PART 1: GENERAL .01 DESCRIPTION

A. This Section specifies furnishing, placing, shaping and compacting aggregate base on previously constructed subarades.

B. Related work specified elsewhere:

1. General and Supplementary Conditions of the . Division 1 - As applicable . Section 01410 - Testing Laboratory Service 4. Section 02220 - Earthwork 5. Section 02510 - Asphaltic Concrete Payement 6. Section 02511 - Portland Cement Concrete Pymt.

1.02 QUALITY ASSURANCE

The following Codes, Regulations, Reference Standards and Specifications apply to work included in this

A. Codes and regulations of the jurisdictional

1. ASTM: C-131, D-1556, D-698, D-2217, D-2922,

2. Texas SDHPT: Test Methods: Tex-110-E, Tex-116-E 1.03 SUBMITTALS

Submit the following for approval in accordance with Section 01410 - "Testing Laboratory Services", and the additional requirements as specified for each:

A. Samples. At least seven (7) calendar days in advance of desired date of approval, submit for testing two (2) 1 cubic foot samples of base material or certified tes results of same, performed by an independent test laboratory certifying that the proposed material complies with the specifications.

B. Source Quality Control.

1. Not less than 10 calendar days prior to the beginning of work, inform the Contracting Officer of source of material to be used.

2. Once the material has been approved, do not change source of supply without authorization and then only after receiving approval of the new source

3. Do not construe approval as approval of the entire location, but as approval only insofar as the material continues to conform to specified requirements.

4. Maintain quality of material which will be sampled and tested as directed by the Contracting

5. The Contracting Officer has the right to reject material at the worksite by visual inspection, pending sampling and testing.

C. Documentation. Submit delivery tickets from each load delivered to the worksite which include, as a minimum the supplier, material and its composition and material weight.

PART 2: PRODUCTS

2.01 FLEXIBLE BASE

A. In accordance with Item 249, Flexible Base (Delivered), of the Texas State Department of Highways and Public Transportation (Texas SDHPT). B. Physical Requirements.

. Type: Type A, crushed or broken aggregate 2. Gradation: Grade One

2.02 BINDER

Test the binder to ensure the following requirements are met:

A. Liquid Limit. Not to exceed 40 when tested in accordance with ASTM D-4318.

C. Plasticity Index. Minimum of 4 and maximum of 12 when calculated in accordance with ASTM D-4318.

B. Plastic Limit. Determined in accordance with ASTM

D. Prepare samples for testing according to ASTM D-4318 and in accordance with the requirements of ASTM D-2217. E. Materials retained on the No. 4 sieve shall have a percent wear of not more than 45 when tested according

F. The material when tested under The Wet Ball for Determining the Disintegration of Flexible Base Materials, Tex-116-E, shall not develop more than 50 percent soil binder.

G. The material, when tested in accordance with Tex-110-E, shall meet the required gradation

PART 3: EXECUTION

3.01 EQUIPMENT

A. Use equipment of size and weight necessary to shape material as shown and to compact material to specified minimum density.

B. Provide sufficient equipment to achieve specified compaction at rate consistent with rate of placement of

C. Obtain approval of equipment prior to use on the

D. Maintain equipment in first class operating

condition while in operation. 3.02 PLACING MATERIAL

A. Subgrade Preparation. In accordance with Section 02220 - "Earthwork".

B. Place material in its final location so as to

provide uniformity of grading throughout work. C. Place material in uniform layers so that each layer has compacted lift thickness of 6 inches maximum and 3

inches minimum, for the full width of the layer. D. Where thickness is shown or specified as more than 6 inches, place material in two or more layers of equal thickness so that specified requirements are met.

3.03 COMPACTION

Moisture content and densities shall conform to Paragraph 3.04 of this Section for the following: A. During placing and compacting, maintain moisture content and dry density within the allowable tolerances

B. Compact each layer to required density before

C. Compact areas not accessible to rollers to required

density by means of approved mechanical tampers.

