

TS-TCS SIGNS:

A. **GENERAL** – The work specified in the Technical Specification consists of furnishing and installing new highway signs, relocation of existing signs and removal of existing signs in conformance with these specifications and the particular types, sizes, and dimensions as shown on the detailed plans.

Construction of new highway signs, relocation of existing signs, and removal of existing signs shall conform with the requirements of the 2015 Florida Design Standards, the most current FDOT Standard Specifications For Road and Bridge Construction, the most current FHWA MUTCD Standard Highway Signs and Markings book, and the Supplemental Specifications for Charlotte County Traffic Sign Installations, attached below.

B. **SIGN FACE -**

1. Reflective Sheeting: The film shall be either 3M High Intensity Prismatic Sheeting, 3M VIP Diamond Grade Reflective Sheeting, or a County approved equal.

- Silk screening or Electro Cut material may be overlaid onto the sheeting.
- Stop signs shall use 3M VIP Diamond Grade Sheeting, or a County approved equal.
- Pedestrian warning signs shall be made of Diamond Grad Fluorescent VIP Yellow Green Microprismatic Reflective Sheeting
- Street signs are to be green with silver lettering and borders. Street signs are to be made with silver Hi Prismatic material. The border width is to be 0.375" with the radius of the corners of 1.5". No letters are to touch or penetrate the border. The maximum size of the street sign blank is 48" X 9" for 2 lane roadways. For street sign letter heights see chart below.

2. Sign Film and Film Application Tape: The traffic control sign film shall consist of highly durable, transparent, acrylic colored films, coated with a transparent, pressure sensitive adhesive, protected by a removable translucent synthetic, release liner.

3. Shape, Size, Legends, and Color: Sign faces shall meet the shape, size, legends, and color requirements of the Manual on Uniform Traffic Control Devices and the Standard Highway Signs Manual latest editions.

All street names are to be 8" – 6" C Series letters, with 4.5"-6" C Series letters designation the type of road (i.e. Street, Road, Boulevard, Drive, Way).The border width is to be 0.375" with the radius of the corners of 1.5". No letters are to touch or penetrate the border. The maximum size of the street sign blank is 48" X 9" for 2 lane roadways. For street sign letter heights see chart below.

Type of Mounting	Type of Street or Highway	Speed Limit	Recommended Minimum Letter Height	
			Initial Upper-Case	Lower-Case
Overhead	All types	All speed limits	12 inches	9 inches
Post-mounted	Multi-lane	More than 40 mph	8 inches	6 inches
Post-mounted	Multi-lane	40 mph or less	6 inches	4.5 inches
Post-mounted	2-lane	All speed limits	6 inches*	4.5 inches*

4. Aluminum Sign Blanks: All sign blanks and street signs shall be fabricated from aluminum sheet conforming to ASTM Specification B209, with 5052-H38 Alloy and shall have a thickness of 0.080 inches.

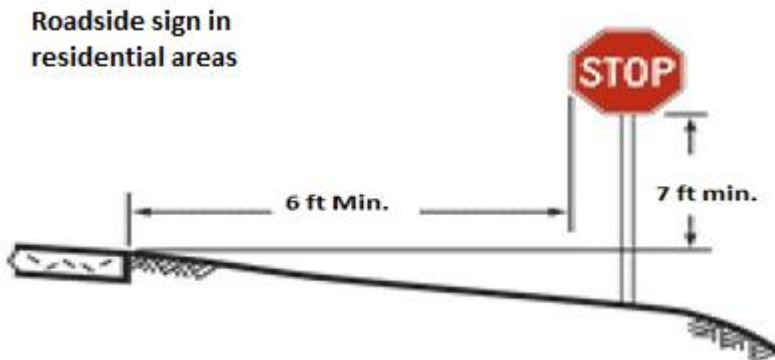
Sign blank dimensions, hole size, location of holes, and corner radii shall be as defined in the U.S. Department of Transportation Standard Highway Manual, and the Manual on Uniform Traffic Control Devices.

