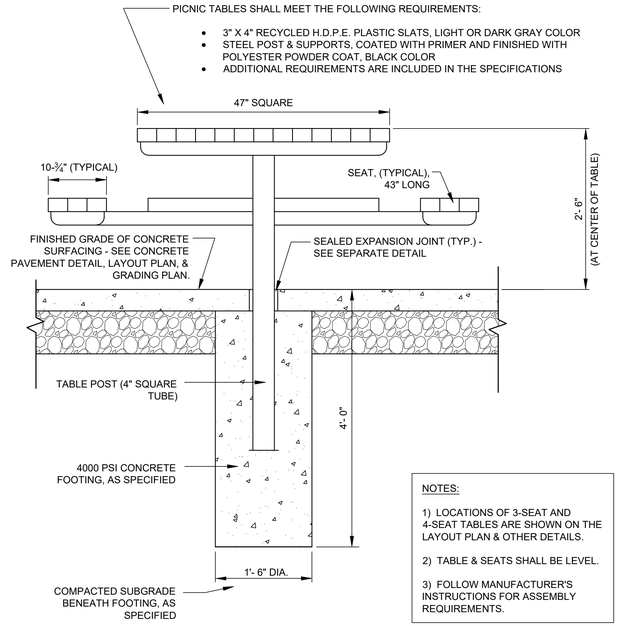
REVISIONS:

NO.	DATE	DESCRIPTION

SCALE: NONE

DETAILS

SHEET L-7

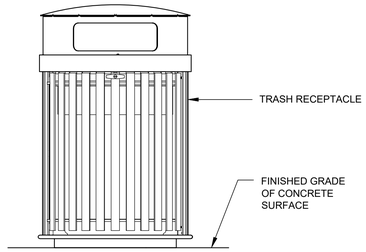


A L8 PICNIC TABLE

SECTION — NOT TO SCALE

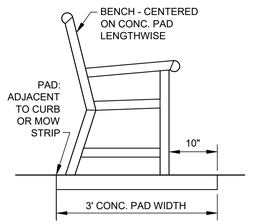
NOTES:

1) TRASH RECEPTACLE SHALL BE #287-32SH (32 GAL.) BY DUMOR, OR APPROVED EQUAL.
2) ASSEMBLE RECEPTACLE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
3) INSTALL RECEPTACLE ON PAVEMENT. SEE LAYOUT PLAN FOR LOCATIONS.
4) SECURE RECEPTACLE TO PAVEMENT WITH 1/2" X 3 3/4" GALVANIZED EXPANSION ANCHOR BOLTS, PROVIDED BY MANUFACTURER
5) COLOR OF TRASH RECEPTACLE SHALL BE BLACK.

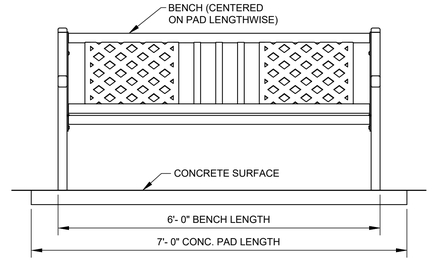


B L8 TRASH RECEPTACLE

ELEVATION — NOT TO SCALE



SIDE ELEVATION



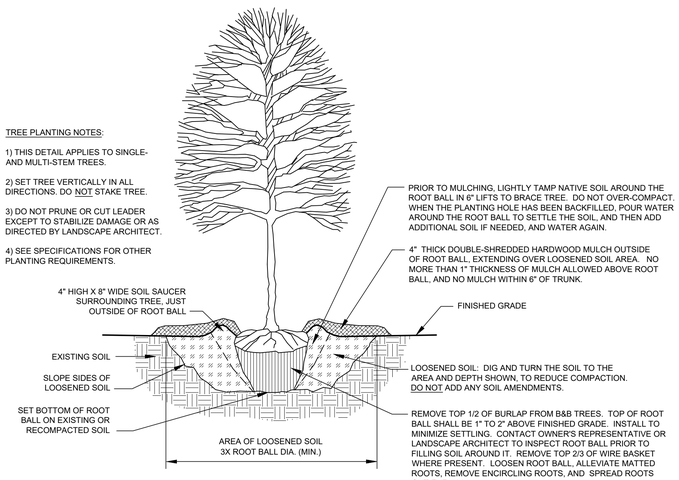
FRONT ELEVATION

NOTES:

1) BENCH SHALL BE # 117-60 BY DUMOR, OR APPROVED EQUAL (SEE SPECS).
2) ASSEMBLE AND INSTALL BENCH IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
3) INSTALL BENCH ON CONCRETE PAD. SEE SEPARATE DETAILS FOR CONC. PAD REQUIREMENTS.
4) SECURE BENCH TO CONCRETE SURFACE WITH 1/2" X 3-3/4" GALVANIZED EXPANSION ANCHOR BOLTS AND STEEL PLATES PROVIDED BY MANUFACTURER.
5) COLOR OF BENCHES SHALL BE BLACK.

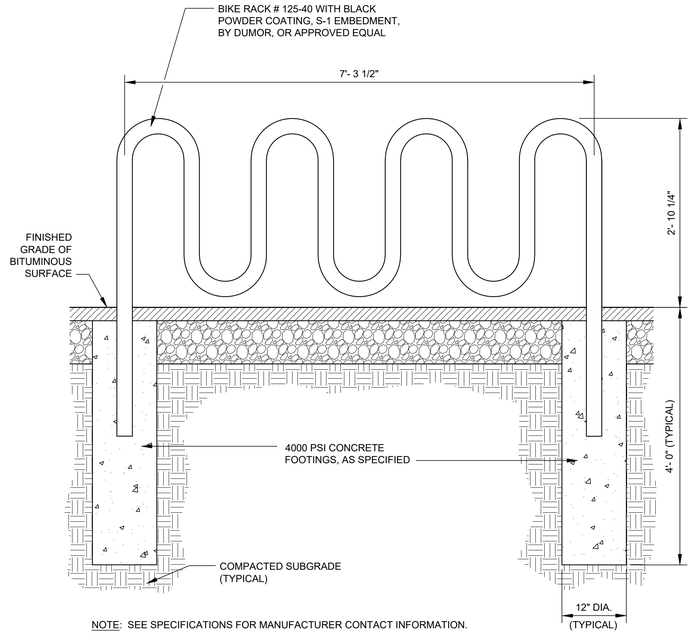
C L8 BENCH WITH BACK

ELEVATIONS — NOT TO SCALE



D L8 TREE PLANTING

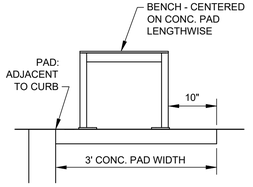
SECTION — NOT TO SCALE



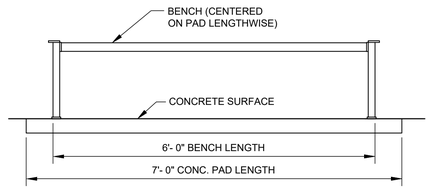
NOTE: SEE SPECIFICATIONS FOR MANUFACTURER CONTACT INFORMATION.

E L8 BIKE RACK

SECTION — NOT TO SCALE



SIDE ELEVATION



FRONT ELEVATION

NOTES:

1) BENCH SHALL BE # 501-60HSNA BY DUMOR, OR APPROVED EQUAL (SEE SPECS).
2) ASSEMBLE AND INSTALL BENCH IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
3) INSTALL BENCH ON CONCRETE PAD. SEE SEPARATE DETAILS FOR CONC. PAD REQUIREMENTS.
4) SECURE BENCH TO CONCRETE SURFACE WITH 1/2" X 3-3/4" GALVANIZED EXPANSION ANCHOR BOLTS AND STEEL PLATES PROVIDED BY MANUFACTURER.
5) COLOR OF BENCHES SHALL BE BLACK.

F L8 BENCH WITHOUT BACK

ELEVATIONS — NOT TO SCALE

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD ▫ WORCESTER, MA 01605
508-852-2644 ▫ info@edlandarch.com

MASSACHUSETTS ALICE WEBB REGISTERED LANDSCAPE ARCHITECT NO. 1414

PROJECT:
LAKE VIEW PLAYGROUND

CLIENT:
CITY OF WORCESTER

DATE: 11-22-24

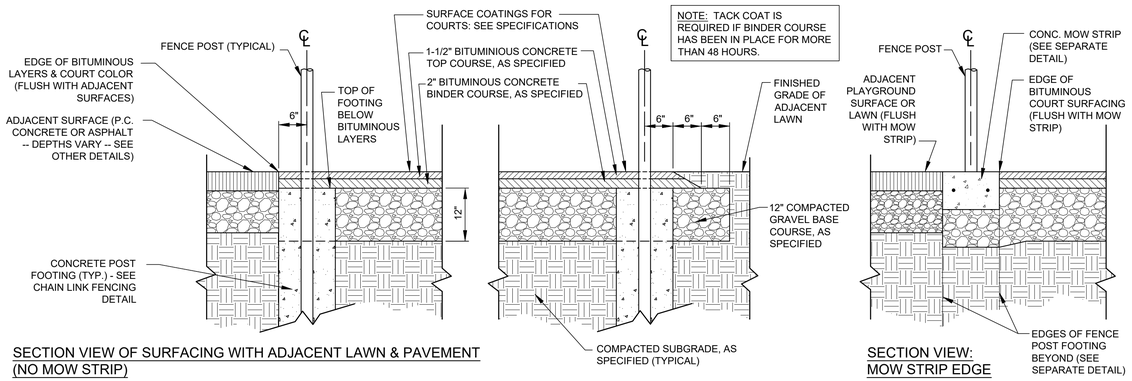
REVISIONS:

NO.	DATE	DESCRIPTION

SCALE: NONE

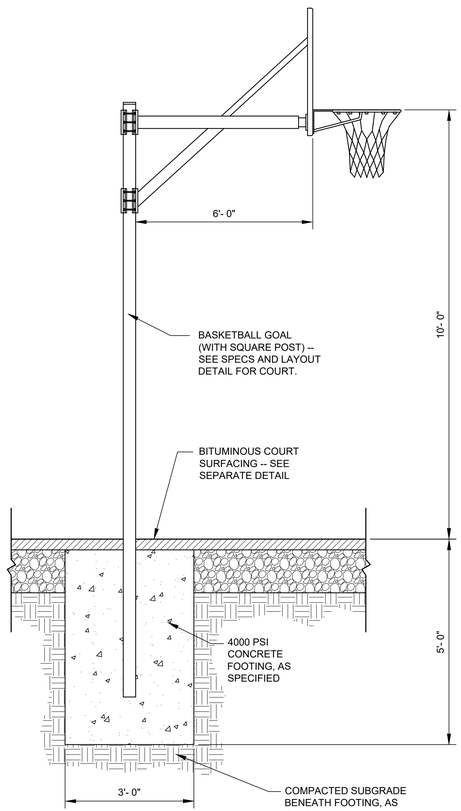
DETAILS

SHEET L-8



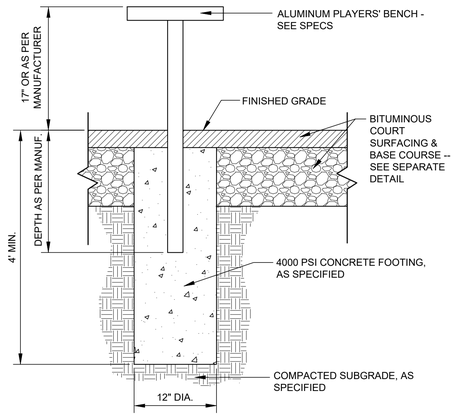
A L9 BASKETBALL COURT SURFACING

NOT TO SCALE



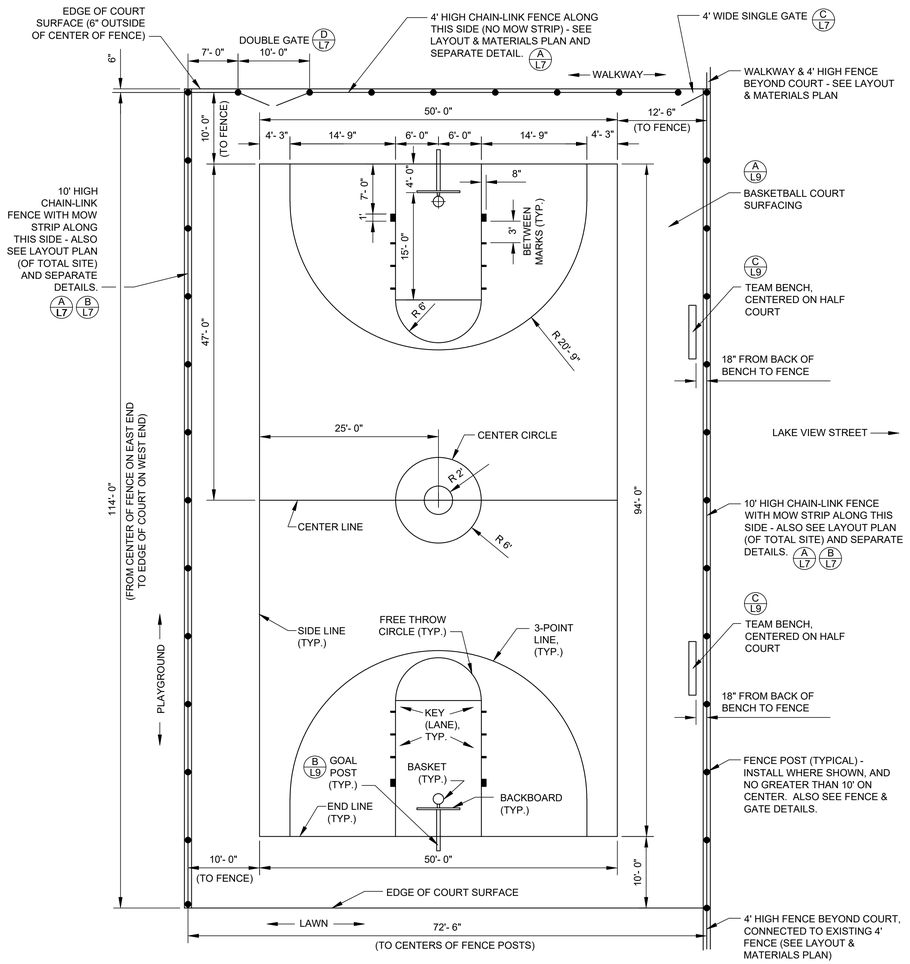
B L9 BASKETBALL GOAL

SECTIONS — NOT TO SCALE



C L9 ALUMINUM TEAM BENCH

SECTION — NOT TO SCALE



NOTES:

1) COURT SHALL HAVE 3 PREMIUM SURFACE COLORS TO BE SELECTED BY OWNER -- SEE SPECS.

2) DIMENSIONS SHOWN ARE TYPICAL FOR BOTH ENDS OF COURT.

3) DIMENSIONS ARE TO CENTERS OF FENCE POSTS (UNLESS OTHERWISE NOTED) AND TO CENTER OF BASKETBALL GOAL POSTS.

4) DIMENSIONS ARE TO INSIDE EDGES OF END LINES & SIDE LINES.

5) DIMENSIONS ARE TO OUTSIDE EDGES OF 3 POINT LINE, FREE THROW RADIUS, AND KEY.

6) DIMENSIONS ARE TO FRONT OF BACKBOARD.

7) ALL LINES AND MARKS ARE 2" WIDE, WHITE COLOR, UNLESS OTHERWISE NOTED.

8) SEE SEPARATE DETAILS FOR FENCE, GATES, BENCHES, BASKETBALL GOALS, AND COURT SURFACING.

D L9 BASKETBALL COURT LAYOUT

PLAN VIEW — SCALE: 1" = 10'

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD ▫ WORCESTER, MA 01605
508-852-2644 ▫ info@edlandarch.com

MASSACHUSETTS ALICE WEBB REGISTERED LANDSCAPE ARCHITECT NO. 1404

PROJECT:
LAKE VIEW PLAYGROUND

CLIENT:
CITY OF WORCESTER

DATE: 11-22-24

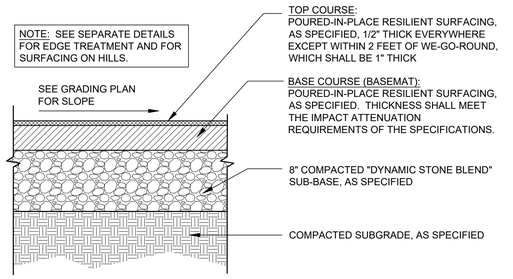
REVISIONS:

NO.	DATE	DESCRIPTION

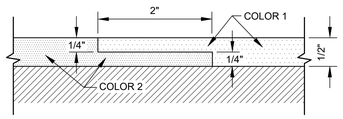
SCALE: AS NOTED

DETAILS

SHEET L-9



SURFACING LAYERS

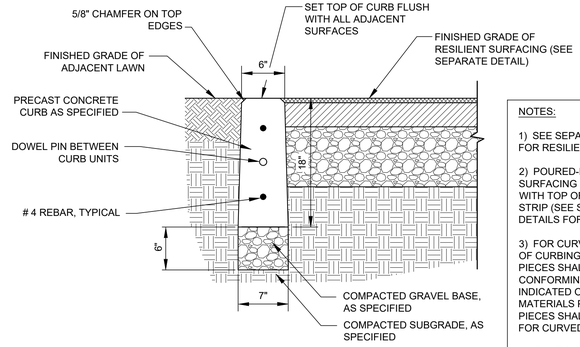


NOTE: ALL SURFACES (VERTICAL & HORIZONTAL) OF THE OVERLAPPING SEAM ON THE LOWER COLOR SHALL BE COATED WITH URETHANE ADHESIVE BEFORE UPPER COLOR IS POURED ABOVE IT.

OVERLAPPED SEAMS BETWEEN SURFACE COLORS

A L10 RESILIENT SURFACING

SECTION NOT TO SCALE



NOTES:

1) SEE SEPARATE DETAIL FOR RESILIENT SURFACING

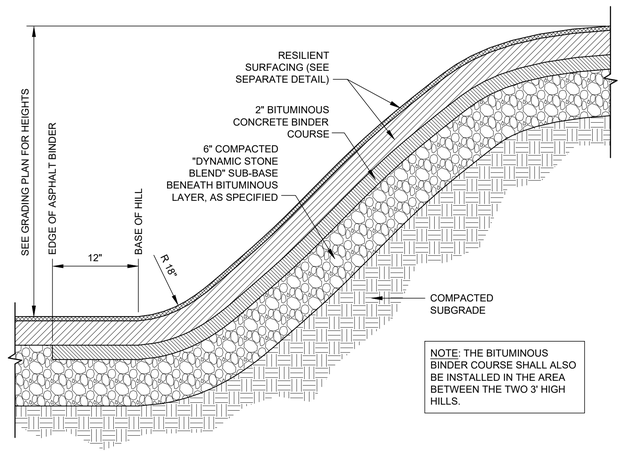
2) POURED-IN-PLACE SURFACING SHALL BE FLUSH WITH TOP OF NEW MOW STRIP (SEE SEPARATE DETAILS FOR MOW STRIPS)

3) FOR CURVED SECTIONS OF CURBING, RADIUS CURB PIECES SHALL BE USED, CONFORMING TO THE RADII INDICATED ON THE LAYOUT & MATERIALS PLAN; STRAIGHT PIECES SHALL NOT BE USED FOR CURVED AREAS.

4) SEE SPECS FOR ADDITIONAL REQUIREMENTS FOR CURBING.

B L10 CURB EDGE AT RESILIENT SURFACING

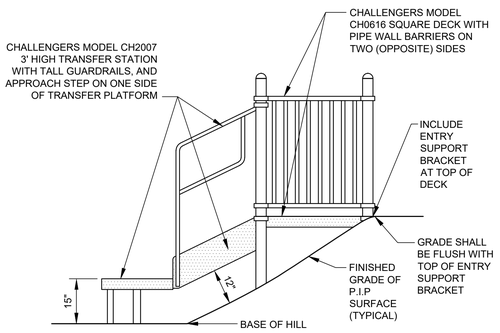
SECTION NOT TO SCALE



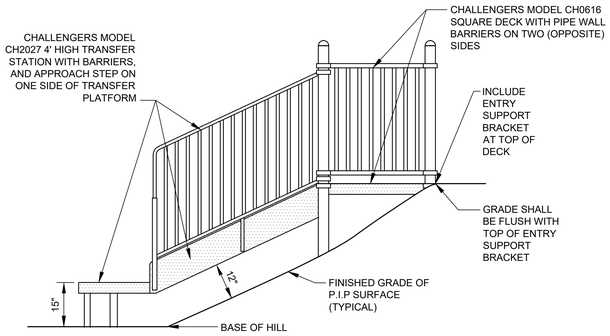
NOTE: THE BITUMINOUS BINDER COURSE SHALL ALSO BE INSTALLED IN THE AREA BETWEEN THE TWO 3' HIGH HILLS.

C L10 RESILIENT SURFACING ON HILLS

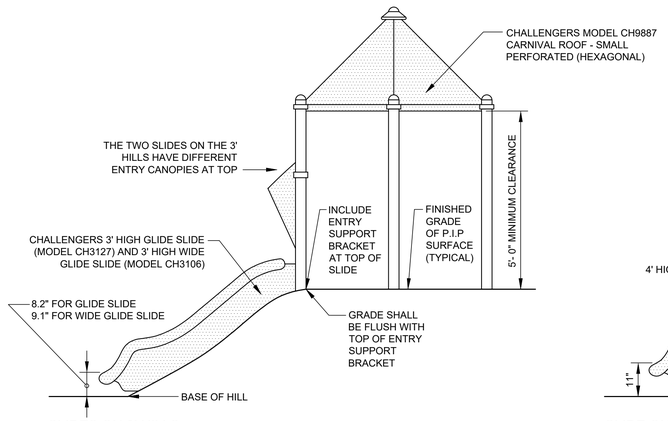
SECTION NOT TO SCALE



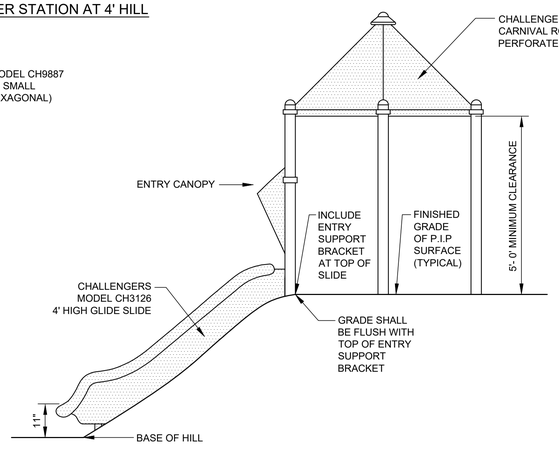
TRANSFER STATION AT 3' HILL



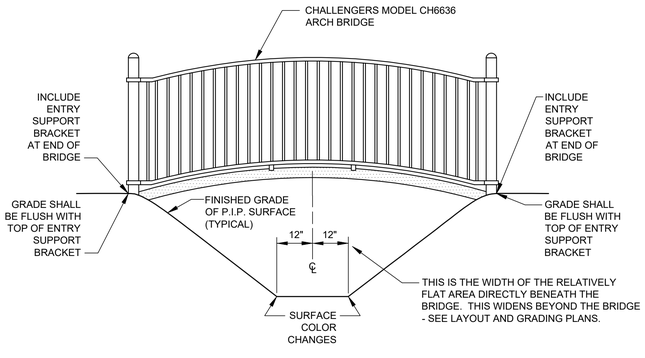
TRANSFER STATION AT 4' HILL



SLIDES ON 3' HILLS



SLIDE ON 4' HILL



BRIDGE BETWEEN 3' HILLS

NOTES:

1) PLAY EQUIPMENT SHOWN INCLUDE GENERAL DEPICTIONS ONLY - SEE MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR ADDITIONAL INFORMATION, INCLUDING POST & FOOTING DETAILS. ALL FOOTINGS SHALL BE AT LEAST 48" DEEP (BELOW FINISHED GRADE).

2) SEE 10-SCALE GRADING PLAN FOR ELEVATIONS.

