CONTRACT DOCUMENTS

AND

SPECIFICATIONS

FOR

PALOS VERDES DAM MODIFICATIONS & PARK IMPROVEMENTS FOR THE CITY OF MESQUITE, TEXAS PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION CITY CONTRACT NO. 2019-083



Prepared by:



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Texas Board of Professional Engineers Registration No. 2144

MAY 2019

SPECIFICATIONS SEAL PAGE

FOR

PALOS VERDES DAM MODIFICATIONS & PARK IMPROVEMENTS



Micah L. Hargrave, P.E.

GENERAL/CIVIL



STRUCTURAL

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Tentative Schedule

PALOS VERDES DAM MODIFICATIONS & PARK IMPROVEMENTS City Contract No. 2019-083

Substantial Completion (180 Calendar Day Contract)	January 18, 2020
Notice to Proceed - Start Construction (Assumes rapid execution of contract documents by the Co insurance and bonds)	July 22, 2019 ntractor with proper
*Council Awards Contract	July 1, 2019
Agenda Item & Council Briefing Completed	June 17, 2019
Open Bids	2:00 p.m., June 13, 2019
Pre-Bid Conference	2:00 p.m., June 6, 2019
2 nd Public Advertisement	Thursday, May 30, 2019
1 st Public Advertisement	Thursday, May 23, 2019
Submit Public Advertisement to Purchasing	Thursday, May 20, 2017

*City Council award date assumes no bidding irregularities or other issues with the low bidder requiring extensive checking of Qualifications.

ADVERTISEMENT FOR BIDS

Bid No. 2019-083

Sealed competitive bids or proposals as set forth and required in the plans and specifications (either of which shall hereinafter be referred to as the "Bid") addressed to the Mayor and City Council of the City of Mesquite, Texas will be received at the office of Ryan Williams, Manager of Purchasing at the Municipal Center, 1515 N. Galloway Ave., Mesquite, Texas 75149 until <u>2:00 p.m. on Thursday, June 13, 2019</u>, for the following: <u>Palos Verdes Dam Modifications & Park Improvements.</u>

As set forth in the plans and specifications, the project includes base bid items consisting of removal and replacement of the existing service spillway inlet and conduit, extension of the conduit to a new junction box downstream of the dam, and other general site improvements. Additional/alternate bid items include a new parking lot downstream of the emergency spillway and other associated general site improvements.

A <u>pre-bid conference</u> will be held <u>at 2:00 p.m. on Thursday, June 6, 2019</u>, at the Mesquite Arts Center located at 1527 N. Galloway Avenue, Mesquite, Texas 75149, in the Rehearsal Hall.

Paper copies of the Bid Documents and addendum may be obtained from the Engineering Division office, Municipal Center, 1515 N. Galloway, Mesquite, Texas 75149 upon a non-refundable payment of fifty dollars (\$50.00) per set or **digital copies** can be obtained through the Mesquite Purchasing Division website, <u>http://www.cityofmesquite.com/674/Bid-Openings-Specifications-Conferences</u>, and BidSync, <u>http://www.cityofmesquite.com/678/BidSync-Bid-Openings</u>. Questions shall be submitted through BidSync and response will be posted through BidSync. The Bid shall be submitted on the form provided in the Bid Documents.

Bidder must submit, with their Bid, a Cashier's check, Certified check or a Bid Bond from an approved surety company, in the amount of five percent (5%) of their Bid as a guarantee that the Bidder will enter into a contract and guarantee forms, if required, within 10 days after notice of award of contract.

The successful bidder must furnish Performance Bond and Payment Bond, each in the amount of 100 percent of the contract price, from an approved Surety company holding a permit from the State of Texas to act as surety, and acceptable according to the latest list of companies holding Certificates of Authority from the Secretary of the Treasury of the United States, or another Surety acceptable to the City.

Further information concerning the procurement may be obtained **by email only** from the City of Mesquite Engineering Division – Curtis J. Cassidy, P.E., CFM, City Engineer, <u>ccassidy@cityofmesquite.com</u>.

The right is reserved by the City of Mesquite to reject any and all bids.

CITY OF MESQUITE, TEXAS

Sonja Land City Secretary CITY CONTRACT: 2019-083 Publish: May 23, 2019 May 30, 2019

INSTRUCTIONS TO BIDDERS

- If you have questions regarding the preparation of your bid, you may contact Ryan Williams, Manager of Purchasing, City of Mesquite, telephone 972-216-6201. For technical questions send an email to *Curtis J. Cassidy, P.E., CFM, City Engineer, <u>ccassidy@cityofmesquite.com</u> and <i>Micah L. Hargrave, P.E., Project Manager, <u>mh@freese.com</u>.*
- 2. Mailed bids must be submitted in sufficient time to be received and time-stamped at the location in the advertisement on or before the published date and time shown on the Advertisement for Bids. The City of Mesquite is not responsible for mail delivered from the post office. Bids received after the published date and time will not be considered and will be returned unopened.
- 3. The Bidder/Contractor shall at all times observe and comply with all Federal, State and local laws, ordinances and regulations which in any manner affect the Contract or the work, and shall indemnify and save harmless the City against any claim arising from the violation of any such laws, ordinances and regulations whether by the Bidder/Contractor or his employees.
- 4. Prices shall be filled in and extended on the bid sheets. In case of discrepancy between unit price and the extension, the unit price will govern. Contractors may utilize the Microsoft Excel spreadsheet bid form available on the City's Purchasing Division web site. No other electronic forms will be accepted. A hard copy printout is required with the bid.
- 5. Bidder shall complete all information requested and blanks provided shall be filled in beside or under each bid item. Failure to completely describe the item being bid may result in rejection of the bid.
- 6. Prices quoted in the bid shall prevail for the entire term of the contract.
- 7. The Contract, Performance Bond and Payment Bond forms are included for Bidders information so that Bidders may be familiar with their contents and requirements. *Bidder shall not fill in or execute these forms at time of bid submittal.*
- 8. The City of Mesquite reserves the right to reject any and all bids, waive formalities and to make award of bid as may be deemed to the best advantage of the City. No bid may be withdrawn within one hundred and twenty (120) days after date of opening. The City may, at its sole discretion, release any Bidder and return the bid security prior to that date.
- 9. The City of Mesquite reserves the right to evaluate variations from these specifications. If exceptions are made, bidder shall state wherein the bid item fails to meet these specifications. Failure to completely describe the item being bid may result in rejection of your bid.
- 10. Any ambiguity in the bid as a result of omission, error, lack of clarity or non-compliance by the Bidder with specifications, instructions and all conditions shall be construed in favor of the City.
- 11. Quantities are estimated. It is specifically understood and agreed that these quantities are approximate and any increase or decrease in quantities may result in contract adjustments per General Provision 104.2.
- 12. Disadvantaged business/HUB vendors listed with the Office of Small Business Assistance of the General Services Commission are requested to provide a copy of their current certificate <u>with the bid.</u>
- 13. Bidders shall complete the non-collusion statement included in the bid.
- 14. All BIDDERS must submit **with the bid**, either a Bid Bond provided herein, Cashier's Check or Certified Check in the amount of 5% of the total bid per General Provision Section 102.5.

- 15. Bidders shall fill out the following forms, as noted in the bid and attach them to their bid and mail or deliver them prior to the bid closing date and time to the City of Mesquite Purchasing Division, 1515 N. Galloway, Mesquite, Texas 75149:
 - a. Bid Form (Proposal)
 - b. Disadvantaged Business Enterprises (DBE) Information
 - c. Prohibition On Contracts with Companies Boycotting Israel House Bill 89
 - d. Non-Collusion Statement
 - e. Conflict of Interest Questionnaire
 - f. Bid Bond
- 16. The <u>apparent low bidder</u> shall complete and deliver to the Engineering Division and City's Consulting Engineer <u>within 48-hours after the bid opening</u>, the following **Bidder's Qualification Information** documents:
 - Qualification Statement of Bidder. If additional space is needed, please use attachments.
 - Reference Statement of Bidder's Surety.
 - Bidder's Release of Qualification Information.
 - Bidder's List of Proposed Sub-contractors.
 - □ Financial Statement Reviewed or Audited by an Independent Certified Public Accountant (CPA) in accordance with Generally Accepted Accounting Principles (GAAP), prepared in the last 12-months for the bidder's company.
 - □ IRS W9 Form

All six (6) documents shall be delivered to the Engineering Division and City's Consulting Engineer as a single, complete package. No one form or statement will be accepted individually.

If a project is a "joint venture", all partners in the joint venture shall complete the qualification forms.

END OF SECTION

STANDARDS OF CONDUCT

The City of Mesquite conducts business with the public, business partners, vendors and contractors under a set of rules to ensure that all City officials and employees discharge their duties in a manner designed to promote public trust and confidence in our city. This code of ethics, titled Standards of Conduct, is taken from the Mesquite City Code, Chapter 2, Article IV, Sec 2-123.

The City wants you to be aware of the rules that its employees are required to follow while performing their services to you. A violation of state or federal statutes may occur if these rules are broken. It is hoped that by outlining these rules for you, your experience in dealing with the City of Mesquite will be both rewarding and satisfactory.

Acceptance of Gifts or Gratuities

Accepting gifts or gratuities by employees in consideration for the performance of their duties, or as an appreciation for their performance, is strictly prohibited.

- Please do not offer employees any gift, loans or any other thing of value.
- Employees may not receive any fee or compensation for their services from any sources other than the City, so please don't offer.
- Please do not offer to buy meals for employees.
- Employees may accept coffee, tea, soft drinks, snacks, etc. when attending meetings in your office.
- Letters to supervisors for exceptional service by employees are always welcome.

Conflicts of Interest

Employees are prohibited from engaging in any outside activities that conflict with, or have the appearance of conflicting with, the duties assigned to them in the employment of the City.

- Please do not ask employees for any special favor or consideration that is not available to every other citizen.
- Please do not ask an employee to disclose any information that is not available to every other citizen through normal public information channels.
- Please do not offer to compensate the employee by offering to hire, or do business with any business entity of the employee or family member
- Do not ask employees to represent you or your company or make any recommendations on your behalf other than those that are a part of their official duties with the City.
- Please do not ask employees to endorse the products or services of your company.
- Please do not ask employees to hand out or post advertising materials.

Solicitation by City Employees

Employees may not solicit gifts, loans, or any other items of value from people doing City business that will be used by them personally.

- If you are asked to pay a fee for services that you believe is improper or illegal, please contact the City's ethic's officer at **972-329-8723**. (Payments should only be made to designated cashiers or clerks.)
- Employees are prohibited from taking retaliatory action against you for failing to comply with any request unless the request is within the scope of the employee's official duties for the City.

Use of City Equipment, Facilities and Resources

Use of City equipment, facilities and resources is authorized only for City purposes and for those activities permitted by City ordinance and policy.

• Please do not ask employees to use City equipment to run errands or perform tasks for your benefit.

• Employees may not perform tasks, nor conduct any business not related to their official duties while on City time.

Your Rights and Expectations

When dealing with employees of the City of Mesquite you have the right to honest, fair and impartial treatment. You may expect prompt, courteous and professional service from our employees who are expected to understand and practice good customer service skills. Employees are tasked to uphold the public trust through the ethical performance of their duties. We understand that the enforcement of regulatory guidelines and codes may sometimes be a cause for concern; however, you may rest assured that we are responsible to all of the citizens of Mesquite and our goal is to serve them to the best of our ability.

Should you have any concerns or questions concerning this information or the conduct of any of our employees please contact the City's ethics officer at 972-329-8723. All calls to the City's ethics officer are confidential and your name (or any other identifying information) will not be disclosed.

Cliff Keheley City Manager

PROPOSAL

To: The Honorable Mayor and City Council Members Purchasing Office - Municipal Center City of Mesquite 1515 N. Galloway Avenue Mesquite, Texas, 75149

Pursuant to the Advertisement for Bid, Proposal, Contract, Bond(s), General Provisions, Special Provision(s), and Requirements and the Plans and Technical Specifications, the undersigned Bidder hereby proposes to do all the work and furnish all necessary superintendence, labor, machinery, equipment, tools and materials, and to complete all the work upon which he bids, as provided by the Specifications, and binds himself, on acceptance of the proposal, to execute a contract and bonds, according to the City of Mesquite forms, for performing and completing the said work within the required time, and furnish all guarantees, for the following prices, and the undersigned certifies that the bid prices contained in this proposal have been carefully checked and are submitted as correct and final, to wit:

PALOS VERDES DAM MODIFICATIONS & PARK IMPROVEMENTS

CITY CONTRACT NO. (2019-083)

PALOS VERDES DAM MODIFICATIONS & PARK IMPROVEMENTS

CITY CONTRACT NO. 2019-083

<u>Bid Form</u>

- 1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with CITY in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.
- 2. Bidder accepts all of the terms and conditions of the Advertisement for Bids and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. The Bid will remain subject to acceptance for one hundred and twenty days (120) after the Bid opening date, or for such longer period of time that Bidder may agree to in writing upon request of CITY.
- 3. In submitting this Bid, Bidder represents, as set forth in the Agreement, that:
 - A. Bidder has examined and carefully studied the Bidding Documents and the other related data identified in the Bidding Documents.
 - B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, and performance of the Work.
 - C. Bidder is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress and performance of the Work.
 - D. Bidder has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site.
 - E. Bidder has obtained and carefully studied (or assumes responsibility for having done so) all additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents to be employed by Bidder, and safety precautions and programs incident thereto.
 - F. Bidder does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the prices bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.
 - G. Bidder is aware of the general nature of work to be performed by CITY and others at the Site that relates to the Work as indicated in the Bidding Documents.
 - H. Bidder has correlated the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents.
 - I. Bidder has given CITY written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by CITY is acceptable to Bidder.

- J. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.
- 4. Bidder further represents that this Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any individual or entity to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over CITY.
- 5. Bidder will complete the Work in accordance with the Contract Documents for the following prices:

PALOS VERDES DAM MODIFICATIONS & PARK IMPROVEMENTS City Contract No. 2019-083 MESQUITE, TEXAS

ITEM	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
Base Bid Items (101-120) – Dam and Service Spillway					
101	Mobilization and Demobilization (Not to Exceed 5% of Total Bid)	LS	1	\$	\$
102	Storm Water Pollution Prevention Plan	LS	1	\$	\$
103	Care of Water During Construction	LS	1	\$	\$
104	Clearing and Grubbing/Demolition	LS	1	\$	\$
	Existing Drop Inlet and CMP Service Spillwa	ıy Condui	t		
	Existing Bag Wall				
	Existing Sidewalk along Dam				
	Existing Irrigation Components within Limits	of Excav	ation		
	Existing Sidewalk Section along Northwest	Drive			
	Existing Headwall (8" PVC)				
	Existing Headwall (2-48" RCP)				
	Existing Slope Protection along Northwest Drive				
	Tree Removal				
105	Excavation	LS	1	\$	\$
106	Trench Safety	LF	610	\$	\$
	Estimated for New Service Spillway and 36" RC Based on Excavation Plan	P; Actua	I Units to be De	termined by	Contractor
107	Service Spillway Drop Inlet Structure	LS	1	\$	\$
108	Install 12" Gate Valve	EA	1	\$	\$
109	CIP Culvert and Transition Structure	LF	195	\$	\$
110	TxDOT Standard Box Culvert (5'x3' RCB)	LF	292	\$	\$
111	Junction Box and Pipe Connections	LS	1	\$	\$
112	Lateral 1 (36" RCP)	LF	123	\$	\$
113	Lateral 1 Headwall (TxDOT CH-FW-0 Headwall)	LS	1	\$	\$

ITEM	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
114	Lateral 2 (8" PVC)	LF	16	\$	\$
115	Compacted Fill, Grading, and Vegetation	LS	1	\$	\$
116	Internal Dam Drainage	LS	1	\$	\$
	Filter Diaphragm				
	Filter Diaphragm Drain				
117	Modular Block Wall	SF	395	\$	\$
118	Irrigation and Electrical	LS	1	\$	\$
119	Sidewalk Replacement along Dam	SY	76	\$	\$
120	Sidewalk Replacement along Northwest Dive	SY	56	\$	\$
Alternate Bid Items (201-210) – New Parking Lot and Existing Parking Lot Improvements			5		
201	Mobilization and Demobilization (Not to Exceed 5% of Total Bid)	LS	1	\$	\$
202	Clearing and Grubbing/Demolition	LS	1	\$	\$
	Existing Sidewalk Section from Dam to North	hwest Dri	ve		
203	Excavation	LS	1	\$	\$
204	Compacted Fill, Grading, and Vegetation	LS	1	\$	\$
205	Parking Lot Concrete	SY	1,018	\$	\$
206	Sidewalk from Dam to Parking Lot to Northwest Drive	SY	164	\$	\$
207	Flexamat Erosion Protection	SF	1,700	\$	\$
208	Flexamat Termination Trench	LF	210	\$	\$
209	Irrigation and Electrical	LS	1	\$	\$
210	Misc. Existing Parking Lot Improvements	LS	1	\$	\$

TOTAL BASE BID (Items 101 to 120)

\$_____

\$_____

\$_____

BASE BID LABOR AND MATERIALS BREAKDOWN

- 1. Materials incorporated into the Project:
- 2. All other charges:

TOTAL ALTERNATE BID (Items 201 to 210)	\$
ALTERNATE BID LABOR AND MATERIALS BREAKDOWN	
1. Materials incorporated into the Project:	\$
2. All other charges:	\$
TOTAL BID (BASE AND ALTERNATE BIDS)	\$

NOTE: Materials and all other charges incorporated into the **PALOS VERDES DAM MODIFICATIONS & PARK IMPROVEMENTS** must equal bid amounts.

Pre-bid Inspection

The undersigned declares that he has personally inspected the site where the work is to be performed and that he has informed himself of all:

- (1) surface and subsurface conditions, constraints, and facilities which may in any way affect the work, in terms of cost, time, and/or constructability;
- (2) quantities, types, and nature(s) of materials to be incorporated into the work;
- (3) types and specialties of equipment, tools, labor, and superintendence required to perform the work;
- (4) other matters which in any way will affect the work and/or the performance of the work;
- (5) project plans, specifications and other project documents.

Commencement and Execution

The undersigned bidder agrees to commence the work on or before the date so stated in the written notice to proceed and to diligently perform all of the work and to substantially complete the work **within 180 calendar days**. Time shall commence on the first day of move-in, but in no case later than the date so stated in the written notice to proceed.

The Time of Construction as given above shall include all work related to this project. Included in the above Time and Construction shall be the necessary utility work involved with the franchise utility companies (i.e. Natural Gas, Telecommunications, Cable Television, Electrical Power, etc.).

The right is reserved by the City as is advantageous to the City, to reject any and all bids, award a contract based upon submitted bids, or to re-bid the contract and to waive any and all formalities. Bidder understands and agrees that the unit prices provided above shall be used for all additions and deletions from the accepted option.

Bidder submits as guarantee that he will execute and issue the required contracts, bonds, insurance, and other required agreements and documents, as set forth under the contract, and general and special provisions of agreement, cashier's check or bid bond payable in full without conditions and upon demand to the City of Mesquite in the amount of:

(\$),

representing 5% of the Bidder's total base bid price.

Bidder understands and agrees that, should he fail to execute and issue the contract, bonds, insurance, other agreements, and other documents as set forth under the general and special provisions of agreement for that certain contract known as the **PALOS VERDES DAM MODIFICATIONS & PARK IMPROVEMENTS and CITY CONTRACT No. 2019-083**, the City will cash or demand payment under the bid bond for payment of agreed upon liquidated damages. Bidder understands and agrees that, for bidding purpose only, liquidated damages shall be 5% of the Bidder's bid proposal, and that upon execution of the Contract, liquidated damages shall be as stated in the General Provisions.

<u>Addenda</u>

Contractor acknowledges receipt and incorporation into the bid of addendums as listed below:

Addendum No. 1 – Acknowledgement of Receipt:	(initial)
Addendum No. 2 – Acknowledgement of Receipt:	(initial)
Addendum No. 3 – Acknowledgement of Receipt:	(initial)
Addendum No. 4 – Acknowledgement of Receipt:	(initial)

Proposal Approval:

Company Name			
Signature:	Printed Na	me:	
Title:	Company	Address	
Telephone	City	State	Zip Code

(If Bidder is a Corporation Seal Proposal with Corporate Seal)

<u>SEAL</u>

DISADVANTAGED BUSINESS ENTERPRISE (DBE) INFORMATION

Disadvantaged Business Enterprises (DBEs) are encouraged to participate in City of Mesquite's bid. The Purchasing Office will provide additional clarification on specifications, assistance with Bid Proposal Forms and further explanation of bidding procedures to those DBEs who request it.

Representatives from DBE companies should identify themselves as such and submit a copy of the Certification.

The City of Mesquite recognizes the certifications of both the State of Texas General Services Commission HUB Program and the North Central Texas Regional Certification Agency. All companies seeking information concerning DBE certification are urged to contact

State of Texas HUB Program General Services Commission OR PO Box 13047 Austin, TX 78711-3047 512-463-5872 North Central Texas *Regional Certification Agency* 624 Six Flags Drive, Suite 216 Arlington, TX 76011 817-640-0606

If your company is already certified, attach a copy of your certification to this form and return with your bid.

FIRM NAME SUBMITTING THE BID	
REPRESENTATIVE	TITLE OF AUTHORIZED REPRESENTATIVE
ADDRESS	CITY, STATE, ZIP
TELEPHONE NUMBER	FACSIMILE NUMBER

Indicate al	I that apply:
-------------	---------------

□ Minority-Owned Business Enterprise

□ Women-Owned Business Enterprise

□ Disadvantaged Business Enterprise

PROHIBITION ON CONTRACTS WITH COMPANIES BOYCOTTING ISRAEL

House Bill 89, effective September 1, 2017, amended the Texas Government Code to add Chapter 2270, Prohibition on Contracts with Companies Boycotting Israel. Effective September 1, 2017, a state agency and a political subdivision (which includes a city) may not enter a contract with a company for goods or services unless the contract contains a written verification from the company that; (i) it does not Boycott Israel; and (ii) will not Boycott Israel during the term of the contract.

"Boycott Israel" is defined to mean refusing to deal with, terminating business activities with, or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations specifically with Israel, or with a person or entity doing business in Israel or in an Israeli-controlled territory, but does not include an action made for ordinary business purposes. "Company" is defined to mean a for-profit sole proprietorship, organization, association, corporation, partnership, joint venture, limited partnership, limited liability partnership, or limited liability company, including a wholly owned subsidiary, majority-owned subsidiary, parent company, or affiliate of those entities or business associations that exists to make a profit.

Ι,		, the
	(Name of Certifying Official)	(Title or Position of Certifying Official)
of		, does hereby verify on behalf of said
	(Name of Company)	

company to the City of Mesquite that said company does not Boycott Israel and will not Boycott Israel (as that term is defined in Texas Government Code Section 808.001) during the term of this contract.

Signature of Certifying Official

Title

Date of Certification

Non-Exclusion Affidavit - System for Award Management (SAM)

Federal, state, and local government agencies, not-profits, and other organizations that use federal money to fund all or part of any program or project are required to follow specific requirements regarding the use of such federal funds. One of these requirements is that no contract, subcontract, grant, financial assistance, or other forms of assistance provided using federal funds may be awarded to individuals or entities that have been suspended, debarred, or otherwise excluded from participation in federally funded programs.

The U.S. federal government maintains a Web site known as the "System for Award Management" (SAM) at <u>www.sam.gov</u>. One of the purposes of the SAM Web site is to provide a comprehensive list of all individuals, firms, and other entities that have been suspended, debarred, or otherwise excluded from participation in federally funded contracts, subcontracts, grants, etc. SAM provides a simple means of helping government, non-profit agencies, and other organizations ensure that they do not award federally-funded grants, contracts, subcontracts, or other financial or non-financial benefits to any individual, firm, or other entity that has been excluded by any agency from participation in such federally funded activities.

I, _______(Contractor Representative), hereby certify that neither I nor _______(Name of the company or organization I represent) nor any subcontractors that I or said company may employ to work on any federally funded activity have been suspended, debarred, or otherwise excluded by any federal agency from participation in any federally funded activity. I further acknowledge my understanding that, before entering into a contract with me or with the company or organization I represent, City of Mesquite staff will perform a search on www.sam.gov to verify whether I, the organization I represent, or any subcontractors I may employ to work on any federally funded activity, have been excluded from participation in any federally funded activity.

Signature of Contractor Representative		Date	
Notary			
Sworn to and subscribed before	me this day of	, 20	
Notary Public in and for	County,	(Insert State Name)	

NON-COLLUSION STATEMENT

The undersigned affirms that they are duly authorized to execute this contract, that this company, corporation, firm, partnership or individual has not prepared this bid in collusion with any other bidder and that the contents of this bid as to prices, terms or conditions of said bid have not been communicated by the undersigned nor by any employee or agent to any other person engaged in this type of business prior to the official opening of this bid.

Name of Company
Address
Phone
Email
Fax
Bidder (Signature)
Bidder (Print Name)
Position with Company
Signature of Company Official Authorizing This Bid
Company Official (Printed Name)
Official Position
SUBSCRIBED AND SWORN TO BEFORE ME, this day of, 201
(Notary Public in and for the State of Texas)
(Printed Name of Notary)
My commission expires

CONTRACTING WITH THE CITY OF MESQUITE

Updated: January 8, 2016

Conflict of Interest Questionnaire And Disclosure of Interested Parties (Form 1295)

YOU WILL BE REQUIRED TO COMPLY WITH THE FOLLOWING:

Chapter 176 of the Texas Local Government Code is an ethics law that was initially enacted by the Texas Legislature with HB 914 in 2005 that requires disclosure of employment and business relationships local government officers may have with contractors, consultants and vendors who conduct business with local government entities. The law applies to any written contract for the sale or purchase of real property, goods or services. Further information regarding Texas Conflict of Interest laws and the **Conflict of Interest Questionnaire** (Form CIQ) can be found at the Texas Ethics Commission web site at the following web address:

https://www.ethics.state.tx.us/filinginfo/conflict_forms.htm PLEASE COMPLETE THE ATTACHED FORM CIQ AND SUBMIT WITH YOUR RESPONSE.

Section 2252.908 of the Texas Government Code was enacted in 2015, by the Texas Legislature pursuant to HB 1295, which provides that a governmental entity may not enter into certain contracts with a business entity on or after January 1, 2016, unless the business entity submits a disclosure of interested parties (Form 1295) to the governmental entity at the time the business entity submits the signed contract to the governmental entity. Further information regarding the disclosure of interested parties law and Form 1295 can be found at the Texas Ethics Commission web site at the following web address:

https://www.ethics.state.tx.us/whatsnew/elf info form1295.htm

PLEASE DO NOT COMPLETE FORM 1295 UNTIL YOU HAVE BEEN NOTIFIED OF CONTRACT AWARD AND REQUESTED TO ELECTRONICALLY FILE FORM 1295 WITH THE TEXAS ETHICS COMMISSION.

CONFLICT OF INTE For vendor doing business	EREST QUESTIONNAIRE	FORM CIQ
This questionnaire reflects changes	made to the law by H.B. 23, 84th Leg., Regular Session.	OFFICE USE ONLY
This questionnaire is being filed in accord has a business relationship as defined l vendor meets requirements under Sectio	lance with Chapter 176, Local Government Code, by a vendor who by Section 176.001(1-a) with a local governmental entity and the n 176.006(a).	Date Received
By law this questionnaire must be filed with than the 7th business day after the date the filed. <i>See</i> Section 176.006(a-1), Local Ge	th the records administrator of the local governmental entity not later he vendor becomes aware of facts that require the statement to be overnment Code.	
A vendor commits an offense if the vendor offense under this section is a misdemea	or knowingly violates Section 176.006, Local Government Code. An inor.	
1 Name of vendor who has a busir	ess relationship with local governmental entity.	
2 Check this box if you are fil completed questionnaire wir you became aware that the	ing an update to a previously filed questionnaire. (The law rether the appropriate filing authority not later than the 7th busines originally filed questionnaire was incomplete or inaccurate.)	equires that you file an updated as day after the date on which
3 Name of local government office	r about whom the information is being disclosed.	
	Name of Officer	
Complete subparts A and B for e CIQ as necessary. A. Is the local gove other than investmer B. Is the vendor rece of the local governm local governmental e	ach employment or business relationship described. Attac rnment officer or a family member of the officer receiving or l ht income, from the vendor? Yes No eiving or likely to receive taxable income, other than investmen ent officer or a family member of the officer AND the taxable entity?	t income, from or at the direction income is not received from the
	Yes No	
5 Describe each employment or other business entity with res ownership interest of one per	business relationship that the vendor named in Section 1 n pect to which the local government officer serves as an o cent or more.	naintains with a corporation or officer or director, or holds an
6 Check this box if the ver as described in Section	ndor has given the local government officer or a family member n 176.003(a)(2)(B), excluding gifts described in Section 176.	of the officer one or more gifts 003(a-1).
7		
Signature of vendor doing	business with the governmental entity	Date
Form provided by Texas Ethics Commission	www.ethics.state.tx.us	Revised 11/30/2015

CONFLICT OF INTEREST QUESTIONNAIRE For vendor doing business with local governmental entity

A complete copy of Chapter 176 of the Local Government Code may be found at http://www.statutes.legis.state.tx.us/ Docs/LG/htm/LG.176.htm. For easy reference, below are some of the sections cited on this form.

Local Government Code § 176.001(1-a): "Business relationship" means a connection between two or more parties based on commercial activity of one of the parties. The term does not include a connection based on:

(A) a transaction that is subject to rate or fee regulation by a federal, state, or local governmental entity or an agency of a federal, state, or local governmental entity;

(B) a transaction conducted at a price and subject to terms available to the public; or

(C) a purchase or lease of goods or services from a person that is chartered by a state or federal agency and that is subject to regular examination by, and reporting to, that agency.

Local Government Code § 176.003(a)(2)(A) and (B):

(a) A local government officer shall file a conflicts disclosure statement with respect to a vendor if:

(2) the vendor:

(A) has an employment or other business relationship with the local government officer or a family member of the officer that results in the officer or family member receiving taxable income, other than investment income, that exceeds \$2,500 during the 12-month period preceding the date that the officer becomes aware that

(i) a contract between the local governmental entity and vendor has been executed; or

(ii) the local governmental entity is considering entering into a contract with the vendor;

(B) has given to the local government officer or a family member of the officer one or more gifts that have an aggregate value of more than \$100 in the 12-month period preceding the date the officer becomes aware that:

- (i) a contract between the local governmental entity and vendor has been executed; or
- (ii) the local governmental entity is considering entering into a contract with the vendor.

Local Government Code § 176.006(a) and (a-1)

(a) A vendor shall file a completed conflict of interest questionnaire if the vendor has a business relationship with a local governmental entity and:

(1) has an employment or other business relationship with a local government officer of that local governmental entity, or a family member of the officer, described by Section 176.003(a)(2)(A);

(2) has given a local government officer of that local governmental entity, or a family member of the officer, one or more gifts with the aggregate value specified by Section 176.003(a)(2)(B), excluding any gift described by Section 176.003(a-1); or

(3) has a family relationship with a local government officer of that local governmental entity.

(a-1) The completed conflict of interest questionnaire must be filed with the appropriate records administrator not later than the seventh business day after the later of:

(1) the date that the vendor:

(A) begins discussions or negotiations to enter into a contract with the local governmental entity; or

(B) submits to the local governmental entity an application, response to a request for proposals or bids, correspondence, or another writing related to a potential contract with the local governmental entity; or

(2) the date the vendor becomes aware:

(A) of an employment or other business relationship with a local government officer, or a family member of the officer, described by Subsection (a);

(B) that the vendor has given one or more gifts described by Subsection (a); or

(C) of a family relationship with a local government officer.

CERTIFICATE OF INTERESTED PARTIES		FORM 1295		
Complete Nos. 1 - 4 and 6 if there are interested parties. Complete Nos. 1, 2, 3, 5, and 6 if there are no interested parties.			OFFI	CE USE ONLY
Name of business entity filing form, a entity's place of business.	nd the city, state and country of the bus	siness		
2 Name of governmental entity or state which the form is being filed.	e agency that is a party to the contract f	or		
Provide the identification number use and provide a description of the good	ed by the governmental entity or state a ds or services to be provided under the	igency to contract.	track or ide	ntify the contract,
4	City, State, Country	Natur	re of Interes	t (check applicable)
Name of Interested Party	(place of business)	Cor	ntrolling	Intermediary
5 Check only if there is NO Interested F	Party.			
⁶ AFFIDAVIT I swear, or affirm, under penalty of perjury, that the above disclosure is true and correct.				
Signature of authorized agent of contracting business entity				
Sworn to and subscribed before me, by the said data data data data data data da			day	
of, 20, to certify which, witness my hand and seal of office.				
Signature of officer administering oath	Printed name of officer administering oat	h	Title of offic	er administering oath
ADD ADDITIONAL PAGES AS NECESSARY				

Form provided by Texas Ethics Commission

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BID BOND

Bond No.:

(by Surety)

STATE OF TEXAS

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KNOW ALL MEN BY THESE PRESENTS:

COUNTY OF DALLAS

THAT_____, of the City of _____, _____, _____, _____, _____, of the City of ______, _____, authorized under the laws of the _______, authorized under the laws of the State of Texas to act as Surety on bonds for principals (hereinafter referred to as "Surety") are held and firmly bound unto the City of Mesquite (hereinafter referred to as "City") in the penal _____ (an amount equal to 5% of the approximate total amount of sum of \$ the bid or if the bid is based upon alternates and/or addenda, at least 5% of the greatest amount bid by the bidder or Principal herein as evidenced in the Bid Proposal) for the payment whereof. the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, by these presents;

WHEREAS the Principal has submitted on or about this date, a bid proposal offering to perform the following: PALOS VERDES DAM MODIFICATIONS & PARK IMPROVEMENTS (2019-083) in accordance with the specifications and terms and conditions related thereto, to which reference is hereby made;

NOW, THEREFORE, the condition of this obligation is such that if the said Principal's offer as stated in the bid proposal is accepted by the City, and the said Principal executes and returns to the City the number of original counterparts of the contract required by the City, on the forms provided by the City, for the materials, equipment and/or services described herein and also executes and returns the same number of Performance, Payment and Maintenance Bonds, if required, on the forms provided by the City, within the time provided in the specifications, then this obligation is null and void, otherwise, it is to remain in full force and effect;

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument on this _____ day of ______, 2019.

PRINCIPAL:	SURETY:
Signature	Signature
Typed or Printed Name	Typed or Printed Name
Title:	Title:
Company:	Company:
Address:	Address:

SURETY'S DALLAS COUNTY REGISTERED AGENT FOR SERVICE (REQUIRED):

Type or Printed Name

Street Address (P.O. Box is not acceptable)

City, State, and Zip Code

Dallas County Telephone No.

BIDDER'S QUALIFICATION INFORMATION

- The <u>apparent low bidder</u> shall complete and deliver to the Engineering Division and City's Consulting Engineer <u>within 48-hours after the bid opening</u>, the following Bidder's Qualification Information documents:
 - Qualification Statement of Bidder. If additional space is needed, please use attachments.
 - □ Reference Statement of Bidder's Surety.
 - Bidder's Release of Qualification Information.
 - Bidder's List of Proposed Sub-contractors.
 - □ Non-Exclusion Affidavit System for Award Management (SAM)
 - Financial Statement Reviewed or Audited by an Independent Certified Public Accountant (CPA) in accordance with Generally Accepted Accounting Principles (GAAP), prepared in the last 12-months for the bidder's company.
 - □ IRS W9 Form a pdf version of this form can be downloaded from IRS web site.

All six (6) documents shall be delivered to the Engineering Division and City's Consulting Engineer as a single, complete package. No one form or statement will be accepted individually.

- 2. If the 48-hours deadline falls on a weekend or holiday, Bidder shall deliver the six (6) documents to the Engineering Division and City's Consulting Engineer the next workday after the 48-hours.
- 3. If a project is a "joint venture", all partners in the joint venture shall complete the pre-qualification forms.
- 4. The low bidder shall be required to submit evidence that they have a practical knowledge and experience of the particular work bid upon and that they have the financial resources to complete the proposed work.
- 5. In determining the contractor's qualifications, the following factors will be considered: Work previously completed by the contractor; adequate plant and equipment to do the work properly and expeditiously; financial resources to meet all obligations incidental to the work; technical expertise and safety record.

QUALIFICATION STATEMENT OF BIDDER

Engineering Division City of Mesquite 1515 N. Galloway Avenue Mesquite, Texas 75149	
Bidder:	
<i>Circle One</i> : Sole Proprietor Partnership	Corporation Joint Venture
Name:	Partner:
Address:	_ Address:
City:	City:
Phone:	Phone:
Principal Place of Business:	Principal Place of Business:
County & State	County & State
If the Bidder is a corporation, fill out the follo	wing:
State and County of Incorporation:	
Location of Principal Office:	
Contact Person(s) at Office:	Phone:
List Officers of the Corporation and person(s Corporation:	s) authorized to execute Contracts on Behalf of the
Name:	_ Title:
Name:	Title:
Name:	Title:
Name:	_ Title:

How many years has your organization been in business as a General Contractor? _____

Greatest number of contracts in excess of \$100,000 under construction at one time in company's history:

Greatest number of contracts in excess of \$500,000 under construction at one time in company's history:

Total approximate value of incomplete work outstanding: \$ _____

List major projects of the type of work qualifying for or similar work completed in the last three years, give the following information for each project:

Project:		
Owner/Engineer:		
Contact Person:	Phone:	
Date of Completion:	Contract Price:	
Project:		
Owner/Engineer:		
Contact Person:	Phone:	
Date of Completion:	Contract Price:	
Project:		
Owner/Engineer:		
Contact Person:	Phone:	
Date of Completion:	Contract Price:	
Project:		
Owner/Engineer:		
Contact Person:	Phone:	
Date of Completion:	Contract Price:	

Project:		
Owner/Engineer:		
Contact Person:	Phone:	
Date of Completion:	Contract Price:	
Project:		
Owner/Engineer:		
Contact Person:	Phone:	
Date of Completion:	Contract Price:	
Project:		
Owner/Engineer:		
Contact Person:	Phone:	
Date of Completion:	Contract Price:	
Project:		
Owner/Engineer:		
Contact Person:	Phone:	
Date of Completion:	Contract Price:	
Project:		
Owner/Engineer:		
Contact Person:	Phone:	
Date of Completion:	Contract Price:	

(If Necessary - List Additional Projects by Using Attachments)

List **incomplete** projects, including the following information for each incomplete project listed:

Project:	
Owner/Engineer:	
Contact Person:	Phone:
Value of Incomplete Work:	
Project:	
Owner/Engineer:	
Contact Person:	Phone:
Value of Incomplete Work:	
Project:	
Owner/Engineer:	
Contact Person:	Phone:
Value of Incomplete Work:	
Project:	
Owner/Engineer:	
Contact Person:	Phone:
Value of Incomplete Work:	
Project:	
Owner/Engineer:	
Contact Person:	Phone:
Value of Incomplete Work:	
(If Necessary - List Additional Projects b	y Using Attachments)

<u>If company is under new management</u>, please list names of staff and qualification and/or experience of said persons. (Please use attachments).

Contact Person:	Phone:	

List any unsatisfied demands upon you as to your accounts payable, please use attachments.

Bank Reference:

Bank:	City:
Address:	Phone:
Contact Officer:	
Other Credit References:	
Name:	Name:
Address:	Address:
City:	City:
Phone:	Phone:
Municipal Reference:	
City:	_
Contact Person:	_Title:
Address:	Phone:

REFERENCE STATEMENT OF BIDDER'S SURETY

Bidder: _____ Address: 1. For this Bidder, how many contracts that are now complete has this surety furnished contract bonds? 2. For this Bidder, how many **incomplete contracts** has this surety furnished contract bonds? 3. What is the maximum bonding capacity of this Bidder? \$ 4. Does the current financial information on this Bidder indicate solvency and a financial ability to complete this contract? 5. Does the information available to this surety indicate that the contractor pays accounts when due? __ If not, give details: _____ 6. Is it the surety's opinion that the bidder has sufficient experience and financial resources to satisfactorily perform the contract? 7. Provided this bidder does not assume other commitments or that this surety does not acquire further information that in your opinion will materially affect the bidder's capacity to perform this contract, will you furnish the bonds as specified: **REMARKS:** Surety: Signed: Title: Address: _____ (Local office in Dallas County) City State Zip Phone:

BIDDER'S RELEASE OF QUALIFICATION INFORMATION

Pursuant to advertisement for bids and in conformance with Instructions to Bidders for types of work outlined in Bidder's Statement of Qualifications, the undersigned is submitting information as required with the understanding that the purpose is for the City's confidential use, only to assist in determining the qualifications of Bidder's organization to perform the type and magnitude of work designated, and further, Bidder guarantees the truth and accuracy of all statements made, and will accept the City's determination of qualifications without prejudice. The surety herein named, any other bonding company(s), bank(s), subcontractor(s), supplier(s), or any other person(s), firm(s) or corporation(s) with whom Bidder has done business, or who have extended any credit to Bidder is (are) hereby authorized to furnish the City with any information the City may request concerning performance on previous work and Bidder's credit standing with any of them; and Bidder hereby releases any and all such parties from any legal responsibility whatsoever on account of having furnished such information to the City:

Signed:	Title:
Printed Name:	_Email:
Bidder:	Date:

LOCATION OF LOCAL UNDERWRITING OFFICE OF PROPOSED SURETY (MUST BE IN DALLAS COUNTY)

Name:	Phone:	
Printed Name:	Email:	
Address:	City:	State:

BIDDER'S LIST OF PROPOSED SUB-CONTRACTORS

1. Sub-Contractor / Material Supplier:		
Company Name:	_	
Type of Work to Be Performed:		
Contact Person:	Title:	
Email:	Phone:	
2. Sub-Contractor / Material Supplier:		
Company Name:	_	
Type of Work to Be Performed:		
Contact Person:	Title:	
Email:	Phone:	
3. Sub-Contractor / Material Supplier:		
Company Name:	_	
Type of Work to Be Performed:		
Contact Person:	Title:	
Email:	Phone:	
4. Sub-Contractor / Material Supplier:		
Company Name:	_	
Type of Work to Be Performed:		
Contact Person:	Title:	
Email:	Phone:	
5. Sub-Contractor / Material Supplier:		
Company Name:	_	
Type of Work to Be Performed:		
Contact Person:	Title:	
Email:	Phone:	
6. Sub-Contractor / Material Supplier:

Company Name:	
Type of Work to Be Performed:	
Contact Person:	Title:
Email:	Phone:
7. Sub-Contractor / Material Supplier:	
Company Name:	
Type of Work to Be Performed:	
Contact Person:	Title:
Email:	Phone:
8. Sub-Contractor / Material Supplier:	
Company Name:	
Type of Work to Be Performed:	
Contact Person:	Title:
Email:	Phone:
9. Sub-Contractor / Material Supplier:	
Company Name:	
Type of Work to Be Performed:	
Contact Person:	Title:
Email:	Phone:
10. Sub-Contractor / Material Supplier:	
Company Name:	
Type of Work to Be Performed:	
Contact Person:	Title:
Email:	Phone:

CONTRACT AND BOND FORMS

NOTICE TO BIDDERS

The following blank spaces in the contract and bonds **are not to be filled in** by the Bidder at the time of submitting his proposal.

The contract and bond forms are submitted at this time to familiarize the Bidder with the form of contract and bonds that the successful Bidder will be required to execute.

CONTRACT CHECKLIST

City contracts must be checked to ensure they are ready for review and signature.

CHECK	CONTRACT ITEM:
	Are all blanks filled in, except for the signatures of the Mayor (or City Manager), City
	Secretary and City Attorney?
	The date the Contract is "made and entered into" should be the meeting date the bid was
	awarded by City Council (for contracts over \$50,000), or the date of City Manager approval
	(for contracts under \$50,000). Is the date of the contract correct?
	units x unit price = amount
	individual amounts = total base bid
	total bid = amount awarded by Council
	Company name is consistent throughout all contractual documents
	If the contractor is a corporation, the President or Vice-President of the corporation should
	sign the Contract. The Secretary of the corporation must then attest the signature and seal
	the Contract unless the contract form used provides for an acknowledgment by a notary.
	Contract total matches the awarded amount by Council
	Signed by authorized person for the company
	Printed name matches signed name
	The name of the person signing the Contract on behalf of the contractor and the City must be
	typed on the appropriate lines as well as their respective titles.
	If the Contract is revised by the striking-out or inserting of new language, both parties should
	initial the change.
	PERFORMANCE AND PAYMENT BONDS
	Performance Bond = 100% of Contract Amount (City Form)
	Includes a 2-year warranty period after City Acceptance for materials and workmanship.
	Check that the company name is identical to name listed in contract
	Check for same contract date (reference in top paragraphs)
	The name of the surety on the bond must appear the same on each page of the bond.
	Check for issuance date (date of contract or after)
	Check for same signature & title throughout bond.
	Check for typed name and title of the person signing bond and for legible signature.
	Check for agent in Dallas County.
	Contract.
	The surety's seal (which is the seal of the bond company) must appear under the surety's
	signature (not a notary's seal). All corporate sureties have seals. The seal may be a legible
	facsimile seal, unless the instrument states otherwise.
	Payment Bond = 100% of contract amount (City form)
	Check that the company name is identical to name listed in contract
	Check for same contract date (reference in top paragraphs)
	The name of the surety on the bond must appear the same on each page of the bond.
	Check for issuance date (date of contract or after)
	Check for same signature & title throughout bond
	Check for typed name and title of the person signing bond and for legible signature.
	Check for agent in Dallas County
	The items listed as work to be done must exactly match the improvements listed on the Contract.
	The surety's seal (which is the seal of the bond company) must appear under the surety's
	signature (not a notary's seal). All corporate sureties have seals. The seal may be a legible
	facsimile seal, unless the instrument states otherwise.
	INSURANCE-GENERAL

CHECK	CONTRACT ITEM:				
	Certificate of Insurance (ACORD form)				
	Certificate of Insurance Supplemental Form				
	Check that the company name is identical to name listed in contract				
	Check the expiration date on policy to ensure it is current.				
	Check for City of Mesquite listed as additional insured under General and Auto Liability				
	Policies.				
	Check for a waiver of subrogation in favor of the City of Mesquite under General and workers				
	Compensation/Employers Liability.				
	Workers Compensation \$100,000 per occurrence				
	INSURANCE-CONSTRUCTION				
	Commercial Liability \$500,000 per person/\$1,000,000 per occurrence				
	Contractual Liability property damage \$500,000 per occurrence with general aggregate of				
	\$1,000,000				
	Automobile combined single limit \$500,000				
	OTHER				
	Filled out Certificate of Interested Parties - Form 1295				
	Fill out and Submit Conflict of Interest Questionnaire (CIQ)				
	IRS W9 Form Submitted for Setting Up Vendor Account and Processing Payment				
Checked	by:				
Date:					

Re	set	F	orn	n
			~	

Supplement to ACORD® 25 (Construction) DATE:										
Insured:					Certificate Holder	(s):				
Commercia	al Gen	eral Liability:								
Yes No										
		Provide, in the sp	ace below, the ap <u>p</u>	opriate form nun	nber(s) of the Add	itional Insured enc	lorsement(s):			
	C-1	Or	going Operations							
	~ 1	Com	pleted Operations							
		Attach a copy of t	he endorsement(s)	6 9 1						
		Does the Other	nsurance clause or	an endorsement	t to the policy sta	te that the CGL p	olicy is primary f	or the Additional		
	C-2	nsured it "agreed in writing in a contract or agreement that this insurance would be primary" or does it contain similar								
		wording? If so, pr	ovide a copy of suc	h similar wording	clearly highlightin	g or referencing th	e applicable lang	uage.		
		Does the Other	nsurance clause of	an endorsemen	it to the policy st	ate that the CGL	policy is non-cor	tributory for the		
	C-3	Additional Insure	d IT "agreed in wri	ting in a contract	or agreement th	at this insurance	would not seek a	contribution from		
		any other insural	nce available to the	e additional Insur	ed " or does it co	ntain similar word	ling? It so, provid	ie a copy of such		
		similar wording c	early nighlighting o	r referencing the	applicable languag	ge.	in part hill or los	la nagliganco"2 (f		
	C-4a	VES attach the p	alicy definition dea	act contain the v	referencing the a	aused in whole or	in part by or so	he negligence ir li		
		Does the control	rtual liability provi	sion contain a re	eference to "rock	ential constructio	n"? If VES atta	ch a convictearly		
	C-4b	highlighting or re	for oncing the applic	able language	ererence to resit			en a copy cleany		
		Is coverage unde	r the nolicy limited	to work nerform	ned within certain	described operati	ons and/or classi	ification codes? If		
	C-5	VES attach the or	nerations and/or cla	ssification codes		deserved operation	ons and, or class	negation codes. In		
	C-6	is there a nollutio	n exclusion in the "	nolicy form"?						
	C-6a	If C-6 is NO, has a	pollution exclusion	been added by e	ndorsement?					
	C-6b	If C-6 is YES, has a	pollution endorse	nent been added	?					
Are t	he foll	owing specifically	excluded?							
	C-7	Independent Con	tractors?							
	C-8	Explosion? (X)?								
	C-9	Collapse? (C)?								
	C-10	Underground? (L	J }?							
	C-11	Punitive Damages	other than Terror	ism)?						
	C-12	Third Party Over J	Actions?							
	C-13	Residential Const	ruction Operations	۲ If YES, attach a c	copγ of the exclusi	on.				
	C-14	Prior Work? If YE	5, attach a copγ of t	he exclusion.						
Workers C	omper	nsation:								
Yes No		2								
	C-1	Does Part 3 prov	ide coverage for "	All States" (other	than monopolisti	c states) or list sp	ecific states? If s	pecific states are		
		listed, provide a l	ist of the states.							
Europe / Line	C-2	Is the Alternate E	mployer endorsem	ent attached to th	ne policy?					
Excess/ Off		Liabiinies;	overes overwhich	of the fellowing m	unimanu nalisios"					
inet	_ACess/	Commercial Gene	excess over which	ce	minal y policies?					
	C-2	Automobile Liabil	ity insurance	~~						
	C-3	Employers Liabilit	v Insurance							
	C-4	Pollution Liability	Insurance (If provid	led by separate p	olicy}					
Yes No				<u> </u>						
	22	Does the policy in	nclude language ad	dressing reduced	or exhausted prim	hary limits over wh	ich the policy is (excess, frequently		
	C-5	referred to as dro	p-down? If YES, pro	vide a copy of su	ch wording clearly	highlighting or ref	erencing the app	licable language.		
Notice of C	Cancell	ation:								
	C 1	Do all policies cer	tified on the attach	ed ACORD® 25 pi	rovide at least a 3	0 day notice to the	e certificate holde	er for cancellation		
	C-1	(other than non-p	payment of premiur	n)?						
It is agreed t	that the	coverages, endorse	ments and conditions	shown on these pag	ges are in effect and	Signature:				
apply, as inc	licated,	to the coverages ce	rtified on the attached	ACORD [®] certificat	e of insurance. This					
form neithei	r affirm	atively nor negative	ly amends, extends n	or alters the covera	ige afforded by the					
policy sumn	narized	hereon and is qua	lified by reference to	the policy itself.	This form does not					
constitute a	contrat older	ct between the issuir	ig insurer(s), authorizi	ra representatives o	or producer, and the					
certy/cate //										

A25 01C (03-13)

This supplemental form is not published, sponsored or endorsed by ACORD Corporation. ACORD is a registered trademark of ACORD Corporation

CONTRACT

STATE OF TEXAS § § KNOW ALL MEN BY THESE PRESENTS: COUNTY OF DALLAS §

THIS CONTRACT is made and entered into on ______, 20___ by and between the **CITY OF MESQUITE**, TEXAS, a municipal corporation, of the County of Dallas and State of Texas, acting through Cliff Keheley, City Manager, hereinafter termed the CITY, and ______, a ______, with offices located at ______, hereinafter termed the CONTRACTOR.

WITNESSETH: That for and in consideration of the mutual covenants hereinafter set forth, the CITY and CONTRACTOR agree as follows:

I. DESCRIPTION OF WORK

The CONTRACTOR shall perform all of the work as specified in the contract documents such work generally described as:

PALOS VERDES DAM MODIFICATIONS & PARK IMPROVEMENTS

Plans and Specifications prepared by:

FREESE AND NICHOLS, INC.

All work shall be performed at the CONTRACTOR'S own proper cost and expense to furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, bonds and other accessories and services necessary to complete the work, in accordance with the Contract documents.

II. CONTRACT DOCUMENTS

The Contract documents shall consist of the following:

- 1. this Contract;
- 2. all addenda issued prior to award of Contract;
- 3. the bid specifications including the advertisement for bid, instruction to bidders, bidder's bid form, plans, and drawings (if any);
- 4. the City of Mesquite General Design Standards;
- 5. the Standard Specifications for Public Works Construction (North Central Texas Fourth Edition October 2004), Division 100, as amended and supplemented by the City of Mesquite by Addendum (hereinafter referred to as the "General Provisions");
- 6. a Performance Bond in the sum of ONE HUNDRED PERCENT (100%) of the total Contract price, which Bond shall be in a form acceptable to the City, shall guarantee the work in accordance with the plans and specifications for a period of one (1) year after acceptance by the City, and shall provide for repair or replacement of all defects due to faulty material and/or workmanship that appear within a period of one (1) years from the date of acceptance by the City;
- 7. A Payment Bond in the sum of ONE HUNDRED PERCENT (100%) of the total Contract

price; and

8. the Contractor's bid/proposal and any other documents identified as pertaining to this Contract, all of which have been identified by the CITY and the CONTRACTOR.

These Contract documents constitute the entire agreement between the CITY and CONTRACTOR, and all are as fully a part of this Contract as if attached to or repeated herein. The Contract documents are complementary and what is called for by one shall be as binding as if called for by all. In the event of an inconsistency in any of the provisions of the Contract documents, the inconsistency shall be resolved by giving precedence to the Contract documents in the order in which they are listed above. The Contract may be altered, amended or modified only as provided in the general or special provisions.

III. TIME OF COMMENCEMENT, COMPLETION AND LIQUIDATED DAMAGES

The work to be performed under this Contract shall be commenced by the CONTRACTOR upon final execution of this Contract and notice from the CITY to proceed. All work to be performed under this Contract shall be substantially completed within <u>180 calendar days</u> of the date of commencement of the work, subject to extensions of time provided in accordance with the Contract documents. Time is of the essence in this Contract and it is understood by the CONTRACTOR and CITY that actual damages caused by the failure of the CONTRACTOR to complete the work within the stated time are impractical or extremely difficult to fix or ascertain, and that per diem deduction from the Contract price shall be retained by the CITY as payment by the CONTRACTOR of liquidated damages, and not as penalty for such failure. Such liquidated damages to be assessed and retained are set forth in the General Provisions.

IV. CONTRACT PRICE

The CITY shall pay the CONTRACTOR for the performance of the work, subject to additions and deductions by change order or as otherwise provided in the provisions of this Contract, in current funds the Contract sum, which has been bid as a separated contract in compliance with the Texas Tax Code, as follows:

Material charges incorporated into the project:		\$	
Labor, equipment and other materials charges:	+	\$	
Total sum:		(\$)

V. CONTRACT ADMINISTRATION

This Contract shall be administered on behalf of the CITY by **Curtis J. Cassidy, City Engineer** (referred to herein as "City Representative") and the CONTRACTOR shall fully comply with any and all instructions from said City Representative. With execution and delivery of the Contract, the CONTRACTOR shall furnish and file with the CITY in the amounts herein required, performance and payment bonds in accordance with the provisions of V.T.C.A. Government Code, Chapter 2253 if this is a public work contract in excess of fifty thousand dollars (\$50,000.00).

VI. LABOR CLASSIFICATION AND MINIMUM WAGE SCALE

The CONTRACTOR is required to follow all provisions of Chapter 2258 of the Texas Government Code in the hiring and payment of all skilled and unskilled labor used on this contract. The CONTRACTOR must pay the prevailing wage rates as shown on the attached Wage Decision.

VII. DISCLOSURE OF CONFLICTS OF INTEREST AND COMPLIANCE WITH OTHER APPLICABLE LAWS

The CONTRACTOR shall at all times observe and comply with all Federal, State and local laws, ordinances and regulations including all amendments and revisions thereto, which in any manner affect the CONTRACTOR or the services and/or items to be provided, specifically and not limited to any ethics laws. In particular, the CONTRACTOR is put on notice that the CITY will require the CONTRACTOR to comply with Chapter 176 of the Texas Local Government Code by completing the attached Conflict of Interest questionnaire (FORM CIQ) and returning the completed FORM CIQ to the CITY. Additionally, CONTRACTOR must comply with Section 2252.908 of the Texas Government Code, which was enacted in 2015 by the Texas Legislature pursuant to HB 1295, providing that a governmental entity may not enter into certain contracts with a business entity on or after January 1, 2016, unless the business entity submits a disclosure of interested parties (FORM1295) to the governmental entity. Further information regarding the disclosure of interested parties law and instructions on filing FORM1295 can be found at the Texas Ethics Commission web site at the following web address:

https://www.ethics.state.tx.us/whatsnew/elf info form1295.htm

VIII. INSURANCE

The CONTRACTOR agrees to provide and to maintain the types and amounts of insurance set forth in the General Provisions attached hereto, and to include the CITY as an additional insured in all policies providing coverage for the term of this Contract.

IX. CHOICE OF LAW, VENUE AND CONTRACT INTEPRETATION

The Parties agree that the laws of the State of Texas shall apply to this Contract, and that it is performable in Dallas County, Texas. Exclusive venue shall lie in Dallas County, Texas. Although this Contract is drafted by the CITY, should any part be in dispute, the parties agree this Contract shall not be construed more favorably for either Party.

X. SEVERABILITY

If any part of this Contract shall be stricken for any reason whatsoever or found to be invalid or unenforceable, that part will be severed and the remainder of this Contract will continue in full force and effect.

XI. SURVIVAL

Any liabilities or obligations of a Party for acts or omissions prior to the cancellation or termination of this Contract, and any other provisions of this Contract which, by their terms, are contemplated to survive (or to be performed after) termination of this Contract, shall survive cancellation or termination thereof. XII. MISCELLANEOUS Pursuant to Section 2270.002, Texas Government Code, CONTRACTOR hereby (i) represents that it does not boycott Israel, and (ii) subject to or as otherwise required by applicable federal law, including without limitation 50 U.S.C. Section 4607, agrees it will not boycott Israel during the term of the Agreement. As used in the immediately preceding sentence, "boycott Israel" shall have the meaning given such term in Section 2270.001, Texas Government Code.

CONTRACTOR further represents that (i) it does not engage in business with Iran, Sudan or any foreign terrorist organization and (ii) it is not listed by the Texas Comptroller under Section 2252.153, Texas Government Code, as a company known to have contracts with or provide supplies or services to a foreign terrorist organization. As used in the immediately preceding sentence, "foreign terrorist organization" shall have the meaning given such term in Section 2252.151, Texas Government Code.

XIII. AUTHORITY TO SIGN

The undersigned officers and/or agents of the parties hereto are the properly authorized officials and have the necessary authority to execute this Contract on behalf of the parties hereto.

IN WITNESS WHEREOF, the CITY and CONTRACTOR have executed this Contract in the year and day first written above.

CITY OF MESQUITE (CITY)	(CONTRACTOR)
By: Cliff Keheley City Manager	BY:(signature) TYPED NAME:
ATTEST:	ATTEST:
By: Sonja Land, City Secretary	
APPROVED AS TO FORM:	
By: City Attorney or Designee	

General Decision Number: TX190025 01/04/2019 TX25

Superseded General Decision Number: TX20180035

State: Texas

Construction Type: Highway

Counties: Archer, Callahan, Clay, Collin, Dallas, Delta, Denton, Ellis, Grayson, Hunt, Johnson, Jones, Kaufman, Parker, Rockwall, Tarrant and Wise Counties in Texas.

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects & railroad construction; bascule, suspension & spandrel arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.60 for calendar year 2019 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.60 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2019. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number Publication Date 0 01/04/2019

* SUTX2011-007 08/03/2011

Rates

Fringes

CONCRETE FINISHER	(Paving and	
Structures)	\$	14.12
ELECTRICIAN		19.80

ttps://www.wdol.gov/wdol/scafiles/davisbacon/TX25.dvb?v=0

FORM	BUILDER/FORM SETTER Paving & Curb\$ 13.16 Structures\$ 13.84
T.A.ROI)FD
LABU	Aenhalt Baker - \$ 12.60
	Flagger
	Laborer, Common \$ 10.72
	Laborer, Utility \$ 12.32
	Pipelayer\$ 13.24
	Work Zone Barricade
	Servicer\$ 11.68
POWER	EOUIPMENT OPERATOR.
	Asphalt Distributor\$ 15.32
	Asphalt Paving Machine\$ 13.99
	Broom or Sweeper\$ 11.74
	Concrete Pavement
	Finishing Machine\$ 16.05
	Concrete Saw\$ 14.48
	Crane Operator, Lattice
	Boom 80 Tons or Less\$ 17.27
	Crane Operator, Lattice
	Boom over 80 Tons\$ 20.52
	crane, Hydraulic 80 Tons
	Crawler Tractor
	Excavator 50 000 pounds
	or less
	Excavator, over 50,000
	pounds\$ 16.99
	Foundation Drill , Truck
	Mounted\$ 21.07
	Foundation Drill, Crawler
	Mounted\$ 17.99
	Front End Loader 3 CY or
	Less\$ 13.69
	Front End Loader, over 3 CY.\$ 14.72
	Machania
	Milling Machine
	Motor Grader, Fine Grade 5 17 19
	Motor Grader, Rough
	Pavement Marking Machine\$ 13.63
	Reclaimer/Pulverizer\$ 11.01
	Roller, Asphalt\$ 13.08
	Roller, Other\$ 11.51
	Scraper\$ 12.96
	Small Slipform Machine\$ 15.96
	Spreader Box\$ 14.73
Servi	cer\$ 14.58
Steel	Worker (Reinforcing)\$ 16.18
TRUCK	DRIVER
1	Lowboy-Float\$ 16.24
(Off Road Hauler\$ 12.25
1	Single Axle\$ 12.31

https://www.wdol.gov/wdol/scafiles/davisbacon/TX25.dvb?v=0

Single or Tandem Axle Dump Truck.....\$ 12.62 Tandem Axle Tractor with Semi Trailer.....\$ 12.86 Transit-Mix.....\$ 14.14

WELDER.....\$ 14.84

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number

https://www.wdol.gov/wdol/scafiles/davisbacon/TX25.dvb?v=0

where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter

https://www.wdol.gov/wdol/scafiles/davisbacon/TX25.dvb?v=0

* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

> Branch of Construction Wage Determinations Wage and Hour Division U.S. Department of Labor 200 Constitution Avenue, N.W. Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator U.S. Department of Labor 200 Constitution Avenue, N.W. Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board U.S. Department of Labor 200 Constitution Avenue, N.W. Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

https://www.wdol.gov/wdol/scafiles/davisbacon/TX25.dvb?v=0

PERFORMANCE BOND

Bond No. 106746817

STATE OF TEXAS § § KNOW ALL MEN BY THESE PRESENTS: COUNTY OF DALLAS §

THAT		, of the City of,				
	County, State of		, (hereinafter referred to as			
"Principal"), and _		(hereinafte	er referred to as "Surety"),			
authorized under th	e laws of the State of Texas to	act as Surety on bon	ds for principals are held and			
firmly bound unto	the City of Mesquite (herei	nafter referred to as	"City") in the penal sum of			
\$	(no	t less than 100% of the	e approximate total amount of			
the Contract as evid	denced in the Proposal) for the	payment whereof, the s	said Principal and Surety bind			
themselves, and the these presents:	eir heirs, administrators, execut	ors, successors and as	signs, jointly and severally, by			

WHEREAS the Principal has entered into a certain written contract with the City, dated the day of ______, 20___, for the PALOS VERDES DAM MODIFICATIONS & PARK IMPROVEMENTS, City Contract No. 2019-083 to which said Contract is hereby referred to and made a part hereof and as fully and to the same extent as if copied at length herein;

NOW, THEREFORE, the condition of this obligation is such that if the said Principal fully and faithfully executes the work and performance of the Contract in accordance with the Plans, Specifications and Contract Documents, including any extensions thereof, and according to the true intent and meaning of said Contract and the Plans and Specifications hereto annexed, then this obligation shall be void; otherwise, to remain in full force and effect.

PROVIDED, HOWEVER, that this Bond is executed pursuant to the provisions of V.T.C.A. Government Code Chapter 2253, Public Work Performance and Payment bonds, as amended, and Article 53.201 of the Property Code, and all liabilities on this Bond shall be determined in accordance with the provisions of said articles to the same extent as if they were fully copied at length herein.

Surety, for value received, stipulates and agrees that the Bond shall automatically be increased by the amount of any change order or supplemental agreement which increases the contract price with or without notice to the Surety and that no change, extension of time, alteration or addition to the terms of the Contract, or to the work performed thereunder, or the Plans, Specifications or Drawings accompanying the same shall in any way affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder.

Surety must be approved by the Texas State Board of Insurance under Article 7.19-1 of the Insurance Code and authorized under the laws of Texas to act a surety on bonds for principals.

Surety agrees that the bond provides for the repairs and/or replacement of all defects due to faulty materials and workmanship that appear within a period of **two (2) year** from the date of completion and acceptance of the improvement by the City.

IN WITNES instrument on this the	S WHEREOF, the said Prir day of	ncipal and Surety have , 20	e signed and sealed this			
PRINCIPAL:		SURETY:				
Signature:		Signature:				
Printed Name:	_	Printed Name	:			
Title:		 Title:				
Company:		Company:				
Street Address:	Street Address: Street Addre		SS:			
(P.O. Box is not acceptable)		(P.O. Box is n	(P.O. Box is not acceptable)			
City, State, Phone Number: Dallas Telephone Nu SURETY'S DALLAS	Zip Code mber COUNTY REGISTERED /	City, Sta	ite, Zip Code E (REQUIRED):			
Printed Name:						
Title:						
Company:						
Street Address:	(P.O. Box is not acceptab	le)				
Phone Number:	City, State, Zip Co Dallas County Telephone	de Number				
	והנומניו שמופט דטשפו טו א	- coney for Surety)				

PAYMENT BOND

Bond No. 106746817

"Principal"),

STATE OF TEXAS	Ş							
COUNTY OF DALLAS	9 §	KNOW ALL MEN BY THESE PRESENTS:						
THAT			,	of	the	City	of	
	C	ounty, State of				, (he	ereinafter refe	erred to as
and		-	(horoi	noftor	roforro	d to as "Sur	sty") outb

and ________ (hereinafter referred to as "Surety"), authorized under the laws of the State of Texas to act as Surety on bonds for principals are held and firmly bound unto the **City of Mesquite** (hereinafter referred to as "City") in the penal sum of \$______ (not less than 100% of the approximate total amount of the Contract as evidenced in the Proposal) for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, by these presents:

WHEREAS the Principal has entered into a certain written contract with the City, dated the day of _______, 20___, for the PALOS VERDES DAM MODIFICATIONS & PARK IMPROVEMENTS, City Contract No. 2019-083 to which said Contract is hereby referred to and made a part hereof and as fully and to the same extent as if copied at length herein;

NOW, THEREFORE, the condition of this obligation is such that the bond guarantees the full and proper protection of all claimants supplying labor and material in the prosecution of the work provided for in said Contract and for the use of each claimant, and that conversely should the Principal faithfully perform said Contract and in all respects duly and faithfully observe and perform all and singular the covenants, conditions and agreements in and by said Contract agreed to by the Principal, and according to the true intent and meaning of said Contract, and the claims and specifications hereto annexed, then this obligation shall be void; otherwise, to remain in full force and effect.

PROVIDED, HOWEVER, that this Bond is executed pursuant to the provisions of V.T.C.A. Government Code Chapter 2253, Public Work Performance and Payment bonds, as amended, and Article 53.201 of the Property Code, and all liabilities on this Bond shall be determined in accordance with the provisions of said articles to the same extent as if they were fully copied at length herein.

Surety, for value received, stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract, or to the work performed thereunder, or the Plans, Specifications or Drawings accompanying same shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder.

Surety must be approved by the Texas State Board of Insurance under Article 7.19-1 of the Insurance Code and authorized under the laws of Texas to act a surety on bonds for principals.

IN V	VITNES	S WH	IEREOF,	the said Princi	pal and	d Surety	have s	signed a	nd sea	led this	instrume	nt on this	;
the	day	/ of		, 20		-		-					

PRINCIPAL:		;	SURETY	:			
Signature:		:	Signature	e:			
Printed Name:			Printed N	lame:			
Title:		 -	Title:				
Company:		_ (Company:				
Street Address:		:	Street Address:				
(P.O. Box is not acce	ptable)		(P.O. Box is not acceptable)				
City, State,	Zip Code		City,	State,	Zip Code		
Phone Number: Dallas Telephone Nu SURETY'S DALLAS Printed Name:	mber COUNTY REGISTERED	AGENT	FOR SE	RVICE (I	REQUIRED)):	
Title:							
Company:							
Street Address:	ıble)						
Phone Number:	Code e Number f Attorney	, / for Sur	rety)				

CONTRACTOR'S AFFIDAVIT OF FINAL PAYMENT AND RELEASE

(This form will be prepared by the City and executed by the Contractor after project completion)

STATE OF TEXAS

KNOW ALL MEN BY THESE PRESENTS:

COUNTY OF DALLAS

§ §

§

BEFORE ME, the undersigned authority, on this day personally appeared ("Affiant"), who, after being by me duly sworn, deposes and says that he is ____ of _____, a _____ of _____ Coun (the "Contractor"), which said Contractor was awarded the contract dated the County, State of Texas day of , 20 for the construction of PALOS VERDES DAM MODIFICATIONS & PARK **IMPROVEMENTS, City Contract No. 2019-083** (the "Work"), for a total consideration of Dollars (\$_____) to be paid to the

said Contractor (the "Contract"), and that Affiant has full power of authority to make this affidavit.

That City of Mesquite, Texas, (the "City") has approved the final estimate on said Work, and that the said Contractor has fully satisfied and paid any and all claims that may be covered by Chapter 53 of the Texas Property Code, and Chapter 2253 of the Texas Government Code, or any other applicable statutes or charter provisions, and that all just bills for labor and materials have been paid and discharged by said Contractor insofar as they pertain to the Work in question.