5. Sign Posts: Steel posts shall conform to the standard specification of hot-rolled carbon sheet steel, structural quality. The cross section of the post shall be a square tube formed of 14-gauge square galvanized steel posts – punch out posts. Posts are to be 2” square, carefully rolled to size and welded in the corner. The furnished members shall be straight and shall have a smooth uniform finish.

All sign post outside concreted areas shall be placed with Hi Strength Concrete Mix which meets or exceeds ASTM C-387 Specifications. Each post shall have a minimum of 20 pounds and a maximum of 40 pounds of concrete placed around each post. The top of the concrete shall be a minimum of 18” below the final surface.

All signs placed in concreted areas shall have a 10”-12” PVC pipe liner insert surrounding the sign post. The PVC shall be flush with the final surface of the surrounding concrete and be filled with dirt to support the sign. These shall not be filled with concrete.

6. Sign Height & Locations: All post mounted signs shall conform to 2015 FDOT Design standards index number 17302. For sign installations in residential areas with no paved shoulder, sidewalk or curb and gutter use the standard below for sign placement and heights.



7. Geospatial Data Collection of Traffic Signs: All signs installed per the contract must have their geospatial data collected and a layer file supplied to the County at the end of the contract with all of the required information. The data must be collected using a 1-3 meter accurate unit. The following attributes must be collected. GPS Location of Sign, MUTCD Code, Size of Sign, Type of Support, Number of Posts, Retroreflectivity Level of Sign, Direction Facing, Date Installed, Sign Sheeting Material Type and Sheeting Manufacturer.

C. **Method of Measurement.**

The quantities to be paid for will be:

- (1) The number of ground traffic signs of each designated class of assembly, complete.
- (2) The number of lighted overhead traffic signs of each designated class of assembly, complete.
- (3) The number of existing signs removed, relocated, modified of each designated class of assembly, complete.

- (4) The number of overhead signs span wire mounted, bridge mounted, and lighted sequential, of each designated class of assembly, complete.
- (5) The number of electronic display signs, of each designated class of assembly, complete.
- (6) The number of flashing beacon signs, of each designated class of assembly, complete.

For the purpose of payment, a sign assembly consists of all the signs mounted on a single structure (one, two or three posts, or overhead structure) or all the signs on a bridge mounted sign structure and the sign structure.

D. Basis of Payment.

Price and payment will be full compensation for furnishing and installation of all materials necessary to complete the signs in accordance with the details shown in the Plans; including sign panels complete with sheeting, painting, and message; sign posts and supports, foundations, excavation, etc.; for lighted signs, include all costs of the electrical installation for lighting, up to the point of connection by others; for flashing beacon signs, include all costs of beacons, controllers, and electrical installation, up to the point of connection by others; and all other work specified in this Section, including all incidentals necessary for the complete item.

TS-RPM RAISED RETRO-REFLECTIVE PAVEMENT MARKERS AND BITUMINOUS ADHESIVE: Place raised retro-reflective pavement markers (RPMs) and adhesive which, upon installation, produces a positive guidance system to supplement other reflective pavement markings. The work specified shall conform to FDOT Design Specifications and be on the Florida Qualified Products list. Price and payment will be full compensation for all work specified in this section. Payment will be made under:

)	Retro-Reflective Pavement Markers	Each (EA)
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TS-TPS TEMPORARY PAINTING TRAFFIC STRIPES & MARKINGS:

A. GENERAL – The work specified in this section consists of layout, furnishing, erecting, installing, and placing all materials and assemblies associated with temporary pavement markings at locations indicated on the Construction Plans. The work shall be performed in accordance with 2015 FDOT Design Standard Specifications FDOT Indexes, the most current FDOT Standard Specifications For Road and Bridge Construction, and the most current Manual on Uniform Traffic Control Devices latest edition. The Contractor shall conform to FDOT Index 17346 for Pavement Messages.

The Contractor shall be responsible to place temporary stop bars, crosswalks, legends, center line and edge stripes on the final wearing surface. If traffic is to drive on the roadway before the final wearing surface the contractor shall provide all temporary striping and legends on the road surface prior to traffic being allowed to travel upon the roadway. Temporary centerline and edge stripes shall be 4" in width.

