COMMISSION ON STORM WATER ISSUES
VIA VIDEOCONFERENCE
Tuesday, December 1, 2020
6:30 p.m.

IMPORTANT NOTICE REGARDING PUBLIC ACCESS & PARTICIPATION

On March 20, 2020, City Manager Gregory Rose declared a State of Emergency for the City of University City due to the COVID-19 Pandemic. Due to the ongoing efforts to limit the spread of the COVID-19 virus, the December 1, 2020 meeting will be conducted via videoconference.

Observe and/or Listen to the Meeting (your options to join the meeting are below):

Webinar via the link below:

https://us02web.zoom.us/j/87941258159?pwd=MGVrdkptRE9Ua0d6dW5JekFMUFF4UT09

Password: 989598

Audio Only Call

iPhone one-tap :
US: +13126266799,,87941258159# or +19292056099,,87941258159#

Or Telephone:
US: +1 312 626 6799 or +1 929 205 6099 or +1 301 715 8592 or +1 346 248 7799 or +1 669 900 6833 or +1 253 215 8782 or 888 788 0099 (Toll Free) or 877 853 5247 (Toll Free)
Webinar ID: 879 4125 8159

Citizen Participation and Public Hearing Comments:
Those who wish to provide a comment during the "Citizen Participation" portion as indicated on the agenda; may provide written comments to Sinan Alpaslan ahead of the meeting.

ALL written comments must be received **no later than 12:00 p.m. the day of the meeting.** Comments may be sent via email to: salpaslan@ucitymo.org, or mailed to the City Hall – 6801 Delmar Blvd. – Attention: Sinan Alpaslan. Such comments will be provided to Board/Commission member prior to the meeting. Comments will be made a part of the official record and made accessible to the public online following the meeting.

Please note, when submitting your comments, a **name and address must be provided.** Please also note if your comment is on an agenda or non-agenda item. If a name and address are not provided, the provided comment will not be recorded in the official record.

The City apologizes for any inconvenience the meeting format change may pose to individuals, but it is extremely important that extra measures be taken to protect employees, residents, and elected officials during these challenging times.

A G E N D A

COMMISSION ON STORM WATER ISSUES MEETING

December 1, 2020 at 6:30 p.m.
Via Zoom

1. **MEETING CALLED TO ORDER**

2. **ROLL CALL**

3. **APPROVAL OF AGENDA**

4. **APPROVAL OF MINUTES**

5. **CITIZEN PARTICIPATION**

Procedures for submitting comments for Citizen Participation and Public Hearings:
ALL written comments must be received **no later than 12:00 p.m. the day of the meeting.** Comments may be sent via email to: salpaslan@ucitymo.org, or mailed to the City Hall – 6801 Delmar Blvd. – Attention: Sinan Alpaslan. Such comments will be provided to the Commission on Storm Water Issues members prior to the meeting. Comments will be made a part of the official record and made accessible to the public online following the meeting *Please note, when submitting your comments, a **name and address must be provided**. Please also not if your comment is on an agenda or non-agenda item. If a name and address are not provided, the provided comment will not be recorded in the official record.*

6. **NEW BUSINESS**
    a. Grant funding availability:
        i. Trash Trap project (introduction by Rachel Bartels - Missouri Confluence Waterkeeper) – See Attachment #1
    b. Establishment of storm water-related database in University City
    c. Request for Proposals/Qualifications for Storm Water Master Plan – See Attachment #2
    d. Meeting with The Green Practices Commission Liaison Jenny Wendt re: The "Washington University Sustainability Plan Water Section" project

7. **OLD BUSINESS**
    a. Bylaws – Update and discussion
    b. Flooding Early Warning System – Update – See Attachment #3
    c. Update on stormwater-related complaints received and analyzed by staff:
        i. 8444 Old Bonhomme Rd. overflow of stormwater from street into property (staff update)
        ii. 1009 Glenside Pl. drainageway causing nuisance flow onto property
    d. Upper River Des Peres Flood Risk Management Study – timeline update

8. **MISCELLANEOUS BUSINESS**

9. **COUNCIL LIAISON COMMENTS**

10. **ADJOURNMENT**

Please call (314) 505-8572 or email salpaslan@ucitymo.org to confirm your attendance

Missouri Trash Trap Pilot Project -- St. Louis Region

A Regional Collaboration for Trash Free Waters

Missouri Confluence Waterkeeper *is a grassroots, citizen-led conservation organization focused on clean water and dedicated to protecting fishable, swimmable, drinkable water. We work to engage, energize, and empower our local community in support of clean water in Missouri.*

Blue2Blue Conservation *is committed to increasing awareness of the dangers of pollution and over-consumption and to promoting small changes we can each make in our daily lives to positively impact on the world we live in.*

Background

A vast majority of all marine debris is composed of plastic,[1] and an estimated 80% of this plastic is carried from land to sea through our earth's vast network of rivers and streams.[2] Recent studies have found that an average of 9 million tons of plastic waste enter the ocean every year from these inland sources. Yet it remains difficult to establish the source of pollution and calculate the amount of litter entering our waterways at any given location.

Once plastics are washed into waterways, the damage caused by their presence costs billions of dollars annually in losses for the tourism, shipping and fishing industries. They disrupt marine ecosystems and threaten food security for people who depend on subsistence fishing. As plastics travel through our waterways, they often break into smaller particles known as microplastics and are significantly more difficult to clean up.

Surprisingly little is known about plastic pollution in freshwater systems, as most research has historically focused on marine environments. Given the significance of inland rivers and streams in the transport of litter, St. Louis, Missouri - at the confluence of the fourth largest river system in the world - is in an ideal location to launch a pilot project to identify and prevent upstream sources of marine debris.

Project Description

The *Trash Trap Project* is a collaborative initiative in the region designed to facilitate cleaner rivers through targeted capture, collection, and documentation of waterborne litter. This pilot program will take place throughout St. Louis, Missouri in streams that all ultimately flow into the

[1] Rios, L. M., C. Moore and P.R. Jones. (2007). Persistent organic pollutants carried by synthetic polymers in the ocean environment. Marine Pollution Bulletin 54:1230–1237.

[2] Hann, S., Sherrington, C., Jamieson, O., Hickman, M., Kershaw, P., Bapasola, A., & Cole, G. (2018). Investigating options for reducing releases in the aquatic environment of microplastics emitted by (but not intentionally added in) products. *EUNOMIA Report*.

Mississippi River. The *Trash Trap Project* is the first of its kind in the region, and it will serve as a template for launching a more comprehensive program in the future.

A “trash trap” is composed of a floating boom and net that attach easily to embankments, stormwater outfalls, canals or creeks. These traps gather floating debris before it reaches the main waterway and creates a larger pollution problem. The traps will be maintained by project partners and emptied on a regular basis.

MCW and project partners have identified three sites to be included in the *Trash Trap Project* in 2020. The sites were selected based on the need for litter collection, visibility for outreach and educational opportunities, type of stream or waterway, and location within the community. Each of the selected sites will have a “trash trap” installed in a location to maximize the impact of the trap in removing as much solid debris as possible before it reaches the Mississippi River.

Each of these locations provides a unique opportunity to make an impact and determine what works best in different types of waterways. All locations are also highly visible and provide significant opportunities for community engagement. Awareness of the trash problem will be the first step to inspiring community action and a move away from an “out of sight, out of mind” mentality.

Project Evaluation

To ensure that the proposed program has a positive effect on the community and meets its stated objectives, we have identified a set of action-based criteria for evaluating the success of the pilot project. This includes:

- Improving overall water quality through removal of litter
- Identifying pollution inputs and working to eliminate at the source
- Data collection, mapping, and sharing of information
- Increased community awareness and understanding of water quality and protection efforts
- Opportunities for community engagement through citizen participation and greater sense of connection to our water resources
- Encouraging more people to paddle, play, swim, float, and enjoy our urban waterways

Funding and Maintenance

The US EPA Region 7 has provided funding for three in-stream litter collections devices and one year of data collection, maintenance, insurance, supplies, etc. Blue2Blue Conservation will lead the maintenance efforts and coordinate volunteers, and Missouri Confluence Waterkeeper will manage the data collection and reporting. Very specific details describing the process, protocols, safety measures, responsibilities, and deliverables are in the EPA QAPP for this project. We are happy to provide that document upon request.