1. Construct base to the following tolerances:

a. Thickness of base: Plus zero or minus 3/8-inch

(1) Plus 1/8-inch or minus 3/8-inch of

(2) Deviation not more than 1/2-inch from

steel straightedge as specified in

Section 02511 - "Concrete Pavement".

2. Maintain moisture content within two percentage

points of optimum moisture content. The "Density

3. Compact material under curbs and gutters,

accordance with ASTM D-698.

B. Tests.

yards placed.

PART 4: METHOD OF MEASUREMENT

PART 5: BASIS OF PAYMENT

PAYMEN'

3.06 DEFICIENT BASES

Control method of compaction shall be used in accordance with Item 249, Flexible Base, TX. SDHPT.

gutters, curbs and pavement to 95 percent of maximum

4. Compact material under sidewalks to 95 percent

content, in accordance with ASTM D-1556 or D-2922

1. Laboratory reference optimum moisture content and

maximum density shall be determined in accordance

with ASTM D-698. Field density shall be determined in accordance with ASTM D-1556-D-2922.

first 100 cubic yards placed; and a minimum of one

2. Perform no less than three (3) tests for the

(1) additional test for every additional 100 cubic

A. Maintain base for pavement in specified conditions

A. Where directed, repair or replace with new material

all payement base that does not meet requirements.

A. All work to be completed in this Section shall be

A. The work described in this Section will be paid for

compensation for shaping and fine grading the roadbed

at the Contract unit price which price shall be full

for securing and furnishing all materials, including

and labor involved in weighing the material wher

required; for loosening, blasting, excavation,

Section and related other sections of the

specifications and plans.

SECTION 02400 - STORM DRAINAGE

END OF SECTION 02230

Contract

Structures

1.02 REQUIREMENTS, CODES

1.03 SUBMITTALS

all royalty and freight involved; for furnishing scales

screening, crushing and temporary stockpiling when

required; for loading all materials; for all hauling

and delivering on the road; for spreading, mixing,

blading, dragging, shaping and finishing; and for all

necessary to complete the work as specified in this

A. This section includes all work required to complete

B. Related information or Work specified elsewhere in

1. General and Supplementary Conditions of the

. Section 01410 — Testing Laboratory Services

6. Section 02514 - Concrete Construction for

A. The following are minimum requirements and shall

federal codes and ordinances shall govern when their

B. All materials and construction shall conform to the

Governments Standard Specifications for Public Works

Construction, the Texas Department of Transportation

Storm Drainage Requirements, and the City of Dallas

requirements for public works construction, standard

A. Manufacturer's product data shall be submitted by

the Contractor to the Engineer for the following:

latest edition of the North Central Texas Council of

govern, except that all local, state, county, and/or

5. Section 02221 - Excavation, Trenching, Embedment,

the Project Manuals includes, but is not limited to,

as indicated by the Plans and Specifications, and

furnish all supplementary items necessary for the

proper installation of the site storm drainage.

2. Division 1 - As applicable

and Backfilling for Utilities

requirements are in excess hereof.

Castings
Embedment Material

5. Joint Material

3. Pipe and Fittings, each type 4. Precast Concrete Structures

4. Section 02200 - Earthwork

manipulation, materials, labor, tools and incidentals

as indicated in the scope of this project.

included in the lump sum bid for the several bid items

until succeeding pavement course is placed.

maximum density at or above optimum moisture

density at or above optimum moisture content, in

D. Puddling or jetting is prohibited

b. Surface of base:

3.04 FIELD QUALITY CONTROL

A. Allowable Tolerances

2.01 MATERIALS, GENERAL

A. Bedding: See Section 02221 - Excavation, Trenching, Embedment, and Backfilling for Utilities

B. Backfill: See Section 02221 - Excavation, Trenching Embedment, and Backfilling for Utilities

C. Storm sewer pipe twelve (12) inches in diameter and larger: Reinforced concrete pipe conforming to ASTM C-76, Class III or IV as shown on the Plans.

