

City of Fairhope

Bid 009-21 Municipal Pier Utility Tray Repairs

**CITY of FAIRHOPE
FAIRHOPE, ALABAMA**

ADVERTISEMENT

Sealed Proposals will be received by the City of Fairhope of Baldwin County, Alabama, in the City of Fairhope offices, 555 South Section St. Fairhope, Alabama, until 10:00 A.M. Thursday, December 15, 2020, then publicly opened thereafter, for furnishing all labor and materials, and performing all work required by the City of Fairhope and described as follows:

RFQ 009-21 Municipal Pier Utility Tray Repair

The project will consist of labor, equipment, and material necessary for electrical modifications to Fairhope Municipal pier and Marina. Thirty (30) calendar days are allowed for the construction of the project.

Plans, Drawings and Specifications are on file and may be viewed in the Purchasing Department of the City of Fairhope, Alabama, located at 555 S. Section Street. Copies may be obtained from the City of Fairhope, at no cost to the Contractor. Bid advertisement, addenda and other related documents will be posted on the City of Fairhope website www.fairhopeal.gov. Questions or comments pertaining to this bid must be presented in writing and sent as e-mail to the attention of the Purchasing Manager, Dee Dee Brandt, P.O. Drawer 429, 555 South Section St., Fairhope, AL 36532, e-mail: deedeeb@fairhopeal.gov, no later than seven (7) days prior to the bid opening or will be forever waived.

All Bids must be on blank bid forms provided in the Bid documents. Bids shall be accompanied by a BID SECURITY equal to 5% (percent) of the bid price, but in no event more than \$50,000.00. BID SECURITY shall be in the form of a Bid Bond signed by a Bonding company authorized to do business in the State of Alabama, or a Cashier's Check payable to the City of Fairhope. NO BID SECURITY is required on bids less than \$10,000.00.

A **Performance Bond** in the form and terms approved by the City of Fairhope in an amount not less than the sum of the bid will be required at the signing of the CONTRACT, and in addition, a **Labor and Materials Bond** in the form and terms approved by the City of Fairhope in an amount not less than fifty percent (50%) of the CONTRACT price insuring payment for all labor and materials.

A non-mandatory pre-bid meeting will be held at the Public Works Building, 555 S. Section Street, Fairhope, AL, December 3, 2020 at 10:00 a.m.

The City of Fairhope is an Equal Opportunity Employer and requires that all contractors comply with the Equal Employment Opportunity laws and the provisions of the Contract documents in this regard. The CITY also encourages and supports the utilization of Minority Business Enterprises on this and all public bids.

All bids, with their guarantee when required), must be enclosed in a sealed, opaque envelope, clearly identified on the outside as **"Sealed Bid" with Bid Name, Bid Number, City of Fairhope's name and address, and the Bidder's name, address, and General Contractor's License Number (Mandatory by State law)**. Each bid must be in a separate envelope. Bids made out in pencil will not be accepted. Failure to observe the instructions contained herein will constitute grounds for rejection of your bid. The CITY reserves the right to accept or reject all bids, or any portions thereof, and to waive informalities, and to furnish any item of material or work to change the amount of the **CONTRACT**, whichever is in the best interest of the City of Fairhope.

The **CONTRACTOR** must furnish to the City of Fairhope at the time of the signing of the **CONTRACT**, a Certificate of Insurance coverage as provided in the contract documents which will include Comprehensive Insurance, Contractor's Automobile, and where applicable, Owner's Protective Liability insurance, Subcontractor's Public Liability and Property Damage Insurance. The company that is awarded the bid must have Workman's Compensation Insurance on all of its employees if work is to be performed on City of Fairhope premises. General Liability Insurance, specifying coverage, must be maintained to hold the City of Fairhope harmless in the event of an accident. See bid packet for details.

No bids will be considered unless the Bidder, whether resident or non-resident of Alabama, is properly qualified to submit a bid for this type of work in accordance with all applicable laws of the State of Alabama. Where applicable, this shall include evidence of holding a current license from the Alabama Licensing Board for General Contractors, Montgomery, Alabama, as required by Chapter 8, Title 34, of the Code of Alabama, 1975. In addition, the awarded vendor, if a non-resident of the State, and if a corporation, Shall show evidence of having qualified with the Secretary of State to do business in the State of Alabama, <http://sos.alabama.gov/business-entities>. Awarded Bidder must have a current business license or purchase a business license with the City of Fairhope prior to work performed. No bids shall be withdrawn for the period of thirty (30) days subsequent to the opening of bids without the consent of the City of Fairhope, Baldwin County, Alabama. Once completed, a tabulation of the responsive and responsible bids will be available for public viewing by visiting the following web address: www.fairhopeal.gov

SECTION 2

GENERAL DEFINITIONS

Where hereinafter used in these PROJECT SPECIFICATIONS the following definitions shall apply:

2-01 Owner. The term "Owner" or "City" shall refer to: City of Fairhope
PUBLIC UTILITIES
FAIRHOPE, ALABAMA

2-02 Bidder. The term "Bidder" shall refer to the person, partnership, firm or corporation submitting a Proposal to Contract with the Owner for the work put forth in these PROJECT SPECIFICATIONS.

2-03 Contractor. The term "Contractor" shall refer to the successful Bidder, the person, partnership, firm or corporation contracting with the Owner to perform and complete the work put forth in these PROJECT SPECIFICATIONS.

2-04 Project. The term "Project" shall refer to the work put forth in these PROJECT SPECIFICATIONS.

2-05 Approved. The term "Approved" shall refer to the City's approval, in writing, or by his duly authorized delegate or representative thereunto authorized by the City, in writing.

2-06 Completion Of Construction: The term "Completion of Construction" shall refer to the full performance by the Contractor of the Contractor's obligations under the Contract and all amendments and revisions thereof except the Contractor's obligations in respect to Release of Liens and Certificate of Contractor under Section 4 Paragraph 33 and 34 of these PROJECT SPECIFICATIONS.

2-07 Completion Of The Project. The term "Completion of the Project" shall refer to the full performance by the Contractor of the Contractor's obligations under the Contract and all amendments and revisions thereof.

2-08 Certificate Of Completion. The term "Certificate of Completion" shall refer to a written certificate signed by the City and approved, in writing, by the Owner and shall be the sole and conclusive evidence as to the date of Completion of Construction and as to the fact of Completion of the Project.

SECTION 3

NOTICE AND INSTRUCTIONS TO BIDDERS

3-01 Sealed Proposals for performing construction prescribed in the Municipal Pier Utility Tray Repairs will be received by the Owner on or before December 15, 2020, at 10:00, Local Time in the City of Fairhope Public Utilities Office, at 555 South Section Street, Fairhope, Alabama 36532, at which time and place the proposals will be publicly opened and read. Any Proposal received subsequent to the time specified will not be considered and will be promptly returned to the Bidder unopened.

3-02 Description of Projects. The Project will consist of supplying and paying for all labor, equipment, tools, transportation, supervision and other means to perform the work put forth in these PROJECT

SPECIFICATIONS. The project is generally described as: **Municipal Pier Utility Tray Repairs**

The Project is located in Baldwin County, in the State of Alabama, all as more fully described in these PROJECT SPECIFICATIONS.

3-03 Obtaining and Transferring PROJECT SPECIFICATIONS. The PROJECT SPECIFICATIONS together with all necessary documents for bidders may be obtained, for the purpose of compiling bids only, from the City of Fairhope, 555 South Section Street, Fairhope, AL 36532.

The Bidder may, during the bidding period, be advised by bulletins (which term includes addenda to the specifications) of additions, deletions, or alterations in any of the documents forming a part of this Contract. All such changes shall be included in the work covered by the bid and shall become a part of this contract. The Bidder shall state in his bid the number and title of all bulletins which he has received.

3-04 Familiarity with Conditions. Prior to the submission of the Proposal the Bidder shall make and shall be deemed to have made a careful examination of the site of the Project and of the PROJECT SPECIFICATIONS, and forms of Contractor's Proposal and Contractor's Bond on file with the Owner, and shall become informed as to the location and nature of the proposed construction, the transportation facilities, the kind and character of soil and terrain to be encountered, the kind of facilities required before and during the construction of the Project, general local conditions and all other matters that may affect the cost and the time of completion of the Project.

3-05 Work on Energized Lines. Not applicable.

3-06 Owner Furnished Materials. See Construction Notes on Drawing E1.

3-07 The Owner Represents. All funds necessary for prompt payment for construction of the Project will be available.

3-08 Bidder's Qualifications. A Bidder who has not already completed similar electrical construction contracts shall file with the City the Bidder's Qualifications, on forms supplied by the City, at least ten (10) days in advance of the scheduled bid opening. No Bidder's Qualifications form will be required of a prospective Bidder who, to the knowledge of the Owner, has already completed such work, unless, prior to the issuance by the Owner or City to such Bidder of a set of PROJECT SPECIFICATIONS bearing a serial number, the City shall in writing notify such Bidder to submit the Bidder's Qualifications. A bid will not be considered from a Bidder required to submit Bidder's Qualifications who has not been notified by the City prior to the bid opening that such Bidder's Qualifications are satisfactory to the Owner. Questions, if any, concerning the sufficiency of such prior work performed by a prospective Bidder or the necessity for filing Bidder's Qualifications forms shall be raised by the Bidder at least ten (10) days prior to the time herein specified for filing the Bidder's Qualifications; questions relating to completed Bidder's Qualifications forms shall be resolved prior to the scheduled bid opening.

3-09 Alternate Designs. Not applicable.

3-10 Bidder's Experience. In estimating the least cost to the Owner as one of the factors in deciding the acceptance of the Proposal, the Owner will consider, in addition to the bid prices of the construction, the experience and responsibility of the Bidder.

3-11 The Time for Completion of Construction of the Project shall be as specified by the City in Section 4 Paragraph 7a.

3-12 Minor Irregularities. The Owner reserves the right to waive minor irregularities or minor errors in any Proposal, if it appears to the Owner that such irregularities or errors were made through inadvertence. Any such irregularities or errors so waived must be corrected on the Proposal in which they occur prior to the acceptance thereof by the Owner.

3-13 Manner of Submitting Proposals. Proposal and all supporting instruments must be submitted on the forms furnished by the City and must be delivered in a sealed envelope addressed to the Owner. The name and address of the Bidder, its License Number if a License Number is required by the State, and the date and hour of the opening of bids must appear on the envelope in which the Proposal is submitted. Proposals must be filled in with ink or typewritten. No alterations or interlineations will be permitted, unless made before submission, and initialed and dated.

3-14 Bid Bond. Each Proposal must be accompanied by a Bid Bond in the form attached or a Certified Check

on a Bank that is a member of the Federal Deposit Insurance Corporation, payable to the order of the Owner, in an amount equal to ten percent (10%) of the maximum bid price, but not to exceed \$10,000.00. Each Bidder agrees, provided its Proposal is one of the three low Proposals, that by filing its Proposal together with such Bid Bond or Check in consideration of the Owner's receiving and considering such Proposal, said Proposal shall be firm and binding upon each such Bidder, and such Bid Bond or Check shall be held by the Owner until a Proposal is accepted and a satisfactory Contractor's Bond is furnished by the successful Bidder, or for a period not to exceed sixty (60) days from the date herein before set for the opening of Proposals, whichever period shall be the shorter. If such Proposal is not one of the three low Proposals the Bid Bond or Check will be returned in each instance within a period of ten (10) days to the Bidder furnishing same.

3-15 Contractor's Bond. The successful Bidder will be required to execute two additional counterparts of the Proposal and to furnish a Contractor's Bond in triplicate in the form attached hereto with sureties listed by the United States Treasury Department as Acceptable Sureties, in a penal sum not less than the contract price.

3-16 Failure to Furnish Contractor's Bond. Should the successful Bidder fail or refuse to execute such counterparts or to furnish a Contractor's Bond within ten (10) days after written notification of the acceptance of the Proposal by the Owner, the Bidder will be considered to have abandoned the Proposal. In such event, the Owner shall be entitled (a) to enforce the Bid Bond in accordance with its terms, or (b) if a Certified Check has been delivered with the Proposal, to retain from the proceeds of the Certified Check the difference (not exceeding the amount of the Certified Check) between the amount of the Proposal and such larger amount for which the Owner may in good faith contract with another party to construct the Project. The term "successful Bidder" shall be deemed to include any Bidder whose Proposal is accepted after another Bidder has previously refused or has been unable to execute the counterparts or to furnish a satisfactory Contractor's Bond.

3-17 Owner's Right to Reject Bids. The Owner reserves the right to reject any and all bids when such rejection is in the interest of the Owner; to reject the bid of a Bidder who has previously failed to perform properly or complete on time jobs of a similar nature; and to reject the bid of a Bidder who is not, in the opinion of the Owner, in a position to perform the Contract.

3-18 Contract is Entire Agreement. The Contract to be affected by the acceptance of the Proposal shall be deemed to include the entire agreement between the parties thereto, and the Bidder shall not claim any modification thereof resulting from any representation or promise made at any time by any officer, agent or employee of the Owner or by any other person.

3-19 Awarding the Contract. The Owner will make the award as soon as practicable to the lowest responsible Bidder, price and other factors considered, provided it is reasonable, and it is to the best interest of the Owner.

Whenever applicable, equalizing elements or factors whether or not specifically mentioned or provided therein, such as transportation or inspection costs or any other element or factor in addition to that of price which would affect the total cost to the Owner will be taken into consideration in comparing bids for award of the Contract.

Should the Owner, for legal reasons, be unable to execute a binding Contract with the successful Bidder within sixty (60) days from date set for bid opening, the Bidder may withdraw his bid. Bids may be withdrawn on written or telegraphic request received from Bidders prior to the time fixed for opening.

SECTION 4

Supplemental GENERAL CLAUSES

4-01 General Conditions. The contract includes the accepted Proposal and the PROJECT SPECIFICATIONS, of which the Proposal is a part. Two or more copies of the Contract shall be signed by both parties and one signed copy retained by each party.

The intent of these documents is to include all material, labor and services of every kind necessary for the proper execution of the work and the terms and conditions of payment thereof.

The documents are to be considered as one and whatever is called for by any one of the documents shall be as binding as if called for by all.

This Contract and the drawings and specifications referred to herein contemplate a finished piece of work of such character and quality as is described in these PROJECT SPECIFICATIONS and is reasonably inferable from them. The Contractor, recognizing the impossibility of producing drawings and specifications with perfect accuracy, agrees that this submitted price for the work hereunder includes sufficient money allowance to make his work complete and operable to fit in with the work of any subcontractors, and the Owner and in compliance with good practice and the ordinances, codes, and regulations of all bodies or persons having Governmental authority over it. The Contractor agrees that inadvertent discrepancies or omissions, or the failure to show details or to repeat on any drawings the figures or notes given on another shall not be the cause for additional charges or claims.

The Owner retains the right to let other contracts in connection with the Project and the Contractor shall properly cooperate with any such other contractors.

4-02 Material and Equipment Schedule. All material for installation on this project will be supplied by Contractor, except as noted in Section 3-06.

4-03 Checking Contractor's Drawings. Unless otherwise specified, not less than three (3) copies of all Contractor's drawings shall be submitted to the City at the proper time so as to prevent delays in delivery of materials. The drawings shall be submitted in the order in which materials are needed at the site without necessarily waiting for completion of all drawings before submitting part of them for approval.

4-04 Owner-Furnished Materials. See Section 3-06.

4-05 Approval of Alternate Materials. The City may approve materials, construction and equipment other than those named or described if he believes that they are in accordance with the Construction Specifications and are desirable, but no such approval shall be valid unless in writing. Alternate proposals or requests for approval, fully describing the work or materials and stating any difference in price will be given consideration, but without any obligations, expressed or implied on the part of the

City to change the named requirements of the Construction Specifications. All requests for approval, including those for material or work not definitely specified or shown on the drawings or called for in the Construction Specifications, shall be made in writing to the City.

4-06 Right-Of-Way Clearing. None required.

4-07 Time and Manner of Construction.

- a. The Contractor agrees to commence construction of the Project on a date (hereinafter called the "Commencement Date") which shall be determined by the City after notice to the Contractor, in writing, of acceptance of the Proposal by the Owner and notice, in writing, from the Owner that sufficient materials to warrant commencement and continuation of construction, but in no event will the Commencement Date be later than fifteen (15) calendar days after the date of executed contract by the Owner. The Contractor further agrees to prosecute diligently and to complete construction in strict accordance with the PROJECT SPECIFICATIONS within 30 days. Provided however, that the Contractor will not be required to perform any construction on such days when, in the judgment of the City, snow, rain or wind, or the results of snow, rain or frost make it impracticable to perform any operation of construction. To the extent of the time lost due to the conditions described herein and approved in writing by the City, the time of completion set out above will be extended if the Contractor makes a written request therefore to the Owner as provided in Subsection "b" of this Paragraph.
- b. Liquidated Damages: Time is the essence of the Contract. Any delay in the completion of the Work as provided for in the Contract Documents will cause inconvenience to the public and loss and damage to the Owner in interest, and in additional administrative, inspection and supervision charges.

Therefore, a time charge equal to TWO HUNDRED FIFTY DOLLARS **(\$250.00)** per day will be made against the Contractor for the entire period that any part of the Work remains uncompleted after the time specified THIRTY (30) days for the completion of the Work as provided in the Contract Documents, the amount of which shall be deducted by the Owner from the Final Estimate, and shall be retained by the Owner out of money's otherwise due the Contractor in the Final Payment, not as a penalty, but as liquidated damages sustained, it being mutually understood and agreed between the parties hereto that such amount is reasonable as liquidated damages.

- c. The time for Completion of Construction shall be extended for the period of any reasonable delay which is due exclusively to causes beyond the control and without the fault of the Contractor, including Acts of God, fires, floods, and acts or omissions of the Owner with respect to matters for which the

Owner is solely responsible. Provided, however, that no such extension of time for completion shall be granted the Contractor unless within ten (10) days after the happening of any event relied upon by the Contractor for such an extension of time the Contractor shall have made a request therefor in writing to the Owner, and provided further that no delay in such time of completion or in the progress of the work which results from any of the above causes except acts or omissions of the Owner, shall result in any liability on the part of the Owner.

- d. The sequence of construction shall be as set forth below, the numbers or names being the designations of extensions or areas (hereinafter called the "Segments") corresponding to the numbers or names shown on the maps attached hereto, or if no Segments are set forth below, the sequence of construction shall be as determined by the Contractor, subject to the approval of the City.
- e. The Owner, acting through the City, may from time to time during the progress of the construction of the Project make such changes, additions to or subtractions from the Construction Specifications and Drawings, Materials and/or sequence of construction provided for in the previous paragraph as conditions may warrant. Provided however, that if any change in the construction to be done shall require an extension of time, a reasonable extension will be granted if the Contractor shall make a written request therefore to the Owner within ten (10) days after any such change is made. And provided further, that if the cost to the Contractor of construction of the project shall be materially increased by any such change or addition, the Owner shall pay the Contractor for the reasonable cost thereof in accordance with a Construction Contract Amendment signed by the Owner and the Contractor, but no claims for additional compensation for any such change or addition will be considered unless the Contractor shall have made a written request therefore to the Owner prior to the commencement of work in connection with such change or addition.
- f. The Contractor will not perform any work hereunder on Sundays without the Owner's approval. The time for completion specified in subsection "a" of this Paragraph shall not be affected in any way by inclusion of this subsection nor by the Owner's consent or lack of consent to Sunday work hereunder.

4-08 Owner Supervision. The work shall be subject at all times to the supervision and direction of the Owner and of his authorized assistants. To prevent disputes and litigations, it is mutually agreed that the City in all cases shall determine the amount or quantity of the various kinds of work and workmanship to be paid for under this Contract, and he shall decide all questions which may arise relative to the performance of the work covered by the Contract and any doubt as to the meaning of the Construction Specifications and Drawings, and any obscurity or discrepancy as to their wording and intent will be final and binding on both parties to this Contract. The City may amend or

correct any errors or omissions in the Construction Specifications and Drawings when such amendments or corrections are necessary to make definite the intent indicated by a reasonable interpretation of the Contract requirements.

4-09 Supervision and Inspection.

- a. The Contractor shall cause the construction work on the Project to receive constant supervision by a competent superintendent (hereinafter called the "Superintendent") who shall be present at all times during working hours where construction is being carried on. The Contractor shall also employ, in connection with the construction of the Project, capable, experienced and reliable foremen and such skilled workmen as may be required for the various classes of work to be performed. Directions and instructions given to the superintendent shall be binding upon the Contractor.
- b. The Owner reserves the right to require the removal from the Project of any employee of the Contractor if in the judgment of the Owner such removal shall be necessary in order to protect the interest of the Owner. The Owner or the Supervisor, if any, shall have the right to require the Contractor to increase the number of its employees and to increase or change the amount or kind of tools and equipment if at any time the progress of the work shall be unsatisfactory to the Owner or Supervisor; but the failure of the Owner or Supervisor to give any such directions shall not relieve the Contractor of its obligations to complete the work within the time and in the manner specified in these PROJECT SPECIFICATIONS.
- c. The manner of construction of the Project shall be subject to the inspection and approval of the Owner. The Owner shall have the right to inspect all payrolls and other data and records of the Contractor and of any Subcontractor, relevant to the construction of the Project. The Contractor shall provide all reasonable facilities necessary for such inspection and tests and shall maintain an office at the site of the Project, with telephone service where obtainable and at least one office employee to whom directions and instructions of the Owner may be delivered. Delivery of such directions or instructions, in writing, to the employee of the Contractor at such office shall constitute delivery to the Contractor. The Contractor shall have an authorized agent accompany the City when final inspection is made and, if requested by the Owner, when any other inspection is made.
- d. In the event that the Owner shall determine that the construction contains or may contain numerous defects, it shall be the duty of the Contractor and the Contractor's surety or sureties to have an inspection made by an City, approved by the Owner, for the purpose of determining the exact nature, extent and location of such defects.
- e. The City may recommend to the Owner that the Contractor suspend the work wholly or in part for such period or periods as the City may deem

necessary due to unsuitable weather or such other conditions as are considered unfavorable for the satisfactory prosecution of the work or because of the failure of the Contractor to comply with any of the provisions of the Contract. Provided, however, that the Contractor shall not suspend work pursuant to this provision without written authority from the Owner so to do. The time of completion hereinabove set forth shall be increased by the number of days of any such suspension, except when such suspension is due to the failure of the Contractor to comply with any of the provisions of this Contract. In the event that work is suspended by the Contractor with the consent of the Owner, the Contractor, before resuming work, shall give the Owner at least twenty-four (24) hours notice thereof, in writing.

4-10 Defective Materials and Workmanship.

- a. The acceptance of any workmanship by the Owner shall not preclude the subsequent rejection thereof if such workmanship shall be found to be defective after installation, and any such workmanship found defective before final acceptance of the construction shall be remedied by and at the expense of the Contractor. Any such condemned work shall be immediately remedied by the Contractor at Contractor's expense. The Contractor shall not be entitled to any payment hereunder so long as any defective workmanship in respect to the Project, of which the Contractor shall have had notice, shall not have been remedied, as the case may be.
- b. Notwithstanding any certificate which may have been given by the Owner, if any workmanship which does not comply with the requirements of this Contract shall be discovered within one (1) year after completion of Construction of the Project, the Contractor shall remedy after notice, in writing, of the existence thereof shall have been given by the Owner. If the Contractor shall be called upon to remedy defective workmanship as herein provided, the Owner, if so requested by the Contractor, shall de-energize that section of the Project involved in such work. In the event of failure by the Contractor so to do, the Owner may remedy such defective workmanship and in such event the Contractor shall pay to the Owner the cost and expense thereof.

4-11 Patent Infringement. The Contractor shall save harmless and indemnify the Owner from any and all claims, suits and proceedings for the infringement of any patent or patents covering any materials or equipment used in construction of the Project.

4-12 Permits for Explosives. Not applicable.

4-13 Laws, Codes, Rules, Etc. The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of work. If the Contractor shall observe that the Construction Specifications and Drawings are at variance therewith, he shall promptly notify the Owner, in writing, and any necessary changes shall be adjusted as provided in the Contract for changes (Section 4-07 hereof). If the

Contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations and without written notice to the Owner, he shall bear all costs arising therefrom. Where work required by the Construction Specifications and Drawings is more than the amount required by said laws, ordinances, rules and regulations, such work shall be as shown or specified. All work shall conform to the codes, rules and regulations of the National Board of Fire Underwriters, Public Corporations and other having jurisdiction. All necessary permits and licenses shall be provided by the Contractor, including City License.

4-14 Examinations of Premises. The Contractor is held to have previously examined the premises and to be satisfied as to the condition under which he will be obliged to operate in performing his part of the work or that will in any manner effect the work under this Contract.

4-15 Contractor's Measurements. Before ordering any material or doing any work, the Contractor shall take or verify all measurements from the property line or reference points as may be required for the proper fitting of his work to other adjoining work. The Contractor shall be responsible for the correctness of his figures and satisfactorily correct without charge any work which does not fit and furnish new work if necessary. No extra charges will be allowed on account of minor differences between actual dimensions and measurements indicated on the drawings; any difference which may be found shall be submitted to the City for his consideration before proceeding with the work.

4-16 Information from City. Dimensions and other information, whether on the Drawings or in the Construction Specifications or other documents or given orally, concerning lot sizes, ground elevations, present obstructions on or near the site, the position of tracts, etc., and the nature of the ground, have been obtained from sources which the City believes to be reliable but the accuracy of such information is not guaranteed. The information is furnished solely for the accommodation of the Contractor and the use of such dimensions and other information is made at the Contractor's own risk.

4-17 Decision of Disputed Questions. To prevent all disputed questions and litigations, it is further agreed by both parties hereto that the City shall in all cases determine the amount and quantity or the classification of the several kinds of work which is to be paid for under this agreement and he shall decide all questions which may arise, relative to the execution of this agreement, and his decision shall be final and binding on both parties.

4-18 Arbitration. Any disagreement arising out of this Contract or for the breach thereof, shall be submitted to arbitration and this agreement shall be specifically enforceable under the prevailing arbitration law, and judgment upon the award rendered may be entered in the highest court of the forum, State or Federal, have jurisdiction. It is mutually agreed that the decision of the arbitrators shall be a condition precedent to any right of legal action that either party may have against the other.

The parties may agree upon one arbitrator, otherwise there shall be three (3), one named in writing by each party of this Contract within five (5) days after notice of arbitration is served by either party upon the other; and a third arbitrator selected by these two

arbitrators within five (5) days thereafter. No one shall serve as an arbitrator who is in any way financially interested in this Contract or in the affairs of either party hereto.

4-19 Franchise and Rights-Of-Way. Not applicable.

4-20 Assignment. The Contractor shall not assign this Contract or any part hereof, or any monies due or to become due hereunder, without the approval of the Owner and without the consent of the surety unless the surety has waived its right to notice of assignment.

4-21 Subcontracting. No part of this Contract shall be sublet without the approval of the Owner. The Contractor shall be as fully responsible to the Owner for the acts and omissions of his subcontractor as he is for the acts and omissions of persons directly employed by himself.

The Contractor shall not be allowed to subcontract any appreciable part of said Contract without requiring a Contractor's Bond from the subcontractor indemnifying the Contractor and the Owner.

The Contractor must submit, with bid, a list of all subcontractors to be utilized in the construction of this project, along with a description of specific work to be performed by each said subcontractor.

4-22 Protection to Persons and Property. The Contractor shall at all times take all reasonable precautions for the safety of employees on the work and of the public, and shall comply with all applicable provisions of Federal, State and Municipal safety laws and building and construction codes, as well as the safety rules and regulations of the Owner. All machinery and equipment and other physical hazards shall be guarded in accordance with the "Manual of Accident Prevention in Construction" of the Associated General Contractors of America unless such instructions are incompatible with Federal, State or Municipal laws or regulations.

The following provisions shall not limit the generality of the above requirements:

- a. The Contractor shall at no time and under no circumstance cause or permit any employee of the Contractor to perform any work upon energized lines, or upon poles carrying energized lines, unless otherwise specified in the Notice and Instructions to Bidders.
- b. The Contractor shall so conduct the construction of the Project as to cause the least possible obstruction of Public Highways.
- c. The Contractor shall provide and maintain all such watchmen, guard lights and other protection for the public as may be required by applicable statutes, ordinances and regulations or by local conditions.
- d. The Contractor shall do all things necessary or expedient properly to protect any and all parallel, converging and intersecting lines, joint line poles,

highways and any and all property of others from damage, and in the event that any such parallel, converging and intersecting lines, joint line poles, highways or other property are damaged in course of the construction of the Project the Contractor shall at its own expense restore any or all of such damaged property immediately to as good a state as before such damage occurred.

- e. The Project, from the commencement of work to completion or to such earlier date or dates when the Owner may take possession and control in whole or in part as hereinafter provided, shall be under the charge and control of the Contractor and during such period of control by the Contractor all risks in connection with the construction of the Project and the materials to be used therein shall be borne by the Contractor. The Contractor shall make good and fully repair all injuries and damages to the Project or any portion thereof under the control of the Contractor by reason of any act of God or other casualty or cause whether or not the same shall have occurred by reason of the Contractor's negligence. The Contractor shall hold the Owner harmless from any and all claims for injuries to persons or for damage to property happening by reason of any negligence on the part of the Contractor or any of the Contractor's agents or employees during the control by the Contractor of the Project or any part thereof.
- f. Any and all excess earth, rock, debris, underbrush and other useless material shall be removed by the Contractor from the site of the Project as rapidly as practicable as the work progresses.
- g. Upon violation by the Contractor of any of the provisions of this section, after written notice of such violation given to the Contractor by the City or the Owner, the Contractor shall immediately correct such violation. Upon failure of the Contractor so to do the Owner may correct such violations at the Contractor's expense; provided, however, that the Owner may, if it deems it necessary or advisable, correct such violation at the Contractor's expense without such prior notice to the Contractor.
- h. The Contractor shall submit to the Owner weekly reports, in duplicate, of all accidents giving such data as may be prescribed by the Owner.

4-23 Contractor's Insurance.

City of Fairhope INSURANCE REQUIREMENTS

4.-23-0 INSURANCE REQUIREMENTS

Awarded Contractor, at its sole expense, shall obtain and maintain in full force the following insurance to protect the Contractor and the City of Fairhope at limits and coverages specified herein. The City of Fairhope will be listed as an additional insured under the Contractor's General Liability insurance and automobile liability insurance policies, and all other applicable policies and certificates of insurance. These limits and coverages specified are the minimum to be maintained and are not intended to represent the correct insurance needed to fully and adequately protect the awarded Bidder.

4-23-01 All insurance will be provided by insurers by admitted carriers in the State of Alabama, shall have a minimum A.M. Best rating of A-VII and must be acceptable to the CITY. Self-insured plans and/or group funds not having an A.M. Best rating must be submitted to the CITY for prior approval.

4-23-02 NO WORK IS TO BE PERFORMED UNTIL PROOF OF COMPLIANCE WITH THE INSURANCE REQUIREMENTS HAS BEEN RECEIVED BY THE CITY.

4-23-03 Worker's Compensation and Employer's Liability

Part One:	Statutory Benefits as required by the State of Alabama		
Part Two:	Employer's Liability	\$1,000,000	each accident
		\$1,000,000	each employee
		\$1,000,000	Policy Limit

4.-23-04 U.S. Longshoreman & Harbor Workers Act (USL&H)

Required if contract involves work near a navigable waterway that may be subject to the USL&H law.

4-23-05 Maritime Endorsement (Jones Act)

Endorsement required if contract involves the use of a Vessel. Or include coverage for "Master Member or Crew" under "Protection and Indemnity" coverage (P&I) unless crew is covered under Workers Compensation.

Bodily injury by accident	\$1,000,000	each accident
Bodily injury by disease	\$1,000,000	aggregate

4.-23-06 Commercial General Liability

Coverage on an Occurrence from with a combined single limit of (Bodily Injury and Property Damage combined as follows:

Each occurrence	\$1,000,000
Personal and Advertising Injury	\$1,000,000
Products/Completed Operation Aggregate	\$2,000,000
General Aggregate	\$2,000,000

Coverage to include:

- Premises and operations
- Personal injury and Advertising Injury
- Products/completed operations
- Independent Contractors
- Blanket Contractual Liability
- Explosion, Collapse and Underground hazards
- Broad Form Property Damage
- Railroad Protective Liability Insurance if work involves construction, demolition, or maintenance operations on or within 50 feet of a railroad.

4-23-07 Automobile Liability

Covering all owned, non-owned and hired vehicles with a limit of no less than \$1,000,000

combined single limit of Bodily injury and property damage per occurrence.

4-23-08 Certificates of Insurance

A Certificate of Insurance evidencing the above minimum requirements must be provided to and accepted by the CITY PRIOR to commencement of any work on the contract. Each policy shall be endorsed to provide ten (10) days written notice of cancellation to the CITY.

4-23-09 The Contractor shall require certificates of insurance from sub-Contractors. Sub-Contractors will carry limits of insurance equal to or greater than those carried by the Contractor. These certificates shall evidence waivers of subrogation in favor of the Contractor and the CITY, and shall be made available to the CITY upon request.

C. Property Insurance

CONTRACTOR shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof. This insurance shall:

1. include the interests of OWNER, CONTRACTOR, Subcontractors, CITY, CITY'S Consultants and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents and other consultants and subcontractors of any of them each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;
2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss and damage to the Work, temporary buildings, falsework, and materials and equipment in transit and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, and such other perils or causes of loss as may be specifically required by the Supplementary Conditions.
3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of City);
4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by OWNER prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by CITY; and
5. allow for partial utilization of the Work by OWNER;
6. include testing and startup; and
7. be maintained in effect until final payment is made unless otherwise agreed to in writing by OWNER, CONTRACTOR and CITY with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.

D. Waiver of Rights

1. OWNER and CONTRACTOR intend that all policies purchased in accordance with paragraph 4.23 will protect OWNER, CONTRACTOR, Subcontractors, and CITY to be listed as **insureds or additional insureds** (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. OWNER and CONTRACTOR waive all rights against each other and their respective officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, and CITY to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by OWNER as trustee or otherwise payable under any policy so issued.
2. OWNER waives all rights against CONTRACTOR, Subcontractors, CITY, CITY's Consultants, and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them for:
 - a. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to OWNER's property or the Work caused by, arising out of, or resulting from fire or other peril whether or not insured by OWNER; and
 - b. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by OWNER during partial utilization, after Substantial Completion, or after final payment.
3. Any insurance policy maintained by OWNER covering any loss, damage or consequential loss shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against CONTRACTOR, Subcontractors, CITY, or CITY's Consultants and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them.

E. Use of Site and Other Areas

1. Limitation on Use of Site and Other Areas

- a. CONTRACTOR shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.
 - b. Should any claim be made by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
 - c. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, CITY, and the officers, directors, partners, employees, agents, and other consultants of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of City attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against OWNER, CITY, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.
2. Removal of Debris During Performance of the Work: During the progress of the Work CONTRACTOR shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
3. Cleaning: Prior to Substantial Completion of the Work CONTRACTOR shall clean the Site and make it ready for utilization by OWNER. At the completion of the Work CONTRACTOR shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
4. Loading Structures: CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

F. Indemnification

1. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, CITY, CITY's Consultants, and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of City attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage:
 - a. is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom; and
 - b. is caused in whole or in part by any negligent act or omission of CONTRACTOR, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not caused in part by any negligence or omission of an individual or entity indemnified hereunder or whether liability is imposed upon such indemnified party by Laws and Regulations regardless of the negligence of any such individual or entity.
2. In any and all claims against OWNER or CITY or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of CONTRACTOR, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph F.1. shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for CONTRACTOR or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
3. The indemnification obligations of CONTRACTOR under paragraph F.1. shall not extend to the liability of CITY Consultants or to the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them arising out of:
 - a. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 - b. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

4-24 Equal Employment Opportunity. During the performance of this Contract the Contractor agrees as follows:

- a. The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color or national origin. The Contractor will take affirmative action to ensure that applicants are employed and that employees are treated during employment, without regard to their race, creed, color or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
- b. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color or national origin.
- c. The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the labor union or workers' representative of the Contractor's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965 and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- d. The Contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965 and of the rules, regulations and relevant orders of the Secretary of Labor.
- e. The Contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations and orders of the Secretary of Labor, or pursuant thereto and will permit access to his books, records and accounts by the Department of Housing and Urban Development and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations and orders.
- f. In the event of the Contractor's noncompliance with the nondiscrimination clauses of this Contract or with any of such rules, regulations or orders, this Contract may be canceled, terminated or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts or Federally-assisted construction contracts, in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation or order of the Secretary of Labor or as otherwise provided by law.

- g. The Contractor will include the provisions of (a) through (g) in every subcontract or purchase order unless exempted by rules, regulations or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each Subcontractor or vendor. The Contractor will take such action with respect to any Subcontractor or purchase order as the Department of Housing and Urban Development may direct as a means of enforcing such provisions, including sanctions for noncompliance. Provided, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a Subcontractor or vendor as a result of such direction by the Department of Housing and Urban Development, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

4-25 Partial Payments. Provided the City receives an Estimate Of Work Performed by the 1st day of each calendar month, then no later than the 23rd day of each such calendar month, the Owner will make partial payment to the Contractor on the basis of a duly certified approved estimate of the work performed during the preceding calendar month by the Contractor, but the Owner will retain 5% of the amount of each such estimate, until final completion and acceptance of all work covered by this Contract.

The Contractor shall pay: (1) for all transportation and utility services according to the rules and regulations of the agency involved, (2) for all tools and other material/equipment, to the extent of 95% of the cost thereof, not later than the 30th day following the completion of that part of the work in or on which such tools and equipment are used and (3) to each of his Subcontractors, not later than the 5th day following each payment to the Contractor, the respective amounts allowed the Contractor on account of the work performed by his Subcontractors, to the extent of each Subcontractor's interest therein, and the bond executed by the Contractor shall indemnify the Owner against any liability thereof.

4-2 6 Owner's Right to Withhold Payments. The Owner may withhold or, on account of subsequently discovered evidence, nullify the whole or a part of any certificate to such extent as may be necessary to protect it from loss on account of:

- a. Defective work not remedied.
- b. Claims filed or reasonable evidence indicating probable filing of claims.
- c. Failure of Contractor to make payments properly to its Subcontractors or for material or labor.
- d. A reasonable doubt that the Contract can be completed for the balance then unpaid.

4-27 Energizing the Project. Prior to Completion of the project the Owner, upon written notice to the Contractor, may test the construction thereof by temporarily energizing any

portion or portions thereof. During the period of such test the portion or portions of the Project so energized shall be considered as within the possession and control of the owner. Upon written notice to the Contractor by the Owner of the completion of such test and upon de-energizing the lines involved therein, said portion or portions of the project shall be considered as returned to the possession and control of the Contractor.

4-28 Release of Liens and Certificate of Contractor. (See Sample) Upon the completion by the Contractor of the construction of the Project, but prior to final payment to the Contractor, the Contractor shall deliver to the Owner releases of all liens and of rights to claim any lien, in the form of Paragraph 33 of this section, from all Subcontractors furnishing services for the Project and a certificate in the form of Paragraph 34 of this section to the effect that all labor used on or for the Project has been paid and that all such releases have been submitted to the Owner. Copy from newspaper of advertising completion of project in local newspaper for four (4) consecutive weeks (1day per week) shall also be submitted at this point.

Upon Completion of Construction by the Contractor, the City will prepare a Certificate of Completion. Upon the approval of such certificate by the Owner, the Owner shall make payment to the Contractor of all amounts to which the Contractor shall be entitled thereunder which shall not have been paid; provided, however, that such final payment shall be made not later than ninety (90) days after the date of Completion of Construction of the Project, as specified in the Certificate of Completion, unless withheld because of the fault of the Contractor.

4-29 Completion on Contractor's Default. If default shall be made by the Contractor or by any Subcontractor in the performance of any of the terms of this Proposal, the Owner, without in any manner limiting its legal and equitable remedies in the circumstances, may serve upon the Contractor and the Surety or Sureties upon the Contractor's Bond or Bonds a written notice requiring the Contractor to cause such default to be corrected forthwith. Unless within twenty (20) days after the service of such notice upon the Contractor such default shall be corrected or arrangements for the correction thereof satisfactory to the Owner shall be made by the Contractor or its Surety or Sureties, the Owner may take over the construction of the Project and prosecute the same to completion by Contract or otherwise for the account and at the expense of the Contractor, and the Contractor and its Surety or Sureties shall be liable to the Owner for any cost or expense in excess of the Contract price occasioned thereby. In such event the Owner may take possession of and utilize, in completing the construction of the Project, any materials, tools, supplies, equipment, appliances and plant belonging to the Contractor or any of its Subcontractors, which may be situated at the site of the Project. The Owner in such contingency may exercise any rights, claims or demands which the Contractor may have against third persons in connection with this Contract and for such purpose the Contractor does hereby assign, transfer and set over unto the Owner all such rights, claims and demands.

4-30 Cumulative Remedies. Every right or remedy herein conferred upon or reserved to the Owner shall be cumulative, shall be in addition to every right and remedy now or hereafter existing at law or in equity or by statute and the pursuit of any right or remedy

shall not be construed as an election. Provided, however, that the provisions of Paragraph 31 of this Section shall be the exclusive measure of damages for failure by the Contractor to complete the construction of the Project within the time herein agreed upon.

4-31 Indemnity. The Contractor agrees to save harmless and indemnify the Owner from and against all claims and demands of any person or persons whomsoever, as well as all costs, expenses, damages and attorney's fee for which said Owner may become liable or answerable by reason of any claim or demand of any such person or persons, resulting or arising from the performance of this Contract.

4-32 Venue. The parties agree that in the event that legal action shall be brought by either party against the other relative to any disagreement arising out of this Contract, such legal action shall be brought in a State Court of competent jurisdiction located in Baldwin County, Alabama.

WAIVER AND RELEASE OF LIEN
(SAMPLE)

WHEREAS, the undersigned, _____

has furnished to _____
the following:

Services Furnished

for use in the construction of a project belonging to _____

Name of Borrower

and designated as, _____,

NOW, THEREFORE, the undersigned, _____

Subcontractor

for and in consideration of \$ _____

and other good valuable consideration, the receipt whereof is hereby acknowledged, do(es) hereby waive and release any and all liens, or right to or claim of lien, on the above described project and premises, under any law, common or statutory, on account of labor or materials, or both, heretofore or hereafter furnished by the undersigned to or for the account of said Name of Contractor _____ for said project.

Given under my (our) hand(s) and seal(s) this _____ day of __, 20____.

Name of Subcontractor

By _____

President, Vice President, Partner or Owner, or, if signed by other than one of foregoing, accompanied by Power of Attorney signed by one of foregoing in favor of the Signer. (Use designation applicable)

CERTIFICATE OF CONTRACTOR (SAMPLE)

_____, certifies that he is the

_____ of _____,
 Title of Office Name of Contractor
 the Contractor, in a Construction Contract No. _____ dated

_____, 20____, entered into between the
 Contractor and _____,
 the Owner, for the construction of a Project which bears the title

_____ and that he is authorized to and does make this certificate on behalf of said Contractor in order to induce the Owner to make payment to the Contractor, in accordance with the provisions of the said construction contract.

Undersigned further says that all persons who have furnished labor in connection with said construction, have been paid in full; that the names of Subcontractors that furnished services in connection with such construction and the kind of services so furnished are:

NAME	KIND OF SERVICE
_____	_____
_____	_____
_____	_____
_____	_____

and that the Contractor has delivered to the Owner releases of liens executed by all such Subcontractors.

 Signature

4-35 Supplemental General Clauses.

Pre-construction Conference:

The City will schedule a conference after Notice of Award with attendance required of the Owner and Contractor.

The Agenda will be as follows:

1. Execution of Owner-Contractor Agreement.
2. Submission of executed bonds and insurance certificates.
3. Submission of list of Subcontractors, Schedule of Values, and Progress Schedule.
4. Designation of personnel representing the parties in Contract and the City.
5. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders and Contract closeout procedures.
6. Scheduling.

