ADDENDUM NO. 1

SAUERMAN WOODS
DRAINAGE IMPROVEMENTS – PHASE 2

FEBRUARY 9, 2024

CITY OF CROWN POINT
101 N. EAST STREET
CROWN POINT, IN 46307

PREPARED BY:

AMERICAN STRUCTUREPOINT, INC.
116 E. BERRY STREET, SUITE 1515
FORT WAYNE, IN 46802

This Addendum forms part of the Contract Documents and modifies the original Bidding Documents as noted below. Acknowledge receipt of the Addendum in the space provided in the Bid Form. Failure to do so may subject Bidder to disqualification.

REVISIONS TO PROJECT MANUAL:

1. *Replace* Table of Contents for Specifications and Contract Documents with Table of Contents for Specifications and Contract Documents (Addendum 1)
2. *Replace* Section 01 33 00, Submittal Procedures with 01 33 00, Submittal Procedures (Addendum 1)
3. *Replace* Section 32 93 00, Plants with 32 93 00, Plants (Addendum 1)
4. *Insert* Section 33 05 33, Ductile Iron Pressure Utility Piping (Addendum 1).
5. *Replace* Section 33 11 00, Water Piping Installation with 33 11 00, Water Piping Installation (Addendum 1)
6. *Replace Bid sheets 3A of 9 and 3B of 9 with R-3A of 9 and R-3B of 9.*

CONTRACT DRAWINGS

Sheet C-08:	Revised Fire Hydrant Loc., added 6" Water Main & Ext.
Sheet C-14:	Replaced Aqua Swirl Model.
Sheet C-21:	Added ADA ramp at approx. station 103+80.
Sheet C-22:	Added ADA ramp north of decorative path.
	Pine Needle Mulch replaced Southern River Rock at north end.
Sheet C-23:	Connected Conc. Sidewalk east of road.

Sheet C-24:	C-21, C-22 ADA ramp additions.
Sheet C-28:	Added – Curb Ramp Details
Sheet C-29:	Added – Curb Ramp Details
Sheet L-01:	Added Pine Needle Mulch note.
Sheet L-02:	Added Pine Needle Mulch note.
Sheet L-04:	Detail 06 - Name change to Southern River Rock.
Sheet L-05:	Labeled the posts and railings and added General Notes.
Sheet L-06:	Added notes clarifying materials and General Notes.
Sheet L-07:	Added notes clarifying materials, General Notes, and Decorative Path Detail.
Sheet L-07.1:	Added Sheet L-07.1 – clarifying Sport Court Layout.
Sheet L-08:	Combined details, clarifying dimensions and materials.
Sheet L-09:	Combined details, clarifying dimensions and materials.
Sheet L-10:	Added note clarifying layout.
Sheet L-11:	Added notes clarifying layout.
Sheet L-12:	Added note clarifying layout and that Rail is Custom.
Sheet L-13:	Modified dimensions clarifying eave height, see Specifications.
Sheet L-14:	Modified dimensions clarifying eave height, see Specifications.

CLARIFICATIONS/QUESTIONS AND ANSWERS:

1. **Question:** Is there a particular model number for the removable bollards.
   Answer: No. Contractors choice if it meets detailed requirements for size and color. The material can all be galvanized (galvanized box and pipe).

2. **Question:** Drawing C-07 is showing the headwall as part of phase 1. Bid item 21 is calling for a storm sewer outfall headwall. Please clarify.
   Answer: There is an outfall as shown on sheet C-15. Will update bid description.

3. **Question**: Drawing C-17 shows 4" asphalt for the asphalt path. Please clarify the surface, intermediate and base thickness.
   Answer: See muti-use path/trail detail on sheet C-28. 1" surface, 3" intermediate, 6" agg. Base.

4. **Question:** Drawings show ADA ramps in 4 locations. The bid items call for 6. Please clarify.
   Answer: See revised drawings C-21 & C-22 showing 6 locations.

5. **Question**: Is there a detail for the decorative path – bid item 09?
   Answer: The Decorative Path is to be constructed per Crown Point Standard Concrete Sidewalk Detail RD-11 on Sheet C-28 and Decoractive Path Detail on Sheet L-06. Per the Decorative Path Detail on Sheet L-06, the path is to be crowned in the center and have cross slopes of 1.5% to the path edge. See Specifications 321316 Decorative Concrete Paving for more details..

6. **Question:** Will there be water in the pond when the scuba diving pad is installed?
   Answer: yes. The water depth is approximately 10'-12' when full

7. **Question**: Is the scuba diving pad to be poured in place or pre-cast.

Answer: Contractors' choice. No rebar required.

8. **Question:** What is final location of the scuba diving pad?
   Answer: See sheet C-05 & C-23. Contractor shall coordinate final location with owner. Likely 10 feet from end of pier. The pad will need to be set level and will be used for divers to sit on bottom of pond to practice buoyancy control.

9. **Question**: Per drawing C-22; is there a manufacturer & model number for the bolt down grab bars?
   Answer: Contractors choice.

10. **Question:** Spec section 323212-2.1.A, states that a contractor is responsible to engage a qualified professional engineer to design the chain link fence and gate frameworks. Please clarify.
    Answer: The chain link fence does not need to be designed by an engineer but the framework and the gate itself needs to be designed to resist the loads prescribed by the applicable code.

11. **Question**: Where is the handrail located on the drawings.
    Answer: See sheets L-05, L-06 and L-13

12. **Question:** Drawing S-09. The details 1, 2, 4, 5 are calling for the railing (to be determined). Is the detail on drawing L-11 for the Echelon II Majestic rail to be used?
    Answer: Yes, the Echelon II Majestic Rail detail on sheet L-12 is the railing (TBD). Reference in details 1, 2, 3, 4, and 5 on Sheet 5-09. Reference railing details on L-11 and L-12.

13. **Question**: Drawing S-06. There is a detail B/S-9 drawing. There is no detail B on drawing S-09.
    Answer: See typical clip angle location plan detail, sheet S-11.

14. **Question:** Please confirm the stone type, depth of stone, and depth of post footings at pickleball courts, details are contradicting on sheet L-08
    Answer: 8" of #73 course aggregate is to be used. See Revised sheet L-09.

15. **Question**: Define where the rubber curb shall be placed around the volleyball courts.
    Answer: The rubber curb shall be placed at the perimeter of the sand volleyball court as depicted in the sport court layout plan, sheet L-07 and the refined details on sheet L-10.

16. **Question:** Define where the 20-foot volleyball court enclosure is to be placed.
    Answer: The 20 foot volleyball court enclosure is to be placed along the perimeter of the 2 sets of 3 courts.

17. **Question**: Verify length and location for the enclosure and posts on drawing C-22. Will there be enclosures between the court. Will some of the posts be omitted for an entrance?
    Answer: There are 2, 20' volleyball court enclosures. Each enclosure is to surround the perimeter of the 2 sets of 3 courts; no dividing nets between the individual courts. See sheet L-07.1

18. **Question:** Confirm the drainage aggregate at the volleyball court. The profile detail and the court section detail on sheet L-09 are contradictory.
    Answer: 8" of clean, free draining aggregate is to be used. The details on sheet L-09 have been updated to reflect this.

19. **Question**: Can spot elevations be provided for the 9ft asphalt path?

Answer: Grading for the trail around the pond was done as phase 1. See sheet C-35.

20. **Question**: What is the Pickleball Court pavement and surface?
    Answer: The pickleball courts are concrete with a cushion concrete surface. See pickleball court details on sheet L-08 and spec section 321823 Cushion concrete Tennes Court Color Coating System.

21. **Question**: Sheet S-08 shows a dock access ladder, please provide detail.
    Answer: The ladder will be all aluminum, 5 step, 21" wide. A specific model / type will be determined later.

OTHER:

1. The sign-in sheet for the pre-bid meeting, which was held February 6, 2024 is included with this addendum.
2. Acknowledgement of Addendum

END OF ADDENDUM NO. 1

CERTIFIED BY:

Bryan Hood

Registered Engineer No. PE 11500233

State of Indiana

Item No.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	MOBILIZATION AND DEMOBILIZATION (5%)	1	L.S.		
2	CONSTRUCTION CONTINGENCY	1	L.S.		
3	EROSION AND SEDIMENTATION CONTROL	1	L.S.		
4	VIDEO DOCUMENTATION OF CONDITIONS	1	L.S.		
5	GRADING AND RESTORATION	1	L.S.		
6	ASPHALT PAVING	6100	S.Y.		
7	9 FT. ASPHALT PATH	2280	S.Y.		
8	REMOVABLE BOLLARDS	9	EA		
9	STAMPED DYED CONCRETE	350	S.Y.		
10	CURB & GUTTER	2500	L.F.		
11	ADA RAMPS, ALL TYPES	6	EA		
12	CONCRETE COMMON AREA	1100	S.Y.		
13	CONCRETE PADS FOR VA GROUPS SCULPTURES (Total of 7 pads at 6'x6' ea.)	7	EA		
14	GRANULAR BACKFILL (#53/#73) - PORCH, PARKING AREAS AND SIDEWALK AREAS	2000	C.Y.		
15	SIDEWALK, 4" CONCRETE	970	S.Y.		
16	4" SCH. 40 PVC PERFORATED PIPE	774	L.F.		
17	STORM SEWER, 24" RCP	888	L.F.		
18	STORM SEWER, 18" RCP	32	L.F.		
19	STORM SEWER, 15" RCP	234	L.F.		
20	STORM SEWER, 12" RCP	480	L.F.		
21	STORM SEWER OUTFALL HEADWALL	1	L.S.		
22	CONCRETE ANTI-SEEP COLLAR	1	L.S.		
23	30" INLETS	14	EA		
24	48" STORM DRAINAGE MANHOLE	3	EA		
25	60" STORM DRAINAGE MANHOLE	6	EA		
26	72" STORM DRAINAGE MANHOLE	1	EA		
27	AQUA SWIRL	1	L.S.		
28	1" WATER SERVICE	194	L.F.		
29	6" DUCTILE IRON PRESSURE UTILITY PIPING	120	L.F.		
30	6" DUCTILE IRON FITTINGS FOR DUCTILE IRON PIPE	3	EA		
31	6" x 6" TAPPING TEE AND VALVE	1	EA		
32	CURB STOP ASSEMBLY	1	L.S.		
33	FOOTWASH STATION	1	L.S.		
34	FIRE HYDRANT ASSEMBLY	1	EA		
35	REMOVE EXISTING FIRE HYDRANT ASSEMBLY	1	EA		
36	6" SANITARY SERVICE	145	L.F.		
37	6" SEWER TAP	1	EA		
38	CLEANOUT	5	EA		
39	TURF GRASS SEED	189000	S.F.		
40	SOD	5000	S.F.		
41	SOUTHERN RIVER ROCK (#2)	40	TONS		
42	PINE NEEDLE MULCH	130	CY		
43	SPLIT RAIL FENCE	100	L.F.		
44	EMERALD GREEN ARBORVITAE (6'-7' height)	129	EA		
45	POND AERATION LIGHTED FOUNTAIN, AIR PUMP, COVER, LINES (Model EFL 450 by Eagle Fountains)	1	L.S.		
46	EAST SIDE PIER	1	L.S.		
47	NORTHSIDE PIER	1	L.S.		
48	LIGHTING, ELECTRICAL, AND RELATED APPURTENANCES	1	L.S.		
49	VOLLEYBALL COURTS AND RELATED APPURTENANCES	1	L.S.		
50	PICKLEBALL COURTS AND RELATED APPURTENANCES	1	L.S.		
51	REST ROOM FACILITY AND RELATED APPURTENANCES	2	L.S.		
52	STORAGE BLDG AND RELATED APPURTENANCES	2	L.S.		
53	ELECTRICAL BUILDING (10' X 12')	1	L.S.		

	MANDATORY ALTERNATE BID ITEMS				
54	PAVILION w/CONCRETE PAD	1	L.S.		
55	PIER SHELTER	1	L.S.		
56	LANDSCAPING	1	L.S.		
57	BIKE RACKS	10	EA		
58	PICNIC TABLES	3	EA		
59	BENCHES AND SEATING	30	EA		
60	WASTE RECEPTACLES	15	EA		
61	DINING TABLES & CHAIRS (BUILT-IN)	20	EA		
62	10' X 10' X 8" CONCRETE DIVING PAD	1	L.S.		

SPECIFICATIONS AND CONTRACT DOCUMENTS – Addendum 1
For
Sauerman Woods
Drainage Improvements – Phase 2

BIDDING REQUIREMENTS

Advertisement to Bid
Instructions to Bidders
Bid Form
Bid Bond
Wage Rates

CONTRACT REQUIREMENTS

Notice of Award
Standard Form of Agreement
General Conditions
Supplementary Conditions
Payment Bond
Performance Bond
Notice to Proceed
Work Change Directive
Change Order
Field Order
Form 96
Non-Collusion Affidavit of Subcontractor
Notice of Acceptability of Work
Certificate of Substantial Completion
Drug Plan and Prequalification Form

TECHNICAL SPECIFICATIONS

APPENDICES

SECTION 01 33 00

SUBMITTAL PROCEDURES
Addendum 1

PART 1 GENERAL

1.1 DESCRIPTION

A. Shop Drawing procedures shall conform to requirements of General Conditions and as described in this Section.

B. The ***Required Submittal Listing*** for this Project is indicated in Attachment 1 herein.

1.2 MEASUREMENT AND PAYMENT

A. This item is to be included in overall Project cost and not bid as a separate Work item. If additional Shop Drawings which are not noted in Attachment 1 are required, they will be prepared and submitted at no additional cost to the Owner.

1.3 PROCEDURE

A. Submit Shop Drawings in accordance with Paragraph ***1.4 –Project Electronic Data Protocol***. Refer to ***Required Submittal Listing*** noted above for Project Shop Drawing. Note that the Owner reserves the right to amend the list as Project needs dictate.

B. A letter of transmittal shall accompany each submittal. A separate transmittal letter shall accompany the data submitted for each submittal item.

C. At the beginning of each letter of transmittal provide a reference heading including the following information:
   1. Owner's Name _____
   2. Project Name _____
   3. Work Order No._____
   4. Section No. _____
   5. Submittal No.(see section 1.3G) _____

D. If a Shop Drawing deviates from the requirements of the Contract Documents, Contractor shall specifically note each variation in his letter of transmittal.

E. All Shop Drawings submitted for approval shall have a title block with complete identifying information satisfactory to Engineer.

F. All Shop Drawings submitted shall bear the stamp of approval and signature of Contractor as evidence that they have been reviewed by Contractor. Submittals without this stamp of approval will not be reviewed by Engineer and will be returned to Contractor. Contractor's stamp shall contain the following minimum information:

Project Name: _____

Contractor's Name: _____

Date: _____

Item: _____

Specifications Section: _____

Page No.: _____

Para. No.: _____

Drawing No.:_____ of _____

Location: _____

Submittal No.: _____

Approved By: _____

G. Submittals shall be numbered in accordance with the project submittal numbering sequence. This sequence will be provided to the Contractor and will generally follow the form of: (Work Order No.)-(Section No.)-(Paragraph No.)-(Item No.)-(Extension APC/ECO). An item number will be assigned to each submittal, within each section; starting with No. 0001 and thence numbered consecutively. Resubmittals shall be identified by the original submittal number followed by a dash and “R1” for the first resubmittal, “R2" for the second resubmittal, etc.

H. Contractor shall comply with the data formats, transmission methods, and permitted uses set forth in the Project Electronic Data Protocol Table as shown in Exhibit 01 33 00-1, when transmitting or using Electronic Data on the Project. If hard copy data format has been previously approved, Contractor shall initially submit to Engineer a minimum of 7 copies of all submittals that are on 11-inch by 17-inch or smaller sheets, and 2 prints made from original, for all submittals on sheets larger than 11-inch by 17-inch. One copy of each submittal shall be stamped "Preliminary - Not For Construction."

I. After Engineer completes his review, Shop Drawings will be marked with one of the following notations:
   1. Approved (APP)
   2. Approved as Noted (AAN)
   3. No Action Required (NAR)
   4. Revise and Resubmit (R&R)
   5. Rejected (REJ)
   6. Hold

J. If a submittal is acceptable, it will be returned "Approved" or "Approved as Noted".

K. Upon a submittal being returned "Approved" or "Approved as Noted", Contractor may order, ship or fabricate the materials included on the submittal, provided it is in accordance with the corrections indicated.

L. If a submittal has been submitted, but does not require approval, it will be returned “No Action Required”. This indicates the receipt of the submittal is acknowledged and no further submittal action is required from any party.

M. If a submittal is unacceptable, it will be returned with one of the following notations:
   1. "Revise and Resubmit"
   2. "Rejected"

N. Upon notification of a submittal returned "Revise and Resubmit", Contractor shall make the corrections indicated and repeat the initial approval procedure. The "Rejected" notation is used to indicate material or equipment that is not acceptable. Upon notification of a submittal so marked, Contractor shall repeat the initial approval procedure utilizing acceptable material or equipment.

O. Incomplete submittals, which could be remedied by the Contractor’s submission of additional information, may be held without disposition. The Contractor will receive a Submittal Hold Notice, detailing generally the required additional information. If the requested information is not received by the date indicated on the Submittal Hold Notice, the submittal shall be marked “Rejected” and Contractor will be notified.

P. Any related Work performed or equipment installed without an "Approved" or "Approved as Noted" Shop Drawing will be at the sole responsibility of the Contractor.

Q. Shop Drawings shall be submitted a minimum of 2 weeks in advance of the need for the material or equipment for construction and with ample allowance for the time required to make delivery of material or equipment after data covering such is approved. Contractor shall assume the risk for all materials or equipment which are fabricated or delivered prior to the approval of Shop Drawings. Materials or equipment will not be included in periodic progress payments until approval thereof has been obtained in the specified manner.

R. Engineer will review and process all submittals promptly, but a reasonable time should be allowed for this, for the Shop Drawings being revised and resubmitted, and for time required to return the approved Shop Drawings to Contractor.

S. It is Contractor's responsibility to review submittals made by his Suppliers and Subcontractors before transmitting them to Engineer to assure proper coordination of the Work and to determine that each submittal is in accordance with his desires and that there is sufficient information about materials and equipment for Engineer to determine compliance with the Contract Documents. Incomplete or inadequate submittals will be returned for revision without review.

T. Contractor shall furnish required submittals with complete information and accuracy in order to achieve required approval of an item within three submittals. All costs to Engineer involved with subsequent submittals of Shop Drawings, Samples or other items requiring approval, will

be backcharged to Contractor, at the rate of 3.0 times direct technical labor cost, by deducting such costs from payments due Contractor for Work completed. In the event that Contractor requests a substitution for a previously approved item, all of Engineer's costs in the reviewing and approval of the substitution will be backcharged to Contractor unless the need for such substitution is beyond the control of Contractor.

1.4 PROJECT ELECTRONIC DATA PROTOCOL

A. General Provisions: The Project Electronic Data Protocol (PROTOCOL) establishes the procedures relative to the transmission or exchange of Electronic Data for the Project. Where a provision in this PROTOCOL conflicts with a provision(s) in the Contract Documents, the provisions in this PROTOCOL will prevail.

B. The Contractor shall incorporate this PROTOCOL by reference into any other agreement for services or construction for the Project.

C. Definitions
   1. *Electronic Data* – Electronic Data is defined as information communications, Drawings, or designs created or stored for the Project in electronic or digital form.
   2. *Confidential Information* – Confidential Information is defined as Electronic Data that the transmitting party has designated as confidential and clearly marked with an indication such as “Confidential” or “Business Proprietary”.
   3. *Written or In Writing* – In addition to definitions in the Contract Documents, “written” or “in writing” shall mean any communication, including without limitation a notice, consent or interpretation, prepared and sent to an address provided in this PROTOCOL using a transmission method sent forth in this PROTOCOL that permits the recipient to print or store the communication. Communications transmitted electronically are presumed received if sent in conformance with Paragraph 1.4 E.

D. Project Electronic Data Protocol Table
   1. The Owner, Contractor, and Engineer shall comply with the data formats, transmission methods, and permitted uses set forth in the Project Electronic Data Protocol Table as shown in Exhibit 01 33 00-1, when transmitting or using Electronic Data on the Project.
   2. Primary data format is electronic and primary transmission method is via email, email attachment, or PMIS.
   3. If Contractor does not have electronic capabilities, hard copy transmissions will be allowed with prior approval. Contractor to coordinate hard copy transmission and return procedures with Engineer and Owner, prior to first submittal.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 33 00

Required Submittal Listing

EXHIBIT 01 33 00-1
PROJECT ELECTRONIC DATA PROTOCOL TABLE

Section	Electronic Data	Data Format					Transmitting Party			Transmission Method				Receiving Party			Notes
		DWG	EM	PDF	HC	W	C	E	O	EM	EMA	Mail	PMIS	C	E	O	
3.01.A	**Project Communications**																
	General Communications & Correspondence		X	X	X (3)		X	X	X	X	X	X (3)		X	X	X	
	Meeting Notices and Agendas		X	X	X (3)	X		X			X	X (3)		X		X	
	Meeting Minutes			X	X (3)			X			X	X (3)		X		X	
3.01.B	**Contractor's Submittals to Owner**																
	Shop Drawings			X	X (3)		X				X	X (3)	X			X	1, 2
	Product Data			X	X (3)		X				X	X (3)	X			X	1, 2
	Informational and Closeout Submittals			X	X (3)		X				X	X (3)	X			X	1, 2
3.01.C	**Engineer's Return of Reviewed Submittals to Owner**																
	Shop Drawings			X				X					X			X	2
	Product Data			X				X					X			X	2
	Informational and Closeout Submittals			X				X					X			X	2
3.01.D	**Modifications**																
	Requests for Interpretation (RFI)			X			X	X					X			X	1
	Engineer's Interpretations (RFI Responses)			X				X					X			X	2
	Clarifications to Engineer			X					X				X		X		
	Field Orders			X	X				X		X	X		X			
	Proposal Requests			X	X		X	X	X		X	X				X	2
	Change Order Proposals			X	X		X				X	X				X	2
	Change Order Proposals - Response			X	X				X		X	X		X			
	Work Change Directive (for Contractor's Signature)			X	X				X		X	X		X			
	Change Order (for Contractor's Signature)				X				X		X	X		X			
3.01.E	**Applications for Payment**			X	X		X				X	X				X	2
3.01.F	**Notices and Claims to Contractor**			X	X				X		X	X		X			
	Notices and Claims to Owner			X	X		X				X	X				X	2
3.01.G	**Closeout Documents**																
	Record Documents (Red Lined Drawings)			X	X		X				X	X				X	2
	Punch List			X	X				X		X	X		X			
	Contract Closeout Documents			X	X		X				X	X				X	2

KEY

Data Format		Transmission Method		Receiving Party	
DWG	.dwg, AutoCAD 2007 drawing	EM	Via e-mail	C	Contractor
EM	.htm, .txt, .rtf, E-mail text	EMA	As an attachment to an e-mail	E	Engineer
PDF	.pdf portable document format	PMIS	Program Management Information System website	O	Owner
HC	Hard Copy	Mail	Via United States Postal Office		
W	.doc, microsoft word 97-2003				

Transmitting Party	
C	Contractor
E	Engineer
O	Owner

Notes

1. **Modifications by Engineer to Contractor's submittals and requests for interpretations are limited to printing out, marking-up, and adding comment sheets.**
2. **Review by OWNER prior to OWNER distribution to appropriate parties**
3. **Primary data format is electronic (PDF), and Secondary is hard copy (with Owner approval)**

Spec Section	Paragraph	Pkg. Name	Submittal Item
01 31 19	1.1.E	Pre-Construction Meetings	Preliminary Progress Schedule
			Preliminary Schedule of Submittals
			Preliminary Schedule of Values
			List of Subcontractors
			List of Emergency Contact Information
01 57 13	1.3.B	Erosion and Sedimentation Control	Product Data/ Instructions
	1.3.C		Inspection Logs
01 71 16.13	1.4.A	Video Documentation of Conditions	Preconstruction Video
01 71 23	1.4.A	Field Engineering	Daily Reports (when requested)
			Contractor's Notes (when requested)
01 77 00	1.1.A	Closeout Procedures	Record Documents
			Special Bonds, Guarantees, and Service Agreements
			Consent of Surety to Final Payment
			Releases as required in General Conditions
			Releases from Agreements
01 78 39	1.3.A	Project Record Documents	Electronic Drawings
			Original Record Drawings
03 00 05	1.5.A	Concrete	Shop Drawings
			Product Data
03 41 00	1.6.A	Precast Concrete Boardwalk System	Detailed Plans
			Design Computations
			Construction Specifications
	1.6.B		Final Plans
	1.6.C		Product Data
			Shop Drawings
05 56 00	1.5.A	Metal Castings	Shop Drawings
	1.5.B		Qualifications Statements (as needed)
10 73 00	1.3.A	Manufactured Shelters and Pavilions	General Submittal (Drawing Sets)
26 05 00	1.11.A-C	Common Work Results for Electrical	General Submittal Requirements
	1.12.A		Operation and Maintenance Manuals
	1.13.A		Warranties
26 05 19	1.04.A	Low-Voltage Electrical Power Conductors and Cables	Shop Drawings

26 05 23	1.02.A	Instrumentation Cables	Shop Drawings
26 05 26	3.02.C	Grounding and Bonding for Electrical Systems	Testing for Project
26 05 33	1.03.A	Raceways, Conduit, and Boxes for Electrical Systems	Shop Drawings
26 08 00	3.06.A	Electrical Acceptance Testing	Testing Report and Testing Plan
26 24 16	1.03.A	Panelboards	Product Data
26 27 16	1.04.B	Electrical Cabinets and Enclosures	Product Data
	1.04.C		Shop Drawings
	1.05.B		Manufacturer's Instructions
	1.06.B		Manufacturer's Field Reports
	1.06.C		Project Record Documents
	1.06.D		Operation Data
26 56 00	1.03.A	Exterior Lighting	Product Data
31 00 05	1.5.A	Trenching and Earthwork	Product Data
	1.5.B		Shop Drawings
			Test Reports / Procedures
			Qualifications Statements
31 05 19	1.5.A	Geosynthetics for Earthwork	Product Data
	1.5.B		Certificates of Compliance
31 11 00	1.5.A	Clearing and Grubbing	Shop Drawings
32 12 16	1.4.A	Asphalt Paving	Job Mix Designs
	1.4.B		Certified Producers List
	1.4.C		Certified Design Laboratories List
32 13 16	1.3.A	Decorative Concrete Paving	Product Data
			Samples
32 18 23	1.4.B	Concrete Tennis Court Cushioned Surface Color Coating System	Product Data
	1.4.C		Samples
	1.4.D		Test Reports
	1.4.E		Manufacturer's Certification
	1.4.F		Manufacturer's Project References
	1.4.G		Applicator's Project References
	1.4.H		Warranty Documentation
	1.4.I		Authorized Installer Certificate
32 31 13	1.3.A	Chain Link Fences and Gates	Product Data
	1.3.B		Shop Drawings
	1.3.C		Samples
	1.3.D		Delegated Design Submittal

32 31 19	1.5.A	Decorative Metal Fences and Gates	Manufacturer's Submittal Package (Drawings and Calculations)
32 91 13	1.3.A	Soil Preparation	Product Data
	1.3.B		Samples
	1.4.A		Field Quality Control Reports
32 92 00	1.5.A	Seeding and Grading	Product Data
	1.5.B		Quality Control
32 93 00	1.5.A	Plants	Product Data
	1.5.B		Samples
	1.6.A		Qualification Data
	1.6.B		Product Certificates
	1.6.C		Pesticide and Herbicide Product Label and Application Instructions
	1.6.D		Sample Warranty
	1.7.A		Maintenance Data
33 05 33	1.5.A	Ductile Iron Pressure Utility Piping	Product Data
			Samples
	1.5.B		Certificates
			Source Quality Control
33 05 34.13	1.5.A	Concrete Non-Pressure Utility Piping	Product Data
	1.5.B		Certifications
			Manufacturer's Instructions
			Testing Compliance
33 05 37.13	1.5.A	PVC Non-Pressure Utility Piping	Product Data
	1.5.B		Certificates
			Source Quality Control
			Qualifications Statements
33 05 38.16	1.5.A	HDPE Pressure Utility Piping	Product Data
	1.5.B		Certificates
			Source Quality Control
			Qualifications Statements
	1.5.C		Record Documentation
33 11 00	1.5.A	Water Piping Installation	Product Data
			Shop Drawings
	1.5.B		Certificates
			Test and Evaluation Reports
			Field Quality Control
	1.5.C		Record Documentation
33 12 00	1.5.A	Water Appurtenances	Product Data
	1.5.B		Certificates

33 31 00	1.5.B	Sanitary Sewer Piping Installation	Field Quality Control Test Results
33 41 00	1.5.A	Storm Utility Piping Installation	Field Quality Control Test Results
33 44 13	1.4.A	Drainage Structures	Shop Drawings
33 46 16.19	1.5.A	Pipe Underdrains	Product Data
	1.5.B		Certificates
			Source Quality Control
			Qualifications Statements
33 49 13	1.4.A	Storm Drainage Manholes	Shop Drawings
33 50 00	1.4.A	Hydrodynamic Separator	Shop Drawings
			Product Data
			Manufacturer's Installation Requirements
			Maintenance Requirements

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SECTION 32 93 00

PLANTS
Addendum 1

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Plants.
2. Tree-watering devices.
3. River rock mulch.
4. Pine needle mulch.

1.2 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 329113 "Soil Preparation" for drawing designations for planting soils.

I. 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.

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

K. 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.

1.3 COORDINATION

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

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. Plant Materials: Include quantities, sizes, quality, and sources for plant materials.

B. Samples for Verification: For each of the following
1. Manufactured topsoil: 1 quart Ziploc bag
2. Planting soil: 1 quart Ziploc bag
3. Mulch: 1 quart Ziploc bag

1.6 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.

1.7 CLOSEOUT SUBMITTALS

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

1.8 MEASUREMENT AND PAYMENT

A. Emerald Green Arborvitae
   1. Work Item Number and Title
      32 93 00- A Emerald Green Arborvitae
   2. Payment for emerald green arborvitae is to be on a unit price basis as noted in the Bid Schedule.
   3. The payment quantity shall be per each emerald green arborvitae successfully planted. This includes all labor and material necessary to successfully install emerald green arborvitae, including but not limited to; excavation, plant material, fertilizers, mulch, weed control, pesticides, watering, soil preparation, and pruning.

B. Landscaping (OPTIONAL BID ITEM)
   1. Work Item Number and Title
      32 93 00- B Landscaping
   2. Payment for landscaping is to be on a lump sum basis as noted in the Bid Schedule.
   3. The payment quantity shall be per lump sum as noted on the Bid Schedule. This lump sum includes all labor and material necessary to successfully install plantings shown on the Drawings, including but not limited to; excavation, plant material, fertilizers, mulch, weed control, pesticides, watering, soil preparation, and pruning.

C. River Rock
   1. Work Item Number and Title
      32 93 00-C Southern River Rock (#2)
   2. Payment for River Rock shall be on a unit price basis for river rock successfully installed.
   3. The pay quantity for River Rock shall be the actual quantity of special backfill actually installed, as measured and described below.
   4. The payment of River Rock shall be based on the unit price per ton as listed on the submitted Basis of Bid Form.
   5. Such unit price shall include all costs to furnish all labor, materials, equipment, tools, and compacting required to place the River Rock material shown on the Drawings.

D. Pine Needle Mulch
   1. Work Item Number and Title
      32 93 00-D Pine Needle Mulch
   2. Payment for Pine Needle Mulch shall be on a unit price basis for pine needle mulch successfully installed.
   3. The pay quantity for Pine Needle Mulch shall be the actual quantity of special backfill actually installed, as measured and described below.
   4. The payment of Pine Needle Mulch shall be based on the unit price per cubic yard as listed on the submitted Basis of Bid Form.
   5. Such unit price shall include all costs to furnish all labor, materials, equipment, tools, and compacting required to place the Pine Needle Mulch material shown on the Drawings.

1.9 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful establishment of plants.
   1. Professional Membership: Installer shall be member in good standing of either the Professional Landscape Network or the American Nursery and Landscape Association.
   2. Experience: Five years' experience in landscape installation in addition to requirements in Section 01 40 00 "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. 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 (150 mm) above the root flare for trees up to 4-inch (100-mm) caliper size, and 12 inches (300 mm) above the root flare for larger sizes.
   2. Other Plants: Measure with stems, petioles, and foliage in the 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.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Package 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. Apply anti-desiccant to trees and shrubs using power spray to provide an adequate film over trunks (before wrapping), branches, stems, twigs, and foliage to protect during digging, handling, and transportation.
   1. If deciduous trees or shrubs are moved in full leaf, spray with anti-desiccant at nursery before moving and again two weeks after planting.

G. 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.

H. 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.

1.11 FIELD CONDITIONS

1. 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.
2. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.
   a. Spring Planting April 1 to June 15.
   b. Fall Planting: September 1 to October 1.
3. 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.
4. Coordination with Lawns: Plant trees and shrubs after finish grades are established and before planting lawns, unless otherwise acceptable to Landscape Architect.
   a. When planting trees and shrubs after lawns, protect lawn areas and promptly repair damage caused by planting operations.

1.12 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. 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 or warranty period.
    c. A limit of one replacement of each plant is required except for losses or replacements due to failure to comply with the 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 ¾ inch (19mm) 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 nursey 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. If formal arrangements or consecutive order of plants is indicated on Drawings, select stock for uniform height and spread, and number the labels to assure symmetry in planting.

2.2 FERTILIZERS

A. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
   1. 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 the following:
   1. Type: Shredded hardwood, ground or shredded bark.
   2. Size Range: 3 inches maximum, ½ inch minimum.
   3. Color: Natural.

B. River Rock Mulch: Rounded riverbed gravel or smooth-faced stone.

   1. Size Range: 2 inches maximum, 3/4 inch minimum.
   2. Color: Uniform tan-beige color range acceptable to Landscape Architect Readily available natural gravel color range.

