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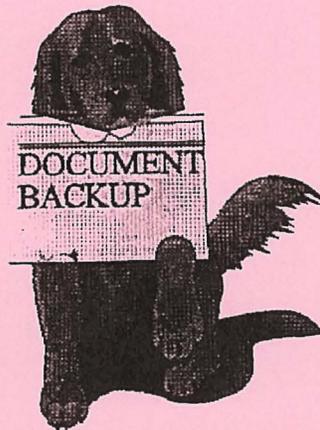


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R2020 0198

MAR 10 2020

CONTRACT DOCUMENTS

FOR

CONSTRUCTION

OF

ANNUAL TRAFFIC LOOPS CONTRACT

PALM BEACH COUNTY, FLORIDA

PROJECT NO. 2020051

R2020 0198

MAR 10 2020

PALM BEACH COUNTY, FLORIDA

**PROJECT NAME: ANNUAL TRAFFIC LOOPS
CONTRACT**

PROJECT NO.: 2020051

**BOARD OF COUNTY COMMISSIONERS
PALM BEACH COUNTY, FLORIDA
ENGINEERING & PUBLIC WORKS
ROADWAY PRODUCTION DIVISION**

Project Name: **Annual Traffic Loops Contract**

Project Number: **2020051**

ADDENDUM NO. 2

Date of Issuance: **September 23, 2019**

The Bid Due Date has been postponed until Tuesday, October 1, 2019

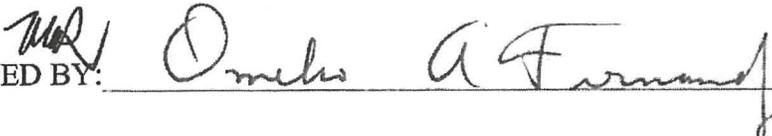
SPECIFICATIONS: Delete: C-A

Insert: C-B

Add: RFI-1

It is required that **ADDENDUM NO. 2** be acknowledged in the space provided on the **PROPOSAL FORM.**

APPROVED BY:



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NOTICE TO BIDDERS

NOTICE TO BIDDERS

A PRE-BID MEETING WILL BE HELD ON

THURSDAY SEPTEMBER 5, 2019 AT 10:00 A.M.

AT THE ENGINEERING & PUBLIC WORKS DEPARTMENT

IN THE THIRD FLOOR MAIN CONFERENCE ROOM (3W-12)

LOCATED AT 2300 NORTH JOG ROAD

WEST PALM BEACH, FLORIDA, 33411-2745

IF THERE ARE ANY QUESTIONS

CONCERNING THIS MEETING,

PLEASE CONTACT THE OFFICE OF

ROADWAY PRODUCTION

AT 684-4150

ADVERTISEMENT FOR BID

Sealed Bids will be received by the Board of County Commissioners, Palm Beach County, Florida, in the Office of Palm Beach County Engineering & Public Works Department, Roadway Production Division, located at 2300 North Jog Road, Third Floor Room 3W-33, West Palm Beach, Florida, 33411-2745, up to 2:00 P.M., local time, and opened in the Third Floor Conference Room (3W-12) on **Tuesday, October 1, 2019**, for furnishing all Materials, labor, Equipment and supplies necessary for the Construction of:

ANNUAL TRAFFIC LOOPS CONTRACT PALM BEACH COUNTY PROJECT NO. 2020051

All conditions and requirements for Bid submission, consideration, and award are contained in the Contract Documents, which are posted on the following Palm Beach County web site:

<https://pbcvssp.co.palm-beach.fl.us/webapp/vssp/AltSelfService>

To review the Contract documents for this project, go to the above URL and click on the project hyperlink. Contractors may then download and print the Contract documents (Plans, Specifications, Excel Proposal Forms, check list "with required forms" and any other related documents).

Hard copy documents will be available at the Department for a non-refundable service fee of \$25. The Contractor shall contact Palm Beach County Roadway Production Division at (561) 684-4150 in advance to arrange for hard copies.

All Bids shall be submitted in accordance with the Bid documents, including but not limited to the General Provision Section 2 and accompanied by the documentation referenced therein.

The Pre-Bid Meeting will be held on Thursday, September 12, 2019 at 11:30 A.M., in the Third Floor Main Conference Room (3W-12) in the Palm Beach County Building at 2300 North Jog Road, West Palm Beach, Florida. Attendance at this pre-bid meeting is highly recommended and strongly encouraged. To the extent you are unable to attend the pre-bid meeting, you may request and obtain an audio recording of the meeting by contacting Palm Beach County Roadway Production Division at (561) 684-4150.

The Board of County Commissioners reserves the right to reject any or all Bids. By order of the Board of County Commissioners, Palm Beach County, Florida.

ATTEST:
SHARON R. BOCK, CLERK & COMPTROLLER

BOARD OF COUNTY COMMISSIONERS
PALM BEACH COUNTY, FLORIDA

DAVID RICKS, P.E., COUNTY ENGINEER

BY: Mack Bernard, Mayor

PUBLISH: PALM BEACH POST
SUNDAY: AUGUST 25, 2019
SUNDAY: SEPTEMBER 1, 2019

SUBMITTALS REQUESTED WITH BID

At a minimum, submit one original package containing the following:

(see contract documents to determine of other requirements apply)

- X EBO Schedules 1 & 2 (pages EBO-1, EBO-2)
- X All Proposal Pages (P Pages)
- X Signed Contractor's Certification (Last P Page)
- X Signed/Sealed Local Preference (Page LP-2)
with Copy of Bidder's Palm Beach County Tax Receipt (If Eligible)
- X Signed/Sealed Living Wage (Pages LW-2, LW-3, LW-4)
- X Scrutinized Companies (Page SC-1)
- X Acknowledged/Sealed Bid Bond and Bid Bond forms pages BB-1 and BB-2
- X Certificate of Resolution (Page CC-1)
- X Copy of Firm's Active License to Conduct Business in the State of Florida
- X "Documentation of Experience and Resources", If Required

If Prime Contractors have not performed similar work with the Palm Beach County Engineering and Public Works Department within the past three years as a prime Contractor, failure to submit the required "Documentation of Experience and Resources" with the bid will cause the bid to be considered Non-Responsive.

(See pages GP-2 and GP-3, Section 2-1 for full requirement text.)

INSTRUCTIONS TO BIDDERS

Prospective Bidders are hereby advised that Division I of the FDOT Standard Specifications for Road and Bridge Construction 2017 (and as amended herein) ("Specifications") shall serve as instructions to Bidders along with the following:

1. **VSS REGISTRATION REQUIRED:** Prior to Contract award or renewal ("Award"), Contractor must register in the County's Vendor Self Service ("VSS") at <https://pbcvssp.co.palm-beach.fl.us/webapp/vssp/AltSelfService>. If Contractor intends to use subcontractors, Contractor must also ensure that all subcontractors are registered as vendors in VSS prior to Contract Award. All subcontractor agreements must include a contractual provision requiring that the subcontractor register in VSS. County will not finalize Contract Award until Contractor has certified that the Contractor and all of its subcontractors are registered in VSS.
2. **LAWS AFFECTING PUBLIC WORK:** Bidders shall be familiar with the various Federal, State and Local Laws affecting the prosecution of the Work. As outlined in Section 2-11 of the Specifications, Palm Beach County (County) Administrative Code Section 305.02 & 402.00, and the Purchasing Ordinance (Palm Beach County Code, Chapter 2, Article III, Division 2, Part A), the County is responsible to assure the qualifications of any or all prospective Contractors.
3. **POWER OF ATTORNEY:** Attorneys-in-fact who sign Proposal Guaranties and Contract Bonds must file with such bond a certified copy of their power of attorney to sign said bonds.
4. **ADDENDA – CHANGES WHILE BIDDING:** No interpretation of the meaning of the Plans, Specifications or other Contract Documents will be made to any Bidder orally. Every Request for Information (RFI) is preferred to be submitted to the Director, Palm Beach County Roadway Production Division via electronic mail (e-mail) to email address:

ENG-RoadwayBids@pbcgov.org

RFI's may also be mailed or faxed to the Director at the following: 2300 N. Jog Road, Suite #3W-33, West Palm Beach, Florida, 33411-2745. Fax: 561-684-4166. For the RFI to be given consideration, it must be submitted at least five (5) Working Days prior to the date and time fixed for the opening of Bids.

Any and all such interpretations and any supplemental instructions will be in the form of written Addenda to the Contract Documents which, if issued, will be posted on the following URL: <https://pbcvssp.co.palm-beach.fl.us/webapp/vssp/AltSelfService> up to seventy-two (72) hours prior to the date and time fixed for the opening of Bids. The exceptions to this notification period shall be that of an Addenda whose content is limited to the listing of additional approved manufacturers and substitutions, or one which contains minor clarifications or changes, which shall be issued up to 24 hours prior to the date fixed for the Contract Letting. The request for Bids may be withdrawn, or the date for receipt of Bids may be postponed, at any time prior to the bid opening.

The Bidder shall acknowledge and certify receipt of all addenda by completing the Proposal Form page. Copies of Addenda will also be made available for inspection at the Department where Bidding Documents are on file for that purpose. Failure of any Bidder to receive any

INSTRUCTIONS TO BIDDERS

such Addenda of interpretation shall not relieve any Bidder from any obligation under the Bid as submitted. All addenda so issued shall, ultimately, become part of the Contract Documents.

5. **POSTING OF BID TABULATIONS:** Recommended award will be posted for review by interested parties at the Engineering & Public Works Department located at 2300 N. Jog Rd., Suite #3W-33, West Palm Beach, Florida, 33411-2745, Florida, and will remain posted for a period of at least seventy-two (72) hours prior to approval by the Board of County Commissioners. Failure to file a protest to the Director of Purchasing Department within the time prescribed in the County Purchasing Ordinance shall constitute a waiver of proceedings under the referenced County Ordinance.

6. **EQUAL BUSINESS OPPORTUNITY PROGRAM**

6.1 Policy. It is the policy of the Board of County Commissioners of Palm Beach County, Florida, (the Board) that all segments of its business population, including, but not limited to, small, local, minority and women owned businesses, have an equitable opportunity to participate in the County's procurement process, prime contract and subcontract opportunities. To that end, the Board adopted an Equal Business Opportunity Ordinance which is codified in Sections 2-80.20 through 2-80.30 (as may be amended) of the Palm Beach County Code, (EBO Ordinance) which sets forth the County's requirements for the EBO program, and which is incorporated in this solicitation. A bidder must comply with the requirements contained in this section for a bidder to be deemed responsive to the solicitation requirements. The provisions of the EBO Ordinance are applicable to this solicitation, and shall have precedence over the provisions of this solicitation in the event of a conflict.

6.1.2 Definitions. The following terms, phrases, words and their derivations shall have the meanings given. Where not inconsistent with the context, words used in the present tense include the future tense, words in the plural number include the singular number, "any" includes "all," "and" includes "or." Capitalized terms are defined as set forth in the EBO Ordinance, and in the Contract.

- A. "prime" and "prime contractor" mean, refer, and relate to "Prime Contractor," as defined in the EBO Ordinance, and to "Bidder" and "Contractor," as defined in the Contract, and as applicable.
- B. "solicitation" and "solicit" mean, refer, and relate to Advertisement for Bid, as defined in the Contract.

6.2 Affirmative Procurement Initiatives (APIs). The API approved for this Project, including any applicable SBE or MWBE goals, is:

A waiver of API requirements was approved by the Office of Equal Business Opportunity on April 23, 2019 based upon the determination that sufficient qualified S/M/WBEs providing the goods or services required by the contract are unavailable in Palm Beach County despite every reasonable attempt to locate them.

INSTRUCTIONS TO BIDDERS

Any bid that fails to comply with the API requirements stated in this solicitation after the period allowed for waiver requests has lapsed shall be deemed non-responsive. See also the EBO Ordinance and Countywide PPM CW-O-043 for further information on APIs.

6.3 API Waiver Requests/Good Faith Efforts. If Bidder is unable to comply with the API requirements as set forth in this solicitation, such Bidder shall submit a request for a waiver or partial waiver at least (7) business days prior to the bid due date as stated in the solicitation. **If a bidder requests a waiver from an API from the Office of EBO at least 7 business days prior to the bid due date, then the bid due date will be extended pending the outcome of a waiver request. Additionally, if the waiver is granted, the solicitation will be amended accordingly and the due date extended again.**

Such waiver request shall include specified documentation that demonstrates satisfactory Good Faith Efforts (as defined below) were undertaken by Bidder to comply with the requirements as described under the selected API. The Good Faith Effort waiver request shall be reviewed by the Office of EBO within seven (7) business days of receipt. The bid due date will be extended during this review period. If the Office of EBO determines that adequate Good Faith Efforts have been demonstrated by the Bidder to warrant a partial or total waiver of the API, then the solicitation shall be amended accordingly to reflect the partial or total waiver, and any bids received by the County in the interim shall be returned unopened. The amended solicitation shall then be advertised to all prospective Bidders and the bid due date extended. However, if the Office of EBO determines that the Bidder failed to submit documentation sufficient to demonstrate that Good Faith Efforts were undertaken by the Bidder to support its waiver or partial waiver request, the request for waiver or partial waiver shall be denied, and the solicitation shall remain unchanged. In the event of an adverse waiver or partial waiver request decision, the Bidder shall have the right to request reconsideration of the adverse decision by the Director of the EBO Office, and if still aggrieved, shall be subsequently entitled to the process for an appeal to a Special Master as referenced in Section 2.-80.28 (b) of the EBO Ordinance. The solicitation due date shall be extended pending the EBO Director reconsideration and Special Master appeal process if requested.

Good Faith Efforts means documentation of the Bidder's intent to comply with the applicable APIs, including, but not limited to, the following: (1) documentation as stated in the solicitation reflecting the Bidder's commitment to comply with SBE or M/WBE goals as established by the Office of EBO for a particular contract; or (2) documentation of efforts made toward achieving EBO program goals (e.g., solicitations of bids/proposals/qualification statements from all qualified SBE firms or M/WBE firms listed in the Office of EBO's directory of certified SBE or M/WBE firms; correspondence from qualified SBE or M/WBE firms documenting their unavailability to perform SBE or M/WBE contracts; documentation of efforts to subdivide work into smaller quantities for subcontracting purposes to enhance opportunities for SBE or M/WBE firms; documentation of a Prime Contractor's posting of a bond covering the work of SBE or M/WBE subcontractors; documentation of efforts to assist SBE or M/WBE firms with obtaining financing, bonding or insurance required by the Bidder; and documentation of consultations with trade associations and consultants that represent the interests of SBE and/or M/WBEs in order to identify qualified and available SBE or M/WBE subcontractors). Scoring of Good Faith Efforts documentation and administrative determinations regarding the adequacy of such Good Faith Efforts is the responsibility of the Office of EBO.

INSTRUCTIONS TO BIDDERS

6.4 Bid Submission Documentation. S/M/WBE bidders, bidding as prime contractors, are advised that they must complete Schedule 1 listing the Work to be performed by their own workforce as well as the Work to be performed by any subcontractor, including S/M/WBE subcontractors. Failure to include this information on Schedule 1 will result in the participation by the S/M/WBE prime bidders own workforce NOT being counted towards meeting the S/M/WBE goal. This requirement applies even if the S/M/WBE contractor intends to perform 100% of the Work with their own workforce.

All Bidders are required to submit with their bid the appropriate EBO schedules in order to be deemed responsive to this solicitation. EBO documentation to be submitted is as follows:

OEBO Forms are available at the following website

<http://discover.pbcgov.org/oebo/Pages/Compliance-Programs.aspx>

Schedule 1 - List of All Proposed Subcontractors, including S/M/WBE Participation. A completed Schedule 1 shall list the names of all subcontractors, including S/M/WBE subcontractors, intended to be used in performance of the contract, if awarded. This schedule shall also be used if an S/M/WBE prime bidder is utilizing any subcontractors.

Schedule(s) 2 - Letter(s) of Intent to Perform as a Subcontractor, including S/M/WBE Subcontractors. A Schedule 2 for each subcontractor, including each S/M/WBE subcontractor, listed on Schedule 1, shall be completed and executed by the proposed subcontractor. The type of Work to be performed by each subcontractor and the dollar value or percentage shall also be specified. Additional copies may be made as needed. A completed Schedule 2 is a binding agreement between the prime contractor and the subcontractor and should be treated as such.

Completed and submitted EBO forms are incorporated into and made a part of the Contract Documents. Schedules 1 and 2 shall be submitted with each work order.

5.5 S/M/WBE Certification. Only those firms certified by Palm Beach County at the time of bid opening shall be counted toward the established S/M/WBE goal. Upon receipt of a complete application, **IT TAKES UP TO NINETY (90) DAYS TO BECOME CERTIFIED AS AN S/M/WBE WITH PALM BEACH COUNTY.** It is the responsibility of the bidder to confirm the certification of any proposed S/M/WBE; therefore, it is recommended that bidders visit the on-line S/M/WBE Directory at www.pbcgov.org/osba to verify S/M/WBE certification.

6.6 Counting S/M/WBE Participation.

Once a firm is determined to be an eligible S/M/WBE according to the Palm Beach County certification procedures, the Prime may count toward its S/M/WBE goals only that portion of the total dollar value of a contract performed by the S/M/WBE.

The Prime may count toward its S/M/WBE goal a portion of the total dollar value of a contract with a joint venture, eligible under the standards for certification, equal to the percentage of the ownership and control of the S/M/WBE partner in the joint venture.

INSTRUCTIONS TO BIDDERS

The Prime may count toward its S/M/WBE goal the entire expenditures for materials and equipment purchased by an S/M/WBE subcontractor, provided that the S/M/WBE subcontractor has the responsibility for the installation of the purchased materials and equipment.

The Prime may count the entire expenditure to an S/M/WBE manufacturer (i.e., a supplier/distributor that produces goods from raw materials or substantially alters the goods before resale).

The Prime may count sixty percent (60%) of its expenditure to S/M/WBE suppliers/distributors that are not manufacturers.

The Prime may count toward its S/M/WBE goal second and third tiered S/M/WBE subcontractors, provided that the Prime submits a completed Schedule 2 form for each S/M/WBE subcontractor.

The Prime may only count towards its S/M/WBE goal the goods and services in which the SBE is certified.

A certified S/M/WBE Prime may count toward the established goal the goods and services in which it performs with its own work force. The Prime S/M/WBE shall submit a completed Schedule 1 and 2.

6.7 S/M/WBE Participation. Bidder represents and warrants that Bidder will meet the S/M/WBE participation percentages submitted in its bid with the subcontractors contained on Schedules 1 and 2 and at the dollar values specified. Bidder agrees to provide any additional information requested by the County to substantiate participation.

6.8 Post Bid Waiver Request. After submission of a bid, if Bidder, through no fault of its own, is unable to meet the S/M/WBE participation specified in its bid, then Bidder must immediately seek substitute S/M/WBEs to fulfill the requirements and obtain the approval of the EBO Director. If, after reasonable Good Faith Efforts, the Bidder is unable to find an acceptable substitute S/M/WBE, a post-bid opening waiver may be requested. The request shall document the reasons for the Bidder's inability to meet the goal requirement. In the event the Bidder is found not to have performed Good Faith Efforts in its attempt to find a suitable substitute for the initial S/M/WBE proposed utilization, one (1) or more of the penalties and sanctions as set forth herein may be imposed by the EBO Office.

6.9 Responsibilities after Contract Award. The successful Bidder is required to submit accurate progress payment information with each pay application regarding each of its subcontractors, including S/M/WBE subcontractors. The Department shall audit the reported payments to S/M/WBE and non-S/M/WBE subcontractors to ensure that the Contractors' reported subcontract participation is accurate. Absent a waiver from the Office of EBO, a Contractor's failure to reach the required level of S/M/WBE subcontracting shall be considered a material breach of contract. In the event of Contractor non-compliance, the Contractor shall be subject to any penalties and sanctions available under the terms of the EBO Ordinance, its contract with the County, or by law.

The successful Bidder shall submit the following forms with each pay application:

INSTRUCTIONS TO BIDDERS

Schedule 3 – Subcontractor Activity Form. This form shall be submitted by the prime contractor with each payment application when subcontractors, including S/M/WBE subcontractors, are utilized in the performance of the contract. This form shall contain the names of all subcontractors, including S/M/WBE subcontractors, specify the subcontracted dollar amount for each subcontractor approved change orders, revised subcontractor contract amount, including S/M/WBE contract amount, amount drawn this period, amount drawn to date, and payments to date issued to subcontractors. This form is intended to be utilized on all non-professional services contracts.

Schedule 4 – Subcontractor Payment Certification, including S/M/WBEs. A Schedule 4 for **each subcontractor**, including each S/M/WBE, shall be completed and signed by each subcontractor, including each S/M/WBE, after receipt of payment from the prime. The prime shall submit this Schedule 4 with each payment application submitted to the County to document payment issued to a subcontractor in the performance of the Contract.

The successful bidder shall submit an S/M/WBE Activity Form (Schedule 3) and Subcontractor Payment Certification Forms (Schedule 4) with each payment application. **Failure to provide these forms may result in a delay in processing payment or disapproval of the invoice until they are submitted.** The S/M/WBE Activity Form (Schedule 3) is to be filled out by the Prime Contractor and the Subcontractor Payment Certification Form (Schedule 4) is to be executed by each subcontractor to verify receipt of payment.

Upon letter notification by the County that the payment tracking system is automated, the prime contractor is required to input all subcontractor payment information directly into the County's contract information system prior to submitting a payment application.

6.10 S/M/WBE Substitution after Contract Award. After Contract award, the Contractor may only substitute a certified S/M/WBE subcontractor who is unwilling or unable to perform, and such substitution may only be done with another certified S/M/WBE, in order to maintain the S/M/WBE percentage(s) submitted with the bid. Any desired change, including substitution, termination, or self-performance, in the S/M/WBE Participation Schedule (Schedule 1) shall be approved in writing in advance by the Office of EBO and the Department, and shall indicate the Prime Contractor's Good Faith Efforts to substitute any certified S/M/WBE with another certified S/M/WBE Subcontractor, as appropriate. Upon receiving approval of substitution for the S/M/WBE subcontractor, the Prime must submit a completed and signed Schedule 2 by the proposed S/M/WBE subcontractor. Subcontractor shall specify the type of Work to be performed, and the cost or percentage. In the event the Prime Contractor is found not to have performed Good Faith Efforts in its attempt to find a suitable substitute for the S/M/WBE subcontractor, one (1) or more of the penalties and sanctions as set forth herein may be imposed by the Office of EBO.

6.11 Change Orders and Modifications. If the County's issuance of an alternate or change order on a project results in changes in the scope of Work to be performed by a S/M/WBE subcontractor listed at bid opening, the Prime must submit a modified, completed and signed Schedule 2 that specifies the revised scope of Work to be performed by the S/M/WBE, along with the price and /or percentage.

INSTRUCTIONS TO BIDDERS

6.12 EBO Program Compliance, Enforcement, Penalties. Under the EBO Ordinance, the Office of EBO is required to implement and monitor S/M/WBE utilization during the term of any contract resulting from this solicitation. It is the County's policy that S/M/WBEs shall have the maximum feasible opportunity to participate in the performance of County contracts. All Bidders are required to comply with the EBO Ordinance which is incorporated herein by reference and are expected to comply with the APIs applicable to this solicitation, as well as the S/M/WBE utilization proposed by a Bidder in its Bid, as the utilization plan and APIs are automatically incorporated into and made a material component of any resulting Contract.

The EBO Office and the Department shall have the right to request and review Contractor's books and records to verify Contractor's compliance with the Contract, adherence to the EBO Program and its Bid. The EBO Office and the Department shall have the right to interview subcontractors and workers at the work site to determine Contract compliance. Contractor shall retain all books and records pertaining to this Contract, including, but not limited to, subcontractor payment records, for four (4) years after project completion date, or such longer time as may be required in other provisions of this Contract, and make such records available for inspection in Palm Beach County by the EBO Office and the County at any reasonable time during the four (4) years.

The Director of the Office of EBO or designee may require such reports, information, and documentation from Contractor as are reasonably necessary to determine compliance with the EBO Ordinance requirements. Contractor shall correct all noncompliance issues within 15 calendar days of a written notice of noncompliance by the contracting department or the EBO Office. If the Contractor does not resolve the non-compliance within 15 days of receipt of written notice of non-compliance, then the Director of the Office of EBO or designee may impose upon the non-complying party any or all of the following penalties:

- a. Suspension of contract;
- b. Withholding of funds;
- c. Termination of contract based upon a material breach of contract pertaining to EBO Program compliance;
- d. Suspension or Debarment of a respondent or bidder, contractor or other business entity from eligibility for providing goods or services to the County for a period not to exceed three (3) years; and
- e. Liquidated damages equal to the difference in dollar value of S/M/WBE participation as committed to in the contract, and the dollar value of S/M/WBE participation as actually achieved.

7. INCENTIVES

Apprentice Incentive

Palm Beach County offers an Apprentice Incentive payment to a contractor who actually expends a minimum of \$25,000 (including subcontractors) in payroll costs on apprentice wages. For purposes of this section, "apprentice" means any person who is participating in a Florida Department of Education registered apprenticeship program. The Living Wage

INSTRUCTIONS TO BIDDERS

provisions of this Contract shall not be diminished by paying an apprentice less than the Living Wage.

Upon completion of the Contract, Contractor may apply for the payment which will be added to the Contract by change order. If the County determines that the Contractor complied with the requirements of this section, it will reimburse the contractor 20% of its apprentice wages (including payroll taxes, costs, and benefits) up to a maximum reimbursement of \$100,000. The request must be submitted no later than 45 days after Substantial Completion of the project.

For projects with construction costs of \$20,000,000 or greater, the threshold amount of expenditures for apprentices which must be paid to qualify for the incentive shall increase to \$50,000 and the maximum reimbursement payment to \$200,000.

To be eligible for the Apprenticeship Incentive payment, the apprentice employer (through the Contractor) must provide the following documentation: apprentice name(s), contact information, the apprentice Registered Apprenticeship Partners Information Data System (RAPIDS) Registration number, certification from the apprentice program that the employee was in good standing during the time on the project, registered trade, and certified payroll for the apprentice hours worked on the project.

The Contractor is required to forward all documentation, assembled and submitted by the apprentice employer in accordance with the above paragraph, to the County for review and disposition. Any incentive that the County approves shall be provided to the apprentice employer in full.

Glades Resident Incentive

Palm Beach County offers an incentive Payment to any contractor (and subcontractors) who hires a new employee that is a resident of the Glades area for work on County contracts ("Glades Employee"). For purposes of this section, "resident of the Glades area" means any person whose legal residence is located in the Glades area as defined in the Palm Beach County Local Preference Ordinance.

To be eligible for the Incentive Payment, the employee must be a full-time employee of the Contractor for a minimum of 3 weeks on this project and cannot have worked for the Contractor claiming the Glades Employee as a new hire for 90 days prior to this project. Within 5 days of the Contractor hiring and the Glades Employee reporting to work at the project site, Contractor must provide the following documentation ("Hiring Certification"): Glades Employee name, contact information including legal residence, copy of driver's license or other proof of residence, hire date, start date at project site, and trade. Both the Glades Employee and employer must sign the Hiring Certification with signatures notarized.

The County has the right, but not the obligation, to conduct unannounced field interviews with the Glades Employee to ensure compliance with the requirements of this Section.

INSTRUCTIONS TO BIDDERS

Upon completion of the Contract, Contractor may apply for the Incentive Payment which will be added to the Contract by change order. The documentation ("Incentive Certification") required includes resubmitting of the Hiring Certification along with the employment end date or last day on the job site (whichever is earlier), a certified payroll for the hours worked on the project, and employee wages and benefits paid. The Incentive Certification must be signed by both the Glades Employee and employer with both signatures notarized. No markup will be allowed either by the General Contractor or a subcontractor.

If the County determines that the Contractor complied with the requirements of this section, it will reimburse the contractor 30% of the new employee(s) wages (including payroll taxes, costs, and benefits) up to a maximum reimbursement of \$100,000. The request must be submitted no later than 45 days after Substantial Completion of the project.

A Contractor can only claim the Incentive Payment once for each Glades Employee within a rolling twelve (12) month period, but the incentive can be claimed across multiple County contracts.

It is a Contract requirement of the Contractor that any reimbursement requested by a subcontractor under this Section be processed by the Contractor to the County for review.

8. ANNUAL CONSTRUCTION CONTRACT ON A TASK WORK ORDER BASIS

See Special Provisions for Method of Ordering Work (SP-10) and Annual construction Contract intent and spending limits (pages SP-11, C-1).

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SPECIAL PROVISIONS

1. COMMERCIAL NON-DISCRIMINATION: The County is committed to assuring equal opportunity in the award of contracts and complies with all laws prohibiting discrimination. Pursuant to Palm Beach County Resolution R2017-1770, as may be amended, the Contractor warrants and represent that throughout the term of the Contract, including any renewals thereof, if applicable, all of its employees are treated equally during employment without regard to race, color, religion, disability, sex, age, national origin, ancestry, marital status, familial status, sexual orientation, gender identity or expression, or genetic information. Failure to meet this requirement shall be considered default of the Contract.

The Contractor represents and warrants that it will comply with the County's Commercial Nondiscrimination Policy described in Resolution 2017-1770, as amended. As part of such compliance, the Contractor shall not discriminate on the basis of race, color, national origin, religion, ancestry, sex, age, marital status, familial status, sexual orientation, gender identity or expression, disability, or genetic information in the solicitation, selection, hiring or commercial treatment of subcontractors, vendors, suppliers, or commercial customers, nor shall the Contractor retaliate against any person for reporting instances of such discrimination. The Contractor shall provide equal opportunity for subcontractors, vendors and suppliers to participate in all of its public sector and private sector subcontracting and supply opportunities, provided that nothing contained in this clause shall prohibit or limit otherwise lawful efforts to remedy the effects of marketplace discrimination that have occurred or are occurring in the County's relevant marketplace in Palm Beach County. The Contractor understands and agrees that a material violation of this clause shall be considered a material breach of any resulting contract and may result in termination of the contract, disqualification or debarment of the Contractor from participating in County contracts, or other sanctions. This clause is not enforceable by or for the benefit of, and creates no obligation to, any third party.

All subcontractor agreements shall include this commercial non-discrimination clause.

2. PALM BEACH COUNTY OFFICE OF THE INSPECTOR GENERAL: Palm Beach County has established the Office of the Inspector General in Palm Beach County Code, Section 2-421 – 2-440, as may be amended. The Inspector General's authority includes but is not limited to the power to review past, present and proposed Department contracts, transactions, accounts and records, to require the production of records, and to audit, investigate, monitor, and inspect the activities of the Contractor, its officers, agents, employees, and lobbyists in order to ensure compliance with Contract requirements and detect corruption and fraud.

Failure to cooperate with the Inspector General or interfering with or impeding any investigation shall be in violation of Palm Beach County Code, Section 2-421 – 2-440, and punished pursuant to Section 125.69, Florida Statutes, in the same manner as a second degree misdemeanor.

3. PUBLIC ENTITY CRIMES: In accordance with F.S. 287.133 (2) (a), persons and affiliates who have been placed on the convicted vendor list may not submit Bids, Contract with, or perform work (as a contractor, supplier, subcontractor or consultant) with any public entity (i.e. Palm Beach County) in excess of Twenty five Thousand dollars (or such other amount as may be hereafter established by the Florida Division of Purchasing in accordance with F.S. 287.017) for a period of 36 months from the date of being placed on the convicted vendor list.

SPECIAL PROVISIONS

As provided in F.S. 287.132-133, by entering into this Contract or performing any Work in furtherance hereof, the contractor certifies that it, its affiliates, suppliers, subcontractors and consultants who will perform hereunder, have not been placed on the convicted vendor list maintained by the State of Florida Department of Management Services within the 36 months immediately preceding the date hereof. This notice is required by F.S. 287-133(3)(a).

The Contractor, Contractor's employees, or subcontractors of Contractor and employees of subcontractors shall comply with Palm Beach County Code, Section 2-371 - 2-377, the Palm Beach County Criminal History Records Check Ordinance ("Ordinance"), for unescorted access to critical facilities ("Critical Facilities") or criminal justice information facilities ("CJI Facilities") as identified in Resolution R-2003-1274, as amended. The Contractor is solely responsible for the financial, schedule, and/or staffing implications of this Ordinance. Further, the Contractor acknowledges that its Contract price includes any and all direct or indirect costs associated with compliance with this Ordinance, except for the applicable FDLE/FBI fees that shall be paid by the Department.

This Contract may include sites and/or buildings which have been designated as either "critical facilities" or "criminal justice information facilities" pursuant to the Ordinance and Resolution R2003-1274, as amended. Department staff representing the Department will contact the Contractor(s) and provide specific instructions for meeting the requirements of this Ordinance. Individuals passing the background check will be issued a badge. The Contractor shall make every effort to collect the badges of its employees and its subcontractors' employees upon conclusion of the Contract and return them to the Department. If the Contractor or its subcontractor(s) terminates an employee who has been issued a badge, the Contractor must notify the Department within two (2) hours. At the time of termination, the Contractor shall retrieve the badge and shall return it to the Department in a timely manner.

The Department reserves the right to suspend the Contractor if the Contractor 1) does not comply with the requirements of County Code Section 2-371 - 2-377, as amended; 2) does not contact the Department regarding a terminated Contractor employee or subcontractor employee within the stated time; or 3) fails to make a good faith effort in attempting to comply with the badge retrieval policy.

4. CHAPTER 119, F.S. PUBLIC RECORDS

Notwithstanding anything contained herein, as provided under Section 119.070 I, F.S., if the Contractor: (i) provides a service; and (ii) acts on behalf of the Department as provided under Section 119.011(2) F.S., the Contractor shall comply with the requirements of Section 119.0701, Florida Statutes, as it may be amended from time to time. The Contractor is specifically required to:

1. Keep and maintain public records required by the Department to perform services as provided under this Contract.

SPECIAL PROVISIONS

2. Upon request from the Department's Custodian of Public Records, provide the Department with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119 or as otherwise provided by law. The Contractor further agrees that all fees, charges and expenses shall be determined in accordance with Palm Beach County PPM CW-F-002, Fees Associated with Public Records Requests, as it may be amended or replaced from time to time.
3. Ensure that public records that are exempt, or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the Contract term and following completion of the Contract, if the Contractor does not transfer the records to the public agency.
4. Upon completion of the Contract the Contractor shall transfer, at no cost to the Department, all public records in possession of the Contractor unless notified by the Department's representative/liaison, on behalf of the Department's Custodian of Public Records, to keep and maintain public records required by the Department to perform the service. If the Contractor transfers all public records to the Department upon completion of the Contract, the Contractor shall destroy any duplicate public records that are exempt, or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion of the Contract, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically by the Contractor must be provided to the Department, upon request of the Department's Custodian of Public Records, in a format that is compatible with the information technology systems of the Department, at no cost to the Department.

Failure of the Contractor to comply with the requirements of this Article shall be a material breach of this Contract. The Department shall have the right to exercise any and all remedies available to it, including but not limited to, the right to terminate for cause. Contractor acknowledges that it has familiarized itself with the requirements of Chapter 119, F.S., and other requirements of State law applicable to public records not specifically set forth herein.

IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, PLEASE CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT:

**Records Request, Palm Beach County Public Affairs Dept.
301 N. Olive Avenue
West Palm Beach, FL 33401
By email at: RECORDSREQUEST@PBCGOV.ORG
Or by Telephone at: 561-355-6680**

SPECIAL PROVISIONS

5. SUBLETTING OR ASSIGNING CONTRACTS: All awards will be made with the understanding that the Work awarded will be performed by the Contractor to whom the award is made, with the assistance of workers, under the Contractor's immediate supervision, and the Contract shall not be sublet, conveyed, transferred or assigned to another Contractor except with the consent of the Department. In no event will the Contractor be released from responsibility. Contractor shall perform not less than 40% of the total Contract amount with its own organization.

6. THE USE OF PATENTED PROCESSES, ETC.: The basis on which a Contract will be awarded will be the bid prices. Prices shall include all charges for the use of patent processes, Materials or methods, and for all other similar incidental charges not expressly provided for in these Contract Documents.

7. NON-COLLUSION: Bidder certifies that this Bid is made without prior understanding, agreement, or connection with any corporation, firm or person submitting a Bid for the same Materials, services, supplies, or Equipment and is in all respects fair and without collusion or fraud. Conviction for the commission of any fraud or act of collusion in connection with any sale, bid, quotation, proposal or other act incident to doing business with Palm Beach County may result in permanent debarment.

No premiums, rebates or gratuities permitted; either with, prior to or after any delivery of material or provision of services. Any such violation may result in award cancellation, return of Materials, discontinuation of services, removal from the vendor bid list(s), and/or debarment or suspension from doing business with Palm Beach County.

8. CONFLICT OF INTEREST: The award is subject to the provisions of the applicable Federal laws, rules and regulations, the Florida Statutes and the Department's ordinances and resolutions. All Bidders must disclose with their Bid the name of any officer, director, or agent of their firm who is also an employee of the Department.

The Contractor represents that it presently has no interest and shall acquire no interest, either direct or indirect, which would conflict in any manner with the performance of services required hereunder, as provided for in Chapter 112, Part III, Florida Statutes, and the Palm Beach County Code of Ethics. The Contractor further represents that no person having any such conflict of interest shall be employed for said performance of services.

The Contractor shall promptly notify the Department's representative, in writing, by certified mail, of all potential conflicts of interest of any prospective business association, interest or other circumstance which may influence or appear to influence the Contractor's judgement or quality of services being provided hereunder. Such written notification shall identify the prospective business association, interest or circumstance, the nature of Work that the Contractor may undertake and request an opinion of the Department as to whether the association, interest or circumstance would, in the opinion of the Department, constitute a conflict of interest if entered into by the Contractor. The Department agrees to notify the Contractor of its opinion by certified mail within thirty (30) days of receipt of notification by the Contractor. If, in the opinion of the Department, the prospective business association, interest or circumstance would not constitute

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a conflict of interest by the Contractor, the Department shall so state in the notification and the Contractor shall, at its option, enter into said association, interest or circumstance and it shall be deemed not in conflict of interest with respect to services provided to the Department by the Contractor under the terms of this Contract.

Further, all Bidders must disclose the name of any Department employee who owns, directly or indirectly, an interest of ten percent or more in the Bidder's firm or any of its branches.

9. REGULATED SUBSTANCE USE REQUIREMENTS

"Best Management Practices" for the Construction Industry

- A. The Contractor shall be responsible for assuring that each contractor or subcontractor evaluates each site before construction is initiated to determine if any site conditions may post particular problems for the handling of any Regulated Substances. For instance, handling Regulated Substances in the proximity of water bodies or wetlands may be improper.
- B. If any regulated substances are stored on the construction site during the construction process, they shall be stored in a location and manner which will minimize any possible risk of release to the environment. Any Regulated Substances shall have constructed below it an impervious containment system constructed of Materials of sufficient thickness, density and composition that will prevent the discharge to the land, groundwater, or surface waters, or any pollutant which may emanate from said storage container or containers. Each containment system shall be able to contain 150% of the contents of all storage containers above the containment system.
- C. Each contractor shall familiarize themselves with the manufacturer's safety data sheet supplied with each material containing a Regulated Substance and shall be familiar with procedures required to contain and clean up any releases of the Regulated Substance. Any tools or Equipment necessary to accomplish same shall be available in case of a release.
- D. Upon completion of construction, all unused and waste Regulated Substance and containment systems shall be removed from the construction site by the responsible contractor and shall be disposed of in a proper manner as prescribed by law.

10. UNIT PRICES: The Contractor is advised that the Contract is a unit price contract. As such, the Bidder shall include all labor, Materials, transportation, Equipment, fuel, and all other items necessary to complete the item of Work, in the unit price for the item. All items incidental to or necessary for the completion of the bid item shall be included in the unit price for the item.

The Contractor shall also comply with to Section 9-3.1 in relation to unit prices.

11. CONTINGENT ITEMS: The Contractor shall not use contingent items to meet the EBO goal(s) participation for the Contract. The SBE and M/WBE participation goals established for the Contract, as specified in the Instructions to Bidders, shall include all pay items for the project,

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less the contingency items. The use of contingent pay items shall only increase the SBE and M/WBE participation of the Contract, over and above the required goals achieved by use of regular pay items.

12. DAILY REPORTS: The Contractor shall keep daily reports of all personnel and Equipment on the project for review by the Department for the entire Contract Time.

13. UTILITIES CONTACTS: Potential utility conflicts may vary with each Work site. Prior to commencing Work, the Contractor shall visit the Work site and ascertain all site conditions, including utilities. It shall be the Contractor's responsibility to avoid conflicts with existing underground and overhead utilities and structures. Contractor shall contact the utility owners to arrange for protection or adjustment of utilities as provided in Section 7.

The Contractor shall notify all utilities servicing the Work area at least 48-hours prior to any excavation so that underground utilities may be located. The Contractor has the responsibility to contact **Sunshine State One-Call of Florida, Inc. at 1-800-432-4770** to schedule marking locations of the utilities which subscribe to their service. The Contractor shall also call (561) 641-3429 for Palm Beach County Water Utility locations and call (561) 233-3900 for Palm Beach County Traffic Control Utility locations.

The Contractor shall properly maintain and protect all utilities. The Contractor shall be responsible for the cost to repair all damages to utilities caused by his operations.

The Contractor shall fully cooperate at all times with the Owners of Utility Companies in order to maintain the operation of the existing utilities with the least amount of interference and interruption possible.

When utility installation/adjustments are included as part of the Proposal, all utility companies (including Palm Beach County Water Utilities Dept.) reserve the right to accept or reject Bid items on their part of Work and perform their Work by their forces or other contracted forces.

14. MAINTENANCE OF TRAFFIC: Maintenance of Traffic (MOT) including Pedestrian MOT shall be incidental to the pay items. If the Contractor and/or its subcontractors do not perform the MOT and do not install and maintain those items covered under MOT according to the requirements of the standards, then Palm Beach County reserves the right to reduce said item based on the pro rata performance as determined by the Department on each payment application or \$1,000.00 per day, whichever is greater.

The Contractor shall assure compliance with FDOT Index 600 of the current Roadway and Traffic Design Standards. All references to "determinations by engineer" will be the responsibility of the Contractor, and shall be brought to the attention of the Department prior to implementation. The cost of complying with the stated standards shall be incidental to the MOT pay item. The Contractor shall ensure that at no time will traffic (temporary or otherwise) be permitted over installed exfiltration trenches.

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Pedestrian traffic must be maintained throughout the duration of construction unless otherwise indicated.

For any lane closures that extend into the peak hour(s) or any other lane closure time restriction presented in the Contract Documents, the Contractor may be charged up to \$1,000.00 per lane per ½ hour.

Lights and flags are required on the first two warning signs in the series.

15. SCHOOL ZONE

During the first and last weeks of the school year, no Work may occur within a school zone.

16. PREMIUM FOR CONFLICT CONDITION: The pay item is included for use when conflicts are encountered:

“Premium for Conflict Condition” - when pay items for regular inlet/manhole structures are specified in the Proposal, and it becomes necessary to construct a ‘conflict structure’, the Contractor shall provide a unit price cost (premium) to cover the additional Work necessary to convert the regular inlet / manhole structure into a conflict structure.

The above item shall be paid for on an ‘EACH’ basis and shall include the cost of all labor, Materials, Equipment, fuel, transportation, and other items necessary to complete the Work.

17. METHOD OF ORDERING (WORK ORDERS): The Department(s) will issue Work Orders on an “as needed” basis. All terms and conditions of the Bid are applicable. The individual orders will specify the Work to be performed, its location, a not-to-exceed cost (based on the Contract unit prices), and a schedule for performance. The Contractor must sign and return the unexecuted Work Order within five (5) Working Days of issuance. Then each Work Order will be executed (signed) by the authorized Department representative and notice to commence will be sent to the Contractor. The Contractor’s failure or refusal to sign a Work Order within five (5) Working Days does not prevent execution of the Work Order (which is solely by signature of the authorized Department representative), and all Work Orders must be performed upon notice to commence.

Upon completion of the Work Order task, the Contractor will submit an individual invoice, a copy of the original Work Order, the appropriately completed SBE-M/WBE participation forms referenced in Item 7 of the SBE-M/WBE Program section of this Contract, a Contractor’s affidavit, and consent of Surety.

Contractor shall comply will all requirements in the Contract Documents for obtaining final payment. Final payment of a Work Order does not terminate the Contract or extinguish the Surety’s obligations under the Contract.

The Contractor will receive progress payments based on submitted invoices. The payment amount will be based on the Work done and accepted. No retainage is withheld.

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18. PROSECUTION OF THE WORK: The Contractor will be required to maintain within Palm Beach County, at all times while this Contract is in effect, the Equipment necessary to properly carry out the provisions of these Specifications. After receiving notice to commence with the Work for a particular project the Contractor shall commence promptly within five (5) Working Days and shall efficiently prosecute the Work with adequate personnel and Equipment until completion, within 30 Calendar Days, or as designated by the County Engineer or his duly appointed representative. Failure to comply with either time requirement shall result in Liquidated Damages, assessed on a Work Order basis and in the amounts shown in Section 8-10.2 of the Standard Specifications.

19. EXTENSION: This Contract period is for twelve (12) months from the date of BCC approval. The Contract period may be extended for a defined period of time, not to exceed thirty-six months total Contract Time, upon approval by the Board of County Commissioners. Option for extension and other Contract deviations will only be exercised upon mutual written agreement through a Board approved Contract Amendment, while adhering to all other original terms, conditions and unit prices of the Contract.

For the purpose of re-bidding, this Contract may be extended upon mutual written agreement through a change order for up to an additional six (6) months, upon the approval of the Contract Review Committee. Total Contract Time shall not exceed forty-two (42) months.

20. AWARD: As the best interest of the Board of County Commissioners may require, the right is reserved to make award(s) on an item-by-item basis, Lot-by-Lot basis, all-or-none or any combination thereof. See General Provision 3-2.1.

21. ANNUAL CONSTRUCTION CONTRACT ON A TASK WORK ORDER BASIS: The intent of this Contract is to award a Contract to a Contractor(s) to perform Work on a Work task order basis. Work Task Orders shall be issued on an "as needed" basis. See Special Provisions for Method of Ordering Work. The line items in the Proposal pages are intended to set unit prices for the task Work Orders. No tasks are guaranteed as part of this Contract. The total value of Work Orders issued under this Contract shall not exceed the amount listed on page C-1 of this document, however, this may be increased by mutual agreement between the Contractor and Palm Beach County via a Contract Amendment.

22. NOT USED

23. NOT USED

24. PIPE CULVERTS

1. For pipe Culverts not within the scope of a FDOT Permit or Construction Agreement, proposed pipe material and size shall meet FDOT Specifications, but is limited to:
 - Reinforced Concrete
 - High Density Polyethylene except:
 - Not permitted under Thoroughfare Roadway pavement.

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- Not permitted under pavement of Roadways providing immediate access to coastal islands.
- Not permitted within the confines of a mechanically stabilized earth (MSE) wall.
- Not permitted in locations where failure would jeopardize buildings adjacent to the Right-of-Way.
- The above restrictions include pipe locations taking into consideration the angle of repose of soil under any structure or the proposed pavement, including planned future widening.
- A-2000 Polyvinyl-chloride, except:
 - Not permitted where the pipe will be exposed to direct sunlight.
 - Not permitted when the manufacture date of the pipe to be installed exceeds 2 years.
- Corrugated Polypropylene.

Corrugated metal pipe may only be used as the last segment of pipe before discharging into a lake or canal when called for on the Plans.

Pipe diameter must match or exceed sizes shown in Plans; equivalent larger size pipes may be required if proposed pipe n value exceeds 0.012. Contractor to supply the required certified testing and computations for pipe life (see FDOT Drainage Manual). All pipe Culverts provided must meet or exceed 100 year design service life.

2. For pipe Culverts within the scope of a FDOT Permit or Construction Agreement, proposed pipe material and size are limited to pipes approved by FDOT, except non-reinforced concrete pipe shall not be used. Pipe diameter must match or exceed sizes shown in Plans; equivalent larger size pipes may be required if proposed pipe n value exceeds 0.012. Contractor to supply the required certified testing and computations for pipe life (see FDOT Drainage Manual). All pipe Culverts provided must meet or exceed 100-year design service life.

25. PIPE CULVERTS (STORM SEWER PUMPING & CLEANING)

New Storm Sewer System

The Contractor is advised that this Contract includes “pumping-down” and “cleaning” of the new storm sewer system(s), as directed by the Engineer. The Contractor shall include the cost of all labor, Materials, Equipment, transportation, fuel and all other items necessary to complete the “pumping-down” and “cleaning” of the new system(s). The Contractor shall remove the water from the system(s) to allow for visual inspections for leaks, deficiencies and lamping. When directed by the Engineer, the Contractor shall make all the necessary repairs to the new storm sewer system(s)

Payment for this Work on the new storm sewer system(s) shall be incidental to the pay item, “Pipe Culvert (Storm)”, L.F.

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Existing Storm Sewer System

Also included as a pay item is “pumping-down” of the “**existing**” storm sewer system(s) (to the lake/canal outfall point, or as directed by the Engineer), and shall be paid on a lineal foot basis under the pay item(s):

- “Storm Sewer Pumping” (Exist.) (24” or less),
- “Storm Sewer Pumping” (Exist.) (>24” to 48”),
- “Storm Sewer Pumping” (Exist.) (>48”)

The item(s) shall also include all costs associated with the removal of the water from the system(s) for visual inspection of leaks, deficiencies and/or lamping.

“**Cleaning**” of the existing storm system(s) is included as a contingent pay item and the Work required under this item will be determined by the Engineer upon review of the system(s) after the pumping phase.

The “cleaning” of the existing storm sewer system(s) shall be paid on a lineal foot basis under the pay item(s):

- “Storm Sewer Cleaning” (Exist.) (24” or less),
- “Storm Sewer Cleaning” (Exist.) (>24”to 48”),
- “Storm Sewer Cleaning” (Exist.) (>48”)

At the semi-final inspection, the contractor shall temporarily plug the system(s) at structures, outfall, or as otherwise directed by the Engineer, and pump the water out of the system to below one third of the diameter of the pipe (from the invert), or as otherwise directed by the Engineer. The Contractor and the Engineer shall visually inspect the system(s) for leaks, deficiencies, and lamping problems. If leaks, deficiencies and/or lamping problems are discovered in the new pipe system(s), the contractor shall make corrective repairs, as required, in accordance with Article 5-10.2 of the General Provisions of this specification, at no additional cost to the Department. If leaks, deficiencies and/or lamping problems are discovered in the existing pipe system(s), the contractor shall notify the Engineer, and the Engineer shall determine if the Contractor should provide a cost proposal for the Work required to make the corrective repairs, in accordance with Article 5-10.2.

26. STORM SEWER SYSTEM PIPE PLUGS: The Contractor shall prepare, and submit to the Engineer for approval, a plan/sequence of the plug locations for pumping down the storm system(s) satisfactory to the Engineer. Upon completion of the storm pumping sequences, the Contractor shall notify the Engineer 24 hours prior to removing any of the temporary plugs for the Engineer to visually confirm/verify the removal of the pipe plug. Cost for the Plans and coordination of all the Work required for the above shall be incidental to the cost of the storm sewer items of Work.

27. FINAL PIPE INSPECTION: Upon completion of placement of concrete pavement or the placement of structural asphalt, but prior to placement of asphalt friction course, dewater installed pipe and provide the Engineer with a video recording schedule allowing for pipe videoing and

SPECIAL PROVISIONS

reports to be completed and submitted to the Department and reviewed prior to continuation of pavement.

For pipe 48 inches or less in diameter, provide the Engineer a video DVD and report using low barrel distortion video Equipment with laser profile technology, non-contact video micrometer and associated software meeting the requirements outlined in Section 430-4.8.

The cost of the above Work shall be incidental to the related pay item for the pipe.

28. VIDEO REPORT: Provide a video report in accordance with Section 430-4.8.1. The cost of the above Work shall be incidental to the related pay item for the pipe.

29. LIMITS OF CONSTRUCTION: The Contractor shall confine the construction of the Roadway within the limits of the right of way unless the right of entry to adjacent properties has been acquired by the Department at the time of construction.

30. RESTORATION AGREEMENTS: Contractor is hereby notified that any construction performed within Restoration Agreement (RA) areas shall be restored to a condition similar or equal to that existing before such construction occurred, at no expense to the Department. Prior to disturbing the Restoration Agreement area, the Contractor shall stake the RA limits, locate/document all improvements within the area, and submit this information to the Department, prior to starting construction. Upon completion of the construction, the Engineer, together with the Contractor, shall conduct an inspection of the area to confirm that all improvements have been appropriately restored. Payment for all Work to complete the item shall be incidental to the cost of the Project.

31. GRAVITY WALL CONSTRUCTION: Unless otherwise directed, gravity walls are to be constructed from "inside" the Right of Way (no encroachment on private property). Any construction methods necessary to satisfy this requirement shall be incidental to the cost of the gravity wall.

32. IRRIGATION SYSTEM WITHIN RESTORATION AGREEMENT AREAS: The Contractor, prior to start of construction, shall obtain as-built information of the irrigation system(s) within restoration agreement areas, and catalogue related component information (manufacturer/part number/etc.) required to ensure appropriate replacement of the system and components. The as-built information shall be submitted to the Department, Construction Coordination Division, and upon completion of the construction, the Contractor shall restore the irrigation system and components to its original or better condition. Payment for all Work to complete the item shall be incidental to the cost of the Project.

33. COLOR TREATED AND STAMPED CONCRETE (5" THICK): The Contractor's attention is directed to the pay item for "Color Treated and Stamped Concrete", S.Y. This item which is proposed to be constructed in lieu of concrete traffic separators, as directed by the Engineer, consists of cast-in-place concrete (5") between Type "F" Curb and Gutter, having the surface colored with a color hardener (equivalent to the products supplied by Wm. D. Adeimy, Inc., 561/832-6305), and with the surface textured or imprinted with a pattern (as directed by the

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Engineer), and then sealed with a color seal. The Contractor is responsible for assuring the curbing is in no way discolored, damaged, marked, etc. by the application of the above.

Color Hardener:

- Apply the dry hardener when the bleed water disappears and the floating process will not disrupt the level of the surface.
- Normally apply the dry hardener evenly in two separate hakes, using two-thirds of the material for the first shake.
- Use wood floats or a power-troweling machine equipped with float blades to work the dry hardener completely and thoroughly into the surface after each application.
- After floating the final shakes, hand or machine trowel the surface to a flat, uniform finish and apply the specified texture. Apply antiquing release before imprinting with mat-type tools.
- Coverage requirements may vary according to intended use and color. 90lbs. per 100sq.ft. is considered the median range.

Curing:

- Use colored concrete sealer in the matching color to cure interior color hardened floors and exterior flat Work, that will receive regular maintenance and re-coating.
- Newly placed concrete should receive one thin finish coat of colored concrete sealer after placement and after the required curing time of 14-28 days has been reached. Before application of the finish coat, the moisture content of the concrete must be low enough so alkali and other salts do not become trapped beneath the coating, causing discoloration or clouding, thus the reason for the 14-28 day time frame.

The Work is to be performed on the job site by trained and experienced workers.

The pay item "Color Treated and Stamped Concrete", S.Y., includes all labor, Equipment, Materials, transportation, fuel and all other items incidental to or necessary for completing the Work.

The Contractor shall install a longitudinal 6" PVC (Schedule 80) pipe at stamped concrete areas, in accordance with the details for the "Irrigation Sleeves" (as detailed in the Special Provisions). This item shall be paid for under, "6" PVC Pipe (Schedule 80)", Lineal Feet, and shall include the cost of all labor, Materials, Equipment, fuel, transportation, and other items necessary to complete the Work.

34. ENGRAVING OF CURB FACE: The Contractor is hereby notified that the names of the roads shall be engraved on all quadrants of major intersections (two per quadrant), with four (4) inch high block letters, having a depth of one-half inch, and painted with a black finish. Locations shall be determined by the Engineer.

Samples of the engraving are available at the office of the Director, Construction Coordination Division, 2300 N. Jog Rd., Suite #3W-57, West Palm Beach, Florida, 33411-2745, Florida.

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The cost for the pay item, "Engraving of Curb Face", EACH, shall include all labor, Equipment, Materials, transportation, fuel and all other items incidental to or necessary for completing the Work.

35. GUARDRAIL & SPECIAL SAFETY PIPE RAIL: At locations where sidewalks, walkways, bike paths or other media for bicycle and/or pedestrian traffic are within 4' of the back of the guardrail post, the contractor shall utilize "steel posts" and "special safety pipe rail" (2" diameter) as shown in FDOT INDEX 400.

Special note: Trinity Industries ET-plus system guardrails will not be allowed on Department Projects.

36. ADDITIONAL INSURED PARTIES: The Contractor performing the construction for Palm Beach County (County) shall be required to carry and furnish insurance coverage, in accordance with General Provision Section 7-13, "Insurance Required", naming County as additional insured on the Certificate of Insurance Form(s), which shall reference the Project Limits and the Project Number, and shall read: "Palm Beach County Board of County Commissioners, a Political Subdivision of the State of Florida, its Officers, Employees and Agents".

Where the limits of Work for this Department project impact the rights-of-way of other agencies (e.g., Florida Department of Transportation (FDOT); South Florida Water Management District (SFWMD); Lake Worth Drainage District (LWDD); and other agencies as applicable), said parties shall also be named as "ADDITIONAL INSURED", either on the same form or on separate forms.

The Contractor shall coordinate all Work within the rights-of-way and air rights-of-way, as they apply, through the Engineer. Also, the Contractor shall notify the County and the agencies, as required in the Contract Documents or within a reasonable time frame prior to the start of any Work within said Right-of-Way, to allow for appropriate accommodations by the agencies.

37. PERMIT COMPLETION CERTIFICATIONS: The Contractor is advised that this Contract includes completing and executing all Construction Completion/Construction Certifications as required by each permit included in the PER section of the Contract Documents.

The Contractor is responsible for retaining the services of a Professional Engineer, registered in the State of Florida and qualified in the field of the required Work, to inspect the Work related to Permit(s), and certify in accordance with the instructions of each permit.

The Contractor shall submit two (2) originals of the completed and executed form to the Department, along with the required "As-Built" information (to be obtained by the Contractor).

All costs associated with Permit Compliance Certifications, including obtaining and depicting "As-built" information are incidental to the Contract.

SPECIAL PROVISIONS

38. NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (N.P.D.E.S)

COMPLIANCE: This Contract requires compliance with the N.P.D.E.S. General Permit. The “Florida Department of Environmental Protection Generic Permit For Stormwater Discharge from Large and Small Construction Activities”, dated May 2003, which contains the description and requirements of the permit, is available at the following URL:

<http://www.dep.state.fl.us/water/stormwater/npdes/docs/cgp.pdf>

The MSWORD format of the Stormwater Pollution Prevention Plan (SWPPP) template is available at the following URL:

<http://www.dep.state.fl.us/water/stormwater/npdes/SWPPP.htm>

Notice of Intent and Notice of Termination forms are available on DEP’s URL:

http://dep.state.fl.us/water/stormwater/npdes/permits_forms.htm

The Contractor shall complete and submit the NOI and payment to DEP. If a SWPPP is not included in the Contract Plans, or the Contractor chooses to prepare his own SWPPP, the SWPPP template shall be utilized by the Contractor for developing the SWPPP for the project. Any SWPPP prepared by the Contractor shall be submitted to the Department at the Pre-Construction meeting for the project for approval by the Engineer.

Failure to sign any required documents or certification statements will be considered a default of the Contract. Any soil disturbing activities performed without the required signed documents or certification statements may be considered a violation of the DEP Generic Permit.

All costs associated with obtaining and complying with the provisions of this permit and to all federal, State and local storm water pollution prevention permits, rules, laws or ordinances, including the implementation of the S.W.P.P.P. for the project during construction are incidental to the Contract. Also included is the cost of all construction erosion and pollution control measures not covered under other specific pay items, the cost of performing and executing the joint inspection & maintenance reports (as shown in the SWPPP “Template”), and the execution of the Contractor Certification form of the Proposal pages. The Contractor Certification form must be signed and submitted with the Bid Proposal.

39. ADDITIONAL REPORTING

The Department requires Contractor to track during the Project, and report at the end of the Project, on the county of residence of Contractor’s employees and its subcontractors’ employees. Contractor agrees to prepare and provide the required report with its request for final payment.

***** FOR SPEC PREPARER – THIS PAGE ONLY APPLICABLE TO COTNRACTS FUNDED WITH INFRASTRUCTURE SALES TAX DOLLARS ***** table of contents will need to be updated for this page if it is included

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SPECIAL PROVISIONS

**PALM BEACH COUNTY
CONTRACTOR'S FINAL REPORT**

COUNTY OF RESIDENCE FOR EMPLOYEES

(to be submitted with Contractor's Application for Final Payment)

To: Palm Beach County Project Manager

From: Contractor Superintendent

Date:

Project Name:

Project Number:

In accordance with the Special Provisions of the Contract, Contractor reports the following:

Total number of employees of Contractor and subcontractors who worked for more than one day on the Project: _____

Number of employees of Contractor and subcontractors who reported their county of residence as Palm Beach County: _____

Signed

SPECIAL PROVISIONS

40. NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (N.P.D.E.S) COMPLIANCE (CONTINUED):

SITE DESCRIPTION

Project Name and Location: Annual Traffic Loops Contract
Palm Beach County, Florida

Palm Beach County Project No.: 2020051

Owner Name and Address: Board of County Commissioners,
Palm Beach County
Roadway Production Division
2300 N. Jog Road
West Palm Beach, FL 33411

Work Description: Traffic loop construction

Runoff Coefficient: TBD

Site Area: TBD

Site Map: TBD

Sequence of Major Soil Disturbing Activities:

1. Paving
2. Signal

Name of Receiving Bodies: TBD

SPECIAL PROVISIONS

41. DYNAMIC LOAD TEST SUPPORT: Dynamic Load Test Support shall include contractor furnishing of Equipment and personnel necessary for attachment of leads, supply power source, man-basket, shelter, and any other services necessary to provide support for the testing (reference FDOT Specifications Section 455-5.13). The Department will secure test lab services, including Pile Driver Analyzer (PDA), required for dynamic measurements during the driving of the test piles. All costs for Dynamic Load Test Support shall be incidental to the cost of test pile.

42. CONSTRUCTION IMPACTS TO BUS OPERATIONS: Public Works and private development construction activities often impact Palm Tran bus operations and bus stops. Timely communication and coordination with Palm Tran and other affected transit agencies during preliminary project.

Planning is essential in order to prevent potential conflicts. Contractors should make every effort to schedule their Work to minimize impacts and the duration of impacts to transit operations and riders.

Contractors should provide Palm Tran with the name and telephone contact of their construction managers prior to the commencement of all construction projects affecting bus stops or impacting bus routes.

- Contact Palm Tran for coordination and review requirements (561 841-4246, 561 841-4223, or 561 841-4224).
- Maintenance of rider access to and from bus stops during construction is desirable. This issue should be discussed at the Pre-Construction Meeting.
- All Work shall conform to the requirements of the Americans with Disabilities Act (ADA), including provisions for temporary access to and from bus stops.
- If necessary, the contractor shall work with Palm Tran to establish an approved temporary bus stop location.
- Contractor shall notify Palm Tran through Palm Beach County Construction Coordination Division at least 10 Working Days (2 weeks) in advance of the start of construction, modification of construction effort with transit impacts, and construction completion, so that Palm Tran can advise its riders.
- Contractor may not remove any bus stop signs, transit shelters, transit benches, or other related transit infrastructure without prior Palm Tran authorization. Contractor may be asked to remove existing bus stop signage or install temporary and permanent bus stop signage. Typically, Palm Tran will make arrangements to remove all other transit infrastructure. If Palm Tran does not remove their facilities in a timely manner, these facilities may become part of the clearing and grubbing.
- Contractor is responsible for construction of an approved ADA accessible access to and from bus stop boarding and alighting areas, when called for in the Plans.
- The cost for the above is incidental to the project.

43. RECORD DRAWINGS (ROADWAY): The Contractor shall note that this Contract includes preparation of "Record Drawings". By definition, "Record Drawings" shall be the electronic information which reflects the as-built conditions of the project recorded at or about the time of the "substantial completion" inspection. The as-built information and permitting forms shall be

SPECIAL PROVISIONS

prepared and certified (i.e., signed and sealed) by a Professional Engineer or Land Surveyor licensed in the State of Florida, as required by the project.

The as-built information shall indicate (at a minimum) the following:

- All changes, additions or deletions to the original design documents.
- Centerline/baseline ties to section line(s) (including ties at P.C. & P.T.).
- Stations/elevations/offsets at P.C.'s, P.T.'s, P.I.'s, low points, high points, horizontal angle points.
- Stations/elevations/offsets at edge-of-pavement (E.O.P.), top-of- curb and back-of-sidewalk, at locations shown on the Plans, at a minimum.
- At non-curb inlets show state plane coordinates, station/offset/elevation to the top-center of the grate.
- At curb inlets show the state plane coordinates, station/offset/elevation at E.O.P.
- At special and slotted structures - show the elevation(s), dimensions, and the invert of the weir; the bleeders/orifices; and pipe inverts.
- At outfalls, show the state plane coordinates, station/offset/invert/diameter of pipe, structure type and dimensions.
- The diameter, invert, shape, and material type of connecting pipes between all structures.
- For Irrigation Sleeves - show the state plane coordinates, station/offset/elevation for all end caps, and the invert elevation at the end cap.
- At lakes obtain cross sections at 50 foot intervals, or as otherwise directed by the Engineer (Top of Bank, Top of Slope, etc.).
- At bridges, show the low member elevation/station/offset.
- At end bents, show station/offset/elevation at two corners to ensure proper offset location.
- For "Begin and End" Bridge, indicate the stations/offsets/elevations at the respective points.
- All existing and proposed trees, show state plane coordinates, station/offset to the approximate center of the tree.
- All existing and proposed Irrigation wells and valve boxes, show state plane coordinates, station/offset to the top-center of the well and/or valve box.
- All existing and proposed pull boxes, show state plane coordinates, station/offset to the top-center of the box.
- All existing and proposed traffic control cabinets, show state plane coordinates, station/offset to the center of the box.

The above information shall be collected by survey, and the collected data shall be referenced on the Micro Station (.dgn) design file of the project (Micro Station (.dgn) is the only acceptable format). The electronic Micro Station (.dgn) files (and .pdf files of same) shall be submitted on three (3) CDs labeled with project information, one (1) set of black line Plans, and six (6) sets of signed & sealed black line Plans, boldly marked in large print "**RECORD DRAWINGS ROADWAY**". PDF files shall be digitally or electronically signed and sealed in accordance with either F.A.C. 5J-17.062 or F.A.C. 61G15-23.

The above information shall be submitted to the Department (Director, Construction Coordination), for approval, prior to scheduling a final inspection.

SPECIAL PROVISIONS

The cost of the location survey, compilation/reproduction/conversion of electronic files, Plans, and other information necessary to satisfy the above, shall be incidental to the cost of the items of Work.

The Contractor shall review all permits for this project and the general/special conditions which may call for "Record-Drawings" for a specific agency. The Contractor is responsible to satisfy the permit requirements in accordance with that agency's policy, with the understanding that the cost for said "Record-Drawings", shall be paid in accordance with PER-1.

44. RECORD DRAWINGS and DOCUMENTS (BRIDGE):

The Contractor is advised that bridge structures are subject to FDOT load rating requirements and shall take all necessary steps to comply with these requirements. See FDOT Load Rating Manual (Topic No. 850-010-035) at <https://www.fdot.gov/maintenance/loadrating.shtm>.

RECORD DRAWINGS (BRIDGE):

The Contractor shall note that this Contract includes preparation of "Record Drawings". By definition, "Record Drawings" shall be the electronic information which reflects the as-built conditions of the project recorded at or about the time of the "substantial completion" inspection. The as-built information and permitting forms shall be prepared and certified (i.e., signed and sealed) by a Professional Engineer or Land Surveyor licensed in the State of Florida, as required by the project.

The as-built information shall indicate (at a minimum) the following:

- All changes, additions or deletions to the original design documents (including shop drawings).
- Centerline/baseline ties to section line(s) (including ties at P.C. & P.T.).
- Stations/elevations/offsets at P.C.'s, P.T.'s, P.I.'s, low points, high points, horizontal angle points.
- Stations/elevations/offsets at edge-of-pavement (E.O.P.), top-of- curb and back-of-sidewalk, at locations shown on the Plans, at a minimum.
- At non-curb inlets show station/offset/elevation to the top-center of the grate.
- At curb inlets show the station/offset/elevation at E.O.P.
- At bridges, show the low member elevation/station/offset.
- At end bents, show station/offset/elevation at two corners to ensure proper offset location.
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The cost of the location survey, compilation/reproduction/conversion of electronic files, Plans, and other information necessary to satisfy the above, shall be incidental to the cost of the items of Work.

The Contractor shall review all permits for this project and the general/special conditions which may call for "Record-Drawings" for a specific agency. The Contractor is responsible to satisfy the permit requirements in accordance with that agency's policy, with the understanding that the cost for said "Record-Drawings", shall be paid in accordance with PER-1.

DOCUMENTS (BRIDGE):

- **Schedule of Anticipated dates of Inspections:**

In-Service Inspections and or Pre-Acceptance Inspection (before any new lanes are opened to traffic). The Schedule should be received within 60 days of the preconstruction meeting. The Department must receive a two week advance confirmation notice prior to the In-Service Inspections and or Pre-Acceptance Inspection.

- **As-Built Load Rating**

If the bridge is built per plan, the As-built load rating is simply a signed and sealed load rating FDOT summary sheet stating that there was no change during construction that would affect the load rating.

- **Pile Driving Records**

- **In-Service Inspection**

The Structures Maintenance In-Service Inspection is conducted prior to any new lanes opening to public traffic. Note that for phased construction, there will be multiple in-service inspections required. The intent of this inspection is to verify the bridge is safe for public traffic in accordance with FHWA instructions Q303-7

45. LOCAL GOVERNMENT PROMPT PAYMENT ACT: In accordance with the Local Government Prompt Payment Act (F.S. 218.70, *et seq*), the Contractor is hereby notified of the following:

1. The Contractor will be notified at the Pre Construction Meeting the manner in which pay requests are to be prepared and directed to the Department. For a pay request to be deemed acceptable, the Contractor must provide the following:

Pay Request No. 1

- OEBO Schedule 3
- Certification of Compliance with the Living Wage Ordinance

Pay Request No. 2 and all others following, but not including the Final

- OEBO Schedule 3
- OEBO Schedule 4

SPECIAL PROVISIONS

- Disbursement of Previous Periodic Payments to Subcontractors
- Certification of Compliance with the Living Wage Ordinance

Final Pay Request

- OEBO Schedule 3
 - OEBO Schedule 4
 - Disbursement of Previous Periodic Payments to Subcontractors
 - Disbursement of Final Payment to Subcontractors
 - Form 1
 - Form 2 including Bonding Affidavit
 - Record of Construction Materials Affidavit
 - Certification of Compliance with the Living Wage Ordinance
 - Equal Business Opportunity (EBO) Final Participation Form
 - Release and Concurrence of Final Payment Amount
 - Form of Guarantee
2. A single list of items (Punch List) required to render the Work complete, satisfactory, and acceptable will be prepared by the Department. The Punch List shall be developed as a result of a joint inspection of the Work, conducted within 30 Calendar Days after reaching substantial completion, by the Contractor, together with the Department, with all unsatisfactory Work listed on the Punch List. The Punch List shall be provided to the Contractor within 5 Working Days of the joint inspection.
 3. If the pay request and support data are not approved, the Contractor is required to submit new, revised or missing information according to the Department's instructions. Otherwise, the Contractor shall prepare and submit to Department an invoice in accordance with the estimate, as approved. In the event any dispute with respect to any payment or pay request cannot be resolved between the Contractor and the Department, Contractor shall, in accordance with the alternative dispute resolution requirements of Florida Statute section 218.76, demand in writing a meeting with and review by the County Engineer. In place of the County Engineer, the Deputy County Engineer may conduct the meeting and review. Such meeting and review shall occur within forty-five (45) Working Days of receipt by the Department of Contractor's written demand. The County Engineer, or Deputy County Engineer, shall issue a written decision on the dispute within fifteen (15) Working Days of such meeting. This decision shall be deemed the Department's final decision for the purposes of the Local Government Prompt Payment Act.

Contractor must remit undisputed payment due for labor, services, or materials furnished by subcontractors and suppliers hired by the Contractor, within 10 days after the Contractor's receipt of payment from the Department, pursuant to Section 218.70 et seq., Florida Statutes. Contractor shall provide subcontractors and suppliers hired by Contractor with a written notice of disputed invoice within 5 business days after receipt of invoice which clearly states the reasons for the disputed invoice.

46. BASIS OF PAYMENT: Payment will be based on field measured quantities. No additional payment will be made for any Work which exceeds that called for in the Contract Documents.

SPECIAL PROVISIONS

40. NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (N.P.D.E.S) COMPLIANCE (CONTINUED):

SITE DESCRIPTION

Project Name and Location: Annual Traffic Loops Contract
Palm Beach County, Florida

Palm Beach County Project No.: 2020051

Owner Name and Address: Board of County Commissioners,
Palm Beach County
Roadway Production Division
2300 N. Jog Road
West Palm Beach, FL 33411

Work Description: Traffic loop construction

Runoff Coefficient: TBD

Site Area: TBD

Site Map: TBD

Sequence of Major Soil Disturbing Activities:

1. Paving
2. Signal

Name of Receiving Bodies: TBD

SPECIAL PROVISIONS

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SPECIAL PROVISIONS

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SPECIAL PROVISIONS

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DOCUMENTS (BRIDGE):

- **Schedule of Anticipated dates of Inspections:**

In-Service Inspections and or Pre-Acceptance Inspection (before any new lanes are opened to traffic). The Schedule should be received within 60 days of the preconstruction meeting. The Department must receive a two week advance confirmation notice prior to the In-Service Inspections and or Pre-Acceptance Inspection.

- **As-Built Load Rating**

If the bridge is built per plan, the As-built load rating is simply a signed and sealed load rating FDOT summary sheet stating that there was no change during construction that would affect the load rating.

- **Pile Driving Records**

- **In-Service Inspection**

The Structures Maintenance In-Service Inspection is conducted prior to any new lanes opening to public traffic. Note that for phased construction, there will be multiple in-service inspections required. The intent of this inspection is to verify the bridge is safe for public traffic in accordance with FHWA instructions Q303-7

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Pay Request No. 1

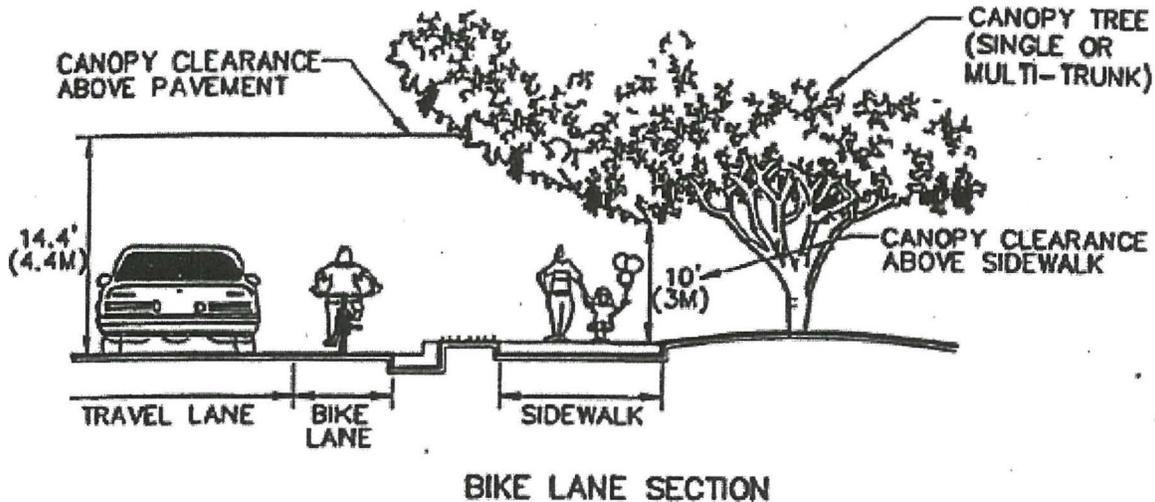
- OEBO Schedule 3
- Certification of Compliance with the Living Wage Ordinance

Pay Request No. 2 and all others following, but not including the Final

- OEBO Schedule 3
- OEBO Schedule 4

SPECIAL PROVISIONS

When tree limbs extend over separate bike paths, they should be at least 10' above the bike bath. When they extend over designated or undesignated bile lanes within the Roadway, they must be at least 14.4' above the pavement (see below).



Roadside Clear Zone

The roadside clearzone is that area outside the Traveled Way, available for use by errant vehicles. Vehicles frequently leave the Traveled Way during avoidance maneuvers and due to loss of control by the driver or due to collisions with other vehicles. The primary function of the clear zone is to allow space and time for the driver to regain control of vehicle and avoid or reduce the consequences of collision with roadside objects. This area also serves as an emergency refuge location for disabled vehicles.

The width of the clear zone should be as wide as it is practicable. The minimum permitted widths are given in the following table. These are minimum values only and should be increased whenever feasible.

In rural areas it is desirable and frequently economically feasible, to substantially increase the width of the clear zone. Where traffic volumes and speeds are high, the width should be increased. The clear zone on the outside of horizontal curves should be increased due to the high probability of vehicles leaving the Roadway at a high angle.

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SPECIAL PROVISIONS

Minimum Width of Clear Zone

Type of Facility	Design Speed or Posted Speed (whichever is greater)						
	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph and above
	Minimum Clear Zone						
Rural	6' Local 10' Collector 14' Arterials	6' Local 10' Collector 14' Arterials	10' Collectors 14' Arterials	14' Arterials and Collectors ADT <1500 18' Arterials and Collectors ADT ≥1500	14' Arterials and Collectors ADT <1500 18' Arterials and Collectors ADT ≥1500	18' Arterials and Collectors ADT <1500 24' Arterials and Collectors ADT ≥1500	18' Arterials and Collectors ADT <1500 30' Arterials and Collectors ADT ≥1500
Urban	4'	4'		4'	N/A	N/A	N/A

Urban Facilities clear zone is measured from face of curb (6" type D or F)

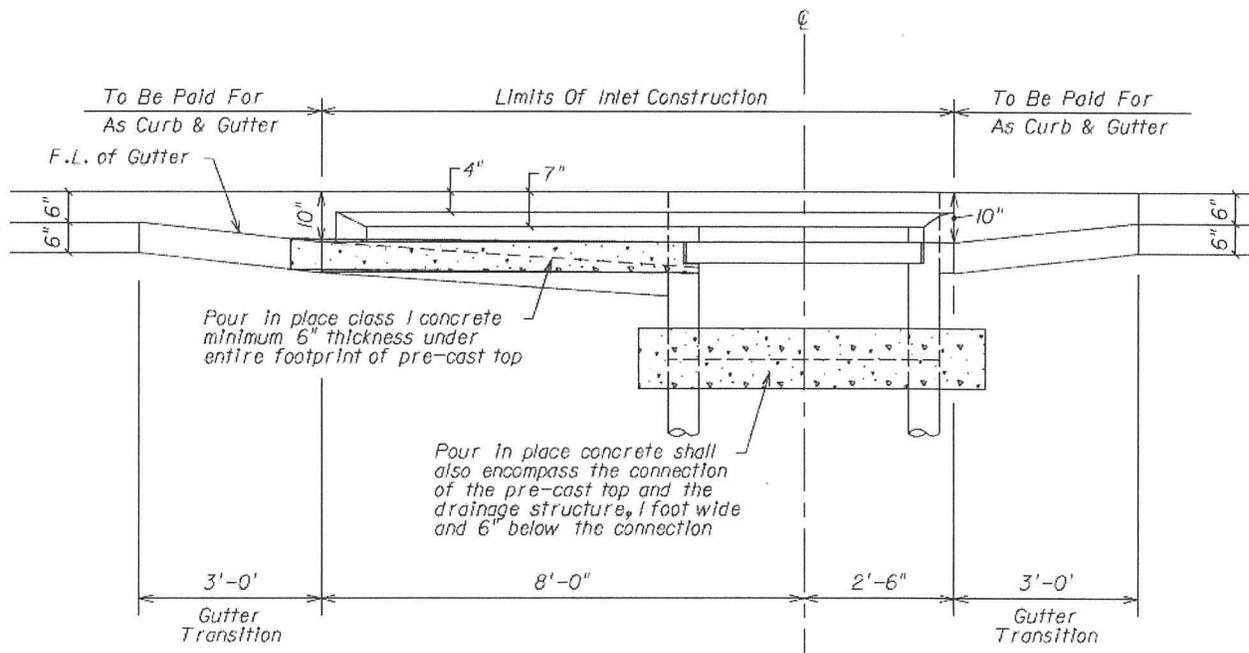
Rural Facilities Use rural for urban facilities when no curb and gutter is present. Measured from edge of through travel lane on rural section.

Curb and gutter not to be used on facilities with design speed > 45 mph.

ADT in the table above refers to design year ADT.

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SPECIAL PROVISIONS



INLET TYPE 5

(Curb Inlet Top Type 6 Symmetrical with Left Half)

SUPPLEMENTAL CONCRETE AT DRAINAGE STRUCTURE TOP DETAIL

REQUEST FOR INFORMATION

RESPONSE TO CONTRACTOR RFI'S:

September 16, 2019

Siemens Industry, Inc.

Joshua M. Lippincott

Joshua.lippincott@siemens.com

QUESTIONS AND OR COMMENTS:

1. Liquidated Damages (LDs) for non-completion of work orders is mentioned, but Section 8-10.2 does not specify what the LDs will be. Can you please clarify?
2. Will permits be required from any entity other than Palm Beach County during the execution of this contract?
3. Is there a requirement that work under this contract be performed during night hours?
4. Can a conditional bid be submitted? Specifically, can a bid include a conditional provision that allows for withdrawal in the event the contract is awarded to multiple contractors?

RESPONSES:

1. See Section 8-10.2 of the FDOT Standard Specifications per page SS-1.
2. All loops work will be done within PBC maintenance jurisdiction. If any permits required, PBC will apply for permits.
3. Contractor will be allowed to work day or night as long as no work completed within restricted times as listed in the contract. All MOT requirements to be met for at all times.
4. No

TECHNICAL SPECIFICATIONS – DIVISION II SECTIONS 600 THROUGH 699

1. INTENT AND SCOPE-

The work detailed in these specifications consists of the installation and /or furnishing of traffic signal items, all according to the Florida Department of Transportation's (FDOT) Standard Specifications for Road and Bridge Construction dated 2017 (or later version) (SSRBC-2017), the Design Standards (English Units) FY 2016-17 (or later version) (DS-FY 2016-17), FDOT Mast Arm Assembly Standards (Index Nos. 17743, and 17745), the attached Notes and Palm Beach County (PBC) Traffic Signal Installation Standards and Details-2015 or later version. Where conflicts exist, the Notes and PBC-Typicals shall take precedence over FDOT standard specifications.

