

SUSITNA HYDROELECTRIC PROJECT

FERC LICENSE APPLICATION

EXHIBIT C

FIRST DRAFT

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Prepared by:



ALASKA POWER AUTHORITY

EXHIBIT C - CONSTRUCTION SCHEDULE

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EXHIBIT C - CONSTRUCTION SCHEDULE

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EXHIBIT C - CONSTRUCTION SCHEDULE

1 - SCHEDULE DEVELOPMENT

This section describes the development schedules prepared for both Watana and Devil Canyon to meet the on-line power requirements of 1993 and 2002, respectively. These schedules span the period from 1983 until 2004. Schedules for the development of both Watana and Devil Canyon are shown on Figures C.1 and C.2. The main elements of the project have been shown on these schedules, as well as some key interrelationships. For purposes of planning, it has been assumed that a license will be awarded by December 31, 1984.

At both sites the period for construction of the main dam is critical. Other activities are fitted to the main dam work. A study of the front end requirements at Watana concluded that initial access work should commence immediately after award of a license to construct and operate the project. This effort will lead to the earliest possible buildup of manpower and equipment to meet construction requirements for early critical path activities including river diversion and the main dam.

1.1 - Watana Schedule

Commencement of construction:

Initial access road	- June, 1983
Site facilities	- January, 1985
Diversion	- April, 1985

Completion of construction:

Four of six units ready	- January, 1994
Six units ready	- July, 1994

Commencement of commercial operations:

Four of six units	- January, 1994
Six units	- July, 1994

The Watana schedules were developed to meet two overall project constraints:

- FERC license would be issued by December 31, 1984; and
- Four units would be on-line by the end of 1993.

The critical path of activities to meet the overall constraints was determined to be through site access, site facilities, diversion and main dam construction. These are highlighted as follows:

(a) Access

Initial road access to site is required by October 1, 1985. Certain equipment will be transported overland during the winter months so that an airfield can be constructed by July 1985. These initial access efforts are required to mobilize labor, equipment, and materials in 1985 for the following major construction activities:

- Main access road/railhead;
- Site facilities;
- Diversion; and
- Main dam.

(b) Site Facilities

Site facilities must be developed in a very short time to support the main construction activities. A camp to house more than 1,000 men must be constructed during the first eighteen months. Site construction roads and contractors' work area have to be started. An aggregate processing plant and concrete batching plant must be operational to start diversion tunnel concrete work by May 1986. Construction power supply must also be started in 1985 for completion by mid-1987. One circuit of the permanent transmission line should be built from the proposed intertie at Gold Creek to Watana.

(c) Diversion

Construction of diversion and dewatering facilities, the first major activity, should start by mid-1985. Excavation of the portals and tunnels requires a concentrated effort to allow completion of the lower tunnel for river diversion by September 1986. The upper tunnel is needed to handle the spring runoff by 1987. The upstream cofferdam must be placed to divert riverflows in September 1986 and raised sufficiently to avoid overtopping by the following spring.

(d) Main Dam

The progress of work in the main dam is critical throughout the period 1986 through 1992. Mobilization of equipment and start of site work must begin in 1986. Excavation on the right abutment proceeds in 1986, as well as river alluvium under the dam core. During 1987 and 1988, dewatering, excavation and foundation treatment must be completed in the riverbed area and a substantial start made on placing fill.

The schedule has also been developed to take advantage of possible early reservoir filling to the minimum operating level by October 1992. Should this occur, power could possibly be generated by the end of 1992.

1.2 - Devil Canyon Schedule

Commencement of construction:

Main Access - April, 1992
Site Facilities - June, 1994
Diversion - June, 1996

Completion of construction:

Four units - October, 2002

Commencement of commercial operations:

Four units - October, 2002

The Devil Canyon schedule was developed to meet the on-line power requirement of all four units in 2002. The critical path of activities was determined to follow through site facilities, diversion and main dam construction.

(a) Access

It has been assumed that site access facilities built for Watana exist at the start of construction. A road will be constructed connecting the Devil Canyon site to the Watana access road. At the same time, a railroad spur will be constructed to permit railroad access to the south bank of the Susitna near Devil Canyon. These activities will be completed by mid-1994.

(b) Site Facilities

Camp facilities should be started in 1994. It has been assumed that buildings can be salvaged from Watana. Site roads and power could also be started at this time.

(c) Diversion

Excavation and concreting of the single diversion tunnel should begin in 1995. River closure and cofferdam construction will take place to permit start of dam construction in 1996.

(d) Arch Dam

The construction of the arch dam will be the most critical construction activity from start of excavation in 1996 until topping out in 2001. The concrete program has been based on an average 8-month placing season for 4-1/2 years. The work has been scheduled to maintain a fairly constant effort during this period to make best use of equipment and manpower.

(e) Spillways and Intake

The spillway and intake are scheduled for completion by the end of 2000 to permit reservoir filling the next year.