A. For concrete pipe or box sections, furnish rubber

2.02 PIPE JOINT MATERIAL

gasket pipe joint material, such as Ram-Nek flexible plastic gasket as manufactured by the K. T. Snyder Company, Inc., or approved equal and meeting all requirements of Federal Specification SS-S-00210. "Sealing Compound, Performed Plastic for Pipe Joints". Use a primer of the type recommended by the manufacturer of the compound used.

B. Joints in precast pipe sewers shall be formed in a careful, thorough, and workmonlike manner. All pipe composed of one part portland cement and two parts sand, so placed as to form a durable watertight joint. The ends of the pipe shall be cleaned thoroughly and wetted before making the joint.

2.03 INLET AND JUNCTION BOX MATERIAL

A. Grate inlet shall consist of a precast or cast-in-place box with a grate cover and frame as specified on the Plans.

B. All frames and covers for inlets shall be non-rocking and heavy duty.

C. Finish mortar conforming to ASTM C-270 Mortar Type M using Portland Cement. Use aggregate conforming to ASTM

A. Material storage, sequence, construction signing or barricades, any required permitting, & cleanup shall be the sole responsibility of the Contractor. All layouts and arades shall be as shown on the Plans, immediately notify the Engineer of any discrepancies or conflicts in the Plans prior to proceeding with the Work.

3.02 EXCAVATION, BEDDING, AND BACKFILL

. All excavation, bedding, and backfill shall conform to Section 02221, the Plans, and the North Central Texas Council of Governments Standard Specifications for Public Works Construction, latest edition.

3.03 PIPE INSTALLATION

A. Furnish and place in position, as directed, all necessary stakes, grade and botter boards for locating work. Do not place pipe until the excavation has been completed, the bottom of the trench condition, line and arade has been obtained. Lay pipe accurately to line and grade in a straight line with spigot or tangue end of the pipe pointing in the direction of flow. Fit pipes together and match them so that when laid, the pipe will form a sewer or culvert with a smooth and uniform invert.

3.04 CONCRETE PIPE OR BOX JOINT INSTALLATION

A. Cold compound joints:

. Neoprene or Rubber Gasket Joints: Rubber gaskets meeting ASTM C 443 may be used in joining concrete pipe. Ends of the pipe must be accurately made and designed for use in gaskets. Lay the pipe sections in the trench to true alignment and grade. Take care in placing pipe and making field joints. Properly lubricate the arrove end of the pipe and rubber gasket with flax soap or equal. Mineral lubricants will not be permitted. Stretch a aasket over the spigot end of the pipe and carefully seat the gasket in the groove. Do not twist, roll, cut, crimp, or otherwise injure gaskets or force them out of position during closure of the joint. Joints in pipe twelve (12) inches and over may be pulled home by suitable winch, come-along or jack, three (3) tons minimum capacity. Correct joint rebound before backfilling pipe. Pull or push home pipe smaller than twelve (12) inches in diameter by suitable means. Remove foreign matter or dirt from the pipe and keep the pipe clean during and after laying.

B. Positioning: Joints made with cold compound maybe pulled home by means of a suitable winch or other suitable power equipment or a come-along. Do not use of bar stuck into the ground for positioning joints on pipe large than ten (10) inches. A bar may be used to push home the joints in pipe ten (10) inches and smaller, provided the joints are pushed all the way home. Positioning will be checked by measuring the laid length per joint so that the number of joints multiplied by the laying length per joint must equal the actual length of sewer in any given section. Pull pipe home in a straight line with all parts of the pipe during or after the pulling operation. Pull or push home rubber gasket joints by any suitable means that will provide adequate pressure to ensure proper assembly of the joint. Use special care to ensure that the joints are pushed home and remain in that position. Complete the joints in accordance with the published instructions of the manufacturer. Neoprene or rubber gasket joints shall, unless otherwise specified, be pointed on the outside with cement mortar.