Installations shall be as shown on plans as presented to the Contractor at the commencement of each project in such amounts, to such locations, at such times as may be designated by the Director of Traffic or his duly appointed representative (Engineer).

All items are to be bid on a unit price basis to establish the price for use on work authorizations (purchase orders) for specific projects.

The Contractor should fully understand that the Board of County Commissioners does not hereunder, contract to do any specific amount of work during the contract period.

The locations of the traffic signal projects will vary, and may be at any point within the boundaries of Palm Beach County. The Contractor will not be expected to operate his equipment or personnel beyond the limits of Palm Beach County under this contract.

For further information, please contact the Director of Traffic at 561-684-4030.

2. REPRESENTATIVE OF THE DIRECTOR OF TRAFFIC

The Director of Traffic Division will appoint one or more representatives (an Engineer) to inspect equipment used under this contract, observe personnel employed, and note the general performance of the Contractor. Any authorization to revoke, alter, enlarge, or relax the conditions of these specifications will be at the discretion of the Engineer. The Engineer will have the authority to reject defective equipment, and report on inept personnel, and to suspend any work that is being improperly done, subject to the final decision of the Director of Traffic Division.

3. STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION

It is the intent of these Specifications that the FDOT Standard Specifications for Road and Bridge Construction dated 2017 (or later version) (DS-FY 2016-17) will be used as the basis for this contract except as amended herein. Such wording as, Department of Transportation and Personnel, is intended to be replaced with that wording which would provide proper terminology, thereby making such Standard Specifications and Special Provisions of Palm Beach County in conjunction with Palm Beach County's personnel.

Add the following to the end of Article "4-1 **Intent of Contract**" of the FDOT SSRBC-2017:
Included under

"The work covered by this Contract consists of the installation and/or furnishing and/or removal of traffic signal items.

No areas will be closed to traffic unless or until approved by the Engineer. During the period or periods that areas are closed to traffic, adequate provisions to control and/or detour traffic will be provided by the Contractor. Traffic control shall be in accordance with FDOT Traffic Control through Work Zones – Index 600 of the Design Standards, (FY-2016-17) for street and highway construction, maintenance, and utility operations, and shall be the responsibility of the Contractor.

The job is to be completed in a workmanlike manner and all debris removed within the time of construction."

4. CONTRACT NOTES

1. All materials and equipment supplied and installed on any project shall be, where applicable, on the FDOT Approved Product List (APL) and meet the FDOT Standard Specifications for Road and Bridge Construction, 2017. All materials and equipment shall be certified. Certificates shall be supplied with shop drawings.
2. Any changes to signalization plan during construction, the proposed change shall be submitted in writing to the Engineer for approval. No changes shall be implemented without the Engineer's approval.
3. The Contractor shall be responsible for the protection of all present utilities that have been located by the various utility companies. He shall also maintain and protect the existing traffic signals and their related equipment from damage caused by subcontractors and employees under his Contract but only to the extent of the Contractor's normal work operation, and he shall not be responsible for routine maintenance, normal wear and tear, or an act of God, unless otherwise specified.
4. The price of the loop installation shall include all maintenance of traffic necessary to complete the job. It is up to the discretion of the Engineer to include additional hours for maintenance of traffic under item No. "102-1-A" as needed to a work order issued to the contractor.
5. The Contractor shall provide barricades and warning and detour signs as required in Section 102-Maintenance of Traffic in FDOT SSRBC-2017.
6. The Contractor shall provide all coordination with FPL necessary to obtain the power for signals. The Contractor shall also provide coordination with all other utilities having an impact on the project.

7. All existing traffic signal equipment removed by the Contractor shall be tagged to identify location. A representative of Traffic Operations warehouse shall be given twenty-four (24) hour notice before delivery to an approved location by the Engineer. Equipment not identified will not be accepted and equipment not returned will result in the withholding of payment to the contractor. Traffic Operation warehouse personnel will issue a receipt to the Contractor for returned equipment.
8. The work covered under the terms of this contract does not require entry into the Controller Cabinet. Loop construction work shall terminate at the Loop junction box near the controller.
9. A Ninety (90) day burn-in period will be required for all electrical or electronic equipment furnished and installed as part of any traffic signal installation or system of traffic control devices. The burn-in shall consist of the field operations of the signalization system in a manner which is in full accordance with the signal operation requirements of the plans and specifications.
10. The burn-in period will commence upon a written conditional acceptance by the Engineer and will terminate 90 consecutive days thereafter, unless an equipment malfunction occurs. The written conditional acceptance of the signal will be granted to the contractor upon completion of final inspection of the signal. See PBC Traffic Signal Inspection Process in Attachment A. The burn-in period will be stopped for the length of time that the equipment is defective. When the equipment is repaired and is functioning properly, the burn-in period will resume from the point in time when it was stopped.
11. All traffic signal loops projects will be inspected prior to final acceptance for maintenance by Palm Beach County Traffic Operations. See Palm Beach County Traffic Operations – Signal Loop Inspection Sheet.
12. During the burn-in period, the Contractor shall restore operation of the installation within four (4) hours after notification of a malfunction. If the Contractor does not respond within four (4) hours, Palm Beach County shall have the option of making the necessary repair and billing the Contractor for the actual time and materials required.
13. Signal Timing: The Engineer will furnish timing. The Contractor shall notify the County Traffic Engineer seventy two (72) hours in advance of any requirement for timing.
14. The abbreviations and acronyms used in this contract are as follows:

a. LF	Linear Feet	k. LS	Lump Sum (Complete)
b. SF	Square Feet	l. F&I	Furnish & Install
c. SY	Square Yards	m. F	Furnish-Only
d. CY	Cubic Yards	n. I	Install-Only
e. AS	Assembly	o. R	Remove
f. PI	Per Installation	p. EA	Each
g. HR	Per Hour		
h. MH	Man Hour		
i. ED	Each Day		
j. WK	Per Week		

15. All loop work to be completed in accordance to pay item 660-2-xxx. No loop work shall be permitted during the hours of 6:45 AM to 8:45 AM, and during the hours of 3:45 PM to 6:30 PM. Nor shall loop work be permitted on days prior to major holidays.
16. Ground rods to be supplied and attached to all signal poles, control cabinets and equipment footings and basis according to PBC standard specifications, and Typical Ground Rod Array Detail. The work and materials for grounding are incidental to items being grounded.
17. All conduit (Bid Items 630-2-1x-y) shall include a 14AWG insulated stranded (THHN) tracer wire and one (1) pull line. Multiple bundle conduit runs (i.e. 2-2") shall require only one (1) tracer per bundle runs and one (1) pull line per conduit in the bundle.
18. Class-I Concrete (Misc.), will be used for pull-box aprons. Aprons can be pre-cast or poured in place.
19. All pull boxes shall have heavy duty covers embossed with the word "PBC TRAFFIC SIGNAL" or "PBC TRAFFIC ITS".
20. **Shop drawings for all materials to be used under this contract shall be submitted to PBC Traffic Division for approval prior to purchase. Shop drawings shall include, but not limited to, conduits, cables, pull boxes.**

5. **SPECIAL BID ITEM NOTES:**

1. Bid Item **102-1-A** consists of Maintenance of Traffic for signalization modifications as necessitated by roadway construction. This pay item is for labor and equipment required to construct or modify traffic signals in order to accommodate changing highway geometrics resulting from on-going construction, and in Accordance with FDOT DS-FY2016-17 Indices 615, 616, 617, 618, 619, 620, 621, 622, and 628. If needed it is estimated that no more than Four (4) MOT hours will be approved for each approach where loops work is being performed, including lead-ins and conduit to and from loop pockets or pull boxes.
2. Bid Items **630-2-11-x** consists of (F&I) PVC (SCH. 40) underground in-trench conduit of 2" diameter when x = 2; 4" diameter when x= 4. This item includes trenching, installing conduit, covering trench, and bringing ground to original condition.
3. Bid Items **630-2-11-xA** consists of (F&I) an additional PVC (SCH. 40) underground conduit in the same trench, 2" diameter when x = 2, and 4" diameter when x = 4. This item provides for additional conduit(s) added in trench covered under items 630-2-11-x.
4. Bid Items **630-2-12-x-y** consists of (F&I) HDPE (SDR 11) directional bore under-pavement conduit of 2" diameter when x = 2; 4" diameter when x = 4; and 4" with (3) 1-1/4" HDPE inner-duct when x =4i. The y represents the number of conduits per directional bore.

5. Bid Items 630-2-13-x-1 consists of (F&I) galvanized rigid conduit (GRC), jack and bore under rail road tracks. Where 'x' represents the diameter of the conduit in inches. **This item includes any additional insurance and other incidentals required by Rail Road authority to work within the Rail Road's ROW.**
6. Bid Items 630-2-14-x consists of furnish and install (F&I) hot dipped galvanized rigid steel conduit surface mounted. The conduit is 1" diameter when x = 1, 2" diameter when x = 2.
7. Bid Items 630-2-15-x consists of (F&I) galvanized bridge mount conduit, where 'x' represents the diameter of conduit in inches. This item includes all parts, labor, materials and all appurtenances necessary for a complete installation.
8. Bid Items 630-3 consists of Roding and cleaning out existing conduit of any size.
9. Bid Item 635-2-11 consists of Furnishing and Installing a 13"X24"X12D Pull box as shown on the plans in accordance with Design Standards, Index No. 17700 and FDOT (SSRBC-2017),
10. Bid Item 635-2-12A consists of Furnishing and Installing a 17"X30"X12D Pull box as shown on the plans in accordance with Design Standards, Index No. 17700 and FDOT (SSRBC-2017),
11. Bid Item 660-2-x **Furnish & Install** an inductance loop detector complete, including installation of loop wire, saw cut, sealant, lead-in, and individual lead-in per loop to cabinet. Lead-in slack of 6' coil per lead in the pull box (if applicable) and 6' coil in the cabinet for each lead-in. Color coding and labeling of the loops shall be provided in all cases (minimum depth of saw cuts of 2"). The loop wire shall be #14 AWG XHHW. The loop lead-in wire shall be #16 AWG shielded twisted stranded, tinned copper. It shall be Carol-Part # C2553.41.01 or equivalent. Splicing butt connector shall be 3M-Part # MH14BCK Scottchlock, or equivalent. Crimping tool shall be Burndy-Part # Y10D476086. Or equivalent. Crimp with the non-insulated mark. Heat shrink Tubing shall be Thomas and Betts-Part #HS16-12-4, or equivalent. A minimum section of 10" shall be applied over Butt Connector segment. Sealant shall be liquid tar (step asphalt hot type 4). See PBC Signal Installation Standards and Details-2015 Sheet T-11, T-11.1, and T-12. See Note # 15 of the Contact Notes for exclusions for installation times.
12. Bid Item 660-2-102-A1 **Furnish & Install** loop assembly Type B with a dimension of 6' X 6'. See PBC Signal Installation Standards and Details-2015 Sheet T-11, T-11.1 and T-12.
13. Bid Item 660-2-102-A2 **Furnish & Install** an additional loop assembly Type B with a dimension of 6' X 6'. See PBC Signal Installation Standards and Details-2015 Sheet T-11, T-11.1 and T-12. **(Used in conjunction with Item 660-2-102-A1, for first loop on the approach)**

14. Bid Item **660-2-106-B1** **Furnish & Install** Loop Assembly Type F with width of 6' and a longitudinal dimension of 26'. See PB Signal Installation Standards and Details-2015 Sheet T-11 and T-11.1, and T-12.
 15. Bid Item **660-2-106-B2** **Furnish & Install** an additional Loop Assembly Type F with width of 6' and a longitudinal dimension of 26'. See PB Signal Installation Standards and Details-2015 Sheet T-11 and T-11.1, and T-12. **(Used in conjunction with Item 660-2-102-B1 for first loop on the approach)**
 16. Bid Item **660-2-106-C1** **Furnish & Install** refers to Loop Assembly Type F with width of 6' and a longitudinal dimension of 46'. See PB Signal Installation Standards and Details-2015 Sheet T-11 and T-11.1, and T-12.
 17. Bid Item **660-2-106-C2** **Furnish & Install** an additional Loop Assembly Type F with width of 6' and a longitudinal dimension of 46'. See PB Signal Installation Standards and Details-2015 Sheet T-11 and T-11.1, and T-12. **(Used in conjunction with Item 660-2-102-C1 for first loop on the approach)**
6. **INVOICING AND PAYMENT**

The Contractor shall submit only one invoice per job. Partial invoicing may be allowed at the discretion of the Engineer. Palm Beach County Traffic Division will review the invoices and issue a payment authorization for each of the Partial and Final invoices. The final payment authorization will be issued only after the final inspection of the job has been completed and approved by the County designated engineer. The total project cost in the final invoice shall not exceed the initial cost estimate of the job listed in the bid-tab associated with the job work authorization and the cost of the change orders. All change orders shall be signed by the County designated engineer.

Attachment "A"

Loop Inspection

Intersection Name: _____ Date: _____

Intersection #: _____ Tech: _____

Approach Needs Repair Uh Reading Comments

Visual				
#1				
#2				
#3				
#4				
#5				
#6				
#7				
#8				
#9				
#10				
#11				
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#23				
#24				
#25				



630-2-XXX

Your communication partner.

Blue Diamond Industries, LLC is an agile manufacturing and services company committed to helping our customers with innovative solutions. We offer quality construction products and installation for outside plant construction and broadband communication networks. Operations include the manufacture of Blue Diamond HDPE innerduct, toneable duct and aerial duct. We also have a variety of HDPE accessories and underground vaults. Blue Diamond is also a representative of Moore Commercial Coatings for high quality communication enclosures.

Underground Construction Products.

High Density Polyethylene (HDPE) innerduct and conduit products provide security and protection to fiber optic and coaxial networks, the communication lifelines. Underground vault structures allow access for inspection, identification, expansion and maintenance of these communication highways.

Our tremendous growth in plastics and underground products is supported by the most progressive, versatile and technologically advanced production equipment available. Our "Blue Diamond" innerduct protects many of the largest fiber optic networks in the United States.

Corporate Headquarters:

Blue Diamond Industries, LLC • 841 Corporate Drive, Suite 201 • Lexington, KY 40503
859-224-0415 • 859-224-0543 fax
www.bdi ky.com

1

3.0 Materials:

- 3.1 The innerduct shall be extruded from virgin High Density Polyethylene (HDPE) resin, in accordance to the requirements of ASTM D3350 with cell classification 345440C.
- 3.2 Density, melt flow, tensile strength at yield, and environmental stress crack shall conform to the values listed in ASTM D3350, except as noted below.
- 3.3 Adequate stabilization shall be added during the manufacturing process to protect the polyethylene against thermal and UV degradation throughout the projected lifespan of the finished product.

4.0 Dimensions:

- 4.1 The innerduct shall be SDR _____, SIDR _____, Schedule 40 or Schedule 80, and conform to the dimensions as outlined in Table _____ or ASTM D3035.

5.0 Identification and Marketing:

- 5.1 Innerduct shall be permanently marked with a _____ (1) laser ink imprinter, or (2) heat embossed white lettering, which shall be marked in a position 90 degrees to any stripes specified.
- 5.2 The base colors of the pipe shall be _____
- 5.3 (0, 1, 2, 3, or 4) 5mm stripes, colored _____ shall be extruded onto the pipe at 90 degrees to the printing and 180 degrees from each other.
- 5.4 Marking shall include the owners name _____, ASTM and SDR designation, diameter and size. Additionally, a sequential length mark of _____ shall show length of the innerduct.
- 5.5 Innerduct shall be marked so that date of manufacture, shift and lot of resin can be identified and referenced to certifications and quality control test results.

6.0 Quality Assurance:

- 6.1 Manufacturer shall provide certification of the properties as specified above.
- 6.2 In addition to continuous in process inspection and control, batch samples will be checked for finish, print quality, dimensions and ovality.
- 6.3 The above tests are in addition to the resin requirements as outlined in ASTM D3350.
- 6.4 All reels will be marked and labeled with customer purchase order, project name, or other information for tracking and receiving.

Polyethylene SDR 13.5: Meets material and dimensional requirements of ASTM F2160.

Nominal Duct Size	Outside Diameter	Wall Thickness	Inside Diameter	Minimum Unsupported Bend Radius	Safe Working Pull Strength	Weight Per 1000 Ft.
1/2"	.840" ± .004"	.062" + .020"	.696"	10"	400 lbs.	72 lbs.
3/4"	1.050" ± .004"	.078" + .020"	.874"	12"	650 lbs.	110 lbs.
1"	1.315" ± .005"	.097" + .020"	1.101"	14"	1,050 lbs.	166 lbs.
1 1/4"	1.660" ± .005"	.123" + .020"	1.394"	18"	1,650 lbs.	264 lbs.
1 1/2"	1.900" ± .006"	.141" + .020"	1.599"	20"	2,150 lbs.	343 lbs.
2"	2.375" ± .006"	.176" + .021"	2.002"	26"	3,400 lbs.	531 lbs.
2 1/2"	2.875" ± .007"	.213" + .026"	2.424"	38"	5,000 lbs.	776 lbs.
3"	3.500" ± .008"	.259" + .031"	2.950"	48"	7,400 lbs.	1,153 lbs.
4"	4.500" ± .009"	.333" + .040"	3.793"	60"	12,200 lbs.	1,904 lbs.
6"	6.625" ± .011"	.491" + .059"	4.959"	67"	26,500 lbs.	4,130 lbs.

Polyethylene SDR 11: Meets material and dimensional requirements of ASTM F2160.

Nominal Duct Size	Outside Diameter	Wall Thickness	Inside Diameter	Minimum Unsupported Bend Radius	Safe Working Pull Strength	Weight Per 1000 Ft.
1/2"	.840" ± .004"	.078" + .020"	.667"	10"	500 lbs.	85 lbs.
3/4"	1.050" ± .004"	.095" + .020"	.839"	12"	800 lbs.	130 lbs.
1"	1.315" ± .005"	.120" + .020"	1.056"	14"	1,250 lbs.	200 lbs.
1 1/4"	1.660" ± .005"	.151" + .020"	1.338"	18"	2,000 lbs.	314 lbs.
1 1/2"	1.900" ± .006"	.173" + .021"	1.534"	20"	2,600 lbs.	409 lbs.
2"	2.375" ± .006"	.216" + .026"	1.917"	26"	4,100 lbs.	639 lbs.
2 1/2"	2.875" ± .007"	.261" + .031"	2.321"	38"	6,000 lbs.	936 lbs.
3"	3.500" ± .008"	.318" + .038"	2.825"	48"	8,900 lbs.	1,367 lbs.
4"	4.500" ± .009"	.409" + .049"	3.633"	60"	14,700 lbs.	2,293 lbs.
6"	6.625" ± .011"	.602" + .072"	4.724"	67"	31,900 lbs.	4,971 lbs.

3-2 →

4 →

7-4 →

4 →

Polyethylene Schedule 40: Meets NEMA TC-7.

Nominal Duct Size	Outside Diameter	Wall Thickness	Inside Diameter	Minimum Unsupported Bend Radius	Safe Working Pull Strength	Weight Per 1000 Ft.
1/2"	.840" ± .004"	.119" ± .010"	.602"	10"	700 lbs.	112 lbs.
3/4"	1.050" ± .004"	.123" ± .010"	.804"	12"	900 lbs.	148 lbs.
1"	1.315" ± .005"	.143" ± .010"	1.029"	14"	1,375 lbs.	218 lbs.
1 1/4"	1.660" ± .005"	.150" ± .010"	1.360"	18"	1,875 lbs.	295 lbs.
1 1/2"	1.900" ± .006"	.155" ± .010"	1.590"	20"	2,225 lbs.	352 lbs.
2"	2.375" ± .006"	.164" ± .010"	2.047"	26"	3,000 lbs.	472 lbs.
2 1/2"	2.875" ± .007"	.215" ± .012"	2.445"	38"	4,775 lbs.	744 lbs.
3"	3.500" ± .008"	.229" ± .013"	3.042"	48"	6,250 lbs.	974 lbs.
6"	6.625" ± .011"	.297" ± .017"	6.031"	67"	15,283 lbs.	2,368 lbs.

*Innerduct rated SDR 7, 9, 9.3, 15.5, 17, 21 and NEMA 5CH80 also available.

Polyethylene SIDR 9: Meets material and dimensional requirements of ASTM D2239.

Nominal Duct Size	ASTM Inside Diameter	Minimum Wall	ASTM Tolerance	Standard Outside Diameter	Weight Per 1000 Ft.
3/4" SIDR 9	0.824	0.092	0.020	1.027	122 lbs.
1" SIDR 9	1.049	0.117	0.020	1.302	183 lbs.
1 1/4" SIDR 9	1.380	0.153	0.020	1.707	328 lbs.
1 1/2" SIDR 9	1.610	0.178	0.021	1.989	444 lbs.
2" SIDR 9	2.067	0.230	0.028	2.554	732 lbs.

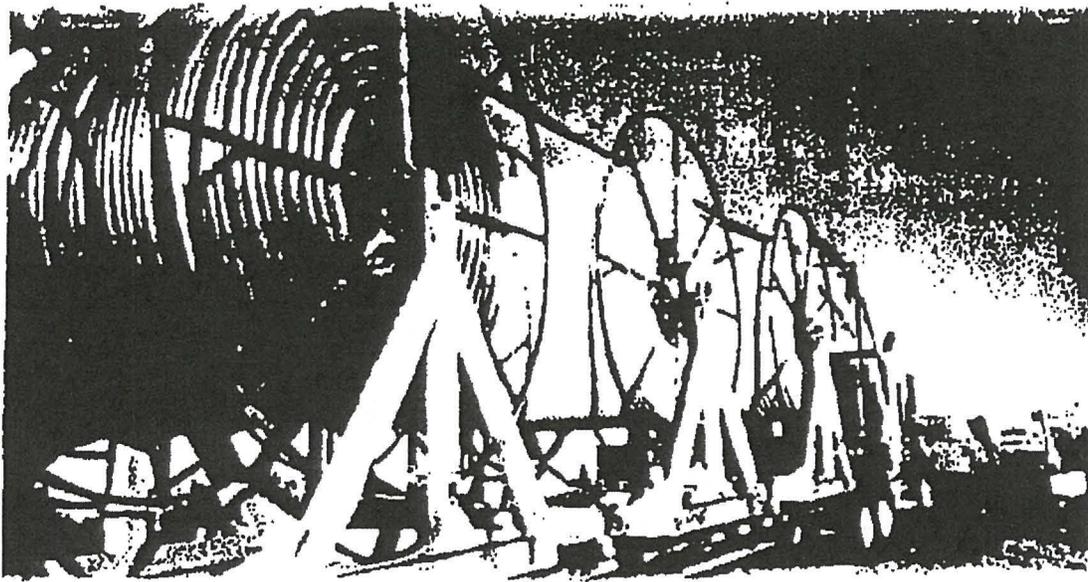
Polyethylene SIDR 11.5: Meets material and dimensional requirements of ASTM D2239.

Nominal Duct Size	ASTM Inside Diameter	Minimum Wall	ASTM Tolerance	Standard Outside Diameter	Weight Per 1000 Ft.
3/4" SIDR 11.5	0.824	0.072	0.020	0.987	96 lbs.
1" SIDR 11.5	1.049	0.091	0.020	1.251	151 lbs.
1 1/4" SIDR 11.5	1.380	0.120	0.020	1.640	255 lbs.
1 1/2" SIDR 11.5	1.610	0.140	0.020	1.910	343 lbs.
2" SIDR 11.5	2.067	0.180	0.022	2.448	559 lbs.
2 1/2" SIDR 11.5	2.469	0.215	0.026	2.924	798 lbs.
3" SIDR 11.5	3.068	0.267	0.032	3.634	1,232 lbs.
4" SIDR 11.5	4.026	0.350	0.042	4.768	2,122 lbs.

Polyethylene SIDR 15: Meets material and dimensional requirements of ASTM D2239.

Nominal Duct Size	ASTM Inside Diameter	Minimum Wall	ASTM Tolerance	Standard Outside Diameter	Weight Per 1000 Ft.
3/4" SIDR 15	0.824	0.062	0.020	0.968	84 lbs.
1" SIDR 15	1.049	0.070	0.020	1.209	117 lbs.
1 1/4" SIDR 15	1.380	0.092	0.020	1.584	187 lbs.
1 1/2" SIDR 15	1.610	0.107	0.020	1.845	264 lbs.
2" SIDR 15	2.067	0.138	0.020	2.363	426 lbs.
2 1/2" SIDR 15	2.469	0.165	0.020	2.818	600 lbs.
3" SIDR 15	3.068	0.205	0.025	3.502	926 lbs.
4" SIDR 15	4.026	0.268	0.032	4.595	1,595 lbs.

Product listed SDR 33, 35 and 39 also available



Reel Capacities.

Pipe Size

reel size = flange x traverse x drum

1/2"	72x42x30	72x48x24						Reels per Truckload	
	17,000	20,000						72"	16
3/4"	72x48x24	84x48x24						84"	14
	10,000	18,000						96"	12
1"	72x48x30	84x48x30	96x38x30	96x48x30				102"	11
	7,000	10,000	11,000	14,000				114"	8
1 1/4"	72x48x30	84x48x30	96x38x30	96x48x30				120"	8
	4,800	6,200	7,500	8,600					
1 1/2"	72x48x30	84x48x30	96x38x30	96x48x30	102x42x30	114x42x30			
	3,000	4,800	5,000	6,000	7,200	8,000			
2"	72x48x42	84x48x42	96x38x42	96x42x42	96x48x42	102x48x42	114x48x42		
	1,800	2,600	3,000	3,500	3,750	4,500	6,000		
2 1/2"	96x48x48	102x48x48	120x42x54						
	2,000	2,500	3,500						
3"	84x48x64	96x42x60	96x48x64	120x42x60					
	1,000	1,000	1,200	2,000					
4"	96x48x72		102x48x72		114x48x72		120x48x72		
	550 SDR	500 SIDR	750 SDR	700 SIDR	1000 SDR	900 SIDR	1250 SDR	1100 SIDR	
5"	102x48x78	114x48x78	120x48x78						
	400	600	750						
6"	120x48x84								
	400								

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We Have all of your Innerduct Needs IN STOCK!!

Our High Density Polyethylene (HDPE) Innerduct is made of **100% Virgin Resin**. The Innerduct can be manufactured in almost any color and has **outstanding UV protection**. Orange, Black, Red, Blue and Green are the most common conduit colors. We can provide **multiple duct and colors on one reel** to maximize space in a trench. All of our Innerduct is sequentially marked every foot and can be purchased with or without pull tape. The Innerduct has a **silicore lining** on the inside to **prevent cable drag friction**. SDR wall thicknesses are contingent on the type of projects projected. Schedule 40, SDR 15.5, SDR 13.5, SDR 11 and SDR 9 are all standard wall thickness.

Corrugated and Plenum Rated HDPE

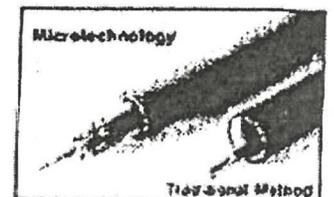
Duct is also one of our specialties. Our Plenum meets UL(910) standards for the national electrical code, article 770, and satisfies UL-2024 standards for low smoke and flame propagation. The Plenum and corrugated are offered in 1" and 1 1/4" with pre-installed pull tape for easy cable installation.

Multiple colors per reel and slitDuct are also available. Please see the [specifications](#) for more information.



MicroDuct - micro, we have the solution

Our newest product "MicroDuct". We have the solution to maximize your occupied duct systems and increase your duct capacity. Call us for MicroDuct sizes available and our wide variety of MicroDuct accessories and installation equipment.



We are the complete source for Innerduct accessories, MicroDuct accessories, fusion, pulling, and blowing...We are ready to take your order! Check out our [accessories](#) page for information about the products listed above..

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INNERDUCT

Test Results

Properties	Test Method	Value	
Smoke peak optical	UL-2024	0.02	
Smoke average optical density	UL-2024	0.01	
Max. flame spread distance(ft.)	UL-2024	1.5'	630-2-XXX
Max flame temperature	UL-2024	554	

Corrugated HDPE

Premier Corrugated HDPE is manufactured from High Density Polyethylene (HDPE) and is intended to be placed inside of existing Innerduct. It's ideal for pulls under 1000 ft. and is designed to reduce surface contact when pulling cable. This lightweight product offers maximum flexibility, and allows for installation in small or restricted areas. Corrugated duct is available in 1" and 1 1/4". The standard color is orange and is offered in a variety of other colors. Sequential marked footage is standard. Cust options, such as multiple colors per reel and Slit Duct are also available.

Accessories

- Universal Aluminum Couplers (screw-on type: sizes 1" thru 2")
- Expansion Type Duct Plugs (can be used with pull tape)

Corrugated HDPE Reels

Size	Color	Part No.	Nominal I.D.	Nominal O.D.	Pull Tape	Reel Size	Reel Length(ft.)
1"	Orange	PEC-100T-1000	1.049"	1.365"	900 lb	48-30-24	1000
1"	Orange	PEC-100T-1800	1.049"	1.365"	900 lb	48-30-24	1800
1"	Orange	PEC-100T-2500	1.049"	1.365"	900 lb	66-41-24	2500
1"	Orange	PEC-100T-5000	1.049"	1.365"	900 lb	72-41-24	5000
1"	Orange	PEC-100T-6500	1.049"	1.365"	900 lb	72-45-24	6500
1"	Orange	PEC-100T-8000	1.049"	1.365"	900 lb	82-41-24	8000
1/4"	Orange	PEC-125T-1000	1.250"	1.550"	900 lb	48-30-24	1000
1/4"	Orange	PEC-125T-2500	1.250"	1.550"	900 lb	66-41-24	2500
1/4"	Orange	PEC-125T-4000	1.250"	1.550"	900 lb	72-41-24	4000
1/4"	Orange	PEC-125T-5000	1.250"	1.550"	900 lb	72-41-24	5000
1/4"	Orange	PEC-125T-6000	1.250"	1.550"	900 lb	82-41-24	6000
1/4"	Orange	PEC-125T-6500	1.250"	1.550"	900 lb	82-41-24	6500

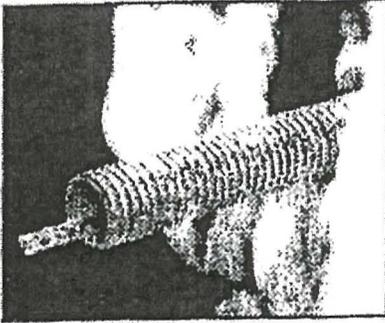
Corrugated HDPE Coils

Size	Color	Part No.	Nominal I.D.	Nominal O.D.	Pull Tape	Coil Length(ft.)
1"	Orange	PEC-100T-250	1.049"	1.365"	900 lb	250
1"	Orange	PEC-100T-500	1.049"	1.365"	900 lb	500
1 1/4"	Orange	PEC-125T-250	1.250"	1.550"	900 lb	250
1 1/4"	Orange	PEC-125T-500	1.250"	1.550"	900 lb	500

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Riser-Gard is a nonmetallic flexible raceway for use in Riser and General Purpose applications. Riser-Gard is UL Listed and is available with tape pre-installed.

Riser-Gard complies with the UL 2024 Standard for Riser Applications for optical fiber/communications raceways.

Riser-Gard is listed to the National Electrical Code per Articles 770 and 800 for Riser and General Purpose optical fiber/telecommunication applications. Riser-Gard is suitable for use in vertical runs in a shaft or between floors, as well as areas other than the plenum (cables installed must be of suitable rating for the application.)

UL Listed to 2024	Test Method	Maximum Value
Maximum Flame Propagation	UL 2024	6.0 ft.
Maximum Air Temperature at 12 ft.	UL 2024	372°F

• Storage -4°F - 158°F • Handling -4°F - 104°F

Standard Stock - Reels

	Color	Part No.	Nom. I.D.	Nom. O.D.	Full Tape	Min. Bend Radius	Reel Size (L x W)	Reel Type	Reel Length	Reel Wt. (lbs.)	Wt. per 100 ft. (lbs.)
3/4"	Orange	DE4X1-1000	.83	1.05	Empty	6"	36" x 24"	W	1000	35	9
	Orange	DE4X1-1000S	.83	1.05	Empty	6"	36" x 24"	W	1000	35	9
	Orange	DF4X1C-500R	1.03	1.315	900 lb.	6"	48" x 32"	W	500	70	14
	Orange	DF4X1C-1000	1.03	1.315	900 lb.	6"	48" x 32"	W	1000	35	14
	Orange	DF4X1-1500	1.03	1.315	Empty	6"	48" x 32"	W	1500	90	14
1"	Orange	DF4X1C-1500	1.03	1.315	900 lb.	6"	48" x 32"	W	1500	90	14
	Orange	DF4X1C-2700	1.03	1.315	900 lb.	6"	48" x 48"	W	2700	105	14
	Orange	DF4X1C-5200	1.03	1.315	900 lb.	6"	65" x 46"	W	5200	385	14
	Orange	DF4X1C-7000	1.03	1.315	900 lb.	6"	72" x 44"	S	7000	98	14
	Orange	DF4X1C-9400	1.03	1.315	900 lb.	6"	84" x 44"	S	9400	134	14
	Orange	DF4X1-1500S	1.03	1.315	Empty	6"	48" x 30"	W	1500	90	14
	Orange	DG4X1-900	1.38	1.66	900 lb.	7"	48" x 30"	W	900	90	17
1 1/4"	Orange	DG4X1C-900	1.38	1.66	900 lb.	7"	48" x 30"	W	900	90	17
	Orange	DG4X1-900S	1.38	1.66	Empty	7"	48" x 30"	W	900	90	17
	Orange	DG4X1C-500R	1.38	1.66	900 lb.	7"	48" x 32"	W	500	70	17
	Orange	DG4X1C-1600	1.38	1.66	900 lb.	7"	48" x 48"	W	1600	105	17
	Orange	DG4X1C-3200	1.38	1.66	900 lb.	7"	65" x 48"	W	3200	385	17
1 1/2"	Orange	DG4X1C-4500	1.38	1.66	900 lb.	7"	72" x 44"	S	4500	98	17
	Orange	DH4X1C-1200	1.57	1.90	900 lb.	8 1/4"	48" x 48"	W	1200	105	22
	Orange	DH4X1C-4500	1.57	1.90	900 lb.	8 1/4"	84" x 44"	S	4500	134	22
2"	Orange	DH4X1-750S	1.57	1.90	Empty	8 1/4"	48" x 30"	W	750	90	22
	Orange	DJ4X1C-700	2.02	2.375	900 lb.	9 1/2"	48" x 48"	W	700	105	26
	Orange	DJ4X1C-2800	2.02	2.375	900 lb.	9 1/2"	96" x 44"	S	2800	146	26
	Orange	DJ4X1-500S	2.02	2.375	Empty	9 1/2"	48" x 30"	W	500	90	26

W = Wood
S = Steel

ENDOT INDUSTRIES

DUCT AND INNERDUCT

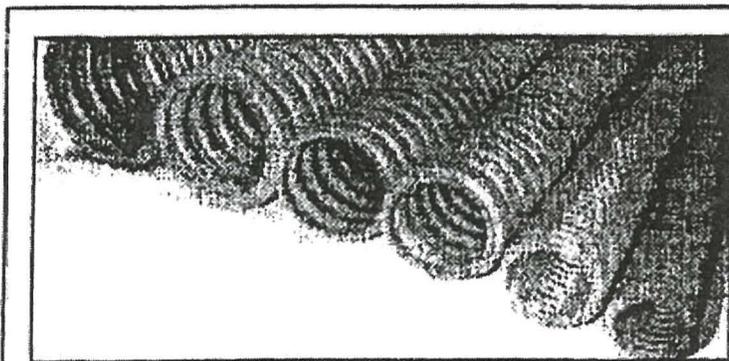
TECHNICAL SPECIFICATIONS

Endocor

630-2-XXX

CORRUGATED DUCT AND INNERDUCT

Designed specifically for fiber optic cables



FEATURES:

- Sizes from 1/2" through 2"
- Flexible & Lightweight for ease of handling
- Available in solid colors or stripes
- Available with multiple lengths/colors per reel
- Special high tensile strength versions available
- Available pre-threaded with pull line
- Available as Split Duct for covering cables in place

ENDOCOR'S corrugated design provides high tensile strength with low weight per foot for ease of handling and significantly longer put ups that can be obtained with smoothwall or ribbed innerduct.

ENDOCOR provides the lowest cable pulling friction of any innerduct design because of reduced surface area and no reel memory eliminating spiraling of the innerduct in the conduit.

ENDOCOR SPLIT DUCT is produced from Low Density Polyethylene for ease of use and superior flexibility.

PART NO.	NOMINAL SIZE	O.D.	I.D.
ICE 500	1/2"	0.850"	0.662"
ICE 750	3/4"	1.116"	0.870"
ICE 1050	1"	1.400"	1.050"
ICE 1250	1 1/4"	1.600"	1.250"
ICE 1500	1 1/2"	1.900"	1.500"
ICE 2000	2"	2.350"	1.900"

ENDOCOR PART NUMBER SYSTEM - One Selection from Each Column Creates a complete Product Part Number

EXAMPLE - Regular Corrugated 3/4", on a 48" Reel, 3/16" PP rope, Orange = ICE 075 22 21 02

PRODUCT	SIZE (ID)	REEL DIAMETER	PULL LINE	COLOR
ICE = corrugated	050 = 1/2"	21 = 34" wood	01 = empty	01 = black
	075 = 3/4"	22 = 48" wood	11 = 1250# kevlar/polyester	02 = orange
ICS = Split Duct	100 = 1"	23 = 78" wood	12 = 1800# kevlar/polyester	03 = green
	125 = 1 1/4"	24 = 84" wood	13 = 1000# polyester	04 = red
	150 = 1 1/2"	37 = 60" steel	14 = 1250# polyester	06 = blue
	200 = 2"	31 = 78" steel	15 = 1800# polyester	07 = white
		32 = 84" steel	17 = 900# kevlar	08 = gray
		33 = 96"x44" steel	21 = 3/16" PP rope	09 = custom
		34 = 96"x56" steel	22 = 1/4" PP rope	
		35 = 114" X 44" steel	31 = Cable In Conduit	

For product quantity per reel refer to Endot's reel capacity charts.

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 - Endoguard
 - Cable Chase
 - Silt Duct
 - Enduct I.D Controlled
 - Enduct O.D Controlled
 - Enduct-ASTM D2447
 - Bore Duct

630-2-XXX

CORRUGATED DUCT AND INNERDUCT

Designed specifically for fiber optic cables

FEATURES:

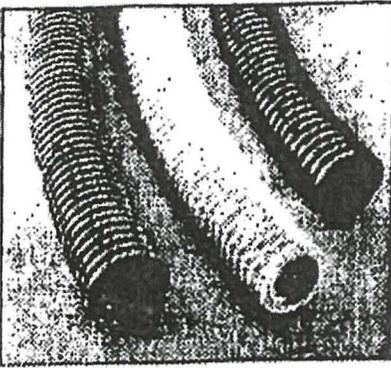
- Flexible
- Corrosion-resistant
- Corrugated for lowest possible coefficient of friction
- Lightweight yet highly crush resistant
- No Memory for ease of handling in all weather
- Available in solid colors or stripes
- Standard and custom reel lengths
- Available with multiple lengths and colors on one reel
- Sizes from 1/2" through 2"
- Special high tensile versions available
- Available pre-threaded with a variety of pull tapes (optional)

ENDOCOR'S corrugated design provides high tensile strength with low weight per foot for ease of handling and significantly longer pulls than can be obtained with smoothwall or ribbed innerduct.

ENDOCOR provides the lowest cable pulling friction of ANY innerduct design because of reduced surface area and no reel memory which eliminates spiraling in the conduit.

ENDOCOR 1050 and 1250 can be coupled with the easy to use, low cost ENDOCLIP for a fast joint that is stronger than the innerduct itself.

Part No.	SIZE	Nominal O.D.	Innerduct I.D.
500	1/2" (13mm)	0.850" (22mm)	0.652" (17mm)
750	3/4" (19mm)	1.116" (28mm)	0.870" (22mm)
1050	1" (25mm)	1.400 (35mm)	1.050" (27mm)
1250	1 1/4" (32mm)	1.600 (41mm)	1.250" (32mm)
1500	1 1/2" (38mm)	1.900" (48mm)	1.500" (36mm)
2000	2" (51mm)	2.350" (60mm)	1.900" (48mm)



Flex-Plus Blue ENT is a nonmetallic flexible raceway for use in walls, floors, and non-plenum ceilings. It's lightweight, hand bendable, and free from sharp edges, which reduces installation time and saves money.

Flex-Plus Blue ENT is UL Listed and CSA certified and is recognized by Article 362 of the 2002 NEC. It is also recognized by ICC, BOCA, SBCCI, and ICBO for having a one and two hour fire rated wall assembly and up to a three hour rated floor/ceiling assembly.

Features:

- For use in buildings in accordance with Article 362 of the 2002 NEC
- 1/2" through 2" sizes
- Available in three colors: Red, Yellow, and Blue
- Outside Diameters meet IPS Dimensions
- Storage -4°F – 158°F
- Handling -4°F – 104°F

630-2-XXX

Standard Stock - Reels

Color	Part No.	Nom. I.D.	Nom. O.D.	Pull Tape	Min. Bend Radius	Reel Size (F x W)	Reel Type	Reel Length	Reel Wt. (lbs.)	Wt. per 100 ft. (lbs.)
Blue	12005AK-001	.56	.84	Empty	6"	36" x 24"	W	1500	40	10
Yellow	12005AY-001	.56	.84	Empty	6"	36" x 24"	W	1500	40	10
Red	12005AR-001	.56	.84	Empty	6"	36" x 24"	W	1500	40	10
Blue	12007AA-001	.76	1.05	Empty	6"	36" x 24"	W	1000	40	14
Yellow	12007AY-001	.76	1.05	Empty	6"	36" x 24"	W	1000	40	14
Red	12007AR-001	.76	1.05	Empty	6"	36" x 24"	W	1000	40	14
Blue	12008-750	1.00	1.315	Empty	6"	36" x 24"	W	750	40	20
Yellow	12008Y-750	1.00	1.315	Empty	6"	36" x 24"	W	750	40	20
Red	12008R-750	1.00	1.315	Empty	6"	36" x 24"	W	750	40	20
Blue	12009-750	1.402	1.66	Empty	7"	48" x 32"	W	750	90	19
Blue	12010-750	1.554	1.90	Empty	8 1/4"	48" x 32"	W	750	90	39
Blue	12011-500	2.030	2.375	Empty	9 1/2"	48" x 32"	W	500	90	32
Red	12011R-500	2.030	2.375	Empty	9 1/2"	48" x 32"	W	500	90	32

W = Wood

Standard Stock - Coils

Color	Part No.	Nom. I.D.	Nom. O.D.	Pull Tape	Min. Bend Radius	Coil Length (ft.)	Wt. per 100 ft. (lbs.)
Blue	12005-200	.56	.84	Empty	6"	200	10
Yellow	12005Y-200	.56	.84	Empty	6"	200	10
Red	12005R-200	.56	.84	Empty	6"	200	10
Blue	12007-100	.76	1.05	Empty	6"	100	14
Yellow	12007Y-100	.76	1.05	Empty	6"	100	14
Red	12007R-100	.76	1.05	Empty	6"	100	14
Blue	12008-100	1.00	1.315	Empty	6"	100	22
Yellow	12008Y-100	1.00	1.315	Empty	6"	100	22
Red	12008R-100	1.00	1.315	Empty	6"	100	22

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Dimensional Data

Listed below

630-2-XXX

BRIDGE MOUNT

BRIDGE MOUNT

JACK & BORE

BRIDGE MOUNTING AND JACK AND BORE UNDER R.R.

Standard Rigid Conduit (GRC) - Weights and Dimensions

Trade Size	Nominal Wt. Per 100 Ft. (30.5M)		Nominal Outside Diameter		Nominal Wall Thickness		Quantity In Primary Bundle		Master Bundles Approx.					
	lb.	kg	in.	mm	in.	mm	ft.	m	ft.	m	lb.	kg	cu ft	cu m
16	82	37.2	0.840	21.3	0.104	2.60	100	30.5	2500	762.5	2050	929.7	20.8	0.59
21	109	49.4	1.050	26.7	0.107	2.70	50	15.2	2000	610.0	2180	988.7	24.3	0.69
27	161	73.0	1.315	33.4	0.126	3.20	50	15.2	1250	381.3	2013	912.9	21.7	0.61
35	218	98.9	1.660	42.2	0.133	3.40	-	-	900	274.5	1962	889.8	23.3	0.66
41	263	119.3	1.900	48.3	0.138	3.50	-	-	800	244.0	2104	954.2	27.8	0.79
53	350	158.7	2.375	60.3	0.146	3.70	-	-	600	183.0	2100	952.4	33.8	0.96
63	559	253.5	2.875	73.0	0.193	4.90	-	-	370	112.9	2068	937.9	29.2	0.83
78	727	329.7	3.500	88.9	0.205	5.20	-	-	300	91.5	2181	989.1	31.3	0.89
91	880	399.1	4.000	101.6	0.215	5.50	-	-	250	76.3	2200	997.7	34.7	0.98
103	1030	467.1	4.500	114.3	0.225	5.70	-	-	200	61.0	2060	934.2	33.7	0.95
129	1400	634.9	5.563	141.3	0.245	6.20	-	-	150	45.8	2100	952.4	41.3	1.17
155	1840	834.5	6.625	168.3	0.266	6.80	-	-	100	30.5	1840	834.5	38.9	1.10

Standard Metallic Tubing (EMT) - Weights and Dimensions

Trade Size	Nominal Wt. Per 100 Ft.	Nominal Outside Diameter	Nominal Wall Thickness	Quantity In	Master Bundles
------------	-------------------------	--------------------------	------------------------	-------------	----------------

(30.5M)

Bundle Quantity Wt. Volume

Metric	lb.	kg	in.	mm	in.	mm	ft.	m	ft.	mm	lb.	kg	cu ft	cu m
16	30	13.6	0.706	17.9	0.042	1.07	100	30.5	7000	2135.0	2100	952.4	28.7	0.81
21	46	20.9	0.922	23.4	0.049	1.25	100	30.5	5000	1525.0	2300	1043.1	35.6	1.01
27	67	30.4	1.163	29.5	0.057	1.45	100	30.5	3000	915.0	2010	911.6	33.7	0.95
35	101	45.8	1.510	38.4	0.065	1.65	50	15.2	2000	610.0	2020	916.1	35.0	0.99
41	116	52.6	1.740	44.2	0.065	1.65	50	15.2	1500	457.5	1740	789.1	34.2	0.97
53	148	67.1	2.197	55.8	0.065	1.65	-	-	1200	366.0	1776	805.4	46.7	1.32
63	216	98.0	2.875	73.0	0.072	1.83	-	-	610	186.1	1318	597.7	41.5	1.18
78	263	119.3	3.500	88.9	0.072	1.83	-	-	510	155.6	1341	608.2	48.9	1.38
91	349	158.3	4.000	101.6	0.083	2.11	-	-	370	112.9	1291	585.5	48.6	1.38
103	393	178.2	4.500	114.3	0.083	2.11	-	-	300	91.5	1179	534.7	48.3	1.37

OR RISERS ON POLES.

Intermediate Metal Conduit (IMC) - Weights and Dimensions

Trade Size	Nominal Wt. Per 100 Ft. (30.5M)	Nominal Outside Diameter	Minimum Wall Thickness	Quantity In Primary Bundle	Master Bundles Approx. Quantity	Wt.	Volume
16	62	28.1	0.815	20.7	0.070	1.80	100 30.5 3500 1067.5 2170 984.1 26.7 0.76
21	84	38.1	1.029	26.1	0.075	1.90	50 15.2 2500 762.5 2100 952.4 30.7 0.87
27	119	54.0	1.290	32.8	0.085	2.20	50 15.2 1700 518.5 2023 917.5 30.7 0.87
35	158	71.7	1.638	41.6	0.085	2.20	- - 1350 411.8 2133 967.3 36.3 1.03
41	194	88.0	1.883	47.8	0.090	2.30	- - 1100 335.5 2134 967.8 38.2 1.08
53	256	116.1	2.360	59.9	0.095	2.40	- - 800 244.0 2048 928.8 45.8 1.30
63	441	200.0	2.857	72.6	0.140	3.50	- - 370 112.9 1632 740.1 29.2 0.83
78	543	246.3	3.476	88.3	0.140	3.50	- - 300 91.5 1629 738.8 31.3 0.89
91	629	285.3	3.971	100.9	0.140	3.50	- - 240 73.2 1510 684.8 34.7 0.98
103	700	317.5	4.466	113.4	0.140	3.50	- - 240 73.2 1680 761.9 42.8 1.21

630-2-XXX

1. The Steel Tube Institute *Guidelines for Installing Steel Conduit Tubing* General Product Information addresses this question. [Click here to link to the section containing a downloadable pdf file.](#)

[Back to Questions](#)

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2. Raceway Articles were renumbered in the 2002 NEC®. The following list shows the Article numbers that apply to IMC, RMC, and EMT, followed by the former Article number in parentheses.

IMC NEC® Article 342 (345)

RMC NEC® Article 344 (346)

EMT NEC® Article 358 (348)

[Back to Questions](#)

3. The following standards cover steel tubing (EMT)/conduit (RMC & IMC). The American Society for Testing Materials (ASTM) does not publish a standard whose scope specifically covers steel electrical conduit and couplings. Therefore, ASTM specifications do not apply to metal conduit for use as a metal raceway for the installation of wires and cables in accordance with the *National Electrical Code*®.

Electrical Metallic Tubing (EMT) is Listed to Standard for Electrical Metallic Tubing - Steel, UL 797 and produced to American National Standards Institute - ANSI C80.3

Rigid Metal Conduit - Steel (RMC) is Listed to Standard for Electrical Rigid Metal Conduit - Steel, UL 6 and produced to American National Standards Institute - ANSI C80.1

Intermediate Metal Conduit - Steel (IMC) is Listed to Standard for Electrical Intermediate Metal Conduit - Steel, UL 1242 and produced to American National Standards Institute - ANSI C80.6.

Additional information on the titles and designations of standards requirements that have been used for the investigation of conduits in a specific category can be found in the Underwriters Laboratories Inc.®, *General Information for Electrical Equipment Directory*. The UL product category for EMT is DYIX, for RMC is DYIX, and for IMC is DYBY.

Federal government, in an effort to reduce costs

• Benefits of rigid conduit

Types of steel conduit

Applications

• Dimensional Data

Technical Contacts

Free Downloads

Types of Steel Conduit

(Product Definitions)

630-2-XXX

Steel Conduit and Tubing

Steel conduit has been in use as a "raceway system" for electrical conductors since the early 1900s. The wall thickness and strength of steel make Rigid Steel Conduit, Intermediate Metal Conduit and Electrical Metallic Tubing the wiring methods recognized as providing the most mechanical protection to the enclosed wire conductors. Additionally, a properly installed metal conduit system is recognized by the National Electrical Code® (NEC®) as an equipment grounding conductor. There are three basic types of steel conduit in use today:

Rigid Metal Conduit — RMC (ferrous metal)

Rigid metal conduit (RMC) is a listed threaded metal raceway of circular cross section with a coupling which can be either a standard straight tapped conduit coupling or the integral type. Threads on the uncoupled end are covered by industry color-coded thread protectors which protect the threads, keep them clean and sharp, and aid in trade size recognition. Rigid metal conduit is available in trade sizes 1/2 through 6. Thread protectors for trade sizes 1, 2, 3, 4, 5, and 6 are color-coded blue, trade sizes 1/2, 1 1/2, 2 1/2, 3 1/2 are black, and trade sizes 3/4 and 1-1/4 are red. The nominal finished length of RMC with coupling is 10 feet.

Rigid metal conduit can have a primary coating of zinc, a combination of zinc and organic coatings, or a nonmetallic coating (such as PVC). Supplementary coatings can be applied to all three where additional corrosion protection is needed.



(NOTE: Contact suppliers with product-specific questions).

Rigid metal conduit is the heaviest-weight and thickest-wall steel conduit. Where galvanized by the hot-dip process, it has a coating of zinc on both the inside and outside. Electro-galvanized rigid has a coating of zinc on the exterior only, with approved corrosion resistant organic coatings on the interior. Rigid with alternate corrosion protection generally has organic coatings on both the exterior and the interior surfaces. Galvanized rigid metal conduit (RMC) is non-combustible and can be used indoors, outdoors, underground, concealed or exposed. Rigid metal conduit with coatings that are not zinc based may have temperature limitations which will be noted on the manufacturer's product label and may not be listed for use in environmental air spaces; consult manufacturers' listings and markings.

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Intermediate Metal Conduit — IMC (ferrous metal)

This product was developed in the 1970s. Intermediate Metal Conduit (IMC) is a listed threaded steel raceway of circular cross section with a coupling which can be either a standard straight-tapped conduit coupling or the integral type. Threads on the uncoupled end are covered by industry color coded thread protectors which protect the threads, keep them clean and sharp, and aid in trade size recognition. IMC is available in trade sizes 1/2 through 4. Thread protectors for trade sizes 1, 2, 3, 4, are color-coded orange; trade sizes 1/2, 1 1/2, 2 1/2, 3 1/2 are yellow; and trade sizes 3/4 and 1 1/4 are green. The nominal finished length of IMC *with coupling* is 10 feet.

IMC has a reduced wall thickness, when compared to RMC, and weighs about one-third less than RMC. The outside has a zinc based coating and the inside has an approved organic corrosion-resistant coating. IMC is interchangeable with galvanized RMC.

conduit. Both have threads with a 3/4-inch per foot taper; use the same couplings and fittings; have the same support requirements; and are permitted in the same locations.

Electrical Metallic Tubing — EMT (ferrous metal)

Electrical Metallic Tubing (EMT), also commonly called thin-wall, is a listed steel raceway of circular cross section which is unthreaded, and nominally 10 feet long. The outside corrosion protection is zinc based and the inside has an approved corrosion resistant organic coating. EMT with integral couplings is available in trade sizes 2 1/2 - 4. EMT is installed by use of set-screw or compression-type couplings and connectors. EMT is permitted to have an integral coupling which is comprised of an expanded, "belled" shape of tube on one end with set screws.

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PVC-Coated Steel Conduit (PVC)

There are three types of PVC-coated conduit; couplings are supplied separately.

1. Primary PVC coating over bare steel which is a listed rigid conduit for environmentally suitable locations.
2. A PVC coating over listed galvanized steel conduit. This is a supplementary coating intended for added protection in severely corrosive locations.
3. A primary PVC coating over a supplementary coating of zinc. This is also intended for severely corrosive locations.

These PVC-coated raceways are generally installed as a system, which means the fittings, conduit bodies, straps, hangers, boxes, etc., are also coated. There are, however, installations where only a coated elbow is used in a galvanized conduit run, such as where emerging from the soil or concrete.

(NOTE: Manufacturers' instructions are very important when installing PVC coated products and

SPECIAL PROVISIONS

47. CLEARING AND GRUBBING: The Contractor is required to notify the owner of any fences, irrigation systems, etc., that lie within the Right-of-Way, to give them the courtesy to remove them before construction. The Contractor shall replace fences, shrubbery, sod, etc., within the limits of construction and outside the Right-of-Way to their original condition, unless otherwise directed by the Engineer. Cost of which is incidental to construction. All Work associated with the re-establishment and/or temporary relocation of mailboxes shall be done in accordance with Index no. 532 of the current F.D.O.T. Roadway and Traffic Design Standards. Specific attention should be directed to coordination with the local postmaster. Payment for all Work required to establish each mailbox in the temporary and/or final location, including any material required to construct the mailbox to current standards, shall be included in the cost of clearing and grubbing, unless the Contract includes a pay item for the Work.

48. SUBSOIL EXCAVATION: Where muck, rock, clay, or other material within the limits of the Roadway is unsuitable in its original position, excavate such material to the cross-sections shown in the Plans or indicated by the Engineer, and backfill with suitable material. Shape backfill material to the required cross-sections. Where the removal of plastic soils below the finished earthwork grade is required, meet a construction tolerance, from the lines shown in the Plans as the removal limits, of ± 0.2 feet in depth and ± 6 inches (each side) in width. Final payment for the Subsoil Excavation, C.Y. will be based on initial and final cross sections, and signed & sealed quantity computations which are to be prepared by a Professional Land Surveyor or Professional Engineer licensed in the State of Florida, and submitted to the Department for acceptance. Initial cross sections shall be taken at 50 foot intervals, or as otherwise directed by the Engineer. When the excavation of unsuitable material is completed to satisfy field conditions, and verified as such by the Engineer, final cross sections shall be taken at 50 foot intervals, or as otherwise directed by the Engineer. The cross sections shall show elevations at the appropriate break points and shall be plotted. Quantity computations shall be prepared (using the Average End Area Method), and submitted to the Engineer for acceptance. The Contractor is advised that no compensation will be made for excavation below the depth required to satisfactorily remove the unsuitable material. The cost for the cross sections and computations shall be incidental to the pay item, Subsoil Excavation, C.Y. Subsoil Excavation, C.Y., shall include the cost of embankment to replace the excavated subsoil, labor, Materials, Equipment, fuel, transportation and other related Work to complete the pay item.

49. EMBANKMENT: The quantity will be at the plan quantity compacted in place. Where payment for embankment is not to be included in the payment for the excavation, and is to be paid for on a cubic yard basis for the item of Embankment, the plan quantities to be paid for will be calculated by the method of average end areas unless the Engineer determines that another method of calculation will provide a more accurate result. The measurement will include only material actually placed above the original ground line, within the lines and grades indicated in the Plans or directed by the Engineer. The length used in the computations will be the station-to-station length actually constructed. The original ground line used in the computations will be as determined prior to placing of embankment, and no allowance will be made for subsidence of material below the surface of the original ground. In no case will payment be made for material allowed to run out of the embankment on a flatter slope than indicated on the cross-section. The

SPECIAL PROVISIONS

Contractor shall make his own estimate on the volume of material actually required to obtain the compacted in-place pay section.

50. RESETTING FENCE: The quantities to be paid for under this item shall be the length in feet of reset fence including gates. The quantity of removed and reset fence determined, as provide above, shall be paid for at the Contract unit price per linear foot for removed and reset fence. The item includes the cost of removing and resetting any existing gates. The above price and payment shall be full compensation for all the Work specified in this Section, including furnishing all the required new hardware, additional posts and replacement of any material damaged by the Contractor.

51. PRICE/DELIVERY/ACCEPTANCE: Price quoted must be the price for new merchandise and free from defects. Any Bids containing modifying or "escalator" clauses will not be considered unless specifically requested in the Bid Specifications.

Deliveries of all items shall be made as soon as possible. **Deliveries resulting from this Bid are to be made during the normal working hours of the Department.** Time is of the essence and the Bidder's delivery date must be specified and adhered to. Should the Bidder, to whom the order or Contract is awarded, fail to deliver on or before his/her stated date, the Department reserves the right to **CANCEL** the order or Contract and make the purchase elsewhere. The successful Bidder(s) shall be responsible for making any and all claims against carriers for missing or damaged items.

Delivered items will not be considered "accepted" until authorized agent for the Department has, by inspection or test of such items, determined that they fully comply with Specifications.

The Board of County Commissioners may return, for full credit, any item(s) received which fail to meet the Department's performance standards.

52. E-VERIFY: The Contractor shall utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired by the Contractor during the term of the Contract and shall expressly require any subcontractors performing work or providing services pursuant to the Contract to likewise utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the Contract term.

53. BOND WAIVER PROGRAM: A Bid Bond is not required for bids of less than \$50,000 and will be waived for all other bids of less than \$200,000 if the Bidder is going to participate in the Bond Waiver Program, provided that the Bidder complies with Palm Beach County Resolution R89-1178 and with Palm Beach County Policies and Procedures relative to the Bond Waiver Program (CW-F-016). For bids with values between \$50,000 and \$200,000, the Bidder must complete an affidavit entitled "Intent to Participate in Bond Waiver Program Bid Affidavit" or provide a Bid Bond. Failure to provide a Bid Bond or complete and return this affidavit with the Bid shall result in rejection of the Bid. For all contracts less than \$200,000, the Public Construction Bond will be waived as well, provided that the Bidder complies with Palm Beach County Resolution R89-1178 and with Palm Beach County Policies and Procedures relative to the Bond

SPECIAL PROVISIONS

Waiver Program (CW-F-016). Copies of the requirements of the Bond Waiver Program (CW-F-016) can be found at the following website: <http://discover.pbcgov.org/PDF/PPM/Index.pdf>. The forms for the Bond Waiver Program can be found at <http://discover.pbcgov.org/engineering/roadwayproduction/Pages/Bid-Documents.aspx>.

54. BRIDGE LOAD RATING REQUIREMENTS: The Contractor is advised that bridge structures are subject to FDOT load rating requirements and shall take all necessary steps to comply with these requirements. See FDOT Load Rating Manual (Topic No. 850-010-035) at <https://www.fdot.gov/maintenance/loadrating.shtm>. Among these requirements are the following:

- Within 60 days of the pre-construction conference the Department must submit the Maintenance Structure Inspection Schedule to the District Structures Maintenance Engineer (DSME).
- DSME will receive a two week advance notice prior to the semi-final inspection.
- Prior to opening any lanes of traffic the as-built load rating document must be received by the DSME and the structures maintenance in-service inspection must be conducted to verify FHWA instructions Q303-7 are followed.

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SPECIAL PROVISIONS

**INTENT TO PARTICIPATE IN BOND WAIVER PROGRAM
BID AFFIDAVIT**

Project Number: _____

If the Contractor intends on participating in the Bond Waiver Program, this form must be completed in its entirety and returned with the Contractor's Bid.

FAILURE TO COMPLETE THIS FORM OR INCLUDE A BID BOND FOR PROJECTS WITH VALUES BETWEEN \$50,000 AND \$200,000, SHALL RESULT IN REJECTION OF THE BID.

_____ (Bidder) hereby states that it intends on participating in the Bond Waiver Program as described in Palm Beach County Resolution R89-1178 and Palm Beach County Policies and Procedures.

Contractor Signature

Title

State of _____ County of _____

Subscribed and Sworn to (or affirmed) before me on this _____ day of _____, 20__ by _____ who is personally known to me or has presented _____ (type of identification) as identification.

Notary Public Signature and Seal

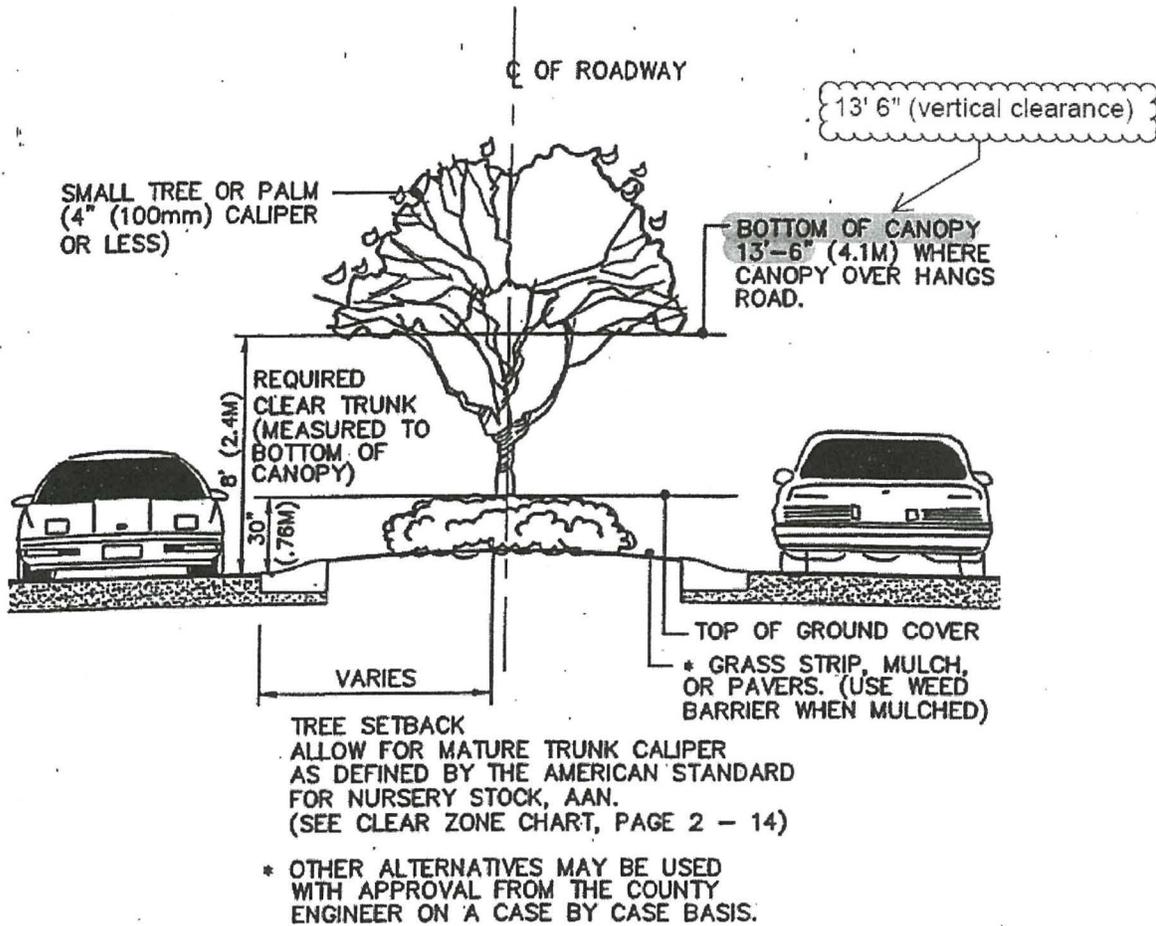
Notary Name Printed

Notary Commission Number

SPECIAL PROVISIONS

54. PLANTING STANDARDS

Mountable Curb and Uncurbed Median within Safe Sight Distance Triangle



TYPICAL SECTION

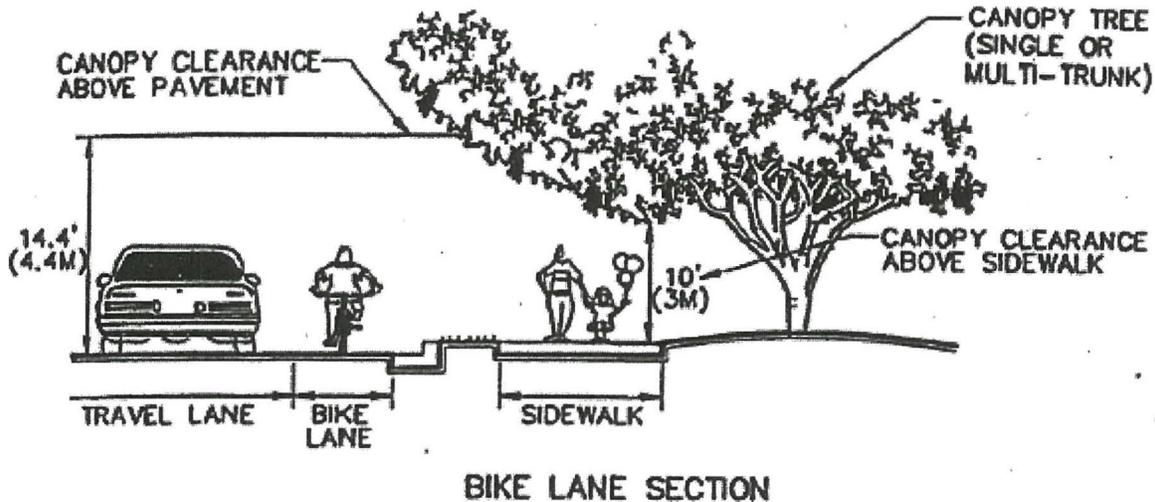
Small trees and palms shall be used within mountable and uncurbed Medians. Tree and palms that are 4" in caliper or less measured at 6" above grade shall be considered small and may be used within the Medians. The plan material within these areas shall be maintained so that they do not overhang into the travel lane. Any portion of the tree that overhangs the travel lanes shall be maintained with a 13'-6" vertical clearance. Otherwise, no encroachment will be permitted.

Canopy Clearance for Sidewalks and Bicycle Paths

Sidewalks should be maintained free of all growth. The bottom limbs of trees overhanging the sidewalk should be at least 10' above the sidewalk.

SPECIAL PROVISIONS

When tree limbs extend over separate bike paths, they should be at least 10' above the bike bath. When they extend over designated or undesignated bile lanes within the Roadway, they must be at least 14.4' above the pavement (see below).



Roadside Clear Zone

The roadside clearzone is that area outside the Traveled Way, available for use by errant vehicles. Vehicles frequently leave the Traveled Way during avoidance maneuvers and due to loss of control by the driver or due to collisions with other vehicles. The primary function of the clear zone is to allow space and time for the driver to regain control of vehicle and avoid or reduce the consequences of collision with roadside objects. This area also serves as an emergency refuge location for disabled vehicles.

The width of the clear zone should be as wide as it is practicable. The minimum permitted widths are given in the following table. These are minimum values only and should be increased whenever feasible.

In rural areas it is desirable and frequently economically feasible, to substantially increase the width of the clear zone. Where traffic volumes and speeds are high, the width should be increased. The clear zone on the outside of horizontal curves should be increased due to the high probability of vehicles leaving the Roadway at a high angle.

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SPECIAL PROVISIONS

Minimum Width of Clear Zone

Type of Facility	Design Speed or Posted Speed (whichever is greater)						
	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph and above
	Minimum Clear Zone						
Rural	6' Local 10' Collector 14' Arterials	6' Local 10' Collector 14' Arterials	10' Collectors 14' Arterials	14' Arterials and Collectors ADT <1500 18' Arterials and Collectors ADT ≥1500	14' Arterials and Collectors ADT <1500 18' Arterials and Collectors ADT ≥1500	18' Arterials and Collectors ADT <1500 24' Arterials and Collectors ADT ≥1500	18' Arterials and Collectors ADT <1500 30' Arterials and Collectors ADT ≥1500
Urban	4'	4'		4'	N/A	N/A	N/A

Urban Facilities clear zone is measured from face of curb (6" type D or F)

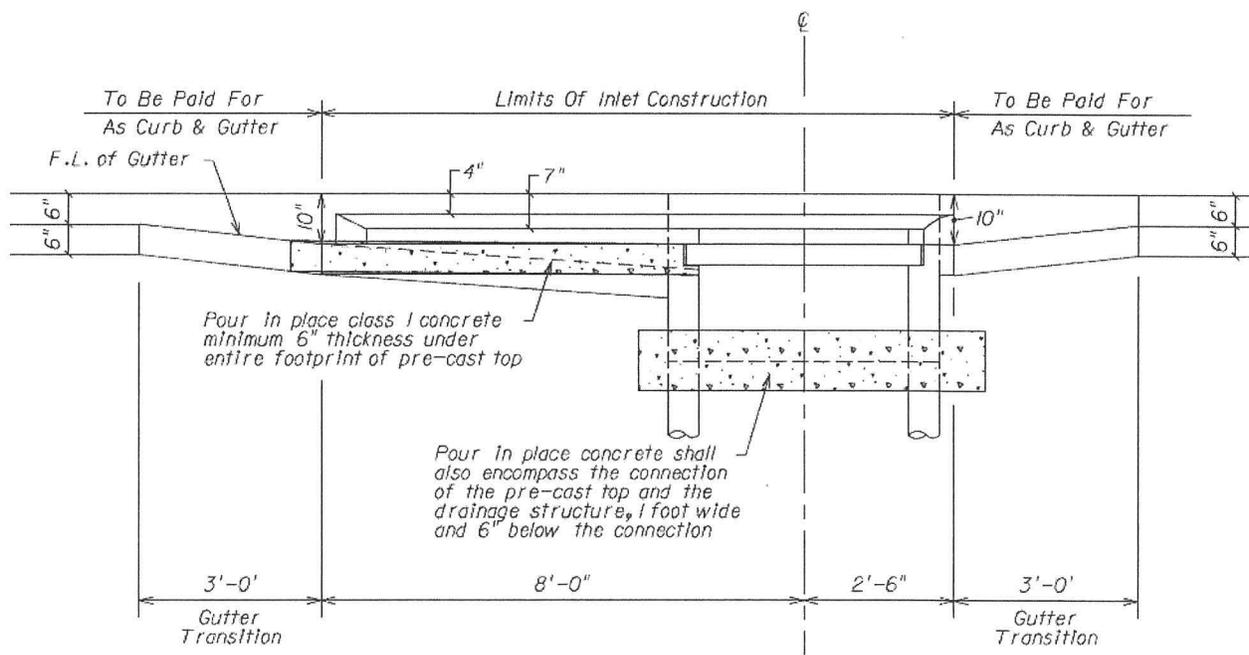
Rural Facilities Use rural for urban facilities when no curb and gutter is present. Measured from edge of through travel lane on rural section.

Curb and gutter not to be used on facilities with design speed > 45 mph.

ADT in the table above refers to design year ADT.

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SPECIAL PROVISIONS



INLET TYPE 5

(Curb Inlet Top Type 6 Symmetrical with Left Half)

SUPPLEMENTAL CONCRETE AT DRAINAGE STRUCTURE TOP DETAIL

REQUEST FOR INFORMATION

RESPONSE TO CONTRACTOR RFI'S:

September 16, 2019

Siemens Industry, Inc.

Joshua M. Lippincott

Joshua.lippincott@siemens.com

QUESTIONS AND OR COMMENTS:

1. Liquidated Damages (LDs) for non-completion of work orders is mentioned, but Section 8-10.2 does not specify what the LDs will be. Can you please clarify?
2. Will permits be required from any entity other than Palm Beach County during the execution of this contract?
3. Is there a requirement that work under this contract be performed during night hours?
4. Can a conditional bid be submitted? Specifically, can a bid include a conditional provision that allows for withdrawal in the event the contract is awarded to multiple contractors?

RESPONSES:

1. See Section 8-10.2 of the FDOT Standard Specifications per page SS-1.
2. All loops work will be done within PBC maintenance jurisdiction. If any permits required, PBC will apply for permits.
3. Contractor will be allowed to work day or night as long as no work completed within restricted times as listed in the contract. All MOT requirements to be met for at all times.
4. No

TECHNICAL SPECIFICATIONS – DIVISION II SECTIONS 600 THROUGH 699

1. INTENT AND SCOPE-

The work detailed in these specifications consists of the installation and /or furnishing of traffic signal items, all according to the Florida Department of Transportation's (FDOT) Standard Specifications for Road and Bridge Construction dated 2017 (or later version) (SSRBC-2017), the Design Standards (English Units) FY 2016-17 (or later version) (DS-FY 2016-17), FDOT Mast Arm Assembly Standards (Index Nos. 17743, and 17745), the attached Notes and Palm Beach County (PBC) Traffic Signal Installation Standards and Details-2015 or later version. Where conflicts exist, the Notes and PBC-Typicals shall take precedence over FDOT standard specifications.

Installations shall be as shown on plans as presented to the Contractor at the commencement of each project in such amounts, to such locations, at such times as may be designated by the Director of Traffic or his duly appointed representative (Engineer).

All items are to be bid on a unit price basis to establish the price for use on work authorizations (purchase orders) for specific projects.

The Contractor should fully understand that the Board of County Commissioners does not hereunder, contract to do any specific amount of work during the contract period.

The locations of the traffic signal projects will vary, and may be at any point within the boundaries of Palm Beach County. The Contractor will not be expected to operate his equipment or personnel beyond the limits of Palm Beach County under this contract.

For further information, please contact the Director of Traffic at 561-684-4030.

2. REPRESENTATIVE OF THE DIRECTOR OF TRAFFIC

The Director of Traffic Division will appoint one or more representatives (an Engineer) to inspect equipment used under this contract, observe personnel employed, and note the general performance of the Contractor. Any authorization to revoke, alter, enlarge, or relax the conditions of these specifications will be at the discretion of the Engineer. The Engineer will have the authority to reject defective equipment, and report on inept personnel, and to suspend any work that is being improperly done, subject to the final decision of the Director of Traffic Division.

3. STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION

It is the intent of these Specifications that the FDOT Standard Specifications for Road and Bridge Construction dated 2017 (or later version) (DS-FY 2016-17) will be used as the basis for this contract except as amended herein. Such wording as, Department of Transportation and Personnel, is intended to be replaced with that wording which would provide proper terminology, thereby making such Standard Specifications and Special Provisions of Palm Beach County in conjunction with Palm Beach County's personnel.

Add the following to the end of Article “4-1 **Intent of Contract**” of the FDOT SSRBC-2017:
Included under

“The work covered by this Contract consists of the installation and/or furnishing and/or removal of traffic signal items.

No areas will be closed to traffic unless or until approved by the Engineer. During the period or periods that areas are closed to traffic, adequate provisions to control and/or detour traffic will be provided by the Contractor. Traffic control shall be in accordance with FDOT Traffic Control through Work Zones – Index 600 of the Design Standards, (FY-2016-17) for street and highway construction, maintenance, and utility operations, and shall be the responsibility of the Contractor.

The job is to be completed in a workmanlike manner and all debris removed within the time of construction.”

4. CONTRACT NOTES

1. All materials and equipment supplied and installed on any project shall be, where applicable, on the FDOT Approved Product List (APL) and meet the FDOT Standard Specifications for Road and Bridge Construction, 2017. All materials and equipment shall be certified. Certificates shall be supplied with shop drawings.
2. Any changes to signalization plan during construction, the proposed change shall be submitted in writing to the Engineer for approval. No changes shall be implemented without the Engineer’s approval.
3. The Contractor shall be responsible for the protection of all present utilities that have been located by the various utility companies. He shall also maintain and protect the existing traffic signals and their related equipment from damage caused by subcontractors and employees under his Contract but only to the extent of the Contractor’s normal work operation, and he shall not be responsible for routine maintenance, normal wear and tear, or an act of God, unless otherwise specified.
4. The price of the loop installation shall include all maintenance of traffic necessary to complete the job. It is up to the discretion of the Engineer to include additional hours for maintenance of traffic under item No. “102-1-A” as needed to a work order issued to the contractor.
5. The Contractor shall provide barricades and warning and detour signs as required in Section 102-Maintenance of Traffic in FDOT SSRBC-2017.
6. The Contractor shall provide all coordination with FPL necessary to obtain the power for signals. The Contractor shall also provide coordination with all other utilities having an impact on the project.

7. All existing traffic signal equipment removed by the Contractor shall be tagged to identify location. A representative of Traffic Operations warehouse shall be given twenty-four (24) hour notice before delivery to an approved location by the Engineer. Equipment not identified will not be accepted and equipment not returned will result in the withholding of payment to the contractor. Traffic Operation warehouse personnel will issue a receipt to the Contractor for returned equipment.
8. The work covered under the terms of this contract does not require entry into the Controller Cabinet. Loop construction work shall terminate at the Loop junction box near the controller.
9. A Ninety (90) day burn-in period will be required for all electrical or electronic equipment furnished and installed as part of any traffic signal installation or system of traffic control devices. The burn-in shall consist of the field operations of the signalization system in a manner which is in full accordance with the signal operation requirements of the plans and specifications.
10. The burn-in period will commence upon a written conditional acceptance by the Engineer and will terminate 90 consecutive days thereafter, unless an equipment malfunction occurs. The written conditional acceptance of the signal will be granted to the contractor upon completion of final inspection of the signal. See PBC Traffic Signal Inspection Process in Attachment A. The burn-in period will be stopped for the length of time that the equipment is defective. When the equipment is repaired and is functioning properly, the burn-in period will resume from the point in time when it was stopped.
11. All traffic signal loops projects will be inspected prior to final acceptance for maintenance by Palm Beach County Traffic Operations. See Palm Beach County Traffic Operations – Signal Loop Inspection Sheet.
12. During the burn-in period, the Contractor shall restore operation of the installation within four (4) hours after notification of a malfunction. If the Contractor does not respond within four (4) hours, Palm Beach County shall have the option of making the necessary repair and billing the Contractor for the actual time and materials required.
13. Signal Timing: The Engineer will furnish timing. The Contractor shall notify the County Traffic Engineer seventy two (72) hours in advance of any requirement for timing.
14. The abbreviations and acronyms used in this contract are as follows:

a. LF	Linear Feet	k. LS	Lump Sum (Complete)
b. SF	Square Feet	l. F&I	Furnish & Install
c. SY	Square Yards	m. F	Furnish-Only
d. CY	Cubic Yards	n. I	Install-Only
e. AS	Assembly	o. R	Remove
f. PI	Per Installation	p. EA	Each
g. HR	Per Hour		
h. MH	Man Hour		
i. ED	Each Day		
j. WK	Per Week		

15. All loop work to be completed in accordance to pay item 660-2-xxx. No loop work shall be permitted during the hours of 6:45 AM to 8:45 AM, and during the hours of 3:45 PM to 6:30 PM. Nor shall loop work be permitted on days prior to major holidays.
16. Ground rods to be supplied and attached to all signal poles, control cabinets and equipment footings and basis according to PBC standard specifications, and Typical Ground Rod Array Detail. The work and materials for grounding are incidental to items being grounded.
17. All conduit (Bid Items 630-2-1x-y) shall include a 14AWG insulated stranded (THHN) tracer wire and one (1) pull line. Multiple bundle conduit runs (i.e. 2-2") shall require only one (1) tracer per bundle runs and one (1) pull line per conduit in the bundle.
18. Class-I Concrete (Misc.), will be used for pull-box aprons. Aprons can be pre-cast or poured in place.
19. All pull boxes shall have heavy duty covers embossed with the word "PBC TRAFFIC SIGNAL" or "PBC TRAFFIC ITS".
20. **Shop drawings for all materials to be used under this contract shall be submitted to PBC Traffic Division for approval prior to purchase. Shop drawings shall include, but not limited to, conduits, cables, pull boxes.**

5. **SPECIAL BID ITEM NOTES:**

1. Bid Item **102-1-A** consists of Maintenance of Traffic for signalization modifications as necessitated by roadway construction. This pay item is for labor and equipment required to construct or modify traffic signals in order to accommodate changing highway geometrics resulting from on-going construction, and in Accordance with FDOT DS-FY2016-17 Indices 615, 616, 617, 618, 619, 620, 621, 622, and 628. If needed it is estimated that no more than Four (4) MOT hours will be approved for each approach where loops work is being performed, including lead-ins and conduit to and from loop pockets or pull boxes.
2. Bid Items **630-2-11-x** consists of (F&I) PVC (SCH. 40) underground in-trench conduit of 2" diameter when x = 2; 4" diameter when x= 4. This item includes trenching, installing conduit, covering trench, and bringing ground to original condition.
3. Bid Items **630-2-11-xA** consists of (F&I) an additional PVC (SCH. 40) underground conduit in the same trench, 2" diameter when x = 2, and 4" diameter when x = 4. This item provides for additional conduit(s) added in trench covered under items 630-2-11-x.
4. Bid Items **630-2-12-x-y** consists of (F&I) HDPE (SDR 11) directional bore under-pavement conduit of 2" diameter when x = 2; 4" diameter when x = 4; and 4" with (3) 1-1/4" HDPE inner-duct when x =4i. The y represents the number of conduits per directional bore.