C. Pine Needle Mulch: Free from deleterious materials consisting of the following:
   1. Type: Long leaf Pine Needles.
   2. Color: Natural.

2.4 WEED-CONTROL BARRIERS

A. Nonwoven Geotextile Filter Fabric: Polypropylene or polyester fabric, 3 oz./sq. yd. minimum, composed of fibers formed into a stable network so that fibers retain their relative position. Fabric shall be inert to biological degradation and resist naturally encountered chemicals, alkalis, and acids.

B. Composite Fabric: Woven, needle-punched polypropylene substrate bonded to a nonwoven polypropylene fabric, 4.8 oz./sq. yd..

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 TREE-WATERING DEVICES (ALTERNATE BID ITEM)

A. Slow-Release Watering Device: Standard product manufactured for drip irrigation of plants and emptying its water contents over an extended time period; manufactured from UV-light-stabilized nylon-reinforced polyethylene sheet, PVC, or HDPE plastic.

1. Manufacturers: Subject to compliance with requirements, provide products by the following:

a. BIO-PLEX.
1) Water-IT-Well Slow Drip Watering Bag
a) Size: 18gal, 30 ft tall by 18 inch wide

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 Architect and replace with new planting soil.

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

3.2 PLANTING AREA ESTABLISHMENT

A. General: Prepare planting area for soil placement and mix planting soil according to Section 329113 "Soil Preparation."

B. Placing Planting Soil: Place and mix planting soil in-place 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.

3.3 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 three times as wide as balled or burlapped 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 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.

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.

3.4 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. 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.
   2. 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.
   3. 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. Carefully remove root ball from container without damaging root ball or plant.
   2. 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.
   3. Continue backfilling process. Water again after placing and tamping final layer of soil.

3.5 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.

3.6 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 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.

3.7 PLANTING AREA MULCHING

A. Install weed-control barriers before mulching according to manufacturer's written instructions. Completely cover area to be mulched, overlapping edges a minimum of 6 inches and secure seams with galvanized pins.

B. Mulch backfilled surfaces of planting areas and other areas indicated.

1. Trees and Treelike Shrubs in Turf Areas: Apply organic mulch ring of 3-inch average thickness of organic mulch over whole surface of planting area, and finish level with adjacent finish grades. Do not place mulch within 3 inches of trunks or stems.

3.8 INSTALLATION OF EDGING

A. 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.

3.9 INSTALLATION OF SLOW-RELEASE WATERING DEVICE

A. Provide one device for each tree.

3.10 PLANT MAINTENANCE

A. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, 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.

3.11 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.

3.12 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.

3.13 MAINTENANCE SERVICE

A. Maintenance Service: 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 for Trees and Shrubs: 12 months from date of Substantial Completion.
2. Maintenance Period for Ground Cover and Other Plants: Six months from date of Substantial Completion.

END OF SECTION 329300

SECTION 33 05 33

DUCTILE IRON PRESSURE UTILITY PIPING
Addendum 1

PART 1 GENERAL

1.1 DESCRIPTION

A. Scope:
   1. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install ductile iron pipe and fittings as shown and specified.
   2. Extent of piping is shown on the Drawings and in the Piping Schedule.

B. Coordination:
   1. Review installation procedures under this and other Sections and coordinate installation of items to be installed with, or before, the ductile iron utility pipe Work.

C. Related Sections:
   1. Section 31 00 05, Trenching and Earthwork.
   2. Section 33 05 38.16, HDPE Pressure Utility Piping.
   3. Section 33 11 00, Water Piping Installation.
   4. Section 33 12 00, Water Appurtenances.

1.2 MEASUREMENT AND PAYMENT

A. Ductile Iron Utility Piping
   1. Work Item Number and Title
      33 05 33-A 6" Ductile Iron Pressure Utility Piping
   2. The quantity of ductile iron pipe installed shall be the number of linear feet actually installed, backfilled and tested, as measured from outside wall of structure to outside wall of structure, as measured along the centerline of the pipe. Measurements shall include length of fittings and valves.
   3. The payment of ductile iron pipe shall be based on the unit price per linear foot as listed on the submitted Bid schedule for each pipe size successfully installed. Payment for any associated restoration shall be paid for under its respective Work item.
   4. This item shall include all costs to furnish all labor, materials, tools, and equipment, both permanent and temporary, to install the ductile iron pipe as shown and specified. The Work includes, but is not limited to, trench excavation, pavement removal and disposal if necessary, dewatering, furnishing and placement of bedding, pipe, placement of required backfill, disposing of excess excavated material, polyethylene encasement, installation of polyethylene encasement, testing of materials, compaction of bedding and backfill, utility verification, temporary sheeting, shoring and bracing, pressure testing, disinfection, restoration/replacement of all disturbed items not included under other Work items, protection of existing utilities and structures, and incidentals for performing all Work as specified unless otherwise provided for as a separate Work item.

B. Fittings
   1. Work Item Number and Title:
      All fittings are Ductile Iron Fittings unless otherwise stated.
      33 05 33-B 6" Ductile Iron Fittings for Ductile Iron Pipe
   2. The number of fittings to be measured for payment shall be the actual number installed of each size and type as shown and specified along a water main that is successfully installed, pressure tested and disinfected.
   3. The payment for these items shall be based on the contract unit price. Payment for special backfill will be under its respective bid item. Payment for excavation, placement of native backfill, disposal of excavated materials, bedding, restoration, and pressure testing and disinfection shall be included under the bid items for the water main unless otherwise broken down by the Engineer as a separate bid items.
   4. These items shall include all costs to furnish all labor, materials, tools and equipment, both permanent and temporary, to install and maintain complete the ductile iron fittings as shown and specified unless otherwise directed by the Engineer. The Work shall include, but is not limited to, any necessary joint restraining required to overcome the thrust imposed by the respective items.

1.3 REFERENCES

A. Standards referenced in this Section are listed below:
   1. American National Standards Institute.
      a. ANSI B18.2.1, Square and Hex Bolts and Screws Inch Series.
      b. ANSI B18.2.2, Square and Hex Nuts. (Inch Series).
   2. ASTM International.
      a. ASTM A193, Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.
      b. ASTM A194, Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both
      c. ASTM A307, Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
      d. ASTM A563, Specification for Carbon and Alloy Steel Nuts.
      e. ASTM A575, Standard Specification for Steel Bars, Carbon, Merchant Quality, M-Grades.
      f. ASTM D5162, Practice for Discontinuity (Holiday) Testing of Non-Conductive Protective Coating on Metallic Substrates.
      g. ASTM G14, Test Method for Impact Resistance of Pipeline Coatings (Falling Weight Test).
   3. American Water Works Association.
      a. AWWA C104, Cement-Mortar Lining for Ductile Iron Pipe and Fittings for Water.
      b. AWWA C105, Polyethylene Encasement for Ductile-Iron Pipe Systems.
      c. AWWA C110, Ductile Iron and Gray Iron Fittings.
      d. AWWA C111, Rubber-Gasket Joints for Ductile Iron Pressure Pipe and Fittings.
      e. AWWA C115, Flanged Ductile Iron Pipe with Ductile Iron or Gray Iron Threaded Flanges.
      f. AWWA C116, Protective Fusion-Bonded Epoxy Coatings for the Interior and Exterior Surfaces of Ductile Iron and Gray Iron Fittings.

g. AWWA C150, Standard for Thickness Design of Ductile Iron Pipe.
h. AWWA C151, Ductile Iron Pipe, Centrifugally Cast.
i. AWWA C153, Ductile Iron Compact Fittings for Water Service.

4. NSF International.
   a. NSF 61, Drinking Water System Components - Health Effects.
5. The Society for Protective Coatings.
   a. SSPC Painting Manual, Volume 1, Para. XIV.
   b. SSPC PA 2, Measurement of Dry Coating Thickness with Magnetic Gages.
6. Manufacturers Standardization Society of the Valve and Fittings Industry.
   a. MSS SP-60, Connecting flange joint between tapping sleeves and tapping valves.
7. National Association of Corrosion Engineers.
   a. NACE RP0188, Discontinuity (Holiday) Testing of Protective Coatings.

1.4 QUALITY ASSURANCE

A. Manufacturer's Qualifications:
   1. Manufacturer shall have a minimum of 5 years successful experience producing ductile iron pipe and fittings and shall be able to show evidence of at least 5 installations in satisfactory operation in the United States that are similar applications to the specified service.
   2. Lining and coating products shall be manufactured by a firm with a minimum of 5 years successful experience in protecting pipelines exposed to the specified service conditions , and shall be able to show evidence of at least 5 installations in satisfactory operation in the United States that are similar applications to the specified service.

B. Component Supply and Compatibility:
   1. Ductile iron pipe manufacturer shall review and approve or prepare all Shop Drawings and other submittals for pipe, fittings, and appurtenances furnished under this Section.
   2. Pipe, fittings, and appurtenances shall be suitable for the specified service and shall be integrated into overall piping system by ductile iron pipe manufacturer.
   3. Ductile iron pipe manufacturer shall be responsible for all products and all factory-applied linings and coatings, whether installed at pipe manufacturer's facility or at manufacturer's Supplier's facility.

C. Regulatory Requirements:
   1. Pipe and fittings, including linings and coatings, that will convey potable water or water that will be treated to become potable, shall be certified by an accredited organization in accordance with NSF 61 as being suitable for contact with potable water, and shall comply with requirements of authorities having jurisdiction at Site.

1.5 SUBMITTALS

A. Action Submittals. Submit the following:
   1. Product Data
      a. Ductile Iron Pipe and Appurtenances - Product Data
         1) Submit product data for pipe, fittings, gaskets, appurtenances, linings, and coatings.
   2. Samples

a. Sample of Pipe and Fitting of Lining,
   1) Submit for each type of lining for use at the Site.
   2) Submit to verify continuity, surface gloss, and color, as applicable, via visual inspection.

B. Informational Submittals. Submit the following:
   1. Certificates
      a. Compliance Standards Certificates
         1) Submit manufacturer's certificate of compliance with standards referenced in this Section.
         2) Submit certificate signed by applicator of the linings and coatings, if other than pipe manufacturer, stating that product to be applied conforms to applicable referenced standards and that the applicator shall conform to the Contract Documents.
         3) Submit manufacturer's certificate of NSF 61 compliance for all components coming into contact with potable water.
   2. Source Quality Control Submittals
      a. Ductile Iron Pipe - Source Quality Control Reports
         1) When requested by Engineer submit results of specified shop tests for pipe, fittings, linings, and coatings.
         2) When requested by Engineer submit lining and coating test coupons.
         3) Provide Test Procedures for Linings and Coatings in Pipe and Fittings

1.6 DELIVERY, STORAGE, AND HANDLING

A. Ship and store in accordance with manufacture's recommendations.

B. Inspect all materials during unloading process.

C. Notify Owner of any cracked, flawed or otherwise defective material.

D. Remove all materials from the Site that are found to be unsatisfactory.

E. Material delivery, storage and handling must conform to requirements in Contract Documents. Refer to Section 01 65 00, Product Delivery Requirements and Section 01 66 00, Product Storage and Handling Requirements.

F. Handling of Pipe and Fittings Lined with Ceramic Epoxy, Fusion Bonded Epoxy, or Glass: Lifting devices shall not come into contact with lined surfaces. Use hooks, forks, chains, straps, and other lifting devices only on exterior of pipe and fittings. Pipe and fittings with damaged lining shall be replaced regardless of cause of damage.

G. Handling of Fittings Coated with Fusion Bonded Epoxy: Hooks, forks, chains, straps, and other lifting devices shall be rubber-coated and be used only on exterior of fittings in manner to avoid damaging coating. If coating becomes damaged, notify pipe and coating manufacturer to determine if repair of damaged area or re-coating is required. Perform repairs using recommended procedures and materials provided by manufacturer, as accepted by Engineer. Pipe and fittings requiring re-coating shall be removed from Site and returned to

manufacturer's facility. Repaired or re-coated pipe and fittings shall comply with requirements of this Section.

PART 2 PRODUCTS

2.1 MATERIALS

A. General:
   1. Piping systems shall be suitable for their intended use.
   2. Joints shall be as specified in the Contract Documents. If not specified, provide flanged joints for exposed piping and push-on or mechanical joints for buried piping. Provide couplings on pipe with plain or grooved ends where shown or where approved by Engineer.

B. Ductile Iron Pipe, Joints, and Fittings:
   1. Non-Flanged Pipe: Conform to AWWA C151 for material, pressure, dimensions, tolerances, tests, markings, and other requirements.
      a. Pressure Class:
         1) 3 inch diameter through 12 inch diameter shall be a minimum Pressure Class 350 in accordance with AWWA C150.
         2) Larger than 12 inch diameter shall be a minimum Pressure Class 250 in accordance with AWWA C150.
      b. Special Thickness Class: As specified in piping schedules.
   2. Pipe Joints:
      a. Mechanical Joints: Comply with AWWA C111 and AWWA C151, capable of meeting pressure rating or special thickness class, and test pressure specified.
         1) Glands: Ductile iron.
         2) Gaskets: Plain tip.
         3) Bolts and Nuts: Cor Blue, Ble Fluoro, or approved equal.
      b. Push-On Joints: Comply with AWWA C111 and AWWA C151, capable of meeting pressure class or special thickness class, and test pressure specified.
         1) Gaskets: Vulcanized SBR, unless otherwise specified.
         2) Stripes: Each plain end shall be painted with a circular stripe to provide a guide for visual check that joint is properly assembled.
         3) Products and Manufacturers: Provide one of the following:
            a) Tyton or Fastite Joint by Clow Water Systems, Atlantic States Cast Iron Pipe Company, Canada Pipe Company, Ltd., McWane Cast Iron Pipe Company, Pacific States Cast Iron Pipe Company, and Griffin Pipe Products Company.
            b) Fastite Joint by American Cast Iron Pipe Company.
            c) Tyton Joint by U.S. Pipe and Foundry Company.
            d) Or equal.
      c. Restrained Joints: Restrained joints shall comply with AWWA C110 or AWWA C153. Restrained push-on joints shall be capable of being deflected after full assembly. Field cuts of restrained pipe are not allowed without approval of Engineer.
         1) Products and Manufacturers: Provide restrained joints by one of the following:

a) Megalug, Series 1100, by EBBA Iron Sales, Inc.
b) Romac, by RomaGrip
c) Sigma, by One-Lok
d) Star Grip 3000 Series, by Star Pipe
e) Or equal.

3. Flanged and Push-On Joint Fittings: Comply with AWWA C110 and AWWA C111.
   a. Material: Ductile iron.
   b. Pressure rating, gaskets, bolts, and nuts shall be as specified for flanged joints. Pressure rating of fittings shall meet, but not exceed, specified pressure rating or special thickness class of the connected pipe.
4. Mechanical Joint Fittings: Comply with AWWA C153 and AWWA C111.
   a. Material: Ductile iron.
   b. Glands: Ductile iron.
   c. Pressure rating, gaskets, bolts, and nuts shall be as specified for mechanical joints. Pressure rating of fittings shall meet, but not exceed, specified pressure rating or special thickness class of connected pipe.

C. Cement-mortar Lining:
   1. Where specified in piping schedules included in Contract Drawings, pipe and fittings shall be lined with bituminous seal coated cement-mortar lining in accordance with AWWA C104.

D. Specials:
   1. Transition Pieces:
      a. Provide suitable transition pieces (adapters) for connecting to existing piping.
      b. Unless otherwise shown or indicated, expose existing piping to determine material, dimensions, and other data required for transition pieces.
   2. Taps:
      a. Provide taps where shown or required for small-diameter piping or instrumentation connections.
      b. Provide corporation stops where shown or required.
   3. Tangential Outlets:
      a. Provide tangential outlet fittings where shown or indicated.
      b. Flanged and grooved end joints are not allowed.

2.2 MARKING FOR IDENTIFICATION

A. Stamp, mark, and identify push-on joint and mechanical joint pipe with:
   1. Name or trademark of manufacturer.
   2. Weight, class or nominal thickness, and casting period.
   3. Country where cast.
   4. Year the pipe was produced.
   5. Letters “DI” or “Ductile” shall be cast or metal stamped
   6. Pipe Size

B. In addition to identification markings specified, also stamp, mark, and identify fittings with:
   1. Manufacturer’s identification.
   2. Pressure rating.

3. Nominal diameters of openings.
4. Country where cast.
5. Number of degrees or fraction of the circle on bends.
6. Letters “DI” or “Ductile” cast on them.

2.3 EXTERIOR SURFACE PREPARATION AND COATINGS

A. Buried Pipe and Fittings:
   1. Asphaltic Coating: Coat pipe and fittings with an asphaltic coating approximately 1 mil thick, in accordance with AWWA C151, AWWA C115, AWWA C110, and AWWA C153, as applicable.
   2. Fusion Bonded Epoxy Coating for Fittings:
      a. When specified, fittings shall be factory coated with 100 percent solids, thermosetting, dry powder epoxy, in conformance with AWWA C116.
      b. Apply coating utilizing a method, recommended by manufacturer that meets requirements of this Section, with finished dry film thickness of at least 6 mils, with exception of joint areas, which shall receive at least a 4 mil dry film thickness coating. Heat and cure fittings in accordance with coating manufacturer’s recommendations.
      c. Source Quality Control: Cut a test coupon from coated fitting no less than 6 inches in diameter, and approximately four inches long, and split coupon lengthwise into 2 equal sections. Surface preparation, application procedure, thickness, and curing parameters shall be the same for test coupon as for Project fittings. Perform the following tests on test coupon:
         1) Scribe coating material through to bare surface of fitting with an “X” across full length of test coupon. Immerse coupon for 500 hours in 150 degree F bath of distilled water. Coating shall show no signs of disbondment or blistering.
         2) Test coupon shall be impact tested using ASTM G14 test method with 20 inch pound impact applied near center of convex section of test coupon. Coating shall show no signs of cracking or disbondment without magnification.
      d. Manufacturer’s Inspection and Certification:
         1) All coated fittings shall be visually inspected by manufacturer and show no sign of blisters, cracks, or lack of coverage.
         2) Check all coated fittings for coating thickness using magnetic film thickness gage utilizing method outlined in SSPC PA 2 Film Thickness Rating.
         3) Holiday-test all coated fittings in accordance with ASTM D5162, NACE RP0188, and SSPC Painting Manual Volume 1, Paragraph XIV, with low-voltage, wet sponge holiday detector. Repair methods and materials for holidays shall be as recommended by coating manufacturer and made prior to shipment to the Site.
      e. Products and Manufacturers: Provide one of the following:
         1) PipeClad 1500, by Valspar Corporation.
         2) Or equal.

2.4 POLYETHYLENE ENCASEMENT

1. Supply polyethylene in tubes or sheets.
2. Provide polyethylene encasement for ductile iron piping to prevent contact between pipe and surrounding bedding material and backfill.

3. Polyethylene encasement materials shall be in accordance with AWWA C105.
4. In addition, polyethylene encasement for use with ductile iron pipe and fitting systems shall consist of three layers of co-extruded linear low density polyethylene (LLDPE), fused into a single thickness of not less than eight mils.
5. The inside surface of the polyethylene wrap to be in contact with the pipe exterior shall be infused with a blend of anti-microbial biocide to mitigate microbiologically influenced corrosion and a volatile corrosion inhibitor to control galvanic corrosion.

2.5 SOURCE QUALITY CONTROL

A. Shop Tests:
1. Pipe manufacturer shall maintain continuous quality control program.
2. Where applicable and when requested by Engineer, submit results of source quality control tests specified in reference standards.

PART 3 EXECUTION

3.1 INSPECTION

A. Inspect pipe materials for defects in material and workmanship. Verify compatibility of pipe and fittings.

3.2 INSTALLATION

A. Buried Piping Installation
1. Refer to the applicable Division 33 piping installation section.

B. Bedding and Backfill
1. Refer to Section 31 00 05 Trenching and Earthwork.

C. Contractor shall be responsible for verification of pipe loading during construction. Pipe design is based on final installation depth and required cover.

3.3 POLYETHYLENE ENCASEMENT

A. Provide polyethylene encasement for ductile iron piping to prevent contact between pipe and surrounding bedding material and backfill.

B. Polyethylene encasement installation shall be in accordance with AWWA C105.

C. Lumps of clay, mud, cinders etc. on the pipe surface shall be removed prior to installation of the polyethylene encasement.

D. Polyethylene film shall be fitted to the contour of the pipe creating a snug, but not tight, encasement with the minimum space between the polyethylene and the pipe. Sufficient slack shall be provided in contouring to prevent stretching the polyethylene where it bridges irregular surfaces, such as, bell-spigot interfaces, bolted joints or fittings and to prevent damage to the polyethylene caused by backfilling operations.

E. Overlaps and ends shall be secured with adhesive tape of plastic tie straps.

F. Installations below the water table tube-form polyethylene should be used with both ends thoroughly sealed with adhesive tape or plastic tie straps at the joint overlaps.

G. Circumferential wraps of tape shall be placed at 2 foot internals along the barrel of the pipe.

3.4 FIELD QUALITY CONTROL

A. Leakage Testing
   1. Complete pipe leakage testing; refer to Section 33 11 00, Water Piping Installation.

B. Disinfection
   1. Complete pipe disinfection; refer to Section 33 11 00, Water Piping Installation.

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SECTION 33 11 00

WATER PIPING INSTALLATION
Addendum 1

PART 1 GENERAL

1.1 DESCRIPTION

A. Scope:
   1. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to install and test all buried piping, fittings, and specials. The Work includes the following:
      a. All types and sizes of buried potable water piping, except where buried piping installations are specified under other Sections.
      b. Unless otherwise shown or specified, this Section includes all buried water piping Work.
      c. Work on or affecting existing buried piping.
      d. Installation of all jointing and gasket materials, specials, flexible couplings, mechanical couplings, harnessed and flanged adapters, sleeves, and other Work required for a complete, buried piping installation.
      e. Supports, restraints, and thrust restraint.
      f. Pipe encasements.
      g. Field quality control, including testing.
      h. Cleaning and disinfecting.
      i. Incorporation of valves, meters, and special items shown or specified into piping systems in accordance with the Contract Documents and as required.

B. Coordination:
   1. Review installation procedures under this and other Sections and coordinate installation of items to be installed with or before buried potable water piping Work.
   2. Coordinate with appropriate piping materials Sections of Division 33, Utilities.

C. Related Sections:

   1. Section 31 00 05, Trenching and Earthwork.
   2. Section 33 05 33, Ductile Iron Pressure Utility Piping.
   3. Section 33 05 38.16, HDPE Pressure Utility Piping.
   4. Section 33 12 00, Water Appurtenances.

1.2 MEASUREMENT AND PAYMENT

A. Measurement and payment for installation of piping and associated appurtenances shall be included in the measurement and payment of each pipe material, except for the specific Work items listed separately below and in other specification sections.

B. Water Main Connection

1. Work Item Number and Title
   33 11 00-A Water Main Connection (6" X 6" Tapping Tee and Valve)
2. The number of water main connections to be measured for payment shall be the actual number successfully installed.
3. The payment for the water main connections shall be based on the unit price as listed on the submitted bid schedule.
4. This item shall include all costs to furnish all labor, materials, tools, and equipment, both permanent and temporary, for the excavation, connection and restoration Work necessary for the water main connection as shown and specified unless otherwise directed by the Engineer. The Work includes, but is not limited to: furnishing and placing the tapping tee and valve, excavation, bracing or shoring, dewatering, disposal of surfaces and spoil where required, saw cutting fittings, furnishing and placement of connection sleeves and materials necessary to make the connection including any required fittings and valves, bedding, granular backfill and/or special backfill ,backfilling and compaction, coordinating and cooperating with City of Crown Point, protection of existing utilities, light poles, fences and mailboxes, Site restoration including, but not limited to, pavement restoration as required, removing and returning or replacing trees, shrubbery, storm sewers, mulched seeding, and incidentals for performing all Work for the connections as specified.
5. Connections: Contractor to perform all Work, including removal of existing materials as necessary to make connection to existing valve. Coordinate with City of Crown Point to make connection to existing water main.

C. Removal of Fire Hydrants
   1. Work Item Number and Title
      33 11 00-A Removal of Hydrants
   2. The quantity for fire hydrant removal shall be the actual number successfully removed.
   3. The payment for fire hydrant removal shall be based on the unit price as listed on the submitted bid schedule.
   4. This item shall include all costs to furnish all labor, materials, tools, and equipment, both permanent and temporary, for removal of existing fire hydrants and auxiliary valve box as shown and specified unless otherwise directed by the Engineer. The Work includes the plug (for main that is to remain in use), plugging materials, coordinating with City of Crown Point for isolation, excavation, removal and disposal of existing facilities, pavement removal and all restoration for the fire hydrant area as set out in these Specifications.
   5. City of Crown Point has the first right of refusal for the removed fire hydrant. Contractor shall dispose of fire hydrant if City of Crown Point, does not want the removed fire hydrant.

1.3 REFERENCES

A. Standards referenced in this Section are listed below:
   1. ASTM International.
      a. ASTM B843, Standard Specification for Magnesium Alloy Anodes for Cathodic Protection.
      b. ASTM D2321, Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity Flow Applications.

c. ASTM D2774, Practice for Underground Installation of Thermoplastic Pressure Piping.
d. ASTM F2164, Standard Practice for Field Leak Testing of Polyethylene (PE) Pressure Piping Systems Using Hydrostatic Pressure.

2. American Water Works Association.
   a. AWWA C111, Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
   b. AWWA C600, Installation of Ductile-Iron Water Mains and Their Appurtenances.
   c. AWWA C605, Underground Installation of PVC and PVCO Pressure Pipe and Fittings.
   d. AWWA C651, Disinfecting Water Mains.
   e. AWWA C901, Polyethylene (PE) Pressure Pipe and Tubing, 1/2-inch through 3-inch, for water service.
   f. AWWA C906, Polyethylene (PE) Pressure Pipe and Fittings, 4-inch through 63-inch, for Water Distribution and Transmission.
   g. AWWA M9, Concrete Pressure Pipe.
   h. AWWA M23, PVC Pipe-Design and Installation.
   i. AWWA M41, Ductile-Iron Pipe Fittings.
   j. AWWA M55, PE Pipe-Design and Installation.
3. National Fire Protection Association.
   a. NFPA 24, Standard for the Installation of Private Fire Service Mains and Their Appurtenances.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements:
   1. Comply with requirements and recommendations of authorities having jurisdiction over the Work, including. See Section 33 05 23.13 Utility Horizontal Directional Drilling for additional information.
      a. Indiana Department of Environmental Management
      b. INDOT ROW permit and other permits deemed necessary by Owner
   2. Obtain required permits for Work in roads, rights-of-way, and other areas of the Work, unless otherwise stipulated by Owner.

1.5 SUBMITTALS

A. Action Submittals: Submit the following:
   1. Product Data
      a. Manufacturer's Technical Information
         1) Manufacturer's literature and Specifications, as applicable, for products specified in this Section.
      b. Chlorine Product Data
         2) Submit for chlorine for use in disinfection of watermains.
   2. Shop Drawings
      a. Water Piping Installation Details
         1) Details of piping, specials, joints, harnessing and thrust blocks, and connections to piping, structures, equipment, and appurtenances.

B. Informational Submittals: Submit the following:

1. Certificates
    a. Compliance with Standards Certificates
        1) Certificate signed by manufacturer of each product certifying that product conforms to applicable referenced standards.
2. Test and Evaluation Reports
    a. Testing Procedures:
        1) Submit proposed testing procedures, methods, apparatus, and sequencing. Obtain Engineer's approval prior to commencing testing.
3. Field Quality Control Submittals
    a. Water piping Installation - Field Quality Control
        1) Results of each specified field quality control test.

C. Closeout Submittals: Submit the following:
1. Record Documentation
    a. Water Piping Installation - Record Documentation
        1) Maintain accurate and up-to-date record documents showing modifications made in the field, in accordance with approved submittals, and other Contract modifications relative to buried piping Work. Submittal shall show actual location of all piping Work and appurtenances at same scale as the Drawings.
        2) Show piping with elevations referenced to Project datum and dimensions from permanent structures. For each horizontal bend in piping, include dimensions to at least three permanent structures, when possible. For straight runs of piping provide offset dimensions as required to document piping location.
        3) Include profile Drawings with buried piping record documents when the Contract Documents include piping profile Drawings.

1.6 DELIVERY, STORAGE AND HANDLING

A. Material delivery, storage and handling must conform to requirements in Contract Documents. Refer to Section 01 65 00, Product Delivery Requirements and Section 01 66 00, Product Storage and Handling Requirements.

PART 2 PRODUCTS

2.1 MATERIALS

A. Piping materials shall conform to Specifications for each type of pipe and piping appurtenances in applicable Sections of Division 33, Utilities.

2.2 BURIED PIPING IDENTIFICATION

A. Tracing Wire Requirements
1. Tracer wire shall be required on all water mains and services.
2. Horizontal Directional Drilling Installation Wire:
    a. Provide - No.12 or stronger Extra High Strength Copper Clad Steel Reinforced with HDPE Insulation tracing wire rated for a minimum tensile strength of 1,100 lbs. The following materials are acceptable:

1) Soloshot EHS 1245 - Copperhead Industries, LLC
2) BoreTough Extra High Strength, Agave Wire, LTD
3) Or approved equal

3. Open Cut Installation Wire:
   a. Provide - No.12 or stronger High Strength Copper Clad Steel Reinforced with HDPE Insulation tracing wire rated for a minimum tensile strength of 300 lbs. The following materials are acceptable:
      1) Superflex 1230 - Copperhead Industries, LLC
      2) Or approved equal
4. Splice tracing wire together with the following material:
   a. DRYCONN Direct Bury Lug Aqua
   b. Agave Direct Bury lug DWTWC-003
   c. Or approved equal
5. All wire utilized for tracing wire shall be designed for and approved by the manufacturer for use in buried low voltage applications and approved by the Engineer.
6. Tracing Wire Corrosion Protection – Sacrificial Anode for installation at the end of a dead end main.
   a. Provide a magnesium alloy anodes for cathodic protection that conforms to the requirements of ASTM B843. Supply a minimum 17 lbs packaged magnesium anode that is cast with a perforated galvanized steel core. The anodes shall be of the specified weight and shall consist of an alloy of the following chemical composition:
      1) Aluminum……...0.010%
      2) Manganese…….0.50 – 1.30
      3) Copper…….....0.02 Max
      4) Nickel…….0.001 Max
      5) Iron……...0.03 Max
      6) Magnesium…….Remainder
   b. Each anode shall be packaged in a permeable cloth bag containing a backfill mixture of the following:
      1) Ground Hydrated Gypsum……75%
      2) Powdered Bentonite……..20%
      3) Anhydrous Sodium Sulfate……5%
   c. The following materials are acceptable:
      1) Packaged Magnesium Anode 17D4 as manufactured by Corrpro Companies Inc.
      2) Or approved equal

B. Marking Post Requirements
   1. The following marking posts, or approved equal, are acceptable for use in connection with water main installation:
      a. Posts: Flexible Marking Post/Test Station (Glasforms or Carsonite)
      b. Decals: "Warning Water Pipeline" (USA Bluebook) or “Caution Water Pipeline” (Glasforms or Carsonite)
   2. The marking post/test station shall be made from a flexible impact resistant composite material. It shall contain reinforced hollowed ribs on each side where the test wire is protected. The tracing wire is extended at the bottom; so that it can be spliced to the pipe wire with a direct bury connector.

PART 3 EXECUTION

3.1 INSTALLATION

A. General:
   1. Install piping as shown, specified, and as recommended by pipe and fittings manufacturer.
   2. In event of conflict between manufacturer's recommendations and the Contract Documents, request interpretation from Engineer before proceeding.
   3. Engineer or Owner or Owner's representative will observe excavations and bedding prior to laying pipe by Contractor. Notify Engineer or Owner or Owner's representative in advance of excavating, bedding, pipe laying, and backfilling operations.
   4. Minimum cover over buried piping shall be 5 feet, unless otherwise shown or approved by Engineer.
   5. Excavation in excess of that required or shown, and that is not authorized by Engineer or Owner or Owner's representative shall be filled at Contractor's expense with granular material furnished, placed, and compacted in accordance with the Contract Documents.
   6. The width of trenches for shall be such as to provide a clearance of not less than 6 inches or not more than 15 inches on each side of the pipe. All pavements shall be cut with an abrasive saw. Concrete driveways, walks, alleys, etc., shall be cut to the nearest joint unless approved by Engineer.
   7. Excavation in excess of that required or shown, and that is not authorized by Engineer shall be filled at Contractor's expense with granular material furnished, placed, and compacted in accordance with Section 31 00 05, Trenching and Earthwork.
   8. Comply with NFPA 24 for "Outside Protection", where applicable to water piping systems used for fire protection.

B. Separation of Sewers and Potable Water Piping:
   1. Horizontal Separation:
      a. Where possible, existing and proposed potable water mains and service lines, and sanitary, combined, and storm sewers shall be separated horizontally by clear distance of at least ten feet measured edge to edge.
      b. If local conditions preclude the specified clear horizontal separation, installation will be allowed if potable water main is in separate trench or on undistributed earth shelf on one side of sewer and with bottom of potable water main at least 18 inches above top of sewer.
      c. This deviation may allow installation of the sewer closer to the water main, provided that the water main is in a separate trench or on an undisturbed earth shelf located on one side of the sewer and at an elevation so the bottom of the water main is at least eighteen inches above the top of the sewer.
      d. Exception:
         1) Where it is not possible to provide minimum horizontal separation described above, construct sewer pipe of pressure pipe complying with public water supply design standards of authority having jurisdiction. Hydrostatically test water main and sewer as specified in this Section prior to backfilling. Hydrostatic test pressure at crossing shall be at least 150 psi.
         2) Sewer in water grade pipe shall extend from manhole to manhole.
   2. Vertical Separation:

a. Provide minimum vertical distance of 18 inches between outside of potable water main and outside of sewer when sewer crosses over potable water main.
b. Center a section of potable water main pipe at least 17.5 feet long over sewer so that sewer joints are equidistant from potable water main joints.
c. Provide adequate structural support where potable water main crosses under sewer. At minimum, provide compacted select backfill for ten feet on each side of crossing.
d. This deviation may allow installation of the sewer closer to the water main, provided that the water is in a separate trench or on an undisturbed earth shelf located on one side of the sewer and at horizontal separation of at least ten feet measured edge to edge.
e. Exceptions:
    1) Where it is not possible to provide minimum horizontal separation described above, construct sewer pipe of pressure pipe complying with public water supply design standards of authority having jurisdiction. Hydrostatically test water main and sewer as specified in this Section prior to backfilling. Hydrostatic test pressure at crossing shall be at least 150 psi.
    2) Sewer in water grade pipe shall extend from manhole to manhole.