Permits and Approvals

DNR permit and 401 certification requirements: Confirmed with Mike Irwin, Environmental Specialist with DNR's Clean Water Act Section 401 Water Quality Certification, Operating Permits Section, Water Protection Program, via email on November 3, 2020 that "A CWA Section 401 WQC is only required when a federal permit or license is required." Because the "USACE has determined the action does not require a permit, a WQC is not required."

USACE 404 certification requirements: Confirmed with Charles Frerker at USACE Regulatory Branch (OD-F) in St. Louis via email on October 30, 2020 that "the stated methods and proposed locations do not trigger the need for a Department of the Army permit." Chuck further noted that he "appreciates everyone's efforts to remove trash from waterways and improve water quality."

MSD has asked for a completed checklist, available upon request, and will approve the project once we have the City/Municipality approval.

Contact Information

Rachel Bartels, Missouri Confluence Waterkeeper
Address: 121 W Adams Avenue, St. Louis, Missouri 63122
Phone: (314) 884-1473 Cell: (619) 804-2902
Social Media: @MOwaterkeeper
Website: https://missouriconfluencewaterkeeper.org/
EIN 82-1589782

COMMISSION ON STORM WATER ISSUES DECEMBER 2020 MEETING AGENDA - ATTACHMENT #2

MEMORANDUM
DEPARTMENT OF PUBLIC WORKS

TO: Todd Thompson, Chairman – Commission on Storm Water Issues

FROM: Sinan Alpaslan, Director of Public Works, Staff Liaison to Commission

DATE: November 25, 2020

RE: Storm Water Master Plan Request for Qualifications

The referenced work is incorporated into the departmental work plan with immediate effect. The item was discussed with the Commission at the regular monthly meeting of October with respect to a need for a methodical approach to storm water-related resident complaints and actions for resolutions.

For assembling a scope of work as basis for the Request for Qualifications (RFQ), the following are staff's proposal for the Master Plan Consultant's work tasks:

- Map/delineate watersheds/sewer sheds in general terms (this is a field survey as well as data research task) to create a storm water map of University City including important infrastructure location and sizes,
- Use Storm Water Task Force Citizen Survey results to pinpoint areas of storm water complaints to overlay on the storm water map to derive any interpretations for priority zones,
- Recommend study criteria for design storm for verification of localized/area flooding complaints,
- Review data, analyze conditions and improvements, and recommend methodology for setting priority levels for maintenance and minor improvements work relative to resolutions of storm water issues,
- Obtain public feedback at the appropriate phases of work development,
- Provide monthly updates to Commission on Storm Water Issues, obtain feedback,
- Provide mid-study update to City Council, obtain feedback,
- Coordinate the master planning work with the other departments of University City including the commissions to which those departments are liaisons,
- Coordinate the master planning work with the US Army Corps of Engineers project team working on the Upper River Des Peres Flood Risk Management Study.
- Conclude the study work with report of findings and recommended actions and present the proposed Master Plan to City Council.

Please advise of any comments and revisions that the Commission deems necessary for the formulation of the Master Plan scope.

From: Sinan Alpaslan
To: Bob Criss; emstein1114@yahoo.com; mkholly.mh@gmail.com; Garry Aronberg; Eric Karch (ekar76@hotmail.com)
Cc: Tim Cusick; ucity7024@gmail.com; Gregory Rose; LaRette Reese; John F Mulligan
Subject: RE: new paper
Date: Friday, November 6, 2020 11:44:43 AM

Thank you for the information Bob. I'm certainly intent to fulfill the part to enable the installation of the rain gauges as soon as possible and here is a timeline:

- Wilson-Drexel: rain gauge pole location design utility locates are complete and approximate pole location identified,
- Fogerty Park: pursuant to field meeting including the Parks department, rain gauge pole location design underground utility locates are called in and its schedule calls for completion in a work-week's time (mid next week),
- A contractors list is in the process of being populated to bid the pole install job (will be done by the Fogerty Park locates completion as above),
- Poles and their install appurtenances are final-identified from the yard to be handed to the selected contractor for the install,
- Bid documents for the poles based on the poles identification and specs is being written to send out by the end of next week,
- Bids opened with a notice to proceed to the contractor pursuant to bid approval on the install of the poles by the end of November. Bids are accepted until December 1 at 2:00 p.m. - please see attached documents.

I will continue to work closely with Eric Stein to ensure the rain gauges attachment integration with the pole install throughout the above schedule and appreciate all your support with this work task.

With Regards,

Sinan Alpaslan, P.E.
Director of Public Works
City of University City
6801 Delmar Boulevard
University City, MO 63130
P: 314.505.8572 | www.ucitymo.org

From: Bob Criss <criss@wustl.edu>
Sent: Friday, November 6, 2020 10:39 AM
To: emstein1114@yahoo.com; mkholly.mh@gmail.com; Garry Aronberg <garonberg@sbcglobal.net>; Eric Karch (ekar76@hotmail.com) <ekar76@hotmail.com>; Bob Criss <criss@wustl.edu>
Cc: Tim Cusick <cusickward2@gmail.com>; ucity7024@gmail.com; Gregory Rose <grose@ucitymo.org>; LaRette Reese <lreese@ucitymo.org>; John F Mulligan <jfmulliganjr@aol.com>; Sinan Alpaslan <salpaslan@ucitymo.org>
Subject: Re: new paper

Colleagues, a new paper concerning stream gauging in St Louis Co is now published online at

https://rdcu.be/b9OvM

The identical print version will not appear for several months. There is plenty in this paper that is of importance to our commission. Fig. 3 shows two examples of lidar cross sections, in one case for RdP at the Heman Park gauge I asked for such info more than a year ago, and not recieving anything of very good quality, my coauthor and I figured out how to do get this info ourselves, wherever we need, so now we have a ver y useful capability.

A troubling finding is that practically all gauge calibration of small streams in our county has been done at very low flows (Fig 2), representing conditions that have nothing to do with flooding. This is also true for our own gauge in Heman Park (Fig 6a), where the only point representing high flow was "calibrated" by an unspecified method, menaning that this point is just some type of estimate or calculation. Note that MDS likely pays the USGS at least $10k/y to maintain each gauges, since $10k was their standard charge many years ago.

If we could ever get a couple of poles erected, so Eric can get the rain gauges installed, and start testing our early warning system, our commission could begin to acquire the data that are absolutely necessary to make important progress. Then I could also begin to prepare a manuscript that might bring some very favorable attention to University City. I am astonished that Eric continues to wait, month after month. Seems to me that something is very, very wrong.

All the best, Bob

Bob Criss,
Department of Earth & Planetary Sciences
Washington University
1 Brookings Drive, Campus Box 1169
St. Louis,MO 63130-4899

Phone: (314) 935-7441
FAX (314) 935-7361
Email: criss@wustl.edu
https://eps.wustl.edu/people/robert-e-criss

On Oct 2, 2020, at 4:25 PM, Sinan Alpaslan <salpaslan@ucitymo.org> wrote:

Dear Commissioners and Councilmember Cusick:

Please find attached meeting notice and agenda for the regular monthly meeting of our Commission on Tuesday, October 6.

Please RSVP for your attendance to me via phone or email. I will be forwarding the Zoom meeting invitations accordingly. I'd propose to get on the Zoom 15 minutes before the meeting time to make sure it is working well for everybody.

