Purchasing Division
Finance Department

Room 120
411 West First Street
Duluth, Minnesota 55802

218-730-5340
purchasing@duluthmn.gov

Addendum 3
Solicitation 23-AA07
Duluth Coastal Infrastructure Rehabilitation Project

This addendum serves to notify all bidders of the following changes to the solicitation documents:

Please see the attached documents.

Please acknowledge receipt of this Addendum by checking the acknowledgment box within the www.bidexpress.com solicitation.

Posted: **August 11, 2023**

ATTACHMENTS:
Addendum from AMI
Updated L501
Updated L505
Updated Spec 32 93 00
Addendum document from Ayres
Updated Spec 26 05 00
Updated E111
Geotechnical report
Updated Bid Form

AMI
Consulting Engineers P.A.

August 11, 2023

Re: Duluth Coastal Infrastructure Rehabilitation – Addendum #3
AMI Project # 211016

1. **Landscaping Plans**
   Confluence has updated sheets no. L501 and L505. They are attached to this addendum.

2. **Landscaping Specifications**
   Confluence has updated the Specification 32 93 00 - Plants. Additions include added information on structural soils (definition and installation). The updated specifications are attached to this addendum.

3. **Electrical Plans**
   Ayres has updated sheet E111 and revised the electrical specifications. They are attached to this addendum.

4. **Question**:
   What City permits are required for the Contractors to obtain?
   Answer:
   The City of Duluth Erosion Control Permit, National Pollutant Discharge Elimination System (NPDES) Permit, and City Building Permits. A road closure permit is not required for Contractors to obtain, it has already been approved by the City.

5. **Question:**
   The map included in the geotechnical report does not show the locations for Borings 87-1 thru 87-8, can the locations be shown on a map?
   Answer:
   The locations of the borings are provided in the geotechnical report after the boring logs on Page (84) in the bid package. The full geotechnical report is attached to this addendum.

   The exact locations of Borings 87-1 thru 87-8 could not be determined based on the available historical information. It is possible that there was a change in the naming convention between the boring logs and the site map, however, there is no documentation for this possible change. The Contractor shall utilize the existing available geotechnical information for the DECC and the Great Lakes Aquarium for information on existing soil conditions.

6. **Question:**
   TH1-TH8 have had sieve analysis completed but no boring logs are shown in these locations. Are boring logs available for TH1-TH8?

Answer:
The sieve analyses were completed on soil samples collected from borings 87-1 thru 87-8 and 86-5 & 86-6 and do not have separate boring logs. The exact boring from which these samples were taken from could not be determined based on the available historical information. The Contractor shall utilize the existing available geotechnical information for the DECC and the Great Lakes Aquarium for information on existing soil conditions.

7. **Question:**
There are details for cobblestone pavers but no bid items, can you add a bid item with the quantity?
Answer:
A bid item for the cobblestone pavers has been added to the bid form, pay item L40. The amount is 950 sq ft.

8. **Question:**
Can you please provide specifications for CT15 – Granular Fill between SSP?
Answer:
The material placed between the new and existing SSP shall be Open Graded Aggregate Base (OGAB). Pay item CT15 has been updated to state "Open Graded Aggregate Base (OGAB) between SSP.

9. **Question:**
Can you clarify the specification for "amended topsoil" as it pertains to the bid item with 657 CY. I'm not seeing a material in the specifications called "amended topsoil."
Answer:
Amended Topsoil should read as Topsoil, the definition is confirmed in the specifications. The confirmed depth of the topsoil should be 4" rather than 12".

10. **Question:**
Similar question for "structural soils" as it pertains to the bid item with 450 CY. There's a reference for a submittal of it in the plant specification, but not a definition of the material.
Answer:
Structural soil is a mixture of crushed gravel and soil with a small amount of hydrogel to prevent the soil and stone from separating during the mixing and installation process. The gravel should consist of crushed stone approximately one inch in diameter, with no fine particles. The soil needed to make structural soil should be loam to clay loam containing at least 20% clay to maximize water and nutrient holding capacity. The proportion of soil to stone is approximately 80% stone to 20% soil by dry weight, with a small amount of hydrogel aiding in the uniform blending of the two materials. Definition on structural soil, as well as installation, are provided in amended soil specification.

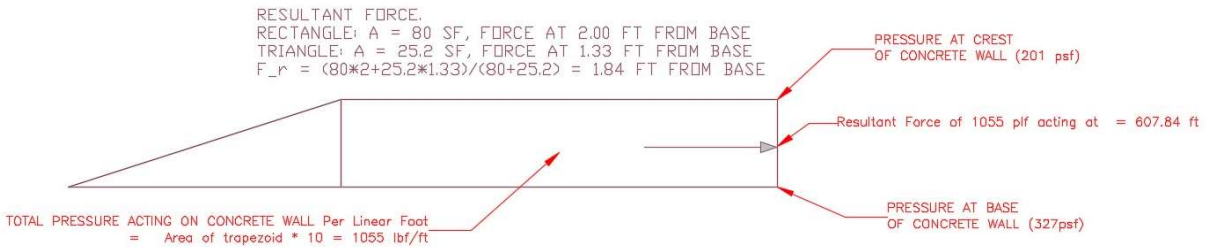
11. **Question:**
Will the City be covering any power hookup fees to Minnesota Power?
Answer:

The City will be responsible for any power hookup fees to Minnesota Power. The Contractor and designer shall coordinate/fill out any documents and/or applications and coordinate/schedule Minnesota Power's scopes of work.

12. **Question:**
    Much of the storm sewer looks to be designed below lake level. Is the expectation to dewater each of those trenches or to install it in a completely submerged condition? Installing RCP joints in submerged condition would be extremely difficult, as would dewatering that amount of water in that proximity to the lake. Would the City consider fused HDPE pipe with anchors in lieu of RCP in those conditions?
    Answer:
    The City desires to have concrete pipe for the storm sewer. Alternative pipe materials may be considered through Value Engineering after a contractor is selected. It will be up to the contractor to determine the best means and methods for pipe installation.

13. **Question:**
    There are some answers in addendum 2 that state an updated bid form is attached but I don't see anything in the addendum file. Can you send or post the updated bid form?
    Answer:
    The bid form was updated in the Bid Express solicitation at the time Addendum 2 was issued. In addition, the updated bid form is attached to this addendum.

14. **Question:**
    In regards to the loading on the storm doors, is the wave pressure zero from 607.84ft IGLD?
    Answer:
    The elevation of 607.84 ft was determined to be the location of resultant force of a distributed pressure across the storm doors. A schematic of the wave pressures is shown below.



15. **Question:**
    In regards to the loading on the storm doors, where is the debris impact loading applied?

    Answer:
    The debris impact loading is assumed to be applied at any point on the storm door.

16. **Question:**

Please confirm what material will be provided by the city for this project? Steel piling specs make reference to including the H-piling being provided by the city. However, the bid form given from the steel procurement bid does not mention h-piles in the letting.

Answer:

Material provided by the City for this project is as follows:

- Steel Sheet Pile
- Protective Steel Coatings for Dock Wall Sheet Pile
- Double Channel Wale
- Steel Pipe Piles
- Bent Plate Steel Pile Cap

17. **Question:**

The concrete finish type 2 calls for exposed aggregate. The spec 03 35 23 lists a few items that may be difficult or very costly to get.

a. *The granite gradation size is not standard and would be difficult and very costly to procure. Is a standard MnDOT ¾ minus acceptable?*
b. *The aggregate supply in this area is not 100% granite. The MnDOT ¾ minus contains gabbro, granite and a couple others. Is this acceptable?*

Answer:

Both are acceptable. Samples of the aggregates should be submitted for approval.

18. **Question:**

The concrete spec 03 30 00, SCT-1, calls out type F fly ash. This fly ash is not consistently available and may not be possible to use throughout the job. Is type C fly ash acceptable?

Answer:

Type C fly ash is considered acceptable for the concrete spec 03 30 00, SCT-1.

19. **Question:**

Reference Question 11 in Addendum #2. Would it be acceptable to have the battered pile take all of the lateral load axially as well as increase the angle of the battered pile to between 30-45 degrees? If we do not consider the lateral load to be taken as an axial load ONLY by the battered pile, the vertical pile would require a very large diameter shaft.

Answer:

It is the Contractor's responsibility for the design of helical piles, if the size is increased or the angle is changed, plans need to be signed and stamped by a licensed professional engineer in the state of Minnesota and submitted to the engineer for approval.

20. **Question:**

Per the response to Question 4 in addendum #2, we understand the contractor is to include the supply of H-piles in our bid. Please confirm if there are any coating requirements for the H-piling. Section SCT-8 Part 3.2A states piles should be corrosion protect by hot dip galvanization. Additionally if the h-pile are required to be galvanized please confirm that the Owner supplied pipe piling will be delivered galvanized.

Answer:

The H-Piles can be bare steel, they do not need to be hot dip galvanized.

21. **Question:**
Please confirm there are no pre-bid submittal requirements for any of the steel piles under this bid package. The specifications reference the need to submit specifications for steel piling a minimum of 7 calendar days prior to the bid date.
Answer:
The pre-bid submittals in questions are geared towards the sheet piling. The sheet piling has already been purchased by the City so there is no pre-bid submittal requirements.

22. **Question:**
Please confirm what is required for the Proof and Performance Testing of the piles under SCT-8 Part 1.5D and 1.5E. Additionally please confirm this testing will be provided by the Owner's engineer as stated in the Schedule for Material Testing.
Answer:
All helical anchor testing will be provided by the contractor. The PDA testing on the steel piles (H-piles & Pipe piles) will be provided by the Owner.

23. **Question:**
Can you please confirm which concrete elements are subject to the Mass Concrete requirements? The drawing 1st note under the mass concrete header on sheet CT010 and the cast in place concrete specifications specifically call out mass concrete for the bollard concrete. The drawing note seems to leave the requirements open for interpretation to include other concrete elements though.
Answer:
ACI Concrete Terminology defines mass concrete as any volume of structural concrete in which a combination of dimensions of the member being cast, the boundary conditions, the characteristics of the concrete mixture, and the ambient conditions can lead to undesirable thermal stresses, cracking, deleterious reactions, or reduction in the long-term strength as a result of elevated concrete temperature due to the heat of hydration. The maximum temperature in mass concrete after placement shall not exceed 160˚F; and the maximum temperature difference between center and surface of placement shall not exceed 35˚F. Items that could be considered mass concrete are as follows – bollard foundations, bollard tieback anchors. This list is not inclusive and it is the Contractor's responsibility to determine what elements may need to follow mass concrete requirements.

24. **Question:**
Item C79 and CT30 are both named "Prefabricated Loading Dock". It's clear one of those is on the back side of the DECC at doors 1&2, where is the other located?
Answer:
There is only one prefabricated loading dock on the project located on the back side of the DECC at doors 1&2. The bid form has been updated to reflect this and is attached to this addendum.

25. **Question:**

Item L4 – Turf Sod- Quantity seems high and is unit of measure current on the item. Can both of these be verified as accurate? (20,418 SQR).

Answer:

Item L4 – Turf Sod quantity is correct. 20,418 square feet.

26. **Question:**

In the fender specification it says:

B. Configuration

1. Fenders must have cylindrical mid-bodies with conical or hemispherical shaped ends terminating in an end fitting on the cylinder's centerline at each end. The diameter of the mid-body must be **60 inches minimum**, and the length of the midbody must be 73 inches minimum. If conical ends are provided, they must have an angle of 60 to 75 degrees, when measured from the central axis of the fender. The length of the fender from eye to eye of the end fittings shall be a **minimum of 120 inches.**

The drawings show 6'-6.75" diameter x 11' x 5.75" Long foam filled fender. Please clarify which governs.

Answer:

The dimensions and performance requirements given on the drawings shall govern if a conflict occurs.

27. **Question:**

Please verify if the hanging hardware size is 1-1/2" Stud Link Chain and Shackles and the Chain Length?

Answer:

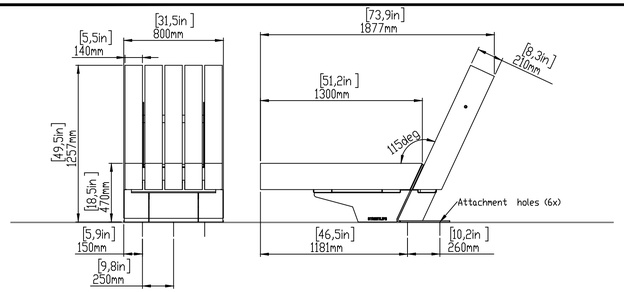
Contractor is responsible for the design of the fender bracket connection and chain size, lengths & angles. Contractor shall also verify if steel panel dimensions (height & width) given in the plan set are adequate based on Contractor selected chains. Fender attachments shall be submit to engineer for review & approval.

28. **Question:**

What is the quantity of the fenders, 4 or 6?

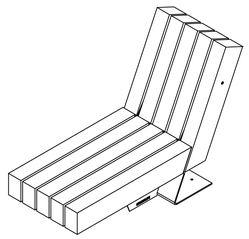
Answer:

The base bid quantity of required foam filled fenders is four. Two additional fenders are included as add alternate options in the civil transportation package.



*Metric units are leading

Design: Streetlife
Protected by int. Modeldepots & Patents



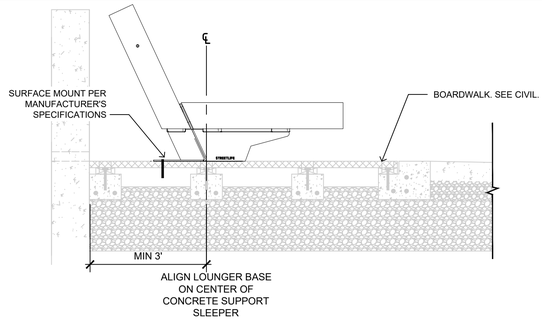
DESIGN INTENT

STREETLIFE DESIGNS

HEAVY-HEAVY LOUNGER
PRODUCT NO. HH-LNG-80
CONTACT: Sonno Witjes
switjes@streetlife.com

NOTES:
1. MATERIALS
 1.1. FSC HARDWOOD III- VIRGIN CORE
 1.2. CORTEN STEEL
2. SURFACE MOUNTED TO BOARDWALK

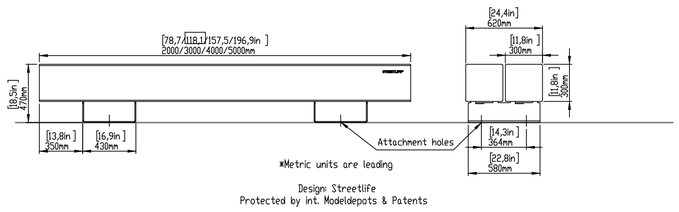
OR APPROVED EQUAL



SECTION OF BENCH SURFACE MOUNT TO BOARDWALK

04 L501 LOUNGER DETAIL

1/2" = 1'-0"



*Metric units are leading

Design: Streetlife
Protected by int. Modeldepots & Patents

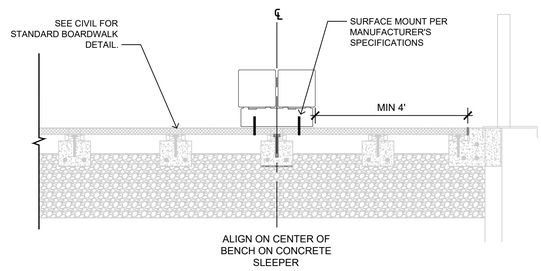
DESIGN INTENT

STREETLIFE DESIGNS

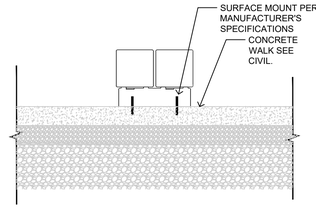
TWO TIMBER DRIFTER BENCH
PRODUCT NO. DB-L2-300
CONTACT: Sonno Witjes
switjes@streetlife.com

NOTES:
1. MATERIALS
 1.1. FSC HARDWOOD III- VIRGIN CORE
 1.2. CORTEN STEEL
2. SURFACE MOUNTED TO BOARDWALK OR CONCRETE. REFER TO PLAN.