C. Temporary Pipe Plugs Between Work Days
1. Temporarily cap and seal, using watertight plug, installed pipe at end of each day of Work or other interruption of pipe installation to prevent entry of animals, liquids, and persons into pipe, and entrance or insertion of deleterious materials into pipe.

D. Plugs (Bulkheads):
1. Install standard plugs in bells at dead ends, tees, and crosses. Cap spigot and plain ends.
2. Fully secure and block plugs, caps, and bulkheads installed for testing to withstand specified test pressure.
3. Where plugging is required for phasing of the Work or subsequent connection of piping, install watertight, permanent type plugs, caps, or bulkhead acceptable to Engineer.

E. Bedding Pipe: Bed pipe as specified and in accordance with details on the Drawings and the requirements in Section 31 00 05, Trenching and Earthwork.
1. Trench excavation and backfill, and bedding materials shall conform to the Contract Documents.
2. Where over excavation is required by Engineer or Owner, due to unsuitable soil in trench or excavation subgrade, remove and replace unsuitable material with approved granular material furnished, placed, and compacted in accordance with the Contract Documents. Payment for removal and replacement of unsuitable soils will be made under the unit price payment items in the Contract Documents.
3. Excavate trenches below bottom of pipe by amount shown and indicated in the Contract Documents. Remove loose and unsuitable material from bottom of trench.
4. Carefully and thoroughly compact pipe bedding with hand held pneumatic compactors.
5. Do not lay pipe until Engineer or Owner approves bedding condition.
6. Do not bring pipe into position until preceding length of pipe has been bedded and secured in its final position.
7. It shall be the Contractor's responsibility to prove that the required compaction is achieved. This may require the employment of an outside independent testing laboratory. No additional payment will be made to the Contractor for such test.

F. Laying Pipe:
   1. Conform to manufacturer's instructions and requirements of standards and manuals listed below, as applicable:
      a. Ductile Iron Pipe: AWWA C600, ANSI/AWWA C105, AWWA M41.
      b. Thermoplastic Pipe: ASTM D2321, ASTM D2774, AWWA C605, AWWA M23, AWWA M45, AWWA, M55.
   2. Install pipe accurately to line and grade shown and indicated in the Contract Documents, unless otherwise approved by Engineer. Remove and reinstall pipes that are not installed correctly.
   3. Slope piping uniformly between elevations shown.
   4. Do not lay pipe in water. Maintain dry trench conditions until jointing and backfilling are complete. Keep clean and protect interiors of pipe, fittings, valves, and appurtenances.
   5. Start laying pipe at lowest point and proceed towards higher elevations, unless otherwise approved by Engineer.
   6. Place bell and spigot-type pipe so that bells face the direction of laying, unless otherwise approved by Engineer.
   7. Excavate around joints in bedding and lay pipe so that pipe barrel bears uniformly on trench bottom.
   8. Deflections at joints shall not exceed 75 percent of amount allowed by pipe manufacturer, unless otherwise approved by Engineer.
   9. Carefully examine pipe, fittings, valves, and specials for cracks, damage, and other defects while suspended above trench before installation. Immediately remove defective materials from the Site and replace with acceptable products.
   10. Inspect interior of all pipe, fittings, valves, and specials and completely remove all dirt, gravel, sand, debris, and other foreign material from pipe interior and joint recesses before pipe and appurtenances are moved into excavation. Bell and spigot-type mating surfaces shall be thoroughly wire brushed, and wiped clean and dry immediately before pipe is laid.
   11. Field cut pipe, where required, with machine specially designed for cutting the type of pipe being installed. Make cuts carefully, without damage to pipe, coating or lining, and with smooth end at right angles to axis of pipe. Cut ends on push-on joint type pipe shall be tapered and sharp edges filed off smooth. Do not flame-cut pipe.
   12. Do not place blocking under pipe, unless specifically approved by Engineer for special conditions.
   13. Touch up protective coatings in manner satisfactory to Engineer prior to backfilling.
   14. Notify Engineer in advance of backfilling operations.
   15. On steep slopes, take measures acceptable to Engineer to prevent movement of pipe during installation.
   16. Thrust Restraint: Where required, as shown on Contract Documents, provide thrust restraint.
   17. Exercise care to avoid flotation when installing pipe in cast-in-place concrete, and in locations with high groundwater.

G. Jointing Pipe:
   1. Ductile Iron Mechanical Joints- For fittings and valves:

a. Immediately before making joint, wipe clean the socket, plain end, and adjacent areas. Taper cut ends and file off sharp edges to provide smooth surface.
b. Lubricate plain ends and gasket with soapy water or manufacturer's recommended pipe lubricant, in accordance with AWWA C111, just prior to slipping gasket onto plain end of the joint assembly.
c. Place gland on plain end with lip extension toward the plain end, followed by gasket with narrow edge of gasket toward plain end.
d. Insert plain end of pipe into socket and press gasket firmly and evenly into gasket recess. Keep joint straight during assembly.
e. Push gland toward socket and center gland around pipe with gland lip against gasket.
f. Insert bolts and hand-tighten nuts.
g. If deflection is required, make deflection after joint assembly and prior to tightening bolts. Alternately tighten bolts approximately 180 degrees apart to seat gasket evenly. Bolt torque shall be as follows:

Pipe Diameter (inches)	**Bolt Diameter (inches)**	**Range of Torque (ft-lbs)**
3	5/8	45 to 60
4 to 24	3/4	75 to 90

h. Bolts and nuts, except those of stainless steel, shall be Cor Blue, Ble Fluoro, or approved equal.

2. Ductile Iron Push-On Joint Pipe:
a. Prior to assembling joints, thoroughly clean with wire brush the last 8 inches of exterior surface of spigot and interior surface of bell, except where joints are lined or coated with a protective lining or coating.
b. Wipe clean rubber gaskets and flex gaskets until resilient. Conform to manufacturer's instructions for procedures to ensure gasket resiliency when assembling joints in cold weather.
c. Insert gasket into joint recess and smooth out entire circumference of gasket to remove bulges and to prevent interference with proper entry of spigot of entering pipe.
d. Immediately prior to joint assembly, apply thin film of pipe manufacturer's recommended lubricant to surface of gasket that will come in contact with entering spigot end of pipe, or apply a thin film of lubricant to outside of spigot of entering pipe.
e. For assembly, center spigot in pipe bell and push pipe forward until spigot just makes contact with rubber gasket. After gasket is compressed and before pipe is pushed or pulled in the rest of the way, carefully check gasket for proper position around the full circumference of joint. Final assembly shall be made by forcing spigot end of entering pipe past gasket until spigot makes contact with base of the bell. When more than a reasonable amount of force is required to assemble the joint, remove spigot end of pipe to verify proper positioning of gasket. Do not use gaskets that have been scored or otherwise damaged.
f. Maintain an adequate supply of gaskets and manufacture's recommended joint lubricant at the Site when pipe jointing operations are in progress.

3. Ductile Iron Proprietary Joints:

a. Install pipe that utilizes proprietary joints for restraint specified in Section 33 05 33, Ductile Iron Pressure Utility Piping, or other such joints, in accordance with manufacturer's instructions.

4. Thermoplastic Pipe Joints:
   a. Bell and Spigot Joints:
      1) Bevel pipe ends, remove all burrs, and provide a reference mark at correct distance from pipe end before making joints.
      2) Clean spigot end and bell thoroughly before making the joint. Insert O-ring gasket while ensuring that gasket is properly oriented. Lubricate spigot with manufacturer's recommended lubricant. Do not lubricate bell and O-ring. Insert spigot end of pipe carefully into bell until reference mark on spigot is flush with bell.
5. Mechanical Coupling Joints:
   a. Mechanical couplings include: sleeve-type flexible couplings, and other mechanical couplings specified.
   b. Prior to installing and assembling mechanical couplings, thoroughly clean joint ends with wire brush to remove foreign matter.
   c. For mechanical couplings that incorporate gaskets, after cleaning apply manufacture's recommended lubricant to rubber gasket or inside of coupling housing and to joint ends. After lubrication, install gasket around joint end of previously installed piece and mate joint end of subsequent piece to installed piece. Position gasket and place coupling housing around gasket and over grooved or shouldered joint ends. Insert bolts and install nuts tightly by hand. Tighten bolts uniformly to produce an equal pressure on all parts of housing. When housing clamps meet metal to metal, joint is complete and further tightening is not required.
6. HDPE Pipe Joints:
   a. HDPE Butt Fusion Welded Joints:
      1) Install joints in accordance with manufacturer's instructions using hydraulic butt fusion machine or manual machine equipped with torque wrench. Equipment shall be able to achieve and maintain heating tool temperature range of 400 to 450 degrees F and an interface pressure of 60 to 90 psi.
      2) Clean interior and exterior of pipe and fitting ends with clean, dry, lint-free cloth.
      3) Align ends to be joined in the fusion machine without forcing ends into alignment. Adjust alignment as necessary and tighten clamps to prevent slippage.
      4) Place facing tool between ends to be joined and face them to provide clean, smooth, parallel mating surface. If stops are present, face ends down to the stops. Remove all shavings after facing without touching ends.
      5) Re-check alignment of ends and check for slippage against fusion pressure. There shall be no detectable gaps between ends. Align outside diameters.
      6) Heating tool shall maintain pipe manufacture's recommended temperature range. Place the tool between ends to be joined. Move ends against heating tool to achieve full contact. Hold ends against heating tool without force until the following melt bead size is formed:

Pipe Diameter (inches)	Required Melt Bead Size (inches)
2 to 4	1/8 to 3/16
4 to 12	3/16 to 1/4
12 to 24	1/4 to 7/16

7) Upon forming proper melt bead size, quickly separate ends and remove heating tool. Quickly inspect melted ends and bring ends together applying joining force recommended by manufacturer, using 60 to 90 psi interfacial pressure to form double bead rolled over surface of pipe on both ends.
8) Hold joining force against ends until joint is cool to the touch. Cooling period shall be 30 to 90 seconds per inch of pipe diameter. Heavier wall thicknesses may require longer cooling times as recommended by pipe manufacturer.
9) Upon completing joint, inspect to verify double bead has been formed on both sides, uniformly rounded and consistent in size all around joint. Remove faulty joints and re-joint.
10) HDPE Mechanical connections of the polyethylene pipe to auxiliary equipment/fittings shall be through flanged connections which shall consist of the following:
    a) A polyethylene "sub-end" shall be thermally butt-fused to the ends of the pipe.
    b) Provide ASTM A240, Type 304 stainless steel backing rings, 125 pound, ANSI B16.1 standard, and gaskets as required by the manufacturer.
    c) Stainless steel bolts and nuts of sufficient length to show a minimum of four complete threads when the joint is made and tightened to the manufacturer's standard. Retorque the nuts after a minimum of 4 hours.

b. HDPE Electro Fusion Joints:
1) Install electrofusion joints and fittings according to manufacturers recommended procedures. Use an appropriate electrofusion machine.
2) Electrofusion technician must be trained and certified.
3) Follow the guidelines listed in the MAB Generic Electrofusion Procedure for Field Joining of 12-inch and Smaller Polyethylene (PE) Pipe, and ASTM F2620.
4) Clean with 90% + isopropyl alcohol and scrape the pipe to prepare for the electrofusion process. Remove the required amount of surface to promote pipe bonding during the electrofusion process. Do not use sand paper, grinding wheel, emory cloth or other abrasives to prepare the joint for electrofusion. Use scraping tools specifically for electrofusion surface preparation.
5) Prior to the electrofusion process, install alignment and restraining clamps. Do not allow the pipe to move during electrofusion. Ensure that the mainline pipe is fully inserted into the fitting.
6) Allow the fitting to cool prior to moving the pipe and fitting, based on the manufacturers recommended time.

H. Backfilling:
1. Conform to applicable requirements of Section 31 00 05, Trenching and Earthwork in the Contract Documents.
2. Place backfill as Work progresses. Backfill by hand and use power tampers until pipe is covered by at least one foot of backfill.

I. Connections to Valves and Hydrants:
   1. Install valves and hydrants as shown and indicated in the Contract Documents.
   2. Provide suitable adapters when valves or hydrants and piping have different joint types.

J. Transitions from One Type of Pipe to Another:
   1. Provide necessary adapters, specials, and connection pieces required when connecting different types and sizes of pipe or connecting pipe made by different manufacturers.

K. Closures:
   1. Provide closure pieces shown or required to complete the Work.

3.2 BURIED PIPING IDENTIFICATION INSTALLATION

A. Mainline and Service Tracing Wire
   1. Tracing wire is required on all water mains and services.
   2. Tracing wire shall be laid directly over the water main and attached to the pipe at regular intervals not to exceed 10 feet.
   3. Attach the tracer wire to the pipe using plastic "zip" strapping or metal wire.
   4. The following technique shall be used to splice wires together:
      a. Use DryConn Direct Bury Lug and strip the wire to 5/8".
      b. Place one stripped conductor into the lug.
      c. Tighten the set screw till it comes in contact with the solid conductor.
      d. Note the location of screwdriver and continue tightening the set screw ¾ turn.
      e. Repeat the steps for the adjacent side.
      f. Remove sealant cover and discard. Close housing, aligning conductors until housing lid is fully latched.
   5. For valves, the wire shall be brought up the outside of the valve or curb box riser. Construct an opening in the lip of the valve box to allow the top of the tracer wire to be stored inside the valve box. Ensure that the opening is sized adequate so the cover will fit snug onto the valve box, once the tracer wire is installed. The wire should be installed with an excess length of 4-6 inches that is to be folded down in the valve box.
   6. For hydrants, install tracing wire in the hydrant shut off valve box in accordance with the installation requirements for values listed above.
   7. For services, install tracing wire in the curb stop valve and 6-inches of wire folded down into the top of the curb box. At service meter, 18-inches of wire shall be wrapped around pipe.
   8. Ensure connectivity is maintained between the mainline tracer wire and the service connection tracer wire.
   9. Successful completion of conductivity test to be completed by the Contractor and in the presence of the Engineer. Successful completion of the test will be required prior to acceptance of water main.

B. Tracing Wire - Sacrificial Anode Installation
   1. Install magnesium anodes onto the tracing wire. Place at all dead end mainlines.
   2. Connect the lead wire from the anode to the tracing wire using approved direct bury lug connectors.

3. Insulate the splice with two half-lapped layers of 3/4 inch wide self-sealing rubber tape followed by two half-lapped layers of 3/4 inch wide electrical tape.
4. Do not dangle the anodes by the lead wire.

C. Marking Post Requirements
1. Marking post will be required for all bores or on feeder mains where standard valve and hydrant spacing cannot be maintained, or as directed by Engineer.
2. Marking post shall be buried at least 12 inches.
3. The wire shall be brought up inside the marking post and attached at the top with 2 holes drilled in the marking posts so that the wire can be wrapped around an inserted eyebolt, or the wire can be feed through the hole and left extended on the exterior of the post.

3.3 THRUST RESTRAINT

A. Provide thrust restraint on pressure piping systems where required.

B. Thrust restraint may be accomplished by using restrained pipe joints, or harnessing buried pipe. Thrust restraints shall be designed for axial thrust exerted by test pressure specified in the Hydrostatic Testing requirements of this Section.

C. Restrained Pipe Joints:
1. Pipe joints shall be restrained by means suitable for the type of pipe being installed.
a. Ductile Iron, Push-on Joints and Mechanical Joints: Restrain with proprietary restrained joint system as specified lugs and tie rods; or other joint restraint systems approved by Engineer.
b. Thermoplastic Joints: Where bell and spigot-type or other non-restrained joints are utilized, provide tie rods across joint or other suitable joint restraint system, subject to the approval of Engineer.
c. HDPE: Restrain HDPE with fusible MJ adapters when connecting to valves and existing Iron fittings.

3.4 WORK AFFECTING EXISTING PIPING

A. Location of Existing Underground Facilities:
1. Locations of existing Underground Facilities shown on the Drawings should be considered approximate.
2. Determine the true location of existing Underground Facilities to which connections are to be made, crossed, and that could be disturbed, and determine location of Underground Facilities that could be disturbed during excavation and backfilling operations, or that may be affected by the Work.

B. Taking Existing Pipelines and Underground Facilities Out of Service:
1. Do not take pipelines or Underground Facilities out of service unless specifically listed in the Contract Documents or approved by Engineer or Owner.
2. Notify Engineer or Owner in writing prior to taking pipeline or Underground Facilities out of service. Shutdown notification shall be provided in advance of the shutdown in accordance with the General Conditions or Contract Documents.

C. Work on Existing Pipelines or Underground Facilities:
   1. Cut or tap piping or Underground Facilities as shown or required with machines specifically designed for cutting or tapping pipelines or Underground Facilities, as applicable.
   2. Install temporary plugs to prevent entry of mud, dirt, water, and debris into pipe.
   3. Provide necessary adapters, sleeves, fittings, pipe, and appurtenances required to complete the Work.

3.5 FIELD QUALITY CONTROL

A. General:
   1. Test all piping.
   2. Notify Construction Manager at least 48 hours in advance of testing.
   3. Conduct all tests in presence of Engineer or Owner.
   4. Air Gaps
      a. To maintain the integrity of the water main still in service, use a 1-20 foot air gap between the new main and the existing.
      b. After successfully completed pressure testing and disinfection, provide closure piping and appurtenances as required to complete the connection to the new water main.
   5. Remove or protect pipeline-mounted devices that could be damaged by testing.
   6. Provide all apparatus and services required for testing, including:
      a. Test pumps, compressors, hoses, calibrated gages, meters, test containers, valves, fittings, and temporary pumping systems required to maintain Owner's operations.
      b. Temporary bulkheads, bracing, blocking, and thrust restraints.
   7. Contractor shall supply water for testing, as well as means to convey water for hydrostatic testing into piping being tested. Contractor shall provide water for other types of testing required.
   8. Repair observed leaks and repair pipe that fails to meet acceptance criteria. Retest after repair.
   9. Unless otherwise specified, testing shall include existing piping systems that connect with new piping system. Test existing pipe to nearest valve. Piping not installed by Contractor and that fails the test shall be repaired upon authorization of Owner. Unless otherwise included in the Work, repair of existing piping or Underground Facilities will be paid as extra Work.
   10. Contractor shall provide a competent person to do the work in the presence of the Owner. The competent person must remain on the job the duration of the PTD project, which may include not standard working hours. It is recommended that the competent person shall have read and be familiar with AWWA standards C651, C600, C605 and other applicable standards.
   11. Valves owned by the City of Crown Point shall only be operated by Owner.
   12. Contractor shall operate new valves until substantial completion.

B. Test Schedule:
   1. Do not place potable water into the newly installed pipe until Owner is on the project site and gives the Contractor approval. A visual continuity test must be passed first.
   2. Unless otherwise specified, required test pressures are at lowest elevation of pipeline segment being tested.

a. Piping Schedule: Hydrostatically test pipe that will convey liquid at a pressure greater than 5 psig.
b. Use exfiltration testing, low-pressure air testing, or vacuum testing for other piping.
c. Disinfect for bacteriological testing piping that conveys potable water.

3. Test Pressure:
   a. Pressure tests shall conform to the applicable AWWA and ASTM standard.

C. Hydrostatic Testing:
1. Preparation for Testing:
   a. For HDPE pipe, follow procedures described in ASTM F2164. Test duration, including time to pressurize, time for initial expansion, time at test pressure, and time to depressurize, shall not exceed 8 hours. If re-testing of a test section or pipeline is required, at least 8 hours shall elapse between tests.
      1) HDPE pipe test pressure and duration: 150 psi for 4-hour expansion; 140psi for 1-hour test
   b. For Ductile Iron pipe, follow procedures described in AWWA M41.
      1) Ductile Iron pipe test pressure and duration: 150 psi for 2 hours
   c. Prior to testing, ensure that adequate thrust protection is in place and joints are properly installed.
   d. Prior to testing ensure that the line is clean and free of dirt and debris.
2. Pressure Gauges
   a. Utilize spot gage trees for the pressure test gages for Owner to attach their pressure gage. The following gages are acceptable:
      1) Noshawk 200 PSI
      2) Wikai 300 PSI
3. Test Procedure for DIP, and PVC pressure pipe:
   a. Fill pipeline slowly to minimize air entrapment and surge pressures. Fill rate shall not exceed one foot of pipe length per second in pipe being tested.
   b. Expel air from pipe as required. Obtain approval of Engineer prior to tapping pipe for expelling air.
   c. Examine exposed joints and valves, and make repairs to eliminate visible leakage.
   d. Add fluid as required to pressurize line to required test pressure. Maintain test pressure for a stabilization period of ten minutes before beginning test.
   e. Timed test period shall not begin until after pipe has been filled, exposed to required wetting period, air has been expelled, and pressure stabilized.
   f. Timed Test Period: After stabilization period, maintain test pressure for at least two hours. During timed testing period, add fluid as required to maintain pressure within five psig of required test pressure.
   g. Pump from test container to maintain test pressure. Measure volume of water pumped from test container and record on test report. Record pressure at test pump at 15 minute intervals for duration of test.
4. Test Procedure for HDPE Pressure Pipe:
   a. Fill pipeline slowly to minimize air entrapment and surge pressures. Fill rate shall not exceed one foot of pipe length per second in pipe being tested.
   b. Expel air from pipe as required. Obtain approval from Engineer prior to tapping pipe for expelling air.
   c. Examine exposed joints and valves, and make repairs to eliminate visible leakage.

d. After filling pipeline, gradually pressurize pipe to test pressure and maintain required test pressure for four hours for pipe to expand. During expansion, add fluid to maintain required test pressure. Begin timed test period after expansion period and other requirements are met.
e. Timed test period shall not begin until after pipe has been filled, exposed to required wetting period, air has been expelled, and pressure stabilized.
f. Timed Test Period: After four-hour expansion phase, reduce test pressure by ten psig and do not add liquid. Test pressure shall then remain steady for one hour, indicating no leakage.
g. If no visible leakage is observed and pressure remains within 5% of the original test pressure for one hour, a passing test is indicated.

5. Makeup Water Allowances:
   a. The allowable makeup water allowance is the maximum amount of water that is added into a pipeline undergoing hydrostatic pressure testing. The allowable leakage rates for the various pipe materials and joints are listed below.
   b. No Makeup Water: Pipe with flanged, welded, fused, or threaded joints.
   c. Rates based on formula or table in AWWA M41:
      1) DIP and PVC pipes joined with rubber gaskets as sealing members, including the following joint types:
         a) Bell and spigot and push-on joints.
         b) Bolted sleeve type couplings.
         c) Allowable leakage per 1,000 feet of pipeline at 150 psi test pressure:

Size (in)	Leakage (gph)
4	0.33
6	0.50
8	0.66
10	0.83
12	0.99
16	1.32
20	1.66

Size (in)	Leakage (gph)
24	1.99
30	2.48
36	2.98
42	3.17
48	3.48
54	4.47
60	4.97

3.6 CLEANING AND DISINFECTION

A. Cleaning, General: Clean pipe systems as follows:
   1. Thoroughly clean all piping, including flushing with water, dry air, or inert gas as required, in manner approved by Engineer or Owner, prior to placing in service. Flush chlorine solution and sodium hypochlorite piping with water.
   2. Piping 24 inch diameter and larger shall be inspected from inside and debris, dirt and foreign matter removed.
   3. For piping that requires disinfection and has not been kept clean during storage or installation, swab each section individually before installation with five percent sodium hypochlorite solution.

B. Disinfection:
   1. Disinfect all potable and finished water piping.

2. All equipment, tools, and mixing machines used in the disinfection process, shall be clean and free from debris, and substances not acceptable for contact with potable water.
3. Procedure for accomplishing complete and satisfactory disinfection is specified below.
4. Other procedures may be considered for acceptance by Engineer or Owner. Any deviations or changes must be confirmed in writing by Owner.
    a. Prior to disinfection, clean piping as specified and flush thoroughly.
    b. Conform to procedures described in AWWA C651. Use the slug method or continuous feed method of disinfecting, unless alternative method is acceptable to Engineer.
    c. No chlorine tabs are to be glued to the inside of the pipe or fittings.
    d. Do not place any other material or substance inside the pipe, including dye, without prior approval from Owner.
5. Unless otherwise specified, water for initial flushing, testing, disinfection, will be provided by the Contractor. Work and all necessary equipment, tools, and machines will be furnished by Contractor. Contractor shall be responsible for damage caused by water from hydrants.
6. Use a clean and free from debris rotary mixer for chlorine preparation. Any other equipment shall be approved by Owner.
7. Chlorine shall be provided by Contractor. Product shall be labeled for drinking water and be NSF 60 approved. The following is acceptable:
    a. Prestochlor- 65% Hydrated Calcium Hypochlorite- Product No. 839284.
    b. Vertex CSS-12, 12.5% Sodium Hypochlorite
    c. Or approved equal.
8. Dechlor chemical, injector pump and hoses shall be provided by the Contractor, if necessary.
9. Test Risers shall be installed every 1,200 feet of new water main plus one at the end of branches. Contractor shall be responsible for maintaining all test risers in operable condition, erosion protection, and that test risers are ready for sampling when the Owner arrives. Test riser maintenance includes but is not limited to freezing, and protection from dust and dirt, Obtain owner approval prior to allowing more than a pencil diameter flow through a test risers shall not flow more than a pencil diameter water flow without Contractor presence. Contractor shall coordinate test risers to be ready for sampling at the time when the Owner arrives.
10. Bacteriologic samples and tests will be performed by the Owner. This includes procuring the sample, transporting sample to the Filtration Plant, and receiving and communicating the results of the test. Certified test laboratory report will be provided to Contractor, if requested.
11. Chlorine concentration in water entering the piping shall not have less than 100 mg/L free chlorine. The chlorine shall be applied continuously and for a sufficient period to develop a column or “slug,” of chlorinated water that will as it moves through the main, expose all interior to a concentration of approximately 100 mg/L for at least 3 hours. Disinfect piping and all related components. Repeat as necessary to provide complete disinfection.
12. After required retention period,
    a. Flush chlorinated water to the Sanitary Sewer, unless otherwise acceptable to Engineer or Owner.
    b. Do not discharge chlorinated water to storm sewers, ditches, or overland.
    c. No flushing during a rain event.

13. If first sample fails, one more is allowed. If the second sample fails, another flush must take place. If the sample failures continue, the disinfection process must be repeated. Contractor must remain on site for the entire disinfection process until the pipe passes.

+ + END OF SECTION + +

Sauerman Woods

Phase 2

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ADDENDUM NO. 1

City of Crown Point

SAUERMAN WOODS
DRAINAGE IMPROVEMENTS – PHASE 2

February 9, 2024

NOTICE TO BIDDERS – IT IS MANDATORY THAT, UPON RECEIPT OF THIS ADDENDUM, YOU 1) SIGN, 2) DATE, 3) WRITE IN YOUR COMPANY NAME, AND 4) RETURN THIS SHEET TO BRYAN HOOD OF AMERICAN STRUCTUREPOINT, BHOOD@STRUCTUREPOINT.COM – THANK YOU.

IF YOU HAVE ANY QUESTIONS CONCERNING THIS ADDENDUM, PLEASE CALL BRYAN HOOD @ (260) 417-6312.

1. Please sign below to acknowledge receipt of this addendum. _____	2. Please insert date of receipt. Date:_____	3. Please insert your company name _____	4. Please return to Bryan Hood. bhood@structurepoint.com

This addendum is being issued as a supplement to the specifications and drawings and shall be considered an integral part of the same. This addendum will become part of the contract documents.

PARK ACCESS DR.

PROPOSED STORM MH (TYP.)

0' 20' 40'

SCALE: 1"=20'

PROPOSED INLET (TYP.)

APP. ℄

att conduit
2.5' to top
4.8' to btm

PROPOSED
INLET (TYP.)

8" pvc

12" rcp

15mcd-15 4' conduit
encased in concrete

CURB BOX

168 LF OF 1"
WATER SERVICE

ex. water main

145 LF OF 6" PVC
SANITARY SERVICE

PROPOSED STORM SEWER

ex. fire hydrant
(TO BE REMOVED AND CAPPED)

4" PVC BEND

exist sanitary mh
tr: 722.24
inv(e): 712.19

att conduit
3.5' to top
5.8' to btm

exist drainage mh
tr: 722.44
inv(e): 718.09
inv(se): 719.29
inv(w): 718.76

ex. water main

6" D.I.R.J. 90° BEND

6"x6" D.I.R.J. TAPPING
SLEEVE AND VALVE

att mh
(12'x6'x7')

exist curb inlet
tr: 722.67
inv(w): 719.13
inv(n): 719.02

exist drainage inlet
tr: 722.82
inv(s): 718.78
inv(w): 718.78
inv(e): 718.76

6" D.I. WATER MAIN

exist drainage inlet
tr: 722.68
inv(e): 719.61

ex. water meter
(ADJUST TO GRADE)

DO NOT DISTURB EXISTING
FIBER OPTIC/ELECTRICAL EQUIPMENT

exist sanitary mh
tr: 723.77
inv(n): 717.57
inv(w): 717.03

F.H. ASSEMBLY

ADJUST CASTING TO
GRADE AS REQUIRED

6"x6" D.I.R.J. TEE

6" PLUG/CAP

att conduit
4.2' to top
6.5' to btm

att mh 696

10" vcp

exist drainage inlet
tr: 723.21
inv(e): 719.36

CLEANOUT

PICKLE BALL COURT

4"Ø SCH. 40 PVC
PERFORATED UNDERDRAIN

REST RM

STANDING
FOOT SHOWER

DECORATIVE PATH

REC. RM

4"x4" PVC CROSS

4"x4" PVC TEE

NOTES:

1. WATER MAIN SHALL HAVE A MINIMUM OF 5-FT. DEPTH.
2. SEE UTILITY DETAILS FOR CONNECTION AND INSTALLATION INFORMATION ON SHEETS C-16 TO C-17.
3. SANITARY SERVICE SHALL HAVE A MINIMUM 1.0% SLOPE.
4. UNDERDRAIN LOCATED UNDER VOLLEYBALL COURTS SHALL HAVE MIN. DEPTHS AND CLEARANCES AS SHOWN ON VOLLEYBALL SECTION DETAIL ON SHEET C-31.
5. FOR ADDITIONAL PROPOSED STORM SEWER INFORMATION, SEE STORM SEWER PLAN AND PROFILE SHEETS C-09 TO C-11.

PLOT SCALE: 1" = 0.833' PLOT DATE: 2/9/2024 10:37 AM EDITED BY: PTRAWINSKI DRAWING FILE: P:\2016\02211\D. DRAWINGS\UTILITY INFRASTRUCTURE\20160221 P2 UI UP.DWG

CITY OF CROWN POINT

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AMERICAN STRUCTUREPOINT INC.

116 East Berry St., Ste 1515 | Fort Wayne, Indiana 46802
TEL 260.373.0600 | FAX 260.373.0608
www.structurepoint.com

SAUERMAN WOODS DRAINAGE IMPROVEMENTS PHASE II

Crown Point, Indiana

BRYAN L. HOOD
REGISTERED
No. 11500233
STATE OF INDIANA
PROFESSIONAL ENGINEER

Bryan L Hood 1/19/2024
CERTIFIED BY

ISSUANCE INDEX
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1/19/2024
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CONSTRUCTION DOCUMENTS

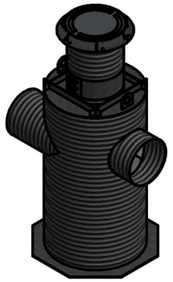
ADDENDUM SCHEDULE		
NO.	DESCRIPTION	DATE
1	AQUA SWIRL MODEL CHANGE. ADDITIONAL MISC. INFO. ADDED	2/09/24

Project Number 2016.02211

UTILITY PLAN

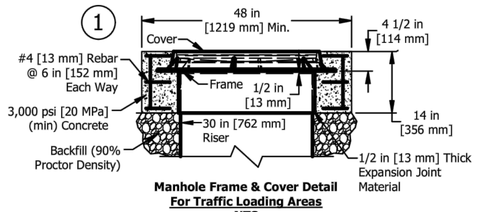
C-08

Aqua-Swirl® Polymer Coated Steel (PCS)
Stormwater Treatment System



Projected View
SCALE 1:70

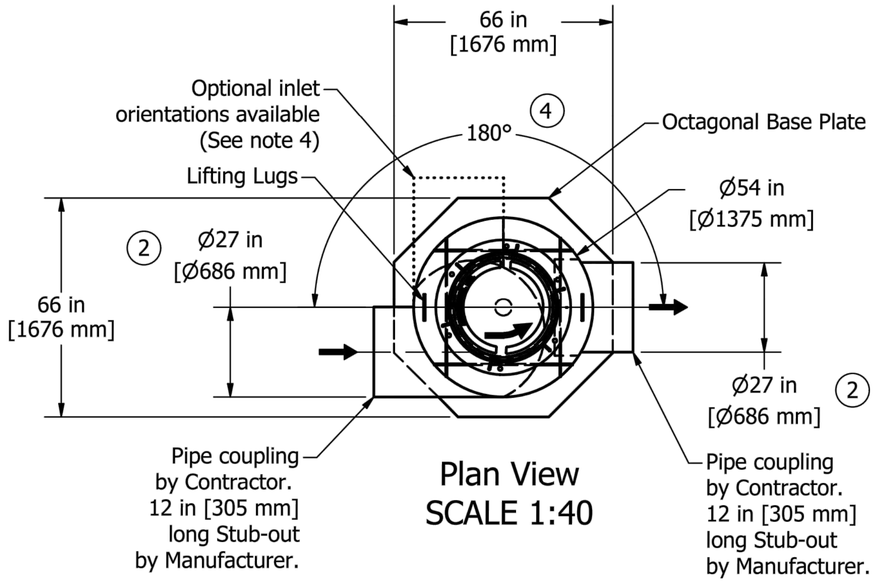
If traffic loading (HS-25) is required or anticipated, a 4-foot [1.22 m] diameter, 14-inch [356 mm] thick reinforced concrete pad must be placed over the Stormwater Treatment System Riser to support and level the manhole frame, as shown. The top of riser pipe must be wrapped with compressible expansion joint material to a minimum 1/2-inch [13 mm] thickness to allow transfer of wheel loads from manhole cover to concrete slab. Manhole cover shall bear on concrete slab and not on riser pipe. The concrete slab shall have a minimum strength of 3,000 psi [20 MPa] and be reinforced with #4 [13 mm] reinforcing steel as shown. Minimum cover over reinforcing steel shall be 1-inch [25 mm]. Top of manhole cover and concrete slab shall be level with finish grade.



