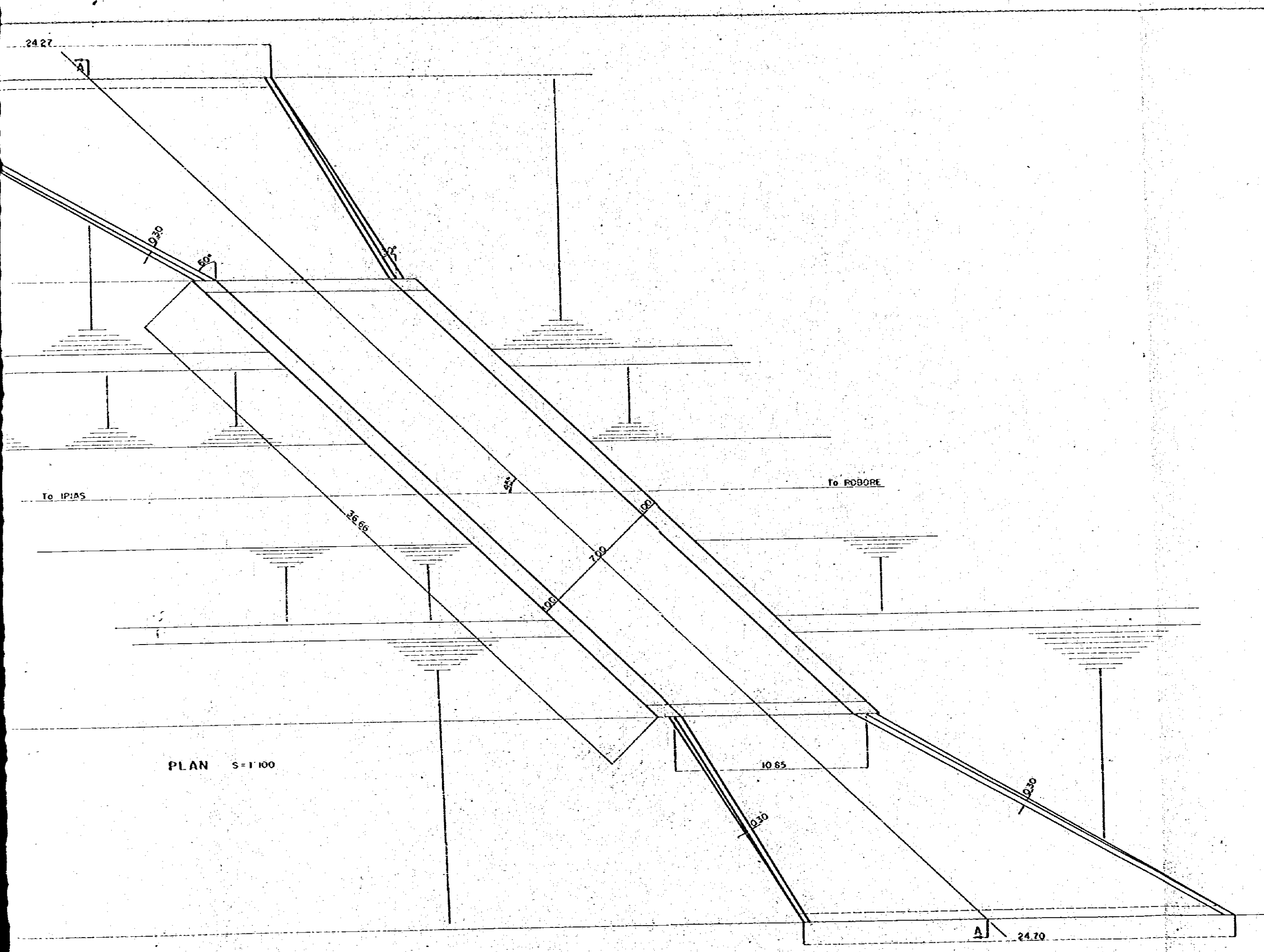


PLAN 1:100

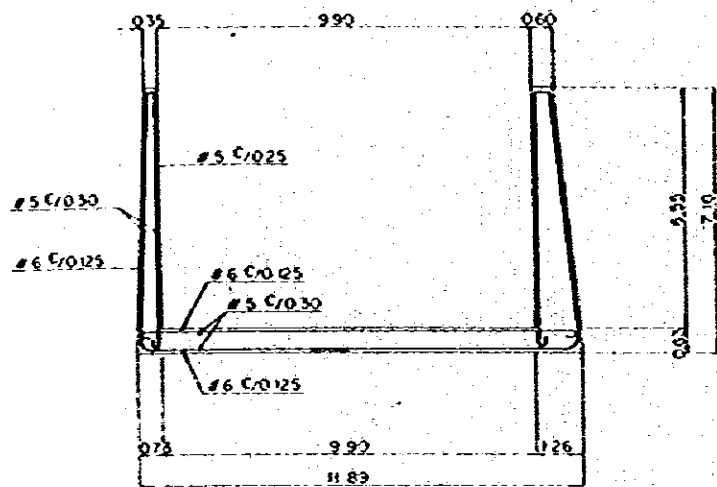
EMPRESA MEXICAL DE FERROCARRILES		
RAILWAY RECONSTRUCTION PROJECT (IPIAS-BUENOS)		
353+02.7 BOX CULVERT (Cb)		
GENERAL VIEW (Sheet 2 of 2)		
Executing Enterprise		
Drawn by Div	Checked by Div	Approved by Div
Contracting Enterprise		