If necessary, the Contractor shall complete corrective work, by hydro-blasting to obliterate existing striping without damaging the final surface. Should damage result of these actions, the area is to be milled to a depth of at least 1-1/4" and resurfaced at no additional cost to the County. Should the temporary traffic stripe or pavement message become worn, covered in tack, or otherwise become in need or refreshing, in the opinion of the County, the Contractor shall repaint the identified stripe and or message free of charge to the County.

B. METHOD OF MEASUREMENT – The quantity to be paid under this section shall be in lump sum (LS) for the completed and accepted work in this section.

C. BASIS OF PAYMENT – The quantity, as shown on the plans for estimating purposes only, shall include all cleaning and preparing of surfaces, layout, furnishing of all materials, the applications, curing and protection of all items, the furnishing of all tools, machines and equipment, and all incidental costs specified for Temporary Traffic Striping, as being covered under this section shall be paid accordingly.

Temporary Traffic Striping Lump Sum (LS)

TS-PPS Permanent TRAFFIC STRIPES AND MARKINGS

GENERAL – The work specified in this section shall include all cleaning and preparing of surfaces, layout, furnishing, erecting, installing, and placing all materials and assemblies associated with permanent pavement markings at locations indicated on the Construction Plans. The work shall be performed in accordance with 2015 FDOT Design Standard Specifications FDOT Indexes, the most current FDOT Standard Specifications For Road and Bridge Construction and the Manual on Uniform Traffic Control Devices latest edition. The Contractor shall conform to FDOT Index 17346 for Pavement Messages.

- A. All permanent traffic stripes and markings shall be water based paint (must be on FDOT APL list) unless the project calls for work to be done upon FDOT roadways then the work on the FDOT roadways must be in thermoplastic and be installed per the most current FDOT Design Standards.

B. Method of Measurement.

The quantities to be paid for under this Section will be as follows:

- (a) The length, in net miles, of 6 inch solid traffic stripe, authorized and acceptably applied.
- (b) The total traversed distance in gross miles of 10-30 or 3-9 skip line. The actual applied line is 25% of the traverse distance for a 1:3 ratio. This equates to 1,320 feet of marking per mile of single line.
- (c) The net length, in feet, of each of all other types of lines and stripes, authorized and acceptably applied.
- (d) The number of pavement messages, symbols and directional arrows, authorized and acceptably applied.
- (e) Lump Sum, as specified in 710-4.1.1 when the item for painted pavement markings (final surface) is included in the proposal.

The net length, in feet of dotted and skip stripes other than 10-30 and 3-9 will be measured as the distance from the beginning of the first painted stripe to the end of the last painted stripe with proper deductions made for unpainted intervals as determined by plan dimensions or stations, subject to 9-1.3. Unpainted intervals will not be included in pay quantity. The gross-mile measurement of 10-30 and 3-9 skip traffic stripes will be taken as the distance from the beginning of the first painted stripe to the end of the last painted stripe, and will include the unpainted intervals. It will not include any lengths of unpainted intervals which, by design or by other intent of the Department, are greater than 30 feet. Final measurement will be determined by plan dimensions or stations, subject to 9-1.3.1.

C. Basis of Payment.

General: Prices and payments will be full compensation for all work specified in this Section, including, all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Final payment will be withheld until all deficiencies are corrected.

D. Lump Sum Payment: When the item for painted pavement markings (final surface) is included in the proposal, prices and payments will be full compensation for two applications of all painted pavement markings applied to the final surface, and one application of retroreflective pavement markers applied to the final surface in accordance with Section 706.

Payment will be made under:

Item No. 710 Painted Pavement Markings.

Traffic Stripes, Solid - per net mile.

Traffic Stripes, Solid - per foot.

Traffic Stripes, Skip - per gross mile.

Traffic Stripes, Skip - per foot.

Dotted/Guideline - per foot.

Messages -each.

Arrows - each.

Yield Markings - per foot.

Item No. 710-90 Painted Pavement Markings (Final Surface) - lump sum.