Respectfully,

<image001.jpg>

Sinan Alpaslan, P.E.
Director of Public Works
City of University City
6801 Delmar Boulevard
University City, MO 63130
P: 314.505.8572 | www.ucitymo.org

<Commission on SW - October 2020 meeting.pdf>

Department of Public Works
6801 Delmar Boulevard, University City, Missouri 63130, Phone: (314) 505-8560, Fax: (314) 862-0694

Request for Quotes

Date: **20 November 2020**
Project #/Name: **1480 – Light Standard Poles Install for Rain Gauges**
Site Address: **1) Fogerty Park Parking Lot @ 1540 82nd Blvd.**
2) East side of Wilson Ave. at Drexel Dr. intersection

RETURN BID TO:

USPS City of University City
Attn: Sinan Alpaslan, Public Works 3rd Floor
6801 Delmar Boulevard
University City, MO 63130

Email Sinan@ucitymo.org

BID DEADLINE: Tuesday, December 1, 2020 at 2:00 pm

The Public Works Department of the City of University City is seeking bids for the installation of 2 ea. (two) light standard poles (Pole Types 1 and 2) at the referenced locations. The poles do not require wiring or rough-in for future wiring because they are not intended to be utilized for lighting. University City intends to place rain gauges atop the poles and these gauges are self-sufficient for power. The poles and their installation hardware including the base plates and anchors are supplied by the City as provided in the attached drawings. The installation hardware including the base plates and anchors for Pole Type 1 is supplied by the City, but for Pole Type 2, the installation hardware per its design drawing is required to be supplied by the Contractor.

Attachments: Set of drawings and specifications for Project #1480

Services

1. Excavate for pole footings as detailed on the attached drawings (the sites are marked with channelizers for viewing by bidders with utility design locates completed around the location, the contractor is responsible for calling in the utility locates for construction and compliance with all applicable laws for trenching and excavation) and prepare the excavation for footing pour.
2. Pour respective reinforced concrete pole footing with anchor embeds per the attached drawings and specifications. Protect concrete up to curing to strength per the attached specifications. Provide ground rod per the attached drawings.
3. Install City-supplied light standards on anchors per the attached drawings. All poles shall be set plumb and accurately aligned by the Contractor to adequately receive/support the rain gauge to be installed by the City.
4. Grade, seed and straw for erosion control areas disturbed by construction work.

General Conditions

1. No STL County permits are required for this project.
2. All fees for University City permits are waived.
3. All debris to be disposed of in an appropriate and legal manner.
4. Contractor is responsible for notifying all utilities and having all existing utilities marked.
5. The City reserves the right to accept or reject any or all bids, to waive irregularities and/or informalities and to disregard all nonconforming, non-responsive, unbalanced or conditional bids. The City of University City complies with all Equal Opportunity requirements. All qualified Offerors will receive consideration without regard to race, creed, color, national origin, gender, marital status, sexual orientation, religion, ancestry, mental or physical handicap or age.

Summary of Quote (Bidder to complete all blanks)

Description	Quantity	Unit	Cost
Pole Type 1 Installed	1	LS	
Concrete Base for Pole Type 1 Installed	1	LS	
Installation Hardware for Pole Type 2	1	LS	
Pole Type 2 Installed	1	LS	
Concrete Base for Pole Type 2 Installed	1	LS	
		Total	

The bidder hereby declares understanding, agreement and certification of compliance to provide the items and/or services, at the prices quoted, in accordance with all requirements and specifications contained herein. The bidder further agrees that when this document is countersigned by an authorized official of the City of University City (hereafter referred to as "the City), a binding contract shall exist between the bidder and the City.

Contractor must pay the current St. Louis County PREVAILING WAGES for this work, and SALES TAX shall not be included in the purchase of materials.

_____ _____

(Signature) (Print Name)

_____

(Company Name)

_____ _____

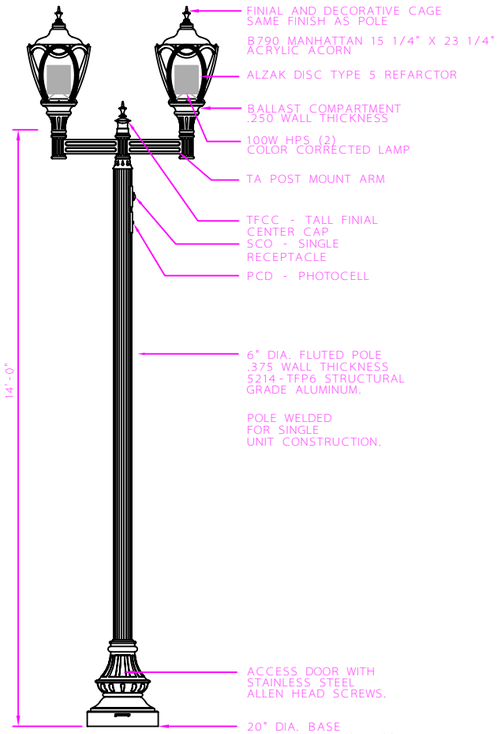
(Address) (Telephone Number)

The City of University City encourages minority and women participation

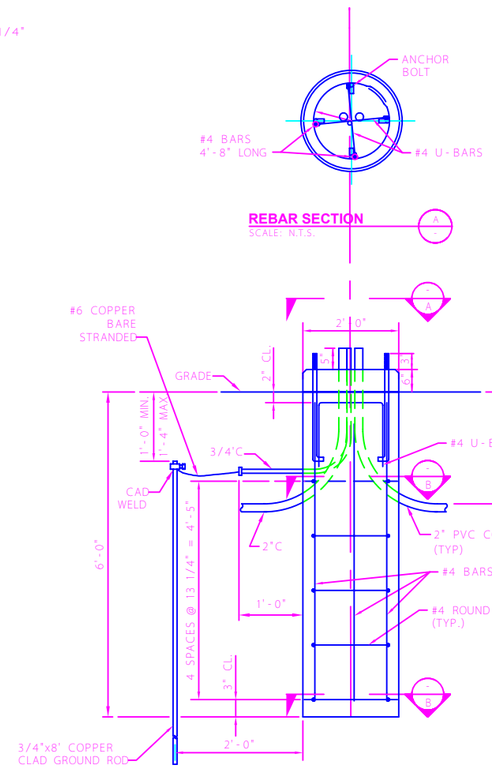
PLEASE CHECK, IF APPLICABLE FOR YOUR COMPANY:
___ Minority Owned ___Female Owned

POLE TYPE 1

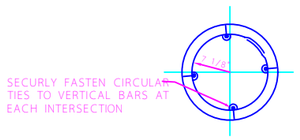
CITY OF UNIVERSITY CITY, MISSOURI		
OLIVE BLVD. IMPROVEMENTS ELECTRICAL DETAILS MISSOURI ROUTE 340	SHEET NUMBER: 55	TOTAL SHEETS: 56
FEDERAL PROJECT NO. STP-5529 (630)		



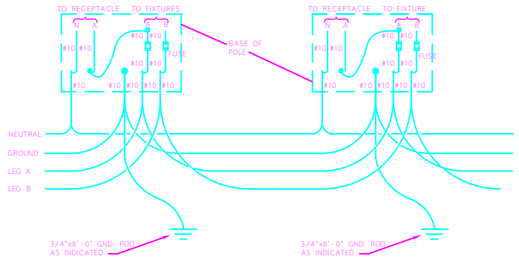
LIGHT POLE DETAIL
SCALE: N.T.S.



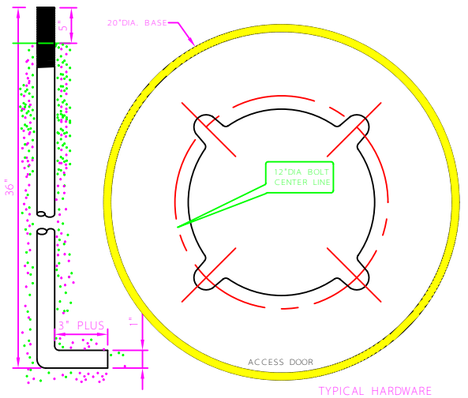
CROSS SECTION OF LIGHT POLE FOUNDATION
SCALE: N.T.S.



SCALE: N.T.S.