A. Construct or install all inlets to line and grade at locations shown or as established by the Engineer. Construct the box section of the inlets per the Plans and Section 02514. Neatly cut off all injet leads at the inside face of the inlet wall and point up with mortar. Shape the floor of all inlets by filling with mortar to facilitate drainage and prevent siltation.

END OF SECTION 02400

SECTION 02510 - ASPHALTIC CONCRETE PAVEMENT

PART 1: GENERAL

Handbook

1.01 SCOPE

 Perform all Work and furnish all materials required for manufacturing and placing hot mix asphaltic concrete pavina surface.

B. Related information or Work specified elsewhere in the Project Manuals includes, but is not limited to, the following:

1. General and Supplementary Conditions of the 2. Division 1 — As applicable

4. Section 02200 - Earthwork 1.02 REFERENCES A. The Asphalt Institute - Manual MS-4 - The Asphalt

B. The Asphalt Institute - Manual MS-13 - Asphalt C. ASTM D-946 - Asphalt Cement for Use in Pavement

D. Standard Specifications for Construction of Highways, Streets, and Bridges for the Texas Department of Transportation, State of Texas (1982 or latest edition thereof). E. North Central Texas Council of Governments Standard

Specifications for Public Works Construction, latest

1.03 QUALITY ASSURANCE

A. Perform work in accordance with current Texas Department of Transportation Specifications and the North Central Texas Council of Governments Standard Specifications for Public Works Construction, latest

B. American Society for Testing and Materials.

C. Mixing Plant: Conform to current Texas Department of Transportation Specifications.

D. Obtain materials from same source throughout

A. Testing and analysis of asphaltic mix will be performed under provisions of Section 01410. B. Submit proposed mix design for review prior to commencement of Work.

C. Testing organization will take samples and perform tests in accordance with ASTM methods. 1.05 SUBMITTALS

B. Submit manufacturers' instructions under provisions of General Conditions.

A. Submit product data under provisions of General

.06 ENVIRONMENTAL REQUIREMENTS A. Do not place asphalt when base surface temperature is less than 50ø F and falling.

A. Prime Coat: MC-30 or MC-70 Asphalt.

C. Asphalt Cement: ASTM D-946.

dust, free of foreign matter,

Mix Asphaltic Concrete, Type "O".

support paving and imposed loads.

0.20 gallons/square yard.

3.03 PLACING ASPHALT PAVEMENT

inaccessible to rolling equipment.

with 10-foot straight edge.

design thickness.

2.02 ASPHALT PAVING MIX

PART 3: EXECUTION

3.02 PREPARATION

3.04 TOLERANCES

B. Tack Coat: Grade SS-1 Emulsified Asphalt

F. Mineral Filler: Finely ground particles of

D. Aggregate for Surface Mix: ASTM C-131, C-136, D-423, D-424.

limestone, hydrated lime, or other approved mineral

A. Use dry materials to avoid foaming. Mix uniformly

B. Hot mix asphaltic concrete surface course should

A. Prepared subgrade shall be tested in conformance with Section 01410 and approved by Soils Engineer.

B. Verify cement treated base is dry and ready to

C. Verify grades and elevations of base are correct.

A. Apply prime coat over substrate at uniform rate of

B. Apply primer in accordance with manufacturer's

D. Apply primer to contact surfaces of curbs and

A. Place surface course within 24 hours of priming base

B. Place each course to compacted thickness identified

C. Compact pavement by rolling. Do not displace or extrude pavement from position. Hand compact in areas

D. Develop rolling with consecutive passes to achieve even and smooth finish, without roller marks.

A. Flatness: Maximum variation of 1/4 inch measured

B. Compacted Scheduled Thickness: Within 1/4 inch of

C. Variation from True Elevation: Within 1/2 inch.

C. Use clean sand to blot excess primer.

D. Beginning of installation means acceptance of

Transportation Standard Specifications Item 340 - Hot

meet the requirements of Texas Department of

E. Fine Aggregate: ASTM C-131, C-136, D-423, D-424.

PART 2: PRODUCTS

3.05 GRATE INLET INSTALLATION

3.06 PROTECTION

A. Immediately after placement, protect pavement from mechanical injury for six (6) hours. 3.07 SCHEDULE

3.05 FIELD QUALITY CONTROL

provisions of Section 01410.

