

86L907

86L907 PD
REV. 1

PROJECT DESCRIPTION FOR THE HIGH TURBINE BUILDING LEVEL TRIP
OF THE CIRCULATING WATER PUMPS
Modification 86L907

Introduction

The purpose of this modification is to protect the safeguards equipment on the 695' elevation from flooding due to failure of the circulating water system. Three level switches will be installed in each of the condenser pits. Using two out of three logic, the switches trip the circulating water pumps for that unit.

Scope

This project consists of installing three level switches in each of the condenser pits at 685' so that the circulating water pumps would be shut down in the event of two out of three of the level switches being tripped by flooding water.

Description

Implementation of this project includes the following:

- 1) Installation of three level switches in each condenser pit at the elevation of 685'. The switches will be contained in protective cages.
- 2) The electrical circuit will be designed to provide 2 out of three logic. The design will include a channel alert in the control room when one of the three channels is tripped.
- 3) Installation of cable from the level switches to a local panel and to the circulating water pumps busses (unit 1 - bus 14 cubicle 8 and bus 13 cubicle 10) (unit 2 - bus 24 cubicle 2 and bus 23 cubicle 3)

Organizations Involved

I&C
Electrical Maintenance

Prepared by: Mark E. G... ..

SAFETY EVALUATION
FOR
MODIFICATION 86L907,
INSTALLATION OF HIGH TURBINE BLDG. LEVEL TRIPS OF THE
CIRC. WATER PUMPS

1.0 SAFETY CONCERNS

This modification creates a potential for the spurious trips of both circulating water pumps for the affected unit. The loss of both circ. pumps would cause a turbine trip from loss of condenser vacuum. The turbine trip would trip the reactor.

2.0 RESOLUTION OF SAFETY CONCERNS

To minimize the chance of inadvertently tripping the circ. pumps and tripping the unit, several features are designed into the modification. Three level switches will be used, and the trip will require that two out three of the switches be tripped to trip the two circ. pumps. The three level switches will be mounted separately, in different locations in the condenser pit. Each switch will be mounted in a protective cage on the wall. Each switch mounting will be labeled "CAUTION: CIRC. PUMP TRIP SWITCH".

The circuit design will include a channel alert. If one of the three level switches trips, an alarm will be received in the control room. At a local panel installed in the condenser pit, three indicating lights will indicate the status of each channel. In the event of a channel alert, the channel generating the alarm can be determined from the local indicating lights.

The above design features will virtually eliminate the chance that workmen in the area will inadvertently trip the unit by disturbing the level switches.

3.0 CONCLUSION

- 3.1 This modification does not create a possibility for an accident or malfunction of a different type than evaluated previously in the USAR or subsequent commitments.
- 3.2 This modification does not increase the probability of occurrence of an accident or malfunction of equipment important to safety previously analyzed in the USAR or subsequent commitments.

3.3 This modification does not increase the consequences of any accident or malfunction of equipment important to safety previously analyzed in the USAR or subsequent commitments.

3.4 This modification does not reduce the margin of safety defined in the bases for any Technical Specification.

Prepared by:

Mark E. Guler

Reviewed by:

D. Brown

PROJECT 862907 - EA-9021
SUBJECT Time needed to fill ~~sump~~ condenser ~~pit~~ with water

ENO.
SHEET NO. 1 OF 1
DATE 8-5-86
COMP. BY J.K. CED. BY

Volume of sump pit

148,616 cu ft.

Volume of condenser

~ 30,000 cu ft.

available space in condenser pit

$$(148,616 - 30,000) = 118,616 \text{ cu ft}$$

$$118,616 \text{ cu ft} \left(\frac{7.48 \text{ gal}}{\text{cu ft}} \right) \left(\frac{1 \text{ min}}{2 \left(\frac{150,000 \text{ gal}}{\text{GPM/pump}} \right)} \right)$$