OR APPROVED EQUAL



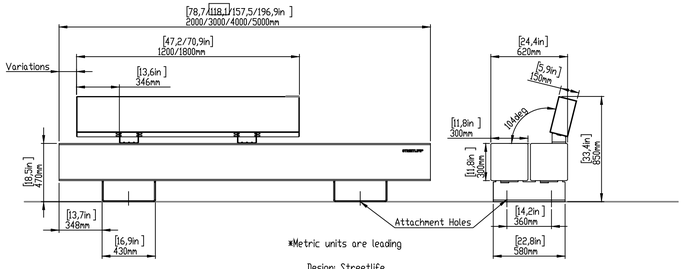
SECTION OF BENCH SURFACE MOUNT TO BOARDWALK



SECTION OF BENCH SURFACE MOUNT TO CONCRETE

03 L501 BACKLESS BENCH 1 DETAIL

1/2" = 1'-0"



*Metric units are leading

Design: Streetlife
Protected by int. Modeldepots & Patents

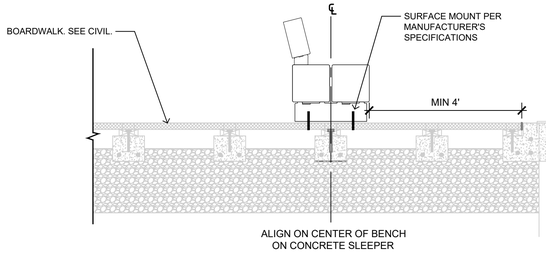
DESIGN INTENT

STREETLIFE DESIGNS

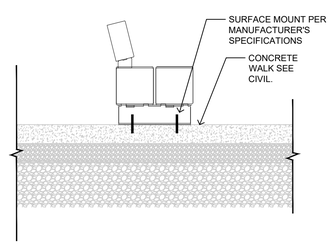
TWO TIMBER DRIFTER BENCH WITH BACK
PRODUCT NO. DB-L2-300
CONTACT: Sonno Witjes
switjes@streetlife.com

NOTES:
1. MATERIALS
 1.1. FSC HARDWOOD III- VIRGIN CORE
 1.2. CORTEN STEEL
2. SURFACE MOUNTED TO BOARDWALK OR CONCRETE. REFER TO PLAN.

OR APPROVED EQUAL



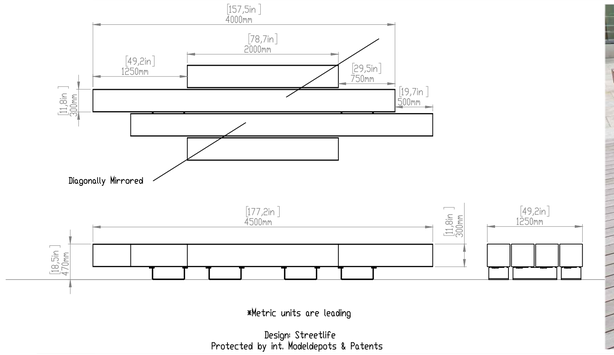
SECTION OF BENCH SURFACE MOUNT TO BOARDWALK



SECTION OF BENCH SURFACE MOUNT TO CONCRETE

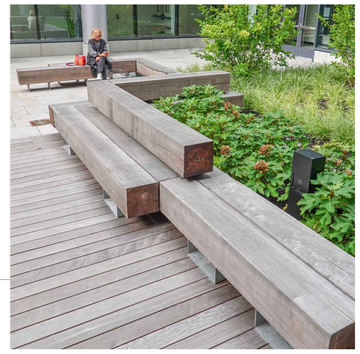
02 L501 BACKED BENCH DETAIL

1/2" = 1'-0"



*Metric units are leading

Design: Streetlife
Protected by int. Modeldepots & Patents



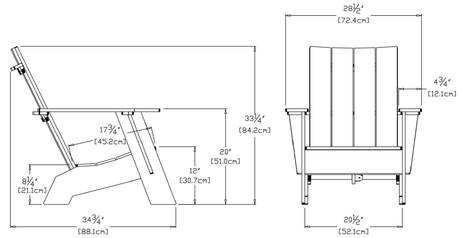
DESIGN INTENT

STREETLIFE DESIGNS

DRIFTER STRUCTURE
PRODUCT REF. NO. DB-STR-H1-450-125
CONTACT: Sonno Witjes
switjes@streetlife.com

NOTE:
1. MATERIALS
 1.1. FSC HARDWOOD III- VIRGIN CORE
 1.2. CORTEN STEEL
2. FREESTANDING.

OR APPROVED EQUAL



#4

DESIGN INTENT

LOLL DESIGNS

4-SLAT ADIRONDACK CHAIR (FLAT)
CONTACT: sales@lolldesigns.com

ALTERATIVE: LANDSCAPE FORMS AMERICANA CHAIR
CONTACT: Mike Konieczny
MikeK@landscapeforms.com

NOTE:
1. COLOR: LOW SHEEN MATTE BLACK
2. CHAIRS TO BE FREESTANDING.

OR APPROVED EQUAL

01 L501 STACKED BENCH

NTS

02 L501 ADIRONDACK CHAIR

3/4" = 1'-0"

AMI Consulting Engineers P.A.
CONFLUENCE
SEH
AYRES MECHANICAL, ELECTRICAL, PLUMBING (MEP)

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

NAME: TERRY MINARIK
SIGNATURE:
DATE: 6/22/2023
LIC. No: 42242

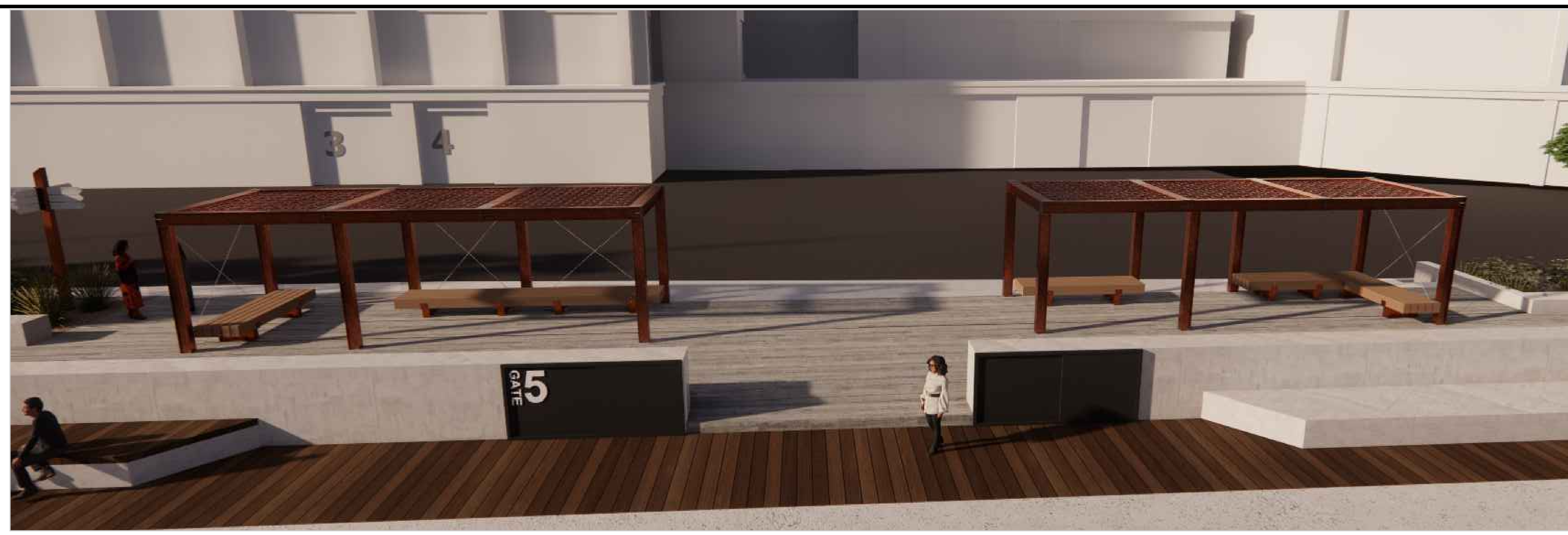
DATE:	REV:	DESCRIPTION	REV. BY:
6/22/2023		ISSUED FOR BID	TM
8/11/2023		ADDENDUM #4	

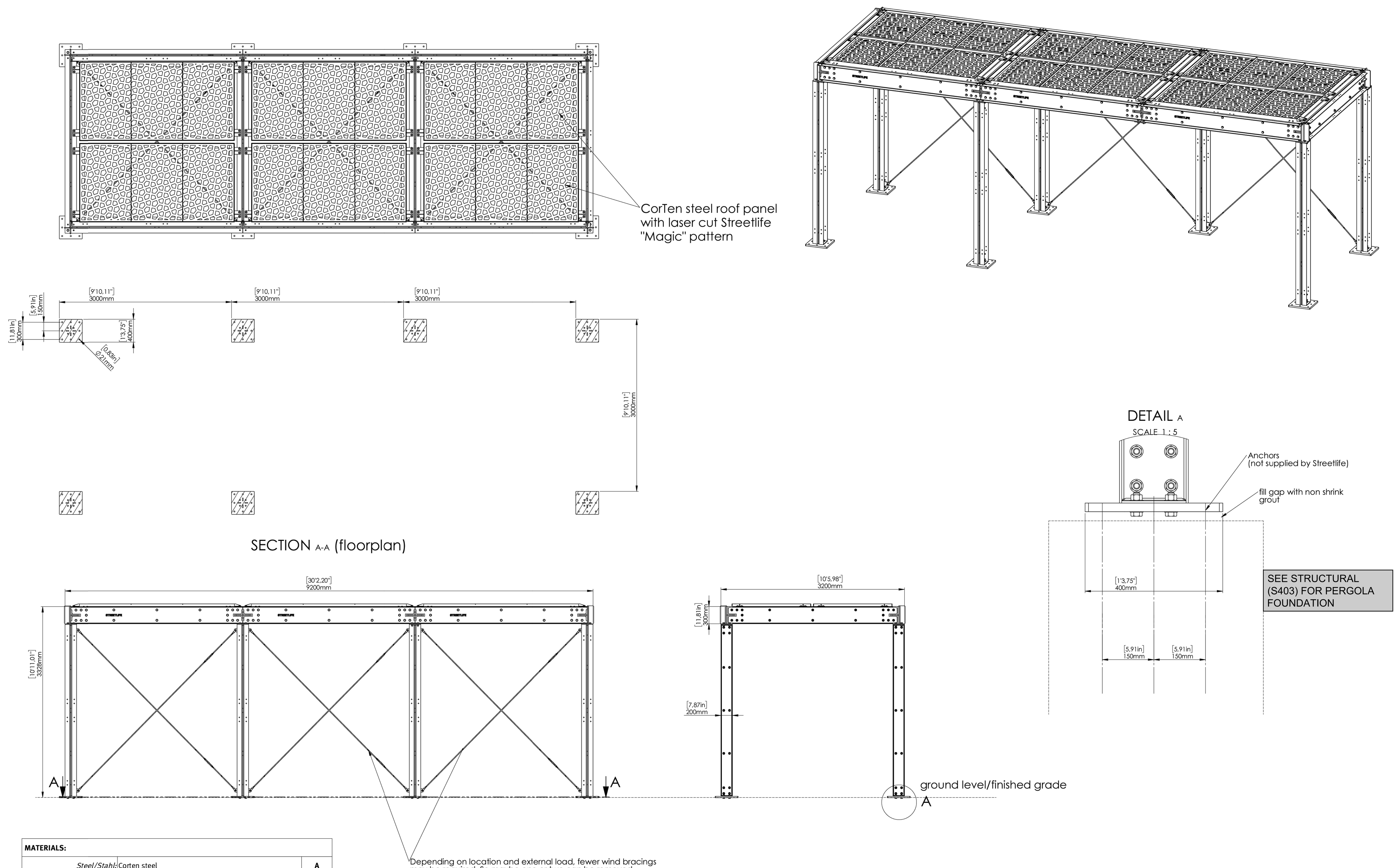
SITE DETAILS: FURNISHINGS 1

JOB No: 21058
DATE: 6/22/2023
DRAWN BY: M.Convery
DESIGNED BY: T.Minarik

SHEET:
L501

DESIGN INTENT





MATERIALS:		
Steel/Stahl:	Corten steel	A
nodes/Knoten:	Hot dip galvanized steel	B
Fixings	Stainless steel	C
MASS:	3628.5	
DIMENSIONS:	Metric units are leading	

SEE STRUCTURAL (S403) FOR PERGOLA FOUNDATION

Drawing for approval

STREETLIFE®
Herengracht 36
2312 LD Leiden
The Netherlands
T +31 (0) 71-3333333
F +31 (0) 71-3333349
www.streetlife.nl
Design protected by int. Modeldepots & Patents

scale: 1:30
units: mm
drawn by: OJOH
drawn date: 24-12-2021
project: Baywalk - Duluth, MN
project nr: NA220584 US
item no: 10-NA220584 US-001-R0-1
item name: PLZ
A1
1 of 1

#4

SHOP DRAWINGS REQUIRED

DESIGN INTENT

STREETLIFE DESIGNS

DRIFTER STRUCTURE
PRODUCT REF. NO.
PLZ-SHA-900-600,
PLZ-SHA-ROOF-CT
CONTACT: Sonno Witjes
switjes@streetlife.com

NOTE:
1. MATERIALS
   1.1. CORTEN STEEL
2. STRETCH STEEL ROOF INFILL IN WEATHERING STEEL (CORTEN)
3. DELIVERED UNWEATHERED
4. MOUNTED PER MANUFACTURER'S SPECIFICATIONS
5. INCLUDE LED COLUMN SURFACE MOUNTED LED SPOTLIGHTS. LIGHT MOUNTING SHOULD BE COORDINATED WITH PERGOLA MANUFACTURER PRIOR TO FABRICATION BASED LIGHTING MANUFACTURER'S SURFACE MOUNTING SPECIFICATIONS. SEE ELECTRICAL FOR LIGHT SELECTION.
6. ALL BRACING LOCATIONS SHOULD BE COORDINATED WITH LANDSCAPE ARCHITECT AND MANUFACTURER PRIOR TO FABRICATION.

OR APPROVED EQUAL

01 L505 PERGOLA NTS

Consulting Engineers P.A.
MECHANICAL, ELECTRICAL, PLUMBING (MEP)

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

NAME: TERRY MINARIK
SIGNATURE:
DATE: 6/22/2023
LIC. No: 42242

DATE:	REV:	DESCRIPTION	REV. BY:
6/22/2023		ISSUED FOR BID	TM
8/11/2023		ADDENDUM #4	

SITE DETAILS: PERGOLA

JOB No: 21058
DATE: 6/22/2023
DRAWN BY: M.Convery
DESIGNED BY: T.Minarik

SHEET:
L505

SA-10 / SECTION 329300 - PLANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preparation of subsoil.
B. Structural Soil
C. Planting Soil
D. Topsoil bedding
E. New trees, plants, and ground cover.
F. Landscape Edging
G. Mulch and Fertilizer
H. Plant establishment
I. Tree Pruning

1.02 DEFINITIONS

A. Backfill: The earth used to replace or the act of replacing earth in an excavation.
B. Finish Grade: Elevation of finished surface of planting soil.
C. Growing Season: A growing season is May 1 to October 1.
D. Pests: Living organisms that occur where they are not desired, or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
E. 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.

