

SUBMITTAL REVIEW COMMENTS

PROJECT Paragon Star
PROJECT NO 185004412
DATE 8/23/2022
SUBMITTAL Sports Lighting Foundations
SUBMITTAL NO 265668
REVIEWER John Plackemeier
HENDERSON NO E005

<input checked="" type="checkbox"/> Approved	Fabrication and/or installation may be undertaken. Approval does not authorize changes to the contract sum or contract time.
<input type="checkbox"/> Approved as Corrected	
<input type="checkbox"/> Revise and Resubmit	Fabrication and/or installation may not be undertaken. In resubmitting, limit corrections to items marked.
<input type="checkbox"/> Rejected	
<input type="checkbox"/> No Action Taken	Submittal either not required for this item or provided for information only. Contract requirements should be followed in all cases.
Review/approval neither extends nor alters any contractual obligations of the Engineer or Contractor. Checking of submittals is only for general conformance with the design concept of the project and general compliance with the information given in the contract documents. Any action shown is subject to the general requirements of the plans and specifications. Contractor is responsible for dimensions, quantities, and coordination between trades and for coordinating approved items and accepted alternates.	
HENDERSON ENGINEERS, INC.	

ACTION CODES

1	2	3	4	5	6
Approved	Approved as Corrected	Revise & Resubmit Items Noted	Rejected	Not Reviewed	For Information Only

(Action Item Codes 1, 2, 5 or 6 are not to be resubmitted.)

COMMENT #	ACTION CODE	DESCRIPTION	COMMENTS
1	2	Foundations	No exceptions taken. Sub-contractors shall coordinate exact location for footings/foundations with civil engineer and general contractor. Field coordinate with sports field surface vendor/supplies and other trades prior to digging/boring. Installer shall maintain all required clearances of easements and other disciplines per local codes.

Note: Henderson's processing of these submittals does not relieve other members of the design and construction team from reviewing submittals for coordination, compliance and performance or reviewing submittals as outlined in the contract documents or both.

PARAGON
SOCCER FIELDS
FIELD LIGHTING
LEE'S SUMMIT, MO



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DRAWING TITLE:
POLE AND FOUNDATION

SCALE: SEE PLAN

NOTES:
SCAN #181108BASE_B_1

PROJECT NUMBER
181108

DATE
23 AUGUST 2022

DRAWING NUMBER
C1

OF TWO

DESIGN NOTES

DESIGN PARAMETERS:

WIND: $V = 115$ MPH, $V_{asd} = 89$ MPH (EXPOSURE C, RISK CATEGORY II) PER INTERNATIONAL BUILDING CODE, 2018 EDITION (ASCE 7-16). DESIGN WIND PARAMETERS ARE AS NOTED, ACTUAL EXPOSURE MUST BE VERIFIED FOR THE SITE BY THE PROPER GOVERNING OFFICIAL.

GEOTECHNICAL PARAMETERS:

ALLOWABLE SIDE FRICTION RESISTANCE (AXIAL COMPRESSION):
0 PSF (GRADE TO -2'-0"); 100 PSF (BELOW -2'-0")

ALLOWABLE LATERAL SOIL BEARING PRESSURE:

0 PSF/FT (GRADE TO -2'-0"); 100 PSF/FT (-2'-0" TO -11'-0"); 50 PSF/FT (BELOW -11'-0") IN ACCORDANCE WITH THE 2018 EDITION OF THE INTERNATIONAL BUILDING CODE, CHAPTER 18.

DESIGN SOIL PARAMETERS ARE AS NOTED. ACTUAL ALLOWABLE SOIL PARAMETERS MUST BE VERIFIED ON SITE. REFERENCE GEOTECHNICAL ENGINEERING REPORT, PROJECT NO. 02165149, PREPARED BY TERRACON CONSULTANTS, INC.; LENEXA, KS.

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.

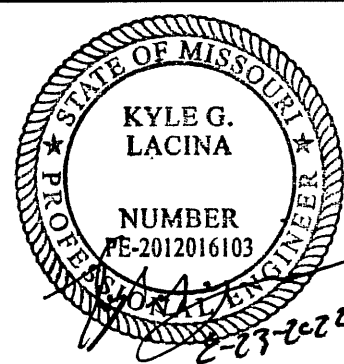
ENCOUNTERING SOIL FORMATIONS THAT WILL REQUIRE SPECIAL DESIGN CONSIDERATIONS OR EXCAVATION PROCEDURES MAY OCCUR. POLE FOUNDATIONS WILL NEED TO BE ANALYZED ACCORDING TO THE SOIL CONDITIONS THAT EXIST. IF ANY DISCREPANCIES OR INCONSISTENCIES ARISE, NOTIFY THE ENGINEER OF SUCH DISCREPANCIES. FOUNDATIONS WILL THEN BE REVISED ACCORDINGLY. REVISIONS WILL BE ANALYZED PER RECOMMENDATIONS DIRECTED BY A LICENSED 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 OR WHEN THE FREE DROP EXCEEDS 6'-0".