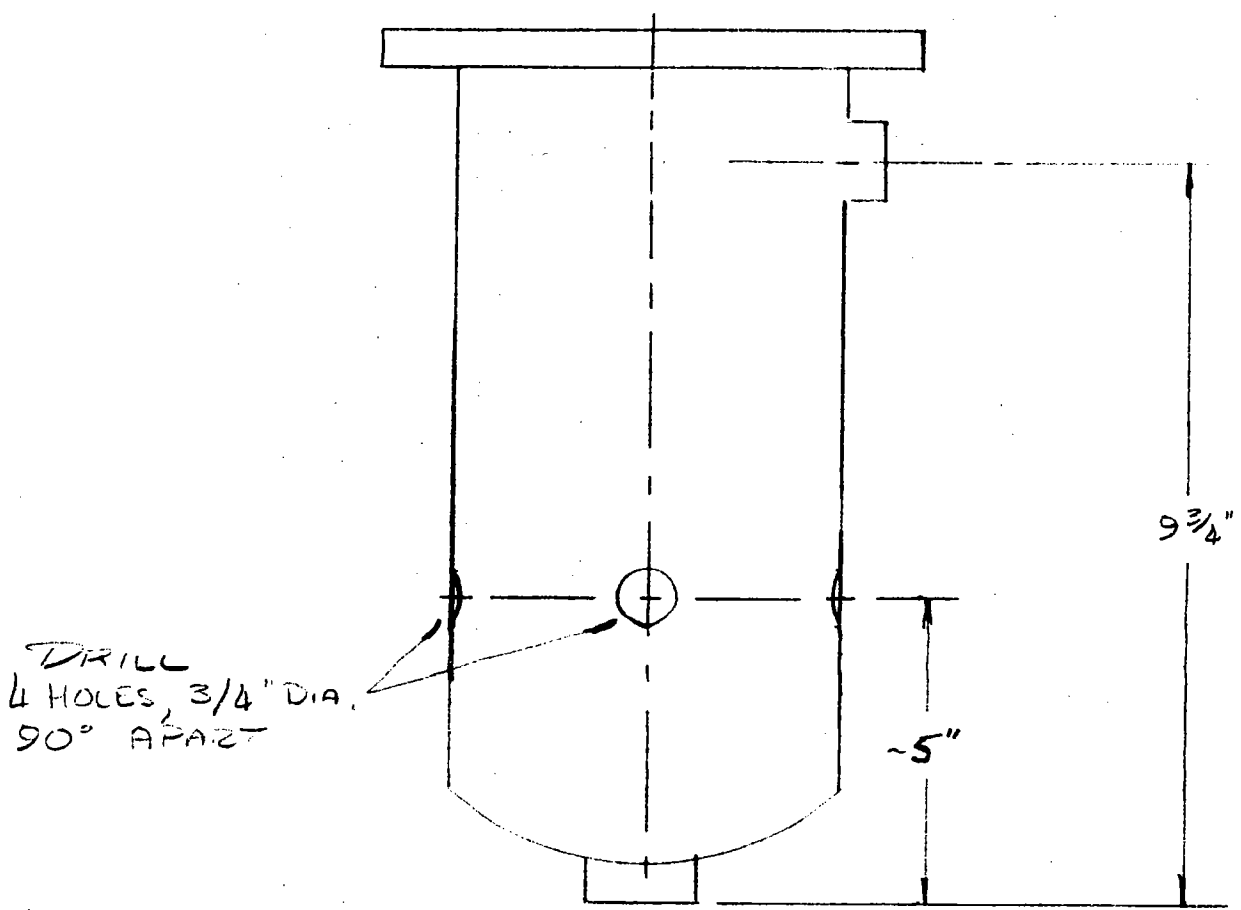
pumps

2.9 min to fill condenser pit

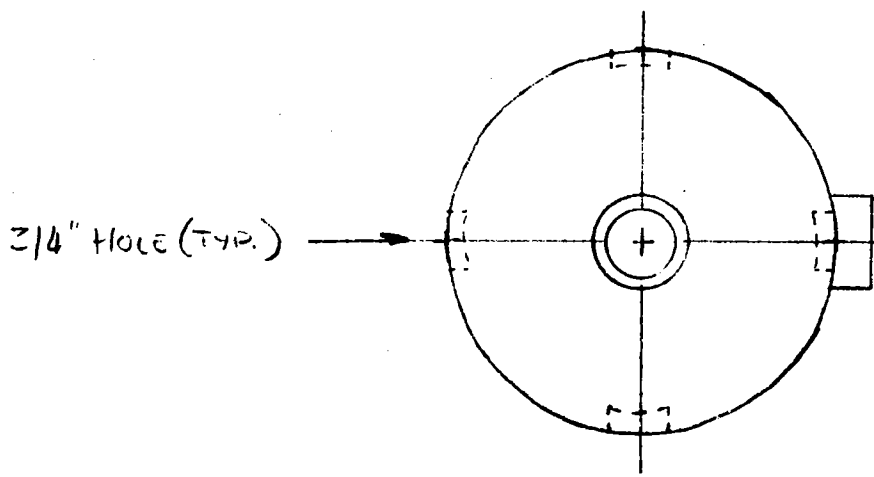
since these calculations ignore the circ water piping, the estimate of 2.5 minutes given by Pioneer is reasonable.

PROJECT TURBINE BLDG HIGH WATER CIRC. PUMP TRIP
SUBJECT SKETCH SHOWING LOCATION OF VENT HOLES

E NO. 806927
SHEET NO. _____ OF _____
DATE 3-18-81
COMP. BY MEK C.K'D L



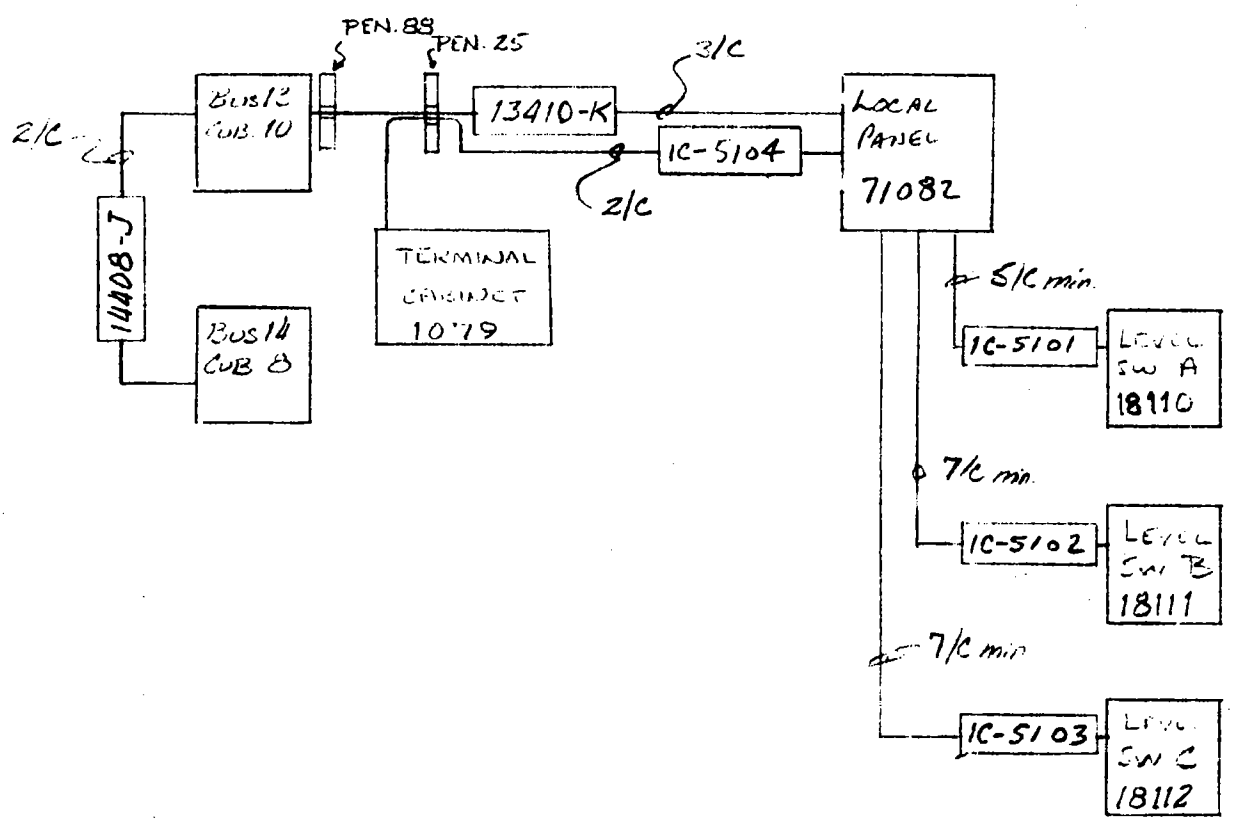
MAGNETROL LEVEL SWITCH
CAGE, SHOWN WITH SWITCH
REMOVED.



RJ Mendel
12674
1/1

PROJECT
SUBJECT

E. NO. **860L907**
SHEET NO. (1)
DATE **3-26-57**
COMP. BY *M. Y. C. / D. BY*



LOCAL SWITCHES
LOCATED IN UNIT 1
CONSIDERED AS
C 6543 EL.