EXPERIENCE OF BIDDER:

Unless advised by the awarding authority in the Advertisement for Bids that the same is not required, the Bidder submits the following list of at least three clients for whom projects involving construction of similar projects have been performed within the past 5 years.

1.

Name of Client Telephone Number: _____

Street Address: _____

City / State: _____

Facility/Project Size: _____

Date of Project Completion: _____

Name of City of Record Telephone Number: _____

2.

Name of Client Telephone Number: _____

Street Address: _____

City / State: _____

Facility/Project Size: _____

Date of Project Completion: _____

Name of City of Record Telephone Number: _____

3.

Name of Client Telephone Number: _____

Street Address: _____

City / State: _____

Facility/Project Size: _____

Date of Completion: _____

Name of City of Record Telephone Number: _____

SECTION 6

BID BOND

The PRINCIPAL (Bidder's name and address)

The OWNER

City of Fairhope
P.O. Drawer 429
Fairhope, AL 36533

The PROJECT for which the Principal's Bid is submitted: (Project name as it appears in the Bid Documents)

Bid 009-21 Municipal Pier Utility Tray Repairs

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned Principal and Surety, jointly and severally, hereby bind ourselves, our heirs, executors, administrators, successors, and assigns to the OWNER in the PENAL SUM of five percent (5%) of the amount of the Principal's bid, but in no event more than TEN THOUSAND DOLLARS (\$10,000.00).

THE CONDITION OF THIS OBLIGATION is that the Principal has submitted to the OWNER the attached bid, which is incorporated herein by reference, for the Project identified above.

NOW, THEREFORE, if, within the terms of the Bid Document, the OWNER accepts the Principal's bid and the Principal thereafter either:

- (a) executes and delivers a Construction Contract with the required Performance and Payment Bonds (each in the for contained in the Bid Documents and properly completed in accordance with the bid) and delivers evidence of insurance as prescribed in the Bid Documents, or fails to execute and deliver such Construction Contract with such Bonds and evidence of insurance, but pays the OWNER the difference, not to exceed the Penal Sum of this Bond, between the amount of the Principal's Bid and the larger amount for which the OWNER may award a Construction Contract for the same Work to another Bidder, then, this obligation shall be null and void, otherwise it shall remain in full force and effect.

The Surety, for value received, hereby stipulates and agrees that the obligation of the Surety under this Bond shall not in any manner be impaired or affected by any extension of the time within which the OWNER may accept the Principal's bid, and the Surety does hereby waive notice of any such extension.

SIGNED AND SEALED this ____ day of _____, 20____.

ATTEST

(Principal (Company))

By _____

Print Name and Title

Surety Company

SURETY

ATTEST

_____ By _____

Print Name and Title

ITEM VI
PERFORMANCE BOND

KNOW ALL MEN: That we _____
(Insert here the name & address of legal title of the Contractor)

hereinafter called the Principal, and _____
(Insert here the name and address of legal title of one or more sureties)

And _____

hereinafter called the Surety or Sureties, are held and firmly bound unto the City of Fairhope hereinafter called the OWNER in the sum of _____ Dollars (\$ _____) for the payment whereof the Principal and the Surety or Sureties bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly, by these presents.

WHEREAS, the Principal has, by means of a written agreement, dated ____/____/____ entered into a Contract with the OWNER for: **Bid 009-21** which agreement is by reference made a part hereof,

NOW THEREFORE, The conditions of this obligation is such that if the Principal shall faithfully perform the Contract on his part, and satisfy all claims and demands, incurred for the same, and shall fully indemnify and save harmless the OWNER from all cost and damage which he may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good for any such default thence this obligation shall be null and void; otherwise, it shall remain in full force and effect.

PROVIDED, HOWEVER, that no suit, action or proceedings, by reason of any default whatever be brought on his Bond after twelve months from the day on which the final payment under the Contract falls due.

PROVIDED, further, that the said surety or sureties, for value received hereby stipulate and agree that no change, extension of time, or addition to the terms of the Contract or to the work to be performed thereunder of the Specifications thereof shall in any way effect their obligations on this bond, and they do hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract, or to the work, or to the Specifications.

Witness our hands and seals this _____ day of _____, 20____.

INDIVIDUAL

_____, Doing Business As, _____
(Signature of Individual Bidder) (Business Name)

Business Mailing Address: _____

email _____

phone _____

CORPORATION

Name of Corporation, Partnership, or Joint Venture

Business Mailing Address: _____

email _____

phone _____

BY: _____
(Signature of Officer Authorized to sign Bids
and Contracts for the Firm)

(Position or Title)

(General Contractor's License Number)

Foreign Corporation Entity Id (Required of out-of-state-vendors)

Attest:

(Secretary)

(Name of State under the laws of which incorporated)

(Name of Surety)

BY: _____
(Attorney in Fact)

ITEM VII
LABOR AND MATERIALS BOND

KNOW ALL MEN BY THESE PRESENTS, that we _____ As Principal, and _____ as Surety, are held and firmly bound unto said City of Fairhope hereinafter called the Obligee, in the penal sum of _____ Dollars (\$ _____) lawful money of the United States, for the payment of which sum and truly to be made, we bind ourselves, our heirs, personal representatives, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, said principal has entered into a certain Contract with said Obligee, dated ____/____/20____, (hereinafter called the Contract) for **Bid 009-21**, which Contract and the Specifications for said work shall be deemed a part hereof as fully as if set out herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH THAT if the said Principal and all subcontractors to whom any portion of the work in said contract is sublet and all assignees of said Principal and of such subcontractors shall promptly make payments to all persons supplying him or them with labor, materials, or supplies for or in the prosecution of the work provided for in such Contract, or any amendment or extension of or addition to said Contract, and for the payment of reasonable attorney's fees incurred by the successful claimant or plaintiffs in suits or claims against the contractor arising out of or in connection with the said contract, then the above obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that this bond is subject to the following conditions and limitations.

(a) Any person, firm or corporation that has furnished labor, materials, or supplies for or in the prosecution of the work provided for in said Contract shall have a direct right to action against the Principal and Surety on this bond, which right of action shall be asserted in a proceeding, instituted in the County in which the work provided for in said Contract is to be performed or in any County in which said Principal or Surety does business. Such right of action shall be asserted in a proceeding instituted in the name of the claimant or claimants for his or their use and benefit against the Principal and Surety or either of them (but not later than one year after the final settlement of said Contract falls due) in which action such claim or claims shall be adjusted and judgment rendered thereon.

(b) The Principal and Surety hereby designate and appoint the Mayor of the City of Fairhope or his successor or representative as the agent of each of them to receive and accept services of process or other pleading issued, or filed in any proceeding instituted on this bond and hereby consent that such service shall be the same as personal service on the Principal and/or Surety.

(c) The Surety shall not be liable hereunder for any damages or compensation recoverable under Workmen's Compensation or Employer's Liability Statute.

(d) In no event shall the Surety be liable for a greater sum than the penalty of this bond, or subject to any suit, action or proceeding thereon that is instituted later than one year after the final settlement of said contract.

(e) This Bond is given pursuant to the terms of an Act of the Legislature of the State of Alabama approved February 8, 1935, entitled: "An Act to further provide for Bonds and Contractors on State and other public works and suits thereon".

Witness our hands and seals this _____ day of _____, 20____.

_____, Doing Business As, _____
(Signature of Bidder) (Business Name)

Business Mailing Address: _____

Attest:

(Secretary)

(Name of State under the laws of which incorporated)

(Name of Surety)

BY: _____
(Attorney in Fact)

GENERAL CONDITIONS, SPECIAL PROVISIONS and SUPPLEMENTAL SPECIFICATIONS

1. **SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION:** The Contractor shall comply with the Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL-91-54).

The contractor alone shall be responsible for the safety, efficiency, and adequacy of his plant, appliances, and methods, and for any damage which may result from their failure or their improper construction, maintenance, or operations.

2. **DEPARTMENT OF TRANSPORTATION SPECIFICATIONS:** It is the intent of the Public Works Director to construct the within described improvements, where applicable, in accordance with the State of Alabama Highway Department Standard Specifications for Highway Construction, most current edition. Said specifications shall be hereafter referred to as the Highway Department Specifications.

All provisions enumerated in the Highway Department Specifications shall be complied with, except as otherwise revised herein. Where certain modifications in said specifications appear in these specifications, only the modifications apply; otherwise, the standard specifications apply.

In said specifications where the words State of Alabama, Governor, State Highway Department, Director, etc., appear, substitute the Owner. Where the word Engineer appears, it shall mean Public Works Director. Where the words Testing Laboratory and/or Laboratory appear, it shall mean the particular Testing Laboratory retained by the Owner for this work.

3. **DEPARTMENT OF TRANSPORTATION DRAWINGS:** Where State of Alabama Department of Transportation Alabama Standard Drawings are applicable for the work required, they shall be considered as part of the plans, and copies of required drawings will be afforded the Contractor for construction purposes.
4. **APPLICABLE BUILDING CODES and PERMITS:** It is the responsibility of the Contractor to insure compliance with all applicable City of Fairhope Building Codes and to obtain the appropriate Building Permits as a subsidiary obligation of the bid price of the work.
5. **PROJECT SITE:** The Contractor shall keep the project site clean at all times. No loose dirt, or stockpiles shall be left in areas other than those areas approved by the Public Works Director. The Public Works Director may require the Contractor to clean up any portion of the Project as he deems necessary. Construction & Demolition (C&D) must be cleaned up daily.
6. **MATERIALS:** The Contractor agrees to comply with, and to require the compliance of all subcontractors with the provisions of Act #876 of the Legislature of Alabama, adopted on September 8, 1961, requiring purchase of materials and supplies and products for the project which are manufactured, mined, processed, or otherwise produced in the United States or its territories if the same are available at reasonable prices; and the Contractor further agrees and stipulates to pay to the Owner a sum to be determined and fixed by the Owner in an amount not less than five hundred (\$500.00) dollars nor more than twenty (20%) percent of the gross amount of the Contract in the event he or any subcontractor breach this agreement to use domestic products.
7. **REPAIR OF DAMAGED TO EXISTING UTILITY TRAY:** This work shall include furnishing all labor, equipment, materials and all incidentals necessary to rebuild, reinforce, repair and/or replace the Utility Tray damaged by Hurricane Zeta, October 28, 2020. The work shall include the reestablishment repair and/or replacement of all key and secondary utility services. Materials and workmanship shall be per the enclosed plans and specifications. Some work will involve field investigation and "design build" prior to repair. All proposed field modifications and "design builds"

MP-Zeta-20 – MUNICIPAL PIER UTILITIES REPAIR

City of Fairhope, Public Works Department

555 South Section Street Fairhope, Alabama 36532

Phone: (251) 928-8003

GENERAL CONDITIONS, SPECIAL PROVISIONS and SUPPLEMENTAL SPECIFICATIONS

shall be reviewed and approved by the Public Works Director prior to Contractors initiation of work.

8. **PUBLIC CONVENIENCE:** No attempt is made to restrict work hours of the Contractor's operations, but he is reminded that it will be necessary to arrange his work schedule to provide the least inconvenience to the public and individual residents. The Municipal Pier will remain open during daylight hours to the General Public. The Contractor shall take extra precaution to ensure that pedestrian traffic is protected by the use of, but not limited to, signs, cones, barriers, fencing and barrels. No direct payment will be made for any of the work described in this section.
9. **EROSION CONTROL:** (If Applicable) Immediately prior to any clearing and grubbing or any excavation which could disturb the soils, the Contractor shall install the erosion control items in locations as required by the nature of the work performed. The provide Erosion Control Plan shall be considered the minimum requirement for the project.

The Contractor will be responsible for identifying and installing erosion control in areas where erosion may be encountered during construction of the project. The Contractor shall take all necessary precautions to insure that the construction of the project and the erosion/sediment from the project are adequately controlled and do not damage streams or adjacent property.

The erosion control items installed shall be maintained by the Contractor throughout the course of the project. The City of Fairhope's Environmental Programs Manager shall be the final authority for corrective action, remediation, requirement of additional BMP's and all other directives required for erosion/sediment control.

10. **UNDERGROUND UTILITIES AND SERVICES:** (If Applicable) Existing utilities, mailboxes, signs and minor obstructions are not shown on the plans. Their presence, and the required removal and the resetting thereof shall be considered incidental to the overall project and the cost for the work noted above shall be included in the overall "lump sum" price for the project (no separate payment).

The Contractor is solely responsible for the locating all existing Utilities and Services. Failure of the Contractor to locate any utility does not justify additional payment to the Contractor if said utility is damaged. The Contractor must notify the utility companies involved prior to starting construction and shall make every effort not to damage any utilities. If utilities are damaged by the Contractor, the Contractor must pay all expenses incurred in the repair at no cost to the Owner or his representatives.

11. **PROVISIONS REQUIRED BY LAW DEEMED INSERTED:** Each and every provision of law and clause required by law to be inserted in this contract shall be deemed to be inserted herein and the contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party the contract shall forthwith be physically amended to make such insertion or correction.
12. **PROTECTION OF LIVES AND HEALTH:** "The Contractor shall exercise proper precaution at all times for the protection of persons and property and shall be responsible for all damages to persons or property, either on or off the site, which occur as a result of his prosecution of the work. The safety provisions of applicable laws and building and construction codes, in addition to specific safety and health regulations described by Chapter XIII, Bureau of Labor Standards, Department of Labor, Part 1518, Safety and Health Regulations for Construction, as outlined in the Federal Register, Volume 36, No. 75, Saturday, April 17, 1971. Title 29 - LABOR, shall be observed and the Contractor shall take or cause to be taken, such additional safety and health measures as the Contracting Authority may determine to be reasonably necessary."

GENERAL CONDITIONS, SPECIAL PROVISIONS and SUPPLEMENTAL SPECIFICATIONS

13. **PUBLIC WORKS DIRECTOR'S AUTHORITY:** The Public Works Director shall give all orders and directions contemplated under this contract and specifications, relative to the execution of the work. The Public Works Director shall determine the amount, quality, acceptability, and fitness of the several kinds of work and materials which are to be paid for under this contract and shall decide all questions which may arise in relation to said work and the construction thereof. The Public Works Director's estimates and decisions shall be final and conclusive, except as herein otherwise expressly provided. In case any question shall arise between the parties hereto relative to said contract or specifications, the determination or decision of the Public Works Director's shall be a condition precedent to the right of the Contractor to receive any money or payment for work under this contract affected in any manner or to any extent by such question.

The Public Works Director shall decide the meaning and intent of any portion of the specifications and of any plans or drawings where the same may be found obscure or be in dispute. Any differences or conflicts in regard to their work which may arise between the Contractor under this contract and other Contractors performing work for the Owner shall be adjusted and determined by the Public Works Director.

14. **USE OF PREMISES AND REMOVAL OF DEBRIS:** The Contractor expressly undertakes at his own expense:
- a. to take every precaution against injuries to persons or damage to property;
 - b. to store his apparatus, materials, supplies and equipment in such orderly fashion at the site of the work as will not unduly interfere with the progress of his work or the work of any other contractors;
 - c. to place upon the work or any part thereof only such loads as are consistent with the safety of that portion of the work; materials, and debris caused by his operations, to the end that at all times the site of the work shall present a neat, orderly and workmanlike appearance;
 - d. before final payment to remove all surplus material, false-work, temporary structures, including foundations thereof, plant of any description and debris of every nature resulting from his operations, and to put the site in a neat, orderly condition;
 - e. to affect all cutting, fitting or patching of his work required to make the same to conform to the plans and specifications and, except with the consent of the Public Works Director, not to cut or otherwise alter the work of any other Contractor.
 - f. The removal and proper disposal of all construction and demolition (C&D) debris is the contractor's responsibility. The cost of such removal and disposal shall be a subsidiary obligation of the related works unit costs.
15. **INSURANCE:** The Contractor shall not commence work under this contract until he has obtained all the insurance required under the terms of this contract.
16. **STATE OF ALABAMA GENERAL CONTRACTOR LICENSE:** Any proposed bidder for this project must possess and maintain a valid Alabama General Contractor (GC) License to qualify to submit bids in the state of Alabama (Code of Alabama; Section 34-8-8). The license must be maintained and valid throughout the contract period. The prime contractor may receive bids from unlicensed subcontractors; however the subcontractor must be licensed before beginning work (Code of Alabama; Section 34-8-7). A copy of all GC Licenses must be provided by the Pre-Construction Conference.
17. **CITY OF FAIRHOPE BUSINESS LICENSE:** The Contractor shall not commence work under this contract until he has obtained a City of Fairhope Business License. The license must be maintained and valid throughout the contract period. A copy of the Business License must be provided by the Pre-Construction Conference.

GENERAL CONDITIONS, SPECIAL PROVISIONS and SUPPLEMENTAL SPECIFICATIONS

18. MATERIALS, SERVICES AND FACILITIES:

- a. It is understood that except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, supervision, temporary construction of every nature, and all other services and facilities of every nature whatsoever necessary to execute, complete and deliver the work within the specified time.
- b. Any work necessary to be performed after regular working hours, on Sundays or Legal Holidays, shall be performed without additional expense to the Owner.

19. **CONTRACTOR'S TITLE TO MATERIALS:** No materials or supplies for the work shall be purchased by the Contractor or by any Subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. The Contractor warrants that he has good title to all materials and supplies used by him in the work, free from all liens, claims or encumbrances.

20. INSPECTION AND TESTING OF MATERIALS:

- a. All materials and equipment used in the construction of the project shall be subject to adequate inspection and testing in accordance with accepted standards. The laboratory or inspection agency shall be selected by the Owner. The Owner will pay for all laboratory inspection service direct, and not as a part of the contract.
- b. Materials of construction, particularly those upon which the strength and durability of the structure may depend, shall be subject to inspection and testing to establish conformance with specification and suitability for uses intended.

21. **QUANTITIES AND PAYMENTS:** Quantities provided are best estimates and may vary with field conditions. Contractor should field verify prior to bidding. Payment will be made on actual measured quantities of work/materials performed. Mobilization/demobilization shall be a subsidiary obligation of the bid price. All required demolition, removal, transport and disposal of existing infrastructure shall be a subsidiary obligation of the quoted unit prices in the aggregate. Only two pay requests will be entertained: 30-day payment at substantial completion and release of retainage. Release of retainage will occur after final acceptance and complete project closeout (30 days post advertisement). A 5% of 50% of the project total retainage will be applied to the project.

22. **CONTRACT TIME:** Contract time for this project shall be thirty (30) Calendar days from the Notice to Proceed date.

23. HARDWARE SPECIFICATIONS:

- a. Hanger Rod – Enduro DuroThread TR-FRP-0625 or equivalent
- b. Double Nuts - Enduro DuroThread FN-FRP-0625 or equivalent
- c. Flat Washers - Enduro DuroThread FW-FRP-0625 or equivalent
- d. Lower Strut – UNISTRUT P100HS - Stainless Steel, Type 304 (SS): ASTM A240, Type 304 or equivalent
- e. Lower Utility Tray – Enduro 18" ELL4 or equivalent – no cover
- f. Upper Utility Tray – match existing – Enduro with cover Enduro EPC or equivalent
- g. All other hardware shall be a strong non-metallic mechanical fastener with requisite shear and tensile strength, or 304 Stainless Steel or better.

24. UTILITY INSTALLATION SPECIFICATIONS and NOTES:

- a. Electrical
 - i. Electric 7200 Volt Primary – Continuous red conduit from shore to transformer (supplied by electric department), no elbows or other fittings (elbows, 45's, other

MP-Zeta-20 – MUNICIPAL PIER UTILITIES REPAIR

City of Fairhope, Public Works Department

555 South Section Street Fairhope, Alabama 36532

Phone: (251) 928-8003

GENERAL CONDITIONS, SPECIAL PROVISIONS and SUPPLEMENTAL SPECIFICATIONS

- than couplings at the shore and at the transformer). Once conduit is installed, the electric department will pull and terminate cable. Transformer will not be energized until secondary work to the panels is completed and inspected by the building department to ensure safety.
- ii. All Secondary work by licensed electricians and approved by building department prior to energization, including new PVC conduit and copper to re-establish earth ground at the shore
- b. Water
 - i. Water line should be 2" (IPS) HDPE (ANSI/NSF 61/14, ANSI/AWWA C901/C906) DR 11 Pressure Class 200 with blue stripe running entire length of pipe. Pipe shall be one continuous length joined by thermal butt-fusion. No mechanical couplings installed. Fused fittings only. Fusion machine and fusion machine operator shall be approved by pipe manufacturer. Restrained by corrosion resistant hardware spaced according to engineer/owner recommendations.
 - c. Sewer
 - i. Low pressure sewer line should be 3" (IPS) HDPE (ANSI/NSF 61/14, ANSI/AWWA C901/C906) DR 11 Pressure Class 200 with green stripe running entire length of pipe. Pipe shall be one continuous length joined by thermal butt-fusion. No mechanical couplings installed. Fused fittings only. Fusion machine and fusion machine operator shall be approved by pipe manufacturer. Restrained by corrosion resistant hardware spaced according to engineer/owner recommendations
 - d. Gas
 - i. Reestablish a ¾" PE gas service that feeds the restaurant only.
 - ii. ¾" PE gas service shall be placed in 2" diameter schedule 40 PVC conduit (casing). The conduit (casing) shall have Natural Gas labels along the length of the service.
 - iii. Run is from the start of the Pier (In the approximate area of the electric transformer) at the location of the gas service shut off valve.
 - iv. Service runs from this valve thru the sea wall and into the 2" PVC conduit (casing) to the restaurant – at that location is an anode less riser that extends out of the PVC conduit (casing) and ties into the meter set.
 - e. Telecommunications
 - i. Coordinate with each applicable service provider
25. **FAILURE TO COMPLETE WORK WITHIN CONTRACT TIME:** Should the Contractor, or in case of default, the surety, fail to complete the work within the time stipulated in the contract or the adjusted time as granted under the provisions of this contract, a deduction for each calendar day that any work shall remain uncompleted, an amount of ***\$250.00 (two-hundred and fifty and no/100)*** shall be deducted from any monies due the Contractor on pay estimates. Any adjustments due to approved time extensions or overruns in the contract amount will be made only after written request by the contractor as may be appropriate. Liquidated damages assessed as provided in these Specifications is not a penalty, but is intended to compensate the City for increased time in administering the contract, supervision, inspection and management, particularly that management and inspection which requires maintaining normal field project management forces for a longer time on any construction operation or phase than originally contemplated when the contract period was agreed upon in the contract. Permitting the Contractor to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a waiver on the part of the City of any of its rights under the contract.

FAIRHOPE MUNICIPAL PIER
UTILITY TRAY REPAIRS
HC ZETA - MOBILE BAY - CITY OF FAIRHOPE
NOVEMBER 2020



MAYOR

Sherry Sullivan

CITY COUNCIL

Kevin G. Boone

Robert A. Brown

Jack Burrell, ACOMO

Jimmy Conyers

Corey Martin

DIRECTOR OF PUBLIC WORKS

Richard D. Johnson, PE

CITY CLERK

Lisa A. Hanks, MMC

INDEX TO SHEETS

<u>SHEET</u>	<u>DESCRIPTION</u>
1	Title
2	Utility Tray Repair Plan & Details
3	2005 Repairs Reference Drawing
4	2005 Repairs Reference Drawing
5	UNISTRUT Detail & Specifications



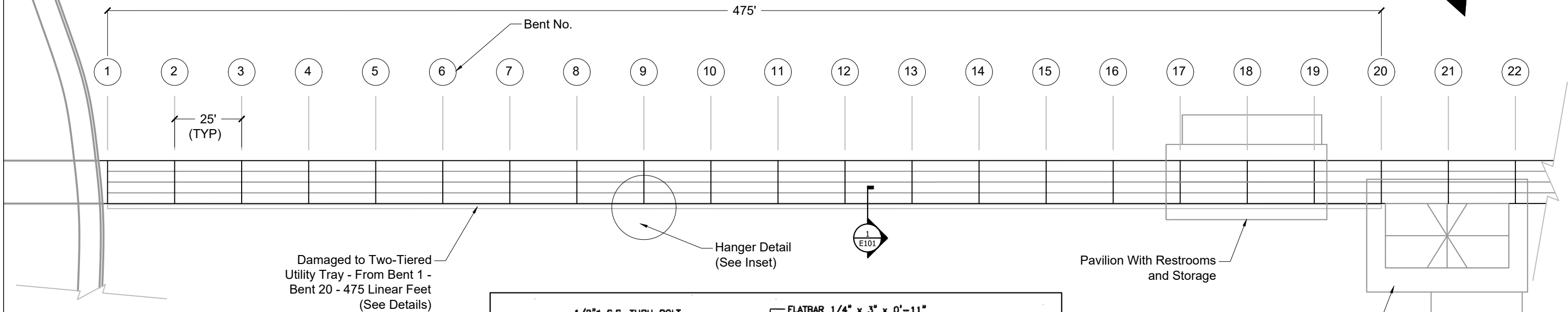
Richard D. Johnson
Richard D. Johnson
AL. REG. NO. 30405

11-10-2020
Date

**Project: MP-Zeta-20
Bid Set Drawings**

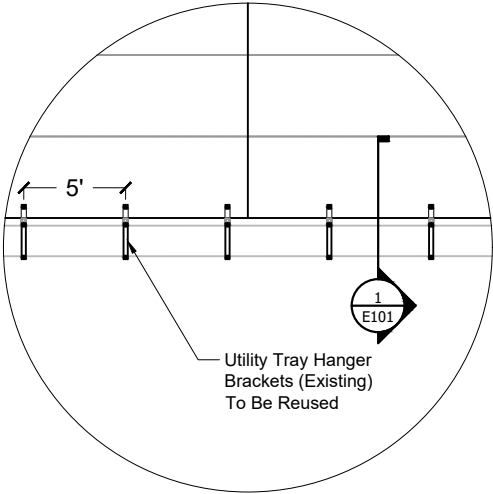
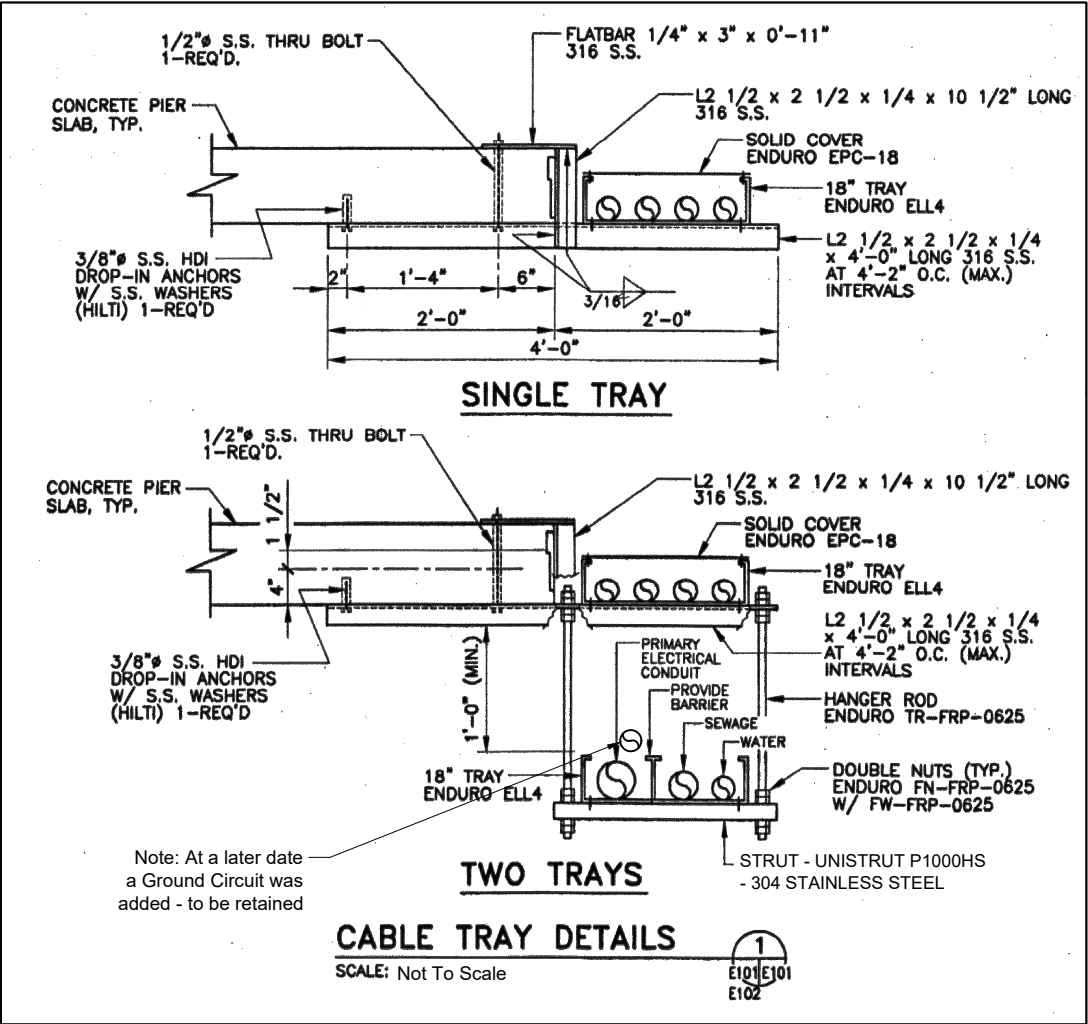
FAIRHOPE MUNICIPAL PIER
Utility Tray Repair
Bents 1 - 20
Plan View: N.T.S.

MOBILE BAY

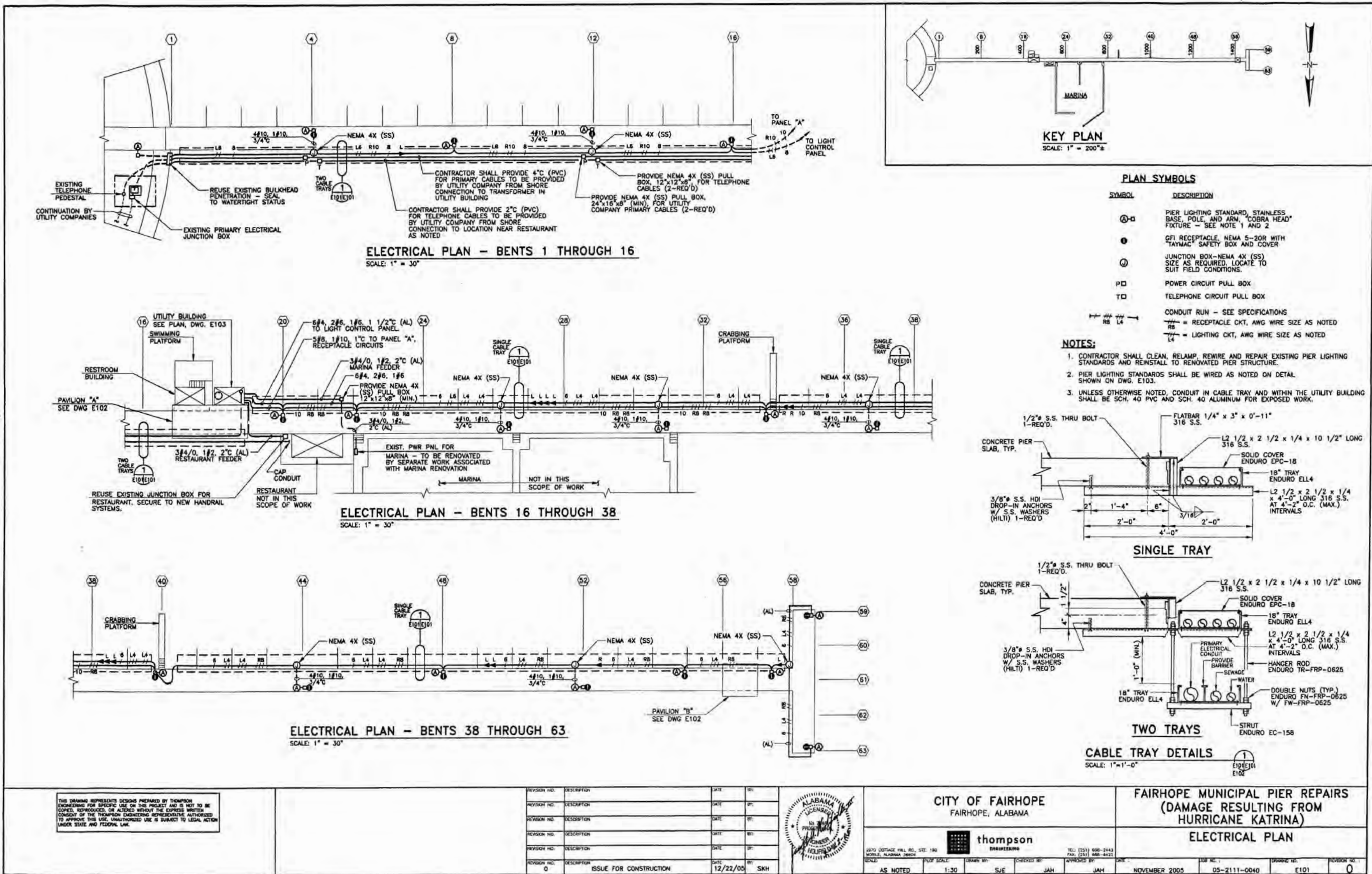


GENERAL PROJECT NOTES

1. This is a singular project consisting of work involving the repair of the utility tray on the Fairhope Municipal Pier from Bent 1 (landside) to Bent 20 (midpoint) approximately 475 L.F.
2. Work includes, but is not limited to: replacement and/or repair of all hanger hardware, installation of new lower strut, replacement and/or repair of all utility trays, reestablishment of all utilities and all other pier utility related infrastructure(s).
3. Utilities to be reestablish are:
 - 3.1. Potable Water
 - 3.2. Low Pressure Sewer
 - 3.3. Low Pressure Gas
 - 3.4. Primary Electric with Ground Run
 - 3.5. Telecommunication Lines - Phone, Cable, Fiber
4. The Public Works Director in consultation with Utilities will determine the priority and the order of work concerning the pier.
5. The removal and proper disposal of all construction and demolition (C&D) debris is the contractor's responsibility. The cost of such removal and disposal shall be a subsidiary obligation of the related works unit costs.
6. The contractor shall secure the site when workers are not present.
7. The work site should be secure with and proper signage displayed at all times during construction.
8. Pier shall remain opened to the General Public during daylight hours during the Utility Repairs.
9. Some work will involve field investigation and "design build" prior to repair. All proposed field modifications and "design build" shall be reviewed and approved by the Public Works Director prior to Contractors initiation of work.
10. Plan Notes:
 - 10.1. All shown dimensions and areas are approximate - contractor should field verify prior to submission of bids
 - 10.2. Payment will be based on actual quantities of repair work completed by the contractor
 - 10.3. The Public Works Director shall decide the meaning and intent of any portion of the specifications and of any plans or drawings where the same may be found obscure or be in dispute.
 - 10.4. These plans are to be considered "suggestive" or "recommended" - field conditions may dictate alternative repair methodologies.
 - 10.5. All work proposed should match dimensions and geometric's of existing structure(s).
11. Questions or clarifications contact Richard D. Johnson, P.E. at (251) 929-0360 or richard.johnson@fairhopeal.gov



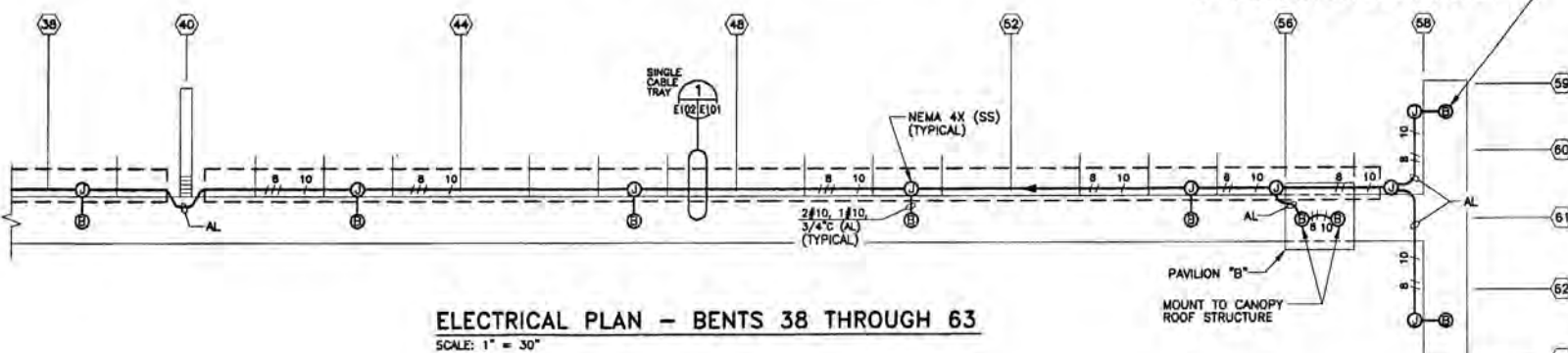
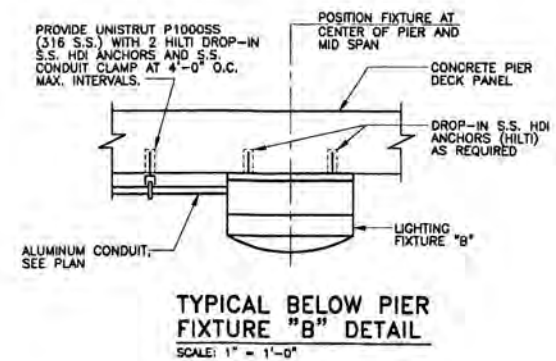
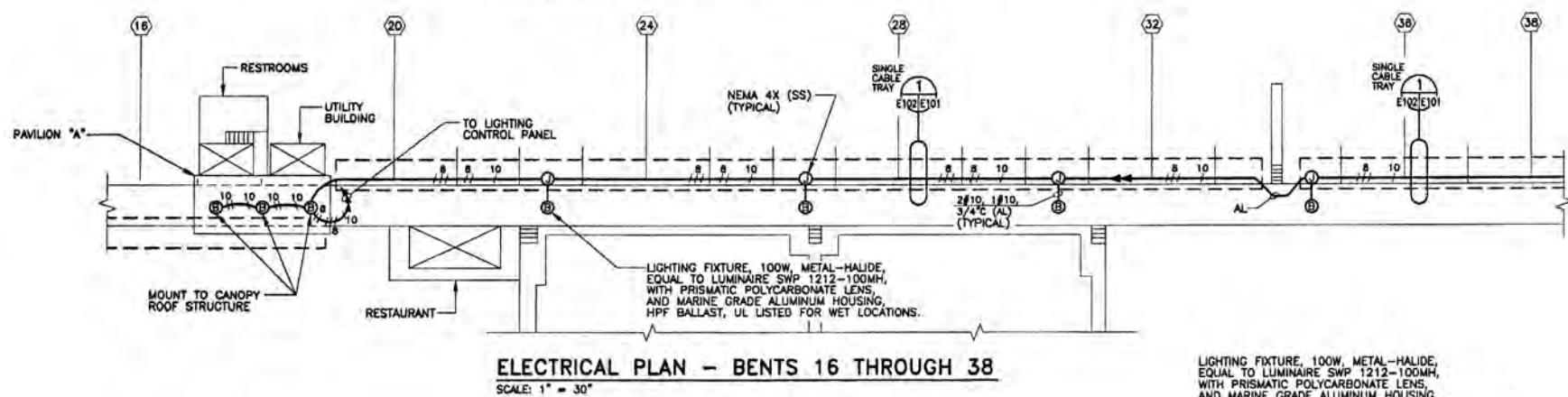
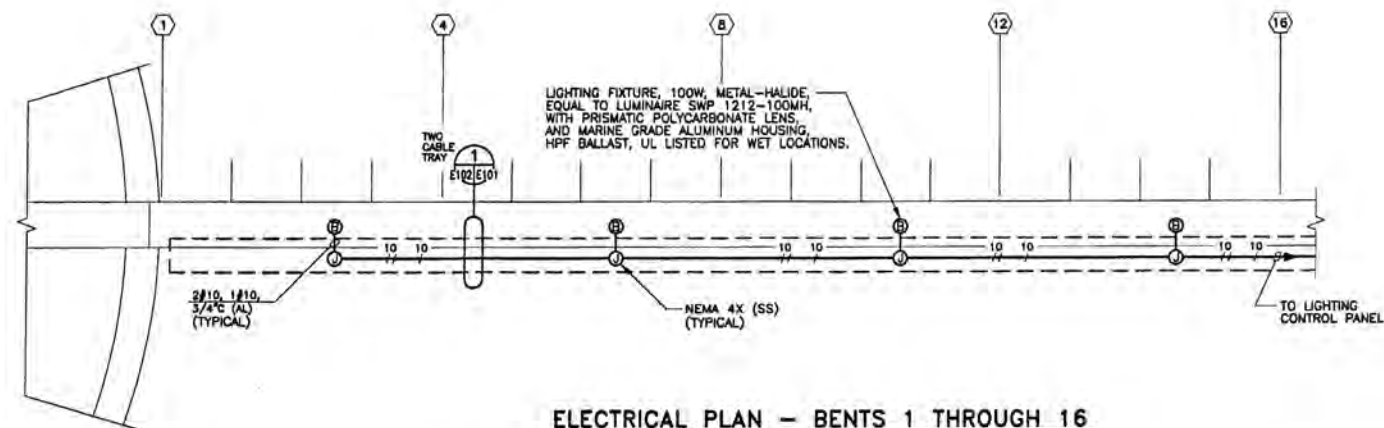
MUNICIPAL PIER - UTILITY TRAY REPAIRS (Hurricane Zeta)		
City of Fairhope	Dept. of Public Works	Drawn By: RDJ
Project #: MP-Zeta-20		Scale: N.T.S.
Date: 11/09/2020	Permit Dwg (11/09/20)	Sheet 2 of 5



Project:	MUNICIPAL PIER - UTILITY TRAY REPAIRS (HC Zeta)		
Title:	2005 Pier Repair - Thompson Engineering Reference Drawing		
Owner:	City of Fairhope	Project #:	MP-Zeta-20
Date:	November 09, 2020	RDJ	Sheet No.: 3 of 5

NOTES:

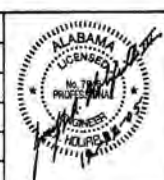
1. This drawing is for historical and geometric reference from the Repair Plan for the Damage from Hurricane Katrina 2005 - This is not to be used for bidding or construction



- GENERAL NOTES:**
1. CONDUCTORS SHALL BE STRANDED COPPER, TYPE XHHW, SIZED AS NOTED BUT NOT SMALLER THAN AWG NO. 12, UNLESS OTHERWISE NOTED.
 2. CONDUIT INSTALLED INDOORS, IN CABLE TRAYS, AND IN GROUT SHALL BE SCHEDULE 40 PVC; AND SCHEDULE 40 ALUMINUM FOR EXPOSED WORK, UNLESS OTHERWISE NOTED.
 3. ALL ELECTRICAL RELATED WORK SHALL BE COORDINATED WITH OTHER WORKING DISCIPLINES WITHIN THE OVERALL PROJECT CONSTRUCTION TO ASSURE A FINISHED PROJECT THAT IS COMPLETE AND FUNCTIONAL.
 4. ALL MISCELLANEOUS ITEMS AND MATERIAL REQUIRED BUT NOT SPECIFICALLY NOTED SHALL BE PROVIDED AS PART OF THIS WORK.
 5. MATERIALS AND INSTALLATION METHODS SHALL BE IN ACCORDANCE WITH APPLICABLE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AS A MINIMUM.
 6. THE CONTRACTOR SHALL OBTAIN ALL APPLICABLE PERMITS, INSPECTIONS, ETC., FOR THIS WORK FROM LOCAL INSPECTION AGENCIES AS A PART OF THIS WORK.
 7. THE CONTRACTOR SHALL PROVIDE FINAL CONSTRUCTION "AS BUILT" DRAWINGS AND MATERIAL/EQUIPMENT DATA TO THE OWNER AT A TIME OF FINAL ACCEPTANCE BY THE OWNER AS THE RECORD DATA FOR THE FINISHED INSTALLATION.