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.

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.



I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MISSOURI.

KYLE G. LACINA - NO. PE-2012016103
LICENSE RENEWAL DATE: DECEMBER 31, 2022

STRUCTURAL ENGINEERS, P.C. - NO. 2006015958

DRAWING NO. COVERED BY THIS SEAL: C1

POLE IDENTIFICATION

POLE DESIGNATION	POLE TYPE	PRECAST BASE TYPE	FIXTURE CONFIGURATION (FIX. PER XARM)	FIXTURE AND ACCESSORIES EPA (FT ²)
P1 - P4	LSS80B	5B	8 (4+4)	37.3
P5, P6, P9, P10	LSS80B	5B	10 (5+5)	42.9
P7, P8	LSS80C	6B	20 (5+5) / (5+5)	70.1
S1, S2	LSS70D	5B	13 (7+6)	53.6
S3, S4	LSS70E	6B	22 (5+4) / (7+6)	79.3
S5, S6	LSS80C	6B	20 (5+5) / (5+5)	72.1
S7, S8, S13, S14	LSS70E	6B	18 (5+4) / (5+4)	65.2
S9 - S12	LSS70D	5B	9 (5+4)	40.1
S15, S16	LSS80C	6B	17 (4+4) / (5+4)	64.5
S22, S23	LSS80B	5B	8 (4+4)	37.3

- EACH POLE HAS (2) CAMERAS & (1) WIFI HUB AT POLE TOP INCLUDED IN EPA ABOVE.
- POLES P1 - P6, P9, P10, S1, S2, S9 - S12, S22, & S23 HAVE (2) SPEAKERS AT 35'-0" AGL INCLUDED IN EPA ABOVE.
- POLES P7, P8, S3 - S8, & S13 - S16 HAVE (4) SPEAKERS AT 35'-0" AGL INCLUDED IN EPA ABOVE.
- EACH POLE HAS (2) 200W LED FLOOD LIGHTS AT 30'-0" AGL INCLUDED IN EPA ABOVE.

CONCRETE/REINFORCEMENT NOTES

CONCRETE SHALL COMPLY WITH THE FOLLOWING ASTM STANDARDS: MIXTURE WITH ASTM C-94, PORTLAND CEMENT WITH ASTM C-150 TYPE 1-A, AGGREGATES (0.75" MAX) WITH ASTM C-33 AND BE IN CONFORMANCE WITH ACI 318.

CONCRETE SHALL BE AIR-ENTRAINED (COMPLY WITH ASTM C-260), HAVE A MAXIMUM WATER -CEMENT RATIO, $w/cm = 0.45$ AND HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 4,500 PSI.

DESIGN SLUMP LIMITS ARE 4" MINIMUM AND 6" MAXIMUM. THE JOB SITE SLUMP MAY BE INCREASED BY THE USE OF A WATER REDUCING AGENT MEETING ASTM C494-92.

