

DEMOLITION OF THE UNITED STATES SECTION FABENS-CASETA INTERNATIONAL BRIDGE



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0915116



STRUCTURAL ENGINEERING
ASSOCIATES, INC.
CONSULTING ENGINEERS

TBPE Firm No. F-199
Revised 14 September 2016

El Paso County
TECHNICAL SPECIFICATIONS
DIVISION 00
PROCUREMENT AND CONTRACTING
REQUIREMENTS

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SPECIFICATION 00.01.01
PROJECT TITLE

The title of this project is as follows:

CONSTRUCTION FOR THE
DEMOLITION OF THE UNITED STATES SECTION
FABENS-CASETA INTERNATIONAL BRIDGE
El Paso County, Texas

--End of Section--

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**SPECIFICATION 00.01.10
TABLE OF CONTENTS GOVERNING**

DIVISIONS AND SECTIONS

Division 00-Procurement and Contracting Requirements

- 00.01.01-Project Title
- 00.01.10-Table of Contents Governing
- 00.01.15-List of Contract Drawings
- 00.31.21-Survey Information
- 00.31.32-Geotechnical Data

Division 01-General Requirements

- 01.42.00-References
- 01.45.07-Quality Control (Small Construction Project<\$500,000)
- 01.57.13-Temporary Environmental Controls
- 01.78.39-Project Record Documents

Division 02-Existing Conditions

- 02.02.00-Existing Conditions & Facilities
- 02.21.00-Surveys

Division 31-Earthwork

- 31.11.00-Preparing Right of Way
- 31.14.00-Remove / Stockpile Existing Materials

Division 32-Exterior Improvements

- 32.15.00-Aggregate Road Surfacing
- 32.92.00-Vegetation for Erosion Control

Division 35-Waterway Construction

- 35.41.00-Construction of Levee

Technical Specification Tables

- Table 1 – Index of Drawings
- Table 2 - Aggregate Surfacing Gradation Requirements
- Table 3 - Plant Varieties and Seeding Rates

NOTE: These specifications are a compilation of USIBWC boiler plate specifications adapted for this project that is to be managed by El Paso County. The definitions of the following terms have been changed to reflect that the project will be managed by El Paso County: Contract, Contracting Officer (CO), Contracting Officer (COR), Government, Inspector, Quality Assurance, and Superintendent.

--End of Section--

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**SPECIFICATION 00.01.15
LIST OF CONTRACT DRAWINGS**

PART 1 - GENERAL

1.1 SECTION INCLUDES

Part 1 - General 1
 1.1 Section Includes 1
 1.2 Measurement and Payment 1
 1.3 Drawing Titles 1
 1.4 Drawing Index 1
 1.5 Additional Or Revised Drawings 2
 Part 2 - Products (Not Used) 2
 Part 3 - Execution (Not Used) 2
 --End of Section-- 2

1.2 MEASUREMENT AND PAYMENT

The work performed by the Contractor under this Section shall not be paid for directly, but shall be included in the various Bid Items under this Contract.

1.3 DRAWING TITLES

- A. The Contract Drawings applicable to this Contract are titled:
**PLANS FOR THE DEMOLITION OF THE UNITED STATES SECTION
 FABENS-CASETA INTERNATIONAL BRIDGE
 El Paso County, Texas**

1.4 DRAWING INDEX

- A. An index of drawings is identified on the drawing title sheet and includes the following:

Table 1 - Index of Drawings

SHEET NO.	SHEET TITLE
S-1	COVER SHEET
S-2	GENERAL NOTES
S-3	OVERALL PLAN OF BRIDGE
S-4	OVERALL ELEVATION OF BRIDGE
S-5	TYPICAL SECTIONS
S-6	PROPOSED PLAN AND PROFILE LEVEE ROAD – ALIGNMENT “A”
S-7	LEVEE ROAD CROSS SECTIONS
S-8	LEVEE ROAD CROSS SECTIONS
S-9	LEVEE ROAD CROSS SECTIONS
S-10	STORM WATER POLLUTION PREVENTION PLAN

SHEET NO.	SHEET TITLE
S-11	TEMP. SEDIMENT CONTROL FENCE & BALED HAY
S-12	TEMP. SEDIMENT CONTROL CONSTRUCTION EXITS
S-13	EPIC

1.5 ADDITIONAL OR REVISED DRAWINGS

- A. Except as provided in these specifications for drawings to be furnished by Contractor, Contract Drawings will be supplemented by additional or revised general and detail drawings as necessary or desirable as work progresses.
- B. Additional or revised general and detail drawings will show dimensions and details necessary for construction purposes more completely than are shown on these Contract Drawings for features of work.
- C. Perform work in accordance with additional general and detail drawings or revisions at applicable prices bid in schedule for such work.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

--End of Section--

**SPECIFICATION 00.31.32
GEOTECHNICAL DATA**

PART 1 - GENERAL

1.1 SECTION INCLUDES

Part 1 - General	1
1.1 Section Includes	1
1.2 Measurement and Payment	1
1.3 Geotechnical Reports	1
Part 2 - Products (Not Used).....	2
Part 3 - Execution (Not Used).....	2
--End of Section--	2

1.2 MEASUREMENT AND PAYMENT

The work performed by the Contractor under this Section shall not be paid for directly, but shall be included in the various Bid Items under this Contract.

1.3 GEOTECHNICAL REPORTS

- A. No geotechnical analysis was performed specifically for this project. For this project, USIBWC has accepted the general geotechnical report performed by for the bridge performed by Licon Engineering entitled, "*Geotechnical Engineering Study Tornillo/Guadalupe International Bridge, El Paso, TX,*" dated April 9, 2003.
- B. No design assumptions were made in the geotechnical information in regards to this project.
- C. The data and report are not intended as a representation or warranty of continuity of conditions between soil borings nor of groundwater levels at dates and times other than date and time when measured. El Paso County neither warrants or guarantees the results of any geotechnical or subsurface investigations as being representative of the site, beyond the actual location of the test specimen(s) nor assumes any responsibility for the manner in which this information may be used or the conclusions reached in utilizing the information contained in the Contract documents. Additional test borings and other exploratory operations may be made by Contractor subsequent to award of the Contract.
- D. The Contractor shall consider all geotechnical information including geotechnical reports, bore logs, and site visits as a whole. The Contractor shall consider the limitations of any geotechnical tests performed including the auger size, bore hole spacing and location, consistency of bore hole data, as well as the frequency and results of testing. El Paso County will not be responsible for interpretations or conclusions drawn there by the Contractor.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

--End of Section--

**SPECIFICATION 00 31 21
SURVEY INFORMATION**

PART 1 - GENERAL

1.1 SECTION INCLUDES

Part 1 - General	1
1.1 Section Includes	1
1.2 Related Requirements	1
1.3 Measurement and Payment	1
1.4 Existing Information	1
1.5 Field Survey	1
1.6 Survey Control	1
1.7 Existing Survey Markers.....	2
1.8 Right of Way (ROW).....	2
1.9 Topographic Survey.....	2
1.10 Existing Utility Survey	2
Part 2 - Products (Not Used).....	2
Part 3 - Execution (Not Used).....	2
--End of Section--	2

1.2 RELATED REQUIREMENTS

- A. Section 02.02.00-Existing Conditions & Facilities

1.3 MEASUREMENT AND PAYMENT

The work performed by the Contractor under this Section shall not be paid for directly, but shall be included in the various Bid Items under this Contract.

1.4 EXISTING INFORMATION

N/A

1.5 FIELD SURVEY

- A. Field survey was performed December 2014, by FXSA, Inc. who developed and provided the following, which was used as the basis of design.

- 1. Topographic Survey of existing Old International Bridge

1.6 SURVEY CONTROL

- A. The surveyor established horizontal and vertical controls based on Texas State Plane Coordinate System, Central Zone, North American Datum of 1983 (NAD 83) in US Survey Feet, and North American Vertical Datum of 1988 (NAVD 88) in US Survey Feet.
- B. The survey was based on existing monumentation established by NGS. Vertical First Order, Class II. Designated P 1073. Elevation 3583.88 feet.

1.7 EXISTING SURVEY MARKERS

The surveyor surveyed and located all existing levee centerline station survey markers in this reach.

1.8 RIGHT OF WAY (ROW)

The project is within the USIBWC ROW. Information provided from the USIBWC indicates that the ROW is approximately 100 feet north of the levee centerline and approximately 250 feet south of the levee centerline.

1.9 TOPOGRAPHIC SURVEY

The surveyor performed a topographic survey along the project reach at the following project stations as shown on the plans: 0+00, 0+80, 1+80, 2+50, 3+00, 3+80, 4+90, and 5+50. The final topographic mappings were provided in an AutoCAD file.

1.10 EXISTING UTILITY SURVEY

- A. The surveyors surveyed and obtained x & y coordinates and elevations of existing surface features of visible structures and utilities, including, but not limited to, gateS, fence crossing, and vehicular gates.
 - 1. **NOTE:** It is the Contractor's responsibility to verify locations of all existing utilities (shown and not shown) prior to construction.
 - 2. Additionally, attention is called to Sections 02.02.00 for additional requirements and guidelines for existing utility survey.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

--END OF SECTION--

El Paso County
TECHNICAL SPECIFICATIONS
DIVISION 01
GENERAL REQUIREMENTS

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**SPECIFICATION 01.42.00
REFERENCES**

PART 1 - GENERAL

1.1 SECTION INCLUDES

Part 1 - General	1
1.1 Section Includes	1
1.2 Measurement and Payment	1
1.3 Application of Industry Standards	1
1.4 Sources for Standards and References	1
1.5 Abbreviations	7
1.6 Definition of Terms	15
Part 2 - Products (Not Used)	23
Part 3 - Execution (Not Used)	23
--End of Section--	23

1.2 MEASUREMENT AND PAYMENT

- A. The work performed by the Contractor under this Section shall not be paid for directly, but shall be included in the various Bid Items under this Contract.

1.3 APPLICATION OF INDUSTRY STANDARDS

A. Applicability of Standards

In the event of a conflict between the referenced standard and these Contract documents, the provisions of the Contract documents shall apply. When a reference standard is specified, comply with the requirements and recommendations stated in the standard, except when they are modified by the Contract documents, or when applicable laws, ordinances, rules, regulations or codes establish stricter standards.

B. Copies of Standards

Copies of applicable standards are not bound with the Contract documents. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from publication source.

1.4 SOURCES FOR STANDARDS AND REFERENCES

- A. Referenced industry standards are cited in other Sections of the Contract documents and the following may not include all referenced standards organizations within the Contract documents. This does not relieve the Contractor of the responsibility of performing the work in accordance with all terms of the Technical Specifications and Contract provisions herein. Per FAR 11.201(b), Contractors may contact the referenced organizations to obtain copies of references and standards.

1. American Association of State Highway and Transportation Officials (AASHTO)
444 North Capital Street, NW, Suite 249, Washington, DC 20001
Ph: 202-624-5800; Fax: 202-624-5806; internet: <http://www.aashto.org>

2. AASHTO Materials Reference Laboratory (AMRL)
4441 Buckeystown Pike, Suite A, Frederick, MD 21704
Ph: 240-436-4900; Fax: 240-436-4899; internet: <http://www.amrl.net>
3. The American Association for Laboratory Accreditation (A2LA)
5301 Buckeystown Pike, Suite 350, Frederick, MD 21704
Ph: 301 644 3248; Fax: 301 662 2974; internet: <http://www.a2la.org>
4. American Concrete Institute (ACI)
P.O. Box 9094, Farmington Hills, MI 48333
Ph: 248-848-3700; Fax: 248-848-3801; internet: <http://www.aci-int.org>
5. American Forest & Paper Association (AF&PA)
1101 K. Street NW, Ste 700, Washington, DC 20005
Ph: 202-463-2700; internet: <http://www.afandpa.org/>
6. American Institute of Steel Construction (AISC)
One East Wacker Drive, Suite 3100, Chicago, IL 60601-2001
Ph: 312-670-2400/800-644-2400; Fax: 312-670-5403; internet: <http://www.aisc.org>
7. American Institute of Timber Construction (AITC)
Ph: 503-639-0651; Fax: 503-684-8928; internet: <http://www.aitc-glulam.org/>
8. American Iron and Steel Institute (AISI)
25 Massachusetts Ave. NW, Ste 800, Washington, DC 20001
Ph: (202) 452-7100; internet <http://www.steel.org/>
9. American National Standards Institute (ANSI)
11 West 42nd Street, New York, NY 10036
Ph: 212-642-4900; Fax: 212-398-0023; internet: <http://www.ansi.org>
10. American Petroleum Institute (API)
1220 L Street NW, Washington, DC 20005-4070
Ph: 202-682-8000; internet: <http://api.org>
11. American Society for Nondestructive Testing (ASNT)
PO Box 28518, 1711 Arlingate Lane, Columbus, OH 43228-0518
Ph: 800-222-2768; Fax: 614-274-6899; internet: <http://asnt.org>
12. American Society of Civil Engineers (ASCE)
1801 Alexander Bell Drive, Reston, Virginia 20191-4400
Ph: 800-548-2723; Fax: 703-295-6222; internet: <http://www.asce.org>
13. American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE)
1791 Tullie Circle NE, Atlanta, GA 30329
Ph: 404-636-8400; Fax: 404-321-5478; internet: <https://www.ashrae.org/>
14. American Society of Mechanical Engineers (ASME)
345 East 47th Street, New York, NY 10017
Ph: 212-705-7722; Fax: 212-705-7739; internet: <http://www.asme.org>
15. American Society of Safety Engineers (ASSE)
1800 E Oakton St., Des Plaines, IL 60018
Ph: 847-699-2929; Fax: 847-768-3434; internet: <http://www.asse.org>

16. American Water Works Association (AWWA)
6666 West Quincy Avenue, Denver, CO 80235
Ph: 303-794-7711; Fax: 303-794-7310; internet: <http://www.awwa.org>
17. American Welding Society, Inc. (AWS)
550 NW Le Jeune Road, Miami, FL 33126
Ph: 305-443-9353, 800-334-9353; Fax: 305-443-7559; internet:
<http://www.amweld.org>
18. American Wood Council (AWC)
222 Catocin Circle SW, Ste 201, Leesburg, VA 20175
Ph: 202-463-2766; Fax: 202-463-2791; internet: <http://awc.org/>
19. APA - The Engineered Wood Association
7011 S. 19th Street, Tacoma, WA 98466
Ph: 253-565-6600; Fax: 253-565-7265; internet: <http://www.apawood.org/>
20. Arizona Department of Environmental Quality (ADEQ)
1110 W Washington St, Phoenix, AZ 85007
Ph: 602-771-2300; internet: www.azdeq.gov
21. ASTM International (ASTM)
100 Barr Harbor Drive, West Conshohocken, PA 19428-2959
Ph: 610-832-9585; Fax: 610-832-9555; internet: <http://www.astm.org>
22. California Environmental Protection Agency (CalEPA)
1001 I Street, PO Box 2815, Sacramento, CA 95812
Ph: 916-323-2514; internet: www.calepa.ca.gov
23. Center for Construction Research and Training, The
8484 Georgia Venue, Ste 1000, Silver Spring, MD 20910
Ph: 301-578-8500; Fax: 301-578-8572; internet: <http://www.elcosh.org>
24. Code of Federal Regulations (CFR)
Superintendent of Documents, P.O. Box 371954, Pittsburg, PA 15250-7954
Ph: 202-512-1800; Fax: 202-512-2250; internet: <http://www.gpo.gov/fdsys/>
25. Composite Panel Association (CPA)
19465 Deerfield Avenue, Ste 306, Leesburg, VA 20176
Ph: 703-724-1128; Fax: 703-724-1588; internet: <http://compositepanel.org/>
26. Environmental Protection Agency (EPA)
Public Information Center
401 "M" Street, SW, Washington, DC 20460
Ph: 202-260-7751 / 800-490-9198; Fax: 202-260-6257; internet: <http://www.epa.gov>
27. Federal Acquisition Regulation (FAR)
Internet: <http://www.acquisition.gov>
28. Federal Geographic Data Committee
590 National Center, Reston, VA 20192
Ph: 703-648-5752; Fax: 703-648-5755; internet: <http://www.fgdc.gov/>

29. Federal Highway Administration (FHWA)
Office of Highway Safety (HHS-31).
400 Seventh St., SW, Washington, DC 20590-0001
Ph: 202-366-0411; Fax: 202-366-2249
Order from: Government Printing Office (GPO), Superintendent of Documents
Washington, DC 20402; Ph: 202-783-3238
30. Federal Sections (FS)
DLA Document Services
Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094
Ph: 215-697-6396; internet: <http://quicksearch.dla.mil>
31. General Services Administration (GSA)
Ph: 202-619-8968; internet: <http://www.gsa.gov>
32. Illuminating Engineering Society of North America (IESNA)
120 Wall Street, New York, NY
Internet: <http://www.ies.org>
33. Infrastructure Health & Safety Association
21 Voyager Court South, Etobicoke, Ontario, Canada M9W 5M7
Ph: 800-263-5024; Fax: 905-625-8998; internet: www.ihsa.ca
34. International Accreditation Service
5360 Workman Mill Road, Whittier, CA 90601
Ph: 562-364-8201; Fax: 562-699-8031; internet: <http://iasonline.org>
35. International Code Council (ICC)
500 New Jersey Ave, NW, 6th Floor, Washington, DC 20001
Ph: 800-786-4452; internet: <http://www.iccsafe.org>
36. International Dark-Sky Association (IDA)
3223 N 1st Avenue, Tucson, AZ 85719
Ph: 520-293-3198; Fax: 520-293-3192; internet: <http://darksky.org/>
37. International Safety Equipment Association (ISEA)
1901 North Moore Street, Arlington, VA 22209
Ph: 703-525-1695; Fax: 703-528-2148; internet: <http://www.safetysystem.org>
38. Manufacturers Standardization Society of the Valve and Fittings Industry, Inc.
(MSS)
127 Park Street, NE, Vienna, VA 22180-4602
Ph: 703-281-6613; Fax: 703-281-6671; internet: <http://www.cssinfo.com>
39. Master Painter's Institute (MPI)
2800 Ingleton Ave., Burnaby BC V5C 6G7 Canada
Ph: 604-298-7578; Fax: 604-298-7571; internet: <http://paintinfo.com>
40. National Association of Architectural Metal Manufacturers (NAAMM)
800 Roosevelt Road, Bldg. C, Ste 321, Glen Ellyn, IL 60137
Ph: 630-942-6591; Fax: 630-790-3095; internet: <http://naamm.org>
41. National Electrical Manufacturers Association (NEMA)
1300 N 17th Street, Ste 1752, Rosslyn, VA 22209
Ph: 703-841-3200; Fax: 703-841-5900; internet: <http://www.nema.org>

42. National Fire Protection Association (NFPA)
1 Batterymarch Park, Quincy, MA 02269-9101
Ph: 617-770-3000; Fax: 617-770-0700; internet: <http://www.nfpa.org>
43. National Institute for Occupational Safety and Health (NIOSH)
395 E Street, SW, Ste 9200, Patriots Plaza Building, Washington, DC 20201
Ph: 800-232-4636; internet: <http://www.cdc.gov/niosh>
44. National Institute for Standards and Technology (NIST)
100 Bureau Drive, Stop 1070, Gaithersburg, MD 20899
Ph: 301-975-6478; internet: <http://www.nist.gov/index.html>
45. New Mexico Department of Game and Fish
1 Wildlife Way, Santa Fe, NM 87507
Ph: 505-476-8000; internet: <http://www.wildlife.state.nm.us/contact/index.htm>
46. New Mexico Department of Transportation (NMDOT)
1120 Cerrillos Road, Santa Fe, NM 87504-1149
Ph: 505-827-5100; Fax: 505-827-5469; internet:
<http://www.dot.state.nm.us/content/nmdot/en.html>
47. New Mexico Energy, Minerals and Natural Resources Department (EMNRD)
1220 South St. Francis Drive, Santa Fe, NM 87505
Ph: 505-476-3200; Fax: 505-476-3220; internet: <http://www.emnrd.state.nm.us>
48. New Mexico Environment Department (NMED)
1190 St. Francis Drive, Suite N4050 Santa Fe, New Mexico 87505
Ph: 800-219-6157 or 505-827-2855; internet: <http://www.nmenv.state.nm.us>
49. New Mexico Historic Preservation Division (NMHPD)
407 Galisteo Street, Suite 236, Santa Fe, NM 87501
Ph: 505-827-6320; internet: <http://www.nmhistoricpreservation.org>
50. New Mexico Office of the State Engineer (NMOSE)
1680 Hickory Loop, Ste J, Las Cruces, NM 88005
Ph: 575-524-6161; internet: <http://www.osa.state.nm.us>
51. North American Proficiency Testing Program for Soil, Plant, & Water Analysis
Laboratories (NAPT)
5585 Guilford Rd., Madison, WI 53711-5801
Ph: 608-268-4972; Fax: 608-273-2021; internet: <http://www.naptprogram.org>
52. Occupational Safety & Health Administration (OSHA)
200 Constitution Ave., Washington, DC 20210
Ph: 800-321-6742; internet: <http://www.osha.gov>
53. Petroleum Equipment Institute (PEI)
PO Box 2380, Tulsa, OK 74101
Ph: 918-494-9696; Fax: 918-491-9895; internet: <http://pei.org/>
54. Research Council on Structural Connections (RCSC)
internet: <http://boltcouncil.org>
55. Sheet Metal and Air Conditioning Contractors' National Association (SMACNA)
4201 Lafayette Center Drive, Chantilly, VA 20151
Ph: 703-803-2980; Fax: 703-803-3732; internet: <https://www.smacna.org/>

56. Steel Structures Painting Council (SSPC)
40 24th Street, Pittsburg, PA 15222
Ph: 412-281-2331; Fax: 412-281-9992; internet: <http://www.sspc.org>
57. Telecommunications Industry Association (TIA)
1320 N Courthouse Rd, Ste. 200, Arlington, VA 22201
Ph: 703-907-7700; Fax: 703-907-7727; internet: <http://www.tiaonline.org/>
58. Texas Commission on Environmental Quality (TCEQ)
PO Box 13087, Austin, TX 78711-3087
Ph: 512-239-1000; internet <http://www.tceq.texas.gov>
59. Texas Department of Transportation (TxDOT)
125 East 11th Street, Austin, TX 78701-2483
Ph: 512.416.2576; Fax: 512.416.2599; internet: <http://www.dot.state.tx.us>
60. Texas Historical Commission (THC)
P.O. Box 12276, Austin, TX 78711-2276
Ph: 512-463-6100; internet: <http://www.thc.state.tx.us>
61. Texas Parks and Wildlife Department (TPWD)
4200 Smith School Road, Austin, TX 78744
Ph: (800) 792-1112; internet: <http://tpwd.state.tx.us>
62. The NELAC Institute (TNI)
PO Box 2439, Weatherford, TX 76086
Ph: 817-598-1624; Fax: 817-423-6777; internet: <http://www.nelac-institute.org>
63. UL, LLC
801 Klein Rd, Ste 200, Plano, TX
Ph: 877-854-3577; internet: <http://ul.com/>
UL Listed products can be searched at no cost at <http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm>
64. United States Army Corps of Engineers (USACE)
ATTN: Technical Report Distribution Section, Services Branch, TIC
3909 Halls Ferry Road, Vicksburg, MS 39180-6199
Ph: 601-634-2355; Fax: 601-634-2542
65. United States Code (USC)
Government Printing Office (GPO)
732 North Capitol Street, NW, Washington, DC 20401
Ph: 202-512-1800; internet: <http://www.gpo.gov/fdsys/>
66. US Department Of Commerce Product Standards (PS)
Superintendent of Documents.
P.O. Box 371954, Pittsburg, PA 15250-7954
Ph: 202-512-1800; Fax: 202-512-2250; internet: http://www.access.gpo.gov/su_docs
67. US Fish and Wildlife Service (FWS)
P.O. Box 1306, Albuquerque, NM 87103-1306
Ph: 505-248-6911; internet: <http://www.fws.gov/southwest/>
68. United States Green Building Council (USGBC)
2101 L. Street NW, Ste. 500, Washington, DC
Ph: 800-795-1747; internet: <http://www.usgbc.org/>

1.5 ABBREVIATIONS

Wherever the following abbreviations and terms are used in the Technical Specifications, Contract Drawings, or other Contract documents, the intent and meaning will be as follows:

GENERAL TERMS

2D	Two Dimensional
3D	Three Dimensional
AED	Automated External Defibrillator
AHA	Activity Hazard Analysis
APP	Accident Prevention Plan (Safety Plan)
BL	Baseline
BMP	Best Management Practices
BOP	Beginning of Project
C	Celsius
CAD	Computer Aided Design
CD	Compact Disc (may be used interchangeably with DVD)
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CGP	Comprehensive Procurement Guideline
CI	Construction Inspector provided by Construction Management Contractor
CL	Centerline
CLIN	Contract Line Item Number
cm	Centimeter
CM	Construction Management Contractor
CO	Contracting Officer
COB	Close of Business
COR	Contracting Officer's Representative
CPG	Comprehensive Procurement Guideline
CPM	Critical Path Method
CPR	Cardiopulmonary Resuscitation
CQC	Contractor's Quality Control
CQCSM	Contractor's Quality Control Systems Manager
CRP	Contractor's Responsible Person
CWA	Clean Water Act
CWHSSA	Contract Work Hours and Safety Standards Act
CY	Cubic Yard
D	Diameter
D&O	Deficiency and Omission
DBA	Davis-Bacon Act
DC	Direct Current
DIA	Diameter
DLC	Direct Labor Costs
dpi	Dots per inch
DTM	Digital Terrain Model
DVD	Digital Video Disc (may be used interchangeably with CD)
EA	Each

EM	Engineering Manual
EO	Executive Order
EOF	USIBWC Engineering Office Files (ROW data)
EOP	End of Project
ESD	Engineering Services Division, USIBWC
°F	Degrees Fahrenheit
FAD	USIBWC Finance and Accounting Division
FAR	Federal Acquisition Regulations
FDGC	Federal Geographic Committee
FEM	Field Environmental Monitor
FLSA	Fair Labor Standards Act
FS	Federal Sections
FSRIA	Farm Security and Rural Investment Act of 2002
FT	Foot/feet
FY	Fiscal Year (October 1 through September 30)
g	Gram
GIP	Government Inspection Personnel
GPS-RTK	Global Position Satellite-Real Time Kinematic land surveying
IFB	Invitation for Bid
IGE	Independent Government Estimate
in	Inch
JHA	Job Hazard Analysis
kPa	Kilopascals
ksi	Thousand pounds per square inch
LBS	Pounds
LDs	Liquidated Damages
LF	Linear Feet
LiDAR	Light Detection and Ranging
LRFD	Load and Resistance Factor Design
LS	Lump Sum
m	Meter
MAX	Maximum
MBTA	Migratory Bird Treaty Act
MIN	Minimum
MIN	Minute
mm	Millimeter
MOA	Memorandum of Agreement
Mod	Contract modification
MOU	Memorandum of Understanding
MPa	Megapascals
MPEG	Moving Picture Experts Group file format
MSDS	Material Safety Data Sheets (has been replaced with SDS)
MUTCD	Manual on Uniform Traffic Control Devices
N	Newton
NA	Not Applicable
NAD27	North American Datum of 1927
NAD83	North American Datum of 1983
NAGPRA	Native American Graves Protection and Repatriation Act
NAVD	North American Vertical Datum of 1988

NEC	National Electrical Code (also known as NFPA 70)
NGE	Natural Ground Elevation
NGVD	National Geodetic Vertical Datum of 1929
NHPA	National Historic Preservation Act
NMSPCGS	New Mexico State Plane Coordinate System
NPS	Nominal Pipe Size
NTP	Notice to Proceed
NTS	Not to Scale
O&M	Operations and Maintenance
OC	On Center
ODC	Other Direct Costs
OEM	Original Equipment Manufacturer
OZ	Ounce
PE	Pay Estimate
PE	Professional Engineer
PLS	Public Land Surveyor
PLS	Pure Live Seed
PPE	Personal Protective Equipment
PSI	Pounds Per Square Inch
PSL	Project Specific Locations
QA	Quality Assurance
QC	Quality Control
QCSM	Quality Control System Manager
R/W	Right-of-Way
RCRA	Resource Conservation and Recovery Act
RFI	Request for Information
RFP	Request for Proposal
RMAN	Recovered Materials Advisory Notice
ROW	USIBWC Right of Way
RPLS	Registered Professional Land Surveyor
s	Second
SDWA	Safe Drinking Water Act
SDS	Safety Data Sheets (new name of MSDS)
SEC	Second
SF	Square Foot
SF	Standard Form
SFS	Schedule for Submittals
SHPO	State Historical Preservation Officer/Office
SOP	Standard Operating Procedure
SOW	Statement of work or Scope of work
SSHO	Site Safety and Health Officer
STA	Station
SUE	Subsurface Utility Engineering
SY	Square Yards
TAC	Texas Administrative Code
TBD	To be Determined
TCL	Temporary Construction Limits
TCP	Traffic Control Plan
TIN	Triangulated Irregular Networks file format

TOLE	Top of Levee Elevation
TYP	Typical
US	United States
USC	United States Code
USCS	Unified Soil Classification System
WSE	Water Surface Elevation
YD	Yard
YR	Year