THIS DRAWING REPRESENTS DESIGN PREPARED BY THOMPSON ENGINEERING FOR PROPOSED USE ON THIS PROJECT AND IS NOT TO BE COPIED, REPRODUCED, OR ALTERED WITHOUT THE EXPRESS WRITTEN CONSENT OF THE THOMPSON ENGINEERING REPRESENTATIVE AUTHORIZED TO APPROVE THIS USE. UNAUTHORIZED USE IS SUBJECT TO LEGAL ACTION UNDER STATE AND FEDERAL LAW.

REVISION NO.	DESCRIPTION	DATE	BY
REVISION NO.	DESCRIPTION	DATE	BY
REVISION NO.	DESCRIPTION	DATE	BY
REVISION NO.	DESCRIPTION	DATE	BY
REVISION NO.	DESCRIPTION	DATE	BY
0	ISSUE FOR CONSTRUCTION	12/22/05	SKH



CITY OF FAIRHOPE FAIRHOPE, ALABAMA		FAIRHOPE MUNICIPAL PIER REPAIRS (DAMAGE RESULTING FROM HURRICANE KATRINA)	
thompson ENGINEERING		BELOW PIER AND CANOPY LIGHTING PLAN	
3870 DOTTAGE HILL RD., STE. 100 MOBILE, ALABAMA 36688	TEL: (251) 866-2442 FAX: (251) 866-8427	DATE: NOVEMBER 2005	JOB NO.: 05-2111-0040
SCALE: AS NOTED	PLOT SCALE: 1:30	DRAWN BY: SJE	CHECKED BY: JAH
		APPROVED BY: JAH	REVISION NO.: 0

NOTES:

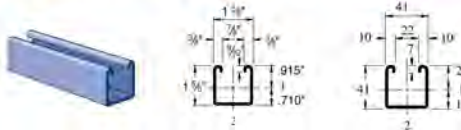
1. This drawing is for historical and geometric reference from the Repair Plan for the Damage from Hurricane Katrina 2005 - This is not to be used for bidding or construction



Project:	MUNICIPAL PIER - UTILITY TRAY REPAIRS (HC Zeta)			
	Title:	2005 Pier Repair - Thompson Engineering Reference Drawing		Sheet No.: 4 of 5
		Project #:	MP-Zeta-20	
	Owner:	City of Fairhope	RDJ	
Date:		November 09, 2020		

UNISTRUT®

P1000



Materials & Finishes - Standard:

- **Pregalvanized (PG):** Conforms to ASTM A653 SS GR 33, G90.
- **Unistrut Defender (DF):** Conforms to ASTM A1046 SS GR 33
- **Hot Dip Galvanized (HG):** Steel conforms to ASTM A1011 SS GR 33, Finish conforms to ASTM A123
- **Perma-Green (GR):** Steel conforms to ASTM A1011 SS GR 33, E-Coat finish
- **Perma-Gold (ZD):** Steel conforms to ASTM A1011 SS GR 33, Finish conforms to ASTM B633, Type II SC3
- **Plain (PL):** Conforms to ASTM A1011 SS GR 33

Materials & Finishes - Special Metals:

- **Stainless Steel, Type 304 (SS):** ASTM A240, Type 304 *
- **Stainless Steel, Type 316 (ST):** ASTM A240, Type 316 *
- **Aluminum (EA):** ASTM B221, Type 6063-T6 (Extruded) *

* These materials have different physical properties and performance characteristics. Please [contact us](#) for design support.

Project:	Municipal Pier-Utility Tray Repair		
Architect / Engineer:	Richard D. Johnson, PE		
Date:	11-10-2020	Phone:	251-928-8003
Contractor:	Bid Item		
Address:	N/A		
Notes:	Reference Specification		

Approval Stamp:

Beam Loading - P1000						
Span (in)	Deflection at		Uniform Loading at Deflection			Lateral Bracing Reduction Factor
	Max Allow. Uniform Load (lbs)	ad (in)	Span/180 (lbs)	Span/240 (lbs)	Span/360 (lbs)	
24	1,690	0.06	1,690	1,690	1,690	1.00
36	1,130	0.13	1,130	1,130	900	0.94
48	850	0.22	850	760	500	0.88
60	680	0.35	650	480	320	0.82
72	580	0.5	450	340	220	0.78
84	480	0.68	330	250	160	0.75
96	420	0.89	250	190	130	0.71
108	380	1.14	200	150	100	0.69
120	340	1.40	160	120	80	0.66
144	280	2.00	110	80	60	0.61
168	240	2.72	80	60	40	0.55
192	210	3.55	60	50	NR	0.51
216	190	4.56	50	40	NR	0.47
240	170	5.62	40	NR	NR	0.44
Note	NR - Not Recommended					

Refer to the General Specifications for loading information.

Column Loading - P1000					
Unbraced Height (in)	Allowable Load at Slot Face (lbs)	Max Column Load Applied at C.G.			
		K=0.65 (lbs)	K=0.80 (lbs)	K=1.0 (lbs)	K=1.2 (lbs)
24	3,550	10,740	9,890	8,770	7,740
36	3,190	8,910	7,740	6,390	5,310
48	2,770	7,260	6,010	4,690	3,800
60	2,380	5,910	4,890	3,630	2,980
72	2,060	4,840	3,800	2,960	2,400
84	1,860	4,040	3,200	2,480	1,980
96	1,670	3,480	2,750	2,110	1,660
108	1,510	3,050	2,400	1,810	KL/r>200
120	1,380	2,700	2,110	KL/r>200	KL/r>200
144	1,150	2,180	1,660	KL/r>200	KL/r>200

Refer to the General Specifications for loading information.

UNISTRUT®

P1000HS



Materials & Finishes - Standard:

- **Pregalvanized (PG):** Conforms to ASTM A653 SS GR 33, G90.
- **Unistrut Defender (DF):** Conforms to ASTM A1046 SS GR 33
- **Hot Dip Galvanized (HG):** Steel conforms to ASTM A1011 SS GR 33, Finish conforms to ASTM A123
- **Perma-Green (GR):** Steel conforms to ASTM A1011 SS GR 33, E-Coat finish
- **Perma-Gold (ZD):** Steel conforms to ASTM A1011 SS GR 33, Finish conforms to ASTM B633, Type II SC3
- **Plain (PL):** Conforms to ASTM A1011 SS GR 33

Materials & Finishes - Special Metals:

- **Stainless Steel, Type 304 (SS):** ASTM A240, Type 304 *
- **Stainless Steel, Type 316 (ST):** ASTM A240, Type 316 *
- **Aluminum (EA):** ASTM B221, Type 6063-T6 (Extruded) *

* These materials have different physical properties and performance characteristics. Please [contact us](#) for design support.

Project:	Municipal Pier-Utility Tray Repair		
Architect / Engineer:	Richard D. Johnson, PE		
Date:	11-10-2020	Phone:	251-928-8003
Contractor:	Bid Item		
Address:	N/A		
Notes:	Reference Specification		

Approval Stamp:

Beam Loading - P1000HS						
Span (in)	Deflection at		Uniform Loading at Deflection			Lateral Bracing Reduction Factor
	Max Allow. Uniform Load (lbs)	Def at Unif Load (in)	Span/180 (lbs)	Span/240 (lbs)	Span/360 (lbs)	
24	1,521	0.06	1,521	1,521	1,521	1.00
36	1,017	0.13	1,017	1,017	810	0.94
48	785	0.22	765	684	450	0.88
60	612	0.35	585	432	288	0.82
72	504	0.50	405	306	198	0.78
84	432	0.68	297	225	144	0.75
96	378	0.89	225	171	117	0.71
108	342	1.14	180	135	90	0.69
120	306	1.40	144	108	72	0.66
144	252	2.00	99	72	54	0.61
168	216	2.72	72	54	36	0.55
192	189	3.55	54	45	NR	0.51
216	171	4.58	45	36	NR	0.47
240	153	5.62	36	NR	NR	0.44
Note	NR - Not Recommended					

Refer to the General Specifications for loading information.

Column Loading - P1000HS					
Unbraced Height (in)	Allowable Load at Slot Face (lbs)	Max Column Load Applied at C.G.			
		K=0.65 (lbs)	K=0.80 (lbs)	K=1.0 (lbs)	K=1.2 (lbs)
24	3,550	10,740	9,890	8,770	7,740
36	3,190	8,910	7,740	6,390	5,310
48	2,770	7,260	6,010	4,690	3,800
60	2,380	5,910	4,890	3,630	2,980
72	2,080	4,840	3,800	2,960	2,400
84	1,860	4,040	3,200	2,480	1,980
96	1,670	3,480	2,750	2,110	1,660
108	1,510	3,050	2,400	1,810	KL/r>200
120	1,380	2,700	2,110	KL/r>200	KL/r>200
144	1,150	2,180	1,660	KL/r>200	KL/r>200

Refer to the General Specifications for loading information.



Project:	MUNICIPAL PIER - UTILITY TRAY REPAIRS (HC Zeta)			
Title:	UNISTRUT Specification			
Owner:	City of Fairhope	Project #:	MP-Zeta-20	Sheet No.: 5 of 5
Date:	November 09, 2020		RDJ	

NOTES:

1. New lower strut shall be UNISTRUT P1000HS - Product dimensions are 1 5/8" wide x 1 5/8" tall x 12 ga. thick; with round holes on one side. The holes are 9/16" in diameter and 1 7/8" on center.
2. Materials & Finishes - Special Metals: Stainless Steel, Type 304 (SS): ASTM A240, Type 304

Lasting Solutions for
Challenging Conditions

composites
enduro

FRP/GRP Solutions for Cable Management Systems



Lasting Solutions for Challenging Conditions

Who we are

At Enduro Composites, we are dedicated to developing products and solutions that deliver meaningful value and service for our customers. With a history of innovation and industry firsts, our fiber reinforced polymer solutions have earned worldwide respect and recognition.

Quality and consistency

Enduro is the world leader in the manufacture and development of fiberglass cable tray and other FRP/GRP systems. With a world-class quality testing laboratory, Enduro ensures consistent and reliable product performance through comprehensive programs of quality control.

Single source responsibility

Because we have been providing FRP/GRP cable management solutions for over three decades, our product offering is one of the broadest in the industry. Combined with our other manufacturing, engineering and design capabilities, this enables us to offer application-specific solutions to just about any design problem. And, since we are vertically integrated, we can deliver these solutions on time and on budget, at the quality level our customers expect.

Design and engineering

Enduro's experienced technical staff can provide engineering and design assistance for your project. If you have a unique design problem, chances are good we have encountered something similar before.

Specification assistance

The specification phase of a project is the most important to ensure the success of a composite cable management solution. With our broad history of installations in a wide variety of challenging environments, we can help you specify the best resin system and the right structural properties to ensure long life and low cost of ownership.

AutoCAD, PDMS

We can assist you in the design process with AutoCAD details. In addition, Enduro's cable tray offering is available in PDMS. Contact us today for more information.

Service and support

Our customer service desk is available to assist with questions, product selection or quotes. Please call us today at 800-231-7271 or email sales@endurocomposites.com.

Our Broad Experience

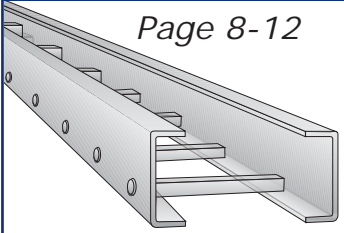
Offshore Platforms
Subsea Applications
Floating Offshore Systems
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Refineries
Liquefied Natural Gas (LNG)
Chemical Plants

Petrochemical Complex
Fertilizer, Potash Plants
Pulp & Paper
Copper Refineries
Aluminum Refineries
Zinc Refineries
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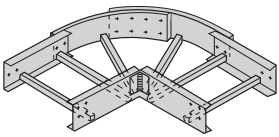
Desalination Plants
Salt Processing
Grain Refining
Food Processing
Water & Wastewater Treatment
Electronics Etching/Clean Rooms
Tunnels, Bridges, Causeways
Non-Conductive Applications

Quick Find Index

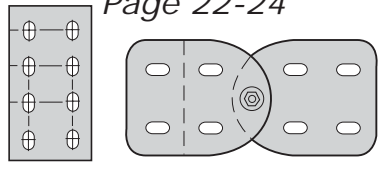
Ladder Cable Tray
Page 8-12



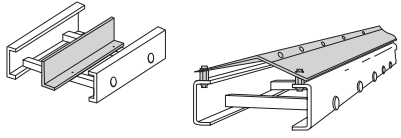
Ladder Cable Tray Fittings
Page 13-21




Ladder Cable Tray Splice Plates
Page 22-24



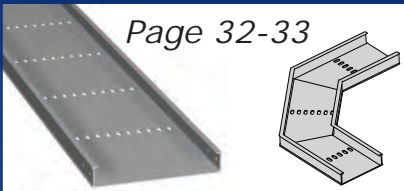
Ladder Cable Tray Accessories
Page 25-27



Channel-Type Instrumentation Tray
Page 28-31



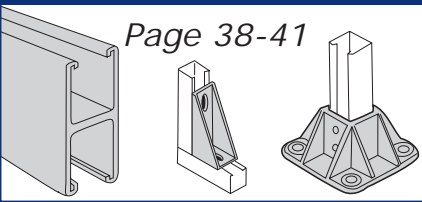
Flanged-Type Instrumentation Tray
Page 32-33



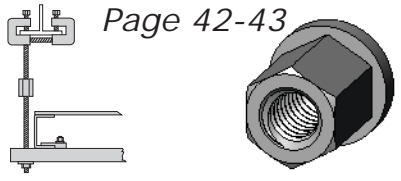
Wireway
Page 34-37



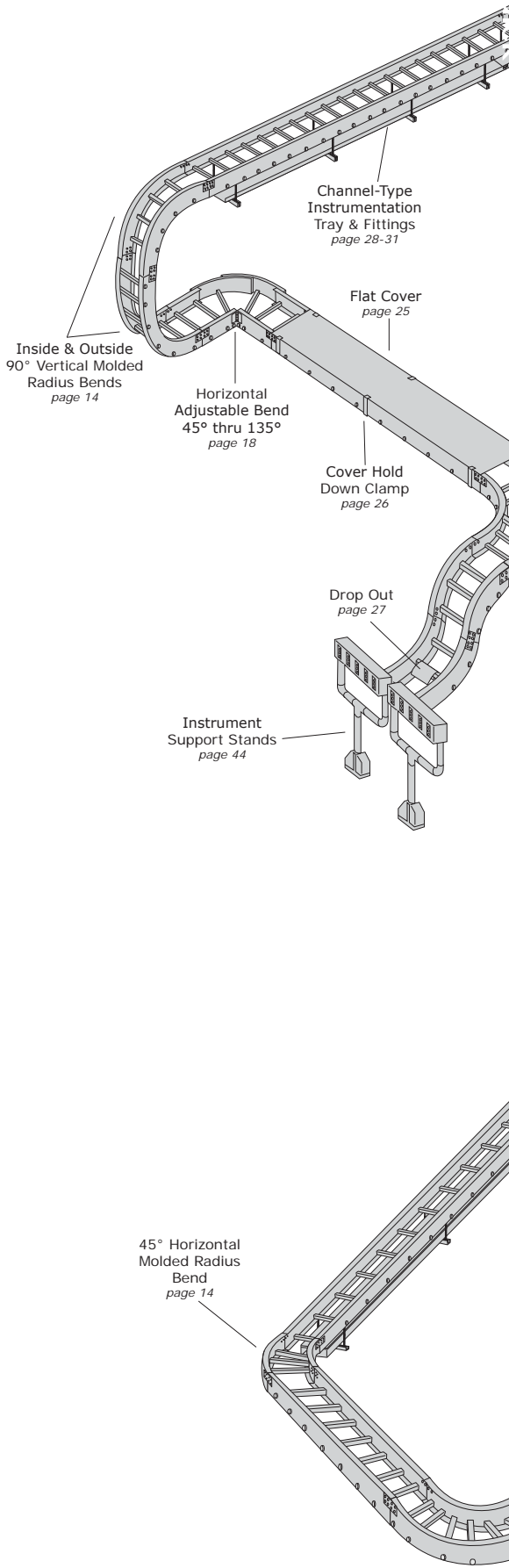
Support Systems & Strut
Page 38-41

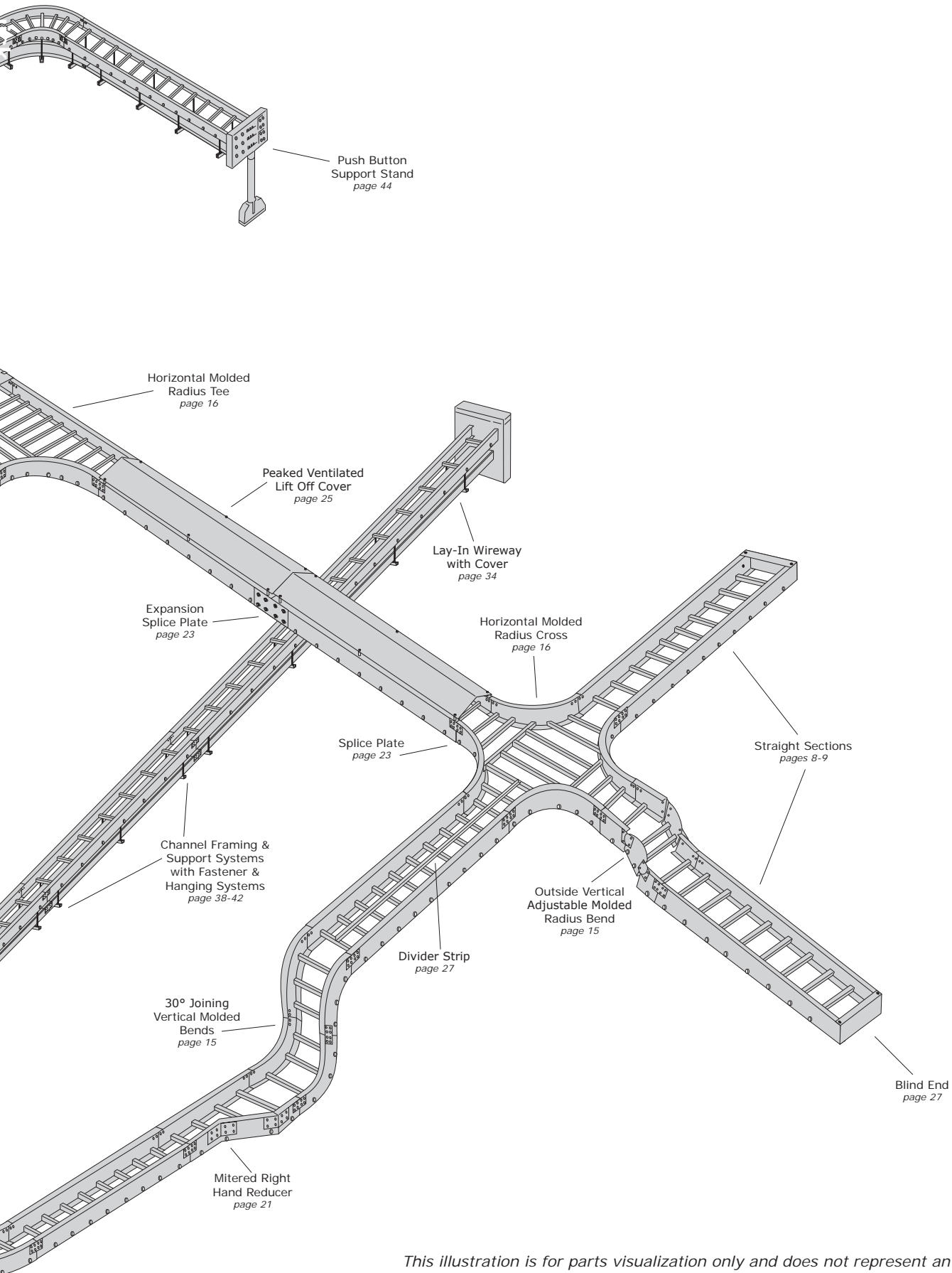


Fastener & Hanger Systems
Page 42-43



Instrument & Push Button Stands
Page 44



*This illustration is for parts visualization only and does not represent an actual layout.
Not all parts are pictured here.*

FRP/GRP Technical Data

Typical Properties of Structural FRP/GRP

Longitudinal Direction

Mechanical (coupon)	FR-P	FR-VE
Ultimate Tensile Strength, PSI (ASTM D638)	30,000	35,000
Ultimate Compressive Strength, PSI (ASTM D695)	30,000	35,000
Ultimate Flexural Strength, PSI (ASTM D790)	30,000	35,000
Tensile Modulus, PSI x 10 ⁶	2.5	3.0
Compressive Modulus, PSI x 10 ⁶	2.5	2.5
Flexural Modulus, PSI x 10 ⁶	1.6	2.0
Ultimate Shear Strength, PSI	5,500	7,000
Ultimate Bearing Stress, PSI	30,000	35,000
Izod Impact Strength, Ft.-Lbs. per inch of notch (ASTM D256) (sample thickness 1/8" except 1/4" for rod)	25	30

Transverse Direction

Mechanical (coupon)	FR-P	FR-VE
Ultimate Tensile Strength, PSI	7,000	10,000
Ultimate Compressive Strength, PSI	15,000	20,000
Ultimate Flexural Strength, PSI	10,000	14,000
Tensile Modulus, PSI x 10 ⁶	0.8	1.0
Compressive Modulus, PSI x 10 ⁶	1.0	1.2
Flexural Modulus, PSI x 10 ⁶	0.8	1.0
Ultimate Shear Strength, PSI	5,500	6,000
Ultimate Bearing Stress, PSI	30,000	35,000
Izod Impact Strength, Ft.-Lbs. per inch of notch (ASTM D256)	4	5
Barcol Hardness (ASTM D2583-75)	50	50

Electrical

Mechanical (coupon)	FR-P	FR-VE
Electric Strength, short term in oil, 1/8", vpm (ASTM D149)*	200	200
Electric Strength, short term in oil, KV per inch	35	35
Dielectric Constant, 60 Hz. (ASTM D150)*	5.6	5.2
Dissipation Factor, 60 Hz. (ASTM D150)*	0.03	0.03
Arc Resistance, seconds (ASTM D495)**	120	120

Full Section in Bending

Mechanical (coupon)	FR-P	FR-VE
Modulus of Elasticity, PSI x 10 ⁶	2.5	3.0
Tensile Strength, PSI	20,000	25,000
Compressive Strength, PSI	20,000	25,000

Fire Retardant Properties

Mechanical (coupon)	FR-P	FR-VE
Flame Resistance, ign/burn, seconds (FTMS 406-2023)	75/75	75/75
Intermittent Flame Test, rating (HLT-15)	100	100
Flammability Test	average time of burning 5 seconds, average extent of burning 15mm (ASTM D635)	
Surface Burning Characteristics, maximum (ASTM E84)	25	25

Thermal

Mechanical (coupon)	FR-P	FR-VE
Thermal Coefficient of Expansion Inches/Inch/°F (ASTM D696)**	5 x 10 ⁻⁶	5 x 10 ⁻⁶
Thermal Conductivity, BTU per Sq. Ft./Ht./°F/In. (ASTM C-177-76)	4	4
Specific Heat, BTU/Lb./°F	0.28	0.28

Other

Mechanical (coupon)	FR-P	FR-VE
Density, Lbs./In. ³ (ASTM D792)	0.065	0.065
Specific Gravity (ASTM D792)	1.80	1.80
Water Absorption, Max. % by weight (24 hour immersion) (ASTM D570)	.50	.50

Note: 1 PSI = 6.894 K Pa; 1 Ft.-Lb./In. = 5.443 kg.-m/m; * Specimen tested perpendicular to laminate face ** Indicates reported value measured in longitudinal direction; Depending on the specific glass content and resin, the strength and stiffness properties may be significantly higher. Contact us for specific values on Halogen-Free Low Smoke Plus resin properties.

Concentric Static Load (if required)

A concentrated static load is not included in the table on page 9. Some user applications may require that a given concentrated static load be imposed over and above the working load. Such concentrated static load represents a static weight applied between the side rail at midspan. When so specified, the concentrated static load may be converted to an equivalent load (W_e) in pounds per linear foot (kg/m) using the formula to the below right and added to the static weight of cable in the tray. This combined load may be used to select a suitable load/span designation (table on page 9).

If the combined load exceeds the working load shown, please contact us. This data was obtained from the NEMA and NEC Standards Publications and other sources to assist in the proper selection of the most appropriate cable tray type offered by Enduro.

$$W_e = \frac{2 \times (\text{Concentrated Static Load})}{\text{span length (ft or m)}}$$

Thermal Contraction & Expansion

The table to the right compares the thermal contraction and expansion based on various temperature differentials for fiberglass, steel and aluminum cable trays. The values shown represent the length of cable tray that will produce a 1/8" movement between expansion connectors for the indicated temperature differential. Fiberglass has the least movement. Enduro has expansion connectors to provide for total movement of 5/8".

Fiberglass vs Steel vs Aluminum

Temp. Differential	Fiberglass Ft. (m)	Steel Ft. (m)	Aluminum Ft. (m)
25°F (14°C)	417 (126)	320 (97)	162 (49)
50°F (28°C)	208 (63)	160 (48)	81 (25)
75°F (42°C)	138 (42)	106 (32)	54 (16)
100°F (56°C)	104 (32)	80 (24)	40 (12)
125°F (69°C)	83 (25)	63 (19)	32 (10)
150°F (83°C)	69 (21)	53 (16)	26 (8)
175°F (97°C)	59 (17)	45 (13)	23 (6)

Effect of Temperature - FRP/GRP

Strength properties of reinforced plastics are reduced when continuously exposed to elevated temperatures. Working loads shall be reduced when based on the table to the right. Percentages shown are approximate. If unusual temperature conditions exist, please contact us for consultation. Below freezing temperatures do not adversely affect the load rating capability of the tray. Fiberglass does not become brittle at below freezing temperatures. Careful review should be made of applications involving service temperatures over 200°F.

Temp.	Polyester Strength %	Vinyl Ester Strength %
75°F (24°C)	100%	100%
100°F (38°C)	90%	100%
125°F (52°C)	78%	100%
150°F (66°C)	68%	90%
175°F (79°C)	60%	90%
200°F (93°C)	52%	75%

The test values in the chart below were obtained from tests conducted by Enduro's vinyl ester resin supplier. The values shown, although obtained from an actual coupon test, are intended for illustrative purposes only, and not for use in design calculations. The values for polyester are slightly lower.

Test Temp. °F (°C)	-100° (-73°)	-50° (-46°)	0° (-18°)	50° (10°)	77° (25°)	100° (38°)	150° (66°)	200° (93°)	250° (121°)	300° (149°)
Flex. St., PSI, ASTM D790	101,500	86,400	79,500	72,300	68,100	66,300	58,700	27,400	13,200	9,200
Flex. Mod., PSI x 10 ⁶ , ASTM D790	3.36	3.32	3.42	3.38	3.24	3.29	3.07	1.98	0.98	0.83
Tensile St., PSI, ASTM D638	84,100	70,400	63,900	58,000	56,100	54,600	49,900	41,800	29,600	22,000

Corrosion Resistance of Resin Systems

Enduro offers a variety of resin systems which are listed in more detail on page 9. The two resin systems most often used are isophthalic polyester fire-retardant (FR-P) and vinyl ester fire-retardant (FR-VE). Polyester is more widely used and sufficient for most applications while vinyl ester is recommended where strong acids (such as hydrochloric acid), strong alkalies (such as caustic soda), organic solvents and organic conditions exist. An abbreviated guide is provided below to assist in the selection of the proper standard resin system for individual application.

Polyester and vinyl ester resin systems are available in conductive formulation. Contact us for corrosion resistance information for halogen-free and halogen-free low smoke plus resins.

All composite materials have an ultra-violet light inhibiting chemical additive and has a maximum flame spread of 25 or less, per ASTM E-84 (Class 1 flame spread). All pultruded products have complete synthetic veil coverage (outer surfacing fabric) to provide maximum chemical and UV protection.

Chemicals	75°F (24°C)	160°F (71°C)	Chemicals	75°F (24°C)	160°F (71°C)
Acetic Acid 5%	FR-P	FR-P	Magnesium Chloride	FR-P	FR-P
Acetic Acid 25%	FR-P	FR-VE-210° (*)	Methyl Alcohol 10%	FR-P	FR-VE-150° (*)
Aluminum Potassium Sulfate 5%	FR-P	FR-P	Naphtha	FR-P	FR-P
Ammonium Hydroxide 10%	FR-P	FR-VE-150°	Nitric Acid 5%	FR-P	FR-P
Ammonium Nitrate	FR-P	FR-P	Nitric Acid 20%	FR-VE	FR-VE-120° (*)
Benzenesulfonic Acid 5%	FR-P	FR-P	Phosphoric Acid 10%	FR-P	FR-P
Calcium Chloride	FR-P	FR-P	Phosphoric Acid 30%	FR-P	FR-P
Carbon Tetrachloride	FR-VE	FR-VE-100° (*)	Phosphoric Acid 85%	FR-P	FR-P
Chlorine Dioxide 15%	FR-P	FR-VE-150° (*)	Sodium Bicarbonate 10%	FR-P	FR-P
Chromic Acid 5%	FR-P	FR-VE-150° (*call)	Sodium Bisulfate	FR-P	FR-P
Copper Sulfate	FR-P	FR-P	Sodium Carbonate	FR-P	FR-VE
Diesel Fuel No. 1	FR-P	FR-P	Sodium Chloride	FR-P	FR-P
Diesel Fuel No. 2	FR-P	FR-P	Sodium Hydroxide 1-50%	FR-VE	FR-VE-120° (*)
Ethylene Glycol	FR-P	FR-P	Sodium Hypochlorite 5%	FR-P	FR-VE-120° (*)
Fatty Acids 100%	FR-P	FR-P	Sodium Nitrate	FR-P	FR-P
Ferrous Sulfate	FR-P	FR-P	Sodium Silicate	FR-P	FR-VE-210° (*)
Fluosilicic Acid 0-20%	FR-VE	FR-VE (call)	Sodium Sulfate	FR-P	FR-P
Hydrochloric Acid 1%	FR-P	FR-P	Sulfuric Acid 0-30%	FR-P	FR-P
Hydrochloric Acid 15%	FR-P	FR-VE-180° (*)	Sulfuric Acid 30-50%	FR-VE	FR-VE
Hydrochloric Acid 37%	FR-P	FR-VE-150° (*)	Sulfuric Acid 50-70%	FR-VE	FR-VE-180° (*)
Hydrogen Sulfide	FR-P-140°	FR-VE-210°	Trisodium Phosphate 25%	FR-P	FR-VE-210° (*)
Kerosene	FR-P	FR-P	Trisodium Phosphate - All	FR-VE	FR-VE-210° (*)
			Water, Distilled	FR-P	FR-P

FR = Fire-Retardant; P = Polyester Resin; VE = Vinyl Ester Resin; (*) = Not recommended to exceed this temperature; call = Call for recommendations. Information contained in this chart is based on data from raw material suppliers and collected from several years of actual industrial applications. Temperatures are not the minimum nor the maximum (except where specifically stated) but represent standard test conditions. The products may be suitable at higher temperatures, but individual test data should be required to establish such suitability. The recommendations or suggestions contained in this chart are made without guarantee or representation as to results. We suggest that you evaluate these recommendations and suggestions in your own laboratory or by actual field trial prior to use.

Ladder Cable Tray Selection Guide

Imperial Straight Section Part Numbers

TYPE - (W) - (RS) - (L)

Example: EHL6 - 06 - 06 - 20

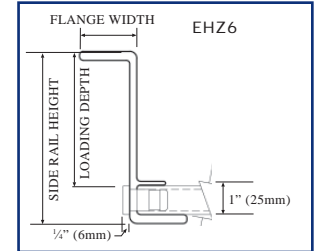
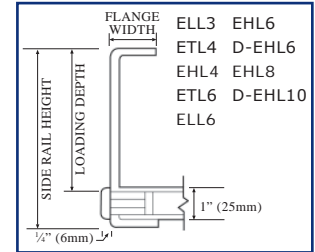
System No.	Side Rail Height	Width	Rung Spacing	Length
See Ladder Cable Tray Selection Guide Below	3=3"	06=6"	06=6"	10=10 Ft.
	4=4"	09=9"	09=9.25"	20=20 Ft.
	6=6"	12=12"	12=12"	
	8=8"	18=18"	18=18.5"	
	10=10"	24=24"		
		30=30"		
		36=36"		

Tray supplied with standard rung.

For Marine Rung, add "MR" at the end of part number. Example: EHL6-06-06-20-MR

Strut rung available upon request.

System Diagrams



Width represents inside dimensions.

Solid bottom available upon request. Rung connections are made with a mechanical and chemical lock. See specification page 12, item 5.1.2 for details.

Please contact us for any other custom modifications.

18.5" (470mm) rung spacing not available for 30" (750mm) and 36" (900mm) widths.

Metric Straight Section Part Numbers

TYPE - (W) - (RS) - (L)

Example: EHL6 - 150 - 150 - 6M

System No.	Side Rail Height	Width	Rung Spacing	Length
See Ladder Cable Tray Selection Guide Below	3=3"	150=150mm	150=150mm	3M=3m
	4=4"	225=225mm	235=235mm	6M=6m
	6=6"	300=300mm	300=300mm	
	8=8"	450=450mm	470=470mm	
	10=10"	600=600mm		
		750=750mm		
		900=900mm		

Tray supplied with standard rung.

For Marine Rung, add "MR" at the end of part number. Example: EHL6-150-150-6M-MR

Strut rung available upon request.

Ladder Cable Tray Selection Guide

Standard System Number (Polyester Resin)	Optional Sys. Number (Δ)=insert code; see bottom of pg.	Side Rail Height In. (mm)*	Loading Depth In. (mm)*	Flange Width In. (mm)*	Min. Channel Thickness In. (mm)*	NEMA Class	Safety Factor	UL Listing	
ELL3	EL(Δ)3	3" (75)	1 ¹³ / ₁₆ " (46)	1" (25)	³ / ₁₆ " (4.8)	8A	1.5	-	
ETL4	ET(Δ)4	4" (100)	2 ⁷ / ₈ " (73)	1 ¹ / ₈ " (28)	⁵ / ₃₂ " (4.0)	8A	1.5	-	
EHL4	EH(Δ)4	4" (100)	2 ³ / ₄ " (70)	1 ¹ / ₈ " (28)	¹ / ₄ " (6.4)	12C	1.5	Class C	
ELL6	EL(Δ)6	6" (152)	4 ¹³ / ₁₆ " (122)	1 ⁵ / ₈ " (41)	³ / ₁₆ " (4.8)	20B	1.5	-	
EHL6	EH(Δ)6	6" (152)	4 ³ / ₄ " (121)	1 ⁵ / ₈ " (41)	¹ / ₄ " (6.4)	20C	1.5	Class C	
D-EHL6	D-EH(Δ)6	6" (152)	4 ¹ / ₁₆ " (119)	1 ⁵ / ₈ " (41)	⁵ / ₁₆ " (8.0)	20C	1.5	Class C	
EHZ6	EHZ(Δ)6	6" (152)	4 ¹ / ₁₆ " (119)	2" (51)	¹ / ₄ " (6.4)	20C	1.5	-	
EHL8	EH(Δ)8	8" (203)	6 ¹ / ₁₆ " (170)	1 ³ / ₄ " (44)	⁵ / ₁₆ " (8.0)	20C	1.5	Class C	
D-EHL10	D-EH(Δ)10	10" (254)	8 ⁵ / ₈ " (219)	2 ³ / ₄ " (70)	³ / ₈ " (9.5)	30C	2.0	-	

(Δ) = Insert one of the following letters for resin designation

V = Vinyl Ester; S = Halogen-Free Polyester; VS = Halogen-Free Vinyl Ester;

Y = Halogen-Free Low Smoke Plus; RT = Conductive

* (mm) value is nominal.

Please note: Custom resin systems may require additional lead times.

Ladder Cable Tray Selection Guide

Resin Systems

Below is an overview of the common resin systems we offer. When choosing a resin type for your application, we highly recommend consulting with us regarding the application to be sure the proper resin is specified. Considerations include corrosion environment, temperature, fire resistance, smoke and smoke toxicity requirements and conductivity / resistivity requirements. Regarding the corrosion environment, certain chemical concentrations and temperatures will dictate whether a polyester or epoxy vinyl ester system is preferred for optimum durability.

Isophthalic Polyester

This industrial-grade polyester resin system offers very good weathering performance (resistance to UV) and corrosion resistance. This system is especially suitable for seawater environments.

Vinyl Ester

This resin system also delivers good weathering performance, but is superior to a polyester with respect to corrosion resistance and high heat environments. Epoxy vinyl ester resins provide greater toughness and considerably higher strength at elevated temperatures. They also provide superior resistance to chemical attack in corrosive chemical service.

Conductive

This Isophthalic Polyester-based resin is formulated to comply with ABS requirements for conductivity. To provide superior resistance to chemical attack, the conductive formulation is also available in a Vinyl Ester base.

Halogen-Free Polyester

This system offers similar performance attributes as our standard Isophthalic Polyester, but without the use of halogens.

Halogen-Free Vinyl Ester

This system offers similar performance attributes as our Vinyl Ester, but without the use of halogens.

Halogen-Free Low Smoke Plus

This modified-acrylic based resin is suitable for applications which require extremely low-smoke development in the case of fire. This resin system is commonly used in tunnel applications.

	Tray Weight Lbs/Ft. (kg/m) 12" width, 12" rung spacing	Working (Allowable) Load Lbs./Ft. (kg/m)							
		8' (2.4m)	10' (3m)	12' (3.7m)	14' (4.3m)	16' (4.9m)	18' (5.5m)	20' (6.1m)	30' (9.1m)
	2.0 (3.0)	50 (74)							
	3.0 (4.5)	50 (74)							
	3.0 (4.5)	205 (303)	144 (214)	100 (148)					
	4.5 (6.7)		300 (446)	208 (310)	153 (228)	117 (174)	93 (138)	75 (112)	
	4.5 (6.7)				204 (304)	156 (233)	123 (184)	100 (149)	
	4.9 (7.3)				272 (405)	208 (310)	164 (244)	133 (198)	
	4.8 (7.1)				204 (304)	156 (233)	123 (184)	100 (149)	
	6.4 (9.5)				204 (304)	156 (233)	123 (184)	100 (149)	
	9.4 (14.1)						278 (413)	225 (335)	100 (149)

Enduro straight sections that are UL Listed are for 10' and 20' lengths. All molded and mitered fittings associated with these tray types are also UL listed. NEMA classes and UL listings in this table are for polyester and vinyl ester resin systems only. Values in Working (Allowable) Load are applicable to all resin systems. To convert 2.0 safety factor to NEMA standard 1.5 for "+" load class, multiply published load by 1.33. +Working (Allowable) Load exceeds standard NEMA load classification.

Installation Guide - Ladder Cable Tray

Installation

The installation of Enduro Cable Tray should be made in compliance with the standards set forth by the National Electric Code and NEMA Publications VE-2 (current issue). Enduro supplies made to order, pre-fabricated cable ladder tray and fittings as specified by the purchaser.

Always observe common safety practices when assembling tray and fittings in the field. Assemble in well-ventilated areas as dust from field cuts can accumulate. This presents no serious health hazard but can cause skin irritation and, if allowed to accumulate with grease and other machining lubricants, can become abrasive. Personnel should wear safety goggles, dust mask, coveralls or a shop coat when sawing, machining and/or sanding. Caution should also be noted when cutting as dust from carbon fiber is also electrically conductive and additional considerations apply.

Avoid generating excessive heat in any machining operation, as heat softens the bonding resin in the

fiberglass, resulting in a ragged rather than a clean-cut edge.

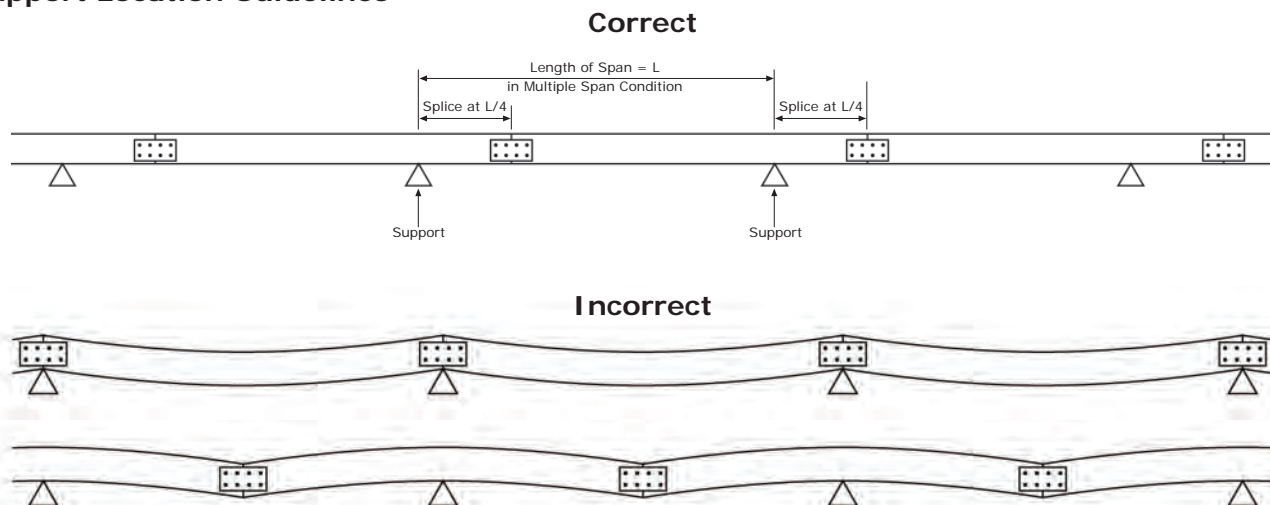
Avoid excessive pressure when sawing, drilling, routing, etc. Use carbide-tipped drill bits and saw blades for extended tool life.

The use of lubricant during machining is not recommended.

To avoid chipping of material at cut edges, secure cable tray and fittings properly during field cut operations. We recommend the use of Enduro sealant (pg. 25) for sealing surfaces and cut edges after field cuts are made.

When using adhesives, be sure to prepare the surface properly before applying. Follow label instructions carefully. A combination of mechanical fasteners and adhesives make the strongest most reliable connections.

Support Location Guidelines*



*These guidelines apply when using standard splice plates. For location flexibility, heavy duty splice plates (pg. 22) allow for support location anywhere in the span.



WARNING
NOT TO BE USED
AS A WALKWAY

Warning! Not to be used as a walkway, ladder or support for personnel. To be used only as a mechanical support for cables and tubing.

ENDURO COMPOSITE SYSTEMS HOUSTON, TEXAS

WARNING! CABLE TRAYS ARE NOT DESIGNED FOR USE AS WALKWAYS

Reference NEMA VE-2 (current issue)

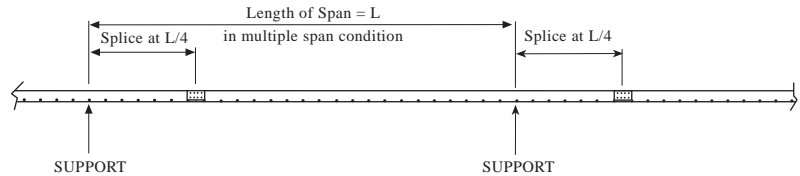
In as much as fiberglass cable tray is designed as a support for power or control cables, or both; it is not intended or designed to be a walkway for personnel. The user is urged to display appropriate warning cautioning against the use of this support as a walkway.

Actual Size Label

Ladder Cable Tray - Installation Guide

Straight Sections

Supports must be located so that connector (splice joints) between horizontal runs fall between the support point and the quarter point of the span.



