

The **SELA Report**

Southeast Louisiana Flood Control Project



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of Engineers
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Just for Rainfall Flooding...

Low-lying land in southeast Louisiana endures attacks by nature on a regular basis.

It is drenched by rain and pounded by hurricanes. If the land were unoccupied, nature could run free, but urban areas, like metropolitan New Orleans, need protection from both hurricane storm surges and rainfall flooding. These two distinct problems require drastically different solutions.

The essential difference between hurricane protection efforts and projects that drain rainfall flooding is that levees and floodwalls for hurricane protection are designed to prevent water from getting in, while canals and pumps for rainfall flooding move rainwater out. These systems, unfortunately, can work at cross purposes. For example, the floodwalls and levees necessary to keep storm

surges out of New Orleans enhance the natural bowl in which the city sits by raising its sides, so that even more water is held within the city.

And since New Orleans can annually expect both a storm producing at least 4.5 inches of rain in 24 hours and a storm dropping at least 2.1 inches of rain in one hour, the city desperately needs a way to empty that bowl.

Canals and pumping stations offer drainage solutions throughout southeast Louisiana's urban areas. These two features rely on each other to successfully remove trapped rainfall — canals carry rainwater to or from pumping stations that draw it out of the city. If the system is to work efficiently, the carrying capacity

of a canal must match the pumping capacity of its pump station. This means that improving a pump is useless if the canal can't handle additional water and vice versa.

SELA projects address rainfall flooding problems by increasing the capacity of both canals and pump stations. Each project either builds, improves or enlarges a part of the drainage system while maintaining relative capacity levels in connecting sections. ♦



Post-Authorization:

Studying New Projects in Orleans and Jefferson Parishes

Even the best-laid plans sometimes need adjustment, and the plans for SELA projects are no exception. As ideas unfold, new problems may arise, better approaches may be discovered and the scope of work may vary.

Recognizing the need for some fine tuning, Congress allows changes to approved projects through what is known as a post-authorization process.

This process begins when a post-authorization change study is written by U.S. Army Corps of Engineers personnel in New Orleans. This study analyzes the change's benefit/cost ratio, feasibility, degree of rainfall flood protection and environmental acceptability.

The study is submitted to the Corps' division office and to its headquarters in Washington, D.C., for approval. Once the report has been approved, the work will be incorporated into the authorized project, and design and construction will proceed.

Currently, both Orleans and Jefferson parishes are studying post-authorization projects.

Orleans Parish People's Triangle

Engineers are considering widening 6,800 feet of Florida Avenue Canal from People's Avenue to Pump Station No. 19. Another option is the construction of five additional box culverts at intersections along Florida Avenue Canal — two at People's Avenue Canal, two at Franklin Avenue and one at Piety Street.

Uptown

This alteration would add 6,000 feet of box culverts along South Claiborne from

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Monticello to Adams. In addition, 8,000 feet of box culverts would be constructed along both Jefferson and Napoleon avenues as well as 7,500 feet along Louisiana Avenue. Constructing the nearly 30,000 feet of box culverts would extend the work of existing SELA projects, including the construction of a

new culvert on Napoleon Avenue from Fontainebleau Drive to Claiborne.

Jefferson Parish

West Bank East of Harvey Canal

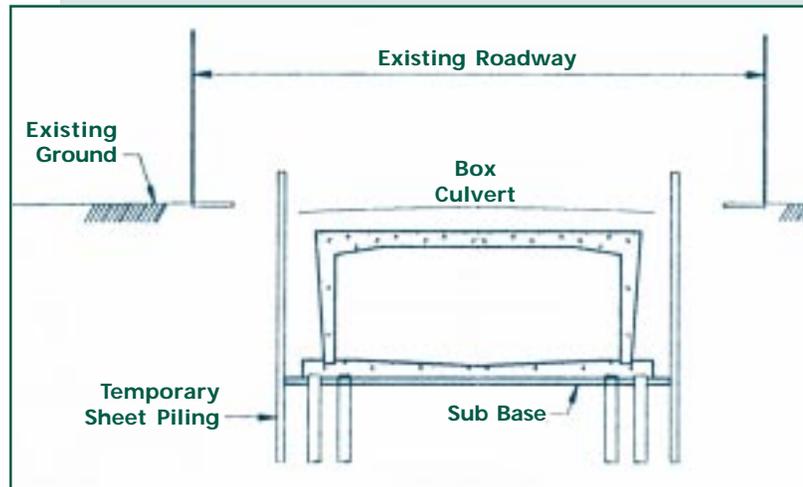
In this proposed modification, three canals, Murphy, Trapp and Industry, are possible improvement sites intended to

increase water capacity in the area. The study is examining four methods of improving the canals' rainfall drainage capacity and their cost-effectiveness:

