

# **REVIEW PLAN**

## **IMPLEMENTATION PHASE DESIGN DOCUMENTATION REPORT AND PLANS & SPECIFICATIONS**

**FOR**

**FY15 OAKLAND COUNTY GWK DRAIN REHABILITATION  
OAKLAND COUNTY, MICHIGAN**

*Initial MSC Approval Date*

**02-APR-2015**

*Last Revision Date*

**XX-XX-XXXX**

**U.S. ARMY CORPS OF ENGINEERS  
DETROIT DISTRICT**

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## REVIEW PLAN – IMPLEMENTATION PHASE

### DESIGN DOCUMENTATION REPORT AND PLANS & SPECIFICATIONS

#### 1. PURPOSE AND REQUIREMENTS

**a. Purpose.** This plan establishes requirements for review of implementation documents for the FY15 Oakland County GWK Drain Rehabilitation project to be executed in the Cities of Royal Oak and Oak Park within Oakland County, Michigan.

#### b. References

- (1) Engineer Circular (EC) 1165-2-214, Civil Works Review, 15 December 2012
- (2) Engineer Regulation (ER) 1110-1-12, Quality Management, 31 July 2006
- (3) CELRE Quality Management Plan, CELRE DC 5-1-1 and, in particular, Appendix C-3 – Engineering Subplan dated November 30, 1998
- (4) ER 1110-2-1150, Engineering and Design for Civil Works Projects, dated 31 August 1999.
- (5) ER 1110-1-12, Engineering and Design Quality Management, dated 21 July 2006 (original) with Change 1 dated 30 September 2006 and Change 2 dated 31 March 2011.
- (6) Quality Management System Document 08508 LRD – Design Process for Civil Works Projects.
- (7) Quality Management System Document 08504 LRD – QC/QA Procedures for Civil Works.
- (8) U.S. Army Corps of Engineers, EM 385-1-1, Health and Safety Manual, 2008.
- (9) U.S. Army Corps of Engineers, ER 1110-2-1150, Engineering and Design for Civil Works Projects, dated 31 August 1999.
- (10) Wade Trim Associates, Inc., “Various Drain Video Inspections – Rehabilitation Recommendations”, 09OCT2014.
- (11) Quality Assurance Plan, 23 December 2014

**c. Requirements.** This review plan was developed in accordance with EC 1165-2-214, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R). It provides the procedures for ensuring the quality and credibility of U.S. Army Corps of Engineers (USACE) decision, implementation, and operations and maintenance documents and work products. The EC outlines three levels of review: District Quality Control, Agency Technical Review, and Independent External Peer Review.

- (1) District Quality Control (DQC). DQC is managed and generally performed by the District responsible for the project. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality

requirements. Basic tools may include, but not be limited, to the following: seamless reviews, quality checks and reviews, supervisory reviews, and project delivery team (PDT) reviews. DQC reviews are performed by experienced District personnel who have not been involved in production.

- (2) Agency Technical Review (ATR). ATR is an in-depth review, managed within USACE, and conducted by a qualified team outside of the home district that is not involved in the day-to-day production of the project/product. The purpose of this review is to ensure the proper application of clearly established criteria, regulations, laws, codes, principles and professional practices. An ATR team reviews the various work products and checks that all the parts fit together in a coherent whole. ATR teams will be comprised of senior USACE personnel, preferably recognized subject matter experts with the appropriate technical expertise, such as regional technical specialists (RTS), and may be supplemented by outside experts. To assure independence, an ATR team will be organized with senior USACE experts from outside Detroit District. The ATR team leader will be from outside LRD and other team members must be from outside Detroit District. ATR team members must be certified by their community of practice to be qualified to perform agency technical reviews and as such must be listed in the Corps of Engineers Reviewer Certification and Access Program (CERCAP).
- (3) Independent External Peer Review (IEPR). IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. Reference 1 requires consideration of two types of IEPR for Civil Works products. Type I generally applies to decision documents. Type II For clarity, IEPR is divided into two types. Type I applies to decision documents. Type II, Safety Assurance Review (SAR) applies to implementation documents, including design and construction products.

## **2. REVIEW MANAGEMENT ORGANIZATION (RMO)**

The RMO is responsible for managing ATR and IEPR (if required). For this review plan, the RMO responsible for approval and oversight of review plan and its implementation is the Great Lakes and Ohio River Division (LRD).

## **3. PROJECT DESCRIPTION**

- a. **Project Scope.** The Detroit District will contract out the development of the implementation documents by the use of Buffalo District's IDIQ contract with Tetra Tech, Inc. Tetra Tech, Inc. will develop implementation documents for the following scope of work: rehabilitation of approximately 12,000 lineal feet of combined sewer that is requiring maintenance due to congested or damaged pipes. The sewer lines consist of both reinforced concrete pipe (RCP) and vitrified clay pipe (VCP) with diameters ranging from 12 to 108 inches. The estimated project design cost is \$54,000 and includes the creation of the solicitation documents, Design

Documentation Report and an Independent Government Estimate. The construction cost is estimated to range between \$250,000 and \$500,000.