AGENCIES & ASSOCIATIONS - Check to see if these are used in the Sections-----

A2LA	American Association for Laboratory Accreditation
AASHTO	American Association of State Highway and Transportation Officials
ABA	Architectural Barriers Act
ABAAS	Architectural Barriers Act Accessibility Standard
ABET	Accreditation Board for Engineering and Technology
ACHP	Advisory Council on Historical Preservation
ADA	Americans with Disabilities Act
ADEQ	Arizona Department of Environmental Quality
ADMI	American Dye Manufacture's Institute
ADOT	Arizona Department of Transportation
AF&PA	American Forest & Paper Association
AISI	American Industrial Standards Institute
AITC	American Institute of Timber Construction
AMRL	AASHTO Materials Reference Laboratory
ANSI	American National Standards Institute
APA	APA - The Engineered Wood Association
API	American Petroleum Institute
APWA	American Public Works Association
AR	US Army Regulation
ARPA	Achaeological Resources Protection Act
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigeration and Air-Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASNT	American Society of Nondestructive Testing
ASSE	American Society of Safety Engineers
ASTM	ASTM International
AWC	American Wood Council
AWWA	American Water works Association
AZ	Arizona
CA	California
CalEPA	California Environmental Protection Agency
CalTrans	California Department of Transportation
CBP	Customs and Border Protection
CC	International Code Council
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CPA	Composite Panel Association
CPWR	The Center for Construction Research and Training
CSI	Construction Sections Institute
DHS	US Department of Homeland Security

DOE	Department of Energy
DOJ	Department of Justice
DOL	Department of Labor
DOT	Department of Transportation
DPS	Defense Printing Service
EBID	Elephant Butte Irrigation District
EEOC	Equal Employment Opportunity Commission
ELCOSH	Electronic Library of Construction Occupational Safety & Health
EMNRD	New Mexico Energy, Minerals and Natural Resources Department
EPA	US Environmental Protection Agency
EPCWID1	El Paso County Water Improvement District #1
EPWU	El Paso Water Utilities
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FWS	US Fish and Wildlife Service
GPO	Government Printing Office
GSA	Geological Society of America
GSA	US General Services Administration
IARC	International Agency for Research on Cancer
IAS	International Accreditation Service
IBC	International Building Code
IBWC	International Boundary and Water Commission
IDA	International Dark-Sky Association
IECC	International Energy Conservation Code
IESNA	Illuminating Engineering Society of North America
IFG	International Fire Code
IFGC	International Fuel Gas Code
IHSA	Infrastructure Health & Safety Equipment
IMC	International Mechanical Code
IPC	International Plumbing Code
IPSDC	International Private Sewage Disposal Code
ISC	Interagency Security Committee
ISEA	International Safety Equipment Association
MPI	Master Painter's Institute
NAPT	North American Proficiency Testing Program for Soil, Plant, & Water Analysis Laboratories
NCHRP	National Cooperative Highway Research Program
NELAC	National Environmental Laboratory Accreditation Conference
NELAP	National Environmental Laboratory Accreditation Program
NEMA	National Electrical Manufacturers Association
NFIP	National Flood Insurance Program
NFPA	National Fire Protection Association
NGS	National Geodetic Survey
NIOSH	National Institute for Occupational Safety and Health
NIST	US National Institute of Standards and Technology
NLRA	National Labor Relations Board
NM HPD	New Mexico Historic Preservation Division
NM OSE	New Mexico Office of the State Engineer
NM SHPO	New Mexico State Historic Preservation Officer

NM	New Mexico
NMDOT	New Mexico Department of Transportation
NMED	New Mexico Environment Department
NPS	US National Park Service
NRCS	National Resource Conservation Service
NSF	National Science Foundation
NTSC	National Television System Committee
NWS	National Weather Service
OIG	Office of Inspector General
OSHA	Occupational Safety and Health Association
PCI	Precast/Prestressed Concrete Institute
PEI	Petroleum Equipment Institute
PS	US Department Of Commerce Product Standard
PUB	Public Utilities Board of Brownsville
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
THC	Texas Historical Commission
TIA	Telecommunications Industry Association
TMUCTD	Texas Manual on Uniform Traffic Control Devices
TPDES	Texas Pollutant Discharge Elimination System
TPWD	Texas Parks and Wildlife Department
TRB	Transportation Research Board
TX	Texas
TxDOT	Texas Department of Transportation
UL	Underwriter's Laboratory
USACE	United States Army Corps of Engineers
USBR	United States Bureau of Reclamation
USDA	United States Department of Agriculture
USERRA	Uniformed Services Employment and Reemployment Rights Act
USGBC	United States Green Building Council
USIBWC	International Boundary and Water Commission, United States Section
WH	Wage and Hour Division, Department of Labor
WHD	Wage and Hour Division, Department of Labor

MATERIALS

ABC	Aggregate Base Course
BWG	Birmingham Wire Gauge
CH	High Plasticity Clay
CL	Low Plasticity Clay
CLSM	Controlled Low Strength Material
DAR	Durability Absorption Ratio
DR	Pipe Dimension Ratio
G	Gradation Coefficient
GC	Clayey Gravel
GP	Poorly Graded Gravel
GW	Well Graded Gravel
HDPE	High Density Polyethylene
IDT	Indirect Tensile for ASTM D6931
LL	Liquid Limit
MH	High Plasticity Silt

ML	Low Plasticity Silt
ND1 or ND2	Non-dispersive Soil from ASTM D4647
PI	Plasticity Index
PL	Plastic Limit
PVC	Polyvinyl Chloride
SC	Clayey Sand
SM	Silty Sand
SP	Poorly Graded Sand or Gravely Sand
SSD	Saturated Surface Dry
SW	Well Graded Sand
UHMW	Ultra High Molecular Weight Polyethylene

CONCRETE

ACI	American Concrete Institute
ACPA	American Concrete Pipe Association
CPMB	Concrete Plant Manufacturers Bureau
CRSI	Concrete Reinforcing Steel Institute
f _c	Compressive Strength of Concrete
GGBFS	Ground Granulated Blast Furnace Slag (Concrete)
NRMCA	National Ready Mixed Concrete Association
PCA	Portland Cement Association
RCB	Reinforced Concrete Box Culvert
RCP	Reinforced Concrete Pipe
UFFA	Ultra Fine Fly Ash (Concrete)

ASPHALT PAVING

AC	Asphalt Cement
AE	Asphalt Emulsion
AE-P	Asphalt Emulsion Prime
AQMP	Aggregate Quality Monitoring Program
A-R	Asphalt-Rubber
C	Cationic Asphalt
COC	Cleveland Open Cup for Flash Points
CRM	Crumb Rubber Modifier Asphalt Polymer
cSt	CentiStokes
EAP&T	Emulsified Asphalt Prime and Tack
HF	High Float Asphalt
HMA	Hot Mix Asphalt
HMAC	Hot Mix Asphalt Concrete
H-suffix	Harder Residue Asphalt
JMF	Job Mix Formula
MC	Medium Curing Asphalt
MS	Medium Setting Asphalt
P	Polymer Modified Asphalt
PCE	Prime, Cure, and Erosion Control
PG	Performance Grade Asphalt
RAP	Recycled/Reclaimed Asphalt Pavement
RC	Rapid Curing Asphalt
RS	Rapid Setting Asphalt

RTFO	Rolling Thin Film Oven
RTFOT	Rolling Thin Film Oven Test
SAC	Surface Aggregate Classification
SBR	Styrene-butadiene Rubber Asphalt Polymer
SBS	Styrene-butadiene-styrene Block Copolymer Asphalt Polymer
SCM	Special Cutback Asphalt Material
SCM	Supplementary Cementing Materials
SS	Slow Setting Asphalt
S-suffix	Stockpile Asphalt Usage
TOC	Tag Open Cup for Flash Point
TR	Tire Rubber Asphalt Polymer
VMA	Voids in Mineral Aggregates

STEEL/METAL

AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
CMP	Corrugated Metal Pipe
HPS	High Performance Steel
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry, Inc.
NAAMM	National Association of Architectural Metal Manufacturers
RCSC	Research Council on Structural Connections
SSPC	Steel Structures Painting Council

WELDING

AWS	American Welding Society
BPVC	Boiler and Pressure Vessel Code
ET	Electromagnetic Testing (Welding)
FCAW	Flux Cored Arc Welding (Welding)
GMAW	Gas Metal Arc Welding (Welding)
GTAW	Gas Tungsten Arc Welding (Welding)
MAG	Metal Active Gas Welding, a subset of GTAW (Welding)
MIG	Metal Inert Gas Welding, a subset of GTAW (Welding)
MMA	Manual Metal Arc Welding, also known as SMAW (Welding)
MT	Magnetic Particle Testing (Welding)
NDT	Nondestructive Testing (Welding)
PT	Liquid Penetrant Testing (Welding)
RT	Radiographic Testing (Welding)
SAW	Submerged Arc Welding (Welding)
SMAW	Shielded Metal Arc Welding (Welding)
TIG	Tungsten Inert Gas Welding, more properly known as GTAW
UT	Ultrasonic Testing (Welding)
VT	Visual and Optical Testing (Welding)
WPS	Welding Procedure Sections

ENVIRONMENTAL

BOD	Biochemical Oxygen Demand
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
C:N	Carbon Nitrogen Ratio
CATEX	Categorical Exemption (NEPA)
CE	Categorical Exemption (NEPA)

CGP	Construction General Permit (SWPP)
EA	Environmental Assessment (NEPA)
EIS	Environmental Impact Statement (NEPA)
EPIC	Environmental Permits, Issues, and Comments
ESA	Endangered Species Act
FONSI	Final of No Significant Impact (NEPA)
HHRB	Human Health Risk-Based
IARC	International Agency for Research on Cancer
LEED	Leadership in Energy and Environmental Design
LEL	Lower Explosive Limit
NELAP	National Environmental Laboratory Accreditation Program
NEPA	National Environmental Policy Act
NOI	Notice of Intent (SWPP)
NOT	Notice of Termination (SWPP)
NPDES	National Pollutant Discharge Elimination System
PCL	Protective Concentration Level
ROD	Record of Decision (NEPA)
SVOC	Semi-Volatile Organic Compounds
SWPP	Stormwater Pollution Prevention
SWPPP	Stormwater Pollution Prevention Plan
T&E	Threatened and Endangered
TCEQ	Texas Commission on Environmental Quality
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
TNI	The NELAC Institute
TPH	Total Petroleum Hydrocarbons
TRRP	Texas Risk Reduction Program
TSS	Total Suspended Solids
TZ	Tetrazolium Test
VOC	Volatile Organic Compounds

COMMISSIONING

BoD	Basis of Design
CCxP	Contractor's Commissioning Plan
CCxR	Contractor's Commissioning Representative
CxA	Commissioning Authority
FPT	Functional Performance Test
TBC	Total Building Commissioning

1.6 DEFINITION OF TERMS

NOTE: These specifications are a compilation of USIBWC boiler plate specifications adapted for this project that is to be managed by El Paso County. The definitions of the following terms have been changed to reflect that the project will be managed by El Paso County: Contract, Contracting Officer (CO), Contracting Officer (COR), Government, Inspector, Quality Assurance, and Superintendent.

Definitions of terms used include the following:

Activity	A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the project. Activities included in a construction schedule consume time and resources.
Actual Cost	Contractor's actual cost to provide labor, material, equipment and project overhead necessary for the work.
Addendum	Change in proposal forms developed between advertising and bid submittal deadline.
Air Temperature	The temperature measured in degrees Fahrenheit (°F) in the shade, not in the direct rays of the sun and away from artificial heat.
Archaeological Resource	Any material remains of human life or activities which are at least one hundred (100) years of age and which are of archaeological interest.
Baseline	A control line offset from the existing facility and/or proposed improvement.
Best Management Practices	Methods or measures used for stormwater pollution control.
Bridge	A structure, including supports, erected over a depression or an obstruction (e.g., water, a highway, or a railway) having a roadway or track for carrying traffic or other moving loads, and having an opening measured along the center of the roadway of more than 20 feet between faces of abutments, spring lines of arches, or extreme ends of the openings for multiple box culverts.
Brittle	Breaking of geological materials from relatively low stress.
Bug Holes	Bug holes, blowholes, or air voids, are small cavities ranging from nearly invisible to approximately one inch that result from the entrapment of air bubbles in the surface of formed concrete.
Business Day	All days in a month excluding weekends and holidays.
Calendar Day	All days in a month including weekends, holidays, and both work and non-work days.
Canal	A man-made waterway used for conveying irrigation water.
Canal Turnout	A structure used to divert water from a canal to a smaller water distribution system.
Centerline	The line identified as the geometric center of the alignment of the existing facility or proposed improvement.
Clean Fill	Fill material that meets or exceeds the TCEQ Texas Risk Reduction Program (TRRP) rules (30 TAC §350.51(m)), median background concentration levels.

Cold Weather	When the air temperature has fallen to, or is expected to fall below forty degrees Fahrenheit (40°F) during the protection period of concrete which includes placement.
Competent	In geology, competence refers to the degree of resistance of geological materials to erosion and deformation. High resistance to erosion and deformation is a competent material.
Contract	The agreement between El Paso County and the Contractor establishing the obligations of the parties for furnishing of materials and performance of the work prescribed in the Contract documents.
Contract Documents	Elements of the Contract including but not limited to the plans, construction drawings, Scope of Work, Technical Specifications, provisions, Contract bonds, modifications and supplemental agreements.
Contract Drawings	The construction drawings identified in Section 00.01.15 and any drawings produced as part of this Contract.
Contract Time	The number of calendar days specified for completion of the work including authorized additional working days.
Contracting Officer	Authorized representative of El Paso County with the authority to enter into, administer and/or terminate Contracts and make related determinations and findings.
Contracting Officer's Representative	An individual, designated in writing, by the Contracting Officer authorized to perform specific technical and administrative functions.
Control Point	An established point shown on the Contract Drawings to provide vertical and horizontal references for geometric control for construction.
Cost Loading	The allocation of the Schedule of Values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract sum, unless otherwise approved by the CO or COR.
CPM	Critical Path Method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of the project.
Critical Path	The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
Critical Path Method	An activity-oriented scheduling method, where activities and durations are well-defined for the development of the Project.

Cross-Sections	Graphic representations of the original ground and the proposed improvement, at right angles to the baseline or centerline.
Crumbly	A material that is easily broken into small fragments or reduced to powder.
Cultural Resources	Cultural resources is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties; specific items include, but are not limited to, human skeletal remains, archaeological artifacts, records, and material remains related to such properties.
Culvert	Any buried structure providing an opening under the facility for drainage or other purposes.
Definable Feature of work	A task that is separate and distinct from other tasks and has control requirements and work crews unique to that task. It results in a physical product and is identified by different trades or disciplines; it is usually an item or activity on the construction schedule. So, for example, excavation, electrical, concrete, roofing, mechanical, HVAC, etc. are all Definable Features of work.
Detour	A temporary traffic route around a closed portion of a road.
Drawings	Construction Contract Drawings that show the location, character, dimensions and details of the work and are a part of the Contract documents. Plans are the same as drawings.
Easement	A real property right acquired by one party to use land belonging to another party for a specified purpose.
Engineer	A professional engineer or engineering firm registered professional in the State of Texas.
Flexible Base	One or more layers of specified material thickness placed on a subgrade to support a surface course (usually asphalt).
Float	The measure of leeway in starting and completing an activity in a CPM schedule. Float is not for the exclusive use or benefit of either the Government or the Contractor by is jointly owned. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned project completion date.
Flood	An overflow of water that submerges land which is usually dry. Flooding can be caused by any source of water including, but not limited to, rain, runoff, river flow, dam releases, and structural failures.
Forb(s)	Any herbaceous flowering plant that is not a grass

Friable	Geological material that crumbles very easily in the hand or is reduced to finer particles by small pressure or friction. Friability is the ability of a solid substance to be reduced to smaller pieces with little effort.
Geotechnical Engineer	A professional engineer, licensed in the state of Texas with a minimum of five (5) years of experience in the field of geotechnical engineering.
Government	Refers to El Paso County.
Ground Disturbing Activities	A ground disturbance is any work or activity that results in a disturbance of the earth including, but not limited to: excavating, digging, trenching, plowing, drilling, tunneling, auguring, backfilling, blasting, topsoil stripping, land leveling, placing embankment, quarrying, clearing and grubbing, hauling, burning, tree removal, fencing, discing, and seeding.
Hard	Geological material that is not friable, is unyielding to pressure, and is impenetrable or almost impenetrable.
Haul Road	A temporary road created or modified to handle construction traffic.
Haul Route	The complete route that will be used to haul materials to and from the jobsite. This includes haul roads and existing roads, both on and off the site.
Hazardous Materials	Hazardous materials or waste include but are not limited to explosives, compressed gas, flammable liquids, flammable solids, combustible liquids, oxidizers, poisons, radioactive materials, corrosives, etiologic agents and other material classified as hazardous by 40 CFR 261, or applicable state and federal regulations.
Holidays	Holidays recognized by the Federal Government: New Year's Day, Birthday of Martin Luther King, Jr., Washington's Birthday, Memorial Day, Independence Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day and Christmas Day. See http://www.opm.gov/policy-data-oversight/snow-dismissal-procedures/federal-holidays/#url=Overview for a complete list for any given year.
Homogeneous	Of uniform structure or composition throughout. Alike in construction.
Honeycomb	Honeycomb is a condition of irregular voids in concrete due to failure of the mortar to effectively fill the spaces between the coarse aggregate particles. Honeycomb is caused by segregation of the concrete during placement.
Hot Weather	One or a combination of the following conditions that tends to impair the quality of freshly mixed or hardened concrete

by accelerating the rate of moisture loss and rate of cement hydration, or otherwise causing detrimental results: high ambient temperature, high concrete temperature, low relative humidity and high wind speed.

Independent Assurance Tests	Tests used to evaluate the sampling and testing techniques and equipment used in the acceptance program.
Inspector	The firm or person assigned by El Paso County to inspect for compliance with the Contract any or all parts of the work and the materials used.
Levee	A facility constructed of an embankment whose primary purpose is to furnish flood protection from seasonal high water and which is therefore subject to water loading for periods of only a few days or weeks a year.
Limits of Construction	An area with established boundaries, identified within the Project's right of way and easements, where the Contractor is permitted to perform the work.
Maintenance Road	A road usually on top of or adjacent to the facility, primarily utilized by the USIBWC and Customs.
Materials	The words "material" or "materials" is used in these specifications to denote items furnished by the Contractor which shall be construed to mean equipment, machinery, product, component, or any other item required to be incorporated in the work
Milestone Date	The date that a specific portion of the work is to be completed, before the completion date for all work under the Contract.
Modification	Any written change in the terms of a Contract.
Notice to Proceed	A written notice to the Contractor to begin the work.
Pavement	That part of a roadway having a constructed all-weather surface. Pavement Structure Combination of surface course, flexible base and subgrade to support the traffic load and distribute it to the roadbed:
Pavement Structure	Combination of surface course, base course, and subgrade to support the traffic load and distribute it to the roadbed: (1) Surface Course - Pavement structure layers designed to accommodate the traffic load. The top layer resists skidding, traffic abrasion, and the disintegrating effects of climate and is sometimes called the wearing course. (2) Base Course - One or more layers of specified material thickness placed on a subgrade to support a surface course. (3) Subgrade - The top surface of a roadbed upon which the base and surface courses (and curbs, if applicable) are constructed.

Pesticide	Any substance or mixture of substances intended for preventing, destroying or controlling any pest, including vectors of human or animal disease, unwanted species of plants or animals, or substances which may be administered to animals for the control of insects, arachnids or other pests in or on their bodies.
Plans	Construction Contract Drawings that show the location, character, dimensions and details of the work and are a part of the Contract documents. Plans are the same as drawings.
Project	The facility and its associated appurtenances that are being constructed under this Contract.
Protection Period	The time required to prevent concrete from being affected by exposure to cold weather.
Quality Assurance	Sampling, testing, inspection and other activities conducted by El Paso County to assure that the Contractor's quality control is being conducted properly.
Quality Control	Sampling, testing and other process control activities conducted by the Contractor to monitor production and placement operations.
Rehabilitate	To restore to original condition, operation, and/or capacity. To make as-new.
Resource Loading	The allocation of manpower and equipment necessary for the completion of an activity as scheduled.
Right-of-Way	A general term denoting land or property owned by the USIBWC for the construction, operation and maintenance of the facility.
Road or Street	General terms denoting a public way for purposes of vehicular travel, primarily for access to residence, business, or other abutting property.
Roadway Gravel	Gravel designed as the surface of a gravel roadway; also known as aggregate surface in this Contract.
Scarification	Scratching the surface of a compacted layer to facilitate bonding with the next layer and avoid potential lamination between compacted layers.
Sluice Gate	A mechanical apparatus that controls the flow of water (through a pipe at the bottom of the levee) from the land side of the levee to the floodway or channel.
Sluice Gate Structure	A concrete manhole that contains the sluice gate apparatus and an opening or openings for the cross-drainage pipe.
Specifications	Requirements issued or made pertaining to the method and manner of performing the work or to quantities and qualities of materials to be furnished under the Contract.
Station	A unit of measurement consisting of 100 horizontal feet.

Subcontract	The agreement between the Contractor and subcontractor establishing the obligations of the parties for furnishing of materials and performance of the work prescribed in the Contract documents.
Subcontractor	An individual, partnership, limited liability company, corporation, or any combination thereof that the Contractor sublets, or proposes to sublet, any portion of a Contract, excluding a material supplier, truck owner-operator, wholly owned subsidiary, or specialty-type businesses such as security companies and rental companies.
Subgrade	The top surface of a roadbed upon which the base and surface courses (and curbs, if applicable) are constructed. Also the bottom of the excavation above which backfill or concrete will be placed.
Subsidiary	Materials, labor, or other elements that because of their nature or quantity have not been identified as a separate bid item and are considered included within the items on which they necessarily depend.
Superintendent	The representative of the Contractor who is available at all times and able to receive instructions from the El Paso County CO or COR and is able to act for the Contractor.
Surface Course	Pavement structure layers designed to accommodate the traffic load. The top layer resists skidding, traffic abrasion and the disintegrating effects of climate and is sometimes called the wearing course.
Surplus Materials	Any debris or material related to the Contract not incorporated into the work.
Utility	Privately, publicly, or cooperatively owned lines, facilities and systems for producing, transmitting, or distributing communications, power, heat, gas, oil, water, waste, or storm or irrigation water; the utility company.
Verification Tests	Tests used to verify accuracy of QC and QA testing.
Weather Advisory	An announcement that hazardous weather or hydrologic event is occurring, imminent, or likely. Advisories are less serious than warnings. Advisories are for events that cause significant inconvenience and if caution is not exercised, could lead to situations that may threaten life or property.
Weather Warning	An announcement that hazardous weather or hydrologic event is occurring, imminent, or likely. A warning means weather conditions pose a threat to life or property. People in the path of the storm need to take protective action.
Weather Watch	An announcement that the risk of a hazardous weather or hydrologic event has increased significantly, but its occurrence, location, or timing is still uncertain. Warnings

are intended to provide enough lead time so those who need to set plans in motion can do so. A watch means that hazardous weather is possible. People should have a plan of action in case a storm threatens and they should listen for later information and possible warnings.

Work

The furnishing of all labor, materials, equipment and other incidentals necessary for the successful completion of the Contract.

Work Day

Contractor's scheduled days of work, whether work is performed or not.

Work Week

Normal, non-overtime, work week accounts for forty (40) hours in four or five work days.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

--END OF SECTION--

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SPECIFICATION 01.45.07
QUALITY CONTROL
(SMALL CONSTRUCTION PROJECT<\$500,000)

PART 1 - GENERAL

1.1 SECTION INCLUDES

Part 1 - General	1
1.1 Section Includes	1
1.2 Related Requirements	1
1.3 Reference Standards.....	1
1.4 Submittals	2
1.5 Measurement and Payment	3
1.6 Quality Control Plan	3
1.7 Contractor Overall Responsibility	4
1.8 Quality Control Coordination Meeting.....	4
1.9 Quality Control Organization	5
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1.12 Documentation.....	9
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Part 2 - Products (Not Used).....	11
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1.2 RELATED REQUIREMENTS

A. Section 00.31.32-Geotechnical Data

1.3 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials (AASHTO)

1. AASHTO Materials Reference Laboratory (AMRL)

B. The American Association for Laboratory Accreditation (A2LA)

1. Geotechnical Testing Accreditation Program

C. ASTM International (ASTM)

1. ASTM C1077-13b Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation

2. ASTM D3666-13 Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials

3. ASTM D3740-12a Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction

4. ASTM E329-11c Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection
 5. ASTM E543-13 Standard Specification for Agencies Performing Nondestructive Testing
 6. ASTM E699-09 Standard Practice for Evaluation of Agencies Involved in Testing, Quality Assurance and Evaluating of Building Components
- D. Federal Acquisition Regulation (FAR)
1. FAR 52.211-10, Commencement, Prosecution and Completion of work
 2. FAR 52.246-12, Inspection of Construction
- E. International Accreditation Service
1. Testing Laboratories Program
- F. The NELAC Institute
1. National Environmental Laboratory Accreditation Program (NELAP)
- G. United States Army Corps of Engineers (USACE)
1. Materials Testing Center, Laboratory Quality Assurance Inspection

1.4 SUBMITTALS

- A. The Contractor Quality Control (CQC) System Manager shall be responsible for certifying that all submittals are in compliance with the Contract requirements.
- B. Required submittals in this Section include:
1. Quality Control Plan
The Contractor shall furnish for review by El Paso County, not later than seven (7) calendar days after receipt of Notice to Proceed, the Contractor Quality Control Plan (CQC Plan) proposed to implement the requirements of FAR 52.246-12, Inspection of Construction and the Contract.
 2. Quality Control Organization
The Contractor shall identify their quality control organization personnel as well as lines of authority and communication.
 3. Quality Control System Manager Qualifications
 4. Alternate Quality Control System Manager Qualifications
 5. Engineering Testing Laboratory Certifications
Prior to use of any laboratory for quality control engineering testing, the Contractor shall submit the name, address, telephone number, laboratory certifications, name(s) of laboratory's full time engineer(s), and the name of the laboratory's responsible officer.
 6. Environmental Testing Laboratory Certifications
Prior to use of any laboratory for quality control environmental testing, the Contractor shall submit the name, address, telephone number, laboratory certifications, name(s)

of laboratory's full time engineer(s), and the name of the laboratory's responsible officer.

7. Daily Quality Control Reports

1.5 MEASUREMENT AND PAYMENT

- A. The work performed by the Contractor under this specification shall not be paid for directly, but shall be included in the various Bid Items under this Contract.

1.6 QUALITY CONTROL PLAN

A. General

1. The Contractor's Quality Control (CQC) Plan shall identify personnel, procedures, control, instructions, test, records and forms to be used. Construction will be permitted to begin only after acceptance by El Paso County of the CQC Plan or acceptance of an interim plan applicable to the particular feature of the work to be started.
2. Work outside of the features of the work included in a compliance confirmed interim plan will not be permitted to begin until compliance confirmation of a full CQC Plan or another interim plan containing the additional features of work to be started

B. Contents of the CQC Plan

1. The CQC Plan shall include, as a minimum, the following to cover all construction operations, both onsite and offsite, including work by subcontractors, fabricators, suppliers, and purchasing agents.
2. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC Plan shall implement the three (3) phase control system for all aspects of the work specified. The CQC System Manager shall report to the project manager or someone higher in the Contractor's organization. Project Manager in this context shall mean the individual with responsibility for the overall management of the project including quality and construction.
3. A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the Contract. A copy of this letter will be furnished to El Paso County.
4. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers and purchasing agents.
5. Control, verification, and acceptance of testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency and person responsible for each test. (Laboratory facilities will be compliance confirmed by El Paso County).

6. Procedures for tracking preparatory, initial and follow up control phases and control, verification and acceptance tests including documentation.
7. Procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures will establish verification that identified deficiencies have been corrected.
8. Reporting procedures, including proposed reporting formats.
9. List of the Definable Features of work
 - a. A definable feature of work is a task that is separate and distinct from other tasks and has separate control requirements. It could be identified by different trades or disciplines, or it could be work by the same trade in a different environment. Although each Technical Specification will have at least one definable feature of work, there is frequently more than one definable feature under a particular Technical Specification.
10. El Paso County may supplement the CQC testing with independent assurance tests and inspections (Quality Assurance). Acceptance of the work by the CQC System Manager does not mean El Paso County accepts the work.

C. Acceptance of the CQC Plan

1. Acceptance of the Contractor's QC Plan is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction.
2. El Paso County reserves the right to require the Contractor to make changes in the CQC plan and operations including removal of personnel, as necessary, to obtain the quality specified.

D. Notification of Changes

1. After compliance confirmation of the CQC Plan, the Contractor shall notify the El Paso County COR in writing a minimum of seven (7) calendar days prior to any proposed change. Proposed changes are subject to acceptance by El Paso County.

1.7 CONTRACTOR OVERALL RESPONSIBILITY

- A. The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract clause in FAR 52.246-12, Inspection of Construction. The quality control system shall consist of plans, procedures and organization necessary to produce an end product that complies with the Contract requirements. The system shall cover all construction operations, both onsite and offsite and shall be keyed to the proposed construction sequence.

1.8 QUALITY CONTROL COORDINATION MEETING

- A. After the Preconstruction Conference, before start of construction, and prior to acceptance by El Paso County of the CQC Plan, the Contractor shall meet with the El Paso County CO or COR and discuss the Contractor's quality control system.
- B. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, activities, testing,

administration of the system for both onsite and offsite work, and the interrelationship of Contractor's management and control with El Paso County's Quality Assurance (QA).

- C. Minutes of the meeting shall be prepared by El Paso County and signed by both the Contractor and the COR. The minutes shall become a part of the Contract file.
- D. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures that may require corrective action by the Contractor.

1.9 QUALITY CONTROL ORGANIZATION

- A. The Contractor shall identify an individual within their organization, as the CQC System Manager, who shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor.
 - 1. The CQC System Manager (CQCSM) shall be onsite at all times whenever Contract work is in progress unless the CQCSM is on a scheduled absence.
 - 2. The CQCSM shall be an employee of the Contractor.
 - 3. An alternate for the CQC System Manager will be identified in the plan to serve in the event of the CQC System Manager's absence.
 - 4. Period of absence for CQCSM shall not exceed three (3) weeks at any one time and not more than thirty (30) workdays during a calendar year.
 - 5. If the CQCSM is absent, the alternate CQCSM shall perform all CQC duties identified.
 - 6. The requirements for the alternate will be the same as for the designated CQC System Manager.
- B. CQC Organizational Staffing
 - 1. The Contractor shall provide a CQC staff which shall be at the worksite at all times during progress, with complete authority to take any action necessary to ensure compliance with the Contract.
 - 2. Testing laboratories and onsite technicians are considered critical elements in the Contractor's QC Plan.
 - 3. The Contractor shall submit a resume of the CQC staff qualifications to the COR for compliance confirmation.
 - a. At a minimum, this shall include:
 - (1) CQC Systems Manager
 - (2) Alternate CQC Systems Manager
- C. CQC System Manager
 - 1. The CQC System Manager shall be a graduate of an ABET accredited college of engineering and/or a registered professional engineer in the State of Texas.
 - 2. The CQCSM shall have a minimum of two (2) years of construction experience on similar earthwork projects.