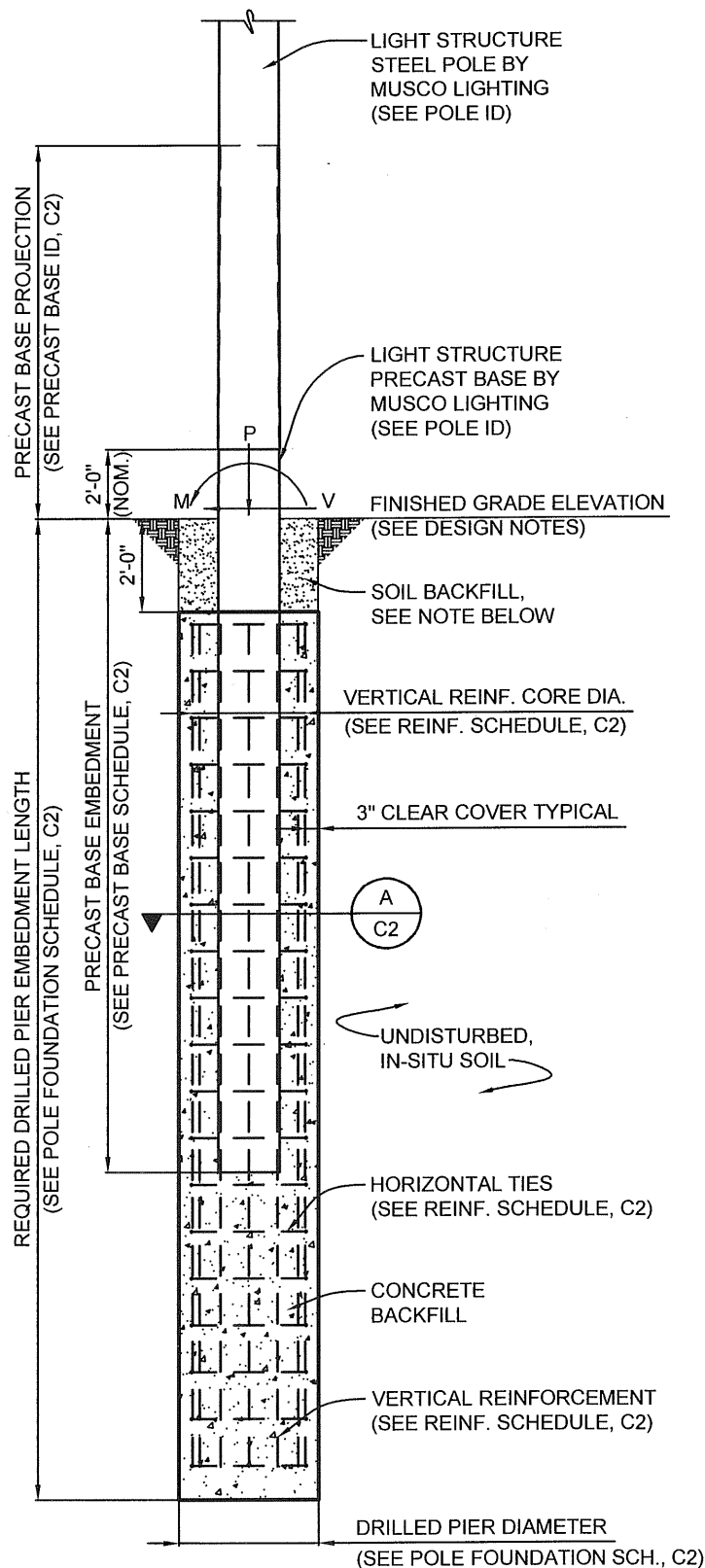
CONCRETE REINFORCEMENT SHALL COMPLY WITH ASTM A615 GRADE 60 AND BE IN CONFORMANCE WITH ACI 315 & 318.

CONCRETE DRILLED PIERS MUST ATTAIN 3,000 PSI STRENGTH PRIOR TO POLE INSTALLATION AND FIXTURE MOUNTING.

THE DEPTH EQUAL TO THE PRECAST BASE EMBEDMENT SHALL BE THOROUGHLY CONSOLIDATED BY MECHANICAL VIBRATION DURING PLACEMENT.

INSTALLATION NOTE:

CONCRETE TO BE PLACED IN A CONTINUOUS POUR OR A COLD JOINT WILL BE ACCEPTABLE AT THE BOTTOM OF THE PRECAST BASE. TWO POUR: WITH THE REINFORCEMENT IN PLACE, THE CONCRETE BELOW THE BOTTOM OF THE PRECAST BASE MAY BE POURED AND ALLOWED TO SET UP LONG ENOUGH TO SUPPORT WEIGHT OF PRECAST BASE. THEN THE PRECAST BASE MAY BE SET IN PLACE AND THE REST OF THE CONCRETE CONCRETE BACKFILL POURED. DEPENDING ON THE DEPTH TO GROUND WATER AT THE TIME OF INSTALLATION, THE TWO POUR METHOD UTILIZING A COLD JOINT MAY NOT BE FEASIBLE.