A. The surface course noted below shall apply for each specific thickness as noted on the Plans. 3. Section 01410 - Testing Laboratory Services

Percent Aggregate Type "D" by Weight or Volume Passing 1/2" sieve 100 Passing 3/8" sieve 85 to 100 Passing 3/8" sieve, 21 to 53 retained on No. 4 sieve Passing No. 4 sieve,

A. Field inspection and testing will be performed under

11 to 32 retained on No. 10 sieve Total retained on No. 10 sieve 54 to 74 Passina No. 10 sieve, retained on No. 40 sieve 6 to 32 Passing No. 40 sieve, retained on No. 80 sieve Passing No. 80 sieve,

retained on No. 200 sieve

Passing No. 200 sieve

The asphaltic material shall form from 4 to 8 percent of the mixture by weight or from 9 to 19 percent of the mixture by volume, unless specified otherwise on the

3 to 27

END OF SECTION 02510

SECTION 02511 - PORTLAND CEMENT CONCRETE PAVEMENT

(SEE SHEET S702 FOR THIS SECTION)

SECTION 02514 - CONCRETE CONSTRUCTION FOR STRUCTURES

PART 1: GENERAL

A. Section includes all materials and work required t complete, as indicated by the Plans and Specifications, and furnish all supplementary items necessary for the proper installation of Concrete Construction for

B. Related information or work specified elsewhere in the Project Manuals includes, but is not limited to. the following:

 General and Supplementary Conditions of the Division 1 - As applicable 3. Section 01410 — Testing Laboratory Services I. Section 02200 — Earthwork 5. Section 02400 - Storm Drainage

1.02 REQUIREMENTS AND CODES

A. The following Specifications are minimum requirements and shall govern, except that all federal, local, county, and/or state codes and ordinances shall govern when their requirements exceed those specified

B. Comply with all requirements of the North Central

Texas Council of Governments Standard Specifications

for Public Works Construction latest edition. PART 2: PRODUCTS

2.01 MATERIALS A. Use Portland Cement conforming to ASTM C-150, Type I unless authorized to use Type II. Meet ASTM Specifications for weight variations and length of storage. Use no caked cement. Deliver in bags for site-mixed concrete. Use only one brand of cement in

any one structure. B. Furnish clean water, free from harmful amounts of oils, acids, alkalis or other damaging substances, in accordance with ACI and ASTM requirements.

C. Provide coarse aggregates conforming to ASTM C-33. Unless otherwise specified, use standard size from No. 4 to 1-1/2 inch and modify only in accordance with the following. Supply aggregate not larger than 1/5 of the narrowest dimension between sides of forms, nor larger than 3/4 of minimum clear spacing between reinforcing

D. Provide fine aggregate meeting the requirement of

E. Use an air entraining admixture conforming with ASTM

F. Use new billet steel bars, Grade 60, conforming to ASTM A-615. Provide bars manufactured by the open hearth process. When placed in work, steel must be free from dirt, scale, rust, paint, oil, or other harmful materials. Where shown, use welded wire fabric conforming to ASTM A-82. Supply the gauge and spacing shown, with longitudinal and transverse wires electrically welded together at points of intersection, using welds strong enough not to be broken during handling or placing. Weld and fabricate fabric sheets according to ASTM A-185. Submit manufacturer's certificates giving properties of steel and supply specimens, free of cost, for testing when required

G. For curing concrete, provide liquid membrane forming compounds. Use a Type 2, white pigmented compound conforming to ASTM C-309. H. Nonshrinking grout shall be nonmetallic, nonstaining

type conforming to CRD-C-621-84A and ASTM C-827 I. Expansion joints shall be one—half (1/2) inch thick asphalt impregnated cane fiber expansion joints, conforming to ASTM D-1751 with removable plastic cap leaving one-half (1/2) inch deep for sealant.