D. Organizational Changes

1. The Contractor shall obtain El Paso County COR's acceptance before replacing any member of the CQC staff. Requests shall include the names, qualifications, duties and responsibilities of each proposed replacement.
2. El Paso County reserves the right to require the Contractor to make changes in the CQC staff, including removal of personnel, laboratories, or technicians as necessary, to obtain the quality specified.

1.10 QC TESTING

A. Testing Procedures

The Contractor shall perform specified or required tests to verify that control measures are adequate to provide a product which conforms to Contract requirements. Testing includes operation and/or acceptance tests when specified. The Contractor shall procure the services of a compliance confirmed testing laboratory. The Contractor shall perform the following activities and shall record and provide the following data:

1. Verify that testing procedures comply with Contract requirements.
2. Verify that facilities and testing equipment are available and comply with testing standards.
3. Check test instrument calibration data against certified standards.
4. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.
5. Results of all tests taken, both passing and failing tests, shall be recorded on the CQC report for the date taken. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test shall be given. If compliance confirmed by El Paso County, actual test reports shall be submitted later with the reference to the test number and date taken.
 - a. An information copy of tests performed by an offsite or commercial test facility shall be provided directly to El Paso County.
 - b. Failure to submit timely test reports as stated shall result in nonpayment for related work performed and disapproval of the test facility for this Contract.

B. Testing Laboratories

1. The Contractor shall pay for all services of any independent testing laboratories required to perform the specified quality control testing and required to ensure that all Contract requirements are met.
2. El Paso County reserves the right to check the laboratory equipment in the proposed laboratory for compliance with the standards set forth in the Contract Specifications and to check the laboratory technician's testing procedures and techniques.

3. The Contractor shall employ certified independent laboratory to perform sampling and testing or provide an onsite laboratory with testing apparatus and qualified laboratory technicians.
 - a. Engineering testing laboratories shall be accredited by US Army Corps of Engineers (USACE), AASHTO, International Accreditation Service, or American Association for Laboratory Accreditation (A2LA).
 - b. Environmental testing laboratories shall be accredited by a National Environmental Laboratory Accreditation Program (NELAP) accreditation body.
4. All laboratories employed to perform testing under this Contract shall be unaffiliated with the Contractor. Additionally, the companies cannot have common ownership or management.
5. No testing laboratory shall be employed that was affiliated with the design of the project. Review the geotechnical data provided in Section 00.31.32.
6. All engineering laboratory tests shall be certified by a professional engineer licensed to practice in the State of Texas.
7. Testing laboratories must be experienced in the type of testing work to be done. All laboratories must meet the requirements of ASTM E699 and ASTM E329.
 - a. Laboratories testing concrete and concrete aggregates: Meet requirements of ASTM C1077.
 - b. Laboratories testing soil and rock: Meet requirements of ASTM D3740.
 - c. Laboratories testing bituminous paving materials: Meet requirements of ASTM D3666.
 - d. Laboratories engaged in nondestructive testing: Meet requirements of ASTM E543.
8. Laboratories shall calibrate measuring devices, laboratory equipment, and instruments at established intervals against certified standards in accordance with National Institute of Standards and Technology requirements.
 - a. To ensure that equipment is maintaining its calibration, USIBWC Form 241 shall be completed for all days when nuclear density tests are performed.
9. All nuclear density testing equipment operators shall have completed a training course approved by the nuclear density testing equipment manufacturer.
10. Upon request, the testing laboratory shall make measuring and testing devices available for use by El Paso County for verification tests.
11. Employment of testing laboratories in no way relieves the Contractor of the obligation to perform work in accordance with the requirements of the Contract.

1.11 COMPLETION OF WORK INSPECTIONS

A. Contractor Inspection

At the completion of all work or any increment thereof established by a completion time stated in the FAR Clause 52.211-10, entitled "Commencement, Prosecution and Completion of work," or stated elsewhere in the Contract documents, the CQC System Manager shall conduct an inspection of the work and develop a "Contractor's Punch List" of items of work which do not conform to the Contract documents. Such a list of

deficiencies shall be included in the CQC documentation and shall include the estimated date by which the deficiencies will be corrected.

1. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected and so notify El Paso County.
2. These inspections and any deficiency corrections required by this paragraph will be accomplished within the time stated for completion of the entire work.

B. Contractor and El Paso County Pre-Final Inspection

The CQC System Manager, Contractor's superintendent, or other primary management person, and the El Paso County will be in attendance at this inspection. The Pre-Final Inspection will be formally scheduled by El Paso County based upon notice from the Contractor. This notice will be given to the Government at least fourteen (14) calendar days prior to the Pre-Final Inspection. The notice must include the Contractor's assurance that all deficiencies listed in the "Contractor's Punch List" developed during the Contractor Inspection phase have been corrected and all Contract work is complete and acceptable by the date scheduled for the Pre-Final Inspection.

1. Failure of the Contractor to have all Contract work acceptably complete will be cause for El Paso County to cancel the inspection and bill the Contractor for El Paso County's additional inspection costs in accordance with the FAR 52.246-12, "Inspection of Construction."
2. At this inspection El Paso County will develop a "El Paso County's Punch List" of incomplete and/or unacceptable work performed under the Contract and will subsequently furnish this list to the Contractor.
3. Failure of El Paso County to detect and list all incomplete and/or unacceptable work during this inspection will not relieve the Contractor from acceptably performing all work required by the Contract documents.
4. El Paso County, at its option, may accept this inspection as the final acceptance inspection if in its opinion, the completion status of the inspected facilities and other work performed under the Contract, warrant this consideration.

C. Contractor and El Paso County Final Acceptance Inspection

The CQC System Manager, the superintendent or other primary management person, and El Paso County will be in attendance at this inspection. The final acceptance inspection will be formally scheduled by El Paso County based upon notice from the Contractor. This notice will be given to El Paso County at least fourteen (14) calendar days prior to the final acceptance inspection. The notice must include the Contractor's assurance that all items in "El Paso County's Punch List" developed during the Contractor and El Paso County Pre-Final Inspection phase have been corrected.

1. Failure of the Contractor to have all Contract work acceptably complete for this final acceptance inspection will be cause for El Paso County to cancel the inspection and bill the Contractor for El Paso County's additional inspection costs in accordance with FAR Clause 52.246-12, Inspection of Construction.
2. This inspection will be considered another Contractor and El Paso County Pre-Final Inspection and the Contractor must schedule another Contractor and El Paso County Final Acceptance Inspection after all items have been corrected.

3. Otherwise, this inspection will be considered a Contractor and El Paso County Final Acceptance Inspection if all items in "El Paso County's Punch List" and all other work are considered acceptably complete by El Paso County.

1.12 DOCUMENTATION

- A. The Contractor shall maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records shall include the work of subcontractors and suppliers and shall include, as a minimum, the following information:
 1. Weather conditions at the worksite.
 - a. When determining minimum and maximum temperatures at the worksite, thermometers placed onsite shall be used. Use of weather.com or other online weather services is not valid for determining the worksite temperature.
 - b. Additional thermometers may be required to monitor concrete placements.
 2. Contractor/subcontractor and their area of responsibility.
 3. Operating plant/equipment with hours worked, idle, or down for repair.
 4. Identification of equipment mobilized or demobilized from the worksite.
 5. Work performed each day, giving location, description and by whom.
 6. Test and/or control activities performed with results and references to specifications/drawings requirements. The control phase shall be identified (Preparatory, Initial, Follow up). List deficiencies noted along with corrective action.
 7. Quantity of materials, as appropriate, received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements. For lump sum priced line items, quantity of materials received is usually not relevant; however, the CQC shall still make notes of items received, acceptability, storage, etc.
 8. Offsite surveillance activities, including actions taken.
 9. Job safety evaluations stating what was checked, results, and instructions or corrective actions.
 10. Instructions given/received and conflicts in Contract Drawings and/or specifications.
 11. Contractor's verification statement.
- B. These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the Contract.

- C. USIBWC Form 163, Contractor's Daily Quality Control Report, shall be used to document this data.
1. A digital copy of Form 163 shall be emailed to the COR daily within twelve (12) hours after the date(s) covered by the report, except that reports need not be emailed on calendar days on which no work is performed.
 2. At a minimum, one (1) report shall be prepared and submitted for every seven (7) calendar days of no work and on the last day of a no work period. The first report following a day of no work shall be for that day only.
 3. All calendar days shall be accounted for throughout the life of the Contract.
 4. The original Form 163 (containing an original signature) with copies of all appurtenance records in report form shall be provided to the COR as part of the Contract Close Out. These hard copies shall contain an original signature and if the daily report contains color items, it must be printed in color.
- D. USIBWC Form 163 shall be signed and dated by the CQC System Manager. The report from the CQCSM shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel. All of these items shall also be provided to the COR daily in electronic format. USIBWC Form 163 can be provided as a pdf scan of the original or as a pdf document containing a scanned electronic signature. All test reports and other items attached to the daily report shall also be scanned into pdf format.
1. The minimum scanning resolution shall be 400 dpi for color and grayscale and shall be 600 dpi for black and white.
 2. Color documents shall be scanned in color.
 3. Test reports, FEM reports, inspections, minutes, etc. shall all be submitted in separate electronic files.
 4. The file names for the electronic files shall always start with the Contract day number and shall also contain a brief description as well as the calendar date. For example, 065 DR Contractor Name IBMxxCxxxx 12-13-2014.pdf or 065 FEM IBMxxCxxxx 12-13-2014.pdf .

1.13 NOTIFICATION OF NONCOMPLIANCE

- A. El Paso County will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the worksite, shall be deemed sufficient for the purpose of notification.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

--End of Section—

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**SPECIFICATION 01.57.13
TEMPORARY ENVIRONMENTAL CONTROLS**

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1.2 RELATED REQUIREMENTS

- A. Section 32.92.00-Vegetation for Erosion Control

1.3 REFERENCE STANDARDS

- A. Environmental Protection Agency (EPA)
 - 1. General Construction Permit 2012
 - 2. National Pollutant Discharge Elimination System (NPDES) Permit Program
- B. Code of Federal Regulations (CFR)
 - 1. 36 CFR 800, Protection of Historic Properties

- C. Texas Commission on Environmental Quality (TCEQ)
 - 1. Texas Pollution Discharge Elimination System (TPDES)
 - 2. TCEQ Construction General Permit TXR150000
- D. United States Code (USC)
 - 1. Archaeological Resources Protection Act (ARPA), 16 USC Chapter 1B
 - 2. Federal Environmental Pesticide Control Act, 7 USC Chapter 6
 - 3. Migratory Bird Treaty Act (MBTA), 16 USC §§703-712
 - 4. National Environmental Policy Act (NEPA), 42 USC §§4321-4347
 - 5. Native American Graves Protection and Repatriation Act (NAGPRA), 25 USC §3001 et. seq.

1.4 SUBMITTALS

- A. The Contractor Quality Control (CQC) System Manager shall be responsible for certifying that all submittals are in compliance with the Contract requirements.
- B. Required submittals in this Section include:
 - 1. Stormwater Pollution Prevention Plan
 - a. A compliance confirmed SWPPP for the worksite is required prior to Contractor mobilization.
 - b. Copies of NOI, NOT, and any applicable waivers shall be provided to COR upon receipt.
 - 2. Pesticide Use Plan, if required.
 - 3. Test Results of Topsoil Salinity Levels
 - 4. Hydrocarbon Storage Tank Permits
 - a. Provide the COR with copies of any permits issued allowing storage tanks in excess of 1,100 gallons.

1.5 MEASUREMENT AND PAYMENT

- A. The work performed by the Contractor under this Section shall not be paid for directly, but shall be included in the various Bid Items under this Contract.

1.6 GENERAL

- A. The Contractor shall provide and maintain methods, equipment and temporary construction as necessary to provide controls over environmental conditions in the construction areas, adjacent areas, temporary work areas and all Project Specific Locations (PSL) and shall remove physical evidence of the temporary facilities at the completion of work.
- B. The Contractor shall, at their own expense, obtain all required permits for environmental controls unless otherwise specified.

- C. Contractors shall be responsible for knowing about applicable environmental laws and regulations.

1.7 FIELD ENVIRONMENTAL MONITOR

- A. USIBWC shall obtain the services of a Field Environmental Monitor (FEM) to ensure compliance with regulatory requirements and environmental protection commitments made during NEPA documentation. The FEM should also meet federal guidelines for construction based projects of the USIBWC.
- B. The Contractor is responsible for being cognizant of and ensuring compliance with the laws and regulations that oversee construction work. This responsibility shall apply to both the Contractor's operations and those of the any subcontractors.
- C. The FEM shall be onsite, overseeing construction during any ground disturbing activity including, but not limited to: excavation, clearing, grubbing, compacting, erosion control, seeding, and hauling. If ground disturbing activities are not being conducted, the FEM shall, at a minimum, perform a daily inspection of the site.
 - 1. The Contractor must coordinate their construction schedule, either daily or weekly, with El Paso County so that scheduling of the FEM can be accomplished in advance.
 - 2. The Contractor shall specifically identify locations of ground disturbing activities on their schedule.
- D. The FEM will be required to survey for and monitor any Threatened and Endangered (T&E) Species and/or birds protected under the Migratory Bird Treaty Act within the project limits in order to prevent adverse impacts to or destruction of these species during construction.
- E. The FEM will write a daily inspection report using USIBWC Form 203. A copy of this report will be provided to the Contractor within one (1) day of the inspection detailed in the report. Reports are not required to be delivered on non-work days.
- F. When any violations of the EA or applicable local, state, or Federal environmental regulations referenced in this Contract are called to the Contractor's attention by El Paso County, the Contractor shall immediately correct the condition to which attention has been directed. Such notice, either oral or written, when served on the Contractor or the Contractor's representative shall be deemed sufficient.
- G. In the event the Contractor fails to or refuses to promptly comply with the compliance directive issued under this Section, the CO may issue an order to stop all or any part of the work. When satisfactory corrective action is taken, an order to resume work will be issued. The Contractor shall not be entitled to any extension of time, to any claim for damages, nor to any additional compensation by reason of the directive or the any stop work order issued under this Section. Failure of El Paso County to order discontinuance of any or all of the Contractor's operations shall not relieve the Contractor of their responsibility under local, state, and Federal environmental regulations.

- H. The FEM shall report directly to the COR, but will have normal day-to-day contact with the Contractor and the El Paso County Inspector. The Contractor shall implement changes required by the FEM to maintain compliance with the EA and environmental laws.
- I. The FEM will not perform stormwater pollution prevention (SWPP) inspections of the site for the Contractor. For the Contractor to meet the requirements in their stormwater pollution prevention plan (SWPPP), the Contractor must delegate all SWPP inspection responsibilities to a specific person on the Contractor's payroll or to an appropriate subcontractor. The FEM may report SWPPP violations for corrective action.

1.8 WATER POLLUTION

- A. The Contractor's construction activities shall be performed by methods that will prevent entrance, or accidental spillage, of solid matter, contaminants, debris, or other pollutants or wastes into the Rio Grande or associated watersheds of the project limits.
- B. Stockpiling material on the floodplain is prohibited.
 - 1. Stockpiles shall have appropriate stormwater BMPs placed between the stockpile and the Rio Grande.
 - 2. Brush and other debris cannot be stored on the floodplain. These items must be removed from the riverside of the levee within seventy two (72) hours.
- C. The Contractor shall meet all the requirements of their SWPPP during construction activities.
- D. The Contractor shall meet all requirements of the National TCEQ Pollutant Discharge Elimination System (NPDES) (TPDES) requirements for discharges associated with construction activities including but not limited to preparation of a stormwater pollution prevention and monitoring plan (SWPPP).
- E. The Contractor shall provide contained traps to washout concrete trucks. All material washed out of any concrete truck shall be contained in the trap.
- F. The Contractor shall periodically inspect earthwork for any evidence of erosion starting. If such evidence is found, the Contractor shall apply corrective measures, as required, to control erosion.

1.9 AIR POLLUTION

- A. The Contractor shall comply with applicable Federal, state, and local laws and regulations and with the requirements of these Contract documents concerning the prevention and control of air pollution and for pollutant emissions from all vehicles and equipment onsite. Should a conflict exist in the requirements for abatement of air pollution, the most stringent requirement shall apply. The Contractor shall utilize such methods and devices available to prevent, control and otherwise minimize atmospheric emissions or discharges of air contaminants including dust.

- B. The Contractor shall not operate equipment and vehicles that show excessive emissions of exhaust gases until corrective repairs or adjustments reduce such emissions to acceptable levels.

1.10 DUST ABATEMENT

- A. The Contractor shall, during the performance of the work required by these Contract documents, or any operations appurtenant thereto and whether within the construction limits of this project or elsewhere, comply with applicable Federal, state, and local laws and regulations regarding the prevention, control and abatement of dust pollution. Should a conflict exist in the requirements for dust abatement, the most stringent requirement shall apply.
- B. The Contractor shall be responsible for controlling objectionable dust caused by the operation of vehicles and equipment, clearing, or for any reason whatsoever. The Contractor shall control dust at all times, including Saturdays, Sundays, and holidays, during both working and nonworking hours.
- C. El Paso County has the authority to stop any construction activity contributing to dust levels which are excessive or are in violation of Federal, state, or local laws. Dust control measures shall be maintained at all times to the satisfaction of the COR, in accordance with the requirements of El Paso County.
- D. All costs resulting from such work stoppage shall be the responsibility of the Contractor and Contract time extensions will not be provided.
- E. The Contractor shall reference dust control requirements in SWPPP under EPA's TCEQ's general construction permit.

1.11 NOISE POLLUTION

- A. The Contractor shall minimize noise throughout all phases of the Contract and exercise particular and special efforts to avoid the creation of unnecessary noise impact on adjacent noise sensitive receptors in the placement of non-mobile equipment such as air compressors, generators, pumps, etc. Place mobile and stationary equipment to cause the least disruption of normal adjacent activities.
- B. The Contractor shall comply with the applicable Federal, state, and local laws and regulations, regarding the prevention, control and abatement of harmful noise levels. Should a conflict exist in the requirements for noise abatement, the most stringent requirement shall apply.
- C. The Contractor's vehicles and equipment shall be such as to minimize noise to the greatest degree practicable. Noise levels shall conform to the latest OSHA and local agency standards.
- D. All equipment associated with the work must be equipped with components to suppress excessive noise and these components must be maintained in their original operating condition considering normal depreciation. Noise attenuation devices installed by the manufacturer such as mufflers, engine covers, insulation, etc. must not

be removed nor rendered ineffectual nor be permitted to remain off the equipment while the equipment is in use.

1.12 LIGHT ABATEMENT

The Contractor shall exercise special care to direct all stationary lights to shine downward at an angle less than horizontal. These lights shall also be shielded so as not to be a nuisance to surrounding areas. No lighting shall include a residence or roadway in its direct beam. The Contractor shall immediately correct lighting problems when they occur.

1.13 PESTICIDES

- A. Pesticides are also known as herbicides, insecticides, fungicides, rodenticides, piscicides, avicides, surface disinfectants, animal repellants, and insect repellants.
- B. Only those pesticides registered with EPA in compliance with the Federal Environmental Pesticide Control Act, or with State or local agencies may be used on the site.
- C. Only pesticides noted as safe for use near lakes and aquatic environments shall be used.
- D. The Contractor shall provide rodent and pest control as necessary to prevent infestation of construction or storage areas, employing methods, and use materials which will not adversely affect conditions at the site or on adjoining properties.
- E. Prior to the use of any pesticide on within USIBWC's ROW, the Contractor shall submit a pesticides use plan.
 - 1. A pesticide use plan is not required for insect repellent to be applied directly to clothing, or for small quantities of aerosol insecticides, such as fly and spider sprays, to be applied within or directly to offices or shop buildings.
 - 2. Submit the pesticide use plan when any chemicals or applications meet one or more of the following:
 - a. Chemicals categorized by the EPA for restricted use.
 - b. Chemicals applied to or that can reasonably be expected to contact water.
 - c. Chemicals expected to endanger threatened animal or plant species.
 - d. Applications involving 2,560 acres or more.
 - 3. For each pesticide:
 - a. Identify the entity to be responsible for pesticide application.
 - b. Provide the complete label as defined by Federal Insecticide Fungicide Rodenticide Act, as amended, containing the following:
 - (1) Brand, common and chemical names.
 - (2) Ingredients and net contents.
 - (3) Use classification and registered uses.
 - (4) Name and address of manufacturer or registrant, EPA registration number and the establishment number.
 - (5) Directions for use, including safety information, warnings and precautions.
 - c. Safety Data Sheet (SDS).

- F. Keep records of pesticide types and amounts purchased, delivered, stored, mixed and actually used, and disposal means of excess. Provide copies of all records to the COR as well as keeping a copy at the jobsite for review.

1.14 EROSION PROTECTION

- A. The Contractor shall use industry Best Management Practices (BMP) for erosion control and construction stormwater containment and permits.
- B. The Contractor shall plan and execute construction and earthwork by methods to control surface drainage from cuts and fills and from borrow and waste disposal areas, to prevent erosion and sedimentation.
- C. The Contractor shall hold the areas of bare soil exposed at any time to a minimum.
- D. The Contractor shall provide temporary control measures such as berms, dikes, and drains.
- E. Vegetation for Erosion Control-Topsoil Salinity
When using vegetation as a method for temporary erosion control, Contractor shall be responsible for using topsoil with salinity levels that are conducive to plant growth, particularly for establishment of native grasses and forbs.
- F. Prior to completion of this Contract, a vegetative cover as noted in Section 32.92.00 shall be established to control erosion.
- G. The Contractor shall construct fills and waste areas by selective placement to eliminate surface silts or clays which will erode.
- H. The Contractor shall apply water or use other methods subject to the COR's compliance confirmation which will keep dust in the air to a minimum.
- I. The Contractor shall revegetate all areas disturbed during construction.

1.15 PAINT AND SOLVENT CONTROL

The Contractor shall comply with all requirements of regulatory agencies in use, storage, application, and disposal of paints and solvents, and containers for paints and solvents. All disposals shall be at a compliance confirmed legal disposal site.

1.16 HYDROCARBONS

- A. Fuel, oil, hydraulic fluid, lubricants, and other petrochemicals shall not be stored within the 100 year floodplain. The 100 year floodplain is defined as top of left levee to top of right levee.
- B. All stored petrochemicals and hydrocarbons must have a secondary containment system capable of containing twice the volume of the project. Appropriate spill cleanup materials must be available onsite at all times during construction.
 - 1. Storage tanks shall have a capacity of 1,100 gallons or less or shall be properly licensed by the state where the tank is located.

- C. The Contractor shall maintain all of their equipment, both onsite and at all PSLs, in good working order to prevent drips and leaks.
 - 1. Leaking equipment shall not be used.
 - 2. Leaking equipment shall be red tagged by the FEM, the Inspector, or the COR. This equipment must be removed from the site until all leaks have been corrected.
- D. All equipment shall be cleaned (pressure washed and/or steam cleaned) of external oil, grease, dirt and mud, and all leaks repaired prior to arriving at the project site.
 - 1. All equipment will be inspected by the CQC and the El Paso County Inspector before unloading at site.
 - 2. Any leaks or accumulations of grease shall be immediately corrected.
 - 3. A written log of inspections and maintenance must be completed and maintained throughout the project period.
- E. All equipment (heavy equipment, chainsaws, ATVs, other hand power tools, etc.) shall be fueled outside of stream adjacent riparian areas and wet areas and at least one hundred (100) feet from any surface water. Specific fueling areas may be approved and designated by the COR.
- F. Used hydrocarbons shall be disposed of by the Contractor according to local, state, and Federal regulations at legal disposal sites.
- G. Any soil contaminated by hydrocarbons shall be removed from the site and disposed of according to the appropriate regulations.

1.17 PRESERVATION OF HISTORICAL AND ARCHAEOLOGICAL DATA

A. General

Federal legislation provides for the protection, preservation, and collection of scientific, prehistorical, historical and archeological data, including relics and specimens, which might otherwise be lost due to alteration of the terrain as a result of any Federal construction project.

- 1. Scientific data and specimens include, but are not limited to: fossilized remains, traces, or imprints of organisms, preserved in or on the earth's crust, that are of paleontological interest, and that provide information about the history of life on earth.
- B. If the Contractor intends to conduct operations which will affect other public or private lands, including but not limited to quarry operation, aggregate production, and use of borrow sources or waste areas, they shall provide El Paso County a minimum of forty five (45) days notice to evaluate the site or they shall provide a certification, signed by a qualified Cultural Resource Professional, that the Contractor's performance under a resultant Contract will in no manner adversely impact any historic property (36 CFR 800).
 - 1. A qualified Cultural Resource Professional is someone that meets the Secretary of the Interior's Standard and Guidelines minimum education and experience requirements

for archeology or historic architecture. See http://www.nps.gov/history/local-law/arch_stnds_9.htm.

C. The Contractor and any subcontractors shall comply with state historical preservation laws (see State's Historical Preservation Office (SHPO)) when operating on non-Federal and non-Indian lands. Any person who, without permission, injures, destroys, excavates, appropriates, or removes any historical or prehistorical artifact, object of antiquity, or archeological resource on public lands of the United States is subject to arrest and penalty of law.

D. Discovery of Resources

1. Should the Contractor, or any of the Contractor's employees, or parties operating or associated with the Contractor in the performance of this Contract discover evidence of possible cultural, scientific, prehistorical, historical, or archeological resources, the Contractor shall:
 - a. Immediately cease work at that location.
 - b. Immediately notify the COR orally, giving the location and nature of the findings.
 - c. Follow with written confirmation to the COR within two (2) days.
2. In addition to notifying the COR, where the discovery occurs on state, municipal, or private lands, notify the appropriate state officials as prescribed by state law.
3. If a cultural resource is determined by El Paso County to be a Native American cultural item, then the Contractor shall cease the activity in the area of the discovery, make a reasonable effort to protect the items discovered, and wait for written approval from the CO before resuming activity. This requirement is prescribed under the Native American Graves Protection and Repatriation Act (NAGPRA).
4. If the discovery occurs on tribal lands, the Contractor shall immediately orally notify the responsible tribal official and the COR and follow with written confirmation within two (2) days to the responsible tribal official and the COR.
5. Exercise care so as not to disturb or damage cultural resources uncovered during construction activities and provide such cooperation and assistance as may be necessary to preserve the findings for removal or other disposition by the CO.
6. Do not resume work in the area of discovery until receipt of written notice to proceed from the CO.

E. Discovery of Human Remains or Native American Artifacts

1. Should the Contractor, or any of the Contractor's employees, or parties operating or associated with the Contractor in the performance of this Contract discover evidence of human remains or burials, the Contractor shall:
 - a. Immediately cease work at that location and within a one hundred (100) foot radius.
 - b. Immediately notify the COR orally, giving the location and nature of the findings.
 - c. Follow with written confirmation to the COR within twenty four (24) hours.

2. In addition to all Federal regulations, any human remains or Native American artifacts found on private property or state owned land used as part of this project is subject to all applicable state regulations.
 - a. See Texas Health and Safety Code §711-715
<http://www.statutes.legis.state.tx.us/Docs/SDocs/HEALTHANDSAFETYCODE.pdf>
 3. Exercise care so as not to disturb or damage any remains or artifacts uncovered during construction activities and provide such cooperation and assistance as may be necessary to preserve the findings for removal or other disposition by the CO.
 4. Do not resume work in the area of discovery until receipt of written notice to proceed from the CO.
- F. Where appropriate by reason of discovery, the CO may order delays in time of performance or changes in work, or both. When such delays or changes are ordered, an equitable adjustment will be made in the Contract in accordance with applicable clauses of the Contract.
- G. Destruction of Archaeological Resources
Any person who excavates, removes, damages, alters, or defaces or attempts to excavate, remove, damage, or otherwise alter, or deface any archaeological resource located on public lands or Indian lands is subject to a maximum of five years in prison and \$250,000 fine, as prescribed under Sections 6 and 7 of the Archaeological Resources Protection Act (ARPA). State law may provide other penalties on non-Federal lands.
- H. The Contractor shall insert this Section (1.17 Preservation of Historical and Archaeological Data) in all subcontracts which involve performance of work on ground disturbing activities.

1.18 MIGRATORY BIRDS

- A. Bird species that are protected under the Migratory Bird Treaty Act (MBTA) may nest in areas containing trees or other suitable habitat within the project limits.
 1. When possible, construction activities should be scheduled to occur outside of the migratory bird nesting season (from the March 1 through August 31).
 2. However, if construction activities must occur during the nesting season of birds protected under the MBTA, then the areas proposed for disturbances shall be surveyed and flagged for any nesting birds prior to construction to avoid inadvertent destruction of active nests and eggs.
 3. If nesting birds are found during this survey, the birds and any related eggs must be relocated or mitigated at the Contractor's expense prior to starting construction.
- B. US Fish and Wildlife (FWS) regulations do not allow for the collection or transport (dead or alive) of any migratory birds nor removal of their nests without a permit issued by the FWS Regional Bird Permit Office. If birds or nest removal is required, the Contractor or FEM shall call the COR. The COR will coordinate with a El Paso

County biologist so that they identify, coordinate, and acquire a temporary permit to collect the bird(s).