The authorization for this project comes from Section 219 (F)(29) of WRDA 92 Public Law 102-580 October 31, 1992.

- b. General Site Location and Description.** Combined sewer system within the cities of Royal Oak and Oak Park, Oakland County, Michigan.
- c. Project Deliver Team (PDT).** The PDT in charge of reviewing the A/E Contractor's design for this project includes the following:

#### **4. RISK INFORMED DECISIONS ON APPROPRIATE REVIEWS**

- a. Project Risks.** The risks for the design of this project are Permit Required Confined Space Entry and Traffic Control. If entry into the sewer is required for design purposes, risk will be mitigated by allowing only those individuals complying with EM 385-1-1 Section 34.A, and certified in Confined Space Entry based on OSHA 1910.146. Since the majority of the work will be taking place within busy roadways, adequate traffic control measures must be adhered to. The risk for Traffic Control will be mitigated by the development and implementation of a Traffic Control Plan submitted by the A/E Contractor and approved by USACE that satisfies the requirements of EM 385-1-1 Section 08.C. The project risks are considered minimal due to the complexity of the project and the level of review effort should reflect the size and complexity of the project.
- b. Appropriate Reviews.** In accordance with EC 1165-2-214, District Quality Control (DQC) reviews and Agency Technical Review (ATR) must be performed for the products developed to implement this project.

As for Independent External Peer Review (IEPR), with the project being in the implementation phase, only whether Type II IEPR (Safety Assurance Review) is required must be determined. EC 1165-2-214 requires Type II IEPR if the project poses a significant threat to human life (public safety) and/or is characterized by one or more of the following factors: the project involves innovative materials, novel methods, complex challenges, etc; and the design requires resiliency, redundancy or robustness.

The District Chief of Engineering has reviewed the project scope and risks (see Section 4.a) and determined the project does not pose significant threat to human life and otherwise does not meet conditions that require a Type II IEPR.

#### **5. SCOPE OF REVIEWS**

As stated above, District Quality Control and Agency Technical Review are required for the project. This section describes the general requirements for DQC and ATR. In accordance with local procedure QMS LRE 08504, the project delivery team will publish a Quality Management Plan that provides detailed instructions for conduct of the quality reviews.

**a. District Quality Control (DQC/QA).**

District Quality Control (DQC) includes reviews managed and performed by District staff to ensure the quality of the design and construction products. Quality control requirements are described in Chapter 3 of ER 1110-1-12 and local work procedures in the regional Quality Management System (QMS). DQC for this project will include the following types of reviews: quality checks, BCOES, plan-in-hand, and supervisory. The following disciplines will be primarily involved with the work and reviews: geotechnical, structural, environmental, and cost. All review comments will be managed in the DrChecks program.

(1) Quality checks will be performed throughout the product development process by experienced individuals. These checks may include review to verify basic assumptions, design criteria, calculations and design methods. Checkers will ensure that internal checks of the design have been completed and indicated on the drawings and computation sheets, and that the completed project design is properly documented in the DDR. Individuals assigned to perform quality checks will be assigned by Tetra Tech, Inc.

(2) BCOES reviews are required by ER 415-1-11 to be performed at the design criteria, 95% design completion, and final back check project stages. District policy is to also perform a BCOES review at the 50% design completion stage. Individuals assigned to the BCOES review team for this project are listed below.

(3) A plan-in-hand (PIH) review will not be performed for this project. Work within a sewer system is not easily accessible and visiting the site during the design will be of little benefit to the Government.

(4) Supervisory reviews will be performed after others have been completed. Reviewers will check the Ready to Advertise (RTA) package to confirm that all reviews have been completed and back checked; all files are properly labeled by project milestone and filed in ProjectWise; all certifications are completed; and the package is ready for advertisement. The supervisory reviewers are listed below.

**b. Agency Technical Review (ATR)**

For implementation documents, agency technical review (ATR) is required according to EC 1165-2-214. The design documentation report (DDR) and plans and specifications for this project will undergo ATR. LRD is the Review Management Organization (RMO) for the project and will manage the ATR effort. However, LRD delegates the authority to the District to organize and administer the ATR. The ATR will be conducted in accordance with procedures in EC 1165-2-214. The ATR team will use the DrChecks program to manage review comments.

Based on the scope of the project work and the risk analysis at Section 4.a above, the following discipline must be represented by members of the ATR team: civil engineering. Given the complexity of the project and the fact that the majority of the work will occur within the existing pipe and manhole structures, the PDT and the LRE Chief of Engineering & Construction have agreed that the selected ATR reviewer will be sufficient to complete the requirements of the ATR Review. The reviewer selected is a senior level expert in the described discipline area and is

certified in the CERCAP database.

The ATR reviewer for this project is listed below.

