

4.0 LEVEES

4.1 Sampling of References

- EM 1110-2-1913, Design and Construction of Levees, 30 Apr 00
- LADOTD Standard Specifications for Roads and Bridges, Louisiana Department of Transportation and Development

In addition, Section 12 of this document includes typical details applicable to levee design and construction.

4.2 Preliminary Work

4.2.1 Develop Project Delivery Schedule

Develop project delivery schedule in advance of anticipated start date. A standard timeline based on complexity of project shall be utilized as a basis for developing the schedule. Accelerated design contracts shall be adjusted accordingly to meet project deadlines for project delivery completion dates. The Product Delivery Team (PDT) members shall be consulted to provide time frames for incorporation into the schedule.

4.2.2 Initial Project Site Visit

Visit the site of work with the PDT. The site visit is commenced after becoming familiar with the area through the office study. Walking the proposed project and potential borrow areas shall be performed to gather physical information. Physical features to be observed are inventoried by detailed notes, supplemented by photographs. Local persons, the local sponsor and/or organizations having knowledge of existing conditions and facilities in the area should be interviewed to gather information concerning subsurface utilities, historical problematic conditions, etc. A site inspection report shall be prepared for permanent files summarizing the findings with prints of significant photos.

4.2.3 Preliminary Requests to PDT

Request right of entry (ROE) for surveys, borings, HTRW, cultural resource and environmental investigations encompassing the entire project area and potential borrow areas as determined during the initial project site visit.

4.3 Project Delivery Work

4.3.1 Request for Initial Engineering Input from PDT

Request initial utility locations/ownership determination, field surveys, design borings, hydraulics and initiation of preliminary HTRW, cultural resource and

environmental investigations. A sample survey request form for internal MVN use is shown in Figure 4.1. Note in 4.3.2 below that further information is to be provided to the Environmental Team with additional detailed input for the investigations.

4.3.2 Construction Solicitation Documents Preparation

4.3.2.1 Initiate Final Requests for Engineering Input into Construction Solicitation Documents

Upon receipt of field surveys, verify that they have been performed as requested and are complete and include all requested deliverables. Upon receiving the soils report for the project from the Geotechnical Team, read and understand the report and required construction items to be included in the construction documents.

Investigate the impacts of construction using multiple lifts in coordination with the Geotechnical Engineer and the rest of the design team. Seek a plan that will provide high levels of protection quickly while minimizing costs. Consider the need for future lifts due to long-term settlement, sea level rise, etc., in order to maintain authorized Level of Protection throughout project design life.

Based on required embankment design from the soils report, determine initial fill quantities and consult with the Geotechnical Team to determine most suitable borrow area(s) to take detailed surveys and borrow borings. Request ROE for borrow area surveys and borrow borings. Drainage impacts of the required embankment sections shall be investigated and the Hydraulics Team shall be consulted to determine adjustments to existing drainage features.

Request Environmental Team to begin all HTRW, cultural resource and environmental clearances of project and borrow area. The request shall include all information and drawings as stipulated in the appendix to this section describing Engineering Input.

4.3.2.2 Right of Entry for Construction

Prepare request for ROE into right of way (ROW) from Real Estate Team.

Prepare ROW drawings showing limits of project and existing and new ROW (if needed), required construction easements, required limits of construction within existing ROW and all temporary access easements. The required design section shall be applied to the existing surveys to determine extents of work to be constructed outside of existing ROW. A meeting with the Geotechnical Team shall be held to determine if there are any alternative design sections to keep the design section within existing ROW (i.e. structural solutions, reinforcement geotextile to reduce berm section, etc.). A cost comparison shall be investigated

to determine most feasible solution (i.e., acquire new ROW vs. cost of I-Wall, T-Wall or a geotextile reinforced section).

Determine impacts to required new right of way of the authorized grade level of protection and 50 year future level of protection design section (to be provided from Geotechnical Team with final soils report). Meet with the Project Manager to evaluate the 50 year future levee footprint and potential to construct 50 year future design section versus authorized grade levee. Consideration will also be given to acquiring a minimum 15 feet beyond the toe of the levee to enhance access for maintenance and to keep trees and adjacent construction well clear of the design section.

Send request for ROE for construction ROW (with ROW drawings as prepared above) to Real Estate Team.

4.3.2.3 Construction Solicitation Documents

Using the design input from all PDT members, prepare detailed plans for construction of the flood protection project. Include all necessary details for construction of the flood protection project. Prepare specifications including all required technical specification sections and a bid schedule to include all biddable items. Calculate all quantities.

Conduct Independent Technical Review (ITR). Upon completion incorporate all changes to the construction solicitation documents as a result of the ITR. Obtain ITR certification.

Conduct BCOE Review. Construction solicitation documents shall be sent to all PDT members, other offices required, local sponsor, utility owners, and all local, state, and Federal agencies as required to review the P&S.

A plan-in-hand site inspection shall be conducted during BCOE review period. The PDT, Construction Division representatives, local sponsor and other persons as required based on project shall take part. Any changes to existing site conditions, potential design changes, etc shall be documented and photographed. A brief report of the plan-in-hand inspection indicating significant findings shall be prepared and disseminated to the PDT.

Evaluate all comments from the BCOE review.

Note that all reviews shall be conducted in DrChecks, and are considered complete when all comments are closed. The comments and comment evaluations must be thoroughly reviewed and checked prior to final input into the DrChecks review system.