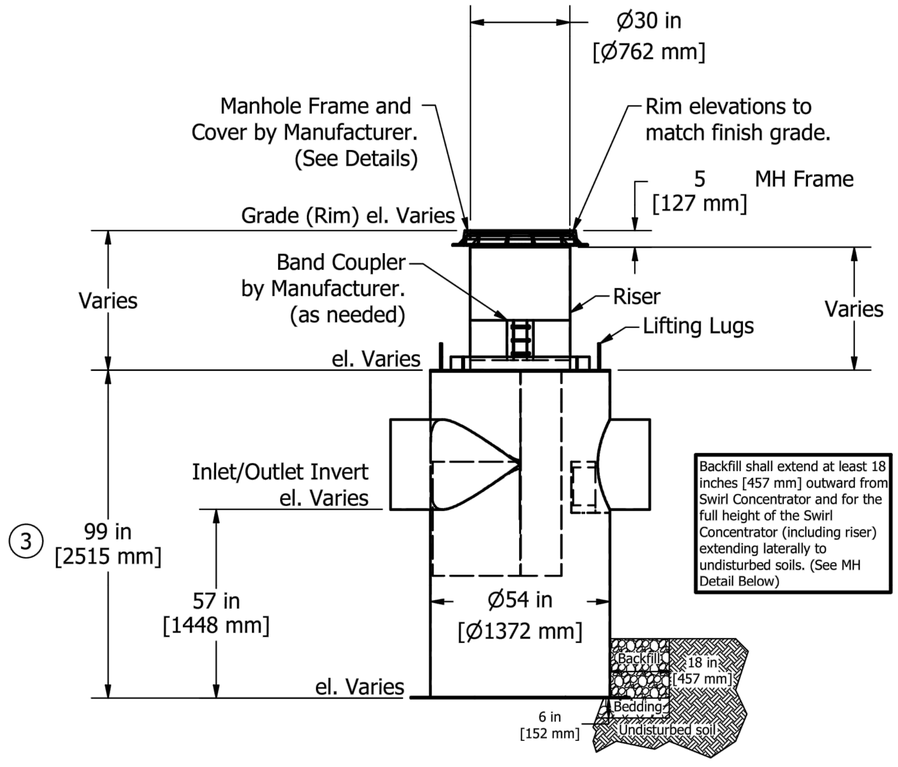
Manhole Frame & Cover Detail
For Traffic Loading Areas
NTS

Please see accompanied Aqua-Swirl® specification notes. See Site Plan for actual System orientation. Approximate dry (pick) weight: 2000 lbs [900 kg].

1. As an alternative, 42 in [1067 mm] diameter, HS-20/25 rated precast concrete rings may be substituted. 14 in [356 mm] thickness must be maintained.
2. XC-4 inlet/outlet pipe size ranges up to 27 in [686 mm].
3. XC-4 chamber height may vary up to 99 in [2515 mm], depending on inlet/outlet pipe size.
4. Orientation may vary from a minimum of 90° to a maximum of 180°. Clockwise or counterclockwise orientation as needed.



Plan View
SCALE 1:40



Elevation View
SCALE 1:40

AquaShield WATER TREATMENT SOLUTIONS
2733 Kanasita Drive, Suite 111, Chattanooga, TN 37343
Phone (888) 344-9044 Fax (423) 826-2112
www.aquashieldinc.com

Aqua-Swirl® XCelerator XC-4 CCW	Structure #:	XC-4 STD	Rvwed	Rvw. Date
	Drawn By:	OFlores		
Standard Detail	Scale:	As Shown		
	Date:	2/25/2021		
U.S. Patent No. 6524473 and other Patent Pending				

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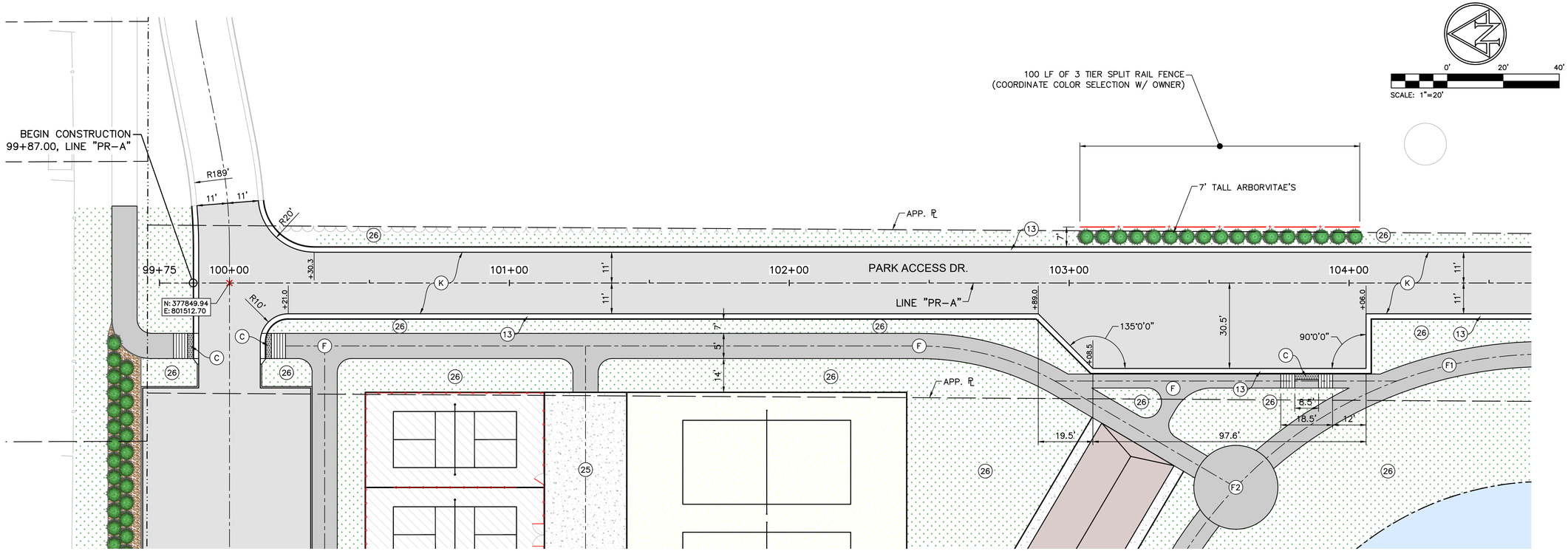
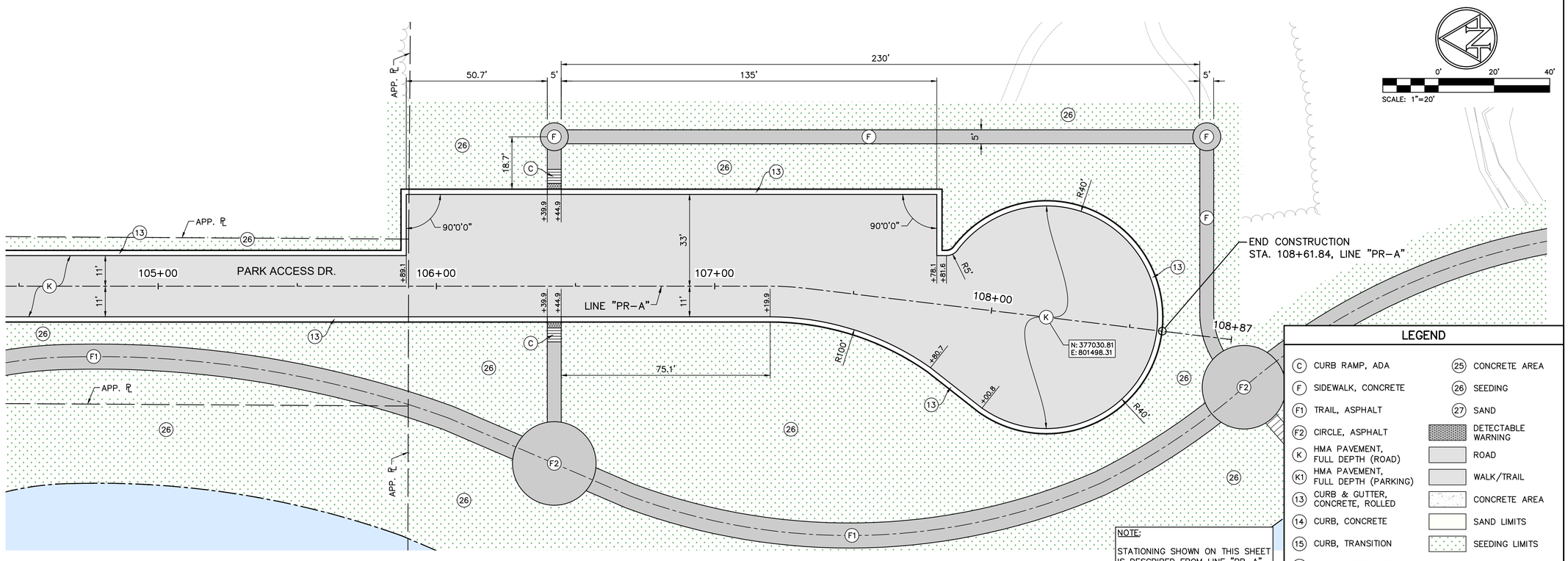
1	AQUA SWIRL MODEL CHANGE, ADDITIONAL MISC. INFO. ADDED	2/09/24

Project Number 2016.02211

UTILITY
STANDARD DETAILS

C-14





LEGEND

(C)	CURB RAMP, ADA	(25)	CONCRETE AREA
(F)	SIDEWALK, CONCRETE	(26)	SEEDING
(F1)	TRAIL, ASPHALT	(27)	SAND
(F2)	CIRCLE, ASPHALT		DETECTABLE WARNING
(K)	HMA PAVEMENT, FULL DEPTH (ROAD)		ROAD
(K1)	HMA PAVEMENT, FULL DEPTH (PARKING)		WALK/TRAIL
(13)	CURB & GUTTER, CONCRETE, ROLLED		CONCRETE AREA
(14)	CURB, CONCRETE		SAND LIMITS
(15)	CURB, TRANSITION		SEEDING LIMITS
(16)	CURB, DEPRESSED		

NOTE:

STATIONING SHOWN ON THIS SHEET IS DESCRIBED FROM LINE "PR-A".

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Project Number 2016.02211

SITE CONSTRUCTION DETAIL LINE "PR-A"

C-21

PLOT SCALE: 1" = .0833' PLOT DATE: 2/9/2024 9:38 AM EDITED BY: PTRAWINSKI DRAWING FILE: P:\2016\02211\D. DRAWINGS\UTILITY INFRASTRUCTURE\20160221 1.P2.UI.CD.01.DWG

PLOT SCALE: 1" = .0833' PLOT DATE: 2/9/2024 10:50 AM EDITED BY: PTRAWINSKI DRAWING FILE: P:\2016\02211\D_DRAWINGS\UTILITY INFRASTRUCTURE\20160211-P2.UI.CD.01.DWG

SCALE: 1"=20'

PARKING LOT

PICKLE BALL COURT

FENCE

GATE

44' SECTION OF FENCE B/W COURTS (TYP. OF 4)

DOUBLE GATE

VOLLEYBALL COURT

30'x64' PAVILION

ROUNDED CONC. FOOT SHOWER PAD (APPROX. 24"x66")

REST ROOM

REC. ROOM

278.6' DECORATIVE PATH

CONCRETE PAD (EXTEND 4' BEYOND ROOF LINE)

BOARDWALK

SQUARE/FLUSH SECTION OF TRAIL FOR BOARDWALK CONNECTION (TYP. OF 2)

STAGGERED 7' TALL ARBORVITAE'S

PINE NEED MULCH, APPROX. LIMITS

N: 377850.09 E: 801475.20

N: 377847.12 E: 801216.19

N: 377847.17 E: 801203.19

N: 377889.44 E: 801117.22

SEE NOTES 1 AND 2

SEE NOTE 3

SAW CUT EXISTING PAVEMENT AND TRANSITION FROM 28-FEET TO 22-FEET. RESTORE EXISTING DRIVEWAY'S AS NEEDED, SEE SITE PLAN AND GENERAL LAYOUT PLAN FOR OVERALL VIEW OF PROJECT LIMITS

DO NOT DISTURB EXISTING FENCE

SOUTHERN RIVER ROCK, APPROX. LIMITS (OUTSIDE OF TRAIL TO EX. FENCE)

APP. ℄

LEGEND

C	CURB RAMP, ADA	25	CONCRETE AREA
F	SIDEWALK, CONCRETE	26	SEEDING
F1	TRAIL, ASPHALT	27	SAND
F2	CIRCLE, ASPHALT		DETECTABLE WARNING
K	HMA PAVEMENT, FULL DEPTH (ROAD)		ROAD
K1	HMA PAVEMENT, FULL DEPTH (PARKING)		WALK/TRAIL
13	CURB & GUTTER, CONCRETE, ROLLED		CONCRETE AREA
14	CURB, CONCRETE		SAND LIMITS
15	CURB, TRANSITION		SEEDING LIMITS
16	CURB, DEPRESSED		

NOTES:

1. DO NOT DISTURB EXISTING FIBER OPTIC/ELECTRICAL CABINETS AND PEDESTALS.
2. INSTALL REMOVABLE BOLLARDS AT KEY LOCATIONS AS SHOWN IN ORDER TO PROTECT EQUIPMENT.
3. INSTALL REMOVABLE BOLLARDS AS SHOWN. FOR ADDITIONAL INFORMATION, SEE DETAIL ON SHEET C-29. APPROX. SPACING 3'-8" O.C.

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SITE CONSTRUCTION DETAIL COMMON AREA

C-22

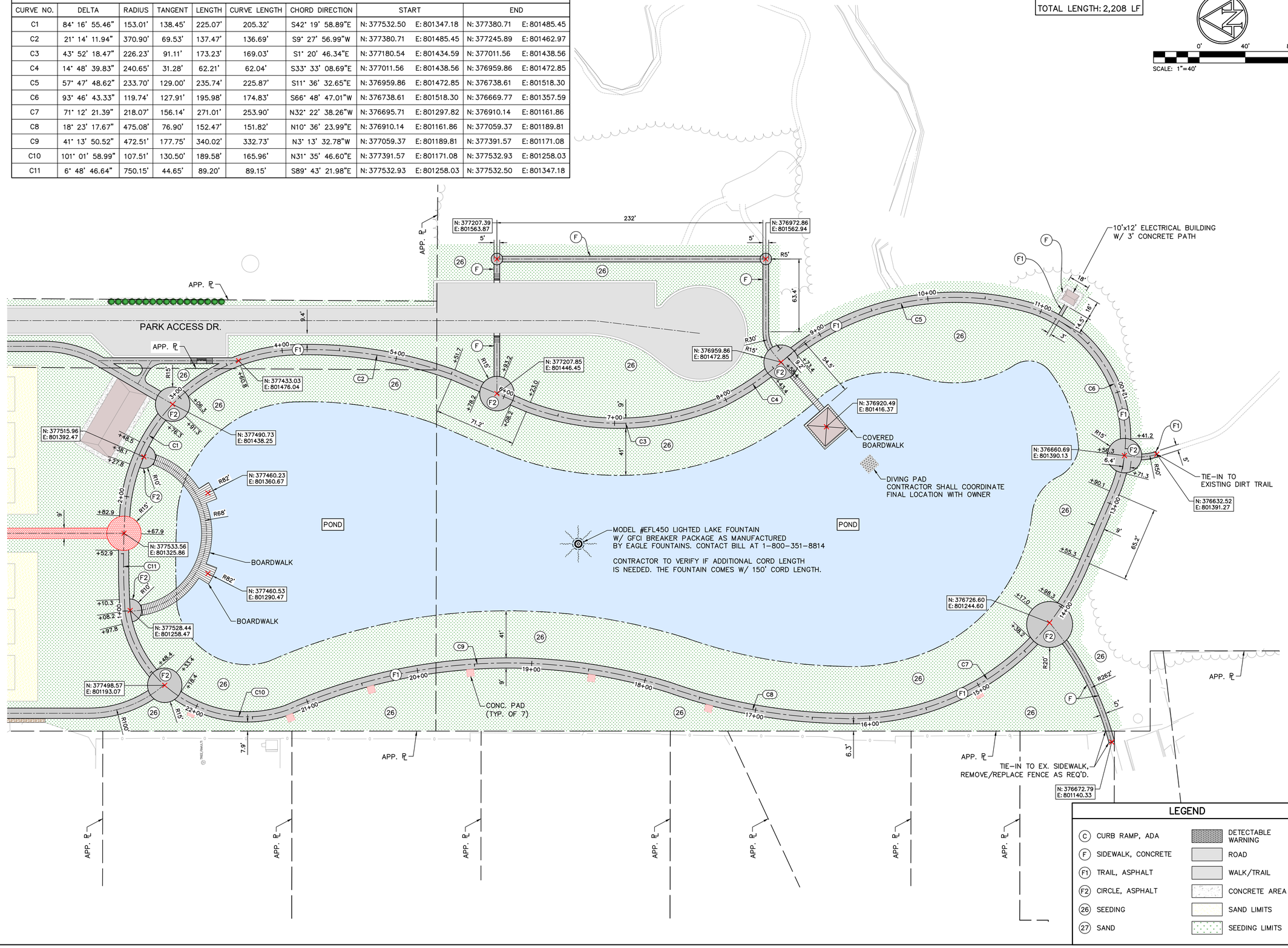
CURVE TABLE: TRAIL								
CURVE NO.	DELTA	RADIUS	TANGENT	LENGTH	CURVE LENGTH	CHORD DIRECTION	START	END
C1	84° 16' 55.46"	153.01'	138.45'	225.07'	205.32'	S42° 19' 58.89"E	N: 377532.50 E: 801347.18	N: 377380.71 E: 801485.45
C2	21° 14' 11.94"	370.90'	69.53'	137.47'	136.69'	S9° 27' 56.99"W	N: 377380.71 E: 801485.45	N: 377245.89 E: 801462.97
C3	43° 52' 18.47"	226.23'	91.11'	173.23'	169.03'	S1° 20' 46.34"E	N: 377180.54 E: 801434.59	N: 377011.56 E: 801438.56
C4	14° 48' 39.83"	240.65'	31.28'	62.21'	62.04'	S33° 33' 08.69"E	N: 377011.56 E: 801438.56	N: 376959.86 E: 801472.85
C5	57° 47' 48.62"	233.70'	129.00'	235.74'	225.87'	S11° 36' 32.65"E	N: 376959.86 E: 801472.85	N: 376738.61 E: 801518.30
C6	93° 46' 43.33"	119.74'	127.91'	195.98'	174.83'	S66° 48' 47.01"W	N: 376738.61 E: 801518.30	N: 376669.77 E: 801357.59
C7	71° 12' 21.39"	218.07'	156.14'	271.01'	253.90'	N32° 22' 38.26"W	N: 376695.71 E: 801297.82	N: 376910.14 E: 801161.86
C8	18° 23' 17.67"	475.08'	76.90'	152.47'	151.82'	N10° 36' 23.99"E	N: 376910.14 E: 801161.86	N: 377059.37 E: 801189.81
C9	41° 13' 50.52"	472.51'	177.75'	340.02'	332.73'	N3° 13' 32.78"W	N: 377059.37 E: 801189.81	N: 377391.57 E: 801171.08
C10	101° 01' 58.99"	107.51'	130.50'	189.58'	165.96'	N31° 35' 46.60"E	N: 377391.57 E: 801171.08	N: 377532.93 E: 801258.03
C11	6° 48' 46.64"	750.15'	44.65'	89.20'	89.15'	S89° 43' 21.98"E	N: 377532.93 E: 801258.03	N: 377532.50 E: 801347.18

TRAIL DATA:

TOTAL LENGTH: 2,208 LF

0' 40' 80'

SCALE: 1"=40'



LEGEND

C	CURB RAMP, ADA		DETECTABLE WARNING
F	SIDEWALK, CONCRETE		ROAD
F1	TRAIL, ASPHALT		WALK/TRAIL
F2	CIRCLE, ASPHALT		CONCRETE AREA
26	SEEDING		SAND LIMITS
27	SAND		SEEDING LIMITS

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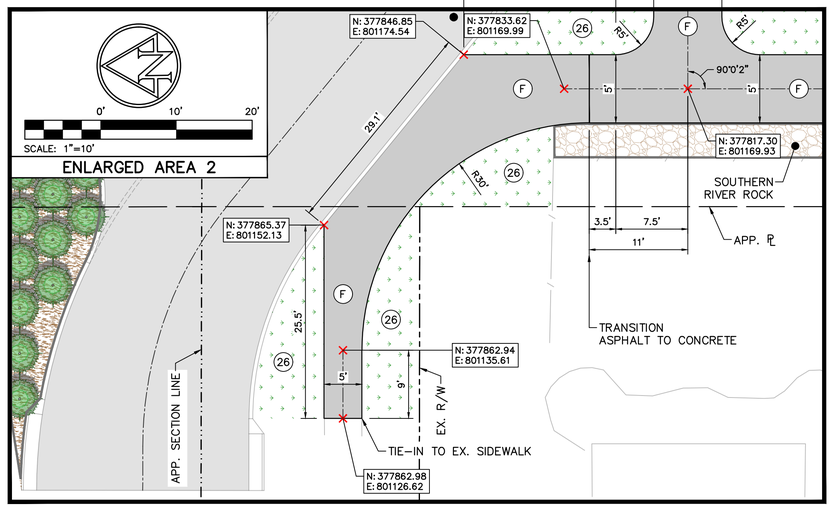
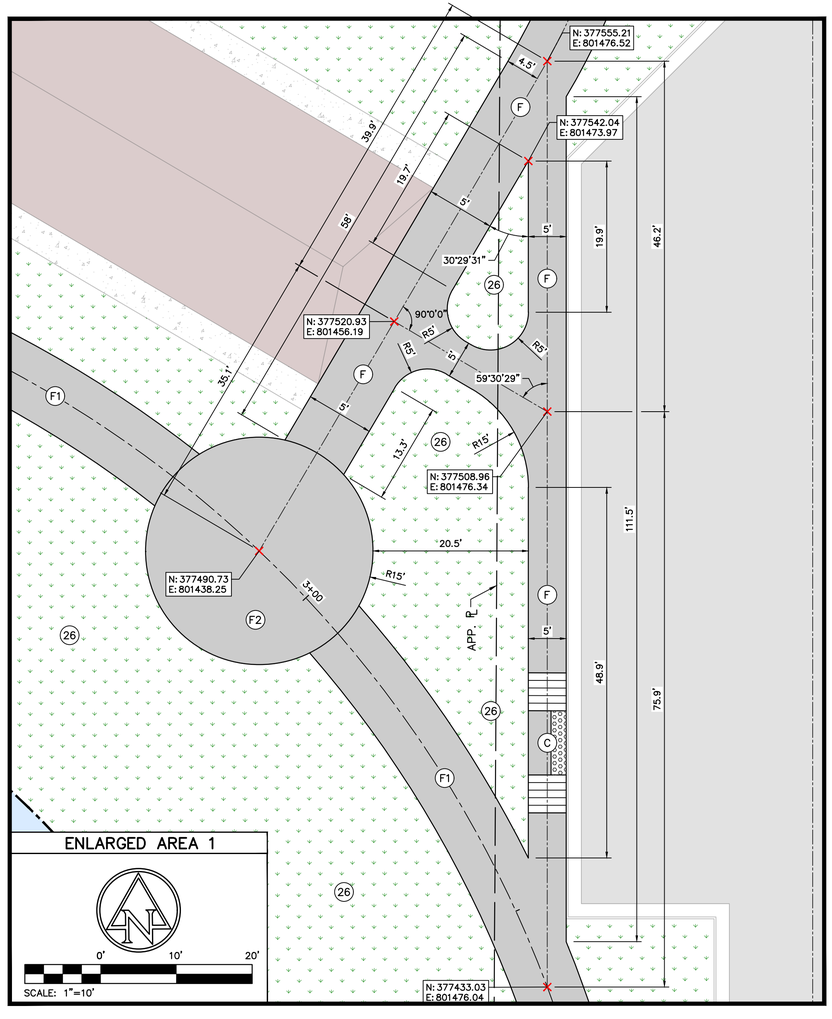
Project Number 2016.02211

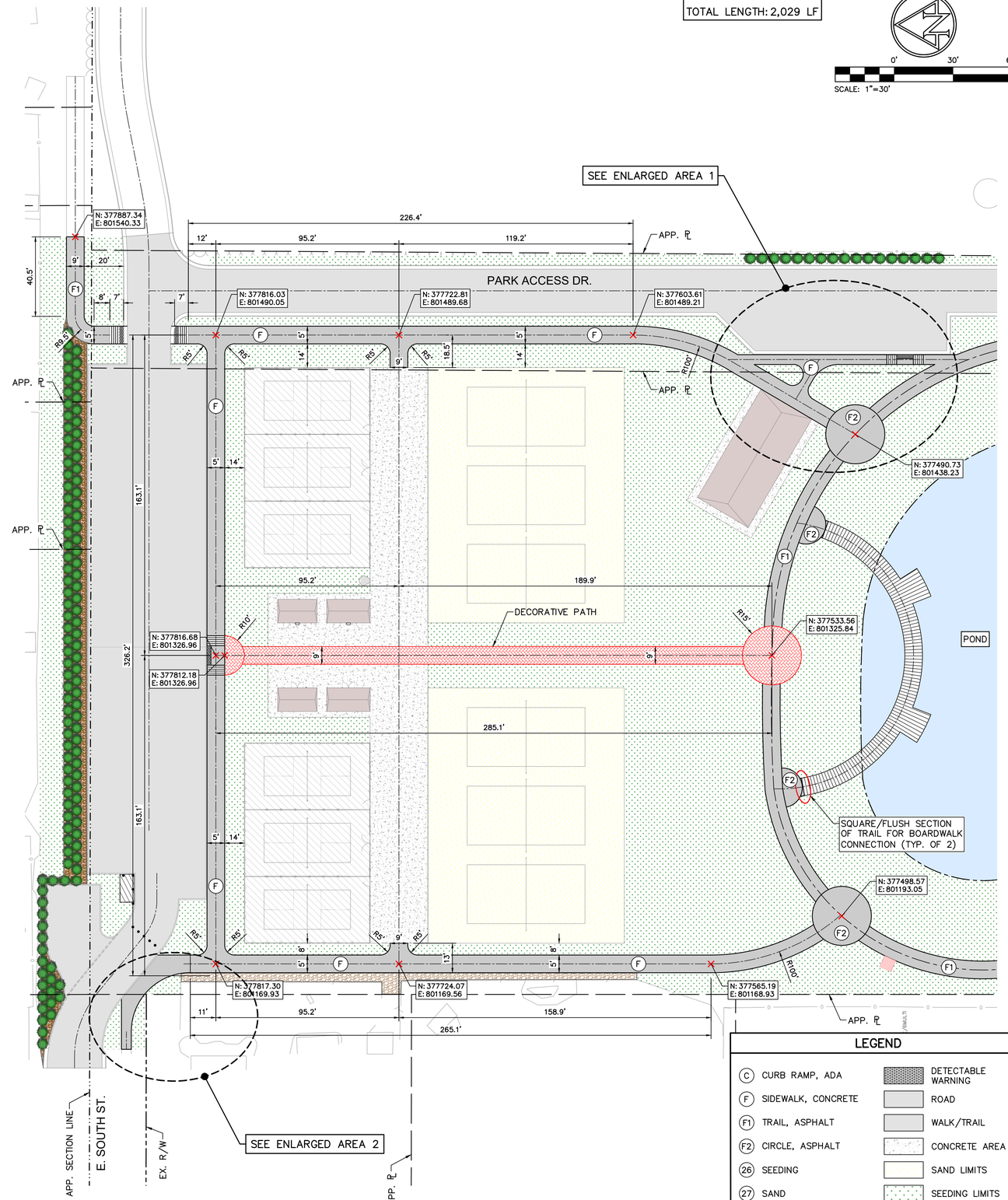
SITE CONSTRUCTION DETAIL TRAIL

C-23

PLOT SCALE: 1" = .0833' PLOT DATE: 2/9/2024 9:39 AM EDITED BY: PTRAWINSKI DRAWING FILE: P:\2016\02211\D. DRAWINGS\UTILITY INFRASTRUCTURE\20160211.P2.UI.CD.02.DWG







LEGEND

C	CURB RAMP, ADA		DETECTABLE WARNING
F	SIDEWALK, CONCRETE		ROAD
F1	TRAIL, ASPHALT		WALK/TRAIL
F2	CIRCLE, ASPHALT		CONCRETE AREA
26	SEEDING		SAND LIMITS
27	SAND		SEEDING LIMITS

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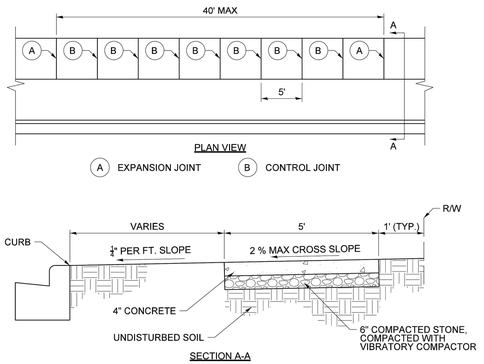
SITE CONSTRUCTION DETAIL TRAIL

C-24

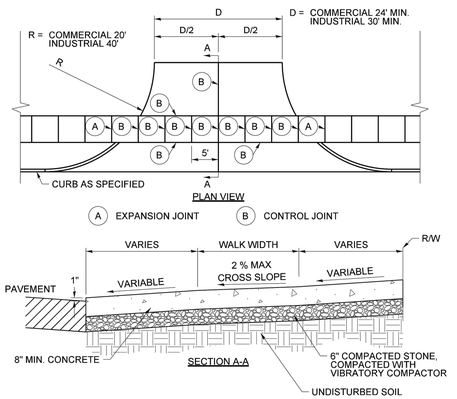
PLOT SCALE: 1" = .0833' PLOT DATE: 2/9/2024 10:51 AM EDITED BY: PTRAWINSKI DRAWING FILE: P:\2016\02211\D_DRAWINGS\UTILITY INFRASTRUCTURE\20160211.P2.UI.CD.02.DWG



NOTES:

1. ALL CONCRETE WORK SHALL MEET THE MOST RECENT ADA REQUIREMENTS
2. PROVIDE 3/4-INCH EXPANSION JOINT CONFORMING TO ASTM D 1751 ALONG BACK OF CURBS, DRIVEWAYS, STEPS, WALLS AND ACROSS THE SIDEWALK AT INTERVALS NOT TO EXCEED 40-FEET.
3. EXTEND EXPANSION JOINT MATERIAL FULL DEPTH OF THE SLAB.
4. PROVIDE TOOLED CONTROL JOINT SPACED AT A DISTANCE EQUAL TO THE WIDTH OF THE WALK.
5. CONCRETE SHALL BE CLASS "A" & 4,000 PSI IN 28 DAYS; MEETING THE REQUIREMENTS OF THE MOST RECENT INDOT STANDARD SPECIFICATIONS MANUAL.
8. SUBBASE IS TO BE COMPACTED LIMESTONE AGGREGATE. SLAG IS NOT PERMITTED.
9. SEE CITY ORDINANCES AND CODES FOR ADDITIONAL REQUIREMENTS

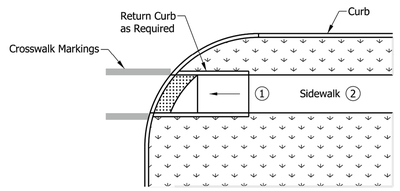
CITY OF CROWN POINT TECHNICAL STANDARDS		CONCRETE SIDEWALK	
APPROVED: 5/13/2022	REVISED:	SCALE: N.T.S.	STANDARD: RD-11



NOTES:

1. ALL CONCRETE WORK SHALL MEET THE MOST RECENT ADA REQUIREMENTS
2. PROVIDE 3/4-INCH EXPANSION JOINT CONFORMING TO ASTM D 1751 ALONG BACK OF CURBS, DRIVEWAYS, STEPS, WALLS AND ACROSS THE SIDEWALK AT INTERVALS NOT TO EXCEED 40-FEET.
3. EXTEND EXPANSION JOINT MATERIAL FULL DEPTH OF THE SLAB.
4. PROVIDE TOOLED CONTROL JOINT SPACED AT A DISTANCE EQUAL TO THE WIDTH OF THE WALK.
5. CONCRETE SHALL BE CLASS "A" & 4,000 PSI IN 28 DAYS; MEETING THE REQUIREMENTS OF THE MOST RECENT INDOT STANDARD SPECIFICATIONS MANUAL.
6. ALL CONCRETE FLAT WORK SHALL BE REINFORCED WITH WIRE MESH 6"X6"X10/10.
7. SUBBASE IS TO BE COMPACTED LIMESTONE AGGREGATE. SLAG IS NOT PERMITTED.
8. SEE CITY ORDINANCES AND CODES FOR ADDITIONAL REQUIREMENTS

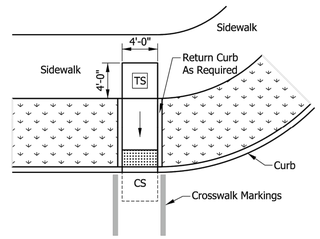
CITY OF CROWN POINT TECHNICAL STANDARDS		COMMERCIAL / INDUSTRIAL DRIVEWAY APPROACH	
APPROVED: 5/13/2022	REVISED:	SCALE: N.T.S.	STANDARD: RD-13



NOTE:

FOR ADDITIONAL INFORMATION, SEE INDOT DETAIL E 604-SWCR-05.