1. The Contractor or the FEM shall notify the COR of any dead birds found on the project site.

1.19 NOXIOUS WEEDS

- A. In order to prevent the potential spread of noxious weeds into work areas, Contractor shall be required to use weed-free equipment.
- B. Pressure wash all equipment to remove dirt and vegetation before bringing onsite to limit introduction of noxious weeds.
- C. All subsequent move-ins of construction equipment shall be treated in the same manner as initial move-in.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

3.1 CONTRACTOR'S RESPONSIBILITIES

- A. Stormwater Pollution Prevention Plan
 1. The Contractor shall prepare and obtain El Paso County's compliance confirmation of a Stormwater Pollution Prevention Plan (SWPPP) for the project site prior to mobilization. The Contractor shall implement their SWPPP in accordance with EPA and General Construction Permit 2012 TCEQ and Construction General Permit TXR150000.
 2. The Contractor shall develop and implement an SWPPP for all project-specific locations within and outside of the USIBWC's right of way in accordance with the specific or general stormwater permit requirements.
 3. Copies of Notice of Intent (NOI), Waivers, and Notice of Terminations (NOT) shall be provided to the COR.
 4. The Contractor shall prevent water pollution from stormwater associated with project site.
 5. The plan shall include the BMPs to be used.
 6. The SWPPP shall be signed, sealed, and dated by a professional engineer and shall be available and posted on the project site during the duration of construction activities.
 7. A general plan covering all work areas is not permitted; each PSL must be addressed separately.
 8. It is the Contractor's responsibility to obtain all permits and clearances required by the SWPPP prior to commencement of construction.

B. Other General Responsibilities

1. Phasing

The Contractor shall implement control measures in the area to be disturbed before beginning construction. Disturbances shall be limited to those areas shown on the Contract Drawings. If, in the opinion of El Paso County, the Contractor cannot control soil erosion and sedimentation resulting from construction operations, El Paso County will limit the disturbed area to that which the Contractor is able to control. The Contractor shall minimize disturbance to vegetation.

2. Maintenance

The Contractor shall immediately correct ineffective control measures, implement additional controls, and/or remove excavated material within the time requirements specified in the applicable stormwater permit.

3. Stabilization

The Contractor shall stabilize disturbed areas where construction activities will be temporarily stopped in accordance with the applicable stormwater permit and establish a uniform vegetative cover.

4. Finished Work

Upon acceptance of vegetative cover, the Contractor shall remove and dispose of all temporary control measures, temporary embankments, bridges, matting, falsework, piling, debris, or other obstructions placed during construction that are not a part of the finished work. Areas where temporary control measures are removed shall be reshaped and seeded.

5. Restricted Activities

- a. Disposal areas, stockpiles, or haul roads shall not be located in any wetland, water body, or streambed unless specifically allowed on the Contract Drawings.
- b. The Contractor shall not install temporary construction crossings in or across any water body without the prior compliance confirmation of the appropriate resource agency and El Paso County.
- c. The Contractor shall restrict construction operations in any water body to the necessary areas as shown on the Contract Drawings or applicable permit; use temporary bridges, timber mats, or other structurally sound and non-eroding material for stream crossings; provide protected storage area for paints, chemicals, solvents and fertilizers at a compliance confirmed location; keep paints, chemicals, solvents and fertilizers off bare ground and provide shelter for stored chemicals.
- d. No equipment repairs shall occur on or in the floodplain/channel of the Rio Grande.
- e. Unless compliance confirmed by the COR, all equipment shall be parked at the Contractor's staging area or at the stockpile site at the end of each work shift.

6. Structure Intakes

All structures shall be protected with silt fence or other appropriate BMP.

7. Installation, Maintenance and Removal Work

- a. The Contractor shall perform work in accordance with the specific or general stormwater permit; install and maintain the integrity of temporary erosion and sedimentation control devices to accumulate silt and debris until earthwork

- construction and permanent erosion control features are in place or the disturbed area has been adequately stabilized as determined by El Paso County.
- b. If a device ceases to function as intended or it has visible damage, the Contractor shall repair or replace the device or portions thereof as necessary.
 - c. The Contractor shall remove sediment, debris, and litter. When compliance confirmed, sediments may be disposed of in the right of way in areas where the material will not contribute to further siltation. The Contractor shall dispose of removed material in accordance with Federal, state, and local regulations.
 - d. The Contractor retains ownership of stockpiled material and must remove it from the project when new installations or replacements are no longer required.
 - e. The Contractor shall remove devices upon compliance confirmation or when directed. Upon removal, finish-grade and dress the area. Stabilize disturbed areas in accordance with the permit and/or as shown on the Contract Drawings or directed.
- C. The Contractor shall implement the provisions of USACE 404 permit. A copy shall be provided to the Contractor by the COR.
- D. The Contractor shall submit the SWPPP to the COR for review and compliance confirmation.

3.2 CONTROLS

- A. In addition to BMPs identified in the Contractor's SWPPP, the Contractor shall provide the following as required:
- 1. Construction Exits / Entrances
When tracking conditions exist, prevent traffic from crossing or exiting the construction site or moving directly onto a public roadway, alley, sidewalk, parking area, or other right of way areas other than at the location of construction exits. The Contractor will be required to use a street sweeper, blade, water truck, or other equipment if other methods of track out control fail to prevent build up of mud or dust on the roadway.
 - 2. Earthwork for Erosion Control
 - a. The Contractor shall perform excavation and backfill operations to minimize erosion and to remove collected sediments from other erosion control devices.
 - b. The Contractor shall ensure that:
 - (1) Earth dikes, swales, or combinations of both are placed along the low crown of daily lift placement to prevent runoff spillover
 - (2) Swales and dikes are placed at other locations to prevent runoff spillover or to divert runoff
 - (3) Cuts are constructed with the low end blocked with undisturbed earth to prevent erosion of hillsides
 - (4) Sediment traps are constructed at drainage structures in conjunction with other erosion control measures.
 - 3. Removal of Sediment and Debris
The Contractor shall remove sediment and debris when accumulation affects the performance of the devices.

4. Drip Pans

The Contractor shall be responsible for providing oil drip pans to be set under any vehicle left parked overnight or being repaired within USIBWC ROW to prevent oil drips from contaminating the soil.

3.3 ENVIRONMENTAL COMMITMENTS

- A. The Contractor shall power wash all equipment prior to using onsite.
 - 1. If equipment is demobilized and then returned to the project, it shall be power washed again.
 - 2. Haul trucks are exempt from this requirement unless they are only used onsite.
- B. Leaking or dripping equipment is not allowed to be operated on this worksite. The Contractor shall ensure that all equipment is in sound working order.
- C. Equipment with oil seeps may require periodical power washing to ensure that oil is not deposited within USIBWC ROW.
- D. The Contractor shall perform construction operations incorporating any environmental commitments identified in the project's environmental documents.
- E. The Contractor shall include permission for El Paso County access in arrangements for private lands used as staging areas, quarries, aggregate sources, borrow sources, etc. El Paso County access to the private land shall be to identify cultural resources and conduct appropriate inspections.

--End of Section—

**SPECIFICATION 01.78.39
PROJECT RECORD DOCUMENTS**

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1.2 Submittals	1
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1.5 Record Drawing Requirements	2
1.6 Contractor Record Drawing Preparer	3
1.7 El Paso County AutoCad Drawings	3
1.8 Certification of Record Drawings	4
1.9 Minimum Drawing Requirements	4
Part 2 - Products	5
2.1 Final Record Drawings	5
Part 3 - Execution (Not Used)	6
--End of Section--	6

1.2 SUBMITTALS

A. Required submittals in this Section include:

1. The Contractor shall submit to El Paso County, within forty five (45) calendar days after completion of construction phase of Contract, a record copy of the Record Drawings for review and compliance confirmation.
 - a. Record Drawings shall be submitted to the COR for review and approval.
 - (1) If review of the preliminary Record Drawings reveals errors and/or omissions, the drawings will be returned to the Contractor for corrections.
 - (2) The Contractor shall make all corrections and return the Record Drawings to the COR within ten (10) calendar days of receipt.
 - (3) Full compliance with this Section is a condition precedent to Substantial Completion and the commencement of any warranty periods set forth in the Contract documents.
 - b. Full compliance with this Section must be completed prior to submittal of the Contractor's final payment application.

1.3 MEASUREMENT AND PAYMENT

A. The work performed by the Contractor under this Section shall not be paid for directly, but shall be included in the various Bid Items under this Contract.

1.4 GENERAL

- A. Record Drawings (as-builts or as-constructed drawings) shall be performed under the supervision of a registered Engineer or Surveyor, licensed to practice in Texas.
- B. The terms "drawings," "Contract Drawings," "drawing files," "working record drawings," and "plans" refer to Contract Drawings which are revised to be used for Record Drawings showing end of project as-built conditions.
- C. Record Drawings are an official record of the project at the time of construction completion. The original "as-designed" Contract Drawings are modified to show all additions, deletions, and other changes made during construction. Accurate Record Drawings are very important for project operation and maintenance as well as future modifications.
- D. The Contractor shall keep one current and updated record copy of all Technical Specifications, Contract Drawings, addenda, supplementary drawings, shop drawings, modifications, and clarifications at the Contractor's field office. Specifications, Contract Drawings, supplementary drawings, and shop drawings shall be annotated to show all changes made during the construction process. These shall be available to El Paso County on a monthly basis to inspect for accuracy and completeness. Failure by the Contractor to maintain a current and satisfactory record copy of the aforementioned documents shall result in retainage of an appropriate amount of the monthly pay estimate, as determined by El Paso County.

1.5 RECORD DRAWING REQUIREMENTS

- A. Any deviations from plan design elevations, layout, quantities, coordinates, slopes, dimensions, workmanship, material, and method of constructability shall be clearly noted on the Record Drawings OR create new drawings that only show the finished construction project.
 - 1. If new drawings are created, their layout, numbering, etc. shall match that of the design/construction drawings.
- B. Cross out words like "equal to" or "similar to" and replace them with the specific information used during the construction process.
- C. Where Contract Drawings or Specifications present options, show only the option used in construction on the Record Drawings.
- D. Use written explanations to describe changes. Do not simply reference modifications, RFIs, or other related documents.
- E. The following information is provided to improve the quality of and to facilitate preparation of the Record Drawings. The most important guideline is that the marked-up changes on the drawings shall be complete and understandable. Someone with no

knowledge of the design or construction should be able to review the Record Drawings and clearly know what exists in the field and how project was constructed.

1. Use written explanations on Record Drawings to describe changes from design. Do not rely on graphic means to convey the revision.
 2. Legibility of lettering and digit values shall be precise and clear when marking drawings and shall clarify ambiguities concerning the nature and application of change involved.
 3. When changes are made, cross out all features, data, and captions that relate to that revision.
 4. When changes are required on small-scale drawings and in restricted areas, suggest large-scale inserts be drawn or sketched, with leaders to the location where applicable.
 5. Provide a legend to delineate as-built features.
 6. Be sure descriptive markings conform to legend symbols shown.
 7. Errors in notation on design drawings shall be corrected and shall clearly show as-built condition.
- F. Record Drawings shall clearly delineate what features are as-built and which features were on the original construction drawings.
1. Record Drawings shall only be printed in black and white.
 2. "As-Designed" items that are not shown on the Record Drawing shall be frozen instead of deleted.

1.6 CONTRACTOR RECORD DRAWING PREPARER

Only personnel proficient in the preparation of engineering drawings and AutoCad (at least three (3) years experience) shall be employed to modify the original Contract Drawings and prepare additional new drawings.

1.7 EL PASO COUNTY AUTOCAD DRAWINGS

- A. The Contractor will be furnished the "as-designed" drawings by El Paso County. The drawings are in AutoCad 2013 format.
1. El Paso County makes no representation regarding the accuracy or completeness of the electronic files received.
 2. The electronic files are not construction documents. Differences may exist between these electronic files and corresponding contractual hard copy/pdf construction documents or the site at the time of construction. In the event that a conflict arises between the hard copy/pdf drawings provided by El Paso County and the electronic files, the hard copy/pdf drawings shall govern. The Contractor is responsible for determining if any conflicts exist.
 3. Record Drawing files submitted by the Contractor shall have different filenames than the "as-designed" files.

1.8 CERTIFICATION OF RECORD DRAWINGS

- A. Record Drawings shall be signed and sealed by a registered, professional engineer or surveyor.
 - 1. The Record Drawings shall contain a statement that they are not considered a certified document as to the original design, but only as to the record drawing changes.
 - 2. The Record Drawings shall contain a certification similar to: "I certify that the locations, elevations, depths, and comments regarding construction accurately reflect existing field conditions."
 - 3. If the engineer signing the drawings did not personally observe and confirm the record conditions or have it done under their direct supervision, then the engineer must clearly indicate the source of the as-built information (eg, field changes noted are from mark-up drawings supplied by the Contractor).
 - a. The engineer may include a caveat on the Record Drawings with a notation as to what they actually confirmed based upon information they obtained through observation, construction inspection, interview, samples, or other useful information acquired during construction of project.

1.9 MINIMUM DRAWING REQUIREMENTS

- A. Stamp sheet with "RECORD DRAWING" and include Contractor's name, El Paso County Contract number, and date.
 - 1. The drawing number, name, and description shall not be changed.
 - 2. If Record Drawings are revised after acceptance/completion, thoroughly note so in a revision block.
- B. Record Drawings are required to reflect the same degree of detail as the original Contract Drawings. This includes detailing items and providing elevations in profiles.
- C. Provide invert elevations, alignments and related information for all related earthwork, canals, ditches, or drainages.
- D. Provide levee centerline elevation, hinge point elevation, toe elevations, alignment, ramps and related information for all areas of levee construction.
- E. Provide final topography in plan and profile sheets.
- F. Note surveyed levee hinge points and toes on topography.
- G. Show new centerline on topography.
- H. Detail locations, depths, and description of any utilities encountered during construction.
- I. Record Drawings shall include, at a minimum, all original Contract Drawings labeled as:
 - 1. "Cover Sheet S-1"

2. "General Notes S-2"
3. "Overall Plan of Bridge S-3"
4. "Overall Elevation of Bridge S-4"
5. "Typical Sections S-5"
6. "Plan & Profile Alignment "A" S-6"
7. "Levee Road Cross Sections S-7, S-8, and S-9"
 - a. Cross Sections shall include preconstruction survey data, bench excavation data, levee embankment data, topsoil data, and Roadway gravel data.
 - b. Cross Sections shall not include data from "as designed" cross sections.
8. "Storm Water Pollution Prevention Plan S-10"
9. "Temporary Erosion, Sediment and Water Pollution Control Measures S-11"
10. "Temporary Erosion, Sediment and Water Pollution Control Measures S-12"
11. "Environmental Permits, Issues and Commitments S-13"

J. Plan and Profile drawings shall conform to:

1. All items, notes and callouts that start with "proposed" or include "to be paid for under" shall not be shown on the Record Drawings.
2. The levee profile shall:
 - a. Include the as constructed top of aggregate surface centerline profile.
 - b. Include the elevation for the constructed top of flexbase centerline.
 - c. Include the elevation of any other features shown on the profile.
3. The levee plan view shall:
 - a. Include only as constructed topography.
 - b. Not include the silt fence or construction exits.
 - c. Only include as constructed centerline.
 - d. Include as constructed levee hinge points (usually the edge of levee roadway).
 - e. Include as constructed levee toes.

PART 2 - PRODUCTS

2.1 FINAL RECORD DRAWINGS

A. Paper Copies

1. Two (2) complete signed and sealed plan and profile set printed at half scale on 11"x17" paper, (ANSI B).

B. Electronic Copies

1. Five (5) electronic sets of drawings in pdf format containing all signatures and stamps.
 - a. Pdf files shall be configured to allow for high quality printing.
 - b. Pdfs shall be generated from AutoCad with a minimum of 600 dpi.

- c. Pdfs shall be rotated to drawing/sheet orientation.
 - d. Pdfs shall be the true size of the drawings (11"x17" or 22"x34" as appropriate).
 - e. Pdf files shall allow extraction of sheets.
2. Five (5) electronic sets of drawing in AutoCad (dwg) 2013 format. This set shall not contain signatures nor official seals/stamps but shall fully contain all necessary items to access the data in AutoCad.
- a. All associated topographic, survey, 2D data, and cross referenced files shall be included in this drawing set.
 - b. Include all shx line type files, ctb pen setting files, etc. required to replicate the drawings shall be included with the drawing set.
 - c. All cross referenced files shall be saved with relative paths.
 - d. All data shall exist in model space (AutoCad model tab).
 - e. A correctly scaled layout with full border and delineated print area shall be shown in AutoCad's layout tab.
 - f. All AutoCad files shall be georeferenced and contain metadata and GIS projection files.
 - g. No more than nine (9) Record Drawings shall be included in each AutoCad file.
 - h. Drawing items shall be associated to correct layers. Minimum Record Drawing layers shall include: dimensions, text/annotation, contours-major, contours-minor, elevations, survey data/points, break lines, survey border, concrete, irrigation gates, and vehicle gates.
 - i. Record Drawing layer names shall be descriptive in nature and shall start with "RD."
- C. Record Drawings and completed work may be rejected by El Paso County until such work is corrected by the Contractor and re-certified on the Record Drawings by said Engineer or Land Surveyor.
- D. Organize paper drawing sets into manageable sizes, bind with durable cover sheets and print titles and identification information on cover.
- E. All CD/DVDs shall be labeled with the Contract Name, El Paso County Contract Number, general contents, and preparing engineer/surveyor name.

PART 3 - EXECUTION

(Not Used)

--End of Section--

El Paso County
TECHNICAL SPECIFICATIONS
DIVISION 02
EXISTING CONDITIONS

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SPECIFICATION 02.02.00
EXISTING CONDITIONS & FACILITIES

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1.2 RELATED REQUIREMENTS

- A. Section 00.31.32-Geotechnical Data
- B. Section 31.11.00-Preparing Right of Way

1.3 REFERENCE STANDARDS

- A. Federal Acquisition Regulation (FAR)
 - 1. FAR 52.249-10, Default (Fixed Price Construction)
- B. US Army Corps of Engineers (USACE)
 - 1. Engineer Technical Letter (ETL) No. 1110-2-583, "Guidelines for Landscaping Planting and Vegetation at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures," April 30, 2014

1.4 SUBMITTALS

- A. Required submittals in this Section include:
 - 1. Copies of notifications provided by Contractor.
 - 2. Flood Protection Plan.

1.5 MEASUREMENT AND PAYMENT

- A. The work performed by the Contractor under this Section shall not be paid for directly, but shall be included in the various Bid Items under this Contract.

1.6 GENERAL

- A. The Contractor shall protect all existing survey markers, piezometers, benchmarks, cross arm stations, base plates, roadways and roadway appurtenances, utilities (underground and above-ground), drainage and irrigation facilities, and trees/vegetation within the right of way or adjacent properties not designated for modification, construction, and/or removal, and shall restore damaged or temporarily relocated utilities, facilities, and trees/vegetation to a condition equal to or better than prior to such damage or temporary relocation, all in accordance with the Contract documents.
- B. The Contractor shall plan and conduct operations to ensure the protection of existing features and ongoing and completed construction. Damages occurring during the course of this construction Contract as a result of the Contractor's actions or negligence shall be repaired by the Contractor at no expense to El Paso County.
- C. Damage shall be restored to a condition equal to or better than prior to such damage or temporary relocation, all in accordance with the Contract documents.
- D. Analyses, designs, and details associated with the repairs shall be prepared by a compliance confirmed design firm at no expense to El Paso County. The Contractor shall submit the designs for COR review and shall not begin work until the design has been compliance confirmed.
- E. In some cases the repair may require an upgrade. If the upgrade is at the request of El Paso County, then the Contractor shall be responsible for the expense of the design in its entirety including the upgraded features. However, El Paso County will provide an equitable adjustment in cost to cover the expense of the construction associated with the upgrade.

1.7 USIBWC OWNED RIGHT-OF-WAY

- A. The Contractor shall begin site work once preconstruction submittals are complete and the Notice to Proceed has been issued.
- B. When landowners adjacent to USIBWC's right-of-way have encroached onto USIBWC property with landscaping, fences, or other items, the Contractor shall provide said landowner with a least seven (7) days notice prior to removal of encroachments.
 - 1. Copies of these notices shall be provided to the COR.
- C. If utilities within the right-of-way must be relocated to proceed with construction, the Contractor shall notify the utility owners.
 - 1. Copies of these notices shall be provided to the COR.

1.8 USIBWC RIGHT-OF-WAY EASEMENT

- A. When construction will occur on USIBWC right-of-way where USIBWC does not own the property, but only has an easement for the project, the Contractor shall not do any work that would affect items not owned by USIBWC (e.g., roadways and roadway appurtenances, railroads, utilities including oil, gas, sewer, or water pipeline; any telephone, telegraph, or electric transmission line, any landscape features (trees/vegetation), any facility, fences, or any other structure) until authority has been secured by the owner.
- B. The Contractor shall give said owner due notice of its intention to begin work and if required by said owner and shall remove, shore, support, or otherwise protect such roadways and roadway appurtenances, railroads, utility; and any other features or items not designated for removal, modification, or construction.

1.9 SURVEY MARKERS

- A. The Contractor shall not destroy, remove, or otherwise disturb any existing survey markers without prior authorization from the COR.
- B. All survey markers, brass caps, or monuments discovered during construction, whether noted on the Contract Drawings or not, shall be surveyed to ensure that they can be accurately restored after construction activities have been completed.
- C. The Contractor shall be required to restore survey markers noted on the Contract Drawings or visible above ground that are disturbed during construction operations.

1.10 ROADWAYS AND APPURTENANCES

A. Signs and Markers

The Contractor shall not destroy, remove, or otherwise disturb any existing roadway signs or markers, unless otherwise specified in the Contract Drawings. The Contractor shall accurately restore or replace any existing roadway signs or markers immediately and as approved by the owner of the roadway.

B. Pavement or Paved Structures

All paved areas cut or damaged during construction shall be replaced with similar materials of equal thickness to match the existing adjacent undisturbed areas, except where specific resurfacing requirements have been called for in the Contract documents or in the requirements of the owner of the pavement or paved structures. The pavement restoration requirement to match existing sections shall apply to all components of existing sections, including sub-base, base and pavement. Temporary and permanent pavement shall conform to the requirements of the affected pavement. Pavements which are subject to partial removal shall be neatly saw-cut in straight lines.

1. Temporary Resurfacing

Wherever required by the public authorities having jurisdiction, the Contractor shall place temporary surfacing promptly after backfilling and shall maintain such surfacing for the period of time fixed by said authorities before proceeding with the final restoration of improvements.

2. Permanent Resurfacing

In order to obtain a satisfactory junction with adjacent surfaces, the Contractor shall saw-cut back and trim the edge so as to provide a clean, sound, vertical joint before permanent replacement of an excavated or damaged portion of pavement. Damaged edges of pavement along excavations and elsewhere shall be trimmed back by saw-cutting in straight lines. All pavement restoration and other facilities restoration shall be constructed to finish grades compatible with adjacent undisturbed pavement.

C. Sidewalks or Private Roads

Wherever sidewalks or private roads have been removed for purposes of construction, the Contractor shall place suitable temporary sidewalks or roadways promptly after backfilling and shall maintain them in satisfactory condition for the period of time fixed by the authorities having jurisdiction over the affected portions. If no such period of time is so fixed, the Contractor shall maintain said temporary sidewalks or roadways until the final restoration thereof has been made.

1.11 UTILITIES

- A. The Contractors shall contact the state's 811 (www.texas811.org www.nm811.org www.azbluestake.com www.digalert.org) at least forty eight (48) hours in advance of any construction work to allow utility operatory to check and mark locations of existing utilities within the project limits.
- B. The Contractor is required to hire a utility locator to survey the project limits to locate any utilities not indicated in the Contract Drawings. The Contractor shall immediately notify the COR of any located utilities not indicated in the Contract Drawings; immediate verbal notification is to be followed-up with written notification to the COR within forty eight (48) hours.
- C. All underground utilities and other improvements which may be impaired during construction operations shall be protected by the Contractor, regardless of whether or not the utilities are indicated in the Contract documents. The Contractor shall take all possible precautions for the protection of unforeseen utility lines to provide for uninterrupted service and to provide such special protection as may be necessary.
 - 1. Special attention is called to the existing structures that are called out in the Contract Drawings.
- D. The Contractor shall be responsible for exploratory excavations it deems necessary to determine the exact locations and depths of any utilities, including irrigation facilities, which may interfere with its work.
 - 1. All such exploratory excavations shall be performed as soon as practicable after Notice to Proceed and, in any event, a sufficient time in advance of construction to avoid possible delays to the Contractor's progress.
 - 2. When such exploratory excavations show the utility location as indicated in the Contract documents to be in error, the Contractor shall so notify the COR.
- E. The number of exploratory excavations required shall be that number which is sufficient to determine the alignment and grade of the utility.

- F. It is the Contractor's responsibility to document by either photographs or video ALL areas where pipes, structure, and utilities are located PRIOR to and after excavation.
1. The COR shall be notified in writing of any existing leaks or other visible damage prior to Contractor's work.
 2. Any leaks and/or damage not detected prior to the Contractor beginning work around the pipes or utilities will be repaired and/or replaced by the Contractor at no cost to El Paso County.
 3. If vegetation obscures pipes, structures, or utilities, the Contractor shall carefully remove obscuring vegetation in order to clearly document the pipe/utility and its condition.
- G. Utilities to be Moved
1. In case it shall be necessary to move the property of any public utility or franchise holder, the Contractor shall coordinate the move with such utility company or franchise holder.
 2. Only upon failure of the utility company or franchise holder to abide by the Contractor's request will El Paso County become involved to require the relocation of the utilities.
 3. When utility lines that are to be removed are encountered within the area of operations, the Contractor shall notify El Paso County a sufficient time in advance for the necessary measures to be taken to prevent interruption of service.
- H. Utilities to be Removed
1. Where the proper completion of the work requires the temporary or permanent removal and/or relocation of an existing utility or other improvement which is indicated, the Contractor shall remove and, without unnecessary delay, temporarily replace or relocate such utility or improvement in a manner satisfactory to El Paso County and the owner of the facility.
 2. In all cases of such temporary removal or relocation, restoration to the former location shall be accomplished by the Contractor in a manner that will restore or replace the utility or improvement as nearly as possible to its former locations and to as good or better condition than found prior to removal.
 3. Abandoned utilities shall be removed within the area of construction.
- I. El Paso County's Right of Access
- The right is reserved to El Paso County and to the owners of public utilities and franchises to enter at any time upon any public street, alley, right-of-way, or easement for the purpose of making changes in their property made necessary by the work of this Contract.
- J. Underground Utilities Indicated
- It is the Contractor's sole responsibility to field-verify locations and elevations of all the underground utilities indicate in the Contract Documents and coordinate with the utility

owners for access, permit, and/or fee as required by the owners and project, prior to construction.

1. It is NOT the responsibility of El Paso County to provide or verify the said information for any of these utilities in the field.
2. Existing utility lines that are indicated or the locations of which are made known to the Contractor prior to excavation and that are to be retained, and all utility lines that are constructed during excavation operations shall be protected from damage during excavation and backfilling and, if damaged, shall be immediately repaired or replaced by the Contractor, unless otherwise repaired by the owner of the damaged utility.
3. If the owner of the damaged facility performs its own repairs, the Contractor shall reimburse said owner for the costs of repair.

K. Underground Utilities Not Indicated

In the event that the Contractor damages existing utility lines that are not indicated or the locations of which are not made known to the Contractor prior to excavation, a verbal report of such damage shall be made immediately to the El Paso County Inspector and COR and a written report thereof shall be made promptly thereafter.

1. The Contractor shall immediately notify the utility owner of the damage, except under no circumstances shall the Contractor notify licensed drainage and/or irrigation districts or structure owners.
 - a. In the case of drainage and/or irrigation districts or private structure owners, El Paso County shall be responsible for contacting the owner.
 - b. Any repairs made to drainage and/or irrigation structures without concurrence or direction by El Paso County shall be at the Contractors expense and responsibility.
2. All utilities shall be fully documented on the Record Drawings.

L. Costs of Repairs

Costs of repairing utilities, even when damage is not due to failure of the Contractor to exercise reasonable care in locating and identifying utilities, will be the responsibility of the Contractor.

1. Costs include equipment on the project which was actually working on that portion of the work which was interrupted or idled by repair or relocation of such utility facilities and which was necessarily idled during such work.

M. Compliance Confirmation of Repairs

All repairs to a damaged utility or improvement are subject to inspection and approval by an authorized representative of the utility or improvement owner before being concealed by backfill or other work.

N. Maintaining in Service

1. Unless indicated otherwise, oil and gasoline pipelines, power and telephone or the communication cable ducts, gas and water mains, irrigation lines, sewer lines, storm drain lines, poles and overhead power, and communication wires and cables encountered along the line of the work shall remain continuously in service during all the operations under the Contract.

O. Record Drawings

All found or relocated utilities shall be included in the Record Drawings.

1.12 TREES, VEGETATION AND OTHER LANDSCAPE FEATURES

A. General

1. The Contractor shall exercise all necessary precautions so as not to damage or destroy any trees or shrubs, including those lying within the right-of-way and project limits and shall not trim or remove any trees unless such trees are noted on the Contract Drawings to be removed or have been compliance confirmed for removal by the COR.
2. Existing trees and shrubs which are damaged during construction shall be trimmed or replaced by the Contractor or a certified tree company under permit from the jurisdictional agency and/or El Paso County.

B. Vegetated areas damaged during construction shall be repaired to match the preconstruction condition to the satisfaction of the land owner and El Paso County.

C. Vegetation Removal

The Contractor shall remove all existing vegetation including, but not limited to, trees, and shrubs lying within the Temporary Construction Limits (TCL) indicated on the Contract Drawings. The Contractor shall comply with the requirements of the Engineer Technical Letter (ETL) No. 1110-2-583 in vegetation removal activities.