1.03 REFERENCE STANDARDS

A. ANSI/AHIA Z60.1 - American National Standard for Nursery Stock 2014.
B. ANSI A300 Part 1 - American National Standard for Tree Care Operations -- Tree, Shrub and Other Woody Plant Maintenance -- Standard Practices 2017.

1.04 SUBMITTALS

A. Product Data: For each type of product indicated.
   1. Mulch
   2. Topsoil
   3. Planting Soil
   4. Structural Soil
   5. Steel Edging
   6. Fertilizers
B. Qualification Data: For qualified 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.
   1. Maintenance Proximity: Not more than two hours' normal travel time from Installer's place of business to project site.
   2. Pesticide Applicator: State licensed, commercial.
C. Maintenance Agreement: Statement of required maintenance period, duties to be performed, name and contact information of individual responsible for overseeing maintenance services.

D. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of plants during a calendar year. Submit before start of required maintenance periods.

E. Statement of Warranty. Describing an understanding of the required warranty. Provide name and phone number for responsible contact.

1.05 QUALITY ASSURANCE

A. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.

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

C. Pre-installation Conference: Schedule a pre-planting meeting to review preparation and planting requirements with the Landscape Architect and Contractor prior to planting. All plants, trees and shrubs shall be planted in accordance with all the drawings and specifications included in the plans.

D. Planting Restrictions: Plant during one of the following periods.
   1. Spring Planting: May 15 to June 15.
   2. Fall Planting: August 15 to October 1.

E. Tree Pruner Qualifications: Company specializing in pruning trees with proof of Arborist Certification.

F. Tree Pruning: Comply with ANSI A300 Part 1.

G. Maintenance Services: Performed by installer.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

B. Protect and maintain plant life until planted.
   1. 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.
   2. Handle planting stock by root ball.
   3. 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. All plants – except for trees- must be installed within
   4. Trees may not be stored on site for more than 24 hours prior to planting without prior approval and installation of moisture retaining cover or bedding around all root balls.

1.07 FIELD CONDITIONS

A. Do not install plant life when ambient temperatures may drop below 45 degrees F or rise above 85 degrees F.

B. Do not install plant life when wind velocity exceeds 30 mph.

1.08 WARRANTY

A. Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship or growth within the specified warranty period.

B. Failures include, but are not limited to: death and unsatisfactory growth, lack of adequate maintenance and damage from falling or blowing over. The Contractor will be responsible to

remove all dead plantings and trees immediately upon notification from the Landscape Architect, even if the replacement is not immediate. This requirement applies during the warranty period as well.

C. All plants, trees and shrubs shall be **warrantied for ONE YEAR from date of Project Substantial Completion.** At the end of the warranty period the Landscape Architect shall make an inspection of the project and dead, unhealthy, or otherwise not acceptable plants, trees, and shrubs shall be replaced by the Contractor at no additional cost to the Owner.
   1. Notify the Owner and Landscape Architect in writing immediately upon completion of any warranty replacement plantings. For replacements after the initial establishment period has expired the Contractor shall water replacement plants for one week, after which the Owner assumes responsibility for watering replacement plants. If written notice is not provided the Contractor shall continue to water replacement plants until notice requirements are fulfilled.
   2. An intermediate warranty inspection may occur prior to the one year warranty expiration. Replacement is required within 60 days of the intermediate warranty inspection.
      a. If a plant replaced during the intermediate warranty period dies prior to the final warranty the contractor is not required to install a second replacement without additional compensation. Requests for additional compensation must be approved prior to proceeding with the work.
   3. Notify the Landscape Architect in writing with any concerns regarding Owner Maintenance of plant material during the warranty period.

D. Replacements: Plants of same size and species as specified, planted in the next growing season, with a new warranty commencing on date of replacement.

PART 2 PRODUCTS

SOIL MATERIALS

A. Structural Soil: Structural Soil is a mixture of crushed gravel and soil with a small amount of hydrogel to prevent the soil and stone from separating during the mixing and installation process. The gravel should consist of crushed stone approximately one inch in diameter, with no fine particles. The soil needed to make structural soil should be loam to clay loam containing at least 20% clay to maximize water and nutrient holding capacity. The proportion of soil to stone is approximately 80% stone to 20% soil by dry weight, with a small amount of hydrogel aiding in the uniform blending of the two materials.
   1. Manufacturers or Approved Equal:
      a. CU-STRUCTURAL SOIL®

B. Planting Soil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay or impurities, plants, weeds and roots; minimum pH value of 5.4 and maximum 7.0.

C. Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay or impurities, plants, weeds and roots; minimum pH value of 5.4 and maximum 7.0.

3.02 SOIL AMENDMENT MATERIALS

A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition.
   1. Composition: 18-24-12.
   2. Application rate: 7.0 lb/1000 SF

3.03 MULCH MATERIALS

A. Organic Mulch: Shredded hardwood bark mulch.
   1. Color: undyed natural wood.
   2. Particle size and consistency: a general mixture of fibers 3 inches in length or less.

3. Remove any large mulch chunks that do not meet the requirements above.

3.04 LANDSCAPE EDGING

A. Steel edging, rolled edge, fabricated in sections of standard lengths, with loops stamped from or welded to face of sections to receive stakes.
   1. Manufacturers or Approved Equal:
      a. Border Concepts; www.borderconcepts.com
      b. Colmet; www.colmet.com
      c. The J.D. Russell Company; www.jdrussellco.com
      d. Sure-loc Edging; www.surelocedging.com
   2. Edging Size: 1/8 inch wide by 5 inches deep.
   3. Stakes: Tapered steel, a minimum of 12 inches long.
   4. Accessories: Standard tapered ends, corners, and splicers.
   5. Finish: Standard Paint.
      a. Color: Black.

3.05 PLANTS

A. Plants: Species and size identified in plant schedule, grown in climatic conditions similar to those in locality of the work.

B. General: All plants, trees and shrubs shall conform to or exceed minimum quality standards as defined by the American Nursery and Landscaping Association, current edition of ANSI Z60.1, and shall be purchased from a licensed Landscape Nursery. Plants, trees and shrubs furnished shall be of the same genus, species, cultivar and size as specified in the plans. Species and variety may be substituted only by the approval of the Landscape Architect. Each plant, tree and shrub shall have an identification label, removed after the Substantial Completion inspection.

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

3.06 ACCESSORIES

A. Treegator slow release watering bag, or approved equal; www.treegator.com
   1. Size: 20 Gallon
   2. Supply and install one per tree.

PART 3 EXECUTION

5.01 EXAMINATION

A. Examine areas to be planted for compliance with requirements and other conditions affecting performance.
   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. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
   3. Suspend soil spreading, grading, and tilling 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 and which is too dusty.

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

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

5.02 PREPARATION OF SUBSOIL

A. Prepare subsoil to eliminate uneven areas. Maintain profiles and contours. Make changes in grade gradual. Blend slopes into level areas.

B. Remove foreign materials, weeds and undesirable plants and their roots. Remove contaminated subsoil.

C. Scarify subsoil to a depth of 3 inches where plants are to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted subsoil.

D. Dig pits and beds 6 inches larger than plant root system.

5.03 PLACING STRUCTURAL SOIL

A. Do not proceed with the installation of the Structural Soil material until all walls, curb footings and utility work in the area have been installed. For site elements dependent on CU-Structural Soil for foundation support, postpone installation until immediately after the installation of Structural Soil.

B. Excavate and compact the proposed subgrade to depths, slopes and widths as shown on the drawings. Maintain all required angles of repose of the adjacent materials as shown on the drawings. Do not over excavate compacted subgrades of adjacent pavement or structures.

C. Place structural soil during dry weather and on dry unfrozen subgrade.

D. Install Structural Soil in 6-inch lifts and compact each lift. Compact all materials to at least 95% Proctor Density from a standard compaction curve AASHTO T 99 (ASTM D 698). No compaction shall occur when moisture content exceeds maximum as listed herein. Delay compaction if moisture content exceeds maximum allowable and protect during delays in compaction with plastic or plywood as directed by the engineer.

5.04 PLACING PLANTING SOIL

A. Where plants are to be installed over structural fill, including open graded aggregate base, a substantial depth of planting soil must be installed to ensure long term growth of the plant material.

B. Place planting soil in depth indicated in planting details.

C. Place planting soil during dry weather and on dry unfrozen subgrade.

5.05 PLACING TOPSOIL

A. Spread topsoil to a minimum depth of 4 inches over area to be planted. Rake smooth.

B. Place topsoil during dry weather and on dry unfrozen subgrade.

C. Remove vegetable matter and foreign non-organic material from topsoil while spreading.

D. Grade topsoil to eliminate rough, low or soft areas, and to ensure positive drainage.

5.06 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.

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

C. Prepare surface soil:
   1. Kill existing weed growth with non-selective herbicide a minimum of two weeks prior to planting date. Apply a second application as necessary a minimum of 24 hours prior to planting.
      a. Apply at rate recommended by manufacturer.

2. Loosen surface soil to a depth of at least 6 inches.
3. Remove stones larger than 1-1/2 inches. in any dimension and sticks, roots, trash, and other extraneous matter.
    a. Legally dispose of waste material, including grass, vegetation, and turf, off Owner's property.

D. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit finish grading to areas that can be planted in the immediate future.

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

5.07 FERTILIZING

A. Apply fertilizer in accordance with manufacturer's instructions.

B. Apply after initial raking of topsoil.

C. Mix thoroughly into upper 2 inches of topsoil.

5.08 TREE AND SHRUB PLANTING

A. Place plants as indicated.

B. Before planting, verify that root flare is visible at top of root ball according to ANSI Z60.1.
1. Expose root flare; root flare may have been buried in the root ball during growing or tree harvesting operations.

C. Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.

D. Excavate planting pits with sides sloping inward at a 30-degree angle. Excavations with vertical sides are not acceptable. 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.
1. Excavate approximately three times as wide as ball diameter.
2. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.
3. Hand dig tree planting pits when in close proximity to existing utilities.

E. Set stock plumb and in center of planting pit or trench with **root flare 1 inch above adjacent finish grades**.
1. Use planting soil for backfill.
2. Balled and Burlapped: After placing some backfill around root ball to stabilize plant, carefully cut and remove burlap, rope, and wire baskets from tops of root balls and from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
3. Container-Grown: Carefully remove root ball from container without damaging root ball or plant.
4. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. Should be tamped down to a factor of 1.25. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
5. Continue backfilling process. Water again after placing and tamping final layer of soil.

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

G. Place plants for best appearance for review and final orientation by Landscape Architect.

H. Set plants vertical.

I. Remove non-biodegradable root containers.

5.09 PLANT SUPPORT

A. Trunk stabilization is not required unless deemed necessary by the Landscape Architect to maintain the tree in an upright position. Tree staking may be requested at any time between planting and expiration of the plant warranty period.
   1. Upright Staking and Tying: Use three stakes of length required to penetrate at least 18 inches below bottom of backfilled excavation and to extend one-third of trunk height above grade. Set vertical stakes and space to avoid penetrating root balls or root masses.
   2. Support trees with bands of flexible ties at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.

5.10 TREE PRUNING

A. Prune trees as recommended in ANSI A300 Part 1.

B. Prune newly planted trees as required to remove dead, broken, and split branches.

5.11 PERENNIAL AND ORNAMENTAL GRASS PLANTING

A. Set out and space perennial plants and ornamental grasses according to plan and 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 within two hours 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.

5.12 EDGING INSTALLATION

A. Steel Edging: Install steel edging where indicated according to manufacturer's written instructions. Anchor with steel stakes spaced per manufacturer’s specifications, driven below top elevation of edging.

5.13 PLANTING AREA MULCHING

A. Mulch planting areas and other areas indicated.
   1. Organic Mulch in Planting Areas: Apply 3-inch average thickness of organic mulch over whole surface of planting area. Finish level with adjacent finish grades.
      a. Do not place mulch within 3 inches of trunks or stems.

5.14 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with Section 014000.

B. Plants will be rejected if a ball of earth surrounding roots has been disturbed or damaged prior to or during planting.

5.15 ESTABLISHMENT

A. See Section 320190 - Operation and Maintenance of Planting for post-occupancy maintenance.

B. Provide maintenance during establishment period at no extra cost to Owner; Owner will pay for water.

C. Maintain plant life for three months after Date of Substantial Completion.

1. **During the establishment period the Contractor shall be on site a minimum of one hour per week throughout the maintenance period to monitor plants, water, and weed as necessary.**
2. Notify the Landscape Architect in writing upon termination of the required maintenance services. The Contractor shall continue maintenance services until written notification is provided.

D. Maintain plant life immediately after placement and until plants are well established and exhibit a vigorous growing condition. Continue maintenance until termination of warranty period.

E. Water sufficiently to saturate root system and prevent soil from drying out.

F. Cultivate and weed plant beds and tree pits.

G. Remove dead or broken branches and treat pruned areas or other wounds.

H. Neatly trim plants where necessary.

I. Immediately remove clippings after trimming.

J. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions.

K. Remedy damage from use of herbicides and pesticides.

L. Replace mulch when deteriorated or displaced.

M. 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.

END OF SECTION

Ingenuity, Integrity, and Intelligence.

ADDENDUM

THE FOLLOWING DRAWINGS ARE ATTACHED HERETO: N/A

ADDENDUM NO. 3

ARCHITECT:
Chase Dewhirst
AMI Consulting Engineers, P.A.
91 Main Street
Superior, WI 54880

PROJECT:
City of Duluth Coastal Infrastructure Rehabilitation

Ayres Project No. 81-0390

OWNER:
City of Duluth

DATE: August 10, 2023

To: Prime Contract Bidders and all others to whom the Project Manual and the Project Drawings have been issued by the Architect/Engineer or Contractor.

This Addendum is a Contract Document and may apply to any or all Contracts and subcontracts. Unless otherwise specified herein or shown on the attached drawings (if any), all work required by this Addendum shall be in complete accord with the Contract Documents and subsequent Addenda thereto.

The items listed in this Addendum are not in any order in regard to the Project Drawings or the Project Manual. All contractors are cautioned to examine each and every item of this Addendum.

The bidder shall insert the Addendum number in the space indicated on the Project Proposal Form. Failure to comply may result in the bid being rejected.

ITEM	REFERENCE	CHANGE/COMMENTS
CHANGES TO ELECTRICAL SPECIFICATIONS		
1.	26 05 00	Revise sections 3.3.B and 3.3.H
CHANGES TO ELECTRICAL DRAWINGS		
1.	E200	Revise details 1, 4, 5, and 6/E200 as shown clouded on plan.

ELECTRICAL PRIOR APPROVALS

Section	Item	Manufacturer
26 56 00	Type C	Sistemalux
26 56 00	Type D	Contech Lighting

SECTION SE-1 (260500) - COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

SE 1.1 RELATED DOCUMENTS

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

SE 1.2 SUMMARY

A. Section Includes:
   1. Electrical equipment coordination and installation.
   2. Grout.
   3. Common electrical installation requirements.
   4. Electrical demolition.
   5. Touchup painting.