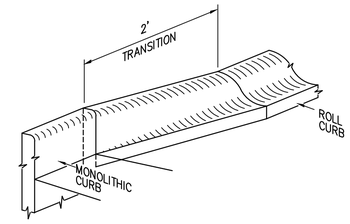
ONE-WAY DIRECTIONAL PERPINDICULAR CURB RAMP PLACEMENT DETAIL
NOT TO SCALE



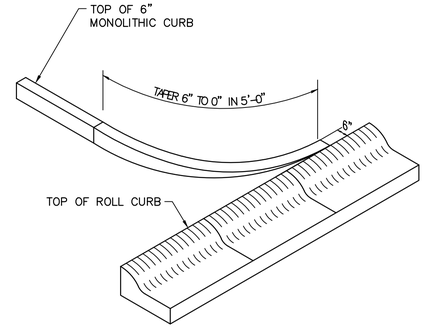
NOTE:

FOR ADDITIONAL INFORMATION, SEE INDOT DETAIL E 604-SWCR-02.

PERPENDICULAR CURB RAMP PLACEMENT DETAIL
NOT TO SCALE

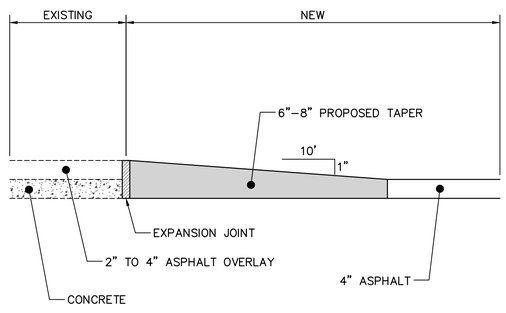


MONOLITHIC CURB TO ROLL CURB – TRANSITION

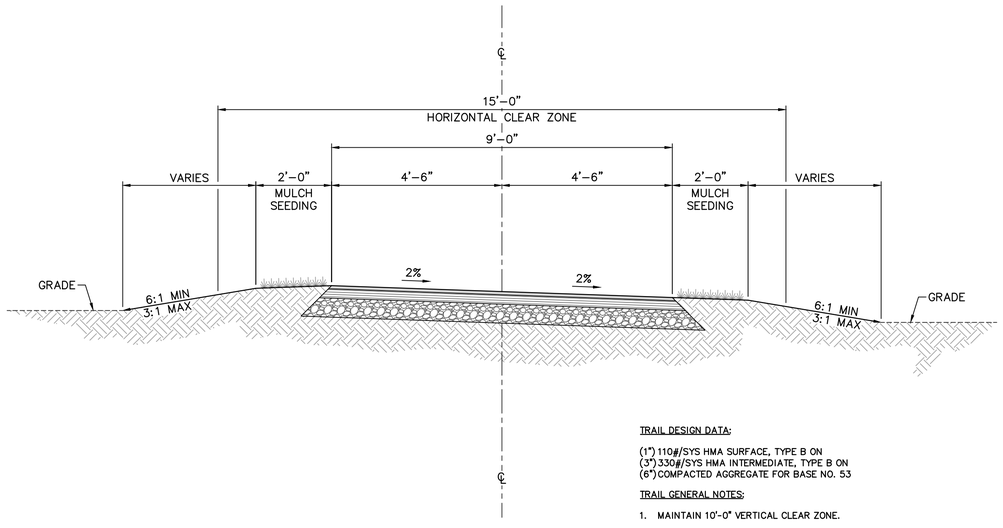


6" MONOLITHIC TO ROLL CURB TRANSITION

CURB TRANSITION DETAIL
NOT TO SCALE



NEW PAVEMENT CONNECTION TO EXISTING PAVEMENT DETAIL
NOT TO SCALE



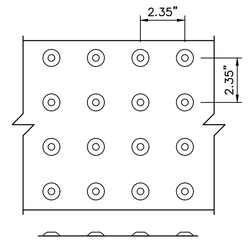
TRAIL DESIGN DATA:

(1") 110#/SYS HMA SURFACE, TYPE B ON
(3") 330#/SYS HMA INTERMEDIATE, TYPE B ON
(6") COMPACTED AGGREGATE FOR BASE NO. 53

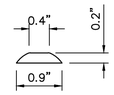
TRAIL GENERAL NOTES:

1. MAINTAIN 10'-0" VERTICAL CLEAR ZONE.

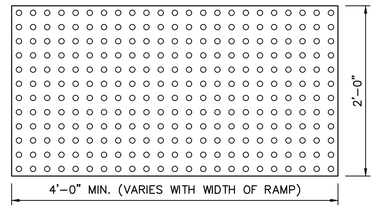
TRAIL/MULTI-USE PATH DETAIL
NOT TO SCALE



TRUNCATED DOME SPACING



TRUNCATED DOME SECTION



TRUNCATED DOME PLAN VIEW

NOTES:

1. DETECTABLE WARNINGS SHALL BE OF THE PAVER TYPE WITH ADHESIVE PER MANUFACTURER'S SPECIFICATIONS.
2. WIDTH OF DETECTABLE WARNING AREA SHALL BE A MINIMUM OF 4 FEET AND VARY WITH WIDTH OF RAMP.
3. LENGTH OF DETECTABLE WARNING AREA SHALL BE 2 FEET REGARDLESS OF SECTION WIDTH.
4. DETECTABLE WARNING AREA CAN BE SQUARE WHERE USED IN A CURB RADIUS.
5. DETECTABLE WARNING DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT DIRECTION OF OF TRAVEL TO PERMIT WHEELS TO ROLL BETWEEN DOMES.
6. DECTECTABLE WARNING AREA SHALL BE A CONTRASTING COLOR IN ALL LOCATIONS.
7. IF MATS ARE TO BE USED, EDGES SHALL BE BEVELED TO ELIMINATE TRIP HAZARD.

TRUNCATED DOMES PLAN AND CROSS-SECTION
NOT TO SCALE

CITY OF CROWN POINT

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SAUERMAN WOODS DRAINAGE IMPROVEMENTS PHASE II

Crown Point, Indiana

BRYAN L. HOOD REGISTERED No. 11500233 STATE OF INDIANA PROFESSIONAL ENGINEER

Bryan L Hood 1/19/2024
CERTIFIED BY

ISSUANCE INDEX
DATE:
1/19/2024
PROJECT PHASE:
CONSTRUCTION DOCUMENTS

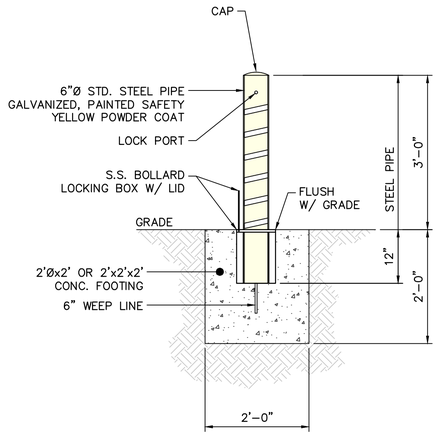
ADDENDUM SCHEDULE		
NO.	DESCRIPTION	DATE
1	AQUA SWIRL MODEL CHANGE, ADDITIONAL MISC. INFO. ADDED	2/09/24

Project Number 2016.02211

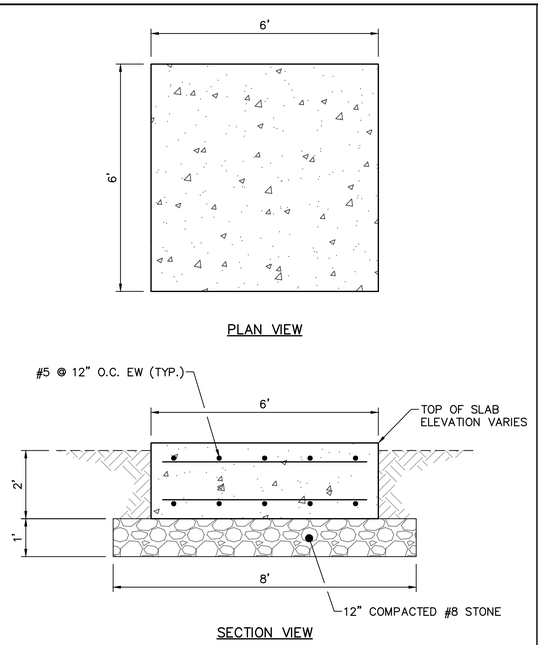
SITE STANDARD DETAILS

C-28

PLOT SCALE: 1" = .0833' PLOT DATE: 2/9/2024 9:40 AM EDITED BY: PTRAWINSKI DRAWING FILE: P:\2016\02211\D. DRAWINGS\UTILITY INFRASTRUCTURE\20160211.P2.ULDT.RD.DWG



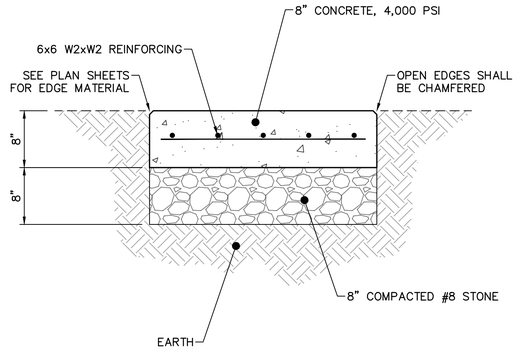
REMOVABLE BOLLARD DETAIL
NOT TO SCALE



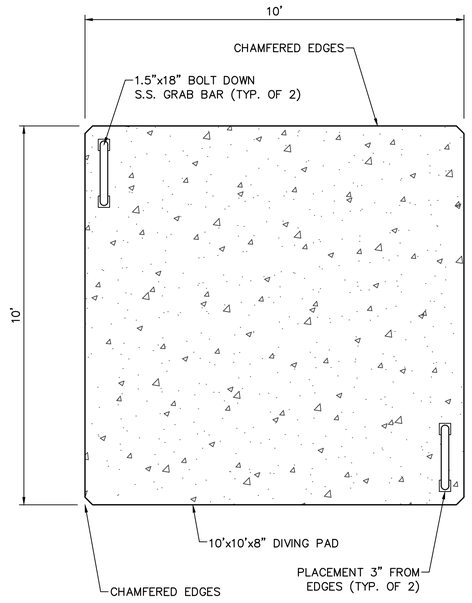
NOTES:

1. CONCRETE SHALL BE CLASS "A" 4,500 PSI WITH 6%± ½% AIR ENTRAINMENT.
2. CROSS SLOPE SHALL BE 1%.

CONCRETE PAD DETAIL
NOT TO SCALE



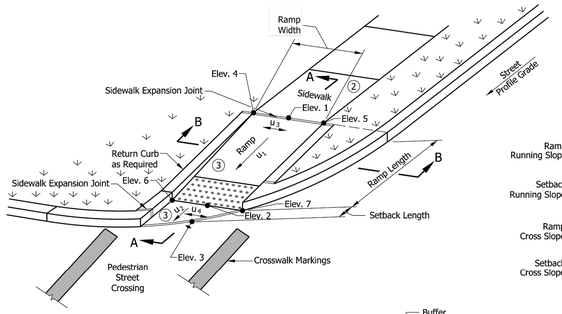
COMMON AREA CONCRETE DETAIL
NOT TO SCALE



NOTES:

1. CONCRETE SHALL BE CLASS "A" 4,000 PSI.
2. CONTRACTOR SHALL COORDINATE FINAL LOCATION WITH OWNER.

DIVING PLATFORM DETAIL
NOT TO SCALE



Component Slope Equations:

Ramp u_1 Running Slope = $\frac{|\text{Elev. 1 - Elev. 2}|}{\text{Ramp Length}} \le 8.33\%$

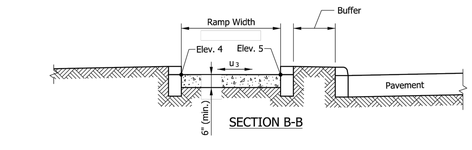
Setback u_2 Running Slope = $\frac{|\text{Elev. 2 - Elev. 3}|}{\text{Setback Length}} \le$ Profile Grade of Adjacent Street

Ramp u_3 Cross Slope = $\frac{|\text{Elev. 4 - Elev. 5}|}{\text{Ramp Width}} \le 2.00\%$ (4)

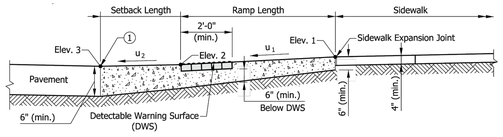
Setback u_4 Cross Slope = $\frac{|\text{Elev. 6 - Elev. 7}|}{\text{Ramp Width}} \le 2.00\%$ (4)

NOTES:

1. The bottom edge of the ramp or setback and top of curb shall be flush with the edge of adjacent pavement and gutter line.
2. A turning space is not required at the top of the ramp for a one-way directional perpendicular curb ramp.
3. Curb ramp surface shall be coarse broomed transverse to the running slope.
4. See Standard Drawing E 604-SWCR-01 for cross slope exceptions.
5. See Standard Drawing E 604-SWCR-12, -13, and -14 for Detectable Warning Surface placement, configuration, and details.
6. See Standard Drawing E 604-CCSJ-01 for sidewalk expansion joint details.



SECTION B-B



SECTION A-A

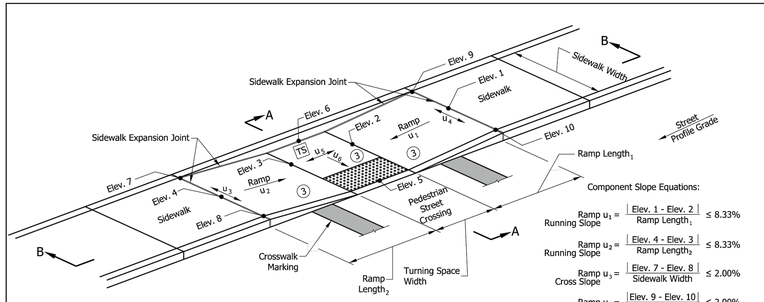
LEGEND:

- Buffer or Other Non-Walkable Surface
- Ramp
- Detectable Warning Surface

INDIANA DEPARTMENT OF TRANSPORTATION	
ONE-WAY DIRECTIONAL PERPENDICULAR CURB RAMP COMPONENT DETAILS SEPTEMBER 2018	
STANDARD DRAWING NO.	E 604-SWCR-06

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips	03/29/18
DESIGN STANDARDS ENGINEER	DATE
/s/ John Leckie	04/25/18
CHIEF ENGINEER	DATE



Component Slope Equations:

Ramp u_1 Running Slope = $\frac{|\text{Elev. 1 - Elev. 2}|}{\text{Ramp Length}_1} \le 8.33\%$

Ramp u_2 Running Slope = $\frac{|\text{Elev. 4 - Elev. 3}|}{\text{Ramp Length}_2} \le 8.33\%$

Ramp u_3 Cross Slope = $\frac{|\text{Elev. 7 - Elev. 8}|}{\text{Sidewalk Width}} \le 2.00\%$

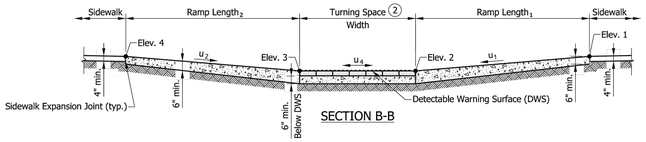
Ramp u_4 Cross Slope = $\frac{|\text{Elev. 9 - Elev. 10}|}{\text{Sidewalk Width}} \le 2.00\%$

Turning Space Cross Slope u_5 = $\frac{|\text{Elev. 2 - Elev. 3}|}{\text{Turning Space Width}} \le 2.00\%$ (5)

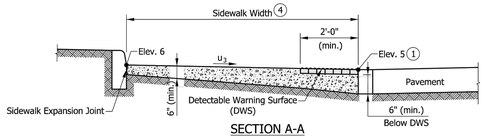
Turning Space Running Slope u_6 = $\frac{|\text{Elev. 6 - Elev. 5}|}{\text{Sidewalk Width}} \le 2.00\%$

NOTES:

1. The bottom edge of the turning space and top of curb shall be flush with the edge of adjacent pavement and gutter line.
2. The turning space shall have a minimum clear dimension of 4 ft x 4 ft and a running slope of 2.00% maximum. Where the turning space is constrained at the back of the sidewalk, the minimum clear dimension shall be 4 ft x 5 ft, with the 5-ft dimension in the direction of the ramp running slope.
3. Curb ramp surface shall be coarse broomed transverse to the running slope.
4. Where there is no buffer between the sidewalk and curb, the preferred minimum sidewalk width is 6 ft. Where a buffer is placed between the sidewalk and curb, the preferred minimum sidewalk width is 5 ft. See Standard Drawing Series E 604-SDWK for sidewalk details.
5. See Standard Drawing E 604-SWCR-01 for cross slope exceptions.
6. See Standard Drawing E 604-SWCR-12, -13, and -14 for Detectable Warning Surface placement, configuration, and details.
7. See Standard Drawing E 604-CCSJ-01 for sidewalk expansion joint details.



SECTION B-B



SECTION A-A

LEGEND:

- Ramp
- Detectable Warning Surface
- TS Turning Space

INDIANA DEPARTMENT OF TRANSPORTATION	
PARALLEL CURB RAMP COMPONENT DETAILS SEPTEMBER 2018	
STANDARD DRAWING NO.	E 604-SWCR-08

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips	03/29/18
DESIGN STANDARDS ENGINEER	DATE
/s/ John Leckie	04/25/18
CHIEF ENGINEER	DATE

CITY OF CROWN POINT

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SAUERMAN WOODS DRAINAGE IMPROVEMENTS PHASE II

Crown Point, Indiana

BRYAN L. HOOD REGISTERED No. 11500233 STATE OF INDIANA PROFESSIONAL ENGINEER

Bryan L. Hood 1/19/2024
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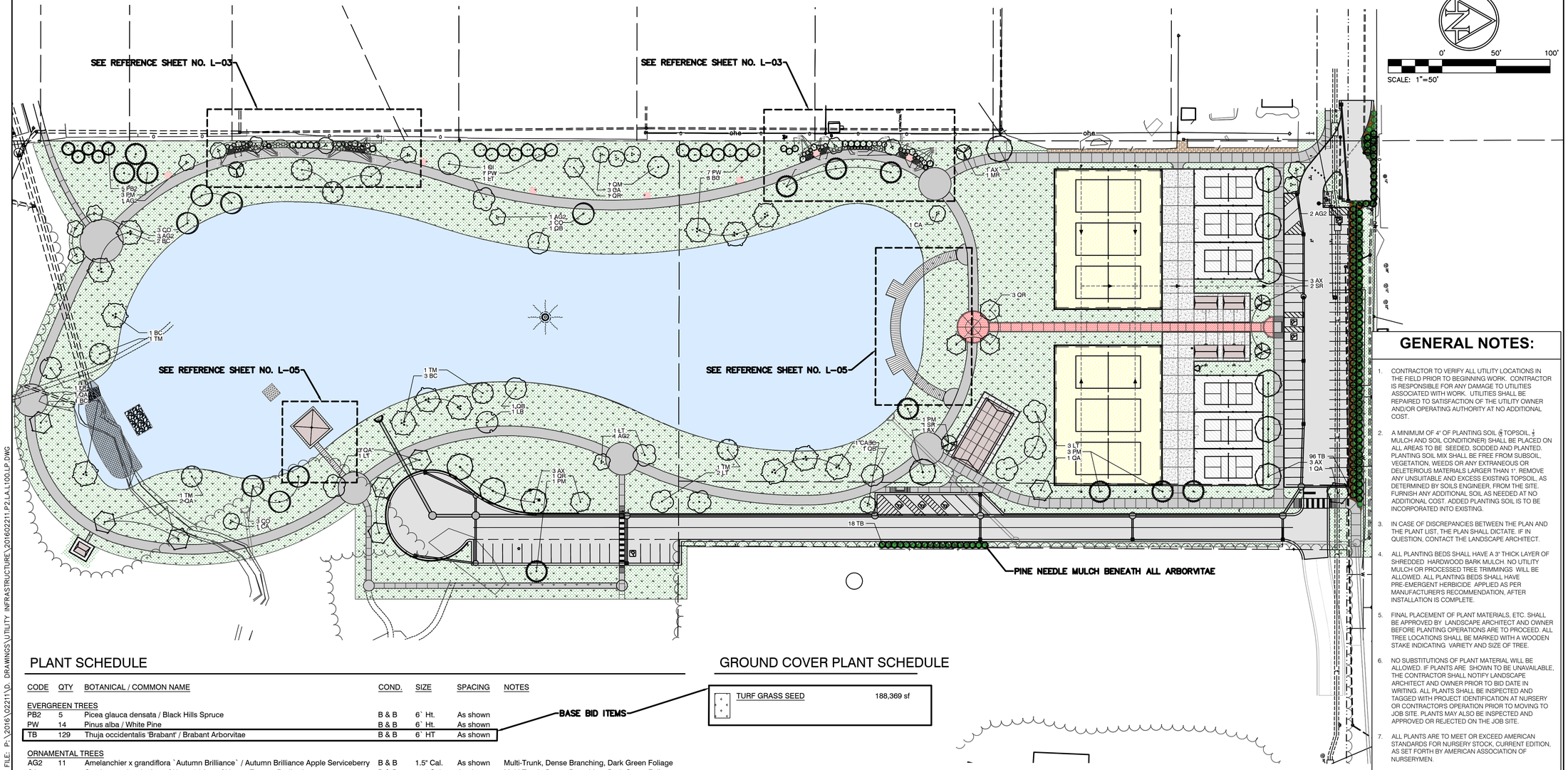
ADDENDUM SCHEDULE		
NO.	DESCRIPTION	DATE
1	AQUA SWIRL MODEL CHANGE, ADDITIONAL MISC. INFO. ADDED	2/09/24

Project Number 2016.02211

SITE STANDARD DETAILS

C-29

PLOT SCALE: 1" = .0833' PLOT DATE: 2/9/2024 9:40 AM EDITED BY: PTRAWINSKI DRAWING FILE: P:\2016\02211\D. DRAWINGS\UTILITY INFRASTRUCTURE\20160211.P2.ULDT.RD.DWG



PLANT SCHEDULE

CODE	QTY	BOTANICAL / COMMON NAME	COND.	SIZE	SPACING	NOTES
EVERGREEN TREES						
PB2	5	Picea glauca densata / Black Hills Spruce	B & B	6` Ht.	As shown	
PW	14	Pinus alba / White Pine	B & B	6` Ht.	As shown	
TB	129	Thuja occidentalis 'Brabant' / Brabant Arborvitae	B & B	6` HT	As shown	BASE BID ITEMS
ORNAMENTAL TREES						
AG2	11	Amelanchier x grandiflora `Autumn Brilliance` / Autumn Brilliance Apple Serviceberry	B & B	1.5" Cal.	As shown	Multi-Trunk, Dense Branching, Dark Green Foliage
CA	9	Cercis canadensis 'Ace of Hearts' / Ace of Hearts Eastern Redbud	B & B	1.5" Cal.	As shown	Multi-Trunk, Dense Branching, Dark Green Foliage
MR	2	Magnolia stellata `Royal Star` / Royal Star Magnolia	B & B	1.5" Cal.	As shown	Multi-Trunk, Dense Branching, Dark Green Foliage
SR	3	Syringa reticulata / Japanese Tree Lilac	B & B	1.5" Cal.	As shown	Multi-Trunk, Dense Branching, Dark Green Foliage
SHADE TREES						
AX	11	Acer x freemanii / Freeman Maple	B & B	4" Cal.	As shown	
BC	13	Betula nigra `Cully` / Heritage® River Birch	B & B	2" Cal.	As shown	Multi-Trunk, Dense Branching, Dark Green Foliage
CO	7	Celtis occidentalis / Common Hackberry	B & B	2" Cal.	As shown	
LS	4	Liquidambar styraciflua 'Slender Silhouette' / Slender Silhouette Sweet Gum	B & B	1.5" Cal.	As shown	Columnar
LR	2	Liquidambar styraciflua `Rotundiloba` / Round-Lobed Sweet Gum	B & B	2" Cal.	As shown	
LT	8	Liriodendron tulipifera / Tulip Poplar	B & B	2" Cal.	As shown	
PM	11	Platanus x acerifolia 'Morton Euclid' / Ovation™ London Plane Tree	B & B	2" Cal.	As shown	
QA	8	Quercus alba / White Oak	B & B	2" Cal.	As shown	
QB	3	Quercus bicolor / Swamp White Oak	B & B	2" Cal.	As shown	
QI	1	Quercus imbricaria / Shingle Oak	B & B	2" Cal.	As shown	
QM	1	Quercus macrocarpa / Burr Oak	B & B	2" Cal.	As shown	
QR	5	Quercus rubra / Red Oak	B & B	2" Cal.	As shown	
TM	7	Taxodium distichum `Mickelson` / Shawnee Brave™ Bald Cypress	B & B	2" Cal.	As shown	
DECIDUOUS SHRUBS						
LR2	12	Diervilla x 'G2X88544' / Kodiak® Orange Diervilla	CONT.	3 GAL.	3` O.C.	
HL	62	Hydrangea paniculata `SMHPLQF` / Little Quick Fire® Panicle Hydrangea	CONT.	3 GAL	2` O.C.	
VR	2	Viburnum dentatum `Ralph Senior` / Autumn Jazz Arrowwood Viburnum	CONT.	3 GAL.	5` O.C.	
EVERGREEN SHRUBS						
AR	5	Aronia arbutifolia `Brilliantissima` / Brilliant Red Chokeberry/Red Chokeberry	CONT.	3 GAL.	5` O.C.	
IF	5	Ilex verticillata 'FarrowMrP' / Mr. Poppins® Winterberry	CONT.	3 GAL.	4` O.C.	
IB	19	Ilex verticillata Berry Poppins / Berry Poppins Winterberry Holly	CONT.	3 GAL.	4` O.C.	
MC	2	Myrica caroliniensis / Bayberry	CONT.	5 GAL	6` O.C.	
TD	24	Taxus x media `Densiformis` / Dense Yew	CONT.	3 GAL.	4` O.C.	
ORNAMENTAL GRASS						
CK	26	Calamagrostis x acutiflora `Karl Foerster` / Feather Reed Grass	CONT.	3 GAL	3` O.C.	
PN	2	Panicum virgatum 'Northwind' / Northwind Switch Grass	CONT.	3 GAL	5` O.C.	

GROUND COVER PLANT SCHEDULE

	TURF GRASS SEED	188,369 sf

NOTE:

1. BASE BID ITEMS HAVE BEEN IDENTIFIED. ALL OTHER ITEMS ARE ALTERNATE BID ITEMS.

Indiana 811
Know what's below. 811 before you dig.

GENERAL NOTES:

1. CONTRACTOR TO VERIFY ALL UTILITY LOCATIONS IN THE FIELD PRIOR TO BEGINNING WORK. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO UTILITIES ASSOCIATED WITH WORK. UTILITIES SHALL BE REPAIRED TO SATISFACTION OF THE UTILITY OWNER AND/OR OPERATING AUTHORITY AT NO ADDITIONAL COST.
2. A MINIMUM OF 4" OF PLANTING SOIL (6 TOPSOIL, 1 MULCH AND SOIL CONDITIONER) SHALL BE PLACED ON ALL AREAS TO BE SEEDED, SODDED AND PLANTED. PLANTING SOIL MIX SHALL BE FREE FROM SUBSOIL, VEGETATION, WEEDS OR ANY EXTRANEOUS OR DELETERIOUS MATERIALS LARGER THAN 1". REMOVE ANY UNSUITABLE AND EXCESS EXISTING TOPSOIL, AS DETERMINED BY SOILS ENGINEER, FROM THE SITE. FURNISH ANY ADDITIONAL SOIL AS NEEDED AT NO ADDITIONAL COST. ADDED PLANTING SOIL IS TO BE INCORPORATED INTO EXISTING.
3. IN CASE OF DISCREPANCIES BETWEEN THE PLAN AND THE PLANT LIST, THE PLAN SHALL DICTATE. IF IN QUESTION, CONTACT THE LANDSCAPE ARCHITECT.
4. ALL PLANTING BEDS SHALL HAVE A 3" THICK LAYER OF SHREDDED HARDWOOD BARK MULCH. NO UTILITY MULCH OR PROCESSED TREE TRIMMINGS WILL BE ALLOWED. ALL PLANTING BEDS SHALL HAVE PRE-EMERGENT HERBICIDE APPLIED AS PER MANUFACTURER'S RECOMMENDATION, AFTER INSTALLATION IS COMPLETE.
5. FINAL PLACEMENT OF PLANT MATERIALS, ETC. SHALL BE APPROVED BY LANDSCAPE ARCHITECT AND OWNER BEFORE PLANTING OPERATIONS ARE TO PROCEED. ALL TREE LOCATIONS SHALL BE MARKED WITH A WOODEN STAKE INDICATING VARIETY AND SIZE OF TREE.
6. NO SUBSTITUTIONS OF PLANT MATERIAL WILL BE ALLOWED. IF PLANTS ARE SHOWN TO BE UNAVAILABLE, THE CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT AND OWNER PRIOR TO BID DATE IN WRITING. ALL PLANTS SHALL BE INSPECTED AND TAGGED WITH PROJECT IDENTIFICATION AT NURSERY OR CONTRACTOR'S OPERATION PRIOR TO MOVING TO JOB SITE. PLANTS MAY ALSO BE INSPECTED AND APPROVED OR REJECTED ON THE JOB SITE.
7. ALL PLANTS ARE TO MEET OR EXCEED AMERICAN STANDARDS FOR NURSERY STOCK, CURRENT EDITION, AS SET FORTH BY AMERICAN ASSOCIATION OF NURSERYMEN.
8. PLANTINGS SHOULD BE INSTALLED BETWEEN APRIL 1ST AND MAY 31ST, OR BETWEEN SEPTEMBER 1ST AND OCTOBER 31ST TO AVOID UNFAVORABLE WEATHER CONDITIONS. LANDSCAPE AND TURF PLANTED OUTSIDE OF THESE PERIODS WILL REQUIRE ADDITIONAL MEASURES TO MAINTAIN ACCEPTABLE HEALTH AT NO ADDITIONAL COST TO THE CLIENT.
9. PLANTS AND ALL OTHER MATERIALS TO BE STORED ON SITE WILL BE PLACED WHERE THEY WILL NOT CONFLICT WITH CONSTRUCTION AND AS DIRECTED BY OWNER.
10. ALL NEW LANDSCAPE PLANTINGS SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FOLLOWING FINAL INSPECTION BY LANDSCAPE ARCHITECT AND OWNER. AT END OF THIS PERIOD, PLANT MATERIAL TERMED DEAD OR UNSATISFACTORY BY LANDSCAPE ARCHITECT OR OWNER SHALL BE REPLACED AT NO ADDITIONAL CHARGE BY THE LANDSCAPE CONTRACTOR.
11. ALL DISTURBED LAWN AREAS SHALL BE SEEDED OR SODDED AS SHOWN PER THE LANDSCAPE AND EROSION CONTROL PLANS.
12. LAWN AND SOD AREAS ARE TO BE GRADED UNIFORMLY WITHOUT ANY UNDULATIONS OR IRREGULARITIES IN THE SURFACE PRIOR TO ANY SEED OR SOD WORK.
13. ALL LAWN IS TO BE A BLEND PER THE PLANT SCHEDULE. SEED AREAS ARE TO HAVE 0% NOXIOUS WEED AND FREE OF DISEASE.
14. PROTECT LAWN SEEDED AREAS WITH STRAW MULCH. SPREAD MULCH UNIFORMLY AT A MINIMUM RATE OF 2 TONS PER ACRE TO FORM A CONTINUOUS BLANKET 1 ½ INCHES IN LOOSE THICKNESS OVER SEEDED AREAS.
15. CONTRACTOR TO APPLY EROSION CONTROL BLANKET TO ALL SURFACES EXCEEDING 4:1 SLOPE. INSTALL EROSION CONTROL BLANKET PER MANUFACTURER INSTRUCTIONS. ENSURE PROPER OVERLAP BETWEEN DIFFERENT RUNS OF EROSION CONTROL BLANKET AND PROPER NUMBER OF STAPLES ARE USED.

ORDINANCE NOTES

SEC. 10-03-06-I LANDSCAPED BUFFER YARD
A LANDSCAPED BUFFER SHALL BE REQUIRED WHERE DISTRICTS AND ZONES ABUT TO MITIGATE THE IMPACT OF ADJACENT USES THAT VARY IN INTENSITY. *"WHERE A RESIDENTIAL SUBDIVISION IS BEING ESTABLISHED, A PERIMETER BUFFER YARD 20 FEET IN WIDTH MUST BE PLANTED ALONG ALL THOROUGHFARES WHICH ABUT THE SUBDIVISION, IRRESPECTIVE OF WHETHER FRONT, SIDE OR REAR YARDS ABUT THE THOROUGHFARE, AND PROVIDE ACCESS TO THE SUBDIVISION. ALL SUCH BUFFERS SHALL BE LOCATED WITHIN COMMON AREAS AND NOT ON AN INDIVIDUAL LOT OR LOTS.*
REQUIREMENTS FOR 20' BUFFER YARD:
THREE (3) CANOPY OR EVERGREEN TREES, TWO (2) ORNAMENTAL TREES, AND TEN (10) SHRUBS MINIMUM PER 100'.