1.13 NOTIFICATION BY THE CONTRACTOR

A. Prior to any work in the vicinity of any existing underground facilities, including all water, sewer, storm drain, gas, petroleum products, or other pipelines, all buried electric power, communications, or television cables, all traffic signal and street lighting facilities, all roadway and state highway rights-of-way, or other existing structures, the Contractor shall notify the respective authorities representing the entities, owners, or agencies responsible for such facilities not less than three (3) working days nor more than seven (7) working days prior to excavation so that a representative of said entities, owners, or agencies can be present during such work if they so desire.

B. As part of this Section, the Contractor shall be required to notify adjacent landowners, renters, or other occupants of adjacent property of the construction operations in writing, and copies of these notifications shall be provided to the COR.

C. Copies of these notices shall be provided to the COR.

1.14 PROTECTION FROM ELEMENTS

A. The work area and Project-Specific Locations may be subject to flooding and the Contractor shall be responsible for protecting the work, existing conditions, and adjacent properties from floods and from any flood damage during the course of construction and prior to acceptance of the work by El Paso County.

B. Until final written acceptance of the project improvements by the CO, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part thereof by the action of the elements or from any other cause, whether arising from the execution or from the non-execution of the work. Protection of the worksite shall be in accordance with the Contract and Federal Acquisition Regulations (FAR). The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the project including material sites occasioned by any of the above causes before final acceptance and shall bear the expense thereof except damage to the work as otherwise specified herein.

C. Flood Caused Suspension of Work

1. In the case of suspension of work from any cause whatsoever, the Contractor shall be responsible for the project and shall take such precautions as shall be necessary to prevent damage to the project, provide for normal drainage and shall erect any necessary temporary structures, signs, or other facilities at no additional cost to El Paso County.
2. During such period of suspension of work, the Contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established plantings, seedings, and soddings furnished under the Contract and shall take adequate precautions to protect new tree growth and other important vegetative growth against injury.

D. Damage from the Elements

1. All damage and loss (whether caused by fire, flood, or any other casualty or happening) to work to be constructed or performed pursuant to the Contract (whether or not covered by partial payments made by El Paso County) shall be at the risk of the Contractor until final acceptance of the work by El Paso County, and no such damage or loss shall relieve the Contractor of, or in any way affect, the obligations to complete and deliver the work in accordance with the Contract requirements, irrespective of any insurance carried by the Contractor.
2. The Contractor shall assume full responsibility and expenses for removing, protecting, and returning to the work site, any and all equipment under their care which might be endangered by said fire, flood, or happening.
3. For any interference or delay in operations which might be caused by such incident(s).
 - a. Weather caused delays shall be reviewed under Contract clause Time Extensions for Unusually Severe Weather--IBWC.
 - b. Delays caused by fire, flood, unusually severe weather, or Acts of God shall be reviewed under FAR 52.249-10, Default (Fixed Price Construction).
4. Any re-excavation, replacement of embankment, or other work made necessary by damage from floods, hurricanes, storms, or water of whatever source or quantity during the course of construction and until final acceptance by El Paso County, shall be performed by the Contractor at their expense.
5. Repair Work
 - a. Repair of work shall be pursuant to the original Contract requirements.
 - b. Such repair work shall consist of restoring the in-place construction to the same state of completion to which such work had advanced prior to the occurrence.

- c. El Paso County reserves the right to make changes in the Contract Drawings and Technical Specifications applicable to the portions of the work to be repaired and if such changes increase the cost of repairing the damage over El Paso County's estimate of the cost of repair without the changes, the Contractor shall be paid for such increased costs and the increased cost amount shall not be considered in determining the cost of repair.
- d. Nothing in this Section shall be construed to relieve the Contractor of full responsibility for the risk of injury, loss, or damage to materials not yet incorporated in the work and to materials, tools, and equipment used to perform the work, or to relieve the Contractor of responsibility required under other Sections of the Contract documents.
- e. The provisions of this Section shall not be applicable to the repair of damage caused by an occurrence to any portion of the work accepted by El Paso County.

E. Flood Protection Plan

The Contractor shall develop and submit a Flood Protection Plan that includes the design for temporary controls for protection from floods.

1. Design elements of the Flood Protection Plan shall be designed by a licensed professional engineer and submitted to the COR for review. The COR shall review the submittal for compliance confirmation, but this shall not relieve the Contractor of the assigned responsibility of protection of the construction site.
2. The Flood Control Plan includes an Emergency Levee Closure Plan that details how the Contractor will close the levee within twenty four (24) hours when necessary. The Contractor must plan to close the levee within a twenty four (24) hour time frame in the event of emergencies. The plan shall describe how the work will be expedited to close the levee, secure the possible breach, and ensure the repair can survive the twenty five (25) year flood stage without collapse, breach, or damage to the remaining parts of the levee. The plan shall also include the method of closure, procedures for closure, and who is responsible for determine when a closure is needed from the Contractor's management. From El Paso County's side only the CO can order a closure.
3. The Flood Control Plan must be adapted to your site and work conditions. However, the basic components of a Flood Control Plan should include these, or similar, aspects.
 - a. Stage 1: A flood watch has been issued by the NWS (National Weather Service) or the onsite superintendent enacts this stage. All work continues as normal but weather conditions and river levels are watched carefully.
 - b. Stage 2: A flood warning has been issued by the NWS or the onsite superintendent. The Contractor continues to work but begins to limit the length of open excavations (breaches) in the levees.
 - c. Stage 3: The Rio Grande begins to overbank. The Contractor should use their discretion about continuing excavation operations. Embankment (backfilling with material that meets Contract Sections) operations usually can continue. The Contractor should have sufficient equipment on hand to close all breaches if required. If spoil or stockpiles exist in the floodplain, the Contractor may want to begin moving them against the levees.
 - d. Stage 4: Water begins to flow into the floodplain. The Contractor should begin to close all breaches immediately with material on hand (material does not need to

meet Contract Sections). Any spoil or stockpiles located in the floodplain need to be pushed up against the levee. All stockpile tops and levee crowns need to be flattened to allow the passage of emergency vehicles.

- e. Stage 5: Flood waters are up against the levee. The Contractor has stopped all levee construction work and is maintaining vigilance to protect breaches from developing in the levee.
4. The Contractor is reminded that they are required to use their own judgment to determine when to move to a different flood stage and what work to continue at any given time. Contractors should monitor the Rio Grande flows and current weather conditions. Releases from upstream dams also contribute to the river flows.
5. Once there is a potential for the river to exceed the banks and rise into the floodplain. It is recommended that the Contractor maintain strict surveillance on floodplain conditions in order to decide whether or not to invoke the flood protection plan for their project. The Contractor may always choose to amend any flood protection plan submittal, based on conditions and viable alternatives for working conditions in order to meet the specification requirements to protect the work, existing conditions, and adjacent properties.
6. Throughout all flood stages, the Contractor shall maintain surveillance of the water conditions and keep communications ongoing with the El Paso County Inspector and COR.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

--End of Section--

**SPECIFICATION 02.21.00
SURVEYS**

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1.2 REFERENCE STANDARDS

A. Federal Geographic Data Committee (FDGC)

1. Standards and Specifications for Geodetic Control Networks, Federal Geodetic Control Committee, September, 1984.

1.3 SUBMITTALS

A. Required submittals in this Section include:

1. Survey Plan
 - a. A complete Survey Plan which shall be submitted twenty one (21) days prior to beginning survey work.
 - b. Survey Plan shall include how lines and grades will be maintained, checked, and during construction.
2. Surveyor Resumes and Proof of Licensure
 - a. Resumes shall be submitted of the registered land surveyors conducting the work twenty one (21) days prior to beginning survey work.
 - b. During the course of the work, a resume shall be submitted for each new registered land surveyor working on the project at least twenty one (21) days prior to the beginning of work by such new registered land surveyor.

3. Sample Field Book or Data Layout
 - a. A sample of the proposed survey field books or electronic data layout to be maintained by the Contractor's surveyor. The sample shall have sufficient information and detail, including example calculations and notes, to demonstrate that the field books will be organized and maintained in a professional manner.
4. Field Data and Calculations
 - a. One copy of actual field data (original field book or electronic data) and calculations entered by the Contractor's Surveyor in the field book shall be submitted within two (2) days of completion of such field data collection, or calculations, except that the COR may request a copy of each day's field notes that are entered in the field books at the conclusion of that day.
 - b. The Contractor shall coordinate with the COR for concurrence regarding submittal of electronic copies, prior to submitting in electronic format. Submittal format shall be included in the Contractor's Survey Plan.
5. All Survey Books, Data, and Documents
 - a. After completion of construction, the Contractor shall submit all field survey books used by the surveyor to El Paso County if not already submitted. These documents will become the property of El Paso County.
 - b. When survey data is submitted electronically, a stamped cover letter identifying the filenames and survey dates shall be submitted concurrently.
6. Survey verification of provided existing site conditions.

1.4 MEASUREMENT AND PAYMENT

- A. The work performed by the Contractor under this Section shall not be paid for directly, but shall be included in the various Bid Items under this Contract.

1.5 GENERAL

- A. The Contractor shall establish required benchmarks and shall perform construction staking for use in their work.
- B. The Contractor shall further:
 1. Develop and make all detail surveys and measurements needed for construction including slope stakes, batter boards, piling, and pier layouts and all other working lines, elevations, and cut sheets.
 2. Provide all material required for benchmarks, control points, batter boards, grade stakes, structure and pipeline elevation stakes, and other items.
 3. Safeguard all points, stakes, grade marks, monuments, and benchmarks made or established on the work. Reestablish same and rectify all work improperly installed because of not maintaining, not protecting, or removing without authorization established points, stakes, marks, and monuments.
 4. Provide such facilities as may be necessary for the COR to check line and grade points placed by Contractor.

5. The Contractor shall give notices and comply with all laws, ordinances, rules, and regulations bearing on the conduct of the work. If the Contractor observes that the Contract are at variance therewith, they shall promptly notify the COR in writing.

1.6 CONTRACTOR'S SURVEYOR

- A. The Contractor shall employ and retain as needed at the worksite a surveyor with the experience and capability of performing all surveyor and layout tasks required of the Contractor. The surveyor shall be a land surveyor registered in the State of Texas. All field surveys will be performed under the direct supervision of a registered surveyor in the State of Texas. Tasks included are:
 1. Provide all surveying equipment required including transit, level, stakes, and required surveying accessories.
 2. Furnish all required lines and grades for construction of all facilities, structures, pipelines, and site improvements.
 3. Keep professional, accurate, well organized, and legible notes of all measurements and calculations made while surveying and laying out the work.
- B. Unless otherwise allowed by state engineering/surveying rules and statues, all survey drawings shall be signed and sealed by a registered surveyor.
- C. Primary control survey monuments damaged or destroyed by the Contractor will be reestablished by the Contractor. If the Contractor fails to reestablish said monuments, El Paso County shall do so at the Contractor's expense and will be deduct these costs from amounts due, or become due from the Contractor.
- D. From established primary control points, the Contractor shall establish all lines and grades and elevations necessary to control the work and shall be responsible for all measurements that are required for execution of the work to the tolerances prescribed in the Contract.
- E. The Contractor shall establish, place, and replace as required, such additional stakes, markers, and other controls as may be necessary for control, intermediate checks and guidance of construction operations.
- F. The Contractor shall provide staking and controls for El Paso County inspection unless waived by the COR.

1.7 SURVEY STAKING

- A. The Contractor shall follow the following construction surveying guidelines for this project:
- B. Utilities and Pipelines
 1. Stake out utilities and pipelines including elevations.
 2. Checkout prior to and during construction.

C. Cross Sections

1. Original, final, and intermediate as required, for the structure sites and other locations as necessary and as required to confirm construction in accordance with lines, grades, elevations, etc. in the Contract Drawings and to maintain and complete the Record Drawings.
2. At any location where construction stops or starts.
3. The maximum interval for cross section surveys shall be one hundred (100) feet.

1.8 SURVEY CONTROL

- A. The North American Datum of 1983 (NAD83) state plane coordinate system shall be used.
- B. All vertical data shall be in accordance with the North American Vertical Datum of 1988 (NAVD88).
- C. All surveys shall be completed in U.S. feet.
- D. Conversions from ground coordinates to grids coordinates shall be provided.

1.9 SURVEY ACCURACY

- A. Temporary survey references set by the Contractor for the Contractor's own use shall be established to at least third order class I accuracy (i.e., 1:10,000). Construction staking used as a guide for the actual work shall be set at least third order class II accuracy (i.e., 1:5,000). The basis on which such orders are established shall be sufficient to provide the absolute margin for error specified below.
- B. Staking shall be +/-0.10 feet horizontally and +/-0.05 feet vertically.
- C. Survey calculations shall include an error analysis sufficient to demonstrate the required accuracy.

1.10 SURVEY RECORDS

- A. Maintain a complete, accurate log of all control, and survey work as it progresses.
- B. All survey data shall be in accordance with recognized professional surveying standards.
 1. All original field notes and computations shall be recorded by the Contractor's surveyor in the Contractor furnished field books and shall be signed by the Contractor's surveyor.
 2. The completeness and accuracy of all survey work and the completeness and accuracy of the survey records, including the field books, shall be the responsibility of the Contractor.
 3. Failure to organize and maintain survey records in a professional manner to allow reasonable and independent verification of all calculations by El Paso County and

to allow reasonable identification by the COR of all elevations, dimensions and grades of the work shall be cause for rejection of the survey records, including the field books.

4. Surveyor field notes and field books shall be available for review as part of the Record Drawing Agenda Item to be discussed at each Progress Meeting.
- C. Illegible notes or data, or erasures on any page of the field books will also be considered sufficient cause for rejection of part or all of the field book.
- D. Corrections by ruling or lining out errors will be satisfactory only if initialed by the surveyor.
- E. Quantity Calculations
1. The Contractor's surveyor shall provide station, offset, and elevation data for the surveyed cross sections in an electronic ASCII file, formatted such that each line contains the baseline station, offset distance from the baseline, and elevation of the surveyed point. The fields in the ASCII file may be separated by a comma, tab, or other commonly used separator.
 2. Volume calculations shall be performed by the average end area method. Computer programs used for calculating quantities shall be approved by the COR, and the program shall be provided to El Paso County so that independent verification of computed quantities can be made. The original plotted sections shall indicate the original ground line and the final lines and grade, as applicable. The elevation and offset shall be shown at each break point or shot on each section so that these elevations and offsets can be used by El Paso County to verify quantity calculations.
- F. Copied notes or data will be permitted. Survey notes shall be legible and shall be scanned into pdf format.
1. The minimum scanning resolution shall be 400 dpi for color and grayscale and shall be 600 dpi for black and white.
 2. Color documents shall be scanned in color.

1.11 PERMANENT SURVEY MARKERS

- A. Any permanent survey markers including brass caps, rebar, metal stakes, pipes, etc. that are disturbed during construction shall be replaced by the Contractor, at the Contractor's expense, prior to final Contract acceptance by El Paso County.
- B. Replacement shall be performed by a professional licensed surveyor.
- C. All monuments shall be set in a such a manner that the accuracy of their relative position is not less than second-order Class II, in accordance with the Sections establish by the U.S. Federal Geodetic Control Committee.
- D. A copy of the survey notes documenting the setting of the monument shall be kept by the responsible surveyor and a copy shall be submitted to the COR.

- E. Survey markers replacement may be verified by El Paso County surveyors.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

3.1 CONTRACTOR VERIFICATION OF CONTRACT SURVEY DATA

- A. During initial site layout and before existing conditions are disturbed the Contractor shall verify, in writing, the basic survey data provided on the Contract Drawings. Verification shall be initiated from the point shown the Contract Drawings or from the Contract Drawing reference point designated by the COR and shall include, as a minimum, benchmark elevations, horizontal control points, and topographic survey sufficient to ensure that the survey data adequately reflects existing conditions.
- B. The Contractor shall not proceed with construction until survey verification is provided to the COR.
- C. Before any existing benchmark references on the Contract Drawings are disturbed, the Contractor shall establish a new benchmark which has been compliance confirmed by the COR.

3.2 PRECONSTRUCTION SURVEY

- A. Prior to any construction operations, the Contractor shall survey the entire project site.
- B. This topographic survey shall be of sufficient detail to produce a six (6) inch contour map.
- C. The centerline of all linear objects (roads, levees, culverts, etc.) shall be stationed.
- D. This survey will be used in conjunction with construction surveys to produce the as-built drawings.
- E. This survey is to determine the existing conditions prior to site disturbances.

3.3 AS CONSTRUCTED SURVEYS

- A. The Contractor's surveyor shall check construction progress to verify that all work is in compliance with the Contract requirements. The Contractor has a responsibility to perform quality control checks on their construction.
- B. The Contractor's surveyor shall perform, plot, and submit cross sections as work progresses.
- C. Surveys shall include sections perpendicular to the centerline of the levee at one hundred (100) foot intervals and at as many additional stations as may be necessary to accurately represent each area.

D. The Contractor's surveyor shall conduct a survey of the site:

1. Prior to any construction work under this Contract.
2. Upon discovery of any utilities within the construction area.
3. After completion of excavation and site preparation for levee construction.
4. After completion of impervious backfill placement.
5. After topsoil installation.
6. After placement of roadway gravel.
7. The Contractor's surveyor shall perform additional surveys as necessary for providing Record Drawings.

--End of Section—

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El Paso County
TECHNICAL SPECIFICATIONS
DIVISION 31
EARTHWORK

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**SPECIFICATION 31.11.00
PREPARING RIGHT OF WAY**

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1.2 RELATED REQUIREMENTS

- A. Section 35.41.00-Construction of Levee

1.3 REFERENCE STANDARDS

- A. US Army Corps of Engineers (USACE)
 - 1. Engineer Technical Letter (ETL) No. 1110-2-583, "*Guidelines for Landscaping Planting and Vegetation at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures,*" dated April 30, 2014

1.4 MEASUREMENT AND PAYMENT

- A. Measurement
 - 1. This Bid Item will be measured based on the lump sum basis, and no separate construction activity will be measured in the field for the purpose of payment for the individual construction activity.

2. Measurement of cost components considered under this Section shall be based on the percentage complete, regardless of the width of the right-of-way, per the Contract Drawings.

B. Payment

1. This Bid Item will be paid for based on the lump sum bid price for the quantity on the Bid Items Table on plan sheet S-2.
2. The cost components considered for the Bid Item price under this Section is "Preparing Right of Way." This price is full compensation for pruning of designated trees and shrubs; excavation, removal, storage, and/or disposal, hauling fees/charges for structures, vegetation, and obstructions; backfilling and compaction of holes; and equipment, labor, tools, and incidentals.

1.5 GENERAL

In general, the Contractor shall prepare the right of way, temporary construction limits, and designated easements for construction operations by removing and disposing of all obstructions even when removal of such obstructions is not specifically shown on the Contract Drawings.

PART 2 - PRODUCT

(Not Applicable to this Section)

PART 3 - EXECUTION

3.1 GENERAL

- A. The Contractor shall limit all construction activities to the Temporary Construction Limits (TCL) shown on the Contract Drawings. As part of pre-bidding inspection, the Contractor shall perform inspection of the project area in order to locate and estimate the number of trees required for removal. The approximate locations of existing trees to be removed, identified as 'Trees to be Removed' in the Contract Drawings, should be used only as guidance to approximately locate the existing trees for removal but not for the purpose of estimating the number and/or size of the trees to be removed for the project.
- B. It shall be the Contractor's responsibility to identify and acquire any easements beyond the USIBWC right-of-way necessary for construction, prior to commencement of construction, at no cost to El Paso County.

3.2 PROTECT FEATURES.

- A. The Contractor shall protect designated features on the right of way.
- B. Do not park equipment, service equipment, store materials, or disturb the root area under the branches of trees designated for preservation.

- C. When shown on the Contract Drawings, prune trees and shrubs. Treat cuts on trees with a compliance confirmed tree wound dressing within twenty (20) minutes of making a pruning cut or otherwise causing damage to the tree.
- D. Testing, removal, and disposal of hazardous materials within the right of way will be in accordance with Contract provisions.

3.3 CLEAR RIGHT OF WAY.

- A. The Contractor shall clear areas within the construction limits of all obstructions, except those features and/or vegetation that are shown on the Contract Drawings to be preserved or protected in place.
- B. Obstructions include but are not limited to structures, concrete, brick, lumber, plaster, equipment, fences, trees, brush and other items as compliance confirmed by the COR.
- C. Pipes and Drainage Structures
Pipes and drainage structures shall be removed as indicated on the Contract Drawings. The Contractor shall inform the COR of all pipes and drainage structures not shown on the Contract Drawings which are encountered during grubbing. Such pipes and drainage structures shall not be removed or disturbed until so directed by the COR. Deleterious material excavated in the process of removing pipes and drainage structures shall be removed from the project site at no additional cost.
- D. Remove miscellaneous stone, scrap iron and debris, whether above or below ground.
- E. Removal of live utility facilities is not included in this Section.
- F. Remove all existing vegetation including, but not limited to trees, brushes, and shrubs prior to the commencement of grading.
- G. The Contractor shall remove and dispose of all existing vegetation together including stumps, roots, and matted roots and other organic materials to a depth of two (2) feet below the depth of the required excavation or existing ground elevations, whichever is lower. Depression made by vegetation removal shall be backfilled in accordance with Section 35.41.00.

3.4 CLEAR OBSTRUCTIONS

- A. In areas to be excavated, remove obstructions to two (2) feet below the excavation level. In all other areas, remove obstructions to two (2) feet below natural ground.
- B. When allowed by the Contract Drawings, cut trees and stumps off to ground level.
- C. Plug the remaining ends of abandoned underground structures with concrete to form a tight closure.

- D. Backfill, compact, and restore areas where obstructions have been removed. Use compliance confirmed material for backfilling.

3.5 VEGETATION REMOVAL (INSIDE FOOTPRINTS OF LEVEE IMPROVEMENT AND CHANNEL EXCAVATION)

- A. The Contractor shall completely remove all existing vegetation including, but not limited to, trees, shrubs, and sod lying within the footprints of the levee improvements and channel excavation, shown on the Contract Drawings, unless directed otherwise by the COR.
- B. The vegetation removal shall include complete removal of stumps, root bulbs, and root system. The removal of the vegetation shall be performed by excavating the trunk (or stem), stump, rootball, and all roots and backfilling of the voided stump area to the original grades in compliance with the compacting method, procedure and minimum compaction required in Section 35.41.00-Construction of Levee. The Contractor shall refer to the Contract Drawings for approximate locations of existing trees to be removed and footprints of levee improvements and channel excavation.
- C. The Contractor shall comply with the requirements of the Engineer Technical Letter (ETL) No. 1110-2-583, "*Guidelines for Landscaping Planting and Vegetation at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures*," (dated April 30, 2014) in vegetation removal activities.

3.6 VEGETATION REMOVAL (OUTSIDE OF FOOTPRINTS OF LEVEE IMPROVEMENT AND CHANNEL EXCAVATION)

- A. The Contractor shall remove all existing vegetation including stem, trunk, stump, rootball, and all roots greater than a half (0.5) inch in diameter, located within fifteen (15) feet distances from both landside and riverside toes of levees as long as they are located within the TCLs and USIBWC Right of Way, unless directed otherwise by the COR.
- B. All existing trees located inside of the TCLs but outside the fifteen (15) feet distances from both landside and riverside toes of levees and not designated for removal shall not be removed, unless directed otherwise by the COR. All remaining vegetation within the TCLs shall be mowed to less than twelve (12) inches high.
- C. If identified to be removed, the removal of the vegetation shall be performed by excavating the trunk (or stem), stomp, rootball, and all roots and backfilling of the voided stump area to the original grades in compliance with the compacting method, procedure and minimum compaction required in Section 35.41.00. The Contractor shall refer to the Contract Drawings for approximate locations of existing trees to be removed. The Contractor must provide a submittal for compliance confirmation by the COR for those trees that will be removed before the work is performed.

- D. The Contractor shall comply with the requirements of the USACE's ETL, identified in Paragraph 3.5 C. herein.

3.7 VEGETATION IN AREAS RECEIVING FILL MATERIAL (GRUBBING)

- A. In areas receiving fill, the Contractor shall remove and dispose of all existing vegetation together including stumps, roots, and matted roots, and other organic materials. Depression made by vegetation removal shall be backfilled in accordance with Section 35.41.00.
- B. If regrowth of vegetation or trees occurs after clearing and grubbing and before placement of fill, the Contractor will be required to clear and grub the area again prior to embankment construction. No payment will be made for this additional clearing and grubbing.

3.8 EXISTING STRUCTURES TO BE REMOVED.

- A. The Contractor shall remove and dispose of the existing structures, identified on the Contract Drawings or by the COR in the field.
- B. Backfilling
The Contractor shall backfill and restore any voided area or holes created by removal activities to the original grade per details shown on the Contract Drawings.
- C. The Contractor shall accept ownership and dispose of removed materials and debris at locations off the right of way. The Contractor is responsible for hauling to locations off of the right of way and for payment of any applicable fees or charges associated with disposal of removed materials and debris.

--End of Section--

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**SPECIFICATION 31.14.00
REMOVE / STOCKPILE EXISTING MATERIALS**

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3.2 Existing Topsoil.....	3
3.3 Existing Rock Riprap.....	3
--End of Section--	3

1.2 RELATED REQUIREMENTS

- A. Section 35.41.00-Construction of Levee

1.3 REFERENCE STANDARDS

- A. ASTM International (ASTM)
 - 1. ASTM D5268-13 Standard Specification for Topsoil Used for Landscaping Purposes.

1.4 MEASUREMENT AND PAYMENT

The work performed by the Contractor under this Section shall not be paid for directly, but shall be included in the various Bid Items under this Contract.

1.5 GENERAL

This Section includes requirements for the removal and disposal or removal and stockpile for re-use of existing materials excavated within the limits of the project, and includes the following:

- A. As indicated on the Contract Drawings or as directed by the COR, the Contractor shall either (1) remove and dispose of or (2) remove and, at the Contractor’s option, stockpile for re-use all material excavated within the limits of the Project. All materials reused on the project shall meet the Contract Specifications.
- B. The material to be removed and which may be stockpiled for re-use includes topsoil, providing that it meets all the requirements for Topsoil presented in Section 35.41.00. All other materials are to be disposed of by the Contractor.

- C. The existing aggregate surface shall not be reused as nor incorporated into new aggregate surface material.
- D. All removals and/or stockpiling shall be completed to the satisfaction of the COR, in order to construct, shape, and rough-in materials to the required lines, grades, and typical sections as shown on the Contract Drawings.
- E. The Contractor will NOT be allowed to stockpile on the riverside of the levee or in the floodplain. It is the Contractor's responsibility to comply with any federal and local regulations and requirements with regards to working in the area within the levees of the Rio Grande.
- F. The Contractor will be required to remove 12-inch timber piles and timber lagging remaining from the demolition and removal of the old bridge. The timber piles and lagging to be removed are located as shown on the contract plans. The timber piles and lagging are to be removed down as called for on the contract plans. Timber piles and lagging removal below the existing ground surface shall be replaced with compacted Fill (Impervious Materials) per Section 35.41.00.

PART 2 - PRODUCT

(Not Used)

PART 3 - EXECUTION

3.1 EXISTING GRAVEL (AGGREGATE SURFACE)

- A. Scarify
Loosen and break existing gravel/caliche and/or aggregate surface material.
- B. Salvaging
Remove the existing gravel and/or caliche material and dispose of it per the requirements specified herein. The Contractor shall NOT re-use the excavated existing aggregate surface as or incorporate it into new aggregate surface at any time. Perform removal operations without interfering with proper drainage, or the general requirements of the work. Remove scarified material using a method compliance confirmed by El Paso County.
- C. Disposal
Dispose of gravel/caliche and/or existing aggregate surface material at a location compliance confirmed by El Paso County. The Contractor shall comply with the local, state, and Federal requirements for disposal activities and location.

3.2 EXISTING TOPSOIL

A. Scarify

Before scarifying, clean the existing topsoil of objectionable materials by compliance confirmed methods. Scarify the area to remove existing topsoil to a depth of six (6) inches.

B. Salvaging

Remove the existing topsoil material and stockpile. Perform salvage operations without interfering with proper drainage, or the general requirements of the work. Remove scarified material using a method compliance confirmed by El Paso County. Keep material free of contamination.

C. Stockpiling and/or Disposal

If topsoil meets the requirements of ASTM D5268, store salvaged topsoil at a location compliance confirmed by El Paso County. Prepare stockpile sites by removing and disposing of trash, wood, brush, stumps, vegetation, and other objectionable materials. Deliver salvaged material and stockpile for re-use. If topsoil does not meet ASTM D5268, then the Contractor shall dispose of unsuitable topsoil material.

3.3 TIMBER PILES AND TIMBER LAGGING

A. Disposal

Dispose of timber piles and timber lagging material at a location compliance confirmed by El Paso County. The Contractor shall comply with the local, state, and Federal requirements for disposal activities and location.

--End of Section--

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El Paso County
TECHNICAL SPECIFICATIONS
DIVISION 32
EXTERIOR IMPROVEMENTS

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**SPECIFICATION 32.15.00
AGGREGATE ROAD SURFACING**

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1.2 RELATED REQUIREMENTS

- A. Section 35.41.00-Construction of Levee 8-10-2015

1.3 REFERENCE STANDARDS

- A. American Association of State Highway and Transportation Officials (AASHTO)
 - 1. AASHTO T180-10-UL Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop
 - 2. AASHTO T224-10-UL Standard Method of Test for Correction for Coarse Particles in the Soil Compaction Test

B. ASTM International (ASTM)

1. ASTM C117-13 Standard Test Method for Materials Finer Than 75 micrometer (No. 200) Sieve in Mineral Aggregates by Washing
2. ASTM C127-12 Standard Test Method for Density, Relative Density (Specific Gravity) and Absorption of Coarse Aggregate
3. ASTM C128-12 Standard Test Method for Density, Relative Density (Specific Gravity) and Absorption of Fine Aggregate
4. ASTM C131-14 Standard Test Method for Resistance to Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
5. ASTM C136-06 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
6. ASTM D8-13b Standard Terminology Relating to Materials for Roads and Pavements
7. ASTM D422-63(2007)e2 Standard Test Method for Particle-Size Analysis of Soils
8. ASTM D1556-07 Density and Unit Weight of Soil in Place by the Sand-Cone Method
9. ASTM D1557-12 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
10. ASTM D4318-10e1 Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
11. ASTM D6938-10 Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
12. ASTM E11-13 Wire Cloth and Sieves for Testing Purposes

C. Code of Federal Regulations (CFR)

1. 36 CFR 800, Protection of Historic Properties

1.4 SUBMITTALS

A. The Contractor Quality Control (CQC) System Manager shall be responsible for certifying that all submittals are in compliance with the Contract requirements.