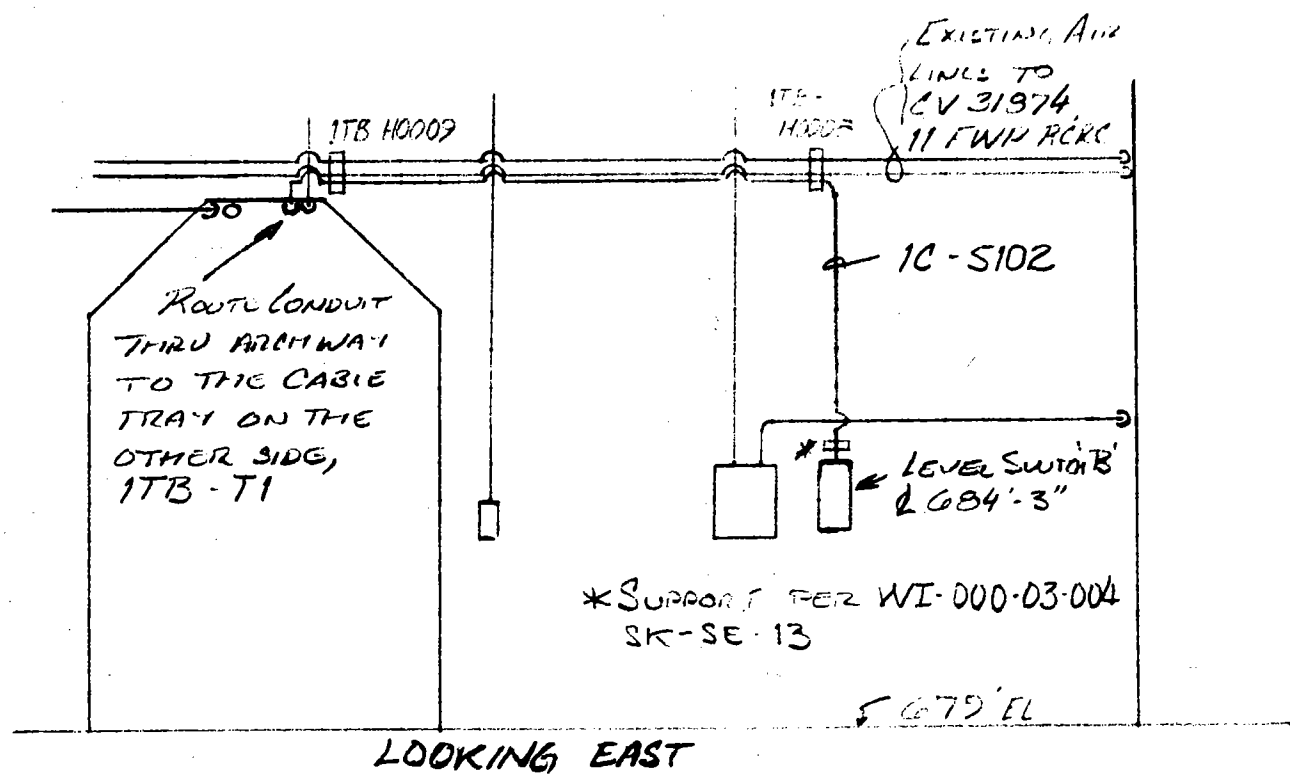
R J Mendel
12676

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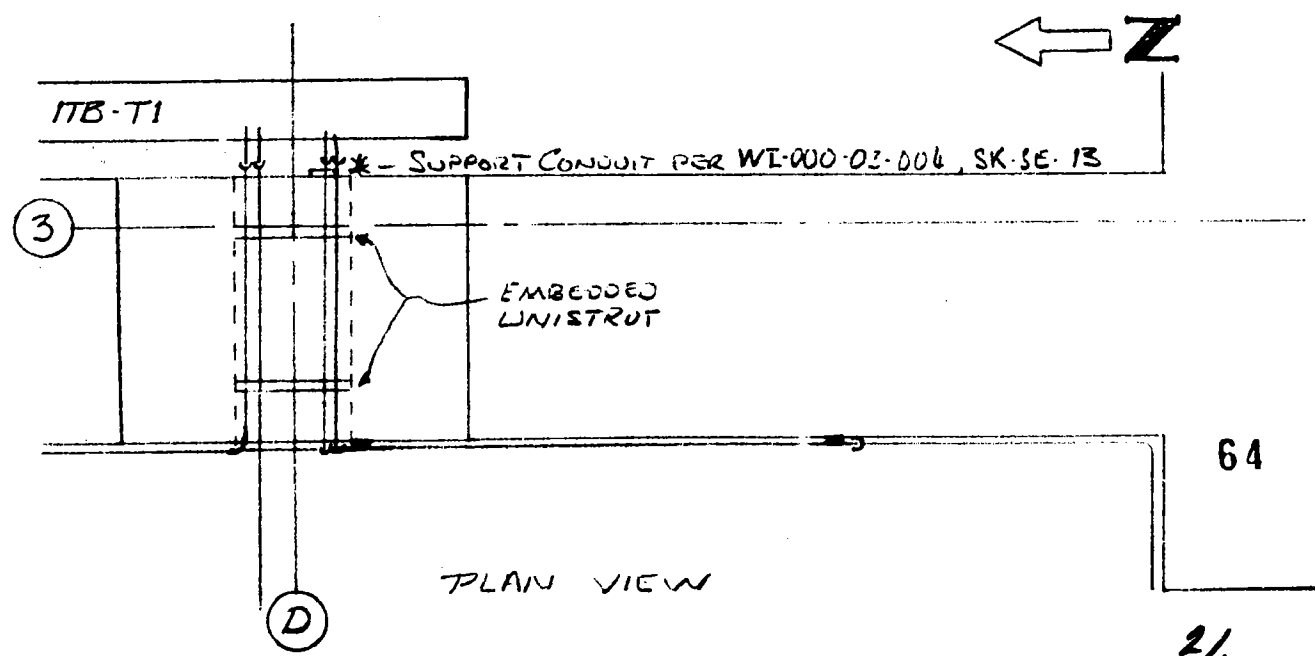
1/4

PROJECT CIRC PUMPS HIGH LEVEL TRIP
SUBJECT LEVEL SWITCH 'B' LOCATION & CONDUIT ROUTING

E NO. 862907
SHEET NO. OF
DATE 3-26-57
COMP BY CHECK'D BY



SEE THE ATTACHED CONDUIT SUPPORT DRAWINGS FOR DETAILS OF EXISTING AND NEW SUPPORTS SHOWN ON THIS PAGE.