SE 1.3 DEFINITIONS

A. EPDM: Ethylene-propylene-diene terpolymer rubber.

B. NBR: Acrylonitrile-butadiene rubber.

SE 1.4 COORDINATION

A. Coordinate arrangement, mounting, and support of electrical equipment:
   1. To provide for ease of disconnecting the equipment with minimum interference to other installations.
   2. To allow right of way for piping and conduit installed at required slope.
   3. So connecting raceways, cables, wireways, cable trays, and busways will be clear of obstructions and of the working and access space of other equipment.

B. Sequence, coordinate, and integrate installing electrical materials and equipment for efficient flow of the Work. Coordinate installing large equipment requiring positioning before closing in the building.

C. Coordinate installation of required supporting devices and set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

D. Coordinate trenching, related electrical and openings with civil construction work and arrange during progress of construction to facilitate the electrical installations that follow.

E. Coordinate electrical testing of electrical items, so equipment and systems that are functionally interdependent are tested to demonstrate successful interoperability.

F. Coordinate connecting electrical service to components furnished under other sections, include connections for equipment specified in other Sections.

PART 2 - PRODUCTS

SE 2.1 GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

SE 2.2 TOUCHUP PAINTING

A. For Equipment: Equipment manufacturer's paint selected to match installed equipment finish.

B. Galvanized Surfaces: Zinc-rich paint recommended by item manufacturer.

PART 3 - EXECUTION

SE 3.1 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION

A. Comply with NECA 1.

B. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.

C. Right of Way: Give to systems installed at a required slope.

D. Materials and Components: Install level, plumb, and parallel and perpendicular to other civil systems and components, unless otherwise indicated.

E. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

SE 3.2 CONNECTIONS TO EQUIPMENT

A. For each electrical connection indicated or otherwise required, provide complete assembly of materials, including but not necessarily limited to pressure connectors, terminals (lugs), electrical insulating tape, electrical solder, electrical soldering flux, heat-shrinkable insulating tubing, cable ties, solderless wirenuts, and other items and accessories as needed to complete splices and terminations of types indicated.

B. Install in accordance with equipment manufacturer's written instructions and with recognized industry practices, and complying with applicable requirements of UL, NEC and NECA's "Standard of Installation" to ensure that products fulfill requirements.

SE 3.3 DEMOLITION

A. Protect existing electrical equipment and installations indicated to remain. If damaged or disturbed in the course of the Work, remove damaged portions and install new products of equal capacity, quality, and functionality.

B. Identify and maintain services that pass through remodeled area and serve devices and equipment outside the remodeled area. Existing conditions indicated on drawings are for reference only. It is the responsibility of this Contractor to locate all underground electric and communication systems. Refer to 3.3.H.

C. Accessible Work: Remove exposed electrical equipment and installations, indicated to be demolished, in their entirety.

D. Abandoned Work: Cut and remove buried raceway, indicated to be abandoned in place, 2 inches (50 mm) below the surface of adjacent construction. Cap raceways and patch surface to match existing finish.

E. Remove demolished material from Project site.

F. Remove, store, clean, reinstall, reconnect, and make operational components indicated for relocation.

G. Removal of PCB Ballasts: Provide a suitable collection container at the project site. Check transformers and the ballasts in all fluorescent fixtures being removed, rewired, or reinstalled under this Contract. Some transformers and ballasts are clearly labeled to indicate whether they do or do not contain PCBs. If a transformer or ballast is not labeled, assume that it contains PCBs. Remove from the fixtures all ballasts known or assumed to contain PCBs and place them in the designated collection container. Place hazardous material including, but not limited to, mercury switches and lamps in the designated collection container. Pick up the container and recycle or dispose of it legally. Comply with the requirements of federal, state, and local pollution control agency guidelines for removal and disposal of fluorescent lamps.

H. Existing Utilities: Locate existing power and communication utilities in excavation areas. If utilities are indicated to remain, support and protect services during excavation operations.
   1. Remove existing underground utilities indicated to be removed.
   2. Uncharted or Incorrectly Charted Utilities: Contact utility owner immediately for instructions.
   3. Maintain and protect existing building and site services which transit the area affected by selective demolition.

I. Repair and refinish disturbed finish materials and other surfaces to match adjacent undisturbed surfaces. Install new fireproofing where existing firestopping has been disturbed. Repair and refinish materials and other surfaces by skilled mechanics of trades involved.

SE 3.4 FIELD QUALITY CONTROL

A. Inspect installed components for damage and faulty work. Replace damaged or faulty components.

END OF SECTION 260500

MATCH LINE 112

EXISTING UTILITY TRANSFORMER AND ELECTRICAL SERVICE CABINETS (IRVIN, STREET LTG, AND VISTA FLEET)

LP4N-G13

HARBOR DRIVE

EXISTING IRVIN ELECTRICAL CABINET

EXISTING VISTA FLEET ELECTRICAL CABINET TO REMAIN

EXISTING BOILER ROOM

BH

T-BH

LP3N-G16

CABINET #3

6 E200

A G13-3 BW-P9A-I

A G13-3 BW-P10A-I

A G13-3 BW-P11A-I

VF5

VF4

POWER SHEET NOTES

A WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.

B CIRCUIT WIRING (INCLUDING HOME RUN) IS NOT SHOWN EXCEPT FOR SWITCHING INTENT OF FIXTURES AND CONTROL OF DEVICES.

KEYNOTES

1 INSTALL EXISTING MARINE POWER PEDESTAL AFTER CONSTRUCTION IS COMPLETE. REFER TO SHEET E100 FOR ADDITIONAL INFORMATION.

2 PROVIDE HANDHOLE FOR EXTENSION OF POST TOP LIGHTING BRANCH CIRCUIT TO FACILITATE SITE LIGHT/POLE REMOVAL.

3 PROVIDE NEMA 4X SS POWER AND COMMUNICATIONS VENDOR CABINET AS MANUFACTURED BY AMERICAN MIDWEST POWER (AMP). PROVIDE CONCRETE PAD, SIZE AS REQUIRED. REFER TO DETAILS ON SHEET E200 FOR EXACT CABINET SPECIFICATIONS.

4 EXISTING HANDHOLE TO REMAIN. PROTECT DURING CONSTRUCTION.

5 PROVIDE 2" CONDUIT WITH CAT 5E CABLINE FOR SECURITY CAMERA CONNECTIONS

6 PROVIDE 2" CONDUIT WITH #8 WIRING FOR SITE LIGHTING BRANCH CIRCUIT.

7 PROVIDE 2" CONDUIT WITH BRANCH CIRCUIT WIRING PER SCHEDULE FOR POLE MOUNTED RECEPTACLES. USE OF #12 PIG TAIL AT 20A RECEPTACLES AND #6 PIG TAIL AT 50A RECEPTACLES ACCEPTABLE.

8 EXISTING POST TOP LIGHT FIXTURE TO REMAIN.

9 EXISTING STREET/POST TOP LIGHTING HAND HOLE TO REMAIN. DISCONNECT AND REMOVE EXISTING LIGHTING BRANCH CIRCUITS TO FACILITATE STREET LIGHT DEMOLITION.

10 EXISTING MN POWER HANDHOLE TO REMAIN.

11 LOCATION/ROUTING OF EXISTING VISTA FLEET OFFICE FEEDER SHOWN FOR REFERENCE ONLY.

12 INSTALL CITY OF DULUTH POLICE DEPARTMENT SECURITY CAMERA RETAINED FROM DEMOLITION ON NEW SITE POLE. PROVIDE 120V DUPLEX RECEPTACLE WITH WEATHER-PROOF WHILE IN USE COVER AT 20' AFF FOR CAMERA POWER.

13 EXISTING 150A, 208Y/120V DISCONNECT SWITCH AND METER ASSOCIATED WITH DEMOLISHED VISTA FLEET OFFICE. CONNECT TO NEW VENDOR CABINET #3.

14 PROVIDE 3" CONDUIT WITH (4) #4/0 + #4GND FOR PANEL P3N-G16.

15 EXISTING HAND HOLE ASSOCIATED WITH DEMOLISHED VISTA FLEET OFFICE (PREVIOUSLY DEMOLISHED IN PHASE I). HAND HOLE AND ASSOCIATED CONDUIT/FEEDER TO REMAIN.

16 PROVIDE HANDHOLE FOR EXTENSION OF FIBER CABLING TO NEW VENDOR CABINET #3.

BRANCH CIRCUIT SIZE

POLE #	RECEPTACLE	WIRE SIZE	MIN CONDUIT SIZE	PANEL
BW-2	50A	#6	2"	LP3N-G12
BW-2	20A	#6	2"	LP3N-G12
BW-3	50A	#6	2"	LP3N-G12
BW-3	20A	#8	2"	LP3N-G12
BW-4	50A	#4	2"	LP3N-G12
BW-4	20A	#6	2"	LP3N-G12
BW-5	50A	#3	2"	LP3N-G15
BW-5	20A	#4	2"	LP3N-G15
BW-6	50A	#6	2"	LP3N-G15
BW-6	20A	#8	2"	LP3N-G15
BW-7	50A	#6	2"	LP3N-G15
BW-7	20A	#10	2"	LP3N-G15
BW-8	50A	#6	2"	LP3N-G15
BW-8	20A	#10	2"	LP3N-G15

1 E111 ELECTRICAL PLAN - STA 0+00 TO 5+50
1" = 20'-0"

8/10/2023 6:59:30 AM
Autodesk Docs://AA_STP23_81-0390 DECC Dock Wall Rehabilitation Phase II Duluth MN/E22_DuluthBayWalk_Site.rvt

AMI Consulting Engineers P.A.
CONFLUENCE

SEH

AMRES
MECHANICAL, ELECTRICAL, PLUMBING (MEP)

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ANTHONY L. BASDEN
SIGNATURE: Anthony Basden
DATE: 06/23/23 LIC. NO. 48705

REV.	DESCRIPTION	DATE:
A	ISSUED FOR BID	06/23/23
3	ADDENDUM 3	08/08/23

DULUTH COASTAL INFRASTRUCTURE REHABILITATION PROJECT
350 HARBOR DRIVE
DULUTH, MINNESOTA

ELECTRICAL PLAN STA 0+00 TO 5+50

JOB No: 211016
DATE: 06/23/23
DRAWN BY: ERS
DESIGNED BY: LAG

SHEET: E111

BRANCH CIRCUIT SIZE

POLE #	RECEPTACLE	WIRE SIZE	MIN CONDUIT SIZE	PANEL
BW-2	50A	#6	2"	LP3N-G12
BW-2	20A	#6	2"	LP3N-G12
BW-3	50A	#6	2"	LP3N-G12
BW-3	20A	#8	2"	LP3N-G12
BW-4	50A	#4	2"	LP3N-G12
BW-4	20A	#6	2"	LP3N-G12
BW-5	50A	#3	2"	LP3N-G15
BW-5	20A	#4	2"	LP3N-G15
BW-6	50A	#6	2"	LP3N-G15
BW-6	20A	#8	2"	LP3N-G15
BW-7	50A	#6	2"	LP3N-G15
BW-7	20A	#10	2"	LP3N-G15
BW-8	20A	#6	2"	LP3N-G15
BW-8	50A	#10	2"	LP3N-G15

POWER SHEET NOTES

A WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.

B CIRCUIT WIRING (INCLUDING HOME RUN) IS NOT SHOWN EXCEPT FOR SWITCHING INTENT OF FIXTURES AND CONTROL OF DEVICES.

KEYNOTES

1 PROVIDE EXTERIOR RATED NEMA 3R POWER PEDESTAL INCLUDING TWO (2) 50A, 208V RECEPTACLES WITH WEATHER-PROOF WHILE IN-USE COVERS AS MANUFACTURED BY LEGRAND XPP SERIES OR EQUIVALENT. PROVIDE 3 #1/0 + 3#8G IN 2"C.

2 PROVIDE 3" CONDUIT WITH (4) #4/0 + #6GND FEEDER FOR PANEL P3N-G15 FROM SWITCHBOARD 'BG-1'. PROVIDE NEW 200A CIRCUIT BREAKER, SIZE, TYPE, AND RATING TO MATCH EXISTING SWITCHBOARD. DIRECTIONAL BORE UNDER EXISTING ROAD, FIELD VERIFY EXACT LOCATION/ROUTING.

3 PROVIDE NEMA 4X SS POWER AND COMMUNICATIONS VENDOR CABINET AS MANUFACTURED BY AMERICAN MIDWEST POWER (AMP). PROVIDE CONCRETE PAD, SIZE AS REQUIRED. REFER TO DETAILS ON SHEET E200 FOR EXACT CABINET SPECIFICATIONS.

4 EXTEND EXISTING STREET LIGHT BRANCH CIRCUIT FROM NEAREST STREET LIGHT ON 5TH AVENUE TO NEW STREET LIGHT LOCATION.

5 PROVIDE 2" CONDUIT WITH CAT 5E CABLING FOR SECURITY CAMERA CONNECTIONS.

6 PROVIDE 2" CONDUIT WITH #8 WIRING FOR SITE LIGHTING BRANCH CIRCUIT.

7 PROVIDE 2" CONDUIT AND BRANCH CIRCUIT WIRING FOR POLE MOUNTED RECEPTACLE, REFER TO BRANCH CIRCUIT SIZE SCHEDULE.

8 PROVIDE 2" CONDUIT FOR MULTI-MODE FIBER CABLING FROM DECC BUILDING TO NEW VENDOR CABINETS. FIELD VERIFY EXACT ROUTING AND CONDUIT STUB LOCATION INTO DECC BUILDING WITH DECC. DIRECTIONAL BORE UNDER EXISTING ROAD, FIELD VERIFY EXACT LOCATION/ROUTING.

9 PROVIDE HANDHOLE FOR EXTENSION OF FEEDER ASSOCIATED WITH PANEL P3N-G15.

10 PROVIDE 2" CONDUIT AND BRANCH CIRCUIT WIRING FOR POWER PEDESTAL.

11 PROVIDE GFI, WEATHER PROOF TYPE RECEPTACLE IN POLE BASE WITH WEATHER PROOF WHILE IN USE COVER.

12 INSTALL TYPE 'D' LIGHT FIXTURE ON INTERIOR WEB OF PERGOLA SYSTEM, REFER TO CONFLUENCE DRAWINGS FOR EXACT LOCATION. ROUTE CONDUIT ON INSIDE OF PERGOLA STRUCTURE TO CONCEAL FROM VIEW.

13 MOUNT TYPE 'C' STEP LIGHT AT 18" AFF.

14 PROVIDE HANDHOLE FOR EXTENSION STEP LIGHTING BRANCH CIRCUITING.

15 PROVIDE HANDHOLE FOR EXTENSION OF LOW VOLTAGE COMMUNICATIONS CABLING.

16 PROVIDE 2" CONDUIT WITH SINGLE MODE FIBER EXTENSION TO VENDOR CABINET.

17 PROVIDE 24" X 24" X 6" POLE MOUNTED JUNCTION BOX FOR SECURITY CAMERA SYSTEM CABLE ROUTING.

18 24" X 24" X 6" POLE MOUNTED JUNCTION BOX FOR SECURITY CAMERA SYSTEM CABLE ROUTING.