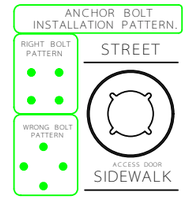


TYPICAL WIRING DIAGRAM
SCALE: NONE



TYPICAL HARDWARE REQUIRED PER BASE
4 ANCHOR BOLTS
4 NUTS
4 WASHERS
3 WASHERS FOR LEVELING IF NEEDED.

1"DIA. X 36" LONG BOLTS WITH 3"+ OF THREAD AND 3"+ HOOK.

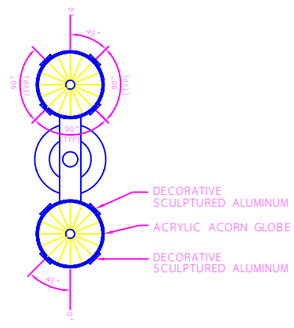


BASE DETAIL
SCALE: N.T.S.

GENERAL NOTES:

1. VERIFY ALL EXISTING UNDERGROUND UTILITIES IN THE FIELD.
2. ALL ATTEMPTS SHOULD BE MADE TO MAINTAIN ROOT SYSTEMS OF PLANT, TREES AND SHRUBS THAT WILL BE REMAINING.
3. ALL FIXTURE DIMENSIONS SHALL BE VERIFIED WITH MANUFACTURER DATA PRIOR TO INSTALLATION. DO NOT USES THESE GUIDES AS TEMPLATES. TEMPLATES ARE PROVIDED BY MANUFACTURER. THIS INFORMATION IS PROVIDED TO SHOW INTENT.

THIS IS A RECORD DRAWING FOR BIDDERS' USE. NO ELECTRICAL OR LIGHTING WORK IS IN SCOPE OF PROJECT #1480



ORENTATION VIEW
SCALE: N.T.S.

INSTALLATION NOTES:

1. ORIENT FIXTURE TO BE PERPENDICULAR TO OLIVE STREET.
2. VERIFY BASE PLATE TEMPLATE WITH MANUFACTURER PRIOR TO INSTALLATION OF CONCRETE BASE.
3. CONCRETE BASE SHALL BE LEVEL WITH GRADE.
4. TOUCH UP ANY SURFACES THAT ARE MARRED DURING INSTALLATION.

PSE SUBMITTAL **JANUARY 30, 2003**

DRAWING TYPE : ELECTRICAL	CDG PROJECT NO. : 01039	DRAWING NO. : E-08

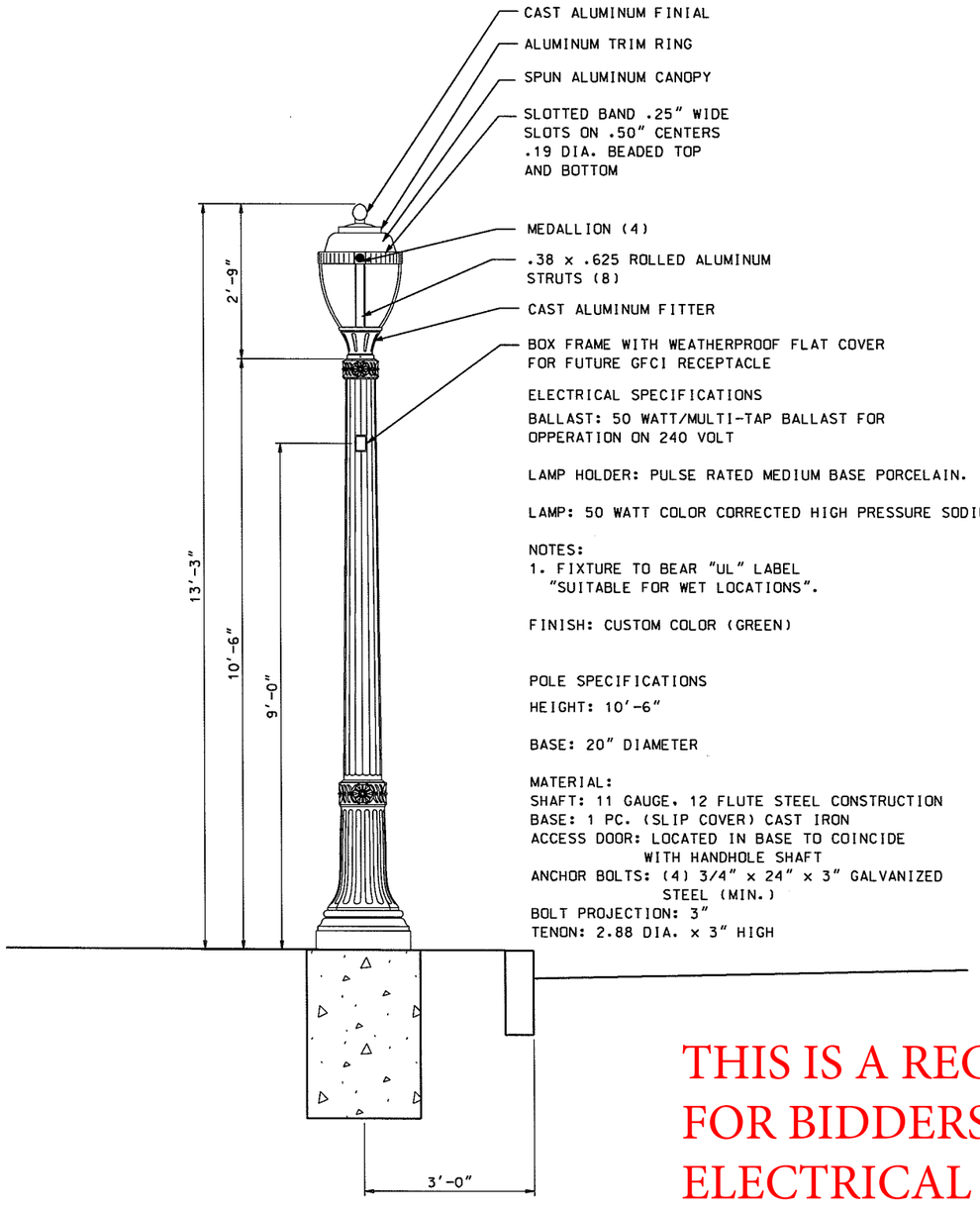
CDG Engineers
Architects Planners, Inc.
One Campbell Plaza 59th & Arsenal Streets St. Louis, MO 63139
TEL 314-781-7770 FAX 314-781-9075

CITY OF UNIVERSITY CITY
OLIVE BLVD. STREETSCAPE IMPROVEMENTS
OLIVE BLVD. FROM I-170 TO SKINKER BLVD.

ELECTRICAL DETAILS

86353-1.dwg
TWJ 1/6/03 11:41 AM

POLE TYPE 2



CAST ALUMINUM FINIAL

ALUMINUM TRIM RING

SPUN ALUMINUM CANOPY

SLOTTED BAND .25" WIDE
SLOTS ON .50" CENTERS
.19 DIA. BEADED TOP
AND BOTTOM

MEDALLION (4)

.38 x .625 ROLLED ALUMINUM
STRUTS (8)

CAST ALUMINUM FITTER

BOX FRAME WITH WEATHERPROOF FLAT COVER
FOR FUTURE GFCI RECEPTACLE

ELECTRICAL SPECIFICATIONS

BALLAST: 50 WATT/MULTI-TAP BALLAST FOR
OPPERATION ON 240 VOLT

LAMP HOLDER: PULSE RATED MEDIUM BASE PORCELAIN.

LAMP: 50 WATT COLOR CORRECTED HIGH PRESSURE SODIUM LAMP.

NOTES:
1. FIXTURE TO BEAR "UL" LABEL
"SUITABLE FOR WET LOCATIONS".