3) PLAY EQUIPMENT ON HILLS SHALL BE SUPPLIED BY PLAYWORLD (PLAYWORLD.COM, LOCAL REP. PHONE # 508-688-7007)

D L10 PLAY EQUIPMENT ON HILLS

ELEVATIONS NOT TO SCALE

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD ▫ WORCESTER, MA 01605
508-852-2644 ▫ info@edlandarch.com

MASSACHUSETTS ALICE WEBB REGISTERED LANDSCAPE ARCHITECT NO. 1404

PROJECT:
LAKE VIEW PLAYGROUND

CLIENT:
CITY OF WORCESTER

DATE: 11-22-24

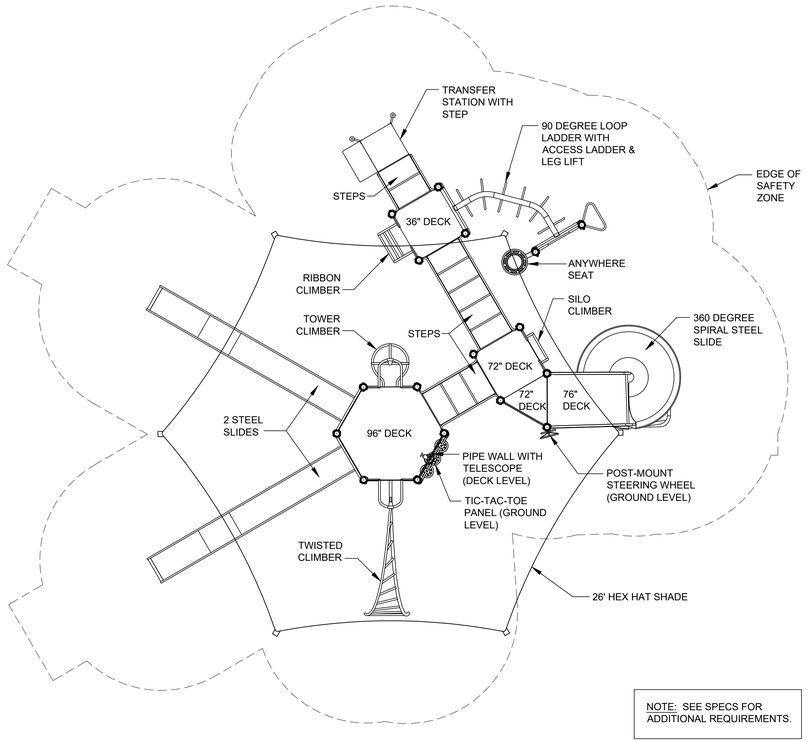
REVISIONS:

NO.	DATE	DESCRIPTION

SCALE: NONE

DETAILS

SHEET L-10

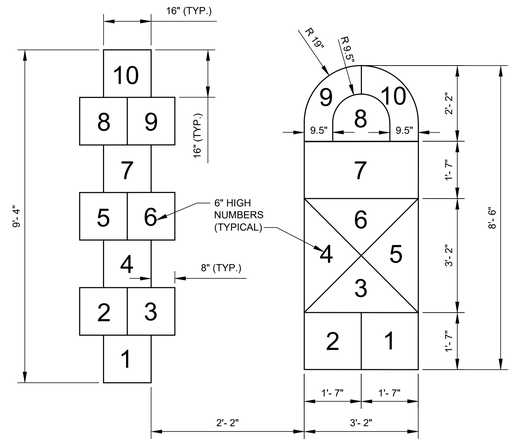


NOTE: SEE SPECS FOR ADDITIONAL REQUIREMENTS.

A L11 COMPOSITE PLAY STRUCTURE

SECTION

NOT TO SCALE



NOTES:

1. PAINT COLOR FOR LINES AND NUMBERS SHALL BE BLACK, AND THE SHAPES INSIDE THE LINES SHALL BE PAINTED WITH 4 DIFFERENT COLORS SELECTED BY THE OWNER'S REPRESENTATIVE, IN REPEATING SEQUENTIAL ORDER ACCORDING TO THE NUMBERED SHAPES.

2. LINES SHALL BE 2" WIDE. DIMENSIONS ARE TO CENTERS OF LINES.

3. SEE SPECS FOR ADDITIONAL PAINT REQUIREMENTS.

4. HOPSCOTCH GAME ON RIGHT SHALL BE CENTERED BETWEEN JOINTS & EDGE OF PAVEMENT - SEE 10 SCALE LAYOUT PLAN.

5. HOPSCOTCH GAME ON LEFT SHALL BE CENTERED BETWEEN EDGE OF PAVEMENT AND 2ND JOINT TO SOUTH, AND SEPARATED FROM OTHER GAME AS DIMENSIONED.

B L11 PAINTED HOPSCOTCH GAMES

SECTION

NOT TO SCALE

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD ▫ WORCESTER, MA 01605
508-852-2644 ▫ info@edlandarch.com

MASSACHUSETTS ALICE WEBB REGISTERED LANDSCAPE ARCHITECT NO. 1404

PROJECT:
LAKE VIEW
PLAYGROUND

CLIENT:
CITY OF
WORCESTER

DATE: 11-22-24

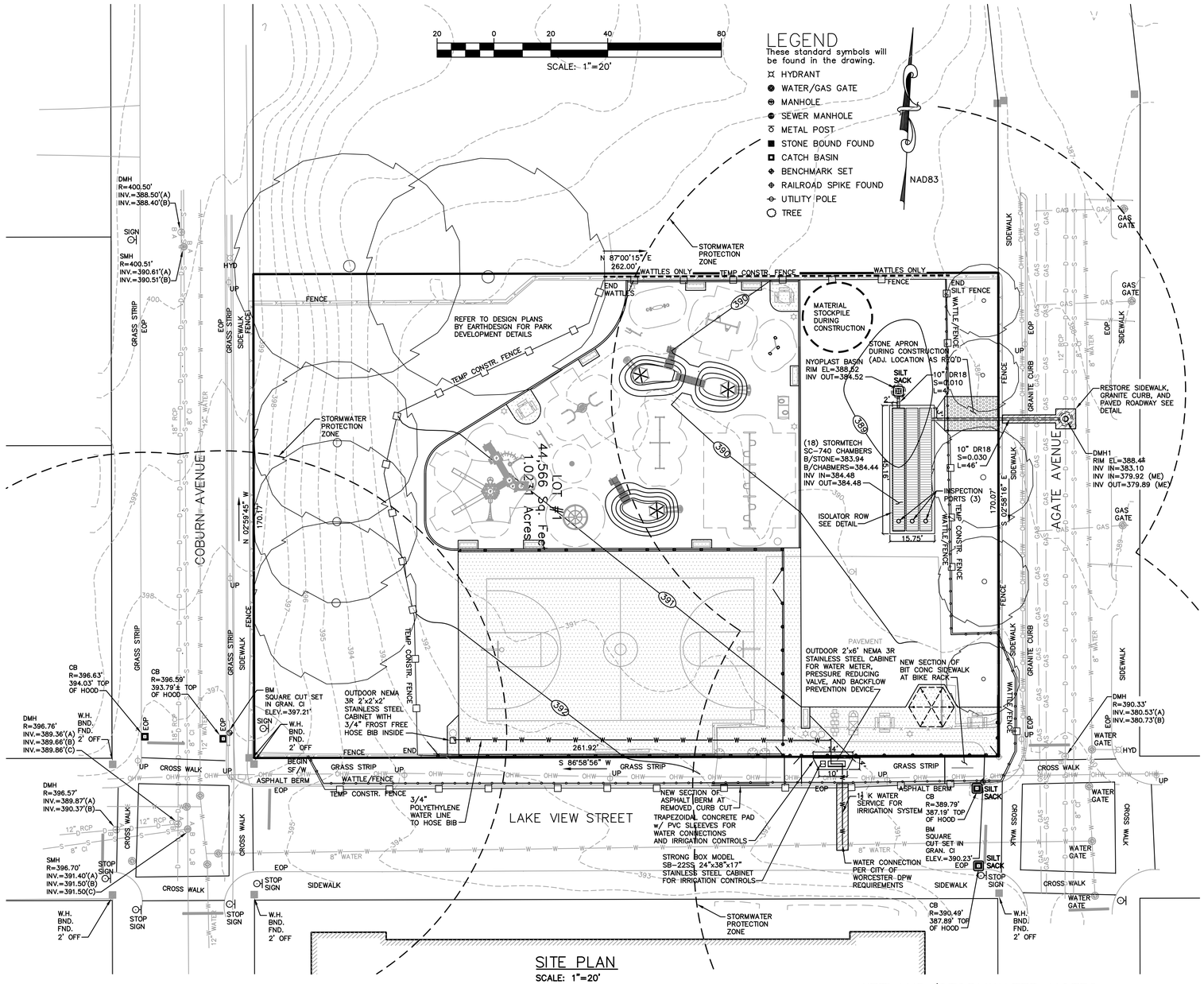
REVISIONS:

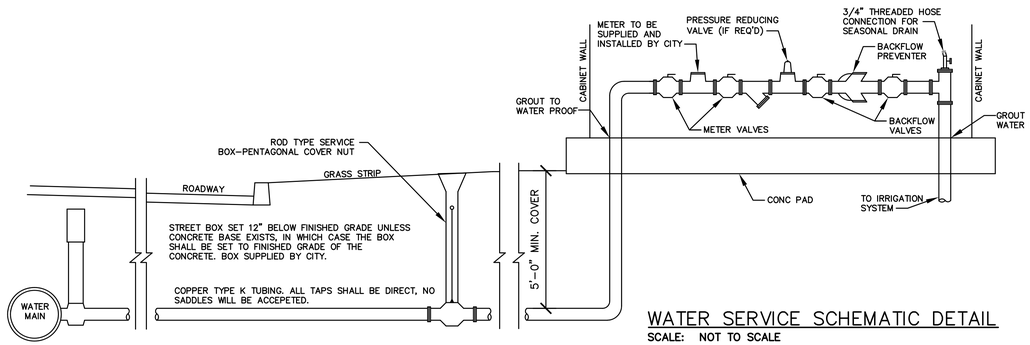
NO.	DATE	DESCRIPTION

SCALE: NONE

DETAILS

SHEET L-11





GENERAL NOTES:

1. ALL REQUIRED PERMITS SHALL BE SECURED PRIOR TO COMMENCING WORK. PRIOR TO COMMENCING ANY WORK ONSITE, CONTRACTOR SHALL NOTIFY THE CITY OF WORCESTER PLANNING AND ENGINEERING DEPARTMENTS, BUILDING DEPARTMENT, CONSERVATION COMMISSION, DEPARTMENT OF PUBLIC WORKS, SCHOOL DEPARTMENT, POLICE AND FIRE DEPARTMENTS.
2. ALL WORK SHALL CONFORM TO THE CITY OF WORCESTER REGULATIONS, ZONING ORDINANCE, CONSERVATION COMMISSION LOCAL ORDINANCE OR OTHER REGULATIONS AS APPLICABLE. ALL REQUIREMENTS OF THE CITY OF WORCESTER ARE HEREBY MADE CONDITIONS OF THIS WORK.
3. CONTRACTOR SHALL CONTROL AIRBORNE DUST WITH USE OF SPRAYED WATER AS REQUIRED TO MINIMIZE IMPACT ON NEIGHBORING PROPERTIES. USE OF CALCIUM CHLORIDE OR OTHER CHEMICALS IS NOT PERMITTED.
4. CONTRACTOR SHALL RETAIN A LICENSED SURVEYOR TO LAY OUT THE SITE CONSTRUCTION, WHO CERTIFY THAT ALL LOCATIONS ARE AS PER PLAN.
5. PROVIDE A 4' DEEP SUMP AT THE PROPOSED NYOPLAST AREA DRAIN.
6. SEVENTY TWO HOURS PRIOR TO COMMENCING ANY EXCAVATION, THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 811. THE CONTRACTOR SHALL COORDINATE INSTALLATION OF NEW UTILITIES WITH THE VICINITY OF EXISTING UTILITIES (UNDERGROUND AND OVERHEAD) WITH THE APPROPRIATE UTILITY.
7. INTERIM AND/OR PERMANENT SOIL STABILIZATION MEASURE SHALL BE INSTITUTED AS SOON AS PRACTICABLE, BUT NO MORE THAN 14 DAYS AFTER CONSTRUCTION ACTIVITY HAS TEMPORARILY OR PERMANENTLY CEASED ON THAT PORTION OF THE SITE.
8. REMOVE ALL TOPSOIL, SUBSOIL, PRIOR TO PLACING ANY FILL ONSITE. WHERE GRAVEL IS CALLED FOR ONSITE, CONTRACTOR MAY UTILIZE ONSITE MATERIALS, IF APPROVED BY OWNER.
9. CONTRACTOR SHALL MAINTAIN COMPLETE RECORDS OF AS-BUILT LOCATIONS OF ALL UNDERGROUND AND ABOVE GROUND FACILITIES. PROVIDE THE OWNER WITH COMPLETE AS-BUILT PLANS UPON COMPLETION OF PROJECT, INCLUDING UTILITIES NOT INDICATED ON THIS PLAN.
10. CONSTRUCTION SEQUENCE:
    ALL WORK OF THIS PROJECT SHALL PROCEED ACCORDING TO THE FOLLOWING PROPOSED SEQUENCE:
    1.) EROSION CONTROL PROVISIONS IN PLACE
    2.) CLEARING/GRUBBING
    3.) CONSTRUCTION OF STORMWATER FACILITIES AND THEN SITE DEVELOPMENT CONSTRUCTION.
11. CONTRACTOR SHALL PLACE A MINIMUM OF 6" (COMPACTED DEPTH) OF GOOD QUALITY LOAM AND GRASS SEED IN ALL AREAS NOT SUBJECT TO RESTORATION BY ANY OTHER MEANS.
12. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE HIS WORK WITH MUNICIPALITY TO LIMIT THE POTENTIAL DISRUPTIONS TO THE THE GENERAL PUBLIC. SHALL EMPLOY DUE CARE AND CAUTION TO PROTECT THE PUBLIC FROM DANGERS ASSOCIATED WITH THE OPERATION. SHALL INSTALL TEMPORARY FENCES, BARRICADES AND SIGNAGE TO ENSURE THAT NO PERSONS ENTER THE WORK AREA. SHALL COORDINATE POLICE DETAILS AS REQUIRED FOR WORK TO BE CONDUCTED IN THE STREET. SHALL EMPLOY DUE CARE WHEN WORKING AROUND PEDESTRIAN AND VEHICLE TRAFFIC.
13. NO EXCAVATION SHALL TAKE PLACE ONSITE UNTIL ALL SEDIMENTATION CONTROLS (STRAW WATTLES, TEMP BASINS, ETC.) ARE FULLY INSTALLED AS PER PLAN. FOLLOWING COMPLETION OF GRADING IN ANY AREA CONTRACTOR SHALL ACT TO PLACE PERMANENT SURFACE FINISH OR TO STABILIZE SURFACE SOILS AGAINST EROSION. LOAM AND SEED SHALL BE PLACED IMMEDIATELY UPON FINAL GRADING.
14. THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT THE PROPOSED CONSTRUCTION ACTIVITIES DO NOT DAMAGE OR UNDERMINE EXISTING SLOPES, BUILDINGS, WALLS, STRUCTURES, ETC. IN THE AREA AROUND THE CONSTRUCTION. REPAIR OF EXISTING SLOPES, BUILDINGS, WALLS, STRUCTURES, ETC. THAT ARE DAMAGED OR UNDERMINED BY THE CONTRACTORS WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
15. EXISTING UTILITY LOCATIONS ARE APPROXIMATE ARE TO BE FIELD VERIFIED. QUINN ENGINEERING, INC. DOES NOT WARRANT THAT ALL EXISTING UTILITIES HAVE BEEN INDICATED. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE EXISTING UTILITY LOCATIONS AND ENSURING THAT THE PROPOSED WORK DOES NOT CONFLICT WITH THE EXISTING UTILITIES NOT SHOWN.
16. SEWERS SHOULD BE LAID AT A MINIMUM OF 10 FEET, HORIZONTALLY, FROM ANY EXISTING OR PROPOSED WATER MAIN. SHOULD LOCAL CONDITIONS PREVENT LATERAL SEPARATION OF 10 FEET TO A WATER MAIN, THE WATER MAIN SHOULD BE LAID IN A SEPARATE TRENCH AND THE ELEVATION OF THE CROWN OF THE SEWER PLACED AT LEAST 18 INCHES BELOW THE INVERT OF THE WATER MAIN. WHENEVER SEWERS MUST CROSS UNDER WATER MAINS, THE SEWER SHOULD BE LAID AT SUCH AN ELEVATION THAT THE CROWN OF THE SEWER IS AT LEAST 18 INCHES BELOW THE INVERT OF THE WATER MAIN. WHEN THE ELEVATION OF THE SEWER CAN NOT BE VARIED TO MEET THIS REQUIREMENT, THE WATER MAIN SHOULD BE RELOCATED TO PROVIDE THIS SEPARATION OR CONSTRUCTED WITH MECHANICAL-JOINT PIPE FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE SEWER. ONE FULL LENGTH OF WATER MAIN SHOULD BE CENTERED OVER THE SEWER SO THAT BOTH JOINTS WILL BE AS FAR FROM THE SEWER AS POSSIBLE. WHEN IT IS IMPOSSIBLE TO OBTAIN HORIZONTAL OR VERTICAL SEPARATION AS STIPULATED ABOVE, BOTH SEWER AND WATER MAIN SHOULD BE ENCASED IN CONCRETE FOR 10 FEET EITHER SIDE OF THE CROSSING.
17. THE GROUND IMMEDIATELY ADJACENT TO FOUNDATIONS SHALL BE SLOPED AWAY FROM THE BUILDING, IN ACCORDANCE WITH 780 CMR 1813.7, AT A SLOPE OF NOT LESS THAN 1:12 FOR A MINIMUM DISTANCE OF 10 FEET MEASURED PERPENDICULAR TO THE FACE OF THE WALL. OTHER APPROVED ALTERNATE METHODS OF DIVERTING WATER AWAY FROM THE FOUNDATION MAY BE ACCEPTABLE.
18. REINFORCED CONCRETE PIPE:
    A. SHALL BE CLASS V CONCRETE.
    B. SHALL CONFORM TO ASTM C76, WALL B.
    C. JOINT MATERIAL TO BE RUBBER GASKET CONFORMING TO ASTM C443 OR MORTAR REINFORCED.
19. PRECAST CONCRETE MANHOLE/CATCH BASIN BASE, BARREL, AND CONE STRUCTURES:
    A. SHALL CONFORM TO ASTM C478.
    B. SHALL BE CAPABLE OF WITHSTANDING H20 LOADING CONDITIONS.
    C. MANHOLE STEPS SHALL BE COPOLYMER POLYPROPYLENE PLASTIC.
    D. STEEL REINFORCING SHALL BE GRADE 60 AND CONFORM TO ASTM A185 AND A615.
20. ALL SDR35 PVC SEWER PIPE & FITTINGS SHALL CONFORM TO ASTM D3034 OR ASTM F679.
21. ALL SCH. 40 & SCH. 80 PVC PIPE & FITTINGS SHALL CONFORM TO ASTM D178M D3915, .4, ASTM . D1785, ASTM D3915, ASTM D4396

CONSTRUCTION PERIOD POLLUTION PREVENTION PLAN NOTES:

1. CONTROLS TO REDUCE POLLUTANTS:
   A.) THE FOLLOWING IS A BRIEF DESCRIPTION OF EACH BMP IMPLEMENTED TO CONTROL POLLUTANTS IN STORM WATER DISCHARGES.
      1.) EROSION CONTROLS: STRAW WATTLES PROVIDE MEASURES OF CONTROLLING EROSION AND SEDIMENTATION AND SHALL BE IMPLEMENTED BY THE CONTRACTOR WHERE NEEDED TO PREVENT SEDIMENT FROM LEAVING THE WORK SITE.
      2.) TEMPORARY CONSTRUCTION ENTRANCES OF CRUSHED STONE SHALL BE IMPLEMENTED BY THE CONTRACTOR WHEN NEEDED TO PREVENT SEDIMENT FROM TRACKING OFF-SITE AND INTO EXISTING ROADWAYS.
   B.) DISTURBED AREAS NOT SUBJECT TO RESTORATION BY OTHER MEANS SHALL BE STABILIZED UPON FINISH GRADING WITH 6" OF LOAM AND GRASS SEED. AREAS SLOPED AT GREATER THAN 3:1 SHALL BE STABILIZED WITH GEOTEXTILE FABRIC.
   C.) THE FOLLOWING RECORDS SHOULD BE MAINTAINED BY THE OPERATOR AS PART OF THE POLLUTION PREVENTION PLAN.
      1. DATES WHEN MAJOR GRADING ACTIVITIES OCCUR.
      2. DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE.
      3. DATES WHEN STABILIZATION MEASURES ARE INITIATED.
   D.) STRAW WATTLES, SILT FENCE, STONE CONSTRUCTION ENTRANCES, EARTH DIKES, TEMPORARY DRAINAGE SWALES, INTERCEPTOR DIKES AND SWALES, AND OTHER STRUCTURAL PRACTICES SHALL BE EMPLOYED BY THE SITE CONTRACTOR TO DIRECT STORMWATER RUNOFF FROM DISTURBED AREAS TO AREAS WHERE DISCHARGE IS ACCEPTABLE. THE APPROPRIATE LOCATION AND INSTALLATION TIMING SHALL BE DETERMINED BY THE SITE CONTRACTOR.
   E.) THE DISCHARGE OF SOLID MATERIALS, INCLUDING BUILDING MATERIALS, TO ANY RESOURCE AREAS IS PROHIBITED.
   F.) THE CONTRACTOR SHALL MINIMIZE VEHICLE TRACKED SEDIMENT ONTO THE SURROUNDING ROADWAYS. AIRBORNE DUST SHALL BE CONTROLLED WITH WATER.
   G.) CONSTRUCTION MATERIALS AND CONSTRUCTION WASTE MATERIALS ASSOCIATED WITH THE PROPOSED DEVELOPMENT SHALL BE STORED IN A MANNER THAT MINIMIZES EXPOSURE TO STORMWATER, IE USE OF TARPAULINS, INSIDE STORAGE, ETC. MATERIALS AND WASTE SHALL BE MAINTAINED IN AN ORDERLY MANNER AND SHALL BE COLLECTED IMMEDIATELY UPON SPILLS OR DISPERSION.
   H.) DURING CONSTRUCTION, POLLUTANTS FROM SOURCES OTHER THAN THE CONSTRUCTION ACTIVITIES ARE NOT EXPECTED.

LONG TERM POLLUTION PREVENTION PLAN MEASURES:

1. GOOD HOUSEKEEPING PRACTICES SHALL BE EMPLOYED IN MAINTENANCE OF THE STORMWATER SYSTEM AND ON SITE AREAS. THE MINIMUM HOUSEKEEPING PRACTICES ARE IDENTIFIED IN THE STORMWATER COLLECTION AND TREATMENT SYSTEM OPERATION AND MAINTENANCE PLAN.
2. STORAGE OF MATERIALS AND WASTE PRODUCTS SHALL BE STORED IN A MANNER THAT MINIMIZES EXPOSURE TO STORMWATER, IE USE OF TARPAULINS, INSIDE STORAGE, ETC. MATERIALS AND WASTE SHALL BE MAINTAINED IN AN ORDERLY MANNER AND SHALL BE COLLECTED IMMEDIATELY UPON SPILLS OR DISPERSION.
3. VEHICLE WASHING SHOULD OCCUR IN ACCORDANCE WITH THE "ILLICIT AND NON STORMWATER DISCHARGES' PORTION OF THE STORMWATER POLLUTION PREVENTION PLAN NOTES.
4. LONG TERM MAINTENANCE OF THE STORMWATER SYSTEM SHALL FOLLOW THE OPERATION AND MAINTENANCE REQUIREMENTS ON THESE PLANS AT A MINIMUM.
5. PARTIES RESPONSIBLE FOR MAINTENANCE OF THE STORMWATER SYSTEM SHOULD BE FAMILIAR WITH "CLEAN UP OF SITES AND SPILLS" INFORMATION AVAILABLE ON THE MA DEP WEB SITE (CURRENTLY AVAILABLE AT http://www.mass.gov/dep/cleanup/laws/spillmgm.doc) AND SHOULD BE PREPARED TO ACT ACCORDINGLY IN THE EVENT OF A SPILL.
6. THE MINIMUM PRACTICES EMPLOYED IN INSPECTION AND MAINTENANCE OF THE ON SITE AREAS AND STORMWATER SYSTEM COMPONENTS ARE IDENTIFIED IN THE STORMWATER COLLECTION AND TREATMENT SYSTEM OPERATION AND MAINTENANCE PLAN.
7. THE MASSACHUSETTS BUREAU OF FARM PRODUCTS & PLANT INDUSTRIES FACT SHEET FOR "PROTECTING WATER RESOURCES FROM FERTILIZER" RECOMMENDS THAT:
   UNUSED FERTILIZER SHOULD BE REMOVED FROM THE SPREADER AND RETURNED TO THE ORIGINAL BAG OR CONTAINER FOR FUTURE USE. STORE UNUSED FERTILIZER IN A DRY PLACE AWAY FROM ANY WATER SOURCE.
   IF STORED FERTILIZER GETS WET YOU NOT ONLY LOSE NUTRIENT VALUE, THERE IS POTENTIAL FOR NITRATES TO LEACH INTO WATER SOURCES.

