DALLAS COUNTY
PUBLIC WORKS

September 22, 2016

City of Addison
Lisa Pyles, P.E.
Infrastructure & Development Services Director
16801 Westgrove
Addison, Texas 75001-5190

RE: 17701, Brookhaven Trail Project (Valley View Lane to existing Vitruvian Trail).

Dear Ms. Pyles,

Enclosed are the record drawing plans for the above mentioned project. Please sign to indicate that you have received the original plans & return this signed letter to Mary Murray, Public Works Dept. If you have any questions you may contact Ms. Murray by phone at 214-653-6165 or email her at Mmurray@dallascounty.org.

Sincerely,

Antonial Irvin, P.E.
Design Project Manager

AI/mm

Cc: Mary Murray, CAD Operator
John Mears, Assistant Director
Komala Narra, P.E.

Enclosures

Received by: Nicole Simpson

Printed Name: Nicole Simpson

Date: 9-27-16

COUNTY OF DALLAS, TEXAS

DEPARTMENT OF PUBLIC WORKS

BROOKHAVEN TRAIL CONNECTION

3939 Valley View Lane

Farmers Branch, Texas

CLOSEOUT DOCUMENTS

ROESCHCO CONSTRUCTION

CLOSEOUT DOCUMENTS
Brookhaven Trail Connection

- CONTRACT DOCUMENTS
  - AS-BUILT DRAWINGS (SUBMITTED SEPERATELY)

- Permits and Reports
  - City Permits
  - TCEQ Permits
  - ADA Inspection Report

- SUBCONTRACTOR INFORMATION
  - TRADE & CONTACT INFORMATION
  - WARRANTY
  - MATERIALS SUBMITTALS
  - OPERATIONS & MAINENANCE MANUALS (IF APPLICABLE)

- MATERIALS
  - SUBMITTALS

CLOSEOUT DOCUMENTS
Brookhaven Trail Connection

TAB 1

- CONTRACT DOCUMENTS
    - AS-BUILT DRAWINGS (SUBMITTED SEPERATELY)

CLOSEOUT DOCUMENTS
Brookhaven Trail Connection

TAB 2

- Permits and Reports
  - City Permits
  - TCEQ Permits
  - ADA Inspection Report

FLATWORK PERMIT

Issue Date: September 19, 2013

PROJECT DESCRIPTION: Hike & bike trail

PROJECT #	(972) 919-2549	www.mygov.us
13-2642	Inspections	Permits

City of Farmers Branch, TX

13000 William Dodson
P.O. Box 819010
Farmers Branch,
TX 75381-9010

(972) 919-2549 Voice
(972) 919-2544 Fax

LOCATION
3939 VALLEY VIEW
Farmers Branch, TX 75234

TENANT
Brookhaven College

CONTRACTOR

RoeschCo Construction

Frisco, TX 75034
(469) 888-4135 Phone
(469) 236-7877 Mobile
tk@roeschco.com

OWNERS

Dallas County Community College District
1601 S Lamar St
Dallas, TX 75215
ph. (214) 378-1824
Thomas Gallegos, College Dir, Facilities Mngmt
Brookhaven College
3939 Valley View Lane, Suite A206
Farmers Branch, TX 75244
ph. (972) 860-4827
Vincent Price, Asst Dir of Facilities Services
Brookhaven College
3939 Valley View Lane, Suite A206
Farmers Branch, TX 75244
ph. (972) 860-4601
George T. Herring, VP of Business Services
Brookhaven College
3939 Valley View Lane, Suite A206
Farmers Branch, TX 75244

AVAILABLE INSPECTIONS

- Flatwork or Driveway

INFORMATION

Contact Person	Todd Kueter
Contact Phone	(469) 236-7877
Contractor Valuation	905066.70
Square Footage	58872

NOTICES

1) All work must be done in compliance with the 2006 I codes.
2) A copy of the signed permit and approved plans must be on site at all times.
3) The project address must be clearly posted at the job site.

READ AND SIGN

I hereby certify by my signature below that the information provided is true and correct to the best of my knowledge and that the stated value of construction includes all materials, equipment, labor, overhead and profit. I further agree to adhere to all City, State and Federal laws regarding the work to be performed under this permit.

Owner / Agent Signature

Date

NOTES

- **Driveway/Flatwork general**

1. Call 972-919-2597 for inspection prior to placing concrete.
2. Concrete specs (recommended) Min. 4" thick, no.3 rebar 18" o.c. each way, Min. 3000 psi.

Texas Commission on Environmental Quality

Protecting Texas by Reducing and Preventing Pollution

July 29, 2014

ROESCHCO CONSTRUCTION INC
14205 RED OAK CIR N
MCKINNEY, TX 75071-6167

Re: **Permit Number TXR15YD72** for the facility/project, BROOKEHAVEN TRAIL CONNECTION, RN100681105
Located at: 3939 VALLEY VIEW LN, FARMERS BRANCH, TX 75244-4906, in DALLAS COUNTY
Issued to: OPERATOR: CN603788670, ROESCHCO CONSTRUCTION INC

Dear Applicant:

We have received your Notice of Termination of coverage under the general permit for discharge of stormwater for your facility at the location listed above. We have updated our records to show your termination of coverage request to be effective on **June 27, 2014.**

By signing this Notice of Termination, you are no longer authorized to discharge stormwater associated with the activity under the general permit. Any discharge of pollutants in stormwater associated with the activity to surface water in the state is unlawful under the Clean Water Act where the discharge is not authorized by a Texas Pollutant Discharge Elimination System (TPDES) permit. In addition, the submittal of this Notice of Termination does not release an owner or operator from liability for any violations of this permit or the Clean Water Act.

As stated in the TPDES stormwater general permit the Stormwater Pollution Prevention Plan and all data used to complete the NOI for coverage under the general permit, must be maintained and made readily available for review for a minimum period of three years following the termination date. Failure to comply with this or any permit condition is a violation of the permit and the statutes under which it was issued, and is grounds for enforcement action. This does not apply to Termination of Waiver coverage.

If you have any questions related to processing you may contact the Stormwater Processing Center by **email at SWPERMIT@texas.gov or by telephone at (512) 239-3700.** For technical issues, you may contact the stormwater technical staff by email at swgp@tceq.texas.gov or by telephone at (512) 239-4671. Also, you may obtain information on the stormwater web site at http://www2.tceq.texas.gov/wq_dpa/index.cfm.

Sincerely,

David W Galindo

David W. Galindo, Director
Water Quality Division
Texas Commission on Environmental Quality

R.E.D. ink REGISTERED ACCESSIBILITY SPECIALIST #18

Bob Davies
614 E. Shady Grove Rd.
O: 972.438.6134 F: 972.579.0504

for
Texas Department of Licensing & Regulation
Architectural Barriers

Dallas County Public Works
Komala Narra
411 Elm Street
Dallas, TX 75202

June 27, 2014
EABPRJB3803137
Ref #:121101

Re: Brookhaven Trail Connection
3939 Valley View Lane
Farmers Branch, TX 75244

INSPECTION COMPLETED – NO VIOLATIONS

Dear Komala:

We are pleased to inform you that the referenced facility has been inspected and found to be in substantial compliance with provisions of the Texas Government Code, Chapter 469. The inspection results will be forwarded to the Texas Department of Licensing and Regulation for issuance of the final approval letter. For newly constructed buildings and facilities, the Department will provide a Notice of Substantial Compliance (Certificate and Decal) to the owner upon receipt of a completed Notice of Substantial Compliance Request Form.

Please note, this determination does not address the requirements of the Americans with Disabilities Act (ADA), (P.L. 101-336), or any other state, local, or federal requirements. For information on the ADA, please contact the United States Department of Justice, Civil Rights Division at (202) 514-0301.

If you have any questions concerning the results of the inspection, or the requirements of the Architectural Barriers Act, or if you are not the owner of record for this facility, contact Bob Davies at 972-438-6134.

Please reference the EABPRJ project number in all future correspondence pertaining to this project.

Sincerely,
RED ink

Bob Davies
RAS #00000018
Encl.
Inspection Report

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Texas Pollutant Discharge Elimination System
Stormwater Construction General Permit

The Notice of Intent (NOI) for the facility listed below was received on September 20, 2013. The intent to discharge stormwater associated with construction activity under the terms and conditions imposed by the Texas Pollutant Discharge Elimination System (TPDES) stormwater construction general permit TXR150000 is acknowledged. Your facility's TPDES construction stormwater general permit number is:

TXR15YG16
Coverage Effective: September 24, 2013

TCEQ's stormwater construction general permit requires certain stormwater pollution prevention and control measures, possible monitoring and reporting, and periodic inspections. Among the conditions and requirements of this permit, you must have prepared and implemented a stormwater pollution prevention plan (SWP3) that is tailored to your construction site. As a facility authorized to discharge under the stormwater construction general permit, all terms and conditions must be complied with to maintain coverage and avoid possible penalties.

Project/Site Information:
RN106908775
BROOKHAVEN TRAIL PROJECT
BROOKEHAVEN TRAIL-FROM VALLEY VIEW LANE TO VITRUVIAN TRAIL IN THE CITIES OF FARMERS BRANCH AND TOWN OF ADDISON
FARMERS BRANCH, TX 75244
DALLAS COUNTY

Operator:
CN600605307
DALLAS COUNTY PUBLIC WORKS
411 ELM ST STE 400
DALLAS, TX 75202-3375

This permit expires on March 05, 2018, unless otherwise amended. If you have any questions related to processing you may contact the Stormwater Processing Center by **email at SWPERMIT@tceq.texas.gov or by telephone at (512) 239-3700.** For technical issues, you may contact the stormwater technical staff by email at swgp@tceq.texas.gov or by telephone at (512) 239-4671. Also, you may obtain information on the stormwater web site at http://www2.tceq.texas.gov/wq_dpa/index.cfm. A copy of this document should be kept with your SWP3.

Issued Date: October 28, 2013

FOR THE COMMISSION

Texas Commission on Environmental Quality

Protecting Texas by Reducing and Preventing Pollution

October 28, 2103

Dear Applicant:

Re: TPDES General Permit for Construction Stormwater Runoff (TXR150000)
Notice of Intent Authorization

Your Notice of Intent application for authorization under the general permit for discharge of stormwater associated with construction activities has been received. Pursuant to authorization from the Executive Director of the Texas Commission on Environmental Quality, the Division Director of the Water Quality Division has issued the enclosed Certificate.

Please refer to the attached certificate for the identification number that was assigned to your project/site and the coverage effective date. Please use this number to reference this project/site for future communications with the Texas Commission on Environmental Quality (TCEQ).

Authorization under the Edwards Aquifer Protection Program is required before construction can begin where the site is located within the Edwards Aquifer Recharge Zone, Contributing Zone, or Contributing Zone within the Transition Zone.
See http://www.tceq.texas.gov/compliance/field_ops/eapp/program.html for additional information.

A Notice of Termination must be submitted when permit coverage is no longer needed. You may obtain a Notice of Termination form at the web site listed below.

For questions related to the status or processing of your application you may contact the Stormwater Processing Center by email at SWPERMIT@tceq.texas.gov or by telephone at (512) 239-3700.

If you have any questions regarding coverage under this general permit or other technical issues, you may contact the stormwater technical staff at (512) 239-4671 or by email at swgp@tceq.texas.gov. Also, you may obtain information on the stormwater web site at www.tceq.texas.gov . Permit and application status information can be found on the TCEQ web site at http://www2.tceq.texas.gov/wq_dpa/index.cfm.

Sincerely,

David W Galindo

David W. Galindo, Director
Water Quality Division
Texas Commission on Environmental Quality

TEXAS DEPARTMENT OF LICENSING AND REGULATION
COMPLIANCE DIVISION - ARCHITECTURAL BARRIERS
P.O. Box 12157 • Austin, Texas 78711 • (512) 539-5669 • (877) 278-0999 • FAX (512) 539-5690
architectural.barriers@license.state.tx.us • www.license.state.tx.us

PROOF OF INSPECTION

The inspection of the referenced construction project was performed on (Date) 6-27-14
The inspection was performed by (Check One):

☐ Texas Department of Licensing and Regulation Name:_____
☐ Contract Provider Name:_____
☒ Registered Accessibility Specialist Name: Bob Davies RAS #: 00000018

****IMPORTANT INFORMATION****

This form is issued by the Texas Department of Licensing and Regulation (TDLR) for the purpose of providing proof of inspection to the building owner and is not intended to imply that a Registered Accessibility Specialist or contract provider is an employee of the department or that they have been hired by the department to perform this inspection.

PROJECT INFORMATION — **PLEASE PRINT OR TYPE**

1. Project Name: Brookhaven Trail Connection		2. EABPRJ #: B3803137
3. Project Address: 3939 Valley View Lane		Suite #:
City: Farmers Branch	County: Dallas	Zip: 75244

INSPECTOR INFORMATION

4. Name: Bob Davies			5. RAS # (if applicable): #00000018
6. Company/Agency: RED ink			
7. Address: 614 E. Shady Grove Rd.		Suite #:	
City: Irving		State: TX	Zip: 75060
8. Phone: 972-438-6134	9.Fax: 972-579-0504	10.**Email: bob@redinktexas.com	
I certify that I have performed an inspection of the referenced construction project:			Date: 6-27-14
11. Signature of Inspector			

OWNER/OWNER DESIGNEE* PRESENT DURING THE INSPECTION

12. Name: Todd Kueter			
13. Company/Agency: Dallas County Public Works			
14. Address: 411 Elm Street		Suite #:	
City: Dallas		State: TX	Zip: 75202
15.Phone: 214-653-6164	16.Fax:	17.**Email: knarra@dallascounty.org	
I certify that I was present during the inspection of the referenced construction project: tkueter@dallascounty.org			Date: 6-27-14
18. Signature of Owner / Designee			

*The designee may be someone other than the owner or designated agent referenced in Administrative Rule 68.10(10)TDLR FORM

TDLR FORM AB044 12-08

NOTE: An individual who completes and files this form with the Texas Department of Licensing and Regulation (the Dept.) is entitled to the following:
1) to be informed about the information that the Dept. collects about the individual, upon their request and subject to a few exceptions;
2) to receive and review the information, under Sections 552.021 and 552.023 of the Texas Govt. Code; and
3) have the Dept. correct information about the individual that is incorrect, under Section 559.004 of the Texas Govt. Code.

**The Department will add your address to the Architectural Barriers email notification list, which automatically provides Department information on matters affecting Architectural Barriers. Your email address is confidential pursuant to the Texas Public Information Act; the Department will not share it with the public. For additional information link to: http://www.license.state.tx.us/newsletters/TDLRnotificationLists.asp

121101

CLOSEOUT DOCUMENTS
Brookhaven Trail Connection

TAB 3

- SUBCONTRACTOR INFORMATION
  - TRADE & CONTACT INFORMATION
  - WARRANTY
  - OPERATIONS & MAINENANCE MANUALS (IF APPLICABLE)

BROOKHAVEN TRAIL CONTRACTORS

General Contractor

RoeschCo Construction, Inc
14205 Red Oak Circle
McKinney, Texas
PHONE: (469) 888-4135
FAX: (469) 888-4136
Contact Person: Marcie Roeschley

Concrete

RoeschCo Construction, Inc
14205 Red Oak Circle
McKinney, Texas
PHONE: (469) 888-4135
FAX: (469) 888-4136
Contact Person: Marcie Roeschley

Landscaping & Utilities

RoeschCo Construction, Inc
14205 Red Oak Circle
McKinney, Texas
PHONE: (469) 888-4135
FAX: (469) 888-4136
Contact Person: Marcie Roeschley

Plaque

Gemini Incorporated
103 Mensing Way
Cannon Falls, Minnesota
PHONE: 1-800-LETTERS
WEB: www.signletters.com
Contact: Jennifer D

Site Furnishings

431 Lawndale Ave.
Kalamazoo, MI
PHONE: 800-430-6209
FAX: 269-381-3455

Bridge

Pioneer Bridges
119 40th Street NE
Fort Payne, Alabama
PHONE:(800) 447-7320
FAX: (256) 845-7775
Contact Person: Alex Flora

Electrical

Electric Inc.
179 Southern Dr
Royce City, Texas
PHONE: (972) 771-5844
FAX: (972) 771-5843
Contact Person: Todd Allen

Pavement Markings

THM
930 Kck Way
Cedar Hill, Texas
PHONE: (469) 523-0180
FAX: (469) 523-0181
Contact Person: Rob Everitt

Rubber Surfacing

Vibra-Whirl Sports
94 Main Street
Panhandle, Texas
PHONE: (806) 537-3526
FAX: (806) 537-3442
Contact: Glen Swafford

ROESCHCO CONSTRUCTION

August 4, 2014

Project: **BROOKHAVEN TRAIL CONNECTION**
MCIP Project No. 17701
Brookhaven College
3939 Valley View
Farmers Branch, Texas
Owner: Dallas County Public Works
411 Elm Street, 4th Floor
Dallas, Texas 75202

RoeschCo Construction, Inc. does hereby warrant that for a period of one year from the date of final acceptance, the above work will remain free from all defects in workmanship and material, and that it will comply with all the specific requirements of the Specifications and other Contract Documents governing the work.

It is understood and agreed that in the event of defects and the necessity of making repairs, the Owner will immediately notify RoeschCo Construction, Inc. in writing of its conditions and shall give the contractor reasonable time in which to make said repairs. If any person, firm or corporation other than RoeschCo Construction, Inc. or its authorized representatives have, since the completion of the above work, performed or attempted to perform any repairs to the property then this warranty could become null and void. This warranty does not cover any repairs made by anyone other than RoeschCo Construction, Inc. or one of its authorized representatives.

RoeschCo Construction, Inc. shall not be under any responsibility or liability whatsoever to make repairs occasioned by injury to said property caused wholly or in part by windstorm, tornado, lightning, hail or other casualty or by reasons of negligence by any party not directly associated with the contractor.

Marcie L Roeschley

Marcie L. Roeschley
President

9801 Camfield Ave, Ste. 200 | Frisco, TX 75033 | PH: 469.888.4135 | FAX: 469.287.4133 | www. RoeschCo.com

PIONEER BRIDGES
A division of Bailey Bridges, Inc.

LIMITED WARRANTY FOR PIONEER BRIDGES FURNISHED BY BAILEY BRIDGES, INC. OF FT PAYNE, ALABAMA

Bailey Bridges, Inc. shall warrant that it can convey good title to the goods, that they are free of liens and encumbrances and that their structures are free of design, material and workmanship defects for a period of ten years from the date of delivery.

Bailey will, at its option, repair or replace, without charge, or allow credit for, any goods found on inspection by it to be defective under normal usage, provided Bailey Bridges, Inc. is notified in writing immediately upon discovery of such defects.

This warranty shall not cover defects caused by abuse, misuse, overloading, accident, improper installation, maintenance, alteration, or any other cause not expressly warranted. This warranty does not cover damage resulting from or relating to the use of any kind of deicing material. Bailey Bridges excludes wood products from this warranty but will pass on original wood supplier's warranty for wood products to the owner.

Coatings are warranted for a period of one year from delivery and shall be maintained according to Bailey's inspection and maintenance procedures. Failure of erector to properly apply touch up paint after erection will void this portion of the warranty.

In no case shall Bailey Bridges, Inc. be liable beyond the replacement of goods of its manufacture and supply, F.O.B. carrier at point of original destination. Bailey Bridges, Inc. is not liable for any labor charges involved in the removal and replacement of defective material or any resulting consequential damages.