(f) Powerhouse and Other Underground Works

Excavation of access into the powerhouse cavern is scheduled to begin in 1996. Stage I concrete begins in 1998 with start of installation of major mechanical and electrical work in 2000.

(g) Transmission Lines/Switchyards

The additional transmission facilities needed for Devil Canyon have been scheduled for completion by the time the final unit is ready for commissioning in late 2001.

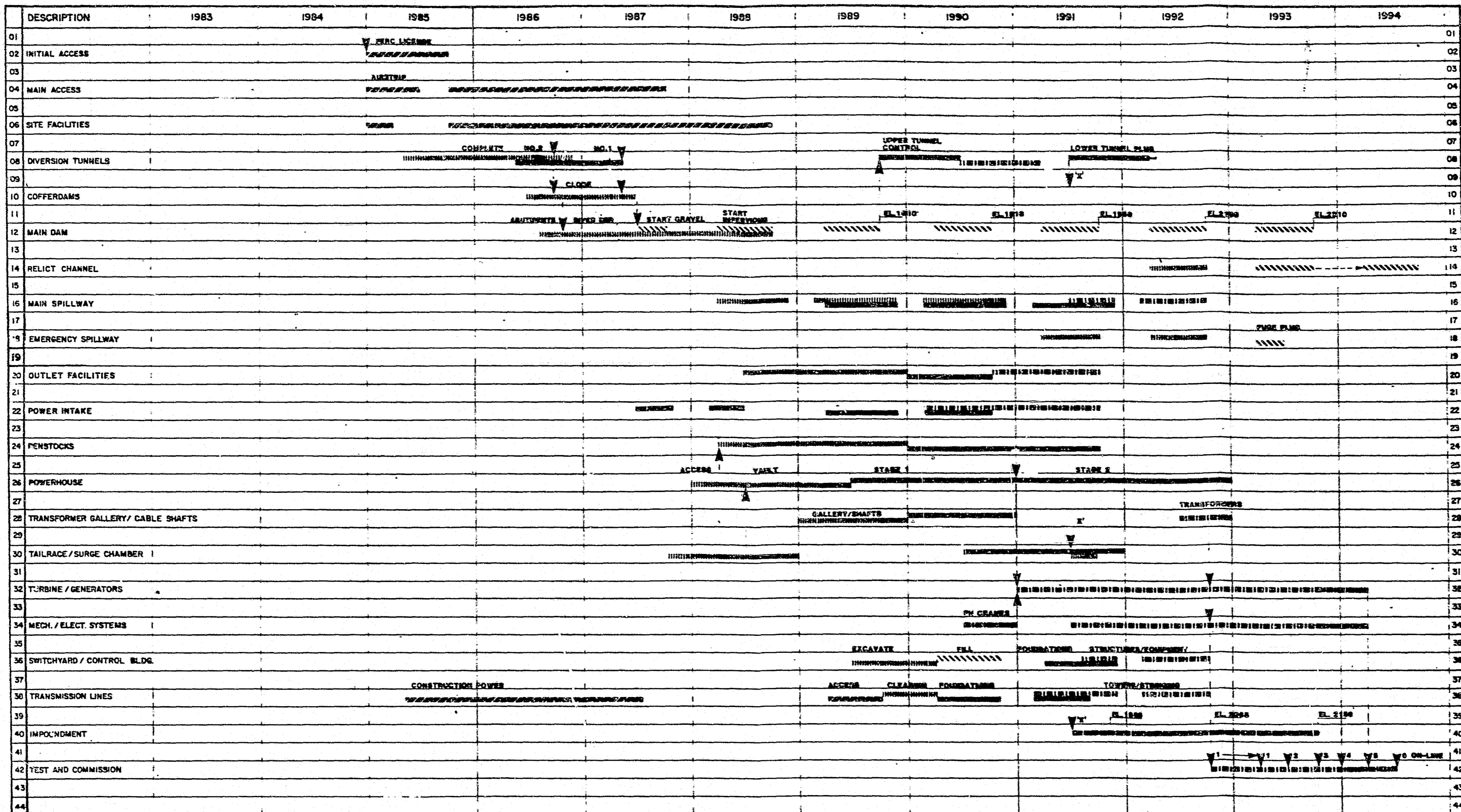
(h) General

The development of site facilities at Devil Canyon begins slowly in 1994 with a rapid acceleration in 1995 through 1997. Within a short period of time, construction begins on most major civil structures. This rapid development is dependent on the provision of support site facilities which should be completed in advance of the main construction work.

1.3 - History of Existing Project

An intertie is planned to permit the economic interchange of up to 70 megawatts of power between major load centers at Anchorage and Fairbanks. Connecting to existing transmission systems at Willow in the south and Healy in the north, the intertie will be built to the same standards as those proposed for the Susitna project transmission system. It will be energized initially at 138 kV. Subsequent to construction of the Watana project, the intertie will be incorporated into the Susitna transmission system and will operate at 345 kV.