That in addition to any funds which may have been previously paid by the City, the Contractor hereby accepts the amount of Dollars

(\$______) as FULL AND FINAL PAYMENT under the aforementioned Contract, and hereby waives and releases any right Affiant and/or the Contractor may have to pursue claims of any nature against the City arising out of or in any manner connected with the performance of the Work and/or the Contract, including but not limited to claims of third parties that supplied material and/or labor for the Work for or through the Contractor ("Subcontractors"), as well as claims for delay, additional compensation, or for recovery of liquidated damages which may have been withheld by the City. The Contractor shall defend, hold harmless, and indemnify the Owner from any such claims of such Subcontractors. The Contractor further releases the City from any claim or liability arising from any act or neglect of the City related to or connected with the Contract. This affidavit is given pursuant to the final payment provisions of the Contract, and shall not be deemed to alter or modify the terms and provisions of said Contract.

By:

(Affiant) (Contractor's Signature)

(Title)

(Printed Name)

SUBSCRIBED AND SWORN TO BEFORE ME, this _____ day of _____, 20__.

(Printed Name	e of Notary)
---------------	--------------

My commission expires

SECTION GP

CONTRACT GENERAL PROVISIONS

For this Contract the City of Mesquite has adopted the North Central Texas Council of Governments Public Works Construction Standards, Fourth Edition (October 2004), Division 100 General Provisions with modifications by addendum. The modifications to the above referenced Division 100 General Provisions are contained in the below City of Mesquite Addendum.

CITY OF MESQUITE

ADDENDUM

<u>T0</u>

NORTH CENTRAL TEXAS

STANDARD SPECIFICATIONS

<u>FOR</u>

PUBLIC WORKS CONSTRUCTION

This addendum to the *North Central Texas Standard Specifications for Public Works Construction, Division 100 General Provisions, Fourth Edition, dated October 2004* sets forth exceptions or requirements of the City of Mesquite and thereby takes precedence over any conditions or requirements of the *North Central Texas Standard Specifications for Public Works Construction, Division 100 General Provisions* with which it is in conflict.

The comments are itemized by the *North Central Texas Standard Specifications for Public Works Construction, Division 100 General Provisions* section reference number followed by specific comments.

101.1 DEFINITIONS

Add the following definitions:

Advertisement: All of the legal publications pertaining to the work contemplated or under contract.

Apparent Low Bidder: The bidder determined to have the numerically lowest bid as a result of the tabulation of bids by the Owner.

Award: The City Council's acceptance of the Contractor's bid for a proposed contract that authorizes the Owner to enter into a contract.

Bid Bond: The approved form of proposal guarantee furnished by the Contractor and his surety as security for compliance with all conditions of such proposal guarantee as set forth in the General Provisions.

Bidder: Any person, persons, partnership, company, firm, association or corporation or combination thereof, acting directly or through a duly authorized representative submitting a proposal for the work contemplated.

Calendar Day: A calendar day is defined as any day of the week or year, no days being excepted.

City: The City of Mesquite, Texas, a municipal corporation, acting by and through (a) its governing body, (b) its Mayor or (c) its City Manager, each of whom is required by Charter to perform specific duties. Responsibility for final enforcement of contracts involving the City of Mesquite is by Charter vested in the City Manager.

Claim: Compensation for any alleged damage by reason of the acts or omissions of the Owner.

Consulting Engineer: The person, firm or entity hired as an independent consultant by the Owner to design the Project and represent the Owner in the administration of the Contract in whatever capacity the Owner designates; the Owner may, at sole option, designate the Consulting Engineer to be the Engineer for purposes of administration of the Contact. The Consulting Engineer shall be understood to be the Consulting Engineer of the Owner, and nothing contained in the Contract Documents shall be construed to make the Consulting Engineer an employee of the Owner, nor shall they be construed to create any contractual or agency relationship between the Consulting Engineer and the Contractor. The term includes the officers, employees, associates, agents or sub-consultants of the Consulting Engineer, if any.

Contractor's Qualification Information: qualification forms completed by a Bidder reflecting a Bidder's financial data and experience.

Effective Start Date: The date indicated in the Notice to Proceed as the date of commencement of Work which is the date from which the start of Contract Time is measured.

Field Order: A written order issued by the Owner's Representative which orders minor changes or clarifications in the Work which do not involve a change in the Contract Time or Contract Price.

General Conditions: The special clauses of the contract setting forth conditions or requirements supplementing the standard or general specifications and taking precedence over any conditions or requirements.

General Design Standards: The General Design Standards developed, adopted and published by the City of Mesquite - Engineering Division.

Owner: The City of Mesquite, Texas.

Owner's Inspector: The Public Works Construction Inspector of the City of Mesquite or the person designated by the Owner's Representative to inspect the work for the City, more than one inspector may be assigned to a project.

Owner's Representative: The City Engineer of the City of Mesquite or the person designated by the City Engineer to represent the City, or such other person as authorized by the City in the contract documents.

Product: The term "product" includes materials, systems, and equipment.

Proposal: The written statement or statements duly filed with the Purchasing Agent, whether in the form of a sealed bid, proposal, quotation or other form, of the person, persons, partnership, company, firm, association or corporation proposing to do the work contemplated.

Proposal Guarantee: The security designated in the advertisement and proposal, to be furnished by each bidder as a guarantee of good faith to enter into a contract with the Owner and comply with all conditions provided for such Proposal Guarantee in the General Provisions (reference Section 102.5).

Provide: The term "provide" means to furnish and install.

Request for Information (RFI): A written request from the Contractor to the Owner's Representative for plan or specification interpretation or clarification.

Shop Drawings or Submittals: All drawings, diagrams, illustrations schedules, and other data which are specifically prepared by or for the Contractor to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, manufacturer's data, diagrams, and other information submitted by the Contractor to the Owner's Representative for approval (reference Section 105.3).

Standard Details: Standard details developed, adopted and published by the City of Mesquite Engineering Division or the standard details developed by other agencies or engineers that are included in the project plans or specifications.

Substantially Complete: In the opinion of the Engineer, that the Work has been made suitable for use or occupancy or is serving its full intended purpose, but may require minor miscellaneous work or adjustment as evidenced by issuance of a Certification of Substantial Completion by the Owner's Representative.

Working Hours: Work shall be done only during the regular and commonly accepted and described working hours between 7:00 a.m. and 6:00 p.m. No work shall be done nights, Sundays or regular holidays unless written permission is given by the Owner's Representative.

Official City Holidays are:

New Year's Day Holiday Martin Luther King Jr. Day Memorial Day Independence Day Labor Day Thanksgiving Day Thanksgiving Friday Christmas Eve Christmas Day Holiday

Written Notice: Written notice shall be deemed to have been duly served if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered mail to the last business address known to him who gives the notice.

102.1 PROPOSAL FORM

Add: Proposal Forms may be obtained as provided in the advertisement for bids.

Add to the end of the Section the Following Subsections:

102.1.1 Contract Price. The total Contract Price shall cover all Work required by the Contract Documents. All costs in connection with the proper and successful completion of the Work, including furnishing all materials, equipment, supplies, and appurtenances; providing all construction plant, equipment, and tools; and performing all necessary labor and supervision to fully complete the Work, shall be included in the unit and lump sum prices bid. All Work not specifically set forth as a pay item in the Bid Form shall be considered a subsidiary obligation of Contractor and all costs in connection therewith shall be included in the prices bid.

102.1.2 Pay Items. Items not listed in the bid proposal shall be considered subsidiary to the construction and no additional compensation will be given for them.

102.3. EXAMINATION OF PLANS, SPECIFICATIONS AND SITE OF THE WORK Add to End of Section the Following Subsections:

102.3.1. Addenda. Bidders desiring further information, or interpretation of the plans and specifications, must make request for such information in writing to the Owner's Representative five (5) working days prior to the date of the bid opening. Answers to such requests will be given in writing to all bidders by Addendum and such Addendum shall be made a part of the Contract Documents. No other explanation or interpretation will be considered official or binding. Should a bidder find discrepancies in the plans, specifications or quantities, or should he be in doubt as to their meaning, he shall at once notify the Owner's Representative in order that a written Addendum may be sent to all bidders. Any Addenda issued prior to twenty-four (24) hours before the opening of bids will be delivered by facsimile or email to all plan holders on record with the City of Mesquite. The proposal as submitted by the Bidder will be so constructed as to include any Addendum issued by the Owner's Representative prior to twenty-four (24) hours before the opening of bids.

The Bidder must acknowledge in the proposal bid forms that all addendums have been received.

102.3.2. Pre-Bid Inspection. Bidder shall inspect the site prior to bidding and prior to move in. Bidder's inspection shall include but not be limited to observation and verification of existing grades, topographic conditions, surface and subsurface soil conditions and surface and subsurface water drainage conditions, observation and verification of any existing utility, appurtenance, or structure as it may relate to the contract. This shall include but not be limited to:

- □ Water and sewer appurtenances.
- □ Storm sewer structures and appurtenances.
- □ Concrete structures and appurtenances.
- □ Petroleum pipeline systems and appurtenances.
- □ Natural Gas pipeline systems and appurtenances.
- Telecommunications systems and appurtenances.
- Electrical systems and appurtenances.
- □ Television cable systems and appurtenances.
- □ Irrigation systems and appurtenances.

102.3.3. Geotechnical Data. Soil Borings, soil profiles, ground water elevations, and underground utilities shown on the plans have been obtained for use in preparation of the plans. The Owner makes no representation or warranty to the accuracy of this geotechnical data.

102.3.4. Quantity Verification. Bidders shall verify all quantities included in the bid proposal prior to submitting bid. Should any major quantity discrepancy between stated bid quantities and Bidder's estimate be found, Bidder shall notify the Owner's Representative in writing, prior to submitting bid, and

obtain a clarification and/or correction to the stated bid quantity. By submitting a bid, Bidder represents that estimates were performed and no major quantity discrepancies were found.

102.3.5. Subsidiary Cost: It is the intent of the Contract Documents, Technical Specifications, Supplemental Specifications, and plans to describe the construction and subsidiary activities and materials necessary to furnish and install a complete in place project, ready for its intended use, accepted by the Owner's Representative. Those materials and work necessary to furnish and install a complete in place project, conforming to the plans and specifications, that are not specifically identified in the bid proposal, technical specifications, or the supplemental technical specifications as pay items shall be considered as subsidiary to the contract as a whole, and as such shall not be submitted for individual payment by the Contractor. The cost of those subsidiary items shall be reflected in the prices stated in the bid proposal. It shall be the responsibility of the Contractor to review the bid proposal, plans, technical specifications, and supplemental technical specifications and site conditions to determine those materials and work which are not specifically identified but which shall be necessary to furnish and install a complete project in place.

102.4. PREPARATION OF PROPOSAL

Change: in the second sentence "both in words and numerals" to "in numerals"

Add after the first sentence: The bidder shall submit Bid Proposals on Bid Forms in the contract document or from computer generated forms supplied by the Owner. Modifications, revisions and creations of a new computer generated form not furnished by the Owner shall be considered an irregular proposal and may disqualify the bidder. Unit prices shown on the Bid Proposals shall state the prices for which he proposes to do the work contemplated or furnish the material required.

102.5 PROPOSAL GUARANTY

Add to the end of the section: An acceptable Surety per the terms of GP Section 103.3 SURETY BONDS shall execute the bidder's surety bond, together with the bidder, as Principal. In addition, the Bidder and its agents shall have no financial interest in the Surety.

102.7. WITHDRAWING PROPOSALS

Change: In the last sentence, change "90 days" to "120 days".

Add: After the 120-day period, if agreed to in writing between Contractor and Owner, the bid will stay in effect, without change, for a period agreed to between the Contractor and Owner.

102.8 OPENING PROPOSALS

Delete the last sentence of this section.

102.9. CONSIDERATION OF PROPOSAL

Add: When required by the bid documents, within 48-hours of the bid opening, the apparent low bidder must submit to the Owner, the Bidder's Qualification Information on the forms provided in the bid documents providing evidence that the bidder is capable of properly executing the work.

102.10. IRREGULAR PROPOSALS

Add: After the words "irregular if" add ", in the sole opinion of the Owner,".

102.12. DISQUALIFICATION OF BIDDERS

Add:

- (9) The bidder being party to any litigation against the Owner;
- (10) The bidder being in arrears on any existing contract or other financial obligation or debt.
- (11) Lack of experience, competency, ability, capacity of the bidder to perform the contract or provide the service required as revealed by the Bidder's Qualification Information.
- (12) Lack of a current financial report as required in the Bidder's Qualification Information submission requirements.

- (13) The quality, availability and adaptability of the supplies, materials, equipment or contractual services, to the particular use required.
- (14) The number and scope of conditions attached to the bid proposal.
- (15) Whether the bidder can perform the contract or provide the service promptly, or within the time required, without delay or interference.
- (16) The character, responsibility, integrity, reputation, experience and safety record of the bidder.
- (17) The previous and existing compliance by the bidder with laws relating to the contract or service.
- (18) Any previous or existing noncompliance by the bidder to perform the contract or provide the service.
- (19) The ability of the bidder to provide future maintenance, repair parts, and service for the subject contract.
- (20) Rejection of bid when a bid is submitted in which there is a material failure to comply with the specification requirements
- (21) Evidence that contractor, subcontractor have been suspended, debarred, or otherwise excluded from participation in federally funded programs.

103.2. AWARD OF CONTRACT

Change: In the first sentence, change "90 days" to "120 days".

Add: The right is reserved, as the interest of the Owner may require, to reject any and all bids and waive any informality of bids received.

103.3.1.4. Bond Amounts Based on Contract Amounts Delete entire section.

103.3.3. Sureties.

Delete second to last sentence and Replace with: The surety shall designate an agent in Dallas County, Texas who is acceptable to the Owner to whom any requisite notices may be delivered and on whom service of process may be had in matters arising out of such suretyship. Legal venue for enforcement of the bonds shall lie exclusively in Dallas County, Texas.

103.4 INSURANCE

Delete entire subsection 103.4.1. Contractor's Insurance, including subsections and Replace with:

103.4.1 Contractor's Insurance. The Contractor and his subcontractor(s) shall not commence work on any contract in the City of Mesquite until he has obtained, for himself and all subcontractors, all the insurance required under this paragraph, and such insurance has been approved by the Owner.

The Contractor and his subcontractor(s) agrees to provide and to maintain the following types and amounts of insurance, which may be satisfied by any combination of primary, excess or umbrella liability insurance, for the term of this Contract:

Amounts and Types of Insurance:

	Туре	Amount	
1	Workers Compensation/Employer's Liability	Statutory	
2	Employer's Liability	\$100,000 Limit Ea. Acc/Disease/Aggregate	City shall be an Additional Insured with Waiver of Subrogation
3	Commercial (Public) Liability, including, but not limited to: A. Premises/Operations B. Independent Contractors C. Personal Injury D. Products/Completed Operations E. Contractual Liability (insuring above indemnity provisions) F. Explosion or Cave-in	\$1,000,000 per Occurrence and Aggregate Limits	All insurance policies shall be written on a primary basis and be non- contributory with any other coverages carried by the City. City is to be an Additional Insured with Waiver of Subrogation.
4	Automobile Policy	Combined Single Limit - \$500,000.00	City shall be an Additional Insured

The required limits may be satisfied by any combination of Primary, Excess or Umbrella liability coverage. The preceding amounts notwithstanding, Owner reserves the right to decrease or increase the minimum required insurance either as provided in the contract documents or after thirty (30) days notice is sent to the Contractor's address as shown on Contractor's Proposal. The Contractor may pass through to the Owner all costs for obtaining the increase in the insurance coverage.

The Contractor understands that it is its sole responsibility to provide Certificates of each policy before any work is started and that failure to timely comply with the stated policy endorsements and special conditions hereinafter specified shall be a cause for termination of this Contract. Prior to the effective date of cancellation of any coverage, the Contractor must deliver to the Owner a replacement Certificate or proof of reinstatement. In addition to the Certificates, all Policies shall be subject to examination and approval by the City Attorney's office for their adequacy as to form, content, form of protection and the providing company.

Insurance required by this Contract for the Owner as additional insured shall be primary insurance and not contributing with any other insurance available to the Owner, under any third party liability policy.

Delete entire subsection 103.4.2. Owner's Protective Liability Insurance and Replace with:

103.4.2 Worker's Compensation Insurance. The Owner shall require worker's compensation insurance coverage as defined in Section 401.011(44) of the Texas Labor Code from any contractor before entering into a building or construction contract to prove in writing that the Contractor and all subcontractors shall provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements set forth in Section 406.096 of the Texas Labor Code, for all persons providing services on the project, for the duration of the project.

103.4.5.1 Endorsements.

Delete 103.4.5.1(1) and Replace with:

(1) With the exception of Workers' Compensation and Professional Liability coverage, the Certificate of Insurance must state that "The City of Mesquite-Texas, its trustees, officers, agents and employees are Additional Insureds as their interests appear relating to the contractually stipulated service, project or product";

103.4.5.2(2) Insurance Requirements.

Add: rated at least "A-(VIII)" in A.M. Best's Key Rating Guide; and

103.6 NOTICE TO PROCEED AND COMMENCEMENT OF WORK

Add: Prior to the start of work, the Owner may arrange a Pre-Construction Conference with the Contractor and appropriate Owner staff. The Pre-Construction Conference shall be scheduled no later than 10 days after the Contract is fully executed. The Notice to Proceed (NTP) shall state the date upon which the Contract time (the Effective Start date) shall start. The Effective Start date will be within 10 days after the Pre-Construction Conference for the Project is held unless requested otherwise in writing by the Owner's Representative.

Add The Following Section:

103.8. COST BREAKDOWN (SCHEDULE OF VALUES FOR LUMP SUM BIDS OR BID ITEMS)

The Contractor shall prepare and submit for approval to the Owner's Representative at the preconstruction meeting a breakdown of lump sum items, identified by the Owner, for the various parts and classes of work to be performed under the Contract.

105.1.1 Priority of Contract Documents.

Delete entire subsection and Replace with:

The bid documents, contract, bonds, bid form, general provisions, special provisions, technical specifications, general specifications, plans, details, appendixes and all supplementary information and referenced standards cited are essential parts of the contract requirements. A requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work.

In case of discrepancy or conflict:

- written out or calculated dimensions shall govern over scaled dimensions;
- large-scale details shall govern over general or smaller scale details;
- project specific details shall govern over general or standard details;
- Special Provisions shall govern over General Provisions;
- project specific technical specifications shall govern over standard specifications;
- City of Mesquite General Design Standards shall govern over North Central Texas Standard Specifications for Public Works Construction, Fourth Edition, dated October 2004;
- City of Mesquite General Design Standards shall govern over Texas Department of Transportation (TXDOT) Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges, Latest Edition.

105.1.3. Contract Drawings and Specifications.

Add at the end of the first paragraph: "The only plans authorized for use are stamped:

RELEASED FOR CONSTRUCTION CITY OF MESQUITE ENGINEERING DIVISION (DATE) THESE PLANS SHALL BE ON THE JOB SITE AT ALL TIMES

105.2.2. Special Warranty.

Change: In the first sentence, change "one year" to "two years".

105.3. SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

Delete: The last sentence in the last paragraph.

105.4. CONSTRUCTION STAKES

Delete: Entire first paragraph of section. **Add:** The Contractor is responsible for furnishing at Contractor's expense all construction staking necessary to establish line and grade.). The Consulting Engineer will provide one-time location of survey control points for the Contractor's surveyor. Prior to construction the Contractor shall field verify elevations and locations of tie-in points for existing utilities. If discrepancies are discovered between field conditions and plan elevations the Contractor shall notify the owner immediately of the discrepancies. All construction staking is subject to checking and verification by the Owner's Representative. The hiring of a Registered Land Surveyor shall comply with Article 2254.004 of the Texas Governmental Code (Professional Services Procurement Act.

105.6. SUPERVISION BY CONTRACTOR

Add: The Contractor shall at all times have on the site of the work a superintendent or general foreman on site if any work is being done or any materials are being delivered to the project location. The Contractor superintendent and general foreman shall be fluent in speaking, reading and writing English.

105.7.1 Authority of the Engineer

Add: The Owner's Representative has the authority to stop the work whenever such stoppage may be necessary to insure the proper execution of the Contract.

105.7.2. Owner's Representative's Final Determination

Add: Should the Contractor object to any order by any subordinate Owner's Representative, the Contractor may, within six days make written appeal to the Owner's Representative for his decision.

105.9 INSPECTION

Add: The Owner's Inspector shall not have the power to waive the obligations of this Contract for the furnishing by the Contractor of good material, and of his performing good work as herein described, and in full accordance with the plans and specifications. No failure or omission of the Owner's Inspector to condemn any defective work or material shall release the Contractor from the obligation to at once remove and properly replace the same at any time prior to Owner's final acceptance upon the discovery of said defective work or material.

105.9.1. Removal of Defective and Unauthorized Work.

Add: If the Owner's Representative prefers to accept Work which is defective and/or not in accordance with the requirements of the Contract Documents, the Owner's Representative may accept Work instead of requiring its removal and correction, prior to recommendation of final payment. Work found to be defective and accepted by the Owner shall be, at the discretion of the Owner's Representative and without recourse by the Contractor, subject to partial or non-payment. Contractor shall bear all direct, indirect, and consequential costs attributable to the Owner's evaluation of any determination to accept such defective work (such costs to be approved by the Owner's Representative as to reasonableness, and to include, but not be limited to, fees and charges of engineers, inspectors, architects, attorneys, laboratories and other professionals). If any such acceptance occurs prior to the Owner's Representative's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and the Owner shall be entitled to an appropriate decrease in the Contract Price. If the acceptance occurs after such recommendation, an appropriate amount will be paid by the Contractor to the Owner.

105.9.3. Inspection Overtime

Delete the second sentence in the second paragraph and Replace with the following: "The Inspector's normal working hours are 7:30 a.m. to 11:30 a.m. and 12:30 p.m. to 4:30 p.m., Monday through Friday with the exclusion of Official City Holidays. **The Contractor will reimburse the Owner for all Inspection overtime outside the Inspector's normal working hours.** To arrange for inspection outside Inspector's normal working hours a verbal request for overtime inspection must be communicated to the Owner's Inspector two working days in advance. Work on Sundays and Holidays is prohibited except in the case of emergency and authorized, in writing, by the Owner's Representative. Work between the hours of 6:00 P.M. and 7:00 A.M. must be approved by the Owner's Representative. Overtime inspection shall be charged portal to portal. There is a two-hour minimum charge for inspection on weekends or Official City Holidays. The Contractor will be charged a 2-hour

minimum overtime charge if the Contractor schedules inspection on weekends or Official City Holidays but then cancels work without notice to the Public Works Construction Inspector before the inspector shows up to the project.

Delete: The last two paragraphs.

Add: Inspection overtime will be reimbursed to the Owner by the Contractor at the rate of time-andone-half plus workman's compensation, F.I.C.A. and other normal City benefits and pertaining rates. The Contractor will be billed monthly by the City for overtime charges. The City will not give final payment or give final acceptance of a project until inspector overtime charges are paid.

106.4. OFF-SITE STORAGE

Delete entire section and Replace with:

The costs incurred in storage of materials or equipment away from the project site will not be made by the Owner. All costs incurred shall be the full responsibility of the Contractor and included in the Contractor's bid.

106.5 SAMPLES AND TESTS OF MATERIALS Delete the first paragraph and Replace with:

Where, called for in the specifications or in the opinion of the Owner tests and retests of materials or completed work are necessary, such tests will be made **at the expense of the Contractor** unless otherwise specified.

Add at the end of the last paragraph:

The Contractor shall designate and pay a recognized testing laboratory to perform all testing, if any, for this project. Such designation is subject to the approval of the Owner's Representative. The hiring of the testing laboratory shall comply with Article 2254.004 of the Texas Governmental Code (Professional Services Procurement Act).

The Testing Laboratory must furnish the inspector with one field copy of the test results. A typed paper copy must be mailed to the Owner's Representative identified at the Pre-Construction Conference. The Owner's Representative may approve the submission of final test reports to the Owner by electronic means.

Collection of potable water samples for bacterial sampling will be accomplished by the Contractor. The Contractor must prepare the sample point and assist the City Public Works Construction Inspector in collecting the sample. All work and materials used for the sampling point and taking the samples must conform to the latest version of the American Water Works Association. Delivery of the potable water sample to the testing laboratory and testing of the potable water sample will be at the Owner's expense.

107.2 INDEMNIFICATION Add the following subsections:

107.2.1 Contractor's Responsibility. Contractor further agrees that it shall at all times exercise reasonable precautions on behalf of, and be solely responsible for, the safety of its officers, agents, employees, subcontractors, licensees, invitees, and other persons, as well as their property, while in the vicinity where the improvements are being made. It is expressly understood and agreed that City shall not be liable or responsible for the negligence of the Contractor, including but not limited to its officers, agents, employees, subcontractors, licensees, invitees, and other persons.

107.2.2 Premise Defects. Further, City assumes no responsibility or liability for harm, injury, or any damaging events which are directly or indirectly attributable to premise defects, real or alleged, in improvements constructed by Contractor which may now exist or which may hereafter arise upon the premises, responsibility for any and all such defects being expressly assumed by Contractor. Contractor understands and agrees that this indemnity provision shall apply to any and all claims, suits,

demands, and/or actions based upon or arising from any such premise defects or conditions, including but not limited to any such claim asserted by or on behalf of Contractor, including but not limited to its officers, agents, employees, subcontractors, licensees, invitees, and other persons.

107.2.3 Notice of Claim. It is further agreed with respect to the above indemnity that City and Contractor will provide the other prompt and timely notice of any event covered which in any way, directly or indirectly, consequently or otherwise, affects or might affect the Contractor or City, and City shall have the right to compromise and defend the same to the extent of its own interests.

107.3 OWNER'S OFFICERS EMPLOYEES OR AGENTS Add the following subsection:

107.3.3 Specific Ethics Provisions

Contractor shall at all times observe and comply with all Federal, State and local laws, ordinances and regulations relating to ethics provisions, including all amendments and revisions thereto, which in any manner affect Contractor or the services and/or items to be provided. In particular, Contractor is put on notice that Owner will require compliance with Chapter 176 of the Texas Local Government Code (hereinafter referred to as the "Act") requiring any person who contracts or seeks to contract with the Owner to disclose potential conflicts of interest as defined in the Act in accordance with the provisions of the Act. Failure to comply with provisions of the Act, may result in: i) the forfeiture by Contractor of all benefits of the Contract; ii) the retainage by Owner of all services performed by Contractor and iii) the recovery by Owner of all consideration, or the value of all consideration, paid to Contractor pursuant to any awarded contract. Additionally, CONTRACTOR must comply with Section 2252.908 of the Texas Government Code, which was enacted in 2015 by the Texas Legislature pursuant to HB 1295, providing that a governmental entity may not enter into certain contracts with a business entity on or after January 1, 2016, unless the business entity submits a disclosure of interested parties (FORM1295) to the governmental entity at the time the business entity submits the signed contract to the governmental entity. Further information regarding the disclosure of interested parties law and instructions on filing FORM1295 can be found at the Texas Ethics Commission web site at the following web address:

https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm

107.12 LABOR AND MATERIALS

Add the following subsection:

107.12.1. LABOR CLASSIFICATION AND MINIMUM WAGE SCALE

In compliance with State Law, the Contractor is required to pay all workers, including employees of subcontractors, for the construction of any public work project not less than the general prevailing rate of per diem wages in the locality for work of a similar character as determined by the City. The City has adopted the prevailing wage rates as determined by the U.S. Department of Labor in accordance with the Federal Davis Bacon Act for this Contract as provided by law.

Attention is called to the fact that the inclusion of a minimum scale of wages to be paid to employees engaged in the work under this Contract does not release the Contractor from compliance with any Federal or State Wage Law that may be applicable to the project. The Contractor shall abide by Federal and State Wage and Hour Laws and must not pay less than the wages legally prescribed as set forth herein. In order to verify compliance with Federal or State wage laws and regulations, the Contractor may be required to submit a weekly certified payroll of all workers on the project listing name, social security number, labor classification, wage rates, hours worked and compensation paid.

Under the provisions of the Texas Government Code, Title 10, Subchapter F, Section 2258.023, the Contractor shall forfeit as a penalty to the City on whose behalf the Contract is made or awarded, Sixty Dollars (\$60.00) for each laborer, workman or mechanic employed, for each calendar day or portion thereof that such laborer, workman or mechanic is paid less than the said stipulated rates for any work under the Contract, by him or by any sub-contractor under him.

Such wage determinations must be for projects in Dallas County, Texas dated no more than 3 years prior to the date this Contract was advertised for bid.

In addition, the Contractor is required to obtain skilled and unskilled labor used on the work, when qualified, fit and available, first from residents within the City of Mesquite, Texas, and second from residents of Dallas County, if practical and available. However, the Contractor may bring his superintendent, foreman, sub-foreman, machine operators and sufficient key men to round his organization.

107.13 EQUAL EMPLOYMENT OPPORTUNITY

107.13.5 Reports

Add at the end of the first sentence: "if required by the Owner".

Add the following subsections:

107.13.6. Protection of Resident Workers: The Owner actively supports the immigration and Nationality Act (NA) which includes provisions addressing employment eligibility, employment verification, and nondiscrimination. Under the INA, employers may hire only persons who may legally work in the United States (i.e., citizens and nationals of the U.S.) and aliens authorized to work in the U.S. The employer must verify the identity and employment eligibility of anyone to be hired, which includes completing the Employment Eligibility Verification Form (I-9). The Contractor shall establish appropriate procedures and controls so no services or products under the Contract Documents will be performed or manufactured by any worker who is not legally eligible to perform such services or employment.

107.13.7. Handicapped Discrimination Regulations:

The handicapped discrimination regulations mandate equal opportunity and require that outside organizations such as labor unions and contractors who provide services to the local governments must not discriminate against qualified handicapped persons in employment decisions.

107.13.8. Non-Compliance with Equal Employment Opportunity Provisions

In the event of the Contractor's non-compliance with the nondiscrimination clauses of this Contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

107.14 STATE AND LOCAL SALES AND USE TAXES

Add: If the Contractor performs under a separated contract as defined by Rule 3.291 by obtaining the necessary permit or permits from the State Comptroller's office allowing the purchase of materials for incorporation in this project without having to pay the Limited Sales and Use Tax at the time of purchase, the Contractor shall identify separately from all other charges the total agreed contract price for materials incorporated into the project. Total materials shall include only materials physically incorporated into the project.

If the Contractor operates under a "separated contract," the Purchasing Division will furnish the Contractor with an exemption certificate for the applicable materials. In order to comply with the requirements of Rule 3.291, as mentioned above, Bidder shall obtain a sales tax permit. It shall be necessary that the Bidder issue resale certificates to suppliers.

Sales tax application for a sales tax permit and information regarding resale certificates may be obtained by writing to:

Comptroller of Public Accounts Capitol Station Austin, Texas 78774 The Contractor may also receive information or request sales tax permit applications by calling the State Comptroller's local Mesquite office at **(214) 289-3400**.

Subcontractors are eligible for sales tax exemption if the subcontract is made in such a manner that the charge for materials is separated from all other charges. The procedure described above will effect a satisfactory separation. When subcontracts are handled in this manner, the Contractor shall issue a resale certificate to the subcontractor, in turn, must issue a resale certificate to his supplier.

107.16 COMPLIANCE WITH LAWS

Add: The Contractor shall indemnify and save harmless the Owner against any claims arising from the violation of any such law, ordinances and regulations.

107.16.1 Storm Water Permit.

Delete entire paragraph and Replace with:

If the project disturbs more than one-acre of land the Contractor shall obtain a Storm Water Discharge permit required for construction of this project under regulations contained in the Texas Commission on Environmental Quality (TCEQ) Texas Pollution Discharge Elimination System (TPDES) General Permit TXR150000. The Contractor shall implement a storm water pollution prevention plan (SWP3); post the appropriate Construction Site Notice (CSN), and if the disturbed land area is 5-acres or more complete and submit a Notice of Intent (NOI) to the TCEQ, including the \$350 by mail or \$250 by electronic payment, NOI fee. For permitting information and requirements, contact the Texas Commission on Environmental Quality (TCEQ) and the City of Mesquite.

If a permit is required, the Contractor shall provide measures to control soil erosion, sediment, and water pollution created by construction operations for the duration of the Contract per the approved construction documents and as directed by the Owner's Representative.

107.18 PUBLIC CONVENIENCE AND SAFETY Add the following subsections:

107.18.1. Temporary Water and Sanitary Sewer Service. When existing water or sanitary sewer mains or services have to be taken up or removed, the Contractor shall, at his own cost and expense, provide and maintain temporary outlets and connections for all private or public water, sanitary sewer and drain connections. The Contractor shall also take care of all sewage and drainage which will be received from these sanitary sewers and drains; and for this purpose he shall provide and maintain, at his own expense, adequate pumping facilities and temporary outlets or diversions. The Contractor, at his own expense, shall construct such piping, troughs, or other structures necessary, and be prepared at all times to dispose of sanitary sewer and drainage received from these temporary connections until such time as the permanent connections are built and in service. The existing water, sanitary sewer and drain connections shall be kept in service and maintained under the Contract, except where specified or ordered to be abandoned by the Owner's Representative. All water, sewage or drainage shall be disposed of in a satisfactory manner so that no nuisance is created, and so that the work under construction will be adequately protected.

107.18.2. Explosives. Explosives shall not be used in the prosecution of this project.

107.19.2. Protection of Persons and Property

Add: At the end of the first sentence in the last paragraph "and City of Mesquite Work Zone Traffic Control Guidelines Manual".

Add: At the end of the section "In order to document site conditions and assist in resolving claims for construction damage the Contractor shall take digital pictures and/or digital video recordings of the site before construction. In addition the Contractor shall during the course of construction periodically record site conditions using digital pictures and/or digital video recordings. The Contractor shall make these recordings at least monthly or more frequently if the Owner's Inspector so orders. Copies of all digital photographs and/or video recordings shall be burned to DVD or other digital media acceptable to the

Owner and provided to the Owner's Inspector."

Add to end of section the following subsection:

107.19.2.1. Access to Property. The Contractor shall schedule the work such that inconvenience to the public and adjoining property owner's shall be at a minimum. Access to all businesses shall be provided at all times during business hours.

The Contractor will schedule work through residential areas in a manner that would expedite construction operations and will restore drive approach access at the end of each working day during execution of the project (except during paving operations of the specific residential drive approach). The Contractors shall maintain temporary drive approaches to the satisfaction of the Owner's Representative. Private drives to residences shall not be closed for more than 10 days at any one time during paving operations.

The Contractor will notify the Owner's Representative Office one (1) week prior to any street or driveway closure.

107.19.3.6. Payment for Trench Safety and Special Shoring.

Delete the first sentence and Replace with: "Payment for trench safety shall be by the lineal feet of trench regardless of depth."

107.23.4. Utility Coordination and Protection

Delete the first sentence and Replace with:

"No franchise utility relocations have taken place in preparation for the project, and the location of existing utilities may not be shown on the plans. It is the Contractor's responsibility to notify utility companies to arrange for exact locations at least 48 hours prior to beginning construction. The Contractor is fully responsible to coordinate necessary utility relocation with the utility companies and will make all efforts to coordinate necessary relocation of utilities with the utility owner. The Owner shall not be held responsible by the contractor for any delays created by a franchise utility company relocating their facilities. The time of construction given for the project includes all necessary utility work involved with franchise utility companies. The Owner will make an effort to assist the Contractor in coordinating relocations before and during the project."

Delete: Table 107.23.4.(a) Utility Coordination

Replace with:

Franchised Utilities (Electric, Phone, Cable & Gas)

Texas One Call Dial 811 or	Dial 811 or by internet at: <u>http://tickets.texas811.org/tickets/submit</u>				
City of Mesquite (City Owned Water, Sanitary Sewer & Storm Sewer)	Engineering Records Room for Obtaining Record Drawings for Existing City Utilities Email: <u>engineering.records@cityofmesquite.com</u> Or 972-329-8536				
City of Mesquite (Field Locates for City Owned Water and Sanitary Sewer)	972-216-6278 or 972-216-6973 or 972-216-8797				
City of Mesquite (Traffic Signal and City owned Optic Fiber)	Traffic Signal Conduit & Loop Detectors Location: Fill out - TRAFFIC SIGNAL & FREEWAY LIGHTING UTILITY LOCATE FORM: http://www.cityofmesquite.com/engineering/documents/Locate Frm.doc				

Add to the end of the section the following subsections:

107.23.5. Arrangement and Charge for Water Furnished by the City. Where Contractor desires to use City water in connection with any construction work, he shall make arrangements with the Mesquite Water Accounting Division for so doing. Where meters are used, the charge for water will be at the regular established rate; where no meters are used, the charge will be as prescribed by ordinance; or, where no ordinance applies, payment shall be made on estimates made by the Mesquite Engineering Division.

107.23.6. Use of Fire Hydrants. No person shall open, turn off, interfere with, attach any pipe or hose to, or connect anything with any fire hydrant, stop valve or stopcock, or tap any water main belonging to the City, unless duly authorized to do so by the Mesquite Utilities Division.

107.23.7. Operation of Existing Valves. The Contractor is not permitted to operate any valve in the existing City of Mesquite water system. The valves must be operated by City of Mesquite Utility Division employees only.

107.26 RESTORATION OF PROPERTY

Add: The Contractor shall exercise special care to minimize damage to trees, plants, shrubs and irrigation systems along the route of the work. The Contractor shall notify adjacent property owners before beginning construction operations adjacent to their property of trees, plants and shrubs which lie inside the right-of-way or easements lines and within the normal limits of work. The property owner's shall be allowed to remove and protect their property, and all trees, plants and shrubs not so protected by the adjacent property owners shall be removed and disposed of by the Contractor, as directed by the Owner's Representative.

Add the following section:

107.27 ANTI-KICKBACK ACT

For any project funded by a Federal grant, the Contractor shall comply with the Copeland "Anti-Kickback" Act (18 U.S.C. 874) or supplemented by Department of Labor regulations (29 CFR, Part 3). This Act provides that each contractor or sub grantee shall be prohibited from inducing, by any means, any person employed in the construction, completion or repair of public work, to give up any part of the compensation to which he is otherwise entitled. The grantee shall report all suspected or reported violations to the grantor agency.

108.1 PROGRESS SCHEDULE

Add: A monthly payment schedule is not required unless requested by the Owner.

109.1 PAYMENT FOR LABOR AND MATERIAL; NO LIENS

Add: The Contractor is not required to furnish payrolls and records unless this submittal is required as a Special Provision to the Contract. The Contractor is still required to comply with the minimum wage rates published by the Owner.

109.2 PAYMENT FOR MATERIALS

Add: The Owner will not pay for Material on Hand unless specified in a Special Provision of the Contract.

109.2.1. Materials On-Hand. – Delete entire subsection.

109.2.2. Materials Stored Off-Site. – Delete entire subsection.

109.5 MONTHLY ESTIMATE, PARTIAL PAYMENTS, RETAINAGE, FINAL ACCEPTANCE AND FINAL PAYMENT.

Delete the first sentence of the first paragraph and Replace with: "Contract pay periods will close at the end of business on the 25th day of each month. Between the 25th day and the last day of each
month, the Owner shall make an approximate estimate of the value of work done during the period under the specifications.

The City Public Works Construction Inspector shall meet with a representative of the Contractor on the job site to measure and otherwise determine the quantity of each bid item completed since the last estimate period. In case an agreement cannot be reached, the quantities determined by the City Public Works Construction Inspector shall be used. Payment or partial payment of any item does not constitute final acceptance of the work. The City Public Works Construction Inspector shall prepare a draft monthly estimate for processing by the Owner for payment. The City Public Works Construction Inspector will forward a copy of this estimate to the Contractor along with any calculations or sketches used in calculating quantities. The Contractor is not required to submit an invoice or billing for monthly work completed."

In the first paragraph, second sentence, delete the words: "the 15th day of the month next following" and **Replace with:** "within 30 days".

Delete the third sentence in the first paragraph and Replace with: "Payment for material on hand will not be paid unless so specified in a Special Provision to this Contract."

Delete the entire second paragraph of this subsection and Replace with:

Owner shall not be liable for interest on any late or delayed payment caused by any claim, dispute, discrepancy in the quantities, any failure to provide supporting documentation or other information required of the Contractor by the Owner or as a condition to payment under the Contract, or due to any payment the Owner has a right to withhold under the Contract.

109.5.4. Final Payment.

Add at the end of the first paragraph: (4) Marked up set of plans showing all changes, revisions and alterations to the original plans.

109.6 WIRE TRANSFERS

Delete Entire Section 109.6 and Replace with: "The City of Mesquite has chosen the Paymode-X[™] service through Bank of America to make electronic payments to contractors, vendors and suppliers.

The City of Mesquite recognizes the importance of expediting the payment process to Contractors vendors and suppliers. Our Accounts Payable department utilizes Paymode-X to replace paper checks with electronic payments. We strongly encouraging our vendors and suppliers to enroll in Paymode-X so that future payments are made electronically. Contract the assigned Owner's Inspector to receive further information on how to process online enrollment to the Paymode-X electronic payment system."

SPECIAL PROVISIONS

These Special Provisions are to be used in conjunction with the **North Central Texas Council** of Governments Public Works Construction Standards, Fourth Edition (October 2004), Division 100 General Provisions, as amended. Should any discrepancies arise, the governing order shall be: Special Provisions, Plans, Technical Specifications, and General Provisions.

THE FOLLOWING SPECIAL PROVISIONS HEREBY MODIFY THE North Central Texas Council of Governments Public Works Construction Standards, Fourth Edition (October 2004), Division 100 General Provisions, unless specifically noted with reference to the Fifth Edition (November 2017). Where reference is made in these specifications to specifications compiled by others, such reference is made for expediency and standardization, and such specifications referred to are hereby made a part of these specifications.

SP-1 PROJECT DESCRIPTION:

This project is for the Palos Verdes Dam Modifications & Park Improvements. The project includes base bid items consisting of removal and replacement of the existing service spillway inlet and conduit, extension of the conduit to a new junction box downstream of the dam, and other general site improvements. Additional/alternate bid items include a new parking lot downstream of the emergency spillway and other associated general site improvements.

SP-2 PRE-BID MEETING:

A pre-bid meeting will be held at 2:00 p.m. on Thursday, June 6, 2019, at the City of Mesquite Art Center located at 1527 N. Galloway Avenue, Mesquite, Texas 75149 in the Rehearsal Hall.

The pre-bid meeting will be held to permit prospective bidders the opportunity to ask questions of the design staff regarding the project, plans and specifications.

SP-3 LIQUIDATED DAMAGES:

This project is a **180 calendar day contract**. Liquidated damages are per the provisions of GP 108.8 in accordance with the Fifth Edition of the North Central Texas Council of Governments Public Works Construction Standards.

SP-4 SUBMITTALS:

The Contractor shall provide submittals of the following items to the Owner's Representative at the preconstruction conference:

- 1. List of Subcontractors and Material Suppliers (including Material's Testing Laboratory and Surveyor for construction staking).
- 2. Submittals for all materials to be incorporated into the project. A submittal is not required for an item if it is an item listed on the City of Mesquite Approved Materials list by brand name and model number.
- 3. Concrete batch designs and paving equipment.
- 4. Project Schedule.
- 5. Listing of all testing required by the specifications and plans with frequency requirements.
- 6. Traffic Control Plan.
- 7. Completed SWPPP.
- 8. Construction Site Notice per TCEQ Construction General Permit requirements.
- 9. Trench Safety and Excavation Plan sealed by a registered engineer.
- 10. Affidavit of trained and certified "Competent Person" for Trench Safety Inspections.
- 11. Contractor Contact List with listing of personnel for 24 hour 7 days a week contact.
- 12. Other Items as requested by the Owner's Representative or required by contract documents, specifications or plans.

SP-5 CONSTRUCTION SEQUENCE:

The Contractor shall prepare a Construction Sequencing Plan which shows staging for the installation of the construction by street or alley segment or other division of the work as requested by the Owner's Representative and submit it to the Owner's Representative at the Pre-Construction Conference. This Plan shall include keeping existing water, sanitary sewer or drainage main in service until the adjacent section of new main has been tested and accepted by the Owner. Disruption of water, sanitary sewer or drainage service to existing residences shall be kept to a minimum when services are switched over to new mains.

SP-6 DISPOSAL OF TREES AND SHRUBS:

The City's compost facility at 3550 Lawson Road (Mapsco 60A-T) will accept trees and brush from the project under the following terms:

- Trees that have root balls will not be accepted.
- All brush must be cut.
- Tree trunks and limbs with a diameter larger than 18-inches must be cut in lengths no longer than three-feet.
- Tree trunks and limbs with a diameter smaller than 18-inches must be cut in lengths no longer than six-feet.
- The contractor will be charged **\$2.90 per cubic yard** of loose material, calculated by truck or trailer volume. Fee will be collected by the truck. There is an option for monthly billing if the contractor sets up an account with the City with a \$100.00 non-refundable deposit.

SP-7 DOCUMENTATION OF SITE CONDITIONS:

Contractor shall furnish an adequate number of photographs and provide video recordings of the site to clearly depict the project pre-construction, during construction, and at final completion (after construction trailers, excess materials, trash, etc. have been removed from the site). All photographs and video recordings are to become the property of the City of Mesquite and shall not be used for public or private publication or display without written consent of the City. Provide clear photographs and video recordings taken with proper exposure with adequate quality and resolution to permit enlargements.

SP-8 COORDINATION OF EXISTING STRUCTURES AND UTILITY LOCATIONS:

Contractor shall examine the site and review the available information concerning the site. Locate utilities, underground facilities, and existing structures. Verify the elevations of the structures adjacent to excavations. Report any discrepancies from information in the Contract Documents to the City and Engineer before beginning construction. Determine if existing structures, poles, piping, or other utilities at excavations will require relocation or replacement. Coordinate the work with local utility companies and others for the relocation or replacement. Protect utilities, underground facilities and existing structures unless they are shown to be replaced or relocated on the drawings. Restore damaged items to the satisfaction of the City and utility or property owner.

SP-9 AS-BUILT DRAWINGS AND RECORD DATA:

Contractor shall indicate all changes made during construction with sufficient detail necessary to provide clear conception of as-constructed project components. Submit as-built drawings and record data to the City of Mesquite and the Engineer at the completion of the project.

SP-10 ESTIMATED QUANTITIES:

Quantities provided in the Contract Documents are approximate. The Contractor shall confirm and/or estimate quantities required to determine bid values and construct the project.

SP-11 ADA & TAS REQUIREMENTS:

All work must comply with current Americans with Disabilities Act (ADA) and Texas Accessibility Standards (TAS) requirements.

SP-12 SPRINKLER AND IRRIGATION REPAIR:

Contractor is responsible for the repair or replacement of any sprinkler damage caused by construction. This repair is subsidiary to the contract unless there is a specific item for sprinkler repair.

<u>SP-13 CLEANUP:</u> The site shall be thoroughly cleaned upon completion by removing construction debris, materials, and trash. Restore grades to match surrounding conditions and remove excess dirt. Adjacent paving shall be cleaned, removing dirt and debris, to like new appearance.

TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS

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UNCATEGORIZED ITEMS

Removal of Trees

ITEM 1051 Block Sodding

ITEM 1052 Leveling Up of Grass Surfaces

APPENDIX | SUPPLEMENTAL REPORT

Appendix A – Environmental Permitting Evaluation Memorandum

The applicable provisions of the following standard specifications shall apply as if written into the Contract Documents in their entirety.

TXDOT Standard Specifications [Listed for reference; copies not reproduced]

- Item 169 Soil Retention Blankets
- Item 462 Concrete Box Culverts and Drains
- Item 464 Reinforced Concrete Pipe
- Item 466 Headwalls and Wingwalls

MOBILIZATION

PART 1 – GENERAL

1.1 DESCRIPTION

A. This item shall be for the procurement of payment and performance bonds, required insurance, full execution of contract documents, attendance at the project preconstruction meeting, submission of required submittals to the City Project Engineer, field office and other facilities at the project site and the movement of adequate personnel, construction equipment and materials to the project site and the Contractor beginning work on the contract items outlined in the contract documents.

PART 2 – MATERIALS AND EQUIPMENT

Not used.

PART 3 – EXECUTION

Not used.

PART 4 – MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. The maximum bid amount for this item shall be five percent (5%) of the total amount bid for the project.

4.2 PAYMENT

A. Payment shall be full compensation when all the items outlined in Part 1.1 above have been completed. The total payment for mobilization shall not exceed 5% of the total bid and shall be payable when in the opinion of the City Project Engineer all the items outlined in Part 1.1 above have been completed.

END OF SECTION

TESTING LABORATORY SERVICES

PART 1 – GENERAL

1.1 DESCRIPTION

- A. The Contractor shall employ and pay for an independent testing laboratory, **APPROVED BY THE OWNER**, to perform testing of construction materials. Contractor shall submit the name of the testing laboratory prior to beginning of Work.
- B. Contractor Shall coordinate all testing activities and shall assist in whatever manner necessary so that the testing laboratory may provide all testing services.
- C. All re-testing costs for failed testing shall be at the expense of the Contractor.
- D. The City's Representative may initiate any test.
- E. The Contractor shall notify the assigned City Public Works Construction Inspector of all density testing 24 hours prior to the scheduled test. Copies of all test reports shall be sent to the Public Works Inspector for review and acceptance and inclusion in the City project file. Projects will not receive City acceptance until all test results are complete and satisfactory.
- F. Materials and products incorporated in the Work, shall be inspected, tested and approved by the Contractor. Tests by the Contractor, Subcontractors or by Suppliers shall be performed by certified technicians using certified laboratories. Laboratory technicians shall hold current certification in accordance with ASTM E 329, Standard Practice for Use in Evaluation of Testing and Inspection Agencies as Used in Construction or have a nationally recognized certification acceptable to the Engineer. Work in which materials are used without prior test and approval may be ordered removed and replaced at the Contractor's expense. The Contractor will be required to furnish such facilities and equipment as may be necessary to perform the tests and inspection and shall be responsible for calibration of all test equipment required. When requested, the Contractor shall furnish a complete written statement of the origin, composition, and/or manufacture of any or all materials that are to be used in the Work.
- G. Contractor shall have testing laboratory include requested City personnel on email distribution list for all test reports. Testing reports must be submitted within five days after the test has been made. Construction shall not proceed where materials are to be placed upon materials previously placed and these previously placed materials have not been tested or the test results have not been made available to the Engineer.
- H. The most current specifications for all specifications listed herein shall govern testing methods.

1.2 STANDARD TEST METHODS FOR COMPACTION AND MOISTURE CONTENT OF SOIL

- A. Moisture and Compaction Testing Standards: Testing laboratory shall sample, test in laboratory, and test in field moisture content and compaction per the following ASTM designations:
 - 1. D-698 Moisture Density Relations of Soil and Soil Aggregate Mixtures.
 - 2. D-6938 Density, in Place, by Nuclear Methods Shallow Depth Test.
 - 3. D-4318 Liquid Limit Plastic Limit and Plasticity Index of Soils Test.
 - 4. D-1140 Material Greater than #200 Sieve.
 - 5. D-2487 Unified Soil Classification System

B. Test Report: Laboratory shall provide both field and final copies of test results to the Engineer, Owner and other parties as directed by the Contractor.

1.3 STANDARD TEST METHODS FOR CONCRETE AND CORING

- A. Concrete
 - 1. Samples shall be drawn from mid-load or from point of discharge if concrete is pumped. Sampling and making of cylinders shall conform to ASTM C-172 and ASTM C-31, respectively.
 - 2. Field Test Methods: For concrete, laboratory shall perform field test(s) and provide the following information for each set of cylinders or beam:
 - a. Contractor's name.
 - b. Name of project.
 - c. Exact location and description of area where concrete was placed.
 - d. Date of sampling.
 - e. Concrete supplier.
 - f. Concrete batch design number.
 - g. Minimum required strength.
 - h. Ambient temperatures.
 - i. Concrete temperature.
 - j. Weather condition; e.g., raining, windy, cloudy, sunny, etc.
 - k. Truck number.
 - I. Ticket number.
 - m. Any admixtures.
 - n. Slump per ASTM C-143; visual inspection will not be accepted.
 - o. Air content in percent per ASTM C-231.
 - 3. Tests and Standards for Concrete:
 - a. ASTM C-172 Sampling of Freshly Mixed Concrete.
 - b. ASTM C-31 Making and Curing of Concrete Test Specimens in the Field.
 - c. ASTM C-143 Slump of Portland Cement Concrete.
 - d. ASTM C-231 Concrete Air Content by Pressure Method (for Fresh Concrete) Test.
 - e. ASTM C-39 Concrete, Cylindrical, Compressive Strength Test.
 - f. ASTM C-793 Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Center Point Loading.)
 - g. ASTM A-1064 Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
- B. Coring
 - 1. Tests and Standards for Concrete Coring:
 - a. Samplings and tests of concrete cores shall conform to ASTM C-42 Obtaining and Testing Drilled Cores Sawed Beams of Concrete.
 - Should coring be required to demonstrate acceptable thickness, measuring of concrete cores shall conform to ASTM C-174 - Measuring Length of Drilled Concrete Cores.
 - c. Testing for Comprehensive Strength shall be in accordance with ASTM C-39 Concrete Cylindrical Strength Test.

1.4 STANDARD TEST METHODS FOR WATER SYSTEMS

- A. Bacterial Sampling
 - 1. The City Public Works Construction Inspector shall supervise the taking of water samples from a suitable tap (not through a fire hydrant) for analysis by the North

Texas Municipal Water District laboratory. The sample(s) shall be transported by City staff to the laboratory at 9:00 AM on Tuesdays and Thursdays. Samples may not be taken earlier than 3:00 PM on the day prior to delivery. The City Public Works Construction Inspector shall notify the Contractor of the results.

- 2. Microbiological sampling shall be done prior to connecting the new conduit into the existing distribution system in accordance with AWWA C651 Disinfecting Water Mains. Samples shall be tested in accordance with *Standard Methods for the Examination of Water and Wastewater*. Samples for bacteriological analysis shall be collected in sterile bottles treated with sodium thiosulfate. At least one sample shall be collected from every 1,000-linear-feet of new water conduit, plus one set from the end of the line and at least one set from each branch. If trench water has entered the new conduit during construction or, if in the opinion of the City inspector, excessive quantities of dirt or debris have entered the new conduit, samples shall be taken at intervals of approximately 200-linear-feet. Samples shall be taken of water that has been in the new conduit for at least 16-hours.
- 3. Unsatisfactory test results shall require a repeat of the disinfection process and resampling as required above until a satisfactory sample is obtained.
- 4. In the event there are two unsatisfactory test results from the same sampling point, the Contractor must "poly-pig" the new water main and samples taken again until a satisfactory sample is obtained.
- B. Hydrostatic (Pressure) Test
 - 1. All water mains, fittings and services shall be tested with a hydraulic test pressure of not less than 200 psi over a period of not less than 2 hours. The allowable leakage, in gallons, of all pipe tested shall be calculated per the following equation: $Allowable \ Leakage = \frac{28.28 * L * D}{148,000}$ where L is Length of Pipe, feet,

D is Diameter of Pipe, inches

- 2. For a two hour pressure test at a pressure of 200 psi. If the tests indicate a leakage in excess of the acceptable rate, the Contractor shall be required to find and repair the leak. Even if the test requirements are met, all apparent leaks shall be repaired and stopped.
- 3. The hydrostatic pump shall be connected to a system where the amount of leakage can be determined by measurement or gauge. The 200-psi pressure shall be maintained at the highest point of the main being tested over the entire 2-hour test period. The leakage shall be determined by comparing the quantity of water in the measuring system at the beginning of the test and quantity of water at the end of the test. The difference in these quantities shall be the leakage. An alternate method is to add water to the measuring system during the test. At the end of the 2-hour test, the quantity of water added shall be the leakage.
- 4. Hydrostatic pressure test for HDPE pipe shall be per NCTCOG Standard Specifications.
- C. Tapping Sleeve and Valve testing

1.5 STANDARD TEST METHODS FOR SANITARY SEWER SYSTEMS

- A. Deflection Testing
 - 1. Mains less than thirty-six (36) inches in diameter shall pass deflection mandrel test per NCTCOG Standard Specifications for Public Works Construction, Item

507.5.1.4 Flexible Pipe (Deflection) Testing and TCEQ regulations Chapter 217.57(b) Deflection Testing.

- 2. Alternate methods for measuring deflection for pipes larger than thirty six (36) inches in diameter subject to City approval. Testing of mains thirty six (36) inches and larger shall occur at least 30 days after installation and backfill.
- 3. Pipe with deflection exceeding the percentage allowed deflection per NCTCOG table 507.5.1.4.2(a) at the time of testing shall be uncovered and reinstalled. If deflection exceeds 7% at the time of testing, pipe shall be removed and replaced with new materials. All failed joints, pipes, sections or structures shall be retested upon completion of remedial actions. Failed sections shall be retested after the remedial construction has been in place for 30 days.
- B. Air Testing
 - Mains less than thirty six (36) inches in diameter and laterals shall pass a Low Pressure Air Test per NCTCOG Standard Specifications for Public Works Construction, Item 507.5.1.3 Low Pressure Air Testing and TCEQ regulations 30 TAC Chapter 217.57(a)(1) Low Pressure Air Test.
 - 2. Pipes 36-inches and larger may be tested per NCTCOG item 507.5.1.3.3 (individual joint air test method). Testing of mains thirty six (36) inches and larger shall occur at least 30 days after installation and backfill. All failed joints, pipes, sections or structures shall be retested upon completion of remedial actions. Failed sections shall be retested after the remedial construction has been in place for 30 days.
- C. TV Camera Inspection
 - After the deflection mandrel and air pressure test, the contractor shall conduct a color television camera inspection of the interior of the installed sanitary sewer system. The main must be laced with enough water to fill any low points. A copy of the recording in digital format and storage device (DVD disk, flash drive, etc.) as specified by the City, with written log of the inspection, shall be provided to the Public Works Construction Inspector prior to final acceptance of the project.
- D. Manhole Testing
 - All manholes shall be vacuum tested including grade rings and casting per NCTCOG Public Works Construction Standard 502.1.5.2 and meet TCEQ regulations 30 TAC 217 and ASTM C1244, "Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test Prior to Backfill". The time for the vacuum to drop from 10 inches of mercury to 9 inches shall not be less than two (2) minutes.

1.6 FREQUENCY OF TESTS

A. Refer to City of Mesquite Standard Details and Project Specifications for the required frequency of tests.

PART 2 – MATERIALS AND EQUIPMENT

Not used.

PART 3 – EXECUTION

Not used.

PART 4 – MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. This section shall not be measured as a separate contract section.

4.2 PAYMENT

A. The work performed and materials furnished in accordance with this section will not be paid for directly but will be subsidiary to pertinent sections.

END OF SECTION

TRENCHING AND BACKFILLING

PART 1 – GENERAL

1.1 DESCRIPTION

A. All excavation, backfilling, and compaction required for utility work.

1.2 SUBMITTAL

- A. Backfill Material
- B. Trench Safety Plan if trench depth greater than 5'
- C. Affidavit of trained and certified "Competent Person" for Trench Safety Inspections

1.3 QUALITY CONTROL

- A. General
 - 1. Locations for testing will be determined by the City Public Works Construction Inspector. Most current ASTM specifications shall govern testing methods.
- B. Testing Requirements, reference Section 10020 Testing Laboratory Services
 - 1. Subgrade
 - a. Proctor analysis
 - b. Moisture content and compaction shall be tested every 300 linear feet along trench in each 12" loose lift
 - 2. Backfill Material brought from off-site
 - a. Gradation sieve analysis shall be submitted prior to use of material
 - b. City Public Works Construction Inspector may request additional gradation sieve analysis as project progresses

PART 2 – MATERIALS AND EQUIPMENT

2.1 GENERAL

- A. Rock and rubble shall not be used as backfill material.
- B. Sand shall not be used as backfill or level up material.

2.2 BACKFILL MATERIALS UNDER PAVEMENT

- A. Recycled Crushed Concrete Flexible Base per TXDOT Item No. 247, Grade 1, Type D
- B. Trenches in area that is proposed to be pavement in the future shall be backfilled the same as areas under existing pavement

PART 3 – EXECUTION

3.1 SAFETY

A. TRENCH SAFETY

1. All excavation and trench operations shall be conducted in accordance with 29 Code of Federal regulations (CFR), Part 1926, Subpart P and all other applicable State and City regulations. Prior to commencing any excavation or trenching operation, the Contractor shall submit to the City Engineer a plan sealed by a Texas Licensed Professional Engineer indicating the intended procedures to be used by the Contractor to comply with OSHA requirements. Such plan shall further identify the "Competent Person" as required by paragraph 1926.651(k)(1) that will work with each crew. An affidavit from the Contractor indicating the competent person must be submitted with the trench safety plan to the City Engineer. A copy of the trench safety plan must be on the job at all times. The City reserves the right

to deny payment for any construction activities in excavations or trenches that are not in accordance with the submitted plan. The City does not approve or disapprove Trench Safety Plans, but will retain a file copy.

- 2. Trench Safety Plan
 - a. Design Requirements. Design to be signed and sealed by a registered Texas professional geotechnical engineer or structural engineer. Engineer shall have sufficient professional engineering competence to designate necessary geotechnical investigation, interpret geotechnical information, and formulate structural design.
 - b. Performance Requirements. Provide for safety of all personnel and the public present in or adjacent to any trench constructed under the scope of this contract.
 - c. Trench safety design must not require excessive excavation, excessive slopes. Contractor is to protect existing trees and adjacent structures.
 - d. Prepare and submit trench safety design to the Owner(s) and/or the City.
 - e. Plan shall be project specific and shall list protection system to be used for plan locations requiring trench safety.
 - f. Qualification. Design engineer to have completed a minimum of 20 trench safety designs in the last two (2) years and have had no trench safety design failures.
 - g. Regulatory Requirement. Conform to any local, State, and Federal laws, rules, regulations, and ordinances covering design and trench safety designs.
- 3. Trench Safety Implementation
 - a. Implementation of trench safety shall comply with submitted trench safety design plan.
 - b. Submit designated competent person who will be on-site full time and is capable of identifying existing and predictable hazards in surrounding or work conditions which are unsanitary, hazardous, or dangerous to employees and who has the authorization to take prompt corrective measures to eliminate them.
 - c. Install, operate, maintain, adjust, and remove trench safety equipment, and precautions in accordance with trench safety design.

B. CONFINED SPACE ENTRY

1. All entry into confined spaces conducted in accordance with 29 Code of Federal regulations (CFR), Part 1910.147 P and all other applicable State and City regulations. Prior to commencing any confined space entry, the Contractor shall submit to the City Engineer a copy of the confined space entry plan with a completed permit.

3.2 PREPARATION

A. All areas where utilities and structures are to be placed shall be cleared of debris and timber. Disposal shall be off-site.

3.3 INSTALLATION

- A. Excavation. Perform excavation to line, grade, and alignment as shown on plans.
- B. Excavation in general, shall be made in open cut from the surface of the ground and shall be no greater in width and depth than is necessary to permit the proper construction of the work. When the trench depth exceeds five (5) feet, see Section 6.2 regarding "trench safety" requirements. The amount of trench excavation to grade shall not exceed one hundred (100) feet from the end of the pipe laying operations and no excavation shall be three hundred (300) feet in advance of the completed pipe operations (includes backfilling). At the end of the workday, all trench excavation shall be backfilled or trench shall be covered with steel plate and secured in place with

asphalt.

- C. Timeliness. Trench backfill shall be of sufficient depth to ensure that the work constructed under this Contract and existing adjacent utilities and structures are stabilized for all conditions that may exist and/or arise. Contractor shall not lay more pipe on any single day than trench backfill can be placed and compacted, and density tested and/or such that stabilization of the work performed and surrounding existing utilities and structures cannot be achieved.
- D. Backfill: For trenches under pavement (existing and proposed) or where indicated on plans, trench shall be backfilled with Recycled Crushed Concrete Flexible Base per TXDOT Item No. 247, Grade 1, Type D to bottom of proposed pavement. For trenches not under existing or proposed pavement, trench may be backfilled with native soil.
- E. Compaction: Compact each 12" loose layer of backfill to within 95% to 100% of standard proctor density at a moisture range of 0% to 6% of optimum. The contractor shall take new proctors at each change in soil type. Water jetting will not be allowed for any trench.

3.4 LINE AND GRADE

A. All backfill to be graded to (+/-) 0.10 feet or as indicated on plans

PART 4 – MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. This section shall be measured by lump sum for development of trench safety plan.
- B. This section shall be measured by linear foot for trench safety implemented.
- C. Other work under this section shall not be measured as a separate bid item.

4.2 PAYMENT

- A. Payment for trench safety plan shall be full compensation for development of plan signed and sealed by a professional engineer licensed in the state of Texas and for materials all manipulation, labor, tools, equipment and incidentals necessary to complete the work.
- B. Payment for trench safety implementation shall be full compensation for implementation and maintenance of trench protection systems and for materials all manipulation, labor, tools, equipment and incidentals necessary to complete the work.
- C. The work performed and materials furnished in accordance with this section including excavation, backfilling, drying, undercutting subgrade and reworking, hauling, disposal of material, compaction, testing and for all manipulation, labor, tools, equipment and incidentals necessary to complete the work, will not be paid for directly but will be subsidiary to installation of utilities.

END OF SECTION

STEEL REINFORCEMENT FOR REINFORCED CONCRETE PAVEMENT, CURB AND GUTTERS AND SIDEWALKS

PART 1 – GENERAL

1.1 DESCRIPTION

A. The work as specified in this section includes all labor, equipment and materials necessary to furnish and install steel reinforcement for concrete.

1.2 SUBMITTALS

- A. Submit certification that reinforcing steel meets or exceeds the applicable ASTM specification. Certification shall include origin of steel.
- B. For structures, submit shop drawing showing bar number, size, length, configuration, spacing and location of all reinforcement bars. Shop drawings shall be prepared in accordance with ACI SP66, ACI Detailing Manual.
- C. Submit dowel baskets, mechanical splicing devices and welded rebar mat layout where applicable.

1.3 QUALITY CONTROL

A. All reinforcement shall be inspected prior to placing any concrete.

PART 2 – MATERIALS AND EQUIPMENT

2.1 MATERIAL

- A. Reinforcing steel bars shall conform to ASTM A 615, Grade 60.
- B. Welded wire reinforcement in roll form is prohibited from use on all projects.
- C. Prefabricated welded wire reinforcement sheets are allowed. Mats shall be produced on automatic welding machines. Welding of rebar in the field in lieu of tie wires is not acceptable. Welded wire reinforcement shall conform to ASTM A 1064.
 - 1. Minimum weld shear strength: 35,000 psi times the area of the rebar wire
 - 2. Minimum yield strength: 70,000 psi
- D. Stirrups and Ties shall conform to ASTM A 615, Grade 60.
- E. Dowels: ASTM A 36, smooth, saw cut to lengths indicated on drawing and remove all burrs.
- F. Mechanical Splicing Devices: Full mechanical connections for reinforcement splices shall be of the type indicated and shall develop at least 125 percent of the specified yield strength of the bar when tested in tension and compression.
- G. Tie wire: Black annealed type, 16 gage or heavier.
- H. Bar Supports
 - 1. Shall be plastic bar supports for concrete pavement placement.
 - 2. Class I Wire Bar Supports will be used for structures. Class I supports are plastic protected metal.
 - 3. All supports must be able to sufficiently support the weight of the steel.

2.2 FABRICATION

A. Cutting & Bending: Reinforcement shall be cut and bent to the shapes shown on the plans. Fabrication tolerances shall be in accordance with the requirements of ACI 318. All reinforcement shall be cold bent, unless otherwise permitted by the Engineer. Coated reinforcement shall not be field cut, unless permitted by the Engineer. Field

cutting of coated reinforcement should be performed using hydraulic-powered or friction cutting tools to minimize coating damage and field touch-up. Flame cutting of coated reinforcement will not be permitted. Field cut coated reinforcement shall be repaired immediately with compatible patching material and suitable for repairs in the field.

- B. Hooks & Bend Dimensions: Hook dimensions and diameters of bends shall be as shown on the plans. When hook dimensions and diameters of bends are not shown, they shall be in accordance with the ACI 318.
- C. Identification and Availability: Reinforcement shall be shipped in bundles, tagged and marked in accordance with the CRSI "Manual of Standard Practice".

PART 3 – EXECUTION

3.1 DELIVERY, STORAGE AND HANDLING

- A. Deliver reinforcement to project site bundled and tagged with metal tags indicating bar size, lengths, and other data corresponding to information shown on placement drawings.
- B. Use care in loading, unloading, handling, and storage of reinforcement materials to prevent damage to bar marking labels.
- C. Stack reinforcement materials on blocks in a neat and orderly manner in such a location as to limit the possibility of damage by construction equipment, prevent ground contact, and permit easy access

3.2 PREPARATION

- A. Inspect subgrade and forms for proper location, grade and alignment before placing reinforcement.
- B. Clean reinforcement, removing loose rust and mill scale, earth, mud, cement, oil, paint, ice, and other materials which reduce or destroy bond with concrete.

3.3 INSTALLATION

- A. Reinforcing steel shall not be damaged, bent, or misshapen prior to, during, or after installation. Re-bending or straightening shall not be allowed, except where field bends are specifically indicated on drawings. Do not use reinforcement having kinks or bends that are not required. Heating of reinforcement shall not be allowed.
- B. Tack welding and welding of reinforcement on site is prohibited. Only factory welded rebar mats are permitted.
- C. Bar supports shall be provided for all reinforcement no matter the depth of the concrete member.
- D. Install reinforcing steel bar in the exact position shown on the plans. Reinforcing splices shall conform to ACI 318 12.15. Reinforcing bar laps shall be 30 bar diameters or per ACI 318, section 12.15, whichever is greater. All reinforcing steel bar intersections shall be secured with tie wire.
- E. Accurately position reinforcements on bar supports, spacers, hangers or other approved supports. Supporting reinforcement directly on concrete, masonry units, brick or rocks in lieu of approved wire chairs is prohibited. Wire sizing and spacing of the chairs shall be sufficient to properly support the steel and shall be in accordance with applicable CRSI standards.
- F. Secure reinforcement in place with ties or clips. Set wire ties so that ends are directed into concrete and not toward exposed concrete surfaces. Remove all wire clippings and debris from bottom of formwork before placement of concrete. Tack welding of reinforcing is not permitted.