MATCH LINE 113

MATCH LINE 111

EXISTING ELECTRICAL ROOM IN SYMPHONY HALL BASEMENT

AJ

ELECTRICAL ROOM BG-1

HARBOR DRIVE

(2) CAT5E

(1) CAT5E

(1) FIBER

BW-P3A-I G13-3

BW-P4A-I G13-3 A

BW-P5A-I G13-3 A

BW-P6A-I G13-3 A

G15-14/16 G15-18/20

G15-1,3

G15-18

G13-3 BW-P8A-I A

G13-3 BW-P7A-I

G15-5,7 A

G15-20

G15-9,11

G15-22

G12-2,4

G12-6,8

G12-19

G12-10,12

G12-21

G12-17

G12-22

PP

BW-S13 BW-S14 BW-S15 BW-S16 BW-S17 BW-S18 BW-S19 BW-S20 BW-S21 BW-S22 BW-S23 BW-S24

G15-13

(TYP.)

LP3N-G15

CABINET #2

5 E200

1 E112 ELECTRICAL PLAN - STA 5+50 TO 11+00
1" = 20'-0"

AMI Consulting Engineers P.A.
CONFLUENCE

SEH

AYRES
MECHANICAL, ELECTRICAL, PLUMBING (MEP)

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ANTHONY L. BASSEN
SIGNATURE: Anthony Bassen
DATE: 06/23/23 LIC. NO. 48705

REV. BY:	DESCRIPTION	DATE:	REV:
	ISSUED FOR BID	06/23/23	A
	ADDENDUM 3	08/08/23	3

DULUTH COASTAL INFRASTRUCTURE REHABILITATION PROJECT
350 HARBOR DRIVE
DULUTH, MINNESOTA

ELECTRICAL PLAN STA 5+50 TO 11+00

JOB No: 211016
DATE: 06/23/23
DRAWN BY: ERS
DESIGNED BY: LAG

SHEET: E112

POWER SHEET NOTES

A WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.

B CIRCUIT WIRING (INCLUDING HOME RUN) IS NOT SHOWN EXCEPT FOR SWITCHING INTENT OF FIXTURES AND CONTROL OF DEVICES.

KEYNOTES

1 PROVIDE 3" CONDUIT WITH (4) #4/0 + #6GND FOR PANEL P3N-G12 FROM SWITCHBOARD 'AJ'. PROVIDE NEW 200A CIRCUIT BREAKER, SIZE, TYPE, AND RATING TO MATCH EXISTING SWITCHBOARD.

2 PROVIDE 2" CONDUIT FOR FIBER CABLING FROM DECC BUILDING TO NEW VENDOR CABINET. FIELD VERIFY EXACT ROUTING AND CONDUIT STUB LOCATION INTO DECC BUILDING WITH DECC.

3 PROVIDE NEMA 4X SS POWER AND COMMUNICATIONS VENDOR CABINET AS MANUFACTURED BY AMERICAN MIDWEST POWER (AMP). PROVIDE CONCRETE PAD, SIZE AS REQUIRED. REFER TO DETAILS ON SHEET E200 FOR EXACT CABINET SPECIFICATIONS.

4 INSTALL EXISTING SITE LIGHT FIXTURE MADE AVAILABLE BY DEMOLITION. EXTEND TO NEAREST LIGHTING BRANCH CIRCUIT FROM BAYFRONT PARK TRAIL LIGHTING. CONNECT/PROGRAM EXISTING LIGHTING CONTROL NODE TO EXISTING ESCHELON SYSTEM, COORDINATE WITH CITY OF DULUTH.

5 PROVIDE 2" CONDUIT WITH CAT 5E CABLING FOR SECURITY CAMERA CONNECTIONS.

6 PROVIDE 2" CONDUIT WITH #8 WIRING FOR SITE LIGHTING BRANCH CIRCUIT.

7 PROVIDE 2" CONDUIT WITH WIRING FOR POLE MOUNTED RECEPTACLES. REFER TO BRANCH CIRCUIT SIZE SCHEDULE FOR EXACT WIRE SIZE.

8 INSTALL NEW LIGHTING IN GREAT LAKES AQUARIUM RETAINING WALL. CONNECT TO EXISTING BRANCH CIRCUIT MADE AVAILABLE BY DEMOLITION FED FROM THE AQUARIUM BUILDING. REFER TO STRUCTURAL PLANS FOR EXACT LOCATIONS.

9 MAINTAIN CIRCUIT CONTINUITY TO EXISTING POLE MOUNTED SITE LIGHT TO REMAIN. PROTECT FIXTURE AND ASSOCIATED BRANCH CIRCUITING DURING CONSTRUCTION.

10 PROVIDE LIGHT FIXTURE AT 3'-0" AFF IN WAVE WALL AND/OR RETAINING WALL. COORDINATE EXACT SPACING WITH STRUCTURAL JOINTS PRIOR TO ROUGH-IN. REFER TO DETAIL 3/E200 FOR CONDUIT ROUTING.

11 CONNECT NEW STREET LIGHT TO EXISTING STREET LIGHTING BRANCH CIRCUIT MADE AVAILABLE BY DEMOLITION. PROVIDE #1/0 ALUMINUM DIRECT BURIED CABLE PER CITY OF DULUTH STANDARDS. REFER TO SEH PLANS FOR POLE/BASE MOUNTING DETAILS.

12 PROVIDE RECESSED JUNCTION BOX IN SIDE OF SEAT WALL AND/OR RETAINING WALL WITH WEATHER-PROOF, LOCKABLE COVER.

13 INSTALL CITY OF DULUTH POLICE DEPARTMENT SECURITY CAMERA ON NEW SITE POLE. INSTALL 120V DUPLEX RECEPTACLE WITH WEATHER-PROOF WHILE IN USE COVER AT 20' AFF FOR CAMERA POWER.

14 PROVIDE HANDHOLE FOR EXTENSION OF WAVE WALL/STEP LIGHTING AND/OR POLE MOUNTED RECEPTALCE BRANCH CIRCUITING.

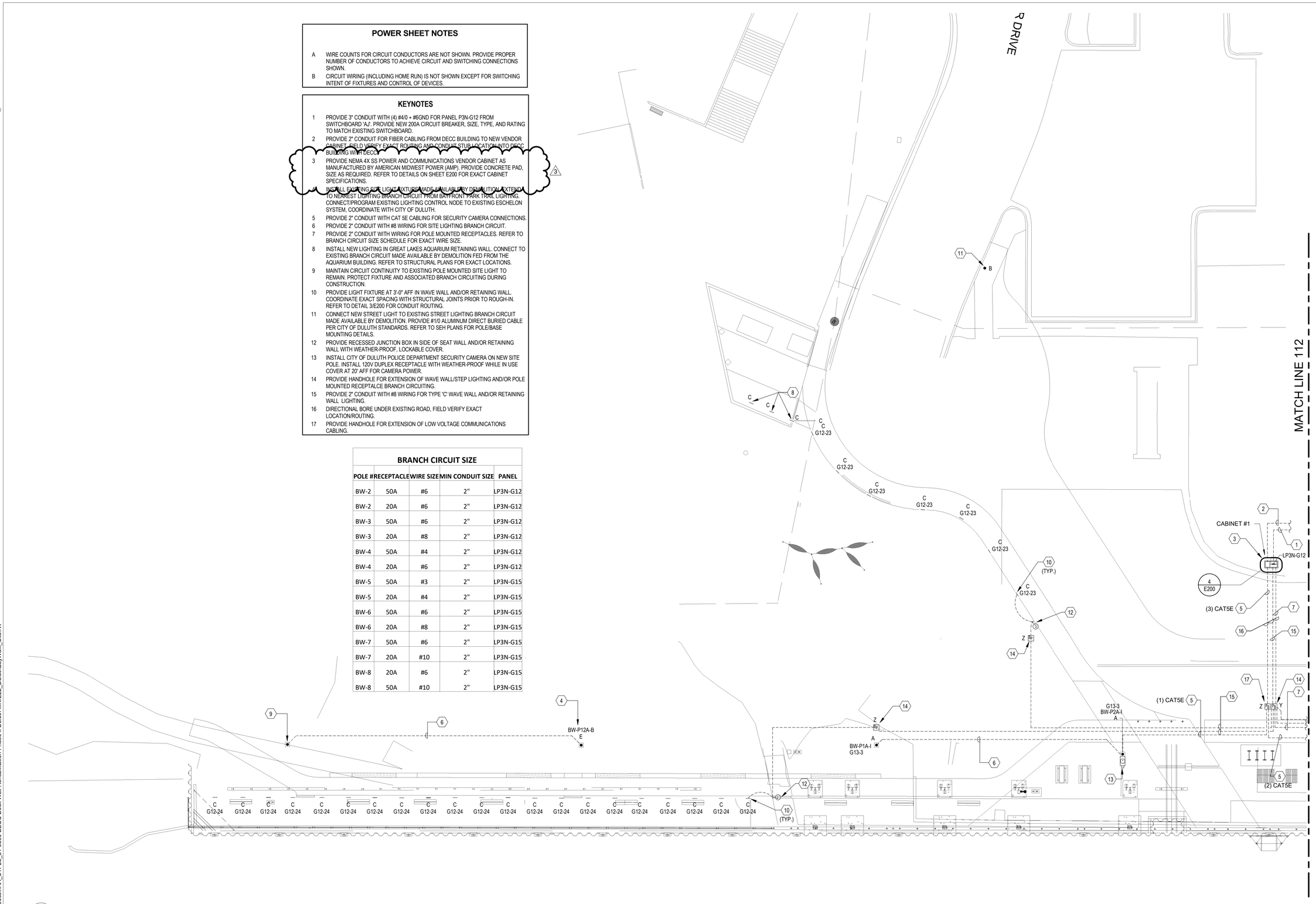
15 PROVIDE 2" CONDUIT WITH #8 WIRING FOR TYPE 'C' WAVE WALL AND/OR RETAINING WALL LIGHTING.

16 DIRECTIONAL BORE UNDER EXISTING ROAD, FIELD VERIFY EXACT LOCATION/ROUTING.

17 PROVIDE HANDHOLE FOR EXTENSION OF LOW VOLTAGE COMMUNICATIONS CABLING.

BRANCH CIRCUIT SIZE

POLE #	RECEPTACLE	WIRE SIZE	MIN CONDUIT SIZE	PANEL
BW-2	50A	#6	2"	LP3N-G12
BW-2	20A	#6	2"	LP3N-G12
BW-3	50A	#6	2"	LP3N-G12
BW-3	20A	#8	2"	LP3N-G12
BW-4	50A	#4	2"	LP3N-G12
BW-4	20A	#6	2"	LP3N-G12
BW-5	50A	#3	2"	LP3N-G15
BW-5	20A	#4	2"	LP3N-G15
BW-6	50A	#6	2"	LP3N-G15
BW-6	20A	#8	2"	LP3N-G15
BW-7	50A	#6	2"	LP3N-G15
BW-7	20A	#10	2"	LP3N-G15
BW-8	20A	#6	2"	LP3N-G15
BW-8	50A	#10	2"	LP3N-G15



1 / E113 ELECTRICAL PLAN - STA 11+00 TO 14+31
1" = 20'-0"

AMI Consulting Engineers P.A. CONFLUENCE

SEH

AMRES MECHANICAL, ELECTRICAL, PLUMBING (MEP)

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ANTHONY L. BASGEN
SIGNATURE: Anthony Basgen
DATE: 06/23/23 LIC. NO. 48705

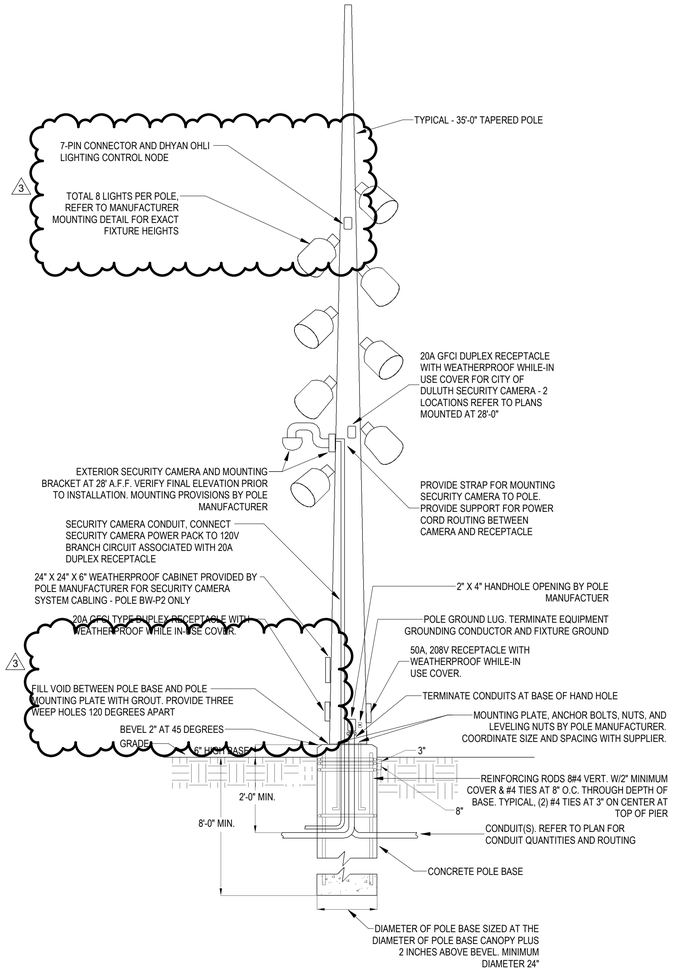
REV. BY:	DESCRIPTION	REV:	DATE:
	ISSUED FOR BID	A	06/20/23
	ADDENDUM 3	3	08/08/23

DULUTH COASTAL INFRASTRUCTURE REHABILITATION PROJECT
350 HARBOR DRIVE
DULUTH, MINNESOTA

ELECTRICAL PLAN STA 11+00 TO 14+31

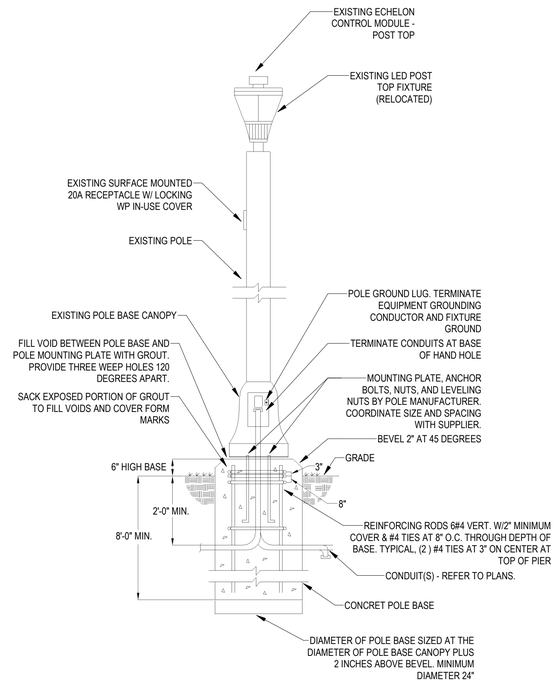
JOB No: 211016
DATE: 06/23/23
DRAWN BY: ERS
DESIGNED BY: LAG

SHEET: E113



NOTE: REFER TO STRUCTURAL PLANS FOR EXACT POLE BASE REQUIREMENTS.

1 E200 DECORATIVE LIGHTING POLE TYPE 'A' DETAIL
NOT TO SCALE

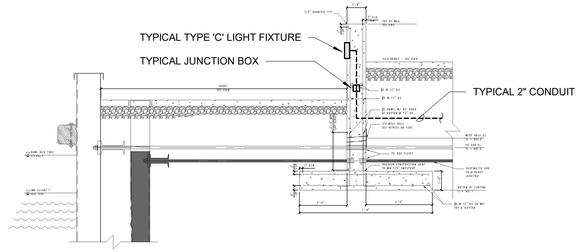


NOTE: REFER TO STRUCTURAL PLANS FOR EXACT POLE BASE REQUIREMENTS.