A BCOE comment resolution meeting shall be held with all commentors to evaluate comment responses and resolve any and all comments not adequately evaluated. A brief report shall be prepared for the files transcribing discussions during the meeting. All DrChecks comments shall be closed out for BCOE completion.

All changes as a result of BCOE review shall be incorporated into the construction solicitation documents. All quantity calculations shall be verified and the documents checked thoroughly prior to the 100% complete documents being delivered to begin advertisement.

4.4 Engineering Input for NEPA

4.4.1 Description of Work

Provide a general description of work including the purpose and need for the work and alternatives considered. The description must include the following: method and duration of construction, time of construction (season, daytime only 24 hr. etc), equipment used, description of site preparation (grubbing etc), types of equipment used, description of construction access routes to include haul roads, residential routes and flotation channels etc., borrow needs and location. If any borrow material is utilized note the source, location, deposition area and whether the pit is existing and permitted or new.

4.4.2 Maps and Drawings

Provide an electronic copy (Jpeg or PDF file) of project vicinity map vicinity map.

Provide an electronic copy (Jpeg or PDF file) of the project footprint and construction area as an overlay on the most current aerial photography of the site. The electronic site map should also include latitude and longitude, north arrow, and identifier place name.

Provide engineering drawings (jpeg or PDF) of levee sections excavation etc.

Line work should include acreage of footprint affected by the project, limits of work, construction right of way, no work zones, stockpile area, staging areas, wash racks, fuel containment areas etc.

Where the footprint will exceed the original levee footprint the new area of impact should be clearly indicated on the drawing.

Required borrow areas should be identified on a vicinity map, current aerials with north arrow, latitude and longitude as well as acreages of the pit delineated.

Drawings of canal work or channel improvements denoting dredged depth and changes in configuration.

Drawings shall note all areas such as commercial storage, abandoned gas/fuel stations, etc., which could contain obvious potential HTRW or environmental issues. The designer shall consult with the Environmental Team Leader on such areas to determine applicability of engineering information to be provided.

4.4.3 Borrow Material

Prepare a map of borrow areas as noted above.

Note cubic yards of material used.

Provide soil type (as noted in borings i.e. sandy loam, clays w/ organics etc.).

Provide containment analysis if applicable.

Note where material is deposited (either stockpiled, used or both).

CEMVN-ED-L								
MEMORANDUM FOR C/Design Services Branch	Date:							
SUBJECT: Survey Request Form	Job No.:							
1. Job Title:								
2. Job Location:								
Levee District:								
Nearest Town:								
3. Type of Survey: (Check as Applicable)								
a. <input type="checkbox"/> Cross-Sections; Approx Number:								
b. <input type="checkbox"/> Profile(s); Estimated Length:								
c. <input type="checkbox"/> Hydrographic								
Referenced to <input type="checkbox"/> C/L <input type="checkbox"/> B/L								
d. <input type="checkbox"/> B/L Traverse; Estimated Length:								
<table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><input type="checkbox"/> New</td> <td style="text-align: center;"><input type="checkbox"/> Re-establish</td> <td style="text-align: center;"><input type="checkbox"/> Recover</td> <td style="text-align: center;"><input type="checkbox"/> Offsets Allowed</td> </tr> </table>			<input type="checkbox"/> New	<input type="checkbox"/> Re-establish	<input type="checkbox"/> Recover	<input type="checkbox"/> Offsets Allowed		
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f. <input type="checkbox"/> Reference Off-sets								
g. <input type="checkbox"/> Other: _____								
<table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">Station</td> <td style="text-align: center;">Cross-Section</td> <td style="text-align: center;">Shot</td> </tr> <tr> <td style="text-align: center;">Limits</td> <td style="text-align: center;">Interval</td> <td style="text-align: center;">Int.</td> </tr> </table>			Station	Cross-Section	Shot	Limits	Interval	Int.
Station	Cross-Section	Shot						
Limits	Interval	Int.						
4. Control: Vertical Horizontal								
Enclosed: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No								
Datum: <input type="checkbox"/> NAVD88 <input type="checkbox"/> NAD-1927								
<input type="checkbox"/> NGVD-1929 (MSL) <input type="checkbox"/> NAD-1983								
<input type="checkbox"/> CAIRO <input type="checkbox"/> Pre-83								
Epoch: <input type="checkbox"/> 2004.65								
<input type="checkbox"/> Post-83 (Latest)								
<input type="checkbox"/> Other Pre -83								
Accuracy Required:								
<table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><input type="checkbox"/> 3rd</td> <td style="text-align: center;"><input type="checkbox"/> 3rd</td> </tr> </table>			<input type="checkbox"/> 3rd	<input type="checkbox"/> 3rd				
<input type="checkbox"/> 3rd	<input type="checkbox"/> 3rd							
5. Description of work to be performed:								
6. Field Books Required: <input type="checkbox"/> Yes <input type="checkbox"/> No								
7. Right of Entry Available: <input type="checkbox"/> Yes <input type="checkbox"/> No								
Available by:								
Requested on:								
8. Please Provide: <input type="checkbox"/> Cost Estimate								
<input type="checkbox"/> Time Schedule								
<input type="checkbox"/> Resume of Negotiations								

Figure 4.1 Sample Survey Request Form (continued on next page)

9. Cost Account #'s:
Contract:
In-House:
S & I:

10. Date Completed Survey Required:

11. Copy of Plans, Maps, Drawings, Etc. Enclosed: Yes No

12. Point of Contact:

LOUIS E. DANFLOUS, P.E.
Chief, Civil Branch

Encls

Figure 4.1 Sample Survey Request Form (continued from prior page)