- G. Vertical stirrups shall pass around the main tension members and be securely tied to the members. The reinforcing shall be wired together at a sufficient number of intersections to produce a sound or sturdy mat or cage of reinforcement that will maintain the reinforcement in the intended positions when the concrete is poured.
- H. Splices not shown on the plans may be made provided such splices meet the requirements of ACI 318. Install mechanical splicing devices in accord with manufacturer's literature. The Owner shall inspect all splices prior to concrete operations.
- I. Where changes in cross section of a column occur, offset longitudinal bars in a region where lateral support is afforded. Where offset is 3 inches or less, slope of inclined portion with axis of column shall not exceed 1 in 6. Where a column face is offset greater than 3 inches, longitudinal bars shall not be offset bent. Separate dowels, lap spliced with the longitudinal bars adjacent to the offset column faces, shall be provided. Use templates to insure proper placement of column dowels.
- J. Place reinforcement in position such that the concrete cover between the outside of any bar and the concrete form conforms to the following schedule unless shown otherwise in the drawings and details.
 - 1. For concrete cast against and permanently exposed to earth: 3"
 - 2. For concrete exposed to weather or earth: 2"

3.4 TOLERANCES

- A. Concrete cover to formed surface plus or minus 1/4".
- B. Minimum spacing between bars two times the bar diameter.
- C. Bars spacing plus or minus 1/4" in 12".
- D. Conform to ACI 318.

PART 4 – MEASUREMENT AND PAYMENT

A. This section shall not be measured as a separate bid item. The work performed and materials furnished in accordance with this section will not be paid for directly but will be subsidiary to pertinent sections.

END OF SECTION

REINFORCED CONCRETE PAVEMENT, CURB AND GUTTERS AND SIDEWALKS

PART 1 – GENERAL

1.1 DESCRIPTION

A. The work as specified in this section includes all labor, equipment and materials necessary to construct the reinforced concrete pavement of the thickness shown on the plans and in conformity with the plans and these specifications.

1.2 SUBMITTAL

- A. The Contractor shall submit the proposed concrete mix design for approval and record.
- B. Paving equipment
- C. Pattern and color for stamped, colored concrete as applicable.
- D. Submittals as required by Section 20010 Steel Reinforcement

1.3 QUALITY CONTROL

- A. General
 - 1. Locations for testing will be determined by the City Public Works Construction Inspector.
- B. Testing Requirements, reference Section 10020 Testing Laboratory Services
 - 1. Subgrade / Sub-base
 - a. Moisture content and compaction shall be tested every 300 ft. per lane
 - 2. Concrete During Placement
 - a. At least one test shall be made on fresh concrete each day for each class of concrete. On large placements, at least one test shall be made on each 150 cubic yards of concrete placed, per class of concrete. Each set of tests shall consist of one (1) slump test, one (1) air entrainment test, one (1) temperature test and three (3) compression test cylinders.
 - 1. One cylinder shall be broken at 7 days and the other two at 28 days or as instructed by the Public Works Construction Inspector.
 - 2. The Contractor may have additional cylinders taken if desired to determine the strength of the concrete in addition to a 7-day break and 28-day break.
 - b. Temperature shall be tested throughout the day on each load of concrete
 - 3. Concrete Cores (4" diameter)
 - a. Tested for both thickness and 28-day strength
 - b. Cores shall be taken at a rate of one per every 300 ft. per lane
 - 4. Reinforcement
 - a. Inspected by City Representative for layout prior to placing any concrete

1.4 INSPECTION

- A. Reinforcing steel must be inspected and approved prior to placement of concrete
- B. Any subgrade and/or base material testing required must be completed and shown to have passed requirements of project specifications prior to placement of concrete.

PART 2 – MATERIALS AND EQUIPMENT

2.1 GENERAL

A. All materials and requirements for concrete shall conform to the requirements of NCTSSPWC Item 303 "Portland Cement Concrete Pavement" with the exception of

items specified herein.

B. Slip Form Paving Machine(s) equipped with external vibrators shall be used for all street pavements. Vibrating screeds will only be allowed for hand finished placement or if authorized by the engineer.

2.2 CONCRETE

- A. Concrete shall have a 28-day minimum compressive strength of 4,000 psi, containing 6 sacks of cement per cubic yard minimum, with 1" to 3" slump for machine placement and 3" to 5" slump for hand placement.
- B. Fly ash may be substituted for up to 20% of the cement content requirement at 1 to 1.25 cement to fly ash substitution rate.

2.3 REINFORCEMENT

- A. Reinforcing shall conform to ASTM A 615 and be a minimum grade of 60 ksi per ASTM A 370. Reinforcement may be rejected for failure to meet the following: reinforcement exceeding the allowable variations; reinforcement with a coating of dirt, loose scale, paint, oil, or other foreign substance which would prevent the bonding of the concrete and reinforcement; reinforcement not bent in accordance with the standard details; or twisted bars. Reinforcement shall be stored above the ground surface upon skids, platforms, or other supports, and shall be protected from mechanical injury and surface deterioration caused by exposure to the conditions producing rust.
- B. Reinforcement shall conform to Section 032111 Steel Reinforcement.

2.4 JOINTS

- A. Joints shall be filled with hot-poured rubber joint sealing compound that conforms to ASTM D 3406 and meets the requirements of NCTSSPWC 303.2.14.1.1.(a) Hot Poured Polymer Sealant Requirements
- B. Expansion joint materials shall consist of:
 - 1. Pre-molded asphalt board tested in accordance with ASTM D 545 Test Methods for Preformed Expansion Joint Fillers for Concrete Construction (Non-extruding and Resilient Types).
 - 2. Redwood shall be prohibited on sidewalks and used on streets only when necessary for constructability

2.5 CURING MATERIALS

A. White Curing compound is to be applied, per manufacturer's recommendations, to all exposed concrete surfaces (including back-of-curbs) immediately after completion of finishing operations. Clear curing compound shall be used on stained concrete surfaces only. Curing compounds shall be ASTM C-309, Type 2 and shall be per NCTSSPWC Section 303.2.13.1.1. The compound shall be delivered to the jobsite in the manufacturer's original containers only, which shall be clearly labeled.

2.6 STAMPED CONCRETE

- A. Pattern and color per plans. City shall be provided mold upon completion of project.
- B. Prepare for approval a 9-sq. ft., 3-in. thick specimen for each color, pattern, and texture required before beginning work

PART 3 – EXECUTION

3.1 GENERAL

A. All requirements for concrete shall conform to the requirements of the current NCTSSPWC Item 303 "Portland Cement Concrete Pavement" with the exception of items specified herein.

3.2 JOINTS

A. Joints shall be used where shown on the plans or where directed by the Engineer. The plane of all joints shall make a right angle with the surface of the pavement. No joint shall have an error in alignment of more than one half (1/2) inch at any point. The

concrete along the face of all joints, except dummy joints, shall be thoroughly consolidated by vibration to insure a surface which is free from honeycombing. All joints shall be constructed in accordance with Standard City of Mesquite Joint Details.

3.3 INTEGRAL CURB

- A. Integral curb shall be constructed along the edge of the pavement as an integral part of the slab and of the same concrete as the slab. The concrete for the curb shall be deposited not more than thirty (30) minutes after the concrete in the slab.
- B. If curb is formed by hand finishing a curb finish mule must be used to ensure a uniform cross-section.
- A. Provide finished work with a well-compacted mass and a surface free from voids and honeycomb, in the required shape, line, and grade. Round exposed edges with an edging tool of the radius shown on the plans. Construct joints at locations shown on the plans. Cure for at least 72 hr.
- B. Set and maintain a guideline that conforms to alignment data shown on the plans, with an outline that conforms to the details shown on the plans. Ensure that changes in curb grade and alignment do not exceed 1/4 in. between any 2 contacts on a 10-ft. straightedge.
- C. Conventionally Formed Concrete.
 - 1. Shape and compact subgrade, foundation, or pavement surface to the line, grade, and cross-section shown on the plans. Lightly sprinkle subgrade or foundation material immediately before concrete placement.
 - 2. Pour concrete into forms, and strike off with a template 1/4 to 3/8 in. less than the dimensions of the finished curb unless otherwise approved. After initial set, plaster surface with mortar consisting of 1 part hydraulic cement and 2 parts fine aggregate. Brush exposed surfaces to a uniform texture.
 - 3. Place curbs, gutters, and combined curb and gutters in 50-ft. maximum sections unless otherwise approved.
- D. Extruded or Slipformed Concrete.
 - 1. Hand-tamp and sprinkle subgrade or foundation material before concrete placement. Provide clean surfaces for concrete placement. Coat cleaned surfaces, if required, with approved adhesive or coating at the rate of application shown on the plans or as directed. Place concrete with approved self-propelled equipment.
 - 2. The forming tube of the extrusion machine or the form of the slipform machine must be easily adjustable vertically during the forward motion of the machine to provide variable heights necessary to conform to the established gradeline.
 - 3. Attach a pointer or gauge to the machine so that a continual comparison can be made between the extruded or slipform work and the grade guideline. Other methods may be used when approved.
 - 4. Finish surfaces immediately after extrusion or slipforming.

3.4 REINFORCEMENT

- A. Reinforcement shall be placed at locations and spacing shown on the plans, or as directed by the Engineer, and shall be supported above the sub-grade on chairs approved by the Engineer.
- B. Placement and work methods shall conform to Section 032111 Steel Reinforcement
- C. Contractor shall drill dowel holes using approved equipment that will ensure proper depth and alignment. Dowel holes shall be mechanically drilled at mid-depth of the slab. The holes shall be on alignment, level with the top surface of the slab, with minimal wandering. In some instances, dowel locations may have to be adjusted due to field conditions such as cracks, heavy mesh reinforcement, or other obstructions at the plan location for a dowel hole. After drilling holes, Contractor shall clean out the dowel holes with compressed air at a minimum 125 psi and then brush the holes out. Contractor shall insert the air nozzle to the back of the hole to force out all dust and debris, which might

prevent the epoxy from bonding to the concrete. Contractor shall occasionally check the air for oil and moisture contamination from the compressor. To place the anchoring material, Contractor shall use a long nozzle that feeds the material to the back of the hole, assuring that the anchoring material will flow forward along the entire dowel embedment length during insertion. Contractor shall not use any method that attempts to pour or push the anchoring material into the hole. The injection wand on the installation unit shall contain an auger-type mixing spindle that mixes the two-part epoxy. Contractor shall insert dowels by twisting the dowel about one full revolution to evenly distribute the material around the dowel's circumference. Contractor shall verify that the dowels are installed to the proper insertion depth and to the correct orientation (perpendicular to the vertical face of pavement). A plastic grout-retention disk shall be used to prevent the escape of epoxy. Some anchoring material shall be visible from the sides of the disk after installation to ensure proper amount of epoxy was placed in the hole. Dipping dowels into epoxy and inserting the dowel into the drilled hole is not acceptable.

D. Standard pavement reinforcing steel bar laps are to be 30 bar diameters or 15" per ACI 318, section 12.15, whichever is greater. All bars shall be wired at their intersections and at all laps or splices. All reinforcement necessary for a section of concrete shall be placed and approved by the Owner before any concrete is placed in the section. The pavement reinforcing steel shall be supported on chairs and care shall be exercised to keep all steel in its proper locations. After the reinforcing steel is securely installed above the subgrade, there shall be no loading imposed upon (or walking upon) the bar mats or individual bars before or during the placing or finishing of the concrete. When placed in the work, the reinforcement shall be free from dirt, loose rust, scale, painting, oil, or other foreign material.

3.5 CONCRETE PLACEMENT

- A. The Contractor shall do all necessary filling, leveling, and fine grading required to bring the subgrade to the exact grades needed for repair.
- B. Fill and Level Up: Approved fill and level-up material is crushed concrete Flexible Base per TXDOT Item No. 247, Grade 1, Type D. Sand may not be used as fill or level-up material under any pavement.
- C. The subgrade shall be compacted using City approved vibratory sheep's foot rollers, or other mechanical compaction equipment approved by the City. The subgrade and all level-up material must be compacted to 95% standard proctor density with a moisture content of 0% to plus 6% of optimum moisture. Moisture level must be maintained by wetting, until placing of concrete. All fill shall have densities taken at the interval and locations determined by the City Public Works Construction Inspector.
- D. Subgrade shall be prepared per plans and pass required testing prior to setting forms.
- E. Placement of Concrete
 - Forms shall be straight, free of warp and kinks, and of a depth equal to the thickness of the finished work. Forms shall be a minimum of 10' in length for each individual form or of a section satisfactory to the Owner, securely staked to the line and grade, and maintained in a true position during the depositing of concrete. Forms shall be of ample strength and shall be provided with adequate devices for secure setting so that when in place they shall withstand the impact and vibration of equipment imposed thereupon without appreciable springing or settlement. Forms shall be thoroughly cleaned and oiled before each use. Forms shall remain in place until the concrete has taken its final set. Removal of forms shall be followed immediately by banking earth against the sides of the slab and wetting it. Care shall be taken in removing forms to prevent spalling or other damage of the concrete. All forms showing a deviation of 1/8" in 10' from a straight line shall be

rejected.

- F. Thickness of concrete shall be per plans.
- G. Hot-Weather Concreting
 - 1. The temperature of concrete as delivered shall not exceed 95 degrees F. Take immediate corrective action or cease concrete production when the concrete temperature exceeds 95 degrees F.
 - 2. If concrete is to be placed before sunrise or after there is sufficient natural light the contractor must provide their own supplemental artificial lighting enough to do work safely and properly and in accordance with the City of Mesquite specifications.
- H. Cold-Weather Concreting
 - 1. No concrete shall be placed on a frozen subgrade
 - 2. If the ambient air temperature is less than 40 degrees F and dropping concrete shall not be placed.
 - 3. If concrete is placed and there is an anticipated low temperature of less than 40 degrees F within 5 days after placement the concrete must be covered and kept at a temperature of no less than 50 degrees F.
 - 4. In all cases, concrete should not be kept at a temperature of less than 50 degrees F for a period of 5 days' minimum.

3.6 FINISHING

- A. Immediately after finishing all concrete surfaces, the surfaces shall be finished to a true, even surface and the required line, grade, and section with all surface voids filled. Finish all concrete street paving wider than 37' with a tine finish (1"), perpendicular to traffic flow. Broom curb and gutter parallel to traffic 12" from curb. The edges of slabs and all joints requiring edging shall be carefully tooled with a suitable tool at the time the concrete begins to take its "initial set" and becomes non-workable. Before street pavement will be accepted and reopened, all foreign debris shall be removed and pavement cleaned.
- B. Stamped Concrete: Contractor shall apply concrete stamping as shown on the plans. Upon completion, contractor shall provide concrete stamping mats used for construction to City.

3.7 Sidewalks

- A. Shape and compact subgrade, foundation, or pavement surface to the line, grade, and cross-section shown on the plans. Lightly sprinkle subgrade or foundation material immediately before concrete placement. Hand-tamp and sprinkle foundation when placement is directly on subgrade or foundation materials. Remove and dispose of existing concrete. Provide a clean surface for concrete placement directly on the surface material or pavement.
- B. Mix and place concrete in accordance with the pertinent Sections. Hand-finishing is allowed for any method of construction. Finish exposed surfaces to a uniform transverse broom finish surface. Curb ramps must include a detectable warning surface and conform to details shown on the plans. Install joints as shown on the plans. Ensure that abrupt changes in sidewalk elevation do not exceed 1/4 in., sidewalk cross slope does not exceed 2%, curb ramp grade does not exceed 8.3%, and flares adjacent to the ramp do not exceed 10% slope. Ensure that the sidewalk depth and reinforcement are not less than the driveway cross-sectional details shown on the plans where a sidewalk crosses a concrete driveway.
- C. Provide finished work with a well-compacted mass, a surface free from voids and honeycomb, and the required true-to-line shape and grade.

3.8 PROTECTION OF PAVEMENT AND OPENING TO TRAFFIC

A. No vehicle traffic shall be permitted on newly paved areas for a minimum of seven days

after placement or until 3000 psi has been achieved.

B. Contractor shall protect concrete during curing period. Any damage done to pavement shall be remedied at contractor's expense.

3.9 PAVEMENT TOLERANCES

- A. No concrete pavement with ponded or standing water over 1/8" deep will be accepted.
- B. Contractor shall measure the transverse and lateral profile of the finished riding surface using a 10-ft straightedge to measure and evaluate the ride quality of the pavement surfaces. The texture and ride quality of the new pavement should closely match of that of the existing pavement to which it connects. Contractor shall use an approved grinding or other acceptable method to correct localized roughness and surface areas that have more than 1/8-in variation between any 2 contacts on a 10-ft straight edge. This shall be considered incidental to this bid item.
- C. Comply with tolerances of ACI 117 and as follows:
 - 1. Elevation: 1/4 inch.
 - 2. Thickness: Plus 3/8 inch, minus 1/4 inch.
 - 3. Surface: Gap below 10-foot- long, unleveled straightedge not to exceed 1/4 inch.
 - 4. Joint Spacing: 3 inches.

3.10 CLEANUP

A. After the construction work has been completed, the Contractor shall remove all debris, trash, excess materials, forms, stakes, etc. from the premises. The site shall be left with a neat appearance. All excavation shall be backfilled, and all excess excavated materials shall be disposed of.

3.11 PENALTY FOR DEFICIENT PAVEMENT THICKNESS AND STRENGTH

- A. Where the pavement is deficient in strength from that called for by the plans or specifications, as determined by the proper compressive strength testing, the Contractor is responsible for addition testing to determine the actual strength deficiency.
- B. Where the pavement thickness is deficient from that called for by the plans or specifications, as determined by core test set up in the contract, the Contractor is responsible for additional core tests to determine actual limits of deficient pavement thickness. The length of the area of such deficient thickness shall be determined by additional cores at intervals of 10 feet along the length of the pavement in each direction until cores are obtained which are at least plan thickness. The width of such area shall be the entire placement width.
- C. Contract payment will be made at an adjusted rate based on the following tables. If area of pavement is deficient in both measurements, then the more stringent payment

deduction will be in effect:

Percent Deficient from Required Strength	Percent of Contract Price Allowed
Greater than 0%- Not more than 5%	95%
Greater than 5%- Not more than 10%	90%
Greater than 10%- Not more than 15%	80%

Deficiency in Thickness Determined By Cores	Percent of Contract Price Allowed
0.00 – 0.20	100%
0.21 – 0.30	80%
0.31 – 0.40	70%
0.41050	60%

D. Any area of pavement found deficient in strength by more than 15% or deficient in thickness by more than 0.50 inches shall be removed and replaced by the Contractor at his entire expense for the width of the street or alley and as directed by the Engineer.

3.12 REMOVAL OF DEFICIENT CONCRETE

- A. If the above tests indicate that a particular batch of previously placed concrete has less than the design strength, the Engineer may direct that the defective concrete be removed and replaced.
 - 1. The removal of the defective concrete shall also include the removal of concrete that has obtained the required strength if the Engineer deems this necessary to obtain structural or visible continuity when the concrete is replaced.
 - 2. The removal, and replacement of any defective concrete, shall be made at no additional cost to the Owner. This shall include any formwork required and any reinforcing steel required. The Owner will not accept any additional costs for extra work required because of the failure of placed concrete to meet the minimum requirements.

PART 4 – MEASUREMENT AND PAYMENT

- A. Concrete street pavement and sidewalks shall be measured by square yard of reinforced concrete street pavement and sidewalks in place and accepted for the depth specified in the plans. The area of concrete pavement includes the portion of the pavement slab extending beneath the curb. Payment shall be full compensation for concrete paving including reinforcement, joints, joint sealing, forms, base for level up, curing compound, testing, clean-up and for all manipulation, labor, tools, equipment and incidentals necessary to complete the work, all in accordance with the plans and these specifications.
- B. Curb or curb and gutter shall be measured by linear foot of curb or curb and gutter in place and accepted. Payment shall be full compensation for concrete paving including reinforcement, joints, joint sealing, forms, base for level up, curing compound, testing, clean-up and for all manipulation, labor, tools, equipment and incidentals necessary to complete the work, all in accordance with the plans and these specifications

END OF SECTION

PAVEMENT STRIPING, MARKERS, AND BUTTONS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. All material, labor, equipment, tools, and superintendence necessary to furnish and install raised and/or retroreflectorized pavement markings.
- B. Work shall be done in accordance with the current Texas Department of Transportation's Standard Specifications for Construction of Highways, Streets and Bridges, Item 662 "Work Zone Pavement Markings", Item 666 "Retroreflectorized Pavement Marking", Item 668 "Prefabricated Pavement Markings", Item 672 "Raised Pavement Marker", Item 677 "Eliminating Existing Pavement Marking and Markers" and Item 678 "Pavement Surface Preparation for Markings" with the exception of items specified herein.

PART 2 – MATERIALS AND EQUIPMENT

2.1 MATERIALS

- A. Where applicable, all of the following shall conform to the City of Mesquite General Design Standards for materials. Materials shall be from the City of Mesquite Approved Materials List.
- B. All pavement markings wider than 6" thick on concrete pavement shall be prefabricated material in accordance with TxDOT DMS-8240 and be "Premark" brand or approved equal.
- C. All markings on asphalt pavement shall be hot applied thermoplastic, type I in accordance with TxDOT DMS-8220

PART 3 – EXECUTION

3.1 GENERAL

- A. Surface shall be prepared prior to installation.
- B. Contractor shall establish guide marks and the City shall verify the locations prior to installation.

PART 4 – MEASUREMENT AND PAYMENT

- A. Raised pavement markers shall be measured by each installed and accepted for the size, type, and color and shall be full compensation for pavement preparation, installment and for all manipulation, labor, tools, equipment and incidentals necessary to complete the work, all in accordance with the plans and these specifications.
- B. Pavement striping shall be measured by the Linear Foot of stripe installed and accepted for the size, type and color, and shall be full compensation for preparation, installment and for all manipulation, labor, tools, equipment and incidentals necessary to complete the work, all in accordance with the plans and these specifications.
- C. Pavement markings shall be measured by each marking installed and accepted for the size, type and color and shall be full compensation for pavement preparation, installment and for all manipulation, labor, tools, equipment and incidentals necessary to complete the work, all in accordance with the plans and these specifications.
- D. The work performed and materials furnished in accordance with this section will not be paid for directly but will be subsidiary to pertinent sections.

END OF SECTION

TRAFFIC SIGNS AND POSTS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. All material, labor, equipment, tools, and superintendence necessary to furnish and install regulatory, warning and guide signs and posts.
- B. Work shall be done in accordance with the current Texas Manual on Uniform Traffic Control Devices (TMUTCD).

PART 2 – MATERIALS AND EQUIPMENT

2.1 MATERIALS

- A. Sign Materials
 - 1. Sign materials and fabrication shall conform to Texas Department of Transportation (TxDOT) Item 636, Aluminum Signs (Type A).
 - 2. Aluminum sign blank substrates shall be 0.080 inch thick. Six (6) inch wide sign blades shall be extruded aluminum, and nine (9) inch wide sign blades shall be flat aluminum.
 - 3. Regulatory and warning signs shall be Type III, high-intensity retroreflective sheeting, as defined by ASTM D 4956-95.
 - 4. Guide signs, to include street name signs, shall be Type I, medium-intensity (engineer grade) retroreflective sheeting, as defined by ASTM D 4956-95.
 - 5. Sign identification decals shall be coded and applied in accordance with TxDOT Item 643, "Sign Identification Decals" to the rear of each sign.
 - 6. A manufacturer's warranty shall be provided to the City that warrants the sign against delamination and loss of retroreflectivity for seven (7) years.
- B. Sign Posts
 - 1. Sign posts shall be roll-formed from 12 gauge (0.105") strip steel per ASTM Spec. #A570-79 or per ASTM Spec. #A446, Grade A. Sign posts shall be comer induction welded so that neither weld nor flash interferes with the telescoping properties.
 - 2. Sign post finish shall be in-line, hot dip galvanized zinc coating per ASSHTO M-120, or strips are pre-galvanized when roll formed from ASTM Spec. #A446, Grade A steel.
 - 3. Sign post holes shall be seven-sixteenths inches (minimum diameter) plus tolerance of one sixty-fourth inch. Holes shall be on exact one-inch centers along the longitudinal centerline of each of the four faces of each section. Thus, each set of four holes on respective section faces will be in exact lateral alignment, at each one-inch increment, longitudinally along the center section length. The centers of the end holes in each section are to be exactly one-half (1/2) inch from the section end. Each section therefore is to be in exact inch measurement with a tolerance of 0.025 inches.
 - 4. Sign Post Tolerances shall be as follows:
 - a. Outside tolerance at all sides, at comers, shall be plus or minus 0.010 inches per respective specified (O.D.) section size.

- b. The straightness tolerance shall be one-sixteenth of one inch per three (3) feet of section length.
- c. Outside comer radii shall be three sixteenths of one inch, plus or minus one sixteenth of one inch.
- d. Respective specified length tolerance shall be plus or minus one quarter of one inch
- e. Convexity and concavity tolerance measured in the center of each section face shall be plus or minus 0.005 inches.
- C. Hardware and Fasteners
 - 1. All hardware and fasteners shall be galvanized steel, stainless steel or dichromate sealed aluminum conforming to TxDOT Materials Specification D-9-7120. When dissimilar metals are used, the metals shall be so selected or insulated to prevent corrosion.
 - 2. Comer bolts, flat washers, and nuts used to secure the 1 % inch post to the base shall be 5116 inches in diameter galvanized steel.
 - 3. Signs shall be fastened with 3/8 inch diameter zinc plated steel drive rivets.
 - 4. Extruded sign blade holders used to secure six-inch sign blades shall be cast aluminum with stainless steel set screws.
 - 5. Nine inch sign blades shall be affixed using 5/16 inch stainless steel round head machine screws with self-locking nuts, *Y*, inch diameter nonferrous spacers, and nylon washers.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. The breakaway sign-support system (BS3) consists of dimensioned square section tubing secured together in a telescoped array to form. The system consists of three 12gauge steel components; a 36 inch long anchor post of 2" x 2" O.D. square tubing, an 18 inch long anchor sleeve of 2-1/4" x 2-1/4" O.D. square tubing, and a sign post of 1-3/4" x 1-3/4" O.D. square tubing. The three components must be manufactured to tolerances that ensure telescoping of sections with minimal internal clearances that preclude excessive play between sections of the assembled support system.
- B. The anchor post and anchor sleeve shall be driven into the ground as an assembly. Three holes shall remain visible above ground level for attachment of the 1 %inch sign post using two corner bolts.
- C. Nine inch sign blades are installed along all arterial and secondary arterial streets as depicted on the current Thoroughfare Plan. Six inch sign blades are installed on all local and collector streets. Standard Construction Details- Signage- sheets T-1 and T-2 depict proper sign assembly and installation.
- D. Street name blades may be affixed to streetlight poles with the approval of Oncor and the City. Street name blades will be attached to cast aluminum cantilever brackets with stainless steel set screws, and the cantilever bracket will be affixed to streetlight pole using stainless steel banding.
- E. Ornamental Signage.
 - 1. Standards for ornamental signage are determined on a case by case basis. In general, ornamental signage shall be compatible with Oncor street light poles and luminaires.
 - 2. Standard Construction Details, Signage, sheets T-3 depicts proper sign placement on street light poles and free standing poles.

PART 4 – MEASUREMENT AND PAYMENT

- A. Signs shall be measured by each installed and accepted for the size and type and shall be full compensation for post installation, sign installation and for all manipulation, labor, tools, equipment and incidentals necessary to complete the work, all in accordance with the plans and these specifications.
- B. The work performed and materials furnished in accordance with this section will not be paid for directly but will be subsidiary to pertinent sections.

END OF SECTION

DIVISION 02
SECTION 02441 IRRIGATION SYSTEM

PART 1 GENERAL

- 1.01 DESCRIPTION
 - Provide an underground irrigation system as shown and specified and including all miscellaneous appurtenances for a complete and operable system. The work includes:
 - A. Automatic irrigation system, including piping, fittings, sprinkler heads, and accessories.
 - B. Valves, and fittings.
 - C. Water Meters and Backflow Preventers are existing.
 - D. Controller, sensors, control wire, phone modem, flow meter, and phone line are existing.
 - E. Testing.
 - F. Excavating and backfilling irrigation system work.

1.02 QUALITY ASSURANCE AND APPLICABLE STANDARDS

- A. Installer's qualifications:
 - 1. Minimum of 5 years experience installing irrigation systems of comparable size.
 - 2. Contractor shall employ a licensed Texas Irrigator.
 - 3. Contractor shall also employ a licensed Texas Irrigation installer or licensed Texas Irrigator as a continuous on-site representative to the Contractor.
- B. Materials, equipment, and methods of installation shall comply with the following codes and standards:
 - 1. The City of Mesquite Ordinances and Building Codes.
 - 2. National Electrical Code.
 - 3. American Society for Testing and Materials, (ASTM).
 - 4. National Sanitation Foundation, (NSF).
 - 5. Texas Commission on Environmental Quality rules and regulations.
- C. Excavating, backfilling, and compacting operations:
- D. Obtain Park Planner's acceptance of installed and tested irrigation system prior to installing backfill materials. Notification must precede requested inspection by 24 hours.

1.03 SUBMITTALS

- A. Submit manufacturer's product data and installation instructions for each of the system components to be installed.
- B. "As-Built" Drawings: Contractor shall submit a set of reproducible "As-Built" drawings on a Mylar base or a vector based electronic file (AutoCAD 2006 or compatible format) upon completion of the project. The Park Planner will provide a base sheet for temporary use by contractor. "As-Built" drawings shall give dimensions to objects from two permanent objects. Dimensions shall be 300' or less unless approved by the Park Planner. Permanent objects are considered non-perishable and not likely to be moved i.e., buildings, street curbs, fire hydrants, tennis/basketball court corners, concrete footings or slabs around facilities, street signs, etc. (plant material is perishable). If permanent objects are not close enough to take measurements from, consult with the Park Planner. Objects to be dimensioned include but are not limited to: electric valves, routing of wiring, mainline, double check valve assembly, any deviations from the plan (including any and all lateral lines). Prior to taking measurements, consult with the Park Planner as to what other objects, if any, are to be dimensioned. Identify field changes and Change Order changes by dimension and detail.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver irrigation system components in manufacturer's original undamaged and unopened containers with labels intact and legible.
- B. Deliver plastic piping in bundles, packaged to provide adequate protection of pipe ends, either threaded or plain.
- C. Store and handle materials to prevent damage and deterioration. Do not store P.V.C. pipe in direct sunlight for more than 48 hours.
- D. Remove uninstalled components and construction debris each day from site. No storage will be permitted.

1.05 PROJECT CONDITIONS

- A. Known underground and surface utility lines are indicated on the drawings. Contractor shall request utility locating services provided by utility companies, and as built conditions of the existing irrigation system including all low voltage conductors, pipe valves and controls.
- B. Water Service The Contractor shall connect the proposed system into existing piping as indicated on the drawings.
- C. Protect existing trees, plants, lawns, and other features designated to remain as part of the final landscape work. Restore turf and planting area to original condition after trenching, backfilling, and cleaning.
- D. Promptly repair damage to adjacent facilities caused by irrigation system work operations. Cost of repairs shall be contractor's expense.
- E. Promptly notify the Park Planner of unexpected sub-surface conditions.
- F. Irrigation system layout is diagrammatic. Exact locations of piping, sprinkler heads, valves, and other components shall be established by contractor in the field at time of installation. Obtain Park Planner's approval of head layout prior to installation.
- G. Space sprinkler components as per manufacturer's recommendations.
- H. Minor adjustments in system layout will be permitted to clear existing fixed obstructions. The Park Planner shall approve final system layout.
- I. A pre-construction inspection will be conducted by Park Planner with the Contractor to observe original site conditions.
- J. Electric power supply to the existing controller shall remain.

1.06 WARRANTY AND GUARANTEE

- A. Materials and workmanship shall be fully guaranteed for one (1) year following Owner's final acceptance of project at 100% completion. Manufacturer's warranty shall extend beyond 1 year if applicable.
- B. Backfilling of all excavation shall be guaranteed for the one (1) year guarantee period.
- C. Provide a one (1) year warranty against material, installation and operation defects. Repairs, adjustments and replacement of defective irrigation system materials, including materials that have been installed on the work during the warranty period shall be at Contractor's expense.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Parts List: Materials provided and installed by irrigation contractor

DESCRIPTION	MANUFACTURER / MODEL NO.
Controller	Existing on site controller
Flow meter	Data Industrial #IR220p-? (Match size to mainline) w/ all
	necessary wiring and accessories for proper operation
Electric Valve	Weathermatic 11000 series (size as noted on drawings)
Wire Splice Kit	King One Step socket seal
Freeze Sensor	Existing on site rain sensor
Rain Sensor	Existing on site freeze sensor
Pop-up Spray Head (turf & bed	Hunter MPR rotator, MP1000, MP2000, MP3000 or MP3500
areas)	
Small Rotary Head (turf areas)	NA
Large Rotary Head (turf areas)	NA
Large Rotary Head (turf areas)	
Rotary Head (clay infield)	NA
Low pressure rotor, 40 operating PSI	NA
Golf / large turf rotors 80'+ radius	NA
Tree / shrub bubbler	Rainbird RWS - M – BG02 Root Watering System
Quick Coupler Valve	NA

Ball Valve (at remote Valve, Q.C.V.)	Spears Schedule 80 PVC (size to match valve)
Valve Box, and lid, 12" x 17"	DFW Plastics D-1200
(for remote valve, and Q.C.V.)	
Valve Box Extension	DFW Plastics D-600
Wire splice box	DFW Plastics 10" round
Concrete Valve Box	NA
Reduced Pressure Zone Assembly	NA
(RPZ)	
RPZ device enclosure	NA
Main Line PVC	Class 200 PVC
Lateral PVC	Class 200 PVC
Swing Joint Assembly, 1" size	Lasco G-132-212
Drip (4' and narrower)	NA
Sleeves	Schedule 40 PVC 4" or 6" (size as noted on drawings)

B. Manufacturers:

Hunter Irrigation Charley Huston Charley.Huston @hunterindusties.com Weathermatic, Inc. Telsco Industries Bill Savelle 214.243.6697 cell P. O. Box 180205 Dallas, TX 75218-0205 972-278-6131, office Glen-Hilton Products, Inc. P. O. Box 31614 Richmond, VA 23294 804-765-1101

Rainbird Corporation Kirk Biddle 972-217-5961

2.02 MATERIALS

- A. Provide only new materials, without flaws or defects and of the highest quality of their specified class and kind.
- B. Comply with pipe sizes indicated. No substitution of smaller pipes will be permitted. Remove damaged and defective pipe.
- C. Provide pipe continuously and permanently marked with manufacturer's name or trademark, size schedule and type of pipe, working pressure at 73 degrees F. and National Sanitation Foundation (NSF) approval.
- D. Plastic pipe, fittings, and connections:
 - 1. Polyvinyl chloride pipe: ASTM D2241, rigid, unplasticized PVC, extruded from virgin parent material. Provide pipe homogeneous throughout and free from visible cracks, holes, foreign materials, blisters, wrinkles, and dents. SDR21, Class 200.
 - PVC pipe fittings: ASTM D2241 schedule 40 PVC molded fittings suitable for solvent weld, slip joint ring tight seal, or screwed connections. Fittings made of other materials are not permitted. PVC Pipe Fittings - All PVC fittings shall be Type I, medium weight Schedule 40, as manufactured by LASCO Manufacturing Company, or approved equal. Provide 24" minimum dimensions between fittings (exception: threaded couplings).
- E. Size slip fitting socket taper to permit a dry unsoftened pipe end to be inserted no more than halfway into the socket. Saddle and cross fittings are not permitted.
- F. Schedule 80 PVC pipe may be threaded.
- G. Use male adapters for plastic to metal connections. Tighten male adapters by hand plus one turn with a strap wrench.
- H. Copper pipe, fittings, and connections of RPZ device: Refer to Water Utilities specifications. Contact Ron Self, City Backflow Inspector, for details at 972-216-6973.
 - 1. Water piping, fittings and connectors: ASTM B88 Type "L" hard tempered copper tubing. Fittings shall be 150 pound working water pressure standard, solder end type, constructed of wrought copper, bronze, or brass.

- 2. Joints made with tin-lead solder, approximately 50/50 composition. Thoroughly polish joints and use proper flux to provide sound joints.
- I. Associated equipment:
 - 1. Electric control: Type UF 12/2 gauge or 14/3 gauge insulation. UL listed approved for direct under ground burial when used in National Electrical Code Class II Circuit,
 - 2. Wire color code: Provide control or "hot" wires red in color. Provide common or "ground" wires white in color.
 - 3. Ground Rod and Wire for Controller
 - a. Ground shall be 6 gauge uncoated copper bus wire.
 - b. Ground rod shall be a copper coated steel rod or as per local code. Length and diameter shall be as per local code.
 - c. Refer to manufacturer's requirements for wire sizing to valves, and sensors.
- J. Valve box to enclose electric valves shall be a 12" rectangular valve box with a snap in lid. Valve box to be installed with 6" extension (as needed), and supported with bricks around the entire base of the box
- K. Automatic sprinkler controllers shall be capable of operating the number of stations specified. Power source shall be standard 120V AC, 60 Hz., @1.0A for 5 valves. Output for operation of companion solenoid-operated valves shall be 24/28V AC, 2.5A (60/70VA). All conduits shall be ridged type for controller wire and electrical to breaker box. The controller shall be of solid-state construction. The operation of the controller shall be a fully automatic, incorporating the following features: pump start/master valve relay with flow sensing, telephone modem, internal surge protection for AC input and valve outputs, & program information memory during power outages. A computer chip bypass switch for the rain sensor shall be installed inside the controller housing.

2.03 ACCESSORIES

- A. Drainage fill: 1/2" washed pea gravel.
- B. Fill: Clean soil free of stones larger than 1" diameter, foreign matter, organic material, and debris.
- C. Suitable excavated materials removed to accommodate the irrigation system work may be used as fill material subject to the Park Planner's review and acceptance.
- D. Concrete Thrust block: 3000 psi, 5 sack concrete mix.

PART 3 EXECUTION

3.01 INSPECTION

- A. Examine final grades and installation conditions. Do not start irrigation system work until unsatisfactory conditions are corrected.
- B. The contractor shall verify existing and proposed locations of all site utilities (i.e. gas, water, electric, telephone, sanitary and storm sewers etc.) prior to any trenching and laying of pipe. In addition, this contractor shall request for inspection of reduced pressure zone assembly (RPZ) with the Water Utilities Division in connection to City provided meter and exhaust.

3.02 PREPARATION

Lay out and stake the location of each pipe run and all sprinkler heads and sprinkler valves. Obtain Park Planner's acceptance of layout prior to excavating.

3.03 INSTALLATION

- A. Excavating and backfilling:
 - 1. Excavation shall include all materials encountered, except materials that cannot be excavated by normal mechanical means.
 - 2. Excavate trenches of sufficient depth to provide 18" maximum and 12" minimum cover over installed pipe.
 - 3. Fill to match adjacent grade elevations with approved earth fill material. Place and compact fill in layers not greater than 8" depth. Backfill all voids in soil. Material shall not be placed to cause shifting or compression of pipe and valve boxes.
 - 4. Provide clean original material fill free of rocks, concrete and debris for backfill.
 - 5. Provide drainage fill aggregate around each valve and double check assembly.

- 6. Irrigation mainline: The mainline shall be installed in a 6" wide (minimum) trench with all electric wire to valves laid directly below mainline (upon inspection the wires should be hidden from sight). Trench shall allow a minimum of 12" of cover. All mains and laterals up to and including 4" shall have a maximum 18" of cover. Mainline shall be flushed before attaching valves. If splices are made in mainline, use gasket repair fittings. Compression fittings are not allowed. Mainline may be backfilled except at joints prior to inspection by the Owner. Mainline shall be tested for leaks under pressure for a 6 to 8 hour period. Joints may be backfilled after Park Planner verifies and approves that no leaks exist.
- 7. Thrust block shall be required at all 3" or larger fittings.
- 8. Lateral Piping Shall be installed in a 4" wide (minimum) trench 12" deep. Excavate trenches and install piping and fill during the same working day. Do not leave open trenches or partially filled trenches open overnight. Fill at joints in pipe may remain open. Remove rock and sharp objects prior top backfill. Photograph or video every part of the installation prior to backfill as documentation that installation meets this specification and the City Standards.
- 9. Sleeves installed to accommodate irrigation piping shall be installed with 18" of cover, as measured from finished grade. Costs for providing and installing these sleeves shall be included in the irrigation system bid item.
- B. Plastic pipe:
 - 1. Install plastic pipe in accordance with manufacturer's installation instructions. Provide for thermal expansion and contraction.
 - 2. Saw cut or use pipe cutting tool specifically designed for plastic pipe using square blocking to ensure a square cut. Remove burrs and shavings at cut ends prior to installation.
 - 3. Make plastic-to-plastic joints with solvent weld joints or slip seal joints. Use only solvent recommended by the pipe manufacturer. Install plastic pipefittings in accordance with pipe manufacturer's instructions. Solvent primer is required on all joints/fittings. Excess primer and/or solvent dripped on pipe or squeezed from fitting is not permitted and shall be grounds for removal and replacement of the joint.
 - 4. Make plastic to metal joints with plastic male adapters.
 - 5. Maintain a minimum of 24" between all glued joints.
 - 6. Allow joints to set at least 24 hours before pressure is applied to the system.
 - 7. Maintain pipe interiors free of dirt and debris. Close open ends of pipe by acceptable methods when pipe installation is not in progress.
 - 8. Inspection of all fittings and coupling will be made by the Park Planner. Backfill of approved soil is not permitted until Park Planner has inspected all fittings, valves, and couplings.
 - 9. Install in-ground control valves in valve box as indicated. Valve boxes shall be installed in accordance with the manufacturer's installation instructions and with an 8" layer of washed pea gravel under the valve. Each valve box shall be supported by bricks around the entire perimeter of the box. Install valve boxes on a suitable base to provide a level foundation. Set the top of the box 2" below surrounding grade and cover to protect from vandalism.
 - 10. Seal threaded connections on both sides of the control valves with Teflon tape.
- C. Sprinklers, fittings, valves, and accessories:
 - 1. Install fittings, valves, sprinkler heads, risers, and accessories in accordance with manufacturer's instructions, except as otherwise indicated. Maintain a minimum of 24" between all glued fittings. All fittings shall be installed in a horizontal manner. Fittings that join pipe vertically or at angles other than horizontal will be subject to removal. Use of fittings that appears excessive and inappropriate for normal installation and not in compliance with standard industry practice, shall be rejected.
 - 2. Set sprinkler heads perpendicular to finished grades, except as otherwise indicated.
 - 3. Set top of electric valve box at 2" below finish grade.
 - 5. Provide pop-up spray heads with 1/2" flex cut-off nipples joint assembly.
 - 6. The contractor shall pull valve wires, program controller by labeling station position for zones and put controller in operation.
 - D. Control wiring:
 - 1. Contractor shall run a single wire to each solenoid, for the control and a common neutral wire to all solenoids from the controller. Wire shall be sized and color-coded according to device requirements of manufacturer.

- 2. Install enough wire to allow raising the valve bonnet or splice to the surface without disconnecting the wires when repair is required, minimum additional wiring is 12 inches, coil wiring per details. Provide a minimum of two additional control wires in the trench for future or damaged wiring.
- 3. Pull each remote control valve wire through rigid conduit in base, which shall then be connected to controller.
- 4. Make wire connections to remote control electric valves and splices of wire in 10" valve boxes. All wire splices must be properly insulated and waterproofed. Splices shall be made with a King One-Step in accordance with manufacturer's recommendations. Provide 2" of soil cover to protect from vandalism. Show location of any and all splices on the "As-Built" drawings
- G. Flushing, testing, and adjustment:
 - 1. After sprinkler piping and main are installed and before sprinkler heads are installed, open control valves and flush out the system with full head of water until pipes are clear of debris.
 - 2. Perform system testing upon completion of each section. Make necessary repairs and re-test repaired sections as required. Trench and pipe must be dry at inspection. System must be under operating pressure for 24 hours prior to observation of every joint and coupling, by the Park Planner. Backfill is permitted after inspection and approval by Park Planner.
 - 3. Adjust sprinklers after installation for proper and adequate distribution of the water over the coverage pattern. Adjust for the proper arc of coverage.
 - 4. Tighten nozzles on spray type sprinklers after installation. Adjust sprinkler-adjusting screw on lateral line or circuit as required for proper radius. Interchange nozzle patterns as directed by the Park Planner, to give best arc of coverage.
 - 5. Adjust all electric remote control valve flow control stems for system balance.
 - 6. Adjust all rain and temperature sensors as directed by the Park Planner. Test as required to obtain satisfactory operating conditions. Demonstrate correct operation of sensors to the Park Planner.
 - 7. Test and demonstrate the controller by operating appropriate day, hour, and station selection features as required to automatically start and shut down irrigation cycles to accommodate plant requirements and weather conditions.
- G. Spare Parts: Provide to the City of Mesquite additional parts as per noted on plan, including installation and operations manuals to all products.

3.04 DISPOSAL OF WASTE MATERIAL

- A. Stockpile, haul from site, and legally dispose of waste materials, including unsuitable excavated materials, rock, trash, and debris. Debris must be removed at the end of work time each day.
- B. Maintain pavement and curb clear, clean, and free of debris and soil. Pavement and curb shall remain clear, clean and free of debris.

3.05 SUBSTANTIAL COMPLETION:

An inspection of the irrigation system will be made by the Park Planner upon request for Application of Substantial Completion by the Contractor. The irrigation system must be sufficiently complete so that all plant material can be sustained by the system and all valve boxes are properly installed. All electric valves shall have 2" of fill over the top of the box. Contractor shall deliver complete "As-Built" drawings (section 1.03B) to Park Planner for review and comment prior to application of final payment.

3.06 CLEANING:

Perform daily cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, soil, debris, and equipment. Repair damage resulting from irrigation system installation. Restore site to the original condition prior to damage caused by construction activities.

3.07 FINAL COMPLETION:

The Park Planner, upon written request, will make an inspection of the irrigation system for Final Completion by the Contractor. Provide notification of at least two (2) working days before requested inspection date. Contractor shall submit on forms approved by the Park Planner, a Waiver of Release of Lien, Affidavit of Payment of Debts and Claim, and a fully executed "Consent of Surety for Payment".

END OF SECTION 02441

DIVISION 03 | CONCRETE

03 11 00 CONCRETE FORMING

1.00 GENERAL

1.01 WORK INCLUDED

- A. This specification shall apply to the junction box, drop inlet, and conduit through the embankment.
- B. Furnish material and labor to form, tie, brace and support wet concrete, reinforcing steel and embedded items until the concrete has developed sufficient strength to remove forms.

1.02 QUALITY ASSURANCE

- A. Design Criteria: Forms shall be designed for the pressure exerted by a liquid weighing 150 pounds per cubic foot. The rate of placing the concrete, the temperature of the concrete, and all other pertinent factors shall be taken into consideration when determining the depth of the equivalent liquid. An additional design live load of 50 pounds per square foot shall be used on horizontal surfaces.
- B. Alignment Control:
 - 1. True alignment of walls and other vertical surfaces having straight lines or rectangular shapes shall be controlled and checked by the following procedures:
 - a. Forming shall be arranged with provisions for adjusting the horizontal alignment of a form, after the form has been filled with concrete to grade, using wedges, turn buckles, or other adjustment methods. Establish a transit line or other reference so that adjustments can be made to an established line while the concrete in the top of the form is still plastic.
 - b. Adjusting facilities shall be at intervals which permit adjustments to a straight line. Concrete shall not be placed until adequate adjusting facilities are in place.

1.03 SUBMITTALS

- A. Submittals shall include:
 - 1. Record Data.
 - a. Manufacturers' literature for specified products.

1.04 STANDARDS

- A. The applicable provisions of the following standards shall apply as if written here in their entirety:
 - 1. American Concrete Institute (ACI) Specifications:

ACI 301	Specifications for Structural Concrete
ACI 318	Building Code Requirements for Structural Concrete

2. American Institute of Steel Construction (AISC) Publication:

AISC Manual of Steel Construction

3. American Iron and Steel Institute (AISI) Publication:

AISI Cold Formed Steel Design Manual

- 4. American Plywood Association (APA) Standards:
 - APA Design/Construction Guide: Concrete Forming

1.05 DELIVERY AND STORAGE

A. Lumber for forms shall be stacked neatly on platforms raised above ground.

1.06 JOB CONDITIONS

- A. The Contractor shall notify the Engineer upon completion of various portions of the work required for placing concrete so that compliance with the plans and specifications may be monitored. The Engineer will authorize the Contractor to proceed with the placement after this has been completed and corrections, if required, have been made.
- B. In hot weather, both sides of the face forms may be required to be treated with oil to prevent warping and to secure tight joints.

2.00 PRODUCTS

2.01 MATERIALS

- A. Lumber: Properly seasoned and of good quality; free from loose or unsound knots, knot holes, twists, shakes, decay, splits, and other imperfections which would affect its strength or impair the finished surface of the concrete.
- B. Fiber Board Form Lining: Hardboard finished smooth on one side; minimum thickness of 3/16 inch thoroughly wet with water at least 12 hours before using.
- C. Plywood Form Lining: Conforming to APA HDO; exterior exposure waterproof adhesive, 3/8 inch thick.
- D. Form Oil: Light, clear oil; shall not discolor or injuriously affect the concrete surface, subsequent coatings, or delay or impair curing operations.

2.02 FABRICATIONS

- A. Lumber: Lumber for facing or sheathing shall be surfaced on at least one side and two edges, and sized to uniform thickness. Lumber of nominal 1-inch thickness or plywood of 3/4-inch thickness shall be permitted for general use on structures, if backed by a sufficient number of studs and wales.
- B. Special Form Lumber:
 - 1. Molding for chamfer strips or other uses shall be made of redwood, cypress, or pine materials of a grade that will not split when nailed, and which can be maintained to a true line without warping. The form shall be mill cut and dressed on all faces. Fillet forms at sharp corners, both inside and outside and at edges, with triangular chamfer strips at all non-contiguous edges exposed to view. Thoroughly oil chamfer strips before installation on forms.

- 2. Construct forms for railings and ornamental work to standards equivalent to first class mill work.
- 3. All moldings, panel work, and bevel strips shall be straight and true with neatly mitered joints, and designed so that the finished work shall be true, sharp and clean cut.
- C. Forms:
 - 1. Forms shall be built mortar tight and of material sufficient in strength to prevent bulging between supports.
 - 2. Reused forms or form lumber shall be maintained clean and in good condition as to accuracy, shape, strength, rigidity, tightness, and smoothness of surface.
 - 3. All forms shall be so constructed as to permit removal without damage to the concrete. Exercise special care in framing forms for copings, offsets, railing and ornamental work, so that there will be no damage to the concrete when the forms are removed.
- D. Metal Forms:
 - 1. The specifications for "Forms" regarding design, mortar tightness, filleted corners, beveled projections, bracing, alignment, removal, re use, oiling, and wetting shall apply equally to metal forms.
 - 2. The metal used for forms shall be of such thickness that the forms will remain true to shape. Bolt and rivet heads on the facing sides shall be countersunk. Clamps, pins, or other connecting devices shall be designed to hold the forms rigidly together and to allow removal without injury to the concrete.
 - 3. Metal forms which do not present a smooth surface or line up properly shall not be used. Exercise special care to keep metal free from rust, grease, or other foreign material that discolors the concrete.
- E. Form Linings:
 - 1. Timber forms for exposed concrete surfaces which are to be given a rubbed finish shall be face-lined with an approved type of form lining material.
 - 2. If plywood is used for form lining, it shall be made with waterproof adhesive and have a minimum thickness of 3/4 inch. It shall preferably be oiled at the mill and then re-oiled or lacquered on the job before using.
 - 3. If fiber board is used, apply water to the screen side on the board. Stack the boards screen side to screen side. Use the smooth hard face as the contact surface of the form. Such surfaces may be formed with 3/4-inch thick plywood made with waterproof adhesive if backed with adequate studs and wales. The greatest strength of the outer plies should be at right angles to the studding. In this case, form lining will not be required.
 - 4. Carefully align edges and faces of adjacent panels and fill the joints between panels with patching plaster or cold water putty to prevent leakage. Lightly sand with No. 0 sandpaper to make the joints smooth.
 - 5. Forms which are reused shall have all unused form tie holes filled and smoothed as specified above.
- F. Form Ties:

- 1. Metal form ties shall be used to hold forms in place and to provide easy metal removal. The use of wire for ties shall not be permitted.
- 2. Leave no metal or other material within 1-1/2 inches of the surface, when removing form tie assemblies which are used inside the forms to hold the forms in correct alignment. The assembly shall provide cone-shaped depressions in the concrete surface at least 1 inch in diameter and 1-1/2 inches deep to allow filling and patching. Such devices, when removed, shall leave a smooth depression in the concrete surface without undue injury to the surface from chipping or spalling.
- 3. Burning off rods, bolts, or ties shall not be permitted.
- 4. Metal ties shall be held in place by devices attached to wales. Each device shall be capable of developing the strength of the tie.
- 5. Metal and wooden spreaders which are separate from the forms shall be wired to top of form and shall be entirely removed as the concrete is placed.
- 6. In the construction of basement or water bearing walls, the portion of a single rod tie that is to remain in the concrete shall be provided with a tightly fitted washer at midpoint to control seepage. Multi-rod ties do not require washers. The use of form ties which are tapered on encased in paper or other material to allow the removal of complete tie, and which leave a hole through the concrete structure, shall not be permitted.
- G. Falsework:
 - 1. Falsework shall be designed and constructed so that no excessive settlement or deformation occurs. Falsework shall provide necessary rigidity.
 - 2. Timber used in falsework centering shall be sound, in good condition and free from defects which impair its strength.
 - 3. Steel members shall be of adequate strength and shape for the intended purpose.
 - 4. Timber piling used in falsework may be of any wood species which satisfactorily withstands driving and which adequately supports the superimposed load.
 - 5. When sills or timber grillages are used to support falsework columns, unless founded on solid rock, shale or other hard materials, place them in excavated pits. Backfill to prevent the softening of the supporting material from form drip or from rains that may occur during the construction process. Sills or grillages shall be of ample size to support the superimposed load without settlement.
 - 6. Falsework not founded on a satisfactory spread footing shall be supported on piling, which shall be driven to a bearing capacity to support the superimposed load without settlement.

3.00 EXECUTION

3.01 PREPARATION

A. Before placing concrete, insure that embedded items are correctly, firmly and securely fastened into place. Embedded items shall be thoroughly clean and free of oil and other

foreign material. Anchor bolts shall be set to the correct location, alignment and elevation by the use of suitable anchor bolt templates.

3.02 INSTALLATION

- A. Pre-Placement:
 - 1. During the elapsed time between building the forms and placing the concrete, maintain the forms to eliminate warping and shrinking.
 - 2. Treat the facing of forms with suitable form oil before concrete is placed. Apply oil before the reinforcement is placed. Wet form surfaces which will come in contact with the concrete immediately before the concrete is placed.
 - 3. At the time of placing concrete, the forms shall be clean and entirely free from all chips, dirt, sawdust, and other extraneous matter at the time. Forms for slab, beam and girder construction shall not have tie wire cuttings, nails or any other matter which would mar the appearance of the finished construction. Clean forms and keep them free of foreign matter during concrete placement.
- B. Placement:
 - Set and maintain forms to the lines designated, until the concrete is sufficiently hardened to permit form removal. If, at any stage of the work, the forms show signs of bulging or sagging, immediately remove that portion of the concrete causing this condition. If necessary, reset the forms and securely brace against further movement.
 - 2. Provide adequate cleanout openings where access to the bottom of the forms is not otherwise readily attainable.
 - 3. Carefully and accurately place and support reinforcement in concrete structures.
- C. Removal: Remove forms so that the underlying concrete surface is not marred or damaged in any way. Forms shall not be removed until the concrete has attained sufficient strength to safely carry the dead load, but in no case less than the number of curing days set forth in the following table:

Forms for concrete of minor structural load carrying importance	
Forms for walls, columns, sides of drilled shafts, massive structural components and other members not resisting a bending moment during curing	1 day
Forms and falsework under slabs, beams and girders where deflections due to dead load moment may exist (for spans < or = 10 feet)	
Forms and falsework under slabs, beams and girders where deflections due to dead load moment may exist (for spans > 10 feet and < or = 20 feet)	

END OF SECTION

APPENDIX A

A1.00 MEASUREMENT AND PAYMENT

A1.01 MEASUREMENT

A. No measurements are required.

A1.02 PAYMENT

A. Payment for Concrete Forming shall be considered subsidiary to Cast-In-Place Concrete for each structure.

END OF APPENDIX A

03 21 00 REINFORCING STEEL

1.00 GENERAL

1.01 WORK INCLUDED

- A. This specification shall apply to the junction box, drop inlet, and conduit through the embankment.
- B. Furnish labor and reinforcing materials required to cut, bend, tie, splice, place and support the reinforcement in the material grades, sizes, quantities and locations specified.

1.02 QUALITY ASSURANCE

- A. Tolerances:
 - 1. Reinforcement shall be placed where specified, with the following maximum tolerances, plus or minus:
 - a. Concrete Cover: 1/4 inch.
 - b. Rebar Spacing: 1/4 inch in 12 inches.

1.03 SUBMITTALS

- A. Submittals shall include:
 - 1. Shop Drawings:
 - a. Reinforcing bar layout drawing with bar lists clearly marked and referenced to the Drawings.
 - 2. Record Data:
 - a. Manufacturers' literature for specified products.
 - 3. Certified Test Reports:
 - a. Certification of steel quality, size, grade and manufacturer's origin.

1.04 STANDARDS

- A. The applicable provisions of the following standards shall apply as if written here in their entirety:
 - 1. American Society for Testing and Materials (ASTM) Standards:

ASTM A1064	Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
ASTM A615	Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

2. American Concrete Institute (ACI) Publications:

ACI 301	Specification for Structural Concrete
ACI SP-66	ACI Detailing Manual

ACI 318	Building Code Requirements for Structural Concrete
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3. Concrete Reinforcing Steel Institute (CRSI) Publications:

CRSI Manual of Standard Practice

1.05 DELIVERY AND STORAGE

A. Store steel reinforcement above the surface of the ground upon platform skids or other supports. Protect from mechanical and chemical injury and surface deterioration caused by exposure to conditions producing rust. When placed in the Work, steel reinforcement shall be free from dirt, scale, dust, paint, oil and other foreign material. Tag and store steel reinforcement for ease of correlation with Shop Drawings.

1.06 JOB CONDITIONS

- A. Proposed deviations from reinforcing indicated on the Drawings or Specifications shall be approved in writing by the Engineer prior to fabrication.
- B. Lap lengths shall be of the length shown on the Drawings or noted in lap and embedment table, and shall be in compliance with ACI 318.
- C. Specified cover for reinforcing shall be maintained throughout construction. Bars shall be cut to lengths necessary to allow for proper clearances. Cover of concrete shall be measured from face of forms to outside face of reinforcement.
- D. Stirrups shall be hooked.

2.00 PRODUCTS

2.01 MATERIALS

- A. Steel Reinforcing Bars: Billet-Steel bars for concrete reinforcement conforming to ASTM A615; Grade 60, with minimum yield strength of 60,000 psi. Steel reinforcing bars shall be produced in the United States of America.
- B. Welded Wire Fabric: Cold-drawn steel wire conforming to ASTM A1064; flat sheets fabricated in accordance with ASTM A1064.
- C. Supports (Chairs): Bar supports shall be of the proper type for the intended use. Bar supports shall provide at least CRSI Class 2 protection. Plastic protected wire bar supports are not allowed.
- D. Spacers: Precast mortar blocks with a 28-day compressive strength that is greater than the specified concrete strength in which the blocks are being placed.
- E. Mechanical Bar Splices: Cadweld splices as manufactured by Erico Products, Inc., or approved equal, installed in strict accordance with the manufacturer's instructions and recommendations. The mechanical devices shall develop at least 125 percent of the specified yield of the spliced bars.
- F. Mechanical Threaded Splices: Mechanical threaded connections shall utilize a metal coupling sleeve with internal threads which engage threaded ends of the bars to be spliced

and shall develop in tension or compression 125 percent of the specified yield strength of the bar.

2.02 FABRICATIONS

A. Bending: Reinforcement shall be bent cold by machine to shapes indicated on the Drawings; true to shapes indicated; irregularities in bending shall be cause for rejection. Unless otherwise noted, all hook and bend details and tolerances shall conform to the requirements of ACI SP-66 and ACI 318.

3.00 EXECUTION

3.01 PREPARATION

A. Before any concrete is placed, all mortar blocks to be used for holding steel in position adjacent to formed surfaces shall be cast in individual molds, after which time the blocks shall be immersed in water for the remainder of at least a 4-day curing period. The blocks shall be cast with the sides beveled and in such a manner that the size of the block increases away from the surface to be placed against the forms. Blocks shall be in the form of a frustum of a cone or pyramid. Suitable tie wires shall be provided in each block for anchoring the block to the reinforcing steel, and to avoid displacement when placing the concrete. The size of the surface to be placed adjacent to the forms shall not exceed 2-1/2 inches square or the equivalent thereof when circular or rectangular areas are provided. Blocks shall be accurately cast to the thickness required, and the surface to be placed adjacent to the forms.

3.02 INSTALLATION

- A. General: Place the reinforcement carefully and accurately in the concrete structures. Rigidly tie and support the reinforcement. Welding of any type of reinforcement shall not be permitted.
- B. Splices:
 - Splicing of bars, except where indicated on the Drawings, shall not be permitted unless approved by the Engineer prior to fabrication. Splices shall be kept to a minimum. Splices shall preferably occur at points of minimum stress. Lap splices which are permitted shall have a lap in accordance with ACI 318. Rigidly clamp or wire the bars at all splices, in accordance with ACI. Overlap sheets of wire fabric sufficiently to maintain a uniform strength and securely fasten.
 - 2. Welding of reinforcing steel splices shall not be permitted.
 - 3. Make mechanical splices where shown on the Drawings using Cadweld splices or approved equal, installed in accordance with the manufacturer's instructions and recommendations. The mechanical device shall develop at least 125 percent of the specified yield strength of the bar.
- C. Placement:
 - Place steel reinforcement, as indicated on the Drawings with the specified tolerances. Hold securely in place during the placing of the concrete. The minimum clear distance between bars shall be per ACI 318 unless noted otherwise. Always pass vertical stirrups

around the main tension members and securely attach thereto. Wire reinforcing together at a sufficient number of intersections to produce a sound, sturdy mat or cage of reinforcement that will maintain the reinforcement in correct positions when the concrete is placed.

- 2. Hold the reinforcing steel in concrete slabs firmly in place with wire supports or "chairs." Sizing and spacing of the chairs shall be sufficient to properly support the steel, and shall be in accordance with CRSI Publications "Manual of Standard Practice in."
- 3. Space the reinforcing steel in concrete walls the proper distance from the face of the forms, as indicated on the Drawings:
 - a. For wall surfaces exposed to view, use chairs.
 - b. For wall surfaces not exposed to view, use chairs or precast mortar blocks.
- 4. Where reinforcing conflicts with location of anchor bolts, inserts, etc., submit prompt notifications so that revisions can be made before concrete is placed. No cutting of reinforcing shall be permitted without the prior approval of the Engineer.
- 5. Welded wire shall be fabricated flat sheets, in longest practical lengths. Lap joints one mesh. Do not locate end laps over beams of continuous structures or midway between supporting beams. Offset end laps of adjacent widths to prevent continuous lap. Fasten ends and sides of welded wire fabric at 48 inches O.C. with tie wire.
- 6. Reinforcing shall extend through construction joints.

3.03 FIELD QUALITY CONTROL

A. Concrete shall not be placed until the Engineer has observed the final placing of the reinforcing steel, and has given permission to place concrete.

END OF SECTION

APPENDIX A

A1.00 MEASUREMENT AND PAYMENT

A1.01 MEASUREMENT

A. No measurements are required.

A1.02 PAYMENT

A. Payment for Reinforcing Steel shall be considered subsidiary to Cast-In-Place Concrete for each structure.

END OF APPENDIX A

03 30 00 CAST-IN-PLACE CONCRETE

1.00 GENERAL

1.01 SUMMARY

- A. This specification shall apply to the junction box, drop inlet, and conduit through the embankment.
- B. Furnish labor, materials, mixing and transporting equipment and incidentals necessary to proportion, mix, transport, place, consolidate, finish and cure concrete in the structure.

1.02 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.03 SUBMITTALS

- A. Submittals shall include:
 - 1. Shop Drawings for:
 - a. Mix design: For each concrete mix, complete the form "Concrete Mix Design" and one of the following forms: "Documentation of Required Average Strength Field Strength Test Record" or "Documentation of Average Strength Trial Mixtures."
 - b. Submit a schedule to the Owner's representative which shows the sequence of concrete placements.
 - 2. Certified Test Reports for:
 - a. Materials used in the trial mix design.
 - b. Aggregate, conforming to ASTM C33, including the test reports for soundness and abrasion resistance.
 - c. Aggregate:
 - 1). Verification that aggregate is not "potentially reactive" per ASTM C289.
 - 2). Or a cement chemical analysis indicating that the total alkali content is acceptable per Paragraph 2.02.A.
 - d. 7-day and 28-day compressive strength tests results.
 - 1). When more than 15, 28-day compressive tests results are available from the current Project for a given class of concrete, include the 15-test running average compressive strength versus the required average compressive strength (based on the previous 15 tests) in graphical form.
 - 3. Record Data for:
 - a. Manufacturer's literature on specified materials.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed concrete work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Manufacturer Qualifications:
 - 1. A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C94 requirements for production facilities and equipment.
- C. Testing Agency Qualifications:
 - 1. An independent testing agency, acceptable to authorities having jurisdiction and the Engineer, qualified according to ASTM C1077 and ASTM E329 to conduct the testing indicated.
 - 2. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
- D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, each aggregate from one source, and each admixture from the same manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver cement in bulk or bags which are plainly marked with the brand and manufacturer's name. Immediately upon receipt, store cement in a dry, weather-tight and properly ventilated structure which excludes moisture. Storage facilities shall permit easy access for inspection and identification. Cement not stored in accordance with the requirements shall not be used.
- B. Sufficient cement shall be in storage to complete placement of concrete started. In order that cement may not become unduly aged after delivery, maintain records of delivery dates. Use cement which has been stored at the Site for 60 days or more before using cement of lesser age. No cement shall be used which is lumped, caked, stored more than 90 days, or whose temperature exceeds 170 F.

1.06 STANDARDS

A. Mixing, sampling, placing, curing and testing of concrete, and the materials used shall be in compliance with the latest revisions of the following standards, unless otherwise noted in the Contract Documents. The Contractor shall maintain one copy of each of the applicable standards at the construction field office.

ASTM Standards		
ASTM C31	Standard Practice for of Making and Curing Concrete Test Specimens in the Field	
ASTM C33	Standard Specification for Concrete Aggregates	
ASTM C39	Standard Specification Test Method for Compressive Strength of Cylindrical Concrete Specimens	

1. American Society for Testing and Materials (ASTM) Standards:

ASTM Standards		
ASTM C42	Standard Specification Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete	
ASTM C87	Standard Specification Test Method for Effect of Organic Impurities in Fine Aggregate on Strength of Mortar	
ASTM C94	Standard Specification of Ready Mixed Concrete	
ASTM C109	Standard Test Method for Compressive Strength of Hydraulic Cement Mortars	
ASTM C125	Terminology Relating to Concrete and Concrete Aggregates	
ASTM C143	Standard Test Method for Slump of Hydraulic Cement Concrete	
ASTM C150	Standard Specification for Portland Cement	
ASTM C156	Standard Test Method for Water Retention by Concrete Curing Materials	
ASTM C171	Standard Specification for Sheet Materials for Curing Concrete	
ASTM C172	Standard Practice for Sampling Freshly Mixed Concrete	
ASTM C173	Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method	
ASTM C191	Standard Test Method for Time of Setting of Hydraulic Cement by Vicat Needle	
ASTM C192	Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory	
ASTM C231	Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method	
ASTM C260	Standard Specification for Air-Entraining Admixtures for Concrete	
ASTM C289	Standard Test Method for Potential Alkali-Silica Reactivity of Aggregates (Chemical Method)	
ASTM C293	Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Center-Point Loading)	
ASTM C309	Standard Specification for Liquid Membrane Forming Compounds for Curing Concrete	
ASTM C494	Standard Specification for Chemical Admixtures for Concrete	
ASTM C579	Standard Test Methods for Compressive Strength of Chemical Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes	
ASTM C580	Standard Test Method for Flexural Strength and Modulus of Elasticity of Chemical Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes	
ASTM C595	Standard Specification for Blended Hydraulic Cements	
ASTM C618	Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete	
ASTM C806	Standard Test Method for Restrained Expansion of Expansive Cement Mortar	

ASTM Standards		
ASTM C827	Standard Test Method for Change in Height at Early Stages of Cylindrical Specimens of Cementitious Mixtures	
ASTM C845	Standard Specification for Expansive Hydraulic Cement	
ASTM C878	Standard Test Method for Restrained Expansion of Shrinkage Compensating Concrete	
ASTM C881	Standard Specification for Epoxy Resin Base Bonding Systems for Concrete	
ASTM C1240	Standard Specification for Silica Fume used in Cementitious Mixtures	
ASTM D570	Standard Test Method for Water Absorption of Plastics	
ASTM D638	Standard Test Method for Tensile Properties of Plastics	
ASTM D746	Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact	
ASTM D994	Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type)	
ASTM D1752	Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction	
ASTM D2240	Standard Test Method for Rubber Property Durometer Hardness	
ASTM D6690-07	Standard Specification for Joint and Crack Sealant, Hot Applied, for Concrete and Asphalt Pavements	
ASTM E96	Standard Test Methods for Water Vapor Transmission of Materials	

2. American Concrete Institute (ACI) Standards:

ACI Standards		
ACI 211.1	Standard Practice for Selecting Proportions for Normal, Heavy-weight, and Mass Concrete	
ACI 214	Recommended Practice for Evaluation of Strength Test Results	
ACI 223	Standard Practice for Use of Shrinkage Compensating Concrete	
ACI 301	Specification for Structural Concrete	
ACI 304	Guide for Measuring, Mixing, Transporting & Placing Concrete	
ACI 304.2R	Placing Concrete by Pumping Methods	
ACI 305.1	Hot Weather Concreting	
ACI 306.1	Cold Weather Concreting	
ACI 308.1	Standard Practice for Curing Concrete	
ACI 309	Guide for Consolidation of Concrete	
ACI 318	Building Code Requirements for Structural Concrete	

- 3. Corps of Engineers, Department of the Army Specification:
 - a. CRD C621 83 Corps of Engineers Specification for Non-Shrink Grout.
- 4. Federal Specification:
 - a. TT S 00227E Type II, Class A or B, Expansion Joint Sealant.