5. Bid Items 630-2-13-x-1 consists of (F&I) galvanized rigid conduit (GRC), jack and bore under rail road tracks. Where 'x' represents the diameter of the conduit in inches. **This item includes any additional insurance and other incidentals required by Rail Road authority to work within the Rail Road's ROW.**
6. Bid Items 630-2-14-x consists of furnish and install (F&I) hot dipped galvanized rigid steel conduit surface mounted. The conduit is 1" diameter when x = 1, 2" diameter when x = 2.
7. Bid Items 630-2-15-x consists of (F&I) galvanized bridge mount conduit, where 'x' represents the diameter of conduit in inches. This item includes all parts, labor, materials and all appurtenances necessary for a complete installation.
8. Bid Items 630-3 consists of Roding and cleaning out existing conduit of any size.
9. Bid Item 635-2-11 consists of Furnishing and Installing a 13"X24"X12D Pull box as shown on the plans in accordance with Design Standards, Index No. 17700 and FDOT (SSRBC-2017),
10. Bid Item 635-2-12A consists of Furnishing and Installing a 17"X30"X12D Pull box as shown on the plans in accordance with Design Standards, Index No. 17700 and FDOT (SSRBC-2017),
11. Bid Item 660-2-x **Furnish & Install** an inductance loop detector complete, including installation of loop wire, saw cut, sealant, lead-in, and individual lead-in per loop to cabinet. Lead-in slack of 6' coil per lead in the pull box (if applicable) and 6' coil in the cabinet for each lead-in. Color coding and labeling of the loops shall be provided in all cases (minimum depth of saw cuts of 2"). The loop wire shall be #14 AWG XHHW. The loop lead-in wire shall be #16 AWG shielded twisted stranded, tinned copper. It shall be Carol-Part # C2553.41.01 or equivalent. Splicing butt connector shall be 3M-Part # MH14BCK Scottchlock, or equivalent. Crimping tool shall be Burndy-Part # Y10D476086. Or equivalent. Crimp with the non-insulated mark. Heat shrink Tubing shall be Thomas and Betts-Part #HS16-12-4, or equivalent. A minimum section of 10" shall be applied over Butt Connector segment. Sealant shall be liquid tar (step asphalt hot type 4). See PBC Signal Installation Standards and Details-2015 Sheet T-11, T-11.1, and T-12. See Note # 15 of the Contact Notes for exclusions for installation times.
12. Bid Item 660-2-102-A1 **Furnish & Install** loop assembly Type B with a dimension of 6' X 6'. See PBC Signal Installation Standards and Details-2015 Sheet T-11, T-11.1 and T-12.
13. Bid Item 660-2-102-A2 **Furnish & Install** an additional loop assembly Type B with a dimension of 6' X 6'. See PBC Signal Installation Standards and Details-2015 Sheet T-11, T-11.1 and T-12. **(Used in conjunction with Item 660-2-102-A1, for first loop on the approach)**

14. Bid Item **660-2-106-B1** **Furnish & Install** Loop Assembly Type F with width of 6' and a longitudinal dimension of 26'. See PB Signal Installation Standards and Details-2015 Sheet T-11 and T-11.1, and T-12.
 15. Bid Item **660-2-106-B2** **Furnish & Install** an additional Loop Assembly Type F with width of 6' and a longitudinal dimension of 26'. See PB Signal Installation Standards and Details-2015 Sheet T-11 and T-11.1, and T-12. **(Used in conjunction with Item 660-2-102-B1 for first loop on the approach)**
 16. Bid Item **660-2-106-C1** **Furnish & Install** refers to Loop Assembly Type F with width of 6' and a longitudinal dimension of 46'. See PB Signal Installation Standards and Details-2015 Sheet T-11 and T-11.1, and T-12.
 17. Bid Item **660-2-106-C2** **Furnish & Install** an additional Loop Assembly Type F with width of 6' and a longitudinal dimension of 46'. See PB Signal Installation Standards and Details-2015 Sheet T-11 and T-11.1, and T-12. **(Used in conjunction with Item 660-2-102-C1 for first loop on the approach)**
6. **INVOICING AND PAYMENT**

The Contractor shall submit only one invoice per job. Partial invoicing may be allowed at the discretion of the Engineer. Palm Beach County Traffic Division will review the invoices and issue a payment authorization for each of the Partial and Final invoices. The final payment authorization will be issued only after the final inspection of the job has been completed and approved by the County designated engineer. The total project cost in the final invoice shall not exceed the initial cost estimate of the job listed in the bid-tab associated with the job work authorization and the cost of the change orders. All change orders shall be signed by the County designated engineer.

Attachment "A"

Loop Inspection

Intersection Name: _____ Date: _____

Intersection #: _____ Tech: _____

Approach Needs Repair Uh Reading Comments

Visual				
#1				
#2				
#3				
#4				
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#25				



630-2-XXX

Your communication partner.

Blue Diamond Industries, LLC is an agile manufacturing and services company committed to helping our customers with innovative solutions. We offer quality construction products and installation for outside plant construction and broadband communication networks. Operations include the manufacture of Blue Diamond HDPE innerduct, toneable duct and aerial duct. We also have a variety of HDPE accessories and underground vaults. Blue Diamond is also a representative of Moore Commercial Coatings for high quality communication enclosures.

Underground Construction Products.

High Density Polyethylene (HDPE) innerduct and conduit products provide security and protection to fiber optic and coaxial networks, the communication lifelines. Underground vault structures allow access for inspection, identification, expansion and maintenance of these communication highways.

Our tremendous growth in plastics and underground products is supported by the most progressive, versatile and technologically advanced production equipment available. Our "Blue Diamond" innerduct protects many of the largest fiber optic networks in the United States.

Corporate Headquarters:

Blue Diamond Industries, LLC • 841 Corporate Drive, Suite 201 • Lexington, KY 40503
859-224-0415 • 859-224-0543 fax
www.bdi ky.com

1

3.0 Materials:

- 3.1 The innerduct shall be extruded from virgin High Density Polyethylene (HDPE) resin, in accordance to the requirements of ASTM D3350 with cell classification 345440C.
- 3.2 Density, melt flow, tensile strength at yield, and environmental stress crack shall conform to the values listed in ASTM D3350, except as noted below.
- 3.3 Adequate stabilization shall be added during the manufacturing process to protect the polyethylene against thermal and UV degradation throughout the projected lifespan of the finished product.

4.0 Dimensions:

- 4.1 The innerduct shall be SDR _____, SIDR _____, Schedule 40 or Schedule 80, and conform to the dimensions as outlined in Table _____ or ASTM D3035.

5.0 Identification and Marketing:

- 5.1 Innerduct shall be permanently marked with a _____ (1) laser ink imprinter, or (2) heat embossed white lettering, which shall be marked in a position 90 degrees to any stripes specified.
- 5.2 The base colors of the pipe shall be _____
- 5.3 (0, 1, 2, 3, or 4) 5mm stripes, colored _____ shall be extruded onto the pipe at 90 degrees to the printing and 180 degrees from each other.
- 5.4 Marking shall include the owners name _____, ASTM and SDR designation, diameter and size. Additionally, a sequential length mark of _____ shall show length of the innerduct.
- 5.5 Innerduct shall be marked so that date of manufacture, shift and lot of resin can be identified and referenced to certifications and quality control test results.

6.0 Quality Assurance:

- 6.1 Manufacturer shall provide certification of the properties as specified above.
- 6.2 In addition to continuous in process inspection and control, batch samples will be checked for finish, print quality, dimensions and ovality.
- 6.3 The above tests are in addition to the resin requirements as outlined in ASTM D3350.
- 6.4 All reels will be marked and labeled with customer purchase order, project name, or other information for tracking and receiving.

Polyethylene SDR 13.5: Meets material and dimensional requirements of ASTM F2160.

Nominal Duct Size	Outside Diameter	Wall Thickness	Inside Diameter	Minimum Unsupported Bend Radius	Safe Working Pull Strength	Weight Per 1000 Ft.
1/2"	.840" ± .004"	.062" + .020"	.696"	10"	400 lbs.	72 lbs.
3/4"	1.050" ± .004"	.078" + .020"	.874"	12"	650 lbs.	110 lbs.
1"	1.315" ± .005"	.097" + .020"	1.101"	14"	1,050 lbs.	166 lbs.
1 1/4"	1.660" ± .005"	.123" + .020"	1.394"	18"	1,650 lbs.	264 lbs.
1 1/2"	1.900" ± .008"	.141" + .020"	1.599"	20"	2,150 lbs.	343 lbs.
2"	2.375" ± .008"	.176" + .021"	2.002"	26"	3,400 lbs.	531 lbs.
2 1/2"	2.875" ± .007"	.213" + .028"	2.424"	38"	5,000 lbs.	778 lbs.
3"	3.500" ± .008"	.258" + .031"	2.950"	48"	7,400 lbs.	1,153 lbs.
4"	4.500" ± .009"	.333" + .040"	3.793"	60"	12,200 lbs.	1,904 lbs.
6"	6.625" ± .011"	.491" + .059"	4.959"	67"	26,500 lbs.	4,130 lbs.

Polyethylene SDR 11: Meets material and dimensional requirements of ASTM F2160.

Nominal Duct Size	Outside Diameter	Wall Thickness	Inside Diameter	Minimum Unsupported Bend Radius	Safe Working Pull Strength	Weight Per 1000 Ft.
1/2"	.840" ± .004"	.078" + .020"	.667"	10"	500 lbs.	85 lbs.
3/4"	1.050" ± .004"	.095" + .020"	.839"	12"	800 lbs.	130 lbs.
1"	1.315" ± .005"	.120" + .020"	1.056"	14"	1,250 lbs.	200 lbs.
1 1/4"	1.660" ± .005"	.151" + .020"	1.338"	18"	2,000 lbs.	314 lbs.
1 1/2"	1.900" ± .008"	.173" + .021"	1.534"	20"	2,600 lbs.	408 lbs.
2"	2.375" ± .008"	.216" + .026"	1.917"	26"	4,100 lbs.	639 lbs.
2 1/2"	2.875" ± .007"	.261" + .031"	2.321"	38"	6,000 lbs.	936 lbs.
3"	3.500" ± .008"	.318" + .038"	2.825"	48"	8,900 lbs.	1,367 lbs.
4"	4.500" ± .009"	.408" + .048"	3.633"	60"	14,700 lbs.	2,293 lbs.
6"	6.625" ± .011"	.602" + .072"	4.724"	67"	31,900 lbs.	4,971 lbs.

3-2

4

7-4

4

Polyethylene Schedule 40: Meets NEMA TC-7.

Nominal Duct Size	Outside Diameter	Wall Thickness	Inside Diameter	Minimum Unsupported Bend Radius	Safe Working Pull Strength	Weight Per 1000 Ft.
1/2"	.840" ± .004"	.119" ± .010"	.602"	10"	700 lbs.	112 lbs.
3/4"	1.050" ± .004"	.123" ± .010"	.804"	12"	900 lbs.	148 lbs.
1"	1.315" ± .005"	.143" ± .010"	1.029"	14"	1,375 lbs.	218 lbs.
1 1/4"	1.660" ± .005"	.150" ± .010"	1.360"	18"	1,875 lbs.	295 lbs.
1 1/2"	1.900" ± .006"	.155" ± .010"	1.590"	20"	2,225 lbs.	352 lbs.
2"	2.375" ± .006"	.164" ± .010"	2.047"	26"	3,000 lbs.	472 lbs.
2 1/2"	2.875" ± .007"	.215" ± .012"	2.445"	38"	4,775 lbs.	744 lbs.
3"	3.500" ± .008"	.229" ± .013"	3.042"	48"	6,250 lbs.	974 lbs.
6"	6.625" ± .011"	.297" ± .017"	6.031"	67"	15,283 lbs.	2,368 lbs.

*Innerduct rated SDR 7, 9, 9.3, 15.5, 17, 21 and NEMA 5CH80 also available.

Polyethylene SIDR 9: Meets material and dimensional requirements of ASTM D2239.

Nominal Duct Size	ASTM Inside Diameter	Minimum Wall	ASTM Tolerance	Standard Outside Diameter	Weight Per 1000 Ft.
3/4" SIDR 9	0.824	0.092	0.020	1.027	122 lbs.
1" SIDR 9	1.049	0.117	0.020	1.302	183 lbs.
1 1/4" SIDR 9	1.380	0.153	0.020	1.707	328 lbs.
1 1/2" SIDR 9	1.610	0.178	0.021	1.989	444 lbs.
2" SIDR 9	2.067	0.230	0.028	2.554	732 lbs.

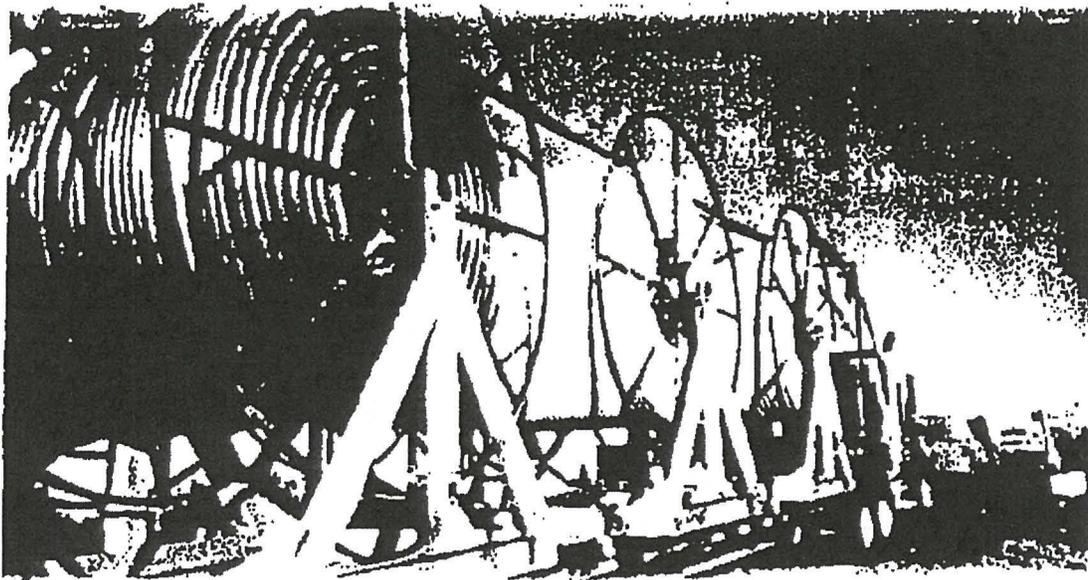
Polyethylene SIDR 11.5: Meets material and dimensional requirements of ASTM D2239.

Nominal Duct Size	ASTM Inside Diameter	Minimum Wall	ASTM Tolerance	Standard Outside Diameter	Weight Per 1000 Ft.
3/4" SIDR 11.5	0.824	0.072	0.020	0.987	96 lbs.
1" SIDR 11.5	1.049	0.091	0.020	1.251	151 lbs.
1 1/4" SIDR 11.5	1.380	0.120	0.020	1.640	255 lbs.
1 1/2" SIDR 11.5	1.610	0.140	0.020	1.910	343 lbs.
2" SIDR 11.5	2.067	0.180	0.022	2.448	559 lbs.
2 1/2" SIDR 11.5	2.469	0.215	0.026	2.924	798 lbs.
3" SIDR 11.5	3.068	0.267	0.032	3.634	1,232 lbs.
4" SIDR 11.5	4.026	0.350	0.042	4.768	2,122 lbs.

Polyethylene SIDR 15: Meets material and dimensional requirements of ASTM D2239.

Nominal Duct Size	ASTM Inside Diameter	Minimum Wall	ASTM Tolerance	Standard Outside Diameter	Weight Per 1000 Ft.
3/4" SIDR 15	0.824	0.062	0.020	0.968	84 lbs.
1" SIDR 15	1.049	0.070	0.020	1.209	117 lbs.
1 1/4" SIDR 15	1.380	0.092	0.020	1.584	187 lbs.
1 1/2" SIDR 15	1.610	0.107	0.020	1.845	264 lbs.
2" SIDR 15	2.067	0.138	0.020	2.363	426 lbs.
2 1/2" SIDR 15	2.469	0.165	0.020	2.818	600 lbs.
3" SIDR 15	3.068	0.205	0.025	3.502	926 lbs.
4" SIDR 15	4.026	0.268	0.032	4.595	1,595 lbs.

Product listed SDR 33, 41 and 49 also available



Reel Capacities.

Pipe Size

reel size = flange x traverse x drum

1/2"	72x42x30	72x48x24						Reels per Truckload	
	17,000	20,000						72"	16
3/4"	72x48x24	84x48x24						84"	14
	10,000	18,000						96"	12
1"	72x48x30	84x48x30	96x38x30	96x48x30				102"	11
	7,000	10,000	11,000	14,000				114"	8
1 1/4"	72x48x30	84x48x30	96x38x30	96x48x30				120"	8
	4,800	6,200	7,500	8,600					
1 1/2"	72x48x30	84x48x30	96x38x30	96x48x30	102x42x30	114x42x30			
	3,000	4,500	5,000	6,000	7,200	8,000			
2"	72x48x42	84x48x42	96x38x42	96x42x42	96x48x42	102x48x42	114x48x42		
	1,800	2,500	3,000	3,500	3,750	4,500	6,000		
2 1/2"	96x48x48	102x48x48	120x42x54						
	2,000	2,500	3,500						
3"	84x48x64	96x42x60	96x48x64	120x42x60					
	1,000	1,000	1,200	2,000					
4"	96x48x72	102x48x72	114x48x72	120x48x72					
	550 SDR	500 SDR	750 SDR	700 SDR	1000 SDR	900 SDR	1250 SDR	1100 SDR	
5"	102x48x78	114x48x78	120x48x78						
	400	600	750						
6"	120x48x84								
	400								

Innerduct.com

"The innerduct Specialists!"

1-800-332-8114



630-2-XXX

We Have all of your Innerduct Needs IN STOCK!!

Our High Density Polyethylene (HDPE) Innerduct is made of **100% Virgin Resin**. The Innerduct can be manufactured in almost any color and has **outstanding UV protection**. Orange, Black, Red, Blue and Green are the most common conduit colors. We can provide **multiple duct and colors on one reel** to maximize space in a trench. All of our Innerduct is sequentially marked every foot and can be purchased with or without pull tape. The Innerduct has a **silicore lining** on the inside to **prevent cable drag friction**. SDR wall thicknesses are contingent on the type of projects projected. Schedule 40, SDR 15.5, SDR 13.5, SDR 11 and SDR 9 are all standard wall thickness.

Corrugated and Plenum Rated HDPE

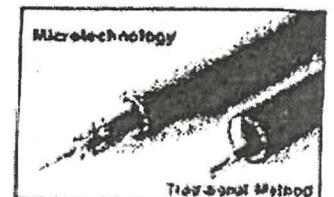
Duct is also one of our specialties. Our Plenum meets UL(910) standards for the national electrical code, article 770, and satisfies UL-2024 standards for low smoke and flame propagation. The Plenum and corrugated are offered in 1" and 1 1/4" with pre-installed pull tape for easy cable installation.

Multiple colors per reel and slitDuct are also available. Please see the [specifications](#) for more information.



MicroDuct - micro, we have the solution

Our newest product "MicroDuct". We have the solution to maximize your occupied duct systems and increase your duct capacity. Call us for MicroDuct sizes available and our wide variety of MicroDuct accessories and installation equipment.



We are the complete source for Innerduct accessories, MicroDuct accessories, fusion, pulling, and blowing...We are ready to take your order! Check out our [accessories](#) page for information about the products listed above..

SWIVEL



COUPLING



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MICRODUCT



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630-2-XXX

INNERDUCT

Test Results

Properties	Test Method	Value	
Smoke peak optical	UL-2024	0.02	
Smoke average optical density	UL-2024	0.01	
Max. flame spread distance(ft.)	UL-2024	1.5'	630-2-XXX
Max flame temperature	UL-2024	554	

Corrugated HDPE

Premier Corrugated HDPE is manufactured from High Density Polyethylene (HDPE) and is intended to be placed inside of existing Innerduct. It's ideal for pulls under 1000 ft. and is designed to reduce surface contact when pulling cable. This lightweight product offers maximum flexibility, and allows for installation in small or restricted areas. Corrugated duct is available in 1" and 1 1/4". The standard color is orange and is offered in a variety of other colors. Sequential marked footage is standard. Cust options, such as multiple colors per reel and Slit Duct are also available.

Accessories

- Universal Aluminum Couplers (screw-on type: sizes 1" thru 2")
- Expansion Type Duct Plugs (can be used with pull tape)

Corrugated HDPE Reels

Size	Color	Part No.	Nominal I.D.	Nominal O.D.	Pull Tape	Reel Size	Reel Length(ft.)
1"	Orange	PEC-100T-1000	1.049"	1.365"	900 lb	48-30-24	1000
1"	Orange	PEC-100T-1800	1.049"	1.365"	900 lb	48-30-24	1800
1"	Orange	PEC-100T-2500	1.049"	1.365"	900 lb	66-41-24	2500
1"	Orange	PEC-100T-5000	1.049"	1.365"	900 lb	72-41-24	5000
1"	Orange	PEC-100T-6500	1.049"	1.365"	900 lb	72-45-24	6500
1"	Orange	PEC-100T-8000	1.049"	1.365"	900 lb	82-41-24	8000
1/4"	Orange	PEC-125T-1000	1.250"	1.550"	900 lb	48-30-24	1000
1/4"	Orange	PEC-125T-2500	1.250"	1.550"	900 lb	66-41-24	2500
1/4"	Orange	PEC-125T-4000	1.250"	1.550"	900 lb	72-41-24	4000
1/4"	Orange	PEC-125T-5000	1.250"	1.550"	900 lb	72-41-24	5000
1/4"	Orange	PEC-125T-6000	1.250"	1.550"	900 lb	82-41-24	6000
1/4"	Orange	PEC-125T-6500	1.250"	1.550"	900 lb	82-41-24	6500

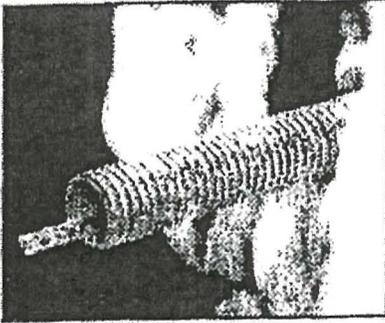
Corrugated HDPE Coils

Size	Color	Part No.	Nominal I.D.	Nominal O.D.	Pull Tape	Coil Length(ft.)
1"	Orange	PEC-100T-250	1.049"	1.365"	900 lb	250
1"	Orange	PEC-100T-500	1.049"	1.365"	900 lb	500
1 1/4"	Orange	PEC-125T-250	1.250"	1.550"	900 lb	250
1 1/4"	Orange	PEC-125T-500	1.250"	1.550"	900 lb	500

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designed and maintained by 

630-2-XXX



Riser-Gard is a nonmetallic flexible raceway for use in Riser and General Purpose applications. Riser-Gard is UL Listed and is available with tape pre-installed.

Riser-Gard complies with the UL 2024 Standard for Riser Applications for optical fiber/communications raceways.

Riser-Gard is listed to the National Electrical Code per Articles 770 and 800 for Riser and General Purpose optical fiber/telecommunication applications. Riser-Gard is suitable for use in vertical runs in a shaft or between floors, as well as areas other than the plenum (cables installed must be of suitable rating for the application.)

UL Listed to 2024	Test Method	Maximum Value
Maximum Flame Propagation	UL 2024	6.0 ft.
Maximum Air Temperature at 12 ft.	UL 2024	372°F

• Storage -4°F - 158°F • Handling -4°F - 104°F

Standard Stock - Reels

	Color	Part No.	Nom. I.D.	Nom. O.D.	Full Tape	Min. Bend Radius	Reel Size (L x W)	Reel Type	Reel Length	Reel Wt. (lbs.)	Wt. per 100 ft. (lbs.)
3/4"	Orange	DE4X1-1000	.83	1.05	Empty	6"	36" x 24"	W	1000	35	9
	Orange	DE4X1-1000S	.83	1.05	Empty	6"	36" x 24"	W	1000	35	9
	Orange	DF4X1C-500R	1.03	1.315	900 lb.	6"	48" x 32"	W	500	70	14
	Orange	DF4X1C-1000	1.03	1.315	900 lb.	6"	48" x 32"	W	1000	35	14
	Orange	DF4X1-1500	1.03	1.315	Empty	6"	48" x 32"	W	1500	90	14
1"	Orange	DF4X1C-1500	1.03	1.315	900 lb.	6"	48" x 32"	W	1500	90	14
	Orange	DF4X1C-2700	1.03	1.315	900 lb.	6"	48" x 48"	W	2700	105	14
	Orange	DF4X1C-5200	1.03	1.315	900 lb.	6"	65" x 46"	W	5200	385	14
	Orange	DF4X1C-7000	1.03	1.315	900 lb.	6"	72" x 44"	S	7000	98	14
	Orange	DF4X1C-9400	1.03	1.315	900 lb.	6"	84" x 44"	S	9400	134	14
	Orange	DF4X1-1500S	1.03	1.315	Empty	6"	48" x 30"	W	1500	90	14
	Orange	DG4X1-900	1.38	1.66	900 lb.	7"	48" x 30"	W	900	90	17
1 1/4"	Orange	DG4X1C-900	1.38	1.66	900 lb.	7"	48" x 30"	W	900	90	17
	Orange	DG4X1-900S	1.38	1.66	Empty	7"	48" x 30"	W	900	90	17
	Orange	DG4X1C-500R	1.38	1.66	900 lb.	7"	48" x 32"	W	500	70	17
	Orange	DG4X1C-1600	1.38	1.66	900 lb.	7"	48" x 48"	W	1600	105	17
	Orange	DG4X1C-3200	1.38	1.66	900 lb.	7"	65" x 48"	W	3200	385	17
1 1/2"	Orange	DG4X1C-4500	1.38	1.66	900 lb.	7"	72" x 44"	S	4500	98	17
	Orange	DH4X1C-1200	1.57	1.90	900 lb.	8 1/4"	48" x 48"	W	1200	105	22
	Orange	DH4X1C-4500	1.57	1.90	900 lb.	8 1/4"	84" x 44"	S	4500	134	22
	Orange	DH4X1-750S	1.57	1.90	Empty	8 1/4"	48" x 30"	W	750	90	22
2"	Orange	DJ4X1C-700	2.02	2.375	900 lb.	9 1/2"	48" x 48"	W	700	105	26
	Orange	DJ4X1C-2800	2.02	2.375	900 lb.	9 1/2"	96" x 44"	S	2800	146	26
	Orange	DJ4X1-500S	2.02	2.375	Empty	9 1/2"	48" x 30"	W	500	90	26

W = Wood
S = Steel

ENDOT INDUSTRIES

DUCT AND INNERDUCT

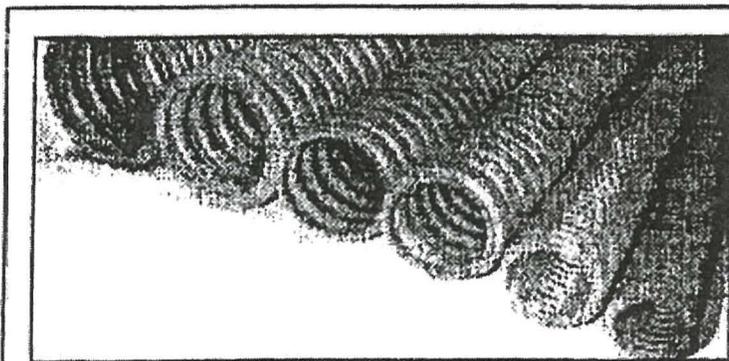
TECHNICAL SPECIFICATIONS

Endocor

630-2-XXX

CORRUGATED DUCT AND INNERDUCT

Designed specifically for fiber optic cables



FEATURES:

- Sizes from 1/2" through 2"
- Flexible & Lightweight for ease of handling
- Available in solid colors or stripes
- Available with multiple lengths/colors per reel
- Special high tensile strength versions available
- Available pre-threaded with pull line
- Available as Split Duct for covering cables in place

ENDOCOR'S corrugated design provides high tensile strength with low weight per foot for ease of handling and significantly longer put ups that can be obtained with smoothwall or ribbed innerduct.

ENDOCOR provides the lowest cable pulling friction of any innerduct design because of reduced surface area and no reel memory eliminating spiraling of the innerduct in the conduit.

ENDOCOR SPLIT DUCT is produced from Low Density Polyethylene for ease of use and superior flexibility.

PART NO.	NOMINAL SIZE	O.D.	I.D.
ICE 500	1/2"	0.850"	0.662"
ICE 750	3/4"	1.116"	0.870"
ICE 1050	1"	1.400"	1.050"
ICE 1250	1 1/4"	1.600"	1.250"
ICE 1500	1 1/2"	1.900"	1.500"
ICE 2000	2"	2.350"	1.900"

ENDOCOR PART NUMBER SYSTEM - One Selection from Each Column Creates a complete Product Part Number

EXAMPLE - Regular Corrugated 3/4", on a 48" Reel, 3/16" PP rope, Orange = ICE 075 22 21 02

PRODUCT	SIZE (ID)	REEL DIAMETER	PULL LINE	COLOR
ICE = corrugated	050 = 1/2"	21 = 34" wood	01 = empty	01 = black
	075 = 3/4"	22 = 48" wood	11 = 1250# kevlar/polyester	02 = orange
ICS = Split Duct	100 = 1"	23 = 78" wood	12 = 1800# kevlar/polyester	03 = green
	125 = 1 1/4"	24 = 84" wood	13 = 1000# polyester	04 = red
	150 = 1 1/2"	37 = 60" steel	14 = 1250# polyester	06 = blue
	200 = 2"	31 = 78" steel	15 = 1800# polyester	07 = white
		32 = 84" steel	17 = 900# kevlar	08 = gray
		33 = 96"x44" steel	21 = 3/16" PP rope	09 = custom
		34 = 96"x56" steel	22 = 1/4" PP rope	
		35 = 114" X 44" steel	31 = Cable In Conduit	

For product quantity per reel refer to Endot's reel capacity charts.

ENDOT INDUSTRIES, INC.

www.endot.com • e-mail: info@endot.com



CORPORATE HEADQUARTERS • 60 Green Pond Road, Rockaway, NJ 07866 • 800-443-6368 • FAX 973-625-4087
 MID-WEST OPERATIONS • 739 County Road 1, South Point, OH 45680 • 800-345-3990 • FAX 740-377-9844
 TENNESSEE OPERATIONS • 400 Bohannon Avenue, Greeneville, TN 37745 • 800-438-5851 • FAX 423-639-3722



ENDOT INDUSTRIES

100-44-ENDOT(443-8368)

PIPE AND TUBING . DUCT AND INNERDUCT

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docor

- Innerduct**
- Endocor
 - Endoguard
 - Cable Chase
 - Silt Duct
 - Enduct I.D Controlled
 - Enduct O.D Controlled
 - Enduct-ASTM D2447
 - Bore Duct

630-2-XXX

CORRUGATED DUCT AND INNERDUCT

Designed specifically for fiber optic cables

FEATURES:

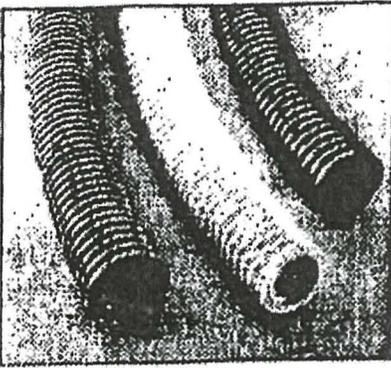
- Flexible
- Corrosion-resistant
- Corrugated for lowest possible coefficient of friction
- Lightweight yet highly crush resistant
- No Memory for ease of handling in all weather
- Available in solid colors or stripes
- Standard and custom reel lengths
- Available with multiple lengths and colors on one reel
- Sizes from 1/2" through 2"
- Special high tensile versions available
- Available pre-threaded with a variety of pull tapes (optional)

ENDOCOR'S corrugated design provides high tensile strength with low weight per foot for ease of handling and significantly longer pulls than can be obtained with smoothwall or ribbed innerduct.

ENDOCOR provides the lowest cable pulling friction of ANY innerduct design because of reduced surface area and no reel memory which eliminates spiraling in the conduit.

ENDOCOR 1050 and 1250 can be coupled with the easy to use, low cost ENDOCLIP for a fast joint that is stronger than the innerduct itself.

Part No.	SIZE	Nominal O.D.	Innerduct I.D.
500	1/2" (13mm)	0.850" (22mm)	0.652" (17mm)
750	3/4" (19mm)	1.116" (28mm)	0.870" (22mm)
1050	1" (25mm)	1.400 (35mm)	1.050" (27mm)
1250	1 1/4" (32mm)	1.600 (41mm)	1.250" (32mm)
1500	1 1/2" (38mm)	1.900" (48mm)	1.500" (36mm)
2000	2" (51mm)	2.350" (60mm)	1.900" (48mm)



Flex-Plus Blue ENT is a nonmetallic flexible raceway for use in walls, floors, and non-plenum ceilings. It's lightweight, hand bendable, and free from sharp edges, which reduces installation time and saves money.

Flex-Plus Blue ENT is UL Listed and CSA certified and is recognized by Article 362 of the 2002 NEC. It is also recognized by ICC, BOCA, SBCCI, and ICBO for having a one and two hour fire rated wall assembly and up to a three hour rated floor/ceiling assembly.

Features:

- For use in buildings in accordance with Article 362 of the 2002 NEC
- 1/2" through 2" sizes
- Available in three colors: Red, Yellow, and Blue
- Outside Diameters meet IPS Dimensions
- Storage -4°F – 158°F
- Handling -4°F – 104°F

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Standard Stock - Reels

Color	Part No.	Nom. I.D.	Nom. O.D.	Pull Tape	Min. Bend Radius	Reel Size (F x W)	Reel Type	Reel Length	Reel Wt. (lbs.)	Wt. per 100 ft. (lbs.)
Blue	12005AK-001	.56	.84	Empty	6"	36" x 24"	W	1500	40	10
Yellow	12005AY-001	.56	.84	Empty	6"	36" x 24"	W	1500	40	10
Red	12005AR-001	.56	.84	Empty	6"	36" x 24"	W	1500	40	10
Blue	12007AA-001	.76	1.05	Empty	6"	36" x 24"	W	1000	40	14
Yellow	12007AY-001	.76	1.05	Empty	6"	36" x 24"	W	1000	40	14
Red	12007AR-001	.76	1.05	Empty	6"	36" x 24"	W	1000	40	14
Blue	12008-750	1.00	1.315	Empty	6"	36" x 24"	W	750	40	20
Yellow	12008Y-750	1.00	1.315	Empty	6"	36" x 24"	W	750	40	20
Red	12008R-750	1.00	1.315	Empty	6"	36" x 24"	W	750	40	20
Blue	12009-750	1.402	1.66	Empty	7"	48" x 32"	W	750	90	19
Blue	12010-750	1.554	1.90	Empty	8 1/4"	48" x 32"	W	750	90	39
Blue	12011-500	2.030	2.375	Empty	9 1/2"	48" x 32"	W	500	90	32
Red	12011R-500	2.030	2.375	Empty	9 1/2"	48" x 32"	W	500	90	32

W = Wood

Standard Stock - Coils

Color	Part No.	Nom. I.D.	Nom. O.D.	Pull Tape	Min. Bend Radius	Coil Length (ft.)	Wt. per 100 ft. (lbs.)
Blue	12005-200	.56	.84	Empty	6"	200	10
Yellow	12005Y-200	.56	.84	Empty	6"	200	10
Red	12005R-200	.56	.84	Empty	6"	200	10
Blue	12007-100	.76	1.05	Empty	6"	100	14
Yellow	12007Y-100	.76	1.05	Empty	6"	100	14
Red	12007R-100	.76	1.05	Empty	6"	100	14
Blue	12008-100	1.00	1.315	Empty	6"	100	22
Yellow	12008Y-100	1.00	1.315	Empty	6"	100	22
Red	12008R-100	1.00	1.315	Empty	6"	100	22

STEEL CONDUIT PRODUCTS

SIC INFORMATION • PRODUCERS • Q&A • NEWS/INFORMATION • RESOURCES • CODE CORNER

Dimensional Data

Listed below

630-2-XXX

BRIDGE MOUNT

BRIDGE MOUNT

JACK & BORE

BRIDGE MOUNTING AND JACK AND BORE UNDER R.R.

Standard Rigid Conduit (GRC) - Weights and Dimensions

Trade Size	Nominal Wt. Per 100 Ft. (30.5M)		Nominal Outside Diameter		Nominal Wall Thickness		Quantity In Primary Bundle		Master Bundles Approx.					
	lb.	kg	in.	mm	in.	mm	ft.	m	ft.	m	lb.	kg	cu ft	cu m
16	82	37.2	0.840	21.3	0.104	2.60	100	30.5	2500	762.5	2050	929.7	20.8	0.59
21	109	49.4	1.050	26.7	0.107	2.70	50	15.2	2000	610.0	2180	988.7	24.3	0.69
27	161	73.0	1.315	33.4	0.126	3.20	50	15.2	1250	381.3	2013	912.9	21.7	0.61
35	218	98.9	1.660	42.2	0.133	3.40	-	-	900	274.5	1962	889.8	23.3	0.66
41	263	119.3	1.900	48.3	0.138	3.50	-	-	800	244.0	2104	954.2	27.8	0.79
53	350	158.7	2.375	60.3	0.146	3.70	-	-	600	183.0	2100	952.4	33.8	0.96
63	559	253.5	2.875	73.0	0.193	4.90	-	-	370	112.9	2068	937.9	29.2	0.83
78	727	329.7	3.500	88.9	0.205	5.20	-	-	300	91.5	2181	989.1	31.3	0.89
91	880	399.1	4.000	101.6	0.215	5.50	-	-	250	76.3	2200	997.7	34.7	0.98
103	1030	467.1	4.500	114.3	0.225	5.70	-	-	200	61.0	2060	934.2	33.7	0.95
129	1400	634.9	5.563	141.3	0.245	6.20	-	-	150	45.8	2100	952.4	41.3	1.17
155	1840	834.5	6.625	168.3	0.266	6.80	-	-	100	30.5	1840	834.5	38.9	1.10

Standard Metallic Tubing (EMT) - Weights and Dimensions

Trade Size	Nominal Wt. Per 100 Ft.	Nominal Outside Diameter	Nominal Wall Thickness	Quantity In	Master Bundles
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(30.5M)

Bundle Quantity Wt. Volume

Metric	lb.	kg	in.	mm	in.	mm	ft.	m	ft.	mm	lb.	kg	cu ft	cu m
16	30	13.6	0.706	17.9	0.042	1.07	100	30.5	7000	2135.0	2100	952.4	28.7	0.81
21	46	20.9	0.922	23.4	0.049	1.25	100	30.5	5000	1525.0	2300	1043.1	35.6	1.01
27	67	30.4	1.163	29.5	0.057	1.45	100	30.5	3000	915.0	2010	911.6	33.7	0.95
35	101	45.8	1.510	38.4	0.065	1.65	50	15.2	2000	610.0	2020	916.1	35.0	0.99
41	116	52.6	1.740	44.2	0.065	1.65	50	15.2	1500	457.5	1740	789.1	34.2	0.97
53	148	67.1	2.197	55.8	0.065	1.65	-	-	1200	366.0	1776	805.4	46.7	1.32
63	216	98.0	2.875	73.0	0.072	1.83	-	-	610	186.1	1318	597.7	41.5	1.18
78	263	119.3	3.500	88.9	0.072	1.83	-	-	510	155.6	1341	608.2	48.9	1.38
91	349	158.3	4.000	101.6	0.083	2.11	-	-	370	112.9	1291	585.5	48.6	1.38
103	393	178.2	4.500	114.3	0.083	2.11	-	-	300	91.5	1179	534.7	48.3	1.37

OR RISERS ON POLES.

Intermediate Metal Conduit (IMC) - Weights and Dimensions

Trade Size	Nominal Wt. Per 100 Ft. (30.5M)	Nominal Outside Diameter	Minimum Wall Thickness	Quantity In Primary Bundle	Master Bundles Approx. Quantity	Wt.	Volume
16	62	28.1	0.815	20.7	0.070	1.80	100 30.5 3500 1067.5 2170 984.1 26.7 0.76
21	84	38.1	1.029	26.1	0.075	1.90	50 15.2 2500 762.5 2100 952.4 30.7 0.87
27	119	54.0	1.290	32.8	0.085	2.20	50 15.2 1700 518.5 2023 917.5 30.7 0.87
35	158	71.7	1.638	41.6	0.085	2.20	- - 1350 411.8 2133 967.3 36.3 1.03
41	194	88.0	1.883	47.8	0.090	2.30	- - 1100 335.5 2134 967.8 38.2 1.08
53	256	116.1	2.360	59.9	0.095	2.40	- - 800 244.0 2048 928.8 45.8 1.30
63	441	200.0	2.857	72.6	0.140	3.50	- - 370 112.9 1632 740.1 29.2 0.83
78	543	246.3	3.476	88.3	0.140	3.50	- - 300 91.5 1629 738.8 31.3 0.89
91	629	285.3	3.971	100.9	0.140	3.50	- - 240 73.2 1510 684.8 34.7 0.98
103	700	317.5	4.466	113.4	0.140	3.50	- - 240 73.2 1680 761.9 42.8 1.21

630-2-XXX

1. The Steel Tube Institute *Guidelines for Installing Steel Conduit Tubing* General Product Information addresses this question. [Click here to link to the section containing a downloadable pdf file.](#)

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2. Raceway Articles were renumbered in the 2002 NEC®. The following list shows the Article numbers that apply to IMC, RMC, and EMT, followed by the former Article number in parentheses.

IMC NEC® Article 342 (345)

RMC NEC® Article 344 (346)

EMT NEC® Article 358 (348)

[Back to Questions](#)

3. The following standards cover steel tubing (EMT)/conduit (RMC & IMC). The American Society for Testing Materials (ASTM) does not publish a standard whose scope specifically covers steel electrical conduit and couplings. Therefore, ASTM specifications do not apply to metal conduit for use as a metal raceway for the installation of wires and cables in accordance with the *National Electrical Code*®.

Electrical Metallic Tubing (EMT) is Listed to Standard for Electrical Metallic Tubing - Steel, UL 797 and produced to American National Standards Institute - ANSI C80.3

Rigid Metal Conduit - Steel (RMC) is Listed to Standard for Electrical Rigid Metal Conduit - Steel, UL 6 and produced to American National Standards Institute - ANSI C80.1

Intermediate Metal Conduit - Steel (IMC) is Listed to Standard for Electrical Intermediate Metal Conduit - Steel, UL 1242 and produced to American National Standards Institute - ANSI C80.6.

Additional information on the titles and designations of standards requirements that have been used for the investigation of conduits in a specific category can be found in the Underwriters Laboratories Inc.®, *General Information for Electrical Equipment Directory*. The UL product category for EMT is DYIX, for RMC is DYIX, and for IMC is DYBY.

Federal government, in an effort to reduce costs

• Benefits of rigid conduit

Types of steel conduit

Applications

• Dimensional Data

Technical Contacts

Free Downloads

Types of Steel Conduit

(Product Definitions)

630-2-XXX

Steel Conduit and Tubing

Steel conduit has been in use as a "raceway system" for electrical conductors since the early 1900s. The wall thickness and strength of steel make Rigid Steel Conduit, Intermediate Metal Conduit and Electrical Metallic Tubing the wiring methods recognized as providing the most mechanical protection to the enclosed wire conductors. Additionally, a properly installed metal conduit system is recognized by the National Electrical Code® (NEC®) as an equipment grounding conductor. There are three basic types of steel conduit in use today:

Rigid Metal Conduit — RMC (ferrous metal)

Rigid metal conduit (RMC) is a listed threaded metal raceway of circular cross section with a coupling which can be either a standard straight tapped conduit coupling or the integral type. Threads on the uncoupled end are covered by industry color-coded thread protectors which protect the threads, keep them clean and sharp, and aid in trade size recognition. Rigid metal conduit is available in trade sizes 1/2 through 6. Thread protectors for trade sizes 1, 2, 3, 4, 5, and 6 are color-coded blue, trade sizes 1/2, 1 1/2, 2 1/2, 3 1/2 are black, and trade sizes 3/4 and 1-1/4 are red. The nominal finished length of RMC with coupling is 10 feet.

Rigid metal conduit can have a primary coating of zinc, a combination of zinc and organic coatings, or a nonmetallic coating (such as PVC). Supplementary coatings can be applied to all three where additional corrosion protection is needed.



(NOTE: Contact suppliers with product-specific questions).

Rigid metal conduit is the heaviest-weight and thickest-wall steel conduit. Where galvanized by the hot-dip process, it has a coating of zinc on both the inside and outside. Electro-galvanized rigid has a coating of zinc on the exterior only, with approved corrosion resistant organic coatings on the interior. Rigid with alternate corrosion protection generally has organic coatings on both the exterior and the interior surfaces. Galvanized rigid metal conduit (RMC) is non-combustible and can be used indoors, outdoors, underground, concealed or exposed. Rigid metal conduit with coatings that are not zinc based may have temperature limitations which will be noted on the manufacturer's product label and may not be listed for use in environmental air spaces; consult manufacturers' listings and markings.

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Intermediate Metal Conduit — IMC (ferrous metal)

This product was developed in the 1970s. Intermediate Metal Conduit (IMC) is a listed threaded steel raceway of circular cross section with a coupling which can be either a standard straight-tapped conduit coupling or the integral type. Threads on the uncoupled end are covered by industry color coded thread protectors which protect the threads, keep them clean and sharp, and aid in trade size recognition. IMC is available in trade sizes 1/2 through 4. Thread protectors for trade sizes 1, 2, 3, 4, are color-coded orange; trade sizes 1/2, 1 1/2, 2 1/2, 3 1/2 are yellow; and trade sizes 3/4 and 1 1/4 are green. The nominal finished length of IMC *with coupling* is 10 feet.

IMC has a reduced wall thickness, when compared to RMC, and weighs about one-third less than RMC. The outside has a zinc based coating and the inside has an approved organic corrosion-resistant coating. IMC is interchangeable with galvanized RMC.

conduit. Both have threads with a 3/4-inch per foot taper; use the same couplings and fittings; have the same support requirements; and are permitted in the same locations.

Electrical Metallic Tubing — EMT (ferrous metal)

Electrical Metallic Tubing (EMT), also commonly called thin-wall, is a listed steel raceway of circular cross section which is unthreaded, and nominally 10 feet long. The outside corrosion protection is zinc based and the inside has an approved corrosion resistant organic coating. EMT with integral couplings is available in trade sizes 2 1/2 - 4. EMT is installed by use of set-screw or compression-type couplings and connectors. EMT is permitted to have an integral coupling which is comprised of an expanded, "belled" shape of tube on one end with set screws.

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PVC-Coated Steel Conduit (PVC)

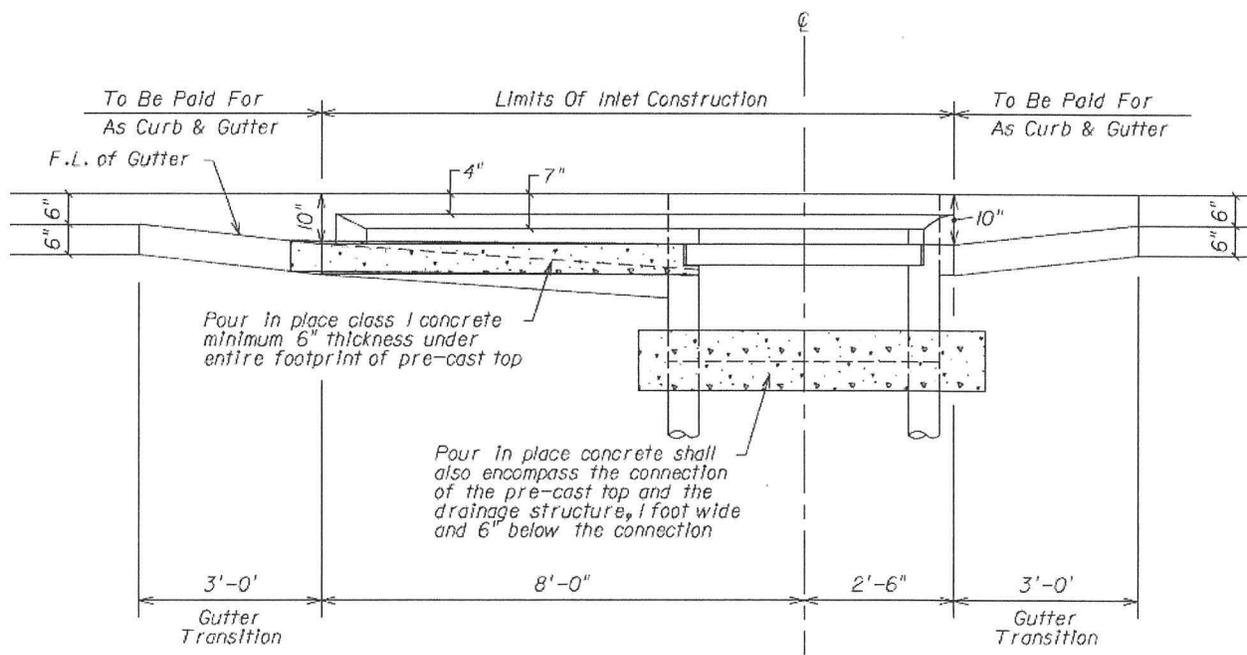
There are three types of PVC-coated conduit; couplings are supplied separately.

1. Primary PVC coating over bare steel which is a listed rigid conduit for environmentally suitable locations.
2. A PVC coating over listed galvanized steel conduit. This is a supplementary coating intended for added protection in severely corrosive locations.
3. A primary PVC coating over a supplementary coating of zinc. This is also intended for severely corrosive locations.

These PVC-coated raceways are generally installed as a system, which means the fittings, conduit bodies, straps, hangers, boxes, etc., are also coated. There are, however, installations where only a coated elbow is used in a galvanized conduit run, such as where emerging from the soil or concrete.

(NOTE: Manufacturers' instructions are very important when installing PVC coated products and

SPECIAL PROVISIONS



INLET TYPE 5

(Curb Inlet Top Type 6 Symmetrical with Left Half)

SUPPLEMENTAL CONCRETE AT DRAINAGE STRUCTURE TOP DETAIL

REQUEST FOR INFORMATION

RESPONSE TO CONTRACTOR RFI'S:

September 16, 2019

Siemens Industry, Inc.

Joshua M. Lippincott

Joshua.lippincott@siemens.com

QUESTIONS AND OR COMMENTS:

1. Liquidated Damages (LDs) for non-completion of work orders is mentioned, but Section 8-10.2 does not specify what the LDs will be. Can you please clarify?
2. Will permits be required from any entity other than Palm Beach County during the execution of this contract?
3. Is there a requirement that work under this contract be performed during night hours?
4. Can a conditional bid be submitted? Specifically, can a bid include a conditional provision that allows for withdrawal in the event the contract is awarded to multiple contractors?

RESPONSES:

1. See Section 8-10.2 of the FDOT Standard Specifications per page SS-1.
2. All loops work will be done within PBC maintenance jurisdiction. If any permits required, PBC will apply for permits.
3. Contractor will be allowed to work day or night as long as no work completed within restricted times as listed in the contract. All MOT requirements to be met for at all times.
4. No

TECHNICAL SPECIFICATIONS – DIVISION II SECTIONS 600 THROUGH 699

1. INTENT AND SCOPE-

The work detailed in these specifications consists of the installation and /or furnishing of traffic signal items, all according to the Florida Department of Transportation's (FDOT) Standard Specifications for Road and Bridge Construction dated 2017 (or later version) (SSRBC-2017), the Design Standards (English Units) FY 2016-17 (or later version) (DS-FY 2016-17), FDOT Mast Arm Assembly Standards (Index Nos. 17743, and 17745), the attached Notes and Palm Beach County (PBC) Traffic Signal Installation Standards and Details-2015 or later version. Where conflicts exist, the Notes and PBC-Typicals shall take precedence over FDOT standard specifications.

Installations shall be as shown on plans as presented to the Contractor at the commencement of each project in such amounts, to such locations, at such times as may be designated by the Director of Traffic or his duly appointed representative (Engineer).

All items are to be bid on a unit price basis to establish the price for use on work authorizations (purchase orders) for specific projects.

The Contractor should fully understand that the Board of County Commissioners does not hereunder, contract to do any specific amount of work during the contract period.

The locations of the traffic signal projects will vary, and may be at any point within the boundaries of Palm Beach County. The Contractor will not be expected to operate his equipment or personnel beyond the limits of Palm Beach County under this contract.

For further information, please contact the Director of Traffic at 561-684-4030.

2. REPRESENTATIVE OF THE DIRECTOR OF TRAFFIC

The Director of Traffic Division will appoint one or more representatives (an Engineer) to inspect equipment used under this contract, observe personnel employed, and note the general performance of the Contractor. Any authorization to revoke, alter, enlarge, or relax the conditions of these specifications will be at the discretion of the Engineer. The Engineer will have the authority to reject defective equipment, and report on inept personnel, and to suspend any work that is being improperly done, subject to the final decision of the Director of Traffic Division.

3. STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION

It is the intent of these Specifications that the FDOT Standard Specifications for Road and Bridge Construction dated 2017 (or later version) (DS-FY 2016-17) will be used as the basis for this contract except as amended herein. Such wording as, Department of Transportation and Personnel, is intended to be replaced with that wording which would provide proper terminology, thereby making such Standard Specifications and Special Provisions of Palm Beach County in conjunction with Palm Beach County's personnel.

Add the following to the end of Article "4-1 **Intent of Contract**" of the FDOT SSRBC-2017:
Included under

"The work covered by this Contract consists of the installation and/or furnishing and/or removal of traffic signal items.

No areas will be closed to traffic unless or until approved by the Engineer. During the period or periods that areas are closed to traffic, adequate provisions to control and/or detour traffic will be provided by the Contractor. Traffic control shall be in accordance with FDOT Traffic Control through Work Zones – Index 600 of the Design Standards, (FY-2016-17) for street and highway construction, maintenance, and utility operations, and shall be the responsibility of the Contractor.

The job is to be completed in a workmanlike manner and all debris removed within the time of construction."

4. CONTRACT NOTES

1. All materials and equipment supplied and installed on any project shall be, where applicable, on the FDOT Approved Product List (APL) and meet the FDOT Standard Specifications for Road and Bridge Construction, 2017. All materials and equipment shall be certified. Certificates shall be supplied with shop drawings.
2. Any changes to signalization plan during construction, the proposed change shall be submitted in writing to the Engineer for approval. No changes shall be implemented without the Engineer's approval.
3. The Contractor shall be responsible for the protection of all present utilities that have been located by the various utility companies. He shall also maintain and protect the existing traffic signals and their related equipment from damage caused by subcontractors and employees under his Contract but only to the extent of the Contractor's normal work operation, and he shall not be responsible for routine maintenance, normal wear and tear, or an act of God, unless otherwise specified.
4. The price of the loop installation shall include all maintenance of traffic necessary to complete the job. It is up to the discretion of the Engineer to include additional hours for maintenance of traffic under item No. "102-1-A" as needed to a work order issued to the contractor.
5. The Contractor shall provide barricades and warning and detour signs as required in Section 102-Maintenance of Traffic in FDOT SSRBC-2017.
6. The Contractor shall provide all coordination with FPL necessary to obtain the power for signals. The Contractor shall also provide coordination with all other utilities having an impact on the project.

7. All existing traffic signal equipment removed by the Contractor shall be tagged to identify location. A representative of Traffic Operations warehouse shall be given twenty-four (24) hour notice before delivery to an approved location by the Engineer. Equipment not identified will not be accepted and equipment not returned will result in the withholding of payment to the contractor. Traffic Operation warehouse personnel will issue a receipt to the Contractor for returned equipment.
8. The work covered under the terms of this contract does not require entry into the Controller Cabinet. Loop construction work shall terminate at the Loop junction box near the controller.
9. A Ninety (90) day burn-in period will be required for all electrical or electronic equipment furnished and installed as part of any traffic signal installation or system of traffic control devices. The burn-in shall consist of the field operations of the signalization system in a manner which is in full accordance with the signal operation requirements of the plans and specifications.
10. The burn-in period will commence upon a written conditional acceptance by the Engineer and will terminate 90 consecutive days thereafter, unless an equipment malfunction occurs. The written conditional acceptance of the signal will be granted to the contractor upon completion of final inspection of the signal. See PBC Traffic Signal Inspection Process in Attachment A. The burn-in period will be stopped for the length of time that the equipment is defective. When the equipment is repaired and is functioning properly, the burn-in period will resume from the point in time when it was stopped.
11. All traffic signal loops projects will be inspected prior to final acceptance for maintenance by Palm Beach County Traffic Operations. See Palm Beach County Traffic Operations – Signal Loop Inspection Sheet.
12. During the burn-in period, the Contractor shall restore operation of the installation within four (4) hours after notification of a malfunction. If the Contractor does not respond within four (4) hours, Palm Beach County shall have the option of making the necessary repair and billing the Contractor for the actual time and materials required.
13. Signal Timing: The Engineer will furnish timing. The Contractor shall notify the County Traffic Engineer seventy two (72) hours in advance of any requirement for timing.
14. The abbreviations and acronyms used in this contract are as follows:

a. LF	Linear Feet	k. LS	Lump Sum (Complete)
b. SF	Square Feet	l. F&I	Furnish & Install
c. SY	Square Yards	m. F	Furnish-Only
d. CY	Cubic Yards	n. I	Install-Only
e. AS	Assembly	o. R	Remove
f. PI	Per Installation	p. EA	Each
g. HR	Per Hour		
h. MH	Man Hour		
i. ED	Each Day		
j. WK	Per Week		

15. All loop work to be completed in accordance to pay item 660-2-xxx. No loop work shall be permitted during the hours of 6:45 AM to 8:45 AM, and during the hours of 3:45 PM to 6:30 PM. Nor shall loop work be permitted on days prior to major holidays.
16. Ground rods to be supplied and attached to all signal poles, control cabinets and equipment footings and basis according to PBC standard specifications, and Typical Ground Rod Array Detail. The work and materials for grounding are incidental to items being grounded.
17. All conduit (Bid Items 630-2-1x-y) shall include a 14AWG insulated stranded (THHN) tracer wire and one (1) pull line. Multiple bundle conduit runs (i.e. 2-2") shall require only one (1) tracer per bundle runs and one (1) pull line per conduit in the bundle.
18. Class-I Concrete (Misc.), will be used for pull-box aprons. Aprons can be pre-cast or poured in place.
19. All pull boxes shall have heavy duty covers embossed with the word "PBC TRAFFIC SIGNAL" or "PBC TRAFFIC ITS".
20. **Shop drawings for all materials to be used under this contract shall be submitted to PBC Traffic Division for approval prior to purchase. Shop drawings shall include, but not limited to, conduits, cables, pull boxes.**

5. **SPECIAL BID ITEM NOTES:**

1. Bid Item **102-1-A** consists of Maintenance of Traffic for signalization modifications as necessitated by roadway construction. This pay item is for labor and equipment required to construct or modify traffic signals in order to accommodate changing highway geometrics resulting from on-going construction, and in Accordance with FDOT DS-FY2016-17 Indices 615, 616, 617, 618, 619, 620, 621, 622, and 628. If needed it is estimated that no more than Four (4) MOT hours will be approved for each approach where loops work is being performed, including lead-ins and conduit to and from loop pockets or pull boxes.
2. Bid Items **630-2-11-x** consists of (F&I) PVC (SCH. 40) underground in-trench conduit of 2" diameter when x = 2; 4" diameter when x= 4. This item includes trenching, installing conduit, covering trench, and bringing ground to original condition.
3. Bid Items **630-2-11-xA** consists of (F&I) an additional PVC (SCH. 40) underground conduit in the same trench, 2" diameter when x = 2, and 4" diameter when x = 4. This item provides for additional conduit(s) added in trench covered under items 630-2-11-x.
4. Bid Items **630-2-12-x-y** consists of (F&I) HDPE (SDR 11) directional bore under-pavement conduit of 2" diameter when x = 2; 4" diameter when x = 4; and 4" with (3) 1-1/4" HDPE inner-duct when x =4i. The y represents the number of conduits per directional bore.

5. Bid Items 630-2-13-x-1 consists of (F&I) galvanized rigid conduit (GRC), jack and bore under rail road tracks. Where 'x' represents the diameter of the conduit in inches. **This item includes any additional insurance and other incidentals required by Rail Road authority to work within the Rail Road's ROW.**
6. Bid Items 630-2-14-x consists of furnish and install (F&I) hot dipped galvanized rigid steel conduit surface mounted. The conduit is 1" diameter when x = 1, 2" diameter when x = 2.
7. Bid Items 630-2-15-x consists of (F&I) galvanized bridge mount conduit, where 'x' represents the diameter of conduit in inches. This item includes all parts, labor, materials and all appurtenances necessary for a complete installation.
8. Bid Items 630-3 consists of Roding and cleaning out existing conduit of any size.
9. Bid Item 635-2-11 consists of Furnishing and Installing a 13"X24"X12D Pull box as shown on the plans in accordance with Design Standards, Index No. 17700 and FDOT (SSRBC-2017),
10. Bid Item 635-2-12A consists of Furnishing and Installing a 17"X30"X12D Pull box as shown on the plans in accordance with Design Standards, Index No. 17700 and FDOT (SSRBC-2017),
11. Bid Item 660-2-x **Furnish & Install** an inductance loop detector complete, including installation of loop wire, saw cut, sealant, lead-in, and individual lead-in per loop to cabinet. Lead-in slack of 6' coil per lead in the pull box (if applicable) and 6' coil in the cabinet for each lead-in. Color coding and labeling of the loops shall be provided in all cases (minimum depth of saw cuts of 2"). The loop wire shall be #14 AWG XHHW. The loop lead-in wire shall be #16 AWG shielded twisted stranded, tinned copper. It shall be Carol-Part # C2553.41.01 or equivalent. Splicing butt connector shall be 3M-Part # MH14BCK Scottchlock, or equivalent. Crimping tool shall be Burndy-Part # Y10D476086. Or equivalent. Crimp with the non-insulated mark. Heat shrink Tubing shall be Thomas and Betts-Part #HS16-12-4, or equivalent. A minimum section of 10" shall be applied over Butt Connector segment. Sealant shall be liquid tar (step asphalt hot type 4). See PBC Signal Installation Standards and Details-2015 Sheet T-11, T-11.1, and T-12. See Note # 15 of the Contact Notes for exclusions for installation times.
12. Bid Item 660-2-102-A1 **Furnish & Install** loop assembly Type B with a dimension of 6' X 6'. See PBC Signal Installation Standards and Details-2015 Sheet T-11, T-11.1 and T-12.
13. Bid Item 660-2-102-A2 **Furnish & Install** an additional loop assembly Type B with a dimension of 6' X 6'. See PBC Signal Installation Standards and Details-2015 Sheet T-11, T-11.1 and T-12. **(Used in conjunction with Item 660-2-102-A1, for first loop on the approach)**

14. Bid Item **660-2-106-B1** **Furnish & Install** Loop Assembly Type F with width of 6' and a longitudinal dimension of 26'. See PB Signal Installation Standards and Details-2015 Sheet T-11 and T-11.1, and T-12.
 15. Bid Item **660-2-106-B2** **Furnish & Install** an additional Loop Assembly Type F with width of 6' and a longitudinal dimension of 26'. See PB Signal Installation Standards and Details-2015 Sheet T-11 and T-11.1, and T-12. **(Used in conjunction with Item 660-2-102-B1 for first loop on the approach)**
 16. Bid Item **660-2-106-C1** **Furnish & Install** refers to Loop Assembly Type F with width of 6' and a longitudinal dimension of 46'. See PB Signal Installation Standards and Details-2015 Sheet T-11 and T-11.1, and T-12.
 17. Bid Item **660-2-106-C2** **Furnish & Install** an additional Loop Assembly Type F with width of 6' and a longitudinal dimension of 46'. See PB Signal Installation Standards and Details-2015 Sheet T-11 and T-11.1, and T-12. **(Used in conjunction with Item 660-2-102-C1 for first loop on the approach)**
6. **INVOICING AND PAYMENT**

The Contractor shall submit only one invoice per job. Partial invoicing may be allowed at the discretion of the Engineer. Palm Beach County Traffic Division will review the invoices and issue a payment authorization for each of the Partial and Final invoices. The final payment authorization will be issued only after the final inspection of the job has been completed and approved by the County designated engineer. The total project cost in the final invoice shall not exceed the initial cost estimate of the job listed in the bid-tab associated with the job work authorization and the cost of the change orders. All change orders shall be signed by the County designated engineer.

Attachment "A"

Loop Inspection

Intersection Name: _____ Date: _____

Intersection #: _____ Tech: _____

Approach Needs Repair Uh Reading Comments

Visual				
#1				
#2				
#3				
#4				
#5				
#6				
#7				
#8				
#9				
#10				
#11				
#12				
#13				
#14				
#15				
#16				
#17				
#18				
#19				
#20				
#21				
#22				
#23				
#24				
#25				



630-2-XXX

Your communication partner.

Blue Diamond Industries, LLC is an agile manufacturing and services company committed to helping our customers with innovative solutions. We offer quality construction products and installation for outside plant construction and broadband communication networks. Operations include the manufacture of Blue Diamond HDPE innerduct, toneable duct and aerial duct. We also have a variety of HDPE accessories and underground vaults. Blue Diamond is also a representative of Moore Commercial Coatings for high quality communication enclosures.

Underground Construction Products.

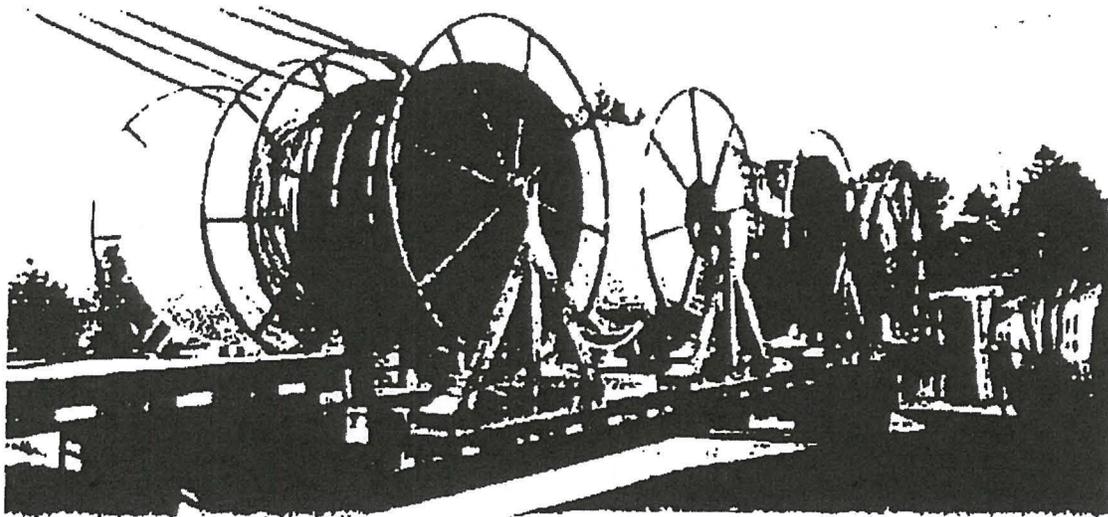
High Density Polyethylene (HDPE) innerduct and conduit products provide security and protection to fiber optic and coaxial networks, the communication lifelines. Underground vault structures allow access for inspection, identification, expansion and maintenance of these communication highways.

Our tremendous growth in plastics and underground products is supported by the most progressive, versatile and technologically advanced production equipment available. Our "Blue Diamond" innerduct protects many of the largest fiber optic networks in the United States.

Corporate Headquarters:

Blue Diamond Industries, LLC • 841 Corporate Drive, Suite 201 • Lexington, KY 40503
859-224-0415 • 859-224-0543 fax
www.bdiky.com

1



630-2-XXX

Blue Diamond Innerduct is RUS/USDA listed.

Blue Diamond is a member of PPI (Plastics Pipe Institute)

Applicable material standards and dimensional specifications.

ASTM F2160 - Solid Wall High Density PE Conduit based on Controlled O.D.

ASTM D3350 - Polyethylene Plastic Pipe Fittings Method

ASTM D3035 - Polyethylene (PE) Plastic Pipe Based on Controlled O.D.

ASTM D1248 - Specification for Polyethylene Plastic Molding and Extrusion Material

ASTM D2239 - Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Inside Diameter

ASTM D2447 - Polyethylene (PE) Plastic Pipe, Schedules 40 and 80, Based on O.D.

ASTM D3485 - Smooth Wall Coilable (PE) Conduit (Duct) for Preassembled Wire and Cable

NEMA Standards Publication TC-7

BELLCORE Generic Requirements for Optical Cable Innerduct and Accessories, 1995

AWWA C901

Specifications.

1.0 Introduction:

The following specification details the requirements for HDPE innerduct as manufactured by Blue Diamond for the purpose of security, protection and identification of fiber optic or coaxial cable networks.

2.0 Innerduct Construction:

2.1 All innerduct shall be circular and of uniform cross section to the dimensions in accordance with ASTM D3035 and F2160

2.2 Innerduct shall be a continuous length of _____ (smooth walled, ribbed inside) with a low friction internal surface containing no welds or joints, coiled on a reel.

2.2.1 Innerduct shall be supplied _____

a) empty

b) containing a pulling medium such as mule tape

c) pre-installed with a cable specified by _____

3.0 Materials:

- 3.1 The innerduct shall be extruded from virgin High Density Polyethylene (HDPE) resin, in accordance to the requirements of ASTM D3350 with cell classification 345440C.
- 3.2 Density, melt flow, tensile strength at yield, and environmental stress crack shall conform to the values listed in ASTM D3350, except as noted below.
- 3.3 Adequate stabilization shall be added during the manufacturing process to protect the polyethylene against thermal and UV degradation throughout the projected lifespan of the finished product.

4.0 Dimensions:

- 4.1 The innerduct shall be SDR _____, SIDR _____, Schedule 40 or Schedule 80, and conform to the dimensions as outlined in Table _____ or ASTM D3035.

5.0 Identification and Marketing:

- 5.1 Innerduct shall be permanently marked with a _____ (1) laser ink imprinter, or (2) heat embossed white lettering, which shall be marked in a position 90 degrees to any stripes specified.
- 5.2 The base colors of the pipe shall be _____
- 5.3 (0, 1, 2, 3, or 4) 5mm stripes, colored _____ shall be extruded onto the pipe at 90 degrees to the printing and 180 degrees from each other.
- 5.4 Marking shall include the owners name _____, ASTM and SDR designation, diameter and size. Additionally, a sequential length mark of _____ shall show length of the innerduct.
- 5.5 Innerduct shall be marked so that date of manufacture, shift and lot of resin can be identified and referenced to certifications and quality control test results.

6.0 Quality Assurance:

- 6.1 Manufacturer shall provide certification of the properties as specified above.
- 6.2 In addition to continuous in process inspection and control, batch samples will be checked for finish, print quality, dimensions and ovality.
- 6.3 The above tests are in addition to the resin requirements as outlined in ASTM D3350.
- 6.4 All reels will be marked and labeled with customer purchase order, project name, or other information for tracking and receiving.

Polyethylene SDR 13.5: Meets material and dimensional requirements of ASTM F2160.

Nominal Duct Size	Outside Diameter	Wall Thickness	Inside Diameter	Minimum Unsupported Bend Radius	Safe Working Pull Strength	Weight Per 1000 Ft.
1/2"	.840" ± .004"	.062" + .020"	.696"	10"	400 lbs.	72 lbs.
3/4"	1.050" ± .004"	.078" + .020"	.874"	12"	650 lbs.	110 lbs.
1"	1.315" ± .005"	.097" + .020"	1.101"	14"	1,050 lbs.	166 lbs.
1 1/4"	1.660" ± .005"	.123" + .020"	1.394"	18"	1,650 lbs.	264 lbs.
1 1/2"	1.900" ± .008"	.141" + .020"	1.599"	20"	2,150 lbs.	343 lbs.
2"	2.375" ± .008"	.176" + .021"	2.002"	26"	3,400 lbs.	531 lbs.
2 1/2"	2.875" ± .007"	.213" + .028"	2.424"	38"	5,000 lbs.	778 lbs.
3"	3.500" ± .008"	.258" + .031"	2.950"	48"	7,400 lbs.	1,153 lbs.
4"	4.500" ± .009"	.333" + .040"	3.793"	60"	12,200 lbs.	1,904 lbs.
6"	6.625" ± .011"	.491" + .059"	4.959"	67"	26,500 lbs.	4,130 lbs.

Polyethylene SDR 11: Meets material and dimensional requirements of ASTM F2160.

Nominal Duct Size	Outside Diameter	Wall Thickness	Inside Diameter	Minimum Unsupported Bend Radius	Safe Working Pull Strength	Weight Per 1000 Ft.
1/2"	.840" ± .004"	.078" + .020"	.667"	10"	500 lbs.	85 lbs.
3/4"	1.050" ± .004"	.095" + .020"	.839"	12"	800 lbs.	130 lbs.
1"	1.315" ± .005"	.120" + .020"	1.056"	14"	1,250 lbs.	200 lbs.
1 1/4"	1.660" ± .005"	.151" + .020"	1.338"	18"	2,000 lbs.	314 lbs.
1 1/2"	1.900" ± .008"	.173" + .021"	1.534"	20"	2,600 lbs.	408 lbs.
2"	2.375" ± .008"	.216" + .026"	1.917"	26"	4,100 lbs.	639 lbs.
2 1/2"	2.875" ± .007"	.261" + .031"	2.321"	38"	6,000 lbs.	936 lbs.
3"	3.500" ± .008"	.318" + .038"	2.825"	48"	8,900 lbs.	1,367 lbs.
4"	4.500" ± .009"	.408" + .048"	3.633"	60"	14,700 lbs.	2,293 lbs.
6"	6.625" ± .011"	.602" + .072"	4.724"	67"	31,900 lbs.	4,971 lbs.

3-2 →

4 →

7-4 →

4 →

Polyethylene Schedule 40: Meets NEMA TC-7.

Nominal Duct Size	Outside Diameter	Wall Thickness	Inside Diameter	Minimum Unsupported Bend Radius	Safe Working Pull Strength	Weight Per 1000 Ft.
1/2"	.840" ± .004"	.119" ± .010"	.602"	10"	700 lbs.	112 lbs.
3/4"	1.050" ± .004"	.123" ± .010"	.804"	12"	900 lbs.	148 lbs.
1"	1.315" ± .005"	.143" ± .010"	1.029"	14"	1,375 lbs.	218 lbs.
1 1/4"	1.660" ± .005"	.150" ± .010"	1.360"	18"	1,875 lbs.	295 lbs.
1 1/2"	1.900" ± .006"	.155" ± .010"	1.590"	20"	2,225 lbs.	352 lbs.
2"	2.375" ± .006"	.164" ± .010"	2.047"	26"	3,000 lbs.	472 lbs.
2 1/2"	2.875" ± .007"	.215" ± .012"	2.445"	38"	4,775 lbs.	744 lbs.
3"	3.500" ± .008"	.229" ± .013"	3.042"	48"	6,250 lbs.	974 lbs.
6"	6.625" ± .011"	.297" ± .017"	6.031"	67"	15,283 lbs.	2,368 lbs.

*Innerduct rated SDR 7, 9, 9.3, 15.5, 17, 21 and NEMA 5CH80 also available.

Polyethylene SIDR 9: Meets material and dimensional requirements of ASTM D2239.

Nominal Duct Size	ASTM Inside Diameter	Minimum Wall	ASTM Tolerance	Standard Outside Diameter	Weight Per 1000 Ft.
3/4" SIDR 9	0.824	0.092	0.020	1.027	122 lbs.
1" SIDR 9	1.049	0.117	0.020	1.302	183 lbs.
1 1/4" SIDR 9	1.380	0.153	0.020	1.707	328 lbs.
1 1/2" SIDR 9	1.610	0.178	0.021	1.989	444 lbs.
2" SIDR 9	2.067	0.230	0.028	2.554	732 lbs.

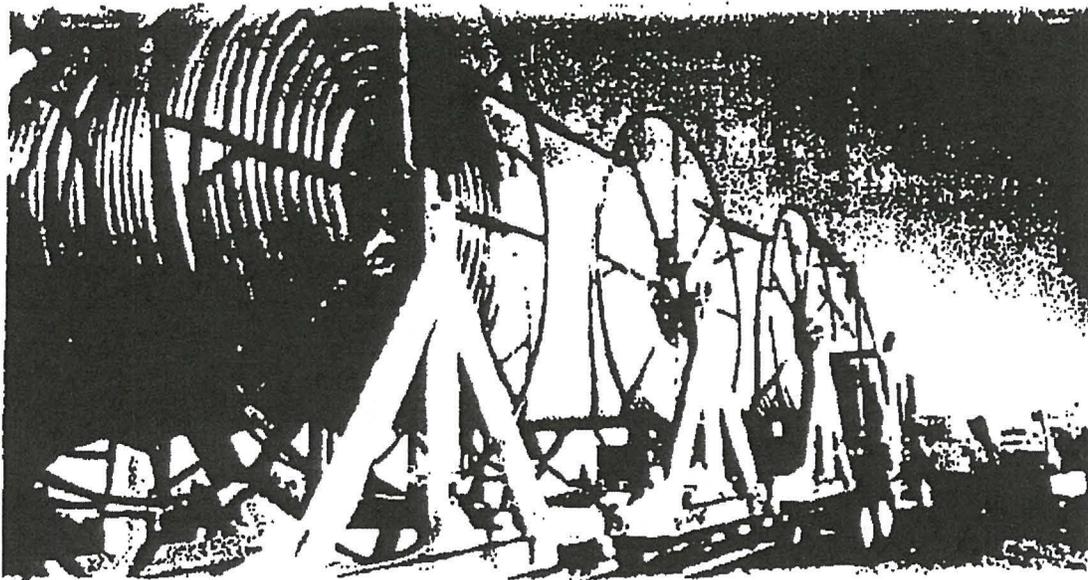
Polyethylene SIDR 11.5: Meets material and dimensional requirements of ASTM D2239.

Nominal Duct Size	ASTM Inside Diameter	Minimum Wall	ASTM Tolerance	Standard Outside Diameter	Weight Per 1000 Ft.
3/4" SIDR 11.5	0.824	0.072	0.020	0.987	96 lbs.
1" SIDR 11.5	1.049	0.091	0.020	1.251	151 lbs.
1 1/4" SIDR 11.5	1.380	0.120	0.020	1.640	255 lbs.
1 1/2" SIDR 11.5	1.610	0.140	0.020	1.910	343 lbs.
2" SIDR 11.5	2.067	0.180	0.022	2.448	559 lbs.
2 1/2" SIDR 11.5	2.469	0.215	0.026	2.924	798 lbs.
3" SIDR 11.5	3.068	0.267	0.032	3.634	1,232 lbs.
4" SIDR 11.5	4.026	0.350	0.042	4.768	2,122 lbs.

Polyethylene SIDR 15: Meets material and dimensional requirements of ASTM D2239.

Nominal Duct Size	ASTM Inside Diameter	Minimum Wall	ASTM Tolerance	Standard Outside Diameter	Weight Per 1000 Ft.
3/4" SIDR 15	0.824	0.062	0.020	0.968	84 lbs.
1" SIDR 15	1.049	0.070	0.020	1.209	117 lbs.
1 1/4" SIDR 15	1.380	0.092	0.020	1.584	187 lbs.
1 1/2" SIDR 15	1.610	0.107	0.020	1.845	264 lbs.
2" SIDR 15	2.067	0.138	0.020	2.363	426 lbs.
2 1/2" SIDR 15	2.469	0.165	0.020	2.818	600 lbs.
3" SIDR 15	3.068	0.205	0.025	3.502	926 lbs.
4" SIDR 15	4.026	0.268	0.032	4.595	1,595 lbs.

Product listed SDR 33, 41 and 49 also available



Reel Capacities.

Pipe Size

reel size = flange x traverse x drum

1/2"	72x42x30	72x48x24					
	17,000	20,000					
3/4"	72x48x24	84x48x24					
	10,000	18,000					
1"	72x48x30	84x48x30	96x38x30	96x48x30			
	7,000	10,000	11,000	14,000			
1 1/4"	72x48x30	84x48x30	96x38x30	96x48x30			
	4,800	6,200	7,500	8,800			
1 1/2"	72x48x30	84x48x30	96x38x30	96x48x30	102x42x30	114x42x30	
	3,000	4,800	5,000	6,000	7,200	8,000	
2"	72x48x42	84x48x42	96x38x42	96x42x42	96x48x42	102x48x42	114x48x42
	1,800	2,800	3,000	3,500	3,750	4,500	6,000
2 1/2"	96x48x48	102x48x48	120x42x54				
	2,000	2,500	3,500				
3"	84x48x64	96x42x60	96x48x64	120x42x60			
	1,000	1,000	1,200	2,000			
4"	96x48x72	102x48x72	114x48x72	120x48x72			
	550 SDR	500 SDR	750 SDR	700 SDR	1000 SDR	900 SDR	1250 SDR 1100 SDR
5"	102x48x78	114x48x78	120x48x78				
	400	600	750				
6"	120x48x84						
	400						

* Each Reel Capacity Subject to Weight and Pipe Capacity.

Innerduct.com

"The innerduct Specialists!"

1-800-332-8114



630-2-XXX

We Have all of your Innerduct Needs IN STOCK!!

Our High Density Polyethylene (HDPE) Innerduct is made of **100% Virgin Resin**. The Innerduct can be manufactured in almost any color and has **outstanding UV protection**. Orange, Black, Red, Blue and Green are the most common conduit colors. We can provide **multiple duct and colors on one reel** to maximize space in a trench. All of our Innerduct is sequentially marked every foot and can be purchased with or without pull tape. The Innerduct has a **silicore lining** on the inside to **prevent cable drag friction**. SDR wall thicknesses are contingent on the type of projects projected. Schedule 40, SDR 15.5, SDR 13.5, SDR 11 and SDR 9 are all standard wall thickness.

Corrugated and Plenum Rated HDPE

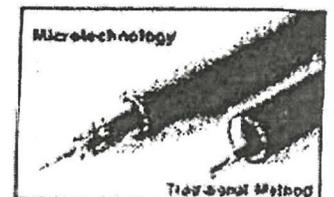
Duct is also one of our specialties. Our Plenum meets UL(910) standards for the national electrical code, article 770, and satisfies UL-2024 standards for low smoke and flame propagation. The Plenum and corrugated are offered in 1" and 1 1/4" with pre-installed pull tape for easy cable installation.

Multiple colors per reel and slitDuct are also available. Please see the [specifications](#) for more information.



MicroDuct - micro, we have the solution

Our newest product "MicroDuct". We have the solution to maximize your occupied duct systems and increase your duct capacity. Call us for MicroDuct sizes available and our wide variety of MicroDuct accessories and installation equipment.



We are the complete source for Innerduct accessories, MicroDuct accessories, fusion, pulling, and blowing...We are ready to take your order! Check out our [accessories](#) page for information about the products listed above..