J. Control joint shall be rigid plastic joint forms. minimum one-eighth (1/8) inch thick, two (2) inches deep, with arrow shaped tip and removable top as manufactured by Burke ("Zip Strip") or approved equal. Sawout control joints can be used in lieu of plastic

2.02 STORAGE OF MATERIALS

A. Store cement off of the ground in a well-ventilated weatherproof building.

B. Prevent mixture of foreign materials with aggregate and preserve graduation of aggregate.

 C. Store reinforcing steel to protect it from mechanical injury and rust.

2.03 CONCRETE

A. Measure materials by weight

2.05 CLASSIFICATION AND PROPORTIONING

coarse aggregate and water.

(28) days of:

2.06 QUALITY OF CONCRETE

PART 3: EXECUTION

3.01 WORK CONDITIONS

or five days at 50øF.

3.02 CONCRETE MIXING

NOT permitted.

Owner and Engineer.

3 03 FORMS

B. Water may be measured by volume.

A. Use either ready mixed concrete conforming to ASTM C-94 or site-mixed concrete. 2.04 MEASUREMENT OF MATERIALS

C. Cement may be measured by bag. One bag weighs 94

A. Concrete shall be normal weight concrete consisting of a proportioned mixture of Portland Cement, fine and

1. Concrete proportions shall be selected on the

2. The Contractor shall employ a qualified testing

Project. The testing laboratory shall establish the

B. Proportion materials to produce concrete that will

have a minimum compressive strength at twenty-eight

1. Reinforced Concrete Inlets: 3,500 psi, 540

pounds minimum of cement per cubic yard, air

in slump shall not exceed ACI recommendation.

E. Admixtures to retard or accelerate setting,

No calcium chloride admixtures may be used

F. No fly ash or plasticizers shall be used.

A. Test cylinders or beams will be made in numbers

required to maintain a check on the strength of the

concrete as described in Section 01410. Provide and

maintain curing facilities as required in ASTM C- 31.

intervals for accurate batching and proportioning.

B. Meet ASTM standard for sampling and testing as

described in Section 01410. Use ASTM C-42 for test

C. Apply normal Portland Cement seven (7)—day and

twenty-eight (28)-day tests and meet minimum strengths

required at three to seven days as directed by Section

D. Should seven (7)-day or three (3)-day test strengths

meet established strength standards, extended curing or

represented by test specimen may be required. Should

strengthening or replacement of portions of structure

A. Mix concrete in quantities required for immediate

of mixing. Clock stamp delivery ticket of all batches

Engineer, Owner, and testing laboratory a minimum of

B. When adverse weather conditions affect quality of

forty—eight (48) hours prior to placement of concrete.

concrete, postpone the work. Do not mix concrete when

and rising. Take temperature readings in the shade away

Protect concrete from temperatures below 32øF until the

concrete has cured for a minimum of three days at 70øF

during cold weather, place concrete in accordance with PCA Standard, Design and Control of Concrete Mixtures.

A. Ready-mixed concrete shall conform to ASTM C-94

B. The addition of water at the job site is permitted

providing that only sufficient water is used to provide

a workable mix and the design water/cement ratio and

the maximum slump are not exceeded. The addition of

cement at job site to maintain water/cement ratio is

C. Air-entraining agents shall be introduced into the

D. Arrange for continuous supply of all materials. Do

A. Provide mortar-tight forms sufficient in strength to

prevent bulging between supports. Set and maintain

slight draft to permit ease of removal. Provide

forms to lines designated. Construct forms to permit

removal without damage to concrete. Forms may be given

adequate cleanout openings and before placing concrete, remove extraneous matter from within forms.