THE HANDLING OF HERBICIDES AND PESTICIDES SHOULD BE CONDUCTED IN ACCORDANCE WITH GUIDELINES AVAILABLE ON THE MA DEP WEB SITE (CURRENTLY AVAILABLE AT http://www.mass.gov/dep/recycle/hazardous/pesticid.htm)
8. MANAGEMENT OF PET WASTE SHOULD BE CONDUCTED IN ACCORDANCE WITH THE GUIDELINES AVAILABLE ON THE MA DEP WEB SITE (CURRENTLY AVAILABLE AT http://www.mass.gov/dep/water/resources/petwaste.pdf)
9. OPERATION AND MAINTENANCE OF ANY ON SITE SEPTIC SYSTEM SHOULD BE CONDUCTED IN ACCORDANCE 310 CMR 15.00.
10. SOLID WASTE SHOULD BE MANAGED IN ACCORDANCE WITH LOCAL, STATE, FEDERAL REGULATIONS AND GUIDELINES.
11. SNOW DISPOSAL SHALL BE CONDUCTED IN ACCORDANCE WITH THE MA DEP GUIDELINE BRPG01-01 (CURRENTLY AVAILABLE AT http://www.mass.gov/dep/water/laws/snowdisp.htm)
12. USE OF SALT ON ROADS AND WALKS IS TO BE MINIMIZED. STORAGE OF SNOW SALT AND OTHER DE-ICING MATERIALS SHALL BE IN ACCORDANCE WITH MA DEP POLICY DWSG97-1 (CURRENTLY AVAILABLE AT http://www.mass.gov/dep/water/laws/saltgui.doc)
13. THE FOLLOWING PAVEMENT SWEEPING SCHEDULE IS RECOMMENDED WITH SWEEPING SCHEDULED PRIMARILY IN THE SPRING AND FALL:
   - QUARTERLY AVERAGE USING A HIGH EFFICIENCY VACUUM SWEEPER
   - QUARTERLY AVERAGE USING A REGENERATIVE AIR SWEEPER
   - MONTHLY AVERAGE USING A MECHANICAL SWEEPER (ROTARY BROOM)

SWEEPINGS SHOULD BE HANDLED IN ACCORDANCE WITH MA DEP POLICY #BRP-94-092.
13. ILLICIT DISCHARGES TO THE STORMWATER SYSTEM ARE PROHIBITED.
14. FOR LAND USES NEAR CRITICAL AREAS OR FROM LAND USED WITH HIGHER POTENTIAL POLLUTANT LOADS THE STORMWATER SYSTEM SHOULD BE PROVIDED WITH A SHUTDOWN DEVICE.
15. PARTIES RESPONSIBLE FOR MAINTENANCE OF THE STORMWATER SYSTEM SHOULD BECOME FAMILIAR WITH THE REQUIREMENTS OF:
   - THE STORMWATER POLLUTION PREVENTION PLAN AND NOTES
   - THE STORMWATER COLLECTION AND TREATMENT SYSTEM OPERATION AND MAINTENANCE PLAN
   - THE LONG TERM POLLUTION PREVENTION PLAN MEASURES
16. IN THE CASE OF AN EMERGENCY DIAL 911 OR CONTACT:
    MASS DEP CENTRAL REGION
    8 NEW BOND STREET
    WORCESTER, MA 01606
    (508) 792-7650

WETLAND/STORMWATER NOTES:

1. NO WETLANDS EXIST IN THE VICINITY OF THIS PROJECT.
2. EROSION CONTROLS INCLUDING TEMPORARY BASINS SHALL BE IMPLEMENTED AND INSPECTED BY A MUNICIPAL REPRESENTATIVE PRIOR TO STARTING CONSTRUCTION.
3. APPROVAL FROM THE WORCESTER CONSERVATION COMMISSION IS REQUIRED FOR THIS PROJECT AS THE SITE IS IN A STORMWATER PROTECTION ZONE.
4. NO EXCAVATION SHALL TAKE PLACE ONSITE UNTIL ALL SEDIMENTATION CONTROLS (WATTLES, SILT FENCE, SILT SACKS, ETC.) ARE FULLY INSTALLED PER PLAN. EROSION CONTROLS SHALL SERVE AS THE LIMIT OF TREE CLEARING AND SITE WORK. NO WORK BEYOND IS ALLOWED.
5. FOLLOWING COMPLETION OF GRADING IN ANY AREA, CONTRACTOR SHALL ACT TO PLACE PERMANENT SURFACE FINISH OR TO STABILIZE SOILS AGAINST EROSION. LOAM AND SEED SHALL BE PLACED IMMEDIATELY UPON FINAL GRADING.
6. ALL EROSION CONTROL DEVICES SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION AND SHALL NOT BE REMOVED UNTIL ALL DISTURBED SURFACES HAVE BEEN FULLY STABILIZED WITH VEGETATION.
7. EXISTING ROADS CONNECTED TO THE PROJECT SITE WILL BE KEPT CLEAN OF SILT AND DEBRIS AT ALL TIMES.
8. THE SITE DOES NOT LIE WITHIN OR IN PROXIMITY TO A FLOOD HAZARD ZONE AS INDICATED ON NFIP FIRM MAPS.
9. THE SITE DOES NOT LIE WITHIN A WATER SUPPLY PROTECTION AREA AS MAPPED ON THE MASS GIS WEBSITE.
10. THE SITE DOES NOT LIE WITHIN 500' OF AN ESTIMATED HABITAT OR RARE WILDLIFE OR PRIORITY HABITAT OF RARE SPECIES.

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD • WORCESTER, MA 01605
508-852-2644 • info@edlandarch.com

QUINN ENGINEERING, INC.
P.O. Box 107
Paxton, Massachusetts 01612
(508)753-7999 Fax:(508)795-0939

COMMONWEALTH OF MASSACHUSETTS
KEVIN J. QUINN
No.39224-0
REGISTERED PROFESSIONAL ENGINEER

PROJECT:
LAKE VIEW PLAYGROUND IMPROVEMENTS

CLIENT:
CITY OF WORCESTER

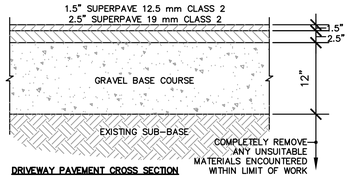
DATE: 11-22-24

REVISIONS:

NO.	DATE	DESCRIPTION
1	12/20/24	CONS COMM COMMENTS

N
SCALE: 1" = 20'
0' 10' 20' 40'

DRAINAGE, EROSION CONTROL, & WATER SERVICE
SHEET C-1



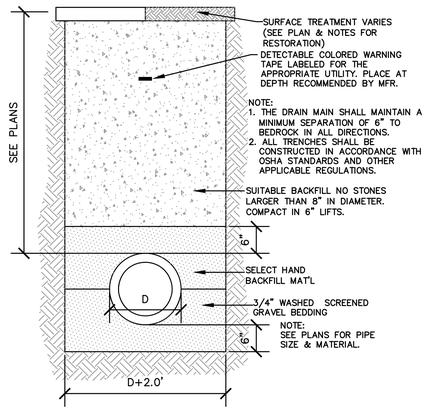
DRIVEWAY PAVEMENT CROSS SECTION

NOTES:
1. IMPORTED GRAVEL USED AS BASE MATERIAL SHALL CONFORM TO MA DOT STANDARD SPECIFICATION M1.03.0 TYPE b.
2. GRAVEL BASE SHALL CONSIST OF INERT MATERIAL THAT IS HARD, DURABLE STONE AND COARSE SAND, FREE FROM LOAM AND CLAY, SURFACE COATINGS, AND DELETERIOUS MATERIALS.
3. GRADATION REQUIREMENTS FOR IMPORTED GRAVEL SHALL BE DETERMINED BY AASHTO-T11 AND T27 AND SHALL CONFORM TO THE FOLLOWING:

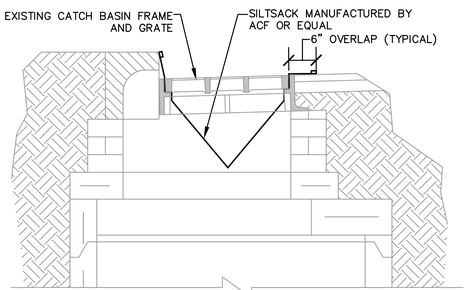
SIEVE DESIGNATION:	% PASSING:
1/2 IN.	50-85
NO. 4	40-75
NO. 50	8-28
NO. 200	0-10

4. THE MAXIMUM SIZE OF STONE IN GRAVEL SHALL BE 3" LARGEST DIMENSION FOR M1.03.0 TYPE b.
5. ALL PAVEMENT SHALL HAVE A CONTINUOUS LONGITUDINAL SLOPE OR SHALL BE CROSS PITCHED TO ADEQUATELY SHED SURFACE WATER.

BITUMINOUS PAVEMENT CROSS SECTION
SCALE: NOT TO SCALE

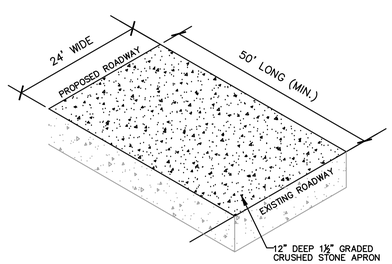


DRAIN TRENCH DETAIL
SCALE: NOT TO SCALE

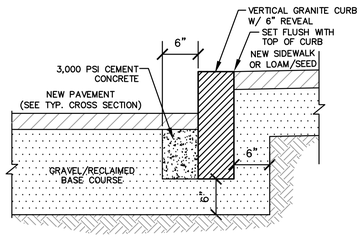


NOTES:
1. THIS DETAIL APPLIES TO ALL CATCHBASINS IDENTIFIED ON THE PLAN.
2. SILTSACK SHALL BE INSTALLED AN MAINTAINED IN ACCORDANCE WITH MANUFACTURE'S SPECIFICATIONS.

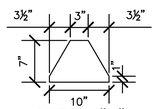
SILT BASKET DETAIL
SCALE: NOT TO SCALE



CONSTRUCTION APRON ISOMETRIC
SCALE: NOT TO SCALE

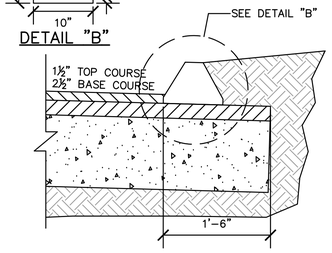


VERTICAL GRANITE CURB (VGC) DETAILS
SCALE: NOT TO SCALE

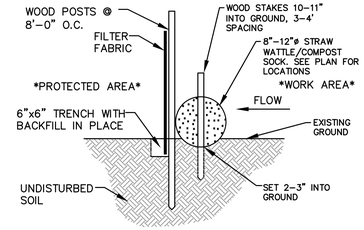


DETAIL "B"

NOTE: BERM SHALL BE LAID ON BASE COURSE AND KEYED INTO TOP COURSE.



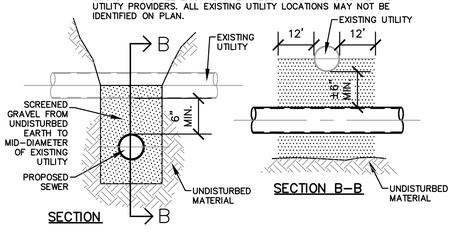
TYPICAL BERM DETAIL
SCALE: NOT TO SCALE



NOTE: WHERE RIGID SURFACES EXIST, WATTLES SHOULD BE ANCHORED TO THE EXISTING OR TEMPORARY CONSTRUCTION FENCING TO PREVENT MOVEMENT FROM STORMWATER FLOWS.

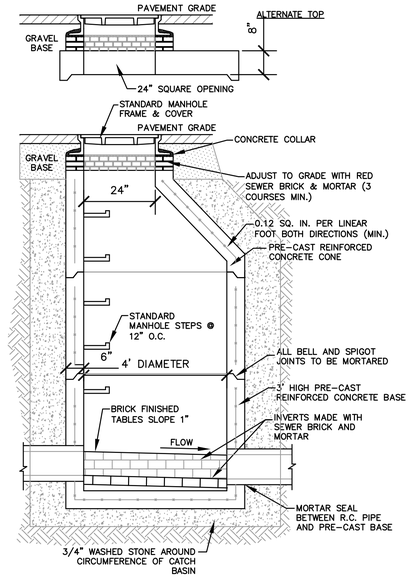
EROSION CONTROL DETAIL
SCALE: NOT TO SCALE

NOTES:
1. SEE TYPICAL TRENCH SECTION FOR MORE INFORMATION.
2. THIS DETAIL APPLIES TO ALL PROPOSED UTILITY CROSSINGS. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING IDENTIFY AND COORDINATING ALL EXISTING UTILITY LOCATIONS WITH DIGSAFE AND UTILITY PROVIDERS. ALL EXISTING UTILITY LOCATIONS MAY NOT BE IDENTIFIED ON PLAN.



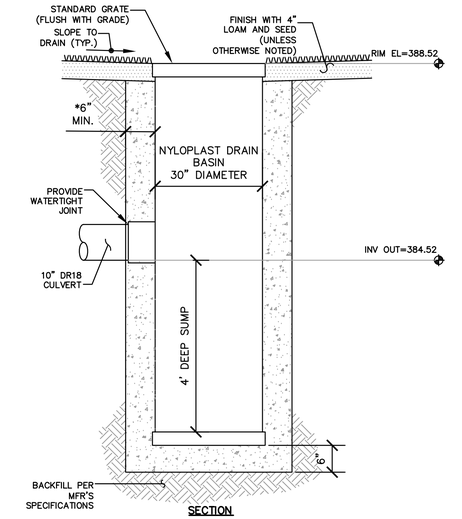
UTILITY CROSSING DETAILS
SCALE: NOT TO SCALE

NOTE:
1. STRUCTURE & REINFORCEMENT SHALL MEET OR EXCEED REQUIREMENTS OF H-20 LOADING.
2. STRUCTURE SHALL CONFORM TO ASTM C-478.
3. SEE TYPICAL PAVEMENT CROSS SECTION FOR PAVEMENT & BASE MATERIALS.
4. SET AND RAISE FRAME & GRATE PER DPW REQUIRMENTS AND SUBDIVISION REGULATIONS.



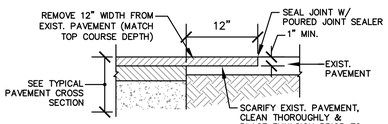
DRAIN MANHOLE DETAIL
SCALE: NOT TO SCALE

NOTES:
1. GRATES/COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2. FRAMES SHALL BE DUCTILE IRON PER ASTM 536 GRADE 70-50-05
3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS.
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HPDE (ADS N-12/HANCOR DUAL WALL) N-12HP & PVC SEWER.
5. ADAPTERS CAN BE MOUNTED AT ANY ANGLE 0° TO 360°
6. BACKFILL MATERIAL SHALL BE CRUSHED STONE OR OTHER GRANULAR MATERIAL MEETING THE REQUIREMENTS OF CLASS I, CLASS II OR CLASS III MATERIAL DEFINED IN ASTM D2321 BEDDING & BACKFILL FOR SURFACE DRAINAGE INLETS AND SHALL BE COMPACTED UNIFORMLY IN ACCORDANCE WITH ASTM D2321.



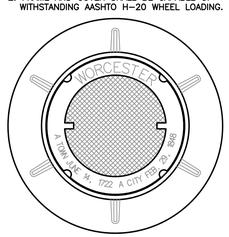
SECTION

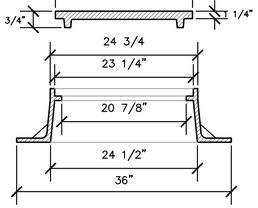
NYLOPLAST DRAIN BASIN DETAIL
SCALE: NOT TO SCALE



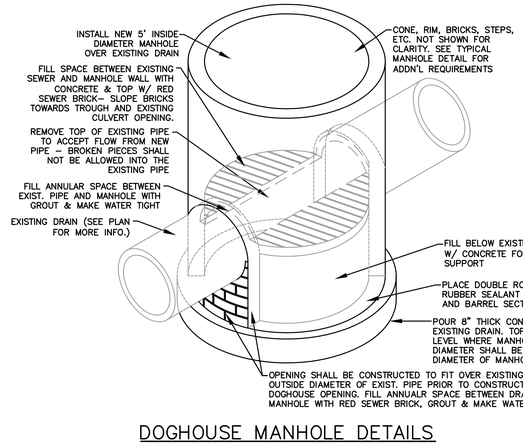
PAVEMENT JOINT DETAIL
SCALE: NOT TO SCALE

NOTES:
1. FRAME AND COVER SHALL CONFORM TO THE CITY OF WORCESTER STANDARD SPECIFICATIONS AND DETAILS.
2. FRAME AND COVER SHALL BE CAPABLE OF WITHSTANDING AASHTO H-20 WHEEL LOADING.



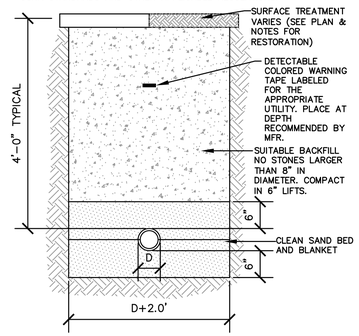


WORCESTER MANHOLE FRAME & COVER ASSEMBLY
SCALE: NOT TO SCALE

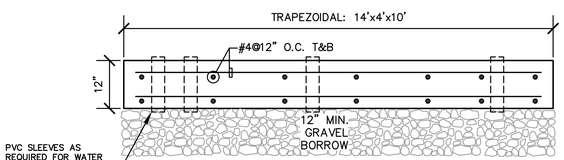


DOGHOUSE MANHOLE DETAILS
NOT TO SCALE

NOTES:
1. THIS DETAIL APPLIES TO UTILITY TRENCHES THAT HAVE NOT BEEN SPECIFIED IN THESE PLANS AND THAT ARE NOT SPECIFIED BY STATE BUILDING CODE, LOCAL REGULATIONS, OR BY THE UTILITY PROVIDER.
1. THE UTILITY CONDUIT, PIPE, ETC SHALL MAINTAIN A MINIMUM SEPARATION OF 6" TO BEDROCK IN ALL DIRECTIONS.
2. ALL TRENCHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH OSHA STANDARDS AND OTHER APPLICABLE REGULATIONS.

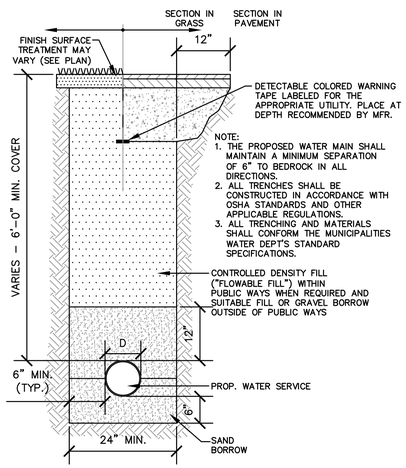


MISC. UTILITY TRENCH DETAIL
SCALE: NOT TO SCALE



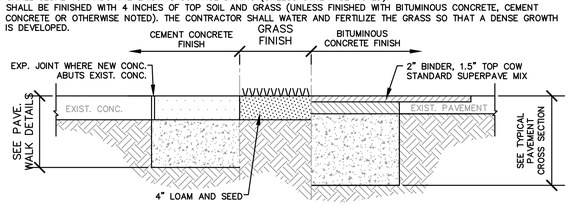
NOTES:
1. CONC. SHALL BE MIN. f'c=3000 PSI AT 28 DAYS.
2. REINFORCING STEEL SHALL BE MIN. fy=60 KSI.

OUTDOOR CABINET CONCRETE SLAB DETAIL
SCALE: NOT TO SCALE



WATER SERVICE TRENCH DETAIL
SCALE: NOT TO SCALE

NOTE:
1. ALL AREAS WITHIN THE TOWN RIGHT OF WAY DISTURBED BY THE PROPOSED WORK SHALL BE SUBJECT TO RESTORATION.
2. ALL FINISH SURFACES SHALL:
   A. BE CONSTRUCTED FLUSH WITH THE ADJACENT FINISH SURFACES.
   B. HAVE UNIFORM SLOPES AND SHALL NOT CONTAIN ANY IRREGULARITIES.
   C. SHALL SLOPE AWAY FROM THE EXISTING BUILDINGS (UNLESS OTHERWISE NOTED).
   D. SHALL SLOPE TOWARDS THE EXISTING SURFACE DRAINS (UNLESS OTHERWISE NOTED).
   E. SHALL BE FINISHED WITH 4 INCHES OF TOP SOIL AND GRASS (UNLESS FINISHED WITH BITUMINOUS CONCRETE, CEMENT CONCRETE OR OTHERWISE NOTED). THE CONTRACTOR SHALL WATER AND FERTILIZE THE GRASS SO THAT A DENSE GROWTH IS DEVELOPED.



ROW SURFACE RESTORATION DETAIL
SCALE: NOT TO SCALE

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD • WORCESTER, MA 01605
508-852-2644 • info@edlandarch.com

QUINN ENGINEERING, INC.
P.O. Box 107
Paxton, Massachusetts 01612
(508)753-7999 Fax:(508)795-0939

COMMONWEALTH OF MASSACHUSETTS
KEVIN J. QUINN
No.39022
REGISTERED PROFESSIONAL ENGINEER

PROJECT:
LAKE VIEW PLAYGROUND IMPROVEMENTS

CLIENT:
CITY OF WORCESTER

DATE: 11-22-24

REVISIONS:

NO.	DATE	DESCRIPTION
1	12/20/24	CONS COMM COMMENTS

N

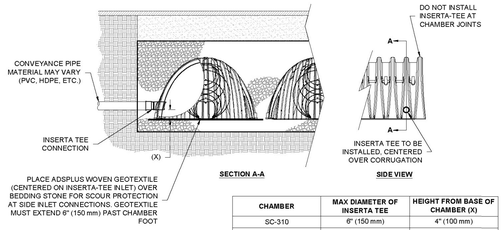
SCALE: 1" = 20'
0' 10' 20' 40'

CIVIL DETAILS

SHEET C-2

SC-740 STORMTECH CHAMBER SPECIFICATIONS

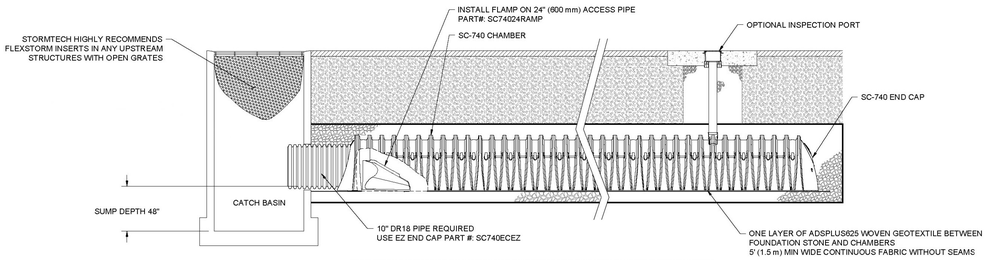
1. CHAMBERS SHALL BE STORMTECH SC-740.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 550 LBS/FT/%. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.