FINISH: CUSTOM COLOR (GREEN)

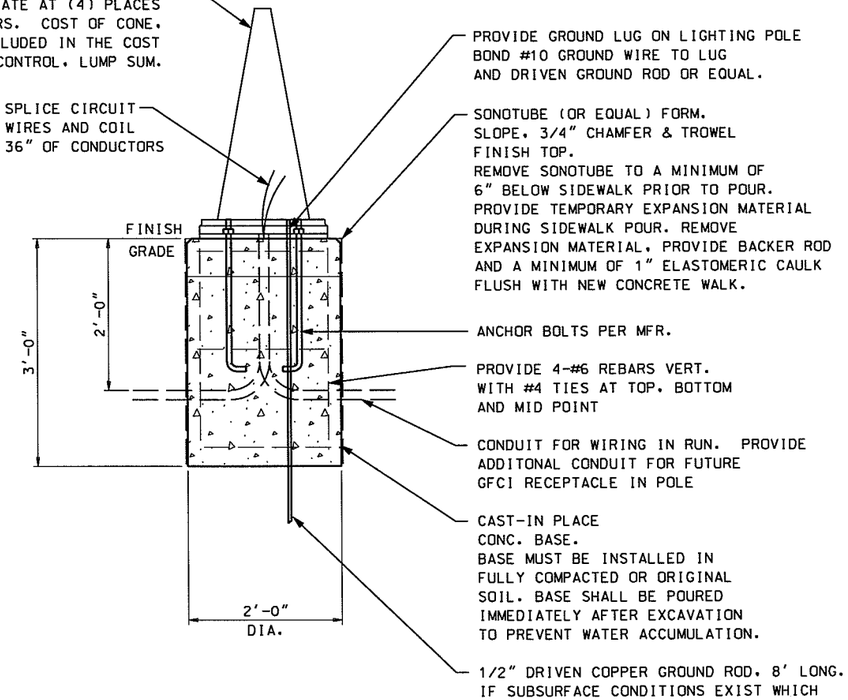
POLE SPECIFICATIONS

HEIGHT: 10'-6"

BASE: 20" DIAMETER

MATERIAL:
SHAFT: 11 GAUGE, 12 FLUTE STEEL CONSTRUCTION
BASE: 1 PC. (SLIP COVER) CAST IRON
ACCESS DOOR: LOCATED IN BASE TO COINCIDE
WITH HANDHOLE SHAFT
ANCHOR BOLTS: (4) 3/4" x 24" x 3" GALVANIZED
STEEL (MIN.)
BOLT PROJECTION: 3"
TENON: 2.88 DIA. x 3" HIGH

DECORATIVE FIXTURE DETAIL



TEMPORARY ORANGE SAFETY CONE
SECURED TO BASE PLATE AT (4) PLACES
W/NUTS AND WASHERS. COST OF CONE,
IN PLACE, TO BE INCLUDED IN THE COST
OF TRAFFIC CONTROL, LUMP SUM.

SPLICE CIRCUIT
WIRES AND COIL
36" OF CONDUCTORS

PROVIDE GROUND LUG ON LIGHTING POLE
BOND #10 GROUND WIRE TO LUG
AND DRIVEN GROUND ROD OR EQUAL.

SONOTUBE (OR EQUAL) FORM.
SLOPE, 3/4" CHAMFER & TROWEL
FINISH TOP.
REMOVE SONOTUBE TO A MINIMUM OF
6" BELOW SIDEWALK PRIOR TO POUR.
PROVIDE TEMPORARY EXPANSION MATERIAL
DURING SIDEWALK POUR. REMOVE
EXPANSION MATERIAL, PROVIDE BACKER ROD
AND A MINIMUM OF 1" ELASTOMERIC CAULK
FLUSH WITH NEW CONCRETE WALK.

ANCHOR BOLTS PER MFR.

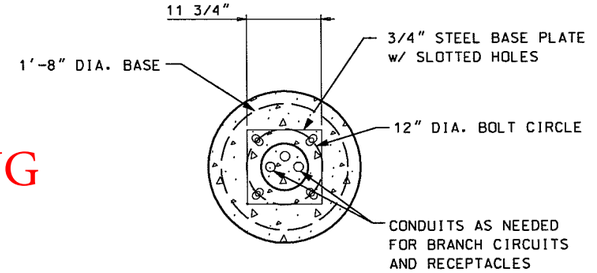
PROVIDE 4-#6 REBARS VERT.
WITH #4 TIES AT TOP, BOTTOM
AND MID POINT

CONDUIT FOR WIRING IN RUN. PROVIDE
ADDITONAL CONDUIT FOR FUTURE
GFCI RECEPTACLE IN POLE

CAST-IN PLACE
CONC. BASE.
BASE MUST BE INSTALLED IN
FULLY COMPACTED OR ORIGINAL
SOIL. BASE SHALL BE POURED
IMMEDIATELY AFTER EXCAVATION
TO PREVENT WATER ACCUMULATION.

1/2" DRIVEN COPPER GROUND ROD, 8' LONG.
IF SUBSURFACE CONDITIONS EXIST WHICH
PROHIBIT THE PLACEMENT OF THE GROUND
ROD IN VERTICAL POSITION, THE ROD MAY BE
DRIVEN AT AN OBLIQUE ANGLE NOT TO EXCEED
45 DEGREES FROM VERTICAL OR BURIED IN A
TRENCH AT LEAST 30 IN. DEEP. CONNECTION TO
GROUND ROD SHALL BE CADWELDED.

FIXTURE FOUNDATION DETAIL



3/4" STEEL BASE PLATE
w/ SLOTTED HOLES

12" DIA. BOLT CIRCLE

CONDUITS AS NEEDED
FOR BRANCH CIRCUITS
AND RECEPTACLES

FIXTURE FOUNDATION PLAN

THIS IS A RECORD DRAWING FOR BIDDERS' USE. NO ELECTRICAL OR LIGHTING WORK IS IN SCOPE OF PROJECT #1480.

RECORD DRAWING

THESE RECORD DRAWINGS HAVE BEEN PREPARED BASED ON INFORMATION PROVIDED, IN PART, BY OTHERS. THE ENGINEER HAS NOT VERIFIED THE ACCURACY AND/OR COMPLETENESS OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

DATE: 11/24/10 BY: BENTON & ASSOCIATES, INC.

MSD P-0027709-00 BASEMAP 18J2 & 18H1

BENTON & ASSOCIATES INC
Illinois Design Firm
Registration No. 184-000852

No.	Description	Date	Appr.

FIXTURE DETAILS
CITY OF UNIVERSITY CITY
DELMAR BOULEVARD STREETSCAPE PROJECT STP-9900(619)
UNIVERSITY CITY, MISSOURI

BENTON & ASSOCIATES, INC.
100 North Tucker Boulevard, Suite 550
St. Louis, MO 63101

Jacksonville Illinois
Kirksville Missouri
Macomb Illinois

Date: JULY 2007
Designed by: WEM / NRF
Drawn by: JLL
Reviewed by: RHB / WEM
Approved by: NRF
This Line is 2" Long on a 22x34 Sheet

Job No. 05el665

8

Sheet 8 of 17

GENERAL NOTES

1. The Contractor shall field check and verify all dimensions and existing conditions prior to construction, notify the Owner's Representative of any discrepancy immediately.

2. The Contractor shall notify the Engineer immediately of any discrepancies between construction documents and actual field conditions.

3. Site dimensions are to face of curb, property line or face of building unless otherwise noted.

4. Contractor shall protect and carefully preserve all survey or property markers and monuments. Any markers or monuments that are removed or disturbed by the Contractor's actions shall be replaced at the Contractor's expense by a registered land surveyor.

5. Construction signs, lights, and barricades shall be installed at locations necessary to maintain a safe work site condition as directed/approved by the Owner, and in accordance with the Manual on Uniform Traffic Control Devices (M.U.T.C.D.)

6. All ground surfaces disturbed by construction shall be restored to its original condition or as shown on the plans.

7. The location of underground utilities and structures shown on the plans represents the best knowledge of the Municipality and Owners. Prior to proceeding with any excavations, the Contractor shall contact Missouri One-Call System at 1-800-334-7483.

FOUNDATION NOTES

1. All footing excavations shall be clean and free of debris, standing water and loose soil prior to placement of concrete.