Construction of the intertie began in October 1982. Completion and initial operation is planned for September, 1984, well in advance of the anticipated date for receipt of a FERC license on December 31, 1984.



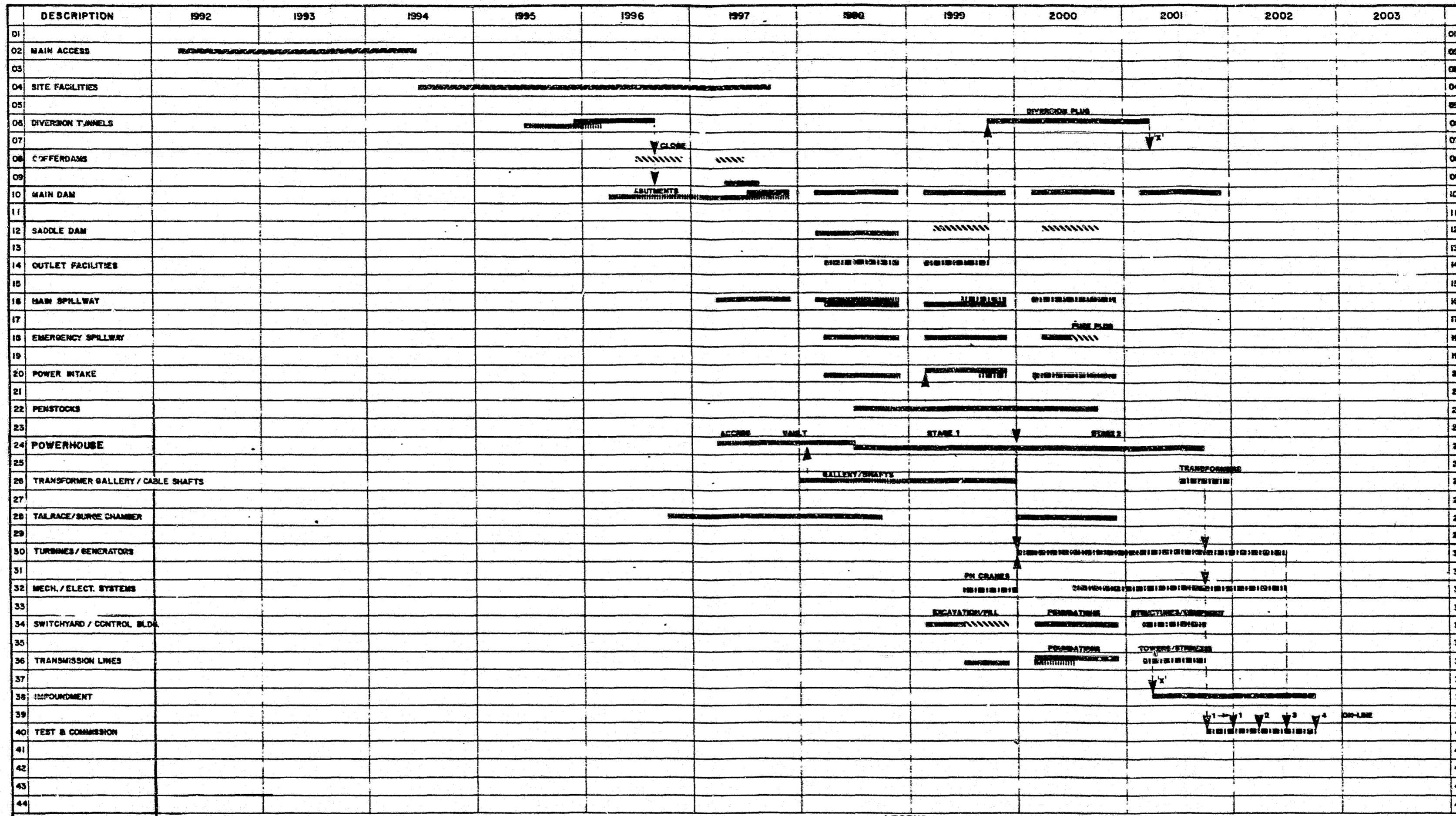
LEGEND

- ACCESS/FACILITIES
- EXCAVATION/FOUNDATION TREATMENT
- FILL
- CONCRETE
- MECHANICAL/ELECTRICAL
- IMPONDMENT

WATANA CONSTRUCTION SCHEDULE

FIGURE C.1





LEGEND

- [Pattern] ACCESS / FACILITIES
- [Pattern] EXCAVATION / FOUNDATION TREATMENT
- [Pattern] PILL
- [Pattern] CONCRETE
- [Pattern] MECHANICAL / ELECTRICAL
- [Pattern] IMPOUNDMENT

DEVIL CANYON CONSTRUCTION SCHEDULE

FIGURE C.2