2.00 PRODUCTS

2.01 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
 - 2. Products: Subject to compliance with requirements, provide one of the products specified.
 - 3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
 - 4. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.02 CONCRETE MATERIALS

- A. Cementitious Material; General: If the fine and/or coarse aggregates test "Potentially Reactive", in accordance with ASTM C289, then a low alkali cementitious material shall be used. A low alkali cementitious material shall be such that, the total alkali content calculated as the percentage of sodium oxide (Na2O) plus 0.658 times the percentage of potassium oxide (K2O) shall not exceed 0.6 percent of the total cementitious material content.
- B. Cement; Type:
 - 1. Type I or I/II Portland cement, conforming to ASTM C150; used for all concrete, unless noted otherwise.
- C. Fly Ash/Pozzolans: Conforming to ASTM C618, Class F fly ash; used in all classes of concrete. A supplier's certificate of the analysis and composition of the fly ash shall be supplied.
- D. Coarse Aggregate:
 - 1. Crushed stone or gravel conforming to ASTM C33, in the gradation size specified.
 - 2. For gradation size number 467, a maximum aggregate size of 1-1/2 inches is:

Sieve Size	Percent Retained	Percent Passing
2″	0	100
1-1/2"	0-5	95-100
3/4"	30-65	35-70

Sieve Size	Percent Retained	Percent Passing
3/8"	70-90	10-30
No. 4	95-100	0-5

3. For gradation size number 57, the maximum aggregate size of 1 inch is:

Sieve Size	Percent Retained	Percent Passing	
1-1/2"	0	100	
1″	0-5	95-100	
1/2"	40-75	25-60	
No. 4	90-100	0-10	
No. 8	95-100	0-5	

4. For gradation size number 67, the maximum aggregate size of 3/4 inch is:

Sieve Size	Percent Retained	Percent Passing
1"	0	100
3/4"	0-10	90-100
3/8"	45-80	20-55
No. 4	90-100	10-10
No. 8	90-100	0-5

5. For gradation size number 8, the maximum aggregate size of 3/8 inch is:

Sieve Size	Percent Retained	Percent Passing
1″	0	100
3/8"	0-15	85-100
No. 4	70-90	10-30
No. 8	90-100	0-10
No. 16	95-100	0-5

- E. Fine Aggregate:
 - 1. Washed and screened natural sands or sands manufactured by crushing stones; conforming to ASTM C33. The gradation in ASTM C33 for air entrained concrete is:

Sieve Size	Percent Retained	Percent Passing
3/8"	0	100
#4	0-5	95-100
#8	0-20	80-100
#16	15-50	50-85
#30	40-75	25-60

Sieve Size	Percent Retained	Percent Passing
#50	70-90	10-30

- 2. Fine aggregate shall have not more than 45 percent retained between any two consecutive sieves. Its fineness modulus, as defined in ASTM C125, shall be not less than 2.3 nor more than 3.1.
- F. Water: Potable and complying with ASTM C1602.

2.03 ADMIXTURES

- A. Air Entraining Admixture: Conforming to ASTM C260.
- B. Water Reducing Admixtures: Conforming to ASTM C494; Types "A" or "D" only; accurately measured and added to the mix according to the manufacturer's recommendations.
- C. Set Retarding Admixtures: Conforming to ASTM C494; Types "B" and "D" only; accurately measured and added to the mix in according to the manufacturer's recommendations.
- D. Water Reducing Admixtures High Range (HRWR): High Range Water Reducer shall comply with ASTM C494, Type F or G. HRWR shall be accurately measured in accordance with the manufacturer's recommendations. HRWR shall be added to the concrete mix at the concrete batch plant. HRWR may not be added at placement site except to redose a batch and only after approval of the HRWR manufacturer. The high range water reducing admixture shall be able to maintain the plasticity range without significant loss of slump or rise in concrete temperature for 2 hours. Other admixtures may only be used with the HRWR if approved by the HRWR manufacturer. A representative of the HRWR manufacturer shall be present during any large placement, placement of slabs, or during times of unusual circumstance which may require changes to the product formulation.
 - 1. Manufacturers:
 - a. BASF Corporation.
 - b. W. R. Grace & Co.
 - c. Sika Corporation.

2.04 WATERSTOPS

- A. Self-Expanding Strip Waterstops (Hydrophilic): Self-expanding strip waterstops shall be used only where specifically indicated. Manufactured rectangular or trapezoidal strip, sodium bentonite or other hydrophylic material for adhesive bonding to concrete.
 - 1. Products:
 - a. Swellseal Joint; De Neef Construction Chemicals (U.S.) Inc.
 - b. Adeka Ultra Seal; Mitsubishi International Corporation.
 - c. Sika Hydrotite; Sika Corporation U.S.

2.05 CURING MATERIALS

A. Sheet Curing Material: Conforming to ASTM C171.

- 1. Waterproof paper.
- 2. Polyethylene film.
- 3. White burlap polyethylene film.
- B. Membrane Curing Compounds: Membrane curing compound conforming to ASTM C309; having a color to indicate coverage when applied; non-staining; applied according to the manufacturer's recommendations. No curing compound shall be used on walls which are to receive a plaster mix finish. When tested according to ASTM C156, the curing compound shall provide a film which has retained, within the specimen, the following percentages of moisture present when the curing compound was applied:
 - 1. At least 97 percent at the end 24 hours.
 - 2. At least 95 percent at the end of 3 days.
 - 3. At least 91 percent at the end of 7 days.
- C. Concrete Curing and Sealing Compound:
 - 1. Where a sealer is necessary, use a concrete curing and sealing compound. Application of this product shall be in accordance with the manufacturer's recommendations.
 - 2. MasterKure CC 1315 WB by BASF Corporation.
- D. Finishing Aid: Spraying material designed to form a monomolecular film on fresh concrete that reduces the rate of evaporation of surface moisture prior to finishing; conforming to Confilm, as manufactured by Master Builders, Inc. This material is not a curing compound. Concrete must be cured as specified.

2.06 RELATED MATERIALS

- A. Joint Materials for Water-Retaining Structures:
 - 1. Pre-molded, resilient, non-bituminous expansion joint filler conforming to ASTM D1752, Type "II", in the thickness specified.
 - 2. Joint sealer conforming to ASTM D6690.
 - 3. Expansion joint sealant for non-potable water shall be a two-component, non-sag, polysulfide-base, elastomeric sealing compound. The material shall conform to Federal Specification TT S 00227E, Type "II", Class B; installed according to the manufacturer's recommendations. Backing material for sealant shall be a rod of a diameter and composition recommended by the sealant manufacturer.
 - Expansion joint sealant for potable water shall be a two-component, non-sag, polysulfide sealant containing no lead or mercury; conforming to Fed. Spec. TT S 00227E, Type "II", Class A; applied according to the manufacturer's specifications. Backing material for sealant shall be a rod of a diameter and composition recommended by the sealant manufacturer.
 - 5. Where surface is to receive a swept in grout topping, a 3-inch wide, 1-mil polyethylene strip shall be placed above the joint sealant and held in place with 1-inch wide polyethylene tape spaced at 12-inch centers (maximum).

- B. Joint Materials for Non-Water-Retaining Structures: Bituminous-type, preformed, expansion joint filler; conforming to ASTM D994.
- C. Bonding Agents: Install according to the manufacturer's recommendations and written instructions.
- D. Bonding agent shall be Sika Armatec 110 EpoCem by Sika Corporation.
- E. Non-Shrink Grout:
 - 1. General: Non-shrink grout for grouting of pump, motor, and equipment baseplates or bedplates, column baseplates, other miscellaneous baseplates, piping block outs and other uses of grout. Grout shall meet the following requirements, as verified by independent laboratory tests:
 - a. No shrinkage from the time of placement, or expansion after set, under ASTM C827 and CRD C621 83 (Corps of Engineers). When non-shrink grouts are tested under CRD C621 83, the grout shall be tested in a fluid state. A fluid state shall be defined as flowing through a flow cone at a rate of 20 seconds, plus or minus 5 seconds.
 - b. An initial set time of not less than 45 minutes under ASTM C191.
 - 2. Non-Shrink Non Metallic Grout: Pre mixed, non-staining, non-shrink grout; minimum 28-day compressive strength of 5000 psi.
 - a. Do not use for vibrating equipment.
 - b. Products:
 - 1). Masterflow 713 Plus by BASF The Chemical Company.
 - 2). Five Star Grout by Five Star Products, Inc.
 - 3). SikaGrout 212 by Sika Corporation.
 - 3. Non-Shrink Epoxy Structural Grouts: Furnished in two components from the factory and mixed on the Site; conforming to ASTM C579, ASTM C580, and ASTM C827; chemical resistant, water resistant and a minimum 7-day compressive strength of 12,000 psi.
 - a. Use for vibrating equipment.
 - b. Products:
 - 1). Sikadur 42, Grout-Pak by Sika Corporation.
 - 2). Five Star HP Epoxy Grout by Five Star Products, Inc.
 - 3). Masterflow 648 CP by BASF The Chemical Company.
- F. Normal Shrinkage Grout: 1 part Portland cement, Type **[I] [II]**, to 3 parts of clean, first quality sand; proportioning on a volumetric basis; used for non-structural applications for grouting areas as shown on the Drawings which do not require non-shrink grout.
- G. Foundation Waterproofing: Thoroseal Foundation Coating as manufactured by Thoro Systems Products. Foundation coating shall be used only on the exterior of concrete walls not exposed to view where indicated on the Drawings.
- H. Zinc Rich Primer: Aluminum surfaces which contact or are embedded in concrete shall be coated with zinc rich primer. Primer shall be Tneme-Zinc.

2.07 REPAIR MATERIALS

- A. Structural Concrete Repair Material: Non-shrink, non-slump, non-metallic, quick setting patching mortar; as approved by the manufacturer for each application and applied accordance with the manufacturer's recommendations.
 - 1. Products:
 - a. Sikatop 123 by Sika Corporation.
 - b. Five Star Structural Concrete by Five Star Products, Inc.

2.08 CONCRETE MIXTURES

- A. Design Criteria:
 - 1. Provide a mix design for each concrete application indicated. This may necessitate multiple mix designs for each class of concrete depending on HRWR, entrained air, and other requirements.
 - 2. All Concrete shall be normal weight concrete composed of Portland cement, fine aggregate, coarse aggregate, admixtures, and water, as specified.
 - 3. ACI 211.1 shall be the basis for selecting the proportions for concrete made with aggregates of normal and high density and of workability suitable for usual cast in place structures.
 - 4. The workability of any mix shall be as required for the specific placing conditions and the method of placement. The concrete shall have the ability to be worked readily into corners and around reinforcing steel without the segregation of materials or the collection of free water on the surface. Compliance with specified slump limitations shall not necessarily designate a satisfactory mix.
 - 5. In no case shall the amount of coarse material produce harshness in placing or honeycombing in the structure, when forms are removed.
 - 6. The maximum amount of coarse aggregate (dry loose volume) per cubic foot of finished concrete shall not exceed 0.82 cubic feet.
 - 7. In calculating water-cement ratio: The water content shall include the amount of water batched or to be added later, plus the free water in the aggregate, and minus the water content at SSD conditions.
 - 8. No allowance shall be made for the evaporation of water after batching. If additional water is required to obtain the desired slump, a compensating amount of cement shall also be added. In no case shall the maximum water cement ratio exceed the specified maximum or that of the approved mix design.
 - 9. Air Entrainment: Provide the percent air entrainment in each concrete mix design as recommended by ACI 318 and ACI 350 for "Moderate Exposure" (Class F1), unless otherwise specified/restricted:
 - a. Do not provide air-entrainment in drilled shafts unless placed underwater.

- b. Do not provide air-entrainment and entrapped air shall not exceed 3 percent for the following applications:
 - 1). Interior slabs.
 - 2). Slabs on composite metal decks.
- 10. When job conditions dictate, water-reducing and set-controlling admixtures may be used. Only specified admixtures shall be used. Admixtures shall be batched at the batch plant.
- 11. High Range Water Reducer (HRWR): Provide HRWR in mix designs as indicated for specified applications. Slump of concrete with the addition of HRWR may be increased to 8 inches (+/- 1 inch).
 - a. Drilled shafts, footings, walls, columns, and beams.
 - b. Interior of building curbs which are not cast monolithically with slabs.
 - c. Precast concrete.
 - d. Do not provide HRWR in slabs and pavement (a water reducer is permitted provided performance requirements are met).
- 12. If fly ash is to be used in place of cement, no more than 25 percent of the cement may be replaced.
- 13. Concrete shall be capable of developing two-thirds of the required 28-day compressive strength in 7 days
- B. Concrete Classifications:

Class	Min. 28-Day Compressive Strength (psi)	Max. Size Aggregate (inches)	Max. Water: Cement Ratio	Slump +/- 1 (inches)	Min. Sacks of Cement Per Cubic Yard **
А	4000	1.5 Size No. 467	0.45	3 (8*)	5.75
С	4000	1.0 Size No. 57	0.45	4 (8*)	5.75
E	1500	1.5 Size No. 467	0.70	4	4.00

* Slump shown is with HRWR

** Provide one additional sack of cement per cubic yard if concrete must be deposited in standing water.

C. Concrete Usage:

Class	Usage
Class A Use	Footings and slabs, and other unless noted otherwise
Class C Use	Walls, columns, beams, drilled shafts
Class E Use	Cradling, Blocking, mud slab, lean concrete backfill

- D. Required Average Compressive Strength:
 - 1. All concrete is required to have an average compressive strength greater than the specified strength. The required average compressive strength shall be established according to the requirements of ACI 301, 4.2.3.3.
 - 2. Standard Deviation: If the production facility has records of field tests performed within the past 12 months and spanning a period of not less than 60 calendar days for a class of concrete within 1000 psi of that specified for the Work, calculate a standard deviation and establish the required average strength fcr' in accordance with ACI 301, 4.2.3.2 and 4.2.3.3.a. If field test records are not available, select the required average strength from ACI 301, Table 4.2.3.3.b.
- E. Documentation of Required Average Compressive Strength:
 - 1. Documentation indicating the proposed concrete proportions will produce an average compressive strength equal to or greater than the required average compressive strength, shall consist of field strength records or trial mixture.
 - 2. Field Strength Records: Document field strength records according to ACI 301, 4.2.3.4.a and including the following:
 - a. Field test data shall not be older than 1 year.
 - b. If field test data are available and represent a single group of at least 10 consecutive strength tests for one mixture, using the same materials, under the same conditions, and encompassing a period of not less than 60 days, verify that the average of the field test results equals or exceeds fcr'. Submit for acceptance the mixture proportions along with the field test data.
 - c. If the field test data represent two groups of compressive strength tests for two mixtures, plot the average strength of each group versus the water-cementitious materials ratio of the corresponding mixture proportions and interpolate between them to establish the required mixture proportions for fcr'.
 - 3. Trial Mixtures:
 - a. Establish trial mixture proportions according to ACI 301, 4.2.3.4.b and including the following.
 - Make at least three trial mixtures complying with performance and design requirements. Each trial mixture shall have a different cementitious material content. Select water-cementitious materials ratios that will produce a range of compressive strengths encompassing the required average compressive strength fcr'.

- 2). Submit a plot of a curve showing the relationship between water-cementitious materials ratio and compressive strength.
- 3). Establish mixture proportions so that the maximum water-cementitious materials ratio is not exceeded when the slump is at the maximum specified.
- b. Laboratory Samples shall be taken in accordance with the trial mix designs for laboratory testing purposes.
- c. The fresh concrete shall be tested for Slump (ASTM C143) and Air Content (ASTM C173 and ASTM C231). Strength test specimens shall be made, cured and tested for 7-day and 28-day strength in accordance with ASTM C192, ASTM C39, and ASTM C293.
- d. Suitable facilities shall be provided for readily obtaining representative Samples of aggregate from each of the weigh batchers for test purposes and for obtaining representative Samples of concrete for uniformity tests. The necessary platforms, tools, and equipment for obtaining Samples shall be furnished. Aggregates shall be tested in accordance with ASTM C289.
- e. The cement contents specified are minimum values. If additional quantities are required to obtain the specified strengths, supply the cement at no additional cost to the Owner.
- f. A trial mix shall be designed by an independent testing laboratory, retained and paid by the Contractor and approved by the Owner. The testing laboratory shall submit verification that the materials and proportions of the trial concrete mix design meet the requirements of the Specifications.
- g. From these trial mix tests, the ratios between 7-day and 28-day strengths shall be established. The 7-day strength which corresponds to the required 28-day strength shall be determined.
- h. The final results of the trial mix design shall be submitted to the Engineer at least 10 days prior to the scheduled beginning of concrete placement and shall be approved by the Engineer prior to the placement of any concrete.
- 4. Revisions to concrete mixtures:
 - a. When less than 15 compressive strength tests results for a given class of concrete are available from the current Project:
 - 1). If any of the following criteria are met, take immediate steps to increase average compressive strength of the concrete.
 - a). A 7-day compressive strength test result multiplied by 1.5 falls below the required 28-day compressive strength.
 - b). A 28-day compressive strength test result is deemed not satisfactory.
 - b. When at least 15 compressive strength test results for a given class of concrete become available from the current Project:
 - 1). Calculate the actual average compressive strength, standard deviation and required average compressive strength using the previous 15 consecutive

strength tests. Submit results in graphical form with each 28-day test result for that class of concrete.

- 2). If any of the following criteria are met, take immediate steps to increase average compressive strength of the concrete.
 - a). A 7-day compressive strength test result multiplied by the average job-todate ratio of 7-day to 28-day compressive strength falls below the required 28-day compressive strength.
 - b). A 28-day compressive strength test result is deemed not satisfactory.
 - c). The average compressive strength falls below the required average compressive strength.
- c. When revisions to the mix design are required, notify the Engineer in writing of the corrective actions taken.

2.09 OFF-SITE BATCH PLANT

A. Batch plants shall be an established concrete batching facility meeting the requirements of the Concrete Plant Standards of the Concrete Plant Manufacturers Bureau.

2.10 CONCRETE MIXING

- A. Mixers may be stationary, truck, or paving mixers of approved design. They shall be capable of combining the materials into a uniform mixture and of discharging without mixture segregation. Stationary and paving mixers shall be provided with an acceptable device to lock the discharge mechanism until the required mixing time has elapsed. The mixers or mixing plant shall include a device for automatically counting the total number of batches of concrete mixed. The mixers shall be operated at the drum or mixing blade speed designated by the manufacturer on the name plate.
- B. The mixing time for stationary mixers shall be based upon the mixer's ability to produce uniform concrete throughout the batch and from batch to batch. For guidance purposes, the manufacturer's recommendations, or 1 minute for 1 cubic yard plus 1/4 minute for each additional cubic yard may be used. Final mixing time shall be based on mixer performance. Mixers shall not be charged in excess of the capacity specified by the manufacturer.
- C. When a stationary mixer is used for partial mixing of the concrete (shrink mixed), the stationary mixing time may be reduced to the minimum necessary to intermingle the ingredients (about 30 seconds).
- D. When a truck mixer is used, either for complete mixing (transit-mixed) or to finish the partial mixing in a stationary mixer and in the absence of uniformity test data, each batch of concrete shall be mixed not less than 70 nor more than 100 revolutions of the drum, at the rate of rotation designated by the manufacturer of the equipment as mixing speed. If the batch is at least 1/2 cubic yard less than the rated capacity, in the absence of uniformity test data, the number of revolutions at mixing speed may be reduced to no less than 50. Additional mixing shall be performed at the speed designated by the manufacturer of the equipment as agitating speed. When necessary for proper control of the concrete, mixing of transit-mixed concrete shall not be permitted until the truck mixer is at the Site of the concrete placement. Truck mixers shall be equipped with accurate revolution counters.

- E. Paving mixers may be either single compartment drum or multiple compartment drum type. A sled or box of suitable size shall be attached to the mixer under the bucket to catch any concrete spillage that may occur when the mixer is discharging concrete into the bucket. Multiple compartment drum paving mixers shall be properly synchronized. The mixing time shall be determined by time required to transfer the concrete between compartments of the drum.
- F. Vehicles used in transporting materials from the batching plant to the paving mixers shall have bodies or compartments of adequate capacity to carry the materials and to deliver each batch, separated and intact, to the mixer. Cement shall be transported from the batching plant to the mixers in separate compartments which are equipped with windproof and rain proof covers.

3.00 EXECUTION

3.01 PREPARATION

- A. Notify the Owner's representative upon completion of various portions of the work required for placing concrete, so that inspection may be made as early as possible. Keep the Owner's representative informed of the anticipated concrete placing schedules.
- B. All items, including lines and grades, forms, waterstops, reinforcing, inserts, piping, electrical, plumbing and the Contractor's concreting materials and equipment shall be in compliance with the Contract Documents before proceeding.
- C. Do not place any concrete until formwork and the placing reinforcement in that unit is complete. Place no concrete before the completion of all adjacent operations which might prove detrimental to the concrete.
- D. Brilliantly light the Site so that all operations are plainly visible when concrete mixing, placing, and finishing, continues after daylight. Whenever possible, concrete finishing shall be completed in daylight hours.
- E. When placing concrete, the forms shall be clean and entirely free from all chips, dirt, sawdust and other extraneous matter. Forms for slab, beam and girder construction shall not have tie wire cuttings, nails, or any other matter which would mar the appearance of the finished construction. Clean forms and keep them free of any foreign matter during concrete placing.
- F. The concrete shall be mixed in quantities required for immediate use. Any concrete which is not in place within the time limits specified shall not be used. Concrete shall not be retempered.
- G. Concrete shall not be placed if impending weather conditions would impair the quality of the finished Work.
- H. Unless otherwise provided, the following requirements shall govern the time sequence on which construction operations shall be carried.
 - 1. Forms for walls or columns shall not be erected on concrete footings until the concrete in the footing has cured for at least 2 curing days. Concrete may be placed in a wall or column as soon as the forms and reinforcing steel placements are approved.

 Steel beams or forms and falsework for superstructures shall not be erected on concrete substructures until the substructure concrete has cured for at least 4 curing days.
Falsework required for superstructures shall not be erected until the substructure has cured for 4 curing days, and shall not be removed until the superstructure has cured.

3.02 EMBEDDED ITEMS

A. Where aluminum anchors, aluminum shapes, or aluminum electrical conduits are embedded in concrete, paint aluminum contact surfaces with zinc rich primer. Allow the paint to thoroughly dry before placing the aluminum in contact with the concrete.

3.03 JOINTS

- A. Expansion Joints and Devices:
 - 1. Workmanship: Exercise careful workmanship in joint construction to separate the concrete sections by an open joint or by the joint materials, and make the joints true to the outline indicated.
 - 2. Expansion Joints: Construct expansion joints and devices to provide expansion and contraction. Construct joints which are to be left open or filled with poured joint material with forms which are adaptable for loosening or early removal. In order to avoid jamming by the expansion action of the concrete and the consequent likelihood of injuring adjacent concrete, remove or loosen these forms as soon as possible after the concrete has initially set. Make provisions for loosening the forms to permit free concrete expansion without requiring full removal.
 - 3. Armored Joints: Carefully construct armored joints to avoid defective anchorage of the steel and porous or honeycombed concrete adjacent to same. Anchor pre-molded materials to the concrete on one side of the joint with approved adhesive. Anchor so that the material does not fall out of the joint.
- B. Construction Joints:
 - 1. Construction joints are formed by placing plastic concrete in direct contact with concrete which has attained its initial set. When concrete is specified as monolithic, the term shall be interpreted as the manner and sequence of concrete placement so that construction joints do not occur.
 - a. Unless noted otherwise, the maximum horizontal spacing of construction joints shall be 40 feet.
 - b. Unless noted otherwise or approved by the Engineer, the maximum vertical spacing of construction joints shall be 15 feet. If not detailed on the Drawings, construction joint details and locations shall be submitted to the Engineer for approval.
 - 2. Additional horizontal and vertical construction joints, when submitted and approved by the Engineer, may have an impact on reinforcing details. Revise reinforcing details to reflect additional joints.
 - 3. Unless otherwise provided, construction joints shall be square and normal to the forms. Provide bulkheads in the forms for all joints except horizontal joints.

- 4. At the proper time, clean horizontal construction joints for receiving the succeeding lift using air water cutting. The surface shall be exposed sound, clean aggregate. The air pressure supply to the jet shall be approximately 100 lb. per square inch, and the water pressure sufficient to bring the water into effective influence of the air pressure. After cutting, wash the surface until there is no trace of cloudiness in the wash water.
- 5. In areas where air water cutting cannot be satisfactorily accomplished, or in areas where it is undesirable to disturb the surface of the concrete before it has hardened, prepare the surface for receiving the next lift by wet sand blasting to immediately remove all laitance and unsound concrete prior to placing of the next lift. Thoroughly wash the surface of the concrete after sand blasting to remove all loose material.
- 6. Provide construction joints with concrete keyways, reinforcing steel dowels, and waterstops. The method of forming keys in keyed joints shall permit the easy removal of forms without chipping, breaking, or damaging the concrete.
- C. Existing Hardened Concrete: Where new concrete or grout is to be placed in contact with existing hardened concrete, texture the existing surface by chipping or other means so that an irregular surface having a height variance of not less than 1/4 inch is created. The existing concrete shall then be coated with a bonding agent and new concrete or grout placed.

3.04 WATERSTOPS

- A. Self-Expanding Strip Waterstops:
 - Install in construction joints and at other locations indicated, according to manufacturer's written instructions, bonding or mechanically fastening and firmly pressing into place.
 - a. Waterstop shall be bonded to the substrate using a continuous bead of swelling sealant or adhesive as recommended by the manufacturer.
 - 1). ADEKA Ultra Seal P-201.
 - 2). Sika Leakmaster.
 - 2. Install in longest lengths practicable.
 - 3. Protect from moisture, oil, dirt, and sunlight prior to the placement of concrete. Coordinate with manufacturer for additional requirements.

3.05 CONCRETE PLACEMENT

- A. Cold Weather:
 - 1. If air temperature has fallen to, or is expected to fall below 40 F during the protection period (a minimum of 48 hours unless longer time frame is recommended by ACI 306R), then cold weather concreting shall be performed in accordance with ACI 306.1.
 - 2. In cases where the temperature drops below 40 F after the concreting operations have been started, sufficient canvas and framework or other type of housing shall be furnished to enclose and protect the structure, in accordance with the requirements of ACI 306R. Sufficient heating apparatus to provide heat shall be supplied, and heating source and protection from combustion gas shall be in accordance with ACI 306.1. The
concrete shall be protected when placed under all weather conditions. Should concrete placed under such conditions prove unsatisfactory, remove and replace the concrete at no cost to the Owner.

- 3. When the air temperature is above 30 F:
 - a. The minimum concrete temperature at the time of mixing shall be 60 F unless other requirements of ACI 306.1 are met, which may allow for a lower mix temperature.
 - b. The minimum concrete temperature at the time of placement and during the protection period shall be 55 F unless other requirements of ACI 306.1 are met, which may allow for a lower temperature.
- 4. The means used to heat a concrete mix shall be in accordance with ACI 306.1.
- 5. Salts, chemicals, or other foreign materials shall not be mixed with the concrete to preventing freezing. Calcium chloride is not permitted.
- B. Hot Weather:
 - Hot weather is defined as any combination of high air temperature, low relative humidity and wind velocity that impairs the quality of the concrete. Hot weather concreting shall be in accordance with ACI 305.1. Concrete shall be placed in the forms without the addition of any more water than that required by the design (slump). No excess water shall be added on the concrete surface for finishing. Control of initial set of the concrete and extending the time for finishing operations may be accomplished with the use of approved water reducing and set retarding admixture, as specified.
 - Maximum time intervals between the addition of mixing water and/or cement to the batch, and the placing of concrete in the forms shall not exceed the following (excluding HRWR admixture use):

Concrete Temperature	Maximum time From Water Batch to Placement
Non-Agitated Concrete	
Up to 80 F	30 Minutes
Over 80 F	15 Minutes
Agitated Concrete	
Up to 75 F	90 Minutes
75 F to 89 F	60 Minutes

- a. The use of an approved set-retarding admixture will permit the extension of the above time maximums by 30 minutes, for agitated concrete only.
- b. The use of an approved high range water reducing (HRWR) admixture will allow placement time extensions as determined by the manufacturer.
- 3. The maximum temperature of concrete shall not exceed 90 F at the time the concrete is placed. The temperatures of the mixing water shall be reduced by the use of chilled water or ice.
- 4. The maximum temperature of concrete with high range water reducing admixture shall not exceed 100 F at the time concrete is placed.

- 5. Under extreme heat, wind, or humidity conditions, concreting operations may be suspended if the quality of the concrete being placed is not acceptable.
- C. Handling and Transporting:
 - Delivery tickets shall be required for each batch and shall be in accordance with ASTM C94, Section 16. Each delivery ticket must show plainly the amount of water, in gallons that can be added to the mixer truck at the Site without exceeding the maximum water cement ratio approved for that mix design. Amount of water added must be in proportion to contents of truck.
 - 2. Arrange and use chutes, troughs, or pipes as aids in placing concrete so that the ingredients of the concrete are not segregated. They shall be steel or steel lined. When steep slopes are necessary, equip the chutes with baffles or make in short lengths that reverse the direction of movement. Extend open troughs and chutes, if necessary, inside the forms or through holes left in the forms. Terminate the ends of these chutes in vertical downspouts.
 - 3. Keep chutes, troughs and pipes clean and free from coatings of hardened concrete by thoroughly flushing with water before and after placement. Discharge water used for flushing away from the concrete in place.
 - 4. Concrete pumping is permitted and shall comply with ACI 304.2R.
 - 5. Carting or wheeling concrete batches on completed concrete floor slab shall not be permitted until the slab has aged at least 4 curing days. Unless pneumatic tired carts are used, wheel the carts on timber planking so that the loads and impact are distributed over the slab. Curing operations shall not be interrupted for the purpose of wheeling concrete over finished slabs.
- D. Depositing:
 - 1. The method and manner of placing shall prevent segregation or separation of the aggregate or the displacement of the reinforcement. Use drop chutes of rubber or metal when necessary. Prevent the spattering of forms or reinforcement bars if the spattered concrete dries or hardens before it is incorporated into the mass.
 - 2. Fill each part of the forms by directly depositing concrete as near its final position as possible. Work the coarse aggregate back from the face and force the concrete under and around the reinforcement bars without displacing them. Depositing large quantities at one point in the forms, then running or working it along the forms shall not be permitted.
 - 3. After the concrete has taken initial set, the forms shall not be jarred. No force or load shall be placed upon projecting reinforcement.
 - 4. Deposit the concrete through vertical drop chutes of rubber or metal of satisfactory size when operations involve placing concrete from above, such as directly into an excavated area, or through the completed forms, particularly in walls, piers, columns, and similar structures. Drop chutes shall be made in sections or provided in several lengths so that the outlet may be adjusted to proper heights during placing.
 - 5. Except for drilled shafts, concrete shall not be dropped free more than 10 feet when HRWR admixture is used or 5 feet without HRWR. Place in continuous horizontal layers

with a depth of from 1 to 3 feet, depending upon the wall thickness. Each layer shall be soft when a new layer is placed upon it. No more than 1 hour shall elapse between the placing of successive concrete layers in any portion of the structures included in continuous placement.

- 6. Place required sections in one continuous operation to avoid additional construction joints.
- 7. If excessive bleeding causes water to form on the surface of the concrete in tall forms, make the mix dryer to reduce the bleeding. In tall walls, place the concrete to a point about 1 foot below the top of the wall and allow to settle for 1 to 2 hours. Resume and complete concreting before set occurs.
- 8. For slopes greater than two percent, start concrete placement at low end and proceed upslope.
- E. Consolidating:
 - Compact each layer of concrete and flush the mortar to the surface of the forms by continuous-working mechanical vibrators. Vibrators which operate by attachment to forms shall not be used. Apply the vibrator to the concrete immediately after deposit. Move vibrator throughout the layer of the newly placed concrete, several inches into the plastic layer below. Thoroughly work the concrete around the reinforcement, embedded fixtures and into the corners and angles of the forms until it is wellcompacted.
 - 2. Mechanical vibrators shall not be operated so that they penetrate or disturb previously placed layers which are partially set or hardened. They shall not be used to aid the flow of concrete laterally. The vibration shall be of sufficient duration to completely compact and embed reinforcement and fixtures, but not to an extent causing segregation.
 - 3. Keep vibrators constantly moving in the concrete and apply vertically at points uniformly spaced, not farther apart than the radius over which the vibrator is visibly effective. The vibrator shall not be held in one location longer than required to produce a liquified appearance on the surface.
 - 4. When submerged in concrete, internal vibrators shall maintain a frequency of not less than 6000 impulses per minute for spuds with diameters greater than 5 inches and 10,000 impulses for smaller spuds. The vibration intensity (amplitude) shall be sufficient to produce satisfactory consolidation.
 - 5. Provide one vibrator (powered pneumatically or electrically) for each 10 cubic yards of concrete per hour being placed. Provide at least one vibrator, which may be of the gasoline powered type, as a standby for each two vibrators in service. To produce satisfactory consolidation, and based upon the observed performance, the Owner's representative may require the use of a larger sized and powered vibrator.
 - 6. Check vibrators intended for regular service or standby service before beginning concreting operations.
- F. Placement in Water:
 - 1. Deposit concrete in water only when dry conditions cannot be obtained. The forms, cofferdams, or caissons shall be sufficiently tight to prevent any water flowing through

the space where concrete is to be deposited. Pumping of water shall not be permitted while the concrete is being placed, nor until it has set for at least 36 hours.

- Carefully place the concrete compact mass using a tremie, closed bottom dumping bucket, or another approved method which does not permit the concrete to fall through the water without protection. The concrete shall not be disturbed after being deposited. Regulate depositing to maintain horizontal surfaces.
- 3. When a tremie is used, it shall consist of a tube constructed in sections having watertight connections. The means of supporting the tremie shall permit the movement of the discharge end over the entire top surface of the work, and shall allow the tremie to be rapidly lowered to retard the flow. The number of times it is necessary to shift the location of the tremie shall be held to a minimum for any continuous placement of concrete. During the placing of concrete, keep the tremie tube full to the bottom of the hopper. When a batch is dumped into the hopper, slightly raise the tremie, but not out of the concrete at the bottom, until the batch discharges to the level of the bottom of the hopper. Stop the flow by lowering the tremie. Continue placing operations until the work is completed.
- 4. When concrete is placed by means of the bottom dump bucket, the bucket shall have a capacity of not less than 1/2 cubic yard. Lower the bucket gradually and carefully until it rests upon the concrete already placed. Raise it very slowly during the discharge travel to maintain still water at the point of discharge and to avoid agitating the mixture.
- 5. Use a sump or other approved method to channel displaced fluid and concrete away from the shaft excavation. Recover slurry and dispose of it as approved. Do not discharge displaced fluids into or in close proximity to streams or other bodies of water.
- G. Placement in Slabs:
 - Allow concrete in columns, walls and deep beams or girders to stand for at least 1 hour to permit full settlement from consolidation, before concrete is placed for slabs they are to support. Haunches are considered as part of the slab and shall be placed integrally with them.
 - 2. When monolithic slabs are placed in strips, the widths of the strips, unless otherwise specified or indicated, shall insure that concrete in any one strip is not allowed to lie in place for more than 1 hour before the adjacent strips are placed.
 - 3. Immediately before placing concrete, thoroughly dampen the earthen cushion to receive concrete to prevent moisture absorption from the concrete.
 - 4. As soon as concrete placing is complete for a slab section of sufficient width to permit finishing operations, level the concrete, strike off, tamp and screed. The screed shall be of a design adaptable to the use intended, shall have provision for vertical adjustment and shall be sufficiently rigid to hold true to shape during use.
 - 5. The initial strike off shall leave the concrete surface at an elevation slightly above grade so that, when consolidation and finishing operations are completed, the surface of the slab is at grade elevation.
 - 6. Continue tamping and screeding operations until the concrete is properly consolidated and free of surface voids. Bring the surface to a smooth, true alignment using longitudinal screeding, floating, belting, and/or other methods.

- 7. When used, templates shall be of a design which permits early removal so satisfactory finishing at and adjacent to the template is achieved.
- 8. While the concrete is still plastic, straightedge the surface using a standard 10-foot metal straightedge. Lap each straightedge pass one-half of the preceding pass. Remove high spots and fill depressions with fresh concrete and re-float. Continue to check with a straightedge during the final finishing operation, until the surface is true to grade and free of depressions, high spots, voids, or rough spots.
- 9. Check the final surface with a straightedge. Ordinates measured from the face of the straightedge to the surface of the slab shall not exceed 1/16 inch per foot from the nearest point of contact. The maximum ordinate shall be 1/8 inch per 10 feet.
- 10. Unless noted otherwise, where floor drains or hub drains are shown in slabs of buildings, vaults, or treatment basin units and sloping the slab is not indicated, slope slab to drain on a grade of 1/16 inch per foot with a maximum total slope of 1-1/4 inches. The thickness of slab at floor or hub drain shall be the thickness of slab, as indicated on the Drawings.
- H. Placement in Foundations: Place concrete in deep foundations so that segregation of the aggregates or displacement of the reinforcement is avoided. Provide suitable chutes or vertical pipes. When footings can be placed in dry foundation pits without the use of cofferdams or caissons, forms may be omitted and the entire excavation filled with concrete to the elevation of the top of footing. The placing of concrete bases above seal courses is permitted after the forms are free from water and the seal course cleaned. Execute necessary pumping or bailing during concreting from a suitable sump located outside the forms.

3.06 FINISHING FORMED SURFACES

- A. Forms for walls, columns and sides of beams and girders shall be removed as specified in Section 03 11 00 "Concrete Forming." Patch, repair, finish and clean concrete after form removal. Finish concrete within 7 days of form removal. Cure concrete as finishing progresses.
- B. Air voids, for all types of finishes, are defects and shall be removed by rubbing or patching.
- C. Finish Schedule:

Type of Finish	Location
No Finish	Surfaces which are not visible from the inside or outside of the completed structure or more than 12" below finish grade (i.e. back of retaining walls below embankment, etc.)
Smooth Finish	Surfaces exposed to view and areas below to a point 12" below grade

- D. No Finish: After forms are removed, repair or patch-tie holes and defects. Otherwise, no additional finish is required.
- E. Smooth Finish: Unless otherwise shown on the schedule above, provide smooth form finish for concrete surfaces to be exposed to view. Surfaces to receive a rubbed finish shall have a smooth form finish. The form facing material shall produce a smooth, hard, uniform texture

on the concrete. The arrangement of the facing material shall be orderly and symmetrical with a minimum number of seams. Patch tie holes and defects and remove fins flush with the adjacent surface.

3.07 MISCELLANEOUS CONCRETE ITEMS

- A. Normal Shrinkage Grouting:
 - 1. Prior to grout application, thoroughly clean the surface of all foreign matter and wet down. Thoroughly clean the foundation and the forms set in place and securely anchor, with holes or cracks in forms caulked with rags, cotton waste or dry sand mixture to prevent the loss of grout. The necessary materials and tools shall be on hand before starting grouting operations. Concrete shall be damp when the grout is poured, but shall not have excess water to dilute the grout.
 - 2. After wetting and just prior to grouting, sprinkle the surface lightly with cement to improve the bond between the grout and the surface.
 - 3. After mixing, quickly and continuously place the grout to avoid overworking, segregation and breaking down of the initial set. Mix and place the grout according to the manufacturer's recommendations. Cure grout using wet curing method for concrete. Grout shall receive a steel trowel finish.
- B. Non-Shrink Grout:
 - 1. Obtain field technical assistance from the Grout manufacturer, as required, to insure that grout mixing and installation comply with the manufacturer's recommendations and procedures.
 - 2. Saturate the foundation for non-shrink grouts 24 hours before installation and clear of excess water. Free baseplates or bedplates of oil, grease, laitance and other foreign substances.
 - 3. Place grout according to the manufacturer's directions so that spaces and cavities below the top of the baseplates and bedplates are completely filled. Provide forms where structural components of the baseplates or bedplates do not confine the grout. Where necessary and acceptable under the manufacturer's procedures, a round head pencil vibrator, 3/4-inch maximum diameter may be used to consolidate the grout.
 - 4. Steel trowel finish the non-shrink grout where the edge of the grout is exposed to view and after the grout has reached its initial set. Cut off the exposed edges of the grout at a 45-degree angle to the baseplate, bedplate, member, or piece of equipment.
 - 5. Wet curing should occur for at least 3 days, unless specified by manufacturer, with wet rags, wet burlap or polyethylene sheets. Keep cloths constantly wet for the curing cycle.
 - 6. Clean and dry the foundation, baseplate or other surface of epoxy grouts prior to installation. Dry curing is acceptable for epoxy grouts.
 - 7. Use epoxy non-shrink grout under all machinery, pumps, equipment, and where chemicals are present that would abate cementitious non-shrink grouts.
 - 8. Mix, install, cure, and finish epoxy grouts according to the manufacturer's recommendations. Install grout in recommended lifts to prevent excess heat.

3.08 CONCRETE PROTECTION AND CURING

- A. General: Give careful attention to proper concrete curing. The curing methods shall be wet curing, sheet materials conforming to ASTM C171, or membrane curing compound conforming to ASTM C309. Membrane curing is not permitted on surfaces to be rubbed or on surfaces to which additional concrete, plaster mix mortar or terrazzo is to be applied. Unless the curing method is specified otherwise, select the appropriate curing method.
- B. Length of Curing Period:
 - 1. A "curing day" shall be any day on which the atmospheric temperature taken in the shade, or the air temperature adjacent to the concrete, remains above 50 F for at least 18 hours.
 - 2. Cure concrete for a period of 7 consecutive days. In cold weather, when curing may be retarded, extend this period to 7 "curing days", up to a limit of 14 consecutive days.
- C. Wet Curing:
 - Immediately following the finishing operations, cover concrete slabs, including roof slabs, with wet cotton mats or with a temporary covering of canvas or burlap. Keep thoroughly wet for a period of 4 curing days after the concrete is placed. The covering shall be held in direct contact with the concrete. A temporary covering shall be required when the size of slab, size of mats, or other factors dictate that the mats cannot be placed immediately after the finishing operations without marring the finishing of the slab.
 - 2. Water used for curing shall be free from injurious amounts of oil, acid, alkali, salt, or other deleterious substances.
 - 3. Canvas or burlap covering material shall weigh not less than 12 ounces per square yard. Place the sections with a lap at the edges of at least 8 inches. Saturate cover material with water previous to placing. Keep saturated as long as it remains in place. Use care in the placing of the cover material to prevent marring the concrete surface.
 - 4. When temporary coverings are used, keep them in place only until the slab has sufficiently hardened so that a cotton mat covering can be substituted without marring or disturbing the slab finish. Thoroughly saturate cotton mats before placing and keep the mats on the slab in a saturated condition for a period of at least 4 curing days.
- D. Sheet Curing: Sheet materials shall conform to ASTM C171. They shall be in contact with the entire concrete surface and applied according to the manufacturer's recommendations. Patch all holes. Where pedestrian traffic is unavoidable, provide suitable walkways to protect the sheet material.
- E. Membrane Curing:
 - 1. Membrane curing shall not be used on surfaces which receive paint, floor hardener, or plaster mix finish or other finish which would be hindered by the use of the curing compound.
 - 2. Cover the surface of the concrete with a continuous, uniform, water-impermeable coating, conforming to ASTM C309 "Liquid Membrane Forming Compounds for Curing Concrete" and apply according to ACI 308.

- 3. Immediately after the removal of the side and end forms, apply a coating to the sides and ends of all concrete. Apply the solution under pressure with a spray nozzle so that the entire exposed surface is completely covered with a uniform film. The rate of application shall insure complete coverage, but the area covered shall not exceed 150 square feet per gallon of curing compound.
- 4. The coating shall be sufficiently transparent and free of permanent color to not result in a pronounced color change from that of the natural concrete at the conclusion of the curing period. The coating shall, however, contain a dye of color strength to render the film distinctively visible on the concrete for a period of at least 4 hours after application.
- 5. After application and under normal conditions, the curing compound shall be dry to touch within 1 hour and shall dry thoroughly and completely within 4 hours. When thoroughly dry, it shall provide a continuous flexible membrane free from cracks or pinholes and shall not disintegrate, check, peel, or crack during the required curing period.
- 6. If the seal is broken during the curing period, immediately repair it with additional sealing solution.

3.09 CONCRETE SURFACE REPAIRS

- A. After the tie rods are broken back or removed, thoroughly clean the holes to remove grease and loose particles. Patch holes with structural concrete repair material. After the holes are completely filled, strike off flush excess mortar and finish the surface to render the filled hole inconspicuous.
- B. If the surface of the concrete is bulged, uneven, or shows honeycombing or form marks, which in the Engineer's opinion cannot be repaired satisfactorily, remove and replace the entire section.
- C. Patch honeycomb and minor defects in all concrete surfaces with structural concrete repair material. Cut back each defective area with a pneumatic chipping tool as deep as the defect extends, but in no case less than 1/2 inch. Prepare the existing concrete according to the recommendations of patching material manufacturer's. Apply repair material according to the manufacturer's recommendations. Finish the surface of the patches to match finish on surrounding concrete.

3.10 FIELD QUALITY CONTROL

- A. Testing:
 - 1. General:
 - a. Tests shall be required throughout the Work to monitor the quality of concrete. Samples shall be taken in accordance with ASTM C172.
 - b. The Engineer may waive these requirements on concrete placements of ten cubic yards or less. However, evidence shall be furnished showing a design mix which meets the Specifications.
 - c. Unless noted otherwise, testing of the materials, ready mix, transit mix or central plant concrete will be by an independent testing agency. The independent testing agency will be approved by the Owner and paid by the Contractor. A summary of all

tests performed will be available. No concrete shall be placed without a representative present at either the plant or at the Site.

- d. Unless the Owner's laboratory is on the Site, provide housing for the curing and storage of test specimens and equipment.
- 2. Slump Test: Slump tests, in accordance with ASTM C143, shall be used to indicate the workability and consistency of the concrete mix from batch to batch. Generally, a slump test shall be made at the start of operations each day, at regular intervals throughout a working day, and at any time when the appearance of the concrete suggests a change in uniformity.
- 3. Air Content Test: Tests for the concrete's air content shall be made in accordance with ASTM C231 or ASTM C173, at the point of delivery of concrete, prior to placing in forms. The test shall be made frequently to monitor a proper air content uniform from batch to batch.
- 4. Temperature Test: Test for the concrete's temperature in accordance with ASTM C1064 and as follows: the temperature of the concrete to be placed shall be taken with a thermometer immediately before placement, with the point of measurement being in the chute or bucket. Temperature test shall be performed for each truck. Record temperatures on batch ticket.
- 5. Compression Test:
 - a. Compression test specimens shall be 6-by-12-inch concrete cylinders made and cured in accordance with ASTM C31. If the maximum aggregate size is no larger than 1 inch, 4-by-8-inch concrete cylinders are acceptable. No fewer than two 6-by-12-inch or three 4-by-8-inch specimens shall be made for each test Sample. Samples shall be taken at a minimum of every 50 cubic yards of concrete for each class placed. At least one set of test specimens per day shall be made for each class of concrete used that day. Specimens shall be cured under laboratory conditions specified in ASTM C31. Additional concrete cylinders may be required for curing on the job under actual job curing conditions. These Samples could be required when:
 - 1). There is a possibility of the air temperature surrounding the concrete falling below 40 F, or rising above 90 F.
 - 2). The curing procedure may need to be improved and/or lengthened.
 - 3). It is necessary to determine when the structure may be put into service.
 - b. Compression strength tests shall be made on the laboratory-cured and job-cured concrete cylinders at 7 and 28 days, in accordance with ASTM C39. The value of each test result shall be the average compressive strength of all of the cylinders in the test Sample. All cylinders within a test Sample shall be taken at the same time from the same batch of concrete. For the 28-day cylinders, the strength level shall be satisfactory if the averages of all sets of three consecutive strength test results exceed the required design compressive strength, and no individual strength test result falls below the required compressive strength by more than 500 psi.
- 6. High Early Strength Concrete Test: When Type "III" High Early Strength Portland cement is used instead of Type "I" Portland cement, the minimum allowable 28-day strength for

Type "I" Portland cement concrete shall be at 7 days. The ages at time of test for Type "III" shall be 3 days and 7 days, instead of 7 days and 28 days, respectively, for Type "I."

- 7. Failure to Meet Requirements:
 - a. Should the 7-day strengths shown by the test specimens fall below the required values, additional curing shall be performed on those portions of the structures represented by the test specimens at the Contractor's expense. Test cores shall be obtained and tested in accordance with ASTM Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete, Designation C 42. If additional curing does not give the strength required, the Owner reserves the right to require strengthening, replacement of those substandard portions of the structure, or additional testing, at the Contractor's expense.
 - b. Upon receipt of the Contractor's written request, substandard concrete work may be reexamined in place by nondestructive testing methods or core Samples, in accordance with ACI 301. The services of an independent testing laboratory shall be retained and all expenses paid without compensation from the Owner. Laboratory results shall be evaluated by the Engineer, who shall make the final decision on acceptability of the concrete in question. Core Sample holes shall be repaired.
- B. The Owner may withhold payment for any section of concrete which does not meet the requirements of the Specifications. Withheld payment shall be based upon the unit prices established for concrete and reinforcing steel. Payment shall be withheld until the unacceptable concrete has been refinished, removed and replaced or otherwise brought into conformance with the Specifications.
- C. PVC Waterstops: Waterstops shall be observed by the Owner's representative prior to concrete placement. Unacceptable splicing defects include:
 - 1. Misalignment of center bulb, ribs and end bulbs greater than 1/16 inch.
 - 2. Bond failure at joint deeper than 1/16 inch.
 - 3. Misalignment which reduces waterstop cross-section more than 15 percent.
 - 4. Bubble or visible porosity in the weld.
 - 5. Visible signs of splice separation when a cooled splice is bent by hand at a sharp angle.
 - 6. Charred or burnt material.

END OF SECTION

APPENDIX A

A1.00 MEASUREMENT AND PAYMENT

A1.01 MEASUREMENT

A. No measurements are required for the Drop Inlet structure and the Junction Box structure. The cast-in-place Conduit structure shall be measured by the linear foot as shown on the plans, complete in-place.

A1.02 PAYMENT

- A. Payment for work covered under this section for the Drop Inlet structure shall be made at the lump sum price for the item "Service Spillway Drop Inlet Structure," which shall be full compensation for furnishing labor, materials, and equipment necessary for performing the required tasks as specified.
- B. Payment for work covered under this section for the Junction Box structure shall be made at the lump sum price for the item "Junction Box and Pipe Connections," which shall be full compensation for furnishing labor, materials, and equipment necessary for performing the required tasks as specified.
- C. Payment for work covered under this section for the cast-in-place Conduit structure shall be made at the per linear foot price for the item "CIP Culvert and Transition structure," which shall be full compensation for furnishing labor, materials, and equipment necessary for performing the required tasks as specified.

END OF APPENDIX A

Concrete Mix Design

Project Name:		
FNI Project Number:		
Project Location:		
Owner:		
General Contractor:		
Mix Number / Class:		
A. Mix Design:		
Cement	=	lb/yd³
Fly Ash	=	lb/yd³
Other Cementitious Material:		
	=	lb/yd³
Fine Aggregate	=	lb/yd³
Course Aggregate	=	lb/yd³
Water	=	lb/yd³
Water Reducing Admixture	=	oz/yd³
High Range Water Reducer	=	oz/yd ³
Air Entraining Admixture	=	oz/yd³
Other Admixture:		
	=	oz/yd³
Slump	=	inches
Gross Weight	=	lb/yd³
Air Content	=	percent
Water/Cement Ratio	=	

B. Materials:

	Source	ASTM	Туре	Remarks
Cement				
Fly Ash				
Other Cementitious Material:				
Fine Aggregate				
Coarse Aggregate				
Water				
Water Reducer				
High Range Water Reducer				
Air Entraining				

	Source	ASTM	Туре	Remarks
Other Admixture:				

- C. Determination of Average Strength Required (fcr'):
 - 1. Test Records Available:
 - A. Summary of Test Records (Provide Supporting Documentation):

Test Group No.	No. of Consecutive Tests	Specified Strength (psi)	Standard Deviation (psi)
A			

- B. Standard Deviation Modification Factor (ACI 30 1, Table 4.2.3.3.a): _____.
- C. Standard Deviation Used: _____.
- D. Average Compressive Strength Required: _____.
- 2. Test Records Not Available:
 - A. Average Compressive Strength Required (ACI 30 1, Table 4.2.3.3.b, if required): _____.
- D. Documentation of Required Average Compressive Strength (Check One):
 - 1. Field Strength:
 - a. Field Strength Test Records (ACI 30 1, Table 4.2.3.3.a): _____. *Complete Attachment A.
 - 2. Trial Mixtures:
 - a. Trial Mixtures (ACI 301, Table 4.2.3.3.b, if required): _____. *Complete Attachment B.

١,	certify that the above information is correct and all gradations,
cer	t certifications, and test results are located at our place of business for review by the Engineer.

Name:	 Date:
Title:	
Company:	
Address:	

Attachment A

Documentation of Required Average Strength – Field Strength Records

(ACI 301, 4.2.3.4.a)

A. Summary of Test Records (Provide Supporting Documentation):

Test Record No.	No. of Tests in Record	Duration of Record (days)	Water- Cementitious Materials Ratio	Average Strength (psi)

- B. Interpolation used? _____.
 - 1. Provide an interpolation calculation or plot of strength versus proportions.
- C. Submit the following data for each mix:
 - 1. Brand, type and amount of cement.
 - 2. Brand, type and amount of each admixture.
 - 3. Source of each material used.
 - 4. Amount of water.
 - 5. Proportions of each aggregate material per cubic yard.
 - 6. Gross weight per cubic yard.
 - 7. Measured slump.
 - 8. Measured air content.
 - 9. Results of consecutive strength tests.

Attachment B

Documentation of Required Average Strength – Trial Mixtures

(ACI 301, 4.2.3.4.b)

A. Summary of Test Record(s):

	7-Day	Tests	28-Day	Tests	Tests Water-		Air	
Trial Mix No.	No. of Test Cylinders	Strength (psi)	No. of Test Cylinders	Strength (psi)	Cementitious Materials Ratio	Slump (in)	Content (percent)	Temperature (F)

- B. Maximum water-cementitious materials ratio ______.
 - 1. Provide an interpolation calculation or plot of strength versus water-cementitious materials ratio.
- C. Submit the following data for each mix:
 - 1. Brand, type and amount of cement.
 - 2. Brand, type and amount of each admixture.
 - 3. Amount of water used in trial mixes.
 - 4. Proportions of each aggregate material per cubic yard.
 - 5. Gross weight per cubic yard.
 - 6. Measured slump.
 - 7. Measured air content.
 - 8. Compressive strength developed at 7 days and 28 days, from not less than three test cylinders cast for each 7-day and 28-day test.

END OF ATTACHMENTS

DIVISION 05 | METALS

05 50 00 METAL FABRICATIONS

1.00 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Steel framing and supports for trash rack.
- B. Products furnished, but not installed, under this Section:
 - 1. Anchor bolts indicated to be cast into concrete or built into unit masonry.
 - 2. Steel weld plates and angles for casting into concrete for applications where they are not specified in other Sections.
- C. Related Sections:
 - 1. Section 03 30 00 "Cast-In-Place Concrete" for installing anchor bolts and other items cast into concrete.

1.03 ACTION SUBMITTALS

- A. Shop Drawings: Show fabrication and installation details for metal fabrications.
 - 1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

1.04 INFORMATIONAL SUBMITTALS

- A. Mill Certificates: Signed by manufacturers of stainless-steel certifying that products furnished comply with requirements.
- B. Welding certificates.

1.05 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.6, "Structural Welding Code Stainless Steel."

1.06 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

1.07 COORDINATION

A. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with

integral anchors, that are to be embedded in concrete. Deliver such items to Project site in time for installation.

2.00 PRODUCTS

- 2.01 METALS, GENERAL
 - A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

2.02 FERROUS METALS

- A. Stainless-Steel Sheet, Strip, and Plate: ASTM A240/A240M or ASTM A666, Type 316L.
- B. Stainless-Steel Bars and Shapes: ASTM A276, Type 316L.

2.03 FASTENERS

- A. General: Unless otherwise indicated, provide Type 316 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941 (ASTM F1941M), Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
 - 1. Provide stainless-steel fasteners for fastening stainless steel.
- B. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, ASTM F593 (ASTM F738M); with hex nuts, ASTM F594 (ASTM F836M); and, where indicated, flat washers; Alloy Group 2 (A4).
- C. Post-Installed Anchors: chemical anchors.
 - Material for Exterior Locations and Where Stainless Steel is Indicated: Alloy Group 2 (A4) stainless-steel bolts, ASTM F593 (ASTM F738M), and nuts, ASTM F594 (ASTM F836M).

2.04 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- B. Anti-Seize Lubricant: Loctite LB 8023 Marine Grade Anti-Seize lubricant or approved equal.

2.05 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

- C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- D. Form exposed work with accurate angles and surfaces and straight edges.
- E. Weld corners and seams continuously to comply with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing.
- F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.
- G. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

2.06 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.
- B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.

2.07 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish metal fabrications after assembly.
- C. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.08 STAINLESS-STEEL FINISHES

- A. Remove tool and die marks and stretch lines or blend into finish.
- B. Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.
- C. Bright, Directional Satin Finish: No. 4.

- D. Dull Satin Finish: No. 6.
- E. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

3.00 EXECUTION

3.01 INSTALLATION, GENERAL

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- C. Field Welding: Comply with the following requirements:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.
- E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
- F. Anti-Seize Lubricant: Where stainless steel nuts and bolts will be installed, apply anti-seize lubricant to threads as recommended by lubricant manufacturer to prevent seizure of nut and bolt during installation or upon removal at a future date.

3.02 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

3.03 INSTALLING PREFABRICATED BUILDING COLUMNS

A. Install prefabricated building columns to comply with AISC's "Specification for Structural Steel Buildings" and with requirements applicable to listing and labeling for fire-resistance rating indicated.

3.04 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to inspect field welds.
- B. Welded Connections: Field welds will be 100 percent visually inspected according to AWS D1.1.
 - Full penetration welds and other welds as specified: In addition to 100 percent visual inspection, 10 percent of connections will be tested and inspected according to AWS D1.1 and the following inspection procedures, at testing agency's option:
 - a. Liquid Penetrant Inspection: ASTM E165.
 - b. Magnetic Particle Inspection: ASTM E709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
 - c. Ultrasonic Inspection: ASTM E164.
 - d. Radiographic Inspection: ASTM E94.
- C. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
 - 1. Corrective measures shall be taken when welding is unsatisfactory or indicates inferior workmanship. Chip and grind if the removal of part of the weld or a portion of the base metal is required. Where deposition of additional weld material is necessary, the sides of the area to be welded shall have no less than one to one (1:1) slope to allow room for depositing new material. Correct defective or unsound welds by the removal and replacement of the entire weld using the following procedures:
 - a. Excessive Convexity: Reduce to size by removal of excess weld metal by grinding.
 - b. Shrinkage Cracks, Cracks in Base Metal, Craters and Excessive Porosity: Remove defective portions of base and weld material down to sound metal, and deposit additional sound material.
 - c. Undercutting, Undersize, and Excessive Concavity: Clean and deposit additional weld metal.
 - d. Overlapping and Incomplete Fusion: Remove and replace the defective portion of the weld.
 - e. Slag Inclusion: Remove those parts of the welds containing slag. Fill with sound weld metal.
 - f. Removal of Adjacent Base Metal during Welding: Clean and form full size by depositing weld material.
 - 2. Remove cracked welds throughout their length.
 - 3. Where work performed subsequently to the making of the deficient weld has rendered the weld inaccessible, or has caused new conditions which make connection of the deficiency dangerous or ineffectual, restore the original conditions by removing welds or members, or both before making the necessary corrections. Another option is to compensate for the deficiency with additional work according to the revised design, approved by the Engineer.

- 4. Cut apart and reweld improperly fitted and misaligned parts.
- 5. Straighten members distorted by heat of welding using mechanical means or by carefully supervised application of a limited amount of localized heat. Heated areas shall not exceed 1200 degrees Fahrenheit as measured by Tempilsticks. Parts to be heated for straightening shall be free from external stress forces, except when mechanical means are used in conjunction with heat application.
- 6. If faulty welding or its removal for rewelding damages the base metal so that, in the Engineer's judgment, it is not in accordance with the intent of the Contract Documents, remove and replace the damaged material and compensate for the deficiency in a manner acceptable to the Engineer.
- 7. Maximum space between pieces or members for fillet welds shall be 1/16 inch. Only effective portion shall be considered in measuring fillet welds.

END OF SECTION

APPENDIX A

A1.00 MEASUREMENT AND PAYMENT

A1.01 MEASUREMENT

A. No measurements are required.

A1.02 PAYMENT

A. Payment for work covered under this section shall be considered subsidiary to the Inlet structure.

END OF APPENDIX A

DIVISION 31 | EARTHWORK

31 05 13 SOILS FOR EARTHWORK

1.00 GENERAL

1.01 WORK INCLUDED

A. This Section of the specifications describes the various classes of Earth Fill. All of the classes of Earth Fill contained in this specification may not be used on this project. The classes of Earth Fill used on this project are shown on the drawings or specified in other sections of the specifications. This Section does not include specifications for placement and compaction of Earth Fill. Specifications for placement and compaction of Earth Fill. Specifications and/or shown on the drawings.

1.02 STANDARDS

A. Soil materials shall be classified into the appropriate class of Earth Fill shown below according to ASTM D2487 "Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)" or other appropriate methods as designated by the Engineer.

2.00 PRODUCTS

2.01 MATERIALS; CLASSIFICATIONS

- A. Class 1 Earth Fill: Limited to clays and sandy clays classified as CH material with a liquid limit greater than or equal to 50, a plasticity index greater than or equal to 25, and a minimum of 60 percent passing the No. 200 sieve, which are free of organic materials.
- B. Class 2 Earth Fill: Limited to clays and sandy clays classified as CH and CL materials with a coefficient of permeability less than or equal to 1.0 x 10⁻⁷ cm/sec, a liquid limit greater than or equal to 30, a plasticity index greater than or equal to 15, and more than 50 percent passing the No. 200 sieve, which are free of organic materials.
- C. Class 3 Earth Fill: Consist of any materials classified as CH, CL, SM, SP, SP-SM, SC, and GC, which have a minimum plasticity index of 4, which are free of organic materials.
- D. Class 4 Earth Fill: Consist of materials which are classified as SP, SM, SC, CL, or dual classifications thereof, which have a liquid limit less than or equal to 35 and a plasticity index of a minimum of 4 and a maximum of 15, which are free of organic materials.
- E. Class 5 Earth Fill: Consist of materials classified as SP or SP-SM which have a plasticity index less than or equal to 4 and a maximum of 12 percent passing the No. 200 sieve, which are free of organic materials.
- F. Class 12 Earth Fill: Consist of soils suitable for topsoil which are relatively free of stones or other objectionable debris, which have sufficient humus content to readily support vegetative growth. The suitability of soils for topsoil shall be subject to the approval of the Engineer.

3.00 EXECUTION (NOT APPLICABLE)

END OF SECTION

APPENDIX A

A1.00 MEASUREMENT AND PAYMENT

- A1.01 MEASUREMENT
 - A. No measurement required for this section.
- A1.02 PAYMENT
 - A. Payment for work covered under this section of the specifications is not a direct pay item and will be subsidiary to the work covered under other sections.

END OF APPENDIX A

31 05 16 AGGREGATES FOR EARTHWORK

1.00 GENERAL

1.01 WORK INCLUDED

A. This Section of the specifications describes the various classes of Aggregate Fill. All of the classes of Aggregate Fill contained in this specification may not be used on this project. The classes of Aggregate Fill used on this project are shown on the drawings or specified in other sections of the specifications. This Section does not include installation. Installation of Aggregate Fill is included in other sections of the specifications and/or on the drawings.

1.02 QUALITY ASSURANCE

- A. Classification Testing:
 - 1. Contractor Testing:
 - a. Arrange and pay for the services of an independent testing laboratory to sample and test proposed Aggregate Fill materials.
 - b. Submit the test results to the Engineer, and obtain approval prior to providing Aggregate Fill.
 - 2. Owner Testing: The Owner shall arrange and pay for additional testing on the Aggregate Fill after delivery to the project site as determined necessary by the Engineer.
- B. Contamination Certification:
 - 1. Obtain a written, notarized certification from the Supplier of each proposed Aggregate Fill source stating that to the best of the Supplier's knowledge and belief there has never been contamination of the source with hazardous or toxic materials.
 - 2. Submit these certifications to the Engineer prior to proceeding to furnish Aggregate Fill to the site. The lack of such certification on a potential Aggregate Fill source shall be cause for rejection of that source.

1.03 STANDARDS

A. Aggregate Fill shall be classified into the appropriate class listed below according to ASTM testing procedures as specified for the various classes.

ASTM C33	Specification for Concrete Aggregates
ASTM C88	Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium sulfate
ASTM C125	Terminology Relating to Concrete and Concrete Aggregates
ASTM C131	Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C535	Test Method for Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM D448	Classification for Sizes of Aggregate for Road and Bridge Construction

1. American Society for Testing and Materials (ASTM) Standards:

2.00 PRODUCTS

2.01 MATERIALS; CLASSIFICATIONS

A. Class 1 Aggregate Fill: Consist of durable particles of crushed stone free of silt, clay, or other unsuitable materials and have a percentage of wear of not more than 40 percent when tested in accordance with ASTM C131 or C535. When material is subjected to five cycles of the sodium sulfate soundness test in accordance with ASTM C88, Sodium Sulfate Solution, the weighted percentage of loss shall not exceed 12 percent. The source of the material shall be approved by the Engineer and meet the following gradation in accordance with ASTM D448, size number 57:

Sieve Size Square Opening	Percent Passing
1-1/2"	100
1″	95-100
1/2"	25-60
No. 4	0-10
No. 8	0-5

B. Class 2 Aggregate Fill: Consist of durable particles of crushed stone free of silt, clay, or other unsuitable materials and have a percentage of wear of not more than 40 percent when tested in accordance with ASTM C131 or C535. When material is subjected to five cycles of the sodium sulfate soundness test in accordance with ASTM C88, Sodium Sulfate Solution, the weighted percentage of loss shall not exceed 12 percent. The source of the material shall be approved by the Engineer and meet the following gradation in accordance with ASTM D448, size number 67:

Sieve Size Square Opening	Percent Passing
1″	100
3/4"	90-100
3/8″	20-55
No. 4	0-10
No. 8	0-5

C. Class 3 Aggregate Fill: Consist of durable particles of crushed stone free of silt, clay, or other unsuitable materials and have a percentage of wear of not more than 40 percent when tested in accordance with ASTM C131 or C535. When material is subjected to five cycles of the sodium sulfate soundness test in accordance with ASTM C88, Sodium Sulfate Solution, the weighted percentage of loss shall not exceed 12 percent. The source of the material shall be approved by the Engineer and meet the following gradation in accordance with ASTM D448, size number 7:

Sieve Size Square Opening	Percent Passing
3/4"	100
1/2"	90-100
3/8"	40-70
No. 4	0-15
No. 8	0-5

D. Class 4 Aggregate Fill: Consist of durable particles of crushed stone free of silt, clay, or other unsuitable materials and have a percentage of wear of not more than 40 percent when tested in accordance with ASTM C131 or C535. When material is subjected to five cycles of the sodium sulfate soundness test in accordance with ASTM C88, Sodium Sulfate Solution, the weighted percentage of loss shall not exceed 12 percent. The source of the material shall be approved by the Engineer and meet the following gradation in accordance with ASTM D448, size number 467:

Sieve Size Square Opening	Percent Passing
2"	100
1-1/2"	95-100
3/4"	35-70
3/8"	10-30
No. 4	0-5

E. Class 5 Aggregate Fill: Consist of durable particles of crushed stone free of silt, clay, or other unsuitable materials and have a percentage of wear of not more than 40 percent when tested in accordance with ASTM C131 or C535. When material is subjected to five cycles of the sodium sulfate soundness test in accordance with ASTM C88, Sodium Sulfate Solution, the weighted percentage of loss shall not exceed 12 percent. The source of the material shall be approved by the Engineer and meet the following gradation in accordance with ASTM D448, size number 357:

Sieve Size Square Opening	Percent Passing
2-1/2"	100
2″	95-100
1"	35-70
1/2"	10-30
No. 4	0-5

F. Class 6 Aggregate Fill: Consist of durable particles of crushed stone free of silt, clay, or other unsuitable materials and have a percentage of wear of not more than 40 percent when tested in accordance with ASTM C131 or C535. When material is subjected to five cycles of the sodium sulfate soundness test in accordance with ASTM C88, Sodium Sulfate Solution, the weighted percentage of loss shall not exceed 12 percent. The source of the material shall be approved by the Engineer and meet the following gradation in accordance with ASTM D448, size number 1:

Sieve Size Square Opening	Percent Passing
4"	100
3-1/2"	90-100
2-1/2"	25-60
1-1/2"	0-15
3/4"	0-5

G. Class 7 Aggregate Fill: Consist of durable particles of crushed stone free of silt, clay, or other unsuitable materials and shall have a percentage of wear of not more than 40 percent when tested in accordance with ASTM C131 or C535. When material is subjected to five cycles of the sodium sulfate soundness test in accordance with ASTM C88, Sodium Sulfate Solution, the weighted percentage of loss shall not exceed 12 percent. The source of the material shall be approved by the Engineer and meet the following gradation in accordance with ASTM D448, size number 6:

Sieve Size Square Opening	Percent Passing
1"	100
3/4"	90-100
1/2"	20-55
3/8"	0-15
No. 4	0-5

H. Class 8 Aggregate Fill: Consist of durable particles of crushed stone free of silt, clay, or other unsuitable materials and shall have a percentage of wear of not more than 40 percent when tested in accordance with ASTM C131 or C535. When material is subjected to five cycles of the sodium sulfate soundness test in accordance with ASTM C88, Sodium Sulfate Solution, the weighted percentage of loss shall not exceed 12 percent. The source of the material shall be approved by the Engineer and meet the following gradation in accordance with ASTM D448, size number 56:

Sieve Size Square Opening	Percent Passing
1-1/2"	100
1"	90-100
3/4"	40-85
1/2"	10-40
3/8"	0-15
No. 4	0-5

- I. Class 9 Aggregate Fill:
 - 1. Consist of washed and screened gravel and natural sands or sands manufactured by crushing stones complying with the requirements of ASTM C33, except that the gradation shall be as follows:

Sieve Size Square Opening	Percent Passing
1/2"	100
3/8″	95-100
No. 4	80-95
No. 8	65-85
No. 16	50-75
No. 30	25-60
No. 50	10-30
No. 100	0-10

- 2. Class 9 Aggregate Fill shall have not more than 45 percent passing any sieve and retained on the next consecutive sieve of those shown above, and its fineness modulus, as defined in ASTM C125, shall be not less than 2.3 nor more than 3.1.
- J. Class 10 Aggregate Fill:
 - 1. Consist of washed and screened natural sands complying with the requirements and tests of ASTM C33. The gradation as included in ASTM C33 is as follows:

Sieve Size Square Opening	Percent Passing
3/8"	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	10-30
No. 100	0-10

2. Class 10 Aggregate Fill shall have not more than 45 percent passing any sieve and retained on the next consecutive sieve of those shown above, and its fineness modulus, as defined in ASTM C125, shall be not less than 2.3 nor more than 3.1.

