

Summer 2003

HARRIS COUNTY FLOOD CONTROL DISTRICT

PREVIOUSLY APPROVED SUBMITTALS
(BASED ON 2000 STANDARD SPECIFICATIONS)



REFERENCE BOOK

HARRIS COUNTY FLOOD CONTROL DISTRICT
PREVIOUSLY APPROVED SUBMITTAL RECORD
REFERENCE BOOK

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OVERVIEW

The Reference Book is intended to provide contractors supporting documents for products that have been previously approved by the Harris County Flood Control District (HCFCD), in accordance with the 2000 Standard Specifications.

Purpose: Reduce the time and effort needed to approve submittals on each construction project by:

- Eliminating the transmittal of multiple signed originals.
- Eliminating the transmittal of multiple swatches/samples.
- Shortening review and approval for products previously approved for the current standard specifications.

What is in the Book:

Binder 1

- The procedure to add a product to the list.
- A specification checklist for submittal of new products (as described in the standard specifications).
- A list of product types not eligible for the list.

What is in the Appendix:

Binder 2

- Samples of the approved products.
- Brochures and product literature for listed products.
- A current list of the approved products sorted by associated specification and by manufacturer (contacts are provided by contractors who select the respective products).

Updates: The samples and product list will be updated on an as needed basis, but no more than once every 6 months. Each update will be dated.

Appreciation: Our appreciation goes to those at the HCFCD, HCA, and the manufacturers who have helped this to become a reality.

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PART 1

Introduction to Previously Approved Submittals:

This reference book is being provided in order to reduce the amount of paper, time, and resources it takes to prepare submittals, and to expedite the processing time of reviews and approvals. The record list includes the manufacturer's name, product item, and associated standard specification number and title.

1.1 Procedure for Previously Approved Submittal List Items

To submit listed products for approval, identify the approved submittal number, the manufacturer's name, product item or design number, supplier, and contact information.

Provide a document identifying the listed items collectively, as one submittal, to the Engineer. No back-up documentation is required.

1.2 Updates to the List

Updates will occur on an as needed basis, but no more frequently than once every six (6) months. Each update will be dated. This will remain true until, or when, the specification requirements of the product change.

The manufacturer of each new product approved for use will be notified by the contractor using that product of its eligibility for the approved submittal list. Contractors will transmit four (4) sets of original documents, data, samples, and brochures to the Engineer to be included in the next update.

1.3 Acknowledgements

Harris County Flood Control District (HCFCD)
Construction Management Section

Houston Contractors Association (HCA)
Flood Control Committee Chair

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PART 2

All About the Reference Book

The Reference Book is a user friendly guide to assist you with data, samples, and brochures of products that were previously approved for HCFCD submittal record.

2.1 Approved Product Listings

- 2.1.1 Sorted by Manufacturer
- 2.1.2 Sorted by Product Description

2.2 Location of Book and Appendix

HARRIS COUNTY FLOOD CONTROL DISTRICT
Construction Management Section
9900 Northwest Freeway
Houston, TX 77092 713/684-4000

HOUSTON CONTRACTOR'S ASSOCIATION
Flood Control Committee Chair
4001 Sherwood Lane
Houston, TX 77092 713/349-9434

2.3 Organization of Appendix

[Under separate cover](#)

- 2.3.1 Sorted by Specification

2.4 Information Available to Bidders

The Harris County Flood Control District (HCFCD) will provide a dated hardcopy of the Reference Book and product list to bidders attending each mandatory pre-bid meeting. After the first 6 months, a CD-ROM will be distributed in lieu of the hardcopy Reference Book. The Appendix to the Reference Book, which includes the data, brochures and samples, must be viewed at HCFCD, Construction Management Section or Houston Contractor's Association.

2.5 Not a Recommendation

The product list is provided for your convenience and use. The list identifies commonly used and readily available products that have been previously approved by HCFCD for our current Standard Specifications. However, HCFCD policy is not to endorse any particular product. Any product that meets the project specifications may be submitted by the Contractor for approval.