Checked by Div	Approved by Div	137



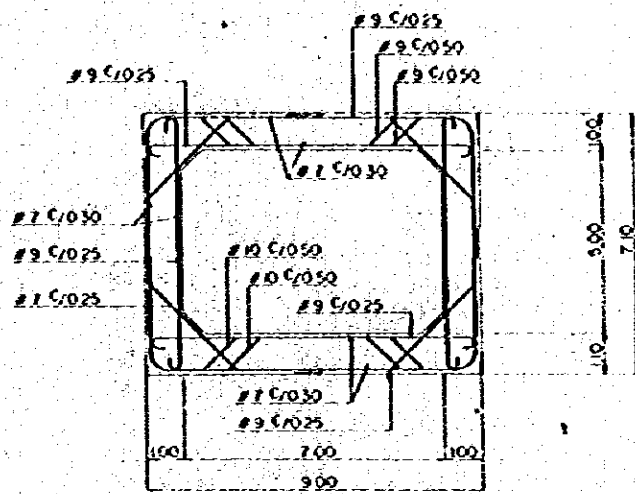
PLAN S=1:100

EMPRESA NACIONAL DE FERROCARRILES RAILWAY RECONSTRUCTION PROJECT (IPRIS BOBIRE)		
353 <sup>m</sup> x 620 <sup>m</sup> BOX CULVERT (CB)		
GENERAL VIEW (Sheet 2 of 2)		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	No 137