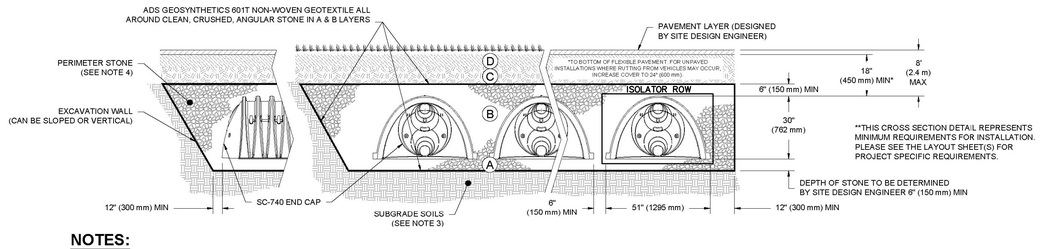
NOTES:
- PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.
- CONTACT ADS ENGINEERING SERVICES IF INSERTA TEE INLET MUST BE RAISED AS NOT ALL INVERTS ARE POSSIBLE

CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
SC-800	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
MC-3500	12" (300 mm)	6" (150 mm)
MC-4500	12" (300 mm)	8" (200 mm)
MC-7200	12" (300 mm)	8" (200 mm)
INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON		

INSERTA-TEE SIDE INLET DETAIL



SC-740 ISOLATOR ROW PLUS DETAIL



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/FT/%. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

SC-740 CROSS SECTION DETAIL

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-740 SYSTEM

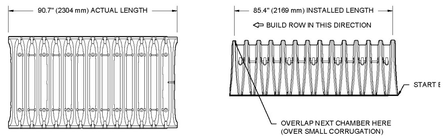
1. STORMTECH SC-740 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4-2" (20-50 mm).
8. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
9. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
2. THE USE OF CONSTRUCTION EQUIPMENT OVER SC-740 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

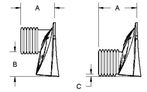
CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	51.0" X 30.0" X 85.4"	(1295 mm X 762 mm X 2169 mm)
CHAMBER STORAGE	45.9 CUBIC FEET	(1.30 m³)
MINIMUM INSTALLED STORAGE*	74.9 CUBIC FEET	(2.12 m³)
WEIGHT	75.0 lbs.	(33.6 kg)

*ASSUMES 6" (152 mm) STONE ABOVE, BELOW, AND BETWEEN CHAMBERS



PRE-FAB STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PRE-FAB STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
PRE-CORED END CAPS END WITH "PC"

PART #	STUB	A	B	C
SC740EPE06T / SC740EPE06TPC	6" (150 mm)	10.9" (277 mm)	18.5" (470 mm)	---
SC740EPE06B / SC740EPE06BPC			---	0.5" (13 mm)
SC740EPE08T /SC740EPE08TPC	8" (200 mm)	12.2" (310 mm)	16.5" (419 mm)	---
SC740EPE06B / SC740EPE08BPC			---	0.6" (15 mm)
SC740EPE10T / SC740EPE10TPC	10" (250 mm)	13.4" (340 mm)	14.5" (368 mm)	---
SC740EPE10B / SC740EPE10BPC			---	0.7" (18 mm)
SC740EPE12T / SC740EPE12TPC	12" (300 mm)	14.7" (373 mm)	12.5" (316 mm)	---
SC740EPE12B / SC740EPE12BPC			---	1.2" (30 mm)
SC740EPE15T / SC740EPE15TPC	15" (375 mm)	18.4" (467 mm)	9.0" (229 mm)	---
SC740EPE15B / SC740EPE15BPC			---	1.3" (33 mm)
SC740EPE18T / SC740EPE18TPC	18" (450 mm)	19.7" (500 mm)	5.0" (127 mm)	---
SC740EPE18B / SC740EPE18BPC			---	1.6" (41 mm)
SC740ECEZ*	24" (600 mm)	18.5" (470 mm)	---	0.1" (3 mm)

ALL STUBS, EXCEPT FOR THE SC740ECEZ ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

* FOR THE SC740ECEZ THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" (44 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

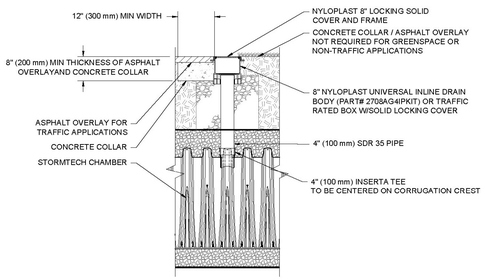
NOTE: ALL DIMENSIONS ARE NOMINAL

SC-740 TECHNICAL SPECIFICATIONS

ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[4] A-1, A-2-4, A-3 OR AASHTO M43[4] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE[5]	AASHTO M43[4] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE[5]	AASHTO M43[4] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
5. WHERE RECYCLED CONCRETE AGGREGATE IS USED IN LAYERS 'A' OR 'B' THE MATERIAL SHOULD ALSO MEET THE ACCEPTABILITY CRITERIA OUTLINED IN TECHNICAL NOTE 6.20 "RECYCLED CONCRETE STRUCTURAL BACKFILL".



NOTE:
INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION CREST.

4" PVC INSPECTION PORT DETAIL (SC SERIES CHAMBER)

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

STORMWATER CHAMBERS DETAILS AND NOTES

SCALE: NOT TO SCALE

Lake View Playground, Worcester *Type III 24-hr 2-Yr Rainfall=3.20"*
Prepared by {enter your company name here} Printed 11/1/2024
HydroCAD® 10.00 s/n 01310 © 2012 HydroCAD Software Solutions LLC

Pond 3P: Proposed Stormwater Chambers - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
Row Length Adjustment= +0.44' x 6.45 sf x 3 rows

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

6 Chambers/Row x 7.12' Long +0.44' Row Adjustment = 43.16' Row Length +12.0" End Stone x 2 = 45.16' Base Length
3 Rows x 51.0" Wide + 6.0" Spacing x 2 + 12.0" Side Stone x 2 = 15.75' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

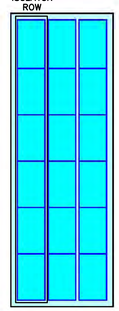
18 Chambers x 45.9 cf +0.44' Row Adjustment x 6.45 sf x 3 Rows = 835.4 cf Chamber Storage

2,489.4 cf Field - 835.4 cf Chambers = 1,654.0 cf Stone x 40.0% Voids = 661.6 cf Stone Storage

Chamber Storage + Stone Storage = 1,497.0 cf = 0.034 af
Overall Storage Efficiency = 60.1%

18 Chambers
92.2 cy Field
61.3 cy Stone

ISOLATOR ROW



earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD • WORCESTER, MA 01605
508-852-2644 • info@edlandarch.com

QUINN ENGINEERING, INC.
P.O. Box 107
Paxton, Massachusetts 01612
(508)753-7999 Fax:(508)795-0939

COMMONWEALTH OF MASSACHUSETTS — KEVIN L. QUINN No.39022 — REGISTERED PROFESSIONAL ENGINEER

PROJECT:
LAKE VIEW PLAYGROUND IMPROVEMENTS

CLIENT:
CITY OF WORCESTER

DATE: 11-22-24

REVISIONS:

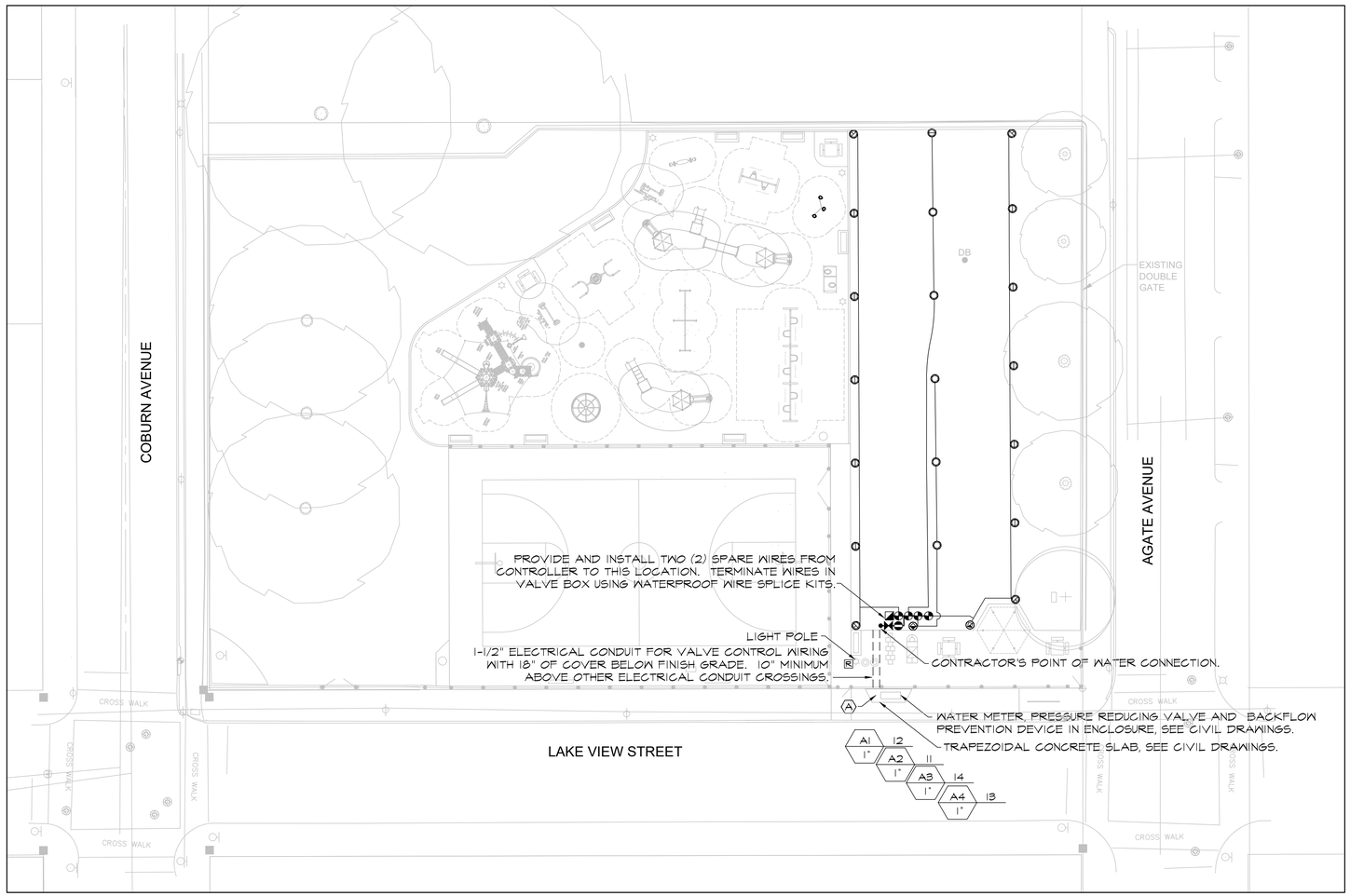
NO.	DATE	DESCRIPTION

N

SCALE: 1" = 20'
0' 10' 20' 40'

CIVIL DETAILS AND NOTES

SHEET C-3



IRRIGATION NOTES

1. COORDINATE FINAL LOCATION OF SPRINKLERS AND NOZZLE SELECTION WITH FINAL APPROVED FIELD LAYOUT.

2. PIPE AND VALVE LOCATIONS ARE DIAGRAMMATIC, CONTRACTOR SHALL FIELD VERIFY.

3. VALVES AND VALVE BOXES SHALL BE PLACED, WHERE POSSIBLE, AS SHOWN.

4. CONTROL WIRE SHALL BE #14 GAUGE SINGLE STRAND, RED FOR TURF ZONES, COMMON WIRE SHALL BE #14 GAUGE SINGLE STRAND WHITE AND SPARE WIRES, INSTALLED WHERE SHOWN, SHALL BE #14 GAUGE SINGLE STRAND BLUE.

5. QUICK COUPLING VALVE SHALL BE INSTALLED ON 1 INCH PVC SWING JOINT WITH BRASS INSERT AND STABILIZER. (SEE DETAIL)

6. ROTARY SPRINKLERS SHALL BE INSTALLED ON SWING PIPE ASSEMBLIES, MINIMUM LENGTH TO BE 6 INCHES, 18 INCH MAXIMUM.

7. IRRIGATION SYSTEM IS DESIGNED FOR SEPARATE WATER SUPPLY TO PROVIDE 20 GPM MAX FROM NEW POTABLE SERVICE. SYSTEM TO PRODUCE 60-PSI DYNAMIC PRESSURE AT IRRIGATION CONTRACTOR'S POINT OF CONNECTION IN LANDSCAPED AREA.

8. CONTRACTOR SHALL TEST DYNAMIC PRESSURE BEFORE STARTING WORK, REPORT ANY DEVIATION FROM PRESSURE REQUIRED TO OWNER'S REPRESENTATIVE BEFORE CONTINUING.

9. INSTALL CONTROLLER IN ENCLOSURE, GENERALLY WHERE SHOWN ON THE DRAWINGS, HARD WIRE TO 120 VOLT, DEDICATED 20 AMP CIRCUIT, POWER SUPPLY USING LICENSED ELECTRICIAN. ROUTE ALL ZONE AND SPARE WIRES TO CONTROLLER VIA 1-1/2" CONDUIT THROUGH ENCLOSURE BASE. SEE CIVIL DRAWINGS FOR SIZE AND SHAPE OF CONCRETE PAD.

10. INSTALL WIRELESS RAIN SENSOR ON LIGHT POLE WHERE DIRECTED BY OWNER'S REPRESENTATIVE. INSTALL RAIN SENSOR RECEIVER INSIDE CONTROLLER PEDESTAL.

11. COORDINATE LOCATION OF EXISTING AND FUTURE UTILITIES ON SITE AND CONTACT PROPER AUTHORITIES AND UTILITY COMPANIES BEFORE THE START OF WORK.

12. FLUSH ALL LATERAL LINES BEFORE INSTALLING SPRINKLERS.

13. SPRINKLERS FOR TURF SHALL HAVE 6 INCH POP UP HEIGHT.

14. CONTRACTOR MUST SUBMIT SHOP PRODUCT DRAWINGS AS PER THE WRITTEN SPECIFICATIONS TO THE IRRIGATION CONSULTANT FOR APPROVAL PRIOR TO ORDERING MATERIAL AND BEGINNING WORK.

15. ANY AND ALL MATERIAL SUBSTITUTIONS WHICH VARY FROM THE SPECIFIED PRODUCTS MUST BE SUBMITTED TO THE IRRIGATION CONSULTANT FOR APPROVAL AS PART OF THE SUBMITTAL PROCESS.

16. ONCE APPROVED SUBMITTALS HAVE BEEN RETURNED TO THE CONTRACTOR, WORK MAY BEGIN. THE IRRIGATION CONSULTANT MUST BE NOTIFIED A MINIMUM OF 7-DAYS IN ADVANCE OF THE START OF WORK TO COORDINATE ON-SITE SUPERVISION AND ADMINISTRATION.

17. SEE IRRIGATION DETAILS AND SPECIFICATIONS SECTION FOR ADDITIONAL NECESSARY INFORMATION.

IRRIGATION LEGEND

SYMBOL	PSI	SPACING	DESCRIPTION
G H F	50	35'	ROTARY SPRINKLER WITH CHECK VALVE (STANDARD NOZZLES)
	50	25'	
	50	18'	
			1" 24 VOLT ELECTRIC ZONE VALVE (SEE VALVE DESIGNATORS FOR FLOW)
			1-1/2" ISOLATION GATE VALVE
			1" QUICK COUPLING VALVE
			1" LATERAL PIPING (SEE LATERAL PIPE SCHEDULE FOR SIZES)
			1-1/2" CLASS-200 PVC MAINLINE PIPING
R			AUTOMATIC WIRELESS RAIN SENSOR
A			AUTOMATIC CONTROLLER IN STAINLESS PEDESTAL
			FLOW METER/NORMALLY OPEN MASTER VALVE
			1-1/2" ELECTRICAL CONDUIT

VALVE DESIGNATION:

A — STATION NO.
10 — FLOW
1" — VALVE SIZE

LATERAL PIPE SCHEDULE

FLOW	PIPE SIZE / TYPE
0-12 GPM	1 INCH 100 PSI POLYETHYLENE OR CLASS-200 PVC
12-22 GPM	1-1/4 INCH 100 PSI POLYETHYLENE OR CLASS-200 PVC

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD •
WORCESTER, MA 01605
508-852-2644 •
info@edlandarch.com

Irrigation Consulting, Inc.
Providing innovative design solutions for irrigation worldwide.
20 Merrit Parkway
Nashua, NH 03062
(978) 433.8972
14509 S. Old Statesville Rd., Suite 109
Huntersville, NC 28078
(704) 843.3688
www.irrigationconsulting.com

PROJECT:
LAKE VIEW PLAYGROUND

CLIENT:
CITY OF WORCESTER

DATE: 11-22-24

REVISIONS:

NO.	DATE	DESCRIPTION

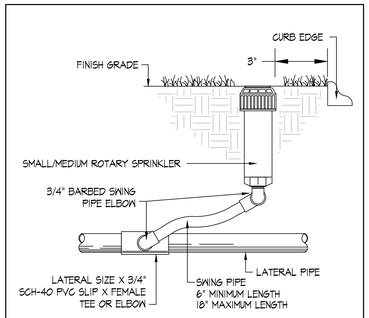
N

SCALE: 1" = 20'
0' 10' 20' 40'

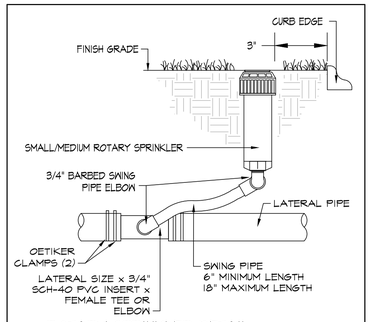
IRRIGATION PLAN

SHEET IR-1

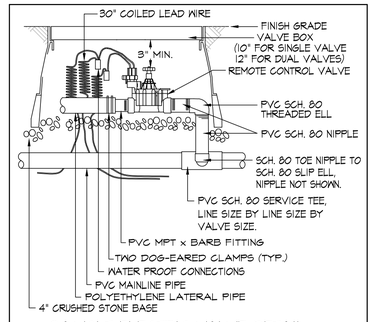
© 2024 IRRIGATION CONSULTING, INC. EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE DRAWINGS. THESE DRAWINGS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY, WITHOUT FIRST OBTAINING THE EXPRESS WRITTEN PERMISSION AND CONSENT OF IRRIGATION CONSULTING, INC.



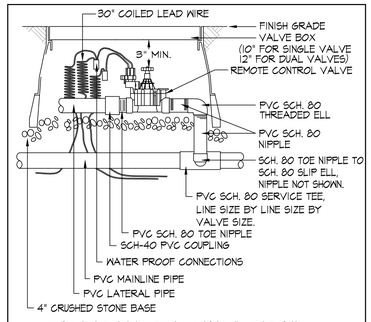
1 ROTARY SPRINKLER DETAIL
NO SCALE



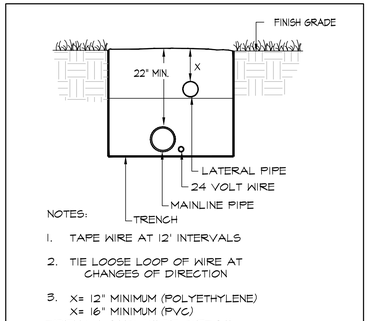
2 ROTARY SPRINKLER DETAIL (WITH POLYETHYLENE LATERAL LINE) NO SCALE



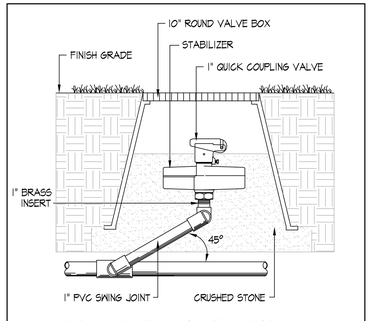
3 24 VOLT ELECTRIC VALVE DETAIL (WITH POLYETHYLENE LATERAL LINE) NO SCALE



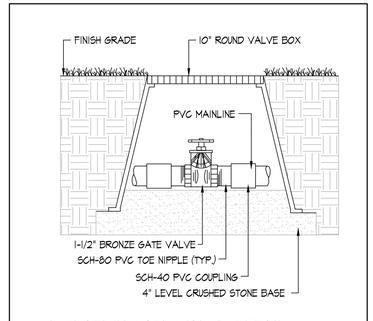
4 24 VOLT ELECTRIC VALVE DETAIL
NO SCALE



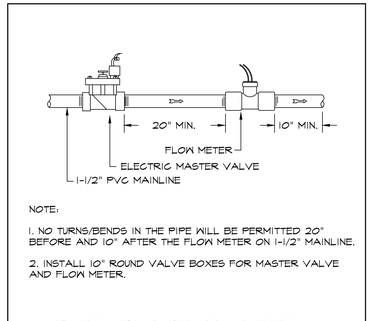
5 TRENCH AND WIRE DETAIL
NO SCALE



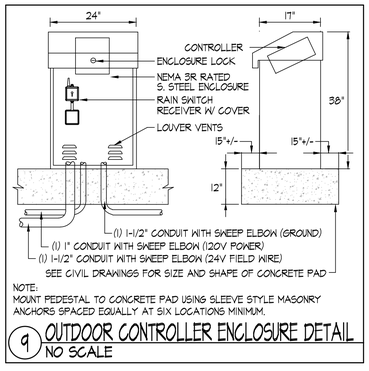
6 QUICK COUPLING VALVE DETAIL
NO SCALE



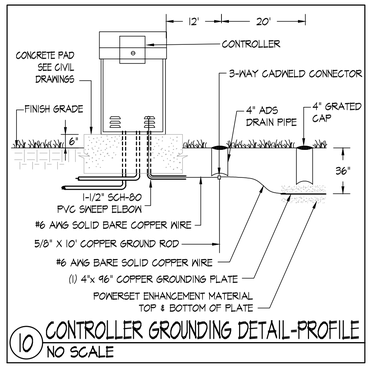
7 ISOLATION GATE VALVE DETAIL
NO SCALE



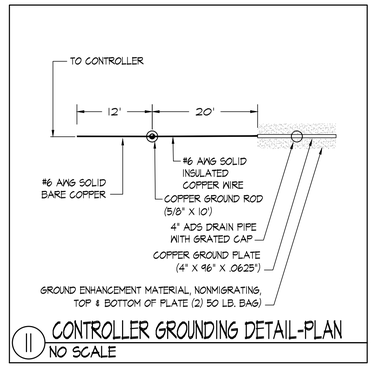
8 MASTER VALVE AND FLOW METER
NO SCALE



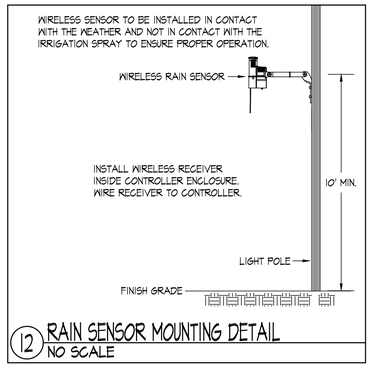
9 OUTDOOR CONTROLLER ENCLOSURE DETAIL
NO SCALE



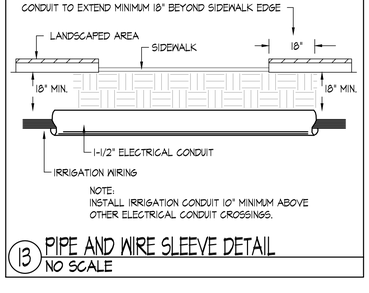
10 CONTROLLER GROUNDING DETAIL-PROFILE
NO SCALE



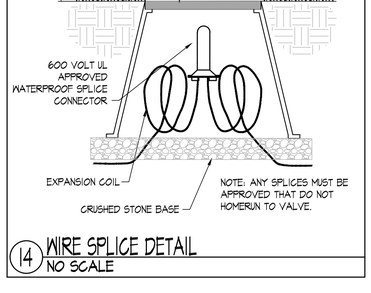
11 CONTROLLER GROUNDING DETAIL-PLAN
NO SCALE



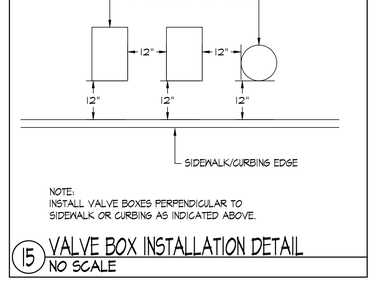
12 RAIN SENSOR MOUNTING DETAIL
NO SCALE



13 PIPE AND WIRE SLEEVE DETAIL
NO SCALE



14 WIRE SPLICE DETAIL
NO SCALE



15 VALVE BOX INSTALLATION DETAIL
NO SCALE

© 2024 IRRIGATION CONSULTING, INC. EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE DRAWINGS. THESE DRAWINGS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY, WITHOUT FIRST OBTAINING THE EXPRESS WRITTEN PERMISSION AND CONSENT OF IRRIGATION CONSULTING, INC.