Standard engineering practice requires that the splice joints be located where they will resist little or no bending moment. This allows the cable tray system to act as a continuous member with spans working in conjunction with one another to resist loading. When a cable tray system is installed with the splice joints located directly over the support, the previous continuous span condition is changed to one of a number of simple spans.

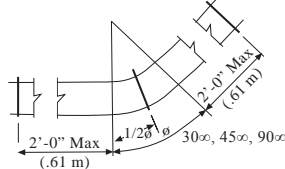
These spans act independently of each other and excessive stress will occur at substantially less loading.

Vertical straight lengths should be supported at intervals dictated by the building structure not exceeding 24 Ft. on centers.

A support should be located 2 Ft. on each side of an expansion connection.

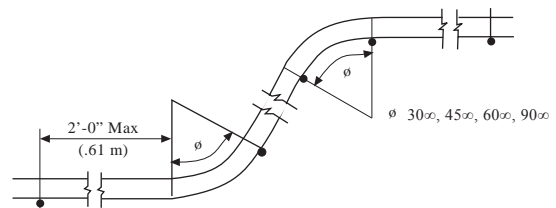
Horizontal Fitting Supports

Supports should be placed within 2 Ft. (.61m) of each fitting extremity, and as follows: 90 degree supports at the 45 degree point of the arc, 45 degree supports at the 22.5 degree point of the arc (except for the 12" radii), 30 degree supports at the 15 degree point of the arc (except for the 12" radii).



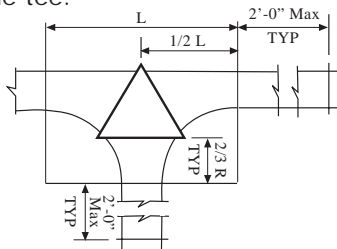
Vertical Fitting Supports

Vertical fittings at the top runs should be supported at each end. Fittings at the bottom of runs should be supported at the top of the fitting, and within 2 Ft. (.61m) of the lower extremity of the fitting.



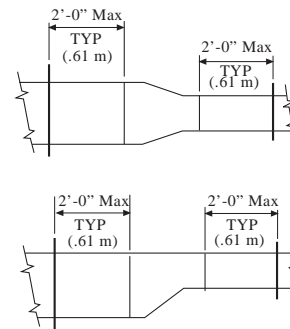
Horizontal Tee Supports

Supports should be placed within 2 Ft. (.61m) of each of the three openings connected to other cable tray items for 12" (305mm) radius. On all other radii, at least one support should also be placed under each side rail of the tee.



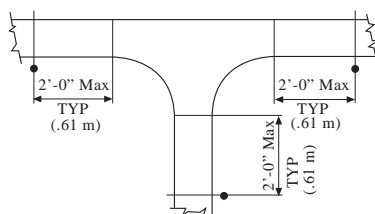
Reducer Fitting Supports

Straight reducer and right/left hand reducer fittings should be supported within 2 Ft. (.61m) of each fitting extremity.



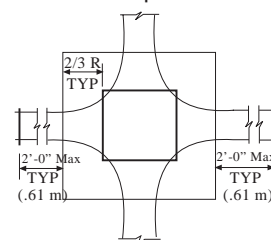
Vertical Tee Supports

Vertical tee fittings should be supported within 2 Ft. (.61m) of each fitting extremity.



Horizontal Cross Supports

Supports should be placed within 2 Ft. (.61m) of the four openings connected to other cable tray items for the 12" (305mm) radius. On all other radii, at least one support should also be placed under each side rail of the cross.



Specification - Ladder Cable Tray

1.0 Scope

- 1.1 The cable tray system shall conform to the material and fabrication requirements as per this specification.

2.0 Standards

- 2.1 The cable tray system shall conform to applicable sections of:
- 2.1.1 NEMA Standard FG-1 (latest edition)
 - 2.1.2 National Electric Code (NEC)
 - 2.1.3 ASTM E-84 (Class 1 Rating)
 - 2.1.4 UL (Underwriters Laboratories, Inc.) Standards for Non-Metallic Cable Trays.
 - 2.1.5 CSA INTERNATIONAL (National Standard of Canada) CAN/CSA-C22.2 No. 126 Cable Tray Systems

3.0 General

3.1 Tray Requirements

- 3.1.1 Tray widths 6" (152mm), 9" (229mm), 12" (305mm), 18" (457mm), 24" (610mm), 30" (762mm), and 36" (914mm)
- 3.1.2 Lengths (as required): 10 ft, 20 ft, 3m, and 6m
- 3.1.3 Rung spacing (as required):
6" (152mm), 9.25" (235mm), 12" (305mm), and 18.5" (470mm)
Rung Type (as required):
Standard Rung, Marine Rung or Strut Rung
- 3.1.4 Radius of fittings (as required):
12" (305mm), 24" (610mm), and 36" (914mm)
- 3.1.5 Resin Systems (as required):
Isophthalic Polyester, Vinyl Ester, Conductive, Halogen-Free Polyester, Halogen-Free Vinyl Ester, or Halogen-Free Low Smoke Plus

3.2 Loading Requirements

- 3.2.1 There shall be three working load classifications of fiberglass cable tray based on 20 Ft. (6m) support span:

Class	Working Load	FOS
A	50 Lbs./Lineal Ft.	1.5
B	75 Lbs./Lineal Ft.	1.5
C	100 Lbs./Lineal Ft.	1.5

- 3.2.2 Span support criteria shall be as specified (Reference the following table)

Support Span (Ft.)	Working Load in Lbs./Lineal Ft.		
	Class A	Class B	Class C
30	-	-	100
20	50	75	100
18	62	92	123
16	78	117	156
14	102	150	200
12	139	208	-
10	200	-	-

- Independent test reports in conformance to NEMA FG-1 are required.

- 3.2.3 Nominal loading depth (as required):
2" (51mm), 3" (76mm), 5" (127mm), 7" (178mm) and 9" (229mm)

4.0 Materials

- 4.1 The glass fiber to resin content shall be maintained between 45 to 55 percent by weight in all pultruded components except flat sheet which shall be 35 to 45 percent; and, 25 to 45 percent by weight in all molded components.
- 4.2 All composite material shall have an ultraviolet light inhibiting chemical additive to resist UV degradation.

- 4.3 All composite material shall be fire retardant and have a flame spread rating of 25 or less (Class 1 Rating) when tested in accordance with ASTM E-84.
- 4.4 All pultruded products shall have a complete surfacing veil to provide maximum chemical and UV protection.

5.0 Construction

- 5.1 Straight section tray shall be fiberglass reinforced meeting all the requirements herein described.
- 5.1.1 The side rail members must turn in.
 - 5.1.2 All rung to side member connections shall have both a mechanical and a chemical (adhesive) lock. The tray shall be assembled by the use of a locking pin made of fiberglass reinforced thermoplastic. The locking pin shall be inserted under pressure with a high strength, chemical resistant adhesive.
 - 5.1.3 All bonded connections must be sanded to maximize adhesion and structural integrity.
 - 5.1.4 The tray interior shall be clear of all projections or sharp objects.
 - 5.1.5 All straight section lengths shall be pre-drilled to accept connector plates.
 - 5.1.6 All cut ends and drilled holes (factory and field) shall be resin coated.
- 5.2 Fittings are to be pre-fabricated and shall meet all the requirements herein described.
- 5.2.1 All fittings shall have a nominal 9.25" rung spacing.
 - 5.2.2 All fittings shall be pre-drilled to accept connector plates.
 - 5.2.3 All fittings shall be designed and installed so as to have the same load carrying capacity as the straight sections.
 - 5.2.4 Rung to side member connections shall have both a mechanical and/or chemical (adhesive) lock. Fittings shall be assembled by use of a locking pin made of fiberglass reinforced thermoplastic and/or a stainless steel rivet. The locking pin shall be inserted under pressure with a high strength chemical resistant adhesive.
- All radius 90° and 45° horizontal and vertical bends, all tees and crosses for tray types using 6" (152mm), and most 4" (101mm) and 8" (202mm), C-channel members shall be of concentric curved molded design and made by resin transfer molding.

5.3 Connector Plates and Fasteners:

- 5.3.1 Connector plates shall be fiberglass and designed with sufficient strength so they may be installed between 0.2 and 0.3 of the length of the span from the support without derating the load carrying capacity of the tray.
- 5.3.2 Connector plates for conductive tray shall be stainless steel.
- 5.3.3 Fasteners for connector plates shall be 3/8" (9.5mm) diameter Type 316 Stainless Steel, Monel, Silicon, Bronze, or FRP/GRP studs & hex nuts as required.

5.4 Accessories

- 5.4.1 The manufacturer shall be capable of providing all necessary parts (i.e. clamps, support assemblies, etc.) for the installation of a complete fiberglass tray system.

6.0 Acceptable Manufacturer

- 6.1 The fiberglass ladder-type cable tray system shall be manufactured - pultrusion, compression molded, resin transfer molded and/or fabricated by Enduro Composites, Inc., of Houston, Texas USA.

Ladder Cable Tray - Molded Fittings

Enduro concentric curved molded fittings are available in polyester and vinyl ester. **For conductive and halogen-free formulations, please contact us for availability and lead time.** It is recommended to use expansion splice plates and 1¼" long assembly fasteners when connecting to other fittings or straight lengths. Refer to page 11 in the Recommended Support Locations section. Rung connections are made with a mechanical and/or chemical lock. Please see page 12, item 5.2.4 for details.

Standards & Listings

NEMA: All 6" and 8" molded fittings = Class C. EHL 4" molded fittings = Class 20A **NEMA** **UL**
UL: All the following molded fittings are UL listed in 4", 6", and 8" in Polyester/Vinyl Ester.

Imperial Molded Fittings Part Numbers

TYPE - (Δ)(H) - (A) - (W) - (R)

Example: EHB - MC6 - 90 - 24 - 24

Type	Resin (Δ)	Side Rail Height (H)	Angle (A)	Width (W)	Radius (R)
EHB = Horizontal Bend	MC = Polyester	4 = 4"	30 = 30°	06 = 6"	12 = 12"
EIV = Vertical Inside	MV = Vinyl Ester	6 = 6"	45 = 45°	09 = 9"	24 = 24"
EOV = Vertical Outside	MRT = Conductive	8 = 8"	60 = 60°	12 = 12"	36 = 36"
EHT = Horizontal Tee	MS = Poly Halogen-Free		90 = 90°	18 = 18"	
EHC = Horizontal Cross				24 = 24"	
EVT = Vertical Tee For vertical tee specify "up" or "down" at end of catalog code				30 = 30"	
				36 = 36"	

Covers = EC before part number; example EC-EHB-MC6-90-24-24. Fasteners for covers are separate order item, see page 43.

Strut Rung = SR after part number; example EHB-MC6-90-24-24-SR. Marine Rung = MR after part number; example EHB-MC6-90-24-24-MR.

For molded fitting availability, please see pages 13-16.

Metric Molded Fittings Part Numbers

TYPE - (Δ)(H) - (A) - (W) - (R)

Example: EHB - MC6 - 90 - 600 - 600

Type	Resin (Δ)	Side Rail Height* (H)	Angle (A)	Width (W)	Radius (R)
EHB = Horizontal Bend	MC = Polyester	4 = 100mm	30 = 30°	150 = 150mm	300 = 300mm
EIV = Vertical Inside	MV = Vinyl Ester	6 = 150mm	45 = 45°	225 = 225mm	600 = 600mm
EOV = Vertical Outside	MRT = Conductive	8 = 200mm	60 = 60°	300 = 300mm	900 = 900mm
EHT = Horizontal Tee	MS = Poly Halogen-Free		90 = 90°	450 = 450mm	
EHC = Horizontal Cross				600 = 600mm	
EVT = Vertical Tee For vertical tee specify "up" or "down" at end of catalog code				750 = 750mm	
				900 = 900mm	

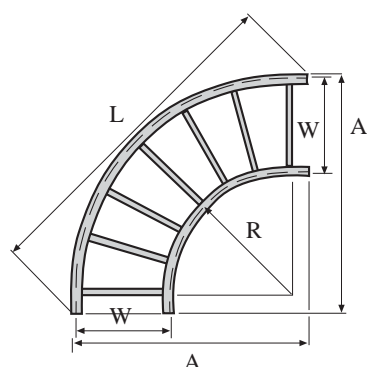
* = (mm) values are nominal. Covers = EC before part number; example EC-EHB-MC6-90-600-600. Fasteners for covers are separate order item, see page 43.

Strut Rung = SR after part number; example EHB-MC6-90-600-600-SR. Marine Rung = MR after part number; example EHB-MC6-90-600-600-MR.

90° Horizontal Bend

Part No. Key*

EHB-(Δ)(H)-90-(W)-(R)



Width	Dimension Inches (mm)					
	12" (305) Radius		24" (610) Radius		36" (914) Radius	
	A	L	A	L	A	L
6 (152)	22¾ (578)	32¾/16 (818)	34¾*** (882)	49⅞ (1248)	46¾ (1187)	66⅞ (1680)
9 (229)	25¾ (654)	36⅞/16 (926)	37¾ (959)	53⅞ (1356)	49¾ (1264)	70⅞ (1787)
12 (305)	28¾ (405)	40⅞/16 (1033)	40¾** (1035)	57⅞ (1464)	52¾ (1340)	74⅞ (1895)
18 (457)	34¾ (883)	49⅞ (1248)	46¾** (1187)	66⅞ (1680)	58¾ (1492)	83⅞ (2111)
24 (610)	40¾ (1035)	57⅞ (1464)	52¾** (1340)	74⅞ (1895)	64¾ (1645)	91⅞ (2324)
30 (762)	46¾ (1187)	66⅞ (1680)	58¾† (1492)	83⅞ (2111)	NA	NA
36 (914)	52¾ (1340)	74⅞ (1895)	64¾† (1645)	91⅞ (2324)	NA	NA

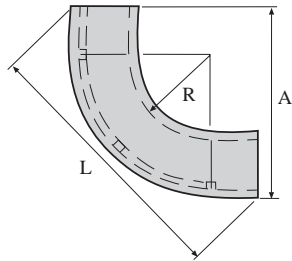
NOTE: mm values are nominal; * In Part No. Key, parentheses () = insert corresponding option code; Δ = Resin; H = Side Rail Height; R = Radius; W = Width of the inside distance from tray wall to tray wall; ** Also available in 4" and 8" side rail; *** Also available in 4" side rail; † Also available in 8" side rail

Molded Fittings - Ladder Cable Tray

90° Vertical Bend

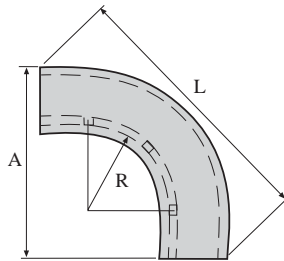
Part No. Key*

INSIDE: EIV-(Δ)(H)-90-(W)-(R)



Part No. Key*

OUTSIDE: EOY-(Δ)(H)-90-(W)-(R)



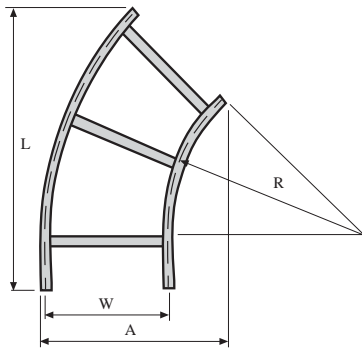
Channel Depth Inches (mm)

Radius	4" Tray		6" Tray		8" Tray	
	A	L	A	L	A	L
12 (305)	NA	NA	22 ³ / ₄ (578)	32 ³ / ₁₆ (818)	NA	NA
24 (610)	32 ¹³ / ₁₆ (833)	46 ³ / ₈ (1178)	34 ³ / ₄ (883)	49 ¹ / ₈ (1356)	36 ¹¹ / ₁₆ (932)	51 ⁷ / ₈ (1318)
36 (914)	NA	NA	46 ³ / ₄ (1187)	66 ¹ / ₈ (1680)	NA	NA

45° Horizontal Bend

Part No. Key*

EHB-(Δ)(H)-45-(W)-(R)



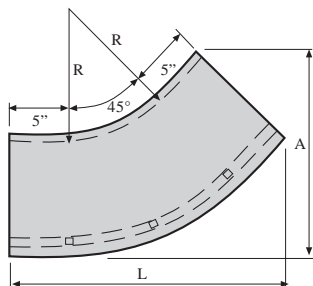
Dimension Inches (mm)

Width	12" (305) Radius		24" (610) Radius		36" (914) Radius	
	A	L	A	L	A	L
6 (152)	9 ¹⁵ / ₁₆ (227)	17 ³ / ₈ (441)	13 ⁷ / ₁₆ ** (341)	25 ⁷ / ₈ (657)	17 (432)	34 ³ / ₈ (873)
9 (229)	12 ¹⁵ / ₁₆ (329)	19 ¹ / ₂ (495)	16 ⁷ / ₁₆ (418)	28 (711)	20 (508)	36 ¹ / ₂ (927)
12 (305)	15 ¹⁵ / ₁₆ (405)	21 ⁵ / ₈ (549)	19 ⁷ / ₁₆ ** (494)	30 ³ / ₈ (765)	23 (584)	38 ⁵ / ₈ (981)
18 (457)	21 ¹⁵ / ₁₆ (557)	25 ⁷ / ₈ (657)	25 ⁷ / ₁₆ ** (646)	34 ³ / ₈ (873)	29 (737)	42 ⁷ / ₈ (1089)
24 (610)	27 ¹⁵ / ₁₆ (710)	30 ³ / ₈ (765)	31 ⁷ / ₁₆ ** (798)	38 ⁵ / ₈ (981)	35 (889)	47 ¹ / ₈ (1197)
30 (762)	33 ¹⁵ / ₁₆ (862)	34 ³ / ₈ (873)	37 ¹ / ₁₆ † (951)	42 ⁷ / ₈ (1089)	NA	NA
36 (914)	39 ¹⁵ / ₁₆ (1014)	38 ⁵ / ₈ (981)	43 ¹ / ₁₆ † (1103)	47 ¹ / ₈ (1197)	NA	NA

45° Vertical Bend

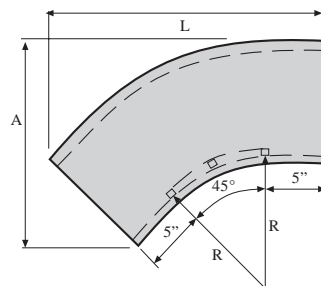
Part No. Key*

INSIDE: EIV-(Δ)(H)-45-(W)-(R)



Part No. Key*

OUTSIDE: EOY-(Δ)(H)-45-(W)-(R)



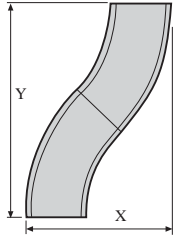
Channel Depth Inches (mm)

Radius	4" Tray		6" Tray		8" Tray	
	A	L	A	L	A	L
12 (305)	NA	NA	13 (330)	21 ¹ / ₁₆ (535)	NA	NA
24 (610)	NA	NA	16 ¹ / ₂ (419)	29 ⁹ / ₁₆ (751)	18 ¹ / ₂ (470)	30 ¹⁵ / ₁₆ (786)
36 (914)	NA	NA	NA	NA	NA	NA

NOTE: mm values are nominal; * In Part No. Key, any parentheses () = insert corresponding option code; Δ = Resin; H = Side Rail Height; R = Radius; W = Width of the inside distance from tray wall to tray wall; ** Also available in 4" and 8" side rail; *** Also available in 4" side rail; † Also available in 8" side rail

Ladder Cable Tray - Molded Fittings

Joining 45° Horizontal Bends

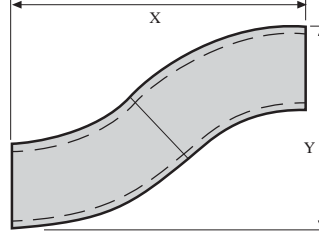


$$X = 2A - .707 (W + .5)$$

$$Y = 2L - .707 (W + .5)$$

Contact us for assembly method.

Joining 45° Vertical Bends



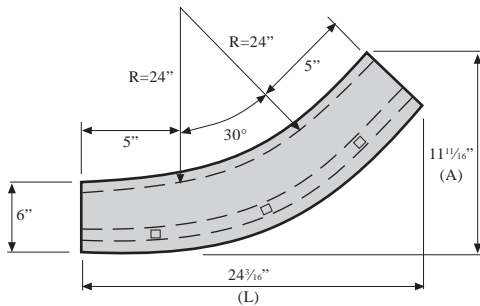
6" Side Rail
 $X = 2L - 4.24"$
 $Y = 2A - 4.24"$

8" Side Rail
 $X = 2L - 5.66"$
 $Y = 2A - 5.66"$

30° Vertical Bend

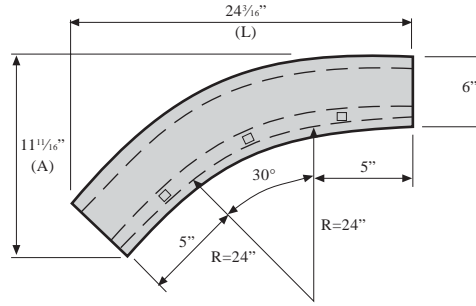
Part No. Key*

INSIDE: EIV-(Δ)6-30-(W)-24



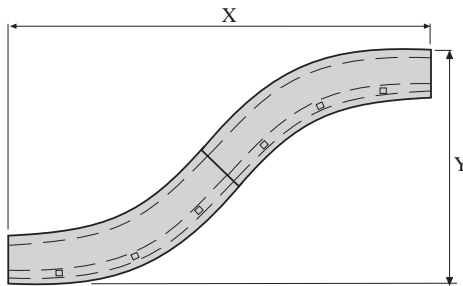
Part No. Key*

OUTSIDE: EOY-(Δ)6-30-(W)-24



Available in 6" and 24" radius depth channel.

Joining 30° Vertical Bends



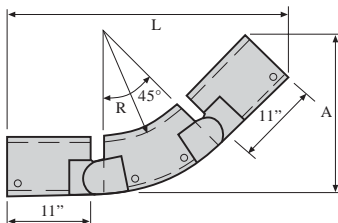
$$X = 2L - 3"$$

$$Y = 2A - 5.20"$$

Vertical Adjustable Bend

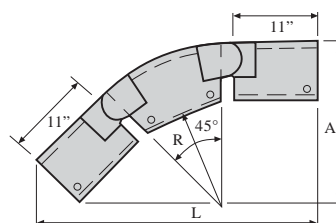
Part No. Key*

INSIDE: EIVA-(Δ)(H)-45-(W)-(R)



Part No. Key*

OUTSIDE: EOVA-(Δ)(H)-45-(W)-(R)



Dimensions Inches (mm)

Radius	A	L
12 (305)	18 (457)	35 (889)
24 (610)	22 (559)	43 (1092)
36 (914)	25 (635)	52 (1321)

Dimensions apply at 45° setting.
 For travel dimensions, contact us.

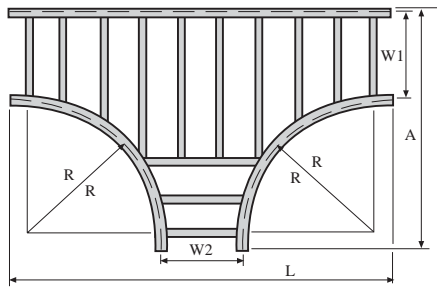
NOTE: mm values are nominal; * In Part No. Key, any parentheses () = insert corresponding option code; Δ = Resin;
 H = Side Rail Height; R = Radius; W = Width of the inside distance from tray wall to tray wall

Molded Fittings - Ladder Cable Tray

Horizontal Tee

Part No. Key*

EHT-(Δ)(H)-(W1)-(W2)-(R)



Contact us for dimensions on reducing tee.

Dimension Inches (mm)

Width	12" (305) Radius		24" (610) Radius**		36" (914) Radius	
	A	L	A	L	A	L
6 (152)	22¾ (578)	39 (991)	34¾ (883)	63 (1600)	46¾ (1187)	87 (2210)
9 (229)	25¾ (654)	42 (1067)	37¾ (959)	66 (1676)	49¾ (1264)	90 (2286)
12 (305)	28¾ (730)	45 (1143)	40¾ (1035)	69 (1753)	52¾ (1340)	93 (2362)
18 (457)	34¾ (883)	51 (1295)	46¾ (1187)	75 (1905)	58¾ (1492)	99 (2515)
24 (610)	40¾ (1035)	57 (1448)	52¾ (1340)	81 (2057)	64¾ (1645)	105 (2667)
30 (762)	46¾ (1187)	63 (1600)	58¾ (1492)	87 (2210)	70¾ (1797)	111 (2819)
36 (914)	52¾ (1340)	69 (1753)	64¾ (1645)	93 (2362)	76¾ (1949)	117 (2972)

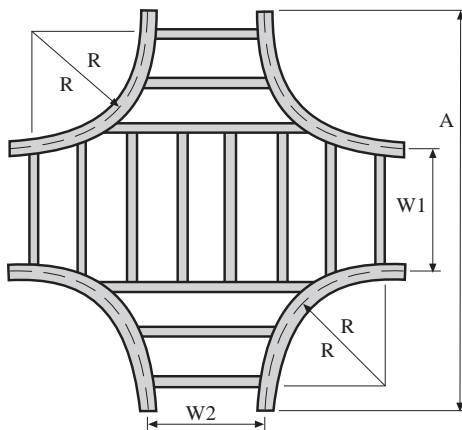
Horizontal Cross

Part No. Key*

EHC-(Δ)(H)-(W1)-(W2)-(R)

Contact us for dimensions on reducing cross.

Due to overall size of the 24" wide thru 36" wide, 36" radius cross assemblies are unable to be shipped via regular motor freight lines.



Dimension Inches (mm)

Width	12" Radius	24" Radius	36" Radius
	A	A**	A
6 (152)	39 (991)	63 (1600)	87 (2210)
9 (229)	42 (1067)	66 (1676)	90 (2286)
12 (305)	45 (1143)	69 (1753)	93 (2362)
18 (457)	51 (1295)	75 (1905)	99 (2515)
24 (610)	57 (1448)	81 (2057)	105 (2667)
30 (762)	63 (1600)	87 (2210)	111 (2819)
36 (914)	69 (1753)	93 (2362)	117 (2972)

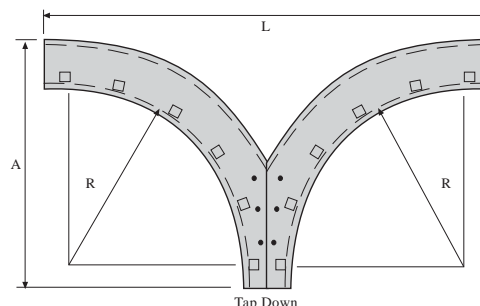
90° Vertical Tee

Part No. Key*

Up: EVT-(Δ)(H)-90-(W)-(R)-Up

Down: EVT-(Δ)(H)-90-(W)-(R)-Down

Tap up and tap down have the same dimensions. Please specify tap direction (up or down).



Dimensions Inches (mm)

Radius	A	L
12 (305)	22¾ (578)	39½ (1003)
24 (610)	34¾** (833)	63½ (1613)
36 (914)	46¾ (1187)	87½ (2223)

NOTE: mm values are nominal; * In Part No. Key, any parentheses () = insert corresponding option code; Δ = Resin; H = Side Rail Height; R = Radius; W = Width of the inside distance from tray wall to tray wall; ** Also available in 4", 6" and 8" side rail

Ladder Cable Tray - Mitered Fittings

Pre-assembled mitered fittings are available for all tray types. Fittings are assembled using 316 SS fasteners unless specified otherwise. When connecting to molded fittings or straight sections, expansion splice plates are recommended. For conductive and halogen-free low smoke plus cable tray, splice plates must be stainless steel. Rung connections are made with a mechanical and/or chemical lock (see specification, pg. 12, item 5.2.4). For assistance with other sizes and widths including 10" mitered fittings, please contact us.

Listings & Approvals

UL: All the following mitered fittings are UL listed in 4", 6", and 8" in Polyester/Vinyl Ester.

Imperial Mitered Fittings Part Numbers

TYPE - (Δ)(H) - (A) - (W) - (R)

Example: EHB - HL6 - 90 - 24 - 24

Type of Fitting	Tray Type/Resin (Δ)	Side Rail Height (H)	Angle	Width (W)	Radius (R)
EHB = Horizontal Bend	See Selection Table to the Right	3 = 3"	30 = 30°	06 = 6"	12 = 12"
EIV = Vertical Inside		4 = 4"	45 = 45°	09 = 9"	24 = 24"
EOV = Vertical Outside		6 = 6"	60 = 60°	12 = 12"	36 = 36"
EHT = Horizontal Tee		8 = 8"	90 = 90°	18 = 18"	
EHC = Horizontal Cross		10 = 10"		24 = 24"	
EVT = Vertical Tee				30 = 30"	
ER = Right Reducer				36 = 36"	
EL = Left Reducer					
ESR = Straight Reducer					
EHBD = Horiz. Direct Bend					

Tray Type/Resin Selection Table

Resin	Tray Type (see page 8)			
	ELL3 ELL6	ETL4	EHL4 EHL6 D-EHL10	EHZ6
Polyester	LL	TL	HL	MZ
Vinyl Ester	LV	TV	HV	HVZ
Poly Halogen-Free	LS	TS	HS	HSZ
VE Halogen-Free	LVS	TVS	HVS	HVSZ
Halogen-Free Low Smoke Plus	LY	TY	HY	HYZ
Conductive	LRT	TRT	HRT	HRTZ

Look at left column to select resin, then look at top row to select tray type. Then, insert corresponding letters into fitting part no.

For vertical tee specify "up" or "down" at end of part code. Covers = EC before catalog number; example EC-EHB-MC6-90-24-24. Fasteners for covers are separate order item, see page 43.

Strut Rung = SR after part number; example EHB-MC6-90-24-24-SR. Marine Rung = MR after part number; example EHB-MC6-90-24-24-MR

Metric Mitered Fittings Part Numbers

TYPE - (Δ)(H) - (A) - (W) - (R)

Example: EHB - HL6 - 90 - 600 - 600

Type of Fitting	Tray Type/Resin (Δ)	Side Rail Height* (H)	Angle	Width (W)	Radius (R)
EHB = Horizontal Bend	See Selection Table to the Upper Right	3 = 75mm	30 = 30°	150 = 150mm	300 = 300mm
EIV = Vertical Inside		4 = 100mm	45 = 45°	225 = 225mm	600 = 600mm
EOV = Vertical Outside		6 = 150mm	60 = 60°	300 = 300mm	900 = 900mm
EHT = Horizontal Tee		8 = 200mm	90 = 90°	450 = 450mm	
EHC = Horizontal Cross		10 = 250mm		600 = 600mm	
EVT = Vertical Tee				750 = 750mm	
ER = Right Reducer				900 = 900mm	
EL = Left Reducer					
ESR = Straight Reducer					
EHBD = Horiz. Direct Bend					

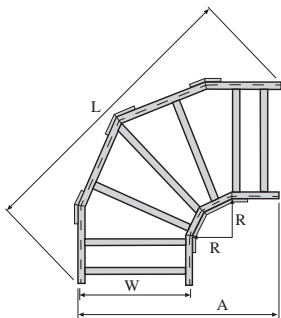
* (mm) value is nominal. For vertical tee specify "up" or "down" at end of part code. Covers = EC before part number; example EC-EHB-MC6-90-600-600. Fasteners for covers are separate order item, see page 43.

Strut Rung = SR after part number; example EHB-MC6-90-600-600-SR. Marine Rung = MR after part number; example EHB-MC6-90-600-600-MR

90° Horizontal Bend

Part No. Key*

EHB-(Δ)(H)-90-(W)-(R)



Width	Dimension Inches (mm)					
	12" (305) Radius		24" (610) Radius		36" (914) Radius	
	A	L	A	L	A	L
6 (152)	33⅜ (854)	47½ (1207)	45⅝ (1159)	64½ (1638)	57⅝ (1464)	81½ (2070)
9 (229)	36⅝ (930)	51¾ (1314)	48⅝ (1235)	68¾ (1746)	60⅝ (1540)	85¾ (2178)
12 (305)	39⅝ (1006)	56 (1422)	51⅝ (1311)	73 (1854)	63⅝ (1616)	90 (2286)
18 (457)	45⅝ (1159)	64½ (1638)	57⅝ (1464)	81½ (2070)	69⅝ (1768)	98½ (2502)
24 (610)	51⅝ (1311)	73 (1854)	63⅝ (1616)	90 (2286)	75⅝ (1921)	107 (2718)
30 (762)	57⅝ (1464)	81½ (2070)	69⅝ (1768)	98½ (2502)	81⅝ (2073)	115⅝ (2931)
36 (914)	63⅝ (1616)	90 (2286)	75⅝ (1921)	107 (2718)	87⅝ (2226)	123⅝ (3146)

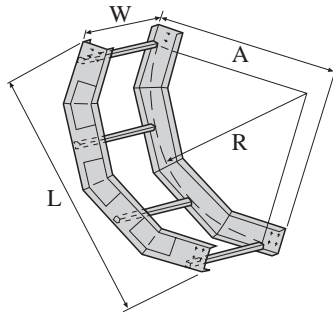
NOTE: mm values are nominal; * In Part No. Key, parentheses () = insert corresponding option code; Δ = Resin;
H = Side Rail Height; R = Radius;

Mitered Fittings - Ladder Cable Tray

90° Vertical Inside Bend

Part No. Key*

EIV-(Δ)(H)-90-(W)-(R)

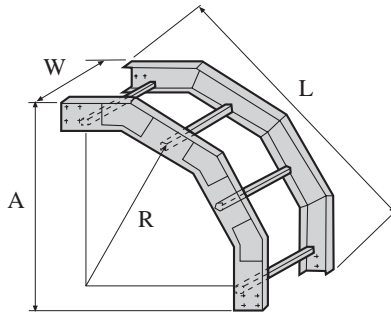


Dim. Inches (mm)	12" Radius			24" Radius			36" Radius		
	Depth**			Depth**			Depth**		
	4"	6"	8"	4"	6"	8"	4"	6"	8"
A	20 ⁷ / ₈ (530)	20 ⁷ / ₈ (530)	20 ⁷ / ₈ (530)	32 ⁷ / ₈ (835)	32 ⁷ / ₈ (835)	32 ⁷ / ₈ (835)	44 ⁵ / ₈ (1133)	44 ⁵ / ₈ (1133)	44 ⁵ / ₈ (1133)
L	29 ¹ / ₂ (749)	29 ¹ / ₂ (749)	29 ¹ / ₂ (749)	46 ¹ / ₂ (1181)	46 ¹ / ₂ (1181)	46 ¹ / ₂ (1181)	63 ³ / ₁₆ (1608)	63 ³ / ₁₆ (1608)	63 ³ / ₁₆ (1608)

90° Vertical Outside Bend

Part No. Key*

EOV-(Δ)(H)-90-(W)-(R)

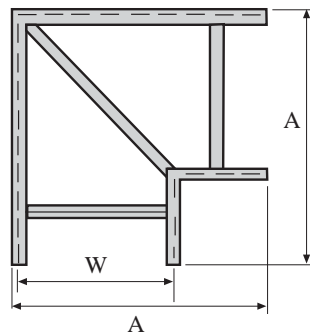


Dim. Inches (mm)	12" Radius			24" Radius			36" Radius		
	Depth**			Depth**			Depth**		
	4"	6"	8"	4"	6"	8"	4"	6"	8"
A	19 ⁷ / ₈ (505)	21 ⁷ / ₈ (555)	23 ⁷ / ₈ (606)	31 ⁷ / ₈ (810)	33 ⁷ / ₈ (860)	35 ⁷ / ₈ (911)	43 ⁷ / ₈ (1114)	45 ⁷ / ₈ (1165)	47 ⁷ / ₈ (1216)
L	28 ⁷ / ₈ (714)	30 ¹⁵ / ₁₆ (786)	33 ³ / ₄ (857)	45 ¹ / ₁₆ (1145)	47 ¹⁵ / ₁₆ (1218)	50 ³ / ₄ (1289)	62 ¹ / ₁₆ (1576)	64 ⁷ / ₈ (1648)	67 ³ / ₄ (1721)

90° Horizontal Direct Bend

Part No. Key*

EHBD-(Δ)(H)-90-(W)

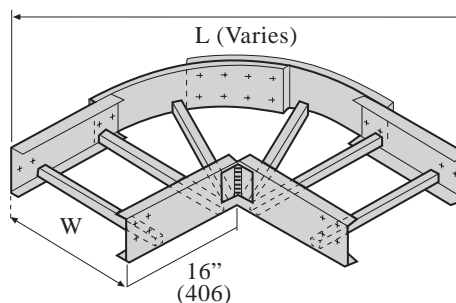


Dimensions Inches (mm)	
W	A
6 (152)	13 (330)
9 (229)	16 (406)
12 (305)	19 (483)
18 (457)	25 (635)
24 (610)	31 (787)
30 (762)	37 (940)
36 (914)	43 (1092)

Horizontal Adjustable Bend 45° - 135°

Part No. Key*

EHAB-(Δ)(H)-(W)



NOTE: mm values are nominal; * In Part No. Key, parentheses () = insert corresponding option code; Δ = Resin; H = Side Rail Height; R = Radius; W = Width of the inside distance from tray wall to tray wall; ** Contact us for availability of 3" (76mm)

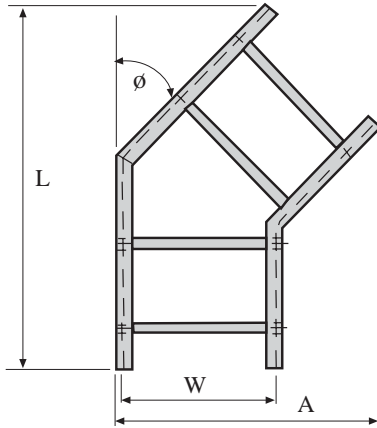
Ladder Cable Tray - Mitered Fittings

30°, 45°, 60° Horizontal Direct Bend

Part No. Key*

EHBD-(Δ)(H)-30/45/60-(W)

The 60° fitting is fabricated with the horizontal adjustable splice plates.



Dimension Inches (mm)

Width	30° Angle (φ)		45° Angle (φ)		60° Angle (φ)	
	A	L	A	L	A	L
6 (152)	14 ¹ / ₁₆ (357)	31 ¹ / ₂ (800)	17 (432)	30 (762)	19 ³ / ₁₆ (487)	27 ⁷ / ₁₆ (700)
9 (229)	17 ¹ / ₁₆ (433)	33 (838)	20 (508)	32 ¹ / ₁₆ (814)	22 ³ / ₁₆ (564)	30 ³ / ₁₆ (767)
12 (305)	20 ¹ / ₁₆ (510)	34 ¹ / ₂ (876)	23 (584)	34 ¹ / ₄ (870)	25 ³ / ₁₆ (640)	32 ³ / ₄ (832)
18 (457)	26 ⁹ / ₁₆ (675)	39 ⁵ / ₁₆ (999)	29 ³ / ₄ (756)	40 ³ / ₁₆ (1021)	32 (813)	39 ⁷ / ₁₆ (1002)
24 (610)	32 ⁷ / ₁₆ (827)	42 ⁵ / ₁₆ (1075)	36 ³ / ₄ (933)	44 ⁷ / ₁₆ (1129)	38 (965)	44 ⁵ / ₈ (1133)
30 (762)	38 ⁷ / ₁₆ (979)	45 ⁵ / ₁₆ (1151)	41 ¹ / ₄ (1060)	48 ¹¹ / ₁₆ (1237)	44 (1118)	49 ⁷ / ₈ (1267)
36 (914)	44 ⁷ / ₁₆ (1132)	48 ³ / ₁₆ (1227)	47 ³ / ₄ (1213)	52 ¹⁵ / ₁₆ (1345)	50 (1270)	55 ¹ / ₁₆ (1399)

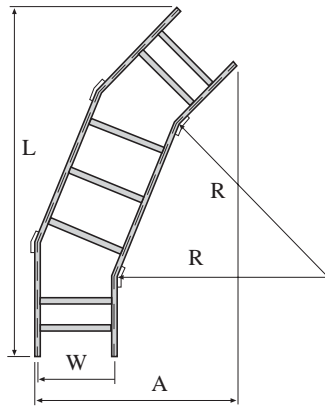
45° Horizontal Bend

Part No. Key*

EHB-(Δ)(H)-45-(W)-(R)

Please contact us for other 30°/60° radius mitered fittings.