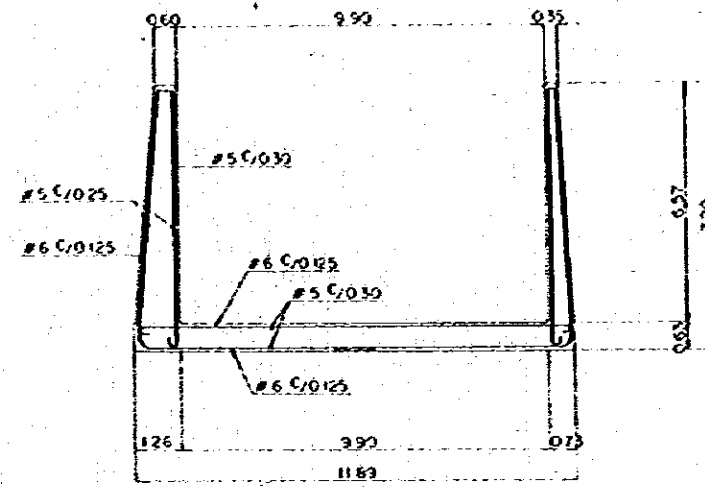
353<sup>K</sup>1020<sup>M</sup>



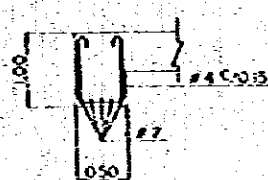
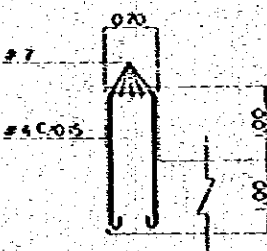
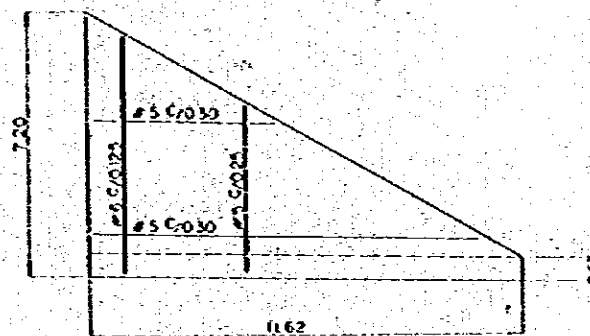
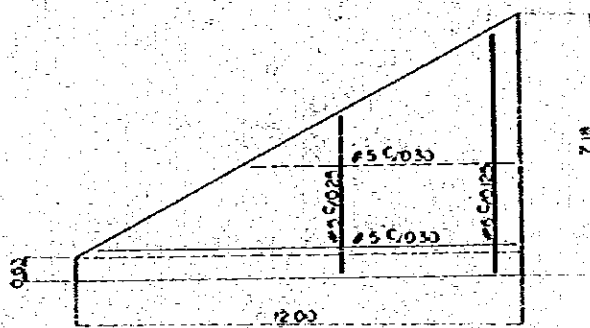
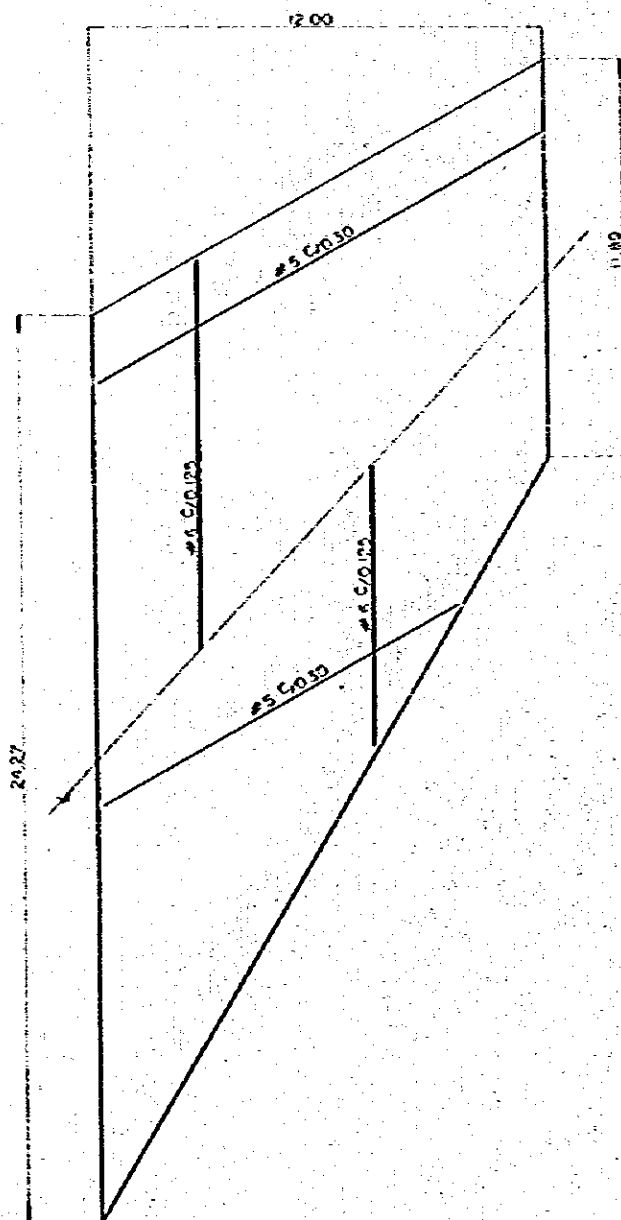
a - a