MARINE PILINGS:

A. MATERIALS: Wood piling shall be cut from Southern Pine and shall contain 30% of summer wood. Piles shall be cut above the ground swell and shall have a uniform taper. Pilings shall be round and be free from worm holes, loose knots, wind shakes, decayed or unsound portions, and other defects which might impair the strength or tightness. Wood piles shall be free from short or reverse bends, and a straight line extending from the center of the tip to the center of the butt, but shall not, at any point, fall further away from the center of the pile than a distance equal to one percent (1%) of the length of the pile. Piling material shall be in accordance with FDOT Specification Section 953. The pilings shall be ten inch (10") diameter (average) and shall be treated in accordance with Florida Department of Transportation, Standard Specification for Road and Bridge Construction, Section 955. Piles shall be cut to proper length prior to treatment and shall have blunt ends for driving.

B. INSTALLATION: Pilings will be located as directed by the County and a third of the length will be driven into firm soil. The elevation of the top of the pilings shall be a least twelve feet (12') above the mean high water level for all pilings. The Contractor's work shall be in accordance with FDOT Specifications Section 445-4, except as amended herein. Pile driving will be governed by the following requirements unless otherwise approved by the County: Jetting or other means of securing initial penetration of piling will be allowed, subject to onsite approval of the method by the County. Pilings may need to be driven deeper due to unsuitable soils per County's direction. The heads of the piles shall be protected during driving, and where necessary, collars or bands shall be provided to protect piles against splitting and brooming. Piles shall be stored and handled so as to avoid injury to the piling. Treated timber shall be handled with rope slings, without sudden dropping, breaking of outer fibers, bruising or penetration of the surface with tools. Cant dogs, hooks or pike poles shall not be used. Cut or sawed ends of piles shall not be used below grade. Broken, split, or misplaced piles shall be withdrawn and replaced. The pilings shall have a 12" band of hi intensity prismatic sheeting wrapped around the piling matching the color of the signs that are to be installed ie. Red for triangle dayboards, green for square dayboards and silver for regulatory signs. No pilings are to be left installed without signs on them unless they have the 12" tape applied to the pilings. The pilings shall be wrapped with a high density polyethylene material that is a minimum .030" thick which covers the piling through the entire tidal zone. The wrap shall be installed using a minimum of 1 1/4" stainless steel ring-shank roofing nails spaced at 2" intervals along the entire seam of the wrap.

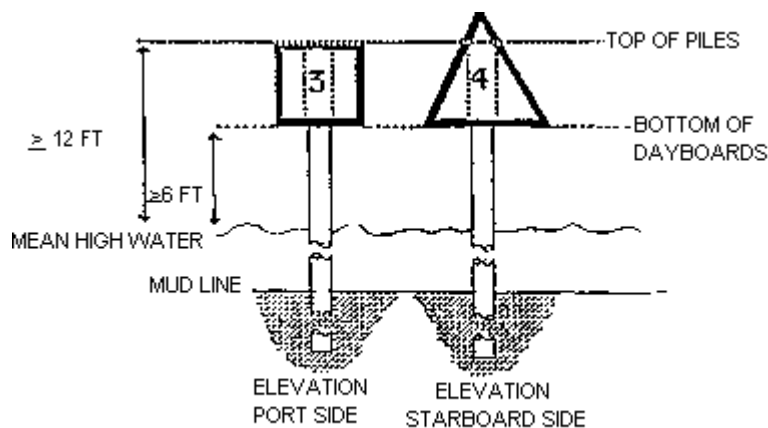
SIGNS:

A. MATERIALS: The Contractor shall install regulatory signs and two (2) types of dayboards, including the necessary hardware, as indicated in the details. The County shall supply all signs and dayboards.

1. HARDWARE DAYBOARDS/SIGNS: All hardware for the installation of dayboards and regulatory signs will be supplied by the Contractor. All dayboards and regulatory signs will be installed using all stainless steel hardware. All signs will be attached to the piling using a 1/2" diameter stainless steel lag bolt for the top and bottom holes. Between the sign and the piling must be a 1/2" width pvc or fiberglass spacer keeping the sign blank from touching the piling. The bottom of the sign must be attached to the piling using a 1/2" diameter stainless steel lag bolt and washer.