K. Class 11 Aggregate Fill: Consist of durable particles of crushed stone free of silt, clay, or other unsuitable material and have a percentage of wear of not more than 40 percent when tested in accordance with ASTM C131 or C535. When material is subjected to five cycles of the sodium sulfate soundness test in accordance with ASTM C88, Sodium Sulfate Solution, the weighted percentage of loss shall not exceed 12 percent. The source of the material shall be approved by the Engineer and meet the following gradation:

Sieve Size Square Opening	Percent Passing
1-3/4"	100
7/8"	65-90
3/8"	50-70
No. 4	35-55
No. 40	15-30
No. 100	0-12 (Wet Sieve Method)

L. Class 12 Aggregate Fill: Consist of durable particles of crushed stone free of silt, clay, or other unsuitable material and have a percentage of wear of not more than 40 percent when tested in accordance with ASTM C131 or C535. When material is subjected to five cycles of the sodium sulfate soundness test in accordance with ASTM C88, Sodium Sulfate Solution, the weighted percentage of loss shall not exceed 12 percent. The source of the material shall be approved by the Engineer and meet the following gradation:

Sieve Size Square Opening	Percent Passing
1-1/2"	100
1"	85-100
3/4"	60-95
3/8″	50-80
No. 4	40-65
No. 16	20-40
No. 100	0-12 (Wet Sieve Method)

M. Class 13 Aggregate Fill: Consist of durable particles of crushed stone free of silt, clay, or other unsuitable material and have a percentage of wear of not more than 40 percent when tested in accordance with ASTM C131 or C535. When material is subjected to five cycles of the sodium sulfate soundness test in accordance with ASTM C88, Sodium Sulfate Solution, the weighted percentage of loss shall not exceed 12 percent. The source of the material shall be approved by the Engineer and shall meet the following gradation:

Sieve Size Square Opening	Percent Passing
1-3/4"	100
7/8″	65-90
3/8"	50-70
No. 4	35-55
No. 40	15-30
No. 100	0-3 (Wet Sieve Method)

N. Class 14 Aggregate Fill: Consist of durable particles of crushed stone free of silt, clay, or other unsuitable material and have a percentage of wear of not more than 40 percent when tested in accordance with ASTM C131 or C535. When material is subjected to five cycles of the sodium sulfate soundness test in accordance with ASTM C88, Sodium Sulfate Solution, the weighted percentage of loss shall not exceed 12 percent. The source of the material shall be approved by the Engineer and meet the following gradation:

Sieve Size Square Opening	Percent Passing
1-1/2"	100
1"	85-100
3/4"	60-95
3/8"	50-80
No. 4	40-65
No. 16	20-40
No. 100	0-3 (Wet Sieve Method)

O. Class 15 Aggregate Fill: Consist of durable particles of silica sand, washed clean, chemically inert, and packaged by the Supplier. The material shall meet applicable regulatory requirements for monitor well filter pack. The source of the material shall be approved by the Engineer and shall meet the following gradation requirements:

Sieve Size Square Opening	Percent Passing
No. 20	98-100
No. 40	0-2

3.00 EXECUTION (NOT APPLICABLE)

END OF SECTION

APPENDIX A

A1.00 MEASUREMENT AND PAYMENT

A1.01 MEASUREMENT

A. No measurement required for this section.

A1.02 PAYMENT

A. Payment for work covered under this section of the specifications is not a direct pay item and will be subsidiary to the work covered under other sections.

END OF APPENDIX A
31 11 00.13 CLEARING AND GRUBBING [DAMS]

1.00 GENERAL

1.01 WORK INCLUDED

A. Furnish labor, materials, equipment, and incidentals necessary to clear, grub, and dispose of cleared and grubbed materials and demolition, transport, and dispose of construction debris and other miscellaneous items noted on the plans. Maintain tools and other equipment necessary to completed specified work.

1.02 JOB CONDITIONS

- A. Debris, trash, or rubbish resulting from clearing, grubbing and demolition shall become property of the Contractor. It shall be promptly disposed of in compliance with the applicable ordinances.
- B. Contractor shall visit the Site and determine the extent of demolition required and the Site conditions that might affect his proposal. Include costs of covering all aspects of the demolition as part of the proposal.
- C. The Drawings shall be carefully reviewed to determine the extent of necessary demolition and to identify elements of the existing construction which are to remain in place. Report any discrepancies to Owner and Engineer before disturbing existing conditions. Property lines and limits of demolition shall be accurately located prior to beginning site demolition. Start of demolition activities shall represent confirmation by Contractor that existing conditions are as presented in the Contract Documents. Demolition outside the limits indicated on the Drawings, or outside the property lines shall not be performed.
 - 1. For electrical demolition, verify field measurements and circuiting arrangements are as shown on the Drawings. Verify that existing wiring and equipment serve only abandoned facilities.
- D. Material removed during demolition, and any equipment not otherwise designated to remain the property of the Owner, shall become the property of the Contractor and shall be promptly removed from the Site.
- E. Take necessary precautions in removing Owner designated property to prevent damage during the demolition process. Equipment shall be removed in one piece. Loose components may be removed separately. Controls and electrical equipment may be removed from the equipment and handled separately. Large units, such as motor driven pumps, may be dismantled and motors handled separately. Do not use a cutting torch to separate the Owner's equipment or material. Salvaged piping shall be taken apart at flanges or fittings and removed in sections.

2.00 PRODUCTS (NOT APPLICABLE)

3.00 EXECUTION

3.01 CLEARING

A. Thoroughly clear (1) to the limits of 10 feet outside the areas to be occupied by the embankment or structure and (2) areas to be occupied by the conduit, parking lot, and other structures. Clearing shall consist of the felling, cutting up, and the satisfactory disposal of trees and other vegetation, together with the down timber, snags, brush, rubbish, fences, and debris occurring within the area to be cleared. Cut off trees, other vegetation, stumps, roots, and brush in the area flush with or slightly below the original ground surface. Trees and brush outside the limits of the indicated areas to be cleared, but within the immediate vicinity of the work that interfere with or retard the progress of construction operations, may be removed upon receipt of the approval of the Engineer. Clearing consists of removal flush with the ground surface.

3.02 GRUBBING

- A. Thoroughly grub (1) the areas to be occupied by the embankment and structures, (2) areas of excavation for which the excavated material is to be used as fill, and (3) to any additional limits indicated. Grubbing shall consist of the removal and disposal of stumps and roots larger than 1 inch in diameter to the depth indicated, matted roots, abandoned structures, abandoned concrete foundations, and concrete floor slabs.
- B. In foundation areas, excavate and remove stumps, roots, logs, or other timber more than 1 inch in diameter, matted roots, and other vegetative matter, and debris not suitable for foundation purposes to a depth not less than 18 inches below the final foundation ground elevation. Refill depressions excavated for and by the grubbing operations in the embankment area as specified in Section 35 73 13.16 "Compacted Fill [Dams]." Grubbing shall be completed at least 200 feet in advance of stripping operations, as indicated in Section 35 73 13.13 "Excavation [Dams]."
- C. Remove timber, logs, stumps, roots, brush, rotten wood, and other refuse from the clearing and grubbing operations from the Owner's property.
- D. The Contractor is responsible for compliance with Federal, State, County, and other locally applicable laws and regulations relative to the building of fires. Pay constant attention to the disposal by burning method until the fires have burned out or have been extinguished. Disposal of materials in streams shall not be permitted and no material shall be piled in stream channels or in areas where it might be washed away by floods. Timber within the areas to be cleared shall become the property of the Contractor, and the Contractor may cut, trim, hew, saw, or otherwise dress felled timber within the limits of the Owner's property, provided timber and waste material is disposed of in a satisfactory manner.

3.03 DEMOLITION

A. Demolition shall include any item noted on the Drawings or required to make room for new Work as indicated on the Drawings. Demolition drawings included in the Contract Documents are provided for the Contractor's reference, but are not intended to limit the demolition to those items shown or otherwise noted. Contractor is responsible to verify for himself any demolition necessary to perform the Work.

END OF SECTION

APPENDIX A

A1.00 MEASUREMENT AND PAYMENT

A1.01 MEASUREMENT

A. No measurement shall be made for clearing and grubbing.

A1.02 PAYMENT

A. Payment for work covered under this Section of the specifications will be made at the lump sum price bid for "Clearing and Grubbing/Demolition," which payment shall constitute full compensation for labor, equipment, tools, and incidentals necessary to complete the work specified herein, including refilling of depressions. No payment will be made for clearing and grubbing as such in the borrow areas, or the waste disposal areas, and cost thereof shall be included in the appropriate bid price of the type of work involved.

END OF APPENDIX A

31 23 19.01 CARE OF WATER DURING CONSTRUCTION [DAMS]

1.00 GENERAL

1.01 WORK INCLUDED

A. Furnish labor, materials, equipment and incidentals necessary to operate pumps, piping and other facilities to assist in the removal of rainfall, surface water and ground water, and provide protection from flood waters and waves. Build and maintain the necessary temporary impounding works, channels, and cofferdam. Remove the temporary works, equipment, and materials after completion in strict accordance with this Section of the specifications and the applicable drawings.

1.02 SUBMITTALS

- A. Submittals shall include:
 - 1. Record Data: Submit written plans and procedures for handling flood flows, overtopping flows, waves, lake water, tailwater, leakage and dewatering excavations including pumping. Plans and procedures shall include layouts and details of diversion barriers, diversion siphons, berms, and cofferdam for use in flood protection and dewatering for construction. Plans and procedures shall be prepared by a licensed Professional Engineer in compliance with the State's dam safety criteria of Title 30 of the Texas Administrative Code, Chapter 299 DAMS AND RESERVOIRS. Submit plans and procedures at least 30 days prior to the start of the care of water measures. These plans and procedures shall outline the Contractor's proposed work schedules, including shift schedules, beginning and ending dates, and equipment. The lake shall not be completely dewatered during construction. If Contractor proposes to maintain the normal pool elevation lower than 492.3 feet during construction, the written plans and procedures must address the lake elevations, and the Owner must approve the lowered normal pool elevation.
- B. Review or approval of submittals does not relieve the Contractor of full responsibility and liability for care of water during construction.

1.03 EXISTING AND PROPOSED CONDITIONS

- A. The drainage basin for Palos Verdes Dam is approximately 73 acres.
- B. The existing service spillway has a crest elevation of 492.3 feet and controls normal pool levels by passing flows through a drop inlet into a 48-inch corrugated metal pipe (CMP). Large inflows to the lake are routed through the existing emergency spillway with a crest elevation of approximately 496 feet. The existing top of dam elevation is 498 feet.
- C. The elevation, storage, and discharge characteristics of the <u>proposed</u> dam configuration are summarized below.

Elevation (feet)	Lake Storage (acre-feet)	Service Spillway Discharge (cfs)	Emergency Spillway Discharge (cfs)	Total Discharge (cfs)
481	0	0	0	0
490	10.46	0	0	0
491	13.33	0	0	0
492	16.67	0	0	0
492.3	17.77	0	0	0
493	20.39	42	0	42
494	24.40	156	0	156
495	28.87	278	0	278
496	33.91	283	16	299
497	39.60	287	283	571
498	45.95	292	1,007	1,299

D. The peak inflow, peak outflow, and peak water surface elevations for the <u>proposed</u> dam configuration are summarized below.

Storm Event	Peak Inflow (cfs)	Peak Outflow (cfs)	Peak Water Surface Elevation (feet)
5-year	330.9	192.1	494.3 feet
10-year	392.2	230.6	494.5 feet
100-year	578.5	281.6	495.5 feet

2.00 PRODUCTS (NOT APPLICABLE)

3.00 EXECUTION

3.01 FLOOD FLOWS AND OTHER WATER

- A. The Contractor is responsible for handling and diverting any flood flows, stream flows, or any other water, including groundwater encountered during the progress of the work. Build, maintain, and operate cofferdams, channels, flumes, sumps, and other temporary works as needed to pass floodwater or divert stream flow or pass other surface water through or around the construction site and away from construction work while it is in progress. The new service spillway installation area shall be protected from the entry of water from the lake until the embankment is fully reconstructed. Unless otherwise approved by the Owner, a diversion must discharge into the same natural watercourse in which its headworks are located. Construct permanent work in areas free from water. Full responsibility for the successful dewatering of the work areas rests with the Contractor. Remove protective works, after they have served their purpose, in a manner satisfactory to the Owner or his representative.
- B. The minimum elevation of the cofferdam system shall be 498 feet.

3.02 DEWATERING EXCAVATED AND OTHER FOUNDATION AREAS

A. The Contractor is responsible for dewatering foundations for all areas during construction of the works of improvement, including areas of required backfills. Lower the water table as needed to keep work areas free of standing water or excessive muddy conditions as needed

for proper performance of the construction work as indicated in Section 35 73 13.16 "Compacted Fill [Dams]." The water table at a concrete structure location shall be maintained a minimum of 2 feet below the subgrade of the concrete during and for a minimum of 7 days after concrete placement. The water table at a backfill location shall be maintained a minimum of 2 feet below the backfill surface. Furnish, prepare, and maintain drains, sumps, casings, well points, and other equipment needed to dewater areas for required construction work. Any dewatering method that causes a loss of fines from foundation areas shall not be permitted. Keep available standby equipment to assure the proper and continuous operation of the dewatering system. Provide continuous monitoring (24 hours per day) of the dewatering system to assure continuous operation.

B. Construction modifications in the dewatering system may be required by the Owner to provide adequate performance. In the event of failure of the system, flooding of the excavation may be ordered by the Owner until the system is operative.

3.03 COORDINATION DURING INCREASED FLOWS AND FLOODING CONDITIONS

- A. Protect and remove all equipment, materials, and personnel during increased flow conditions resulting from local drainage or any other increased flow condition. Any damage or loss of equipment and materials shall be at the Contractor's sole expense. The Owner shall not be liable for any damages or costs associated with Contractor's failure to adequately protect the work areas or to move equipment, personnel, and materials.
- B. Contractor shall coordinate any emergency planning with the Owner in accordance with the Emergency Action Plan for Palos Verdes Lake Dam.

END OF SECTION

APPENDIX A

A1.00 MEASUREMENT AND PAYMENT

A1.01 MEASUREMENT

A. No measurements are required.

A1.02 PAYMENT

A. Payment for the work covered under this Section of the specifications will be made at the lump sum price bid for "Care of Water During Construction," which payment shall constitute full compensation for all costs of furnishing the labor, equipment, and materials for any temporary diversions and drainage channels, installing pumps and other equipment as required, maintaining the work free from water, and removing the temporary protective works. Partial payments will be made based upon the number of days bid allowable for the contract and the number of contract days completed.

END OF APPENDIX A

31 23 23.34 FLOWABLE FILL

1.00 GENERAL

1.01 WORK INCLUDED

A. Furnish labor, materials, equipment, and incidentals necessary to mix and place flowable fill, consisting of Portland cement, fine aggregate, fly ash, and water in the proper proportions as specified hereinafter. Flowable fill (Controlled Low-Strength Material, CLSM) shall be used to bed and backfill around piping, utilities, and structures where indicated.

1.02 QUALITY ASSURANCE

- A. Design Criteria Flowable Fill Proportions and Consistency: Flowable fill shall be proportioned to give the necessary workability, strength, and consistency, and shall conform to the following governing requirements:
 - 1. Permeability: Maximum permeability limit of 1x10⁻⁶ cm/sec. This limit shall apply at all locations where flowable fill is used as a utility trench plug (dam) within trench backfill materials.
 - 2. Subsidence: Evaporation of bleed water shall not result in shrinkage of more than 10.4 mm per m (1/8 inch per ft.) of flowable fill depth. Measurement of a Final Bleeding shall be as measured in Section 10 of ASTM C940.
 - 3. Strength for Non-Excavatable Flowable Fill: Unconfined compressive strength at 28days when tested in accordance with ASTM D4832: 150 psi minimum.
 - a. Where indicated provide Non-Excavatable Flowable Fill below structures and/or around structures, unless noted otherwise.
 - 4. Fluidity: Flowable fill shall be self-consolidating and non-segregating in accordance with ASTM C1611:
 - a. Slump Flow Test: Minimum 20-inch mean spread.
 - b. Visual Stability Index (VSI) Test: Less than or equal to 1.
- B. Factory Testing: The Contractor shall be responsible for the design of the material. A trial mix shall be designed by an independent testing laboratory, retained by the Contractor. The testing laboratory shall submit verification that the materials and proportions of the trial mix design meets the requirement of the Specifications. In lieu of trial mix design, Contractor may submit historical data for a mix design used successfully in previous similar work. The Contractor shall not make changes in materials, either in gradation, source, or brand, or proportions of the mixture after having been approved, except by specific approval of the Engineer.
- C. Owner Testing: It is the responsibility of the Contractor to achieve and maintain the quality of material required by this Section. However, the Owner may secure the services of an independent testing laboratory to verify the quality of the flowable fill. The Owner shall have the right to require additional testing, strengthening, or replacement of flowable fill which has failed to meet the minimum requirements of this Section.

1.03 SUBMITTALS

- A. Submit mix design on each material required. Provide backup data as required below.
- B. Submit historical or trial mix data and test results as a basis for mix design approval. Required data shall include:
 - 1. Permeability test results if plugs are required on Project.
 - 2. Subsidence test results.
 - 3. Strength test results.
 - 4. Fluidity test results.

1.04 STANDARDS AND REFERENCES

- A. Materials shall meet recommendation for mix design and placement, as published by National Ready Mixed Concrete Association.
- B. The applicable provisions of the following references and standards shall apply to this Section as if written herein in their entirety.

ASTM C33	Specification for Concrete Aggregates
ASTM C40	Test Method for Organic Impurities in Fine Aggregates for Concrete
ASTM C150	Specification for Portland Cement
ASTM C618	Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use as Mineral Admixture in Portland Cement Concrete
ASTM C 940	Standard Test Method for Expansion and Bleeding of Freshly Mixed Grouts for Preplaced-Aggregate Concrete in the Laboratory
ASTM C 1611	Standard Test Method for Slump flow of Self Consolidating Concrete
ASTM D 4832	Standard Test Method for Preparation and Testing of Controlled Low Strength Material (CLSM) Test Cylinders

1. American Society for Testing and Materials (ASTM) Standards:

2.00 PRODUCTS

2.01 MATERIALS

- A. Cement: Portland cement conforming to the specifications and test for Type I Portland cement of the American Society for Testing and Materials, Designation C-150.
- B. Fine Aggregate: Fine aggregate consisting of natural, washed and screened sand having clean, hard, strong, durable, uncoated grains complying with the requirements for ASTM C33. The sand shall generally be of such size that all will pass a 3/8-inch sieve, at least 95 percent pass a 1/4-inch screen and at least 80 percent pass a No. 8 sieve. Aggregate shall not contain strong alkali, or organic material which gives a color darker than the standard color when tested in accordance with ASTM Specification Designation C40.
- C. Fly Ash/Pozzolans: Fly ash shall be an ASTM C618, Class "C" fly ash. The fly ash may be used in controlled low-strength material.

- D. Water: Water for flowable fill shall be clean and free from oil, acid, alkali, organic matter or other harmful impurities. Water which is suitable for drinking or for ordinary household use will be acceptable for concrete. Where available, water shall be obtained from mains of a waterworks system.
- E. Performance Additive: As required to meet specification requirements:
 - 1. "Darafill" by Grace Construction Products.
 - 2. Rheocell Rheofill by BASF The Chemical Company.
 - 3. Sika Lightcrete Powder by Sika Corporation.
 - 4. Approved equal.
- F. Chemical Admixtures for Concrete per ASTM C 494, as required by performance requirements.

2.02 MIXES

- A. In the determination of the amount of water required for mix, consideration shall be given to the moisture content of the aggregate. The net amount of water in the mix will be the amount added at the mixer; plus the free water in the aggregate; and minus the absorption of the aggregate, based on a 30-minute absorption period. No water allowance shall be made for evaporation after batching.
- B. The methods of measurement of materials shall be such that the proportions of water to cement can be closely controlled during the progress of the Work and easily checked at any time by the Owner's representative. To avoid unnecessary or haphazard changes in consistency, the aggregate shall be obtained from sources which will insure a uniform quality and grading during any single day's operation and they shall be delivered to the Work and handled in such a manner that the variation in moisture content will not interfere with the steady production of flowable fill of reasonable degree of uniformity. Sources of supply shall be approved by the Owner's representative.
- C. All material shall be separately and accurately measured. Measurement may be made by weight or by volume, as determined by the Contractor; however; all equipment for measurement of materials shall be subject to approval by the Owner's representative.

3.00 EXECUTION

3.01 INSTALLATION

- A. Contractor shall give the Owner's representative sufficient advance notice before starting to place material in any area, to permit inspection of the area, and preparation for pouring.
- B. Conduct the operation of depositing the material so as to form a compact, dense, impervious mass, and so as not to develop air pockets in confined spaces.
- C. Unless specified otherwise, flowable fill shall be uniformly placed to the depth shown on the Drawings. The fill shall be brought up uniformly to the top of excavation elevation. Placement of flowable fill shall then cease and the fill protected from traffic for a period of 72 hours.
 - 1. To prevent pipe flotation, place material in lifts or provide alternate means.

- 2. Around structures, material shall be placed in lifts. Lift depth shall not exceed one-tenth of total structure embedment into subgrade nor 5 feet, whichever is less.
- 3. When multiple lifts are required, material shall be allowed to harden before placing next lift. Hardening time varies with each mix. Verify flowable fill has reached a penetration number of 1500, in accordance with ASTM C 403, but not less than 5 hours.
- D. The material shall be placed against undisturbed trench walls, and shall not be placed on or against frozen ground.
- E. At time of placement the ambient temperature shall be 35 F and rising.

3.02 FIELD QUALITY CONTROL

- A. An approved testing laboratory shall perform the quality control testing of backfill operations. The testing laboratory shall sample material in accordance with ASTM D5971. The testing laboratory shall monitor backfill operation continuously or at intervals acceptable to the Owner and Engineer at structures. It shall be the responsibility of the Contractor to provide sufficient advance notification to the testing laboratory before backfill operations begin.
 - 1. Strength: A strength test is the average of two cylinders per ASTM D4832.
 - 2. Fluidity: A fluidity test is a Slump Flow Test and a VSI Test per ASTM C1611.
 - 3. For all tests required, at a minimum perform one test per day, but not less than one per 150 cubic yards.

END OF SECTION

APPENDIX A

A1.00 MEASUREMENT AND PAYMENT

A1.01 MEASUREMENT

A. No measurement required for this section.

A1.02 PAYMENT

A. Payment for work covered under this section of the specifications is not a direct pay item and will be subsidiary to the work covered under other sections.

END OF APPENDIX A

31 35 23.22 FLEXAMAT EROSION PROTECTION – TIED CONCRETE BLOCK MATS

1.00 GENERAL

1.01 DESCRIPTION

A. The work shall consist of furnishing and placing the Flexamat system in accordance with this specification and conforming with the lines, grades, design, and dimensions shown on the plans.

1.02 SUBMITTALS

- A. Record Data: Submit as record data material specification sheets as required to comply with the requirements presented herein.
- B. Performance Testing: Full-scale laboratory testing performed by an independent 3rd party testing facility with associated engineered calculations certifying the hydraulic capacity of the proposed Tied-Concrete Block Erosion Control Mat meets the following requirements:

Test	Tested Value	Bed Slope	Soil Classification	Limiting Value
ASTM D6460	Shear Stress	30%	Sandy Loam (USDA)	24lb./ft ²
ASTM 6460	Velocity	20%	Loam (USDA)	30 ft./sec

2.00 PRODUCTS

2.01 MATERIALS

- A. Flexamat: Flexamat is manufactured from individual concrete blocks tied together with high strength polypropylene bi-axial geogrid. Each block is tapered, beveled and interlocked and includes connections that prevent lateral displacement of the blocks within the mats when they are lifted for placement.
 - 1. Tied Concrete Block Mats shall be Flexamat, manufactured by Motz Enterprises, Inc. or approved equal.
- B. Blocks: Furnish blocks manufactured with concrete conforming to the cement requirements of ASTM C150 and to the aggregate requirements of ASTM C33. Meet a minimum compressive strength of 5,000 psi at 28 days. Furnish blocks that have a minimum weight of 3 lb. per block. Blocks shall be placed no further than 2 in. apart.
- C. Polypropylene Bi-Axial Geogrid: Provide revetment mat that is constructed of a high tenacity, low elongating, and continuous filament polypropylene fibers that is securely cast into and embedded within the base of the concrete blocks and obtains connection strength greater than that of the geogrid. Ensure the geogrid meets the following requirements:

Description	Requirement
UV Stabilization	2% Carbon Black
Ultimate Tensile Strength	2,055 lb./lf

- D. Underlayment Materials: Flexamat Plus includes both Curlex[®] II and Recyclex[®] TRM. The backing material shall be packaged within roll of Flexamat.
 - Curlex [®] II: Erosion control blanket (ECB) consisting of a specific cut of naturally seedfree Great Lakes Aspen curled wood excelsior with 80% six-inch fibers or greater fiber length. It is of consistent thickness with fibers evenly distributed throughout the entire area of the blanket. The top and bottom of each blanket is covered with degradable polypropylene netting.

Index Property	Test Method	Value
Thickness	ASTM D 6525	0.418 in (10.62 mm)
Light Penetration	ASTM D 6567	34.6%
Resiliency	ASTM D 6524	64%
Mass per Unit Area	ASTM D 6475	0.57 lb/yd ² (309 g/m ²)
MD-Tensile Strength Max.	ASTM D 6818	127.0 lb/ft (1.9 kN/m)
TD-Tensile Strength Max.	ASTM D 6818	50.9 lb/ft (0.7 kN/m)
MD-Elongation	ASTM D 6818	28.64%
TD-Elongation	ASTM D 6818	29.84%
Swell	ECTC Procedure	89%
Water Absorption	ASTM D 1117/ECTC	199%
Bench-Scale Rain Splash	ECTC Method 2	SLR = 6.84 @ 2 in/hr ^{2,3}
Bench-Scale Rain Splash	ECTC Method 2	SLR = 7.19 @ 4 in/hr ^{2,3}
Bench-Scale Rain Splash	ECTC Method 2	SLR = 7.56 @ 6 in/hr ^{2,3}
Bench-Scale Shear	ECTC Method 3	2.6 lb/ft ² @ 0.5 in soil loss 3
Germination Improvement	ECTC Method 4	645%
1. Weight is based on a dry fiber weight basis at time of manufacture. Baseline		

moisture content of Great Lakes Aspen excelsior is 22%.

2. SLR is the Soil Loss Ratio, as reported by NTPEP/AASHTO. 3 Bench-scale index values should not be used for design purposes.

2. Recyclex® TRM: Recyclex TRM – V is a permanent non-degradable Turf Reinforcement Mat (TRM) consisting of 100% post-consumer recycled polyester (green or brown bottles) with 80% five-inch fibers or greater fiber length. It is of consistent thickness with fibers evenly distributed throughout the entire area of the TRM. The top and bottom of each TRM is covered with heavy duty polypropylene net. Fibers are tightly crimped and curled to allow fiber interlock, and to retain 95% memory of the original shape after loading by hydraulic events. Fibers have a specific gravity greater than 1.0; therefore, the blanket will not float during hydraulic events. Recyclex TRM – V meets Federal Government Executive Order initiatives for use of products made from, or incorporating, recycled materials. Recyclex TRM – V shall be manufactured in the U.S.A. and the fibers shall be made from 100a% recycled post-consumer goods.

Index Property	Test Method	Value
Thickness	ASTM D 6525	0.294 in (7.47 mm)
Light Penetration	ASTM D 6567	57%
Resiliency	ASTM D 6524	86%
Mass per Unit Area	ASTM D 6566	0.50 lb/yd ² (271 g/m ²)
MD-Tensile Strength Max.	ASTM D 6818	295.2 lb/ft (4.32 kN/m)
TD-Tensile Strength Max.	ASTM D 6818	194.4 lb/ft (2.85 kN/m)
MD-Elongation	ASTM D 6818	32.2%
TD-Elongation	ASTM D 6818	40.8%
Swell	ECTC Procedure	8%
Water Absorption	ASTM D 1117/ECTC	33.8 %
Specific Gravity	ASTM D 792	1.21
Porosity	ASTM D 4355 (1,000 hr)	80% minimum
Bench-Scale Rain Splash	ECTC Method 2	ECTC Method 2
Bench-Scale Rain Splash	ECTC Method 2	SLR = 4.97 @ 4 in/hr ^{1,2}
Bench-Scale Rain Splash	ECTC Method 2	SLR = 5.99 @ 6 in/hr ^{1,2}
Bench Scale Shear	ECTC Method 3	2.40 lb/ft ² @ 0.5 in soil loss 2
Germination Improvement ECTC Method 4 353%		353%
1. SLR is the Soil Loss Ratio, as reported by NTPEP/AASHTO		
Bench-scale index values should not be used for design purposes		

3. Non-woven Filter Fabric: The underlayment material shall be packaged in roll of Flexamat and shall meet the following characteristics:

Property	Test Method	English
Weight - Typical	ASTM D 5261	10 oz/sy
Tensile Strength	ASTM D 4632	250 lbs.
Elongation @ Break	ASTM D 4632	50%
Mullen Burst*	ASTM D 3786*	500 psi
Puncture Strength*	ASTM D 4833*	155 lbs.
CBR Puncture	ASTM D 6241	700 lbs.
Trapezoidal Tear	ASTM D 4533	100 lbs.
Apparent Opening Size	ASTM D 4751	100 US Sieve
Permittivity	ASTM D 4491	1.20 Sec-1
Water Flow Rate	ASTM D 4491	80 g/min/sf
UV Resistance @ 500 Hours	ASTM D 4355	70%

2.02 EQUIPMENT

A. Provide the proper equipment to place the mat that will not damage the mat material or disturb the topsoil subgrade and seed bed.

2.03 DELIVERY, STORAGE, AND HANDLING:

- A. Cover the mat or otherwise protect it during long periods of storage to protect against degradation of the backing material as recommended by the manufacturer.
- B. Mats will be rolled for shipment and are packaged with handling straps. These handling straps shall only be used for lifting below 2 feet to place heavy duty lifting straps under rolls. Upon delivery, rolls may be left exposed for up to 30 days. If exposure will exceed 30 days, cover or tarp the rolls to minimize UV exposure.
- C. All mats to be inspected upon delivery. Assure that all units are sound and free of defects that would interfere with the proper placing of the unit or impair the strength or permanence of the construction.
- D. Chipping or missing concrete resulting in a weight loss exceeding 15% of the average weight of a concrete unit is grounds for rejection by the Owner or Engineer. Replace, repair or patch the damaged areas per the manufacturer's recommendations.

3.00 EXECUTION

3.01 INSTALLATION

- A. Prior to installing Flexamat, prepare the subgrade as detailed in the plans. All subgrade surfaces to be smooth and free of all rocks, stones, sticks, roots, and other protrusions or debris of any kind that would result in an individual block being raised more than 3/4 in. above the adjoining blocks. When seeding is shown on the plans, provide subgrade material that can sustain growth.
- B. Ensure the prepared subgrade provides a smooth, firm, and unyielding foundation for the mats. The subgrade shall be graded into a parabolic or trapezoidal shape to concentrate flow to middle of mat or mats.
- C. When vegetation is required, distribute seed on the prepared topsoil subgrade before installation of the concrete mats in accordance with the specifications.
- D. Install mats to the line and grade shown on the plans and per the manufacturer's guidelines. The manufacturer or authorized representative will provide technical assistance during the slope preparation and installation of the concrete block mats as needed.
- E. Provide a minimum 18-inch deep concrete mat embedment toe trench at all edges exposed to concentrated flows. Provide a minimum 24-inch deep concrete mat embedment toe trench at the upstream edge which abuts the parking lot. Recess exterior edges subject to sheet flow a minimum of 2 inches.

END OF SECTION

APPENDIX A

A1.00 MEASUREMENT AND PAYMENT

A1.01 MEASUREMENT

A. This item will be measured by the square foot as shown on the plans, complete in-place.

A1.02 PAYMENT

A. Payment for work covered under this Section of the specifications will be made at the per square foot price bid for "Flexamat Erosion Protection," which payment shall constitute full compensation for loading and transporting, placing concrete block mats, excavation and disposal, topsoil and bedding, equipment, labor, materials, tools, and incidentals necessary to complete the work specified herein.

END OF APPENDIX A

DIVISION 32 | EXTERIOR IMPROVEMENTS

32 32 23.17 PRECAST MODULAR BLOCK RETAINING WALL

1.00 GENERAL

1.01 DESCRIPTION

- A. The work shall consist of furnishing and installing precast concrete modular block wall (MBW) units to the lines, grades and dimensions shown on the Contract Drawings and as specified herein. MBW system refers to either gravity block walls or mechanically stabilized earth walls with a MBW unit face.
- B. Work includes furnishing a sealed engineering design and shop drawings of the retaining wall system.
- C. Work includes furnishing leveling pad, unit fill and all backfill material as specified herein and as shown on the Contract Drawings.
- D. Work includes furnishing approved MBW facing units and cap units as shown on the Contract Drawings.
- E. Work includes installation of wall drainage system as shown on the Contract Drawings.
- F. Work includes furnishing soil reinforcement when required on the Contract Drawings.

1.02 DEFINITIONS

- A. Cap Unit: A MBW cap unit designed specifically to top or finish an approved MBW Unit.
- B. Drainage Aggregate: Clean, crushed stone placed within and immediately behind the precast MBW units to facilitate drainage and backfilling immediately adjacent to and behind the MBW units.
- C. Filter Fabric Geotextile: A non-woven, geosynthetic fabric material manufactured for use as a separation and filtration medium between the native or compacted soil and all free aggregate materials.
- D. Foundation Zone: Compacted or in-situ soil or undisturbed rock material below the entire base of all MBW units and/or reinforced soil for the MBW system.
- E. Geogrid: See Soil Reinforcement.
- F. Leveling Pad: A level, compacted gravel layer upon which the first course of MBW units are placed.
- G. Mechanically Stabilized Earth (MSE): Refers to a wall system that is soil constructed in lifts with reinforcing (geogrid) that includes a mechanical connection of the reinforcing to the MBW facing units.
- H. Precast Concrete Modular Block Retaining Wall Facing (MBW) Units: A preapproved facing unit which meets all physical and performance criteria in this specification, as determined by the Engineer prior to award of the contract, machine made from Portland Cement, water and mineral aggregates. MBW units under this section shall be cast utilizing a wet-cast concrete mix and shall weight more than 800 pounds per unit.
- I. Reinforced Zone/Backfill: This zone is present when a mechanically stabilized earth (MSE) system is used. When included, this zone is granular compacted soil that is reinforced with

geogrid. This zone is sometimes referred to as Reinforced Soil. When present, the reinforced zone does not count as part of the retained zone.

- J. Retained Zone/Soil: This zone is undisturbed and/or compacted soil that is present behind the wall system. For a gravity MBW this is material behind the drainage layer for MBW units. For a MSE MBW this is the material behind the Reinforced Zone.
- K. Soil Reinforcement: A structural geotextile formed by a regular network of integrally connected tensile elements with apertures of sufficient size to allow interlocking with surrounding soil, rock or earth and function primarily as structural reinforcement, as specified in this section.
- L. Tail Extension: A cast-in-place or precast concrete unit that is placed/constructed behind the MBW facing units to increase the base width of gravity walls. Tail extensions, or base width extensions, are used behind MBW facing units in hidden areas to allow for increased stability using larger base widths and/or more bulk weight.
- M. Unit Fill: Free-draining aggregate fill placed in the open areas (when present) of MBW units.

1.03 REFERENCE DOCUMENTS

A. Geosynthetic Research Institute:

GG1-87	Standard Test Method for Geogrid Rib Tensile Strength
GG2-87	Standard Test Method for Geogrid Junction Strength
GG3 (a&b)-91	Tension Creep Testing of (Stiff & Flexible) Geogrids
GG4 (a&b)-91	Determination of Long-Term Design Strength of (Stiff & Flexible) Geogrids
GG5-91	Geogrid Pullout

B. American Society for Testing and Materials (ASTM) Standards:

ASTM CB-90	Specification for Concrete Aggregates
ASTM C90-85	Hollow Load-Bearing Masonry Units
ASTM C140-90	Methods of Sampling and Testing Concrete Masonry Units
ASTM C145-85	Solid Load Bearing Concrete Masonry Units
ASTM C150-89	Specification for Portland Cement
ASTM C595-89	Specification for Blended Hydraulic Cements
ASTM D52	Tensile Creep Testing of Geosynthetics
ASTM D698	Moisture Density Relationship for Soils, Standard Method
ASTM D1557	Modified Proctor Density
ASTM D4318	Atterberg Limits
ASTM D4595	Tensile Properties of Geotextiles by the Wide-Width Strip Method
ASTM D4632	Tensile Properties of Geotextiles
ASTM D6913	Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis

ASTM G57-78	Resistivity
ASTM G51-77	Alkalinity

C. Other specifications:

NCMA TEK 50 A	Specifications for Segmental Retaining Wall Units
NCMA SRWU-1	Determination of Connection Strength between Geosynthetics and Segmental Concrete Units
NCMA SRWU-2	Determination of Shear Strength between Segmental Concrete Units
NCMA	Design Manual for Segmental Retaining Wall

1.04 SUBMITTALS

- A. Contractor's qualifications indicating a minimum of the previous 2 years' experience and a minimum of 40,000 square feet of documentable satisfactory experience installing Segmental Retaining Wall systems over 8 feet in height. Provide a project list indicating the required experience before beginning construction of MBW walls.
- B. Retaining Wall Design Calculations and Construction Shop Drawings: At least 14 days prior to construction, the General Contractor shall furnish construction shop drawings and a supporting structural calculations report to the Owner for review and approval. This submittal shall include the following:
 - 1. Detailed MBW shop drawings, sealed by a Professional Engineer licensed in the state where the wall is to be constructed, including wall profiles, reinforcement type and connection details (when proposed), elevations and lengths (when proposed), top and bottom of wall elevations, proposed grades at top of wall, and stations showing beginning of and ending of wall as well as the beginning and ending of turns and radii and points of intersection.
 - 2. Detailed MBW engineering design calculations addressing required design parameters according to NCMA recommendations, sealed by a Professional Engineer licensed in the state where the wall is to be constructed, including external and internal stability calculations.
 - 3. Proprietary product literature indicating specifically which MBW units are proposed for use on the project, including color, face style, and texture. Include proprietary product specifications indicating compressive strength, unit weight, aggregate mix, and percent absorption for the units proposed.
 - 4. Proprietary product literature for soil reinforcements/MSE proposed for use in the MBW system indicating exactly which reinforcements are to be used, wide width tensile strength, and results of 10,000-hour testing. This information should also include manufacturer recommended reduction factors for creep, biological/chemical damage, installation damage, factor of safety for uncertainties, and any other reductions identified by the manufacturer to be used for design with the proposed reinforcement.
 - 5. Results of internal stability testing, including:

- a. Connection strength testing performed by a certified testing laboratory for the specific MBW unit and specific soil reinforcements proposed according to NCMA test method SRWU-1.
- b. Results of shear strength testing between MBW units performed by a certified testing laboratory according to NCMA test method SRWU-2.
- C. Manufacturer's specifications (latest edition) for proposed materials, method of installation, and list of materials proposed for use.
- D. Samples of MBW units showing finish and potential color variation shall be provided to the OWNER prior to construction.
- E. A certificate of compliance with test report documentation certifying that the reinforced backfill materials comply with Paragraph 2.03 of this specification.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Check the materials upon delivery to assure the specified type, grade, color and texture of MBW units have been received.
- B. Prevent excessive mud, wet concrete, epoxies, and like materials which may affix themselves, from contacting the unit and reinforcement materials.
- C. Store a sufficient quantity of materials at or near the site of work to ensure that installation operations will not be delayed by a shortage of materials.
- D. Store all products in a suitable location and in a manner which prevents damage to the product. Protect the labels until the product is used. Provide weather protective coverings until the product is used and properly cover any interim, unused portion until used.
- E. Protect the materials from damage. Damaged materials or products shall not be incorporated into the retaining wall structure.

1.06 SPECIAL PROVISIONS

- A. Unless otherwise shown on the plans, wall batter shall be a maximum of 5 degrees. Blocks shall be placed horizontally, and positive means of obtaining batter shall be provided.
- B. The Contractor's Professional Engineer responsible for design of the MBW system shall interpret subsurface conditions within the MBW foundation area and shall provide recommendations for any subsoil improvements required. Foundation area of concrete modular/segmental retaining walls shall be taken to extend from a minimum of 6 inches from the front face of the block to a minimum of 6 inches beyond the back edge of the block or tail extension.
- C. Include the cost of all means of foundation or subsoil improvement as recommended by the Contractor's Wall Design Engineer in the unit price bid per square foot of facing area.
- D. Prior to undertaking any grading or excavation of the site, survey to confirm the location of the retaining walls, as well as any underground features, including utility locations within the area of construction.
- E. Coordinate installation of underground utilities with wall installation.
- F. The Design Criteria for the MBW system shall be:

- 1. Internal Stability of Walls:
 - a. Minimum Factor of Safety on/for:
 - 1). Tensile Overstress: 1.0
 - 2). Geogrid Pullout (peak load criteria): 1.5
 - 3). Geogrid Pullout (serviceability criterion): 1.0
 - 4). Facing Shear (peak load criterion): 1.5
 - 5). Facing Shear (serviceability criterion): 1.0
 - 6). Connections (peak load criterion): 1.5
 - 7). Connections (serviceability criterion): 1.0
 - 8). Uncertainties: 1.5
- 2. External Stability of Walls:
 - a. Minimum Factor of Safety against/for:
 - 1). Base Sliding (static condition): 1.5
 - 2). Overturning: 2.0
 - 3). Global Stability: 1.5
 - 4). Bearing Capacity: 2.0
- 3. Design shall address hydrostatic loading, seismic loading, rapid drawdown, surcharge, velocity effects, and back slopes where appropriate.

2.00 MATERIALS

2.01 PRECAST MODULAR BLOCK RETAINING WALL UNITS

- A. MBW units shall meet all physical and performance criteria set forth in this specification and the construction drawings. MBW Units may be supplied by the following vendors or their approved licensees (in alphabetical order):
 - 1. Big Block, Inc.
 - 2. ReCon Wall Systems, Inc.
 - 3. Redi-Rock International
 - 4. Stone Strong Systems
- B. MBW units shall meet the following structural requirements:
 - 1. Concrete used to form all MBW units including cap units shall have a minimum net 28day compressive strength of 3,000 psi. The MBW units shall have adequate freeze/thaw protection, as indicated by a maximum absorption rate of 8 percent.
 - 2. Cementitious materials used in the manufacture of the units shall be Type I, Type II or Type III Portland cement in accordance with ASTM C150.
 - 3. Other constituents: Air entraining agents, coloring pigments, integral water repellents, finely ground silica and other constituents previously established as suitable for use in

modular/segmental retaining wall units, conforming to applicable ASTM Standards or shown by test or experience to not be detrimental to the durability of the segmental concrete facing units or to any material used in masonry construction, are acceptable.

- 4. Exterior dimensions of units may vary in accordance with ASTM C90. MBW concrete facing unit dimensions shall not differ more than 1/8 inch from the manufacturer's molded dimension, nor more than 1/16 inch in height from front to back of unit.
- 5. Only MBW systems with positive interlocking fascia connections such as pins, locators, lips, keyways, or clips are acceptable.
- 6. If fiberglass connecting pins are required, the pins shall be 2-inch diameter thermoset isophthalic polyester resin-protruded fiberglass reinforcement rods with a minimum flexural strength of 128,000 psi and a short beam shear of 6,400 psi.
- 7. Cast-in-place tail extensions shall conform to the requirements of Paragraphs 2.01.B.1, 2.01.B.2, and 2.01.B.3.
- C. Finish and Appearance:
 - 1. All MBW units shall be sound and free of cracks or other defects that would interfere with the proper placing of the unit or significantly impair the strength or permanence of the construction.
- D. Sampling and Testing:
 - Compressive strength test specimens shall conform to the saw-cut coupon provisions of Section 5.2.4 of ASTM C140 except that the coupon shall have a minimum thickness of 1-1/2 inches.
- 2.02 BASE LEVELING PAD MATERIAL AND UNIT FILL FOR BLOCK
 - A. Base Leveling Pad Material: The base leveling pad material shall be compacted, crushed stone conforming to TxDOT Item 247, Grade 1-2 and constructed to the elevations shown on the Contract Drawings. Compact crushed stone to a minimum in-place density of 98 percent of the maximum dry density per ASTM D698 at a moisture content within 2 percent of optimum.
 - B. Unit Fill: Fill for units shall consist of granular fill as specified in the approved construction shop drawings
 - C. Drainage Backfill: For all MBW wall sections, place a minimum of 12 inches of granular fill behind the MBW units, as shown in the Contract Drawings.

2.03 REINFORCED WALL BACKFILL

- A. All soil material used in the reinforced zone shall be clean, free-drainage crushed stone with no more than five (5) percent fines as determined using ASTM D6913. Fine-grained soil or select fill is not allowed.
- B. Wall backfill material reinforced with geogrid shall have a pH in the range of 3 to 10 as determined in accordance with ASTM G51.
- C. Compaction of fill between MBW units and the 3-foot zone behind the MBW units shall be accomplished by running hand-operated compaction equipment just behind units. Compact

fill to minimum 95 percent Standard Proctor Density (ASTM D698). Do not run mechanical vibrating plate compactors on top of the MBW units.

- D. The reinforced backfill shall be placed in maximum 8 inches thick compacted lifts and shall be compacted to a minimum of 95 percent Standard Proctor Density (ASTM D698).
- 2.04 RETAINED ZONE BACKFILL OR COMMON BACKFILL
 - A. Soil placed in the retained zone behind the wall or behind the reinforced backfill shall be general earth backfill that is compacted in density and moisture-controlled lifts to the density requirements specified on the Contract Drawings.
- 2.05 GEOGRID REINFORCEMENT
 - A. Geogrid reinforcement shall be as indicated on the approved construction shop drawings.

2.06 FILTER FABRIC

A. Geotextile filter fabric shall be as indicated on the Contract Drawings.

3.00 EXECUTION

- 3.01 EXCAVATION
 - A. Excavate to the lines and grades shown on the Contract Drawings. Take precautions to minimize over-excavation. Over-excavation shall be filled with approved compacted material at the Contractor's expense. Do not to disturb embankment materials beyond the lines shown on the Drawings.
 - B. Excavation of unsuitable soils and replacement with approved compacted material shall be performed in accordance with Section 35 73 13.16 "Compacted Fill [Dams]." Contractor's Professional Engineer responsible for design of the MBW wall shall inspect the excavation and furnish a report approving the subgrade prior to placement of leveling pad material.
 - C. Over-excavated areas in front of the wall face shall be filled with approved compacted material at the Contractor's expense before the wall is built to over 4 feet in height.
 - D. Verify location of existing structures and utilities prior to excavation. Ensure all surrounding structures are protected from the effects of wall excavation.
 - E. Coordinate installation of new utilities and improvements to existing utilities with wall installation.
 - F. In areas where soft, disturbed or otherwise unsuitable soils are encountered within the zone of influence of the wall loading in the excavations, such unsuitable soils shall be over-excavated to the depths and extent indicated in the contract documents and replaced with suitable material as described in Section 35 73 13.16 "Compacted Fill [Dams]."

3.02 LEVELING PAD CONSTRUCTION

A. Leveling pad shall be placed as shown on the Contract Drawings. The leveling pad should extend laterally a minimum distance of 6 inches from the toe and heel of the lower most MBW unit and any tail or base extension.

- B. Foundation soil for the leveling pad shall be proof rolled and the top 12 inches compacted to minimum 95 percent Standard Proctor Density (ASTM D698) and tested prior to placement of leveling pad materials.
- C. The granular leveling pad material shall be compacted to provide a level, hard surface on which to place the first course of MBW units. Compaction will be with mechanical plate compactors.

3.03 MBW UNIT INSTALLATION

- A. First course of MBW units shall be placed on the leveling pad. The MBW units shall be leveled side-to-side, front-to-rear and aligned with adjacent units. Ensure MBW units are in full contact with the leveling pad.
- B. Place the front of the MBW units side-by-side. Do not leave gaps between the front of adjacent units. Alignment may be achieved by means of a string line or offset from base line to the back of the units. Layout of curves and corners shall be in accordance with MBW manufacturer's installation guidelines.
- C. Install fascia block connections per MBW manufacturer's recommendations, and place connecting pins (if required). Fill all voids of MBW units with unit fill and tamp fill.
- D. Place and compact drainage fill inside, between, and behind units, and place and compact infill soil behind drainage fill. Place filter fabric to separate foundation and retained zone soil from drainage and/or reinforced zone fill. Compaction effort within 3 feet of the back of the precast modular blocks should be accomplished with walk-behind compactors. Heavy equipment shall not be operated within 3 feet of the back of the wall. As part of this step, install drain tile and provide weeps at the spacing indicated on the Drawings.
- E. Backfill material shall be installed in lifts that do not exceed a compacted thickness of 6 inches.
- F. Sweep all excess debris from top of units and install next course. Ensure that each course is completely unit-filled, backfilled, and compacted prior to proceeding to the next course.
- G. Repeat procedure to the extent of wall height, checking alignment every three courses to ensure level rows of MBW units. Stacking of MBW units without placing core fill in the previous course of units will not be permitted.
- H. As appropriate, where the top of the wall changes elevation, units can be stepped with grade or turned into the embankment with a convex return end. Provide appropriate buried units on compacted leveling pad in the area of the convex return end.

3.04 GEOGRID REINFORCEMENT INSTALLATION (WHEN REQUIRED)

- A. Geogrid reinforcement shall be installed at the locations and elevations shown on the construction drawings on level fill compacted to the requirements of this specification.
- B. Continuous 12" (300 mm) wide strips of geogrid reinforcement shall be passed completely through the vertical core slot of the precast modular block unit and extended to the embedment length shown on the construction plans. The strips shall be staked or anchored as necessary to maintain a taut condition.

- C. Reinforcement length of the geogrid reinforcement is measured from the back of the MBW unit. The length shall be as indicated on the approved shop drawings.
- D. The geogrid shall be continuous throughout its entire length and may not be spliced. The geogrid shall be furnished in nominal, prefabricated roll widths no less than 12 inches +/- ½- inch. No field modification of the geogrid roll width shall be permitted.
- E. Neither rubber tire nor track vehicles may operate directly on the geogrid. Construction vehicle traffic in the reinforced zone shall be limited to speeds of less than 5 mph once a minimum of 9 inches of compacted fill has been placed over the geogrid reinforcement. Sudden braking and turning of construction vehicles in the reinforced zone shall be prohibited.

3.05 WALL INFILL AND REINFORCED BACKFILL PLACEMENT

- A. Place reinforced fill and compact to or 80% relative density per ASTM D4254. Compaction effort within 3 feet of the back of the precast modular blocks should be accomplished with walk-behind compactors. Heavy equipment shall not be operated within 3 feet of the back of the wall. As part of this step, install drain tile and provide weeps to the spacing indicated on Drawings.
- B. Backfill material placed immediately behind the drainage reinforced backfill shall be compacted to a minimum of 95 percent of maximum dry density at ± 2 percent of the optimum moisture content per ASTM D698 Standard Proctor.
- C. Backfill and reinforced backfill material shall be installed in lifts that do not exceed a compacted thickness of 8 inches.
- D. At the end of each work day, the Retaining Wall Installation Contractor shall grade and compact the surface of the last lift of the granular wall infill to a 3 percent (± 1 percent) slope away from the precast modular block wall face.
- E. The General Contractor shall direct the Grading Contractor to protect the precast modular block wall structure against surface water runoff at all times through the use of berms, diversion ditches, silt fence, temporary drains and/or any other necessary measures to prevent soil staining of the wall face, scour of the retaining wall foundation or erosion of the reinforced backfill or wall infill.

3.06 CAP INSTALLATION

A. Place MBW Cap units per manufacturer's recommendations and as shown on the approved shop drawings. Backfill and compact to finished grade as shown on the Contract Drawings.

3.07 COMPLETION

- A. A minimum of 12 inches of compacted, low-permeability clay fill shall be placed over the granular wall infill and/or reinforced zone of the precast modular block retaining wall structure. The adjacent retained soil shall be graded to prevent ponding of water behind the completed retaining wall.
- B. The crest slope above the wall shall be immediately seeded to establish vegetation. The General Contractor shall ensure that the seeded slope receives adequate irrigation and erosion protection to support germination and growth.

C. The Contractor shall confirm that the MBW geometries conform to the requirements of this section. The Contractor shall notify the Owner of any deviations.

4.00 CONSTRUCTION QUALITY CONTROL AND ASSURANCE

4.01 CONSTRUCTION QUALITY CONTROL

- A. The contractor is responsible to ensure that all installation and materials meet the quality specified in the Contract Drawings and approved construction shop drawings.
- B. The contractor shall verify that installation is in accordance with the specifications and construction drawings.

4.02 QUALITY ASSURANCE

- A. The Owner will engage testing and inspection services to provide independent quality construction assurance.
- B. Compaction testing shall be performed in all fill zones with a minimum of every one-foot of vertical fill and every 100 lineal feet along the wall.
- C. The independent inspection professional should perform sufficient testing and observation to verify that wall installation substantially conforms to the Contract Documents.

END OF SECTION

APPENDIX A

A1.00 MEASUREMENT AND PAYMENT

A1.01 MEASUREMENT

A. Measurement for this item shall be by the square foot of total wall height for the Modular Block Wall system.

A1.02 PAYMENT

- A. Payment for work incidental to construction of the Modular Block Wall system shall be made at the per square foot price for the item "Modular Block Wall," which shall be full compensation for furnishing labor, materials, and equipment necessary for performing the required tasks as specified.
- B. The price bid shall be full compensation for the Modular Block Wall system and installation, including the leveling pad, blocks, earth reinforcements (if used), imported backfill, wall drainage, filter fabric, joint filler, adhesive, and other items specified on the construction drawings or required for completion of the wall system not covered under other pay items.

END OF APPENDIX A

DIVISION 33 | UTILITIES

33 46 36 INTERNAL DRAINAGE SYSTEMS [DAMS]

1.00 GENERAL

1.01 WORK INCLUDED

A. Furnish labor, materials, equipment and incidentals necessary to install an internal drainage system, including vertical and/or horizontal embankment granular filter drains, sand well drains, gravel drains, pipes, and valves.

1.02 REFERENCE SPECIFICATIONS

A. Section 35 73 13.16 "Compacted Fill [Dams]."

1.03 SUBMITTALS

- A. Submittals shall include:
 - 1. Test results of natural filter materials.
 - 2. Product Data sheets for all manufactured products.

1.04 STANDARDS

- A. The applicable provisions of the following standards shall apply as if written here in their entirety:
 - 1. American Society for Testing and Materials (ASTM) Standards:

ASTM C33	Standard Specifications for Concrete Aggregates	
ASTM C88	Standard Specifications for Soundness of Aggregates by Use of	
	Sodium Sulfate or Magnesium Sulfate	
ASTM D1784	Standard Specifications for Rigid Polyvinyl Chloride (PVC)	
	Compounds and Chlorinated Polyvinyl Chloride (CPVC) Compounds	
ASTM D2241	Standard Specifications for Polyvinyl Chloride (PVC) Pressure Related	
	Pipe (SDR-Series)	
ASTM D4254	Test Methods for Minimum Index Density and Unit Weight of Soils	
	and Calculation of Relative Density	

2. American Water Works Association (AWWA) Standards:

AWWA C106	Standard Specification for Cast Iron Pipe Centrifugally Cast in Metal Molds for Water or Other Liquids
AWWA C110	Standard Specification for Ductile Iron Fittings
AWWA C151	Standard Specification for Ductile Iron Pipes Centrifugally Cast in
	Metal Molds or Sand-lined Molds, for Water and Other Liquids

2.00 PRODUCTS

2.01 MATERIALS

- A. Filters and Drains:
 - 1. The granular materials to construct the filter diaphragm, two-stage, and single-stage drains shall be composed of tough durable particles; reasonably free from thin, flat and elongated pieces; natural material; well graded between the prescribed limits indicated and contain no organic material nor soft, friable particles in quantities considered objectionable by the Engineer. Crushed materials shall not be used. Materials shall be rejected when failing to meet the specified requirements.
 - 2. Soundness in Magnesium Sulfate: All materials used for vertical chimney, horizontal finger, blanket and collector drains shall have a maximum loss of less than 25 percent weighted average at five cycles when tested for soundness in Magnesium Sulfate in accordance with ASTM C88.
 - 3. Gradation: Gradation for filter diaphragm, two-stage, and single-stage drains shall be as indicated.

Sieve Size Square Opening	Percent Passing
3/8"	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	10-30
No. 100	2-10
No. 200	0-5

a. Filter Sand: Filter sand materials shall consist of washed and screened natural silica sands complying with the requirements and test of ASTM C33, fine aggregate, as follows:

b. Gravel Drain: Drain aggregate material for the finger and two-stage collector drains shall consist of durable particles of washed and crushed stone free of silt, clay, or other unsuitable materials. The source of the material shall be approved by the Engineer and meet the following gradation (gradation is a modified ASTM D448, size number 89, and shall be well graded with no gap grading):

Sieve Size Square Opening	Percent Passing
1-1/2"	100
1"	85-100
3/8"	55-90
No. 4	35-70
No. 8	15-50
No. 30	0-10
No. 200	0-3

- B. PVC Material: PVC materials for pipes and fittings for internal drainage systems shall conform to ASTM D1784. Minimum required tensile strength shall be 5000 psi. PVC check valves shall be constructed as indicated.
- C. PVC Pipes: The pipe for internal drainage systems shall conform to ASTM D2241, 160 psi rating minimum. Perforated and non-perforated pipe shall be as indicated.

3.00 EXECUTION

- 3.01 PREPARATION; FOUNDATION AND FILTER BED
 - A. Prior to placement of filter material, prepare the foundation in accordance with Section 35 73 13.16 "Compacted Fill [Dams]." Compacted fills upon which the filter material is placed shall be constructed to the lines and grades indicated and in accordance with Section 35 73 13.16 "Compacted Fill [Dams]."
- 3.02 FILTER
 - A. General: "Filter" refers to the graded, granular material used to create the vertical filter diaphragm, two-stage, and single-stage drains.
 - B. Moisture Control of Filter: Sufficiently wet the filter materials to prevent segregation at the time of placement and compaction.
 - C. Filter Placement:
 - 1. The filter forms an integral part of the embankment and shall be placed in conjunction with the placement of the adjacent embankment.
 - 2. Place filter materials in lifts not to exceed 3 feet. Contractor shall place filter using equipment and procedures that do not result in segregation or contamination of the filter with adjacent embankment or other materials. If appropriate density, as specified in Paragraph 3.02.D cannot be achieved with lifts of 3 feet, reduce the lift thickness.
 - D. Compaction of Filter:
 - 1. Compaction Equipment: Compaction equipment that is used for compaction of filter material shall be as specified in Section 35 73 13.16 "Compacted Fill [Dams]."
 - 2. Compaction: Compact the filter material with pneumatic rollers, vibratory rollers, or power tampers to a relative density of at least 70 percent as determined by

ASTM D4254. Contractor shall prevent contamination of filter material during the placement of embankment materials adjacent to the filter. Contractor shall remove contaminated filter material and replace at no expense to the Owner.

3.03 PIPING

- A. Horizontally Placed Piping: Place drain piping in trenches excavated in the compacted drainage material and embankment fill. Compact backfill around the pipe by hand tampers to a density equal to that of the surrounding material. Place the pipe to the lines and grades indicated. Rest each section of the pipe upon the pipe bed for the full length of its barrel, with recesses excavated to accommodate bells and joints. Under no circumstances shall pipe be laid in water, and no pipe shall be laid when drainage material conditions or weather are unsuitable for such work. Take up and relay or replace any section of the pipe already laid that is found to be defective or damaged at no cost to the Owner, and do not place material thereon until it has been approved. Temporarily plug pipe branches with an appropriate plug to prevent entrance of foreign matter into the pipe. In the event that drainage pipes are cracked, broken, crushed, or accumulate foreign matter, repair the damage at no cost to the Owner. Make allowance for the expansion and contraction of PVC caused by changes in temperature.
- B. Inspection: Clean out and inspect each completed section for foreign objects and debris prior to covering.
- C. Pipe Cast in Concrete: Securely brace pipes and lay to the required lines and grades prior to placing concrete around the pipes. Bracing, plugging (as required) and placing concrete around the pipes shall conform to Section 03 30 00 "Cast-In-Place Concrete." Take care to prevent displacement or damage to the pipe and repair any damages or replace the pipe at the Contractor's expense.

3.04 CONCRETE STRUCTURES

A. Construct associated concrete structures in accordance with Section 03 30 00 "Cast-In-Place Concrete."

3.05 FIELD QUALITY CONTROL

- A. Contractor will provide for quality control tests on the materials incorporated in the work. Copies of the results of tests performed shall be promptly furnished to the Owner's representative. Any testing performed by the Owner in no way relieves the Contractor of the responsibility of completing the work in accordance with this Contract.
 - 1. In-place density tests shall be conducted at a rate of one test per 100 linear feet for every lift, with a minimum of three tests per lift, or at a rate requested by the Owner's representative.
 - 2. At least one density/unit weight determination shall be performed for each material type that is placed and compacted. Additional tests shall be performed at the start of and during the course of construction for any significant change in material type, color, consistency, or other characteristics that may be indicative of a change in material properties.

- B. Contractor shall assist the laboratory personnel in taking tests to the extent of furnishing labor and equipment to prepare the areas for testing and curtailing operations in the vicinity of the test area during testing.
- C. Owner has the right to conduct such tests as they deem necessary to assure themselves of compliance with the Specifications. Conflicting results between the Owner's laboratory tests and those made by the Contractor shall be resolved by the Engineer and that decision shall be final.

END OF SECTION

APPENDIX A

A1.00 MEASUREMENT AND PAYMENT

A1.01 MEASUREMENT

A. No measurements are required.

A1.02 PAYMENT

- A. Payment for work incidental to the internal drainage system shall be made at the lump sum price for the item "Internal Dam Drainage," which shall be full compensation for furnishing labor, materials, and equipment necessary for performing the required tasks as specified.
- B. Miscellaneous Items: Payment for the miscellaneous items, including but not limited to pipes, fittings, and valves shall be subsidiary to the internal drainage dam drainage system and are not items of direct pay. The cost of required excavations for any other miscellaneous items covered by this specification shall also be subsidiary to the internal drainage system.

END OF APPENDIX A
DIVISION 35 | WATERWAY & MARINE CONSTRUCTION

35 73 13.13 EXCAVATION [DAMS]

1.00 GENERAL

1.01 WORK INCLUDED

- A. Furnish labor, materials, equipment, and incidentals necessary to perform operations in connection with removing, hauling, and disposing of materials at the locations indicated.
- B. Excavations placed in the compacted fills shall be conducted so as to segregate different materials in accordance with their suitability in the various zones of the work. The locations of the excavations and excavation limit lines are generally as shown on the drawings.

1.02 QUALITY ASSURANCE

- A. Classification:
 - General: Classifications of excavation shall include material of whatever nature encountered, including clays, sands, gravels, conglomeritic boulders, weathered clay shales, shales, and rock. The Engineer shall, in accordance with the specifications, determine the classification of required excavations. Required excavation shall be considered to fall within one of the following classifications: stripping excavation or general required excavation.
 - 2. Stripping Excavation: Stripping excavation shall consist of excavation, down to a maximum depth of 9 inches, required to remove all topsoil, rubbish, vegetation not removed by clearing and grubbing operations, and other unsatisfactory material from the borrow areas, the foundation areas of the embankment, structures, and the areas of required excavation that is to be used for fill. Stripping operations shall be limited to the area within the lines indicated for required excavation and the foundation areas of the embankments or structures. In certain areas, the Engineer may require excavation to a greater depth than 9 inches. Compensation for stripping excavation greater than 9 inches shall be made as general required excavation. Continuous drainage of stripped areas shall be maintained to prevent ponding of water or formation of swampy areas. Stripping shall be completed at least 100 feet in advance of foundation preparation.
 - 3. General Required Excavation: General required excavation shall consist of the material required to be excavated for the permanent work which is not classified or subsidiary to another class of excavation or other work. General required excavation shall include material of whatever nature encountered including clays, sands, gravels, caliche, conglomeritic boulders, and weathered clay shales and shales, and rock, if encountered, in required excavations.
- B. Exclusions:
 - 1. Embankment Internal Drainage: Excavation required in the work of constructing the embankment internal drainage shall not be measured or paid for under this specification.
 - 2. Trench Safety System: Excavation required in constructing the trench safety system outside the lines and grades indicated shall not be measured or paid for under this specification.

3. Service Spillway: Excavation required in the work of constructing the service spillway structure shall not be measured or paid for under this specification.

2.00 PRODUCTS (NOT APPLICABLE)

3.00 EXECUTION

3.01 PREPARATION

A. Perform excavation of materials by the use of any excavating and hauling equipment adaptable to the work and by any method generally accepted for this type of work.

3.02 REMOVAL

A. General:

- Excavate to the lines and grades indicated or as directed by the Engineer. Any and all excess excavation for the convenience of the Contractor or over-excavation performed by the Contractor for any purpose or reason, except when ordered by the Engineer, and whether or not due to the fault of the Contractor, will be at the expense of the Contractor. Where required to complete the work, refill the excess excavation and over excavation with materials furnished, placed, and compacted at the Contractor's expense, using procedures and materials specified herein.
- 2. Perform excavation for embankment and structural foundations in the dry. No excavation shall be made in frozen material without the approval of the Engineer. No additional allowance above the unit prices bid per cubic yard for the respective classification of excavation shall be made on account of any material being wet or frozen or on account of any surface or ground water condition.
- 3. Excavations shall be to the full dimensions indicated, or as directed by the Engineer. Finish excavations to the prescribed lines and grades. Individual sharp points of undisturbed material may extend within the prescribed lines not more than 6 inches except in areas that are excavated as foundations for concrete structures.
- 4. Following completion of the excavation and prior to placement of embankment or structural material upon the prepared foundation surface, the Engineer shall approve the foundation surface. Proof rolling may be required before approval. The foundation material shall meet the moisture and density requirements of the fill material to be placed upon it. If the foundation material which, in the opinion of the Engineer, is unsuitable for use as the foundation, perform additional excavation and backfill as directed. Such additional excavation and backfill shall be paid for in accordance with the appropriate bid items or agreed upon prices. Following approval of the foundation surface, assume full responsibility for maintaining the foundation surface and remove or re-compact the weathered or unsatisfactory foundation material and replace with compacted fill or lean concrete, at the Contractor's expense. Following approval of the foundation, diligently prosecute the working of placing the appropriate embankment or structural material on the prepared foundation. Do not excavate or maintain the side slopes any steeper than 3 horizontal to 1 vertical (3:1) unless otherwise indicated on the plans.

- 5. The Contractor is responsible for excavation safety in accordance with Section 10030 "Trenching and Backfilling." Flatten the slopes as necessary for excavation safety. This additional excavation and any extra backfill needed due to the flatter slopes shall conform to this Section and Section 35 73 13.16 "Compacted Fill [Dams]."
- 6. Maintenance of side slopes is the Contractor's responsibility.

3.03 DISPOSAL

- A. It is the intent of these specifications that, if possible, the required excavation be incorporated into an appropriate zone of the embankment. When necessary, dry or wet the excavation suitable for use in the embankment to the proper moisture content prior to placing of the fill or waste excavation at the Contractor's discretion. When necessary, stockpile excavated materials suitable for use at convenient locations in an approved manner. Place stripping excavation at convenient locations in an approved manner.
- B. Waste materials determined to be unusable by the Engineer shall be removed from the site by the Contractor, at no additional cost to the Owner.

END OF SECTION

APPENDIX A

A1.00 MEASUREMENT AND PAYMENT

A1.01 MEASUREMENT

A. No measurements are required.

A1.02 PAYMENT

A. Payment for work incidental to excavation shall be made at the lump sum price for the item "Excavation," which shall be full compensation for furnishing labor, materials, and equipment necessary for performing the required tasks as specified.

END OF APPENDIX A

35 73 13.16 COMPACTED FILL [DAMS]

1.00 GENERAL

1.01 WORK INCLUDED

A. Furnish labor, materials, equipment and incidentals necessary to perform operations in connection with preparing the embankment foundation for the initial embankment and placing and compacting permanent fills and backfills not otherwise specified in other Sections in accordance with the drawings and these specifications.