The bridge owner shall be responsible for proper inspection and maintenance of the bridges covered by this warranty.

BAILEY BRIDGES, INC.
119 40th Street NE Fort Payne, AL 35967 866-708-5778 256-845-7775 fax www.pioneerbridges.com

PIONEER BRIDGES
A division of Bailey Bridges, Inc.

INSPECTION AND MAINTENANCE OF PIONEER BRIDGES

INSPECTION

I. USER SAFETY (INSPECTION BY OTHERS)

A. Each bridge should be inspected at regular intervals (at least once per year) to ensure that all items of user safety are accounted for and performing properly. Those areas of special concern should be as follows:

1. All safety rails, handrails, rubrails, fencing or other types of safety features should be in place with complete structural integrity and capacity. There shall be no sharp edges or protrusions on any feature that could produce bodily harm or be a hazard to the user.
2. All deck surfaces should be without gaps, cracks or projections that could create a trip hazard or interfere with the user in any way. Special consideration should be given to any smooth deck surface that could also create a possible slip hazard.

II. STRUCTURAL INTEGRITY (INSPECTION BY OTHERS)

A. Each bridge should be inspected at regular intervals not to exceed one year. Pages 5-13 of the American Association of State Highway and Transportation Officials (AASHTO) Manual for Maintenance Inspection of Bridges provides an excellent guide for this inspection. We recommend its use, particularly in the case of bridges for vehicular use. This visual inspection should include, but not be limited to the following:

1. Check the decking to insure it is in satisfactory condition. Pay special attention to timber decks at their contact surfaces where they bear on stringers.
2. All steel surfaces should be inspected to insure that they are performing satisfactorily. Check for any excessive corrosion on weathering steel bridges or paint and caulk integrity on painted bridges, paying special attention to the following areas:

a. All steel below the deck, particularly the tops of stringers supporting wood decks.
b. Truss or floor system joints where debris or water may accumulate.
c. Anywhere vegetation or other material may have come in contact with the steel.

NOTE: Any weathering steel surface not "boldly exposed" to the atmosphere should be checked to insure it has formed its protected oxide layer.
3. Check all steel surfaces and welded and bolted connections for cracks. Pay special attention to the welded truss and floor beam joints in vehicular or material handling bridges subject to fatigue stresses.
4. Check the ends of the bridge for any damage which may have been caused by vehicular impact.
5. Check the integrity of concrete abutments and/or piers for scour due to water flow if applicable, etc., per AASHTO's Manual for Maintenance Inspection or the foundation engineer's recommendations.
6. Check anchor bolts for damage and see that they are secure. Examine all bearings to ascertain that they are functioning properly. Expansion bearings and the expansion joints at the ends of the bridge must be checked to see that they can move freely and are clear of all foreign material.

7. SPLICED BRIDGES:
a. Check the bolted splices for any excessive corrosion or cracking of the steel or fasteners,
b. Make sure all weep holes are open and clear of debris to allow for complete drainage of any moisture which may collect on the interior tube surfaces.

B. If problems are seen during the inspection procedure, cleaning and repair or replacement of weathering steel bridge components may be necessary; painted bridges may require cleaning and repainting or replacement of some or all members.

MAINTENANCE FOR PAINTED BRIDGES

Painted bridges, like any painted structure, require periodic inspections and painting. The following steps will help increase the life span of your bridge:

A. After inspections, or any time loss or damage of the paint coat is noticeable, problem areas should be repaired as follows:

1. Select a maintenance coating system based on the following:
a. Inspection report findings
b. Environment (identify any corrosives)
c. Degree of surface preparation attainable
d. Current paint compatibility

NOTES:
* Generic type compatibility is a major factor in the selection of a system (some coating systems are not recommended over a particular type of existing material).
* Depending upon the surface performance, an upgrade in the coating system may be necessary at this time.

2. Clean all applicable surfaces as dictated by the repair system chosen (i.e., pressure wash, brush off, blast clean, etc.)
3. Apply repair coats per the coating manufacturer's recommendations.
4. Caulk all unwelded seams which are in need of repair with a good quality clear silicone caulk suitable for exterior use.

B. The entire bridge structure will require periodic repainting dependent upon varying factors such as the existing paint system, bridge usage, atmospheric environment, etc. Repainting will typically be required every 2-10 years. The frequency of painting will need to be determined by the inspector. The following steps should be followed when repainting the bridge structures:

1. Remove wood decking or grating, fencing, wood rubrails and any other non-painted items which will not be receiving new paint. Obviously, concrete and asphalt decked bridges will be painted with the deck in place, unless these decks have deteriorated to the point of replacement. If this is the case, remove the deck prior to painting, if not, special care should be exercised to insure problem areas below deck are cleaned and painted properly.
2. Select a coating system based on parameters similar to those outlined in the repair painting section, paying attention to the following items:

Environment, specifically any corrosives identified during inspections
Substrate condition
Surface preparation limitations

3. After selecting a system compatible with all existing surface conditions and site limitations, clean all surfaces and apply according to the manufacturer's recommendations.
4. After the coating system has properly cured, caulk all unwelded seams with a good quality clear silicon caulk suitable for exterior use and replace the decking, fencing, etc., which were removed prior to cleaning and repainting the structure. This is also an excellent time to replace the wood rubrail which may have shown excessive deterioration.

MAINTENANCE FOR WEATHERING STEEL BRIDGES

Weathering steel is not a maintenance free material. The following steps will help increase the life span of your bridge. Pioneer recommends rinsing the steel truss and beneath the bridge every 3 months if the bridge is within a five-mile radius of the ocean.

A. Do not use de-icing salts for snow removal. De-icing salts can severely damage the weathering steel.
B. Avoid retention of debris on the steel surfaces. Flush bridges at areas which accumulate debris (including salt) on a regular basis.
C. Prevent weathering steel from contact with vegetation, masonry or other materials so that the weathering process can proceed on a natural basis.
D. If excessive corrosion is encountered due to salts from adjacent roadways or roadways beneath an overpass structure, or for any other reason, it may be wise to blast clean and paint the truss joints, the steel beneath the deck or any area which exhibits excessive corrosion.

MAINTENANCE FOR DECKING

I. WOOD DECKS

Wood is a natural material which exhibits large volume changes with variations in moisture content and time, particularly in the width direction, which can cause gaps to form between the planks. Cupping and splits may also occur which need to be repaired.

Please note: It is the owner's responsibility to keep the wood deck free from cupping, splits, gaps and smooth surfaces.

A. Replace all planks that have deteriorated past a useful and safe life.
B. Eliminate gaps between the planks which might be large enough for a high-heeled shoe to become lodged. Eliminating the gaps should be done as follows:

1. Remove all deck bolts.
2. Remove plank hold-down angles. Be sure to mark their locations for ease of reinstallation.
3. Slide wood planks together.
4. Add new plank or planks to fill up the excess space.
5. Reinstall plank hold down angles.
6. Drill new holes in wood planks.

7. Install new deck bolts (see shop drawings for size and material).

C. Replacement planks may be purchased through Pioneer.
D. Over time with exposure to the environment, wood may become smooth, particularly when wet with rain, dew, snow, sleet, ice, etc. Periodically it may be necessary to "roughen" the surface of the decking with large grit sandpaper.

II. GRATING DECKS

A. Repair or replace any grating which shows damage or deterioration to the main bearing bars.
B. If galvanized, inspect to see if corrosion has occurred. Wire brush any spots exhibiting corrosion and repair. We recommend the use of either sprayed zinc metalizing or the use of organic zinc rich paint for repairing galvanized surfaces.
C. For weathering steel grating, if excessive corrosion is encountered due to salts from adjacent roadways or roadways beneath an overpass structure, or for any other reason, it may be wise to blast clean and paint the grating.

III. CONCRETE & ASPHALT

For all concrete and asphalt decks, Pioneer supplies a steel corrugated form decking to aid in the placement of the concrete or asphalt. For asphalt decks, this steel form is the main load carry member. For concrete decks, this steel form may or may not be integral to the deck design (as in a composite deck). The contractor places the reinforcing and concrete, or the asphalt, after installation of the bridge.

During inspection, the asphalt or concrete covering should be checked for excessive cracking and deterioration. At the same time, the seal form decks should be checked for excessive rusting and/or damage. If the coverings are deemed to require replacement, the steel forms may be reused if they are not damaged or do not show excessive corrosion.

Structural form decks (for asphalt decks and composite concrete decks) may require replacement even when the deck surface itself is sound.

Concrete and asphalt decks are usually not designed to accept the added dead weight of an overlay. Therefore, the only remedy is repair of the cracking or replacement of the concrete or asphalt covering.

See the shop drawing for recommended concrete strength, reinforcing size, slab and asphalt thickness, control joint location and surface finish.

Please note: Maintenance of the bridge decking, including keeping it free from slip or trip hazards, is the owner's responsibility.

EJ | Electric, Inc.

HUB-WBENC-NCTRCA Certified

August 5, 2014

ROESCHCO Construction
9801 Camfield Avenue Suite 200
Frisco Texas 75033

RE: Brookhaven Trail Connection, MCIP Project No. 17701
Brookhaven College
3939 Valley View
Farmers Branch Texas

Subject: Warranty

This letter shall serve as warranty against defects in labor or materials supplies in the above referenced project, for a period of **one (1) year from the date of substantial completion.** We will, upon notification, repair at our expense or have the appropriate subcontractor/supplier repair the defective materials and/or installations within the warranty period.

This warranty does not include repair work for improperly maintained, abused, neglected, damaged or subject to normal wear and tear.

Let this letter also serve as a written certification that to the very best of our knowledge none of the materials provided by Electric, Inc. contained any asbestos, lead or any other hazardous material.

Feel free to contact us with any questions. Thank you for your time.

Cordially,
Carolyn Thumann
Carolyn Thumann
CEO

The State of Texas

County of Rockwall

BEFORE ME, the undersigned authority, on this day personally appeared Carolyn Thumann, personally known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he was duly authorized and executed the same for the purposes and consideration therein expressed.

Given under my hand and seal of office, this the 5th day of August 2014.

NOTARY PUBLIC IN AND FOR
STATE OF TEXAS

NOTARY PUBLIC
SANDRA J. BOSWELL
State of Texas
My Commission Expires 12/02/2014

My Commission Expires
December 2, 2014

10860 Sanden Drive
Dallas, TX 75238
Ph: 214-932-3000
Fx: 214-932-3003

Brookhaven Trail
BEGA

ELECTRICAL CONTRACTOR
ELECTRIC INC.

O&M MANUAL
August 5, 2014

CONTACT INFORMATION

FOR PROJECT SUPPORT
PLEASE CONTACT

Ryan Vanness
214-578-7518
RVANNESS@CEDDALLAS.COM

Heather Vanegas
214-932-2979
HEATHER@CEDDALLAS.COM

Erin McHugh
214-932-2978
ERINM@CEDDALLAS.COM

Housing: Two interlocking die-cast aluminum housings. Heavy gauge .080" spun aluminum shade with rolled edge, finished white inside.

Arm: Fabricated from .125" wall aluminum extrusion formed into a continuous smooth radius, terminating and welded into a one piece die-cast aluminum fitter. Fitter slip fits a 3" O.D. pole top and is secured by six (6) socket head stainless steel set screws threaded into stainless steel inserts.

Enclosure: Lamp enclosure/optical system comprises an assembly of two pure anodized aluminum asymmetrical main beam reflectors with clear impact resistant acrylic lens with optical texture fixed to a heavy gauge .080" spun aluminum shade with rolled edge, finished white inside and rigidly fastened to the luminaire housing. Fasteners are stainless steel.

Electrical: 42.8W LED luminaire, 48 total system watts, -30°C start temperature. Integral 120V through 277V electronic LED driver located in luminaire head, 0-10V dimming. Standard LED color temperature is 4000K with a >80 CRI. Available in 3000K (>80 CRI); add suffix K3 to order.
Note: Due to the dynamic nature of LED technology, LED luminaire data on this sheet is subject to change at the discretion of BEGA-US. For the most current technical data, please refer to www.bega-us.com.

Finish: Available in four standard BEGA colors: Black (BLK); White (WHT); Bronze (BRZ); Silver (SLV). To specify, add appropriate suffix to catalog number. Custom colors supplied on special order.

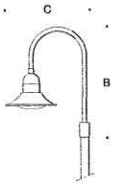
UL listed, suitable for wet locations. Protection class: IP65.

Weight: 27.6 lbs.

Effective Projection Area (EPA): 2.8 ft²

Luminaire Lumens: 2548
Tested in accordance with LM-79-08

Type:
BEGA Product:
Project: Brookhaven Trail
Voltage:
Color: Bronze
Options:
Modified:



Single pole-top luminaires

	Lamp	LEED	A	B	C
7911 LED	42.8W LED	LZ-2	26⅝	46¼	40⅛

Recommended for use with 14' to 18' poles.

BEGA-US 1000 BEGA Way, Carpinteria, CA 93013 (805) 684-0533 FAX (805) 566-9474 www.bega-us.com

Type:
Project: **Brookhaven Trail**
Options: **Bronze**
Modified:
Luminaire:
Fixture EPA:
Optional Tenon: ❑ 2⅜"ϕ x 3½" H
GCO: ❑
GFI: ❑

Approval:

1108HR 3" - 5" Tapered round hinged pole

Wall thickness: .125"

Shaft: Extruded from all new seamless 6063 aluminum alloy tubing, heat treated to a T-6 condition.

Anchor base: Round cast aluminum A356 alloy, heat treated to a T-6 condition. Anchor base and shaft continuously welded at the outside top and inside bottom of the anchor base casting. Pole base to be round hinged two piece casting. Hinge Pole shaft to be welded to upper base casting which is secured to lower base casting by three (3) stainless steel bolts. Bolts to be fastened to cast-in stainless threaded inserts in lower casting. Cast round two piece base cover supplied with pole.

Anchor bolts: Four (4) ¾" x 17" galvanized steel anchor bolts supplied with double nuts and flat washers. Maximum bolt projection 3½". For luminaires requiring threaded inserts and pole cap -specify: 1D (single); 2D (2@ 180°); 3D (3 @ 120°).

GCO or GFI: Standard GCO/GFI location is opposite the hinge. Height above base for ballast in luminaires is 18". For single luminaires with a pole base mounted (PBM) ballast the minimum height is 24" and 42" minimum for double PBM luminaires.

Weight: 50.0 lbs.

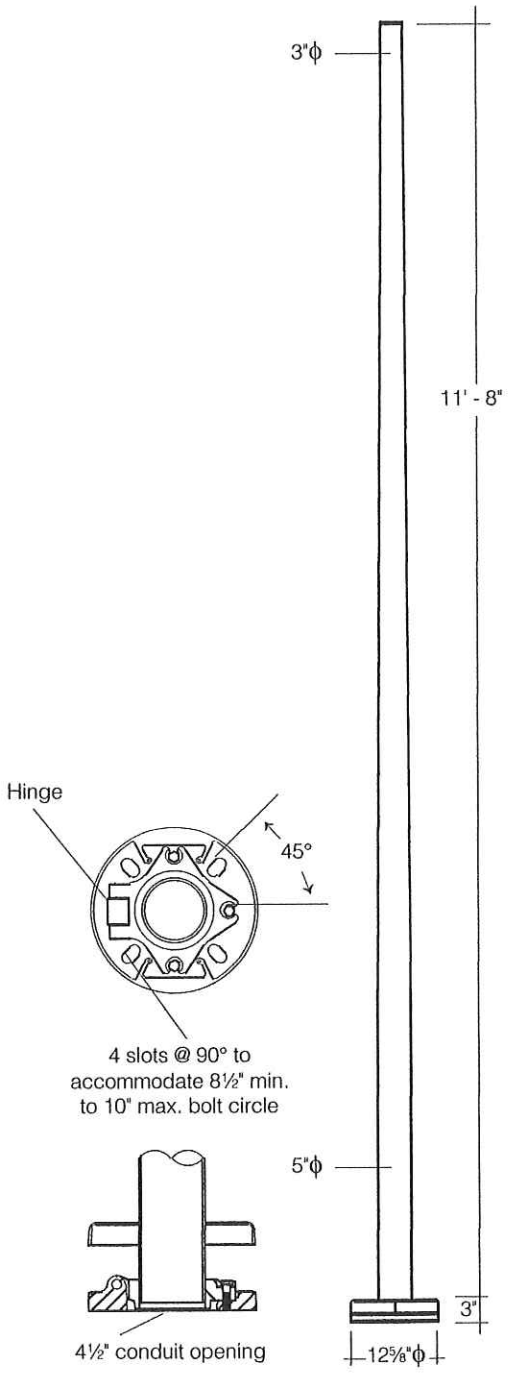
Disclaimer

BEGA-US warrants the specific anchor bolts and pole combination according to the product number(s) and description(s) indicated on this submittal sheet. Structural changes to the pole requested by the customer, including changes to pole length, may affect the compatibility of the anchor bolts and corresponding poles. BEGA-US is not responsible for the incompatibility of the anchor bolts and poles resulting from such structural changes without review by the BEGA-US engineering department. This includes, but is not limited to, any labor charges, charges for replacement materials and shipping.

Pole wind load rating:

MPH:	70	80	90	100	120
EPA:	15.5	11.5	8.7	6.8	4.4

Note: Data above assumes grade level installation and a maximum luminaire weight of 50 lbs.



BEGA-US 1000 BEGA Way, Carpinteria, CA 93013 [P] 805·684·0533 [F] 805·684·6682

Terms and Conditions

BEGA Limited Warranty

All materials and component parts, excluding lamps, ballasts and transformers are guaranteed to be free from defects of material and/or workmanship for a period of three years from date of shipment. Lamps, ballasts and transformers are covered to the extent of that particular manufacturer's warranty.

LED modules and drivers are guaranteed to be free from defects of material and/or workmanship for a period of five years from the date of shipment. Failure is defined as having 15% or more LED's not illuminated in a luminaire. BEGA assumes no responsibility for installation or proper selection of its products.

Limit of Liability BEGA's liability is expressly limited to the repair or replacement of such parts where, in our judgement, damage is caused by a defect and not misuse, and is limited to such repair and replacement being made at the factory. Freight charges to and from the factory will be borne by the purchaser. No claims for labor, performance, materials, or deductions from invoices will be allowed. Warranty is voided if any unauthorized repairs or alterations are made.

Damaged Merchandise All shipments are delivered to the transportation company in good condition. BEGA's liability ceases at that time. If a shipment is received damaged, recipient must accept the shipment and immediately contact the freight carrier for damage inspection.

If concealed damage is found, notify the delivering carrier at once and request an inspection. Without this inspection the transportation company will not consider a claim for loss or damage. If the carrier will not perform the inspection, recipient should prepare an affidavit that recipient contacted them, noting the time and date that they failed to comply with recipient's request. This along with the other papers in recipients possession will support the claim.

If the shipment is not delivered in accordance with the quantity of cartons or packages as shown on the Bill of Lading and/or Freight Bill, do not accept it until such shortages are noted on the Bill of Lading and/or Freight Bill.

Damage or Loss in Transit Loss or disputes with carriers regarding damaged product does not relieve the buyer's obligation to pay the full amount of BEGA's invoice in a timely manner. Shipments must be inspected by the freight carrier immediately upon receipt for noticeable transportation loss or damage, and a claim entered at once with the carrier as stated.