B. Use fluid pressure of 150 pounds per cubic foot and

live load of 50 pounds per square foot on horizontal

surfaces with maximum unit stresses of 125 percent

allowable stresses used for design of structures.

ready-mix supplies without written approval of the

NOT change source of cement, aggregate, admixtures, or

concrete, in accordance with manufacturer's

non-aditating trucks is not permitted. Use of

retempered concrete is not permitted.

and the National Ready Mix Concrete Association. Use of

the air temperature is at or below 40øF and falling. Concrete may be mixed when the temperature is 35øF

from artificial heat. If authorized for placement

with time of mixing at ready mix plant. Notify

use, and place concrete within one (1) hour after start

as applicable for type of cement being used, fail to

resumed curing on those portions of structure

additional curing fail to give required strength,

which fail to develop required strength could be

required at the Contractor's sole expense.

Moisture tests of aggregate will be made at sufficient

D. Air content shall be six (6) percent plus/minus

reduce water ratio or prevent freezing shall not be

used, unless approved by the Owner and Engineer.

one (1) percent by volume using ASTM test method.

2. All other reinforced concrete structures: 3,000

psi, 517 pounds of cement per cubic yard minimum,

C. Slumps shall range from two and one-half (2-1/2)

inches minimum to a four (4) inch maximum. Tolerance

produce the concrete strengths specified.

laboratory to provide concrete design mixes for the

proportioning of materials and additives required to

basis of trial mixes conforming to ACI 211.1.

2. Lining for Rubbed Finished Surfaces. Provide form surfaces or form-lining surfaces free of irregularities for exposed concrete faces which are to be given rubbed finish. Use plywood of 1/4 inch minimum thickness, and preferably oiled at the mill. Re-oil or lacquer the liner on the job before using. Facing may be constructed of 3/4 inch plywood made with waterproof adhesive backed on adequate stude and wales. In such cases, form lining will not be required. Apply rubbed finishes where indicated on

1. General Form Lumber. Use seasoned lumber of

good quality, free from loose or unsound knots, knot

holes, twists, shakes, decay and other imperfections

Use S4S lumber for facing or sheathing. Use nominal

two (2) inch lumber as minimum thickness of forms

adequately to prevent misalignment. Provide lumber

approved thickness for general use and back by

sufficient number of stude and wales.

for bottom of caps, or 3/4 inch form plywood backed

of nominal one (1) inch thickness or form plywood or

which would affect strength or impair the finished

C. Materials:

surface of concrete.

3. Special Form Lumber. Make molding for chamfer strips, or similar uses, of redwood, cypress or pine. Furnish a quality that will not split when nailed and which can be maintained to true line. Use milicut molding dressed on all faces. Unless otherwise provided, fillet forms at sharp corners and edges with triangular chamfer strips of 3/4 inch, measured on sides.

D. Use metal form ties of approved type to hold forms in place. Do not use wire ties or snap ties. Remove form ties to depth of at least 3/4 inch from surface of concrete. Provide form tie holes not larger than 7/8 inch in diameter. Do not burn off ties. Do not use pipe spreaders. Remove spreaders which are separate from forms as concrete is being placed.

E. Treat facing of forms with approved form oil before concrete is placed. When so directed, treat both sides of face forms with oil. Apply oil before reinforcement is placed.Immediately before the concrete is placed, wet surfaces of forms which will come in contact with

F. Applicable provisions of these Specifications apply equally to metal forms. Counter sink bolt and rivet heads on facing sides. Use only metal forms which present a smooth surface and which line up properly. Keep metal free from rust, grease or other foreign material that will tend to disfigure or discolor concrete. Provide metal pan forms that are clean and in good condition, free from dents and rust. Provide Plans and a gauge and in condition to support concrete and construction loads without significant distortion.

3.04 FALSEWORK

A. Install rigid falsework having no excessive settlement or deformation. Use sound timber in falsework centering. Use hardwood timber for wedges.

B. Construction for a design load of 110 pounds per cubic foot for concrete, and a live load of 50 pounds per square foot of horizontal surface of formwork with maximum unit stresses 125 percent of allowable stresses used for design of structures.

