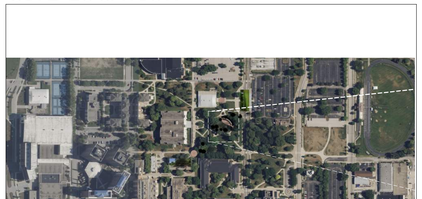
INDIANA STATE UNIVERSITY

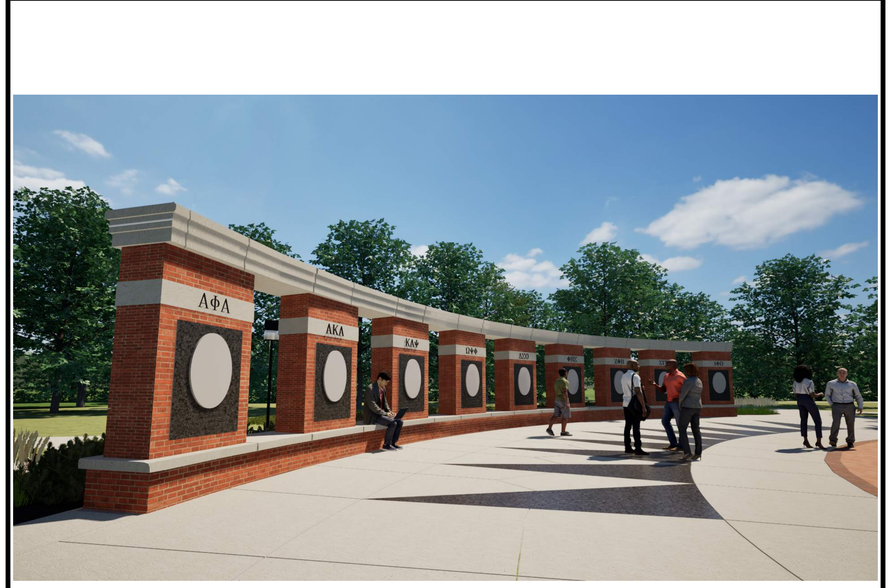
INDIANA STATE UNIVERSITY - NATIONAL PAN-HELLENIC COUNCIL PLAZA

520 NORTH 7TH STREET
TERRE HAUTE, IN 47809

SITE LOCATION



BUILDING LOCATION



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PROJECT TEAM

OWNER

INDIANA STATE UNIVERSITY

ARCHITECTURE

METICULOUS
25 N PINE ST. SUITE B
INDIANAPOLIS IN 46202
TELEPHONE: 317.926.1820
FAX: 317.926.1815
https://www.meticulousda.com/

CIVIL ENGINEERING & SURVEY

FRITZ ENGINEERING SERVICES

FRITZ ENGINEERING
14020 MISSISSINEWA DRIVE
CARMEL, INDIANA 46033

LANDSCAPE ARCHITECTURE

J2 Design Studio
Landscape Architecture | Urban Design

J2 DESIGN STUDIO
693 EAST 82ND STREET
INDIANAPOLIS, IN 46240

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NEVILLE
ENGINEERING SERVICE, INC.

NEVILLE ENGINEERING
1221 W LAKEVIEW CT.
ROMEOVILLE, IL 60446

STRUCTURAL ENGINEERING:

CSP ENGINEERING
STRUCTURAL ENGINEERING CONSULTANTS

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100% CONSTRUCTION DOCUMENTS

INDIANA STATE UNIVERSITY - NATIONAL PAN-HELLENIC COUNCIL PLAZA
520 NORTH 7TH STREET
TERRE HAUTE, IN 47809

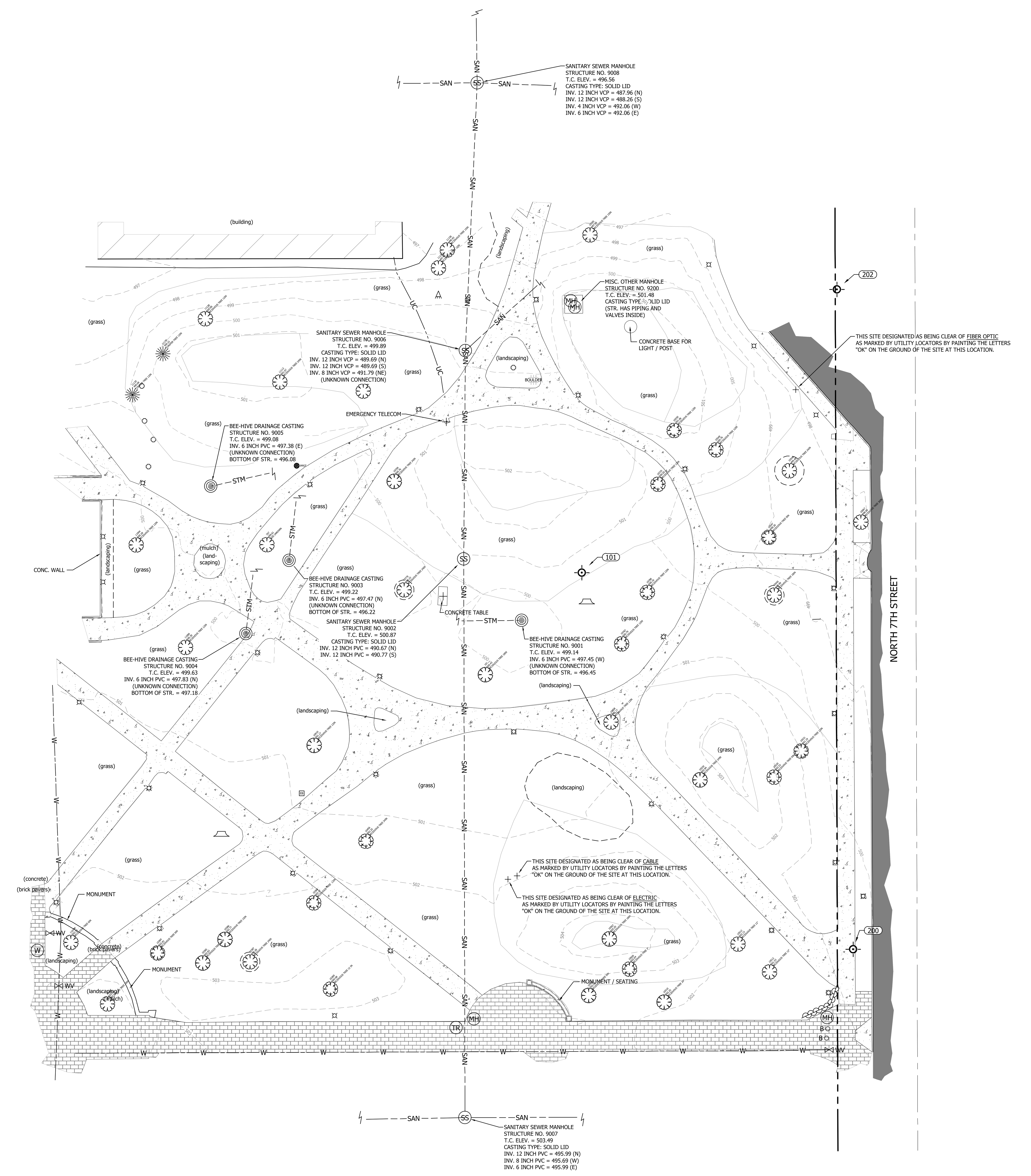
#	Revision	Date

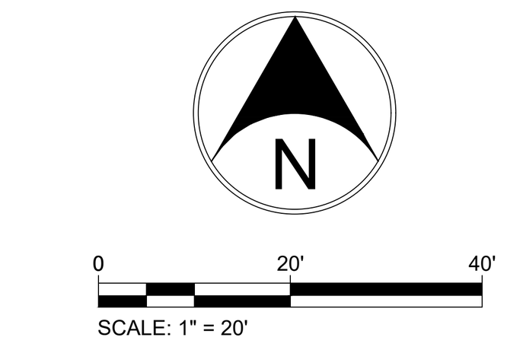
DAMON FOUNTRELL NEWTON
REGISTERED
No. AR10600160
STATE OF INDIANA
ARCHITECT

ISSUE DATE: 05.15.2025
PROJECT NO.: P24-0112

COVER SHEET
G-000

5/15/2025 11:44:00 AM





SURVEY CONTROL TABLE				
POINT NO.	NORTHING	EASTING	ELEVATION	POINT DESCRIPTION
101	1538819.59	2861220.94	500.55	FES SURVEY CONTROL (CAPPED REBAR)
200	1538666.28	2861331.48	500.76	FES SURVEY CONTROL (MAG NAIL W/ WASHER)
202	1538934.89	2861324.79	496.39	FES SURVEY CONTROL (MAG NAIL W/ WASHER)

FRITZ ENGINEERING SERVICES, LLC (FES) CONTROL NOTES

- FES Rebar Control = 24 inch by $\frac{5}{8}$ inch diameter rebar with orange cap with stamping flush with grade.
- FES Mag Nail Control = Mag nail with stamped washers.
- Control Stamping = "FRITZ ENG. SURVEY CONTROL FIRM #0152"

SURVEY CONTROL AND BASIS OF BEARING INFORMATION

Indiana State Plane Grid - West Zone Zone (N.A.D. 1983):

Unless noted otherwise, all bearings, distances, areas, and coordinates shown hereon are based upon GPS observations, Indiana State Plane Coordinate Grid System (Indiana West Zone - N.A.D. 1983) and are reported in U.S. Survey Feet and decimal parts thereof. Geoid Model 18 was used for all GPS observations.

The survey control were measured with survey grade GPS equipment, with said GPS observations utilizing the INDOT Continuously Operating Reference Station (INCORS) a real-time kinematic (RTK) correction service over the internet. This system is stated by INDOT as "Providing Network RTK in RTCM (Real Time Correction Message) 2.3, and 3.1 in the MAX (R2K2 Full) and i-MAX (R2K2 LITE) formats via NTRIP (Networked Transport of RTCM via Internet) and TCP/IP, as well as CMR and CMR+ in the MAX (R2K2 Full) and i-MAX (R2K2 LITE) formats via NTRIP, and TCP/IP." Where GPS observations could not be performed or data collected, electronic total stations applying standard radial surveying techniques were utilized to establish additional secondary control.

SURVEY VERTICAL DATUM INFORMATION

The survey vertical datum and vertical control was established in the North American Vertical Datum 1988 (NAVD 88) utilizing survey grade global positioning equipment (GPS), utilizing the INDOT Continuously Operating Reference Station (INCORS), a real-time kinematic (RTK) correction service over the internet. Geoid Model 18 was used for all GPS observations.

EXISTING UTILITY & SEWER DISCLAIMER:

UTILITY LOCATIONS, CROSSINGS, DEPTHS, AND INFORMATION ARE APPROXIMATELY SHOWN. THIS INCLUDES ALL SEWER (SANITARY, STORM, AND COMBINE) LOCATIONS AND MEASURE DOWN INFORMATION. LOCATIONS ARE SHOWN PER INDIANA 811 MARKINGS AS LOCATED BY THE SURVEYOR (BY OTHERS), G.I.S. DATA (IF AVAILABLE), AND UTILITY COMPANY CORRESPONDENCE (IF ANY). ALL UTILITY LOCATIONS, SIZES, MATERIALS, INVERT, DEPTHS, LENGTHS, ETC. ARE CONSIDERED APPROXIMATE AND MAY BE SKEPTICAL IN NATURE.

THE UTILITIES INDICATED ON THESE PLANS MAY NOT BE A COMPETE INVENTORY OF ALL EXISTING UTILITIES CURRENTLY ON OR NEAR THE SITE. THE PATH, SIZE AND LOCATION OF THESE UTILITIES MAY BE APPROXIMATE UNTIL THEY ARE EITHER RELOCATED, BY CALLING INDIANA 811 AND OTHER UTILITY LOCATE COMPANIES, OR UNTIL THEY ARE EXCAVATED TO VERIFY THE LOCATION, DEPTH, AND PATH OF THE UTILITY LINES. LOCATIONS ARE SHOWN PER INDIANA 811 MARKINGS AS LOCATED BY THE SURVEYOR (BY OTHERS), G.I.S. DATA (IF AVAILABLE), AND UTILITY COMPANY CORRESPONDENCE (IF ANY).

NO ASSUMPTIONS WERE MADE CONNECTING UTILITIES OBSERVED AND LOCATED TO OTHER APPURTENANCES OR HOW THEY ENTER OR CONNECT INTO ADJOINING HOUSES OR BUILDINGS UNLESS IDENTIFIED BY THE SURVEYOR PER ONSITE UTILITY MARKINGS OR AS INDICATED BASED ON G.I.S. / UTILITY PLAN DATA. FRITZ ENGINEERING SERVICES, LLC DID NOT ADD, INTERPOLATE, ASSUME, OR DEPICT ANY UTILITY LINE DIRECTIONS OR CONNECTIONS OUTSIDE WHAT WAS PROVIDED. NO ATTEMPT WAS MADE AS PART OF THIS PROJECT TO OBTAIN OR SHOW DATA CONCERNING EXISTENCE, SIZE, DEPTH, CONDITION, CAPACITY, OR LOCATION OF ANY UTILITY, PUBLIC SERVICE FACILITY, OR UTILITY SERVICE LINES TO THE PROPERTY. NO EXCAVATIONS WERE MADE DURING THE COURSE OF THIS PROJECT TO LOCATE UNDERGROUND UTILITIES AND/OR SEWER STRUCTURES.

NO WARRANTY, EITHER EXPRESSED OR IMPLIED, IS MADE TO THE ACCURACY AND/OR COMPLETENESS OF INFORMATION PRESENTED ON UNDERGROUND UTILITIES AND SEWERS, OR AS TO ITS FITNESS FOR ANY PARTICULAR PURPOSE OR USE. IN NO EVENT WILL FRITZ ENGINEERING SERVICES, LLC, ITS EMPLOYEES, AGENTS, AND/OR ASSIGNS BE LIABLE FOR ANY DAMAGES ARISING OUT OF THE FURNISHING AND/OR USE OF SUCH INFORMATION.

CONTRACTOR SHALL FIELD VERIFY EXACT LOCATIONS OF ALL EXISTING UTILITIES WITHIN AREA OF WORK PRIOR TO CONSTRUCTION. ENGINEER SHALL BE NOTIFIED OF ANY POTENTIAL CONFLICTS FOUND.

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ASHTON FRITZ (ashton@fritz-eng.com)

STRUCTURAL ENGINEER:
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6516 FERGUSON ST.
INDIANAPOLIS, IN 46220
MBE INDIANA: UNSP #81101505
v. (317) 995-7808
IVAN TOLIVER (ivan@csp1engineering.com)

ELECT. ENGINEER:

NEVILLE ENGINEERING
1221 W LAKEVIEW CT
ROMEOVILLE, IN 60446
v. (630) 410-2344
JOHN NEVILLE (jneville@nevilleeng.com)

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JULIE SMITH (julie.smith@j2-designstudio.com)

100% CONSTRUCTION DOCUMENTS

INDIANA STATE UNIVERSITY - NATIONAL PAN-HELLENIC COUNCIL PLAZA

520 N. 7TH ST. TERRE HAUTE, IN 47809

REVISIONS

No.	Description	Date

CERTIFIED BY:

ASHTON L. FRITZ
REGISTERED
No. PE10707583
STATE OF INDIANA
PROFESSIONAL ENGINEER

BID ISSUE DATE: MAY 15, 2025

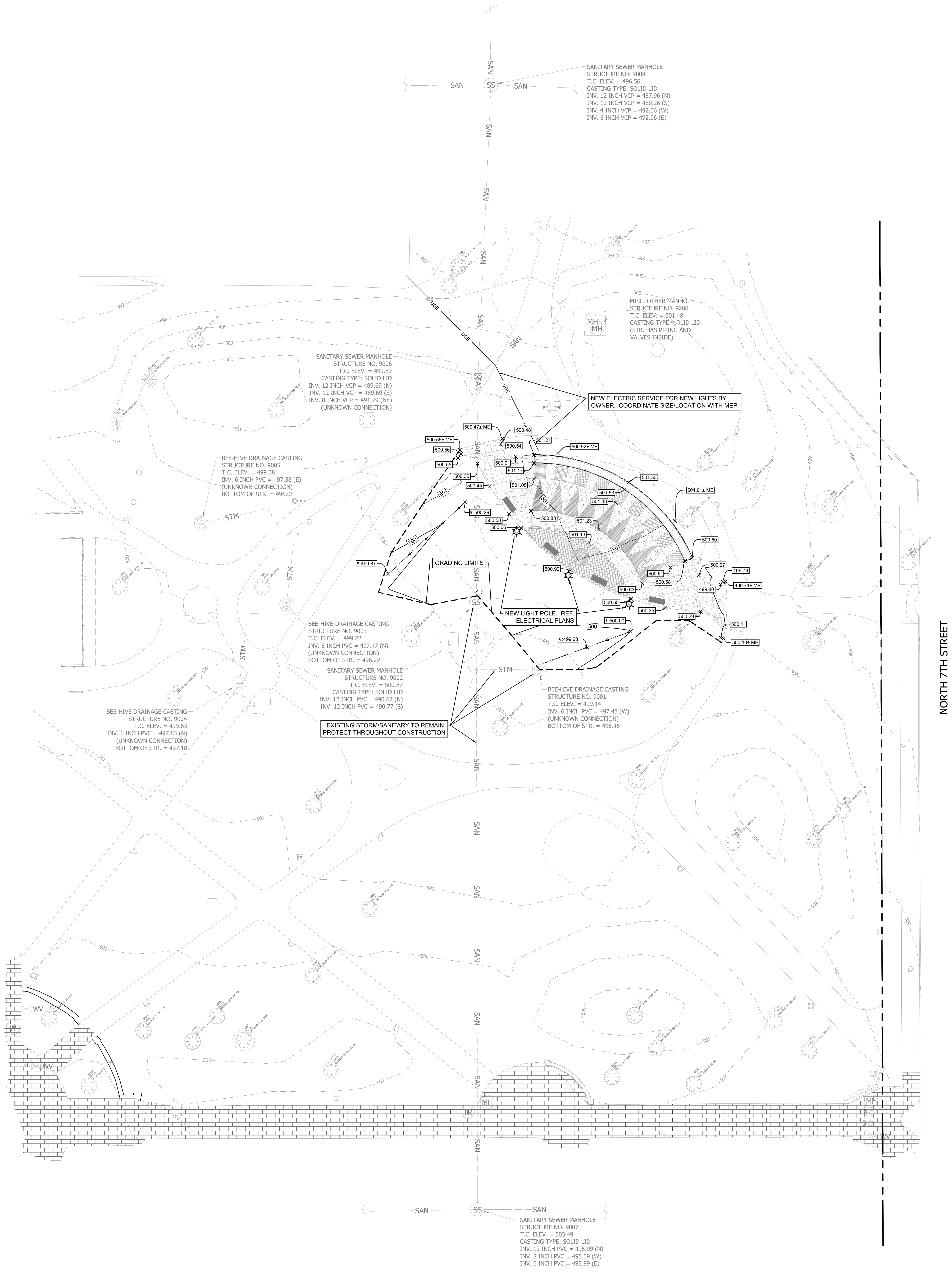
DRAWN:	CHECKED:
KG	AF

PROJECT NO.: P24-0112

REVISION NO.:

EXISTING CONDITIONS PLAN

C102



N

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

GRADING LEGEND:

- STORM MANHOLE
- STORM COMBINATION/CURB INLET
- STORM AREA INLET
- STORM BEEHIVE/YARD INLET
- STORM FLARED END SECTION
- STORM MECHANICAL SEPARATOR (REF. PLAN FOR SIZE/TYPE)
- ### STORM STRUCTURE NUMBER
- FLOW LINE, SWALE / GRASS
- FLOW LINE, PAVEMENT
- -X.X% SLOPE / RAMP SLOPE
- SURFACE DRAINAGE FLOW ARROW DIRECTION
- ### EXISTING CONTOUR AND LABEL
- ### PROPOSED CONTOUR AND LABEL
- GRADE BREAK
- FL:XXX.XX FLOW LINE / SWALE SPOT ELEVATION
- XXX.XX SPOT ELEVATION
- XXX.XX H.P. SPOT ELEVATION, HIGH POINT
- XXX.XX L.P. SPOT ELEVATION, LOW POINT
- TC:XXX.XX BC:XXX.XX TC- TOP OF CURB ELEVATION; BC - BOTTOM OF CURB/GUTTER ELEVATION
- TW:XXX.XX BW:XXX.XX TW - TOP OF WALL ELEVATION; BW - BOTTOM OF WALL ELEVATION
- XXX.XX RIM CASTING RIM ELEVATION
- ME MATCH EXISTING ELEVATION
- CONSTRUCTION LIMIT LINE

NOTES:

SURVEY VERTICAL DATUM INFORMATION:

THE SURVEY AND THIS PROJECT ELEVATIONS ARE ESTABLISHED BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). THE VERTICAL DATUM WAS ESTABLISHED BY THE SURVEYOR PER GLOBAL POSITIONING SYSTEM (GPS) OBSERVATIONS UTILIZING INCORS NETWORK AND GEOID18. THEREFORE, THE ELEVATIONS, CONTOURS AND GRADES SHOWN ON THIS SHEET AND PLAN SET ARE IN NAVD88.

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520 N. 7TH ST. TERRE HAUTE, IN 47809

REVISIONS

No.	Description	Date

CERTIFIED BY:

ASHTON L. FRITZ
REGISTERED
No. PE10707583
STATE OF INDIANA
PROFESSIONAL ENGINEER
Ashton L Fritz
5/15/2025

BID ISSUE DATE: MAY 15, 2025

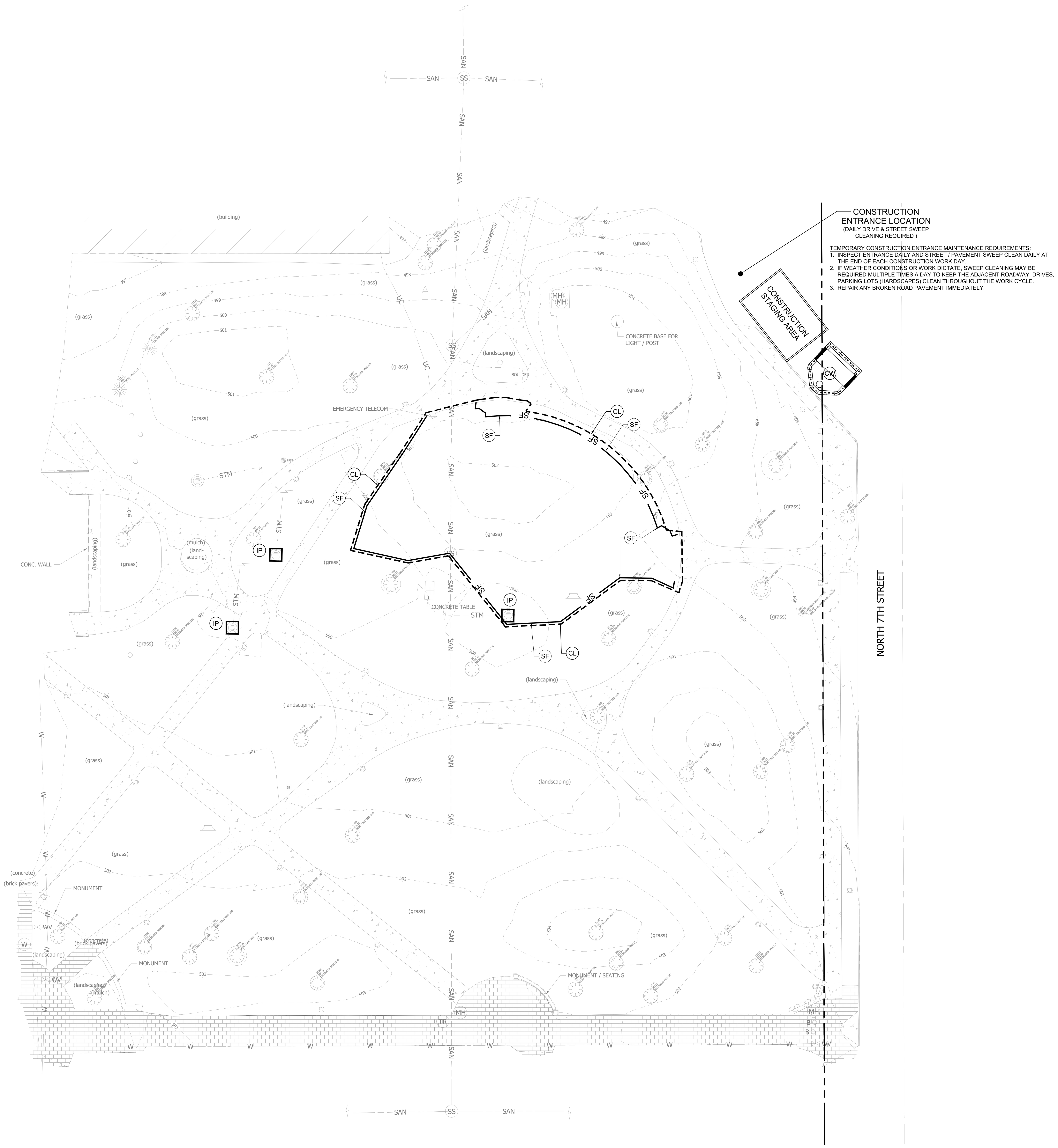
DRAWN: KG | CHECKED: AF

PROJECT NO.: P24-0112

REVISION NO.:

GRADING PLAN

C301



SCALE: 1" = 20'

TEMPORARY CONSTRUCTION ENTRANCE MAINTENANCE REQUIREMENTS:

1. INSPECT ENTRANCE DAILY AND STREET / PAVEMENT SWEEP CLEAN DAILY AT THE END OF EACH CONSTRUCTION WORK DAY.
2. IF WEATHER CONDITIONS OR WORK DICTATE, SWEEP CLEANING MAY BE REQUIRED MULTIPLE TIMES A DAY TO KEEP THE ADJACENT ROADWAY, DRIVES, PARKING LOTS (HARDSCAPES) CLEAN THROUGHOUT THE WORK CYCLE.
3. REPAIR ANY BROKEN ROAD PAVEMENT IMMEDIATELY.

KEY NOTES: (XX)

IP	INLET PROTECTION	
CE	CONSTRUCTION ENTRANCE	
PS	PERMANENT SEEDING	
TS	TEMPORARY SEEDING	
EB	EROSION CONTROL BLANKET WITH PERMANENT SEEDING	
SP	SILT PERIMETER PROTECTION (SILT SOCK)	SP
SF	SILT FENCE	SF
CL	EROSION CONTROL LIMITS	
CW	CONCRETE WASHOUT	
SUB	PAVEMENT SUBBASE	
LA	LANDSCAPE PLANTING AREA. SEE PLAN SHEET L200 FOR PERMANENT E.C. MEASURE	
RP	OUTLET RIP-RAP PROTECTION	
CD	ROCK CHECK DAM	

EROSION CONTROL NOTES:

1. All disturbed areas shall be restored to initial / pre-construction conditions and grades. All flow lines shall be re-established and vegetative cover restored. Contractor may be required to extend vegetative restoration period to warmer months to ensure seed germination.
2. All erosion control practices shall be in accordance with the "Indiana Storm Water Quality Manual" and the SCS "Field Office Technical Guide".
3. The governing municipality has the right to require additional erosion control measures in the field as conditions warrant.
4. The storm water quality unit shown on these plans shall be the unit installed during the development of this property. No substitutions shall be permitted.
5. There shall be no dirt, debris, or storage of materials in the street or alleyways.
6. Public and private roadways, drives, and parking lots shall be kept cleared of accumulated sediment. Bulk clearing of accumulated sediment shall not include flushing the area with water. Projects subject to IDEM's CSGP shall remove sediment from public rights-of-way not exclusive of construction traffic at the end of each day per the CSGP requirements.
7. Stabilization shall be initiated by the end of the seventh (7^{th}) day the area was left idle. Stabilization must be completed within fourteen (14) days after initiation.
8. Additional erosion and sediment control measures may be required by the inspector.
5. Copies of the letter of intent and response from the governing municipality office for Construction Stormwater General Permit compliance shall be provided onsite, when required.
6. All erosion control materials shall be approved by the governing municipality department prior to installation.
5. All proposed erosion and sediment control shall be in conformance with the TERRE HAUTE Stormwater Design and Specifications Manual and Requirements, latest editions. Discrepancies between the plans and the manual shall not alleviate the contractor from adhering to the requirements set forth in the manual.

THE CONTRACTOR IS RESPONSIBLE FOR ALL INSTALLATION AND MAINTENANCE OF EROSION CONTROL AND STORM WATER POLLUTION PREVENTION FOR THE PROJECT AREA:

NAME: T.B.D.
ADDRESS: T.B.D.
PHONE: T.B.D.
EMAIL: T.B.D.

LIST OF QUALIFICATIONS:
CONTRACTOR IS TO INFORM TERRE HAUTE OF WHOM THIS STORMWATER POLLUTION PREVENTION INDIVIDUAL IS AT THE PRE-CONSTRUCTION MEETING, PRIOR TO ANY EARTH DISTURBING & CONSTRUCTION ACTIVITIES.

THE INDIANA STORM WATER QUALITY MANUAL AND TERRE HAUTE STANDARDS AND DETAILS SHALL BE USED IN CONJUNCTION WITH THIS SET OF EROSION CONTROL PLANS.

EROSION CONTROL MAINTENANCE SCHEDULE

EROSION CONTROL MEASURE	*MAINTENANCE	INSTALLATION SEQUENCE
STONE CONSTRUCTION ENTRANCE	AS NEEDED	PRIOR TO CLEARING AND GRADING
SILT PERIMETER PROTECTION	WEEKLY, AFTER STORM EVENTS AND AS NEEDED	PRIOR TO CLEARING AND GRADING
EXISTING INLET PROTECTION	WEEKLY, AFTER STORM EVENTS AND AS NEEDED	PRIOR TO CLEARING AND GRADING
TREE PROTECTION	WEEKLY, AFTER STORM EVENTS AND AS NEEDED	PRIOR TO CLEARING AND GRADING
TEMPORARY SEEDING	WATER AS NEEDED	AFTER ROUGH GRADING
PERMANENT SEEDING	WATER AS NEEDED	AFTER FINISH GRADING
INLET PROTECTION	WEEKLY, AFTER STORM EVENTS AND AS NEEDED	AFTER EACH INLET IS PLACED
SEED, SOD & LANDSCAPE AROUND UNITS FINISHED	WATER AS NEEDED	AFTER FINISHED GRADING AROUND FINISHED UNITS
REMOVAL OF INLET PROTECTION	N/A	AFTER ALL AREAS DRAINING TO THESE AREAS ARE STABILIZED
REMOVAL OF SILT PERIMETER	N/A	AFTER ALL AREAS DRAINING TO THESE AREAS ARE STABILIZED

*- SEE CHART, NOTES AND DETAILS FOR MAINTENANCE REQUIREMENTS

**FOR ADDITIONAL EROSION CONTROL INFORMATION AND NOTES, SEE SHEET C503 & C504.

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INDIANA STATE UNIVERSITY - NATIONAL PAN-HELLENIC COUNCIL PLAZA

520 N. 7TH ST. TERRE HAUTE, IN 47809

REVISIONS

No.	Description	Date

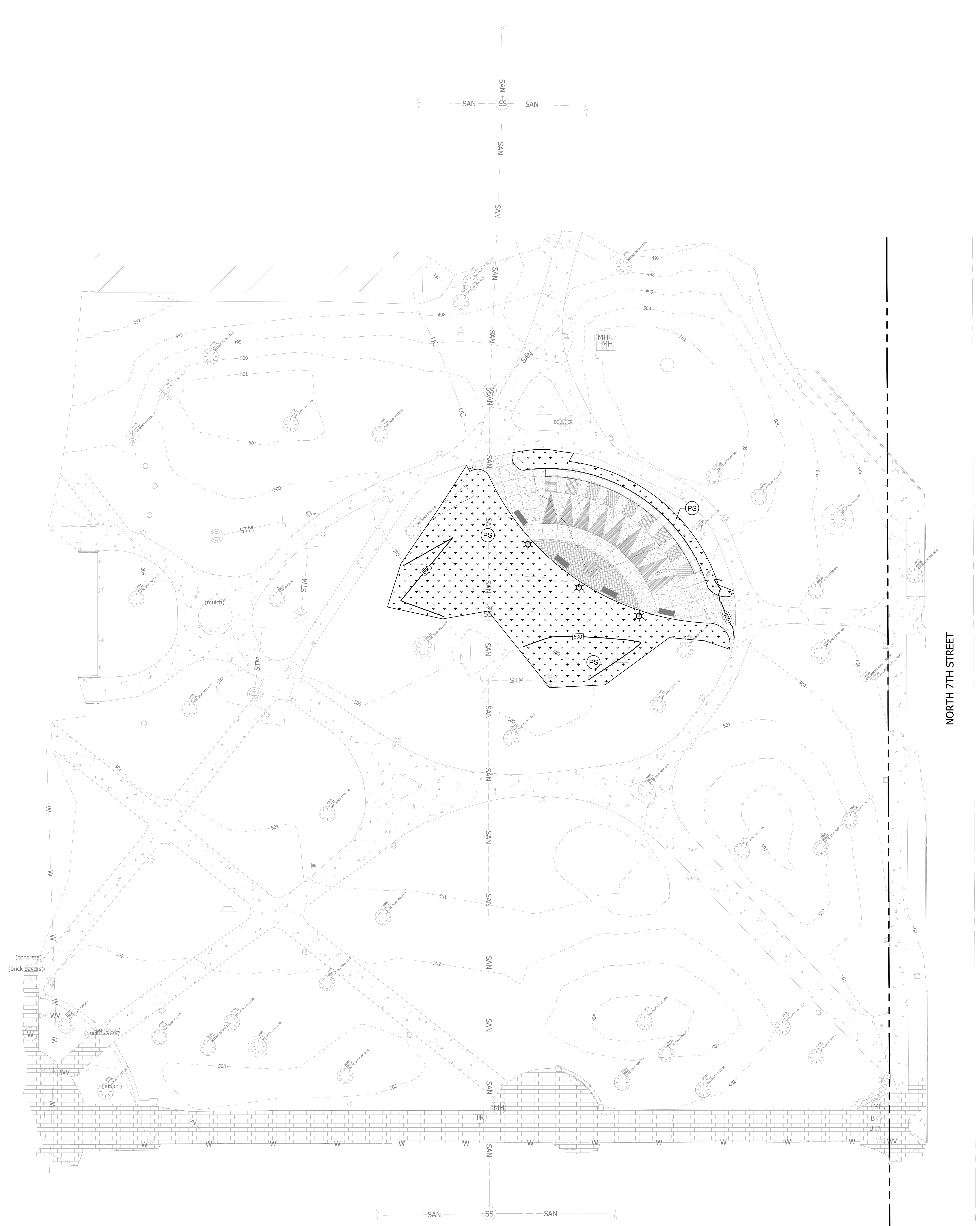
CERTIFIED BY:

ASHTON L. FRITZ
REGISTERED
No. PE10707583
STATE OF INDIANA
PROFESSIONAL ENGINEER
5/15/2025

BID ISSUE DATE: MAY 15, 2025
DRAWN: KG
CHECKED: AF
PROJECT NO.: P24-0112
REVISION NO.:

INITIAL EROSION CONTROLS SWPPP

C501



KEY NOTES:

IP	INLET PROTECTION	
CE	CONSTRUCTION ENTRANCE	
PS	PERMANENT SEEDING	
TS	TEMPORARY SEEDING	
EB	EROSION CONTROL BLANKET WITH PERMANENT SEEDING	
SP	SILT PERIMETER PROTECTION (SILT SOCK)	SP
SF	SILT FENCE	SF
CL	EROSION CONTROL LIMITS	
CW	CONCRETE WASHOUT	
SUB	PAVEMENT SUBBASE	
LA	LANDSCAPE PLANTING AREA. SEE PLAN SHEET L200 FOR PERMANENT E.C. MEASURE	
RP	OUTLET RIP-RAP PROTECTION	
CD	ROCK CHECK DAM	

EROSION CONTROL NOTES:

1. All disturbed areas shall be restored to initial / pre-construction conditions and grades. All flow lines shall be re-established and vegetative cover restored. Contractor may be required to extend vegetative restoration period to warmer months to ensure seed germination.
2. All erosion control practices shall be in accordance with the "Indiana Storm Water Quality Manual" and the SCS "Field Office Technical Guide".
3. The governing municipality has the right to require additional erosion control measures in the field as conditions warrant.
4. The storm water quality unit shown on these plans shall be the unit installed during the development of this property. No substitutions shall be permitted.
5. There shall be no dirt, debris, or storage of materials in the street or alleyways.
6. Public and private roadways, drives, and parking lots shall be kept cleared of accumulated sediment. Bulk clearing of accumulated sediment shall not include flushing the area with water. Projects subject to IDEM's CSGP shall remove sediment from public rights-of-way not exclusive of construction traffic at the end of each day per the CSGP requirements.
7. Stabilization shall be initiated by the end of the seventh (7^{th}) day the area was left idle. Stabilization must be completed within fourteen (14) days after initiation.
8. Additional erosion and sediment control measures may be required by the inspector.
5. Copies of the letter of intent and response from the governing municipality office for Construction Stormwater General Permit compliance shall be provided onsite, when required.
6. All erosion control materials shall be approved by the governing municipality department prior to installation.
5. All proposed erosion and sediment control shall be in conformance with the TERRE HAUTE Stormwater Design and Specifications Manual and Requirements, latest editions. Discrepancies between the plans and the manual shall not alleviate the contractor from adhering to the requirements set forth in the manual.

THE CONTRACTOR IS RESPONSIBLE FOR ALL INSTALLATION AND MAINTENANCE OF EROSION CONTROL AND STORM WATER POLLUTION PREVENTION FOR THE PROJECT AREA:

NAME: T.B.D.
ADDRESS: T.B.D.
PHONE: T.B.D.
EMAIL: T.B.D.

LIST OF QUALIFICATIONS:
CONTRACTOR IS TO INFORM TERRE HAUTE OF WHOM THIS STORMWATER POLLUTION PREVENTION INDIVIDUAL IS AT THE PRE-CONSTRUCTION MEETING, PRIOR TO ANY EARTH DISTURBING & CONSTRUCTION ACTIVITIES.

THE INDIANA STORM WATER QUALITY MANUAL AND TERRE HAUTE STANDARDS AND DETAILS SHALL BE USED IN CONJUNCTION WITH THIS SET OF EROSION CONTROL PLANS.

EROSION CONTROL MAINTENANCE SCHEDULE

EROSION CONTROL MEASURE	*MAINTENANCE	INSTALLATION SEQUENCE
STONE CONSTRUCTION ENTRANCE	AS NEEDED	PRIOR TO CLEARING AND GRADING
SILT PERIMETER PROTECTION	WEEKLY, AFTER STORM EVENTS AND AS NEEDED	PRIOR TO CLEARING AND GRADING
EXISTING INLET PROTECTION	WEEKLY, AFTER STORM EVENTS AND AS NEEDED	PRIOR TO CLEARING AND GRADING
TREE PROTECTION	WEEKLY, AFTER STORM EVENTS AND AS NEEDED	PRIOR TO CLEARING AND GRADING
TEMPORARY SEEDING	WATER AS NEEDED	AFTER ROUGH GRADING
PERMANENT SEEDING	WATER AS NEEDED	AFTER FINISH GRADING
INLET PROTECTION	WEEKLY, AFTER STORM EVENTS AND AS NEEDED	AFTER EACH INLET IS PLACED
SEED, SOD & LANDSCAPE AROUND UNITS FINISHED	WATER AS NEEDED	AFTER FINISHED GRADING AROUND FINISHED UNITS
REMOVAL OF INLET PROTECTION	N/A	AFTER ALL AREAS DRAINING TO THESE AREAS ARE STABILIZED
REMOVAL OF SILT PERIMETER	N/A	AFTER ALL AREAS DRAINING TO THESE AREAS ARE STABILIZED

*- SEE CHART, NOTES AND DETAILS FOR MAINTENANCE REQUIREMENTS

**FOR ADDITIONAL EROSION CONTROL INFORMATION AND NOTES, SEE SHEET C503 & C504.

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JULIE SMITH (julie.smith@j2-designstudio.com)

100% CONSTRUCTION DOCUMENTS

INDIANA STATE UNIVERSITY - NATIONAL PAN-HELLENIC COUNCIL PLAZA

520 N. 7TH ST. TERRE HAUTE, IN 47809

REVISIONS

No.	Description	Date

CERTIFIED BY:

ASHTON L. FRITZ
REGISTERED
No. PE10707583
STATE OF INDIANA
PROFESSIONAL ENGINEER
5/15/2025

BID ISSUE DATE: MAY 15, 2025
DRAWN: KG
CHECKED: AF
PROJECT NO.: P24-0112
REVISION NO.:

POST CONSTRUCTION SWPPP

C502

EROSION CONTROL SEQUENCE & PROCEDURES

*THESE EROSION CONTROL MEASURES, SEQUENCES AND PROCEDURES SHALL APPLY TO ALL PHASES OF THE PROJECT, INCLUDING THE INITIAL / PRE-CONSTRUCTION PHASE, DURING CONSTRUCTION PHASE, AND POST CONSTRUCTION PHASE.

Contractor shall schedule a Pre-Construction Meeting with the CITY OF TERRE HAUTE Stormwater Management Department (812-244-2311) / Local Governing Municipality Stormwater Management Department / County Surveyor's Office / County Soil and Water

1. prior to any earth moving activities or construction.
2. The following erosion control measures shall be in place prior to any land disturbing activities:
   - 2.1. Create a stabilized construction entrance, if necessary.
   - 2.2. Install Temporary Inlet Protection Measures on existing storm inlets.
   - 2.3. Install Temporary Silt Fence and/or Silt Sock Protection as shown on approved plans.
   - 2.4. Install Temporary Construction Washout as required.
   - 2.5. Install Temporary check dams and sediment basins, if necessary.
3. Contractor shall contact the CITY OF TERRE HAUTE / Governing Municipality / MS4 / County Soil and Water Department for an initial Erosion Control Inspection to obtain full sign off on the Improvement Location Permit prior to earthwork activities.
4. The contractor shall control waste, garbage, debris, wastewater, and other substances on the site so they will not be transported from the site by the action of wind, storm water runoff, or other forces. Proper disposal or management of all wastes and unused building material appropriate to the nature of the waste or material is required.
5. Public or private roadways shall be kept clear of accumulated sediment. All sediment that is cleared must be returned to the likely point of origin or other suitable location. Clearing of large amounts of sediment shall not include flushing the area with water.
6. Minimize the exposure of bare earth by limiting the work area to that necessary to perform the work, and by proper scheduling of manpower and equipment.
7. All erosion and sediment control measures shall be inspected, cleaned, and maintained following each storm event.
8. Wherever possible, maintain existing vegetative cover. Use non-vegetative material including mulch, erosion blankets, or stone to control erosion from disturbed areas.
9. A log shall be maintained of all inspections (weekly, and following storm events), maintenance and repair of erosion and sediment control measures. The log shall be maintained on site and be available upon request to the owners representatives and the operating authorities having jurisdiction over the site.
10. Once land disturbing activities begin, the following practices shall be provided:
    - 10.1. The Trained Individual responsible for the erosions control maintenance for the contractor shall make weekly site inspections and after every rainfall event of 0.5 inches and greater.
    - 10.2. Positive drainage shall be maintained at all times. Contractor shall ensure the downstream drainage system and adjacent properties are not receiving sediment/debris laden runoff. If additional measures are necessary to protect adjacent properties or the downstream drainage system, the Contractor shall notify the Engineer and implement the necessary measures immediately.
    - 10.3. Once earth disturbing activities begin, the adjacent roadways, adjacent drives and parking lots shall be continuously monitored for sediment tracking. If sediment is found, immediate action is required to clean the offsite areas and the current erosion control practices will need to be inspected and modified accordingly to prevent any further sediment from leaving the project site.
    - 10.4. Once the new storm structures and / or pipes are is in place, the appropriate type of inlet protection measures shall be placed.
    - 10.5. As surface types change, perimeter silt protection may need to be modified or replaced with a different perimeter protection. Update and replace perimeter silt protection as needed and required per these plans and site conditions / restraints.
    - 10.6. Continued monitoring of all exposed areas shall be performed in order to verify the surrounding areas are not becoming sediment laden from construction activities onsite.
    - 10.7. As the construction occurs, disturbed areas shall be stabilized as soon as they are at finished grade or will be left bare for more than 15 days.
    - 10.8. Provide final grade stabilization upon final grading of all areas including erosion control blanketing, seeding and sodding as appropriate.
    - 10.9. Storm sewers that become silted due to construction activities shall be cleaned with a jet vacuum and the material properly disposed of.
    - 10.10. As the existing swales and ditches are removed or graded away, the temporary check dams, filter dams, and sediment basins may be removed (unless noted otherwise on the plans) along with their retained debris, pollutants, and sediment. All material shall be disposed of off site at an approved location.
11. After site preparation, demolition, clearing and mass earthwork phases are complete and prior to infrastructure, building, and fine grading construction begins:
    - 11.1. The perimeter erosion control practices (silt fence, construction entrance, check filter dams, temp. sediment basins, etc.) shall be examined, cleaned, and reinstalled if damaged. Some practices may need to be relocated or changed for the proposed site layout or per construction phases. (See Erosion Control Plans).
    - 11.2. Relocate staging area if needed due to site configuration.
    - 11.3. Install a Temporary Concrete Washout if not done already.
    - 11.4. Once the new storm structures and / or pipes are is in place, the appropriate type of inlet protection measures shall be placed.
    - 11.5. Continued monitoring of all exposed areas shall be performed in order to verify the surrounding areas are not becoming sediment laden from construction activities onsite.
    - 11.6. As the construction occurs, disturbed areas shall be stabilized as soon as they are at finished grade or will be left bare for more than 15 days.
    - 11.7. Provide final grade stabilization upon final grading of all areas including erosion control blanketing, seeding and sodding as appropriate.
    - 11.8. Storm sewers that become silted due to construction activities shall be cleaned with a jet vacuumed and the material properly disposed of.
    - 11.9. Temporary silt fence to be installed around pond and maintained until open areas contributing to direct sheet flow to pond have been stabilized. Only once these open areas are properly and permanently stabilized can this temporary silt fence be removed and disposed of properly.
    - 11.10. Minimize erosion from exposed areas by providing and maintaining temporary or permanent stabilization measures. Erosion control measures to protect exposed areas shall be installed at the end of the day's work or within 24 hours of the completion of the earth disturbing activity, as applicable for the type of measure.
    - 11.11. All disturbed areas shall be seeded and/or stabilized upon completion of the earth disturbing activity.
    - 11.12. Rip-rap protection for final grades, detention ponds or storm sewers need established upon completion of final grading and storm sewer construction.
12. All graded areas (lawns, banks, mounds, etc.) with slopes equal to or steeper than 6h:1v shall be stabilized with an erosion control blanket unless noted otherwise. All constructed swales channels shall be stabilized with an erosion control blanket to the top of the bank. Soil stockpiles shall be seeded and mulched to minimize erosion.
13. All other lawn and planting areas shall be seeded and stabilized with an anchored, crimped or tackified mulch and seed mixture.
14. Areas to be paved shall be stabilized with a temporary stone cover. The temporary stone stabilization shall be equivalent to the proposed stone sub-base material. Adequate sub-base depths shall be maintained during construction, verified and restored, if necessary, prior to final paving. Stone stabilization shall be installed per the paving specifications and details.
15. Install pipe and grate inlet protection measures and pipe outlet protection as new pipes or pipe extensions are installed. Limit excavation to the work that can be performed that day. Trenches shall be seeded and mulched as part of the backfill operation.
16. Install inlet protection measures to prevent debris and sediment from entering storm system. Check weekly and after each storm event for debris and sediment. Clear blockages as identified. Damaged or ineffective measures shall be replaced.
17. Soil stockpiles shall have appropriate perimeter protection to prevent sedimentation of the surrounding acres. Any stock pile that will not be disturbed for 15 days or longer shall be seeded and protected with mulch or erosion control blanket.
18. All disturbed areas where work will potentially cease for 15 days or longer shall be seeded and stabilized immediately upon completion of the activity.
19. Erosion and sediment control measures shall be maintained until the site is 95% stabilized.
20. Construction Phase BMP's shall remain in place and continue to be inspected until the entire site has reached the minimum vegetative cover, 70% established.
21. Once construction is complete and prior to the contractor handing over the project to the owner, the contractor shall clean all debris, pollutants, and sediment from the storm sewers.
22. Once construction is complete and prior to the contractor handing over the project to the owner, the contractor shall clean all debris, pollutants, and sediment from the detention pond and remove the outlet structure rock check dam. Contractor to stabilize wet detention ponds (if any) after clean out.
23. Upon the site reaching the required minimum established vegetative cover, the IDEM CSGP Notice of Termination shall be submitted to the MS4 Department for approval prior to submitting it to IDEM if required for project.