2.1.1

MANUFACTURER'S NAME - HCFCD PREVIOUSLY APPROVED SUBMITTAL LIST (2000 STANDARDS)

MANUFACTURER'S NAME	PRODUCT DESCRIPTION	REFERENCE ID#	ITEM #
CAMPBELL	CONCRETE MIX DESIGN	03310-S001	MIX 3131600, 3000 PSI
CAMPBELL	CONCRETE MIX DESIGN	03310-S002	MIX S011022, 1500 PSI, NON-STRUC.
CAMPBELL	CONCRETE MIX DESIGN	03310-S004	MIX HCFC1, STRUCTURAL USE, 3000 PSI
CHERRY CRUSHED CONCRETE	GRANULAR FILL, STABILIZED ACCESS	02378-S004	3" X 5" BULLROCK
CHERRY CRUSHED CONCRETE	RIPRAP	02378-S007	GRADE 1
CHERRY CRUSHED CONCRETE	RIPRAP	02378-S008	GRADE 2
CONTECH	GEOTEXTILE	02379-S003	C 70/06 (WOVEN)
CONTECH	CORRUGATED METAL PIPE & BAND COUPLERS	02642-S001	16 GAGE CMP
DORSETT BROTHERS	FLOWABLE CONCRETE FILL	02322-S004	MIX G1P104G
DORSETT BROTHERS	FLOWABLE CONCRETE FILL	02322-S005	MIX G1P104G
DORSETT BROTHERS	FLOWABLE CONCRETE FILL	02322-S006	MIX G1P103G, CANNOT PUMP
DORSETT BROTHERS	CONCRETE MIX DESIGN	03310-S007	MIX AIN155L, 3000 PSI
DORSETT BROTHERS	CONCRETE MIX DESIGN	03310-S008	MIX L1N111R, 2000 PSI
DORSETT BROTHERS	CONCRETE MIX DESIGN	03310-S009	MIX AIN085L w/FIBER
DORSETT BROTHERS	CONCRETE MIX DESIGN	03310-S010	MIX AIN085L, 3000 PSI
EASTERN PRODUCTS, INC.	MULCH & TACKIFIER	02925-S002	ECO TAK-OP
FRONTIER MATERIALS	FIBER REINFORCEMENT	03310-S021	FMC 350011 (FMC 10115), 3500 PSI
GULF COAST LIMESTONE	GRANULAR FILL	02378-S001	GRADE/TON
GULF COAST LIMESTONE	RIPRAP	02378-S009	GRADE 1
HANSON PIPE & PRODUCTS	REINFORCED CONCRETE PIPE	02611-S001	(WITH GASKETS)
INDUSTRIAL FABRICS, INC.	GEOTEXTILE	02379-S003	AMOCO 2002
INDUSTRIAL FABRICS, INC.	SILT FENCE	02361-S005	AMOCO 2130
INTERNATIONAL CELLULOSE	MULCH & TACKIFIER	02925-S003	OASIS FIBERMULCH, PAPER
KC CRUSHED CONCRETE	STABILIZED ACCESS - ROCK	02378-S005	3" X 5" BULLROCK
MIDWEST INDUSTRIAL SUPPLY	SOIL STABILIZER	02925-S004	SOIL-SEMENT
PARK ENVIRONMENTAL EQUIPMENT	TYPE "B" INLET	02632-S002	VULCAN FOUNDRY V4880-I
PIPELINE COMPONENTS, INC.	CAST-IN-PLACE MANHOLE (FRAMES & COVER)	02630-S001	w/MANHOLES
SOUTHERN CRUSHED CONCRETE	GRANULAR FILL	02378-S002	GRADE/TON
SOUTHERN CRUSHED CONCRETE	GRANULAR FILL, STABILIZED ACCESS	02378-S006	3" X 5" BULLROCK
SOUTHERN CRUSHED CONCRETE	RIPRAP	02378-S010	GRADE 1
SOUTHERN CRUSHED CONCRETE	RIPRAP	02378-S011	GRADE 2
TEXAS STEEL CULVERT CO.	CORRUGATED METAL PIPE & BAND COUPLERS	02642-S002	16 GAGE CMP
TNS ADVANCED TECHNOLOGIES, INC.	GEOTEXTILE	02379-S004	TNS M706
TNS ADVANCED TECHNOLOGIES, INC.	GEOTEXTILE	02379-S007	TNS W300
TRANSIT MIX	CONCRETE MIX DESIGN	03310-S017	MIX 76606211, 4000 PSI
TRANSIT MIX	CONCRETE MIX DESIGN	03310-S012	MIX 15006211, 1500 PSI
TRANSIT MIX	CONCRETE MIX DESIGN	03310-S013	MIX 76406211, 2000 PSI
TRANSIT MIX	CONCRETE MIX DESIGN	03310-S014	MIX 76506211, 3000 PSI
TXI	FLOWABLE CONCRETE FILL	02322-S007	MIX 8396
TXI	CONCRETE MIX DESIGN	03310-S017	MIX 43500, 1500 PSI, TYPE II
TXI	CONCRETE MIX DESIGN	03310-S018	MIX 13500, 1500 PSI
TXI	CONCRETE MIX DESIGN	03310-S019	MIX 45000, 3000 PSI, TYPE II
TXI	CONCRETE MIX DESIGN	03310-S020	MIX 88605, 3000 PSI