SWIVEL



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630-2-XXX

INNERDUCT

Test Results

Properties	Test Method	Value	
Smoke peak optical	UL-2024	0.02	
Smoke average optical density	UL-2024	0.01	
Max. flame spread distance(ft.)	UL-2024	1.5'	630-2-XXX
Max flame temperature	UL-2024	554	

Corrugated HDPE

Premier Corrugated HDPE is manufactured from High Density Polyethylene (HDPE) and is intended to be placed inside of existing Innerduct. It's ideal for pulls under 1000 ft. and is designed to reduce surface contact when pulling cable. This lightweight product offers maximum flexibility, and allows for installation in small or restricted areas. Corrugated duct is available in 1" and 1 1/4". The standard color is orange and is offered in a variety of other colors. Sequential marked footage is standard. Cust options, such as multiple colors per reel and Slit Duct are also available.

Accessories

- Universal Aluminum Couplers (screw-on type: sizes 1" thru 2")
- Expansion Type Duct Plugs (can be used with pull tape)

Corrugated HDPE Reels

Size	Color	Part No.	Nominal I.D.	Nominal O.D.	Pull Tape	Reel Size	Reel Length(ft.)
1"	Orange	PEC-100T-1000	1.049"	1.365"	900 lb	48-30-24	1000
1"	Orange	PEC-100T-1800	1.049"	1.365"	900 lb	48-30-24	1800
1"	Orange	PEC-100T-2500	1.049"	1.365"	900 lb	66-41-24	2500
1"	Orange	PEC-100T-5000	1.049"	1.365"	900 lb	72-41-24	5000
1"	Orange	PEC-100T-6500	1.049"	1.365"	900 lb	72-45-24	6500
1"	Orange	PEC-100T-8000	1.049"	1.365"	900 lb	82-41-24	8000
1/4"	Orange	PEC-125T-1000	1.250"	1.550"	900 lb	48-30-24	1000
1/4"	Orange	PEC-125T-2500	1.250"	1.550"	900 lb	66-41-24	2500
1/4"	Orange	PEC-125T-4000	1.250"	1.550"	900 lb	72-41-24	4000
1/4"	Orange	PEC-125T-5000	1.250"	1.550"	900 lb	72-41-24	5000
1/4"	Orange	PEC-125T-6000	1.250"	1.550"	900 lb	82-41-24	6000
1/4"	Orange	PEC-125T-6500	1.250"	1.550"	900 lb	82-41-24	6500

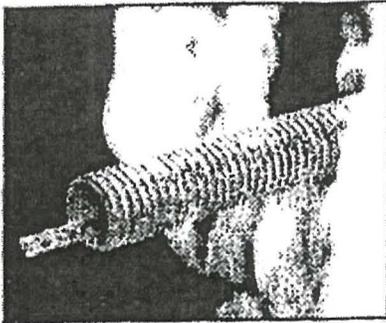
Corrugated HDPE Coils

Size	Color	Part No.	Nominal I.D.	Nominal O.D.	Pull Tape	Coil Length(ft.)
1"	Orange	PEC-100T-250	1.049"	1.365"	900 lb	250
1"	Orange	PEC-100T-500	1.049"	1.365"	900 lb	500
1 1/4"	Orange	PEC-125T-250	1.250"	1.550"	900 lb	250
1 1/4"	Orange	PEC-125T-500	1.250"	1.550"	900 lb	500

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designed and maintained by 

630-2-XXX



Riser-Gard is a nonmetallic flexible raceway for use in Riser and General Purpose applications. Riser-Gard is UL Listed and is available with tape pre-installed.

Riser-Gard complies with the UL 2024 Standard for Riser Applications for optical fiber/communications raceways.

Riser-Gard is listed to the National Electrical Code per Articles 770 and 800 for Riser and General Purpose optical fiber/telecommunication applications. Riser-Gard is suitable for use in vertical runs in a shaft or between floors, as well as areas other than the plenum (cables installed must be of suitable rating for the application.)

UL Listed to 2024	Test Method	Maximum Value
Maximum Flame Propagation	UL 2024	6.0 ft.
Maximum Air Temperature at 12 ft.	UL 2024	372°F

• Storage -4°F - 158°F • Handling -4°F - 104°F

Standard Stock - Reels

	Color	Part No.	Nom. I.D.	Nom. O.D.	Full Tape	Min. Bend Radius	Reel Size (L x W)	Reel Type	Reel Length	Reel Wt. (lbs.)	Wt. per 100 ft. (lbs.)
3/4"	Orange	DE4X1-1000	.83	1.05	Empty	6"	36" x 24"	W	1000	35	9
	Orange	DE4X1-1000S	.83	1.05	Empty	6"	36" x 24"	W	1000	35	9
	Orange	DF4X1C-500R	1.03	1.315	900 lb.	6"	48" x 32"	W	500	70	14
	Orange	DF4X1C-1000	1.03	1.315	900 lb.	6"	48" x 32"	W	1000	35	14
	Orange	DF4X1-1500	1.03	1.315	Empty	6"	48" x 32"	W	1500	90	14
1"	Orange	DF4X1C-1500	1.03	1.315	900 lb.	6"	48" x 32"	W	1500	90	14
	Orange	DF4X1C-2700	1.03	1.315	900 lb.	6"	48" x 48"	W	2700	105	14
	Orange	DF4X1C-5200	1.03	1.315	900 lb.	6"	65" x 46"	W	5200	385	14
	Orange	DF4X1C-7000	1.03	1.315	900 lb.	6"	72" x 44"	S	7000	98	14
	Orange	DF4X1C-9400	1.03	1.315	900 lb.	6"	84" x 44"	S	9400	134	14
	Orange	DF4X1-1500S	1.03	1.315	Empty	6"	48" x 30"	W	1500	90	14
	Orange	DG4X1-900	1.38	1.66	900 lb.	7"	48" x 30"	W	900	90	17
1 1/4"	Orange	DG4X1C-900	1.38	1.66	900 lb.	7"	48" x 30"	W	900	90	17
	Orange	DG4X1-900S	1.38	1.66	Empty	7"	48" x 30"	W	900	90	17
	Orange	DG4X1C-500R	1.38	1.66	900 lb.	7"	48" x 32"	W	500	70	17
	Orange	DG4X1C-1600	1.38	1.66	900 lb.	7"	48" x 48"	W	1600	105	17
	Orange	DG4X1C-3200	1.38	1.66	900 lb.	7"	65" x 48"	W	3200	385	17
1 1/2"	Orange	DG4X1C-4500	1.38	1.66	900 lb.	7"	72" x 44"	S	4500	98	17
	Orange	DH4X1C-1200	1.57	1.90	900 lb.	8 1/4"	48" x 48"	W	1200	105	22
	Orange	DH4X1C-4500	1.57	1.90	900 lb.	8 1/4"	84" x 44"	S	4500	134	22
	Orange	DH4X1-750S	1.57	1.90	Empty	8 1/4"	48" x 30"	W	750	90	22
2"	Orange	DJ4X1C-700	2.02	2.375	900 lb.	9 1/2"	48" x 48"	W	700	105	26
	Orange	DJ4X1C-2800	2.02	2.375	900 lb.	9 1/2"	96" x 44"	S	2800	146	26
	Orange	DJ4X1-500S	2.02	2.375	Empty	9 1/2"	48" x 30"	W	500	90	26

W = Wood
S = Steel

ENDOT INDUSTRIES

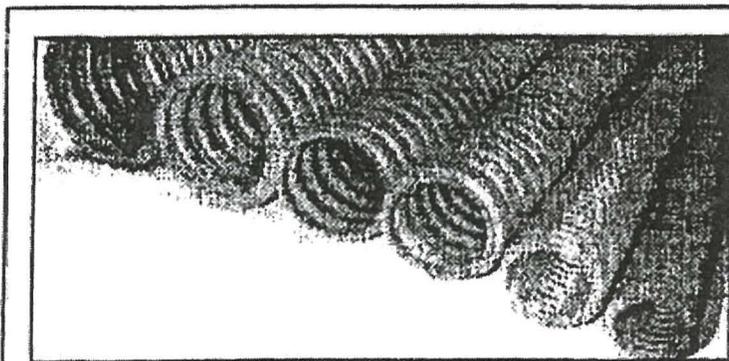
DUCT AND INNERDUCT TECHNICAL SPECIFICATIONS

Endocor

630-2-XXX

CORRUGATED DUCT AND INNERDUCT

Designed specifically for fiber optic cables



FEATURES:

- Sizes from 1/2" through 2"
- Flexible & Lightweight for ease of handling
- Available in solid colors or stripes
- Available with multiple lengths/colors per reel
- Special high tensile strength versions available
- Available pre-threaded with pull line
- Available as Split Duct for covering cables in place

ENDOCOR'S corrugated design provides high tensile strength with low weight per foot for ease of handling and significantly longer put ups that can be obtained with smoothwall or ribbed innerduct.

ENDOCOR provides the lowest cable pulling friction of any innerduct design because of reduced surface area and no reel memory eliminating spiraling of the innerduct in the conduit.

ENDOCOR SPLIT DUCT is produced from Low Density Polyethylene for ease of use and superior flexibility.

PART NO.	NOMINAL SIZE	O.D.	I.D.
ICE 500	1/2"	0.850"	0.662"
ICE 750	3/4"	1.116"	0.870"
ICE 1050	1"	1.400"	1.050"
ICE 1250	1 1/4"	1.600"	1.250"
ICE 1500	1 1/2"	1.900"	1.500"
ICE 2000	2"	2.350"	1.900"

ENDOCOR PART NUMBER SYSTEM - One Selection from Each Column Creates a complete Product Part Number

EXAMPLE - Regular Corrugated 3/4", on a 48" Reel, 3/16" PP rope, Orange = ICE 075 22 21 02

PRODUCT	SIZE (ID)	REEL DIAMETER	PULL LINE	COLOR
ICE = corrugated	050 = 1/2"	21 = 34" wood	01 = empty	01 = black
	075 = 3/4"	22 = 48" wood	11 = 1250# kevlar/polyester	02 = orange
ICS = Split Duct	100 = 1"	23 = 78" wood	12 = 1800# kevlar/polyester	03 = green
	125 = 1 1/4"	24 = 84" wood	13 = 1000# polyester	04 = red
	150 = 1 1/2"	37 = 60" steel	14 = 1250# polyester	06 = blue
	200 = 2"	31 = 78" steel	15 = 1800# polyester	07 = white
		32 = 84" steel	17 = 900# kevlar	08 = gray
		33 = 96"x44" steel	21 = 3/16" PP rope	09 = custom
		34 = 96"x56" steel	22 = 1/4" PP rope	
		35 = 114" X 44" steel	31 = Cable In Conduit	

For product quantity per reel refer to Endot's reel capacity charts.

ENDOT INDUSTRIES, INC.

www.endot.com • e-mail: info@endot.com



CORPORATE HEADQUARTERS • 60 Green Pond Road, Rockaway, NJ 07866 • 800-443-6368 • FAX 973-625-4087
 MID-WEST OPERATIONS • 739 County Road 1, South Point, OH 45680 • 800-345-3990 • FAX 740-377-9844
 TENNESSEE OPERATIONS • 400 Bohannon Avenue, Greeneville, TN 37745 • 800-438-5851 • FAX 423-639-3722

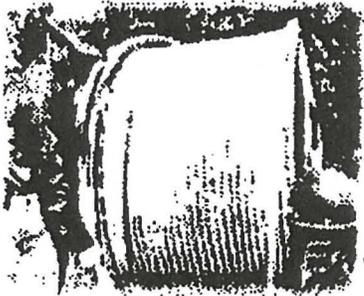


ENDOT INDUSTRIES

100-44-ENDOT(443-8368)

PIPE AND TUBING . DUCT AND INNERDUCT

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docor

- Innerduct**
- Endocor
 - Endoguard
 - Cable Chase
 - Silt Duct
 - Enduct I.D Controlled
 - Enduct O.D Controlled
 - Enduct-ASTM D2447
 - Bore Duct

630-2-XXX

CORRUGATED DUCT AND INNERDUCT

Designed specifically for fiber optic cables

FEATURES:

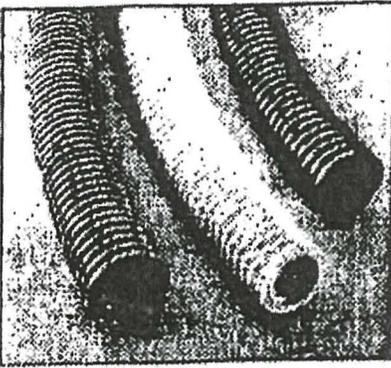
- Flexible
- Corrosion-resistant
- Corrugated for lowest possible coefficient of friction
- Lightweight yet highly crush resistant
- No Memory for ease of handling in all weather
- Available in solid colors or stripes
- Standard and custom reel lengths
- Available with multiple lengths and colors on one reel
- Sizes from 1/2" through 2"
- Special high tensile versions available
- Available pre-threaded with a variety of pull tapes (optional)

ENDOCOR'S corrugated design provides high tensile strength with low weight per foot for ease of handling and significantly longer pulls than can be obtained with smoothwall or ribbed innerduct.

ENDOCOR provides the lowest cable pulling friction of ANY innerduct design because of reduced surface area and no reel memory which eliminates spiraling in the conduit.

ENDOCOR 1050 and 1250 can be coupled with the easy to use, low cost ENDOCLIP for a fast joint that is stronger than the innerduct itself.

Part No.	SIZE	Nominal O.D.	Innerduct I.D.
500	1/2" (13mm)	0.850" (22mm)	0.652" (17mm)
750	3/4" (19mm)	1.116" (28mm)	0.870" (22mm)
1050	1" (25mm)	1.400 (35mm)	1.050" (27mm)
1250	1 1/4" (32mm)	1.600 (41mm)	1.250" (32mm)
1500	1 1/2" (38mm)	1.900" (48mm)	1.500" (36mm)
2000	2" (51mm)	2.350" (60mm)	1.900" (48mm)



Flex-Plus Blue ENT is a nonmetallic flexible raceway for use in walls, floors, and non-plenum ceilings. It's lightweight, hand bendable, and free from sharp edges, which reduces installation time and saves money.

Flex-Plus Blue ENT is UL Listed and CSA certified and is recognized by Article 362 of the 2002 NEC. It is also recognized by ICC, BOCA, SBCCI, and ICBO for having a one and two hour fire rated wall assembly and up to a three hour rated floor/ceiling assembly.

Features:

- For use in buildings in accordance with Article 362 of the 2002 NEC
- 1/2" through 2" sizes
- Available in three colors: Red, Yellow, and Blue
- Outside Diameters meet IPS Dimensions
- Storage -4°F – 158°F
- Handling -4°F – 104°F

630-2-XXX

Standard Stock - Reels

Color	Part No.	Nom. I.D.	Nom. O.D.	Pull Tape	Min. Bend Radius	Reel Size (F x W)	Reel Type	Reel Length	Reel Wt. (lbs.)	Wt. per 100 ft. (lbs.)
Blue	12005AK-001	.56	.84	Empty	6"	36" x 24"	W	1500	40	10
Yellow	12005AY-001	.56	.84	Empty	6"	36" x 24"	W	1500	40	10
Red	12005AR-001	.56	.84	Empty	6"	36" x 24"	W	1500	40	10
Blue	12007AA-001	.76	1.05	Empty	6"	36" x 24"	W	1000	40	14
Yellow	12007AY-001	.76	1.05	Empty	6"	36" x 24"	W	1000	40	14
Red	12007AR-001	.76	1.05	Empty	6"	36" x 24"	W	1000	40	14
Blue	12008-750	1.00	1.315	Empty	6"	36" x 24"	W	750	40	20
Yellow	12008Y-750	1.00	1.315	Empty	6"	36" x 24"	W	750	40	20
Red	12008R-750	1.00	1.315	Empty	6"	36" x 24"	W	750	40	20
Blue	12009-750	1.402	1.66	Empty	7"	48" x 32"	W	750	90	19
Blue	12010-750	1.554	1.90	Empty	8 1/4"	48" x 32"	W	750	90	39
Blue	12011-500	2.030	2.375	Empty	9 1/2"	48" x 32"	W	500	90	32
Red	12011R-500	2.030	2.375	Empty	9 1/2"	48" x 32"	W	500	90	32

W = Wood

Standard Stock - Coils

Color	Part No.	Nom. I.D.	Nom. O.D.	Pull Tape	Min. Bend Radius	Coil Length (ft.)	Wt. per 100 ft. (lbs.)
Blue	12005-200	.56	.84	Empty	6"	200	10
Yellow	12005Y-200	.56	.84	Empty	6"	200	10
Red	12005R-200	.56	.84	Empty	6"	200	10
Blue	12007-100	.76	1.05	Empty	6"	100	14
Yellow	12007Y-100	.76	1.05	Empty	6"	100	14
Red	12007R-100	.76	1.05	Empty	6"	100	14
Blue	12008-100	1.00	1.315	Empty	6"	100	22
Yellow	12008Y-100	1.00	1.315	Empty	6"	100	22
Red	12008R-100	1.00	1.315	Empty	6"	100	22

STEEL CONDUIT PRODUCTS

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Dimensional Data

Listed below

630-2-XXX

BRIDGE MOUNT

BRIDGE MOUNT

JACK & BORE

BRIDGE MOUNTING AND JACK AND BORE UNDER R.R.

Standard Rigid Conduit (GRC) - Weights and Dimensions

Trade Size	Nominal Wt. Per 100 Ft. (30.5M)		Nominal Outside Diameter		Nominal Wall Thickness		Quantity In Primary Bundle		Master Bundles Approx.					
	lb.	kg	in.	mm	in.	mm	ft.	m	ft.	m	lb.	kg	cu ft	cu m
16	82	37.2	0.840	21.3	0.104	2.60	100	30.5	2500	762.5	2050	929.7	20.8	0.59
21	109	49.4	1.050	26.7	0.107	2.70	50	15.2	2000	610.0	2180	988.7	24.3	0.69
27	161	73.0	1.315	33.4	0.126	3.20	50	15.2	1250	381.3	2013	912.9	21.7	0.61
35	218	98.9	1.660	42.2	0.133	3.40	-	-	900	274.5	1962	889.8	23.3	0.66
41	263	119.3	1.900	48.3	0.138	3.50	-	-	800	244.0	2104	954.2	27.8	0.79
53	350	158.7	2.375	60.3	0.146	3.70	-	-	600	183.0	2100	952.4	33.8	0.96
63	559	253.5	2.875	73.0	0.193	4.90	-	-	370	112.9	2068	937.9	29.2	0.83
78	727	329.7	3.500	88.9	0.205	5.20	-	-	300	91.5	2181	989.1	31.3	0.89
91	880	399.1	4.000	101.6	0.215	5.50	-	-	250	76.3	2200	997.7	34.7	0.98
103	1030	467.1	4.500	114.3	0.225	5.70	-	-	200	61.0	2060	934.2	33.7	0.95
129	1400	634.9	5.563	141.3	0.245	6.20	-	-	150	45.8	2100	952.4	41.3	1.17
155	1840	834.5	6.625	168.3	0.266	6.80	-	-	100	30.5	1840	834.5	38.9	1.10

Standard Metallic Tubing (EMT) - Weights and Dimensions

Trade Size	Nominal Wt. Per 100 Ft.	Nominal Outside Diameter	Nominal Wall Thickness	Quantity In	Master Bundles
					TSP-23

(30.5M)

Bundle Quantity Wt. Volume

Metric	lb.	kg	in.	mm	in.	mm	ft.	m	ft.	mm	lb.	kg	cu ft	cu m
16	30	13.6	0.706	17.9	0.042	1.07	100	30.5	7000	2135.0	2100	952.4	28.7	0.81
21	46	20.9	0.922	23.4	0.049	1.25	100	30.5	5000	1525.0	2300	1043.1	35.6	1.01
27	67	30.4	1.163	29.5	0.057	1.45	100	30.5	3000	915.0	2010	911.6	33.7	0.95
35	101	45.8	1.510	38.4	0.065	1.65	50	15.2	2000	610.0	2020	916.1	35.0	0.99
41	116	52.6	1.740	44.2	0.065	1.65	50	15.2	1500	457.5	1740	789.1	34.2	0.97
53	148	67.1	2.197	55.8	0.065	1.65	-	-	1200	366.0	1776	805.4	46.7	1.32
63	216	98.0	2.875	73.0	0.072	1.83	-	-	610	186.1	1318	597.7	41.5	1.18
78	263	119.3	3.500	88.9	0.072	1.83	-	-	510	155.6	1341	608.2	48.9	1.38
91	349	158.3	4.000	101.6	0.083	2.11	-	-	370	112.9	1291	585.5	48.6	1.38
103	393	178.2	4.500	114.3	0.083	2.11	-	-	300	91.5	1179	534.7	48.3	1.37

OR RISERS ON POLES.

Intermediate Metal Conduit (IMC) - Weights and Dimensions

Trade Size	Nominal Wt. Per 100 Ft. (30.5M)	Nominal Outside Diameter	Minimum Wall Thickness	Quantity In Primary Bundle	Master Bundles Approx. Quantity	Wt.	Volume
16	62	28.1	0.815	20.7	0.070	1.80	100 30.5 3500 1067.5 2170 984.1 26.7 0.76
21	84	38.1	1.029	26.1	0.075	1.90	50 15.2 2500 762.5 2100 952.4 30.7 0.87
27	119	54.0	1.290	32.8	0.085	2.20	50 15.2 1700 518.5 2023 917.5 30.7 0.87
35	158	71.7	1.638	41.6	0.085	2.20	- - 1350 411.8 2133 967.3 36.3 1.03
41	194	88.0	1.883	47.8	0.090	2.30	- - 1100 335.5 2134 967.8 38.2 1.08
53	256	116.1	2.360	59.9	0.095	2.40	- - 800 244.0 2048 928.8 45.8 1.30
63	441	200.0	2.857	72.6	0.140	3.50	- - 370 112.9 1632 740.1 29.2 0.83
78	543	246.3	3.476	88.3	0.140	3.50	- - 300 91.5 1629 738.8 31.3 0.89
91	629	285.3	3.971	100.9	0.140	3.50	- - 240 73.2 1510 684.8 34.7 0.98
103	700	317.5	4.466	113.4	0.140	3.50	- - 240 73.2 1680 761.9 42.8 1.21

630-2-XXX

1. The Steel Tube Institute *Guidelines for Installing Steel Conduit Tubing* General Product Information addresses this question. [Click here to link to the section containing a downloadable pdf file.](#)

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630-2-XXX

2. Raceway Articles were renumbered in the 2002 NEC®. The following list shows the Article numbers that apply to IMC, RMC, and EMT, followed by the former Article number in parentheses.

IMC NEC® Article 342 (345)

RMC NEC® Article 344 (346)

EMT NEC® Article 358 (348)

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3. The following standards cover steel tubing (EMT)/conduit (RMC & IMC). The American Society for Testing Materials (ASTM) does not publish a standard whose scope specifically covers steel electrical conduit and couplings. Therefore, ASTM specifications do not apply to metal conduit for use as a metal raceway for the installation of wires and cables in accordance with the *National Electrical Code*®.

Electrical Metallic Tubing (EMT) is Listed to Standard for Electrical Metallic Tubing - Steel, UL 797 and produced to American National Standards Institute - ANSI C80.3

Rigid Metal Conduit - Steel (RMC) is Listed to Standard for Electrical Rigid Metal Conduit - Steel, UL 6 and produced to American National Standards Institute - ANSI C80.1

Intermediate Metal Conduit - Steel (IMC) is Listed to Standard for Electrical Intermediate Metal Conduit - Steel, UL 1242 and produced to American National Standards Institute - ANSI C80.6.

Additional information on the titles and designations of standards requirements that have been used for the investigation of conduits in a specific category can be found in the Underwriters Laboratories Inc.®, *General Information for Electrical Equipment Directory*. The UL product category for EMT is DYIX, for RMC is DYIX, and for IMC is DYBY.

Federal government, in an effort to reduce costs

• Benefits of rigid conduit

Types of steel conduit

Applications

• Dimensional Data

Technical Contacts

Free Downloads

Types of Steel Conduit

(Product Definitions)

630-2-XXX

Steel Conduit and Tubing

Steel conduit has been in use as a "raceway system" for electrical conductors since the early 1900s. The wall thickness and strength of steel make Rigid Steel Conduit, Intermediate Metal Conduit and Electrical Metallic Tubing the wiring methods recognized as providing the most mechanical protection to the enclosed wire conductors. Additionally, a properly installed metal conduit system is recognized by the National Electrical Code® (NEC®) as an equipment grounding conductor. There are three basic types of steel conduit in use today:

Rigid Metal Conduit — RMC (ferrous metal)

Rigid metal conduit (RMC) is a listed threaded metal raceway of circular cross section with a coupling which can be either a standard straight tapped conduit coupling or the integral type. Threads on the uncoupled end are covered by industry color-coded thread protectors which protect the threads, keep them clean and sharp, and aid in trade size recognition. Rigid metal conduit is available in trade sizes 1/2 through 6. Thread protectors for trade sizes 1, 2, 3, 4, 5, and 6 are color-coded blue, trade sizes 1/2, 1 1/2, 2 1/2, 3 1/2 are black, and trade sizes 3/4 and 1-1/4 are red. The nominal finished length of RMC with coupling is 10 feet.

Rigid metal conduit can have a primary coating of zinc, a combination of zinc and organic coatings, or a nonmetallic coating (such as PVC). Supplementary coatings can be applied to all three where additional corrosion protection is needed.



(NOTE: Contact suppliers with product-specific questions).

Rigid metal conduit is the heaviest-weight and thickest-wall steel conduit. Where galvanized by the hot-dip process, it has a coating of zinc on both the inside and outside. Electro-galvanized rigid has a coating of zinc on the exterior only, with approved corrosion resistant organic coatings on the interior. Rigid with alternate corrosion protection generally has organic coatings on both the exterior and the interior surfaces. Galvanized rigid metal conduit (RMC) is non-combustible and can be used indoors, outdoors, underground, concealed or exposed. Rigid metal conduit with coatings that are not zinc based may have temperature limitations which will be noted on the manufacturer's product label and may not be listed for use in environmental air spaces; consult manufacturers' listings and markings.

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Intermediate Metal Conduit — IMC (ferrous metal)

This product was developed in the 1970s. Intermediate Metal Conduit (IMC) is a listed threaded steel raceway of circular cross section with a coupling which can be either a standard straight-tapped conduit coupling or the integral type. Threads on the uncoupled end are covered by industry color coded thread protectors which protect the threads, keep them clean and sharp, and aid in trade size recognition. IMC is available in trade sizes 1/2 through 4. Thread protectors for trade sizes 1, 2, 3, 4, are color-coded orange; trade sizes 1/2, 1 1/2, 2 1/2, 3 1/2 are yellow; and trade sizes 3/4 and 1 1/4 are green. The nominal finished length of IMC *with coupling* is 10 feet.

IMC has a reduced wall thickness, when compared to RMC, and weighs about one-third less than RMC. The outside has a zinc based coating and the inside has an approved organic corrosion-resistant coating. IMC is interchangeable with galvanized RMC.

conduit. Both have threads with a 3/4-inch per foot taper; use the same couplings and fittings; have the same support requirements; and are permitted in the same locations.

Electrical Metallic Tubing — EMT (ferrous metal)

Electrical Metallic Tubing (EMT), also commonly called thin-wall, is a listed steel raceway of circular cross section which is unthreaded, and nominally 10 feet long. The outside corrosion protection is zinc based and the inside has an approved corrosion resistant organic coating. EMT with integral couplings is available in trade sizes 2 1/2 - 4. EMT is installed by use of set-screw or compression-type couplings and connectors. EMT is permitted to have an integral coupling which is comprised of an expanded, "belled" shape of tube on one end with set screws.

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PVC-Coated Steel Conduit (PVC)

There are three types of PVC-coated conduit; couplings are supplied separately.

1. Primary PVC coating over bare steel which is a listed rigid conduit for environmentally suitable locations.
2. A PVC coating over listed galvanized steel conduit. This is a supplementary coating intended for added protection in severely corrosive locations.
3. A primary PVC coating over a supplementary coating of zinc. This is also intended for severely corrosive locations.

These PVC-coated raceways are generally installed as a system, which means the fittings, conduit bodies, straps, hangers, boxes, etc., are also coated. There are, however, installations where only a coated elbow is used in a galvanized conduit run, such as where emerging from the soil or concrete.

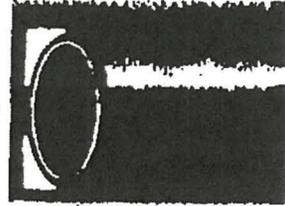
(NOTE: Manufacturers' instructions are very important when installing PVC coated products and

Product types.

Smooth wall innerduct.

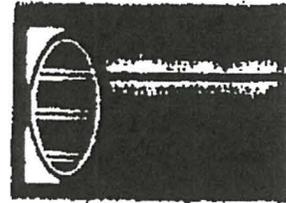
SDR 11

Smooth wall is the standard High Density Polyethylene (HDPE) Duct. The interior of smooth wall has a glass-like finish which delivers the lowest coefficient of friction of all available non-lubricated innerducts. Smooth wall innerduct is a durable high quality product for direct burial applications.



Ribbed wall innerduct.

Ribbed wall innerduct is designed to allow extremely long cable pulls to glide through the interior raised ribs. All ribbed wall innerduct is internally ribbed and available in any SDR and SDR rating.



Tracer wire innerduct.

Tracer wire innerduct provides a method of locating underground fiber optic cable. The tracer wire is a single copper wire co-extruded into the innerduct providing a corrosion resistant conductor. An alternative method of locating buried fiber optic cable is to use traceable tape, available preinstalled in any of our duct products.

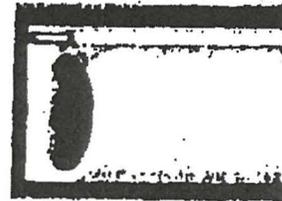
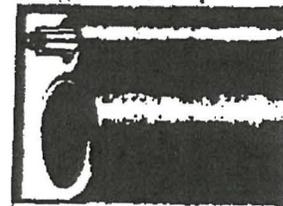


Figure 8 innerduct.

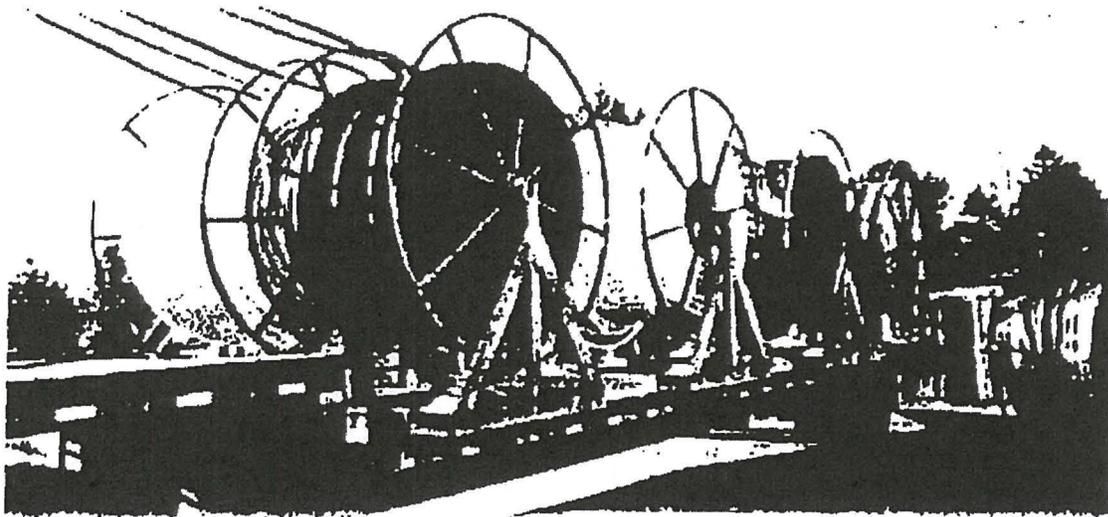
AERIAL

Blue Diamond figure 8 innerduct features a high tensile galvanized support strand for aerial placement of duct. The support strand is an integral component of the coextruded duct.



Colors & Identification

Standard colors available in:	White, black, blue, green, red, orange, lilac, grey, yellow, brown, buff, terra cotta. *Special colors are available.
Striping:	Striping combinations are available in all colors in combinations of single, double, triple and quad stripes.
Identification:	<ul style="list-style-type: none"> • Innerduct size, SDR and sequential footage markings every 2' are laser imprinted on every order. • Custom imprints such as company name, project name or any other special identification markings are also available.
Options:	<ul style="list-style-type: none"> • Lubrication. • Up to four lengths/colors of innerduct per reel available layed in parallel or series. • Pre-installed pull tape, tracer tape.



630-2-XXX

Blue Diamond Innerduct is RUS/USDA listed.

Blue Diamond is a member of PPI (Plastics Pipe Institute)

Applicable material standards and dimensional specifications.

ASTM F2160 - Solid Wall High Density PE Conduit based on Controlled O.D.
ASTM D3350 - Polyethylene Plastic Pipe Fittings Method
ASTM D3035 - Polyethylene (PE) Plastic Pipe Based on Controlled O.D.
ASTM D1248 - Specification for Polyethylene Plastic Molding and Extrusion Material
ASTM D2239 - Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Inside Diameter
ASTM D2447 - Polyethylene (PE) Plastic Pipe, Schedules 40 and 80, Based on O.D.
ASTM D3485 - Smooth Wall Coilable (PE) Conduit (Duct) for Preassembled Wire and Cable
NEMA Standards Publication TC-7
BELLCORE Generic Requirements for Optical Cable Innerduct and Accessories, 1995
AWWA C901

Specifications.

1.0 Introduction:

The following specification details the requirements for HDPE innerduct as manufactured by Blue Diamond for the purpose of security, protection and identification of fiber optic or coaxial cable networks.

2.0 Innerduct Construction:

2.1 All innerduct shall be circular and of uniform cross section to the dimensions in accordance with ASTM D3035 and F2160

2.2 Innerduct shall be a continuous length of _____ (smooth walled, ribbed inside) with a low friction internal surface containing no welds or joints, coiled on a reel.

2.2.1 Innerduct shall be supplied _____

a) empty

b) containing a pulling medium such as mule tape

c) pre-installed with a cable specified by _____

3.0 Materials:

- 3.1 The innerduct shall be extruded from virgin High Density Polyethylene (HDPE) resin, in accordance to the requirements of ASTM D3350 with cell classification 345440C.
- 3.2 Density, melt flow, tensile strength at yield, and environmental stress crack shall conform to the values listed in ASTM D3350, except as noted below.
- 3.3 Adequate stabilization shall be added during the manufacturing process to protect the polyethylene against thermal and UV degradation throughout the projected lifespan of the finished product.

4.0 Dimensions:

- 4.1 The innerduct shall be SDR _____, SIDR _____, Schedule 40 or Schedule 80, and conform to the dimensions as outlined in Table _____ or ASTM D3035.

5.0 Identification and Marketing:

- 5.1 Innerduct shall be permanently marked with a _____ (1) laser ink imprinter, or (2) heat embossed white lettering, which shall be marked in a position 90 degrees to any stripes specified.
- 5.2 The base colors of the pipe shall be _____
- 5.3 (0, 1, 2, 3, or 4) 5mm stripes, colored _____ shall be extruded onto the pipe at 90 degrees to the printing and 180 degrees from each other.
- 5.4 Marking shall include the owners name _____, ASTM and SDR designation, diameter and size. Additionally, a sequential length mark of _____ shall show length of the innerduct.
- 5.5 Innerduct shall be marked so that date of manufacture, shift and lot of resin can be identified and referenced to certifications and quality control test results.

6.0 Quality Assurance:

- 6.1 Manufacturer shall provide certification of the properties as specified above.
- 6.2 In addition to continuous in process inspection and control, batch samples will be checked for finish, print quality, dimensions and ovality.
- 6.3 The above tests are in addition to the resin requirements as outlined in ASTM D3350.
- 6.4 All reels will be marked and labeled with customer purchase order, project name, or other information for tracking and receiving.

Polyethylene SDR 13.5: Meets material and dimensional requirements of ASTM F2160.

Nominal Duct Size	Outside Diameter	Wall Thickness	Inside Diameter	Minimum Unsupported Bend Radius	Safe Working Pull Strength	Weight Per 1000 Ft.
1/2"	.840" ± .004"	.062" + .020"	.696"	10"	400 lbs.	72 lbs.
3/4"	1.050" ± .004"	.078" + .020"	.874"	12"	650 lbs.	110 lbs.
1"	1.315" ± .005"	.097" + .020"	1.101"	14"	1,050 lbs.	166 lbs.
1 1/4"	1.660" ± .005"	.123" + .020"	1.394"	18"	1,650 lbs.	264 lbs.
1 1/2"	1.900" ± .008"	.141" + .020"	1.599"	20"	2,150 lbs.	343 lbs.
2"	2.375" ± .008"	.176" + .021"	2.002"	26"	3,400 lbs.	531 lbs.
2 1/2"	2.875" ± .007"	.213" + .028"	2.424"	38"	5,000 lbs.	778 lbs.
3"	3.500" ± .008"	.258" + .031"	2.950"	48"	7,400 lbs.	1,153 lbs.
4"	4.500" ± .009"	.333" + .040"	3.793"	60"	12,200 lbs.	1,904 lbs.
6"	6.625" ± .011"	.491" + .059"	4.959"	67"	26,500 lbs.	4,130 lbs.

Polyethylene SDR 11: Meets material and dimensional requirements of ASTM F2160.

Nominal Duct Size	Outside Diameter	Wall Thickness	Inside Diameter	Minimum Unsupported Bend Radius	Safe Working Pull Strength	Weight Per 1000 Ft.
1/2"	.840" ± .004"	.078" + .020"	.667"	10"	500 lbs.	85 lbs.
3/4"	1.050" ± .004"	.095" + .020"	.839"	12"	800 lbs.	130 lbs.
1"	1.315" ± .005"	.120" + .020"	1.056"	14"	1,250 lbs.	200 lbs.
1 1/4"	1.660" ± .005"	.151" + .020"	1.338"	18"	2,000 lbs.	314 lbs.
1 1/2"	1.900" ± .008"	.173" + .021"	1.534"	20"	2,600 lbs.	408 lbs.
2"	2.375" ± .008"	.216" + .026"	1.917"	26"	4,100 lbs.	639 lbs.
2 1/2"	2.875" ± .007"	.261" + .031"	2.321"	38"	6,000 lbs.	936 lbs.
3"	3.500" ± .008"	.318" + .038"	2.825"	48"	8,900 lbs.	1,367 lbs.
4"	4.500" ± .009"	.408" + .048"	3.633"	60"	14,700 lbs.	2,293 lbs.
6"	6.625" ± .011"	.602" + .072"	4.724"	67"	31,900 lbs.	4,971 lbs.

3-2 →

4 →

7-4 →

4 →

Polyethylene Schedule 40: Meets NEMA TC-7.

Nominal Duct Size	Outside Diameter	Wall Thickness	Inside Diameter	Minimum Unsupported Bend Radius	Safe Working Pull Strength	Weight Per 1000 Ft.
1/2"	.840" ± .004"	.119" ± .010"	.602"	10"	700 lbs.	112 lbs.
3/4"	1.050" ± .004"	.123" ± .010"	.804"	12"	900 lbs.	148 lbs.
1"	1.315" ± .005"	.143" ± .010"	1.029"	14"	1,375 lbs.	218 lbs.
1 1/4"	1.660" ± .005"	.150" ± .010"	1.360"	18"	1,875 lbs.	295 lbs.
1 1/2"	1.900" ± .006"	.155" ± .010"	1.590"	20"	2,225 lbs.	352 lbs.
2"	2.375" ± .006"	.164" ± .010"	2.047"	26"	3,000 lbs.	472 lbs.
2 1/2"	2.875" ± .007"	.215" ± .012"	2.445"	38"	4,775 lbs.	744 lbs.
3"	3.500" ± .008"	.229" ± .013"	3.042"	48"	6,250 lbs.	974 lbs.
6"	6.625" ± .011"	.297" ± .017"	6.031"	67"	15,283 lbs.	2,368 lbs.

*Innerduct rated SDR 7, 9, 9.3, 15.5, 17, 21 and NEMA 5CH80 also available.

Polyethylene SIDR 9: Meets material and dimensional requirements of ASTM D2239.

Nominal Duct Size	ASTM Inside Diameter	Minimum Wall	ASTM Tolerance	Standard Outside Diameter	Weight Per 1000 Ft.
3/4" SIDR 9	0.824	0.092	0.020	1.027	122 lbs.
1" SIDR 9	1.049	0.117	0.020	1.302	183 lbs.
1 1/4" SIDR 9	1.380	0.153	0.020	1.707	328 lbs.
1 1/2" SIDR 9	1.610	0.178	0.021	1.989	444 lbs.
2" SIDR 9	2.067	0.230	0.028	2.554	732 lbs.

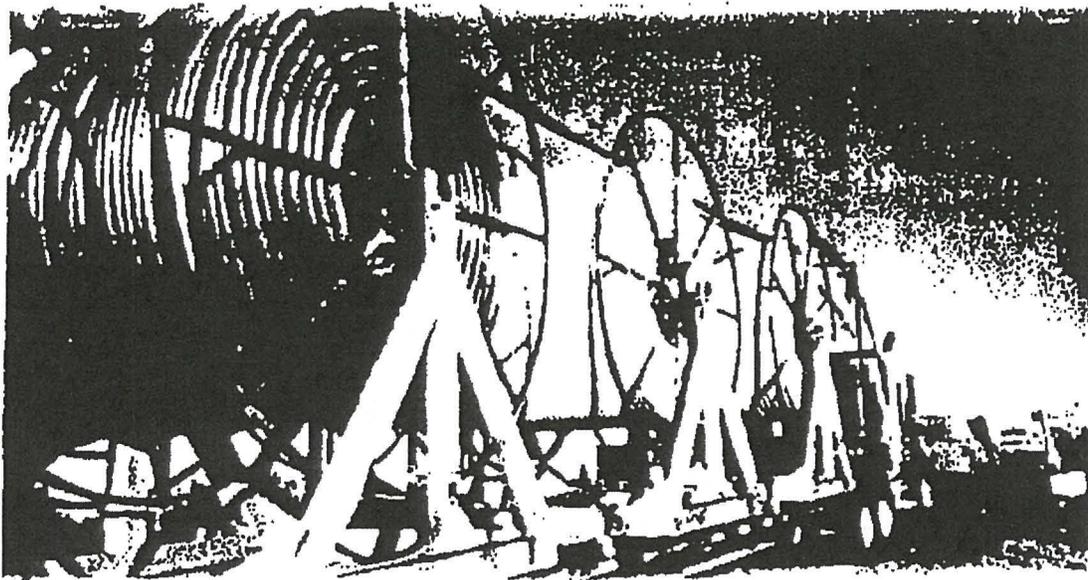
Polyethylene SIDR 11.5: Meets material and dimensional requirements of ASTM D2239.

Nominal Duct Size	ASTM Inside Diameter	Minimum Wall	ASTM Tolerance	Standard Outside Diameter	Weight Per 1000 Ft.
3/4" SIDR 11.5	0.824	0.072	0.020	0.987	96 lbs.
1" SIDR 11.5	1.049	0.091	0.020	1.251	151 lbs.
1 1/4" SIDR 11.5	1.380	0.120	0.020	1.640	255 lbs.
1 1/2" SIDR 11.5	1.610	0.140	0.020	1.910	343 lbs.
2" SIDR 11.5	2.067	0.180	0.022	2.448	559 lbs.
2 1/2" SIDR 11.5	2.469	0.215	0.026	2.924	798 lbs.
3" SIDR 11.5	3.068	0.267	0.032	3.634	1,232 lbs.
4" SIDR 11.5	4.026	0.350	0.042	4.768	2,122 lbs.

Polyethylene SIDR 15: Meets material and dimensional requirements of ASTM D2239.

Nominal Duct Size	ASTM Inside Diameter	Minimum Wall	ASTM Tolerance	Standard Outside Diameter	Weight Per 1000 Ft.
3/4" SIDR 15	0.824	0.062	0.020	0.968	84 lbs.
1" SIDR 15	1.049	0.070	0.020	1.209	117 lbs.
1 1/4" SIDR 15	1.380	0.092	0.020	1.584	187 lbs.
1 1/2" SIDR 15	1.610	0.107	0.020	1.845	264 lbs.
2" SIDR 15	2.067	0.138	0.020	2.363	426 lbs.
2 1/2" SIDR 15	2.469	0.165	0.020	2.818	600 lbs.
3" SIDR 15	3.068	0.205	0.025	3.502	926 lbs.
4" SIDR 15	4.026	0.268	0.032	4.595	1,595 lbs.

Product listed SDR 33, 41 and 49 also available



Reel Capacities.

Pipe Size

reel size = flange x traverse x drum

1/2"	72x42x30	72x48x24						Reels per Truckload	
	17,000	20,000						72"	16
3/4"	72x48x24	84x48x24						84"	14
	10,000	18,000						96"	12
1"	72x48x30	84x48x30	96x38x30	96x48x30				102"	11
	7,000	10,000	11,000	14,000				114"	8
1 1/4"	72x48x30	84x48x30	96x38x30	96x48x30				120"	8
	4,800	6,200	7,500	8,600					
1 1/2"	72x48x30	84x48x30	96x38x30	96x48x30	102x42x30	114x42x30			
	3,000	4,500	5,000	6,000	7,200	8,000			
2"	72x48x42	84x48x42	96x38x42	96x42x42	96x48x42	102x48x42	114x48x42		
	1,800	2,500	3,000	3,500	3,750	4,500	6,000		
2 1/2"	96x48x48	102x48x48	120x42x54						
	2,000	2,500	3,500						
3"	84x48x64	96x42x60	96x48x64	120x42x60					
	1,000	1,000	1,200	2,000					
4"	96x48x72	102x48x72	114x48x72	120x48x72					
	550 SDR	500 SDR	750 SDR	700 SDR	1000 SDR	900 SDR	1250 SDR	1100 SDR	
5"	102x48x78	114x48x78	120x48x78						
	400	600	750						
6"	120x48x84								
	400								

Capacity may vary due to differences in pipe and reel capacities.

Innerduct.com

"The innerduct Specialists!"

1-800-332-8114



630-2-XXX

We Have all of your Innerduct Needs IN STOCK!!

Our High Density Polyethylene (HDPE) Innerduct is made of **100% Virgin Resin**. The Innerduct can be manufactured in almost any color and has **outstanding UV protection**. Orange, Black, Red, Blue and Green are the most common conduit colors. We can provide **multiple duct and colors on one reel** to maximize space in a trench. All of our Innerduct is sequentially marked every foot and can be purchased with or without pull tape. The Innerduct has a **silicore lining** on the inside to **prevent cable drag friction**. SDR wall thicknesses are contingent on the type of projects projected. Schedule 40, SDR 15.5, SDR 13.5, SDR 11 and SDR 9 are all standard wall thickness.

Corrugated and Plenum Rated HDPE

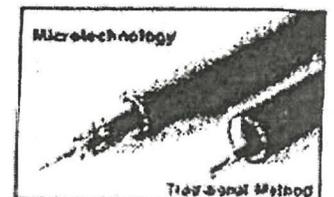
Duct is also one of our specialties. Our Plenum meets UL(910) standards for the national electrical code, article 770, and satisfies UL-2024 standards for low smoke and flame propagation. The Plenum and corrugated are offered in 1" and 1 1/4" with pre-installed pull tape for easy cable installation.

Multiple colors per reel and slitDuct are also available. Please see the [specifications](#) for more information.



MicroDuct - micro, we have the solution

Our newest product "MicroDuct". We have the solution to maximize your occupied duct systems and increase your duct capacity. Call us for MicroDuct sizes available and our wide variety of MicroDuct accessories and installation equipment.



We are the complete source for Innerduct accessories, MicroDuct accessories, fusion, pulling, and blowing...We are ready to take your order! Check out our [accessories](#) page for information about the products listed above..

SWIVEL



COUPLING



TARA



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MICRODUCT



PULLING EYE



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630-2-XXX

INNERDUCT

Test Results

Properties	Test Method	Value	
Smoke peak optical	UL-2024	0.02	
Smoke average optical density	UL-2024	0.01	
Max. flame spread distance(ft.)	UL-2024	1.5'	630-2-XXX
Max flame temperature	UL-2024	554	

Corrugated HDPE

Premier Corrugated HDPE is manufactured from High Density Polyethylene (HDPE) and is intended to be placed inside of existing Innerduct. It's ideal for pulls under 1000 ft. and is designed to reduce surface contact when pulling cable. This lightweight product offers maximum flexibility, and allows for installation in small or restricted areas. Corrugated duct is available in 1" and 1 1/4". The standard color is orange and is offered in a variety of other colors. Sequential marked footage is standard. Cust options, such as multiple colors per reel and Slit Duct are also available.

Accessories

- Universal Aluminum Couplers (screw-on type: sizes 1" thru 2")
- Expansion Type Duct Plugs (can be used with pull tape)

Corrugated HDPE Reels

Size	Color	Part No.	Nominal I.D.	Nominal O.D.	Pull Tape	Reel Size	Reel Length(ft.)
1"	Orange	PEC-100T-1000	1.049"	1.365"	900 lb	48-30-24	1000
1"	Orange	PEC-100T-1800	1.049"	1.365"	900 lb	48-30-24	1800
1"	Orange	PEC-100T-2500	1.049"	1.365"	900 lb	66-41-24	2500
1"	Orange	PEC-100T-5000	1.049"	1.365"	900 lb	72-41-24	5000
1"	Orange	PEC-100T-6500	1.049"	1.365"	900 lb	72-45-24	6500
1"	Orange	PEC-100T-8000	1.049"	1.365"	900 lb	82-41-24	8000
1/4"	Orange	PEC-125T-1000	1.250"	1.550"	900 lb	48-30-24	1000
1/4"	Orange	PEC-125T-2500	1.250"	1.550"	900 lb	66-41-24	2500
1/4"	Orange	PEC-125T-4000	1.250"	1.550"	900 lb	72-41-24	4000
1/4"	Orange	PEC-125T-5000	1.250"	1.550"	900 lb	72-41-24	5000
1/4"	Orange	PEC-125T-6000	1.250"	1.550"	900 lb	82-41-24	6000
1/4"	Orange	PEC-125T-6500	1.250"	1.550"	900 lb	82-41-24	6500

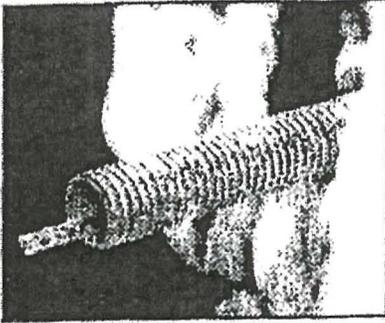
Corrugated HDPE Coils

Size	Color	Part No.	Nominal I.D.	Nominal O.D.	Pull Tape	Coil Length(ft.)
1"	Orange	PEC-100T-250	1.049"	1.365"	900 lb	250
1"	Orange	PEC-100T-500	1.049"	1.365"	900 lb	500
1 1/4"	Orange	PEC-125T-250	1.250"	1.550"	900 lb	250
1 1/4"	Orange	PEC-125T-500	1.250"	1.550"	900 lb	500

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designed and maintained by 

630-2-XXX



Riser-Gard is a nonmetallic flexible raceway for use in Riser and General Purpose applications. Riser-Gard is UL Listed and is available with tape pre-installed.

Riser-Gard complies with the UL 2024 Standard for Riser Applications for optical fiber/communications raceways.

Riser-Gard is listed to the National Electrical Code per Articles 770 and 800 for Riser and General Purpose optical fiber/telecommunication applications. Riser-Gard is suitable for use in vertical runs in a shaft or between floors, as well as areas other than the plenum (cables installed must be of suitable rating for the application.)

UL Listed to 2024	Test Method	Maximum Value
Maximum Flame Propagation	UL 2024	6.0 ft.
Maximum Air Temperature at 12 ft.	UL 2024	372°F

• Storage -4°F - 158°F • Handling -4°F - 104°F

Standard Stock - Reels

	Color	Part No.	Nom. I.D.	Nom. O.D.	Full Tape	Min. Bend Radius	Reel Size (L x W)	Reel Type	Reel Length	Reel Wt. (lbs.)	Wt. per 100 ft. (lbs.)
3/4"	Orange	DE4X1-1000	.83	1.05	Empty	6"	36" x 24"	W	1000	35	9
	Orange	DE4X1-1000S	.83	1.05	Empty	6"	36" x 24"	W	1000	35	9
	Orange	DF4X1C-500R	1.03	1.315	900 lb.	6"	48" x 32"	W	500	70	14
	Orange	DF4X1C-1000	1.03	1.315	900 lb.	6"	48" x 32"	W	1000	35	14
	Orange	DF4X1-1500	1.03	1.315	Empty	6"	48" x 32"	W	1500	90	14
1"	Orange	DF4X1C-1500	1.03	1.315	900 lb.	6"	48" x 32"	W	1500	90	14
	Orange	DF4X1C-2700	1.03	1.315	900 lb.	6"	48" x 48"	W	2700	105	14
	Orange	DF4X1C-5200	1.03	1.315	900 lb.	6"	65" x 46"	W	5200	385	14
	Orange	DF4X1C-7000	1.03	1.315	900 lb.	6"	72" x 44"	S	7000	98	14
	Orange	DF4X1C-9400	1.03	1.315	900 lb.	6"	84" x 44"	S	9400	134	14
	Orange	DF4X1-1500S	1.03	1.315	Empty	6"	48" x 30"	W	1500	90	14
	Orange	DG4X1-900	1.38	1.66	900 lb.	7"	48" x 30"	W	900	90	17
	Orange	DG4X1C-900	1.38	1.66	900 lb.	7"	48" x 30"	W	900	90	17
	Orange	DG4X1-900S	1.38	1.66	Empty	7"	48" x 30"	W	900	90	17
	Orange	DG4X1C-500R	1.38	1.66	900 lb.	7"	48" x 32"	W	500	70	17
1 1/4"	Orange	DG4X1C-1600	1.38	1.66	900 lb.	7"	48" x 48"	W	1600	105	17
	Orange	DG4X1C-3200	1.38	1.66	900 lb.	7"	65" x 48"	W	3200	385	17
	Orange	DG4X1C-4500	1.38	1.66	900 lb.	7"	72" x 44"	S	4500	98	17
	Orange	DH4X1C-1200	1.57	1.90	900 lb.	8 1/4"	48" x 48"	W	1200	105	22
	Orange	DH4X1C-4500	1.57	1.90	900 lb.	8 1/4"	84" x 44"	S	4500	134	22
1 1/2"	Orange	DH4X1-750S	1.57	1.90	Empty	8 1/4"	48" x 30"	W	750	90	22
	Orange	DJ4X1C-700	2.02	2.375	900 lb.	9 1/2"	48" x 48"	W	700	105	26
	Orange	DJ4X1C-2800	2.02	2.375	900 lb.	9 1/2"	96" x 44"	S	2800	146	26
2"	Orange	DJ4X1-500S	2.02	2.375	Empty	9 1/2"	48" x 30"	W	500	90	26

W = Wood
S = Steel

ENDOT INDUSTRIES

DUCT AND INNERDUCT

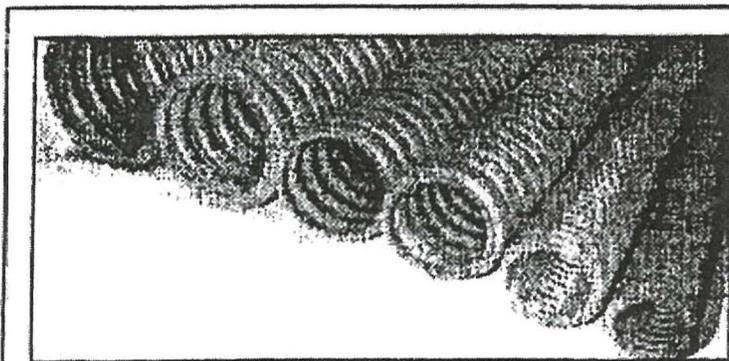
TECHNICAL SPECIFICATIONS

Endocor

630-2-XXX

CORRUGATED DUCT AND INNERDUCT

Designed specifically for fiber optic cables



FEATURES:

- Sizes from 1/2" through 2"
- Flexible & Lightweight for ease of handling
- Available in solid colors or stripes
- Available with multiple lengths/colors per reel
- Special high tensile strength versions available
- Available pre-threaded with pull line
- Available as Split Duct for covering cables in place

ENDOCOR'S corrugated design provides high tensile strength with low weight per foot for ease of handling and significantly longer put ups that can be obtained with smoothwall or ribbed innerduct.

ENDOCOR provides the lowest cable pulling friction of any innerduct design because of reduced surface area and no reel memory eliminating spiraling of the innerduct in the conduit.

ENDOCOR SPLIT DUCT is produced from Low Density Polyethylene for ease of use and superior flexibility.

PART NO.	NOMINAL SIZE	O.D.	I.D.
ICE 500	1/2"	0.850"	0.662"
ICE 750	3/4"	1.116"	0.870"
ICE 1050	1"	1.400"	1.050"
ICE 1250	1 1/4"	1.600"	1.250"
ICE 1500	1 1/2"	1.900"	1.500"
ICE 2000	2"	2.350"	1.900"

ENDOCOR PART NUMBER SYSTEM - One Selection from Each Column Creates a complete Product Part Number

EXAMPLE - Regular Corrugated 3/4", on a 48" Reel, 3/16" PP rope, Orange = ICE 075 22 21 02

PRODUCT	SIZE (ID)	REEL DIAMETER	PULL LINE	COLOR
ICE = corrugated	050 = 1/2"	21 = 34" wood	01 = empty	01 = black
	075 = 3/4"	22 = 48" wood	11 = 1250# kevlar/polyester	02 = orange
ICS = Split Duct	100 = 1"	23 = 78" wood	12 = 1800# kevlar/polyester	03 = green
	125 = 1 1/4"	24 = 84" wood	13 = 1000# polyester	04 = red
	150 = 1 1/2"	37 = 60" steel	14 = 1250# polyester	06 = blue
	200 = 2"	31 = 78" steel	15 = 1800# polyester	07 = white
		32 = 84" steel	17 = 900# kevlar	08 = gray
		33 = 96"x44" steel	21 = 3/16" PP rope	09 = custom
		34 = 96"x56" steel	22 = 1/4" PP rope	
		35 = 114" X 44" steel	31 = Cable In Conduit	

For product quantity per reel refer to Endot's reel capacity charts.

ENDOT INDUSTRIES, INC.

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PIPE AND TUBING . DUCT AND INNERDUCT

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- Endocor
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 - Cable Chase
 - Silt Duct
 - Enduct I.D Controlled
 - Enduct O.D Controlled
 - Enduct-ASTM D2447
 - Bore Duct

630-2-XXX

CORRUGATED DUCT AND INNERDUCT

Designed specifically for fiber optic cables

FEATURES:

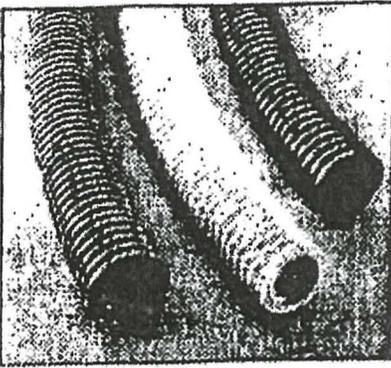
- Flexible
- Corrosion-resistant
- Corrugated for lowest possible coefficient of friction
- Lightweight yet highly crush resistant
- No Memory for ease of handling in all weather
- Available in solid colors or stripes
- Standard and custom reel lengths
- Available with multiple lengths and colors on one reel
- Sizes from 1/2" through 2"
- Special high tensile versions available
- Available pre-threaded with a variety of pull tapes (optional)

ENDOCOR'S corrugated design provides high tensile strength with low weight per foot for ease of handling and significantly longer pulls than can be obtained with smoothwall or ribbed innerduct.

ENDOCOR provides the lowest cable pulling friction of ANY innerduct design because of reduced surface area and no reel memory which eliminates spiraling in the conduit.

ENDOCOR 1050 and 1250 can be coupled with the easy to use, low cost ENDOCLIP for a fast joint that is stronger than the innerduct itself.

Part No.	SIZE	Nominal O.D.	Innerduct I.D.
500	1/2" (13mm)	0.850" (22mm)	0.652" (17mm)
750	3/4" (19mm)	1.116" (28mm)	0.870" (22mm)
1050	1" (25mm)	1.400 (35mm)	1.050" (27mm)
1250	1 1/4" (32mm)	1.600 (41mm)	1.250" (32mm)
1500	1 1/2" (38mm)	1.900" (48mm)	1.500" (36mm)
2000	2" (51mm)	2.350" (60mm)	1.900" (48mm)



Flex-Plus Blue ENT is a nonmetallic flexible raceway for use in walls, floors, and non-plenum ceilings. It's lightweight, hand bendable, and free from sharp edges, which reduces installation time and saves money.

Flex-Plus Blue ENT is UL Listed and CSA certified and is recognized by Article 362 of the 2002 NEC. It is also recognized by ICC, BOCA, SBCCI, and ICBO for having a one and two hour fire rated wall assembly and up to a three hour rated floor/ceiling assembly.

Features:

- For use in buildings in accordance with Article 362 of the 2002 NEC
- 1/2" through 2" sizes
- Available in three colors: Red, Yellow, and Blue
- Outside Diameters meet IPS Dimensions
- Storage -4°F – 158°F
- Handling -4°F – 104°F

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Standard Stock - Reels

Color	Part No.	Nom. I.D.	Nom. O.D.	Pull Tape	Min. Bend Radius	Reel Size (F x W)	Reel Type	Reel Length	Reel Wt. (lbs.)	Wt. per 100 ft. (lbs.)
Blue	12005AK-001	.56	.84	Empty	6"	36" x 24"	W	1500	40	10
Yellow	12005AY-001	.56	.84	Empty	6"	36" x 24"	W	1500	40	10
Red	12005AR-001	.56	.84	Empty	6"	36" x 24"	W	1500	40	10
Blue	12007AA-001	.76	1.05	Empty	6"	36" x 24"	W	1000	40	14
Yellow	12007AY-001	.76	1.05	Empty	6"	36" x 24"	W	1000	40	14
Red	12007AR-001	.76	1.05	Empty	6"	36" x 24"	W	1000	40	14
Blue	12008-750	1.00	1.315	Empty	6"	36" x 24"	W	750	40	20
Yellow	12008Y-750	1.00	1.315	Empty	6"	36" x 24"	W	750	40	20
Red	12008R-750	1.00	1.315	Empty	6"	36" x 24"	W	750	40	20
Blue	12009-750	1.402	1.66	Empty	7"	48" x 32"	W	750	90	19
Blue	12010-750	1.554	1.90	Empty	8 1/4"	48" x 32"	W	750	90	39
Blue	12011-500	2.030	2.375	Empty	9 1/2"	48" x 32"	W	500	90	32
Red	12011R-500	2.030	2.375	Empty	9 1/2"	48" x 32"	W	500	90	32

W = Wood

Standard Stock - Coils

Color	Part No.	Nom. I.D.	Nom. O.D.	Pull Tape	Min. Bend Radius	Coil Length (ft.)	Wt. per 100 ft. (lbs.)
Blue	12005-200	.56	.84	Empty	6"	200	10
Yellow	12005Y-200	.56	.84	Empty	6"	200	10
Red	12005R-200	.56	.84	Empty	6"	200	10
Blue	12007-100	.76	1.05	Empty	6"	100	14
Yellow	12007Y-100	.76	1.05	Empty	6"	100	14
Red	12007R-100	.76	1.05	Empty	6"	100	14
Blue	12008-100	1.00	1.315	Empty	6"	100	22
Yellow	12008Y-100	1.00	1.315	Empty	6"	100	22
Red	12008R-100	1.00	1.315	Empty	6"	100	22

STEEL CONDUIT PRODUCTS

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Dimensional Data

Listed below

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BRIDGE MOUNT

BRIDGE MOUNT

JACK & BORE

BRIDGE MOUNTING AND JACK AND BORE UNDER R.R.

Standard Rigid Conduit (GRC) - Weights and Dimensions

Trade Size	Nominal Wt. Per 100 Ft. (30.5M)		Nominal Outside Diameter		Nominal Wall Thickness		Quantity In Primary Bundle		Master Bundles Approx.					
	lb.	kg	in.	mm	in.	mm	ft.	m	ft.	m	lb.	kg	cu ft	cu m
16	82	37.2	0.840	21.3	0.104	2.60	100	30.5	2500	762.5	2050	929.7	20.8	0.59
21	109	49.4	1.050	26.7	0.107	2.70	50	15.2	2000	610.0	2180	988.7	24.3	0.69
27	161	73.0	1.315	33.4	0.126	3.20	50	15.2	1250	381.3	2013	912.9	21.7	0.61
35	218	98.9	1.660	42.2	0.133	3.40	-	-	900	274.5	1962	889.8	23.3	0.66
41	263	119.3	1.900	48.3	0.138	3.50	-	-	800	244.0	2104	954.2	27.8	0.79
53	350	158.7	2.375	60.3	0.146	3.70	-	-	600	183.0	2100	952.4	33.8	0.96
63	559	253.5	2.875	73.0	0.193	4.90	-	-	370	112.9	2068	937.9	29.2	0.83
78	727	329.7	3.500	88.9	0.205	5.20	-	-	300	91.5	2181	989.1	31.3	0.89
91	880	399.1	4.000	101.6	0.215	5.50	-	-	250	76.3	2200	997.7	34.7	0.98
103	1030	467.1	4.500	114.3	0.225	5.70	-	-	200	61.0	2060	934.2	33.7	0.95
129	1400	634.9	5.563	141.3	0.245	6.20	-	-	150	45.8	2100	952.4	41.3	1.17
155	1840	834.5	6.625	168.3	0.266	6.80	-	-	100	30.5	1840	834.5	38.9	1.10

Standard Metallic Tubing (EMT) - Weights and Dimensions

Trade Size	Nominal Wt. Per 100 Ft.	Nominal Outside Diameter	Nominal Wall Thickness	Quantity In	Master Bundles
				TSP-23	

(30.5M)

Bundle Quantity Wt. Volume

Metric	lb.	kg	in.	mm	in.	mm	ft.	m	ft.	mm	lb.	kg	cu ft	cu m
16	30	13.6	0.706	17.9	0.042	1.07	100	30.5	7000	2135.0	2100	952.4	28.7	0.81
21	46	20.9	0.922	23.4	0.049	1.25	100	30.5	5000	1525.0	2300	1043.1	35.6	1.01
27	67	30.4	1.163	29.5	0.057	1.45	100	30.5	3000	915.0	2010	911.6	33.7	0.95
35	101	45.8	1.510	38.4	0.065	1.65	50	15.2	2000	610.0	2020	916.1	35.0	0.99
41	116	52.6	1.740	44.2	0.065	1.65	50	15.2	1500	457.5	1740	789.1	34.2	0.97
53	148	67.1	2.197	55.8	0.065	1.65	-	-	1200	366.0	1776	805.4	46.7	1.32
63	216	98.0	2.875	73.0	0.072	1.83	-	-	610	186.1	1318	597.7	41.5	1.18
78	263	119.3	3.500	88.9	0.072	1.83	-	-	510	155.6	1341	608.2	48.9	1.38
91	349	158.3	4.000	101.6	0.083	2.11	-	-	370	112.9	1291	585.5	48.6	1.38
103	393	178.2	4.500	114.3	0.083	2.11	-	-	300	91.5	1179	534.7	48.3	1.37

OR RISERS ON POLES.

Intermediate Metal Conduit (IMC) - Weights and Dimensions

Trade Size	Nominal Wt. Per 100 Ft. (30.5M)	Nominal Outside Diameter	Minimum Wall Thickness	Quantity In Primary Bundle	Master Bundles Approx. Quantity	Wt.	Volume
16	62	28.1	0.815	20.7	0.070	1.80	100 30.5 3500 1067.5 2170 984.1 26.7 0.76
21	84	38.1	1.029	26.1	0.075	1.90	50 15.2 2500 762.5 2100 952.4 30.7 0.87
27	119	54.0	1.290	32.8	0.085	2.20	50 15.2 1700 518.5 2023 917.5 30.7 0.87
35	158	71.7	1.638	41.6	0.085	2.20	- - 1350 411.8 2133 967.3 36.3 1.03
41	194	88.0	1.883	47.8	0.090	2.30	- - 1100 335.5 2134 967.8 38.2 1.08
53	256	116.1	2.360	59.9	0.095	2.40	- - 800 244.0 2048 928.8 45.8 1.30
63	441	200.0	2.857	72.6	0.140	3.50	- - 370 112.9 1632 740.1 29.2 0.83
78	543	246.3	3.476	88.3	0.140	3.50	- - 300 91.5 1629 738.8 31.3 0.89
91	629	285.3	3.971	100.9	0.140	3.50	- - 240 73.2 1510 684.8 34.7 0.98
103	700	317.5	4.466	113.4	0.140	3.50	- - 240 73.2 1680 761.9 42.8 1.21

630-2-XXX

1. The Steel Tube Institute *Guidelines for Installing Steel Conduit Tubing* General Product Information addresses this question. [Click here to link to the section containing a downloadable pdf file.](#)

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2. Raceway Articles were renumbered in the 2002 NEC®. The following list shows the Article numbers that apply to IMC, RMC, and EMT, followed by the former Article number in parentheses.

IMC NEC® Article 342 (345)

RMC NEC® Article 344 (346)

EMT NEC® Article 358 (348)

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3. The following standards cover steel tubing (EMT)/conduit (RMC & IMC). The American Society for Testing Materials (ASTM) does not publish a standard whose scope specifically covers steel electrical conduit and couplings. Therefore, ASTM specifications do not apply to metal conduit for use as a metal raceway for the installation of wires and cables in accordance with the *National Electrical Code*®.

Electrical Metallic Tubing (EMT) is Listed to Standard for Electrical Metallic Tubing - Steel, UL 797 and produced to American National Standards Institute - ANSI C80.3

Rigid Metal Conduit - Steel (RMC) is Listed to Standard for Electrical Rigid Metal Conduit - Steel, UL 6 and produced to American National Standards Institute - ANSI C80.1

Intermediate Metal Conduit - Steel (IMC) is Listed to Standard for Electrical Intermediate Metal Conduit - Steel, UL 1242 and produced to American National Standards Institute - ANSI C80.6.

Additional information on the titles and designations of standards requirements that have been used for the investigation of conduits in a specific category can be found in the Underwriters Laboratories Inc.®, *General Information for Electrical Equipment Directory*. The UL product category for EMT is DYIX, for RMC is DYIX, and for IMC is DYBY.

Federal government, in an effort to reduce costs

• Benefits of rigid conduit

Types of steel conduit

Applications

• Dimensional Data

Technical Contacts

Free Downloads

Types of Steel Conduit

(Product Definitions)

630-2-XXX

Steel Conduit and Tubing

Steel conduit has been in use as a "raceway system" for electrical conductors since the early 1900s. The wall thickness and strength of steel make Rigid Steel Conduit, Intermediate Metal Conduit and Electrical Metallic Tubing the wiring methods recognized as providing the most mechanical protection to the enclosed wire conductors. Additionally, a properly installed metal conduit system is recognized by the National Electrical Code® (NEC®) as an equipment grounding conductor. There are three basic types of steel conduit in use today:

Rigid Metal Conduit — RMC (ferrous metal)

Rigid metal conduit (RMC) is a listed threaded metal raceway of circular cross section with a coupling which can be either a standard straight tapped conduit coupling or the integral type. Threads on the uncoupled end are covered by industry color-coded thread protectors which protect the threads, keep them clean and sharp, and aid in trade size recognition. Rigid metal conduit is available in trade sizes 1/2 through 6. Thread protectors for trade sizes 1, 2, 3, 4, 5, and 6 are color-coded blue, trade sizes 1/2, 1 1/2, 2 1/2, 3 1/2 are black, and trade sizes 3/4 and 1-1/4 are red. The nominal finished length of RMC with coupling is 10 feet.

Rigid metal conduit can have a primary coating of zinc, a combination of zinc and organic coatings, or a nonmetallic coating (such as PVC). Supplementary coatings can be applied to all three where additional corrosion protection is needed.



(NOTE: Contact suppliers with product-specific questions).

Rigid metal conduit is the heaviest-weight and thickest-wall steel conduit. Where galvanized by the hot-dip process, it has a coating of zinc on both the inside and outside. Electro-galvanized rigid has a coating of zinc on the exterior only, with approved corrosion resistant organic coatings on the interior. Rigid with alternate corrosion protection generally has organic coatings on both the exterior and the interior surfaces. Galvanized rigid metal conduit (RMC) is non-combustible and can be used indoors, outdoors, underground, concealed or exposed. Rigid metal conduit with coatings that are not zinc based may have temperature limitations which will be noted on the manufacturer's product label and may not be listed for use in environmental air spaces; consult manufacturers' listings and markings.

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Intermediate Metal Conduit — IMC (ferrous metal)

This product was developed in the 1970s. Intermediate Metal Conduit (IMC) is a listed threaded steel raceway of circular cross section with a coupling which can be either a standard straight-tapped conduit coupling or the integral type. Threads on the uncoupled end are covered by industry color coded thread protectors which protect the threads, keep them clean and sharp, and aid in trade size recognition. IMC is available in trade sizes 1/2 through 4. Thread protectors for trade sizes 1, 2, 3, 4, are color-coded orange; trade sizes 1/2, 1 1/2, 2 1/2, 3 1/2 are yellow; and trade sizes 3/4 and 1 1/4 are green. The nominal finished length of IMC *with coupling* is 10 feet.

IMC has a reduced wall thickness, when compared to RMC, and weighs about one-third less than RMC. The outside has a zinc based coating and the inside has an approved organic corrosion-resistant coating. IMC is interchangeable with galvanized steel conduit.

conduit. Both have threads with a 3/4-inch per foot taper; use the same couplings and fittings; have the same support requirements; and are permitted in the same locations.

Electrical Metallic Tubing — EMT (ferrous metal)

Electrical Metallic Tubing (EMT), also commonly called thin-wall, is a listed steel raceway of circular cross section which is unthreaded, and nominally 10 feet long. The outside corrosion protection is zinc based and the inside has an approved corrosion resistant organic coating. EMT with integral couplings is available in trade sizes 2 1/2 - 4. EMT is installed by use of set-screw or compression-type couplings and connectors. EMT is permitted to have an integral coupling which is comprised of an expanded, "belled" shape of tube on one end with set screws.

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PVC-Coated Steel Conduit (PVC)

There are three types of PVC-coated conduit; couplings are supplied separately.

1. Primary PVC coating over bare steel which is a listed rigid conduit for environmentally suitable locations.
2. A PVC coating over listed galvanized steel conduit. This is a supplementary coating intended for added protection in severely corrosive locations.
3. A primary PVC coating over a supplementary coating of zinc. This is also intended for severely corrosive locations.

These PVC-coated raceways are generally installed as a system, which means the fittings, conduit bodies, straps, hangers, boxes, etc., are also coated. There are, however, installations where only a coated elbow is used in a galvanized conduit run, such as where emerging from the soil or concrete.

(NOTE: Manufacturers' instructions are very important when installing PVC coated products and

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630-2-XXX

INNERDUCT

Test Results

Properties	Test Method	Value	
Smoke peak optical	UL-2024	0.02	
Smoke average optical density	UL-2024	0.01	
Max. flame spread distance(ft.)	UL-2024	1.5'	630-2-XXX
Max flame temperature	UL-2024	554	

Corrugated HDPE

Premier Corrugated HDPE is manufactured from High Density Polyethylene (HDPE) and is intended to be placed inside of existing Innerduct. It's ideal for pulls under 1000 ft. and is designed to reduce surface contact when pulling cable. This lightweight product offers maximum flexibility, and allows for installation in small or restricted areas. Corrugated duct is available in 1" and 1 1/4". The standard color is orange and is offered in a variety of other colors. Sequential marked footage is standard. Cust options, such as multiple colors per reel and Slit Duct are also available.

Accessories

- Universal Aluminum Couplers (screw-on type: sizes 1" thru 2")
- Expansion Type Duct Plugs (can be used with pull tape)

Corrugated HDPE Reels

Size	Color	Part No.	Nominal I.D.	Nominal O.D.	Pull Tape	Reel Size	Reel Length(ft.)
1"	Orange	PEC-100T-1000	1.049"	1.365"	900 lb	48-30-24	1000
1"	Orange	PEC-100T-1800	1.049"	1.365"	900 lb	48-30-24	1800
1"	Orange	PEC-100T-2500	1.049"	1.365"	900 lb	66-41-24	2500
1"	Orange	PEC-100T-5000	1.049"	1.365"	900 lb	72-41-24	5000
1"	Orange	PEC-100T-6500	1.049"	1.365"	900 lb	72-45-24	6500
1"	Orange	PEC-100T-8000	1.049"	1.365"	900 lb	82-41-24	8000
1/4"	Orange	PEC-125T-1000	1.250"	1.550"	900 lb	48-30-24	1000
1/4"	Orange	PEC-125T-2500	1.250"	1.550"	900 lb	66-41-24	2500
1/4"	Orange	PEC-125T-4000	1.250"	1.550"	900 lb	72-41-24	4000
1/4"	Orange	PEC-125T-5000	1.250"	1.550"	900 lb	72-41-24	5000
1/4"	Orange	PEC-125T-6000	1.250"	1.550"	900 lb	82-41-24	6000
1/4"	Orange	PEC-125T-6500	1.250"	1.550"	900 lb	82-41-24	6500

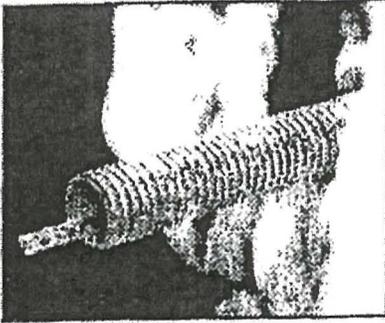
Corrugated HDPE Coils

Size	Color	Part No.	Nominal I.D.	Nominal O.D.	Pull Tape	Coil Length(ft.)
1"	Orange	PEC-100T-250	1.049"	1.365"	900 lb	250
1"	Orange	PEC-100T-500	1.049"	1.365"	900 lb	500
1 1/4"	Orange	PEC-125T-250	1.250"	1.550"	900 lb	250
1 1/4"	Orange	PEC-125T-500	1.250"	1.550"	900 lb	500

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630-2-XXX



Riser-Gard is a nonmetallic flexible raceway for use in Riser and General Purpose applications. Riser-Gard is UL Listed and is available with tape pre-installed.

Riser-Gard complies with the UL 2024 Standard for Riser Applications for optical fiber/communications raceways.

Riser-Gard is listed to the National Electrical Code per Articles 770 and 800 for Riser and General Purpose optical fiber/telecommunication applications. Riser-Gard is suitable for use in vertical runs in a shaft or between floors, as well as areas other than the plenum (cables installed must be of suitable rating for the application.)

UL Listed to 2024	Test Method	Maximum Value
Maximum Flame Propagation	UL 2024	6.0 ft.
Maximum Air Temperature at 12 ft.	UL 2024	372°F

• Storage -4°F - 158°F • Handling -4°F - 104°F

Standard Stock - Reels

	Color	Part No.	Nom. I.D.	Nom. O.D.	Full Tape	Min. Bend Radius	Reel Size (L x W)	Reel Type	Reel Length	Reel Wt. (lbs.)	Wt. per 100 ft. (lbs.)
3/4"	Orange	DE4X1-1000	.83	1.05	Empty	6"	36" x 24"	W	1000	35	9
	Orange	DE4X1-1000S	.83	1.05	Empty	6"	36" x 24"	W	1000	35	9
	Orange	DF4X1C-500R	1.03	1.315	900 lb.	6"	48" x 32"	W	500	70	14
	Orange	DF4X1C-1000	1.03	1.315	900 lb.	6"	48" x 32"	W	1000	35	14
	Orange	DF4X1-1500	1.03	1.315	Empty	6"	48" x 32"	W	1500	90	14
1"	Orange	DF4X1C-1500	1.03	1.315	900 lb.	6"	48" x 32"	W	1500	90	14
	Orange	DF4X1C-2700	1.03	1.315	900 lb.	6"	48" x 48"	W	2700	105	14
	Orange	DF4X1C-5200	1.03	1.315	900 lb.	6"	65" x 46"	W	5200	385	14
	Orange	DF4X1C-7000	1.03	1.315	900 lb.	6"	72" x 44"	S	7000	98	14
	Orange	DF4X1C-9400	1.03	1.315	900 lb.	6"	84" x 44"	S	9400	134	14
	Orange	DF4X1-1500S	1.03	1.315	Empty	6"	48" x 30"	W	1500	90	14
	Orange	DG4X1-900	1.38	1.66	900 lb.	7"	48" x 30"	W	900	90	17
1 1/4"	Orange	DG4X1C-900	1.38	1.66	900 lb.	7"	48" x 30"	W	900	90	17
	Orange	DG4X1-900S	1.38	1.66	Empty	7"	48" x 30"	W	900	90	17
	Orange	DG4X1C-500R	1.38	1.66	900 lb.	7"	48" x 32"	W	500	70	17
	Orange	DG4X1C-1600	1.38	1.66	900 lb.	7"	48" x 48"	W	1600	105	17
	Orange	DG4X1C-3200	1.38	1.66	900 lb.	7"	65" x 48"	W	3200	385	17
1 1/2"	Orange	DG4X1C-4500	1.38	1.66	900 lb.	7"	72" x 44"	S	4500	98	17
	Orange	DH4X1C-1200	1.57	1.90	900 lb.	8 1/4"	48" x 48"	W	1200	105	22
	Orange	DH4X1C-4500	1.57	1.90	900 lb.	8 1/4"	84" x 44"	S	4500	134	22
	Orange	DH4X1-750S	1.57	1.90	Empty	8 1/4"	48" x 30"	W	750	90	22
2"	Orange	DJ4X1C-700	2.02	2.375	900 lb.	9 1/2"	48" x 48"	W	700	105	26
	Orange	DJ4X1C-2800	2.02	2.375	900 lb.	9 1/2"	96" x 44"	S	2800	146	26
	Orange	DJ4X1-500S	2.02	2.375	Empty	9 1/2"	48" x 30"	W	500	90	26

W = Wood
S = Steel

ENDOT INDUSTRIES

DUCT AND INNERDUCT

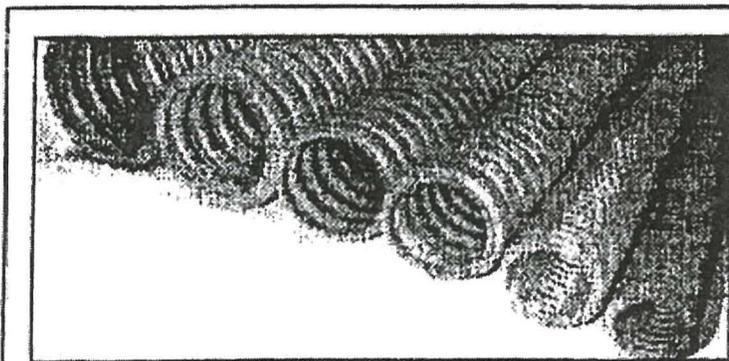
TECHNICAL SPECIFICATIONS

Endocor

630-2-XXX

CORRUGATED DUCT AND INNERDUCT

Designed specifically for fiber optic cables



FEATURES:

- Sizes from 1/2" through 2"
- Flexible & Lightweight for ease of handling
- Available in solid colors or stripes
- Available with multiple lengths/colors per reel
- Special high tensile strength versions available
- Available pre-threaded with pull line
- Available as Split Duct for covering cables in place

ENDOCOR'S corrugated design provides high tensile strength with low weight per foot for ease of handling and significantly longer put ups that can be obtained with smoothwall or ribbed innerduct.