EROSION CONTROL MAINTENANCE SCHEDULE

EROSION CONTROL MEASURE	*MAINTENANCE	INSTALLATION SEQUENCE
STONE CONSTRUCTION ENTRANCE	AS NEEDED	PRIOR TO CLEARING AND GRADING
SILT PERIMETER PROTECTION	WEEKLY, AFTER STORM EVENTS AND AS NEEDED	PRIOR TO CLEARING AND GRADING
EXISTING INLET PROTECTION	WEEKLY, AFTER STORM EVENTS AND AS NEEDED	PRIOR TO CLEARING AND GRADING
TREE PROTECTION	WEEKLY, AFTER STORM EVENTS AND AS NEEDED	PRIOR TO CLEARING AND GRADING
TEMPORARY SEEDING	WATER AS NEEDED	AFTER ROUGH GRADING
PERMANENT SEEDING	WATER AS NEEDED	AFTER FINISH GRADING
INLET PROTECTION	WEEKLY, AFTER STORM EVENTS AND AS NEEDED	AFTER EACH INLET IS PLACED
SEED, SOD & LANDSCAPE AROUND	WATER AS NEEDED	AFTER FINISHED GRADING AROUND FINISHED UNITS
UNITS FINISHED		
REMOVAL OF INLET PROTECTION	N/A	AFTER ALL AREAS DRAINING TO THESE AREAS ARE STABILIZED
REMOVAL OF SILT PERIMETER	N/A	AFTER ALL AREAS DRAINING TO THESE AREAS ARE STABILIZED

*- SEE CHART, NOTES AND DETAILS FOR MAINTENANCE REQUIREMENTS

MATERIAL HANDLING AND SPILL PREVENTION & RESPONSE PLAN

PURPOSE

The intention of this spill prevention, control and countermeasures (SPCC) is to establish the procedures and equipment required to prevent the discharge of oil and hazardous substances in quantities that violate applicable water quality standards, cause a sheen upon or discoloration of the surface of adjacent waterways / watercourses / waterbodies and navigable waters or adjoining shorelines, or cause sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines. the plan also establishes the activities required to mitigate such discharges (i.e., countermeasures) should they occur.

Definitions:

Pollutant: Means pollutant of any kind or in any form, including but not limited to sediment, paint, cleaning agents, concrete washout, pesticides, nutrients, trash, hydraulic fluids, fuel, oil, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged soil.

Discharge:

Includes but is not limited to, any spilling, leaking, pumping, pouring, emitting, emptying, or dumping.

Navigable waters:

Means all waters of the unites states that are connected with a navigable stream, lake, or sea. [Note: This definition is usually interpreted to mean any wastewater (even normally dry wash or storm sewer) that eventually drains into a navigable stream].

Pan review and amendments:

This plan shall be reviewed and/or amended, if necessary, whenever there is a change in the design of the site, construction, operation, or maintenance which materially affects the sites' potential for the discharge of regulated material.

PREDICTION OF POTENTIAL SPILLS

1. Nearest navigable water: Wabash River
2. Possible spill sources (during and post construction): Vehicular sources such as leaking fuel or oil, brake fluid, grease, antifreeze; construction trash and debris, biological agents found in trash and debris, fertilizers, household items including but not limited to cleaning agents, chemicals, paint, herbicides and pesticides.
3. Groundwater contamination: This facility maintains no above ground or under ground storage tanks. therefore, it is felt that there is little or no possibility of post construction groundwater contamination.

VEHICLE AND EQUIPMENT MAINTENANCE

DESCRIPTION AND PURPOSE

Prevent or reduce the contamination of stormwater resulting from vehicle and equipment maintenance by running a "dry and clean site". The best option would be to perform maintenance activities at an offsite facility. If this option is not available then work should be performed in designated areas only, while providing cover for materials stored outside, checking for leaks and spills, and containing and cleaning up spills immediately.

SUITABLE APPLICATIONS

These procedures are suitable on all construction projects where on onsite yard area is necessary for storage and maintenance of heavy equipment and vehicles.

LIMITATIONS

Onsite vehicle and equipment maintenance should only be used where it is impractical to send vehicles and equipment offsite for maintenance and repair. Sending vehicles/equipment offsite should be done in conjunction with a stabilized construction entrance / exit. Outdoor vehicle or equipment maintenance is a potentially significant source of stormwater pollution. Activities that can contaminate stormwater include engine repair and service, changing or replacement of fluids, and outdoor equipment storage and parking (engine fluid leaks).

IMPLEMENTATION

- If maintenance must occur onsite, use designated areas, located away from drainage courses. Dedicated maintenance areas should be protected from stormwater runon and runoff, and should be located at least 50 feet from downstream drainage facilities and watercourses.
- Drip pans or absorbent pads should be used during vehicle and equipment maintenance work that involves fluids, unless the maintenance work is performed over on impermeable surface in a dedicated maintenance area.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- All fueling trucks and fueling areas are required to have spill kits and/or use other spill protection devices.
- Use absorbent materials on small spills. Remove the absorbent materials promptly and dispose of properly.
- Inspect onsite vehicles and equipment daily at startup for leaks, and repair immediately. Keep vehicles and equipment clean; do not allow excessive build-up of oil and grease.
- Segregate and recycle wastes, such as greases, used oil or oil filters, antifreeze, cleaning solutions, automotive batteries, hydraulic and transmission fluids. Provide secondary containment and covers for these materials if stored onsite.
- Train employees and subcontractors in proper maintenance and spill cleanup procedures.
- Drip pans or plastic sheeting should be placed under all vehicles and equipment placed on docks, barges, or other structures over water bodies when the vehicle or equipment is planned to be idle for more than 1 hour. Properly dispose of used oils, fluids, lubricants, and spill cleanup materials. Do not place used oil in a dumpster or pour into a storm drain or watercourse. Properly dispose of or recycle used batteries. Do not bury used tires. Repair leaks of fluids and oil immediately.
- Listed below is further information if you must perform vehicle or equipment maintenance onsite.

INSPECTION AND MAINTENANCE

- Inspect and verify that BMP's are in place prior to the commencement of associated activities. while activities associated with the BMP are under way, inspect weekly to verify continued BMP implementation.
- Keep ample supplies of spill cleanup materials onsite. Maintain waste fluid containers in leak proof condition.
- Vehicles and equipment should be inspected on each day of use. Leaks should be repaired immediately or the problem vehicle(s) or equipment should be removed from the project site. Inspect equipment for damaged hoses and leaky gaskets routinely. Repair or replace as needed.

VEHICLE AND EQUIPMENT FUELING

DESCRIPTION AND PURPOSE

Vehicle equipment fueling procedures and practices are designed to prevent fuel spills and leaks, and reduce or eliminate contamination of stormwater. This can be accomplished by using offsite facilities, fueling in designated areas only, enclosing or covering stored fuel, implementing spill controls, and training employees and subcontractors in proper fueling procedures.

LIMITATIONS

Onsite vehicle and equipment fueling should only be used where it is impractical to send vehicles and equipment offsite for fueling. Sending vehicles and equipment offsite should be done in conjunction with a stabilized construction entrance / exit.

IMPLEMENTATION

- Use offsite fueling stations as much as possible. These businesses are better equipped to handle fuel and spills properly. Performing this work offsite can also be economical by eliminating the need for a separate fueling area at a site.
- Discourage "topping-off" of fuel tanks.
- Absorbent spill cleanup materials and spill kits should be available in fueling areas and on fueling trucks, and should be disposed of properly after use.
- Drip pans or absorbent pools should be used during vehicle and equipment fueling, unless the fueling is performed over an impermeable surface in a dedicated fueling area.
- Use absorbent materials on small spills. Do not hose down or bury the spill. Remove the absorbent materials promptly and dispose of properly.
- Avoid mobile fueling of mobile construction equipment around the site; rather, transport the equipment to designated fueling areas.
- Train employees and subcontractors in proper fueling and cleanup procedures.
- Dedicated fueling areas should be protected from stormwater runon and runoff, and should be located at least 50 feet away from downstream drainage facilities and watercourses. Fueling must be performed on level-grade areas.
- Protect fueling areas with berms and dikes to prevent runon, runoff, and to contain spills.
- Nozzles used in vehicle and equipment fueling should be equipped with an automatic shutoff to control drips. Fueling operations should not be left unattended.
- Federal, State, and Local requirements should be observed for any stationary above ground storage tanks.

INSPECTION AND MAINTENANCE

Vehicles and equipment should be inspected each day of use for leaks. Leaks should be repaired immediately or problem vehicles or equipment should be removed from the project site. Keep ample supplies of spill cleanup materials onsite. Immediately clean up spills and properly dispose of contaminated soil and cleanup materials.

THE CONTRACTOR IS RESPONSIBLE FOR ALL INSTALLATION AND MAINTENANCE OF EROSION CONTROL AND STORM WATER POLLUTION PREVENTION FOR THE PROJECT AREA:

NAME: T.B.D.
ADDRESS: T.B.D.
PHONE: T.B.D.
EMAIL: T.B.D.

LIST OF QUALIFICATIONS:

CONTRACTOR IS TO INFORM TERRE HAUTE OF WHOM THIS STORMWATER POLLUTION PREVENTION INDIVIDUAL IS AT THE PRE-CONSTRUCTION MEETING, PRIOR TO ANY EARTH DISTURBING & CONSTRUCTION ACTIVITIES.

THE INDIANA STORM WATER QUALITY MANUAL AND TERRE HAUTE STANDARDS AND DETAILS SHALL BE USED IN CONJUNCTION WITH THIS SET OF EROSION CONTROL PLANS.

SOLID WASTE MANAGEMENT

DESCRIPTION AND PURPOSE

Solid waste management procedures and practices are designed to prevent or reduce the discharge of pollutants to stormwater from solid or construction waste by providing designated waste collection areas and containers, arranging for regular disposal, and training employees and subcontractors.

SUITABLE APPLICATIONS

The BMP's are suitable for construction sites where the following wastes are generated or stored:

- Solid waste generated from trees and shrubs removed during land clearing, demolition of existing structures (rubble), and building construction.
- Packing materials including wood, paper, and plastic.
- Scrap or surplus building materials including scrap metals, rubber, plastic, glass pieces and masonry products.
- Domestic wastes including food containers such as beverage cans, coffee cups, paper bags, plastic wrappers, and cigarettes.
- Construction wastes including brick, mortar, timber, steel and metal scraps, pipe and electrical cuttings, non-hazardous equipment ports, styrofoam and other materials send transport and package construction materials.

IMPLEMENTATION

The following steps will help keep a clean site and reduce stormwater pollution:

- Select designated waste collection areas onsite.
- Inform trash-hauling contractors that you will accept only watertight dumpsters for onsite use.
- Inspect dumpsters for leaks and repair any dumpster that is not watertight.
- Provide an adequate number of containers with lids or covers that can be placed over the container to keep rain out or to prevent loss of wastes when it is windy.
- Plan for additional containers and more frequent pickups during the demolition phase of construction or as needed.
- Collect site trash daily, especially during rainy and windy conditions.
- Remove this solid waste promptly since erosion and sediment control devices tend to collect litter.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.
- Do not hose out dumpsters on the construction site. Leave dumpster cleaning to the trash hauling contractor.
- Arrange for regular waste collection before containers overflow.
- Clean up immediately if a container does spill.
- Make sure that construction waste is collected, removed, and disposed of only at authorized disposal areas.
- Inspect the storm manhole with snout. Remove any floating debris on a regular basis and have sumps professionally cleaned once a year. **Caution should be noted - all sumps are deep and potentially dangerous. Extreme care and safety measures along with OSHA guidelines should be followed.

COLLECTION, STORAGE, AND DISPOSAL

- Littering on the project site should be prohibited.
- To prevent clogging of the storm drainage system, litter and debris removal from drainage grates, trash rocks, and ditch lines should be a priority.
- Trash receptacles should be provided in the contractor's yard, field trailer areas, and at locations where workers congregate for lunch and break periods.
- Litter from work areas within the construction limits of the project site should be collected and placed in watertight dumpsters at least weekly, regardless of whether the litter was generated by the contractor, the public, or others. collected litter and debris should not be placed in or next to drain inlets, stormwater drainage systems, or watercourses.
- Dumpsters of sufficient size and number should be provided to contain the solid waste generated by the project.
- Full dumpsters should be removed from the project site and the contents should be disposed of by the trash hauling contractor.
- Construction debris and waste should be removed from the site biweekly or more frequently as needed.
- Construction material visible to the public should be stored or stocked in an orderly manner.
- Stormwater runon should be prevented from contacting stored solid waste through the use of berms, dikes, or other temporary diversion structures or through the use of measures to elevate waste from site surfaces.
- Solid waste storage areas should be located at least 50 feet from drainage facilities and water courses and should not be located in areas prone to flooding or ponding.

INSPECTION AND MAINTENANCE

- Inspect and verify that activity-based BMP's are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly to verify continued BMP implementation.
- Inspect BMP's subject to non-stormwater discharge daily while non-stormwater discharges occur.
- Inspect construction waste area regularly.
- Arrange for regular waste collection.

MISCELLANEOUS

The contractor shall furnish and maintain sanitary facilities for this project for all personal. The facilities shall be cleaned as necessary and the waste materials shall be disposed of in accordance with the laws and regulations of the State of Indiana and local/county requirements.

Concrete trucks will wash out at the designated area near the construction entrance. The contractor shall take care to insure that no waste materials are discharged into the waters of the state. Each contractor is responsible to provide litter control for trash generated by his crew. All trash including but not limited to; solid waste, paint cans, oil cans, used oil and filters will be contained and disposed of by the contractor in accordance with the laws and regulations of the State of Indiana and local/county requirements.

SPILL PREVENTION PLAN AND ACTION

If a release containing a hazardous substance in an amount equal to or in excess of a reporting quantity established under either 40 CFR 117 or 40 CFR 302 occurs during a 24-hour period, the contractor will immediately notify the permittee who shall then do the following: notify the National Response Center (NCR) (800-424-8802) and the Indiana State Emergency Management Agency (317-232-3986); as well as the local/county emergency management, the local governing fire department (911), and the municipality's stormwater department and /or department of public works. Also, the engineer will prepare a revision to this document to identify measures to prevent the reoccurrence of such releases.

ALERT PROCEDURES FOR SPILLS:

1. Any personnel observing a spill will immediately instigate the following procedure:
   a.) Dialing "0" from any telephone.
   b.) Notify the appropriate emergency personnel.
2. The emergency coordinator will then take the following actions:
   a.) Barricade the area allowing no vehicles to enter or leave the spill zone.
   b.) Notify the Indiana department of environmental management, office of emergency response by calling the appropriate telephone number: 317-233-7745 toll free: 800-233-7745.
   Also contact the national response center at 800-424-8802 and provide the following instructions:
   - Time of observation of the spill
   - Location of the spill
   - Identity of material spilled
   - Probable source of the spill
   - Probable time of the spill
   - Volume of the spill and duration
   - Present and anticipated movement of the spill
   - Weather conditions
   - Personnel at the scene
   - Action initiated by personnel

   c.) Notify the local fire department phone: 9-1-1
   d.) Notify the County Soil and Water office.
   e.) Notify the MS4 department of the city's stormwater department.
   f.) Notify the local police department phone: 9-1-1
   g.) Notify waste recovery contractor, maintenance personnel or other contractual personnel as necessary for cleanup.
   h.) Coordinate and monitor cleanup until the situation has been stabilized and all spills have been eliminated.
   i.) Cooperate with the IDEM-OER or procedures and reports involved with the event.

CLEANUP PARAMETERS:

1. The owner shall be continually kept informed, maintain lists of qualified contractors and available vac-trucks, tank pumpers and other equipment readily accessible for clean up operations. In addition, a continually updated list of available absorbent materials and clean-up supplies should be kept on site.
2. All maintenance personnel will be made aware of techniques for prevention of spills. They will be informed of the requirements and procedures outlined in this plan. They will be kept abreast of current developments or new information on the prevention of spills and / or necessary alterations to this plan.
3. When spills occur which could endanger human life and this becomes primary concern, the discharge of the life saving protection function will be carried out by the local police and fire departments.
4. Absorbent materials, which are used in cleaning up spilled materials, will be disposed of in a manner subject to the approval of the Indiana Department of Environmental Management.
5. Flushing of spilled material with water will not be permitted unless so authorized by the Indiana Department of Environmental Management.

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100% CONSTRUCTION DOCUMENTS

INDIANA STATE UNIVERSITY - NATIONAL PAN-HELLENIC COUNCIL PLAZA

520 N. 7TH ST. TERRE HAUTE, IN 47809

REVISIONS

No.	Description	Date

CERTIFIED BY:

ASHTON L. FRITZ REGISTERED No. PE10707583 STATE OF INDIANA PROFESSIONAL ENGINEER

5/15/2025

BID ISSUE DATE: MAY 15, 2025

DRAWN: KG CHECKED: AF

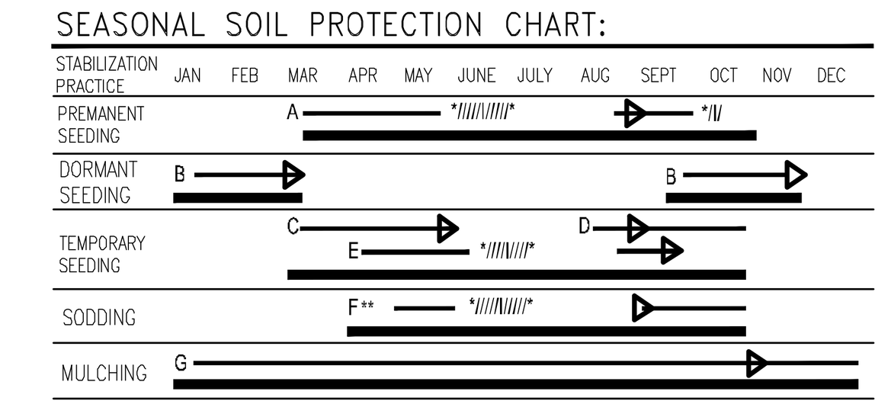
PROJECT NO.: P24-0112

REVISION NO.:

SWPPP SEQUENCING & SOILS INFORMATION

C503

SEASONAL SOIL PROTECTION CHART:



A = KENTUCKY BLUEGRASS 40 LBS/ACRE; CREEPING RED FESCUE 40 LBS/ACRE; PLUS 2 TONS STRAW MULCH/ACRE, OR ADD ANNUAL RYEGRASS 20 LBS/ACRE.

B = KENTUCKY BLUEGRASS 60 LBS/ACRE; CREEPING RED FESCUE 60 LBS/ACRE; PLUS 2 TONS STRAW MULCH/ACRE, OR ADD ANNUAL RYEGRASS 30 LBS/ACRE.

C = SPRING OATS 3 BUSHEL/ACRE

D = WHEAT OR RYE 2 BUSHEL/ACRE

E = ANNUAL RYEGRASS 40 LBS/ACRE

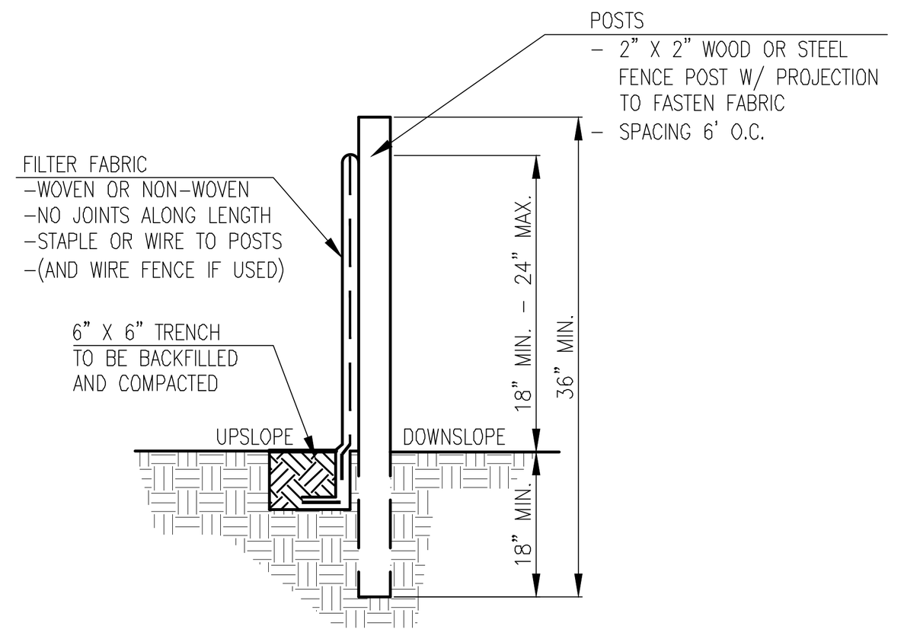
F = SOD

G = STRAW MULCH 2 TONS/ACRE

/I/ IRRIGATION NEEDED DURING JUNE, JULY, AND/OR SEPTEMBER

** IRRIGATION NEEDED FOR 2 TO 3 WEEKS AFTER APPLYING SOD

SEASONAL SOIL SEEDING PROTECTION CHART

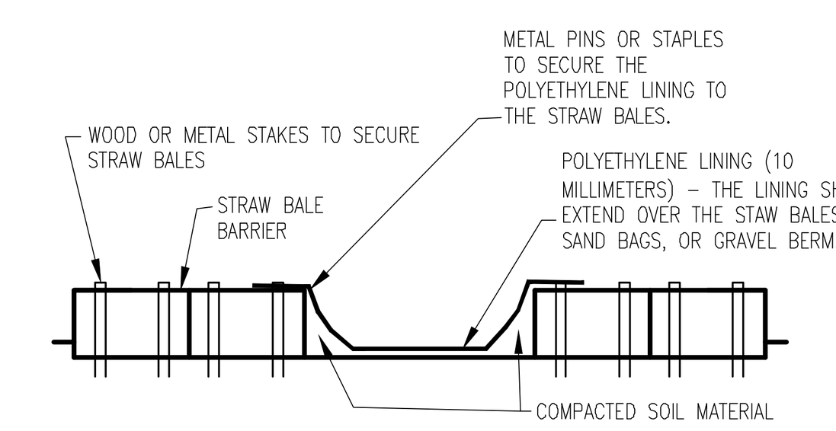


INSTALLATION:
1. THE BOTTOM 1' OF THE FENCE SHALL BE BURIED IN THE TRENCH ON THE UPSLOPE SIDE.
2. FENCE SHALL BE INSTALLED ALONG LEVEL GRADES, NOT ACROSS FLOW CHANNELS.
3. IF OPTIONAL SUPPORT WIRE FENCE IS USED, POST SPACING MAY BE EXTENDED TO 8' O.C.

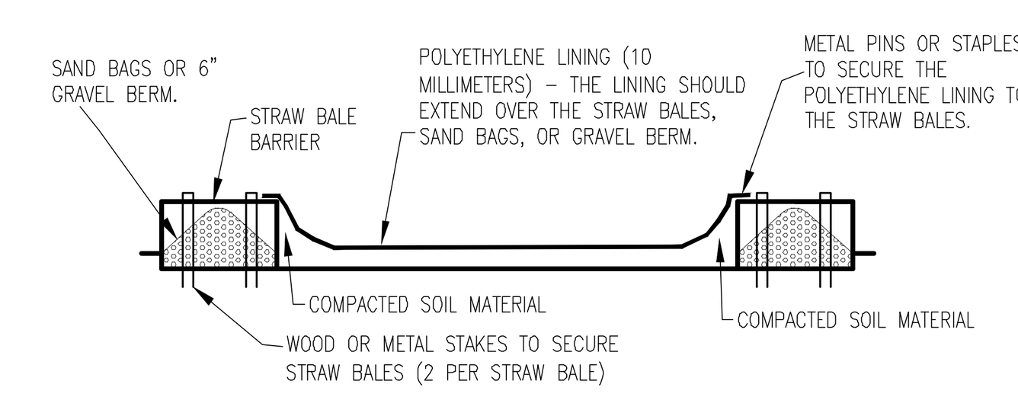
MAINTENANCE:
1. INSPECT SILT FENCE PERIODICALLY (WEEKLY) AND AFTER EACH STORM EVENT.
2. IF FABRIC IS TORN OR DAMAGED OR IN ANY WAY BECOMES INEFFECTIVE, REPLACE THE AFFECTED PORTION IMMEDIATELY.
3. REMOVE DEPOSITED SEDIMENT WHEN IT REACHES HALF THE HEIGHT OF THE FENCE, OR IT IS CAUSING THE FABRIC TO BULGE.
4. TAKE CARE NOT TO UNDERMINE THE FENCE DURING SEDIMENT REMOVAL.
5. AFTER THE CONTRIBUTING AREA HAS BEEN STABILIZED, REMOVE THE FENCE AND REMAINING SEDIMENT, BRING THE DISTURBED AREA TO GRADE, AND STABILIZE.

SILT FENCE SECTION

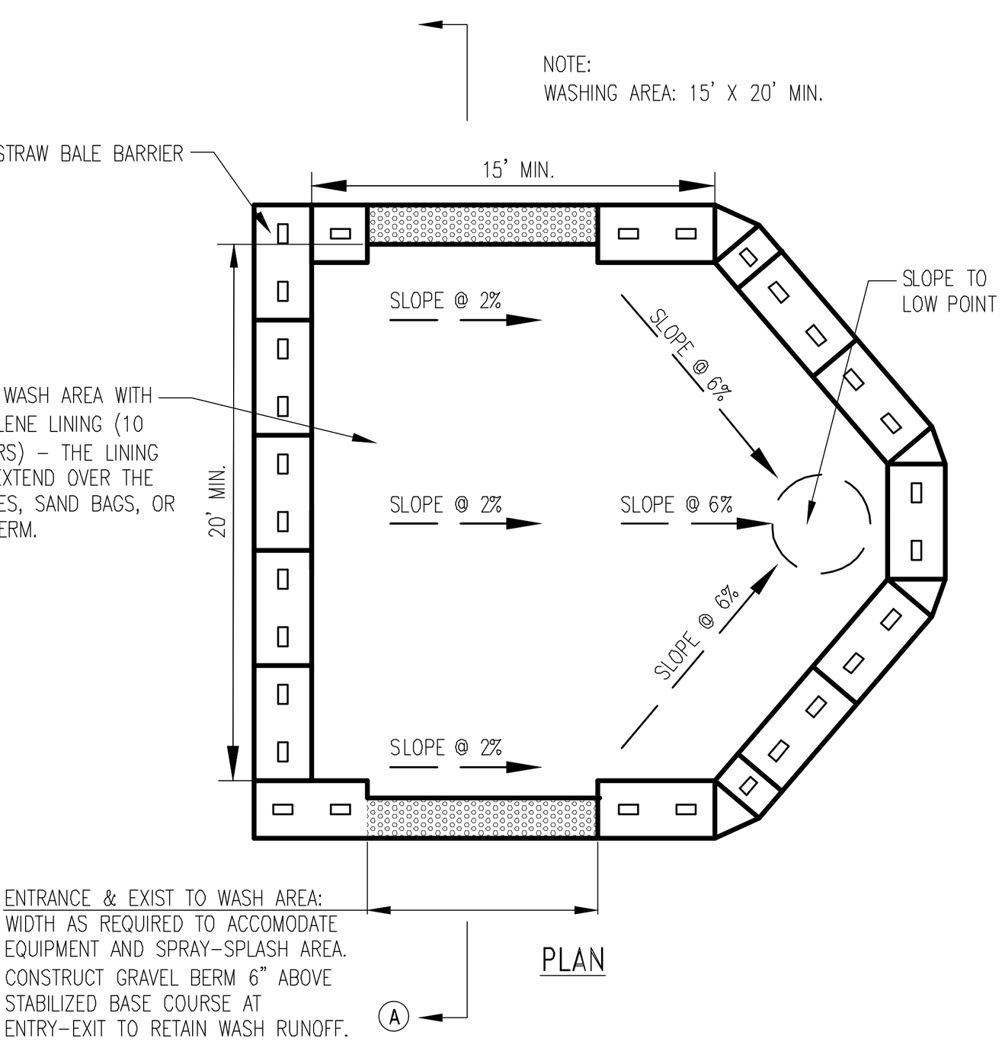
NOT TO SCALE – PRACTICE 3.74



FRONT ELEVATION



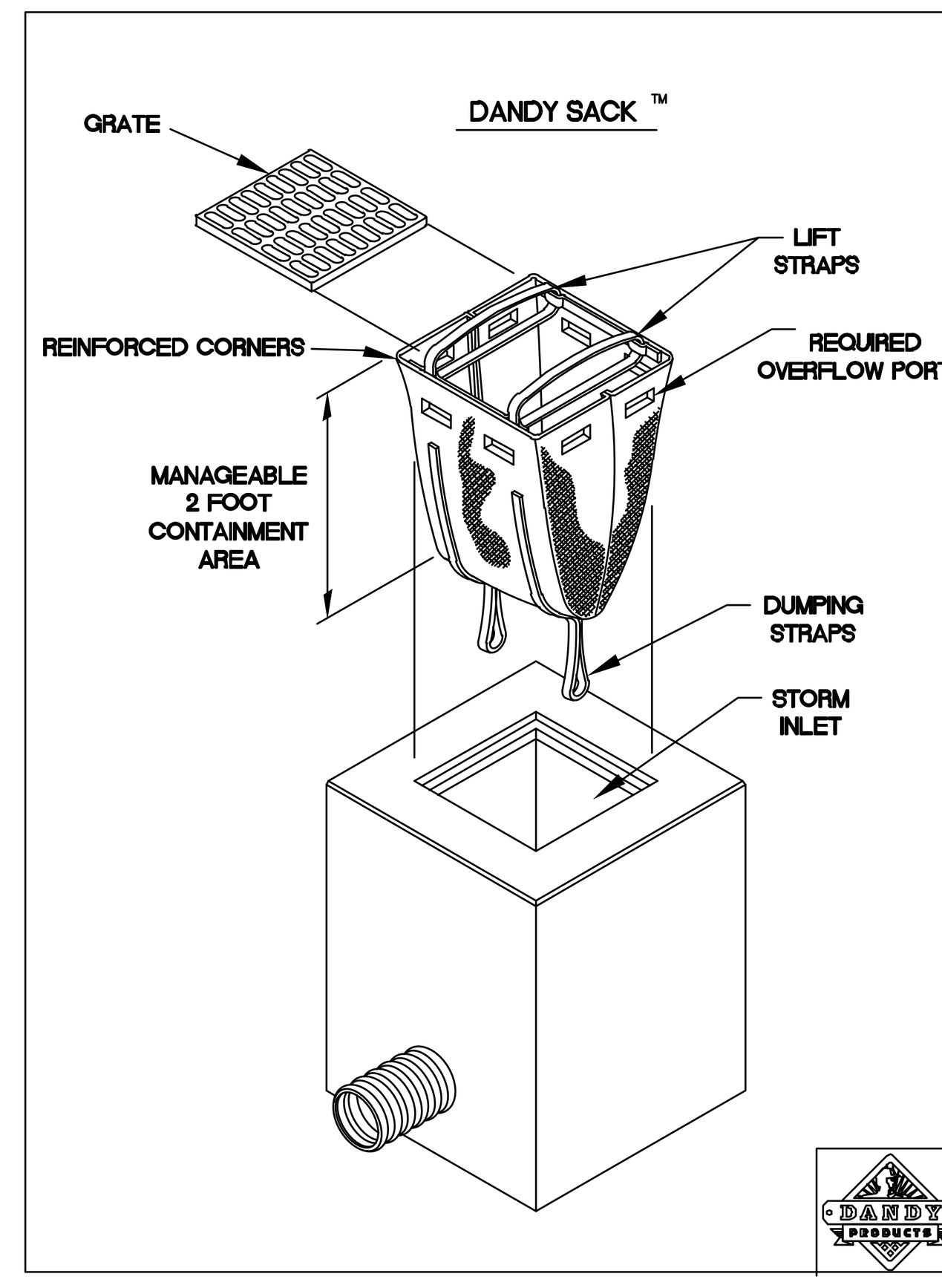
SECTION A–A



PLAN

CONCRETE WASHOUT AREA

NOT TO SCALE



DANDY SACK™
SPECIFICATIONS

NOTE: THE DANDY SACK™ WILL BE **MANUFACTURED IN THE U.S.A.** FROM A WOVEN MONOFILAMENT FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS:

REGULAR FLOW DANDY SACK™ (BLACK)

Mechanical Properties	Test Method	Units	MARV
Grab Tensile Strength	ASTM D 4632	kN (lbs)	1.78 (400) x 1.40 (315)
Grab Tensile Elongation	ASTM D 4632	%	15 x 15
Puncture Strength	ASTM D 4833	kN (lbs)	0.67 (150)
Mullen Burst Strength	ASTM D 3786	kPa (psi)	5506 (800)
Trapezoid Tear Strength	ASTM D 4533	kN (lbs)	0.67 (150) x 0.73 (165)
UV Resistence	ASTM D 4355	%	90
Apparent Opening Size	ASTM D 4751	Mm (US Std Sieve)	0.425 (40)
Flow Rate	ASTM D 4491	1/min/m² (gal/min/ft²)	2852 (70)
Permittivity	ASTM D 4491	Sec^{-1}	0.90

HI–FLOW DANDY SACK™ (SAFETY ORANGE)

Mechanical Properties	Test Method	Units	MARV
Grab Tensile Strength	ASTM D 4632	kN (lbs)	1.62 (365) X 0.89 (200)
Grab Tensile Elongation	ASTM D 4632	%	24 X 10
Puncture Strength	ASTM D 4833	kN (lbs)	0.40 (90)
Mullen Burst Strength	ASTM D 3786	kPa (psi)	3097 (450)
Trapezoid Tear Strength	ASTM D 4533	kN (lbs)	0.51 (115) X 0.33 (75)
UV Resistence	ASTM D 4355	%	90
Apparent Opening Size	ASTM D 4751	Mm (US Std Sieve)	0.425 (40)
Flow Rate	ASTM D 4491	1/min/m² (gal/min/ft²)	5907 (145)
Permittivity	ASTM D 4491	Sec^{-1}	2.1

*Note: All Dandy Sacks™ can be ordered with our optional oil absorbent pillows

DETAIL OF INLET SEDIMENT CONTROL DEVICE

PROJECT:		DR. BY:
CITY/STATE:	DATE:	DR. NO:

DANDY PRODUCTS

"IT'S THE LAW"

811

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ASHTON FRITZ (ashton@fritz-eng.com)

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MBE INDIANA: UNSP #81101505
v. (317) 995-7808
IVAN TOLIVER (ivan@csp1engineering.com)

ELECT. ENGINEER:

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1221 W LAKEVIEW CT
ROMEOVILLE, IN 60446
v. (630) 410-2344
JOHN NEVILLE (jneville@nevilleeng.com)

LANDSCAPE ARCHITECTURE:

J2 DESIGN STUDIO
693 EAST 82ND STREET
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v. (312) 213-7686
JULIE SMITH (julie.smith@j2-designstudio.com)

100% CONSTRUCTION DOCUMENTS

INDIANA STATE UNIVERSITY - NATIONAL PAN-HELLENIC COUNCIL PLAZA

520 N. 7TH ST. TERRE HAUTE, IN 47809

REVISIONS

No.	Description	Date

CERTIFIED BY:

ASHTON L. FRITZ
REGISTERED
No.
PE10707583
STATE OF
INDIANA
PROFESSIONAL ENGINEER

5/15/2025

BID ISSUE DATE: MAY 15, 2025

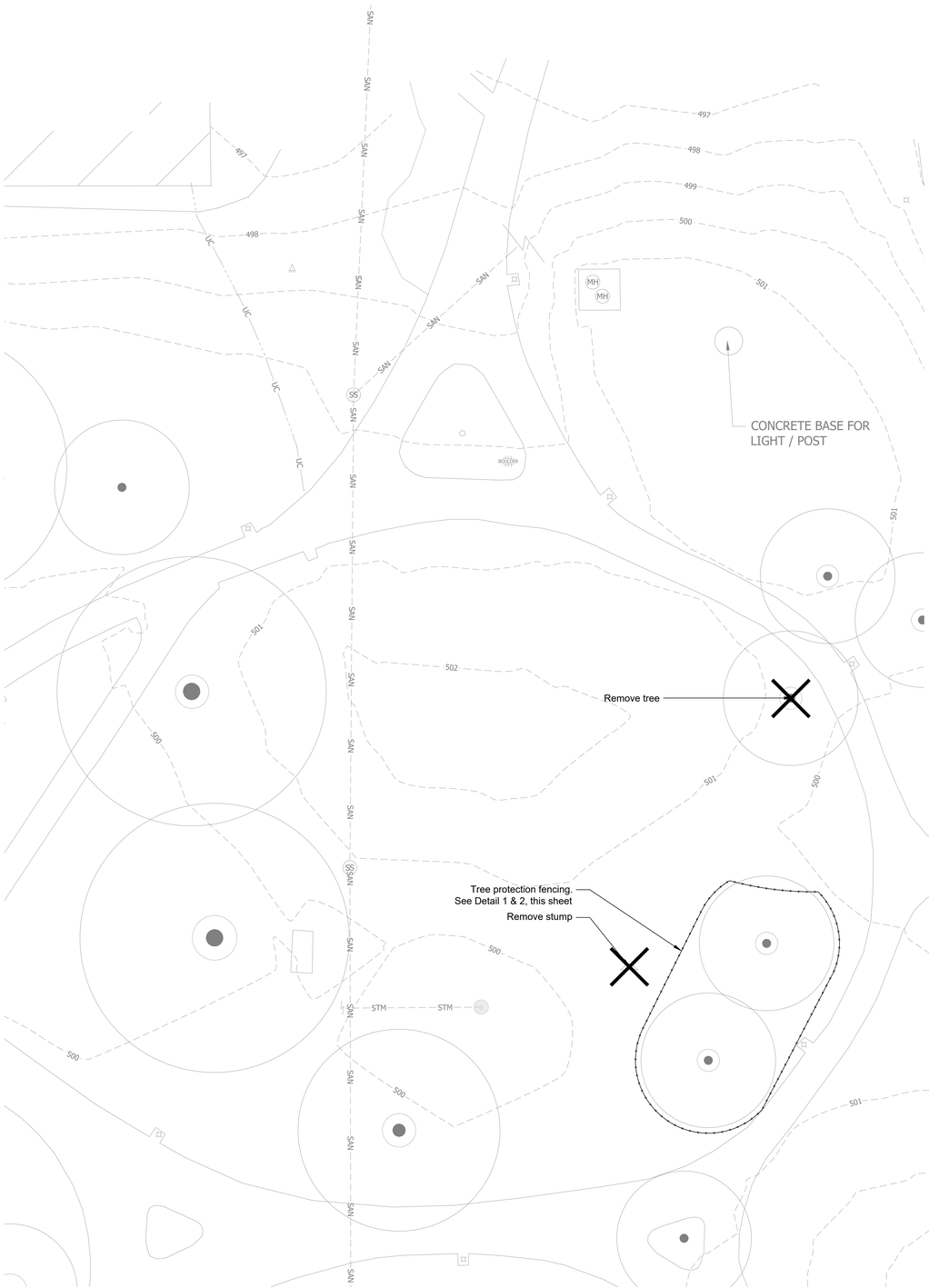
DRAWN: KG | CHECKED: AF

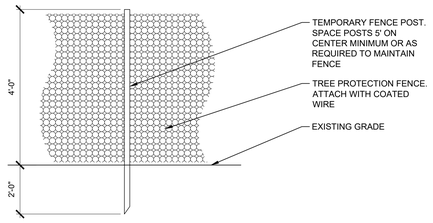
PROJECT NO.: P24-0112

REVISION NO.:

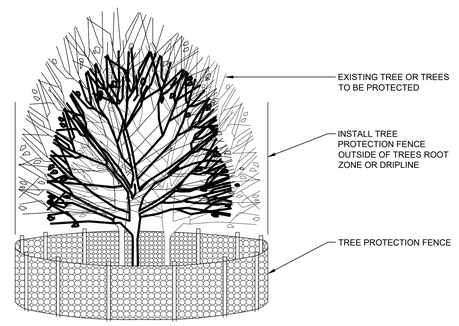
EROSION CONTROL DETAILS

C504





1 SECTION - TREE PROTECTION FENCING
1" = 1'-0"



2 AXON - TREE PROTECTION FENCING
1" = 1'-0"

LEGEND

- Existing Tree
- Remove Tree
- Tree Protection Fence

TREE REMOVAL AND PRESERVATION NOTES

1. Contractor shall verify all utility locations (existing and proposed) along with existing conditions and grades (existing and proposed), and note any discrepancies to Owner, Engineer, and Landscape Architect immediately, before proceeding with any work.
2. Base information for these plans was taken from Engineer's site survey. Contractor shall verify all dimensions and locations of existing and proposed features, and familiarize themselves with any obstacles encumbering the work of this project.
3. All tree removals shall be tagged and confirmed by the contractor with the landscape architect and city forester.
4. Install tree protection fencing prior to site work and maintain throughout construction period. No storage of materials, vehicular access or an other construction activities shall be permitted within the tree protection zones.
5. Tree protection fencing shall be installed along all construction access paths where existing tree drip lines intersect with the access paths.
6. Maintain existing grade at base of all trees to remain, protect existing trees to remain against any disturbance including unnecessary cutting, breaking, or excavation.
7. For tree removals grind out stumps to a minimum of 18" depth and remove all roots prior to installation of proposed materials. Bring to finish grade with soil fill per specifications.
8. Keep all areas clean, neat, and orderly at all times. Legally dispose of all materials removed from the site per local codes and regulations.
9. Contractor shall limit all work and disturbance to within designated project areas. It shall be the responsibility of the contractor to restore to the original condition any damage or disturbance outside these limits.
10. Streets, sidewalks, and adjacent property shall be protected throughout the work as required by local codes and regulations and as approved by the city.
11. Protect structures, utilities, sidewalks, pavements, fencing, furnishings, trees, and landscaping from damage caused by settlement, lateral movement, undermining, washouts, and other hazards created by site improvements. If any damage occurs, contractor shall repair to original condition at no additional cost.

NORTH

SCALE IN FEET
1" = 10'
0' 5' 10' 30'

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JULIE SMITH (julie.smith@j2-designstudio.com)

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INDIANA STATE UNIVERSITY - NATIONAL PAN-HELLENIC COUNCIL PLAZA

520 N 7TH ST. TERRE HAUTE, IN 47809

REVISIONS

No.	Description	Date

CERTIFIED BY:

JULIE SMITH
LA21900015
STATE OF INDIANA
REGISTERED LANDSCAPE ARCHITECT

BID ISSUED DATE: MAY 15, 2025

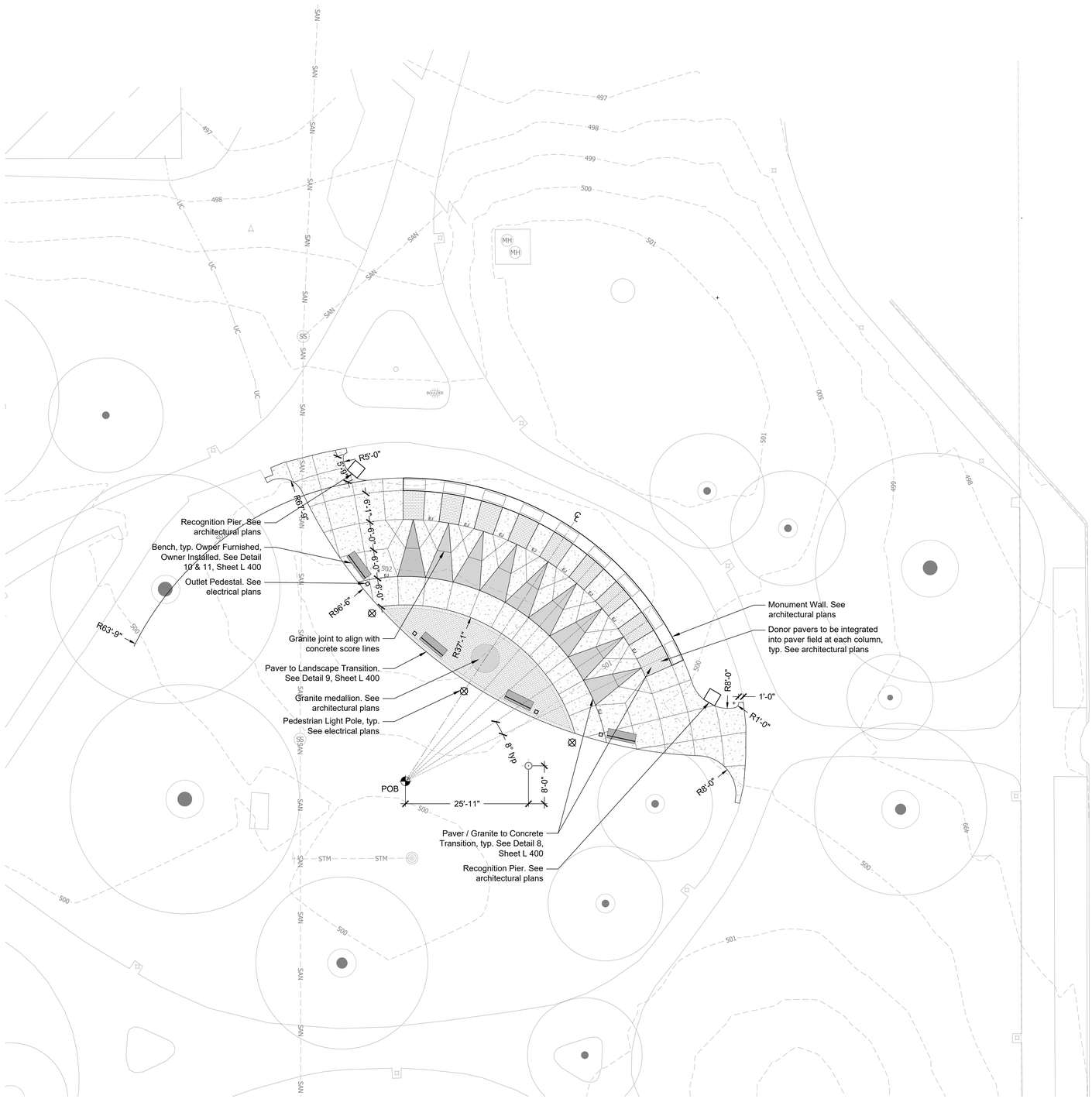
DRAWN: JES | CHECKED: JLS

PROJECT NO.: P24-0112

REVISION NO.:

Tree Removal & Preservation Plan

L 100



LEGEND

- Concrete Paving, 4 Inch. Sand Matrix Finish. See Detail 3, Sheet L 400
- Sawcut Joint. See Detail 4, Sheet L 400
- EJ — Expansion Joint. See Detail 5, Sheet L 400
- Unit Paving. See Detail 6, Sheet L 400
- Granite Paving. See Detail 7, Sheet L 400

MATERIALS NOTES

1. Contractor shall verify all utility locations (existing and proposed) along with existing conditions and grades (existing and proposed), and note any discrepancies to Owner, Engineer, and Landscape Architect immediately, before proceeding with any work.
2. Base information for these plans was taken from Engineer's site survey. Contractor shall verify all dimensions and locations of existing and proposed features, and familiarize themselves with any obstacles encumbering the work of this project.
3. Contractor is responsible for field layout of all new improvements. The Landscape Architect is to verify in field all layout and locations prior to installation. Contact Landscape Architect for resolution of discrepancies between existing conditions and design intent as expressed in contract documents.
4. Contractor is responsible to maintain all layout stakes during construction.
5. Place stakes at edges of site improvements and every 25 feet on center along centerline of all pathways for review by the Landscape Architect prior to earthwork operations.
6. Contractor to provide layout stakes every 10 feet minimum for large arcs where radius points are not accessible.
7. Adjustment to stake locations due to discrepancies between coordinates and dimensions is incidental to the contract.
8. All curves and radii to be smooth and not segmented.
9. Layout score joints and paving pattern as identified in the plans. Do not deviate from the plans unless approved by the Landscape Architect.
10. Provide expansion joints in paving concrete subbase at 30' maximum or as shown.
11. All walls are drawn where bottom of wall meets paving.

