



PROCEDURES FOR  
DESIGN OF  
CANAL PROJECTS  
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The Department has made a strong commitment to maintain and preserve the New York State Canal System. Maintenance and Operation programs are expected to be augmented by various Capital expenditure programs. Virtually all of these funds should be expended on Canal Rehabilitation projects. We expect these funds to routinely be used for non-bridge canal projects. Bridge canal projects are eligible for normal bridge funding but may be progressed under this program.

The Structures Division has been made responsible for the structural design of all Canal Rehabilitation projects. Basically, these projects will be processed in the same manner as bridge rehabilitation projects, from PIR thru contract award and construction. However, some modifications to existing bridge rehabilitation procedures are necessary to adapt the process to the unique requirements inherent to Canal projects. Accordingly, the specific features of the process for delivering a Canal Rehabilitation project are outlined below:

1. The Waterways Maintenance Division will develop the overall program, with the approval of the Program Planning and Management Group.
2. All Project Initiation Requests for Canal projects will be prepared in the respective Regional Offices. PIR's will be forwarded initially to the Waterways Maintenance Division for concurrence with the overall Canal Program. Assuming their concurrence, the PIR will then be submitted by the Regional Office to the Program Planning Bureau for normal PIR review and processing throughout the Main Office.
3. The Region must indicate, within the PIR, if they will be able to perform entire project design in-house. Each project can involve structures type work and/or may involve highway type work. It is presumed that on most Canal projects the structures type work will comprise the majority of the project work. The responsible agency and designer will be determined as follows:

Responsible Agency - The Structures Division will be the responsible agency for all Canal Projects with structural work (i.e. Gates, locks, walls, etc.)

- The Region will be the responsible agency for all non-structural Canal Projects.

Designer - For projects with highway design, structures design, or both,  
- If the Region can do all the design work, they will be assigned the project.

- For projects with mixed designs, if the Region can do the highway work but not the structures work, the Region will be assigned the highway work and the Structures Division will decide whether or not they will do the structures work or a consultant.\* If a consultant is used, the Design Review Section of the Structures Division will manage the consultant.

- For projects with mixed designs, if the Region can not do any of the design work, the Design Bureau will be consulted as to whether they can do the highway work. If they can, they will be assigned the highway work. If they can not, the highway work will be assigned to a consultant. The Structures Division will decide whether they will do the structures work or a consultant.\*

If the entire design is being done by a consultant, the Structures Division will manage the consultant and will take action to have the consultant designated upon receipt of the HC 190a form from the Region. If only the highway section is being done by a consultant, the Design Bureau will manage the consultant.

- For only structural design projects, assuming the Region can not do the design work, the Structures Division will decide whether they will do the structures work or a consultant.\* If a consultant is assigned the design work the project will be managed by the Structures Division.
- For projects with highway design only, assuming the Region and Design Bureau can not do the design, the Design will be assigned to a consultant and managed by the Design Bureau.

\*The factors which will determine the designer are:

- a. the scope of work included in the project,
- b. the schedule for the project,
- c. the projected workload of the Division,
- d. the accessibility of the site for inspection,
- e. and the ability of the Region to provide basic input data for the design. This will often be the controlling factor and is detailed further under 5. below.

4. A Canal Rehabilitation Project Report (CRPR) must be prepared for all Canal projects as a prerequisite for Design Approval for projects that have structural design. This Report is expected to be much less complex than a Bridge Rehabilitation Project Report (BRPR). The CRPR's purpose is to describe the existing conditions, to show that the proposed work is justified and that the measures to be taken will correct the deficiencies in the most appropriate way.

The Region Office will produce the CRPR when the design is assigned to the Structures Division or the Region. The Consultant will produce the CRPR when the design is assigned to a Consultant. The Structures Division will review the CRPR for all projects except when the structural design is being done in the Region. In that case, the CRPR need only be forwarded to the Bridge Office during plan review. Consultant generated CRPR's will also be reviewed by the Region.