B. Required submittals in this Section include:

1. Testing Laboratory
 - a. No work requiring testing will be permitted until the facilities have been inspected and compliance confirmed by the COR.
 - b. If this information has already been submitted for other quality control work, it does not need to be resubmitted.
2. Gravel/Aggregate Materials

At least ten (10) calendar days prior to placement of any aggregate surface, the Contractor shall submit to the COR the results of all required testing necessary to

classify the gravel and necessary for determining if placement is in compliance with the requirements herein.

3. Nuclear Density Testing Equipment Operator

Nuclear density testing equipment shall be used in accordance with ASTM D6938. In addition, the following conditions shall apply:

- a. Prior to using the nuclear density testing equipment on the site, the Contractor shall submit to the COR a certification that the operator has completed a training course approved by the nuclear density testing equipment manufacturer.
- b. The nuclear density testing equipment shall be capable of extending a probe a minimum of twelve (12) inches down into a hole.
- c. If this information has already been submitted for other quality control work, it does not need to be resubmitted.

4. Reports-Survey Records

Submit a copy of the records of each compliance survey the next work day following the survey.

5. Test Results

Test results shall be furnished to the COR within twenty four (24) hours of making the test.

- a. Test results shall be certified by a Texas registered Professional Civil Engineer. These certifications shall state that the tests and observations were performed by or under the direct supervision of the Texas registered Professional Civil Engineer and that the results are representative of the materials or conditions being certified by the tests.

6. Preservation of Historical and Archaeological Data

- a. When the Contractor proposes to use a source/quarry for rock or gravel, the source must first be approved by the COR to ensure compliance with Section 106 of NEPA (36 CFR 800).
- b. Submit a map showing the location of proposed sites to the COR at least forty five (45) days in advance of use.
- c. Take no action to use or alter the proposed location until written approval for site use is received from the COR.
- d. If the quarry or borrow site already provides materials for USACE, or other governmental agency, the Contractor may provide a copy of the environmental approvals from said agencies.
- e. Include permission for El Paso County access to any gravel sources.

7. Environmental Compliance

Submit documentation showing that all applicable laws, rules, and regulations are being followed for project-specific locations.

1.5 MEASUREMENT AND PAYMENT

A. Measurement

1. This Bid Item will be measured based on the in place square yards measured in the field for the purpose of payment for the individual construction activity.

2. Measurement of cost component considered under this Section will be based the square yard complete in place in final position.

B. Payment

1. This Bid Item will be paid for based on the unit bid price for the quantity on the Bid Items Table on plan sheet S-2.
2. The cost components considered for the Bid Item price under this Section of the Sections shall include the followings:
 - a. The work performed and materials furnished under this Section will be "Roadway Surface," specified at the location in the Contract Drawings, including top of levees and maintenance ramps. No additional payment will be made for thickness or width exceeding that shown on the Typical Sections or provided on the Contract Drawings for square yard in the final position. Sprinkling, rolling, and correction of soft spots will not be paid for directly but will be subsidiary to the cost component under this Section unless otherwise shown on the Contract Drawings. This price is full compensation for furnishing materials, temporary stockpiling, assistance provided in stockpile sampling and operations to level stockpiles for measurement, loading, hauling, delivery of materials, spreading, blading, mixing, shaping, placing, compacting, reworking, finishing, correcting locations where thickness is deficient, curing, furnishing scales and labor for weighing and measuring, and equipment, labor, tools, and incidentals.

1.6 GENERAL

- A. The Contractor shall construct six (6) inch layer of Aggregate Base Course (ABC), a roadway surfacing, along the top of levee embankments and maintenance access ramps as shown on the Contract Drawings.

B. Degree of Compaction

Degree of compaction required, except as noted in the second sentence, is expressed as a percentage of the maximum laboratory dry density obtained by the test procedure presented in ASTM D1557 abbreviated as a percent of laboratory maximum dry density. Since ASTM D1557 applies only to soils that have thirty percent (30%) or less by weight of their particles retained on the ¾ inch sieve, the degree of compaction for material having more than thirty percent (30%) by weight of their particles retained on the ¾ inch sieve are expressed as a percentage of the laboratory maximum dry density in accordance with AASHTO T180 Method D and corrected with AASHTO T224.

1.7 WORK PLAN

- A. All plant, equipment, and tools used in the performance of the work will be subject to approval before the work is started and shall be maintained in satisfactory working condition at all times. Provide adequate equipment having the capability of producing the required compaction, meeting grade controls, thickness control, and smoothness requirements as set forth herein.

1.8 WEATHER RESTRICTIONS

- A. Perform construction when the atmospheric temperature is above thirty five degrees Fahrenheit (35°F). When the temperature falls below thirty five degrees Fahrenheit (35°F), protect all completed areas by approved methods against detrimental effects of freezing. Correct completed areas damaged by freezing, rainfall, or other weather conditions to meet specified requirements.

PART 2 - PRODUCTS

2.1 GENERAL

- A. The Contractor shall furnish uncontaminated materials of uniform quality that meet the requirements of the Contract Drawings and Technical Specifications and shall notify El Paso County of the proposed material sources and of changes to material sources.
- B. No slag material shall be permitted at any time.
- C. El Paso County may sample and test project materials at any time before compaction throughout the duration of the project to assure Technical Specification compliance.
- D. The Contractor shall use ASTM D8 material definitions and shall incorporate the following requirement for materials as applicable.

2.2 AGGREGATE

- A. Furnish aggregate of the type and grade shown on the Contract Drawings and conforming to these specifications. Each source must meet Table 2 requirements for liquid limit, and plasticity index. Do not use additives such as but not limited to lime, cement, or fly ash to modify aggregates to meet the requirements of Table 2, unless shown on the Contract Drawings.
- B. Material Types
 - 1. Do not use fillers or binders unless compliance confirmed.
 - 2. Gravel shall be free of organic matter and other objectionable materials or coatings.
 - 3. The portion retained on the No. 4 sieve is known as coarse aggregate; that portion passing the No. 4 sieve is known as fine aggregate.
- C. Aggregate Road Surfacing

Materials shall be composed of caliche (argillaceous limestone, calcareous or calcareous clay particles) with or without stone conglomerate gravel, sand, or granular materials. Furnished material shall be 'CRUSHED' gravel and meet all the requirements of Table 2 herein.

Table 2 - Aggregate Surfacing Gradation Requirements

Property	Test Method	Aggregate Surfacing
Master Gradation	ASTM D422	% Passing by Weight
Sieve Size		
1-½ in.		0-10
3/8 in.		50-85
No. 4		35-65
No. 40	15-30	
Liquid Limit, max.	ASTM D4318	40
Plasticity Index, max.	ASTM D4318	12
Plasticity Index, min.		4
Specific Gravity, min.	ASTM C127/C128	2.40
LA Abrasion, max. loss	ASTM C131	20%

2.3 WATER

- A. Furnish water free of industrial wastes and other objectionable matter. Each of sulfate and chloride contents shall not exceed 3,000 ppm.

2.4 IN-SITU MATERIAL

- A. The quality of in-situ material at this project location is of very low quality. The Contractor shall either import material or generate a crushing operation within the vicinity and Right-of-Way of the project to provide the material meeting the requirements specified in this Section.
- B. No in-situ material shall be reused on this project.

2.5 EQUIPMENT

- A. The Contractor shall provide proof rollers.

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

- A. The Contractor shall construct each layer uniformly, free of loose or segregated areas, and with the required density and moisture content; provide a smooth surface that conforms to the typical sections, lines, and grades shown on the Contract Drawings.
- B. Provide adequate drainage during the entire period of construction to prevent water from collecting or standing on the working area.

- C. Provide line and grade stakes as necessary for control. Grade stakes shall be in lines parallel to the centerline of the area under construction and suitably spaced for string lining.

3.2 OPERATION OF AGGREGATE SOURCES

- A. Clearing, stripping, excavating, and crushing are the responsibility of the Contractor. Operate the aggregate sources to produce the quantity and quality of materials meeting the specified requirements in the specified time limit.
- B. Aggregate sources on non-El Paso County lands shall be operated in agreement with local laws or authorities.
- C. Unless authorized by law and by written authorization of the landowner, any Contractor (or subcontractor) operated aggregate source shall be returned to its pre-construction condition upon completion of work.

3.3 STOCKPILING MATERIAL

- A. Clear and level storage sites prior to stockpiling of material. Stockpile all materials, including approved material available from excavation and grading, in the manner and at the locations designated. Materials obtained from different sources shall be stockpiled separately.

3.4 PREPARATION OF UNDERLYING COURSE

- A. Prior to constructing the aggregate surface the subgrade shall be cleaned of all foreign substances and shall contain no frozen material.
- B. Any existing gravel along top of existing levee and surface of maintenance ramps shall be removed and disposed of.
- C. The surface of the underlying course or subgrade shall meet specified compaction and surface tolerances of Section 35.41.00.
 - 1. Ruts or soft yielding spots in the underlying courses, areas having inadequate compaction, and deviations of the surface from the requirements set forth herein shall be corrected by loosening and removing soft or unsatisfactory material and by adding approved material, reshaping to line and grade, and recompacting to specified density requirements.
 - 2. The top of the levee shall be sloped to drain per the Contract Drawings.
 - 3. The top of the levee shall not have windrows of clay along the edges.
- D. Proof Rolling
All areas to receive aggregate surface shall be proof rolled prior to placement. Ruts and low areas shall be repaired by scarifying and recompacting. Any additional material required to fill low areas must meet the requirements of Section 35.41.00.

3.5 INSTALLATION

A. Mixing the Materials

Mix the coarse and fine aggregates in a stationary plant, or in a traveling plant or bucket loader on an approved paved working area. Make adjustments in mixing procedures or in equipment, as directed, to obtain true grades, to minimize segregation or degradation, to obtain the required water content and to insure a satisfactory aggregate surface meeting all requirements of this Section.

B. Placing

Place the material on the prepared subgrade or subbase in layers of uniform thickness with an approved spreader.

1. When a compacted layer six (6) inches or less in thickness is required, place the material in a single layer. When a compacted layer in excess of six (6) inches is required, place the material in layers of equal thickness.
2. No individual layer shall be thicker than six (6) inches or thinner than three (3) inches when compacted.
3. The layers shall be so placed that when compacted they will be true to the grades or levels required with the least possible surface disturbance.
4. Where the aggregate surface is placed in more than one layer, the previously constructed layers shall be cleaned of loose and foreign matter by sweeping with power sweepers, power brooms, or hand brooms, as directed.
5. Such adjustments in placing procedures or equipment shall be made as may be directed by the COR to obtain true grades, to minimize segregation and degradation, to adjust the water content and to insure an acceptable aggregate surface.

C. Grade Control

The finished and completed aggregate surface shall conform to the lines, grades, and typical sections shown. Underlying material(s) shall be excavated and prepared at sufficient depth for the required aggregate surface thickness so that the finished aggregate surface and the subsequent surface course will meet the designated grades.

D. Edges of Aggregate Road Surfacing

The aggregate surface shall be placed so that the completed section will be a minimum of two (2) feet wider, on all sides, than the next layer that will be placed above it. Additionally, place approved fill material along the outer edges of the aggregate surface in sufficient quantities to compact to the thickness of the course being constructed, or to the thickness of each layer in a multiple layer course, allowing in each operation at least a two (2) foot width of this material to be rolled and compacted simultaneously with rolling and compacting of each layer of aggregate surface.

E. Compaction

Compact each layer of the aggregate surface, as specified, with approved compaction equipment.

1. Maintain water content during the compaction procedure to within plus or minus two percent (2%) of the optimum water content determined from laboratory tests as specified in Paragraph 3.8 .
2. Rework, re-compact, and refinish material that fails to meet or that loses required moisture, density, stability, or finish before the next course is placed or the project is accepted. Continue work until Technical Specification requirements are met.
3. In all places not accessible to the rollers, the mixture shall be compacted with hand operated power tampers.
4. Continue compaction until each layer has a degree of compaction that is at least ninety five percent (95%) of laboratory maximum density through the full depth of the layer. Make such adjustments in compacting or finishing procedures as may be directed to obtain true grades, to minimize segregation and degradation, to reduce or increase water content and to ensure a satisfactory aggregate surface.
5. Any materials that are found to be unsatisfactory shall be removed and replaced with satisfactory material or reworked, as directed by the COR, to meet the requirements of this Section.

F. Thickness

Construct the compacted thickness of the aggregate surface as indicated.

1. The total compacted thickness of the aggregate surface shall be not be less than six (6) inches.
 - a. Where the measured thickness is more than half ($\frac{1}{2}$) inch deficient, correct such areas by scarifying, adding new material of proper gradation, reblading and recompacting as directed.
 - b. Areas less than half ($\frac{1}{2}$) inch deficient, shall be corrected per direction of COR.
 - c. The Contractor may, at their discretion, place the aggregate surface thicker than six (6) inches at no additional cost to El Paso County. Where the measured thickness is thicker than required, the course shall be considered as conforming to the specified thickness requirements.

G. Finishing

The surface of the top layer of aggregate surface shall be finished after final compaction and proof rolling by cutting any overbuild to grade and rolling with a steel-wheeled roller.

1. Thin layers of material shall not be added to the top layer of aggregate surface to meet grade.
2. If the elevation of the top layer of aggregate surface is half ($\frac{1}{2}$) inch or more below grade, then the top layer should be scarified to a depth of at least three (3) inches and new material shall be blended in and compacted and proof rolled to bring to grade.

3. Adjustments to rolling and finishing procedures shall be made as directed to minimize segregation and degradation, obtain grades, maintain moisture content, and insure an acceptable aggregate surface.
4. Should the surface become rough, corrugated, uneven in texture, or traffic marked prior to El Paso County acceptance of the project, the unsatisfactory portion shall be scarified, reworked, and recompact or it shall be replaced as directed.

3.6 MAINTENANCE

- A. Maintain the aggregate surface in a satisfactory condition until final acceptance by El Paso County. Maintenance shall include immediate repairs to any defects and shall be repeated as often as necessary to keep the area intact. Any area of aggregate surface that is damaged shall be reworked or replaced as necessary to comply with this Section.

3.7 DISPOSAL OF UNSATISFACTORY MATERIALS

- A. Any unsuitable materials that must be removed shall be disposed of outside the limits of USIBWC-controlled land. No additional payments will be made for materials that must be replaced.

3.8 QUALITY CONTROL

- A. All test reports, both unofficial and official, shall be provided to the COR along with the Contractor's daily QC report.
- B. Sampling
Take samples for laboratory testing in conformance with ASTM D75. When deemed necessary, the sampling will be observed by El Paso County.
- C. Tests
Perform the following tests in conformance with the applicable standards listed.
 1. Sieve Analysis
Make sieve analysis in conformance with ASTM C117 and ASTM C136. Sieves shall conform to ASTM E11. Particle-size analysis of the soils shall also be completed in conformance with ASTM D422. Hydrometer is not required.
 2. Specific Gravity
Determine the specific gravity of the aggregates using ASTM C127 or C128 as appropriate.
 3. Liquid Limit and Plasticity Index
Determine liquid limit and plasticity index in accordance with ASTM D4318. Atterberg Limits Test shall be performed in accordance with ASTM D4318 wet preparation, mechanically disaggregated, four-point method.

4. Moisture-Density Determinations

Determine the laboratory maximum dry density and optimum moisture content in accordance with ASTM D1557 and if greater than thirty percent (30%) retained on ¾ inch sieve then by AASHTO T180 corrected with AASHTO T224.

5. Field Density Tests

- a. Degree of compaction required, except as noted in the second sentence, is expressed as a percentage of the maximum laboratory dry density obtained by the test procedure presented in ASTM D1557 abbreviated as a percent of laboratory maximum dry density.
- b. Since ASTM D1557 applies only to soils that have thirty percent (30%) or less by weight of their particles retained on the ¾ inch sieve, the degree of compaction for material having more than thirty percent (30%) by weight of their particles retained on the ¾ inch sieve are expressed as a percentage of the laboratory maximum dry density in accordance with AASHTO T180 and corrected with AASHTO T224.
- c. Measure field density in accordance with ASTM D1556 or ASTM D6938.
- d. For the method presented in ASTM D6938 check the calibration curves and adjust them, if necessary, using only the sand cone method as described in paragraph Calibration of the ASTM publication.
- e. Tests performed in accordance with ASTM D6938 result in a wet unit weight of soil and ASTM D6938 shall be used to determine the moisture content of the soil. The calibration curves furnished with the moisture gauges shall also be checked along with density calibration checks as described in ASTM D6938.
- f. The calibration checks of both the density and moisture gauges shall be made by the prepared containers of material method, as described in paragraph Calibration of ASTM D6938, on each different type of material being tested at the beginning of a job and at intervals as directed.

6. Wear Test (LA Abrasion)

Perform wear tests on aggregate surface material in conformance with ASTM C131.

D. Testing Frequency

1. Initial Tests

Perform one of each of the following tests, on the proposed material prior to commencing construction, to demonstrate that the proposed material meets all specified requirements when furnished. If materials from more than one source are going to be utilized, this testing shall be completed for each source.

- a. Gradation and sieve analysis.
- b. Liquid limit and plasticity index.
- c. Moisture-density relationship.
- d. Wear.
- e. Specific gravity.

2. In Place Tests

Perform each of the following tests on samples taken from the placed and compacted aggregate surface. Samples shall be taken and tested at the rates indicated. Perform

sampling and testing of recycled concrete aggregate at twice the specified frequency until the material uniformity is established.

- a. Perform moisture and density tests on every lift of material placed and at a frequency of one set of tests for every five hundred linear feet (500 lf), or portion thereof, of completed area.
- b. Perform gradation and sieve analysis on every lift of material placed and at a frequency of one sieve analysis for every fifteen hundred linear feet (1,500 lf), or portion thereof, of material placed.
- c. Perform liquid limit and plasticity index tests at the same frequency as the sieve analysis.
- d. Measure the total thickness of the aggregate surface at intervals, in such a manner as to ensure one measurement for each five hundred (500) square yards of aggregate surface. Measurements shall be made in three (3) inch diameter test holes penetrating the aggregate surface.

E. Confirmation of Material

1. Select the source of the material prior to the time the material will be required in the work. Tentative approval of material will be based on initial test results.
2. Final compliance confirmation of the materials will be based on sieve analysis, liquid limit, and plasticity index tests performed on samples taken from the completed and fully compacted course(s).

--End of Section--

**SPECIFICATION 32.92.00
VEGETATION FOR EROSION CONTROL**

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1.2 RELATED REQUIREMENTS

- A. Section 01.57.13-Temporary Environmental Controls
- B. Section 35.41.00-Construction of Levee

1.3 REFERENCE STANDARDS

- A. ASTM International (ASTM)
 - 1. ASTM D5268-13 Standard Specification for Topsoil Used for Landscaping Purposes
 - 2. ASTM D5851-95(2011) Standard Guide for Planning and Implementing a Water Monitoring Program

1.4 SUBMITTALS

- A. The Contractor Quality Control (CQC) System Manager shall be responsible for certifying that all submittals are in compliance with the Contract requirements.
- B. Required submittals in this Section include:
 - 1. Seeding Plan
 - a. The Contractor shall submit a Seeding Plan for review and compliance confirmation by COR. The seed mix, site preparation, maintenance, and watering shall be developed per these specifications and the site conditions.
 - b. The Contractor shall revise the Seeding Plan as appropriate for site conditions and vegetation management.
 - 2. Vegetation Establishment Plan
 - a. The Contractor shall submit a Vegetation Establishment Plan for compliance confirmation. The plan shall include recommendations for fertilizer and/or soil amendment application based upon soil testing results for each completed area to be seeded.
 - b. The Contractor shall provide copies of the topsoil analyses data sheets. Topsoil analyses shall include soil pH, phosphorus, potassium, calcium, magnesium, sodium, sulfur, copper, zinc, chloride, total dissolved salts, conductivity, and sodium absorption ratio.
 - c. In addition to the soil amendment and fertilization plan, this plan shall describe procedures for fertilizing, mulching, and site maintenance until vegetation is established.
 - 3. Vegetation Maintenance Plan

The Contractor shall include instructions indicating procedures during one typical year including variations of maintenance for climatic conditions throughout the year. The Maintenance Plan shall provide instructions and procedures for watering, promotion of growth, including pruning and mowing, integrated pest management and any site specific conditions that require specialized maintenance.
 - 4. During Seeding Activities

Daily seeding and watering areas shall be noted on the Contractor's daily QC report.
 - 5. Seed Bag Labels

The Contractor will be required to collect seed labels and keep accurate records of seed sources, types and mixes. All labels and records shall be submitted at the completion of seeding for El Paso County records.
 - 6. Pesticide Use Plan

Prior to any use of an herbicide, the Contractor shall submit a Pesticide Use Plan per Specification 01.57.13 1.13 .
 - 7. Testing Laboratory

Compliance confirmation of testing facilities shall be based on North American Proficiency Testing Program for Soil, Plant, & Water Analysis Laboratories (NAPT) certification. No work requiring testing will be permitted until the facilities have been inspected and compliance confirmed by the COR.

8. Topsoil
At least ten (10) calendar days prior to placement of any material, the Contractor shall submit to the COR the results of all required testing necessary to classify the material and necessary for determining if placement is in compliance with the requirements herein.
9. Test Results
 - a. Test results shall be furnished to the COR within twenty four (24) hours of making the test.
 - b. Inspections and test results shall be certified by a NAPT certified laboratory and that the results are representative of the materials or conditions being certified by the tests.
10. Preservation of Historical and Archaeological Data
 - a. When the Contractor proposes to use a source or borrow pit for topsoil, the source must first be compliance confirmed by the COR to ensure compliance with Section 106 of NEPA (36 CFR 800).
 - b. Submit a map showing the location of proposed sites to the COR at least forty five (45) days in advance of use.
 - c. Take no action to use or alter the proposed location until written approval for site use is received from the COR.
 - d. If the quarry or borrow site already provides materials for USIBWC and / or El Paso County, USACE, or other governmental agency, the Contractor may provide a copy of the environmental approvals from said agencies.
 - e. Include permission for El Paso County access to any borrow sources.
11. Environmental Compliance
Submit documentation showing that all applicable laws, rules, and regulations are being followed for project-specific locations.

1.5 MEASUREMENT AND PAYMENT

A. Measurement

1. This Bid Item will be measured based on the lump sum basis, and no separate construction activity will be measured in the field for the purpose of payment for this individual construction activity.
2. Measurement of cost components considered under this Section is based on percentage complete of final revegetation per these Specifications and the Contract Drawings.
3. No separate measurement will be made for placement of material required for repairs or reseeding.

B. Payment

1. This Bid Item will be paid for based on the lump sum bid price for the quantity on the Bid Items Table on plan sheet S-2.

2. Payment for seeding, fertilizing, mulching, watering, and mowing will be included in the Contract Lump Sum bid price. Price and payment shall constitute full compensation for furnishing all plant, labor, products, including soil testing, seeding plan, and watering to prepare the soil and apply the seed and mulch at the applicable rates as specified herein. Price shall also include maintenance mowing as required herein.
3. After seeding is completed, the Contractor may request partial payment only. Material certifications, invoices, and test reports must be provided to authorize the initial fifty percent (50%) payment when seeding is completed. One hundred percent (100%) payment will only be paid when vegetation is established per this Section.

1.6 GENERAL

- A. All areas disturbed by construction activities shall be revegetated.
- B. The Contractor shall establish adapted plants by seeding. This practice serves to prevent excessive soil and water loss and improve water quality, to provide or improve forage, browse, or cover for wildlife, and to restore historic plant communities.

PART 2 - PRODUCTS

2.1 SEED

- A. Origin of Seed
 1. The first preference for seed selection will be adapted certified named varieties, followed by adapted non-certified named varieties, then followed by common local ecotypes (local native harvest).
 2. The success of range seeding is strongly influenced by the adaptation of the seed source to local climatic conditions. Released cultivars with known performance and adaptations should be used. Also, seed originating on sandy soils generally should not be used to seed heavy soils or vice-versa. Certified seed of released cultivars is always recommended over uncertified or native harvested material. Seed certification is the only guarantee as to variety and quality.
 3. Seeds should be certified weed free.
- B. Native Sources
 1. The origin of native harvest seed shall not exceed the following distance guidelines from the area of intended use: three hundred (300) miles to the north, two hundred (200) miles to the south, two hundred (200) miles to the east, and one hundred (100) miles to the west.
 2. Named varieties are exempt from mileage requirements, so long as they are seeded within their range of adaptability.

C. Seed Quality and Definitions

1. Interpretation of Current Analysis Report

- a. Grass seed germination deteriorates rapidly with age. For this reason, seed analysis shall be no more than one (1) year old.
- b. Cooperators who harvest seed for their own use must have an analysis completed. Regardless of who grows or sells the seed, a copy of the current analysis must be provided. The analysis will show purity, germination, harvest location, and weed content. Noxious or weed seed content in excess of that permitted by state seed law will not be allowed for use.

2. Pure Live Seed (PLS) Determination

Compute by adding percentage of germination and firm seed. Multiply this sum by purity. Divide the product by 100 for percent PLS.

$$[(\% \text{ Germ.} + \% \text{ Firm Seed}) \text{ Purity}] / 100 = \% \text{ PLS}$$

(Firm, hard or dormant are congruent terms)

D. Seed Varieties and Seeding Rates

All seed rates shown are based upon drilled seed. Broadcast seeding will need at least double the seed rate.

Table 3 - Plant Varieties and Seeding Rates

Plant Name and Variety	NRCS Recommended Seeding Rate
Alkali muhly (Westwater Germplasm)	0.6 PLS per acre
Alkali sacaton (Salado)	0.5 PLS per acre
Blue grama (Hatchita or Lovington)	1.2 PLS per acre
Cane bluestem (Grant)	1.7 PLS per acre
Green sprangletop (Marfia)	1.6 PLS per acre
Indian ricegrass	4.0 PLS per acre
Inland saltgrass	2.0 PLS per acre
Black grama (Nogal)	0.7 PLS per acre
Plains bristlegrass	3.0 PLS per acre
Sand dropseed	0.2 PLS per acre
Sideoats grama	4.6 PLS per acre

1. Filler Grasses

For broadcast or drilled seedings, up to one (1) pound per acre of green sprangletop may be added to a full rate (100%) of a basic mixture of native grasses to provide quick cover. Use of filler grass should be considered when reseeding following mechanical brush control or other operations with complete soil disturbance.

2. Using PLS to Determine Actual Seeding Rate

Once the PLS for a seed has been determined, it is used to calculate the actual seeding rate. If the recommended rate for a seed is 10 pounds per acre and the PLS is 89%, 11.2 pounds per acre of the supplied seed will actually have to be applied to achieve the rate of 10 pounds PLS per acre.

Calculate this by: (Recommended Seeding Rate) / PLS = Actual Seeding Rate

E. Seeding Mixtures

The Contractor shall develop a seed mix that is adaptable to the work site. At least five (5) of the native seeds listed in Table 3 shall be used in the seed mix. The Contractor's

seed mix shall be comprised of native grasses whose adaptations to soil, salinity, moisture, and location indicate that they will be successful in growing at the worksite. To determine the seeding rate for individual species used in a mixture, multiple the percent of each species in the mixture times the full actual seeding rate for that species.

2.2 WATERING

- A. For seed germination, the top four (4) inches of the soil surface must remain moist to be successful. If rainfall does not provide the required moisture for germination, the Contractor shall apply water in such a manner and rate to ensure germination. The Contractor shall ensure that applied water does not erode soil or vegetation.
- B. The Contractor shall ensure that water used for any irrigation does not contain high levels of salts or other chemicals/pollutants that may impede germination.
- C. Water applied during establishment and irrigation from a water source other than municipal water supply shall be analyzed by a certified water analysis laboratory. The water source shall be tested every thirty (30) days or until operations cease use of the water source for irrigation purposes.
- D. The water source shall have a total dissolved solids (TDS) concentration of no greater than 1,000 mg/L. In addition to the agronomic tests to determine irrigation water suitability, the Contractor shall not apply water as irrigation that may contain any substance toxic to plants or that limits plant growth (e.g., oil, acid, alkali, salt, etc.).
- E. The Contractor shall provide copies of the findings for all proposed water sources, other than municipal water sources, earmarked for vegetation establishment and irrigation. Water analyses shall include pH, alkalinity, calcium, chloride, iron, magnesium, manganese, potassium, sodium, sulfur, total dissolved salts, conductivity, and sodium absorption ratio.
- F. The Contractor must provide submittal for compliance confirmation of the water to be used for vegetative watering shall be procured from a metered commercial source. Water from the Rio Grande shall not be used by the Contractor at any time.

2.3 TOPSOIL

- A. Topsoil shall be tested per Section 35.41.00 3.10 H.
- B. Topsoil testing shall indicate that the soil used can support the seed mix used by the Contractor. The Contractor shall also use the topsoil tests to aid in determining fertilizer usage, mulching, and watering schedules.