NORTH

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0' 5' 10' 30'

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520 N. 7TH ST. TERRE HAUTE, IN 47809

REVISIONS

No.	Description	Date

CERTIFIED BY:

JULIE SMITH LA21900015 REGISTERED LANDSCAPE ARCHITECT STATE OF INDIANA

BID ISSUED DATE: MAY 15, 2025

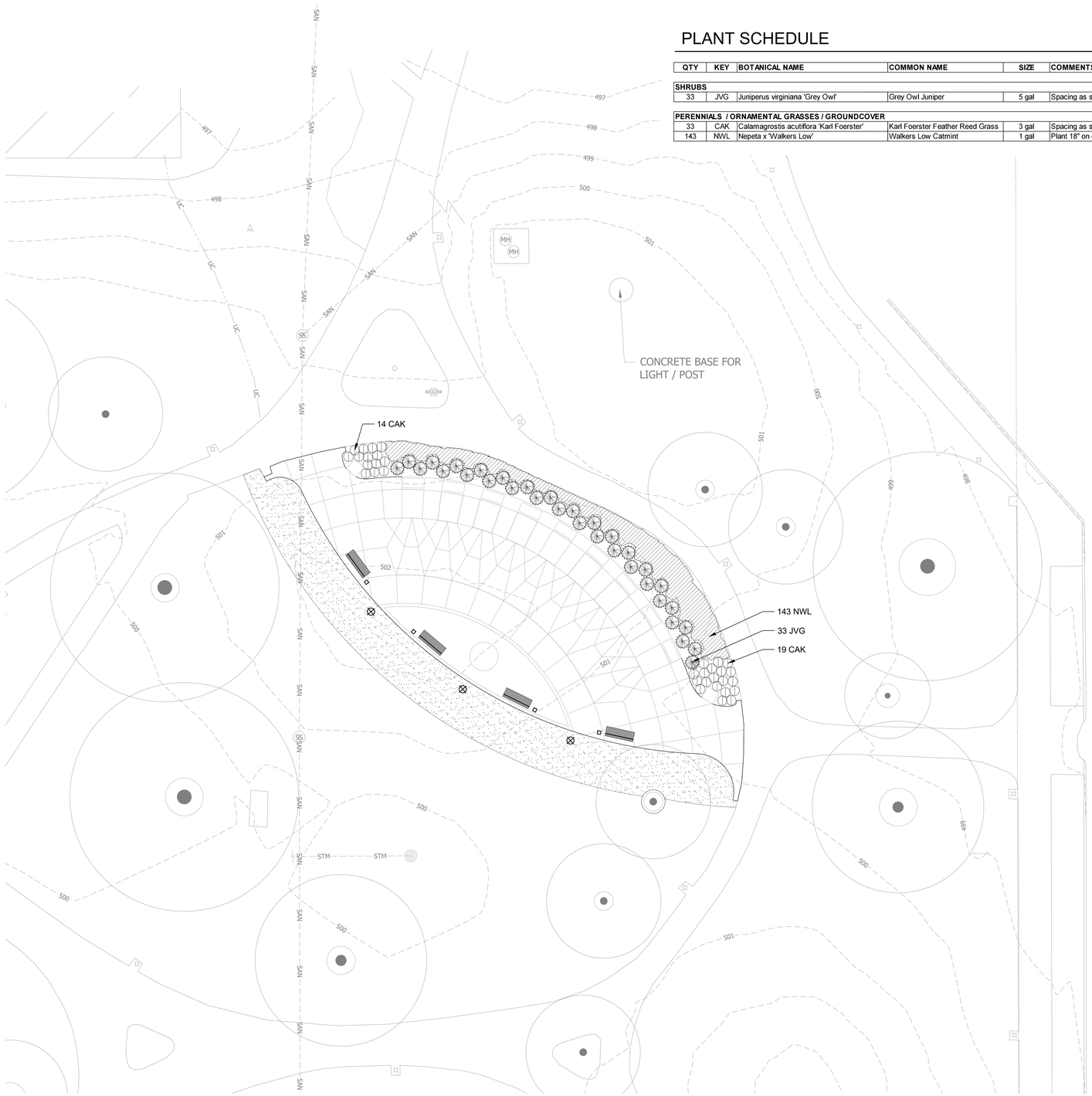
DRAWN:	CHECKED:
JES	JLS

PROJECT NO.: P24-0112

REVISION NO.:

Layout and Materials Plan

L 200



PLANT SCHEDULE

QTY	KEY	BOTANICAL NAME	COMMON NAME	SIZE	COMMENTS
SHRUBS					
33	JVG	Juniperus virginiana 'Grey Owl'	Grey Owl Juniper	5 gal	Spacing as shown on plans
PERENNIALS / ORNAMENTAL GRASSES / GROUNDCOVER					
33	CAK	Calamagrostis acutiflora 'Karl Foerster'	Karl Foerster Feather Reed Grass	3 gal	Spacing as shown on plans
143	NWL	Nepeta x 'Walkers Low'	Walkers Low Catmint	1 gal	Plant 18" on center

LEGEND

Existing Tree
See Detail 1 & 2, Sheet L 100

Shrub
See Detail 1, Sheet L 400

Ornamental Grass
See Detail 2, Sheet L 400

Perennials / Groundcovers
See Detail 2, Sheet L 400

Basis of Bid: Sod
Alternate: Seed

PLANTING NOTES

1. Plants and other materials are quantified and summarized for the convenience of the Owner and jurisdictional agencies only. Confirm and install sufficient quantities to complete the work as drawn. No additional payments will be made for materials required to complete the work as drawn.
2. Stake tree and shrub locations and planting bed layout for approval by landscape architect prior to installation. Tree and shrub locations shall be marked with a stake bearing a legible note indicating variety and size of tree. Planting bed edges shall be marked with a highly visible paint line. Stakes shall be removed prior to substantial completion. Landscape Architect reserves the right to make adjustments to plant locations. Plant material installed in incorrect locations shall be reinstalled at no additional cost.
3. Do not locate plants within 10' of utility structures or within 5' horizontally of underground utility lines unless noted otherwise on drawings.
4. Substitutions of plant materials shall not be allowed. If plants are not available, the contractor shall notify the landscape architect prior to the bid in writing. All plants shall be inspected and tagged with project identification at nursery or contractor's operations prior to moving to the site. Landscape Architect reserves the right to reject plant materials on-site that do not meet project requirements.
5. All planting soil, whether from on-site or imported, shall be tested as identified in the specifications. Submit testing agency with laboratory report to Landscape Architect for approval, along with recommendations to amending soil as appropriate for use in planting.
6. Planting soil shall be installed to the following depths
   a. Shrubs: 24" depth
   b. Ornamental Grasses / Perennials / Groundcover: 18" depth
7. The contractor shall weed, water, and maintain all plant material until end of required maintenance period and final acceptance by the Owner.
8. Contractor shall guarantee and warranty plant materials for a period of one full year following planting substantial completion.
9. Planting beds and tree mulch rings shall have a shovel cut spaded edge vertically cut to a depth of 2".
10. Tree mulch rings shall be covered with a 3" thickness of shredded hardwood bark mulch. Bark mulch shall be approved by Landscape Architect and be uniform in color and texture. Utility mulch or process tree trimmings will not be allowed.
11. Tree mulch rings in lawn areas shall have a 5' diameter unless noted otherwise on drawings.
12. Lawn seed or sod limits are approximate. Sow seed or lay sod to limits of grading and disturbance. Contractor shall be responsible for restoration of unauthorized disturbance outside construction limits.
13. For Alternate lawn seed, Contractor shall seed and water for one month after Substantial Completion.

NORTH

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0' 5' 10' 30'

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520 N. 7TH ST. TERRE HAUTE, IN 47809

REVISIONS

No.	Description	Date

CERTIFIED BY:

JULIE SMITH
LA21900015
STATE OF INDIANA
REGISTERED LANDSCAPE ARCHITECT

BID ISSUED DATE: MAY 15, 2025

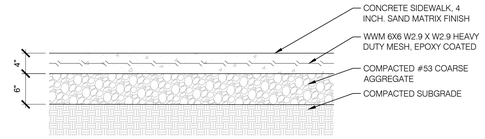
DRAWN: JES | CHECKED: JLS

PROJECT NO.: P24-0112

REVISION NO.:

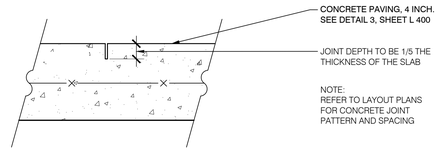
Landscape Plan

L 300



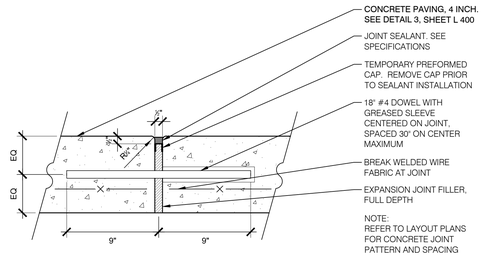
3 SECTION - CONCRETE PAVING, 4 INCH

1" = 1'-0"



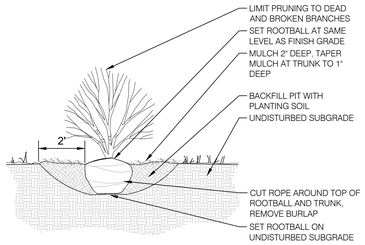
4 SECTION - SAWCUT JOINT

3" = 1'-0"



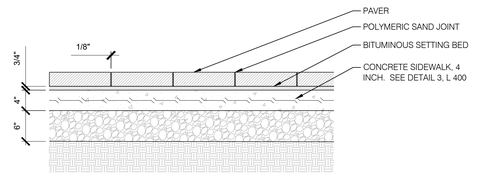
5 SECTION - EXPANSION JOINT

3" = 1'-0"



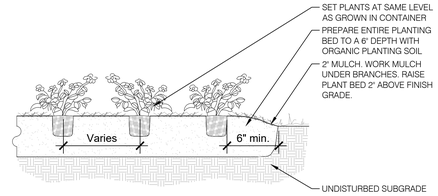
1 SECTION - SHRUB PLANTING

1/2" = 1'-0"



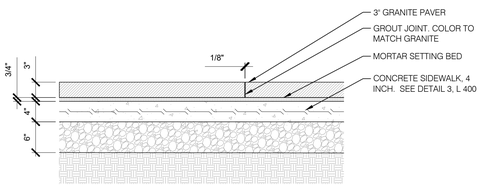
6 SECTION - UNIT PAVING

1" = 1'-0"



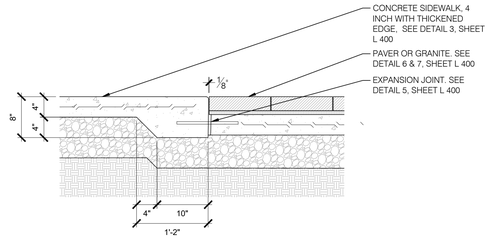
2 SECTION - PERENNIAL / GROUNDCOVER PLANTING

1/2" = 1'-0"



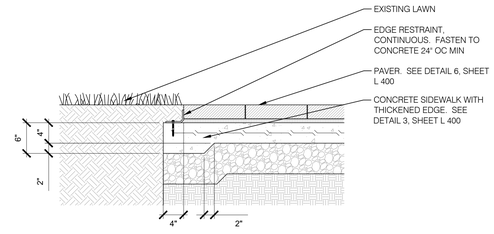
7 SECTION - GRANITE PAVING

1" = 1'-0"



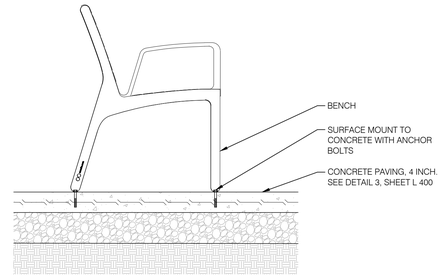
8 SECTION - PAVER / GRANITE TO CONCRETE TRANSITION

1" = 1'-0"



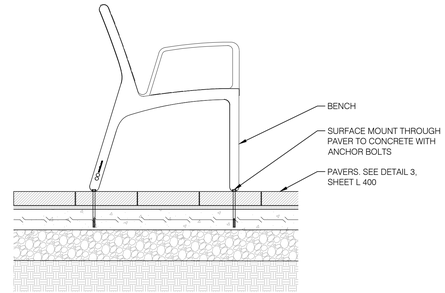
9 SECTION - PAVER TO LANDSCAPE TRANSITION

1" = 1'-0"



10 SECTION - BENCH SURFACE MOUNT OWNER FURNISHED, OWNER INSTALLED

1" = 1'-0"



11 SECTION - BENCH PAVER SURFACE MOUNT OWNER FURNISHED, OWNER INSTALLED

1" = 1'-0"

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100% CONSTRUCTION DOCUMENTS

INDIANA STATE UNIVERSITY - NATIONAL PAN-HELLENIC COUNCIL PLAZA

520 N 7TH ST. TERRE HAUTE, IN 47809

REVISIONS

No.	Description	Date

CERTIFIED BY:

REGISTERED LANDSCAPE ARCHITECT
JULIE SMITH
LA21900015
STATE OF INDIANA

BID ISSUED DATE: MAY 15, 2025

DRAWN:	CHECKED:
JES	JLS

PROJECT NO.: P24-0112

REVISION NO.:

Site Details

L 400

SECTION 015639 - TEMPORARY TREE AND PLANT PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes general protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.

1.3 DEFINITIONS

A. Caliper: Diameter of a trunk measured by a diameter tape at a height 6 inches above the ground for trees up to and including 4-inch size at this height and as measured at a height of 12 inches above the ground for trees larger than 4-inch size.

B. Caliper (DBH): Diameter breast height; diameter of a trunk as measured by a diameter tape at a height 54 inches above the ground line for trees with caliper of 8 inches or greater as measured at a height of 12 inches above the ground.

C. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction and indicated on Drawings.

D. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and [indicated on Drawings] defined by a circle concentric with each tree with a radius 1.5 times the diameter of the drip line unless otherwise indicated.

E. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.
   1. Review methods and procedures related to temporary tree and plant protection including, but not limited to, the following:
      a. Tree-service firm's personnel, and equipment needed to make progress and avoid delays.
      b. Arborist's responsibilities.
      c. Quality-control program.
      d. Coordination of Work and equipment movement with the locations of protection zones.
      e. Trenching by hand or with air spade within protection zones.
      f. Field quality control.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings:
   1. Include plans, elevations, sections, and locations of protection-zone fencing and signage, showing relation of equipment-movement routes and material storage locations with protection zones.
   2. Detail fabrication and assembly of protection-zone fencing and signage.
   3. Indicate extent of trenching by hand or with air spade within protection zones.

C. Samples: For each type of the following:
   1. Organic Mulch: 1-quart volume of organic mulch; in sealed plastic bags labeled with composition of materials by percentage of weight and source of mulch.
   2. Protection-Zone Fencing: Assembled Samples of manufacturer's standard size made from full-size components.
   3. Protection-Zone Signage: Full-size Samples of each size and text, ready for installation.

D. Tree Pruning Schedule: Written schedule detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.
   1. Species and size of tree.
   2. Location on site plan. Include unique identifier for each.
   3. Reason for pruning.
   4. Description of pruning to be performed.
   5. Description of maintenance following pruning.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For arborist and tree service firm.

B. Certification: From arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.

C. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.

D. Existing Conditions: Documentation of existing trees and plantings indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.
   1. Use sufficiently detailed photographs or video recordings.
   2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

E. Quality-control program.

1.7 QUALITY ASSURANCE

A. Arborist Qualifications: Certified Arborist as certified by ISA.

B. Tree Service Firm Qualifications: An experienced tree service firm that has successfully completed temporary tree and plant protection work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site during execution of the Work.

C. Quality-Control Program: Prepare a written program to systematically demonstrate the ability of personnel to properly follow procedures and handle materials and equipment during the Work without damaging trees and plantings. Include dimensioned diagrams for placement of protection zone fencing and signage, the arborist's and tree-service firm's responsibilities, instructions given to workers on the use and care of protection zones, and enforcement of requirements for protection zones.

1.8 FIELD CONDITIONS

A. The following practices are prohibited within protection zones:
   1. Storage of construction materials, debris, or excavated material.
   2. Moving or parking vehicles or equipment.
   3. Erection of sheds or structures.
   4. Impoundment of water.
   5. Excavation or other digging unless otherwise indicated.
   6. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

B. Do not direct vehicle or equipment exhaust toward protection zones.

C. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Backfill Soil: Planting soil of suitable moisture content and granular texture for placing around tree; free of stones, roots, plants, sod, clods, clay lumps, pockets of coarse sand, concrete slurry, concrete layers or chunks, cement, plaster, building debris, and other extraneous materials harmful to plant growth.
   1. Planting Soil: Planting soil backfill as specified in Section 329115 "Soil Preparation."

B. Organic Mulch: Free from deleterious materials and suitable as a top dressing for trees and shrubs, consisting of one of the following:
   1. Type: Shredded hardwood.
   2. Size Range: 3 inches maximum, 1/2 inch minimum.
   3. Color: Natural.

C. Protection-Zone Fencing: Fencing fixed in position and meeting the following requirements:
   1. Plastic Protection-Zone Fencing: Plastic construction fencing constructed of high-density extruded and stretched polyethylene fabric with 2-inch maximum opening in pattern and weighing a minimum of 0.4 lb/ft.; remaining flexible from minus 60 to plus 200 deg F; inert to most chemicals and acids; minimum tensile yield strength of 2000 psi and ultimate tensile strength of 2680 psi; secured with plastic bands or galvanized-steel or stainless-steel wire ties; and supported by tubular or T-shape galvanized-steel posts spaced not more than 96 inches apart.
      a. Height: 48 inches.
      b. Color: High-visibility orange, nonfading.

D. Protection-Zone Signage: Shop-fabricated, rigid plastic or metal sheet with attachment holes prepunched and reinforced; legibly printed with nonfading lettering and as follows:
   1. Size and Text: As shown on Drawings.
   2. Lettering: 3-inch- high minimum, black characters on white background.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

B. Prepare written report, endorsed by arborist, listing conditions detrimental to tree and plant protection.

3.2 PREPARATION

A. Locate and clearly identify trees, shrubs, and other vegetation to remain. Tie a 1-inch blue vinyl tape around each tree trunk at 54 inches above the ground.

B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

C. Tree-Protection Zones: Mulch areas inside tree-protection zones and other areas indicated. Do not exceed indicated thickness of mulch.
   1. Apply 2-inch uniform thickness of organic mulch unless otherwise indicated. Do not place mulch within 6 inches of tree trunks.

3.3 PROTECTION ZONES

A. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones before materials or equipment are brought on the site and construction operations begin in a manner that will prevent people and animals from easily entering protected areas except by entrance gates. Construct fencing so as not to obstruct safe passage or visibility at vehicle intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation.
   1. Posts: Set or drive posts into ground one-third the total height of the fence without concrete footings. Where a post is located on existing paving or concrete to remain, provide appropriate means of post support acceptable to Landscape Architect.

B. Protection-Zone Signage: Install protection-zone signage in visibly prominent locations in a manner approved by Landscape Architect. Install one sign spaced approximately every 35 feet on protection-zone fencing, but no fewer than four signs with each facing a different direction.

C. Maintain protection zones free of weeds and trash.

D. Maintain protection-zone fencing and signage in good condition as acceptable to Landscape Architect and remove when construction operations are complete and equipment has been removed from the site.
   1. Do not remove protection-zone fencing, even temporarily, to allow deliveries or equipment access through the protection zone.
   2. Temporary access is permitted subject to preapproval in writing by arborist if a root buffer effective against soil compaction is constructed as directed by arborist. Maintain root buffer so long as access is permitted.

3.4 EXCAVATION

A. General: Excavate at edge of protection zones and for trenches indicated within protection zones according to requirements in Section 312000 "Earth Moving" unless otherwise indicated.

B. Trenching within Protection Zones: Where utility trenches are required within protection zones, excavate under or around tree roots by hand or with air spade, or tunnel under the roots by drilling, auger boring, or pipe jacking. Do not cut main lateral tree roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots as required for root pruning. If excavating by hand, use narrow-tine spading forks to comb soil and expose roots.

C. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

3.5 ROOT PRUNING

A. Prune tree roots that are affected by temporary and permanent construction. Prune roots as follows:
   1. Cut roots manually by digging a trench and cutting exposed roots with sharp pruning instruments; do not break, tear, chop, or slant the cuts. Do not use a backhoe or other equipment that rips, tears, or pulls roots.
   2. Cut Ends: Coat cut ends of roots more than 1-1/2 inches in diameter with an emulsified asphalt or other coating formulated for use on damaged plant tissues and that is acceptable to arborist.
   3. Temporarily support and protect roots from damage until they are permanently redirected and covered with soil.
   4. Cover exposed roots with burlap and water regularly.
   5. Backfill as soon as possible according to requirements in Section 312000 "Earth Moving."

B. Root Pruning at Edge of Protection Zone: Prune tree roots 12 inches outside of the protection zone by cleanly cutting all roots to the depth of the required excavation.

C. Root Pruning within Protection Zone: Clear and excavate by hand or with air spade to the depth of the required excavation to minimize damage to tree root systems. If excavating by hand, use narrow-tine spading forks to comb soil to expose roots. Cleanly cut roots as close to excavation as possible.

3.6 CROWN PRUNING

A. Prune branches that are affected by temporary and permanent construction. Prune branches as directed by arborist.
   1. Prune to remove only injured, broken, dying, or dead branches unless otherwise indicated. Do not prune for shape unless otherwise indicated.
   2. Do not remove or reduce living branches to compensate for root loss caused by damaging or cutting root system.
   3. Pruning Standards: Prune trees according to ANSI A300 (Part 1).
      a. Type of Pruning: Cleaning where indicated.
      b. Specialty Pruning: Structural and restoration where indicated.

B. Unless otherwise directed by arborist and acceptable to Landscape Architect, do not cut tree leaders.

C. Cut branches with sharp pruning instruments; do not break or chop.

D. Do not paint or apply sealants to wounds.

E. Provide subsequent maintenance pruning during Contract period as recommended by arborist.

F. Chip removed branches and dispose of off-site.

3.7 REGRADING

A. Lowering Grade: Where new finish grade is indicated below existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.

B. Raising Grade: Where new finish grade is indicated above existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.

C. Minor Fill within Protection Zone: Where existing grade is 2 inches or less below elevation of finish grade, fill with backfill soil. Place backfill soil in a single uncompacted layer and hand grade to required finish elevations.

3.8 FIELD QUALITY CONTROL

A. Inspections: Engage a qualified arborist to direct plant-protection measures in the vicinity of trees, shrubs, and other vegetation indicated to remain and to prepare inspection reports.

3.9 REPAIR AND REPLACEMENT

A. General: Repair or replace trees, shrubs, and other vegetation indicated to remain or to be relocated that are damaged by construction operations, in a manner approved by Landscape Architect.
   1. Submit details of proposed pruning and repairs.
   2. Perform repairs of damaged trunks, branches, and roots within 24 hours according to arborist's written instructions.
   3. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Landscape Architect.

B. Trees: Remove and replace trees indicated to remain that are more than 25 percent dead or in an unhealthy condition before the end of the corrections period or are damaged during construction operations that Landscape Architect determines are incapable of restoring to normal growth pattern.
   1. Small Trees: Provide new trees of same size and species as those being replaced for each tree that measures 6 inches or smaller in caliper size.
   2. Large Trees: Provide two new tree(s) of 4-inch caliper size for each tree being replaced that measures more than 6 inches in caliper size.
      a. Species: As selected by Landscape Architect.
   3. Plant and maintain new trees as specified in Section 329300 "Plants."

C. Excess Mulch: Rake mulched area within protection zones, being careful not to injure roots. Rake to loosen and remove mulch that exceeds a 2-inch uniform thickness to remain.

D. Soil Aeration: Where directed by Landscape Architect, aerate surface soil compacted during construction. Aerate 10 feet beyond drip line and no closer than 36 inches to tree trunk. Drill 1-inch- diameter holes a minimum of 12 inches deep at 24 inches o.c. Backfill holes with an equal mix of augered soil and sand.

3.10 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove excess excavated material, displaced trees, trash, and debris and legally dispose of them off Owner's property.

END OF SECTION 015639

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100% CONSTRUCTION DOCUMENTS

INDIANA STATE UNIVERSITY - NATIONAL PAN-HELLENIC COUNCIL PLAZA

520 N 7TH ST. TERRE HAUTE, IN 47809

REVISIONS

No.	Description	Date

CERTIFIED BY:

REGISTERED LANDSCAPE ARCHITECT
JULIE SMITH
LA21900015
STATE OF INDIANA

BID ISSUED DATE: MAY 15, 2025

DRAWN: JES | CHECKED: JLS

PROJECT NO.: P24-0112

REVISION NO.:

Technical Specifications

L 500

SECTION 321313 - CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Related Requirements:
1. Section 321373 "Concrete Paving Joint Sealants"

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash, slag cement, and other pozzolans.

B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.
1. Review methods and procedures related to concrete paving, including but not limited to, the following:
a. Concrete mixture design.
b. Quality control of concrete materials and concrete paving construction practices.
c. Submittal review and approvals of samples and mockups .
2. Require representatives of each entity directly concerned with concrete paving to attend, including the following:
a. Contractor's superintendent.
b. Independent testing agency responsible for concrete design mixtures.
c. Ready-mix concrete manufacturer.
d. Decorative concrete paving Subcontractor.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Sustainable Design Submittals:
1. Product Data: For recycled content, indicating postconsumer and preconsumer recycled content and cost.
2. Environmental Product Declaration (EPD): For each product.

C. Samples for Initial Selection: For each type of product, ingredient, or admixture requiring color, pattern, or texture selection.

D. Samples for Verification: For each type of exposed color, pattern, or texture indicated, prepared as Samples of size indicated below:
1. Decorative Concrete Coarse Aggregate: 10-lb Sample of each mix. Submit three separate aggregate mixes meeting project requirements for review and approval by Landscape Architect.

E. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified ready-mix concrete manufacturer and testing agency.

B. Material Certificates: For the following, from manufacturer:
1. Cementitious materials.
2. Steel reinforcement and reinforcement accessories.
3. Admixtures.
4. Curing compounds.
5. Bonding agent or epoxy adhesive.
6. Joint fillers.

C. Material Test Reports: For each of the following:
1. Aggregates: Include service-record data indicating absence of deleterious expansion of concrete due to alkali-aggregate reactivity.

D. Field quality-control reports.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer of decorative concrete paving systems.

B. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.

C. Testing Agency Qualifications: Qualified according to ASTM C1077 and ASTM E329 for testing indicated.
1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

D. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
1. Build mockups of full-thickness sections of concrete paving to demonstrate typical joints; surface finish, texture, and color; curing; and standard of workmanship.
2. Build mockups of concrete paving in the location and of the size indicated or, if not indicated, build mockups where directed by Landscape Architect and not less than 96 inches by 96 inches.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Landscape Architect specifically approves such deviations in writing.

1.8 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified independent testing agency to perform preconstruction testing on concrete paving mixtures.

1.9 FIELD CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

B. Cold-Weather Concrete Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:
1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
2. Do not use frozen materials or materials containing ice or snow.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.

C. Hot-Weather Concrete Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:
1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover steel reinforcement with water-soaked burlap, so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with ACI 301 unless otherwise indicated.

2.2 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.
1. Use flexible or uniformly curved forms for curves with a radius of 100 feet or less. Do not use notched and bent forms.

B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

2.3 STEEL REINFORCEMENT

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 60 percent.

B. Epoxy-Coated Welded-Wire Reinforcement: ASTM A884/A884M, Class A, plain steel.

C. Epoxy-Coated Reinforcing Bars: ASTM A775/A775M or ASTM A934/A934M; with ASTM A615/A615M, Grade 60 deformed bars.

D. Epoxy-Coated-Steel Wire: ASTM A884/A884M, Class A; coated, plain.

E. Epoxy-Coated, Joint Dowel Bars: ASTM A775/A775M; with ASTM A615/A615M, Grade 60 plain-steel bars.

F. Tie Bars: ASTM A615/A615M, Grade 60; deformed.

G. Hook Bolts: ASTM A307, Grade A, internally and externally threaded. Design hook-bolt joint assembly to hold coupling against paving form and in position during concreting operations, and to permit removal without damage to concrete or hook bolt.

H. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded-wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete specified, and as follows:
1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.
2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

I. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating, compatible with epoxy coating on reinforcement.

2.4 CONCRETE MATERIALS

A. Regional Materials: Verify concrete is manufactured within 100 miles of Project site from aggregates that have been extracted, harvested, or recovered, as well as manufactured, within 100 miles of Project site.

B. Cementitious Materials: Use the following cementitious materials, of same type, brand, and source throughout Project:
1. Portland Cement: ASTM C150/C150M, gray portland cement Type I/II.
2. Fly Ash: ASTM C618, Class C or Class F.
3. Slag Cement: ASTM C989/C989M, Grade 100 or 120.

C. Normal-Weight Aggregates: ASTM C33/C33M, Class 4S, uniformly graded. Provide aggregates from a single source with documented service-record data of at least 10 years' satisfactory service in similar paving applications and service conditions using similar aggregates and cementitious materials].
1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

D. Decorative Concrete Coarse Aggregate: Selected, hard, and durable; washed; free of materials with deleterious reactivity to cement or that cause staining; from a single source, with gap-graded coarse aggregate as follows:
1. Aggregate Sizes: 1/2 to 3/4 inch nominal.
2. Aggregate Source, Shape, and Color: Decorative aggregate from Stone Center of Indiana.

E. Air-Entraining Admixture: ASTM C260/C260M.

F. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.
1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
2. Retarding Admixture: ASTM C494/C494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C1017/C1017M, Type II.

G. Water: Potable and complying with ASTM C94/C94M.

2.5 CURING AND SEALING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular, film forming, manufactured for application to fresh concrete.
1. Basis-of-Design Product: Subject to compliance with requirements, provide Brickform; a division of Solomon Colors ; Evaporation Retarder. or a comparable product by one of the following:
a. Euclid Chemical Company (The); an RPM company.
b. Laticrete International, Inc.
c. Sika Corporation.
d. W.R. Meadows, Inc.

A. Penetrating Anti-Spalling Sealer: Sealer shall be a siloxane-based compound which has a 92-percent chloride iB. on screen and a repellency factor of 92-percC. ent when tested in accordance with NCHRP #244, Test Method. In addition, sealer-treated concrete must exhibit no scaling when exposed to 125 cycles of freezing and thawing. System shall conform to requirements with ASTM C957-81. Test must be by an independent testing laD. boratory.
1. Products: Subject to compliance with requirements, provide products by one of the following:
a. Euco-Guard Vox (VOC Compliant) by Euclid Chemical Co.
b. Enironseal by Hydrozo.
c. Saltguard WB by PROSOCO, Inc.
d. Aquapel Plus by L & M Construction Chemical Co.

B. Concrete Silane Sealer: 100-percent reactive, 40-percent solids by with, deep penetrating alkyl polymer silane, non-staining, invisible, 10-year performance guarantee for protection of concrete subject to severe environmental conditions with frequent exposure to de-icing slats complying with National Cooperative Highway Research Program No. 244 and ASTM C672 with a rating of 0, no scaling, the highest rating with the following physical properties:
1. Yellowing: No.
2. Surface Darkening: No.
3. Film Forming: No.
4. NCHRP 244 Series II: Absorption: 93-percent reduction, minimum.
5. NCHRP 244 Series IV: Total Chloride Reduction: 98-percent reduction, minimum.
6. Resistance to Chloride-Ion Penetration:
a. AASHTO-T259:
1) ½-inch depth: 98-percent minimum.
2) 1-ich depth: 98-percent minimum.
b. 20-percent soluble solutions are not acceptable.
c. Products: Subject to compliance with requirements, provide products by one of the following:
1) Penetrating Sealer 40 by Sonneborn.
2) Baracade Silane 40 by Tamms.
3) Pentane 40 or Penaten 40 WB by L & M Construction Chemical Co.
4) Weather Worker 8-40 by Dayton Superior.

2.6 RELATED MATERIALS

A. Joint Fillers: ASTM D1751, asphalt-saturated cellulosic fiber in preformed strips.

B. Bonding Agent: ASTM C1059/C1059M, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

2.7 CONCRETE MIXTURES

A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixtures or field experience.
1. Use a qualified independent testing agency for preparing and reporting proposed concrete design mixtures for the trial batch method.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
1. Fly Ash or Pozzolan: 25 percent.
2. Slag Cement: 50 percent.
3. Combined Fly Ash or Pozzolan, and Slag Cement: 50 percent, with fly ash or pozzolan not exceeding 25 percent.

C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:
1. Air Content: 6 percent plus or minus 1-1/2 percent for 3/4-inch nominal maximum aggregate size.

D. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

E. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.
1. Use high-range, water-reducing and retarding admixture in concrete as required for placement and workability.
2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

F. Color Pigment: Add color pigment to concrete mixture according to manufacturer's written instructions and to result in hardened concrete color consistent with approved mockup.

G. Concrete Mixtures: Normal-weight concrete.
1. Compressive Strength (28 Days): 4000 psi.
2. Maximum W/C Ratio at Point of Placement: 0.45.
3. Slump Limit: 4 inches, plus or minus 1 inch.

2.8 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C94/C94M. Furnish batch certificates for each batch discharged and used in the Work.
1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Proof-roll prepared subbase surface below concrete paving to identify soft pockets and areas of excess yielding.
1. Completely proof-roll subbase in one direction and repeat in perpendicular direction. Limit vehicle speed to 3 mph.
2. Proof-roll with a pneumatic-tired and loaded, 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
3. Correct subbase with soft spots and areas of pumping or rutting exceeding depth of 1/2 inch according to requirements in Section 312000 "Earth Moving."

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove loose material from compacted subbase surface immediately before placing concrete.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.4 STEEL REINFORCEMENT INSTALLATION

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

D. Install welded-wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

E. Epoxy-Coated Reinforcement: Use epoxy-coated steel wire ties to fasten epoxy-coated reinforcement. Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D3963/D3963M.

3.5 JOINTS

A. General: Form construction, isolation, and control joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.
1. When joining existing paving, place transverse joints to align with previously placed joints unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints.
1. Continue steel reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of paving strips unless otherwise indicated.
2. Provide tie bars at sides of paving strips where indicated.
3. Butt Joints: Use bonding agent at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
4. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.
1. Locate expansion joints at intervals of 50 feet unless otherwise indicated.
2. Extend joint fillers full width and depth of joint.
3. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.
4. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
5. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

D. Control Joints: Form weakened-plane control joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of the concrete thickness, as follows:
1. Sawed Joints: Form control joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.

3.6 CONCRETE PLACEMENT

A. Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast-in.

B. Remove snow, ice, or frost from subbase surface and steel reinforcement before placing concrete. Do not place concrete on frozen surfaces.

C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

E. Do not add water to concrete during delivery or at Project site. Do not add water to fresh concrete after testing.

F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

G. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.
1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement dowels and joint devices.

H. Screed paving surface with a straightedge and strike off.

I. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleedwater appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

3.7 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

B. Float Finish: Begin the second floating operation when bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.
1. Abrasive-Blast Finish: As indicated on drawings use abrasive grit, equipment, application techniques, and cleaning procedures to expose aggregate and surrounding matrix surfaces. Abrasive blast finish shall be equivalent to a medium sandblast finish removing a maximum of 1 /16-inch of the surface matrix.
2. Medium-to-Fine-Textured Broom Finish: As indicated on drawings draw a soft-bristle broom across float-finished concrete surface, perpendicular to line of traffic, to provide a uniform, fine-line texture.

3.8 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by moisture curing as follows:
1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
a. Water.
b. Continuous water-fog spray.
c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

3.9 PAVING TOLERANCES

A. Comply with tolerances in ACI 117 and as follows:
1. Elevation: 3/4 inch.
2. Thickness: Plus 3/8 inch, minus 1/4 inch.
3. Surface: Gap below 10-feet-long; unleveled straightedge not to exceed 1/2 inch.
4. Alignment of Tie-Bar End Relative to Line Perpendicular to Paving Edge: 1/2 inch per 12 inches of tie bar.
5. Lateral Alignment and Spacing of Dowels: 1 inch.
6. Vertical Alignment of Dowels: 1/4 inch.
7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Paving Edge: 1/4 inch per 12 inches of dowel.
8. Joint Spacing: 2 inches.
9. Control Joint Depth: Plus 1/4 inch, no minus.
10. Joint Width: Plus 1/8 inch, no minus.

3.10 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Testing Services: Testing and inspecting of composite samples of fresh concrete obtained according to ASTM C172/C172M shall be performed according to the following requirements:
1. Testing Frequency: Obtain at least one composite sample for each 5000 sq. ft. or fraction thereof of each concrete mixture placed each day.
a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
2. Slump: ASTM C143/C143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C231/C231M, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C1064/C1064M; one test hourly when air temperature is 40 deg F and below and when it is 80 deg F and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C31/C31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
6. Compressive-Strength Tests: ASTM C39/C39M; test one specimen at seven days and two specimens at 28 days.
a. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at 28 days.

C. Strength of each concrete mixture will be satisfactory if average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.

D. Test results shall be reported in writing to Landscape Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Landscape Architect but will not be used as sole basis for approval or rejection of concrete.

F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Landscape Architect.

G. Concrete paving will be considered defective if it does not pass tests and inspections.

H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

I. Prepare test and inspection reports.

3.11 REPAIR AND PROTECTION

A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Landscape Architect.

B. Drill test cores, where directed by Landscape Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory paving areas with portland cement concrete bonded to paving with epoxy adhesive.

C. Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.

D. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 321316

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100% CONSTRUCTION DOCUMENTS

INDIANA STATE UNIVERSITY - NATIONAL PAN-HELLENIC COUNCIL PLAZA

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REVISIONS

No.	Description	Date

CERTIFIED BY:

REGISTERED LANDSCAPE ARCHITECT
JULIE SMITH
LA21900015
STATE OF INDIANA

BID ISSUED DATE:
MAY 15, 2025

DRAWN: JES
CHECKED: JLS

PROJECT NO.: P24-0112

REVISION NO.:

Technical Specifications

L 501

SECTION 321373 - CONCRETE PAVING JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
1. Cold-applied joint sealants.
2. Joint-sealant backer materials.
3. Primers.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Paving-Joint-Sealant Schedule: Include the following information:
1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

1.5 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of joint sealant and accessory.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. Product Testing: Test joint sealants using a qualified testing agency.

1.7 FIELD CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:
1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Provide joint sealants, backing materials, and other related materials in accordance with Section 906 of the INDOT Standard Specifications, latest edition, that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. Primers: Product recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Before installing joint sealants, clean out joints immediately to comply with joint-sealant manufacturer's written instructions.
1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.

B. Joint Priming: Prime joint substrates where indicated or where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

3.3 INSTALLATION OF JOINT SEALANTS

A. Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated unless more stringent requirements apply.

B. Joint-Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions.

C. Install joint-sealant backings to support joint sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
1. Do not leave gaps between ends of joint-sealant backings.
2. Do not stretch, twist, puncture, or tear joint-sealant backings.
3. Remove absorbent joint-sealant backings that have become wet before sealant application and replace them with dry materials.

D. Install joint sealants immediately following backing installation, using proven techniques that comply with the following:
1. Place joint sealants so they fully contact joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

E. Tooling of nonsag Joint Sealants: Immediately after joint-sealant application and before skinning or curing begins, tool sealants according to the following requirements to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint:
1. Remove excess joint sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by joint-sealant manufacturer and that do not discolor sealants or adjacent surfaces.

F. Provide joint configuration to comply with joint-sealant manufacturer's written instructions unless otherwise indicated.

3.4 CLEANING AND PROTECTION

A. Clean off excess joint sealant as the Work progresses, by methods and with cleaning materials approved in writing by joint-sealant manufacturers.

B. Protect joint sealants, during and after curing period, from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately and replace with joint sealant so installations in repaired areas are indistinguishable from the original work.

3.5 PAVING-JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Joints within concrete paving.
1. Joint Location:
a. Expansion and isolation joints in concrete paving.
b. Contraction joints in concrete paving.
c. Other joints as indicated.
2. Joint Sealant: In accordance with Section 906 of the INDOT Standard Specifications, latest edition.
3. Joint-Sealant Color: To match pavement

END OF SECTION 321373

SECTION 321400 - UNIT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
1. Concrete pavers.
2. Curbs and edge restraints.

B. Related Requirements:
1. Section 321313 "Concrete Paving"

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data:
1. For materials other than water and aggregates.
2. For the following:
a. Pavers.
b. Bituminous setting materials.

B. Sieve Analyses: For aggregate setting-bed materials, according to ASTM C136.

C. Samples for Initial Selection: For each type of unit paver indicated and the following:
1. Joint materials involving color selection.

D. Samples for Verification: For full-size units of each type of unit paver indicated. Assemble no fewer than five Samples of each type of unit on suitable backing and grout joints. [Include Samples of the following:]
1. Joint materials.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for unit pavers, indicating compliance with requirements.
1. For solid interlocking paving units, include test data for freezing and thawing according to ASTM C67.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A qualified unit paving installer. Installer's field supervisor shall have Concrete Paver Installer Certification from the Interlocking Concrete Pavement Institute (ICPI) with the following designations:
1. Commercial Paver Technician Designation.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
1. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store pavers on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store aggregates where grading and other required characteristics can be maintained, and contamination avoided.

D. Store asphalt cement and other bituminous materials in tightly closed containers.

1.8 FIELD CONDITIONS

A. Cold-Weather Protection: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen subgrade or setting beds. Remove and replace unit paver work damaged by frost or freezing.

B. Weather Limitations for Bituminous Setting Bed:
1. Install bituminous setting bed only when ambient temperature is above 40 deg F and when base is dry.
2. Apply asphalt adhesive only when ambient temperature is above 50 deg F and when temperature has not been below 35 deg F for 12 hours immediately before application. Do not apply when setting bed is wet or contains excess moisture.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain each type of unit paver, joint material, and setting material from single source with resources to provide materials and products of consistent quality in appearance and physical properties.

2.2 CONCRETE PAVERS

A. Concrete Pavers, Solid Interlocking Paving Units: Complying with ASTM C936/C936M and resistant to freezing and thawing when tested according to ASTM C67, made from normal-weight aggregates.
1. Basis-of-Design Product: Subject to compliance with requirements, provide Hanover Architectural Products; Traditional Prest Brick
2. Face Sizes: 3-7/8-by-7-7/8-inch rectangle
3. Paver Thickness: 2-3/8 inches; gauged to produce thickness within plus or minus 1/32 inch of indicated thickness.
4. Edges: Square
5. Finish: Natural finish; non-directional natural texture surface.
6. Color: Russet

2.3 CURBS AND EDGE RESTRAINTS

A. Aluminum Edge Restraints: Manufacturer's standard L-shaped, 3/16-inch-thick by 2-1/4-inch-high extruded-aluminum edging with openings fabricated in flanges to receive fasteners at 12 inches o.c.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. Brickstop Corporation.
b. Permaloc Corporation.
c. Sure-loc Edging Corporation.
2. Fasteners: Stainless Steel Bolts and Nuts: Regular hexagon-head annealed stainless steel bolts, ASTM F59; with hex nuts, ASTM F594 (ASTM F836M); and flat washers; Alloy Group 1 (A1) of diameter indicated providing 2 inch minimum embedment in concrete.

B. Job-Built Concrete Edge Restraints: Comply with requirements in Section 033000 "Cast-in-Place Concrete" for normal-weight, air-entrained, ready-mixed concrete with minimum 28-day compressive strength of 3000 psi.

2.4 ACCESSORIES

A. Cork Joint Filler: Preformed strips complying with ASTM D1752, Type II.

B. Fasteners:

2.5 BITUMINOUS SETTING-BED MATERIALS

A. Primer for Base: ASTM D2028/D2028M, cutback asphalt, grade as recommended by unit paver manufacturer.

B. Fine Aggregate for Setting Bed: ASTM D1073, No. 2 or No. 3.

C. Asphalt Cement: ASTM D3381/D3381M, Viscosity Grade AC-10 or Grade AC-20.

D. Neoprene-Modified Asphalt Adhesive: Paving manufacturer's standard adhesive consisting of oxidized asphalt combined with 2 percent neoprene and 10 percent long-fibered mineral fibers containing no asbestos.

E. Sand for Joints: Fine, sharp, washed, natural sand or crushed stone with 100 percent passing No. 16 sieve and no more than 10 percent passing No. 200 sieve.
1. Provide sand of color needed to produce required joint color.

2.6 BITUMINOUS SETTING-BED MIX

A. Mix bituminous setting-bed materials at an asphalt plant in approximate proportion, by weight, of 7 percent asphalt cement to 93 percent fine aggregate unless otherwise indicated. Heat mixture to 300 deg F.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces indicated to receive unit paving, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove substances from concrete substrates that could impair setting bed bond, including curing and sealing compounds, form oil, and laitance.

B. Sweep concrete substrates to remove dirt, dust, debris, and loose particles.

C. Proof-roll prepared subgrade according to requirements in Section 312000 "Earth Moving" to identify soft pockets and areas of excess yielding. Proceed with unit paver installation only after deficient subgrades have been corrected and are ready to receive subbase and base course for unit pavers.

3.3 INSTALLATION, GENERAL

A. Do not use unit pavers with chips, cracks, voids, discolorations, or other defects that might be visible or cause staining in finished work.

B. Mix pavers from several pallets or cubes, as they are placed, to produce uniform blend of colors and textures.

C. Cut unit pavers with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Cut units to provide pattern indicated and to fit adjoining work neatly. Use full units without cutting where possible. Hammer cutting is not acceptable.
1. For concrete pavers, a block splitter may be used.

D. Joint Pattern: As indicated.

E. Tolerances:
1. Do not exceed 1/4 inch in 10 feet from level, or indicated slope, for finished surface of paving.

F. Expansion and Control Joints:
1. Provide for sealant-filled joints at locations and of widths indicated. Provide compressible foam filler as backing for sealant-filled joints unless otherwise indicated; where unfilled joints are indicated, provide temporary filler until paver installation is complete. Install joint filler before setting pavers. Sealant materials and installation are specified in Section 321373 "Concrete Paving Joint Sealants."
2. Provide cork joint filler at locations and of widths indicated. Install joint filler before setting pavers. Make top of joint filler flush with top of pavers.

G. Provide edge restraints as indicated. Install edge restraints before placing unit pavers.
1. Install edge restraints to comply with manufacturer's written instructions. Install stakes at intervals required to hold edge restraints in place during and after unit paver installation.
2. For metal edge restraints with top edge exposed, drive stakes at least 1 inch below top edge.
3. Install job-built concrete edge restraints to comply with requirements in Section 321313 "Concrete Paving."

3.4 BITUMINOUS SETTING-BED APPLICATIONS

A. Apply primer to concrete slab or binder course immediately before placing setting bed.

B. Prepare for setting-bed placement by locating 3/4-inch-deep control bars approximately 11 feet apart and parallel to one another, to serve as guides for striking board. Adjust bars to subgrades required for accurate setting of paving units to finished grades indicated.

C. Place bituminous setting bed where indicated, in panels, by spreading bituminous material between control bars. Spread mix at a minimum temperature of 250 deg F. Strike setting bed smooth, firm, even, and not less than 3/4 inch thick. Add fresh bituminous material to low, porous spots after each pass of striking board. After each panel is completed, advance first control bar to next position in readiness for striking adjacent panels. Carefully fill depressions that remain after removing depth-control bars.
1. Roll setting bed with power roller to a nominal depth of 3/4 inch. Adjust thickness as necessary to allow accurate setting of unit pavers to finished grades indicated. Complete rolling before mix temperature cools to 185 deg F.

D. Apply neoprene-modified asphalt adhesive to cold setting bed by squeegeeing or troweling to a uniform thickness of 1/16 inch. Proceed with setting of paving units only after adhesive is tacky and surface is dry to touch.

E. Place pavers carefully by hand in straight courses, maintaining accurate alignment and uniform top surface. Protect newly laid pavers with plywood panels on which workers can stand. Advance protective panels as work progresses, but maintain protection in areas subject to continued movement of materials and equipment to avoid creating depressions or disrupting alignment of pavers. If additional leveling of paving is required, and before treating joints, roll paving with power roller after sufficient heat has built up in the surface from several days of hot weather.

F. Joint Treatment: Place unit pavers with hand-tight joints. Fill joints by sweeping sand over paved surface until joints are filled. Remove excess sand after joints are filled.

3.5 REPAIRING, POINTING, AND CLEANING

A. Remove and replace unit pavers that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Provide new units to match adjoining units and install in same manner as original units, with same joint treatment and with no evidence of replacement.

B. Pointing: During tooling of joints, enlarge voids or holes and completely fill with grout. Point joints at sealant joints to provide a neat, uniform appearance, properly prepared for sealant application.

END OF SECTION 321400

SECTION 321440 - GRANITE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes:

Exterior paving.

B. Related Requirments
1. Section 321313 "Concrete Paving"

1.3 PREINSTALLATION MEETINGS

1. Preinstallation Conference: Conduct conference at Project site

1.4 SUBMITTALS

A. Product Data: For each stone type and each manufactured product shown on Drawings or specified.
1. For each stone variety used on Project, include physical property data.

B. Shop Drawings: Show fabrication and installation details for stone:
1. Include dimensions and profiles of stone units.

C. Samples: Submit samples for each stone type required, exhibiting the full range of color characteristics expected.
1. Submit a minimum of 2 each, 12 inches x 12 inches in size, in each color and finish specified.
2. Sealant Samples: For each type and color of joint sealant required.

D. Preliminary Test Reports: Submit test reports for proposed stones prior to final stone selection. Preliminary test reports shall be indicative of the stone to be proposed for the project.
1. Testing of production stone is required in addition to preliminary test reports.

E. Certification: Submit a letter of certification from the stone fabricator, stating the material being furnished is the specified material and there are sufficient reserves available to supply the project and furnish replacements if needed.

F. Material Test Reports: From a qualified independent testing agency, as follows:
1. Provide reports for each stone type.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified unit paving installer. Installer's field supervisor shall have Concrete Paver Installer Certification from the Interlocking Concrete Pavement Institute (ICPI) with the following designations:
1. Commercial Paver Technician Designation.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
1. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store and handle materials to prevent deterioration or damage.
1. Stone shall be carefully packed and loaded for shipment using reasonable care and customary precautions against damage in transit. Material, which may cause staining or discoloration shall not be used for blocking or packing.
2. The stone shall be stacked on timber or platforms at least 4 inches above the ground. Care shall be taken to prevent staining or discoloration during storage.
3. If storage is to be for a prolonged period, polyethylene or other suitable plastic film shall be placed between wood and finished surfaces of completely dry stone.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. FIELD CONDITIONS
1. Cold-Weather Protection: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen subgrade or setting beds. Remove and replace unit paver work damaged by frost or freezing.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain each type of stone, joint material, and setting material from single source with resources to provide materials and products of consistent quality in appearance and physical properties.

2.2 GRANITE MATERIAL

A. Granite: ASTM C 615.

B. Cut stone from one block or contiguous, matched blocks in which natural markings occur.

C. Granite Type:
1. Basis-of-Design Product: Subject to compliance with requirements, provide Coldspring Custom Fabricated Granite
2. Stone Variety: Academy Black
3. Location: Exterior Paving
4. Finish: Thermal
5. Nominal Thickness: Not less than 3 inches

2.3 MORTAR MATERIALS

A. Portland Cement: ASTM C 150, Type I or Type II, except Type III may be used for cold-weather construction.

B. Hydrated Lime: ASTM C 207.

C. Portland Cement-Lime Mix: ASTM C 150, Type I or Type III, and ASTM C 207.

D. Colored Portland Cement-Lime Mix: ASTM C 150, Type I or Type III; ASTM C 207; and mortar pigments.

E. Aggregate: ASTM C 144.

F. Mortar Pigments: Natural and synthetic iron oxides. Use only pigments with a record of satisfactory performance in mortar and containing no carbon black.