- A trapezoid lined with concrete from the water level up, lined with rip-rap below the water level and left with a soft bottom
- A completely concrete-lined trapezoid
- A concrete flume-trapezoid combination consisting of a bottom flume topped with angled, trapezoid sides
- A concrete flume

In addition, the project would increase the Whitney-Barataria pumping station capacity by 1,000 cubic feet per second (cfs). ♦

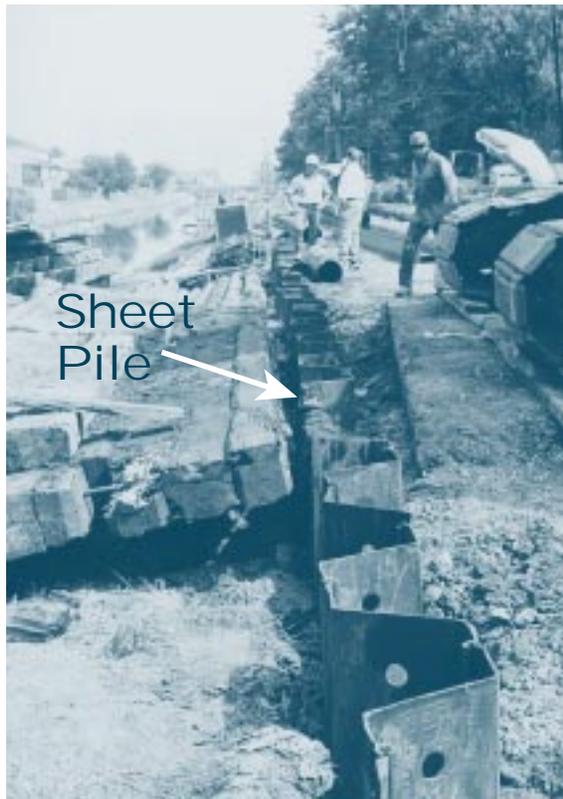
What's a Box Culvert?



Box culverts are a common conduit for channeling rainwater out of Orleans Parish. They are typically pre-cast concrete boxes that are placed under existing roadways. The projects currently under post-authorization study in Orleans Parish could use box culverts similar to the design shown at left.

Tools of the Trade:

Sheet Pile

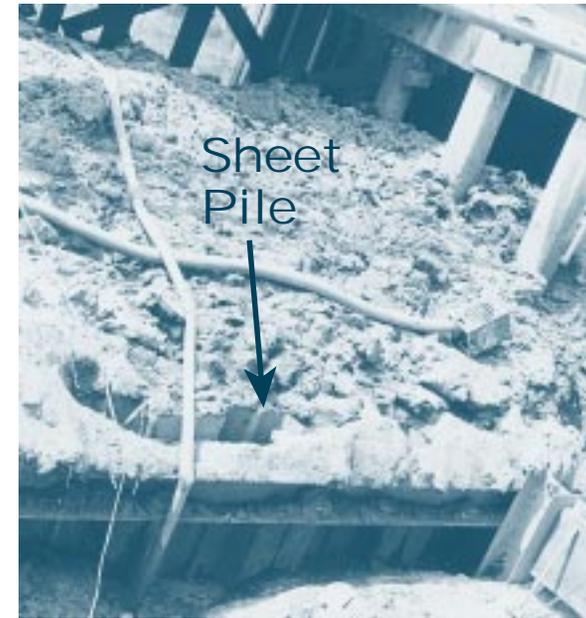


Sheet pile driven into the ground at the canal's new width. The existing canal can be seen in the background.

Expanding canals and pumping stations is no everyday construction task.

SELA contractors contend with water-filled canals, cramped work space and countless other problems as they strive to improve the area's rainfall flood control systems. Because of the complexities involved in accomplishing their work, contractors frequently use special tools and materials to get the job done. One of the most commonly used and important materials is sheet pile.