2.4 PLANTING DATES

- A. The Contractor is responsible for seeding and site vegetation and therefore shall determine the when to plant. NRCS provides the following guidance for planting in this region.
- B. Dates of seeding usually correspond to the high probability (sixty percent [60%] or more) of receiving effective precipitation (.6 to 1.0 inch during any three week period) for seedling establishment.
- C. Cool season species may be seeded anytime during the dormant period (generally from November to March). When the seeding is done early in this period it allows for more winter moisture to accumulate in the soil. Treatment of seed with a fungicide to prevent seed deterioration is recommended. Disturbances like discing, harrowing, and seeding tend to dry out the soil surface.
- D. The preferred time for warm season species is three to six (3-6) weeks after the last killing frost in the spring, although they may be seeded any time during the growing season except the last forty five (45) days prior to the average killing frost date. In the desert areas it is desirable to delay seeding until July after the monsoon storm weather pattern have developed.

PART 3 - EXECUTION

3.1 SEEDBED PREPARATION

- A. Seedbed preparation will have to meet USIBWC / FEMA standards for the levees. This may entail no cultivation beyond a depth of four (4) inches as specified below. The levees might not be reseeded if USIBWC does not approve due to design / FEMA constraints, as pertaining to 32.92.00 3.5.G Slope Erosion Control Maintenance.
- B. Areas disturbed during construction will be seeded using any method noted in this Contract that will place the seed in the newly disturbed soil before rain crusts the soil surface. The seedbed shall be firm, free of weed competition and shall not have a restrictive layer such as a plowpan, hardpan, or caliche.
- C. All areas to be seeded shall be cultivated to a depth of four (4) inches before seeding, except where temporary vegetation was established prior to permanent seeding and drilling will be used to seed. Temporary vegetation, if used, shall be mowed to a height of six (6) to ten (10) inches in height prior to seeding with permanent seed. Weeds are not counted in any vegetation establishment calculations.
- D. At a minimum, topsoil is required in all areas notes on the typical sections in the Contract Drawings including on the levee side slopes and on permeable fill. Topsoil may be required in other areas disturbed by construction to establish vegetation.
 - 1. Topsoil shall not be placed within the excavated river channel.

3.2 SEEDING OPERATION

A. Drilling

1. Whenever possible native grasses should be seeded with a grass drill equipped with double disk openers having depth bands followed by cultipacker, press wheels or drag chains. (Press wheels or cultipacking are preferred). Seed is usually planted 1/4 to 3/4 inches deep. The distance between rows should not exceed twelve (12) inches.
2. Any type of drill is preferable to broadcast seeding. An inert seed dilutant such as rice hulls or cracks grain may be used to facilitate drilling and regulation of seeding rates.

B. Broadcasting

1. Broadcasting may be used where the seed can be firmly anchored into the soil. Seedbed modification by cultipacking or other means will be needed to accomplish this. Cultipacking before and after seed placement is preferred. Broadcasting, without covering or packing, requires no less than two (2) times the amount of seed used for drilling.
2. Hand broadcasting is acceptable where equipment cannot be operated because of terrain and an adequate stand of grasses can be expected on the seeded area.

C. Seeding Depth

Optimum depth of seeding is roughly proportional to seed size. Generally smaller sized seeds like blue grama are planted shallow and larger seeds like tall fescue can be planted deeper. Optimal seeding depth is also dependent on soil surface textures. The following is a general guideline.

1. One-fourth to one-half inch deep on fine-to-medium textured soils.
2. One-half to three-fourth inch deep on sandy loams or loamy sand soils.

3.3 MULCHING

Mulch should be used on all areas except those previously planted with temporary vegetation. Prior to mulching, the soil surface shall be prepared in order to achieve the desired purpose.

A. Mulching Materials

1. The selection of mulching materials will depend primarily on site conditions and the material's availability. Mulch materials shall consist of natural and/or artificial materials that are environmentally safe such as plant residue, wood bark or chips, rice hulls, or other equivalent materials of sufficient dimension (depth or thickness) and durability to achieve the intended purpose for the required time period.
2. The mulch material shall be evenly applied and, if necessary, anchored to the soil. Tackifiers, emulsions, pinning, netting, crimping, or other acceptable methods of anchoring will be used if needed to hold the mulch in place for specified periods. As a minimum, manufactured mulches shall be applied according to the manufacturer's specifications.

3. Mulching operations shall comply with federal, state and/or local laws and regulations during the installation, operation, and maintenance of this practice.
4. Mulch material shall be relatively free of disease, pesticides, chemicals, noxious weed seeds, and other pests and pathogens.
5. Use the Soil Conditioning Index to assess soil quality impacts and to determine the type and rate of the mulching material.

B. Operation and Maintenance

1. Mulched areas will be periodically inspected and mulch shall be reinstalled or repaired as needed to accomplish the intended purpose. Evaluate the effectiveness of the mulch (application, amount of cover provided, durability, etc.) and adjust the management or type of mulch to better meet the intended purpose(s).
2. Removal or incorporation of mulch materials shall be consistent with the intended purpose and site conditions.
3. Operation of equipment near and on the site shall not compromise the intended purpose of the mulch.
4. Prevent or repair any fire damage to the mulch material.
5. Properly collect and dispose of artificial mulch material after intended use.
6. Monitor and control undesirable weeds in mulched areas.

3.4 FERTILIZER

- A. Fertilizer normally will not be recommended when reseeding native rangeland because it will encourage excessive weed growth. However, it may be necessary to fertilize on coarse textured or severely eroded soils that may not have residual or inherent fertility of sufficient levels to support emerging grasses during establishment. In these cases, fertilize following the emergence of the seeded grasses to limit weeds from using the fertilizer. A soils test should be taken prior to fertilization. The soil test should note "for establishment" instead of listing a yield goal that would be for production purposes.
- B. It is the Contractor's responsibility to ensure that the topsoil used has appropriate amounts of nitrogen, phosphorous, and potassium to encourage native grass growth. The Contractor shall also ensure that the topsoil used matches the seed mixture in terms of salinity.

3.5 MANAGEMENT DURING ESTABLISHMENT

- A. Immediately after seeding has been installed, the Contractor shall begin to provide vegetation maintenance to include, but not limited to, mowing, edging, over-seeding, aeration, fertilizing, watering, weeding, and pruning for all newly seeded materials, unless indicated otherwise and at all areas inside or outside the limits of the construction that are disturbed by the Contractor's operations.

B. Weed Control

The Contractor shall control the growth of weeds on the jobsite. Generally, when three (3) weeds per square foot or a fifty percent (50%) canopy are observed, weed control should begin. During establishment, excessive amounts of competitive weedy plants may be controlled by the following methods:

1. Herbicides

Chemicals used must be federally and locally registered and must be applied in accordance with authorized registered uses, directions on label and other federal or state policies and requirements. Seeded species shall have three (3) to five (5) leaves per plant before herbicides are applied.

- a. Any herbicides used must be safe for use in aquatic environments.
- b. Records of herbicide usage including type, strength, dates of application, application rate and area applied shall be submitted.
- c. Submit a Pesticide Use Plan per Section 01.57.13.

2. Mowing

Weeds shall be mowed when they reach a height of six (6) to eight (8) inches. Mowing should be above the height of seeded plants. The cover crop should also be maintained. Mowing shall not be done when daily maximum air temperature exceeds ninety five degrees Fahrenheit (95°) and the humidity falls below thirty percent (30%) to prevent dehydration of the seedlings. Generally, mowing should not be done after July 15.

C. Policing

The Contractor shall police all vegetated areas. Policing shall include removal of leaves, branches and limbs regardless of length or diameter, dead vegetation, paper, trash, garbage, rocks, or other debris. Collected debris shall be promptly removed and disposed of at a compliance confirmed disposal site.

D. Water Restriction

The Contractor shall abide by state, local, or other water conservation regulations in force during the vegetation establishment period. Additionally, no water from Rio Grande shall be used for vegetation maintenance activities.

E. Promotion of Growth

The seeded areas shall be maintained in a manner that promotes proper health, growth, and natural color. Turf shall have a neat uniform manicured appearance, free of bare areas, ruts, holes, weeds, pests, dead vegetation, debris, and unwanted vegetation that present an unsightly appearance. Mow, remove excess clippings, eradicate weeds, water, over-seed, aerate, and perform other operations necessary to promote growth, as compliance confirmed by COR. Remove noxious weeds from the seeded areas by mechanical means.

F. Mowing

The turf shall be mowed at a uniform finished height of twelve (12) inches, measured from the soil. Mowing of turf shall be performed in a manner that prevents scalping,

rutting, bruising, uneven, and rough cutting. Prior to mowing, all rubbish, debris, trash, leaves, rocks, paper, and limbs or branches on a turf area shall be picked up and disposed.

G. Slope Erosion Control Maintenance

The Contractor shall provide slope erosion control maintenance to prevent undermining of all slopes in newly seeded areas. Maintenance tasks include immediate repairs to weak spots where seeding will be installed, in order to intercept and direct water flow to prevent development of large gullies and slope erosion. Eroded seeded areas shall be backfilled with amended topsoil and replanted with the same plant species.

3.6 VEGETATION MAINTENANCE PERIOD

- A. The Contractor shall maintain the vegetated areas including all fertilizing, watering, mulches, and weed control for the full revegetation period stated in the Contract or until at least a seventy percent (70%) vegetative coverage is established, whichever is greater.
- B. Immediately after seeding has been installed in the seeding areas per the Contract Drawings, the Contractor shall begin to provide vegetation maintenance to include, but not limited to, mowing, edging, over-seeding, aeration, fertilizing, watering, weeding, and pruning for all newly seeded materials, unless indicated otherwise, and at all areas inside or outside the limits of the construction that are disturbed by the Contractor's operations.
- C. Replanting
The Contractor shall replant in accordance with Paragraph 3.2 herein and within specified planting dates, the areas which do not have a satisfactory stand of vegetation cover.
- D. When work is found to not meet design intent and Technical Specification requirements, maintenance period will be extended at no additional cost to El Paso County, until work has been completed, inspected and compliance confirmed by COR.
- E. Substantial completion and acceptance of the construction portion of the Contract by El Paso County can occur prior to the end of the vegetation maintenance period. Final Contract completion will not occur until vegetation cover has been established.

3.7 CRITERIA FOR DETERMINING STAND ESTABLISHMENT

- A. The quality of vegetation established will be determined by counting the number of plants per square foot that are well distributed throughout field. Weeds are not counted in any vegetation establishment calculations. Failure of the Contractor to ensure vegetation growth will require reseeding at the Contractor's expense.
 - 1. To determine the plants per square foot, transects shall be located in representative areas of the field. One hundred readings, three (3) to five (5) steps apart with one-foot square quadrats are recommended for recording the plant counts. Count the total number of plants occurring within the quadrats and divide by 100 to get the number of plants per square foot. More than one transect may be needed on large fields or

- where stand establishment is not uniform. Delineate those areas of the planted area that do not meet establishment criteria
- a. 0 to 0.05 Plants per Square Foot = Failure. Reseeding required.
 - b. 0.05 to 0.1 Plants per Square Foot = Probable Failure. Reseeding required at a reduced seeding rate (75% of original rate).
 - c. 0.1 to 0.5 Plants per Square Foot = Questionable. COR and Contractor will decide whether or not to reapply. Factors to consider are vigor of existing plants, potential to spread, extent of competition, length of Contract, weather considerations and adequacy of erosion control.
 - d. Over 0.5 Plants per Square Foot = Satisfactory.
2. Areas larger than five hundred (500) square feet that are bare of vegetation will require spot reseeding by the Contractor.
- B. Weeds include all plants not included on the seed list in Table 3.

--End of Section--

El Paso County
TECHNICAL SPECIFICATIONS
DIVISION 35
WATERWAY CONSTRUCTION

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**SPECIFICATION 35.41.00
CONSTRUCTION OF LEVEE**

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1.2 RELATED REQUIREMENTS

- A. Section 01.57.13-Temporary Environmental Controls
- B. Section 32.15.00-Aggregate Road Surfacing
- C. Section 31.11.00-Preparing Right of Way
- D. Section 31.14.00-Remove / Stockpile Existing Materials

1.3 REFERENCE STANDARDS

- A. ASTM International (ASTM)
 1. ASTM D422-63(2007)e2 Standard Test Method for Particle-Size Analysis of Soils
 2. ASTM D448-12 Standard Classification for Sizes of Aggregate for Road and Bridge Construction
 3. ASTM D1557-12 Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort
 4. ASTM D2166-13 Standard Test Method for Unconfined Compressive Strength of Cohesive Soil
 5. ASTM D2216-10 Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
 6. ASTM D2487-11 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
 7. ASTM D4221-11 Standard Test Method for Dispersive Characteristics of Clay Soil by Double Hydrometer
 8. ASTM D4318-10e1 Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
 9. ASTM D4647-13 Standard Test Methods for Identification and Classification of Dispersive Clay Soils by the Pinhole Test
 10. ASTM D5268-13 Standard Specification for Topsoil Used for Landscaping Purposes.
 11. ASTM D6572-13e1 Standard Test Methods for Determining Dispersive Characteristics of Clayey Soils by the Crumb Test
 12. ASTM D6938-10 Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

1.4 SUBMITTALS

- A. The Contractor Quality Control (CQC) System Manager shall be responsible for certifying that all submittals are in compliance with the Contract requirements.

B. Required submittals in this Section include:

1. Plan of Operations

2. Testing Laboratory

No work requiring testing will be permitted until the facilities have been compliance confirmed by the COR. If this information has already been submitted for other quality control work, it does not need to be resubmitted.

3. Compacted and Backfill Materials

At least ten (10) calendar days prior to placement of any material, the Contractor shall submit to the COR the results of all required testing necessary to classify the material and necessary for determining if placement is in compliance with the requirements herein.

4. Moisture Adjustment Plan

The Contractor shall outline the steps that will be taken to ensure that embankment material is placed at the appropriate moisture. Detail testing, methods of wetting, mixing methods, and drying methods.

5. Blending Plan

When blended material will be used as fill, a blending plan which outlines all steps, materials, equipment, labor, etc. that the Contractor will use to assure material is blended into one homogeneous mixture shall be submitted.

6. Nuclear Density Testing Equipment Operator

Nuclear density testing equipment shall be used in accordance with ASTM D6938. In addition, the following conditions shall apply:

- a. Prior to using the nuclear density testing equipment on the site, the Contractor shall submit to the COR a certification that the operator has completed a training course approved by the nuclear density testing equipment manufacturer.
- b. The nuclear density testing equipment shall be capable of extending a probe a minimum of twelve (12) inches down into a hole.

7. Reports - Survey Records

Submit a copy of the records of each compliance survey the next work day following the survey.

8. Test Results

Test results shall be furnished to the COR within twenty-four (24) hours of completing the test, and in accordance with Paragraph 3.10 B. herein.

- a. Test results shall be certified by a Texas registered Professional Civil Engineer. These certifications shall state that the tests and observations were performed by or under the direct supervision of the professional engineer and that the results are representative of the materials or conditions being certified by the tests.

9. Preservation of Historical and Archaeological Data

When the Contractor proposes to use a source or borrow pit, the source must first be approved by the COR to ensure compliance with Section 106 of NEPA (36 CFR 800).

- a. Submit a map showing the location of proposed sites to the COR at least forty-five (45) days in advance of use.

- b. Take no action to use or alter the proposed location until written approval for site use is received from the COR.
 - c. If the quarry or borrow site already provides materials for USIBWC and / or El Paso County, USACE, or other governmental agency, the Contractor may provide a copy of the environmental approvals from said agencies.
 - d. Include permission El Paso County access to any borrow sources.
10. Environmental Compliance
Submit documentation showing that all applicable laws, rules, and regulations are being followed for project-specific locations.

1.5 MEASUREMENT AND PAYMENT

A. Measurement

Measurement of cost components considered under this Section and based on the Contract Drawings shall include the following:

1. Excavation (Levee)

The volume of Excavation (Levee) is computed between the original ground surface and the excavation limits within the limits of levee embankment foundation, including benching, as shown on the Contract Drawings. The measurements will occur at one hundred (100) foot intervals along the levee alignment. The work for this cost component shall be measured by cubic yard.

2. Fill (Impervious Material)

The volume of compacted fill is computed between the excavation limits and the design grade within the limits of levee embankment foundation, including backfill of benching sections, as shown on the Contract Drawings. The measurements will occur at one hundred (100) foot intervals along the levee alignment. Shrinkage or swelling factors are not considered in determining the calculated quantities shown in the Contract Drawings. The work for this cost component shall be measured by cubic yard.

3. Topsoil

The volume of topsoil is computed as the upper six (6) inches within the areas defined as "Topsoil" in the Typical Sections of the Contract Drawings. The measurements will occur at one hundred (100) foot intervals along the levee alignment. The work for this cost component shall be measured by cubic yard.

4. Diversion, Control, and Removal of Water

The work for this cost component under the Diversion, Control, and Removal of Water, described in Paragraph 3.1 B. of this Section will be measured by the lump sum.

5. The work for the items under this Section, except for Diversion, Control, and Removal of Water, will be measured by the cubic yard complete in place using the average end area method.

- a. The volume is computed between the original ground surface or the new surface as constructed meeting the lines, grades, and slopes of the Contract Drawings.

- b. The measurements will occur at one hundred (100) foot intervals along the levee alignment.
- c. Shrinkage or swelling factors are not considered in determining the calculated quantities shown in the Contract Drawings.
- d. Over excavation and over building of embankment performed beyond specified or directed paylines and backfill and compaction of backfill for such over excavation will not be measured.
- e. Where excavation is performed in backfill, no measurement will be made for the resulting excavation, backfill, and compacting backfill.
- f. Overbuilding beyond lines and grades indicated on Contract Drawings is for the Contractor's benefit and shall not be included in measurement.

B. Payment

This Bid Item will be paid for based on the unit bid price for the quantity on the Bid Items Table on plan sheet S-2. The cost components considered for the Bid Item price under this Section shall include the followings:

1. Excavation (Levee)

The work performed and the materials furnished for excavation of material within the limits of levee embankment as shown on the Contract Drawings and disposal offsite. The Contractor, at no additional expense to El Paso County, may elect to stockpile excavated material for re-use in the project provided the material meets all requirements of the Technical Specifications.

2. Fill (Impervious Material)

The work performed and materials furnished for constructing pervious fill using clay material to establish design grade for the levee embankment as shown on the Contract Drawings.

3. Topsoil

The work performed and materials furnished to construct a topsoil layer as shown on the Contract Drawings.

4. Diversion, Control, and Removal of Water

The work performed and materials furnished for the Paragraph 3.1 B. of this Section. The price is full compensation for furnishing, hauling, placement, equipment, labor, tools, and incidental. Additionally, the price will include costs associated with construction of temporary cofferdams and/or dewatering during construction; and preparing and submitting Dewatering Control Plan and final Construction Sequencing Plan.

5. These prices are full compensation for furnishing, hauling, and placement, disposal of waste materials, equipment, labor, tools, and incidentals. Additionally, shaping existing material, loosening, mixing, pulverizing, compacting, finishing, curing, curing materials, blading, shaping and maintaining shape, replacing mixture, disposing of loosened materials, processing, hauling, preparing secondary subgrade, water and sprinkling, rolling (including proof rolling), and corrections of soft spots, will not be paid for directly but will be subsidiary to the various bid items, unless otherwise shown on the Contract Drawings.

- a. Includes cost of labor and materials for shoring, sheeting, bracing, timbering, safety sloping, and other temporary construction; of removing such temporary construction where required; stockpiling excavated material for backfill unless covered under another line item; and disposal of unused or wasted excavated materials.
- b. Over excavation performed beyond specified or directed paylines and backfill and compaction of backfill for such over excavation shall be at the expense of the Contractor.
- c. Where excavation is performed in backfill, no payment will be made for the resulting excavation, backfill, and compacting backfill.
- d. Includes the cost of work associated with the excavation or procuring, processing, and hauling of necessary material.
- e. No payment will be made for removal and reconstruction of defective and nonconforming backfill or backfill compacted to an insufficient density.
- f. Include costs associated with furnishing water to moisten material for compaction.
- g. Overbuilding beyond lines and grades indicated on Contract Drawings is for the Contractor's benefit and shall not be included in payment.

1.6 GENERAL

A. General Description of Work

1. The Work for this project generally consists of demolition and removal of the existing Fabens-Caseta International Bridge and levee improvements.
2. Construction efforts will be broken up into the following two phases:
 - a. Phase 1 – Demolition of Bridge
 - b. Phase 2 – Levee Improvements

B. The final product shall be a levee that meets FEMA 44 CFR 65.10.

C. The work covered by this Section consists of furnishing all submittals, labor, equipment, plant, materials, and all efforts necessary to perform levee construction including, but not limited to, compacted fill and backfill placement, benching, excavation, and over-excavation, construction of maintenance ramps, and any general earthwork as defined for this project.

D. In regard to earthwork, this Section shall govern if there is disagreement with or between Technical Specifications and Contract Drawings.

1.7 PLAN OF OPERATIONS

A. Fifteen (15) calendar days prior to commencement of haul road construction or placing compacted fill whichever is earlier, the Contractor shall submit for compliance confirmation a Plan of Operations for accomplishing all fill and excavation operations as well as for the location and construction of haul roads. The Plan of Operations shall also include drainage and dewatering planning.

- B. Compliance confirmation of the detailed Plan of Operations shall be obtained from the COR prior to starting the work.

1.8 ACCESS ROADS AND MAINTENANCE RAMPS

A. General

In general and as a minimum, the Contractor shall be required to maintain the access, haul roads, routing, and staging areas to prevent dust, rutting, interference with normal traffic flow, litter, and general damage or deterioration.

B. Permanent Roads Used as Haul Roads

Permanent roads used as haul roads shall be maintained throughout the duration of use and shall be restored to the pre-construction condition or the intended construction condition.

1.9 MAPPING AND FIELD SURVEYS

- A. Topographic mapping is as indicated on the Contract Drawings. Field surveys shall be completed as necessary and shall use the vertical and horizontal control identified within the Contract Drawings.

B. Layout of Work

The Contractor shall lay out the work as indicated within the Contract Drawings.

C. Verification Survey

The Contractor shall complete surveys to verify work to the lines, grades, and requirements specified.

1.10 SOURCES OF FILL MATERIAL

A. Reuse of Excavated Material

1. The excavated or over-excavated material that meets the requirements for the topsoil specified in this Section and is approved by the COR may be salvaged and reused at the intended locations.
2. Excavated existing Flex Base material may not be reused as new Flex Base material at any time.
3. El Paso County makes no assurances or guarantees that any of the existing material onsite will be suitable for reuse.
4. Unsuitable material becomes the property of the Contractor and must be removed from the project site.

1.11 SUBSURFACE INFORMATION

A. Use of Subsurface Information

The geotechnical engineering report dated April 9, 2003 for the new international bridge is used as a reference for this project. Drill, sample, and test results are an indication of the subsurface condition at the location of the boring and tests. Variations in subsurface condition may exist between boring and test locations. Soil moisture contents and groundwater levels are indication of that information at the time of the measurement, sample extraction, and/or testing. Soil moisture content and groundwater level may vary with time in response to seasonal precipitation and river stage variations. As a result, moisture contents and groundwater levels at the time of construction may differ from the data shown on the geotechnical report.

1.12 SAMPLES FURNISHED TO EL PASO COUNTY

A. Upon request from the COR and within four (4) hours of the COR request, the Contractor shall furnish samples from material sources, placed fill, ongoing construction, and/or completed construction. The specifics of sample acquisition to include method, conditions, quantity, container, and other requirements will be specified by the COR. Contractor shall perform this service at no cost to El Paso County.

1.13 DRAINAGE AND DEWATERING

A. The Contractor shall address in their general Plan of Operations the methods of drainage control. The Contractor shall maintain natural drainage patterns and/or designed drainage patterns. Temporary work, such as haul roads, shall be designed and constructed so as not to induce adverse flooding or backwater from general runoff and pipe, ditch, or stream. The Contractor shall complete necessary efforts to divert runoff and pipe, ditch, or stream discharge away from excavations, fill areas, and general construction. The Contractor shall monitor and make adjustments as necessary.

1.14 PROTECTION OF EXISTING FEATURES AND ONGOING OR COMPLETED CONSTRUCTION

A. The Contractor shall plan and conduct operations to ensure the protection of existing features and ongoing and completed construction.

B. Ongoing and Completed Construction

The Contractor shall complete the necessary efforts to protect ongoing and completed construction. Earth fills and exposed cuts shall be protected from construction activity and general erosion. Damages occurring shall be repaired by the Contractor at no expense to El Paso County. The Contractor shall be responsible for protecting against erosion and repair thereof until the cover has been placed and in the instance of vegetative cover, until the vegetation has established.

C. Public Roads, Accesses, and Appurtenances

The Contractor shall plan and complete the necessary efforts to protect public roads, accesses, and appurtenances from damages associated with this construction project. Contractor's activities shall not deter public use of the roads, accesses, and appurtenances.

D. Environmental and Cultural

The Contractor is referred to and shall comply with the requirements of environmental protection, outlined in Section 01.57.13.

E. Blasting and Explosives' Storage

Blasting shall not be allowed for this construction project. Explosives shall not be stored on site for any reason or for any length of time.

F. Impacts Outside Construction Right-of-Way/Easements.

1. Contractor's work directly or indirectly impacting property not included within the project's construction right-of-way limits, shall be coordinated with the COR, and proof of Contractor acquired right-of-way or easements of the impacted real estate or facility shall be provided to the COR thirty (30) days prior to impacting the real estate or facility.
2. The Contractor shall coordinate with the COR to obtain more information on working outside the USIBWC right-of-of-way areas. It is the Contractor's responsibility to protect in place any existing features that were not identified to be altered or modified on the Contract Drawings and restore any disturbed areas to the original conditions at no cost to El Paso County.

1.15 WEATHER RESTRICTION

- A. Perform construction when the atmospheric temperature is above thirty five degrees Fahrenheit (35°F). When the temperature falls below thirty five degrees Fahrenheit (35°F), protect all completed areas by approved methods against detrimental effects of freezing. Correct completed areas damaged by rainfall, freezing, or other weather conditions to meet specified requirements.

PART 2 - PRODUCTS

2.1 FILL (IMPERVIOUS MATERIALS)

- A. Soils used for areas identified as 'Fill (Impervious Materials)' in the Contract Drawings shall meet the following requirements:
1. The clay soils shall be clean and free of trash, organics, hazardous compounds, asbestos, or other deleterious materials.
 2. The clay soils shall be rated as Grade 1 (non-dispersive) when tested in accordance with ASTM D6572 (Crumb Test).

3. The clay soils shall be rated as ND1 or ND2 as evaluated using ASTM D4647 (Pin Hole Test).
4. The clay soils shall have a percent dispersive less than thirty (30) evaluated using ASTM D4221 (Double Hydrometer).
5. The materials shall consist of low to moderate plasticity clay soils and be classified as CL in accordance with the Unified Soil Classification System (USCS). Soils classified as ML, MH, SC, SM, SP, or gravels shall not be permitted.
6. The clay shall have a Plasticity Index in the range of fifteen (15) to thirty (30) with a maximum Liquid Limit of forty five (45).
7. Gradation shall consist of dry material with a minimum of sixty percent (60%) passing a US Standard No. 200 sieve and of one hundred percent (100%) of the dry material passing the one (1) inch sieve.
8. The material shall contain less than thirty five percent (35%) sand content by weight.
9. Large clay clods shall be pulverized and reduced to less than one half (½) inch in diameter.
10. Rock, gravel and other oversized material (greater than one (1) inch in diameter) shall not be permitted.
- 11. Clay used as the impervious layer shall not be blended with any other material if it meets the requirements of 35.41.00 2.1.A.(1) through (10) in situ at the borrow pit.**
12. The intent is to build a hard, solid, competent, impervious levee. The impervious fill used in levee construction shall be homogenous throughout any levee section in its physical characteristics (hard, solid, competent, and impervious).
13. The final product shall be a hard, competent, solid soil mass. Contractor must be aware of the fact that there are some clayey materials that even though they fulfill the specifications as a clay layer, do not hold together after twenty four (24) to thirty six (36) hours of drying time. The Contractor shall be responsible for running any necessary tests to make sure that these materials are not used as levee embankment fill material.
 - a. If the levee material becomes soft and/or friable after drying, it shall be removed and replaced with material that produces a hard, competent, solid soil mass.
14. Use Clean Fill as defined by the USIBWC: Fill material that meets or exceeds the TCEQ Texas Risk Reduction Program (TRRP) rules (30 TAC §350.21(m)), median background concentration levels.

2.2 TOPSOIL MATERIAL

- A. In general, topsoil material shall be material organic in nature and capable of sustaining the specified vegetative growth. The Contractor may elect to stockpile and

reuse existing onsite topsoil material, stripped in preparation of the fill, excavation, or general construction, if the topsoil material meets the requirements of ASTM D5268.

1. Unsuitable stripped material becomes the property of the Contractor and shall be removed from the site. Stripped material is addressed within Section 31.14.00.
2. Topsoil from offsite sources, proposed by the Contractor and compliance confirmed by the COR, shall be supplemented as necessary when there is insufficient acceptable onsite sources.
3. Topsoil material shall be free from clay lumps, weeds, litter, brush, matted roots, toxic substances, or any material harmful to plant growth or which would hinder grading, planting, operation, or maintenance operations.
4. Topsoil material shall comply with ASTM D5268.
5. Topsoil material shall not contain more than five percent (5%) by weight of stones or other such objects larger than one (1) inch in any dimension.
6. Topsoil salinities must be at a level that are conducive to plant growth, including the establishment of native grasses and forbs as used in the seeding mix. The Contractor is responsible for performing any tests necessary to determine if the topsoil material is appropriate for plant growth.

2.3 SALVAGED MATERIAL

- A. The Contractor is allowed to reuse, as topsoil only, the salvaged material excavated from the existing levee embankment (with the exception of re-using excavated existing Flex Base as new Flex Base material) if it meets the material requirements for topsoil specified herein and is approved by the COR. The reused material can be blended with other material in which case the final product must meet or exceed all material requirements from this Section and the Contract Drawings.
 1. Reused material may not be blended for Fill (Impervious Material).
- B. If the Contractor chooses to blend material to meet the topsoil material requirements herein, the Contractor shall submit a blending plan which outlines all steps, materials, equipment, labor, etc. that the Contractor will use to assure material is blended into one homogeneous mixture.
- C. If issues with the blending, placement, or compaction of material arises, El Paso County shall discontinue allowing blending of materials.
- D. The Contractor is required to obtain their own soils testing laboratory and provide results of the material stockpile for COR final compliance confirmation.
- E. All stockpiling, blending, testing, and any other related labor, equipment, materials, storage areas are the sole responsibilities and the cost of the Contractor.

