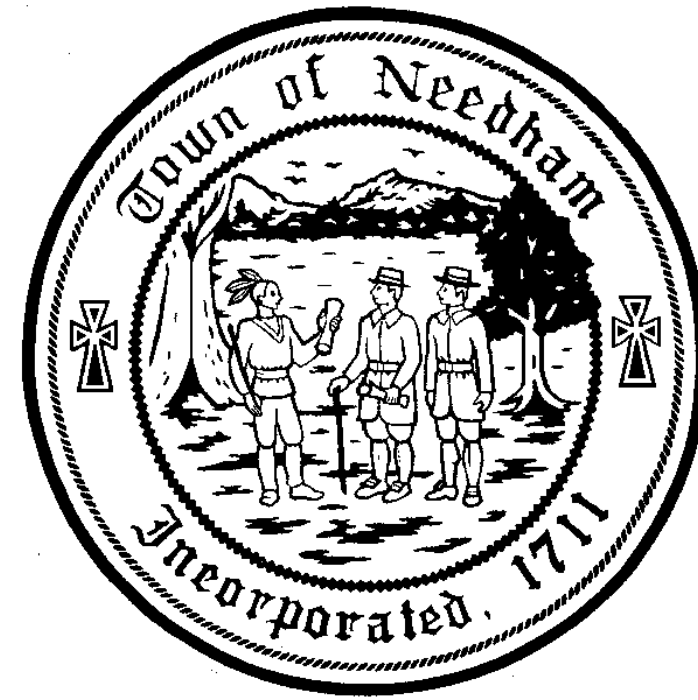


TOWN OF NEEDHAM, MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS

NEEDHAM TOWN COMMON RENOVATION OCTOBER 2021 REV. NOVEMBER , 2021



SELECT BOARD

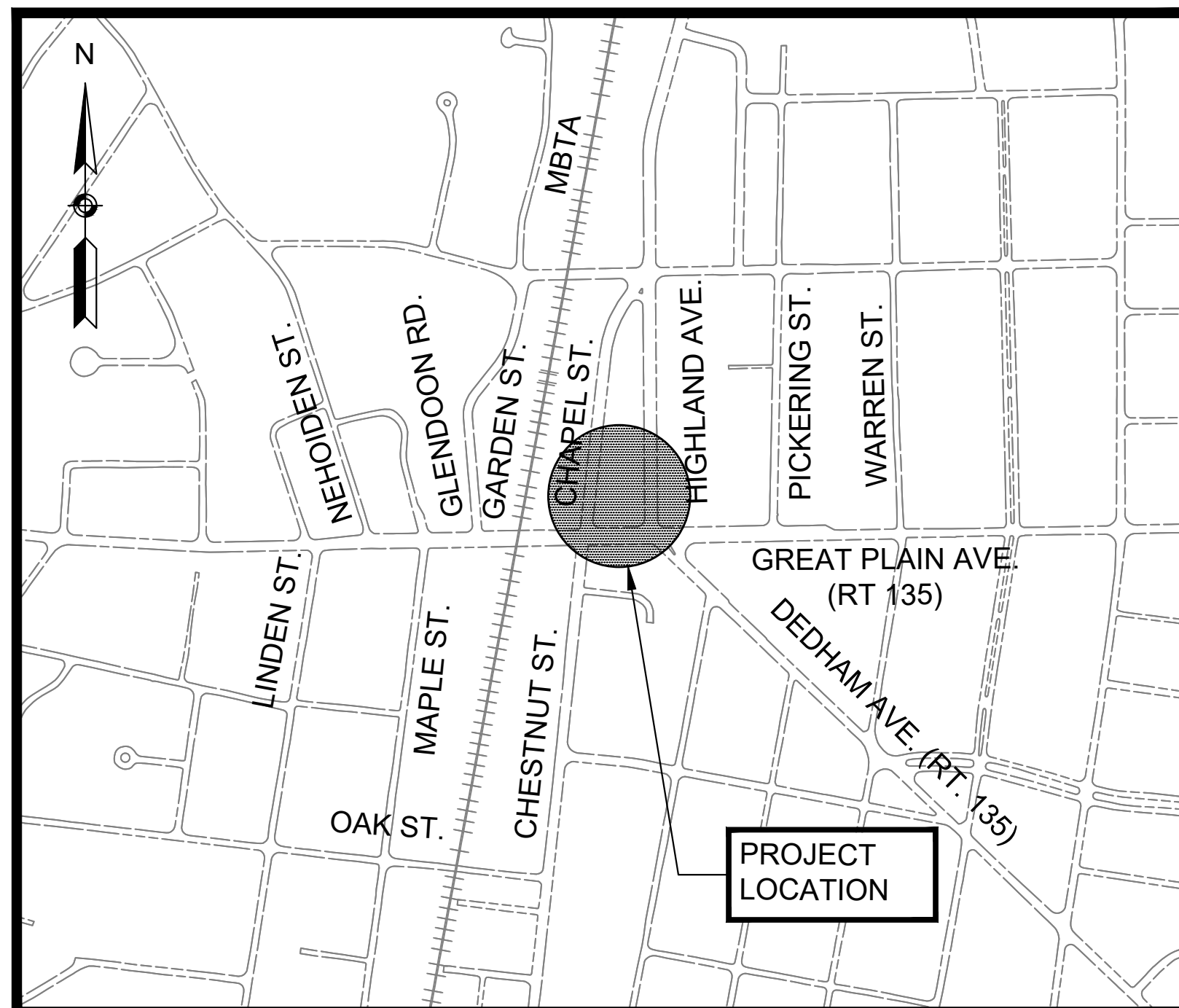
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 DANIEL P. MATTHEWS, MEMBER
 MARCUS NELSON, MEMBER

TOWN MANAGER

KATHLEEN P. FITZPATRICK

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 ROBERT A. LEWIS, ASSISTANT DIRECTOR
 EDWARD OLSEN, SUPERINTENDENT PARKS & FORESTRY



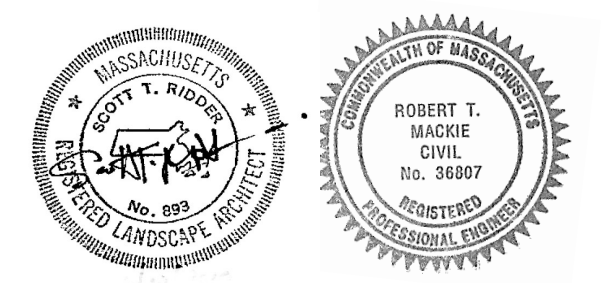
LOCATION MAP
1"=500'

PLAN INDEX

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET & INDEX
2	GENERAL NOTES
3	EXISTING CONDITIONS & SITE PREPARATION PLAN
4	LAYOUT & MATERIALS PLAN
5	GRADING & DRAINAGE PLAN
6	ELECTRICAL PLAN
7	IRRIGATION PLAN
8	IRRIGATION DETAIL
9	PLANTING PLAN
10	DETAILS
11	DETAILS
12	DETAILS
13	ELECTRICAL DETAILS
14	ELECTRICAL DETAILS
15	ELECTRICAL DETAILS
16	ELECTRICAL DETAILS
17	DETAILS
18	DETAILS

PERMIT SET

PREPARED BY:



Scott Ridder Bob Mackie 11-4-2021
 REGISTERED PROFESSIONAL DATE

GENERAL NOTES:

1. THE LOCATION OF SUBSURFACE UTILITIES SHOWN IS APPROXIMATE AND NOT GUARANTEED TO BE COMPLETE OR ACCURATE. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND ELEVATIONS OF EXISTING UTILITY LINES AND STRUCTURES PRIOR TO COMMENCEMENT OF WORK. THE CONTRACTOR MUST NOTIFY DIG SAFE PRIOR TO ANY EXCAVATION, DEMOLITION OR EXPLOSION WORK IN PUBLIC OR PRIVATE WAYS OR UTILITY COMPANY RIGHT-OF-WAY OR EASEMENT.
2. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR THE RESOLUTION OF THE CONFLICT.
3. THE CONTRACTOR SHALL ALTER THE MASONRY OF THE TOP SECTION OF ALL EXISTING DRAINAGE AND SANITARY STRUCTURES AS NECESSARY FOR THE CHANGES IN GRADE, AND RESET ALL WATER AND DRAINAGE FRAMES, GRATES AND BOXES TO THE PROPOSED FINISH SURFACE GRADE. REQUIRED NEW MASONRY SHALL BE CLAY BRICK CONFORMING TO M4.05.2.
4. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, CABLE TV, FIRE ALARM AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES. ALL UTILITY CASTING AND FIRE ALARM BOXES SHALL BE ADJUSTED TO FINISH GRADE BY THEIR RESPECTIVE OWNERS.
5. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
6. THE TERM "PROPOSED" (PROP.) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE AND RESET" (R&R).
7. ALL DRAINAGE STRUCTURES SHALL BE RETAINED UNLESS NOTED OTHERWISE.
8. ALL FRAMES AND GRATES FOR PROPOSED DRAINAGE STRUCTURES SHALL BE MUNICIPAL STANDARD.
9. UNLESS OTHERWISE NOTED EXISTING DRAINAGE LINES TO BE REPLACED SHALL BE ABANDONED IN PLACE. IF THEY CONFLICT WITH THE PROPOSED DRAINAGE LINES THEY SHALL BE REMOVED AS DIRECTED BY THE ENGINEER.
10. WHERE DRAINAGE PIPES OR STRUCTURES ARE ABANDONED IN PLACE THE CONTRACTOR SHALL MAKE SURE THAT ALL CONNECTING PIPES, INLETS AND OUTLETS ARE PLUGGED. ALL LIVE CONNECTIONS SHALL BE CONNECTED TO THE NEW SYSTEM.
11. ALL CURB TIE DIMENSIONS ARE TO THE FACE OF THE CURB.
12. PROPOSED SIDEWALKS AND WHEELCHAIR RAMPS SHALL BE CONSTRUCTED TO THE NEAREST SCORE LINE OR EXPANSION JOINT IN THE EXISTING ADJACENT WALK SURFACE AS DIRECTED BY THE ENGINEER.
13. PROPOSED SIDEWALK AT SIGNS, POLES AND OTHER FEATURES SHALL BE BOXED AND PROVIDED FLEXIBLE JOINT FILLER.
14. THE PROPOSED SIDEWALK GRADE SHALL MEET THE EXISTING GRADE AT ALL ADJOINING PAVEMENT ELEVATIONS UNLESS OTHERWISE NOTED ON THE PLAN.
15. PROPOSED SIDEWALK AND WHEELCHAIR RAMPS SCORE LINES AND EXPANSION JOINTS ARE SHOWN ON THE PLANS. THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER DURING CONSTRUCTION.
16. WHEN WORKING NEXT TO EXISTING PAVEMENT, WALLS, BERMS, AND OTHER STRUCTURES, CONTRACTOR SHALL EXERCISE EXTREME CAUTION NOT TO DISTURB THE EXISTING STRUCTURES. ANY DAMAGE TO THE EXISTING STRUCTURES SHALL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE.
17. ORNAMENTAL STREET LIGHTING LAYOUTS ARE SHOWN ON ELECTRICAL PLANS. THE DETAILS ARE SHOWN ON DETAIL SHEETS.
18. DUE TO THE PROJECT IN DOWNTOWN AREA, CONTRACTOR SHALL EXERCISE EXTREME CAUTION NOT TO DISTURB EXISTING SIDEWALK. THE CONTRACTOR SHALL MEET ALL EXISTING GRADES AT THESE LOCATIONS UNLESS OTHERWISE SHOWN ON THE PLAN.
19. SAFETY CONTROLS FOR CONSTRUCTION OPERATIONS SHALL BE IN ACCORDANCE WITH MASSDOT REQUIREMENTS AND THE LATEST VERSION OF THE MUTCD.
20. SURVEY BASE PLAN BY CHAPPELL ENGINEERING ASSOCIATES, LLC ON OCTOBER 2018.
21. THE SURVEY BASE PLAN ARE IN U.S. SURVEY FEET IN THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM REFERENCED TO THE NORTH AMERICAN DATUM OF 1983.
22. ELEVATIONS, IN U.S. SURVEY FEET, ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
23. PROPOSED TREE LOCATIONS ARE APPROXIMATE. THE CONTRACTOR SHALL STAKE TREES IN THE FIELD PRIOR TO INSTALLATION FOR APPROVAL BY THE ENGINEER.
24. LOCATION OF PROPOSED SHRUB PLANTINGS ARE APPROXIMATE. THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER PRIOR TO INSTALLATION.
25. THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN A MINIMUM LEVEL OF GENERAL STREET LIGHTING EQUIVALENT TO THE EXISTING CONDITION OVER THE COURSE OF THE PROJECT EITHER BY TEMPORARILY RETAINING SOME OF THE EXISTING LIGHTS AND/OR ACTIVATING PORTIONS OF THE NEW LIGHTING SYSTEMS. THE CONTRACTOR SHALL BE REQUIRED TO IDENTIFY HIS APPROACH IN HIS POST BID SCHEDULE.

WHEELCHAIR RAMP NOTES:

1. ALL WHEELCHAIR RAMPS SHALL CONFORM TO THE REQUIREMENTS OF THE ARCHITECTURAL ACCESS BOARD (A.A.B.) AND THE AMERICANS WITH DISABILITIES ACT (A.D.A.), AND THE TOWN OF NEEDHAM STANDARDS.
2. THE LOCATION OF PROPOSED WHEELCHAIR RAMP ARE SHOWN ON LAYOUT PLAN AND THE DETAILS, EXACT LOCATION MAY BE ADJUSTED, IF NECESSARY, BY THE ENGINEER IN THE FIELD.
3. PROPOSED WHEELCHAIR RAMPS SHALL HAVE DETECTABLE WARNING PANELS INSTALLED IN ACCORDANCE WITH AAB AND ADA STANDARDS. THE PANEL SHALL BE VARIED TO MEET OPENINGS OF THE RAMP AS SHOWN. THE PANEL SHALL BE GRANITE AND COLORED CALEDONIA.
4. IN INSTANCES WHERE AN EXISTING MANHOLE, HANDHOLE OR OTHER "SURFACE" TYPE STRUCTURE THAT CANNOT BE REMOVED OR RESET, IS WITHIN THE ACTUAL WHEELCHAIR RAMP PATH, THE STRUCTURE SHALL BE CAREFULLY ADJUSTED SUCH THAT THE TOPMOST SURFACES OF THE STRUCTURE COVER SHALL BE FLUSH WITH THE RAMP SURFACE AND SHALL MATCH THE SLOPE OF THE NEW WHEELCHAIR RAMP AS DIRECTED BY THE ENGINEER.

PAVEMENT NOTES:

PAVEMENT MILLING AND OVERLAY

SURFACE COURSE: 1 1/2" CLASS I BITUMINOUS CONCRETE TOP COURSE

PAVEMENT MILLING: 1 1/2" PAVEMENT MILLING

NOTE: 1.5" MAX LIFT BINDER COURSE FOR LEVELING IN AREAS NOT ABLE TO BE SHAPED WITH MILLING.

CONCRETE SIDEWALK, WHEELCHAIR RAMPS, AND DRIVEWAYS

SURFACE COURSE: 5" CEMENT CONCRETE

SUB BASE: 8" GRAVEL BORROW TYPE C (MIN.) OR COMBINATION OF EXISTING SUITABLE SUB BASE AS APPROVED BY THE ENGINEER.

HMA SIDEWALK

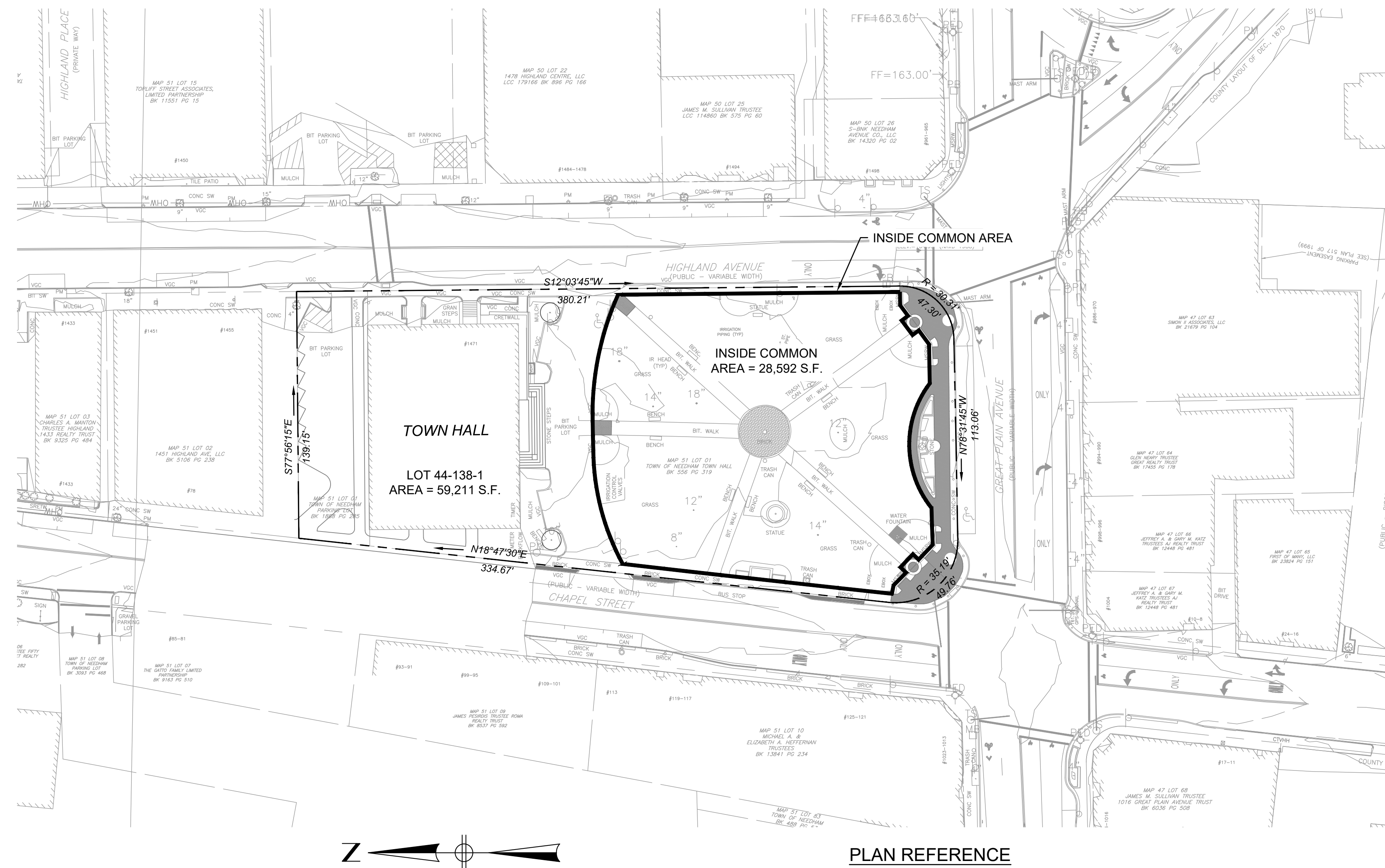
SURFACE COURSE: 3" HOT MIX ASPHALT (HMA) PAVEMENT PLACED IN TWO LAYERS, 1" TOP COURSE MATERIAL OVER 2" BINDER COURSE MATERIAL

BASE COURSE: 8" GRAVEL BORROW TYPE C (MIN.)

INSIDE COMMON AREA

COMMON AREA	Existing	Area %	PROPOSED	Area %
Paths and Walkways	4,121 s.f.	14.5 %	8,239 s.f.	28.8 %
Planted Areas	617 s.f.	2.1 %	1586 s.f.	5.5 %
Lawn Area	23,844 s.f.	83.4 %	18,767 s.f.	65.7 %
TOTAL	28,592 s.f.	100.0 %	28,592 s.f.	100.0 %

ENTIRE LOT	
LOT AREA %	EXISTING
Building	16.54%
Paved Areas	34.0%
Open Space	49.46%



PLAN REFERENCE

1. "1471 HIGHLAND AVENUE ZONING AS-BUILT PLAN OF LAND IN NEEDHAM, MA.", PREPARED BY JOHN A. HAMMER III, PLS. BILLERICA, MA., DATED SEPTEMBER 30, 2011, SHEETS 1 AND 2. NOTED AS BUILDING PERMIT No. B120100159.

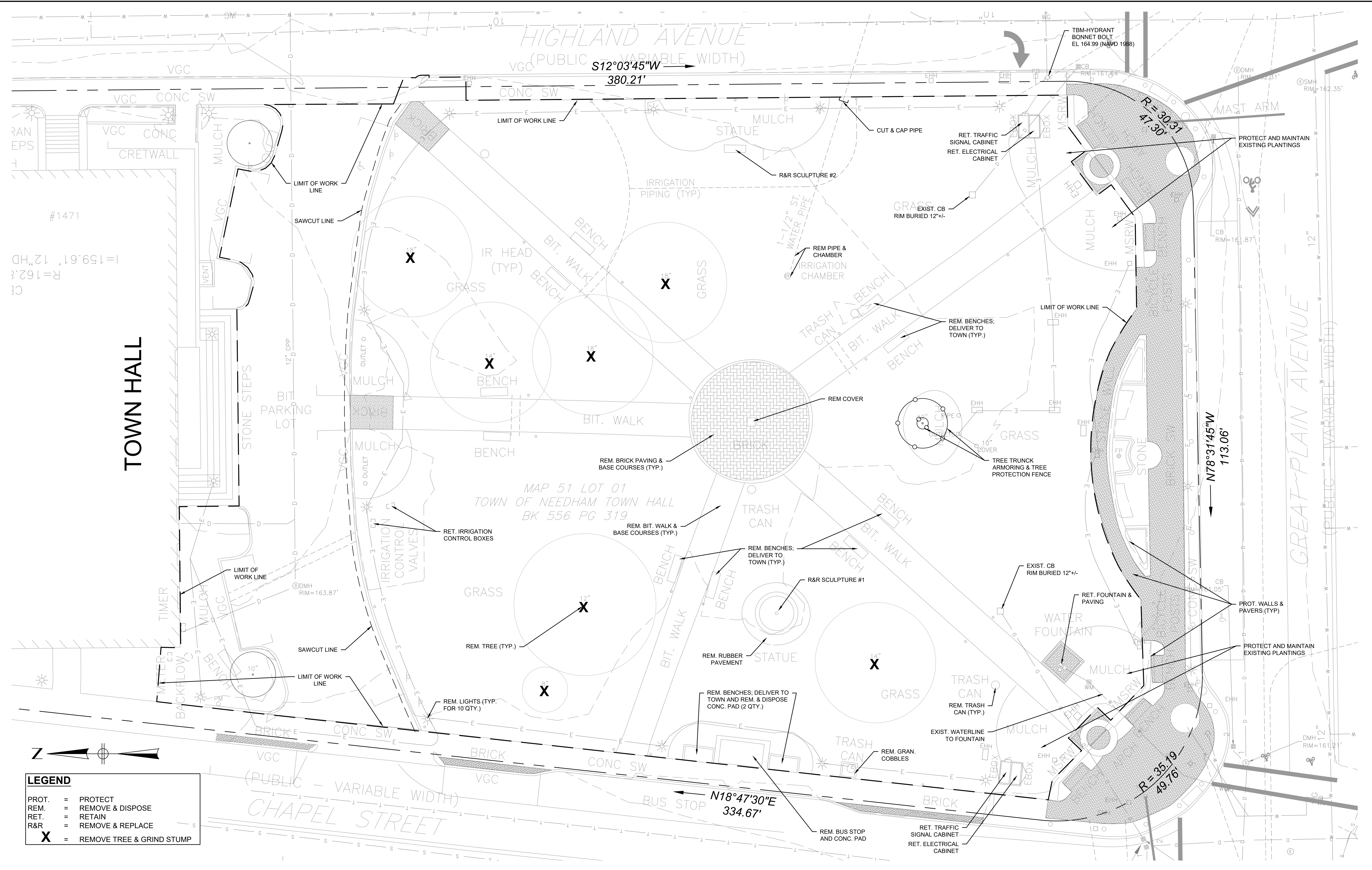
PROPERTY INFORMATION
SCALE: 1" = 40'

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DESIGNED BY: SR/NS										AS SHOWN		TOWN COMMON RENOVATION GENERAL NOTES NEEDHAM, MASSACHUSETTS		ISSUE DATE: NOV. 4, 2021	
CHECKED BY: SR/RM															
NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS											

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1/14/2021 9:27 AM C:\7100517185-NEEDHAM-TOWN COMMONDRAWING FILES\PLANS\SET17185 EXIST CONDITIONS DWG (BETA STB BW.STB)



LEGEND	
PROT.	= PROTECT
REM.	= REMOVE & DISPOSE
RET.	= RETAIN
R&R	= REMOVE & REPLACE
X	= REMOVE TREE & GRIND STUMP

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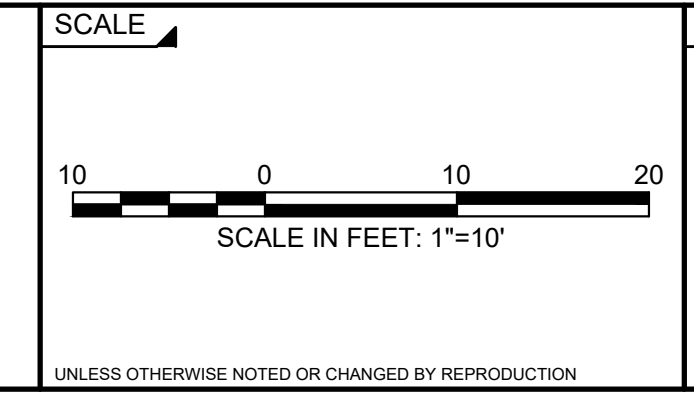
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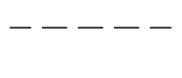



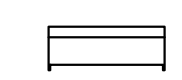



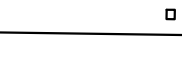

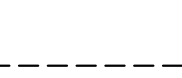




TITLE
TOWN COMMON RENOVATION
EXISTING CONDITIONS & SITE PREPARATION PLAN
NEEDHAM, MASSACHUSETTS

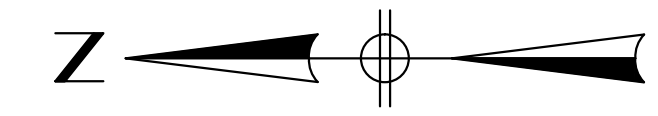
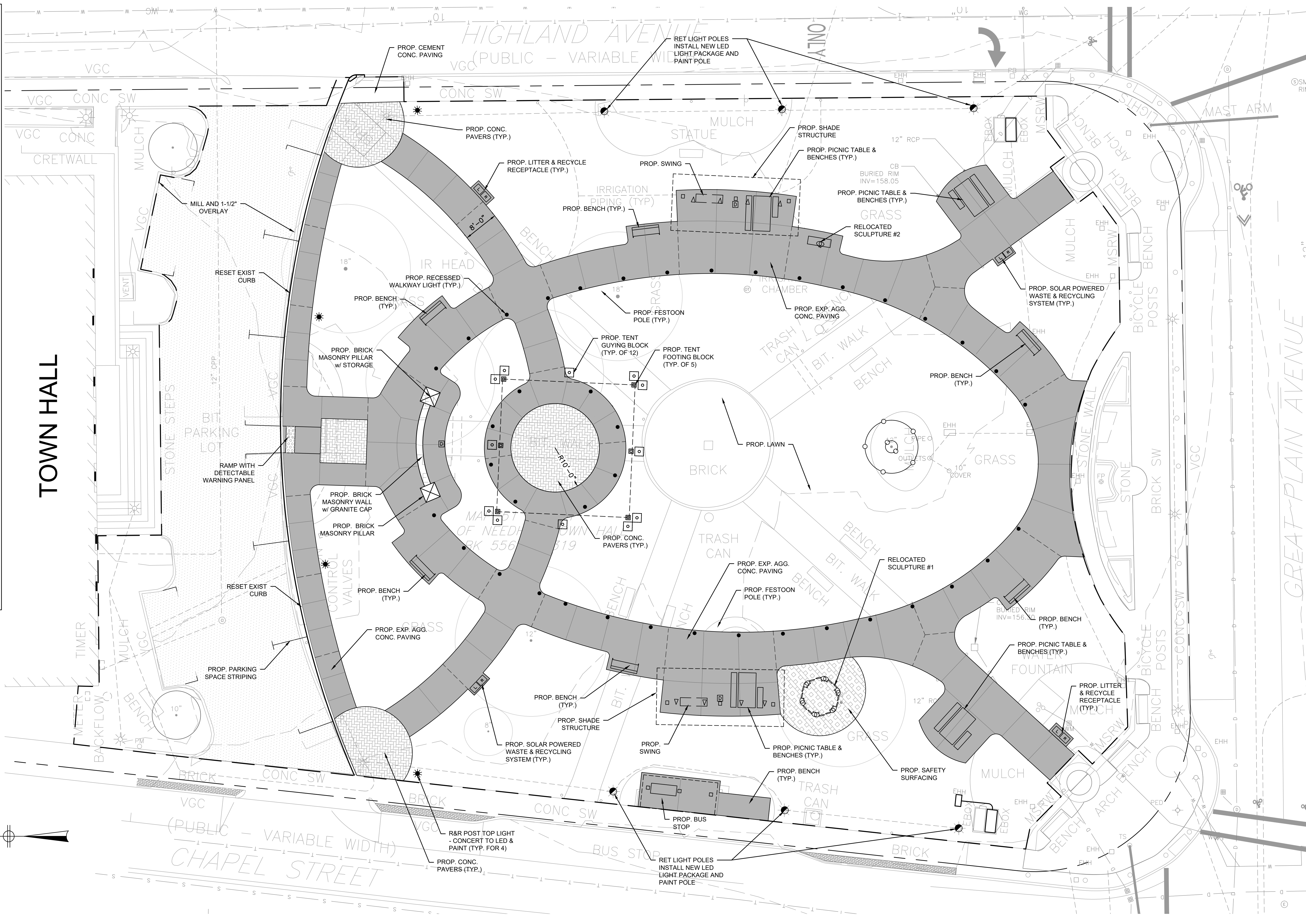
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ISSUE DATE NOV. 4, 2021
SHEET NO. 3

LANDSCAPE LEGEND:

HARDSCAPE

-  MILL & OVERLAY
-  CEM. CONC. PAVING
-  PAVERS
-  SAFETY SURFACE
-  EXPANSION JOINT
-  CONTROL JOINT (SAWCUT)
-  LANDSCAPE WALL
-  EDGE OF PAVEMENT
-  LANDSCAPE CURB
-  BENCH
-  LITTER AND RECYCLE RECEPTACLES
-  TENT ANCHOR
-  SHADE STRUCTURE WITH SWING BENCH
-  PICNIC TABLE
-  BUS SHELTER WITH BENCH
-  RELOCATED SCULPTURE #1 "CIRCLE OF PEACE"
-  RELOCATED SCULPTURE #2 "CHILDREN ON BENCH"

TOWN HALL



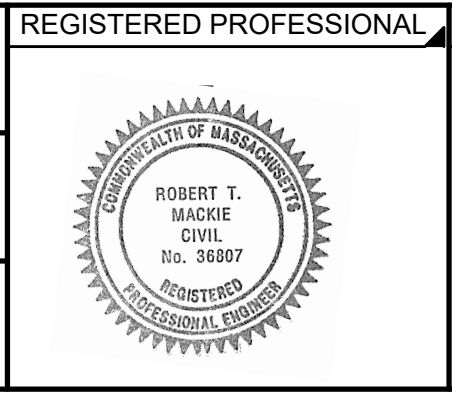
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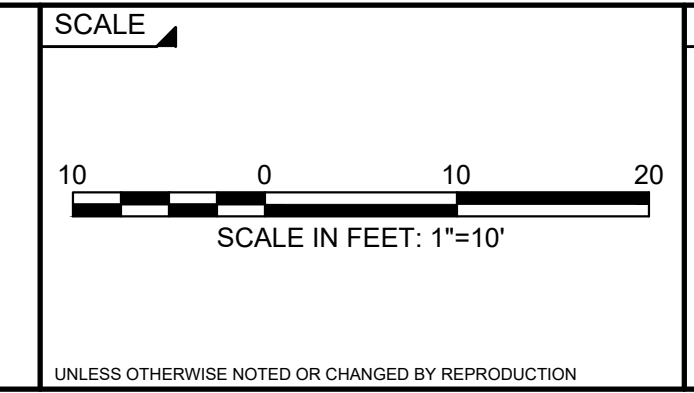
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TITLE

TOWN COMMON RENOVATION

LAYOUT & MATERIALS PLAN

NEEDHAM, MASSACHUSETTS

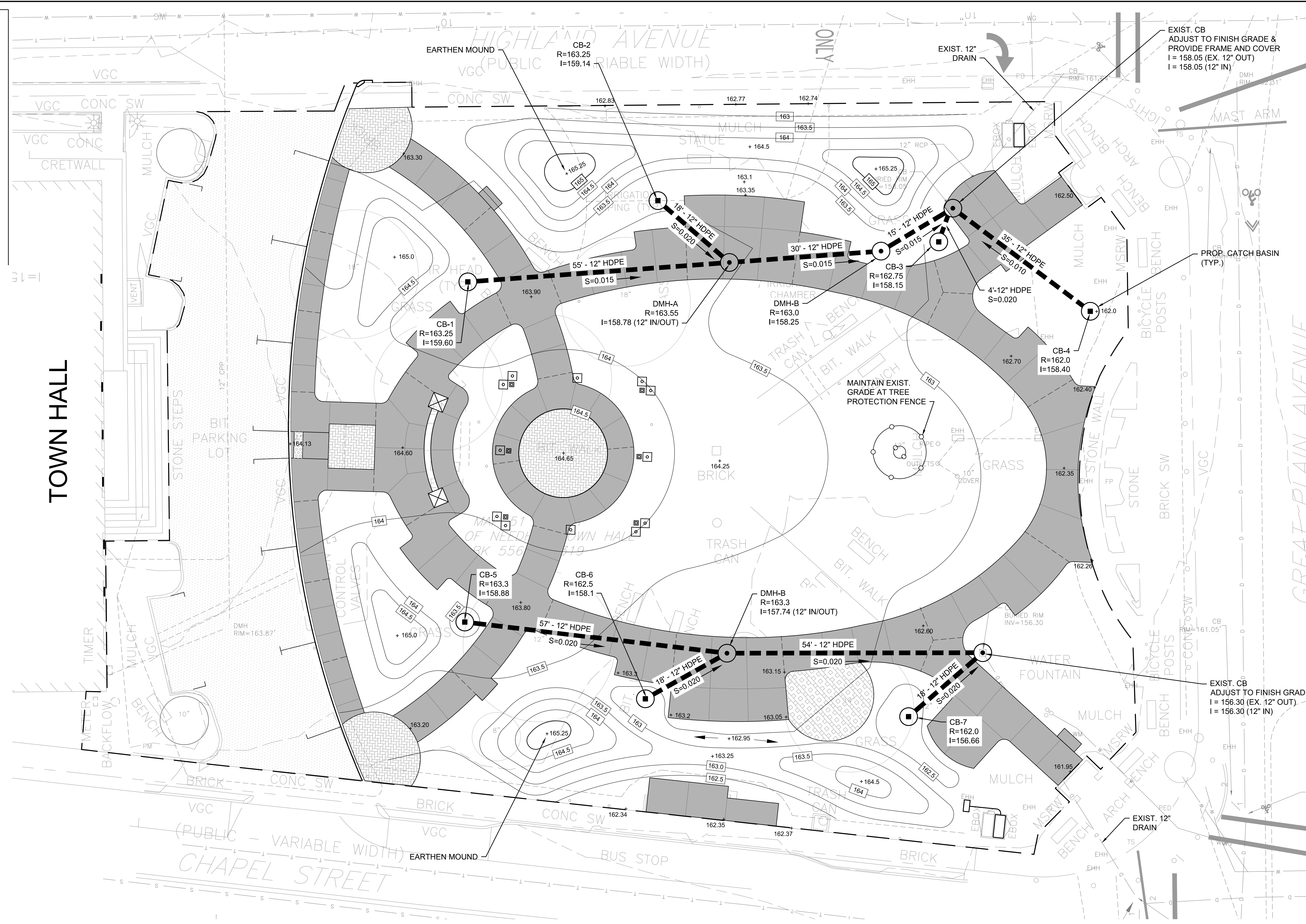
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ISSUE DATE NOV. 4, 2021

SHEET NO. 4

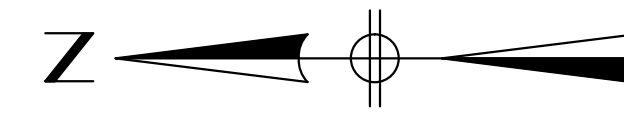
GRADING LEGEND:

- EXIST. CONTOUR MAJOR
- EXIST. CONTOUR MINOR
- PROP. CONTOUR MAJOR
- PROP. CONTOUR MINOR
- +164.25 PROP. SPOT GRADE
- PROP. MANHOLE
- PROP. CATCH BASIN