ENDOCOR provides the lowest cable pulling friction of any innerduct design because of reduced surface area and no reel memory eliminating spiraling of the innerduct in the conduit.

ENDOCOR SPLIT DUCT is produced from Low Density Polyethylene for ease of use and superior flexibility.

PART NO.	NOMINAL SIZE	O.D.	I.D.
ICE 500	1/2"	0.850"	0.662"
ICE 750	3/4"	1.116"	0.870"
ICE 1050	1"	1.400"	1.050"
ICE 1250	1 1/4"	1.600"	1.250"
ICE 1500	1 1/2"	1.900"	1.500"
ICE 2000	2"	2.350"	1.900"

ENDOCOR PART NUMBER SYSTEM - One Selection from Each Column Creates a complete Product Part Number

EXAMPLE - Regular Corrugated 3/4", on a 48" Reel, 3/16" PP rope, Orange = ICE 075 22 21 02

PRODUCT	SIZE (ID)	REEL DIAMETER	PULL LINE	COLOR
ICE = corrugated	050 = 1/2"	21 = 34" wood	01 = empty	01 = black
	075 = 3/4"	22 = 48" wood	11 = 1250# kevlar/polyester	02 = orange
ICS = Split Duct	100 = 1"	23 = 78" wood	12 = 1800# kevlar/polyester	03 = green
	125 = 1 1/4"	24 = 84" wood	13 = 1000# polyester	04 = red
	150 = 1 1/2"	37 = 60" steel	14 = 1250# polyester	06 = blue
	200 = 2"	31 = 78" steel	15 = 1800# polyester	07 = white
		32 = 84" steel	17 = 900# kevlar	08 = gray
		33 = 96"x44" steel	21 = 3/16" PP rope	09 = custom
		34 = 96"x56" steel	22 = 1/4" PP rope	
		35 = 114" X 44" steel	31 = Cable In Conduit	

For product quantity per reel refer to Endot's reel capacity charts.

ENDOT INDUSTRIES, INC.

www.endot.com • e-mail: info@endot.com



CORPORATE HEADQUARTERS • 60 Green Pond Road, Rockaway, NJ 07866 • 800-443-6368 • FAX 973-625-4087
 MID-WEST OPERATIONS • 739 County Road 1, South Point, OH 45680 • 800-345-3990 • FAX 740-377-9844
 TENNESSEE OPERATIONS • 400 Bohannon Avenue, Greeneville, TN 37745 • 800-438-5851 • FAX 423-639-3722

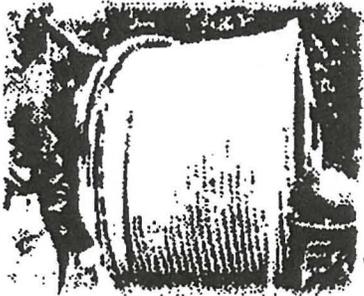


ENDOT INDUSTRIES

100-44-ENDOT(443-8368)

PIPE AND TUBING . DUCT AND INNERDUCT

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docor

- Innerduct**
- Endocor
 - Endoguard
 - Cable Chase
 - Silt Duct
 - Enduct I.D Controlled
 - Enduct O.D Controlled
 - Enduct-ASTM D2447
 - Bore Duct

630-2-XXX

CORRUGATED DUCT AND INNERDUCT

Designed specifically for fiber optic cables

FEATURES:

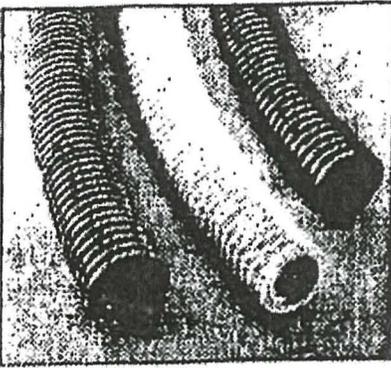
- Flexible
- Corrosion-resistant
- Corrugated for lowest possible coefficient of friction
- Lightweight yet highly crush resistant
- No Memory for ease of handling in all weather
- Available in solid colors or stripes
- Standard and custom reel lengths
- Available with multiple lengths and colors on one reel
- Sizes from 1/2" through 2"
- Special high tensile versions available
- Available pre-threaded with a variety of pull tapes (optional)

ENDOCOR'S corrugated design provides high tensile strength with low weight per foot for ease of handling and significantly longer pulls than can be obtained with smoothwall or ribbed innerduct.

ENDOCOR provides the lowest cable pulling friction of ANY innerduct design because of reduced surface area and no reel memory which eliminates spiraling in the conduit.

ENDOCOR 1050 and 1250 can be coupled with the easy to use, low cost ENDOCLIP for a fast joint that is stronger than the innerduct itself.

Part No.	SIZE	Nominal O.D.	Innerduct I.D.
500	1/2" (13mm)	0.850" (22mm)	0.652" (17mm)
750	3/4" (19mm)	1.116" (28mm)	0.870" (22mm)
1050	1" (25mm)	1.400 (35mm)	1.050" (27mm)
1250	1 1/4" (32mm)	1.600 (41mm)	1.250" (32mm)
1500	1 1/2" (38mm)	1.900" (48mm)	1.500" (36mm)
2000	2" (51mm)	2.350" (60mm)	1.900" (48mm)



Flex-Plus Blue ENT is a nonmetallic flexible raceway for use in walls, floors, and non-plenum ceilings. It's lightweight, hand bendable, and free from sharp edges, which reduces installation time and saves money.

Flex-Plus Blue ENT is UL Listed and CSA certified and is recognized by Article 362 of the 2002 NEC. It is also recognized by ICC, BOCA, SBCCI, and ICBO for having a one and two hour fire rated wall assembly and up to a three hour rated floor/ceiling assembly.

Features:

- For use in buildings in accordance with Article 362 of the 2002 NEC
- 1/2" through 2" sizes
- Available in three colors: Red, Yellow, and Blue
- Outside Diameters meet IPS Dimensions
- Storage -4°F – 158°F
- Handling -4°F – 104°F

630-2-XXX

Standard Stock - Reels

Color	Part No.	Nom. I.D.	Nom. O.D.	Pull Tape	Min. Bend Radius	Reel Size (F x W)	Reel Type	Reel Length	Reel Wt. (lbs.)	Wt. per 100 ft. (lbs.)
Blue	12005AK-001	.56	.84	Empty	6"	36" x 24"	W	1500	40	10
Yellow	12005AY-001	.56	.84	Empty	6"	36" x 24"	W	1500	40	10
Red	12005AR-001	.56	.84	Empty	6"	36" x 24"	W	1500	40	10
Blue	12007AA-001	.76	1.05	Empty	6"	36" x 24"	W	1000	40	14
Yellow	12007AY-001	.76	1.05	Empty	6"	36" x 24"	W	1000	40	14
Red	12007AR-001	.76	1.05	Empty	6"	36" x 24"	W	1000	40	14
Blue	12008-750	1.00	1.315	Empty	6"	36" x 24"	W	750	40	20
Yellow	12008Y-750	1.00	1.315	Empty	6"	36" x 24"	W	750	40	20
Red	12008R-750	1.00	1.315	Empty	6"	36" x 24"	W	750	40	20
Blue	12009-750	1.402	1.66	Empty	7"	48" x 32"	W	750	90	19
Blue	12010-750	1.554	1.90	Empty	8 1/4"	48" x 32"	W	750	90	39
Blue	12011-500	2.030	2.375	Empty	9 1/2"	48" x 32"	W	500	90	32
Red	12011R-500	2.030	2.375	Empty	9 1/2"	48" x 32"	W	500	90	32

W = Wood

Standard Stock - Coils

Color	Part No.	Nom. I.D.	Nom. O.D.	Pull Tape	Min. Bend Radius	Coil Length (ft.)	Wt. per 100 ft. (lbs.)
Blue	12005-200	.56	.84	Empty	6"	200	10
Yellow	12005Y-200	.56	.84	Empty	6"	200	10
Red	12005R-200	.56	.84	Empty	6"	200	10
Blue	12007-100	.76	1.05	Empty	6"	100	14
Yellow	12007Y-100	.76	1.05	Empty	6"	100	14
Red	12007R-100	.76	1.05	Empty	6"	100	14
Blue	12008-100	1.00	1.315	Empty	6"	100	22
Yellow	12008Y-100	1.00	1.315	Empty	6"	100	22
Red	12008R-100	1.00	1.315	Empty	6"	100	22

STEEL CONDUIT PRODUCTS

SIC INFORMATION • PRODUCERS • Q&A • NEWS/INFORMATION • RESOURCES • CODE CORNER

Dimensional Data

Listed below

630-2-XXX

BRIDGE MOUNT

BRIDGE MOUNT

JACK & BORE

BRIDGE MOUNTING AND JACK AND BORE UNDER R.R.

Standard Rigid Conduit (GRC) - Weights and Dimensions

Trade Size	Nominal Wt. Per 100 Ft. (30.5M)		Nominal Outside Diameter		Nominal Wall Thickness		Quantity In Primary Bundle		Master Bundles Approx.					
	lb.	kg	in.	mm	in.	mm	ft.	m	ft.	m	lb.	kg	cu ft	cu m
16	82	37.2	0.840	21.3	0.104	2.60	100	30.5	2500	762.5	2050	929.7	20.8	0.59
21	109	49.4	1.050	26.7	0.107	2.70	50	15.2	2000	610.0	2180	988.7	24.3	0.69
27	161	73.0	1.315	33.4	0.126	3.20	50	15.2	1250	381.3	2013	912.9	21.7	0.61
35	218	98.9	1.660	42.2	0.133	3.40	-	-	900	274.5	1962	889.8	23.3	0.66
41	263	119.3	1.900	48.3	0.138	3.50	-	-	800	244.0	2104	954.2	27.8	0.79
53	350	158.7	2.375	60.3	0.146	3.70	-	-	600	183.0	2100	952.4	33.8	0.96
63	559	253.5	2.875	73.0	0.193	4.90	-	-	370	112.9	2068	937.9	29.2	0.83
78	727	329.7	3.500	88.9	0.205	5.20	-	-	300	91.5	2181	989.1	31.3	0.89
91	880	399.1	4.000	101.6	0.215	5.50	-	-	250	76.3	2200	997.7	34.7	0.98
103	1030	467.1	4.500	114.3	0.225	5.70	-	-	200	61.0	2060	934.2	33.7	0.95
129	1400	634.9	5.563	141.3	0.245	6.20	-	-	150	45.8	2100	952.4	41.3	1.17
155	1840	834.5	6.625	168.3	0.266	6.80	-	-	100	30.5	1840	834.5	38.9	1.10

Standard Metallic Tubing (EMT) - Weights and Dimensions

Trade Size	Nominal Wt. Per 100 Ft.	Nominal Outside Diameter	Nominal Wall Thickness	Quantity In	Master Bundles
				TSP-23	

(30.5M)

Bundle Quantity Wt. Volume

Metric	lb.	kg	in.	mm	in.	mm	ft.	m	ft.	mm	lb.	kg	cu ft	cu m
16	30	13.6	0.706	17.9	0.042	1.07	100	30.5	7000	2135.0	2100	952.4	28.7	0.81
21	46	20.9	0.922	23.4	0.049	1.25	100	30.5	5000	1525.0	2300	1043.1	35.6	1.01
27	67	30.4	1.163	29.5	0.057	1.45	100	30.5	3000	915.0	2010	911.6	33.7	0.95
35	101	45.8	1.510	38.4	0.065	1.65	50	15.2	2000	610.0	2020	916.1	35.0	0.99
41	116	52.6	1.740	44.2	0.065	1.65	50	15.2	1500	457.5	1740	789.1	34.2	0.97
53	148	67.1	2.197	55.8	0.065	1.65	-	-	1200	366.0	1776	805.4	46.7	1.32
63	216	98.0	2.875	73.0	0.072	1.83	-	-	610	186.1	1318	597.7	41.5	1.18
78	263	119.3	3.500	88.9	0.072	1.83	-	-	510	155.6	1341	608.2	48.9	1.38
91	349	158.3	4.000	101.6	0.083	2.11	-	-	370	112.9	1291	585.5	48.6	1.38
103	393	178.2	4.500	114.3	0.083	2.11	-	-	300	91.5	1179	534.7	48.3	1.37

OR RISERS ON POLES.

Intermediate Metal Conduit (IMC) - Weights and Dimensions

Trade Size	Nominal Wt. Per 100 Ft. (30.5M)	Nominal Outside Diameter	Minimum Wall Thickness	Quantity In Primary Bundle	Master Bundles Approx. Quantity	Wt.	Volume							
Metric	lb.	kg	in.	mm	in.	mm	ft.	m	ft.	mm	lb.	kg	cu ft	cu m
16	62	28.1	0.815	20.7	0.070	1.80	100	30.5	3500	1067.5	2170	984.1	26.7	0.76
21	84	38.1	1.029	26.1	0.075	1.90	50	15.2	2500	762.5	2100	952.4	30.7	0.87
27	119	54.0	1.290	32.8	0.085	2.20	50	15.2	1700	518.5	2023	917.5	30.7	0.87
35	158	71.7	1.638	41.6	0.085	2.20	-	-	1350	411.8	2133	967.3	36.3	1.03
41	194	88.0	1.883	47.8	0.090	2.30	-	-	1100	335.5	2134	967.8	38.2	1.08
53	256	116.1	2.360	59.9	0.095	2.40	-	-	800	244.0	2048	928.8	45.8	1.30
63	441	200.0	2.857	72.6	0.140	3.50	-	-	370	112.9	1632	740.1	29.2	0.83
78	543	246.3	3.476	88.3	0.140	3.50	-	-	300	91.5	1629	738.8	31.3	0.89
91	629	285.3	3.971	100.9	0.140	3.50	-	-	240	73.2	1510	684.8	34.7	0.98
103	700	317.5	4.466	113.4	0.140	3.50	-	-	240	73.2	1680	761.9	42.8	1.21

630-2-XXX

1. The Steel Tube Institute *Guidelines for Installing Steel Conduit Tubing* General Product Information addresses this question. [Click here to link to the section containing a downloadable pdf file.](#)

[Back to Questions](#)

630-2-XXX

2. Raceway Articles were renumbered in the 2002 NEC®. The following list shows the Article numbers that apply to IMC, RMC, and EMT, followed by the former Article number in parentheses.

IMC NEC® Article 342 (345)

RMC NEC® Article 344 (346)

EMT NEC® Article 358 (348)

[Back to Questions](#)

3. The following standards cover steel tubing (EMT)/conduit (RMC & IMC). The American Society for Testing Materials (ASTM) does not publish a standard whose scope specifically covers steel electrical conduit and couplings. Therefore, ASTM specifications do not apply to metal conduit for use as a metal raceway for the installation of wires and cables in accordance with the *National Electrical Code*®.

Electrical Metallic Tubing (EMT) is Listed to Standard for Electrical Metallic Tubing - Steel, UL 797 and produced to American National Standards Institute - ANSI C80.3

Rigid Metal Conduit - Steel (RMC) is Listed to Standard for Electrical Rigid Metal Conduit - Steel, UL 6 and produced to American National Standards Institute - ANSI C80.1

Intermediate Metal Conduit - Steel (IMC) is Listed to Standard for Electrical Intermediate Metal Conduit - Steel, UL 1242 and produced to American National Standards Institute - ANSI C80.6.

Additional information on the titles and designations of standards requirements that have been used for the investigation of conduits in a specific category can be found in the Underwriters Laboratories Inc.®, *General Information for Electrical Equipment Directory*. The UL product category for EMT is DY, for RMC is DYIX, and for IMC is DYBY.

Federal government, in an effort to reduce costs

• Benefits of rigid conduit

Types of steel conduit

Applications

• Dimensional Data

Technical Contacts

Free Downloads

Types of Steel Conduit

(Product Definitions)

630-2-XXX

Steel Conduit and Tubing

Steel conduit has been in use as a "raceway system" for electrical conductors since the early 1900s. The wall thickness and strength of steel make Rigid Steel Conduit, Intermediate Metal Conduit and Electrical Metallic Tubing the wiring methods recognized as providing the most mechanical protection to the enclosed wire conductors. Additionally, a properly installed metal conduit system is recognized by the National Electrical Code® (NEC®) as an equipment grounding conductor. There are three basic types of steel conduit in use today:

Rigid Metal Conduit — RMC (ferrous metal)

Rigid metal conduit (RMC) is a listed threaded metal raceway of circular cross section with a coupling which can be either a standard straight tapped conduit coupling or the integral type. Threads on the uncoupled end are covered by industry color-coded thread protectors which protect the threads, keep them clean and sharp, and aid in trade size recognition. Rigid metal conduit is available in trade sizes 1/2 through 6. Thread protectors for trade sizes 1, 2, 3, 4, 5, and 6 are color-coded blue, trade sizes 1/2, 1 1/2, 2 1/2, 3 1/2 are black, and trade sizes 3/4 and 1-1/4 are red. The nominal finished length of RMC with coupling is 10 feet.

Rigid metal conduit can have a primary coating of zinc, a combination of zinc and organic coatings, or a nonmetallic coating (such as PVC). Supplementary coatings can be applied to all three where additional corrosion protection is needed.



(NOTE: Contact suppliers with product-specific questions).

Rigid metal conduit is the heaviest-weight and thickest-wall steel conduit. Where galvanized by the hot-dip process, it has a coating of zinc on both the inside and outside. Electro-galvanized rigid has a coating of zinc on the exterior only, with approved corrosion resistant organic coatings on the interior. Rigid with alternate corrosion protection generally has organic coatings on both the exterior and the interior surfaces. Galvanized rigid metal conduit (RMC) is non-combustible and can be used indoors, outdoors, underground, concealed or exposed. Rigid metal conduit with coatings that are not zinc based may have temperature limitations which will be noted on the manufacturer's product label and may not be listed for use in environmental air spaces; consult manufacturers' listings and markings.

[Go to top](#)

Intermediate Metal Conduit — IMC (ferrous metal)

This product was developed in the 1970s. Intermediate Metal Conduit (IMC) is a listed threaded steel raceway of circular cross section with a coupling which can be either a standard straight-tapped conduit coupling or the integral type. Threads on the uncoupled end are covered by industry color coded thread protectors which protect the threads, keep them clean and sharp, and aid in trade size recognition. IMC is available in trade sizes 1/2 through 4. Thread protectors for trade sizes 1, 2, 3, 4, are color-coded orange; trade sizes 1/2, 1 1/2, 2 1/2, 3 1/2 are yellow; and trade sizes 3/4 and 1 1/4 are green. The nominal finished length of IMC *with coupling* is 10 feet.

IMC has a reduced wall thickness, when compared to RMC, and weighs about one-third less than RMC. The outside has a zinc based coating and the inside has an approved organic corrosion-resistant coating. IMC is interchangeable with galvanized RMC.

conduit. Both have threads with a 3/4-inch per foot taper; use the same couplings and fittings; have the same support requirements; and are permitted in the same locations.

Electrical Metallic Tubing — EMT (ferrous metal)

Electrical Metallic Tubing (EMT), also commonly called thin-wall, is a listed steel raceway of circular cross section which is unthreaded, and nominally 10 feet long. The outside corrosion protection is zinc based and the inside has an approved corrosion resistant organic coating. EMT with integral couplings is available in trade sizes 2 1/2 - 4. EMT is installed by use of set-screw or compression-type couplings and connectors. EMT is permitted to have an integral coupling which is comprised of an expanded, "belled" shape of tube on one end with set screws.

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PVC-Coated Steel Conduit (PVC)

There are three types of PVC-coated conduit; couplings are supplied separately.

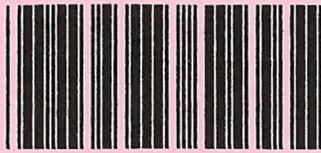
1. Primary PVC coating over bare steel which is a listed rigid conduit for environmentally suitable locations.
2. A PVC coating over listed galvanized steel conduit. This is a supplementary coating intended for added protection in severely corrosive locations.
3. A primary PVC coating over a supplementary coating of zinc. This is also intended for severely corrosive locations.

These PVC-coated raceways are generally installed as a system, which means the fittings, conduit bodies, straps, hangers, boxes, etc., are also coated. There are, however, installations where only a coated elbow is used in a galvanized conduit run, such as where emerging from the soil or concrete.

(NOTE: Manufacturers' instructions are very important when installing PVC coated products and

R-2026-0198

Document Type



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* P B C R D 0 *



R2020 0198

MAR 10 2020

CONTRACT DOCUMENTS

FOR

CONSTRUCTION

OF

ANNUAL TRAFFIC LOOPS CONTRACT

PALM BEACH COUNTY, FLORIDA

PROJECT NO. 2020051

R2020 0198

MAR 1 0 2020

PALM BEACH COUNTY, FLORIDA

**PROJECT NAME: ANNUAL TRAFFIC LOOPS
CONTRACT**

PROJECT NO.: 2020051

**BOARD OF COUNTY COMMISSIONERS
PALM BEACH COUNTY, FLORIDA
ENGINEERING & PUBLIC WORKS
ROADWAY PRODUCTION DIVISION**

Project Name: **Annual Traffic Loops Contract**

Project Number: **2020051**

ADDENDUM NO. 1

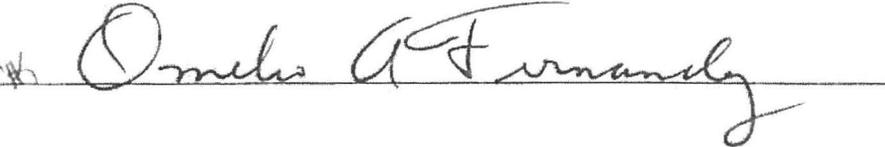
Date of Issuance: **August 30, 2019**

The Pre-Bid Meeting has been postponed until Thursday, September 12, 2019 at 11:30 a.m.

SPECIFICATIONS: Delete: C

Insert: C-A

It is required that **ADDENDUM NO. 1** be acknowledged in the space provided on the **PROPOSAL FORM.**

APPROVED BY: 

**BOARD OF COUNTY COMMISSIONERS
PALM BEACH COUNTY, FLORIDA
ENGINEERING & PUBLIC WORKS
ROADWAY PRODUCTION DIVISION**

Project Name: **Annual Traffic Loops Contract**

Project Number: **2020051**

ADDENDUM NO. 2

Date of Issuance: **September 23, 2019**

The Bid Due Date has been postponed until Tuesday, October 1, 2019

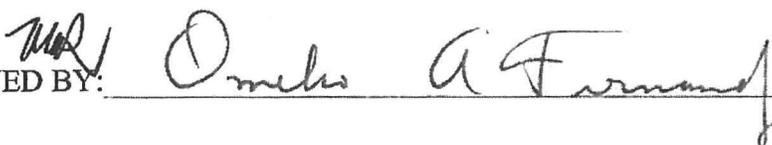
SPECIFICATIONS: Delete: C-A

Insert: C-B

Add: RFI-1

It is required that **ADDENDUM NO. 2** be acknowledged in the space provided on the **PROPOSAL FORM.**

APPROVED BY:



INDEX

Bidding Forms

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NOTICE TO BIDDERS

NOTICE TO BIDDERS

A PRE-BID MEETING WILL BE HELD ON

THURSDAY SEPTEMBER 5, 2019 AT 10:00 A.M.

AT THE ENGINEERING & PUBLIC WORKS DEPARTMENT

IN THE THIRD FLOOR MAIN CONFERENCE ROOM (3W-12)

LOCATED AT 2300 NORTH JOG ROAD

WEST PALM BEACH, FLORIDA, 33411-2745

IF THERE ARE ANY QUESTIONS

CONCERNING THIS MEETING,

PLEASE CONTACT THE OFFICE OF

ROADWAY PRODUCTION

AT 684-4150

ADVERTISEMENT FOR BID

Sealed Bids will be received by the Board of County Commissioners, Palm Beach County, Florida, in the Office of Palm Beach County Engineering & Public Works Department, Roadway Production Division, located at 2300 North Jog Road, Third Floor Room 3W-33, West Palm Beach, Florida, 33411-2745, up to 2:00 P.M., local time, and opened in the Third Floor Conference Room (3W-12) on **Tuesday, October 1, 2019**, for furnishing all Materials, labor, Equipment and supplies necessary for the Construction of:

ANNUAL TRAFFIC LOOPS CONTRACT PALM BEACH COUNTY PROJECT NO. 2020051

All conditions and requirements for Bid submission, consideration, and award are contained in the Contract Documents, which are posted on the following Palm Beach County web site:

<https://pbevssp.co.palm-beach.fl.us/webapp/vssp/AltSelfService>

To review the Contract documents for this project, go to the above URL and click on the project hyperlink. Contractors may then download and print the Contract documents (Plans, Specifications, Excel Proposal Forms, check list "with required forms" and any other related documents).

Hard copy documents will be available at the Department for a non-refundable service fee of \$25. The Contractor shall contact Palm Beach County Roadway Production Division at (561) 684-4150 in advance to arrange for hard copies.

All Bids shall be submitted in accordance with the Bid documents, including but not limited to the General Provision Section 2 and accompanied by the documentation referenced therein.

The Pre-Bid Meeting will be held on Thursday, September 12, 2019 at 11:30 A.M., in the Third Floor Main Conference Room (3W-12) in the Palm Beach County Building at 2300 North Jog Road, West Palm Beach, Florida. Attendance at this pre-bid meeting is highly recommended and strongly encouraged. To the extent you are unable to attend the pre-bid meeting, you may request and obtain an audio recording of the meeting by contacting Palm Beach County Roadway Production Division at (561) 684-4150.

The Board of County Commissioners reserves the right to reject any or all Bids. By order of the Board of County Commissioners, Palm Beach County, Florida.

ATTEST:
SHARON R. BOCK, CLERK & COMPTROLLER

BOARD OF COUNTY COMMISSIONERS
PALM BEACH COUNTY, FLORIDA

DAVID RICKS, P.E., COUNTY ENGINEER

BY: Mack Bernard, Mayor

PUBLISH: PALM BEACH POST
SUNDAY: AUGUST 25, 2019
SUNDAY: SEPTEMBER 1, 2019

SUBMITTALS REQUESTED WITH BID

At a minimum, submit one original package containing the following:
(see contract documents to determine if other requirements apply)

- X EBO Schedules 1 & 2 (pages EBO-1, EBO-2)
- X All Proposal Pages (P Pages)
- X Signed Contractor's Certification (Last P Page)
- X Signed/Sealed Local Preference (Page LP-2)
with Copy of Bidder's Palm Beach County Tax Receipt (If Eligible)
- X Signed/Sealed Living Wage (Pages LW-2, LW-3, LW-4)
- X Scrutinized Companies (Page SC-1)
- X Acknowledged/Sealed Bid Bond and Bid Bond forms pages BB-1 and BB-2
- X Certificate of Resolution (Page CC-1)
- X Copy of Firm's Active License to Conduct Business in the State of Florida
- X "Documentation of Experience and Resources", If Required

If Prime Contractors have not performed similar work with the Palm Beach County Engineering and Public Works Department within the past three years as a prime Contractor, failure to submit the required "Documentation of Experience and Resources" with the bid will cause the bid to be considered Non-Responsive.

(See pages GP-2 and GP-3, Section 2-1 for full requirement text.)

INSTRUCTIONS TO BIDDERS

Prospective Bidders are hereby advised that Division I of the FDOT Standard Specifications for Road and Bridge Construction 2017 (and as amended herein) ("Specifications") shall serve as instructions to Bidders along with the following:

1. **VSS REGISTRATION REQUIRED:** Prior to Contract award or renewal ("Award"), Contractor must register in the County's Vendor Self Service ("VSS") at <https://pbcvssp.co.palm-beach.fl.us/webapp/vssp/AltSelfService>. If Contractor intends to use subcontractors, Contractor must also ensure that all subcontractors are registered as vendors in VSS prior to Contract Award. All subcontractor agreements must include a contractual provision requiring that the subcontractor register in VSS. County will not finalize Contract Award until Contractor has certified that the Contractor and all of its subcontractors are registered in VSS.
2. **LAWS AFFECTING PUBLIC WORK:** Bidders shall be familiar with the various Federal, State and Local Laws affecting the prosecution of the Work. As outlined in Section 2-11 of the Specifications, Palm Beach County (County) Administrative Code Section 305.02 & 402.00, and the Purchasing Ordinance (Palm Beach County Code, Chapter 2, Article III, Division 2, Part A), the County is responsible to assure the qualifications of any or all prospective Contractors.
3. **POWER OF ATTORNEY:** Attorneys-in-fact who sign Proposal Guaranties and Contract Bonds must file with such bond a certified copy of their power of attorney to sign said bonds.
4. **ADDENDA – CHANGES WHILE BIDDING:** No interpretation of the meaning of the Plans, Specifications or other Contract Documents will be made to any Bidder orally. Every Request for Information (RFI) is preferred to be submitted to the Director, Palm Beach County Roadway Production Division via electronic mail (e-mail) to email address:

ENG-RoadwayBids@pbcgov.org

RFI's may also be mailed or faxed to the Director at the following: 2300 N. Jog Road, Suite #3W-33, West Palm Beach, Florida, 33411-2745. Fax: 561-684-4166. For the RFI to be given consideration, it must be submitted at least five (5) Working Days prior to the date and time fixed for the opening of Bids.

Any and all such interpretations and any supplemental instructions will be in the form of written Addenda to the Contract Documents which, if issued, will be posted on the following URL: <https://pbcvssp.co.palm-beach.fl.us/webapp/vssp/AltSelfService> up to seventy-two (72) hours prior to the date and time fixed for the opening of Bids. The exceptions to this notification period shall be that of an Addenda whose content is limited to the listing of additional approved manufacturers and substitutions, or one which contains minor clarifications or changes, which shall be issued up to 24 hours prior to the date fixed for the Contract Letting. The request for Bids may be withdrawn, or the date for receipt of Bids may be postponed, at any time prior to the bid opening.

The Bidder shall acknowledge and certify receipt of all addenda by completing the Proposal Form page. Copies of Addenda will also be made available for inspection at the Department where Bidding Documents are on file for that purpose. Failure of any Bidder to receive any

INSTRUCTIONS TO BIDDERS

such Addenda of interpretation shall not relieve any Bidder from any obligation under the Bid as submitted. All addenda so issued shall, ultimately, become part of the Contract Documents.

5. **POSTING OF BID TABULATIONS:** Recommended award will be posted for review by interested parties at the Engineering & Public Works Department located at 2300 N. Jog Rd., Suite #3W-33, West Palm Beach, Florida, 33411-2745, Florida, and will remain posted for a period of at least seventy-two (72) hours prior to approval by the Board of County Commissioners. Failure to file a protest to the Director of Purchasing Department within the time prescribed in the County Purchasing Ordinance shall constitute a waiver of proceedings under the referenced County Ordinance.

6. **EQUAL BUSINESS OPPORTUNITY PROGRAM**

6.1 Policy. It is the policy of the Board of County Commissioners of Palm Beach County, Florida, (the Board) that all segments of its business population, including, but not limited to, small, local, minority and women owned businesses, have an equitable opportunity to participate in the County's procurement process, prime contract and subcontract opportunities. To that end, the Board adopted an Equal Business Opportunity Ordinance which is codified in Sections 2-80.20 through 2-80.30 (as may be amended) of the Palm Beach County Code, (EBO Ordinance) which sets forth the County's requirements for the EBO program, and which is incorporated in this solicitation. A bidder must comply with the requirements contained in this section for a bidder to be deemed responsive to the solicitation requirements. The provisions of the EBO Ordinance are applicable to this solicitation, and shall have precedence over the provisions of this solicitation in the event of a conflict.

6.1.2 Definitions. The following terms, phrases, words and their derivations shall have the meanings given. Where not inconsistent with the context, words used in the present tense include the future tense, words in the plural number include the singular number, "any" includes "all," "and" includes "or." Capitalized terms are defined as set forth in the EBO Ordinance, and in the Contract.

- A. "prime" and "prime contractor" mean, refer, and relate to "Prime Contractor," as defined in the EBO Ordinance, and to "Bidder" and "Contractor," as defined in the Contract, and as applicable.
- B. "solicitation" and "solicit" mean, refer, and relate to Advertisement for Bid, as defined in the Contract.

6.2 Affirmative Procurement Initiatives (APIs). The API approved for this Project, including any applicable SBE or MWBE goals, is:

A waiver of API requirements was approved by the Office of Equal Business Opportunity on April 23, 2019 based upon the determination that sufficient qualified S/M/WBEs providing the goods or services required by the contract are unavailable in Palm Beach County despite every reasonable attempt to locate them.

INSTRUCTIONS TO BIDDERS

Any bid that fails to comply with the API requirements stated in this solicitation after the period allowed for waiver requests has lapsed shall be deemed non-responsive. See also the EBO Ordinance and Countywide PPM CW-O-043 for further information on APIs.

6.3 API Waiver Requests/Good Faith Efforts. If Bidder is unable to comply with the API requirements as set forth in this solicitation, such Bidder shall submit a request for a waiver or partial waiver at least (7) business days prior to the bid due date as stated in the solicitation. **If a bidder requests a waiver from an API from the Office of EBO at least 7 business days prior to the bid due date, then the bid due date will be extended pending the outcome of a waiver request. Additionally, if the waiver is granted, the solicitation will be amended accordingly and the due date extended again.**

Such waiver request shall include specified documentation that demonstrates satisfactory Good Faith Efforts (as defined below) were undertaken by Bidder to comply with the requirements as described under the selected API. The Good Faith Effort waiver request shall be reviewed by the Office of EBO within seven (7) business days of receipt. The bid due date will be extended during this review period. If the Office of EBO determines that adequate Good Faith Efforts have been demonstrated by the Bidder to warrant a partial or total waiver of the API, then the solicitation shall be amended accordingly to reflect the partial or total waiver, and any bids received by the County in the interim shall be returned unopened. The amended solicitation shall then be advertised to all prospective Bidders and the bid due date extended. However, if the Office of EBO determines that the Bidder failed to submit documentation sufficient to demonstrate that Good Faith Efforts were undertaken by the Bidder to support its waiver or partial waiver request, the request for waiver or partial waiver shall be denied, and the solicitation shall remain unchanged. In the event of an adverse waiver or partial waiver request decision, the Bidder shall have the right to request reconsideration of the adverse decision by the Director of the EBO Office, and if still aggrieved, shall be subsequently entitled to the process for an appeal to a Special Master as referenced in Section 2.-80.28 (b) of the EBO Ordinance. The solicitation due date shall be extended pending the EBO Director reconsideration and Special Master appeal process if requested.

Good Faith Efforts means documentation of the Bidder's intent to comply with the applicable APIs, including, but not limited to, the following: (1) documentation as stated in the solicitation reflecting the Bidder's commitment to comply with SBE or M/WBE goals as established by the Office of EBO for a particular contract; or (2) documentation of efforts made toward achieving EBO program goals (e.g., solicitations of bids/proposals/qualification statements from all qualified SBE firms or M/WBE firms listed in the Office of EBO's directory of certified SBE or M/WBE firms; correspondence from qualified SBE or M/WBE firms documenting their unavailability to perform SBE or M/WBE contracts; documentation of efforts to subdivide work into smaller quantities for subcontracting purposes to enhance opportunities for SBE or M/WBE firms; documentation of a Prime Contractor's posting of a bond covering the work of SBE or M/WBE subcontractors; documentation of efforts to assist SBE or M/WBE firms with obtaining financing, bonding or insurance required by the Bidder; and documentation of consultations with trade associations and consultants that represent the interests of SBE and/or M/WBEs in order to identify qualified and available SBE or M/WBE subcontractors). Scoring of Good Faith Efforts documentation and administrative determinations regarding the adequacy of such Good Faith Efforts is the responsibility of the Office of EBO.

INSTRUCTIONS TO BIDDERS

6.4 Bid Submission Documentation. S/M/WBE bidders, bidding as prime contractors, are advised that they must complete Schedule 1 listing the Work to be performed by their own workforce as well as the Work to be performed by any subcontractor, including S/M/WBE subcontractors. Failure to include this information on Schedule 1 will result in the participation by the S/M/WBE prime bidders own workforce NOT being counted towards meeting the S/M/WBE goal. This requirement applies even if the S/M/WBE contractor intends to perform 100% of the Work with their own workforce.

All Bidders are required to submit with their bid the appropriate EBO schedules in order to be deemed responsive to this solicitation. EBO documentation to be submitted is as follows:

OEBO Forms are available at the following website

<http://discover.pbcgov.org/oebo/Pages/Compliance-Programs.aspx>

Schedule 1 - List of All Proposed Subcontractors, including S/M/WBE Participation. A completed Schedule 1 shall list the names of **all** subcontractors, including S/M/WBE subcontractors, intended to be used in performance of the contract, if awarded. This schedule shall also be used if an S/M/WBE prime bidder is utilizing any subcontractors.

Schedule(s) 2 - Letter(s) of Intent to Perform as a Subcontractor, including S/M/WBE Subcontractors. A Schedule 2 for each subcontractor, including each S/M/WBE subcontractor, listed on Schedule 1, shall be completed and executed by the proposed subcontractor. The type of Work to be performed by each subcontractor and the dollar value or percentage shall also be specified. Additional copies may be made as needed. A completed Schedule 2 is a binding agreement between the prime contractor and the subcontractor and should be treated as such.

Completed and submitted EBO forms are incorporated into and made a part of the Contract Documents. Schedules 1 and 2 shall be submitted with each work order.

5.5 S/M/WBE Certification. Only those firms certified by Palm Beach County at the time of bid opening shall be counted toward the established S/M/WBE goal. Upon receipt of a complete application, **IT TAKES UP TO NINETY (90) DAYS TO BECOME CERTIFIED AS AN S/M/WBE WITH PALM BEACH COUNTY.** It is the responsibility of the bidder to confirm the certification of any proposed S/M/WBE; therefore, it is recommended that bidders visit the on-line S/M/WBE Directory at www.pbcgov.org/osba to verify S/M/WBE certification.

6.6 Counting S/M/WBE Participation.

Once a firm is determined to be an eligible S/M/WBE according to the Palm Beach County certification procedures, the Prime may count toward its S/M/WBE goals only that portion of the total dollar value of a contract performed by the S/M/WBE.

The Prime may count toward its S/M/WBE goal a portion of the total dollar value of a contract with a joint venture, eligible under the standards for certification, equal to the percentage of the ownership and control of the S/M/WBE partner in the joint venture.

INSTRUCTIONS TO BIDDERS

The Prime may count toward its S/M/WBE goal the entire expenditures for materials and equipment purchased by an S/M/WBE subcontractor, provided that the S/M/WBE subcontractor has the responsibility for the installation of the purchased materials and equipment.

The Prime may count the entire expenditure to an S/M/WBE manufacturer (i.e., a supplier/distributor that produces goods from raw materials or substantially alters the goods before resale).

The Prime may count sixty percent (60%) of its expenditure to S/M/WBE suppliers/distributors that are not manufacturers.

The Prime may count toward its S/M/WBE goal second and third tiered S/M/WBE subcontractors, provided that the Prime submits a completed Schedule 2 form for each S/M/WBE subcontractor.

The Prime may only count towards its S/M/WBE goal the goods and services in which the SBE is certified.

A certified S/M/WBE Prime may count toward the established goal the goods and services in which it performs with its own work force. The Prime S/M/WBE shall submit a completed Schedule 1 and 2.

6.7 S/M/WBE Participation. Bidder represents and warrants that Bidder will meet the S/M/WBE participation percentages submitted in its bid with the subcontractors contained on Schedules 1 and 2 and at the dollar values specified. Bidder agrees to provide any additional information requested by the County to substantiate participation.

6.8 Post Bid Waiver Request. After submission of a bid, if Bidder, through no fault of its own, is unable to meet the S/M/WBE participation specified in its bid, then Bidder must immediately seek substitute S/M/WBEs to fulfill the requirements and obtain the approval of the EBO Director. If, after reasonable Good Faith Efforts, the Bidder is unable to find an acceptable substitute S/M/WBE, a post-bid opening waiver may be requested. The request shall document the reasons for the Bidder's inability to meet the goal requirement. In the event the Bidder is found not to have performed Good Faith Efforts in its attempt to find a suitable substitute for the initial S/M/WBE proposed utilization, one (1) or more of the penalties and sanctions as set forth herein may be imposed by the EBO Office.

6.9 Responsibilities after Contract Award. The successful Bidder is required to submit accurate progress payment information with each pay application regarding each of its subcontractors, including S/M/WBE subcontractors. The Department shall audit the reported payments to S/M/WBE and non-S/M/WBE subcontractors to ensure that the Contractors' reported subcontract participation is accurate. Absent a waiver from the Office of EBO, a Contractor's failure to reach the required level of S/M/WBE subcontracting shall be considered a material breach of contract. In the event of Contractor non-compliance, the Contractor shall be subject to any penalties and sanctions available under the terms of the EBO Ordinance, its contract with the County, or by law.

The successful Bidder shall submit the following forms with each pay application:

INSTRUCTIONS TO BIDDERS

Schedule 3 – Subcontractor Activity Form. This form shall be submitted by the prime contractor with each payment application when subcontractors, including S/M/WBE subcontractors, are utilized in the performance of the contract. This form shall contain the names of all subcontractors, including S/M/WBE subcontractors, specify the subcontracted dollar amount for each subcontractor approved change orders, revised subcontractor contract amount, including S/M/WBE contract amount, amount drawn this period, amount drawn to date, and payments to date issued to subcontractors. This form is intended to be utilized on all non-professional services contracts.

Schedule 4 – Subcontractor Payment Certification, including S/M/WBEs. A Schedule 4 for **each subcontractor**, including each S/M/WBE, shall be completed and signed by each subcontractor, including each S/M/WBE, after receipt of payment from the prime. The prime shall submit this Schedule 4 with each payment application submitted to the County to document payment issued to a subcontractor in the performance of the Contract.

The successful bidder shall submit an S/M/WBE Activity Form (Schedule 3) and Subcontractor Payment Certification Forms (Schedule 4) with each payment application. **Failure to provide these forms may result in a delay in processing payment or disapproval of the invoice until they are submitted.** The S/M/WBE Activity Form (Schedule 3) is to be filled out by the Prime Contractor and the Subcontractor Payment Certification Form (Schedule 4) is to be executed by each subcontractor to verify receipt of payment.

Upon letter notification by the County that the payment tracking system is automated, the prime contractor is required to input all subcontractor payment information directly into the County's contract information system prior to submitting a payment application.

6.10 S/M/WBE Substitution after Contract Award. After Contract award, the Contractor may only substitute a certified S/M/WBE subcontractor who is unwilling or unable to perform, and such substitution may only be done with another certified S/M/WBE, in order to maintain the S/M/WBE percentage(s) submitted with the bid. Any desired change, including substitution, termination, or self-performance, in the S/M/WBE Participation Schedule (Schedule 1) shall be approved in writing in advance by the Office of EBO and the Department, and shall indicate the Prime Contractor's Good Faith Efforts to substitute any certified S/M/WBE with another certified S/M/WBE Subcontractor, as appropriate. Upon receiving approval of substitution for the S/M/WBE subcontractor, the Prime must submit a completed and signed Schedule 2 by the proposed S/M/WBE subcontractor. Subcontractor shall specify the type of Work to be performed, and the cost or percentage. In the event the Prime Contractor is found not to have performed Good Faith Efforts in its attempt to find a suitable substitute for the S/M/WBE subcontractor, one (1) or more of the penalties and sanctions as set forth herein may be imposed by the Office of EBO.

6.11 Change Orders and Modifications. If the County's issuance of an alternate or change order on a project results in changes in the scope of Work to be performed by a S/M/WBE subcontractor listed at bid opening, the Prime must submit a modified, completed and signed Schedule 2 that specifies the revised scope of Work to be performed by the S/M/WBE, along with the price and /or percentage.

INSTRUCTIONS TO BIDDERS

6.12 EBO Program Compliance, Enforcement, Penalties. Under the EBO Ordinance, the Office of EBO is required to implement and monitor S/M/WBE utilization during the term of any contract resulting from this solicitation. It is the County's policy that S/M/WBEs shall have the maximum feasible opportunity to participate in the performance of County contracts. All Bidders are required to comply with the EBO Ordinance which is incorporated herein by reference and are expected to comply with the APIs applicable to this solicitation, as well as the S/M/WBE utilization proposed by a Bidder in its Bid, as the utilization plan and APIs are automatically incorporated into and made a material component of any resulting Contract.

The EBO Office and the Department shall have the right to request and review Contractor's books and records to verify Contractor's compliance with the Contract, adherence to the EBO Program and its Bid. The EBO Office and the Department shall have the right to interview subcontractors and workers at the work site to determine Contract compliance. Contractor shall retain all books and records pertaining to this Contract, including, but not limited to, subcontractor payment records, for four (4) years after project completion date, or such longer time as may be required in other provisions of this Contract, and make such records available for inspection in Palm Beach County by the EBO Office and the County at any reasonable time during the four (4) years.

The Director of the Office of EBO or designee may require such reports, information, and documentation from Contractor as are reasonably necessary to determine compliance with the EBO Ordinance requirements. Contractor shall correct all noncompliance issues within 15 calendar days of a written notice of noncompliance by the contracting department or the EBO Office. If the Contractor does not resolve the non-compliance within 15 days of receipt of written notice of non-compliance, then the Director of the Office of EBO or designee may impose upon the non-complying party any or all of the following penalties:

- a. Suspension of contract;
- b. Withholding of funds;
- c. Termination of contract based upon a material breach of contract pertaining to EBO Program compliance;
- d. Suspension or Debarment of a respondent or bidder, contractor or other business entity from eligibility for providing goods or services to the County for a period not to exceed three (3) years; and
- e. Liquidated damages equal to the difference in dollar value of S/M/WBE participation as committed to in the contract, and the dollar value of S/M/WBE participation as actually achieved.

7. INCENTIVES

Apprentice Incentive

Palm Beach County offers an Apprentice Incentive payment to a contractor who actually expends a minimum of \$25,000 (including subcontractors) in payroll costs on apprentice wages. For purposes of this section, "apprentice" means any person who is participating in a Florida Department of Education registered apprenticeship program. The Living Wage

INSTRUCTIONS TO BIDDERS

provisions of this Contract shall not be diminished by paying an apprentice less than the Living Wage.

Upon completion of the Contract, Contractor may apply for the payment which will be added to the Contract by change order. If the County determines that the Contractor complied with the requirements of this section, it will reimburse the contractor 20% of its apprentice wages (including payroll taxes, costs, and benefits) up to a maximum reimbursement of \$100,000. The request must be submitted no later than 45 days after Substantial Completion of the project.

For projects with construction costs of \$20,000,000 or greater, the threshold amount of expenditures for apprentices which must be paid to qualify for the incentive shall increase to \$50,000 and the maximum reimbursement payment to \$200,000.

To be eligible for the Apprenticeship Incentive payment, the apprentice employer (through the Contractor) must provide the following documentation: apprentice name(s), contact information, the apprentice Registered Apprenticeship Partners Information Data System (RAPIDS) Registration number, certification from the apprentice program that the employee was in good standing during the time on the project, registered trade, and certified payroll for the apprentice hours worked on the project.

The Contractor is required to forward all documentation, assembled and submitted by the apprentice employer in accordance with the above paragraph, to the County for review and disposition. Any incentive that the County approves shall be provided to the apprentice employer in full.

Glades Resident Incentive

Palm Beach County offers an incentive Payment to any contractor (and subcontractors) who hires a new employee that is a resident of the Glades area for work on County contracts ("Glades Employee"). For purposes of this section, "resident of the Glades area" means any person whose legal residence is located in the Glades area as defined in the Palm Beach County Local Preference Ordinance.

To be eligible for the Incentive Payment, the employee must be a full-time employee of the Contractor for a minimum of 3 weeks on this project and cannot have worked for the Contractor claiming the Glades Employee as a new hire for 90 days prior to this project. Within 5 days of the Contractor hiring and the Glades Employee reporting to work at the project site, Contractor must provide the following documentation ("Hiring Certification"): Glades Employee name, contact information including legal residence, copy of driver's license or other proof of residence, hire date, start date at project site, and trade. Both the Glades Employee and employer must sign the Hiring Certification with signatures notarized.

The County has the right, but not the obligation, to conduct unannounced field interviews with the Glades Employee to ensure compliance with the requirements of this Section.

INSTRUCTIONS TO BIDDERS

Upon completion of the Contract, Contractor may apply for the Incentive Payment which will be added to the Contract by change order. The documentation ("Incentive Certification") required includes resubmitting of the Hiring Certification along with the employment end date or last day on the job site (whichever is earlier), a certified payroll for the hours worked on the project, and employee wages and benefits paid. The Incentive Certification must be signed by both the Glades Employee and employer with both signatures notarized. No markup will be allowed either by the General Contractor or a subcontractor.

If the County determines that the Contractor complied with the requirements of this section, it will reimburse the contractor 30% of the new employee(s) wages (including payroll taxes, costs, and benefits) up to a maximum reimbursement of \$100,000. The request must be submitted no later than 45 days after Substantial Completion of the project.

A Contractor can only claim the Incentive Payment once for each Glades Employee within a rolling twelve (12) month period, but the incentive can be claimed across multiple County contracts.

It is a Contract requirement of the Contractor that any reimbursement requested by a subcontractor under this Section be processed by the Contractor to the County for review.

8. ANNUAL CONSTRUCTION CONTRACT ON A TASK WORK ORDER BASIS

See Special Provisions for Method of Ordering Work (SP-10) and Annual construction Contract intent and spending limits (pages SP-11, C-1).

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SPECIAL PROVISIONS

1. COMMERCIAL NON-DISCRIMINATION: The County is committed to assuring equal opportunity in the award of contracts and complies with all laws prohibiting discrimination. Pursuant to Palm Beach County Resolution R2017-1770, as may be amended, the Contractor warrants and represent that throughout the term of the Contract, including any renewals thereof, if applicable, all of its employees are treated equally during employment without regard to race, color, religion, disability, sex, age, national origin, ancestry, marital status, familial status, sexual orientation, gender identity or expression, or genetic information. Failure to meet this requirement shall be considered default of the Contract.

The Contractor represents and warrants that it will comply with the County's Commercial Nondiscrimination Policy described in Resolution 2017-1770, as amended. As part of such compliance, the Contractor shall not discriminate on the basis of race, color, national origin, religion, ancestry, sex, age, marital status, familial status, sexual orientation, gender identity or expression, disability, or genetic information in the solicitation, selection, hiring or commercial treatment of subcontractors, vendors, suppliers, or commercial customers, nor shall the Contractor retaliate against any person for reporting instances of such discrimination. The Contractor shall provide equal opportunity for subcontractors, vendors and suppliers to participate in all of its public sector and private sector subcontracting and supply opportunities, provided that nothing contained in this clause shall prohibit or limit otherwise lawful efforts to remedy the effects of marketplace discrimination that have occurred or are occurring in the County's relevant marketplace in Palm Beach County. The Contractor understands and agrees that a material violation of this clause shall be considered a material breach of any resulting contract and may result in termination of the contract, disqualification or debarment of the Contractor from participating in County contracts, or other sanctions. This clause is not enforceable by or for the benefit of, and creates no obligation to, any third party.

All subcontractor agreements shall include this commercial non-discrimination clause.

2. PALM BEACH COUNTY OFFICE OF THE INSPECTOR GENERAL: Palm Beach County has established the Office of the Inspector General in Palm Beach County Code, Section 2-421 – 2-440, as may be amended. The Inspector General's authority includes but is not limited to the power to review past, present and proposed Department contracts, transactions, accounts and records, to require the production of records, and to audit, investigate, monitor, and inspect the activities of the Contractor, its officers, agents, employees, and lobbyists in order to ensure compliance with Contract requirements and detect corruption and fraud.

Failure to cooperate with the Inspector General or interfering with or impeding any investigation shall be in violation of Palm Beach County Code, Section 2-421 – 2-440, and punished pursuant to Section 125.69, Florida Statutes, in the same manner as a second degree misdemeanor.

3. PUBLIC ENTITY CRIMES: In accordance with F.S. 287.133 (2) (a), persons and affiliates who have been placed on the convicted vendor list may not submit Bids, Contract with, or perform work (as a contractor, supplier, subcontractor or consultant) with any public entity (i.e. Palm Beach County) in excess of Twenty five Thousand dollars (or such other amount as may be hereafter established by the Florida Division of Purchasing in accordance with F.S. 287.017) for a period of 36 months from the date of being placed on the convicted vendor list.

SPECIAL PROVISIONS

As provided in F.S. 287.132-133, by entering into this Contract or performing any Work in furtherance hereof, the contractor certifies that it, its affiliates, suppliers, subcontractors and consultants who will perform hereunder, have not been placed on the convicted vendor list maintained by the State of Florida Department of Management Services within the 36 months immediately preceding the date hereof. This notice is required by F.S. 287-133(3)(a).

The Contractor, Contractor's employees, or subcontractors of Contractor and employees of subcontractors shall comply with Palm Beach County Code, Section 2-371 - 2-377, the Palm Beach County Criminal History Records Check Ordinance ("Ordinance"), for unescorted access to critical facilities ("Critical Facilities") or criminal justice information facilities ("CJI Facilities") as identified in Resolution R-2003-1274, as amended. The Contractor is solely responsible for the financial, schedule, and/or staffing implications of this Ordinance. Further, the Contractor acknowledges that its Contract price includes any and all direct or indirect costs associated with compliance with this Ordinance, except for the applicable FDLE/FBI fees that shall be paid by the Department.

This Contract may include sites and/or buildings which have been designated as either "critical facilities" or "criminal justice information facilities" pursuant to the Ordinance and Resolution R2003-1274, as amended. Department staff representing the Department will contact the Contractor(s) and provide specific instructions for meeting the requirements of this Ordinance. Individuals passing the background check will be issued a badge. The Contractor shall make every effort to collect the badges of its employees and its subcontractors' employees upon conclusion of the Contract and return them to the Department. If the Contractor or its subcontractor(s) terminates an employee who has been issued a badge, the Contractor must notify the Department within two (2) hours. At the time of termination, the Contractor shall retrieve the badge and shall return it to the Department in a timely manner.

The Department reserves the right to suspend the Contractor if the Contractor 1) does not comply with the requirements of County Code Section 2-371 - 2-377, as amended; 2) does not contact the Department regarding a terminated Contractor employee or subcontractor employee within the stated time; or 3) fails to make a good faith effort in attempting to comply with the badge retrieval policy.

4. CHAPTER 119, F.S. PUBLIC RECORDS

Notwithstanding anything contained herein, as provided under Section 119.070 I, F.S., if the Contractor: (i) provides a service; and (ii) acts on behalf of the Department as provided under Section 119.011(2) F.S., the Contractor shall comply with the requirements of Section 119.0701, Florida Statutes, as it may be amended from time to time. The Contractor is specifically required to:

1. Keep and maintain public records required by the Department to perform services as provided under this Contract.

SPECIAL PROVISIONS

2. Upon request from the Department's Custodian of Public Records, provide the Department with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119 or as otherwise provided by law. The Contractor further agrees that all fees, charges and expenses shall be determined in accordance with Palm Beach County PPM CW-F-002, Fees Associated with Public Records Requests, as it may be amended or replaced from time to time.
3. Ensure that public records that are exempt, or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the Contract term and following completion of the Contract, if the Contractor does not transfer the records to the public agency.
4. Upon completion of the Contract the Contractor shall transfer, at no cost to the Department, all public records in possession of the Contractor unless notified by the Department's representative/liaison, on behalf of the Department's Custodian of Public Records, to keep and maintain public records required by the Department to perform the service. If the Contractor transfers all public records to the Department upon completion of the Contract, the Contractor shall destroy any duplicate public records that are exempt, or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion of the Contract, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically by the Contractor must be provided to the Department, upon request of the Department's Custodian of Public Records, in a format that is compatible with the information technology systems of the Department, at no cost to the Department.

Failure of the Contractor to comply with the requirements of this Article shall be a material breach of this Contract. The Department shall have the right to exercise any and all remedies available to it, including but not limited to, the right to terminate for cause. Contractor acknowledges that it has familiarized itself with the requirements of Chapter 119, F.S., and other requirements of State law applicable to public records not specifically set forth herein.

IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, PLEASE CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT:

**Records Request, Palm Beach County Public Affairs Dept.
301 N. Olive Avenue
West Palm Beach, FL 33401
By email at: RECORDSREQUEST@PBCGOV.ORG
Or by Telephone at: 561-355-6680**

SPECIAL PROVISIONS

5. SUBLETTING OR ASSIGNING CONTRACTS: All awards will be made with the understanding that the Work awarded will be performed by the Contractor to whom the award is made, with the assistance of workers, under the Contractor's immediate supervision, and the Contract shall not be sublet, conveyed, transferred or assigned to another Contractor except with the consent of the Department. In no event will the Contractor be released from responsibility. Contractor shall perform not less than 40% of the total Contract amount with its own organization.

6. THE USE OF PATENTED PROCESSES, ETC.: The basis on which a Contract will be awarded will be the bid prices. Prices shall include all charges for the use of patent processes, Materials or methods, and for all other similar incidental charges not expressly provided for in these Contract Documents.

7. NON-COLLUSION: Bidder certifies that this Bid is made without prior understanding, agreement, or connection with any corporation, firm or person submitting a Bid for the same Materials, services, supplies, or Equipment and is in all respects fair and without collusion or fraud. Conviction for the commission of any fraud or act of collusion in connection with any sale, bid, quotation, proposal or other act incident to doing business with Palm Beach County may result in permanent debarment.

No premiums, rebates or gratuities permitted; either with, prior to or after any delivery of material or provision of services. Any such violation may result in award cancellation, return of Materials, discontinuation of services, removal from the vendor bid list(s), and/or debarment or suspension from doing business with Palm Beach County.

8. CONFLICT OF INTEREST: The award is subject to the provisions of the applicable Federal laws, rules and regulations, the Florida Statutes and the Department's ordinances and resolutions. All Bidders must disclose with their Bid the name of any officer, director, or agent of their firm who is also an employee of the Department.

The Contractor represents that it presently has no interest and shall acquire no interest, either direct or indirect, which would conflict in any manner with the performance of services required hereunder, as provided for in Chapter 112, Part III, Florida Statutes, and the Palm Beach County Code of Ethics. The Contractor further represents that no person having any such conflict of interest shall be employed for said performance of services.

The Contractor shall promptly notify the Department's representative, in writing, by certified mail, of all potential conflicts of interest of any prospective business association, interest or other circumstance which may influence or appear to influence the Contractor's judgement or quality of services being provided hereunder. Such written notification shall identify the prospective business association, interest or circumstance, the nature of Work that the Contractor may undertake and request an opinion of the Department as to whether the association, interest or circumstance would, in the opinion of the Department, constitute a conflict of interest if entered into by the Contractor. The Department agrees to notify the Contractor of its opinion by certified mail within thirty (30) days of receipt of notification by the Contractor. If, in the opinion of the Department, the prospective business association, interest or circumstance would not constitute

SPECIAL PROVISIONS

a conflict of interest by the Contractor, the Department shall so state in the notification and the Contractor shall, at its option, enter into said association, interest or circumstance and it shall be deemed not in conflict of interest with respect to services provided to the Department by the Contractor under the terms of this Contract.

Further, all Bidders must disclose the name of any Department employee who owns, directly or indirectly, an interest of ten percent or more in the Bidder's firm or any of its branches.

9. REGULATED SUBSTANCE USE REQUIREMENTS

"Best Management Practices" for the Construction Industry

- A. The Contractor shall be responsible for assuring that each contractor or subcontractor evaluates each site before construction is initiated to determine if any site conditions may post particular problems for the handling of any Regulated Substances. For instance, handling Regulated Substances in the proximity of water bodies or wetlands may be improper.
- B. If any regulated substances are stored on the construction site during the construction process, they shall be stored in a location and manner which will minimize any possible risk of release to the environment. Any Regulated Substances shall have constructed below it an impervious containment system constructed of Materials of sufficient thickness, density and composition that will prevent the discharge to the land, groundwater, or surface waters, or any pollutant which may emanate from said storage container or containers. Each containment system shall be able to contain 150% of the contents of all storage containers above the containment system.
- C. Each contractor shall familiarize themselves with the manufacturer's safety data sheet supplied with each material containing a Regulated Substance and shall be familiar with procedures required to contain and clean up any releases of the Regulated Substance. Any tools or Equipment necessary to accomplish same shall be available in case of a release.
- D. Upon completion of construction, all unused and waste Regulated Substance and containment systems shall be removed from the construction site by the responsible contractor and shall be disposed of in a proper manner as prescribed by law.

10. UNIT PRICES: The Contractor is advised that the Contract is a unit price contract. As such, the Bidder shall include all labor, Materials, transportation, Equipment, fuel, and all other items necessary to complete the item of Work, in the unit price for the item. All items incidental to or necessary for the completion of the bid item shall be included in the unit price for the item.

The Contractor shall also comply with to Section 9-3.1 in relation to unit prices.

11. CONTINGENT ITEMS: The Contractor shall not use contingent items to meet the EBO goal(s) participation for the Contract. The SBE and M/WBE participation goals established for the Contract, as specified in the Instructions to Bidders, shall include all pay items for the project,

SPECIAL PROVISIONS

less the contingency items. The use of contingent pay items shall only increase the SBE and M/WBE participation of the Contract, over and above the required goals achieved by use of regular pay items.

12. DAILY REPORTS: The Contractor shall keep daily reports of all personnel and Equipment on the project for review by the Department for the entire Contract Time.

13. UTILITIES CONTACTS: Potential utility conflicts may vary with each Work site. Prior to commencing Work, the Contractor shall visit the Work site and ascertain all site conditions, including utilities. It shall be the Contractor's responsibility to avoid conflicts with existing underground and overhead utilities and structures. Contractor shall contact the utility owners to arrange for protection or adjustment of utilities as provided in Section 7.

The Contractor shall notify all utilities servicing the Work area at least 48-hours prior to any excavation so that underground utilities may be located. The Contractor has the responsibility to contact **Sunshine State One-Call of Florida, Inc. at 1-800-432-4770** to schedule marking locations of the utilities which subscribe to their service. The Contractor shall also call (561) 641-3429 for Palm Beach County Water Utility locations and call (561) 233-3900 for Palm Beach County Traffic Control Utility locations.

The Contractor shall properly maintain and protect all utilities. The Contractor shall be responsible for the cost to repair all damages to utilities caused by his operations.

The Contractor shall fully cooperate at all times with the Owners of Utility Companies in order to maintain the operation of the existing utilities with the least amount of interference and interruption possible.

When utility installation/adjustments are included as part of the Proposal, all utility companies (including Palm Beach County Water Utilities Dept.) reserve the right to accept or reject Bid items on their part of Work and perform their Work by their forces or other contracted forces.

14. MAINTENANCE OF TRAFFIC: Maintenance of Traffic (MOT) including Pedestrian MOT shall be incidental to the pay items. If the Contractor and/or its subcontractors do not perform the MOT and do not install and maintain those items covered under MOT according to the requirements of the standards, then Palm Beach County reserves the right to reduce said item based on the pro rata performance as determined by the Department on each payment application or \$1,000.00 per day, whichever is greater.

The Contractor shall assure compliance with FDOT Index 600 of the current Roadway and Traffic Design Standards. All references to "determinations by engineer" will be the responsibility of the Contractor, and shall be brought to the attention of the Department prior to implementation. The cost of complying with the stated standards shall be incidental to the MOT pay item. The Contractor shall ensure that at no time will traffic (temporary or otherwise) be permitted over installed exfiltration trenches.

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Pedestrian traffic must be maintained throughout the duration of construction unless otherwise indicated.

For any lane closures that extend into the peak hour(s) or any other lane closure time restriction presented in the Contract Documents, the Contractor may be charged up to \$1,000.00 per lane per ½ hour.

Lights and flags are required on the first two warning signs in the series.

15. SCHOOL ZONE

During the first and last weeks of the school year, no Work may occur within a school zone.

16. PREMIUM FOR CONFLICT CONDITION: The pay item is included for use when conflicts are encountered:

“Premium for Conflict Condition” - when pay items for regular inlet/manhole structures are specified in the Proposal, and it becomes necessary to construct a ‘conflict structure’, the Contractor shall provide a unit price cost (premium) to cover the additional Work necessary to convert the regular inlet / manhole structure into a conflict structure.

The above item shall be paid for on an ‘EACH’ basis and shall include the cost of all labor, Materials, Equipment, fuel, transportation, and other items necessary to complete the Work.

17. METHOD OF ORDERING (WORK ORDERS): The Department(s) will issue Work Orders on an “as needed” basis. All terms and conditions of the Bid are applicable. The individual orders will specify the Work to be performed, its location, a not-to-exceed cost (based on the Contract unit prices), and a schedule for performance. The Contractor must sign and return the unexecuted Work Order within five (5) Working Days of issuance. Then each Work Order will be executed (signed) by the authorized Department representative and notice to commence will be sent to the Contractor. The Contractor’s failure or refusal to sign a Work Order within five (5) Working Days does not prevent execution of the Work Order (which is solely by signature of the authorized Department representative), and all Work Orders must be performed upon notice to commence.

Upon completion of the Work Order task, the Contractor will submit an individual invoice, a copy of the original Work Order, the appropriately completed SBE-M/WBE participation forms referenced in Item 7 of the SBE-M/WBE Program section of this Contract, a Contractor’s affidavit, and consent of Surety.

Contractor shall comply will all requirements in the Contract Documents for obtaining final payment. Final payment of a Work Order does not terminate the Contract or extinguish the Surety’s obligations under the Contract.

The Contractor will receive progress payments based on submitted invoices. The payment amount will be based on the Work done and accepted. No retainage is withheld.

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18. PROSECUTION OF THE WORK: The Contractor will be required to maintain within Palm Beach County, at all times while this Contract is in effect, the Equipment necessary to properly carry out the provisions of these Specifications. After receiving notice to commence with the Work for a particular project the Contractor shall commence promptly within five (5) Working Days and shall efficiently prosecute the Work with adequate personnel and Equipment until completion, within 30 Calendar Days, or as designated by the County Engineer or his duly appointed representative. Failure to comply with either time requirement shall result in Liquidated Damages, assessed on a Work Order basis and in the amounts shown in Section 8-10.2 of the Standard Specifications.

19. EXTENSION: This Contract period is for twelve (12) months from the date of BCC approval. The Contract period may be extended for a defined period of time, not to exceed thirty-six months total Contract Time, upon approval by the Board of County Commissioners. Option for extension and other Contract deviations will only be exercised upon mutual written agreement through a Board approved Contract Amendment, while adhering to all other original terms, conditions and unit prices of the Contract.

For the purpose of re-bidding, this Contract may be extended upon mutual written agreement through a change order for up to an additional six (6) months, upon the approval of the Contract Review Committee. Total Contract Time shall not exceed forty-two (42) months.

20. AWARD: As the best interest of the Board of County Commissioners may require, the right is reserved to make award(s) on an item-by-item basis, Lot-by-Lot basis, all-or-none or any combination thereof. See General Provision 3-2.1.

21. ANNUAL CONSTRUCTION CONTRACT ON A TASK WORK ORDER BASIS: The intent of this Contract is to award a Contract to a Contractor(s) to perform Work on a Work task order basis. Work Task Orders shall be issued on an "as needed" basis. See Special Provisions for Method of Ordering Work. The line items in the Proposal pages are intended to set unit prices for the task Work Orders. No tasks are guaranteed as part of this Contract. The total value of Work Orders issued under this Contract shall not exceed the amount listed on page C-1 of this document, however, this may be increased by mutual agreement between the Contractor and Palm Beach County via a Contract Amendment.

22. NOT USED

23. NOT USED

24. PIPE CULVERTS

1. For pipe Culverts not within the scope of a FDOT Permit or Construction Agreement, proposed pipe material and size shall meet FDOT Specifications, but is limited to:
 - Reinforced Concrete
 - High Density Polyethylene except:
 - Not permitted under Thoroughfare Roadway pavement.

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- Not permitted under pavement of Roadways providing immediate access to coastal islands.
- Not permitted within the confines of a mechanically stabilized earth (MSE) wall.
- Not permitted in locations where failure would jeopardize buildings adjacent to the Right-of-Way.
- The above restrictions include pipe locations taking into consideration the angle of repose of soil under any structure or the proposed pavement, including planned future widening.
- A-2000 Polyvinyl-chloride, except:
 - Not permitted where the pipe will be exposed to direct sunlight.
 - Not permitted when the manufacture date of the pipe to be installed exceeds 2 years.
- Corrugated Polypropylene.

Corrugated metal pipe may only be used as the last segment of pipe before discharging into a lake or canal when called for on the Plans.

Pipe diameter must match or exceed sizes shown in Plans; equivalent larger size pipes may be required if proposed pipe n value exceeds 0.012. Contractor to supply the required certified testing and computations for pipe life (see FDOT Drainage Manual). All pipe Culverts provided must meet or exceed 100 year design service life.

2. For pipe Culverts within the scope of a FDOT Permit or Construction Agreement, proposed pipe material and size are limited to pipes approved by FDOT, except non-reinforced concrete pipe shall not be used. Pipe diameter must match or exceed sizes shown in Plans; equivalent larger size pipes may be required if proposed pipe n value exceeds 0.012. Contractor to supply the required certified testing and computations for pipe life (see FDOT Drainage Manual). All pipe Culverts provided must meet or exceed 100-year design service life.

25. PIPE CULVERTS (STORM SEWER PUMPING & CLEANING)

New Storm Sewer System

The Contractor is advised that this Contract includes “pumping-down” and “cleaning” of the new storm sewer system(s), as directed by the Engineer. The Contractor shall include the cost of all labor, Materials, Equipment, transportation, fuel and all other items necessary to complete the “pumping-down” and “cleaning” of the new system(s). The Contractor shall remove the water from the system(s) to allow for visual inspections for leaks, deficiencies and lamping. When directed by the Engineer, the Contractor shall make all the necessary repairs to the new storm sewer system(s)

Payment for this Work on the new storm sewer system(s) shall be incidental to the pay item, “Pipe Culvert (Storm)”, L.F.

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Existing Storm Sewer System

Also included as a pay item is “pumping-down” of the “**existing**” storm sewer system(s) (to the lake/canal outfall point, or as directed by the Engineer), and shall be paid on a lineal foot basis under the pay item(s):

- “Storm Sewer Pumping” (Exist.) (24” or less),
- “Storm Sewer Pumping” (Exist.) (>24” to 48”),
- “Storm Sewer Pumping” (Exist.) (>48”)

The item(s) shall also include all costs associated with the removal of the water from the system(s) for visual inspection of leaks, deficiencies and/or lamping.

“**Cleaning**” of the existing storm system(s) is included as a contingent pay item and the Work required under this item will be determined by the Engineer upon review of the system(s) after the pumping phase.

The “cleaning” of the existing storm sewer system(s) shall be paid on a lineal foot basis under the pay item(s):

- “Storm Sewer Cleaning” (Exist.) (24” or less),
- “Storm Sewer Cleaning” (Exist.) (>24”to 48”),
- “Storm Sewer Cleaning” (Exist.) (>48”)

At the semi-final inspection, the contractor shall temporarily plug the system(s) at structures, outfall, or as otherwise directed by the Engineer, and pump the water out of the system to below one third of the diameter of the pipe (from the invert), or as otherwise directed by the Engineer. The Contractor and the Engineer shall visually inspect the system(s) for leaks, deficiencies, and lamping problems. If leaks, deficiencies and/or lamping problems are discovered in the new pipe system(s), the contractor shall make corrective repairs, as required, in accordance with Article 5-10.2 of the General Provisions of this specification, at no additional cost to the Department. If leaks, deficiencies and/or lamping problems are discovered in the existing pipe system(s), the contractor shall notify the Engineer, and the Engineer shall determine if the Contractor should provide a cost proposal for the Work required to make the corrective repairs, in accordance with Article 5-10.2.

26. STORM SEWER SYSTEM PIPE PLUGS: The Contractor shall prepare, and submit to the Engineer for approval, a plan/sequence of the plug locations for pumping down the storm system(s) satisfactory to the Engineer. Upon completion of the storm pumping sequences, the Contractor shall notify the Engineer 24 hours prior to removing any of the temporary plugs for the Engineer to visually confirm/verify the removal of the pipe plug. Cost for the Plans and coordination of all the Work required for the above shall be incidental to the cost of the storm sewer items of Work.

27. FINAL PIPE INSPECTION: Upon completion of placement of concrete pavement or the placement of structural asphalt, but prior to placement of asphalt friction course, dewater installed pipe and provide the Engineer with a video recording schedule allowing for pipe videoing and

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reports to be completed and submitted to the Department and reviewed prior to continuation of pavement.

For pipe 48 inches or less in diameter, provide the Engineer a video DVD and report using low barrel distortion video Equipment with laser profile technology, non-contact video micrometer and associated software meeting the requirements outlined in Section 430-4.8.

The cost of the above Work shall be incidental to the related pay item for the pipe.

28. VIDEO REPORT: Provide a video report in accordance with Section 430-4.8.1. The cost of the above Work shall be incidental to the related pay item for the pipe.

29. LIMITS OF CONSTRUCTION: The Contractor shall confine the construction of the Roadway within the limits of the right of way unless the right of entry to adjacent properties has been acquired by the Department at the time of construction.

30. RESTORATION AGREEMENTS: Contractor is hereby notified that any construction performed within Restoration Agreement (RA) areas shall be restored to a condition similar or equal to that existing before such construction occurred, at no expense to the Department. Prior to disturbing the Restoration Agreement area, the Contractor shall stake the RA limits, locate/document all improvements within the area, and submit this information to the Department, prior to starting construction. Upon completion of the construction, the Engineer, together with the Contractor, shall conduct an inspection of the area to confirm that all improvements have been appropriately restored. Payment for all Work to complete the item shall be incidental to the cost of the Project.

31. GRAVITY WALL CONSTRUCTION: Unless otherwise directed, gravity walls are to be constructed from "inside" the Right of Way (no encroachment on private property). Any construction methods necessary to satisfy this requirement shall be incidental to the cost of the gravity wall.

32. IRRIGATION SYSTEM WITHIN RESTORATION AGREEMENT AREAS: The Contractor, prior to start of construction, shall obtain as-built information of the irrigation system(s) within restoration agreement areas, and catalogue related component information (manufacturer/part number/etc.) required to ensure appropriate replacement of the system and components. The as-built information shall be submitted to the Department, Construction Coordination Division, and upon completion of the construction, the Contractor shall restore the irrigation system and components to its original or better condition. Payment for all Work to complete the item shall be incidental to the cost of the Project.

33. COLOR TREATED AND STAMPED CONCRETE (5" THICK): The Contractor's attention is directed to the pay item for "Color Treated and Stamped Concrete", S.Y. This item which is proposed to be constructed in lieu of concrete traffic separators, as directed by the Engineer, consists of cast-in-place concrete (5") between Type "F" Curb and Gutter, having the surface colored with a color hardener (equivalent to the products supplied by Wm. D. Adeimy, Inc., 561/832-6305), and with the surface textured or imprinted with a pattern (as directed by the

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Engineer), and then sealed with a color seal. The Contractor is responsible for assuring the curbing is in no way discolored, damaged, marked, etc. by the application of the above.

Color Hardener:

- Apply the dry hardener when the bleed water disappears and the floating process will not disrupt the level of the surface.
- Normally apply the dry hardener evenly in two separate hakes, using two-thirds of the material for the first shake.
- Use wood floats or a power-troweling machine equipped with float blades to work the dry hardener completely and thoroughly into the surface after each application.
- After floating the final shakes, hand or machine trowel the surface to a flat, uniform finish and apply the specified texture. Apply antiquing release before imprinting with mat-type tools.
- Coverage requirements may vary according to intended use and color. 90lbs. per 100sq.ft. is considered the median range.

Curing:

- Use colored concrete sealer in the matching color to cure interior color hardened floors and exterior flat Work, that will receive regular maintenance and re-coating.
- Newly placed concrete should receive one thin finish coat of colored concrete sealer after placement and after the required curing time of 14-28 days has been reached. Before application of the finish coat, the moisture content of the concrete must be low enough so alkali and other salts do not become trapped beneath the coating, causing discoloration or clouding, thus the reason for the 14-28 day time frame.

The Work is to be performed on the job site by trained and experienced workers.

The pay item "Color Treated and Stamped Concrete", S.Y., includes all labor, Equipment, Materials, transportation, fuel and all other items incidental to or necessary for completing the Work.

The Contractor shall install a longitudinal 6" PVC (Schedule 80) pipe at stamped concrete areas, in accordance with the details for the "Irrigation Sleeves" (as detailed in the Special Provisions). This item shall be paid for under, "6" PVC Pipe (Schedule 80)", Lineal Feet, and shall include the cost of all labor, Materials, Equipment, fuel, transportation, and other items necessary to complete the Work.

34. ENGRAVING OF CURB FACE: The Contractor is hereby notified that the names of the roads shall be engraved on all quadrants of major intersections (two per quadrant), with four (4) inch high block letters, having a depth of one-half inch, and painted with a black finish. Locations shall be determined by the Engineer.

Samples of the engraving are available at the office of the Director, Construction Coordination Division, 2300 N. Jog Rd., Suite #3W-57, West Palm Beach, Florida, 33411-2745, Florida.

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The cost for the pay item, "Engraving of Curb Face", EACH, shall include all labor, Equipment, Materials, transportation, fuel and all other items incidental to or necessary for completing the Work.

35. GUARDRAIL & SPECIAL SAFETY PIPE RAIL: At locations where sidewalks, walkways, bike paths or other media for bicycle and/or pedestrian traffic are within 4' of the back of the guardrail post, the contractor shall utilize "steel posts" and "special safety pipe rail" (2" diameter) as shown in FDOT INDEX 400.

Special note: Trinity Industries ET-plus system guardrails will not be allowed on Department Projects.

36. ADDITIONAL INSURED PARTIES: The Contractor performing the construction for Palm Beach County (County) shall be required to carry and furnish insurance coverage, in accordance with General Provision Section 7-13, "Insurance Required", naming County as additional insured on the Certificate of Insurance Form(s), which shall reference the Project Limits and the Project Number, and shall read: "Palm Beach County Board of County Commissioners, a Political Subdivision of the State of Florida, its Officers, Employees and Agents".

Where the limits of Work for this Department project impact the rights-of-way of other agencies (e.g., Florida Department of Transportation (FDOT); South Florida Water Management District (SFWMD); Lake Worth Drainage District (LWDD); and other agencies as applicable), said parties shall also be named as "ADDITIONAL INSURED", either on the same form or on separate forms.

The Contractor shall coordinate all Work within the rights-of-way and air rights-of-way, as they apply, through the Engineer. Also, the Contractor shall notify the County and the agencies, as required in the Contract Documents or within a reasonable time frame prior to the start of any Work within said Right-of-Way, to allow for appropriate accommodations by the agencies.

37. PERMIT COMPLETION CERTIFICATIONS: The Contractor is advised that this Contract includes completing and executing all Construction Completion/Construction Certifications as required by each permit included in the PER section of the Contract Documents.

The Contractor is responsible for retaining the services of a Professional Engineer, registered in the State of Florida and qualified in the field of the required Work, to inspect the Work related to Permit(s), and certify in accordance with the instructions of each permit.

The Contractor shall submit two (2) originals of the completed and executed form to the Department, along with the required "As-Built" information (to be obtained by the Contractor).

All costs associated with Permit Compliance Certifications, including obtaining and depicting "As-built" information are incidental to the Contract.

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38. NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (N.P.D.E.S)

COMPLIANCE: This Contract requires compliance with the N.P.D.E.S. General Permit. The “Florida Department of Environmental Protection Generic Permit For Stormwater Discharge from Large and Small Construction Activities”, dated May 2003, which contains the description and requirements of the permit, is available at the following URL:

<http://www.dep.state.fl.us/water/stormwater/npdes/docs/cgp.pdf>

The MSWORD format of the Stormwater Pollution Prevention Plan (SWPPP) template is available at the following URL:

<http://www.dep.state.fl.us/water/stormwater/npdes/SWPPP.htm>

Notice of Intent and Notice of Termination forms are available on DEP’s URL:

http://dep.state.fl.us/water/stormwater/npdes/permits_forms.htm

The Contractor shall complete and submit the NOI and payment to DEP. If a SWPPP is not included in the Contract Plans, or the Contractor chooses to prepare his own SWPPP, the SWPPP template shall be utilized by the Contractor for developing the SWPPP for the project. Any SWPPP prepared by the Contractor shall be submitted to the Department at the Pre-Construction meeting for the project for approval by the Engineer.

Failure to sign any required documents or certification statements will be considered a default of the Contract. Any soil disturbing activities performed without the required signed documents or certification statements may be considered a violation of the DEP Generic Permit.

All costs associated with obtaining and complying with the provisions of this permit and to all federal, State and local storm water pollution prevention permits, rules, laws or ordinances, including the implementation of the S.W.P.P.P. for the project during construction are incidental to the Contract. Also included is the cost of all construction erosion and pollution control measures not covered under other specific pay items, the cost of performing and executing the joint inspection & maintenance reports (as shown in the SWPPP “Template”), and the execution of the Contractor Certification form of the Proposal pages. The Contractor Certification form must be signed and submitted with the Bid Proposal.

39. ADDITIONAL REPORTING

The Department requires Contractor to track during the Project, and report at the end of the Project, on the county of residence of Contractor’s employees and its subcontractors’ employees. Contractor agrees to prepare and provide the required report with its request for final payment.

***** FOR SPEC PREPARER – THIS PAGE ONLY APPLICABLE TO CONTRACTS FUNDED WITH INFRASTRUCTURE SALES TAX DOLLARS ***** table of contents will need to be updated for this page if it is included

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SPECIAL PROVISIONS

**PALM BEACH COUNTY
CONTRACTOR'S FINAL REPORT**

COUNTY OF RESIDENCE FOR EMPLOYEES

(to be submitted with Contractor's Application for Final Payment)

To: Palm Beach County Project Manager

From: Contractor Superintendent

Date:

Project Name:

Project Number:

In accordance with the Special Provisions of the Contract, Contractor reports the following:

Total number of employees of Contractor and subcontractors who worked for more than one day on the Project: _____

Number of employees of Contractor and subcontractors who reported their county of residence as Palm Beach County: _____

Signed

SPECIAL PROVISIONS

40. NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (N.P.D.E.S) COMPLIANCE (CONTINUED):

SITE DESCRIPTION

Project Name and Location: **Annual Traffic Loops Contract**
Palm Beach County, Florida

Palm Beach County Project No.: **2020051**

Owner Name and Address: Board of County Commissioners,
Palm Beach County
Roadway Production Division
2300 N. Jog Road
West Palm Beach, FL 33411

Work Description: **Traffic loop construction**

Runoff Coefficient: **TBD**

Site Area: **TBD**

Site Map: **TBD**

Sequence of Major Soil Disturbing Activities:

1. Paving
2. Signal

Name of Receiving Bodies: **TBD**

SPECIAL PROVISIONS

41. DYNAMIC LOAD TEST SUPPORT: Dynamic Load Test Support shall include contractor furnishing of Equipment and personnel necessary for attachment of leads, supply power source, man-basket, shelter, and any other services necessary to provide support for the testing (reference FDOT Specifications Section 455-5.13). The Department will secure test lab services, including Pile Driver Analyzer (PDA), required for dynamic measurements during the driving of the test piles. All costs for Dynamic Load Test Support shall be incidental to the cost of test pile.