2. HARDWARE BUOYS: All buoys must be installed using the following hardware. The buoys must be Red or green (nun or can) channel marker buoy, side attachment (14" diameter base, 28"x12" float collar, 49" overall height, draft under 9", submerged buoyancy approximately 300 lbs, net weight approximately 100 lbs.) The anchor used must be a 150lb mushroom anchor. The buoy and the anchor must be attached to the chain using three (3) each ½" galvanized swivels and six (6) each ½" galvanized shackles. Stainless steel rigging wire must be used on all shackle pins. The chain attached to the buoy shackle must be ½" galvanized chain extending the depth of the water. Attached to the ½" chain must be a 6 ½" galvanized shackle attached to 5/8" galvanized chain extending 1 ½ times the depth of the water to the anchor shackle. Overall length of the combined chains must be a minimum of 2 ½ times the depth of the water at mean high tide.

C. INSTALLATION: The Contractor shall install dayboards as shown in the detail below. The correct shape and colored dayboards will be installed on the appropriate piling per USCG boating regulations. Dayboards shall be mounted atop the pilings so that none of the pile is visible above square dayboards and no more than 6" of piling sticking above triangle dayboards. The elevation of the bottom of the dayboard and/or regulatory sign shall be a minimum of six feet (6') above mean high water.



D. Geospatial Data Collection of Marine Pilings: All pilings installed per the contract must have their geospatial data collected and a layer file supplied to the County at the end of the contract with all of the required information. The data must be collected using a 1-3 meter accurate unit. The following attributes must be collected. GPS Location of Piling, Type of Sign Installed, Size of Sign, Direction Facing, Date Installed.

SPECIAL REGULATIONS

STANDARD MANATEE CONDITIONS FOR IN-WATER WORK

The contractor shall comply with the following conditions intended to protect manatees from direct project effects:

- a. All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. The contractor shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act.
- b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.

- c. Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.
- d. All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shut down if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.
- e. Any collision with or injury to a manatee shall be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1-888-404-3922. Collision and/ or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-731-3336) for north Florida or Vero Beach (1-772-562-3909) for south Florida.
- f. Temporary signs concerning manatees shall be posted prior to and during all in water project activities. All signs are to be removed by the contractor upon completion of the project. Awareness signs that have already been approved for this use by the FWC must be used. One sign which reads *Caution: Boaters* must be posted. A second sign measuring at least 8' W by 11" explaining the requirements for "Idle Speed/No Wake" and the shutdown of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities. Example of sign below.



SEA TURTLE AND SMALLTOOTH SAWFISH CONSTRUCTION CONDITIONS

The Contractor shall comply with the following protected species construction conditions:

- a. The Contractor shall instruct all personnel associated with the project of the potential presence of these species and the need to avoid collisions with sea turtles and small tooth sawfish. All construction personnel are responsible for observing water related activities for the presence of these species.

b. The Contractor shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing sea turtles or small tooth sawfish, which are protected under the Endangered Species Act of 1973.

C Siltation barriers shall be made of material in which a sea turtle or small tooth sawfish cannot become entangled, be properly secured, and be regularly monitored to avoid protected species entrapment.

Barriers may not block sea turtle or small tooth sawfish entry to or exit from designated critical habitat without prior agreement from the National Marine Fisheries Service's Protected Resources Division, St. Petersburg, Florida.

d. All vessels associated with the construction project shall operate at "no wake/ idle" speeds at all times while in the construction area and while in water depths where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will preferentially follow deep-water routes (e.g., marked channels) whenever possible.

e. If a sea turtle or small tooth sawfish is seen within 100 yards of the active daily construction/ dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 feet of a sea turtle or small tooth sawfish. Operation of any mechanical construction equipment shall cease immediately if a sea turtle or small tooth sawfish is seen within a 50-foot radius of the equipment.

Activities may not resume until the protected species has departed the project area of its own volition.

f. Any collision with and/ or injury to a sea turtle or small tooth sawfish shall be reported immediately to the National Marine Fisheries Service's Protected Resources Division (72.7-824c5312) and the local authorized sea turtle stranding/ rescue organization. It shall be the responsibility of the Contractor to assure compliance with any FDOT specifications, OSHA, EPA, and/or other Federal, State or County law(s), code(s) and ordinance(s), as each may apply.