HIGHLAND AVENUE
(PUBLIC VARIABLE WIDTH)

CHAPEL STREET
(PUBLIC VARIABLE WIDTH)



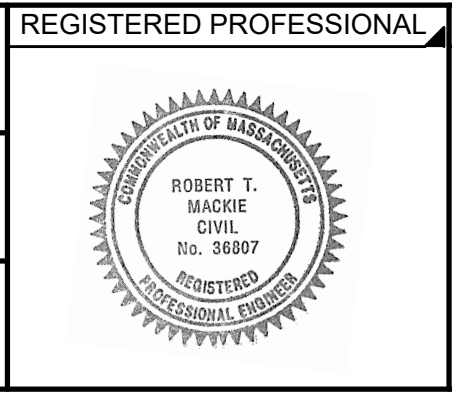
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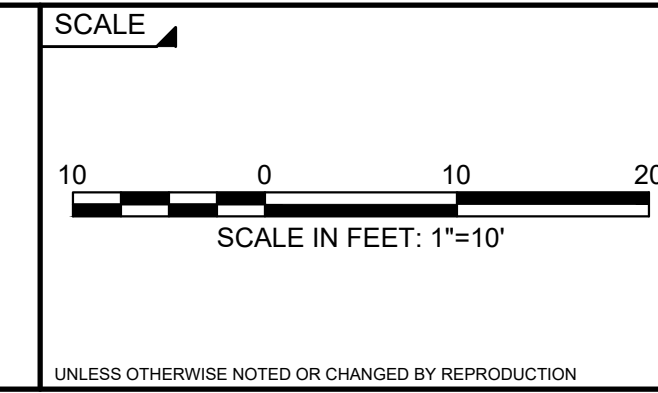
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SCALE

TITLE

TOWN COMMON RENOVATION

GRADING & DRAINAGE PLAN













NEEDHAM, MASSACHUSETTS

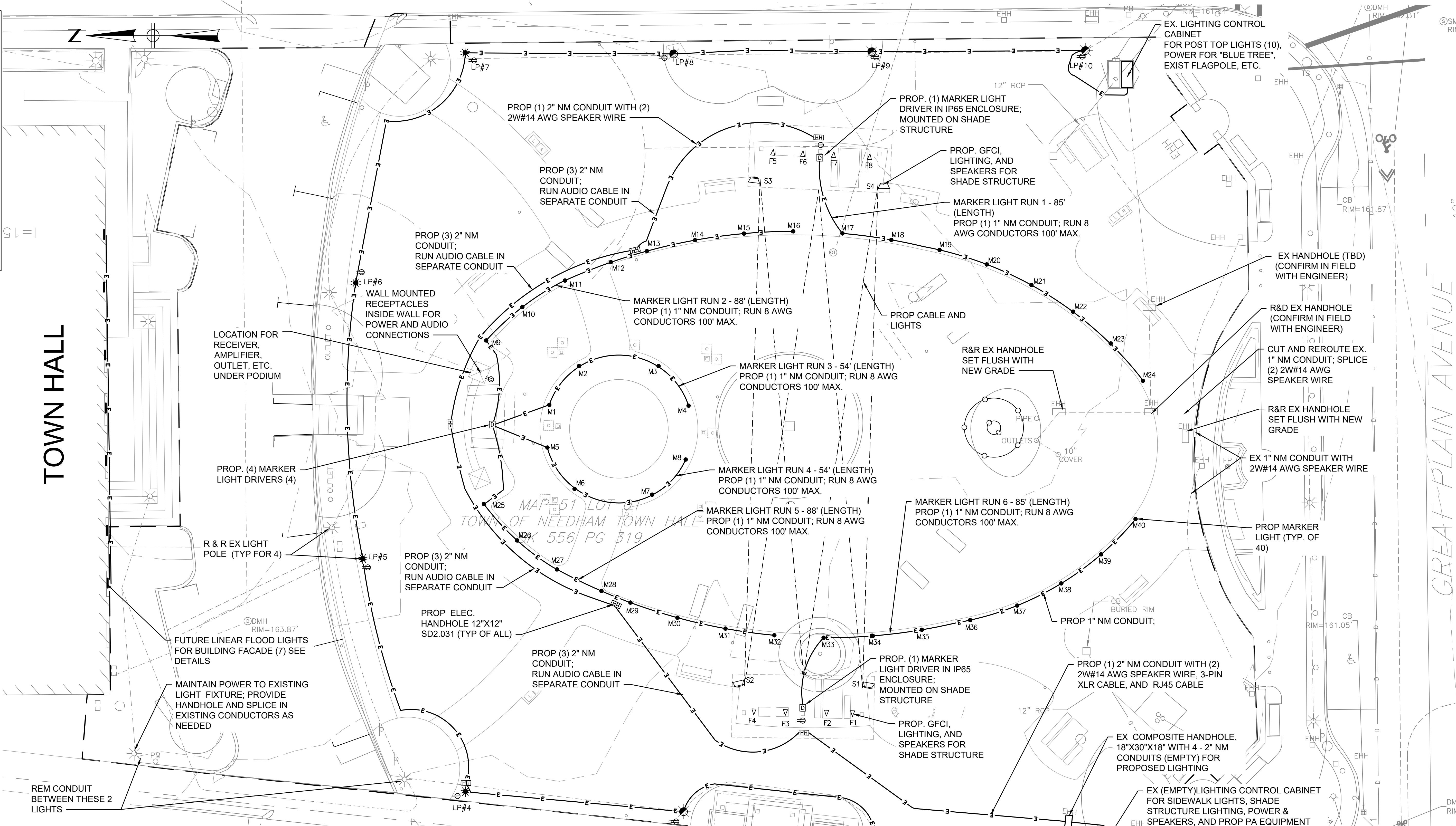
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ISSUE DATE NOV. 4, 2021

SHEET NO. 5

ELECTRICAL LEGEND

-  RET EXIST. LIGHT POLE & NEW 3,500 K LED
-  LIGHT POLE
-  HANDHOLE
-  CONDUIT
-  SHADE STRUCTURE LIGHT
-  GFCI RECEPTACLE
-  GROUND MOUNT GFCI
-  PATH LIGHT
-  BUILDING LIGHT
-  SPEAKERS
-  FESTOON POLE (A-F)
-  AIRPLANE WIRE





ELECTRICAL FIXTURE LEGEND/SCHEDULE

SYMBOL	QTY	MANUFACTURER	PART/MODEL	DESCRIPTION	VOLTAGE	LAMPS	OPTIONS
M	40	ZANEEN	L91545-NANO FULL INOX Roll Over 1W LED 3000K/4000K, 50lm	IN GROUND MARKER LIGHTS	120	1W	PROVIDE DRIVERS (DTM0200350ES) IN WATER TIGHT ENCLOSURES (ENCP11 ALUMINUM) AS NEEDED IN RUNS NOT TO EXCEED THE MANUFACTURERS RECOMMENDATIONS
F	8	ECOSENSE	F080 (CONFIGURATION TBD)	STRUCTURE FLOOD LIGHTS	120	TBD	MOUNT ON SHADE STRUCTURES
S	4	BOSE	FREESPACE FS2SE	SPEAKERS	N/A	N/A	MOUNT ON SHADE STRUCTURES; PULL 14 GAUGE SPEAKER WIRE AS NEEDED BACK TO THE SERVICE PANEL
L	7	LUMENPULSE	LUMENFACADE (CONFIGURATION TBD)	LINEAR BUILDING FLOOD LIGHTS	120	TBD	PROVIDE APPROPRIATE, CABLING, CBX BOX, AND LUMENTONE 2 CONTROL SYSTEM
LP	4	VISCO	UPGRADE TO LED (3500K) AND PAINT	TOWN STANDARD LIGHTPOLE	120	3,500K LED	EACH LIGHT POLE SHALL BE PROVIDED WITH A 120V DUPLEX RECEPTACLE.
EXIST. LP	6	VISCO	UPGRADE TO LED (3500K) AND PAINT	EXIST. TOWN STANDARD LIGHTPOLE	120	3,500K LED	EACH LIGHT POLE SHALL BE PROVIDED WITH A 120V DUPLEX RECEPTACLE.


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SCALE

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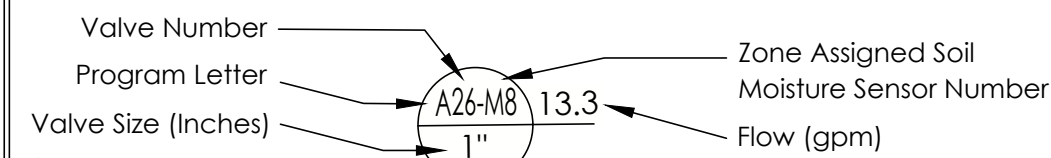
TITLE

TOWN COMMON RENOVATION
ELECTRICAL PLAN
NEEDHAM, MASSACHUSETTS

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ISSUE DATE NOV. 4, 2021
SHEET NO. 6

1/14/2021 9:35 AM O:\710057185-NEEDHAM-TOWN COMMONDRAWING FILES\PLANS\SET\7185 UTILITY PLAN.DWG (BETA STB BNW STB)

GENERAL IRRIGATION STRATEGY

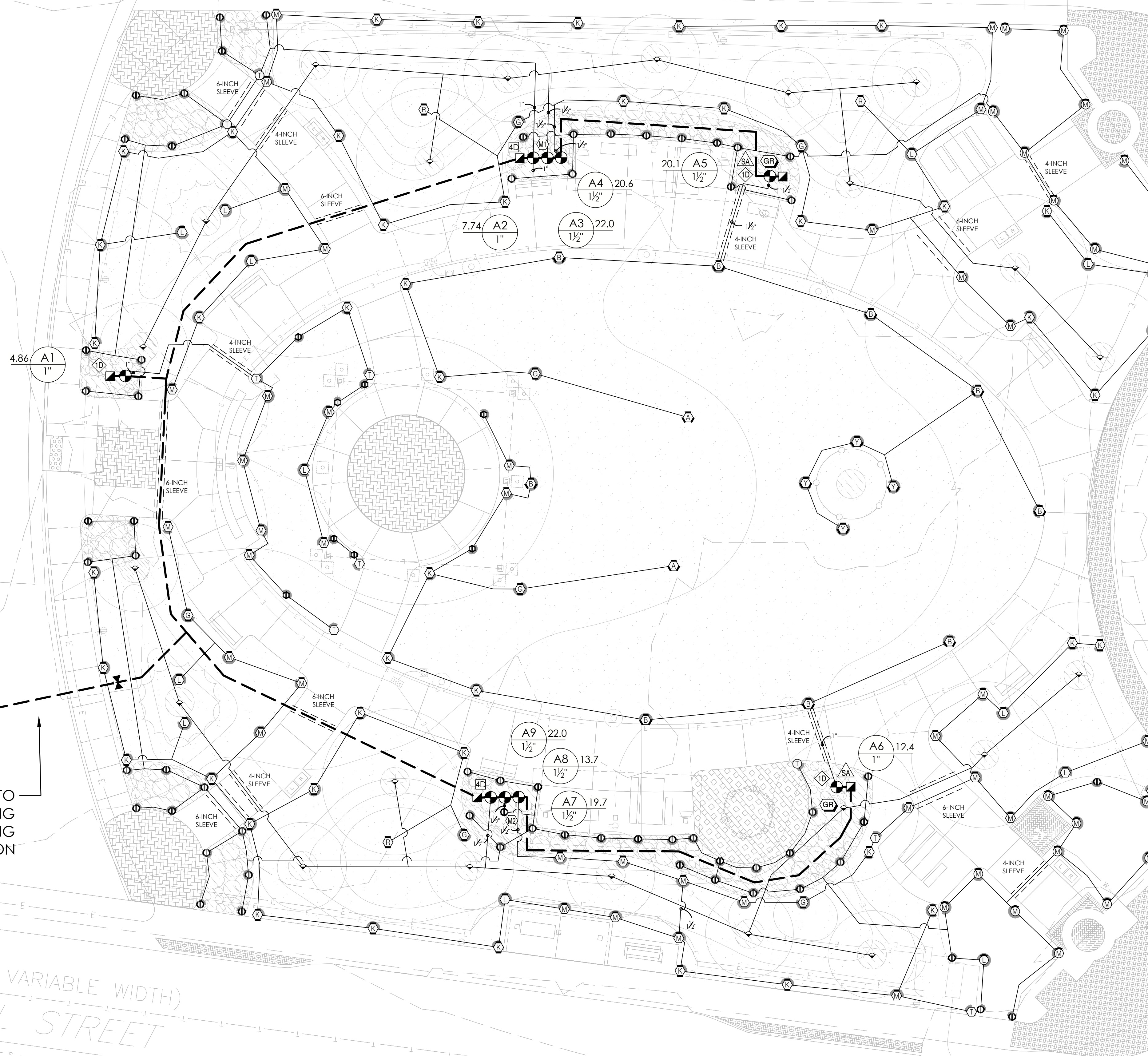


Lawn
6-Inch Pop-Up Sprinklers with Head-to-Head Coverage. Use spray nozzles for short distances, rotary nozzles for medium to long distances.

Planting Beds
12-Inch Pop-Up Sprinklers with Head-to-Head Coverage. Use spray nozzles for short distances, rotary nozzles for medium to long distances.

Soil Moisture Sensors
Calibrate soil moisture sensors in field as per manufacturer instructions. Program irrigation controller to irrigate on high limit (wetter) settings during the first year of establishment/guarantee period. Switch to lower limit (minimum allowable) settings after guarantee period at turnkey. Provide soil moisture sensors for each combination of plant species, sun exposure, and soil type.

Cycle-Soak
Program irrigation controller to apply daily water use in soak cycles as to split up application and allow for proper horizontal and vertical movement of water through soils.



IRRIGATION NOTES

- SEE IRRIGATION DETAILS AND SPECIFICATIONS SECTION 328400 FOR ADDITIONAL REQUIRED INFORMATION. SEE LANDSCAPE PLANS FOR ADDITIONAL INFORMATION.
- COORDINATE FINAL LOCATION OF IRRIGATION AND VALVE BOXES WITH FINAL APPROVED LANDSCAPE. IN GENERAL, PLACE ALL VALVE BOXES WITHIN PLANTER BEDS TO MAXIMUM EXTENT PRACTICABLE FOR AT-GRADE LANDSCAPE.
- ALL PIPE AND VALVE LOCATIONS ARE DIAGRAMMATIC FOR CLARITY; CONTRACTOR SHALL FIELD VERIFY.
- SPECIFIED VALVE BOX LOCATIONS AND COLORS SHALL BE APPROVED BY LANDSCAPE ARCHITECT AND/OR OWNER'S REPRESENTATIVE.
- ALL CONTROL WIRE SHALL BE 14/2 AWG TWO-WIRE INSTALLED PARALLEL TO MAINLINE DIRECT BURIAL WITH DBY/R-6 WIRE SPLICE KITS.
- IRRIGATION SYSTEM IS DESIGNED FOR DOMESTIC SUPPLY AT 30 GPM MAXIMUM. SYSTEM TO PRODUCE 60-PSI DYNAMIC PRESSURE MINIMUM AT EACH AT-GRADE IRRIGATION POINT OF CONNECTION. CONTRACTOR SHALL TEST DYNAMIC PRESSURE BEFORE STARTING WORK AND REPORT ANY DEVIATION TO THE OWNER'S REPRESENTATIVE BEFORE CONTINUING.
- INSTALL NEW CONTROLLER IN WALL-MOUNTED STAINLESS STEEL ENCLOSURE AS LOCATED APPROXIMATELY ON PLANS, AS DIRECTED BY OWNER'S REPRESENTATIVE. HARD WIRE TO 120 VOLT, DEDICATED 20-AMP CIRCUIT, POWER SUPPLY USING LICENSED ELECTRICIAN. COORDINATE WITH SITE COMMUNICATIONS CONTRACTOR TO PROVIDE CAT/5 ETHERNET CABLE TO IRRIGATION CONTROLLER FROM LOCAL AREA NETWORK (INTERNET).
- ALL ABOVE GROUND WIRING SHALL BE INSTALLED IN RIGID, METALLIC CONDUIT FOR VANDALISM PROTECTION.
- GROUND IRRIGATION CONTROLLER TO APPROVED BUILDING EARTH GROUND. COORDINATE WITH SITE ELECTRICAL CONTRACTOR.
- GROUND ALL DECODERS IN THE FIELD BY CONNECTING SURGE ARRESTORS TO BARE COPPER 6AWG WIRE BACK TO. DO NOT USE GROUNDING RODS AS REQUIRED BY MANUFACTURER.
- COORDINATE LOCATION OF ALL EXISTING AND FUTURE UTILITIES ON SITE. CONTACT PROPER AUTHORITIES AND UTILITY COMPANIES BEFORE THE START OF WORK.
- FLUSH ALL LATERAL LINES BEFORE INSTALLING SPRINKLER AND DRIP IRRIGATION.
- CONTRACTOR MUST SUBMIT PRODUCT CUT SHEETS AS PER THE WRITTEN SPECIFICATIONS TO THE ENGINEER FOR APPROVAL PRIOR TO ORDERING MATERIAL AND BEGINNING WORK.
- MATERIAL SUBSTITUTIONS WHICH VARY FROM THE SPECIFIED PRODUCTS MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL AS PART OF THE SUBMITTAL PROCESS.
- ONCE APPROVED SUBMITTALS HAVE BEEN RETURNED TO THE CONTRACTOR, WORK MAY BEGIN. OWNER'S REPRESENTATIVE MUST BE NOTIFIED 7 DAYS IN ADVANCE OF THE START OF WORK TO COORDINATE ON-SITE SUPERVISION AND ADMINISTRATION.

IRRIGATION MATERIAL LIST

SYMBOL	MANUFACTURER/MODEL	DETAIL # (IR-2.0)
(M)	Soil Moisture Sensor with Number	2
(ID)	1-Station Decoder	1, 6
(4D)	4-Station Decoder	
(SA)	Surge Arrestor	3
(GR)	Decoder Grounding Rod	4
(ZV)	Commercial Electric Zone Valve w/Sentry/Scrubber	6
(QV)	Quick Coupler Valve	7
(IGV)	1-Inch Isolation Gate Valve with Cross Handle	8
(L)	Irrigation Lateral Line: PVC Schedule 40 Size as Noted, Unlabeled Pipe = 1-Inch	9
(M)	Irrigation Mainline: 1-Inch PVC Schedule 40	
(S)	Pipe Sleeve: PVC SDR 35 Solvent Weld (with Size)	10
(T)	6" Pop-Up Rotary Sprinkler w/CV PR40 (Corner)	11
(B)	6" Pop-Up Rotary Sprinkler w/CV PR40 (Large)	
(M)	6" Pop-Up Rotary Sprinkler w/CV PR40 (Mid)	
(S)	6" Pop-Up Rotary Sprinkler w/CV PR40 (Small)	
(LST)	6" Pop-Up Rotary Sprinkler w/CV PR40 (Strip)	
(X)	6" Pop-Up Rotary Sprinkler w/CV PR40 (X-Large)	
(X-S)	6" Pop-Up Rotary Sprinkler w/CV PR40 (X-Small)	
(ADJ)	6" Pop-Up Rotary Sprinkler w/CV PR40 (X-Small)	
(T)	12" Pop-Up Rotary Sprinkler w/CV PR40 (Corner)	12
(LST)	12" Pop-Up Rotary Sprinkler w/CV PR40 (Strip)	
(S)	12" Pop-Up Rotary Sprinkler w/CV PR40 (Small)	
(M)	12" Pop-Up Rotary Sprinkler w/CV PR40 (Mid)	
(B)	12" Pop-Up Rotary Sprinkler w/CV PR40 (Large)	
(X)	12" Pop-Up Rotary Sprinkler w/CV PR40 (X-Large)	
(X-S)	12" Pop-Up Rotary Sprinkler w/CV PR40 (X-Small)	
(ADJ)	12" Pop-Up Rotary Sprinkler w/CV PR40 (X-Small)	

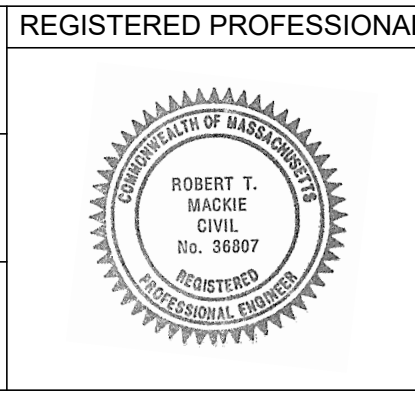
EXISTING IRRIGATION

- (MV) Master Valve
- (FS) Flow Sensor
- (WM) Water Meter
- (BP) Backflow Preventer

9/2/2021 1:01 PM C:\USERS\TAMORAEQUEOUS CONSULTANTS\PROJECTS\BETA GROUP\INC20-0080_NEEDHAM20_DESIGN\2_CD\IRRIGATION DESIGN.DWG (BETA STB BW.STB)

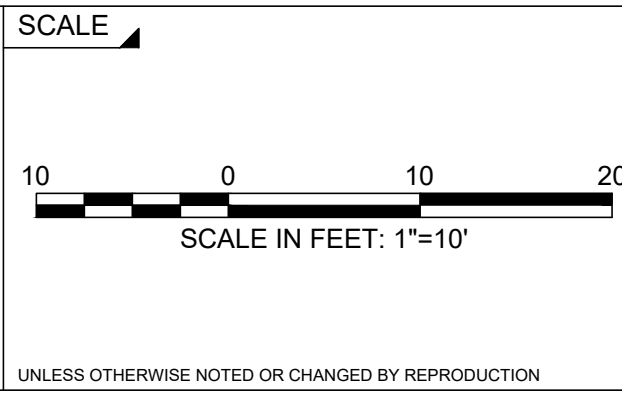
NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY: TL
DESIGNED BY: TL
CHECKED BY: MI



PREPARED BY
Aqueous
AQUEOUS CONSULTANTS, LLC
2 Dundee Park Drive, Suite 301B
Andover, MA 01810
(978) 470-1695