2. All footing excavations shall be inspected and approved by the Owner's Representative prior to placement of concrete.

3. The Contractor shall familiarize himself with the scope of the work and soil and water conditions before proceeding with the work.

4. All fill material shall be approved for use in advance of placement by the Owner's Representative. No fill shall be placed over frozen, muddy or other deleterious material. No fill may be placed over a previous lift that has not been adequately compacted and accepted by the Owner's Representative.

5. It shall be the Contractor's Responsibility to insure all structures' stability during construction, especially with regard to buoyance forces.

END GENERAL NOTES AND FOUNDATION NOTES

SECTION 1 - BASIC MATERIALS AND METHODS

PART 1 GENERAL

1.01 PROTECT ADJACENT MATERIALS INDICATED TO REMAIN:

A. Install and maintain dust and noise barriers to keep dirt, dust, and noise from being transmitted to adjacent areas. Remove protection and barriers after demolition and/or construction operations are complete.

1.02 LOCATE, IDENTIFY AND PROTECT EXISTING ELECTRICAL SERVICES:

A. Locate, identify and protect existing electrical services passing through demolition and construction areas serving other areas outside the demo/construction limits. When services must be interrupted, install temporary services for affected areas.

B. Maintain and protect existing building services within the affected area by selective demolition and construction.

1.03 PROTECT EXISTING STRUCTURES:

A. Protect existing structures, utilities, sidewalks, pavements, and other facilities from damage by settlement, lateral movement, undermining, washout, and other hazards created by the excavation operations.

1.04 SITE INFORMATION:

A. Subsurface conditions were investigated during the design of the Project. Reports of these findings are available for information only; data in the reports are not intended as representations of warranties of accuracy of continuity of conditions. The Owner will not be responsible for interpretations or conclusions drawn from this data.

1.05 EXISTING UTILITIES:

A. Locate existing underground utilities in excavation areas. If utilities are indicated to remain, support and protect services during excavation operations.

B. When uncharted or incorrectly charted utilities are discovered contact the utility immediately for instructions.

C. Provide temporary utility services to affected areas. Provide a minimum of 48 hours notice to Engineer prior to utility interruption.

1.06 EXPLOSIVES:

A. The use of explosives is prohibited.

PART 2 PRODUCTS

2.01 SOIL MATERIALS:

A. The subbase materials shall be naturally or artificially graded mixture of natural or crushed gravel, crushed stone, crushed slag, or natural or crushed sand.

B. Drainage fill shall be washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, 100 percent passing a 1-1/2-inch sieve, and not more than 5 percent passing a No. 4 sieve.

C. Backfill and fill materials shall be materials complying with ASTM D2487 soil classification groups GW, GP, GM, SM, SW, and SP; free of clay, rock, or gravel larger than 2 inches in any dimension; debris; waste; frozen materials; and vegetable and other deleterious matter.

2.02 MISCELLANEOUS METALS:

A. Steel plates, shapes, bars, and bar grating shall comply with ASTM A 36.

B. Nonshrink, nonmetallic grout premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout, recommended for interior and exterior applications.

C. Fasteners shall be stainless steel zinc-coated of type, grade, and class as required.

2.03 MISCELLANEOUS LUMBER:

A. Framing materials shall be standard grade, light-framing-size lumber of any species. Number 3 common or standard grade boards complying with WCLIB or AWPA rules, or Number 3 boards complying with SPIB rules. Lumber shall be preservative treated in accordance with AWPB LP-2, and kiln dried to a moisture content of not more than 19 percent.

B. Construction panels shall be plywood panels; APA C-D PLUGGED INT, with exterior glue; thickness as indicated, or if not indicated, not less than 3/4 inches.

PART 3 EXECUTION

3.01 EXCAVATION:

A. Slope sides of excavations to comply with local codes and ordinances. Shore and brace as required for stability of excavation.

B. Shoring and Bracing: Establish requirements for trench shoring and bracing to comply with local codes and authorities. Maintain shoring and bracing in excavations regardless of time period excavations will be open.

1. Remove shoring and bracing when no longer required. Where sheeting is allowed to remain, cut top of sheeting at an elevation of 30 inches below finished grade elevation.

C. Install sediment and erosion control measures in accordance with local codes and ordinances.

3.02 DEWATERING:

A. Prevent surface watering and subsurface or ground water from flowing into excavations and from flooding project site and surrounding area.

1. Do not allow water to accumulate in excavations. Remove water to prevent softening of bearing materials. Provide and maintain dewatering system components necessary to convey water away from excavations.

2. Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey surface water to collecting or run-off areas. Do not use trench excavations as temporary drainage ditches.

3.03 MATERIAL STORAGE:

A. Stockpile satisfactory excavated materials where directed, until required for backfill or fill. Place, grade, and shape stockpiles for proper drainage.

1. Locate and retain soil materials away from edge of excavations. Do not store within drip-line of trees indicated to remain.

2. Remove and legally dispose of excess excavated materials and materials not acceptable for use as backfill or fill.

3.04 EXCAVATION FOR UNDERGROUND VAULTS AND ELECTRICAL STRUCTURES:

A. Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10 foot; plus a sufficient distance to permit placing and removal of concrete formwork, installation of services, other construction, and for inspection.

1. Excavate, by hand, areas within drip-line of large trees. Protect the root system from damage and dry-out. Maintain moist conditions for root system and cover exposed roots with burlap. Paint root cuts of 1 inch in diameter and larger with emulsified asphalt tree paint.

B. Take care not to disturb bottom of excavation. Excavate by hand to final grade just before concrete reinforcement is placed.

3.05 TRENCHING:

A. Excavate trenches for electrical installations as follows:

1. Excavate trenches to the uniform width, sufficiently wide to provide ample working room and a minimum of 6 to 9 inches clearance on both sides of raceways and equipment.

2. Excavate trenches to depth indicated or required.

3. Limit the length of open trench to that in which installations can be made and the trench backfilled within the same day.

4. Where rock is encountered, carry excavation below required elevation and backfill with a layer of crushed stone or gravel prior to installation of raceways and equipment. Provide a minimum of 6 inches of stone or gravel cushion between rock bearing surface and electrical installations.

3.06 COLD WEATHER PROTECTION:

A. Protect excavation bottoms against freezing when atmospheric temperature is less then 35 deg F (1 deg 2 C).

3.07 BACKFILLING AND FILLING:

A. Place soil materials in layers to required subgrade elevations for each area classification listed below, using materials specified in Part 2 of this section.

1. Under walks and pavements, use a combination of subbase materials and excavated or borrowed materials.

2. Under building slabs, use drainage fill materials.

3. Under piping and equipment, use subbase materials where required over rock bearing surface and for correction of unauthorized excavation.

4. Other areas, use excavated or borrowed materials.

B. Backfill excavations as promptly as work permits, but not until completion of the following:

1. Inspection , testing, approval, and locations of underground utilities have been recorded.

2. Removal of concrete formwork.

3. Removal of shoring and bracing, and backfilling of voids.

4. Removal of trash and debris.

3.08 PLACEMENT AND COMPACTION:

A. Place backfill and fill materials in layers of not more than 8 inches in loose depth for material compacted by heavy equipment, and not more than 4 inches in loose depth form material compacted by hand-operated tampers.

B. Before compaction, moisten or aerate each layer as necessary to provide optimum moisture content. Compact each layer to required percentage of maximum dry density or relative dry density for each area classification specified below. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

C. Place backfill and fill materials evenly adjacent to structures, piping, and equipment to required elevations. Prevent displacement of raceways and equipment by carrying material uniformly around them to approximately same elevation in each lift.

3.09 COMPACTION:

A. Control soil compaction during construction, providing minimum percentage of density specified for each area classification indicated below.