G. Latex Additive: Acrylic-resin water emulsion recommended by additive manufacturer for use with field-mixed portland cement mortar bed.

H. Thin-Set Mortar: Latex-Portland Cement Mortar: ANSI A118.4. Provide products by one of the following:

I. Water: Potable.

2.4 GROUT

A. Grout Color: Match stone

B. Polymer Modified Cement Grout: ANSI A118.7.
1. Polymer Type: Acrylic resin in liquid-latex form for addition to prepackaged dry-grout mix.

2.5 STONE FABRICATION

A. Select stone for intended use to prevent fabricated units from containing cracks, seams, and starts that could impair structural integrity or function.

B. Fabricate stone to comply with requirements indicated and with the following references:
1. Granite: NBGQA's "Specifications for Architectural Granite."

C. Cut stone to produce pieces of thickness, size, and shape indicated, including details on Drawings and Shop Drawings.
1. Pattern: As indicated on Drawings
2. Joint Width: 1/2 inch

D. Fabricate stone stair treads in sizes and profiles indicated.

E. Carefully inspect finished stone units at fabrication plant for compliance with requirements. Replace defective units. Clean backs of stones to remove rust stains and iron particles.

2.6 MORTAR AND GROUT MIXES

A. Mortar: Comply with referenced standards and with manufacturers' written instructions.
1. Do not use admixtures. Do not use calcium chloride.
2. Combine mortar materials and mix thoroughly. Discard mortar when it has reached initial set.

B. Latex-Modified Portland Cement Setting Mortar: Proportion and mix portland cement, aggregate, and latex additive to comply with manufacturer's written instructions.

C. Mortar-Bed Bond Coat: Mix neat cement and latex additive to a creamy consistency.

D. Latex-Modified Portland Cement Bond Coat: Proportion and mix portland cement, aggregate, and latex additive to comply with manufacturer's written instructions.

E. Cement-Paste Bond Coat: Mix either neat cement or cement and sand with water to a consistency similar to that of thick cream.

F. Joint Grout: Comply with mixing requirements in referenced ANSI standards and with manufacturer's written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces indicated to receive stone.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Sweep concrete substrates to remove dirt, dust, debris, and loose particles.

B. Remove substances from concrete substrates that could impair mortar bond.

C. Clean dirty or stained stone surfaces before setting.
1. Scrub with fiber brushes; drench with clear water.
2. Use mild cleaning compounds.

3.3 INSTALLATION

A. Do necessary field cutting as stone is set. Cut lines straight and true and finish field-cut edges to match shop-cut edges.
1. Use power saws with diamond blades to cut stone.

B. Set stone to comply with Drawings and Shop Drawings.

C. Scribe and field-cut stone as necessary to fit at obstructions. Produce neat joints of size specified or indicated.

D. Expansion- and Control-Joint Installation: Locate and install according to Drawings and Shop Drawings.

3.4 INSTALLATION TOLERANCES

A. Variation in Line: Do not exceed 1/8 inch in 8 feet, or 3/8 inch maximum.

B. Variation in Joint Width: Do not vary joint thickness more than 1/16 inch or 1/4 of nominal joint width, whichever is less.

C. Variation in Surface Plane: Do not exceed 1/8 inch in 10 feet or 3/8 inch maximum from level or slope indicated.

D. Variation in Plane between Adjacent Units (Lipping): Do not exceed 1/32-inch difference between planes of adjacent units.

3.5 INSTALLATION OF STONE DIRECTLY OVER CONCRETE

A. Saturate concrete with clean water several hours before placing setting bed. Remove surface water about one hour before placing setting bed.

B. Apply mortar-bed bond coat to damp concrete and broom to provide an even coating that completely covers the concrete. Do not exceed 1/16-inch thickness. Limit area of mortar-bed bond coat to avoid its drying out before placing setting bed.

C. Apply mortar bed to finished elevations indicated immediately after applying mortar-bed bond coat.

D. Mix and place only that amount of mortar bed that can be covered with stone before initial set. Cut back, bevel edge, and discard material that has reached initial set before stone can be placed.

E. Place stone before initial set of mortar occurs. Immediately before placing stone on setting bed, apply uniform 1/16-inch thick bond coat to bed or to back of each stone unit.

F. Tamp and beat stone with a wooden block or rubber mallet.
1. Set each unit in a single operation before initial set of mortar; do not return to areas already set.

G. Rake out joints to depth required to receive grout or pointing mortar as units are set.

H. Point joints after setting.

3.6 GROUTING

A. Polymer-Modified Cement Grout for Stone Joints: ANSI A108.10 and manufacturer's written instructions.
1. Do not use sanded grout for polished stone.
2. Grout joints as soon as possible after initial set of setting bed. Finish joints by tooling to produce a slightly concave polished joint, free of drying cracks.
3. Maintain grout in damp condition for seven days.

3.7 ADJUSTING

A. Remove and replace stone not matching final samples and mockups.

B. Remove and replace stone not complying with requirements.

C. Replace non-complying stone to match final samples and mockups, comply with specified requirements. Replacement stone shall show no evidence of replacement.

D. Patching: Minor patching in small areas may be acceptable if the repair does not distract from the overall appearance of the finished project.

3.8 PROTECTION

A. Prohibit traffic from installed stone for a minimum of 72 hours.

B. Protect during construction with nonstaining kraft paper, and cover with a layer of untreated plywood where adjoining areas require construction work access.

3.9 CLEANING

A. Clean stone as work progresses. Remove mortar, sealant, and stains before tooling joints.

B. Final Cleaning: Clean stone as recommended by fabricator or stone producer.
1. Clean all finished stonework with a mild detergent using a fiber brush.
2. After cleaning, rinse with clean water.
3. Do not use acid or other caustic materials.

C. When cleaning is completed, remove temporary protection.

END OF SECTION 321440

METICULOUS

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100% CONSTRUCTION DOCUMENTS

INDIANA STATE UNIVERSITY - NATIONAL PAN-HELLENIC COUNCIL PLAZA

520 N 7TH ST. TERRE HAUTE, IN 47809

REVISIONS

No.	Description	Date

CERTIFIED BY:

REGISTERED LANDSCAPE ARCHITECT
JULIE SMITH
LA21900015
STATE OF INDIANA

BID ISSUED DATE: MAY 15, 2025

DRAWN: JES | CHECKED: JLS

PROJECT NO.: P24-0112

REVISION NO.:

Technical Specifications

L 502

SECTION 323300 - SITE FURNISHINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
1. Bench.

B. Related Requirements:
1. Section 033000 "Cast-in-Place Concrete"

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Sustainable Design Submittals:
1. Product Data: For recycled content, indicating postconsumer and preconsumer recycled content and cost.
2. Chain-of-Custody Certificates: For certified wood products. Include statement of costs.

B. Samples: For each exposed product and for each color and texture specified.

C. Product Schedule: For site furnishings. Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

A. Material Test Reports: For stone variety proposed for use on Project, by a qualified testing agency, indicating compliance with required physical properties, other than abrasion resistance, according to referenced ASTM standards. Base reports on testing done within previous three years.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For site furnishings to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Bench Replacement Planks: No fewer than ten full-size units for each size indicated.

PART 2 - PRODUCTS

2.1 BENCH

A. Products: Subject to compliance with requirements, provide the following:
1. mmCite; Miela.

B. Frame: Cast aluminum.

C. Seat and Back:
1. Material:
a. Wood: Thermally modified Wood; formed into evenly spaced planks.
2. Seat Height: As indicated.
3. Seat Surface Shape: Contoured or dished.
4. Overall Height: As indicated.
5. Overall Width: 6-feet.
6. Overall Depth: As indicated.
7. Arms: Two, one at each end.
a. Arm Material: Match frame.
8. Weight: 110 lbs.
9. Seating Configuration: Multiple units as indicated.
a. Straight shape.

D. Aluminum Finish: Color coated.
1. Color: TBD by Owner

E. Wood Finish: Manufacturer's standard finish.

F. Installation Method: Surface mount as indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with manufacturer's written installation instructions unless more stringent requirements are indicated. Complete field assembly of site furnishings where required.

B. Unless otherwise indicated, install site furnishings after landscaping and paving have been completed.

C. Install site furnishings level, plumb, true, and securely anchored at locations indicated on Drawings.

END OF SECTION 323300

SECTION 329115 - SOIL PREPARATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes planting soils specified according to performance requirements of the mixes.

B. Related Requirements:
1. Section 311000 "Site Clearing"
2. Section 329200 "Turf and Grasses"
3. Section 329300 "Plants"

1.3 DEFINITIONS

A. AAPFCO: Association of American Plant Food Control Officials.

B. Backfill: The earth used to replace or the act of replacing earth in an excavation. This can be amended or unamended soil as indicated.

C. CEC: Cation exchange capacity.

D. Compost: The product resulting from the controlled biological decomposition of organic material that has been sanitized through the generation of heat and stabilized to the point that it is beneficial to plant growth.

E. Duff Layer: A surface layer of soil, typical of forested areas, that is composed of mostly decayed leaves, twigs, and detritus.

F. Imported Soil: Soil that is transported to Project site for use.

G. Manufactured Soil: Soil produced by blending soils, sand, stabilized organic soil amendments, and other materials to produce planting soil.

H. NAPT: North American Proficiency Testing Program. An SSSA program to assist soil-, plant-, and water-testing laboratories through interlaboratory sample exchanges and statistical evaluation of analytical data.

I. Organic Matter: The total of organic materials in soil exclusive of undecayed plant and animal tissues, their partial decomposition products, and the soil biomass; also called "humus" or "soil organic matter."

J. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified as specified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

K. RCRA Metals: Hazardous metals identified by the EPA under the Resource Conservation and Recovery Act.

L. SSSA: Soil Science Society of America.

M. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

N. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.

O. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil"; but in disturbed areas such as urban environments, the surface soil can be subsoil.

P. USCC: U.S. Composting Council.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.
1. Include recommendations for application and use.
2. Include test data substantiating that products comply with requirements.
3. Include sieve analyses for aggregate materials.
4. Material Certificates: For each type of imported soil and soil amendment and fertilizer before delivery to the site, according to the following:
a. Manufacturer's qualified testing agency's certified analysis of standard products.
b. Analysis of fertilizers, by a qualified testing agency, made according to AAPFCO methods for testing and labeling and according to AAPFCO's SUIP #25.
c. Analysis of nonstandard materials, by a qualified testing agency, made according to SSSA methods, where applicable.

B. Sustainable Design Submittals:
1. Environmental Product Declaration (EPD): For each product.

C. Samples: For each bulk-supplied material, 1-gal. volume of each in sealed containers labeled with content, source, and date obtained. Each Sample shall be typical of the lot of material to be furnished; provide an accurate representation of composition, color, and texture.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For each testing agency.

B. Preconstruction Test Reports: For preconstruction soil analyses specified in "Preconstruction Testing" Article.

C. Field quality-control reports.

1.7 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent, state-operated, or university-operated laboratory; experienced in soil science, soil testing, and plant nutrition; with the experience and capability to conduct the testing indicated; and that specializes in types of tests to be performed.

1.8 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction soil analyses on existing, on site soil.
1. Notify Landscape Architect seven days in advance of the dates and times when laboratory samples will be taken.

B. Preconstruction Soil Analyses: For each unamended soil type, perform testing on soil samples and furnish soil analysis and a written report containing soil-amendment and fertilizer recommendations by a qualified testing agency performing the testing according to "Soil-Sampling Requirements" and "Testing Requirements" articles.
1. Have testing agency identify and label samples and test reports according to sample collection and labeling requirements.

1.9 SOIL-SAMPLING REQUIREMENTS

A. General: Extract soil samples according to requirements in this article.

B. Sample Collection and Labeling: Have samples taken and labeled by soil scientist (CPSS) certified by SSSA or state-certified, -licensed, or -registered soil scientist under the direction of the testing agency.
1. Number and Location of Samples: Minimum of eight representative soil samples from varied locations for each soil to be used or amended for landscaping purposes.
2. Procedures and Depth of Samples: According to USDA-NRCS's "Field Book for Describing and Sampling Soils."
3. Division of Samples: Split each sample into two, equal parts. Send half to the testing agency and half to Owner for its records.
4. Labeling: Label each sample with the date, location keyed to a site plan or other location system, visible soil condition, and sampling depth.

1.10 TESTING REQUIREMENTS

A. General: Perform tests on soil samples according to requirements in this article.

B. Physical Testing:
1. Soil Texture: Soil-particle, size-distribution analysis by the following methods according to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods":
a. Hydrometer Method: Report percentages of sand, silt, and clay.
2. Bulk Density: Analysis according to core method of SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods."
3. Total Porosity: Calculate using particle density and bulk density according to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods."
4. Water Retention: According to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods."
5. Saturated Hydraulic Conductivity: According to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods"; at 85 percent compaction according to ASTM D698 (Standard Proctor).

C. Chemical Testing:
1. CEC: Analysis by sodium saturation at pH 7 according to SSSA's "Methods of Soil Analysis - Part 3- Chemical Methods."
2. Clay Mineralogy: Analysis and estimated percentage of expandable clay minerals using CEC by ammonium saturation at pH 7 according to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods."
3. Metals Hazardous to Human Health: Test for presence and quantities of RCRA metals including aluminum, arsenic, barium, copper, cadmium, chromium, cobalt, lead, lithium, and vanadium. If RCRA metals are present, include recommendations for corrective action.
4. Phytotoxicity: Test for plant-available concentrations of phytotoxic minerals including aluminum, arsenic, barium, cadmium, chlorides, chromium, cobalt, copper, lead, lithium, mercury, nickel, selenium, silver, sodium, strontium, tin, titanium, vanadium, and zinc.

D. Fertility Testing: Soil fertility analysis according to standard laboratory protocol of SSSA NAPT NCR-13, including the following:
1. Percentage of organic matter.
2. CEC, calcium percent of CEC, and magnesium percent of CEC.
3. Soil reaction (acidity/alkalinity pH value).
4. Buffered acidity or alkalinity.
5. Nitrogen ppm.
6. Phosphorous ppm.
7. Potassium ppm.
8. Manganese ppm.
9. Manganese-availability ppm.
10. Zinc ppm.
11. Zinc availability ppm.
12. Copper ppm.
13. Sodium ppm and sodium absorption ratio.
14. Soluble-salts ppm.
15. Presence and quantities of problem materials including salts and metals cited in the Standard protocol. If such problem materials are present, provide additional recommendations for corrective action.
16. Other deleterious materials, including their characteristics and content of each.

E. Organic-Matter Content: Analysis using loss-by-ignition method according to SSSA's "Methods of Soil Analysis - Part 3-Chemical Methods."

F. Recommendations: Based on the test results, state recommendations for soil treatments and soil amendments to be incorporated to produce satisfactory planting soil suitable for healthy, viable plants indicated. Include, at a minimum, recommendations for nitrogen, phosphorous, and potassium fertilization, and for micronutrients.
1. Fertilizers and Soil Amendment Rates: State recommendations in weight per 1000 sq. ft. for 6-inchdepth of soil.
2. Soil Reaction: State the recommended liming rates for raising pH or sulfur for lowering pH according to the buffered acidity or buffered alkalinity in weight per 1000 sq. ft. for 6-inchdepth of soil.

1.11 DELIVERY, STORAGE, AND HANDLING

A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and compliance with state and Federal laws if applicable.

B. Bulk Materials:
1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Do not move or handle materials when they are wet or frozen.
4. Accompany each delivery of bulk fertilizers and soil amendments with appropriate certificates.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Regional Materials: Acquire manufactured planting soil and soil amendments and fertilizers within 100 miles of Project site from materials that have been extracted, harvested, or recovered, as well as manufactured, within 100 miles of Project site.

2.2 PLANTING SOILS SPECIFIED ACCORDING TO PERFORMANCE REQUIREMENTS

A. Planting-Soil Type Existing Soil: Existing, on-site surface soil, modified to produce viable planting soil. Using preconstruction soil analyses and materials specified in other articles of this Section, amend existing, on-site surface soil to become planting soil complying with the following requirements:
1. Basic Properties: Existing, on-site soil shall not contain the following:
a. Unacceptable Materials: Concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials that are harmful to plant growth.
b. Unsuitable Materials: Stones, roots, plants, sod, clay lumps, and pockets of coarse sand that exceed a combined maximum of 5 percent by dry weight of the manufactured soil.
c. Large Materials: Stones, clods, roots, clay lumps, and pockets of coarse sand exceeding 1-1/2 inches in any dimension.
2. Fragment Size Distribution:
a. Fine Fragments: Maximum 10 percent by dry weight.
b. Medium Fragments: Maximum 40 percent by dry weight.
c. Coarse Fragments: Maximum 40 percent by dry weight.
d. Sticks and Roots: Maximum 5 percent by dry weight.
e. Debris and Other Foreign Materials: Maximum 5 percent by dry weight.
3. Percentage of Organic Matter: Minimum 6 percent by volume.
4. Soil Reaction: pH of 6 to 7.
5. CEC of Total Soil: Minimum 7 meq/100 mL at pH of 7.0.
6. CEC of Clay Fraction: Maximum 15 meq/100 mL at pH of 7.0.
7. Soluble-Salt Content: 5 to 10 dS/m measured by electrical conductivity.
8. Bulk Density: 1.2 g/cu. cm to 1.4 g/cu. cm at 85 percent compaction.
9. Total Porosity: Minimum 50 percent at 85 percent compaction.
10. Macro Porosity: Minimum 15 percent at 85 percent compaction.
11. RCRA Metals: Below maximum limits established by the EPA.
12. Phytotoxicity: Below phytotoxicity limits established by SSSA.

B. Planting-Soil Type Planting Soil Backfill: Manufactured soil consisting of manufacturer's basic sandy loam according to USDA textures, blended in a manufacturing facility with sand, stabilized organic soil amendments, and other materials as specified in other articles of this Section to produce viable planting soil.
1. Basic Properties: Manufactured soil shall not contain the following:
a. Unacceptable Materials: Concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials that are harmful to plant growth.
b. Unsuitable Materials: Stones, roots, plants, sod, clay lumps, and pockets of coarse sand that exceed a combined maximum of 5 percent by dry weight of the manufactured soil.
c. Large Materials: Stones, clods, roots, clay lumps, and pockets of coarse sand exceeding 1-1/2 inches in any dimension.
2. Fragment Size Distribution:
a. Fine Fragments: Maximum 10 percent by dry weight.
b. Medium Fragments: Maximum 40 percent by dry weight.
c. Coarse Fragments: Maximum 40 percent by dry weight.
d. Sticks and Roots: Maximum 5 percent by dry weight.
e. Debris and Other Foreign Materials: Maximum 5 percent by dry weight.
3. Percentage of Organic Matter: Minimum 6 percent by volume.
4. Soil Reaction: pH of 6 to 7.
5. CEC of Total Soil: Minimum 7 meq/100 mL at pH of 7.0.
6. CEC of Clay Fraction: Maximum 15 meq/100 mL at pH of 7.0.
7. Soluble-Salt Content: 5 to 10 dS/m measured by electrical conductivity.
8. Bulk Density: 1.2 g/cu. cm to 1.4 g/cu. cm at 85 percent compaction.
9. Total Porosity: Minimum 50 percent at 85 percent compaction.
10. Macro Porosity: Minimum 15 percent at 85 percent compaction.
11. RCRA Metals: Below maximum limits established by the EPA.
12. Phytotoxicity: Below phytotoxicity limits established by SSSA.

2.3 INORGANIC SOIL AMENDMENTS

A. Lime: ASTM C602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent and as follows:
1. Class: O, with a minimum of 95 percent passing through No. 8 sieve and a minimum of 55 percent passing through a No. 60 sieve.
2. Form: Provide lime in form of ground calcitic limestone.

B. Sulfur: Granular, biodegradable, and containing a minimum of 90 percent elemental sulfur, with a minimum of 99 percent passing through a No. 6 sieve and a maximum of 10 percent passing through a No. 40 sieve.

C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.

D. Agricultural Gypsum: Minimum 90 percent calcium sulfate, finely ground with 90 percent passing through a No. 50 sieve.

E. Sand: Clean, washed, natural or manufactured, free of toxic materials, and according to ASTM C33/C33M.

2.4 ORGANIC SOIL AMENDMENTS

A. Compost: Well-composted, stable, and weed-free organic matter produced by composting feedstock, and bearing USCC's "Seal of Testing Assurance," and as follows:
1. Feedstock: Limited to leaves.
2. Reaction: pH of 5.5 to 8.
3. Soluble-Salt Concentration: Less than 4 dS/m.
4. Moisture Content: 35 to 55 percent by weight.
5. Organic-Matter Content: 30 to 40 percent of dry weight.
6. Particle Size: Minimum of 98 percent passing through a 3/4-inch sieve.

B. Muck Peat: Partially decomposed moss peat, native peat, or reed-sedge peat, finely divided or of granular texture with 100 percent passing through a 1/2-inch sieve, a pH of 6 to 7.5, a soluble-salt content measured by electrical conductivity of maximum 5 dS/m, having a water-absorbing capacity of 1100 to 2000 percent, and containing no sand.

2.5 FERTILIZERS

A. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.

B. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified testing agency.

C. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified testing agency.

PART 3 - EXECUTION

3.1 GENERAL

A. Place planting soil and fertilizers according to requirements in other Specification Sections.

B. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in planting soil.

C. Proceed with placement only after unsatisfactory conditions have been corrected.

3.2 PREPARATION OF UNAMENDED, ON-SITE SOIL BEFORE AMENDING

A. Excavation: Excavate soil from designated area(s) as specified in the drawings and stockpile until amended.

B. Unacceptable Materials: Clean soil of concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials that are harmful to plant growth.

C. Unsuitable Materials: Clean soil to contain a combined maximum of 8 percent by dry weight of stones, roots, plants, sod, clay lumps, and pockets of coarse sand.

3.3 PLACING AND MIXING PLANTING SOIL OVER EXPOSED SUBGRADE

A. General: Apply and mix unamended soil with amendments on-site to produce required planting soil. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.

B. Subgrade Preparation: Till subgrade to a minimum depth of 4 inches. Remove stones larger than 1-1/2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

C. Apply, add soil amendments, and mix approximately half the thickness of unamended soil over prepared, loosened subgrade according to "Mixing" Paragraph below. Mix thoroughly into top of subgrade. Spread remainder of planting soil.

D. Mixing: Spread unamended soil to total depth 18 inches, but not less than required to meet finish grades after mixing with amendments and natural settlement. Do not spread if soil or subgrade is frozen, muddy, or excessively wet.

E. Amendments: Apply soil amendments and fertilizer, if required, evenly on surface, and thoroughly blend them with unamended soil to produce planting soil.

F. Mix lime and sulfur with dry soil before mixing fertilizer, if required.

G. Mix fertilizer with planting soil no more than seven days before planting.

H. Lifts: Apply and mix unamended soil and amendments in lifts not exceeding 8 inches in loose depth for material compacted by compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

I. Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

3.4 BLENDING PLANTING SOIL IN PLACE

A. General: Mix amendments with in-place, unamended soil to produce required planting soil. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.

B. Preparation: Till unamended, existing soil in planting areas to a minimum depth of 4 inches. Remove stones larger than 1-1/2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

C. Mixing: Apply soil amendments and fertilizer, if required, evenly on surface, and thoroughly blend them into full depth of unamended, in-place soil to produce planting soil.

D. Mix lime and sulfur with dry soil before mixing fertilizer, if required.

E. Mix fertilizer with planting soil no more than seven days before planting.

F. Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

3.5 PLACING MANUFACTURED PLANTING SOIL OVER EXPOSED SUBGRADE

A. General: Apply manufactured soil on-site in its final, blended condition. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.

B. Subgrade Preparation: Till subgrade to a minimum depth of 12 inches. Remove stones larger than 1-1/2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
1. Apply approximately half the thickness of planting soil over prepared, loosened subgrade. Mix thoroughly into top 4 inches of subgrade. Spread remainder of planting soil.

C. Application: Spread planting soil to total depth of 6 inches in turf and native prairie planting areas and as indicated on Drawings for plants, but not less than required to meet finish grades after natural settlement. Do not spread if soil or subgrade is frozen, muddy, or excessively wet.
1. Lifts: Apply planting soil in lifts not exceeding 8 inches in loose depth for material compacted by compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

D. Compaction: Compact each lift of planting soil to 75 to 82 percent of maximum Standard Proctor density according to ASTM D698.

E. Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

3.6 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Perform the following tests:
1. Compaction: Test planting-soil compaction after placing each lift and at completion using a densitometer or soil-compaction meter calibrated to a reference test value based on laboratory testing according to ASTM D698. Space tests at no less than one for each 2000 sq. ft. of in-place soil or part thereof.
2. Performance Testing: For each amended planting-soil type, demonstrating compliance with specified performance requirements. Perform testing according to "Soil-Sampling Requirements" and "Testing Requirements" articles.

C. Soil will be considered defective if it does not pass tests.

D. Prepare test reports.

E. Label each sample and test report with the date, location keyed to a site plan or other location system, visible conditions when and where sample was taken, and sampling depth.

3.7 PROTECTION

A. Protect areas of in-place soil from additional compaction, disturbance, and contamination. Prohibit the following practices within these areas except as required to perform planting operations:
1. Storage of construction materials, debris, or excavated material.
2. Parking vehicles or equipment.
3. Vehicle traffic.
4. Erection of sheds or structures.
5. Impoundment of water.
6. Excavation or other digging unless otherwise indicated.

B. If planting soil or subgrade is overcompacted, disturbed, or contaminated by foreign or deleterious materials or liquids, remove the planting soil and contamination; restore the subgrade as directed by Landscape Architect and replace contaminated planting soil with new planting soil.

3.8 CLEANING

A. Protect areas adjacent to planting-soil preparation and placement areas from contamination. Keep adjacent paving and construction clean and work area in an orderly condition.

B. Remove surplus soil and waste material including excess subsoil, unsuitable materials, trash, and debris and legally dispose of them off Owner's property unless otherwise indicated.

END OF SECTION 329115

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100% CONSTRUCTION DOCUMENTS

INDIANA STATE UNIVERSITY - NATIONAL
PAN-HELLENIC COUNCIL PLAZA
520 N. 7TH ST. TERRE HAUTE, IN 47809

REVISIONS

No.	Description	Date

CERTIFIED BY:

REGISTERED LANDSCAPE ARCHITECT
JULIE SMITH
LA21900015
STATE OF INDIANA

BID ISSUED DATE: MAY 15, 2025
DRAWN: JES
CHECKED: JLS
PROJECT NO.: P24-0112
REVISION NO.:

Technical Specifications

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SECTION 329200 - TURF AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Seeding.
   2. Sodding.
   3. Erosion-control materials.

B. Related Requirements:
   1. Section 329115 “Soil Preparation”
   2. Section 329300 "Plants"

1.3 DEFINITIONS

A. Finish Grade: Elevation of finished surface of planting soil.

B. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.

C. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

D. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See Section 329115 "Soil Preparation" and drawing designations for planting soils.

E. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For landscape Installer.

B. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
   1. Certification of each seed mixture for turfgrass sod. Include identification of source and name and telephone number of supplier.

C. Product Certificates: For fertilizers, from manufacturer.

D. Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: Recommended procedures to be established by Owner for maintenance of turf during a calendar year. Submit before expiration of required maintenance periods.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful turf establishment.
   1. Professional Membership: Installer shall be a member in good standing of either the National Association of Landscape Professionals or AmericanHort.
   2. Experience: Five years' experience in turf installation in addition to requirements in Section 014000 "Quality Requirements."
   3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
   4. Personnel Certifications: Installer's field supervisor shall have certification in one of the following categories from the National Association of Landscape Professionals:
      a. Landscape Industry Certified Technician - Exterior.
      b. Landscape Industry Certified Lawn Care Manager.
      c. Landscape Industry Certified Lawn Care Technician.
   5. Pesticide Applicator: State licensed, commercial.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.

B. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" sections in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod within 24 hours of harvesting and in time for planting promptly. Protect sod from breakage and drying.

C. Bulk Materials:
   1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
   2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
   3. Accompany each delivery of bulk materials with appropriate certificates.

1.8 FIELD CONDITIONS

A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of Substantial Completion.
   1. Spring Planting (Seed): March 15 to May30
   2. Spring Planting (Sod): March 15 to June 30.
   3. Fall Planting (Seed): September 15 to October 30.
   4. Fall Planting (Sod): September 1 to November 15.

B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 SEED

A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Rules for Testing Seeds" for purity and germination tolerances.

B. Seed Species:
   1. Quality, State Certified: State-certified seed of grass species as listed below for solar exposure.
   2. Sun and Partial Shade, Cool-Season Grass: Proportioned by weight as follows:
      a. 50 percent Kentucky bluegrass (Poa pratensis).
      b. 30 percent chewings red fescue (Festuca rubra variety).
      c. 10 percent perennial ryegrass (Lolium perenne).
      d. 10 percent redtop (Agrostis alba).

2.2 TURFGRASS SOD

A. Turfgrass Sod: Approved, complying with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture that is strongly rooted and capable of vigorous growth and development when planted.

B. Turfgrass Species, Cool-Season Grass: Sod of grass species as follows, with not less than 85 percent germination, not less than 95 percent pure seed, and not more than 0.5 percent weed seed:
   1. Full Sun: Kentucky bluegrass (Poa pratensis), a minimum of three cultivars.

2.3 FERTILIZERS

A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
   1. Composition:
      a. Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

2.4 MULCHES

A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.

B. Asphalt Emulsion: ASTM D977, Grade SS-1; nontoxic and free of plant-growth or germination inhibitors.

2.5 PESTICIDES

A. General: Pesticide, registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

B. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.

C. Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.

2.6 EROSION-CONTROL MATERIALS

A. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches long.

B. Erosion-Control Fiber Mesh: Biodegradable burlap or spun-coir mesh, a minimum of 0.92 lb/sq. yd., with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches long.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.
   1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
   2. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
   3. Uniformly moisten excessively dry soil that is not workable or which is dusty.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Landscape Architect and replace with new planting soil.

3.2 PREPARATION

A. Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
   1. Protect grade stakes set by others until directed to remove them.

B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 TURF AREA PREPARATION

A. General: Prepare planting area for soil placement and mix planting soil according to Section 329115 "Soil Preparation."

B. Placing Planting Soil: Place manufactured planting soil over exposed subgrade.
   1. Reduce elevation of planting soil to allow for soil thickness of sod.

C. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

D. Before planting, obtain Landscape Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 PREPARATION FOR EROSION-CONTROL MATERIALS

A. Prepare area as specified in "Turf Area Preparation" Article.

B. For erosion-control blanket or mesh, install from top of slope, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.

C. Moisten prepared area before planting if surface is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

3.5 SEEDING

A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph.
   1. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
   2. Do not use wet seed or seed that is moldy or otherwise damaged.
   3. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.

B. Sow seed at a total rate of 5 to 8 lb/1000 sq. ft..

C. Rake seed lightly into top 1/8 inch of soil, roll lightly, and water with fine spray.

D. Protect seeded areas with slopes exceeding 1:4 with erosion-control blankets and 1:6 with erosion-control fiber mesh installed and stapled according to manufacturer's written instructions.

E. Protect seeded areas with erosion-control mats where indicated on Drawings; install and anchor according to manufacturer's written instructions.

F. Protect seeded areas with slopes not exceeding 1:6 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre to form a continuous blanket 1-1/2 inches in loose thickness over seeded areas. Spread by hand, blower, or other suitable equipment.
   1. Anchor straw mulch by crimping into soil with suitable mechanical equipment.
   2. Bond straw mulch by spraying with asphalt emulsion at a rate of 10 to 13 gal./1000 sq. ft.. Take precautions to prevent damage or staining of structures or other plantings adjacent to mulched areas. Immediately clean damaged or stained areas.

G. Protect seeded areas from hot, dry weather or drying winds by applying planting soil within 24 hours after completing seeding operations. Soak areas, scatter mulch uniformly to a thickness of 3/16 inch, and roll surface smooth.

3.6 SODDING

A. Application General: Install sod in lawn areas between drive and street curb and adjacent sidewalks.

B. Lay sod within 24 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy.

C. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to soil or sod during installation. Tamp and roll lightly to ensure contact with soil, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.
   1. Lay sod across slopes exceeding 1:3.
   2. Anchor sod on slopes exceeding 1:6 with wood pegs or steel staples spaced as recommended by sod manufacturer but not less than two anchors per sod strip to prevent slippage.

D. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod.

3.7 TURF MAINTENANCE

A. General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
   1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
   2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
   3. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.

B. Watering: Install and maintain irrigation system piping, hoses, and turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches.
   1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch.
   2. Water turf with fine spray at a minimum rate of 1 inch per week unless rainfall precipitation is adequate.

C. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:
   1. Mow to a height of 1-1/2 to 2 inches.

D. Turf Postfertilization: Apply commercial fertilizer after initial mowing and when grass is dry.
   1. Use fertilizer that provides actual nitrogen of at least 1 lb/1000 sq. ft. to turf area.

3.8 SATISFACTORY TURF

A. Turf installations shall meet the following criteria as determined by Landscape Architect:
   1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.
   2. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.

B. Use specified materials to reestablish turf that does not comply with requirements, and continue maintenance until turf is satisfactory.

3.9 PESTICIDE APPLICATION

A. Apply pesticides and other chemical products and biological control agents according to requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

B. Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations.

3.10 CLEANUP AND PROTECTION

A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

C. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.

D. Remove nondegradable erosion-control measures after grass establishment period.

3.11 MAINTENANCE SERVICE

A. Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in "Turf Maintenance" Article. Begin maintenance immediately after each area is planted and continue until acceptable turf is established, but for not less than the following periods:
   1. Seeded Turf: 30 days from date of Substantial Completion.
      a. When initial maintenance period has not elapsed before end of planting season, or if turf is not fully established, continue maintenance during next planting season.
   2. Sodded Turf: 30 days from date of Substantial Completion.

END OF SECTION 329200

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100% CONSTRUCTION DOCUMENTS

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REVISIONS

No.	Description	Date

CERTIFIED BY:

LANDSCAPE ARCHITECT
JULIE SMITH
LA21900015
STATE OF INDIANA

BID ISSUED DATE: MAY 15, 2025

DRAWN: JES | CHECKED: JLS

PROJECT NO.: P24-0112

REVISION NO.:

Technical Specifications

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SECTION 329300 - PLANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Plants.

B. Landscape edgings.

C. Related Requirements:
   1. Section 329200 "Turf and Grasses"

1.3 DEFINITIONS

A. Backfill: The earth used to replace or the act of replacing earth in an excavation.

B. Balled and Burlapped Stock: Plants dug with firm, natural balls of earth in which they were grown, with a ball size not less than diameter and depth recommended by ANSI Z60.1 for type and size of plant required; wrapped with burlap, tied, rigidly supported, and drum laced with twine with the root flare visible at the surface of the ball as recommended by ANSI Z60.1.

C. Container-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container, with a well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of plant required.

D. Finish Grade: Elevation of finished surface of planting soil.

E. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant. Some sources classify herbicides separately from pesticides.

F. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

G. Planting Area: Areas to be planted.

H. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See Section 329115 "Soil Preparation" for drawing designations for planting soils.

I. Plant; Plants; Plant Material: These terms refer to vegetation in general, including trees, shrubs, vines, ground covers, ornamental grasses, bulbs, corms, tubers, or herbaceous vegetation.

J. Root Flare: Also called "trunk flare." The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.

K. Stem Girdling Roots: Roots that encircle the stems (trunks) of trees below the soil surface.

L. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

1.4 COORDINATION

A. Coordination with Turf Areas (Lawns): Plant trees, shrubs, and other plants after finish grades are established and before planting turf areas unless otherwise indicated.
   1. When planting trees, shrubs, and other plants after planting turf areas, protect turf areas, and promptly repair damage caused by planting operations.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Plant Materials: Include quantities, sizes, quality, and sources for plant materials.
   2. Plant Photographs: Include color photographs in digital format of each required species and size of plant material as it will be furnished to Project. Take photographs from an angle depicting true size and condition of the typical plant to be furnished. Include a scale rod or other measuring device in each photograph. For species where more than 20 plants are required, include a minimum of three photographs showing the average plant, the best quality plant, and the worst quality plant to be furnished. Identify each photograph with the full scientific name of the plant, plant size, and name of the growing nursery.

B. Samples for Verification: For each of the following:
   1. Organic Mulch: 1-quart volume of each organic mulch required; in sealed plastic bags labeled with composition of materials by percentage of weight and source of mulch. Each Sample shall be typical of the lot of material to be furnished; provide an accurate representation of color, texture, and organic makeup.
   2. Mineral Mulch: 5 lb of each mineral mulch required, in sealed plastic bags labeled with source of mulch. Sample shall be typical of the lot of material to be delivered and installed on-site; provide an accurate indication of color, texture, and makeup of the material.
   3. Weed Control Barrier: 12 by 12 inches.
   4. Slow-Release, Tree-Watering Device: One unit of each size required.

1.7 Edging Materials and Accessories: Manufacturer's standard size, to verify color selected.

1.8 INFORMATIONAL SUBMITTALS

A. Qualification Data: For landscape Installer. Include list of similar projects completed by Installer demonstrating Installer's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of owners' contact persons.

B. Product Certificates: For each type of manufactured product, from manufacturer, and complying with the following:
   1. Manufacturer's certified analysis of standard products.
   2. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.

C. Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project.

D. Sample Warranty: For special warranty.

1.9 CLOSEOUT SUBMITTALS

A. Maintenance Data: Recommended procedures to be established by Owner for maintenance of plants during a calendar year. Submit before expiration of required maintenance periods.

1.10 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful establishment of plants.
   1. Professional Membership: Installer shall be a member in good standing of either the National Association of Landscape Professionals or AmericanHort.
   2. Experience: Five years' experience in landscape installation in addition to requirements in Section 014000 "Quality Requirements."
   3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
   4. Personnel Certifications: Installer's field supervisor shall have certification in one of the following categories from the National Association of Landscape Professionals:
      a. Landscape Industry Certified Technician - Exterior.
      b. Landscape Industry Certified Interior.
      c. Landscape Industry Certified Horticultural Technician.
   5. Pesticide Applicator: State licensed, commercial.

B. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1.

C. Measurements: Measure according to ANSI Z60.1. Do not prune to obtain required sizes.
   1. Trees and Shrubs: Measure with branches and trunks or canes in their normal position. Take height measurements from or near the top of the root flare for field-grown stock and container-grown stock. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip to tip. Take caliper measurements 6 inches above the root flare for trees up to 4-inch caliper size, and 12 inches above the root flare for larger sizes.
   2. Other Plants: Measure with stems, petioles, and foliage in their normal position.

D. Plant Material Observation: Landscape Architect may observe plant material either at place of growth or at site before planting for compliance with requirements for genus, species, variety, cultivar, size, and quality. Landscape Architect may also observe trees and shrubs further for size and condition of balls and root systems, pests, disease symptoms, injuries, and latent defects and may reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.
   1. Notify Landscape Architect of sources of planting materials seven days in advance of delivery to site.

1.11 DELIVERY, STORAGE, AND HANDLING

A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws if applicable.

B. Bulk Materials:
   1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
   2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
   3. Accompany each delivery of bulk materials with appropriate certificates.

C. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of plants during shipping and delivery. Do not drop plants during delivery and handling.

D. Handle planting stock by root ball.

E. Store bulbs, corms, and tubers in a dry place at 60 to 65 deg F until planting.

F. Wrap trees and shrubs with burlap fabric over trunks, branches, stems, twigs, and foliage to protect from wind and other damage during digging, handling, and transportation.

G. Deliver plants after preparations for planting have been completed, and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.
   1. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
   2. Do not remove container-grown stock from containers before time of planting.
   3. Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray. Water as often as necessary to maintain root systems in a moist, but not overly wet condition.

1.12 FIELD CONDITIONS

A. Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of plantings and construction contiguous with new plantings by field measurements before proceeding with planting work.

B. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.
   1. Spring Planting: March 15 to May 30.
   2. Fall Planting: September 15 to November 1.

C. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.

1.13 WARRANTY

A. Special Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner.
      b. Structural failures including plantings falling or blowing over.
      c. Faulty performance of tree stabilization.
      d. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
   2. Warranty Periods: From date of Substantial Completion.
      a. Trees, Shrubs, Vines, and Ornamental Grasses: 12 months.
      b. Ground Covers, Biennials, Perennials, and Other Plants: 12 months.
   3. Include the following remedial actions as a minimum:
      a. Immediately remove dead plants and replace unless required to plant in the succeeding planting season.
      b. Replace plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
      c. A limit of one replacement of each plant is required except for losses or replacements due to failure to comply with requirements.
      d. Provide extended warranty for period equal to original warranty period, for replaced plant material.

PART 2 - PRODUCTS

2.1 PLANT MATERIAL

A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Plant List, Plant Schedule, or Plant Legend indicated on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
   1. Trees with damaged, crooked, or multiple leaders; tight vertical branches where bark is squeezed between two branches or between branch and trunk ("included bark"); crossing trunks; cut-off limbs more than 3/4 inch in diameter; or with stem girdling roots are unacceptable.
   2. Collected Stock: Do not use plants harvested from the wild, from native stands, from an established landscape planting, or not grown in a nursery unless otherwise indicated.

B. Provide plants of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of plants required. Plants of a larger size may be used if acceptable to Landscape Architect, with a proportionate increase in size of roots or balls.

C. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which begins at root flare according to ANSI Z60.1. Root flare shall be visible before planting.

D. Labeling: Label at least one plant of each variety, size, and caliper with a securely attached, waterproof tag bearing legible designation of common name and full scientific name, including genus and species. Include nomenclature for hybrid, variety, or cultivar, if applicable for the plant.

E. Provide healthy, disease-free plants of species and variety shown or listed, with well-established root systems reaching to sides of the container to maintain a firm ball, but not with excessive root growth encircling the container. Provide only plants that are acclimated to outdoor conditions before delivery and that are in bud but not yet in bloom.

2.2 FERTILIZERS

A. Planting Tablets: Tightly compressed chip-type, long-lasting, slow-release, commercial-grade planting fertilizer in tablet form. Tablets shall break down with soil bacteria, converting nutrients into a form that can be absorbed by plant roots.
   1. Size: 5-gram tablets.
   2. Nutrient Composition: 20 percent nitrogen, 10 percent phosphorous, and 5 percent potassium, by weight plus micronutrients.

2.3 MULCHES

A. Organic Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of one of the following:
   1. Type: Double shredded hardwood.
   2. Size Range: 2 inches maximum, 1/2 inch minimum.
   3. Color: Natural.

2.4 PESTICIDES

A. General: Pesticide registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

B. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.

C. Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.

2.5 MISCELLANEOUS PRODUCTS

A. Burlap: Non-synthetic, biodegradable.

B. Filter Fabric: Nonwoven geotextile manufactured for separation applications and made of polypropylene, polyolefin, or polyester fibers or combination of them.

C. Mycorrhizal Fungi: Dry, granular inoculant containing at least 5300 spores per lb of vesicular-arbuscular mycorrhizal fungi and 95 million spores per lb of ectomycorrhizal fungi, 33 percent hydrogel, and a maximum of 5.5 percent inert material.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive plants, with Installer present, for compliance with requirements and conditions affecting installation and performance of the Work.
   1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
   2. Verify that plants and vehicles loaded with plants can travel to planting locations with adequate overhead clearance.
   3. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
   4. Uniformly moisten excessively dry soil that is not workable or which is dusty.

B. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Landscape Architect and replace with new planting soil.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities and turf areas and existing plants from damage caused by planting operations.

B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

C. Lay out individual tree and shrub locations and areas for multiple plantings. Stake locations, outline areas, adjust locations when requested, and obtain Landscape Architect's acceptance of layout before excavating or planting. Make minor adjustments as required.

3.3 PLANTING AREA ESTABLISHMENT

A. General: Prepare planting area for soil placement and mix planting soil according to Section 329115 "Soil Preparation ."

B. Placing Planting Soil: Place manufactured planting soil over exposed subgrade.

C. Before planting, obtain Landscape Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

D. Application of Mycorrhizal Fungi: At time directed by Landscape Architect, broadcast dry product uniformly over prepared soil at application rate according to manufacturer's written recommendations.

3.4 EXCAVATION FOR TREES AND SHRUBS

A. Planting Pits and Trenches: Excavate circular planting pits.
   1. Excavate planting pits with sides sloping inward at a 45-degree angle. Excavations with vertical sides are unacceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.
   2. Excavate approximately two times as wide as ball diameter for balled and burlapped container-grown stock.
   3. Excavate at least 12 inches wider than root spread and deep enough to accommodate vertical roots for bare-root stock.
   4. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.
   5. If area under the plant was initially dug too deep, add soil to raise it to the correct level and thoroughly tamp the added soil to prevent settling.
   6. Maintain angles of repose of adjacent materials to ensure stability. Do not excavate subgrades of adjacent paving, structures, hardscapes, or other new or existing improvements.
   7. Maintain supervision of excavations during working hours.
   8. Keep excavations covered or otherwise protected when unattended by Installer's personnel.
   9. If drain tile is indicated on Drawings or required under planting areas, excavate to top of porous backfill over tile.

B. Backfill Soil: Subsoil and topsoil removed from excavations may not be used as backfill soil unless otherwise indicated.

C. Obstructions: Notify Landscape Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.
   1. Hardpan Layer: Drill 6-inch-diameter holes, 24 inches apart, into free-draining strata or to a depth of 10 feet, whichever is less, and backfill with free-draining material.

D. Drainage: Notify Landscape Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub planting pits.

E. Fill excavations with water and allow to percolate away before positioning trees and shrubs.

3.5 TREE, SHRUB, AND VINE PLANTING

A. Inspection: At time of planting, verify that root flare is visible at top of root ball according to ANSI Z60.1. If root flare is not visible, remove soil in a level manner from the root ball to where the top-most root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.

B. Roots: Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.

C. Balled and Burlapped Stock: Set each plant plumb and in center of planting pit or trench with root flare 1 inch above adjacent finish grades.
   1. Backfill: Planting soil backfill.
   2. After placing some backfill around root ball to stabilize plant, carefully cut and remove burlap, rope, and wire baskets from tops of root balls and from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
   3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
   4. Place planting tablets equally distributed around each planting pit when pit is approximately one-half filled. Place tablets beside the root ball about 1 inch from root tips; do not place tablets in bottom of the hole.
      a. Quantity: As indicated on Drawings Three for each caliper inch of plant.
   5. Continue backfilling process. Water again after placing and tamping final layer of soil.

D. Container-Grown Stock: Set each plant plumb and in center of planting pit or trench with root flare 1 inch above adjacent finish grades.
   1. Backfill: Planting soil backfill .
   2. Carefully remove root ball from container without damaging root ball or plant.
   3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
   4. Place planting tablets equally distributed around each planting pit when pit is approximately one-half filled. Place tablets beside the root ball about 1 inch from root tips; do not place tablets in bottom of the hole.
      a. Quantity: Two per plant.
   5. Continue backfilling process. Water again after placing and tamping final layer of soil.

E. Slopes: When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of the root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of the root ball.

3.6 TREE, SHRUB, AND VINE PRUNING

A. Remove only dead, dying, or broken branches. Do not prune for shape.

B. Prune, thin, and shape trees, shrubs, and vines as directed by Landscape Architect.

C. Prune, thin, and shape trees, shrubs, and vines according to standard professional horticultural and arboricultural practices. Unless otherwise indicated by Landscape Architect, do not cut tree leaders; remove only injured, dying, or dead branches from trees and shrubs; and prune to retain natural character.

D. Do not apply pruning paint to wounds.

3.7 GROUND COVER AND PLANT PLANTING

A. Set out and space ground cover and plants other than trees, shrubs, and vines as indicated on Drawings in even rows with triangular spacing.

B. Use planting soil backfill for backfill.

C. Dig holes large enough to allow spreading of roots.

D. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.

E. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.

F. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

3.8 PLANTING AREA MULCHING

A. Mulch backfilled surfaces of planting areas and other areas indicated.
   1. Trees and Treelike Shrubs in Turf Areas: Apply organic mulch ring of 2-inch average thickness, with 24-inch radius around trunks or stems. Do not place mulch within 6 inches of trunks or stems.
   2. Organic Mulch in Planting Areas: Apply 2-inch average thickness of organic mulch extending 12 inches beyond edge of individual planting pit or trench and over whole surface of planting area, and finish level with adjacent finish grades. Do not place mulch within [3 inches] of trunks or stems.

3.9 Mineral Mulch in Planting Areas: Apply 4-inch average thickness of mineral mulch over whole surface of area, and finish level with adjacent finish grades or bottom of tree grate. Do not place mulch within 6 inches of trunks or stems.

3.10 INSTALLATION OF EDGING

A. Steel Edging: Install steel edging where indicated according to manufacturer's written instructions. Anchor with steel stakes spaced approximately 30 inches apart, driven below top elevation of edging.

B. Shovel-Cut Edging: Separate mulched areas from turf areas, curbs, and paving with a 45-degree, 4- to 6-inch-deep, shovel-cut edge as indicated on Drawings.