SUBCONSULTANT

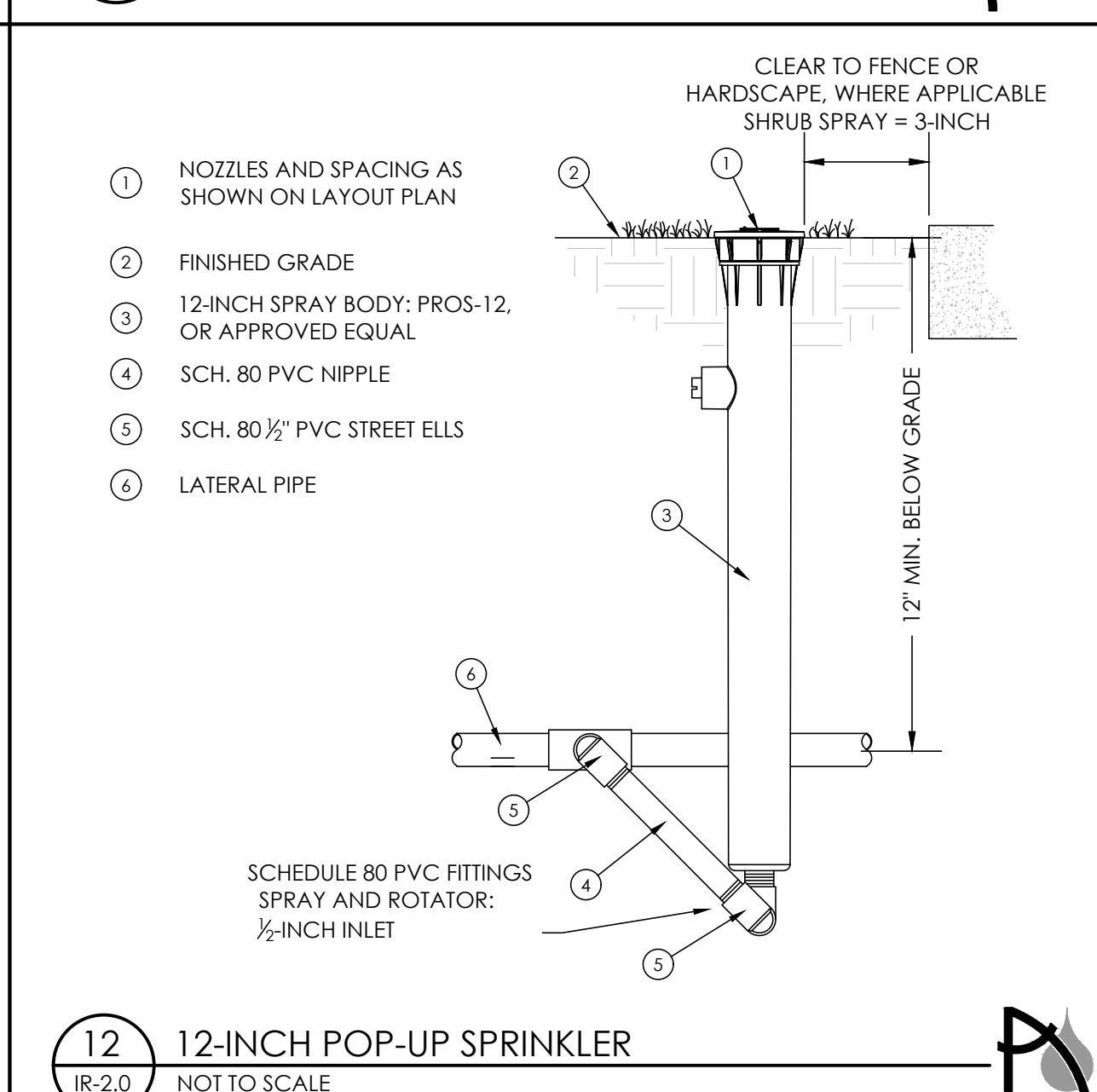
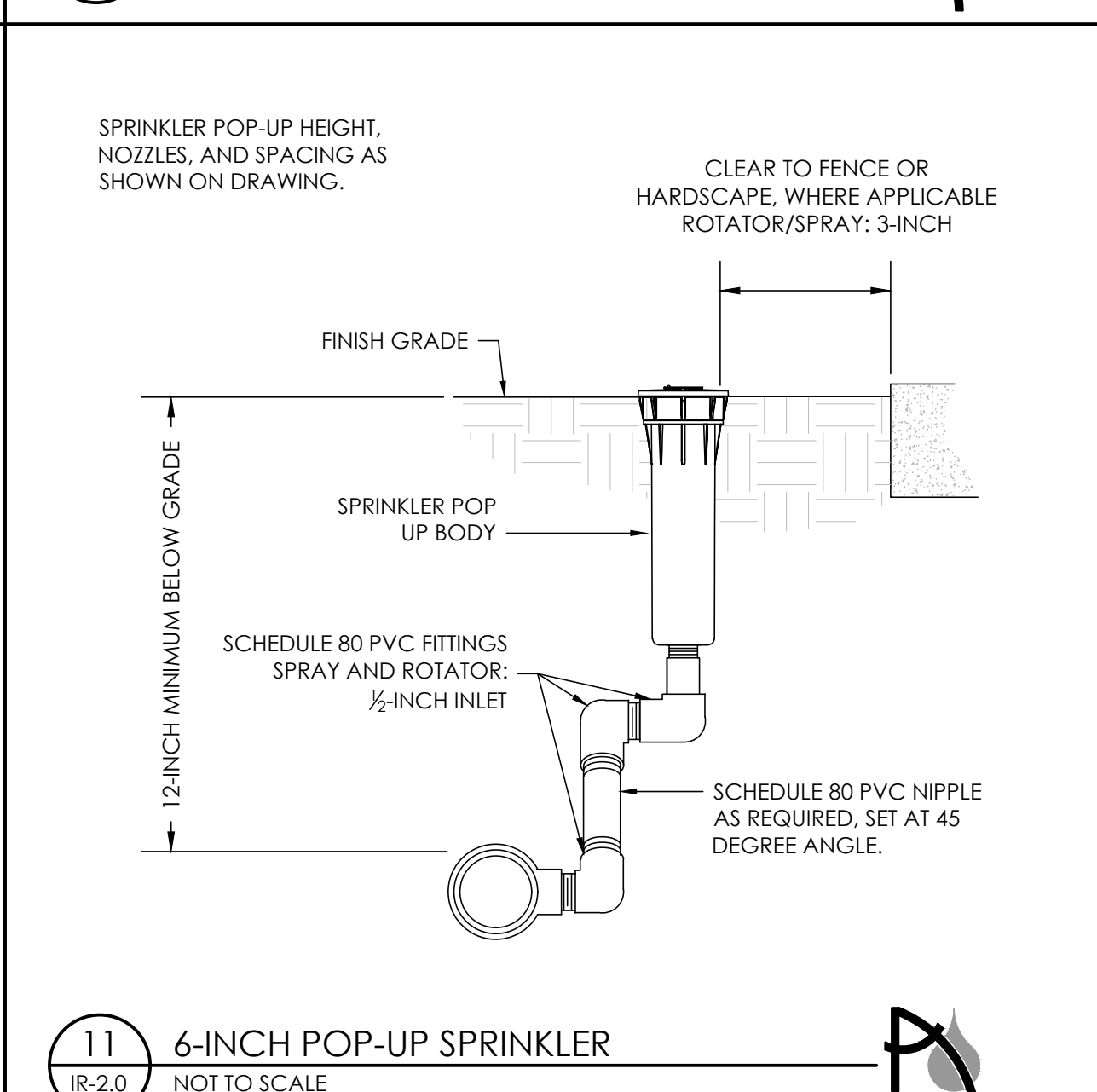
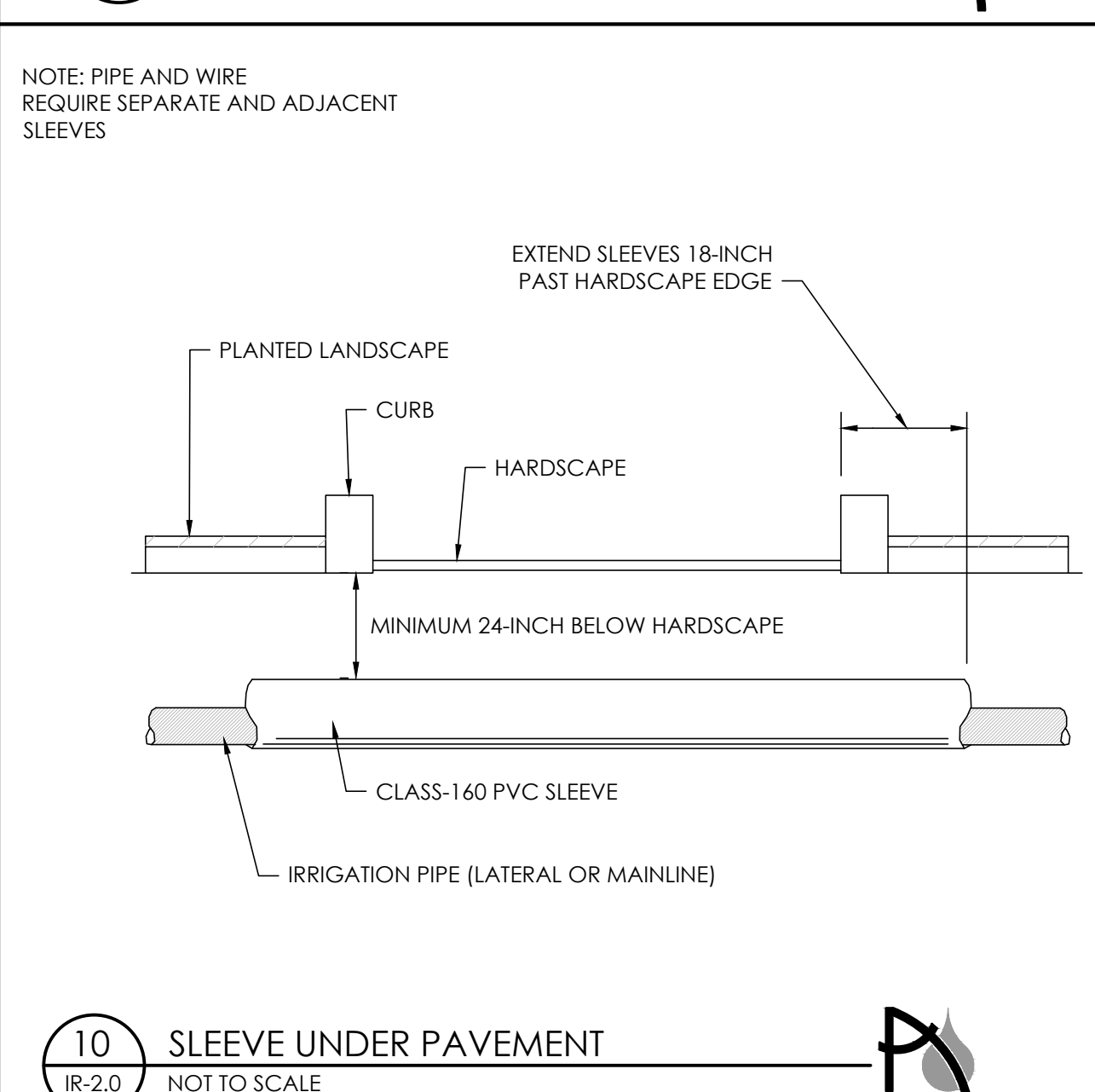
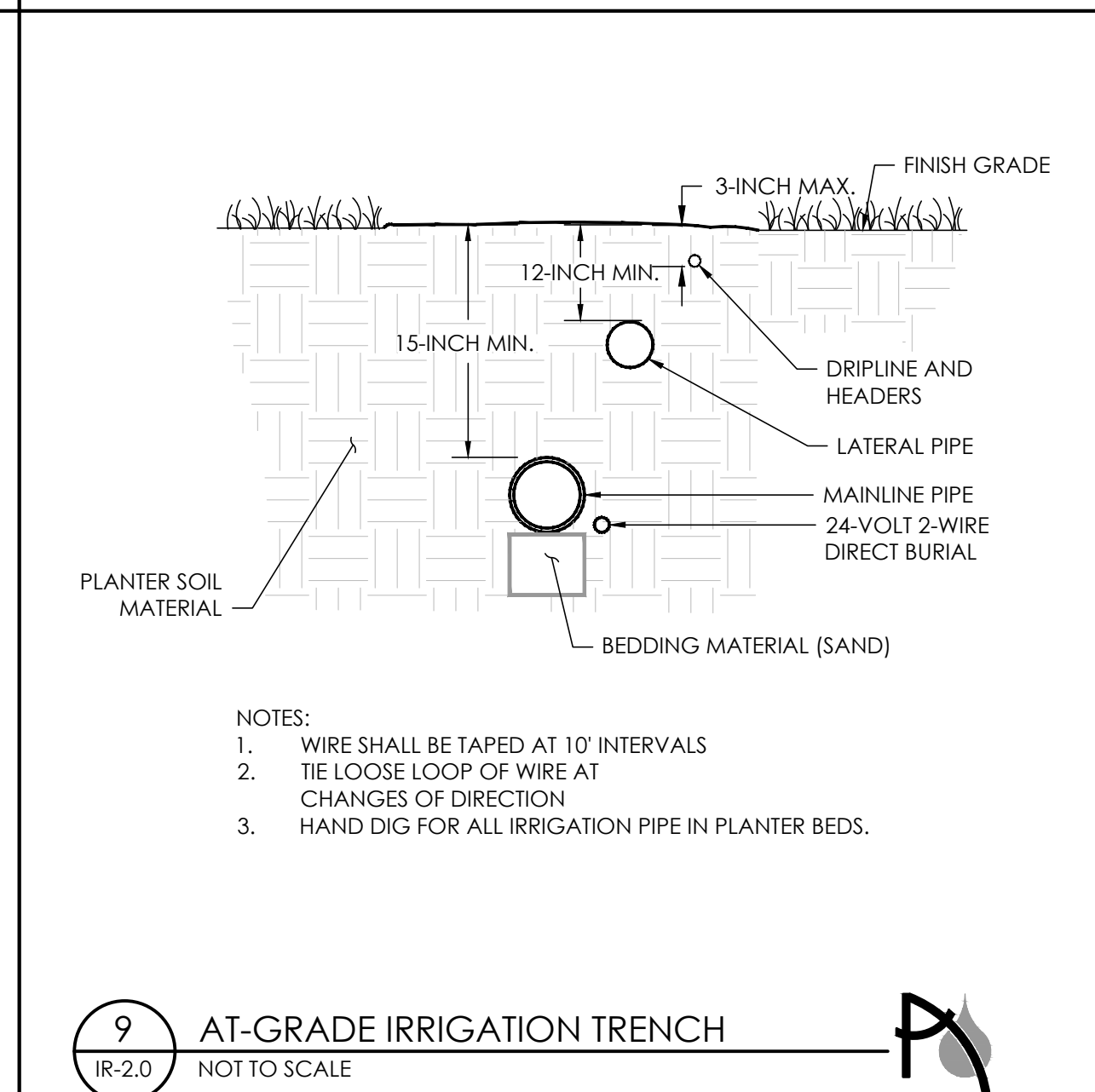
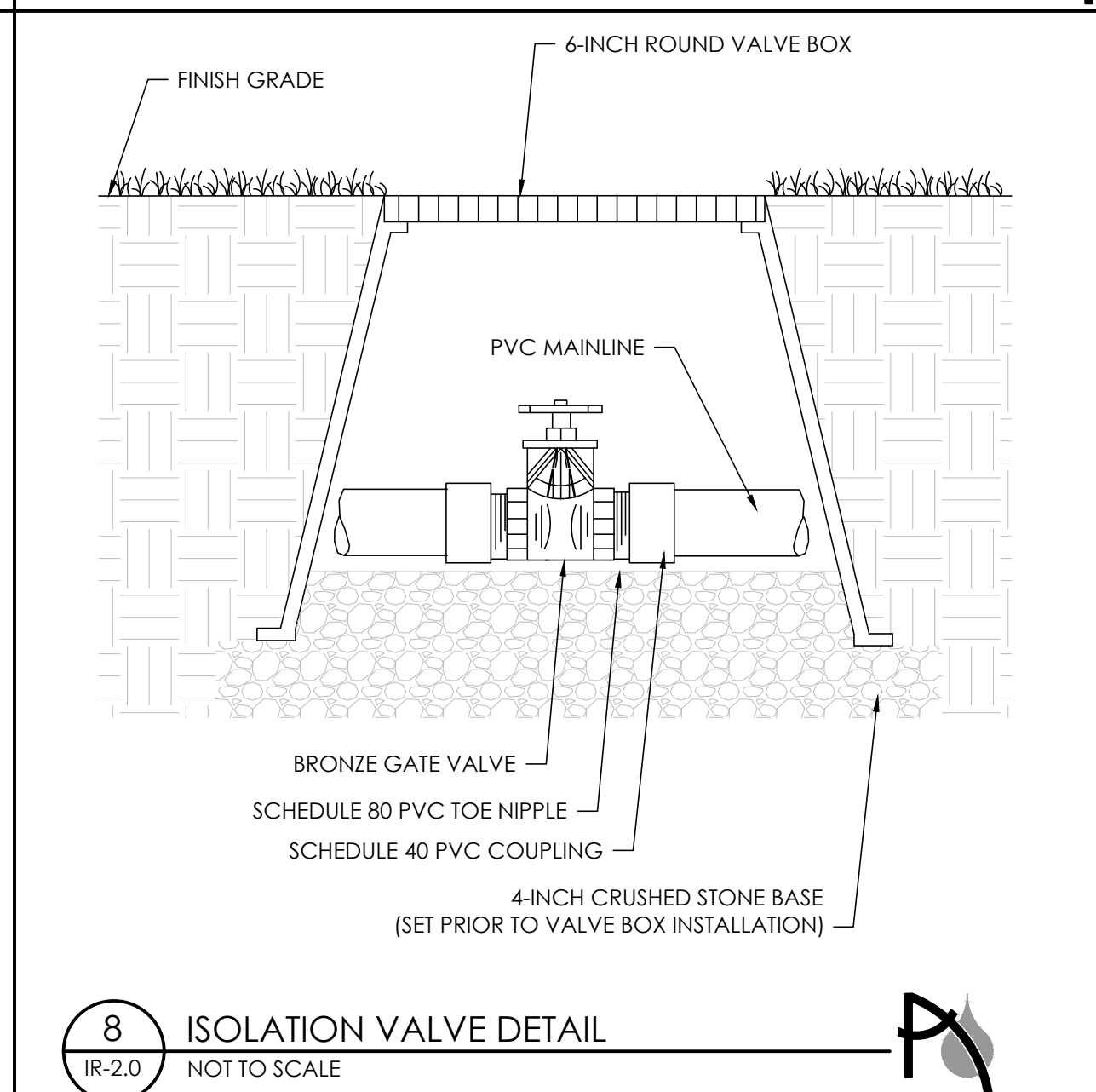
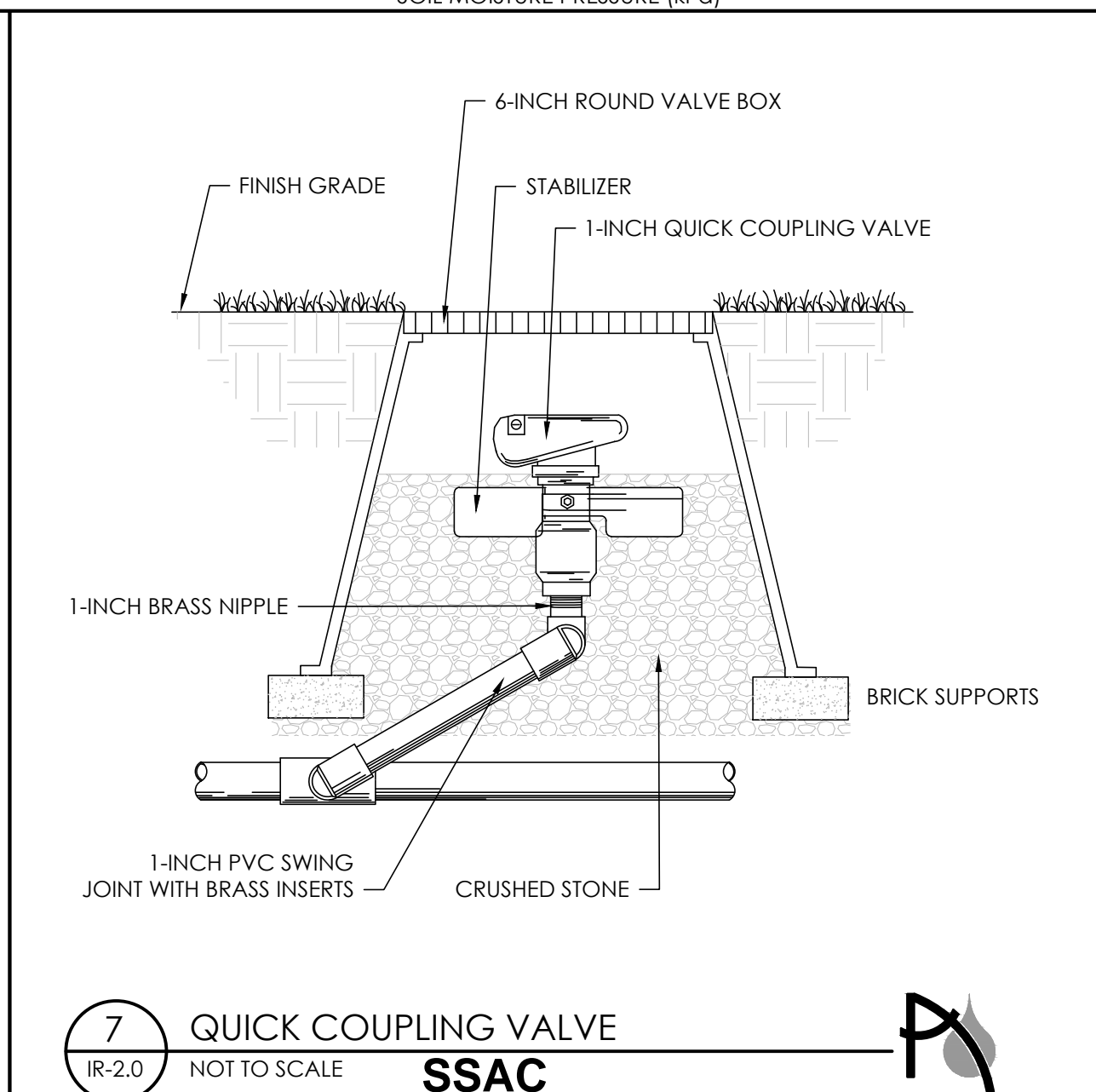
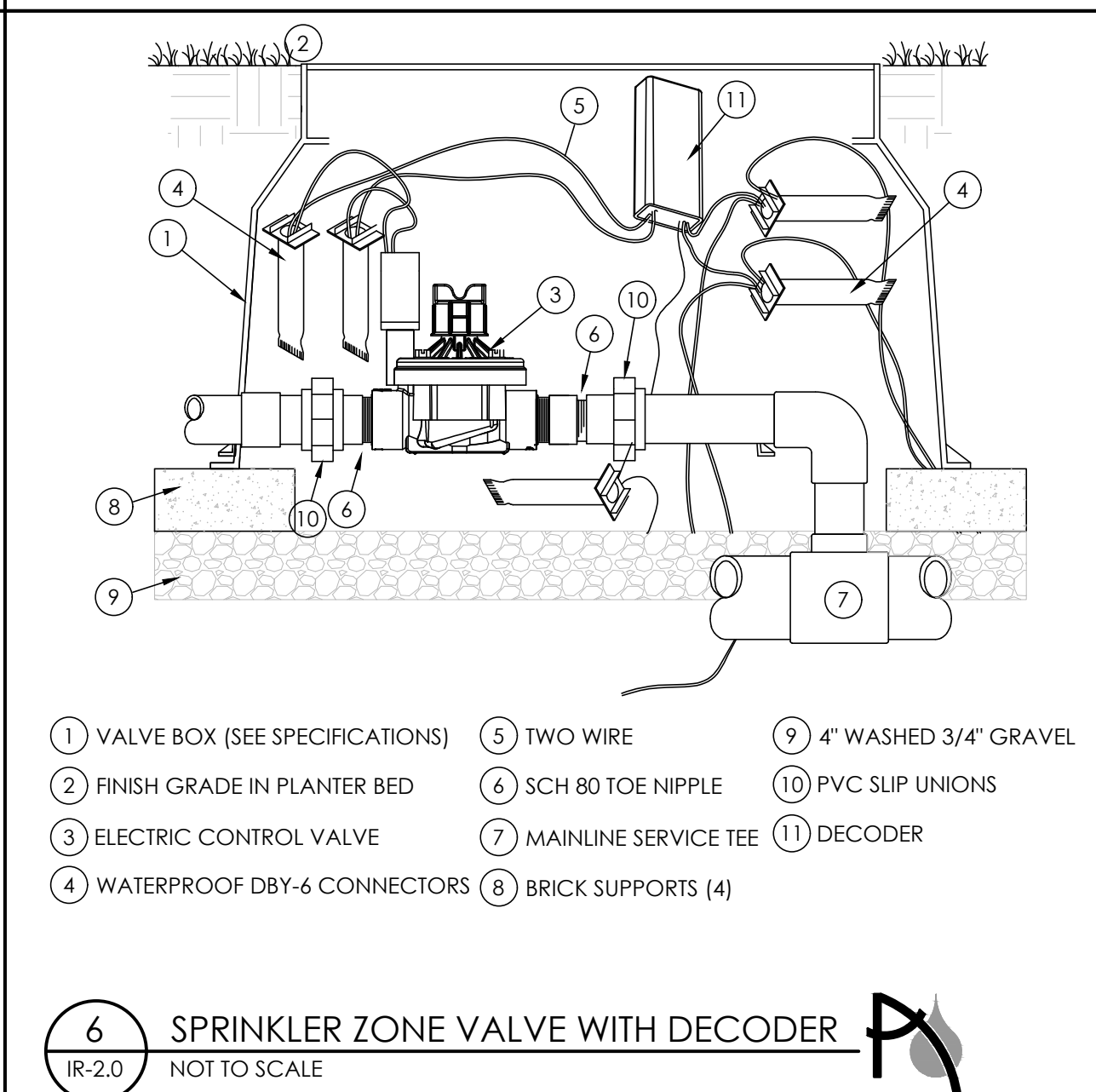
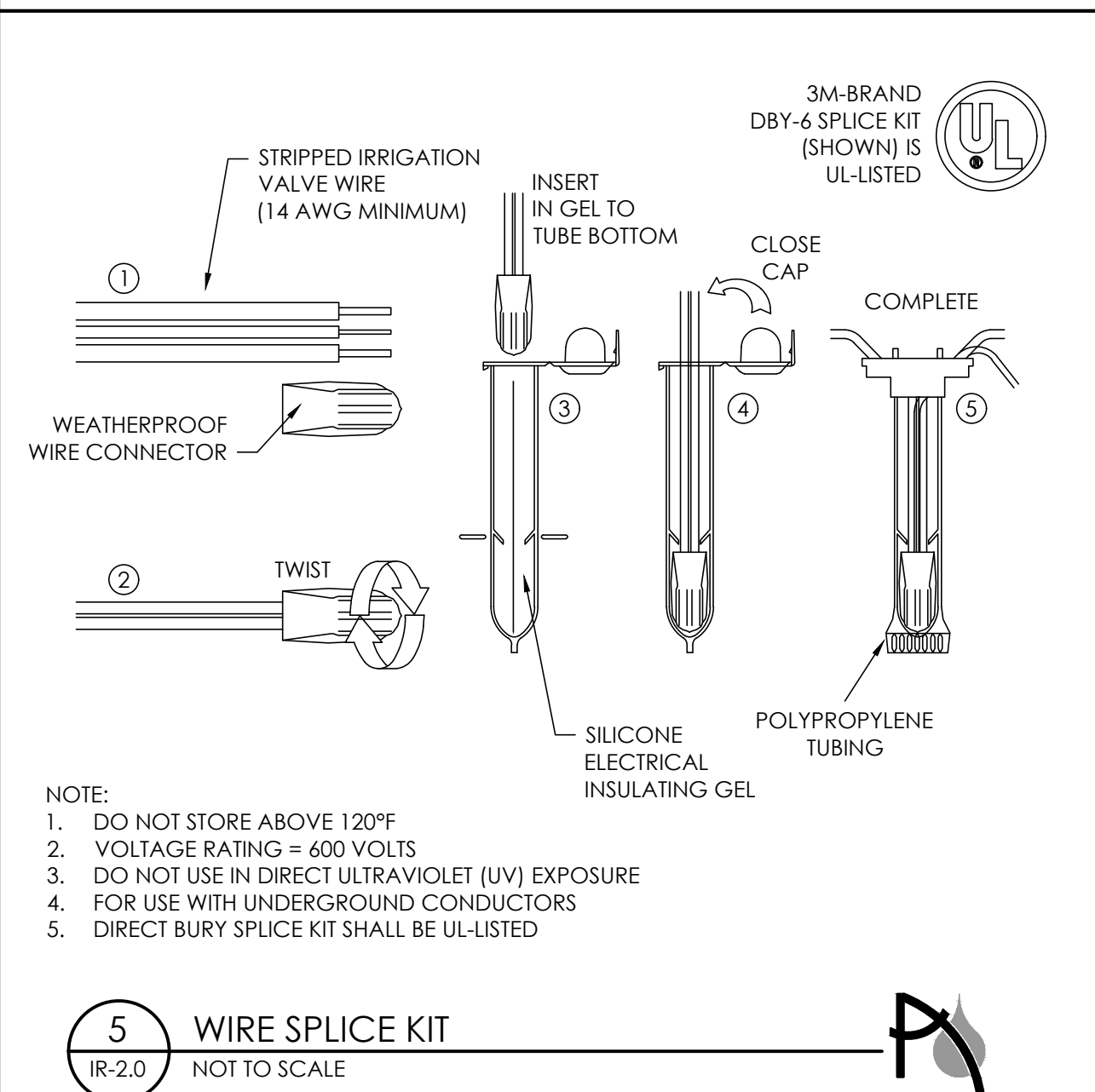
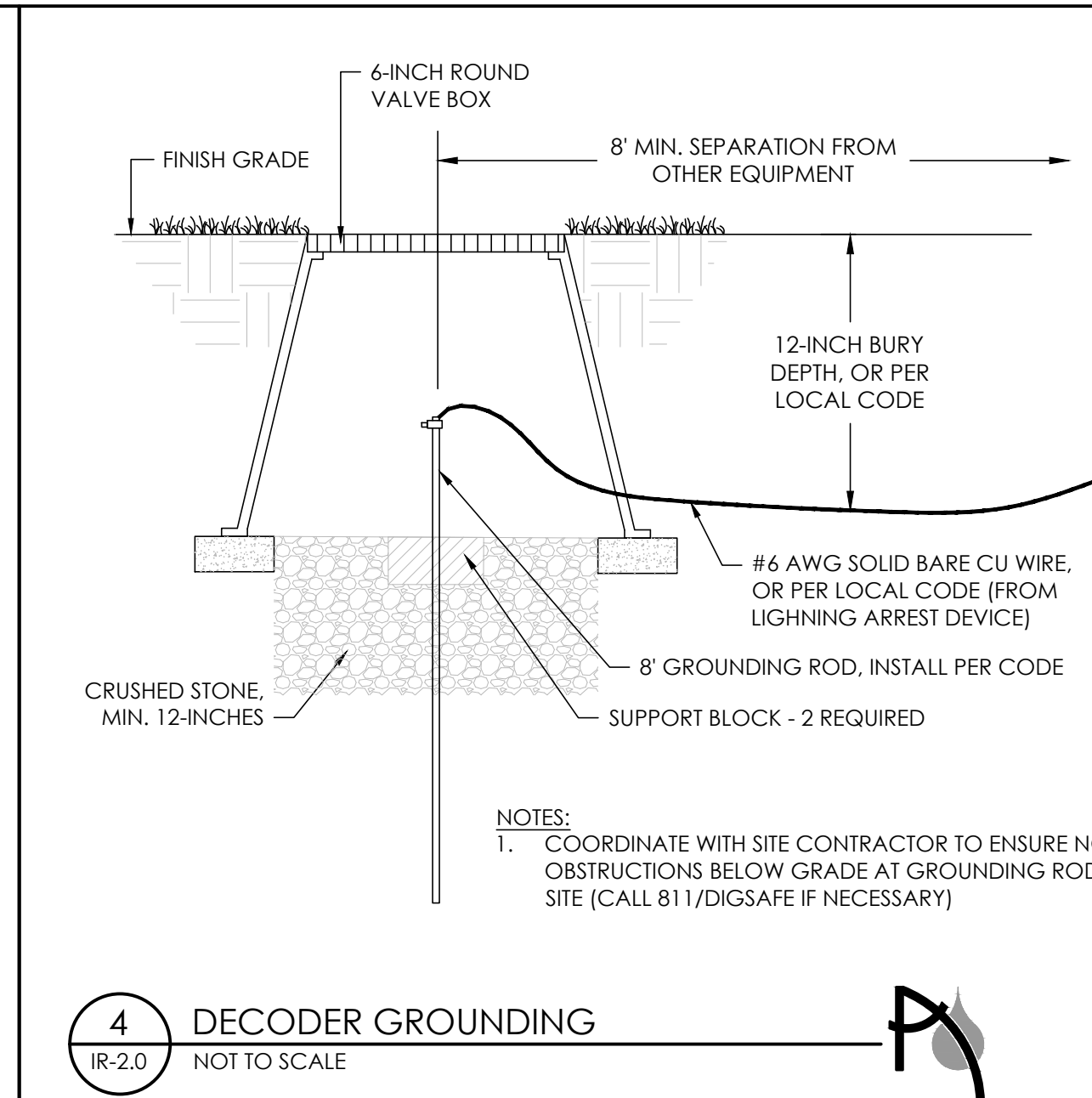
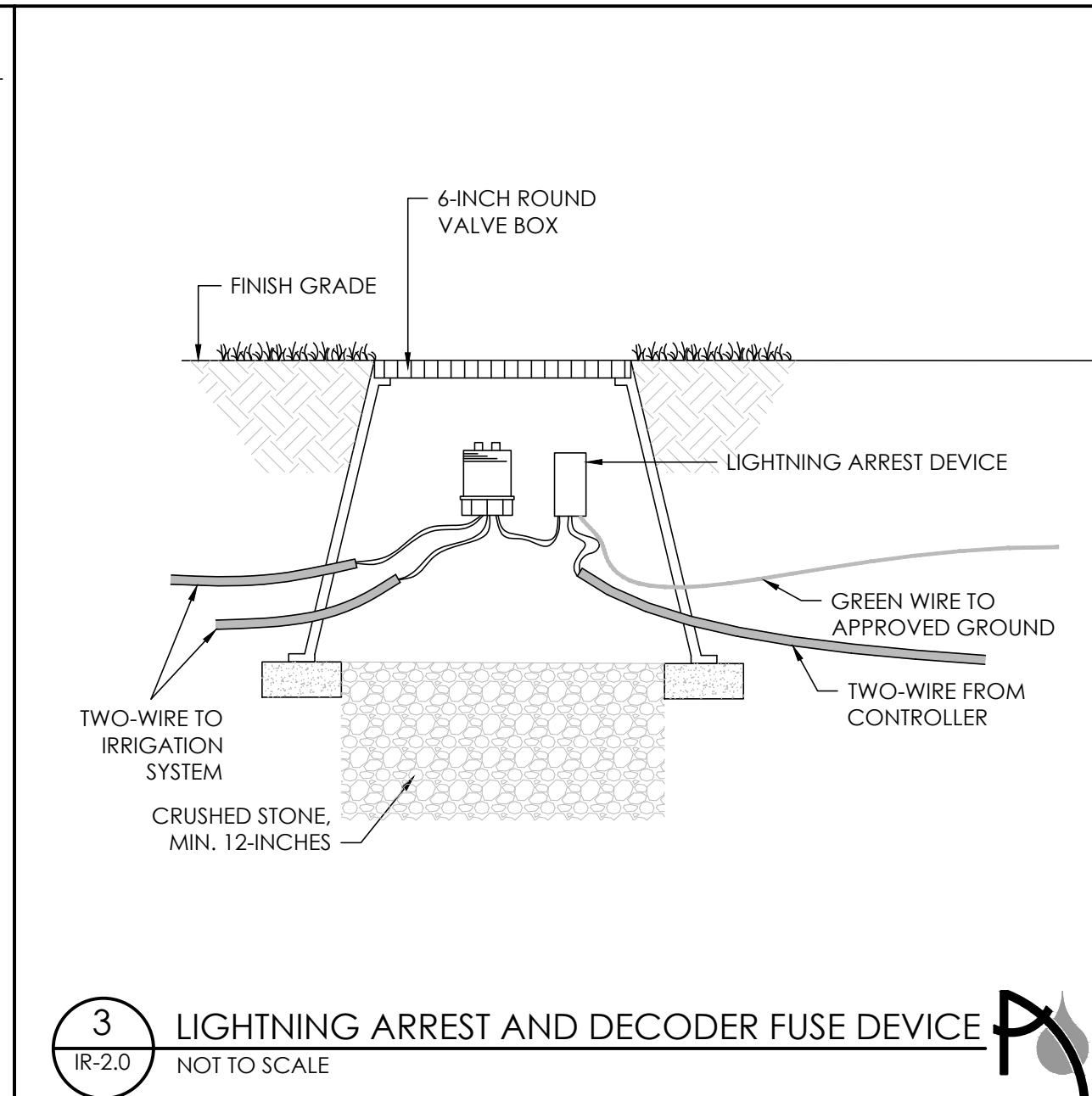
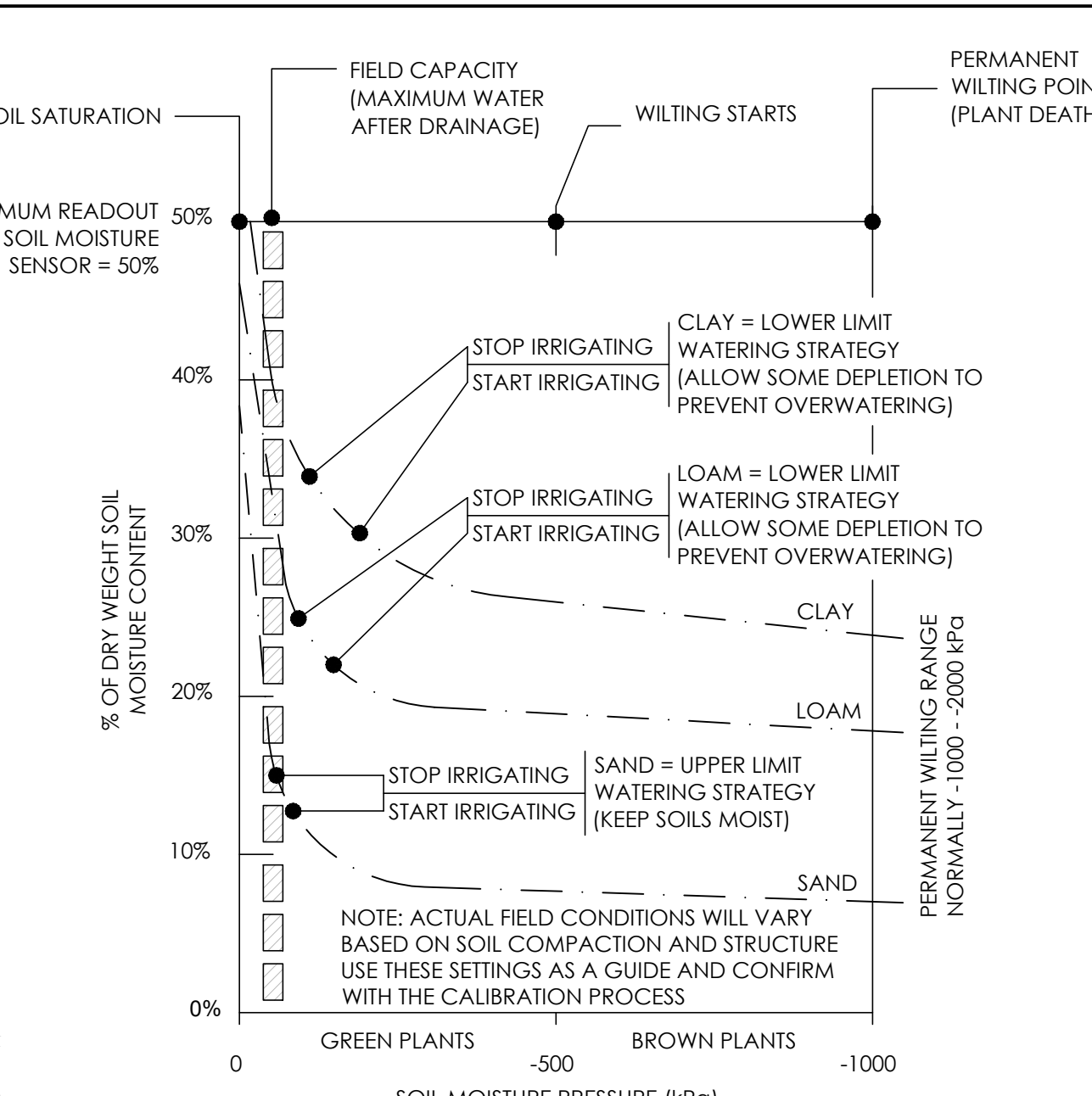
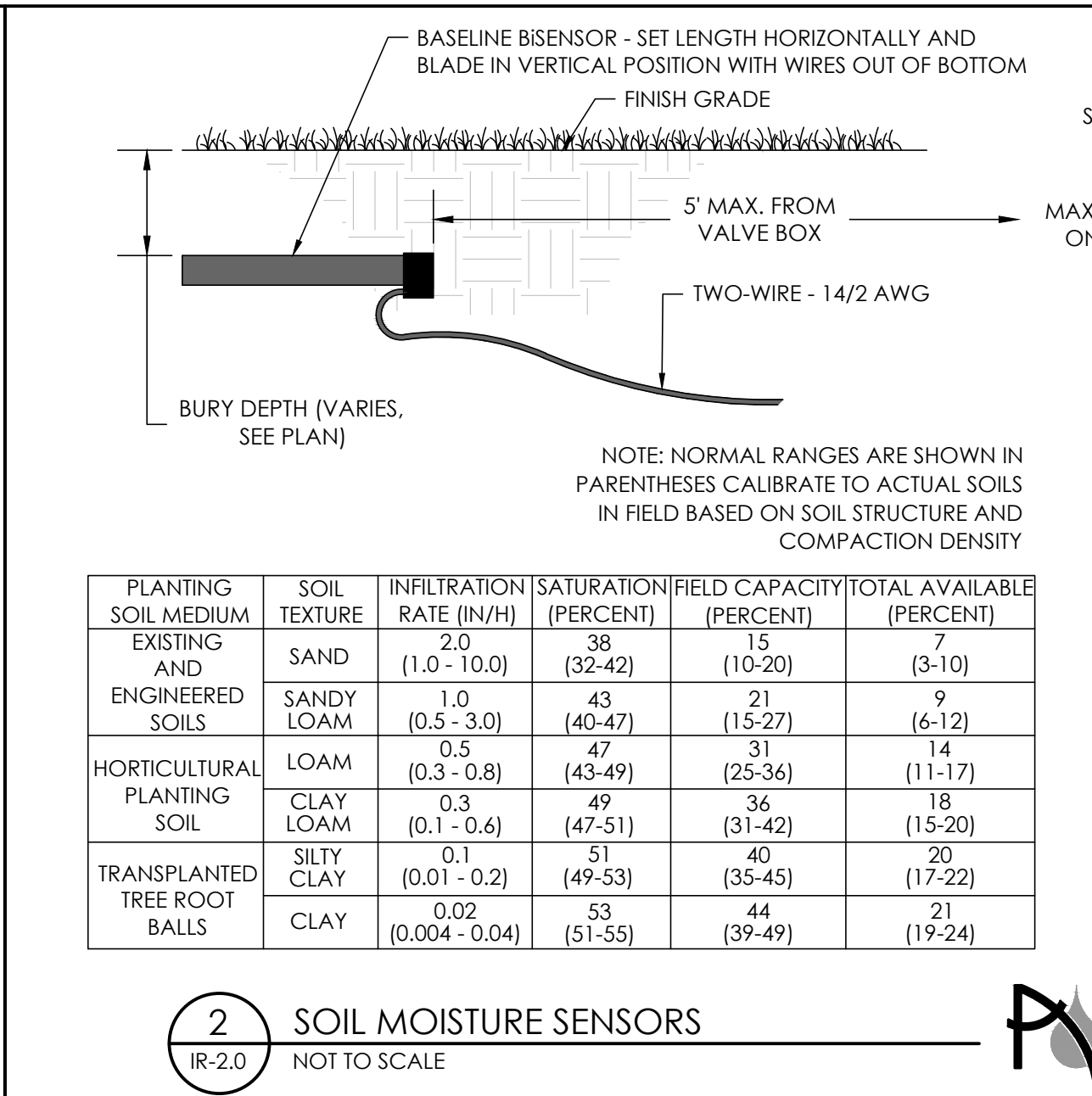
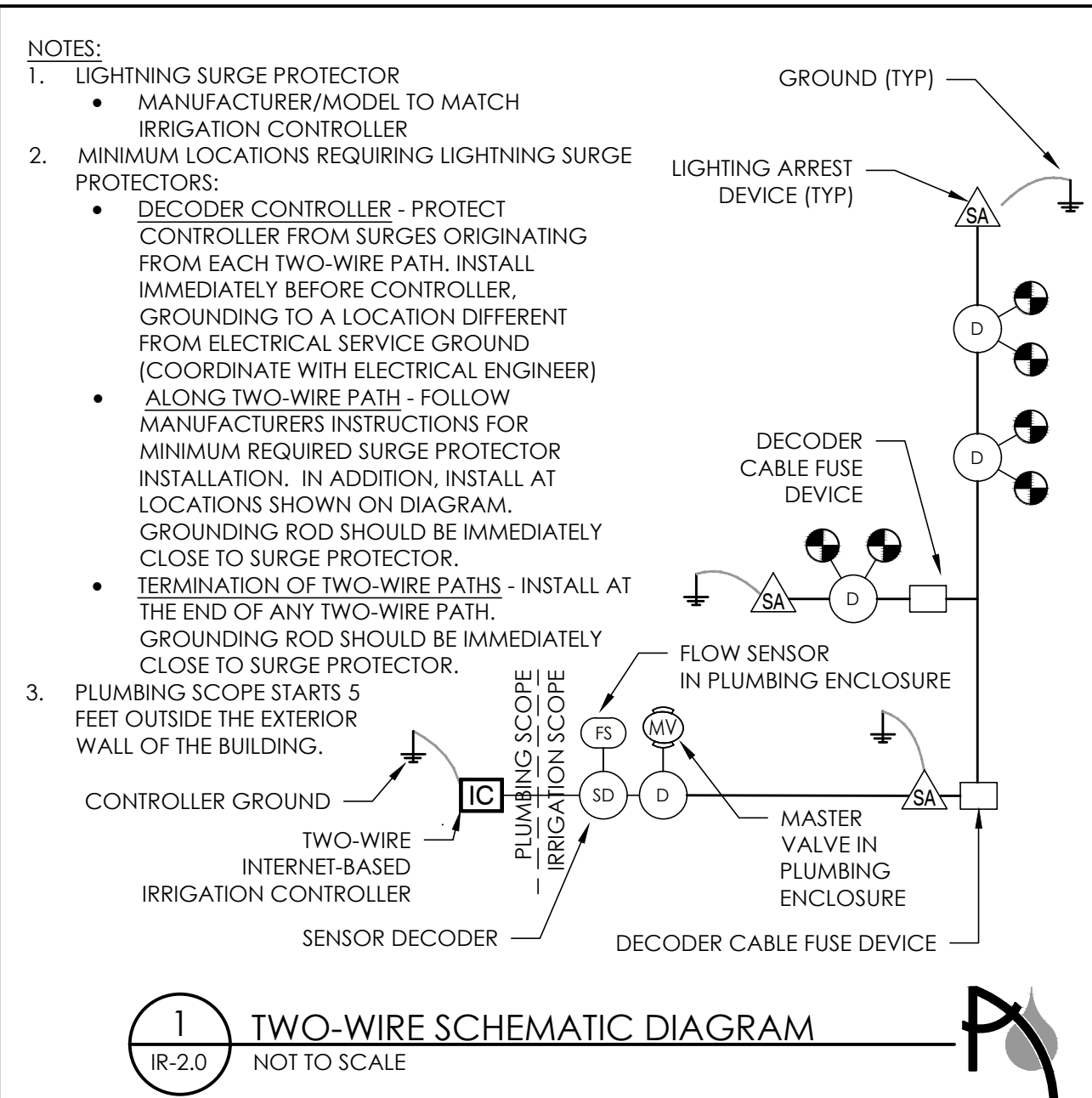


TITLE

**TOWN COMMON RENOVATION
NEEDHAM, MASSACHUSETTS
IRRIGATION LAYOUT PLAN**

BETA JOB NO. 7185
ISSUE DATE AUGUST 2021
SHEET NO. **7**

C:\USERS\TAMORAEQUEOUS CONSULTANTS\PROJECTS\BETA GROUP\INC20-0080_NEEDHAM20_DESIGN\2_CD\IRRIGATION DESIGN.DWG (BETA STB BW.STB)

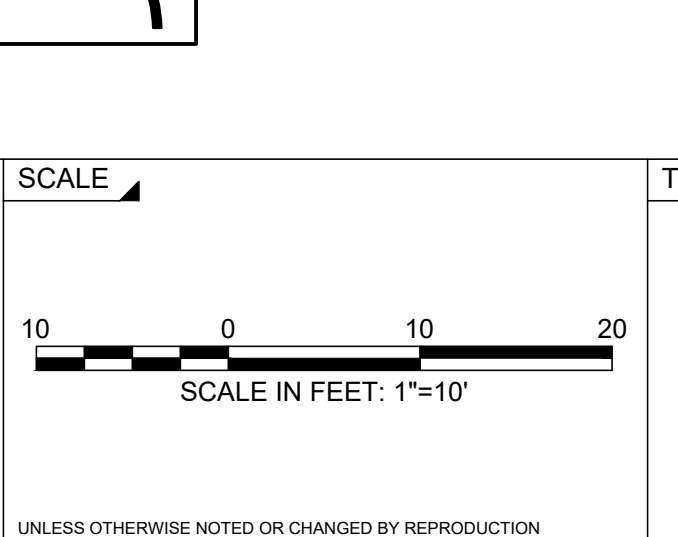


NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY: TL
DESIGNED BY: TL
CHECKED BY: MI