PROJECT *CIRC PIPING HIGH LEVEL TRIP*

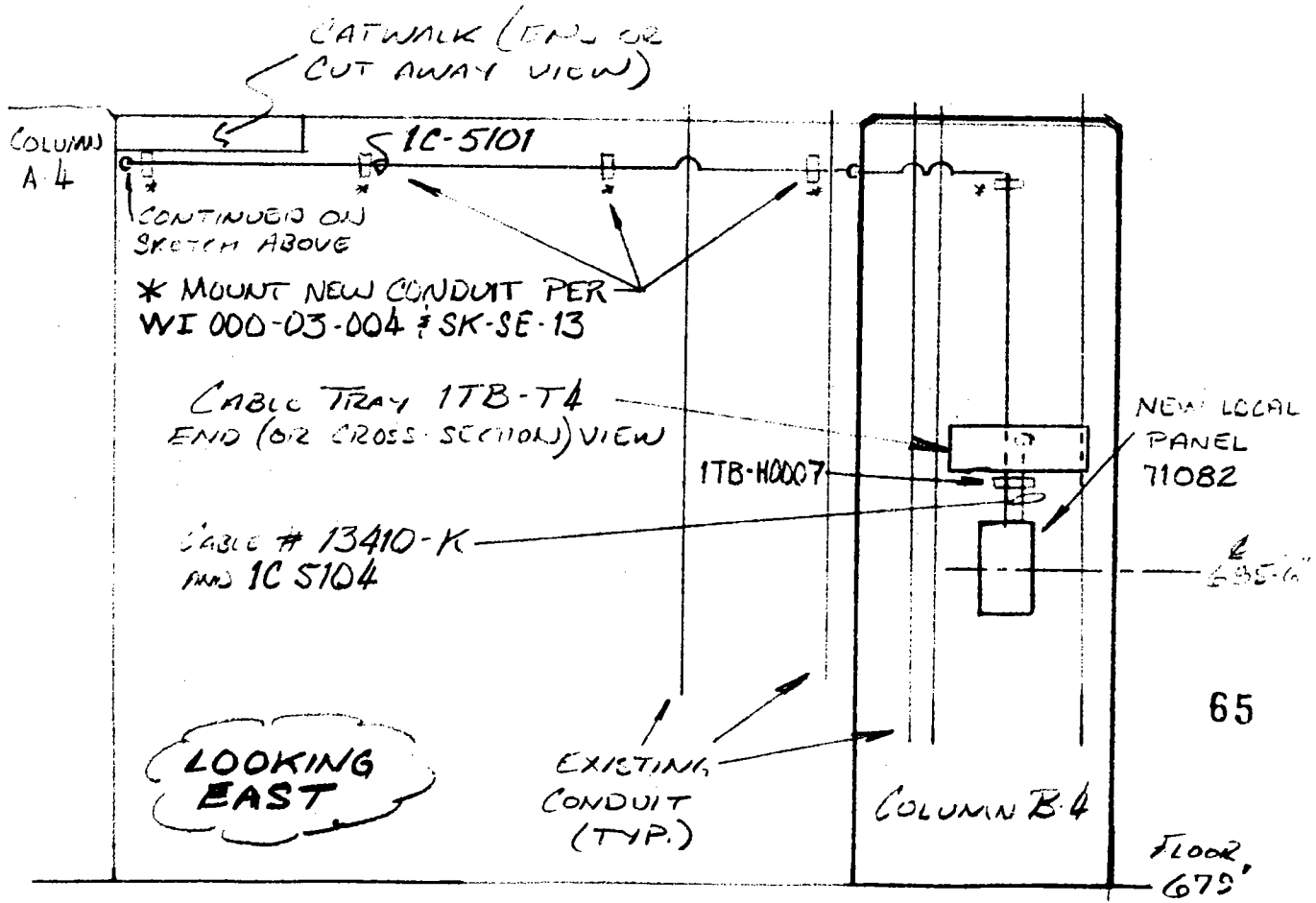
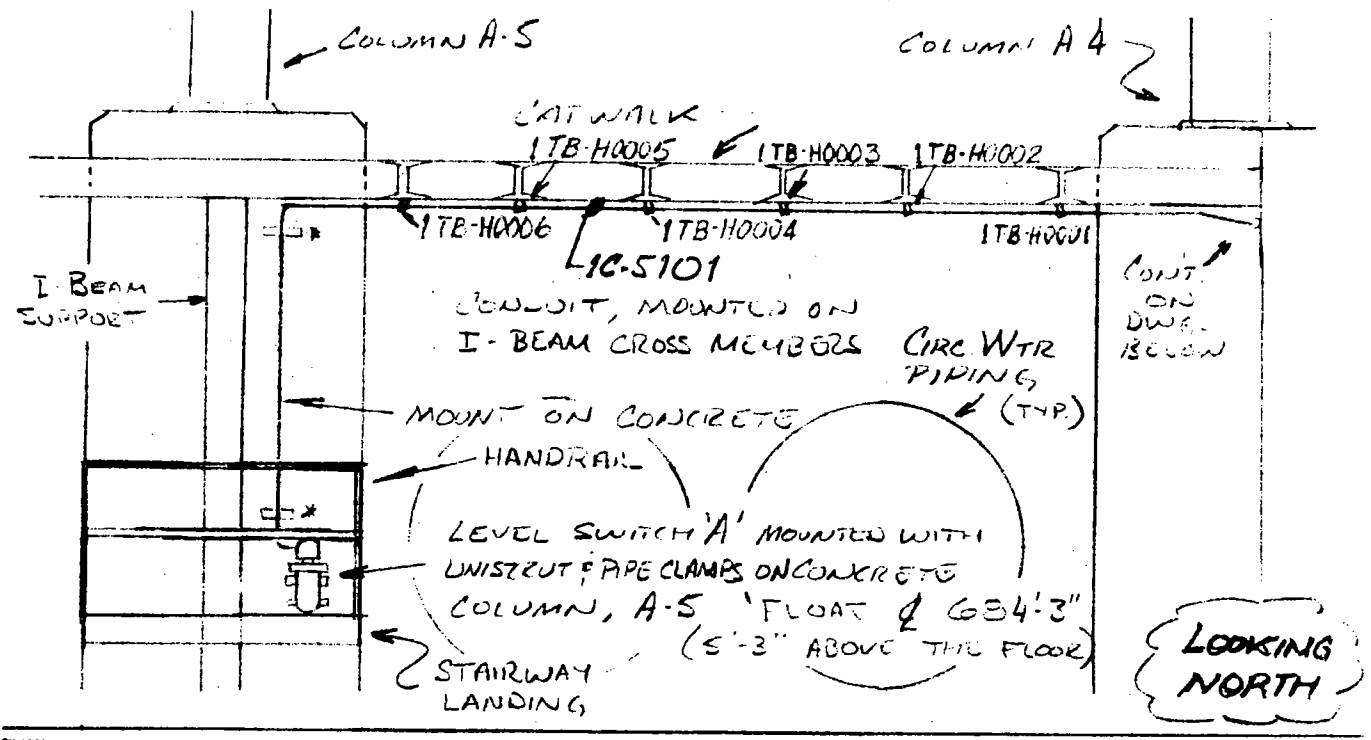
E NO. *36-997*