1.02 QUALITY ASSURANCE

- A. Definitions:
 - 1. Embankment: Defined as the earth fill portions of the Work, and includes all types of earth fill materials for the embankment and all other specified or directed earth fills.
 - 2. Compacted Fill: Includes all fill placed in layers and compacted.
- B. Classifications:
 - 1. The types of compacted earth fill are:
 - a. Embankment Fill: Embankment fill consists of all fills used in the construction of the embankment which will be composed of the fill placed around and adjacent to the conduit.
 - b. Filter and Drain Material: Filter and drain materials consists of all fills used in the construction of the internal drainage system of the embankment including the filter diaphragm. Material classifications shall be as specified in Section 33 46 36 "Internal Drainage Systems [Dams]."
 - c. Structural Backfill: "Structural Backfill" consists of compacted fill or backfill that is placed around or adjacent to a structure once the structure is completed and a specified time interval has elapsed (for curing).
- C. Lines and Grades: Construct the embankment to the lines, grades, and cross-sections as indicated. The Owner reserves the right to increase or decrease the foundation widths or the embankment slopes or to make such other changes in the embankment sections as may be deemed necessary to produce a safe structure. Increase in height of completed embankment material for foundation settlement shall be to lines and grades indicated. There shall be no payment for shrinkage or consolidation that occurs during construction. The end slopes and side slopes of fill sections shall not be steeper than those indicated. After the completion of all embankment work, conduct an as-constructed survey of the embankment.
- D. Conduct of the Work: Maintain and protect the embankment in a satisfactory condition at all times until final completion and acceptance of the Work under the Contract. If the hauling equipment causes horizontal shears or slickensides, rutting, quaking, heaving, cracking, or excessive deformation of the embankment, limit the type, load, travel speed, and/or haul pattern of the hauling equipment on the embankment. Excavate and remove from the embankment any material which the Owner's representative considers objectionable and dispose of such material and refill the excavated area. The removal of

any embankment material placed outside of described slope lines may be required and if necessary, shall be at the Contractor's expense. If directed by Owner's representative, replace any material rendered unsuitable at the Contractor's expense.

- E. Haul Roads: Locate and construct haul roads at approved locations. Construct haul roads to maintain the intended traffic, to be free draining, and to be maintained in good condition throughout the contract period. Remove haul roads within the area of contact between the embankment and its foundation and abutment, and treat the area as specified in Section 31 11 00.13 "Clearing and Grubbing [Dams]."
- F. Slides: In the event of a slide in any part of the embankment prior to final acceptance of the Work, remove material from the slide area, as directed by Owner's representative, and rebuild such portion of the embankment at the Contractor's expense.

1.03 SUBMITTALS

- A. Submittals shall include:
 - 1. List of proposed earthmoving and compaction equipment, including details of the physical properties required by this Section.
 - 2. Laboratory and field test results of materials required by this Section. Provide test results to Owner and Engineer within 24 hours of completion.

1.04 STANDARDS

- A. The applicable provisions of the following standards shall apply as if written here in their entirety:
 - 1. American Society for Testing and Materials (ASTM) Standards:

ASTM C136	Standard Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM D698	Test Method for Moisture-Density Relations of Soils and Soil Aggregate Mixtures, Using 5.5-lb. Rammer and 12-Inch Drop
ASTM D1556	Test Method for Density of Soil in Place by the Sand- Cone Method
ASTM D6938	Test Methods for in-Place Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D2937	Test Method for Density of Soil in Place by the Drive-Cylinder Method
ASTM D3017	Test Method for Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D3042	Test Method for Insoluble Residue in Carbonate Aggregates
ASTM D4253	Test Methods for Maximum Index Density of Soils Using a Vibratory Table
ASTM D4254	Test Methods for Minimum Index Density of Soils and Calculation of Relative Density
ASTM D4318	Test Method for Liquid, Plastic Limit, and Plasticity Index of Soils
ASTM D4373	Test Method for Calcium Carbonate Content of Soils"

2. USBR Engineering Nomograph No. 26, "A Rapid Method of Construction Control for Embankments of Cohesive Soil."

2.00 PRODUCTS

2.01 MATERIALS

- A. Secure materials for embankment fill from required excavations and/or from approved offsite borrow areas. The intention is to use the most suitable materials obtainable from these sources. Materials containing brush, roots, sod, or other decomposable or perishable materials shall not be considered suitable. The suitability of the materials shall be subject to approval of the Owner's representative. Materials shall meet the requirements shown on the plans.
- 2.02

2.02 COMPACTION EQUIPMENT

- A. Compaction equipment shall conform to the following requirements and shall be utilized as hereinafter specified. Variations from the specified equipment shall be approved by the Engineer. However, use of approved compaction equipment does not alleviate the Contractor from meeting all density requirements of the compacted fill. The Contractor is required to use equipment suitable and appropriate to achieve the required densities of the material being placed. The selection, operation, and use of the compaction equipment shall be based on adequate demonstration of achieving the required densities using the proposed equipment and the actual construction materials.
 - 1. Tamping Rollers:
 - a. Tamping rollers shall consist of a heavy-duty double drum unit with a drum diameter not less than 60 inches and an individual drum length of not less than 60 inches. The drums shall be water or sand and water ballasted. Each drum shall have staggered feet uniformly spaced over the cylindrical surface such as to provide approximately three tamping feet for each 2 square feet of drum surface. The tamping feet shall be 7 to 9 inches in clear projection from the cylindrical surface of the roller and shall have a face area of not less than 7 nor more than 10 square inches. Self-propelled rollers with tamping feet surface areas greater than 10 but less than 30 square inches can be utilized provided the feet have tapered heads that add to the compactive effort. The roller shall be equipped with cleaning fingers, so to prevent the accumulation of material between the tamping feet, and these cleaning fingers shall be maintained at their full length throughout the periods of use of the roller. The weight of the roller shall not be less than 3500 pounds per foot of linear drum length weighted and shall not be less than 1500 pounds per foot of drum length empty. The two drums comprising one roller unit shall be configured so that both drums function when traversing uneven ground. The roller shall be self-propelled, or tractor drawn at a speed that will give optimum compactive effort.
 - b. The character and efficiency of this equipment shall be subject to demonstration of satisfactory results as required in Paragraph 2.03.A. The roller shall provide uniform compaction throughout the lift and shall ensure bonding by kneading action. The roller shall not cause scaring of the fill or laminations in the fill. The roller shall not walk across a lift until uniform compaction is obtained. Additional testing shall be required if the materials change during construction. When necessary repairs shall

be made to the tamping feet, minor alterations shall be made to the roller, and variations in the weight of roller shall be made.

- 2. Pneumatic Rollers: Pneumatic rollers shall have a minimum of four wheels equipped with pneumatic tires. The tires shall be of such size and ply as can be maintained at tire pressures between 80 and 100 pounds per square inch for a 25,000-pound wheel load during rolling operations. The roller wheels shall be located abreast and be designed so that each wheel carries approximately equal load in traversing uneven ground. The spacing of the wheels shall be such that the distance between the nearest edges of adjacent tires shall not be greater than 50 percent of the tire width of a single tire at the operating pressure of a 25,000-pound wheel load. The roller shall be provided with a body suitable for ballast loading such that the load per wheel may be varied, as ordered by the Engineer, from 18,000 to 25,000 pounds. The roller shall be towed at speeds not to exceed 10 miles per hour. The character and efficiency of this equipment shall be subject to demonstration of satisfactory results as required in Paragraph 2.03.A.
- 3. Vibratory Rollers: Vibratory rollers shall have a total static weight of not less than 20,000 pounds, with at least 90 percent of the weight transmitted to the ground through a single smooth drum when the roller is standing in a level position. The diameter of the drum shall be between 5 and 5-1/2 feet and the width between 6 and 9 feet. The unsprung weight of drum, shaft, and internal mechanism shall be not less than 12,000 pounds. The frequency of vibration during operation shall be between 1100 and 1500 cpm, and the dynamic force shall be not less than 40,000 pounds at 1,400 cpm. No backing of the vibratory roller shall be allowed on the embankment unless the vibrating mechanism is capable of being reversed. The Equipment Manufacturer shall furnish sufficient data, drawings and computations for verification of the above specifications, and the character and efficiency of this equipment shall be subject to demonstration of satisfactory results as required in Paragraph 2.03.A. Self-propelled and towed vibratory rollers shall be operated at speeds not exceeding 3 miles per hour and 1.5 miles per hour, respectively.
- 4. Power Tampers: Compaction of material in areas where it is impracticable to use a roller or tractor shall be performed with approved power tampers or other approved equipment.

3.00 EXECUTION

3.01 EXCAVATION

- A. For areas outside of the footprint of the embankment, when footing concrete is to rest on an excavated surface other than rock, take care not to disturb the bottom of the excavation. The exposed foundation material shall be protected with a seal slab in accordance with the drawings. The seal slab shall be placed as soon as practical after excavations are completed.
- B. For footings where the soil encountered at established footing grade is an unstable material, use the following procedure unless other methods are specified. Remove unstable soil. Replace the unstable soil with compacted select fill. Place in uniform layers at a suitable depth for compaction. We each layer if necessary and compact by rolling or tamping to provide a stable foundation for the structure.

- C. Perform excavation to permit surfaces to be brought to final line and grade within plus or minus 0.1 foot. Restore over-break at the Contractor's expense. In general, perform excavation in open-cut from the surface of the ground and at the line and grade indicated.
- D. The sides of the excavation, from the bottom of the excavation to the top of the ground shall be supported in accordance with OSHA requirements. Maintain the supports throughout construction. Remove supports after the completion of the work.

3.02 PREPARATION OF FOUNDATION

- A. Prepare embankment foundation as specified in this Section. Unless otherwise directed, fill each depression with the type of material which is to be placed immediately above the foundation. Place the fill in layers, moisten, and compact in accordance with the applicable provisions. Materials which cannot be compacted by roller equipment because of inadequate clearances shall be spread in 4-inch layers and compacted with power tampers to a density and moisture content in accordance with the applicable provisions. After filling of depressions and trenches and immediately prior to placement of compacted fill in any section of the embankment, loosen the foundation of such section thoroughly by scarifying, plowing, discing, or harrowing to a minimum depth of 6 inches, and maintain the moisture content within the limits specified in Paragraph 3.04 for the appropriate type of material. Remove roots or other debris turned up in the process of loosening and compact the entire surface of the embankment foundation area as specified in Paragraph 3.03.
- B. Plate areas of the foundation which are not feasible to dry back to the desired moisture content in the opinion of the Owner's representative. Plating consists of covering the wet area with no more than 3 feet of dry material and compacting. Route hauling equipment over the area and remove any soft spots which rut and replace with dry compacted fill. The entire area must be capable of supporting 10 passes of a 50-ton pneumatic roller without significant rutting. The top 18 inches of plating, in final form, must comply with the requirements of moisture content and density for the specific section or zone of the embankment in which it lies.

3.03 PLACING OF MATERIAL

A. Place embankment materials on properly prepared subgrade as specified in this Section. Each load of material, as nearly as practicable, shall be a mixture of material obtained from the borrow source when the excavation involves materials of a different type. Perform the combined excavation, placing, and spreading operation to obtain blending of material, and to ensure that the materials, when compacted in the embankment, have the best practicable degree of compaction, impermeability, and stability. Spread the earth materials that can be compacted with the specified tamping and pneumatic rollers in approximate horizontal layers not more than 8 inches thick before compacting over the length and breadth of the section of embankment under construction. In areas where the specified tamping and pneumatic rollers cannot be utilized, spread the earth materials in approximately horizontal layers not more than 4 inches thick before compacting. If the surface of the embankment is too smooth and hard to bond properly with succeeding layer, scarify and wet the surface before the succeeding layer is placed. Where fill is to be placed adjoining/next to existing fill, remove the fill to un-weathered, dense material, sloped to no steeper than 1H:1V if existing fill face is parallel to the centerline of the embankment and 5H:1V if the face is perpendicular to the centerline of the embankment. Bench and scarify

each layer on these edges as adjoining lifts are placed. Feathered edges are not allowed. Route material hauling equipment over the surface of the embankment to distribute the added compaction afforded by the rolling equipment, and to prevent the formation of ruts on the embankment surface.

- B. As soon as practicable after commencement of construction of any section of the embankment, raise or crown the top portion with grades not to exceed 5 percent so that the surface of the fill drains freely and is maintained throughout construction. During the dumping and spreading process, maintain at all times a force of men adequate to remove roots and debris and stones greater than 6 inches in maximum dimension from embankment materials. Remove roots and debris from the embankment and dispose of debris and roots in an approved manner.
- C. Structural Backfill: Place structural backfill, where room permits, as specified in the previous paragraphs. Where room does not permit and within 3 feet of structures, compact 4-inch layers of soil or 24-inch layers of rock by power tampers or rubber-tired equipment, provided the rubber-tired equipment does no damage. Adjust the moisture content and blending of the 4-inch layers such that the layers can be compacted and bonded together. Complete compaction by power tamps or rubber-tired equipment such that there will be a 24-inch overlap by roller compaction. Lifts thicker than 4 inches may be allowed with the use of rubber-tired equipment such that there will be a 24-inch overlap roller compaction. Lifts thicker than 4 inches may be allowed with the use of rubber-tired equipment if compaction can be achieved throughout the entire lift and it can be shown that the lifts are bonded together. Do not operate rollers within 3 feet of structures. Allow 14 days to elapse since concrete placement before backfill or other loads are placed on or against concrete surfaces. Before permitting passage of hauling and rolling equipment over the top of a concrete structure, provide depth of fill over the concrete sufficient to permit such passage without inducing harmful stresses or vibrations in the structures. Keep backfill on structures receiving fill on both sides within 2 feet of the fill on the opposite side.

3.04 MOISTURE CONTROL

- A. General: The materials in each layer of the fill shall uniformly contain the amount of moisture, within the limits specified below necessary to obtain the maximum dry density for the soil. Rework material that is not within the specified moisture content limits after compaction regardless of density. The moisture requirements shall be met at the time the next overlying lift of fill is placed.
- B. Embankment and Filter and Drain Zones:
 - 1. Embankment fill soils shall be cohesive clay. Compact fill soil, tested by ASTM D698 or USBR EM No. 26, within 0 percentage points dry to 3 percentage points wet of the optimum moisture content required to obtain the density specified in Paragraph 3.05.
 - 2. Filter and Drain: Moisture control for filter and drain soils shall be as specified in Section 33 46 36 "Internal Drainage Systems [Dams]."
- C. Processing: After spreading the soil on the embankment, adjust the moisture content of the soil, if necessary, by either aeration or the addition of water to bring the moisture content within the range specified. Uniformly distribute the moisture content throughout the layer of soil to be compacted. In order to accomplish this distribution, thoroughly mix the layer of soil by discing or harrowing. Thoroughly mix each soil layer by discing or harrowing prior to

compacting the layer regardless of the moisture uniformity of the soil material. Should the surface of a previously compacted layer become dry due to exposure to the elements, appropriately wet the surface of the compacted layer prior to placing the succeeding layer of soil, and properly disk or harrow. Should a layer of soil be over wetted, allow the layer to dry to within the specified moisture content prior to compacting. Should the surface of a layer become smooth and hard, roughen the surface by scarifying, and wet, if necessary, prior to placing the next layer of soil.

- D. Frozen Material: Do not place or compact fill material that is frozen. In addition, do not place fill on top of any frozen material.
- E. Scarify and re-compact in-place fill that has been frozen so that it meets the density and moisture requirements when the next lift is placed on it.

3.05 COMPACTION

- A. General:
 - 1. After a layer of fill material has been dumped and spread, harrow the layer as needed to break up and blend the fill materials. Perform harrowing with a heavy disc plow, or other approved harrow, to the full depth of the layer. If one pass of the harrow does not accomplish the breaking up and blending of the materials, make additional passes of the harrow to obtain desired result. When the moisture content and the uniformity of the layer is satisfactory, compact the lift of material by at least the specified number of passes to the percent of optimum density specified below.
 - 2. Compact embankment fill with at least eight passes with a tamping roller. A pass shall consist of one trip over the area being compacted. The front and rear axle rollers on self-propelled models shall only be considered as one pass per trip. The initial and final area to be rolled shall each have the required passes. Stagger passes between the initial and final area in order to establish overlapping with the required passes at all locations. Dumping, spreading, sprinkling and compacting may be performed at the same time at different points along a section where there is sufficient area to permit these operations to proceed simultaneously.
 - Determine the in-place moisture and density of materials by one or more of the following methods: ASTM D2937, D2167, D1556, D3017, D2922, or USBR Engineering Monograph No. 26. Determine the laboratory maximum density and optimum moisture of cohesive materials by ASTM D698 or USBR Engineering Monograph No. 26. Determine the maximum density and optimum moisture of non-cohesive materials by D4253 and D4254.
 - 4. Compact soils, to an average (10 test running average) of 98 percent of the appropriate maximum density. The minimum density of any test shall be 95 percent of the maximum density.
 - 5. A change the number of passes, the weight of the roller modified, or the lift thickness may be necessary to meet the density requirements. Regardless, the number of passes used to compact the fill shall not be decreased from those listed above.
- B. Filter and Drain: Compact filter and drain materials placed in the internal drainage system, such as filter diaphragms and horizontal drains, as specified in Section 33 46 36 "Internal Drainage Systems [Dams]." Exercise care during placement of embankment material

adjacent to the filter to avoid contamination of the filter. Remove contaminated filter material and replace at no cost to the Owner.

3.06 FIELD QUALITY CONTROL; CONSTRUCTION CONTROL

- A. The Contractor will provide for quality control tests on the materials incorporated in the Work. Copies of the results of tests performed shall be promptly furnished to the Owner's representative. Any testing performed by the Owner in no way relieves the Contractor of the responsibility of completing the Work in accordance with this Contract.
 - 1. In-place density tests shall be conducted at a rate of one test per 3,000 square feet for every lift, with a minimum of three tests per lift, or at a rate requested by the Owner's representative.
 - 2. At least one moisture-density determination, one Atterberg limits determination, and one particle size gradation test shall be performed for each material type that is placed and compacted. Additional tests shall be performed at the start of and during the course of construction for any significant change in material type, color, consistency, or other characteristics that may be indicative of a change in material properties.
- B. The Contractor shall assist the laboratory personnel in taking tests to the extent of furnishing labor and equipment to prepare the areas for testing and curtailing operations in the vicinity of the test area during testing.
- C. The Owner has the right to conduct such tests as deemed necessary to ensure compliance with the Specifications. Conflicting results between the Owner's laboratory tests and those made by the Contractor shall be resolved by the Engineer and that decision shall be final.

END OF SECTION

APPENDIX A

A1.00 MEASUREMENT AND PAYMENT

A1.01 MEASUREMENT

A. No measurements are required.

A1.02 PAYMENT

- A. Payment for work incidental to compacted embankment fill shall be made at the lump sum price for the item "Compacted Fill, Grading, and Vegetation," which shall be full compensation for furnishing labor, materials, and equipment necessary for performing the required tasks as specified.
- B. Filter and Drain Material: Payment for the Filter and Drain Material shall be made at the lump sum price for the item "Internal Dam Drainage," which shall be full compensation for furnishing labor, materials, and equipment necessary for performing the required tasks as specified.
- C. Structural Backfill: Structural backfill shall not be an item of direct payment. The cost of this item shall be included in the unit price bid for the particular material placed.

A1.03 EXCLUSIONS

- A. Waste disposal shall not be an item of direct pay. The cost of waste disposal shall be included in the appropriate excavation pay item.
- B. Material required to backfill excavations back to the plan line and grade to install the trench safety system shall not be an item of payment.
- C. Material required to backfill unauthorized excavations back to the plan line and grade shall not be an item of payment.
- D. Material required to backfill those items excluded from compacted fill or embankment in Paragraph 1.02.C shall not be an item of payment.
- E. Testing and certifying fill materials shall not be an item of direct payment but shall be included in the unit price bid for the particular borrow material(s).

END OF APPENDIX A

DIVISION 40 | PROCESS INTEGRATION

40 05 61 GATE VALVES

1.00 GENERAL

- 1.01 WORK INCLUDED
 - A. Furnish labor, materials, equipment and incidentals necessary to install gate valves and appurtenances, including valve boxes, operators, bolts, nuts and gaskets.

1.02 QUALITY ASSURANCE

- A. Acceptable Manufacturers:
 - 1. American-Flow Control.
 - 2. M&H.
 - 3. Mueller.
 - 4. Clow.
 - 5. U.S. Pipe.

1.03 SUBMITTALS

- A. Submittals shall include:
 - 1. Operation and Maintenance Manuals.

1.04 STANDARDS

- A. The applicable provisions of the following standards shall apply as if written here in their entirety:
 - 1. American National Standards Institute (ANSI) Standards:

ANSI B16.1 Cast Iron Pipe Flanges and Flanged Fittings

2. American Society for Testing and Materials (ASTM) Standards:

ASTM A126	Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings
ASTM A536	Standard Specification for Ductile Iron Castings

3. American Water Works Association (AWWA) Standards:

AWWA C111	Rubber-Gasket Joints
AWWA C500	Gate Valves for Water and Sewage Systems
AWWA C509	Resilient Seated Gate Valves for Water and Sewage Systems

2.00 PRODUCTS

- 2.01 GATE VALVES
 - A. General:

- 1. Unless otherwise specified, gate valves greater than 24 inches in size shall be in strict accordance with AWWA C500. Gate valves shall be double disc, parallel seat internal wedging type with non-rising stem. Unless otherwise specified, gate valves 3 through 24 inches in size shall be in accordance with AWWA C509, Resilient Wedge.
- 2. Gate valves 2-1/2 inches and smaller shall be bronze, non-rising stem with wedge disc and screwed ends for 300-psi W.O.G. working pressure. Bronze gate valves shall be Crane No. 437, Mueller No. H 10914, or approved equal.
- 3. Gate valves 30 inches and larger shall be equipped with non-rising stem bypass valve and with spur-gears in enclosed oil or grease lubricated gear cases. Gear boxes shall be factory lubricated. Flanges shall conform to ANSI, Class 125 or 250.
- B. Gate: Gate for double disc valves shall be cast iron with bronze mounted wedges and seats. Gate for resilient seated valves shall be cast iron with rubber-seat compound bonded to the valve gate.
- C. Operators: Operators shall turn counterclockwise to open the valve. Exposed valves shall have handwheel operators unless otherwise designated. A directional arrow and the word "open" shall be cast on the handwheel. Valves for buried service shall have a 2-inch square nut operator and shall be installed with extension stems where required to extend operating nut to within 12 inches of the finished grade. Provide a cast iron valve box to enclose the operating stem. Valve box shall be three-piece extension type equal to Mueller No. 10380 or Clow F2450.
- D. Stem and Seal: The non-rising stem shall be bronze with inside screw. Shaft seal shall employ O-rings or V-type packing.
- E. Bell Ends: Where designated, valves shall be mechanical joint or rubber gasketed push on joints in accordance with the applicable requirements of AWWA C111.

3.00 EXECUTION

- 3.01 INSTALLATION
 - A. Carefully handle and lower buried valves into position to prevent damage to any part of the valves. Place the valve in the proper position with stem truly vertical and securely hold until connections have been made. Furnish bolts, nuts, and gaskets. The Contractor shall be responsible for adjusting the valve boxes to the proper length to conform with the ground surface.

3.02 FIELD QUALITY CONTROL

A. Upon completion of installation of the equipment, an acceptance test to verify the satisfactory operation of each unit shall be conducted. The test shall be conducted in a manner approved by and in the presence of the Owner or Engineer. The unit shall be checked for general operation and leakage. The unit must perform in a manner acceptable to the Engineer before final acceptance will be made by the Owner.

END OF SECTION

APPENDIX A

A1.00 MEASUREMENT AND PAYMENT

A1.01 MEASUREMENT

A. This item will be measured by the quantity used as shown on the plans, complete in-place.

A1.02 PAYMENT

A. Payment for work covered under this Section of the specifications will be made at the per quantity price bid for "12" Gate Valve," which payment shall constitute full compensation for equipment, labor, materials, tools, installation, and incidentals necessary to complete the work specified herein.

END OF APPENDIX A

UNCATEGORIZED ITEMS

ITEM 1051 - BLOCK SODDING

DESCRIPTION

1051-1.1 This item shall govern for furnishing, hauling, and planting Bermuda grass sod at locations designated on the plans or as directed by the Owner and in accordance with the requirements of this specification.

MATERIALS

1051-2.1 Sod. The sod placed by the contractor shall be live, growing grass with a healthy root system and dense matted roots throughout the sod for a minimum thickness of 1". Sod shall be Common Bermuda grass. If turf exists adjacent to the disturbed area, the Contractor shall match type of sod to the existing turf. Sod shall be healthy, free of insects, disease, stones, undesirable foreign materials, and weeds detrimental to its growth or that might affect its livelihood or hardiness when transplanted. All sod shall be obtained from an area of reasonably fertile soil with a high percentage of loamy topsoil. Sod, including the soil containing roots, shall be cut to uniform thickness. It shall be mowed to a height not to exceed three inches before the sod is lifted. Sod shall be kept moist. Sod shall not be planted when its moisture condition is so excessively wet or dry that its survival shall be affected. Grass sod with dried roots shall be considered unacceptable and rejected. Sod placed during dormancy shall be inspected by the Owner to verify that the grass is satisfactory. Broken or torn pads and uneven ends shall be rejected.

1051-2.2 Water. Water for sodded areas shall be free from oil, acid, alkali, salt, or other harmful materials that might injure the sod.

1051-2.3 Fertilizer. Soil testing is not required. Fertilizer shall be 1-1-1 or 1-2-1 (N-P-K) ratio applied at a rate of 10 lbs fertilizer per 1,000 sq ft.

CONSTRUCTION METHODS

1051-3.1 Equipment. Suitable equipment necessary for proper ground surface preparation and for the transporting and placing of all required materials shall be on hand, in good condition, and approved by the Owner before the various operations begin. Adequate watering equipment must also be on hand before sodding begins.

1051-3.2 Preparing the Surface. After the designated areas have been completed to the lines and grades shown on the plans, areas to be sodded shall be cultivated to a depth of 4" and raked or otherwise cleared of large stones, sticks, and other debris that might interfere with sodding, livelihood of the grasses, or future maintenance of grass-covered

areas. If any damage occurs after the grading of areas to be sodded and before the placement of sod, the Contractor shall repair such damage.

1051-3.3 Laying Sod. At locations shown on the plans, or where directed, sod shall be carefully placed by hand on the prepared areas. Sod shall be placed so that the entire designated areas are covered. The entire sodded area shall immediately be rolled and tamped with approved equipment to form a solid mass and provide an even surface. Any voids left shall be filled with additional sod and tamped. Surfaces that in the opinion of the Owner may slide due to the height or slope of the surface, shall be pegged with wooden pegs driven through the sod and flush with the surface of the sod.

1051-3.4 Fertilizing. Fertilizing shall consist of providing and distributing fertilizer over the sodded areas in accordance with these specifications. The fertilizer shall be in acceptable condition for distribution and applied uniformly over the area. All fertilizer shall be delivered in bags or containers clearly labeled showing the analysis of the contents. A sample label or specification of proposed fertilizer shall be submitted to the Owner for approval prior to use.

1051-3.5 Watering. Sodded areas shall be thoroughly watered immediately after they are planted. Sod shall be thereafter watered at such time and in a manner and quantity directed by the Owner until completion and final acceptance of the project by the Owner. In all cases the sod shall be kept moist until it is established and watered in a manner that will avoid erosion from the application of excess quantities.

METHOD OF MEASUREMENT

1051-4.1 Measurement. This item will be measured by the square yard of sodded area completed and accepted.

BASIS OF PAYMENT

1051-5.1 Payment. The work performed and materials furnished as prescribed in this item, measured as provided under "Measurement", shall not be a direct pay item but subsidiary to the contract unit price bid for "Compacted Fill, Grading, and Vegetation." This price shall be full compensation for furnishing and placing all materials required; for all staking, rolling and tamping; for all water; and for all manipulation, labor, tools, equipment and incidentals necessary to complete the work, all in accordance with the plans and these specifications. Fertilizer will not be paid for directly but shall be considered subsidiary to this item.

END ITEM 1051

ITEM 1052 – LEVELING UP OF GRASS SURFACES

DESCRIPTION

1052-1.1 This item shall govern for leveling up of grass surfaces including the furnishing and placing of topsoil to the lines and grades as established by the plans or the Owner.

MATERIALS

1052-2.1 Topsoil. All excavated material that is suitable for topsoil shall be used before any topsoil is obtained from a borrow source. Topsoil shall be secured from approved borrow sources as required to supplement suitable material secured from project excavation. The topsoil shall be free from rock and objectionable material, and able to support plant growth. The fertile topsoil shall be easily cultivated and have a high resistance to erosion. Topsoil obtained from borrow sources shall have a pH of 5.5 to 8.5. When suitable topsoil is secured from offsite, the Contractor shall notify the Owner sufficiently in advance of operations in order that necessary measurements and tests can be made for approval. Topsoil material secured from excavations shall be stockpiled at locations approved by the Owner.

1052-2.2 Water. Water shall be free from oil, acid, alkali, salt, industrial wastes, or other harmful materials harmful to the growth of vegetation.

CONSTRUCTION METHODS

1052-3.1 Equipment. Suitable equipment necessary for proper preparation and treatment of the ground surface and for the hauling and placing of all required materials shall be on hand, in good condition, and approved by the Owner before the various operations are started.

1052-3.2 Preparing the Surface. At the designated areas, the Contractor shall remove the existing sod and ground to the proper depth to allow for the placement of 4" minimum of topsoil to meet the lines and grades of the area. Immediately prior to dumping and spreading the topsoil on any area, the surface shall be loosened and cultivated to a minimum depth of 2" to facilitate bonding of the topsoil to the covered subgrade soil. The surface of the area where the topsoil will be placed, shall be cleared of all stones larger than 2" in any dimension and other material which may be detrimental to proper bonding or the proper growth of the desired planting.

1052-3.3 Placing the Topsoil. Remove and dispose of objectionable material from the topsoil before beginning the work. The topsoil shall be evenly spread on the prepared areas to a uniform depth of 4" after rolling unless otherwise directed. Place and shape the topsoil as directed. Spreading shall not be done when the ground or topsoil is frozen,

excessively wet or otherwise in a condition detrimental to the work. Spreading shall be carried on so that sodding operations can follow with minimal or no soil preparation. Contractor shall conform to Item 1051-Block Sodding and TxDOT Item 162 Sodding for Erosion Control for materials and requirements of sodding operations. After topsoil spreading, any large clods or lumps shall be broken up. After spreading is completed, the topsoil shall be watered and rolled with a light roller or other suitable equipment. The topsoil surface shall now conform to the required lines, grades, and cross sections and ensure positive drainage. Any topsoil or other dirt falling upon pavements as a result of hauling or handling shall be removed promptly.

METHOD OF MEASUREMENT

1052-4.1 Measurement. This item will be measured by the square yard complete in place and accepted.

BASIS OF PAYMENT

1052-5.1 Payment. The work performed and materials furnished as prescribed in this item, measured as provided under "Measurement", shall not be a direct pay item but subsidiary to the contract unit price bid for "Compacted Fill, Grading, and Vegetation." This price shall be full compensation for securing necessary sources; excavation, loading, hauling, and stockpiling; furnishing and placing topsoil; watering and rolling; and for all manipulation, labor, tools, equipment and incidentals necessary to complete the work, all in accordance with the plans and these specifications.

END ITEM 1052

TS-x REMOVE TREE (12" OR GREATER)

This item is for large tree (12 inches and greater) removal and disposal. Tree diameter is measured 4.5 feet above ground level at the diameter of breast height or DBH for single trunk trees. Multi-trunk trees diameter is the sum of all trunks added together and divided by the number of trunks measured at 4.5 feet above ground level; DBH. DBH is the most frequent measurement made by using either a diameter tape or tree caliper. Root ball shall be removed to 3-feet below grade.

The City's compost facility at 3550 Lawson Road will accept trees and brush from the project under the following terms:

- Trees that have root balls will not be accepted.
- All brush must be cut.
- Tree trunks and limbs with a diameter larger than 18-inches must be cut in lengths no longer than three-feet.
- Tree trunks and limbs with a diameter smaller than 18-inches must be cut in lengths no longer than six-feet.
- The contractor will be charged \$2.90 per cubic yard of loose material, calculated by truck or trailer volume. Fee will be collected by the truck. There is an option for monthly billing if the contractor sets up an account with the City with a \$100.00 nonrefundable deposit.



APPENDIX | SUPPLEMENTAL REPORT

APPENDIX A – ENVIRONMENTAL PERMITTING EVALUATION MEMORANDUM

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то:	Micah Hargrave, P.E.
FROM:	Richard Aldredge, PWS
SUBJECT:	Environmental Permitting Evaluation of the Proposed Palos Verdes Dam Modifications
DATE:	May 14, 2019
PROJECT:	MES10392

Introduction

The City of Mesquite is proposing various rehabilitation activities to the existing Palos Verdes Dam located in Mesquite, Dallas County, Texas. An Environmental Scientist with Freese and Nichols, Inc. (FNI) conducted a site visit within the proposed project area on October 14, 2015. The objective of the site visit was to identify potential waters of the U.S., which could be affected by the proposed activities, in accordance with Section 404 of the Clean Water Act. This memo has been prepared to summarize the findings of the environmental permitting evaluation. Project location maps on aerial and USGS topographic imagery are presented in Figures 1 and 2 in Appendix A. Ground level photographs can be referenced in Appendix B.

Waters of the U.S.

The United States Army Corps of Engineers (USACE) regulates the discharge of dredged and fill material into waters of the United States, including wetlands, under Section 404 of the Clean Water Act (CWA). Within the context of the proposed project, jurisdictional waters would include streams that display an ordinary high water mark (OHWM) and have a downstream connection with a traditional navigable water of the U.S. (TNW), impoundments of such streams, as well as wetlands adjacent to jurisdictional waters.

Streams

One stream (Stream 1) was identified within the proposed project area. Stream 1 is an ephemeral stream with an approximately 12-foot wide OHWM (Photo 1). Stream 1 appears to have a downstream connection with Duck Creek, a tributary to the East Fork Trinity River, a TNW; and would therefore be potentially jurisdictional.

Impoundments

One impoundment (Palos Verdes Lake) was identified within the proposed project area (Figures 1 and 2, Photo 2). Palos Verdes Lake is a perennial waterbody with a normal pool (OHWM) elevation of 492.3 ft-msl. Palos Verdes Lake appears to be an impoundment of Stream 1; and would therefore be potentially jurisdictional.



No other wetlands or waterbodies were identified in the project area.

Section 404 Permitting

Based on our understanding, the proposed project construction activities in waters of the U.S. would include:

- 1. Install a temporary coffer dam and excavate the existing spillway;
- 2. Remove and replace existing 48-inch corrugated metal pipe (CMP) with proposed reinforced concrete conduit;
- 3. Remove existing bag wall and replace with proposed modular block wall;
- 4. Install proposed buried box culvert from proposed reinforced concrete conduit to proposed junction box;
- 5. Fill approximately 30 linear feet of Stream 1 for new service spillway;
- 6. Fill area of Stream 1 erosion along Northwest Drive and channelize the flow underground into the proposed headwall and 36-inch reinforced concrete pipe (RCP).

Based on the findings of the permitting evaluation, the proposed project would result in the discharge of fill material into waters of the U.S. and is therefore subject to Section 404 permit regulations. Proposed activities in waters of the U.S. would be covered by the following:

- Nationwide Permit 3 (NWP 3, *Maintenance*)
- Nationwide Permit 12 (NWP 12, *Utility Lines*)
- Nationwide Permit 14 (NWP 14, *Linear Transportation Projects*)

NWP 3 authorizes the repair, rehabilitation, or replacement of any previously authorized, currently serviceable, structure, or fill. The existing dam and spillway (structure) need rehabilitation. NWP 3 also authorizes minimum stream channel modification necessary in the immediate vicinity for the rehabilitation of the structure. The filling of 30 linear feet of Stream 1 would be in the immediate vicinity of the dam and must be filled to make the new service spillway function properly. This minor fill is not expected to impede downstream flows. Furthermore since, the proposed project does not change the structure's intended use or cause more than a minor deviation in the structure's footprint, NWP 3 is applicable for the proposed spillway rehabilitation activities.

NWP 12 authorizes the construction, maintenance, or repair of utility lines, including outfall and intake structures, and the associated excavation, backfill, or bedding for utility lines, in all waters of the United States, provided there is no change in pre-construction contours. The proposed reinforced concrete conduit, buried box culvert, junction box, and 36-inch RCP would be considered utility lines and pre-construction contours would be restored in waters of the U.S.; therefore, the installation of these structures would be covered under NWP 12.

NWP 14 authorizes any stream channel modification, including bank stabilization, limited to the minimum necessary to construct or protect the linear transportation project; provided these modifications are in the immediate vicinity of the project. Stream 1 has eroded into and is threatening Northwest Drive (Photo 3). The section of Stream 1 located within the area of

erosion will be channelized underground into the proposed headwall and 36-inch RCP maintaining downstream flows. This stream channelization would be done in the immediate vicinity of Northwest Drive and its purpose would be to protect the roadway; therefore, these activities would be covered under NWP 14.

Cultural Resources

Projects sponsored by public entities that affect a cumulative area greater than five acres or that disturb more than 5,000 cubic yards require advance consultation with the Texas Historical Commission (THC) according to Section 191.0525 (d) of the Antiquities Code of Texas. NWP General Condition 20, *Historic Properties,* requires compliance with Section 106 of the National Historic Preservation Act. Based on engineering calculations, the proposed project is expected to exceed the cubic yards of disturbance threshold; therefore, a letter was sent to the THC on May 3, 2019 requesting their review. Given the previous disturbance of the Area of Potential Effect and the surrounding area our staff archeologist considers the project to have a low potential to find intact prehistoric or historic buried cultural material. A copy of the letter sent to THC is included in Appendix D.

Aquatic Resource Relocation

FNI spoke with Texas Parks and Wildlife Dept. (TPWD) regarding the requirement for an Aquatic Resource Relocation Plan (AARP). According to TPWD, "A freshwater mussel survey is not needed and an ARRP is not recommended for this project if the contractor doing the work around the outlet structure can do what they can to limit the amount of fish trapped in the area to be dewatered and if the contractor can dip net out any fish that are trapped during dewatering. If for some reason the dewatering area needs to be enlarged please get back with me to reevaluate."

Conclusions

Results of the environmental permitting evaluation indicate that the proposed project activities would be located in waters of the U.S. and are therefore subject to Section 404 permitting regulations. Pending the response from the THC, the proposed project activities have been designed to meet the terms and conditions of NWP's 3, 12, and 14 without requiring the submittal of a pre-construction notification to the USACE. The response from the THC will be sent to the City as soon as it is received. Copies of the 2017 NWP's 3, 12, and 14 and the Nationwide Permit General Conditions are provided in Appendix C and should be included in the construction bid documents. It should be noted that our conclusions regarding applicability and coverage of the NWPs are based on experience and best professional judgement. If the City requires a firm decision regarding NWP coverage, we can assist by requesting written verification from the USACE. Once submitted, the City would need to wait for the USACE's written response/approval before proceeding with construction.



Appendix A

Figures



NAD 1983 StatePlane Texas North Central FIPS 4202 Feet



Path: H:\ENVIRONMENTAL\FINAL_EXHIBITS\2_Topo.mxd

NAD 1983 StatePlane Texas North Central FIPS 4202 Feet



Appendix B

Photographs





Photo 1: Stream 1 looking downstream.



Photo 2: Palos Verdes Lake looking northeast.





Photo 3: Area of Stream 1 erosion looking west along Northwest Drive.





Appendix C Copies of 2017 NWP's and General Conditions
NATIONWIDE PERMIT 3 Maintenance Effective Date: March 19, 2017 (NWP Final Notice, 82 FR 4)

3. Maintenance. (a) The repair, rehabilitation, or replacement of any previously authorized, currently serviceable structure or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, requirements of other regulatory agencies, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized. This NWP also authorizes the removal of previously authorized structures or fills. Any stream channel modification is limited to the minimum necessary for the repair, rehabilitation, or replacement of the structure or fill; such modifications, including the removal of material from the stream channel, must be immediately adjacent to the project. This NWP also authorizes the removal of accumulated sediment and debris within, and in the immediate vicinity of, the structure or fill. This NWP also authorizes the repair, rehabilitation, or replacement of those structures or fills destroyed or damaged by storms, floods, fire or other discrete events, provided the repair, rehabilitation, or replacement is commenced, or is under contract to commence, within two years of the date of their destruction or damage. In cases of catastrophic events, such as hurricanes or tornadoes, this two-year limit may be waived by the district engineer, provided the permittee can demonstrate funding, contract, or other similar delays.

(b) This NWP also authorizes the removal of accumulated sediments and debris outside the immediate vicinity of existing structures (e.g., bridges, culverted road crossings, water intake structures, etc.). The removal of sediment is limited to the minimum necessary to restore the waterway in the vicinity of the structure to the approximate dimensions that existed when the structure was built, but cannot extend farther than 200 feet in any direction from the structure. This 200 foot limit does not apply to maintenance dredging to remove accumulated sediments blocking or restricting outfall and intake structures or to maintenance dredging to remove accumulated sediments blocking materials must be deposited and retained in an area that has no waters of the United States unless otherwise specifically approved by the district engineer under separate authorization.

(c) This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the maintenance activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After conducting the maintenance activity, temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

(d) This NWP does not authorize maintenance dredging for the primary purpose of navigation. This NWP does not authorize beach restoration. This NWP does not authorize new stream channelization or stream relocation projects.

<u>Notification</u>: For activities authorized by paragraph (b) of this NWP, the permittee must submit a pre-construction notification to the district engineer prior to commencing the activity (see

general condition 32). The pre-construction notification must include information regarding the original design capacities and configurations of the outfalls, intakes, small impoundments, and canals. (Authorities: Section 10 of the Rivers and Harbors Act of 1899 and section 404 of the Clean Water Act (Sections 10 and 404))

<u>Note</u>: This NWP authorizes the repair, rehabilitation, or replacement of any previously authorized structure or fill that does not qualify for the Clean Water Act section 404(f) exemption for maintenance.

Nationwide Permit General Conditions

<u>Note</u>: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. <u>Navigation</u>. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. <u>Aquatic Life Movements</u>. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. <u>Spawning Areas</u>. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. <u>Migratory Bird Breeding Areas</u>. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. <u>Shellfish Beds</u>. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. <u>Suitable Material</u>. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. <u>Water Supply Intakes</u>. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. <u>Adverse Effects From Impoundments</u>. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. <u>Management of Water Flows</u>. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. <u>Fills Within 100-Year Floodplains</u>. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. <u>Equipment</u>. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. <u>Soil Erosion and Sediment Controls</u>. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. <u>Removal of Temporary Fills</u>. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. <u>Proper Maintenance</u>. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. <u>Single and Complete Project</u>. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. <u>Wild and Scenic Rivers</u>. (a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

(b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. The permittee shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: http://www.rivers.gov/.

17. <u>Tribal Rights</u>. No NWP activity may cause more than minimal adverse effects on tribal rights (including treaty rights), protected tribal resources, or tribal lands.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless ESA section 7 consultation addressing the effects of the proposed activity has been completed. Direct effects are the immediate effects on listed species and critical habitat that are caused by the NWP activity and are later in time, but still are reasonably certain to occur.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed activity or that utilize the designated critical habitat that might be affected by the proposed activity. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete preconstruction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have "no effect" on listed species or critical habitat, or until ESA section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWPs.

(e) Authorization of an activity by an NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.

(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.nmfs.noaa.gov/pr/species/esa/ respectively.

19. <u>Migratory Birds and Bald and Golden Eagles</u>. The permittee is responsible for ensuring their action complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting appropriate local office of the U.S. Fish and Wildlife Service to determine applicable measures to reduce impacts to migratory birds or eagles, including whether "incidental take" permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. <u>Historic Properties</u>. (a) In cases where the district engineer determines that the activity may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act. If pre-construction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or adverse effect. Where the non-Federal applicant has identified historic properties on which the activity might have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed.

(d) For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. <u>Discovery of Previously Unknown Remains and Artifacts</u>. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. <u>Designated Critical Resource Waters</u>. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. <u>Mitigation</u>. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation to ensure that the activity results in no more than minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult-to-replace resources (see 33 CFR 332.3(e)(3)).

(e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. Restored riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWPs, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

(2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f)).

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permitteeresponsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. <u>Safety of Impoundment Structures</u>. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. <u>Water Quality</u>. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. <u>Coastal Zone Management</u>. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. <u>Regional and Case-By-Case Conditions</u>. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. <u>Use of Multiple Nationwide Permits</u>. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. <u>Transfer of Nationwide Permit Verifications</u>. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

(Transferee)

(Date)

30. <u>Compliance Certification</u>. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards,

will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(1)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the activity and mitigation.

The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. <u>Activities Affecting Structures or Works Built by the United States</u>. If an NWP activity also requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a "USACE project"), the prospective permittee must submit a preconstruction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission is not authorized by NWP until the appropriate Corps office issues the section 408 permission to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. <u>Pre-Construction Notification</u>. (a) <u>Timing</u>. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act

(see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) <u>Contents of Pre-Construction Notification</u>: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed activity;

(3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;

(4) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures. For single and complete linear projects, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation

requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-Federal permittees, if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed activity or utilize the designated critical habitat that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

(8) For non-Federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the "study river" (see general condition 16); and

(10) For an activity that requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from the Corps office having jurisdiction over that USACE project.

(c) <u>Form of Pre-Construction Notification</u>: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is an NWP PCN and must include all of the applicable information required in paragraphs (b)(1) through (10) of this general condition. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

(d) <u>Agency Coordination</u>: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of stream bed; (iii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iv) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or e-mail that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

D. District Engineer's Decision

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If a project proponent requests authorization by a specific NWP, the district engineer should issue the NWP verification for that activity if it meets the terms and conditions of that NWP, unless he or she determines, after considering mitigation, that the proposed activity will result in more than minimal individual and cumulative adverse effects on the aquatic environment and other aspects of the public interest and exercises discretionary authority to require an individual permit for the proposed activity. For a linear project, this determination will include an evaluation of the individual crossings of waters of the United States to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings authorized by NWP. If an applicant requests a waiver of the 300 linear foot limit on impacts to streams or of an otherwise applicable limit, as provided for in NWPs 13, 21, 29, 36, 39, 40, 42, 43, 44, 50, 51, 52, or 54, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in only minimal individual and cumulative adverse environmental effects. For those NWPs that have a waivable 300 linear foot limit for losses of intermittent and ephemeral stream bed and a 1/2-acre limit (i.e., NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52), the loss of intermittent and ephemeral stream bed, plus any other losses of jurisdictional waters and wetlands, cannot exceed 1/2-acre.

2. When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by NWP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional or condition assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse environmental effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

3. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for NWP activities with smaller impacts, or for impacts to other types of waters (e.g., streams). The district engineer will consider any proposed compensatory mitigation or other mitigation measures the applicant has included in the proposal in determining whether the net adverse environmental effects of the proposed activity are no more than minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are no more than minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure the NWP activity results in no more than minimal adverse environmental effects. If the net adverse environmental effects of the NWP activity (after consideration of the mitigation proposal) are determined by the district engineer to be no more than minimal, the district engineer will provide a timely written response to the applicant. The response will state that the NWP activity can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

4. If the district engineer determines that the adverse environmental effects of the proposed activity are more than minimal, then the district engineer will notify the applicant either: (a) that the activity does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the activity is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal; or (c) that the activity is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse environmental effects, the activity will be authorized within the 45-day PCN period (unless additional time is

required to comply with general conditions 18, 20, and/or 31, or to evaluate PCNs for activities authorized by NWPs 21, 49, and 50), with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation plan or a requirement that the applicant submit a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal. When compensatory mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

E. Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.

4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

F. Definitions

<u>Best management practices (BMPs)</u>: Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

<u>Compensatory mitigation</u>: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

<u>Currently serviceable</u>: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

<u>Discharge</u>: The term "discharge" means any discharge of dredged or fill material into waters of the United States.

<u>Ecological reference</u>: A model used to plan and design an aquatic habitat and riparian area restoration, enhancement, or establishment activity under NWP 27. An ecological reference may be based on the structure, functions, and dynamics of an aquatic habitat type or a riparian area type that currently exists in the region where the proposed NWP 27 activity is located. Alternatively, an ecological reference may be based on a conceptual model for the aquatic habitat type or riparian area type to be restored, enhanced, or established as a result of the proposed NWP 27 activity. An ecological reference takes into account the range of variation of the aquatic habitat type or riparian area type in the region.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

<u>Ephemeral stream</u>: An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

<u>Establishment (creation)</u>: The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

<u>High Tide Line</u>: The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

<u>Historic Property</u>: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

<u>Independent utility</u>: A test to determine what constitutes a single and complete non-linear project in the Corps Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

<u>Indirect effects</u>: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

<u>Intermittent stream</u>: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a

waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. The loss of stream bed includes the acres or linear feet of stream bed that are filled or excavated as a result of the regulated activity. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the United States.

<u>Navigable waters</u>: Waters subject to section 10 of the Rivers and Harbors Act of 1899. These waters are defined at 33 CFR part 329.

<u>Non-tidal wetland</u>: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

<u>Open water</u>: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of flowing or standing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of "open waters" include rivers, streams, lakes, and ponds.

<u>Ordinary High Water Mark</u>: An ordinary high water mark is a line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas.

<u>Perennial stream</u>: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

<u>Practicable</u>: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

<u>Pre-construction notification</u>: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

<u>Preservation</u>: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

<u>Protected tribal resources</u>: Those natural resources and properties of traditional or customary religious or cultural importance, either on or off Indian lands, retained by, or reserved by or for, Indian tribes through treaties, statutes, judicial decisions, or executive orders, including tribal trust resources.

<u>Re-establishment</u>: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

<u>Rehabilitation</u>: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

<u>Restoration</u>: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

<u>Riffle and pool complex</u>: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

<u>Riparian areas</u>: Riparian areas are lands next to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

<u>Shellfish seeding</u>: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term "single and complete project" is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately. Single and complete non-linear project: For non-linear projects, the term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of "independent utility"). Single and complete non-linear projects may not be "piecemealed" to avoid the limits in an NWP authorization.

<u>Stormwater management</u>: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

<u>Stormwater management facilities</u>: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

<u>Stream bed</u>: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

<u>Stream channelization</u>: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the United States.

<u>Structure</u>: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

<u>Tidal wetland</u>: A tidal wetland is a jurisdictional wetland that is inundated by tidal waters. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line.

<u>Tribal lands</u>: Any lands title to which is either: 1) held in trust by the United States for the benefit of any Indian tribe or individual; or 2) held by any Indian tribe or individual subject to restrictions by the United States against alienation.

<u>Tribal rights</u>: Those rights legally accruing to a tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaty, statute, judicial decisions, executive order or agreement, and that give rise to legally enforceable remedies.

<u>Vegetated shallows</u>: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems. <u>Waterbody</u>: For purposes of the NWPs, a waterbody is a jurisdictional water of the United States. If a wetland is adjacent to a waterbody determined to be a water of the United States, that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)). Examples of "waterbodies" include streams, rivers, lakes, ponds, and wetlands.

ADDITIONAL INFORMATION

This nationwide permit is effective March 19, 2017, and expires on March 18, 2022.

Information about the U.S. Army Corps of Engineers regulatory program, including nationwide permits, may also be found at <u>http://www.swf.usace.army.mil/Missions/Regulatory.aspx</u> and <u>http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits.aspx</u>

2017 NATIONWIDE PERMIT (NWP) REGIONAL CONDITIONS

FOR THE STATE OF TEXAS

The following regional conditions apply within the entire State of Texas:

1. For all discharges proposed for authorization under Nationwide Permits (NWP) 3, 6, 7, 12, 14, 18, 19, 21, 23, 25, 27, 29, 39, 40, 41, 42, 43, 44, 49, 51, and 52, into the following habitat types or specific areas, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32, Pre-Construction Notification (PCN). The Corps of Engineers (Corps) will coordinate with the resource agencies as specified in NWP General Condition 32(d) (PCN). The habitat types or areas are:

a. Pitcher Plant Bogs: Wetlands typically characterized by an organic surface soil layer and include vegetation such as pitcher plants (*Sarracenia* spp.) and/or sundews (*Drosera* spp.).

b. Bald Cypress-Tupelo Swamps: Wetlands dominated by bald cypress (*Taxodium distichum*) and/or water tupelo (*Nyssa aquatic*).

2. For all activities proposed for authorization under any Nationwide Permit (NWP) at sites approved as compensatory mitigation sites (either permittee-responsible, mitigation bank and/or in-lieu fee) under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

3. For all activities proposed for authorization under NWP 16, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32 (Pre-Construction Notification) and must obtain an individual water quality certification (WQC) from the TCEQ. Work cannot begin under NWP 16 until the applicant has received written approval from the Corps and WQC.

NOTE: For all activities proposing to use equipment that has operated or been stored in a water body on the Texas list of zebra mussel (*Dreissena polymorpha*) infected water bodies, equipment should be decontaminated prior to relocation in accordance with Texas Administrative Code, Title 31, Part 2, Chapter 57, Subchapter A. The following decontamination Best Management Practices (BMPs), as a minimum, are indicated:

a. Clean: Clean both the inside and outside of equipment and gear, by removing all plants, animals, and mud and thoroughly washing the equipment using a high pressure spray nozzle.

b. Drain: Drain all water from receptacles before leaving the area, including livewells, bilges, ballast, and engine cooling water on boats.

c. Dry: Allow time for your equipment to dry completely before relocating in other waters. Equipment should be dried prior to relocation. High temperature pressure washing (greater than or equal to 140F) or professional cleaning may be substituted for drying time.

The following regional condition only applies within the Albuquerque, Fort Worth, and Galveston Districts:

4. For all activities proposed for authorization under Nationwide Permit (NWP) 12 that involve a discharge of fill material associated with mechanized land clearing of wetlands dominated by native woody shrubs, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32 – Pre-Construction Notification prior to commencing the activity. For the purpose of this regional condition, a shrub dominated wetland is characterized by woody vegetation less than 3.0 inches in diameter at breast height but greater than 3.2 feet in height, which covers 20% or more of the area. Woody vines are not included.

The following regional conditions apply within the Albuquerque District.

5. Nationwide Permit (NWP) 23 – Approved Categorical Exclusions. A pre-construction notification (PCN) to the District Engineer in accordance with General Condition 32 - PCN is required for all proposed activities under NWP 23.

6. Nationwide Permit (NWP) 27 – Aquatic Habitat Restoration, Establishment, and Enhancement Activities. For all proposed activities under NWP 27 that require preconstruction notification, a monitoring plan commensurate with the scale of the proposed restoration project and the potential for risk to the aquatic environment must be submitted to the Corps. (See "NWP 27 Guidelines" at http://www.spa.usace.army.mil/Missions/RegulatoryProgramandPermits/NWP.aspx).

7. Channelization. Nationwide Permit (NWP) General Condition 9 for Management of Water Flows is amended to add the following: Projects that would result in permanent channelization to previously un-channelized streams require pre-construction notification to the Albuquerque District Engineer in accordance with NWP General Condition 32 – Pre-Construction Notification.

8. Dredge and Fill Activities in Intermittent and Perennial Streams, and Special Aquatic Sites: For all activities subject to regulation under the Clean Water Act Section 404 in intermittent and perennial streams, and special aquatic sites (including wetlands, riffle and pool complexes, and sanctuaries and refuges), pre-construction notification (PCN) to the Albuquerque District Engineer is required in accordance with Nationwide Permit General Condition 32 - PCN.

9. Springs. For all discharges of dredged or fill material within 100 feet of the point of groundwater discharge of natural springs located in an aquatic resource, a preconstruction notification (PCN) is required to the Albuquerque District Engineer in accordance with Nationwide Permit General Condition 32 - PCN. A natural spring is defined as any location where ground water emanates from a point in the ground and has a defined surface water connection to another waters of the United States. For purposes of this regional condition, springs do not include seeps or other groundwater discharges which lack a defined surface water connection. 10. Suitable Fill. Use of broken concrete as fill or bank stabilization material is prohibited unless the applicant demonstrates that its use is the only practicable material (with respect to cost, existing technology, and logistics). Any applicant who wishes to use broken concrete as bank stabilization must provide notification to the Albuquerque District Engineer in accordance with Nationwide Permit General Condition 32 - Pre-Construction Notification along with justification for such use. Use of broken concrete with rebar or used tires (loose or formed into bales) is prohibited in all waters of the United States.

The following regional conditions apply only within the Fort Worth District.

11. For all discharges proposed for authorization under all Nationwide Permits (NWP) into the area of Caddo Lake within Texas that is designated as a "Wetland of International Importance" under the Ramsar Convention, the applicant shall notify the Fort Worth District Engineer in accordance with the NWP General Condition 32 – Pre-Construction Notification (PCN). The Fort Worth District will coordinate with the resource agencies as specified in NWP General Condition 32(d) - PCN.

12. Compensatory mitigation is generally required for losses of waters of the United States that exceed 1/10 acre and/or for all losses to streams that exceed 300 linear feet. Loss is defined in Section F of the Nationwide Permits (NWP). Mitigation thresholds are cumulative irrespective of aquatic resource type at each single and complete crossing. Compensatory mitigation requirements will be determined in accordance with the appropriate district standard operating procedures and processes. The applicant shall notify the Fort Worth District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

13. For all activities proposed for authorization under Nationwide Permits (NWP) 12, 14 and/or 33 that involve a temporary discharge of fill material into 1/2 acre or more of emergent wetland OR 1/10 acre of scrub-shrub/forested wetland, the applicant shall notify the Fort Worth District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

14. For all discharges proposed for authorization under Nationwide Permits (NWP) 51 and 52, the Fort Worth District will provide the pre-construction notification (PCN) to the U.S. Fish and Wildlife Service as specified in NWP General Condition 32(d)(2) - PCN for its review and comments.

The following regional conditions apply only within the Galveston District.

15. No Nationwide Permits (NWP), except NWP 3, shall be used to authorize discharges into the habitat types or specific areas listed in paragraphs a through c, below. The applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity under NWP 3.

a. Mangrove Marshes. For the purpose of this regional condition, Mangrove marshes are those waters of the United States that are dominated by mangroves (Avicennia spp., Laguncuaria spp., Conocarpus spp., and Rhizophora spp.). b. Coastal Dune Swales. For the purpose of this regional condition, coastal dune swales are wetlands and/or other waters of the United States located within the backshore and dune areas in the coastal zone of Texas. They are formed as depressions within and among multiple beach ridge barriers, dune complexes, or dune areas adjacent to beaches fronting tidal waters of the United States. c. Columbia Bottomlands. For the purpose of this regional condition, Columbia bottomlands are defined as waters of the United States that are dominated by bottomland hardwoods in the Lower Brazos and San Bernard River basins identified in the 1997 Memorandum of Agreement between the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, Natural Resource Conservation Service, and Texas Parks and Wildlife Department for bottomland hardwoods in Brazoria County. (For further information, see http://www.swg.usace.army.mil/Business-With-Us/Regulatory/Permits/Nationwide-General-Permits/)

16. A Compensatory Mitigation Plan is required for all special aquatic site losses, as defined in Section F of the Nationwide Permits (NWP), that exceed 1/10 acre and/or for all losses to streams that exceed 200 linear feet. Compensatory mitigation requirements will be determined in accordance with the appropriate district standard operating procedures and processes. The applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

17. For all seismic testing activities proposed for authorization under Nationwide Permit (NWP) 6, the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification (PCN). The PCN must state the time period for which the temporary fill is proposed, and must include a restoration plan for the special aquatic sites. For seismic testing under NWP 6 within the Cowardin Marine System, Subtidal Subsystem; as defined by the U.S. Fish and Wildlife Service, Classification of Wetlands and Deepwater Habitats of the United States, December 1979/Reprinted 1992, the Corps will coordinate with the resource agencies in accordance with NWP General Condition 32(d) - PCN.

18. For all activities proposed under Nationwide Permits (NWP) 10 and 11 located in vegetated shallows and coral reefs; as defined by 40 CFR 230.43 and 230.44 respectively, the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification. Examples include, but are not limited to: seagrass beds, oyster reefs, and coral reefs.

19. Nationwide Permit 12 shall not be used to authorize discharges within 500 feet of vegetated shallows and coral reefs; as defined by 40 CFR 230.43 and 230.44 respectively. Examples include, but are not limited to: seagrass beds, oyster reefs, and coral reefs.

20. For all activities proposed for authorization under Nationwide Permit 12 that involve underground placement below a non-navigable river bed and/or perennial stream bed there shall a minimum cover of 48 inches (1,219 millimeters) of soil below the river and/or perennial stream thalweg.

21. For all discharges and work proposed below the high tide line under Nationwide Permits (NWP) 14 and 18, the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification (PCN). The Galveston District will coordinate with the resource agencies in accordance with NWP General Condition 32(d) - PCN.

22. For all activities proposed for authorization under Nationwide Permit (NWP) 33 the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 – Pre-Construction Notification (PCN). The PCN must include a restoration plan showing how all temporary fills and structures will be removed and the area restored to pre-project conditions. Activities causing the temporary loss, as defined in Section F of the NWPs, of more than 0.5 acres of tidal waters and/or 200 linear feet of stream will be coordinated with the agencies in accordance with NWP General Condition 32(d) - PCN.

23. No Nationwide Permits (NWP), except NWPs 3, 16, 20, 22, 37, shall be used to authorize discharges, structures, and/or fill within the standard setback and high hazard zones of the Sabine-Neches Waterway as defined in the Standard Operating Procedure - Permit Setbacks along the Sabine-Neches Waterway. The applicant shall notify the Galveston District Engineer in accordance with NWP General Condition 32 - Pre-Construction Notification for all discharge, structures and/or work in medium hazard zones and all NWP 3 applications within the standard setback and high hazard zones of the Sabine-Neches Waterway.

24. No Nationwide Permits (NWP), except 20, 22, and 37, shall be used to authorize discharges, structures, and/or fill within the standard setback exemptions of the Gulf Intracoastal Waterway as defined in the Standard Operating Procedure- Department of the Army Permit Evaluation Setbacks along the Gulf Intracoastal Waterway. The applicant shall notify the Galveston District Engineer in accordance with NWP General Condition 32 (Pre-Construction Notification) for all discharges, structures and/or work within the standard setback, shoreward of the standard setback, and/or standard setback exemption zones.

25. The use of Nationwide Permits in the San Jacinto River Waste Pits Area of Concern are revoked. (For further information, see http://www.swg.usace.army.mil/Business-With-Us/Regulatory/Permits/Nationwide-General-Permits/)

26. The use of Nationwide Permits 51 and 52 are revoked within the Galveston District boundaries.

27. Nationwide Permit (NWP) 53 pre-construction notifications will be coordinated with resource agencies as specified in NWP General Condition 32(d) – Pre-construction Notification.

28. For all activities proposed under Nationwide Permits (NWP) 21, 29, 39, 40, 42, 43, 44, and 50 that result in greater than 300 feet of loss in intermittent and/or ephemeral streams, as defined in Section F of the NWPs, require evaluation under an Individual Permit.

The following regional conditions apply only within the Tulsa District.

29. Upland Disposal: Except where authorized by Nationwide Permit 16, material disposed of in uplands shall be placed in a location and manner that prevents discharge of the material and/or return water into waters or wetlands unless otherwise authorized by the Tulsa District Engineer.

30. Major Rivers: The prospective permittee shall notify the Tulsa District Engineer for all Nationwide Permit 14 verifications which cross major rivers within Tulsa District. For the purposes of this condition, major rivers include the following: Canadian River, Prairie Dog Town Fork of the Red River, and Red River.

NATIONWIDE PERMIT 12 Utility Line Activities Effective Date: March 19, 2017 (NWP Final Notice, 82 FR 4)

12. <u>Utility Line Activities</u>. Activities required for the construction, maintenance, repair, and removal of utility lines and associated facilities in waters of the United States, provided the activity does not result in the loss of greater than 1/2-acre of waters of the United States for each single and complete project.

<u>Utility lines</u>: This NWP authorizes discharges of dredged or fill material into waters of the United States and structures or work in navigable waters for crossings of those waters associated with the construction, maintenance, or repair of utility lines, including outfall and intake structures. There must be no change in pre-construction contours of waters of the United States. A "utility line" is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose, and any cable, line, or wire for the transmission for any purpose of electrical energy, telephone, and telegraph messages, and internet, radio, and television communication. The term "utility line" does not include activities that drain a water of the United States, such as drainage tile or french drains, but it does apply to pipes conveying drainage from another area.

Material resulting from trench excavation may be temporarily sidecast into waters of the United States for no more than three months, provided the material is not placed in such a manner that it is dispersed by currents or other forces. The district engineer may extend the period of temporary side casting for no more than a total of 180 days, where appropriate. In wetlands, the top 6 to 12 inches of the trench should normally be backfilled with topsoil from the trench. The trench cannot be constructed or backfilled in such a manner as to drain waters of the United States (e.g., backfilling with extensive gravel layers, creating a french drain effect). Any exposed slopes and stream banks must be stabilized immediately upon completion of the utility line crossing of each waterbody.

<u>Utility line substations</u>: This NWP authorizes the construction, maintenance, or expansion of substation facilities associated with a power line or utility line in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not result in the loss of greater than 1/2-acre of waters of the United States. This NWP does not authorize discharges into non-tidal wetlands adjacent to tidal waters of the United States to construct, maintain, or expand substation facilities.

<u>Foundations for overhead utility line towers, poles, and anchors</u>: This NWP authorizes the construction or maintenance of foundations for overhead utility line towers, poles, and anchors in all waters of the United States, provided the foundations are the minimum size necessary and separate footings for each tower leg (rather than a larger single pad) are used where feasible.

<u>Access roads</u>: This NWP authorizes the construction of access roads for the construction and maintenance of utility lines, including overhead power lines and utility line substations, in nontidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not cause the loss of greater than 1/2-acre of nontidal waters of the United States. This NWP does not authorize discharges into non-tidal wetlands adjacent to tidal waters for access roads. Access roads must be the minimum width necessary (see Note 2, below). Access roads must be constructed so that the length of the road minimizes any adverse effects on waters of the United States and must be as near as possible to pre-construction contours and elevations (e.g., at grade corduroy roads or geotextile/gravel roads). Access roads constructed above pre-construction contours and elevations in waters of the United States must be properly bridged or culverted to maintain surface flows.

This NWP may authorize utility lines in or affecting navigable waters of the United States even if there is no associated discharge of dredged or fill material (See 33 CFR part 322). Overhead utility lines constructed over section 10 waters and utility lines that are routed in or under section 10 waters without a discharge of dredged or fill material require a section 10 permit.

This NWP authorizes, to the extent that Department of the Army authorization is required, temporary structures, fills, and work necessary for the remediation of inadvertent returns of drilling fluids to waters of the United States through sub-soil fissures or fractures that might occur during horizontal directional drilling activities conducted for the purpose of installing or replacing utility lines. These remediation activities must be done as soon as practicable, to restore the affected waterbody. District engineers may add special conditions to this NWP to require a remediation plan for addressing inadvertent returns of drilling fluids to waters of the United States during horizontal directional drilling activities conducted for the purpose of installing or replacing utility lines.

This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the utility line activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After construction, temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

<u>Notification</u>: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if any of the following criteria are met: (1) the activity involves mechanized land clearing in a forested wetland for the utility line right-of-way; (2) a section 10 permit is required; (3) the utility line in waters of the United States, excluding overhead lines, exceeds 500 feet; (4) the utility line is placed within a jurisdictional area (i.e., water of the United States), and it runs parallel to or along a stream bed that is within that jurisdictional area; (5) discharges that result in the loss of greater than 1/10-acre of waters of the United States; (6) permanent access roads are constructed above grade in waters of the United States for a distance of more than 500 feet; or (7) permanent access roads are constructed in waters of the United States with impervious materials. (See general condition 32.) (Authorities: Sections 10 and 404)

<u>Note 1</u>: Where the utility line is constructed or installed in navigable waters of the United States (i.e., section 10 waters) within the coastal United States, the Great Lakes, and United States territories, a copy of the NWP verification will be sent by the Corps to the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), for charting the utility line to protect navigation.

<u>Note 2</u>: For utility line activities crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. Utility line activities must comply with 33 CFR 330.6(d).

<u>Note 3</u>: Utility lines consisting of aerial electric power transmission lines crossing navigable waters of the United States (which are defined at 33 CFR part 329) must comply with the applicable minimum clearances specified in 33 CFR 322.5(i).

<u>Note 4</u>: Access roads used for both construction and maintenance may be authorized, provided they meet the terms and conditions of this NWP. Access roads used solely for construction of the utility line must be removed upon completion of the work, in accordance with the requirements for temporary fills.

<u>Note 5</u>: Pipes or pipelines used to transport gaseous, liquid, liquescent, or slurry substances over navigable waters of the United States are considered to be bridges, not utility lines, and may require a permit from the U.S. Coast Guard pursuant to section 9 of the Rivers and Harbors Act of 1899. However, any discharges of dredged or fill material into waters of the United States associated with such pipelines will require a section 404 permit (see NWP 15).

<u>Note 6</u>: This NWP authorizes utility line maintenance and repair activities that do not qualify for the Clean Water Act section 404(f) exemption for maintenance of currently serviceable fills or fill structures.

<u>Note 7</u>: For overhead utility lines authorized by this NWP, a copy of the PCN and NWP verification will be provided to the Department of Defense Siting Clearinghouse, which will evaluate potential effects on military activities.

<u>Note 8</u>: For NWP 12 activities that require pre-construction notification, the PCN must include any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings that require Department of the Army authorization but do not require pre-construction notification (see paragraph (b) of general condition 32). The district engineer will evaluate the PCN in accordance with Section D, "District Engineer's Decision." The district engineer may require mitigation to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see general condition 23).

Nationwide Permit General Conditions

<u>Note</u>: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. <u>Navigation</u>. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. <u>Aquatic Life Movements</u>. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. <u>Spawning Areas</u>. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. <u>Migratory Bird Breeding Areas</u>. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. <u>Shellfish Beds</u>. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. <u>Suitable Material</u>. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. <u>Water Supply Intakes</u>. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. <u>Adverse Effects From Impoundments</u>. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. <u>Management of Water Flows</u>. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. <u>Fills Within 100-Year Floodplains</u>. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. <u>Equipment</u>. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. <u>Soil Erosion and Sediment Controls</u>. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. <u>Removal of Temporary Fills</u>. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. <u>Proper Maintenance</u>. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. <u>Single and Complete Project</u>. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. <u>Wild and Scenic Rivers</u>. (a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

(b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. The permittee shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river. The permittee shall not adversely affect the Wild and Scenic River designation or study status.

(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: http://www.rivers.gov/.

17. <u>Tribal Rights</u>. No NWP activity may cause more than minimal adverse effects on tribal rights (including treaty rights), protected tribal resources, or tribal lands.