Joining 45° Horizontal Bend
X = 2A - .707 (W + .5)
Y = 2L - .707 (W + .5)



Dimension Inches (mm)

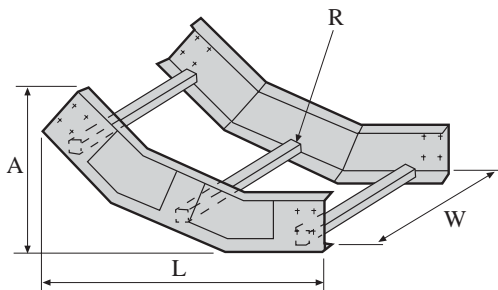
Width	12" (305) Radius		24" (610) Radius		36" (914) Radius	
	A	L	A	L	A	L
6 (152)	20 ¹¹ / ₁₆ (525)	38 ⁷ / ₈ (987)	24 ¹ / ₄ (616)	47 ³ / ₈ (1203)	27 ³ / ₄ (705)	55 ⁷ / ₈ (1419)
9 (229)	23 ¹¹ / ₁₆ (602)	41 (1041)	27 ¹ / ₄ (692)	49 ¹ / ₂ (1257)	30 ³ / ₄ (781)	58 (1473)
12 (305)	26 ¹¹ / ₁₆ (678)	43 ³ / ₈ (1095)	30 ¹ / ₄ (768)	51 ¹ / ₈ (1311)	33 ³ / ₄ (857)	60 ³ / ₈ (1527)
18 (457)	32 ¹¹ / ₁₆ (830)	47 ³ / ₈ (1203)	36 ¹ / ₄ (921)	55 ⁷ / ₈ (1419)	39 ³ / ₄ (1010)	64 ³ / ₈ (1635)
24 (610)	38 ¹¹ / ₁₆ (983)	51 ³ / ₈ (1311)	42 ¹ / ₄ (1073)	60 ³ / ₈ (1527)	45 ³ / ₄ (1162)	68 ³ / ₈ (1743)
30 (762)	44 ¹¹ / ₁₆ (1135)	55 ⁷ / ₈ (1419)	48 ¹ / ₄ (1226)	64 ³ / ₈ (1635)	51 ³ / ₄ (1314)	72 ¹ / ₁₆ (1846)
36 (914)	50 ¹¹ / ₁₆ (1287)	60 ³ / ₈ (1527)	54 ¹ / ₄ (1378)	68 ³ / ₈ (1743)	57 ³ / ₄ (1467)	77 ¹ / ₁₆ (1957)

30°/45° Vertical Inside Bend

Part No. Key*

EIV-(Δ)(H)-30 or 45-(W)-(R)

All dimensions are to the nearest 1/4"



Dim. Inches (mm)		12" Radius				24" Radius				36" Radius			
		Depth				Depth				Depth			
		3"	4"	6"	8"	3"	4"	6"	8"	3"	4"	6"	8"
30°	A	8 (203)	9 (229)	10 (254)	12 (305)	9 (229)	10 (254)	12 (305)	14 (356)	11 (279)	12 (305)	14 (356)	15 (381)
	L	18 (457)	18 (457)	18 (457)	18 (457)	24 (610)	24 (610)	24 (610)	24 (610)	30 (762)	30 (762)	30 (762)	30 (762)
45°	A	**	11 ¹ / ₁₆ (281)	12 ¹ / ₂ (318)	13 ⁷ / ₈ (352)	**	14 ⁹ / ₁₆ (370)	16 (406)	17 ¹ / ₁₆ (443)	**	18 ³ / ₈ (470)	19 ¹ / ₂ (495)	20 ¹⁵ / ₁₆ (532)
	L	**	19 ⁷ / ₈ (505)	19 ⁷ / ₈ (505)	19 ⁷ / ₈ (505)	**	28 ³ / ₈ (721)	28 ³ / ₈ (721)	28 ³ / ₈ (721)	**	36 ⁷ / ₈ (937)	36 ⁷ / ₈ (937)	36 ⁷ / ₈ (937)

NOTE: mm values are nominal; * In Part No. Key, parentheses () = insert corresponding option code; Δ = Resin; H = Side Rail Height;
R = Radius; W = Width of the inside distance from tray wall to tray wall; ** Contact us for availability of 3" (76mm)

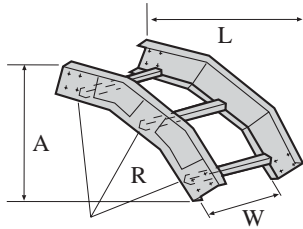
Mitered Fittings - Ladder Cable Tray

30°/45° Vertical Outside Bend

Part No. Key*

EOV-(Δ)(H)-30 or 45-(W)-(R)

All dimensions are to the nearest 1/4"

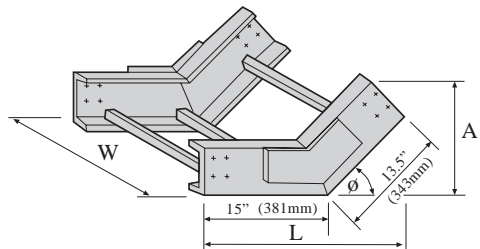


Dim. Inches (mm)		12" Radius				24" Radius				36" Radius			
		Depth				Depth				Depth			
		3"	4"	6"	8"	3"	4"	6"	8"	3"	4"	6"	8"
30°	A	7 (178)	8 (203)	10 (254)	10 (254)	9 (229)	10 (254)	12 (305)	12 (305)	11 (279)	12 (305)	14 (356)	14 (356)
	L	17 (432)	17 (432)	18 (457)	18 (457)	23 (584)	23 (584)	24 (610)	24 (610)	29 (737)	29 (737)	30 (762)	30 (762)
45°	A	**	10 3/4 (273)	12 3/4 (324)	14 3/4 (375)	**	14 3/16 (364)	16 5/16 (414)	18 3/16 (465)	**	17 13/16 (452)	19 13/16 (503)	21 13/16 (554)
	L	**	19 3/16 (487)	20 3/16 (522)	22 (559)	**	27 11/16 (703)	29 1/16 (738)	30 1/2 (775)	**	36 1/8 (918)	37 7/16 (954)	39 (991)

30°/45° Vertical Inside Direct Bend

Part No. Key*

EIVD-(Δ)(H)-30 or 45-(W)

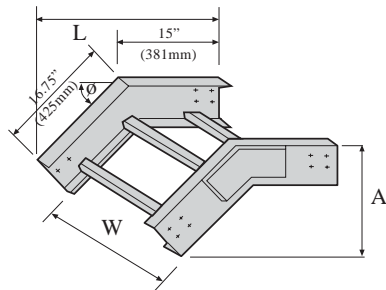


Dim. Inches (mm)		30° Angle (φ)			45° Angle (φ)		
		Depth**			Depth**		
		4"	6"	8"	4"	6"	8"
A		10 3/16 (259)	11 15/16 (303)	13 11/16 (348)	12 3/8 (314)	13 13/16 (351)	15 3/16 (386)
	L	26 11/16 (678)	26 11/16 (678)	26 11/16 (678)	24 3/16 (624)	24 3/16 (624)	24 3/16 (624)

30°/45° Vertical Outside Direct Bend

Part No. Key*

EOVD-(Δ)(H)-30 or 45-(W)

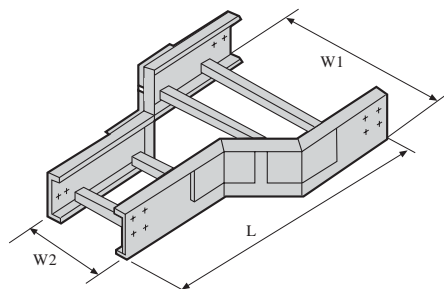


Dim. Inches (mm)		30° Angle (φ)			45° Angle (φ)		
		Depth**			Depth**		
		4"	6"	8"	4"	6"	8"
A		11 13/16 (300)	13 3/16 (344)	16 1/16 (408)	14 11/16 (357)	16 1/16 (408)	18 3/8 (473)
	L	29 1/2 (749)	29 1/2 (749)	30 7/8 (784)	26 7/8 (683)	26 7/8 (683)	27 15/16 (710)

Straight Reducer

Part No. Key*

ESR-(Δ)(H)-(W1)x(W2)



		W1 Inches (mm)					
		36 (914)	30 (762)	24 (610)	18 (457)	12 (305)	9 (229)
W2 Inches (mm)	6 (152)	43 1/2 (1105)	40 1/2 (1029)	37 1/2 (953)	34 1/2 (876)	26 3/4 (679)	26 3/8 (670)
	9 (229)	42 (1067)	39 (991)	36 (914)	33 (838)	26 3/8 (670)	—
	12 (305)	40 1/2 (1029)	37 1/2 (953)	36 (914)	26 3/4 (679)	—	—
	18 (457)	37 1/2 (953)	35 3/4 (908)	26 3/4 (679)	—	—	—
	24 (610)	35 3/4 (908)	26 3/4 (679)	—	—	—	—
	30 (762)	26 3/4 (679)	—	—	—	—	—
		Dimension "L" Inches (mm)					

NOTE: mm values are nominal; * In Part No. Key, parentheses () = insert corresponding option code; Δ = Resin; H = Side Rail Height; R = Radius; W = Width of the inside distance from tray wall to tray wall; ** Contact us for availability of 3" (76mm)

Ladder Cable Tray - Mitered Fittings

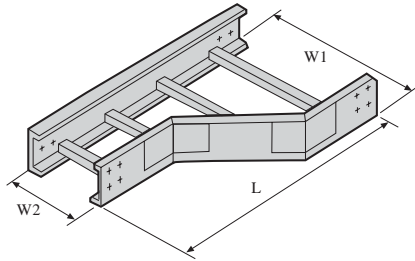
Right or Left Hand Reducer

Part No. Key*

RIGHT: ER-(Δ)(H)-(W1)x(W2)

LEFT: EL-(Δ)(H)-(W1)x(W2)

Right hand reducer is shown.

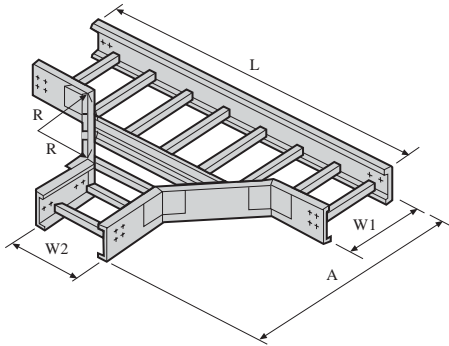


		W1 Inches (mm)					
		36 (914)	30 (762)	24 (610)	18 (457)	12 (305)	9 (229)
W2 Inches (mm)	6 (152)	55½ (1410)	46¼ (1175)	46¼ (1175)	37 (940)	37 (940)	27¾ (705)
	9 (229)	46¼ (1175)	46¼ (1175)	37 (940)	37 (940)	27¾ (705)	—
	12 (305)	46¼ (1175)	37 (940)	37 (940)	27¾ (705)	—	—
	18 (457)	37 (940)	37 (940)	27¾ (705)	—	—	—
	24 (610)	37 (940)	27¾ (705)	—	—	—	—
	30 (762)	27¾ (705)	—	—	—	—	—
Dimension "L" Inches (mm)							

Horizontal Tee

Part No. Key*

EHT-(Δ)(H)-(W1)-(W2)-(R)

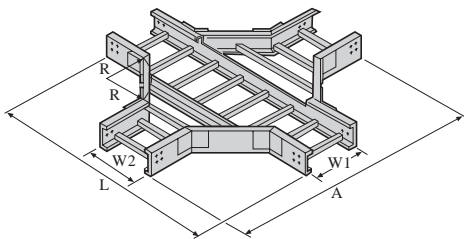


		Dimension Inches (mm)					
		12" (305) Radius		24" (610) Radius		36" (914) Radius	
Width		A	L	A	L	A	L
6 (152)		30⅝ (780)	55½ (1410)	42⅝ (1080)	74 (1880)	54⅝ (1390)	101¾ (2580)
9 (229)		33⅝ (850)	55½ (1410)	45⅝ (1160)	83¼ (2110)	57⅝ (1460)	101¾ (2580)
12 (305)		36⅝ (930)	55½ (1410)	48⅝ (1240)	83¼ (2110)	60⅝ (1540)	111 (2820)
18 (457)		42⅝ (1080)	64¾ (1640)	54⅝ (1390)	92½ (2350)	66⅝ (1690)	111 (2820)
24 (610)		48⅝ (1240)	74 (1880)	60⅝ (1540)	92½ (2350)	72⅝ (1840)	120¼ (3050)
30 (762)		54⅝ (1390)	74 (1880)	66⅝ (1690)	101¾ (2580)	78⅝ (2000)	129½ (3290)
36 (914)		60⅝ (1540)	83¼ (2110)	72⅝ (1840)	111 (2820)	84⅝ (2150)	129½ (3290)

Horizontal Cross

Part No. Key*

EHC-(Δ)(H)-(W1)-(W2)-(R)



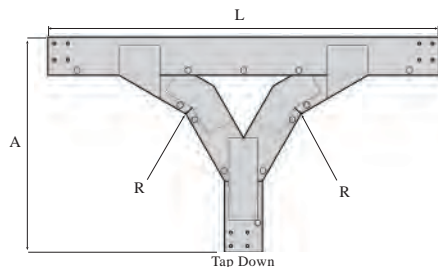
		Dimension Inches (mm)					
		12" (305) Radius		24" (610) Radius		36" (914) Radius	
Width		A	L	A	L	A	L
6 (152)		54¾ (1390)	55½ (1410)	78¾ (2000)	74 (1880)	102¾ (2610)	101¾ (2580)
9 (229)		57¾ (1470)	55½ (1410)	81¾ (2080)	83¼ (2110)	105¾ (2690)	101¾ (2580)
12 (305)		60¾ (1540)	55½ (1410)	84¾ (2150)	83¼ (2110)	108¾ (2760)	111 (2820)
18 (457)		66¾ (1700)	64¾ (1640)	90¾ (2310)	92½ (2350)	114¾ (2910)	111 (2820)
24 (610)		72¾ (1850)	74 (1880)	96¾ (2460)	92½ (2350)	120¾ (3070)	120¼ (3050)
30 (762)		78¾ (2000)	74 (1880)	102¾ (2610)	101¾ (2580)	126¾ (3220)	129½ (3290)
36 (914)		84¾ (2150)	83¼ (2110)	108¾ (2760)	111 (2820)	132¾ (3370)	129½ (3290)

Vertical Tee

Part No. Key*

EVT-(Δ)(H)-90-(W)-(R)

Specify "up" or "down" at the end of the part number. For tap up, dimensions different than tap down, contact us for dimensions.



Dimensions Inches (mm)		
Radius	A	L
24 (610)	33⅝ (860)	61¾ (1568)
36 (914)	45⅝ (1165)	85¾ (2178)

NOTE: mm values are nominal; * In Part No. Key, parentheses () = insert corresponding option code; Δ = Resin;
H = Side Rail Height; R = Radius; W = Width of the inside distance from tray wall to tray wall

Splice Plates - Ladder Cable Tray

Enduro offers a full line of fiberglass splice plates designed to provide a structural transition between straight sections and fittings. Enduro splice plates and hardware are sold separately and are not provided as standard with straight sections or fittings due to the many hardware options. All plates have $\frac{7}{16}$ " pre-drilled bolt holes.

NEMA FG-1

Please refer to NEMA FG-1 regarding proper tray installation as it pertains to support and splice plate locations for straight sections and fittings. Refer to page 11 for recommended support locations. **NEMA**

Ladder Cable Tray Splice Plate Part Numbers

TYPE - (H)(Δ) - (D)

Example: **ESP - 6C - 180**

Type

ESP = Straight
EEP = Expansion
EVS = Vertical
EHS = Horizontal

Side Rail Height

3 = 3" (75mm)*
4 = 4" (100mm)*
6 = 6" (150mm)*
8 = 8" (200mm)*
10 = 10" (250mm)*

Material

C = Polyester
V = Vinyl Ester
SS = Stainless Steel
S = Halogen-Free

Degree

180 = Straight, Expansion
90 = 90°
45 = 45°
30 = 30°
22.5 = 22.5°
HA = Horiz. Adjustable**
VA = Vert. Adjustable**

* (mm) value is nominal. ** For Horiz. and Vert. Adjustable part number use "ESP" for Type, example: ESP-6C-HA. Expansion plates have 1" slotted holes allowing 5/8" total contraction and expansion. Refer to thermal contraction table on page 6 for maximum spacing between expansion joints. Side rail height of 3" and 4" requires 4 bolt sets per plate. Side rail height of 6" and 8" requires 8 bolt sets per plate. Side rail height of 10" requires 12 bolt sets per plate. For 6" and 8" channel heavy duty splice plates, see page 24.

Splice Plate and Hardware Options

Tray Resin	Splice Plate Material				Hardware Material Sets			
	Polyester	Vinyl Ester	Halogen-Free Polyester	316 Stainless Steel	316 Stainless Steel	Monel	Silicon Bronze	Isoplast
Polyester	Standard	Optional		Optional	Standard	Optional	Optional	Optional
Vinyl Ester		Standard		Optional	Standard	Optional	Optional	Optional
Halogen-Free Polyester		Optional	Optional	Standard	Standard	Optional	Optional	Optional
Halogen-Free Vinyl Ester				Standard	Standard	Optional	Optional	Optional
Halogen-Free Low Smoke Plus				Standard	Standard	Optional	Optional	Optional
Conductive				Standard	Standard	Optional	Optional	Optional

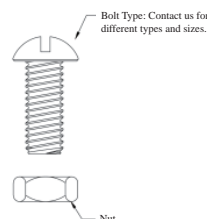
Hardware

Type	Set Includes	Size	For Use With Tray Types	Part No.
316 Stainless Steel Bolt Set	Bolt, nut	$\frac{3}{8}$ "-16 x 1"	All tray types (except 10" Channel)	#505166SS*
316 Stainless Steel Bolt Set	Bolt, nut, washer	$\frac{3}{8}$ "-16 x 1½"	For use with VA splice plate	#505168SS
Monel Bolt Set	Bolt, nut	$\frac{3}{8}$ "-16 x 1¼"	All tray types (except 10" Channel)	#606167M
FRP/GRP Studs & Nuts	Stud and 2 nuts	$\frac{3}{8}$ "-16 x 2"	ELL3, ELL4, ETL6, EHZ6	#707166F
FRP/GRP Studs & Nuts	Stud and 2 nuts	$\frac{3}{8}$ "-16 x 2½"	EHL6, EHL8, EHV6	#707167F
Silicon Bronze Bolt Set	Bolt, nut	$\frac{3}{8}$ "-16 x 1¼"	All tray types (except 10" Channel)	#808167SB

* Standard hardware set; NOTE: For monel and silicon bronze, please contact us for lead times. Also available in additional sizes. For 10" channel, please contact us for hardware; It is recommended that expansion splice plates and 1½" long assembly fasteners be used when connecting mitered fittings to molded fittings or straight lengths.

Fastener Torque

Inch: GRD. 2 UNC		Metric: Class 5.8	
Size	Ft-Lbs	Size	N-m
1/4 - 20	4-6	M8 x 1.25	14-16
3/8 - 16	17-23	M10 x 1.5	26-33
1/2 - 13	42-56	M12 x 1.78	45-58



Ladder Cable Tray - Splice Plates

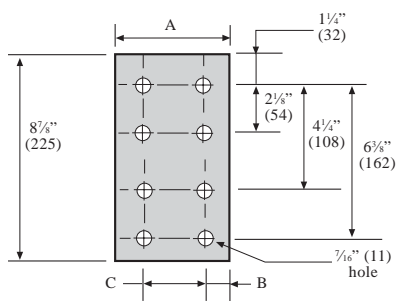
Typical Dimensions for FRP/GRP Splice Plates

Typical Dimensions Inches (mm)			
Channel Depth Inches (mm)	A	B	C
3 (76)	1 3/4 (44)	1 (25)	-0-
4 (102)	2 (51)	1 (25)	-0-
6 (152)	4 5/8 (117)	1 (25)	2 5/8 (67)
8 (203)	6 (152)	1 1/16 (43)	2 5/8 (67)

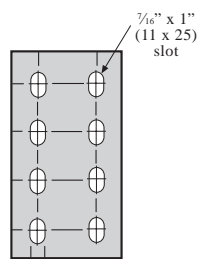
Typical Dimensions for Stainless Splice Plates

Typical Dimensions Inches (mm)			
Channel Depth Inches (mm)	A	B	C
3 (76)	1 1/4 (32)	5/8 (16)	-0-
4 (102)	1 1/4 (32)	5/8 (16)	-0-
6 (152)	4 1/8 (105)	3/4 (19)	2 5/8 (67)
8 (203)	4 1/8 (105)	3/4 (19)	2 5/8 (67)

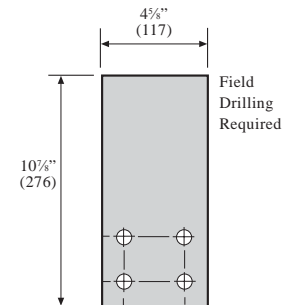
Straight Section



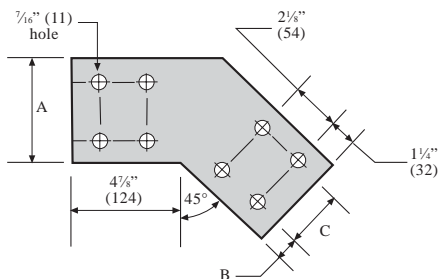
Expansion



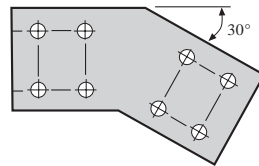
90° Vertical



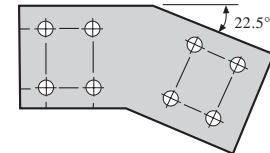
45° Vertical



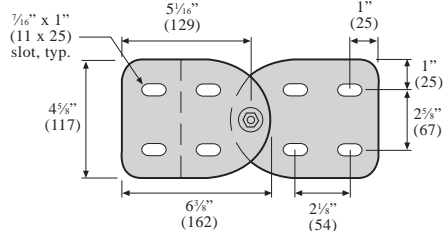
30° Vertical



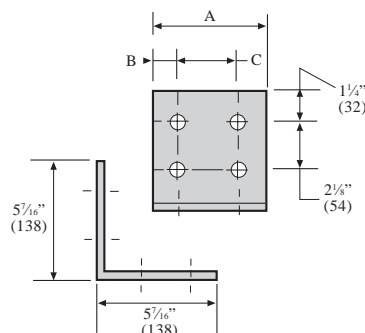
22.5° Vertical



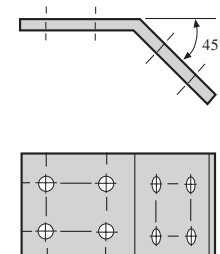
Adjustable Vertical



90° Horizontal



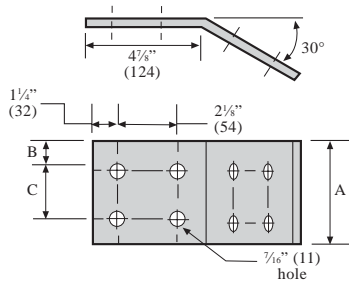
45° Horizontal



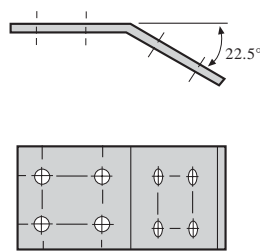
For adjustable vertical plate hardware, use catalog number 505168SS. For travel dimensions, contact us.

Splice Plates - Ladder Cable Tray

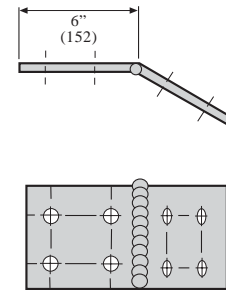
30° Horizontal



22.5° Horizontal



Adjustable Horizontal



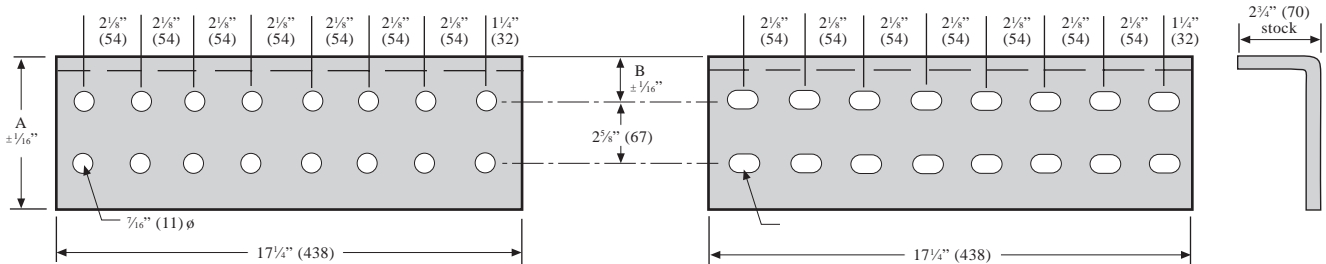
Heavy Duty Splice Plates

Part No. Key*

ESP-(H) HP-180 Splice Plate

Part No. Key*

EESP-(H) HP-180 Splice Plate



Side Rail Height Inches (mm)	A Inches (mm)	B Inches (mm)
4 (102)	3 (76)	1 3/8 (35)
6 (152)	5 (127)	1 3/8 (35)
8 (204)	6 3/8 (162)	2 1/16 (52)

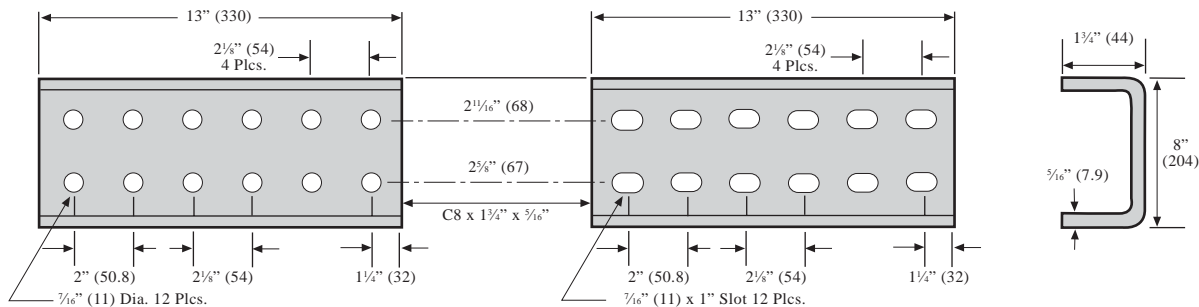
10" Channel Splice Plates

Part No.

ESP-10C-180 Splice Plate

Part No.

EESP-10C-180 Splice Plate



* In Part No. Key, parentheses () = insert corresponding option code; H = Side Rail Height - 4, 6, 8 (inches)

Ladder Cable Tray - Accessories

Enduro offers a full line of accessories for our electrical products including cable tray covers, divider strips, drop outs, blind ends, adapters, hold-down clips, marine rungs, strut rungs, swivel clamps and a wide variety of stainless steel or FRP/GRP cable tray fasteners appropriate for any application.

Resin Designation

(Δ) = Insert one of the following letters for resin designations when required.

P = Polyester (Example: EPC-CL-12-P)

V = Vinyl Ester (Example: EPC-CL-12-V)

Y = Halogen-Free Low Smoke Plus (Example: EPC-CL-12-Y)

RT = Conductive (Example: EPC-CL-12-RT)

S = Poly Halogen-Free (Example: EPC-CL-12-S)

VS = VE Halogen-Free (Example: EPC-CL-12-VS)

Cable tray covers are recommended for those areas where the cable needs protection from falling objects, adverse weather conditions, etc. Available in 10ft. (3m) sections in both flat and peaked design. In addition to cover, solid bottom is also available. See page 26 for cover accessories.

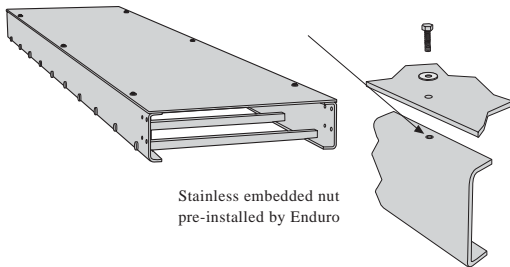
Clampless Flat Cover

Part No. Key*

EPC-CL-(W)-(Δ)

Easiest & Lowest Installation Cost

Eliminates the need for Cover Hold Down Clamp for a quicker and easier field installation. Recommended to be purchased with a cable tray straight section matching the clampless flat cover section.



A total of three pairs of stainless embedded nuts are pre-installed to the cable tray channels by Enduro. Contact us for metal types available on embedded nuts. 1/4" diameter stainless fasteners and flat washers are also included and shipped separately.

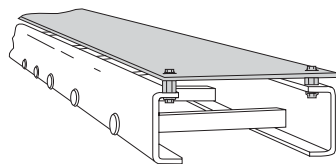
Contact us regarding fittings availability on this type of cover system. Available tray widths (inches): 6, 9, 12, 18, 24, 30, 36

Flat Cover

Part No. Key*

"C" Tray: E(Δ)C-(W)

"Z" Tray: EZC-(W)



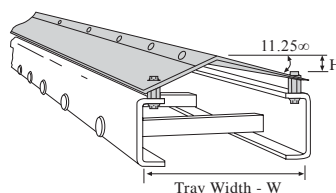
Tray Width Inches (mm)	"C" Tray Type	Wt./LF	"Z" Tray Type	Wt./LF
6 (152)	EPC-06	0.57	EZC-06	0.95
9 (229)	EPC-09	0.86	EZC-09	1.24
12 (305)	EPC-12	1.14	EZC-12	1.52
18 (457)	EPC-18	1.71	EZC-18	2.09
24 (610)	EPC-24	2.28	EZC-24	2.66
30 (762)	EPC-30	2.85	EZC-30	3.23
36 (914)	EPC-36	3.42	NA	NA

Installation Methods for Flat Cover: Thermoplastic Drive Rivets (part no. R-25) are the most economical method, but do require field drilling. It is recommended rivets be installed on 24" centers along both side rails. Cover Hold Down Clamps and Enduro Stand Offs allow cover to be removed for easy access to cables - see page 26. It is recommended to use seven pair at 1'6" on center per 10 Ft. length of cover. Add ventilation height 2" for Flat Cover. Flat covers can be ventilated or non-ventilated. Diagram shown is ventilated. **To order Flat Cover for ladder cable tray fittings, add "EC" before fitting part number. Example: EC-EHB-MC6-90-24-24**

Peaked Cover

Part No. Key*

EPC22-(W)



Contact us for Z-Tray covers.

Installation Methods for Peaked Cover: Use three pair of Enduro Stand Offs - Peaked for each 10 ft. length of tray.

Peaked cover is not available for fittings.

Contact us for information on 22.5°, 30° and 45° peaked covers.

Add ventilation height 1 3/4" for peaked cover. Peaked covers can be ventilated or non-ventilated. Diagram shown is ventilated.

"C" Tray Type	Dimensions In. (mm)		Wt./LF
	W	H	
EPC22-06	6 (152)	0.6 (15)	0.77
EPC22-09	9 (229)	0.9 (23)	0.77
EPC22-12	12 (305)	1.2 (31)	1.3
EPC22-18	18 (457)	1.8 (46)	1.5
EPC22-24	24 (610)	2.4 (61)	1.9
EPC22-30	30 (762)	3.0 (76)	2.1
EPC22-36	36 (914)	3.6 (91)	2.4

Solid Bottom Cover (Above Rung)

Part No. Key*

(TS)-(W)-(RS)-(L)-SBT

Example part number: EHL6-24-09-10-SBT



Solid Bottom Cover (Clampless Beneath)

Part No. Key*

(TS)-(W)-(RS)-(L)-SBU

Example part number: EHL6-24-09-10-SBU



* In Part No. Key, parentheses () = insert corresponding option code; Δ = Insert resin designation, see gray box at top; W = Width of the inside distance from tray wall to tray wall; TS = Tray System; RS = Rung Space; L = Length

Accessories - Ladder Cable Tray

Stand Off

Part No.

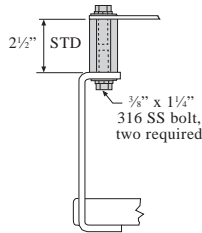
ESO

Vinyl Ester resin is the standard.

Includes mounting hardware.

Not suited for high wind applications.

Not available for EHZ6 tray.



Stand Off Peaked

Part No.

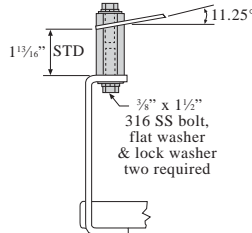
ESOP

Vinyl Ester resin is the standard.

Includes mounting hardware.

Not suited for high wind applications.

Not available for EHZ6 tray.

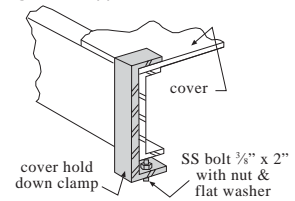


Cover Hold Down Clamp

Part No. Key*

ECHE-(H)(Δ)

Not suited for high wind applications. Not available for EHZ6 tray.



Complete Cover Hold Down

Part No. Key*

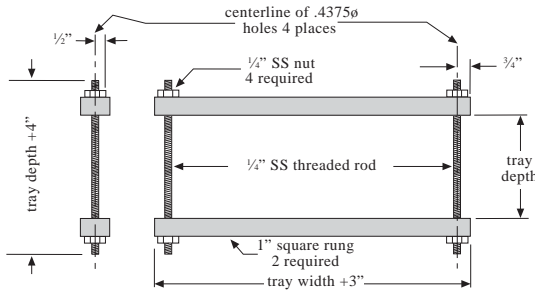
CCHE-(H)(Δ) x (W)

Recommended Usage: To secure cover to tray in an outdoor application.

Best suited for a high wind applications.

Available in stainless steel, contact us for dimensions.

Peaked cover use: CPCHD-(H)(Δ) x (W)



Conduit Swivel Clamp

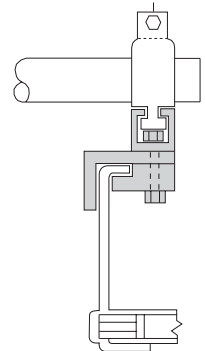
Part No. Key*

ECTC-(TD)

This allows an easy transition to/from conduit and FRP/GRP cable tray.

Please substitute cable tray designation when ordering (Example TD = EHL6).

Pipe clamps are separate order item, see page 40. For Vinyl Ester add "VE" to end of part number - example: ECTC-(TD)-VE.



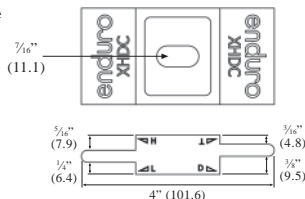
Hold Down Clamp & Expansion Guide

Enduro's XHDC serves as both a Hold Down Clip and Expansion Guide for all Enduro ladder tray types. This new design eliminates the need for ordering or tracking multiple products for securing ladder tray to structural supports.

Installation: To determine the appropriate orientation for installation, rotate the XHDC to the corresponding letter indicator (etched into side profile) as shown in the table below. Each row shows which letter indicator to use for each series, for use as either Hold Down Clip, or Expansion Guide. See example below.

Part No. XHDC		Tray Type
Hold Down Clamp	Expansion Guide	
T	L	ELL3
L	H	ETL4
L	H	EHL4
T	L	ETL6
L	H	ELL6
L	H	EHL6
H	D	D-EHL6
H	D	EHZ6
H	D	EHL8
D	Contact Us	D-EHL10

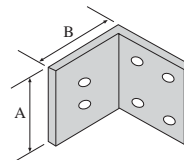
For installation hardware selection, please contact us and specify installation conditions.



Floor / Panel Flange Plate

Part No. Key*	Side Rail Height	Dim. A	Dim. B
FP-3(Δ)	3" (76)	1 3/4"	5 1/16"
FP-4(Δ)	4" (102)	2 1/4"	5 1/16"
FP-6(Δ)	6" (152)	4 5/8"	5 1/16"
FP-8(Δ)	8" (203)	6"	5 1/16"
FP-10(Δ)	10" (254)	8"	5 1/16"

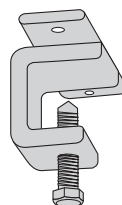
Please contact us for stainless steel dimensions. See bottom of page for (Δ) code. All drilled holes are 7/16" in diameter. Hole pattern varies with tray type.



Beam Hold Down Guide

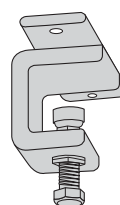
Part No.

BCHDG-MP-CP



Part No.

BCHDG-MP-LV



Eliminates the Need to Drill or Punch Holes While Allowing for Normal Expansion

A stainless steel guide that secures the position of cable tray on a support rack or structure.

Guide becomes a clamp with use of a 316 SS set screw on top. Set screw is included with part.

Guide is also easily adaptable for right or left sided installations.

* In Part No. Key, parentheses () = insert corresponding option code; Δ = Insert resin designation, see gray box on page 25; H = Side Rail Height, available heights (inches): 3, 4, 6, or 8; W = Width of the inside distance from tray wall to tray wall; TD = Tray Designation

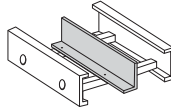
Ladder Cable Tray - Accessories

Divider Strip

Part No. Key*	
Loose Divider	Installed Divider
EDS-(Δ)3x10	EDS-(Δ)3x10 Installed
EDS-(Δ)4x10	EDS-(Δ)4x10 Installed
EDS-(Δ)6x10	EDS-(Δ)6x10 Installed
EDS-(Δ)8x10	EDS-(Δ)8x10 Installed
EDS-(Δ)3x3M	EDS-(Δ)3x3M Installed
EDS-(Δ)4x3M	EDS-(Δ)4x3M Installed
EDS-(Δ)6x3M	EDS-(Δ)6x3M Installed
EDS-(Δ)8x3M	EDS-(Δ)8x3M Installed

Divider strips are supplied in ten foot lengths. Unless indicated otherwise, dividers are intended for field installation. Please indicate installation position if required. For easier installation, dividers can be furnished with factory-drilled notching with additional cost.

Divider strips are available for fittings, please contact us for part numbers. For securing riveted divider to tray we use 3/16" SS rivets. We also have available thermoplastic drive rivets (directly below) which require field drilling.

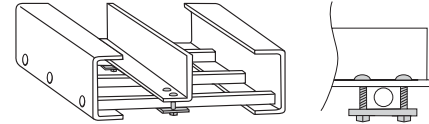


Adjustable Clamp for Divider Strip

Part No. Key*
For □ Side Rail: ADC-1(Δ)
For L Side Rail: ADC-2(Δ)

This part number is only for the adjustable clamp, does not include divider strip.

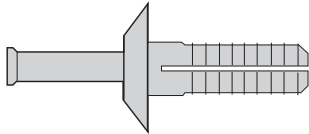
[side rail only available in 3" (76), 4" (102), 6" (152) and 8" (203)



Nylon Thermoplastic Drive Rivet

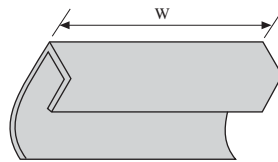
Part No. Key*
R-25-(Δ)

For securing cover material and divider strip. Pigmented to match resin type.



Drop Out

Part No. Key*
For □ Side Rail: EDO-1-(W)
For L Side Rail: EDO-2-(W)
For 10" □ Side Rail: EDO-3-(W)



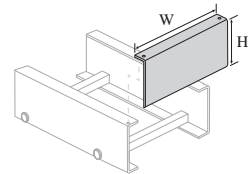
Actual width of Drop Out is less than width of tray to allow for placement inside channel flange. R-25 drive rivets (left) are a separate order item. For Vinyl Ester, add "VE" to the end of part number. For Halogen-Free Low Smoke Plus resin add "Y" to part number.

Drop Out installation for less than 12" width: Drill two 1/4" holes 1" from each end. Insert R-25 rivet into each opening. Drop Out installation for more than 12" width: Drill three 1/4" holes 1" from each end and in the middle. Insert R-25 rivet into each opening.

Blind End

Part No. Key*
EBE-(H)(Δ)-(W)

316 SS fasteners included.



Standard Field Install Rung

Part No. Key*
EFIR-(W)-(PE or VE)

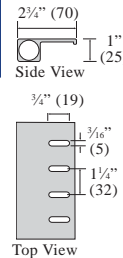
Rung is standard 1" x 1" rung. PE = Polyester; VE = Vinyl Ester; Example for a 6" wide rung, polyester resin: EFIR-06-PE Hardware included.



Marine Field Install Rung

Part No. Key*
EFIR-MR-(W)-(PE or VE)

PE = Polyester; VE = Vinyl Ester; Example for a 6" wide rung, polyester resin: EFIR-MR-06-PE Hardware included.



Strut Field Install Rung

Part No. Key*
EFSR-(W)-(PE or VE)

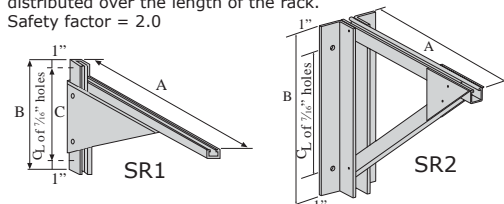
PE = Polyester; VE = Vinyl Ester; Example for a 6" wide rung, polyester resin: EFSR-06-PE



Cable Tray Support Racks

Part No. Key*	Dimension In.			Allowable Load Lbs
	A	B	C	
SR1-6(Δ)	10"	12"	10"	1,600
SR1-9(Δ)	13"	12"	10"	1,100
SR1-12(Δ)	16"	12"	10"	850
SR1-18(Δ)	22"	12"	10"	725
SR1-24(Δ)	28"	12"	10"	480
SR2-24(Δ)	26"	21"	15"	750
SR2-30(Δ)	32"	21"	15"	750
SR2-36(Δ)	38"	21"	15"	750

Allowable load is based on a total load, uniformly distributed over the length of the rack. Safety factor = 2.0

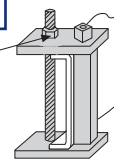


Vertical Tray Hanger Support

Part No. Key*
VH-(H)(Δ)

Not available for EHZ6.

1/2" hanger rod and nuts separate order items



Gluzilla Adhesive

Part No.
635395

Fiberglass to fiberglass adhesive for custom fabrication or repair.

Meets NTSA and UPS requirements for sea and ground transportation.



Field Cutting Sealant

Part No.
Quart Can: ESQ
Gallon Can: ESG

Seals exposed fibers after any field cuts. Restores gloss and luster to weathered fiberglass.

Seals exposed FRP/GRP threads after installation of fiberglass threaded rod and hex nuts. For polyester and vinyl ester resin products. Clear color.

Meets NSTA and UPS requirements for sea and ground transportation.



* In Part No. Key, parentheses () = insert corresponding option code; Δ = Insert resin designation, see gray box on page 25;
H = Side Rail Height, available heights (inches): 3, 4, 6, or 8; W = Width of the inside distance from tray wall to tray wall

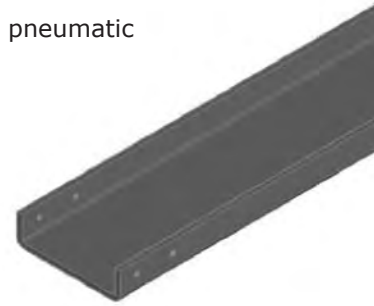
Channel-Type Instrumentation Tray

Enduro channel-type instrumentation tray is designed for light loads of individual wiring and pneumatic tubing. Our channel-type tray is available with solid or ventilated bottom.

All straight sections and pre-assembled fittings are pre-drilled to accept flange splice plates. All splice plates and hardware are separate order items.

Enduro's ventilated channel-type tray features 1⁷/₁₆" (36.5125) x 1¹/₄" (6.35) +/- size slots to allow for cooling and cable strapping.

All (mm) dimensions are nominal.



Channel-Type Instrumentation Tray Part Numbers

EI(B) - (Δ) - (W) x (L)

Example: **EIS - PE - 200 x 20**

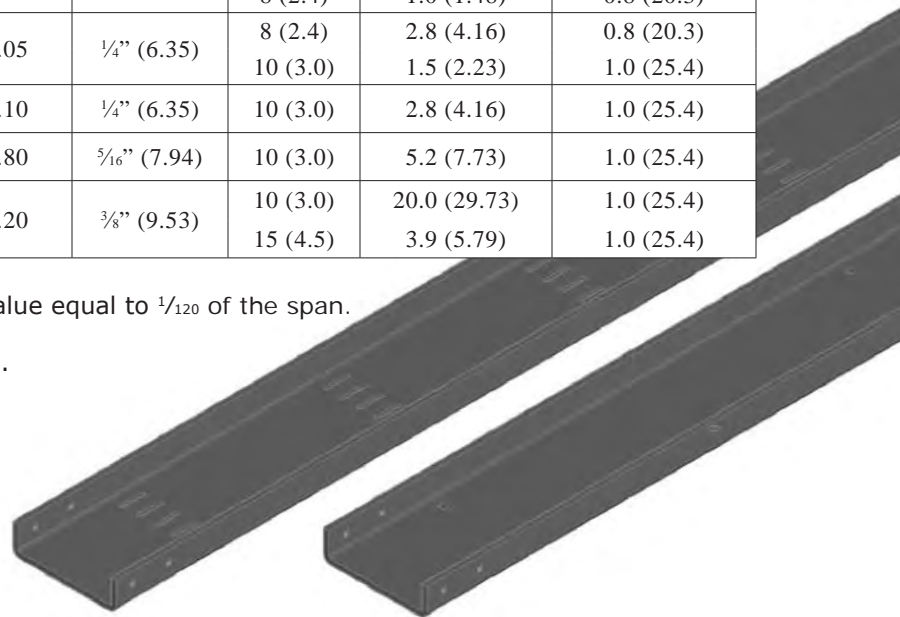
Type	Resin (Δ)	Width (W)	Length (L)
EIS = Solid Bottom	PE = Polyester	200 = 2"	10 = 10'
EIP = Slotted Bottom	VE = Vinyl Ester	300 = 3"	20 = 20'
EIH = Ventilated (Holes) Bottom	RT = Conductive	400 = 4"	3M = 3m
	MS = Polyester Halogen-Free	400D = 4"	6M = 6m
	Y = Halogen-Free Low Smoke Plus	600 = 6"	
		800 = 8"	
		1000 = 10"	

Technical Data - Channel-Type Instrumentation Tray

Part No. Key*	Channel Size Width x Depth	Lbs./Ft.	Channel Thickness	Span Ft. (m)	Max Loading Lbs./Ft. (N/m)	Max Deflection In. (mm)
EI(B)-(Δ)-200 x (L)	2" x 1" (51 x 25)	0.60	3/16" (4.76)	5 (1.5)	4.0 (5.94)	0.5 (12.7)
EI(B)-(Δ)-300 x (L)	3" x 1" (76 x 25)	0.75	3/16" (4.76)	5 (1.5) 8 (2.4)	3.9 (5.79) 1.0 (1.48)	0.5 (12.7) 0.8 (20.3)
EI(B)-(Δ)-400 x (L)	4" x 1 1/8" (102 x 35)	1.05	1/4" (6.35)	8 (2.4) 10 (3.0)	2.8 (4.16) 1.5 (2.23)	0.8 (20.3) 1.0 (25.4)
EI(B)-(Δ)-600 x (L)	6" x 1 3/8" (152 x 41)	2.10	1/4" (6.35)	10 (3.0)	2.8 (4.16)	1.0 (25.4)
EI(B)-(Δ)-800 x (L)	8" x 1 3/4" (203 x 44)	2.80	5/16" (7.94)	10 (3.0)	5.2 (7.73)	1.0 (25.4)
EI(B)-(Δ)-1000 x (L)	10" x 2 3/4" (254 x 70)	4.20	3/8" (9.53)	10 (3.0) 15 (4.5)	20.0 (29.73) 3.9 (5.79)	1.0 (25.4) 1.0 (25.4)

Loads are based on limiting the deflection to a value equal to 1/120 of the span.