SHEET NO. ... OF

SUBJECT *LEVEL SWITCH 'A' LOCATION & CONDUIT ROUTING*

DATE *3-26-57*

COMP. *POWER* C.K'D BY



E NO. EX62927

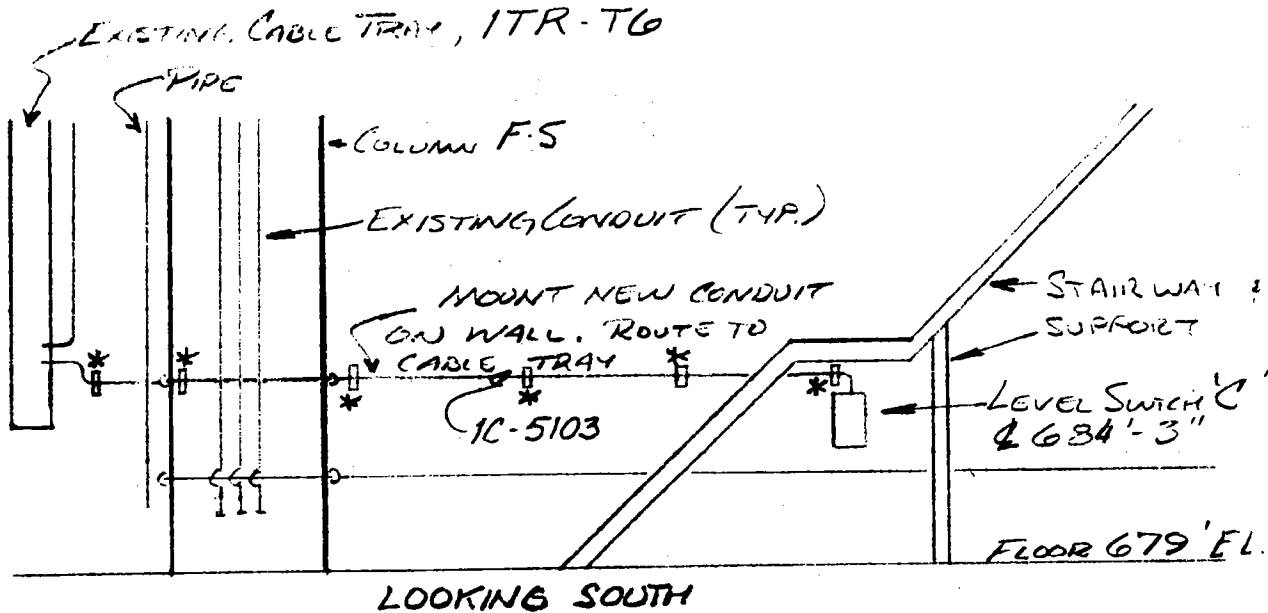
SHEET NO. _____ OF _____

DATE 3-26-87

COMP. BY WES CHECK'D BY _____

PROJECT CIRC PUMPS HIGH LEVEL TRIP

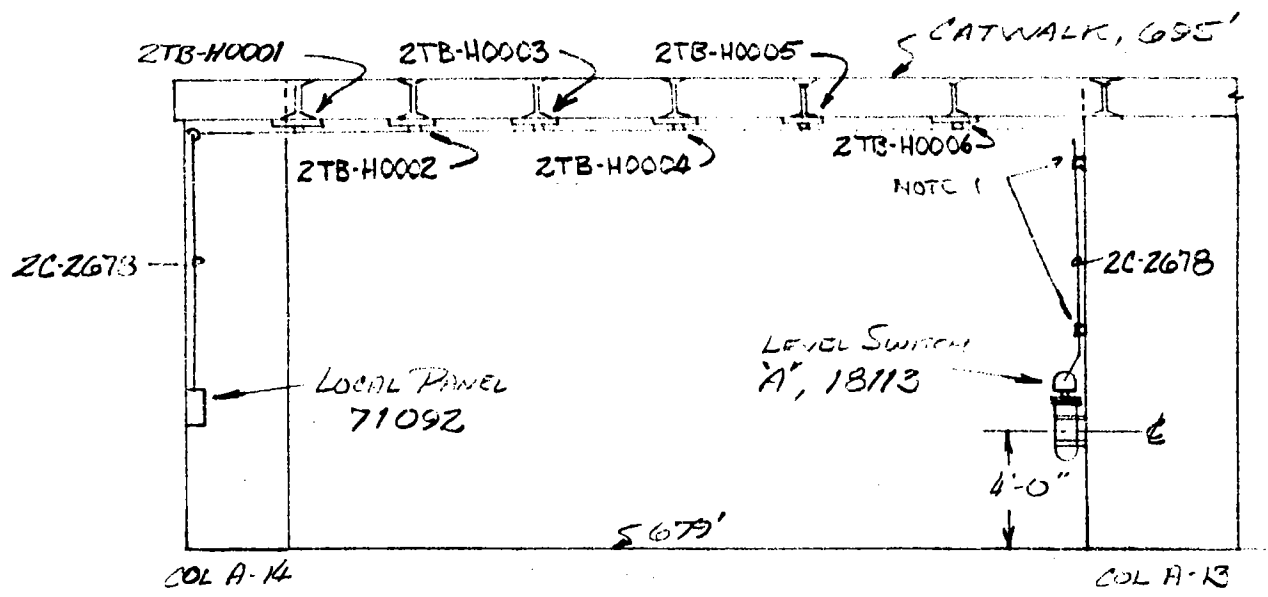
SUBJECT LEVEL SWITCH 'C' LOCATION & CONDUIT ROUTING



* SUPPORT CONDUIT PER WI 000-03-004 SK-SE-13



PROJECT CIRC WATER PUMP HIGH LEVEL TRIP
SUBJECT CONDUIT ROUTING AND LEVEL SW A LOCATION
E. NO. BGL 9071
SHEET NO. 2 OF 3
DATE 2-21-81
COMP. BY MEB C.R.D. BY