REGISTERED PROFESSIONAL
ROBERT T. MAQUIE
CIVIL
No. 38897
PROFESSIONAL ENGINEER

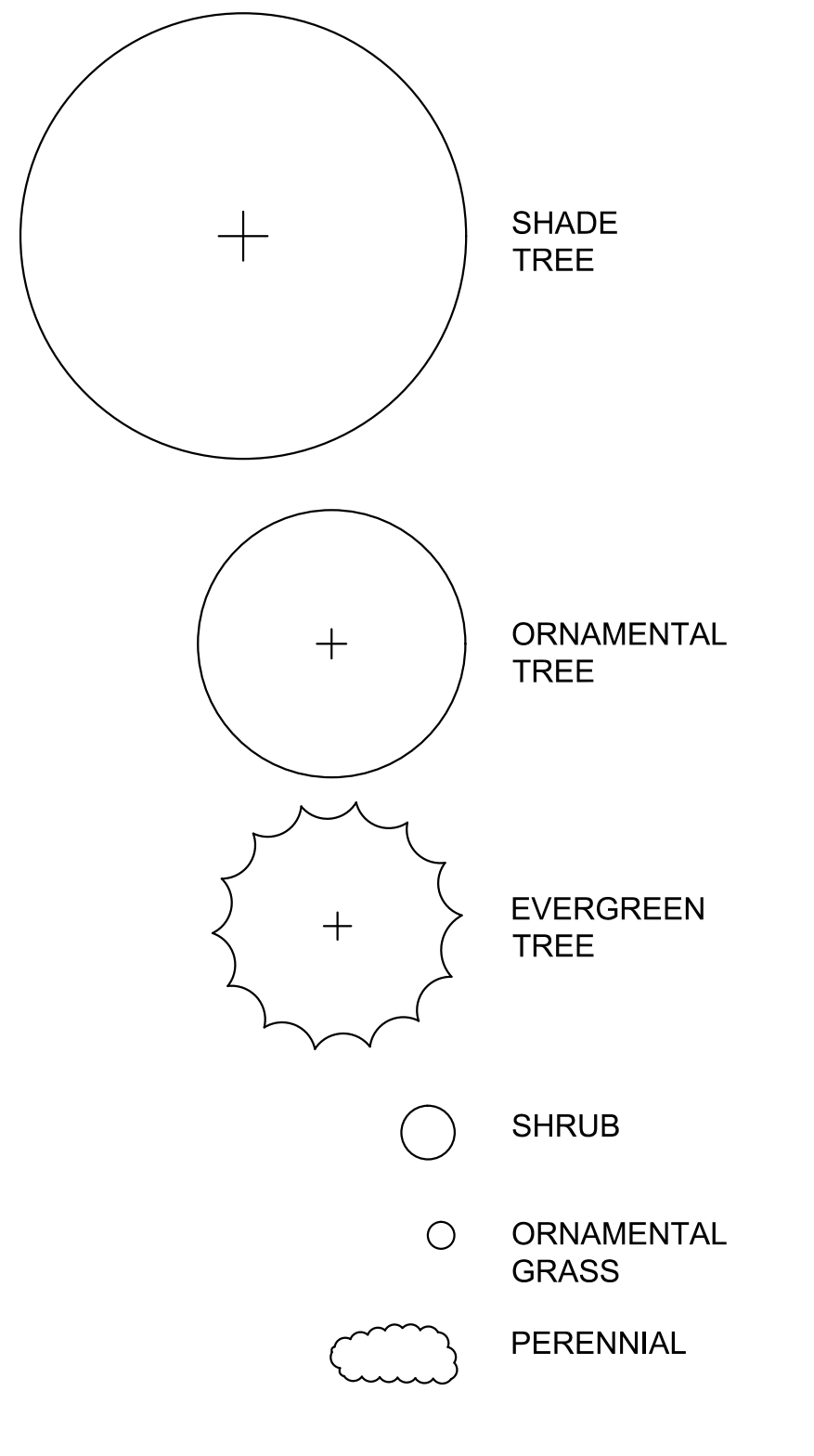
PREPARED BY
Aqueous
AQUEOUS CONSULTANTS, LLC
2 Dundee Park Drive, Suite 301B
Andover, MA 01810
(978) 470-1695



TOWN COMMON RENOVATION
NEEDHAM, MASSACHUSETTS
IRRIGATION DETAILS

BETA JOB NO. 7185
ISSUE DATE: AUGUST 2021
SHEET NO. 8

PLANT LEGEND:

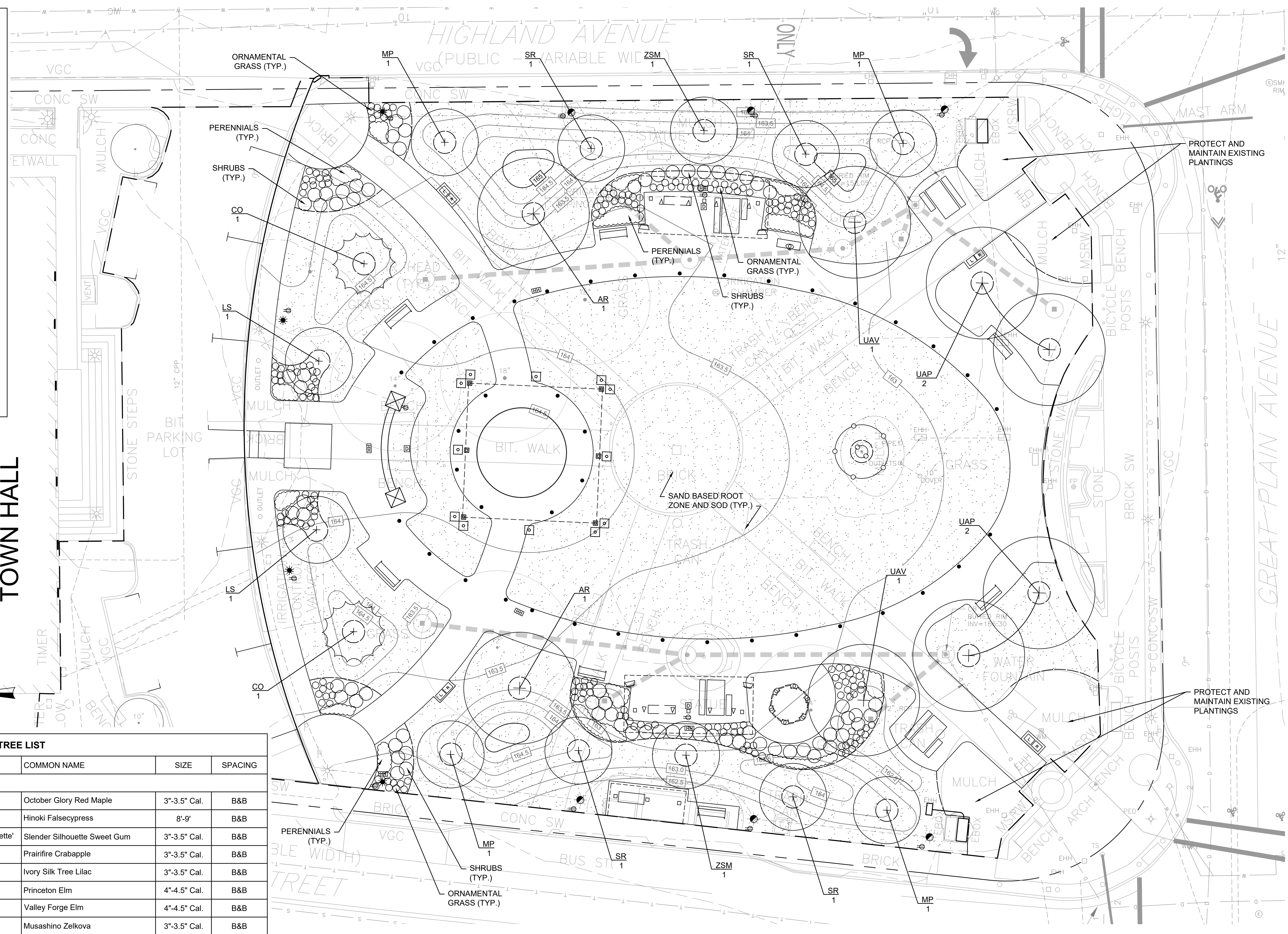


TOWN HALL

TRAV. POINT#36
MAGNAIL
N. 2927629.5456
E. 727422.5334
EL. 163.76'

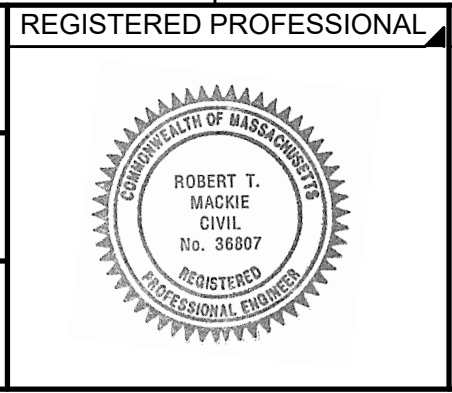
TREE LIST					
KEY	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
TREES					
AR		Acer rubrum 'October Glory'	October Glory Red Maple	3"-3.5" Cal.	B&B
CO		Chamaecyparis obtuse	Hinoki Falsecypress	8'-9'	B&B
LS		Liquidambar styraciflua 'Slender Silhouette'	Slender Silhouette Sweet Gum	3"-3.5" Cal.	B&B
MP		Malus prairifire	Prairifire Crabapple	3"-3.5" Cal.	B&B
SR		Syringa reticulata 'Ivory Silk'	Ivory Silk Tree Lilac	3"-3.5" Cal.	B&B
UAP		Ulmus americana 'Princeton'	Princeton Elm	4"-4.5" Cal.	B&B
UAV		Ulmus americana 'Valley Forge'	Valley Forge Elm	4"-4.5" Cal.	B&B
ZSM		Zelkova serrata 'Musashino'	Musashino Zelkova	3"-3.5" Cal.	B&B

1/14/2021 9:40 AM C:\TOWNCOMMONDRAWING FILES\PLANS\SET17185\PLANTING.DWG (BETA STB BW) (STB)

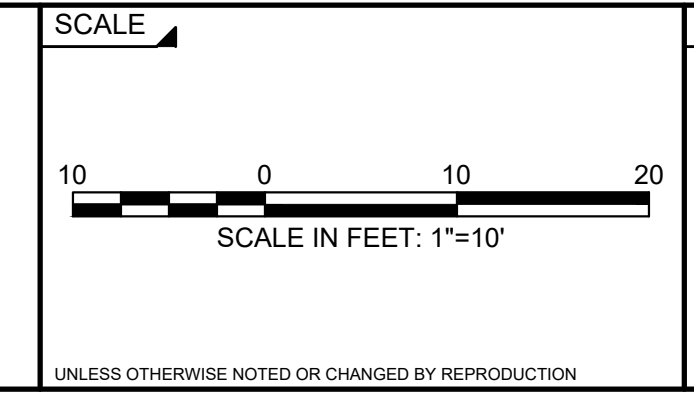


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SR/NS
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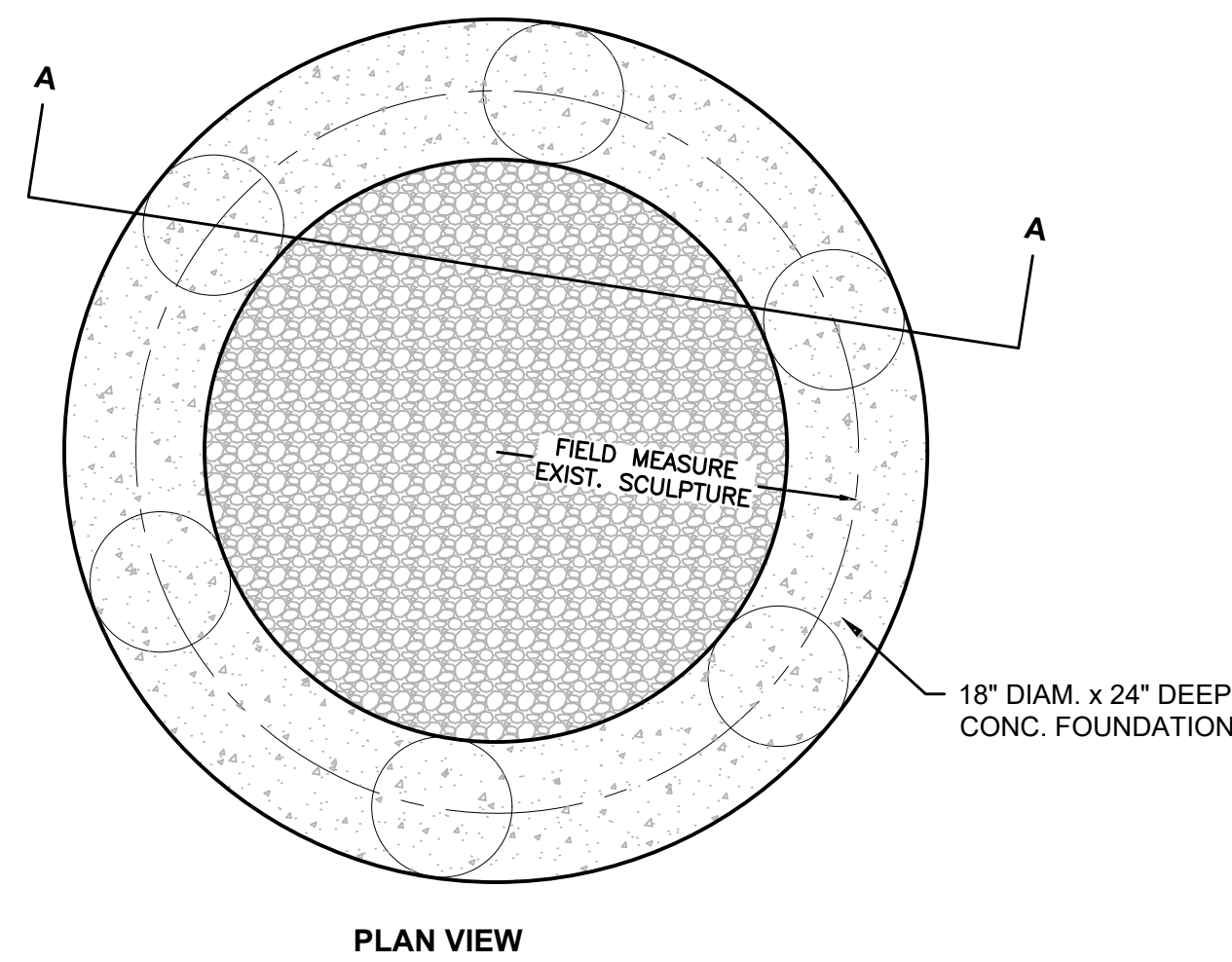
REGISTERED PROFESSIONAL
PREPARED BY
SUBCONSULTANT



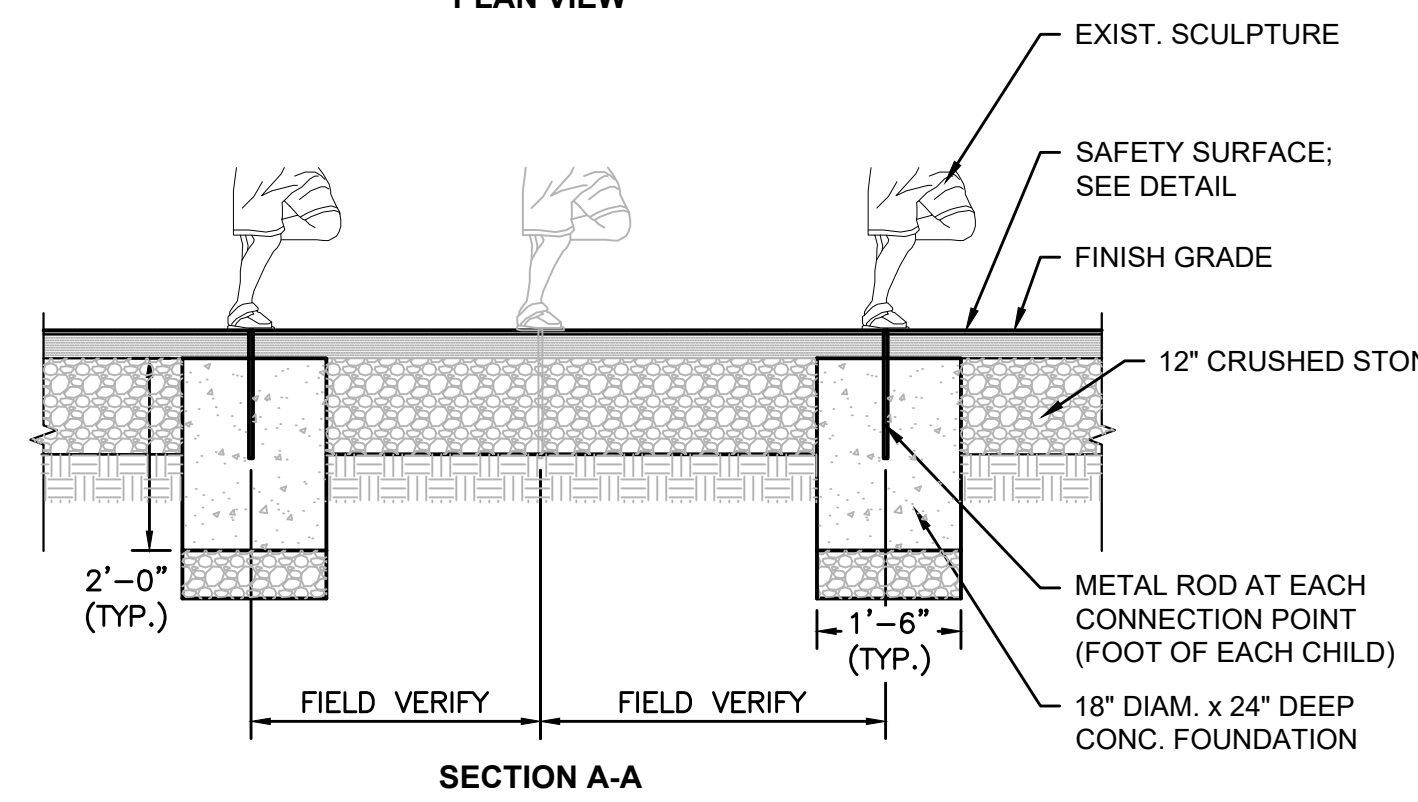
TITLE
**TOWN COMMON RENOVATION
PLANTING PLAN
NEEDHAM, MASSACHUSETTS**

BETA JOB NO. 7185
ISSUE DATE NOV. 4, 2021
SHEET NO. 9

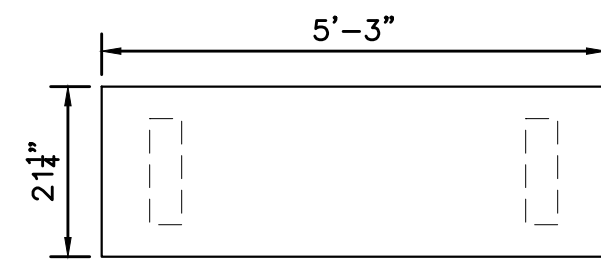
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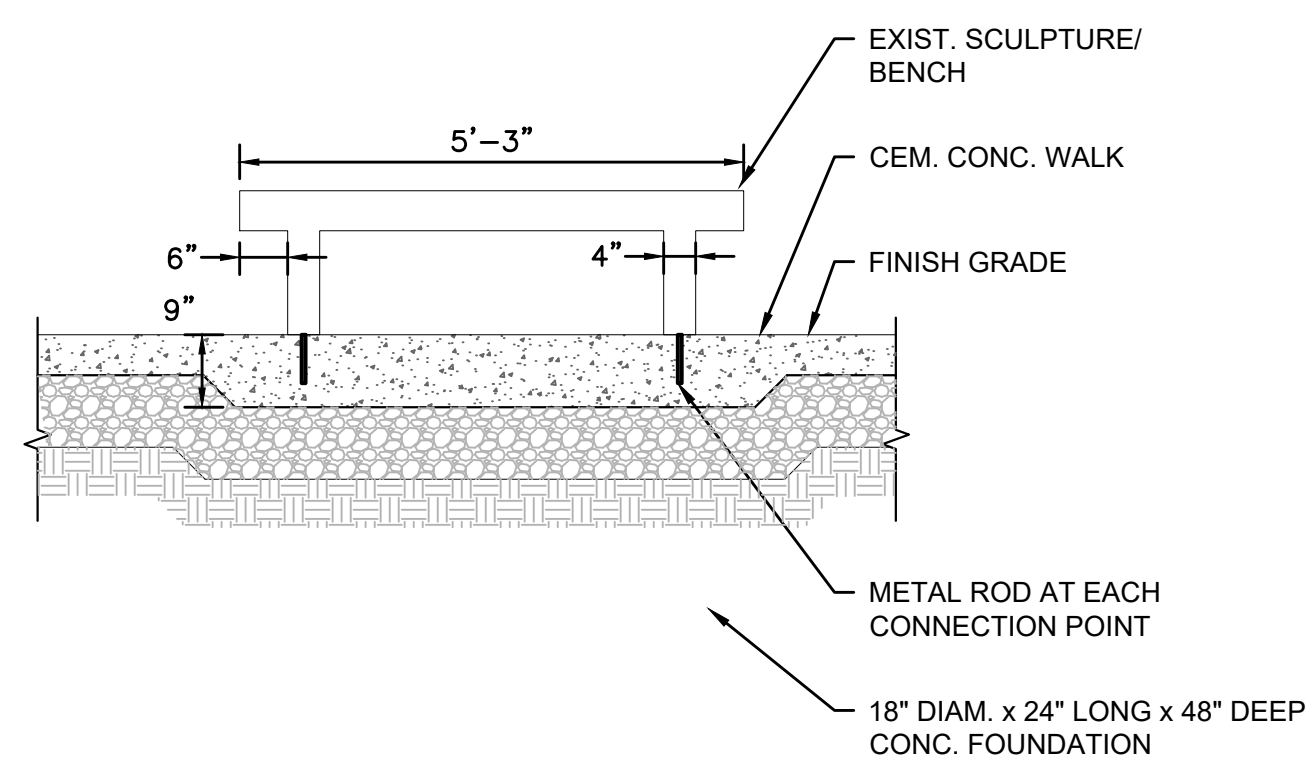
PLAN VIEW



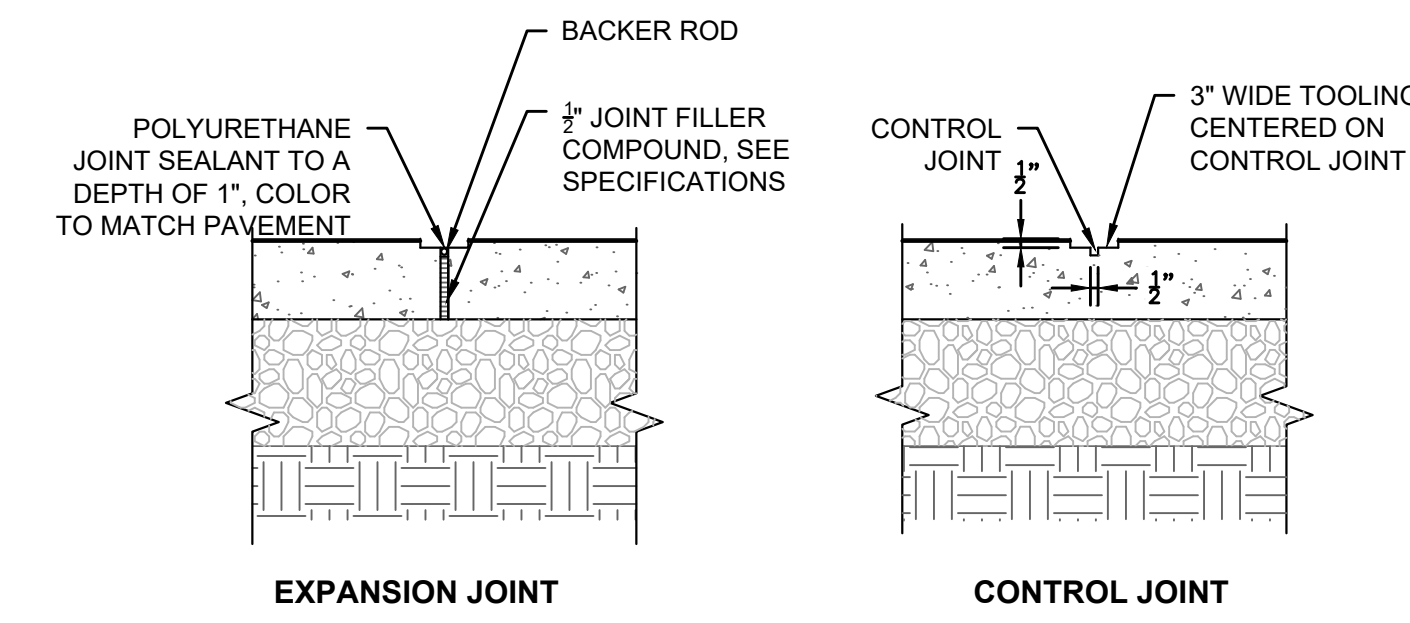
SECTION A-A
SCULPTURE #1 - CIRCLE OF PEACE
SCALE: 1/2"=1'-0"



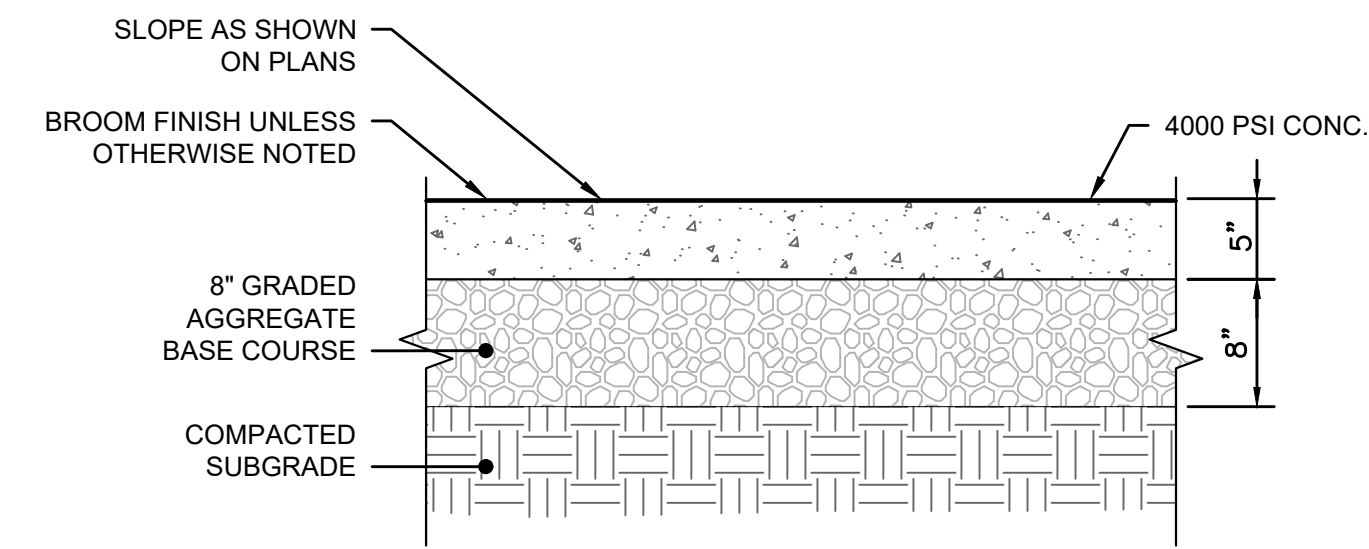
PLAN VIEW



TYPICAL SECTION
SCULPTURE #2 - CHILDREN ON BENCH
SCALE: 1/2"=1'-0"

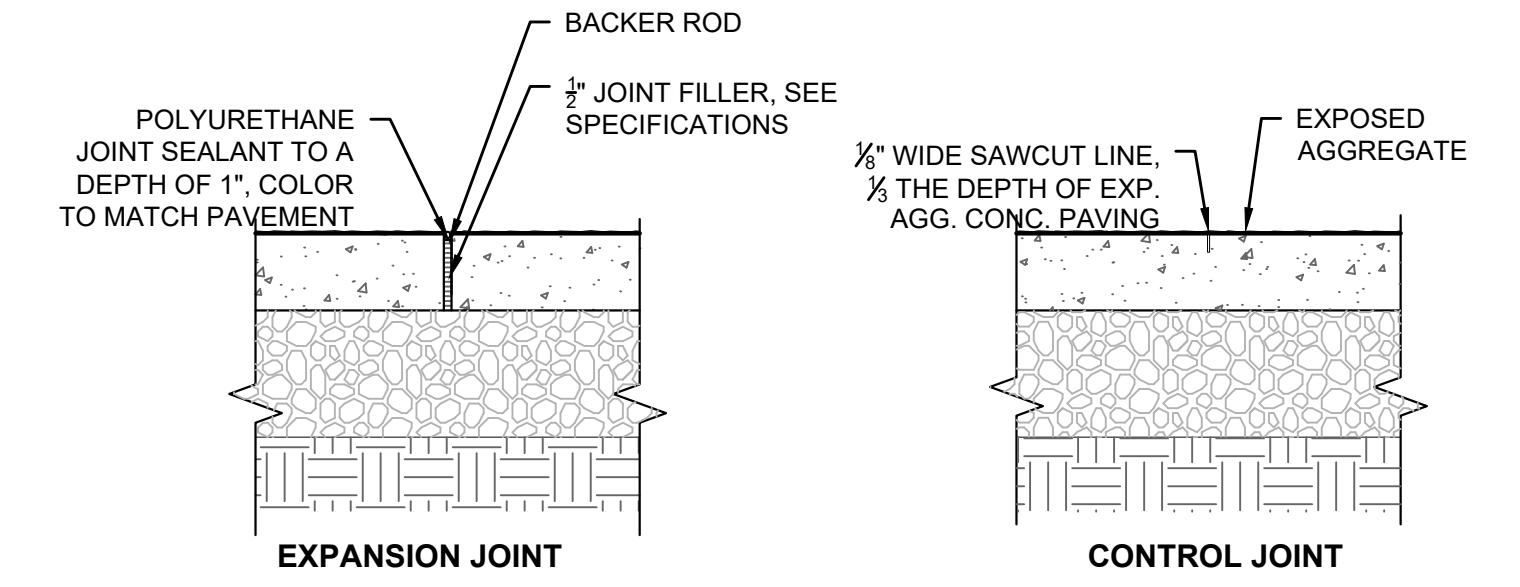


EXPANSION JOINT **CONTROL JOINT**

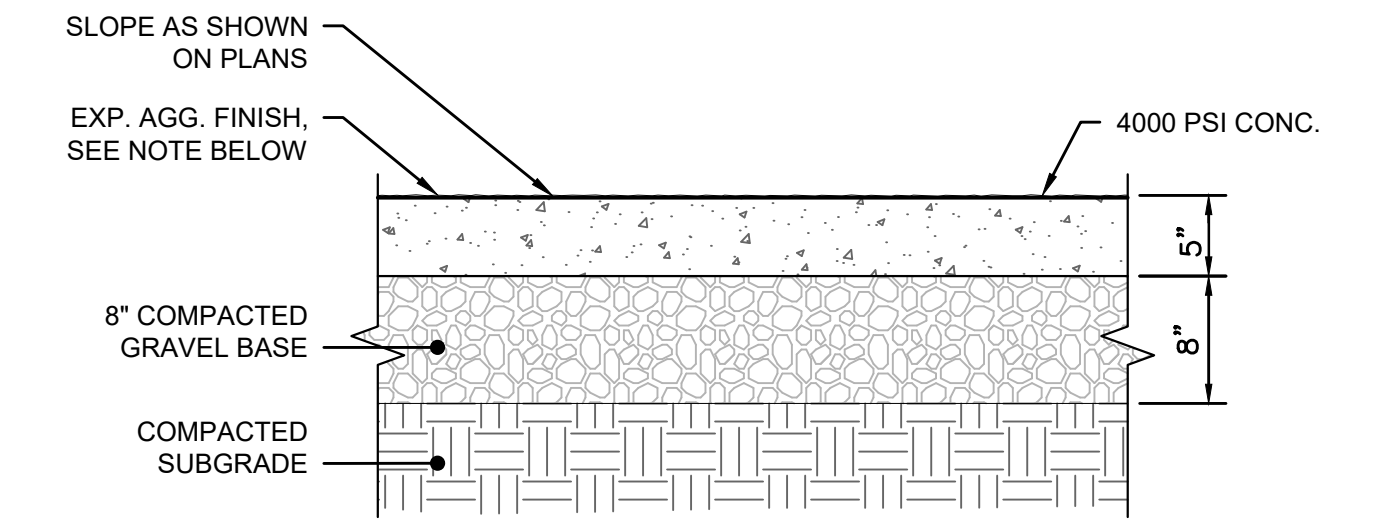


- NOTES:**
1. EXPANSION JOINTS SHALL BE 20' O.C. UNLESS OTHERWISE NOTED ON THE PLANS.
 2. CONTROL JOINTS SHALL BE 5' O.C. UNLESS OTHERWISE NOTED ON THE PLANS.

CONCRETE PAVING - 5" THICK
SCALE: 1"=1'

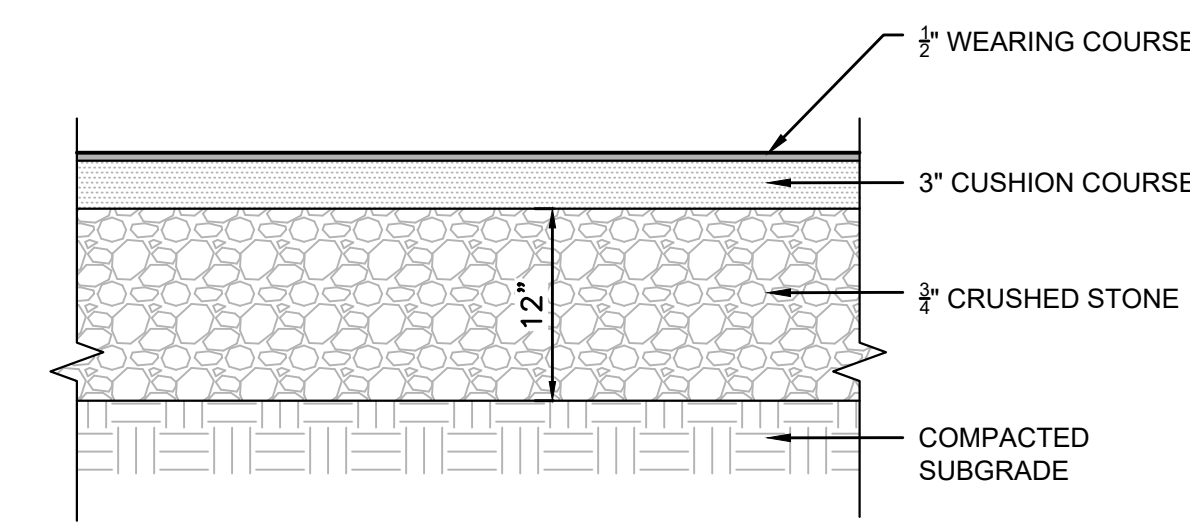


EXPANSION JOINT **CONTROL JOINT**

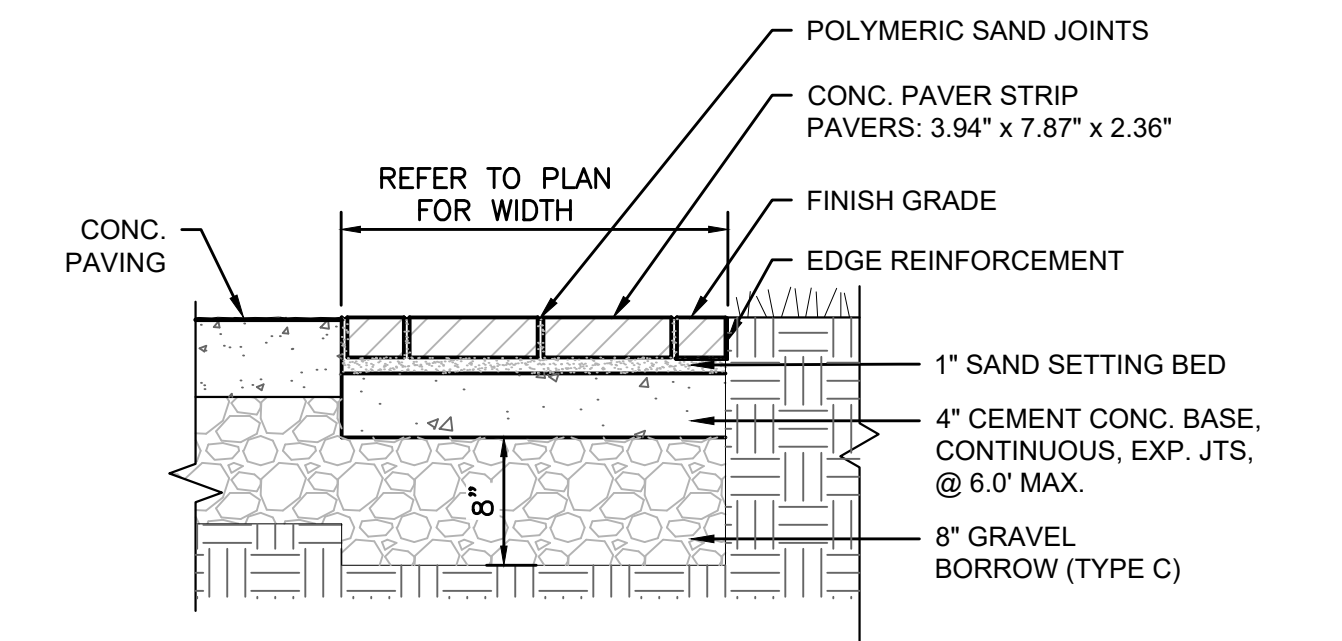


- NOTES:**
1. AGGREGATE SIZE, COLOR, AND SHAPE SHALL BE CONSISTANT THROUGHOUT THE PROJECT AREA.
 2. EXPANSION JOINTS SHALL BE 20' O.C. UNLESS OTHERWISE NOTED ON THE PLANS.
 3. THOROUGHLY WASH AND CLEAN ALL SURFACES AND REMOVE ALL DEBRIS AFTER POWERWASHING AND SAWCUTTING.
 4. SAWCUT CONTROL JOINTS SHALL BE AS NOTED ON THE PLANS.