3.05 PLACING REINFORCEMENT

A. Place reinforcing steel accurately and secure it adequately in position in the forms. Maintain reinforcing steel in place using an approved concrete and hot-dip galvanized metal chairs and spacers. Provide a bat tie pigtail extending more than 3/8 inch past the outside face of the bar. All reinforcing steel be inspected per Section 01410 and approved by the Engineer before concrete is placed.

B. Provide minimum spacing center—to—center of parallel bars 2-1/2 times nominal diameter of the bar. In no case permit clear distance between bars be less than 1-1/2 times maximum size of coarse aggregate. Minimum cover measured from surface of concrete to face of reinforcing bar will be three (3) inches.

C. Bend reinforcing steel to required shapes while steel is cold. Excessible irrequignities in bending will be cause for rejection. Detail bars in accordance with ACI 315-57. D. Splicing of bars will not be permitted without written approval. Approved bar bending schedules or

placing drawings constitute written approval. Splice

reinforcement but not less than 12 inches. Stagger

bars with a lop of 24 times the diameter of

splices or else locate at points of low tensile stress. **END OF SECTION 02514**

SECTION 02525 - CONCRETE CURBS

(SEE SHEET S702 FOR THIS SECTION

3930 Meredith Avenue

Dallas, Texas 75211

CASSESA consulting engineers, inc.

Structural, Civil, & Construction Engineering

SECTION 02584 - PAVEMENT MARKING

PART 1: GENERAL

A. Perform all work required for pavement marking as indicated on the plans and specified herein.

4. Section 02525 - Concrete Curbs

B. Related information or work specified elsewhere in the Project Manuals includes, but is not limited to, the following:

> 1. General and Supplementary Conditions of the **EXPIRATION DATE:** 2. Division 1 - As applicable 3. Section 02511 - Portland Cement Concrete Pavement

> > **AFFIXATION DATE:**

0

Grou

son

G

C. Pavement marking and other painting to be done under this specifications includes:

 All parking space marking, directional arrows, curbs, entrance arrows, fire lane lines, accessible parking symbol on pavement, diagonal safety marking required at accessible parking spaces and any other marking or painting required by codes, ordinances or laws in conjunction with traffic movement or control and parking on the site.

1.02 REQUIREMENTS, CODES

A. The following specifications are minimum requirements and shall govern, except that all local, state, county and/or federal, codes and ordinances shall govern when their requirements exceed those

B. Contractor shall coordinate fire lane requirements with City of Dallas Fire Department.

A. Submit complete manufacturer's product data sheets

for marking paint.

1.04 JOB CONDITIONS A. Environmental Requirements. Do not apply materials in rainy or faggy conditions, or when ambient or pavement temperatures are below 50øF, or when such conditions are anticipated in subsequent 8 hours.

PART 2: PRODUCTS

A. Paint for all fire lane striping shall be a weather resistant traffic paint, bright red, as manufactured by Sherwin-Williams or Glidden.

B. Paint for letters along fire lane striping and all other paints shall be a weather resistant traffic paint, white, as manufactured by Sherwin-Williams or

PART 3: EXECUTION 3.01 PREPARATION

3.03 PROTECTION

END OF SECTION 02584

A. Inspect all surfaces to be painted. Contractor shall repair all surface damage and defects.

B. Clean surface of all foreign material. 3.02 APPLICATION

> A. Apply one coat, 9 mil. thickness on face and top of curbs at all drive approaches, and as required to form all directional arrows on site. B. Apply one coat, 9 mil. thickness in four (4)-inch-wide stripes at the spacing and angles as

shown on the plans to create parking stalls, handicap

Americans with Disabilities Act of 1990, and any other

striping or symbols required by city, county, state, and/or federal codes, ordinances, or laws.

symbols, all safety marking as required by the

C. If one coat does not provide acceptable coverage, recoat until acceptable coverage is attained.

A. Protect adjacent surfaces from overspray or

Job No.

Plan No.

Date

Drawn By

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CIVIL SITEWORK SPECIFICATIONS

Sheet No.

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Signed:

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31 JAN 2005

Ccei Revisions

Sheet Title