18. <u>Endangered Species</u>. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act

(ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless ESA section 7 consultation addressing the effects of the proposed activity has been completed. Direct effects are the immediate effects on listed species and critical habitat caused by the NWP activity. Indirect effects are those effects on listed species and critical habitat that are caused by the NWP activity and are later in time, but still are reasonably certain to occur.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed activity or that utilize the designated critical habitat that might be affected by the proposed activity. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete preconstruction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have "no effect" on listed species or critical habitat, or until ESA section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWPs.

(e) Authorization of an activity by an NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.

(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.nmfs.noaa.gov/pr/species/esa/ respectively.

19. <u>Migratory Birds and Bald and Golden Eagles</u>. The permittee is responsible for ensuring their action complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting appropriate local office of the U.S. Fish and Wildlife Service to determine applicable measures to reduce impacts to migratory birds or eagles, including whether "incidental take" permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. <u>Historic Properties</u>. (a) In cases where the district engineer determines that the activity may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act. If pre-construction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or adverse effect. Where the non-Federal applicant has identified historic properties on which the activity might have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed.

(d) For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. <u>Discovery of Previously Unknown Remains and Artifacts</u>. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. <u>Designated Critical Resource Waters</u>. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. <u>Mitigation</u>. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation to ensure that the activity results in no more than minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult-to-replace resources (see 33 CFR 332.3(e)(3)).

(e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. Restored riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic
environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWPs, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

(2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f)).

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permitteeresponsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. <u>Safety of Impoundment Structures</u>. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. <u>Water Quality</u>. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. <u>Coastal Zone Management</u>. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. <u>Regional and Case-By-Case Conditions</u>. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. <u>Use of Multiple Nationwide Permits</u>. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. <u>Transfer of Nationwide Permit Verifications</u>. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

(Transferee)

(Date)

30. <u>Compliance Certification</u>. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(1)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the activity and mitigation.

The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. <u>Activities Affecting Structures or Works Built by the United States</u>. If an NWP activity also requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a "USACE project"), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission is not authorized by NWP until the appropriate Corps office issues the section 408 permission to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. <u>Pre-Construction Notification</u>. (a) <u>Timing</u>. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to

make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) <u>Contents of Pre-Construction Notification</u>: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed activity;

(3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;

(4) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures. For single and complete linear projects, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-Federal permittees, if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed activity or utilize the designated critical habitat that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

(8) For non-Federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the "study river" (see general condition 16); and

(10) For an activity that requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from the Corps office having jurisdiction over that USACE project.

(c) <u>Form of Pre-Construction Notification</u>: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is

an NWP PCN and must include all of the applicable information required in paragraphs (b)(1) through (10) of this general condition. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

(d) <u>Agency Coordination</u>: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of stream bed; (iii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iv) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or e-mail that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

D. District Engineer's Decision

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If a project proponent requests authorization by a specific NWP, the district engineer should issue the NWP verification for that activity if it meets the terms and conditions of that NWP, unless he or she determines, after considering mitigation, that the proposed activity will result in more than minimal individual and cumulative adverse effects on the aquatic environment and other aspects of the public interest and exercises discretionary authority to require an individual permit for the proposed activity. For a linear project, this determination will include an evaluation of the individual crossings of waters of the United States to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings authorized by NWP. If an applicant requests a waiver of the 300 linear foot limit on impacts to streams or of an otherwise applicable limit, as provided for in NWPs 13, 21, 29, 36, 39, 40, 42, 43, 44, 50, 51, 52, or 54, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in only minimal individual and cumulative adverse environmental effects. For those NWPs that have a waivable 300 linear foot limit for losses of intermittent and ephemeral stream bed and a 1/2-acre limit (i.e., NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52), the loss of intermittent and ephemeral stream bed, plus any other losses of jurisdictional waters and wetlands, cannot exceed 1/2-acre.

2. When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by NWP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional or condition assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse environmental effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

3. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for NWP activities with smaller impacts, or for impacts to other types of waters (e.g., streams). The district engineer will consider any proposed compensatory mitigation or other mitigation measures the applicant has included in the proposal in determining whether the net adverse environmental effects of the proposed activity are no more than minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are no more than minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory

mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure the NWP activity results in no more than minimal adverse environmental effects. If the net adverse environmental effects of the NWP activity (after consideration of the mitigation proposal) are determined by the district engineer to be no more than minimal, the district engineer will provide a timely written response to the applicant. The response will state that the NWP activity can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

4. If the district engineer determines that the adverse environmental effects of the proposed activity are more than minimal, then the district engineer will notify the applicant either: (a) that the activity does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the activity is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal; or (c) that the activity is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse environmental effects, the activity will be authorized within the 45-day PCN period (unless additional time is required to comply with general conditions 18, 20, and/or 31, or to evaluate PCNs for activities authorized by NWPs 21, 49, and 50), with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation plan or a requirement that the applicant submit a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal. When compensatory mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

E. Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.

4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

F. Definitions

<u>Best management practices (BMPs)</u>: Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

<u>Compensatory mitigation</u>: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic

resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

<u>Currently serviceable</u>: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

<u>Discharge</u>: The term "discharge" means any discharge of dredged or fill material into waters of the United States.

<u>Ecological reference</u>: A model used to plan and design an aquatic habitat and riparian area restoration, enhancement, or establishment activity under NWP 27. An ecological reference may be based on the structure, functions, and dynamics of an aquatic habitat type or a riparian area type that currently exists in the region where the proposed NWP 27 activity is located. Alternatively, an ecological reference may be based on a conceptual model for the aquatic habitat type or riparian area type to be restored, enhanced, or established as a result of the proposed NWP 27 activity. An ecological reference takes into account the range of variation of the aquatic habitat type or riparian area type in the region.

<u>Enhancement</u>: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

<u>Ephemeral stream</u>: An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

<u>Establishment (creation)</u>: The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

<u>High Tide Line</u>: The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

<u>Historic Property</u>: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

<u>Independent utility</u>: A test to determine what constitutes a single and complete non-linear project in the Corps Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

<u>Indirect effects</u>: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

<u>Intermittent stream</u>: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. The loss of stream bed includes the acres or linear feet of stream bed that are filled or excavated as a result of the regulated activity. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the United States.

<u>Navigable waters</u>: Waters subject to section 10 of the Rivers and Harbors Act of 1899. These waters are defined at 33 CFR part 329.

<u>Non-tidal wetland</u>: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

<u>Open water</u>: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of flowing or standing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of "open waters" include rivers, streams, lakes, and ponds.

<u>Ordinary High Water Mark</u>: An ordinary high water mark is a line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas.

<u>Perennial stream</u>: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

<u>Practicable</u>: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

<u>Pre-construction notification</u>: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

<u>Preservation</u>: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

<u>Protected tribal resources</u>: Those natural resources and properties of traditional or customary religious or cultural importance, either on or off Indian lands, retained by, or reserved by or for, Indian tribes through treaties, statutes, judicial decisions, or executive orders, including tribal trust resources.

<u>Re-establishment</u>: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

<u>Rehabilitation</u>: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

<u>Restoration</u>: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

<u>Riffle and pool complex</u>: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

<u>Riparian areas</u>: Riparian areas are lands next to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters

with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

<u>Shellfish seeding</u>: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term "single and complete project" is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of "independent utility"). Single and complete non-linear projects may not be "piecemealed" to avoid the limits in an NWP authorization.

<u>Stormwater management</u>: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

<u>Stormwater management facilities</u>: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

<u>Stream bed</u>: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

<u>Stream channelization</u>: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the United States.

<u>Structure</u>: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring

structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

<u>Tidal wetland</u>: A tidal wetland is a jurisdictional wetland that is inundated by tidal waters. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line.

<u>Tribal lands</u>: Any lands title to which is either: 1) held in trust by the United States for the benefit of any Indian tribe or individual; or 2) held by any Indian tribe or individual subject to restrictions by the United States against alienation.

<u>Tribal rights</u>: Those rights legally accruing to a tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaty, statute, judicial decisions, executive order or agreement, and that give rise to legally enforceable remedies.

<u>Vegetated shallows</u>: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

<u>Waterbody</u>: For purposes of the NWPs, a waterbody is a jurisdictional water of the United States. If a wetland is adjacent to a waterbody determined to be a water of the United States, that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)). Examples of "waterbodies" include streams, rivers, lakes, ponds, and wetlands.

<u>Note</u>: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. <u>Navigation</u>. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the

structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. <u>Aquatic Life Movements</u>. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. <u>Spawning Areas</u>. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. <u>Migratory Bird Breeding Areas</u>. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. <u>Shellfish Beds</u>. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. <u>Suitable Material</u>. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. <u>Water Supply Intakes</u>. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. <u>Adverse Effects From Impoundments</u>. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. <u>Management of Water Flows</u>. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. <u>Fills Within 100-Year Floodplains</u>. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. <u>Equipment</u>. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. <u>Soil Erosion and Sediment Controls</u>. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. <u>Removal of Temporary Fills</u>. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. <u>Proper Maintenance</u>. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. <u>Single and Complete Project</u>. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. <u>Wild and Scenic Rivers</u>. (a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

(b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. The permittee shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river. The permittee shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: http://www.rivers.gov/.

17. <u>Tribal Rights</u>. No NWP activity may cause more than minimal adverse effects on tribal rights (including treaty rights), protected tribal resources, or tribal lands.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless ESA section 7 consultation addressing the effects of the proposed activity has been completed. Direct effects are the immediate effects on listed species and critical habitat that are caused by the NWP activity and are later in time, but still are reasonably certain to occur.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed activity or that utilize the designated critical habitat that might be affected by the proposed activity. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete preconstruction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have "no effect" on listed species or critical habitat, or until ESA section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWPs.

(e) Authorization of an activity by an NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.

(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.nmfs.noaa.gov/pr/species/esa/ respectively.

19. <u>Migratory Birds and Bald and Golden Eagles</u>. The permittee is responsible for ensuring their action complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting appropriate local office of the U.S. Fish and Wildlife Service to determine applicable measures to reduce impacts to migratory birds or eagles, including whether "incidental take" permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. <u>Historic Properties</u>. (a) In cases where the district engineer determines that the activity may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act. If pre-construction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties

identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or adverse effect. Where the non-Federal applicant has identified historic properties on which the activity might have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed.

(d) For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. <u>Discovery of Previously Unknown Remains and Artifacts</u>. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. <u>Designated Critical Resource Waters</u>. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed in the

designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. <u>Mitigation</u>. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation to ensure that the activity results in no more than minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult-to-replace resources (see 33 CFR 332.3(e)(3)).

(e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. Restored riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWPs, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

(2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f)).

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permitteeresponsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management. (i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. <u>Safety of Impoundment Structures</u>. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. <u>Water Quality</u>. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. <u>Coastal Zone Management</u>. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. <u>Regional and Case-By-Case Conditions</u>. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. <u>Use of Multiple Nationwide Permits</u>. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. <u>Transfer of Nationwide Permit Verifications</u>. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below." (Transferee)

(Date)

30. <u>Compliance Certification</u>. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(1)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the activity and mitigation.

The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. <u>Activities Affecting Structures or Works Built by the United States</u>. If an NWP activity also requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a "USACE project"), the prospective permittee must submit a preconstruction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission is not authorized by NWP until the appropriate Corps office issues the section 408 permission to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. <u>Pre-Construction Notification</u>. (a) <u>Timing</u>. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) <u>Contents of Pre-Construction Notification</u>: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed activity;

(3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;

(4) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures. For single and complete linear projects, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-Federal permittees, if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed activity or utilize the designated critical habitat that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

(8) For non-Federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the "study river" (see general condition 16); and

(10) For an activity that requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from the Corps office having jurisdiction over that USACE project.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is an NWP PCN and must include all of the applicable information required in paragraphs (b)(1) through (10) of this general condition. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

(d) <u>Agency Coordination</u>: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and

conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of stream bed; (iii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iv) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or e-mail that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination. D. District Engineer's Decision

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If a project proponent requests authorization by a specific NWP, the district engineer should issue the NWP verification for that activity if it meets the terms and conditions of that NWP, unless he or she determines, after considering mitigation, that the proposed activity will result in more than minimal individual and cumulative adverse effects on the aquatic environment and other aspects of the public interest and exercises discretionary authority to require an individual permit for the proposed activity. For a linear project, this determination will include an evaluation of the individual crossings of waters of the United States to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings authorized by NWP. If an applicant requests a waiver of the 300 linear foot limit on impacts to streams or of an otherwise applicable limit, as provided for in NWPs 13, 21, 29, 36, 39, 40, 42, 43, 44, 50, 51, 52, or 54, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in only minimal individual and cumulative adverse environmental effects. For those NWPs that have a waivable 300 linear foot limit for losses of intermittent and ephemeral stream bed and a 1/2-acre limit (i.e., NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52), the loss of intermittent and ephemeral stream bed, plus any other losses of jurisdictional waters and wetlands, cannot exceed 1/2-acre.

2. When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by NWP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional or condition assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse environmental effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

3. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for NWP activities with smaller impacts, or for impacts to other types of waters (e.g., streams). The district engineer will consider any proposed compensatory mitigation or other mitigation measures the applicant has included in the proposal in determining whether the net adverse environmental effects of the proposed activity are no more than minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are no more than minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure the NWP activity results in no more than minimal adverse environmental effects. If the net adverse environmental effects of the NWP activity (after consideration of the mitigation proposal) are determined by the district engineer to be no more than minimal, the district engineer will provide a timely written response to the applicant. The response will state that the NWP activity can proceed

under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

4. If the district engineer determines that the adverse environmental effects of the proposed activity are more than minimal, then the district engineer will notify the applicant either: (a) that the activity does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the activity is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal; or (c) that the activity is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse environmental effects, the activity will be authorized within the 45-day PCN period (unless additional time is required to comply with general conditions 18, 20, and/or 31, or to evaluate PCNs for activities authorized by NWPs 21, 49, and 50), with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation plan or a requirement that the applicant submit a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal. When compensatory mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. E. Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.

4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

F. Definitions

<u>Best management practices (BMPs)</u>: Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

<u>Compensatory mitigation</u>: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

<u>Currently serviceable</u>: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

<u>Discharge</u>: The term "discharge" means any discharge of dredged or fill material into waters of the United States.

Ecological reference: A model used to plan and design an aquatic habitat and riparian area restoration, enhancement, or establishment activity under NWP 27. An ecological reference may be based on the structure, functions, and dynamics of an aquatic habitat type or a riparian area type that currently exists in the region where the proposed NWP 27 activity is located. Alternatively, an ecological reference may be based on a conceptual model for the aquatic habitat type or riparian area type to be restored, enhanced, or established as a result of the proposed NWP 27 activity. An ecological reference takes into account the range of variation of the aquatic habitat type or riparian area type in the region.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

<u>Ephemeral stream</u>: An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

<u>Establishment (creation)</u>: The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

<u>High Tide Line</u>: The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

<u>Historic Property</u>: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

<u>Independent utility</u>: A test to determine what constitutes a single and complete non-linear project in the Corps Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

<u>Indirect effects</u>: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

<u>Intermittent stream</u>: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. The loss of stream bed includes the acres or linear feet of stream bed that are filled or excavated as a result of the regulated activity. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the United States.

<u>Navigable waters</u>: Waters subject to section 10 of the Rivers and Harbors Act of 1899. These waters are defined at 33 CFR part 329.

<u>Non-tidal wetland</u>: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

<u>Open water</u>: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of flowing or standing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of "open waters" include rivers, streams, lakes, and ponds.

<u>Ordinary High Water Mark</u>: An ordinary high water mark is a line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas.

<u>Perennial stream</u>: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

<u>Practicable</u>: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

<u>Pre-construction notification</u>: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction

notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

<u>Preservation</u>: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

<u>Protected tribal resources</u>: Those natural resources and properties of traditional or customary religious or cultural importance, either on or off Indian lands, retained by, or reserved by or for, Indian tribes through treaties, statutes, judicial decisions, or executive orders, including tribal trust resources.

<u>Re-establishment</u>: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

<u>Rehabilitation</u>: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

<u>Restoration</u>: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

<u>Riffle and pool complex</u>: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

<u>Riparian areas</u>: Riparian areas are lands next to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

<u>Shellfish seeding</u>: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

<u>Single and complete linear project</u>: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves

multiple crossings of one or more waterbodies at separate and distant locations. The term "single and complete project" is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of "independent utility"). Single and complete non-linear projects may not be "piecemealed" to avoid the limits in an NWP authorization.

<u>Stormwater management</u>: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

<u>Stormwater management facilities</u>: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

<u>Stream bed</u>: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

<u>Stream channelization</u>: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the United States.

<u>Structure</u>: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

<u>Tidal wetland</u>: A tidal wetland is a jurisdictional wetland that is inundated by tidal waters. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line.

<u>Tribal lands</u>: Any lands title to which is either: 1) held in trust by the United States for the benefit of any Indian tribe or individual; or 2) held by any Indian tribe or individual subject to restrictions by the United States against alienation.

<u>Tribal rights</u>: Those rights legally accruing to a tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaty, statute, judicial decisions, executive order or agreement, and that give rise to legally enforceable remedies.

<u>Vegetated shallows</u>: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

<u>Waterbody</u>: For purposes of the NWPs, a waterbody is a jurisdictional water of the United States. If a wetland is adjacent to a waterbody determined to be a water of the United States, that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)). Examples of "waterbodies" include streams, rivers, lakes, ponds, and wetlands.

ADDITIONAL INFORMATION

This nationwide permit is effective March 19, 2017, and expires on March 18, 2022.

Information about the U.S. Army Corps of Engineers regulatory program, including nationwide permits, may also be found at <u>http://www.swf.usace.army.mil/Missions/Regulatory.aspx</u> and <u>http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits.aspx</u>

2017 NATIONWIDE PERMIT (NWP) REGIONAL CONDITIONS

FOR THE STATE OF TEXAS

The following regional conditions apply within the entire State of Texas:

1. For all discharges proposed for authorization under Nationwide Permits (NWP) 3, 6, 7, 12, 14, 18, 19, 21, 23, 25, 27, 29, 39, 40, 41, 42, 43, 44, 49, 51, and 52, into the following habitat types or specific areas, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32, Pre-Construction Notification (PCN). The Corps of Engineers (Corps) will coordinate with the resource agencies as specified in NWP General Condition 32(d) (PCN). The habitat types or areas are:

a. Pitcher Plant Bogs: Wetlands typically characterized by an organic surface soil layer and include vegetation such as pitcher plants (*Sarracenia* spp.) and/or sundews (*Drosera* spp.).

b. Bald Cypress-Tupelo Swamps: Wetlands dominated by bald cypress (*Taxodium distichum*) and/or water tupelo (*Nyssa aquatic*).

2. For all activities proposed for authorization under any Nationwide Permit (NWP) at sites approved as compensatory mitigation sites (either permittee-responsible, mitigation bank and/or in-lieu fee) under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

3. For all activities proposed for authorization under NWP 16, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32 (Pre-Construction Notification) and must obtain an individual water quality certification (WQC) from the TCEQ. Work cannot begin under NWP 16 until the applicant has received written approval from the Corps and WQC.

NOTE: For all activities proposing to use equipment that has operated or been stored in a water body on the Texas list of zebra mussel (*Dreissena polymorpha*) infected water bodies, equipment should be decontaminated prior to relocation in accordance with Texas Administrative Code, Title 31, Part 2, Chapter 57, Subchapter A. The following decontamination Best Management Practices (BMPs), as a minimum, are indicated:

a. Clean: Clean both the inside and outside of equipment and gear, by removing all plants, animals, and mud and thoroughly washing the equipment using a high pressure spray nozzle.

b. Drain: Drain all water from receptacles before leaving the area, including livewells, bilges, ballast, and engine cooling water on boats.

c. Dry: Allow time for your equipment to dry completely before relocating in other waters. Equipment should be dried prior to relocation. High temperature pressure washing (greater than or equal to 140F) or professional cleaning may be substituted for drying time.

The following regional condition only applies within the Albuquerque, Fort Worth, and Galveston Districts:

4. For all activities proposed for authorization under Nationwide Permit (NWP) 12 that involve a discharge of fill material associated with mechanized land clearing of wetlands dominated by native woody shrubs, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32 – Pre-Construction Notification prior to commencing the activity. For the purpose of this regional condition, a shrub dominated wetland is characterized by woody vegetation less than 3.0 inches in diameter at breast height but greater than 3.2 feet in height, which covers 20% or more of the area. Woody vines are not included.

The following regional conditions apply within the Albuquerque District.

5. Nationwide Permit (NWP) 23 – Approved Categorical Exclusions. A pre-construction notification (PCN) to the District Engineer in accordance with General Condition 32 - PCN is required for all proposed activities under NWP 23.

6. Nationwide Permit (NWP) 27 – Aquatic Habitat Restoration, Establishment, and Enhancement Activities. For all proposed activities under NWP 27 that require preconstruction notification, a monitoring plan commensurate with the scale of the proposed restoration project and the potential for risk to the aquatic environment must be submitted to the Corps. (See "NWP 27 Guidelines" at http://www.spa.usace.army.mil/Missions/RegulatoryProgramandPermits/NWP.aspx).

7. Channelization. Nationwide Permit (NWP) General Condition 9 for Management of Water Flows is amended to add the following: Projects that would result in permanent channelization to previously un-channelized streams require pre-construction notification to the Albuquerque District Engineer in accordance with NWP General Condition 32 – Pre-Construction Notification.

8. Dredge and Fill Activities in Intermittent and Perennial Streams, and Special Aquatic Sites: For all activities subject to regulation under the Clean Water Act Section 404 in intermittent and perennial streams, and special aquatic sites (including wetlands, riffle and pool complexes, and sanctuaries and refuges), pre-construction notification (PCN) to the Albuquerque District Engineer is required in accordance with Nationwide Permit General Condition 32 - PCN.

9. Springs. For all discharges of dredged or fill material within 100 feet of the point of groundwater discharge of natural springs located in an aquatic resource, a preconstruction notification (PCN) is required to the Albuquerque District Engineer in accordance with Nationwide Permit General Condition 32 - PCN. A natural spring is defined as any location where ground water emanates from a point in the ground and has a defined surface water connection to another waters of the United States. For purposes of this regional condition, springs do not include seeps or other groundwater discharges which lack a defined surface water connection. 10. Suitable Fill. Use of broken concrete as fill or bank stabilization material is prohibited unless the applicant demonstrates that its use is the only practicable material (with respect to cost, existing technology, and logistics). Any applicant who wishes to use broken concrete as bank stabilization must provide notification to the Albuquerque District Engineer in accordance with Nationwide Permit General Condition 32 - Pre-Construction Notification along with justification for such use. Use of broken concrete with rebar or used tires (loose or formed into bales) is prohibited in all waters of the United States.

The following regional conditions apply only within the Fort Worth District.

11. For all discharges proposed for authorization under all Nationwide Permits (NWP) into the area of Caddo Lake within Texas that is designated as a "Wetland of International Importance" under the Ramsar Convention, the applicant shall notify the Fort Worth District Engineer in accordance with the NWP General Condition 32 – Pre-Construction Notification (PCN). The Fort Worth District will coordinate with the resource agencies as specified in NWP General Condition 32(d) - PCN.

12. Compensatory mitigation is generally required for losses of waters of the United States that exceed 1/10 acre and/or for all losses to streams that exceed 300 linear feet. Loss is defined in Section F of the Nationwide Permits (NWP). Mitigation thresholds are cumulative irrespective of aquatic resource type at each single and complete crossing. Compensatory mitigation requirements will be determined in accordance with the appropriate district standard operating procedures and processes. The applicant shall notify the Fort Worth District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

13. For all activities proposed for authorization under Nationwide Permits (NWP) 12, 14 and/or 33 that involve a temporary discharge of fill material into 1/2 acre or more of emergent wetland OR 1/10 acre of scrub-shrub/forested wetland, the applicant shall notify the Fort Worth District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

14. For all discharges proposed for authorization under Nationwide Permits (NWP) 51 and 52, the Fort Worth District will provide the pre-construction notification (PCN) to the U.S. Fish and Wildlife Service as specified in NWP General Condition 32(d)(2) - PCN for its review and comments.

The following regional conditions apply only within the Galveston District.

15. No Nationwide Permits (NWP), except NWP 3, shall be used to authorize discharges into the habitat types or specific areas listed in paragraphs a through c, below. The applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity under NWP 3.

a. Mangrove Marshes. For the purpose of this regional condition, Mangrove marshes are those waters of the United States that are dominated by mangroves (Avicennia spp., Laguncuaria spp., Conocarpus spp., and Rhizophora spp.). b. Coastal Dune Swales. For the purpose of this regional condition, coastal dune swales are wetlands and/or other waters of the United States located within the backshore and dune areas in the coastal zone of Texas. They are formed as depressions within and among multiple beach ridge barriers, dune complexes, or dune areas adjacent to beaches fronting tidal waters of the United States. c. Columbia Bottomlands. For the purpose of this regional condition, Columbia bottomlands are defined as waters of the United States that are dominated by bottomland hardwoods in the Lower Brazos and San Bernard River basins identified in the 1997 Memorandum of Agreement between the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, Natural Resource Conservation Service, and Texas Parks and Wildlife Department for bottomland hardwoods in Brazoria County. (For further information, see http://www.swg.usace.army.mil/Business-With-Us/Regulatory/Permits/Nationwide-General-Permits/)

16. A Compensatory Mitigation Plan is required for all special aquatic site losses, as defined in Section F of the Nationwide Permits (NWP), that exceed 1/10 acre and/or for all losses to streams that exceed 200 linear feet. Compensatory mitigation requirements will be determined in accordance with the appropriate district standard operating procedures and processes. The applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

17. For all seismic testing activities proposed for authorization under Nationwide Permit (NWP) 6, the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification (PCN). The PCN must state the time period for which the temporary fill is proposed, and must include a restoration plan for the special aquatic sites. For seismic testing under NWP 6 within the Cowardin Marine System, Subtidal Subsystem; as defined by the U.S. Fish and Wildlife Service, Classification of Wetlands and Deepwater Habitats of the United States, December 1979/Reprinted 1992, the Corps will coordinate with the resource agencies in accordance with NWP General Condition 32(d) - PCN.

18. For all activities proposed under Nationwide Permits (NWP) 10 and 11 located in vegetated shallows and coral reefs; as defined by 40 CFR 230.43 and 230.44 respectively, the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification. Examples include, but are not limited to: seagrass beds, oyster reefs, and coral reefs.

19. Nationwide Permit 12 shall not be used to authorize discharges within 500 feet of vegetated shallows and coral reefs; as defined by 40 CFR 230.43 and 230.44 respectively. Examples include, but are not limited to: seagrass beds, oyster reefs, and coral reefs.
20. For all activities proposed for authorization under Nationwide Permit 12 that involve underground placement below a non-navigable river bed and/or perennial stream bed there shall a minimum cover of 48 inches (1,219 millimeters) of soil below the river and/or perennial stream thalweg.

21. For all discharges and work proposed below the high tide line under Nationwide Permits (NWP) 14 and 18, the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification (PCN). The Galveston District will coordinate with the resource agencies in accordance with NWP General Condition 32(d) - PCN.

22. For all activities proposed for authorization under Nationwide Permit (NWP) 33 the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 – Pre-Construction Notification (PCN). The PCN must include a restoration plan showing how all temporary fills and structures will be removed and the area restored to pre-project conditions. Activities causing the temporary loss, as defined in Section F of the NWPs, of more than 0.5 acres of tidal waters and/or 200 linear feet of stream will be coordinated with the agencies in accordance with NWP General Condition 32(d) - PCN.

23. No Nationwide Permits (NWP), except NWPs 3, 16, 20, 22, 37, shall be used to authorize discharges, structures, and/or fill within the standard setback and high hazard zones of the Sabine-Neches Waterway as defined in the Standard Operating Procedure - Permit Setbacks along the Sabine-Neches Waterway. The applicant shall notify the Galveston District Engineer in accordance with NWP General Condition 32 - Pre-Construction Notification for all discharge, structures and/or work in medium hazard zones and all NWP 3 applications within the standard setback and high hazard zones of the Sabine-Neches Waterway.

24. No Nationwide Permits (NWP), except 20, 22, and 37, shall be used to authorize discharges, structures, and/or fill within the standard setback exemptions of the Gulf Intracoastal Waterway as defined in the Standard Operating Procedure- Department of the Army Permit Evaluation Setbacks along the Gulf Intracoastal Waterway. The applicant shall notify the Galveston District Engineer in accordance with NWP General Condition 32 (Pre-Construction Notification) for all discharges, structures and/or work within the standard setback, shoreward of the standard setback, and/or standard setback exemption zones.

25. The use of Nationwide Permits in the San Jacinto River Waste Pits Area of Concern are revoked. (For further information, see http://www.swg.usace.army.mil/Business-With-Us/Regulatory/Permits/Nationwide-General-Permits/)

26. The use of Nationwide Permits 51 and 52 are revoked within the Galveston District boundaries.

27. Nationwide Permit (NWP) 53 pre-construction notifications will be coordinated with resource agencies as specified in NWP General Condition 32(d) – Pre-construction Notification.

28. For all activities proposed under Nationwide Permits (NWP) 21, 29, 39, 40, 42, 43, 44, and 50 that result in greater than 300 feet of loss in intermittent and/or ephemeral streams, as defined in Section F of the NWPs, require evaluation under an Individual Permit.

The following regional conditions apply only within the Tulsa District.

29. Upland Disposal: Except where authorized by Nationwide Permit 16, material disposed of in uplands shall be placed in a location and manner that prevents discharge of the material and/or return water into waters or wetlands unless otherwise authorized by the Tulsa District Engineer.

30. Major Rivers: The prospective permittee shall notify the Tulsa District Engineer for all Nationwide Permit 14 verifications which cross major rivers within Tulsa District. For the purposes of this condition, major rivers include the following: Canadian River, Prairie Dog Town Fork of the Red River, and Red River.

NATIONWIDE PERMIT 14 Linear Transportation Projects Effective Date: March 19, 2017 (NWP Final Notice, 82 FR 4)

14. <u>Linear Transportation Projects</u>. Activities required for crossings of waters of the United States associated with the construction, expansion, modification, or improvement of linear transportation projects (e.g., roads, highways, railways, trails, airport runways, and taxiways) in waters of the United States. For linear transportation projects in non-tidal waters, the discharge cannot cause the loss of greater than 1/2-acre of waters of the United States. For linear transportation projects in tidal waters, the discharge cannot cause the loss of greater than 1/2-acre of waters of the loss of greater than 1/3-acre of waters of the United States. Any stream channel modification, including bank stabilization, is limited to the minimum necessary to construct or protect the linear transportation project; such modifications must be in the immediate vicinity of the project.

This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to construct the linear transportation project. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to preconstruction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

This NWP cannot be used to authorize non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars.

<u>Notification</u>: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) the loss of waters of the United States exceeds 1/10-acre; or (2) there is a discharge in a special aquatic site, including wetlands. (See general condition 32.) (<u>Authorities</u>: Sections 10 and 404)

<u>Note 1</u>: For linear transportation projects crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. Linear transportation projects must comply with 33 CFR 330.6(d).

<u>Note 2</u>: Some discharges for the construction of farm roads or forest roads, or temporary roads for moving mining equipment, may qualify for an exemption under section 404(f) of the Clean Water Act (see 33 CFR 323.4).

<u>Note 3</u>: For NWP 14 activities that require pre-construction notification, the PCN must include any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings that require Department of the Army authorization but do not require pre-construction notification (see paragraph (b) of general condition 32). The district engineer will evaluate the PCN in accordance with Section D, "District Engineer's Decision." The district engineer may require mitigation to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see general condition 23).

Nationwide Permit General Conditions

<u>Note</u>: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. <u>Navigation</u>. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. <u>Aquatic Life Movements</u>. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. <u>Spawning Areas</u>. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. <u>Migratory Bird Breeding Areas</u>. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. <u>Shellfish Beds</u>. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. <u>Suitable Material</u>. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. <u>Water Supply Intakes</u>. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. <u>Adverse Effects From Impoundments</u>. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. <u>Management of Water Flows</u>. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. <u>Fills Within 100-Year Floodplains</u>. The activity must comply with applicable FEMAapproved state or local floodplain management requirements.

11. <u>Equipment</u>. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. <u>Soil Erosion and Sediment Controls</u>. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. <u>Removal of Temporary Fills</u>. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. <u>Proper Maintenance</u>. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. <u>Single and Complete Project</u>. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. <u>Wild and Scenic Rivers</u>. (a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

(b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible

inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. The permittee shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: http://www.rivers.gov/.

17. <u>Tribal Rights</u>. No NWP activity may cause more than minimal adverse effects on tribal rights (including treaty rights), protected tribal resources, or tribal lands.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless ESA section 7 consultation addressing the effects of the proposed activity has been completed. Direct effects are the immediate effects on listed species and critical habitat that are caused by the NWP activity and are later in time, but still are reasonably certain to occur.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed activity or that utilize the designated critical habitat that might be affected by the proposed activity. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete preconstruction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have "no effect" on listed species or critical habitat, or until ESA section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWPs.

(e) Authorization of an activity by an NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.

(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.nmfs.noaa.gov/pr/species/esa/ respectively.

19. <u>Migratory Birds and Bald and Golden Eagles</u>. The permittee is responsible for ensuring their action complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting appropriate local office of the U.S. Fish and Wildlife Service to determine applicable measures to reduce impacts to migratory birds or eagles, including whether "incidental take" permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. <u>Historic Properties</u>. (a) In cases where the district engineer determines that the activity may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act. If pre-construction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been

submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or adverse effect. Where the non-Federal applicant has identified historic properties on which the activity might have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed.

(d) For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects

historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. <u>Discovery of Previously Unknown Remains and Artifacts</u>. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. <u>Designated Critical Resource Waters</u>. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. <u>Mitigation</u>. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation to ensure that the activity results in no more than minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult-to-replace resources (see 33 CFR 332.3(e)(3)).

(e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. Restored riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWPs, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

(2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f)).

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permitteeresponsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. <u>Safety of Impoundment Structures</u>. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. <u>Water Quality</u>. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. <u>Coastal Zone Management</u>. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. <u>Regional and Case-By-Case Conditions</u>. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. <u>Use of Multiple Nationwide Permits</u>. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. <u>Transfer of Nationwide Permit Verifications</u>. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

(Transferee)

(Date)

30. <u>Compliance Certification</u>. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(1)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the activity and mitigation.

The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. <u>Activities Affecting Structures or Works Built by the United States</u>. If an NWP activity also requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a "USACE project"), the prospective permittee must submit a preconstruction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission is not authorized by NWP until the appropriate Corps office issues the section 408 permission to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. <u>Pre-Construction Notification</u>. (a) <u>Timing</u>. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) <u>Contents of Pre-Construction Notification</u>: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed activity;

(3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;

(4) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures. For single and complete linear projects, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-Federal permittees, if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed activity or utilize the designated critical habitat that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

(8) For non-Federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the "study river" (see general condition 16); and

(10) For an activity that requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from the Corps office having jurisdiction over that USACE project.

(c) <u>Form of Pre-Construction Notification</u>: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is an NWP PCN and must include all of the applicable information required in paragraphs (b)(1) through (10) of this general condition. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

(d) <u>Agency Coordination</u>: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of stream bed; (iii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iv) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or e-mail that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions

of the NWPs, including the need for mitigation to ensure the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

D. District Engineer's Decision

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If a project proponent requests authorization by a specific NWP, the district engineer should issue the NWP verification for that activity if it meets the terms and conditions of that NWP, unless he or she determines, after considering mitigation, that the proposed activity will result in more than minimal individual and cumulative adverse effects on the aquatic environment and other aspects of the public interest and exercises discretionary authority to require an individual permit for the proposed activity. For a linear project, this determination will include an evaluation of the individual crossings of waters of the United States to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings authorized by NWP. If an applicant requests a waiver of the 300 linear foot limit on impacts to streams or of an otherwise applicable limit, as provided for in NWPs 13, 21, 29, 36, 39, 40, 42, 43, 44, 50, 51, 52, or 54, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in only minimal individual and cumulative adverse environmental effects. For those NWPs that have a waivable 300 linear foot limit for losses of intermittent and ephemeral stream bed and a 1/2-acre limit (i.e., NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52), the loss of intermittent and ephemeral stream bed, plus any other losses of jurisdictional waters and wetlands, cannot exceed 1/2-acre.

2. When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by NWP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional or condition assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse environmental effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

3. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for NWP activities with smaller impacts, or for impacts to other types of waters (e.g., streams). The district engineer will consider any proposed compensatory mitigation or other mitigation measures the applicant has included in the proposal in determining whether the net adverse environmental effects of the proposed activity are no more than minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are no more than minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure the NWP activity results in no more than minimal adverse environmental effects. If the net adverse environmental effects of the NWP activity (after consideration of the mitigation proposal) are determined by the district engineer to be no more than minimal, the district engineer will provide a timely written response to the applicant. The response will state that the NWP activity can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

4. If the district engineer determines that the adverse environmental effects of the proposed activity are more than minimal, then the district engineer will notify the applicant either: (a) that the activity does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the activity is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal; or (c) that the activity is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse environmental effects, the activity will be authorized within the 45-day PCN period (unless additional time is required to comply with general conditions 18, 20, and/or 31, or to evaluate PCNs for activities authorized by NWPs 21, 49, and 50), with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation plan or a requirement that the applicant submit a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal. When compensatory mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

E. Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.

4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

F. Definitions

<u>Best management practices (BMPs)</u>: Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

<u>Compensatory mitigation</u>: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

<u>Currently serviceable</u>: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

<u>Direct effects</u>: Effects that are caused by the activity and occur at the same time and place.

<u>Discharge</u>: The term "discharge" means any discharge of dredged or fill material into waters of the United States.

<u>Ecological reference</u>: A model used to plan and design an aquatic habitat and riparian area restoration, enhancement, or establishment activity under NWP 27. An ecological reference may be based on the structure, functions, and dynamics of an aquatic habitat type or a riparian area type that currently exists in the region where the proposed NWP 27 activity is located. Alternatively, an ecological reference may be based on a conceptual model for the aquatic habitat type or riparian area type to be restored, enhanced, or established as a result of the proposed NWP 27 activity. An ecological reference takes into account the range of variation of the aquatic habitat type or riparian area type in the region.

<u>Enhancement</u>: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

<u>Ephemeral stream</u>: An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

<u>Establishment (creation)</u>: The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

<u>High Tide Line</u>: The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

<u>Historic Property</u>: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

<u>Independent utility</u>: A test to determine what constitutes a single and complete non-linear project in the Corps Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

<u>Indirect effects</u>: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

<u>Intermittent stream</u>: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. The loss of stream bed includes the acres or linear feet of stream bed that are filled or excavated as a result of the regulated activity. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the United States.

<u>Navigable waters</u>: Waters subject to section 10 of the Rivers and Harbors Act of 1899. These waters are defined at 33 CFR part 329.

<u>Non-tidal wetland</u>: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

<u>Open water</u>: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of flowing or standing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of "open waters" include rivers, streams, lakes, and ponds.

<u>Ordinary High Water Mark</u>: An ordinary high water mark is a line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas.

<u>Perennial stream</u>: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

<u>Practicable</u>: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

<u>Pre-construction notification</u>: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

<u>Preservation</u>: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

<u>Protected tribal resources</u>: Those natural resources and properties of traditional or customary religious or cultural importance, either on or off Indian lands, retained by, or reserved by or for, Indian tribes through treaties, statutes, judicial decisions, or executive orders, including tribal trust resources.

<u>Re-establishment</u>: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

<u>Rehabilitation</u>: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

<u>Restoration</u>: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

<u>Riffle and pool complex</u>: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

<u>Riparian areas</u>: Riparian areas are lands next to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

<u>Shellfish seeding</u>: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term "single and complete project" is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of "independent utility"). Single and complete non-linear projects may not be "piecemealed" to avoid the limits in an NWP authorization.

<u>Stormwater management</u>: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

<u>Stormwater management facilities</u>: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

<u>Stream channelization</u>: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the United States.

<u>Structure</u>: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

<u>Tidal wetland</u>: A tidal wetland is a jurisdictional wetland that is inundated by tidal waters. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line.

<u>Tribal lands</u>: Any lands title to which is either: 1) held in trust by the United States for the benefit of any Indian tribe or individual; or 2) held by any Indian tribe or individual subject to restrictions by the United States against alienation.

<u>Tribal rights</u>: Those rights legally accruing to a tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaty, statute, judicial decisions, executive order or agreement, and that give rise to legally enforceable remedies.

<u>Vegetated shallows</u>: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

<u>Waterbody</u>: For purposes of the NWPs, a waterbody is a jurisdictional water of the United States. If a wetland is adjacent to a waterbody determined to be a water of the United States, that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)). Examples of "waterbodies" include streams, rivers, lakes, ponds, and wetlands.

ADDITIONAL INFORMATION

This nationwide permit is effective March 19, 2017, and expires on March 18, 2022.

Information about the U.S. Army Corps of Engineers regulatory program, including nationwide permits, may also be

found at http://www.swf.usace.army.mil/Missions/Regulatory.aspx and http://www.usace.army.mil/Missions/Regulatory.aspx and http://www.usace.army.mil/Missions/Regulatory.aspx and http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits.aspx

2017 NATIONWIDE PERMIT (NWP) REGIONAL CONDITIONS

FOR THE STATE OF TEXAS

The following regional conditions apply within the entire State of Texas:

1. For all discharges proposed for authorization under Nationwide Permits (NWP) 3, 6, 7, 12, 14, 18, 19, 21, 23, 25, 27, 29, 39, 40, 41, 42, 43, 44, 49, 51, and 52, into the following habitat types or specific areas, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32, Pre-Construction Notification (PCN). The Corps of Engineers (Corps) will coordinate with the resource agencies as specified in NWP General Condition 32(d) (PCN). The habitat types or areas are:

a. Pitcher Plant Bogs: Wetlands typically characterized by an organic surface soil layer and include vegetation such as pitcher plants (*Sarracenia* spp.) and/or sundews (*Drosera* spp.).

b. Bald Cypress-Tupelo Swamps: Wetlands dominated by bald cypress (*Taxodium distichum*) and/or water tupelo (*Nyssa aquatic*).

2. For all activities proposed for authorization under any Nationwide Permit (NWP) at sites approved as compensatory mitigation sites (either permittee-responsible, mitigation bank and/or in-lieu fee) under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

3. For all activities proposed for authorization under NWP 16, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32 (Pre-Construction Notification) and must obtain an individual water quality certification (WQC) from the TCEQ. Work cannot begin under NWP 16 until the applicant has received written approval from the Corps and WQC.

NOTE: For all activities proposing to use equipment that has operated or been stored in a water body on the Texas list of zebra mussel (*Dreissena polymorpha*) infected water bodies, equipment should be decontaminated prior to relocation in accordance with Texas Administrative Code, Title 31, Part 2, Chapter 57, Subchapter A. The following decontamination Best Management Practices (BMPs), as a minimum, are indicated:

a. Clean: Clean both the inside and outside of equipment and gear, by removing all plants, animals, and mud and thoroughly washing the equipment using a high pressure spray nozzle.

b. Drain: Drain all water from receptacles before leaving the area, including livewells, bilges, ballast, and engine cooling water on boats.

c. Dry: Allow time for your equipment to dry completely before relocating in other waters. Equipment should be dried prior to relocation. High temperature pressure washing (greater than or equal to 140F) or professional cleaning may be substituted for drying time.

The following regional condition only applies within the Albuquerque, Fort Worth, and Galveston Districts:

4. For all activities proposed for authorization under Nationwide Permit (NWP) 12 that involve a discharge of fill material associated with mechanized land clearing of wetlands dominated by native woody shrubs, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 32 – Pre-Construction Notification prior to commencing the activity. For the purpose of this regional condition, a shrub dominated wetland is characterized by woody vegetation less than 3.0 inches in diameter at breast height but greater than 3.2 feet in height, which covers 20% or more of the area. Woody vines are not included.

The following regional conditions apply within the Albuquerque District.

5. Nationwide Permit (NWP) 23 – Approved Categorical Exclusions. A pre-construction notification (PCN) to the District Engineer in accordance with General Condition 32 - PCN is required for all proposed activities under NWP 23.

6. Nationwide Permit (NWP) 27 – Aquatic Habitat Restoration, Establishment, and Enhancement Activities. For all proposed activities under NWP 27 that require preconstruction notification, a monitoring plan commensurate with the scale of the proposed restoration project and the potential for risk to the aquatic environment must be submitted to the Corps. (See "NWP 27 Guidelines" at http://www.spa.usace.army.mil/Missions/RegulatoryProgramandPermits/NWP.aspx).

7. Channelization. Nationwide Permit (NWP) General Condition 9 for Management of Water Flows is amended to add the following: Projects that would result in permanent channelization to previously un-channelized streams require pre-construction notification to the Albuquerque District Engineer in accordance with NWP General Condition 32 – Pre-Construction Notification.

8. Dredge and Fill Activities in Intermittent and Perennial Streams, and Special Aquatic Sites: For all activities subject to regulation under the Clean Water Act Section 404 in intermittent and perennial streams, and special aquatic sites (including wetlands, riffle and pool complexes, and sanctuaries and refuges), pre-construction notification (PCN) to the Albuquerque District Engineer is required in accordance with Nationwide Permit General Condition 32 - PCN.

9. Springs. For all discharges of dredged or fill material within 100 feet of the point of groundwater discharge of natural springs located in an aquatic resource, a preconstruction notification (PCN) is required to the Albuquerque District Engineer in accordance with Nationwide Permit General Condition 32 - PCN. A natural spring is defined as any location where ground water emanates from a point in the ground and has a defined surface water connection to another waters of the United States. For purposes of this regional condition, springs do not include seeps or other groundwater discharges which lack a defined surface water connection. 10. Suitable Fill. Use of broken concrete as fill or bank stabilization material is prohibited unless the applicant demonstrates that its use is the only practicable material (with respect to cost, existing technology, and logistics). Any applicant who wishes to use broken concrete as bank stabilization must provide notification to the Albuquerque District Engineer in accordance with Nationwide Permit General Condition 32 - Pre-Construction Notification along with justification for such use. Use of broken concrete with rebar or used tires (loose or formed into bales) is prohibited in all waters of the United States.

The following regional conditions apply only within the Fort Worth District.

11. For all discharges proposed for authorization under all Nationwide Permits (NWP) into the area of Caddo Lake within Texas that is designated as a "Wetland of International Importance" under the Ramsar Convention, the applicant shall notify the Fort Worth District Engineer in accordance with the NWP General Condition 32 – Pre-Construction Notification (PCN). The Fort Worth District will coordinate with the resource agencies as specified in NWP General Condition 32(d) - PCN.

12. Compensatory mitigation is generally required for losses of waters of the United States that exceed 1/10 acre and/or for all losses to streams that exceed 300 linear feet. Loss is defined in Section F of the Nationwide Permits (NWP). Mitigation thresholds are cumulative irrespective of aquatic resource type at each single and complete crossing. Compensatory mitigation requirements will be determined in accordance with the appropriate district standard operating procedures and processes. The applicant shall notify the Fort Worth District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

13. For all activities proposed for authorization under Nationwide Permits (NWP) 12, 14 and/or 33 that involve a temporary discharge of fill material into 1/2 acre or more of emergent wetland OR 1/10 acre of scrub-shrub/forested wetland, the applicant shall notify the Fort Worth District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

14. For all discharges proposed for authorization under Nationwide Permits (NWP) 51 and 52, the Fort Worth District will provide the pre-construction notification (PCN) to the U.S. Fish and Wildlife Service as specified in NWP General Condition 32(d)(2) - PCN for its review and comments.

The following regional conditions apply only within the Galveston District.

15. No Nationwide Permits (NWP), except NWP 3, shall be used to authorize discharges into the habitat types or specific areas listed in paragraphs a through c, below. The applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity under NWP 3.

a. Mangrove Marshes. For the purpose of this regional condition, Mangrove marshes are those waters of the United States that are dominated by mangroves (Avicennia spp., Laguncuaria spp., Conocarpus spp., and Rhizophora spp.). b. Coastal Dune Swales. For the purpose of this regional condition, coastal dune swales are wetlands and/or other waters of the United States located within the backshore and dune areas in the coastal zone of Texas. They are formed as depressions within and among multiple beach ridge barriers, dune complexes, or dune areas adjacent to beaches fronting tidal waters of the United States. c. Columbia Bottomlands. For the purpose of this regional condition, Columbia bottomlands are defined as waters of the United States that are dominated by bottomland hardwoods in the Lower Brazos and San Bernard River basins identified in the 1997 Memorandum of Agreement between the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, Natural Resource Conservation Service, and Texas Parks and Wildlife Department for bottomland hardwoods in Brazoria County. (For further information, see http://www.swg.usace.army.mil/Business-With-Us/Regulatory/Permits/Nationwide-General-Permits/)

16. A Compensatory Mitigation Plan is required for all special aquatic site losses, as defined in Section F of the Nationwide Permits (NWP), that exceed 1/10 acre and/or for all losses to streams that exceed 200 linear feet. Compensatory mitigation requirements will be determined in accordance with the appropriate district standard operating procedures and processes. The applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification prior to commencing the activity.

17. For all seismic testing activities proposed for authorization under Nationwide Permit (NWP) 6, the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification (PCN). The PCN must state the time period for which the temporary fill is proposed, and must include a restoration plan for the special aquatic sites. For seismic testing under NWP 6 within the Cowardin Marine System, Subtidal Subsystem; as defined by the U.S. Fish and Wildlife Service, Classification of Wetlands and Deepwater Habitats of the United States, December 1979/Reprinted 1992, the Corps will coordinate with the resource agencies in accordance with NWP General Condition 32(d) - PCN.

18. For all activities proposed under Nationwide Permits (NWP) 10 and 11 located in vegetated shallows and coral reefs; as defined by 40 CFR 230.43 and 230.44 respectively, the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification. Examples include, but are not limited to: seagrass beds, oyster reefs, and coral reefs.

19. Nationwide Permit 12 shall not be used to authorize discharges within 500 feet of vegetated shallows and coral reefs; as defined by 40 CFR 230.43 and 230.44 respectively. Examples include, but are not limited to: seagrass beds, oyster reefs, and coral reefs.

20. For all activities proposed for authorization under Nationwide Permit 12 that involve underground placement below a non-navigable river bed and/or perennial stream bed there shall a minimum cover of 48 inches (1,219 millimeters) of soil below the river and/or perennial stream thalweg.

21. For all discharges and work proposed below the high tide line under Nationwide Permits (NWP) 14 and 18, the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 - Pre-Construction Notification (PCN). The Galveston District will coordinate with the resource agencies in accordance with NWP General Condition 32(d) - PCN.

22. For all activities proposed for authorization under Nationwide Permit (NWP) 33 the applicant shall notify the Galveston District Engineer in accordance with the NWP General Condition 32 – Pre-Construction Notification (PCN). The PCN must include a restoration plan showing how all temporary fills and structures will be removed and the area restored to pre-project conditions. Activities causing the temporary loss, as defined in Section F of the NWPs, of more than 0.5 acres of tidal waters and/or 200 linear feet of stream will be coordinated with the agencies in accordance with NWP General Condition 32(d) - PCN.

23. No Nationwide Permits (NWP), except NWPs 3, 16, 20, 22, 37, shall be used to authorize discharges, structures, and/or fill within the standard setback and high hazard zones of the Sabine-Neches Waterway as defined in the Standard Operating Procedure - Permit Setbacks along the Sabine-Neches Waterway. The applicant shall notify the Galveston District Engineer in accordance with NWP General Condition 32 - Pre-Construction Notification for all discharge, structures and/or work in medium hazard zones and all NWP 3 applications within the standard setback and high hazard zones of the Sabine-Neches Waterway.

24. No Nationwide Permits (NWP), except 20, 22, and 37, shall be used to authorize discharges, structures, and/or fill within the standard setback exemptions of the Gulf Intracoastal Waterway as defined in the Standard Operating Procedure- Department of the Army Permit Evaluation Setbacks along the Gulf Intracoastal Waterway. The applicant shall notify the Galveston District Engineer in accordance with NWP General Condition 32 (Pre-Construction Notification) for all discharges, structures and/or work within the standard setback, shoreward of the standard setback, and/or standard setback exemption zones.

25. The use of Nationwide Permits in the San Jacinto River Waste Pits Area of Concern are revoked. (For further information, see http://www.swg.usace.army.mil/Business-With-Us/Regulatory/Permits/Nationwide-General-Permits/)

26. The use of Nationwide Permits 51 and 52 are revoked within the Galveston District boundaries.

27. Nationwide Permit (NWP) 53 pre-construction notifications will be coordinated with resource agencies as specified in NWP General Condition 32(d) – Pre-construction Notification.

28. For all activities proposed under Nationwide Permits (NWP) 21, 29, 39, 40, 42, 43, 44, and 50 that result in greater than 300 feet of loss in intermittent and/or ephemeral streams, as defined in Section F of the NWPs, require evaluation under an Individual Permit.

The following regional conditions apply only within the Tulsa District.

29. Upland Disposal: Except where authorized by Nationwide Permit 16, material disposed of in uplands shall be placed in a location and manner that prevents discharge of the material and/or return water into waters or wetlands unless otherwise authorized by the Tulsa District Engineer.

30. Major Rivers: The prospective permittee shall notify the Tulsa District Engineer for all Nationwide Permit 14 verifications which cross major rivers within Tulsa District. For the purposes of this condition, major rivers include the following: Canadian River, Prairie Dog Town Fork of the Red River, and Red River.

Bryan W. Shaw, Ph.D., P.E., *Chairman* Toby Baker, *Commissioner* Jon Niermann, *Commissioner* Richard A. Hyde, P.E., *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

March 6, 2017

Colonel Lars N. Zetterstrom, P.E. Galveston District U.S. Army Corps of Engineers P.O. Box 1229 Galveston, Texas 77553-1229

Re: 2017 USACE Nationwide Permits Reissuance

Dear Colonel Zetterstrom :

This letter is in response to your January 25, 2017, letter requesting Clean Water Act Section 401 certification of the United States Army Corps of Engineers (Corps) Nationwide Permits (NWPs). The Final Notice of Reissuance of Nationwide Permits was published in the <u>Federal Register</u> (Vol. 82, No. 4, pages 1860-2008) on January 6, 2017. Regional conditions for NWPs in Texas were proposed in public notices on June 7, 2016 and January 12, 2017.

The Texas Commission on Environmental Quality (TCEQ) has reviewed the Final Notice of Reissuance of Nationwide Permits and the proposed regional conditions. On behalf of the Executive Director and based on our evaluation of the information contained in these documents, the TCEQ certifies that the activities authorized by NWPs 1, 2, 4, 5, 8, 9, 10, 11, 20, 23, 24, 28, 34, 35, and 48 should not result in a violation of established Texas Surface Water Quality Standards as required by Section 401 of the Federal Clean Water Act and pursuant to Title 30, Texas Administrative Code, Chapter 279.

The TCEQ conditionally certifies that the activities authorized by NWPs 3, 6, 7, 12, 13, 14, 15, 17, 18, 19, 21, 22, 25, 27, 29, 30, 31, 32, 33, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 49, 50, 51, 52, 53, and 54 should not result in a violation of established Texas Surface Water Quality Standards as required by Section 401 of the Federal Clean Water Act and pursuant to Title 30, Texas Administrative Code, Chapter 279. Conditions for each NWP are defined in Enclosure 1 and more detail on specific conditions are discussed below.

The TCEQ understands that a prohibition against the use of NWPs in coastal dune swales, mangrove marshes, and Columbia Bottomlands in the Galveston District will be included in the 2017 Texas Regional Conditions (Regional Conditions) for all NWPs, except for NWP 3. Inclusion of a prohibition of using NWPs in coastal dune swales, mangrove marshes, and Columbia bottomlands in the Galveston District, except for NWP 3, is a condition of this TCEQ 401 certification.

P.O. Box 13087 • Austin, Texas 78711-3087 • 512-239-1000 • tceq.texas.gov

MAR 08 2017

Colonel Lars N. Zetterstrom, P.E. U.S. Army Corps of Engineers USACE Nationwide Permits Page 2 March 6, 2017

The TCEQ wants to clarify the application of NWP 16 in Texas. NWP 16 should be limited to the return water from upland contained dredged material disposal areas. It is important to emphasize the intent for dredged material disposal. The TCEQ understands dredged material to be associated with navigational dredging activities, not commercial mining activities. To avoid confusion the TCEQ requests that a regional condition be added that prohibits the use of NWP 16 for activities that would be regulated under Standard Industrial Classification (SIC) codes 1442 and 1446 (industrial and construction sand and gravel mining). This condition is also included as part of the 401 certification of NWP 16.

The final decision document for NWP 16 states that the quality of the return water is controlled by the state through the 401 certification procedures. Consistent with previous NWPs certification decisions the TCEQ is conditionally certifying NWP 16 for the return water from confined upland disposal not to exceed a 300 mg/L total suspended solids (TSS) concentration and request the Corps to include this condition in the Regional Conditions. Initial feedback from the Corps indicates that a regional condition is possible. The TCEQ recognizes the usefulness of having an instantaneous method to determine compliance with the 300 mg/L TSS limit. However, existing literature and analysis of paired samples of turbidity and TSS from the Texas Surface Water Quality Information System indicate this relationship must be a site-specific characterization of the actual sediments to be dredged. To address this approach we have continued language in the NWP 16 conditional certification that allows flexibility to use an instantaneous method in implementing the TSS limit when a site-specific correlation curve for turbidity (nephelometric turbidity units (NTU)) versus TSS has been approved by TCEQ. The TCEQ remains interested in working with the Corps in the development of these curves. We encourage the Corps to accept the conditional certification of NWP 16 as a Regional Condition and that we work together to find the best methods to implement this limit.

In evaluating this condition for the Regional Conditions for NWPs, the TCEQ encourages the Corps to consider that TSS limits are promulgated as effluent limits under Title 40 of the Code of Federal Regulations. The TCEQ requirement to control return water from confined upland disposal not to exceed a 300 mg/L TSS has also been included in individual 404 permits. It is also important to note that the TCEQ effectively imposes TSS effluent limits in thousands of wastewater discharge permits issued in Texas under Section 402 of the federal Clean Water Act.

The TCEQ is conditionally certifying NWP General Condition #12 *Soil Erosion and Sediment Controls*, and General Condition #25 *Water Quality*. The conditions address three broad categories of water quality management with specific recommendations for Best Management Practices (BMPs) for each category. These BMPs are intended to enhance the water quality protection of these General Conditions. A list of TCEQ-recommended BMPs is included as Enclosure 2.

Colonel Lars N. Zetterstrom, P.E. U.S. Army Corps of Engineers USACE Nationwide Permits Page 3 March 6, 2017

Enclosure 3 is provided as a quick reference table for all NWPs. A detailed description of the BMPs is provided in Enclosure 4. Runoff from bridge decks has been exempted from the requirement for post-construction total suspended solids (TSS) controls under General Condition 25. As stated in previous NWP certifications, the TCEQ would like to include these BMPs for the protection of waters in the state specific to each NWP as part of the regional conditions for Texas.

The TCEQ is conditionally certifying NWPs 13, 29, 39, 40, 42, 43, 44, 50, 51, and 52 to require the Corps to copy TCEQ on all written approvals of waivers for impacts to ephemeral, intermittent or perennial streams. The TCEQ is conditionally certifying NWP 36 to require the Corps to copy TCEQ on all written waivers for discharges greater than the 50 cubic yard limit or boat ramps greater than 20 feet in width. The TCEQ is also conditionally certifying General Condition 23 *Mitigation* to require the Corps to copy TCEQ on any written notification of a mitigation waiver. The TCEQ is requesting this information to fulfill its responsibility to ensure water of the state is appropriately protected by understanding the impact of waivers being granted in Texas.

This certification decision is limited to those activities under the jurisdiction of the TCEQ. For activities related to the production and exploration of oil and gas, a Texas Railroad Commission certification is required as provided in the Texas Water Code §26.131.

The TCEQ has reviewed the Notice of Reissuance of Nationwide Permits for consistency with the Texas Coastal Management Program (CMP) goals and policies in accordance with the CMP regulations {Title 31, Texas Administrative Code (TAC), Chapter (§)505.30} and has determined that the action is consistent with the applicable CMP goals and policies.

This certification was reviewed for consistency with the CMP's development in critical areas policy {31 TAC §501.23} and dredging and dredged material disposal and placement policy {31 TAC §501.25}. This certification complies with the CMP goals {31 TAC §501.12(1, 2, 3, 5)} applicable to these policies.

The TCEQ reserves the right to modify this certification if additional information identifies specific areas where significant impacts, including cumulative or secondary impacts, are occurring, and the use of these NWPs would be inappropriate.

No review of property rights, location of property lines, nor the distinction between public and private ownership has been made, and this certification may not be used in any way with regard to questions of ownership. Colonel Lars N. Zetterstrom, P.E. U.S. Army Corps of Engineers USACE Nationwide Permits Page 4 March 6, 2017

If you require further assistance, please contact Mr. John Trevino, Water Quality Assessment Section, Water Quality Division (MC-150), at (512) 239-4600.

Sincerely. Saly MiMilli pr

Ďavid W. Galindo, Director Water Quality Division Texas Commission on Environmental Quality

DWG/JT/tc

Attachments

CCS: Mr. Stephen Brooks, Branch Chief, U.S. Army Corp of Engineers, Regulatory Branch, CESWF-PER-R, P.O. Box 17300, Fort Worth, Texas 76102-0300 Ms. Allison Buchtien, Texas General Land Office via e-mail Branch Chief, U.S. Army Corps of Engineers, Albuquerque District, 4101 Jefferson Plaza NE, Room 313, Albuquerque, New Mexico 87109-3435 Regulatory Branch Chief, U.S. Army Corps of Engineers, Regulatory Branch CESWT-PE-R, 1645 South 101st East Avenue, Tulsa, Oklahoma, 74128 Regulatory Branch Chief, U.S. Army Corps of Engineers, El Paso Regulatory Office, CESPA-OD-R-EP, P.O. Box 6096, Fort Bliss, Texas 79906-6096 Attachment 1

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<u>Attachment 1</u> Conditions of Section 401 Certification for Nationwide Permits and General Conditions

General Condition 12 (Soil Erosion and Sediment Controls)

Erosion control and sediment control BMPs described in Attachment 2 are required with the use of this general condition. If the applicant does not choose one of the BMPs listed in Attachment 2, an individual 401 certification is required.

General Condition 25 (Water Quality)

Post-construction total suspended solids (TSS) BMPs described in Attachment 2 are required with the use of this general condition. If the applicant does not choose one of the BMP's listed in Attachment 2, an individual 401 certification is required. Bridge deck runoff is exempt from this requirement.

General Condition 23 (Mitigation)

The U.S. Army Corps of Engineers will copy the TCEQ on all mitigation waivers sent to applicants.

<u>NWPs 13, 29, 39, 40, 41, 42, 43, 44, 50, 51, 52</u>

The U.S. Army Corps of Engineers will copy the TCEQ on all written approvals of waivers for impacts to ephemeral, intermittent or perennial streams.

All NWPs except for NWP 3

These NWPs are not authorized for use in coastal dune swales, mangrove marshes, and Columbia bottomlands in the Galveston District, Texas.

NWP 3 (Maintenance)

Soil Erosion and Sediment Controls under General Condition 12 are required.

<u>NWP 6 (Survey Activities)</u>

Soil Erosion and Sediment Controls under General Condition 12 are required.

<u>NWP 7 (Outfall Structures and Associated Intake Structures)</u>

Soil Erosion and Sediment Controls under General Condition 12 are required.

NWP 12 (Utility Line Activities)

Soil Erosion and Sediment Controls under General Condition 12 are required. Postconstruction TSS controls under General Condition 25 are required.



Attachment 1

Conditions of Section 401 Certification for Nationwide Permits and General Conditions

NWP 13 (Bank Stabilization)

Soil Erosion and Sediment Controls under General Condition 12 are required.

NWP 14 (Linear Transportation Projects)

Soil Erosion and Sediment Controls under General Condition 12 are required. Postconstruction TSS controls under General Condition 25 are required.

NWP 15 (U.S. Coast Guard Approved Bridges)

Soil Erosion and Sediment Controls under General Condition 12 are required.

<u>NWP 16 (Return Water From Upland Contained Disposal Areas)</u>

Activities that would be regulated under Standard Industrial Classification (SIC) codes 1442 and 1446 (industrial and construction sand and gravel mining) are not eligible for this NWP. Effluent from an upland contained disposal area shall not exceed a TSS concentration of 300 mg/L unless a site-specific TSS limit, or a site specific correlation curve for turbidity (nephelometric turbidity units (NTU)) versus TSS has been approved by TCEQ.

NWP 17 (Hydropower Projects)

Soil Erosion and Sediment Controls under General Condition 12 are required. Postconstruction TSS controls under General Condition 25 are required.

NWP 18 (Minor Discharges)

Soil Erosion and Sediment Controls under General Condition 12 are required. Postconstruction TSS controls under General Condition 25 are required.

NWP 19 (Minor Dredging)

Soil Erosion and Sediment Controls under General Condition 12 are required.

NWP 21 (Surface Coal Mining Activities)

Soil Erosion and Sediment Controls under General Condition 12 are required. Postconstruction TSS controls under General Condition 25 are required.

NWP 22 (Removal of Vessels)

Soil Erosion and Sediment Controls under General Condition 12 are required.

NWP 25 (Structural Discharges)

Revised March 3, 2017


Attachment 1

Conditions of Section 401 Certification for Nationwide Permits and General Conditions

Soil Erosion and Sediment Controls under General Condition 12 are required.

NWP 27 (Aquatic Habitat Restoration, Establishment, and Enhancement Activities)

Soil Erosion and Sediment Controls under General Condition 12 are required.

NWP 29 (Residential Developments)

Soil Erosion and Sediment Controls under General Condition 12 are required. Postconstruction TSS controls under General Condition 25 are required.

NWP 30 (Moist Soil Management for Wildlife)

Soil Erosion and Sediment Controls under General Condition 12 are required.

NWP 31 (Maintenance of Existing Flood Control Facilities)

Soil Erosion and Sediment Controls under General Condition 12 are required. Postconstruction TSS controls under General Condition 25 are required.

NWP 32 (Completed Enforcement Actions)

Soil Erosion and Sediment Controls under General Condition 12 are required.

NWP 33 (Temporary Construction, Access and Dewatering)

Soil Erosion and Sediment Controls under General Condition 12 are required.

NWP 36 (Boat Ramps)

The U.S. Army Corps of Engineers will copy the TCEQ on all written waivers for discharges greater than the 50 cubic yard limit or boat ramps greater than 20 feet in width. Soil Erosion and Sediment Controls under General Condition 12 are required. Post-construction TSS controls under General Condition 25 are required.

NWP 37 (Emergency Watershed Protection and Rehabilitation)

Soil Erosion and Sediment Controls under General Condition 12 are required.

NWP 38 (Cleanup of Hazardous and Toxic Waste)

Soil Erosion and Sediment Controls under General Condition 12 are required.

NWP 39 (Commercial and Institutional Developments)



<u>Attachment 1</u> Conditions of Section 401 Certification for Nationwide Permits and General Conditions

Soil Erosion and Sediment Controls under General Condition 12 are required. Postconstruction TSS controls under General Condition 25 are required.

NWP 40 (Agricultural Activities)

Soil Erosion and Sediment Controls under General Condition 12 are required. Postconstruction TSS controls under General Condition 25 are required.

NWP 41 (Reshaping Existing Drainage Ditches)

Soil Erosion and Sediment Controls under General Condition 12 are required. Postconstruction TSS controls under General Condition 25 are required.

NWP 42 (Recreational Facilities)

Soil Erosion and Sediment Controls under General Condition 12 are required. Postconstruction TSS controls under General Condition 25 are required.

NWP 43 (Stormwater Management Facilities)

Soil Erosion and Sediment Controls under General Condition 12 are required.

<u>NWP 44 (Mining Activities)</u>

Soil Erosion and Sediment Controls under General Condition 12 are required. Postconstruction TSS controls under General Condition 25 are required.

NWP 45 (Repair of Uplands Damaged by Discrete Events)

Soil Erosion and Sediment Controls under General Condition 12 are required. Postconstruction TSS controls under General Condition 25 are required.

NWP 46 (Discharges in Ditches)

Soil Erosion and Sediment Controls under General Condition 12 are required.

NWP 49 (Coal Remining Activities)

Soil Erosion and Sediment Controls under General Condition 12 are required. Postconstruction TSS controls under General Condition 25 are required.

NWP 50 (Underground Coal Mining Activities)

Soil Erosion and Sediment Controls under General Condition 12 are required. Postconstruction TSS controls under General Condition 25 are required.



<u>Attachment 1</u> Conditions of Section 401 Certification for Nationwide Permits and General Conditions

NWP 51 (Land-Based Renewal Energy Generation Facilities)

Soil Erosion and Sediment Controls under General Condition 12 are required. Postconstruction TSS controls under General Condition 25 are required.

NWP 52 (Water-Based Renewal Energy Generation Pilot Projects)

Soil Erosion and Sediment Controls under General Condition 12 are required. Postconstruction TSS controls under General Condition 25 are required.

NWP 53 (Removal of Low-Head Dams)

Soil Erosion and Sediment Controls under General Condition 12 are required.

NWP 54 (Living Shorelines)

Sediment Controls under General Condition 12 are required.

Attachment 2

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Attachment 2 401 Water Quality Certification Best Management Practices (BMPs) for Nationwide Permits

Below are the 401 water quality certification conditions the Texas Commission on Environmental Quality (TCEQ) added to the January 6, 2017 issuance of Nationwide Permits (NWP), as described in the Federal Register (Vol. 82, No. 4, pages 1860-2008).

Additional information regarding these conditions, including descriptions of the best management practices (BMPs), can be obtained from the TCEQ by contacting the 401 Coordinator, MC-150, P.O. Box 13087, Austin, Texas 78711-3087 or from the appropriate U.S. Army Corps of Engineers district office.