EXPOSED AGGREGATE CONCRETE PAVING
SCALE: 1"=1'



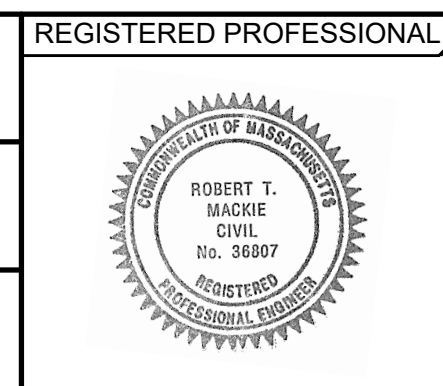
POLYURETHANE SAFETY SURFACING
AT 'CIRCLE OF PEACE' SCULPTURE
SCALE: 1"=1'-0"



CONCRETE PAVER SIDEWALK
SCALE: 1"=1'-0"

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CHECKED BY:
SR/RM



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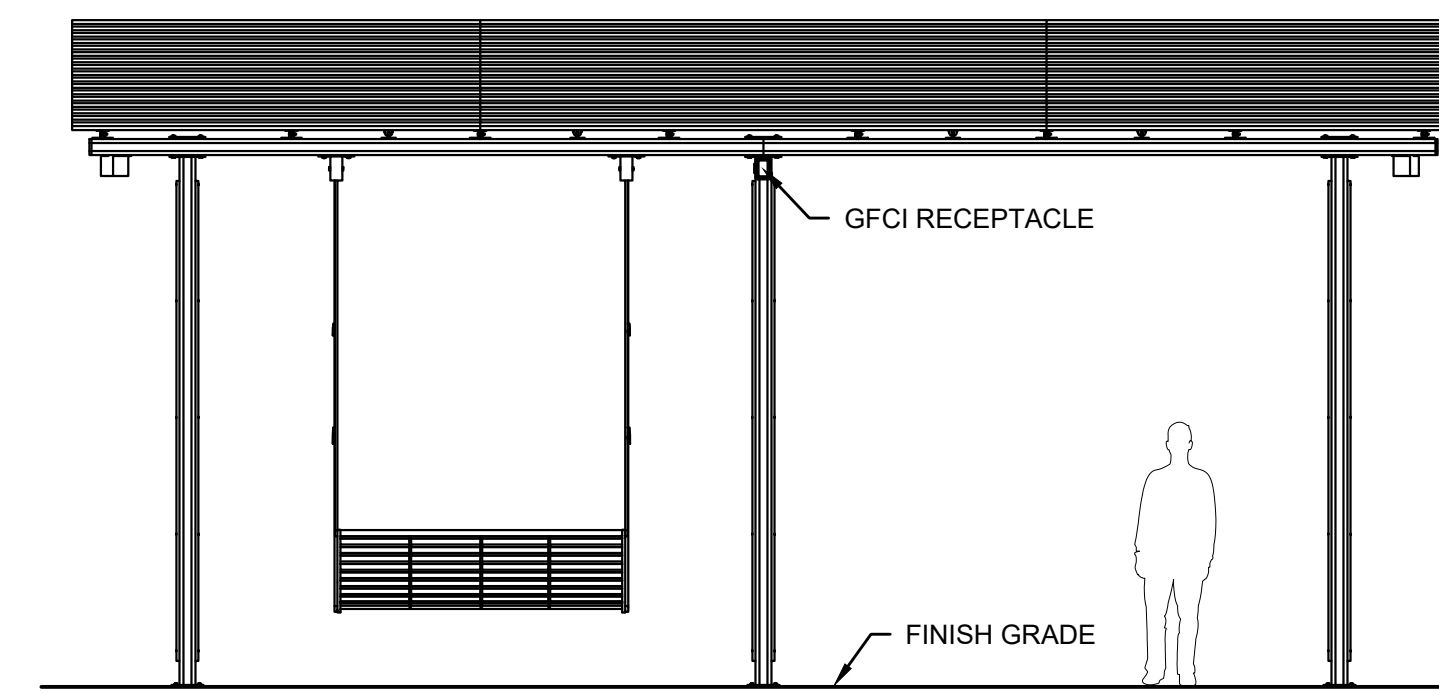
SCALE
AS SHOWN

TITLE
TOWN COMMON RENOVATION
DETAILS
NEEDHAM, MASSACHUSETTS

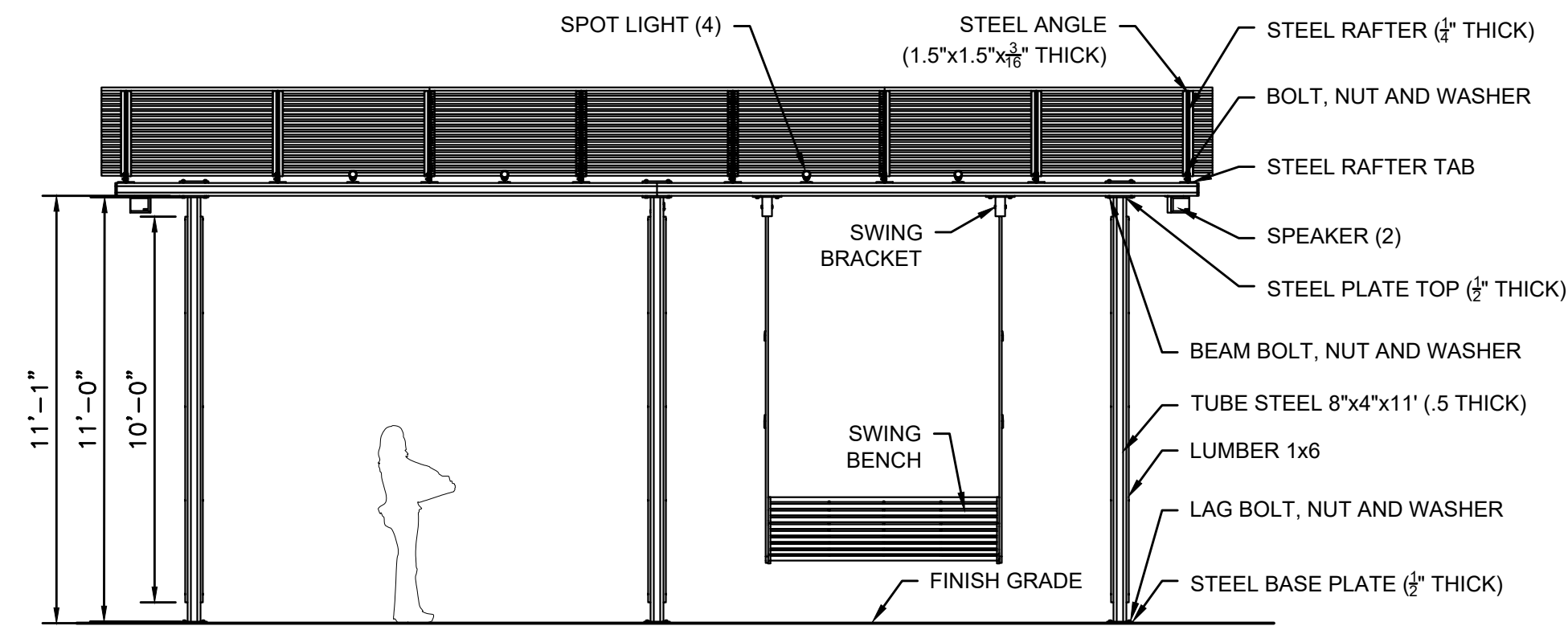
BETA JOB NO. 7185
ISSUE DATE NOV. 4, 2021
SHEET NO. 10

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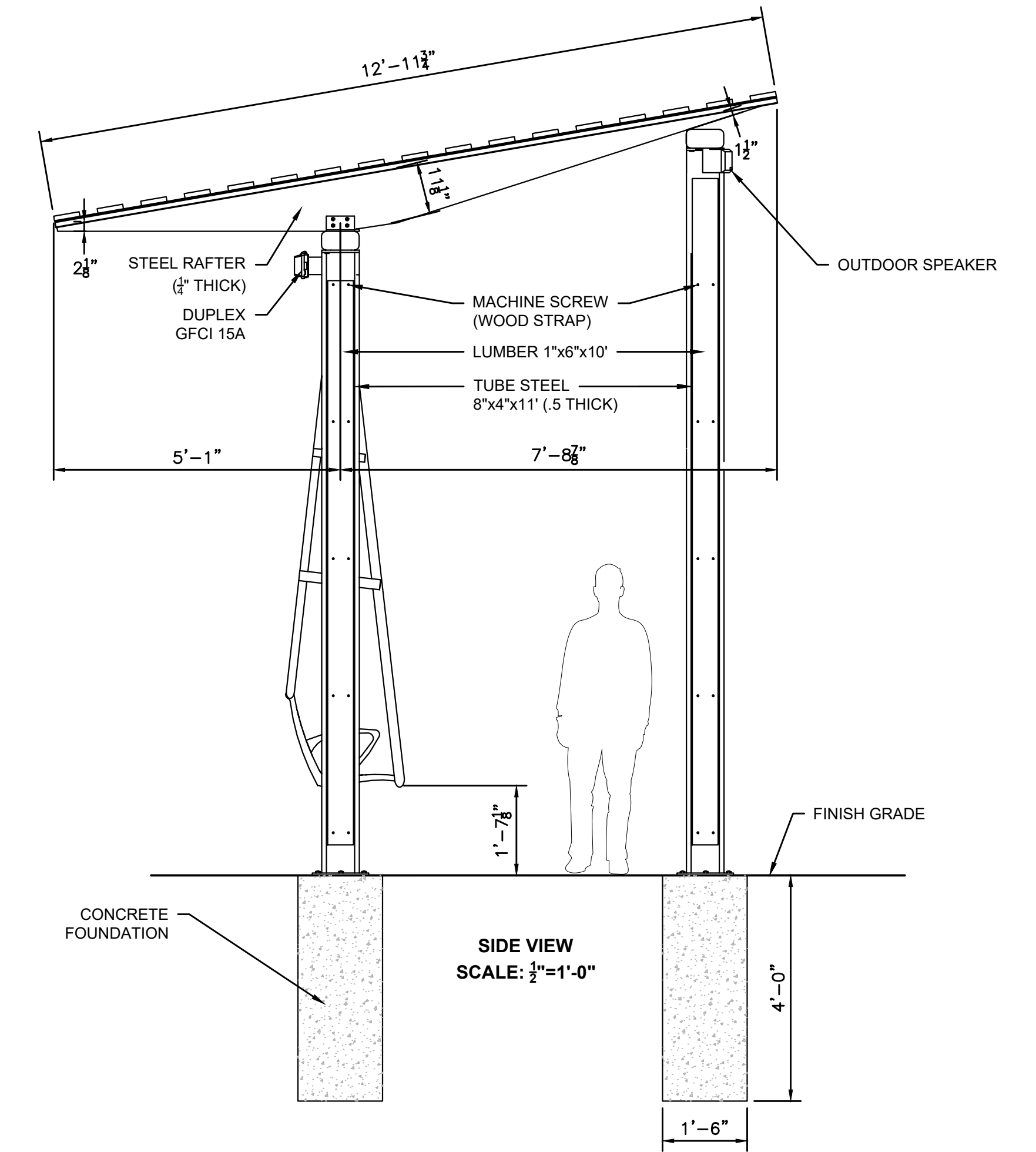
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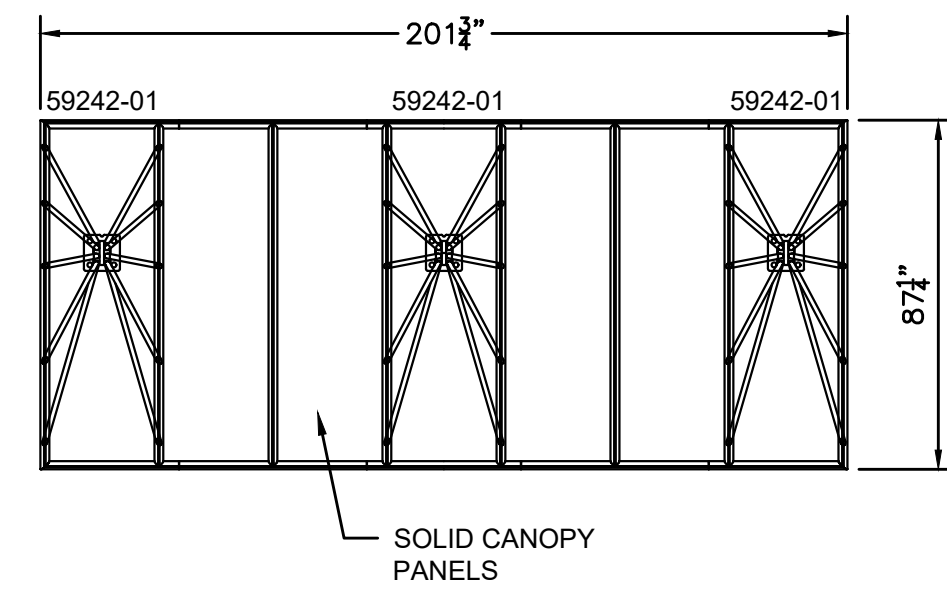
REAR VIEW



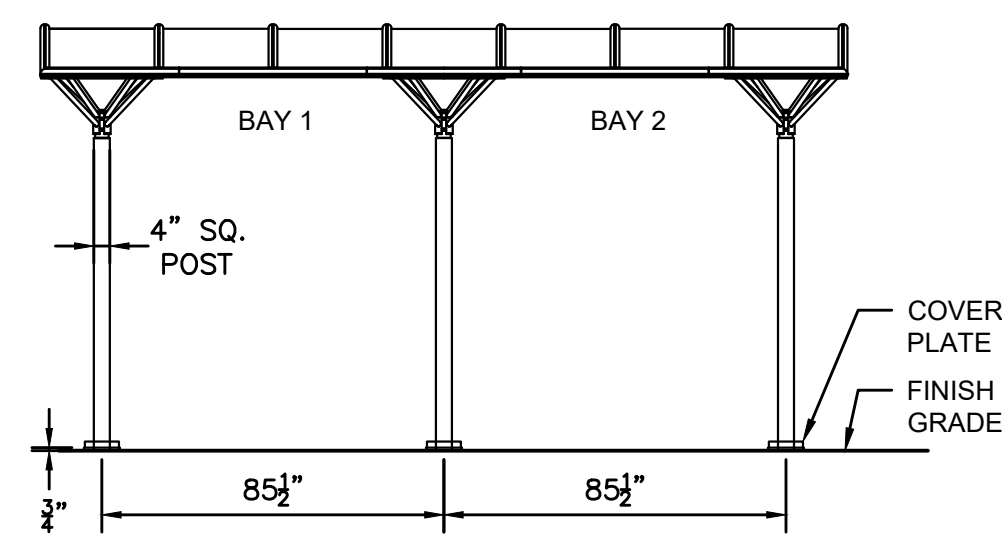
FRONT VIEW



SIDE VIEW
SCALE: 1/2"=1'-0"

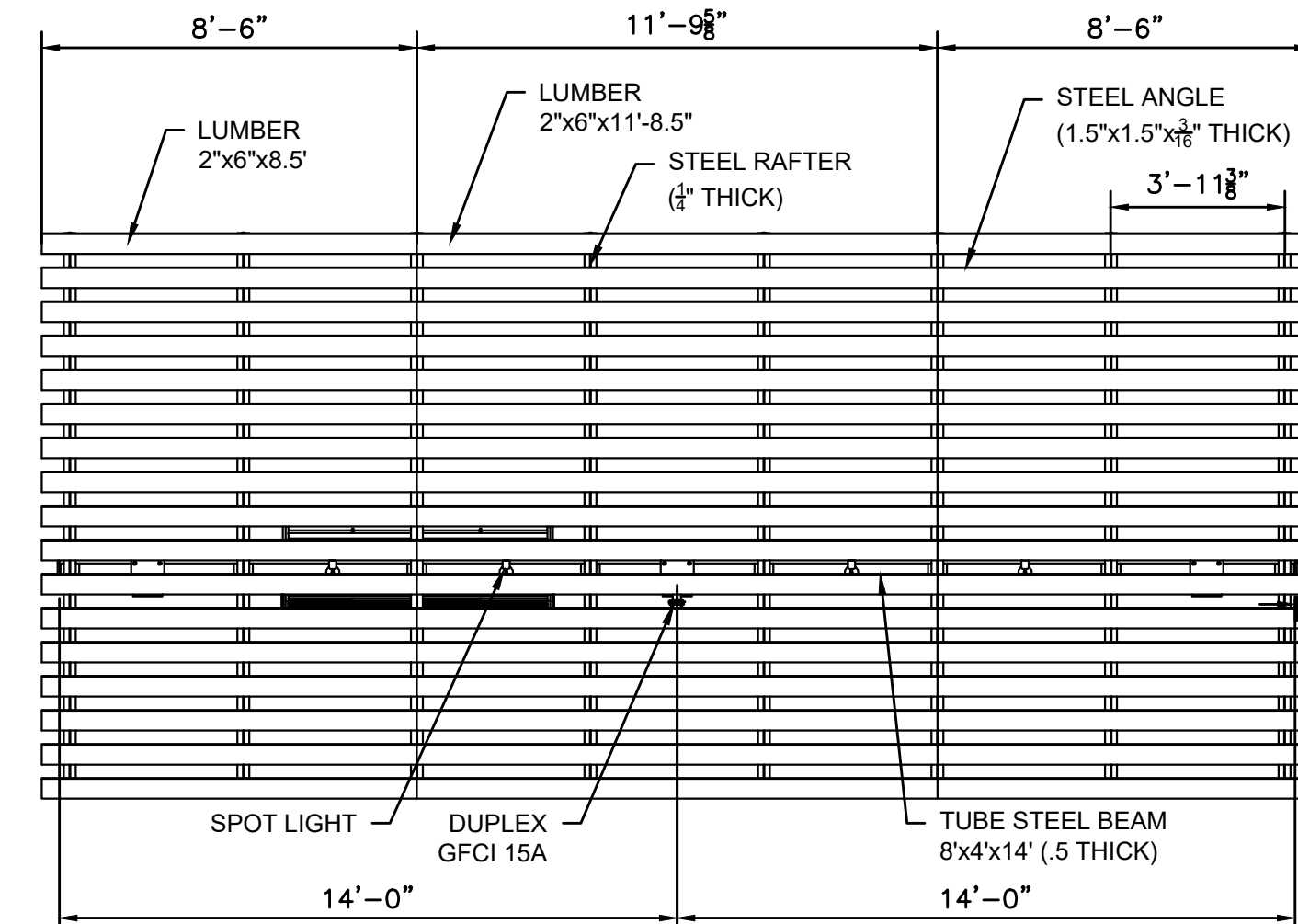
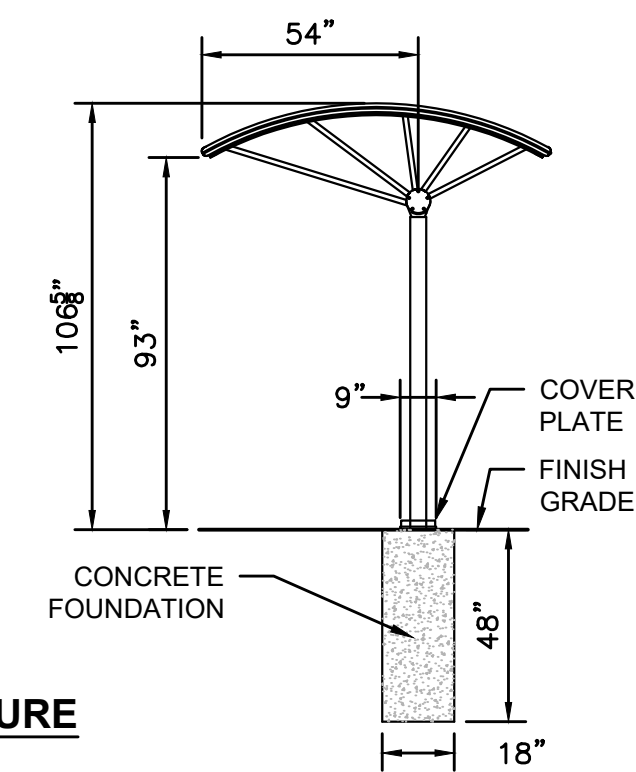


SOLID CANOPY PANELS

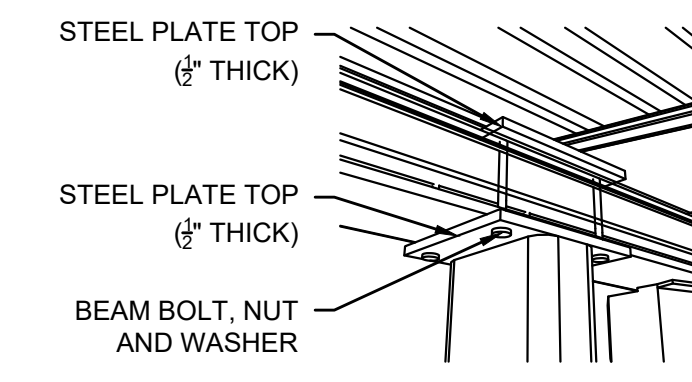


BUS SHELTER STRUCTURE

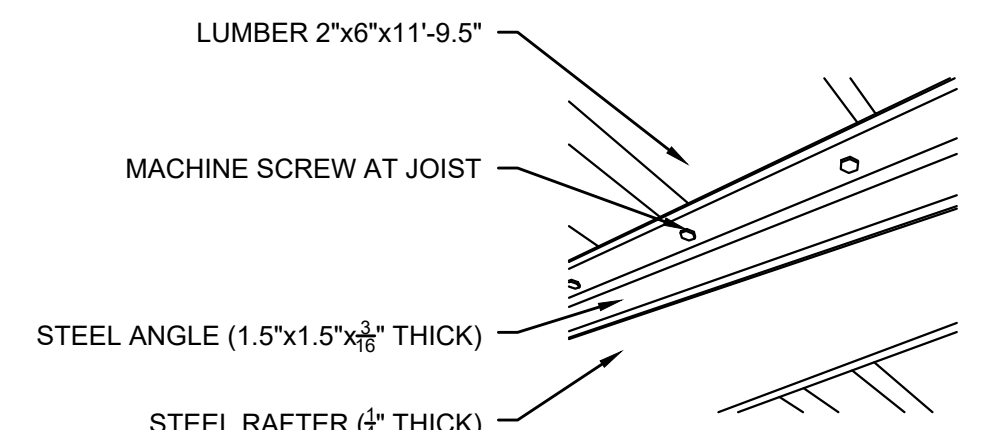
SCALE: 1/4"=1'-0"



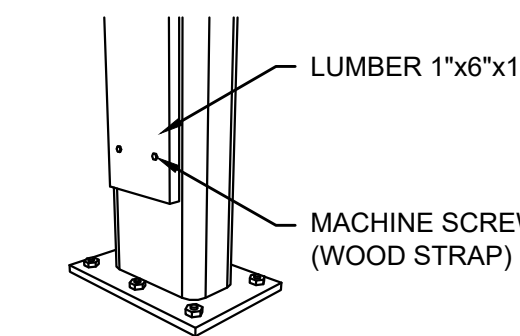
TOP VIEW



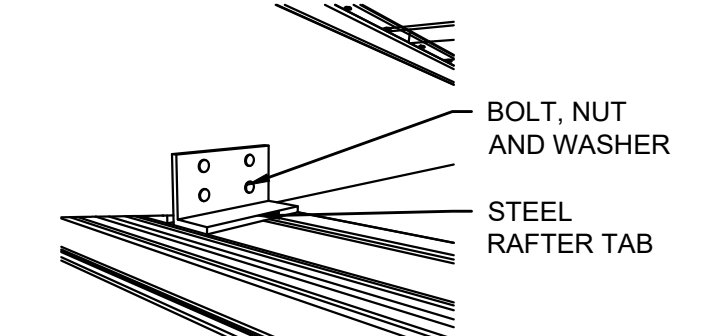
TUBE STEEL POST TO TUBE



RAFTER TAB CONNECTION



TUBE STEEL POST TO FOUNDATION CONNECTION



1/2 METAL PLATE TO TUBE STEEL BEAM CONNECTION

SHADE STRUCTURE
SCALE: 1/4"=1'-0"

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

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DESIGNED BY:	SR/NS
CHECKED BY:	SR/RM

REGISTERED PROFESSIONAL

PREPARED BY

SUBCONSULTANT	
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SCALE	AS SHOWN
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TITLE