1. Percentage of Maximum Density Requirements: Compact soil to not less than the following percentages of maximum density for soils which exhibit a well-defined moisture-density relationship (cohesive soils), determined in accordance with ASTM D 1557 and not less than the following percentages of relative density, determined in accordance with ASTM D 2049, for soils which will not exhibit a well-defined moisture-density relationship (cohesionless soils).

a. Areas Under Structures, Building Slabs and Steps, Pavements: Compact top 12 inches of subgrade and each layer of backfill or fill material to 90 percent maximum density for cohesive material, or 95 percent relative

density for cohesionless material.

b. Areas Under Walkways: Compact top 6 inches of subgrade and each layer of backfill or fill material to 90 percent maximum density for cohesive material, or 95 percent relative density for cohesionless material.

c. Other Areas: Compact top 6 inches of subgrade and each layer of backfill or fill material to 85 percent maximum density for cohesive soils, and 90 percent relative density for cohesionless soils.

2. Moisture Control: Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water. Apply water in minimum quantity necessary to achieve required moisture content and to prevent water appearing on surface during, or subsequent to, compaction operations.

3.10 SUBSIDENCE:

A. Where subsidence occurs at electrical installation excavations during the period 12 months after Substantial Completion, remove surface treatment (i.e., pavement, lawn, or other finish), add backfill material, compact to specified conditions, and replace surface treatment. Restore appearance, quality, and condition of surface or finish to match adjacent areas.

3.11 ERECTION OF WOOD SUPPORTS AND ANCHORAGE:

A. Cut, fit, and place wood grounds, nailers, blocking, and anchorage accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.

B. Select fastener sizes that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood members.

C. Attach to substrates as required to support applied loads.

END SECTION 1 - BASIC MATERIALS AND METHODS

SECTION 2 - CAST-IN-PLACE CONCRETE AND RELATED ITEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Provisions of the drawings and Division 1 are part of this Division and Section. Division 2 through 15 shall be reviewed for any work that may apply to this Section.

1.02 SUMMARY:

A. This specification includes the following items required for cast-in-place concrete and related elements for foundations, grade walls and sidewalks.

1. Concrete mix design.
2. Supply concrete and related materials.
3. Batch, mix, and transport concrete.
4. Place and finish concrete and related materials.
5. Sample and test concrete.
6. Protection and curing.
7. Repair concrete defects to new concrete.
8. Supply and installation of reinforcing steel.
9. Designing, furnishing, erecting, dismantling, and removal of all formwork required for cast-in-place concrete.

B. Work covered under this Section shall include, but not be limited to:

1. Cast-in-place footings, foundations, grade walls and sidewalks.

1.03 QUALITY ASSURANCE:

A. All materials and work shall comply with the latest edition of the following specifications except where more stringent requirements are shown or specified:

1. ACI 301 ASpecifications for Structural Concrete for Buildings.@
2. ACI 318 ABuilding Code Requirements for Reinforced Concrete.@

3. ACI 304 ARecommended Practice for Measuring, Mixing, Transporting and Placing Concrete.@

4. ACI 305 AHot Weather Concreting.@

5. ACI 306 ACold Weather Concreting.@

6. ACI 309 A Standard Practice for Consolidation of Concrete.

7. ASTM, American Society for Testing and Materials specifications as invoked herein or by reference.

8. ACI 315, ADetails and Detailing of Concrete Reinforcement.@

9. AManual of Standard Practices,@ Concrete Reinforcing Steel Institute.

10. ACI 347 ARecommended Practice for Concrete Formwork.@

B. The Contractor shall employ an Owner-approved testing agency to sample, perform, and evaluate concrete tests required by ACI 301.

1. Make at least one strength test and corresponding slump, air content, and temperature tests for each truck of cement.

2. Sampling of concrete shall be at the point of placement.

3. Air content testing shall comply with ASTM C231.

4. Each set of compressive strength test specimens shall consist of 4 standard cylinders; one tested at 7 days, two tested at 28 days, and one reserved for later testing.

C. The Owner reserves the right perform inspections of all work in progress for conformance to specification requirements.

1.04 SUBMITTALS:

A. The Contractor shall provide submittals in accordance with the requirements of Division 1 - General Requirements.

B. Submit the following items in writing to the Owner:

1. Manufacturer's product data with installation instructions for all proprietary materials including admixtures, curing compounds, non-shrink grout, epoxy grout, adhesives, patching materials, etc.

2. Test reports for all tests performed by the testing agency.

3. Mix design report shall be submitted for each concrete mix design at least 15 days prior to use of that mix and shall be approved by the Owner prior to production. Mix design report shall, as a minimum, include the following:

   a. Information required by ASTM C94, paragraphs 5.3.2 and 5.5.
   b. Type and name of fine and coarse aggregate to be used.
   c. Method used to establish concrete proportions in accordance with ACI 301, paragraph 3.8.1.2.

4. Batch tickets containing the information of ASTM C94, paragraph 16.1.

5. Reinforcing Steel Detail Drawings: Submit detail drawings for fabrication, bending, and placement of reinforcing materials.

6. Record drawings (as-built drawings) showing all deviations beyond specified tolerances.

PART 2 - PRODUCTS

2.01 CONCRETE MATERIALS:

A. Portland Cement: ASTM, C150, Type I or Type II.

B. Fine and Coarse Aggregate: ASTM C33.

1. For exterior exposed surfaces, do not use fine or coarse aggregates containing spalling-causing deleterious substances.

2. 3/4 inch nominal or 1 inch nominal maximum size coarse aggregate for concrete production.

3. Coarse aggregate for concrete pavements, slabs, curbs, walkways, and drainage ditches shall be Class 4M according to ASTM C33. All other coarse aggregate for concrete shall be Class 3M according to ASTM C33.

C. Water: Potable.

D. Admixtures: No admixtures shall contain more than 0.1 percent chloride ions.

1. Air-Entraining: ASTM C260.

2. Water Reducing: ASTM C494, Type A.

3. Water Reducing and Retarding: ASTM C494, Type D

4. Water Reducing and Accelerating: ASTM C494, Type E.

E. Flyash: ASTM C618, Class C

2.02 RELATED MATERIALS:

A. Liquid Membrane Form Curing Compound: ASTM C309, Type 1-D, Class A when applied at 200 square feet per gallon.

B. Sealer for concrete surfaces shall be one of the following products, or approved equal (for grade wall only):

1. AEuco Diamond Hard@ by Euclid Chemical Company.

C. Reinforcing Materials:

1. Reinforcing Steel: ASTM A615, Grade 60

2. Supports and tie wire for reinforcing: Provide steel accessory devices for spacing, supporting and fastening reinforcing steel and welded wire fabric during concrete placement.

3. Protective covering for reinforcement bars shall be 3".

4. All reinforcement bars shall be fabricated in accordance with the latest ACI Manual of Standard Practice for detailing reinforced concrete structures.

5. All reinforcement bars shall be clean and free of grease and scaling rust.

6. Reinforced concrete designed in accordance with the "Building Code Requirements for Reinforced Concrete" (ACI 318-95) by the American Concrete Institute.

7. Where reinforcement is shown hooked, provide standard 90 degree hooks unless noted otherwise on plans.

8. A ¾" x ¾" chamfer shall be provided on all exposed edges of concrete.

F. Formwork Materials:

1. Form materials shall be a standard commercial form system, a job-built plywood system, or a combination thereof.

2. Forms used for exposed surfaces shall be in good, clean condition subject to the Owner=s approval and capable of producing a Asmooth form finish@ in accordance with ACI 301. Plywood to be used on exposed surfaces shall comply with U.S. Product Standard PS-1, AB-B Concrete Form Plywood,@ Class I, Exterior Grade or better. Forms for concrete to remain exposed

above grade shall provide a smooth finish free of defects and deformities caused by forms.

3. Form ties shall be of a standard commercial system with removable or snap-off ends which will not spall the concrete surface upon removal. Form ties may not be located in concrete surfaces to be exposed above grade.

4. Form coating shall be a standard commercially formulated compound that will not bond with, stain, or adversely affect concrete surfaces.