DETAIL C-C

NOTE 1: SUPPORT CONDUIT ACCORDING TO WI 000-03-004 AND SKETCH CS-40

71

1/2



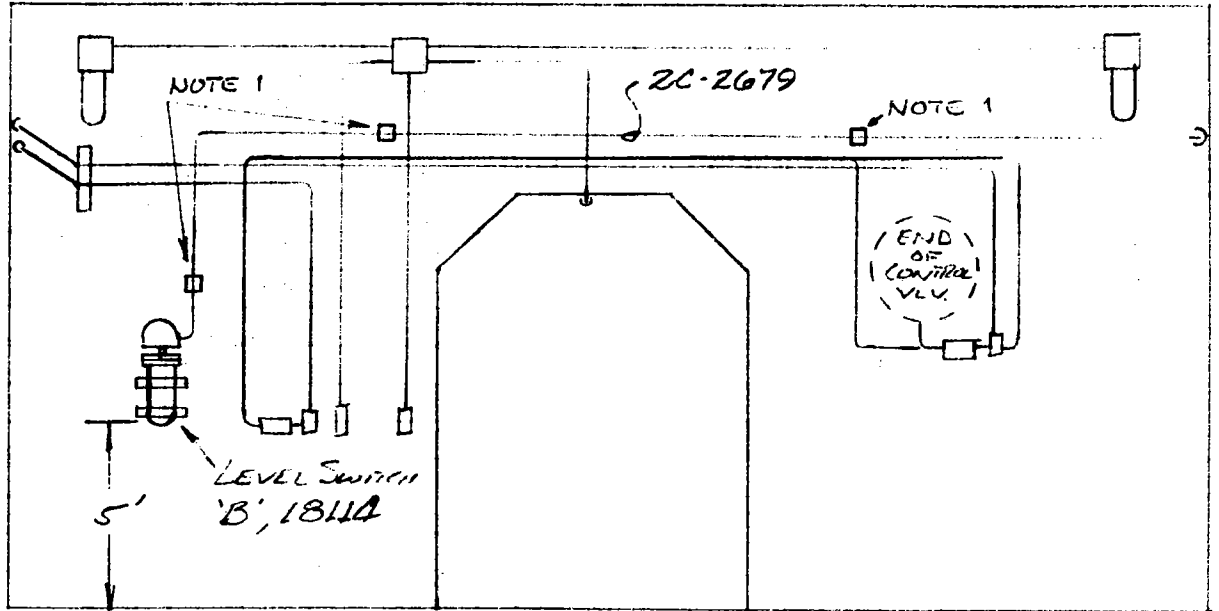
PROJECT

CIRC WATER PUMP HIGH LEVEL TRIP

SUBJECT

CONDUIT ROUTING AND LEVEL SWITCH LOCATION

E NO. 261-207
SHEET NO. OF
DATE 3-27-31
COMP. BY M.E.C. C.K'D BY

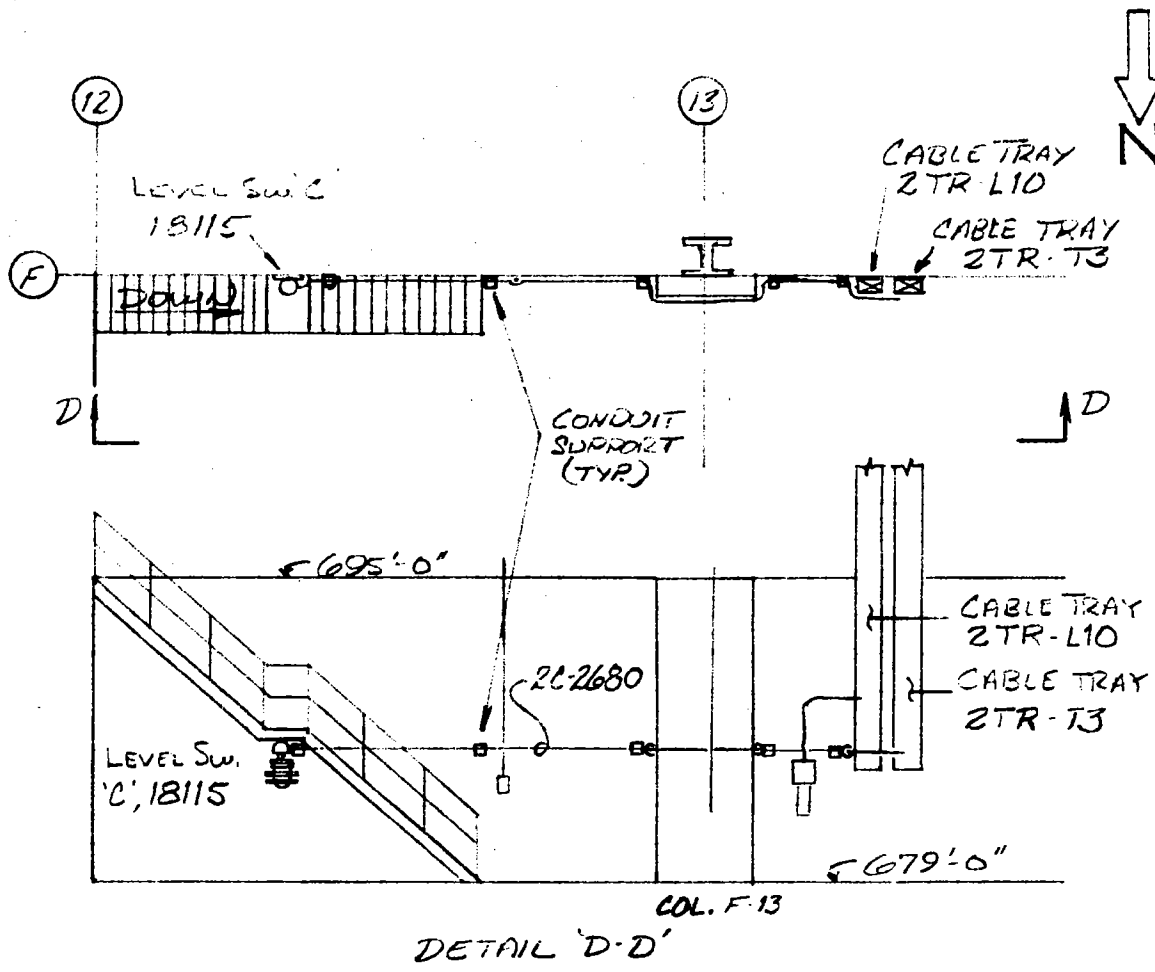


DETAIL A-A

NOTE 1 : SUPPORT CONDUIT ACCORDING TO WI 000-03-004, AND SKETCH CS-40

E NO. 264207
SHEET NO. OF
DATE 8-31-81
COMP. BY MCH C'K'D BY

PROJECT CIRC. WATER PUMP HIGH LEVEL TRIP
SUBJECT UNIT 2, LEVEL SWITCH LOCATION AND CONDUIT ROUTING



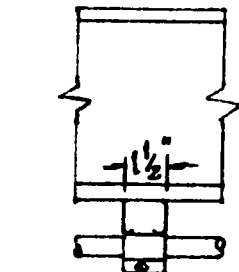
DETAIL 'D-D'