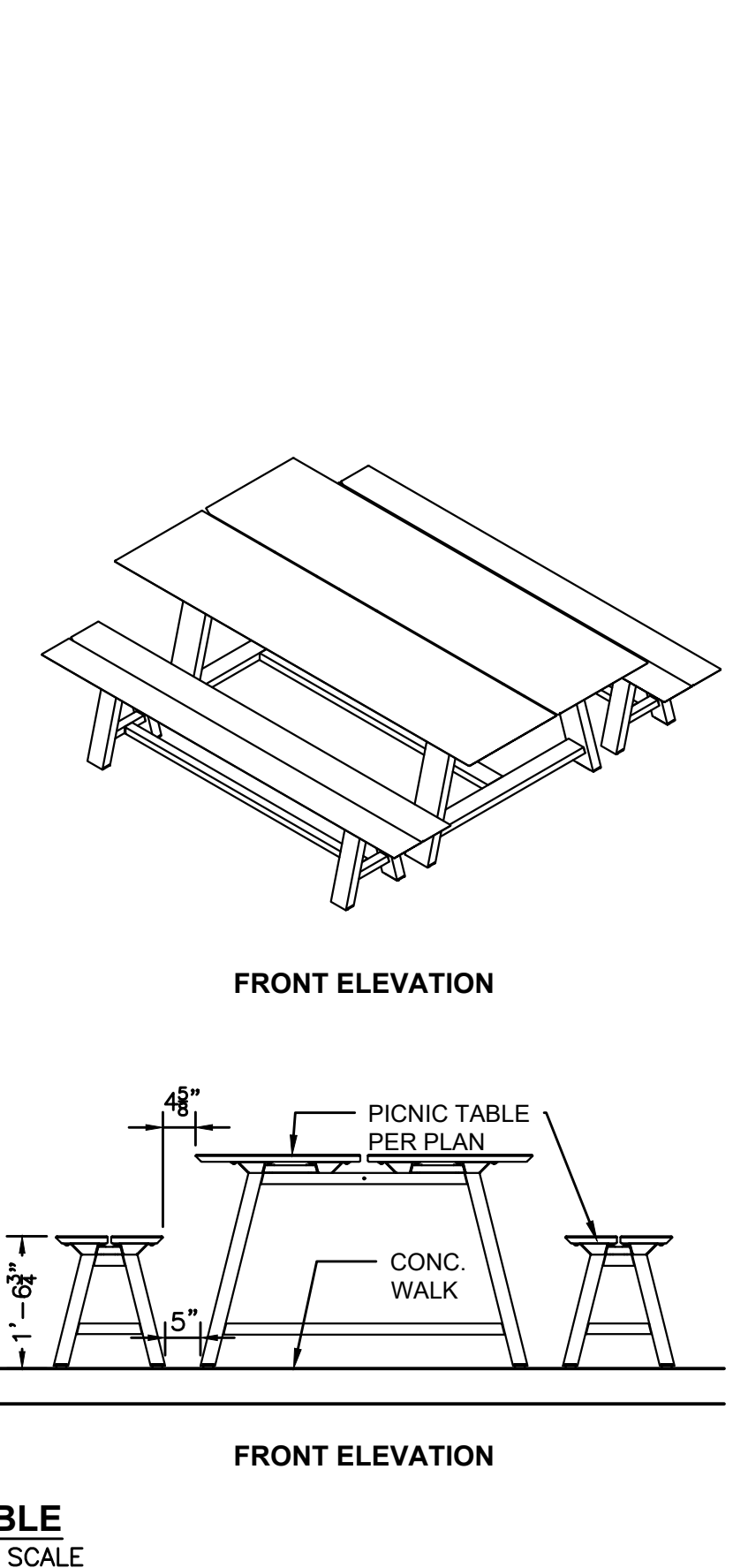
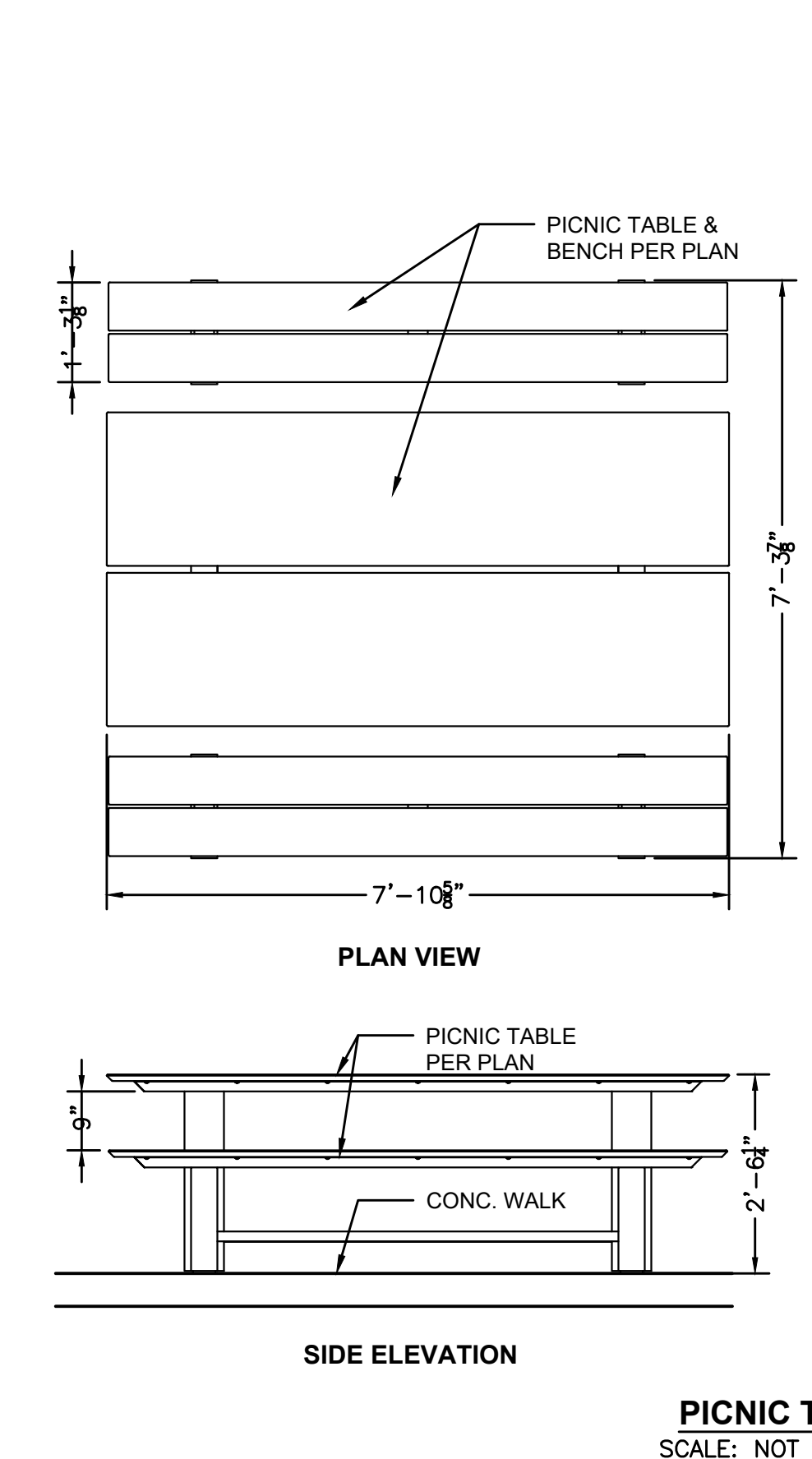
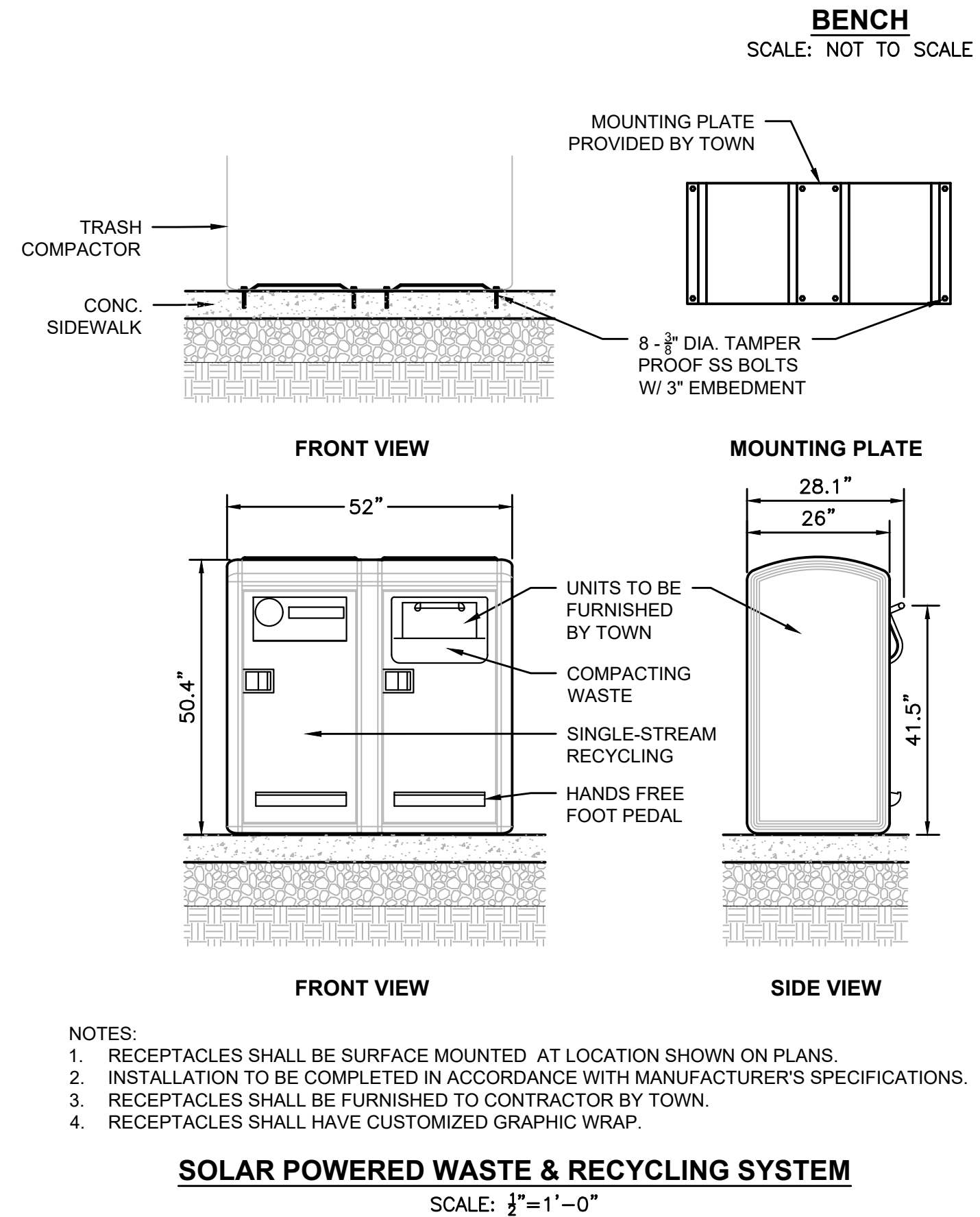
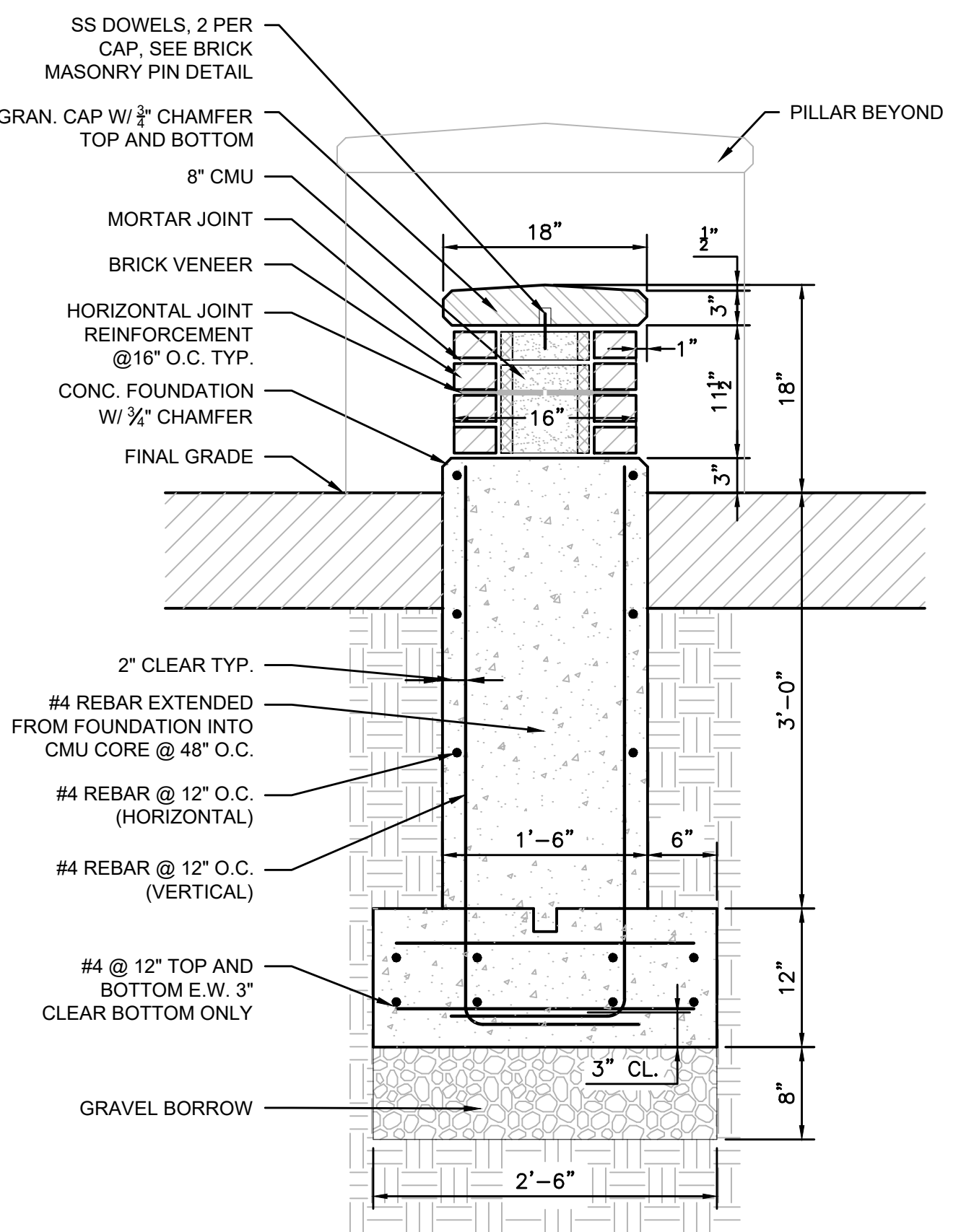
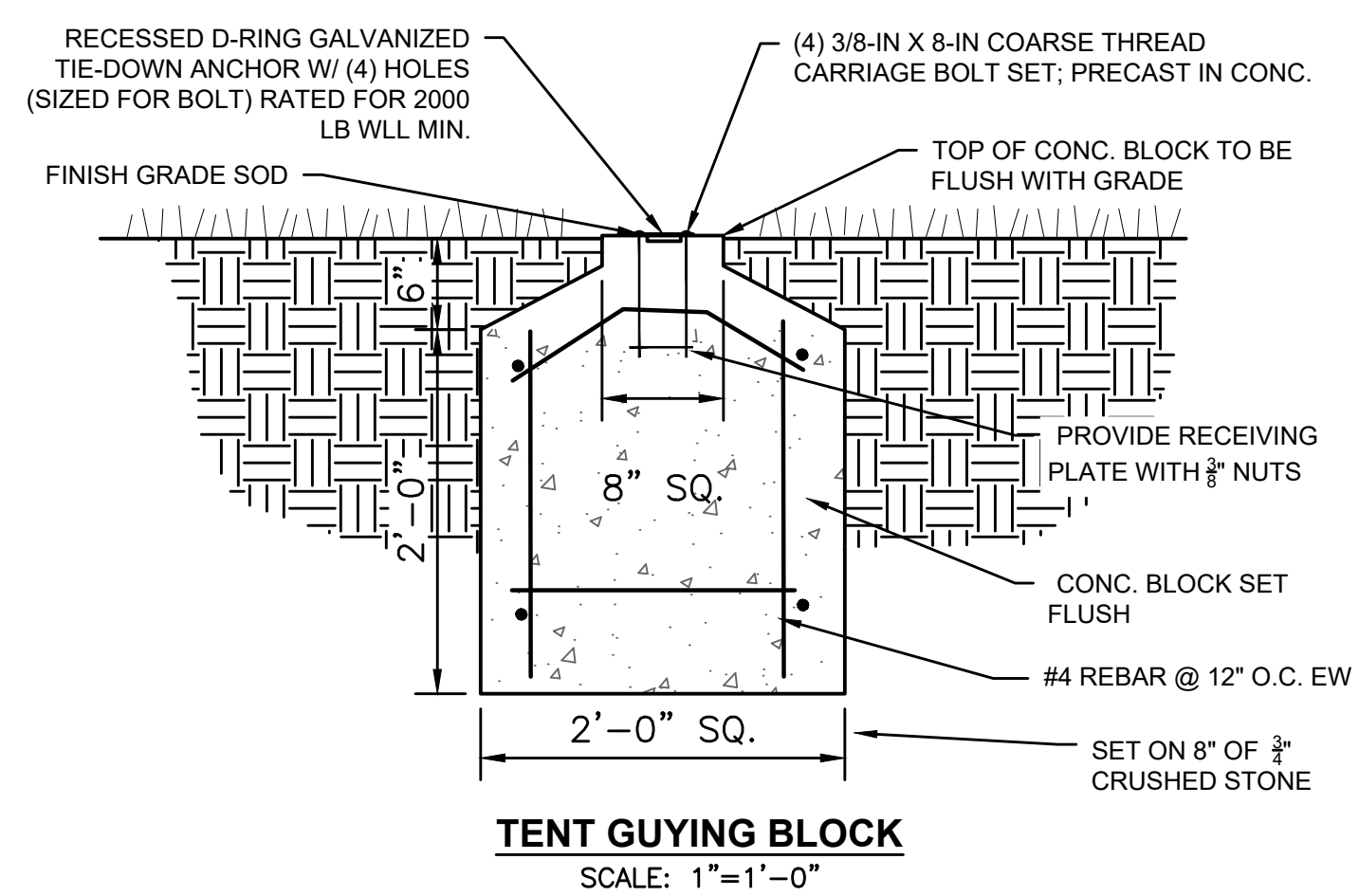
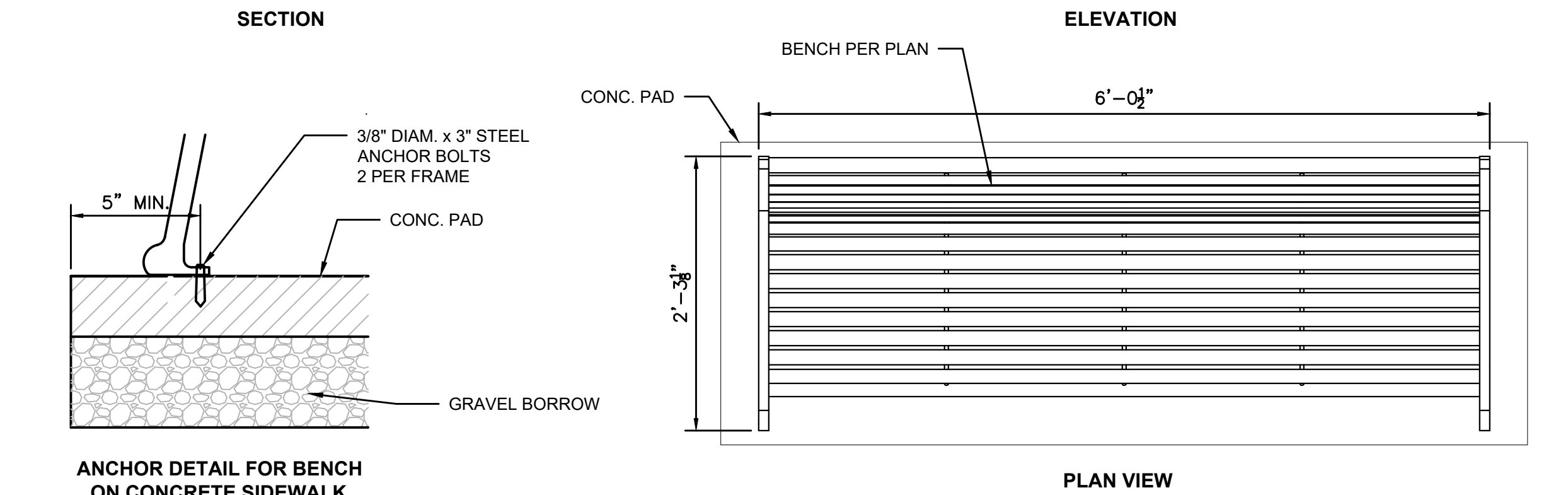
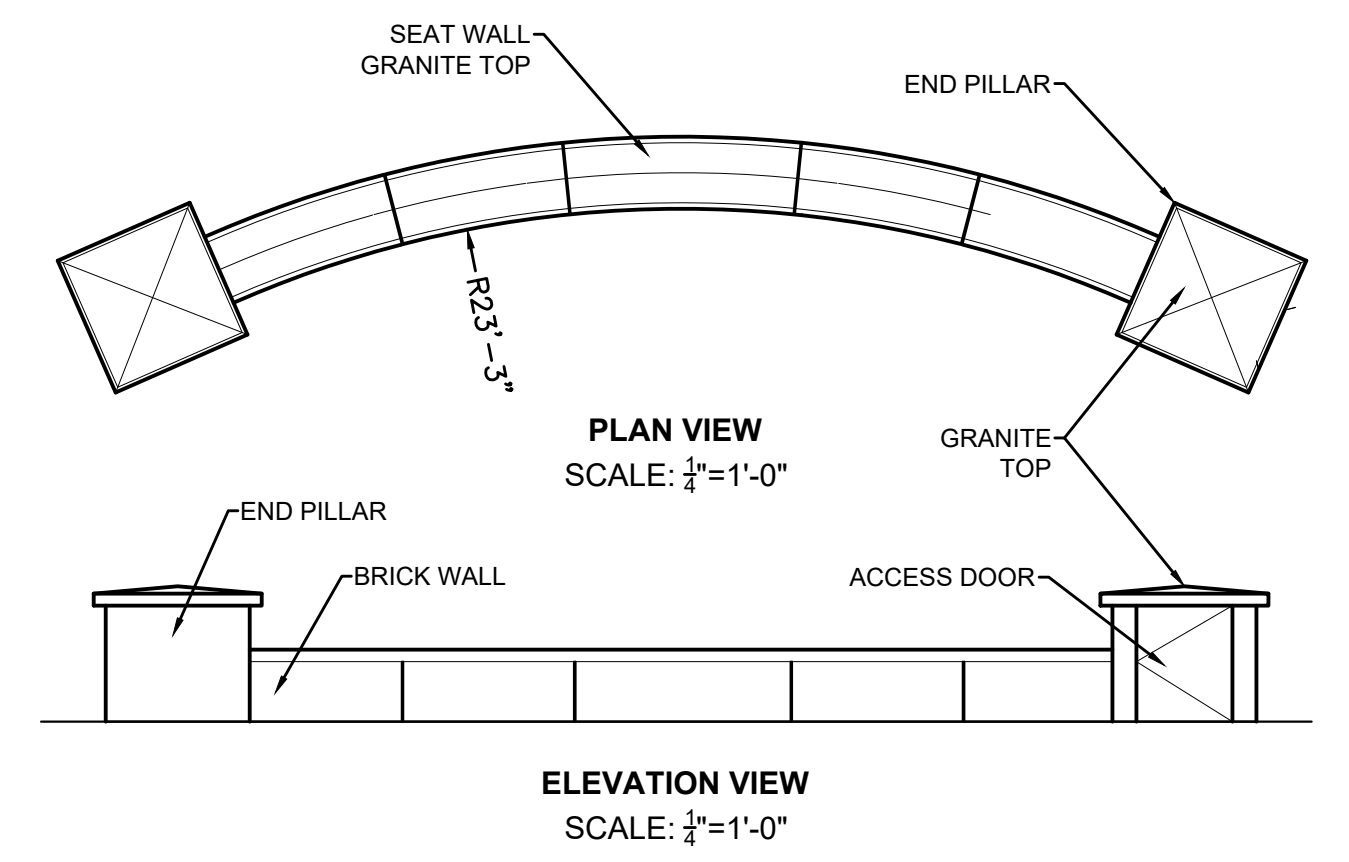
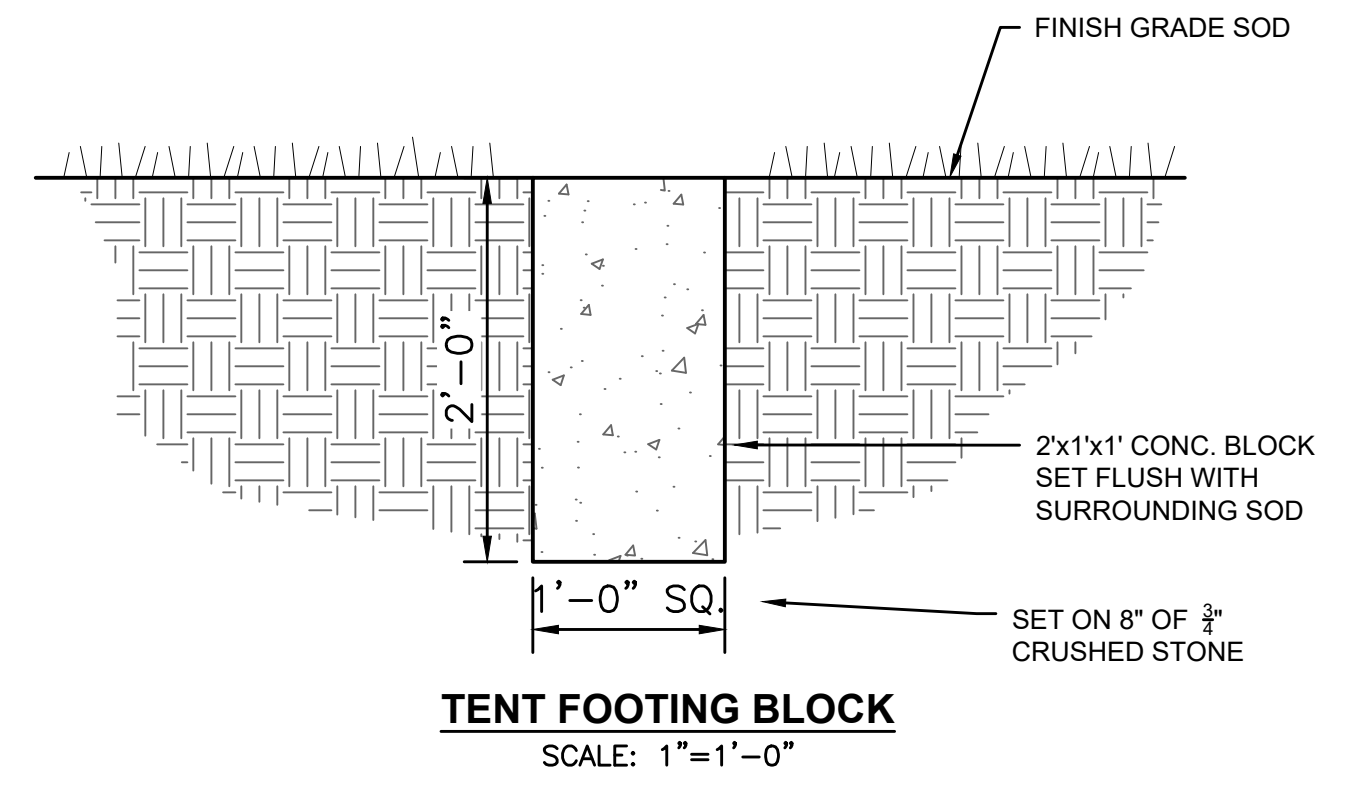
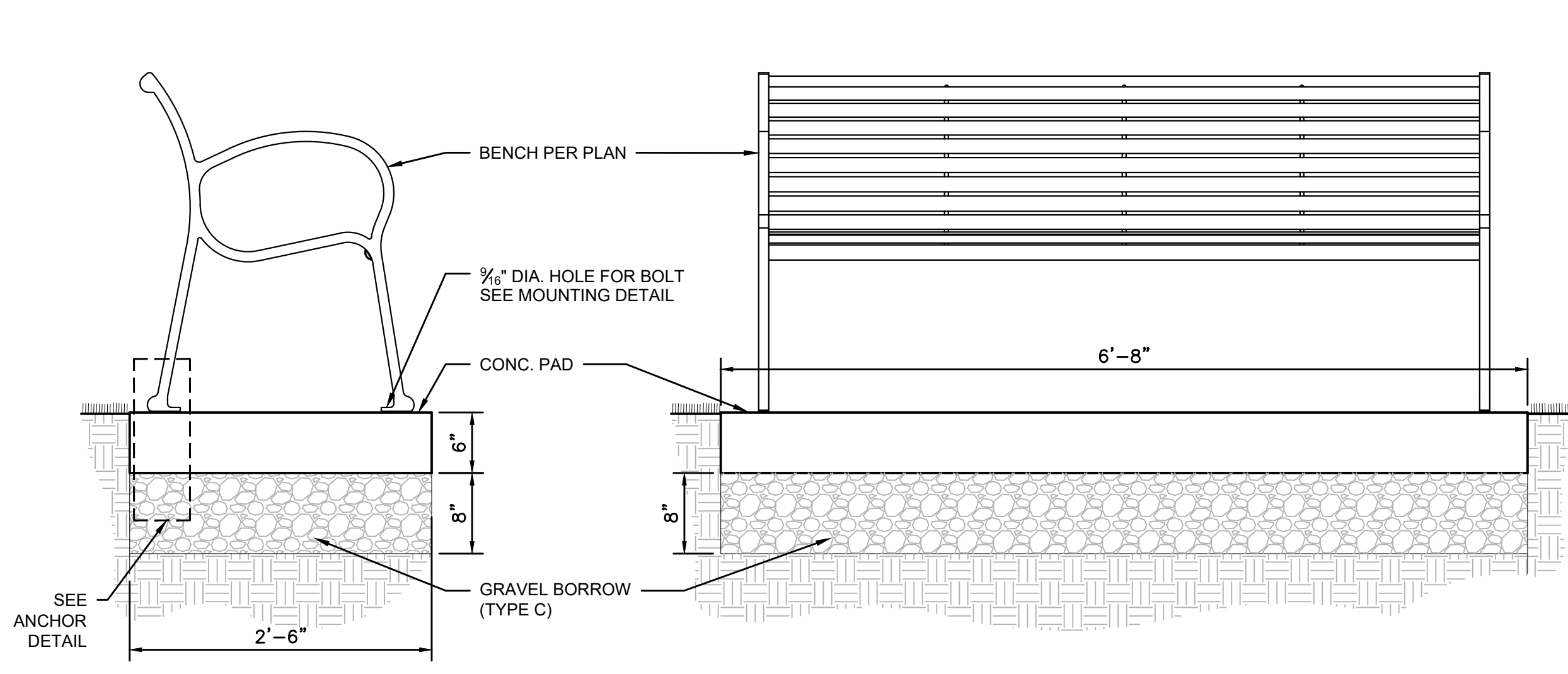
TOWN COMMON RENOVATION

DETAILS

NEEDHAM, MASSACHUSETTS

BETA JOB NO.	7185
ISSUE DATE	NOV. 4, 2021
SHEET NO.	11

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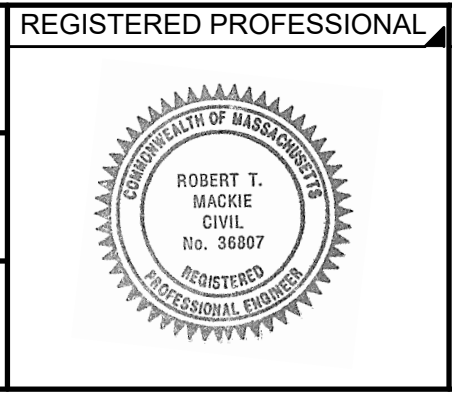
NOTE: ALLOW FOR MOISTURE REMOVAL SYSTEM BETWEEN CMU AND BRICK FACING MATERIALS THAT ALLOWS FOR MOISTURE ENTERING TO DRAIN THROUGH WEEP HOLES, TYP. FOR BRICK MASONRY PIER AND WALL.

- NOTES:
 1. RECEPTACLES SHALL BE SURFACE MOUNTED AT LOCATION SHOWN ON PLANS.
 2. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
 3. RECEPTACLES SHALL BE FURNISHED TO CONTRACTOR BY TOWN.
 4. RECEPTACLES SHALL HAVE CUSTOMIZED GRAPHIC WRAP.

1/16/2021 9:44 AM C:\7100517185-NEEDHAM-TOWN\COMMONDRAWING FILES\PLANS\SET17185 LANDSCAPE DETAILS.DWG (BETA STB BW) (STB)

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SR/NS
 CHECKED BY:
SR/RM



PREPARED BY
SUBCONSULTANT
 SCALE
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TITLE
 TOWN COMMON RENOVATION
 DETAILS
 NEEDHAM, MASSACHUSETTS

BETA JOB NO. 7185
 ISSUE DATE NOV. 4, 2021
 SHEET NO. 12

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1/16/2021 9:47 AM C:\7100517185 - NEEDHAM - TOWN COMMONDRAWING FILES\PLANS\SET\7185 UTILITY PLAN.DWG (BETA STB BN.STB)



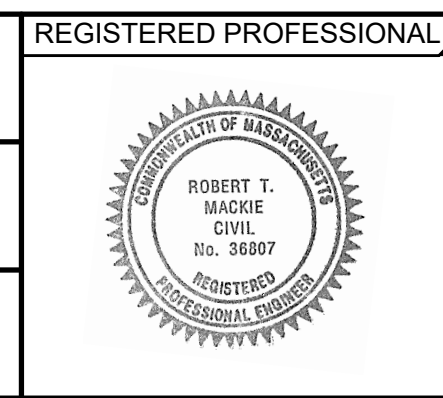
NOTES:
 1. PROVIDE (1) 20 AMP CIRCUIT AND INSTALL A NEW BREAKER WITHIN THE EXISTING ELECTRICAL PANEL.
 2. COORDINATE ROUTING OF THE NEW CIRCUIT TO A TOUCH LED LIGHTING CONTROLLER. CAPABLE OF CHANGING COLORS, CREATING ZONES, DIMMING AND TIMER FUNCTIONS.

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TITLE

TOWN COMMON RENOVATION

ELECTRICAL DETAILS

NEEDHAM, MASSACHUSETTS

BETA JOB NO. 7185

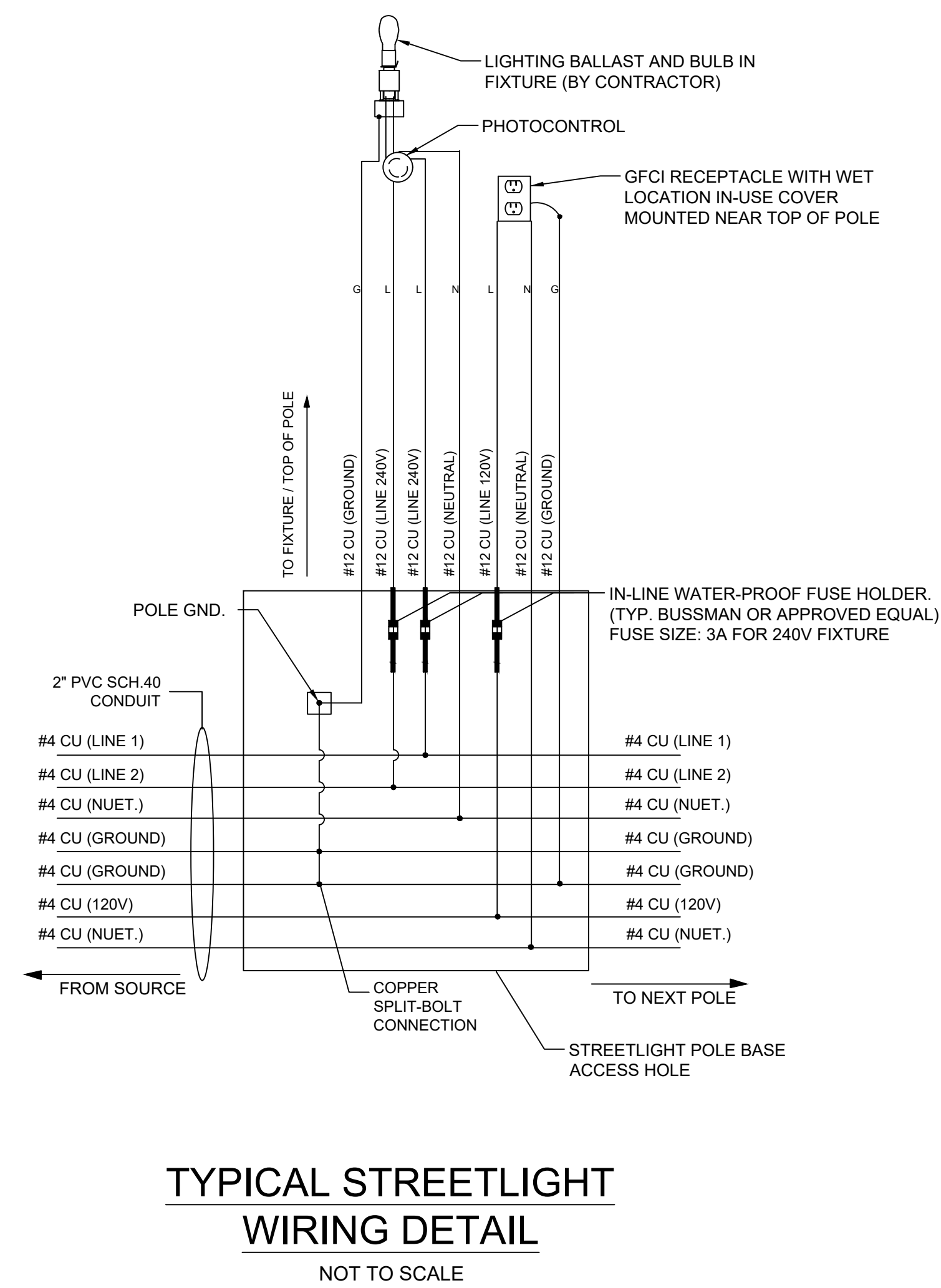
ISSUE DATE NOV. 4, 2021

SHEET NO. 13

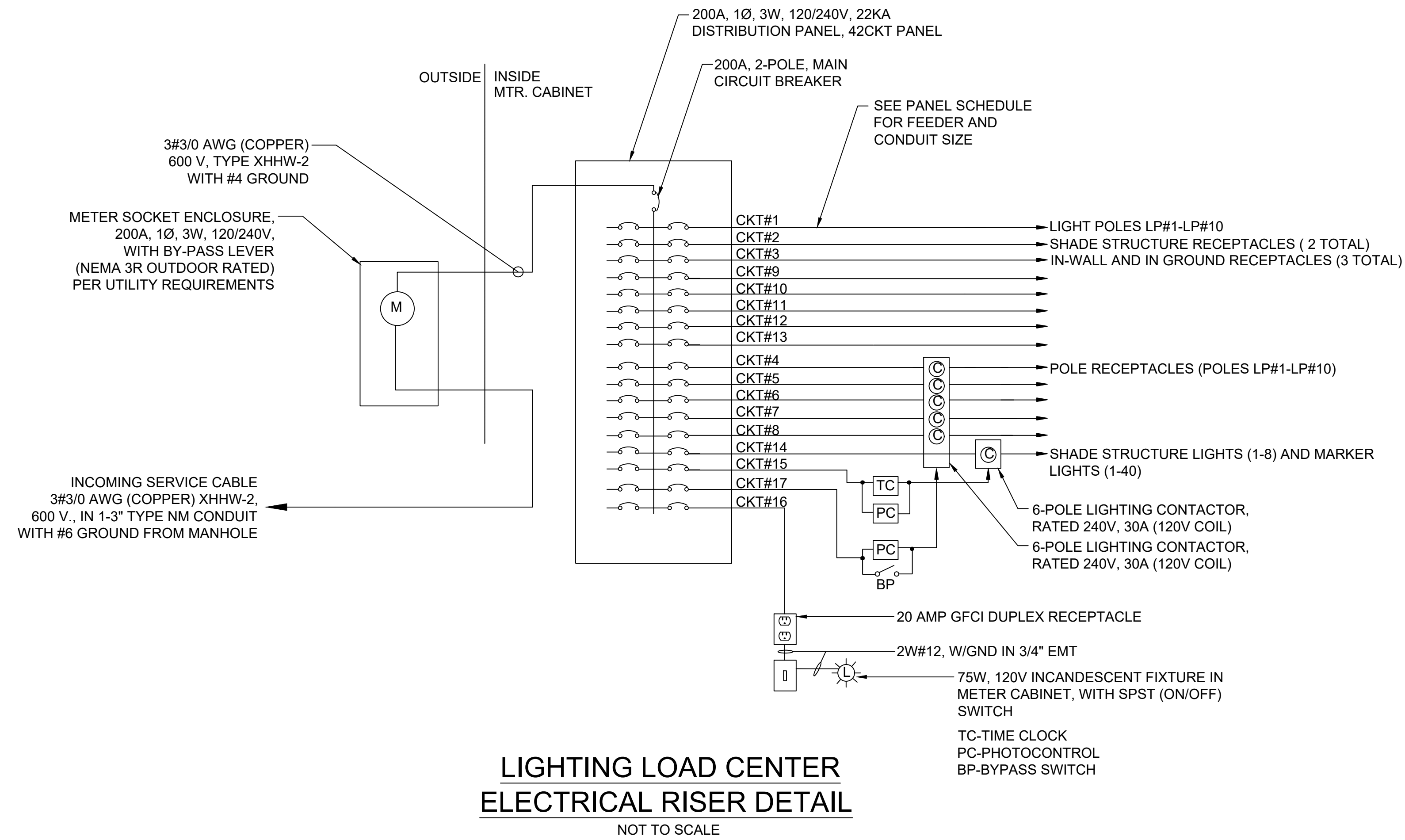
ELECTRICAL NOTES:

- ALL WORK TO BE COMPLETED IN ACCORDANCE WITH THE LATEST APPLICABLE STANDARDS OF ANSI, NEMA, UL, NFPA-70, AND THE NATIONAL ELECTRICAL CODE WITH REGARDS TO MATERIAL, DESIGN, AND CONSTRUCTION.
- THIS DRAWING IS FOR INFORMATION ONLY. THE CONTRACTOR SHALL VERIFY ALL LOCATIONS, DEVICES, MATERIALS, AND EQUIPMENT, PRIOR TO THE START OF ANY WORK.
- CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE, AT LEAST 72 HOURS PRIOR TO BEGINNING ANY EXCAVATION.
- PVC CONDUIT AND FITTINGS SHALL CONFORM TO ANSI/NEMA SPECIFICATIONS, TC-2, TC-3 AND UL-651.
- CONTRACTOR SHALL OBTAIN ALL NECESSARY INSPECTIONS AND COORDINATE ALL WORK WITH THE OWNER AND THE TOWN OF NEEDHAM. TRENCHES SHALL BE INSPECTED PRIOR TO BACKFILLING.
- LOCATIONS OF ALL UTILITIES ARE APPROXIMATE AND ARE PROVIDED FOR INFORMATION ONLY.
- CONTRACTOR TO BALANCE THE NUMBER OF LIGHTING FIXTURES ON EACH CIRCUIT
- CONTRACTOR TO LOCATE ALL ELECTRICAL EQUIPMENT AS DIRECTED BY THE OWNER, ARCHITECT & ENGINEER.

NEW DISTRIBUTION PANEL SCHEDULE - P1							
CIRCUIT	BREAKER			DESCRIPTION OF LOAD	CABLE	CONDUIT	REMARKS
	FRAME	POLES(N-NEUTRAL)	TRIP				
M	200	2P	200	MAIN CIRCUIT BREAKER	3W#3/0AWG & #6AWG GND	1-3"NM SCH80	
1	30	2P	30	LIGHTING CIRCUIT #1 (POLES LP#1-LP#10,)	3W#4AWG & #4 GND	1-2"NM SCH80	CONTROLLED BY PHOTOCELL IN EACH POLE
2	30	2P	30	SHADE STRUCTURE RECEPTACLES (2 TOTAL)	2W#8AWG & #10 GND	1-2"NM SCH80	CONTROLLED BY BREAKER (ALWAYS ON)
3	30	2P	30	IN WALL AND IN GROUND RECEPTACLES (3 TOTAL)	2W#8AWG & #10 GND	1-2"NM SCH80	CONTROLLED BY BREAKER (ALWAYS ON)
4	30	2P	30	POLE RECEPTACLES (POLES LP#11-LP#21)	2W#4AWG & #4 GND	1-2"NM SCH80	CONTROLLED BY PHOTOCELL W/BYPASS IN CABINET
5	30	2P	30				
6	30	1P	30				
7	30	1P	30				
8	30	1P	30				
9	20	1P	20				
10	20	1P	20				
11	20	1P	20				
12	20	1P	20				
13	30	2P	30				
14	20	1P	20	FLAG AND ARCH UPLIGHTS (6 LIGHTS)	2W#8AWG & #10 GND	1-2"NM SCH80	CONTROLLED BY TIMECLOCK & PHOTOCELL IN CABINET
15	20	1P	20	TIME CLOCK POWER	2W#12AWG & #12 GND	1-1"NM SCH80	
16	20	1P	20	RECEPTACLE IN CABINET	2W#12AWG & #12 GND	1-1"NM SCH80	
17	20	1P	20	PHOTOCONTROL CONTACTOR POWER	2W#12AWG & #12 GND	1-1"NM SCH80	



TYPICAL STREETLIGHT WIRING DETAIL
NOT TO SCALE

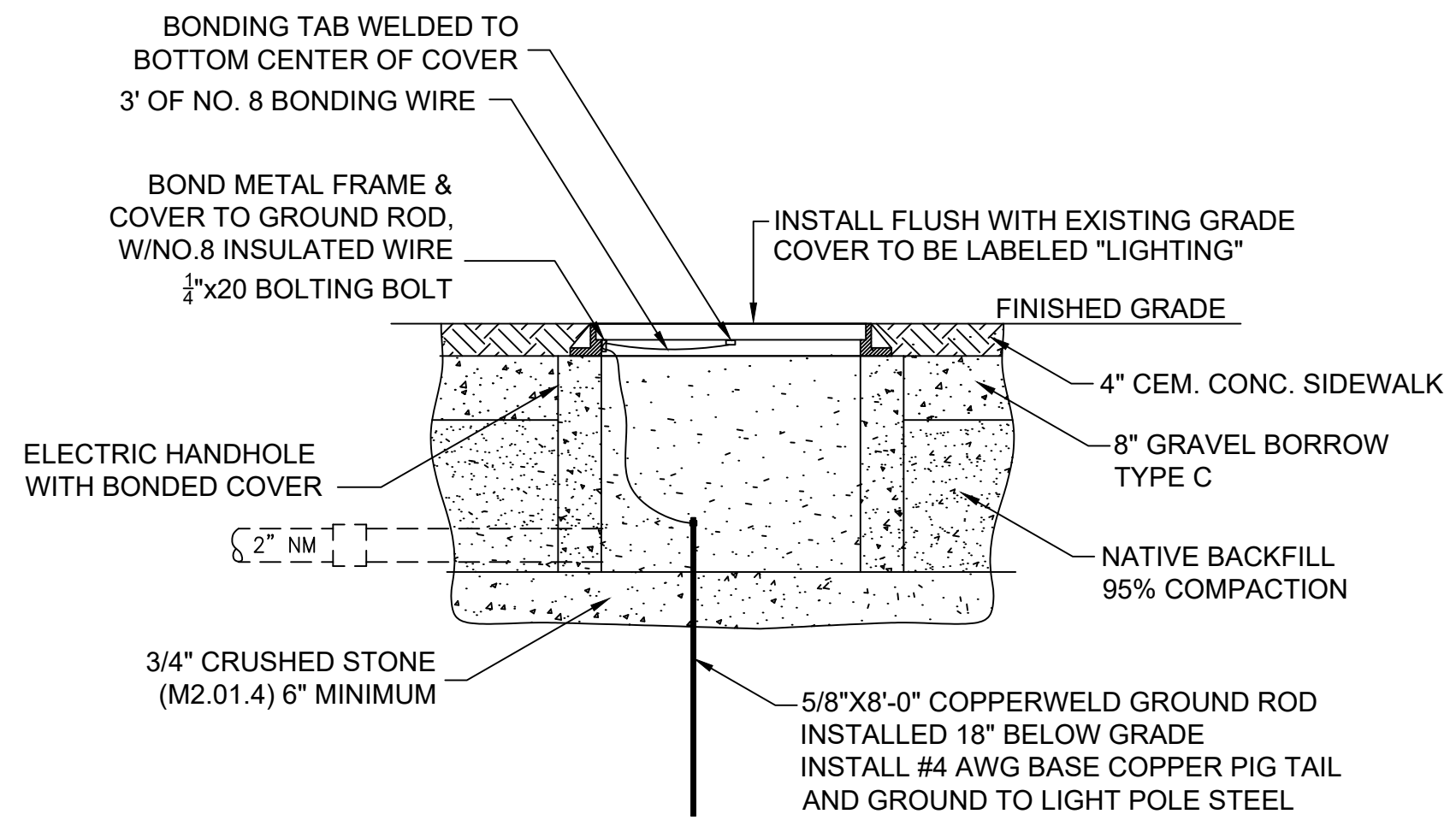


LIGHTING LOAD CENTER ELECTRICAL RISER DETAIL
NOT TO SCALE

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NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS													