2.1 Approved Product Listings

2.1.2

PRODUCT DESCRIPTION - HCFCD PREVIOUSLY APPROVED SUBMITTAL LIST (2000 STANDARDS)

REFERENCE ID#	PRODUCT DESCRIPTION	MANUFACTURER'S NAME	ITEM #
02630-S001	CAST-IN-PLACE MANHOLE (FRAMES & COVER)	PIPELINE COMPONENTS, INC.	w/MANHOLES
03310-S017	CONCRETE MIX DESIGN	TRANSIT MIX	MIX 76606211, 4000 PSI
03310-S007	CONCRETE MIX DESIGN	DORSETT BROTHERS	MIX AIN155L, 3000 PSI
03310-S008	CONCRETE MIX DESIGN	DORSETT BROTHERS	MIX L1N111R, 2000 PSI
03310-S009	CONCRETE MIX DESIGN	DORSETT BROTHERS	MIX AIN085L w/FIBER
03310-S010	CONCRETE MIX DESIGN	DORSETT BROTHERS	MIX AIN085L, 3000 PSI
03310-S017	CONCRETE MIX DESIGN	TXI	MIX 43500, 1500 PSI, TYPE II
03310-S018	CONCRETE MIX DESIGN	TXI	MIX 13500, 1500 PSI
03310-S019	CONCRETE MIX DESIGN	TXI	MIX 45000, 3000 PSI, TYPE II
03310-S020	CONCRETE MIX DESIGN	TXI	MIX 88605, 3000 PSI
03310-S001	CONCRETE MIX DESIGN	CAMPBELL	MIX 3131600, 3000 PSI
03310-S002	CONCRETE MIX DESIGN	CAMPBELL	MIX S011022, 1500 PSI, NON-STRUC.
03310-S004	CONCRETE MIX DESIGN	CAMPBELL	MIX HCFC1, STRUCTURAL USE, 3000 PSI
03310-S012	CONCRETE MIX DESIGN	TRANSIT MIX	MIX 15006211, 1500 PSI
03310-S013	CONCRETE MIX DESIGN	TRANSIT MIX	MIX 76406211, 2000 PSI
03310-S014	CONCRETE MIX DESIGN	TRANSIT MIX	MIX 76506211, 3000 PSI
02642-S001	CORRUGATED METAL PIPE & BAND COUPLERS	CONTECH	16 GAGE CMP
02642-S002	CORRUGATED METAL PIPE & BAND COUPLERS	TEXAS STEEL CULVERT CO.	16 GAGE CMP
03310-S021	FIBER REINFORCEMENT	FRONTIER MATERIALS	FMC 10115, 3500 PSI
02322-S004	FLOWABLE CONCRETE FILL	DORSETT BROTHERS	MIX G1P104G
02322-S005	FLOWABLE CONCRETE FILL	DORSETT BROTHERS	MIX G1P104G
02322-S006	FLOWABLE CONCRETE FILL	DORSETT BROTHERS	MIX G1P103G, CANNOT PUMP
02322-S007	FLOWABLE CONCRETE FILL	TXI	MIX 8396
02379-S003	GEOTEXTILE	CONTECH	C 70/06 (WOVEN)
02379-S007	GEOTEXTILE	TNS ADVANCED TECHNOLOGIES, INC.	TNS W300
02379-S003	GEOTEXTILE	INDUSTRIAL FABRICS, INC.	AMOCO 2002
02379-S004	GEOTEXTILE	TNS ADVANCED TECHNOLOGIES, INC.	TNS M706
02378-S001	GRANULAR FILL	GULF COAST LIMESTONE	GRADE/TON
02378-S002	GRANULAR FILL	SOUTHERN CRUSHED CONCRETE	GRADE/TON
02378-S006	GRANULAR FILL, STABILIZED ACCESS	SOUTHERN CRUSHED CONCRETE	3" X 5" BULLROCK
02378-S004	GRANULAR FILL, STABILIZED ACCESS	CHERRY CRUSHED CONCRETE	3" X 5" BULLROCK
02925-S002	MULCH & TACKIFIER	EASTERN PRODUCTS, INC.	ECO TAK-OP