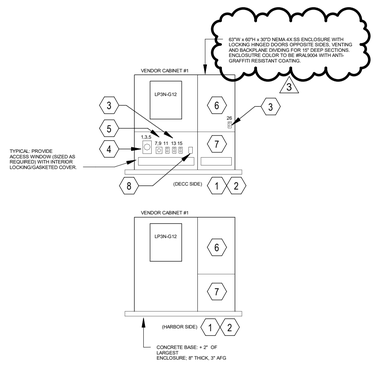
2 E200 DECORATIVE POST TOP LIGHTING POLE TYPE 'E' DETAIL
NOT TO SCALE

KEYNOTES

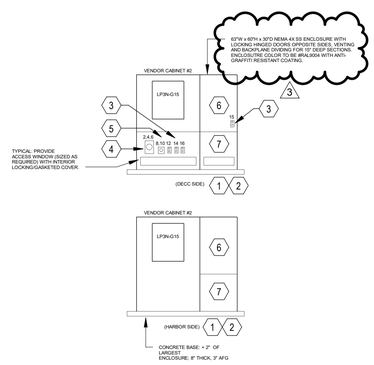
1. ENCLOSURE SIZES AND EQUIPMENT LAYOUT ARE SHOWN FOR DESIGN INTENT. FINAL SIZES AND LAYOUT BY CONTRACTOR. ADJUST SIZES BASED ON ACTUAL EQUIPMENT AND SUBMIT ENCLOSURE COORDINATION DRAWINGS INCLUDING BUT NOT LIMITED TO, MATERIAL SPECIFICATIONS, ELEVATIONS, SECTIONS, FLOOR OPENINGS WITH INCOMING RACEWAY LAYOUT, LABELING, AND DIMENSIONAL DATA.
2. PROVIDE EXTERIOR ENCLOSURE LABEL.
3. CONNECT DOUBLE DUPLEX RECEPTACLE TO PANEL/CKT INDICATED WITH 2 #12 + #12G IN 1/2"C.
4. CONNECT 100A, 208V, 4W PIN AND SLEEVE TYPE RECEPTACLE AS MANUFACTURED BY MELTRIC MODEL #33-64177-C-K07-843-NC OR EQUIVALENT. CONNECT TO PANEL/CIRCUIT INDICATED WITH 4 #3 + #8G IN 1-1/4"C.
5. CONNECT 60A, 208V, 3PW PIN AND SLEEVE TYPE RECEPTACLE AS MANUFACTURED BY MELTRIC MODEL #33-64073-263 OR EQUIVALENT. CONNECT TO PANEL/CIRCUIT INDICATED WITH 2 #4 + #10G IN 1-1/4"C.
6. LOCKABLE LOW VOLTAGE COMPARTMENT FOR SECURITY CAMERA EQUIPMENT. PROVIDE MOUNTING PLATE FOR EQUIPMENT/DEVICES AS REQUIRED
7. LOW VOLTAGE COMPARTMENT FOR COMMUNICATOINS EQUIPMENT. PROVIDE MOUNTING PLATE FOR RUGGED SWITCH AND TWO (2) PUNCH DOWN BLOCKS.
8. PROVIDE 7-PIN CONNECTORS FOR DHYAN LIGHTING CONTROL NODES FOR TYPE 'C' WAVE WALL LIGHTING, TYPE 'C' STEP LIGHTING, TYPE 'D' PERGOLA LIGHTING AND TYPE 'C' RETAINING WALL LIGHTING. MOUNT 7-PIN CONNECTORS AND CONTROL NODES IN POWER SIDE OF VENDOR CABINET.



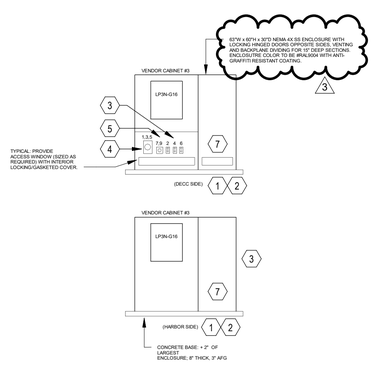
3 E200 WAVE WALL CONDUIT ROUTING DETAIL
NOT TO SCALE



4 E200 VENDOR POWER & COMMUNICATIONS CABINET #1
NOT TO SCALE



5 E200 VENDOR POWER COMMUNICATIONS CABINET #2
NOT TO SCALE



6 E200 VENDOR POWER & COMMUNICATIONS CABINET #3
NOT TO SCALE

AMI Consulting Engineers P.A.
CONFLUENCE
SEH
AMRES MECHANICAL, ELECTRICAL, PLUMBING (MEP)

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ANTHONY L. BASSEN
SIGNATURE:
DATE: 06/23/23 LIC. NO. 48705

REV:	DATE:	DESCRIPTION	REV. BY:
A	06/23/23	ISSUED FOR BID	
3	08/08/23	ADDENDUM 3	

DULUTH COASTAL INFRASTRUCTURE REHABILITATION PROJECT
350 HARBOR DRIVE
DULUTH, MINNESOTA

ELECTRICAL DETAILS

JOB No: 211016
DATE: 06/23/23
DRAWN BY: ERS
DESIGNED BY: LAG

SHEET: E200

8/10/2023 7:00:25 AM
Autodesk Docs://AA_STP23_81-0390 DECC Dock Wall Rehabilitation Phase II Duluth MN/E22_DuluthBayWalk_Site.rvt

DULUTH STATE CONVENTION CENTER

PHASE 1 - UNDERGROUND SITE UTILITIES

May 28, 1987

I hereby certify that this specification and accompanying drawings were prepared by me or under my direct supervision, and that I am a duly Registered Engineer under the Laws of the State of Minnesota.

Howard E. Jacobs - Mechanical Engineer Reg. #3974

Allan A. Hill - Electrical Engineer Reg. #6489

1. Soil Investigation Data

A. The following excerpts from the Geotechnical Exploration Program dated May 5, 1987, are enclosed for bidder's information. Complete copies of the report are on file with the Owner and Architect.

1. Test Borings

2. Test Borings Location Plan

B. This information is not a part of the contract documents and is being made available to bidders with the understanding that it represents the best available information regarding existing conditions and that no warranty or guarantee of such existing conditions is intended.

lakehead testing laboratory, inc.

JOB NO. 910 87-271 VERTICAL SCALE 1" = 10' LOG OF TEST BORING NO. 87-1

PROJECT PROPOSED CONVENTION CENTER - DULUTH, MINNESOTA

DEPTH IN FEET	DESCRIPTION OF MATERIAL & SURFACE ELEVATION	GEOLOGIC ORIGIN	N	WL	SAMPLE NO.	SAMPLE TYPE	LAB TESTS W	LAB TESTS D	LAB TESTS L.L./P.L.	LAB TESTS Qu
0	SAND, brown, fine grained, moist, medium dense to dense, trace of organics (SP-SM)	FILL	20		1	FA				
			21		2	SB				
			11	▼	3	SB				
			14		4	SB				
11	PEAT, brown, wet (Pt)	SWAMP	1		5	SB				
			1		6	NS				
			1		7	SB				
23	SAND, dark brown, fine to medium grained, w/ gravel, waterbearing, very dense (SP-SM)		39		8	SB				
			70		9	SB				M.A.
32	SAND, brown, fine grained, waterbearing, very dense (SP-SM)	LAKE DEPOSIT	167		10	SB				
			125		11	SB				
			54		12	SB				
			54		13	SB				
			75		14	SB				
61	(End of Boring)		56		15	SB				
					16	SB				

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILED DEPTHS	WATER LEVEL
4/13		11'	9½'	None	to	9'
					to	
					to	
					to	

START 4/13/87 COMPLETE 4/14/87

METHOD 10:00

3¼" HSA to 29½'

JW/DM to 59½'

CREW CHIEF L. Anderson

lakehead testing laboratory, inc.

JOB NO. 910 87-271 VERTICAL SCALE 1" = 10' LOG OF TEST BORING NO. 87-2

PROJECT PROPOSED CONVENTION CENTER - DULUTH, MINNESOTA

DEPTH IN FEET	DESCRIPTION OF MATERIAL (SURFACE ELEVATION 101.4')	GEOLOGIC ORIGIN	N	WL	SAMPLE NO.	SAMPLE TYPE	W	D	L.L./P.L.	Qu
0	SAND, brown, fine grained, moist (SP-SM)	FILL			1	FA				
2	SAND, black, fine to medium grained, w/cinders, organics, moist, medium dense to very dense (SP-SM)	FILL	39		2	SB				
		FILL	23		3	SB				
8		FILL	14	▼	4	SB				
	PEAT, brown, wet	SWAMP	8		5	SB				
		SWAMP	5		6	SB				
		SWAMP	3		7	SB				
		SWAMP	12		8	SB				
23	SAND, reddish brown, fine to medium grained, w/gravel, wet, dense (SP-SM)	LAKE DEPOSIT	20		9	SB				
		LAKE DEPOSIT	28		10	SB				M.A.
32	SAND, brown, fine grained, waterbearing, medium dense to very dense, trace of organics (SP-SM)	LAKE DEPOSIT	87		11	SB				
		LAKE DEPOSIT	62		12	SB				
		LAKE DEPOSIT	18		13	SB				M.A.
	NOTE: Lense of gravel at 60'	LAKE DEPOSIT	75		14	SB				
		LAKE DEPOSIT	50		15	SB				
		LAKE DEPOSIT	46		16	SB				
61	(End of Boring)									

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILED DEPTHS	WATER LEVEL
4/13		11'	9½'	None	to	9'
					to	
					to	
					to	

START 4/13/87 COMPLETE 4/13/87

METHOD 3¼" HSA to 29½'

DM/JW to 59½'

3:00

CREW CHIEF L. Anderson

lakehead testing
laboratory, inc.

JOB NO. 910 87-271 VERTICAL SCALE 1" = 10' LOG OF TEST BORING NO. 87-3

PROJECT PROPOSED CONVENTION CENTER - DULUTH, MINNESOTA

DEPTH IN FEET	DESCRIPTION OF MATERIAL — SURFACE ELEVATION 107.7'	GEOLOGIC ORIGIN	N	WL	SAMPLE NO.	SAMPLE TYPE	LABORATORY TESTS W	D	L.L./P.L.	Qu
	SAND, brown, fine grained, moist, dense to very dense (SP-SM)	FILL	43		1	SB				
			27		2	SB				
			42		3	SB				
9			91		4	SB				
	SAND, dark brown, fine to medium grained, moist to wet, w/Cinders, glass, metal, organics, loose to very dense (SP-SM)		34	▼	5	SB				
			6		6	SB				
			4		7	SB				
22										
	PEAT, brown, wet	SWAMP	4		8	SB				
30			18		9	SB				
	SAND, dark brown, fine to medium grained, w/gravel, wet, dense to very dense (SP-SM)		53		10	SB				M.A.
37										
	SAND, brown, fine grained, waterbearing, very dense (SP-SM)	LAKE DEPOSIT	39		11	SB				
			125		12	SB				
			48		13	SB				
			69		14	SB				
61			49		15	SB				
	(End of Boring)									

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILED DEPTHS	WATER LEVEL
4/13		16'	14½'	None	to	14'
					to	
					to	
					to	

START 4/13/87 COMPLETE 4/13/87

METHOD • 3:40

3¼" HSA to 34½'

DM/JW to 59½'

CREW CHIEF L. Anderson

lakehead testing laboratory, inc.

JOB NO. 910 87-271 VERTICAL SCALE 1" = 10' LOG OF TEST BORING NO. 87-4

PROJECT PROPOSED CONVENTION CENTER - DULUTH, MINNESOTA

DEPTH IN FEET	DESCRIPTION OF MATERIAL & SURFACE ELEVATION 100.1	GEOLOGIC ORIGIN	N	WL	SAMPLE NO.	SAMPLE TYPE	LABORATORY TESTS W	D	L.L. / P.L.	Qu
0	SAND, brown, fine grained, moist, dense (SP-SM)	FILL	30		1	FA				
4					2	SB				
	SAND, dark brown, fine grained, w/gravel, cinders, organics, moist to wet, loose to dense (SP-SM)		20	▼	3	SB				
			8		4	SB				
11.5			7		5	SB				
13.5	PEAT, brown, wet	SWAMP	2		6	SB				
16	SAND, brown, fine grained, moist to wet, dense (SP-SM)	LAKE DEPOSIT	19		7	SB				
	(End of Boring)									

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILED DEPTHS	WATER LEVEL
4/15	11:00	16'	14½'	None	to	6'
4/15	11:10	16	None	7'	to	6
					to	
					to	

START 4/15/87 COMPLETE 4/15/87

METHOD 3¼" HSA

11:00

CREW CHIEF L. Anderson

lakehead testing laboratory, inc.

JOB NO. 910 87-271 VERTICAL SCALE 1" = 10' LOG OF TEST BORING NO. 87-5

PROJECT PROPOSED CONVENTION CENTER - DULUTH, MINNESOTA

DEPTH IN FEET	DESCRIPTION OF MATERIAL & SURFACE ELEVATION 99.0	GEOLOGIC ORIGIN	N	WL	SAMPLE NO.	SAMPLE TYPE	LABORATORY TESTS W	D	L.L./P.L.	Qu
0	SAND, brown, fine grained, moist to wet, dense to loose (SP-SM)	FILL	19		1	FA				
			23	▼	2	SB				
			6		3	SB				
	Note: Waterbearing below 6'		2		4	SB				
			3		5	SB				
14.5			2		6	SB				
16	SAND, brown, fine grained, wet, loose (SM)				7	SB				
	(End of Boring)									

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILED DEPTHS	WATER LEVEL
4/15	9:50	16'	14½'	None	to	6'
4/15	10:00	16	None	7'	to	6
					to	
					to	

START 4/15/87 COMPLETE 4/15/87

METHOD 3¼" HSA

9:50

CREW CHIEF L. Anderson

lakehead testing laboratory, inc.

JOB NO. 910 87-271 VERTICAL SCALE 1" = 10' LOG OF TEST BORING NO. 87-6

PROJECT PROPOSED CONVENTION CENTER - DULUTH, MINNESOTA

DEPTH IN FEET	DESCRIPTION OF MATERIAL (SURFACE ELEVATION 98.9')	GEOLOGIC ORIGIN	N	WL	SAMPLE NO.	SAMPLE TYPE	LAB TESTS W	D	L.L./P.L.	Qu
0										
2	SAND, brown, fine to med. grained, moist (SM)	FILL			1	FA				
	SAND, brown, fine grained, moist, dense to loose (SP-SM)		24		2	SB				
6.5			8	▼	3	SB				
	SAND, dk brown, fine to med. grained, w/gravel, cinders, peat, waterbearing, loose to medium dense (SP-SM)		12		4	SB				
11.5			4		5	SB				
	SAND, brown, fine grained, water-bearing, loose to medium dense, w/lense of gravel (SP-SM)		7		6	SB				
16			14		7	SB				
	(End of Boring)									

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILED DEPTHS	WATER LEVEL
4/15	12:40	16'	14½'	None	to	8'
4/15	12:50	16	None	7'	to	6
					to	
					to	

START 4/15/87 COMPLETE 4/15/87 • 12:40

METHOD 3¼" HSA

CREW CHIEF L. Anderson

lakehead testing laboratory, inc.