42. CONSTRUCTION IMPACTS TO BUS OPERATIONS: Public Works and private development construction activities often impact Palm Tran bus operations and bus stops. Timely communication and coordination with Palm Tran and other affected transit agencies during preliminary project.

Planning is essential in order to prevent potential conflicts. Contractors should make every effort to schedule their Work to minimize impacts and the duration of impacts to transit operations and riders.

Contractors should provide Palm Tran with the name and telephone contact of their construction managers prior to the commencement of all construction projects affecting bus stops or impacting bus routes.

- Contact Palm Tran for coordination and review requirements (561 841-4246, 561 841-4223, or 561 841-4224).
- Maintenance of rider access to and from bus stops during construction is desirable. This issue should be discussed at the Pre-Construction Meeting.
- All Work shall conform to the requirements of the Americans with Disabilities Act (ADA), including provisions for temporary access to and from bus stops.
- If necessary, the contractor shall work with Palm Tran to establish an approved temporary bus stop location.
- Contractor shall notify Palm Tran through Palm Beach County Construction Coordination Division at least 10 Working Days (2 weeks) in advance of the start of construction, modification of construction effort with transit impacts, and construction completion, so that Palm Tran can advise its riders.
- Contractor may not remove any bus stop signs, transit shelters, transit benches, or other related transit infrastructure without prior Palm Tran authorization. Contractor may be asked to remove existing bus stop signage or install temporary and permanent bus stop signage. Typically, Palm Tran will make arrangements to remove all other transit infrastructure. If Palm Tran does not remove their facilities in a timely manner, these facilities may become part of the clearing and grubbing.
- Contractor is responsible for construction of an approved ADA accessible access to and from bus stop boarding and alighting areas, when called for in the Plans.
- The cost for the above is incidental to the project.

43. RECORD DRAWINGS (ROADWAY): The Contractor shall note that this Contract includes preparation of "Record Drawings". By definition, "Record Drawings" shall be the electronic information which reflects the as-built conditions of the project recorded at or about the time of the "substantial completion" inspection. The as-built information and permitting forms shall be

SPECIAL PROVISIONS

prepared and certified (i.e., signed and sealed) by a Professional Engineer or Land Surveyor licensed in the State of Florida, as required by the project.

The as-built information shall indicate (at a minimum) the following:

- All changes, additions or deletions to the original design documents.
- Centerline/baseline ties to section line(s) (including ties at P.C. & P.T.).
- Stations/elevations/offsets at P.C.'s, P.T.'s, P.I.'s, low points, high points, horizontal angle points.
- Stations/elevations/offsets at edge-of-pavement (E.O.P.), top-of- curb and back-of-sidewalk, at locations shown on the Plans, at a minimum.
- At non-curb inlets show state plane coordinates, station/offset/elevation to the top-center of the grate.
- At curb inlets show the state plane coordinates, station/offset/elevation at E.O.P.
- At special and slotted structures - show the elevation(s), dimensions, and the invert of the weir; the bleeders/orifices; and pipe inverts.
- At outfalls, show the state plane coordinates, station/offset/invert/diameter of pipe, structure type and dimensions.
- The diameter, invert, shape, and material type of connecting pipes between all structures.
- For Irrigation Sleeves - show the state plane coordinates, station/offset/elevation for all end caps, and the invert elevation at the end cap.
- At lakes obtain cross sections at 50 foot intervals, or as otherwise directed by the Engineer (Top of Bank, Top of Slope, etc.).
- At bridges, show the low member elevation/station/offset.
- At end bents, show station/offset/elevation at two corners to ensure proper offset location.
- For "Begin and End" Bridge, indicate the stations/offsets/elevations at the respective points.
- All existing and proposed trees, show state plane coordinates, station/offset to the approximate center of the tree.
- All existing and proposed Irrigation wells and valve boxes, show state plane coordinates, station/offset to the top-center of the well and/or valve box.
- All existing and proposed pull boxes, show state plane coordinates, station/offset to the top-center of the box.
- All existing and proposed traffic control cabinets, show state plane coordinates, station/offset to the center of the box.

The above information shall be collected by survey, and the collected data shall be referenced on the Micro Station (.dgn) design file of the project (Micro Station (.dgn) is the only acceptable format). The electronic Micro Station (.dgn) files (and .pdf files of same) shall be submitted on three (3) CDs labeled with project information, one (1) set of black line Plans, and six (6) sets of signed & sealed black line Plans, boldly marked in large print "**RECORD DRAWINGS ROADWAY**". PDF files shall be digitally or electronically signed and sealed in accordance with either F.A.C. 5J-17.062 or F.A.C. 61G15-23.

The above information shall be submitted to the Department (Director, Construction Coordination), for approval, prior to scheduling a final inspection.

SPECIAL PROVISIONS

The cost of the location survey, compilation/reproduction/conversion of electronic files, Plans, and other information necessary to satisfy the above, shall be incidental to the cost of the items of Work.

The Contractor shall review all permits for this project and the general/special conditions which may call for "Record-Drawings" for a specific agency. The Contractor is responsible to satisfy the permit requirements in accordance with that agency's policy, with the understanding that the cost for said "Record-Drawings", shall be paid in accordance with PER-1.

44. RECORD DRAWINGS and DOCUMENTS (BRIDGE):

The Contractor is advised that bridge structures are subject to FDOT load rating requirements and shall take all necessary steps to comply with these requirements. See FDOT Load Rating Manual (Topic No. 850-010-035) at <https://www.fdot.gov/maintenance/loadrating.shtm>.

RECORD DRAWINGS (BRIDGE):

The Contractor shall note that this Contract includes preparation of "Record Drawings". By definition, "Record Drawings" shall be the electronic information which reflects the as-built conditions of the project recorded at or about the time of the "substantial completion" inspection. The as-built information and permitting forms shall be prepared and certified (i.e., signed and sealed) by a Professional Engineer or Land Surveyor licensed in the State of Florida, as required by the project.

The as-built information shall indicate (at a minimum) the following:

- All changes, additions or deletions to the original design documents (including shop drawings).
- Centerline/baseline ties to section line(s) (including ties at P.C. & P.T.).
- Stations/elevations/offsets at P.C.'s, P.T.'s, P.I.'s, low points, high points, horizontal angle points.
- Stations/elevations/offsets at edge-of-pavement (E.O.P.), top-of- curb and back-of-sidewalk, at locations shown on the Plans, at a minimum.
- At non-curb inlets show station/offset/elevation to the top-center of the grate.
- At curb inlets show the station/offset/elevation at E.O.P.
- At bridges, show the low member elevation/station/offset.
- At end bents, show station/offset/elevation at two corners to ensure proper offset location.
- For "Begin and End" Bridge, indicate the stations/offsets/elevations at the respective points.

The above information shall be collected by survey, and the collected data shall be referenced on the Micro Station (.dgn) design file of the project (Micro Station (.dgn) is the only acceptable format). The electronic Micro Station (.dgn) files (and .pdf files of same) shall be submitted on three (3) CDs labeled with project information, one (1) set of black line Plans, and six (6) sets of signed & sealed black line Plans, boldly marked in large print "**RECORD DRAWINGS BRIDGE**".

SPECIAL PROVISIONS

The above information shall be submitted to the Department (Director, Construction Coordination), for approval, prior to scheduling a final inspection.

The cost of the location survey, compilation/reproduction/conversion of electronic files, Plans, and other information necessary to satisfy the above, shall be incidental to the cost of the items of Work.

The Contractor shall review all permits for this project and the general/special conditions which may call for "Record-Drawings" for a specific agency. The Contractor is responsible to satisfy the permit requirements in accordance with that agency's policy, with the understanding that the cost for said "Record-Drawings", shall be paid in accordance with PER-1.

DOCUMENTS (BRIDGE):

- **Schedule of Anticipated dates of Inspections:**

In-Service Inspections and or Pre-Acceptance Inspection (before any new lanes are opened to traffic). The Schedule should be received within 60 days of the preconstruction meeting. The Department must receive a two week advance confirmation notice prior to the In-Service Inspections and or Pre-Acceptance Inspection.

- **As-Built Load Rating**

If the bridge is built per plan, the As-built load rating is simply a signed and sealed load rating FDOT summary sheet stating that there was no change during construction that would affect the load rating.

- **Pile Driving Records**

- **In-Service Inspection**

The Structures Maintenance In-Service Inspection is conducted prior to any new lanes opening to public traffic. Note that for phased construction, there will be multiple in-service inspections required. The intent of this inspection is to verify the bridge is safe for public traffic in accordance with FHWA instructions Q303-7

45. LOCAL GOVERNMENT PROMPT PAYMENT ACT: In accordance with the Local Government Prompt Payment Act (F.S. 218.70, *et seq*), the Contractor is hereby notified of the following:

1. The Contractor will be notified at the Pre Construction Meeting the manner in which pay requests are to be prepared and directed to the Department. For a pay request to be deemed acceptable, the Contractor must provide the following:

Pay Request No. 1

- OEBO Schedule 3
- Certification of Compliance with the Living Wage Ordinance

Pay Request No. 2 and all others following, but not including the Final

- OEBO Schedule 3
- OEBO Schedule 4

SPECIAL PROVISIONS

- Disbursement of Previous Periodic Payments to Subcontractors
- Certification of Compliance with the Living Wage Ordinance

Final Pay Request

- OEBO Schedule 3
 - OEBO Schedule 4
 - Disbursement of Previous Periodic Payments to Subcontractors
 - Disbursement of Final Payment to Subcontractors
 - Form 1
 - Form 2 including Bonding Affidavit
 - Record of Construction Materials Affidavit
 - Certification of Compliance with the Living Wage Ordinance
 - Equal Business Opportunity (EBO) Final Participation Form
 - Release and Concurrence of Final Payment Amount
 - Form of Guarantee
2. A single list of items (Punch List) required to render the Work complete, satisfactory, and acceptable will be prepared by the Department. The Punch List shall be developed as a result of a joint inspection of the Work, conducted within 30 Calendar Days after reaching substantial completion, by the Contractor, together with the Department, with all unsatisfactory Work listed on the Punch List. The Punch List shall be provided to the Contractor within 5 Working Days of the joint inspection.
 3. If the pay request and support data are not approved, the Contractor is required to submit new, revised or missing information according to the Department's instructions. Otherwise, the Contractor shall prepare and submit to Department an invoice in accordance with the estimate, as approved. In the event any dispute with respect to any payment or pay request cannot be resolved between the Contractor and the Department, Contractor shall, in accordance with the alternative dispute resolution requirements of Florida Statute section 218.76, demand in writing a meeting with and review by the County Engineer. In place of the County Engineer, the Deputy County Engineer may conduct the meeting and review. Such meeting and review shall occur within forty-five (45) Working Days of receipt by the Department of Contractor's written demand. The County Engineer, or Deputy County Engineer, shall issue a written decision on the dispute within fifteen (15) Working Days of such meeting. This decision shall be deemed the Department's final decision for the purposes of the Local Government Prompt Payment Act.

Contractor must remit undisputed payment due for labor, services, or materials furnished by subcontractors and suppliers hired by the Contractor, within 10 days after the Contractor's receipt of payment from the Department, pursuant to Section 218.70 et seq., Florida Statutes. Contractor shall provide subcontractors and suppliers hired by Contractor with a written notice of disputed invoice within 5 business days after receipt of invoice which clearly states the reasons for the disputed invoice.

46. BASIS OF PAYMENT: Payment will be based on field measured quantities. No additional payment will be made for any Work which exceeds that called for in the Contract Documents.

SPECIAL PROVISIONS

47. CLEARING AND GRUBBING: The Contractor is required to notify the owner of any fences, irrigation systems, etc., that lie within the Right-of-Way, to give them the courtesy to remove them before construction. The Contractor shall replace fences, shrubbery, sod, etc., within the limits of construction and outside the Right-of-Way to their original condition, unless otherwise directed by the Engineer. Cost of which is incidental to construction. All Work associated with the re-establishment and/or temporary relocation of mailboxes shall be done in accordance with Index no. 532 of the current F.D.O.T. Roadway and Traffic Design Standards. Specific attention should be directed to coordination with the local postmaster. Payment for all Work required to establish each mailbox in the temporary and/or final location, including any material required to construct the mailbox to current standards, shall be included in the cost of clearing and grubbing, unless the Contract includes a pay item for the Work.

48. SUBSOIL EXCAVATION: Where muck, rock, clay, or other material within the limits of the Roadway is unsuitable in its original position, excavate such material to the cross-sections shown in the Plans or indicated by the Engineer, and backfill with suitable material. Shape backfill material to the required cross-sections. Where the removal of plastic soils below the finished earthwork grade is required, meet a construction tolerance, from the lines shown in the Plans as the removal limits, of ± 0.2 feet in depth and ± 6 inches (each side) in width. Final payment for the Subsoil Excavation, C.Y. will be based on initial and final cross sections, and signed & sealed quantity computations which are to be prepared by a Professional Land Surveyor or Professional Engineer licensed in the State of Florida, and submitted to the Department for acceptance. Initial cross sections shall be taken at 50 foot intervals, or as otherwise directed by the Engineer. When the excavation of unsuitable material is completed to satisfy field conditions, and verified as such by the Engineer, final cross sections shall be taken at 50 foot intervals, or as otherwise directed by the Engineer. The cross sections shall show elevations at the appropriate break points and shall be plotted. Quantity computations shall be prepared (using the Average End Area Method), and submitted to the Engineer for acceptance. The Contractor is advised that no compensation will be made for excavation below the depth required to satisfactorily remove the unsuitable material. The cost for the cross sections and computations shall be incidental to the pay item, Subsoil Excavation, C.Y. Subsoil Excavation, C.Y., shall include the cost of embankment to replace the excavated subsoil, labor, Materials, Equipment, fuel, transportation and other related Work to complete the pay item.

49. EMBANKMENT: The quantity will be at the plan quantity compacted in place. Where payment for embankment is not to be included in the payment for the excavation, and is to be paid for on a cubic yard basis for the item of Embankment, the plan quantities to be paid for will be calculated by the method of average end areas unless the Engineer determines that another method of calculation will provide a more accurate result. The measurement will include only material actually placed above the original ground line, within the lines and grades indicated in the Plans or directed by the Engineer. The length used in the computations will be the station-to-station length actually constructed. The original ground line used in the computations will be as determined prior to placing of embankment, and no allowance will be made for subsidence of material below the surface of the original ground. In no case will payment be made for material allowed to run out of the embankment on a flatter slope than indicated on the cross-section. The

SPECIAL PROVISIONS

Contractor shall make his own estimate on the volume of material actually required to obtain the compacted in-place pay section.

50. RESETTING FENCE: The quantities to be paid for under this item shall be the length in feet of reset fence including gates. The quantity of removed and reset fence determined, as provide above, shall be paid for at the Contract unit price per linear foot for removed and reset fence. The item includes the cost of removing and resetting any existing gates. The above price and payment shall be full compensation for all the Work specified in this Section, including furnishing all the required new hardware, additional posts and replacement of any material damaged by the Contractor.

51. PRICE/DELIVERY/ACCEPTANCE: Price quoted must be the price for new merchandise and free from defects. Any Bids containing modifying or “escalator” clauses will not be considered unless specifically requested in the Bid Specifications.

Deliveries of all items shall be made as soon as possible. **Deliveries resulting from this Bid are to be made during the normal working hours of the Department.** Time is of the essence and the Bidder’s delivery date must be specified and adhered to. Should the Bidder, to whom the order or Contract is awarded, fail to deliver on or before his/her stated date, the Department reserves the right to **CANCEL** the order or Contract and make the purchase elsewhere. The successful Bidder(s) shall be responsible for making any and all claims against carriers for missing or damaged items.

Delivered items will not be considered “accepted” until authorized agent for the Department has, by inspection or test of such items, determined that they fully comply with Specifications.

The Board of County Commissioners may return, for full credit, any item(s) received which fail to meet the Department’s performance standards.

52. E-VERIFY: The Contractor shall utilize the U.S. Department of Homeland Security’s E-Verify system to verify the employment eligibility of all new employees hired by the Contractor during the term of the Contract and shall expressly require any subcontractors performing work or providing services pursuant to the Contract to likewise utilize the U.S. Department of Homeland Security’s E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the Contract term.

53. BOND WAIVER PROGRAM: A Bid Bond is not required for bids of less than \$50,000 and will be waived for all other bids of less than \$200,000 if the Bidder is going to participate in the Bond Waiver Program, provided that the Bidder complies with Palm Beach County Resolution R89-1178 and with Palm Beach County Policies and Procedures relative to the Bond Waiver Program (CW-F-016). For bids with values between \$50,000 and \$200,000, the Bidder must complete an affidavit entitled “Intent to Participate in Bond Waiver Program Bid Affidavit” or provide a Bid Bond. Failure to provide a Bid Bond or complete and return this affidavit with the Bid shall result in rejection of the Bid. For all contracts less than \$200,000, the Public Construction Bond will be waived as well, provided that the Bidder complies with Palm Beach County Resolution R89-1178 and with Palm Beach County Policies and Procedures relative to the Bond

SPECIAL PROVISIONS

Waiver Program (CW-F-016). Copies of the requirements of the Bond Waiver Program (CW-F-016) can be found at the following website: <http://discover.pbcgov.org/PDF/PPM/Index.pdf>. The forms for the Bond Waiver Program can be found at <http://discover.pbcgov.org/engineering/roadwayproduction/Pages/Bid-Documents.aspx>.

54. BRIDGE LOAD RATING REQUIREMENTS: The Contractor is advised that bridge structures are subject to FDOT load rating requirements and shall take all necessary steps to comply with these requirements. See FDOT Load Rating Manual (Topic No. 850-010-035) at <https://www.fdot.gov/maintenance/loadrating.shtm>. Among these requirements are the following:

- Within 60 days of the pre-construction conference the Department must submit the Maintenance Structure Inspection Schedule to the District Structures Maintenance Engineer (DSME).
- DSME will receive a two week advance notice prior to the semi-final inspection.
- Prior to opening any lanes of traffic the as-built load rating document must be received by the DSME and the structures maintenance in-service inspection must be conducted to verify FHWA instructions Q303-7 are followed.

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SPECIAL PROVISIONS

**INTENT TO PARTICIPATE IN BOND WAIVER PROGRAM
BID AFFIDAVIT**

Project Number: _____

If the Contractor intends on participating in the Bond Waiver Program, this form must be completed in its entirety and returned with the Contractor's Bid.

FAILURE TO COMPLETE THIS FORM OR INCLUDE A BID BOND FOR PROJECTS WITH VALUES BETWEEN \$50,000 AND \$200,000, SHALL RESULT IN REJECTION OF THE BID.

_____ (Bidder) hereby states that it intends on participating in the Bond Waiver Program as described in Palm Beach County Resolution R89-1178 and Palm Beach County Policies and Procedures.

Contractor Signature

Title

State of _____ County of _____

Subscribed and Sworn to (or affirmed) before me on this _____ day of _____, 20__ by _____ who is personally known to me or has presented _____ (type of identification) as identification.

Notary Public Signature and Seal

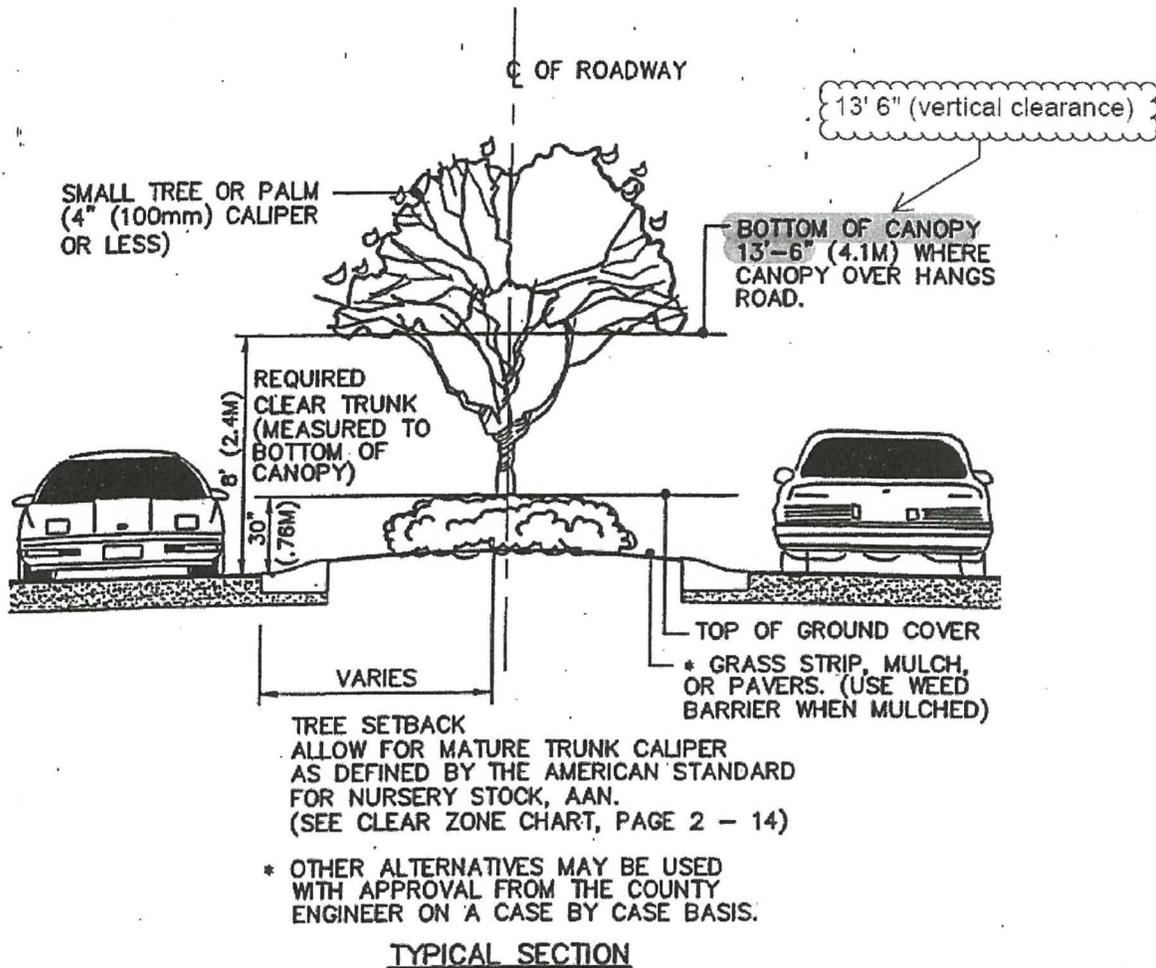
Notary Name Printed

Notary Commission Number

SPECIAL PROVISIONS

54. PLANTING STANDARDS

Mountable Curb and Uncurbed Median within Safe Sight Distance Triangle

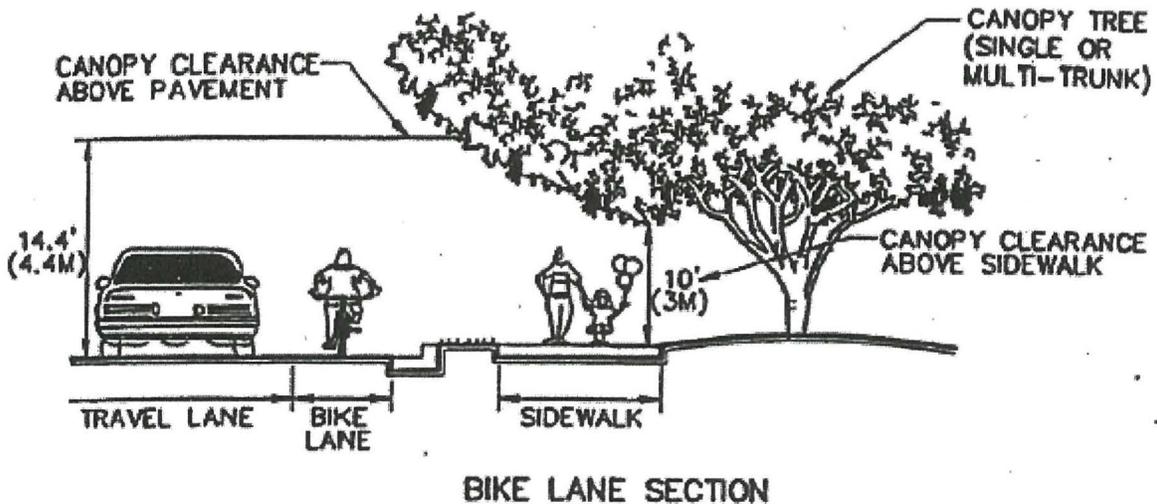


Small trees and palms shall be used within mountable and uncurbed Medians. Tree and palms that are 4" in caliper or less measured at 6" above grade shall be considered small and may be used within the Medians. The plan material within these areas shall be maintained so that they do not overhang into the travel lane. Any portion of the tree that overhangs the travel lanes shall be maintained with a 13'-6" vertical clearance. Otherwise, no encroachment will be permitted.

Canopy Clearance for Sidewalks and Bicycle Paths
Sidewalks should be maintained free of all growth. The bottom limbs of trees overhanging the sidewalk should be at least 10' above the sidewalk.

SPECIAL PROVISIONS

When tree limbs extend over separate bike paths, they should be at least 10' above the bike bath. When they extend over designated or undesignated bile lanes within the Roadway, they must be at least 14.4' above the pavement (see below).



Roadside Clear Zone

The roadside clearzone is that area outside the Traveled Way, available for use by errant vehicles. Vehicles frequently leave the Traveled Way during avoidance maneuvers and due to loss of control by the driver or due to collisions with other vehicles. The primary function of the clear zone is to allow space and time for the driver to regain control of vehicle and avoid or reduce the consequences of collision with roadside objects. This area also serves as an emergency refuge location for disabled vehicles.

The width of the clear zone should be as wide as it is practicable. The minimum permitted widths are given in the following table. These are minimum values only and should be increased whenever feasible.

In rural areas it is desirable and frequently economically feasible, to substantially increase the width of the clear zone. Where traffic volumes and speeds are high, the width should be increased. The clear zone on the outside of horizontal curves should be increased due to the high probability of vehicles leaving the Roadway at a high angle.

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SPECIAL PROVISIONS

Minimum Width of Clear Zone

Type of Facility	Design Speed or Posted Speed (whichever is greater)						
	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph and above
	Minimum Clear Zone						
Rural	6' Local 10' Collector 14' Arterials	6' Local 10' Collector 14' Arterials	10' Collectors 14' Arterials	14' Arterials and Collectors ADT <1500 18' Arterials and Collectors ADT ≥1500	14' Arterials and Collectors ADT <1500 18' Arterials and Collectors ADT ≥1500	18' Arterials and Collectors ADT <1500 24' Arterials and Collectors ADT ≥1500	18' Arterials and Collectors ADT <1500 30' Arterials and Collectors ADT ≥1500
Urban	4'	4'		4'	N/A	N/A	N/A

Urban Facilities clear zone is measured from face of curb (6" type D or F)

Rural Facilities Use rural for urban facilities when no curb and gutter is present. Measured from edge of through travel lane on rural section.

Curb and gutter not to be used on facilities with design speed > 45 mph.

ADT in the table above refers to design year ADT.

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PALM BEACH COUNTY ENGINEERING & PUBLIC WORKS DEPARTMENT
 PALM BEACH COUNTY, FLORIDA
LIQUID ASPHALT CALCULATIONS

Estimate No: _____ Page No. _____ Status of: _____
 Contractor: _____
 Contract for: _____
 Bid Index: _____

Month/Year	Tons	Pounds	*L.A. %	Weight of L.A.	Gal.	0.95% or 1.05% of Bid Index	Monthly Index	Difference (+ or -)	Change in Cost	Cumm.	Comm. Total
A	B	C	D	E	F	G	H	I	J	K	L
		2000.00	*								0.00
		2000.00	*								0.00
		2000.00	*								0.00
		2000.00	*								0.00
		2000.00	*								0.00
		2000.00	*								0.00
		2000.00	*								0.00
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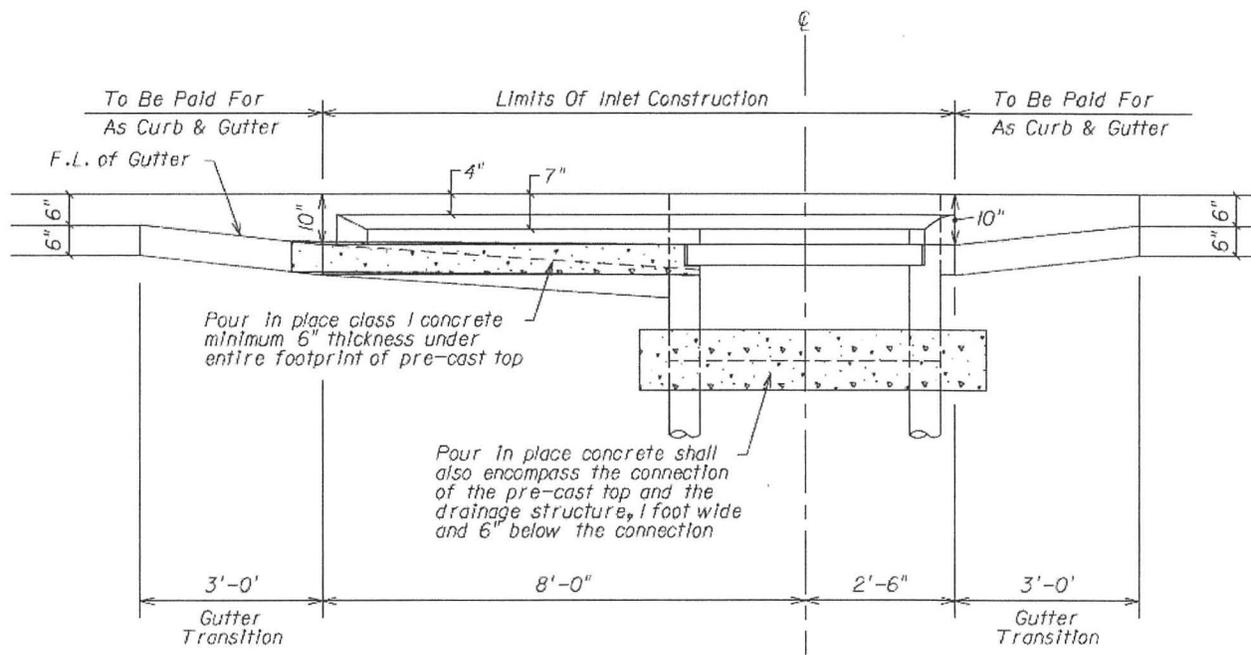
SPECIAL PROVISIONS

SP-30

LIQUID ASPHALT:
 All bids for materials covered by the Proposal are to include required liquid bituminous materials and tack coats. No additional payment will be made for the liquid bituminous materials in the prime and tack coats. The Department will adjust the bid unit price for bituminous material, excluding cutback and emulsified asphalt, to reflect increases or decreases in the Asphalt Price Index (API) of bituminous material from that in effect during the month in which bids were received.
 A price adjustment may be made upon request by either party, when escalation or de-escalation of the cost of the liquid bituminous materials used in the Asphaltic Concrete Mixes included in this proposal exceed 5% (See General Provision Section 9-2.1.2 "Bituminous Material").

* NOTE: The L.A. % to be applied for Friction Courses is 6.5%.
 For all other asphalt mixes the L.A. % shall be 6.25%.
 This form shall be submitted to the Engineer on a monthly basis.

SPECIAL PROVISIONS



INLET TYPE 5

(Curb Inlet Top Type 6 Symmetrical with Left Half)

SUPPLEMENTAL CONCRETE AT DRAINAGE STRUCTURE TOP DETAIL

REQUEST FOR INFORMATION

RESPONSE TO CONTRACTOR RFI'S:

September 16, 2019
Siemens Industry, Inc.
Joshua M. Lippincott
Joshua.lippincott@siemens.com

QUESTIONS AND OR COMMENTS:

1. Liquidated Damages (LDs) for non-completion of work orders is mentioned, but Section 8-10.2 does not specify what the LDs will be. Can you please clarify?
2. Will permits be required from any entity other than Palm Beach County during the execution of this contract?
3. Is there a requirement that work under this contract be performed during night hours?
4. Can a conditional bid be submitted? Specifically, can a bid include a conditional provision that allows for withdrawal in the event the contract is awarded to multiple contractors?

RESPONSES:

1. See Section 8-10.2 of the FDOT Standard Specifications per page SS-1.
2. All loops work will be done within PBC maintenance jurisdiction. If any permits required, PBC will apply for permits.
3. Contractor will be allowed to work day or night as long as no work completed within restricted times as listed in the contract. All MOT requirements to be met for at all times.
4. No

TECHNICAL SPECIFICATIONS – DIVISION II SECTIONS 600 THROUGH 699

1. INTENT AND SCOPE-

The work detailed in these specifications consists of the installation and /or furnishing of traffic signal items, all according to the Florida Department of Transportation's (FDOT) Standard Specifications for Road and Bridge Construction dated 2017 (or later version) (SSRBC-2017), the Design Standards (English Units) FY 2016-17 (or later version) (DS-FY 2016-17), FDOT Mast Arm Assembly Standards (Index Nos. 17743, and 17745), the attached Notes and Palm Beach County (PBC) Traffic Signal Installation Standards and Details-2015 or later version. Where conflicts exist, the Notes and PBC-Typicals shall take precedence over FDOT standard specifications.

Installations shall be as shown on plans as presented to the Contractor at the commencement of each project in such amounts, to such locations, at such times as may be designated by the Director of Traffic or his duly appointed representative (Engineer).

All items are to be bid on a unit price basis to establish the price for use on work authorizations (purchase orders) for specific projects.

The Contractor should fully understand that the Board of County Commissioners does not hereunder, contract to do any specific amount of work during the contract period.

The locations of the traffic signal projects will vary, and may be at any point within the boundaries of Palm Beach County. The Contractor will not be expected to operate his equipment or personnel beyond the limits of Palm Beach County under this contract.

For further information, please contact the Director of Traffic at 561-684-4030.

2. REPRESENTATIVE OF THE DIRECTOR OF TRAFFIC

The Director of Traffic Division will appoint one or more representatives (an Engineer) to inspect equipment used under this contract, observe personnel employed, and note the general performance of the Contractor. Any authorization to revoke, alter, enlarge, or relax the conditions of these specifications will be at the discretion of the Engineer. The Engineer will have the authority to reject defective equipment, and report on inept personnel, and to suspend any work that is being improperly done, subject to the final decision of the Director of Traffic Division.

3. STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION

It is the intent of these Specifications that the FDOT Standard Specifications for Road and Bridge Construction dated 2017 (or later version) (DS-FY 2016-17) will be used as the basis for this contract except as amended herein. Such wording as, Department of Transportation and Personnel, is intended to be replaced with that wording which would provide proper terminology, thereby making such Standard Specifications and Special Provisions of Palm Beach County in conjunction with Palm Beach County's personnel.

Add the following to the end of Article “4-1 **Intent of Contract**” of the FDOT SSRBC-2017:
Included under

“The work covered by this Contract consists of the installation and/or furnishing and/or removal of traffic signal items.

No areas will be closed to traffic unless or until approved by the Engineer. During the period or periods that areas are closed to traffic, adequate provisions to control and/or detour traffic will be provided by the Contractor. Traffic control shall be in accordance with FDOT Traffic Control through Work Zones – Index 600 of the Design Standards, (FY-2016-17) for street and highway construction, maintenance, and utility operations, and shall be the responsibility of the Contractor.

The job is to be completed in a workmanlike manner and all debris removed within the time of construction.”

4. CONTRACT NOTES

1. All materials and equipment supplied and installed on any project shall be, where applicable, on the FDOT Approved Product List (APL) and meet the FDOT Standard Specifications for Road and Bridge Construction, 2017. All materials and equipment shall be certified. Certificates shall be supplied with shop drawings.
2. Any changes to signalization plan during construction, the proposed change shall be submitted in writing to the Engineer for approval. No changes shall be implemented without the Engineer’s approval.
3. The Contractor shall be responsible for the protection of all present utilities that have been located by the various utility companies. He shall also maintain and protect the existing traffic signals and their related equipment from damage caused by subcontractors and employees under his Contract but only to the extent of the Contractor’s normal work operation, and he shall not be responsible for routine maintenance, normal wear and tear, or an act of God, unless otherwise specified.
4. The price of the loop installation shall include all maintenance of traffic necessary to complete the job. It is up to the discretion of the Engineer to include additional hours for maintenance of traffic under item No. “102-1-A” as needed to a work order issued to the contractor.
5. The Contractor shall provide barricades and warning and detour signs as required in Section 102-Maintenance of Traffic in FDOT SSRBC-2017.
6. The Contractor shall provide all coordination with FPL necessary to obtain the power for signals. The Contractor shall also provide coordination with all other utilities having an impact on the project.

7. All existing traffic signal equipment removed by the Contractor shall be tagged to identify location. A representative of Traffic Operations warehouse shall be given twenty-four (24) hour notice before delivery to an approved location by the Engineer. Equipment not identified will not be accepted and equipment not returned will result in the withholding of payment to the contractor. Traffic Operation warehouse personnel will issue a receipt to the Contractor for returned equipment.
8. The work covered under the terms of this contract does not require entry into the Controller Cabinet. Loop construction work shall terminate at the Loop junction box near the controller.
9. A Ninety (90) day burn-in period will be required for all electrical or electronic equipment furnished and installed as part of any traffic signal installation or system of traffic control devices. The burn-in shall consist of the field operations of the signalization system in a manner which is in full accordance with the signal operation requirements of the plans and specifications.
10. The burn-in period will commence upon a written conditional acceptance by the Engineer and will terminate 90 consecutive days thereafter, unless an equipment malfunction occurs. The written conditional acceptance of the signal will be granted to the contractor upon completion of final inspection of the signal. See PBC Traffic Signal Inspection Process in Attachment A. The burn-in period will be stopped for the length of time that the equipment is defective. When the equipment is repaired and is functioning properly, the burn-in period will resume from the point in time when it was stopped.
11. All traffic signal loops projects will be inspected prior to final acceptance for maintenance by Palm Beach County Traffic Operations. See Palm Beach County Traffic Operations – Signal Loop Inspection Sheet.
12. During the burn-in period, the Contractor shall restore operation of the installation within four (4) hours after notification of a malfunction. If the Contractor does not respond within four (4) hours, Palm Beach County shall have the option of making the necessary repair and billing the Contractor for the actual time and materials required.
13. Signal Timing: The Engineer will furnish timing. The Contractor shall notify the County Traffic Engineer seventy two (72) hours in advance of any requirement for timing.
14. The abbreviations and acronyms used in this contract are as follows:

a. LF	Linear Feet	k. LS	Lump Sum (Complete)
b. SF	Square Feet	l. F&I	Furnish & Install
c. SY	Square Yards	m. F	Furnish-Only
d. CY	Cubic Yards	n. I	Install-Only
e. AS	Assembly	o. R	Remove
f. PI	Per Installation	p. EA	Each
g. HR	Per Hour		
h. MH	Man Hour		
i. ED	Each Day		
j. WK	Per Week		

15. All loop work to be completed in accordance to pay item 660-2-xxx. No loop work shall be permitted during the hours of 6:45 AM to 8:45 AM, and during the hours of 3:45 PM to 6:30 PM. Nor shall loop work be permitted on days prior to major holidays.
16. Ground rods to be supplied and attached to all signal poles, control cabinets and equipment footings and basis according to PBC standard specifications, and Typical Ground Rod Array Detail. The work and materials for grounding are incidental to items being grounded.
17. All conduit (Bid Items 630-2-1x-y) shall include a 14AWG insulated stranded (THHN) tracer wire and one (1) pull line. Multiple bundle conduit runs (i.e. 2-2") shall require only one (1) tracer per bundle runs and one (1) pull line per conduit in the bundle.
18. Class-I Concrete (Misc.), will be used for pull-box aprons. Aprons can be pre-cast or poured in place.
19. All pull boxes shall have heavy duty covers embossed with the word "PBC TRAFFIC SIGNAL" or "PBC TRAFFIC ITS".
20. **Shop drawings for all materials to be used under this contract shall be submitted to PBC Traffic Division for approval prior to purchase. Shop drawings shall include, but not limited to, conduits, cables, pull boxes.**

5. **SPECIAL BID ITEM NOTES:**

1. Bid Item **102-1-A** consists of Maintenance of Traffic for signalization modifications as necessitated by roadway construction. This pay item is for labor and equipment required to construct or modify traffic signals in order to accommodate changing highway geometrics resulting from on-going construction, and in Accordance with FDOT DS-FY2016-17 Indices 615, 616, 617, 618, 619, 620, 621, 622, and 628. If needed it is estimated that no more than Four (4) MOT hours will be approved for each approach where loops work is being performed, including lead-ins and conduit to and from loop pockets or pull boxes.
2. Bid Items **630-2-11-x** consists of (F&I) PVC (SCH. 40) underground in-trench conduit of 2" diameter when x = 2; 4" diameter when x = 4. This item includes trenching, installing conduit, covering trench, and bringing ground to original condition.
3. Bid Items **630-2-11-xA** consists of (F&I) an additional PVC (SCH. 40) underground conduit in the same trench, 2" diameter when x = 2, and 4" diameter when x = 4. This item provides for additional conduit(s) added in trench covered under items 630-2-11-x.
4. Bid Items **630-2-12-x-y** consists of (F&I) HDPE (SDR 11) directional bore under-pavement conduit of 2" diameter when x = 2; 4" diameter when x = 4; and 4" with (3) 1-1/4" HDPE inner-duct when x = 4i. The y represents the number of conduits per directional bore.

5. Bid Items **630-2-13-x-1** consists of (F&I) galvanized rigid conduit (GRC), jack and bore under rail road tracks. Where 'x' represents the diameter of the conduit in inches. **This item includes any additional insurance and other incidentals required by Rail Road authority to work within the Rail Road's ROW.**
6. Bid Items **630-2-14-x** consists of furnish and install (F&I) hot dipped galvanized rigid steel conduit surface mounted. The conduit is 1" diameter when x = 1, 2" diameter when x = 2.
7. Bid Items **630-2-15-x** consists of (F&I) galvanized bridge mount conduit, where 'x' represents the diameter of conduit in inches. This item includes all parts, labor, materials and all appurtenances necessary for a complete installation.
8. Bid Items **630-3** consists of Roding and cleaning out existing conduit of any size.
9. Bid Item **635-2-11** consists of Furnishing and Installing a 13"X24"X12D Pull box as shown on the plans in accordance with Design Standards, Index No. 17700 and FDOT (SSRBC-2017),
10. Bid Item **635-2-12A** consists of Furnishing and Installing a 17"X30"X12D Pull box as shown on the plans in accordance with Design Standards, Index No. 17700 and FDOT (SSRBC-2017),
11. Bid Item **660-2-x** **Furnish & Install** an inductance loop detector complete, including installation of loop wire, saw cut, sealant, lead-in, and individual lead-in per loop to cabinet. Lead-in slack of 6' coil per lead in the pull box (if applicable) and 6' coil in the cabinet for each lead-in. Color coding and labeling of the loops shall be provided in all cases (minimum depth of saw cuts of 2"). The loop wire shall be #14 AWG XHHW. The loop lead-in wire shall be #16 AWG shielded twisted stranded, tinned copper. It shall be Carol-Part # C2553.41.01 or equivalent. Splicing butt connector shall be 3M-Part # MH14BCK Scottchlock, or equivalent. Crimping tool shall be Burndy-Part # Y10D476086. Or equivalent. Crimp with the non-insulated mark. Heat shrink Tubing shall be Thomas and Betts-Part #HS16-12-4, or equivalent. A minimum section of 10" shall be applied over Butt Connector segment. Sealant shall be liquid tar (step asphalt hot type 4). See PBC Signal Installation Standards and Details-2015 Sheet T-11, T-11.1, and T-12. See Note # 15 of the Contact Notes for exclusions for installation times.
12. Bid Item **660-2-102-A1** **Furnish & Install** loop assembly Type B with a dimension of 6' X 6'. See PBC Signal Installation Standards and Details-2015 Sheet T-11, T-11.1 and T-12.
13. Bid Item **660-2-102-A2** **Furnish & Install** an additional loop assembly Type B with a dimension of 6' X 6'. See PBC Signal Installation Standards and Details-2015 Sheet T-11, T-11.1 and T-12. **(Used in conjunction with Item 660-2-102-A1, for first loop on the approach)**

14. Bid Item **660-2-106-B1** **Furnish & Install** Loop Assembly Type F with width of 6' and a longitudinal dimension of 26'. See PB Signal Installation Standards and Details-2015 Sheet T-11 and T-11.1, and T-12.
15. Bid Item **660-2-106-B2** **Furnish & Install** an additional Loop Assembly Type F with width of 6' and a longitudinal dimension of 26'. See PB Signal Installation Standards and Details-2015 Sheet T-11 and T-11.1, and T-12. **(Used in conjunction with Item 660-2-102-B1 for first loop on the approach)**
16. Bid Item **660-2-106-C1** **Furnish & Install** refers to Loop Assembly Type F with width of 6' and a longitudinal dimension of 46'. See PB Signal Installation Standards and Details-2015 Sheet T-11 and T-11.1, and T-12.
17. Bid Item **660-2-106-C2** **Furnish & Install** an additional Loop Assembly Type F with width of 6' and a longitudinal dimension of 46'. See PB Signal Installation Standards and Details-2015 Sheet T-11 and T-11.1, and T-12. **(Used in conjunction with Item 660-2-102-C1 for first loop on the approach)**

6. **INVOICING AND PAYMENT**

The Contractor shall submit only one invoice per job. Partial invoicing may be allowed at the discretion of the Engineer. Palm Beach County Traffic Division will review the invoices and issue a payment authorization for each of the Partial and Final invoices. The final payment authorization will be issued only after the final inspection of the job has been completed and approved by the County designated engineer. The total project cost in the final invoice shall not exceed the initial cost estimate of the job listed in the bid-tab associated with the job work authorization and the cost of the change orders. All change orders shall be signed by the County designated engineer.

Attachment "A"

Loop Inspection

Intersection Name: _____ Date: _____

Intersection #: _____ Tech: _____

Approach Needs Repair Uh Reading Comments

Visual				
#1				
#2				
#3				
#4				
#5				
#6				
#7				
#8				
#9				
#10				
#11				
#12				
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#14				
#15				
#16				
#17				
#18				
#19				
#20				
#21				
#22				
#23				
#24				
#25				



630-2-XXX

Your communication partner.

Blue Diamond Industries, LLC is an agile manufacturing and services company committed to helping our customers with innovative solutions. We offer quality construction products and installation for outside plant construction and broadband communication networks. Operations include the manufacture of Blue Diamond HDPE innerduct, toneable duct and aerial duct. We also have a variety of HDPE accessories and underground vaults. Blue Diamond is also a representative of Moore Commercial Coatings for high quality communication enclosures.

Underground Construction Products.

High Density Polyethylene (HDPE) innerduct and conduit products provide security and protection to fiber optic and coaxial networks, the communication lifelines. Underground vault structures allow access for inspection, identification, expansion and maintenance of these communication highways.

Our tremendous growth in plastics and underground products is supported by the most progressive, versatile and technologically advanced production equipment available. Our "Blue Diamond" innerduct protects many of the largest fiber optic networks in the United States.

Corporate Headquarters:

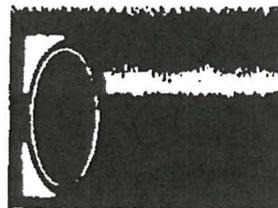
Blue Diamond Industries, LLC • 841 Corporate Drive, Suite 201 • Lexington, KY 40503
859-224-0415 • 859-224-0543 fax
www.bdiky.com

Product types.

Smooth wall innerduct.

SDR 11

Smooth wall is the standard High Density Polyethylene (HDPE) Duct. The interior of smooth wall has a glass-like finish which delivers the lowest coefficient of friction of all available non-lubricated innerducts. Smooth wall innerduct is a durable high quality product for direct burial applications.



Ribbed wall innerduct.

Ribbed wall innerduct is designed to allow extremely long cable pulls to glide through the interior raised ribs. All ribbed wall innerduct is internally ribbed and available in any SDR and SIDR rating.



Tracer wire innerduct.

Tracer wire innerduct provides a method of locating underground fiber optic cable. The tracer wire is a single copper wire co-extruded into the innerduct providing a corrosion resistant conductor. An alternative method of locating buried fiber optic cable is to use traceable tape, available preinstalled in any of our duct products.

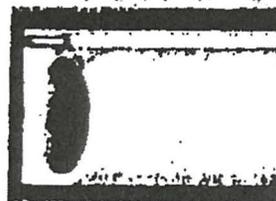


Figure 8 innerduct.

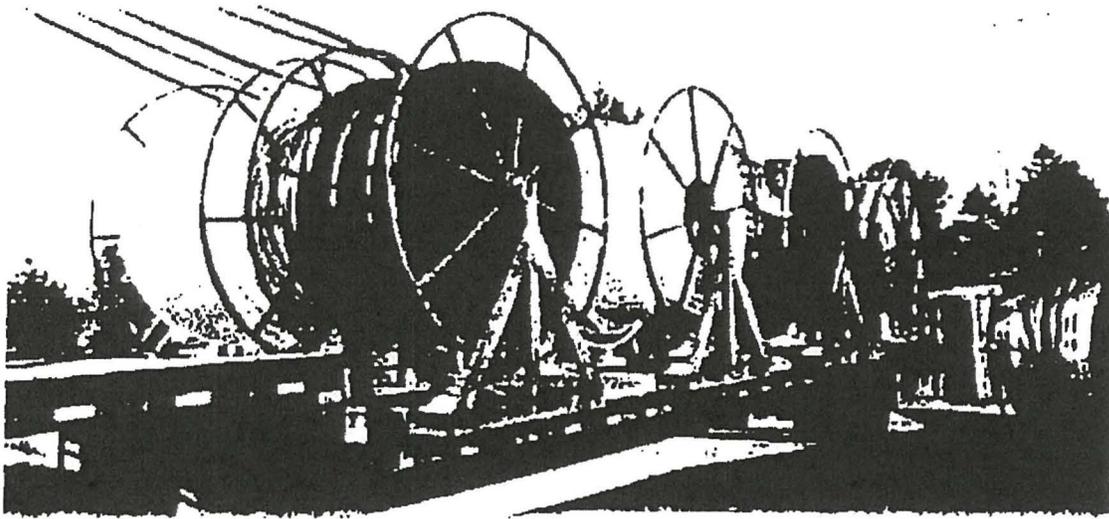
AERIAL

Blue Diamond figure 8 innerduct features a high tensile galvanized support strand for aerial placement of duct. The support strand is an integral component of the coextruded duct.



Colors & Identification

Standard colors available in:	White, black, blue, green, red, orange, lilac, grey, yellow, brown, buff, terra cotta. *Special colors are available.
Striping:	Striping combinations are available in all colors in combinations of single, double, triple and quad stripes.
Identification:	<ul style="list-style-type: none"> • Innerduct size, SDR and sequential footage markings every 2' are laser imprinted on every order. • Custom imprints such as company name, project name or any other special identification markings are also available.
Options:	<ul style="list-style-type: none"> • Lubrication. • Up to four lengths/colors of innerduct per reel available layed in parallel or series. • Pre-installed pull tape, tracer tape.



630-2-XXX

Blue Diamond Innerduct is RUS/USDA listed.

Blue Diamond is a member of PPI (Plastics Pipe Institute)

Applicable material standards and dimensional specifications.

ASTM F2160 - Solid Wall High Density PE Conduit based on Controlled O.D.
ASTM D3350 - Polyethylene Plastic Pipe Fittings Method
ASTM D3035 - Polyethylene (PE) Plastic Pipe Based on Controlled O.D.
ASTM D1248 - Specification for Polyethylene Plastic Molding and Extrusion Material
ASTM D2239 - Polyethylene (PE) Plastic Pipe (SIDR-PR) Based on Controlled Inside Diameter
ASTM D2447 - Polyethylene (PE) Plastic Pipe, Schedules 40 and 80, Based on O.D.
ASTM D3485 - Smooth Wall Coilable (PE) Conduit (Duct) for Preassembled Wire and Cable
NEMA Standards Publication TC-7
BELLCORE Generic Requirements for Optical Cable Innerduct and Accessories, 1995
AWWA C901

Specifications.

1.0 Introduction:

The following specification details the requirements for HDPE innerduct as manufactured by Blue Diamond for the purpose of security, protection and identification of fiber optic or coaxial cable networks.

2.0 Innerduct Construction:

2.1 All innerduct shall be circular and of uniform cross section to the dimensions in accordance with ASTM D3035 and F2160

2.2 Innerduct shall be a continuous length of _____ (smooth walled, ribbed inside) with a low friction internal surface containing no welds or joints, coiled on a reel.

2.2.1 Innerduct shall be supplied _____

a) empty

b) containing a pulling medium such as mule tape

c) pre-installed with a cable specified by _____

3.0 Materials:

- 3.1 The innerduct shall be extruded from virgin High Density Polyethylene (HDPE) resin, in accordance to the requirements of ASTM D3350 with cell classification 345440C.
- 3.2 Density, melt flow, tensile strength at yield, and environmental stress crack shall conform to the values listed in ASTM D3350, except as noted below.
- 3.3 Adequate stabilization shall be added during the manufacturing process to protect the polyethylene against thermal and UV degradation throughout the projected lifespan of the finished product.

4.0 Dimensions:

- 4.1 The innerduct shall be SDR _____, SIDR _____, Schedule 40 or Schedule 80, and conform to the dimensions as outlined in Table _____ or ASTM D3035.

5.0 Identification and Marketing:

- 5.1 Innerduct shall be permanently marked with a _____ (1) laser ink imprinter, or (2) heat embossed white lettering, which shall be marked in a position 90 degrees to any stripes specified.
- 5.2 The base colors of the pipe shall be _____
- 5.3 (0, 1, 2, 3, or 4) 5mm stripes, colored _____ shall be extruded onto the pipe at 90 degrees to the printing and 180 degrees from each other.
- 5.4 Marking shall include the owners name _____, ASTM and SDR designation, diameter and size. Additionally, a sequential length mark of _____ shall show length of the innerduct.
- 5.5 Innerduct shall be marked so that date of manufacture, shift and lot of resin can be identified and referenced to certifications and quality control test results.

6.0 Quality Assurance:

- 6.1 Manufacturer shall provide certification of the properties as specified above.
- 6.2 In addition to continuous in process inspection and control, batch samples will be checked for finish, print quality, dimensions and ovality.
- 6.3 The above tests are in addition to the resin requirements as outlined in ASTM D3350.
- 6.4 All reels will be marked and labeled with customer purchase order, project name, or other information for tracking and receiving.

Polyethylene SDR 13.5: Meets material and dimensional requirements of ASTM F2160.

Nominal Duct Size	Outside Diameter	Wall Thickness	Inside Diameter	Minimum Unsupported Bend Radius	Safe Working Pull Strength	Weight Per 1000 Ft.
1/2"	.840" ± .004"	.062" + .020"	.696"	10"	400 lbs.	72 lbs.
3/4"	1.050" ± .004"	.078" + .020"	.874"	12"	650 lbs.	110 lbs.
1"	1.315" ± .005"	.097" + .020"	1.101"	14"	1,050 lbs.	166 lbs.
1 1/4"	1.660" ± .005"	.123" + .020"	1.394"	18"	1,650 lbs.	264 lbs.
1 1/2"	1.900" ± .008"	.141" + .020"	1.599"	20"	2,150 lbs.	343 lbs.
2"	2.375" ± .008"	.176" + .021"	2.002"	26"	3,400 lbs.	531 lbs.
2 1/2"	2.875" ± .007"	.213" + .026"	2.424"	38"	5,000 lbs.	776 lbs.
3"	3.500" ± .008"	.259" + .031"	2.950"	48"	7,400 lbs.	1,153 lbs.
4"	4.500" ± .009"	.333" + .040"	3.793"	60"	12,200 lbs.	1,904 lbs.
6"	6.625" ± .011"	.491" + .059"	4.959"	67"	26,500 lbs.	4,130 lbs.

Polyethylene SDR 11: Meets material and dimensional requirements of ASTM F2160.

Nominal Duct Size	Outside Diameter	Wall Thickness	Inside Diameter	Minimum Unsupported Bend Radius	Safe Working Pull Strength	Weight Per 1000 Ft.
1/2"	.840" ± .004"	.078" + .020"	.667"	10"	500 lbs.	85 lbs.
3/4"	1.050" ± .004"	.095" + .020"	.839"	12"	800 lbs.	130 lbs.
1"	1.315" ± .005"	.120" + .020"	1.056"	14"	1,250 lbs.	200 lbs.
1 1/4"	1.660" ± .005"	.151" + .020"	1.338"	18"	2,000 lbs.	314 lbs.
1 1/2"	1.900" ± .008"	.173" + .021"	1.534"	20"	2,600 lbs.	409 lbs.
2"	2.375" ± .008"	.216" + .026"	1.917"	26"	4,100 lbs.	639 lbs.
2 1/2"	2.875" ± .007"	.261" + .031"	2.321"	38"	6,000 lbs.	936 lbs.
3"	3.500" ± .008"	.318" + .038"	2.825"	48"	8,900 lbs.	1,367 lbs.
4"	4.500" ± .009"	.409" + .049"	3.633"	60"	14,700 lbs.	2,293 lbs.
6"	6.625" ± .011"	.602" + .072"	4.724"	67"	31,900 lbs.	4,971 lbs.

3-2 →
4 →
7-4 →
-4 →

Polyethylene Schedule 40: Meets NEMA TC-7.

Nominal Duct Size	Outside Diameter	Wall Thickness	Inside Diameter	Minimum Unsupported Bend Radius	Safe Working Pull Strength	Weight Per 1000 Ft.
1/2"	.840" ± .004"	.119" ± .010"	.602"	10"	700 lbs.	112 lbs.
3/4"	1.050" ± .004"	.123" ± .010"	.804"	12"	900 lbs.	148 lbs.
1"	1.315" ± .005"	.143" ± .010"	1.029"	14"	1,375 lbs.	218 lbs.
1 1/4"	1.660" ± .005"	.150" ± .010"	1.360"	18"	1,875 lbs.	295 lbs.
1 1/2"	1.900" ± .006"	.155" ± .010"	1.590"	20"	2,225 lbs.	352 lbs.
2"	2.375" ± .006"	.164" ± .010"	2.047"	26"	3,000 lbs.	472 lbs.
2 1/2"	2.875" ± .007"	.215" ± .012"	2.445"	38"	4,775 lbs.	744 lbs.
3"	3.500" ± .008"	.229" ± .013"	3.042"	48"	6,250 lbs.	974 lbs.
6"	6.625" ± .011"	.297" ± .017"	6.031"	67"	15,263 lbs.	2,368 lbs.

*Interduct rated SDR 7, 9, 9.3, 13.5, 17, 21 and NEMA SCH80 also available.

Polyethylene SIDR 9: Meets material and dimensional requirements of ASTM D2239.

Nominal Duct Size	ASTM Inside Diameter	Minimum Wall	ASTM Tolerance	Standard Outside Diameter	Weight Per 1000 Ft.
3/4" SIDR 9	0.824	0.092	0.020	1.027	122 lbs.
1" SIDR 9	1.049	0.117	0.020	1.302	183 lbs.
1 1/4" SIDR 9	1.380	0.153	0.020	1.707	328 lbs.
1 1/2" SIDR 9	1.610	0.178	0.021	1.989	444 lbs.
2" SIDR 9	2.067	0.230	0.028	2.554	732 lbs.

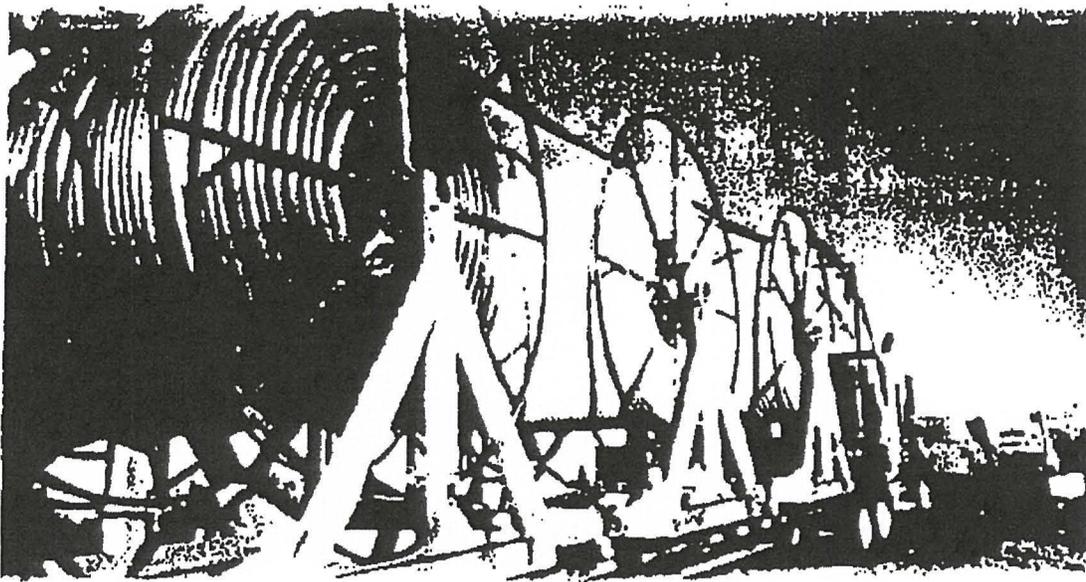
Polyethylene SIDR 11.5: Meets material and dimensional requirements of ASTM D2239.

Nominal Duct Size	ASTM Inside Diameter	Minimum Wall	ASTM Tolerance	Standard Outside Diameter	Weight Per 1000 Ft.
3/4" SIDR 11.5	0.824	0.072	0.020	0.987	96 lbs.
1" SIDR 11.5	1.049	0.091	0.020	1.251	151 lbs.
1 1/4" SIDR 11.5	1.380	0.120	0.020	1.640	255 lbs.
1 1/2" SIDR 11.5	1.610	0.140	0.020	1.910	343 lbs.
2" SIDR 11.5	2.067	0.180	0.022	2.448	559 lbs.
2 1/2" SIDR 11.5	2.469	0.215	0.026	2.924	798 lbs.
3" SIDR 11.5	3.068	0.267	0.032	3.634	1,232 lbs.
4" SIDR 11.5	4.026	0.350	0.042	4.768	2,122 lbs.

Polyethylene SIDR 15: Meets material and dimensional requirements of ASTM D2239.

Nominal Duct Size	ASTM Inside Diameter	Minimum Wall	ASTM Tolerance	Standard Outside Diameter	Weight Per 1000 Ft.
3/4" SIDR 15	0.824	0.062	0.020	0.968	84 lbs.
1" SIDR 15	1.049	0.070	0.020	1.209	117 lbs.
1 1/4" SIDR 15	1.380	0.092	0.020	1.584	187 lbs.
1 1/2" SIDR 15	1.610	0.107	0.020	1.845	264 lbs.
2" SIDR 15	2.067	0.138	0.020	2.363	426 lbs.
2 1/2" SIDR 15	2.469	0.165	0.020	2.818	600 lbs.
3" SIDR 15	3.068	0.205	0.025	3.502	926 lbs.
4" SIDR 15	4.026	0.268	0.032	4.595	1,595 lbs.

*Product rated SDR 53, 7 and 19 also available



Reel Capacities.

Pipe Size

reel size = flange x traverse x drum

1/2"	72x42x30	72x48x24
	17,000	20,000

Reels per Truckload

3/4"	72x48x24	84x48x24
	10,000	18,000

72"	10
84"	14

1"	72x48x30	84x48x30	96x38x30	96x48x30
	7,000	10,000	11,000	14,000

96"	12
102"	11

1 1/4"	72x48x30	84x48x30	96x38x30	96x48x30
	4,500	6,500	7,500	8,500

114"	8
120"	8

1 1/2"	72x48x30	84x48x30	96x38x30	96x48x30	102x42x30	114x42x30
	3,000	4,500	5,000	6,000	7,200	9,000

2"	72x48x42	84x48x42	96x38x42	96x42x42	96x48x42	102x48x42	114x48x42
	1,500	2,500	3,000	3,500	3,750	4,500	6,000

2 1/2"	96x48x48	102x48x48	120x42x54
	2,000	2,500	3,500

3"	84x48x54	96x42x60	96x48x64	120x42x60
	1,000	1,000	1,200	2,000

4"	96x48x72		102x48x72		114x48x72		120x48x72	
	550 SDR	800 SIDR	750 SDR	700 SIDR	1000 SDR	900 SIDR	1250 SDR	1100 SIDR

5"	102x48x78	114x48x78	120x48x78
	400	600	750

6"	120x48x84
	400

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Innerduct.com

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630-2-XXX

We Have all of your Innerduct Needs IN STOCK!!

Our High Density Polyethylene (HDPE) Innerduct is made of **100% Virgin Resin**. The Innerduct can be manufactured in almost any color and has **outstanding UV protection**. Orange, Black, Red, Blue and Green are the most common conduit colors. We can provide **multiple duct and colors on one reel** to maximize space in a trench. All of our Innerduct is sequentially marked every foot and can be purchased with or without pull tape. The Innerduct has a **silicore lining** on the inside to **prevent cable drag friction**. SDR wall thicknesses are contingent on the type of projects projected. Schedule 40, SDR 15.5, SDR 13.5, SDR 11 and SDR 9 are all standard wall thickness.

Corrugated and Plenum Rated HDPE

Duct is also one of our specialties. Our Plenum meets UL(910) standards for the national electrical code, article 770, and satisfies UL-2024 standards for low smoke and flame propagation. The Plenum and corrugated are offered in 1" and 1 1/4" with pre-installed pull tape for easy cable installation.

Multiple colors per reel and slitDuct are also available. Please see the [specifications](#) for more information.



MicroDuct - micro, we have the solution

Our newest product "MicroDuct". We have the solution to maximize your occupied duct systems and increase your duct capacity. Call us for MicroDuct sizes available and our wide variety of MicroDuct accessories and installation equipment.



We are the complete source for Innerduct accessories, MicroDuct accessories, fusion, pulling, and blowing...We are ready to take your order! Check out our [accessories](#) page for information about the products listed above..

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INNERDUCT

Test Results

Properties	Test Method	Value	
Smoke peak optical	UL-2024	0.02	
Smoke average optical density	UL-2024	0.01	
Max. flame spread distance(ft.)	UL-2024	1.5'	630-2-XXX
Max flame temperature	UL-2024	554	

Corrugated HDPE

Premier Corrugated HDPE is manufactured from High Density Polyethylene (HDPE) and is intended to be placed inside of existing Innerduct. It's ideal for pulls under 1000 ft. and is designed to reduce surface contact when pulling cable. This lightweight product offers maximum flexibility, and allows for installation in small or restricted areas. Corrugated duct is available in 1" and 1 1/4". The standard color is orange and is offered in a variety of other colors. Sequential marked footage is standard. Cust options, such as multiple colors per reel and Slit Duct are also available.

Accessories

- Universal Aluminum Couplers (screw-on type: sizes 1" thru 2")
- Expansion Type Duct Plugs (can be used with pull tape)

Corrugated HDPE Reels

Size	Color	Part No.	Nominal I.D.	Nominal O.D.	Pull Tape	Reel Size	Reel Length(ft.)
1"	Orange	PEC-100T-1000	1.049"	1.365"	900 lb	48-30-24	1000
1"	Orange	PEC-100T-1800	1.049"	1.365"	900 lb	48-30-24	1800
1"	Orange	PEC-100T-2500	1.049"	1.365"	900 lb	66-41-24	2500
1"	Orange	PEC-100T-5000	1.049"	1.365"	900 lb	72-41-24	5000
1"	Orange	PEC-100T-6500	1.049"	1.365"	900 lb	72-45-24	6500
1"	Orange	PEC-100T-8000	1.049"	1.365"	900 lb	82-41-24	8000
1/4"	Orange	PEC-125T-1000	1.250"	1.550"	900 lb	48-30-24	1000
1/4"	Orange	PEC-125T-2500	1.250"	1.550"	900 lb	66-41-24	2500
1/4"	Orange	PEC-125T-4000	1.250"	1.550"	900 lb	72-41-24	4000
1/4"	Orange	PEC-125T-5000	1.250"	1.550"	900 lb	72-41-24	5000
1/4"	Orange	PEC-125T-6000	1.250"	1.550"	900 lb	82-41-24	6000
1/4"	Orange	PEC-125T-6500	1.250"	1.550"	900 lb	82-41-24	6500

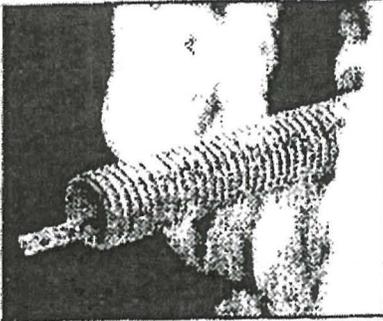
Corrugated HDPE Coils

Size	Color	Part No.	Nominal I.D.	Nominal O.D.	Pull Tape	Coil Length(ft.)
1"	Orange	PEC-100T-250	1.049"	1.365"	900 lb	250
1"	Orange	PEC-100T-500	1.049"	1.365"	900 lb	500
1 1/4"	Orange	PEC-125T-250	1.250"	1.550"	900 lb	250
1 1/4"	Orange	PEC-125T-500	1.250"	1.550"	900 lb	500

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Riser-Gard is a nonmetallic flexible raceway for use in Riser and General Purpose applications. Riser-Gard is UL Listed and is available with tape pre-installed.

Riser-Gard complies with the UL 2024 Standard for Riser Applications for optical fiber/communications raceways.

Riser-Gard is listed to the National Electrical Code per Articles 770 and 800 for Riser and General Purpose optical fiber/telecommunication applications. Riser-Gard is suitable for use in vertical runs in a shaft or between floors, as well as areas other than the plenum (cables installed must be of suitable rating for the application.)

UL Listed to 2024	Test Method	Maximum Value
Maximum Flame Propagation	UL 2024	6.0 ft.
Maximum Air Temperature at 12 ft.	UL 2024	372°F

• Storage -4°F - 158°F • Handling -4°F - 104°F

Standard Stock - Reels

	Color	Part No.	Nom. I.D.	Nom. O.D.	Full Tape	Min. Bend Radius	Reel Size (L x W)	Reel Type	Reel Length	Reel Wt. (lbs.)	Wt. per 100 ft. (lbs.)
3/4"	Orange	DE4X1-1000	.83	1.05	Empty	6"	36" x 24"	W	1000	35	9
	Orange	DE4X1-1000S	.83	1.05	Empty	6"	36" x 24"	W	1000	35	9
	Orange	DF4X1C-500R	1.03	1.315	900 lb.	6"	48" x 32"	W	500	70	14
	Orange	DF4X1C-1000	1.03	1.315	900 lb.	6"	48" x 32"	W	1000	35	14
	Orange	DF4X1-1500	1.03	1.315	Empty	6"	48" x 32"	W	1500	90	14
1"	Orange	DF4X1C-1500	1.03	1.315	900 lb.	6"	48" x 32"	W	1500	90	14
	Orange	DF4X1C-2700	1.03	1.315	900 lb.	6"	48" x 48"	W	2700	105	14
	Orange	DF4X1C-5200	1.03	1.315	900 lb.	6"	65" x 46"	W	5200	385	14
	Orange	DF4X1C-7000	1.03	1.315	900 lb.	6"	72" x 44"	S	7000	98	14
	Orange	DF4X1C-9400	1.03	1.315	900 lb.	6"	84" x 44"	S	9400	134	14
1 1/4"	Orange	DF4X1-1500S	1.03	1.315	Empty	6"	48" x 30"	W	1500	90	14
	Orange	DG4X1-900	1.38	1.66	900 lb.	7"	48" x 30"	W	900	90	17
	Orange	DG4X1C-900	1.38	1.66	900 lb.	7"	48" x 30"	W	900	90	17
	Orange	DG4X1-900S	1.38	1.66	Empty	7"	48" x 30"	W	900	90	17
	Orange	DG4X1C-500R	1.38	1.66	900 lb.	7"	48" x 32"	W	500	70	17
1 1/2"	Orange	DG4X1C-1600	1.38	1.66	900 lb.	7"	48" x 48"	W	1600	105	17
	Orange	DG4X1C-3200	1.38	1.66	900 lb.	7"	65" x 48"	W	3200	385	17
	Orange	DG4X1C-4500	1.38	1.66	900 lb.	7"	72" x 44"	S	4500	98	17
	Orange	DH4X1C-1200	1.57	1.90	900 lb.	8 1/4"	48" x 48"	W	1200	105	22
	Orange	DH4X1C-4500	1.57	1.90	900 lb.	8 1/4"	84" x 44"	S	4500	134	22
2"	Orange	DH4X1-750S	1.57	1.90	Empty	8 1/4"	48" x 30"	W	750	90	22
	Orange	DJ4X1C-700	2.02	2.375	900 lb.	9 1/2"	48" x 48"	W	700	105	26
	Orange	DJ4X1C-2800	2.02	2.375	900 lb.	9 1/2"	96" x 44"	S	2800	146	26
	Orange	DJ4X1-500S	2.02	2.375	Empty	9 1/2"	48" x 30"	W	500	90	26

W = Wood
S = Steel

ENDOT INDUSTRIES

DUCT AND INNERDUCT

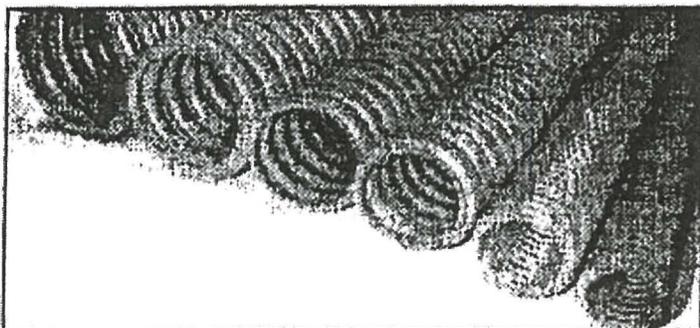
TECHNICAL SPECIFICATIONS

Endocor

630-2-XXX

CORRUGATED DUCT AND INNERDUCT

Designed specifically for fiber optic cables



FEATURES:

- Sizes from 1/2" through 2"
- Flexible & Lightweight for ease of handling
- Available in solid colors or stripes
- Available with multiple lengths/colors per reel
- Special high tensile strength versions available
- Available pre-threaded with pull line
- Available as Split Duct for covering cables in place

ENDOCOR'S corrugated design provides high tensile strength with low weight per foot for ease of handling and significantly longer put ups that can be obtained with smoothwall or ribbed innerduct.

ENDOCOR provides the lowest cable pulling friction of any innerduct design because of reduced surface area and no reel memory eliminating spiraling of the innerduct in the conduit.

ENDOCOR SPLIT DUCT is produced from Low Density Polyethylene for ease of use and superior flexibility.

PART NO.	NOMINAL SIZE	O.D.	I.D.
ICE 500	1/2"	0.860"	0.662"
ICE 750	3/4"	1.118"	0.870"
ICE 1050	1"	1.400"	1.050"
ICE 1250	1 1/4"	1.600"	1.260"
ICE 1500	1 1/2"	1.900"	1.500"
ICE 2000	2"	2.350"	1.900"

ENDOCOR PART NUMBER SYSTEM - One Selection from Each Column Creates a complete Product Part Number

EXAMPLE - Regular Corrugated 3/4", on a 48" Reel, 3/16" PP rope, Orange = ICE 075 22 21 02

PRODUCT	SIZE (ID)	REEL DIAMETER	PULL LINE	COLOR
ICE = corrugated	050 = 1/2"	21 = 34" wood	01 = empty	01 = black
	075 = 3/4"	22 = 48" wood	11 = 1250# kevlar/polyester	02 = orange
ICS = Split Duct	100 = 1"	23 = 78" wood	12 = 1800# kevlar/polyester	03 = green
	125 = 1 1/4"	24 = 84" wood	13 = 1000# polyester	04 = red
	150 = 1 1/2"	37 = 60" steel	14 = 1250# polyester	06 = blue
	200 = 2"	31 = 78" steel	15 = 1800# polyester	07 = white
		32 = 84" steel	17 = 900# kevlar	08 = gray
		33 = 96"x44" steel	21 = 3/16" PP rope	09 = custom
		34 = 96"x56" steel	22 = 1/4" PP rope	
		35 = 114" X 44" steel	31 = Cable In Conduit	

For product quantity per reel refer to Endot's reel capacity charts.

ENDOT INDUSTRIES, INC.

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 - Endoguard
 - Cable Chase
 - Silt Duct
 - Enduct I.D Controlled
 - Enduct O.D Controlled
 - Enduct-ASTM D2447
 - Bore Duct

630-2-XXX

CORRUGATED DUCT AND INNERDUCT

Designed specifically for fiber optic cables

FEATURES:

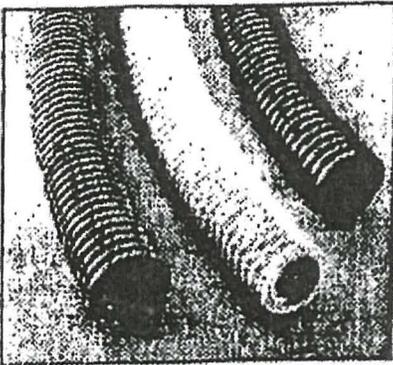
- Flexible
- Corrosion-resistant
- Corrugated for lowest possible coefficient of friction
- Lightweight yet highly crush resistant
- No Memory for ease of handling in all weather
- Available in solid colors or stripes
- Standard and custom reel lengths
- Available with multiple lengths and colors on one reel
- Sizes from 1/2" through 2"
- Special high tensile versions available
- Available pre-threaded with a variety of pull tapes (optional)

ENDOCOR'S corrugated design provides high tensile strength with low weight per foot for ease of handling and significantly longer pulls than can be obtained with smoothwall or ribbed innerduct.

ENDOCOR provides the lowest cable pulling friction of ANY innerduct design because of reduced surface area and no reel memory which eliminates spiraling in the conduit.

ENDOCOR 1050 and 1250 can be coupled with the easy to use, low cost ENDOCLIP for a fast joint that is stronger than the innerduct itself.

Part No.	SIZE	Nominal O.D.	I.D.
500	1/2" (13mm)	0.850" (22mm)	0.652" (17mm)
750	3/4" (19mm)	1.116" (28mm)	0.870" (22mm)
1050	1" (25mm)	1.400 (35mm)	1.050" (27mm)
1250	1 1/4" (32mm)	1.600 (41mm)	1.250" (32mm)
1500	1 1/2" (38mm)	1.900" (48mm)	1.500" (36mm)
2000	2" (51mm)	2.350" (60mm)	1.900" (48mm)



Flex-Plus Blue ENT is a nonmetallic flexible raceway for use in walls, floors, and non-plenum ceilings. It's lightweight, hand bendable, and free from sharp edges, which reduces installation time and saves money.

Flex-Plus Blue ENT is UL Listed and CSA certified and is recognized by Article 362 of the 2002 NEC. It is also recognized by ICC, BOCA, SBCCI, and ICBO for having a one and two hour fire rated wall assembly and up to a three hour rated floor/ceiling assembly.

Features:

- For use in buildings in accordance with Article 362 of the 2002 NEC
- 1/2" through 2" sizes
- Available in three colors: Red, Yellow, and Blue
- Outside Diameters meet IPS Dimensions
- Storage -4°F – 158°F
- Handling -4°F – 104°F

630-2-XXX

Standard Stock - Reels

Color	Part No.	Nom. I.D.	Nom. O.D.	Pull Tape	Min. Bend Radius	Reel Size (F x W)	Reel Type	Reel Length	Reel Wt. (lbs.)	Wt. per 100 ft. (lbs.)
Blue	12005AK-001	.56	.84	Empty	6"	36" x 24"	W	1500	40	10
Yellow	12005AY-001	.56	.84	Empty	6"	36" x 24"	W	1500	40	10
Red	12005AR-001	.56	.84	Empty	6"	36" x 24"	W	1500	40	10
Blue	12007AA-001	.76	1.05	Empty	6"	36" x 24"	W	1000	40	14
Yellow	12007AY-001	.76	1.05	Empty	6"	36" x 24"	W	1000	40	14
Red	12007AR-001	.76	1.05	Empty	6"	36" x 24"	W	1000	40	14
Blue	12008-750	1.00	1.315	Empty	6"	36" x 24"	W	750	40	20
Yellow	12008Y-750	1.00	1.315	Empty	6"	36" x 24"	W	750	40	20
Red	12008R-750	1.00	1.315	Empty	6"	36" x 24"	W	750	40	20
Blue	12009-750	1.402	1.66	Empty	7"	48" x 32"	W	750	90	19
Blue	12010-750	1.554	1.90	Empty	8 1/4"	48" x 32"	W	750	90	39
Blue	12011-500	2.030	2.375	Empty	9 1/2"	48" x 32"	W	500	90	32
Red	12011R-500	2.030	2.375	Empty	9 1/2"	48" x 32"	W	500	90	32

W = Wood

Standard Stock - Coils

Color	Part No.	Nom. I.D.	Nom. O.D.	Pull Tape	Min. Bend Radius	Coil Length (ft.)	Wt. per 100 ft. (lbs.)
Blue	12005-200	.56	.84	Empty	6"	200	10
Yellow	12005Y-200	.56	.84	Empty	6"	200	10
Red	12005R-200	.56	.84	Empty	6"	200	10
Blue	12007-100	.76	1.05	Empty	6"	100	14
Yellow	12007Y-100	.76	1.05	Empty	6"	100	14
Red	12007R-100	.76	1.05	Empty	6"	100	14
Blue	12008-100	1.00	1.315	Empty	6"	100	22
Yellow	12008Y-100	1.00	1.315	Empty	6"	100	22
Red	12008R-100	1.00	1.315	Empty	6"	100	22

STEEL CONDUIT PRODUCTS

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Dimensional Data

Listed below

630-2-XXX

BRIDGE MOUNT

BRIDGE MOUNT

JACK & BORE

FOR BRIDGE MOUNTING AND JACK AND BORE UNDER R.R.