02925-S003	MULCH & TACKIFIER	INTERNATIONAL CELLULOSE	OASIS FIBERMULCH, PAPER
02611-S001	REINFORCED CONCRETE PIPE	HANSON PIPE & PRODUCTS	(WITH GASKETS)
02378-S009	RIPRAP	GULF COAST LIMESTONE	GRADE 1
02378-S010	RIPRAP	SOUTHERN CRUSHED CONCRETE	GRADE 1
02378-S011	RIPRAP	SOUTHERN CRUSHED CONCRETE	GRADE 2
02378-S007	RIPRAP	CHERRY CRUSHED CONCRETE	GRADE 1
02378-S008	RIPRAP	CHERRY CRUSHED CONCRETE	GRADE 2
02361-S005	SILT FENCE	INDUSTRIAL FABRICS, INC.	AMOCO 2130
02925-S004	SOIL STABILIZER	MIDWEST INDUSTRIAL SUPPLY	SOIL-SEMENT
02378-S005	STABILIZED ACCESS - ROCK	KC CRUSHED CONCRETE	3" X 5" BULLROCK
02632-S002	TYPE "B" INLET	PARK ENVIRONMENTAL EQUIPMENT	VULCAN FOUNDRY V4880-I

2.1 Approved Product Listings

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PART 3

Products Not Eligible for the List:

The following products are dependent on feedstock or site specific specifications. Standard submittal procedures must be followed for approval of these pay items.

3.1 Product Table

Section 02321	Cement Stabilized Sand
Section 02379	Geotextiles
Section 02911	Topsoil
Section 02316	Sand
Section 02314	Imported Soil
Section – Per Project	Special Specification

3.2 Explanation

Import Fill and Sand (used for structural backfill or an element of Cement Stabilized Sand) are products that are dependent on the specific site the Contractor chooses to meet the specification. Samples and lab analysis must be received to insure the specifications are being met.

Topsoil is another product that can vary greatly from source to source. The specification for topsoil used on HCFCD channels is not the same as topsoil used for residential or commercial landscaping. Samples are required, and the proper amount of organics and clay must be verified.

Even though geotextile are listed on the previously approved submittal record, geotextile fabrics are specified for several different uses on HCFCD projects. Stabilized construction access, riprap installations and erosion control systems, such as articulated concrete block or gabion mattresses, are all systems that may require geotextile fabrics on the job. The appropriate apparent opening size, strength, and other characteristics are dependent on the type of installation and the soil type at the location of placement. Therefore, the Contractor must identify the intended use for the fabric, when the product is chosen.