- *STREET BUFFER LENGTH: 897 LF*
- *REQUIRED PLANTINGS: 27 CANOPY OR EVERGREEN TREES, 18 ORNAMENTAL TREES, 90 SHRUBS*
- *PROVIDED PLANTINGS: 27 CANOPY OR EVERGREEN TREES, 26 ORNAMENTAL TREES, 126 SHRUBS*

SEC. 10-03-06-H STREETSCAPING
STREET TREES SHALL BE PLANTED AT A RATE OF ONE TREE PER 40 LINEAR FEET OF FRONTAGE. TREES SHALL BE PLANTED IN THE FRONT YARD NO CLOSER THAN THREE FEET FROM THE CURB OR EDGE OF THE RIGHT-OF-WAY, OR IF THERE IS A SIDEWALK THEN THREE FEET ON THE SIDEWALK OPPOSITE THE STREET, AS THE CASE MAY BE. TREE PLANTINGS SHALL NOT BE PLACED IN THE VISIBILITY TRIANGLE LOCATED AT AN INTERSECTION. STREET TREES MAY BE SPACED 30-60 FEET APART DEPENDING ON SITE CONDITIONS PROVIDED THE SPACING AVERAGES TO ONE TREE PER 40 FEET OF CURB LINE ADJACENT TO THE SUBJECT PROPERTIES.

- *LOCAL STREET LENGTH: 3674 LF*
- *REQUIRED PLANTINGS: 184 STREET TREES AT 40' O.C. AVERAGE*
- *PROVIDED PLANTINGS: 184 TREES TOTAL: 168 STREET TREES ON STREET IN SECTION 1 CONSTRUCTION, 9 TREES ON WEST SIDE OF VOLTANI WAY TO BE SPECIFIED AND INSTALLED IN SECTION 2 CONSTRUCTION, 2 SOUTHERNMOST TREES ON VOLTANI WAY TO BE SPECIFIED AND INSTALLED IN SECTION 4 CONSTRUCTION, AND 5 TREES IN COMMON AREA E TO MEET TOTAL REQUIRED.*

CITY OF CROWN POINT

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SAUERMAN WOODS DRAINAGE IMPROVEMENTS PHASE II

Crown Point, Indiana

MARK UNDERWOOD REGISTERED No. LA29700016 STATE OF INDIANA LANDSCAPE ARCHITECT

1/19/2024
CERTIFIED BY

ISSUANCE INDEX
DATE:
1/19/2024
PROJECT PHASE:
CONSTRUCTION DOCUMENTS

ADDENDUM SCHEDULE		
NO.	DESCRIPTION	DATE
1	AQUA SWIRL MODEL CHANGE, ADDITIONAL MISC. INFO. ADDED	2/09/24

Project Number 2016.02211

OVERALL LANDSCAPE PLAN

L-01

PLOT SCALE: 1" = 0833' PLOT DATE: 2/9/2024 11:29 AM EDITED BY: DNESPO DRAWING FILE: P:\2016\02211\D. DRAWINGS\UTILITY INFRASTRUCTURE\ 20160211.P2.LA.L100.LP.DWG

SEE REFERENCE SHEET NO. L-03

SEE REFERENCE SHEET NO. L-03

SEE REFERENCE SHEET NO. L-05

SEE REFERENCE SHEET NO. L-05

PINE NEEDLE MULCH BENEATH ALL ARBORVITAE

0' 50' 100'

SCALE: 1"=50'

PLOT SCALE: 1" = .0833' PLOT DATE: 2/9/2024 11:30 AM EDITED BY: DNESPO DRAWING FILE: P:\2016\02211\D_DRAWINGS\UTILITY INFRASTRUCTURE\20160221.P2.LA.L100.LP.DWG

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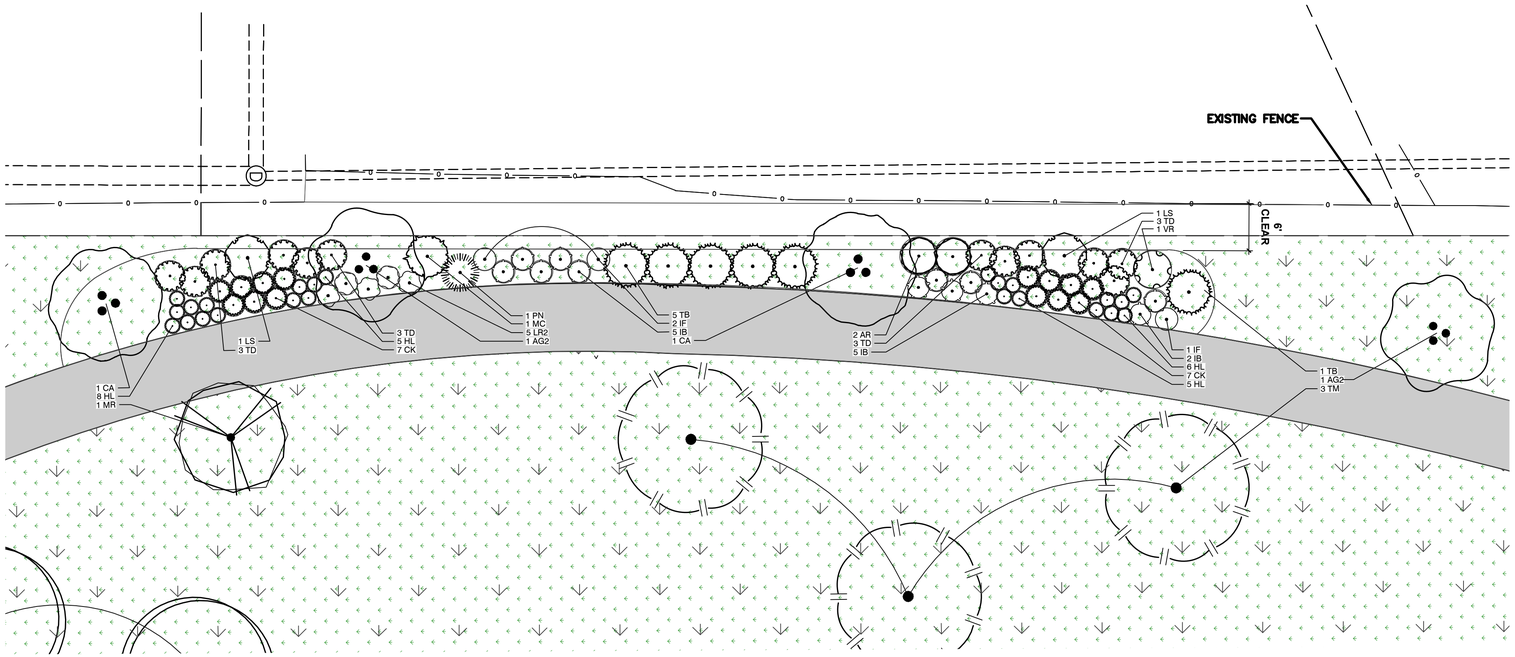
Project Number 2016.02211

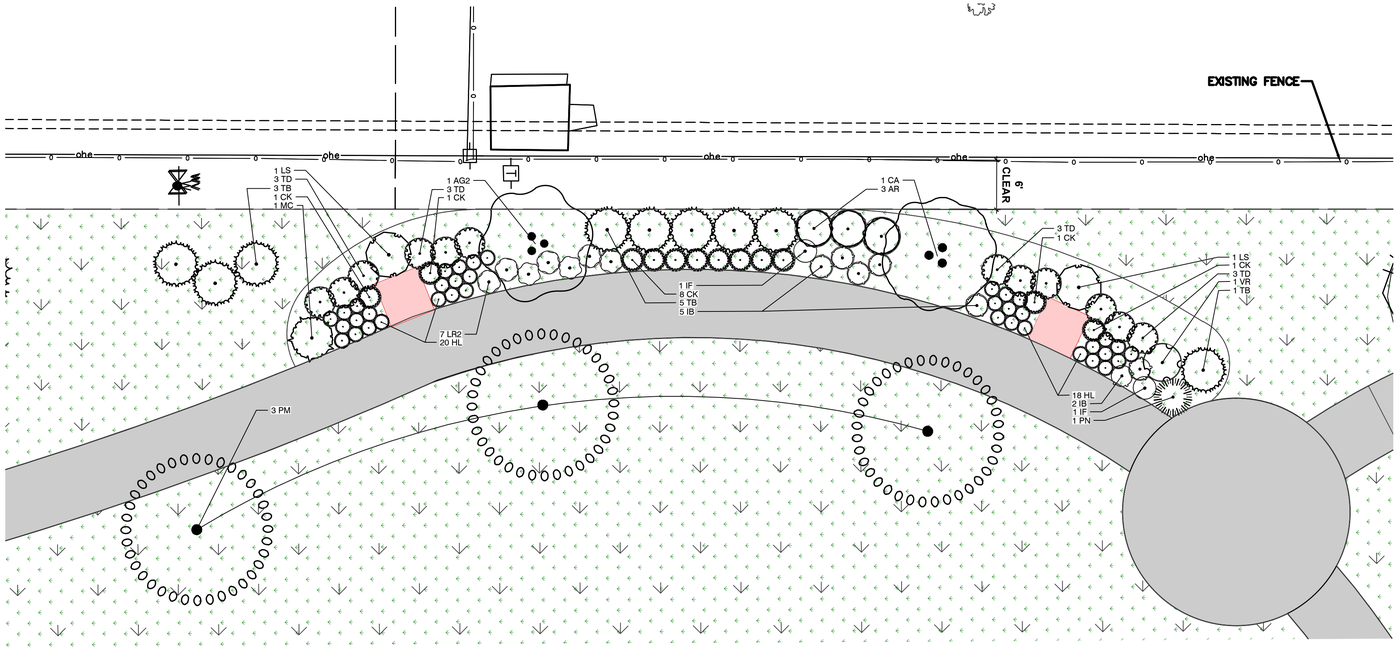
OVERALL LANDSCAPE PLAN W/ AERIAL

L-02



01 PLAN ENLARGEMENT

NTS



02 PLAN ENLARGEMENT

NTS

0' 10' 20'

SCALE: 1"=10'

BASE BID ITEMS

PLANT SCHEDULE

CODE	QTY	BOTANICAL / COMMON NAME	COND.	SIZE	SPACING
EVERGREEN TREES					
PB2	5	Picea glauca densata / Black Hills Spruce	B & B	6` Ht.	As shown
PW	14	Pinus alba / White Pine	B & B	6` Ht.	As shown
TB	129	Thuja occidentalis 'Brabant' / Brabant Arborvitae	B & B	6` HT	As shown
ORNAMENTAL TREES					
AG2	11	Amelanchier x grandiflora `Autumn Brilliance` / Autumn Brilliance Apple Serviceberry	B & B	1.5" Cal.	As shown
CA	9	Cercis canadensis 'Ace of Hearts' / Ace of Hearts Eastern Redbud	B & B	1.5" Cal.	As shown
MR	2	Magnolia stellata `Royal Star` / Royal Star Magnolia	B & B	1.5" Cal.	As shown
SR	3	Syringa reticulata / Japanese Tree Lilac	B & B	1.5" Cal.	As shown
SHADE TREES					
AX	11	Acer x freemanii / Freeman Maple	B & B	4" Cal.	As shown
BC	13	Betula nigra `Cully` / Heritage® River Birch	B & B	2" Cal.	As shown
CO	7	Celtis occidentalis / Common Hackberry	B & B	2" Cal.	As shown
LS	4	Liquidambar styraciflua 'Slender Silhouette' / Slender Silhouette Sweet Gum	B & B	1.5" Cal.	As shown
LR	2	Liquidambar styraciflua `Rotundiloba` / Round-Lobed Sweet Gum	B & B	2" Cal.	As shown
LT	8	Liriodendron tulipifera / Tulip Poplar	B & B	2" Cal.	As shown
PM	11	Platanus x acerifolia 'Morton Euclid' / Ovation™ London Plane Tree	B & B	2" Cal.	As shown
QA	8	Quercus alba / White Oak	B & B	2" Cal.	As shown
QB	3	Quercus bicolor / Swamp White Oak	B & B	2" Cal.	As shown
QI	1	Quercus imbricaria / Shingle Oak	B & B	2" Cal.	As shown
QM	1	Quercus macrocarpa / Burr Oak	B & B	2" Cal.	As shown
QR	5	Quercus rubra / Red Oak	B & B	2" Cal.	As shown
TM	7	Taxodium distichum `Mickelson` / Shawnee Brave™ Bald Cypress	B & B	2" Cal.	As shown
DECIDUOUS SHRUBS					
LR2	12	Diervilla x 'G2X88544' / Kodiak® Orange Diervilla	CONT.	3 GAL.	3` O.C.
HL	62	Hydrangea paniculata `SMHPLQF` / Little Quick Fire® Panicle Hydrangea	CONT.	3 GAL.	2` O.C.
VR	2	Viburnum dentatum `Ralph Senior` / Autumn Jazz Arrowwood Viburnum	CONT.	3 GAL.	5` O.C.
EVERGREEN SHRUBS					
AR	5	Aronia arbutifolia `Brilliantissima` / Brilliant Red Chokeberry/Red Chokeberry	CONT.	3 GAL.	5` O.C.
IF	5	Ilex verticillata 'FarrowMrP' / Mr. Poppins® Winterberry	CONT.	3 GAL.	4` O.C.
IB	19	Ilex verticillata Berry Poppins / Berry Poppins Winterberry Holly	CONT.	3 GAL.	4` O.C.
MC	2	Myrica caroliniensis / Bayberry	CONT.	5 GAL	6` O.C.
TD	24	Taxus x media `Densiformis` / Dense Yew	CONT.	3 GAL.	4` O.C.
ORNAMENTAL GRASS					
CK	26	Calamagrostis x acutiflora `Karl Foerster` / Feather Reed Grass	CONT.	3 GAL	3` O.C.
PN	2	Panicum virgatum 'Northwind' / Northwind Switch Grass	CONT.	3 GAL	5` O.C.

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SAUERMAN WOODS DRAINAGE IMPROVEMENTS PHASE II

Crown Point, Indiana

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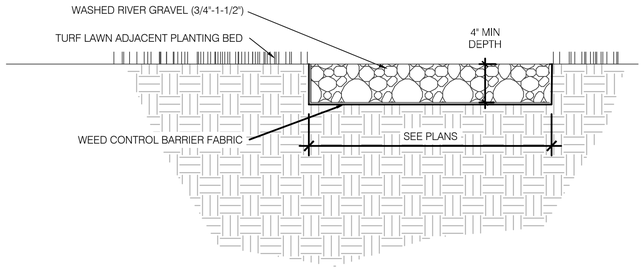
Project Number 2016.02211

LANDSCAPE PLAN ENLARGEMENTS

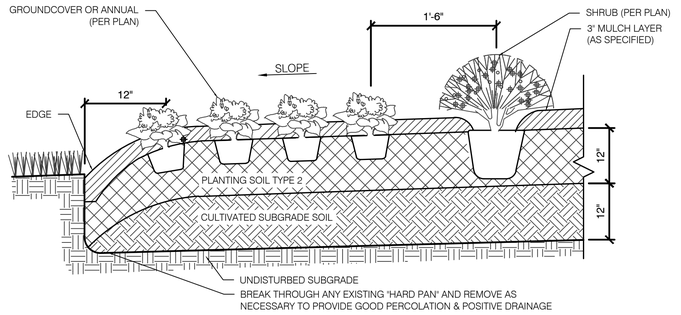
L-03

PLOT SCALE: 1" = .0833' PLOT DATE: 2/9/2024 11:30 AM EDITED BY: DNESPO DRAWING FILE: P:\2016\02211\D. DRAWINGS\UTILITY INFRASTRUCTURE\20160211.P2.LA.L100.LP.DWG



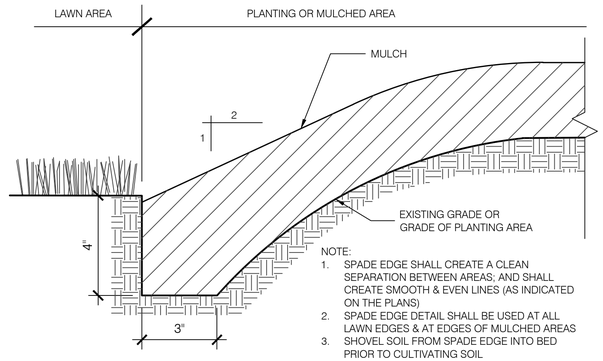
06 SOUTHERN RIVER ROCK

NTS



03 GROUNDCOVER AND ANNUAL PLANTING

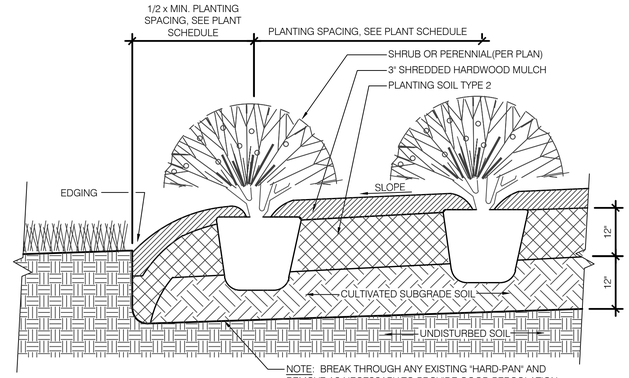
NTS



NOTE:
1. SPADE EDGE SHALL CREATE A CLEAN SEPARATION BETWEEN AREAS; AND SHALL CREATE SMOOTH & EVEN LINES (AS INDICATED ON THE PLANS)
2. SPADE EDGE DETAIL SHALL BE USED AT ALL LAWN EDGES & AT EDGES OF MULCHED AREAS
3. SHOVEL SOIL FROM SPADE EDGE INTO BED PRIOR TO CULTIVATING SOIL

05 EDGE - SPADE - ALT.

NTS



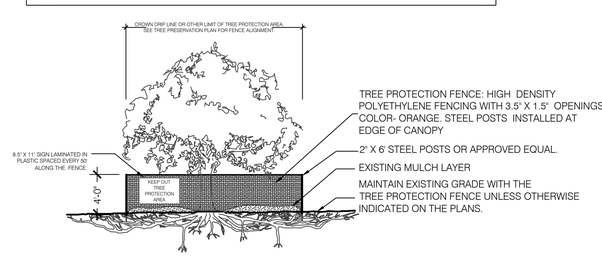
PLANTING PROCEDURE

1. LAYOUT BED AND OUTLINE EDGE.
2. PREPARE PLANTING SOIL PER SPECIFICATIONS.
3. INSTALL PLANTS, MULCH AND WATER THOROUGHLY. DO NOT ALLOW AIR POCKETS TO FORM WHEN BACKFILLING.

02 SHRUB AND PERENNIAL PLANTING

NTS

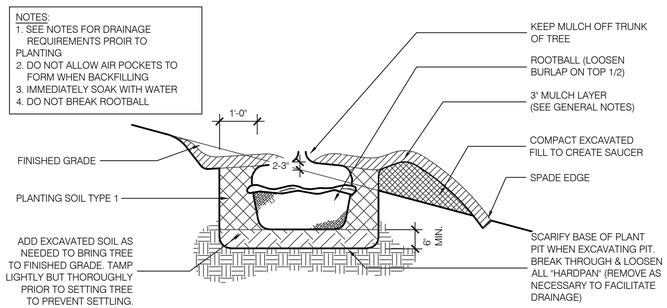
NOTES:
1. SEE SPECIFICATIONS FOR ADDITIONAL TREE PROTECTION REQUIREMENTS.
2. IF THERE IS NO EXISTING IRRIGATION, SEE SPECIFICATIONS FOR WATERING REQUIREMENTS.
3. NO PRUNING SHALL BE PERFORMED EXCEPT BY APPROVED ARBORIST.
4. NO EQUIPMENT SHALL OPERATE INSIDE THE PROTECTIVE FENCING INCLUDING DURING FENCE INSTALLATION AND REMOVAL.
5. SEE SITE PREPARATION PLAN FOR ANY MODIFICATIONS WITH THE TREE PROTECTION AREA.



07 TREE PROTECTION DETAIL

NTS

NOTES:
1. SEE NOTES FOR DRAINAGE REQUIREMENTS PROIR TO PLANTING
2. DO NOT ALLOW AIR POCKETS TO FORM WHEN BACKFILLING
3. IMMEDIATELY SOAK WITH WATER
4. DO NOT BREAK ROOTBALL



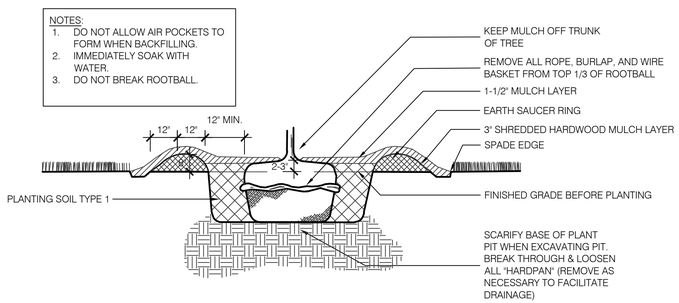
PLANTING PROCEDURE

1. EXCAVATE ROOTBALL PIT
2. SET TREE SUCH THAT TOP OF ROOTBALL IS 2-3" HIGHER THAN FINISH GRADE.
3. REMOVE ALL TWINE, ROPE, WIRE BASKET, AND BURLAP FROM TOP 1/3 OF ROOTBALL & EXPOSE ROOT FLARE.
4. BACKFILL WITH SOIL MIX & "WATER IN"
5. COMPLETE BACKFILLING, CONSTRUCT SAUCER, SPADE-EDGE & ADD MULCH
6. STAKE & GUY SECURELY (AS REQUIRED)
7. INSTALL WATERING DEVICE (AS REQUIRED)

04 TREE PLANTING - ON SLOPE

NTS

NOTES:
1. DO NOT ALLOW AIR POCKETS TO FORM WHEN BACKFILLING.
2. IMMEDIATELY SOAK WITH WATER.
3. DO NOT BREAK ROOTBALL.



PLANTING PROCEDURE

1. EXCAVATE ROOTBALL PIT
2. SET TREE SUCH THAT TOP OF ROOTBALL IS 2-3" HIGHER THAN FINISH GRADE.
3. REMOVE ALL TWINE, ROPE, WIRE BASKET, AND BURLAP FROM TOP 1/3 OF ROOTBALL & EXPOSE ROOT FLARE.
4. BACKFILL WITH SOIL MIX & "WATER IN"
5. COMPLETE BACKFILLING, CONSTRUCT SAUCER, SPADE-EDGE & ADD MULCH
6. STAKE & GUY SECURELY (AS REQUIRED)
7. INSTALL WATERING DEVICE (AS REQUIRED)

01 TREE PLANTING - LEVEL AREA

NTS

PLOT SCALE: 1" = .0833' PLOT DATE: 2/9/2024 11:30 AM EDITED BY: DNESPO DRAWING FILE: P:\2016\02211\D. DRAWINGS\UTILITY INFRASTRUCTURE\20160221I.P2.LA.L100.LP.DWG

CITY OF CROWN POINT

SAUERMAN WOODS DRAINAGE IMPROVEMENTS PHASE II

Crown Point, Indiana

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MARK UNDERWOOD REGISTERED No. LA29700016 STATE OF INDIANA LANDSCAPE ARCHITECT

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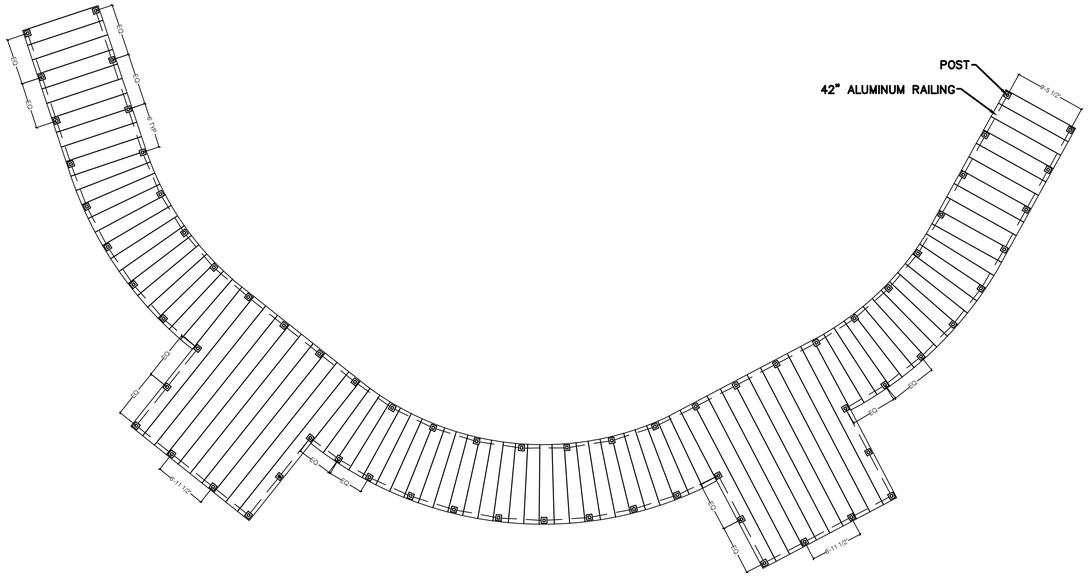
Project Number 2016.02211

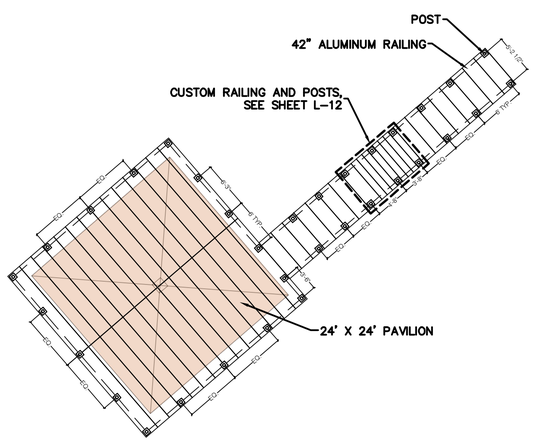
LANDSCAPE PLANTING DETAILS

L-04



01 NORTH BOARDWALK PLAN ENLARGEMENT

NTS



02 SOUTH BOARDWALK PLAN ENLARGEMENT

NTS

NOTES:

1. POSTS AND RAILINGS BASED OFF PERMATRAK BOARDWALK SYSTEM DRAWINGS. SEE SHEETS S-01 THROUGH S-11. CONTRACTOR TO COORDINATE RAILING WITH THE PERMATRAK LAYOUT AND SUBMIT SHOP DRAWINGS FOR APPROVAL.
2. SEE REFERENCE SHEETS L-12 THROUGH L-13 FOR RAILING AND POST DETAILS.

0' 10' 20'

SCALE: 1"=10'

GENERAL NOTES:

1. CONTRACTOR RESPONSIBLE FOR FIELD LAYOUT OF ALL NEW IMPROVEMENTS. DIGITAL FILES OF GEOMETRIC INFORMATION WILL BE PROVIDED UPON REQUEST IN AUTOCAD FORMAT. NO ADDITIONAL PAYMENT WILL BE MADE FOR ADJUSTMENTS NECESSARY TO CONSTRUCT THE WORK AS DRAWN.
2. CONTRACTOR RESPONSIBLE FOR COORDINATING WORK AND OBTAINING APPROVAL OF ALL LAYOUTS BY OWNERS REPRESENTATIVE PRIOR TO CONSTRUCTION. NO ADDITIONAL PAYMENT WILL BE MADE TO CORRECT WORK IF CONSTRUCTED INCORRECTLY WITHOUT PRE-APPROVAL BY OWNERS REPRESENTATIVE.
3. CONTRACTOR RESPONSIBLE FOR MAINTAINING ALL LAYOUT STAKES DURING CONSTRUCTION. NO ADDITIONAL PAYMENT WILL BE MADE TO REPLACE LAYOUT STAKES.
4. ALL WALLS ARE DIMENSIONED TO THE FACE OF WALL UNLESS OTHERWISE NOTED.
5. ALL DIMENSIONS FROM ROADWAY ARE FROM BACK OF CURB UNLESS OTHERWISE NOTED.
6. ALL CURVES AND RADII TO BE SMOOTH AND NOT SEGMENTED.
7. ADJUSTMENT TO STAKE LOCATIONS DUE TO DISCREPANCIES BETWEEN COORDINATES AND DIMENSIONS IS INCIDENTAL TO THE CONTRACT. NO ADDITIONAL PAYMENTS WILL BE MADE FOR THIS WORK.
8. ALL ROADWAY WIDTHS ARE MEASURED FROM EDGE OF PAVEMENT TO EDGE OF PAVEMENT UNLESS OTHERWISE SHOWN ON THE PLANS.
9. CONTRACTOR RESPONSIBLE FOR TAKING DELIVERY, ASSEMBLING, AND INSTALLING ALL MATERIALS AND FURNISHINGS PER MANUFACTURER'S INSTRUCTIONS.
10. PLACE CONTROL AND EXPANSION JOINTS AS SHOWN ON PLANS AND DETAILS FOR ALL CURBS, WALKS, WALLS, STEPS, AND CONCRETE PAVING. WHERE JOINTS ARE NOT SHOWN, PLACE CONTROL JOINTS A MAXIMUM OF 9 FEET ON CENTER, 3/4" PRE-MOLDED FIBER EXPANSION JOINTS A MAXIMUM OF 30 FEET ON CENTER, AND BETWEEN ALL SEPARATE POURS.
11. REFER TO SPECIFICATIONS FOR ADDITIONAL CONDITIONS, STANDARDS, AND NOTES.
12. ALL SIDEWALKS CONSTRUCTED OVER UTILITY TRENCHES AND/OR ABUTTING DRIVEWAY APRONS SHALL BE REINFORCED WITH TWO NO. 4 REINFORCING BARS OF 20 FEET MINIMUM LENGTH.