All claims against BEGA, including claims for shortages and errors, must be made in writing ten (10) days after delivery. Failure to make any such claim within ten (10) days shall constitute acceptance of the merchandise and waive any such shortages, errors, or other claims.

Payment Terms Payment terms for credit approved orders are net 30 days from the date of invoice. A late payment charge of 1.5% per month will be added to all outstanding balances after 30 days from the date of invoice. The buyer agrees to reimburse BEGA for all incurred collection costs which are necessary to enforce payment of invoiced amounts.

Conditions of Sale

New Accounts Opening order of $2,500 minimum required.

Prices and product information are subject to change without notice.

Freight Allowances Freight prepaid within the continental U.S. on any order or partial shipment over $5,000. On shipments to Alaska and Hawaii, freight allowance applies only to port of debarkation from the continental U.S. BEGA reserves the right to route all shipments. Shipments will be made in any other manner requested by the customer, provided customer accepts all additional costs over normal shipping charges. All shipments are F.O.B. Factory at the purchaser's risk.

Drop Shipments BEGA reserves the right to refuse to make direct shipments to points of destination outside the regular assigned selling and service area of the distributor.

Cancellations All modified orders are noncancelable after release. Cancellation fee will be assessed for any product manufactured or partially manufactured.

Returns

1. Materials may not be returned for credit without prior written authorization from the factory.
2. Requests to return material must be made **within 60 days from the invoice date.**
3. The total value of the items to be returned must exceed ***$250.00.***
4. Approved returns must be accompanied by the appropriate Purchase Order number and Return Authorization number. Return Authorization number must be printed on the outside of the box.
5. Non-stock, modified, custom color or discontinued items are not returnable.
6. Return Authorization will **expire 90 days after the date that the Return Authorization is issued.** Materials will be refused and returned to sender if Return Authorization period of 90 days has expired.
7. Material accepted for return is subject to a minimum 50% restocking charge, including freight costs.
8. If returned for credit, material must arrive in new, resalable condition. Credit will not be issued for materials damaged as the result of improper packaging.
9. No RA will be issued against unpaid invoices.

Delivery Many cataloged products are stocked at the BEGA factory and are available for immediate shipment. In all cases, BEGA will do its utmost to meet customer requirements but cannot be responsible for delays beyond its control. No liability shall be sustained by BEGA by reason of not filling any order or portion thereof due to such delays.

Parts Miscellaneous replacement parts prices are available upon request.

TOTAL HIGHWAY MAINTENANCE, LLC

930 Kck Way
Cedar Hill, TX 75104
(469) 523-0180) Office
(469) 523-0181) Fax
SBE# 23244

August 12, 2014

Project: **BROOKHAVEN TRAIL CONNECTION – Pavement Markings**
MCIP Project No. 17701
Brookhaven College
3939 Valley View
Farmers Branch, Texas
Owner: Dallas County Public Works
411 Elm Street, 4th Floor
Dallas, Texas 75202

Total Highway Maintenance, LLC. does hereby warrant that for a period of one year from the date of final acceptance, the above work will remain free from all defects in workmanship and material, and that it will comply with all the specific requirements of the Specifications and other Contract Documents governing the work.

It is understood and agreed that in the event of defects and the necessity of making repairs, the Owner will immediately notify RoeschCo Construction, Inc. in writing of its conditions, and shall give RoeschCo Construction, Inc. reasonable time in which to contact Total Highway Maintenance, LLC. to make said repairs. If any person, firm or corporation other than Total Highway Maintenance, LLC. or its authorized representatives have, since the completion of the above work, performed or attempted to perform any repairs to the property, then this warranty could become null and void. This warranty does not cover any repairs made by anyone other than Total Highway Maintenance, LLC. or one of its authorized representatives.

Total Highway Maintenance, LLC. shall not be under any responsibility or liability whatsoever to make repairs occasioned by injury to said property caused wholly or in part by windstorm, tornado, lightning, hail or other casualty or by reasons of negligence by any party not directly associated with the contractor.

Rob Everitt
Estimating Manager

GEMINI INCORPORATED

103 Mensing Way Cannon Falls, MN 55009-1143
1-800-LETTERS www.signletters.com

Gemini Letters Guarantee

When permanently installed by a Sign Professional, Gemini Letters are guaranteed for the life of the building they were originally put on.

Plastic Letters
If any letters break or fade, Gemini will replace the defective letters for free. Exterior letters will get dirty. Varied climatic conditions may impact the letter finish. Therefore, some regular cleaning may be required. A good dish soap and water will help return the letters to their original luster.

Metal Letters
Should any metal letter finish fade or corrode, Gemini will refinish at no charge. Some metal finishes do require regular maintenance to keep their original luster. Painted, satin and polished letters are clearcoated with a hardened polyurethane, similar to your car finish. This can be cleaned with a good dish soap and water. If the face gets scratched, a good car polish will also help bring back the original luster. Painted metal letters are double coated with a hardened acrylic polyurethane, and then oven baked. This paint should retain its original luster and not crack for at least 10-15 years.

STATE OF TEXAS ≈
COUNTY OF CARSON ≈

AFFIDAVIT OF WARRANTY

Upon substantial completion, personally appeared before me the undersigned Notary Public, Glen Swafford, President of Vibra-Whirl Sports, Ltd., of Panhandle, Texas, who on his oath made the following affidavit:

Vibra-Whirl Sports, Ltd., manufacturer and installer of Latex Surface Systems, warrants the Omni-B Surface (Black) installed on the athletic track facilities located at Brookhaven Community College, Farmers Branch, Texas shall be free from defects in workmanship, labor and materials under normal use and service for a period of 12 months from the date of Substantial Completion subject to the conditions as listed below. This warranty shall remain in force and effect provided that the damages claimed have not been caused by improper design or engineering, by the failure of an inadequate or defective base, by the inherent characteristics of the earth or soil upon which the surface is installed, or by normal wear and tear. Furthermore, this warranty shall remain in force and effect provided that the owner properly maintains constant moisture in the surrounding soils on both the inside and the outside of the track's surface. This warranty shall remain in force and effect provided that the Owner does not allow abuse, neglect, the use of improper footwear or equipment, deliberate acts, static or dynamic loads exceeding Vibra-Whirl Sports, Ltd. recommendations, or the use of improper cleaning methods to the track surface. Acts of God are specifically excluded from this warranty. All warranty claims must be addressed in writing to Vibra-Whirl Sports, Ltd. stating the specifics of any requested warranty repairs.

Track Surfacing-_____, 2014

Vibra-Whirl Sports, Ltd.

Glen Swafford, President

SUBSCRIBED AND SWORN TO BEFORE ME, this 20th day of June 2014

Notary Public

NOTARY PUBLIC STATE OF TEXAS
SHERRIE L HIBBS
My Commission Expires
September 16, 2017

94 Main Street • P.O. Box 966 • Panhandle, Texas 79068 • 806-537-3526 • Fax 806-537-3442

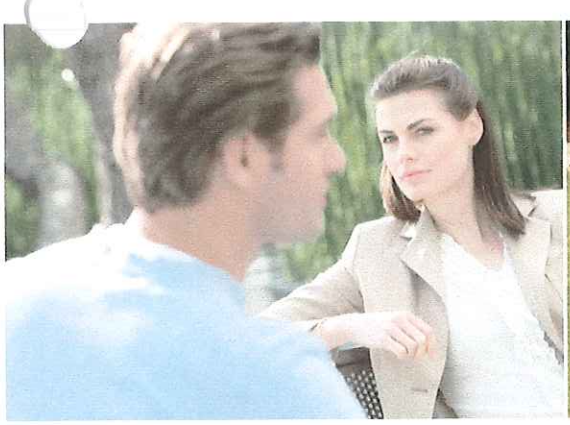
VW SPORTS

WARRANTY REQUIREMENTS FOR USE AND MAINTENANCE OF VIBRA-WHIRL TRACK SURFACES

1. Keep surface clean. Remove mud, before dry, and accumulations of sand or soil. Blow off the track on a regular basis (monthly). Frequency will result in extending the life of the surface.
2. Eliminate grass and other vegetation immediately. Remove vegetation that grows through the surface. Do Not let running grasses grow over the surface of the track and field event areas. Special care should be taken where there is no curb as grass can undermine the base causing the asphalt and surface to deteriorate. We recommend that the edges of the track and field events be treated a minimum of twice annually with a soil sterilant to eliminate vegetation which may encroach into the track or track surface. Do Not use a weed eater on the track to eliminate vegetation, as it will destroy the surface.
3. Eradicate insect/ant infestation in the track base or surfacing.
4. Provide protection, such as plywood, in any areas subject to equipment traffic and in areas of high pedestrian traffic. Indoor-outdoor carpet serves this purpose in areas of light pedestrian traffic, football teams, cheerleaders, etc.
5. Do Not permit any vehicles to be driven on the track surface. If vehicles need to cross the track, a minimum of two (2) layers of thick plywood should be used as protection. If unprotected, damage will result from sudden stops and starts, prolonged parking, and turning the steering wheel while the vehicle is stopped.
6. Do Not permit bicycles, two wheelers, three wheelers, wheelchairs, strollers, roller blades, skates, etc., on the track surfacing.
7. Do Not spill gasoline, kerosene, oil or any other petroleum derivatives, or solvents on the track surface. In the event of an accidental spill of an oil base material, the surface should be flushed thoroughly with detergent and water solution.
8. Do Not permit spikes longer than 3/16" to be used by runners. Do Not permit waffle type soles, cleats, or hard sole shoes to be used on the track.
9. Do Not permit sharp, hard objects such as bicycle stands, bench legs, standards, etc., to be placed on the track without proper protection. Refer to # 4 above.
10. Do Not place high jump and pole vault pads and standards on the track surface.
11. For extended life, we suggest use of the outer lanes for practice and jogging.
12. Minor repairs may be accomplished by local maintenance. This material is available from Vibra-Whirl Sports, Ltd. Instructions will be provided with materials.
13. Insure that the moisture content is consistent around the inside and outside of the track. This is important, as the track will crack during dry seasons when a constant moisture content is not sustained. Many keep a consistent moisture content on the inside as the football field is irrigated. An irrigation system may be needed on the outside of the track to obtain a consistent moisture content.
14. Use only paint recommended by Vibra-Whirl Sports, Ltd. to touch up markings and for restriping. Paint is available through Vibra-Whirl Sports, Ltd.
15. All warranty issues will be addressed in writing to Vibra-Whirl Sports, Ltd. stating specifics of warranty repairs.

94 Main Street • P.O. Box 966 • Panhandle, Texas 79068 • 806-537-3526 • Fax 806-537-3442

landscapeforms®



Our Warranty

Landscape Forms, Inc. warrants all products (other than noted exceptions) to be free from defects in material and/or workmanship for a period of three years from date of invoice. Noted exceptions: LED lighting products are warranted three years on metal parts and painted finishes and six years or 50,000 operating hours (whichever comes first) for the LED cartridge and Drive Circuit.

This warranty does not apply to damage resulting from accident, alteration, misuse, tampering, negligence, or abuse. Landscape Forms, Inc. will, at its option, repair, replace, or refund the purchase price of any items found defective upon inspection by an authorized Landscape Forms, Inc. service representative.

Our Pledge

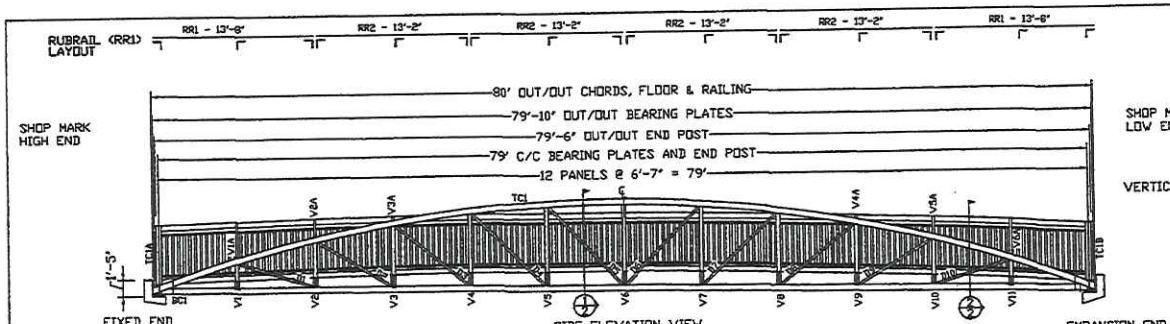
Your complete satisfaction and future business are our goals. Standing behind our products has been a cornerstone of our commitment to quality and service since our founding in 1969. Our products will satisfactorily perform their intended function, under normal conditions, for many years. If you are ever dissatisfied with one of our products, please contact us and let us demonstrate our commitment.

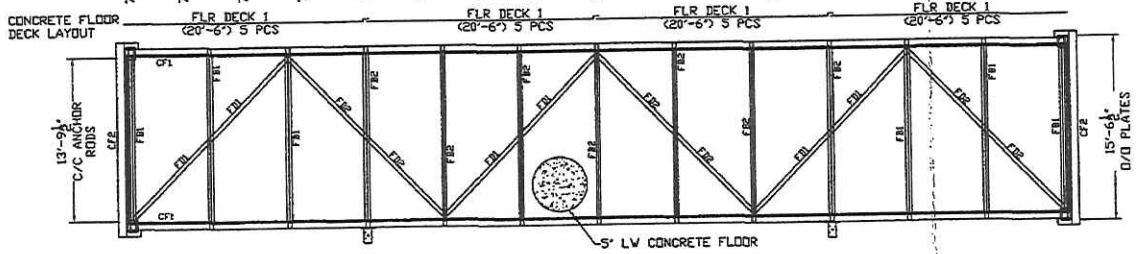
431 Lawndale Avenue, Kalamazoo, MI 49048 800.430.6209 269.381.3455 fax landscapeforms.com

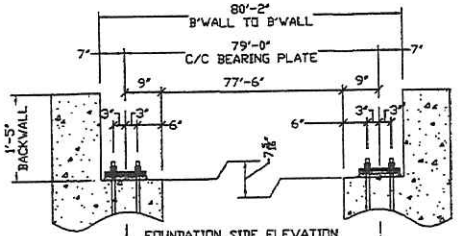
CLOSEOUT DOCUMENTS
Brookhaven Trail Connection

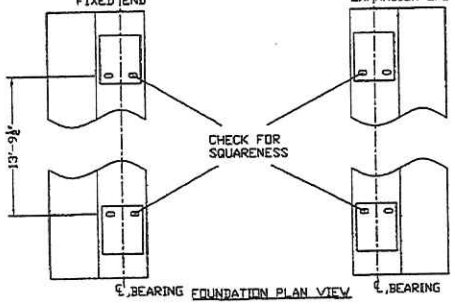
TAB 4

- MATERIALS
  - SUBMITTALS

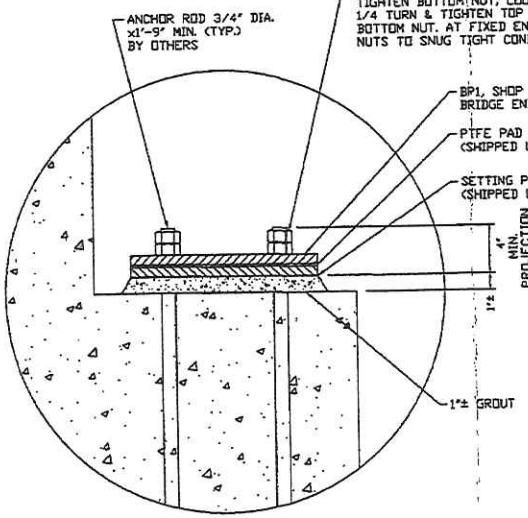


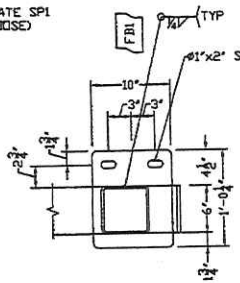




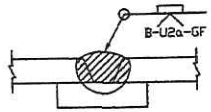


ABUTMENT REACTIONS
(EXCLUDES IMPACT)
VERT. DL = 35.9 KIPS
VERT. LL = 47.0 KIPS
HORIZ. (WIND) = 7.1 KIPS
UPLIFT (WIND) AT ONE BP = NONE

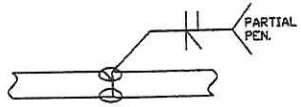




P820 CNC# 2330
BEARING PLATE AND SETTING PLATE DETAIL
PL1/2" A588 OR A242



TYP. TOP & BOTT. CHORD SHOP SPLICE WELD DETAIL



TYPICAL BUTT SPLICE FOR RAILS & MISC ITEMS.

GENERAL NOTES:

1. ALL DESIGN STRESSES ARE IN ACCORDANCE WITH THE SPECIFICATION OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION, 13TH EDITION WITH P3 STANDARD SPECS.
2. WELDING TO CONFORM WITH THE AMERICAN WELDING SOCIETY D1.1 LATEST REVISION. WELDING TO BE PERFORMED BY EXPERIENCED WELDERS QUALIFIED IN ACCORDANCE WITH A.W.S. PROCEDURES. WELDING ELECTRODES TO BE A.W.S E81T-X SERIES. WELD PROCESS TO BE FCAW OR GMAW.
3. ALL STRUCTURAL STEEL TO HAVE A MINIMUM YIELD STRENGTH OF 50,000 PSI WITH A WEATHERING FINISH.
4. STRUCTURAL WELDS WILL BE A MINIMUM OF 3/16" FILLET UNLESS SHOWN OTHERWISE. MINIMUM WELD DOES NOT APPLY TO SEAL WELDS.
5. ANCHOR RODS TO BE ASTM A307 OR THREADED A36 STEEL RODS. AT EXPANSION END, "EXPANSION" NUTS AND ANCHOR RODS SHOULD BE LOOSELY "HAND TIGHTENED" SO AS TO ALLOW THE BEARING PLATES TO SLIDE ON THE SETTING PLATES OR TEFLON PADS. AT FIXED END, NUTS SHOULD BE TIGHTENED TO SNUG-TIGHT CONDITION. PLACE SETTING PLATE AND TEFLON PADS ON SHIMS, SET BRIDGE, AND THEN GROUT UNDER SETTING PLATES. IF REQUIRED, FIELD SPLICE CONNECTION BOLTS SHALL BE ASTM A325 TYPE 3 AND SHALL BE TIGHTENED BY THE TURN OF THE NUT METHOD TO OBTAIN PROPER TENSION.
6. ALL STEEL TO BE SAND BLASTED TO S.S.P.C. #6 "COMMERCIAL BLAST CLEANING."
7. CONCRETE FLOOR DECK TO BE 4000 PSI LIGHT WEIGHT (120 PCF), POURED AND FINISHED ON THE JOB SITE. THE BRIDGE SHALL BE DELIVERED FORMED WITH A GALVANIZED COMPOSITE FLOOR DECK. CONTROL JOINTS ARE NOT RECOMMENDED OR REQUIRED. HOWEVER, DEPENDING ON POUR SEQUENCE AND CURE RATES, CONTRACTOR MAY UTILIZE CONTROL JOINTS OR POUR STOPS AT THEIR DISCRETION TO MITIGATE SHRINKAGE CRACKING DURING CONCRETE CURE. CONTRACTOR TO FURNISH REINFORCING STEEL WHICH SHALL BE GRADE 60 DEFORMED BARS.
8. HAND RAILS AND ALL OTHER ACCESSIBLE SURFACES TO BE GROUND SMOOTH WITH NO SHARP EDGES OR CORNERS.
9. LENGTH OF ANCHOR RODS AND FOUNDATION DETAILS ARE FOR GENERAL ARRANGEMENT PURPOSES ONLY. ACTUAL FOUNDATION AND SUBSTRUCTURE DESIGN, RAILING APPLICATION, CAMBER AND SLOPE REQUIREMENTS, ELECTRICAL GROUNDING, AND CLEARANCES (FLOOD PLAIN, ROADWAY, AND WATERWAY) ARE THE RESPONSIBILITY OF OTHERS).