JOB NO. 910 87-271 VERTICAL SCALE 1" = 10' LOG OF TEST BORING NO. 87-7

PROJECT PROPOSED CONVENTION CENTER - DULUTH, MINNESOTA

DEPTH IN FEET	DESCRIPTION OF MATERIAL SURFACE ELEVATION 100.7'	GEOLOGIC ORIGIN	N	WL	SAMPLE NO.	SAMPLE TYPE	LABORATORY TESTS W	D	L.L./P.L.	Qu
0					1	FA				
	SAND, brown, fine grained, moist to wet, dense to very dense (SP-SM)		26		2	SB				
			36	▼	3	SB				
7		FILL								
	SAND, dark brown to black, fine to medium grained, waterbearing, med. dense to dense, w/peat, cinders (SP-SM)		35		4	SB				
			9		5	SB				
12.5			20		6	SB				
	SAND, brown, fine to med. grained, waterbearing, dense, w/gravel (SP-SM)	LAKE DEPOSIT	24		7	SB				
16	(End of Boring)									

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILED DEPTHS	WATER LEVEL
4/15	1:55	16'	14½'	None	to	6'
4/15	2:05	16	None	7'	to	6
					to	
					to	

START 4/15/87 COMPLETE 4/15/87

METHOD 3¼" HSA • 1:55

CREW CHIEF L. Anderson

lakehead testing laboratory, inc.

JOB NO. 910 87-271 VERTICAL SCALE 1" = 10' LOG OF TEST BORING NO. 87-8

PROJECT PROPOSED CONVENTION CENTER - DULUTH, MINNESOTA

DEPTH IN FEET	DESCRIPTION OF MATERIAL & SURFACE ELEVATION 97.5'	GEOLOGIC ORIGIN	N	WL	SAMPLE NO.	SAMPLE TYPE	LAB TESTS W	D	L.L./P.L.	Qu
0										
2	SAND, brn, fine grained, w/gravel & cobbles (SM)				1	FA				
4	SAND, brn, fine grained, moist, very dense (SP-SM)		32		2	SB				
5	WOOD		51	▼	3	SB				
	SAND, dark brown, fine grained, wet, very dense to loose, w/ organics (SM)	FILL			4	SB				
12			6		5	SB				
	SAND, brown, fine to medium grained, waterbearing, dense, w/gravel (SP-SM)	LAKE DEPOSIT	19		6	SB				
16			19		7	SB				
	(End of Boring)									

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILED DEPTHS	WATER LEVEL
4/15	3:55	16'	14½'	None	to	6'
4/15	4:00	16	None	8"	to	6
					to	
					to	

START 4/15/87 COMPLETE 4/15/87

METHOD 3¼" HSA

3:55

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SIEVE ANALYSIS TESTS

PROJECT DULUTH STATE CONVENTION CENTER
DULUTH, MINNESOTA

DATE May 4, 1987

REPORTED TO Duluth Convention Center Design Team, Duluth, MN

JOB NO. 910 87-271

BORING NO.	TH-1	TH-2	TH-2	TH-3
SAMPLE NO.	10	10	18	10
DEPTH (ft)	29½-31	29½-31	44½-46	34½-36
TYPE OF SAMPLE	SB	SB	SB	SB
CLASSIFICATION (ASTM: D 2487)				
Symbol	SP-SM	SP-SM	SP-SM	SP-SM
Description	SAND, dark, fine to medium grained, w/grave	SAND, reddish brown, fine to medium grained, w/gravel	SAND, brown, fine grained	SAND, dk brown, fine to medium grained, w/ gravel
MECHANICAL ANALYSIS:				
Dry Weight of Total Sample (grams)	131	84	110	133
Based on Total Sample				
Gravel - % (On # 4)	13	37	0.0	35
Based on - Total Sample				
Sand - % (# 4 – #10)	9.9	12	0.4	21
(# 10 – #40)	6.8	9.0	0.4	9.4
(# 40 – #100)	37	28	56	23
(# 100 – #200)	7.0	4.8	33	5.7
Fines - % (# 200 Down)	8.1	8.7	10	5.5

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JOB NO. 400 86-682 VERTICAL SCALE 1" = 6 Ft LOG OF TEST BORING NO. 86-5

PROJECT ENTRY PROTECTION, MINNESOTA SLIP - WATERFRONT, DULUTH, MN

DEPTH IN FEET	DESCRIPTION OF MATERIAL & SURFACE ELEVATION 606+	GEOLOGIC ORIGIN	N	WL	SAMPLE NO.	SAMPLE TYPE	LABORATORY TESTS W	D	L.L. / P.L.	Qu
0	FILL-SAND & GRAVEL, dark brown, loose, with organics, wet to water-bearing	FILL	-		1	FA				
			8	▼	2	SB				
			7		3	SB				
			9		4	SB				
10	PEAT, brown, wet (PT)	SWAMP	5		5	SB				
			2		6	SB				
16	SAND W/SILT, brown, fine to coarse grained, waterbearing, with gravel, medium dense to dense (SP-SM)	LAKE DEPOSIT	15		7	SB				
			16		8	SB				
			25		9	SB				
28	SAND WITH SILT, brown, fine grained, water-bearing, trace of organics, very dense (SP-SM)		69		10	SB				
			64		11	SB				
41	(End of Boring)		62		12	SB				

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILED DEPTHS	WATER LEVEL
8/29	10:15	6'	4½'	4½'	to	4'
					to	
					to	
					to	

START 8-29-86 COMPLETE 8-29-86 2:30

METHOD 3-1/4" HSA to 24';
DM 23-39½'

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lakehead testing laboratory, inc.

JOB NO. 400 86-682 VERTICAL SCALE 1" = 6 Ft LOG OF TEST BORING NO. 86-6

PROJECT ENTRY PROTECTION, MINNESOTA SLIP - WATERFRONT, DULUTH, MN

DEPTH IN FEET	DESCRIPTION OF MATERIAL (SURFACE ELEVATION 606+)	GEOLOGIC ORIGIN	N	WL	SAMPLE NO.	SAMPLE TYPE	LAB TESTS W	D	L.L./P.L.	Qu
0	PROBABLY FILL - SAND W/SILT, dark brown, very loose to medium dense, wet to water-bearing	PROBABLY FILL	-	▼	1	FA				
			13		2	SB				
			2		3	SB				
16	SAND W/SILT, brown, fine to coarse grained, waterbearing, with gravel, medium dense to very dense (SP-SM)	LAKE DEPOSIT	16		4	SB				
			55		5	SB				
26	SAND WITH SILT, brown, fine grained, water-bearing, trace of organics, very dense (SP-SM)		32		6	SB				
			57		7	SB				
			62		8	SB				
41	(End of Boring)									

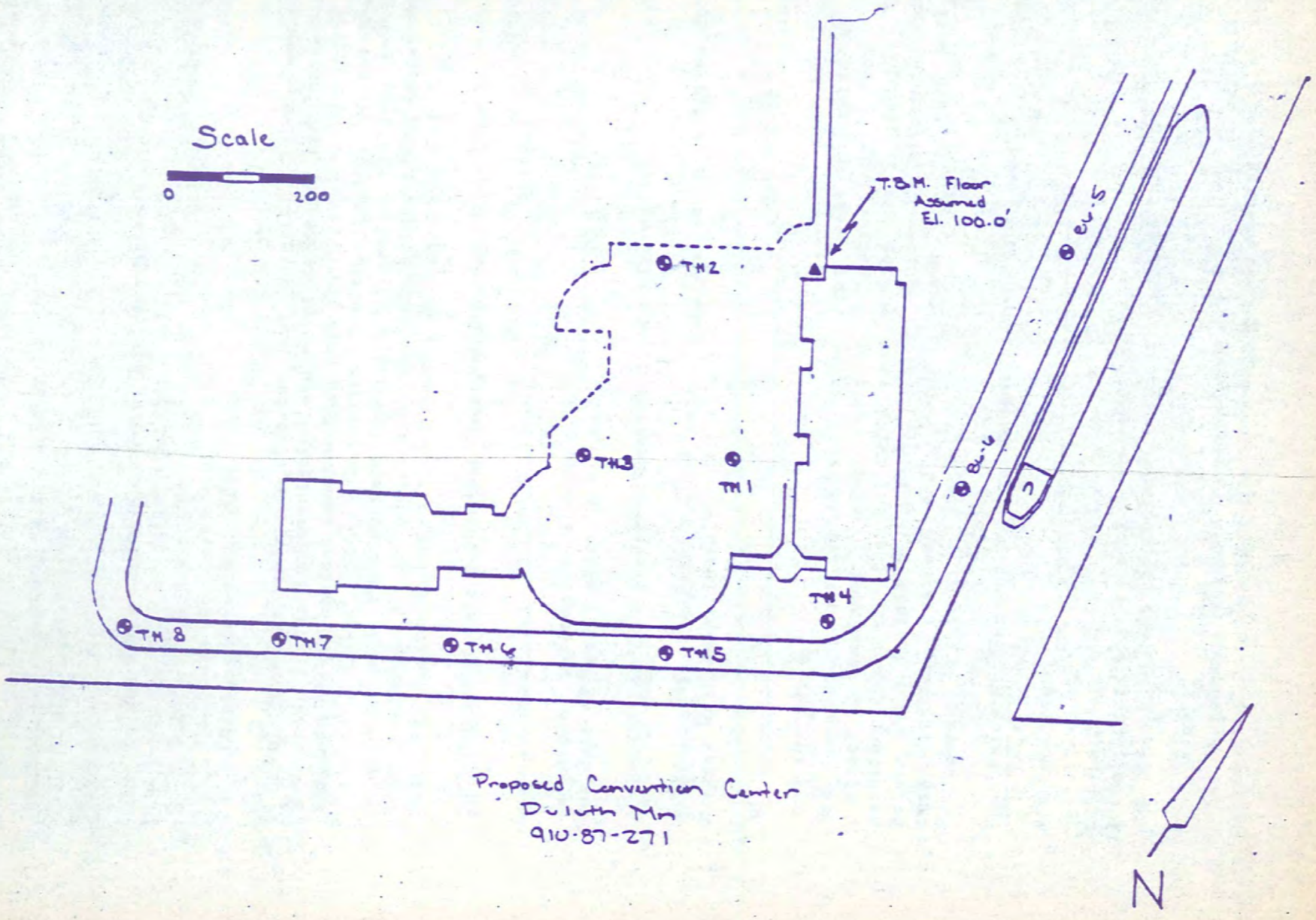
WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILED DEPTHS	WATER LEVEL
8/29	3:00	6'	4½'	4½'	to	4'
					to	
					to	
					to	

START 8-29-86 COMPLETE 8-29-86

METHOD 3 1/4" HSA to 24'; DM 22-39½' • 4:45

CREW CHIEF L. Anderson



Proposed Convention Center
Duluth Mn
910-87-271

BID PROPOSAL FORM

The purpose of this BID PROPOSAL FORM is to present Unit Costs for installation of each system and materials not purchased by Owner. Miscellaneous materials required by the Contractor not on the bid form shall remain the responsibility of the contractor and are to be included in the Unit Costs for this project. Contractor is responsible for providing final quantities of materials based on their bid.

NOTE: All costs are to be considered final installed or final installed & removal costs. Include cost for all materials not purchased by owner, hardware, shipping, fabrication, labor, equipment, insurance, permits state and local taxes, overhead and profit to properly install items listed under each system. Contractor shall determine earthwork quantities necessary to construct the project per the Construction Documents and as indicated in the Geotechnical Report.

LINE ITEM NO.	SPEC ITEM NO.	ITEM DESCRIPTION		UNIT	TOTAL ESTIMATED QUANTITIES	QUANTITIES				UNIT PRICE	COST				TOTAL ESTIMATED COST
						BAYWALK	ROADWAY	EDA	STORM SEWER		BAYWALK	ROADWAY	EDA	STORM SEWER	
MOBILIZATION & MATERIAL HANDLING															
1	2021.501	EDA FUNDED MOBILZATION		LUMP SUM	1			1							
2	2021.501	NON-EDA FUNDED EDA MOBILIZATION		LUMP SUM	1	1									
3	na	MATERIAL HANDLING		LUMP SUM	1	1									
									MOBILIZATION & MATERIAL HANLING SUBTOTAL						
CIVIL															
C1	2101.502	GRUBBING		TREE	44	44									
C2	2104.502	REMOVE PLANTER		EACH	3	3									
C3	2104.502	REMOVE CONCRETE PLANTER		EACH	5	5									
C4	2104.502	SALVAGE BENCH		EACH	3	3									
C5	2104.502	SALVAGE BOUY		EACH	1	1									
C6	2104.502	SALVAGE SIGN		EACH	8	1	7								
C7	2104.502	REMOVE MANHOLE		EACH	2				2						
C8	2104.502	REMOVE CATCH BASIN		EACH	7				7						
C9	2104.502	REMOVE HYDRANT		EACH	2	1	1								
C10	2104.502	REMOVE GATE VALVE AND BOX		EACH	1		1								
C11	2104.502	SALVAGE LIGHTING UNIT		EACH	12	11	1								
C12	2104.502	REMOVE LIGHT FOUNDATION		EACH	12	11	1								
C13	2104.503	REMOVE CURB AND GUTTER		LIN FT	140		140								
C14	2104.503	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)		LIN FT	389	10	379								
C15	2104.503	SAWING CONCRETE PAVEMENT (FULL DEPTH)		LIN FT	1285	88	1197								
C16	2104.503	REMOVE WATER MAIN		LIN FT	244	90	154								
C17	2104.503	REMOVE SEWER PIPE (STORM)		LIN FT	618				618						
C18	2104.503	REMOVE RETAINING WALL		LIN FT	141	141									
C19	2104.503	REMOVE FENCE		LIN FT	353	353									
C20	2104.507	REMOVE RIPRAP		CU YD	249	249									
C21	2104.518	REMOVE CONCRETE RUBBLE		SQ FT	5400	5400									
C22	2104.518	REMOVE CONCRETE PAVEMENT		SQ FT	25848		25848								
C23	2104.518	REMOVE BITUMINOUS PAVEMENT	(P)	SQ FT	840		840								
C24	2104.518	REMOVE PAVEMENT		SQ FT	2093		2093								
C25	2104.518	REMOVE BITUMINOUS WALK		SQ FT	2134	2134									
C26	2104.518	REMOVE CONCRETE SIDEWALK		SQ FT	29514	29514									
C27	2104.518	REMOVE CONCRETE DRIVEWAY PAVEMENT	(P)	SQ FT	159		159								
C28	2104.618	SALVAGE BOARDWALK		SQ FT	5793	5793									
C29	2104.602	SALVAGE STATUE AND BASE		EACH	1	1									
C30	2104.602	REMOVE STATUE FOUNDATION		EACH	1	1									
C31	2104.602	REMOVE STEEL PILES		EACH	72	72									
C32	2104.602	REMOVE CONCRETE POSTS		EACH	62	62									
C33	2106.507	COMMON EMBANKMENT (CV)		CU YD	2296	2296									
C34	2106.507	EXCAVATION - COMMON	(P)	CU YD	8557	7724	833								
C35	2108.504	GEOTEXTILE FABRIC TYPE 4		SQ YD	4590	4590									
C36	2108.504	GEOTEXTILE FABRIC TYPE 7		SQ YD	7538	7252	286								
C37	2211.507	AGGREGATE BASE (CV) CLASS 5	(P)	CU YD	1914	1336	578								
C38	2212.507	DRAINABLE AGGREGATE BASE, TYPE OGAB	(P)	CU YD	4619	4619									
C39	2301.502	DOWEL BAR		EACH	969		969								
C40	2301.503	INTEGRANT CURB DESIGN B6		LIN FT	505		505								