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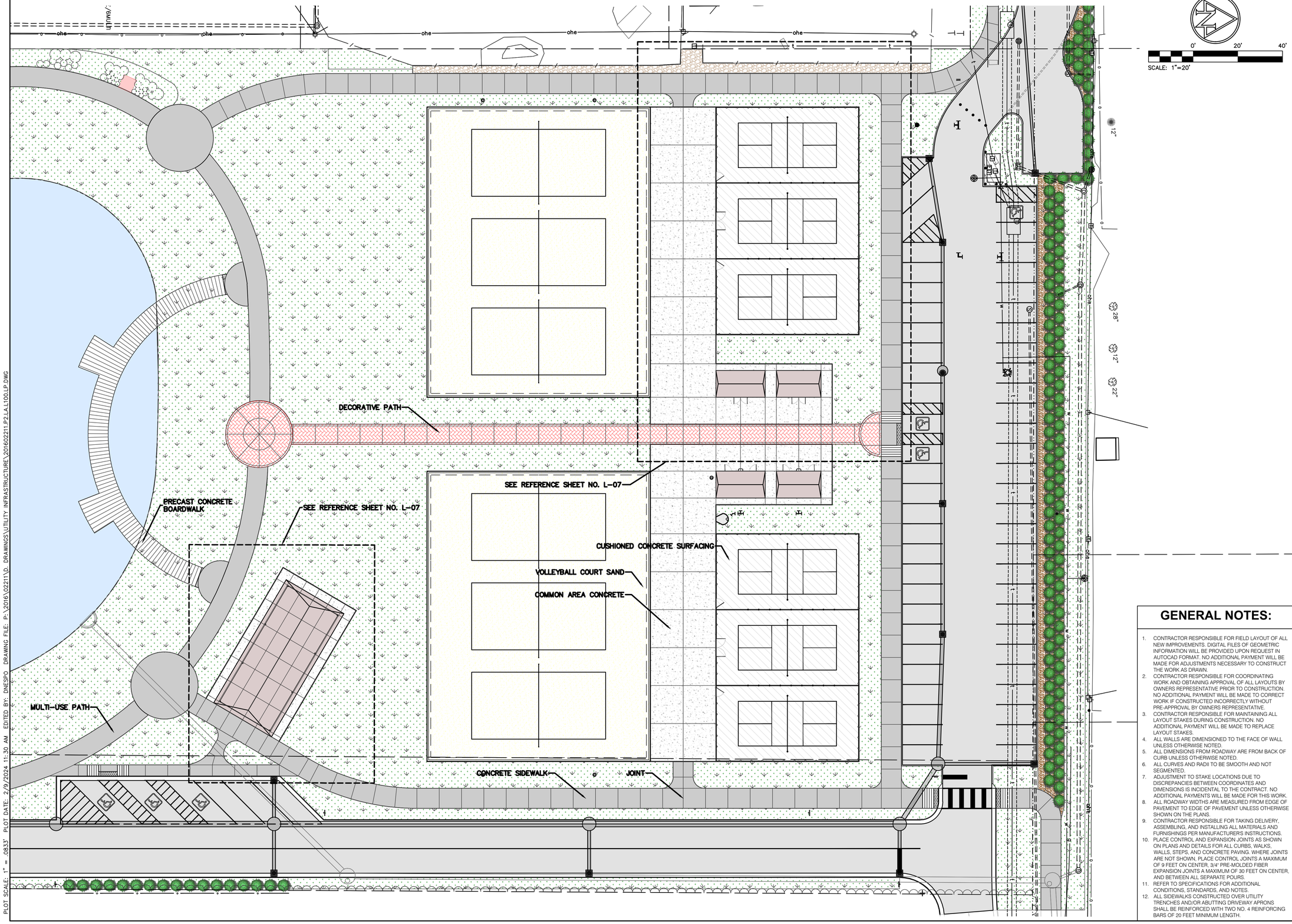
RAILING POST LAYOUT PLAN ENLARGEMENTS

L-05

PLOT SCALE: 1" = .0833' PLOT DATE: 2/9/2024 11:30 AM EDITED BY: DNESPO DRAWING FILE: P:\2016\02211\D. DRAWINGS\UTILITY INFRASTRUCTURE\20160211.P2.LA.L100.LP.DWG



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CITY OF CROWN POINT

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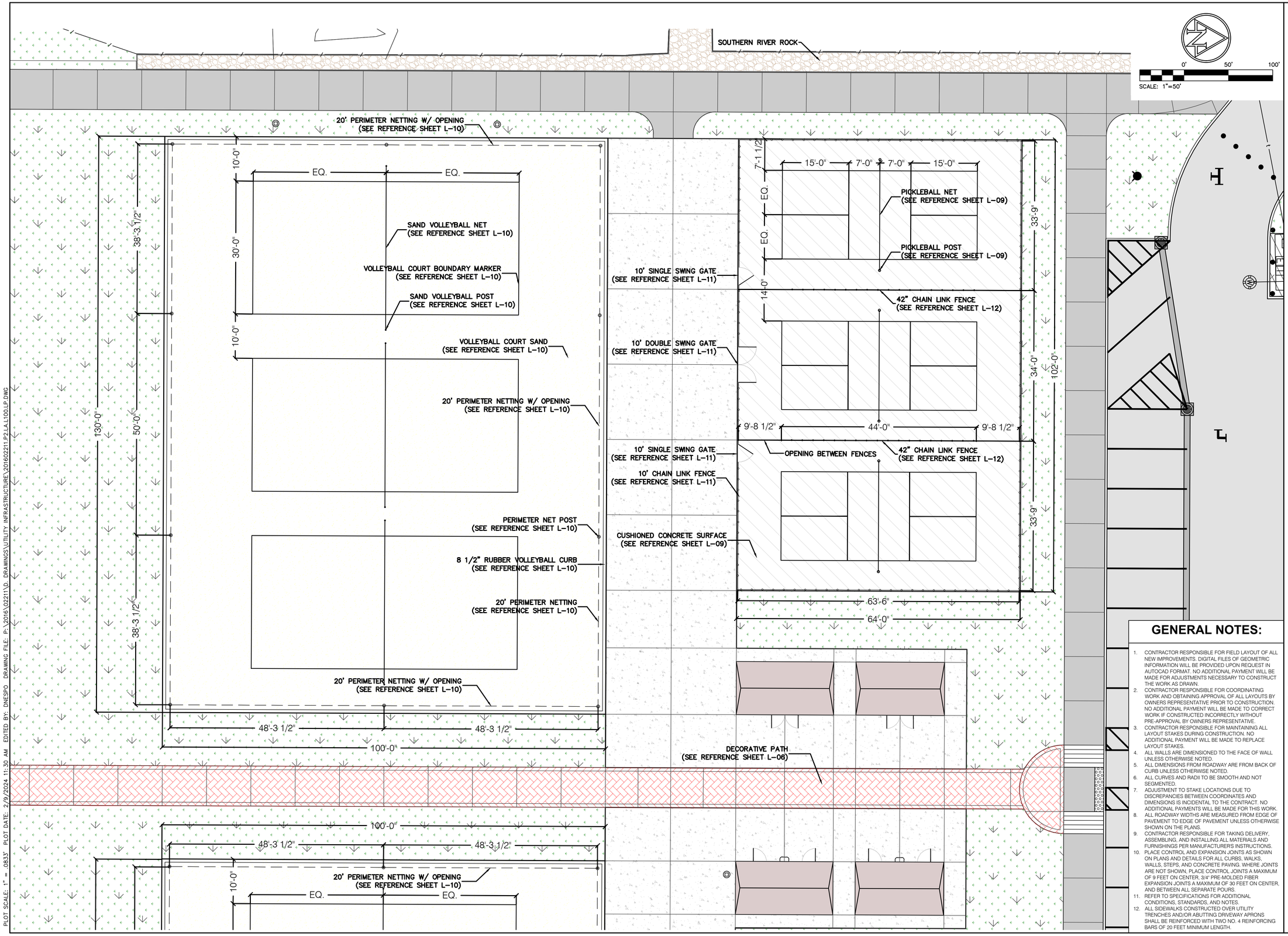
CONCRETE JOINT LAYOUT PLAN

L-06



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8. ALL ROADWAY WIDTHS ARE MEASURED FROM EDGE OF PAVEMENT TO EDGE OF PAVEMENT UNLESS OTHERWISE SHOWN ON THE PLANS.
9. CONTRACTOR RESPONSIBLE FOR TAKING DELIVERY, ASSEMBLING, AND INSTALLING ALL MATERIALS AND FURNISHINGS PER MANUFACTURER'S INSTRUCTIONS.
10. PLACE CONTROL AND EXPANSION JOINTS AS SHOWN ON PLANS AND DETAILS FOR ALL CURBS, WALKS, WALLS, STEPS, AND CONCRETE PAVING. WHERE JOINTS ARE NOT SHOWN, PLACE CONTROL JOINTS A MAXIMUM OF 9 FEET ON CENTER, 3/4" PRE-MOLDED FIBER EXPANSION JOINTS A MAXIMUM OF 30 FEET ON CENTER, AND BETWEEN ALL SEPARATE POURS.
11. REFER TO SPECIFICATIONS FOR ADDITIONAL CONDITIONS, STANDARDS, AND NOTES.
12. ALL SIDEWALKS CONSTRUCTED OVER UTILITY TRENCHES AND/OR ABUTTING DRIVEWAY APRONS SHALL BE REINFORCED WITH TWO NO. 4 REINFORCING BARS OF 20 FEET MINIMUM LENGTH.

CITY OF CROWN POINT

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SAUERMAN WOODS DRAINAGE IMPROVEMENTS PHASE II

Crown Point, Indiana

MARK UNDERWOOD REGISTERED No. LA29700016 STATE OF INDIANA LANDSCAPE ARCHITECT

1/19/2024
CERTIFIED BY

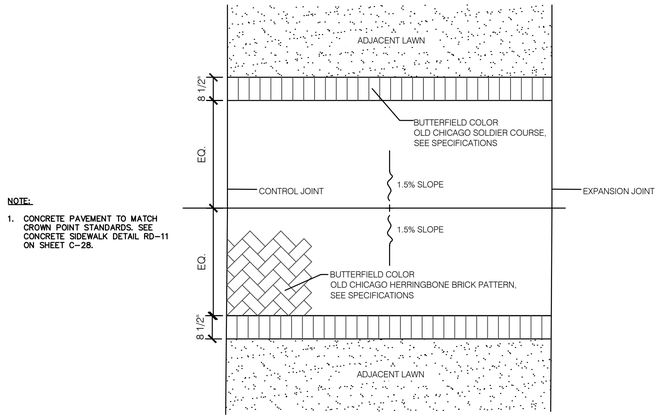
ISSUANCE INDEX
DATE:
1/19/2024
PROJECT PHASE:
CONSTRUCTION DOCUMENTS

ADDENDUM SCHEDULE		
NO.	DESCRIPTION	DATE
1	AQUA SWIRL MODEL CHANGE, ADDITIONAL MISC. INFO. ADDED	2/09/24

Project Number 2016.02211

SPORT COURT LAYOUT PLAN

L-07.1

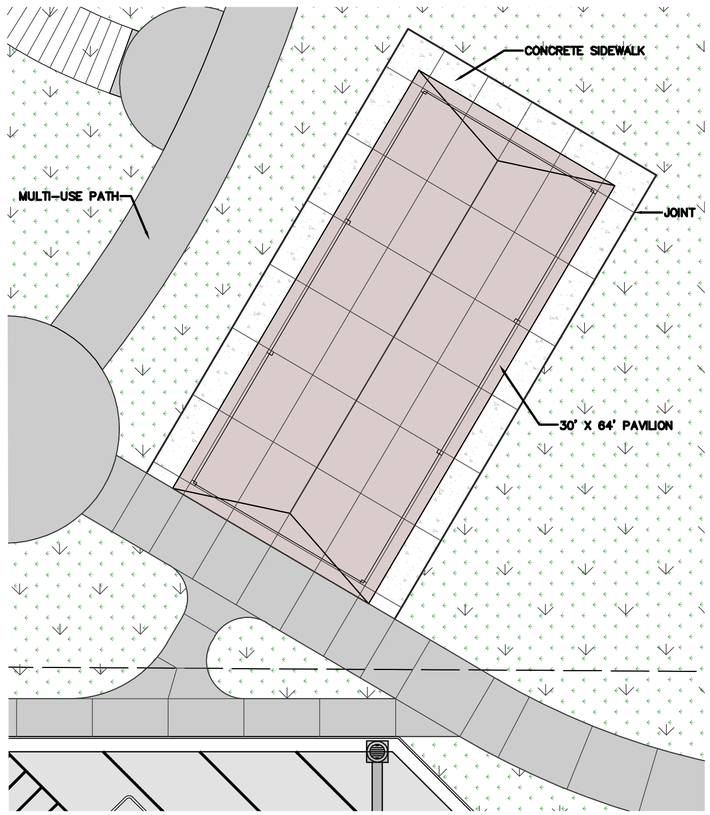


NOTE:

1. CONCRETE PAVEMENT TO MATCH CROWN POINT STANDARDS. SEE CONCRETE SIDEWALK DETAIL RD-11 ON SHEET C-28.

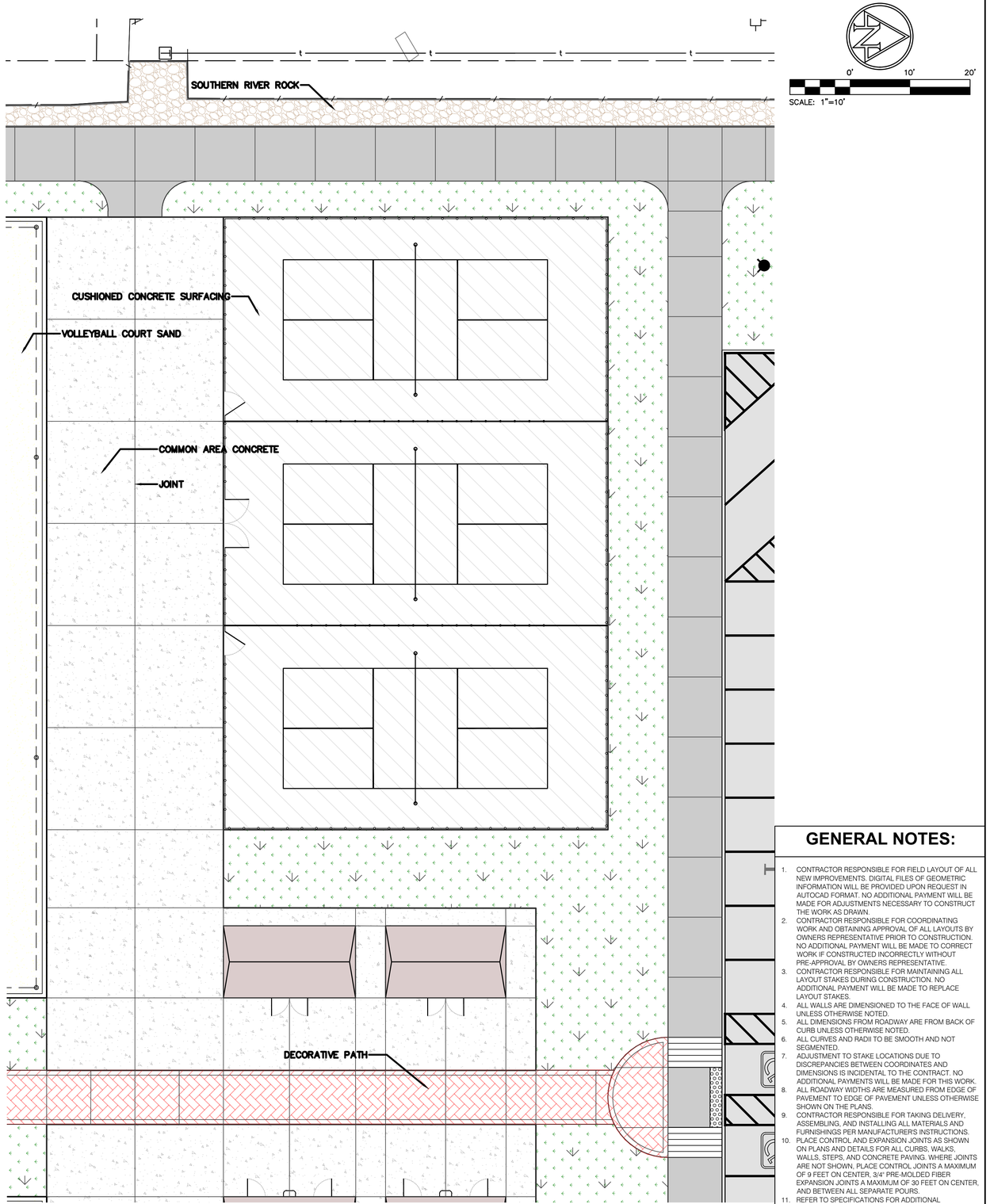
03 DECORATIVE PATH DETAIL

NTS



02 PLAN ENLARGEMENT

NTS



01 PLAN ENLARGEMENT

NTS

GENERAL NOTES:

1. CONTRACTOR RESPONSIBLE FOR FIELD LAYOUT OF ALL NEW IMPROVEMENTS. DIGITAL FILES OF GEOMETRIC INFORMATION WILL BE PROVIDED UPON REQUEST IN AUTOCAD FORMAT. NO ADDITIONAL PAYMENT WILL BE MADE FOR ADJUSTMENTS NECESSARY TO CONSTRUCT THE WORK AS DRAWN.
2. CONTRACTOR RESPONSIBLE FOR COORDINATING WORK AND OBTAINING APPROVAL OF ALL LAYOUTS BY OWNERS REPRESENTATIVE PRIOR TO CONSTRUCTION. NO ADDITIONAL PAYMENT WILL BE MADE TO CORRECT WORK IF CONSTRUCTED INCORRECTLY WITHOUT PRE-APPROVAL BY OWNERS REPRESENTATIVE.
3. CONTRACTOR RESPONSIBLE FOR MAINTAINING ALL LAYOUT STAKES DURING CONSTRUCTION. NO ADDITIONAL PAYMENT WILL BE MADE TO REPLACE LAYOUT STAKES.
4. ALL WALLS ARE DIMENSIONED TO THE FACE OF WALL UNLESS OTHERWISE NOTED.
5. ALL DIMENSIONS FROM ROADWAY ARE FROM BACK OF CURB UNLESS OTHERWISE NOTED.
6. ALL CURVES AND RADII TO BE SMOOTH AND NOT SEGMENTED.
7. ADJUSTMENT TO STAKE LOCATIONS DUE TO DISCREPANCIES BETWEEN COORDINATES AND DIMENSIONS IS INCIDENTAL TO THE CONTRACT. NO ADDITIONAL PAYMENTS WILL BE MADE FOR THIS WORK.
8. ALL ROADWAY WIDTHS ARE MEASURED FROM EDGE OF PAVEMENT TO EDGE OF PAVEMENT UNLESS OTHERWISE SHOWN ON THE PLANS.
9. CONTRACTOR RESPONSIBLE FOR TAKING DELIVERY, ASSEMBLING, AND INSTALLING ALL MATERIALS AND FURNISHINGS PER MANUFACTURER'S INSTRUCTIONS.
10. PLACE CONTROL AND EXPANSION JOINTS AS SHOWN ON PLANS AND DETAILS FOR ALL CURBS, WALKS, WALLS, STEPS, AND CONCRETE PAVING. WHERE JOINTS ARE NOT SHOWN, PLACE CONTROL JOINTS A MAXIMUM OF 9 FEET ON CENTER, 3/4" PRE-MOLDED FIBER EXPANSION JOINTS A MAXIMUM OF 30 FEET ON CENTER, AND BETWEEN ALL SEPARATE POURS.
11. REFER TO SPECIFICATIONS FOR ADDITIONAL CONDITIONS, STANDARDS, AND NOTES.
12. ALL SIDEWALKS CONSTRUCTED OVER UTILITY TRENCHES AND/OR ABUTTING DRIVEWAY APRONS SHALL BE REINFORCED WITH TWO NO. 4 REINFORCING BARS OF 20 FEET MINIMUM LENGTH.

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Crown Point, Indiana

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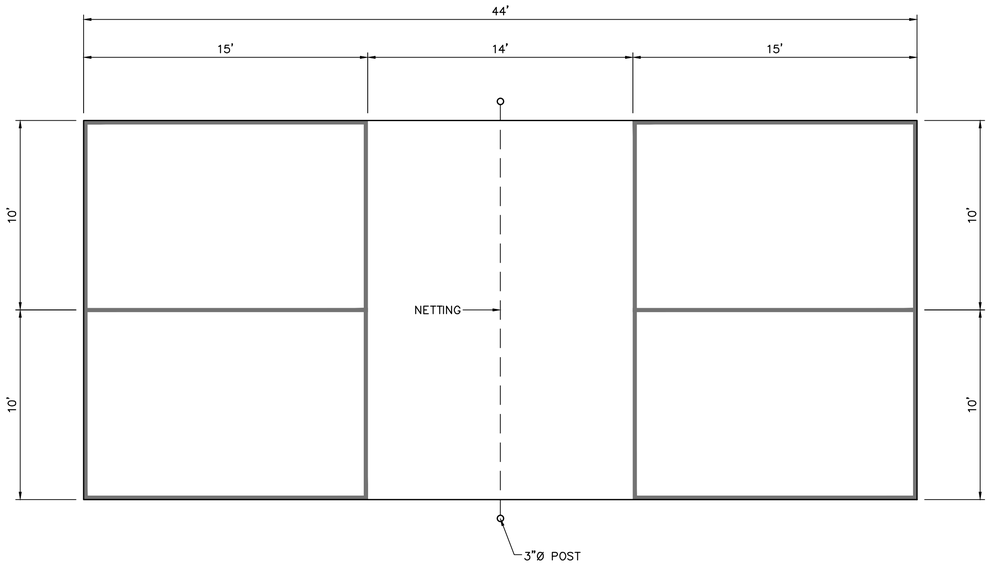
1	AQUA SWIRL MODEL CHANGE, ADDITIONAL MISC. INFO. ADDED	2/09/24

Project Number 2016.02211

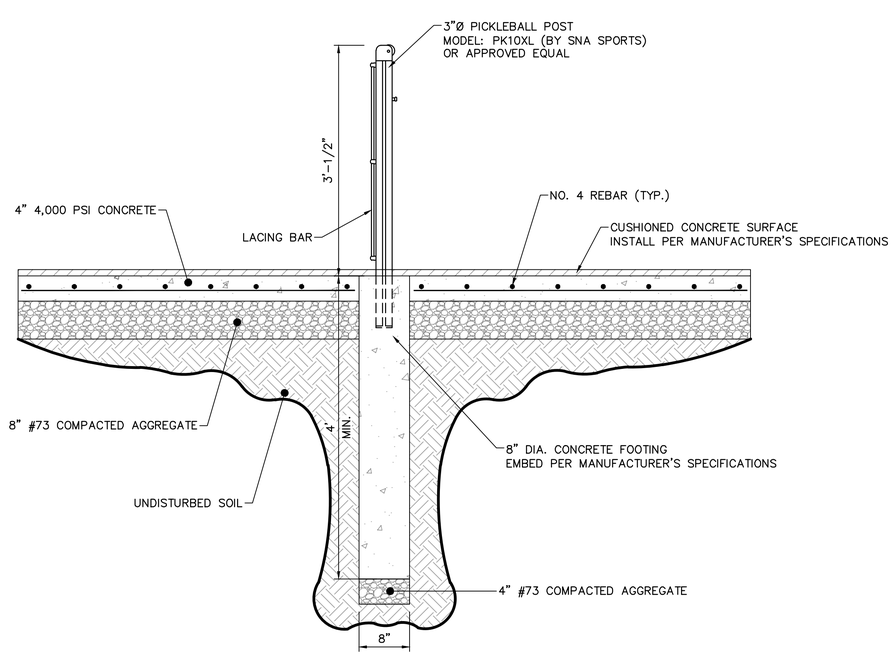
CONCRETE JOINT LAYOUT PLAN ENLARGEMENTS

L-07

PLOT SCALE: 1" = .0833' PLOT DATE: 2/9/2024 11:30 AM EDITED BY: DNESPO DRAWING FILE: P:\2016\02211\D. DRAWINGS\UTILITY INFRASTRUCTURE\20160221 1.P2.LA.L100.LP.DWG



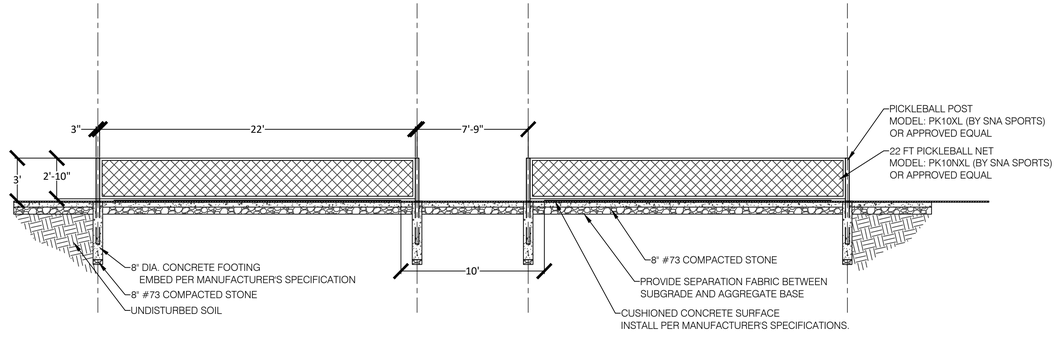
PICKLEBALL COURT PLAN



POST AND CONCRETE SECTION

NOTES:
1. INSTALL PICKLEBALL POST AND NET SYSTEM PER MANUFACTURER'S SPECIFICATIONS.
2. SEE SHEET L-07.1 FOR LAYOUT OF DETAILS.

PICKLEBALL COURT DETAILS
NOT TO SCALE



NOTES:
1. INSTALL PICKLEBALL POST AND NET SYSTEM PER MANUFACTURER'S SPECIFICATIONS.
2. SEE SHEET L-07.1 FOR LAYOUT OF DETAILS.

PICKLEBALL COURT SECTION DETAIL
NOT TO SCALE

PLOT SCALE: 1" = .0833' PLOT DATE: 2/9/2024 11:31 AM EDITED BY: DNESPO DRAWING FILE: P:\2016\02211\D. DRAWINGS\UTILITY INFRASTRUCTURE\20160211.P2.LA.DT.MD.DWG

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SAUERMAN WOODS DRAINAGE IMPROVEMENTS PHASE II

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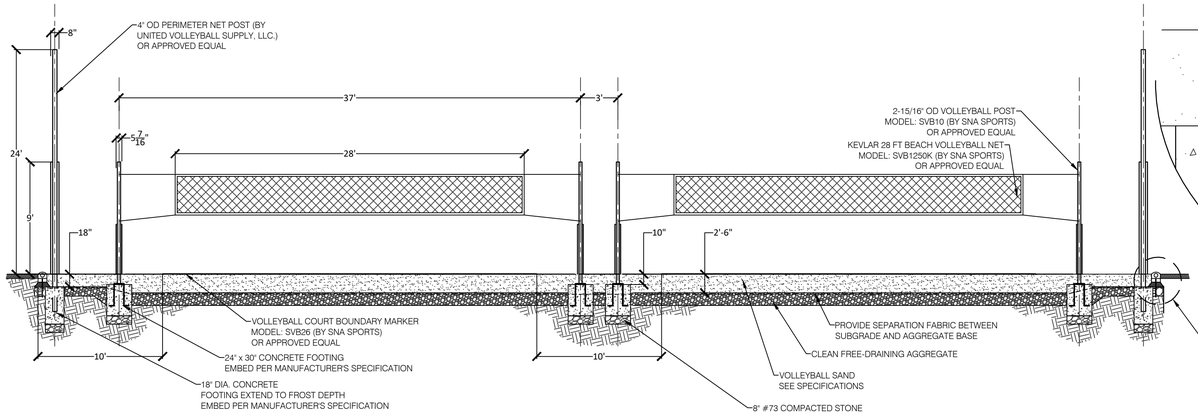
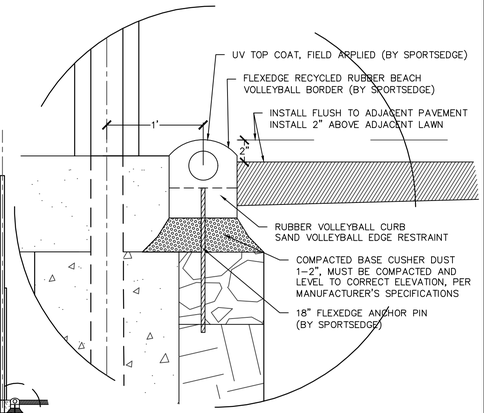
NO.	DESCRIPTION	DATE
1	AQUA SWIRL MODEL CHANGE; ADDITIONAL MISC. INFO. ADDED	2/09/24

Project Number 2016.02211

PICKLEBALL DETAILS

L-08

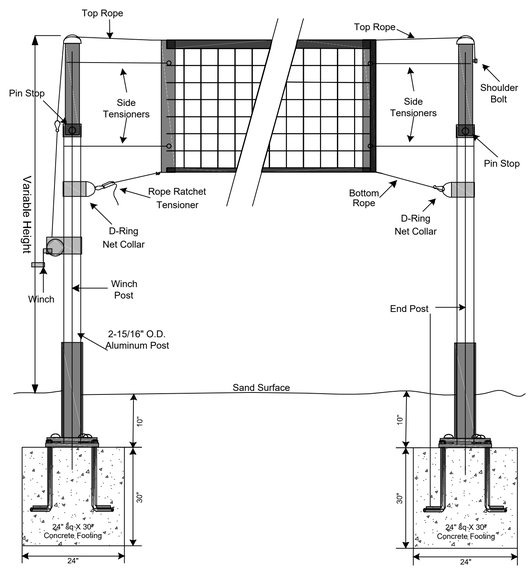




RUBBER VOLLEYBALL CURB ENLARGEMENT

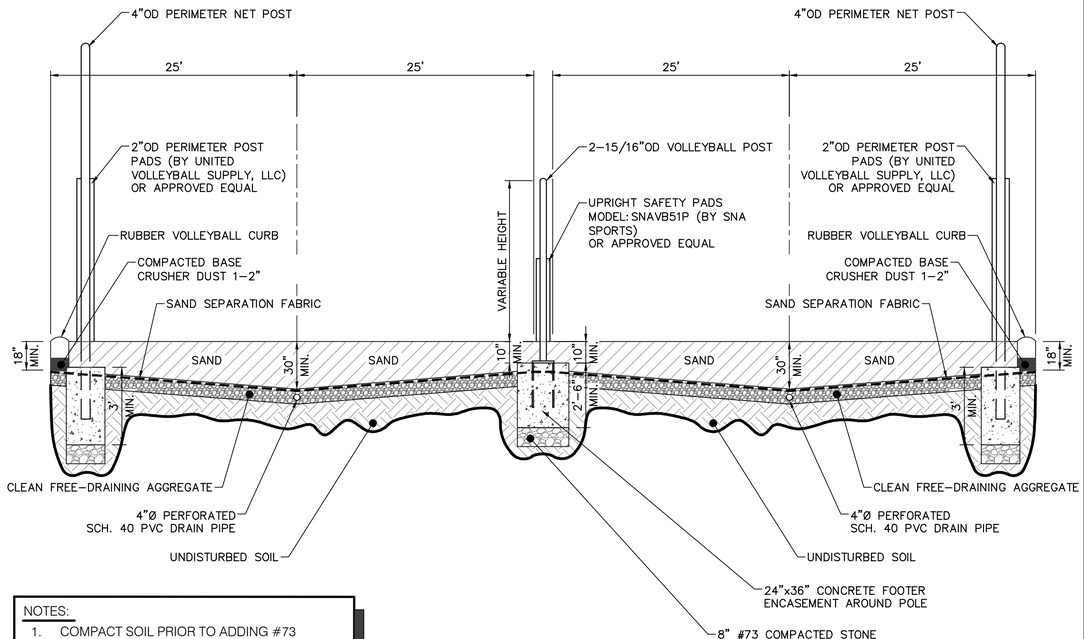
NOTES:
1. COMPACT SOIL PRIOR TO ADDING #73 COMPACTED STONE.
2. INSTALL 20' PERIMETER NET AND POSTS PER MANUFACTURER'S SPECIFICATIONS.
3. INSTALL VOLLEYBALL NET SYSTEM AND POSTS PER MANUFACTURER'S SPECIFICATIONS.
4. SEE SHEET L-07.1 FOR LAYOUT OF DETAILS.

VOLLEYBALL COURT SECTION DETAIL
NOT TO SCALE



NOTES:
1. TELESCOPIC SAND PRO SYSTEM MODEL: TP4SAND (BY SNA SPORTS) OR APPROVED EQUAL.
2. INSTALL PER MANUFACTURER'S SPECIFICATIONS.

VOLLEYBALL POST AND NET DETAIL
NOT TO SCALE



NOTES:
1. COMPACT SOIL PRIOR TO ADDING #73 COMPACTED STONE.
2. INSTALL 20' PERIMETER NET AND POSTS PER MANUFACTURER'S SPECIFICATIONS.
3. INSTALL VOLLEYBALL NET SYSTEM AND POSTS PER MANUFACTURER'S SPECIFICATIONS.
4. SEE SHEET L-07.1 FOR LAYOUT OF DETAILS.

VOLLEYBALL COURT PROFILE DETAIL
NOT TO SCALE

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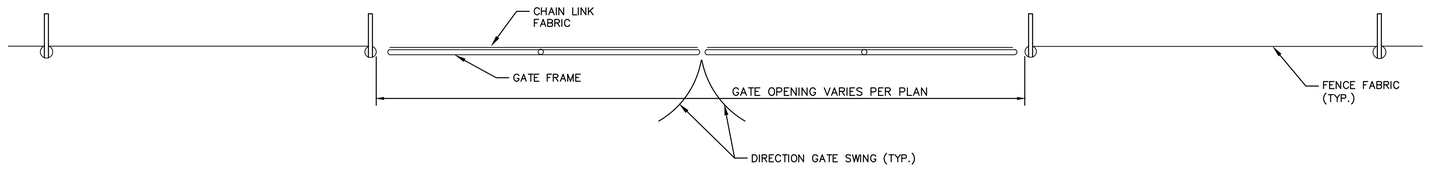
Project Number 2016.02211

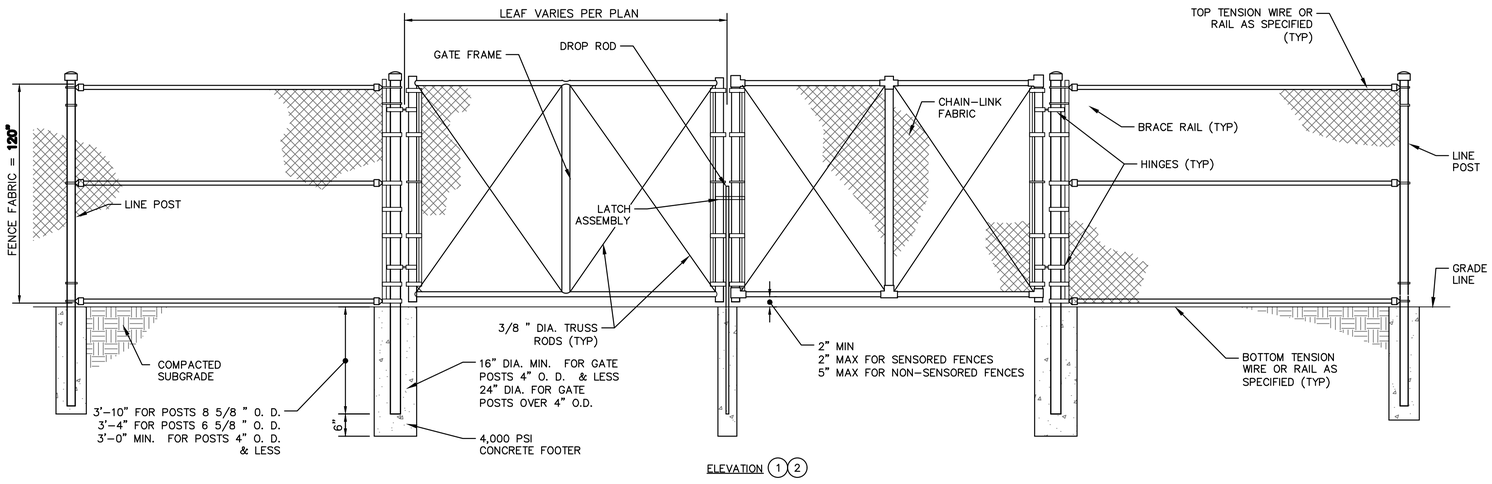
VOLLEYBALL DETAILS

L-09

PLOT SCALE: 1" = .0833' PLOT DATE: 2/9/2024 11:31 AM EDITED BY: DNESPO DRAWING FILE: P:\2016\02211\D. DRAWINGS\UTILITY INFRASTRUCTURE\20160221_P2_LA_DT_MD.DWG



DOUBLE SWING GATE PLAN



ELEVATION (1)(2)

NOTE:

1. AS SHOWN FOR DOUBLE SWING GATE. CONTRACTOR TO MODIFY AS REQUIRED FOR SINGLE GATE CONSTRUCTION AS CALLED FOR ON CONSTRUCTION PLANS.

GATE POST SCHEDULE (1)(2)	
GATE LEAF WIDTH (NOMINAL)	OUTSIDE DIMENSION (NOMINAL)
6' OR LESS	2.875" OD 2.5" SQ
GREATER THAN 6' TO 12'	4.0" OD
GREATER THAN 12' TO 18'	6.625" OD
MORE THAN 18'	8.625" OD

POST AND CONCRETE SECTION

NOTES:
1. ALL CHAIN LINK FENCES AND GATES SHALL BE BLACK POLYMER COATED PER SPECIFICATIONS.
2. SEE SHEET L-07.1 FOR LAYOUT OF DETAILS.