## 6. PUBLIC INVOLVEMENT

### a. Public Comment Period

Public involvement for this will include posting the approved the MSC review plan on the District website, to which the public will have access.

## 7. IN-KIND CONTRIBUTION BY SPONSOR

There are no in-kind contributions from the sponsor for the development of the implementation documents.

## 8. REVIEW SCHEDULE AND COSTS

### a. District Quality Control

Schedules and costs for the DQC reviews outlined in Section 5.a are listed in the table below.

<b>DQC REVIEWS</b>	<b>SCHEDULE</b>	<b>COST</b>
Calculation Checks	March 2015	\$3,000
BCOES Reviews: Pre-Design Conference 50% Design BCOES 50% Backcheck 95% Design BCOES 95% Backcheck	March 2015 April 2015 April 2015 May 2015 June 2015	\$9,000
100 % Design Supervisory Reviews	June 2015	\$1,000

### b. Agency Technical Review

The ATR is scheduled to begin in March 2015 after the 50% BCOES Review and prior to the 100% Design Supervisory Review. The budgeted cost for the ATR is \$4,000.

## 9. MSC APPROVAL

The District will submit this review plan to the Division Commander for approval. This plan is a living document and will be revised and submitted for re-approval should the project scope and schedule change substantially.

## **10. REVIEW PLAN POINTS OF CONTACT / VERTICAL TEAM CONTACTS**

Questions and/or comments relating to this review plan can be directed to the following points of contact:



**ATTACHMENT 1: SAMPLE STATEMENT OF TECHNICAL REVIEW**

**COMPLETION OF AGENCY TECHNICAL REVIEW**

The Agency Technical Review (ATR) has been completed for the implementation documents for the FY15 Oakland County GWK Drain Rehabilitation project in Oakland County, Michigan. The ATR was conducted as defined in the project’s Review Plan to comply with the requirements of EC 1165-2-214. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer’s needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrChecks<sup>sm</sup>.

*SIGNATURE*

\_\_\_\_\_  
Name  
ATR Team Leader  
Office Symbol/Company

\_\_\_\_\_  
Date

*SIGNATURE*

\_\_\_\_\_  
Name  
Project Manager (home district)  
Office Symbol

\_\_\_\_\_  
Date

*SIGNATURE*

\_\_\_\_\_  
Name  
Architect Engineer Project Manager<sup>1</sup>  
Company, location

\_\_\_\_\_  
Date

*SIGNATURE*

\_\_\_\_\_  
Name  
Review Management Office Representative  
Office Symbol

\_\_\_\_\_  
Date

**CERTIFICATION OF AGENCY TECHNICAL REVIEW**

Significant concerns and the explanation of the resolution are as follows: Describe the major technical concerns and their resolution.

As noted above, all concerns resulting from the ATR of the project have been fully resolved.

*SIGNATURE*

\_\_\_\_\_  
Name  
Chief, Engineering Division (home district)  
Office Symbol

\_\_\_\_\_  
Date

<sup>1</sup> Only needed if some portion of the ATR was contracted

**ATTACHMENT 2: REVIEW PLAN REVISIONS**

<b>Revision Date</b>	<b>Description of Change</b>	<b>Page / Paragraph Number</b>

### ATTACHMENT 3: ACRONYMS AND ABBREVIATIONS

<b><u>Term</u></b>	<b><u>Definition</u></b>	<b><u>Term</u></b>	<b><u>Definition</u></b>
AFB	Alternative Formulation Briefing	NED	National Economic Development
ASA(CW)	Assistant Secretary of the Army for Civil Works	NER	National Ecosystem Restoration
ATR	Agency Technical Review	NEPA	National Environmental Policy Act
CAP	Continuing Authorities Program	O&M	Operation and maintenance
CSDR	Coastal Storm Damage Reduction	OMB	Office and Management and Budget
DPR	Detailed Project Report	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
DQC	District Quality Control/Quality Assurance	OEO	Outside Eligible Organization
DX	Directory of Expertise	OSE	Other Social Effects
EA	Environmental Assessment	PCX	Planning Center of Expertise
EC	Engineer Circular	PDT	Project Delivery Team
EIS	Environmental Impact Statement	PAC	Post Authorization Change
EO	Executive Order	PMP	Project Management Plan
ER	Ecosystem Restoration	PL	Public Law
FDR	Flood Damage Reduction	QMP	Quality Management Plan
FEMA	Federal Emergency Management Agency	QA	Quality Assurance
FRM	Flood Risk Management	QC	Quality Control
FSM	Feasibility Scoping Meeting	RED	Regional Economic Development
GRR	General Reevaluation Report	RMC	Risk Management Center
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RMO	Review Management Organization
IEPR	Independent External Peer Review	RTS	Regional Technical Specialist
LRR	Limited Reevaluation Report	SAR	Safety Assurance Review
MSC	Major Subordinate Command	USACE	U.S. Army Corps of Engineers
		WRDA	Water Resources Development Act