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD •
WORCESTER, MA 01605
508-852-2644 •
info@edlandarch.com

Irrigation Consulting, Inc.
Providing innovative design solutions for irrigation worldwide.
20 Merrit Parkway
Nashua, NH 03062
(978) 433.8972
14509 S. Old Statesville Rd., Suite 109
Huntersville, NC 28078
(704) 843.3688
www.irrigationconsulting.com

PROJECT:
LAKE VIEW PLAYGROUND

CLIENT:
CITY OF WORCESTER

DATE: 11-22-24

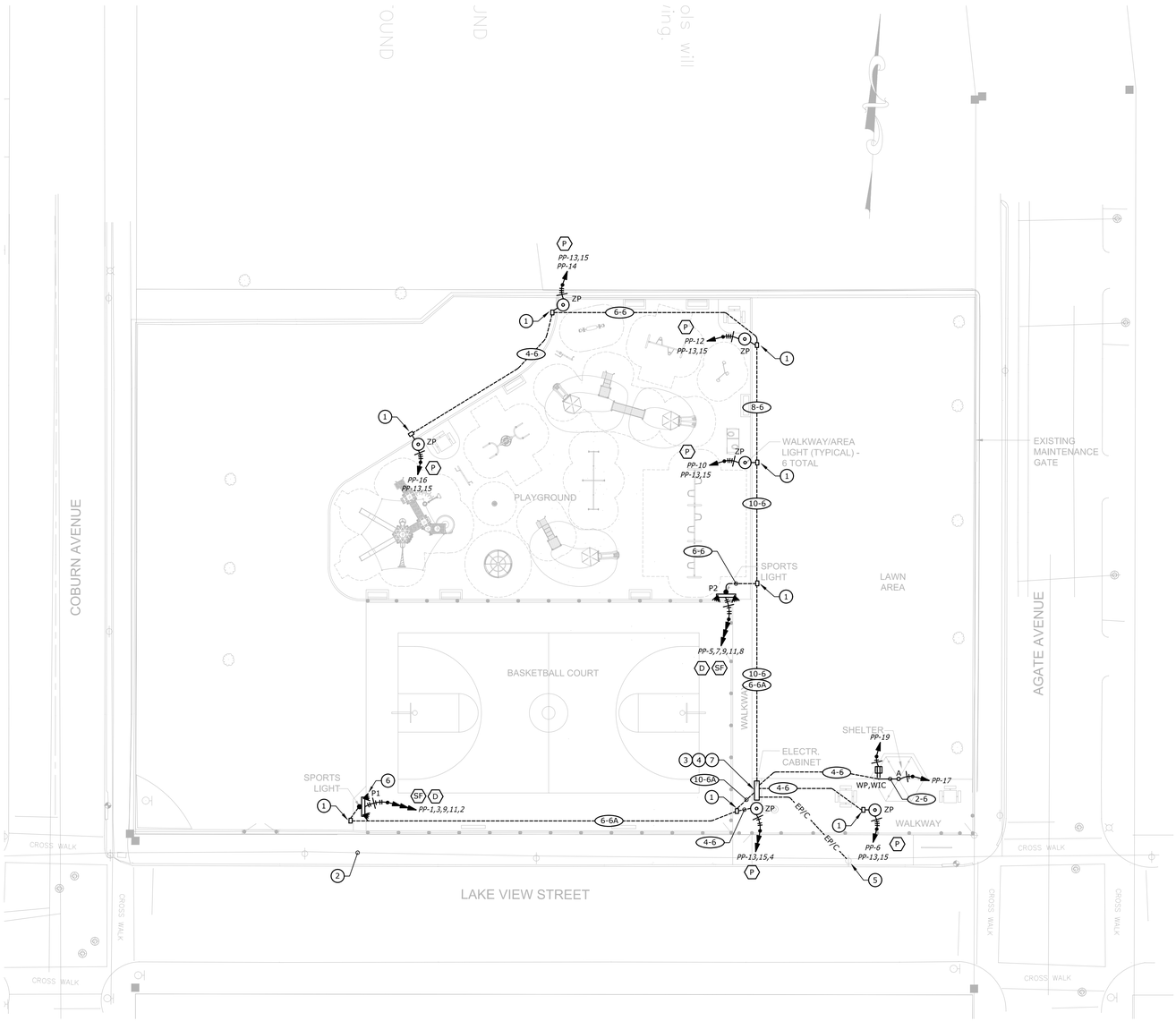
REVISIONS:

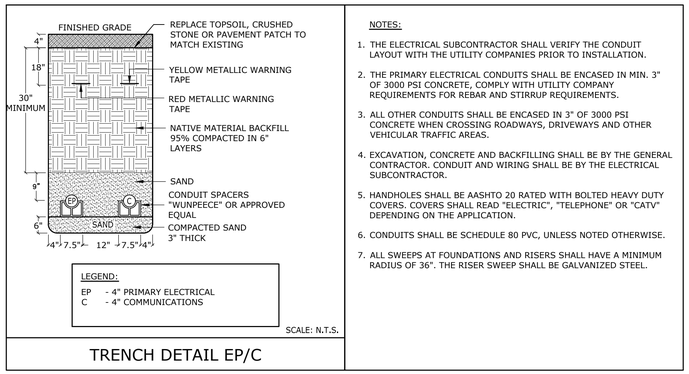
NO.	DATE	DESCRIPTION

SCALE: N.T.S.

IRRIGATION DETAILS

SHEET IR-2





LEGEND:
EP - 4" PRIMARY ELECTRICAL
C - 4" COMMUNICATIONS

SCALE: N.T.S.

TRENCH DETAIL EP/C

NOTES:

1. THE ELECTRICAL SUBCONTRACTOR SHALL VERIFY THE CONDUIT LAYOUT WITH THE UTILITY COMPANIES PRIOR TO INSTALLATION.
2. THE PRIMARY ELECTRICAL CONDUITS SHALL BE ENCASED IN MIN. 3" OF 3000 PSI CONCRETE, COMPLY WITH UTILITY COMPANY REQUIREMENTS FOR REBAR AND STIRRUP REQUIREMENTS.
3. ALL OTHER CONDUITS SHALL BE ENCASED IN 3" OF 3000 PSI CONCRETE WHEN CROSSING ROADWAYS, DRIVEWAYS AND OTHER VEHICULAR TRAFFIC AREAS.
4. EXCAVATION, CONCRETE AND BACKFILLING SHALL BE BY THE GENERAL CONTRACTOR. CONDUIT AND WIRING SHALL BE BY THE ELECTRICAL SUBCONTRACTOR.
5. HANDHOLES SHALL BE AASHTO 20 RATED WITH BOLTED HEAVY DUTY COVERS. COVERS SHALL READ "ELECTRIC", "TELEPHONE" OR "CATV" DEPENDING ON THE APPLICATION.
6. CONDUITS SHALL BE SCHEDULE 80 PVC, UNLESS NOTED OTHERWISE.
7. ALL SWEEPS AT FOUNDATIONS AND RISERS SHALL HAVE A MINIMUM RADIUS OF 36". THE RISER SWEEP SHALL BE GALVANIZED STEEL.

KEYED NOTES

1. HANDHOLE FOR POWER, 24"W X 36"L X 22"D.
2. EXISTING OVERHEAD WIRES.
3. ELECTRIC CABINET, NEMA 3R STAINLESS STEEL.
4. MUSCO LIGHTING CONTROL CABINETS, LOCATED IN ELECTRICAL CABINET.
5. EXISTING UTILITY POLE.
6. LIGHT FIXTURE / ARM, SHALL BE LOCATED MINIMUM 10' FROM OVERHEAD ELECTRICAL WIRES. FIELD COORDINATE DIMENSION PRIOR TO INSTALLATION.
7. FURNISH AND INSTALL AN EXHAUST FAN IN THE CABINET FOR 24HR OPERATION. WIRE TO CIRCUIT *PP-18*. CARRY IN BID $1000.00 FOR FURNISHING AND INSTALLING THE EXHAUST FAN.

GENERAL NOTES

1. CARRY IN BID 110' OF CONDUIT, FEEDER AND TRENCHING FOR ELECTRICAL SECONDARY SERVICE FROM THE ELECTRICAL CABINET TO THE UTILITY POLE.
2. CARRY IN BID 175' OF CONDUIT, CABLING AND TRENCHING FOR COMMUNICATIONS (INTERNET SERVICE) FROM THE ELECTRICAL CABINET TO THE UTILITY POLE.
3. ALL SPORTS LIGHT FIXTURES ARE TO BE WIRED VIA RELAYS IN THE LIGHTING CONTROL SYSTEM CABINET.
4. ALL PATHWAY LIGHT FIXTURES ARE TO BE CONTROLLED VIA PHOTOCELL.
5. THE FOLLOWING SHALL BE WIRED VIA MUSCO LIGHTING CONTROLLER:
   - MUSCO SPORTS LIGHTS.
   - SECURITY LIGHTS ON MUSCO POLES.
   - ALL PATHWAY LIGHTS (TYPE ZP).
   - GAZEBO LIGHT (TYPE A).
   - GAZEBO DUPLEX RECEPTACLE.

KEYED NOTES

TAG	DESCRIPTION	FED FROM	VOLTAGE	FEEDER / CABLE
P	PATHWAY LIGHT FIXTURE WITH INTEGRAL GFCI RECEPTACLE	ELECTRICAL PANEL	120/240V 120V	2#6 AWG & 1#8 AWG GND FOR LIGHT AND 2#6 AWG & 1#8 AWG GND FOR RECEPTACLE. SEE WIRING DIAGRAM.
SF	SPORTS FIELD POLE MOUNTED LIGHT FIXTURE MUSCO SECURITY LIGHT	**MUSCO PANEL** **MUSCO PANEL**	**240V** **240V**	**2#6 AWG & 1#8 AWG GND (LIGHTING)** **2#6 AWG & 1#8 AWG GND (LIGHTING)**
D	DUPLEX RECEPTACLE FOR CAMERA MOUNTED ON SPORTS FIELD LIGHT POLE. INSTALL RECEPTACLE IN ENCLOSURE. ENCLOSURE BASIS OF DESIGN BY MUSCO, ECE 48" CABINET. MOUNT ENCLOSURE MINIMUM 10' ABOVE GRADE.	PANEL PP	120V	**2#6 AWG & 1#8 AWG GND (LIGHTING)** PROVIDE INLINE FUSES

WIRE SCHEDULE

- 2-6: 2#6 AWG & 1#8 AWG GND FOR LIGHT IN 2"C
- 4-6: 2#6 AWG & 1#8 GND FOR LIGHT AND 2#6 AWG & 1#8 AWG GND FOR GFCI RECEPTACLE IN 2"C
- 6-6: 2#6 AWG & 1#8 GND FOR PATHWAY LIGHT POLE AND 4#6 AWG & 1#8 AWG GND FOR GFCI RECEPTACLE IN 2"C
- 6-6A: 4#6 AWG & 1#8 AWG GND FOR MUSCO LIGHT POLE AND 2#6 AWG & 1#8 AWG GND FOR CEMERA DUPLEX RECEPTACLE IN 2"C
- 8-6: 2#6 AWG & 1#8 GND FOR PATHWAY LIGHT POLE IN 2"C AND 6#6 AWG & 1#8 AWG GND FOR GFCI RECEPTACLE IN 2"C
- 10-6: 2#6 AWG & 1#8 GND FOR PATHWAY LIGHT POLE AND 4#6 AWG & 1#8 AWG GND FOR GFCI RECEPTACLES IN 2"C AND 4#6 AWG & 1#8 AWG GND FOR GFCI RECEPTACLES IN 2"C
- 10-6A: 4#6 AWG & 1#8 AWG GND FOR MUSCO LIGHT POLE AND 2#6 AWG & 1#8 AWG GND FOR CAMERA DUPLEX RECEPTACLE IN 2"C AND 2#6 AWG & 1#8 GND FOR PATHWAY LIGHT POLE AND 2#6 AWG & 1#8 AWG GND FOR GFCI DUPLEX RECEPTACLE IN 2"C

LEGEND

WP,WIC - GFCI RECEPTACLE WITH WHILE IN-USE COVER

LIGHTING FIXTURE SCHEDULE

CALLOUT	DESCRIPTION	MOUNTING	MODEL	VOLTS
A	8" SURFACE MOUNT FIXTURE	SURFACE	DMF DC4-SM-W-M-D-25-GA-0-00-00-30K-BK-T-00-R	120V 1P 2W
P1	SPORTS AND SECURITY LIGHT	POLE	SEE SPORT AND SECURITY LIGHT FIXTURE SCHEDULE	240V 2P 2W
P2	SPORTS AND SECURITY LIGHT	POLE	SEE SPORT AND SECURITY LIGHT FIXTURE SCHEDULE	240V 2P 2W
ZP	WALKWAY LIGHT FIXTURE	POLE	PROVIDE LIGHT FIXTURE WITH 16'-0" POLE SEE DRAWING E-3 FOR SPECIFICATIONS	240V 2P 2W

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD • WORCESTER, MA 01605
508-852-2644 • info@edlandarch.com

ART Engineering
we build the future.
38 Front Street, FL 3, Worcester, MA 01608
www.artengineering.us

COMMONWEALTH OF MASSACHUSETTS
AZIM S. RAWJI
No. 41765
REGISTERED PROFESSIONAL ELECTRICAL ENGINEER

PROJECT:
LAKE VIEW PLAYGROUND IMPROVEMENTS

CLIENT:
CITY OF WORCESTER

DATE: 11-22-24

REVISIONS:

NO.	DATE	DESCRIPTION

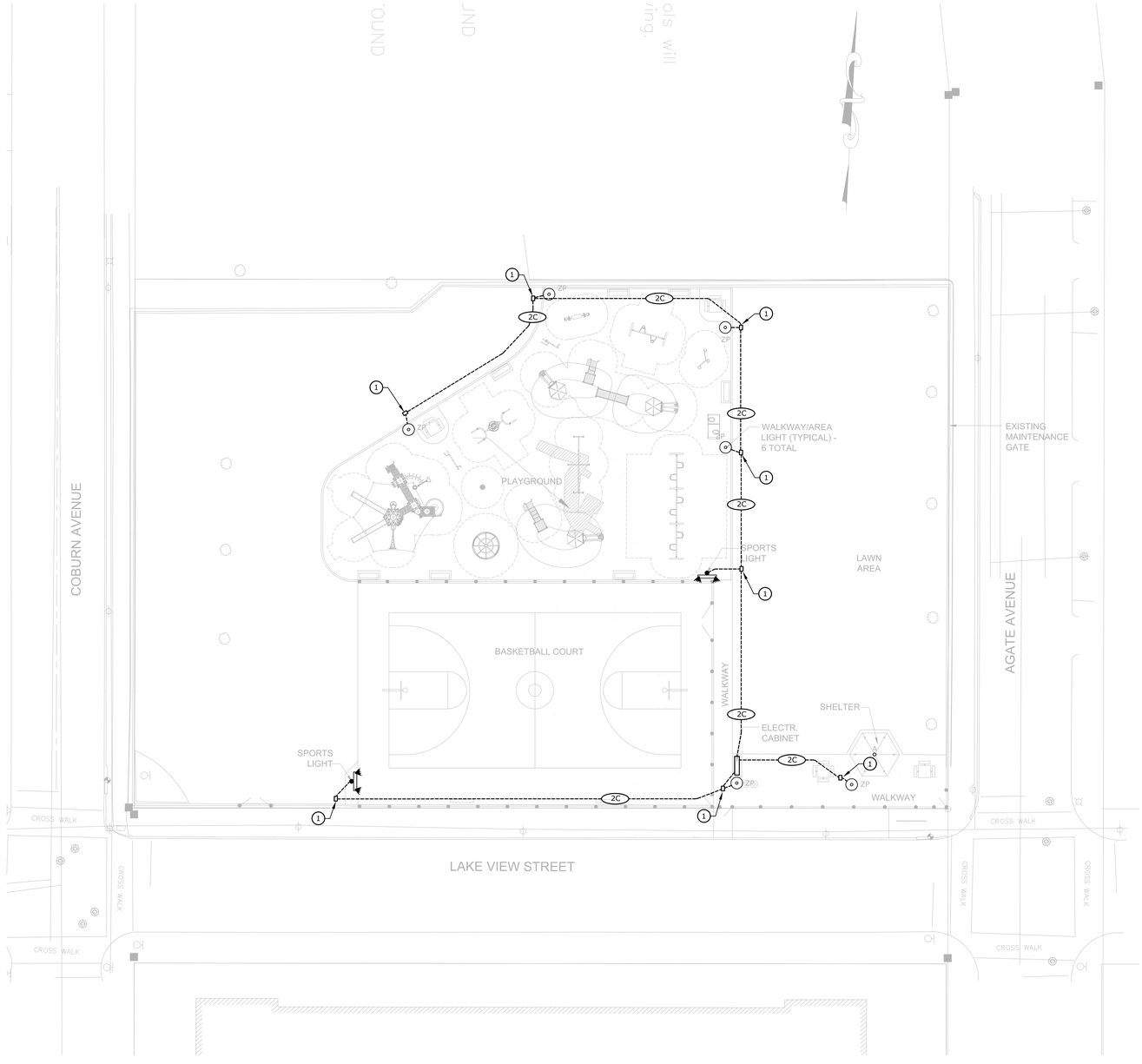
N

SCALE: 1" = 20'

0' 10' 20' 40'

ELECTRICAL SITE PLAN

SHEET E-1



GENERAL NOTES

1. CARRY IN BID 175' OF CONDUIT, CABLING AND TRENCHING FOR COMMUNICATIONS (INTERNET SERVICE) FROM THE ELECTRICAL CABINET TO THE UTILITY POLE.
2. SEE FRONT END DOCUMENTS FOR SECURITY CAMERA REQUIREMENTS.

KEYED NOTES

(1) HANDHOLE FOR COMMUNICATIONS, 24"W X 36"L X 22"D. PROVIDE 2"C BETWEEN HANDHOLES AND 1"C FROM HANDHOLE TO THE POLE.

WIRE SCHEDULE

(2C) 2" HDPE CONDUIT FOR CAMERA

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD • WORCESTER, MA 01605
508-852-2644 • info@edlandarch.com

ART Engineering
we build the future.
38 Front Street, FL 3, Worcester, MA 01608
www.artengineering.us

COMMONWEALTH OF MASSACHUSETTS
AZIM S. RAWJI
No. 41765
REGISTERED PROFESSIONAL ELECTRICAL ENGINEER

PROJECT:
LAKE VIEW PLAYGROUND IMPROVEMENTS

CLIENT:
CITY OF WORCESTER

DATE: 11-22-24

REVISIONS:

NO.	DATE	DESCRIPTION

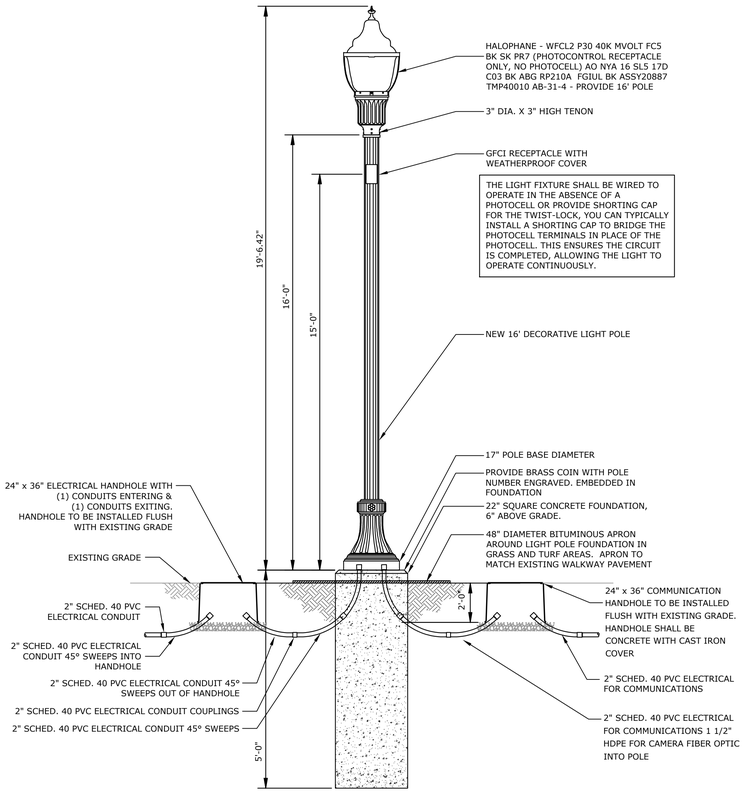
N

SCALE: 1" = 20'

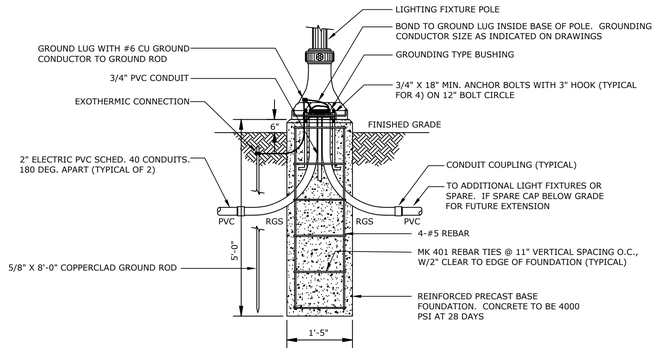
0' 10' 20' 40'

SECURITY SYSTEM CONDUIT PLAN

SHEET E-2



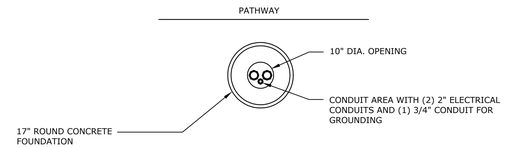
PATHWAY LIGHT POLE INSTALLATION DETAIL - FIXTURE TYPE ZP NTS



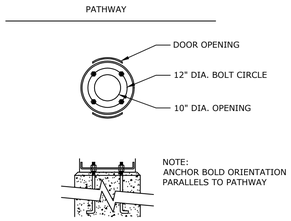
PATHWAY LIGHT POLE FOUNDATION DETAIL NTS

NOTES

1. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR EXCAVATING AND BACKFILLING FOR THE LIGHT POLE BASES; AND FURNISHING AND INSTALLING 6" OF CRUSHED STONE AT CONCRETE BASE.
2. THE ELECTRICAL SUBCONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING PRE-CAST LIGHT POLE BASES.
3. THE ELECTRICAL SUBCONTRACTOR IS RESPONSIBLE FOR FURNISHING THE POLE BASE BOLT TEMPLATE AND CONDUIT REQUIREMENTS.
4. LOCATE ANCHOR BOLTS SUCH THAT THE POLE AND BOLT COVER ARE CENTERED ON THE POLE BASE.
5. THE ELECTRICAL SUBCONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING ALL THE REQUIRED CONDUIT AND WIRING TO THE LIGHT POLE BASES.
6. COORDINATE EXACT ANCHOR BOLT REQUIREMENTS WITH SITE POLE MANUFACTURER.
7. THE ANCHOR BOLTS SHALL BE CUT DOWN BEFORE THE POLE INSTALLATION TO ALLOW THE POLE TO BE CLOSER TO THE BASE. IF THE SPECIFIED POLE HAS NO SKIRT TO HIDE THE ANCHOR BOLTS THE POLE MUST SIT ON THE BASE TO LOOK FINISHED.
8. FOR CONCRETE POLE BASES FOR SPORTS FIELD LIGHTING SHOWN ON DRAWING E1 PLEASE REFER TO SPECIFICATIONS.
9. ALL STEEL REINFORCING TO BE ASTM A615 (REBAR) GRADE 60.
10. ALL CONCRETE STRENGTH TO BE EQUAL TO 4000 P.S.I.

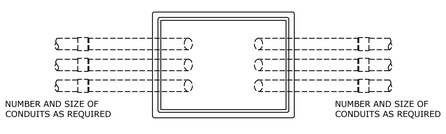


BASE FOOTPRINT NTS



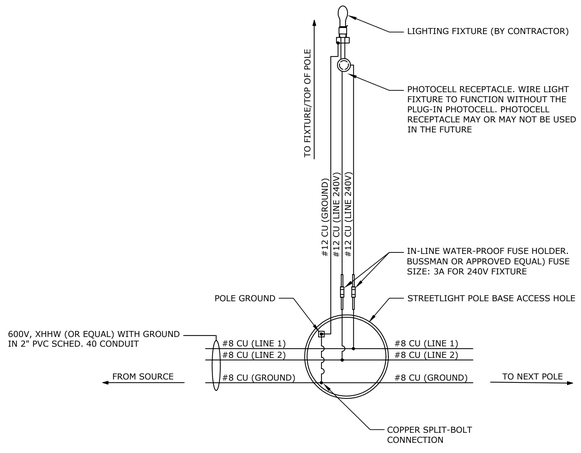
PATHWAY LIGHT POST ANCHOR DETAIL NTS

NOTE:
1. SEE L SHEETS FOR SPECIFIC POLE LOCATIONS.