PLACARD INFO:
PEDESTRIAN TRAFFIC
LIGHT VEHICLE, MAX GVW: 5 TONS
MODEL: CROSSBOW
SERIAL NO: 13261P

DESIGN CRITERIA

THIS BRIDGE IS DESIGNED BASED ON THE FOLLOWING CRITERIA:
1. DEAD LOAD OF 65 PSF PLUS EVENLY DISTRIBUTED LIVE LOAD OF 85 PSF.
2. DEAD LOAD PLUS CONCENTRATED LIVE LOAD OF 10,000 POUNDS.
3. WIND LOAD OF 35 PSF CALCULATED ON THE ENTIRE PROJECTED VERTICAL SURFACE AS THOUGH FULLY ENCLOSED PER AASHTO.

TX FIRM #11145

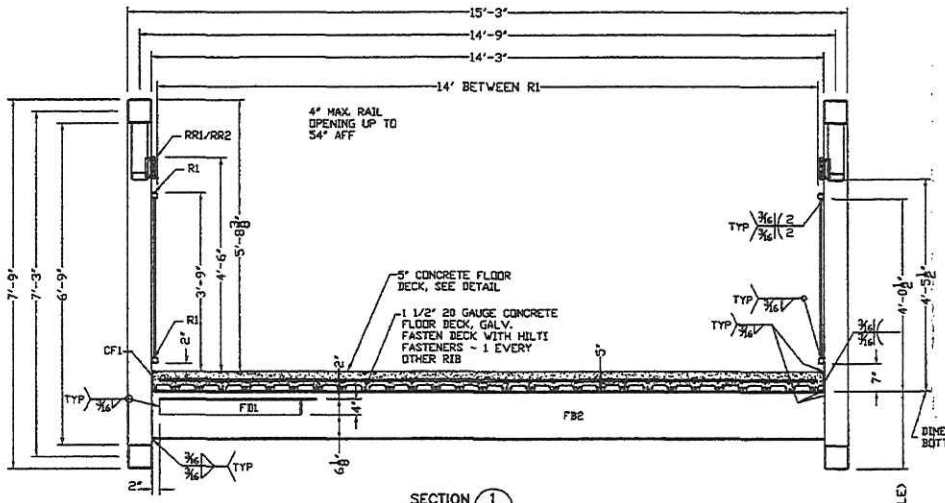
REV	DESCRIPTION	BY/DATE	CHECKED BY
0	RELEASED FOR FABRICATION	JD 11/20/13	AF 11/20/13
A	APPROVAL ONLY		

PIONEER BRIDGES
A DIVISION OF BAILEY BRIDGES, INC.
119 40th Street NE
Fort Payne, AL 35967
1-866-706-5775

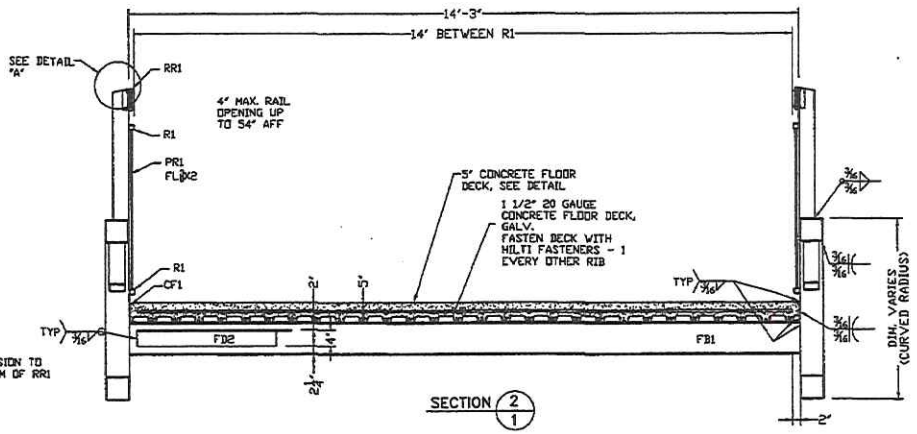
PROJECT: BROOKHAVEN TRAIL
OWNER: BROOKHAVEN COLLEGE
ADDRESS: DALLAS, TX
CONTRACTOR: ROESCHCO CONSTRUCTION, INC.
DESCRIPTION: 14' x 80' CROSSBOW PEDESTRIAN BRIDGE

DRAWN BY: JD
APPROVED BY: RGG
CHECKED BY: AF

JOB NO. 13261P
SHEET 1 OF 3
REV. 0

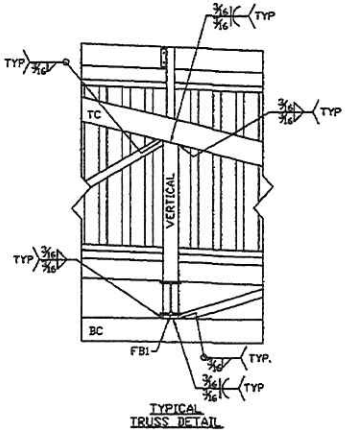


SECTION 1/1

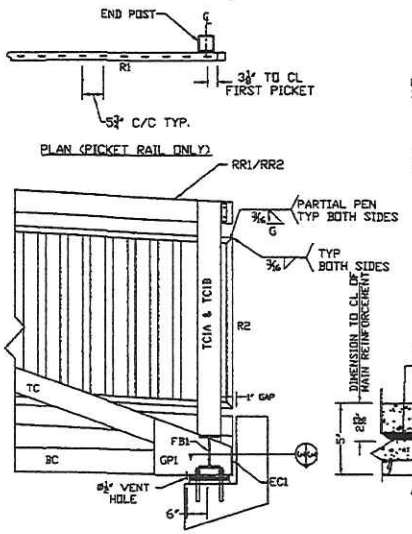


SECTION 2/1

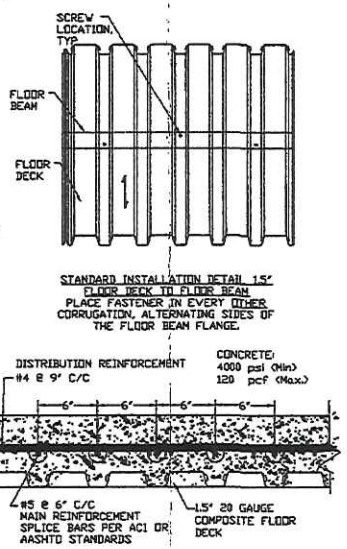
VERTICAL	DIM "A"
TC1A	10"
V1	1'-0 5/8"
V2	1'-3 5/8"
V3	1'-5 5/8"
V4	1'-6 5/8"
V5	1'-7 5/8"
V6	1'-7 5/8"
V7	1'-7 5/8"
V8	1'-6 5/8"
V9	1'-5 5/8"
V10	1'-3 5/8"
V11	1'-0 5/8"
TC1B	9 5/8"



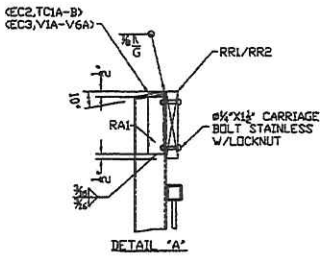
TYPICAL TRUSS DETAIL



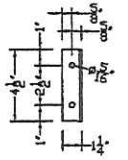
TRUSS END DETAIL



CONCRETE DECK TYPICAL DETAIL



DETAIL "A"



RAIL DETAIL
L1 1/4X1 1/4X 1/8

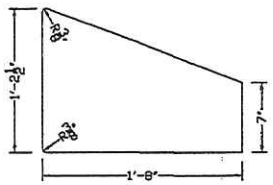
TX FIRM #11145

REV.	DESCRIPTION	BY/DATE	CHECKED BY
0	RELEASED FOR FABRICATION	JD 11/21/13	AF 11/21/13
A	APPROVAL ONLY		

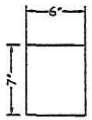
PIONEER BRIDGES
A DIVISION OF BAILEY BRIDGES, INC.
119 40th Street NE
Fort Payne, AL 35967
1-866-708-6778

PROJECT: BROOKHAVEN TRAIL	DRAWN BY: JD
OWNER: BROOKHAVEN COLLEGE	APPROVED BY: RGG
ADDRESS: DALLAS, TX	CHECKED BY: AF
CONTRACTOR: ROESCHCO CONSTRUCTION, INC.	
DESCRIPTION: 14' x 80' CROSSBOW PEDESTRIAN BRIDGE	

JOB NO: 13261P
SHEET: 2 OF 3
REV: 0

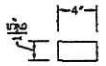


GP1 CNC#3180
PL ⅜" A588 OR A242
4 REQ'D

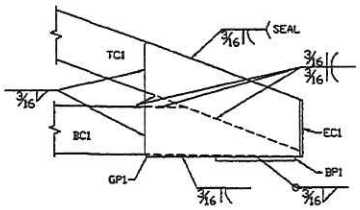


EC1 CNC#3181
TC END CAP PLATE
PL ⅜" A588 OR A242
4 REQ'D

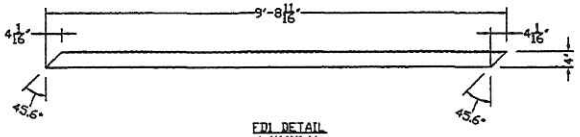
EC2 CNC#3182
TC1A-TC1B CAP PLATE
PL ½" A588 OR A242
4 REQ'D



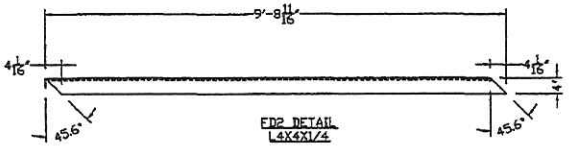
EC3 CNC#3183
V1A-V6A CAP PLATE
PL ¼" A588 OR A242
12 REQ'D



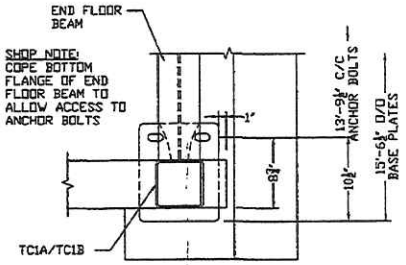
GP1 WELD DETAIL



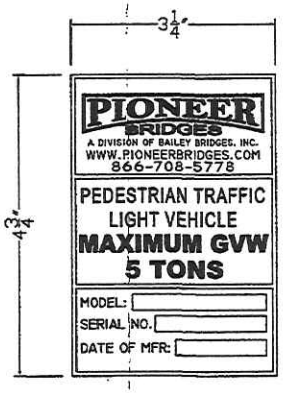
FD1 DETAIL
L4X4X1/4

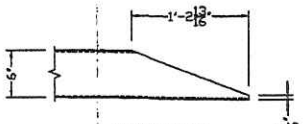


FD2 DETAIL
L4X4X1/4



SECTION 3/2





BOTTOM CHORD
SKEW/COPE DETAIL

BILL OF MATERIALS (A588, A242, A847) U.N.O. - 1 BRIDGE (14'x80')

PC MK	QTY	DESCRIPTION	LENGTH Ft	LENGTH In	TTL LENGTH (Ft)	TTL WT (LBS)	DIMENSION 1
TC1	2	HSS6X6X1/4	81	9 9/16	163.59	3108.0	
TC1A	2	HSS6X6X1/4	5	1 3/16	10.20	193.8	WB
TC1B	2	HSS6X6X1/4	5	1 3/16	10.22	194.0	WB
BC1	2	HSS6X6X3/16	80	8 1/16	160.04	2321.3	
V1	2	HSS6X6X1/4	1	11 15/16	3.85	61.5	WB
V2	2	HSS6X6X1/4	3	6 5/8	7.44	118.8	WB
V3	2	HSS6X6X1/4	5	6 3/8	10.13	157.3	WB
V4	2	HSS6X6X1/4	6	8 9/16	12.01	187.2	WB
V5	2	HSS6X6X1/4	6	6 13/16	13.14	204.7	WB
V6	2	HSS6X6X1/4	6	9	13.50	210.4	WB
V7	2	HSS6X6X1/4	6	6 15/16	13.18	205.0	WB
V8	2	HSS6X6X1/4	6	9 1/4	13.04	197.7	WB
V9	2	HSS6X6X1/4	5	9 15/16	10.16	158.3	WB
V10	2	HSS6X6X1/4	3	8 7/8	7.49	116.8	WB
V11	2	HSS6X6X1/4	1	11 13/16	3.87	61.2	WB
V1A	2	HSS4X2X3/16	3	1 1/16	6.19	42.4	WB
V2A	2	HSS4X2X3/16	1	6 5/16	3.05	21.0	WB
V3A	2	HSS4X2X3/16	0	3 15/16	0.65	4.5	WB
V4A	2	HSS4X2X3/16	0	3 13/16	0.64	4.4	WB
V5A	2	HSS4X2X3/16	1	6 3/16	3.03	20.8	WB
V6A	2	HSS4X2X3/16	3	1	6.17	42.3	WB
D1	2	HSS4X2X3/16	6	6 11/16	13.11	89.1	
D2	2	HSS4X2X3/16	7	3 7/16	14.57	198.1	
D3	2	HSS4X2X3/16	8	0 3/4	16.13	110.7	
D4	2	HSS4X2X3/16	8	6 9/16	17.29	118.4	
D5	2	HSS4X2X3/16	9	1 3/16	18.20	125.0	
D6	2	HSS4X2X3/16	9	6 3/8	19.06	124.0	
D7	2	HSS4X2X3/16	8	7 5/8	17.27	118.8	
D8	2	HSS4X2X3/16	8	0 1/8	16.02	110.0	
D9	2	HSS4X2X3/16	7	2 15/16	14.49	99.5	
D10	2	HSS4X2X3/16	6	6 3/8	13.06	89.7	
FB1	8	W8X21	14	3	85.50	1795.5	
FB2	7	W12X19	14	3	99.75	1895.3	
FD1	6	L4X4X1/4	6	8 11/16	58.34	385.1	
FD2	6	L4X4X1/4	9	8 11/16	58.34	385.1	
SP1 PB20	4	PL1/2x10	1	0 1/4	4.08	68.4	
SP1 PB20	4	PL1/2x10	1	0 1/4	4.08	68.4	
PT3	4	TEFLON 1/8X9 1/4	0	11 1/2	3.83	45.5	
EC1	4	PL3/8X9	0	7	2.33	3.9	
EC2	4	PL1/4X5 1/2	0	5 1/2	1.83	5.5	
EC3	8	PL1/4X1 15/16	0	4	2.67	3.4	
R1	4	HSS1 1/2X1 1/2X3/16	80	0 3/8	320.13	1376.5	
PR1	334	PL5/8X2	3	4	1113.33	7648.8	
RA1	38	L1 1/4X1 1/4X1/8	0	4 1/2	13.50	13.0	
RR1	4	IPE 5X8X8	13	8	54.67	162.9	
RR2	8	IPE 5X8X8	13	2	106.20	313.9	
BOLT	72	CARRIAGE BOLT W/LOCKNUT 1/4X1 1/2	1	0	72.00	0.0	
CP1	2	C5X6.7	80	0 3/8	160.06	1077.4	
CP2	2	C5X6.7	14	3	28.50	191.0	
FLR DECK 1	20	CFD 1.5 20GA	20	0	410.00	3219.3	
DECK FASTEN.	195	HILTI DECK FASTENERS			0.00	0.0	
LPB	2	HSS8X8X1/4	1	3	2.50	0.0	
LSP1	4	PL3/4X7 1/2	1	3	5.00	0.0	
EC4	2	PL1/4X5 7/16	0	7 7/16	1.24	0.0	
BOLT, NSW	8	BOLT,5/8X2 3/4 ASTM A325	1	0	8.00	0.0	

TOTAL WEIGHT PER BRIDGE, LBS = 27354

SHIPPING LIST

PC MK	QTY	DESCRIPTION				TTL WT.
80-FT BRIDGE	1	DIM=15'-6 1/2" W X 80'-0" L X 9'-3" H				
SHIM PACK	1	(6)PL4X4X1/2,(4) 3/8,(4) 1/4,(4) 1/8				
SP1 PB20	4	PL1/2x10	1	0 1/4	4.08	0.0
PT3	4	TEFLON 1/8X9 1/4	0	11 1/2	3.83	0.0
LPB	2	HSS8X8X1/4	1	3	2.50	0.0
LSP1	4	PL3/4X7 1/2	1	3	5.00	0.0
EC4	2	PL1/4X5 7/16	0	7 7/16	1.24	0.0
BOLT, NSW	8	BOLT,5/8X2 3/4 ASTM A325	1	0	8.00	0.0

* Confirm that placard is on bridge and post - see DWG 1 for placard info.

TOTAL SHIP WEIGHT PER BRIDGE AND ROOF, LBS = 27354

TX FIRM #11145

REV.	DESCRIPTION	BY/DATE	CHECKED BY
0	RELEASED FOR FABRICATION	JB 11/20/13	AF 11/20/13
A	APPROVAL ONLY		

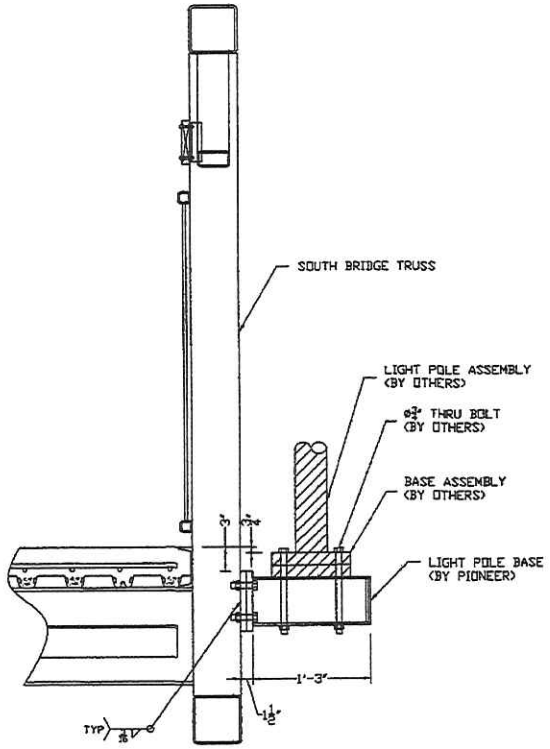
PIONEER BRIDGES
A DIVISION OF BAILEY BRIDGES, INC.
119 40th Street NE
Fort Payne, AL 35967
1-866-708-5778

PROJECT: BROOKHAVEN TRAIL — DRAWN BY: JB
OWNER: BROOKHAVEN COLLEGE — APPROVED BY: RGG
ADDRESS: DALLAS, TX — CHECKED BY: AF
CONTRACTOR: ROESCHCO CONSTRUCTION, INC.
DESCRIPTION: 14' x 80' CROSSBOW PEDESTRIAN BRIDGE

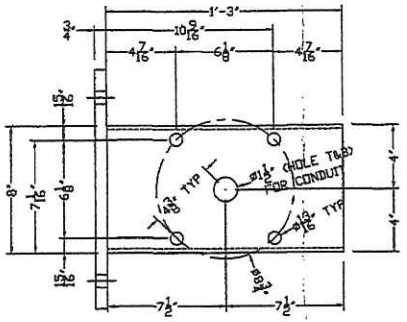
THIS BRIDGE STRUCTURE SHALL NOT BE FIELD MODIFIED IN ANY WAY WITHOUT THE CONSENT AND APPROVAL OF PIONEER BRIDGES. THESE DRAWINGS ARE THE PROPERTY OF PIONEER BRIDGES AND ARE NOT TO BE COPIED OR USED IN ANY WAY DETRIMENTAL WITHOUT THEIR WRITTEN CONSENT.