POLE FOUNDATION ELEVATION

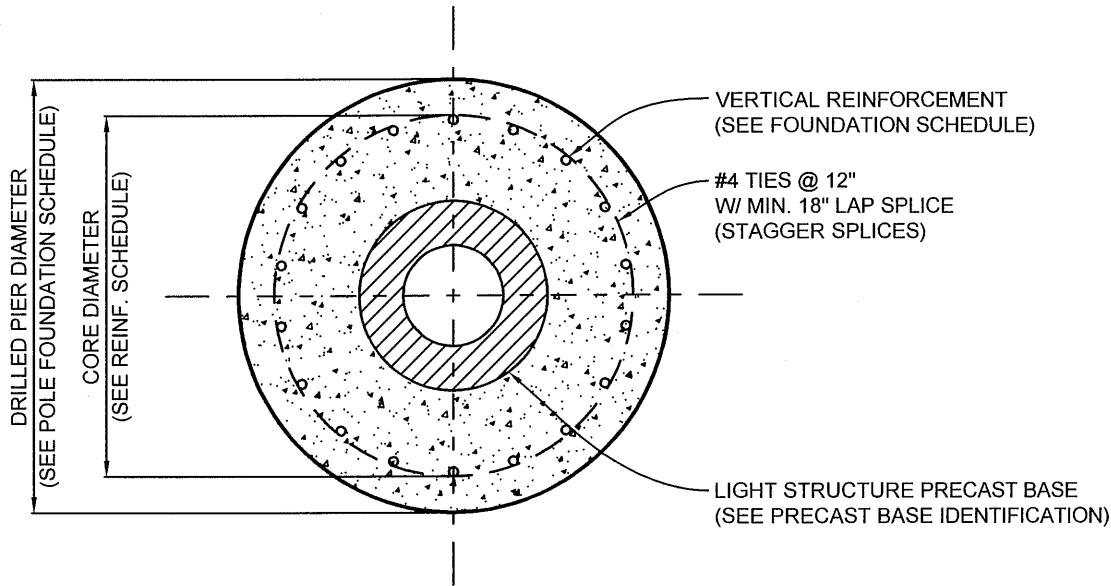
SCALE: NOT TO SCALE

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).

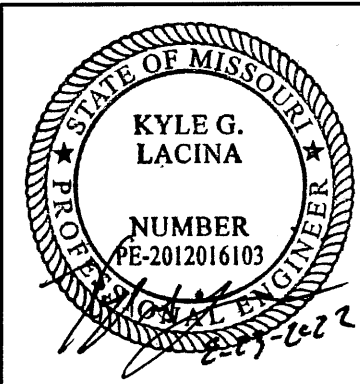
POLE FOUNDATION SCHEDULE									
POLE DESIGNATION	FORCES (1.)			DRILLED PIER			REINFORCING		
	MOMENT (M) FT-LBS	SHEAR (V) LBS	VERTICAL (P) LBS	DIAMETER INCHES	EMBEDMENT DEPTH	CONCRETE BACKFILL YD³ (2.)	CORE DIAMETER INCH (3.)	VERTICAL REINFORCING	HORIZONTAL TIES
P1 - P4	126,874	2,393	3,666	42	21'-0"	5.9	35	18 - #7	#4 @ 12"
P5, P6, P9, P10	142,114	2,579	3,866	42	21'-0"	5.9	35	18 - #7	#4 @ 12"
P7, P8	206,915	3,569	5,425	42	23'-0"	6.2	35	18 - #7	#4 @ 12"
S1, S2	135,193	2,639	4,129	42	21'-0"	5.9	35	18 - #7	#4 @ 12"
S3, S4	184,866	3,496	5,548	42	23'-0"	6.2	35	18 - #7	#4 @ 12"
S5, S6	211,412	3,622	5,425	42	23'-0"	6.2	35	18 - #7	#4 @ 12"
S7, S8, S13, S14	154,066	3,063	5,015	42	23'-0"	6.2	35	18 - #7	#4 @ 12"
S9 - S12	105,436	2,213	3,596	42	21'-0"	5.9	35	18 - #7	#4 @ 12"
S15, S16	190,768	3,373	5,126	42	23'-0"	6.2	35	18 - #7	#4 @ 12"
S22, S23	126,874	2,393	3,666	42	21'-0"	5.9	35	18 - #7	#4 @ 12"

- ASD LOAD COMBINATION D + 0.6W.
VERTICAL FORCE IS WEIGHT OF DRESSED POLE (DOES NOT INCLUDE PRECAST BASE WEIGHT).
- MINIMUM CONCRETE BACKFILL VOLUME, SITE CONDITIONS MAY REQUIRE ADDITIONAL BACKFILL.
- CORE DIAMETER EQUAL TO INSIDE DIAMETER OF TIES.



A PIER DETAIL
SCALE: NOT TO SCALE

PRECAST BASE IDENTIFICATION					
PRECAST BASE TYPE	PRECAST BASE WEIGHT	PRECAST BASE LENGTH	PROJECTION ABOVE GRADE	STANDARD EMBEDMENT	OUTSIDE DIAMETER
5B	4,580 LBS	23'-11"	7'-11"	16'-0"	18.25"
6B	6,930 LBS	26'-1"	8'-1"	18'-0"	20.56"
REFERENCE POLE ID TABLE ON SHEET C1 FOR POLE TO PRECAST BASE TYPES					



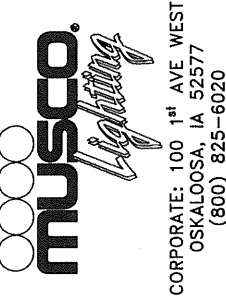
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DRAWING NO. COVERED BY THIS SEAL: C2

PARAGON
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DRAWING TITLE: POLE AND FOUNDATION SCALE: SEE PLAN NOTES: SCAN #181108BASE_B_1	PROJECT NUMBER 181108
DATE 23 AUGUST 2022	DRAWING NUMBER C2
OF TWO	