SUPPORT CONDUIT ACCORDING TO WI 000-03-004
AND SKETCH CS-40

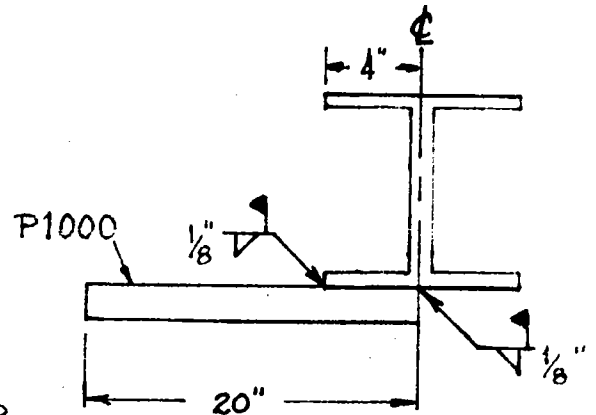
MOD 86L907

1 of 1

SEE DWG. CS-4 FOR INSTRUCTIONS				
CONDUITS			LONG. BRACING	
NO.	DIA.	SPAN	LS	SUPP. NO.



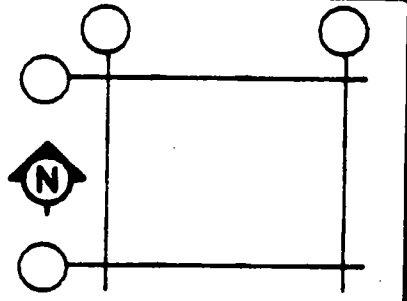
UNISTRUT CLAMP SERIES P1100 (TYPICAL)



$P_{ALLOWABLE} = 475 \text{ lbs.}$

TOTAL LOAD:

REMARKS



PLAN AT EL.

	BY	DATE
PREPARED	ME Gmb	1.12.89
REVIEWED		
APPROVED		

MINN. PE. NO.

COMMENTS FOR REVISIONS:

$P_{MAX} \text{ OF THE FILLET WELD} = J_{MAX}^* A_{THROAT}$

$P_{MAX} = 18,000 \frac{\text{lb}_f}{\text{in}^2} (1\frac{1}{2} \text{ in.}) (\frac{1}{8} \text{ in.}) (0.707)$

$P_{MAX} = 2386 \text{ lb}_f$

ASSUME TOTAL LOAD, $P_{ALLOWABLE}$, IS AT 20 INCHES, AND $\Sigma M = 0$.

$P_{ALLOWABLE} = \frac{4 \text{ in.} (2386 \text{ lb}_f)}{20 \text{ in.}}$

$P_{ALLOWABLE} = 475 \text{ lb}_f$

* J_{MAX} : FROM PG. 5-21, MANUAL OF STEEL CONSTRUCTION 7th Ed., AISC

NOTE: FOR DIMENSIONAL TOLERANCES SEE DWG. CS-3

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FORM CC-704 12-29-87

COMPANY:

NON-STANDARD CONDUIT SUPPORT

CS-NS

NSP CO. PROJ. NO.
86L907

NEW/EXIST.

SUPP. NO.

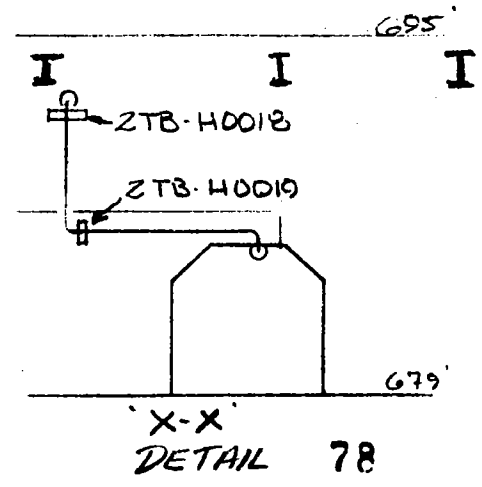
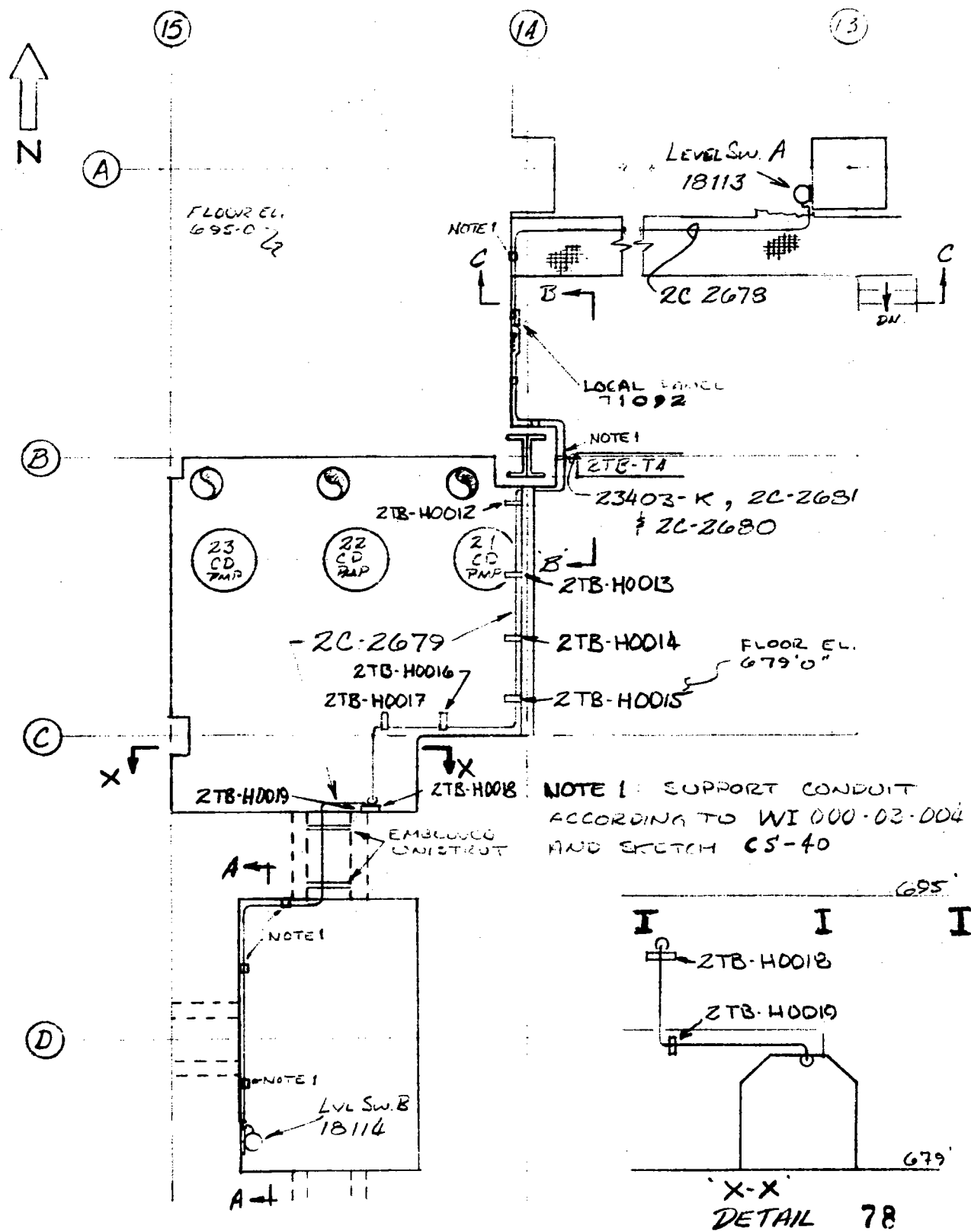
SHT. NO.