Standard Rigid Conduit (GRC) - Weights and Dimensions

Trade Size	Nominal Wt. Per 100 Ft. (30.5M)		Nominal Outside Diameter		Nominal Wall Thickness		Quantity In Primary Bundle		Master Bundles Approx.					
	lb.	kg	in.	mm	in.	mm	ft.	m	ft.	m	lb.	kg	cu ft	cu m
16	82	37.2	0.840	21.3	0.104	2.60	100	30.5	2500	762.5	2050	929.7	20.8	0.59
21	109	49.4	1.050	26.7	0.107	2.70	50	15.2	2000	610.0	2180	988.7	24.3	0.69
27	161	73.0	1.315	33.4	0.126	3.20	50	15.2	1250	381.3	2013	912.9	21.7	0.61
35	218	98.9	1.660	42.2	0.133	3.40	-	-	900	274.5	1962	889.8	23.3	0.66
41	263	119.3	1.900	48.3	0.138	3.50	-	-	800	244.0	2104	954.2	27.8	0.79
53	350	158.7	2.375	60.3	0.146	3.70	-	-	600	183.0	2100	952.4	33.8	0.96
63	559	253.5	2.875	73.0	0.193	4.90	-	-	370	112.9	2068	937.9	29.2	0.83
78	727	329.7	3.500	88.9	0.205	5.20	-	-	300	91.5	2181	989.1	31.3	0.89
91	880	399.1	4.000	101.6	0.215	5.50	-	-	250	76.3	2200	997.7	34.7	0.98
103	1030	467.1	4.500	114.3	0.225	5.70	-	-	200	61.0	2060	934.2	33.7	0.95
129	1400	634.9	5.563	141.3	0.245	6.20	-	-	150	45.8	2100	952.4	41.3	1.17
155	1840	834.5	6.625	168.3	0.266	6.80	-	-	100	30.5	1840	834.5	38.9	1.10

Standard Metallic Tubing (EMT) - Weights and Dimensions

Trade Size	Nominal Wt. Per 100 Ft.	Nominal Outside Diameter	Nominal Wall Thickness	Quantity In	Master Bundles
				TSP-23	

(30.5M)

Bundle Quantity Wt. Volume

Metric	lb.	kg	in.	mm	in.	mm	ft.	m	ft.	mm	lb.	kg	cu ft	cu m
16	30	13.6	0.706	17.9	0.042	1.07	100	30.5	7000	2135.0	2100	952.4	28.7	0.81
21	46	20.9	0.922	23.4	0.049	1.25	100	30.5	5000	1525.0	2300	1043.1	35.6	1.01
27	67	30.4	1.163	29.5	0.057	1.45	100	30.5	3000	915.0	2010	911.6	33.7	0.95
35	101	45.8	1.510	38.4	0.065	1.65	50	15.2	2000	610.0	2020	916.1	35.0	0.99
41	116	52.6	1.740	44.2	0.065	1.65	50	15.2	1500	457.5	1740	789.1	34.2	0.97
53	148	67.1	2.197	55.8	0.065	1.65	-	-	1200	366.0	1776	805.4	46.7	1.32
63	216	98.0	2.875	73.0	0.072	1.83	-	-	610	186.1	1318	597.7	41.5	1.18
78	263	119.3	3.500	88.9	0.072	1.83	-	-	510	155.6	1341	608.2	48.9	1.38
91	349	158.3	4.000	101.6	0.083	2.11	-	-	370	112.9	1291	585.5	48.6	1.38
103	393	178.2	4.500	114.3	0.083	2.11	-	-	300	91.5	1179	534.7	48.3	1.37

OR RISERS ON POLES.

Intermediate Metal Conduit (IMC) - Weights and Dimensions

Trade Size	Nominal Wt. (30.5M)	Nominal Outside Diameter	Minimum Wall Thickness	Quantity In Primary Bundle	Master Bundles Approx.	Quantity	Wt.	Volume						
Metric	lb.	kg	in.	mm	in.	mm	ft.	m	ft.	mm	lb.	kg	cu ft	cu m
16	62	28.1	0.815	20.7	0.070	1.80	100	30.5	3500	1067.5	2170	984.1	26.7	0.76
21	84	38.1	1.029	26.1	0.075	1.90	50	15.2	2500	762.5	2100	952.4	30.7	0.87
27	119	54.0	1.290	32.8	0.085	2.20	50	15.2	1700	518.5	2023	917.5	30.7	0.87
35	158	71.7	1.638	41.6	0.085	2.20	-	-	1350	411.8	2133	967.3	36.3	1.03
41	194	88.0	1.883	47.8	0.090	2.30	-	-	1100	335.5	2134	967.8	38.2	1.08
53	256	116.1	2.360	59.9	0.095	2.40	-	-	800	244.0	2048	928.8	45.8	1.30
63	441	200.0	2.857	72.6	0.140	3.50	-	-	370	112.9	1632	740.1	29.2	0.83
78	543	246.3	3.476	88.3	0.140	3.50	-	-	300	91.5	1629	738.8	31.3	0.89
91	629	285.3	3.971	100.9	0.140	3.50	-	-	240	73.2	1510	684.8	34.7	0.98
103	700	317.5	4.466	113.4	0.140	3.50	-	-	240	73.2	1680	761.9	42.8	1.21

630-2-XXX

1. The Steel Tube Institute *Guidelines for Installing Steel Conduit/Tubing* General Product Information addresses this question. [Click here to link to the section containing a downloadable pdf file.](#)

[Back to Questions](#)

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2. Raceway Articles were renumbered in the 2002 NEC®. The following list shows the Article numbers that apply to IMC, RMC, and EMT, followed by the former Article number in parentheses.

IMC NEC® Article 342 (345)

RMC NEC® Article 344 (346)

EMT NEC® Article 358 (348)

[Back to Questions](#)

3. The following standards cover steel tubing (EMT)/conduit (RMC & IMC). The American Society for Testing Materials (ASTM) does not publish a standard whose scope specifically covers steel electrical conduit and couplings. Therefore, ASTM specifications do not apply to metal conduit for use as a metal raceway for the installation of wires and cables in accordance with the *National Electrical Code*®.

Electrical Metallic Tubing (EMT) is Listed to Standard for Electrical Metallic Tubing - Steel, UL 797 and produced to American National Standards Institute - ANSI C80.3

Rigid Metal Conduit - Steel (RMC) is Listed to Standard for Electrical Rigid Metal Conduit - Steel, UL 6 and produced to American National Standards Institute - ANSI C80.1

Intermediate Metal Conduit - Steel (IMC) is Listed to Standard for Electrical Intermediate Metal Conduit - Steel, UL 1242 and produced to American National Standards Institute - ANSI C80.6.

Additional information on the titles and designations of standards requirements that have been used for the investigation of products in a specific category can be found in the Underwriters Laboratories Inc.®, *General Information for Electrical Equipment Directory*. The UL product category for EMT is DYIX, for RMC is DYIX, and for IMC is DYBY.

Federal government, in an effort to reduce costs

• Benefits of steel conduit

Types of steel conduit

Applications

• Dimensional Data

Technical Contacts

Free Downloads

Types of Steel Conduit

(Product Definitions)

630-2-XXX

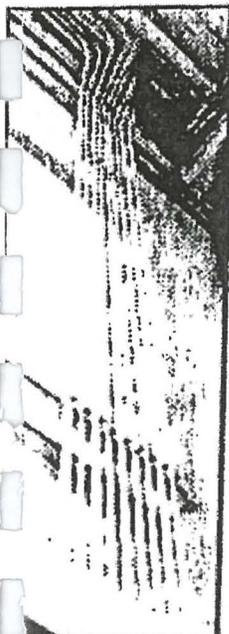
Steel Conduit and Tubing

Steel conduit has been in use as a "raceway system" for electrical conductors since the early 1900s. The wall thickness and strength of steel make Rigid Steel Conduit, Intermediate Metal Conduit and Electrical Metallic Tubing the wiring methods recognized as providing the most mechanical protection to the enclosed wire conductors. Additionally, a properly installed metal conduit system is recognized by the National Electrical Code® (NEC®) as an equipment grounding conductor. There are three basic types of steel conduit in use today:

Rigid Metal Conduit — RMC (ferrous metal)

Rigid metal conduit (RMC) is a listed threaded metal raceway of circular cross section with a coupling which can be either a standard straight tapped conduit coupling or the integral type. Threads on the uncoupled end are covered by industry color-coded thread protectors which protect the threads, keep them clean and sharp, and aid in trade size recognition. Rigid metal conduit is available in trade sizes 1/2 through 6. Thread protectors for trade sizes 1, 2, 3, 4, 5, and 6 are color-coded blue, trade sizes 1/2, 1 1/2, 2 1/2, 3 1/2 are black, and trade sizes 3/4 and 1-1/4 are red. The nominal finished length of RMC with coupling is 10 feet.

Rigid metal conduit can have a primary coating of zinc, a combination of zinc and organic coatings, or a nonmetallic coating (such as PVC). Supplementary coatings can be applied to all three where additional corrosion protection is needed.



(NOTE: Contact suppliers with product-specific questions).

Rigid metal conduit is the heaviest-weight and thickest-wall steel conduit. Where galvanized by the hot-dip process, it has a coating of zinc on both the inside and outside. Electro-galvanized rigid has a coating of zinc on the exterior only, with approved corrosion resistant organic coatings on the interior. Rigid with alternate corrosion protection generally has organic coatings on both the exterior and the interior surfaces. Galvanized rigid metal conduit (RMC) is non-combustible and can be used indoors, outdoors, underground, concealed or exposed. Rigid metal conduit with coatings that are not zinc based may have temperature limitations which will be noted on the manufacturer's product label and may not be listed for use in environmental air spaces; consult manufacturers' listings and markings.

[Go to top](#)

Intermediate Metal Conduit — IMC (ferrous metal)

This product was developed in the 1970s. Intermediate Metal Conduit (IMC) is a listed threaded steel raceway of circular cross section with a coupling which can be either a standard straight-tapped conduit coupling or the integral type. Threads on the uncoupled end are covered by industry color coded thread protectors which protect the threads, keep them clean and sharp, and aid in trade size recognition. IMC is available in trade sizes 1/2 through 4. Thread protectors for trade sizes 1, 2, 3, 4, are color-coded orange; trade sizes 1/2, 1 1/2, 2 1/2, 3 1/2 are yellow; and trade sizes 3/4 and 1 1/4 are green. The nominal finished length of IMC *with coupling* is 10 feet.

IMC has a reduced wall thickness, when compared to RMC, and weighs about one-third less than RMC. The outside has a zinc based coating and the inside has an approved organic corrosion-resistant coating. IMC is interchangeable with other TSP-27

conduit. Both have threads with a 3/4-inch per foot taper; use the same couplings and fittings; have the same support requirements; and are permitted in the same locations.

Electrical Metallic Tubing — EMT (ferrous metal)

Electrical Metallic Tubing (EMT), also commonly called thin-wall, is a listed steel raceway of circular cross section which is unthreaded, and nominally 10 feet long. The outside corrosion protection is zinc based and the inside has an approved corrosion resistant organic coating. EMT with integral couplings is available in trade sizes 2 1/2 - 4. EMT is installed by use of set-screw or compression-type couplings and connectors. EMT is permitted to have an integral coupling which is comprised of an expanded, "belled" shape of tube on one end with set screws.

[Go to top](#)

PVC-Coated Steel Conduit (PVC)

There are three types of PVC-coated conduit; couplings are supplied separately.

1. Primary PVC coating over bare steel which is a listed rigid conduit for environmentally suitable locations.
2. A PVC coating over listed galvanized steel conduit. This is a supplementary coating intended for added protection in severely corrosive locations.
3. A primary PVC coating over a supplementary coating of zinc. This is also intended for severely corrosive locations.

These PVC-coated raceways are generally installed as a system, which means the fittings, conduit bodies, straps, hangers, boxes, etc., are also coated. There are, however, installations where only a coated elbow is used in a galvanized conduit run, such as where emerging from the soil or concrete.

(NOTE: Manufacturers' instructions are very important when installing PVC coated products and

STEEL CONDUIT PRODUCTS

• [SIC INFORMATION](#) • [PRODUCERS](#) • [Q&A](#) • [NEWS](#)

• [CODE CORNER](#)

• [Company Links](#)



630-2-XXX

[Technical Contacts](#)

The membership of the Steel Tube Institute's Steel Conduit Section represents the leading producers of Steel Conduit tubing, who have banded together to promote the use of Steel Conduit. They are listed below. All members who have a website are linked. The names of those companies who have websites are printed in blue. To visit their home page, simply click on their name.



	<p>Allied Tube & Conduit Corp. 16100 S. Lathrop Avenue Harvey, IL 60426 Telephone: (708) 339-1610 Fax: (708) 339-9827</p>
	<p>Picoma Industries 330 East Ninth Street Waynesboro, PA 17268 Telephone: (800) 742-6621 Fax: (717) 762-0948</p>
 <p><small>Demanded The Brand®</small> <small>Maverick Tube Corporation</small></p>	<p>Republic Conduit Maverick Tube Corp. 16401 Swingley Ridge Rd. Suite 700 Chesterfield, MO 63017 Telephone: (800) 325-1777 Fax: (636) 733-1677</p>
 <p>WESTERN TUBE & CONDUIT CORPORATION</p>	<p>Western Tube & Conduit Co. P.O. Box 2720 Long Beach, CA 90801-2720 Telephone: (310)</p>

537-6300
Fax: (310) 604-9785

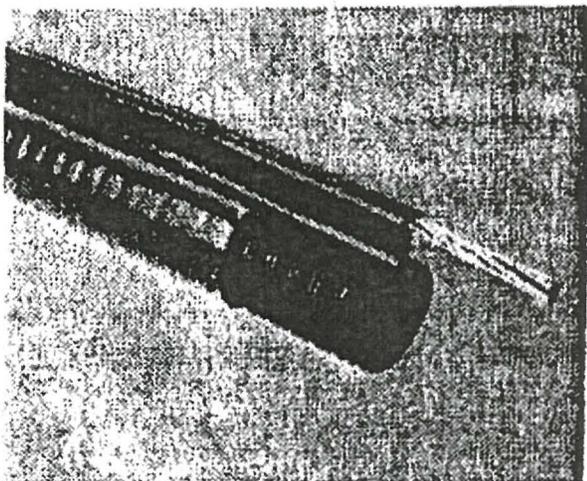


**Wheatland Tube
Company**
P.O. Box 600
Collingswood, NJ
08108
Telephone: (856)
854-5400
Fax: (856) 858-5578

630-2-XXX

STRAND-GUARD® AERIAL FIGURE-8 CONDUIT

August 2001 — Rev. 3.0



Features:

- Flexible corrugated inner wall
- 6.6M or 10M strand strengths
- Multiple sizes, continuous long lengths
- Easy payoff
- Uses standard industry hardware
- Optional pre-installed pull tape

Benefits:

- Fast, straight, one-pass installation
- Designed for air-assisted fiber placement
- Lower installed cable and maintenance cost
- Provides added layout of protection for your fiber investment

MINIMIZE YOUR AERIAL INSTALLATION COSTS – IDEAL FOR AIR-ASSISTED CABLE PLACEMENT

ARNCO's Strand-Guard® is ideal for difficult access areas, such as water or interstate crossings, or heavy tree areas.

- There is no need to put up a strand making installation a one-pass operation. Easy straight payoff allows for direct placement.
- Standard hardware and ARNCO's Split-Lock™ coupler are all that is needed to construct the aerial plant
- No expansion sleeves needed, as the corrugated inner liner absorbs mechanical strain.
- The Strand-Guard system is airtight, and the corrugated inner liner reduces cable surface contact, resulting in a lower coefficient of friction for pulling or air-assisted cable placement.

DESIGNED TO RESIST THE ELEMENTS

Strand-Guard was designed to stay up in the toughest conditions.

- A unique inner corrugated wall combined with a high-strength web dissipates the expansion contraction forces.
- A specially formulated flexible sunlight resistant outer jacket provides the protection and rigidity necessary to protect your fiber and allow air-assisted cable placement.
- Several high strength steel flooded strand options are available providing long-term adhesion and water resistance in heavy storm loads.
- Corrugated design absorbs internal ice expansion.

FLEXCALC™ PROGRAM

Ask your ARNCO® sales representative about our FlexCalc software for use in calculating sag tension requirements. The program is simple to use as it walks the user through a menu of choices culminating in a table of sag and tension information for the specific selections the user has requested. Please contact an ARNCO® sales representative or an authorized ARNCO® distributor for more details.

1-800-321-7914
WEB SITE: www.arnco.com
E-MAIL: info@arnco.com

ARNCO CORPORATION
860 GARDEN STREET, ELYRIA, OH 44035
PHONE: 440-322-1000 • FAX: 440-322-1001

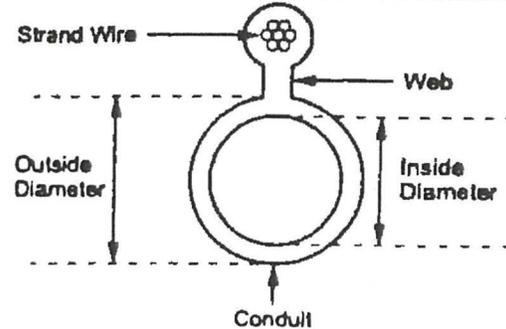
ARNCO
Cable Installation Systems

Product Bulletin**STRAND-GUARD®
AERIAL FIGURE-8 CONDUIT**

August 2001 — Rev. 3.0

**TECHNICAL SPECIFICATIONS
& ORDERING INFORMATION**

Strand-Guard® is a self-supporting conduit designed for ease of installation and long life in aerial applications. It is a very economical way to protect fiber optic cable installed aerially.

**TECHNICAL SPECIFICATIONS****MATERIALS**

Resin	Specially formulated, UV stabilized, black polyethylene.
UV Protection	Minimum 2% carbon black (avg. particle size 20µ) with antioxidant.
Strand	High strength zinc galvanized steel, with flooding/adhesive compound.

DIMENSIONS

Description	Nominal I.D.	Nominal Composite O.D.	Nominal Composite Wall	Weight/ft.
1.00" I.D. with 6.6M strand	1.00"	1.44"	.110"	.362 lbs.
1.00" I.D. with 10M strand	1.00"	1.44"	.110"	.511 lbs.
1.25" I.D. with 6.6M strand	1.25"	1.66"	.110"	.429 lbs.
1.25" I.D. with 10M strand	1.25"	1.66"	.110"	.578 lbs.
1.50" I.D. with 6.6M strand	1.50"	1.90"	.110"	.509 lbs.
1.50" I.D. with 10M strand	1.50"	1.90"	.110"	.658 lbs.
2.00" I.D. with 6.6M strand	2.00"	2.38"	.110"	.624 lbs.
2.00" I.D. with 10M strand	2.00"	2.38"	.110"	.773 lbs.

Dimensions	Bend Radius		Pull Strength(1) Max (@ 3.5% elongation)
	Unsupported	Supported	
1.00"	14"	13"	415 lbs.
1.25"	16"	15"	500 lbs.
1.50"	20"	18"	585 lbs.
2.00"	24"	22"	760 lbs.

1 Tensile yield is for duct component only and not strand. Installation tension should be placed on strand, not duct.

**SPLIT-LOCK™ COUPLERS**

Part No.	Description
IA 552 100 SS	1" I.D. SDR
IA 552 125 SS	1-1/4" I.D. SDR
IA 552 150 SS	1-1/2" I.D. SDR
IA 552 200 SS	2" I.D. SDR

Specifications, dimensions and packaging subject to change. Consult factory or representative for current ordering information.

Printed in U.S.A.

R-105

ARNCO
Installation Systems

ARNCO CORPORATION
860 GARDEN STREET, ELYRIA, OH 44035
PHONE: 440-322-1000 - FAX: 440-322-1001

1-800-321-7914
WEB SITE: www.arnco.com
E-MAIL: info@arnco.com

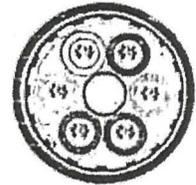
12 Count
~~CRS~~
 24, 48, + 96

ExpressLT™ Dry

Dry loose tube cable (2.5 mm)



- MDPE Outer Jacket
- Water Blocking Tape
- MDPE Inner Jacket (Double Jacket Designs Only)
- Central Strength Member
- Outer Strength Members (where applicable)
- Dry Buffer Tube Containing up to 12 Fibers
- Ripcord
- ezPREP® Corrugated Steel Armor (optional)



A versatile, multi-purpose fiber cable designed for ease of use and buffer tube mid-span storage applications

Overview

Prysmian's popular ExpressLT™ cable combines buffer tubes with enhanced flexibility, a completely dry water-blocking system, and optional ezPREP® armor. The buffer tubes are also rated for mid-span storage applications. This combination of features makes ExpressLT™ an ideal solution for applications requiring frequent sheath access and express tube storage.

Product Snapshot

Applications	Multi-purpose outdoor, aerial lashed, duct, direct buried (when armored)
Constructions	Dielectric, armored, double armored, dual jacket
Count	4 to 432 fibers in color-coded buffer tubes
Fiber Types	Single-mode, multimode, bend-insensitive SM, NZDS
Options	Steel central member, 22 or 24 AWG copper pair(s), 16 AWG tonewire, striped jacket, factory-installed pulling eye
Similar Alternatives	Del-hilled buffer tubes / LT 2.0 / heavy duty / central / indoor-outdoor / indoor / self-support / microduct
Performance	Tested in accordance with TIA 455 series FOTPs for fiber optic cables. Complies with ICEA G40, RUS 7 CFR 1755 (PE90 listed), Telcordia GR-20, and IEC 60794-3-11

RUS LISTED

Features and Benefits

Easy Cable Entry and Preparation

- Dry water-blocked core speeds cable access
- Dry, water-blocked tubes reduce prep time by an average of 15 minutes per cable end
- Available with ezPREP® armor to allow easy access to the core in mid-sheath entries
- Reverse oscillating stranded core facilitates mid-span access of fibers. Tubes can easily be removed from the core
- Ripcord speeds cable entry & outer jacket removal

Available with ezPREP® Armor

- The jacket can be easily separated from the armor without a heat gun or torch
- Armored cable access, bonding and grounding are faster, easier and safer

Flexible Routing and Termination

- Buffer tubes can be stored in FTx pedestals, closures and cabinets in lengths up to 20'
- 2.5mm buffer tubes with enhanced flexibility simplify routing and splice preparation

Multi-Purpose Design

- Suitable for aerial lashed, duct, and direct buried installation (when armored)
- Small diameter and light weight, extends reel and installation lengths
- Optional ezPREP® corrugated steel tape armor provides mechanical protection and rodent resistance

ExpressLT™ Dry

Dry loose tube cable (2.5 mm)

Dielectric (Non-Armored) (EDH1KT)

Fiber Count	# of Buffer Tubes	Diameter Inches (mm)	Approximate Cable Weight lb/ft (kg/km)	Bend Radius Load Inches (cm)	Bend Radius No Load Inches (cm)
4 to 60	5	0.40 (10.2)	43 (64)	8 (20)	4 (10)
62 to 72	6	0.43 (10.9)	50 (75)	8 (21)	4 (11)
74 to 96	8	0.50 (12.6)	65 (97)	10 (25)	5 (13)
98 to 120	10	0.55 (14.1)	81 (121)	11 (28)	6 (14)
122 to 144	12	0.63 (15.9)	105 (156)	13 (32)	6 (16)
146 to 216	18	0.63 (15.9)	105 (156)	13 (32)	6 (16)
228 to 264	22	0.68 (17.3)	128 (190)	14 (35)	7 (17)
276 to 288	24	0.72 (18.3)	145 (216)	14 (37)	7 (18)
290 to 432	36	0.80 (20.4)	181 (270)	16 (41)	8 (21)

Single Jacket Armored (SP) (EDH1A1)

Fiber Count	# of Buffer Tubes	Diameter Inches (mm)	Approximate Cable Weight lb/ft (kg/km)	Bend Radius Load Inches (cm)	Bend Radius No Load Inches (cm)
4 to 60	5	0.46 (11.8)	80 (132)	9 (24)	5 (12)
62 to 72	6	0.50 (12.6)	97 (145)	10 (25)	5 (13)
74 to 96	8	0.56 (14.3)	116 (172)	11 (29)	6 (14)
98 to 120	10	0.62 (15.8)	143 (213)	12 (32)	6 (16)
122 to 144	12	0.69 (17.6)	176 (262)	14 (35)	7 (18)
146 to 216	18	0.70 (17.9)	170 (254)	14 (36)	7 (18)
228 to 254	22	0.76 (19.4)	190 (283)	15 (39)	8 (19)
276 to 298	24	0.91 (20.7)	206 (300)	16 (42)	8 (21)
290 to 432	36	0.90 (23.0)	253 (376)	16 (45)	9 (23)

Double Jacket Single Armored (PSP) (EDH1A2)

Fiber Count	# of Buffer Tubes	Diameter Inches (mm)	Approximate Cable Weight lb/ft (kg/km)	Bend Radius Load Inches (cm)	Bend Radius No Load Inches (cm)
4 to 60	5	0.53 (13.5)	107 (160)	11 (27)	5 (14)
62 to 72	6	0.55 (14.0)	117 (174)	11 (28)	5 (14)
74 to 96	8	0.61 (15.5)	137 (204)	12 (31)	6 (16)
98 to 120	10	0.67 (17.1)	167 (249)	13 (34)	7 (17)
122 to 144	12	0.74 (18.9)	198 (294)	15 (38)	7 (19)
146 to 216	18	0.76 (19.3)	198 (294)	15 (38)	8 (20)
228 to 254	22	0.80 (20.4)	220 (327)	15 (41)	8 (20)
276 to 288	24	0.86 (21.8)	249 (366)	17 (44)	9 (22)
290 to 432	36	0.94 (24.0)	289 (426)	19 (48)	9 (24)

ExpressLT™ Dry

Dry loose tube cable (2.5 mm)

Dielectric Double Jacket (PDP) (EDHNA2J)

Fiber Count	# of Buffer Tubes	Diameter (inches (mm))	Approximate Cable Weight (lb/ft (kg/km))	Bend Radius (Load) (inches (cm))	Bend Radius (No Load) (inches (cm))
4 to 60	5	0.46 (11.7)	63 (96)	9 (23)	5 (12)
62 to 72	6	0.48 (12.2)	73 (108)	10 (25)	5 (12)
74 to 96	8	0.54 (13.8)	89 (133)	11 (28)	5 (14)
98 to 120	10	0.61 (15.4)	111 (165)	12 (31)	6 (15)
122 to 144	12	0.67 (17.0)	133 (198)	13 (34)	7 (17)
146 to 216	18	0.67 (17.1)	137 (204)	13 (34)	7 (17)
218 to 264	22	0.74 (18.7)	159 (237)	15 (37)	7 (15)
266 to 288	24	0.78 (19.9)	175 (266)	16 (40)	8 (20)

Double Jacket Double Armored (SPSP) (EDH2A2J)

Fiber Count	# of Buffer Tubes	Diameter (inches (mm))	Approximate Cable Weight (lb/ft (kg/km))	Bend Radius (Load) (inches (cm))	Bend Radius (No Load) (inches (cm))
4 to 60	5	0.64 (16.3)	182 (272)	13 (33)	6 (16)
62 to 72	6	0.67 (17.1)	194 (289)	13 (34)	7 (17)
74 to 96	8	0.75 (19.1)	226 (336)	15 (38)	8 (19)
98 to 120	10	0.80 (20.4)	258 (384)	16 (41)	8 (20)
122 to 144	12	0.88 (22.4)	312 (465)	18 (45)	9 (22)
146 to 216	18	0.88 (22.4)	305 (454)	18 (45)	9 (22)
218 to 264	22	0.94 (23.9)	338 (503)	19 (48)	9 (24)
266 to 288	24	0.98 (24.9)	368 (547)	20 (50)	10 (25)

Triple Jacket Double Armored (PSPSP) (EDH2A3J)

Fiber Count	# of Buffer Tubes	Diameter (inches (mm))	Approximate Cable Weight (lb/ft (kg/km))	Bend Radius (Load) (inches (cm))	Bend Radius (No Load) (inches (cm))
4 to 60	5	0.70 (17.8)	215 (320)	14 (36)	7 (18)
62 to 72	6	0.73 (18.6)	228 (339)	15 (37)	7 (19)
74 to 96	8	0.78 (19.9)	265 (394)	16 (40)	8 (20)
98 to 120	10	0.86 (21.8)	313 (466)	17 (43)	9 (22)
122 to 144	12	0.93 (23.7)	367 (546)	19 (47)	9 (24)
146 to 216	18	0.93 (23.7)	367 (546)	19 (47)	9 (24)
218 to 264	22	0.98 (25.0)	402 (598)	20 (50)	10 (25)
266 to 288	24	1.02 (26.0)	429 (639)	20 (52)	10 (26)

Installation

- Maximum installation load 600 lbf (2700 N)
- Maximum operation load 180 lbf (800 N)

Temperature Range

- Shipping and Storage -48° F to +167° F (-40° C to +75° C)
- Installation 22° F to +140° F (-30° C to +60° C)
- Operation -10° F to +158° F (-40° C to +70° C)

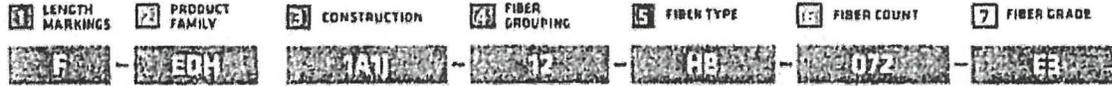
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 +1-800-875-9862 | +1-800-669-0808 | website: us.prysmiangroup.com/technical

SC04 0706 EXPRESSLT DRY 11 13

Ordering Guide

The Prysmian Group part number incorporates several significant attributes involving cable design and optical performance. The appropriate part number can be configured using the process described below.

Example: ExpressLT™ dry (gel-free) | single armor single jacket (12 fibers/tube) with 72 single-mode fibers (printed in feet)



PART NUMBER CONSTRUCTION	
1) LENGTH MARKINGS	F = Feet or M = Meters
2) PRODUCT FAMILY	EDH = ExpressLT Dry
3) CONSTRUCTION	1JKT = Single Jacket 1A1) = Single Armor, Single Jacket 1A2) = Single Armor, Dual Jacket 2A2) = Double Armor, Dual Jacket 2A3) = Double Armor, Triple Jacket NA2) = Non Armored, Dual Jacket
4) FIBER GROUPING	12 = 12f per tube

FIBER INFORMATION																										
5) FIBER TYPE	SINGLE-MODE 110 = Single-Mode (ITU G.652 C & D) Low Water Peak ES = Enhanced Single-Mode (ITU G.652 C & D) CE = Corning™ SMF28e+ Single-Mode B1 = Bend-Insensitive Single-Mode (ITU G.657.A1 & G.652.D) B2 = Bend-Insensitive Single-Mode (ITU G.657.A2 & B2 & G.652.D) TU = TeraLight Ultra Single-Mode (ITU G.655 B G.656) 1A = RZDSF-LA Single-Mode (ITU G.655) LE = LEAF NZDSF (ITU G.655)																									
MULTI-MODE	<table border="1"> <thead> <tr> <th></th> <th>Wavelength (nm)</th> <th>Bandwidth (MHz)</th> <th>10GbE Dist (m)</th> <th>40GbE Dist (m)</th> </tr> </thead> <tbody> <tr> <td>OM1 (62.5µm)</td> <td>850/1300</td> <td>200/500</td> <td>300/550</td> <td>33/...</td> </tr> <tr> <td>OM2+ BIF (50µm)</td> <td>850/1300</td> <td>700/500</td> <td>600</td> <td>150/...</td> </tr> <tr> <td>OM3 BIF (50µm)</td> <td>850/1300</td> <td>1500/500</td> <td>1000</td> <td>300/...</td> </tr> <tr> <td>OM4 BIF (50µm)</td> <td>850/1300</td> <td>3500/500</td> <td>1100</td> <td>550/...</td> </tr> </tbody> </table>		Wavelength (nm)	Bandwidth (MHz)	10GbE Dist (m)	40GbE Dist (m)	OM1 (62.5µm)	850/1300	200/500	300/550	33/...	OM2+ BIF (50µm)	850/1300	700/500	600	150/...	OM3 BIF (50µm)	850/1300	1500/500	1000	300/...	OM4 BIF (50µm)	850/1300	3500/500	1100	550/...
	Wavelength (nm)	Bandwidth (MHz)	10GbE Dist (m)	40GbE Dist (m)																						
OM1 (62.5µm)	850/1300	200/500	300/550	33/...																						
OM2+ BIF (50µm)	850/1300	700/500	600	150/...																						
OM3 BIF (50µm)	850/1300	1500/500	1000	300/...																						
OM4 BIF (50µm)	850/1300	3500/500	1100	550/...																						
6) FIBER COUNT	104 to 432 fibers																									
7) FIBER GRADE	<table border="1"> <thead> <tr> <th>SINGLE-MODE</th> <th>Attenuation (dB/km) @ Wavelength (nm)</th> <th>Fiber Type</th> </tr> </thead> <tbody> <tr> <td>E1</td> <td>0.40/0.40/0.30 @ 1310/1383/1550</td> <td>110, ES, or CE</td> </tr> <tr> <td>E3</td> <td>0.35/0.35/0.25 @ 1310/1383/1550</td> <td>110, ES, CE, B1, or B2</td> </tr> <tr> <td>NA</td> <td>0.40/0.25 @ 1310/1550</td> <td>TeraLight Ultra Single-Mode</td> </tr> <tr> <td>1A</td> <td>0.25 @ 1550</td> <td>RZDSF-LA Single-Mode</td> </tr> <tr> <th>MULTI-MODE</th> <th>Attenuation (dB/km) @ Wavelength (nm)</th> <th></th> </tr> <tr> <td>M2</td> <td>3.5/1.0 @ 850/1300</td> <td></td> </tr> <tr> <td>M3</td> <td>3.0/1.0 @ 850/1300</td> <td></td> </tr> </tbody> </table>	SINGLE-MODE	Attenuation (dB/km) @ Wavelength (nm)	Fiber Type	E1	0.40/0.40/0.30 @ 1310/1383/1550	110, ES, or CE	E3	0.35/0.35/0.25 @ 1310/1383/1550	110, ES, CE, B1, or B2	NA	0.40/0.25 @ 1310/1550	TeraLight Ultra Single-Mode	1A	0.25 @ 1550	RZDSF-LA Single-Mode	MULTI-MODE	Attenuation (dB/km) @ Wavelength (nm)		M2	3.5/1.0 @ 850/1300		M3	3.0/1.0 @ 850/1300		
SINGLE-MODE	Attenuation (dB/km) @ Wavelength (nm)	Fiber Type																								
E1	0.40/0.40/0.30 @ 1310/1383/1550	110, ES, or CE																								
E3	0.35/0.35/0.25 @ 1310/1383/1550	110, ES, CE, B1, or B2																								
NA	0.40/0.25 @ 1310/1550	TeraLight Ultra Single-Mode																								
1A	0.25 @ 1550	RZDSF-LA Single-Mode																								
MULTI-MODE	Attenuation (dB/km) @ Wavelength (nm)																									
M2	3.5/1.0 @ 850/1300																									
M3	3.0/1.0 @ 850/1300																									
*The table lists the fiber part numbers and grades as well as request.																										

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Our team at CDR Systems, Electrimold and Western Power Products is committed to delivering the highest quality of customer service.

For Customer support please contact us at one of the following

E-Mail : sales@cdrsystems.com
Sales Associates : (386) 615-9510
Fax : (386) 615-9606

CDR Systems Corporation
146 South Atlantic Ave.
Ormond Beach, FL 32176 USA



WESTERN POWER PRODUCTS



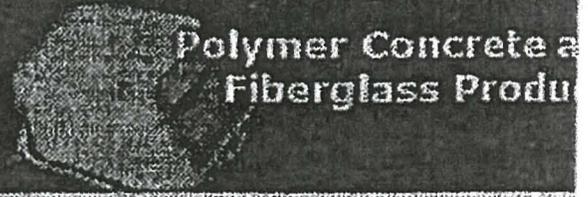
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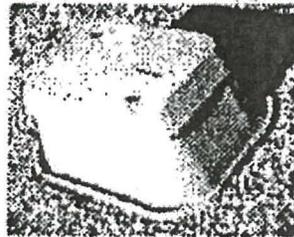
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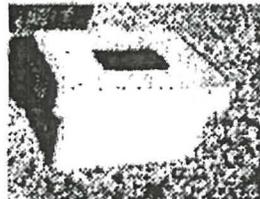
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Products



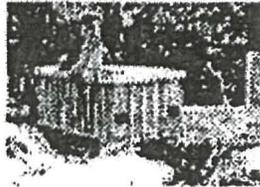
Small Boxes - Flared Wall

Available in sizes from: 10" x 15" x 12" to 30" x 48" x 36". Many sizes and depths available. Tapered wall provides greater inside room, and "locks" into the ground.



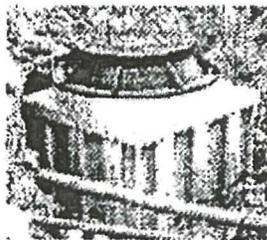
Small Boxes - Straight Wall

Available sizes from 10"x15"x12" to 36"x72"x36", straight sides permit easy movement of box, should grade level change.



Large Boxes

Sizes from 30" x 48" to 48" x 96". Any depth from 5" to 48". Extension to 48". Larger Specials available also.



Street Rated - Boxes

NEW! For use in roadway. Sizes from 48" x 48" to 48" x 96" depths to 48". Extension to 48".



QAV II

Quick assembly vaults ship flat to save space

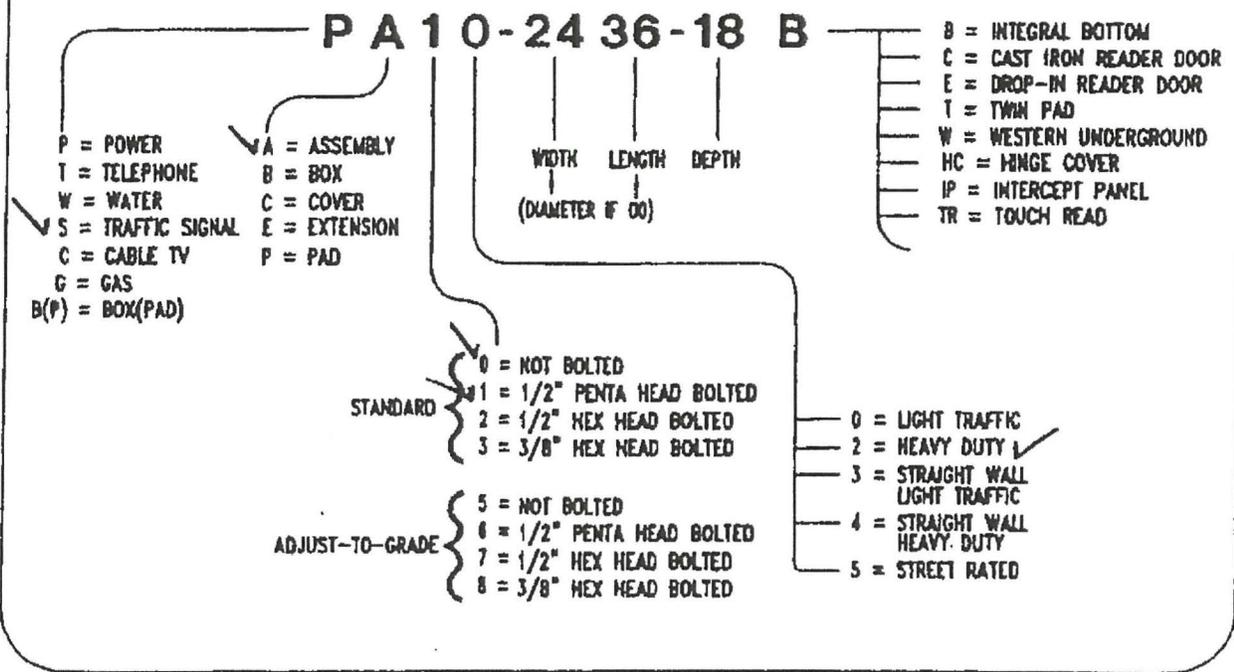


Equipment and Transformer Pads

Used under transformers and telephone cabinets. Adds stability, prevents corrosion and damage.



"BUILD-A-PART" NUMBERING SYSTEM



1/3/76

CDR is VERSATILE; we build our products with the features you order. The diagram above explains how our catalog numbering system allows you to design your own box assembly from the many options available.

LIGHT TRAFFIC boxes are rated for use in sidewalks, paved pedestrian areas or areas not subject to heavy vehicular traffic.

✓ HEAVY DUTY boxes are rated for uses in alleys, driveways, parking lots, or areas subject to heavy vehicles.

STREET RATED boxes are suitable for use in streets subject to AASHTO H-20 loads and are available in certain sizes.

Boxes with different depths, special features or in different sizes are available and can be made to order. Boxes can be ordered with integral or separate bottoms. To insure strength and rigidity, boxes over 30" deep should have a bottom.

Covers are available with or without bolting capability, 1/2" stainless steel penta head hardware is standard. Other hardware should be specified. Covers are available with standard or specified logos. "Electric" is standard on Power boxes; "Telephone" is standard on Telephone boxes, etc.



SYSTEMS CORPORATION

146 SOUTH ATLANTIC AVENUE • ORMOND BEACH, FL 32176 • TEL: 386-615-9510 • FAX: 386-615-9606 • E-MAIL: sales@cdrsystems.com

CATALOG INDEX

Service Boxes & Vaults
QAV II - Quick Assembly Vaults *HEAVY DUTY*
Convertible Pedestal/Handhole
Load Specification Sheet

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15 x 17 Series	B-12	36 X 72 Series	C-41
15 x 27 Series	B-13	36 X 72W Series	C-41A
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17 x 30 Series (Flared Wall)	B-20	48 X 48 Series	C-42
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Trench Covers	D-20	Typical Wall Sections	D-50
Round Box (2700 Series)	D-21	Large Box Details & Options	D-60
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Round Box (3900 Series)	D-21B		
Street Rated Boxes	D-22		
Torsion Assist Boxes	D-25		

Surface Equipment Supports Page

Equipment-Transformer Pads E-10

Boxpads E-20



• LIGHTEST • STRONGEST •

SERVICE BOXES • VAULTS • TRANSFORMER PADS • EQUIPMENT PADS

12/28/04

TS-4C

TSP-40



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17 X 30 BOXES

FLARED WALL
FOR SPLICE BOXES — HANDHOLES — METER BOXES
FIBER OPTICS

- **STRONG** - 4 to 5 times the strength of concrete
- **LIGHTWEIGHT** - Quick easy installation for **LOWEST INSTALLED COST**
- **AVAILABLE** - Light traffic or Heavy duty design
- **NESTABLE** - for easy storage, transportation and freight savings (for flared wall boxes only)
- **NON-CONDUCTIVE** - And unaffected by UV light, moisture, freezing and sub soil chemicals
- **STAINLESS STEEL HARDWARE** - non-corrosive
- **NO EXTRA CHARGE** - for standard cover logos

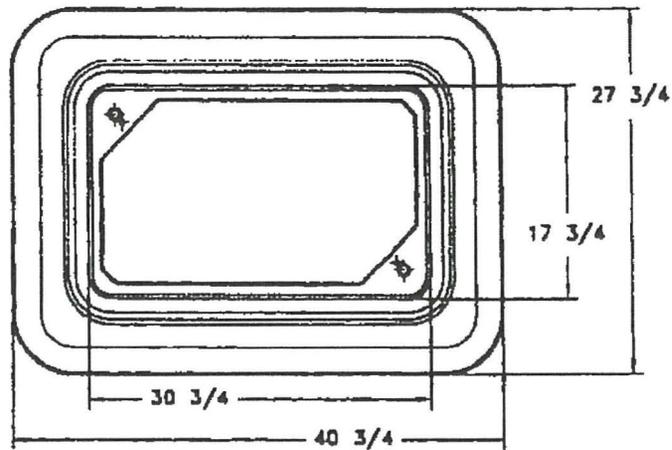
Assemblies

Box and Cover	COVER		LIGHT TRAFFIC		HEAVY DUTY	
	NOT BOLTED	BOLTED	Part No.	WT.	Part No.	WT.
12" deep	•	•	_A00-1730-12 93		<u>A02-1730-12 101</u>	
			_A10-1730-12 93		_A12-1730-12 101	
18" deep	•	•	_A00-1730-18 105		_A02-1730-18 115	
			_A10-1730-18 105		_A12-1730-18 115	
22" deep	•	•	_A00-1730-22 115		_A02-1730-22 125	
			_A10-1730-22 115		_A12-1730-22 125	
24" deep	•	•	_A00-1730-24 125		_A02-1730-24 135	
			_A10-1730-24 125		_A12-1730-24 135	
30" deep	•	•	_A00-1730-30 135		_A02-1730-30 145	
			_A10-1730-30 135		_A12-1730-30 145	

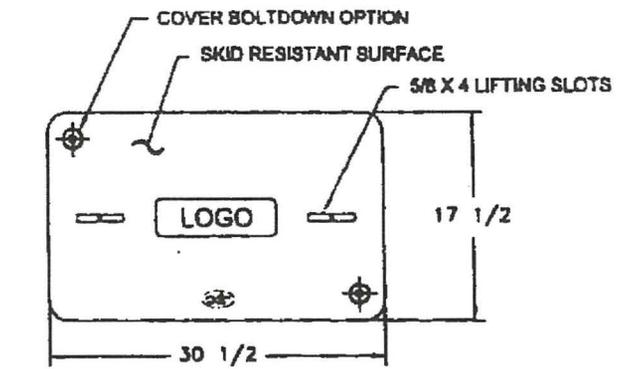
Components

	LIGHT TRAFFIC				HEAVY DUTY			
	NOT BOLT DOWN		BOLT DOWN		NOT BOLT DOWN		BOLT DOWN	
	Part No.	WT.						
Box 12" deep	_B00-1730-12 46		_B10-1730-12 46		_B02-1730-12 50		_B12-1730-12 50	
Box 18" deep	_B00-1730-18 58		_B10-1730-18 58		_B02-1730-18 64		_B12-1730-18 64	
Box 22" deep	_B00-1730-22 68		_B10-1730-22 68		_B02-1730-22 74		_B12-1730-22 74	
Box 24" deep	_B00-1730-24 78		_B10-1730-24 78		_B02-1730-24 84		_B12-1730-24 84	
Box 30" deep	_B00-1730-30 88		_B10-1730-30 88		_B02-1730-30 94		_B12-1730-30 94	
Cover 2" thick	_C00-1730-02 47		_C10-1730-02 47		_C02-1730-02 51		_C12-1730-02 51	
Cover with 6" x 9" Cast Iron Meter Lid	_C00-1730-2C 51		_C10-1730-2C 51					
Extension 8" deep	_E00-1730-08 39		_E00-1730-08 39		_E02-1730-08 45		_E02-1730-08 45	
Extension 16" deep	_E00-1730-16 42		_E00-1730-16 42		_E02-1730-16 48		_E02-1730-16 48	

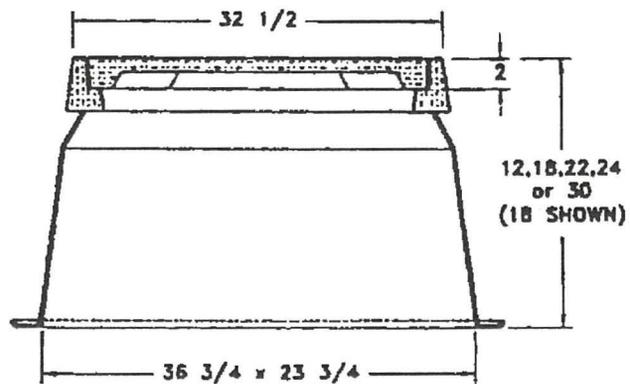
TS-42



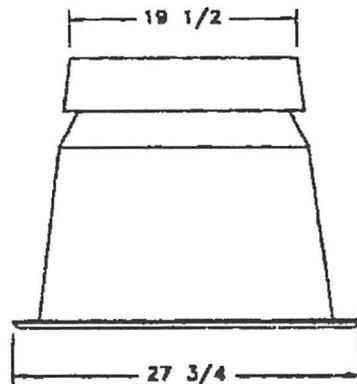
TOP VIEW



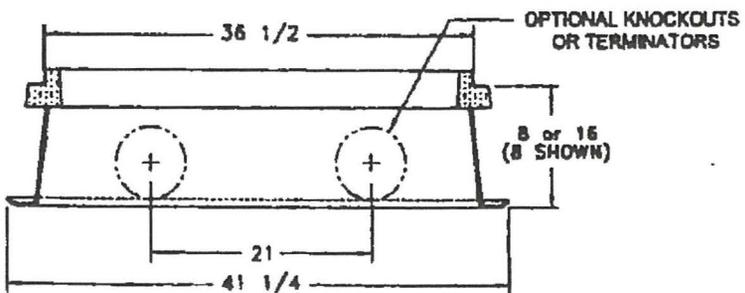
COVER
OPTIONAL CAST IRON READER LIDS AVAILABLE



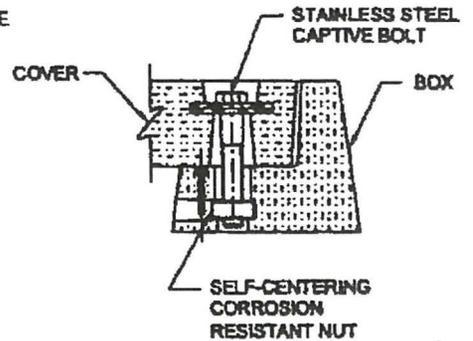
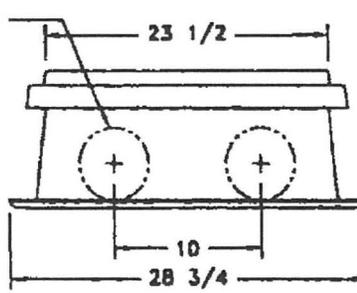
BOX & COVER SECTION



END VIEWS



EXTENSION SECTION



COVER BOLTDOWN OPTION

- MATERIAL: FIBERGLASS REINFORCED PGLYMER CONCRETE & FIBERGLASS REINFORCED POLYMER
- STANDARD COLOR: CONCRETE GRAY
- (OPTIONAL COLORS AVAILABLE FOR COVER AND COLLAR)
- FLARED WALL BOXES ARE NESTABLE

cdr SYSTEMS CORP 148 SOUTH ATLANTIC AVE., ORLANDO BEACH, FL 32178			
TITLE 17 x 30 FLARED WALL SERIES BOX, COVER & EXTENSION			
DRAWN	E. HODGKINS	DATE	7/1/02
CHECKED		A SIZE	021-0001
APPROVED	AOK		



SYSTEMS CORPORATION

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30 X 48W BOXES

FLARED WALL

FOR SPLICE BOXES - HANDHOLES - METER BOXES - FIBER OPTICS

- **STRONG** - 4 to 5 times the strength of concrete
- **LIGHTWEIGHT** - Quick easy installation for **LOWEST INSTALLED COST**
- **AVAILABLE** - Light traffic or Heavy duty design
- **NESTABLE** - for easy storage, transportation and freight savings (for flared wall boxes only)
- **NON-CONDUCTIVE** - And unaffected by UV light, moisture, freezing and sub soil chemicals
- **STAINLESS STEEL HARDWARE** - non corrosive
- **NO EXTRA CHARGE** - for standard cover logos

Assemblies

Box and Cover	COVER		LIGHT TRAFFIC		HEAVY DUTY	
	NOT BOLTED	BOLTED	Part No.	WT.	Part No.	WT.
18" deep	•	•	_A00-3048-18W 310 _A10-3048-18W 310		_A02-3048-18W 375 _A12-3048-18W 375	
24" deep	•	•	_A00-3048-24W 320 _A10-3048-24W 320		<u>A02-3048-24W 385</u> _A12-3048-24W 385	
30" deep	•	•	_A00-3048-30W 405 _A10-3048-30W 405		_A02-3048-30W 405 _A12-3048-30W 405	
36" deep	•	•	_A00-3048-36W 425 _A10-3048-36W 425		_A02-3048-36W 425 _A12-3048-36W 425	

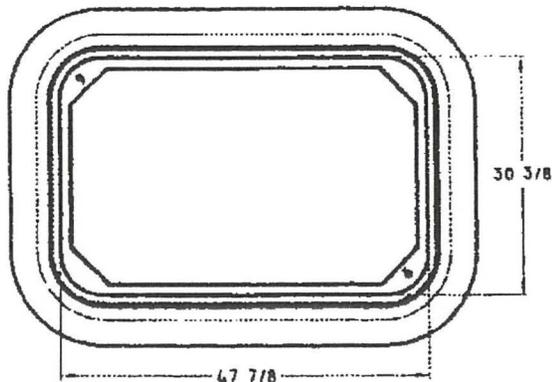
Components

BOX	LIGHT TRAFFIC				HEAVY DUTY			
	NOT BOLTED	WT.	BOLT DOWN	WT.	NOT BOLTED	WT.	BOLT DOWN	WT.
18" deep	_B00-3048-18W	145	_B10-3048-18W	145	_B02-3048-18W	150	_B12-3048-18W	150
24" deep	_B00-3048-24W	155	_B10-3048-24W	155	_B02-3048-24W	160	_B12-3048-24W	160
30" deep	_B00-3048-30W	175	_B10-3048-30W	175	_B02-3048-30W	180	_B12-3048-36W	180
36" deep	_B00-3048-36W	190	_B10-3048-36W	190	_B02-3048-36W	200	_B12-3048-36W	200
Extension 8" deep	_E00-3048-08W	55			_E02-3048-08W	65		
Extension 16" deep	_E00-3048-16W	100			_E02-3048-18W	110		

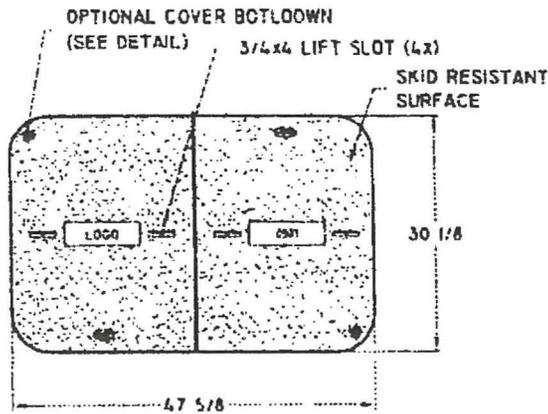
Cover	LIGHT TRAFFIC				HEAVY DUTY			
	NOT BOLTED	WT.	BOLT DOWN	WT.	NOT BOLTED	WT.	BOLT DOWN	WT.
3" thick-one piece	_C00-3048-03W	100	_C10-3048-03W	100	_C02-3048-03W	130	_C12-3048-03W	130
3" thick-two piece	_C00-3048-23W*	165	_C10-3048-23W*	165	_C02-3048-23W*	225	_C12-3048-23W*	225

* Two piece cover is standard. One piece cover is available upon request.

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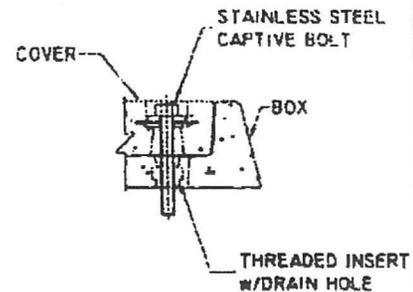


TOP VIEW

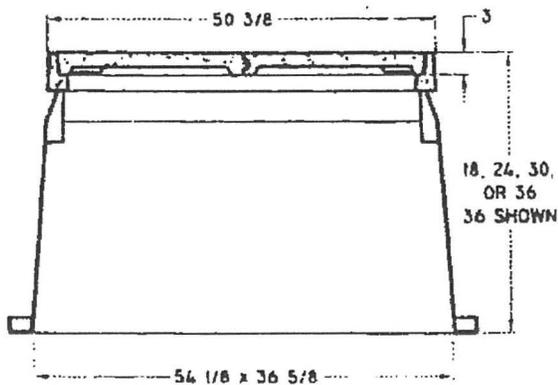


2 PIECE COVER

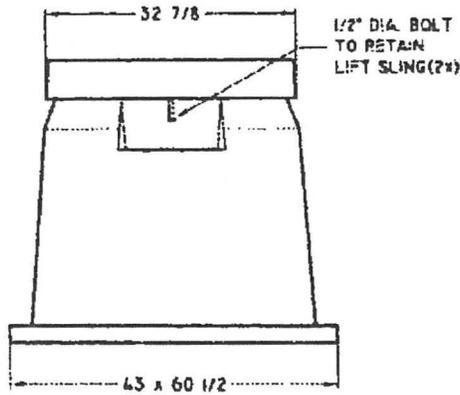
ONE PIECE COVER ALSO AVAILABLE
 OPTIONAL COVERS WITH CAST IRON READER LID
 OR TOUCH READ OPENING



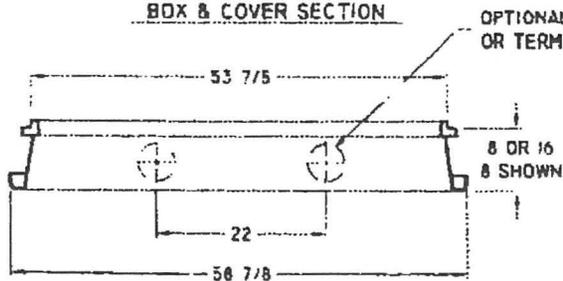
COVER BOLTDOWN DETAIL



BOX & COVER SECTION

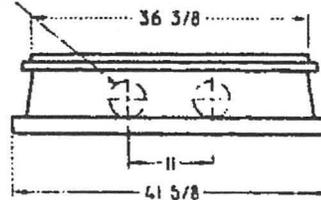


END VIEW



EXTENSION SECTION

OPTIONAL KNOCKOUTS
 OR TERMINATORS



END VIEW

- MATERIAL: FIBERGLASS REINFORCED POLYMER CONCRETE & FIBERGLASS REINFORCED POLYMER
- STANDARD COLOR: CONCRETE GRAY
- OPTIONAL COLORS AVAILABLE FOR COVER & BOX COLLAR
- FLARED WALL BOXES ARE NESTABLE

cdr CONCRETE REINFORCEMENT DISTRIBUTORS 148 SOUTH ATLANTIC AVE., ORMOND BEACH, FL 32178			
TITLE 30 x 48W FLARED WALL SERIES BOX, COVER & EXTENSION			
DRAWN	MMK	DATE	7/22/05
CHECKED		A VII	051-0005
APPROVED	ACF		

635-1-15A

LOAD SPECIFICATION TABLE

LOAD DESIGNATION (1)	DESCRIPTION	DESIGN LOADS			TESTING		SELECT CDR PRODUCT RATING
		LIVE LB/WHEEL (2)	LIVE + IMPACT LB/WHEEL	SIDE PSF (3)	LOAD, LBS	SAFETY FACTOR	
C857 A-0.3	PEDESTRIAN	(300 PSF)	—————	30	(650 PSF) (4)	2.17	LIGHT TRAFFIC
WUC 3.6	INCIDENTAL TRAFFIC	—————	—————	600	10,400	—————	
C857 A-B	LIGHT TRUCKS	8,000	10,400	30/40	17,360 (4)	2.17	
2DK	LIGHT TRUCKS	8,000	10,400	30/40	20,000 (4)	2.50	20K
AASHTO H10	LIGHT TRUCK TRAFFIC	8,000	10,400	N/A	22,568 (4)	2.82	
C857 A-12	MEDIUM TRUCKS	12,000	15,600	30/60	26,040 (4)	2.17	
AASHTO H15	MEDIUM TRUCK TRAFFIC	12,000	15,600	N/A	27,000 (5)	2.25	
C857 A-16	HEAVY TRUCKS	16,000	20,800	30/80	27,000 (5)	1.69	
AASHTO H20	HEAVY TRUCK TRAFFIC	16,000	20,800	N/A	45,136 (4)	2.82	STREET RATED (6)

FOOTNOTES:

1. LOAD DESIGNATIONS ARE FROM ASTM C857 "MINIMUM STRUCTURAL DESIGN LOADING FOR UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES", "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES", "AASHTO, 13TH ED.," AND "NON-CONCRETE ENCLOSURES," WESTERN UNDERGROUND COMMITTEE GUIDE 3.6, MAY 1988.
2. WHEEL FOOTPRINTS ARE GIVEN IN ASTM C857 & THE AASHTO STANDARDS.
3. SIDE LOADS ARE SHOWN AS (HYDROSTATIC PRESSURE FROM SOIL) / (SURCHARGE FROM VEHICLE). SEE ASTM C857 FOR METHOD TO CALCULATE TOTAL LOAD. CDR USES A MINIMUM SAFETY FACTOR OF 3.0 FOR SIDE LOAD TESTS.
4. TEST LOAD CALCULATED ACCORDING TO AASHTO TEST METHOD T33 AND ASTM C497.
5. TEST LOAD IS MINIMUM APPLIED TO CDR HEAVY DUTY PRODUCTS TO DATE. CONSULT FACTORY IF HIGHER TEST LOADS OR SAFETY FACTORS ARE REQUIRED FOR A PARTICULAR PRODUCT.
6. CONSULT FACTORY FOR AVAILABLE SIZES.

 148 SOUTH ATLANTIC AVE., ORLANDO BEACH, FL 32178			
LOAD SPECIFICATION TABLE			
DRAWN	MMK	DATE	1/5/05
CHECKED		<div style="border: 1px solid black; padding: 5px; display: inline-block;">A</div>	951-0001
APPROVED	AGK		

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635-1-15A

9/2/10



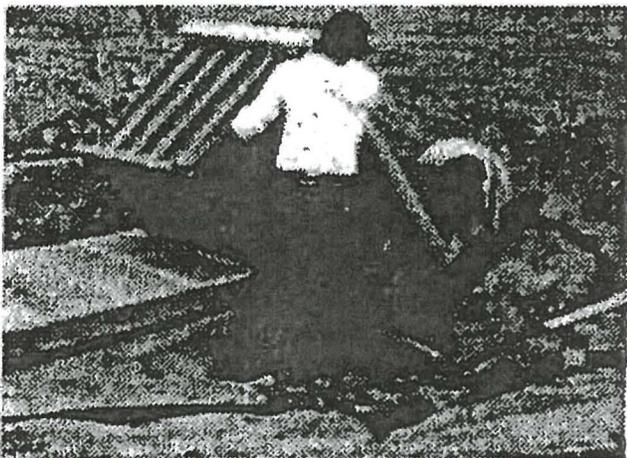
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service boxes & vaults

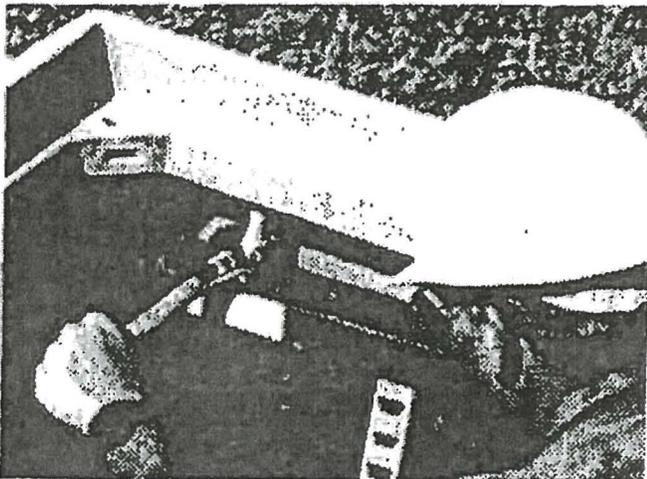
LIGHT WEIGHT - SAVES TIME - SAVES MONEY!!
1/3 to 1/10 the weight of standard concrete boxes - easily installed by 1 or 2 men without heavy equipment.

HIGHEST STRENGTH - special combinations of polymer concrete and fiber reinforced polyester - 3 to 4 times the compressive strength of concrete and has the tensile strength of steel.

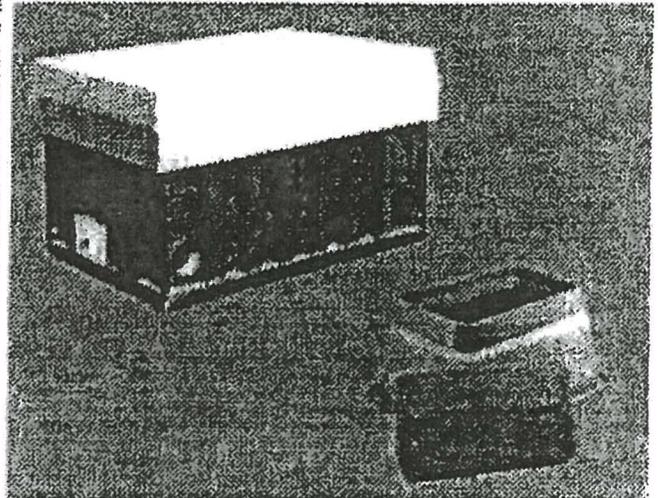
LONGEST LIFE - projected 30 or more years - based on past installations in all climates.



TWO MEN EASILY HANDLE A SERVICE BOX.



ADJUST TO GRADE OPTION.



ADDITIONAL FEATURES:

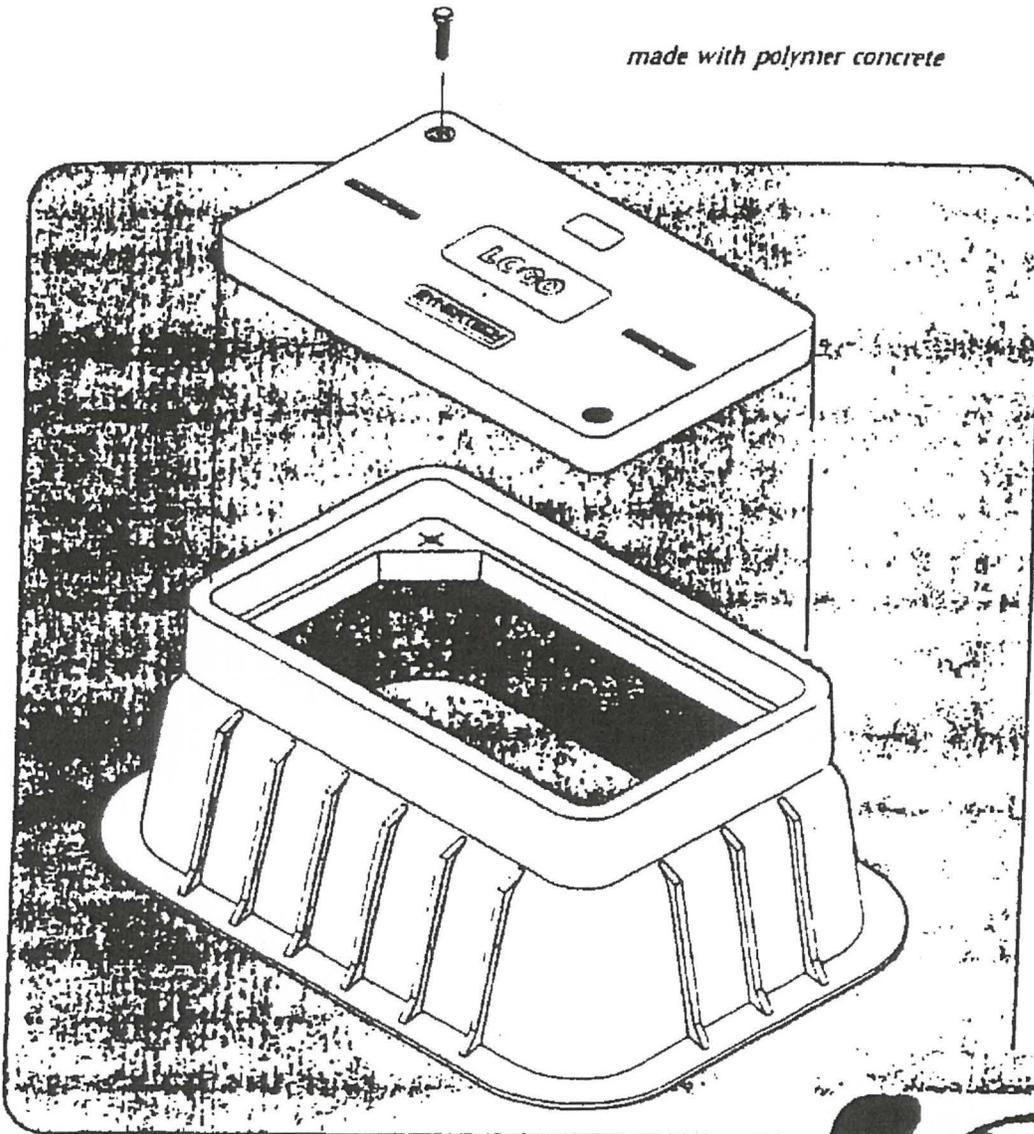
- ☑ Boxes can be made in any depth from 12 to 48 inches. Extensions from 6 to 24 inches are available.
- ☑ Available with or without integral bottoms on boxes 30 x 48 and larger.
- ☑ Adjust to grade option available on boxes 30 x 48 and larger. Vertical adjustments including tilting to 4 inches can be made in minutes. No grouting necessary and adjustments can be made during installation or at any time afterwards.
- ☑ Knockouts are easily made in the field with a wood hole cutting saw or ordered with knockouts already cut. Conduit terminators are also available.
- ☑ Racks can be cast into the box as optional equipment on boxes 30 x 48 and larger. Pulling-eyes can also be provided on these larger boxes.
- ☑ Tongue and groove interlocking design in large two or three panel covers speed installation and removal.
- ☑ 24 x 36 or smaller covers are one piece, 30 x 48, 30 x 60 and 36 x 60 - one or two pieces, 48 x 78 - two pieces and 48 x 96 - three or four pieces.
- ☑ Bolting covers to boxes is simplified by utilizing captive stainless steel bolts and "self centering" fasteners that are replaceable.

TS-46

SYNERTECH

635-2-X

made with polymer concrete



 Oldcastle Precast[®]



Synertech Underground Products

Oldcastle Precast underground enclosures are used as splice boxes, pull-boxes, equipment enclosures, meter boxes, and valve boxes or whenever underground access is required.

Oldcastle Precast has combined the exceptional strength and durability of high density polymer concrete for the ring and cover with the tough and lightweight qualities of specialty fiberglass for the box, to meet your most important requirements for underground enclosures.

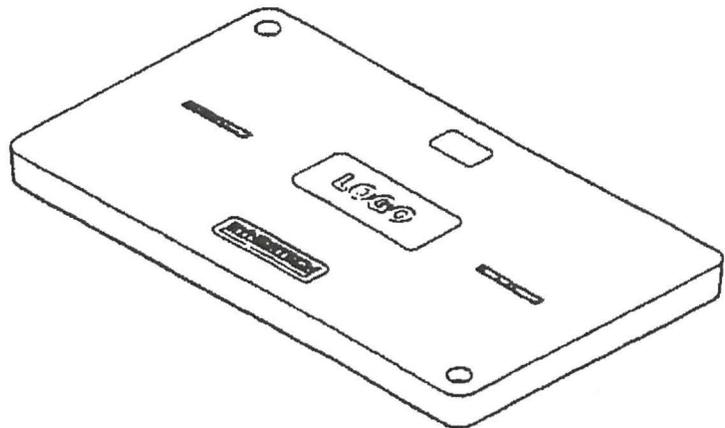
Oldcastle Precast Underground Enclosures:

- use 20,000 P.S.I. polymer concrete for higher strength
- exceed W.U.C. 3.6 structural requirements
- are lightweight and easy to handle for a lower installed cost
- are designed for 10,000 pound and 20,000 pound applications
- come supplied with stainless steel bolts on all bolt down covers
- have exceptional resistance to sunlight and chemicals
- are unaffected by freeze/thaw
- are non-conductive and do not require grounding for safety
- can be manufactured in decorative colors
- are available with special logos
- are nestable to minimize storage space requirements

Table of Contents:

11 x 18 box & cover	2
12 x 12 box & cover	3
13 x 24 box & cover	4
17 x 30 box & cover	5
24 x 36 box & cover	6
30 x 48 box & cover	7
36 x 60 box & cover	8
options	9
box installation procedures	10
specifications/ASTM C-857	11
channel system	12

standard logos



- | | |
|-------------------|------------------------|
| 01 - blank | 10 - lighting |
| 02 - electric | 11 - street lighting |
| 03 - telephone | 12 - traffic |
| 04 - fiber optics | 13 - traffic signal |
| 05 - water | 14 - non-potable water |
| 06 - C.A.T.V. | 15 - controls |
| 07 - ground | 16 - communications |
| 08 - gas | 17 - irrigation |
| 09 - high voltage | |

635-2-X
(4 of 9)

17 x 30

COVER	WEIGHT	CATALOG NO.
Bolt Down		
Rated 10,000#	50 lbs.	S1730SBBOA
Rated 20,000#	50 lbs.	S1730HBBOA

No Bolts		
Rated 10,000#	50 lbs.	S1730SOBOA
Rated 20,000#	50 lbs.	S1730HOBOA

Add 2 Stainless Steel Hex Bolts, Cat. #1001

Add 2 Stainless Steel Point Head Bolts, Cat. #1005

BOX WITH OPEN BASE (with inserts)

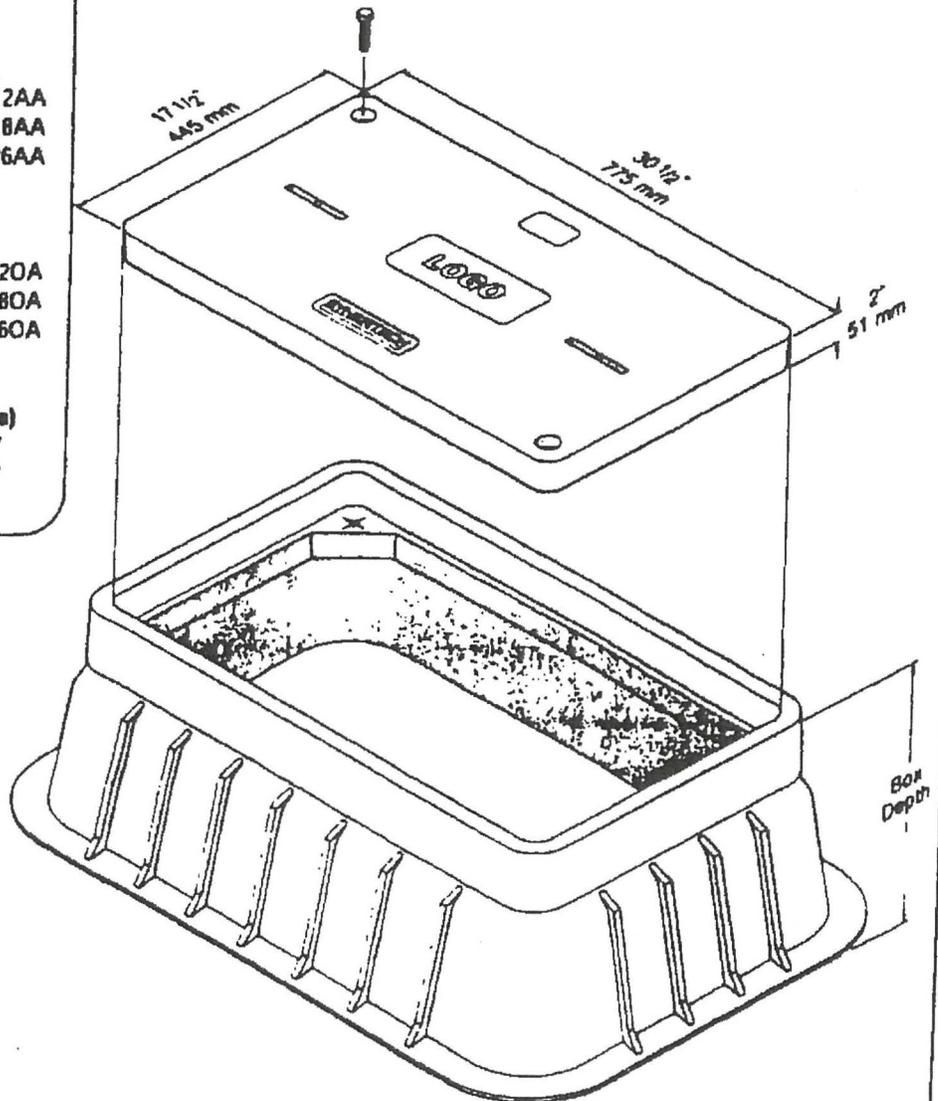
Box Depth		
12" (305mm)	70 lbs.	S1730B12AA
18" (457mm)	80 lbs.	S1730B18AA
26" (660mm)	90 lbs.	S1730B26AA

BOX WITH OPEN BASE (no inserts)

Box Depth		
12" (305mm)	70 lbs.	S1730B12OA
18" (457mm)	80 lbs.	S1730B18OA
26" (660mm)	90 lbs.	S1730B26OA

INSIDE BOX DIMENSIONS

Box Depth	W (@ base)	L (@ base)
12" (305mm)	21-15/16"	34-15/16"
18" (457mm)	23-11/16"	36-11/16"
26" (660mm)	26"	39"



For other options see page 9 or contact factory.

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635-2-X (5 of 9)

30 x 48

COVER **WEIGHT** **CATALOG NO.**

Bolt Down		
Rated 10,000#	155 lbs.	S3048SCBOA
Rated 20,000#	155 lbs.	S3048HCBOA

No Bolts		
Rated 10,000#	155 lbs.	S3048SOBOA
Rated 20,000#	155 lbs.	S3048HOBOA

Add 2 Stainless Steel Hex Bolts, Cat. #1002
 Add 2 Stainless Steel Penta Head Bolts, Cat. #1006

BOX WITH OPEN BASE (with inserts)

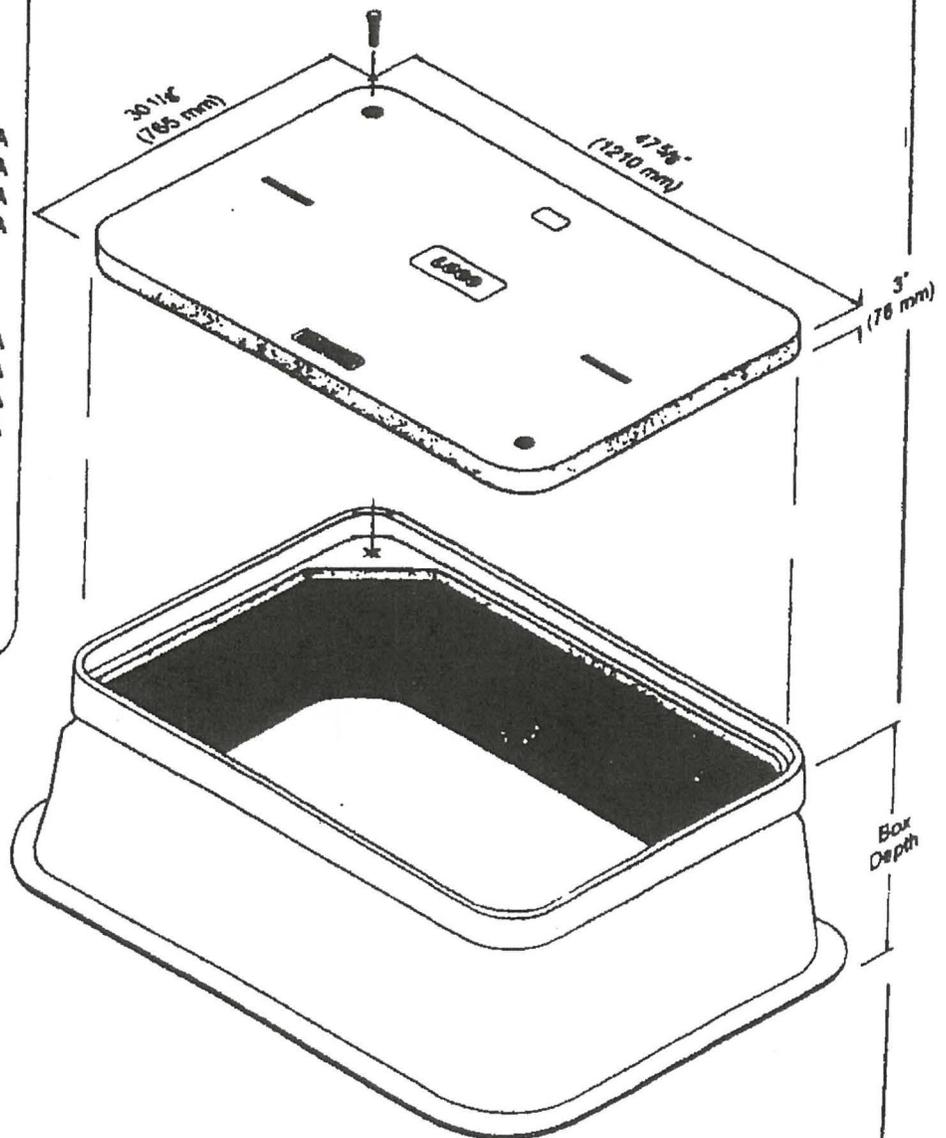
Box Depth		
12" (305mm)	150 lbs.	S3048B12AA
14" (457mm)	170 lbs.	S3048B18AA
16" (660mm)	205 lbs.	S3048B26AA
18" (914mm)	225 lbs.	S3048B36AA

BOX WITH OPEN BASE (no inserts)

Box Depth		
12" (305mm)	150 lbs.	S3048B12OA
14" (457mm)	170 lbs.	S3048B18OA
16" (660mm)	205 lbs.	S3048B26OA
18" (914mm)	225 lbs.	S3084B36OA

SIDE BOX DIMENSIONS

Box Depth	W (ø base)	L (ø base)
12" (305mm)	34-1/8"	51-5/8"
14" (457mm)	35-7/8"	53-3/8"
16" (660mm)	38-3/16"	55-11/16"
18" (914mm)	40-1/8"	57-1/2"



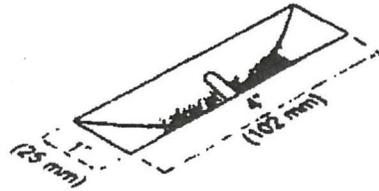
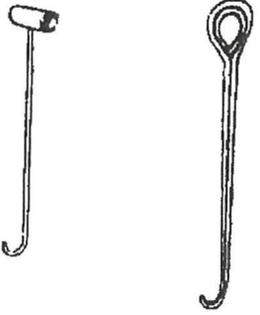
For other options see page 9 or contact factory.