C. Mow-Strip Installation:
   1. Excavate for mow strip as indicated on Drawings.
   2. Compact subgrade uniformly beneath mow strip.
   3. Apply nonselective, pre-emergent herbicide that inhibits growth of grass and weeds.
   4. Install steel edging, delineating the edge of mow strip.
   5. Install weed-control barrier before mulching, covering area of mow strip, and overlapping and pinning edges of barrier at least 6 inches and according to manufacturer's written instructions.
   6. Place indicated thickness of mineral mulch, fully covering weed barrier.
   7. Rake mulch to a uniform surface level with adjacent finish grades.

3.11 PLANT MAINTENANCE

A. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings.

B. Fill in, as necessary, soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.

C. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices when possible to minimize use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.

3.12 PESTICIDE APPLICATION

A. Apply pesticides and other chemical products and biological control agents according to authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

B. Pre-Emergent Herbicides (Selective and Nonselective): Apply to tree, shrub, and ground-cover areas according to manufacturer's written recommendations. Do not apply to seeded areas.

C. Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations.

3.13 REPAIR AND REPLACEMENT

A. General: Repair or replace existing or new trees and other plants that are damaged by construction operations, in a manner approved by Landscape Architect.
   1. Submit details of proposed pruning and repairs.
   2. Perform repairs of damaged trunks, branches, and roots within 24 hours, if approved.
   3. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Landscape Architect.

B. Remove and replace trees that are more than 25 percent dead or in an unhealthy condition before the end of the corrections period or are damaged during construction operations that Landscape Architect determines are incapable of restoring to normal growth pattern.
   1. Provide new trees of same size as those being replaced for each tree of 6 inches or smaller in caliper size.
   2. Provide one new tree(s) of 6-inch caliper size for each tree being replaced that measures more than 6 inches in caliper size.
   3. Species of Replacement Trees: Species selected by Landscape Architect.

3.14 CLEANING AND PROTECTION

A. During planting, keep adjacent paving and construction clean and work area in an orderly condition. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Remove surplus soil and waste material including excess subsoil, unsuitable soil, trash, and debris and legally dispose of them off Owner's property.

C. Protect plants from damage due to landscape operations and operations of other contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.

D. After installation and before Substantial Completion, remove nursery tags, nursery stakes, tie tape, labels, wire, burlap, and other debris from plant material, planting areas, and Project site.

E. At time of Substantial Completion, verify that tree-watering devices are in good working order and leave them in place. Replace improperly functioning devices.

3.15 MAINTENANCE SERVICE

A. Maintenance Service for Trees and Shrubs: Provide maintenance by skilled employees of landscape Installer. Maintain as required in "Plant Maintenance" Article. Begin maintenance immediately after plants are installed and continue until plantings are acceptably healthy and well established, but for not less than maintenance period below:
   1. Maintenance Period: 12 months from date of Substantial Completion.

B. Maintenance Service for Ground Cover and Other Plants: Provide maintenance by skilled employees of landscape Installer. Maintain as required in "Plant Maintenance" Article. Begin maintenance immediately after plants are installed and continue until plantings are acceptably healthy and well established, but for not less than maintenance period below:
   1. Maintenance Period: 12 months from date of Substantial Completion.

END OF SECTION 329300

METICULOUS

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100% CONSTRUCTION DOCUMENTS

INDIANA STATE UNIVERSITY - NATIONAL PAN-HELLENIC COUNCIL PLAZA

520 N. 7TH ST. TERRE HAUTE, IN 47809

REVISIONS

No.	Description	Date

CERTIFIED BY:

REGISTERED LANDSCAPE ARCHITECT JULIE SMITH LA21900015 STATE OF INDIANA

BID ISSUED DATE: MAY 15, 2025

DRAWN: JES | CHECKED: JLS

PROJECT NO.: P24-0112

REVISION NO.:

Technical Specifications

L 505

GENERAL NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE GUIDELINES SET FORTH IN THE 2014 INDIANA BUILDING CODE.
2. MEANS, METHODS, PROCEDURES, AND SEQUENCES OF CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR.
3. IMPLEMENTATION OF JOB SITE SAFETY INCLUDING ALL OSHA REGULATIONS IS THE RESPONSIBILITY OF THE CONTRACTOR.
4. TEMPORARY BRACING, SHEETING, SHORING, ETC. REQUIRED TO ENSURE THE STRUCTURAL INTEGRITY OF THE NEW AND EXISTING STRUCTURES, SIDEWALKS, UTILITIES, ETC. DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. CONTRACTOR'S CONSTRUCTION AND ERECTION SEQUENCES SHALL CONSIDER THE EFFECTS OF THERMAL EXPANSION AND CONTRACTION ON THE STRUCTURE DURING CONSTRUCTION.
6. HOLES AND NOTCHES SHALL NOT BE CUT OR DRILLED INTO ANY STRUCTURAL MEMBER IN THE FIELD WITHOUT THE APPROVAL OF THE ENGINEER.
7. STRUCTURAL DRAWINGS ARE NOT STAND ALONE DOCUMENTS. CONTRACTOR SHALL COORDINATE STRUCTURAL, ARCHITECTURAL, CIVIL, MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS AND OTHER DISCIPLINES AND INCORPORATE ALL REQUIREMENTS INTO SHOP DRAWINGS AND FIELD WORK.
8. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES FOUND BETWEEN THE STRUCTURAL DRAWINGS AND THE DRAWINGS OR REQUIREMENTS OF ANY OTHER DISCIPLINE.
9. CONTRACTOR IS RESPONSIBLE FOR COORDINATING DIMENSIONS AND INSTALLATION DETAILS OF PURCHASED EQUIPMENT WITH THE SUPPORTING STRUCTURE. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES BETWEEN THESE ITEMS AND THE STRUCTURE.
10. DETAILS DESIGNATED AS "TYPICAL DETAILS" APPLY GENERALLY TO THE DRAWINGS IN AREAS WHERE CONDITION ARE SIMILAR TO THOSE SHOWN IN THE DETAILS. CONTACT ENGINEER FOR INTERPRETATION OF THE APPLICABILITY OF TYPICAL DETAILS.
11. SHOP DRAWINGS AND MATERIAL SUBMITTALS SHALL BE REVIEWED BY THE CONTRACTOR PRIOR TO SUBMISSION TO THE ENGINEER.
12. CHANGES OR ADDITIONS MADE TO RESUBMITTED SHOP DRAWINGS SHALL BE CLEARLY INDICATED ON THE DRAWINGS. REVIEW OF RESUBMITTED SHOP DRAWINGS SHALL BE LIMITED TO THE ITEMS NOTED FOR CORRECTION ON THE PRIOR SUBMITTAL.

FOUNDATION NOTES

1. EXTERIOR FOUNDATIONS SHALL BEAR A MINIMUM OF 3'-0" BELOW FINISH GRADE AND SHALL BEAR ON UNDISTURBED SOIL.
2. ALLOWABLE SOIL BEARING PRESSURES:

   COLUMN/PIER FOOTINGS- 1,500 PSF
   WALL FOOTINGS- 1,500 PSF
3. REPORT (WITHIN 24 HOURS) ANY UNUSUAL SOIL CONDITIONS NOT DESCRIBED IN GEOTECHNICAL INVESTIGATION.
4. FOUNDATION EXCAVATIONS SHALL BE MADE TO PLAN ELEVATIONS AND INSPECTED BY A QUALIFIED GEOTECNICAL ENGINEER. SOIL CONDITIONS FOUND TO BE UNACCEPTABLE SHALL BE MODIFIED BY ONE OF THE FOLLOWING PROCEDURES:

   REMOVE ALL UNACCEPTABLE SOIL AND REPLACE WITH COMPACTED MATERIAL AS OUTLINED IN THE GEOTECNICAL REPORT.

   LOWER FOUNDATIONS TO AN ACCEPTABLE LEVEL.
5. FOUNDATION EXCAVATIONS SHALL BE COMPACTED TO A LEVEL SURFACE (OR FORMED WHERE SOIL CONDITIONS DO NOT ALLOW). THE EXCAVATION SHALL BE PROTECTED FROM WEATHER IF CONCRETE PLACEMENT DOES NOT OCCUR WITHIN 24 HOURS OF EXCAVATION OF THE FOOTING.
6. ALL ENGINEERED FILL BENEATH SLABS AND OVER FOOTINGS SHOULD BE COMPACTED TO A DRY DENSITY OF AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY. ALL FILL WHICH SHALL BE STRESSED BY FOUNDATION LOADS SHALL BE APPROVED GRANULAR MATERIALS COMPACTED TO A DRY DENSITY OF AT LEAST 98%. COORDINATE ALL FILL AND COMPACTION OPERATIONS WITH THE SPECIFICATIONS AND THE SUBSURFACE INVESTIGATION.
7. IT IS THE RESPONSIBILITY OF THE CONTRACTOR AND EACH SUB-CONTRACTOR TO VERIFY THE LOCATION OF ALL UTILITIES AND SERVICES SHOWN, OR NOT SHOWN AND ESTABLISH SAFE WORKING CONDITIONS BEFORE COMMENCING WORK.
8. THE CONTRACTOR SHALL LAYOUT THE ENTIRE BUILDING AND FIELD VERIFY ALL DIMENSIONS PRIOR TO ANY REQUIRED EXCAVATIONS.

CONCRETE NOTES

1. CONCRETE SHALL BE DESIGNED AND DETAILED IN ACCORDANCE WITH THE BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI-318-14), AND CONSTRUCTED IN ACCORDANCE WITH THE CRSI MANUAL OF STANDARD PRACTICE.
2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE 28-DAY STRENGTH OF 3,000PSI. AIR ENTRAINMENT 4%-6% IN ALL EXPOSED CONCRETE WORK.
3. MAXIMUM WATER/CEMENT RATIOS:

   A. FOUNDATIONS 0.44
   B. INTERIOR SLABS 0.47
   C. EXTERIOR SLABS 0.44
4. ALL CONCRETE SHALL BE NORMAL WEIGHT CONCRETE (144 PCF +) WITH ALL CEMENT CONFORMING TO ASTM C150, TYPE I. MAXIMUM AGGREGATE SIZE SHALL BE 1-1/2" FOR FOOTINGS AND 3/4" FOR WALLS AND SLABS, CONFORMING TO ASTM C33.
5. REINFORCING STEEL: ASTM A615 GRADE 60.
6. WELDED WIRE REINFORCEMENT: (WWR) ASTM A-185.
7. LEVELING GROUT SHALL BE NON-SHRINK, NON-METALLIC TYPE, FACTORY PRE-MIXED GROUT IN ACCORDANCE WITH CE-CRD-C621 OR ASTM C109, WITH A MINIMUM COMPRESSIVE 28-DAY STRENGTH OF 5,000 PSI.
8. REINFORCING STEEL CLEAR COVER SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE:

   A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3"

   B. CONCRETE EXPOSED TO EARTH OR WEATHER

   #6 BARS AND LARGER 2"
   #5 BARS SMALLER 1-1/2"

   C. CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND

   SLABS, WALLS, JOISTS
   #11 BARS AND SMALLER 3/4"

   BEAMS AND COLUMNS
   PRIMARY REINFORCEMENT, TIES, STIRRUPS, OR SPIRALS
   1-1/2"
9. SUBMIT TO EOR REINFORCING STEEL SHOP DRAWINGS AND MIX DESIGNS FOR APPROVAL PRIOR TO PLACING ANY CONCRETE.
10. ALL REINFORCEMENT SHALL BE SECURELY HELD IN PLACE WHILE PLACING CONCRETE. IF REQUIRED, ADDITIONAL BARS, STIRRUPS OR CHAIRS SHALL BE PROVIDED BY THE CONTRACTOR TO FURNISH SUPPORT FOR ALL BARS.
11. LAP WELDED WIRE REINFORCEMENT TWO (2) FULL WIRE SPACES AT SPLICES AND WIRE TOGETHER.
12. PLACING OF CONCRETE SHALL NOT START UNTIL THE PLACEMENT OF REINFORCING HAS BEEN APPROVED BY THE INSPECTION AGENCY.
13. NO SLEEVE SHALL BE PLACED THROUGH ANY CONCRETE ELEMENT UNLESS SHOWN ON THE APPROVED SHOP DRAWINGS OR SPECIFICALLY AUTHORIZED IN WRITING BY THE STRUCTURAL ENGINEER.
14. COLD WEATHER CONCRETING SHALL BE IN ACCORCANCE WITH ACI-306. HOT WEATHER CONCRETING SHALL BE IN ACCORDANCE WITH ACI-305R.
15. PREPARE CONCRETE TEST CYLINDERS FROM EACH DAY'S POUR. CYLINDERS SHALL BE PROPERLY CURED AND STORED. SAMPLE FRESH CONCRETE IN ACCORDANCE WITH ASTM C172.

MASONRY NOTES

1. MASONRY CONSTRUCTION AND MATERIALS SHALL CONFORM TO ALL REQUIREMENTS OF "SPECIFICATIONS FOR MASONRY STRUCTURES" (TMS 602-13), EXCEPT AS MODIFIED BY THE REQUIREMENTS OF THESE CONTRACT DOCUMENTS.
2. COMPRESSIVE STRENGTH SHALL BE DETERMINED FOR EACH TYPE OF MASONRY BY THE UNIT STRENGTH METHOD.
   A. CONCRETE MASONRY: f'_m = 2000 PSI AT 28 DAYS.
3. SUBMITTALS SHALL BE MADE FOR THE FOLLOWING:
   A. COLD WEATHER CONSTRUCTION PROCEDURE.
   B. HOT WEATHER CONSTRUCTION PROCEDURE.
   C. MANUFACTURERS LITERATURE FOR;
      1. HORIZONTAL JOINT REINFORCING.
      2. REINFORCING STEEL POSITIONERS.
      3. MOVEMENT JOINT MATERIALS.
      4. TIES & ANCHORS.
   D. SHOP DRAWINGS SHOWING:
      1. DETAILS OF STEEL REINFORCING.
      2. LINTELS.
   E. MANUFACTURERS CERTIFICATE OF COMPLIANCE FOR SPECIFIED:
      1. MASONRY UNIT.
      2. REINFORCING STEEL.
   F. PROPORTIONS OF MATERIALS IN ACCORDANCE WITH REFERENCED SPECIFICATIONS OF:
      1. MORTAR.
      2. GROUT.
4. MATERIALS
   A. CONCRETE MASONRY UNITS: ASTM C90 TYPE I.
      1. BELOW GRADE: NORMAL WEIGHT AGGREGATE PER ASTM C33.
      2. ABOVE GRADE: LIGHTWEIGHT AGGREGATE PER ASTM C331 OR NORMAL WEIGHT.
   B. MORTAR: ASTM C270
      1. MORTAR TYPES
         A. ALL MASONRY UNLESS NOTED OTHERWISE: TYPE S
         B. NON-LOAD BEARING INTERIOR PARTITION WALLS: TYPE N
      2. PORTLAND CEMENT-LIME MORTAR:
         A. PORTLAND CEMENT: TYPE I
         B. HYDRATED LIME: TYPE S.
      3. MASONRY CEMENT MORTAR IS PERMITTED.
   C. GROUT: ASTM C476. SLUMP 8" TO 11". MINIMUM COMPRESSIVE STRENGTH = 2000 PSI AT 28 DAYS.
   D. REINFORCING STEEL: ASTM A615, ASTM A706, OR ASTM A996, 60 KSI YIELD.
   E. HORIZONTAL JOINT REINFORCING FOR SINGLE WYTHE CONCRETE MASONRY: ASTM A951 9 GAGE LADDER TYPE. HOT DIPPED GALVANIZED PER ASTM A153 CLASS B. PLACE HORIZONTAL JOINT REINFORCING AT 16" CENTERS VERTICALLY FOR CONCRETE MASONRY. LAP HORIZONTAL JOINT REINFORCING 6" MINIMUM. HORIZONTAL JOINT REINFORCING SHALL BE DISCONTINUOUS ACROSS MOVEMENT JOINTS.
5. QUALITY ASSURANCE
   1. CONCRSITE STRUCTURAL OBSERVATION (NOT CONSIDERED PART OF SPECIAL INSPECTIONS) OF MASONRY WORK IS REQUIRED PER ACI 530.1-08/TMS 602-08. SITE OBSERVATIONS WILL BE MADE BY THE STRUCTURAL ENGINEERING, ARCHITECT, OR AN ALTERNATE APPROVED BY THE STRUCTURAL ENGINEER. COST OF THIS SERVICE WILL BE PAID FOR BY OWNER. REQUEST FOR OBSERVATION IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. THE SITE OBSERVER SHALL VERIFY COMPLIANCE WITH THE DESIGN DRAWINGS AND SPECIFICATIONS AND KEEP A RECORD WHICH WILL COVER:
      1. BELOW QUALITY OF MASONRY UNITS AND MATERIALS FOR MORTAR AND GROUT.
      2. PROPORTIONING, MIXING AND CONSISTENCY OF MORTAR AND GROUT.
      3. LAYING, MORTARING AND GROUTING OF MASONRY UNITS AND MASONRY STRUCTURAL ELEMENTS.
      4. CONDITIONS, GRADE, SIZE, SPACING AND PLACING OF REINFORCING.
      5. TYPE, SPACING, AND PLACING OF TIES AND ACCESSORIES.
      6. ANY SIGNIFICANT OR UNUSUAL CONSTRUCTION LOADS ON COMPLETED MASONRY STRUCTURAL ELEMENTS.
      7. TEMPERATURE, MOISTURE CONDITIONS, AND PROVISIONS THAT WERE MADE FOR HOT OR COLD WEATHER CONSTRUCTION.
      8. GENERAL PROGRESS OF WORK.
   2. OBSERVATION RECORDS, IF DONE OTHER THAN BY STRUCTURAL ENGINEER, SHALL BE IMMEDIATELY FORWARDED TO STRUCTURAL ENGINEER AFTER EACH SITE VISIT.
6. MORTAR PROPORTIONS MUST BE ACCURATELY MEASURED PRIOR TO MIXING. CEMENT TO MIX IN FULL BAG QUANTITIES. MEASURE SAND IN BOX WITH VOLUME OF ONE CUBIC FOOT AS OFTEN AS NECESSARY TO MAINTAIN CONSISTENT PROPORTIONS AND AT LEAST ONCE DAILY AND EVERY 4 HOURS OF MIXING.
7. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS AND SPECIFICATIONS OF FIRE RATED MASONRY.
8. PROVIDE PREFABRICATED "L" AND J" SHAPED HORIZONTAL JOINT REINFORCING AT WALL INTERSECTION.
9. RUNNING BOND PATTERN SHALL BE USED FOR ALL MASONRY WORK UNLESS OTHERWISE NOTED.
10. PROVIDE MOVEMENT (CONTROL AND EXPANSION) JOINTS IN WALLS WHERE INDICATED ON ARCHITECTURAL DRAWINGS, BOND BEAMS SHALL BE DISCONTINUOUS ACROSS MOVEMENT JOINTS UNLESS NOTED OTHERWISE.
   A. MOVEMENT JOINNTS IN CONCRETE BLOCK: SASH BLOCK UNIT WITH PREFORMED SHEAR KEY. CAULK BOTH FACES. ALTERNATE DETAILS FOR CONTROL JOINTS MAY BE ACCETABLE - SUBMIT DETAILS FOR APROVAL.
   B. PROVIDE BUILDING PAPER BOND BREAK BELOW LINTEL BEARING ADJACENT TO CONTROL JOINTS.
11. UNLESS NOTED OTHERWISE ON PLANS, UNDER LINTELS, BEARING PLATES, BEAMS. ETC.; FILL CELLS WITH GROUT, 3 COURSES MINIMUM BELOW BEARING.
12. UNLESS NOTED OTHERWISE ON PLANS, LINTELS SHALL HAVE 8" MINIMUM END BEARING.
13. ALL REINFORCING STEEL SHALL BE SUPPORTED AND FASTENED TO APPROVED POSITIONERS LOCATED AT 192 BAR DIA. MAXIMUM SPACING AND WITH A MINIMUM OF TWO POSITIONERS PER GROUT POUR (ONE NEAR THE BOTTOM AND ONE NEAR THE TOP) TO PREVENT DISPLACEMENT DURING THE PLACEMENT OF GROUT.
14. GROUT ALL CELLS BELOW GRADE SOLID.
15. PROVIDE REINFORCING BAR SPLICE AS SPECIFIED IN THE FOLLOWING TABLE. BAR SPLICE COUPLERS MAY BE CONSIDERED AS A SUBSTITUTE, SUBMIT MANUFACTURER'S DATA PRIOR TO INSTALLATION.

BAR SIZE	LAP SPLICE
#4	36"
#5	45"
#6	54"
#7	63"

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100% CONSTRUCTION DOCUMENTS

INDIANA STATE UNIVERSITY - NATIONAL PAN-HELLENIC COUNCIL PLAZA

520 N 7TH ST. TERRE HAUTE, IN 47809

REVISIONS

No.	Description	Date

CERTIFIED BY:

IVAN L. TOLIVER
REGISTERED
No. PE11600373
STATE OF
INDIANA
PROFESSIONAL ENGINEER

BID ISSUED DATE: MAY 15, 2025

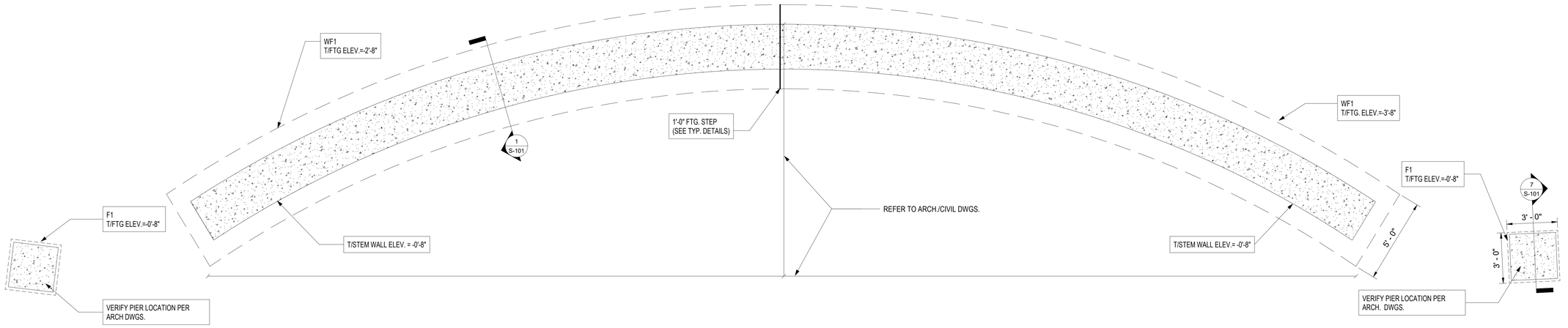
DRAWN: SF | CHECKED: IT

PROJECT NO.: P24-0112

REVISION NO.:

GENERAL NOTES

S 000



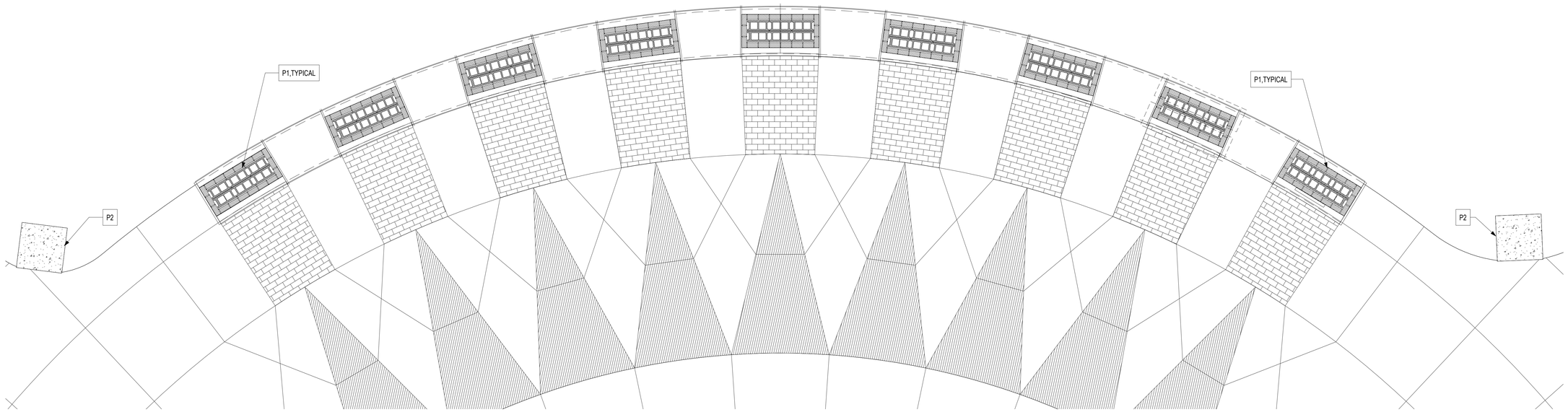
1 FOUNDATION PLAN
3/8" = 1'-0"

FOUNDATION NOTES:

1. FINISHED PAVEMENT ELEVATION PER CIVIL DRAWINGS = 501.71' AND IS REPRESENTED AS 0'-0" ON THE STRUCTURAL DRAWINGS.
2. COORDINATE ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT SHOWN.
3. SEE PLAN FOR TOP OF WALL FOOTING ELEVATIONS AND STEP FOOTING WHERE NEEDED PER TYPICAL DETAILS.
4. TOP OF STEM WALL ELEVATION = -0'-8" TYPICAL, UNLESS NOTED OTHERWISE.
5. SEE SHEET S101 FOR FOUNDATION SECTIONS AND TYPICAL DETAILS.
6. REFER TO CIVIL/ARCH. DWGS FOR PAVEMENT EXTENTS AND REQUIREMENTS.

WALL FTG. SCHEDULE						
MARK	SIZE	REINFORCEMENT	STEM WALL	VERT. REINFORCEMENT	HORIZ. REINFORCEMENT	NOTES
WF1	5'-0" W X 1'-6" D	(5) #5 BARS + (1) TRANSVERSE # 5 @ 18" O.C @ BTM.	2'-8"W X 2'-0"D	(12) #5 BARS AT EACH PIER	(2) # 5 BARS @ T&B	T/WALL ELEV.= -0'-8"

COLUMN FTG. SCHEDULE			
MARK	SIZE	REINFORCEMENT	NOTES
F1	3'-0" W X 3'-0"L X 2'-6"D	(4) # 4 BARS E/W	



2 PIER PLAN
3/8" = 1'-0"

MASONRY PIER NOTES

1. COORDINATE ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT SHOWN.
2. CONSTRUCT THE BOTTOM 3 COURSES OF THE WALL WITH 12" CMU'S.
3. THE UPPER PIERS CONSIST OF GROUTED AND REINFORCED 8" CMU'S.
4. SEE DETAILS FOR PIER AND CONCRETE CAP REINFORCEMENT REQUIREMENTS.

MASONRY PIER SCHEDULE			
MARK	SIZE	REINFORCEMENT	NOTES
P1	16"W X 48"L	(12) #5 VERT. BARS	GROUT REINFORCED CELLS
P2	24"W X24"L	(4) #4 VERT. BARS	FULLY GROUTED

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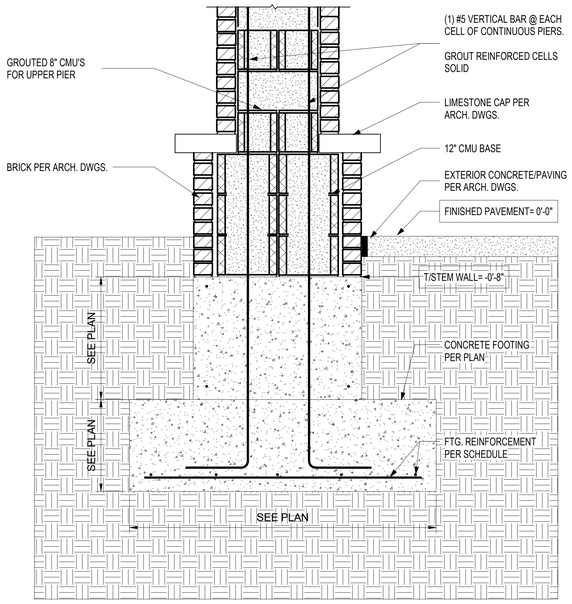
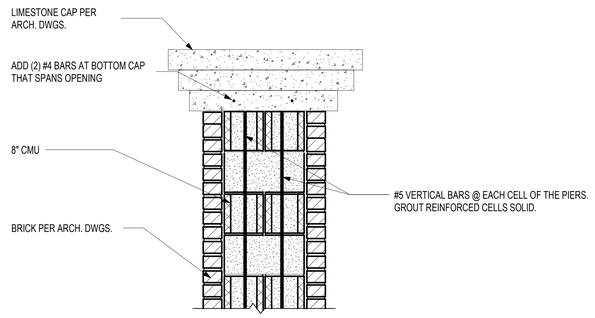
FOUNDATION PLAN

S 100

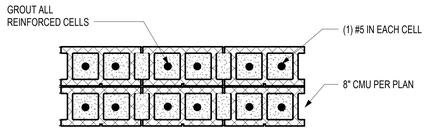


1 WALL SECTION
1" = 1'-0"



TOP OF WALL VIEW

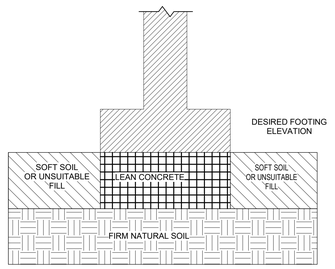
2 TOP OF WALL VIEW
1" = 1'-0"



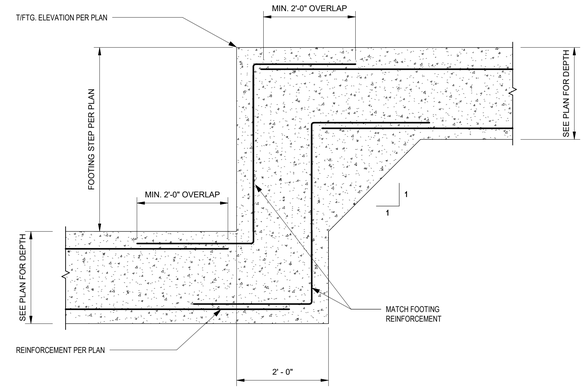
3 P1 REINFORCEMENT
1" = 1'-0"

UNDERCUT EXCAVATION FOR FOOTINGS IN UNSTABLE MATERIALS REPLACED WITH LEAN CONCRETE

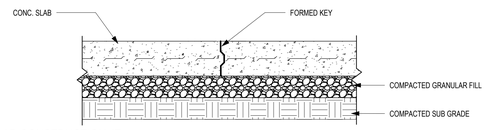
FUTURE GRADE



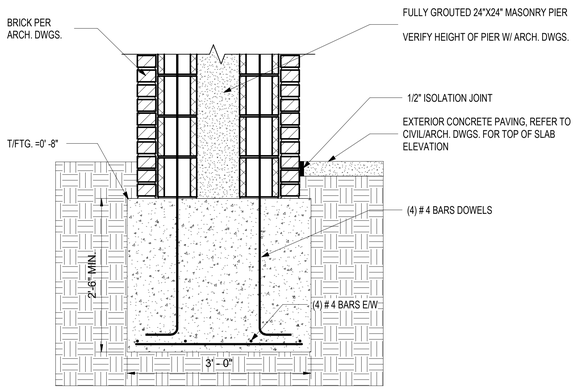
4 TYP. UNDERCUTTING DETAIL
1" = 1'-0"



5 TYPICAL STEP FOOTING DETAIL
3/4" = 1'-0"



6 TYP. SLAB CONSTRUCTION JT.
1" = 1'-0"



7 MASONRY PIER ON F1 FOOTING DETAIL
1" = 1'-0"

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BID ISSUED DATE: MAY 15, 2025

DRAWN: SF | CHECKED: IT

PROJECT NO.: P24-0112

REVISION NO.:

SECTIONS AND DETAILS

S 101

DIVISION 04 - MASONRY

SECTION 042613
MASONRY VENEER

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Clay facing brick.
B. Mortar and grout.
C. Reinforcement and anchorage.
D. Flashings.
E. Installation of lintels.
F. Accessories.

1.02 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.
B. ASTM C91/C91M - Standard Specification for Masonry Cement; 2023.
C. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.
D. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2018.
E. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2019a, with Editorial Revision.
F. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2024.
G. ASTM C476 - Standard Specification for Grout for Masonry; 2023.
H. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing; 2017.
I. BIA Technical Notes No. 28B - Brick Veneer/Steel Stud Walls; 2005.
J. BIA Technical Notes No. 46 - Maintenance of Brick Masonry; 2017.
K. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022, with Errata (2024).

1.03 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.
B. Samples: Submit four samples of facing brick units to illustrate color, texture, and extremes of color range.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

1.06 FIELD CONDITIONS

A. Maintain materials and surrounding air temperature to minimum 40 degrees F (5 degrees C) prior to, during, and 48 hours after completion of masonry work.
B. Maintain materials and surrounding air temperature to maximum 90 degrees F (32 degrees C) prior to, during, and 48 hours after completion of masonry work.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS, SEE STRUCTURAL

2.02 BRICK UNITS

A. Manufacturers:
   1. BRICKCRAFT: www.brickcraft.com.
   2. Substitutions: Not permitted.

2.03 MORTAR AND GROUT MATERIALS

A. Masonry Cement: ASTM C91/C91M Type N.
B. Portland Cement: ASTM C150/C150M, Type I; color as required to produce approved color sample.
C. Hydrated Lime: ASTM C207, Type S.
D. Grout Aggregate: ASTM C404.
E. Water: Clean and potable.

2.04 REINFORCEMENT AND ANCHORAGE

A. Masonry Veneer Anchors: 2-piece anchors that permit differential movement between masonry veneer and structural backup, hot dip galvanized to ASTM A 153/A 153M, Class B.
   1. Anchor plates: Not less than 0.075 inch (1.91 mm) thick, designed for fastening to structural backup through sheathing by two fasteners.
   2. Wire ties: Manufacturer's standard shape, 0.1875 inch (4.75 mm) thick.
   3. Vertical adjustment: Not less than 3-1/2 inches (89 mm).
B. Strap Anchors: Bent steel shapes, 1-1/2-inch (38 mm) width, 0.105-inch (2.7 mm) thickness, 24-inch (610 mm) length; with 1-1/2 inches (38 mm) long, 90-degree bend at each end to form U or Z shape or with cross pins; hot-dip galvanized in accordance with ASTM A153/A153M Class B.

2.05 FLASHINGS

A. Metal Flashing Materials:
   1. Prefabricated Metal Flashing: Smooth fabricated 12 oz/sq ft (3.66 kg/sq m) flashing for surface mounted conditions.
B. Flashing Sealant/Adhesives: Silicone, polyurethane, or silyl-terminated polyether/polyurethane, or other type required or recommended by flashing manufacturer; type capable of adhering to type of flashing used.
C. Lap Sealants and Tapes: As recommended by flashing manufacturer; compatible with membrane and adhesives.

2.06 ACCESSORIES

A. Weeps:
   1. Type: Polyester mesh.
   2. Color(s): As selected by Architect from manufacturer's full range.
B. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

2.07 MORTAR AND GROUT MIXING

A. Mortar for Unit Masonry: ASTM C270, Proportion Specification.
   1. Masonry below grade and in contact with earth; Type S.
   2. Exterior, non-loadbearing masonry; Type N.
B. Grout: ASTM C476; consistency as required to fill volumes completely for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches (50 mm) or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches (50 mm).

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive masonry.
B. Verify that related items provided under other sections are properly sized and located.

3.02 COURSING

A. Establish lines, levels, and coursing indicated. Protect from displacement.
B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
C. Concrete Masonry Units:
D. Brick Units:
   1. Bond: As shown on drawings..
   2. Coursing: Three units and three mortar joints to equal 8 inches (200 mm).
   3. Mortar Joints: Concave.

3.03 PLACING AND BONDING

A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
B. Lay hollow masonry units with face shell bedding on head and bed joints.
C. Remove excess mortar as work progresses.
D. Interlock intersections and external corners, except for units laid in stack bond.
E. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
F. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

3.04 WEEPS/CAVITY VENTS

A. Install weeps in veneer walls at 24 inches (600 mm) on center horizontally on top of through-wall flashing above shelf angles and lintels and at bottom of walls.

3.05 MASONRY FLASHINGS

A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
B. Terminate flashing up 8 inches (203 mm) minimum on vertical surface of backing:
   1. Terminate vertical leg of flashing into bed joint in masonry or reglet in concrete.
   2. Apply cap bead of sealant on top edge of self-adhered flashing.
C. Extend metal flashings through exterior face of masonry and terminate in an angled drip with hemmed edge. Install joint sealer below drip edge to prevent moisture migration under flashing.
D. Lap end joints of flashings at least 6 inches (152 mm), minimum, and seal watertight with flashing sealant/adhesive.

3.06 LINTELS

3.07 CONTROL AND EXPANSION JOINTS

A. Do not continue horizontal joint reinforcement through control or expansion joints.
B. Form expansion joint as detailed on drawings.

3.08 TOLERANCES

A. Install masonry within the site tolerances found in TMS 402/602.
B. Maximum Variation From Unit to Adjacent Unit: 1/16 inch (1.6 mm).
C. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft (6 mm in 3 m) and 1/2 inch in 20 ft (13 mm in 6 m) or more.
D. Maximum Variation from Plumb: 1/4 inch (6 mm) per story non-cumulative; 1/2 inch (13 mm) in two stories or more.
E. Maximum Variation from Level Coursing: 1/8 inch in 3 ft (3 mm in 1 m) and 1/4 inch in 10 ft (6 mm in 3 m); 1/2 inch in 30 ft (13 mm in 9 m).
F. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch (minus 6.4 mm, plus 9.5 mm).

3.09 CLEANING

A. Remove excess mortar and mortar smears as work progresses.
B. Replace defective mortar. Match adjacent work.
C. Clean soiled surfaces with cleaning solution.

SECTION 044316
STONE FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fabricated oolitic limestone and granite items.
B. Metal anchors and supports.

1.02 REFERENCE STANDARDS

A. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications; 2023a.
B. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2023.
C. ASTM C119 - Standard Terminology Relating to Dimension Stone; 2022.
D. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2019a, with Editorial Revision.
E. ASTM C568/C568M - Standard Specification for Limestone Dimension Stone; 2022.
F. ASTM C615/C615M - Standard Specification for Granite Dimension Stone; 2023.
G. ASTM C1528/C1528M - Standard Guide for Selection of Dimension Stone; 2020.
H. ILI (HB) - Indiana Limestone Handbook; 2007.

PART 2 PRODUCTS

2.01 FABRICATED ITEMS

A. Masonry Blocks: Oolitic limestone.
   1. Size: As indicated on drawings.
B. Wall Caps and Copings: Oolitic limestone.
   1. Size, Shape, and Configuration: As indicated on drawings.
   2. Top Condition: Double slope.

2.02 STONE

A. Oolitic Limestone: Indiana; complying with ASTM C568/C568M Classification II - Medium Density.
   1. Grade: ILI Standard.
   2. Color: Buff.
   3. Surface Finish: Honed; as described in ASTM C119 and ASTM C1528/C1528M.
B. Granite: Match landscape pavers.
   1. Color: Black.
   2. Surface Finish: Gloss.

2.03 MORTAR

A. Mortar: ASTM C270, Type N, Proportion specification, using Portland cement of white color.

2.04 ANCHORS AND ACCESSORIES

A. Anchors and Other Components in Contact with Stone: Stainless steel, ASTM A666 Type 304.
   1. Sizes and configurations: As required for vertical and horizontal support of stone and applicable loads.
   2. Wire ties are not permitted.
B. Support Components not in Contact with Stone: Stainless steel, ASTM A240/A240M Type 304.
C. Setting Buttons and Shims: Lead type.

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PAN-HELLENIC COUNCIL PLAZA
520 N. 7TH ST. TERRE HAUTE, IN 47809

REVISIONS

No.	Description	Date

CERTIFIED BY:

DAMON FOUNTRELL LEWIN
REGISTERED
No. AR10600160
STATE OF INDIANA
ARCHITECT

BID ISSUED DATE: MAY 15, 2025

DRAWN: J.D.S. CHECKED: J.S

PROJECT NO.: P24-0112

REVISION NO.:

ARCHITECTURAL SPECS

AS100

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
APP	APPROXIMATE
ARCH	ARCHITECT
BLKG	BLOCKING
B.O.	BOTTOM OF
BOT	BOTTOM
CJ	CONTROL JOINT
CL	CENTER LINE
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
DET	DETAIL
DIM	DIMENSION
DRWGS	DRAWINGS
EA	EACH
EJ	EXPANSION JOINT
EL	ELEVATION
ENG	ENGINEER
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
FIN	FINISH
FLR	FLOOR
FT	FEET
GA	GAUGE
HM	HOLLOW METAL
HORIZ	HORIZONTAL
JT	JOINT
MAS	MASONRY
MAX	MAXIMUM
MFR	MANUFACTURER
MIN	MINIMUM
M.O.	MASONRY OPENING
OD	OUTSIDE DIAMETER
OPP	OPPOSITE
OTO	OUT TO OUT
RB	RESILIENT BASE
REF	REFERENCE
REQD	REQUIRED
SCHED	SCHEDULE
SEC	SECTION
SIM	SIMILAR
SPECS	SPECIFICATIONS
SF	SQUARE FOOT
STD	STANDARD
STL	STEEL
T.O.	TOP OF
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
VERT	VERTICAL
W/	WITH
W/O	WITHOUT
WD	WOOD
WP	WORKING POINT

GENERAL NOTES

A. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL DIMENSIONS AND JOB CONDITIONS. ANY DEVIATION FROM WHAT IS NOTED IN DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT IMMEDIATELY.

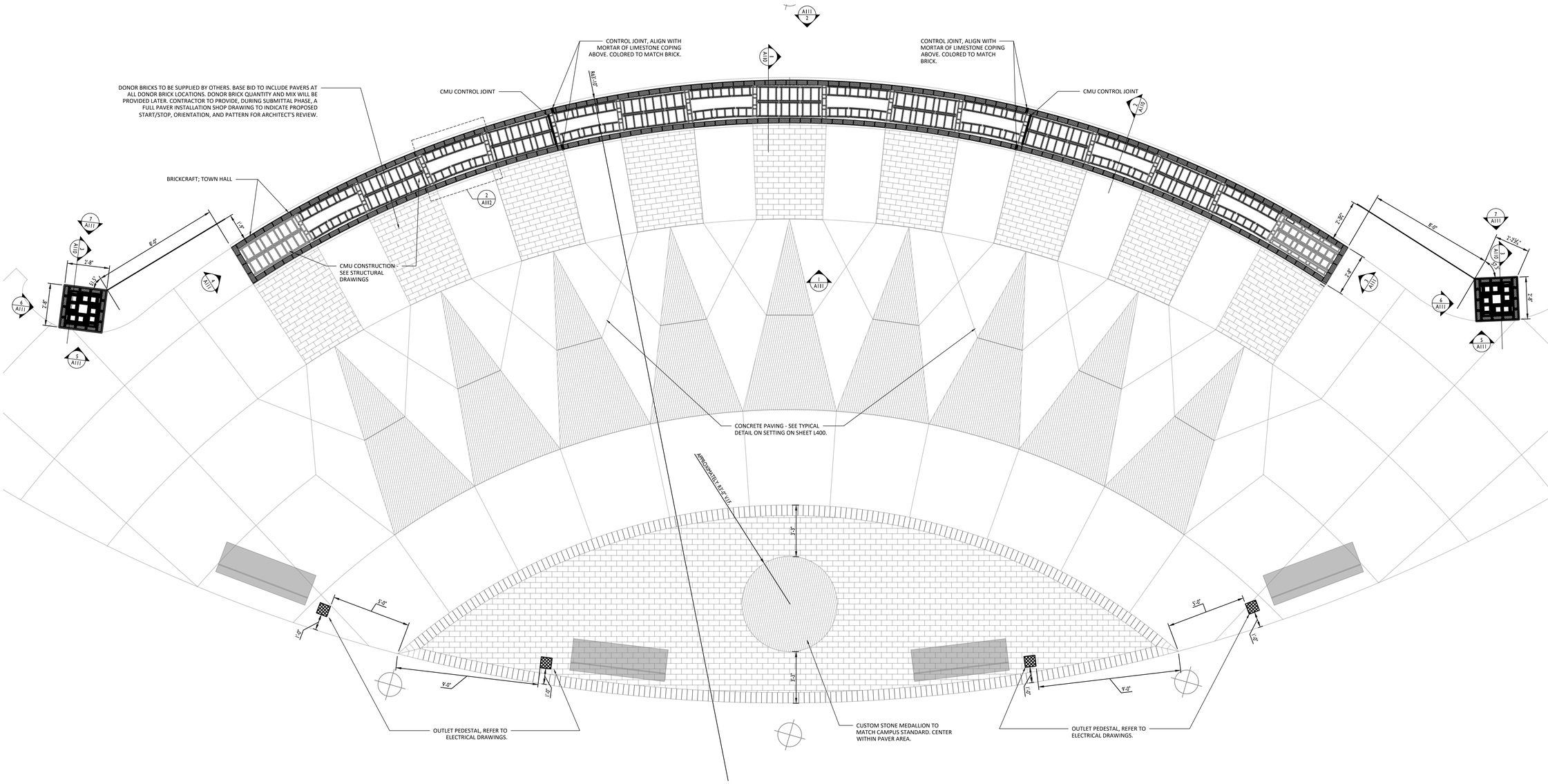
B. ALL DIMENSIONS SHOWN ARE FACE OF BRICK, MASONRY.

C. PROVIDE APPROVED FIRE RATED STOPPING MATERIALS IN ANY OPENINGS IN FIRE RATED ASSEMBLIES.

D. REFER TO EXTERIOR ELEVATIONS FOR ALL BRICK, MASONRY, AND OTHER EXPANSION JOINT LOCATIONS.

E. PRIOR TO ORDERING ANY PRODUCTS, CONTRACTOR SHALL SUBMIT SAMPLES TO THE ARCHITECT OF ALL FINISH MATERIALS TO BE USED ON THE PROJECT. THE CONTRACTOR SHALL BEAR SOLE RESPONSIBILITY FOR ANY MATERIALS ORDERED INCORRECTLY WHEN THAT MATERIAL WAS NOT REVIEWED BY THE ARCHITECT.