DOUBLE SWING GATE DETAIL
NOT TO SCALE

NOTES: (1)(2)

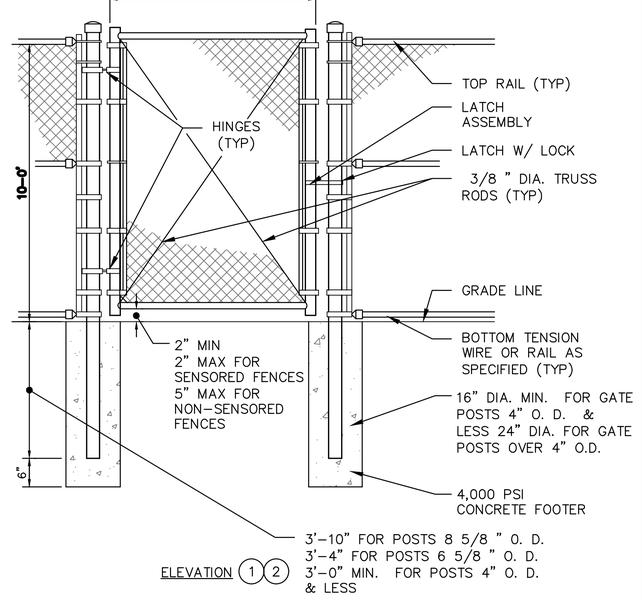
1. FOR NON-SENSORED FENCES, DETAILS SHOWN ARE TO CLARIFY REQUIREMENTS AND ARE NOT INTENDED TO LIMIT OTHER TYPE OF FENCE SECTIONS AND METHODS OF INSTALLATION WHICH COMPLY WITH THE SPECIFICATIONS.

2. SWING GATES SHALL BE CONSTRUCTED WITH DROP RODS, PADLOCKS, LATCH ASSEMBLY AND GATE KEEPERS EXCEPT AS NOTED.

3. ALL GATE FRAMES SHALL MEET THE MINIMUM REQUIREMENTS OF ASTM F900 1.90" NOMINAL (ROUND) OR 2.00" NOMINAL (SQUARE). GATE FRAMES SHALL BE OF WELDED CONSTRUCTION OR SHALL BE ASSEMBLED USING HEAVY FITTINGS. AT CONTRACTOR'S OPTION A WELDED HORIZONTAL BRACE MAY BE USED IN LIEU OF TRUSS RODS TO BRACE ALL-WELDED GATE FRAMES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER RIGID CONSTRUCTION OF ALL GATES SUPPLIED.

4. ALL SWING GATES TO BE REINFORCED WITH ¾" ø GALVANIZED STRUCTURAL WIRE ROPE AND HARDWARE AS INDICATED ON PLANS.

GATE POST SCHEDULE (1)(2)	
GATE LEAF WIDTH (NOMINAL)	OUTSIDE DIMENSION (NOMINAL)
6' OR LESS	2.875" OD 2.5" SQ
GREATER THAN 6' TO 12'	4.0" OD



ELEVATION (1)(2)

SINGLE SWING GATE DETAIL
NOT TO SCALE

CITY OF CROWN POINT

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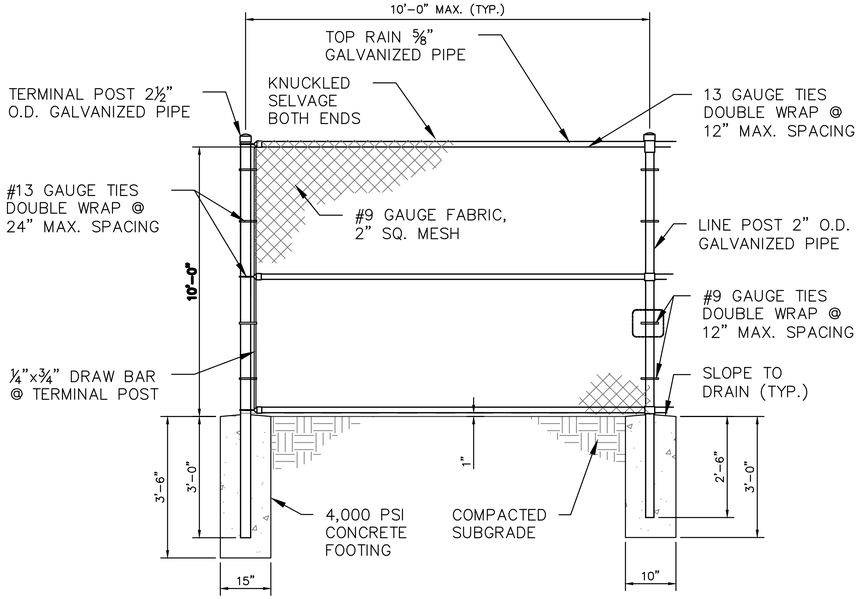
Project Number 2016.02211

LANDSCAPE SITE DETAILS

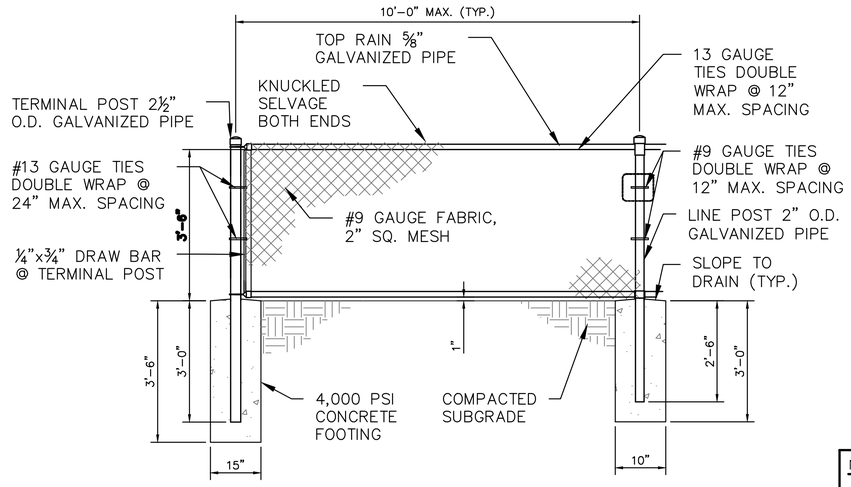
L-10

PLOT SCALE: 1" = 0833' PLOT DATE: 2/9/2024 11:31 AM EDITED BY: DNESPO DRAWING FILE: P:\2016\02211\D. DRAWINGS\UTILITY INFRASTRUCTURE_20160211.P2.LA.DT.MD.DWG



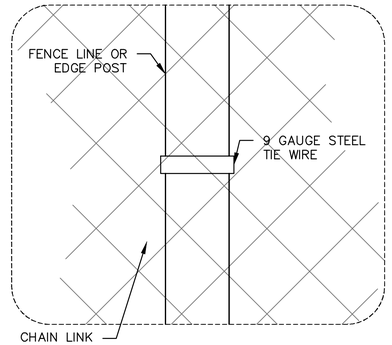
NOTES:
1. ALL CHAIN LINK FENCES AND GATES SHALL BE BLACK POLYMER COATED PER SPECIFICATIONS.
2. SEE SHEET L-07.1 FOR LAYOUT OF DETAILS.

10' CHAIN LINK FENCE DETAIL
NOT TO SCALE

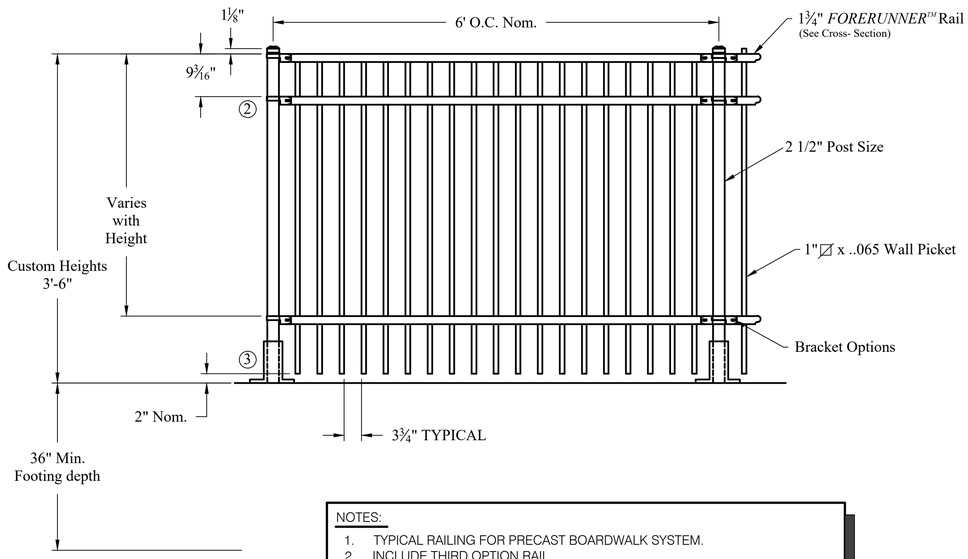


NOTES:
1. ALL CHAIN LINK FENCES AND GATES SHALL BE BLACK POLYMER COATED PER SPECIFICATIONS.
2. SEE SHEET L-07.1 FOR LAYOUT OF DETAILS.

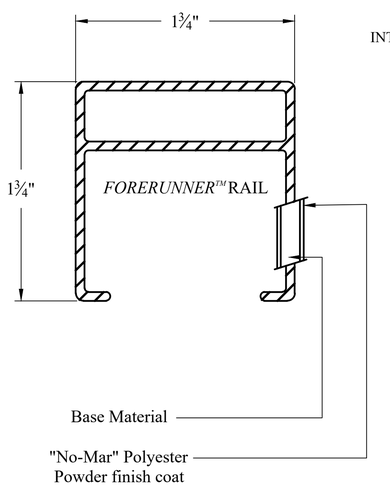
42" CHAIN LINK FENCE DETAIL
NOT TO SCALE



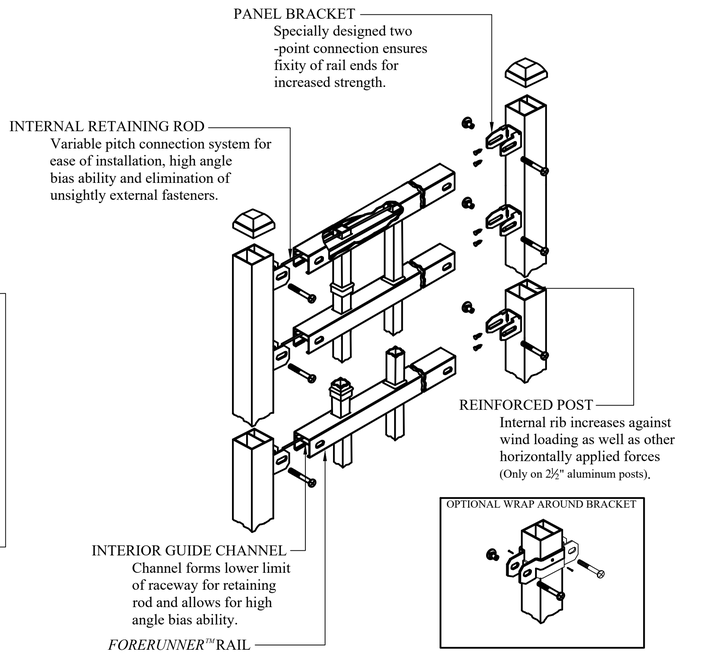
CHAIN LINK FENCE ENLARGEMENT



NOTES:
1. TYPICAL RAILING FOR PRECAST BOARDWALK SYSTEM.
2. INCLUDE THIRD OPTION RAIL.
3. PREPARE STRUCTURAL POST BASE TO ATTACH MECHANICALLY TO THE PERMACAST BOARDWALK STRUCTURE. ATTACH RAILING TO BOARDWALK WITH STRUCTURAL HARDWARE PER MANUFACTURER'S SPECIFICATIONS.
4. SEE SHEET L-05 FOR LAYOUT OF DETAILS.



CROSS SECTION



Values shown are nominal and not to be used for installation purposes. See product specification for installation requirements.

ECHELON II MAJESTIC 2/3/4 RAIL DETAIL
NOT TO SCALE

CITY OF CROWN POINT

AMERICAN STRUCTUREPOINT INC.

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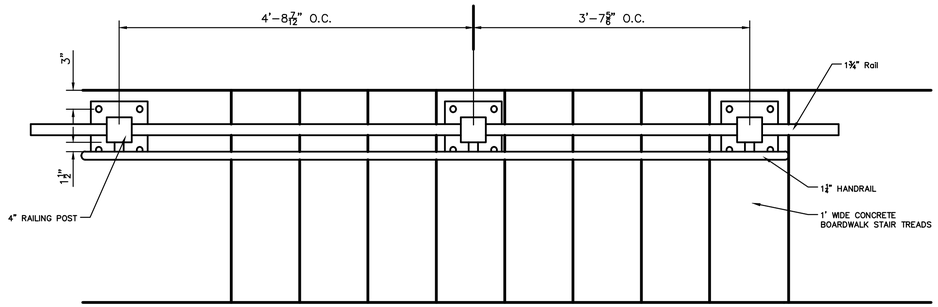
Project Number 2016.02211

LANDSCAPE SITE DETAILS

L-11

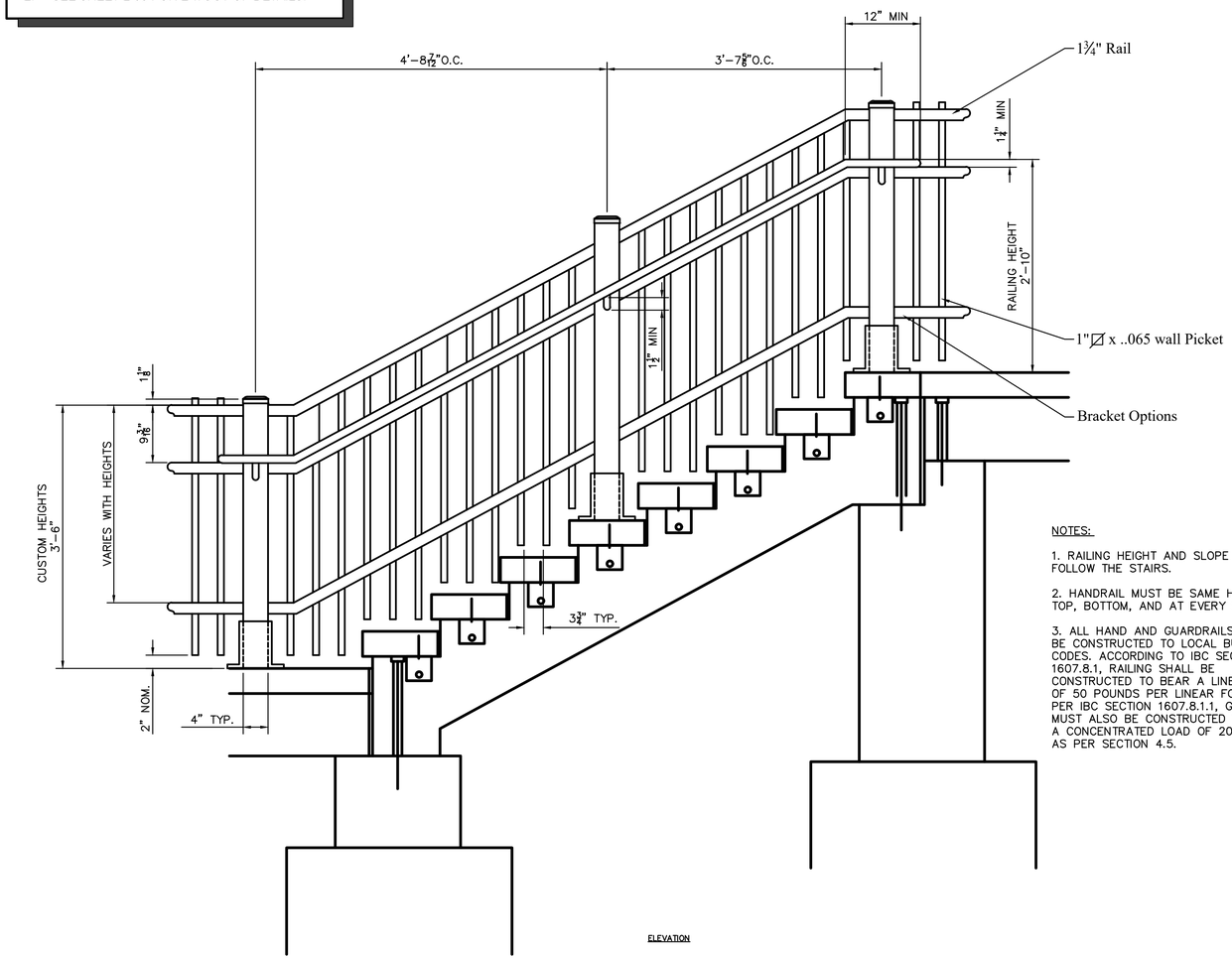
PLOT SCALE: 1" = .0833' PLOT DATE: 2/9/2024 11:31 AM EDITED BY: DNESPO DRAWING FILE: P:\2016\02211\D. DRAWINGS\UTILITY INFRASTRUCTURE\20160211.P2.LA.DT.MD.DWG



PLAN

NOTES:

1. CUSTOM HANDRAIL TO MATCH AMERISTAR ECHELON II RAIL, SEE SHEET L-11.
2. SEE SHEET L-05 FOR LAYOUT OF DETAILS.



NOTES:

1. RAILING HEIGHT AND SLOPE MUST FOLLOW THE STAIRS.

2. HANDRAIL MUST BE SAME HEIGHT; TOP, BOTTOM, AND AT EVERY STAIR.

3. ALL HAND AND GUARDRAILS SHALL BE CONSTRUCTED TO LOCAL BUILDING CODES. ACCORDING TO IBC SECTION 1607.8.1, RAILING SHALL BE CONSTRUCTED TO BEAR A LINEAR LOAD OF 50 POUNDS PER LINEAR FOOD. AS PER IBC SECTION 1607.8.1.1, GUARDRAILS MUST ALSO BE CONSTRUCTED TO BEAR A CONCENTRATED LOAD OF 200 POUNDS, AS PER SECTION 4.5.

ELEVATION

CUSTOM HANDRAIL DETAIL
NOT TO SCALE

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LANDSCAPE SITE DETAILS

L-12

PLOT SCALE: 1" = .0833' PLOT DATE: 2/9/2024 11:31 AM EDITED BY: DNESPO DRAWING FILE: P:\2016\02211\D. DRAWINGS\UTILITY INFRASTRUCTURE\20160211.P2.LA.DT.MD.DWG

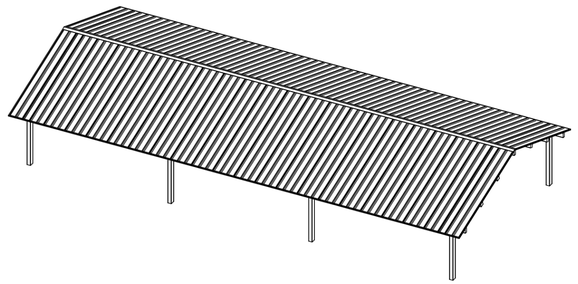
poligon®

PROJECT:

LOCATION:

BUILDING TYPE: REK 30x64

ROOF TYPE: MULTI-RIB



DRAWING LIST:

SHEET NUMBER	DRAWING DESCRIPTION
CS	COVER SHEET
1	ARCHITECTURAL ELEVATIONS
2	STRUCTURAL FRAMING PLAN
3	COLUMN LAYOUT

FABRICATOR APPROVALS:
CITY OF PHOENIX, AZ APPROVED FABRICATOR #C08-2010
CITY OF LOS ANGELES, CA APPROVED FABRICATOR #1596
CITY OF RIVERSIDE, CA APPROVED FABRICATOR #SP06-0033
CITY OF HOUSTON, TX APPROVED FABRICATOR #470
CLARK COUNTY, NV APPROVED FABRICATOR #264
STATE OF UTAH APPROVED FABRICATOR 02008-14

CERTIFICATES:
MIAMI-DADE COUNTY CERTIFICATE OF COMPETENCY NO. 16-1025.01
PCI (POWDER COATING INSTITUTE) 4000 CERTIFIED

MATERIALS:

DESCRIPTION	ASTM DESIGNATION
TUBE STEEL	A500 (GRADE B)
SCHEDULE PIPE	A53 (GRADE B)
RMT PIPE	A519
LIGHT GAGE COLD FORMED STRUCTURAL STEEL PLATE	A1003 (GRADE 50)
ROOF PANELS (STEEL)	A36
	A653

GENERAL NOTES:
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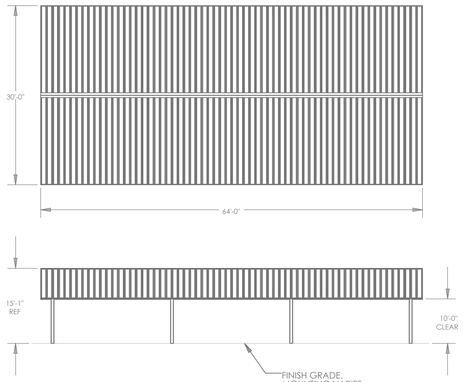
STOP!!
NOT FOR CONSTRUCTION
USE FOR PRELIMINARY PLANNING AND ESTIMATING ONLY

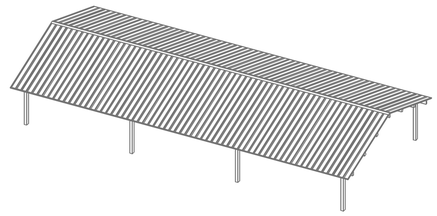
DRAWING: COVER SHEET
SCALE: 1:96
REV LEVEL: A
poligon (616)399-1963 www.poligon.com by PORTERCORP

SHEET: CS

GENERAL ROOF NOTES:

1. METAL ROOFING:
   - 24 GAUGE
   - GALVALUME COATED
   - KYNAR 500 PAINTED
2. TRIM COLOR MATCHES ROOF
3. SEE POLIGON.COM FOR COLOR OPTIONS

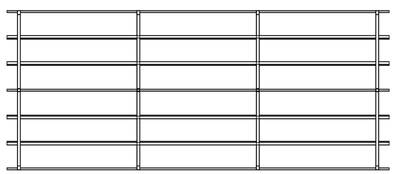


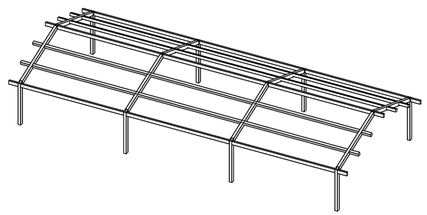


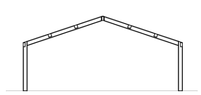
STOP!!
NOT FOR CONSTRUCTION
USE FOR PRELIMINARY PLANNING AND ESTIMATING ONLY

DRAWING: ARCHITECTURAL ELEVATIONS
SCALE: 1:128
REV LEVEL: A
poligon (616)399-1963 www.poligon.com by PORTERCORP

SHEET: 1







FINISH GRADE. MOUNTING VARIES BASED ON ENGINEERING REQUIREMENTS.

STOP!!
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DRAWING: STRUCTURAL FRAMING PLAN
SCALE: 1:128
REV LEVEL: A
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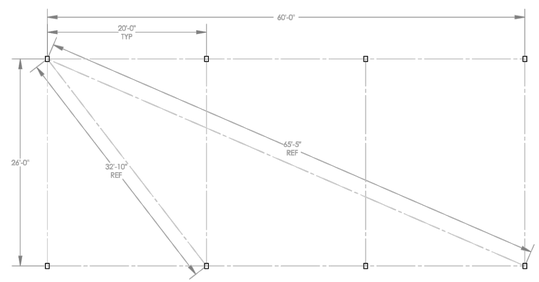
SHEET: 2

BASEPLATE NOTES:

1. POLIGON ENGINEERING WILL DETERMINE REQUIRED BASEPLATE DESIGN AFTER ENGINEERING PACKAGE IS ORDERED.
2. CUSTOMER MAY SUGGEST PREFERRED BASEPLATE DESIGN.



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DRAWING: COLUMN LAYOUT
SCALE: 1:96
REV LEVEL: A
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SHEET: 3

CITY OF CROWN POINT

Hub of Lake County · CROWN POINT · WHERE IT ALL BEGINS

AMERICAN STRUCTUREPOINT INC.
116 East Berry St., Ste 1515 | Fort Wayne, Indiana 46802
TEL 260.373.0600 | FAX 260.373.0608
www.structurepoint.com

SAUERMAN WOODS DRAINAGE IMPROVEMENTS PHASE II

Crown Point, Indiana

MARK UNDERWOOD REGISTERED No. LA29700016 STATE OF INDIANA LANDSCAPE ARCHITECT

1/19/2024
CERTIFIED BY

ISSUANCE INDEX
DATE:
1/19/2024
PROJECT PHASE:
CONSTRUCTION DOCUMENTS

ADDENDUM SCHEDULE		
NO.	DESCRIPTION	DATE
1	AQUA SWIRL MODEL CHANGE; ADDITIONAL MISC. INFO. ADDED	2/09/24

Project Number 2016.02211

LANDSCAPE SITE DETAILS

L-13

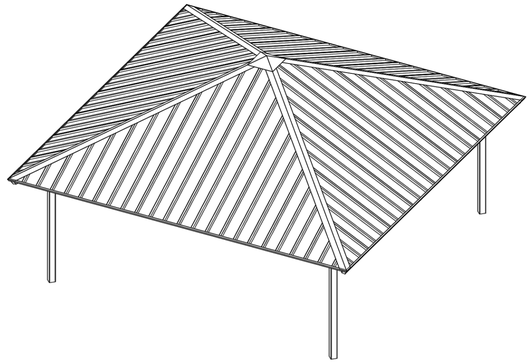
poligon®

PROJECT:

LOCATION:

BUILDING TYPE: SQR-24

ROOF TYPE: MULTI-RIB



DRAWING LIST:

SHEET NUMBER	DRAWING DESCRIPTION
CS	COVER SHEET
1	ARCHITECTURAL ELEVATIONS
2	STRUCTURAL FRAMING PLAN
3	COLUMN LAYOUT

FABRICATOR APPROVALS:
CITY OF PHOENIX, AZ APPROVED FABRICATOR #C08-2010
CITY OF LOS ANGELES, CA APPROVED FABRICATOR #1596
CITY OF RIVERSIDE, CA APPROVED FABRICATOR #SP06-0033
CITY OF HOUSTON, TX APPROVED FABRICATOR #470
CLARK COUNTY, NV APPROVED FABRICATOR #264
STATE OF UTAH APPROVED FABRICATOR 02008-14

CERTIFICATES:
MIAMI-DADE COUNTY CERTIFICATE OF COMPETENCY NO. 16-1025.01
PCI (POWDER COATING INSTITUTE) 4000 CERTIFIED

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DRAWING: COVER SHEET
SCALE: 1:48 | REV LEVEL: A
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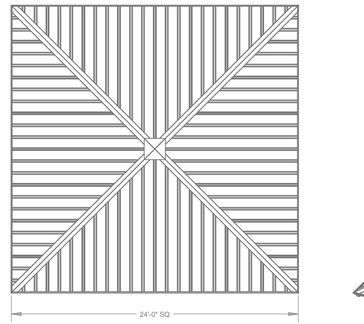
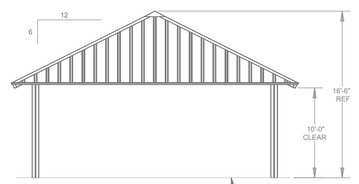
SHEET: CS





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DRAWING: ARCHITECTURAL ELEVATIONS
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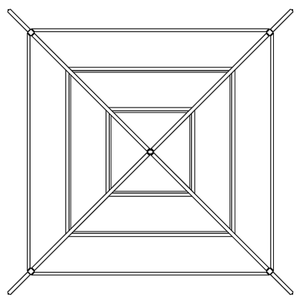
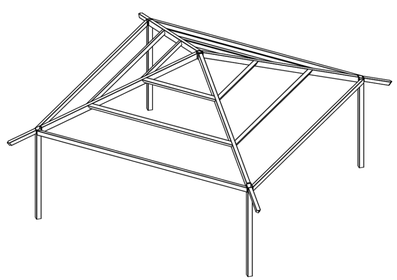
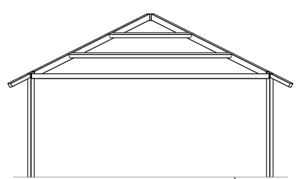
SHEET: 1







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DRAWING: STRUCTURAL FRAMING PLAN
SCALE: 1:64 | REV LEVEL: A
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SHEET: 2

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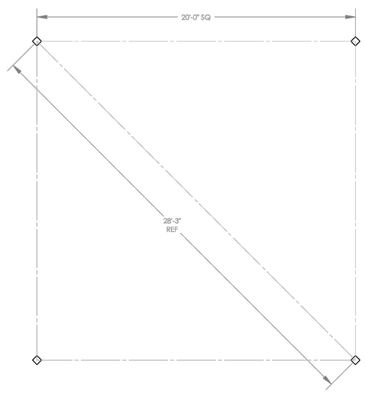

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SHEET: 3

PLOT SCALE: 1" = .0833' PLOT DATE: 2/9/2024 11:31 AM EDITED BY: DNESPO DRAWING FILE: P:\2016\02211\D. DRAWINGS\UTILITY INFRASTRUCTURE\20160211.P2.LA.DT.MD.DWG

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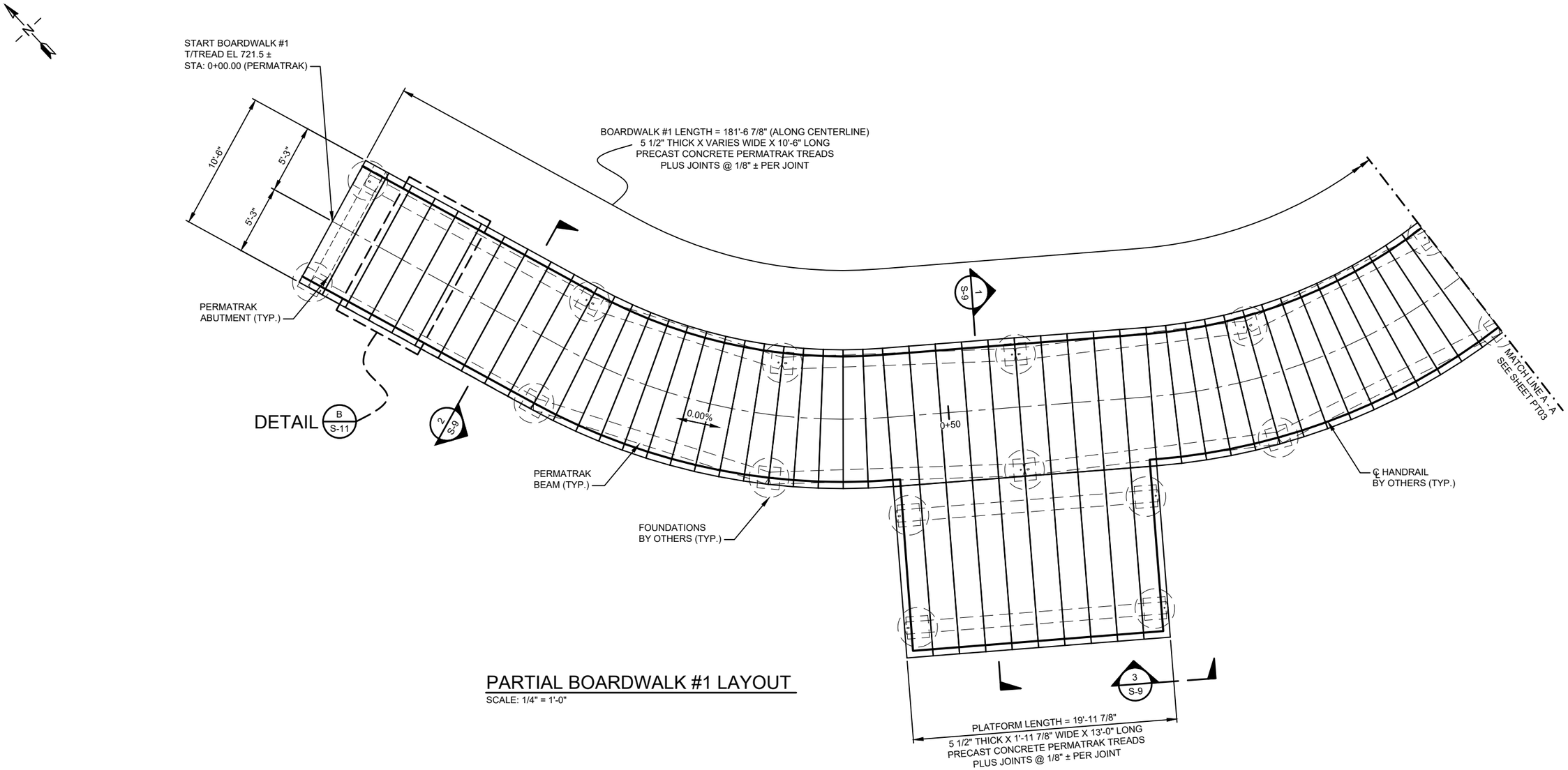
Project Number 2016.02211

LANDSCAPE SITE DETAILS

L-14



PARTIAL BOARDWALK #1 LAYOUT

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

Patented Product: U.S. Patent #5,906,084 #8,302,362 #8,522,505 #8,839,588 #9,096,975

NO.	DATE	DESCRIPTION	BY:
6			
5			
4			
3			
2			
1			

PREPARED FOR:

AMERICAN STRUCTUREPOINT

FOR BIDDING - NOT FOR CONSTRUCTION

PermaTrak®
The Concrete Boardwalk Company
www.permatrak.com TEL: 877-332-7862

OFFICE LOCATIONS
FLORIDA
TEXAS
LOUISIANA
NORTH CAROLINA
OHIO

PROJECT TITLE:

SAUERMAN WOODS DRAINAGE IMPROVEMENTS PHASE II

CROWN POINT, IN

JASON V. PHILBIN REGISTERED No. PE11200323 STATE OF INDIANA PROFESSIONAL ENGINEER 1-9-24

JOB NUMBER:	2023-2071
DATE:	01/09/2024
DESIGNED BY:	KPH
DRAWN BY:	KPH
CHECKED BY:	KAS/AMC
SHEET NO.	S-06