Project specific specifications require a full submittal to be made. These items are unique to the project, and are not included in HCFCD standard specifications or on the Standard Details drawings.

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PART 4

Standard Submittal Requirements

4.1 Submittal Procedure – 01330 (Standard Specifications)

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 – GENERAL

1.1 SUMMARY

- A. Section includes procedures for the submittals identified by the Project Manual.

1.2 SUBMITTAL PROCEDURES

- A. Deliver available submittals to the Engineer at the Pre-Construction meeting. Allow no less than 14 days for initial review of submittals by the Engineer. The Engineer will review and return submittals as expeditiously as possible but the amount of time required for review will vary depending on the complexity and quantity of data submitted. This time for review shall in no way be justification for delays or additional compensation to the Contractor. Allow time to make delivery of material or equipment after the submittal is approved.
- B. Submit 4 copies of documents unless otherwise specified.
- C. The Engineer's review of submittals covers only general conformity to the Plans and Specifications. Quantities will not be reviewed or verified by the Engineer. Contractor is responsible for errors, omissions or deviations from Contract requirements. Review of submittals in no way relieves the Contractor from obligation to furnish required items according to the Plans and Specifications.
- D. Revise and resubmit submittals as required. Identify all changes made since previous submittal.
- E. The Contractor shall assume the risk for material or equipment that is fabricated or delivered prior to approval. No material or equipment shall be incorporated into the work or included in periodic progress payments until approval has been obtained in the specified manner.

(continues)

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PART 4 (continued)

- F. Submittal Numbering:
1. Transmit each submittal to the Engineer.
 2. Identify each submittal by project number, submittal number, section number and pay item number.
 3. Sequentially number each submittal beginning with the number 1. Resubmittals shall use the original number followed with an alphabetic suffix (i.e., 2A for the first resubmittal of Submittal 2 or 15C for the third resubmittal of Submittal 15). Each submittal shall only contain one type of work, material or equipment. Mixed submittals will not be accepted.
 4. Identify variations from requirements of Contract Documents and identify product or system limitations.
- G. Contractor's Stamp: Apply Contractor's stamp, certifying that the items have been reviewed in detail and are correct and in accordance with Contract Documents, except as noted by any requested variance.

PART 2 - PRODUCTS – Not used

PART 3 - EXECUTION – Not used

END OF SECTION

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4.2 Submittal Requirement Checklist (s)

SUBMITTAL REQUIREMENTS FOR PREAPPROVED LIST

CONCRETE - 03310

- Analytical test strength results less than one year old showing historic performance of the submitted mixture
- Coarse aggregate gradations conforming to ASTM C 33, Size No. 357, 467, 57, 67, or 7

Size	Sieve	% Passing
357	2 1/2 inch	100
	2 inch	95 - 100
	1 inch	35 - 70
	1/2 inch	10 - 30
	No. 4	0 - 5
467	2 inch	100
	1 1/2 inch	95 - 100
	3/4 inch	35 - 70
	3/8 inch	10 - 30
	No. 4	0 - 5
57	1 1/2 inch	100
	1 inch	95 - 100
	1/2 inch	25 - 60
	No. 4	0 - 10
	No. 8	0 - 5
67	1 inch	100
	3/4 inch	90 - 100
	3/8 inch	20 - 55
	No. 4	0 - 10
	No. 8	0 - 5
7	3/4 inch	100
	1/2 inch	90 - 100
	3/8 inch	40 - 70
	No. 4	0 - 15
	No. 8	0 - 5

- Fine aggregate gradations meeting the following:

Sieve	Percent Passing
3/8 inch	100
No. 4	95 - 100
No. 8	80 - 100
No. 16	50 - 85
No. 30	25 - 60
No. 50	5 - 30
No. 100	0 - 10

Note**- Fine aggregate shall have no more than 45% passing any sieve and retained on the next consecutive sieve of those listed above and the fineness modulus shall be not less than 2.3 nor more than 3.1.