For ventilated tray, max loading reduced by 10%.

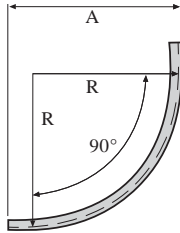


NOTE: mm values are nominal; * In Part No. Key, parentheses () = insert corresponding option code; B = Bottom; Δ = Resin; R = Radius; (L) = Length; W = Width of the inside distance from tray wall to tray wall

Channel-Type Inst. Tray - Fittings & Accessories

90° Vertical Inside Molded

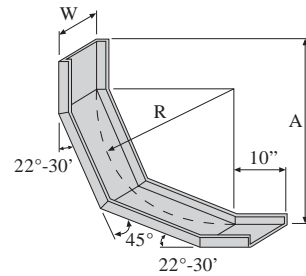
Part No.	Radius	A
EI(B)-(Δ)-MC90IV-18-600	18" (457)	22 ³ / ₄ " (578)
EI(B)-(Δ)-MC90IV-24-400	24" (610)	28 ¹ / ₁₆ " (729)
EI(B)-(Δ)-MC90IV-24-600	24" (610)	28 ³ / ₄ " (730)



90° Vertical Inside Mitered

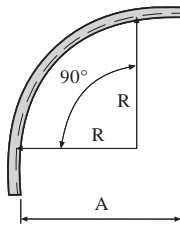
Part No.	A
EI(B)-(Δ)-90IV-(R)-(W)	22 ¹ / ₄ " (565)
EI(B)-(Δ)-90IV-(R)-(W)	34 ¹ / ₄ " (820)

R = Radius which can be 12" (305) or 24" (610); W = Width which can be 2", 3", 4", 6", 8" or 10"; For 10" dimensions contact us.



90° Vertical Outside Molded

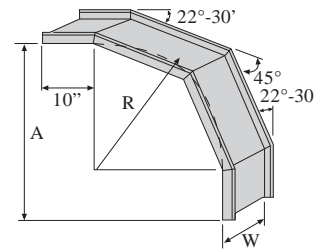
Part No.	Radius	A
EI(B)-(Δ)-MC90OV-12-600	12" (305)	16 ¹ / ₄ " (413)
EI(B)-(Δ)-MC90OV-24-400	24" (610)	28 ⁵ / ₁₆ " (719)
EI(B)-(Δ)-MC90OV-24-600	24" (610)	28 ¹ / ₄ " (718)
EI(B)-(Δ)-MC90OV-24-800	24" (610)	28 ³ / ₁₆ " (716)



90° Vertical Outside Mitered

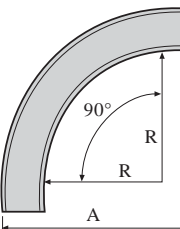
Part No.	A
EI(B)-(Δ)-90OV-(R)-(W)	22" (559)
EI(B)-(Δ)-90OV-(R)-(W)	34" (864)

R = Radius which can be 12" (305) or 24" (610); W = Width which can be 2", 3", 4", 6", 8" or 10"; For 10" dimensions contact us.



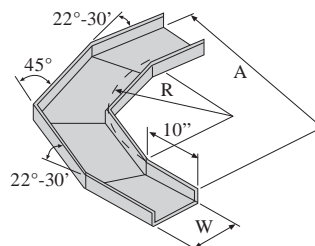
90° Horizontal Molded

Part No.	Radius	A
EI(B)-(Δ)-MC90HB-12-600	12" (305)	22 ³ / ₄ " (578)
EI(B)-(Δ)-MC90HB-24-400	24" (610)	32 ¹³ / ₁₆ " (833)
EI(B)-(Δ)-MC90HB-24-600	24" (610)	34 ³ / ₄ " (883)
EI(B)-(Δ)-MC90HB-24-800	24" (610)	36 ¹ / ₁₆ " (932)



90° Horizontal Bend

	Part No.	A
12" (305) Radius	EI(B)-(Δ)-90HB-12-200	24" (610)
	EI(B)-(Δ)-90HB-12-300	25" (635)
	EI(B)-(Δ)-90HB-12-400	26" (660)
	EI(B)-(Δ)-90HB-12-600	28" (711)
	EI(B)-(Δ)-90HB-12-800	30" (762)
24" (610) Radius	EI(B)-(Δ)-90HB-12-1000	32" (813)
	EI(B)-(Δ)-90HB-24-200	36" (914)
	EI(B)-(Δ)-90HB-24-300	37" (940)
	EI(B)-(Δ)-90HB-24-400	38" (965)
	EI(B)-(Δ)-90HB-24-600	40" (1016)
	EI(B)-(Δ)-90HB-24-800	42" (1067)
	EI(B)-(Δ)-90HB-24-1000	44" (1118)



(B) = S for solid
P for Ventilated

(Δ) = PE for Polyester
VE for Vinyl Ester

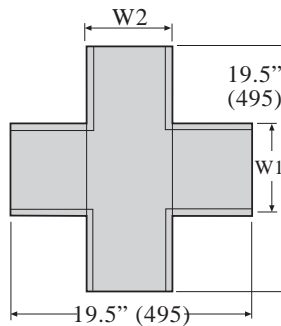
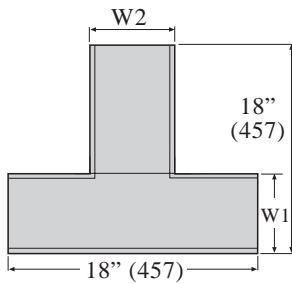
NOTE: mm values are nominal; * In Part No. Key, parentheses () = insert corresponding option code;
B = Bottom; Δ = Resin; R = Radius; W = Width of the *inside* distance from tray wall to tray wall

Channel-Type Inst. Tray - Fittings & Accessories

Horizontal Tee & Horizontal Cross

Tee Part No. Key*	Cross Part No. Key*	W1	W2
EI(B)-(Δ)-HT-200	EI(B)-(Δ)-HC-200	2" (51)	2" (51)
EI(B)-(Δ)-HT-300	EI(B)-(Δ)-HC-300	3" (76)	3" (76)
EI(B)-(Δ)-HT-400	EI(B)-(Δ)-HC-400	4" (102)	4" (102)
EI(B)-(Δ)-HT-600	EI(B)-(Δ)-HC-600	6" (154)	6" (154)
EI(B)-(Δ)-HT-800	EI(B)-(Δ)-HC-800	8" (203)	8" (203)
EI(B)-(Δ)-HT-1000	EI(B)-(Δ)-HC-1000	10" (255)	10" (255)

(B) = S for solid
P for Ventilated
(Δ) = PE for Polyester
VE for Vinyl Ester
RT for Conductive
MS for Polyester Halogen-Free
Y for Halogen-Free Low Smoke Plus



Channel Tray Cover

Part No. Key*

E(Δ)C-(W)-(L)

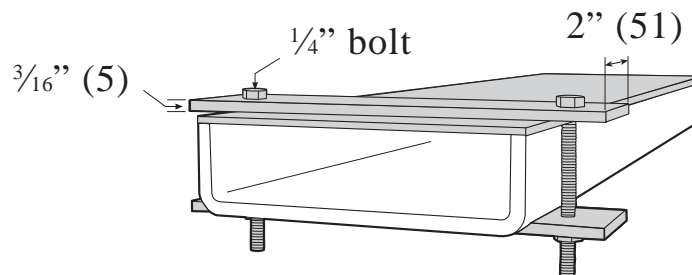
Δ = Resin - insert "P" for polyester resin, insert "Y" for halogen-free low smoke plus resin. Hardware and clamp not included. For other resin part numbers, contact us.

Channel Cover Clamp

Part No. Key*

CCC-(W)-(Δ)

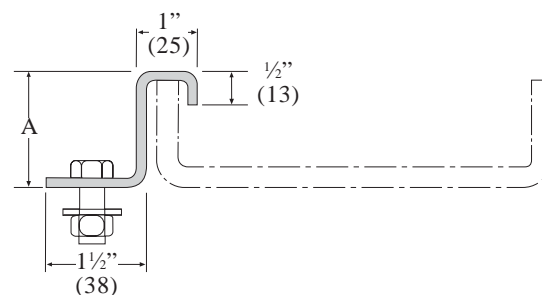
Δ = Resin - insert "PE" for polyester resin, insert "Y" for halogen-free low smoke plus resin. 316 SS hardware included. For other resin part numbers, contact us.



Channel Hold Down Clip

Part No. Key	W	A
IHDC-3	3" (76)	1 1/8" (28)
IHDC-4	4" (102)	1 1/4" (33)
IHDC-4D	4" (102)	2 1/8" (54)
IHDC-6	6" (154)	1 3/4" (44)
IHDC-6D	6" (154)	2 1/8" (54)
IHDC-8	8" (203)	1 7/8" (47)
IHDC-10	10" (255)	2 7/8" (72)

Hardware not included. 10 Ga. 316 SS



* In Part No. Key, parentheses () = insert corresponding option code; B = Bottom; Δ = Resin;
W = Width of the inside distance from tray wall to tray wall

Splice Plates - Channel-Type Inst. Tray

Channel-Type Splice Plate Part Numbers

Example: **EISP - 90V - 600**

Degree
180 = Straight
90 = 90°
45 = 45°
30 = 30°
22.5 = 22.5°

Direction
V = Vertical
H = Horizontal
(for straight, leave direction space in product number blank, example: EISP-180-600)

Channel Size
200 = 2" (50mm)*
300 = 3" (75mm)*
400 = 4" (100mm)*
600 = 6" (150mm)*
800 = 8" (200mm)*
1000 = 10" (250mm)*

These part numbers are for Polyester resin.

* (mm) values are nominal

Splice plates and hardware are sold individually and are not provided with straight sections or fittings.

For expansion insert "X" between "EISP" and Degree, example: EISP-X-180-200.

For Vinyl Ester Resin, add "VE"
Example: EISP-VE-90V-600

For Halogen-Free Polyester Resin, add "HS" - Example EISP-HS-90V-600

For Stainless Steel, add "316SS"
Example: EISP-90V-600-316SS

Dimensions

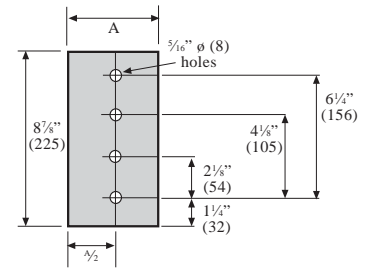
Channel Depth Inches (mm)	A Inches (mm)	B Inches (mm)
2" (51)	1" (25)	½" (12.7)
3" (76)	1" (25)	½" (12.7)
4" (102)	1" (25)	½" (12.7)
6" (152)	1½" (32)	¾" (15.875)
8" (203)	1½" (32)	¾" (15.875)
10" (254)	2½" (57)	1½" (28.575)

Hardware

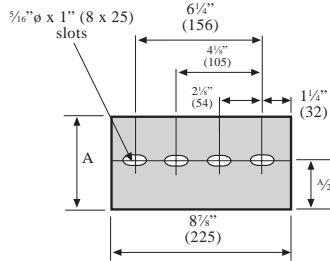
Part No.	
505138SS (Pan Head)	¼" - 20 x ¾"
505139SS	¼" - 20 x ¾"
505141SS	¼" - 20 x 1"
505142SS	¼" - 20 x 1½"

505138SS, 505139SS, 505141SS for use with all splice plates except 10" channel tray.
505142SS for use with 10" channel tray splice plates. Contact us for pricing and availability.

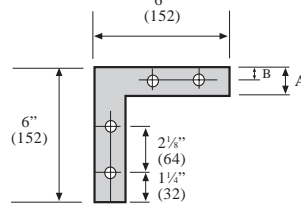
Straight Section



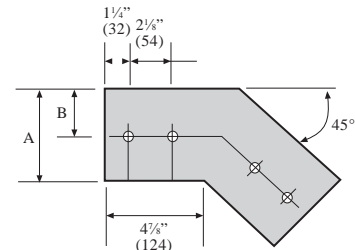
Expansion



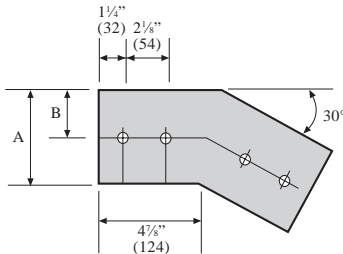
90° Vertical



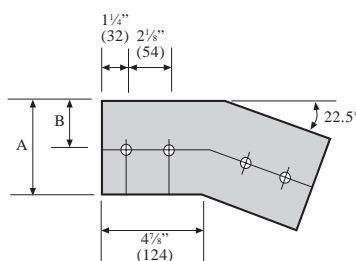
45° Vertical



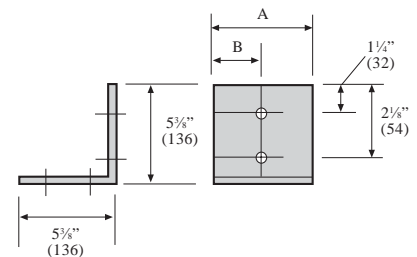
30° Vertical



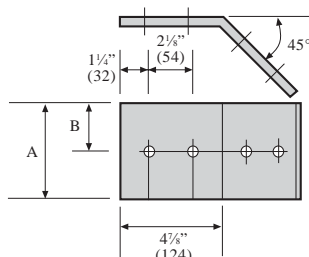
22.5° Vertical



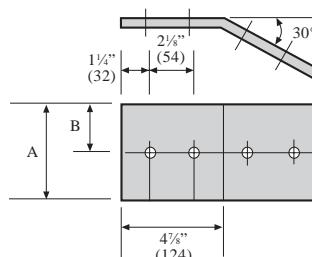
90° Horizontal



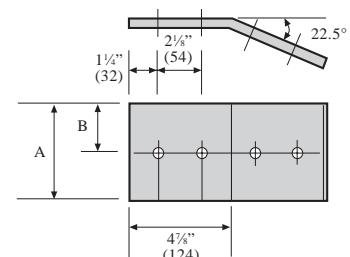
45° Horizontal



30° Horizontal



22.5° Horizontal

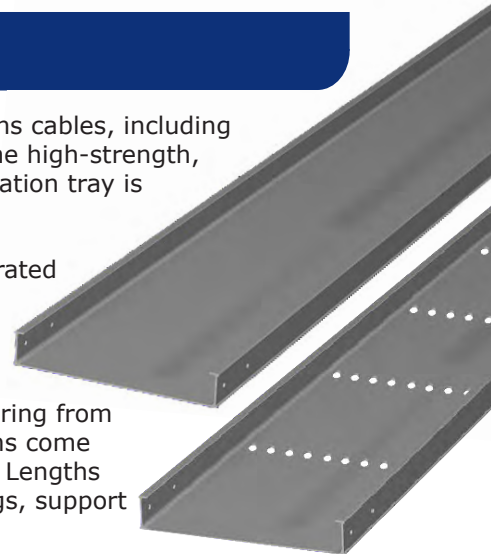


Flanged-Type Instrumentation Tray

Enduro flanged-type instrumentation tray is ideal for low-voltage or communications cables, including fiber-optic cables, or to support hydraulic or pneumatic tubing. Made from the same high-strength, corrosion-resistant pultruded materials as our ladder-type tray, Enduro instrumentation tray is tough and made to stand up to the most demanding environments.

Enduro flanged tray comes in different resin systems, your choice of solid or perforated bottom, and with or without snap-on covers. Perforated cable trays are predrilled with holes for ventilation or easy attachment of cables. If alternate hole sizes or slots are required, please contact Enduro for additional pricing and lead time.

Our flanged-type instrumentation trays come in depths of 50mm or 80mm, measuring from the outside of the top to the outside of the bottom. Enduro flanged-type tray widths come in 50mm, 100mm, 150mm and 300mm, measuring inside to inside of the flanges. Lengths can be in 3m and 6m. In addition, our offering includes a full complement of fittings, support systems and accessories.



Flanged-Type Straight Section Part Numbers

(Δ) - IT(B) - (H) - CT - (W) - (L)

Example: EP - ITS - 50 - CT - 50 - 3M

Resin (Δ)

EP = Polyester
EV = Vinyl Ester
ERT = Conductive
ES = Poly Halogen-Free
VS = VE Halogen-Free
Y = Halogen-Free Low Smoke Plus

Bottom (B)

ITS = Solid Bottom
ITP = Perforated Bottom*
ITL = Slotted Bottom*

Side Rail Height (H)

50 = 50mm (1.97")
80 = 80mm (3.15")

Width (W)

50 = 50mm (1.97")
100 = 100mm (3.94")
150 = 150mm (5.91")
300 = 300mm (11.82")

Length (L)

3M = 3m (118.1")

*Please contact us for perforation or slot size.

Technical Data - Flanged Tray

Maximum Loading

Part No.	Span Ft. (m)	Max Loading Lbs./Ft. (N/m)
(Δ)-IT(B)-50-CT-50-3M	5 (1.5)	25.7 (34.8)
	10 (3.0)	3.1 (4.2)
	15 (4.5)	0.9 (1.2)
(Δ)-IT(B)-50-CT-100-3M	5 (1.5)	30.9 (41.9)
	10 (3.0)	3.8 (5.2)
	15 (4.5)	1.1 (1.5)
(Δ)-IT(B)-50-CT-150-3M	5 (1.5)	35.6 (48.3)
	10 (3.0)	4.4 (6.0)
	15 (4.5)	1.3 (1.8)
(Δ)-IT(B)-50-CT-300-3M	5 (1.5)	42.4 (57.5)
	10 (3.0)	5.2 (7.1)
	15 (4.5)	1.5 (2.0)
(Δ)-IT(B)-80-CT-50-3M	5 (1.5)	54.2 (73.9)
	10 (3.0)	6.7 (9.1)
	15 (4.5)	2.0 (2.7)
(Δ)-IT(B)-80-CT-100-3M	5 (1.5)	94.4 (128.0)
	10 (3.0)	11.8 (16.0)
	15 (4.5)	3.5 (4.7)
(Δ)-IT(B)-80-CT-150-3M	5 (1.5)	108.4 (147.0)
	10 (3.0)	13.5 (18.3)
	15 (4.5)	4.0 (5.4)
(Δ)-IT(B)-80-CT-300-3M	5 (1.5)	130.8 (177.3)
	10 (3.0)	16.4 (22.2)
	15 (4.5)	4.8 (6.5)

Load (Lbs/Ft) are based on deflection equal to L/D = 200.

Please contact us for minimum run requirements for non-stock items.

Accessories & Splice Plates

Straight Cover

Part No. Key*

(Δ)-IT-(W)-CTC-(L)

Example: EL-IT-50-CTC-3M
Covers only available in 3m lengths.



Straight Splice Plates

Part No. Key*	Material
ESS-IT-(H)-SSP	Stainless Steel
EP-IT-(H)-SSP	Polyester
EV-IT-(H)-SSP	Vinyl Ester

Stainless Example: ESS-IT-80-SSP; Vinyl Ester Example: EV-IT-80-SSP;
Polyester Example: EL-IT-80-SSP

Reducer Splice Plates

Part No. Key*	Material
ESS-IT-(H)-(W1)-(W2)-RSP	Stainless Steel
E(Δ)-IT-(H)-(W1)-(W2)-RSP	Fiberglass

Please specify Width 1 and Width 2 when ordering.

Hardware

Part No.	Size Range
#505139SS	1/4" - 20" x 3/4"

* In Part No. Key, parentheses () = insert corresponding option code; Δ = Resin; B = Bottom; H = Side Rail Height
W = Width of the inside distance from tray wall to tray wall

Fittings - Flanged-Type Inst. Tray

Flanged-Type Fittings Part Numbers (Δ) - IT(B) - (H) - TYPE - (W) - (A) - (L)

Example: EP - ITS - 50 - HB - 50 - 90 - 300

Resin (Δ)	Bottom (B)	Side Rail Height (H)	Type	Width (W)	Angle
EP=Polyester	ITS=Solid Bottom	50=50mm (1.97")	HB=Horizontal Bend	50=50mm (1.97")	90=90°
EV=Vinyl Ester	ITP=Perforated Bottom*	80=80mm (3.15")	IV=Inside Vertical	100=100mm (3.94")	45=45°
RT=Conductive	ITL=Slotted Bottom*		OV=Outside Vertical	150=150mm (5.91")	
S=Poly Halogen-Free			HT=Horizontal Tee	300=300mm (11.82")	
VS=VE Halogen-Free			HC=Horizontal Cross		
Y=Halogen-Free Low Smoke Plus					

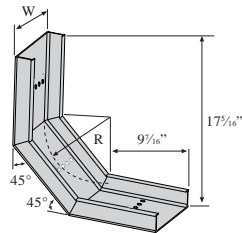
*Please contact us for perforation or slot size.
Note: More fittings and fitting covers available, please contact us.

90° Vertical Inside Mitered

Part No. Key*

(Δ)-(B)-(H)-IV-(W)-90-300

Radius = 11.8" (300mm)

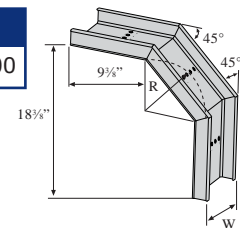


90° Vertical Outside Mitered

Part No. Key*

(Δ)-(B)-(H)-OV-(W)-90-300

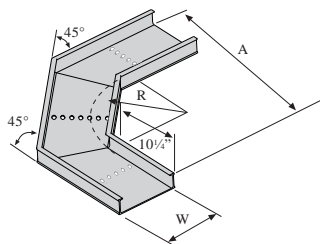
Radius = 11.8" (300mm)



90° Horizontal Mitered

Part No. Key*	A
(Δ)-(B)-50-HB-50-90-300	19 3/8" (493)
(Δ)-(B)-80-HB-50-90-300	
(Δ)-(B)-50-HB-100-90-300	21 3/8" (543)
(Δ)-(B)-80-HB-100-90-300	
(Δ)-(B)-50-HB-150-90-300	23 5/16" (593)
(Δ)-(B)-80-HB-150-90-300	
(Δ)-(B)-50-HB-300-90-300	29 1/4" (743)
(Δ)-(B)-80-HB-300-90-300	

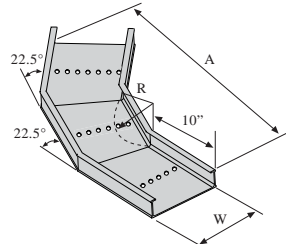
Radius = 11.8" (300mm)



45° Horizontal Mitered

Part No. Key*	A
(Δ)-(B)-50-HB-50-45-300	27 1/16" (688)
(Δ)-(B)-80-HB-50-45-300	
(Δ)-(B)-50-HB-100-45-300	28 1/2" (723)
(Δ)-(B)-80-HB-100-45-300	
(Δ)-(B)-50-HB-150-45-300	29 7/8" (758)
(Δ)-(B)-80-HB-150-45-300	
(Δ)-(B)-50-HB-300-45-300	34 1/16" (865)
(Δ)-(B)-80-HB-300-45-300	

Radius = 11.8" (300mm)



Horizontal Fitting Cover

Part No. Key*

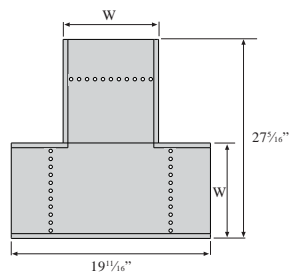
(Δ)-IT-(W)-CTC-(90 or 45)-300



Horizontal Tee

Part No. Key*

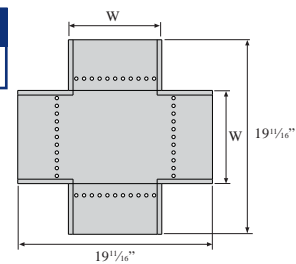
(Δ)-(B)-(H)-(W)-HT



Horizontal Cross

Part No. Key*

(Δ)-(B)-(H)-(W)-HC



Note: More fittings and fitting covers available, please contact us. * In Part No. Key, parentheses () = insert corresponding option code;
Δ = Resin; B = Bottom; H = Side Rail Height; W = Width of the inside distance from tray wall to tray wall

Wireway

Enduro wireway is designed to protect data control, communication and power cables from atmospheric conditions (like dust, dirt, oil, water) and unauthorized/accidental tampering. Enduro lay-in wireway is often found in:

- Computer, communication, and clean room applications.
Enduro wireway readily conforms to the grid-post system of raised floors.
- Food processing plants
where periodic washdowns often utilize caustic disinfectants
- Transportation/subway systems
where enclosed environments desire telecommunication wireway materials to have low smoke development and non-toxic smoke properties for enhanced public safety

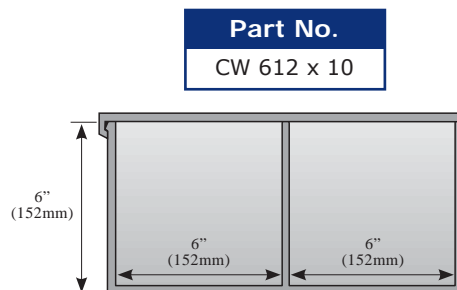
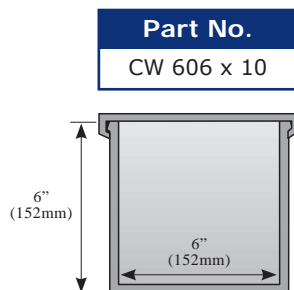
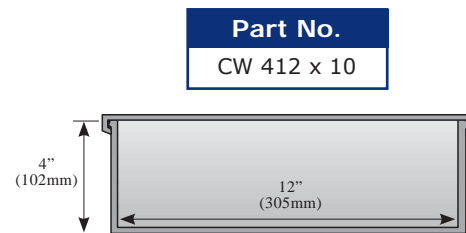
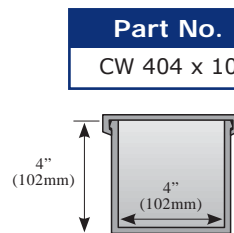
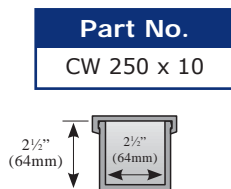
Enduro lay-in-wireway is manufactured by the pultrusion process using special fiberglass composite designs and fire-retardant resin formulation for superior strength, durability, and corrosion resistance.

Enduro wireway carries a Class 1 fire rating in accordance with ASTM Standard E-84.



Our wireway straight sections and fittings are provided with a "snap-on / snap-off" cover. It also has a modular design which includes straight sections, elbows, tees and crosses.

All wireway sections and fittings are available in the five sizes shown below. Please contact us about other available sizes and gasketing. Straight sections and covers come in 10 ft. lengths. Splice plates are a separate order item.

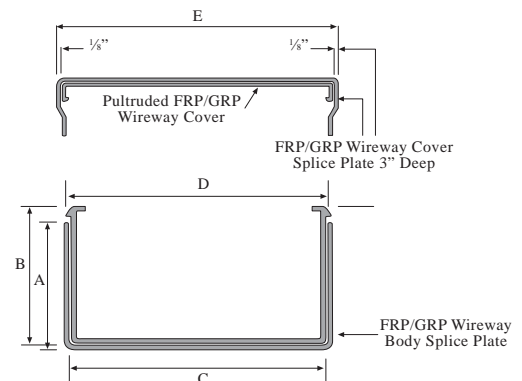


The CW 612 x 10 is available with or without a divider. The divider allows separation of various cables as needed.

Dimensions - Wireway with Cover

Part No.	Dimension Inches (mm)				
	A	B	C	D	E
CW 250 x 10	N/A	2.5" (64)	2.5" (64)	3" (76)	N/A*
CW 404 x 10	3 3/16" (81)	4" (102)	4" (102)	4 3/4" (121)	5 3/8" (136)
CW 412 x 10	3 3/16" (81)	4" (102)	12" (305)	12 3/4" (324)	13 3/8" (340)
CW 606 x 10	5 5/8" (143)	6" (152)	6" (152)	6 3/4" (171)	7 3/8" (187)
CW 612 x 10	5 5/8" (143)	6" (152)	12 3/8" (314)	12 3/4" (324)	13 3/8" (340)

* Cover body and splice plates not available for CW250. See page 37 for splicing method. Please contact us for minimum run requirements for non-stock items.



Technical Data - Wireway

Wireway Load Span

Part No.	Maximum Span	Maximum Loading
CW250 x 10	contact us	contact us
CW404 x 10	10' (3m)	10 Lbs/Ft (14.9 kg/m)
CW412 x 10	10' (3m)	12 Lbs/Ft (17.9 kg/m)
CW606 x 10	10' (3m)	20 Lbs/Ft (29.8 kg/m)
CW612 x 10	10' (3m)	25 Lbs/Ft (37.2 kg/m)



Wireway Physical Properties

Electrical

Property	Polyester Fire Retardant	ASTM Test
Electric Strength, Short Term in Oil 1/8", VPM*	200	D149
Electric Strength, Short Term in Oil, KV per inch	35	D149

Other

Property	Polyester Fire Retardant	ASTM Test
Density - Solid Shape Lbs./In.	0.065	D792
Water Absorption (24 Hr. Immersion) Max % by Wt.	0.50	D570
Surface Burning Characteristic, Maximum	25	E84

Thermal

Property	Polyester Fire Retardant	ASTM Test
Thermal Coefficient of Expansion (Inches/Inch/°F)**	5 x 10 ⁻⁶	D696

Longitudinal Direction

Property	Polyester Fire Retardant	ASTM Test
Ultimate Tensile Strength	30,000 PSI	D638
Ultimate Compressive Strength	30,000 PSI	D695
Ultimate Flexural Strength	30,000 PSI	D790

Transverse Direction

Property	Polyester Fire Retardant
Ultimate Tensile Strength	7,000 PSI
Ultimate Compressive Strength	15,000 PSI
Ultimate Flexural Strength	10,000 PSI

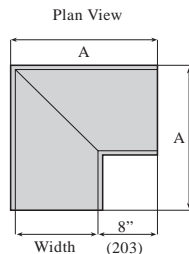
* Specimen tested perpendicular to laminate face.
** Reported value measured in longitudinal direction.

Meets and exceeds test standard for UL 94-VO Flammability Classification and has a flame spread rating under 25 when tested in accordance with ASTM E84.

Fittings - Wireway

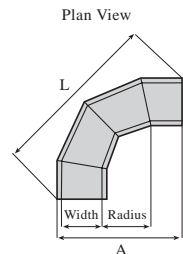
90° Horizontal Direct Bend

Part No.	A
CW 250-90H	8" (203)
CW 404-90H	12 ^{13/16} " (325)
CW 412-90H	21" (533)
CW 606-90H	15" (381)
CW 612-90H	21" (533)



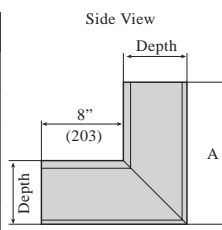
90° Horizontal Bend 12" Radius

Part No.	A	L
CW 250-90H-12	22 ^{1/2} " (572)	31 ^{13/16} " (808)
CW 404-90H-12	24 ^{13/16} " (630)	35" (889)
CW 412-90H-12	33" (838)	46 ^{9/16} " (1183)
CW 606-90H-12	27" (686)	38 ^{1/8} " (968)
CW 612-90H-12	33" (838)	46 ^{9/16} " (1183)



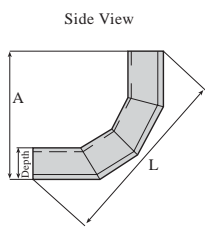
90° Vertical Inside Direct Bend

Part No.	A
CW 250-90IV	10 ^{1/2} " (267)
CW 404-90IV	12" (305)
CW 412-90IV	12" (305)
CW 606-90IV	14" (356)
CW 612-90IV	14" (356)



90° Vertical Inside Bend 12" Radius

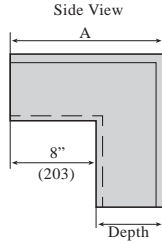
Part No.	A	L
CW 250-90IV-12	17 ^{9/16} " (446)	24 ^{13/16} " (630)
CW 404-90IV-12	18 ^{1/8} " (460)	25 ^{11/16} " (652)
CW 412-90IV-12	18 ^{1/8} " (460)	25 ^{11/16} " (652)
CW 606-90IV-12	18 ^{1/8} " (460)	25 ^{11/16} " (652)
CW 612-90IV-12	18 ^{1/8} " (460)	25 ^{11/16} " (652)



Fittings - Wireway

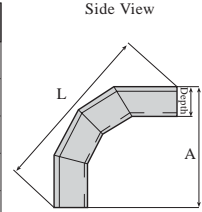
90° Vertical Outside Direct Bend

Part No.	A
CW 250-90OV	10½" (267)
CW 404-90OV	12" (305)
CW 412-90OV	12" (305)
CW 606-90OV	14" (356)
CW 612-90OV	14" (356)



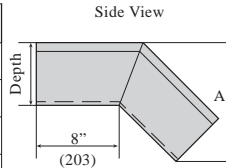
90° Vertical Outside Bend 12" Radius

Part No.	A	L
CW 250-90OV-12	19⅜" (487)	27⅞" (689)
CW 404-90OV-12	22⅛" (562)	31⅜" (797)
CW 412-90OV-12	22⅛" (562)	31⅜" (797)
CW 606-90OV-12	24⅜" (614)	34⅜" (868)
CW 612-90OV-12	24⅜" (614)	34⅜" (868)



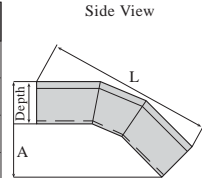
45° Vertical Outside Direct Bend

Part No.	A
CW 250-45OV	8⅞" (205)
CW 404-45OV	10" (254)
CW 412-45OV	10" (254)
CW 606-45OV	12" (305)
CW 612-45OV	12" (305)



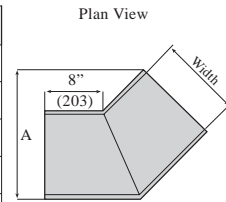
45° Vertical Outside Bend 12" Radius

Part No.	A	L
CW 250-45OV-12	9⅞" (252)	21⅜" (543)
CW 404-45OV-12	12" (305)	23⅜" (595)
CW 412-45OV-12	12" (305)	23⅜" (595)
CW 606-45OV-12	14" (356)	25" (635)
CW 612-45OV-12	14" (356)	25" (635)



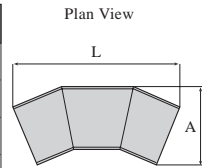
45° Horizontal Direct Bend

Part No.	A
CW 250-45H	8⅞" (205)
CW 404-45H	10½" (267)
CW 412-45H	18⅞" (473)
CW 606-45H	12⅝" (321)
CW 612-45H	18⅞" (473)



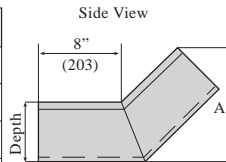
45° Horizontal Bend 12" Radius

Part No.	A	L
CW 250-45H-12	5⅞" (141)	25⅞" (657)
CW 404-45H-12	8⅞" (205)	28⅞" (721)
CW 412-45H-12	16⅜" (411)	34⅞" (878)
CW 606-45H-12	10⅜" (259)	30" (762)
CW 612-45H-12	16⅜" (411)	34⅞" (878)



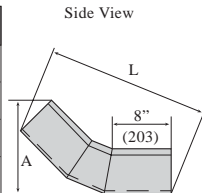
45° Vertical Inside Direct Bend

Part No.	A
CW 250-45IV	8⅞" (205)
CW 404-45IV	10⅞" (264)
CW 412-45IV	10⅞" (264)
CW 606-45IV	11⅜" (284)
CW 612-45IV	11⅜" (284)



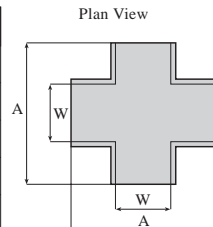
45° Vertical Inside Bend 12" Radius

Part No.	A	L
CW 250-45IV-12	10⅞" (257)	21⅞" (535)
CW 404-45IV-12	11⅞" (287)	21⅜" (552)
CW 412-45IV-12	11⅞" (287)	21⅜" (552)
CW 606-45IV-12	12⅜" (324)	21⅜" (552)
CW 612-45IV-12	12⅜" (324)	21⅜" (552)



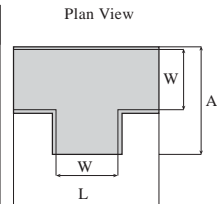
Horizontal Cross Direct

Part No.	A
CW 250-HC	18½" (470)
CW 404-HC	20⅞" (524)
CW 412-HC	28⅜" (730)
CW 606-HC	22⅜" (578)
CW 612-HC	28⅜" (730)



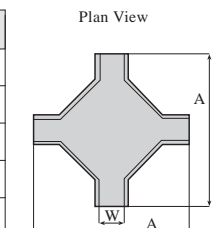
Horizontal Tee Direct

Part No.	A	L
CW 250-HT	10½" (267)	18½" (470)
CW 404-HT	13" (330)	20⅞" (524)
CW 412-HT	21" (533)	28⅜" (730)
CW 606-HT	15" (381)	22⅜" (578)
CW 612-HT	21" (533)	28⅜" (730)



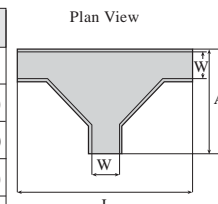
Horizontal Cross 12" Radius

Part No.	A
CW 250-HC-12	42¼" (1073)
CW 404-HC-12	44⅞" (1133)
CW 412-HC-12	52⅜" (1140)
CW 606-HC-12	46⅜" (1187)
CW 612-HC-12	52⅜" (1140)



Horizontal Tee 12" Radius

Part No.	A	L
CW 250-HT-12	22½" (572)	42¼" (1073)
CW 404-HT-12	24⅜" (630)	44⅞" (1133)
CW 412-HT-12	32⅜" (837)	52⅜" (1340)
CW 606-HT-12	26⅜" (684)	46⅜" (1187)
CW 612-HT-12	32⅜" (837)	52⅜" (1340)



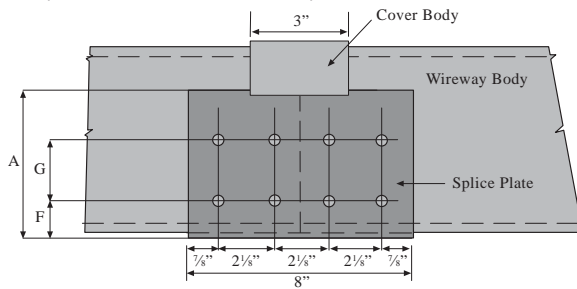
Splice Plates & Accessories - Wireway

Splice Plates - Wireway

Cover Body & Splice Plates

Part No.	A	F	G	Hole Dia.
CW 404 x SP304	3 $\frac{3}{16}$ " (81)	1 $\frac{3}{4}$ " (44)	0	$\frac{7}{16}$ " (11)
CW 412 x SP304	3 $\frac{3}{16}$ " (81)	1 $\frac{3}{4}$ " (44)	0	$\frac{7}{16}$ " (11)
CW 606 x SP304	5 $\frac{3}{8}$ " (136)	1 $\frac{1}{2}$ " (38)	2 $\frac{5}{8}$ " (67)	$\frac{7}{16}$ " (11)
CW 612 x SP304	5 $\frac{3}{8}$ " (136)	1 $\frac{1}{2}$ " (38)	2 $\frac{5}{8}$ " (67)	$\frac{7}{16}$ " (11)

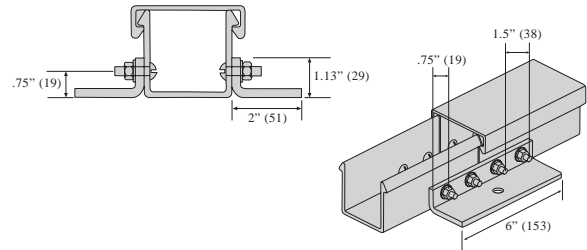
Includes snap-on cover splice plate and bottom plate with 304SS fasteners. If 316SS is required, substitute 316 for 304 in part number.



Wireway CW Hold Down Splice Joint

Part No.
CW250-AC304
CW404-AC304
CW412-AC304
CW606-AC304
CW612-AC304

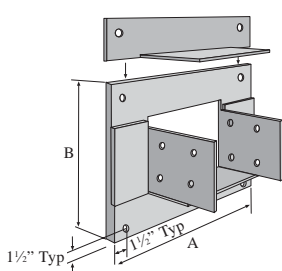
A dual purpose splice plate that offers hold down capabilities. Easily adaptable to other Enduro wireway sizes with or without body splice plate. Standard hold down splice joint material color is gray. Contact us for details regarding a custom color. If 316SS is required, substitute 316 for 304 in part number.



Accessories - Wireway

Panel Adapter

Part No.	A	B
CW 250 - PA	contact us	contact us
CW 404 - PA	10 $\frac{1}{4}$ " (260)	10 $\frac{3}{8}$ " (264)
CW 412 - PA	18 $\frac{1}{4}$ " (463)	10 $\frac{3}{8}$ " (264)
CW 606 - PA	12 $\frac{1}{4}$ " (311)	12 $\frac{3}{8}$ " (314)
CW 612 - PA	18 $\frac{1}{4}$ " (463)	12 $\frac{3}{8}$ " (314)

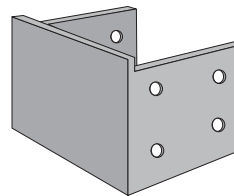


Top plate removable for easy access.

Closure Plate

Part No.
CW 250 - CP304
CW 404 - CP304
CW 412 - CP304
CW 606 - CP304
CW 612 - CP304

Fasteners are 304SS.
If required 316SS can be substituted;
Example: CW 404-CP-316



Specification - Wireway

1.0 General

- 1.1 This specification covers the requirements for a fiberglass lay-in-wireway system to support and protect power, control and instrumentation cables.
- 1.2 Wireway shall be solid bottom type construction with minimum wall thickness of .1875 inches.
- 1.3 Cover and cover splice plates shall be snap-on type construction requiring no installation fasteners.

2.0 Standards

- 2.1 The wireway system shall conform to the applicable sections of the National Electric Code (NEC) Article 378.
- 2.2 The NEC requires wireway to be supported at intervals not exceeding 5 feet, unless specifically approved for supports at greater intervals, but in no case shall the distance between supports exceed 10 feet.

3.0 Materials

- 3.1 The wireway, cover, and splice plates shall be made from the pultrusion process utilizing an Enduro Fire Retardant Polyester resin formulation with UV light inhibiting additives and exterior veil coverage.
- 3.2 Resin System (as required): Isophthalic Polyester, Vinyl Ester, Halogen-Free Isophthalic Polyester, Halogen-Free Vinyl Ester or Halogen-Free Low Smoke Plus resin available.
- 3.3 All composite material shall meet ASTM E84, maximum 25 flame spread rating.
- 3.4 Color shall be gray.

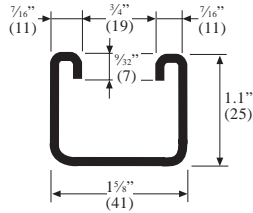
4.0 Loading Capabilities

Consult factory for specific applications.