JOB NO. 13261P — REV. 0
SHEET: 3 OF 3

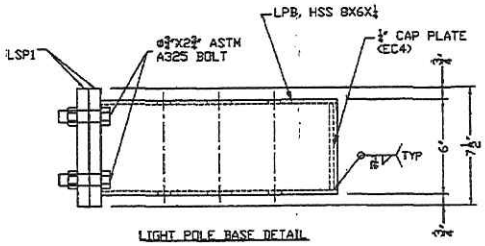
DEC 03 2013



BRIDGE SECTION VIEW



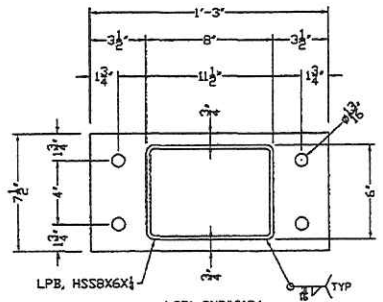
PLAN VIEW OF LIGHT SUPPORT



LIGHT POLE BASE DETAIL

* PER APPROVED DRAWINGS, LIGHT POLE BASES TO BE INSTALLED ON VERTICALS "V3" AND "V9" OF SOUTH BRIDGE TRUSS.

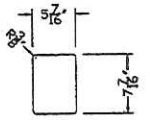
* PLEASE PROVIDE APPROPRIATE WEIGHT OF LIGHT POLE ASSEMBLY FOR DESIGN CHECK.



LSP1 CNC#3184
LIGHT SUPPORT PLATE
PL ¾" A588 OR A242
4 REQ'D

BILL OF MATERIALS (A588, A242, A847) U.N.O. - 2 LIGHT SUPPORTS

PC MK	QTY	DESCRIPTION	LENGTH Ft	LENGTH In	TTL LENGTH (Ft)	TTL WT (LBS)
LPB	2	HSS8X6X1/4	1	3	2.50	56.0
LSP1	4	PL3/4X7 1/2	1	3	5.00	95.5
EC4	2	PL1/4X5 7/16	0	7 7/16	1.24	5.8
BOLT, N & W	8	3/4X2 3/4 ASTM A325	1	0	8.00	0.0
					TOTAL WEIGHT PER BRIDGE, LBS =	167



EC4 CNC#3185
LIGHT SUPPORT CAP PLATE
PL ¼" A588 OR A242
2 REQ'D

REV	DESCRIPTION	BY/DATE	CHECKED BY
0	RELEASED FOR FABRICATION	JB 11/20/13	AF 11/20/13
A	APPROVAL ONLY		

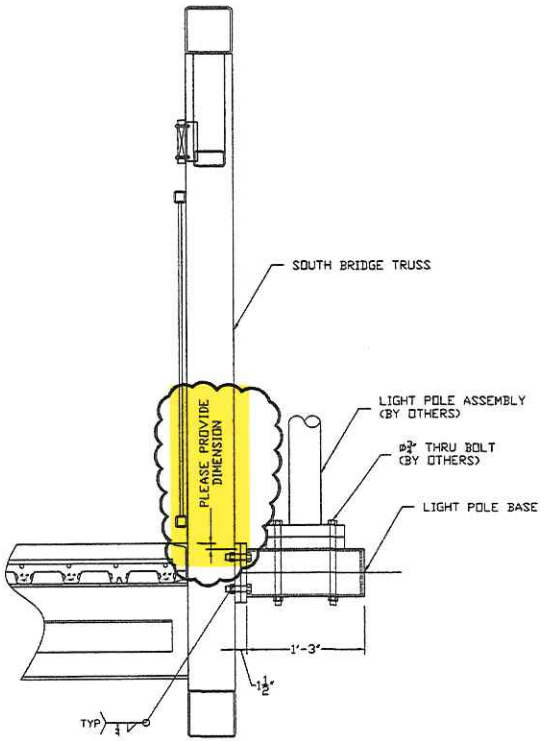
PIONEER BRIDGES
A DIVISION OF BAILEY BRIDGES, INC.
119 40th Street NE
Fort Payne, AL 35967
1-866-768-5728

PROJECT: BROOKHAVEN TRAIL
OWNER: BROOKHAVEN COLLEGE
ADDRESS: DALLAS, TX
CONTRACTOR: ROESCHCO CONSTRUCTION, INC.
DESCRIPTION: SUPPLEMENTAL LIGHT SUPPORT DETAILS

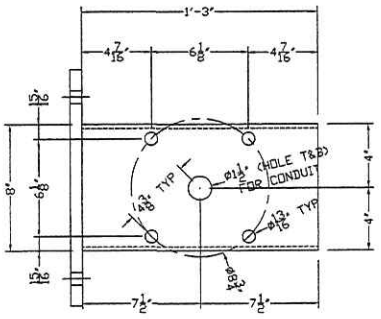
DRAWN BY: JB
APPROVED BY: RGG
CHECKED BY: AF

JOB NO. 13261P
SHEET: SUPPL1
REV. 0

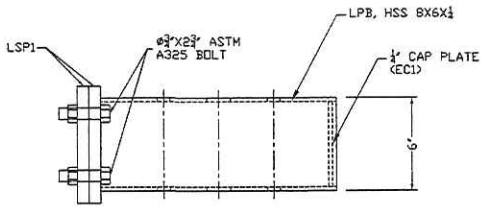
Material Schedule (A588, A247, A847) U.N.O - 2 LIGHT SUPPORTS		
Pc. Mk	Quantity	Description
LPB	2	HSS8X6X1/4
LSP1	4	PL3/4X7 1/2
EC1	2	PL1/4X5 7/16
BOLT, N & W	8	3/4X2 3/4 ASTM A325



BRIDGE SECTION VIEW



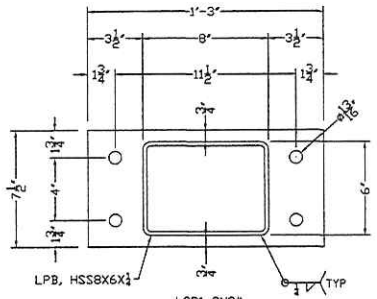
PLAN VIEW OF LIGHT SUPPORT



LIGHT POLE BASE DETAIL

* PER APPROVED DRAWINGS, LIGHT POLE BASES TO BE INSTALLED ON VERTICALS 'V3' AND 'V9' OF SOUTH BRIDGE TRUSS.

* PLEASE PROVIDE APPROPRIATE WEIGHT OF LIGHT POLE ASSEMBLY FOR DESIGN CHECK.



LSP1 CNC#
LIGHT SUPPORT PLATE
PL ¾" A588 OR A242
4 REQ'D

ROESCHCO CONSTRUCTION
SHOP DRAWING, PRODUCT DATA, SAMPLE APPROVAL IS FOR GENERAL DESIGN AND ARRANGEMENT ONLY. SUBCONTRACTOR OR SUPPLIER IS RESPONSIBLE FOR DIMENSION, QUANTITIES AND CONFORMITY TO THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS

REVIEWED BY Todd Kueter
DATE 11.21.2013
SUBMITTAL Submittal #4 Bridge Light Pole Base

REV	DESCRIPTION	BY/DATE	CHECKED BY
A	APPROVAL ONLY		

PIONEER BRIDGES
A DIVISION OF BAILEY BRIDGES, INC.
119 40th Street NE
Fort Payne, AL 35967
1-866-799-6778

PROJECT: BROOKHAVEN TRAIL
OWNER: BROOKHAVEN COLLEGE
ADDRESS: DALLAS, TX
CONTRACTOR: ROESCHCO CONSTRUCTION, INC.
DESCRIPTION: SUPPLEMENTAL LIGHT SUPPORT DETAILS

DRAWN BY: JD
APPROVED BY:
CHECKED BY: AF

JOB NO. 13261P
SHEET: SUPPL1
REV: A

PIONEER BRIDGES™

A Division of Bailey Bridges, Inc.

TX Firm #11145

10/9/13

Project # : 13261P
printed: 9/20/2013
Finish: Weathering
Design: AISC with PB standard specs 13th Edition

Location: Dallas, TX
Style: Crossbow
Splice: None transverse

Geometry & Data

Span :	79.00 ft (c/c brg.)	Panel Points: 12 at 6.58' - Bow Truss	
Width :	14.00 ft inside clr.	14.25 ft inside trusses 15.38' ship width, BP IN.	
Style :	Crossbow w/ 1 diag.	5.0 in LW Concrete floor	
Truss ht.:	7.250 ' @ cl (c/c chord)	2.268 ' @1st vert panel (c/c chords)	ref only
Flr to TC :	5.700 ' @ cl	1.518 ' @1st vert (top of flr to top of TC)	ref only
Guardrails :	Pickets	54 in. height Top Chord is not top rail (n)	
Handrail:	Wood	1.42 ' Abutment Backwall Ht. (Floor elev varies)	
Fencing:	None	24.5% LL Impact factor 0.80 ' flr ht Δ excl. camber	
Fy=	50 ksi All primary Steel	0.92 in. Thermal Expansion (total) for 150 deg.temp diff.	
Fu=	70 ksi (U.N.O.)	0.1% Camber+Δdl = 1.82 in.	

Loads

Load Cases:

DL	65	Dead Load psf (act'l=63.4)
LLa	0	HS veh. load 1 lane
LLb	85.0	Unif. Live Load (psf)
LLc	0	Snow Load (psf) roof/adds to LL
LLd	20	Snow Load (psf) combines w/ LLg
	35	Wind Load (psf) on vert surface
LLh	0.0	psf Stream flow (0 fps)
LLe	35.0	psf - max of wind or stream
LLf	10	Veh. Load (K) min. check
LLg	5	Veh. Load (K) combines w/ snow d
LLk	0	wind on live
LLm	2	K @ ctr. (Motorcycle / 4 wheeler)

Load Combinations:

LC1 DL + LLb
LC2 DL + LLd
LC3 DL + LLb*.75 + LLc*.75
LC4 DL + LLe
LC5 (DL + (LLe + LLb+ LLc) * .75)
LC6 .6*DL + LLe
LC7 DL + LLd + LLg
LC8 DL + LLf + LLc

Reactions (@ each abutment)
w/out impact

DL	35.9	kips
LL uniform	47.0	kips
LL veh.	10.0	kips
Wind (hor. transverse)	7.1	kips
Wind (long.)	na	kips
Uplift	none	K @ one brg. plate

Note: The uniform and vehicular loads do not combine

0.75 " Anchor Bolt min.
1.16 g seismic capacity (superstructure only)

Deflections

DL Δ=	1.34	in	L/Δ=	705
LL Δ=	1.76	in	L/Δ=	539
Hor (wind) Δ=	0.09	in	L/Δ=	10363

seismic period =0.15 sec
lateral fn =6.70 HZ

Truss Forces for the following load combination: (load which produces max. moment)
DL + LLb

Pioneer Bridges

13261P

			Truss Forces (kips)					Panel Point Loads (kips)		
								P0	3.5	misc
TC1	-116.7	BC1	110.4	V1	6.9	D1	1.0	P1	6.9	
TC2	-115.5	BC2	110.4	V2	6.6	D2	0.9	P2	6.9	0.17
TC3	-114.5	BC3	111.3	V3	6.5	D3	0.7	P3	6.9	0.22
TC4	-113.8	BC4	112.1	V4	6.5	D4	0.4	P4	6.9	0.27
TC5	-113.3	BC5	112.6	V5	6.6	D5	0.2	P5	6.9	0.32
TC6	-113.0	BC6	112.9	CTR	6.7	D6	0.2	P6	6.9	0.37
TC7	-113.0	BC7	112.9	V7	6.6	D7	0.4	P7	6.9	0.32
TC8	-113.3	BC8	112.6	V8	6.5	D8	0.7	P8	6.9	0.27
TC9	-113.8	BC9	112.1	V9	6.5	D9	0.9	P9	6.9	0.22
TC10	-114.5	BC10	111.3	V10	6.6	D10	1.0	P10	6.9	0.17
TC11	-115.5	BC11	110.4	V11	6.9	.	.	P11	6.9	0.12
TC12	-116.7	BC12	110.4	V12	0.0	.	.	P12	3.5	0.00
.	.	.	.	.	.	.	.	P13	0.0	0.00
.	.	.	.	.	.	.	.	P14	0.0	0.00
.	.	.	.	.	.	.	.	P15	0.0	0.00
.	.	.	.	.	.	.	.	P16	0.0	0.00
.	.	.	.	.	.	.	.	P17	0.0	0.00
.	.	.	.	.	.	.	.	P18	0.0	0.00
.	.	.	.	.	.	.	.	P19	0.0	0.00
.	.	.	.	.	.	.	.	P20	0.0	0.00
.	.	.	.	.	.	.	.	P21	0.0	0.00
.	.	.	.	.	.	.	.	P22	0.0	0.00
.	.	.	.	.	.	.	.	P23	0.0	0.00
.	.	.	.	.	.	.	.	P24	0.0	0.00
.	.	.	.	.	.	.	.	P25	0.0	0.00
.	.	.	.	.	.	.	.	P26	0.0	0.00
.	.	.	.	.	.	.	.	P27	0.0	0.00
.	.	.	.	.	.	.	.	P28	0.0	0.00
.	.	.	.	.	.	.	.	P29	0.0	0.00
.	.	.	.	.	.	.	.	P30	0.0	0.00
.	.	.	.	.	.	.	.	P31	0.0	0.00
.	.	.	.	.	.	.	.	P32	0.0	0.00
.	.	.	.	.	.	.	.	P33	0.0	0.00
.	.	.	.	.	.	.	.	P34	0.0	0.00
.	.	.	.	.	.	.	.	P35	0.0	0.00
.	.	.	.	.	.	.	.	P36	0.0	0.00
.	.	.	.	.	.	.	.	P37	0.0	0.00
.	.	.	.	.	.	.	.	P38	0.0	0.00
.	.	.	.	.	.	.	.	P39	0.0	0.00
MAX >>	**-116.7**		**112.9**		**6.9**		**1.0**			

design info

			out of truss plane data					in plane data					
TC	Member	A (in^2)	S (in^3)	I (in^4)	r (in)	Z (in^3)	wd.(in)	S (in^3)	I (in^4)	r (in)	Z	Ht.(in	CW
.	HSS6X6X1/4	5.24	9.54	28.60	2.34	11.20	6.00	9.54	28.60	2.34	11.20	6.00	0
.			K= 1.33			kl/r=	45.0	K= 0.8			kl/r=	27.0	2

Unbraced Length (PPT spacing) L= 6.58 ft Fy=50 Fu=70 ksi

The top chord is braced by the U-Frame formed by the floor beam and truss verts. (Re: *Guide to Stability Design Criteria*, T.V. Galambos - chapt. 15) Using Holt's Equations for stability, determine the out of truss plane K factor, spring constant C req'd, & C furnished. (not applicable to top braced bridges)

Creq'd.= 2.44 Cfurn= 4.65 k/in C req'd < C furnished, OK!

check per AISC Ωc=Ωb= 1.67

Pc/Ωc= A*Fcr/Ωc = 135.3 K Fcr= 43.11 ksi

Max TC force (Pr) = 116.7 K 95.2% % stress OK 111 ' TCr

(from truss analysis) includes eccentricity 110 ' mir <data

TC1 OK act'l b/t=20.1, AISC max b/t=33.7 OK

kL/r OK

BC	Member	A (in^2)	S (in^3)	I (in^4)	r (in)	Z (in^3)	wd.(in)	S (in^3)	I (in^4)	r (in)	Z	Ht.(in	tw
T	HSS6X6X3/16	3.98	7.42	22.30	2.37	8.63	6.00	7.42	22.30	2.37	8.63	6.00	0.17
.										Fy=50	Fu=70	ksi	2

Preq'd= 112.9 kips < Pn=Fy * Ag / Ωt = 119.2 kips OK ! 94.5% stress

Vert	Member	A (in^2)	S (in^3)	I (in^4)	r (in)	Z (in^3)	wd.(in)	S (in^3)	I (in^4)	r (in)	Z	Ht.(in	Cw
	HSS6X4X1/4	4.30	6.96	20.90	2.20	8.53	6.00	5.56	11.10	1.61	6.45	4.00	0.3
			K= 2.0	out of plane	&	0.8	in plane			Fy=50	Fu=70	ksi	1.7

The vertical truss member size is based on the combined maximum truss axial force and the maximum out of plane bending moment. The maximums occur at different locations so all vert. members are checked individually. The out of plane bending is produced by the at the top chord from the following cases: (N/A if top braced)
Wind - 62% on windward truss, 85% stream flow, 300 plf if aashto HS, 50 plf min.rail load, and 1.00% of TC force.

Max PPT Spacing: 6.58 ft Max axial Ld truss analysis: 6.9 kips (@ 1st vert)

Ht. Fb to TC: 5.79 ft (@ cl) Axial Load from veh.: 6.5 kips

Ht. Fb to BC: 1.46 ft (@ cl) Max. Moment: 7.2 K-ft (@ ctr vert)

length @ cl: 7.25 ft M cap.= 17.37 K-ft fa= -1.6 ksi

Controlling VERT is " CTR" with Pr= -6.7k, Pc= 81.5k, Mr= 7.2k', Mc=17.4k' Fa= 19.0 ksi

act'l b/t=20.1, AISC max b/t=28.5 OK

AISC Unity EQ H1-1a,b= 0.37 OK

kl/r OK

Diags	Member	A (in^2)	S (in^3)	I (in^4)	r (in)	Z (in^3)	wd.(in)	S (in^3)	I (in^4)	r (in)	Z	Ht.(in)	
.	HSS4X2X3/16	1.89	1.83	3.66	1.39	2.34	4.00	1.22	1.22	0.80	1.43	2.00	
										Fy=50	Fu=70	ksi	1

Max. truss analysis: 1.0 kips . .

Min. check for conc. Ld.. 2.1 kips . .

Max (single diag) 2.1 kips use 2.1 kips < Pn=Fy * Ag / Ωt = 56.6 kips OK !

3.7%

end weld size 3/16"

connection OK

This area . n/a .

ot applicable n/a .

0.0 max use 0.0 kips . n/a A= 1.9

. 56.6 kips .

page 4

FB

Member	A (in^2)	S (in^3)	I (in^4)	r (in)	Z (in^3)	Ht.(in)	S (in^3)	I (in^4)	r (in)	Z	Ht.(in)	tw
W12X19	5.57	21.30	130.00	4.82	24.70	12.20	1.88	3.76	0.82	2.98	4.01	0.24

(USE W8X21 FOR END 3 FLR BEAMS) - - data for U-Frame plane - - - - Fy=50 Fu=70 ksi 3.4

The floor beam size is determined by the moments from a combination of direct load application and end moments from the truss verticals. Additionally, the floor beam size may be increased to provide additional stiffness (stability) to the Top Chord.