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- Cement properties showing that ASTM C 150, Type II cement requirements shown in the following tables are met:

TABLE 1: Standard Chemical Requirements	Type II
SiO ₂ , min%	20.0
Al ₂ O ₃ , max%	6.0
Fe ₂ O ₃ , max%	6.0
MgO, max%	6.0
SO ₃ , max%	3.0
Loss on Ignition, max %	3.0
Insoluble Residue, max %	0.75
C ₃ S, max%	-
C ₂ S, min%	-
C ₃ A, max%	8.0
TABLE 2: Standard Physical Requirements	Type II
Fineness, specific surface, m ² /kg, Air permeability test, min	-
Autoclave expansion, max%	0.80
Compressive Strength, not less than the values shown for the ages indicated below in MPa:	
1 day	-
3 days	10.3
7 days	17.2
28 days	-
Time of setting by Vicat test	
Initial, not less than (minutes)	45
Final, not more than (minutes)	375

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- Product data for admixtures showing that the admixtures used meet the following applicable ASTM requirements:
Air Entraining ASTM C 260
Water Reducer ASTM C 494, Type A
Water Reducer and Retarder ASTM C 494, Type D
High Range Water Reducer (Superplasticizer) ASTM C 494, Type F or G

- Design mix prepared in accordance with ASTM C 1077 meeting the following requirements:

Type	Minimum 28-Day Compressive Strength (Lbs./sq.in.)	Maximum W/C Ratio	Air Content (Percent)	Consistency Range in Slump (Inches)	Cementitious Content (Lbs./cy)
Structural	3000	0.45	3-5	2 to 4	470
Non-Structural	1500	n/a	3-5	5 to 7	329

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REINFORCING STEEL - 03310

- General Comment on reinforcing steel. The actual mill certifications come with the steel delivery after analysis of that batch of steel. These should be submitted onsite, therefore, a previously approved submittal would not be representative of the delivered product.

SILT FENCE – 02361

- Catalog data, cut sheets and mill certificate for the silt fence geotextile and catalog data for welded wire fabric mesh or plastic grid mesh reinforcement to be used.
- Manufacturer's literature showing that geotextile fabric:
 - consists of long-chain synthetic polymers composed of at least 95 percent by weight of polyolefins in a woven fabric.
 - contains stabilizers and/or inhibitors to make the fibers resistant to deterioration resulting from exposure to sunlight or heat.
 - is resistant to commonly encountered soil chemicals, mildew, rot, and insects.
 - has a minimum grab strength of 100 lbs (ASTM D 4632).

TIMBER BENT – 02464

- Manufacturer's literature showing that timber members meet or exceed the following standards:
 - TIMBER PILES - Provide southern pine wood poles for use as timber bent piles that meet the requirements of ANSI O5.1.P
 - Provide minimum diameter of 8 inches at the pile tip.
 - Provide southern pine wood poles that are pressure preservative treated in accordance with AWPA C4 using one of the following methods:
 - Creosote conforming to AWPA P1/P13 to 9.0 pounds per cubic foot (pcf) by assay.
 - Chromated copper arsenate (CCA – Type C) oxide preservative to produce a retention assay of 0.6 pounds per cubic foot.
 - TIMBER MEMBERS - Provide southern pine timber members meeting SPIB Section 300 – National Grading Rule for Dimensioned Lumber, SEL STR Grade No. 2 or better.
 - Provide pressure preservative members treated per AWPA C2 for Soil and Fresh Water Use with one of the following methods:
 - Creosote conforming to AWPA P1/P13 to 10.0 pounds per cubic foot by assay.
 - Chromated copper arsenate (CCA – Type C) oxide preservative to produce a retention assay of 0.6 pounds per cubic foot.
 - HARDWARE - Provide bolts conforming to ASTM A 307.
 - Provide hot dipped galvanized hardware in accordance with ASTM A 153.