PART 3 - EXECUTION

3.01 CONCRETE MIX DESIGN:

A. Concrete mix design shall comply with ACI 301 and ASTM C94 using laboratory trial batches or field experience.

B. All concrete shall be normal weight concrete.

C. All concrete shall have a water reducing admixture.

D. Concrete shall be air entrained according to ACI 301, paragraph 3.4 and a minimum of 5%.

E. Unless indicated otherwise on the drawings, all structural concrete shall have a minimum compressive strength of 4000 psi at 28 days with 4 inch maximum slump at point of placement.

3.02 CONCRETE BATCH MIXING:

A. Concrete shall be batched, mixed, and transported according to ACI 301, ASTM C94, ACI 304, and ACI 318.

B. All ready mix tickets shall show the following:

1. Name of concrete plant.

2. Serial number of ticket.

3. Date and contractor=s name.

4. Quantity of concrete.

5. Time when batch was loaded, or of first mixing cement, aggregate, and water.

C. Water added to the concrete at the site will be shown on the ticket.

3.03 CONCRETE TESTING:

A. Concrete shall be sampled and tested in accordance with Paragraph 4.A. of the Job Special Provisions.

3.04 CONCRETE PLACEMENT, FINISHING, CURING, AND SEALING:

A. Place finish and cure concrete according to ACI 301, ACI 304, and ACI 318.

1. Exposed concrete to remain above grade shall be smooth, and shall have all voids filled and be hand-rubbed after forms are removed.

B. Consolidate concrete according to ACI 309 using mechanical vibrating equipment. Use care to ensure a smooth finish for concrete to remain exposed.

C. Protect concrete from physical damage or reduced strength due to weather extremes during mixing, placing, and curing.

1. In cold weather, comply with ACI 306.

2. In hot weather, comply with ACI 305.

3.05 REPAIRS:

A. Repair new concrete surface defects and damage according to ACI 301, Chapter 9. Approved proprietary products are acceptable.

B. Prior to making any concrete repairs, all honeycombed and other defective concrete shall be removed down to sound concrete. Edges of repair areas shall be perpendicular to the surface or slightly undercut. No feather edges are permitted.

C. When using proprietary repair products, comply with manufacturers= recommendations.

3.06 REINFORCING MATERIALS:

A. Detail reinforcing steel according to the indicated standards.

B. All reinforcing bar splices shall be Class AB@ unless a specified splice length is shown on the drawings.

C. Minimum concrete cover shall be according to ACI 318 with the following exceptions:

D. All hooks depicted on the drawings are Astandard hooks@ unless specifically

dimensioned otherwise.

E. Reinforcing Materials Installation:

1. Accurately position, support, and secure reinforcing steel during concrete placement according to the indicated standards.

2. Set wire ties so ends are directly into concrete, not towards exposed concrete surfaces.

3. Clean reinforcing materials of loose rust, mill scale, earth, ice, oil, and other materials which reduce or destroy bond with concrete.

3.09 FORMWORK

A. Design, erect, support, brace, and maintain formwork and shoring so that it will safely support vertical and lateral loads that might be applied including, but not limited to, fresh concrete, concrete placement personnel and equipment, and wind pressure. All work shall be in accordance with the referenced specifications, including ACI 347.

B. All formwork and shoring shall be readily removable without damaging concrete surfaces.

C. Set edge forms and screed strips to proper elevations and contours as requested by the concrete finishing personnel.

D. Side forms of footings may be omitted and concrete placed directly against the excavation.

E. Accurately place and support embedded items using setting diagrams, templates, and instructions provided by others. Metal anchorage devices may be used as required to support embedded items against displacement during placing operations. Aluminum items shall not be embedded in concrete.

END OF SECTION 2 – CAST-IN-PLACE CONCRETE AND RELATED ITEMS

SECTION 3 – LIGHT STANDARD INSTALL

PART 1 GENERAL

1.01 RELATED DOCUMENTS:

A. Drawings and the remaining specification sections apply to work of this section.

1.02 WORK INCLUDED:

A. This section covers the installing, testing, and placing in operation of all light standards to be used for rain gauge install by the City as specified herein and shown on the plans.

B. Related work specified elsewhere.

PART 2 PRODUCTS

2.01 POLE TYPE 1 (SUPPLIED BY THE CITY)

2.01.01 POLE CHARACTERISTICS

A. The 14' tall decorative post shall be aluminum, one-piece construction. The 20" diameter cast aluminum fluted base shall be constructed with an aluminum shaft.

1. The base shall be designed with twelve curved flutes and teardrop decorations and be made of heavy wall, 319 alloy cast aluminum. It shall have a 1-inch thick floor cast as an integral part of the base. The shaft shall be double circumferentially welded internally and externally to the base for added strength.

2. The cast tapered fluted shaft shall be made of heavy wall, 319 alloy cast aluminum.

3. Four hot-dipped galvanized "L" type anchor bolts shall be provided with the post for anchorage. A door shall be provided for wiring and anchor bolt access. It shall be secured with two, tamper proof, stainless steel screws. Post will be provided with a grounding stud mounted on the base floor opposite the access door.

B. Pole shall be supplied complete with anchor bolt assemblies, templates, and base cover plates. A handhole with cover and a grounding lug shall be provided on pole. The grounding lug shall be accessible from the handhole.

C. Pole shall be set plumb and accurately aligned by the Contractor.

2.01.02 BASES

A. The base plate shall be 11.75" square 0.75" thick steel base plate and shall be welded to the pole.

B. Four (4) 1" dia x 36.0" x 3.0" galvanized steel anchor bolts on a 12.0" dia. bolt circle shall be provided with each pole. Provide 10 gauge steel anchor bolt template with each pole.

C. The base cover shall be of a two piece cast aluminum alloy 319 with a minimum wall thickness of 0.25" and shall be 20.00" in dia.

D. The pole shall also be furnished with a 5.75" high cast aluminum transition cover complete 1/4" setscrews for securing said transition cover.

2.02 POLE TYPE 2 (SUPPLIED BY THE CITY)

2.02.01 POLE CHARACTERISTICS

A. The 10'-6" tall decorative post shall be 11 gauge steel, tapered with 12 flutes. Post's base plates shall be ¾" thick and attached by welding. The base cover shall be designed with curved flutes and be made of cast iron. The base cover shall be a one piece construction with a base diameter of 20".

B. Pole shall be supplied complete with anchor bolt assemblies, templates, and base cover plates.

C. Pole shall be set plumb and accurately aligned by the Contractor.

2.02.02 BASES

A. Four hot-dipped galvanized anchor bolts shall be provided with the post for anchorage. A door shall be provided for anchor bolt access. It shall be secured with two, tamper-proof stainless steel screws. Post will be provided with a grounding rod.

PART 3 EXECUTION

3.01 GENERAL:

A. Install all poles and bases shown on the drawings. The poles shall be aligned and set true and plumb. Touch-up all scratches and mars with touch-up paint.

B. Provide concrete foundations for poles.

3.02 CONCRETE POLE BASES:

A. The Contractor shall provide all concrete light pole bases for the lighting system as shown on the drawings. The exterior surface shall be smooth and free from defects and the top elevation shall be set as shown on the drawings. Set anchor bolts per manufacturer's recommendation. The anchor bolts are to be set plumb and true.

B. The concrete, placement and finish shall conform to Section 3520, PORTLAND CEMENT CONCRETE PAVING.

C. The Reinforcing steel shall conform to Section 3210, REINFORCING STEEL.

PART 4 PAYMENT

4.01 GENERAL:

A. Payment for work in this section will be included as part of the lump sum amount as stated in the proposal and considered incidental to the contract.

B. POLES INSTALLED - PER UNIT: Payment shall be at the unit prices as herein indicated for each type of pole shown on the drawings. These prices shall be full compensation for the execution of pay items indicated including all material, equipment, labor, tools and appurtenances necessary to complete these items.

C. CONCRETE BASES - PER UNIT: Payment shall be at the unit prices as herein indicated. These prices shall be full compensation for the placement of the concrete base including; grounding system, reinforcing steel, concrete, concrete forms, any other materials, equipment, labor, tools and appurtenances necessary to complete the base.

END SECTION 3 – LIGHT STANDARD INSTALL