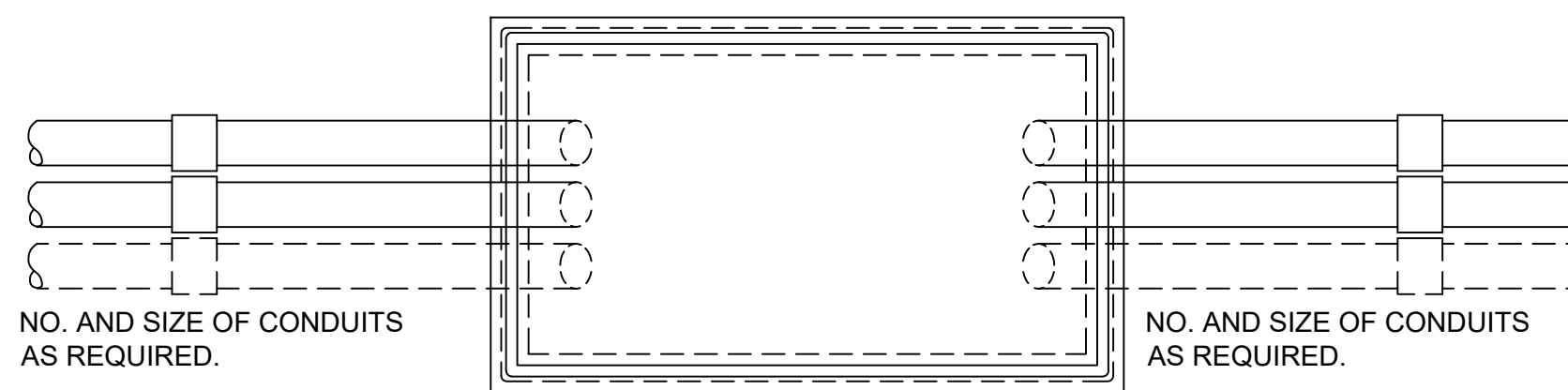
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION



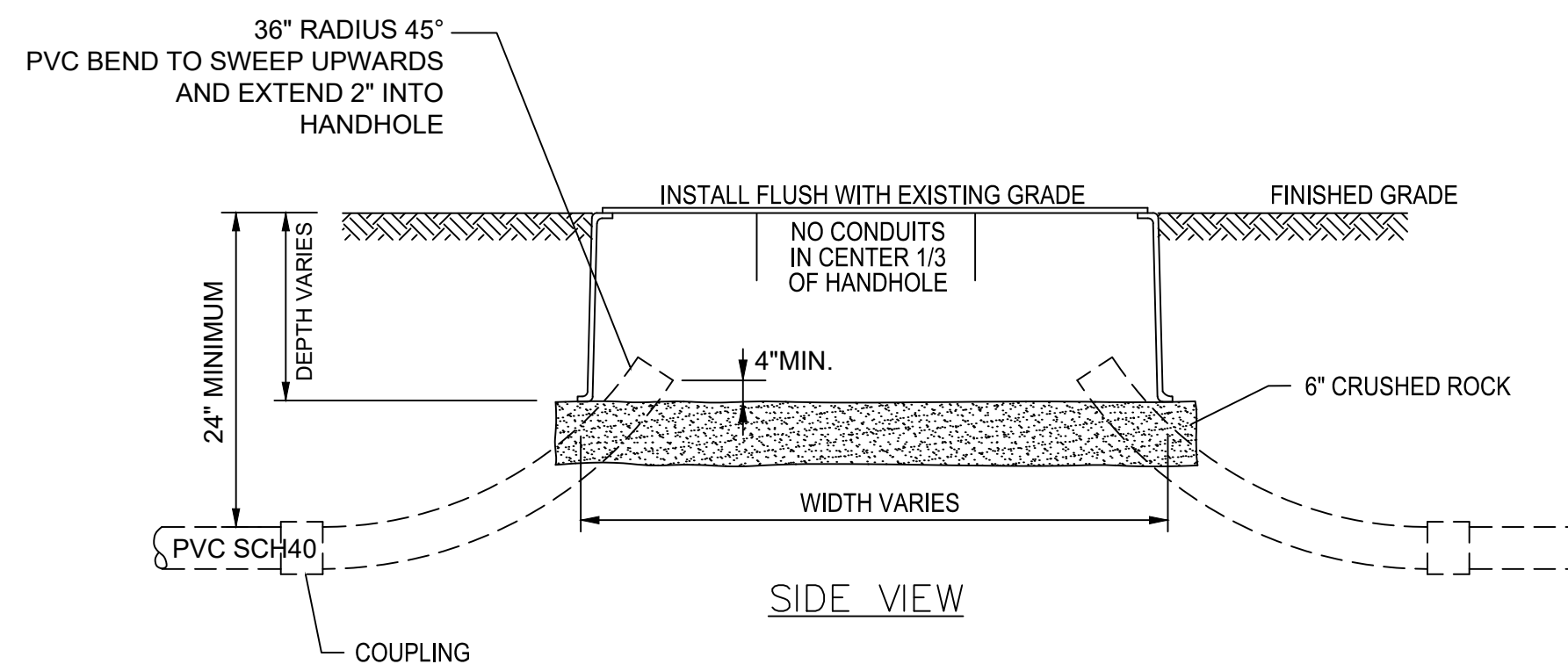
- HANDHOLE INSTALLATION NOTES:**
- HANDHOLE ORIENTATION TO BE SUCH THAT ALL SUPPLY DUCTS ENTER ON SAME SHORT SIDE.
 - SIZE AND NUMBER OF CONDUITS AS REQUIRED.
 - CONDUIT LOCATIONS SHOWN ARE TYPICAL.

**INSTALLATION DETAIL
PRECAST ELECTRIC HANDHOLE**
NOT TO SCALE

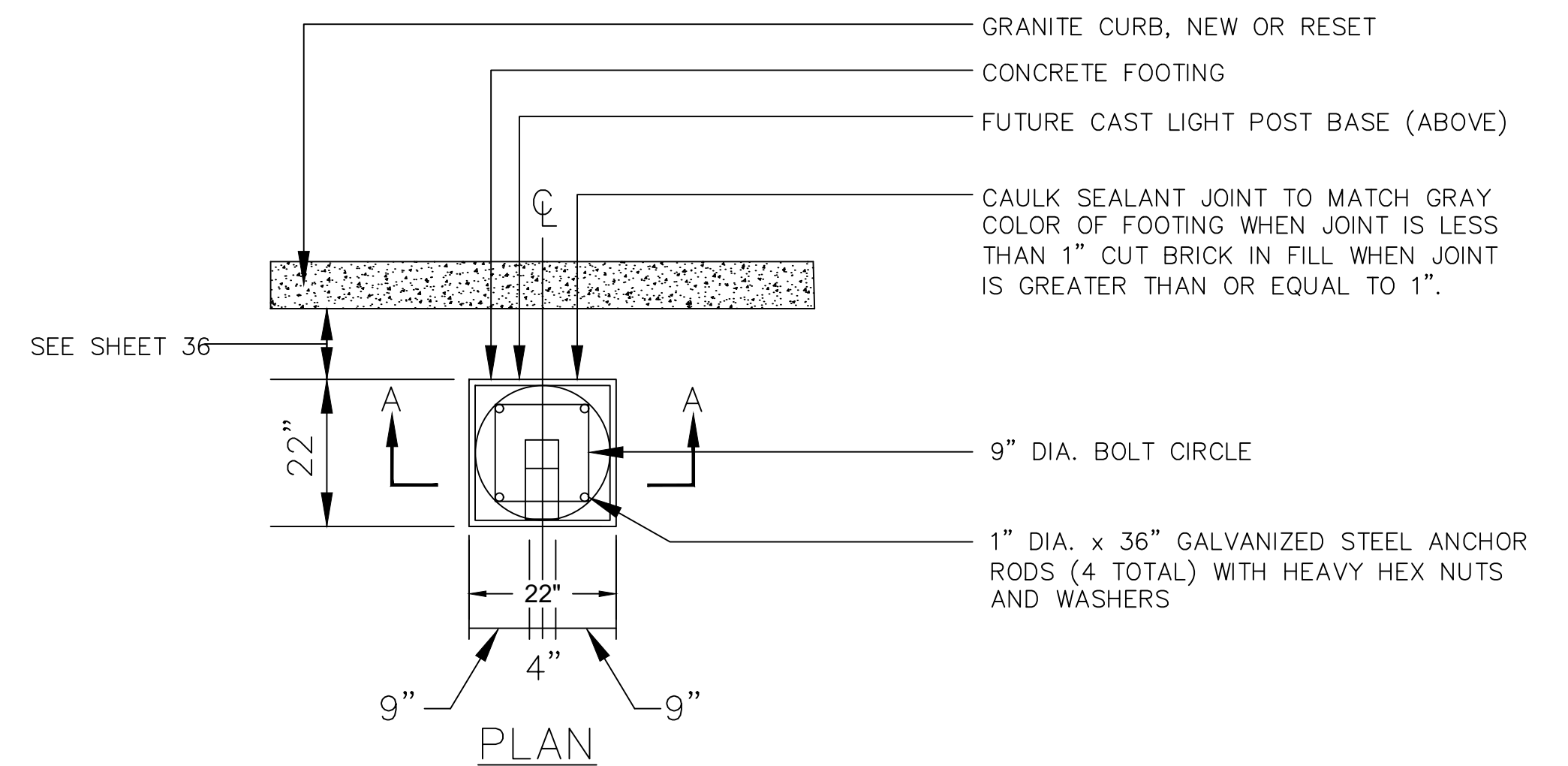
- NOTES:**
- HANDHOLE ORIENTATION TO BE SUCH THAT ALL SUPPLY DUCTS ENTER ON SAME SHORT SIDE.
 - SIZE AND NUMBER OF CONDUITS AS REQUIRED.
 - CONDUIT LOCATIONS SHOWN ARE TYPICAL.



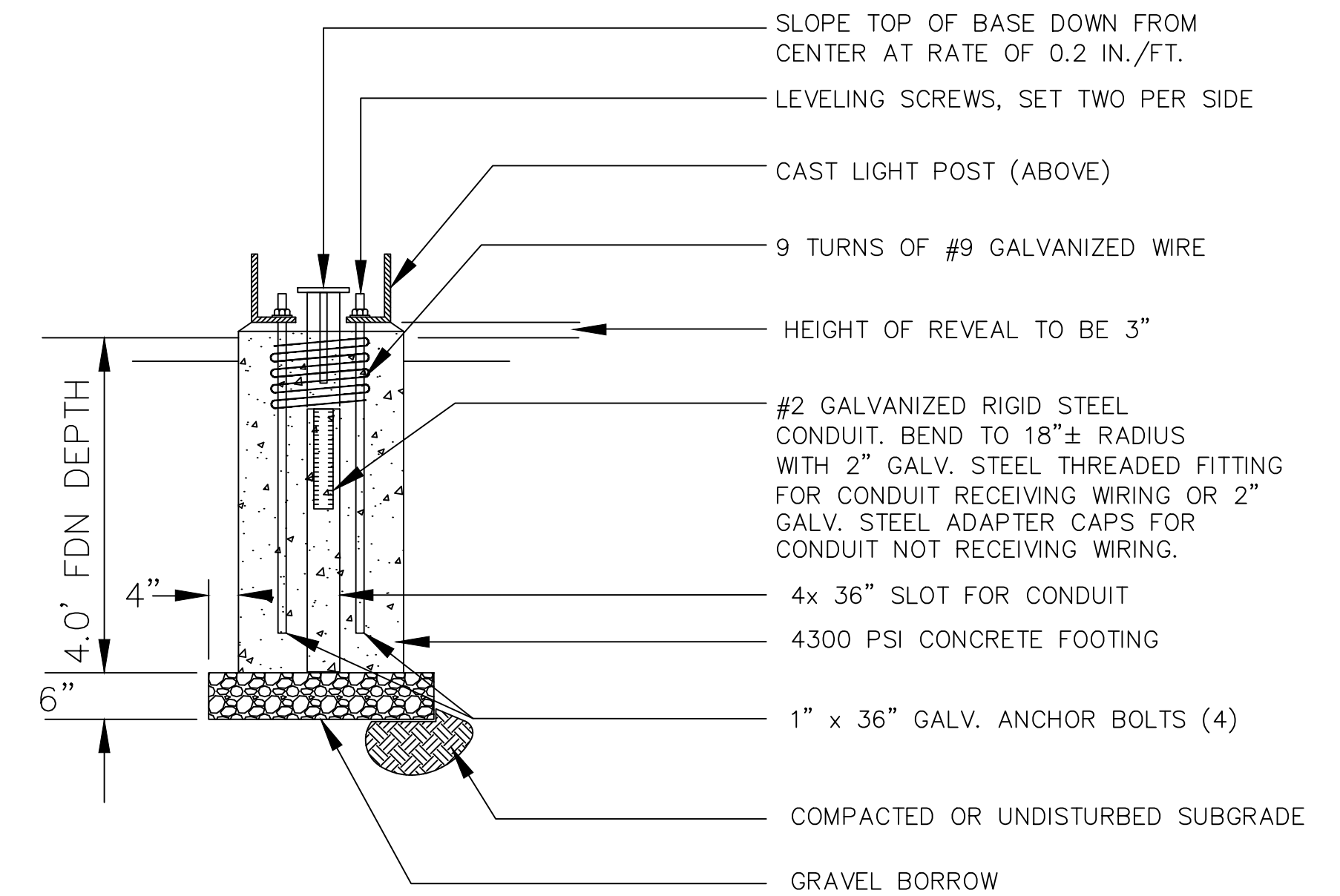
PLAN VIEW



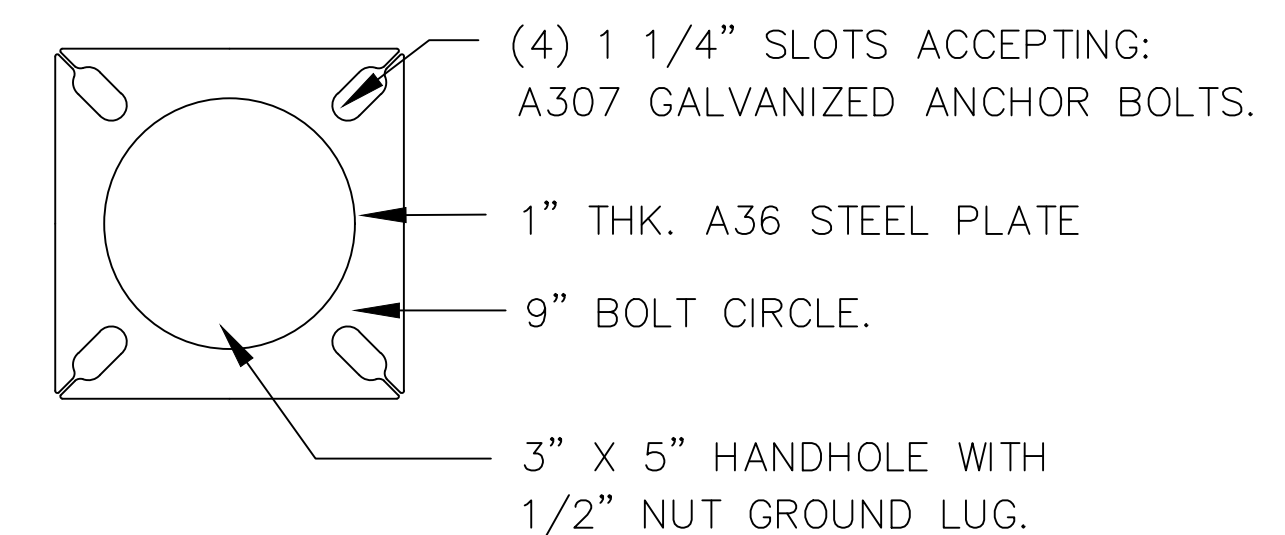
**INSTALLATION DETAIL
COMPOSITE ELECTRIC HANDHOLE**
NOT TO SCALE



PLAN

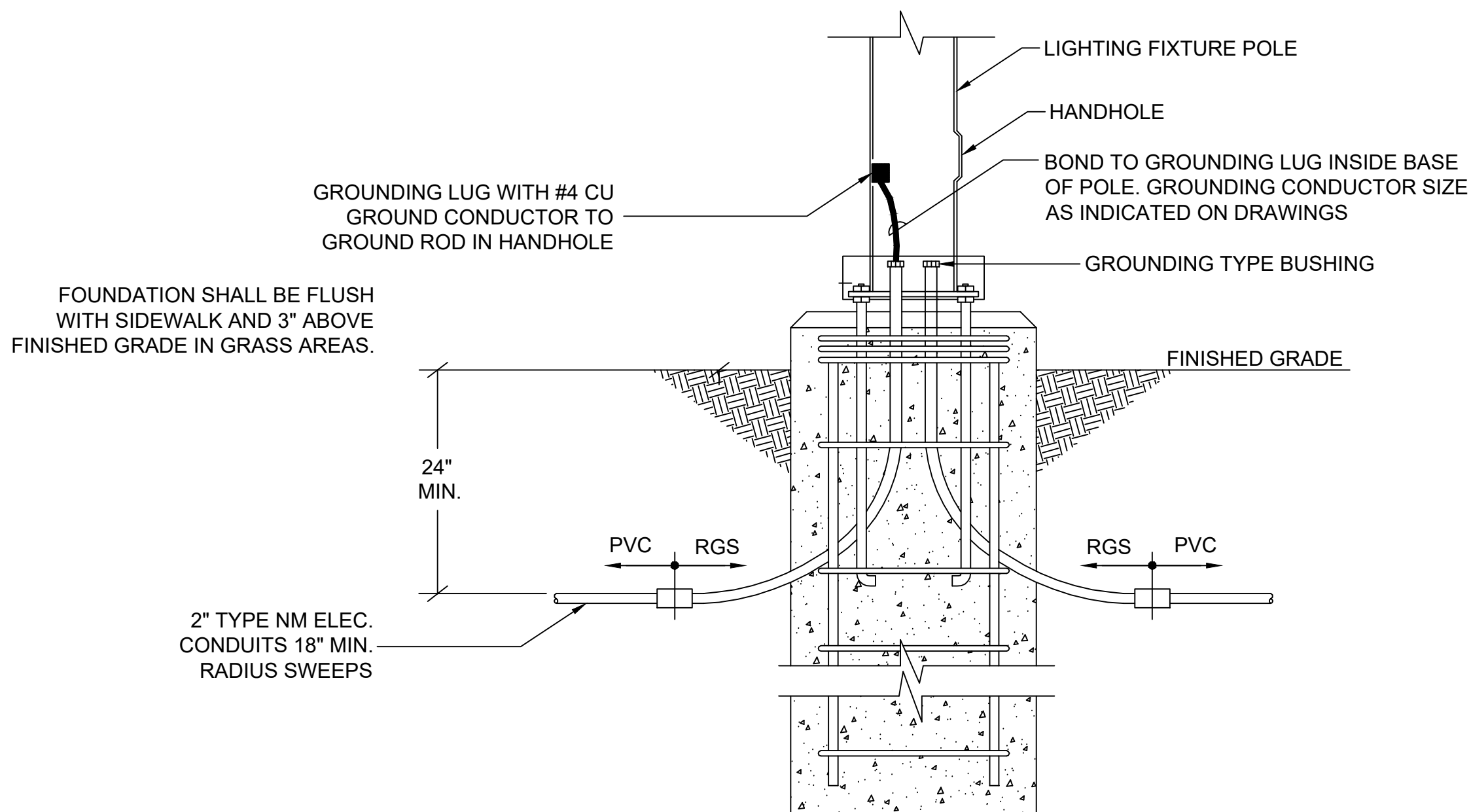


SECTION A-A



STD. BASE PLATE

LIGHT POLE FOUNDATION DETAIL
NOT TO SCALE

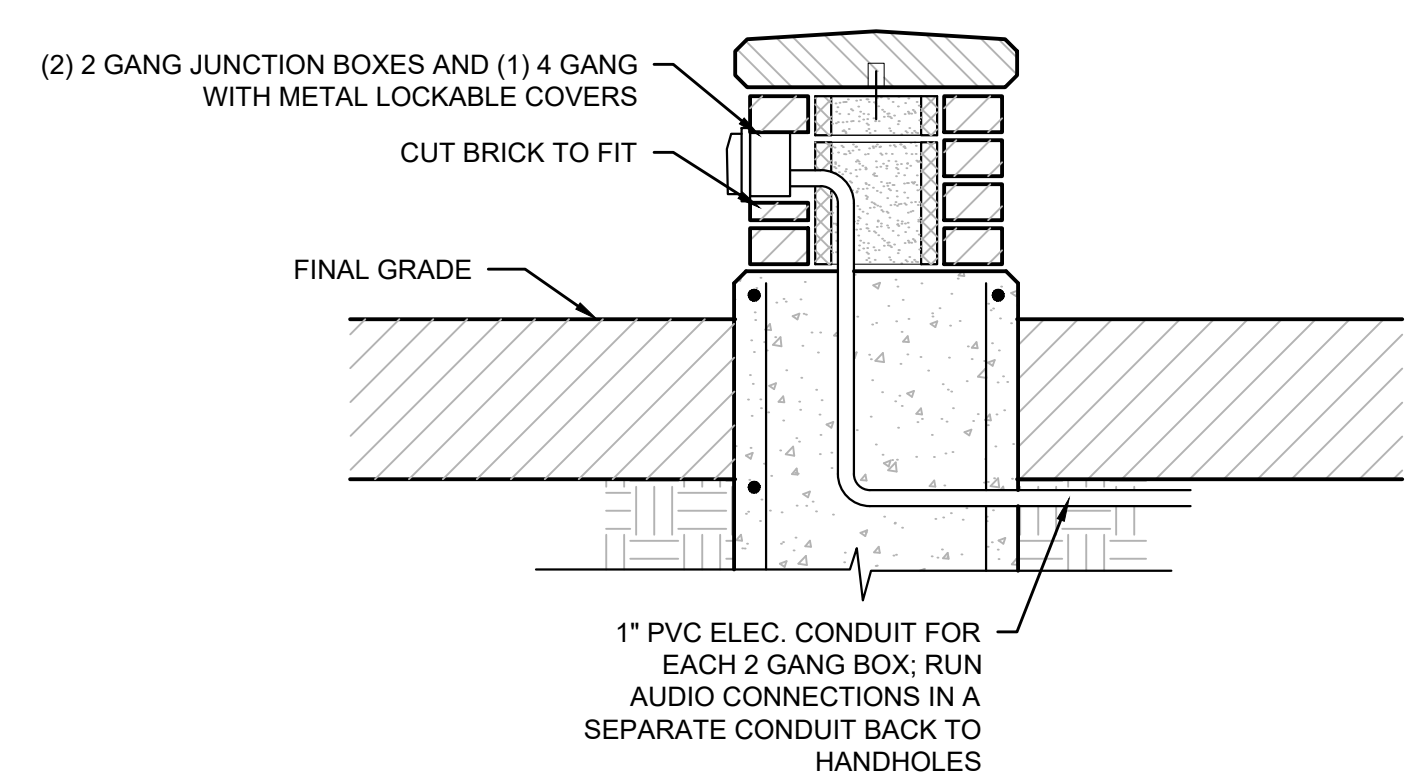
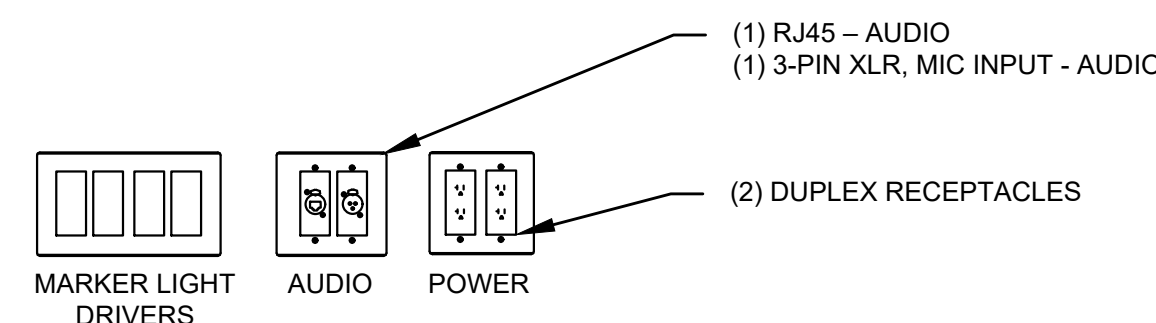


- LIGHT POLE FOUNDATION NOTES:**
- BOLT PATTERN SHOWN IS TYPICAL AND NOT FOR CONSTRUCTION CONTRACTOR TO PROVIDE BOLT PATTERN DETAILS BASED ON SELECTED MANUFACTURER.
 - PROVIDE REBAR DETAIL FROM PRECAST CONCRETE VENDOR FOR APPROVAL.
 - CONDUIT LOCATIONS SHOWN ARE TYPICAL.

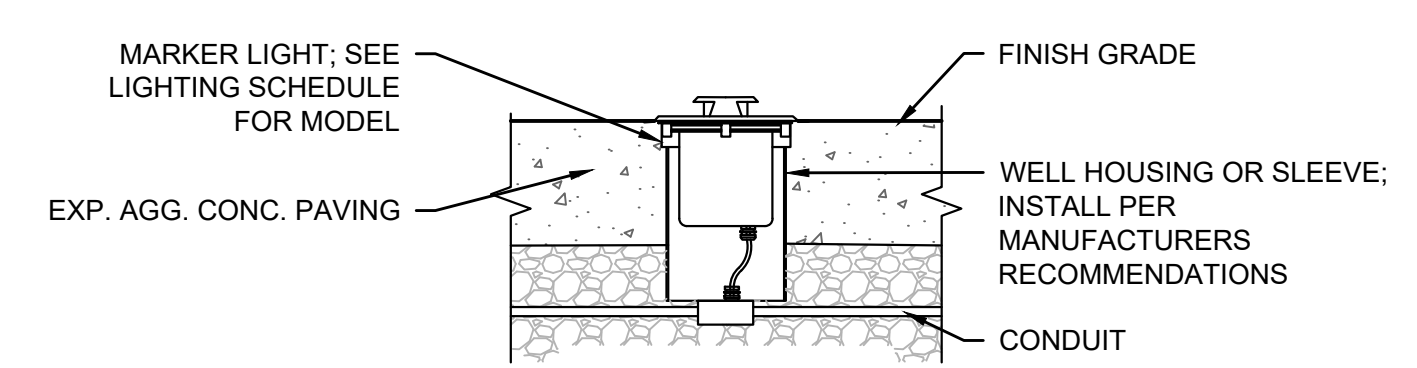
LIGHT POLE FOUNDATION CONDUIT DETAIL
NOT TO SCALE

11/16/2021 9:49 AM C:\7100517185 - NEEDHAM - TOWN COMMON DRAWING FILES\PLANS\SET17185 UTILITY PLAN DWG (BETA STB BNW STB)

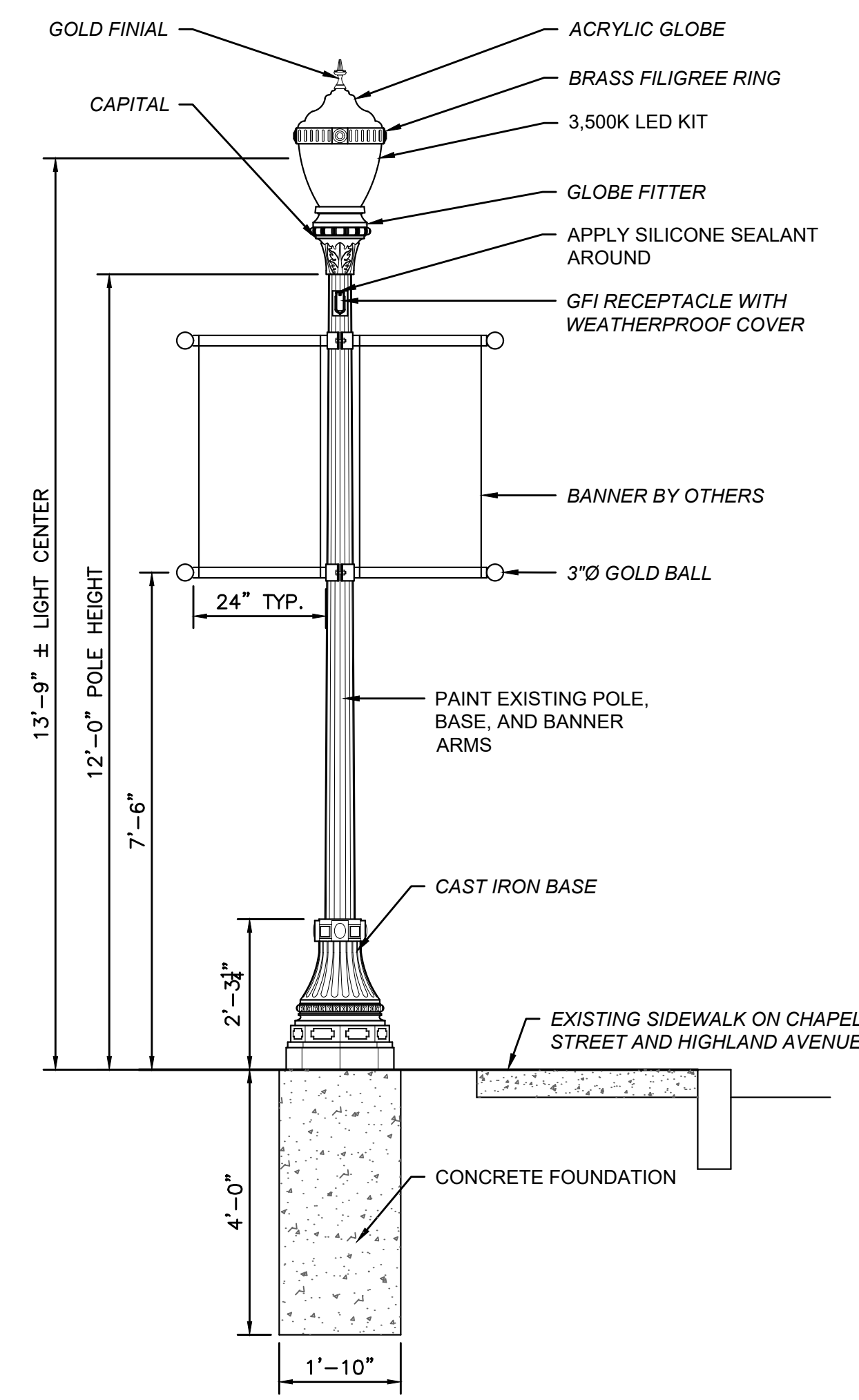
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DESIGNED BY: SR/NS										AS SHOWN		TOWN COMMON RENOVATION ELECTRICAL DETAILS NEEDHAM, MASSACHUSETTS		ISSUE DATE NOV. 4, 2021	
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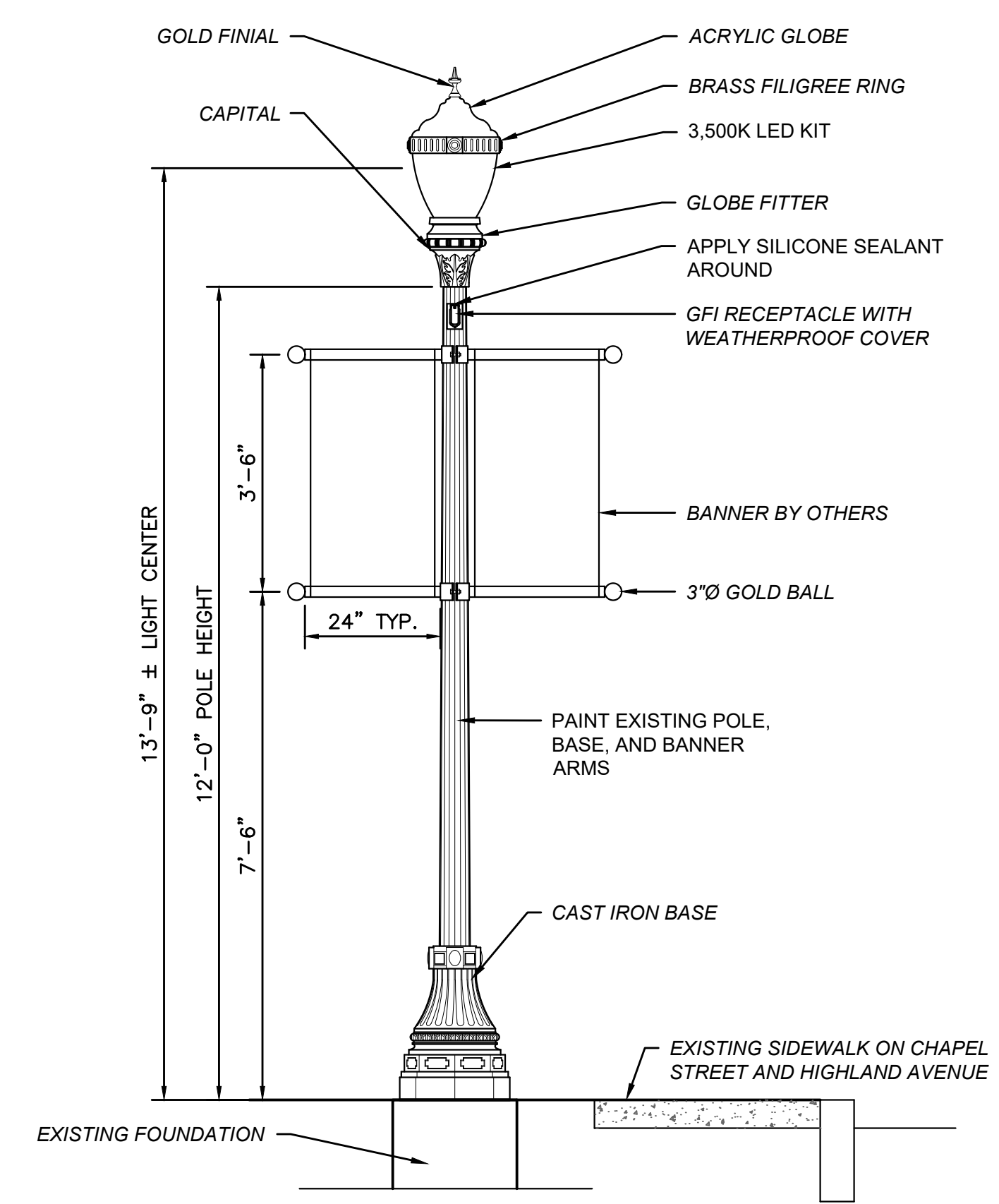
TYPICAL SECTION
WALL MOUNTED DRIVERS, AUDIO AND GFCI RECEPTACLES
 SCALE: 1"=1'-0"



TYPICAL SECTION
RECESSED WALKWAY LIGHT
 SCALE: NTS



EXISTING POST TOP LIGHT ON NEW FOUNDATION
 SCALE: 1/2"=1'-0"



EXISTING POST TOP LIGHT
 SCALE: 1/2"=1'-0"