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FLOWABLE FILL – 02322

- MIX DESIGN REQUIREMENTS:
 - Mix design designation (number or code) used for ordering
 - Minimum 7 day strength of 100 psi
 - Proportions of each material/product used
 - Cement properties meeting ASTM C 150, Type I requirements

TABLE 1: Standard Chemical Requirements	Type I
SiO ₂ , min%	-
Al ₂ O ₃ , max%	-
Fe ₂ O ₃ , max%	-
MgO, max%	6.0
SO ₃ , max%	3.0-3.5
Loss on Ignition, max %	3.0
Insoluble Residue, max %	0.75
C ₃ S, max%	-
C ₂ S, min%	-
C ₃ A, max%	-
TABLE 2: Standard Physical Requirements	Type I
Fineness, specific surface, m ² /kg, Air permeability test, min	280
Autoclave expansion, max%	0.80
Compressive Strength, not less than the values shown for the ages indicated below in MPa:	
1 day	-
3 days	12.4
7 days	19.3
28 days	-
Time of setting by Vicat test	
Initial, not less than (minutes)	45
Final, not more than (minutes)	375

- Test data showing that fly ash properties meet ASTM C 618, Class C requirements with CaO min 20%, silicon dioxide (SiO₂) plus aluminum oxide (AL₂O₃) plus iron oxide (FE₂O₃) min 50%, sulfur trioxide (SO₃) max 5%, moisture content max 3%, and loss on ignition max 6%
- Water requirements meeting ASTM C 94
- Fine aggregate gradation data showing 100% passing 3/8" sieve, 1% -10% passing #200 sieve
- Fine aggregate properties showing Plasticity Index ≤ 4 (determined in accordance with ASTM D 4318) and organic impurities with a color not darker than standard (determined in accordance with ASTM C 40)
- Product data for admixtures showing compliance with ASTM C 260 or C 494

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RIPRAP AND GRANULAR FILL – 02378

- Material gradations less than one year old showing conformance with granular fill (3” to 5” consists of no material greater than 5” and none less than 3”; 4” to 8” with no material greater than 8” and none less than 4”)
- Material gradations for all sizes used and plants used
- Riprap gradation No.1 and No. 2 in accordance with the following tables:

TABLE 1 RIPRAP GRADATION NO. 1

Percent Lighter by Weight	Stone Weight Lbs.		Volume Cubic Ft. (2)		Cubical Shape Ft. (Each Side)		Spherical Shape Ft. (Dia.)	
	Lower Limit	Upper Limit	Lower Limit	Upper Limit	Lower Limit	Upper Limit	Lower Limit	Upper Limit
100	180	265	1.20	1.77	1.06	1.21	1.31	1.50
50	80	110	0.53	0.73	0.81	0.90	1.01	1.12
10	40	60	0.27	0.40	0.64	0.74	0.80	0.91

TABLE 2 RIPRAP GRADATION NO. 2

Percent Lighter by Weight	Stone Weight Lbs.		Volume Cubic Ft. (2)		Cubical Shape Ft. (Each Side)		Spherical Shape Ft. (Dia.)	
	Lower Limit	Upper Limit	Lower Limit	Upper Limit	Lower Limit	Upper Limit	Lower Limit	Upper Limit
100	260	640	1.73	4.27	1.20	1.62	1.49	2.01
50	130	200	0.87	1.33	0.95	1.10	1.18	1.37
15	40	150	0.27	1.00	0.64	1.00	0.80	1.24

1. The theoretical cube and sphere size is presented for guidance only. Paragraph 2.1 shall control riprap shape and dimensions.
2. Volume is based on 150 pcf, unit weight.