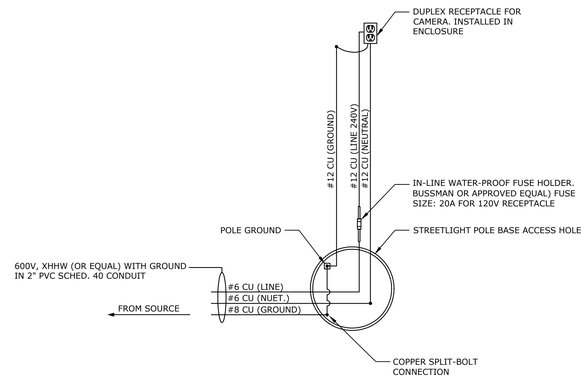


TYPICAL HANDHOLE INSTALLATION DETAIL NTS

NOTES:
1. HANDHOLE ORIENTATION TO BE SUCH THAT ALL SUPPLY DUCTS ENTER ON SAME SHORT SIDE.
2. SIZE AND NUMBER OF CONDUITS AS REQUIRED.
3. CONDUIT LOCATIONS SHOWN ARE TYPICAL.



TYPICAL PATHWAY LIGHT/INTEGRAL RECEPTACLE WIRING DETAIL NTS



TYPICAL PATHWAY LIGHT AND SPORTS FIELD RECEPTACLE FOR CAMERA WIRING DETAIL NTS

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD • WORCESTER, MA 01605
508-852-2644 • info@edlandarch.com

ART Engineering
we build the future.
38 Front Street, FL 3, Worcester, MA 01608
www.artengineering.us

COMMONWEALTH OF MASSACHUSETTS
AZIM S. RAWJI
No. 41765
REGISTERED PROFESSIONAL ELECTRICAL ENGINEER

PROJECT:
LAKE VIEW PLAYGROUND IMPROVEMENTS

CLIENT:
CITY OF WORCESTER

DATE: 11-22-24

REVISIONS:

NO.	DATE	DESCRIPTION

N

ELECTRICAL DETAILS

SHEET E-3

System Requirements: Control System Summary

Project Information

Control System

Control System ID: 1 of 1
Control System Type: Control-Link ® Control and Monitoring System
Communication Type: PowerLine-ST

Power Requirements

Control cabinet(s):
Control voltage (phase to neutral) 120/60
VA loading - Inrush 2043.0
VA loading - Sealed 232.0
Lighting Circuits:
Voltage/Hertz/Phase 240/60/1

Project Notes:

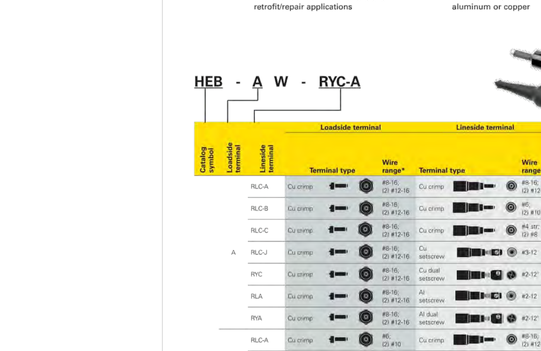
Equipment Listing		
Description	Qty	Size (in)
Control and monitoring cabinet - primary	1	24 X 48
Contactors, 30 amperes	6	-
Off/On/Auto switches	5	-

Important Notes:

1. Please confirm that the lighting circuit voltage listed above is accurate for this facility. This is the voltage/phase being connected and utilized at each lighting pole's electrical components enclosure disconnect. Inaccurate voltage/phase can result in additional costs and delays. Contact your Musco sales representative to confirm this item.
2. In a 3 phase design, all 3 phases are to be run to each pole location. Musco's single phase luminaires come pre-wired to utilize all 3 phases across the entire facility.
3. One contactor is required for each circuit at each pole location. Contactors are 3 pole and 100% rated for the published continuous load.
4. If the lighting system will be fed from more than one distribution location, additional equipment may be required. Contact your Musco sales representative.
5. Size overcurrent devices using the full load amps column of the Circuit Summary by Switch chart @Minimum power factor is 0.91. Size conduit per code unless otherwise specified as larger to allow for harness connectors.
6. Avoid use of in-ground junction/pull boxes when possible. If used, all wire connectors must be UL listed for Wet Locations to prevent leakage current.
7. Control power wiring must be in separate conduit from line or load power wiring. Communication cables must be in separate conduit from any power wiring.
8. Refer to Installation Instructions for more details on equipment information and the installation requirements.

System Requirements: Control System Summary

Equipment Layout and Connection Details



Connection Details	
ID	Description
1a	Line power to contactors, and equipment grounding conductor. Requires one circuit per contactor, size wiring per load and voltage drop.
1b	Load power from contactors, and equipment grounding conductor. Requires one circuit per contactor, size wiring per load and voltage drop.
2a	Control power with equipment ground to control cabinet. Requires dedicated 20 A circuit. Provide transformer if control voltage not present.

Equipment	
ID	Description
1	Control and monitoring cabinet - primary

System Requirements: Control System Summary

Circuit Summary

Switching Schedule	
Field/Switch Description	Switches
Basketball	1
Security	2
Pathway	3
Gazebo Light	4
Gazebo Duplex	5

Control Module ID: 1 **Lighting Circuit Voltage: 240/60/1**

Circuit Summary by Switch							
Switch	Zone Description	Pole ID	Qty of Fixtures	Full load amperes	Contactor Size (Amps)	Cabinet #	Contactor ID
1	Basketball	P1	2	5.54	30	1	C1
	Basketball	P2	2	5.54	30	1	C2
2	Security	P1, P2	2	.86	30	1	C3
3	Pathway	ZP	1	1	30	1	C4
4	Gazebo Light	A	1	1	30	1	C5
5	Gazebo Duplex		1	1	30	1	C6

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD • WORCESTER, MA 01605
508-852-2644 • info@edlandarch.com

ART Engineering
we build the future.
38 Front Street, FL 3, Worcester, MA 01608
www.artengineering.us

COMMONWEALTH OF MASSACHUSETTS
AZIM S. RAWJI
No. 41765
REGISTERED PROFESSIONAL ELECTRICAL ENGINEER

PROJECT:
LAKE VIEW PLAYGROUND IMPROVEMENTS

CLIENT:
CITY OF WORCESTER

DATE: 11-22-24

REVISIONS:

NO.	DATE	DESCRIPTION

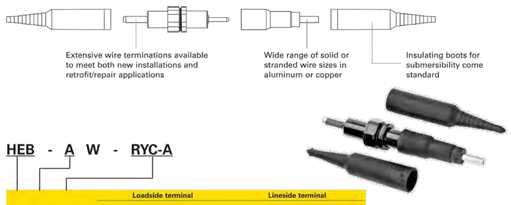
N

ELECTRICAL DETAILS

SHEET E-4

FUSE INSTALLATION DETAILS

HEB breakaway, single-pole holder



HEB - A W - RYC-A

Catalog symbol	Loadside terminal	Lineside terminal	Loadside terminal: Terminal type	Loadside terminal: Wire range*	Lineside terminal: Terminal type	Lineside terminal: Wire range*
HEB	A	RLC-A	Cu crimp	#6-1/0, (2) #12-1/0	Cu crimp	#6-1/0, (2) #12-1/0
		RLC-B	Cu crimp	#6-1/0, (2) #12-1/0	Cu crimp	#6, (2) #10
		RLC-C	Cu crimp	#6-1/0, (2) #12-1/0	Cu crimp	#4 str; (2) #6
		RLC-J	Cu crimp	#6-1/0, (2) #12-1/0	Cu setscrew	#3-1/2
		RYC	Cu crimp	#6-1/0, (2) #12-1/0	Cu dual setscrew	#2-1/2†
		RLA	Cu crimp	#6-1/0, (2) #12-1/0	Al setscrew	#2-1/2
		RYA	Cu crimp	#6-1/0, (2) #12-1/0	Al dual setscrew	#2-1/2†
	B	RLC-A	Cu crimp	#6, (2) #10	Cu crimp	#6-1/0, (2) #12-1/0
		RLC-B	Cu crimp	#6, (2) #10	Cu crimp	6#, (2) #10
		RYC	Cu crimp	#6, (2) #10	Cu dual setscrew	#2-1/2†
	J	RLC-J	Cu setscrew	#3-1/2	Cu setscrew	#3-1/2
		RYC	Cu setscrew	#3-1/2	Cu dual setscrew	#2-1/2†
	K	RLC-J	Cu dual setscrew	#2-1/2†	Cu setscrew	#3-1/2
		RYC	Cu dual setscrew	#2-1/2†	Cu dual setscrew	#2-1/2†
	L	RLA	Al setscrew	#2-1/2	Al setscrew	#2-1/2
		RLC-J	Al setscrew	#2-1/2	Cu setscrew	#3-1/2
		RYA	Al setscrew	#2-1/2	Al dual setscrew	#2-1/2†

- Up to 600 volts
- Up to 30 amps
- Up to 200 kA withstand rating
- UL Recognized to Guide IZLT2, CSA Certified, CE, and RoHS compliant

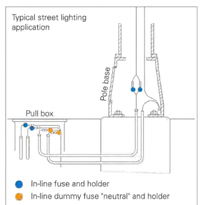
See data sheet No. 2127 for more detail.
* Solid/stranded conductors unless otherwise noted.
† Not dual wire rated. One wire per opening.

Meet code requirements and save money with Bussmann™ series in-line fuse holders

Superior circuit protection in roadway and street lighting applications is key to keeping the lights reliable and safe. Using in-line fuse holders that can adequately withstand the lighting environment can make it easier to apply superior circuit protection.

In fact, **breakaway capability** and **submersibility** are quickly becoming preferred features. Many states already mandate breakaway fuse holders in roadway lighting applications to ensure safe disconnection in the event of a knockdown or if maintenance is required. Submersibility and waterproof requirements have also been enforced as street lighting is prone to wet conditions.

Bussmann series HEB and HEX breakaway in-line fuse holders are **UL® Recognized as fuse holders** and meet breakaway and submersibility requirements. What's more, they can help you realize a reduction in labor time, tools needed and maintenance costs when used as a standard solution.



Specific codes and regulations for street lighting vary by state, for example:

Florida Department of Transportation's *Standard Specifications for Road and Bridge Construction*, Section 992:

992-2.6 In Line Fuse Holders
In line fuse holders shall provide a breakaway connection and be UL recognized per Guide IZLT2 and rated for 600V.The wire connections in the fuse holders shall be of the copper setscrew type. Fused connections shall utilize... FNQ 10 amp time delay fuse rated for 500V. Fuses shall be UL listed to Standard 248-14.The rating for the fuse holders shall be water resistant or submersible rated.

HEX breakaway, dual-pole holder

HEX - A W - DRLC-A

Catalog symbol	Loadside terminal	Lineside terminal	Loadside terminal: Terminal type	Loadside terminal: AWG wire range*	Lineside terminal: Terminal type	Lineside terminal: AWG wire range*
HEX	A	DRLC-A	Cu crimp	8-1/0; (2) 12-1/0	Cu crimp	8-1/0; (2) 12-1/0
		DRLC-B	Cu crimp	8-1/0; (2) 12-1/0	Cu crimp	6; (2) 10
		DRYC	Cu crimp	8-1/0; (2) 12-1/0	Cu dual setscrew	2-1/2†
	J	DRYC	Cu setscrew	3-1/2	Cu dual setscrew	2-1/2†
	K	DRYC	Cu dual setscrew	2-1/2†	Cu dual setscrew	2-1/2†

- 600 volts
- Up to 30 amps
- Up to 200 kA withstand rating
- UL Recognized per Guide IZLT2, CSA® Certified, CE and RoHS compliant
- Wide range of solid or stranded copper wire sizes
- Extensive wire terminations available to meet both new installations and retrofit/ repair applications
- Insulating boots for submersibility come standard

See data sheet No. 2126 for more detail.
* Solid/stranded conductors unless otherwise noted.
† Not dual wire rated. One wire per opening.

HET neutral single-pole holder

- Provides means of conductor continuity
- Permanent, solid neutral for use in conjunction with the HEB holder
- Identifiable by white, plastic coupling nut
- Can be used in place of HEB with a supplemental dummy fuse "neutral," Bussmann series NNB

See data sheet No. 2125 for more detail.

Lake View Playground

Worcester, MA

Grid Summary

Name	**Spill at 100' (Cd)**
Spacing	30.0'
Height	5.0' above grade

Illumination Summary

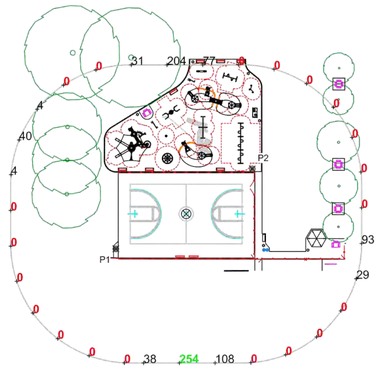
	MAINTAINED MAX CANDELA (PER FIXTURE)
	Entire Grid
Scan Average	**28.46**
Maximum	254
Minimum	0
Avg/Min	-
Max/Min	**-**
UG (adjacent pts)	0.00
CU	0.00
No. of Points	31
LUMINAIRE INFORMATION	
Applied Circuits	A
No. of Luminaires	**4**
Total Load	2.16 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.



SCALE IN FEET 1 : 60
0' 60' 120'

ENGINEERED DESIGN By: T.Lanphier • File #239460B • 30-Oct-24

Pole location(s) dimensions are relative to 0,0 reference point(s)

musco Lighting
We Make It Happen.

Not to be reproduced in whole or part without the written consent of Musco Sports Lighting, LLC. ©1981, 2023 Musco Sports Lighting, LLC.

ILLUMINATION SUMMARY

Lake View Playground

Worcester, MA

Equipment Layout

INCLUDES:
- Basketball

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

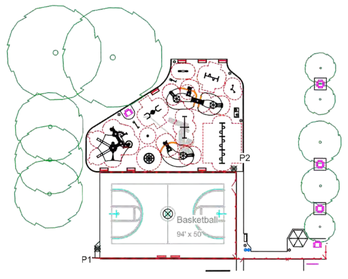
Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

Equipment List For Areas Shown

	Pole			Luminaires		
QTY	LOCATION	SIZE	GRADE ELEVATION	ABOVE GRADE LEVEL	LUMINAIRE TYPE	QTY/POLE
2	P1-P2	40'	-	40' 25'	TLC-LED-550 CREE OSQ	2 1
2				Totals		6

Single Luminaire Amperage Draw Chart

Driver Specifications (.90 min power factor)	Line Amperage Per Luminaire (max draw)					
Single Phase Voltage	208 (60)	220 (60)	240 (60)	277 (60)	347 (60)	380 (60)	480 (60)
CREE OSQ	-	-	-	-	0.3	-	0.2
TLC-LED-550	3.2	3.0	2.8	2.4	1.9	1.8	1.4



SCALE IN FEET 1 : 60
0' 60' 120'

ENGINEERED DESIGN By: T.Lanphier • File #239460B • 30-Oct-24

Pole location(s) dimensions are relative to 0,0 reference point(s)

musco Lighting
We Make It Happen.

Not to be reproduced in whole or part without the written consent of Musco Sports Lighting, LLC. ©1981, 2023 Musco Sports Lighting, LLC.

EQUIPMENT LAYOUT

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD • WORCESTER, MA 01605
508-852-2644 • info@edlandarch.com

ART Engineering
we build the future.
38 Front Street, FL 3, Worcester, MA 01608
www.artengineering.us

COMMONWEALTH OF MASSACHUSETTS
AZIM S. RAWJI
No. 41765
REGISTERED PROFESSIONAL ELECTRICAL ENGINEER

PROJECT:
LAKE VIEW PLAYGROUND IMPROVEMENTS

CLIENT:
CITY OF WORCESTER

DATE: 11-22-24

REVISIONS:

NO.	DATE	DESCRIPTION

N

ELECTRICAL DETAILS

SHEET E-5

Lake View Playground

Worcester, MA

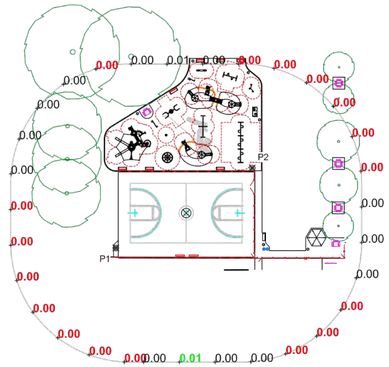
Grid Summary

Name	Spill at 100'
Spacing	30.0'
Height	3.0' above grade

Illumination Summary

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average	**0.00**
Maximum	0
Minimum	0
Avg/Min	-
Max/Min	**-**
UG (adjacent pts)	0.00
CU	0.00
No. of Points	31
LUMINAIRE INFORMATION	
Applied Circuits	A
No. of Luminaires	**4**
Total Load	2.16 kW



Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE IN FEET 1 : 60

0' 60' 120'

ENGINEERED DESIGN By: T.Lanphier • File #239460B • 30-Oct-24

Pole location(s) dimensions are relative to 0,0 reference point(s)

We Make It Happen.

Not to be reproduced in whole or part without the written consent of Musco Sports Lighting, LLC. ©1981, 2023 Musco Sports Lighting, LLC.

ILLUMINATION SUMMARY

Lake View Playground

Worcester, MA

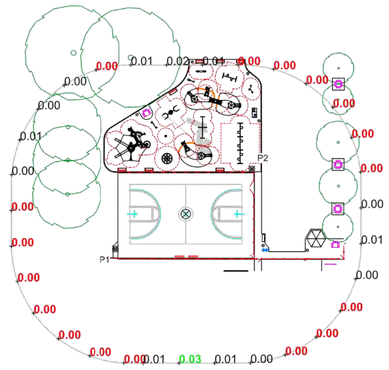
Grid Summary

Name	Spill at 100'
Spacing	30.0'
Height	3.0' above grade

Illumination Summary

MAINTAINED MAX VERTICAL FOOTCANDLES

	Entire Grid
Scan Average	**0.00**
Maximum	0
Minimum	0
Avg/Min	-
Max/Min	**-**
UG (adjacent pts)	0.00
CU	0.00
No. of Points	31
LUMINAIRE INFORMATION	
Applied Circuits	A
No. of Luminaires	**4**
Total Load	2.16 kW



Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE IN FEET 1 : 60

0' 60' 120'

ENGINEERED DESIGN By: T.Lanphier • File #239460B • 30-Oct-24

Pole location(s) dimensions are relative to 0,0 reference point(s)

We Make It Happen.

Not to be reproduced in whole or part without the written consent of Musco Sports Lighting, LLC. ©1981, 2023 Musco Sports Lighting, LLC.

ILLUMINATION SUMMARY

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD • WORCESTER, MA 01605
508-852-2644 • info@edlandarch.com

ART Engineering
we build the future.
38 Front Street, FL 3, Worcester, MA 01608
www.artengineering.us

COMMONWEALTH OF MASSACHUSETTS
AZIM S. RAWJI
No. 41765
REGISTERED PROFESSIONAL ELECTRICAL ENGINEER

PROJECT:
LAKE VIEW PLAYGROUND IMPROVEMENTS

CLIENT:
CITY OF WORCESTER

DATE: 11-22-24

REVISIONS:

NO.	DATE	DESCRIPTION

N

ELECTRICAL DETAILS

SHEET E-6

Lake View Playground
Worcester, MA

Lighting System

Pole/Fixture Summary

Pole ID	Pole Height	Mtg Height	Fixture Qty	Luminaire Type	Load	Circuit
P1-P2	40'	40'	2	TLC-LED-550	1.08 kW	A
		25'	1	Cree OSQ	0.10 kW	B
2			6		2.36 kW	

Circuit Summary

Circuit	Description	Load	Fixture Qty
A	Basketball	2.16 kW	4
B	Security	0.20 kW	2

Fixture Type Summary

Type	Source	Wattage	Lumens	L90	L80	L70	Quantity
Cree OSQ	LED 5700K - 70 CRI	100W	14,743	--	--	--	2
TLC-LED-550	LED 5700K - 75 CRI	540W	67,000	>120,000	>120,000	>120,000	4

Single Luminaire Amperage Draw Chart

Driver Specifications (.90 min power factor)	Line Amperage Per Luminaire (max draw)						
Single Phase Voltage	208 (60)	220 (60)	240 (60)	277 (60)	347 (60)	380 (60)	480 (60)
CREE OSQ	-	-	-	-	0.3	-	0.2
TLC-LED-550	3.2	3.0	2.8	2.4	1.9	1.8	1.4

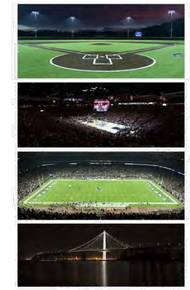
Light Level Summary

Calculation Grid Summary

Grid Name	Calculation Metric	Illumination Ave					Circuits	Fixture Qty
		Ave	Min	Max	Max/Min	Ave/Min		
Basketball	Horizontal Illuminance	30.88	19	39	2.03	1.62	A	4
Spill at 100'	Horizontal	0.00	0	0	-	-	A	4
Spill at 100'	Max Vertical Illuminance Metric	0.00	0	0	-	-	A	4
Spill at 100' (Cd)	Max Candela (by Fixture)	28.46	0	254	-	-	A	4

ENGINEERED DESIGN By: T.Lanphier • File #239460B • 30-Oct-24

From Hometown to Professional



We Make It Happen.

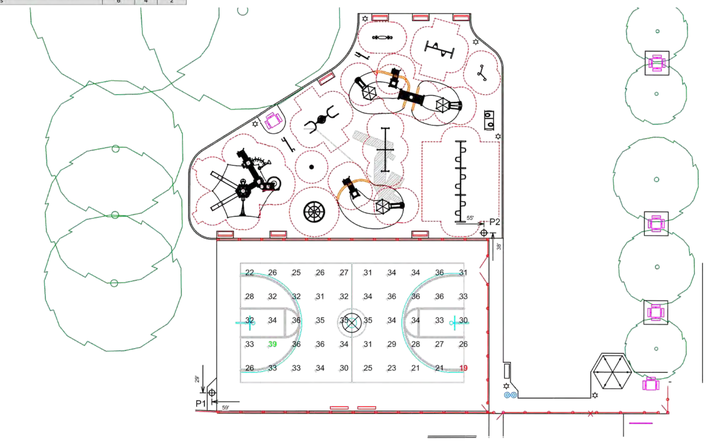
Not to be reproduced in whole or part without the written consent of Musco Sports Lighting, LLC. ©1981, 2023 Musco Sports Lighting, LLC.

PROJECT SUMMARY

Equipment List For Areas Shown

Pole QTY	Pole LOCATION	Pole SIZE	Pole GRADE ELEVATION	Pole ABOVE GRADE LEVEL	Luminaires LUMINAIRE TYPE	Luminaires QTY/POLE	Luminaires THIS GRID	Luminaires OTHER GRIDS
2	P1-P2	40'	-	40'	TLC-LED-550	2	2	0
				25'	CREE OSQ	1	0	1
2				Totals		6	4	2

*Above Grade level relative to the field



SCALE IN FEET 1 : 30
0' 30' 60'

Pole location(s) dimensions are relative to 0,0 reference point(s)

ENGINEERED DESIGN By: T.Lanphier • File #239460B • 30-Oct-24

Lake View Playground
Worcester, MA

Grid Summary

Name	Basketball
Size	94' x 50'
Spacing	10.0'
Height	3.0' above grade

Illumination Summary

MAINTAINED HORIZONTAL FOOTCANDLES	Entire Grid
Guaranteed Average	**30**
Scan Average	30.88
Maximum	39
Minimum	19
Avg/Min	1.62
Guaranteed Max/Min	**2.5**
Max/Min	2.03
UG (adjacent pts)	1.38
CU	0.57
No. of Points	50
LUMINAIRE INFORMATION	
Applied Circuits	A
No. of Luminaires	**4**
Total Load	2.16 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

We Make It Happen.