F. UNLESS SPECIFIED ELSEWHERE, ALL INTERIOR SLABS AND SLAB INFILLS TO BE FF-50/FL-35 OVERALL AND FF-35/FL-25 LOCAL.



1 BASE PLAN
SCALE 3/8" = 1'-0"

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ARCHITECT

BID ISSUED DATE: MAY 15, 2025

DRAWN: J.D.S. | CHECKED: J.S

PROJECT NO.: P24-0112

REVISION NO.:

LAYERED PLANS

A 101

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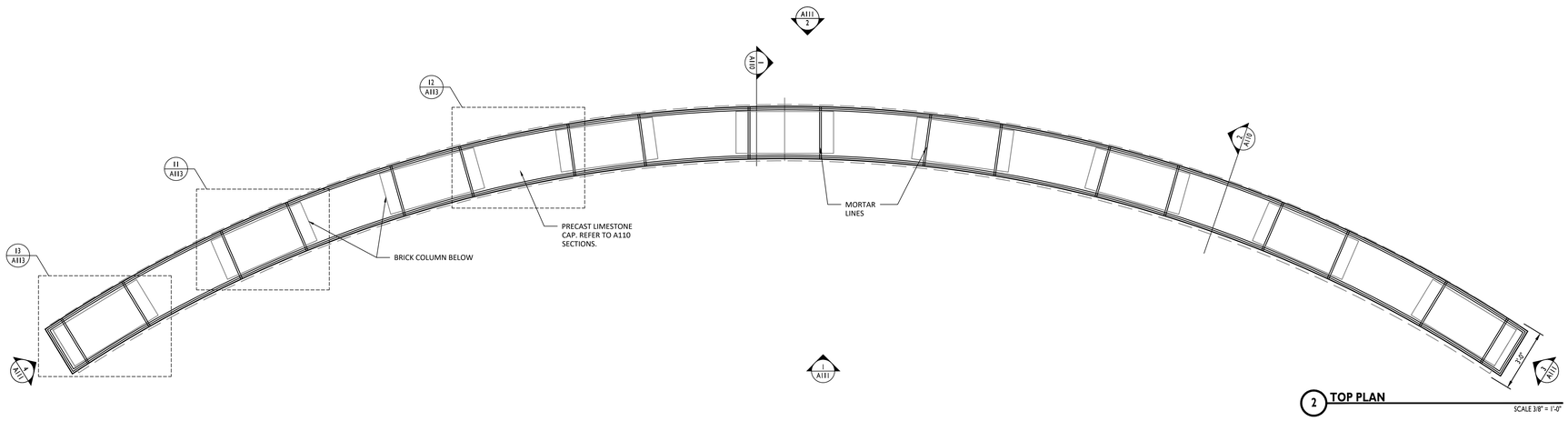
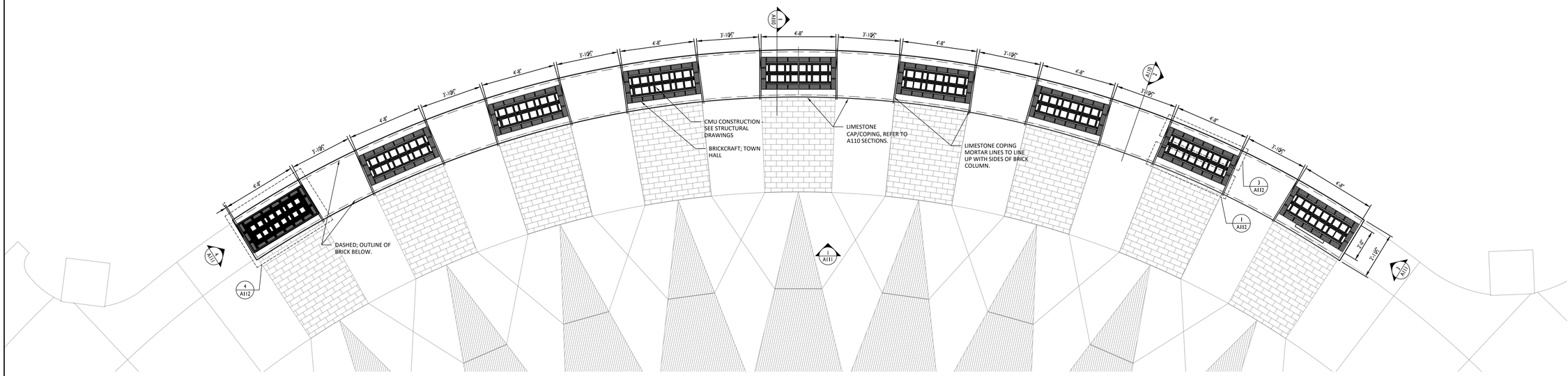


2 **TOP PLAN**
SCALE 3/8" = 1'-0"



1 **MID PLAN**
SCALE 3/8" = 1'-0"

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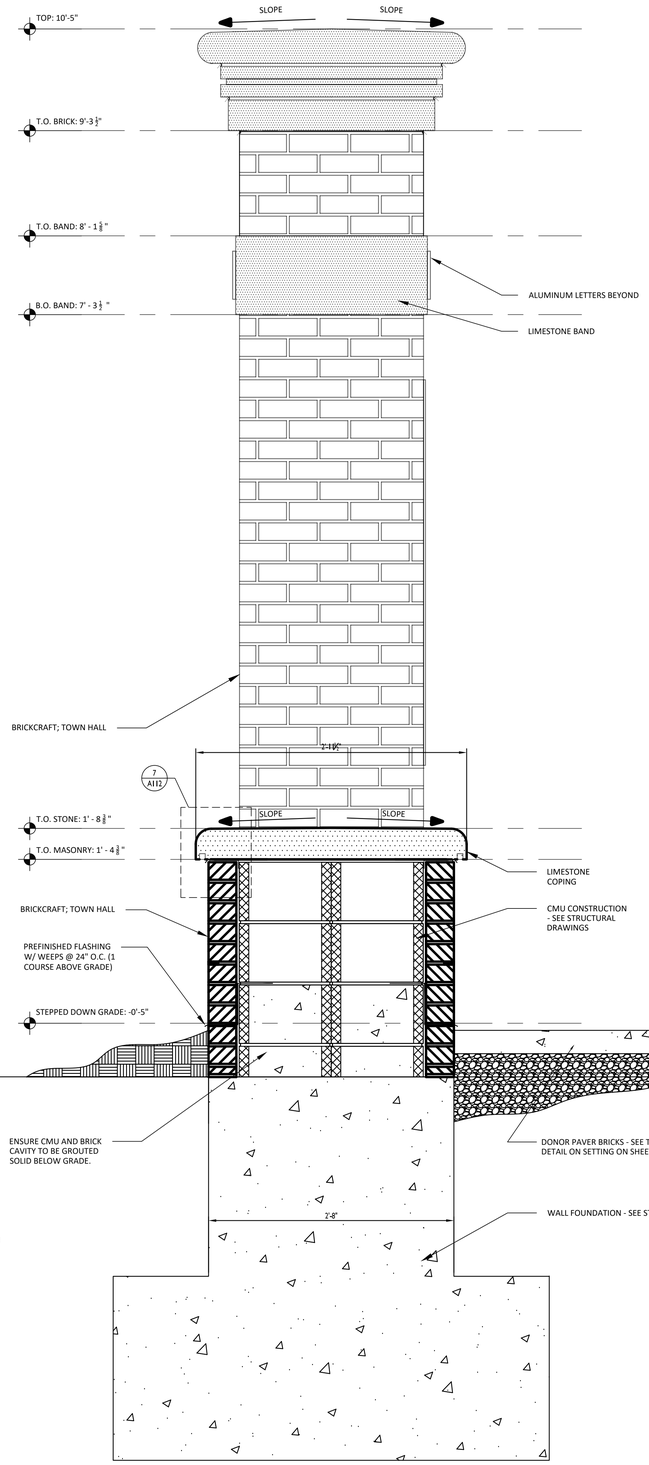
MID AND TOP PLAN

A 102

3 **RECOGNITION PIER SECTION**
1 1/2" = 1'-0"



2 **BASE WALL / COPING SECTION**
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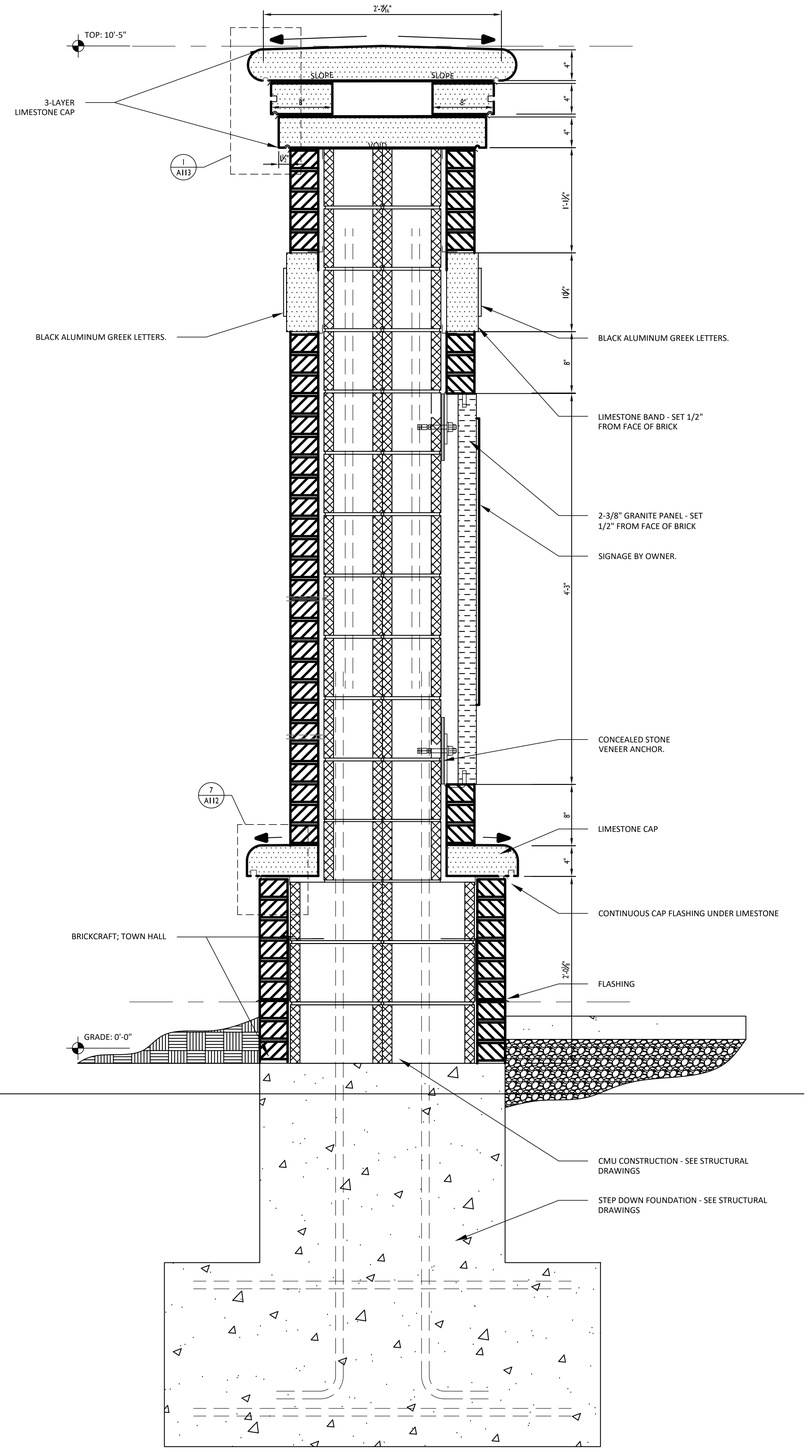

1 **WALL SECTION W/ BRICK COLUMN**
1 1/2" = 1'-0"

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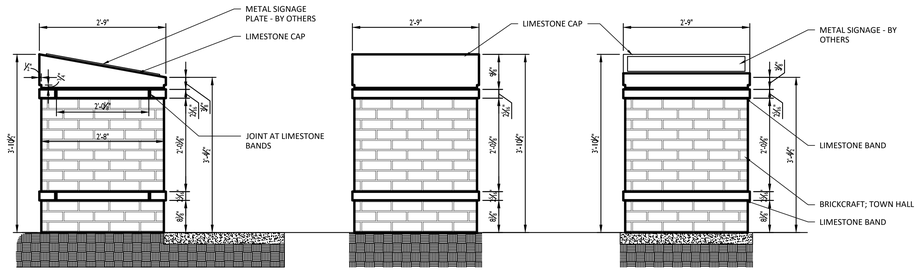
WALL SECTIONS AND DETAILS

A 110

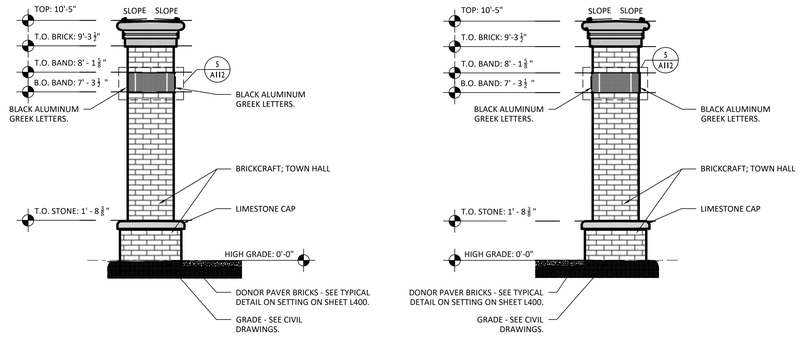
NOTE: ARCHITECTURAL GRADE ELEVATION 0'-0" = 501.71, REFER TO CIVIL DRAWINGS.



7 **PIER SIDE** 3/4" = 1'-0"

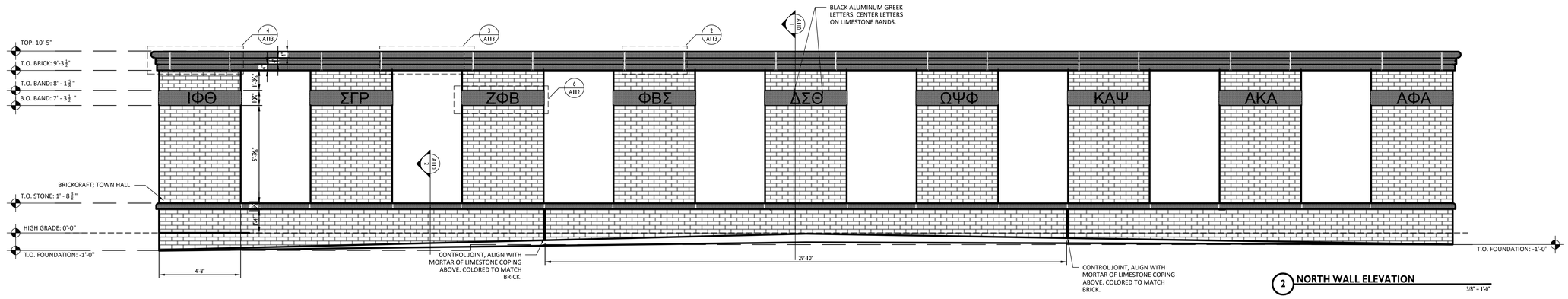
6 **PIER BACK** 3/4" = 1'-0"

5 **PIER FRONT** 3/4" = 1'-0"

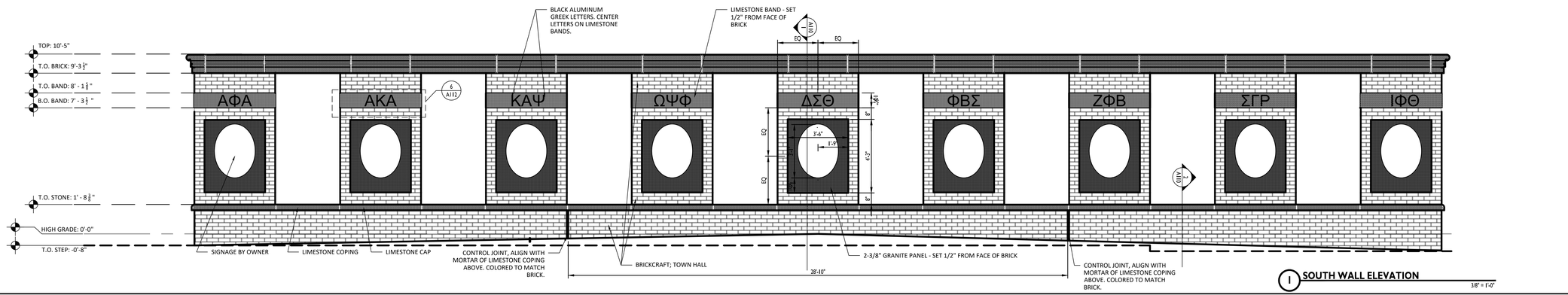


4 **NORTHWEST WALL ELEVATION** 3/8" = 1'-0"

3 **SOUTHEAST WALL ELEVATION** 3/8" = 1'-0"



2 **NORTH WALL ELEVATION** 3/8" = 1'-0"



1 **SOUTH WALL ELEVATION** 3/8" = 1'-0"

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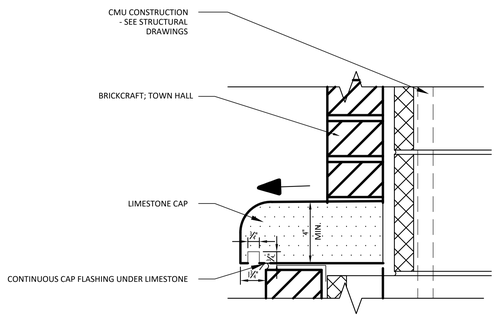
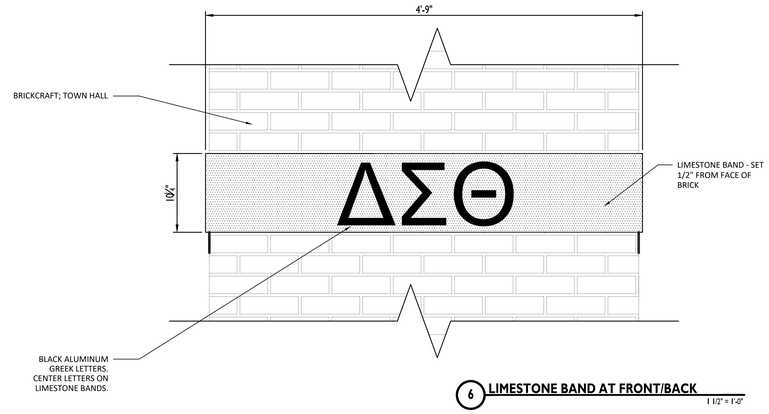
WALL ELEVATIONS

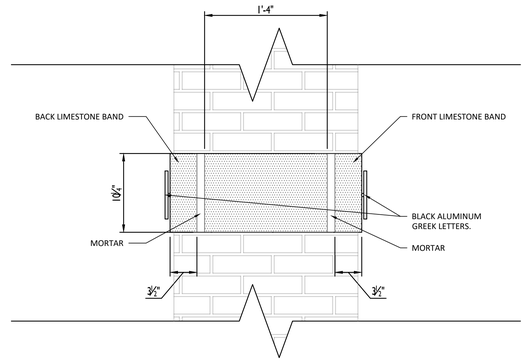
A 111



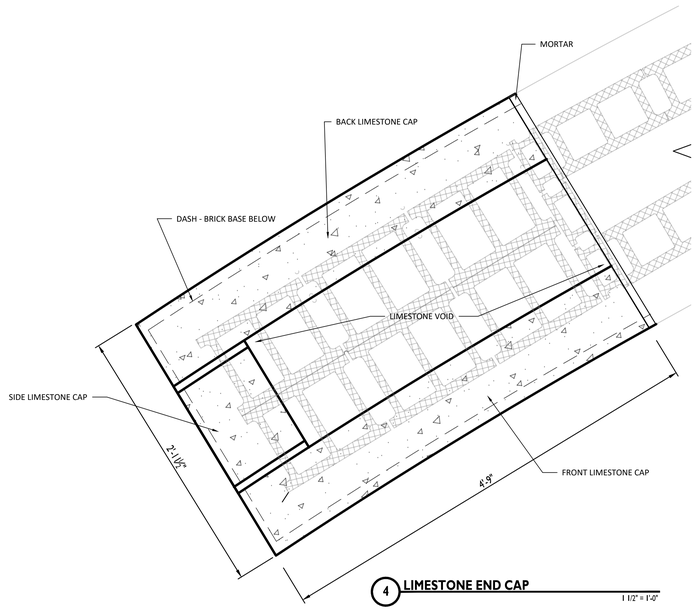
7 **LIMESTONE CAP**
3" = 1'-0"



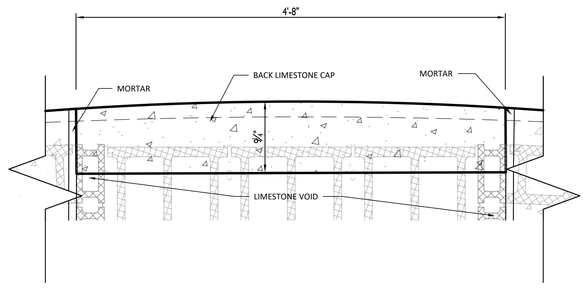
6 **LIMESTONE BAND AT FRONT/BACK**
1 1/2" = 1'-0"



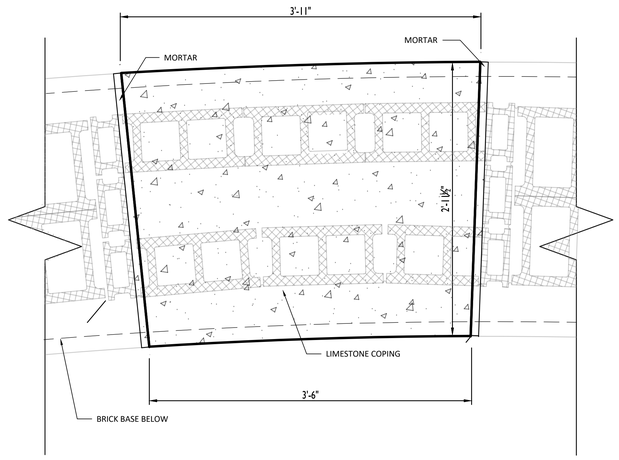
5 **LIMESTONE BAND AT SIDES**
1 1/2" = 1'-0"



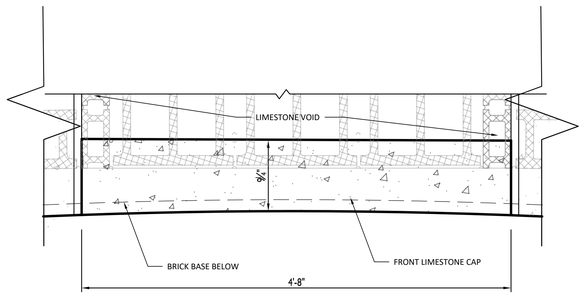
4 **LIMESTONE END CAP**
1 1/2" = 1'-0"



3 **BACK LIMESTONE CAP AT BRICK COLUMNS**
1 1/2" = 1'-0"



2 **LIMESTONE COPING BETWEEN BRICK COLUMNS**
1 1/2" = 1'-0"



1 **FRONT LIMESTONE CAP AT BRICK COLUMNS**
1 1/2" = 1'-0"

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100% CONSTRUCTION DOCUMENTS

INDIANA STATE UNIVERSITY - NATIONAL PAN-HELLENIC COUNCIL PLAZA

520 N. 7TH ST. TERRE HAUTE, IN 47809

REVISIONS

No.	Description	Date

CERTIFIED BY:

DAMON FOUNTRELL LEWIN
REGISTERED
No. AR10600160
STATE OF INDIANA
ARCHITECT

BID ISSUED DATE: MAY 15, 2025

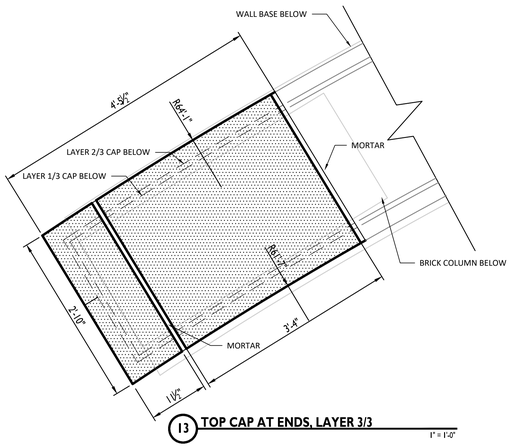
DRAWN: J.D.S. | CHECKED: J.S

PROJECT NO.: P24-0112

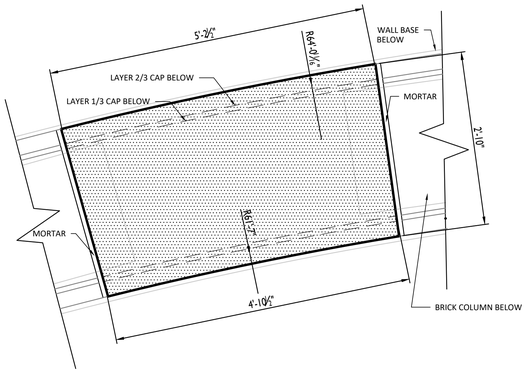
REVISION NO.:

COPING AND
BAND DETAILS

A 112



13 TOP CAP AT ENDS, LAYER 3/3
1" = 1'-0"



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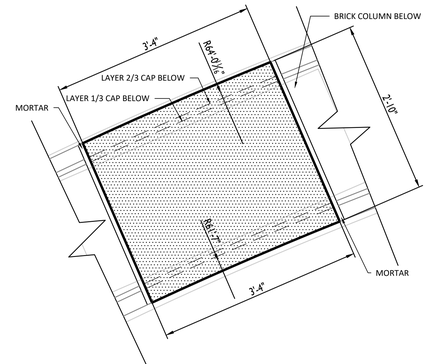

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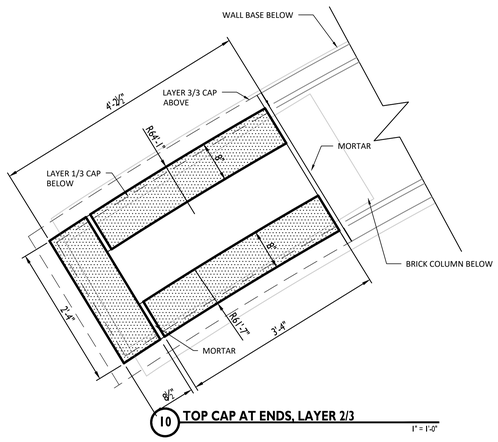

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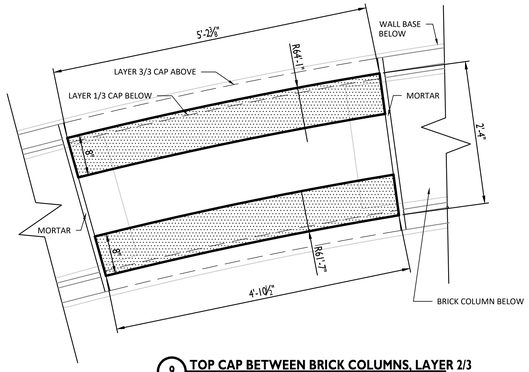

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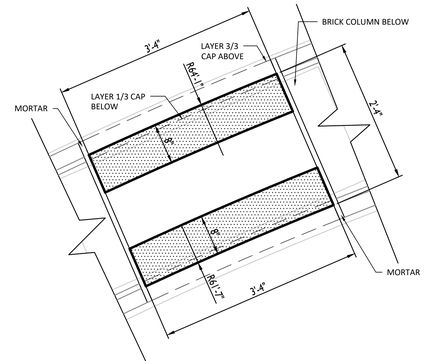

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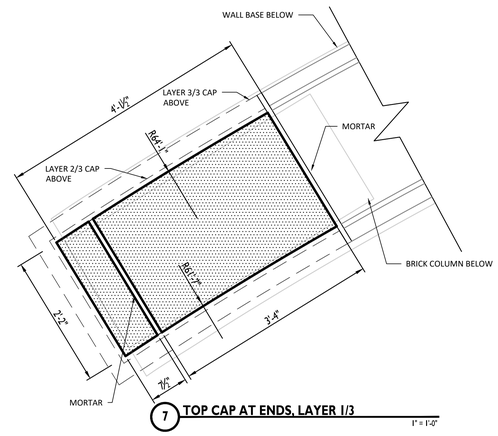

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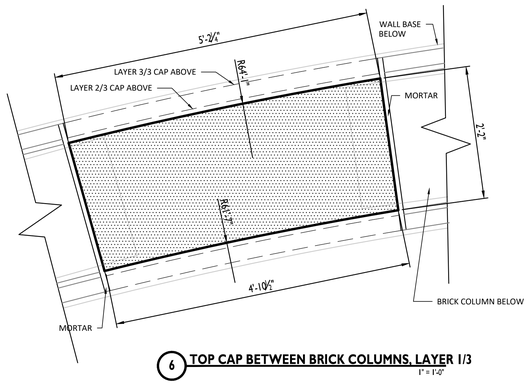
1" = 1'-0"



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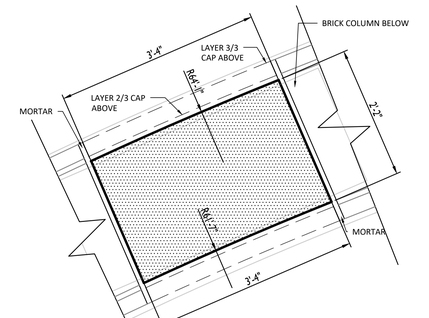

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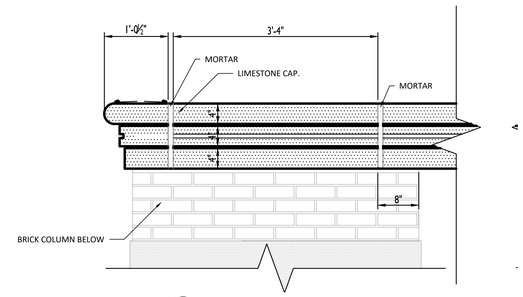

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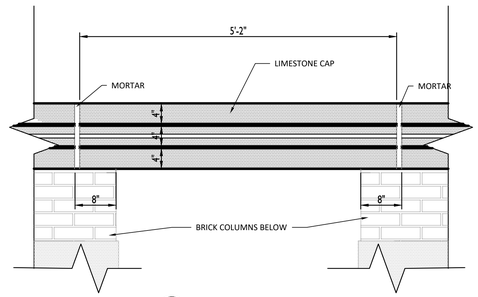
1" = 1'-0"



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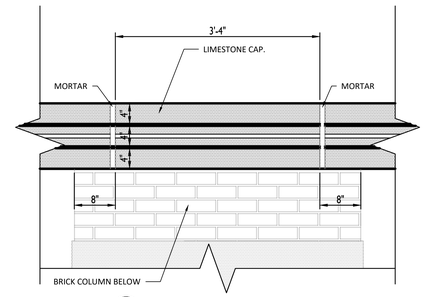
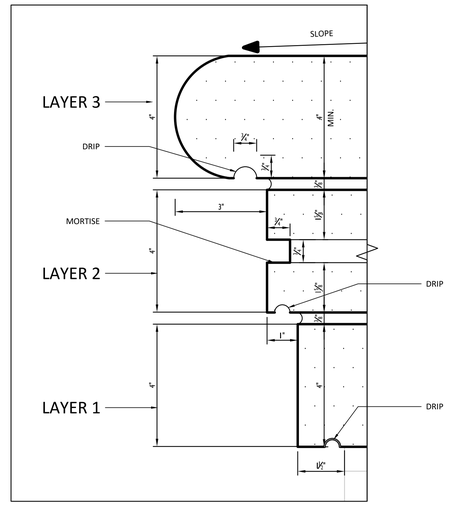
1" = 1'-0"



2 TOP CAP ABOVE BRICK COLUMN
1" = 1'-0"



1 TOP CAP PROFILE / LAYER KEY
6" = 1'-0"

METICULOUS

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REVISIONS

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BID ISSUED DATE: MAY 15, 2025
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TOP CAP DETAILS

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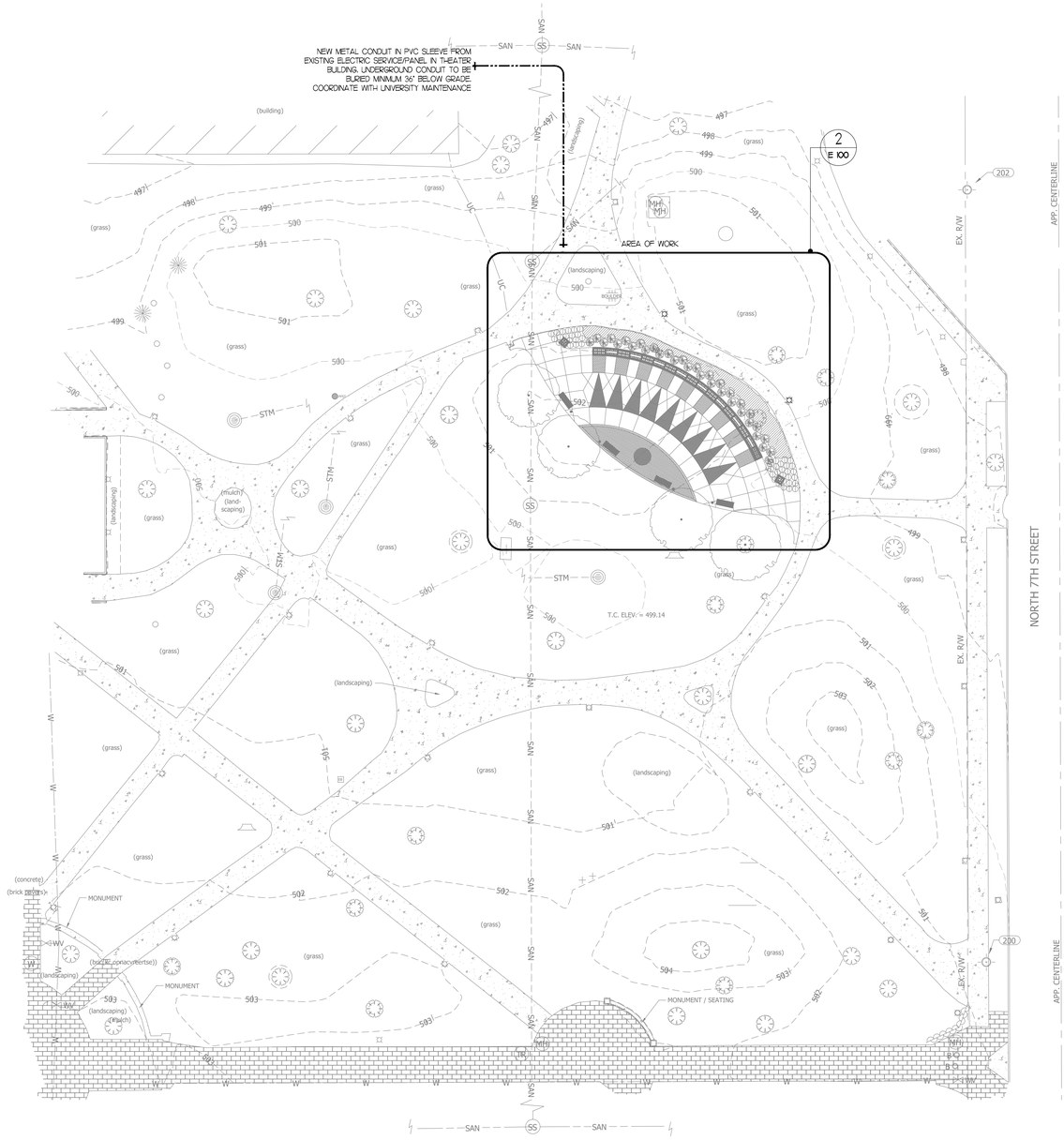
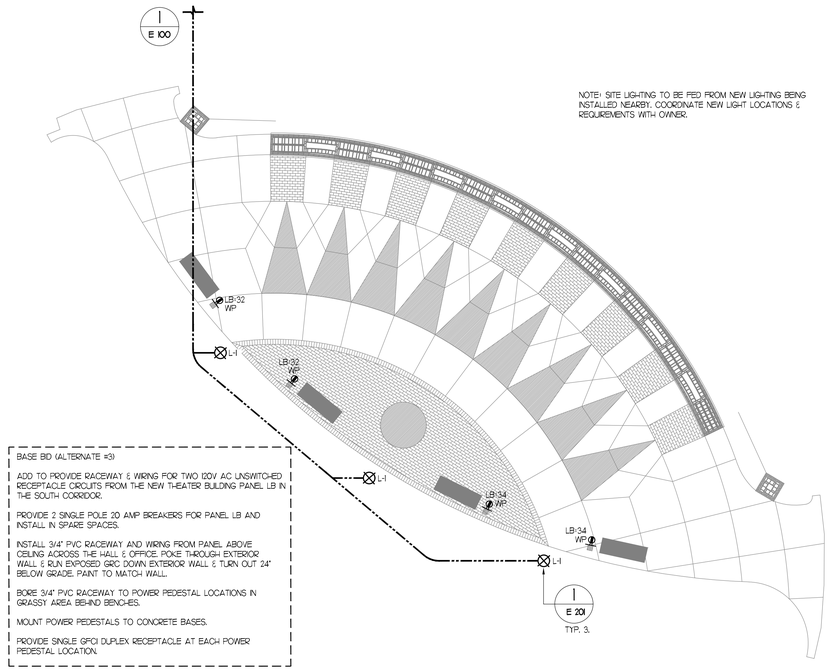
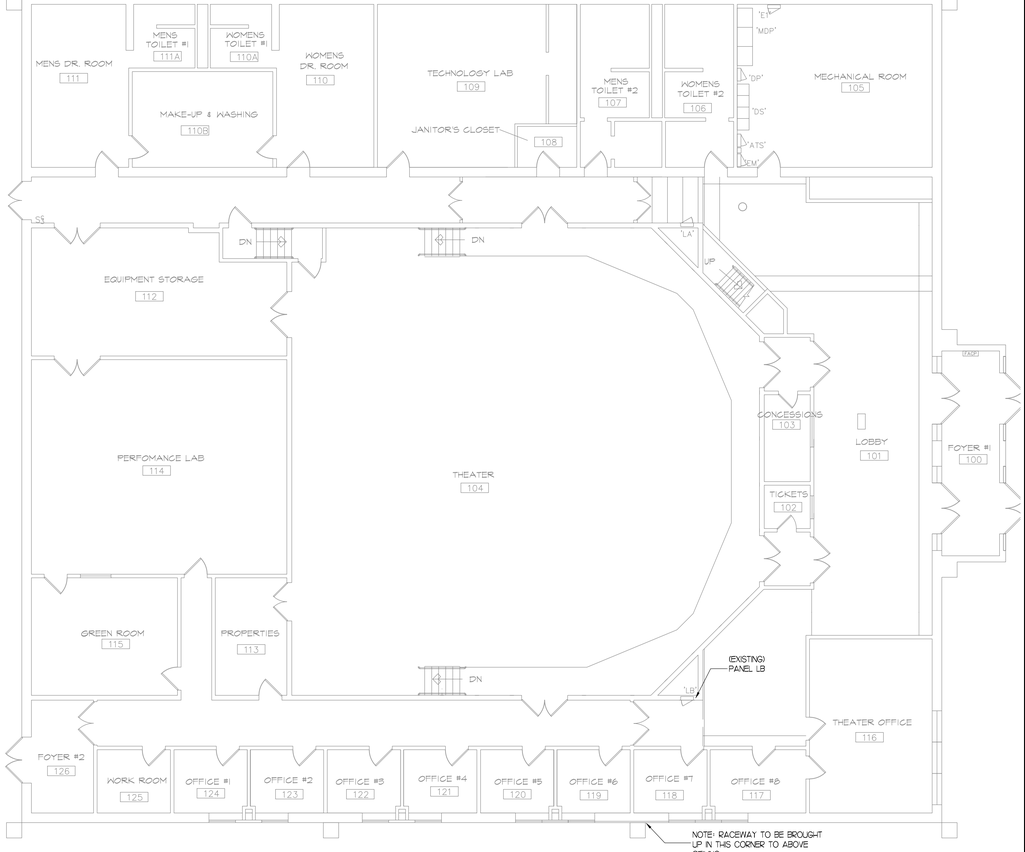


1 ELECTRICAL SITE PLAN
1" = 20'-0"



2 ENLARGED ELECTRICAL PLAN
1/8" = 1'-0"



3 THEATER BUILDING KEY PLAN
1/8" = 1'-0"

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REVISIONS

No.	Description	Date

CERTIFIED BY:

JOHN K. NEVILLE PE-11011623 LICENSED PROFESSIONAL ENGINEER OF INDIANA

MAY 15, 2025
EXPIRES 07/31/2026

BID ISSUED DATE: MAY 15, 2025

DRAWN: J.D.S. | CHECKED: J.S

PROJECT NO.: P24-0112

REVISION NO.:

ELECTRICAL PLANS

E 100

EXTERIOR LIGHT FIXTURE SCHEDULE

FIXT. NO.	DESCRIPTION	MANUFACTURER & MODEL NUMBER	VOLTAGE	LAMP QTY. & TYPE	REMARKS
L-1	LED POLE LIGHT BULB- POLE-	HOLOPHANE WAE3-P30-30K-MVOLT-MS-GL5-BK-SBR-TBK-PR7-AO-SH HOLOPHANE NYA14L5J20P07BK-CIT TOOL-AB-31-4-RFD313452	MULTI-VOLT	56W LED	NEW HOLOPHANE UTILITY WASHINGTON "POSTLITE", LED 3, LED PERFORMANCE PACKAGE P30, NOMINAL 8,600 LUMENS, FIELD ADJUSTABLE OUTPUT, 56 WATTS, 3000 SERIES CCT, SYMMETRIC TYPE 5 DIST., 120-277 AUTO SENSE VOLTAGE, SHORTING CAP, BLACK FINISH, ISU STANDARD SPIKE FINIAL/BAND/RIBS WITH A NORTH YORKSHIRE CAST ALUMINUM POLE, 14' TALL, SITE-LINK STRAIGHT L5J SHAFT, 20" DIA. CAST IRON BASE, BLACK FINISH, ANCHOR BOLTS. PROVIDE INDIVIDUAL FUSE PROTECTION AT EACH POLE. CAMPUS STANDARD, CONFIRM WITH HOLOPHANE.

NOTE: THE FIXTURES IN THIS SCHEDULE SHALL BE PROVIDED AS SPECIFIED, WITHOUT EXCEPTION. NO ALTERNATES WILL BE ACCEPTED WITHOUT UNIVERSITY APPROVAL. PROVIDE SUBMITTAL TO ENGINEER AND UNIVERSITY FOR APPROVAL PRIOR TO PURCHASE. ALL NEW LIGHTS SHALL BE LED & 3000K COLOR TEMP. VERIFY VOLTAGE IN FIELD FOR EACH LOCATION.

UNIVERSITY FACILITY CONTACT-
PATRICK TEETERS
PATRICK.TEETERS@INDIANASTATE.EDU

POWER PEDESTAL SPECIFICATION:

PEDOC
POWER PEDESTAL: 1-Gang, Hinged Cover, 24" High, Surface Mount, S.S. Powder Coated Black

NOTE: REFER TO MANUFACTURER SPECIFICATIONS FOR MOUNTING DETAIL & INSTALLATION FOR POWER PEDESTAL.

MOUNTING HEIGHTS FOR ELECTRICAL DEVICES

DEVICE	MOUNTING HEIGHTS
DISCONNECT SWITCHES, MOTOR STARTERS, MOTOR PUSH BUTTON STATIONS	60" TO CENTERLINE.

NOTES:
1. ALL DIMENSIONS ARE CONSIDERED FROM FINISHED FLOOR AND, UNLESS NOTED OTHERWISE, SHALL NOT VARY. RAISED FLOORS SHALL BE CONSIDERED FINISHED FLOOR.
2. ALL DIMENSIONS SHALL BE COORDINATED WITH ARCHITECTURAL DETAILS AND MAY BE ADJUSTED TO CONFORM WITH ARCHITECTURAL REQUIREMENTS AS LONG AS NO CODE RESTRICTION IS VIOLATED.
3. OUTLETS INSTALLED LOWER THAN 15" AFF (FORWARD REACH) AND 9" AFF (SIDE REACH) ARE IN VIOLATION OF ADA.

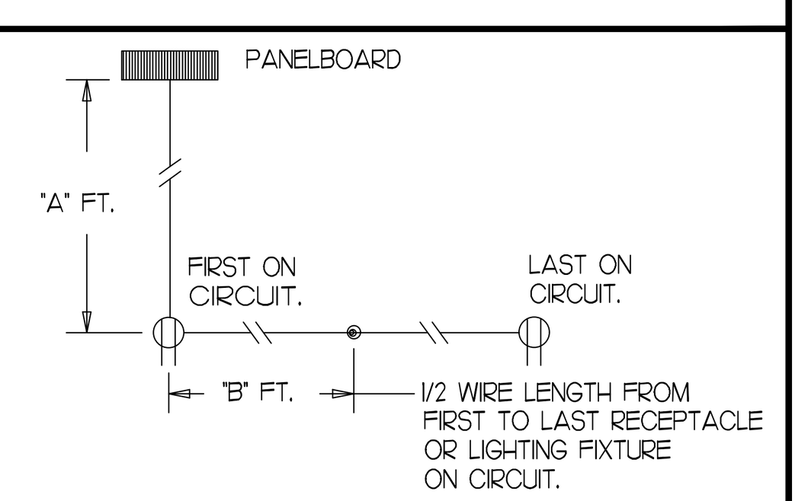
SPECIAL NOTES:

1. FOR LIGHTING FIXTURES MOUNTING HEIGHTS SEE SCHEDULE AND DRAWINGS.

WIRE SIZING TABLE

FOR MULTI-VOLT-20A BRANCH CIRCUITS ONLY (UNLESS NOTED OTHERWISE)

IF DISTANCE (A+B) IN FEET IS: (SEE DIAGRAM AT RIGHT)	USE COPPER WIRE IN METALLIC CONDUIT, AWG SIZE AS FOLLOWS ON ENTIRE CIRCUIT AND SIZE CONDUIT ACCORDINGLY.
0' TO 45'	#12 AWG (MIN.)
45' TO 72'	#10 AWG
72' TO 110'	#8 AWG
110' TO 180'	#6 AWG (MAX.)



ELECTRICAL SYMBOL LIST

	EXTERIOR POLE LIGHT: FIXTURE L-1
L-1 3a L-1 1a	"L-1" INDICATES FIXTURE TYPE, REFER TO LIGHTING FIXTURE SCHEDULE FOR DESCRIPTION AND MOUNTING "3" INDICATES CIRCUIT NUMBER "a" INDICATES SWITCH CONTROL
	LIGHTING CONTROL TIME CLOCK
	LIGHTING CONTROL PHOTOCELL
WP	DUPLEX RECEPTACLE - GFCI TYPE WITH WATER PROOF COVER
	ELECTRICAL J-BOX, CIRCUIT & CONNECTION TO EQUIPMENT/DEVICE
	ELECTRICAL BRANCH PANEL
	ELECTRICAL DISTRIBUTION PANEL
OR $	NON-FUSED DISCONNECT SWITCH - SEE EQUIPMENT CONNECTION SCHEDULE

GENERAL NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL EXISTING UNDERGROUND UTILITIES. HIRE A LOCATING SERVICE (INDIANA 811).
2. EXISTING TREES, LANDSCAPING, ETC. ARE NOT SHOWN. CONTRACTOR SHALL VERIFY IN FIELD. EXERCISE EXTREME CAUTION WHEN WORKING AROUND EXISTING TREES AND LANDSCAPING.
3. PROVIDE ALL TRENCHING AND BACKFILL AS REQUIRED. ALL UNDERGROUND CONDUIT SHALL BE SCH. 40 PVC, BUIRED A MINIMUM OF 36" BELOW FINISHED GRADE.
4. CUT AND PATCH EXISTING SIDEWALKS AND PAVEMENT AS REQUIRED. PATCH TO MATCH, OR EXCEED EXISTING CONDITION.
5. ISU SHALL PROVIDE TREE TRIMMING AS REQUIRED, FOR DEMOLITION AND INSTALLATION OF NEW LIGHTING AND TO AID IN LIGHT DISTRIBUTION. COORDINATE WITH ISU.
6. SEE DWG. E401 FOR LIGHT FIXTURE SCHEDULE AND POLE BASE DETAILS.
7. FOR LIGHT FIXTURES SHOWN TO BE REMOVED, CONTRACTOR SHALL ALSO REMOVE EXISTING CONCRETE BASE. CONTRACTOR SHALL UNCOVER EXISTING UNDERGROUND CONDUIT BACK TO A POINT TO ALLOW FOR DEMOLITION AND RECONNECTION TO NEW FIXTURE.
8. CIRCUITS INDICATED ARE FROM EXISTING PANELS, AS NOTED. VERIFY IN FIELD.
9. RETAINAGE WILL BE WITHHELD UNTIL PROJECT AND FINAL LANDSCAPING IS COMPLETE. CONTRACTOR SHALL PROVIDE TOPSOIL FOR ALL SETTLED AREAS AND PROVIDE FINAL SEEDING AT APPROPRIATE TIME (SEASON).
10. NO JOB TRAILER IS REQUIRED. MATERIAL LAY DOWN MAY BE AT THE PROJECT SITE AND SHALL BE PROPERLY PROTECTED. COORDINATE WITH ISU.
11. THE OWNER HAS FIRST RIGHT OF REFUSAL FOR SALVAGE AND WILL PROVIDE A LIST OF ITEMS TO BE SALVAGED AND DELIVERED TO STORAGE LOCATION ON CAMPUS. FOR BIDDING PURPOSES, ISU CURRENTLY HAS NO REQUEST FOR SALVAGE ON THIS PROJECT.
12. PROVIDE GROUND CONDUCTORS IN EACH RACEWAY, SAME SIZE AS CIRCUIT CONDUCTORS. BOND TO POLE AND FIXTURE.
13. FOR REWORK OF CONCRETE SIDEWALK OR PAVERS, REMOVE AND REPLACE ENTIRE SECTION(S) FROM JOINT TO JOINT. TOOL TO MATCH EXISTING.
14. THERE IS EXISTING LAWN IRRIGATION IS SOME AREAS OF THE PROJECT.
15. MINIMUM SIZE WIRE AND CONDUIT SHALL BE #6 AWG IN 1" CONDUIT, OR AS NOTED.
16. CONTRACTOR SHALL PREPARE REASONABLY ACCURATE RECORD DRAWINGS, WHICH SHALL SHOW GENERAL CONDUIT ROUTING AND WIRING.
17. EXACT ROUTING AND WIRING OF CIRCUITS IS UNKNOWN. CONTRACTOR SHALL TRACE ALL CIRCUITS PRIOR TO BEGINNING WORK.

ELECTRICAL NOTES:

1. CODES

THE WORK SHALL COMPLY WITH ALL APPLICABLE LOCAL, MUNICIPAL, AND NATIONAL CODES. WHERE THE CONSTRUCTION DOCUMENTS INDICATE MORE RESTRICTIVE REQUIREMENTS THE CONSTRUCTION DOCUMENTS SHALL GOVERN. HOWEVER, THE CONSTRUCTION DOCUMENTS SHALL NOT BE INTERPRETED AS AUTHORITY TO VIOLATE AND CODE OR REGULATION.

2. DRAWINGS AND SPECIFICATIONS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR READING AND COMPLYING WITH BOTH THE DRAWINGS AND SPECIFICATIONS. IN THE EVENT OF A CONFLICT OR INCONSISTENCY BETWEEN THE DRAWINGS, NOTES, SPECIFICATIONS, OR CODES, THE REFERENCE WHICH PROVIDES THE MORE COMPLETE OR HIGHER STANDARD SHALL PREVAIL.

3. INTERPRETATION OF THE DOCUMENTS

CAREFULLY COMPARE THE DRAWINGS AND SPECIFICATIONS, CHECKING MEASUREMENTS AND CONDITIONS UNDER WHICH THIS INSTALLATION IS TO BE MADE. FOR CLARIFICATION BETWEEN VARIOUS DRAWINGS, BETWEEN DRAWINGS OR SPECIFICATION, OR BETWEEN SECTIONS OF THE SPECIFICATION, THE MATTER SHALL BE REFERRED TO THE ENGINEER BEFORE ANY WORK IS EXECUTED. THE CONTRACTOR SHALL STATE IN THEIR PROPOSAL ANY EXCEPTIONS NECESSARY TO MAKE THIS A COMPLETE, READY TO USE INSTALLATION. IF NOT STATED IN THE PROPOSAL, IT WILL NOT BE CONSIDERED EXTRA.