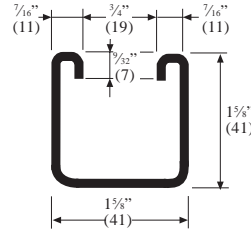
Support Systems & Strut

Channel Framing (Solid & Punched)

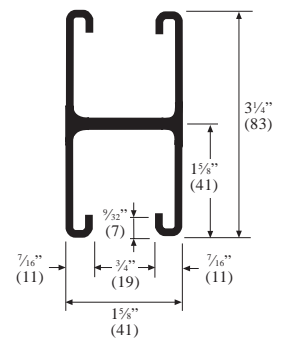
Part No.	Lbs./Ft.
Polyester: EC-10	0.47
Vinyl Ester: EC-VE-10	



Part No.	Lbs./Ft.
Polyester: EC-158	0.68
Vinyl Ester: EC-VE-158	



Part No.	Lbs./Ft.
Polyester: EC-158D	1.36
Vinyl Ester: EC-VE-158D	



For punched channel framing add "H" to the end of the part number; example: EC-10H. Punched not available for double channel. Punched holes are 9/16" holes on 2" centers. Replaces drilled strut.

For use in tray support systems, electrical conduit and tray rungs for tying down cable. Available in 10 ft and 20 ft lengths. See below for loading, and see page 41 for specification information.

Technical Data - Support Systems & Strut

Channel Framing Loading

Beam and Column Data: Polyester and Vinyl Ester Resin Base

Beam Span or Column Height In.(mm)	Part No.	Maximum Allowable Uniform Beam Load		Deflection @ Maximum Allowable Uniform Beam Load		Uniform Load @ Maximum Deflection = 0.25 In. (6mm)		Uniform Load @ Maximum Deflection = 0.50 In. (13mm)		Maximum Allowable Column Load Lbs.(kg)
		Poly Lbs.(kg)	Vinyl Lbs.(kg)	Poly In.(mm)	Vinyl In.(mm)	Poly Lbs.(kg)	Vinyl Lbs.(kg)	Poly Lbs.(kg)	Vinyl Lbs.(kg)	
12" (305)	EC-10 EC-158 EC-158D	790 (358) 1720 (780) 5080 (2301)	990 (449) 2150 (975) 6350 (2880)	0.11 (3) 0.07 (2) 0.04 (1)	0.12 (3) 0.07 (2) 0.04 (1)	- - -	- - -	- - -	- - -	2550 (1156) 3650 (1655) 7300 (3111)
18" (457)	EC-10 EC-158 EC-158D	530 (240) 1150 (521) 5080 (2301)	670 (304) 1440 (653) 4240 (1923)	0.24 (6) 0.15 (4) 0.09 (2)	0.27 (7) 0.17 (4) 0.10 (2)	- - -	620 (281) - -	- - -	- - -	2350 (1066) 3370 (1528) 6740 (3058)
24" (610)	EC-10 EC-158 EC-158D	400 (181) 860 (390) 2540 (1152)	500 (227) 1080 (490) 3180 (1442)	0.43 (11) 0.27 (7) 0.16 (4)	0.48 (12) 0.30 (8) 0.17 (4)	240 (109) 810 (367) -	270 (122) 910 (412) -	- - -	- - -	2070 (939) 2960 (1342) 5920 (2685)
30" (762)	EC-10 EC-158 EC-158D	320 (145) 690 (313) 2040 (925)	400 (181) 870 (394) 2550 (1156)	0.67 (17) 0.42 (11) 0.24 (6)	0.75 (19) 0.48 (12) 0.27 (7)	120 (54) 410 (186) 2000 (907)	140 (63) 460 (209) 2350 (1066)	240 (109) -	270 (122) -	1710 (775) 2450 (1111) 4900 (2222)
36" (914)	EC-10 EC-158 EC-158D	270 (122) 580 (263) 1700 (771)	340 (154) 730 (331) 2130 (966)	0.98 (25) 0.61 (15) 0.35 (9)	1.10 (28) 0.69 (19) 0.39 (10)	70 (31) 240 (109) 1220 (553)	80 (36) 270 (122) 1370 (621)	140 (63) 480 (217) -	160 (72) 540 (245) -	1260 (571) 1800 (816) 3600 (1633)
42" (1067)	EC-10 EC-158 EC-158D	230 (104) 490 (222) 1460 (662)	290 (131) 620 (281) 1830 (830)	1.32 (34) 0.82 (21) 0.48 (12)	1.49 (38) 0.92 (23) 0.62 (16)	50 (22) 150 (68) 770 (349)	55 (25) 170 (77) 870 (394)	100 (45) 300 (136) 1510 (650)	115 (52) 340 (154) 1720 (530)	920 (417) 1320 (598) 2640 (1197)
48" (1219)	EC-10 EC-158 EC-158D	200 (91) 430 (195) 1270 (576)	250 (113) 540 (245) 1590 (721)	1.72 (44) 1.07 (27) 0.62 (16)	1.92 (49) 1.20 (30) 0.69 (17)	30 (13) 100 (45) 520 (236)	25 (16) 115 (52) 590 (267)	60 (27) 200 (90) 1040 (471)	70 (31) 230 (104) 1170 (780)	700 (317) 1010 (458) 2020 (916)
60" (1524)	EC-10 EC-158 EC-158D	160 (72) 350 (158) 1020 (462)	200 (91) 400 (200) 1280 (580)	2.68 (68) 1.70 (43) 0.97 (25)	2.99 (76) 1.91 (48) 1.09 (28)	20 (9) 60 (27) 270 (122)	23 (10) 70 (32) 310 (140)	40 (18) 120 (54) 540 (245)	45 (20) 135 (61) 610 (276)	180 (81) 260 (118) 520 (235)
72" (1829)	EC-10 EC-158 EC-158D	140 (63) 290 (131) 850 (385)	180 (81) 370 (168) 1070 (485)	* 2.44 (62) 1.40 (35)	* 2.78 (71) 1.57 (40)	10 (4) 30 (13) 160 (72)	12 (5) 34 (15) 180 (81)	20 (9) 60 (27) 320 (145)	23 (10) 70 (32) 360 (163)	- - -
84" (2134)	EC-10 EC-158 EC-158D	120 (54) 250 (113) 730 (331)	150 (68) 320 (145) 920 (417)	* * 1.91 (48)	* * 2.15 (55)	NR 20 (9) 100 (45)	- 23 (10) 115 (52)	12 (5) 40 (18) 200 (90)	15 (7) 45 (20) 230 (104)	- - -
96" (2438)	EC-10 EC-158 EC-158D	100 (45) 220 (100) 640 (290)	130 (59) 250 (113) 800 (363)	* * 2.50 (63)	* * 2.79 (71)	NR 13 (6) 70 (32)	- 15 (7) 80 (36)	- 26 (12) 140 (63)	- 30 (13) 160 (72)	- - -

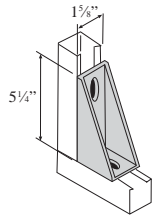
* Deflection is in excess of 3.00 In. (76mm); mid-span support is recommended. NR = Not Recommended; **Beam Loads:** Table lists the total allowable load for various simple spans based on a minimum safety factor 2:1. If load is concentrated at center of span, multiply the load from the table by 0.5 and the corresponding deflection by 0.8. **Column Loads:** Table lists the total allowable axial load for various unsupported column heights based on a minimum safety factor of 3:1. Eccentric loads should be reduced according to standard practice.

Notes: All beams should be supported in a manner to prevent rotation at supports. Long, deep beams should be tied between supports to prevent twist.

Support Systems & Strut

Connector Plates

Based on individual applications, changes may be required on dimension and thickness of material. Please contact us. Holes are drilled to accept $\frac{3}{8}$ " bolts.
For Vinyl Ester Connector Plates, insert the letters "VE" as indicated in this example:
Polyester = CP-100; Vinyl Ester = CP-VE-100



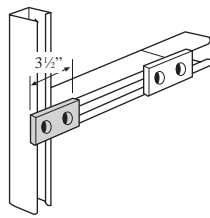
Universal Angle
SEE NOTE AT BOTTOM

Part No.

Polyester: CP-501

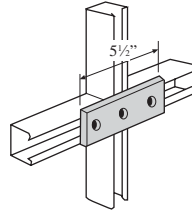
Polyurethane: CP-PU-501

Nylon: CP-NY-501



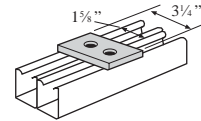
Part No.

CP-100



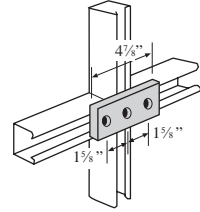
Part No.

CP-101



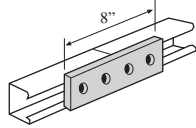
Part No.

CP-102



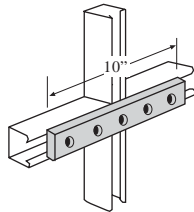
Part No.

CP-103



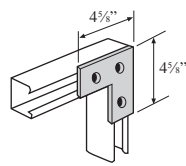
Part No.

CP-104



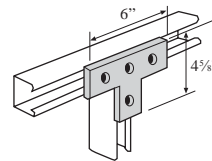
Part No.

CP-105



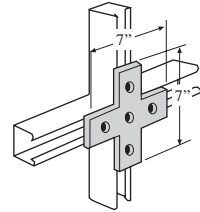
Part No.

CP-109



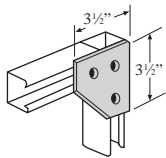
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CP-110



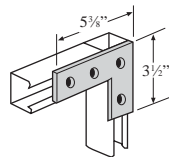
Part No.

CP-111



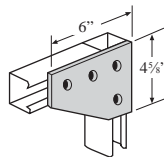
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CP-112



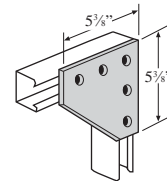
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CP-113



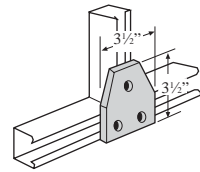
Part No.

CP-114



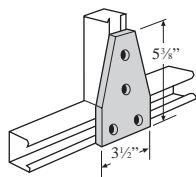
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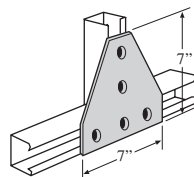
Part No.

CP-116



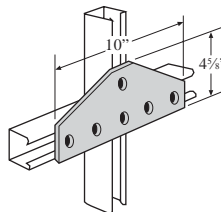
Part No.

CP-117



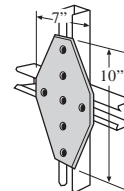
Part No.

CP-118



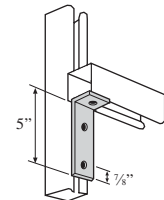
Part No.

CP-119



Part No.

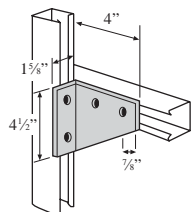
CP-120



Note: Flat washer not required for CP-205

Part No.

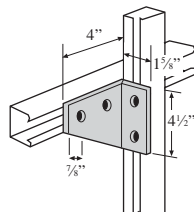
CP-205



SEE NOTE AT BOTTOM

Part No.

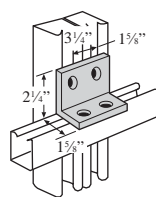
CP-209



SEE NOTE AT BOTTOM

Part No.

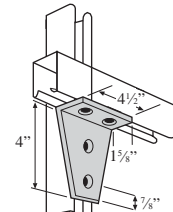
CP-210



SEE NOTE AT BOTTOM

Part No.

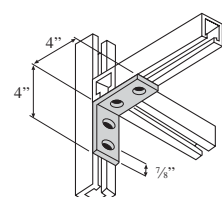
CP-211



SEE NOTE AT BOTTOM

Part No.

CP-226



SEE NOTE AT BOTTOM

Part No.

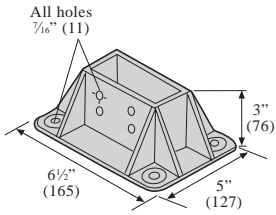
CP-405

NOTE: These composite angle components will not support tensile loads or forces.

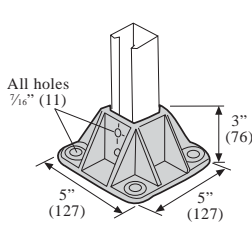
Support Systems & Strut

Post Base

Part No.
Polyester: PBD-PE
Polyurethane: PBD-PU



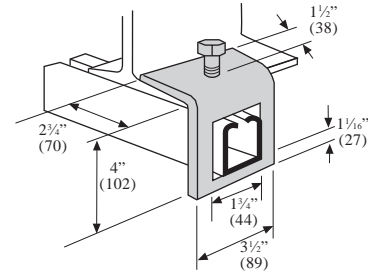
Part No.
Polyester: PBS-PE
Polyurethane: PBS-PU



Window Clamp

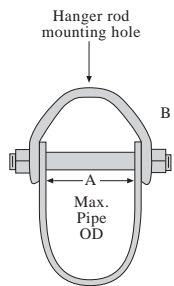
Part No.
WC-158

Stainless steel set screw included



Clevis Hanger

Part No.	Pipe Size	Hanger O.D.	Hanger Rod Dia.
CH-010	3/4" to 1"	2.53"	3/8"
CH-015	1 1/4" to 1 1/2"	3.06"	1/2"
CH-020	2"	3.68"	1/2"
CH-025	3" to 4"	7.04"	1/2"
CH-030	6"	9.36"	1/2"



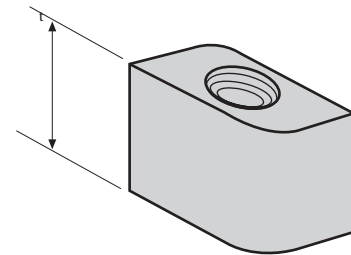
Polyurethane (PU) resin is the standard. Allowable loads have a 3:1 safety factor at 120°F. Insulation may be required at higher temperatures. Tolerance is 3/4" maximum. For Clevis Hangers sizes 8" to 24" please contact us for pricing and availability.

FRP/GRP Channel Nut

Part No.	Size	Weight	t
CN-025	1/4"-20	5.58 Lbs/C	1 1/16" (27)
CN-038	3/8"-16	5.31 Lbs/C	1 1/16" (27)
CN-050	1/2"-13	5.27 Lbs/C	1 1/16" (27)

Vinyl Ester resin is the standard. Channel nuts are self locking and designed for use with EC-158 and EC-158D strut only.

Resistance to slip = 450 Lbs. per bolt
Pull out strength = 700 Lbs. per bolt
Recommended safety factor = 3



Non-Metallic Universal Pipe Clamp

Conduit Outside Diameter Inches
(for reference only)

Part No.	Pipe Size Inches	Wt./ 100 Sets* Lbs.	PVC Schedule 40 & 80	PVC Coated Steel	Rigid Steel	Fiberglass (FRP/GRP)
PC-1609N	1/2	9.0	0.840	0.920	0.840	-
PC-1610N	3/4	10.0	1.050	1.130	1.050	0.890
PC-1611N	1	10.5	1.315	1.395	1.315	1.195
PC-1612N	1 1/4	11.0	1.660	1.740	1.660	1.507
PC-1613N	1 1/2	13.0	1.900	1.980	1.900	1.757
PC-1614N	2	14.0	2.375	2.455	2.375	2.132
PC-1615N	2 1/2	18.0	2.875	2.955	2.875	2.650
PC-1616N	3	20.0	3.500	3.580	3.500	3.132
PC-1617N	3 1/2	23.0	4.000	4.080	4.000	3.632
PC-1618N	4	25.0	4.500	4.580	4.500	4.132

* Includes nylon bolt

For rigid, PVC coated steel, PVC Schedule 40 & 80 and fiberglass conduit.

Made from a toughened grade of glass reinforced polycarbonate resin. Standard fasteners are nylon slotted hex bolt and nut. Recommended for horizontal use as shown. For vertical placement please contact us.

Packaged 10 sets per bag.

If stainless steel fasteners are preferred, indicate by adding the letter "S" after the catalog number (Example: PC-1609S).

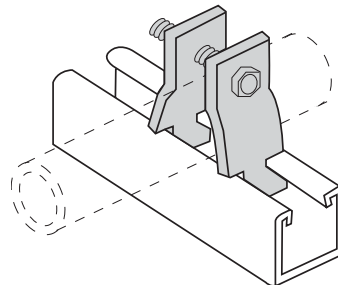
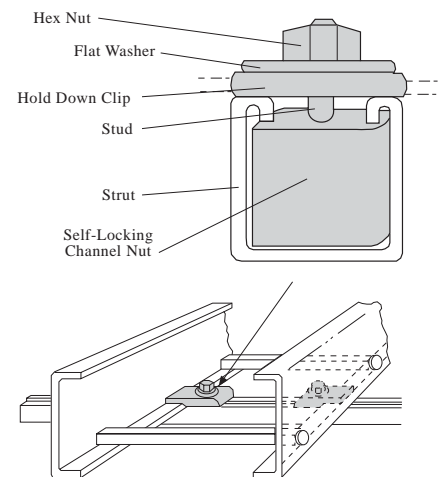


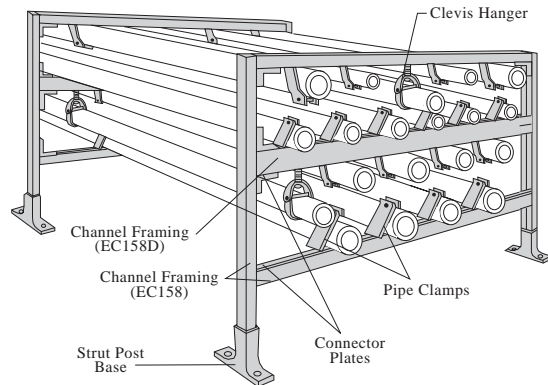
Diagram: FRP/GRP Channel Nut with Hold Down Clip



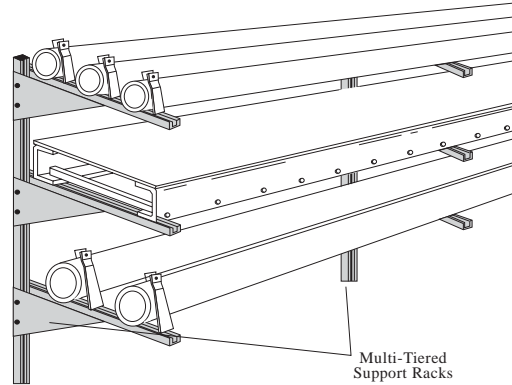
Typical Installations - Support Systems & Strut

Enduro's DuroStrut combined with our cable tray accessories are functional in many non-cable tray applications. DuroStrut includes all the items necessary to field fabricate to your specifications whether wall, floor, or ceiling mounted. Enduro can also assist in engineering to your requirements. The information published are guideline suggestions for the design professional. Full-scale proof testing of installation is recommended to verify assembly at site. If you need a special shape or assembly, call Enduro for information on custom pultrusions and fabrications.

Pipe Support Racks Sample Installation



Wall Stanchion Sample Installation



FRP Structural Shapes and Flat Sheets

Channel		Unusual Channel		Angle		Square Tube		Flat Sheet (Construction Grade)	
Size in Inches	Lbs/Ft	Size in Inches	Lbs/Ft	Size in Inches	Lbs/Ft	Size in Inches	Lbs/Ft	Size in Inches	Lbs/Ft
2 x 1 x 3/16	0.37	4 3/4 x 3 1/4 x 1/4	2.06	1 x 1 x 1/4	0.17	2 x 2 x 1/8	0.90	1/8 thickness	1.41
3 x 1 x 3/16	0.68	6 7/8 x 5 3/8 x 1/4	3.08	2 x 2 x 1/4	0.69	2 x 2 x 1/4	1.40	3/16 thickness	1.71
4 x 1 1/8 x 1/4	1.13	Round Tube		3 x 3 x 3/8	1.53	2 x 2 1/2 x 1/4*	1.55	1/4 thickness	2.34
6 x 1 5/8 x 1/4	1.70	2 3/8 x 1/4	1.45	4 x 4 x 3/8	2.09	2 1/2 x 2 1/2 x 1/4	1.70	3/8 thickness	3.35
6 x 1 5/8 x 5/16	2.10	Wide Flange Beam		4 5/8 x 1 5/8 x 1/8	0.83	3 x 3 x 1/4	2.20	1/2 thickness	4.03
6 x 2 x 3/16	1.53	6 x 6 x 3/8	5.30	5 x 5 x 3/8	2.81	3 x 4 x 1/4	2.51		
8 x 1 3/4 x 5/16	2.50			6 x 6 x 3/8	3.35	4 x 4 x 1/4	3.25		
10 x 2 3/4 x 3/8	4.27					6 x 6 x 1/4	4.70		

*Non stock item, minimum run required.

All are available in polyester and vinyl ester. Stocking lengths are 10' or 20' Flat sheet is available in 3' x 10' pieces. Contact us for required shapes not listed.

Specification - DuroStrut

1.0 Scope

- 1.1 This specification covers the requirements for Enduro non-metallic Channel Framing Systems & Accessories

2.0 Standards

- 2.1 All channel shall have a flame spread rating of 25 or less, and the Smoke Developed Index shall have a density of 450 or less when tested in accordance with the provisions of ASTM E-84; therefore qualifying as a class 1 material in the Uniform Building Code
- 2.2 All channel shall have a surfacing veil over the entire surface in addition to a UV inhibitor in the resin system to protect against degradation from ultra-violet light.
- 2.3 Glass-reinforced channels covered in this specification shall comply with the requirements of ASTM D 3917 and ASTM D 4385 which govern the dimensional tolerance and visual defects of pultruded shapes.

3.0 Materials

- 3.1 FRP channel shall be of pultruded glass-reinforced isophthalic polyester or vinyl ester resin having the physical property values listed in this catalog.
- 3.2 Some accessories shall be of injection molded, 40% long glass fiber reinforced polyurethane, or nylon.

- 3.3 All channel shall be manufactured by the pultrusion process, and contain a minimum of 50% glass by weight.
- 3.4 All channel shall conform, as a minimum requirement, to loads and deflections shown on the tables in the latest version of the Enduro technical catalog.

4.0 Non-Metallic Pipe Clamps

- 4.1 All pipe clamps shall be manufactured by the injection molding process with an impact modified, 30% glass filled thermoplastic polyester resin.
- 4.2 All pipe clamps interlock with the channel framing described above.
- 4.3 All pipe clamps shall be designed for rigid PVC coated steel, Schedule 40 and 80 PVC, and filament wound fiberglass pipe or conduit. Clamps shall be adjustable to accommodate a 3/4" minimum deviation in O.D. size.

5.0 Fasteners

- 5.1 All fasteners shall be injected molded glass reinforced nylon, 316 stainless steel, or pultruded vinyl ester rod with ground threads and compression molded vinyl ester nuts.

6.0 Acceptable Manufacturer

- 6.1 DuroStrut is manufactured and fabricated exclusively by Enduro Composites, Inc. - Houston, TX.

Fastener & Hanging Systems

Enduro fastener and hanging systems are exceptionally strong non-metallic mechanical systems with outstanding shear and tensile strengths. This makes the Enduro fastener system an excellent choice for all structural, mechanical and electrical applications where fasteners must be corrosion-resistant and/or non-conductive. It is not recommended that FRP/GRP threaded rod be used in conjunction with steel or PVC coated steel beam clamps or nuts. Thread shear could occur due to insufficient thread engagement.

FRP/GRP Threaded Rod

Part No.	Size	Weight
TR-FRP-038	3/8"-16	0.07 Lbs/Ft
TR-FRP-050	1/2"-13	0.12 Lbs/Ft
TR-FRP-0625	5/8"-11	0.18 Lbs/Ft
TR-FRP-075	3/4"-10	0.28 Lbs/Ft
TR-FRP-100	1"-8	0.50 Lbs/Ft

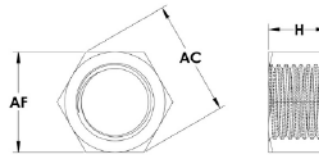
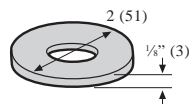


Hex Nut

Part No.	Thread Size	Height	AF	AC
FN-038	3/8"-16	.337-.320"	.563-.551"	.650-.628"
FN-050	1/2"-13	.448-.427"	.750-.736"	.866-.84"
FN-0625	5/8"-11	.559-.535"	.938-.922"	1.083-1.051"
FN-075	3/4"-10	.665-.617"	1.125-1.088"	1.299-1.24"
FN-1000	1"-8	.887-.831"	1.5-1.45"	1.732-1.653"

FRP/GRP Flat Washer

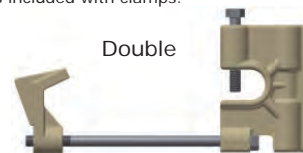
Part No.	Size	Weight
FW-FRP-038	3/8"-16	1.3 Lbs/C
FW-FRP-050	1/2"-13	1.3 Lbs/C
FW-FRP-0625	5/8"-11	1.3 Lbs/C
FW-FRP-075	3/4"-10	1.3 Lbs/C
FW-FRP-1000	1"-8	1.3 Lbs/C



Beam Clamps

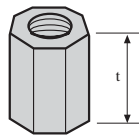
Part No.	Description
BCS-3/8	Single for 3/8" FRP/GRP Threaded Rod
BCS-1/2	Single for 1/2" FRP/GRP Threaded Rod
BCD-3/8	Double for 3/8" FRP/GRP Threaded Rod
BCD-1/2	Double for 1/2" FRP/GRP Threaded Rod

Ultimate load = 300 Lbs. Recommended safety factor = 3
SS set screws included with clamps.



FRP/GRP Rod Coupler

Part No.	Size	Weight	t
RC-FRP-038	3/8"-16	7.80 Lbs/C	2" (51)
RC-FRP-050	1/2"-13	7.00 Lbs/C	2" (51)
RC-FRP-0625	5/8"-11	13.73 Lbs/C	2" (51)
RC-FRP-075	3/4"-10	12.66 Lbs/C	2" (51)
RC-FRP-1000	1"-8	44.03 Lbs/C	2 3/4" (70)



Vinyl Ester resin is the standard.
IMPORTANT: Minimum thread engagement must be 3/4" per side.

Typical Properties - FRP/GRP Threaded Rod

Properties	3/8-16 UNC	1/2-13 UNC	5/8-11 UNC	3/4-10 UNC	1-8 UNC
Thread shear strength using FRP/GRP hex nut in tensile - Lbs.	1,250	2,200	3,100	4,500	6,500
Transverse shear on threaded rod - double shear (load Lb.) (ASTM-B565)	3,000	5,000	7,500	12,000	22,000
Transverse shear on threaded rod - single shear (load Lb.)	1,600	2,600	3,800	6,200	15,000
Compressive strength longitudinal, PSI (ASTM-D695)	54,000	54,000	54,000	54,000	65,000
Flexural strength, PSI (ASTM-D790)	55,000	55,000	55,000	55,000	60,000
Flexural modulus, PSI x 10 ⁶ (ASTM-D790)	2.0	2.0	2.0	2.50	2.75
Torque strength using fiberglass nut lubricated with SAE 10W30 motor oil, Ft.-Lbs.	8	18	35	50	110
Dielectric strength, KV/In. (ASTM-D149)	35	35	35	35	35
Water absorption 24 hour immersion - threaded, % (ASTM-D570)	1	1	1	1	1
Coefficient of thermal expansion - longitudinal In./In./°F	5 x 10 ⁻⁶	5 x 10 ⁻⁶	5 x 10 ⁻⁶	5 x 10 ⁻⁶	5 x 10 ⁻⁶
Max recommended operation temp - based on 50% retention of ultimate thread shear strength °F (°C)	200°(93°)	200°(93°)	200°(93°)	200°(93°)	200°(93°)
Stud weight, Lb./Ft.	0.07	0.12	0.18	0.28	0.50
Flammability	Self-extinguishing on all				

Note: 1 Ft.-Lb. = .138 kg-M; 1 Lb = .4536 kg; 1 PSI = 6.984 K Pa; Test results are for studs with single FRP/GRP hex nuts only, stainless steel nuts will result in reduced values. Proper safety factors should be applied to testing. All values are based on laboratory test results.

Fastener & Hanging Systems - Installation Guide

The Enduro fastener system is a vinyl ester resin and fiberglass composite with unique characteristics which make it ideal for many applications where high strength, non-metallic fasteners are required.

For Access After Installation

If the assembly will require occasional removal of the nuts, the rod should be lightly coated with a dry lubricant, silicon spray, or a light oil prior to assembly.

For Permanent Installation

If the assembly is designed to be a permanent installation, the nuts and studs should be bonded with an epoxy adhesive.

Apply a light coating of adhesive to the stud and nut threads, then quickly secure the assembly before adhesive has time to set, otherwise the mil thickness of the adhesive will make it impossible to thread. Next, apply a thick coat of adhesive to the exposed stud and nut surfaces. This provides a locking mechanism which eliminates the need for extra torque and lock washers.

For Hanging System Installation

The optimum method of installation for a hanger system is to finger tighten the assembly and then only tighten the nuts one-half turn to secure any jam nut assemblies. Follow the permanent installation procedure whenever possible. This results in minimum torque and allows maximum thread shear.

To insure maximum resistance to chemical attack once the assembly is completed, the exposed stud thread and nut surfaces should be coated with Enduro's Field Cutting Sealant (Part No. ES-Q or ES-G; see pg. 27).

Metal & FRP/GRP Installation

When utilizing metal fasteners, connectors, or nuts, consideration must be given to reduced strengths. Enduro rod and nuts are designed with maximum thread engagement and extra nut thickness. Metal products have less thread engagement. When installation requires metal components, special tests may be necessary to define ultimate strengths of the fastener systems.

For Beam Clamp Installation

Maximum installation torque of 10 foot-pounds is recommended to secure set screw.

Site Conditions

Vibration and dynamic loading conditions on the Enduro fastener assembly should be eliminated or minimized. If this is not possible, additional safety factors should be used in designing the fastener system.

Tools Required

The oversize hex nut design of the Enduro nut requires a larger than normal socket wrench, but either a six point or twelve point socket will work.

Important - do not exceed the torque values listed in the table above.

Caution

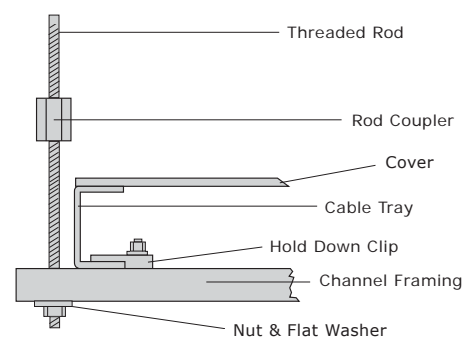
Do not over torque the Enduro nut and rod. The thread shear and torque values are NOT mutually exclusive, they are additive

Example

1/2" - 13 has a thread shear of 2,200 Lbs. and an ultimate torque strength of 18 ft-lbs. If you use the maximum installation torque of 8 ft-lbs, the amount of thread shear remaining is reduced to 1,225 lbs.

Specifying engineers should apply this information at the design stage, applying the proper safety factors to ensure a secure installation.

Typical Hanging Support System



Instrument & Pushbutton Stands

Enduro's universal instrument support system offers many of the same features and benefits as our cable tray, strut and wireway systems. Enduro instrument and pushbutton stands are built to any configuration required, including, single or double post, large mounting panel (switch rack/station) type designs, and any mounting requirements needed. For all configurations, please specify dimensions in inches.

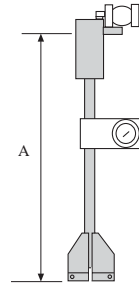
Enduro Instrument & Pushbutton Stand Benefits:

- Costs less than stainless steel systems & competitive with most metallic systems
- Faster assembly time than metallic systems due to easy cut, fit, and adhesive design
- Lighter weight with corrosion resistance comparable to stainless steel and galvanized stand designs
- Compatible with metallic post bases and metallic support structures
- Easily built on site allowing for design freedom and increasing response time
- Constructed from 2" Schedule 80 gray vinyl ester base for superior corrosion resistance
- 2" SteelFree™ U-Bolt (shown below) may be used to attach instruments and/or gauges to the supports

Floor Mount Single

Part No. Key*

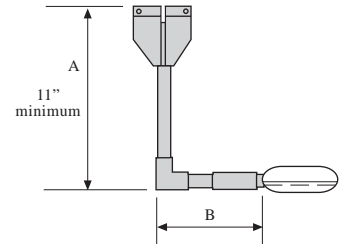
DISR170B1 x (A)



Column or Wall Mount

Part No. Key*

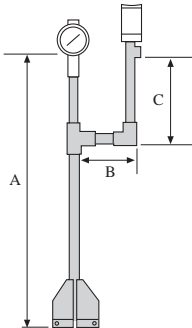
DISR175B48 x (A) x (B)



Floor Mount, Multiple Instrument

Part No. Key*

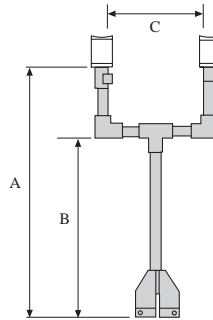
DISR172B x (A) x (B) x (C)



Floor Mount Double

Part No. Key*

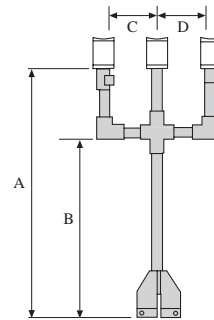
DISR171B x (A) x (B) x (C)



Floor Mount Triple

Part No. Key*

DISR173T x (A) x (B) x (C) x (D)

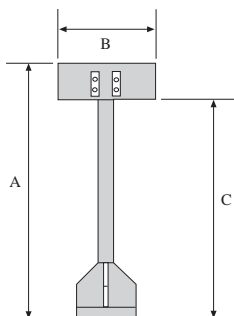


Pushbutton Station

Part No. Key*

DPS x (A) x (B) x (C)

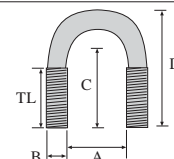
Made of pultruded fiberglass reinforced vinyl ester 2" square tube with an 8" square vinyl ester base at 6 1/2" high. Please specify dimensions in inches.



U-Bolts

Part No.	Pipe Nom. Dia.	A	B	C	D	TL	Max Rec. Loading Lbs.	Max Rec. Torque In.-Lbs.
EU050	1/2"	0.93	0.375	1.56	2.41	1.25	75	20
EU075	3/4"	1.12	0.375	1.66	2.60	1.25	75	20
EU100	1"	1.37	0.375	1.78	2.85	1.25	75	20
EU125	1 1/4"	1.68	0.375	1.94	3.16	1.25	75	20
EU150	1 1/2"	2.00	0.375	2.10	3.47	1.25	75	20
EU200	2"	2.43	0.500	2.46	4.18	1.50	150	40
EU250	2 1/2"	2.93	0.500	2.71	4.68	1.50	150	40
EU300	3"	3.56	0.500	3.03	5.31	1.50	150	40
EU350	3 1/2"	4.06	0.500	3.28	5.81	1.50	150	40
EU400	4	4.56	0.500	3.53	6.31	1.50	150	40

Made from glass reinforced polyurethane resin, u-bolts are the ideal choice for mounting enclosures, instrumentation, conduit, and piping on your Enduro instrument and pushbutton support systems. Excellent as an alternative when replacing corroded steel u-bolts. Recommended for operating temperatures up to 150 °F. Four nuts included with each u-bolt.



* In Part No. Key, parentheses () = insert corresponding dimension

Other Enduro Engineered FRP/GRP Products

Enduro Environmental Products

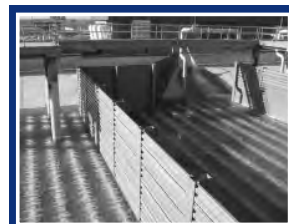
FRP/GRP Tank Cover

- Compression Sealed for Effective Odor Control
- Removable Panels for Easy Access
- Walkable Non-skid Surface
- Less Headspace Over Water for Efficient Odor Processing
- Customized to Your Application



FRP/GRP Baffle Wall

- UL Certified to NSF ANSI standard 61
- Easy Installation
- Baffle Options:
 - Removable Panels
 - Flexible Design
 - Access Doors
 - Solid or Perforated
- Customized to Your Application



FRP/GRP Clarifier Products

- Weirs and Scum Baffles
- Density Current Baffles
- Launder Covers
- Launder Trough Systems



Enduro Third Rail Cover Board For Light Rail & Mass Transit Systems

Enduro third rail cover boards are custom designed to provide safety by shielding or insulating personnel from a rail that is "live" or may contain stray currents. Our fiberglass light rail covers are made of high-performance, lightweight pultruded composites. Enduro has exceeded the most stringent of transportation safety tests utilizing our Halogen Free Low Smoke Plus resin technology that provides the highly desired low smoke development and low toxicity characteristics preferred by transportation safety authorities.



Enduro Building Products

Enduro FRP/GRP Building Panels

World-Leading Industrial Building Panels

For demanding structural and environmental conditions, Enduro Tuff Span® FRP/GRP Building Panels deliver unsurpassed performance as industrial roofing and siding.

Strength

In FRP/GRP materials, strength and stiffness is determined by the alignment and amount of its glass fiber reinforcements.

Tuff Span® is constructed with high reinforcing content placed in straight and continuous, bidirectional alignment. As a result, Tuff Span® has higher strength and stiffness of any profiled FRP/GRP Building Panel and history of standing up to hurricane winds where aged metal, cementitious, and other materials have failed.

Corrosion Resistance

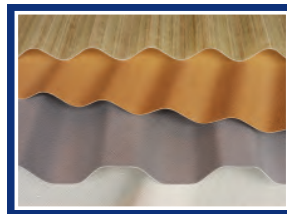
To resist attack from aggressive chemical exposure, Tuff Span® is formulated with premium resin systems, Iso-Polyester or Vinyl Ester.

UV Protection

Extended and superior UV protection is provided by an exterior acrylic coating, UV stabilized resin, embossed resin-rich surface, and interior mat or veil.

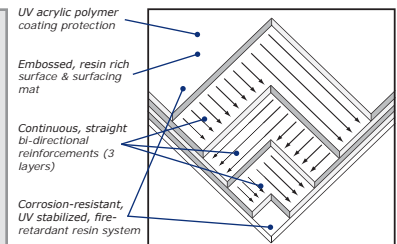


Fertilizer storage facility installed with Enduro DuroLite roofing & siding panels



Opaque Colors		Translucent Colors	
Gray		Gray	Clear
White		White	Green
Beige		Beige	Daylight Blue
Stone White		Stone White	Gray Mist
Shale		Shale	

Enduro has the ability to produce colors matched to existing structures. More colors available, contact us.



Enduro Tuff Span® FRP/GRP panels are the strongest of any profiled FRP/GRP building panel.

More Enduro Tuff Span® Products

For a complete FRP system, Enduro offers other building products designed specifically for corrosive applications & environments.

Beams

Angle

Louvers

Tube

Ridge Vents

Wide Flange

Gutter Systems

Flat Plate Sections

Channel



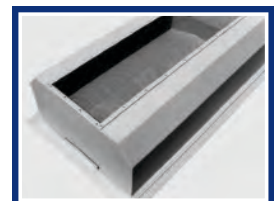
Enduro FRP/GRP structural members at a water treatment plant



Enduro FRP/GRP primary & secondary beams



Enduro FRP/GRP louvers on an offshore platform off the Gulf Coast



Enduro FRP/GRP Ridge Vent



**I
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CERTIFIED**

www.endurocomposites.com

sales@endurocomposites.com

HOUSTON

16602 Central Green Blvd.

Houston, TX 77032

800.231.7271

SAUDI ARABIA

P.O. Box 4779 Al-Khobar 31952

Kingdom of Saudi Arabia

966.3.8128630

Fairhope Municipal Pier – 1 Fairhope Avenue
Repair of Damaged Utility Tray – Hurricane Zeta
City of Fairhope Public Works Project No. MP-Zeta-20
Bid/Quote Response:

REPAIR OF DAMAGED UTILITY TRAY BID/QUOTE:

The City of Fairhope is requesting responses to repair and/or replace a damaged utility tray that runs from shoreline to the midpoint (approximately 475 linear feet) on the northside of Fairhope's Municipal Pier, 1 Fairhope Avenue, Fairhope, Alabama. During Hurricane Zeta, October 28, 2020, this multi-utility supporting structural tray was severely damaged. The respondent shall submit a lump sum price to completely repair and/or replace all damage. The lump sum price should include all material, equipment, tools, labor, and incidentals to deliver a complete "turnkey" repaired utility tray.

SCOPE OF WORK:

Work shall include, but not be limited to the following:

The repairs will be as follows:

REPAIR TRAY FRAME and BRACKETS to include

- Upper Carriage Appears Mostly Intact – Inspect and Repair as Required
- Rebuild Lower Tier of Carriage to include:
 - Replace and/or reuse threaded rods
 - Replace and/or reuse double nuts
 - Replace and/or reuse flat washers
 - Replace and/or reuse lower strut
 - Replace and/or reuse lower utility tray
- Check, tighten and/or repair all connections on each cantilever hanger bracket
- Check, tighten and/or repair all connections on each upper utility tray strut
- Check repair and replace upper utility tray along noted run

REESTABLISH UTILITIES TO PRE-STORM CONDITIONS: UTILITIES SUPPORTED AND SERVED BY THE TRAY are:

- Potable Water
- Low Pressure Sewer
- Low Pressure Gas
- Primary Electric with Ground Run
- Telecommunication Lines - Phone, Cable, Fiber
- All utilities are current off the tray and in the waters of Mobile Bay along the northside of pier. Components may be reusable, repairable or a total loss. Bid shall include a complete reestablishment of function principal utilities (electrical, water and sewer) and placement of all necessary conduits, pipes and runs for gas and telecommunications to be reestablished.

INSPECT, TIGHTEN, SECURE AND REPAIR ENTIRE UTILITY CHASE:

- From seawall east of Bent 1 to Bent 20 – approximately 475 linear feet.

CRITICAL TIMELINES:

- Contract to be let by December 15, 2020
- 15-day Notice to Proceed
- Contract to start on January 1, 2021
- 30 Calendar Days allowed for work (no exceptions for holidays)

HARDWARE SPECIFICATIONS:

1. Hanger Rod – Enduro DuroThread TR-FRP-0625 or equivalent
2. Double Nuts - Enduro DuroThread FN-FRP-0625 or equivalent
3. Flat Washers - Enduro DuroThread FW-FRP-0625 or equivalent
4. Lower Strut – UNISTRUT P100HS - Stainless Steel, Type 304 (SS): ASTM A240, Type 304 or equivalent
5. Lower Utility Tray – Enduro 18" ELL4 or equivalent – no cover
6. Upper Utility Tray – match existing – Enduro with cover Enduro EPC or equivalent
7. All other hardware shall be a strong non-metallic mechanical fastener with requisite shear and tensile strength, or 304 Stainless Steel or better.

UTILITY INSTALLATION SPECIFICATIONS and NOTES:

1. Electrical
 - a. Electric 7200 Volt Primary – Continuous red conduit from shore to transformer (supplied by electric department), no elbows or other fittings (elbows, 45's, other than couplings at the shore and at the transformer). Once conduit is installed, the electric department will pull and terminate cable. Transformer will not be energized until secondary work to the panels is completed and inspected by the building department to ensure safety.
 - b. All Secondary work by licensed electricians and approved by building department prior to energization, including new PVC conduit and copper to re-establish earth ground at the shore
2. Water
 - a. Water line should be 2" (IPS) HDPE (ANSI/NSF 61/14, ANSI/AWWA C901/C906) DR 11 Pressure Class 200 with blue stripe running entire length of pipe. Pipe shall be one continuous length joined by thermal butt-fusion. No mechanical couplings installed. Fused fittings only. Fusion machine and fusion machine operator shall be approved by pipe manufacturer. Restrained by corrosion resistant hardware spaced according to engineer/owner recommendations.
3. Sewer
 - a. Low pressure sewer line should be 3" (IPS) HDPE (ANSI/NSF 61/14, ANSI/AWWA C901/C906) DR 11 Pressure Class 200 with green stripe running entire length of pipe. Pipe shall be one continuous length joined by thermal butt-fusion. No mechanical couplings installed. Fused fittings only. Fusion machine and fusion machine operator shall be approved by pipe manufacturer. Restrained by corrosion resistant hardware spaced according to engineer/owner recommendations
4. Gas
 - a. Reestablish a ¾" PE gas service that feeds the restaurant only.
 - b. ¾" PE gas service shall be placed in 2" diameter schedule 40 PVC conduit (casing). The conduit (casing) shall have Natural Gas labels along the length of the service.
 - c. Run is from the start of the Pier (In the approximate area of the electric transformer) at the location of the gas service shut off valve.