Not to be reproduced in whole or part without the written consent of Musco Sports Lighting, LLC. ©1981, 2023 Musco Sports Lighting, LLC.

ILLUMINATION SUMMARY

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD • WORCESTER, MA 01605
508-852-2644 • info@edlandarch.com

ART Engineering
we build the future.
38 Front Street, FL 3, Worcester, MA 01608
www.artengineering.us

COMMONWEALTH OF MASSACHUSETTS
AZIM S. RAWJI
No. 41765
REGISTERED PROFESSIONAL ELECTRICAL ENGINEER

PROJECT:
LAKE VIEW PLAYGROUND IMPROVEMENTS

CLIENT:
CITY OF WORCESTER

DATE: 11-22-24

REVISIONS:

NO.	DATE	DESCRIPTION

N

ELECTRICAL DETAILS

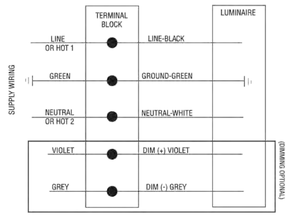
SHEET E-7

Datasheet: **OSQ Area Luminaire on Light-Structure System™**

Electrical Data

Rated wattage per luminaire[1] ..... 130-168 W
Input voltage ..... 120-277V or 347-480V, 50/60Hz
Driver configuration ..... Integral
Driver Efficiency ..... >90%
Starting (inrush) current 73A, 120µs
Power factor ..... > 0.9
Total Harmonic Distortion ..... < 20%
Operating temperature range ..... -40°C - +35°C (-40°F - +95°F)
Dimming mode[2] ..... 0-10V dimming to 10%

Typical Wiring



	120 Vac	208 Vac	240 Vac	277 Vac	347 Vac	480 Vac
Max operating current[3]	1.41 A	0.84 A	0.73 A	0.64 A	0.50 A	0.37 A

Footnotes:

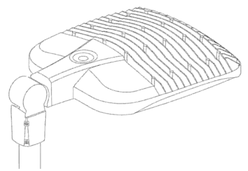
1) Rated wattage is the power consumption, including driver efficiency losses, at stabilized operation in 25° C ambient temperature environment.

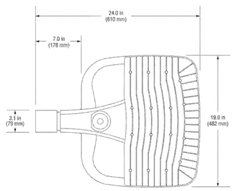
2) Dimming controls not provided by Musco. Driver provides 10V source current at 0.15 mA, compliant with IEC 60929 Annex E dimming standard.

3) Operating current based on 25 degree C.

Notes

1. Use thermal magnetic HID-rated or D-curve circuit breakers.





Cree is registered trademark of Cree, Inc.
Patent www.cree.com/patents. • ©2016 Musco Sports Lighting, LLC • Cree OSQ Series 120-480V • M-2175-en04-2

SECURITY LIGHTING DETAIL

Installation Instructions: **Light-Structure System™**

Precast Concrete Base

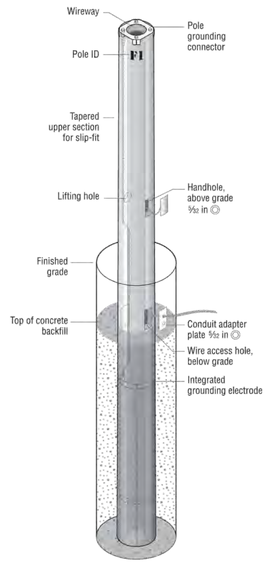
Overview

The precast concrete base is set directly into the ground, backfilled with concrete, and allowed to cure for 12 to 24 hours. The base is designed for easy slip-fit connection to the galvanized steel pole. The remaining components — steel pole, poletop luminaire assembly, electrical components enclosure, and wire harness —are assembled as a unit and set onto the base. The base includes an integrated lightning ground system.

Tools/Materials Needed

Musco Supplied
- ❑ *Field Aiming Diagram*
- ❑ Musco *Foundation and Pole Assembly Drawing* or alternate foundation design
- ❑ Steel bar
- ❑ Wooden base wedges
- ❑ Level with shim for tapered base
- ❑ 5⁄32 in hex key

Contractor Supplied
- ❑ Conduit for underground wiring
- ❑ Concrete backfill
- ❑ Water pump (as needed)



Installation Procedure

Verify pole ID on concrete base matches pole location on *Field Aiming Diagram*.

For options on poor soil conditions, alternative installation methods, or if there are any issues with pole locations given, contact your local Musco representative. Your project engineer's name appears on *Field Aiming Diagram*.

Note: Use only project-specific foundation designs as detailed on Musco Foundation and Pole Assembly Drawing or alternate foundation design plan.

1 Mark pole locations per *Field Aiming Diagram*.

2 Excavate holes to size and depth given on Musco *Foundation and Pole Assembly Drawing* or alternate foundation design.

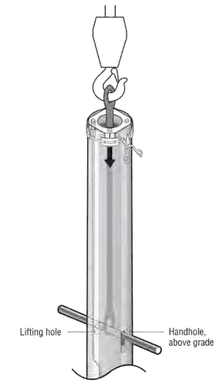
Warning
Fall hazard
Cover holes or install fencing for fall safety.

LIGHT POLE INSTALLATION DETAILS

Installation Instructions: **Light-Structure System™**

Precast Concrete Base

3 Sling and lower base into hole. Orient wire access hole to accommodate incoming supply wiring. Snip banding and remove tab protectors.

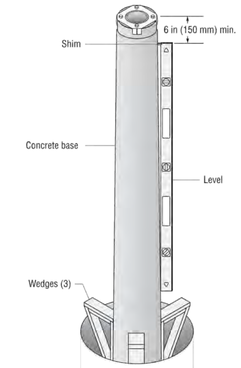


4 Plumb base and wedge into position. Use supplied level with shim on upper end against base. Shim accommodates taper of base. Top of base is beveled. Keep level at least 6 in (150 mm) from top when plumbing.

5 Remove any water from hole to avoid weakening foundation. Water in hole during concrete pour can also cause hollow center of base to fill with concrete.

If backfilling to finished grade with concrete instead of compacted fill, be sure to maintain wire access.

6 Backfill with concrete per Musco *Foundation and Pole Assembly Drawing* or alternate foundation design.



LIGHT POLE INSTALLATION DETAILS

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD • WORCESTER, MA 01605
508-852-2644 • info@edlandarch.com

ART Engineering
we build the future.
38 Front Street, FL 3, Worcester, MA 01608
www.artengineering.us

COMMONWEALTH OF MASSACHUSETTS
AZIM S. RAWJI
No. 41765
REGISTERED PROFESSIONAL ELECTRICAL ENGINEER

PROJECT:
LAKE VIEW PLAYGROUND IMPROVEMENTS

CLIENT:
CITY OF WORCESTER

DATE: 11-22-24

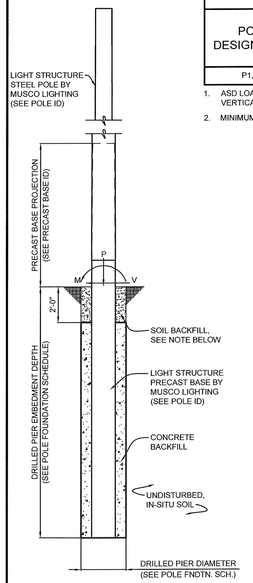
REVISIONS:

NO.	DATE	DESCRIPTION

N

ELECTRICAL DETAILS

SHEET E-8



POLE FOUNDATION ELEV.

SCALE: NOT TO SCALE

SOIL BACKFILL NOTE:
THE TOP TWO FEET OF ANNULUS SHALL BE BACKFILLED WITH SOIL, WITH A CLASSIFICATION OF CLASS 5 (TABLE 1806.2) OR BETTER. COMPACTION, 95% FOR COHESIVE SOIL AND 98% FOR A COHESIONLESS SOIL BASED UPON STANDARD PROCTOR TESTING (ASTM D698).

POLE FOUNDATION SCHEDULE

POLE DESIGNATION	FORCES (1.)			DRILLED PIER		
	MOMENT (M) FT-LBS	SHEAR (V) LBS	VERTICAL (P) LBS	DIAMETER INCHES	EMBEDMENT DEPTH	CONCRETE BACKFILL YD^3 (2.)
P1, P2	13,244	560	576	36	8'-0"	1.5

1. ASD LOAD COMBINATION D + 0.6W.
VERTICAL FORCE IS WEIGHT OF DRESSED POLE (DOES NOT INCLUDE PRECAST BASE WEIGHT).
2. MINIMUM CONCRETE BACKFILL VOLUME, SITE CONDITIONS MAY REQUIRE ADDITIONAL BACKFILL.

PRECAST BASE IDENTIFICATION

PRECAST BASE TYPE	PRECAST BASE WEIGHT	PRECAST BASE LENGTH	PROJECTION ABOVE GRADE	STANDARD EMBEDMENT	OUTSIDE DIAMETER
1B	920 LBS	15'-2"	7'-2"	8'-0"	9.56"

POLE IDENTIFICATION

POLE DESIGNATION	POLE TYPE	PRECAST BASE TYPE	FIXTURE CONFIGURATION (FIX. PER XARM)	FIXTURE AND ACCESSORIES EPA (FT^2)
P1, P2	LSS40A	1B	3 (2)	6.0

- POLES P1 & P2 HAVE (1) CREE OSQ FIXTURE AT 25'-0" AGL INCLUDED ABOVE.
- POLES P1 & P2 HAVE (1) CAMERA AT 20'-0" AGL INCLUDED IN EPA ABOVE.

DESIGN NOTES

DESIGN PARAMETERS:
WIND: V_{ult} = 124 MPH, V_{asd} = 96 MPH (EXPOSURE C, RISK CATEGORY II) PER MASSACHUSETTS STATE BUILDING CODE - 780 CMR, 9TH EDITION (IBC 2015 / ASCE 7-10).

GEOTECHNICAL PARAMETERS:
ALLOWABLE END BEARING SOIL PRESSURE: 2,000 PSF
ALLOWABLE LATERAL SOIL BEARING PRESSURE:
0 PSF/FT (GRADE TO -2'-0"); 150 PSF/FT (-2'-0" TO -5'-0"); 300 PSF/FT (BELOW -5'-0")
IN ACCORDANCE WITH MASSACHUSETTS STATE BUILDING CODE - 780 CMR, 9TH EDITION, CHAPTER 18.

DESIGN SOIL PARAMETERS ARE AS NOTED. ACTUAL ALLOWABLE SOIL PARAMETERS MUST BE VERIFIED ON SITE. REFERENCE SOIL BORING LOGS B-1 & B-2, PROJECT FILE NO. 24-08027, PREPARED BY SOIL X CORP.; LEOMINSTER, MA.

A GEOTECHNICAL ENGINEER OR REPRESENTATIVE OF IS RECOMMENDED (NOT REQUIRED) TO BE AVAILABLE AT THE TIME OF THE FOUNDATION INSTALLATION TO VERIFY THE SOIL DESIGN PARAMETERS AND TO PROVIDE ASSISTANCE IF ANY PROBLEMS ARISE IN FOUNDATION INSTALLATION.

ENCOUNTERING SOIL FORMATIONS THAT WILL REQUIRE SPECIAL DESIGN CONSIDERATIONS OR EXCAVATION PROCEDURES MAY OCCUR. POLE FOUNDATIONS WILL NEED TO BE ANALYZED ACCORDING TO THE SOIL CONDITIONS THAT EXIST. IF ANY DISCREPANCIES OR INCONSISTENCIES ARISE, NOTIFY THE ENGINEER OF SUCH DISCREPANCIES. FOUNDATIONS WILL THEN BE REVISED ACCORDINGLY. REVISIONS WILL BE ANALYZED PER RECOMMENDATIONS DIRECTED BY A REGISTERED ENGINEER.

ALL EXCAVATIONS MUST BE FREE OF LOOSE SOIL AND DEBRIS PRIOR TO FOUNDATION INSTALLATION AND CONCRETE BACKFILL PLACEMENT. TEMPORARY CASINGS OR DRILLERS SLURRY MAY BE USED TO STABILIZE THE EXCAVATION DURING INSTALLATION. CASINGS MUST BE REMOVED DURING CONCRETE BACKFILL PLACEMENT. CONCRETE BACKFILL MUST BE PLACED WITH A TREMIE WHEN SLURRY OR WATER IS PRESENT WITHIN THE EXCAVATION.

CONTRACTOR MUST BE FAMILIAR WITH THE COMPLETE SOIL INVESTIGATION REPORT AND BORINGS, AND CONTACT THE GEOTECHNICAL FIRM (IF NECESSARY) TO UNDERSTAND THE SOIL CONDITIONS AND THE POSSIBILITY OF GROUND WATER PUMPING AND EXCAVATION STABILIZATION OR BRACING DURING PRECAST BASE INSTALLATION AND PLACEMENT OF CONCRETE BACKFILL.

CONCRETE:
CONCRETE SHALL BE AIR-ENTRAINED AND HAVE A MINIMUM COMPRESSIVE DESIGN STRENGTH AT 28 DAYS OF 3,000 PSI. 3,000 PSI CONCRETE SPECIFIED FOR EARLY POLE ERECTION, ACTUAL REQUIRED MINIMUM ALLOWABLE CONCRETE STRENGTH IS 1,000 PSI. ALL PIERS AND CONCRETE BACKFILL MUST BEAR ON AND AGAINST FIRM UNDISTURBED SOIL.

GENERAL NOTES:
FIXTURES MUST BE LOCATED TO MAINTAIN 10'-0" MINIMUM HORIZONTAL CLEARANCE FROM ANY OBSTRUCTION. ENGINEER MUST BE NOTIFIED IF FOUNDATIONS ARE NEAR ANY RETAINING WALLS OR WITHIN / NEAR ANY SLOPES STEEPER THAN 3H : 1V. POLES, FIXTURES, PRECAST BASES, ELECTRICAL ITEMS AND INSTALLATION PER MUSCO LIGHTING.

KYLE G. LACINA STRUCTURAL No. 46148 REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS

LAKE VIEW PLAYGROUND ATHLETIC LIGHTING WORCESTER, MA

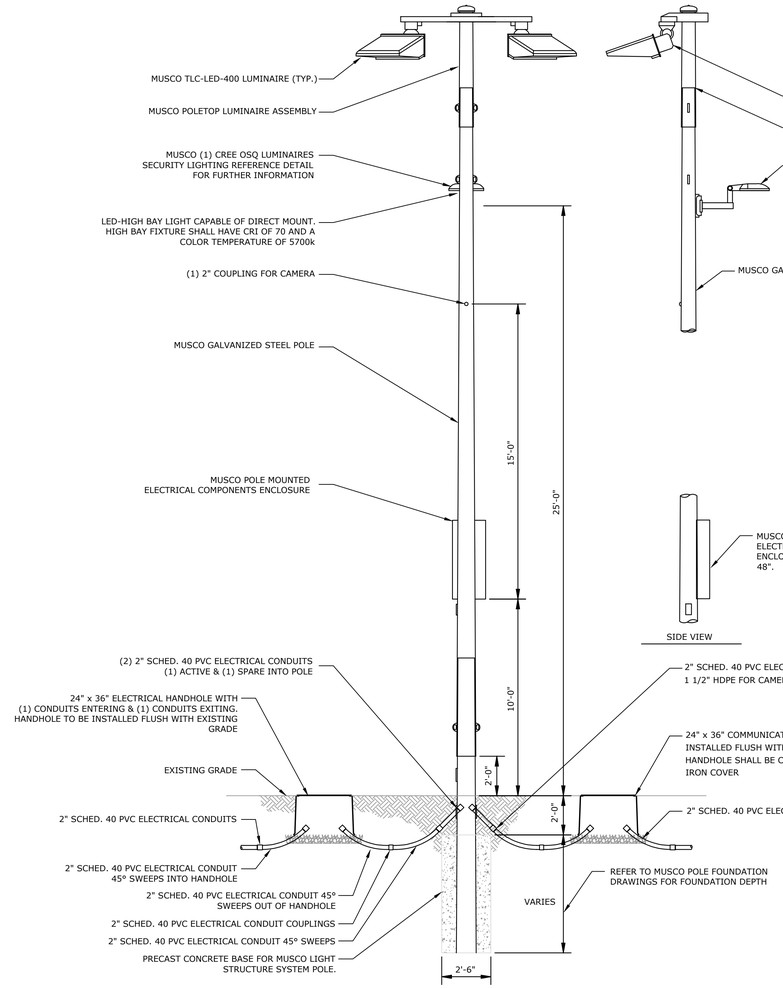
musco Lighting
COMPONENT SUPPLY 1 MUSCO PARK WEST OSKALOOSA, IA 52577 (800) 825-6030

STRUCTURAL ENGINEERS, P.C.
114 NICHOLAS DRIVE
MARSHALLTOWN, IOWA 50158
PHONE NUMBER: 641-752-6334
EMAIL: KEL.INFO@SBCGLOBAL.NET

DRAWING TITLE: POLE AND FOUNDATION
SCALE: SEE PLAN
NOTES: SCAN #239460B

PROJECT NUMBER: 239460
DATE: 08 NOVEMBER 2024
DRAWING NUMBER: C1
OF ONE

USE OR REPRODUCTION OF THIS INFORMATION OTHER THAN ITS INTENDED PURPOSE FOR THIS PROJECT IS PROHIBITED WITHOUT WRITTEN CONSENT FROM MUSCO SPORTS LIGHTING, LLC.



PROPOSED SPORTS LIGHTING POLE INSTALLATION DETAIL NTS

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD • WORCESTER, MA 01605
508-852-2644 • info@edlandarch.com

ART Engineering
we build the future.
38 Front Street, FL 3, Worcester, MA 01608
www.artengineering.us

COMMONWEALTH OF MASSACHUSETTS AZIM S. RAWJI No. 41765 REGISTERED PROFESSIONAL ELECTRICAL ENGINEER

PROJECT:
LAKE VIEW PLAYGROUND IMPROVEMENTS

CLIENT:
CITY OF WORCESTER

DATE: 11-22-24

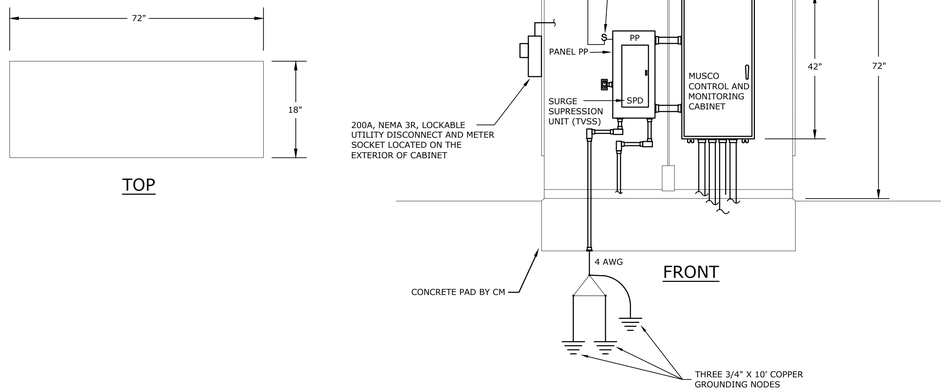
REVISIONS:

NO.	DATE	DESCRIPTION

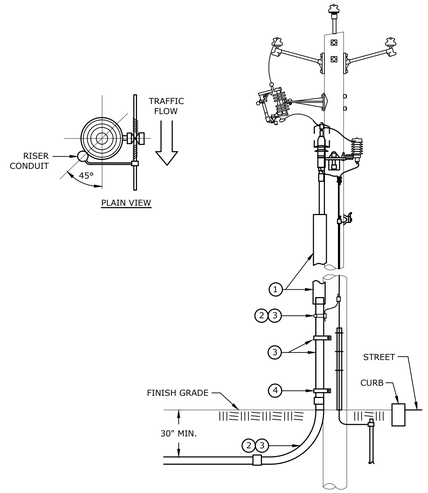
N

ELECTRICAL DETAILS

SHEET E-9



LIGHTING CONTROL PANEL AND ENCLOSURE DETAIL — NTS



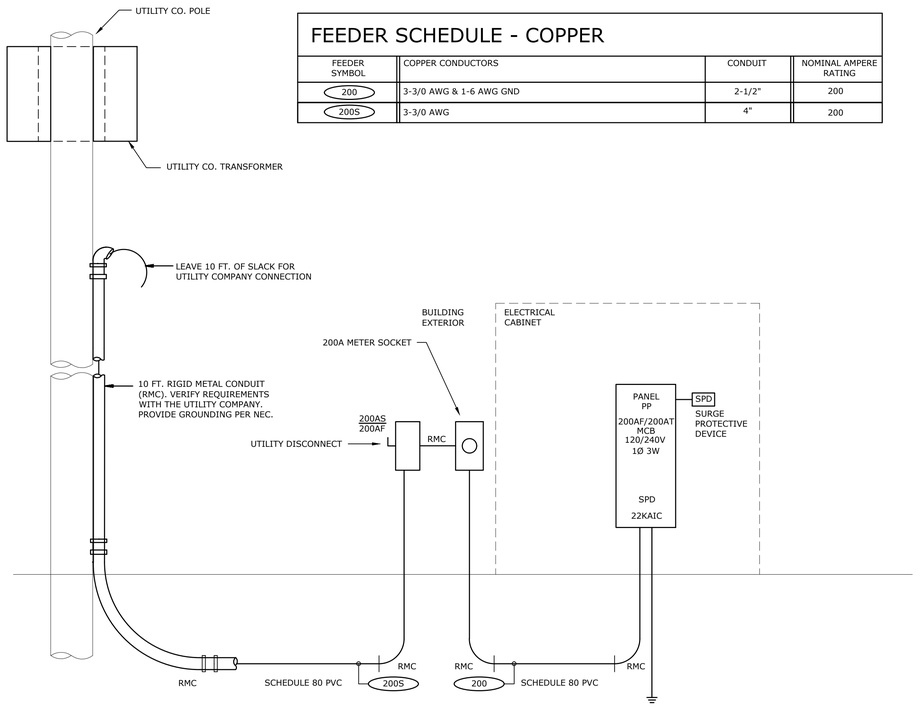
TYPICAL POLE RISER DETAIL — NTS

RISER POLE NOTES:

1. THE UTILITY COMPANY SHALL DESIGNATE CONDUIT RISER LOCATION ON THE POLE. ALL PRIMARY RISERS SHALL BE GALVANIZED STEEL, THIS INCLUDES THE 90 DEGREE SWEEP. PER NEC ALL STEEL RISERS MUST BE BONDED 6" DOWN FROM TOP OF RISER AND THE BOND MUST BE AT LEAST 8' HIGH FROM FINISHED GRADE.
2. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND INSTALLING THE BOND CLAMPS AND THE TAP. THE UTILITY COMPANY WILL MAKE THE BOND CONNECTION FROM THAT RISER BOND TAP TO THE GROUND SYSTEM ON THE POLE. SPARE RISER SWEEP SHALL BE BONDED ALSO. RISER SWEEP IN DIRECT BURIED APPLICATIONS SHALL BE CONCRETE ENCASED.

KEYED NOTES

1. U GUARD
2. GALVANIZED STEEL CONDUIT AND BEND ARE TO BE USED, THEY SHALL BE GROUNDED BY BONDING TO AN APPROVED U-BOLT TYPE GROUND CLAMP 6"(150mm) FROM TO OF THE CONDUIT. A 24" (600mm) CONDUCTOR SHALL BE PROVIDED TO EXTEND TO THE UTILITY COMPANY'S GROUNDING CONDUCTOR. THE CONDUCTOR SHALL BE SIZED AS REQUIRED BY THE NATIONAL ELECTRICAL CODE. ARTICLE 250, BUT IN NO CASE SHALL IT BE SMALLER THAN #4 AWG COPPER. USE CORROSION RESISTANT BENDS IN LOCATIONS SUBJECT TO HIGHWAY SALTING.
3. GALVANIZED STEEL CONDUIT, GALVANIZED STEEL SWEEP, ATTACHMENT CLAMPS, GROUNDING CLAMP AND 24" GROUNDING CONDUCTOR SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL SUBCONTRACTOR. NORMALLY, THE CONDUIT SHALL RISE ON THE SIDE OF THE POLE AWAY FROM TRAFFIC UP TO 8 FT. (2.5m) TO 11 FT. (3.4m). CONSULT UTILITY COMPANY FOR PROPER LOCATION ON POLE.
4. PIPE STRAPS, INSTALL AT NOT MORE THAN 30" (750mm) INTERVALS.
5. THE CONDUIT BURIAL DEPTH SHALL BE 30" (750mm) MINIMUM.