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PREPARED BY
SUBCONSULTANT

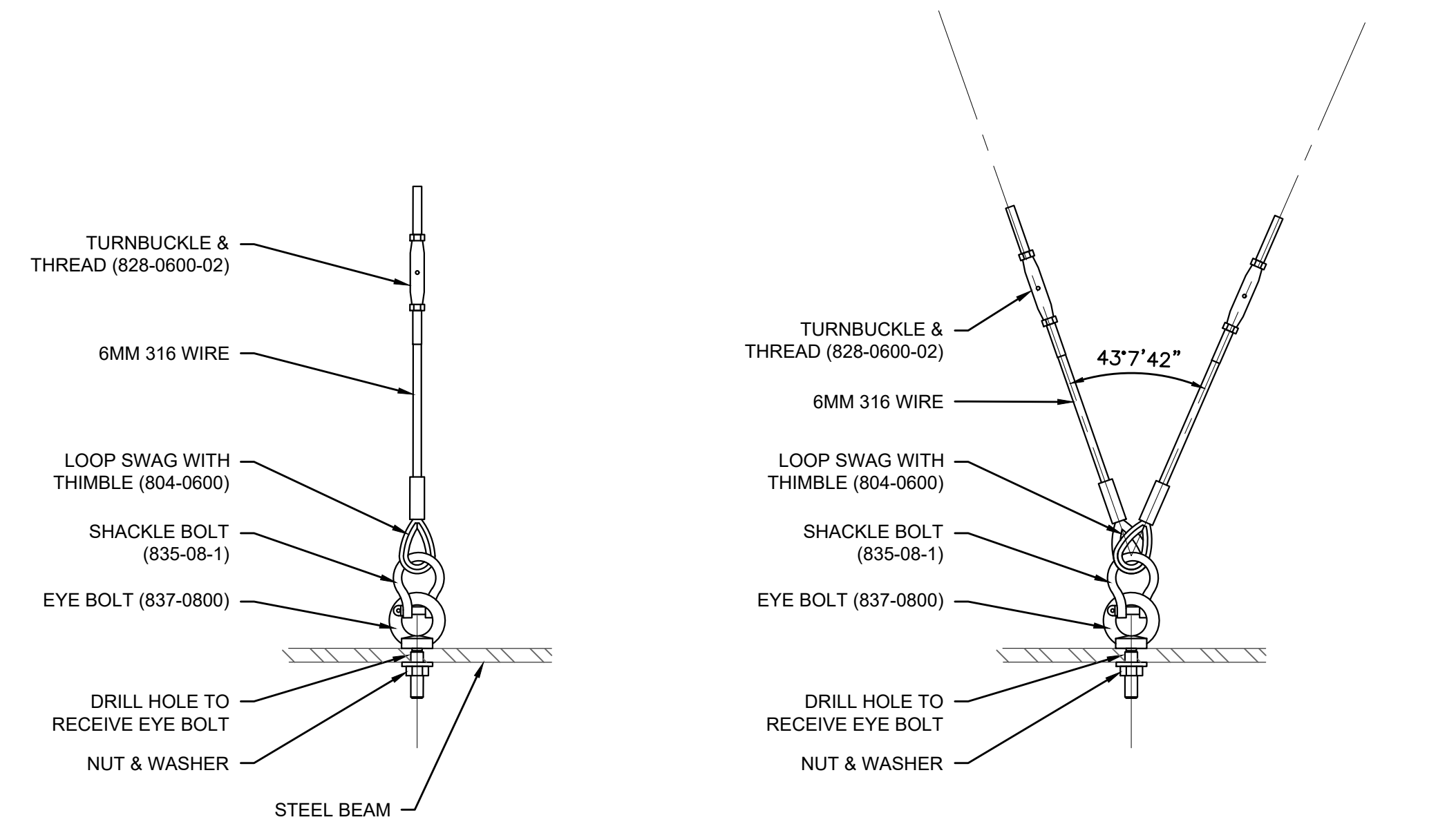
SCALE
AS SHOWN

TITLE
TOWN COMMON RENOVATION
ELECTRICAL DETAILS
NEEDHAM, MASSACHUSETTS

BETA JOB NO. 7185
 ISSUE DATE NOV. 4, 2021
 SHEET NO. 16

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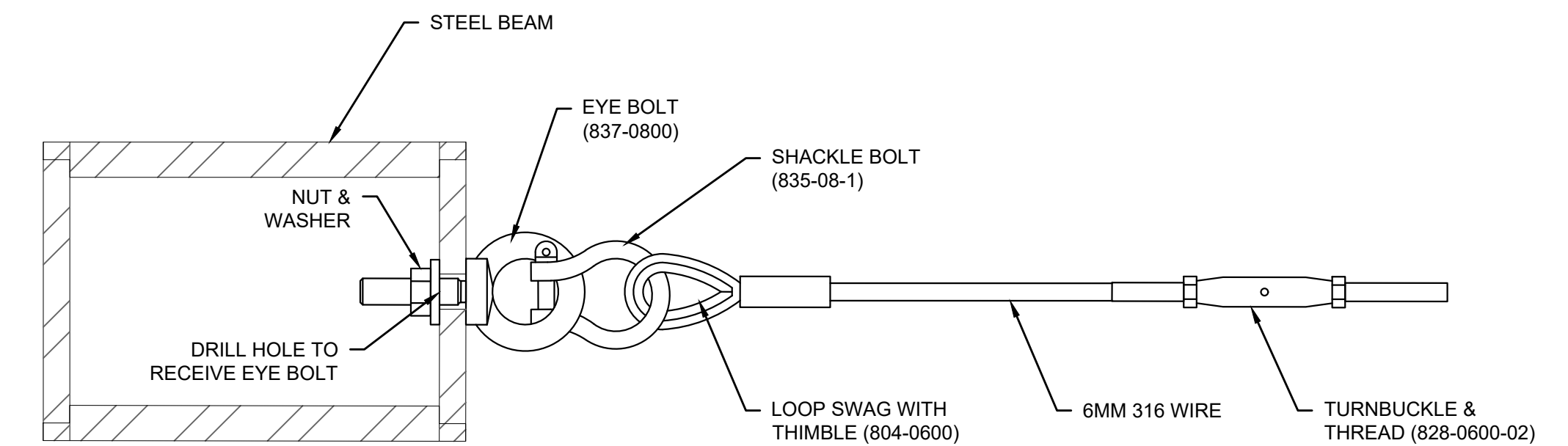


SINGLE POLE MOUNT

DUAL POLE MOUNT (LOCATION 1)

MOUNTING TAB LOCATION

SCALE: 3" = 1'



CABLE MOUNTING TAB

SCALE: 6" = 1'

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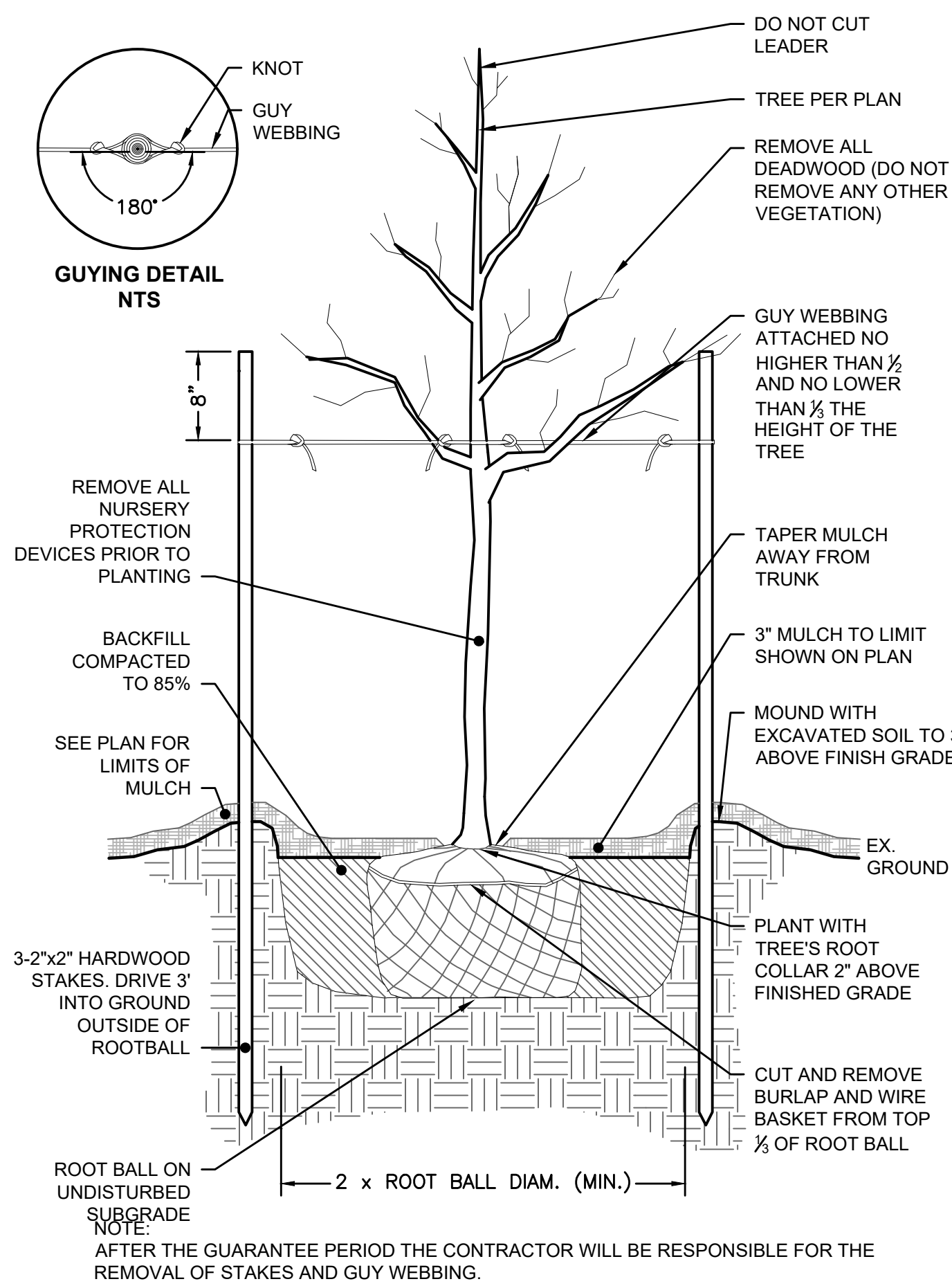
PREPARED BY
SUBCONSULTANT

SCALE
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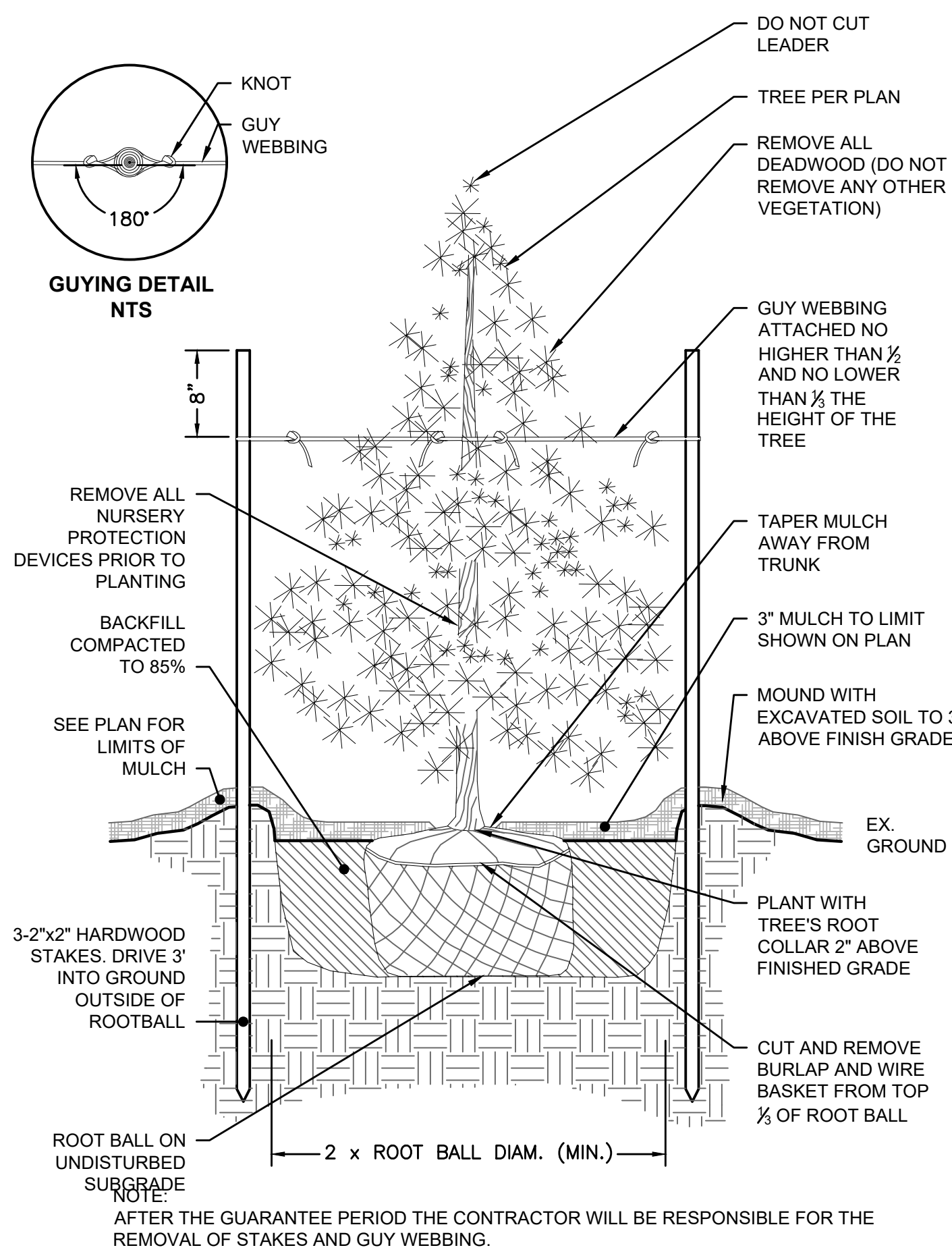
TITLE
**TOWN COMMON RENOVATION
DETAILS
NEEDHAM, MASSACHUSETTS**

BETA JOB NO. 7185
ISSUE DATE NOV. 4, 2021
SHEET NO. 17

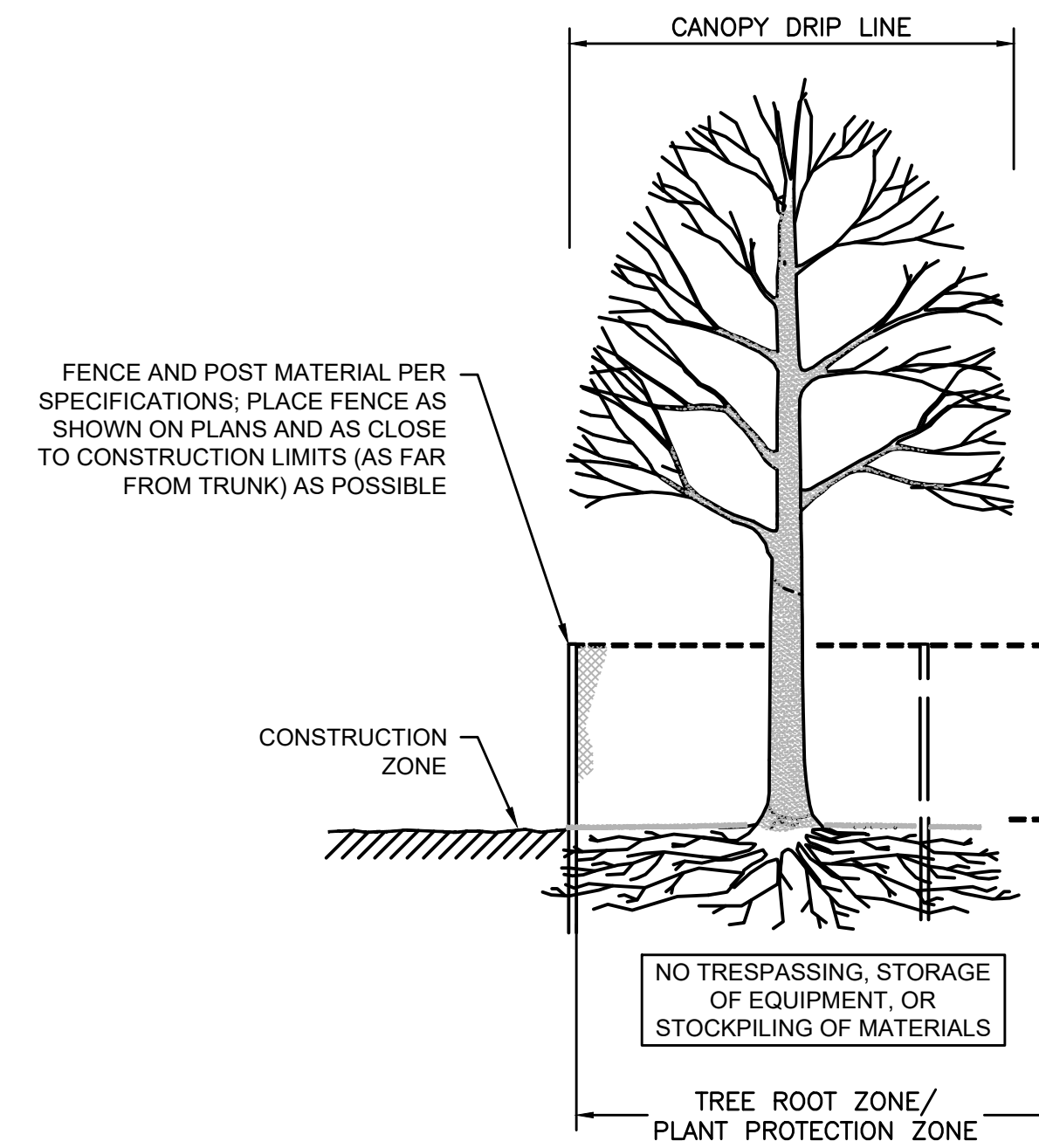
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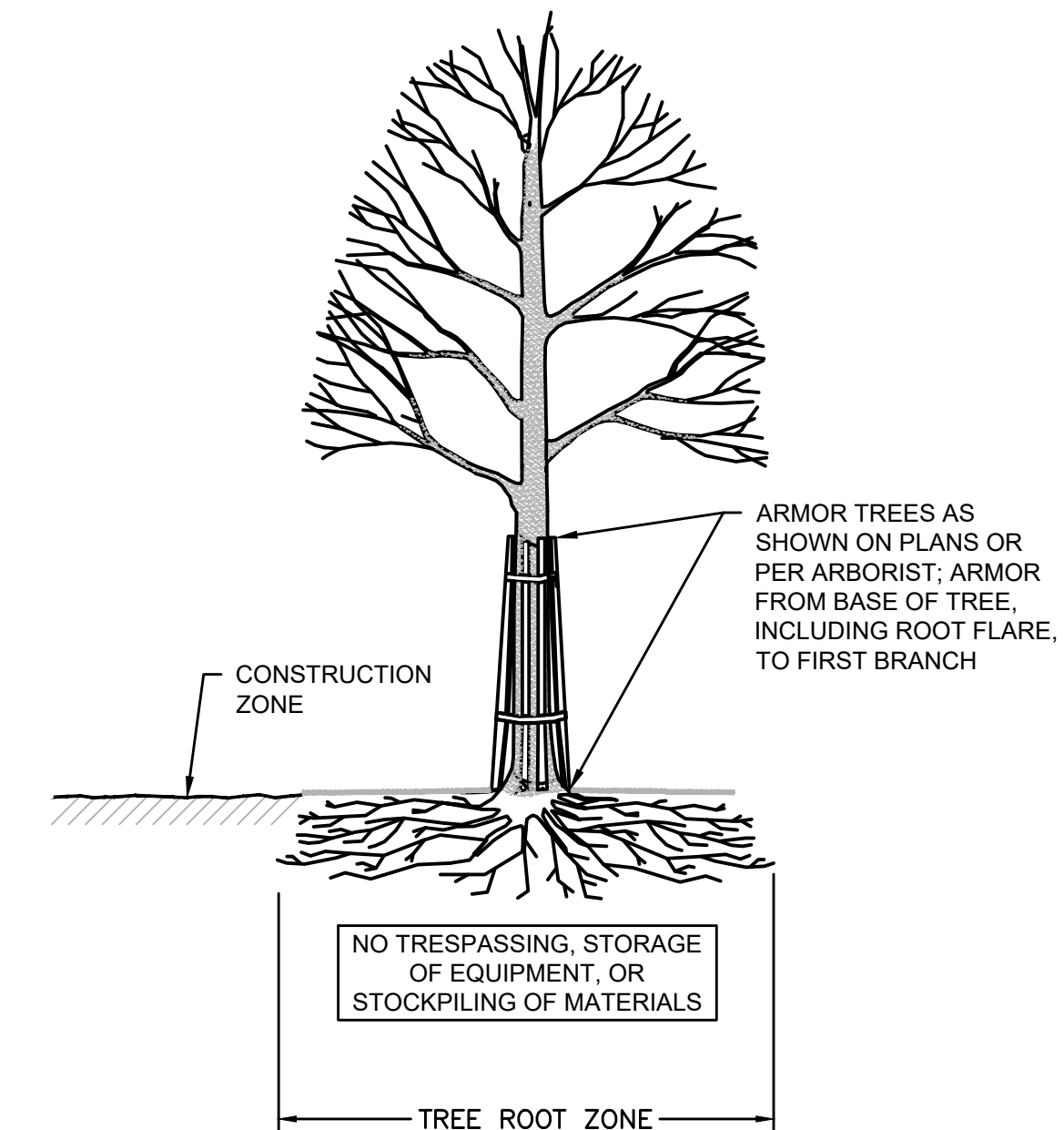
DECIDUOUS TREE STAKING & PLANTING
NOT TO SCALE



EVERGREEN TREE STAKING & PLANTING
NOT TO SCALE

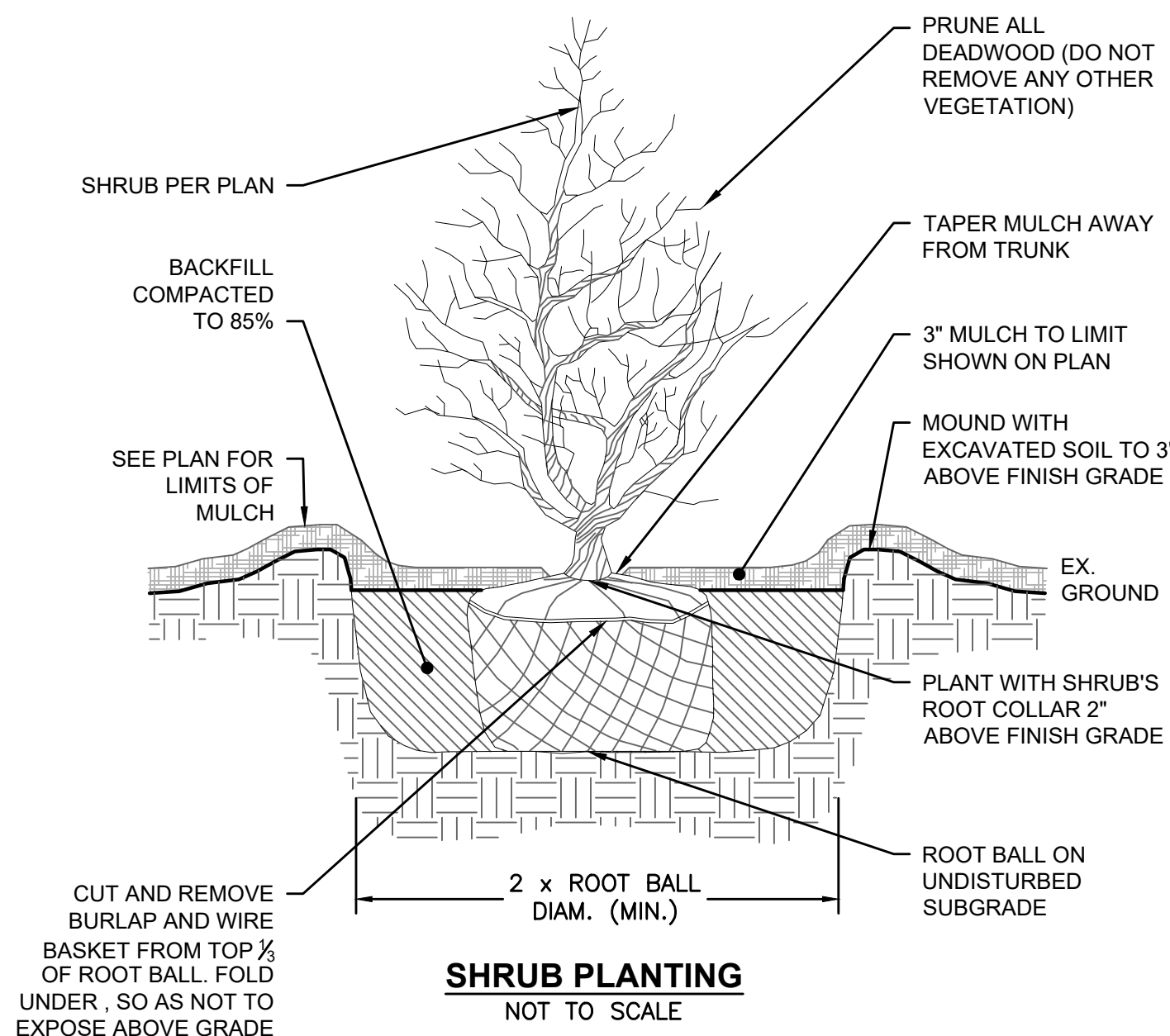


SECTION - FENCE PROTECTION OF ROOT ZONE

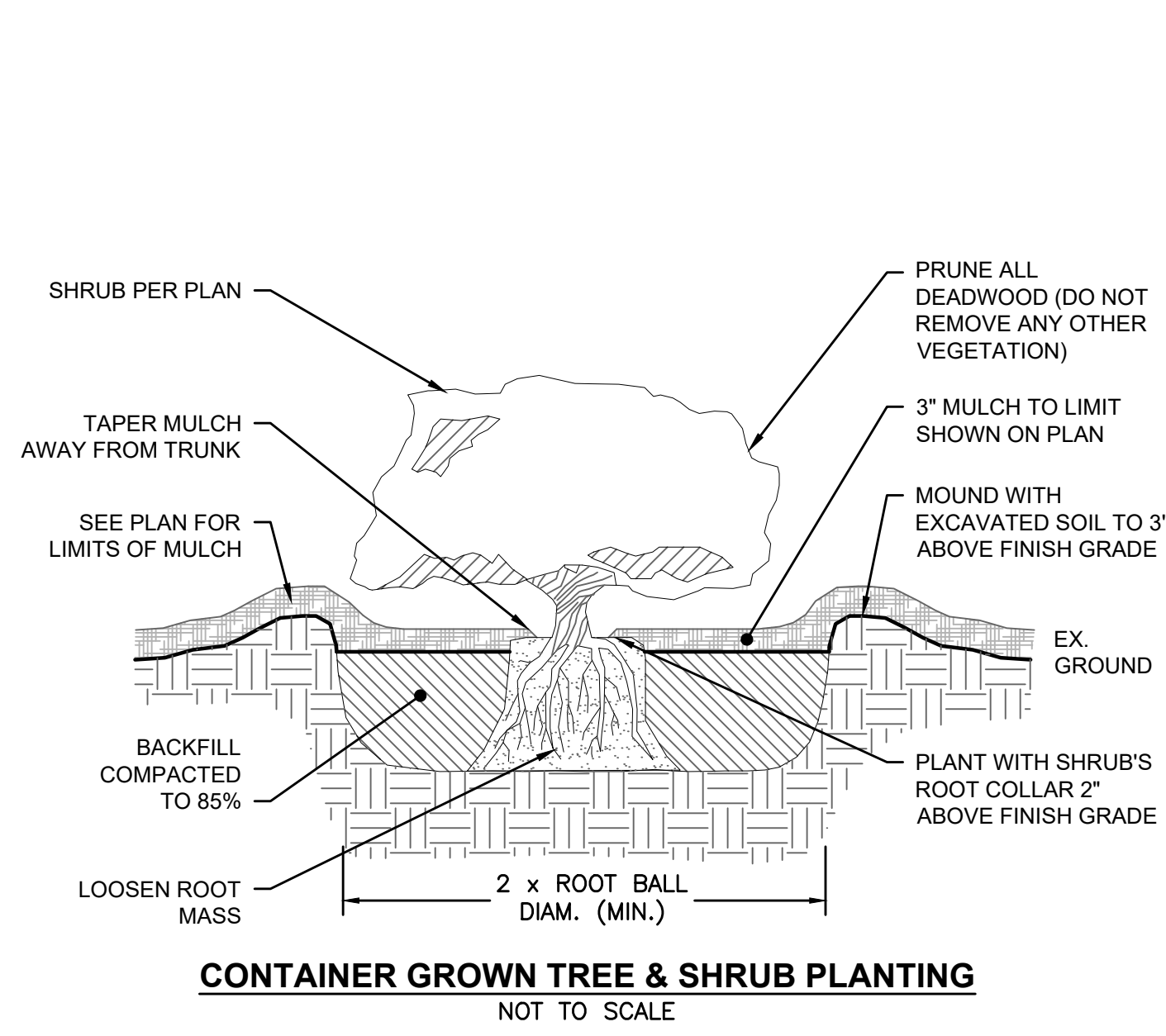


SECTION - TRUNK ARMORING & PRUNING

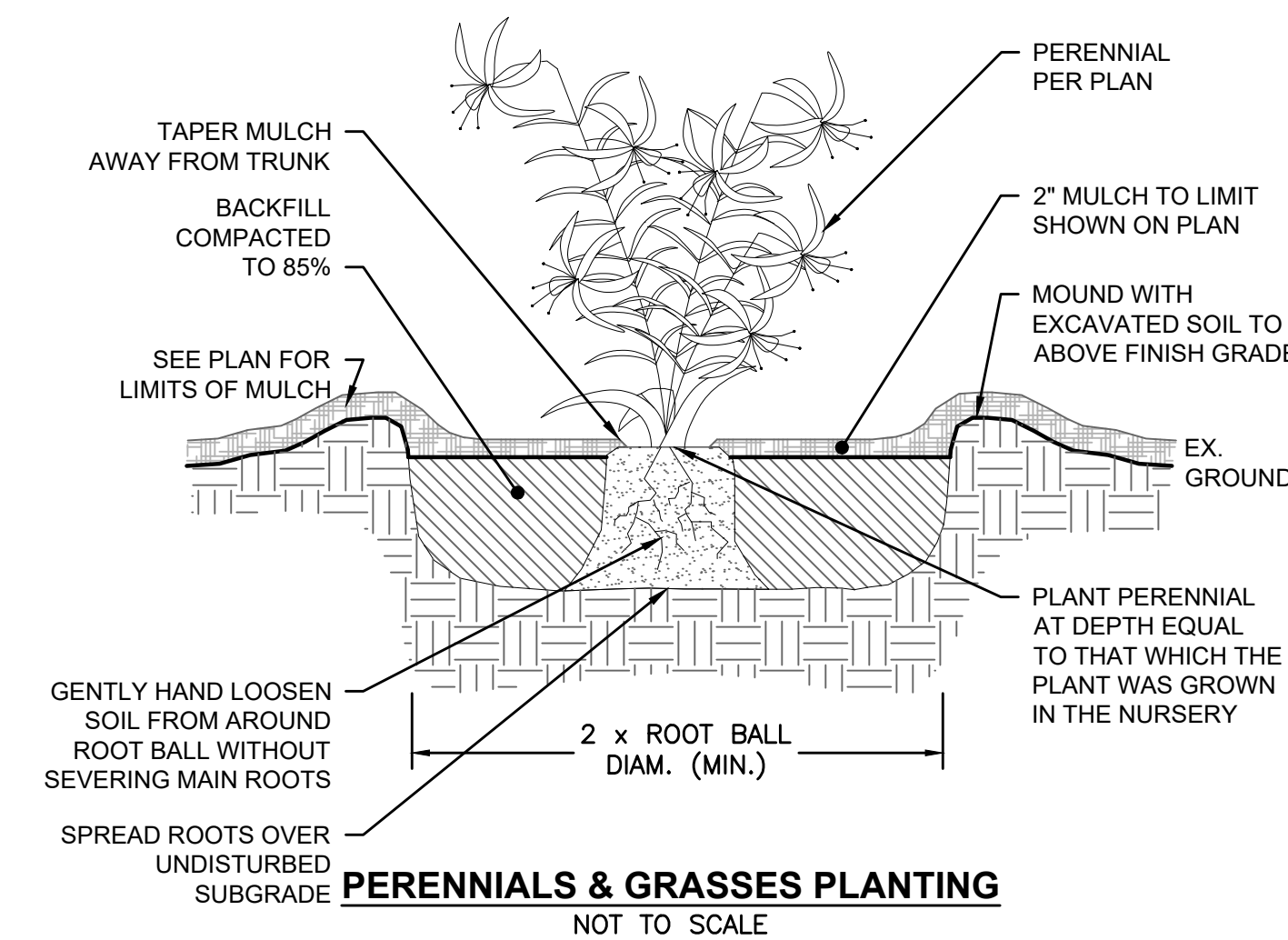
TREE PROTECTION FOR 'BLUE TREE'
SCALE: NOT TO SCALE



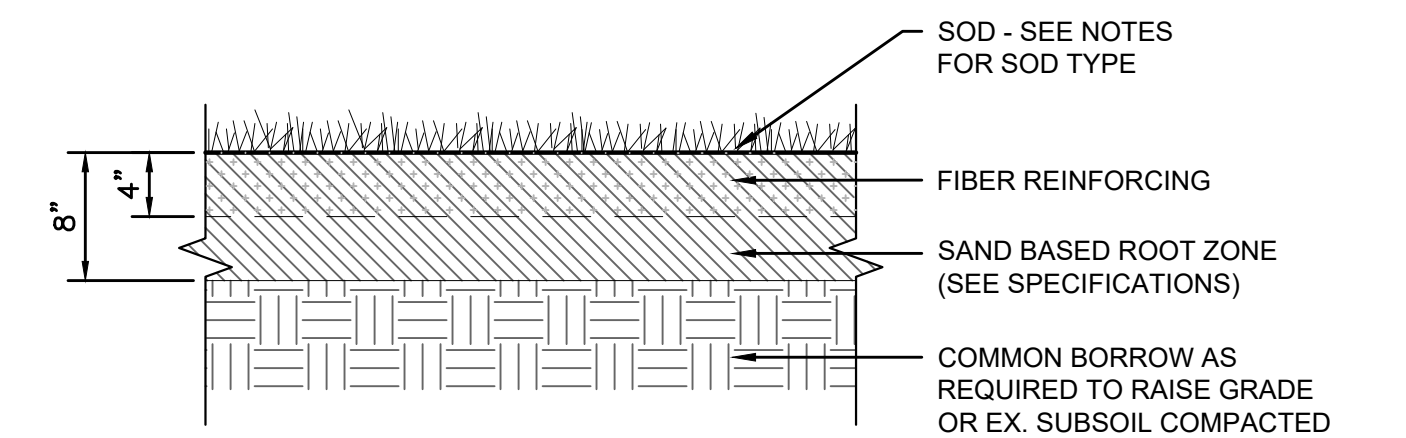
SHRUB PLANTING
NOT TO SCALE



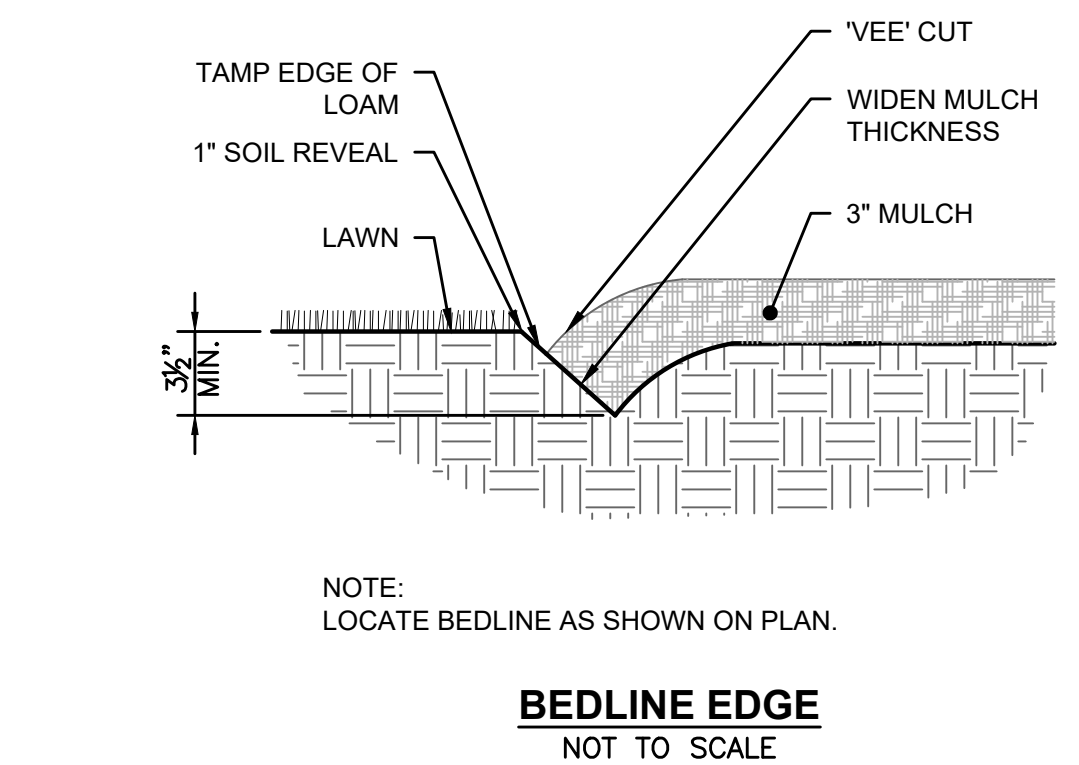
CONTAINER GROWN TREE & SHRUB PLANTING
NOT TO SCALE



PERENNIALS & GRASSES PLANTING
NOT TO SCALE



SAND BASED ROOT ZONE AND SOD
NOT TO SCALE

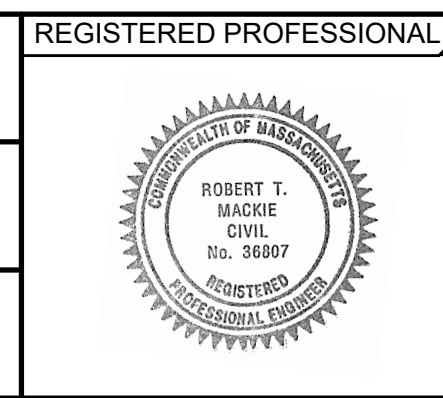


BEDLINE EDGE
NOT TO SCALE

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SCALE	TITLE
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BETA JOB NO.	7185
ISSUE DATE	NOV. 4, 2021
SHEET NO.	18

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