C41	2301.503	INTEGRANT CURB DESIGN D4		LIN FT	91		91								
C42	2301.504	CONCRETE PAVEMENT 8"		SQ YD	1465		1465								
C43	2301.508	SUPPLEMENTAL PAVEMENT REINFORCEMENT		POUND	1320		1320								
C44	2301.602	DRILL & GROUT REINF BAR (EPOXY COATED)		EACH	389		389								
C45	2302.503	JOINT & CRACK REPAIR (TYPE B3)		LIN FT	200		200								
C46	2302.503	FULL DEPTH REPAIR (TYPE CD-LV)		LIN FT	200		200								
C47	2302.504	PARTIAL DEPTH REPAIR (TYPE BA)		SQ YD	65		65								
C48	2360.509	TYPE SP 9.5 WEARING COURSE MIXTURE (3,C)		TON	80	50	30								
C49	2411.607	CONCRETE STEPS		CU YD	141	141									
C50	2451.607	MEDIUM FILTER AGGREGATE (CV)		CU YD	707	707									
C51	2503.503	12" RC PIPE SEWER DESIGN 3006 CLASS V		LIN FT	204				204						
C52	2503.503	15" RC PIPE SEWER DESIGN 3006 CLASS V		LIN FT	38				38						
C53	2503.503	30" RC PIPE SEWER DESIGN 3006 CLASS V		LIN FT	101				101						
C54	2503.503	48" RC PIPE SEWER DESIGN 3006 CLASS V		LIN FT	231				236						
C55	2503.602	CONNECT TO EXISTING STORM SEWER		EACH	8				8						
C56	2504.602	HYDRANT ASSEMBLY		EACH	2	1	1								
C57	2504.602	CONNECT TO EXISTING WATER MAIN		EACH	3	1	2								
C58	2504.602	2" CORPORATION STOP		EACH	2	2									
C59	2504.602	1" CURB STOP AND BOX		EACH	2	2									
C60	2504.602	1" BLOW-OFF		EACH	2	2									
C61	2504.602	ABOVE GROUND METER AND BACKFLOW PREVENTER		LUMP SUM	1	1									
C62	2504.603	2" TYPE PE PIPE		LIN FT	166	166									
C63	2504.603	8" WATERMAIN DUCTILE IRON CL 52		LIN FT	98		98								
C64	2504.604	3" POLYSTYRENE INSULATION		SQ YD	90		90								
C65	2506.502	CASTING ASSEMBLY		EACH	12				12						
C66	2506.502	ADJUST FRAME AND RING CASTING		EACH	2	1	1								
C67	2506.503	CONSTRUCT DRAINAGE STRUCTURE DESIGN 48-4020		LIN FT	34				34						
C68	2506.503	CONSTRUCT DRAINAGE STRUCTURE DESIGN 60-4020		LIN FT	13				13						
C69	2506.503	CONSTRUCT DRAINAGE STRUCTURE DESIGN 72-4020		LIN FT	6				6						
C70	2506.503	CONSTRUCT DRAINAGE STRUCTURE DESIGN 84-4020		LIN FT	24				24						
C71	2520.507	LEAN MIX BACKFILL		CU YD	27	7	20								
C72	2521.518	4" CONCRETE WALK		SQ FT	14713	9511	5202								
C73	2521.518	6" CONCRETE WALK		SQ FT	19988	19647	341								
C74	2531.503	CONCRETE CURB AND GUTTER DESIGN B624		LIN FT	56		56								
C75	2531.503	CONCRETE CURB AND GUTTER DESIGN D424		LIN FT	951		951								
C76	2531.503	CONCRETE CURB DESIGN V6		LIN FT	13	13									
C77	2531.504	6" CONCRETE DRIVEWAY PAVEMENT		SQ YD	17		17								
C78	2531.618	TRUNCATED DOMES		SQ FT	82	50	32								
C79	2540.601	PREFABRICATED LOADING DOCK		LUMP SUM	1	1									
C80	2540.603	BOARDWALK - CONCRETE BEAM		LIN FT	5271	5271									
C81	2540.603	BOARDWALK - OUTER CONCRETE BEAM		LIN FT	1601	1601									
C82	2540.603	TIMBER NAILER		LIN FT	6872	6872									
C83	2540.618	INSTALL BOARDWALK		SQ FT	14041	14041									
C84	2540.618	FLAGSTONE WITH DECOMPOSED GRANITE		SQ FT	2757	2757									
C85	2545.511	LIGHTING UNIT TYPE SPECIAL		EACH	1		1								
C86	2545.515	LIGHT FOUNDATION TYPE SPECIAL		EACH	1		1								
C87	2545.523	2" NON-METALLIC CONDUIT		LIN FT	192		192								
C88	2545.531	UNDERGROUND WIRE 1 COND NO 8		LIN FT	808		808								
C89	2545.531	UNDERGROUND WIRE 1 COND NO 12		LIN FT	110		110								
C90	2564.518	SIGN PANELS TYPE C		SQ FT	64		64								
C91	2564.602	INSTALL SIGN		EACH	1		1								
C92	2573.501	STABILIZED CONSTRUCTION EXIT		LUMP SUM	2	1	1								
C93	2573.502	CULVERT END CONTROLS		EACH	1	1									
C94	2573.502	STORM DRAIN INLET PROTECTION		EACH	16	16									
C95	2573.503	SEDIMENT CONTROL LOG TYPE STRAW		LIN FT	629	629									
C96	2573.503	FLOTATION SILT CURTAIN TYPE STILL WATER		LIN FT	148	148									
C97	2574.507	COMMON TOPSOIL BORROW		CU YD	252	252									
C98	2582.503	4" SOLID LINE PAINT (WR)		LIN FT	217		217								

C99	2582.503	4" DOUBLE SOLID LINE PAINT (WR)		LIN FT	1104		1104								
C100	2582.518	CROSSWALK PAINT GROUND IN (WR)		SQ FT	178		178								
										CIVIL SUBTOTAL					
CIVIL TRANSPORTATION															
CT1	SCT-09	Steel Sheet Pile Installation (Installation)		SF	63250			63250							
CT2	SCT-02	Double Channel Wale (Installation)		LF	1210			1210							
CT3	SCT-07	Steel Pipe Piles (Installation)		LF	5198			5198							
CT4	SCT-06	Tie Rods and Hardware		LF	3700			3700							
CT5	SCT-08	Helical Anchors		EACH	162			162							
CT6	SCT-02	Bent Plate Steel Pile Cap (Installation)		LF	1210			1210							
CT7	na	Chain Guardrail Along Dock Wall		EACH	110			110							
CT8	na	Solid Guardrail Along Dock Wall		LF	276			276							
CT9	SCT-01	Concrete Storm Retaining Wall		CY	620			620							
CT10	SCT-04	Storm Doors @ Retaining Wall Opening Locations (8 total)		LS	1			1							
CT11	SCT-11	New Bollards and New Foundations		EACH	17			17							
CT12	SCT-07	Steel H Pile for Bollards HP 12 x 63 @ Bollard Locations		LF	1938			1938							
CT13	na	Steel H Pile A Frame HP 14 x 89 @ Bollard Locations		LF	3927			3927							
CT14	na	New Dock Cleats		EACH	26	26									
CT15	na	Open Graded Aggregate Base		CY	3350	3350									
CT16	SCT-03	Single Row Timber (Rub Rail Fender)		LF	1030			1030							
CT17	na	Safety Ladder		EACH	10	10									
CT18	SCT-10	Fenders		EACH	4	4									
CT19	na	Fender Panel Mounting		EACH	4	4									
CT20	SCT-02	Transfer Beam over H-Piles (Materials & Installation)		LF	215			215							
CT21	SCT-07	Steel H Piles HP 12 x 53 for Transfer Beam		LF	1073			1073							
CT22	SCT-02	Corner Brace W12x45		LF	25	25									
CT23	na	Existing Dock Demolition - Cut and Remove Existing SSP		LF	962			962							
CT24	na	Existing Dock Demolition - Remove Existing Structures in Conflict		LF	204			204							
CT25	na	Existing Dock Demolition - Remove existing failed sheet pile		LS	1			1							
CT26	SCH-01	Bedding Stone		TN	100	100									
CT27	SCH-01	Filter Stone		TN	375	375									
CT28	SCH-01	Armor Stone		TN	510	510									
CT29	2108.504	Geotextile		SY	500	500									
CT31	2574.507	Topsoil Borrow		CY	50	50									
CT32	na	Outfall Alcove		LS	1	1									
CT33	na	Seawall Openings for Storm Pipes & Cooling Pipe		EACH	4	4									
CT34	na	Flowable Fill Sheet Pile Outpans		CY	14	14									
CT35		6" Corrugated Steel Pipe		LF	16	16									
CT36		Excavation - Rock		LS	1	1									
CT37		Salvage - Rock		LS	1	1									
										CIVIL TRANSPORTATION SUBTOTAL					
LANDSCAPE															
L1	SA-8	Pergola		EA	1	1									
L2	na	Weathered Steel Wall Edge		LF	90	90									
L3	SA-6	Artificial Turf		SF	800	800									
L4	SA-9	Turf Sod		SQ	20418	20418									
L5	na	Planting Bed - Native Perrenials		0	0	0									
L6	SA-10	Hardwood Mulch - 3"		CY	80	80									
L7	SA-10	Topsoil - 4"		CY	350	350									
L8	SA-10	#1 Perennial		EA	2435	2435									
L9	SA-10	#2 Perennial		EA	165	165									
L10	na	Structural Soils		CY	450	450									
L11	SA-10	Planting Soils		CY	1000	1000									
L12	SA-10	Coniferous Tree		EA	3	3									
L13	SA-10	Deciduous Trees		EA	25	25									
L14	SA-10	Steel Planting Bed Edging		LF	150	150									
L15	na	Water Meter Enclosure		EA	1	1									
L16	SA-8	Trash/Recycling Receptable		EA	16	16									

L17	SA-8	Backless Bench 2		EA	6	6										
L18	SA-8	Bike Racks		EA	8	8										
L19	SA-8	Drinking Fountains		EA	1	1										
L20	SA-8	Backless Bench		EA	2	2										
L21	SA-8	Backed Bench		EA	8	8										
L22	SA-8	Wave Seating		EA	10	10										
L23	SA-8	Stacked Bench Seating		EA	1	1										
L24	SA-8	Picnic Table		EA	4	4										
L25	SA-8	Lounge Seating		EA	17	17										
L26	SA-8	Seat topper		EA	25	25										
L27	SA-8	LOLL Adirondack Chairs		EA	14	14										
L28	na	Seat Wall (2'x2') with decorative finish		LF	134	134										
L29	na	Seat Wall (3'x2') with decorative finish		LF	70	70										
L30	na	Seat Wall (20"x2')		LF	295	295										
L31	SA-2	Wall Mounted Monument Sign		EA	1	1										
L32	SA-2	Freestanding Monument Sign		EA	1	1										
L33	na	Inset Topographic Metal Wall Markings		EA	3	3										
L34	SA-7	Solid Wall Mounted Security Gate		EA	2	2										
L35	SA-7	Foldable Wall Mounted Security Gate		EA	2	2										
L36	na	Seat Wall (4'x2')		LF	282.5	282.5										
L37	SA-1	Railings		EA	4	4										
L38	SA-8	Removable Traffic Bollard		EA	5	5										
L39	SA-1	Surface Mounted Bar Railing		LF	30	30										
L40		Cobblestone Paver		SF	950	950										
										LANDSCAPE SUBTOTAL						
STRUCTURAL																
S1	2104.501	Remove Great Lakes Aquarium Loading Dock Retaining Wall		LS	1	1										
S2	na	Remove & Replace GLA Loading Dock Concrete Pavement		LS	1	1										
S3	SCT-01	New Retaining Wall at Cul-de-sac		CY	165	165										
S4	SCT-08	New Retaining Wall at Cul-de-sac Helical Piles		Each	25	25										
S5	SCT-01	Boardwalk Retaining Wall Section		CY	56	56										
S6	SCT-01	Pergola Foundations		CY	24	24										
										STRUCTURAL SUBTOTAL						
ELECTRICAL																
E1	265600	DECORATIVE POLE LIGHTING		EACH	11	11										
E2	260500	RELOCATE EXISTING POST TOP LIGHTING		EACH	2	2										
E3	260533	VENDOR POWER & COMMUNICATIONS CABINETS		EACH	2	2										
E4	na	UTILITY WORK (4" CONDUIT PROVISIONS ONLY)		LIN FT	0	0										
E5	262416	200A CIRCUIT BREAKERS		EACH	2	2										
E6	260519	SITE LIGHTING WIRE #8		LIN FT	1500	1500										
E7	260533	SITE LIGHTING CONDUIT 2"		LIN FT	1500	1500										
E8	260519	VENDOR CABINET FEEDER #4/0		LIN FT	500	500										
E9	260533	VENDOR FEEDER CONDUIT 3"		LIN FT	500	500										
E10	262726	20A POLE MTD RECEPT		EACH	6	6										
E11	262726	50A POLE MTD RECEPT		EACH	6	6										
E12	260519	20A POLE MTD RECEPT WIRE #6		LIN FT	1000	1000										
E13	260533	20A POLE MTD RECEPT CONDUIT 2"		LIN FT	1000	1000										
E14	260519	50A POLE MTD RECEPT WIRE #6		LIN FT	1000	1000										
E15	260533	50A POLE MTD RECEPT CONDUIT 2"		LIN FT	1000	1000										
E16	271500	SECURITY CAMERA FIBER		LIN FT	500	500										
E17	271500	SECURITY CAMERA CAT 5E		LIN FT	1500	1500										
E18	271500	VENDOR FIBER		LIN FT	500	500										
E19	270500	VENDOR RUGGED SWITCH		EACH	2	2										
E20	270500	VENDOR CABINET PUNCH DOWN		EACH	4	4										
E21	260533	HAND HOLES		EACH	6	6										
E22	265600	PERGOLA LIGHTING FEATURE		EACH	1	1										
E23	265600	STEP LIGHTING		EACH	2	2										
E24	260500	MARINE PEDESTALS - RE-INSTALL VISTA		EACH	2	2										

E25	260500	DEMOLITION		EACH	1	1									
E26	265600	RETAINING WALL LIGHTING		EACH	9	9									
E27	265600	WAVE WALL LIGHTING		EACH	21	21									
E28	260943	LIGHTING CONTROL SYSTEM		EACH	1	1									
									ELECTRICAL SUBTOTAL						
											BAYWALK	**ROADWAY**	**EDA**	**STORM SEWER**	
									TOTAL PROJECT COST						
									TOTAL BASE BID (WRITTEN OUT IN WORDS)						
ADD ALTERNATES - Order of Add Alternatives will be determined by the City based on bid price															
AACT35	SCT-10	Fenders		EACH	2	2									
AACT36		Fender Panel Mounting Frame		EACH	2	2									
AAL01		Stacked Granite wall (60 feet)		LUMP SUM	1	1									
AAL02		Seat Wall (2'x2')		LF	132	132									
ABL01		Custom Hammock Poles		EA	6	6									
ACL01		Backless Bench		EA	2	2									
ACL02		Backed Bench		EA	4	4									
ACL03		Stacked Bench Seating		EA	1	1									
ADL01		Perforated Metal Panel		EA	2	2									
AAE01		IRVIN POWER & COMMUNICATIONS CABINET		EACH	1	1									
AAE02		POWER PEDESTAL		EACH	1	1									
									ADD ALTERNATE TOTAL						