DISTRIBUTION RISER — NTS

FEEDER SCHEDULE - COPPER

FEEDER SYMBOL	COPPER CONDUCTORS	CONDUIT	NOMINAL AMPERE RATING
200	3-3/0 AWG & 1-6 AWG GND	2-1/2"	200
200S	3-3/0 AWG	4"	200

NOTES:

1. THE ELECTRICAL SUBCONTRACTOR SHALL VERIFY THE CONDUIT LAYOUT WITH THE UTILITY COMPANIES PRIOR TO INSTALLATION.
2. THE PRIMARY ELECTRICAL CONDUITS SHALL BE ENCASED IN MIN. 3" OF 3000 PSI CONCRETE, COMPLY WITH UTILITY COMPANY REQUIREMENTS FOR REBAR AND STIRRUP REQUIREMENTS.
3. ALL OTHER CONDUITS SHALL BE ENCASED IN 3" OF 3000 PSI CONCRETE WHEN CROSSING ROADWAYS, DRIVEWAYS AND OTHER VEHICULAR TRAFFIC AREAS.
4. EXCAVATION, CONCRETE AND BACKFILLING SHALL BE BY THE GENERAL CONTRACTOR. CONDUIT AND WIRING SHALL BE BY THE ELECTRICAL SUBCONTRACTOR.
5. HANDHOLES SHALL BE AASHTO 20 RATED WITH BOLTED HEAVY DUTY COVERS. COVERS SHALL READ "ELECTRIC", "TELEPHONE" OR "CATV" DEPENDING ON THE APPLICATION.
6. CONDUITS SHALL BE SCHEDULE 80 PVC, UNLESS NOTED OTHERWISE.
7. ALL SWEEPS AT FOUNDATIONS AND RISERS SHALL HAVE A MINIMUM RADIUS OF 36". THE RISER SWEEP SHALL BE GALVANIZED STEEL.

ELECTRICAL CABINET

PROVIDE OUTDOOR NE MA 3R STAINLESS STEEL, TO CONTAIN 120/240V PANELBOARDS, RECEPTACLES, ETC. FOR POWER, WITH SPACE FOR FUTURE EQUIPMENT.

CONTRACTOR TO SIZE CABINET TO COORDINATE WITH SIZES OF PANELBOARD AND EQUIPMENT TO BE INSTALLED WITHIN CABINETS. DIMENSIONS SHOWN ARE TYPICAL AND ARE FOR REFERENCE ONLY. CABINET TO BE SIMILAR TO CABINETS INSTALLED AT THE RECENTLY RENOVATED PARKS (LIST PROVIDED UPON REQUEST). CABINET TO INCLUDE ALL EQUIPMENT SHOWN OR IMPLIED AND ALL EQUIPMENT SHALL BE INSTALLED INSIDE OF CABINET WITHOUT PHYSICAL CONFLICTS AND PER NEC. CABINET TO BE SIZED FOR ALL NECESSARY CONDUITS, WHETHER ACTIVE, SPARE OR FUTURE AS LISTED ON PANELBOARD SCHEDULES.

CABINETS TO BE MANUFACTURED FROM 11 GAUGE MINIMUM STAINLESS STEEL WITH 12 GAUGE STEEL PANEL, MOUNTED INSIDE. CABINETS TO HAVE INTEGRAL KEYED LOCKING MECHANISM, KEYED ALIKE, WITH PROVISION FOR PAD-LOCK. CABINETS SHALL BE VENTILATED TYPE AND FACTORY PAINTED BLACK POWDER-COAT. CABINETS TO HAVE DOOR HOLD-OPEN LATCHES.

New Panel

PP

MOUNTING SURFACE
FED FROM UTILITY

VOLTS 240/120V 2P 3W
BUS AMPS 200
NEUTRAL 100%

MAIN BKR 200
LUGS STANDARD
AIC 22,000

CKT #	CKT BKR	CIRCUIT DESCRIPTION		CKT #	CKT BKR	CIRCUIT DESCRIPTION
1	20/2	MUSCO SPORTS LIGHTS – WIRED VIA MUSCO LIGHTING CONTROLS	a	2	20/1	RECEPTACLE – CAMERA
3	|		b	4	20/1	RECEPTACLE – CAMERA
5	20/2	MUSCO SPORTS LIGHTS – WIRED VIA MUSCO LIGHTING CONTROLS	a	6	20/1	RECEPTACLE – CAMERA
7	|		b	8	20/1	RECEPTACLE – CAMERA
9	20/2	MUSCO SECURITY LIGHTS – WIRED VIA MUSCO LIGHTING CONTROLS	a	10	20/1	RECEPTACLE – CAMERA
11	|		b	12	20/1	RECEPTACLE – CAMERA
13	20/1	PATHWAY LIGHTING – WIRED VIA MUSCO LIGHTING CONTROLS	a	14	20/1	RECEPTACLE – CAMERA
15	|		b	16	20/1	RECEPTACLE – CAMERA
17	20/1	GAZEBO LIGHTING – WIRED VIA MUSCO LIGHTING CONTROLS	a	18	20/1	EXHAUST FAN
19	20/1	GAZEBO–RECEPTACLE–WIRED VIA MUSCO LIGHTING CONTROLS	b	20	20/1	SPARE
21	20/1	SPARE	a	22	20/1	SPARE
23	20/1	SPARE	b	24	20/1	SPARE
25	20/1	SPARE	a	26	20/1	SPARE
27	–/1	SPACE	b	28	–/1	SPACE
29	–/1	SPACE	a	30	–/1	SPACE
31	–/1	SPACE	b	32	–/1	SPACE
33	–/1	SPACE	a	34	–/1	SPACE
35	–/1	SPACE	b	36	–/1	SPACE
37	–/1	SPACE	a	38	–/1	SPACE
39	–/1	SPACE	b	40	–/1	SPACE
41	–/1	SPACE	a	42	–/1	SPACE

GENERAL NOTES

1. ALL RACEWAY SHALL BE CONCEALED UNLESS OTHERWISE NOTED. PROVIDE PULL STRINGS FOR ALL RACEWAYS. COORDINATE ROUTING OF ALL EXPOSED CONDUITS WITH THE ARCHITECT.
2. THE SIZES OF ELECTRICAL RACEWAY SHALL BE AS INDICATED ON THE CONTRACT DRAWINGS AND SHALL MEET THE REQUIREMENTS OF THE LOCAL ELECTRIC CODE, 1" MINIMUM, OR AS SHOWN ELSEWHERE.
3. CONDUIT FOR WIRING CONCEALED IN FLOOR SLABS, OR BELOW GRADE SHALL BE 1" MINIMUM.
4. ALL WORK INCLUDING DEVICES, OUTLETS, FIXTURES, WIRING, CONDUIT, RACEWAY, EQUIPMENT, ETC SHOWN ON THE ELECTRICAL PLANS IS NEW WORK AND SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL SUBCONTRACTOR OR THEIR SUB-CONTRACTORS, UNLESS NOTED OTHERWISE.
5. ALL NEW OUTLETS, DEVICES, FIXTURES, WIRING, CONDUIT, RACEWAY, EQUIPMENT, ETC SHOWN ON THE ELECTRICAL PLANS SHALL BE PROVIDED WITH ALL PARTS AND ACCESSORIES FOR A COMPLETE INSTALLATION.
6. ALL WIRE AND CABLE FOR POWER, LIGHTING, CONTROL INDICATION, ALARM, SIGNAL AND COMMUNICATION SYSTEM, UNLESS OTHERWISE NOTED, SHALL HAVE TYPE THHN INSULATION AND SHALL BE RATED FOR 600V MINIMUM.
7. MINIMUM WIRE SHALL BE #12. ALL WIRING SHALL BE NEW, UNLESS NOTED OTHERWISE. WIRING IN EXCESS OF 70 FEET FOR 120/208V AND 165 FEET FOR 277/480V MUST BE SIZED FOR VOLTAGE DROP. UPGRADE FEEDER SIZES IN ACCORDANCE WITH THE NEC. LIMIT VOLTAGE DROP TO LESS THAN 3%. FEEDERS SHALL FOLLOW SIMILAR GUIDELINES AND BE LIMITED TO 2% DROP.
8. ALL WIRING INSTALLATION SHALL BE COLOR CODED AS PER THE ELECTRICAL CODE. ALL CONDUCTORS SHALL BE STRANDED TYPE.
9. CIRCUIT RUNS ARE SHOWN DIAGRAMMATICALLY ONLY AND SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT AND FIXTURES.
10. ALL WIRING, INCLUDING BUT NOT LIMITED TO VIDEO SURVEILLANCE SYSTEM, SOUND SYSTEM, ACCESS CONTROL, FIRE ALARM, LIGHTING CONTROL, LOW VOLTAGE SYSTEMS, DATA, VOICE, BRANCH CIRCUITS AND FEEDERS SHALL BE INSTALLED IN RIGID METAL CONDUIT WHERE EXPOSED. EMT IS ALLOWED IF NOT SUBJECT TO SEVERE PHYSICAL DAMAGE.
11. WIRING (NOT SHOWN) FOR THE VIDEO SURVEILLANCE SYSTEM, SOUND SYSTEM, ACCESS CONTROL, LIGHTING CONTROL, LOW VOLTAGE SYSTEMS, SHALL BE FURNISHED AND INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS, SEE ELECTRICAL SPECIFICATIONS FOR ADDITIONAL SCOPE OF WORK. EXPOSED WIRING SHALL BE INSTALLED IN RIGID METAL CONDUIT. EMT IS ALLOWED IF NOT SUBJECT TO SEVERE PHYSICAL DAMAGE.
12. CONDUITS SHALL BE TERMINATED SO AS TO PERMIT NEAT CONNECTIONS TO MOTORS AND OTHER EQUIPMENT.
13. CONDUIT AND WIRING (NOT SHOWN) FOR THE HVAC CONTROL EQUIPMENT AND MISCELLANEOUS DEVICES, OUTLET, SWITCHES, JUNCTION, PULL AND TERMINAL BOXES SHALL BE PROVIDED WITH NEMA ENCLOSURE SUITABLE TO THE ENVIRONMENT.
14. ALL WIRING DEVICES, PANEL BOARDS, DISTRIBUTION BOARDS, MOTORS, ETC., SHALL BE GROUNDED AS PER ELECTRIC CODE.
15. ALL WORK SHALL BE INSTALLED IN FULL ACCORDANCE WITH LOCAL, STATE & FEDERAL CODES, STATE AND LOCAL AUTHORITIES. FILE ALL PLANS, OBTAIN ALL PERMITS, PAY ALL FEES, SCHEDULE ALL INSPECTIONS, MAKE ALL TESTS AND OBTAIN ALL APPROVALS REQUIRED. THE ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST ADOPTED EDITION OF NATIONAL ELECTRIC CODE AND LOCAL AUTHORITIES HAVING JURISDICTION. ALL COMPONENTS SHALL BE UL LISTED.
16. WHERE CONFLICTS ARE FOUND BETWEEN DRAWINGS, SPECIFICATIONS, LAWS & ORDINANCES, THE MOST STRINGENT SHALL APPLY.
17. SUBMIT FOR APPROVAL, COMPLETE SHOP DRAWINGS, LIST OF MATERIALS AND DETAILED DATA OF EQUIPMENT GIVING THE MANUFACTURERS NAME, CATALOG NUMBER, SIZE, CAPACITY AND DIMENSIONS. SUBMIT SHOP DRAWINGS FOR APPROVAL ONLY AFTER VERIFYING ALL DIMENSIONS, CONFIRM THAT THE EQUIPMENT, DEVICES, FIXTURES, ETC. CAN BE INSTALLED WITHOUT MODIFICATIONS. NO EQUIPMENT SHALL BE INSTALLED OR FABRICATED WITHOUT OBTAINING APPROVAL. ANY MODIFICATIONS REQUIRED, SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
18. SUBMIT FOR APPROVAL PRODUCTS THAT ARE APPROVED EQUAL ONLY. IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL SUBCONTRACTOR TO VERIFY THAT THE SUBSTITUTED SYSTEMS ARE APPROVED EQUAL. IN THE EVENT THAT UNAPPROVED SYSTEMS ARE SUBMITTED FOR APPROVAL, THE ELECTRICAL SUBCONTRACTOR SHALL RETURN THESE SYSTEMS TO THE VENDOR AND FURNISH AND INSTALL APPROVED SYSTEMS AT NO ADDITIONAL COST TO THE OWNER.
19. ELECTRICAL SUBCONTRACTOR SHALL FURNISH AND INSTALL MOTOR STARTERS FOR ALL MOTORS, UNLESS CLEARLY INDICATED OTHERWISE ON THE CONTRACT DOCUMENTS. PROVIDE WITH NEMA ENCLOSURE SUITABLE TO THE ENVIRONMENT.THREE PHASE MOTORS SHALL BE PROVIDED WITH A COMBINATION MAGNETIC MOTOR STARTER WITH AMBIENT COMPENSATED OVERLOAD HEATERS IN EACH UNGROUNDED LEG. SHORT CIRCUIT AND GROUND FAULT PROTECTION SHALL BE BY FUSED DISCONNECT SWITCH AS SHOWN OR SPECIFIED. PROVIDE (1) SET OF NO AND (1) SET OF NC AUXILIARY CONTACTS.
20. MANUALLY CONTROLLED SINGLE PHASE MOTORS SHALL HAVE FULLY RATED MANUAL MOTOR STARTER SWITCHES WITH O.L. HEATERS IN EACH UNGROUNDED LEG.
21. THE WIRING DIAGRAMS, QUANTITY AND SIZE OF WIRES AND CONDUIT REPRESENT A SUGGESTED ARRANGEMENT BASED UPON SELECTED STANDARD COMPONENTS OF ELECTRICAL EQUIPMENT. MODIFICATIONS ACCEPTABLE TO THE ENGINEER MAY BE MADE BY THE CONTRACTOR TO ACCOMMODATE EQUIPMENT ACTUALLY PURCHASED.
22. ALL PANELBOARDS SHALL BE MOUNTED SO THAT THE DISTANCE FROM THE TOP CIRCUIT BREAKER OPERATING HANDLE TO THE FLOOR SHALL NOT EXCEED 6'-6".
23. ALL NON-LOCKING RECEPTACLES IN DAMP AND WET LOCATIONS SHALL BE GFCI AND LISTED AS WEATHER RESISTANT TYPE PER NEC.
24. SWITCHGEAR & PANEL DESIGNATIONS ARE INTENDED TO BE INTERPRETED AS INDICATED BELOW:
    - BLANK: CONTAINS NECESSARY BUS AND HARDWARE FOR FUTURE ADDITION OF BREAKERS OR STARTERS WITHIN SIZE RANGE SHOWN.
    - SPACE: CONTAINS NECESSARY BUS AND HARDWARE FOR FUTURE ADDITION OF BREAKERS OR STARTERS WITHIN SIZE RANGE SHOWN.
    - SPARE: CONTAINS A COMPLETE BREAKER OR STARTER INSTALLED, SIZE AS INDICATED AVAILABLE FOR FUTURE USE.
25. THE ELECTRICAL SUBCONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFICATION OF EXISTING ELECTRICAL SERVICES AND CONNECTION REQUIREMENTS. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY CONFLICTS OR DISCREPANCIES FOUND PRIOR TO BID.

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD • WORCESTER, MA 01605
508-852-2644 • info@edlandarch.com

ART Engineering
we build the future.
38 Front Street, FL 3, Worcester, MA 01608
www.artengineering.us

COMMONWEALTH OF MASSACHUSETTS
AZIM S. RAWJI
No. 41765
REGISTERED PROFESSIONAL ELECTRICAL ENGINEER

PROJECT:
LAKE VIEW PLAYGROUND IMPROVEMENTS

CLIENT:
CITY OF WORCESTER

DATE: 11-22-24

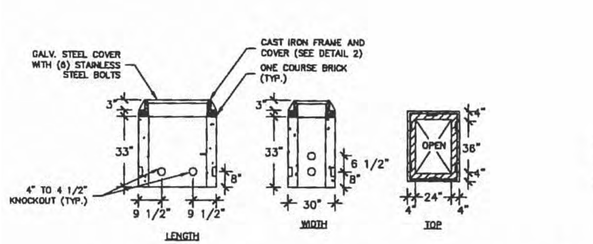
REVISIONS:

NO.	DATE	DESCRIPTION

N

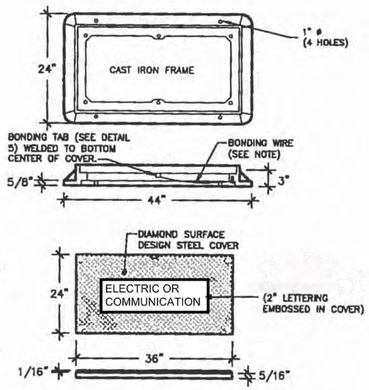
ELECTRICAL DETAILS

SHEET E-10



TYPICAL PRE-CAST CONCRETE HANDHOLE

NOT TO SCALE



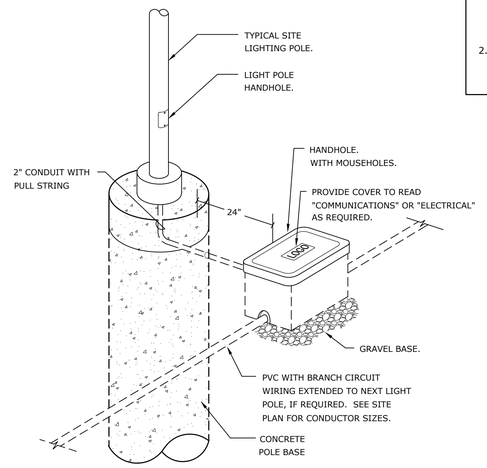
TYPICAL HANDHOLE COVER

NOT TO SCALE

NOTES:

1. ELECTRIC HANDHOLES ARE TO BE STRONG, LIGHTWEIGHT, AND NON-CONDUCTIVE, AND PROVIDED IN THE DIMENSIONS AS SHOWN ON THE CONTRACT DRAWINGS. ELECTRIC HANDHOLES SHALL BE ULTRAVIOLET (UV) RESISTANT, ALONG WITH BEING UNAFFECTED BY MOISTURE, FREEZING TEMPERATURES, SOIL, AND SUB-SOIL CHEMICALS. ELECTRIC HANDHOLES TO BE PRECAST CONCRETE, AS APPROVED BY ENGINEER. MINIMUM HANDHOLE SIZE IS 24"W X 36"L X 22"D (INSIDE DIMENSIONS)FOR COMMUNICATION HAND HOLES AND 10"WX18"X15"D FOR ELECTRIC HANDHOLES.
2. ELECTRIC HANDHOLES TO BE PRECAST CONCRETE. MINIMUM HANDHOLE SIZE IS 24"W X 36"L X 22"D (INSIDE DIMENSIONS)FOR COMMUNICATION HAND HOLES AND 10"WX18"X15"D FOR ELECTRIC HANDHOLES.
3. HANDHOLES SHALL BE PROVIDED WITH CAST IRON COVERS, WITH AN "ELECTRIC" LOGO FOR POWER AND "COMMUNICATIONS" LOGO FOR AUDIO, ETC. HANDHOLES AND COVERS SHALL BE DESIGN FOR STREET-RATED, HEAVY DUTY APPLICATIONS, MEETING THE REQUIREMENTS OF THE EITHER: AASHTO HS-20 OR ANSI/SCTE 77-2002 TIER 15 LOADING, WITH A MINIMUM DESIGN LOAD OF 15,000 LBS FOR BOTH THE HANDHOLE BOX AND COVERS SHALL MEET THE REQUIREMENTS OF THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE WITH REGARDS TO STRUCTURAL INTEGRITY, INSTALLATION METHODS, GROUNDING OF THE COVER AND METALLIC PARTS, ETC. HANDHOLES SHALL BE UL LISTED FOR THE INTENDED USE (MOISTURE AND FREEZE RESISTANT AND ABLE TO WITHSTAND SOIL CHEMICALS).
4. COLOR OF ELECTRIC HANDHOLES AND COVERS TO BE GREEN IN GRASS AREAS, AS APPROVED BY ENGINEER. HANDHOLES TO BE INSTALLED FLUSH WITH FINAL GRADE.
5. HANDHOLES FOR TELEPHONE AND CATV ARE TO BE PER THE LOCAL UTILITY REQUIREMENTS, WITH COVER LOGOS PER THE UTILITIES.
6. CONDUITS IN HANDHOLES SHALL BE SWEPT UP USING 45 DEGREE SWEEPS, TERMINATING A MINIMUM OF 4-INCHES ABOVE THE GRAVEL SUB-SURFACE. CONDUITS SHALL ENTER FROM EACH END, BELOW THE BOTTOM OF EACH HANDHOLE, WITHIN AN AREA 1/3 OF THE LENGTH FROM THE END OF THE HANDHOLE.
7. THE ELECTRICAL SUBCONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING ALL THE REQUIRED CONDUIT AND WIRING TO THE HANDHOLES.
8. THE ELECTRICAL SUBCONTRACTOR IS RESPONSIBLE FOR FURNISHING PRE-CAST HANDHOLES, TO BE INSTALLED BY GENERAL CONTRACTOR.

1	HANDHOLE DETAIL	*NTS*

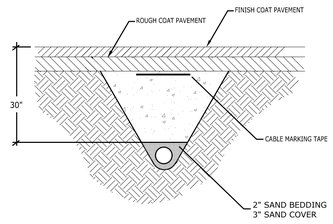


NOTES

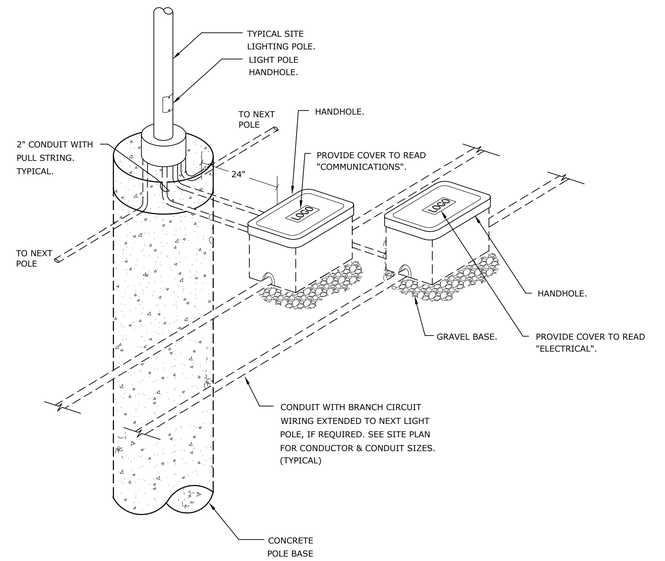
1. INSTALLATION TYPICAL FOR LANDSCAPED OR PAVED SIDEWALK AREAS. HANDHOLE SHALL NOT BE LOCATED IN TRAFFIC AREAS. COORDINATE COVER AND FRAME COLOR OF HANDHOLE.
2. PROVIDE IN-LINE, WATERPROOF FUSE HOLDER-BUSS "TRON", TYPE HEB OR HEX, AS REQUIRED.

NOTES

1. ALL SITE LIGHTING CONDUITS SHALL BE INSTALLED MINIMUM 36" BELOW FINISHED GRADE. CONDUITS IN NON PAVED AREAS SHALL BE SCHEDULE 80 PVC WITH 6" COMPACT SAND ALL SIDES. CONDUITS UNDER PAVED SURFACES, SIDEWALKS, DRIVEWAYS, AND ROADS SHALL BE EITHER GALVANIZED RIGID STEEL OR SCHEDULE 40 PVC WITH 3" CONCRETE ALL SIDES.



3	SITE LIGHTING / POWER CONDUIT DETAIL	*NTS*



3	HANDHOLE /CONDUIT AT POLE BASE DETAIL	*NTS*

earthdesign
LANDSCAPE ARCHITECTURE
280 BEVERLY ROAD • WORCESTER, MA 01605
508-852-2644 • info@edlandarch.com

ART Engineering
we build the future.
38 Front Street, FL 3, Worcester, MA 01608
www.artengineering.us

COMMONWEALTH OF MASSACHUSETTS
AZIM S. RAWJI
No. 41765
REGISTERED PROFESSIONAL ELECTRICAL ENGINEER

PROJECT:
LAKE VIEW PLAYGROUND IMPROVEMENTS

CLIENT:
CITY OF WORCESTER

DATE: 11-22-24

REVISIONS:

NO.	DATE	DESCRIPTION

N

ELECTRICAL DETAILS

SHEET E-11