		Dir. Mom.	End Mom.
span:	14.75 ft		
Dead Load:	44.7 psf	8.0	2.8
Unif. LLb:	85.0 psf	15.2	3.7
Max Veh.:	10K Veh. (LLf, HS, LLm)	21.9	1.0
snow LLg:	20 psf	3.6	0.9
veh. LLd:	5 K	10.9	0.4

Load comb.	Tot. Mom.	
DL + LLb :	29.8	.
DL + LLf :	33.7	<<controls
DL + HS :	10.8	.
DL + LLd + LLg :	26.6	.
DL + LLm :	16.7	.

fb= 19.0 ksi

Fb= 30 ksi fb/Fb= 0.63 OK

Maximum Design Mr= 33.7 k-ft

Mn/Ωc= 53.1 k-ft OK

Stringers

Member	A (in^2)	S (in^3)	I (in^4)	r (in)	Z (in^3)	Ht.(in)	S (in^3)	I (in^4)	r (in)	Z	Ht.(in)
C3X4.1	1.20	1.10	1.65	1.17	1.32	3.00	0.20	0.19	0.40	0.40	1.41

This area not applicable! There are no stringers. Fy=50 Fu=70 ksi 1

Re: AASHTO specs for wheel load distribution. Distr. Factor = 0.01 for 5 in. LW Concrete

0.01 k' M (DL) span= 6.58 ft 1.3 Impact factor

8.56 k' max LL 25.0 psf Dead Load

Mr= 0.08 k' (max LL + DL) * continuity factor * DF 0.8 Continuity Factor

Mn/Ωc= 2.74 k' (Fy*Sx/12/Ωc)

Mn/Ωc= 2.74k' > 0.08k' OK 3.0%

Flr Diag

Member	A (in^2)	Sx(in^3)	Ix(in^4)	rx (in)	Zx(in^3)	Ht.(in)	Sy (in^3	Iy(in^4)	ry(in)	Zy	w.(in)	rz
L4X4X1/4	1.94	1.03	3.00	1.25	1.82	4.00	1.03	3.00	1.25	1.82	4.00	0.8

Lu= 145.3 " k= 0.8 kl/r= 148.4 Fy=50 Fu=70 ksi

One FD per two bays, designed as compression member, Not Welded to stringers Z

Max Axial Comp Force req'd= 0.00 kips Pn=A*Fcr/Ωc=1.9*6.8= 13.2 kips

Concrete slab shear capacity is 47.4 ksi * 168in * 4.3in = 33.9 kips

Total horizontal shear capacity of bridge = 33.9+(13.2*0.58)= 41.5 kips OK

Horizontal Reaction 7.15 K

KL/r for full end diag = 235.6 if used N/A

End Portal (H bridges only) In plane data 1.42 ' backwall Ht.

Member	A (in^2)	S (in^3)	I (in^4)	r (in)	Z (in^3)	Ht.(in)	bf (in)	Mcap	
Flr Bm	W8X21	6.16	18.20	75.30	3.49	20.40	8.28	5.27	41.71
End Post	HSS6X6X1/4	5.24	9.54	28.60	2.34	11.20	6.00	6.00	21.86

0.66 'cl FB to brg.

1.61 FB to TC

Hor reaction capacity without reinforcements = 66.8 kips end post controls

Check 1% of TC axial force at end post (per AASHTO Guidespec):

1.15 kips, x end ht 1.61 ft = 0.76 K-ft

End post Mn = 21.86 K-ft OK

0
0
0

Truss Diagonal connection calculations - OVERLAP

Pioneer Bridges Job # 13261P
14 ft x 79 bridge

Member Data

Diagonal d	Fy	Fu
HSS4X2X3/16	50	70
4 height hd		
2 width bd		
0.17 thickness td		
1.89 Area		

Vert v	Fy	Fu
HSS6X4X1/4	50	70
6 height		
4 width		
0.23 thickness		
4.30 Area		

Bott Chord bc	Fy	Fu
HSS6X6X3/16	50	70
6 height ho		
6 width bo		
0.17 thickness to		
3.98 Area		

Top Chord & End Post tc	Fy	Fu
HSS6X6X1/4	50	70
6 height ho		
6 width bo		
0.23 thickness to		
5.24 Area		

Design Force **2.1** Kips (ASD)
1.95 K (LRFD) Rn/Ωm = 21 ksi

2.0 Ωm (weld)
70 ksi Filler Metal (min)

AASHTO LRFD Rr=.6*Φe2Fexx= 33.6 ksi Φe2=0.8

ASD AISC Weld Size Required:	3/16"	fillet	12 in @	2.78	K/in =	33.4	kips OK
AASHTO LRFD Weld size	3/16"		"	4.45	"	53.4	OK

The calculations below are for overlapped "K" connections only. (Chapt. K2 - Ωm=1.58) AASH

50 % overlap Ov factor (Ovf) = 1.0

Check Top Chord Conn. Capacity @ End Post

be = (10 / (bo/to)) * ((Fyo*to)/(Fyd/td) * bd) <= bd = 1.0
beov = (10 / (bv/tv)) * ((Fyv*tv)/(Fyd/td) * bd) <= bd = 1.0

N = Fyd * td * ((Ovf*(2*hd-4*td)) + be + beov) = 81.6 kips
/1.625 LRFD --> ASD = **50.2** kips **OK**

Check Top Chord Conn.

be = 1.0
beov = 1.6
N = Fyd * td * ((Ovf*(2*hd-4*td)) + be + beov) = 86.2 kips
/1.625 LRFD --> ASD = **53.0** kips **OK**

Check Bottom Chord Conn.

be = 0.6
beov = 1.6
N = Fyd * td * ((Ovf*(2*hd-4*td)) + be + beov) = 82.2 kips
/1.625 LRFD --> ASD = **50.6** kips **OK**

NOTE: these formulas are found in CISC and AISC design manuals, HSS connections.

PIONEER BRIDGES

Concrete deck design per AASHTO Standard Specifications for Highway Bridges, 17th Ed.

Job# 13261P

85 psf Uniform Live Load — 14 ft x 79 bridge
20 psf Uniform Snow Load (added to veh. Load 2) — wheel load
10 kip Vehicular Load 1 (minimum check) — 4.00 kips
5 kip Vehicular Load 2 (combine with snow) — 2.00 kips
HS 0 ton Vehicular Load — 80 % on rear axle — 0.00 kips
24.51 % LL Impact Factor — Max 4.00 kips
4.9804 kips Design Wheel Load (Incl. impact)

5.0 in Concrete Thickness — 4000 psi Concrete Strength (f'c)
120 pcf Lightweight Concrete — 60000 psi Re/I Steel Strength (fy)
✓ **1.5** in Depth of Metal Floor Deck — **20** ga.
Design Dead Load — 44.7 psf Weight of Slab and Form

Main Reinforcement Parallel to Traffic — **AASHTO 3.24.3.2**

6.58 ft "S", Design Span — Deck spans 7.35 ft at 2 span condition OK! ✓
0.24 kip-ft Dead Load Moment
0.46 kip-ft Uniform Live Load moment
5.925 kip-ft HS20-44 Moment = 900*S per ft. width (Impact Not Included)
0.3113 Ratio of Design Wheel Load (5.0 kips) to HS20 Wheel Load (16 kips).
1.8443 kip-ft Live Load Moment (Includes Impact)
1.84 Max LL Moment used for design (per ft. width) — Wheel Controls

LRFD Design Moment
M_u = Factored Design Moment = 1.3*MD + 2.2*(ML + Impact)
M_u = 4.37 kip-ft

✓ Use # **5** bars at 6 in c/c spacing. — 0.625 " diameter of bar
0.31 in^2 As, Area of steel per bar
0.62 in^2 per ft As, Area of steel per foot width of slab

2.00 " Top Cover
2.81 in d, Depth to Re/I Steel
1.00 " Bott. Cover - distr. reinf.
0.9 Φ
1.88 " Bott. Cover - main @ rib.

0.0482 $\rho_{balanced} = .85*\beta*f'c/fy$ — **AASHTO 8.16.3**
0.0361 $\rho_{max} = .75*\rho_{balanced}$ — β = 0.85
0.0033 $\rho_{min} = 200/fy$ — ρ=As/(b*d)= 0.018 — > ρmin and < ρmax, OK! ✓
ΦMn = Φ[As*fy*d*(1-.6*(ρfy/f'c))]
ΦMn = 6.55 kip-ft — Greater than Mu , OK! ✓

Shear ok per AASHTO 3.24.4
Distribution Reinforcement — **AASHTO 3.24.10.2**

39.0 % P = % of Reinforcement Required = 100/√S , 50% Maximum

0.2416 in^2, A_{DR}, Area of Distribution Re/I Required
✓ Use # 4 bars at 9 in c/c spacing.
0.2667 in^2, A_{DR} Actual — OK ✓

Temperature & Shrinkage Reinforcement - ACI 7.12.2.1 — Overall Design OK ✓
0.108 in^2. Min $A_{t\&s}$ = .0018*b*h — Less than Adr, therefore ok!

BIG D CONCRETE

WORK SHEET - CONCRETE MIX DESIGN

(Absolute Volume Method Designed for One Cubic Yard)

Designed By:	David Wittwer		DATE:	12/11/13	w/c 0.48
Class Concrete	3,600 At 28 Days		Big D Order Mix #	13600AE	
W/C: Max	0.48	Design 0.48	Project:	Brook Haven, Roeshco Const.	
Min. Specified CF	588	Design 588	Description:	6.25 SACK, AE, WR, PG, Slump - 4" +/- 1" Slump	
Fly Ash:	0%	Design 0	Agg. No. 1 Sp. Gr.	2.575	% of mix 42.0% Concrete Sand
Designed for:	4.5 % Air	+ / - 1.0%	Agg. No. 2 Sp. Gr.	2.594	% of mix 12.0% 3/8" Pea Gravel
Admixture:	Sika AEA, Sikament 686		Agg. No. 3 Sp. Gr.	2.633	% of mix 46.0% 1" Concrete Rock
					100%

Vol. Cement = Design CF / Sp. Gr. * 62.4 = 588 / (3.15 * 62.4) = 2.991 cu. ft.

Vol. Fly Ash = Design CF / Sp. Gr. * 62.4 = 0 / (2.5 * 62.4) = 0.000 cu. ft.

Vol. Water = Design CF * Design W/C / 62.4 = 588 * 0.48 / 62.4 = 4.523 cu. ft.

Vol. Air (Entrained & Trapped) = Design Air * 27 / 100 = 4.5 * 27 / 100 = 1.215 cu. ft.

Volume Cement, Water & Air = 8.730 cu. ft.

Volume Occupied by Aggregates = 27-Volume Cement, Water & Air = 18.270 cu. ft.

% Aggr. No. 1 / Sp. Gr. Agg. No. 1 * 62.4 = 42% / 2.575 * 100 / 62.4 = 0.261 cu. ft.

% Aggr. No. 2 x 100 lbs / Sp. Gr. Agg. No. 2 * 62.4 * 100 = 12% / 2.694 * 100 / 62.4 = 0.074 cu. ft.

% Aggr. No. 3 x 100 lbs / Sp. Gr. Agg. No. 3 * 62.4 * 100 = 46% / 2.633 * 100 / 62.4 = 0.280 cu. ft.

Absolute Volume 100 lbs. Combined Aggregate = 0.616 cu. ft.

Total Weight of Comb. Aggr. = 100 * Vol. occupied by Aggregates / Abosulte Volume of 100 lbs of Aggr. = 2968 lbs

Batch Weight Calculations

Cement =		588 lbs.
Fly Ash =		0 lbs.
Water = Design CF * w/c ratio =	33.8 (gal)	282 lbs
Agg. No. 1 = lbs Combined Aggr. * % Agg. No. 1 = Sand		1247 lbs.
Agg. No. 2 = lbs Combined Aggr. * % Agg. No. 2 = Pea G.		356 lbs.
Agg. No. 3 = lbs Combined Aggr. * % Agg. No. 3 = 1" Lim		1365 lbs.
Weight for One Cubic Yard		= 3839 lbs.

Cement Source:	Holcim Type I/II Midlothian	H2O Source:	City of Dallas		
Aggregate No. 1:	Sand	Source:	Frontier Mining & Materials, LLC		
Aggregate No. 2:	Pea Gravel	Source:	Frontier Mining & Materials, LLC		
Aggregate No. 3:	511 - #57 Conc Agg - Crushed Limestone	Source:	Martin Marietta - 54501 - Chico Quarry		
Weight per Cu. Ft. Fresh Conc. - Design	142.17	AEA:	SIKA AEA - 0.5 OZ/100# of Cement	2.9	OZ/CY $0.024/OZ
Weight per Cu. Ft. Fresh Conc. - Air Free	148.87	Water Reducer	Sikament 686 - 4 OZ/100# of Cem.	23.5	OZ/CY $0.042/OZ

DOT Form 694-Rev

BIG D CONCRETE

WORK SHEET - CONCRETE MIX DESIGN

(Absolute Volume Method Designed for One Cubic Yard)

Designed By:	David Wiltwer		DATE:	12/11/13	w/c 0.48
Class Concrete	3,600 At 28 Days		Big D Order Mix #	13600AE	
W/C: Max	0.48	Design 0.48	Project:	Brook Haven, Roeshco Const.	
Min. Specified CF	588	Design 588	Description:	6.25 SACK, AE, WR, PG, Slump - 4" +/- 1" Slump	
Fly Ash:	0%	Design 0	Agg. No. 1 Sp. Gr.	2.575	% of mix 42.0% Concrete Sand
Designed for:	4.5 % Air	+ / - 1.0%	Agg. No. 2 Sp. Gr.	2.594	% of mix 12.0% 3/8" Pea Gravel
Admixture:	Sika AEA, Sikament 686		Agg. No. 3 Sp. Gr.	2.633	% of mix 46.0% 1" Concrete Rock
					100%

Vol. Cement = Design CF / Sp. Gr. * 62.4 = 588 / (3.15 * 62.4) = 2.991 cu. ft.

Vol. Fly Ash = Design CF / Sp. Gr. * 62.4 = 0 / (2.5 * 62.4) = 0.000 cu. ft.

Vol. Water = Design CF * Design W/C / 62.4 = 588 * 0.48 / 62.4 = 4.523 cu. ft.

Vol. Air (Entrained & Trapped) = Design Air * 27 / 100 = 4.5 * 27 / 100 = 1.215 cu. ft.

Volume Cement, Water & Air = 8.730 cu. ft.

Volume Occupied by Aggregates = 27-Volume Cement, Water & Air = 18.270 cu. ft.

% Aggr. No. 1 / Sp. Gr. Agg. No. 1 * 62.4 = 42% / 2.575 * 100 / 62.4 = 0.261 cu. ft.

% Aggr. No. 2 x 100 lbs / Sp. Gr. Agg. No. 2 * 62.4 * 100 = 12% / 2.594 * 100 / 62.4 = 0.074 cu. ft.

% Aggr. No. 3 x 100 lbs / Sp. Gr. Agg. No. 3 * 62.4 * 100 = 46% / 2.633 * 100 / 62.4 = 0.280 cu. ft.

Absolute Volume 100 lbs. Combined Aggregate = 0.616 cu. ft.

Total Weight of Comb. Aggr. = 100 * Vol. occupied by Aggregates / Absolute Volume of 100 lbs of Aggr. = 2968 lbs

Batch Weight Calculations

Cement =		588 lbs.
Fly Ash =		0 lbs.
Water = Design CF * w/c ratio =	33.8 (gal)	282 lbs
Agg. No. 1 = lbs Combined Aggr. * % Agg. No. 1 = Sand		1247 lbs.
Agg. No. 2 = lbs Combined Aggr. * % Agg. No. 2 = Pea G.		356 lbs.
Agg. No. 3 = lbs Combined Aggr. * % Agg. No. 3 = 1" Lim		1365 lbs.
Weight for One Cubic Yard		= 3839 lbs.

Cement Source:	Holcim Type I/II Midlothian				
Aggregate No. 1:	Sand				
Aggregate No. 2:	Pea Gravel				
Aggregate No. 3:	511 - #57 Conc Agg - Crushed Limestone				
Weight per Cu. Ft. Fresh Conc. - Design	142.17	H2O Source:	City of Dallas		
Weight per Cu. Ft. Fresh Conc. - Air Free	148.87	Source:	Frontier Mining & Materials, LLC		
		Source:	Frontier Mining & Materials, LLC		
		Source:	Martin Marietta - 54501 - Chico Quarry		
		AEA:	SIKA AEA - 0.5 OZ/100# of Cement	2.9	OZ/CY $0.024/OZ
		Water Reducer	Sikament 686 - 4 OZ/100# of Cem.	23.5	OZ/CY $0.042/OZ

DOT Form 694-Rev

Material: Portland Cement Test Period: 01-Feb-2013

Type: I-II To: 28-Feb-2013

Certification

This Holcim cement meets the specifications of ASTM C150 for Type I-II cement.

General Information

Supplier:	Holcim (US) Inc.	Source Location:	Midlothian Plant
Address:	1800 Dove Lane		1800 Dove Lane
	Midlothian, TX, 76065		Midlothian, TX, 76065
Telephone:	(972) 923-5800	Contact:	Javier Sosa
Date Issued:	12-Mar-2013		

The following information is based on average test data during the test period.
The data is typical of cement shipped by Holcim; individual shipments may vary.

Tests Data on ASTM Standard Requirements

Chemical			Physical		
Item	Limit[A]	Result	Item	Limit[A]	Result
SiO_2 (%)	-	19.7	Air Content (%)	12 max	10
Al_2O_3 (%)	6.0 max	4.8	Blaine Fineness (m^2/kg)	260 min	359
Fe_2O_3 (%)	6.0 max	3.3			
CaO (%)	-	63.9			
MgO (%)	6.0 max	0.8	Autoclave Expansion (%) (C151)	0.80 max	0.02
SO_3 (%)	3.0 max[B]	3.5	Compressive Strength MPa (psi):		
Loss on Ignition (%)	3.0 max	1.8			
Insoluble Residue (%)	0.75 max	0.48	3 days	12.0 (1740) min	28.7 (4160)
CO_2 (%)	-	1.0	7 days	19.0 (2760) min	34.5 (5010)
Limestone (%)	5.0 max	2.9			
$CaCO_3$ in Limestone (%)	70 min	78	Initial Vicat (minutes)	45-375	96
Inorganic Processing Addition (%)	5.0 max	0.0			
Potential Phase Compositions[C]:			Mortar Bar Expansion (%) (C1038)	-	0.008
C_3S (%)	-	61			
C_2S (%)	-	10			
C_3A (%)	8 max	7			
C_4AF (%)	-	10			
$C_3S + 4.75C_3A$ (%)	-	94.3			

Tests Data on ASTM Optional Requirements

Chemical			Physical		
Item	Limit[A]	Result[D]	Item	Limit[A]	Result
Equivalent Alkalies (%)	0.60 max	0.57			

Notes

[A] Dashes in the limit / result columns mean Not Applicable.

[B] It is permissible to exceed the specification limit provided that ASTM C1038 Mortar Bar Expansion does not exceed 0.020 % at 14 days.