STABILIZED CONSTRUCTION ACCESS, FABRIC – 02365

- Manufacturer’s literature showing that the geotextile is of woven or spunbond nonwoven fibers consisting of long-chain synthetic polymers composed of at least 95 percent by weight of polyolefins.
- List of properties showing that the following specification requirements are met:
 - o Minimum average roll value.
 - Elongation < 50 percent.
 - Grab Strength ≥200 pounds.
 - Puncture Strength ≥75pounds.
 - UV Stability (retained strength) ≥ 50 percent after 500 hours of exposure.
 - o Maximum average roll value.
 - Apparent Opening Size (AOS) – 0.212 to 0.6 mm (#70 to #30 US sieve).
- Product literature showing manufacturer’s recommendations for use
- Cut sheets

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CORRUGATED METAL PIPE – 02642

- Product literature showing that pipe meets specification requirements AASHTO M 36 or M 245

- Product literature showing that coupling bands meet the following specification requirements for coupling bands and other hardware for galvanized steel pipe:
 - Coupling bands shall be not more than 3 nominal sheet thicknesses lighter than the thicknesses of the pipe to be connected and in no case lighter than 0.064 inch for steel or 0.048 inch for aluminum.
 - Coupling bands shall be made of the same base metal and coating (metallic or otherwise) as the pipe.
 - Provide 24 inch wide coupling bands with annular corrugations. Material, corrugation, diameter and coating of the coupling band shall match the pipe.
 - Bolts for coupling bands shall be 1/2 inch diameter. Bands shall have a minimum of 3 bolts at each connection.
 - Galvanized bolts may be hot dip galvanized, mechanically galvanized or electrogalvanized.

REINFORCED CONCRETE BOX - 02612:

These are project specific and should be submitted on a project by project basis

PRECAST TYPE “A” INLET – NO STANDARD SPECIFICATION:

These are project specific and should be submitted on a project by project basis

REINFORCED CONCRETE PIPE – 02611

- Shop drawings showing that steel reinforcing meets ASTM C 76, Type III specifications
- Concrete strength test results showing that concrete meets ASTM C 76, Type III specifications
- Manufacturer’s installation recommendations

Note: Valid only for 02611, Reinforced (Circular) Concrete Culvert, Storm Drain and Sewer Pipe, and Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets

SEED – 02923

- Certification for Texas Seed and Plant Certification Act and Standards showing that each product complies with Sections 21.9, 31.10 and 21.11
- Certification for Federal Seed Act showing that each product complies with the U.S. Department of Agriculture Rules and Regulations
- KY 31 Tall Fescue, Bermudagrass Hulled and Unhulled, Bermudagrass Hulled, Ryegrass, Foxtail Millet, Crimson Clover and Innoculant, and Pensacola Bahiagrass – need certification within last 9 months

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MULCH AND TACKIFIER – 02925

- Manufacturer's tackifier product literature showing compliance with specification
- Manufacturer's mulch literature showing compliance with material specification
- Manufacturer's application recommendations for slopes

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4.3 Pre-Construction Meeting Submittal Instructions & Log

STANDARD SUBMITTAL PROCEDURES

The Project Manual provides technical specifications for construction of this project. It also provides requirements for the submittal of information on certain products, etc. CONTRACTOR should make submittals for specific products to the ENGINEER **PRIOR TO INCORPORATION OF SUCH PRODUCTS INTO THE PROJECT**. CONTRACTOR should forward all submittals directly to the ENGINEER.

In general, please **ALLOW TWO (2) WEEKS** for review of the submittal. The Engineer will provide instructions for further action, if any.

In order to facilitate this process, each submittal should contain the following:

1. Separate Transmittal Letter for Each Submittal, Include Section No. & Title

2. Four Copies of Each Submittal, Include Contractor Stamp on Each Copy

3. Proposed Product Clearly Indicated on Submittal

Prior to making a submittal, CONTRACTOR should feel certain that the selected product meets or exceeds the requirements contained in the Project Manual. We have attached a summary of standard HCFCD submittal requirements and we will update the log as we review and approve submittals. The submittal log is a tool for tracking submittals. The CONTRACTOR remains responsible for all submittal requirements as contained within the Project Manual. ENGINEER may withhold payment for products incorporated into the project prior to review and approval of submittals.