I. Erosion Control

Disturbed areas must be stabilized to prevent the introduction of sediment to adjacent wetlands or water bodies during wet weather conditions (erosion). *At least one* of the following BMPs must be maintained and remain in place until the area has been stabilized for NWPs 3, 6, 7, 12, 13, 14, 15, 17, 18, 19, 21, 22, 25, 27, 29, 30, 31, 32, 33, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 49, 50, 51, 52, and 53. If the applicant does not choose one of the BMPs listed, an individual 401 certification is required. BMPs for NWP 52 apply only to land-based impacts from attendant features.

o Blankets/Matting
o Sod
o Diversion Dike
o Mulch Filter Socks

o Compost Filter Socks

II. Sedimentation Control

Prior to project initiation, the project area must be isolated from adjacent wetlands and water bodies by the use of BMPs to confine sediment. Dredged material shall be placed in such a manner that prevents sediment runoff into water in the state, including wetlands. Water bodies can be isolated by the use of one or more of the required BMPs identified for sedimentation control. These BMP's must be maintained and remain in place until the dredged material is stabilized. *At least one* of the following BMPs must be maintained and remain in place until the area has been stabilized for NWPs 3, 6, 7, 12, 13, 14, 15, 17, 18, 19, 21, 22, 25, 27, 29, 30, 31, 32, 33, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 49, 50, 51, 52, 53, and 54. If the applicant does not choose one of the BMPs listed, an individual 401 certification is required. BMPs for NWP 52 apply only to land-based impacts from attendant features.

o Sand Bag Berm

o Rock Berm



Attachment 2 401 Water Quality Certification Best Management Practices (BMPs) for Nationwide Permits

o Silt Fence	o Hay Bale Dike
o Triangular Filter Dike	o Brush Berms
o Stone Outlet Sediment Traps	o Sediment Basins
o Erosion Control Compost	o Mulch Filter Socks

o Compost Filter Socks

III. Post-Construction TSS Control

After construction has been completed and the site is stabilized, total suspended solids (TSS) loadings shall be controlled by *at least one* of the following BMPs for NWPs 12, 14, 17, 18, 21, 29, 31, 36, 39, 40, 41, 42, 44, 45, 49, 50, 51, and 52. If the applicant does not choose one of the BMPs listed, an individual 401 certification is required. BMPs for NWP 52 apply only to land-based impacts from attendant features. Runoff from bridge decks has been exempted from the requirement for post construction TSS controls.

o Retention/Irrigation Systems	o Constructed Wetlands
o Extended Detention Basin	o Wet Basins
o Vegetative Filter Strips	o Vegetation lined drainage ditches
o Grassy Swales	o Sand Filter Systems
o Erosion Control Compost	o Mulch Filter Socks
o Compost Filter Socks	o Sedimentation Chambers*

* Only to be used when there is no space available for other approved BMPs.

IV. NWP 16: Return Water from Upland Contained Disposal Areas

Effluent from an upland contained disposal area shall not exceed a TSS concentration of 300 mg/L unless a site-specific TSS limit, or a site specific correlation curve for turbidity (nephelometric turbidity units (NTU)) versus TSS has been approved by TCEQ.

V. NWP 29, 39, 40, 42, 43, 44, 50, 51, and 52

The Corps will copy the TCEQ on all authorizations for impacts of greater than 300



Attachment 2 401 Water Quality Certification Best Management Practices (BMPs) for Nationwide Permits

linear feet of intermittent and ephemeral streams.

<u>VI. NWP 13</u>

The Corps will copy the TCEQ on all authorizations for impacts greater than 500 linear feet in length of ephemeral, intermittent, perennial streams or drainage ditches.

<u>VII. NWP 36</u>

The Corps will copy the TCEQ on all authorizations for discharges greater than the 50 cubic yard limit or boat ramps greater than 20 feet in width.

VIII. All NWPs except NWP 3

These NWPs are not authorized for use in coastal dune swales, mangrove marshes, and Columbia bottomlands in the Galveston District, Texas.

Attachment 3

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<u>Attachment 3</u> Reference to Nationwide Permits Best Management Practices Requirements

NWP	Permit Description	Erosion Control	Sediment Control	Post Construction TSS
1	Aid to Navigation			
2	Structures in Artificial Canals			
3	Maintenance	X	X	
4	Fish and Wildlife Harvesting, Enhancement and Attraction Devices and Activities			
5	Scientific Measurement Devices			
6	Survey Activities *Trenching	X	X	
7	Outfall Structures and Associated Intake Structures	X	X	
8	Oil and Gas Structures on the Outer Continental Shelf			
9	Structures in Fleeting and Anchorage Areas			,
10	Mooring Buoys			
11	Temporary Recreational Structures			
12	Utility Line Activities	X	Х	X
13	Bank Stabilization	X	X	
14	Linear Transportation Projects	Х	X	X
15	U.S. Coast Guard Approved Bridges	Х	X	
16	Return Water From Upland Contained Disposal Areas			
17	Hydropower Projects	Х	Х	X
18	Minor Discharges	X	Х	X
19	Minor Dredging	X	Х	

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<u>Attachment 3</u> Reference to Nationwide Permits Best Management Practices Requirements

NWP	Permit Description	Erosion Control	Sediment Control	Post Construction TSS
20	Response Operations for Oil and Hazardous Substances			
21	Surface Coal Mining Activities	X	X	X .
22	Removal of Vessels	X	X	
23	Approved Categorical Exclusions			
24	Indian Tribe or State Administered Section 404 Programs			
25	Structural Discharges	X	X .	
26	[Reserved]			
27	Aquatic Habitat Restoration, Establishment, and Enhancement Activities	X	X	
28	Modifications of Existing Marinas		1	
29	Residential Developments	X	Х	X
30	Moist Soil Management for Wildlife	X	X	
31	Maintenance of Existing Flood Control Facilities	X	X	X
32	Completed Enforcement Actions	X	Х	
33	Temporary Construction, Access and Dewatering	X	Х	
34	Cranberry Production Activities			
35	Maintenance Dredging of Existing Basins			
36	Boat Ramps	X	X	X
37	Emergency Watershed Protection and Rehabilitation	X	X	
38 [.]	Cleanup of Hazardous and Toxic Waste	X	x	



<u>Attachment 3</u> Reference to Nationwide Permits Best Management Practices Requirements

NWP	Permit Description	Erosion Control	Sediment Control	Post Construction TSS
39	Commercial and Institutional Developments	X	X	X
40	Agricultural Activities	X	X	X
41	Reshaping Existing Drainage Ditches	X	X .	X
42	Recreational Facilities	X	X	X
43	Stormwater Management Facilities	X	X	
44	Mining Activities	X	X	X
45.	Repair of Uplands Damaged by Discrete Events	X	X	X
46.	Discharges in Ditches	X	X	
47.	[Reserved]			
48.	Existing Commercial Shellfish Aquaculture Activities			
49.	Coal Remining Activities	X	Х	Х
50.	Underground Coal Mining Activities	X	Х	Х
51.	Land-Based Renewable Energy Generation Facilities	x	X	x
52.	Water-Based Renewable Energy Generation Pilot Projects	X	X	X
53.	Removal of Low-Head Dams	Х	X	
54.	Living Shorelines		Х	

Attachment 4

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<u>Attachment 4</u> Description of BMPs

EROSION CONTROL BMPs

Temporary Vegetation

Description: Vegetation can be used as a temporary or permanent stabilization technique for areas disturbed by construction. Vegetation effectively reduces erosion in swales, stockpiles, berms, mild to medium slopes, and along roadways. Other techniques such as matting, mulches, and grading may be required to assist in the establishment of vegetation.

Materials:

- The type of temporary vegetation used on a site is a function of the season and the availability of water for irrigation.
- Temporary vegetation should be selected appropriately for the area.
- County agricultural extension agents are a good source for suggestions for temporary vegetation.
- All seed should be high quality, U.S. Dept. of Agriculture certified seed.

Installation:

- Grading must be completed prior to seeding.
- Slopes should be minimized.
- Erosion control structures should be installed.
- Seedbeds should be well pulverized, loose, and uniform.
- Fertilizers should be applied at appropriate rates.
- Seeding rates should be applied as recommended by the county agricultural extension agent.
- The seed should be applied uniformly.
- Steep slopes should be covered with appropriate soil stabilization matting.

Blankets and Matting

Description: Blankets and matting material can be used as an aid to control erosion



on critical sites during the establishment period of protective vegetation. The most common uses are in channels, interceptor swales, diversion dikes, short, steep slopes, and on tidal or stream banks.

Materials:

New types of blankets and matting materials are continuously being developed. The Texas Department of Transportation (TxDOT) has defined the critical performance factors for these types of products and has established minimum performance standards which must be met for any product seeking to be approved for use within any of TxDOT's construction or maintenance activities. The products that have been approved by TxDOT are also appropriate for general construction site stabilization. TxDOT maintains a web site at

http://www.txdot.gov/business/doing_business/product_evaluation/erosion_control.h tm which is updated as new products are evaluated.

Installation:

- Install in accordance with the manufacturer's recommendations.
- Proper anchoring of the material.
- Prepare a friable seed bed relatively free from clods and rocks and any foreign material.
- Fertilize and seed in accordance with seeding or other type of planting plan.
- Erosion stops should extend beyond the channel liner to full design cross-section of the channel.
- A uniform trench perpendicular to line of flow may be dug with a spade or a mechanical trencher.
- Erosion stops should be deep enough to penetrate solid material or below level of ruling in sandy soils.
- Erosion stop mats should be wide enough to allow turnover at bottom of trench for stapling, while maintaining the top edge flush with channel surface.

<u>Mulch</u>

Description: Mulching is the process of applying a material to the exposed soil surface to protect it from erosive forces and to conserve soil moisture until plants can become established. When seeding critical sites, sites with adverse soil conditions or seeding on other than optimum seeding dates, mulch material should be applied immediately



after seeding. Seeding during optimum seeding dates and with favorable soils and site conditions will not need to be mulched.

Materials:

- Mulch may be small grain straw which should be applied uniformly.
- On slopes 15 percent or greater, a binding chemical must be applied to the surface.
- Wood-fiber or paper-fiber mulch may be applied by hydroseeding.
- Mulch nettings may be used.
- Wood chips may be used where appropriate.

Installation:

Mulch anchoring should be accomplished immediately after mulch placement. This may be done by one of the following methods: peg and twine, mulch netting, mulch anchoring tool, or liquid mulch binders.

<u>Sod</u>

Description: Sod is appropriate for disturbed areas which require immediate vegetative covers, or where sodding is preferred to other means of grass establishment. Locations particularly suited to stabilization with sod are waterways carrying intermittent flow, areas around drop inlets or in grassed swales, and residential or commercial lawns where quick use or aesthetics are factors. Sod is composed of living plants and those plants must receive adequate care in order to provide vegetative stabilization on a disturbed area.

Materials:

- Sod should be machine cut at a uniform soil thickness.
- Pieces of sod should be cut to the supplier's standard width and length.
- Torn or uneven pads are not acceptable.
- Sections of sod should be strong enough to support their own weight and retain their size and shape when suspended from a firm grasp.
- Sod should be harvested, delivered, and installed within a period of 36 hours.



<u>Attachment 4</u> Description of BMPs

Installation:

- Areas to be sodded should be brought to final grade.
- The surface should be cleared of all trash and debris.
- Fertilize according to soil tests.
- Fertilizer should be worked into the soil.
- Sod should not be cut or laid in excessively wet or dry weather.
- Sod should not be laid on soil surfaces that are frozen.
- During periods of high temperature, the soil should be lightly irrigated.
- The first row of sod should be laid in a straight line with subsequent rows placed parallel to and butting tightly against each other.
- Lateral joints should be staggered to promote more uniform growth and strength.
- Wherever erosion may be a problem, sod should be laid with staggered joints and secured.
- Sod should be installed with the length perpendicular to the slope (on the contour).
- Sod should be rolled or tamped.
- Sod should be irrigated to a sufficient depth.
- Watering should be performed as often as necessary to maintain soil moisture.
- The first mowing should not be attempted until the sod is firmly rooted.
- Not more than one third of the grass leaf should be removed at any one cutting.

Interceptor Swale

Interceptor swales are used to shorten the length of exposed slope by intercepting runoff, prevent off-site runoff from entering the disturbed area, and prevent sedimentladen runoff from leaving a disturbed site. They may have a v-shape or be trapezoidal with a flat bottom and side slopes of 3:1 or flatter. The outflow from a swale should be directed to a stabilized outlet or sediment trapping device. The swales should remain in place until the disturbed area is permanently stabilized.



Materials:

- Stabilization should consist of a layer of crushed stone three inches thick, riprap or high velocity erosion control mats.
- Stone stabilization should be used when grades exceed 2% or velocities exceed 6 feet per second.
- Stabilization should extend across the bottom of the swale and up both sides of the channel to a minimum height of three inches above the design water surface elevation based on a 2-year, 24-hour storm.

Installation:

- An interceptor swale should be installed across exposed slopes during construction and should intercept no more than 5 acres of runoff.
- All earth removed and not needed in construction should be disposed of in an approved spoils site so that it will not interfere with the functioning of the swale or contribute to siltation in other areas of the site.
- All trees, brush, stumps, obstructions and other material should be removed and disposed of so as not to interfere with the proper functioning of the swale.
- Swales should have a maximum depth of 1.5 feet with side slopes of 3:1 or flatter.
 Swales should have positive drainage for the entire length to an outlet.
- When the slope exceeds 2 percent, or velocities exceed 6 feet per second (regardless of slope), stabilization is required. Stabilization should be crushed stone placed in a layer of at least 3 inches thick or may be high velocity erosion control matting. Check dams are also recommended to reduce velocities in the swales possibly reducing the amount of stabilization necessary.
- Minimum compaction for the swale should be 90% standard proctor density.

Diversion Dikes

A temporary diversion dike is a barrier created by the placement of an earthen embankment to reroute the flow of runoff to an erosion control device or away from an open, easily erodible area. A diversion dike intercepts runoff from small upland areas and diverts it away from exposed slopes to a stabilized outlet, such as a rock berm, sandbag berm, or stone outlet structure. These controls can be used on the perimeter of the site to prevent runoff from entering the construction area. Dikes are generally used for the duration of construction to intercept and reroute runoff from disturbed areas to prevent excessive erosion until permanent drainage features are installed and/or slopes are stabilized.



Materials:

- Stone stabilization (required for velocities in excess of 6 fps) should consist of riprap placed in a layer at least 3 inches thick and should extend a minimum height of 3 inches above the design water surface up the existing slope and the upstream face of the dike.
- Geotextile fabric should be a non-woven polypropylene fabric designed specifically for use as a soil filtration media with an approximate weight of 6 oz./yd², a Mullen burst rating of 140 psi, and having an equivalent opening size (EOS) greater than a #50 sieve.

Installation:

- Diversion dikes should be installed prior to and maintained for the duration of construction and should intercept no more than 10 acres of runoff.
- Dikes should have a minimum top width of 2 feet and a minimum height of compacted fill of 18 inches measured form the top of the existing ground at the upslope toe to top of the dike and have side slopes of 3:1 or flatter.
- The soil for the dike should be placed in lifts of 8 inches or less and be compacted to 95 % standard proctor density.
- The channel, which is formed by the dike, must have positive drainage for its entire l length to an outlet.
- When the slope exceeds 2 percent, or velocities exceed 6 feet per second (regardless of slope), stabilization is required. In situations where velocities do not exceed 6 feet per second, vegetation may be used to control erosion.

Erosion Control Compost

Description: Erosion control compost (ECC) can be used as an aid to control erosion on critical sites during the establishment period of protective vegetation. The most common uses are on steep slopes, swales, diversion dikes, and on tidal or stream banks.

Materials:

New types of erosion control compost are continuously being developed. The Texas Department of Transportation (TxDOT) has established minimum performance standards which must be met for any products seeking to be approved for use within any of TxDOT's construction or maintenance activities. Material used within any TxDOT construction or maintenance activities must meet material specifications in accordance with current TxDOT specifications. TxDOT maintains a website at



http://www.txdot.gov/business/contractors_consultants/recycling/compost.htm that provides information on compost specification data.

ECC used for projects not related to TxDOT should also be of quality materials by meeting performance standards and compost specification data. To ensure the quality of compost used as an ECC, products should meet all applicable state and federal regulations, including but not limited to the United States Environmental Protection Agency (USEPA) Code of Federal Regulations (CFR), Title 40, Part 503 Standards for Class A biosolids and Texas Natural Resource Conservation Commission (now named TCEQ) Health and Safety Regulations as defined in the Texas Administration Code (TAC), Chapter 332, and all other relevant requirements for compost products outlined in TAC, Chapter 332. Testing requirements required by the TCEQ are defined in TAC Chapter 332, including Sections §332.71 Sampling and Analysis Requirements for Final Products and §332.72 Final Product Grades. Compost specification data approved by TxDOT are appropriate to use for ensuring the use of quality compost materials or for guidance.

Testing standards are dependent upon the intended use for the compost and ensures product safety, and product performance regarding the product's specific use. The appropriate compost sampling and testing protocols included in the United States Composting Council (USCC) Test Methods for the Examination of Composting and Compost (TMECC) should be conducted on compost products used for ECC to ensure that the products used will not impact public health, safety, and the environment and to promote production and marketing of quality composts that meet analytical standards. TMECC is a laboratory manual that provides protocols for the composting industry and test methods for compost analysis. TMECC provides protocols to sample, monitor, and analyze materials during all stages of the composting process. Numerous parameters that might be of concern in compost can be tested by following protocols or test methods listed in TMECC. TMECC information can be found at http://www.tmecc.org/tmecc/index.html. The USCC Seal of Testing Assurance (STA) program contains information regarding compost STA certification. STA program information can be found at http://tmecc.org/sta/STA_program_description.html.

- Install in accordance with current TxDOT specification.
- Use on slopes 3:1 or flatter.
- Apply a 2 inch uniform layer unless otherwise shown on the plans or as directed.
- When rolling is specified, use a light corrugated drum roller.



Mulch and Compost Filter Socks

Description: Mulch and compost filter socks (erosion control logs) are used to intercept and detain sediment laden run-off from unprotected areas. When properly used, mulch and compost filter socks can be highly effective at controlling sediment from disturbed areas. They cause runoff to pond which allows heavier solids to settle. Mulch and compost filter socks are used during the period of construction near the perimeter of a disturbed area to intercept sediment while allowing water to percolate through. The sock should remain in place until the area is permanently stabilized. Mulch and compost filter socks may be installed in construction areas and temporarily moved during the day to allow construction activity provided it is replaced and properly anchored at the end of the day. Mulch and compost filter socks may be seeded to allow for quick vegetative growth and reduction in run-off velocity.

Materials:

New types of mulch and compost filter socks are continuously being developed. The Texas Department of Transportation (TxDOT) has established minimum performance standards which must be met for any products seeking to be approved for use within any of TxDOT's construction or maintenance activities. Mulch and compost filter socks used within any TxDOT construction or maintenance activities must meet material specifications in accordance with TxDOT specification 5049. TxDOT maintains a website at

http://www.txdot.gov/business/contractors_consultants/recycling/compost.htm that provides information on compost specification data.

Mulch and compost filter socks used for projects not related to TxDOT should also be of quality materials by meeting performance standards and compost specification data. To ensure the quality of compost used for mulch and compost filter socks, products should meet all applicable state and federal regulations, including but not limited to the United States Environmental Protection Agency (USEPA) Code of Federal Regulations (CFR), Title 40, Part 503 Standards for Class A biosolids and Texas Natural Resource Conservation Commission Health and Safety Regulations as defined in the Texas Administration Code (TAC), Chapter 332, and all other relevant requirements for compost products outlined in TAC, Chapter 332. Testing requirements required by the TCEQ are defined in TAC Chapter 332, including Sections §332.71 Sampling and Analysis Requirements for Final Products and §332.72 Final Product Grades. Compost specification data approved by TxDOT are appropriate to use for ensuring the use of quality compost materials or for guidance.

Testing standards are dependent upon the intended use for the compost and ensures product safety, and product performance regarding the product's specific use. The appropriate compost sampling and testing protocols included in the United States Composting Council (USCC) Test Methods for the Examination of Composting and



<u>Attachment 4</u> Description of BMPs

Compost (TMECC) should be conducted on compost products used for mulch and compost filter socks to ensure that the products used will not impact public health, safety, and the environment and to promote production and marketing of quality composts that meet analytical standards. TMECC is a laboratory manual that provides protocols for the composting industry and test methods for compost analysis. TMECC provides protocols to sample, monitor, and analyze materials during all stages of the composting process. Numerous parameters that might be of concern in compost can be tested by following protocols or test methods listed in TMECC. TMECC information can be found at http://www.tmecc.org/tmecc/index.html. The USCC Seal of Testing Assurance (STA) program contains information regarding compost STA certification. STA program information can be found at

http://tmecc.org/sta/STA_program_description.html.

Installation:

- Install in accordance with TxDOT Special Specification 5049.
- Install socks (erosion control logs) near the downstream perimeter of a disturbed area to intercept sediment from sheet flow.
- Secure socks in a method adequate to prevent displacement as a result of normal rain events such that flow is not allowed under the socks.
- Inspect and maintain the socks in good condition (including staking, anchoring, etc.). Maintain the integrity of the control, including keeping the socks free of accumulated silt, debris, etc., until the disturbed area has been adequately stabilized.

SEDIMENT CONTROL BMPS

Sand Bag Berm

Description: The purpose of a sandbag berm is to detain sediment carried in runoff from disturbed areas. This objective is accomplished by intercepting runoff and causing it to pool behind the sand bag berm. Sediment carried in the runoff is deposited on the upstream side of the sand bag berm due to the reduced flow velocity. Excess runoff volumes are allowed to flow over the top of the sand bag berm. Sand bag berms are used only during construction activities in streambeds when the contributing drainage area is between 5 and 10 acres and the slope is less than 15%, i.e., utility construction in channels, temporary channel crossing for construction equipment, etc. Plastic facing should be installed on the upstream side and the berm should be anchored to the streambed by drilling into the rock and driving in T-posts or rebar (#5 or #6) spaced appropriately.



Materials:

- The sand bag material should be polypropylene, polyethylene, polyamide or cotton burlap woven fabric, minimum unit weight 4 oz/yd 2, mullen burst strength exceeding 300 psi and ultraviolet stability exceeding 70 percent.
- The bag length should be 24 to 30 inches, width should be 16 to 18 inches and thickness should be 6 to 8 inches.
- Sandbags should be filled with coarse grade sand and free from deleterious material. All sand should pass through a No. 10 sieve. The filled bag should have an approximate weight of 40 pounds.
- Outlet pipe should be schedule 40 or stronger polyvinyl chloride (PVC) having a nominal internal diameter of 4 inches.

- The berm should be a minimum height of 18 inches, measured from the top of the existing ground at the upslope toe to the top of the berm.
- The berm should be sized as shown in the plans but should have a minimum width of 48 inches measured at the bottom of the berm and 16 inches measured at the top of the berm.
- Runoff water should flow over the tops of the sandbags or through 4-inch diameter PVC pipes embedded below the top layer of bags.
- When a sandbag is filled with material, the open end of the sandbag should be stapled or tied with nylon or poly cord.
- Sandbags should be stacked in at least three rows abutting each other, and in staggered arrangement.
- The base of the berm should have at least 3 sandbags. These can be reduced to 2 and 1 bag in the second and third rows respectively.
- For each additional 6 inches of height, an additional sandbag must be added to each row width.
- A bypass pump-around system, or similar alternative, should be used on conjunction with the berm for effective dewatering of the work area.



<u>Silt Fence</u>

Description: A silt fence is a barrier consisting of geotextile fabric supported by metal posts to prevent soil and sediment loss from a site. When properly used, silt fences can be highly effective at controlling sediment from disturbed areas. They cause runoff to pond which allows heavier solids to settle. If not properly installed, silt fences are not likely to be effective. The purpose of a silt fence is to intercept and detain water-borne sediment from unprotected areas of a limited extent. Silt fence is used during the period of construction near the perimeter of a disturbed area to intercept sediment while allowing water to percolate through. This fence should remain in place until the disturbed area is permanently stabilized. Silt fence should not be used where there is a concentration of water in a channel or drainage way. If concentrated flow occurs after installation, corrective action must be taken such as placing a rock berm in the areas of concentrated flow. Silt fencing within the site may be temporarily moved during the day to allow construction activity provided it is replaced and properly anchored to the ground at the end of the day. Silt fences on the perimeter of the site or around drainage ways should not be moved at any time.

Materials:

- Silt fence material should be polypropylene, polyethylene or polyamide woven or nonwoven fabric. The fabric width should be 36 inches, with a minimum unit weight of 4.5 oz/yd, mullen burst strength exceeding 190 lb/in 2, ultraviolet stability exceeding 70%, and minimum apparent opening size of U.S. Sieve No. 30.
- Fence posts should be made of hot rolled steel, at least 4 feet long with Tee or Y-bar cross section, surface painted or galvanized, minimum nominal weight 1.25 lb/ft 2, and Brindell hardness exceeding 140.
- Woven wire backing to support the fabric should be galvanized 2-inch x 4-inch welded wire, 12 gauge minimum.

- Steel posts, which support the silt fence, should be installed on a slight angle toward the anticipated runoff source. Post must be embedded a minimum of 1 foot deep and spaced not more than 8 feet on center. Where water concentrates, the maximum spacing should be 6 feet.
- Lay out fencing down-slope of disturbed area, following the contour as closely as possible. The fence should be sited so that the maximum drainage area is * acre/100 feet of fence.
- The toe of the silt fence should be trenched in with a spade or mechanical trencher,



so that the down-slope face of the trench is flat and perpendicular to the line of flow. Where fence cannot be trenched in (e.g., pavement or rock outcrop), weight fabric flap with 3 inches of pea gravel on uphill side to prevent flow from seeping under fence.

- The trench must be a minimum of 6 inches deep and 6 inches wide to allow for the silt fence fabric to be laid in the ground and backfilled with compacted material.
- Silt fence should be securely fastened to each steel support post or to woven wire, which is in turn attached to the steel fence post. There should be a 3-foot overlap, securely fastened where ends of fabric meet.

<u> Triangular Filter Dike</u>

Description: The purpose of a triangular sediment filter dike is to intercept and detain water-borne sediment from unprotected areas of limited extent. The triangular sediment filter dike is used where there is no concentration of water in a channel or other drainage way above the barrier and the contributing drainage area is less than one acre. If the uphill slope above the dike exceeds 10%, the length of the slope above the dike should be less than 50 feet. If concentrated flow occurs after installation, corrective action should be taken such as placing rock berm in the areas of concentrated flow. This measure is effective on paved areas where installation of silt fence is not possible or where vehicle access must be maintained. The advantage of these controls is the ease with which they can be moved to allow vehicle traffic and then reinstalled to maintain sediment

Materials:

- Silt fence material should be polypropylene, polyethylene or polyamide woven or nonwoven fabric. The fabric width should be 36 inches, with a minimum unit weight of 4.5 oz/yd, mullen burst strength exceeding 190 lb/in 2, ultraviolet stability exceeding 70%, and minimum apparent opening size of U.S. Sieve No. 30.
- The dike structure should be 6 gauge 6-ing x 6-inch wire mesh folded into triangular form being eighteen (18) inches on each side.

- The frame of the triangular sediment filter dike should be constructed of 6-inch x 6inch, 6 gauge welded wire mesh, 18 inches per side, and wrapped with geotextile fabric the same composition as that used for silt fences.
- Filter material should lap over ends six (6) inches to cover dike to dike junction; each junction should be secured by shoat rings.



- Position dike parallel to the contours, with the end of each section closely abutting the adjacent sections.
- There are several options for fastening the filter dike to the ground. The fabric skirt
 may be toed-in with 6 inches of compacted material, or 12 inches of the fabric skirt
 should extend uphill and be secured with a minimum of 3 inches of open graded
 rock, or with staples or nails. If these two options are not feasible the dike structure
 may be trenched in 4 inches.
- Triangular sediment filter dikes should be installed across exposed slopes during construction with ends of the dike tied into existing grades to prevent failure and should intercept no more than one acre of runoff.
- When moved to allow vehicular access, the dikes should be reinstalled as soon as possible, but always at the end of the workday.

<u>Rock Berm</u>

Description: The purpose of a rock berm is to serve as a check dam in areas of concentrated flow, to intercept sediment-laden runoff, detain the sediment and release the water in sheet flow. The rock berm should be used when the contributing drainage area is less than 5 acres. Rock berms are used in areas where the volume of runoff is too great for a silt fence to contain. They are less effective for sediment removal than silt fences, particularly for fine particles, but are able to withstand higher flows than a silt fence. As such, rock berms are often used in areas of channel flows (ditches, gullies, etc.). Rock berms are most effective at reducing bed load in channels and should not be substituted for other erosion and sediment control measures further up the watershed.

Materials:

- The berm structure should be secured with a woven wire sheathing having maximum opening of one inch and a minimum wire diameter of 20 gauge galvanized and should be secured with shoat rings.
- Clean, open graded 3- to 5-inch diameter rock should be used, except in areas where high velocities or large volumes of flow are expected, where 5- to 8-inch diameter rocks may be used.

- Lay out the woven wire sheathing perpendicular to the flow line. The sheathing should be 20 gauge woven wire mesh with 1 inch openings.
- Berm should have a top width of 2 feet minimum with side slopes being 2:1 (H:V) or flatter.



- Place the rock along the sheathing to a height not less than 18 inches.Wrap the wire sheathing around the rock and secure with tie wire so that the ends
- What the whet sheathing around the rock and secure with the wire so that the ends of the sheathing overlap at least 2 inches, and the berm retains its shape when walked upon.
- Berm should be built along the contour at zero percent grade or as near as possible.
- The ends of the berm should be tied into existing upslope grade and the berm should be buried in a trench approximately 3 to 4 inches deep to prevent failure of the control.

<u>Hay Bale Dike</u>

Description: The purpose of a hay or straw bale dike is to intercept and detain small amounts of sediment-laden runoff from relatively small unprotected areas. Straw bales are to be used when it is not feasible to install other, more effective measures or when the construction phase is expected to last less than 3 months. Straw bales should not be used on areas where rock or other hard surfaces prevent the full and uniform anchoring of the barrier.

Materials:

Straw: The best quality straw mulch comes from wheat, oats or barley and should be free of weed and grass seed which may not be desired vegetation for the area to be protected. Straw mulch is light and therefore must be properly anchored to the ground.

Hay: This is very similar to straw with the exception that it is made of grasses and weeds and not grain stems. This form of mulch is very inexpensive and is widely available but does introduce weed and grass seed to the area. Like straw, hay is light and must be anchored.

- Straw bales should weigh a minimum of 50 pounds and should be at least 30 inches long.
- Bales should be composed entirely of vegetable matter and be free of seeds.
- Binding should be either wire or nylon string, jute or cotton binding is unacceptable.
 Bales should be used for not more than two months before being replaced.



Description of BMPs

Installation:

- Bales should be embedded a minimum of 4 inches and securely anchored using 2inch x 2-inch wood stakes or 3/8-inch diameter rebar driven through the bales into the ground a minimum of 6 inches.
- Bales are to be placed directly adjacent to one another leaving no gap between them.
- All bales should be placed on the contour.
- The first stake in each bale should be angled toward the previously laid bale to force the bales together.

Brush Berms

Organic litter and spoil material from site clearing operations is usually burned or hauled away to be dumped elsewhere. Much of this material can be used effectively on the construction site itself. The key to constructing an efficient brush berm is in the method used to obtain and place the brush. It will not be acceptable to simply take a bulldozer and push whole trees into a pile. This method does not assure continuous ground contact with the berm and will allow uncontrolled flows under the berm.

Brush berms may be used where there is little or no concentration of water in a channel or other drainage way above the berm. The size of the drainage area should be no greater than one-fourth of an acre per 100 feet of barrier length; the maximum slope length behind the barrier should not exceed 100 feet; and the maximum slope gradient behind the barrier should be less than 50 percent (2:1).

Materials:

- The brush should consist of woody brush and branches, preferably less than 2 inches in diameter.
- The filter fabric should conform to the specifications for filter fence fabric.
- The rope should be 1/4 inch polypropylene or nylon rope.
- The anchors should be 3/8-inch diameter rebar stakes that are 18-inches long.

Installation:

• Lay out the brush berm following the contour as closely as possible.



- The juniper limbs should be cut and hand placed with the vegetated part of the limb in close contact with the ground. Each subsequent branch should overlap the previous branch providing a shingle effect.
- The brush berm should be constructed in lifts with each layer extending the entire length of the berm before the next layer is started.
- A trench should be excavated 6-inches wide and 4-inches deep along the length of the barrier and immediately uphill from the barrier.
- The filter fabric should be cut into lengths sufficient to lay across the barrier from its up-slope base to just beyond its peak. The lengths of filter fabric should be draped across the width of the barrier with the uphill edge placed in the trench and the edges of adjacent pieces overlapping each other. Where joints are necessary, the fabric should be spliced together with a minimum 6-inch overlap and securely sealed.
- The trench should be backfilled and the soil compacted over the filter fabric.
- Set stakes into the ground along the downhill edge of the brush barrier, and anchor the fabric by tying rope from the fabric to the stakes. Drive the rope anchors into the ground at approximately a 45-degree angle to the ground on 6-foot centers.
- Fasten the rope to the anchors and tighten berm securely to the ground with a minimum tension of 50 pounds.
- The height of the brush berm should be a minimum of 24 inches after the securing ropes have been tightened.

Stone Outlet Sediment Traps

A stone outlet sediment trap is an impoundment created by the placement of an earthen and stone embankment to prevent soil and sediment loss from a site. The purpose of a sediment trap is to intercept sediment-laden runoff and trap the sediment in order to protect drainage ways, properties and rights of way below the sediment trap from sedimentation. A sediment trap is usually installed at points of discharge from disturbed areas. The drainage area for a sediment trap is recommended to be less than 5 acres.

Larger areas should be treated using a sediment basin. A sediment trap differs from a sediment basin mainly in the type of discharge structure. The trap should be located to obtain the maximum storage benefit from the terrain, for ease of clean out and disposal of the trapped sediment and to minimize interference with construction activities. The volume of the trap should be at least 3600 cubic feet per acre of



Description of BMPs

drainage area.

Materials:

- All aggregate should be at least 3 inches in diameter and should not exceed a volume of 0.5 cubic foot.
- The geotextile fabric specification should be woven polypropylene, polyethylene or polyamide geotextile, minimum unit weight of 4.5 oz/yd 2, mullen burst strength at least 250 lb/in 2, ultraviolet stability exceeding 70%, and equivalent opening size exceeding 40.

Installation:

- Earth Embankment: Place fill material in layers not more than 8 inches in loose depth. Before compaction, moisten or aerate each layer as necessary to provide the optimum moisture content of the material. Compact each layer to 95 percent standard proctor density. Do not place material on surfaces that are muddy or frozen. Side slopes for the embankment are to be 3:1. The minimum width of the embankment should be 3 feet.
- A gap is to be left in the embankment in the location where the natural confluence of runoff crosses the embankment line. The gap is to have a width in feet equal to 6 times the drainage area in acres.
- Geotextile Covered Rock Core: A core of filter stone having a minimum height of 1.5 feet and a minimum width at the base of 3 feet should be placed across the opening of the earth embankment and should be covered_by geotextile fabric which should extend a minimum distance of 2 feet in either direction from the base of the filter stone core.
- Filter Stone Embankment: Filter stone should be placed over the geotextile and is to have a side slope which matches that of the earth embankment of 3:1 and should cover the geotextile/rock core a minimum of 6 inches when installation is complete. The crest of the outlet should be at least 1 foot below the top of the embankment.

Sediment Basins:

The purpose of a sediment basin is to intercept sediment-laden runoff and trap the sediment in order to protect drainage ways, properties and rights of way below the sediment basin from sedimentation. A sediment basin is usually installed at points of discharge from disturbed areas. The drainage area for a sediment basin is recommended to be less than 100 acres.



Sediment basins are effective for capturing and slowly releasing the runoff from larger disturbed areas thereby allowing sedimentation to take place. A sediment basin can be created where a permanent pond BMP is being constructed. Guidelines for construction of the permanent BMP should be followed, but revegetation, placement of underdrain piping, and installation of sand or other filter media should not be carried out until the site construction phase is complete.

Materials:

- Riser should be corrugated metal or reinforced concrete pipe or box and should have watertight fittings or end to end connections of sections.
- An outlet pipe of corrugated metal or reinforced concrete should be attached to the riser and should have positive flow to a stabilized outlet on the downstream side of the embankment.
- An anti-vortex device and rubbish screen should be attached to the top of the riser and should be made of polyvinyl chloride or corrugated metal.

Basin Design and Construction:

- For common drainage locations that serve an area with ten or more acres disturbed at one time, a sediment basin should provide storage for a volume of runoff from a two-year, 24-hour storm from each disturbed acre drained.
- The basin length to width ratio should be at least 2:1 to improve trapping efficiency. The shape may be attained by excavation or the use of baffles. The lengths should be measured at the elevation of the riser de-watering hole.
- Place fill material in layers not more than 8 inches in loose depth. Before compaction, moisten or aerate each layer as necessary to provide the optimum moisture content of the material. Compact each layer to 95 percent standard proctor density. Do not place material on surfaces that are muddy or frozen. Side slopes for the embankment should be 3:1 (H:V).
- An emergency spillway should be installed adjacent to the embankment on undisturbed soil and should be sized to carry the full amount of flow generated by a 10-year, 3-hour storm with 1 foot of freeboard less the amount which can be carried by the principal outlet control device.
- The emergency spillway should be lined with riprap as should the swale leading from the spillway to the normal watercourse at the base of the embankment.



- The principal outlet control device should consist of a rigid vertically oriented pipe or box of corrugated metal or reinforced concrete. Attached to this structure should be a horizontal pipe, which should extend through the embankment to the toe of fill to provide a de-watering outlet for the basin.
- An anti-vortex device should be attached to the inlet portion of the principal outlet control device to serve as a rubbish screen.
- A concrete base should be used to anchor the principal outlet control device and should be sized to provide a safety factor of 1.5 (downward forces = 1.5 buoyant forces).
- The basin should include a permanent stake to indicate the sediment level in the pool and marked to indicate when the sediment occupies 50% of the basin volume (not the top of the stake).
- The top of the riser pipe should remain open and be guarded with a trash rack and anti-vortex device. The top of the riser should be 12 inches below the elevation of the emergency spillway. The riser should be sized to convey the runoff from the 2-year, 3-hour storm when the water surface is at the emergency spillway elevation. For basins with no spillway the riser must be sized to convey the runoff from the 10-yr, 3-hour storm.
- Anti-seep collars should be included when soil conditions or length of service make piping through the backfill a possibility.
- The 48-hour drawdown time will be achieved by using a riser pipe perforated at the point measured from the bottom of the riser pipe equal to 1/2 the volume of the basin. This is the maximum sediment storage elevation. The size of the perforation may be calculated as follows:

$$Ao = \frac{As \times \sqrt{2h}}{Cd \times 980,000}$$

Where:

 A_{a} = Area of the de-watering hole, ft 2 A_{s} = Surface area of the basin, ft 2 C_{d} = Coefficient of contraction, approximately 0.6 h = head of water above the hole, ft Perforating the riser with multiple holes with a combined surface area equal to A_{a} is acceptable.



Description of BMPs

Erosion Control Compost

Description: Erosion control compost (ECC) can be used as an aid to control erosion on critical sites during the establishment period of protective vegetation. The most common uses are on steep slopes, swales, diversion dikes, and on tidal or stream banks.

Materials:

New types of erosion control compost are continuously being developed. The Texas Department of Transportation (TxDOT) has established minimum performance standards which must be met for any products seeking to be approved for use within any of TxDOT's construction or maintenance activities. Material used within any TxDOT construction or maintenance activities must meet material specifications in accordance with current TxDOT specifications. TxDOT maintains a website at http://www.txdot.gov/business/contractors_consultants/recycling/compost.htm that provides information on compost specification data.

ECC used for projects not related to TxDOT should also be of quality materials by meeting performance standards and compost specification data. To ensure the quality of compost used as an ECC, products should meet all applicable state and federal regulations, including but not limited to the United States Environmental Protection Agency (USEPA) Code of Federal Regulations (CFR), Title 40, Part 503 Standards for Class A biosolids and Texas Natural Resource Conservation Commission (now named TCEQ) Health and Safety Regulations as defined in the Texas Administration Code (TAC), Chapter 332, and all other relevant requirements for compost products outlined in TAC, Chapter 332. Testing requirements required by the TCEQ are defined in TAC Chapter 332, including Sections §332.71 Sampling and Analysis Requirements for Final Products and §332.72 Final Product Grades. Compost specification data approved by TxDOT are appropriate to use for ensuring the use of quality compost materials or for guidance.

Testing standards are dependent upon the intended use for the compost and ensures product safety, and product performance regarding the product's specific use. The appropriate compost sampling and testing protocols included in the United States Composting Council (USCC) Test Methods for the Examination of Composting and Compost (TMECC) should be conducted on compost products used for ECC to ensure that the products used will not impact public health, safety, and the environment and to promote production and marketing of quality composts that meet analytical standards. TMECC is a laboratory manual that provides protocols for the composting industry and test methods for compost analysis. TMECC provides protocols to sample, monitor, and analyze materials during all stages of the composting process. Numerous parameters that might be of concern in compost can be tested by following protocols or test methods listed in TMECC. TMECC information can be found at



<u>Attachment 4</u> Description of BMPs

http://www.tmecc.org/tmecc/index.html. The USCC Seal of Testing Assurance (STA) program contains information regarding compost STA certification. STA program information can be found at http://tmecc.org/sta/STA_program_description.html.

Installation:

- Install in accordance with current TxDOT specification.
- Use on slopes 3:1 or flatter.
- Apply a 2 inch uniform layer unless otherwise shown on the plans or as directed.
- When rolling is specified, use a light corrugated drum roller.

Mulch and Compost Filter Socks

Description: Mulch and compost filter socks (erosion control logs) are used to intercept and detain sediment laden run-off from unprotected areas. When properly used, mulch and compost filter socks can be highly effective at controlling sediment from disturbed areas. They cause runoff to pond which allows heavier solids to settle. Mulch and compost filter socks are used during the period of construction near the perimeter of a disturbed area to intercept sediment while allowing water to percolate through. The sock should remain in place until the area is permanently stabilized. Mulch and compost filter socks may be installed in construction areas and temporarily moved during the day to allow construction activity provided it is replaced and properly anchored at the end of the day. Mulch and compost filter socks may be seeded to allow for quick vegetative growth and reduction in run-off velocity.

Materials:

New types of mulch and compost filter socks are continuously being developed. The Texas Department of Transportation (TxDOT) has established minimum performance standards which must be met for any products seeking to be approved for use within any of TxDOT's construction or maintenance activities. Mulch and compost filter socks used within any TxDOT construction or maintenance activities must meet material specifications in accordance with TxDOT specification 5049. TxDOT maintains a website at

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Description of BMPs

Regulations (CFR), Title 40, Part 503 Standards for Class A biosolids and Texas Natural Resource Conservation Commission Health and Safety Regulations as defined in the Texas Administration Code (TAC), Chapter 332, and all other relevant requirements for compost products outlined in TAC, Chapter 332. Testing requirements required by the TCEQ are defined in TAC Chapter 332, including Sections §332.71 Sampling and Analysis Requirements for Final Products and §332.72 Final Product Grades. Compost specification data approved by TxDOT are appropriate to use for ensuring the use of quality compost materials or for guidance.

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Installation:

- Install in accordance with TxDOT Special Specification 5049.
- Install socks (erosion control logs) near the downstream perimeter of a disturbed area to intercept sediment from sheet flow.
- Secure socks in a method adequate to prevent displacement as a result of normal rain events such that flow is not allowed under the socks.
- Inspect and maintain the socks in good condition (including staking, anchoring, etc.). Maintain the integrity of the control, including keeping the socks free of accumulated silt, debris, etc., until the disturbed area has been adequately stabilized.

POST-CONSTRUCTION TSS CONTROLS

<u>Retention/Irrigation Systems</u>



Description: Retention/irrigation systems refer to the capture of runoff in a holding pond, then use of the captured water for irrigation of appropriate landscape areas. Retention/irrigation systems are characterized by the capture and disposal of runoff without direct release of captured flow to receiving streams. Retention systems exhibit excellent pollutant removal but can require regular, proper maintenance. Collection of roof runoff for subsequent use (rainwater harvesting) also qualifies as a retention/irrigation practice, but should be operated and sized to provide adequate volume. This technology, which emphasizes beneficial use of stormwater runoff, is particularly appropriate for arid regions because of increasing demands on water supplies for agricultural irrigation and urban water supply.

Design Considerations: Retention/irrigation practices achieve 100% removal efficiency of total suspended solids contained within the volume of water captured. Design elements of retention/irrigation systems include runoff storage facility configuration and sizing, pump and wet well system components, basin lining, basin detention time, and physical and operational components of the irrigation system. Retention/irrigation systems are appropriate for large drainage areas with low to moderate slopes. The retention capacity should be sufficient considering the average rainfall event for the area.

Maintenance Requirements: Maintenance requirements for retention/irrigation systems include routine inspections, sediment removal, mowing, debris and litter removal, erosion control, and nuisance control.

Extended Detention Basin

Description: Extended detention facilities are basins that temporarily store a portion of stormwater runoff following a storm event. Extended detention basins are normally used to remove particulate pollutants and to reduce maximum runoff rates associated with development to their pre-development levels. The water quality benefits are the removal of sediment and buoyant materials. Furthermore, nutrients, heavy metals, toxic materials, and oxygen-demanding materials associated with the particles also are removed. The control of the maximum runoff rates serves to protect drainage channels below the device from erosion and to reduce downstream flooding. Although detention facilities designed for flood control have different design requirements than those used for water quality enhancement, it is possible to achieve these two objectives in a single facility.

Design Considerations: Extended detention basins can remove approximately 75% of the total suspended solids contained within the volume of runoff captured in the basin. Design elements of extended detention basins include basin sizing, basin configuration, basin side slopes, basin lining, inlet/outlet structures, and erosion controls. Extended detention basins are appropriate for large drainage areas with low



to moderate slopes. The retention capacity should be sufficient considering the average rainfall event for the area.

Maintenance Requirements: Maintenance requirements for extended detention basins include routine inspections, mowing, debris and litter removal, erosion control, structural repairs, nuisance control, and sediment removal.

Vegetative Filter Strips

Description: Filter strips, also known as vegetated buffer strips, are vegetated sections of land similar to grassy swales except they are essentially flat with low slopes, and are designed only to accept runoff as overland sheet flow. They may appear in any vegetated form from grassland to forest, and are designed to intercept upstream flow, lower flow velocity, and spread water out as sheet flow. The dense vegetative cover facilitates conventional pollutant removal through detention, filtration by vegetation, and infiltration.

Filter strips cannot treat high velocity flows, and do not provide enough storage or infiltration to effectively reduce peak discharges to predevelopment levels for design storms. This lack of quantity control favors use in rural or low-density development; however, they can provide water quality benefits even where the impervious cover is as high as 50%. The primary highway application for vegetative filter strips is along rural roadways where runoff that would otherwise discharge directly to a receiving water passes through the filter strip before entering a conveyance system. Properly designed roadway medians and shoulders make effective buffer strips. These devices also can be used on other types of development where land is available and hydraulic conditions are appropriate.

Flat slopes and low to fair permeability of natural subsoil are required for effective performance of filter strips. Although an inexpensive control measure, they are most useful in contributing watershed areas where peak runoff velocities are low as they are unable to treat the high flow velocities typically associated with high impervious cover.

Successful performance of filter strips relies heavily on maintaining shallow unconcentrated flow. To avoid flow channelization and maintain performance, a filter strip should:

- Be equipped with a level spreading device for even distribution of runoff
- Contain dense vegetation with a mix of erosion resistant, soil binding species
- Be graded to a uniform, even and relatively low slope
- Laterally traverse the contributing runoff area


Filter strips can be used upgradient from watercourses, wetlands, or other water bodies along toes and tops of slopes and at outlets of other stormwater management structures. They should be incorporated into street drainage and master drainage planning. The most important criteria for selection and use of this BMP are soils, space, and slope.

Design Considerations: Vegetative filter strips can remove approximately 85% of the total suspended solids contained within the volume of runoff captured. Design elements of vegetative filter strips include uniform, shallow overland flow across the entire filter strip area, hydraulic loading rate, inlet structures, slope, and vegetative cover. The area should be free of gullies or rills which can concentrate flow. Vegetative filter strips are appropriate for small drainage areas with moderate slopes. Other design elements include the following:

- Soils and moisture are adequate to grow relatively dense vegetative stands
- Sufficient space is available
- Slope is less than 12%
- Comparable performance to more expensive structural controls

Maintenance Requirements: Maintenance requirements for vegetative filter strips include pest management, seasonal mowing and lawn care, routine inspections, debrise and litter removal, sediment removal, and grass reseeding and mulching.

Constructed Wetlands

Description: Constructed wetlands provide physical, chemical, and biological water quality treatment of stormwater runoff. Physical treatment occurs as a result of decreasing flow velocities in the wetland, and is present in the form of evaporation, sedimentation, adsorption, and/or filtration. Chemical processes include chelation, precipitation, and chemical adsorption. Biological processes include decomposition, plant uptake and removal of nutrients, plus biological transformation and degradation. Hydrology is one of the most influential factors in pollutant removal due to its effects on sedimentation, aeration, biological transformation, and adsorption sediments.

The wetland should be designed such that a minimum amount of maintenance is required. The natural surroundings, including such things as the potential energy of a stream or flooding river, should be utilized as much as possible. The wetland should approximate a natural situation and unnatural attributes, such as rectangular shape or rigid channel, should be avoided.



Site considerations should include the water table depth, soil/substrate, and space requirements. Because the wetland must have a source of flow, it is desirable that the water table is at or near the surface. If runoff is the only source of inflow for the wetland, the water level often fluctuates and establishment of vegetation may be difficult. The soil or substrate of an artificial wetland should be loose loam to clay. A perennial baseflow must be present to sustain the artificial wetland. The presence of organic material is often helpful in increasing pollutant removal and retention. A greater amount of space is required for a wetland system than is required for a detention facility treating the same amount of area.

Design Considerations: Constructed wetlands can remove over 90% of the total suspended solids contained within the volume of runoff captured in the wetland. Design elements of constructed wetlands include wetland sizing, wetland configuration, sediment forebay, vegetation, outflow structure, depth of inundation during storm events, depth of micropools, and aeration. Constructed wetlands are appropriate for large drainage areas with low to moderate slopes.

Maintenance Requirements: Maintenance requirements for constructed wetlands include mowing, routine inspections, debris and litter removal, erosion control, nuisance control, structural repairs, sediment removal, harvesting, and maintenance of water levels.

Wet Basins

Description: Wet basins are runoff control facilities that maintain a permanent wet pool and a standing crop of emergent littoral vegetation. These facilities may vary in appearance from natural ponds to enlarged, bermed (manmade) sections of drainage systems and may function as online or offline facilities, although offline configuration is preferable. Offline designs can prevent scour and other damage to the wet pond and minimize costly outflow structure elements needed to accommodate extreme runoff events.

During storm events, runoff inflows displace part or all of the existing basin volume and are retained and treated in the facility until the next storm event. The pollutant removal mechanisms are settling of solids, wetland plant uptake, and microbial degradation. When the wet basin is adequately sized, pollutant removal performance can be excellent, especially for the dissolved fraction. Wet basins also help provide erosion protection for the receiving channel by limiting peak flows during larger storm events. Wet basins are often perceived as a positive aesthetic element in a community and offer significant opportunity for creative pond configuration and landscape design. Participation of an experienced wetland designer is suggested. A significant potential drawback for wet ponds in arid climates is that the contributing watershed for these facilities is often incapable of providing an adequate water supply to



maintain the permanent pool, especially during the summer months. Makeup water (i.e., well water or municipal drinking water) is sometimes used to supplement the rainfall/runoff process, especially for wet basin facilities treating watersheds that generate insufficient runoff.

Design Considerations: Wet basins can remove over 90% of the total suspended solids contained within the volume of runoff captured in the basin. Design elements of wet basins include basin sizing, basin configuration, basin side slopes, sediment forebay, inflow and outflow structures, vegetation, depth of permanent pool, aeration, and erosion control. Wet basins are appropriate for large drainage areas with low to moderate slopes.

Maintenance Requirements: Maintenance requirements for wet basins include mowing, routine inspections, debris and litter removal, erosion control, nuisance control, structural repairs, sediment removal, and harvesting.

Grassy Swales

Grassy swales are vegetated channels that convey stormwater and remove pollutants by filtration through grass and infiltration through soil. They require shallow slopes and soils that drain well. Pollutant removal capability is related to channel dimensions, longitudinal slope, and type of vegetation. Optimum design of these components will increase contact time of runoff through the swale and improve pollutant removal rates.

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Grassy swales are primarily stormwater conveyance systems. They can provide sufficient control under light to moderate runoff conditions, but their ability to control large storms is limited. Therefore, they are most applicable in low to moderate sloped areas or along highway medians as an alternative to ditches and curb and gutter drainage. Their performance diminishes sharply in highly urbanized settings, and they are generally not effective enough to receive construction stage runoff where high sediment loads can overwhelm the system. Grassy swales can be used as a pretreatment measure for other downstream BMPs, such as extended detention basins. Enhanced grassy swales utilize check dams and wide depressions to increase runoff storage and promote greater settling of pollutants.

Grassy swales can be more aesthetically pleasing than concrete or rock-lined drainage systems and are generally less expensive to construct and maintain. Swales can slightly reduce impervious area and reduce the pollutant accumulation and delivery associated with curbs and gutters. The disadvantages of this technique include the possibility of erosion and channelization over time, and the need for more right-of-way as compared to a storm drain system. When properly constructed, inspected, and maintained, the life

expectancy of a swale is estimated to be 20 years.



Design Considerations:

- Comparable performance to wet basins
- Limited to treating a few acres
- Availability of water during dry periods to maintain vegetation
- Sufficient available land area

The suitability of a swale at a site will depend on land use, size of the area serviced, soil type, slope, imperviousness of the contributing watershed, and dimensions and slope of the swale system. In general, swales can be used to serve areas of less than 10 acres, with slopes no greater than 5 %. The seasonal high water table should be at least 4 feet below the surface. Use of natural topographic lows is encouraged, and natural drainage courses should be regarded as significant local resources to be kept in use.

Maintenance Requirements:

Research in the Austin area indicates that vegetated controls are effective at removing pollutants even when dormant. Therefore, irrigation is not required to maintain growth during dry periods, but may be necessary only to prevent the vegetation from dying.

Vegetation Lined Drainage Ditches

Vegetation lined drainage ditches are similar to grassy swales. These drainage ditches are vegetated channels that convey storm water and remove pollutants by filtration through grass and infiltration through soil. They require soils that drain well. Pollutant removal capability is related to channel dimensions, longitudinal slope, and type of vegetation. Optimum design of these components will increase contact time of runoff through the ditch and improve pollutant removal rates. Vegetation lined drainage ditches are primarily storm water conveyance systems. They have vegetation lined in the low flow channel and may include vegetated shelves.

Vegetation in drainage ditches reduces erosion and removes pollutants by lowering water velocity over the soil surface, binding soil particles with roots, and by filtration through grass and infiltration through soil. Vegetation lined drainage ditches can be used where:

- A vegetative lining can provide sufficient stability for the channel grade by increasing maximum permissible velocity
- Slopes are generally less than 5%, with protection from sheer stress as needed through the use of BMPs, such as erosion control blankets



 Site conditions required to establish vegetation, i.e. climate, soils, topography, are present

Design Criteria: The suitability of a vegetation lined drainage ditch at a site will depend on land use, size of the area serviced, soil type, slope, imperviousness of the contributing watershed, and dimensions and slope of the ditch system. The hydraulic capacity of the drainage ditch and other elements such as erosion, siltation, and pollutant removal capability, must be taken into consideration. Use of natural topographic lows is encouraged, and natural drainage courses should be regarded as significant local resources to be kept in use. Other items to consider include the following:

- Capacity, cross-section shape, side slopes, and grade
- Select appropriate native vegetation
- Construct in stable, low areas to conform with the natural drainage system. To
 reduce erosion potential, design the channel to avoid sharp bends and steep grades.
- Design and build drainage ditches with appropriate scour and erosion protection. Surface water should be able to enter over the vegetated banks without erosion occurring.
- BMPs, such as erosion control blankets, may need to be installed at the time of seeding to provide stability until the vegetation is fully established. It may also be necessary to divert water from the channel until vegetation is established or to line the channel with sod.
- Vegetated ditches must not be subject to sedimentation from disturbed areas.
- Sediment traps may be needed at channel inlets to prevent entry of muddy runoff and channel sedimentation.
- Availability of water during dry periods to maintain vegetation
- Sufficient available land area

Maintenance:

During establishment, vegetation lined drainage ditches should be inspected, repaired, and vegetation reestablished if necessary. After the vegetation has become established, the ditch should be checked periodically to determine if the channel is withstanding flow velocities without damage. Check the ditch for debris, scour, or



erosion and immediately make repairs if needed. Check the channel outlet and all road crossings for bank stability and evidence of piping or scour holes and make repairs immediately. Remove all significant sediment accumulations to maintain the designed carrying capacity. Keep the vegetation in a healthy condition at all times, since it is the primary erosion protection for the channel. Vegetation lined drainage ditches should be seasonally maintained by mowing or irrigating, depending on the vegetation selected. The long-term management of ditches as stable, vegetated, "natural" drainage systems with native vegetation buffers is highly recommended due to the inherent stability offered by grasses, shrubs, trees, and other vegetation.

Research in the Austin area indicates that vegetated controls are effective at removing pollutants even when dormant. Therefore, irrigation is not required to maintain growth during dry periods, but may be necessary only to prevent the vegetation from dying.

Sand Filter Systems

The objective of sand filters is to remove sediment and the pollutants from the first flush of pavement and impervious area runoff. The filtration of nutrients, organics, and coliform bacteria is enhanced by a mat of bacterial slime that develops during normal operations. One of the main advantages of sand filters is their adaptability; they can be used on areas with thin soils, high evaporation rates, low-soil infiltration rates, in limited-space areas, and where groundwater is to be protected.

Since their original inception in Austin, Texas, hundreds of intermittent sand filters have been implemented to treat stormwater runoff. There have been numerous alterations or variations in the original design as engineers in other jurisdictions have improved and adapted the technology to meet their specific requirements. Major types include the Austin Sand Filter, the District of Columbia Underground Sand Filter, the Alexandria Dry Vault Sand Filter, the Delaware Sand Filter, and peat-sand filters which are adapted to provide a sorption layer and vegetative cover to various sand filter designs .

Design Considerations:

- Appropriate for space-limited areas
- Applicable in arid climates where wet basins and constructed wetlands are not appropriate
- High TSS removal efficiency

Cost Considerations:

Filtration Systems may require less land than some other BMPs, reducing the land



acquisition cost; however the structure itself is one of the more expensive BMPs. In addition, maintenance cost can be substantial.

Erosion Control Compost

Description: Erosion control compost (ECC) can be used as an aid to control erosion on critical sites during the establishment period of protective vegetation. The most common uses are on steep slopes, swales, diversion dikes, and on tidal or stream banks.

Materials:

New types of erosion control compost are continuously being developed. The Texas Department of Transportation (TxDOT) has established minimum performance standards which must be met for any products seeking to be approved for use within any of TxDOT s construction or maintenance activities. Material used within any TxDOT construction or maintenance activities must meet material specifications in accordance with current TxDOT specifications. TxDOT maintains a website at http://www.txdot.gov/business/contractors_consultants/recycling/compost.htm that provides information on compost specification data.

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Installation:

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- When rolling is specified, use a light corrugated drum roller.

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Installation:

- Install in accordance with TxDOT Special Specification 5049.
- Install socks (erosion control logs) near the downstream perimeter of a disturbed area to intercept sediment from sheet flow.
- Secure socks in a method adequate to prevent displacement as a result of normal rain events such that flow is not allowed under the socks.
- Inspect and maintain the socks in good condition (including staking, anchoring, etc.). Maintain the integrity of the control, including keeping the socks free of accumulated silt, debris, etc., until the disturbed area has been adequately



stabilized.

<u>Sedimentation Chambers (only to be used when there is no space available for other approved BMP's)</u>

Description: Sedimentation chambers are stormwater treatment structures that can be used when space is limited such as urban settings. These structures are often tied into stormwater drainage systems for treatment of stormwater prior to entering state waters. The water quality benefits are the removal of sediment and buoyant materials. These structures are not designed as a catch basin or detention basin and not typically used for floodwater attenuation.

Design Considerations: Average rainfall and surface area should be considered when following manufacturer's recommendations for chamber sizing and/or number of units needed to achieve effective TSS removal. If properly sized, 50-80% removal of TSS can be expected.

Maintenance Requirements: Maintenance requirements include routine inspections, sediment, debris and litter removal, erosion control and nuisance control.



Appendix D

Letter to THC



Innovative approaches Practical results Outstanding service

2711 N. Haskell Avenue, Suite 3300 • Dallas, Texas 75204 • 214-217-2200 • FAX 817-735-7491

www.freese.com

May 3, 2019

Mark Wolfe State Historic Preservation Officer Texas Historical Commission 108 West 16th Street Austin, TX 78701

RE: City of Mesquite Palos Verdes Dam Modifications and Park Improvements City of Mesquite, Dallas County, Texas FNI Project Number: MES10392

Dear Mr. Wolfe,

Introduction:

The City of Mesquite is proposing dam modifications and park improvements at Palos Verdes Park in Mesquite, Dallas County, Texas (Attachment B, Figure 1).

Project Contact Information:

Richard Aldredge, PWS Environmental Scientist Freese and Nichols, Inc. 2711 North Haskell, Suite 3300 Dallas, Texas 75204 Phone: 214-217-2384 Fax: 214-217-2201

Federal Involvement:

The proposed project activities would be designed to meet the terms and conditions of one or more Section 404 Nationwide Permits without requiring the submittal of a pre-construction notification to the USACE. On behalf of the City of Mesquite, Freese and Nichols, Inc. is notifying the THC in compliance with Nationwide General Permit Condition 20, *Historic Properties*.

State Involvement:

The proposed project is expected to disturb more than 5,000 cubic yards. In accordance with Section 191.0525 (d) of the Antiquities Code of Texas, on behalf of the City of Mesquite, Freese and Nichols, Inc. is notifying the THC of the proposed project.

Project Work Description:

The proposed dam modifications are required to meet TCEQ requirements and include installation of a temporary cofferdam, excavation of the existing spillway, removal and replacement of existing corrugated metal pipe with reinforced concrete conduit, replacement of existing bag wall with a modular block wall, and installation of a buried box culvert to a new junction box. Proposed improvements would also include protection of Northwest Drive by filling the area of erosion and channelizing the flow underground into the proposed headwall and 36-inch pipe, and the addition of a new parking lot at the location of the existing emergency spillway. Ground photographs of the proposed project improvement areas are presented in Attachment A. The Demolition Plan, Grading

Plan, and Service Spillway Plan and Profile sheets from the final design plans are included in Attachment B.

Project Location:

Figure 1 in Attachment B depicts the project vicinity on a road map background. Figure 2 in Attachment B depicts the project on a recent aerial background. Figure 3 shows the project on the Mesquite USGS 24K topographic quadrangle. Figure 4 in Attachment B depicts the project on aerial imagery with TASA data. The project area has experienced a high degree of disturbance due to urban development in the immediate area.

Identification of Historic Properties:

The Area of Potential Effect (APE) is approximately 4.3 acres; however, only a portion of the APE will involve excavation at the spillway and for the proposed box culvert and for the proposed service spillway conduit. Based on the results of a desktop review by our staff registered professional archeologist, no historical or archeological resources have been identified within the APE. Proposed excavation at the existing service spillway has a 20-foot depth of vertical impact from the crest of the dam within fill material that was placed during the original construction of the dam resulting in minimal disturbance to native soils, if any (Attachment B, Sheet C-8). Excavation along the proposed service spillway conduit is approximately 7 to 8 feet below existing ground in Ferris Heiden Clay (Attachment B, Sheet C-8). Depth to bedrock for Ferris Heiden Clay is described as 40-60 inches; therefore, our staff archeologist considers this area to have low integrity to find buried cultural material (Attachment C, Web Soil Survey Report). The entire APE has previously been disturbed by urban development, erosion, and the original ground of the APE and the surrounding area our staff archeologist considers the APE to have a low potential to find intact prehistoric or historic buried cultural material.

Please review the proposed project for potential historical and archaeological issues that should be considered by the City prior to construction. The project is scheduled to bid in mid May 2019 so your timely review would be greatly appreciated. I can be contacted at 214-217-2384 or <u>rga@freese.com</u> if you have any questions or require additional information.

Sincerely,

Richard Aldredge, PWS Freese and Nichols, Inc.

Attachments

cc: Micah Hargrave, P.E, Freese and Nichols, Inc. Brian King, RPA, GISP, CFM Freese and Nichols, Inc. Attachment A Photos



Photo 1. Side view of existing Palos Verdes Dam service spillway looking west.



Photo 2. View along existing Palos Verdes Park Dam looking east.



Photo 3. View of existing emergency spillway and proposed parking lot looking southeast.



Photo 4. View of erosion along Northwest Drive looking west.

Attachment B Figures and Sheets from Final Engineering Plans



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Attachment C Web Soil Survey Report



United States Department of Agriculture

NRCS

Natural Resources Conservation Service A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Dallas County, Texas

ATTACHMENT C: Palos Verdas Dam



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/? cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



	MAP LEGEND			MAP INFORMATION			
Area of In	terest (AOI) Area of Interest (AOI)	8	Spoil Area Stony Spot	The soil surveys that comprise your AOI were mapped at 1:20,000.			
Solis ~ Special () () () () () () () () () ()	Soil Map Unit Polygons Soil Map Unit Lines Soil Map Unit Points Point Features Blowout Borrow Pit Clay Spot Closed Depression	Ø ♥ ■ Water Fea Transport ++ ++	Very Stony Spot Wet Spot Other Special Line Features atures Streams and Canals tation Rails Interstate Highways	Warning: Soil Map may not be valid at this scale. Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale. Please rely on the bar scale on each map sheet for map measurements.			
 ⊘ 	Gravel Pit Gravelly Spot Landfill Lava Flow Marsh or swamp	Backgrou	US Routes Major Roads Local Roads Ind Aerial Photography	Source of Map: Natural Resources Conservation Service Web Soil Survey URL: Coordinate System: Web Mercator (EPSG:3857) Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.			
* © 0 > + ∵ ∉	Mine of Quary Miscellaneous Water Perennial Water Rock Outcrop Saline Spot Sandy Spot Severely Eroded Spot			This product is generated from the USDA-NRCS certified data as of the version date(s) listed below. Soil Survey Area: Dallas County, Texas Survey Area Data: Version 16, Sep 14, 2018 Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.			
\$ Ø	Sinkhole Slide or Slip Sodic Spot			Date(s) aerial images were photographed: Aug 20, 2016—Dec 13, 2017 The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.			

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI			
34	Ferris-Heiden complex, 5 to 12 percent slopes	1.8	43.5%			
42	Heiden clay, 2 to 5 percent slopes, eroded	2.4	56.2%			
W	Water	0.0	0.3%			
Totals for Area of Interest	•	4.2	100.0%			

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The
delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Dallas County, Texas

34—Ferris-Heiden complex, 5 to 12 percent slopes

Map Unit Setting

National map unit symbol: d7m8 Elevation: 400 to 1,000 feet Mean annual precipitation: 28 to 42 inches Mean annual air temperature: 64 to 70 degrees F Frost-free period: 225 to 275 days Farmland classification: Not prime farmland

Map Unit Composition

Ferris and similar soils: 65 percent *Heiden and similar soils:* 25 percent *Minor components:* 10 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Ferris

Setting

Landform: Ridges Landform position (two-dimensional): Backslope Landform position (three-dimensional): Side slope Microfeatures of landform position: Linear gilgai Down-slope shape: Linear Across-slope shape: Convex Parent material: Residuum weathered from calcareous shale in eagleford shale and taylor marl formations of cretaceous age

Typical profile

H1 - 0 to 3 inches: clay H2 - 3 to 41 inches: clay H3 - 41 to 72 inches: clay

Properties and qualities

Slope: 5 to 12 percent
Depth to restrictive feature: 40 to 60 inches to densic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 30 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 5.0
Available water storage in profile: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 6e Hydrologic Soil Group: D *Ecological site:* Northern Eroded Blackland (R086AY008TX) *Hydric soil rating:* No

Description of Heiden

Setting

Landform: Ridges Landform position (two-dimensional): Backslope Landform position (three-dimensional): Side slope Microfeatures of landform position: Linear gilgai Down-slope shape: Linear Across-slope shape: Convex Parent material: Clayey residuum weathered from clayey shale of eagleford shale or taylor marl

Typical profile

H1 - 0 to 19 inches: clay H2 - 19 to 45 inches: clay H3 - 45 to 78 inches: clay H4 - 78 to 80 inches: clay

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 55 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 12.0
Available water storage in profile: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 4e Hydrologic Soil Group: D Ecological site: Northern Eroded Blackland (R086AY008TX) Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 10 percent *Hydric soil rating:* No

42-Heiden clay, 2 to 5 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2sshp Elevation: 320 to 750 feet Mean annual precipitation: 37 to 40 inches Mean annual air temperature: 67 to 68 degrees F Frost-free period: 245 to 260 days Farmland classification: Not prime farmland

Map Unit Composition

Heiden, eroded, and similar soils: 85 percent Minor components: 15 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Heiden, Eroded

Setting

Landform: Ridges Landform position (two-dimensional): Backslope, shoulder Landform position (three-dimensional): Side slope, interfluve Microfeatures of landform position: Linear gilgai Down-slope shape: Convex Across-slope shape: Convex Parent material: Clayey residuum weathered from mudstone

Typical profile

Ap - 0 to 6 inches: clay Bkss1 - 6 to 18 inches: clay Bkss2 - 18 to 58 inches: clay CBdk - 58 to 80 inches: clay

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: 40 to 65 inches to densic material
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 12.0
Available water storage in profile: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3e Hydrologic Soil Group: D Ecological site: Southern Eroded Blackland (R086AY009TX) Hydric soil rating: No

Minor Components

Ferris, moderately eroded

Percent of map unit: 8 percent Landform: Ridges Landform position (two-dimensional): Backslope Landform position (three-dimensional): Side slope Microfeatures of landform position: Linear gilgai Down-slope shape: Linear Across-slope shape: Convex Ecological site: Southern Eroded Blackland (R086AY009TX) Hydric soil rating: No

Heiden

Percent of map unit: 7 percent Landform: Ridges Landform position (two-dimensional): Backslope, shoulder Landform position (three-dimensional): Side slope, interfluve Microfeatures of landform position: Linear gilgai Down-slope shape: Convex Across-slope shape: Convex Ecological site: Southern Blackland (R086AY011TX) Hydric soil rating: No

W-Water

Map Unit Composition

Water: 100 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

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