2.4 UNSUITABLE MATERIAL

- A. Unsuitable materials or unsatisfactory materials are subgrade materials made up of woody debris, garbage, organics, or any item not defined as stone or soil.
- B. Existing, in-situ subgrade material that does not meet these specifications for fill is considered unsuitable material.

2.5 EQUIPMENT

- A. Earthwork construction equipment intended for the tasks identified hereinafter shall comply with the requirements specified.
- B. Towed Tamping Rollers
The design and operation of the tamping roller shall be subject to the compliance confirmation of the COR who shall have the right at any time during the prosecution of the work to direct such repairs to the tamping feet, minor alterations in the roller and variations in the weight as may be found necessary to secure optimum compaction of the earth fill materials. The Contractor may be required to add ballast to the roller to the maximum capacity specified by the manufacturer of the roller. The use of the rubber-tired tractor shall be discontinued if the tires leave ruts that prevent uniform compaction by the tamping roller.
- C. Vibratory Rollers
Vibratory rollers shall be used for compacting pervious materials in random fill, drainage fill, or aggregate surfacing.
- D. Self-Propelled Tamping Rollers
Self-propelled tamping rollers may be used in lieu of towed tamping rollers provided the foot pressure on the tamping feet of the self-propelled roller are approximately the same as the foot pressure on the towed roller. The COR has the authority to limit or eliminate the use of self-propelled rollers if they are found to cause shearing or laminations of the compacted fill.
- E. Hand Operated Power Tampers
In areas where large equipment is not allowed or it is impracticable to use a roller, compaction shall be performed by the use of compliance confirmed hand operated power tampers. Hand operated power tampers shall be used for compaction impervious materials and shall be capable of compacting material in a confined area. The character and efficiency of this equipment shall be subject to the compliance confirmation of the COR.
- F. Hand Operated Vibratory Plate
In areas where large equipment is not allowed or it is impracticable to use a vibratory roller, compaction shall be performed by the use of a compliance confirmed hand operated vibratory plate. The character and efficiency of this equipment shall be subject to the compliance confirmation of the COR.

G. Wetting Equipment

Wetting equipment shall consist of tank trucks, pressure distributors or other equipment designed to apply water uniformly and in controlled quantities and rates to variable surface widths. Wetting equipment compliance confirmation shall be based on demonstration of satisfactory performance. Wetting equipment types and operations shall not compact or excessively wet the material to receive the moisture and shall not result in standing water within the material to be wetted or areas adjacent the staging.

H. Materials' Manipulation Equipment

Scarifiers, discs, pulverizers, spring-tooth or spike-tooth harrows, spreaders, and other equipment shall be suitable for use in manipulating materials in preparation of use in construction. Equipment shall be subject to compliance confirmation by the COR and shall be based on demonstration of satisfactory performance. Equipment used for blending materials shall be capable of penetrating the full thickness or capable of processing the full thickness of the material. Satisfactory performance shall be based on consistent complete and thorough processing of the material or materials.

1. If incomplete mixing of the material occurs, the COR can require the Contractor to use different equipment up to and including a pulverizer.

I. Other Earthwork Equipment

Other Equipment not mentioned such as equipment for earthwork extraction and handling shall be subject to COR compliance confirmation, and compliance confirmation shall be based on continued satisfactory performance. When conditions change, equipment changes may be required.

1. The Contractor shall be made aware of conditions specific to a floodplain with a fluctuating river adjacent to the work, the Contractor shall consider operational (or trafficability) problems such as, but not limited to, pumping of water and materials to the surface by moving equipment as well as bogging of equipment in soft, wet ground.
2. Selection and proposal of equipment in the Plan of Operations shall account for ground conditions associated with floodplains near a fluctuating river.

- J. Provide machinery, tools, and equipment necessary for proper execution of the work. Provide proof rollers when required.

PART 3 - EXECUTION

3.1 GENERAL CONSTRUCTION

- A. All work shall be in compliance with the requirements of the construction documents including compliance confirmed submittals.

B. Diversion, Dewatering, and Runoff Control

Where diversion, dewatering and/or runoff control is necessary, the Contractor shall submit a 'Construction Sequencing Plans' for COR review.

1. Diversion, surface and groundwater control shall be accomplished as necessary in coordination with the required excavation and fill placement.
2. Runoff control shall also include control of discharges from pipes either currently discharging or discharging as a result of being severed.
3. Surface water and/or groundwater control may necessitate the use of temporary diversion ditches or berms, cofferdams, and/or pumping from wells, well points, and/or sumps.

C. Moisture Content Adjustment

1. General

The Contractor shall develop a plan for adjusting moisture contents of the available fill material to achieve the proper placement and compaction. Moisture content for Fill (Impervious Material) may require air drying or additives for moisture content reduction or sprinkling and mixing to increase the moisture content. Contractor may propose alternative methods to adjust moisture contents. The submittal shall include in detail the planned procedures. Adjustment of moisture content shall not be an added expense to El Paso County.

2. Air Dry

The Contractor may reduce the moisture content by staging operations to allow spreading of material and disking the soil to expose it to air and sun. The submittal shall address such tasks as efforts to acquire the wet material from the borrow area, borrow sequencing, location of spreading, procedure to avoid crusting of the spread soil or exposed borrow, plan to avoid introduction of moisture from rainfall, continuous aeration, seasonal complications, and transfer of material to the fill zone. The submittal shall also address in detail staging, equipment, and anticipated results.

3. Admixtures

The Contractor may reduce the moisture content by mixing additives within the wet soil. The submittal shall address in detail as a minimum the procedure, equipment, mixture, and case studies where used before (under similar circumstances). Applicable requirements considered within the air dry option shall also be included within this submittal. The use of lime or other drying agents, compliance confirmed by the COR, may be proposed by the Contractor. The submittal shall also include moisture-density curves developed for the material types and admixture percentage. The moisture-density curve for the fill with the admixture (drying agent) shall be used to establish the maximum dry density and optimum moisture content for the fill type with the drying agent incorporated. Adjustments in the drying agent will constitute a different fill material type and will be subjected to the required testing. Any drying agents incorporated into the embankment material must be environmentally safe for placement into an aquatic environment.

3.2 SHORING, SHEETING, AND BRACING

- A. Where excavation or fill support is necessary to support earth, protect adjacent features, or maintain worker safety, the support system shall be designed in accordance with Standard design criteria and submitted for COR compliance confirmation.
- B. Design shall be completed by a Texas registered professional engineer with experience in this kind of work. Shoring, sheeting and bracing shall not be used in lieu of the required excavation slopes where there is sufficient space for cut back slopes.
- C. The design and submittal shall also address removal of the excavation or fill support. All shoring, sheeting and bracing shall be removed as fill and backfill operations progress and the void filled by a COR compliance confirmed method.

3.3 EXCAVATION OPERATIONS

- A. Excavation shall consist of removal to the lines and grades shown on the Contract Drawings, including benching, and the handling to include stockpiling, loading, hauling, disposal, and/or placement as required. Excavations shall be maintained free of debris of any sort or deposited material. Excavations shall be protected from surface runoff. Excavation drainage and dewatering shall be coordinated as required by these construction documents to include compliance confirmed submittals. Excavation shall not be initiated until utilities have been cleared.
- B. Clearing, grubbing, and stripping shall conform to Section 31.11.00 Preparing Right of Way.
- C. Excavation for Keys and Benches
 - 1. The Contractor shall excavate into the existing levee to create a series of keys and benches as shown in the Contract Drawings with the bench placed within the slope rather than constructed at the toe of the slope.
 - 2. The keys and benches reduce the risk of formation of a preferential failure surface at the old/new fill interface.
 - 3. Typical bench consists of an eight (8) foot long horizontal and two (2) or three (3) foot high vertical section depending upon the applicable Typical Section in the Contract Drawings.
- D. Over-Excavations
 - 1. Over-Excavations OUTSIDE the Limits of the Levee
Over-excavation outside the limits of the foundation of the levee (or structure or pipe within the levee alignment) shall be backfilled to grade with similar materials or a COR compliance confirmed alternate material and compacted to a density of at least that of the surrounding undisturbed material or if an alternate material is compliance confirmed, to the density required for that material type.

2. Over-Excavations WITHIN the Limits of the Levee
 - a. Over-excavation within the limits of the foundation of the levee (or structure or pipe within the levee alignment) shall be performed as shown in the Contract Drawings. The over-excavation of the existing levee shall be at least twelve (12) inches from the existing grade and may need to be extended or deepened, as necessary, to remove unsuitable soil, if encountered. The over-excavation in the levee embankment shall include a series of benches with a typical bench consisting of minimum eight (8) foot long horizontal and maximum three (3) foot high vertical sections as shown on the Contract Drawings. Exposed subgrade soil after over-excavation is completed may need to be dried prior to receiving backfill material. Over-excavated area shall be backfilled to grade with Fill (Impervious Material) in accordance with the compaction requirements herein.
 - b. Over-excavation shall include a one (1) to three (3) feet deep key with a minimum width of six (6) feet along the riverside toe of the new levee.
3. Over-excavation not agreed to in writing by El Paso County shall be for the Contactor's convenience and shall not be included in measurement and payment for excavation or for backfill.

E. Stockpiles

1. Stockpiled material shall be placed such that any part of the stockpile is no closer to the excavation than a distance equal to the depth of the excavation.
2. Stockpiled material placed the minimum distance from the excavation shall not be higher than the adjacent excavation depth and shall maintain the slope of the excavation. Stockpiles material shall be no taller than 1.25 the height of the levee at that location.
3. Stockpiles shall be left with safe side slopes. Vertical side slopes are not allowed.
4. Stockpiling shall be performed in accordance with the requirements of Section 31.14.00.
5. Stockpiles shall be protected from contamination of differing materials, natural occurrences, and general construction activities.

3.4 FILL (IMPERVIOUS MATERIAL) OPERATIONS

A. In general, fill operations shall conform to the requirements in these construction documents and compliance confirmed submittals. Specified testing shall be required to verify the specified ranges or limits are met and to verify adequacy of the procedure. It is the Contractor's sole responsibility to achieve the compaction requirements defined herein. If the specified ranges and limits and/or procedure are not met, then the Contractor shall adjust the operations for compliance and the fill shall be reworked at no additional cost to El Paso County.

B. Limits of Fill Operations

Fill shall be placed to the lines and grades and within the appropriate fill zone as indicated within the Contract Drawings and as described herein. Only compliance

confirmed materials as defined herein shall be placed in the appropriate fill zones. Topsoil shall be placed within the fill lines indicated on the Contract Drawings per the requirements herein. Unsatisfactory materials shall be the responsibility of the Contractor for disposition. The Contractor shall place fill in such a manner as to prevent mixing of material types especially at the fill zones' interfaces.

C. Surface Preparation for Fill Placement

Clearing, grubbing, stripping, and/or general excavation shall be completed as required prior to any fill operations, in accordance with Section 31.11.00 Preparing Right of Way.

Fill shall not be placed until the area to receive the fill has been inspected and compliance confirmed by the El Paso County Inspector.

D. Minimum Density and Moisture Content

1. Surfaces subjected to fill

- a. Surfaces subjected to fill include the prepared surface of in-situ subgrade soils and the prepared surface of the previously placed lift.
- b. In-situ subgrade surfaces and surfaces of the previously placed lifts shall be moisture-conditioned by scarifying to a minimum depth of three (3) inches and re-compacting to a minimum of ninety-five percent (95%) of the maximum dry density as determined from ASTM D1557 and as shown on the Contract Drawings.
- c. The moisture content of the in-situ subgrade surfaces and surfaces of the previously placed lifts should be maintained within the range of optimum moisture content to two (2) percentage points above the optimum moisture content while fill operations occur.

2. Compact each layer of Fill (Impervious Material) to a minimum of ninety-five percent (95%) of the maximum dry density as determined from ASTM D1557 and as shown on the Contract Drawings.

3. The moisture content of the Fill (Impervious Material) should be maintained within the range of optimum moisture content to two (2) percentage points above the optimum moisture content while fill operations occur.

4. Fill shall be placed in layers and compacted in accordance with the provisions for the specific material type required herein.

5. Where necessary the moisture content shall be adjusted for the scarified soil or the fill to be placed.

6. Surfaces shall be graded to drain.

E. Removal of Unsuitable Materials

Unsuitable materials or soil that has been subjected to conditions such as saturating rain or freeze conditions, shall be removed prior to placement of fill.

F. Benching

When fill is to be placed against the existing levee embankment, the Contractor shall create a series of benches into the banks, conforming to the methods described in Paragraph 3.3 E.

G. Placement of Fill

In general, placement of fill shall be in accordance with the requirements of the Technical Specifications and to the lines and grades shown on the Contract Drawings.

Fill shall be placed in horizontal layers only. The Contractor shall note zone callouts in the Contract Drawings for specific material types.

H. Fill Placement

1. The levee embankment is to be raised in eight (8) inch loose, six (6) inch compacted, lifts. The fill material placed within the levee embankment slopes shall be compacted as required to meet the requirements of Paragraph 3.4 D. If the minimum compaction is not achieved, the lifts shall be reworked. If compaction testing fails again, placement shall be discontinued until the COR makes a determination.
 2. To ensure proper compaction of the final lift, the compacted fill for the levee embankment is to be overbuilt a minimum of two (2) feet past the final slopes and grades and then trimmed to the finished grade. The overbuilding shall occur in five hundred (500) feet sections measured along the centerline of the levee. The overbuild will not be placed within four (4) feet of any structure.
 3. To ensure a competent finished top lift, the Contractor shall ensure that the completed top lift is at least three (3) inches thick after compaction. If the final cut reduces the thickness of the top lift to less than three (3) inches, the Contractor shall scarify the top lift to a depth of at least six (6) inches and then re-compact the section.
 4. If the dumped impervious material requires breaking up, then the Contractor shall propose a procedure, which shall be compliance confirmed subject to satisfactory demonstration of effectiveness.
- I. The Contractor shall be required to perform whatever work is required to achieve the required densities for the Fill (Impervious Material). This work shall include complete removal of unacceptable fill areas, and replacement and recompaction until acceptable fill is provided. Material removed which does not conform to the requirements for fill and excess excavated materials shall be hauled away from the project site by the Contractor and disposed of in compliance with ordinances, codes, laws, and regulations at no additional cost to El Paso County.

J. Proof Rolling

1. Once a site is cleared, grubbed, stripped, and/or excavated, the site shall be proof rolled to locate loose, saturated, or soft zones.
2. Loose and soft zones shall be removed and disposed.
3. Surveys for excavation volume shall be conducted prior to proof rolling.

- K. Placement practices throughout each fill zone of the levee shall be such that the fill will be free from lenses, pockets, streaks, and layers of material differing in texture, gradation, or classification from surrounding material of the same material type. If within the same material type lenses, pockets, streaks, or layers are encountered, the Contractor shall spread and mix the materials by a COR compliance confirmed method in order to form a homogeneous blend of the materials.
- L. The finished levee embankment shall be homogenous in material and compaction characteristics. No evidence of placement layers/lifts shall be visible in the final product. Each lift of fill shall be thoroughly bounded to the prior lift/subgrade. In no instance shall any two lifts be able to be easily separated.
- M. The finished levee embankment shall be a hard, competent, solid soil mass. The dried clay shall not be brittle, crumbly, or friable.
- N. The levee typical sections shall be maintained throughout the work zone. No deviations in cross section shall be greater than three (3) inches longitudinally unless shown on the Contract Drawings. The sides of the levee shall not have a wavy appearance.

3.5 TOPSOIL FILL OPERATIONS

- A. Where vegetative cover is scheduled, topsoil shall be placed within the limits of the lines and grades of the Contract Drawings but not to exceed the specified topsoil thickness of six (6) inches.
- B. Topsoil shall only be placed where vegetative cover is scheduled. Topsoil shall be compacted by one (1) pass over each eight (8) inch loose lift thickness. Topsoil shall not be placed in more than an eight (8) inch loose lift thickness.
- C. Moisture Content of Topsoil Material
The moisture content for the topsoil material to be placed shall be such that compaction effort is kept to a minimum yet sufficient to hold the soil together and support vegetative cover.

3.6 FILL TOLERANCES

- A. Fill areas shall be constructed to the grades, lines, and cross sections shown on the Contract Drawings and as directed herein. Allowance of tolerance is for Contractor's constructability purposes only and there will be no additional compensation by El Paso County for Contractor's utilization of grade tolerance.
 - 1. The vertical tolerance for the final grade of Fill (Impervious Material) shall be zero (0) below and 0.1 foot above design grade.
 - 2. The vertical tolerance for the final grade for other surfaces (top of Flex Base) shall be 0.1 foot above or zero (0) below design grade.

3.7 MOISTURE CONTROL

- A. Materials being placed as fill shall be within the moisture content limits for the respective material type. Materials that are not within the specified moisture content limits either before or after compaction shall be reworked and the moisture content adjusted to obtain moisture content within the specified range.
- B. The project site is in a semi-arid to desert environment, and hot, dry conditions are expected in late spring through early fall and low humidity conditions are expected during the majority of the year. The soils must be maintained in a moist condition at all times and properly compacted in a timely, workmanlike manner.
- C. Surfaces to receive fill shall be monitored for moisture content. Whenever the surface to receive fill is either too dry or too wet, the moisture content of the surface shall be appropriately adjusted prior to placing the next fill lift.
- D. Once the fill has been placed to required lines and grades and has passed all required soils and density tests, the Contractor shall allow the material to dry out.

3.8 MATERIALS TESTING

- A. In general, the requirements specified herein are the minimum requirements. Additional testing shall be required when there is question on the material or fill placed or change of conditions occurring that may impact the material or placed fill. The Contractor shall perform quality control testing and shall use a certified laboratory. El Paso County will not provide quality control testing.
 - 1. El Paso County reserves the right to sample and test any material used on this Contract for quality assurance. El Paso County inspections are for the sole benefit of El Paso County.
- B. Test Reporting Frequency
Test results will be made immediately available to the COR upon request. The Contractor shall provide a certified hard copy of each test report to the COR within twenty four (24) hours of each test result or as requested by the COR. The original test report and an electronic copy of the original report are required. The electronic copy shall be a scan of the signed original or include a scanned electronic signature. Unsigned copies will not be accepted.
- C. Minimum soil classification tests apply whether the material is from a borrow pit or from excavations onsite.
- D. Fill (Impervious Material)
 - 1. ASTM D2487, grain size analyses, in accordance with ASTM D422 shall be performed during placement at a minimum rate of one (1) test per two hundred fifty (250) cubic yards of embankment material.
 - a. When performing ASTM D422, sieves sized two (2) inch, one (1) inch, 3/8 inch, 4, 10, 20, 40, 60, 140 and 200 shall be used at a minimum.

- b. ASTM D422 includes hydrometer testing of material below the 200 sieve.
2. Fill soils shall be tested in accordance with ASTM D6572 (Crumb Test) at minimum rate of one (1) test per two hundred fifty (250) cubic yards of compacted fill material.
3. Fill soils shall be tested in accordance with in accordance with ASTM D4647 (Pin Hole Test) at minimum rate of one (1) test per two hundred fifty (250) cubic yards of compacted fill material.
4. Fill soils shall be tested in accordance with in accordance with ASTM D4221 (Double Hydrometer) at minimum rate of one (1) test per two hundred fifty (250) cubic yards of compacted fill material.
5. Fill soils shall be tested in accordance with in accordance with ASTM D4318 (Atterberg Limits) at minimum rate of one (1) test per two hundred fifty (250) cubic yards of compacted fill material.
6. Sand content in accordance with ASTM D1140 at minimum rate of one (1) test per two hundred fifty (250) cubic yards of compacted fill material.
7. Any materials that do not meet the minimum test criteria shall be removed and replaced with suitable soils.
8. Prior to placing any Fill (Impervious Material), a (5) five-point (minimum) compaction test (ASTM D1557) shall be performed on the representative samples of the material to be used as fill.
 - a. Additional tests shall be required each time a new material is encountered or every two hundred fifty (250) cubic yards of compacted fill material, whichever provides for the greatest number of tests.
 - b. The moisture-density curves shall be compiled to form a family of curves which will be utilized to estimate optimum properties (maximum dry density and optimum moisture content) to be used with field density test.
9. Additional tests shall be required if noticeable changes in any material is observed.

E. In-Situ Subgrade Soils

1. Soil classification tests (ASTM D2487) shall be performed on foundation materials as required to determine the properties of the in situ soils.
2. Moisture-Density Relationship
Subgrade materials shall be tested in accordance with ASTM D1557 at minimum rate of one (1) test for each type of material exposed in the subgrade or one (1) test for every seven thousand five hundred square feet (7,500 ft²) of exposed subgrade, whichever produces the greater number of tests.
3. Density Requirements
 - a. The subgrade under the new levee and under Fill (Impervious Material) shall be compacted to a minimum of ninety-five percent (95%) of the maximum dry density as determined from ASTM D1557

- b. The subgrade under the Flex Base, shall be maintained at a minimum of ninety five percent (95%) of the maximum dry density as determined from ASTM D1557.
- c. The subgrade under topsoil shall be compacted to a minimum of ninety percent (90%) of maximum dry density per ASTM D1557.

4. Moisture Content

- a. The subgrade under Fill (Impervious Material) shall be scarified and recompactd while between optimum and two (2) percentage points above optimum.
- b. The subgrade under new Flex Base shall be scarified and recompactd while between optimum and two (2) percentage points above optimum.
- c. The subgrade under topsoil shall be scarified and recompactd while within two (2) percentage points plus/minus of the optimum moisture content.

F. Topsoil

- 1. ASTM D5268 shall be performed during placement at a minimum rate of one (1) test per one hundred fifty (150) cubic yards of topsoil.
 - a. Each soil sample shall be a composite sample from no less than six (6) random areas within the sample area to a depth of four (4) inches.
 - b. Collected soil shall be mixed within a clean, non-metallic container.
 - c. All organic matter from existing vegetation shall be removed from the soil sample prior to submission to the testing laboratory.
- 2. Additional tests shall be required if noticeable changes in material is observed.
- 3. These testing requirements apply to all topsoil whether brought in from offsite or if onsite material is reused.

G. Moisture Content Tests

- 1. One moisture content test in accordance with ASTM D6938 shall be performed whenever an in place density test is performed.
- 2. Fills not meeting the required specifications for moisture content shall be retested after corrective measures have been applied.
- 3. When conditions exist throughout the placement process such as drying winds or sun or wetting from precipitation, additional testing shall be completed throughout the placement process to ensure proper moisture content. The COR shall determine the frequency of additional testing.
- 4. Whenever a change of material occurs, a laboratory moisture content (ASTM D2216) shall be obtained to verify the nuclear gauge reading. Additional ASTM D2216 tests shall be performed once every ten (10) nuclear density (ASTM D6938) tests performed to verify the nuclear gauge reading.
- 5. The Contractor and/or QC Laboratory shall correlate the moisture tests taken by ASTM D2216 and ASTM D6938 to ensure that testing procedures are within industry guidelines. USIBWC Form 240 shall be used for each ASTM D2216 correlation test performed.

H. In-Place Density Tests

1. In-place density shall be determined in accordance with ASTM D1557 and ASTM D6938.
2. Fill in-place density tests shall be performed at least two (2) tests per day or one (1) test every two hundred and fifty (250) cubic yards placed, whichever provides for the greatest number of tests. Additionally, the Contractor shall perform in place density tests for the fill material when requested by COR.
3. Placed fill not meeting the required specifications for in-place density shall be retested after additional compaction has been completed.
4. Subgrade
 - a. Immediately prior to placement of Fill (Impervious Material) or Flex Base, subgrade materials shall be tested in accordance with in accordance with ASTM D6938 at minimum rate of one (1) test per seven thousand five hundred square feet (7,500 ft²) of exposed subgrade or once per workday, whichever provides for the greatest number of tests.
5. During ASTM D6938 nuclear density tests, the probe shall extend through both the newly added lift and the scarified prior lift (e.g., 6" lift plus 3" scarification equals probe of 9", minimum). Tests into scarified and compacted subgrade shall be taken at a twelve inch (12") depth.
6. Each submittal including density test data shall include a copy of the testing laboratory's summary of all densities performed for a given workday as well as all tests and samples taken.
7. Include USIBWC Forms 237 and 241 for all days when nuclear density tests are performed.

I. The Contractor shall perform additional tests at the request of the COR.

3.9 CONTRACTOR QUALITY CONTROL

A. Contractor quality control in support of the earthwork shall include all efforts to ensure compliance with these construction documents to include support of El Paso County efforts as part of quality assurance. The Contractor shall immediately report to the COR in writing all conditions identified in the field as a change. The Contractor efforts in support of Contractor earthwork quality control shall include but not be limited to the items indicated hereinafter.

B. Excavation

The Contractor shall complete all efforts to ensure compliance with the construction documents in support of excavation requirements for required excavation and excavation in support of non-pay items such as borrow areas. Contractor efforts shall include but not be limited to the following:

1. Maintain records and complete as-built drawings and submit to the COR as required.

2. Complete all surveys to ensure excavations to all specified lines and grades within specified tolerances.
3. Complete utility location prior to excavations and documenting the utilities as required.
4. Use only compliance confirmed equipment for work and modify as necessary and as compliance confirmed by the COR.
5. Complete segregation of materials to include testing, stockpile, placement, removal offsite, and providing for protection of segregated materials.
6. Complete operations to ensure protection of levee embankment and stockpile from runoff and discharges.
7. Complete operations to ensure stability of levee embankment and stockpiled material.

C. Fill

1. The Contractor shall complete all efforts to ensure compliance with the construction documents in support of fill operations' requirements for levee embankment, structure backfill, permeable backfill, general fill, and topsoil. Contractor efforts shall include but not be limited to the following:
 - a. Maintain records, test results, and complete as-built drawings and submit to the COR as required.
 - b. Use only compliance confirmed equipment for work and modify as necessary and as compliance confirmed by the COR.
 - c. Complete all surveys to include survey control, grade stakes, and survey sections to ensure proper project layout and that fill limits are met to include fill zones and overall fill.
 - d. Complete all proper surface preparation to receive fill.
2. Complete all testing of materials and fill placed to ensure compliance with the construction requirements. Properly place and compact appropriate materials and protect partially and completed fill operations.
3. The Contractor shall perform whatever work is required to achieve the required densities for the compacted fill. This work shall include complete removal of unacceptable fill areas, and replacement and recompaction until acceptable fill is provided. Material removed which does not conform to the requirements for fill and excess excavated materials shall be hauled away from the project site by the Contractor and disposed of in compliance with ordinances, codes, laws, and regulations at no additional cost to El Paso County.

D. Miscellaneous

Contractor shall perform all work in accordance with the construction documents and compliance confirmed submittals. All necessary surveys shall be completed as well as maintaining all records and complete as-built drawings.

E. Testing and Reporting

The Contractor shall complete all testing in accordance with the requirements of these construction documents and shall continue to do so until testing results meet all requirements of the project sections and are compliance confirmed by the COR at no additional cost to El Paso County. Testing specified shall be considered the minimum requirement.

1. When there is question of the material or the fill placed or conditions occurring in the field that may impact the material or fill placed properties, the COR may require additional testing and the Contractor shall complete the additional testing at no additional cost to El Paso County.
 2. As part of quality assurance, El Paso County may perform testing. The Contractor shall provide the samples for El Paso County testing and when the testing is to be performed in the field, the Contractor shall provide the testing equipment at no additional cost to El Paso County.
 3. The Contractor shall furnish records, test results, and related documentation to the COR in accordance with the requirements of these construction documents.
- F. All test reports and other collected data shall be provided to the COR daily with the Contractor's Daily QC Report.

3.10 EQUIPMENT TRAFFIC ON FOUNDATION AND FILL ZONES

- A. Equipment traffic shall be routed to distribute the compaction effort as much as practicable. Ruts formed in the surface to receive fill material shall be filled before that material is compacted.
- B. Surfaces made smooth prior to receiving fill shall be scarified.
- C. Surfaces rutted or damaged after compaction shall be re-scarified and recompacted within allowable moisture levels.

3.11 COMPLETED AND PARTIALLY PLACED FILL

- A. Fill placed, completely or partially, shall be shaped to drain from the fill and graded to drain away from the fill.
- B. The Contractor shall protect the fill from erosion until the vegetative cover is established. Erosion occurring during the interim shall be the Contractor's responsibility to repair at no additional cost to El Paso County.
- C. Should a slide occur in any part of the embankment during its construction or after its completion, but prior to its expiration of the warranty period, the Contractor shall repair the levee embankment with a compliance confirmed method at no additional expense to El Paso County.

3.12 EMBANKMENT SURFACE EROSION REPAIR OPERATIONS

- A. In general, embankment surface repair operations shall conform to the requirements herein these construction documents and compliance confirmed submittals. The operations shall take place in the areas where drainage rills were observed along the landside slope of the levee embankment.
 - 1. The methodology shall primarily be a procedural specification with specific material properties maintained within a specified range or limit.
 - 2. Specified testing shall be required to verify the specified ranges or limits are met and to verify adequacy of the procedure. If the specified ranges and limits are met and the procedure testing doesn't deliver the defined compaction results, then an adjustment in the procedure may be specified and an equitable adjustment made in the price to the Contractor or in lieu of this, the COR may adjust the compaction values. If the specified ranges and limits and/or procedure are not met, then the Contractor shall adjust the operations for compliance and the operations reworked at no additional cost to El Paso County.

- B. The Contractor shall bench into the existing slope as shown in the Contract Drawings. Each bench shall contain multiple lifts (at maximum depths designated in the Contract Drawings) that butt-up against the vertical face of the bench and shall be re-compacted with each lift until the minimum compacted dry density is achieved.

--End of Section--