SKETCH NO.

REV. 0

PROJECT *Coal Conversion Plant*
SUBJECT *Unit 2, LVL SWITCH LOUISIANA - 3rd St. Power Plant*

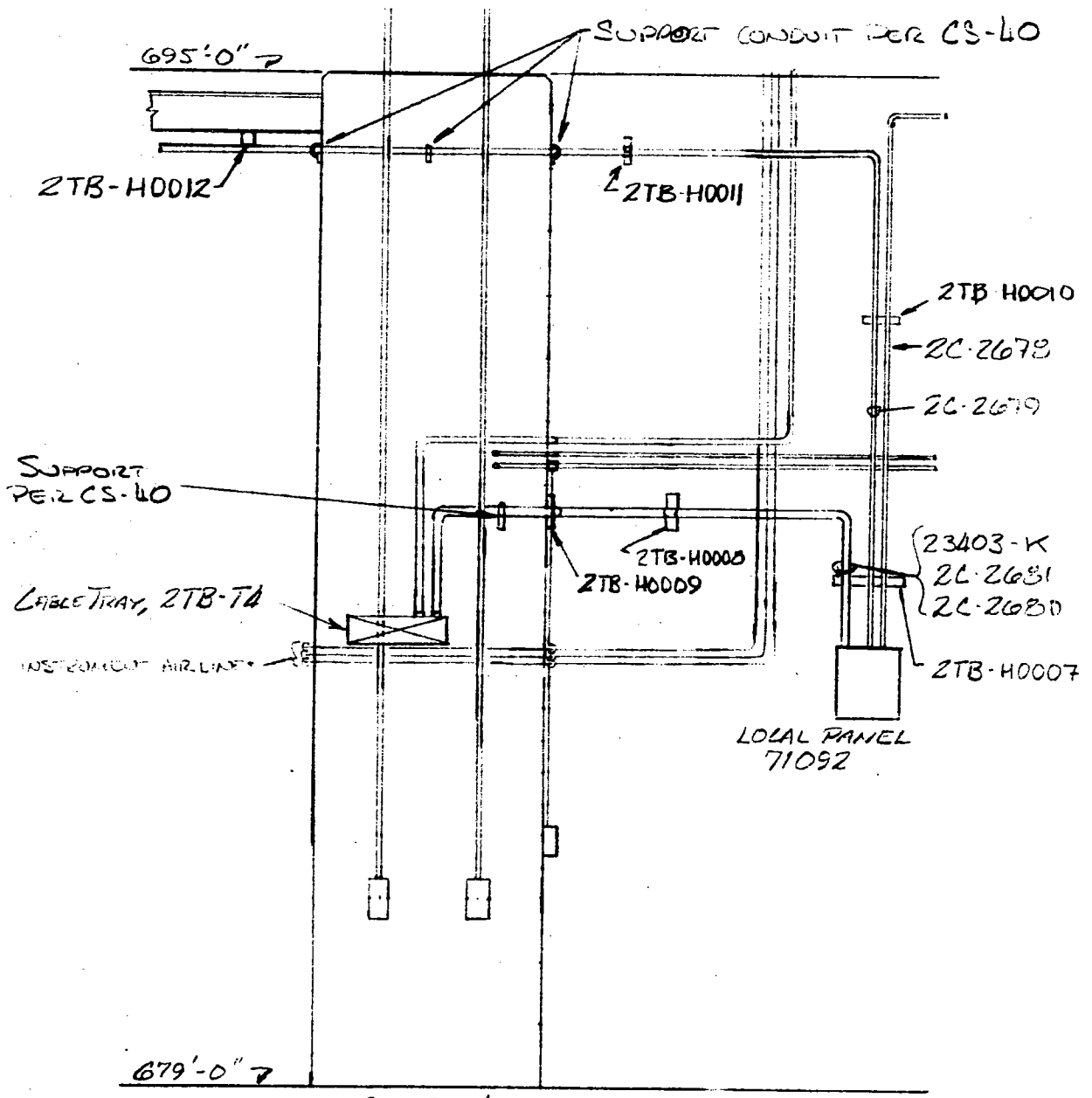
E NO. *30-201*
SHEET NO. *1* OF *2*
DATE *1-19-81*
COMP. BY *MJE* C.K'D BY



1/2

PROJECT CIRC WATER PUMP HIGH LEVEL TRIP
SUBJECT UNIT 2, CONDUIT ROUTING SKETCH

E NO. 86L907
SHEET NO. 2 OF 2
DATE 1-19-82 (X-1)
COMP. BY ME CK'D BY



COL. B-14

DETAIL B-B