5. The CRPR will usually include, but not be limited to, the following:
  - A. A brief description of the facility, including a history which describes all previous relevant problems and the work done to correct them.
  - B. A discussion of all feasible alternatives.
  - C. A description of the proposed rehabilitation, specifically laying out limits and extent of work. Sketches and original photographs, not copies, shall be provided to amply demonstrate the intended work.
  - D. The results of an in-depth inspection, including the location and results of cores, test pits, soil borings, etc. This material should support the work recommended under C. above.
  - E. Data relating to the accessibility of the site, such as where equipment may be placed or material stored, when construction must be performed because of Canal water levels or Canal operations, etc. The proposed project schedule should be explained.
  - F. Miscellaneous pertinent data, such as the identification of required permits, any detours, any environmental, historical, political or parkland issues, etc.

The Report should attempt to answer but at least address all foreseeable questions that might arise during the course of the design. This will enable the Designer to conduct a field inspection of a confirmatory nature, rather than an exploratory inspection.

The CRPR shall be submitted to the Structures Division, where appropriate at least one month prior to the scheduled start of structural design (see 7. below). It should be accompanied by a set of existing plans and any additional information (comparable to "bridge site data") necessary to the design.

The CRPR Report will be returned to author for revisions as necessary. Upon receipt of the final acceptable CRPR, and where appropriate, formal acceptance will be granted by the D.C.E.S.

If the Region cannot commit to producing the CRPR and furnishing the necessary accompanying data, it should be so stated in the PIR. The Region should be aware that when they cannot produce the CRPR, a Consultant will be hired to do so. In this event, it is highly likely that the Consultant will handle the entire project including design.

6. Design Approval for all Canal projects with structural design will be granted in writing by the D.C.E. (Structures), except rarely when the project is to be a Federally aided. Initially, all Federal aid projects are expected to be N.C.A. In this case, Design Approval will be granted by F.H.W.A., following the routine procedure. All other Canal projects will have design approval granted by the Regional Director.

7. After Design Approval, structural design may commence. Structural design phase time will be set by the Structures Division for structural designs done by the Structures Division or a Consultant during the PIR review. It will vary from project to project. Projects designed by the Region shall have the phase time stated in the PIR.

A preliminary submission will be required, to illustrate the general details of the proposed work, regardless of who does the structural design. This will be reviewed by all interested parties to insure that the final plans resolve all critical items.

A Canal preliminary submission will differ from the usual Bridge Preliminary Plan. More emphasis will be placed on the Specifications, Construction Items to be used, construction procedures and schedules, and restrictions on the Contractor. The overall plan may be more informal, but repair details will be important. Since Design Approval will already have been granted, the preliminary submission is really a preview of the PS&E package which will allow for a mid-course correction. The Structures Division will approve the preliminary submission for all projects with structural design and distribute the final version to all interested parties and reviewers.

8. Any necessary Hydraulic design will be produced by the Structures Division. Hydraulics will be evaluated at the PIR stage and hydraulic design will be completed as the first element of structural design.

Any Coast Guard involvement, including a permit, will be handled by the Structures Division. Any Corps of Engineers involvement, including permits and water quality certificates, will be handled by the Region Office. It will be the responsible agency's job to see that either Coast Guard or Corps of Engineer's requirements have been satisfied.

9. Geotechnical requirements will be finalized during the review of the preliminary submission. The Soils Bureau should be contracted during the writing of the CRPR. The results of their investigation will be used by the Structures Division in determining the foundation parameters to which the designer will strictly adhere on all projects with structural design.
10. Advanced plan submission for projects with structural design done outside the Structures Division will generally be required.
11. The designer will be responsible for the plans, specifications, estimate, and the Report on Design (A Summary of design information which permits quick familiarization with the proposed contract) to the Region. The remaining tasks necessary to progress the PS&E package shall be the responsibility of the Region or in some cases the Consultant retained to do this work.
12. Scope change requests will be submitted to Capital Projects by the Region. The normal SCR review procedure will allow all interested parties to comment.