Sheet pile is a long, corrugated section of metal that is driven vertically into the soil to form part of a retaining wall. For instance, if a project requires the widening of a canal, contractors will frequently begin by driving sheet piling into the ground at the canal's planned new width (see photo at left). The sheet piling holds back the earth behind it as workers excavate the dirt between the piling and the existing canal. When the excavation is completed, the canal has been widened out to the sheet piling.



Sheet pile used to reinforce earthen dam.

Contractors also use sheet piling to reinforce temporary earth dams that construction crews erect in canals to prevent water from entering the work area. Under construction guidelines, these dams must be constructed of excavated dirt so that they may be removed quickly in the event of heavy rainfall. The sheet piling protects the workers in the canal by ensuring that the dams don't collapse unexpectedly (see photo above). ♦

Construction Update:

Jefferson Parish Moves Forward With Canal Improvements

About 40 SELA projects are planned for construction in Jefferson Parish. At present, two are complete, another 10 are under construction, and 19 more projects are slated to begin construction in 1999. In total, SELA improvements in Jefferson Parish will cost nearly \$278 million. The photos on these two pages indicate some of the progress being made on two of the 10 projects currently under construction. ♦



Keyhole Canal from Lapalco to Railroad Canal

Improvements to Keyhole Canal on the west bank of the Mississippi include the construction of nearly 2,800 feet of improved earthen channel and 2,100 feet of concrete-lined canal. Total construction cost is \$1.7 million.



The photo at top shows construction progress on the concrete-lined portion of the canal. The trapezoid design of the sloped walls is a common canal design in SELA projects. The bottom photo illustrates the use of earthen dams to dewater a construction area. The dam prevents water from entering the construction area but can be easily removed if necessary.

Canal No. 3 from I-10 to Elmwood Canal

Improvements to Canal No. 3, which runs under I-10, include the construction of more than 4,000 feet of concrete flume and concrete-lined channel at a cost of \$7.2 million.



After dewatering the work area with an earthen dam, construction teams set up forms for pouring concrete to line the channel. Rebar is used to reinforce and strengthen the concrete base of the channel.



The photo above shows the project area prior to construction. In its original state, Canal No. 3 was an earthen channel -- one of the most common types in Jefferson Parish. Notice the height of the water against the I-10 support columns.



With the forms and rebar in place, workers begin pouring the concrete lining. Because concrete-lined canals can carry water at a faster rate than earthen canals, this canal, which feeds Pumping Station No. 2 on Lake Ponchartrain, will be able to move more water per hour than before.

St. Tammany Projects Set for Authorization

Planning is moving forward and authorization will be achieved soon for several SELA projects in St. Tammany Parish, according to Army Corps of Engineers project managers.

The Corps is in the process of completing plans for structure-raising projects in Abita Springs, Lacombe and near Bayou Chinchuba. The plans involve detailing all the tests that will be used to identify eligible structures, notifying the owners and determining which owners are interested in participation.

When the project plans are complete, the Corps will execute Project Cooperation Agreements with the non-federal (local) sponsors of each project. Letters of intent agreeing to sponsor the projects have been received from the St. Tammany Police Jury for the Abita Springs and Lacombe projects and from

the City of Mandeville for the Bayou Chinchuba projects.

The Mandeville Hurricane Protection Project, while not quite as far along in the planning as the three already mentioned, is proceeding as well. Post-authorization changes had to be implemented after residents requested that the project's focus be changed from levees and floodwalls to structure-raising. Progress on a project management plan is expected in the first quarter of 1999. The City of Mandeville has provided a letter of intent to sponsor the project.

A fourth project, the Mile Branch channel improvement project, has seen interaction between the Corps and the

City of Covington, which has signed a letter of intent to sponsor the project. The city has requested a scaled-down version of the original plans that would be economically feasible for them to fund. The city had the channel surveyed at its expense, and Corps personnel are currently identifying channel modifications that would meet both the city's needs and its budget.

Finally, the city of Slidell has taken the first step toward sponsoring a reduced flood control plan that involves the City of Slidell only and not its environs. The city council on September 22 authorized Mayor Sam Caruso to sign a letter of intent with the Corps voicing support for the project and asking the Corps to continue its evaluation of the plan.

The Slidell project now being considered is a smaller version of the Gravity Drainage District 3 plan which died in April 1998 when voters turned down a ¼-cent sales tax increase to fund the project. ♦