- d. Service runs from this valve thru the sea wall and into the 2" PVC conduit (casing) to the restaurant – at that location is an anode less riser that extends out of the PVC conduit (casing) and ties into the meter set.
5. Telecommunications
 - a. Coordinate with each applicable service provider

GENERAL NOTES:

1. Contractor will be required to be Licensed, Bonded, and Insured. Documents will be required at time of bid/quote acceptance and execution of purchase order or contract.
2. Work must be completed 30 calendar days from the end of "Notice to Proceed" period.
3. Enclosed scope of work, descriptions, quantities, etc. are "good faith" estimates only. Prior to submitting quotations contractor should field measure and verify all quantities.
4. Responses will be treated and considered as "lump sum" bids for all described work.
5. Only one pay request will be accepted and processed upon final acceptance of work.
6. Job quoted are subject to the GENERAL CONDITIONS, SPECIAL PROVISIONS and SUPPLEMENTAL SPECIFICATIONS as attached.
7. Questions, inquiries and requests for clarification should be directed to Richard D. Johnson, PE; Director of Public Works: Phone - (251) 928-8003; or by Email richard.johnson@fairhopeal.gov
8. Bids must be received by 10:00 AM - Tuesday, December 15, 2020, at the Purchasing Department; 555 South Section Street; Fairhope, AL 36532

Municipal Pier Repair to Utility Tray Lump Sum Bid: \$ _____

Contractor Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Contact Name: _____ Phone: _____

CITY OF FAIRHOPE

STANDARD TERMS & CONDITIONS

1. ACCEPTANCE OF AGREEMENT

This Agreement contains all terms and conditions agreed upon by the OWNER and Winning bidder. No other agreement, oral or otherwise, regarding the subject matter of this Agreement shall be deemed to exist or to bind either party hereto. The Winning Bidder shall not employ Subcontractors without the express written permission of the OWNER. No waiver, alteration, consent or modification of any of the provisions of the Agreement shall be binding unless in writing and signed by the OWNER and CONTRACTOR. This Agreement shall not be construed against the party or parties preparing it. It shall be construed as if all the parties and each of them jointly prepared this Agreement, and any uncertainty or ambiguity shall not be interpreted against one or more parties.

2. ACCEPTANCE OF WORK

The City of Fairhope will be deemed to have accepted the Work after the City of Fairhope agrees the Work is completed by signature on delivery or service tickets. In the event Work furnished under the Contract / Agreement / Purchase Order is found to be defective or does not conform to the intent of the Contract / Agreement / Purchase Order, the awarded vendor shall, after receipt of notice from the City of Fairhope, correct the deficiencies. Failure on the part of the awarded vendor to properly correct the deficiencies within the time period allowed will constitute the City of Fairhope's right to cancel the Contract / Agreement / Purchase Order immediately, upon written notice to the awarded vendor.

3. ADDENDA

All Addenda are part of the Contract Documents. Include resultant costs in the Bid. Addenda will be issued by email to all Bidders on record and posted to the City of Fairhope website www.fairhopeal.gov. It is the responsibility of the bidder to verify that all addenda have been received, and to include all signed addenda in the bid submission

4. ADDITIONAL ORDERS

Unless it is specifically stated to the contrary in the bid response, the City of Fairhope reserves the option to place additional orders against a contract awarded as a result of this solicitation at the same terms and conditions; to extend the renewal date until a new bid is in place, if it is mutually agreeable.

5. APPLICABLE LAW

This Agreement is deemed to be under and shall be governed by and construed according to the laws of the State of Alabama. Any litigation arising out of the Agreement shall be heard in the Courts of Baldwin County, Alabama.

6. ASSIGNMENT

The awarded vendor shall not assign the Contract / Agreement / Purchase Order or sublet it as a whole without the express written permission of the City of Fairhope. The awarded vendor shall not assign any payment due them hereunder, without the express written permission of City of Fairhope. The City of Fairhope may assign the Contract / Agreement / Purchase Order, or sublet it as a whole, without the consent of the awarded vendor.

7. ASSURANCE OF NON-CONVICTION OF BRIBERY

The bidder hereby declares and affirms that, to its best knowledge, none of its officers, directors, or partners and none of its employees directly involved in obtaining contracts has been convicted of bribery, attempted bribery or conspiracy to bribe under the laws of any state or Federal government.

8. AWARD CONSIDERATION

The following factors will be considered in determining the lowest **responsible** bidder: Overall quality, Conformity with specifications both general and specific, Purposes for which materials or services are required, Delivery dates and time required for delivery, Unit acquisition cost, financial ability to meet the contract, previous performance, facilities and equipment, availability of repair parts, experience, delivery promise, terms of payments, compatibility as required, other costs, and other objective and accountable factors which are reasonable.

9. AWARD OR REJECTION OF BIDS

The Bid will be awarded to the lowest responsible bidder complying with conditions of the invitation for bids, provided his bid is reasonable and it is in the interest of the City of Fairhope to accept it. The bidder to whom the award is made will be notified at the earliest possible date. The City of Fairhope, however, reserves the right to reject any and all bids and to waive any informality in bids received whenever such rejection or waiver is in the interest to the City of Fairhope.

10. BACK ORDERS

If it is necessary to back order any items, the vendor must notify the Purchasing Department and advise as to the expected shipping or delivery date. If this date is not acceptable, the City of Fairhope may seek remedies for default.

11. BID AND PERFORMANCE SECURITY

If bid security is required, a bid bond or cashier's check in the amount indicated on the bid cover must accompany the bid and be made payable to The City of Fairhope of Baldwin County, Al. Corporate or certified checks are not acceptable. Bonds must be in a form satisfactory to the City and underwritten by a company licensed to issue bonds in the State of Alabama. If bid security fails to accompany the bid, it shall be deemed unresponsive, unless the Purchasing Manager deems the failure to be non-substantial. All checks will be returned to the bidders after the contract has been Approved. If a performance bond is required, the successful bidder will be notified after the awarding of the contract.

12. BRAND NAMES

Reference to brand names and numbers is descriptive, but not restrictive, unless otherwise specified. Bids on equivalent items meeting the standards of quality thereby indicated will be considered, providing the bid clearly describes the article offered and indicates how it differs from the referenced brands. Descriptive literature or manufacturers specifications plus any supplemental information necessary for comparison purposes should be submitted with the bid or the bid on that item may be rejected. Reference to literature submitted with a previous bid or on file with the Division of Purchasing will not satisfy this requirement. The

burden is on the bidder to demonstrate that the item bid is equivalent to the item specified in the ITB. Bids without sufficient documentation to fully support equality, may be considered non-responsive. Reference by the City of Fairhope in the ITB to available existing specifications shall be sufficient to make the terms of such specifications binding on the bidder. Unless the bidder specifies otherwise in its bid, it is understood the bidder is offering a referenced brand item as specified in the ITB or is bidding as specified when no brand is referenced. Failure to examine drawings, specifications and instructions will be at the bidder's risk.

13. BUSINESS LICENSE

The vendor selected to enter into a Contract / Agreement with the City of Fairhope must be licensed to do business in the City of Fairhope prior to commencement of any work under the contract. Delivery of goods or services to the City of Fairhope by Purchase Order have detailed and varied Business License requirements. In all instances that require a business license. Awarded vendor will provide proof of possessing a current City of Fairhope Business License. Prospective bidders will not be required to possess a City of Fairhope Business License prior to award.

14. CANCELLATION OF / CONTRACT / AGREEMENT / PURCHASE ORDER / LEASE

A purchase order can be canceled in whole or in part when awarded vendor fails to deliver or perform as specified. Cancellation of a purchase order can only be made by a written purchase order change (POC) from the City of Fairhope. A term contract, lease or agreement can be canceled by the City of Fairhope, for justifiable cause, or convenience, by written notice.

15. CERTIFICATION PURSUANT TO ACT NO. 2006-557

Alabama law (section 41-4-116, code of Alabama 1975) provides that every bid submitted, and contract executed shall contain a certification that the vendor, CONTRACTOR, and all of its affiliates that make sales for delivery into Alabama or leases for use in Alabama are registered, collecting, and remitting Alabama state and local sales, use, and/or lease tax on all taxable sales and leases into Alabama. By submitting this bid, the bidder is hereby certifying that they are in full compliance with act no. 2006-557, they are not barred from bidding or entering into a contract pursuant to 41-4-116, and acknowledges that the awarding authority may declare the contract void if the certification is false. All corporations must register to do business in Alabama with the Office of the Secretary of State. Their address is:

Office of the Secretary of State
P.O. Box 5616
Montgomery, AL 36103
(334) 242-5324
Fax: (334) 240-3138
<http://www.sos.state.al.us/index.aspx>

The Foreign Corporation form is online at
<http://www.sos.state.al.us/downloads/dl1.cfm>.

16. COST OF REMEDYING DEFECTS

All defects, indirect and consequential costs of correcting, removing or replacing any or all of the defective materials or equipment will

be charged against the awarded vendor.

17. DELIVERY OF BID

Bids must be received in the Purchasing Office by the date and time specified on the bid cover. All bids will be accepted until the time and date stated on the bid cover. No bids will be accepted that extend past the time and date on the bid cover. The time of receipt shall be determined by the time clock stamp in the Purchasing Department. Bids submitted by U.S. Mail must be received by the City of Fairhope of Baldwin County, Alabama, in the City of Fairhope offices, 555 South Section St., Fairhope, AL., unless otherwise specified.

18. DELIVERY

The number of calendar days required for delivery after receipt of a purchase order shall be stated in the RFQ / ITB / RFP and /or Purchase Orders. When no time is stated in the document, the time shall be fourteen (14) calendar days after receipt of order. If a shipment is not made within the time period specified, the Purchase Order may be canceled.

19. ENVIRONMENTAL REQUIREMENTS

All products will be clearly labeled for their intended use. Each delivery of product or materials will include a Material Safety Data Sheet (MSDS) for all materials that require an MSDS. All manufacturers/distributors of hazardous substances, including any of the items listed on this bid/quote/ contract and subsequent award must include completed material safety data sheet (MSDS) for each hazardous material. Additionally, each container of hazardous materials must be appropriately labeled with:

- a) The identity of the hazardous material,
- b) Appropriate hazard warnings, and manufacturer, importer, or other responsible party.

20. EQUIPMENT DEMONSTRATION

The City of Fairhope may require equipment/ product materials or service techniques to be demonstrated at a time, date and location to be specified by the City of Fairhope.

21. EQUIPMENT ELECTRICAL CERTIFICATION

All electrical equipment purchased shall conform to, and be identified in, the applicable standard(s), or otherwise be certified as applicable, as of the bid opening date and time, by Underwriters Laboratories, Inc. or other recognized laboratory facility. Bidder must provide satisfactory documentation with returned bid that all such equipment meets the applicable product standard or has otherwise been certified as outlined above. Unless indicated in the bid document, the above certification shall apply to the equipment itself, not the individual components of that equipment.

22. ERRORS IN BID

Bidders are assumed to be informed regarding conditions, requirements and specifications prior to submitting bids. Failure to do so will be at the bidder's risk. Bids already submitted may be withdrawn without penalty prior to bid opening. Errors discovered after the bid opening may not be corrected.

23. FORCE MAJEURE

Neither the City nor the awarded vendor shall be deemed in breach of any contract / Purchase Order or Agreement which may result

from this proposal submission if it is prevented from performing any of the obligations hereunder by reason of Acts of God, acts of the public enemy, acts of superior governmental authority, strikes or labor disputes, floods, riots, rebellion, sabotage, or any similar other unforeseeable causes beyond its control and not due to its fault or negligence. Each party shall notify the other immediately in writing of the cause of such after the beginning period thereof. The awarded vendor may request cancellation and the City of Fairhope may grant the request if performance is prevented by any of the above referenced causes, or other unavoidable circumstances not attributable to the fault or negligence of the vendor. The burden of proof for such relief rests with the vendor. All correspondence pertaining to cancellation of a purchase order or term contract must be addressed to the City of Fairhope Purchasing Manager.

24. HAZARDOUS AND TOXIC SUBSTANCES

Bidder must comply with all applicable Federal, State, County and City laws, ordinances and regulations relating to hazardous and toxic substances, including such laws, ordinances and regulations pertaining to information hazardous and toxic substances, and as amended from time to time. Bidder shall provide the City of Fairhope with a "Material Safety Data Sheet" for all goods that carry one.

25. INDEMNITY

Indemnity: The awarded vendor hereby agrees to indemnify and save harmless the City of Fairhope, its officers, agent, and employees, from and against any and all liabilities, claims, demands, damages, fines, fees, expenses, penalties, suits, proceedings, actions and cost of actions, including reasonable attorney's fees for trial and on appeal, of any kind and nature, arising or growing out of, or in any way connected with the performance of this Contract / Agreement / Purchase Order, to the extent caused by a negligent act or omission of the awarded vendor, their agents, servants, employees, Sub-contractors, or others associated with the awarded vendor. The awarded vendor shall be responsible for damage to any equipment excluded from this agreement, or damage or injury caused by any equipment excluded from this agreement, only to the extent that the damage or injury is caused by a negligent act or omission of the awarded vendor, or caused by failure of the awarded vendor's supplied product to perform as specified.

26. INSPECTION

All materials, workmanship, equipment, and supplies are subject to inspection and test at any source or time. Final inspection, acceptance or rejection will be made at delivery destination. Goods that do not meet specifications will be rejected unless substitutions have been approved by the City of Fairhope. Failure to inspect or to reject upon receipt, however, does not relieve the awarded vendor of liability. When subsequent tests, after receipt, are conducted and when such tests reveal a failure to meet specifications, the City of Fairhope will reject the goods and the awarded vendor shall immediately supply goods meeting specifications or the City of Fairhope may seek damages including but not limited to the testing expense, regardless of whether a part of or all of the goods have been consumed through the testing process. Rejected goods shall be removed by the awarded vendor promptly after rejection, at his expense. If not removed in fourteen (14) calendar days, they may be disposed of at the discretion of the City of Fairhope. Disposal costs will be the awarded vendor's

responsibility.

27. INSPECTION OF PREMISES

At reasonable times, the City may inspect those areas of the awarded vendor's place of business that are related to the performance of a Contract / Agreement / Purchase Order. If the City makes such an inspection, the awarded vendor must provide reasonable assistance. The City of Fairhope reserves the right on demand and without notice all the vendor's files associated with a subsequent Contract / Agreement / Purchase Order where payments are based on the awarded vendor's record of time, salaries, materials, or actual expenses. This same clause will apply to any sub-contractors assigned to the Contract / Agreement / Purchase Order.

28. INSURANCE

If a Contract / Agreement / Purchase Order results from this RFQ / ITB / RFP, or other form of solicitation, the awarded vendor shall maintain such insurance as will indemnify and hold harmless the City of Fairhope from Workmen's Compensation and Public Liability claims from property damage and personal injury, including death, which may arise from the awarded vendor's operations under this Contract / Agreement / Purchase Order, or by anyone directly or indirectly employed by him/her.

29. INVITATION TO BID

Any provisions made in the RFQ / ITB / RFP, or other form of solicitation, supersedes any provisions outlined here in the General Terms and Conditions.

30. INVOICING, DELIVERY, PACKAGING

Invoices shall be prepared only after ordered materials have been delivered. All invoices must show the purchase order number. Unless otherwise specified in writing, vendors shall not ship any material without an authorized Purchase Order from the City of Fairhope Purchasing Department. All packages delivered must show the purchase order number. The awarded vendor will be required to furnish all materials, equipment and/or service called for at the bid price quoted. In the event the awarded vendor fails to deliver within a reasonable period of time, as determined by the City of Fairhope, the right is reserved to cancel the award and subsequent purchase order and purchase from the next lowest responsible bidder the items needed. The original awarded vendor will be back charged the difference between the original contract price and the price the City of Fairhope has to pay as a result of the failure to perform by the original awarded vendor. All bids will remain firm for acceptance for 60 days from the date of bid opening. Prices shall be net F.O.B., Prepaid and Allow, City of Fairhope chosen site, Baldwin County, AL. The title and risk of loss of the goods will not pass to the City of Fairhope until receipt and acceptance takes place at the F.O.B. point.

31. LABELING

Individual shipping cartons shall be labeled with the name "City of Fairhope", Purchase Order Number, and where applicable, Contract Number, date of manufacture, batch number, storage requirements, conditions, and recommended shelf life. Bidders are encouraged to offer product packaging with recycled content.

32. LOSS OR DAMAGE IN TRANSIT

Delivery by a vendor to a common carrier does not constitute

delivery to the City of Fairhope. Any claim for loss or damage incurred during delivery shall be between the vendor and the carrier. The City of Fairhope accepts title only after satisfactory receipt at the delivery point. The City of Fairhope shall note all visible damages on the freight bill and may refuse the damaged goods. The vendor shall make immediate replacement of the damaged merchandise or be subject to damages for breach of contract. If damage is to a small portion of a total shipment and the City of Fairhope will not be inconvenienced because of the shortage, the vendor may be permitted by the Purchasing Manager to deduct the amount of damage or loss from its invoice, in lieu of replacement. Risk of loss during delivery is borne by the vendor until the goods have been accepted by the City of Fairhope, unless otherwise specified in the RFQ / ITB / RFP or other form of solicitation.

33. MANDATORY SITE VISIT

If the RFQ / ITB / RFP or other form of solicitation requires a mandatory site visit, bidders must inspect the site where installation or service is to take place to obtain a full understanding of scope of work outlined therein. Date of site visit will be determined by the City of Fairhope.

34 MONITORING OF SERVICES

Performance of services will be monitored by the requisitioning department and/or the Purchasing Department, and evaluation reports may be filed with the Purchasing Department. Performance not meeting specifications will result in cancellation of Contract / Agreement / Purchase Order and may result in vendor being removed from the vendor list.

35. NON-CONFORMING MERCHANDISE

When merchandise received from the lowest responsible bidder is not in accordance with the purchase order, it will be returned to the bidder, at bidder's expense.

36. NON-DISCRIMINATION

The City of Fairhope is an Equal Opportunity Employer and requires that all CONTRACTORS comply with the Equal Employment Opportunity laws and the provisions of the Contract / Agreement / Purchase Order documents in this regard. The City also encourages and supports the utilization of Minority Business Enterprises on this and all public bids.

37. NON-EXCLUSIVE

Unless otherwise specified, this Contract / Agreement / Purchase Order is considered a non-exclusive Contract / Agreement / Purchase Order between the parties.

38. NOTIFICATION AND ACCIDENT REPORTS

In the event of accidents of any kind, in the performance of a Contract / Agreement / Purchase Order, the awarded vendor shall notify the City of Fairhope immediately and furnish, without delay, copies of all such accident reports to the City of Fairhope. If in the performance of their Work, the awarded vendor fails to immediately report an accident to the City of Fairhope, of which the awarded vendor has knowledge of and which results in a fine levied against the City of Fairhope then the awarded vendor shall be responsible for all fines levied against the City of Fairhope.

39. PACKAGING

All goods must be packaged in new packing containers. Packing that meets the requirements of common carriers is acceptable,

unless otherwise required. A packing slip or invoice must accompany all shipments and must reference the purchase order number. Unless otherwise specified, goods are to be packaged in cartons meeting federal specifications and shipped on non-returnable pallets.

40. PATENTS

Awarded Vendor guarantees that the sale and / or use of goods will not infringe upon any U.S. or foreign patent. Awarded vendor will at his / her own expense, indemnify, protect and save harmless the City of Fairhope, on any patent claims arising from the purchase of goods or services.

41. PAYMENT

Invoices -- Upon completion of service and delivery of materials specified in the applicable purchase order, awarded vendor will submit an invoice and signed delivery ticket to:

City of Fairhope
Accounts Payable Department
P.O. Drawer 429
Fairhope, Al. 36533
ap@fairhopeal.gov

All invoices must reference appropriate Purchase Order Numbers
Payment of Invoice: All invoices received by the City of Fairhope are payable within thirty (30) days from the date of receipt by the City of Fairhope, provided they are approved by the City of Fairhope.

42. PAYMENT WITHHELD

Payment may be withheld until all items have been delivered and all requirements of the Contract / Agreement / Purchase Order have been fulfilled

43. PRODUCT TESTING

Vendor shall incur all cost involved in obtaining an Independent Laboratory Test if the City deems necessary during the term of the Contract / Agreement / Purchase Order. The City of Fairhope reserves the right to request a demonstration of any and all items bid before making the award.

44. PERMITS LICENSES AND CERTIFICATES

The awarded vendor is to procure all permits, licenses, and certificates, or any approvals of plans or specifications as may be required by Federal, State, Local Laws, ordinances, rules, and regulations, for the proper execution and completion of Work covered under the Contract / Agreement / Purchase Order.

45. PREPARATION OF BID

All bids / proposals shall be typewritten or in ink on the form(s) prepared by the City of Fairhope. Bids / proposals prepared in pencil will not be accepted. All bids / proposals must be signed by officials of the corporation or company duly authorized to sign bids / proposals. Any bid / proposal submitted without being signed will automatically be rejected. All corrections or erasures shall be initialed and dated by the person authorized to sign quotations / bids / proposals. If there are discrepancies between unit prices quoted and extensions, the unit price will prevail.

46. QUESTIONS / CONTACT

Commencing with the issuance of the RFQ / ITB / RFP, or other form of solicitation, no vendor or anyone acting on a vendor's behalf, shall make direct or indirect contact with City personnel or undertake any activities or take any action to otherwise promote its quotation / bid / proposal to the City or its personnel. All communications shall be made to the contact identified in the quotation / bid / proposal documents. Violation of this requirement may, at the City's sole and absolute discretion, be grounds for disqualifying a vendor from further consideration.

47. RECEIPT BY CITY OF FAIRHOPE

If not otherwise stated in the order, the City of Fairhope will be said to have received goods when they have been delivered, unloaded and placed on the agency's dock or if there is no dock, inside an accessible building, and signed for by an authorized City employee. Shipments will be checked against the receiving copy of the Purchase Order. If the purchase order requires grading certificates, USDA Stamps, or any proof of quality, such proof must accompany the shipment.

48. REJECTION OF BIDS

The City of Fairhope reserves the right to accept or reject any or all bids in whole or in part for any reason, to waive technicalities or informalities, or to advertise for new proposals, if, in the judgment of the awarding authority, the best interest of the City of Fairhope will be promoted thereby. Bidders may be disqualified and rejection of proposals may be recommended for any of (but not limited to) the following causes: Failure to use the bid forms furnished by the City of Fairhope, Lack of signature by an authorized representative on the bid form, Failure to properly complete the bid form and vendor compliance, Evidence of collusion among bidders, unauthorized alteration of the bid form.

50. RIGHT TO AUDIT

The awarded vendor shall maintain documentation of all work performed. The awarded vendor shall make any and all documentation available to the City of Fairhope at all reasonable times, for inspections and audit by the City of Fairhope, during the entire term of the Contract / Agreement / Purchase Order and for a period of Three (3) years after expiration of the Contract / Agreement / Purchase Order.

51. SAMPLES

Bidders will not be required to furnish samples at the time of bid opening, unless specifically called for. The City of Fairhope reserves the right to request samples after bid opening to assist in the evaluation of proposals submitted.

52. SAFETY MEASURES

The awarded vendor shall take all necessary precautions for the safety of the City of Fairhope's and awarded vendor's employees at the Work site, and shall erect and properly maintain at all times, all necessary safeguards for the protection of the workmen and the public. The awarded vendor shall post signs warning against hazards in and around the Work site.

53. SET-UP AND INSTALLATION

Unless otherwise specified, bid / quotation to include cost of all uncrating, disposal of shipping materials, set-up, testing and initial instruction to agency personnel.

54. SPILL CLEAN UP

The awarded vendor shall be responsible for spillage caused by their negligence, which occurs during transit or unloading operations. The awarded vendor shall immediately report and clean up any spillage. Upon failure to do so, the awarded vendor shall remain responsible for all actual related costs

55. SUBSTITUTIONS

Substitutions on a purchase order shall require the approval of the Originating Buyer. The City of Fairhope reserves the right to reject at destination and hold at the vendor's risk and expense any goods supplied by the vendor which do not conform to the specification or description embodied in the order or are inferior in any respect to the good specified. Any good bought by sample which is inferior in quality to the sample submitted by vendor will be rejected. Any goods delivered that do not meet specifications may be returned to the vendor at its expense. When a good is returned, the vendor must make immediate replacement with acceptable merchandise or the City of Fairhope may seek remedies for default.

56. TABULATION

Bid results are posted on The City of Fairhope's web site: www.fairhopeal.gov. The awarded vendor will be sent a written notification via mail.

57. TAXES

Prices quoted shall be delivered prices, exclusive of all federal or state excise, sales, and manufacturer's taxes. The City will assume no transportation or handling charges other than specified in the RFQ, ITB, RFP or other form of solicitation. The City is tax exempt by law – Code of Alabama 1975.

58. TERMINATION FOR CONVENIENCE

Any Contract / Agreement / Purchase Order may be terminated for convenience by the City of Fairhope, in whole or in part, by written notification to the awarded vendor.

59. TERMINATION FOR DEFAULT

Performance of Work under the Contract / Agreement / Purchase Order Agreement may be terminated by the City of Fairhope, in whole or in part, in writing, whenever the City of Fairhope determines that the awarded vendor has failed to meet the requirements of the Contract / Agreement / Purchase Order.

60. TERMINATION FOR NON-APPROPRIATION

Termination for Non-appropriation – The continuation of any financial obligation beyond the current fiscal year is subject to and contingent upon sufficient funds being appropriated, budgeted, and otherwise made available by the local source, State Legislature and/or federal sources. The City of Fairhope may terminate any financial obligation, and awarded vendor waives any and all claim(s) for damages, effective immediately upon receipt of written notice (or any date specified therein) if for any reason the City of Fairhope's funding from local, State and/or federal sources is not appropriated, withdrawn or limited.

61. TIME IS OF THE ESSENCE

The City of Fairhope and awarded vendor agree that time is of the essence in the performance of work called for under this Contract / Agreement / Purchase Order. The awarded vendor agrees that all

work will be accomplished regularly, diligently and uninterrupted at such a rate of progress as will ensure full completion thereof within reasonable time periods.

62. TITLE

All titles, fees, as well as other charges, are to be paid by awarded vendor. Awarded vendor is to furnish prepaid certificate of title in the name of the City of Fairhope. Title shall change upon acceptance of delivery at the City of Fairhope approved delivery location.

63. VENDOR LIST

A vendor may be removed from the City of Fairhope's Bidders List if a vendor fails to respond to three (3) consecutive ITB's. A properly submitted "No Bid" is considered as a response and the vendor will receive credit for the response.

64. WARRANTY

The awarded vendor expressly warrants that all articles, materials, and work offered shall conform to each and every specification, drawing, sample, or other description which is furnished to or adopted by the City of Fairhope, and that it will be fit and sufficient

for the purpose intended, merchantable, of good material and workmanship, and free from defects. The awarded vendor further warrants all items for a period of one year, unless otherwise stated, from the date of acceptance of the items delivered and installed or work completed. All repairs, replacements, or adjustments during the warranty period will be at the awarded vendor's sole expense. Awarded vendor will provide written warranty for all parts and labor for a period of (1) one year commencing from date of written acceptance of delivery by City of Fairhope. Awarded vendor will provide written copies of all other applicable warranties, such as, Manufacturer's warranty. Those warranties, if any, will be in addition to the awarded vendor's warranty, and the terms of which will not be altered by the awarded vendor's warranty.

65. IMMIGRATION LAW

The CONTRACTOR agrees that it shall comply with all of the requirements of the **Beason-Hammon Alabama Taxpayer and Citizen Protection Act, Act No 2011-535**, Alabama Code (1975) Section 31-13-1, et. Seq., (also known as the Alabama Immigration Act) see Section 31-13-9, and the provisions of said Act, including all penalties for violation thereof, are incorporated herein.

IMPORTANT

IMPORTANT

Awarded Vendor

**PLEASE DO THIS AS SOON AS
POSSIBLE:**

APPLICATION

FOR

SALES AND USE TAX CERTIFICATE OF EXEMPTION

**NEEDS TO BE INITIATED BY YOU, AND A COPY EMAILED TO
DEE DEE BRANDT, PURCHASING MANAGER, AT
deedee.brandt@fairhopeal.gov**

WHEN YOU SUBMIT TO THE STATE

<https://revenue.alabama.gov/wp-content/uploads/2017/05/ST-EXC-01.pdf>

**IN ORDER FOR YOU TO GET THE CERTIFICATION
COMPLETED, THE STATE REQUIRES THAT THE CITY ALSO
MAKE APPLICATION, AND WE, THE CITY, NEED YOUR
INFORMATION TO DO THAT, BEFORE THEY GRANT YOUR
CERTIFICATION.**

Sales Tax Exemption Requirements and Procedure

At the time of Bid, provide an accounting of sales tax on the form provided in ITEM III BID RESPONSE FORM. Failure to provide an accounting of sales tax shall render the bid non-responsive. Other than **determining responsiveness**, sales tax shall not affect the bid pricing nor be considered in the determination of the lowest responsible and responsive bidder.

1.0 BACKGROUND

Legislative Act 2013-205, Code of Alabama (1975) Section 40-9-14.1, is applicable to certain construction contracts with the City of Fairhope, Alabama. This law allows a sales and use tax exemption. When applicable, all business entities entering into construction contracts with the City of Fairhope, Alabama, will comply with the requirements of Section 40-9-14.1.

Code of Alabama (1975) Section 40-9-14.1

Certificates of exemption to governmental entities, contractors, etc., for certain tax exempt projects.

(a) For the purposes of this section, the term governmental entity means the State of Alabama and its political subdivisions, including a county, a municipality, and an industrial or economic development board or authority. A governmental entity shall also include an educational institution of any of the foregoing Alabama political subdivisions including a public college or university, a county or city board of education, and the State Board of Education.

(b)(1) The Department of Revenue shall issue a certificate of exemption to the governmental entity for each tax exempt project.

(2) The Department of Revenue shall grant a certificate of exemption from state and local sales and use taxes to any contractor licensed by the State Licensing Board for General Contractors, or any subcontractor working under the same contract, for the purchase of building materials, construction materials and supplies, and other tangible personal property that becomes part of the structure that is the subject of a written contract for the construction of a building or other project, not to include any contract for the construction of any highway, road, or bridge, for and on behalf of a governmental entity which is exempt from the payment of sales and use taxes.

(c) The use of a certificate of exemption for the purchase of tangible personal property pursuant to this section shall include only tangible personal property that becomes part of the structure that is the subject of the construction contract. Any contractor or subcontractor purchasing any tangible personal property pursuant to a certificate of exemption shall maintain an accurate cost accounting of the purchase and use of the property in the construction of the project.

(d) A contractor who has an exemption from sales and use tax for the purchase of materials to use on a government project shall file, in a manner as prescribed by the department, reports of all exempt purchases. The reports shall be filed as a prerequisite to renewal of a certificate of exemption.

(e)(1) The department may assess any contractor or subcontractor with state and local sales or use taxes on any item purchased with a certificate of exemption not properly accounted for and reported as required.

(2) Any contractor or subcontractor who intentionally uses a certificate of exemption in violation of this section shall, in addition to the actual sales or use tax liability due, be subject to a civil penalty levied by the department in the amount of not less than a minimum of two thousand dollars (\$2,000) or two times

any state and local sales or use tax due for the property and, based on the contractor's or subcontractor's willful misuse of the certificate of exemption, may be barred from the use of any certificate of exemption on any project for up to two years.

(f) The department may adopt rules to implement this section in order to effectuate the purposes of this section and to provide for accurate accounting and enforcement of this section.

(g) In bidding the work on a tax-exempt project, the bid form shall provide for an accounting for the tax savings.

(h) The intent of this section is to lower the administrative cost for the governmental entity, contractor, and subcontractor for public works projects. It is not the intent of this section to change the basis for determining professional services from fair market value, which may include sales and use taxes.

(i) This section shall be operative for contracts entered into January 1, 2014, or thereafter, and shall not apply to any contract entered into prior to January 1, 2014. In addition, this section shall not apply to any contract change orders or contract extensions, including revised, renegotiated, or altered contracts, when the original contract was entered into prior to January 1, 2014. The Department of Revenue may adopt rules to implement this section after October 1, 2013. (*Act 2013-205, §1.*)

2.0 PROCEDURE

2.0.1 Each contractor and subcontractor must make application for qualification of the Sales and Use Tax exemption using Alabama Dept. of Revenue Form ST: EXC-01 for each tax-exempt project. The application is available on the Alabama Dept. of Revenue's website at <http://revenue.alabama.gov/salestax/ST-EXC-01.pdf>. Applications should be submitted directly to the Sales and Use Tax Division Central Office, P.O. Box 327710, Montgomery, AL 36132-7710.

2.0.2 Legislative Act 2013-205 requires the Department of Revenue to issue Form STC-1, *Sales and Use Tax Certificate of Exemption for Government Entity Projects*, to all contractors and subcontractors working on qualifying governmental entity projects once the Form ST: EXC-01 is approved.

2.0.3 Contractors and sub-contractors for qualifying projects will be required to file monthly consumers use tax returns and report all exempt purchases for ongoing projects, as well as all taxable purchases on one return. These returns are required to be filed through the Alabama Dept. of Revenue's online tax return filing and payment portal, My Alabama Taxes (<https://myalabamataxes.alabama.gov>).

**Instructions for Preparation of Form ST:
EXC-01**

Sales and Use Tax Certificate of Exemption for Government Entity Project

NOTE: Exemption Certificates will be issued as of the project start date or the received date of the application. If, upon receipt of the application, the project has already commenced, the certificate will be issued as of the received date of the application. Any purchases made prior to the issuance of a certificate will not be exempt.

In order to expedite the processing of your application, please include the following documentation when submitting your application:

Exempt Entity:

1. Signed Application
2. Copy of Executed / Signed Contract and /or Letter of Intent

General Contractor:

1. Signed Application
2. Copy of Executed / Signed Contract and /or Letter of Intent
3. List of Sub-Contractors
4. Alabama Board of General Contractor's License
5. State / County Business License (usually obtained through county probate office)
6. Any other municipal business licenses associated with the project

Sub-Contractor:

1. Application
2. Alabama Board of General Contractor's License
3. State/County Business License (usually obtained through county probate office)
4. Any other municipal business licenses associated with the project
5. List of Sub-Contractors (if any)

General contractors and sub-contractors:

- Any additions and/or deletions to the list of sub-contractors working on a project must be submitted to the Department within 30 days of occurrence.
- If an extension is needed for a project, please contact the Department of Revenue at the address, numbers, or emails listed below.
- Sub-Contractor's Estimated Start Date should be the date they will begin working on the project and ordering materials instead of the General Contractor's Estimated Start Date for the project.

THERE IS A FILING REQUIREMENT IF YOUR APPLICATION IS APPROVED. The return will be filed through the Consumer's Use Tax account. Please see the following page for detailed instructions and general information regarding the reporting requirements.

The application and required documentation may be mailed, faxed, or emailed to the

following: Fax: (334) 353-7867

Emails: amber.hartley@revenue.alabama.gov

owen.carothers@rcvenue.alabama.gov

Mailing Address: ATTN: Contractor's Exemption Alabama Department of
Revenue Sales & Use Tax Division
Room 4303
PO Box 327710
Montgomery, AL 36132-7710



ALABAMA DEPARTMENT OF REVENUE
SALES AND USE TAX DIVISION
P.O. Box 327710 • Montgomery, AL 36132-7710

ST: EXC-01
8/18

Application For Sales and Use Tax Certificate of Exemption

FOR GOVERNMENT ENTITY PROJECT

This Certificate of Exemption will be limited to purchases which qualify for an exemption of sales and use taxes pursuant to Rule No. 810-6-3-.77

PROJECT INFORMATION:

PROJECT NAME		PROJECT OWNER'S FEIN (EXEMPT ENTITY)	
STREET ADDRESS OF PROJECT (CITY AND COUNTY INCLUDED)	CITY	ZIP	COUNTY

APPLICANT'S INFORMATION:

RELATION: (CHOOSE ONE)

☐ Government Entity ☐ General Contractor ☐ Subcontractor

APPLICANT'S LEGAL NAME	FEIN			
DBA	CONSUMER'S USE TAX ACCOUNT NUMBER			
MAILING ADDRESS: STREET	CITY	STATE	ZIP	COUNTY
CONTACT PERSON		BUSINESS TELEPHONE NUMBER ()		
EMAIL ADDRESS				

PROJECT START DATE (PROVIDED BY GENERAL CONTRACTOR)	PROJECT COMPLETION DATE (PROVIDED BY GENERAL CONTRACTOR)
ESTIMATED START DATE (FOR APPLICANT)	ESTIMATED COMPLETION DATE (FOR APPLICANT)
WILL THE APPLICANT HAVE ANY SUBCONTRACTORS ON THIS JOB? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, please attach list.	NAME OF PARTY TO THE CONTRACT
JOB DESCRIPTION	

WILL ANY POLLUTION CONTROL EXEMPTION BE APPLICABLE? <input type="checkbox"/> Yes <input type="checkbox"/> No	ESTIMATED POLLUTION CONTROL COST \$	
TOTAL PROJECT BID AMOUNT (APPLICANT'S PORTION OF PROJECT) \$	LABOR COST (APPLICANT'S PORTION OF PROJECT) \$	MATERIAL COST (APPLICANT'S PORTION OF PROJECT) \$

REVENUE DEPARTMENT USE ONLY

PENDING DOCUMENTATION / INFORMATION:

☐ GCL ☐ SBL ☐ Contract / NTP / LOI ☐ LOS ☐ Project Dates / Breakdown of Costs

Contact Dates: _____ Received Date: _____

Forwarded for Denial: _____

PROJECT NAME

PROJECT OWNER'S FEIN (EXEMPT ENTITY)

FORM OF OWNERSHIP:

☐ Individual ☐ Partnership ☐ Corporation ☐ Multi member LLC ☐ Single member LLC ☐ Government Entity

If applicant is a corporation, a copy of the certified certificate of incorporation, amended certificate of incorporation, certificate of authority, or articles of incorporation should be attached. If the applicant is a limited liability company or a limited liability partnership, a copy of the certified articles of organization should be attached.

OWNERSHIP INFORMATION:

Corporations – give name, title, home address, and Social Security Number of each officer.

Partnerships – give name, home address, Social Security Number or FEIN of each partner.

Sole Proprietorships – give name, home address, Social Security Number of owner.

LLC – give name, home address, and Social Security Number or FEIN of each member.

LLP – give name, home address, and Social Security Number or FEIN of each partner.

NAME (PLEASE PRINT)

SIGNATURE

TITLE

DATE

REVENUE DEPARTMENT USE ONLY

PENDING OTHER:

☐ Government Entity ☐ General Contractor ☐ Not on LOS

Contact Dates: _____ Received Date: _____

Forwarded for Denial: _____

Examiner's Remarks _____

Examiner _____ Date _____

Instructions For Preparation of Form ST: EXC-01

Sales and Use Tax Certificate of Exemption for Government Entity Project

NOTE: Exemption Certificates will be issued as of the project start date or the received date of the application. If, upon receipt of the application, the project has already commenced, the certificate will be issued as of the received date of the application. Any purchases made prior to the issuance of a certificate will not be exempt.

***** Please allow 10 to 14 business days for your application to be processed. *****

In order to expedite the processing of your application, please include the following documentation when submitting your application:

Exempt Entity:

1. Signed Application
2. Copy of Executed/Signed Contract, Letter of Intent, Notice of Award, and/or Notice to Proceed

General Contractor:

1. Signed Application
2. Copy of Executed/Signed Contract, Letter of Intent, Notice of Award, and/or Notice to Proceed
3. List of Subcontractors
4. Alabama Board of General Contractor's License
5. State/County Business License (usually obtained through county probate office)
6. Any other municipal business licenses associated with the project

Subcontractor:

1. Signed Application
2. Alabama Board of General Contractor's License
3. State/County Business License (usually obtained through county probate office)
4. Any other municipal business licenses associated with the project
5. List of Subcontractors (if any)

General contractors and subcontractors:

- Any additions and/or deletions to the list of subcontractors working on a project must be submitted to the Department within 30 days of occurrence.
- If an extension is needed for a project, please contact the Department of Revenue at the address, number, or email listed below. Extension requests should be submitted no more than 30 days after expiration date.
- Subcontractor's Estimated Start Date should be the date they will begin working on the project and ordering materials instead of the General Contractor's Estimated Start Date for the project.

THERE IS A FILING REQUIREMENT IF YOUR APPLICATION IS APPROVED. The return will be filed through the Consumer's Use Tax account. Please see the following page for detailed instructions and general information regarding the reporting requirements.

The application and required documentation may be mailed, faxed, or emailed to the following:

Fax: (334) 353-7867

Email: STExemptionUnit@revenue.alabama.gov

Mailing Address: ATTN: Contractor's Exemption
Alabama Department of Revenue
Sales & Use Tax Division
Room 4303
PO Box 327710
Montgomery, AL 36132-7710

General Information and Instructions Regarding the Reporting Requirements for Contractors Awarded an Exemption Certificate

A contractor's exemption certificate for a Government Entity project is needed in order to purchase materials tax exempt for the qualified project. Once the exemption certificate has been applied for and awarded, there is a monthly filing requirement to report the purchases that have been made for each exempt project. The Consumer's Use (CNU) tax account is used to report the tax-exempt purchases made with each certificate for each exempt project for each month.

The consumer's use tax return must be filed for each of the months covered by the exemption certificate. (For example, if the certificate's effective date is June 29, 2014 and the expected completion date is October 1, 2014, a consumer's use tax return must be filed for each of the following months: June, July, August, September, and October.) A return **MUST** be filed each month to report the monthly purchases. Therefore, all active exemption certificates must be included on the monthly report even if the monthly purchases for a specific project was \$0.

If a CNU tax account is not already open under the taxpayer/business name, one will automatically be assigned at the time the exemption certificate is generated. Electronic filing is required through the Department's online filing system, My Alabama Taxes (MAT). A letter containing the online filing information will be mailed to the address on file within a few days after the new CNU tax account has been assigned. This letter will contain all the information needed to create your online filing account in MAT. For questions relating to setting up the account on www.myalabamataxes.alabama.gov, please contact Business Registration at 334-242-1584 or the Sales Tax Division at 1-866-576-6531.

Once the MAT account is set up, please log in and file the monthly CNU tax return. There is a table located at the bottom left hand corner labeled "Contractor's Exemption for Government Construction Projects." All three fields in the table are required to be completed: exemption number, project number, and total amount of purchases for that specific project for the month. Additional projects may be added on the additional rows that appear as data is added; the table will allow the addition of more projects.

***Please do not use lines 1 through 9 of the return for reporting exempt project information. Leave these lines blank unless taxable purchases were made outside of the state of Alabama that need to be reported and tax remitted. (Lines 1 through 9 do not have anything to do with the exemption reporting requirements).

When the certificate expires (upon the project's completion) and the CNU tax account is no longer needed, please contact the Business Registration Unit at 334-242-1584 and close the CNU tax account. Please be advised that if there are multiple government entity projects open, the consumer's use tax account should remain open until the last project completion date. For example, if Project EXC00ABCD ends in June of 2014 but Project EXC00EFGH ends January of 2015, the CNU tax account must remain open until the end of January 2015. A return for Project EXC00EFGH must be filed all the way through January 2015.

If the applicant already has a CNU tax account and it is currently set up online, please use this account to report exempt project purchases through www.myalabamataxes.alabama.gov using the instructions provided above. The return may then be filed as usual.

***All Consumer's Use Tax returns are due on the 20th of the month following the month in which purchases were made (i.e., the return for the month of June is due July 20th, etc. There are 20 days to file the return before it is deemed late.)

***Any penalty waiver requests may be directed to the Sales and Use Tax Division at 1-866-576-6531. Only one waiver per 18 month period is allowed.