[C] Adjusted per Annex A1.6 of ASTM C150 and AASHTO M85.

[D] Maximum total alkali, based on a 95% confidence interval level per TxDOT DMS 4600.
This data may have been reported on previous mill certificates.

Additional Data

Inorganic Processing Addition Data		Base Cement Phase Composition	
Item	Result[A]	Item	Result
Type	-	C_3S (%)	63
Amount (%)	-	C_2S (%)	10
SiO_2 (%)	-	C_3A (%)	7
Al_2O_3 (%)	-	C_4AF (%)	10
Fe_2O3 (%)	-		
CaO (%)	-		
SO_3 (%)	-		

Basic Quality Statistical Summary Report

Period 03/06/2013 - 04/11/2013
Plant 54501-Chico Quarry
Product 511-#57 Conc Agg
Specification ASTM 57

Sieve/Test	Tests	Average	St Dev	Target	Specification
1 1/2" (37.5mm)	148	100.0	0.00		100-100
1" (25mm)	148	97.0	1.04		95-100
3/4" (19mm)	148	79.4	5.98		
1/2" (12.5mm)	148	40.6	4.80		25-60
3/8" (9.5mm)	148	22.4	5.13		
#4 (4.75mm)	148	4.4	1.51		0-10
#8 (2.36mm)	148	1.1	0.39		0-5
Pan	148	0.00	0.000		
-#200 (75um)	49	0.49	0.144	<0.8	<1.5
LA Abrasion	2	28.4	0.85		<40
Soundness (MgSO4)	3	10.6	1.26		<18
Micro-Deval	1	17.0			
Micro-Deval (B)	1	18.5			
Absorption	2	1.60	0.247		
SPGR (Dry,Gsb)	2	2.592	0.0226		
SPGR (SSD)	2	2.633	0.0170		
SPGR (Apparent,Gsa)	2	2.703	0.0071		
Unit Wt (Loose)	2	89.5	1.84		
Voids (Loose)	1	44			
Unit Wt (Rodded)	2	99.0	0.50		
Voids (Rodded)	1	39			

Comments

Query

Query Selections
Date Created 04/11/2013
Date Range 03/06/2013 - 04/11/2013
Plant Chico Quarry
Sample Type Shipping

AGG REPORT #: C11-1223
REPORT DATE: 10/17/2013

FINE AGGREGATE ANALYSIS

AGG Sample ID No.: 153413-1
Material Description: Concrete Sand
Sample Source: Single Wash
Sample Date: 10/15/13

SIEVE	PERCENT PASSING	REQUIRED SPECIFICATION PERCENT PASSING
3/8"	100.0	100
No.4	99.0	95-100
No. 8	82.0	80-100
No. 16	63.0	50-85
No. 30	45.2	25-60
No. 50	15.0	5-30
No. 100	2.5	0-10
No. 200	0.5	0-3

FINENESS MODULUS	2.93	2.30-3.10

SAND EQUIVELENT	98	n/a

NOTES:

ALLIANCE GEOTECHNICAL GROUP

PROJECT: Aggregate Testing — David Wittwer
AGG REPORT #: C11-1223
REPORT DATE: 8/28/2012

FINE AGGREGATE ANALYSIS

AGG Sample ID No.: 134125
Material Description: 3/8 Pea Gravel
Sample Source: Client Sampled
Sample Date: 8/20/12
Sample Specifications: ASTM C-33 #8 Stone

SIEVE	PERCENT PASSING	REQUIRED SPECIFICATION PERCENT PASSING
1/2"	100.0	100
3/8"	85.1	85-100
No.4	4.2*	10-30
No. 8	1.2	0-10
No. 16	1.0	0-5

DECNT	.6	

SPECIFIC GRAVITY OF FINE AGGREGATES	
Specific Gravity	2.594
Percent Absorption	1.50

ALLIANCE GEOTECHNICAL GROUP
STATE OF TEXAS
AARON J. ALLEN
104534
LICENSED
PROFESSIONAL ENGINEER
F-1970

Aaron J. Allen

NOTES: *Does not meet specification.

ALLIANCE GEOTECHNICAL GROUP

MICHELLE E. CARR
MY COMMISSION EXPIRES
August 18, 2014

Michelle E. Carr

October 28, 2013

CERTIFICATION

PROJECT: Brookhaven College

CONTRACTOR: Ferguson

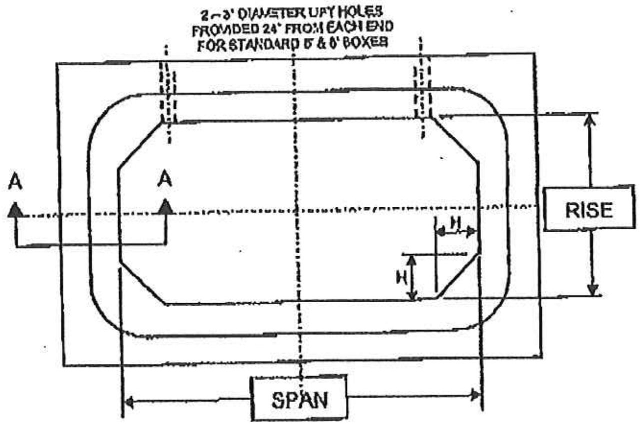
This letter certifies that the following products manufactured and/or supplied by J & G Concrete Products meet or exceed the specifications for the above project as indicated:

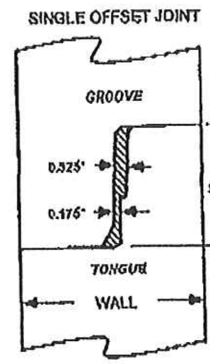
Reinforced Concrete Pipe Class III.....ASTM C76-11

Respectfully Submitted,

Quality Assurance Manager

Office 972.937.9200 Fax: 972.937.9255 Toll Free: 866.907.9200 PO Box 974 Waxahachie, TX 75168





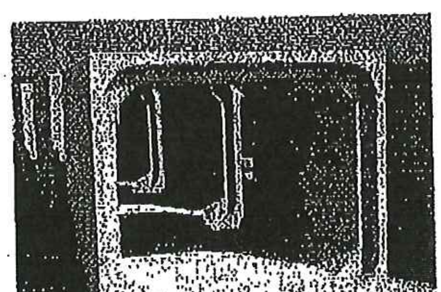
VIEW A - A

BOLDFACE IS FOR 0<2 DESIGN EARTH COVER

SPAN X RISE (FT)	TOP SLAB (IN)	BTM SLAB (IN)	WALL (IN)	HAUNCH H (IN)	WEIGHT (LBS/FT)
3X2	7 6	6	6	8	1083 1033
3X3	7 6	6	6	8	1233 1183
4X2	8 6	6	6	8	1308 1183
4X3	8 6	6	6	8	1458 1333
4X4	8 6	6	6	8	1608 1483
5X2	8 6	7 6	6	8	1558 1333
5X3	8 6	7 6	6	8	1708 1483
5X4	8 6	7 6	6	8	1858 1633
5X5	8 6	7 6	6	8	2008 1783
6X2	8 7	7	7	8	1827 1738
6X3	8 7	7	7	8	2002 1913
6X4	8 7	7	7	8	2177 2088
6X5	8 7	7	7	8	2352 2263
6X6	8 7	7	7	8	2527 2438
7X2	8	8	8	8	2200
7X3	8	8	8	8 12	2400 2610
7X4	8	8	8	8 12	2600 2810
7X6	8	8	8	8 12	2800 3010
7X6	8	8	8	8 12	3000 3210
7X7	8	8	8	8 12	3200 3410
8X2	8	8	8	8	2400
8X3	8	8	8	8 12	2600 2810
8X4	8	8	8	8 12	2800 3010
8X5	8	8	8	8 12	3000 3210

SPAN X RISE (FT)	TOP SLAB (IN)	BTM SLAB (IN)	WALL (IN)	HAUNCH H (IN)	WEIGHT (LBS/FT)
8X6	8	8	8	8 12	3200 3410
8X7	8	8	8	8 12	3400 3610
8X8	8	8	8	8 12	3600 3810
9X3	9	9	9	12	3338
9X4	9	9	9	12	3563
9X6	9	9	9	12	3788
9X6	9	9	9	12	4013
9X7	9	9	9	12	4238
9X8	9	9	9	12	4371
9X9	9	9	9	12	4688
10X3	10	10	10	12	3967
10X4	10	10	10	12	4217
10X5	10	10	10	12	4467
10X6	10	10	10	12	4717
10X7	10	10	10	12	4967
10X8	10	10	10	12	5217
10X9	10	10	10	12	5467
10X10	10	10	10	12	5717
11X3	11	11	11	12	4654
11X4	11	11	11	12	4929
11X5	11	11	11	12	5204
11X6	11	11	11	12	5479
11X7	11	11	11	12	5754
11X8	11	11	11	12	6029

SPAN X RISE (FT)	TOP SLAB (IN)	BTM SLAB (IN)	WALL (IN)	HAUNCH H (IN)	WEIGHT (LBS/FT)
11X9	11	11	11	12	6304
11X10	11	11	11	12	6579
11X11	11	11	11	12	6854
12X3	12	12	12	12	5400
12X4	12	12	12	12	5700
12X5	12	12	12	12	6000
12X6	12	12	12	12	6300
12X7	12	12	12	12	6600
12X8	12	12	12	12	6900
12X9	12	12	12	12	7200
12X10	12	12	12	12	7500
12X11	12	12	12	12	7800
12X12	12	12	12	12	8100



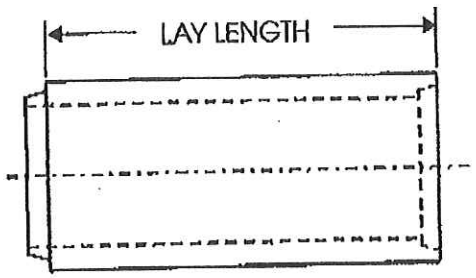
IN ADDITION TO THE SIZES SHOWN BOXES CAN BE MADE IN 6" INCREMENTS IN BOTH RISE AND SPAN

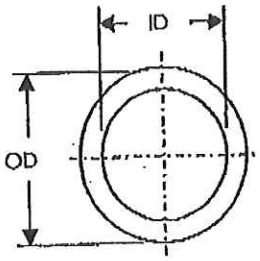
PRECAST CONCRETE BOX - ASTM C1577 & C1677

Product Data Sheet – **Single Off-Set Joint**

J+G CONCRETE PRODUCTS

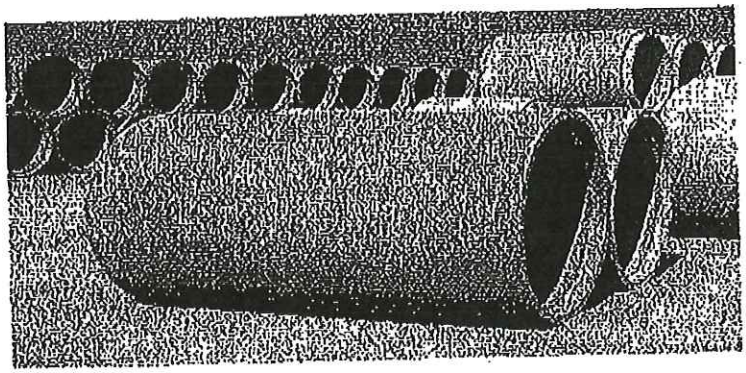
9/28/2011



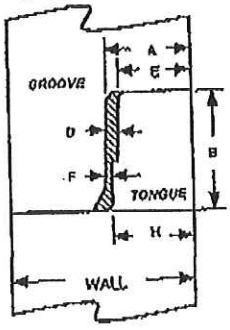


PIPE SIZE ID (IN)	WALL B THICKNESS (IN)	PIPE SIZE OD (IN)	WEIGHT (LBS/FT)	LAY LENGTHS (FT)	PIPE JOINT DIMENSIONS					
					A	B	D	E	F	H
12 SINGLE OFF-SET	**2.5	17	119	4, 6, 8	1.271	2.875	0.281	0.990	0.094	NA
15 SINGLE OFF-SET	**2.75	20.5	160	4, 6, 8	1.393	2.875	0.281	1.112	0.094	NA
18 SINGLE OFF-SET	*2.75	23.5	187	4, 6, 8	1.358	2.750	0.156	1.077	0.063	1.359
21 SINGLE OFF-SET	*3	27	236	4, 6, 8	1.483	2.750	0.156	1.327	0.063	1.516
24 SINGLE OFF-SET	3	30	265	4, 6, 8	1.494	3.000	0.250	1.244	0.094	1.505
27 SINGLE OFF-SET	3.25	33.5	322	4, 6, 8	1.616	3.250	0.250	1.365	0.094	1.635
30 SINGLE OFF-SET	3.5	37	384	4, 6, 8	1.740	3.250	0.250	1.490	0.094	1.760
33 SINGLE OFF-SET	3.75	40.5	451	4, 6, 8	1.865	3.250	0.250	1.615	0.094	1.885
36 SINGLE OFF-SET	4	44	524	4, 6, 8	1.990	3.250	0.250	1.740	0.094	2.010
42 SINGLE OFF-SET	4.5	51	685	4, 6, 8	2.494	4.000	0.446	2.048	0.146	2.497
48 SINGLE OFF-SET	5	58	867	4, 6, 8	2.494	4.000	0.446	2.048	0.146	2.497
54 SINGLE OFF-SET	5.5	65	1071	4, 6, 8	2.954	5.000	0.446	1.908	0.146	2.383
60 SINGLE OFF-SET	6	72	1296	4, 6, 8	2.804	5.000	0.446	2.158	0.146	2.613
66 SINGLE OFF-SET	6.5	79	1642	4, 6, 8	2.893	6.000	0.446	2.446	0.146	2.920
72 SINGLE OFF-SET	7	86	1810	4, 6, 8	2.937	6.000	0.446	2.491	0.146	2.966

*WALL B + ¼" **WALL B + ½"



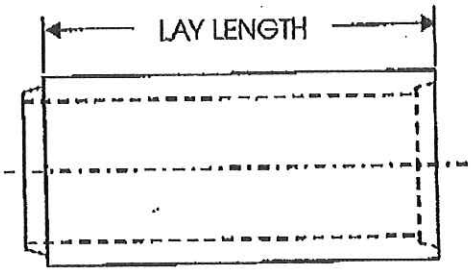
SINGLE OFFSET JOINT

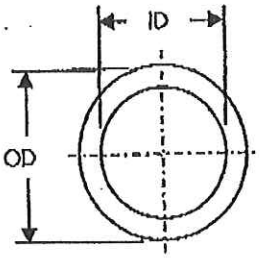


REINFORCED CONCRETE ROUND PIPE - ASTM C76 & ASTM C 655

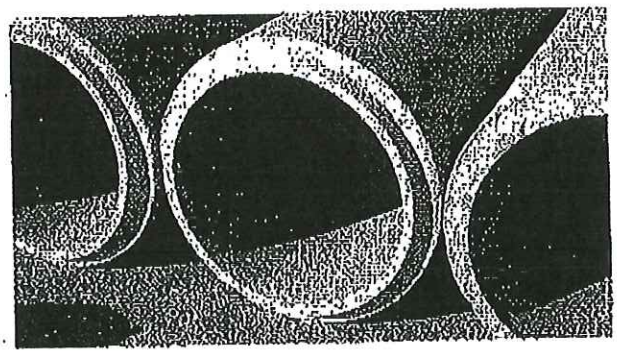
Product Data Sheet – **Single Off-Set Joint**

J+G CONCRETE PRODUCTS

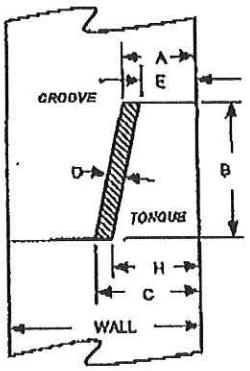




PIPE SIZE ID (IN)	WALL THICKNESS (IN)	PIPE SIZE OD (IN)	WEIGHT (LBS/FT)	LAY LENGTHS (FT)	PIPE JOINT DIMENSIONS					
					A	B	C	D	E	H
18 TONGUE & GROOVE	2.5	23	168	4, 6, 8	1.125	1.875	.453	0.250	0.875	.703
24 TONGUE & GROOVE	3	30	265	4, 6, 8	1.500	2.250	1.766	0.250	1.250	1.516
27 TONGUE & GROOVE	3.25	33.5	322	4, 6, 8	1.375	2.250	1.766	0.250	1.125	1.516
30 TONGUE & GROOVE	3.5	37	384	4, 6, 8	1.500	2.500	1.938	0.250	1.250	1.688
36 TONGUE & GROOVE	4	44	524	4, 6, 8	1.688	3.000	2.219	0.313	1.375	1.906
42 TONGUE & GROOVE	4.5	51	685	4, 6, 8	1.938	3.500	2.563	0.375	1.563	2.188
48 TONGUE & GROOVE	5	58	867	4, 6, 8	2.125	3.500	2.750	0.376	1.750	2.375



TONGUE & GROOVE JOINT



3/7/2012

REINFORCED CONCRETE ROUND PIPE - ASTM C76

Product Data Sheet - **Tongue & Groove Joint**

J+G CONCRETE PRODUCTS

10860 Sanden Drive
Dallas, TX 75238
Ph: 214-932-3000
Fx: 214-932-3003

Brookhaven Trail
ELECTRICAL CONTRACTOR
Electric Inc.

SUBMITTAL DATE
December 11, 2013

Housing: Two interlocking die-cast aluminum housings. Heavy gauge .080" spun aluminum shade with rolled edge, finished white inside.

Arm: Fabricated from .125" wall aluminum extrusion formed into a continuous smooth radius, terminating and welded into a one piece die-cast aluminum fitter. Fitter slip fits a 3" O.D. pole top and is secured by six (6) socket head stainless steel set screws threaded into stainless steel inserts.

Enclosure: Lamp enclosure/optical system comprises an assembly of two pure anodized aluminum asymmetrical main beam reflectors with clear impact resistant acrylic lens with optical texture fixed to a heavy gauge .080" spun aluminum shade with rolled edge, finished white inside and rigidly fastened to the luminaire housing. Fasteners are stainless steel.

Electrical: 42.8W LED luminaire, 48 total system watts, -30°C start temperature. Integral 120V through 277V electronic LED driver located in luminaire head, 0-10V dimming. Standard LED color temperature is 4000K with a >80 CRI. Available in 3000K (>80 CRI); add suffix K3 to order.
Note: Due to the dynamic nature of LED technology, LED luminaire data on this sheet is subject to change at the discretion of BEGA-US. For the most current technical data, please refer to www.bega-us.com.

Finish: Available in four standard BEGA colors: Black (BLK); White (WHT); Bronze (BRZ); Silver (SLV). To specify, add appropriate suffix to catalog number. Custom colors supplied on special order.

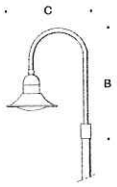
UL listed, suitable for wet locations. Protection class: IP65.

Weight: 27.6 lbs.

Effective Projection Area (EPA): 2.8 ft²

Luminaire Lumens: 2548
Tested in accordance with LM-79-08

Type:
BEGA Product:
Project: **Brookhaven Trail**
Voltage:
Color: **Bronze**
Options:
Modified:



Single pole-top luminaires

	Lamp	LEED	A	B	C
7911 LED	42.8W LED	LZ-2	26⅝	46¼	40⅛

Recommended for use with 14' to 18' poles.