4. ELECTRICAL DRAWINGS

THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL DOORS, WALLS, FURNITURE, EQUIPMENT, ETC.. THE LOCATION OF RACEWAY SYSTEM COMPONENTS IS SCHEMATIC. THE EXACT LOCATION OF RACEWAY SYSTEM COMPONENTS SHALL BE DETERMINED BY THE CONTRACTOR IN THE FIELD. THE CONTRACTOR SHALL CONFIRM THE DIMENSIONS OF THE ACTUAL EQUIPMENT TO BE SUPPLIED FOR THIS PROJECT, AND VERIFY CLEARANCES AND ROUGH-INS PRIOR TO STARTING WORK.

5. SITE EXAMINATION

BEFORE SUBMITTING A BID, THE CONTRACTOR SHALL VISIT THE SITE, EXAMINE THE PREMISES, AND MAKE A THOROUGH SURVEY OF THE EXISTING CONDITIONS. THE SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE. NO CONSIDERATION OR ALLOWANCE WILL BE GRANTED FOR FAILURE TO VISIT THE SITE OR FOR LATER CLAIMS FOR LABOR, EQUIPMENT, MATERIALS REQUIRED, OR FOR DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN SITE EXAMINATION BEEN MADE.

6. COORDINATION WITH OTHER TRADES

THE ELECTRICAL CONTRACTOR SHALL OBTAIN A COMPLETE SET OF ARCHITECTURAL AND ENGINEERING DOCUMENTS AND COORDINATE WITH MECHANICAL, PLUMBING, ARCHITECTURAL, AND OTHER TRADES FOR EXACT DIMENSIONS, CLEARANCES, ROUGH-IN LOCATIONS, AND OTHER ADDITIONAL SCOPES OF WORK THAT MAY NOT BE SHOWN ON THE ELECTRICAL PLANS. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL 120 VOLT (AND HIGHER) AC POWER TO OTHER TRADES EQUIPMENT AND HARDWARE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO, CONTROLS, FIRE AND SECURITY SYSTEMS, MOTORIZED DOORS, DAMPERS, LIFTS, AND OTHER SYSTEMS. UNLESS SPECIFICALLY NOTED OTHERWISE ON THE ELECTRICAL PLANS, THE ELECTRICAL CONTRACTOR SHALL FURNISH ALL SAFETY DISCONNECT SWITCHES TO MECHANICAL EQUIPMENT.

7. PERMITS, APPLICATIONS AND RELEASES

THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS INSPECTIONS, APPLICATIONS, RELEASES AND FEES REQUIRED BY LOCAL, STATE AND FEDERAL AGENCIES FOR THE EXECUTION OF THIS WORK. SCHEDULING OF ALL REQUIRED INSPECTIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

8. FIRE STOPPING

ALL PENETRATIONS IN WALL, FLOOR OR CEILINGS SHALL BE SUITABLY CLOSED UP AND SEALED WITH AN INTUMESCENT FIRE STOPPING COMPOUND LISTED IN THE MOST RECENT FACTORY MUTUAL RESEARCH CORPORATION (FMRC) APPROVAL GUIDE. FIRE STOPPING PRODUCTS SHALL BE MANUFACTURED BY 3M CO.

9. OWNER FURNISHED EQUIPMENT

EQUIPMENT THAT WILL BE FURNISHED BY THE OWNER WILL BE INDICATED ON A SEPARATE SCHEDULE. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER FOR DELIVERY SCHEDULES. THE CONTRACTOR IS TO ASSUME THAT ON SITE STORAGE MAY NOT BE AVAILABLE WHEN COORDINATING DELIVERY OF EQUIPMENT. THE CONTRACTOR, IN COORDINATION WITH THE OWNER'S REPRESENTATIVE, WILL INSPECT THE DELIVERY FOR ACCURACY AND SHIPMENT DAMAGE AND ACCEPTING THE EQUIPMENT. THE CONTRACTOR SHALL BE RESPONSIBLE TO STORE, PROTECT AND ULTIMATELY INSTALL THE EQUIPMENT.

10. EQUIPMENT

ALL MATERIALS AND EQUIPMENT USED IN THIS INSTALLATION SHALL BE NEW, AND HAVE THE APPROPRIATE UL LISTING AND LABEL.

11. MISCELLANEOUS SUPPORTING MEMBERS

ALL ANGLES CHANNELS, AND OTHER MISCELLANEOUS STEEL, BOLTS, RODS, ETC.. REQUIRED TO SUPPORT LIGHT FIXTURE, CONDUIT, RACEWAY, LADDER TRAY, OR OTHER ELECTRICAL EQUIPMENT OR DEVICES SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.

12. PANEL BOARDS

ALL PANEL BOARDS SHALL BE PROVIDED WITH TYPEWRITTEN DIRECTORIES. SEE PANEL SCHEDULES ON THE DRAWINGS FOR COMPLETE IDENTIFICATION AND LABELING REQUIREMENTS. PANEL DIRECTORIES SHALL HAVE SUFFICIENT DETAIL TO ALLOW EACH CIRCUIT TO BE DISTINGUISHED FROM ALL OTHERS. ADDITIONALLY, THE PANEL LABEL SHALL INCLUDE THE SOURCE OF FEED.

13. SAFETY

THE CONTRACTOR SHALL TAKE ALL STEPS NECESSARY TO ENSURE THE SAFETY OF THE OWNERS EMPLOYEES, BUILDING EMPLOYEES AND GUESTS, AS WELL AS THEIR OWN FORCES, BY ADEQUATELY PROTECTING ANY EXPOSED LIVE CONDUCTORS, OR DEVICES THROUGHOUT THE COURSE OF THIS WORK.

14. EQUIPMENT CONNECTIONS

PROVIDE FINAL CONNECTIONS FOR ALL EQUIPMENT FURNISHED UNDER OTHER DIVISIONS AND FOR ALL OWNER FURNISHED EQUIPMENT. PROVIDE A FLEXIBLE LIQUID TIGHT CONNECTION TO ALL VIBRATION PRODUCING EQUIPMENT.

15. UTILITY POWER COORDINATION

THE CONTRACTOR SHALL PERFORM ALL COORDINATION AND SCHEDULING OF LOCAL UTILITY POWER COMPANY WORK EFFORT. ANY EXCESS FACILITIES CHARGES WILL BE PAID BY THE OWNER WITHOUT MARK-UP. CONTRACTOR SHALL WORK REQUIRED FOR THE NEW SERVICE.

16. CABLING

BRANCH CIRCUITS TO RECEPTACLES, LIGHTING AND MISC. SMALL LOADS (15 OR 20 AMP CIRCUITS), UNLESS SPECIFICALLY NOTED OTHERWISE, SHALL BE 2 - #12, 1 - #12 GRD., 3/4" C. A SEPARATE NEUTRAL AND GROUND SHALL BE RUN FOR EACH CIRCUIT. SEE NOTE BELOW FOR ADDITIONAL REQUIREMENTS.

GENERAL. BRANCH CIRCUITS SHALL BE PERMITTED AS MULTIWIRE CIRCUITS. ALL CONDUCTORS OF A MULTIWIRE BRANCH CIRCUIT SHALL ORIGINATE FROM THE SAME PANELBOARD OR SIMILAR DISTRIBUTION EQUIPMENT.

EACH MULTIWIRE BRANCH CIRCUIT SHALL BE PROVIDED WITH A MEANS THAT WILL SIMULTANEOUSLY DISCONNECT ALL UNGROUNDED CONDUCTORS AT THE POINT WHERE THE BRANCH CIRCUIT ORIGINATES.

17. ARC-FLASH HAZARD

ARC-FLASH HAZARD WARNING MARKINGS SHALL BE PROVIDED ON ELECTRICAL EQUIPMENT LIKELY TO REQUIRE EXAMINATION, ADJUSTMENT, SERVICING, OR MAINTENANCE WHILE ENERGIZED TO WARN QUALIFIED PERSONS OF POTENTIAL ELECTRIC ARE FLASH HAZARDS IN ACCORDANCE WITH (NEC 110.16).

NEVILLE
ENGINEERING SERVICE, INC.
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PANEL SCHEDULE

	SURFACE MOUNT	
X	FLUSH MOUNT	
	MAIN BREAKER	AMPS
X	MAIN LUG ONLY	100 AMPS
	DOUBLE MAIN LUGS	

PANEL: (EXISTING) PANEL LB
JOB NO.: ISU SITE LIGHTING PROJECT
MAIN BUS 100 AMPS
VOLTAGE 120/240 V
PHASE 1 P
WIRE 3 W
AIC RATING 10K AMPS

CKT. NO.	BREAKER POLE	BREAKER AMP	BREAKER CLASS	DESCRIPTION	LOAD IN KVA LTG	LOAD IN KVA REC	LOAD IN KVA MTR		CKT. NO.	BREAKER POLE	BREAKER AMP	BREAKER CLASS	DESCRIPTION	LOAD IN KVA LTG	LOAD IN KVA REC	LOAD IN KVA MTR
1	1	20		NOT LABELED				A	2	1	20		NOT LABELED			
3	1	20		NOT LABELED				B	4	1	20		NOT LABELED			
5	1	20		NOT LABELED				A	6	1	20		NOT LABELED			
7	1	20		NOT LABELED				B	8	1	20		NOT LABELED			
9	1	20		NOT LABELED				A	10	1	20		NOT LABELED			
11	1	20		NOT LABELED				B	12	1	20		NOT LABELED			
13	1	20		NOT LABELED				A	14	1	20		NOT LABELED			
15	1	20		NOT LABELED				B	16	1	20		NOT LABELED			
17	1	20		NOT LABELED				A	18	1	20		NOT LABELED			
19	1	20		NOT LABELED				B	20	1	20		NOT LABELED			
21	1	20		NOT LABELED				A	22	1	20		NOT LABELED			
23	1	20		NOT LABELED				B	24	1	20		NOT LABELED			
25	1	20		NOT LABELED				A	26	1	20		NOT LABELED			
27	1	20		NOT LABELED				B	28	1	20		NOT LABELED			
29	2	25		NOT LABELED				A	30	1	20		NOT LABELED			
31								B	32	1	20		**POWER PEDESTALS**		0.36	
33	1	20		SPACE				A	34	1	20		**POWER PEDESTALS**		0.36	
35	1	20		SPACE				B	36				SPACE			
37	1	20		SPACE				A	38				SPACE			
39	1	20		SPACE				B	40				SPACE			

P-P VOLTS 240

	LTG	REC	MTR
CONNECTED LOAD - PHASE AB	0	0.36	0
CONNECTED LOAD - PHASE BC	0	0.36	0
TOTALS	0.0	0.7	0.0
TOTAL CONNECTED LOAD (KVA)		0.7	
PHASE LOADING	P A	P B	
TOTAL CONNECTED LOAD (KVA)	0.4	0.4	
TOTAL CONNECTED LOAD (AMPS)	3.0	3.0	

NOTES
EXISTING PANEL LOCATED INSIDE THEATER BUILDING. **BOLDED** CIRCUITS ARE NEW.

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100% CONSTRUCTION DOCUMENTS

INDIANA STATE UNIVERSITY - NATIONAL PAN-HELLENIC COUNCIL PLAZA

520 N. 7TH ST. TERRE HAUTE, IN 47809

REVISIONS

No.	Description	Date

CERTIFIED BY:

JOHN K. NEVILLE
PE-11011623
LICENSED PROFESSIONAL ENGINEER OF INDIANA

John K. Neville
MAY 15, 2025
EXPIRES 07/31/2026

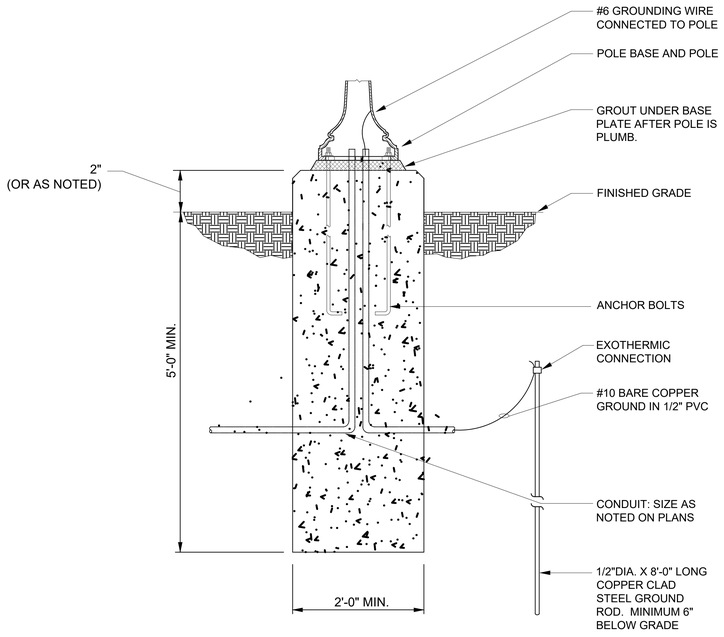
BID ISSUED DATE: MAY 15, 2025
DRAWN: J.D.S. CHECKED: J.S
PROJECT NO.: P24-0112
REVISION NO.:

ELECTRICAL SCHEDULES & NOTES

E 200

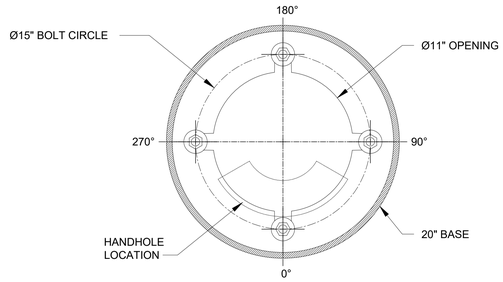
DETAIL NOTES:

1. VERIFY ANCHOR BOLT LOCATIONS WITH MANUFACTURER'S TEMPLATE PRIOR TO BASE CONSTRUCTION.
2. VERIFY THESE BASE DIMENSIONS WITH OWNER/ENGINEER PRIOR TO BEGINNING WORK.
3. DURING DEMOLITION OF EXISTING POLE BASES, CONTRACTOR SHALL CAREFULLY EXCAVATE TO LOCATE EXISTING CONDUITS AND CUT NEAR POLE BASE FOR EXTENSION TO NEW BASE. CAREFULLY REMOVE EXISTING BASE IN ORDER TO NOT DISTURB SURROUNDING EARTH ANY MORE THAN NECESSARY. EITHER REFILL EXISTING HOLE WITH COMPACTED CLEAN FILL, IN MAXIMUM 6" LIFTS, AND RE-DRILL FOR NEW BASE; OR FILL ENTIRE HOLE WITH CONCRETE TO 12" BELOW FINISHED GRADE DURING THE FORMING AND POUR OF THE NEW BASE. INTENT IS TO ENSURE THAT NEW POLE BASE IS SUPPORTED BY UNDISTURBED EARTH SO THAT IT WON'T LEAN OVER TIME AND WILL REMAIN PLUMB. COORDINATE WITH ENGINEER. ALL EXISTING WIRING SHALL BE REMOVED AND REPLACED WITH NEW, FROM PANEL TO NEW FIXTURES. REUSE AS MUCH EXISTING RACEWAY AS POSSIBLE. EXTEND RACEWAY INTO NEW POLE.
4. PROVIDE ONE SPARE CONCEALED 1" CONDUIT FROM POLE TO OUTSIDE NEW BASE AT 36" BELOW FINISHED GRADE FOR FUTURE USE. EXTEND TO NEAREST LAWN AREA.
5. CONTRACTOR SHALL HIRE PATRIOT ENGINEERING TO TEST EACH BATCH OF CONCRETE FOR COMPLIANCE TO BID DOCS.
6. POLE BASES SHALL CURE AT LEAST 7 DAYS BEFORE MOUNTING POLES. VERIFY WITH CONCRETE COMPANY AND PATRIOT ENGINEERING. ADD ACCELERATOR TO MIX AS NECESSARY. THE DESIRE IS TO LIMIT THE TIME DURATION OF BEING WITHOUT LIGHTING AS MUCH AS POSSIBLE.
7. REGRADE, REMULCH, RESEED OR REPAVE AS NECESSARY TO MATCH OR IMPROVE EXISTING CONDITION.
8. VERIFY HEIGHT OF POLE BASE FOR EACH LOCATION. TYPICALLY, IN LANDSCAPE OR LAWN AREAS = 2" EXPOSED CONCRETE ABOVE FINISHED GRADE AND IN PAVEMENT/PARKING AREAS = 30" EXPOSED CONCRETE ABOVE FINISHED GRADE.
9. PRECAST CONCRETE BASES ARE ACCEPTABLE IF THEY MEET ALL OF THE REQUIREMENTS SHOWN IN THE DETAILS SHOWN ON THIS DRAWING.
10. ANCHOR BOLTS SHALL BE CAREFULLY INSTALLED TO ENSURE THAT POLE IS CENTERED ON TOP OF CONCRETE BASE. OWNER RESERVES THE RIGHT TO REQUEST BASES BE REPOURED IF POLES ARE NOT PLUMB OR CENTERED ON BASE.



1 POLE BASE DETAIL

NO SCALE



VERIFY WITH MANUFACTURER. DO NOT USE AS A TEMPLATE.

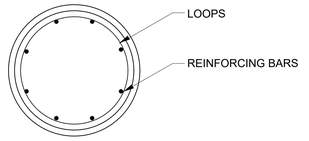
3 TYPICAL ANCHOR BOLT PLAN VIEW

N.T.S.

THIS PHOTO SHOWS A TYPICAL INSTALLATION OF A CONCRETE POLE BASE. THIS IS REPRESENTATIVE OF THE DESIRED INSTALLATION FOR THIS PROJECT.

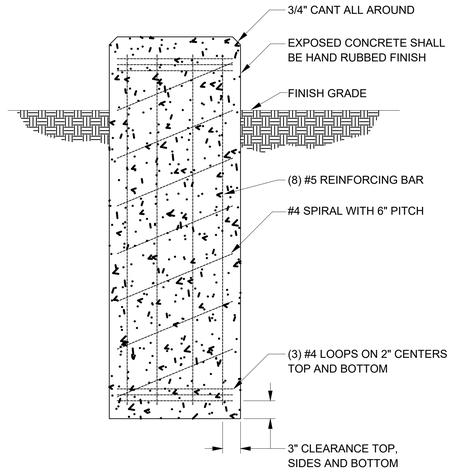
4 EXAMPLE OF CONCRETE POLE BASE INSTALLATION

NO SCALE



POLE BASE PLAN VIEW

N.T.S.



NOTES:

1. USE 4000 PSI 28 DAY STRENGTH CONCRETE FOR POLE BASE.
2. PLACE CONCRETE THE SAME DAY BASE IS DRILLED.
3. USE SONOTUBE FORM ABOVE GRADE AND EXTEND TO 6" BELOW GRADE.
4. REFER TO "POLE BASE DETAIL" FOR DIMENSIONS.

2 POLE BASE CONCRETE AND REINFORCING DETAIL

NO SCALE

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ELECTRICAL DETAILS & NOTES

E 201

26 05 00
COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL, SUPPLEMENTARY, AND SPECIAL CONDITIONS APPLY TO ALL ELECTRICAL WORK.

1.02 DESCRIPTION OF WORK

A. SECTION 260500 APPLIES TO ALL ELECTRICAL MATERIALS, EQUIPMENT, INSTALLATIONS AND SERVICES SUPPLIED UNDER ANY PORTION OF THE WORK.
B. ALL WORK MUST MEET OR EXCEED ALL LOCAL, STATE AND FEDERAL CODES AND ADA GUIDELINES.
C. ALL ELECTRICAL CONTRACTOR OR ELECTRICAL SUB-CONTRACTOR WORK SHALL BE PERFORMED BY A LICENSED AND BONDED ELECTRICAL CONTRACTOR WITH AT LEAST FIVE (5) YEARS OF SUCCESSFUL INSTALLATION EXPERIENCE ON PROJECTS WITH ELECTRICAL WORK SIMILAR TO THIS PROJECT.
D. THE ELECTRICAL CONTRACTOR OR ELECTRICAL SUB-CONTRACTOR SHALL COORDINATE THE BASIC REQUIREMENTS AS APPLICABLE TO ANY EQUIPMENT, INSTALLATIONS AND SERVICES OF AN ELECTRICAL NATURE.
E. IT IS THE INTENTION OF THIS DIVISION OF THE SPECIFICATIONS AND THE ACCOMPANYING DRAWINGS TO DESCRIBE AND PROVIDE FOR THE FURNISHING, INSTALLING, TESTING AND PLACING IN SATISFACTORY AND SUCCESSFUL OPERATION ALL EQUIPMENT, MATERIALS, DEVICES AND NECESSARY APPURTENANCES TO PROVIDE A COMPLETE ELECTRICAL SYSTEM.
F. THE CONTRACT DRAWINGS INDICATE THE EXTENT AND THE GENERAL LOCATION AND ARRANGEMENT OF EQUIPMENT, CONDUIT AND WIRING. THE GENERAL CONTRACTOR AND THEIR ELECTRICAL SUB-CONTRACTOR SHALL STUDY THE PLANS AND DETAILS AND SHALL COORDINATE WITH ALL OTHER TRADES TO PREVENT CONFLICT AND INTERFERENCE WITH OTHER INSTALLATIONS.
G. THE ELECTRICAL CONTRACTOR OR THE ELECTRICAL SUB-CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF A COMPLETE AND OPERATING ELECTRICAL SYSTEM IN ACCORDANCE WITH THE INTENT OF THE DRAWINGS AND SPECIFICATIONS.
H. ANY MINOR CHANGES IN LOCATION OF EQUIPMENT AND CONDUITS FROM THOSE SHOWN ON THE PLANS SHALL BE MADE WITHOUT EXTRA CHARGE IF SO DIRECTED BY THE OWNER PRIOR TO INSTALLATION.
I. ALL EQUIPMENT SHALL BE INSTALLED SUCH THAT MAINTENANCE AND SERVICE MAY BE PROPERLY ACCOMPLISHED. IF NECESSARY, THE OWNER MAY AT THEIR OPTION REQUIRE THE CONTRACTOR TO DEMONSTRATE THE SERVICE ON ANY PIECE OF EQUIPMENT TO DETERMINE SUFFICIENT SERVICE SPACE EXISTS. IF SERVICE SPACE IS NOT ADEQUATE, THE EQUIPMENT SHALL BE RELOCATED AT NO ADDITIONAL COST TO THE OWNER SO THAT SUFFICIENT SERVICE SPACE IS ACHIEVED.

1.03 PERMITS AND FEES

A. THIS WORK SHALL INCLUDE THE PROCUREMENT OF AND PAYMENT FOR ALL PERMITS AND FEES FOR THE PERFORMANCE OF THE ELECTRICAL WORK.

1.04 SUBMITTALS

A. THE FOLLOWING ITEMS THAT SHALL BE SUBMITTED FOR APPROVAL PRIOR TO ORDERING. SUBMIT INDIVIDUALLY BY THE APPROPRIATE SPECIFICATION SECTION NUMBER.
1. RACEWAY (UNLESS SPECIAL RACEWAY IS SPECIFIED A LETTER ON COMPANY LETTERHEAD STATING THE PRODUCTS TO BE USED ARE IN CONFORMANCE WITH THE SPECIFICATIONS IS ACCEPTABLE AS A SUBMITTAL. CHECK WITH ENGINEER/OWNER)
2. WIRE (UNLESS SPECIAL WIRE IS SPECIFIED A LETTER ON COMPANY LETTERHEAD STATING THE PRODUCTS TO BE USED ARE IN CONFORMANCE WITH THE SPECIFICATIONS IS ACCEPTABLE AS A SUBMITTAL. CHECK WITH ENGINEER/OWNER)
3. WIRING DEVICES AND COVERS
4. LIGHTING FIXTURES
5. DISCONNECT SWITCHES
6. MOTOR STARTERS
7. PANELBOARDS AND SWITCHBOARDS
8. FIRE ALARM
9. OTHERS AS REQUIRED BY THE RELATED DIVISION 26 SECTION.
B. SUBMISSION OF THE ABOVE INFORMATION SHALL BE ELECTRONICALLY IN ISU APPROVED PDF FORMAT.

1.05 PROJECT CLOSEOUT

A. ON ELECTRICAL PRIME PROJECTS ONE SET OF ALL PROJECT DOCUMENTS SHALL BE SUBMITTED ELECTRONICALLY IN PDF FORMAT ON A USB FLASH DRIVE. THE FOLLOWING IS A LIST, BUT NOT LIMITED TO, OF REQUIRED DOCUMENTATION TO BE INCLUDED ON THE USB FLASH DRIVE:
1. BID FORM
2. AWARD LETTER AND CONTRACT FOR CONSTRUCTION
3. MEETING MINUTES AND SUPPORTING DOCUMENTATION.
4. REVIEWED SUBMITTALS AND REVIEWED SHOP DRAWINGS
5. ALL CHANGE DOCUMENTATION, E.G. ASI, RFI, CCD, RFP, CP, CO, ETC.
6. PAY APPLICATIONS
7. INSTALLATION INSTRUCTIONS AND SCHEMATIC DRAWINGS
a. COMPLETE PARTS LIST WITH MANUFACTURER'S MODEL NUMBERS.
b. COMPLETE WIRING DIAGRAMS SHOWING ALL CONNECTIONS AND INTERNAL WIRING. FACTORY TYPICAL WIRING DIAGRAMS ARE NOT ACCEPTABLE.
8. OPERATING AND MAINTENANCE INSTRUCTIONS.
9. WARRANTY AND GUARANTEE INFORMATION
10. SUBSTANTIAL COMPLETION DOCUMENTS TO DETERMINE START OF WARRANTY PERIOD
B. WHEN INDIVIDUAL SPECIFICATION SECTIONS CALL FOR CLOSE-OUT SUBMISSION THEY MAY BE COMBINED ON A MASTER PROJECT CLOSE-OUT USB FLASH DRIVE WITH ITEMIZED FILES AND SUB-FILES FOR EACH SECTION.
C. ADDITIONALLY, SUBMIT ONE HARD COPY OF THE O&M'S IN A 3-RING BINDER AND UNFOLDED RECORD DRAWINGS.
D. PRIOR TO RELEASE OF FINAL PAYMENT, INDIANA STATE UNIVERSITY MUST RECEIVE A COMPLETE SET OF RECORD DRAWINGS IN AUTOCAD 2010 ON A CD OR DVD. THE DESIGN ENGINEER AND THE INDIANA STATE UNIVERSITY DEPARTMENT OF FACILITIES MANAGEMENT ENGINEERING STAFF MUST APPROVE THESE DRAWINGS.

1.06 COPPER REQUIREMENTS FOR ELECTRICAL EQUIPMENT

A. ALL CURRENT-CARRYING COMPONENTS (PHASE, NEUTRAL AND GROUND) OF ALL ELECTRICAL EQUIPMENT SHALL BE COPPER. NO CUAL ALLOWED WITHOUT PRIOR APPROVAL OF OWNER.
B. EXCEPTIONS: MOLDED CASE CIRCUIT BREAKERS WITH IN-BUILT LUGS AND SAFETY SWITCHES.

1.07 UNDERGROUND UTILITIES

A. ALL UNDERGROUND UTILITY LINES SHALL BE BURIED A MINIMUM OF 366 BELOW FINISHED GRADE.
B. PLACE 36 OF COMPACTED RED SAND BELOW ALL BURIED UTILITY LINES AND COVER WITH 126 OF RED SAND.
C. REMAINDER OF THE TRENCH SHALL BE BACK FILLED WITH NEW TOPSOIL FREE OF DEBRIS, COMPACTED IN 66 LIFTS TO 98% STANDARD PROCTOR USING THE WATER JET METHOD.
D. INSTALL THE APPROPRIATE 66 WIDE MARKER TAPE A MINIMUM OF 126 ABOVE ANY BURIED UTILITY LINE.

1.08 NEUTRAL RULES

A. NEUTRAL RULES AND REQUIREMENTS FOR MULTI-CIRCUIT BRANCH RACEWAY INSTALLATIONS.
1. A SEPARATE DEDICATED NEUTRAL SHALL BE INSTALLED FOR EVERY PHASE CONDUCTOR IN A MULTI-CIRCUIT 120-VOLT OR 277-VOLT RACEWAY.
2. NEUTRALS SHALL BE MARKED IN SUCH A WAY AS TO PREVENT THE ACCIDENTAL CROSSING OF NEUTRALS AT DEVICE LOCATIONS.
3. NEUTRALS IN 120-VOLT APPLICATIONS SHALL BE WHITE, GRAY IN 277-VOLT APPLICATIONS.
4. THIS INCLUDES PRE-WIRED RACEWAY SYSTEMS SUCH AS ISODUCT AND SYSTEMS FURNITURE.
5. NO SHARING OF NEUTRALS IS ALLOWED.
B. OVER SIZING OF NEUTRAL CONDUCTORS SHALL NOT BE ALLOWED IN LIEU OF THE PRECEDING RULES AND REQUIREMENTS.
C. THESE RULES SUPERCEDE ANY OTHER NEUTRAL INSTRUCTIONS EITHER WRITTEN OR IMPLIED IN ANY OTHER SPECIFICATION SECTION OR SHOWN ON DRAWINGS.

1.09 RACEWAY SYSTEMS INSTALLATION SUMMARY

A. PROVIDE CONDUITS, CABLE TRAYS, SURFACE RACEWAYS, BOXES, FITTINGS AND SUPPORTS TO FORM A COMPLETE, COORDINATED, AND CONTINUOUSLY GROUNDED RACEWAY SYSTEM.
B. NO MORE THAN THREE (3) SINGLE PHASE (120VOLT AND 277VOLT) CIRCUITS SHALL BE INSTALLED IN A CONDUIT RACEWAY SYSTEM.

1.10 RACEWAY REQUIREMENTS

A. CONDUITS INDOORS IN GENERAL AREAS SHALL BE ELECTRICAL METALLIC TUBING (EMT) WITH STEEL SET SCREW OR COMPRESSION FITTINGS.
B. CONDUITS INDOORS IN HAZARDOUS AREAS, ENCASED IN CONCRETE FLOOR SLABS OR SUBJECTED TO WATER, PHYSICAL DAMAGE OR ABUSE SHALL BE GALVANIZED RIGID STEEL (GRS) OR INTERMEDIATE METAL CONDUIT (IMC) WITH CAST OR MALLEABLE IRON THREADED FITTINGS AND BUSHINGS.
C. CONDUITS INDOORS FOR MEDIUM VOLTAGE DISTRIBUTION CIRCUITS OR FOR FIRE PUMP FEEDERS SHALL BE GALVANIZED RIGID STEEL CONDUIT WITH CAST OR MALLEABLE IRON THREADED FITTINGS AND BUSHINGS.
D. CONDUITS OUTDOORS SHALL BE GALVANIZED RIGID STEEL OR INTERMEDIATE METAL CONDUIT WITH CAST OR MALLEABLE IRON THREADED FITTINGS AND BUSHINGS.
E. CONDUITS ENCASED IN CONCRETE UNDERGROUND SHALL BE TYPE DB PVC FOR IT APPLICATIONS AND SCHEDULE 80 FOR MV APPLICATIONS BOTH WITH MATCHING FITTINGS.
F. CONDUITS DIRECT BURIED UNDERGROUND SHALL BE SCHEDULE 40 PVC WITH MATCHING FITTINGS.
G. CONDUITS IN STEAM TUNNELS SHALL BE GALVANIZED RIGID STEEL OR INTERMEDIATE METAL CONDUIT WITH CAST OR MALLEABLE IRON THREADED FITTINGS AND BUSHINGS. EXCEPTIONS TO THIS REQUIREMENT ARE TUNNEL SEGMENTS INSIDE BUILDING (I.E., MECHANICAL ROOMS) WHERE EMT MAY BE USED.
H. FINAL CONNECTIONS TO RECESSED LIGHTING FIXTURES AND UNDER COUNTER LIGHTS SHALL BE 1/2" MINIMUM FLEXIBLE METALLIC CONDUIT, MANUFACTURED WIRING SYSTEMS, OR GALVANIZED STEEL TYPE MC CABLE ALL WITH STEEL FITTINGS.
1. MANUFACTURED WIRING SYSTEMS SHALL
a. ONLY BE USED ABOVE ACCESSIBLE CEILINGS.
b. SHALL NOT BE USED IN WALLS OR ABOVE PERMANENT CEILINGS.
c. SHALL CONTAIN A DEDICATED, SEPARATE, GROUNDING CONDUCTOR.
2. TYPE MC CABLE CONDUCTORS SHALL BE COLOR CODED TO MATCH THE BUILDING COLOR-CODING SCHEME. TYPE MC CABLE SHALL BE TERMINATED WITH STEEL SETSCREW CONNECTORS THAT HAVE INTEGRAL INSULATING BUSHINGS. SELF-LOCKING, TWIST-IN TYPE FITTINGS ARE NOT ACCEPTABLE.
I. FINAL CONNECTIONS TO MOTORS, TRANSFORMERS AND EQUIPMENT SUBJECT TO VIBRATION OR REMOVAL FOR MAINTENANCE SHALL BE 1/2" MINIMUM LIQUID TIGHT FLEXIBLE METALLIC CONDUIT WITH STEEL LIQUID TIGHT FITTINGS. TRANSFORMER CONNECTIONS MAY BE NON-LIQUID TIGHT FLEXIBLE METALLIC CONDUIT IN ELECTRICAL ROOMS ONLY.
J. CONNECTIONS TO RECESSED POWER RECEPTACLES AND LIGHT SWITCHES IN AREAS WITH ACCESSIBLE CEILINGS:
1. IN NEW 'METAL STUD AND GYPSUM BOARD PARTITIONS (WALLS)' AND IN EXISTING 'METAL STUD AND GYPSUM BOARD PARTITIONS (WALLS)', WHERE THE WALL IS NOT BEING OTHERWISE OPENED UP, THE FINAL CONNECTIONS MAY BE MADE WITH TYPE MC CABLE. THIS MC CABLE, SHALL:
a. BE RUN TO A BOX IMMEDIATELY ABOVE THE ACCESSIBLE CEILING, AND THE BOX SIZE SHALL NOT EXCEED 4-11/16" SQUARE.
b. CONDUIT SHALL BE USED FOR THE ENTIRE RUN, FROM THIS JUNCTION BOX, TO THE POWER SOURCE, LOAD (LIGHTS), ETC.
c. NO MORE THAN THREE CIRCUITS MAY BE RUN THROUGH ANY GIVEN JUNCTION BOX.
d. INDIVIDUAL CONDUCTORS MAKING UP THE MC CABLE SHALL BE STRANDED COPPER, WITH SEPARATE GROUNDING CONDUCTOR, AND STEEL CORRUGATED ARMOR. INDIVIDUAL CONDUCTORS SHALL BE COLOR CODED AS REQUIRED IN SECTION 16120.
e. THE MC CABLE IS TERMINATED USING UL LISTED HARDWARE INTENDED FOR THE CABLE AND BOXES BEING USED, (AND RATED FOR COMMERCIAL AND INDUSTRIAL ENVIRONMENTS).
f. THE MC CABLE SHALL BE SECURED IN THE WALL CAVITY AS REQUIRED BY NEC.
g. THE MC CABLE SHALL BE AS SHORT AS IT IS NECESSARY TO SERVE THE NEED AND MEET THE CODE
K. IN AREAS WITH NON-ACCESSIBLE CEILINGS DEVICES SHALL BE INSTALLED WITH STANDARD CONDUIT; RUN BACK IN A CONTINUOUS INSTALLATION TO A JUNCTION BOX LOCATED AT AN ACCESS POINT IN THE CEILING
L. CONNECTIONS TO OTHER RECESSED DEVICES, (INCLUDING COMMUNICATION OUTLET BOXES, JUNCTION OR PULL BOXES, ETC) SHALL BE WITH STANDARD CONDUIT OF THE TYPE APPROPRIATE FOR THE WALL CONSTRUCTION.

1.11 CABLE TRAY REQUIREMENTS

A. POWER AND TELECOMMUNICATIONS CABLE TRAYS SHALL BE ALUMINUM, LADDER TYPE, OF THE SIZES SHOWN ON THE DRAWINGS.
B. CENTER SPLINE TELECOMMUNICATIONS CABLE TRAY MAY ONLY BE USED WHERE SHOWN.
C. CHANGES IN CABLE TRAY DIRECTION OR ELEVATION SHALL BE MADE USING STANDARD FITTINGS FROM THE SAME MANUFACTURER AS THE CABLE TRAY.
D. BARRIERS SHALL BE INSTALLED IN CABLE TRAYS WHERE SHOWN TO SEPARATE CIRCUITS OF DIFFERENT VOLTAGE LEVELS.

1.12 SURFACE RACEWAY REQUIREMENTS

A. WHEN CONDUITS IN FINISHED AREAS CANNOT BE CONCEALED IN WALLS OR ABOVE CEILINGS, SURFACE RACEWAYS MAY BE USED WHERE PERMITTED. BOXES AND FITTINGS SHALL MATCH AND BE FROM THE SAME MANUFACTURER AS THE RACEWAYS.
B. RACEWAY SHALL BE METAL AND WHITE IN COLOR UNLESS OTHERWISE NOTED ON THE DRAWINGS.
C. CONTRACTOR SHALL VERIFY WITH THE OWNER IF THE USE OF METAL SURFACE RACEWAY IS ACCEPTABLE.

1.13 BOX REQUIREMENTS

A. PROVIDE SHEET STEEL OUTLET BOXES, EXTENSIONS, AND PLASTER RINGS FOR EMT, FLEXIBLE METAL CONDUIT, AND MC CABLE.
B. PROVIDE CAST OR MALLEABLE IRON OUTLET BOXES AND COVERS FOR GALVANIZED RIGID STEEL CONDUITS, INTERMEDIATE METAL CONDUITS, AND LIQUIDTIGHT FLEXIBLE METAL CONDUITS.
C. BOXES SHALL BE SIZED FOR ALL CONDUCTORS AND DEVICES TO BE CONTAINED WITHIN. BOX EXTENSIONS SHALL NOT BE USED TO CORRECT FOR UNDERSIZED BOXES. A SINGLE EXTENSION MAY BE USED AS FOLLOWS ONLY IF ALL FREE CONDUCTORS EXTEND AT LEAST 3 INCHES OUTSIDE OF THE EXTENSION OPENING.
1. ON BOXES BEING FLUSH MOUNTED IN MASONRY WALLS.
2. ON EXISTING BOXES IN WALLS THAT ARE BEING FURRED OUT.
3. ON EXISTING BOXES FOR CONNECTING TO AN EXISTING CIRCUIT.
4. ON FIRE ALARM, SECURITY AND CLOCK SYSTEM BOXES WHERE REQUIRED BY THE SYSTEM MANUFACTURER'S INSTRUCTIONS.
D. PLASTER RINGS SHALL NOT BE CONSIDERED BOX EXTENSIONS, BUT THEIR CAPACITIES MAY BE INCLUDED IN BOX FILL CALCULATIONS.

1.14 SUPPORT REQUIREMENTS

A. MECHANICAL AREAS AND TUNNELS
1. SURFACE MOUNTED EQUIPMENT SHALL BE SECURED TO STEEL CHANNELS.
2. SURFACE MOUNTED RACEWAY 1½6 AND SMALLER AND BOXES MAYBE ATTACHED DIRECTLY TO SURFACES.
3. MULTIPLE RACEWAY RUNS MAYBE ATTACHED TO
a. A TRAPEZE SYSTEM WITH APPROVED STRAPS
b. TRAPEZE SHALL BE ATTACHED TO THE STRUCTURE BY STEEL CHANNELS AND THREADED ROD.
4. VERTICAL SURFACE RACE WAY 1½6 MAYBE ATTACHED BY:
a. BELOW 8' BY ONE OR TWO HOLE STRAPS
b. 86 AND ABOVE WITH PIPE HANGERS (6MINERALLAC STYLE HANGERS6)
5. THE CHANNELS AND RACEWAY SHALL BE ATTACHED WITH TOGGLE BOLTS TO HOLLOW TILE, BLOCK OR SIMILAR SURFACES, AND ATTACHED WITH SCREWS OR BOLTS AND EXPANSION SHIELDS TO SOLID MASONRY OR CONCRETE.
B. FINISHED AREAS ABOVE SUSPENDED CEILINGS
1. RACEWAY AND BOXES MAYBE ATTACHED DIRECTLY TO SURFACES WITH APPROPRIATE STRAPS OR HANGERS.
2. MULTIPLE RACEWAY RUNS MAYBE ATTACHED TO
a. A TRAPEZE SYSTEM WITH APPROVED STRAPS
b. TRAPEZE SHALL BE ATTACHED TO THE STRUCTURE BY STEEL CHANNELS AND THREADED ROD.
3. THE CHANNELS AND RACEWAY SHALL BE ATTACHED WITH TOGGLE BOLTS TO HOLLOW TILE, BLOCK OR SIMILAR SURFACES, AND ATTACHED WITH SCREWS OR BOLTS AND EXPANSION SHIELDS TO SOLID MASONRY OR CONCRETE.
4. ATTACHMENT OF RACEWAY TO CEILING GRID SUPPORT WIRES OR RODS IS NOT PERMITTED.
C. FINISHED AREAS INSIDE WALLS
1. RACEWAY AND BOXES SHALL BE ATTACHED TO STRUCTURAL MEMBERS WITH DEVICES SPECIFICALLY DESIGNED FOR RACEWAY/BOX ATTACHMENT TO THE TYPE OF STRUCTURAL MEMBER USED.
D. FINISHED AREAS EXPOSED
1. SURFACE RACEWAY SHALL BE ATTACHED TO FINISHED SURFACES UTILIZING THE FACTORY APPROVED METHOD OF ATTACHMENT.
2. TAPE IS NOT ACCEPTABLE FOR ATTACHMENT OF NON-METALLIC SURFACE RACEWAY.

PART 2 - PRODUCTS

2.01 CONDUITS

A. ELECTRICAL METALLIC TUBING SHALL BE THIN WALL STEEL TUBING, ELECTRO-GALVANIZED OR HOT DIPPED GALVANIZED INSIDE AND OUTSIDE. FITTINGS AND BUSHINGS SHALL BE GALVANIZED STEEL SET SCREW TYPE WITH TWO SCREWS PER CONNECTION FOR SIZES OVER 2".
B. GALVANIZED RIGID STEEL CONDUIT AND INTERMEDIATE METAL CONDUIT SHALL BE HOT DIPPED GALVANIZED INSIDE AND OUTSIDE, IN 10' LENGTHS AND THREADED ON BOTH ENDS. FITTINGS AND BUSHINGS SHALL BE CAST OR MALLEABLE IRON, AND HOT DIPPED GALVANIZED INSIDE AND OUTSIDE.
C. PVC CONDUIT AND FITTINGS SHALL BE TYPE DB FOR ENCASEMENT IN CONCRETE FOR IT APPLICATIONS, SCHEDULE 40 FOR DIRECT BURIAL, CONCEALED AND EXPOSED WORK, AND SCHEDULE 80 IN MV DUCT BANKS. FITTINGS SHALL BE OF THE SAME TYPE AND FROM THE SAME MANUFACTURER AS THE CONDUIT. PVC CONDUIT SHALL BE UL LABELED FOR 90 DEGREES C CABLES. APPROVED MANUFACTURERS:
1. CANTEX
2. CARLON
3. NATIONAL PIPE & PLASTIC.
D. FLEXIBLE METALLIC CONDUIT SHALL BE GALVANIZED STEEL OR ALUMINUM. FITTINGS SHALL BE OF STEEL WITH CADMIUM OR GALVANIZED FINISH. FITTINGS SHALL BE MACHINE SCREW CLAMP TYPE, SINGLE OR TWO-PIECE. SELF-LOCKING, TWIST-IN TYPE FITTINGS ARE NOT ACCEPTABLE.
E. LIQUID TIGHT FLEXIBLE METALLIC CONDUIT SHALL CONSIST OF A FLEXIBLE, GALVANIZED STEEL CORE, A CONTINUOUS COPPER GROUND STRIP AND A POLYVINYL CHLORIDE JACKET. FITTINGS SHALL BE STEEL LIQUID TIGHT GROUNDING TYPE FROM THE SAME MANUFACTURER AS THE CONDUIT.

2.02 CABLE TRAYS

A. LADDER TYPE CABLE TRAY SHALL BE ALUMINUM, OF THE WIDTH SHOWN, WITH 4" RAIL HEIGHT, 13/16" MINIMUM RUNG WIDTH, AND 9" MAXIMUM RUNG SPACING. THE TRAY WITH A 10' SPAN SHALL BE CAPABLE OF SUSTAINING A WORKING LOAD OF 145 POUNDS PER LINEAL FOOT WITH A LOAD DEFLECTION OF 1.0" WHEN TESTED IN ACCORDANCE WITH NEMA VE1-3.01. APPROVED MANUFACTURES:
1. B-LINE
2. CHALFANT
3. COPE
4. GLOBETRAY
5. HUSKY
6. MONO-SYSTEMS
7. SQUARE D
8. WIREMOLD.
B. CENTER SPLINE CABLE TRAY SHALL BE ALUMINUM, OF THE WIDTH SHOWN,WITH TOP MOUNTED RUNGS, 36 LOAD DEPTH, 13/166 MINIMUM RUNG WIDTH, AND 96 MAXIMUM RUNG SPACING. THE TRAY WITH A 10' SPAN SHALL BE CAPABLE OF SUSTAINING A WORKING LOAD OF 145 POUNDS PER LINEAL FOOT WITH A LOAD DEFLECTION OF 1.0" WHEN TESTED IN ACCORDANCE WITH NEMA VE1-3.01.
C. TRAY FITTINGS INCLUDING HORIZONTAL AND VERTICAL BENDS, TEES, CROSSES, REDUCERS, SPLICE PLATES AND EXPANSION JOINTS SHALL BE FROM THE SAME MANUFACTURER AND OF THE SAME PRODUCT LINE AS THE TRAY. BENDS, TEES, CROSSES AND REDUCERS SHALL HAVE A 13/166 MINIMUM RUNG WIDTH, A 9" MAXIMUM RUNG SPACING, AND A 12" MINIMUM BEND RADIUS.
D. TRAY FASTENERS SHALL BE GALVANIZED OR ZINC PLATED STEEL.

2.03 SURFACE RACEWAYS

A. WHERE SURFACE RACEWAYS ARE CALLED FOR ON THE DRAWINGS, OR WHEN CONDUITS IN FINISHED AREAS CANNOT BE CONCEALED IN WALLS OR ABOVE CEILINGS, SURFACE RACEWAYS SHALL BE USED. BOXES AND FITTINGS SHALL MATCH AND BE FROM THE SAME MANUFACTURER AS THE SURFACE RACEWAY.
B. SURFACE RACEWAYS SHALL CONSIST OF A BASE AND COVER, SIZED FOR THE NUMBER OF CONDUCTORS CONTAINED WITHIN, COMPLETE WITH ALL CONNECTORS, FITTINGS, BUSHINGS, BOXES, COVERS AND MOUNTING HARDWARE.
C. RACEWAYS SHALL BE 600 VOLT RATED, AND BE IN COMPLIANCE WITH THE APPLICABLE PARAGRAPHS OF NEC ARTICLE 352.
D. THEY SHALL BE NON-FLAMMABLE, AND UL LABELED, UNDER UL 5, OR UL 5A (AS APPLICABLE).
E. THE COMPLETED RACEWAY SYSTEM SHALL BE VANDAL RESISTANT.
F. SHALL ACCEPT RECEPTACLES, COVER PLATES, TELEPHONE/DATA OUTLETS AND OTHER STANDARD WIRING DEVICES AS SPECIFIED ELSEWHERE IN THESE SPECIFICATIONS.
G. THE COVER PLATES USED FOR WIRING DEVICES AND TELECOMMUNICATION OUTLETS SHALL BE OF THE 'OVERLAPPING' TYPE, AND SHALL THEREFORE COVER THE 'CUT-END' OF THE RACEWAY COVER.
H. THE RACEWAYS SHALL HAVE "SCUFF" RESISTANT FINISH, AND THE RACEWAYS SHALL BE PAINTABLE.
I. ALL COMPONENTS OF THE RACEWAY SYSTEM EXPOSED TO VIEW SHALL BE OF THE SAME COLOR AND SHADE.
J. BARRIERS SHALL BE PROVIDED WHEN NECESSARY TO SEPARATE CONDUCTORS OF DIFFERENT VOLTAGES, OR SERVICES.
K. SURFACE RACEWAYS SHALL BE STEEL OR PLASTIC AS NOTED BELOW, AND AS NOTED ON THE DRAWINGS:
L. TYPE STANDARDS MANUFACTURERS
1. METALLIC
a. METALLIC RACEWAYS SHALL BE OF .040" THICK (MINIMUM) ZINC PLATED OR GALVANIZED STEEL.
b. THE ACCEPTABLE LEVELS OF QUALITY ARE, GENERICALLY,
1) LIKE "WIREMOLD V500 AND V700" FOR SMALLER SINGLE CHANNEL RACEWAY APPLICATIONS,
2) LIKE "WIREMOLD V3000" FOR LARGER SINGLE CHANNEL RACEWAY APPLICATIONS, AND
3) LIKE "WIREMOLD V4000" FOR LARGER MULTI-CHANNEL RACEWAY APPLICATIONS.
c. MANUFACTURERS INCLUDE WIREMOLD, HUBBELL, THOMAS AND BETTS, OR MONO-SYSTEM.
2. PLASTIC
a. PLASTIC RACEWAYS SHALL BE OF A MATERIAL MEETING ALL OF THE REQUIREMENTS OF UL 5A, (INCLUDING FLAMMABILITY, RESISTIVELY STRUCTURAL STRENGTH, ETC.).
b. THE ACCEPTABLE LEVELS OF QUALITY ARE, GENERICALLY,
1) PANDUIT LD SERIES, OR CARLON SERIES 30 FOR SMALLER SINGLE CHANNEL RACEWAY APPLICATIONS;
2) PANDUIT TYPE T-70, OR CARLON "PREMIERE", FOR LARGER SINGLE CHANNEL RACEWAYS, AND SMALLER MULTI-CHANNEL RACEWAYS; AND
3) PANDUIT TWIN 70 OR CARLON "PRESTIGE", FOR LARGER MULTI-CHANNEL RACEWAY APPLICATIONS.
c. MANUFACTURERS INCLUDE PANDUIT, CARLON, HUBBELL, MONO SYSTEMS, AND WIREMOLD.
M. USE VERTICAL SURFACE RACEWAYS FROM JUNCTION BOXES ABOVE THE CEILING, TO THE HORIZONTAL PORTION OF THE SURFACE RACEWAY. LOCATE VERTICAL SECTION AS CLOSE TO ROOM CORNERS (OR 'VERTICAL BREAKS' IN MID WALL) AS IS POSSIBLE. USE OF EXPOSED VERTICAL CONDUITS IS NOT ACCEPTABLE.