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635-2-X (6 of 9)

options & accessories

standard hook manhole hook



larger pockets for manhole lift hooks
Standard size: 1/2" x 4"

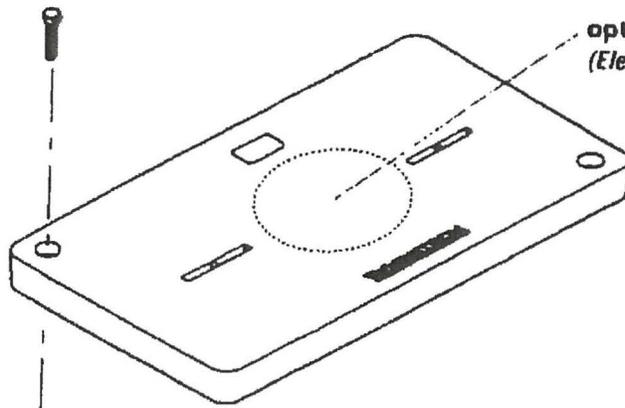


penta-head sockets
Size
1/2"
3/8"

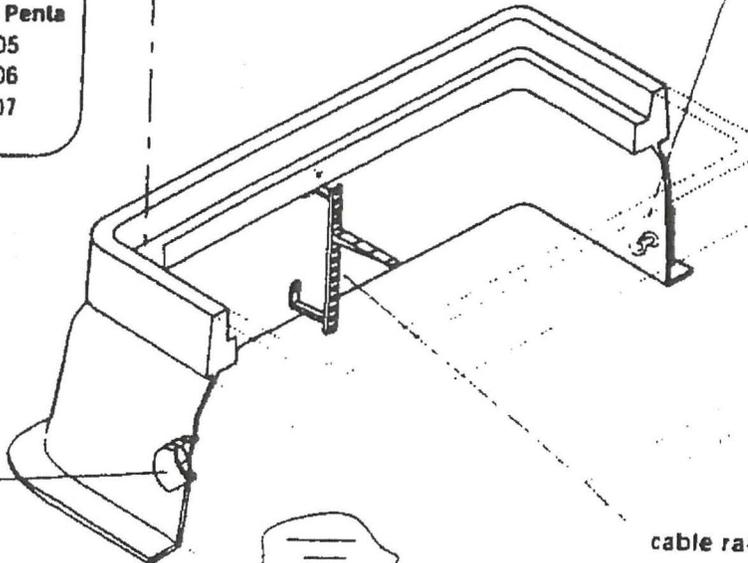


penta-head bolts

Size	Cat. No. SS Hex	Cat. No. SS Penta
1/2" x 2-1/2"	1001	1005
1/2" x 3-1/2"	1002	1006
3/8" x 1-1/4"	1003	1007

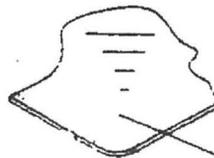


optional marker
(Electronic or Magnetic)



pulling eyes
Limited tension capacity: Contact supplier with your pulling requirements

cable racks and hooks



optional base

DUCT terminators

Nominal Size	Pipe O.D. Size
2"	2.375
3"	3.500
4" Electrical	4.500
4" Telephone	4.350
5"	5.563

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Oldcastle Precast quick specification

Underground enclosures shall be manufactured by Oldcastle's Synertech Molded Products, Inc. Boxes and covers shall be concrete gray and have a minimum vertical test load of 10,000 or 20,000 pounds. Covers shall have a minimum coefficient of friction of .50.

The polymer concrete shall test to a minimum of 20,000 P.S.I. compressive strength and shall be suitable for installation and use through a temperature range of -40°C to +90°C.

ASTM C-857

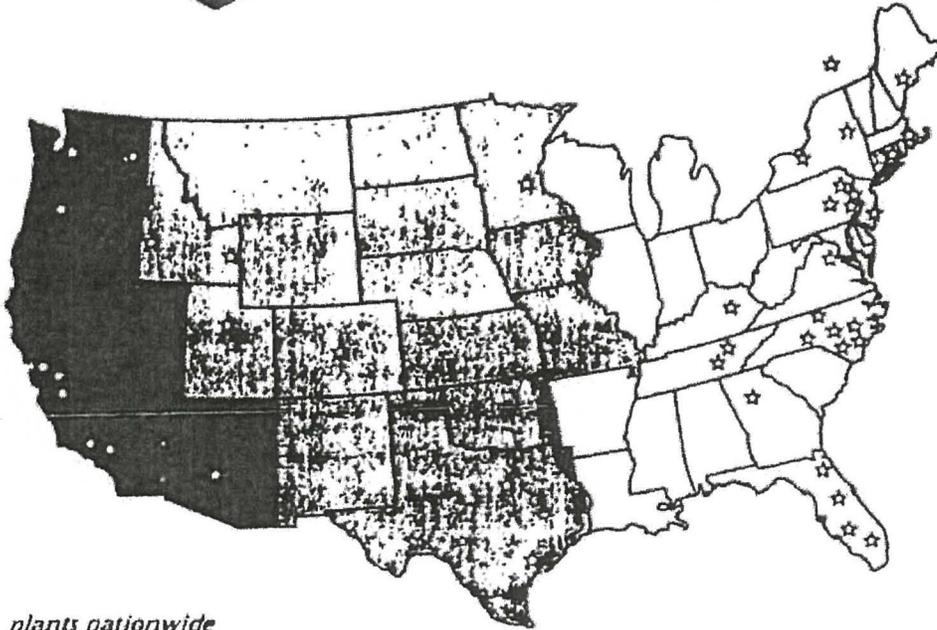
COVER TYPE	COVER RATINGS	LIVE LOAD	30% SAFETY	TEST LOAD	TEST AREA
Standard	5 Ton GVW (10,000#)	4,000#	5,200#	11,284#	10" x 10"
	<i>Synertech Molded Products, Inc. 10,000# boxes and covers may be placed in locations that may see occasional non-deliberate light vehicles.</i>				
Heavy Duty	10 Ton GVW (20,000#)	8,000#	10,400#	22,568#	10" x 10"
	<i>Synertech Molded Products, Inc. 20,000# boxes and covers may be placed in locations that may see occasional non-deliberate heavy vehicles.</i>				

All Synertech Molded Products, Inc. covers meet ASTM test loads.
 No polymer concrete box or cover should be placed in a full traffic, H-20, application.
 Meets Western Underground Committee - Guide 3.6 Structural Requirements.

NOTE: Whenever a box and cover is placed in an area where it might be subjected to traffic, a concrete collar is recommended.

635-2-X(8 of 9)

Oldcastle Precast



plants nationwide

(888) 232-6274

ROTONDO PRECAST

Avon, CT
(860) 673-3291

Rehoboth, MA
(508) 336-7600

Telford, PA
(215) 257-8081

Fredericksburg, VA
(540) 898-6300

AMCOR

Littleton, CO
(303) 791-1100

Ogden, UT
(800) 776-8760

Ramsey, MN
(800) 480-3548

Nampa, ID
(800) 696-5648

Idaho Falls, ID
(800) 999-2240

SUPERIOR CONCRETE CO

Auburn, ME
(207) 784-9144

Oldcastle / BROOKS

Houston, TX
(713) 991-2400

Mansfield, TX
(817) 453-1054

Cloud

LaVergne, TN
(615) 793-1920

Lexington, KY
(606) 259-1484

BROOKS

Medley, FL
(305) 887-3527

Oldcastle Precast

Stone Mountain, GA
(770) 493-5420

Greensboro, NC
(336) 668-2481

N. Fort Myers, FL
(941) 574-8896

Orlando, FL
(407) 855-7580

Jacksonville, FL
(904) 768-7081

Concord, NC
(704) 788-4050

Lebanon, TN
(615) 453-6111

UTILITY VAULT

Chandler, AZ
(480) 963-2678

Auburn, WA
(253) 839-3500

Pleasanton, CA
(925) 846-8183

Fontana, CA
(909) 428-3700

Wilsonville, OR
(503) 682-2844

635-2-X (9 of 9)

17 x 30

COVER **WEIGHT** **CATALOG NO.**

With Bolts		
Rated 10,000#	50 lbs.	S1730SBBOA
Rated 20,000#	50 lbs.	S1730HBBOA

No Bolts		
Rated 10,000#	50 lbs.	S1730SOBOA
Rated 20,000#	50 lbs.	S1730HOBOA

Add 2 Stainless Steel Hex Bolts, Cat. #1001
 Add 2 Stainless Steel Pent Head Bolts, Cat. #1005

BOX WITH OPEN BASE (with inserts)

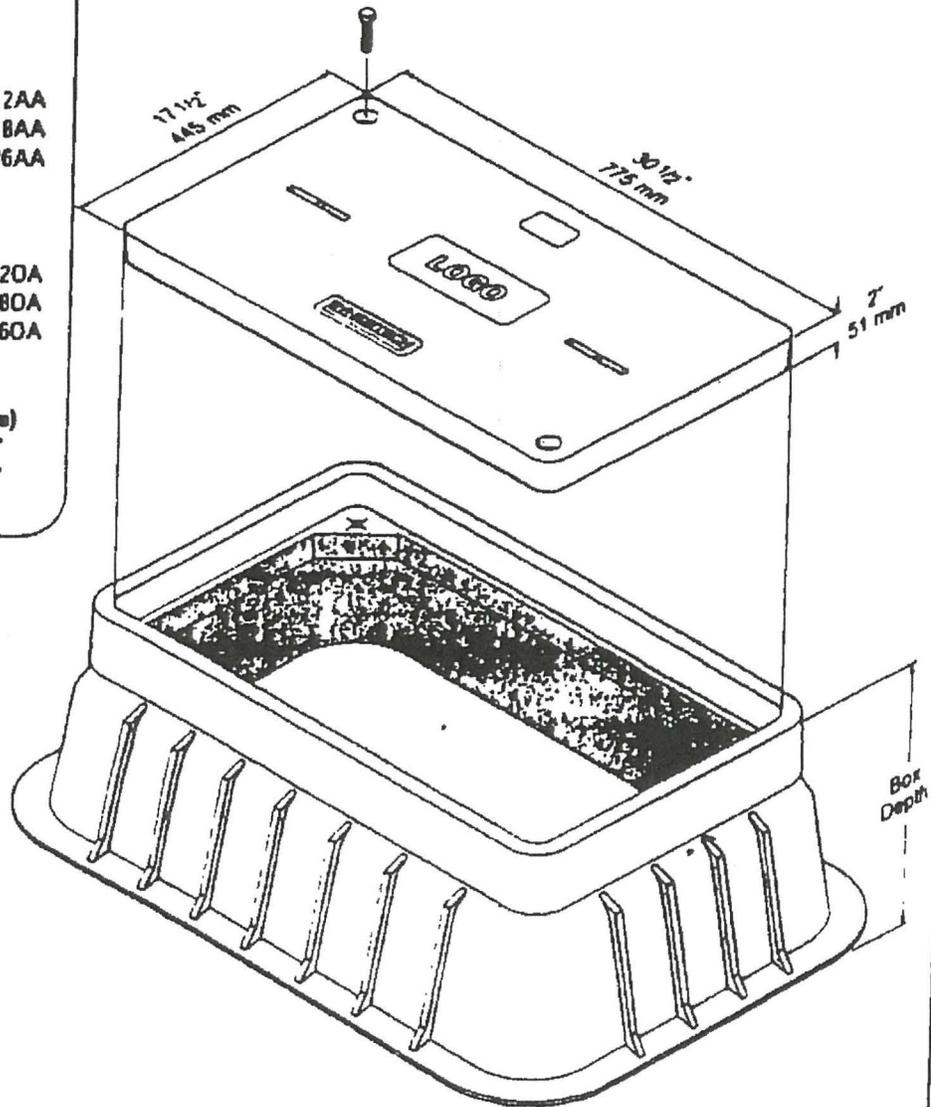
Box Depth		
2" (305mm)	70 lbs.	S1730B12AA
4" (457mm)	80 lbs.	S1730B18AA
6" (660mm)	90 lbs.	S1730B26AA

BOX WITH OPEN BASE (no inserts)

Box Depth		
2" (305mm)	70 lbs.	S1730B120A
4" (457mm)	80 lbs.	S1730B180A
6" (660mm)	90 lbs.	S1730B260A

INSIDE BOX DIMENSIONS

Box Depth	W (at base)	L (at base)
2" (305mm)	21-15/16"	34-15/16"
4" (457mm)	23-11/16"	36-11/16"
6" (660mm)	26"	39"



For other options see page 9 or contact factory.

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COMMUNICATION & CONTROL
INDUSTRY EQUALS - PVC



RoHS Compliant

Cables are manufactured to meet current NEC guidelines and are verified by outside standards organizations including c(UL)us and c(ETL)us.



PART NO.	AWG/ COND	STRAND	OUTER JKT THICKNESS		NOMINAL OD		SHIP. WT / 1M'
			INCH	mm	INCH	mm	
22 AWG							
22002TSD Equal to Belden™ 8761	22/2	7x30 TC	.025	.64	.175	4.44	18
22003TSD Equal to Belden™ 8771	22/3	7x30 TC	.033	.64	.199	5.05	24
22022TSD Equal to Belden™ 8723	22/4	7x30 TC	.025	.64	.160	4.06	19
22033TSD Equal to Belden™ 8777	22/6	7x30 TC	.025	.64	.273	6.93	42
20 AWG							
20002TSD Equal to Belden™ 8762	20/2	7x28 TC	.028	.71	.204	5.18	23
20003TSD Equal to Belden™ 8772	20/3	7x28 TC	.033	.64	.218	5.54	32
18 AWG							
21802SD Equal to Belden™ 8760	18/2	16/30 TC	.028	.71	.222	5.64	26
21803SD Equal to Belden™ 8770	18/3	16x30 TC	.033	.64	.246	6.25	39
318004SD Equal to Belden™ 9418	18/4	19/30 TC	.035	.69	.245	6.22	40
16 AWG							
21602SD Equal to Belden™ 8719	16/2	19x29 TC	.032	.61	.313	7.95	49
14 AWG							
14002TSD Equal to Belden™ 8720	14/2	19x27 TC	.035	.69	.355	9.02	71
12 AWG							
21202SD Equal to Belden™ 8718	12/2	19x25 TC	.040	1.02	.400	10.2	100

Belden™ is a trademark of Belden Inc.

PRODUCT DESCRIPTION

PVC insulated stranded tinned copper conductors, short overall twist length, aluminum mylar shielding with drain wire and an overall gray PVC jacket.

SPECIFICATIONS

Conductor	Tinned Copper
Insulation	Equal to competitor
Jacket	PVC
Shield	Aluminum Mylar
NEC Articles	800 CM 14-12 AWG CL2
Voltage Rating	300 V
Temp. Rating	75°C
Drain Wire	Equal to competitor

APPLICATIONS

- Security Systems
- Intercom Systems
- Sound/Audio System
- Power-Limited Controls

COLOR CODE CHART

*Equal to competitor

AVAILABLE PUT-UPS

1,000' Reels and Boxes
500' Reels and Boxes
Other lengths available. Please consult your factory representative for availability.



LOOP DETECTOR WIRE

IMSA Specification 51-1 Loop Detector Cable



Cable Identification

Indent print on jacket
 "ADVANCED DIGITAL CABLE
 INC. YYYY IMSA 51-1 TYPE
 600V"
 *replace YYYY with year of manufacturer.

Specifications		Color Code	Put-Ups
Conductor - Stranded Bare Copper	Insulation - PVC/Nylon 14 AWG - .018" PVC + .05" Nylon 12 AWG - .018" PVC + .05" Nylon	Black <i>Other colors available upon request.</i>	Standard Reels 1,000', 2,500', 5,000' <i>Other lengths available. Please consult your factory representative for availability.</i>

PART NO.	AWG	OUTER JKT THICKNESS		NOMINAL O.D.		WEIGHT lbs. / 100'
		INCH	mm	INCH	mm	
B152	14	.026	.660	.115	2.92	16
B154	12	.026	.660	.135	3.43	24

* WILL SUPPLY BLUE

IMSA Specification 51-3 Loop Detector Cable



Cable Identification

Indent print on jacket
 "ADVANCED DIGITAL CABLE
 INC. XX AWG IMSA 51-3
 YYYY 600V (UL) TYPE
 XHHW E218985"
 *replace XX with the AWG size
 *replace YYYY with year of manufacturer

Specifications		Color Code	Put-Ups
Conductor - Stranded Bare Copper	Insulation - XLPE 14 AWG - .030" XLPE 12 AWG - .030" XLPE	Black <i>Other colors available upon request.</i>	Standard Reels 1,000', 2,500', 5,000' <i>Other lengths available. Please consult your factory representative for availability.</i>

PART NO.	AWG	OUTER JKT THICKNESS		NOMINAL O.D.		WEIGHT lbs. / 100'
		INCH	mm	INCH	mm	
B165	14	.030	.762	.133	3.38	17
B164	12	.030	.762	.150	3.81	26

This specification is a standard specification and is intended to be used as a guide in product selection and is believed to be reliable. ADC has made every effort to ensure that the information is accurate at the time of publication. This specification is subject to change without notice.



Phone: (800) 343 2579 • Fax: (828) 389 3922 • www.adcable.com

PALM BEACH COUNTY, FLORIDA
STANDARD SPECIFICATIONS FOR ROAD AND
BRIDGE CONSTRUCTION

Florida Department of Transportation Standard Specifications for Road and Bridge Construction, dated July 2017 shall be used as the basis for the Work.

The Contractor agrees that the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, July 2017 Edition, amended as follows by the General Provisions, but not otherwise changed, shall govern.

**PALM BEACH COUNTY, FLORIDA
GENERAL PROVISIONS**

**DIVISION I
GENERAL REQUIREMENTS AND COVENANTS**

**SECTION 1
DEFINITIONS AND TERMS**

1-3 Definitions

The following terms, when used in the Contract Documents, have the meaning described as follows:

Department THE FOLLOWING IS SUBSTITUTED:

The Palm Beach County Engineering & Public Works Department or The State of Florida Department of Transportation, as appropriate.

Engineer THE FOLLOWING IS SUBSTITUTED:

Palm Beach County Engineering, acting directly or through duly authorized representatives, such representatives acting within the scope of the duties and authority assigned to them.

Note: In order to avoid cumbersome and confusing repetition of expressions in these Specifications, it is provided that whenever anything is, or is to be done, if, as, or, when, or where “acceptable, accepted, approval, approved, authorized, condemned, considered necessary, contemplated, deemed necessary, designated, determined, directed, disapproved, established, given, indicated, insufficient, ordered, permitted, rejected, required, reserved, satisfactory, specified, sufficient, suitable, suspended, unacceptable, or unsatisfactory,” it shall be understood as if the expression were followed by the words “by the Engineer”, “to the Engineer”, or “of the Engineer”.

ADD THE FOLLOWING DEFINITION:

Financial Project Identification Number – *Project Number*

ADD THE FOLLOWING DEFINITION:

Lot - *The definition varies throughout the specification. The Engineer reserves the right to define the testing limits.*

ADD THE FOLLOWING DEFINITION:

Approved Products List - *Refers to FDOT's Approved Products List*

END OF SECTION

GENERAL PROVISIONS

SECTION 2 PROPOSAL REQUIREMENTS AND CONDITIONS

2-1 Prequalification of Bidders DELETE AND INSERT THE FOLLOWING:

Palm Beach County Engineering & Public Works Department (Department) does not certify Contractors. Although FDOT certification is not a requirement, the Department reserves the right to utilize FDOT's listing of pre-qualified Contractors in determining Contractor's eligibility to perform the Work required for this project. Refer to URL

http://www.fdot.gov/contracts/prequal_info/prequalified.shtm

for access to pre-qualified FDOT Contractors for construction contracts exceeding \$250,000 in amount. All Contractors bidding on any Contract may be required to submit a copy of their FDOT Certification of Current Capacity and Status of Contracts On Hand (Form 525-010-46).

Prime Contractors who have not performed similar Work with the Department within the past three (3) years as a prime Contractor shall provide with the Bid a report listing all "similar" projects performed and completed by the firm in a separate binder entitled "Documentation of Experience and Resources". The Department reserves the right to request additional information, which shall be submitted within three (3) business days of the Department's request.

- Failure to submit the "Documentation of Experience and Recourses" with the Bid will cause the Bid to be considered non-responsive.
- Failure to submit additional requested information within three (3) business days of the Department's request will cause the Bid to be considered non-responsive.

The "Documentation of Experience and Resources" shall include at a minimum:

- Listing of Similar Projects Completed by the Firm:
 - project title
 - project number
 - brief summary of the scope performed
 - the entity for whom the Work was performed
 - two (2) entity contacts (one administrative /one construction) with direct telephone numbers
 - the construction budget of the project
 - the resulting budget (over / under)
- Detailed Information with Respect to:
 - financial resources
 - Equipment
 - past record on projects
 - key personnel resumes with a statement of their Work category experience
- A list stating the types of Work in which the firm can provide backup to show experience, expertise, and competence.
- The aggregate amount of Work that they currently have under contract
- Any other pertinent information to assist us in this qualification review

GENERAL PROVISIONS

The Department will review the submitted documentation to determine if the Contractor is approved to perform the Work required for this project.

If Prime Contractors have not performed similar Work with the Department within the past three years as a prime Contractor, failure to submit the required "Documentation of Experience and Resources" with the Bid will cause the Bid to be considered non-responsive.

A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may **not** submit the following:

- (a) A Bid on a Contract to provide any goods or services to a public entity.
- (b) A Bid on a Contract with a public entity for the construction or repair of a public building or public Work.
- (c) Bids on leases of real property to a public entity.

A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity may not be awarded or perform Work as a Contractor, supplier, subcontractor, or consultant under a Contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017 F.S., for Category Two. All restrictions apply for a period of 36 months from the date of placement on the convicted vendor list.

2-2 Proposals

2-2.1 Obtaining Proposals DELETE AND INSERT THE FOLLOWING:

Obtain a Proposal under the conditions stipulated in the Advertisement for Bid. The Advertisement states the location and description of the Work to be performed; the estimate of the various quantities (if applicable); the items of work to be performed (if applicable); the Contract Time; the amount of Proposal Guaranty; and the date, time, and place of the opening of Proposals. The Proposal Form will also include any Special Provisions or other requirements which vary from or are not contained in the Standard Specifications.

The Plans, Specifications and other documents designated in the Advertisement are part of the Proposal, whether attached or not. Do not detach any papers bound with or attached to the Proposal.

ADD THE FOLLOWING SUB-ARTICLE:

2-2.1.1 Filling out Proposal Form (Pay Item Forms)

In filling out Proposal Forms, Bidders shall be governed by the following provisions:

GENERAL PROVISIONS

- (a) Proposals can be made on the blank Proposal Form provided (Excel file). The blank spaces in the Proposal Form must be filled in, regardless of whether quantities are shown, and no change shall be made either in the phraseology of, or in the items listed in the Proposal Form. It is the Bidder's responsibility to check and verify the accuracy of excel file formulas/extensions. Bidders are reminded that this is a unit price contract, and bid totals will be based on actual unit prices provided (see Section "e" below) regardless of extensions and totals shown.
- (b) Each Proposal Form shall specify a unit price, for each of the separate items, as called for.
- (c) Any Proposal which does not contain prices set opposite each of the items for which there is a blank space, or any Proposal which shall in any manner fail to conform to the conditions of the published notice will be cause for rejection.
- (d) Proposals must be signed in ink by an authorized officer of the firm with the signature in full, and name and title of the officer. Example:

John Doe Contracting Company
By: John Doe, President

- (e) In the event of mathematical errors in the extension of units and unit prices, the unit price shall prevail. The "Total Bid" as indicated on the Proposal Forms shall be the summation of the extension of units and unit prices only. Should the Proposal include "Alternate(s)", the total amount that will be considered for the "Alternate(s)" shall also be the summation of the extension of units and unit prices only, with the unit price prevailing.

When "Alternate(s)" are included, the Department reserves the right to award the Contract based on the "Total Bid" with or without the "Alternate(s)", with no recourse to the Contractor.

- (f) When a corporation is a Bidder, the person signing shall state under the law of what state the corporation was chartered, and the name and title of the officer having authority under the by-laws to sign Contracts.
- (g) Anyone signing the Proposal as agent must submit the Proposal with legal evidence of its agent's authority to do so. Post office address, county and state, must be given after the signature.
- (h) Proposals that contain any omission, erasure, alteration, addition or item not called for in the Engineer's estimate, or that show irregularities of any kind, will be considered as informal or irregular. This will be cause for the rejection of the Bid.

DELETE AND INSERT THE FOLLOWING:

2-2.2 Department Modifications to Contract Documents

Modifications to any Contract Documents will be posted at the following URL address:

<https://pbcvssp.co.palm-beach.fl.us/webapp/vssp/AltSelfService>

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The Bidder shall take responsibility for checking and downloading the revised data from the Department's website. If the Department's website cannot be accessed, contact the Palm Beach County Purchasing Department at (561) 616-6800 or email PBCVendor@pbcgov.org.

2-2.3 Internet Bid Submittals DELETE IN ITS ENTIRETY

2-2.4 Hard Copy Bid Submittals DELETE AND INSERT THE FOLLOWING:

Unless otherwise indicated in the Advertisement for Bid, the Contractor shall prepare and submit the Bid as a hard copy submittal to the Department in accordance with the Contract Documents.

Print and submit Bid documents generated from the web site on letter size paper. Ensure that all computer generated sheets are legible. The Department prefers 12 point font size and recommends a minimum of 20 pound paper.

The Department will not be held responsible if the Bidder submits a Bid that is incomplete. Failure to follow proper procedures may cause the Bid to be declared non-responsive, or irregular.

2-5 Preparation of Proposals DELETE AND INSERT THE FOLLOWING:

2-5.1 General

Submit Proposals on the form described in 2-2. Any pay item that will be provided free or at no cost to the Department shall be indicated as "free" or "\$00.00". If the pay item is left blank or N/A is used, the Bid may be declared irregular. Show the total of the Bid where called for on the Proposal Forms.

2-5.2 Internet Bid Submittals DELETE IN ITS ENTIRETY.

2-5.3 Hard Copy Bid Submittal DELETE AND INSERT THE FOLLOWING:

If the Proposal is made by an individual, either in the Bidder's own proper person or under a trade or firm name, the Bidder shall execute the Proposal under the Bidder's signature and enter the firm's office street address.

If made by a partnership, execute the Proposal by setting out in full the names of the partners, the firm name of the partnership, if any, have two or more of the general partners sign the Proposal and enter the Bidding firm's office street address.

If made by a corporation, execute the Proposal by setting out in full the corporate name and have the president or other legally authorized corporate officer or agent sign the Proposal, affix the corporate seal and enter the bidding corporation's office street address. If made by a limited liability company, execute the Proposal by setting out the company name, have the manager or authorized member sign the Proposal and enter the bidding company's office address.

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If made by a joint venture, execute the Proposal by setting out the joint venture name, have the authorized parties sign the Proposal and enter the bidding office's street address.

2-6 Rejection of Irregular Proposals DELETE AND INSERT THE FOLLOWING:

A Proposal is irregular and the Department may reject it if it shows omissions, alterations of form, additions not specified or required, conditional or unauthorized alternate bids, or irregularities of any kind; or if the unit prices are obviously unbalanced, or if the cost is in excess of or below the reasonable cost analysis values.

ADD THE FOLLOWING SUB ARTICLE AFTER 2-6

2-6.1 Unbalanced Bid Items

Bid items in which the unit prices are not in line with the industry standards or averages for the items may be considered to be unbalanced and rejected.

For a Bid to be balanced, each item must carry its proportionate share of direct cost, overhead and profit. Unbalanced items which are installed and billed at the beginning of a project may lead the bid to be irregular due to front-end loading the Bid.

Bid which are determined by the Department to be unbalanced Bids or which contain unbalanced line item pricing when compared to competitor's Bid's for the same item and standard industry prices, and which significantly deviate from the Department's determination of acceptable line item pricing, may be rejected by the Department.

2-7 Guaranty to Accompany Proposals (Bid Bond) DELETE AND INSERT THE FOLLOWING:

The Department will not consider any Proposal unless accompanied by a Proposal Guaranty of the character and amount indicated in the Advertisement, and unless made payable to the Board of County Commissioners, Palm Beach County, Florida. Submit the Proposal with the understanding that the successful Bidder shall furnish a Contract Bond pursuant to the requirements of 3-5.

The Bidder's Proposal Guaranty is binding for all projects included in the Contract awarded to the Contractor pursuant to the provisions of this Subarticle.

The bond may be a Certified Check or a Cashier's Check and shall be made payable to the Board of County Commissioners, Palm Beach County, Florida, in the amount of 5% (Five Percent) of the total gross amount of the Bid as a guarantee that the Bidder, if given a letter of intent to award, will within fourteen (14) consecutive Working Days of the date of the letter, enter into a written Contract with the Board of County Commissioners in accordance with the accepted Bid. Certified checks shall be signed by the party whose Bid it accompanies.

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2-8 Delivery of Proposals

2-8.1 Internet Bid Submittals DELETE IN ITS ENTIRETY

2-8.2 Hard Copy Bid Submittals DELETE AND INSERT THE FOLLOWING:

Submit all Bids in sealed envelopes bearing on the outside the name of the Bidder, the Bidder's address, date of opening, and in large letters, the words:

CONSTRUCTION OF: ANNUAL TRAFFIC LOOPS CONTRACT

for which the Bidder submitted the Bid.

For Proposals that are submitted by mail, enclose the Proposal in a sealed envelope, marked as directed above. Enclose the sealed envelope in a second outer envelope addressed to the Department, at the place designated in the Advertisement. For a Proposal that is not submitted by mail, deliver it to the Department, or to the place as designated in the Advertisement. The Department will return Proposals received after the time set for opening Bids to the Bidder unopened.

A Bidder may withdraw a Proposal at any time prior to that fixed for opening Bids without prejudice to him/herself.

2-9 Withdrawal or Revision of Proposals

2-9.1 Internet Bid Submittals DELETE IN ITS ENTIRETY.

2-9.2 Hard Copy Bid Submittals DELETE AND INSERT THE FOLLOWING:

A Bidder may withdraw or revise a Proposal after submitting it, provided the Department receives a written request to withdraw or revise the Proposal prior to the time set for opening of Bids. The resubmission of any Proposal withdrawn under this provision is subject to the provisions of 2-8.

END OF SECTION

SECTION 3 AWARD AND EXECUTION OF CONTRACT

3-2 Award of Contract

3-2.1 General DELETE AND INSERT THE FOLLOWING:

If the Department decides to award the Contract, the Department will award the Contract to the lowest responsible, responsive Bidder whose Proposal complies with all the Contract Document requirements. If awarded, the Department will award the Contract within one hundred eighty (180)

GENERAL PROVISIONS

days after the opening of the Proposals, unless the Special Provisions change this time limit or the Bidder and the Department extend the time period by mutual consent.

The Notice to Proceed (see 8-3.3) shall be issued within one hundred twenty (120) Calendar Days of the award of Contract, unless otherwise mutually agreed by the Contractor and the Department.

For the purpose of award, the low Bid shall be the lowest amount bid for the "Total Bid", and if any alternates are considered, it shall be the "Total Bid" plus the addition for the alternate or alternates which the Department may select. In no case will any award be made until all necessary investigations are made into the responsibility of the lowest Bidder.

Prior to award of the Contract by the Department, the Bidder must provide proof of authorization to do business in the State of Florida.

3-5 Contract Bond Required

3-5.1 General Requirements for All Bonds DELETE AND INSERT THE FOLLOWING:

Under no circumstances shall the Contractor begin Work until it has supplied the Department with a Contract Bond. Upon award, furnish to the Department, and maintain in effect throughout the life of the Contract, an acceptable Contract Bond. Obtain the Contract Bond from a Surety licensed to conduct business in the State of Florida, meeting all of the requirements of the laws of Florida and the regulations of the Department, and having the Department's approval. The Penal Sum of the Contract Bond shall automatically increase as the Contract Amount increases; provided, however, that any increase of more than 20% from the initial Penal Sum, requires the Surety's written consent. Ensure that the Surety's Florida Licensed Insurance Agent's name, address, and telephone number is clearly stated on the Contract Bond form.

To insure the faithful performance of each and every condition, any stipulation and requirement of the Contract Documents and to indemnify and save harmless the Department from any and all damages, either directly or indirectly, arising out of any failure to perform same, the Contractor shall furnish to the Department, the Contract Bond on forms attached hereto.

3-5.1.1 Work Order For Less Than \$200,000

For each Work Order in an amount less than \$200,000, furnish to the Department and maintain in effect throughout the duration of the Work Order, a Surety Bond in the amount of \$50,000, as security for faithful performance of Work Order(s) and for the payment of all persons performing labor and furnishing Materials in connection therewith. In the event that the amount of a proposed Work exceeds the amount of the Surety Bond, furnish additional Surety Bond, in increments of \$50,000, so that the total amount of the Surety Bond(s) exceeds the amount of all Work Orders.

3-5.1.2 Work Order For \$200,000 or More

For each Work Order in the amount of \$200,000 or more, furnish to the Department and maintain in effect throughout the duration of the Work Order, an acceptable Surety Bond in an amount at

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least equal to the amount of the total Work Order, as security for faithful performance and for the payment of all persons performing labor, and furnishing Materials in connection therewith.

ADD THE FOLLOWING SUB-ARTICLE:

3-6 Execution of Contract and Contract Bond DELETE AND INSERT THE FOLLOWING:

The Contractor shall execute the Contract and provide satisfactory Contract Bond and documentation evidencing all insurance required per Section 7-13 (Insurance) to the Department within fourteen (14) Working Days of the date of the Letter of Intent to Award.

Per Section 8-1, Contractor shall perform not less than 40% of the total Contract with its own organization. Therefore, Contractor shall submit with the Contract Documents a detailed breakdown (in dollars and percentage) of how the total Contract amount is proposed to be distributed. The breakdown shall show all relevant information for the Contractor and all sub-contractors.

3-6.1 Recording of Contract Bond

Before commencing the Work, Contractor shall provide to the Department a certified copy of the recorded Contract Bond(s). Department may not make any payment to Contractor until Contractor has complied with this requirement.

3-7 Failure by Contractor to Execute Contract and Furnish Bond DELETE AND INSERT THE FOLLOWING:

In the event that the Contractor fails to execute the Contract and to furnish an acceptable Contract Bond, as prescribed in 3-5 and 3-6, within fourteen (14) Working Days of Intent to Award, the Department may cause the Contractor to forfeit the Proposal Guaranty to the Department not as a penalty but as liquidation of damages sustained. The Department may then award the Contract to the next lowest responsive, responsible Bidder, re-advertise, or accomplish the Work using alternate resources.

3-8 Audit of Contractor's Records DELETE AND INSERT THE FOLLOWING:

Upon execution of the Contract, the Department reserves the right to conduct an audit of the Contractor's records pertaining to the project. The Department or its representatives may conduct an audit, or audits, at any time prior to final payment, or thereafter pursuant to 5-13. The Department may also require submittal of the records from either the Contractor or any subcontractor or material supplier. As the Department deems necessary, records include all books of account, supporting documents, and papers pertaining to the cost of performance of the Work. Retain all records pertaining to the Contract for a period of not less than four years from the date of the Engineer's final acceptance of the project, unless a longer minimum period is otherwise specified. Upon request, make all such records available to the Department or its representative(s). For the purpose of this Article, records include but are not limited to all books of account, supporting documents, and papers that the Department deems necessary to ensure compliance with

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the provisions of the Contract Documents. If the Contractor fails to comply with these requirements, the Department may disqualify or suspend the Contractor from bidding on or working as a subcontractor on future Contracts. Ensure that the subcontractors provide access to their records pertaining to the project upon request by the Department. Comply with Section 20.055(5), Florida Statutes, and incorporate in all subcontracts the obligation to comply with Section 20.055(5), Florida Statutes.

END OF SECTION

SECTION 4 SCOPE OF THE WORK

4-1 Intent of Contract ~~DELETE~~ AND INSERT THE FOLLOWING:

The intent of the Contract is to provide for the construction and completion in every detail of the Work described in the Contract. Furnish all labor, Materials, Equipment, tools, transportation and supplies required to complete the Work in accordance with the Contract Documents.

All of the Work involved in this project shall conform to the construction Plans and Specifications and shall be completed in a workmanlike manner. All debris is to be removed within the time specified in the Contract.

4-3 Alteration of Plans or of Character of Work

4-3.1 General ~~DELETE~~ AND INSERT THE FOLLOWING:

The Engineer reserves the right to make, at any time prior to or during the progress of the Work, such increases or decreases in quantities and such alterations in the details of construction as may be found necessary or desirable by the Engineer. Such increases, decreases or alterations shall not constitute a breach of Contract, shall not invalidate the Contract, nor release the Surety from any liability arising out of this Contract or the Contract Bond. The Contractor agrees to perform the Work, as altered, the same as if it had been a part of the original Contract.

4-3.9 Cost Savings Initiative Proposal ~~DELETE~~ IN ITS ENTIRETY.

4-4 Unforeseeable Work ~~DELETE~~ AND INSERT THE FOLLOWING:

When the Department requires Work that is not covered by a price in the Contract, and the Department finds that such Work is essential to the satisfactory completion of the Contract within its intended scope, the Department will make an adjustment to the Contract. The Engineer will determine the basis of payment for such an adjustment in a fair and equitable amount.

END OF SECTION

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SECTION 5 CONTROL OF THE WORK

5-1 Plans and Working Drawings

5-1.1 Contract Documents DELETE AND INSERT THE FOLLOWING:

The Contractor will be furnished five (5) copies of the Plans and Specifications at the Pre-Construction Meeting. Additional copies may be purchased from the Department, at a total cost of \$25 per set of Plans and Contract Documents.

The Contractor shall have Contract Documents available on the job site at all times.

5-1.4.5 Submittal Paths and Copies

5-2 Coordination of Contract Documents DELETE AND INSERT THE FOLLOWING:

These Specifications, the Plans, Special Provisions, and all supplementary documents are integral parts of the Contract; a requirement occurring in one is as binding as though occurring in all. All parts of the Contract are complementary and describe and provide for a complete Work.

When not stipulated as being covered under other pay items, pay items will include:

- the Work and Materials specified in the Specifications
- additional, incidental Work, not specifically mentioned,
 - when so shown in the Plans
 - if indicated, or obvious and apparent, as being necessary for the proper completion of the Work

In cases of discrepancy, the governing order of the documents is as follows:

1. Proposal (i.e. pay items, Bid items)
 2. Special Provisions
 3. Technical Special Provisions
 4. Plans
 5. Design Standards
 6. Supplemental Specifications
 7. General Provisions
 8. Standard Specifications
- Computed dimensions govern over scaled dimensions.

5-7 Engineering and Layout

5-7.1 Control Points Furnished by the Department ADD THE FOLLOWING AT THE END OF THIS ARTICLE:

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Should reference points or benchmarks fall within construction limits, the Contractor shall notify the Engineer for survey coordination, and establish new reference points or benchmarks in locations that will not be affected by the construction and preserved upon completion of construction.

The Contractor shall have a licensed surveyor verify the accuracy of the survey data prior to proceeding with Work.

5-7.3 Layout of Work ~~DELETE AND INSERT THE FOLLOWING:~~

Utilizing the control points furnished by the Department in accordance with 5-7.1, the Contractor shall have a licensed surveyor verify the accuracy of the survey data prior to proceeding with Work, and establish all horizontal and vertical controls necessary to construct the Work in conformity to the Contract Documents. Perform all calculations required, and set all stakes needed such as grade stakes, offset stakes, reference point stakes, slope stakes, and other reference marks or points necessary to provide lines and grades for construction of all Roadway, Bridge, and miscellaneous items.

When performing utility construction as part of the project, establish all horizontal and vertical controls necessary to carry out such Work.

5-10-Inspections

5-10.2 Inspection for Acceptance ~~DELETE AND INSERT THE FOLLOWING:~~

Upon notification that all Contract Work, or all Contract Work on the portion of the Contract scheduled for acceptance, has been completed, the Engineer will make an inspection for acceptance. The inspection will be made within seven days of the notification. If the Engineer finds that all Work has been satisfactorily completed, the Department will consider such inspection as the final inspection. If any or all of the Work is found to be unsatisfactory, the Engineer will detail in writing the remedial Work required to achieve acceptance. The Contract Time shall be suspended to allow the Contractor time to complete the remedial Work in accordance with the following schedule; with the suspension commencing upon the date of the written notification by the Department:

Contract Amount	Contract Time Suspension
≤\$5,000,000	30 Days
>\$5,000,000≤\$10,000,000	45 Days
>\$10,000,000	60 Days

If all Work is not completed by the Contractor and accepted by the Engineer during the Contract Time Suspension, the Contract Time shall resume and, after any remaining Contract Time is expended, Liquidated Damages shall be assessed until all Work is accepted by the Engineer.

Upon satisfactory completion of the Work, the Department will provide written notice of acceptance, either partial or final, to the Contractor.

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Until final acceptance in accordance with 5-11, replace or repair any damage to the accepted Work at no additional cost to the Department and as provided in 7-14.

5-12 Claims by Contractor

5-12.2 Notice of Claim

5-12.2.1 Claims for Extra Work DELETE IN ITS ENTIRETY

5-12.3 Content of Written Claim DELETE ITEM (5) IN ITS ENTIRETY

5-12.5 Pre-Settlement and Pre-Judgment Interest DELETE IN ITS ENTIRETY

5-12.6 Compensation for Extra Work or Delay DELETE IN ITS ENTIRETY END OF SECTION

SECTION 6 CONTROL OF MATERIALS

6-1 Acceptance Criteria

ADD THE FOLLOWING SUB ARTICLE:

6-1.2.5

All Materials that are subjected to tests by samples or otherwise, shall be compensated for as follows:

- (a) All tests made that indicate failures to meet the design criteria shall be paid for by the Contractor.
- (b) All tests made that indicate passing of the design criteria and approved as such by the Engineer, shall be paid for by the Owner or Palm Beach County.

6-5.2 Source of Supply-Steel REPLACE TITLE OF ARTICLE WITH THE FOLLOWING:

Source of Supply-Steel (For Federal Aid Contracts only)

6-6 Warranty INSERT NEW SUB-ARTICLE 6-6 "WARRANTY" AT THE END OF SECTION 6:

The Contractor warrants to the Owner and Engineer that all Materials and Equipment furnished under this Contract will be new unless otherwise specified and that all Work will be of good quality, free from faults and defects and in conformance with Contract Documents. All Work not so conforming to these requirements may be considered defective. If required by the Engineer,

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the Contractor shall furnish satisfactory evidence as to the kind and quality of Materials and Equipment. All Work shall be warranted and guaranteed unconditionally for a period of one (1) year after the letter of final acceptance.

END OF SECTION

SECTION 7 LEGAL REQUIREMENTS AND RESPONSIBILITY TO THE PUBLIC

7-1.9 Florida Minority Business Loan Mobilization Program DELETE IN ITS ENTIRETY.

7-2 Permits and Licenses

7-2.1 General DELETE AND INSERT THE FOLLOWING:

Except for permits procured by the Department, if any, procure all permits and licenses, pay all charges and fees, and give all notices necessary and incidental to the due and lawful prosecution of the Work.

It shall be the Contractor's responsibility to become familiar with all local governmental codes, ordinances, and laws governing, associated with, or pertaining to the prosecution and completion of the Work. Any costs involved in procuring permits and licenses, complying with local codes, ordinances or laws, or giving notices shall be incidental to the project and paid by the contractor.

The Department will also acquire any modifications or revisions to an original permit when the Contractor requires such modifications or revisions to complete the construction operations specified in the Plans or Special Provisions and within the Right-of-Way limits.

Acquire all permits for Work performed outside the Right-of-Way or easements for the project. Acquire permits required by municipality or public agency, including but not limited to tree removal and dewatering permits. The permitting time shall be included in the Proposal and Work progress schedule. The Contractor shall also be responsible for completing appropriate certifications by a Professional Engineer, certified in the State of Florida, as outlined on PER-1.

In carrying out the Work in the Contract, when under the jurisdiction of any environmental regulatory agency, comply with all regulations issued by such agencies and with all general, special, and particular conditions relating to construction activities of all permits issued to the Department as though such conditions were issued to the Contractor. Post all permit placards in a protected location at the worksite.

In case of a discrepancy between any permit condition and other Contract Documents, the more stringent condition shall prevail.

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7-11.3 Contractors' Use of Streets and Roads

7-11.3.2 On the State Highway System DELETE AND INSERT THE FOLLOWING:

When hauling Materials or Equipment to the project over roads and bridges on the State Highway System and such use causes damage, immediately, at no expense to the Department, repair such Road or Bridge to as good a condition as before the hauling began.

7-11.5 Utilities.

7-11.5.1 Arrangements for Protection or Adjustment DELETE AND INSERT THE FOLLOWING:

Unless otherwise specified, all references to utility Work, conflicts, relocation, coordination, adjustments, permits, utility pay items, and similar references shall be considered separate and distinct from Roadway and Bridge items and shall pertain to all utilities including Palm Beach County Water Utilities Department (PBCWUD) and Palm Beach County Traffic Division. The Contractor shall be responsible to be familiar with and assure that all utility related Work be performed in accordance with each respective utility department's minimum engineering and construction standards.

Sufficient time has been allotted in the Contract time for the Contractor to coordinate the installation and relocation, if necessary, of all utilities.

The Contractor shall be responsible to ascertain the exact location of all utilities prior to construction regardless of information which may be indicated on the drawings. Utilities shall be located and marked in the field.

The Contractor shall be responsible to verify if "other" utilities (not shown in the Plans) exist within the area of construction. Should there be utility conflicts, the Contractor shall inform the Engineer and notify the respective utility owners to resolve utility conflicts and utility adjustments, as required.

The Contractor shall plan his Work and conduct his construction operations in cooperation with the various utility companies. The Contractor shall use extreme caution where construction is performed in proximity to utilities, and the Engineer and the respective utility owner shall be notified when any Work may conflict with the utilities.

The Contractor shall make all necessary arrangements with the Utility Companies concerned for the maintenance of their lines during the construction period. In the event that complete relocation of utilities has not been accomplished prior to the effective date of the "Notice to Proceed", the Contractor nevertheless shall commence to Work under this Contract and schedule his Work to avoid interference with the utility relocation Work. The Department will not be liable for any damage to any utilities due to any action by the Contractor.

7-12 Responsibility for Damages, Claims, etc.

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7-12.1 Contractor to Provide Indemnification DELETE AND INSERT THE FOLLOWING:

The Contractor shall protect, indemnify, defend, reimburse, save, and hold harmless the Department and all of its officers, agents, and employees from and against all suits, actions, claims, demands, liability, expense, loss, cost or causes of action of any kind or character, including attorney's fees and costs, whether at trial or appellate levels or otherwise, arising out of, because of, during, or due to the acts or omissions commission of the Contractor, its officers, agents, or employees or as a result of their performance of the terms of the Contract. In the performance of the Contract, neither the contractor/consultant, nor any of its officers, agents, or employees will be liable under this section for damages arising out of injury or damage to persons or property directly caused or resulting from the sole negligence of the Department or any of its officers, agents, or employees.

The Contractor shall include the provision in any and all agreements with subcontractors executed in connection with this Contract.

Unless otherwise noted herein, no provision of this Contract is intended to, or shall be construed to, create any third party beneficiary or to provide any rights to any person or entity not a party to this Contract, including but not limited to any citizen or employees of the Contractor.

7-13 Insurance DELETE AND INSERT THE FOLLOWING:

7-13.1 General

Unless otherwise specified in this Contract, or approved by the Department, the Contractor shall, at its sole expense, maintain in full force and effect at all times during the Contract and the performance of Work, including the warranty period, insurance coverage with limits, including endorsements, not less than those set forth in the Insurance Coverage and Limit Table below and with insurers and under forms of policies acceptable to the Department. Contractor shall furnish to the Department Certificate(s) of insurance evidencing that such policies are in full force and effect, not later than fourteen (14) Calendar Days of the date of the letter of Intent to Award, but in any event, prior to execution of the Contract by the Department and prior to commencement of Work. Such certificate(s) shall adhere in every respect to the conditions set forth herein.

The requirements contained herein as to types and limits, as well as the Department's approval of insurance coverage to be maintained by Contractor, are not intended to and shall not in any manner limit or qualify the liabilities and obligations assumed by Contractor under the Contract.

7-13.1.1 Commercial General Liability Insurance

Furnish and maintain a standard Insurance Service Office (ISO) version Commercial General Liability policy form, or its equivalent providing coverage for, but not be limited to, Bodily Injury and Property Damage, Premises/Operations, Personal Injury, Products/Completed Operations, Independent Contractors, Contractual Liability, Broad Form Property Damage, X-C-U (X = Explosion; C = Collapse; U = Underground) Coverages (if applicable), Severability of Interest

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including Cross Liability, and be in accordance with all of the limits, terms and conditions set forth herein. Contractor agrees this coverage shall be provided on a primary basis.

7-13.1.2 Business Automobile Liability Insurance

Furnish and maintain a standard ISO version Business Automobile Liability coverage form, or its equivalent, providing coverage for all owned, non-owned and hired automobiles, and in accordance with all of the limits, terms and conditions set forth herein. Contractor agrees this coverage shall be provided on a primary basis. Notwithstanding the foregoing, should the Contractor not own any automobiles, the business auto liability requirement shall be amended to allow the Contractor to agree to maintain only Hired & Non-Owned Auto Liability. This amended coverage requirement may be satisfied by way of endorsement to the Commercial General Liability, or separate Business Auto Coverage form.

7-13.1.3 Workers' Compensation and Employer's Liability Insurance

Furnish and maintain Workers' Compensation Insurance and Employer's Liability, including Federal Act endorsement for U.S. Longshore and Harbor Workers' Compensation Act when any Work is on or contiguous to navigable bodies of U.S. waterways and ways adjoining, covering all of its employees on the Work site. This coverage shall be in accordance with all of the limits, terms and conditions set forth herein. Exemptions for a Contractor in or doing Work in the Construction Industry, or proof of Workers' Compensation coverage provided by an employee leasing arrangement shall not satisfy this requirement.

If any Work is sublet Contractor shall require all subcontractors to similarly comply with this requirement unless such subcontractors' employees are covered by Contractor's Workers' Compensation insurance policy. Contractor agrees this coverage shall be provided on a primary basis. Contractor shall defend, indemnify and save the Department harmless from any damages resulting to them for failure of Contractor to take out or maintain such insurance.

7-13.1.4 Additional Required Insurance

Furnish and maintain the following additional required insurance coverages with respect to any Work involving property, operations, or type of Equipment for which each insurance coverage described below has been designed specifically to provide coverage for when Work involves.

7-13.1.4.1 Railroad Protective Liability Insurance

With respect to any of the Work involving construction of a railroad grade crossing, overpass or underpass structure, or a railroad crossing signal installation, or any other Work or operations by the Contractor within the limits of the railroad right of way, including any encroachments thereon from Work or operations within the vicinity of the railroad right of way the Contractor shall furnish to the Department for transmittal to the railroad company, an original insurance policy which, with respect to the operations the Contractor or any of its subcontractors perform, will provide for and in behalf of the railroad company, Railroad Protective Liability Coverage. Coverage shall be in accordance with all of the limits, terms and conditions set forth herein and conform with the

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requirements of the U.S. Department of Transportation, Federal Highway Administration, Federal-Aid Program Manual, Volume 6, Chapter 6, Section 2, Subsection 2, Transmittal 350, dated October 1, 1982, and any supplements or revisions. Contractor agrees this coverage shall be provided on a primary basis.

7-13.1.4.2 Watercraft Liability Insurance

With respect to any of the Work hereunder involving watercraft owned, hired, or borrowed, the Contractor shall furnish and maintain Protection and Indemnity, or similar Watercraft Liability. Coverage shall be included either by way of endorsement under the Commercial General Liability or by separate watercraft liability insurance and be in accordance with all of the limits, terms and conditions set forth herein. Contractor agrees this coverage shall be provided on a primary basis.

7-13.1.4.3 Aircraft Liability Insurance

With respect to any of the Work involving including fixed wing or helicopter aircraft, aircraft owned, hired, or borrowed, including the Contractor shall furnish and maintain Aircraft Liability. Passenger Liability shall be included when persons other than the pilot and crew are occupying the aircraft. Coverage shall be in accordance with all of the limits, terms and conditions set forth herein. Contractor agrees this coverage shall be provided on a primary basis.

7-13.2 Utility Owners Protective Liability Insurance

When the Work under the Contract involves the installation of attachments to joint-use utility poles, the Contractor shall furnish evidence to the Department that, with respect to the operations the Contractor performs, his Commercial General Liability is endorsed with a Broad Form Contractual Endorsement covering the below indemnification or the Department and Utility Company are to be an Additional Named Insured on the policy.

The Contractor hereby agrees to indemnify, defend, save and hold harmless the Department and any owner of Equipment attached to or supported by a jointly used pole from all claims, liabilities and suits whether or not due to or caused by negligence of the Department or joint pole Equipment owners for bodily injury or death to person(s) or damage to property resulting in connection with the performance of the described Work by Contractor, its subcontractors, agents or employees.

7-13.3 Satisfying Limits Under an Umbrella Policy

If necessary, the Contractor may satisfy the minimum limits required above for either Commercial General Liability, Business Auto Liability, and Employer's Liability coverage under an Umbrella or Excess Liability. The underlying limits may be set at the minimum amounts required by the Umbrella or Excess Liability provided the combined limits meet at least the minimum limit for each required policy. The Umbrella or Excess Liability shall have an Annual Aggregate at a limit not less than two (2) times the highest per occurrence minimum limit required above for any of the required coverages. The Department and any other applicable entities shall be specifically endorsed as an "Additional Insured" on the Umbrella or Excess Liability, unless the Umbrella or

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Excess Liability provides continuous coverage to the underlying policies on a complete Follow-Form basis without exceptions and stated as such on the Certificate of Insurance.

7-13.4 Additional Insured

The Contractor agrees to endorse the Department and any other required entity as an Additional Insured on each insurance policy required to be maintained by the Contractor, except for Workers' Compensation and Business Auto Liability. The CG 2026 Additional Insured - Designated Person or Organization endorsement, or its equivalent, shall be endorsed to the Commercial General Liability. Other policies, when required, such as for watercraft, aircraft, and utility owners protective, shall provide a standard Additional Insured endorsement offered by the insurer providing coverage with respect to liability arising out of the operations of the Contractor. The endorsement shall read "Palm Beach County Board of County Commissioners". The Contractor shall agree that the Additional Insured endorsements provide coverage on a primary basis. Endorsement shall be in accordance with all of the limits, terms and conditions set forth herein.

7-13.5 Additional Requirements

7-13.5.1 Waiver of Subrogation

The Contractor agrees, by entering into this Contract, to a Waiver of Subrogation for each required policy providing coverage during the Contract. When required by the insurer or should a policy condition not permit an Insured to enter into a pre-loss agreement to waive subrogation without an endorsement, then the Contractor shall agree to notify the insurer and request the policy be endorsed with a Waiver of Transfer of Rights of Recovery Against Others, or its equivalent. This Waiver of Subrogation requirement shall not apply to any policy, which a condition to the policy specifically prohibits such an endorsement, or voids coverage should the insured enter into such an agreement on a pre-loss basis. The Waiver of Subrogation shall be in accordance with all of the limits, terms and conditions set forth herein.

7-13.5.2 Right to Review & Adjust

The Contractor shall agree, notwithstanding the foregoing, that the Department, by and through its Risk Management Department, in cooperation with the Department, reserves the right to periodically review, reject or accept all required policies of insurance, including limits, coverages, or endorsements, hereunder from time to time throughout the life of this Contract. Furthermore, the Department reserves the right to review and reject any insurer providing coverage because of poor financial condition or because it is not operating legally. In such event, the Department shall provide Contractor written notice of such adjusted limits and Contractor shall agree to comply within thirty (30) days of receipt thereof and to be responsible for any premium revisions as a result of any such reasonable adjustment.

7-13.5.3 No Representation of Coverage Adequacy

The coverages and limits identified in the table have been determined to protect primarily interests of the Department only, and the Contractor agrees in no way should the coverages and limits in

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the table be relied upon when assessing the extent or determining appropriate types and limits of coverage to protect the Contractor against any loss exposures, whether as a result of the construction project or otherwise.

7-13.5.4 Certificate of Insurance

Certificates of Insurance must provide clear evidence that Contractor's Insurance Policies contain the minimum limits of coverage, cancellation notice, and terms and conditions set forth herein.

In the event the Department is notified that a required insurance coverage will be cancelled or non-renewed during the period of this Contract, the Contractor shall furnish prior to the expiration of such insurance, an additional certificate of insurance as proof that equal and like coverage for the balance of the period of the Contract and any extension thereof is in effect. Contractor shall not continue to Work pursuant to this Contract unless all required insurance remains in effect.

The Department shall have the right, but not the obligation, of prohibiting Contractor or any subcontractor from entering the project site until such certificates or other evidence that insurance has been placed in complete compliance with these requirements is received and accepted by the Department.

The Department Reserves The Right To Withhold Payment, But Not The Obligation, To Contractor Until Coverage Is Reinstated. If The Contractor Fails To Maintain The Insurance As Set Forth Herein, The Department Shall Have The Right, But Not The Obligation, To Purchase Said Insurance At Contractor's Expense.

7-13.5.4.1 Additional Requirements for Certificates of Insurance

1. Shall clearly identify Palm Beach County, a political subdivision of the State of Florida, its officers, agents and employees as Additional Insured for all required insurance coverages, except Workers' Compensation and Business Auto Liability.
2. Shall clearly indicate project name and project number to which it applies.
3. Shall clearly indicate a notification requirement in the event of cancellation or non-renewal of coverage.
2. Evidence of renewal coverage or reinstatement of cancelled coverage must be provided in advance of any policy that may expire during the term of this Contract. Failure to provide such certificate shall result in automatic stoppage of the Work until such time as the renewal certificate is supplied.
3. Within forty-eight (48) hours of a request by the Department, and subsequently, prior to expiration of any of the required coverage throughout the term of this Contract, the Contractor shall deliver to the Department at the address below, unless otherwise directed by the

GENERAL PROVISIONS

Department, a signed Certificate(s) of Insurance, evidencing that all types and amounts of insurance coverage required by this Contract have been obtained and are in full force and effect. Said Certificate(s) of Insurance shall, to the extent allowable by the insurer, include a minimum thirty (30) days' endeavor to notify due to cancellation (10 days for nonpayment of premium) or non-renewal of coverage. The Certificate Holder shall read:

Palm Beach County Board of County Commissioners
c/o Engineering Department / Roadway Production Division
2300 N. Jog Road
Third Floor, West Wing
West Palm Beach, FL 33411

4. The Certificates of Insurance must be completed in the original and signed and returned to the Department along with Contracts and Sureties.

7-13.5.5 Deductibles, Coinsurance Penalties, & Self-Insured Retention

The Contractor shall be fully and solely responsible for any costs or expenses as a result of a coverage deductible, coinsurance penalty, or self-insured retention; including any loss not covered because of the operation of such deductible, coinsurance penalty, or self-insured retention.

7-13.5.6 Subcontractor's Insurance

The Contractor shall agree to cause each subcontractor employed by Contractor to purchase and maintain insurance of the type specified herein, unless the Contractor's insurance provides coverage on behalf of the subcontractor. When requested by the Department, the Contractor shall agree to obtain and furnish copies of certificates of insurance evidencing coverage for each subcontractor.

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7-13.5.7 Insurance Coverage and Limit Table

The Contractor shall agree to maintain the coverage, endorsements, and limits of liability in accordance with and set forth by the Insurance Coverage & Limit Table as follows:

INSURANCE COVERAGE & LIMIT TABLE		
TYPE OF COVERAGE	CONTRACTS LESS THAN \$500,000	CONTRACTS \$500,000 OR MORE
<p><u>COMMERCIAL GENERAL LIABILITY:</u></p> <p>Limit of Liability not less than:</p> <p>Additional Insured endorsement required: General Aggregate Limit must apply Per Project</p>	<p>\$500,000 per occurrence</p> <p>Yes</p>	<p>\$1,000,000 per occurrence</p> <p>Yes</p>
<p><u>COMPREHENSIVE AUTO LIABILITY:</u></p> <p>Limit of Liability not less than:</p>	<p>\$500,000 per occurrence</p>	<p>\$1,000,000 per occurrence</p>
<p><u>WORKERS' COMPENSATION & EMPLOYER'S LIABILITY:</u></p> <p>Coverage not less than:</p> <p>Employer's Liability Limits not less than:</p>	<p>Statutory</p> <p>\$100,000/500,000/100,000</p>	
<p><u>WATERCRAFT LIABILITY:</u></p> <p>Limit of Liability not less than:</p> <p>Additional Insured endorsement required:</p>	<p>\$1,000,000 per occurrence</p> <p>Yes</p>	
<p><u>AIRCRAFT LIABILITY:</u></p> <p>Limit of Liability not less than:</p> <p>When used to carry passengers (excluding aircrafts crew) coverage for Passenger Liability not less than:</p> <p>Additional Insured endorsement required:</p>	<p>\$5,000,000 per occurrence</p> <p>\$1,000,000 per passenger</p> <p>Yes</p>	
<p><u>RAILROAD PROTECTIVE LIABILITY:</u></p> <p>Limit of Liability not less than:</p> <p>Additional Insured endorsement required: General Aggregate Limit must apply Per Project</p>	<p>\$2,000,000 per occurrence \$6,000,000 aggregate</p> <p>Yes</p>	
<p><u>UTILITY OWNERS PROTECTIVE LIABILITY:</u></p> <p>Limit of Liability not less than:</p> <p>Additional Insured endorsement required:</p>	<p>\$1,000,000 per occurrence</p> <p>Yes</p>	

GENERAL PROVISIONS

7-14 Contractor's Responsibility for Work ADD THE FOLLOWING AT THE END OF THIS ARTICLE:

In addition to the above, the Contractor will not be held responsible for damage to any landscape items caused by an officially declared hurricane which occurs after the final acceptance of the entire Work (as specified in 580), but during any remaining portion of the 90-day establishment period.

7-16 Wage Rates for Federal-Aid Projects DELETE AND INSERT THE FOLLOWING:

For all projects that include Federal-aid participation, the Contract Documents contain requirements with regard to payment of predetermined minimum wages. Predetermined Wage Rate Decisions (U.S. Department of Labor provided Wage Rate Tables) exist for Heavy, Highway, and Building Construction Projects.

END OF SECTION

SECTION 8 PROSECUTION AND PROGRESS

8-3 Prosecution of Work

8-3.2 Submission of Working Schedule DELETE AND INSERT THE FOLLOWING:

Provide a schedule that shows the various activities of Work in sufficient detail to demonstrate a reasonable and workable plan to complete the project within the Contract Time. Show the order and interdependence of activities and the sequence for accomplishing the Work. Describe all activities in sufficient detail so that the Engineer can readily identify the Work and measure the progress on each activity. Show each activity with a beginning Work date, a duration, and a monetary value. Include activities for procurement fabrication, and deliver of Materials, plant, and Equipment, and review time for shop drawings and submittals. Include milestone activities when milestones are required by the Contract Documents. In a project with more than one phase, adequately identify each phase and its completion date, and do not allow activities to span more than one phase.

The Engineer will return inadequate schedules to the Contractor for corrections. Resubmit a corrected schedule within 15 Calendar Days from the date of the Engineer's return transmittal.

Submit an updated Work Progress Schedule, for Engineer's acceptance, if there is a significant change in the planned order or duration of an activity. The Engineer will review the updated schedule and respond within 7 Calendar Days of receipt.

By acceptance of the schedule, the Engineer does not endorse or otherwise certify the validity or accuracy of the activity durations or sequencing of activities. The Engineer will use the accepted schedule as the baseline against which to measure the progress.

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If the Contractor fails to submit either the corrected or an updated schedule in the time specified, the Engineer will withhold all Contract payments until the Engineer accepts the schedule.

8-3.5 Preconstruction Conference DELETE AND INSERT THE FOLLOWING:

After the award of Contract and prior to issuance of the Notice to Proceed a Pre-Construction Conference will be held between the Contractor, representative of the County Engineer's Office, representative of other municipalities concerned, utility companies, other Contractors affected by the Work and any other persons designated by the County Engineer's Office to have a material interest in the Work. The time and place of this conference will be set by the County Engineer's Office. The Contractor shall bring with him to this conference a copy of his proposed Work schedule for the job.

8-6 Temporary Suspension of Contractor's Operations

8-6.1 Authority to Suspend Contractor's Operations ADD THE FOLLOWING TO THE END OF THIS ARTICLE:

In particular, the Engineer reserves the right to suspend Work on the project from December 15th to December 23, inclusive. The Engineer will give a minimum of thirty (30) Calendar Days notice of suspension. Prior to carrying out any Work on the project during the period of suspension, the Contractor shall obtain written approval from the Engineer.

8-6.1.1 State of Emergency DELETE AND INSERT THE FOLLOWING:

The Engineer has the authority to suspend the Contractor's operations, wholly or in part, pursuant to a Governor's Declaration of a State of Emergency. The Engineer will order such suspension in writing, giving in detail the reasons for the suspension. Contract Time will be charged during all suspensions of Contractor's operations. The Department, at its sole discretion, may grant an extension of Contract Time and reimburse the Contractor for specific costs associated with such suspension.

8-6.4 Suspension of Contractor's Operations-Holidays DELETE AND INSERT THE FOLLOWING:

Unless the Contractor submits a written request to Work on a Holiday at least ten Calendar Days in advance of the requested date and receives written approval from the Engineer, the Contractor shall not Work on the following days: Martin Luther King, Jr. Day; Memorial Day; the Saturday and Sunday immediately preceding Memorial Day; Independence Day; Labor Day; the Friday, Saturday, and Sunday immediately preceding Labor Day; Veterans Day; Thanksgiving Day; the Friday, Saturday and Sunday immediately following Thanksgiving Day; and December 24 through January 2, inclusive.

Contract Time will be charged during these Holiday periods regardless of whether the Contractor's operations have been suspended. Contract Time will be adjusted in accordance with 8-7.3.2. The Contractor is not entitled to any additional compensation beyond any allowed Contract Time adjustment for suspension of operations during such Holiday periods.

GENERAL PROVISIONS

The Contractor will be allowed additional Contract Time for each Working Day included in the Engineer directed suspension of Work between December 15th and December 23rd. During such suspensions, remove all Equipment and Materials from the clear zone, except those required for the safety of the traveling public and retain sufficient personnel at the job site to properly meet the requirements of Sections 102 and 104. The Contractor is not entitled to any additional compensation for removal of Equipment from clear zones or for compliance with Section 102 and Section 104 during such Holiday periods.

8-7 Computation of Contract Time

8-7.2 Date of Beginning of Contract Time DELETE AND INSERT THE FOLLOWING:

The date on which Contract Time begins is the date stated in the Notice to Proceed.

8-8 Failure of Contractor to Maintain Satisfactory Progress

8-8.1 General: Pursue the Work to Completion DELETE AND INSERT THE FOLLOWING:

Satisfactory progress is an essential element of the Contract and, as Delay in the prosecution of the Work will inconvenience the public, obstruct traffic, and interfere with business, it is important that the Work be pressed vigorously to completion. Moreover, the cost to the Department for the administration of the Contract, including engineering, inspection, and supervision, will be increased as the construction period is lengthened.

8-8.2 Regulations Governing Suspension for Delinquency DELETE AND INSERT THE FOLLOWING:

- (a) A Contractor may be declared delinquent because of unsatisfactory progress on a Contract with the Department, when the Contract Time allowed has not been entirely consumed, but the Contractor's progress at any check period does not meet at least one of the following two tests:
- (1) The percentage of dollar value of completed Work with respect to the total amount of the Contract is within ten percentage points of the percentage of Contract Time elapsed.
 - (2) The percentage of dollar value of completed Work is within ten percentage points of the dollar value which should have been performed according to the Contractor's own progress schedule previously approved by the Engineer.

In lieu of the ten percentage points stated in the two preceding paragraphs, twenty (20) percentage points may be allowed for a Contractor who, in the opinion of the Engineer, has adequate organization, Equipment, and financial resources to undertake other contract or subcontract Work without conflict or Delay in prosecuting Work under existing contracts let by the Department.

GENERAL PROVISIONS

(b) A Contractor will be declared delinquent because of unsatisfactory progress on the Contract with the Department, under either of the following circumstances:

- (1) The Contract Time allowed has been consumed and the Work has not been completed.
- (2) The Contract Time allowed has not been entirely consumed the Contractor's progress at any check period does not meet either of the two tests described under the paragraphs headed (a) above (c).

A Contractor declared delinquent under the provisions of 8-8 will be disqualified from further bidding and also will not be approved as a subcontractor so long as the delinquent status exists. Also, any individual, firm, partnership or corporation, affiliated with a delinquent Contractor for either personnel, Equipment or finances, shall likewise be disqualified.

- (c) The Contractor may appeal in writing to the Department for relief from disqualification status. The Department will act upon any appeal within thirty (30) Calendar Days after the filing thereof, and will promptly notify the appellant of the action taken.
- (d) A Contractor disqualified under the requirements of this Article will be removed from such status upon receipt of evidence from the Construction Coordination Division that his progress is no longer delinquent, provided the Contract Time has not elapsed.
- (e) The principal progress check period will occur monthly, upon the Department's receipt of the Contractor's monthly estimates. Postings will generally be completed by the first week of each month, and preliminary notices of delinquency will be sent to the Contractor immediately thereafter, and confirmed by certified mail.
- (f) No Contractor given such a preliminary notice of delinquency will be finally declared delinquent until a period of ten Calendar Days after the preliminary notice has elapsed. During this ten-day period, the Contractor may request and provide support for any extensions of time, or other considerations which would affect the delinquency.
- (g) Final notification of delinquency will be made and verified by certified mail after the expiration of this ten-day period, provided no extensions of time or other considerations are deemed proper by the County Engineer, and provided the delinquency status has not been corrected.
- (h) The Engineer may grant extensions of time during the prosecution of the Work, as allowed under the Contract, regardless of the Contractor's delinquency status.

8-9 Default and Termination of Contract

8-9.2 Termination of Contract for Convenience DELETE AND INSERT THE FOLLOWING:

The Department may, at its option, terminate the Contract, in whole or in part at any time by written notice thereof to Contractor, whether or not Contractor is in default. Upon such notice,

GENERAL PROVISIONS

Contractor hereby waives any claims for damages from the optional termination, including loss of anticipated profits on account thereof. As the sole right and remedy of Contractor, the Department shall pay Contractor in accordance with Subparagraphs below, provided, however, that those provisions of the Contract which by their very nature survive final acceptance under the Contract shall remain in full force and effect after such termination.

- A. Upon receipt of any such notice, Contractor and its Surety shall, unless the notice requires otherwise:
1. Immediately discontinue Work on the date and to the extent specified in the notice;
 2. Place no further orders or subcontracts for Materials, services, or facilities, other than may be necessary or required for completion of such portion of Work under the Contract that is not terminated;
 3. Promptly make every reasonable effort to obtain cancellation upon terms satisfactory to Department of all orders and subcontracts to the extent they relate to the performance of Work terminated or assign to the Department those orders and subcontracts and revoke agreements specified in such notice;
 4. The Contractor agrees to assign all subcontracts required for performance of this Contract to the Department;
 5. The Contractor shall include in all subcontracts, Equipment leases and purchase order, a provision requiring the subcontractor, Equipment lessor or supplier, to consent to the assignment of their subcontract to the Department;
 6. Assist the Department, as specifically requested in writing, in the maintenance, protection and disposition of property acquired by the Department under the Contract; and
 7. Complete performance of any work which is not terminated.
- B. Upon any such termination, the Department will pay to Contractor an amount determined in accordance with the following (without duplication of any item):
1. All amounts due and not previously paid to Contractor for Work completed in accordance with the Contract prior to such notice, and for Work thereafter completed as specified in such notice.
 2. The reasonable cost of settling and paying claims arising out of the termination of Work under subcontracts or orders as provided in Subparagraph A.3. above.
 3. The verifiable costs incurred pursuant to Subparagraph A.5. above.
 4. Any other reasonable costs which can be verified to be incidental to such termination of Work.

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The foregoing amounts will include a reasonable sum, under all of the circumstances, as profit for all Work satisfactorily performed by Contractor.

Contractor shall submit within 30 days after receipt of notice of termination, a proposal for an adjustment to the Contract price including all incurred costs described herein.

The Department shall review, analyze, and verify such proposal, and negotiate an equitable adjustment, and the Contract shall be amended in writing accordingly.

8-10 Liquidated Damages for Failure to Complete the Work

8-10.2.1 Amounts Reasonable/No Penalty ADD THE FOLLOWING SUB-ARTICLE:

The Contractor hereby agrees and affirms that the amounts specified in this section reflect a fair compensable value for damages suffered by Department as a result of Contractor's Delay, and that said amounts are not a penalty nor will ever be contested as reflecting the imposition of a penalty against Contractor.

END OF SECTION

SECTION 9 MEASUREMENT AND PAYMENT

9-2 Scope of Payments

9-2.1.1 Fuels DELETE AND INSERT THE FOLLOWING:

The Department will make no price adjustments for fuels.

9-2.1.2 Bituminous Material DELETE AND INSERT THE FOLLOWING:

Department will adjust the Bid unit price for bituminous material, excluding cutback and emulsified asphalt to reflect increases or decreases in the Asphalt Price Index (API) of bituminous material from that in effect during the month in which Bids were received.

Bituminous adjustments will be made only when the current API (CAPI) varies by more than 5% of the API prevailing in the month when Bids were received (BAPI), and then only on the portion that exceeds 5%.

The Department will determine the API for each month by averaging quotations in effect on the first day of the month at all terminals that could reasonably be expected to furnish bituminous material to projects in the State of Florida.

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The API will be available on the Construction Office website before the 15th of each month at the following URL: <http://www.dot.state.fl.us/construction/fuel&bit/Fuel&Bit.shtm>

Refer to the "Liquid Asphalt Calculation" table provided in the Special Provisions of these documents.

9-3 Compensation for Altered Quantities

9-3.1 General ADD THE FOLLOWING TO THE END OF THIS ARTICLE:

The Contractor is advised that all items may be increased, decreased or deleted from the Contract, as directed by the Engineer. Whenever change or combination of changes in the Plans results in total elimination or substitution of any item included in the original Contract quantities, no allowance will be made for any loss of anticipated profits because of these changes, decreases or deletions of items.

The Contractor's attention is called to the fact that the quotations for the various items of Work are intended to establish a total price for completing the Work in its entirety. The unit prices for the items of Work shall include the cost of all labor, Materials, Equipment, transportation, fuel and all other items incidental to or necessary for the completion of the item of Work.

Should the Contractor feel that the cost for any item of Work has not been established by the Bid Form or Basis of Payment, he shall include the cost for that Work in some other applicable Bid item, so that his Proposal for the project does reflect his total price for completing the Work in its entirety.

9-3.2.1 Error in Plan Quantity DELETE IN ITS ENTIRETY

9-5 Partial Payments

9-5.1 General DELETE AND INSERT THE FOLLOWING:

The Contractor will receive partial payments on monthly estimates, based on the amount of Work done or completed (including delivery of certain Materials, as specified herein below). The monthly payments shall be approximate only, and all partial estimates and payments shall be subject to correction in the subsequent estimates and the final estimate and payment.

The amount of such payments shall be the total value of the Work done to the date of the estimate, based on the quantities and the unit prices for all Work performed, less an amount retained and less payments previously made. The amount retained shall be 5% of the value of Work completed. This retainage may be reduced to 2 1/2% of Contract amount at the discretion of the Department Engineer when said project exceeds 90% of the Contract amount.

The amount retained on water and sewer construction and adjustments included in the Contract shall be 10% of the monthly estimates until the Work is approved by the permitting agency. The retainage after approval/acceptance by the agency shall be in accordance with 9-5.1.

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As an exception to the percentages for the amount to be retained on partial or monthly estimates as specified above, for contracts in which landscaping items constitute 50 per cent or more of the original Contract amount, 10 per cent of the value of Work completed shall be retained until the end of the 90-day establishment period for landscaping items or until final acceptance of the entire Contract Work; whichever of such is the later date.

Contract amount is defined as the original Contract amount as adjusted by approved Supplemental Agreements.

9-5.5 Partial Payments for Delivery of Certain Materials

9-5.5.1 General ADD THE FOLLOWING TO THE END OF THIS ARTICLE:

(7) Common Carrier Freight Rates. No adjustments shall be made for change in common carrier rates.

9-5.5.2 Partial Payment Amounts DELETE AND INSERT THE FOLLOWING:

The Contractor will receive progress payments on a monthly basis. The amount will be based on the Work done or completed (including delivery of certain Materials per 9-6). The progress payments shall be approximate only, and shall be subject to correction in the subsequent monthly estimates and the final estimate and payment.

The amount of such payments shall be the total value of the Work done to the date of the estimate, based on the quantities and the unit prices for all Work performed, less an amount retained and less payments previously made. The amount retained shall be 5% of the value of Work completed. This retainage may be reduced to 2-1/2% of Contract amount at the discretion of the County Engineer when said project exceeds 90% of the Contract amount.

On water and sewer construction, the amount retained and adjustments included in the Contract shall be 10% of the progress payments, up to 50% completion. After 50% completion, the retainage shall be reduced to 5% until the Work is approved by the permitting agency.

As an exception to the percentages for the amount to be retained on progress payments as specified above, for contracts in which landscaping items constitute 50 per cent or more of the original Contract amount, 10 per cent of the value of Work completed shall be retained up to 50% completion. After 50% completion, the retainage shall be reduced to 5% until the end of the 90-day establishment period for landscaping items or until final acceptance of the entire Contract Work; whichever of such is the later date.

Contract amount is defined as the original Contract amount as adjusted by approved Supplemental Agreements.

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The following partial payment restrictions apply:

- (1) Partial payments for structural steel and precast prestressed items will not exceed 85% of the Bid price for the item. Partial payments for all other items will not exceed 75% of the Bid price of the item in which the material is to be used.
- (2) Partial payment will not be made for aggregate and base course material received after paving or base construction operations begin except when a construction sequence designated by the Department requires suspension of paving and base construction after the initial paving operations, partial payments will be reinstated until the paving and base construction resumes.

9-9 Interest Due on Delayed Payments DELETE IN ITS ENTIRETY

9-11 Change Order Approvals ADD THE FOLLOWING ARTICLE:

Change Orders shall be approved in accordance with existing Department policy per Resolution #R89-633 dated April 4, 1989 and the current PPM #CWF-050.

Department reserves the right to increase or decrease any of the unit quantities as necessary to complete the Work contracted. Such increases or decreases may be authorized by the Department's Engineer at the unit price(s) as Bid.

END OF SECTION

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GENERAL PROVISIONS

SECTION 102 MAINTENANCE OF TRAFFIC

102-1 Description ADD THE FOLLOWING AT THE END OF THIS ARTICLE:

All existing signs are the property of the Department. The Contractor shall stockpile the above mentioned signs and contact Traffic Operations (sign supervisor) at 233-3900 for pick-up. Signs must be kept in good condition or be responsible for reimbursement to Palm Beach County Traffic Division.

This section shall be governed by the following standards:

1. Florida Department of Transportation (FDOT) "Standard Specifications for Road and Bridge Construction"
2. "Manual on Uniform Traffic Control Devices for Streets and Highways" (MUTCD)
3. Florida Department of Transportation "Design Standards"
4. Florida Department of Transportation "Plans Preparation Manual"
5. "Manual of Uniform Minimum Standards for Design, Construction and Maintenance of Streets and Highways"

In addition to the above Specifications, the following shall also apply:

Barricades, Lights and Cones

1. All barricades shall be maintained daily.
2. All Type III barricades shall have one Type A flashing light on each barricade. When extremely hazardous conditions exist, two Type B flashing lights shall be used. Extremely hazardous conditions shall be determined by Palm Beach County Engineering Traffic Division. Drums, Type II barricades and barrier walls shall have one Type C steady burning light.

Flag Person and Vests

1. The flagger shall be trained in the proper manner as set forth in the MUTCD and certified as per Section 102 FDOT Specifications for Road and Bridge Construction. Each flagger shall have a certification card with them when flagging. Certification cards shall have the flagger's name, date of certification and expiration date.
 - If the person flagging traffic does not have the Certification, or the name is not on the list of approved flaggers, the flagger shall be replaced immediately with a certified flagger. There will be no lane closure until that time.

GENERAL PROVISIONS

- At the pre-construction meeting, the contractor may submit a list of certified flaggers. This list must include the same information as the flagger(s)' certification card(s).
2. All construction personnel shall wear a retro-reflective orange or strong yellow/green vest/garment during daytime or nighttime operations when working within the Right-of-Way (Class 2 or 3 per MUTCD).
 - A. Ensure that these vest/garments be worn whenever workers are within the Right-of-Way. Workers operating machinery or Equipment in which loose clothing could become entangled during operation are exempt from this requirement. Such exempt workers will be required to wear orange shirts or jackets.
 - B. Require Contractor personnel to wear retro-reflective orange or strong yellow/green vest/garment during daytime or nighttime operations.
 - C. Replace faded vest/garments, as determined by the Inspector.

Flashing Arrow Boards

1. Flashing arrow boards shall be used on any four (4) lane or larger Roadway where traffic is being channelized or diverted, or as directed by the Palm Beach County Traffic Engineering Department. Flashing arrow boards shall conform with Section 6F-56 MUTCD /Type B or C only. Solar arrow boards shall be used.

Traffic Signals

1. A minimum of seventy-two hours notice must be given to Traffic Division (684-4030) prior to Work requiring the realigning of traffic signals.
2. The Department will charge for traffic signals to be realigned to accommodate MOT.
3. No material shall be disturbed within 6' of a traffic pole or within the specified distance of a guy wire and anchor to a depth greater than 2' as shown in Figure 1 in the General Provisions unless approved by and coordinated with Palm Beach County Traffic Operations. Contact Traffic Operations at (561) 233-3900, 24 hours in advance of any excavation. Failure to comply with the above shall result in the prime contractor incurring all costs incurred as a result of damage to the traffic signal installation. These costs shall be paid 30 days from date of invoice or the following pay estimate will be withheld until payment is made or the cost may be deducted from the pay estimate.
4. Line locates will be given. However, a twenty-four hours' notice must be given. If new traffic poles are to be installed it shall be the contractor's responsibility to provide final stabilized grade within 4"-6" along with Right-of-Way locations at the intersection.

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The contractor shall have a 2-hour window for their change-over that is 1 hour before and one hour after the scheduled change-over time. After that the contractor shall be responsible for all cost incurred for the Delay.

102-1.1 General

1. Contractor shall keep sufficient cold patch asphalt on the job site to fill pot-holes and to perform other minor pavement maintenance as needed.
2. All Highway Equipment shall have a Slow Moving Vehicle sign with either a flasher or a beacon operating when the Equipment is operating.
3. During peak hours 7:00 A.M. to 9:00 A.M. and 3:00 P.M. to 7:00 P.M. left turn and through lanes shall not be blocked without permission from the Traffic Engineer.
4. Any manholes/valves in the travel way shall have 50" width of asphalt extending from the edge for every 1" inch of height.

Pedestrians

1. When pedestrian movement through or around a worksite is necessary, the Contractor shall provide a separate, safe footpath without abrupt changes in grade or terrain.
 - If one (1) or two (2) pedestrian ways are provided (exist) prior to the start of a project, only one (1) has to be maintained.
2. Places where pedestrians are judged especially vulnerable to impact by vehicles, all foot traffic should be separated and protected by longitudinal positive barrier systems.
3. Pedestrian detours are not to exceed 300 feet from the closure to a signalized or Palm Beach County approved alternative crossing location. The Contractor is to provide a safe and reasonable alternate route including pedestrian detours, diversions and flaggers to assist pedestrians around the work area when applicable.
4. Sidewalks within school zones/areas shall be maintained during morning start and afternoon dismissal times unless otherwise approved by the Engineer. Otherwise, direct detours shall be provided such that students will not be diverted for more than 100 feet. Temporary guarded crossings provided by the Contractor shall be utilized when needed.

102-3.2 Worksite Traffic Supervisor

Certification must be through American Traffic Safety Services Association (ATSSA) or FDOT approved Advanced Maintenance of Traffic course certification.