BEGA-US 1000 BEGA Way, Carpinteria, CA 93013 (805) 684-0533 FAX (805) 566-9474 www.bega-us.com

Type:
Project: **Brookhaven Trail**
Options: **Bronze**
Modified:
Luminaire:
Fixture EPA:
Optional Tenon: ❑ 2⅜"ϕ x 3½" H
GCO: ❑
GFI: ❑

Approval:

1108HR 3" - 5" Tapered round hinged pole

Wall thickness: .125"

Shaft: Extruded from all new seamless 6063 aluminum alloy tubing, heat treated to a T-6 condition.

Anchor base: Round cast aluminum A356 alloy, heat treated to a T-6 condition. Anchor base and shaft continuously welded at the outside top and inside bottom of the anchor base casting. Pole base to be round hinged two piece casting. Hinge Pole shaft to be welded to upper base casting which is secured to lower base casting by three (3) stainless steel bolts. Bolts to be fastened to cast-in stainless threaded inserts in lower casting. Cast round two piece base cover supplied with pole.

Anchor bolts: Four (4) ¾" x 17" galvanized steel anchor bolts supplied with double nuts and flat washers. Maximum bolt projection 3½". For luminaires requiring threaded inserts and pole cap -specify: 1D (single); 2D (2@ 180°); 3D (3 @ 120°).

GCO or GFI: Standard GCO/GFI location is opposite the hinge. Height above base for ballast in luminaires is 18". For single luminaires with a pole base mounted (PBM) ballast the minimum height is 24" and 42" minimum for double PBM luminaires.

Weight: 50.0 lbs.

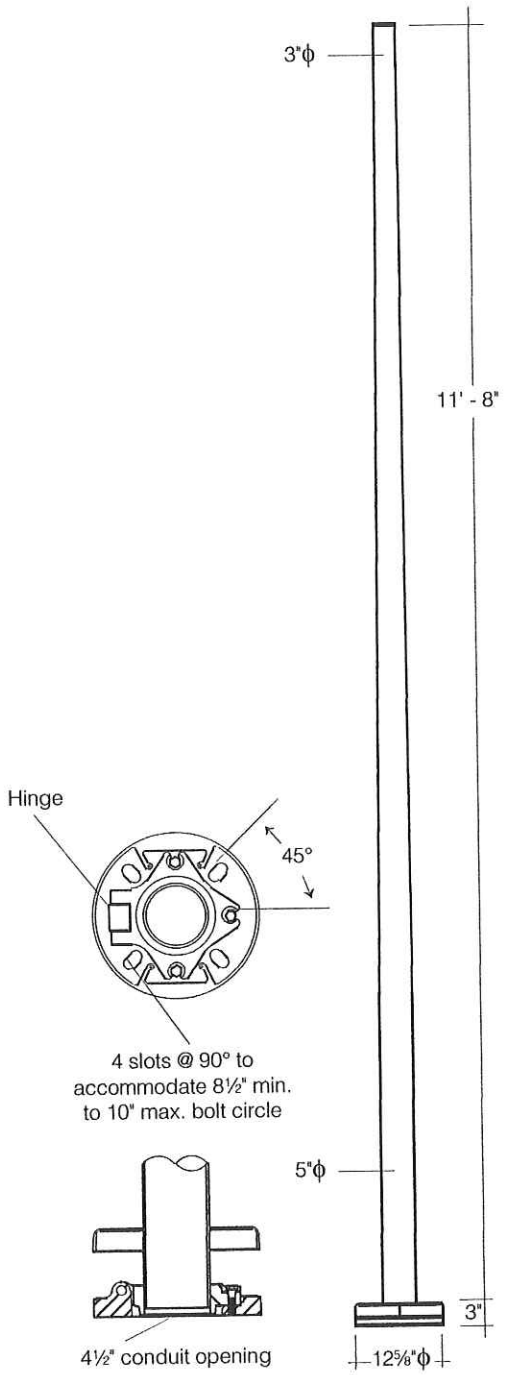
Disclaimer

BEGA-US warrants the specific anchor bolts and pole combination according to the product number(s) and description(s) indicated on this submittal sheet. Structural changes to the pole requested by the customer, including changes to pole length, may affect the compatibility of the anchor bolts and corresponding poles. BEGA-US is not responsible for the incompatibility of the anchor bolts and poles resulting from such structural changes without review by the BEGA-US engineering department. This includes, but is not limited to, any labor charges, charges for replacement materials and shipping.

Pole wind load rating:

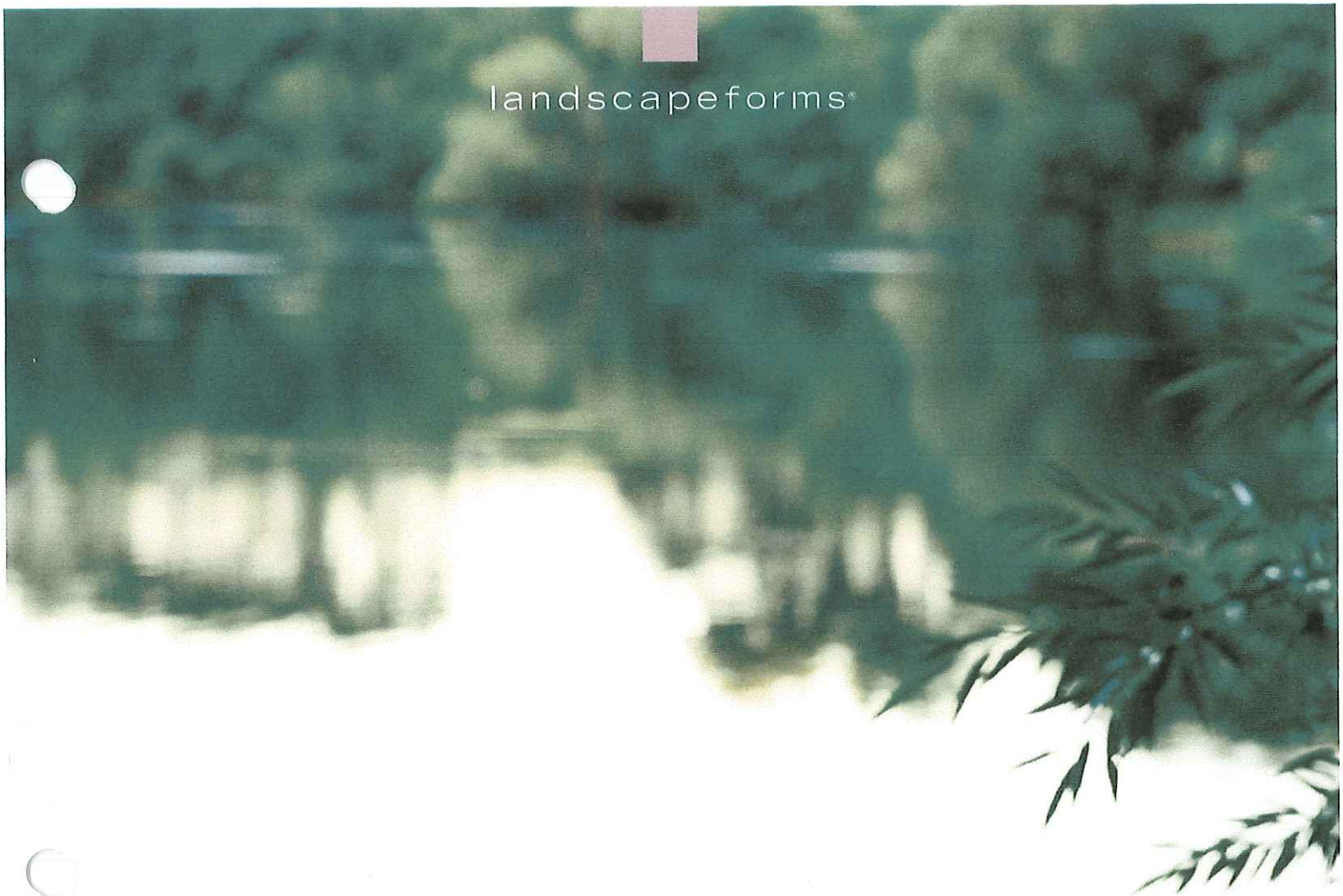
MPH:	70	80	90	100	120
EPA:	15.5	11.5	8.7	6.8	4.4

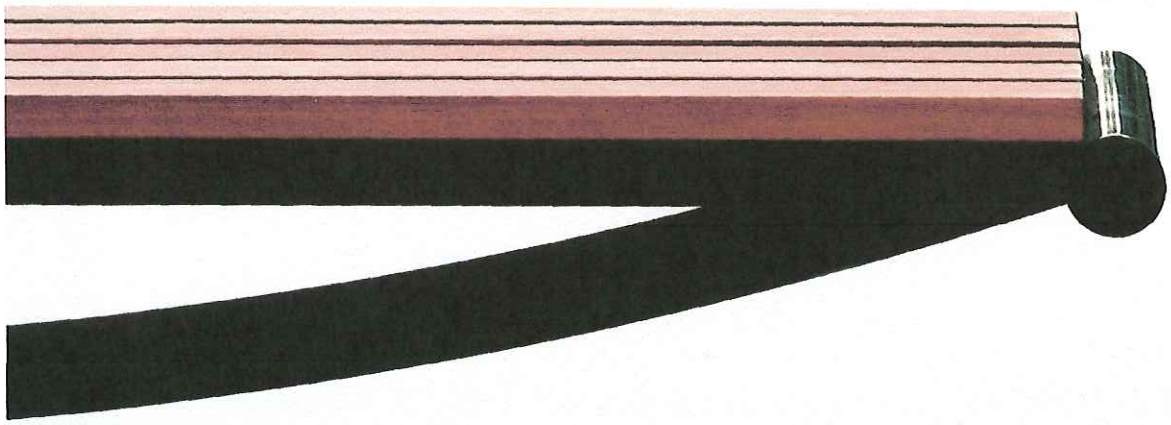
Note: Data above assumes grade level installation and a maximum luminaire weight of 50 lbs.



BEGA-US 1000 BEGA Way, Carpinteria, CA 93013 [P] 805·684·0533 [F] 805·684·6682

landscapeforms®





arcata®

Bold and beautiful. Robust structure and visual sweep. Arcata meets the measure of expansive outdoor spaces.

Arcata, designed by Kipp Stewart, renders the classic slatted-seat bench in contemporary form and materials. Its utility and flair are a fine fit for city parks, riverfronts and corporate and university campuses. Arcata with back and arms embodies stability and comfort. Backless, it expresses pure sculptural form.

Our Purpose Is To Enrich Outdoor Spaces

We believe in the power of design and its ability to elevate experience and help create a sense of place in public environments. Our high quality products and outstanding customer service have earned us a reputation as one of the world's premier designers and manufacturers of outdoor commercial furnishings.

Arcata® Specifications

Arcata bench is 74" long and is available backed or backless. The backed bench is available with arms. Seat and back surfaces are available in a variety of woods, aluminum or PolySite™ recycled plastic timbers. Bench may be surface mounted or embedded.

backless embedded	backed surface mount	backed with arms embedded	
17" x 18" x 74"	24" x 32" x 74"	24" x 32" x 75"	d x h x l

Finishes

Interior woods are finished with Landscape Forms' exclusive LF-80 wood finish, a clear, catalyzed acrylic catalyzed acrylic lacquer.

Exterior woods are unfinished and will weather to a soft pewter gray, requiring no future maintenance.

Metal is finished with Landscape Forms' proprietary Pangard II® polyester powercoat, a hard yet flexible finish that resists rusting, chipping, peering and fading. Call for standard color chart. A wide array of optional colors may be specified for an upcharge.

To Specify

Select Arcata bench in backless or backed and embedded or surface mount support. If backed, choose with or without arms. Specify wood type, aluminum or PolySite™ seat material. Select powdercoat color, and PolySite™ color if specified. Benches may be specified in FSC certified woods. Visit landscapeforms.com; click Design Tools, Materials/Colors link for standard offerings, including FSC wood options.

IDEA Silver Award Winner

Metal is the world's most recycled material and is fully recyclable. Powdercoat finish on metal parts contains no heavy metals, is HAPS-free and has extremely low VOCs. Consult our website for recycled content for this product.

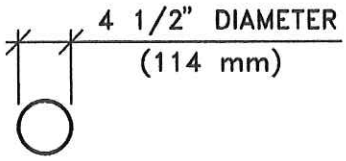
Landscape Forms is proud to specify FSC and Green-e certified paper. This paper meets the Forest Stewardship Council's standards for responsible forest management and is made using certified renewable energy.

www.landscapeforms.com
Download product photos, brochures, color charts, SketchUp components, technical information, CAD details, CSI specifications, assembly instructions.

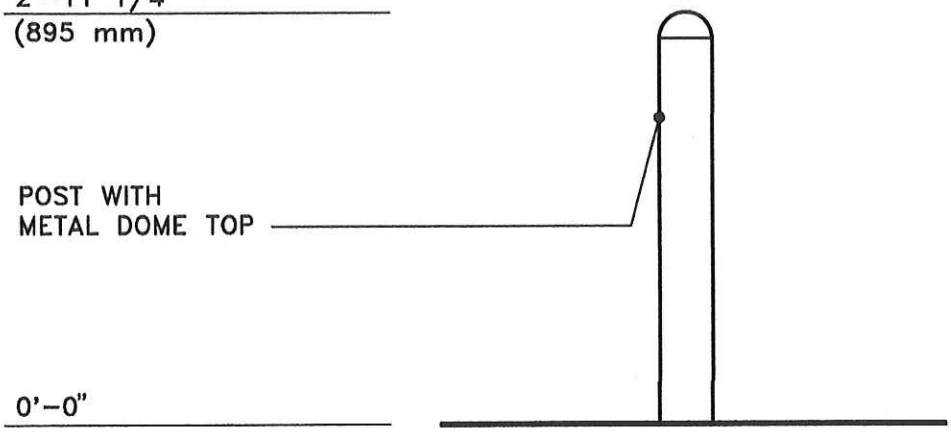
Arcata is designed by Kipp Stewart.
Specifications are subject to change without notice.
Arcata is manufactured in U.S.A.
Arcata design is protected by U.S. Patent Nos. D453,424, D455,919, D451,296 and D450,952.
Landscape Forms supports the LAF at the Second Century level.

landscapeforms®
800.521.2546 269.381.3455 fax
431 Lawndale Avenue, Kalamazoo, MI 49048
www.landscapeforms.com

Paul E. Allen Co. Inc.
1-888-877-4887
rep. Eric Hiller
peaco@grandecom.net

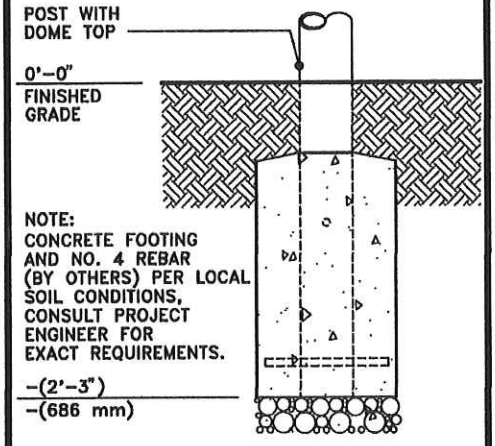


TOP VIEW

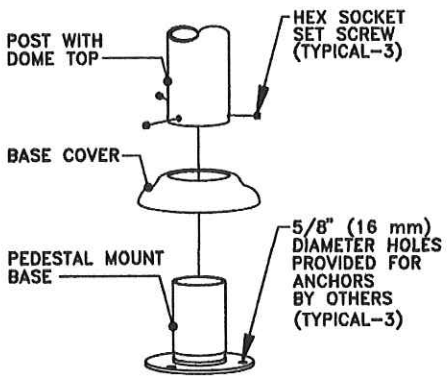


FRONT VIEW

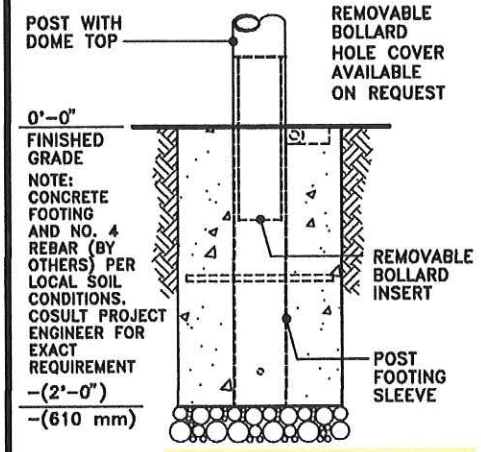
Choice of standard powder coat



2190-E (EMBEDMENT MOUNTING)



2190-P (PEDESTAL MOUNTING)



2190-R (REMOVABLE MOUNTING)

△

Scale	Drawn by: AT	07-04-10
3/4"=1'-0"	Ck'd by:	

COLUMBIA CASCADE COMPANY
Makers of TimberForm®, PipeLine® RePlay,® TimberForm®-2, InterPlay® CycLoops® and CycLocker® Products.
1300 S.W. Sixth Avenue, Suite 310 Telephone 503/223-1157
Portland, Oregon 97201-3464 Facsimile 503/223-4530
U.S.A.
WWW.TIMBERFORM.COM

Title:
TIMBERFORM
MODEL NO. 2190
METAL BOLLARD

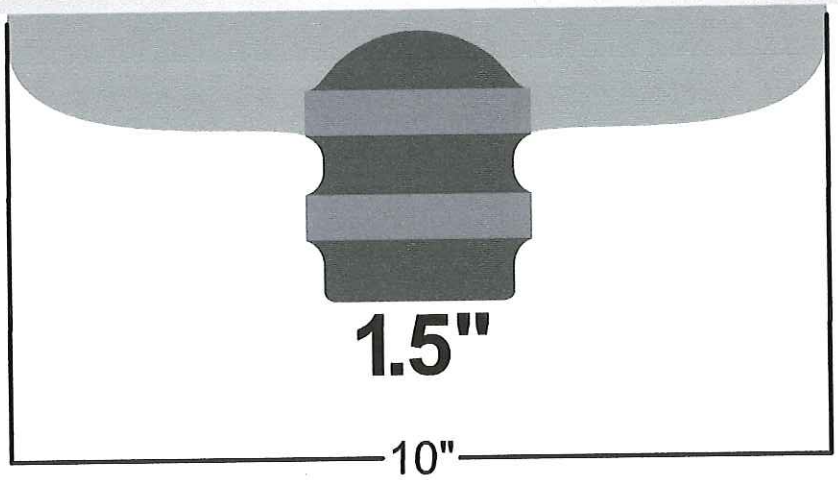
Drawing No.	Sheet
W-2190	1 of 1

PLAQUE ORDER: 2838734
VERSION: 2

DATE: 7-7-14
ARTIST: Chris

Brookhaven Trail Connection

This trail is dedicated to the citizens of Dallas County with special thanks to the communities of Addison and Farmers Branch, Vitruvian Park, the North Central Texas Council of Governments, the Dallas County Community College District and all that have made a contribution in partnership with Dallas County.



CAST PLAQUE

MATERIAL - Aluminum
SIZE - 18"W x 12"h
QTY - 1
FINISH - Stipple w/Satin Surface
CLEAR COAT - Semi-Gloss
MOUNT - 1.5" Post Cap Mount

-RAISED
Aluminum

-RECESSED
2025 Black Painted