2.04 BOXES

A. BOXES FOR FIXTURES, OUTLETS, SWITCHES, EQUIPMENT CONNECTIONS AND WIRE PULLING SHALL BE
1. CAST OR FORMED FROM CARBON STEEL SHEETS OF COMMERCIAL GRADE STEEL NOT LESS THAN 14-GAUGE,
2. ONE-PIECE CONSTRUCTION, ZINC, OR CADMIUM PLATED,
3. TAPPED FOR MOUNTING PLATES AND COVERS AS REQUIRED.
B. PULL AND JUNCTION BOXES SHALL BE
1. FABRICATED FROM GALVANIZED OR PAINTED CODE GAUGE COLD ROLLED CARBON STEEL SHEETS.
2. WELDED CONSTRUCTION WITH FLAT REMOVABLE COVERS FASTENED TO THE BOX WITH MACHINE SCREWS.
3. SEAMS AND JOINTS SHALL BE CLOSED AND REINFORCED WITH FLANGES FORMED OF THE SAME MATERIAL FROM WHICH THE BOX IS CONSTRUCTED OR BY CONTINUOUS WELDING WHICH WILL PROVIDE equivalent strength to flange construction.
4. PREFERABLY NOT PROVIDED WITH 'KNOCKOUTS'.
C. BOX COVERS SHALL BE FASTENED IN PLACE BY MACHINE SCREWS OR HINGES AND LATCHES. SELF-TAPPING OR SHEET METAL FASTENERS ARE NOT ACCEPTABLE.

2.05 SUPPORTS

A. HANGERS AND BRACKETS SHALL BE MADE OF STEEL PIPE, CHANNEL IRON, ANGLE IRON OR PREFABRICATED STEEL CHANNEL. PREFABRICATED STEEL CHANNEL SHALL BE BY B-LINE, HILTI, POWERSTRUT OR UNISTRUT.
B. ANCHORS SHALL BE LEAD SHIELD ANCHORS OR PLASTIC EXPANSION ANCHORS FOR SMALL LOADS, AND EXPANSION OR EPOXY ANCHORS FOR LARGE LOADS. POWDER-DRIVEN ANCHORS SHALL NOT BE USED.

2.06 LABELS AND DIRECTORIES

A. EQUIPMENT NAMEPLATES SHALL BE ENGRAVED .125 INCH (1/8") THICK 'LANALOID' (LANACOID) PLASTIC. WHITE, WITH BLACK LETTERS. THE ENGRAVED LETTERS SHALL BE AT LEAST ONE QUARTER INCH (¼") HIGH.
B. RECEPTACLES AND LIGHTING SWITCH COVERS SHALL BE LABELED USING CLEAR ADHESIVE BACKED NYLON OR MYLAR TAPE WITH BLACK TEXT PERMANENTLY LAMINATED TO THE TAPE.
C. PANEL DIRECTORIES SHALL BE TYPED ON SUPPLIED CARD STOCK WITH PANEL, OR CARD STOCK SIMILAR IN THICKNESS AND MATERIAL AS THOSE SUPPLIED WITH THE PANELS. INSTALL SUPPLIED CLEAR PLASTIC COVER, OR ONE OF LIKE MATERIAL.

PART 3 - EXECUTION

3.01 GENERAL

A. ALL WORK SHALL CONFORM TO ALL APPLICABLE CODES AND CONSTRUCTION STANDARDS.
B. ALL INSTALLATIONS SHALL BE WARRANTED FOR A PERIOD OF ONE (1) YEAR AGAINST DEFECTS IN MATERIAL AND WORKMANSHIP.
C. THE OWNER RESERVES THE RIGHT TO RELOCATE ANY DEVICE FIFTEEN (15) FEET PRIOR TO INSTALLATION AT NO ADDITIONAL COST.
D. MATERIAL STORAGE
1. ALL MATERIALS SHALL BE NEW AND IN ORIGINAL FACTORY PACKAGING.
2. ALL MATERIAL SHALL BE KEPT DRY AND CLEAN.
3. THE OWNER RESERVES THE RIGHT TO REJECT ANY MATERIAL NOT PROPERLY STORED.
E. CONTRACTOR SHALL SWAB CLEAN THE INTERIOR OF ALL RACEWAY PRIOR TO PULLING WIRE.
F. DEVICE PLATE SCREW SLOTS SHALL BE ORIENTED VERTICALLY.

3.02 RACEWAYS

A. SIZE CONDUITS IN ACCORDANCE WITH THE NEC, BUT NOT LESS THAN THE SIZES SHOWN ON THE DRAWINGS. MINIMUM POWER, FIRE ALARM AND CONTROL CONDUIT SIZE SHALL BE ¾". MINIMUM TELECOMMUNICATIONS CONDUIT SIZE SHALL BE 1".
B. INSTALL CONCEALED AND EXPOSED CONDUITS AND CABLE TRAYS PARALLEL TO OR AT RIGHT ANGLES TO BUILDING LINES. CONDUITS SHALL NOT BE EMBEDDED IN CONCRETE SLABS EXCEPT WHERE SPECIFICALLY SHOWN. INSTALL SURFACE RACEWAYS AS CLOSE TO ROOM CORNERS OR TRIM FEATURES AS POSSIBLE TO MAKE THE SURFACE RACEWAYS LESS OBVIOUS.
C. MAKE DIRECTIONAL CHANGES IN PRIMARY POWER DISTRIBUTION CONDUITS ABOVE GROUND WITH SWEEPS AND LONG RADIUS ELBOWS, AND UNDERGROUND WITH 20' MINIMUM RADIUS BENDS.
D. CONCEAL CONDUITS WHEREVER POSSIBLE AND PRACTICAL. WHEN CONDUITS CANNOT BE CONCEALED IN FINISHED AREAS, USE SURFACE RACEWAYS WITH MATCHING BOXES FROM THE SAME MANUFACTURER AS THE RACEWAYS.
E. METAL CONDUITS, FITTINGS, ENCLOSURES AND RACEWAYS SHALL BE MECHANICALLY JOINED TOGETHER IN A FIRM ASSEMBLY TO FORM A CONTINUOUS ELECTRICAL CONDUCTOR PROVIDING EFFECTIVE ELECTRICAL GROUNDING CONTINUITY.
F. PROVIDE EXPANSION FITTINGS AT THE INTERVALS SPECIFIED IN THE MANUFACTURER'S INSTRUCTIONS.
G. CONDUITS ENTERING PANELS LOCATED OUTDOORS, IN PARKING STRUCTURES, IN STEAM TUNNELS AND ON COOLING TOWERS SHALL ENTER FROM THE SIDES, BACK, OR BOTTOM. CONDUITS SHALL NOT ENTER FROM THE TOP.
H. SEPARATE RACEWAYS FROM UNINSULATED STEAM PIPES, HOT WATER PIPES, AND OTHER HOT SURFACES BY A MINIMUM OF 46 HORIZONTALLY OR 126 VERTICALLY. SEPARATE RACEWAYS FROM VENTILATION DUCTS AND INSULATED PIPES SO THAT THEY DO NOT COME INTO CONTACT WITH EACH OTHER.
I. LOW VOLTAGE SIGNAL CIRCUITS SHALL BE SEPARATED OR SHIELDED FROM POWER CIRCUITS TO PREVENT THE INDUCTION OF NOISE INTO THE SIGNAL CIRCUITS.
J. EMT ENTERING SHEET METAL ENCLOSURES AND OUTLET BOXES SHALL BE SECURED IN PLACE BY A CONNECTOR WITH A LOCKNUT. RIGID CONDUIT SHALL BE SECURED WITH LOCKNUT INSIDE AND OUTSIDE AND A BUSHING. SUFFICIENT THREAD ON THE CONNECTOR OR CONDUIT SHALL EXTEND INTO THE ENCLOSURE SO THAT THE BUSHING WILL BUTT TIGHT INTO THE CONNECTOR OR CONDUIT. BUSHINGS SHALL NOT BE USED AS JAMB NUTS OR IN LIEU OF LOCKNUTS.
K. FLEXIBLE METALLIC CONDUIT TO MOTORS AND SIMILAR EQUIPMENT SHALL NOT EXCEED 3'-0" IN LENGTH, AND SHALL HAVE ADEQUATE SLACK TO ABSORB THE MAXIMUM VIBRATION. FLEXIBLE CONDUIT CONNECTIONS TO LIGHTING FIXTURES SHALL NOT EXCEED 6'-0" IN LENGTH.

3.03 MOUNTING HEIGHTS

A. EXCEPT WHERE SHOWN OTHERWISE, INSTALL EQUIPMENT AND DEVICES AT THE FOLLOWING HEIGHTS:
1. RECEPTACLES (WALL): 18" A.F.F. TO CENTER
2. RECEPTACLES (ABOVE COUNTER): 48" A.F.F. TO CENTER OR 46 MINIMUM ABOVE COUNTERTOP OR BACKSPLASH.
3. RECEPTACLES (UNFINISHED AREA): 48" A.F.F. TO CENTER
4. SURFACE RACEWAY RECEPTACLE STRIPS: 42" A.F.F. TO BOTTOM
5. LIGHT SWITCHES: 48" A.F.F. TO CENTER
6. TELEPHONE OUTLETS (WALL PHONE): 48" A.F.F. TO CENTER
7. TELEPHONE/DATA OUTLETS: 18" A.F.F. TO CENTER
8. CLOCK OUTLETS: 88" A.F.F. TO CENTER
9. FIRE ALARM PULL STATIONS: 45" A.F.F. TO CENTER
10. FIRE ALARM HORN/STROBES: 80" A.F.F. TO BOTTOM OR 1' BELOW FINISHED CEILING WHICHEVER IS LOWER.
11. CARD READERS: 48" A.F.F. TO CARD SLOT
12. SECURITY SYSTEM CONTROLS: 486 A.F.F. TO CENTER
13. THERMOSTATS/HVAC CONTROLS: 486 A.F.F. TO CENTER
14. PANELBOARDS: 72" A.F.F. TO TOP
15. SAFETY SWITCHES/MOTOR STARTERS: 72" A.F.F. TO TOP (EXCEPT TOP OF HANDLE SHALL NOT EXCEED 78" A.F.F.)
16. MOTOR CONTROL PUSHBUTTONS: 60" A.F.F. TO CENTER
17. VERIFY WITH THE OWNER FOR HEIGHTS NOT OTHERWISE LISTED.

3.04 SUPPORTS

A. PROVIDE 4" THICK CONCRETE HOUSEKEEPING PADS FOR FLOOR-MOUNTED EQUIPMENT.
B. SUPPORT ALL ELECTRICAL ITEMS INDEPENDENTLY OF SUPPORTS PROVIDED BY THE OTHER TRADES.
C. SUPPORT CONDUITS AND BOXES USING STEEL CONDUIT STRAPS OR 1/4-INCH MINIMUM DIAMETER THREADED ROD HANGERS. SUSPENDED CEILING HANGERS OR HANGER WIRE SHALL NOT BE USED (EXCEPT TO SUPPORT FLEXIBLE METALLIC CONDUIT AND MANUFACTURED WIRING SYSTEMS).
D. SUPPORT CABLE TRAYS WITH SUPPORT BRACKETS OR 3/8" DIAMETER MINIMUM THREADED ROD HANGERS AT INTERVALS NOT EXCEEDING 8'-0" FOR STRAIGHT RUNS. ADDITIONAL SUPPORTS SHALL BE PROVIDED AT TRAY FITTINGS.
E. HANGERS SHALL BE OF SUFFICIENT STRENGTH THAT THEIR DEFLECTION AT MID SPAN DOES NOT EXCEED 1/240 OF THE HANGER SPAN LENGTH AFTER THE CABLES ARE INSTALLED.
F. ROUTE FLEXIBLE METALLIC CONDUIT, MANUFACTURED WIRING SYSTEMS AND TYPE MC CABLE PARALLEL TO OR PERPENDICULAR TO BUILDING LINES, AND IN A NEAT AND WORKMANLIKE MANNER. COIL THE EXCESS MANUFACTURED WIRING SYSTEMS AND TYPE MC CABLE, AND SUPPORT INDEPENDENTLY OF THE CEILING GRID SYSTEM AT INTERVALS NOT EXCEEDING 3 FEET.

3.05 PENETRATIONS, SLEEVES AND FIRE SEALS

A. CUT FLOOR AND WALL PENETRATIONS NEATLY AND TO THE MINIMUM SIZE REQUIRED FOR INSTALLATION OF THE EQUIPMENT AND RACEWAYS.
B. PROVIDE GALVANIZED STEEL PIPE SLEEVES FOR ALL CONDUITS PENETRATING FLOORS, EXTERIOR WALLS AND ROOFS.
1. EXTEND FLOOR SLEEVES ABOVE THE FLOOR A MINIMUM OF 2 INCHES.
2. EMBED SLEEVES IN NEW CONCRETE OR STEP-CORE CONCRETE AND GROUT SLEEVES INTO EXISTING CONCRETE WITH EPOXY GROUT.
3. SEAL FLOOR SLEEVES USING FIRE-SEALING SYSTEMS APPROVED BY A NATIONALLY RECOGNIZED TESTING LABORATORY.
4. SEAL EXTERIOR WALL AND ROOF PENETRATIONS WATER TIGHT.
C. PATCH BOTH SIDES OF WALL PENETRATIONS CUT FOR ELECTRICAL EQUIPMENT AND RACEWAYS TO SEAL AGAINST THE PASSAGE OF AIR, SOUND AND FIRE.
1. SEAL CABLE TRAY PENETRATIONS IN FIRE RATED WALLS USING FIRE SEALANT BAGS APPROVED BY A NATIONALLY RECOGNIZED TESTING LABORATORY.
2. SEAL CONDUIT PENETRATIONS IN FIRE RATED WALLS USING FIRE SEALING CAULK APPROVED BY A NATIONALLY RECOGNIZED TESTING LABORATORY.
3. SEAL CONDUIT PENETRATIONS IN NON-RATED WALLS USING MASONRY MATERIALS THAT MATCH THE WALL CONSTRUCTION.
4. FIRE SEAL BETWEEN RECESSED OUTLET BOXES LOCATED ON OPPOSITE SIDES OF A FIRE RATED WALL IF THE BOX OPENINGS ARE OVER 16 SQUARE INCHES AND THE BOXES ARE LESS THAN 24 INCHES APART.

3.06 EXPANSION FITTINGS

A. PROVIDE EXPANSION FITTINGS AT ALL BUILDING EXPANSION JOINTS.
B. PROVIDE EXPANSION FITTINGS, IN ACCORDANCE WITH MANUFACTURE RECOMMENDATIONS, IN ALL AREAS SUBJECT TO SWINGS IN TEMPERATURE OF MORE THAN 15 DEGREES C.
C. INSTALL EXPANSION FITTINGS IN ALL LOCATIONS WERE EXPECTED EXPANSION DIFFERENCE IS ¼", OR MORE, BETWEEN BOXES

3.07 IDENTIFICATION

A. PROVIDE NAMEPLATES AND LABELS IN ACCORDANCE WITH ARTICLE 2.6.
1. LANALOID LABELS SHALL BE MECHANICALLY SECURED IN PLACE WITH SHEET METAL SCREWS AND/OR BOLTS AND NUTS
2. LABELS SHALL BE NEATLY CENTERED. PLACE LABELS IN LIKE POSITIONS ON SIMILAR EQUIPMENT.
B. COLOR CODE WIRING AS NOTED IN SECTION 26 05 19 3.01 B
C. COLOR CODE JUNCTION BOXES AND BOX COVERS OF
1. EMERGENCY POWER CIRCUITS WITH RED PAINT
2. FIRE ALARM CIRCUITS WITH RED PAINT.
3. TEMPERATURE CONTROL CIRCUITS WITH BLUE PAINT.
4. PHONE AND DATA CIRCUITS WITH ORANGE PAINT.

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100% CONSTRUCTION DOCUMENTS

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John K. Neville
MAY 15, 2025
EXPIRES 07/31/2026

BID ISSUED DATE: MAY 15, 2025
DRAWN: J.D.S.
CHECKED: J.S
PROJECT NO.: P24-0112
REVISION NO.:

ELECTRICAL SPECIFICATIONS

E 300

26 05 19
LOW VOLTAGE WIRE AND CABLE

PART 1- GENERAL

1.01 DESCRIPTION OF WORK

A. EXTENT OF ELECTRICAL WIRE AND CABLE WORK IS INDICATED BY THE PROJECT DRAWINGS.

B. TYPES OF WIRE, CABLE AND CONNECTORS IN THIS SECTION INCLUDE THE FOLLOWING

1. 600 VOLT INSULATED COPPER CONDUCTORS
2. TWIST ON INSULATED METAL SPRING CONNECTORS
3. COMPRESSION CONNECTORS
4. SPLIT BOLT CONNECTORS

1.02 QUALITY ASSURANCE

A. MANUFACTURERS: FIRMS REGULARLY ENGAGED IN MANUFACTURE OF ELECTRICAL WIRE AND CABLE OF TYPES SIZES AND RATINGS REQUIRED, WHOSE PRODUCTS HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR NOT LESS THAN FIVE (5) YEARS.

B. INSTALLERS: FIRM WITH AT LEAST FIVE (5) YEARS OF SUCCESSFUL INSTALLATION EXPERIENCE WITH PROJECTS UTILIZING ELECTRICAL WIRING AND CABLING WORK SIMILAR TO THOSE REQUIRED FOR THIS PROJECT.

C. NEC COMPLIANCE: COMPLY WITH NEC REQUIREMENTS AS APPLICABLE TO CONSTRUCTION, INSTALLATION AND COLOR CODING OF ELECTRICAL WIRES AND CABLE.

D. U.L. COMPLIANCE: COMPLY WITH APPLICABLE REQUIREMENTS OF UL STANDARD 83, óTHERMOPLASTIC-INSULATED WIRES AND CABLESó, AND UL STANDARD 486A, óWIRE CONNECTORS AND SOLDERING LUGS FOR USE WITH COPPER CONDUCTORSó.

E. UL LABELS: PROVIDE WIRE, CABLE AND CONNECTORS WHICH ARE UL LISTED AND LABELED.

1.03 DELIVERY, STORAGE AND HANDLING

A. DELIVER WIRE AND CABLE PROPERLY PACKAGED IN FACTORY-FABRICATED TYPE CONTAINERS OR WOUND ON NEMA SPECIFIED TYPE NON-RETURNABLE WIRE AND CABLE REELS.

B. STORE WIRE AND CABLE IN A CLEAN DRY SPACE. PROTECT PRODUCTS FROM WEATHER, DAMAGING FUMES, CONSTRUCTION DEBRIS AND TRAFFIC.

C. HANDLE WIRE AND CABLE CAREFULLY TO AVOID ABRADING, PUNCTURING, OR TEARING WIRE AND CABLE INSULATION AND SHEATHING. ENSURE THAT DIELECTRIC RESISTANCE INTEGRITY OF WIRE AND CABLE IS MAINTAINED.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURES OFFERING PRODUCTS WHICH MAY BE USED ON THIS PROJECT INCLUDE, BUT NOT LIMITED TO, THE FOLLOWING:

1. LOW VOLTAGE WIRE:
   a. AMERICAN INSULATED WIRE AND CABLE
   b. SOUTHWIRE COMPANY
   c. OTHERS AS APPROVED
2. ELECTRONIC CABLE
   a. BELDEN
   b. ALPHA
   c. ANIXTER
3. TWIST ON INSULATED METAL SPRING CONNECTORS
   a. IDEAL
   b. THOMAS AND BETTS CORP
   c. 3M COMPANY
4. COMPRESSION
   a. SQUARE D / ANDERSON
   b. THOMAS AND BETTS

2.02 DESCRIPTION THHN / THWN

A. CONDUCTOR:

1. BARE, SOFT ANNEALED COPPER PER ASTM B-3.
2. SIZES 14 - 10 AWG: SOLID, BUNCHED, UNILAY CONCENTRIC COMBINATION UNILAY OR COMPRESSED STRANDED (CLASS C) ALTERNATE ASTM B-787, ASTM B-3 OR ASTM B-8 AND UL-83.
3. SIZES 8 - 2 AWG: CONCENTRIC, COMPRESSED STRANDED (CLASS C) ALTERNATE ASTM B-787, ASTM B-8, UL-83 AND UL-1063.
4. SIZES 1 AWG - 750 KCMIL: CONCENTRIC, COMPRESSED STRANDED (CLASS B) ASTM B-8, UL-83 AND UL-1063.

B. INSULATION:

1. HIGH DIELECTRIC POLYVINYL CHLORIDE (PVC) PER UL-83 AND UL-1063.
2. OVERALL JACKET: NYLON PER UL-83 AND UL-1063.

C. CABLE IDENTIFICATION:

1. INK PRINT ON JACKET FOR SIZES 14 - 10 AWG (SOLID CONDUCTORS): ó(SIZE) AWG TYPE THHN OR THWN GAS AND OIL RES II 600V(UL) OR AWM VW-1---(COMPANY NAME).---C-UL TYPE T90 NYLON OR TWN 75ó
2. INK PRINT ON JACKET FOR SIZES 14 AWG - 750 KCMIL (STRANDED): ó(SIZE) AWG (OR KCMIL) TYPE MTW OR THHN OR THWN OR GAS AND OIL RES II 600V (UL) OR AWM---(COMPANY NAME).---C-UL TYPE T90 NYLON OR TWN 75.ó
3. ALSO óVW-1ó AND óFT1ó ON SIZES 14 THROUGH 6 AWG AND óFOR CT USE SUN RESó ON SIZES 1/0 AWG AND LARGER IN BLACK.

D. CABLES CONFORM TO THE FOLLOWING STANDARDS:

1. UL-83 FOR THHN-THWN, UL-1063 FOR MTW (STRANDED CONDUCTORS ONLY)
2. FEDERAL SPECIFICATION J-C-30B, NEMA WC-5, UL-758 FOR AWM STYLES 1316 THROUGH 1321, 1408 THROUGH 1414, 1452 AND 1453.

2.03 ELECTRONIC CABLE - COMMUNICATION AND SIGNAL

A. SHALL CONFORM TO THE RECOMMENDATIONS OF THE MANUFACTURERS OF THE COMMUNICATION AND SIGNAL SYSTEMS; HOWEVER, NOT LESS THAN WHAT IS SHOWN.

B. WIRING SHOWN IS FOR TYPICAL SYSTEMS. PROVIDE WIRING AS REQUIRED FOR THE SYSTEMS BEING FURNISHED.

C. MULTI-CONDUCTOR CABLES SHALL HAVE THE CONDUCTORS COLOR CODED.

2.04 CABLES AND CONNECTORS

A. GENERAL: PROVIDE ELECTRICAL CABLES AND CONNECTORS OF MANUFACTURER'S STANDARD MATERIALS, AS INDICATED BY PUBLISHED PRODUCT INFORMATION.

B. PROVIDE COPPER CONDUCTORS WITH CONDUCTIVITY OF NOT LESS THAN 98% AT 68^{0} F (20^{0} C).

C. ELECTRONIC CABLE SHALL BE PLENUM RATED AND AS RECOMMENDED BY THE EQUIPMENT SUPPLIER

D. CONNECTORS SHALL BE FOR COPPER TO COPPER CONNECTIONS

E. INSULATION: ALL CONNECTORS SHALL BE FULLY INSULATED TO MATCH INSULATION TYPE AND RATING OF CONDUCTORS BEING SPLICED.

PART 3 - EXECUTION

3.01 INSTALLATION OF WIRES AND CABLES

A. GENERAL: INSTALL ELECTRICAL CABLES, WIRES AND WIRING CONNECTORS AS INDICATED, IN COMPLIANCE WITH APPLICABLE REQUIREMENTS OF NEC, NEMA, UL AND NECA'S óSTANDARD OF INSTALLATIONSó, AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES.

B. FEEDER PHASE IDENTIFICATION FROM LEFT TO RIGHT OR FRONT TO BACK FACING FRONT OF EQUIPMENT SHALL BE ONE OF THE FOLLOWING:

Phase A	Phase B	Phase C	Neutral	System
X	Y	Z	N	Any voltage
BLACK	RED	BLUE	WHITE	120/208 volt feeders
BROWN	ORANGE	YELLOW	GRAY	277/480 volt feeders

C. INSTALL ALL WIRING IN CONDUIT EXCEPT AS INDICATED ON THE DRAWINGS OR DIRECTED BY OWNER.

D. PULL CONDUCTORS TOGETHER WHERE MORE THAN ONE IS BEING INSTALLED IN A RACEWAY.

E. USE PULLING COMPOUND OR LUBRICANT WHERE NECESSARY. COMPOUND MUST NOT DETERIORATE CONDUCTOR OR INSULATION. USE OF SOAP IS NOT PERMITTED AS A PULLING LUBRICANT.

F. PULLING MEANS MUST NOT DAMAGE CABLE OR RACEWAY.

3.02 COMPRESSION CONNECTORS

A. USE ONLY COMPRESSION INDENTER TOOLS DESIGNED FOR THE TYPE OF CONNECTOR USED.

B. FOR MULTIPLE INDENTATIONS START AT CENTER AND INDENT OUTWARD.

3.03 FIELD QUALITY CONTROL

A. PRIOR TO ENERGIZING, TEST ALL CABLES AND WIRES WITH óMEGGERó TO DETERMINE INSULATION RESISTANCE LEVELS TO ENSURE INSULATION INTEGRITY.

B. PRIOR TO ENERGIZING, TEST WIRES AND CABLES FOR ELECTRICAL CONTINUITY AND FOR SHORT CIRCUITS.

END OF SECTION 26 05 19

26 05 26
GROUNDING AND BONDING

PART 1 - GENERAL

1.01 SUMMARY

A. PROVIDE GROUNDING FOR ALL SYSTEMS AND EQUIPMENT.

1.02 GROUNDING SYSTEM REQUIREMENTS

A. EACH GROUND ROD SHALL HAVE A MAXIMUM RESISTANCE TO GROUND OF 10 OHMS BEFORE CONNECTION TO THE OTHER GROUND RODS. IF READING IS ABOVE 10-OHMS, DRIVE ONE EXTENSION. FURTHER TESTING OF THAT INDIVIDUAL ROD IS NOT NEEDED.

B. THE TOTAL GROUNDING SYSTEM WITH ALL CONNECTIONS COMPLETED SHALL HAVE A MAXIMUM RESISTANCE TO GROUND OF 2 OHMS FOR PRIMARY SERVICES OR 5 OHMS FOR SECONDARY SERVICES. SELECT APPROPRIATE VALUE.

1.03 CONNECTION REQUIREMENTS

A. PROVIDE EXOTHERMIC WELD TYPE, OR BURNDY HYGROUND, GROUND CONNECTIONS FOR CONCEALED, UNDERGROUND, AND CONCRETE ENCASED GROUND CONNECTIONS, FOR GROUND CONNECTIONS TO STRUCTURAL STEEL, CONNECTIONS BETWEEN SECTIONS OF THE MAIN GROUND BUS AND ALL CONNECTIONS TO THE SUBSTATION ROOM GROUND BUS BARS.

B. EXPOSED GROUND CONNECTIONS (EXCEPT CONNECTIONS TO STRUCTURAL STEEL AND SUBSTATION ROOM GROUND BUS BARS) MAY BE MADE WITH COPPER OR BRONZE COMPRESSION GROUND FITTINGS OR BOLTED COMPRESSION RING LUGS.

C. PROVIDE EXOTHERMIC WELD TYPE, OR BURNDY HYGROUND GROUND CONNECTIONS FOR SPLICES AND TAPS OF GROUNDING CONDUCTORS NO. 8 AWG AND LARGER. EXPOSED SPLICES AND TAPS SHALL BE TAPED.

PART 2 - PRODUCTS

2.01 GROUND RODS

A. UNLESS SHOWN OTHERWISE, GROUND RODS SHALL BE 3/4" DIAMETER BY 10' LONG, COPPER CLAD STEEL. GROUND RODS SHALL BE CAPABLE OF BEING EXTENDED WHEN ADDITIONAL LENGTH IS REQUIRED.

2.02 GROUNDING CONDUCTORS

A. GROUNDING CONDUCTORS FOR DIRECT BURIAL UNDERGROUND, FOR ENCASEMENT IN CONCRETE, AND FOR GROUNDING OF UNIT SUBSTATIONS SHALL BE NO. 4/0 AWG MINIMUM, BARE, STRANDED COPPER.

B. GROUNDING CONDUCTORS FOR GENERAL USE SHALL BE STRANDED, COPPER CONDUCTOR, SIZED IN ACCORDANCE WITH THE NEC UNLESS SHOWN OTHERWISE ON THE DRAWINGS, AND INSULATED WITH GREEN NEC TYPE THHN INSULATION RATED 90 DEGREES C, 600 VOLTS.

2.03 GROUND CONNECTIONS

A. GROUND CONNECTIONS SHALL BE BURNDY HYGROUND, CADWELD, THERMO-WELD OR THOMAS & BETTS BLACKBURN ONLY.

PART 3 - EXECUTION

3.01 INSTALLATION REQUIREMENTS

A. GROUND DUCT BANKS AND MANHOLES IN ACCORDANCE WITH SPECIFICATION SECTION 26 05 13

B. PROVIDE BARE COPPER GROUNDING CONDUCTORS FROM DUCT BANKS, MANHOLES, UNIT SUBSTATIONS, PRIMARY SWITCHES, TRANSFORMERS, SWITCHGEAR, PANELBOARDS, MOTOR CONTROL CENTERS AND CONTROL PANELS TO THE BUILDING GROUNDING SYSTEM. EQUIPMENT RATED ABOVE 480 VOLTS OR 600 AMPS SHALL BE GROUNDED BY A MINIMUM OF TWO INDEPENDENT GROUNDING CONDUCTORS.

C. BOND TRANSFORMER, UPS SYSTEM, CENTRAL BATTERY/INVERTER SYSTEM, EMERGENCY GENERATOR, AND SEPARATELY DERIVED ELECTRICAL SYSTEM NEUTRALS TO THE BUILDING GROUNDING SYSTEM.

D. GROUND MOTORS RATED 460 VOLTS AND BELOW BY MOTOR FEEDER EQUIPMENT GROUNDING CONDUCTORS. STRANDED COPPER GROUNDING CONDUCTORS CONNECTED TO BUILDING STEEL SHALL ALSO BOND MOTORS RATED OVER 460 VOLTS.

E. PROVIDE GREEN INSULATED EQUIPMENT GROUNDING CONDUCTORS IN ALL SERVICE, FEEDER, AND BRANCH CIRCUITS FOR CONNECTION OF LOAD DEVICES TO THE POWER SOURCE GROUND. RACEWAYS SHALL NOT BE USED AS EQUIPMENT GROUNDING CONDUCTORS.

F. EQUIPMENT GROUNDING CONDUCTORS SHALL NOT BE DAISY-CHAINED.

G. BOND EQUIPMENT-GROUNDING CONDUCTORS IN BOXES AND ENCLOSURES WHERE THE GROUNDING CONDUCTORS ARE TERMINATED OR SPLICED.

H. BOND CONDUITS, CABLE TRAYS, WIREWAYS, SURFACE RACEWAYS, BOXES, AND ENCLOSURES TOGETHER, AND TO THE BUILDING GROUNDING SYSTEM. PROVIDE BONDING BUSHINGS AND BONDING JUMPERS TO BOND CONDUITS WHERE THEY ENTER A BOX OR ENCLOSURE.

I. GROUND THE LIGHTNING PROTECTION SYSTEM WITH SEPARATE GROUND RODS. THE BUILDING GROUNDING SYSTEM GROUND RODS SHALL NOT BE USED. AFTER COMPLETION OF BOTH SYSTEMS, THE LIGHTNING PROTECTION SYSTEM SHALL BE BONDED TO THE BUILDING GROUNDING SYSTEM.

J. PROTECT SEPARATELY ROUTED GROUNDING CONDUCTORS SUBJECT TO DAMAGE OR PHYSICAL ABUSE BY SCHEDULE 40 PVC NONMETALLIC CONDUITS. GROUNDING CONDUCTORS SHALL NOT BE ROUTED IN METALLIC CONDUITS EXCEPT WHEN ROUTED WITH PHASE CONDUCTORS.

END OF SECTION 26 05 26

26 05 33
RACEWAY AND BOXES

PART 1 - GENERAL

1.01 SUMMARY

A. THIS SECTION SPECIFIES RACEWAYS AND BOXES FOR BUILDING AND STRUCTURE ELECTRICAL SYSTEMS UNDER 600 VOLTS.

B. PROVIDE ALL LABOR, MATERIALS, AND EQUIPMENT AS NECESSARY TO COMPLETE ALL WORK AS INDICATED ON THE DRAWINGS, AND AS SPECIFIED HEREIN.

C. RELATED SECTIONS:

1. DIVISION 01 - GENERAL REQUIREMENTS
2. APPLICABLE SECTIONS OF DIVISION 26 - ELECTRICAL

PART 2 - PRODUCTS

2.01 GENERAL INFORMATION

A. ALL BOXES, BRACKETS, BOLTS, CLAMPS, ETC., SHALL BE GALVANIZED OR ELECTRO-GALVANIZED.

B. ALL HARDWARE USED OUTDOORS SHALL BE HOT DIPPED GALVANIZED.

2.02 CONDUIT

A. RIGID GALVANIZED CONDUIT SHALL BE INSTALLED IN POURED CONCRETE SLABS, WALLS AND PARTITIONS. RIGID OR I.M.C. SHALL BE INSTALLED IN DAMP LOCATIONS AND INACCESSIBLE PLACES.

B. ALL RIGID CONDUIT, I.M.C. AND E.M.T. SHALL BE HOT DIPPED GALVANIZED OR ELECTRO-GALVANIZED.

C. E.M.T. MAY ONLY BE INSTALLED EXPOSED, ABOVE SUSPENDED CEILINGS, OR IN PARTITIONS.

D. FLEXIBLE STEEL CONDUIT MAY BE USED FOR SHORT RUNS TO INDIVIDUAL PIECES OF EQUIPMENT.

E. FLEXIBLE SHEATHED METALLIC CONDUIT SHALL BE USED FOR RUNS LESS THAN 6' IN LENGTH TO INDIVIDUAL PIECES OF EQUIPMENT IN MECHANICAL ROOMS, PENTHOUSES, ETC.

F. MC CABLE IS PERMITTED IN EXISTING WALLS WHERE INSTALLATION OF EMT IS NOT POSSIBLE TO DEVICES

G. NO E.M.T. OR ALUMINUM CONDUIT SHALL BE USED IN CONCRETE, DIRECT BURIAL OR IN CORROSIVE LOCATIONS.

H. ALUMINUM CONDUIT MAY ONLY BE USED IN SIZES 1-1/2 INCH AND LARGER. NO ALUMINUM CONDUIT WILL BE PERMITTED IN CONCRETE. WHEN ALUMINUM CONDUIT IS USED, ALL BENDS SHALL BE GALVANIZED STEEL.

I. SIZE AND TYPE OF CONDUIT SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE. WHERE CONDUITS ARE INDICATED ON THE DRAWING TO BE LARGER THAN REQUIRED BY CODE, THE LARGER CONDUIT SHALL BE USED.

J. MINIMUM CONDUIT SIZE SHALL BE 3/4 INCH IN ALL RUNS.

2.03 PULL AND JUNCTION BOXES

G. ALL PULL BOXES SHALL BE GALVANIZED SHEET STEEL, SIZED AS REQUIRED, WITH THICKNESS NOT LESS THAN NO. 14 GAUGE.

2.04 OUTLET BOXES

A. ALL OUTLETS, EXCEPT AS OTHERWISE SPECIFIED, SHALL CONSIST OF APPROVED GALVANIZED STEEL BOXES OF PATTERN ADAPTED TO THE SPECIAL REQUIREMENTS OF EACH OUTLET, SECURELY FASTENED IN PLACE IN AN APPROVED MANNER.

PART 3 - EXECUTION

3.01 CONDUIT

A. CONDUIT SHALL BE CONCEALED IN ALL NEW WALLS AND RUN ABOVE SUSPENDED CEILINGS.

B. USE WIREMOLD TYPE METAL RACEWAY WHERE NECESSARY TO RUN EXPOSED ON EXISTING WALLS AND/OR CEILINGS IN FINISHED AREAS AS SHOWN ON THE DRAWINGS.

C. ALL CONDUIT SHALL BE FASTENED OR SUSPENDED FROM STRUCTURAL MEMBERS, SLABS, OR WALLS ONLY. IT SHALL NOT BE RUN ON OR FASTENED TO TEE BARS OF SUSPENDED LAY-IN CEILINGS.

D. ALL CONDUIT SHALL BE SUPPORTED BY APPROVED HANGERS AT SPACED PER NEC.

E. ALL EXPOSED CONDUIT SHALL BE RUN PARALLEL TO THE STRUCTURAL MEMBERS OF THE BUILDING IN A NEAT MANNER, SECURELY FASTENED IN PLACE.

F. WHEN METAL CONDUIT EXTENDS BELOW THE BOTTOM OF A SLAB ON THE GROUND, THE SLAB SHALL BE THICKENED IN THE AREA OF THE CONDUIT SO AS TO ENCASE THE CONDUIT IN CONCRETE BY AT LEAST 2 INCHES ON ALL SIDES. THE RESPONSIBILITY FOR AND EXPENSE OF THIS WORK SHALL BE BORNE BY THE CONTRACTOR.

3.02 OUTLET BOXES

A. RECESSED OUTLET BOXES FOR SINGLE GANG OR 2-GANG INSTALLATIONS SHALL BE 4ó SQUARE WITH APPROPRIATE DEVICE RING OR PLASTER RING FOR THE REQUIRED NUMBER OF DEVICES.

1. ALL DEVICE RINGS AND PLASTER RINGS HALL BE INSTALLED VERTICALLY UNLESS INSTRUCTED OTHERWISE BY THE A/E OR OWNER.
2. ALL PLASTER RINGS SHALL NOT EXTEND PAST FLUSH WITH WALL SURFACE OR BE RECESSED MORE THAN ¼ó FROM WALL SURFACE.
3. FOR INSTALLATIONS OF MORE THAN TWO DEVICES USE THE APPROPRIATE WALL BOX FOR THE NUMBER OF DEVICES REQUIRED. IF APPROVED BY THE OWNER THE USE OF GANGABLE WALL BOXES IS ALLOWED.
4. FOR SURFACE INSTALLATIONS IN MECHANICAL AREA OR SIMILAR LOCATIONS 4ó SQUARE BOXES SHALL BE USED WITH ¼ó RAISED COVER.

3.03 PULL AND JUNCTION BOXES

A. PULL BOXES SHALL NOT BE INSTALLED IN INACCESSIBLE LOCATIONS.

END OF SECTION 26 05 33

26 56 00
EXTERIOR LIGHTING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL, SUPPLEMENTARY, AND SPECIAL CONDITIONS APPLY TO ALL LIGHTING INSTALLATIONS.

B. SECTION 03 21 11 CONCRETE REINFORCING

C. SECTION 03 31 13 CAST IN PLACE CONCRETE

D. SECTION 26 05 00 COMMON WORK RESULTS ELECTRICAL

E. SECTION 26 05 33 RACEWAY AND BOXES

F. SECTION 26 05 19 LOW VOLTAGE WIRING

G. SECTION 26 09 23 LIGHTING CONTROLS

1.02 REQUIREMENTS OF WORK

A. THE BASIC ELECTRICAL REQUIREMENTS APPLY TO ALL ELECTRICAL MATERIALS, EQUIPMENT, INSTALLATIONS AND SERVICES SUPPLIED UNDER DIMMER PACKAGE.

B. THE ELECTRICAL CONTRACTOR SHALL OBTAIN A BILL OF MATERIALS FROM THE LIGHTING SUPPLIER(S) LISTED HEREIN OR PROPOSED FOR SUBSTITUTION. THE BILL OF MATERIALS SHALL BE SUBMITTED WITH THE CONTRACTOR'S BID AND SHALL INCLUDE, BUT NOT LIMITED TO, THE FOLLOWING.

1. ALL LIGHTING FIXTURES
2. ALL FIXTURE ACCESSORIES
3. NUMBER, FIXTURE TYPE AND LIGHT SOURCE TYPE TO BE PROVIDED

C. THE ELECTRICAL SUB-CONTRACTOR AND THE LIGHTING SUPPLIER(S) ARE RESPONSIBLE FOR THE INSTALLATION OF A COMPLETE AND OPERATING LIGHTING SYSTEM IN ACCORDANCE WITH THE INTENT OF THE CONTRACT DOCUMENTS.

1.03 SUBMITTALS

A. THE FOLLOWING ITEMS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO ORDERING.

1. POLES AND ARMS (CROSSARMS)
2. LIGHT FIXTURES

B. ALL SUBMITTALS SHALL BE SUBMITTED ELECTRONICALLY IN PDF FORMAT

1.04 INSTALLER QUALIFICATIONS

A. A FIRM WITH AT LEAST FIVE (5) YEARS OF SUCCESSFUL INSTALLATION EXPERIENCE ON PROJECTS WITH ELECTRICAL WORKS SIMILAR TO THIS PROJECT.

PART 2 - PRODUCTS

2.01 LIGHTING FIXTURE MANUFACTURERS

A. ACCEPTABLE MANUFACTURERS HOLOPHANE

B. NO SUBSTITUTIONS CAMPUS STANDARD.

2.02 FIXTURE SCHEDULE

A. ALL LIGHTING UNLESS OTHERWISE NOTED SHALL BE LED 3000K

B. HOLOPHANE 14' POST TOP

1. POLE: NYA14L5J20P07BK CIT TOOL RXXXY RFD170203 (SITE-LINK POLE)
2. FIXTURE: WAE3 P30 30K MVOLT MS GL5 BK SK TBK AO PR7 SH

C. HOLOPHANE 20' TWIN TEARDROP

1. POLE: DT20RTU798D
2. CLAMSHELL BASE: PM18CSBU9911
3. ROADWAY ARM: PD84/2CABKH
4. LEVELING FITTER: BHDF13200BK
5. LUMINAIRE: ESL2P40S30KASBKTG3S (REVISE AS REQUIRED FOR DISTRIBUTION TYPE REQUIRED (TYPE 3 LISTED))

D. HOLOPHANE 20' SINGLE TEARDROP

1. POLE: DT20RTU798D
2. CLAMSHELL BASE: PM18CSBU9911
3. ROADWAY ARM: PD42CABKH
4. LEVELING FITTER: BHDF13200BK
5. LUMINAIRE: ESL2P40S30KASBKTG3S (REVISE AS REQUIRED FOR DISTRIBUTION TYPE REQUIRED (TYPE 3 LISTED))

E. HOLOPHANE 30' SINGLE TEARDROP WITH ISU SPECIAL CAMDEN ROADWAY ARM

1. POLE: FL210-800EU879A
2. ANCHOR BOLTS: ABFL210800U7522
3. CLAMSHELL BASE: NY24CSBU2805
4. ROADWAY ARM: CAM481 MODU7522
5. FITTER: BHDF13200BK
6. FIXTURE: ESL2P40S30KASBKTGS3

F. HOLOPHANE 30' TWIN TEARDROP WITH ISU SPECIAL CAMDEN ROADWAY ARM

1. POLE: FL210-800EU879A
2. ANCHOR BOLTS: ABFL210800U7522
3. CLAMSHELL BASE: NY24CSBU2805
4. ROADWAY ARM: CAM961 MODU7522
5. FITTER: BHDF13200BK
6. FIXTURE: ESL2P40S30KASBKTGS3

G. ENTRANCE LIGHTING - HOLOPHANE MGV 70DHP MT L B 3 4 B EM (WALL MOUNTED GRANVILLE MINI IES TYPE III DISTRIBUTION.

H. BOLLARD (NON-LIGHTED) - HOLOPHANE BOLNY4717BTCABKH

I. WALL AREA LIGHTING - HOLOPHANE WALLPACK II, HPS SIZED AS REQUIRED, COLOR TO BE DARK BRONZE.

J. IN-GROUND LIGHTING SHALL BE INSTALLED IN A CONVEX TOPPED CONCRETE PEDESTAL AT LEAST 2" ABOVE FINISHED GRADE.

PART 3 - EXECUTION

3.01 GENERAL

A. ALL EQUIPMENT SHALL BE INSTALLED IN A WORKMANLIKE MANNER AND SHALL CONFORM TO INDUSTRY STANDARDS FOR THIS TYPE ON INSTALLATION.

B. ALL FIXTURES SHALL BE PLUMB AND SQUARE ON THE BASE AND SURROUNDINGS

3.02 POLE BASES

A. POLE BASES SHALL BE FORMED WITH APPROPRIATE SIZED SONATUBE, EARTH FORMED BASES ARE NOT PERMITTED.

B. RACEWAY SHALL EXTEND A MINIMUM OF 2ó ABOVE FINISHED TOP OF BASE.

C. PROVIDE ½ó BY 8' COPPER GROUND ROD AT EACH BASE LOCATION A MINIMUM OF 1' OUTSIDE THE DIAMETER OF THE CONCRETE BASE. TOP OF GROUND ROD SHALL BE BURIED A MINIMUM OF 6ó BELOW FINISHED GRADE. PROVIDE RACEWAY OUT OF THE BASE TO GROUND ROD LOCATION AND INSTALL A #10 SOLID BARE COPPER CONDUCTOR. CONNECTION TO GROUND ROD SHALL BE BY MEANS OF A MECHANICAL CONNECTOR.

D. BASES SHALL BE:

1. FOR TYPE B BASE SHALL BE 4000# REBAR REINFORCED CONCRETE 20ó DIAMETER 2' DEEP WITH TOP 2ó ABOVE FINISHED GRADE AND ¾ó CHAMBER EDGE.
2. FOR TYPES C & D BASE SHALL BE 4000# REBAR REINFORCED CONCRETE 24ó DIAMETER 4' DEEP WITH TOP 2ó ABOVE FINISHED GRADE (EXCEPT WHERE INSTALLED EXPOSED IN A PARKING SPACE WHERE THE BASE SHALL BE 48ó BELOW GRADE WITH 24ó EXPOSED ABOVE GRADE) AND ¾ó CHAMBER EDGE.
3. FOR TYPES E & F BASE SHALL BE 4000# REBAR REINFORCED CONCRETE 36ó DIAMETER 6' DEEP WITH TOP 2ó ABOVE FINISHED GRADE AND ¾ó CHAMBER EDGE.
4. TYPE H BASE SHALL BE 4000# CONCRETE 18ó DIAMETER 2' DEEP WITH TOP 2ó ABOVE FINISHED GRADE AND ¾ó CHAMBER EDGE.

3.03 EMERGENCY POWER

A. WHEN A BUILDING HAS AN EMERGENCY GENERATOR AND AVAILABLE EMERGENCY LOAD IS AVAILABLE:

1. EXTERIOR LIGHTING ON WALKWAYS SHALL BE ON EMERGENCY POWER
2. EXTERIOR LIGHTING AT ENTRANCES SHALL BE ON EMERGENCY POWER

3.04 TESTING

A. óMEGGERó ALL WIRING PRIOR TO ENERGIZING.

B. TEST ALL SWITCHES AND SENSORS FOR PROPER OPERATION

C. VERIFY PROPER OPERATION OF EACH FIXTURE.

3.05 CLOSEOUT

A. PRIOR TO FINAL ACCEPTANCE AND PROJECT CLOSEOUT THE CONTRACTOR SHALL:

1. REPAIR OR REPLACE ANY NON-FUNCTIONAL FIXTURES.
2. VERIFY ALL POLES ARE LEVEL AND PLUMB.

3.06 WARRANTY

A. AS SPECIFIED ON EACH INDIVIDUAL FIXTURE LISTED HEREIN.

B. IN LIEU OF A SPECIFIC FIXTURE WARRANTY, ALL PARTS AND LABOR ON THIS PROJECT SHALL BE WARRANTED FOR A PERIOD OF ONE (1) YEAR AFTER START-UP AND OWNER ACCEPTANCE.

END OF SECTION 26 56 00

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100% CONSTRUCTION DOCUMENTS

INDIANA STATE UNIVERSITY - NATIONAL PAN-HELLENIC COUNCIL PLAZA

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REVISIONS

No.	Description	Date

CERTIFIED BY:

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PE-11011623
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ENGINEER
OF
INDIANA

John K. Neville
MAY 15, 2025
EXPIRES 07/31/2026

BID ISSUED DATE:
MAY 15, 2025

DRAWN: J.D.S.
CHECKED: J.S

PROJECT NO.: P24-0112

REVISION NO.:

ELECTRICAL SPECIFICATIONS

E 301