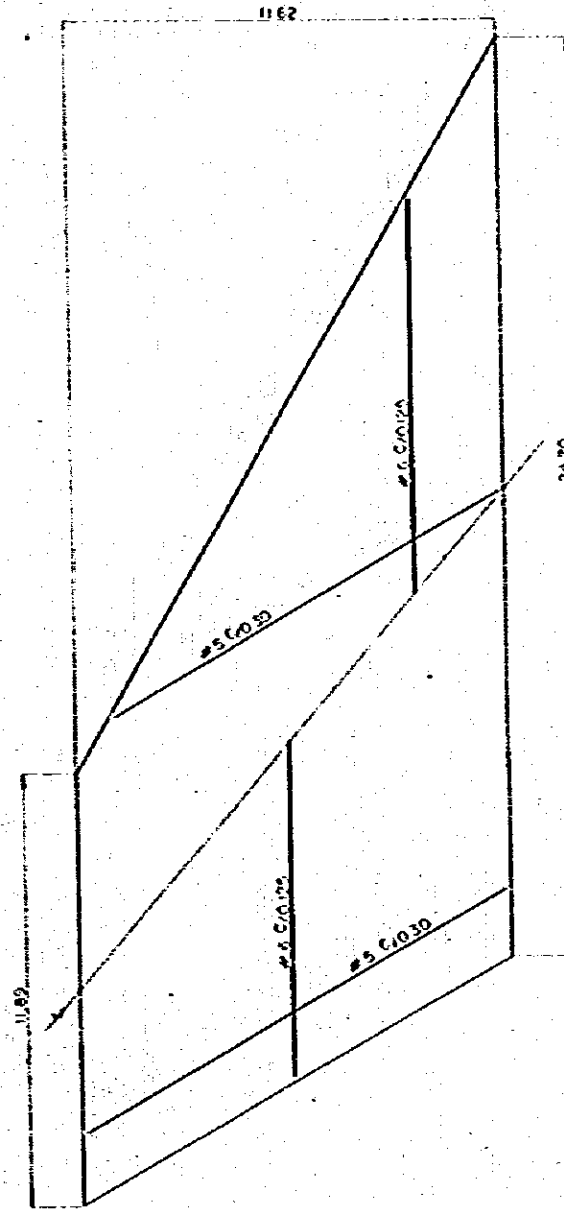
b - b



c - c



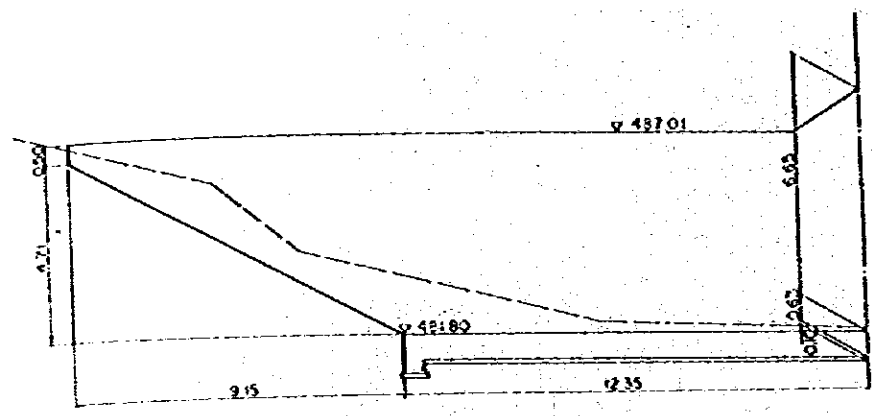
BAR ARRANGEMENT S-150.1100



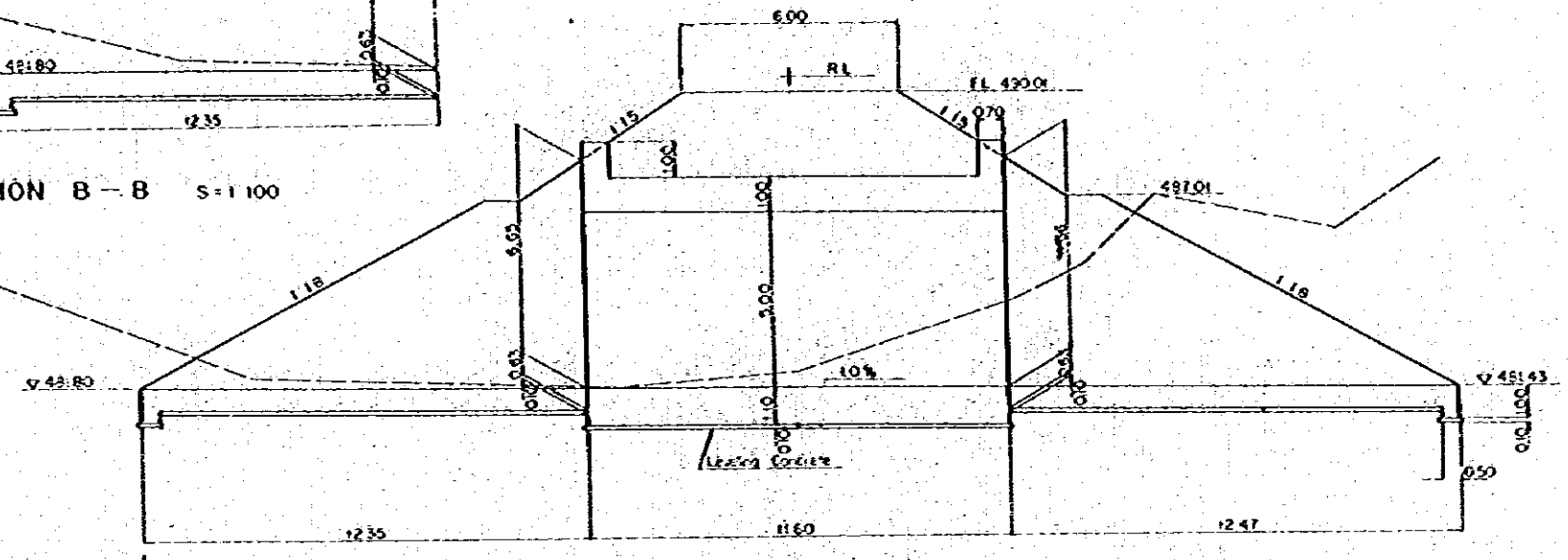
- NOTES
- 1 COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS
  - 2 REINFORCING STEEL BAR ASTM A615 GRADE 60 OR A617 GRADE 60
  - 3 STRUCTURAL CONCRETE  $f'_{c} = 20700 \text{ psi}$
  - 4 LEVELING CONCRETE  $f'_{c} = 15075 \text{ psi}$

EMPRESA NACIONAL DE FERROCARRILES		
RAILWAY REHABILITATION PROJECT (EPUS 100002)		
353 <sup>K</sup> 1020 <sup>M</sup> BOX CULVERT (Cb)		
BAR ARRANGEMENT		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	38

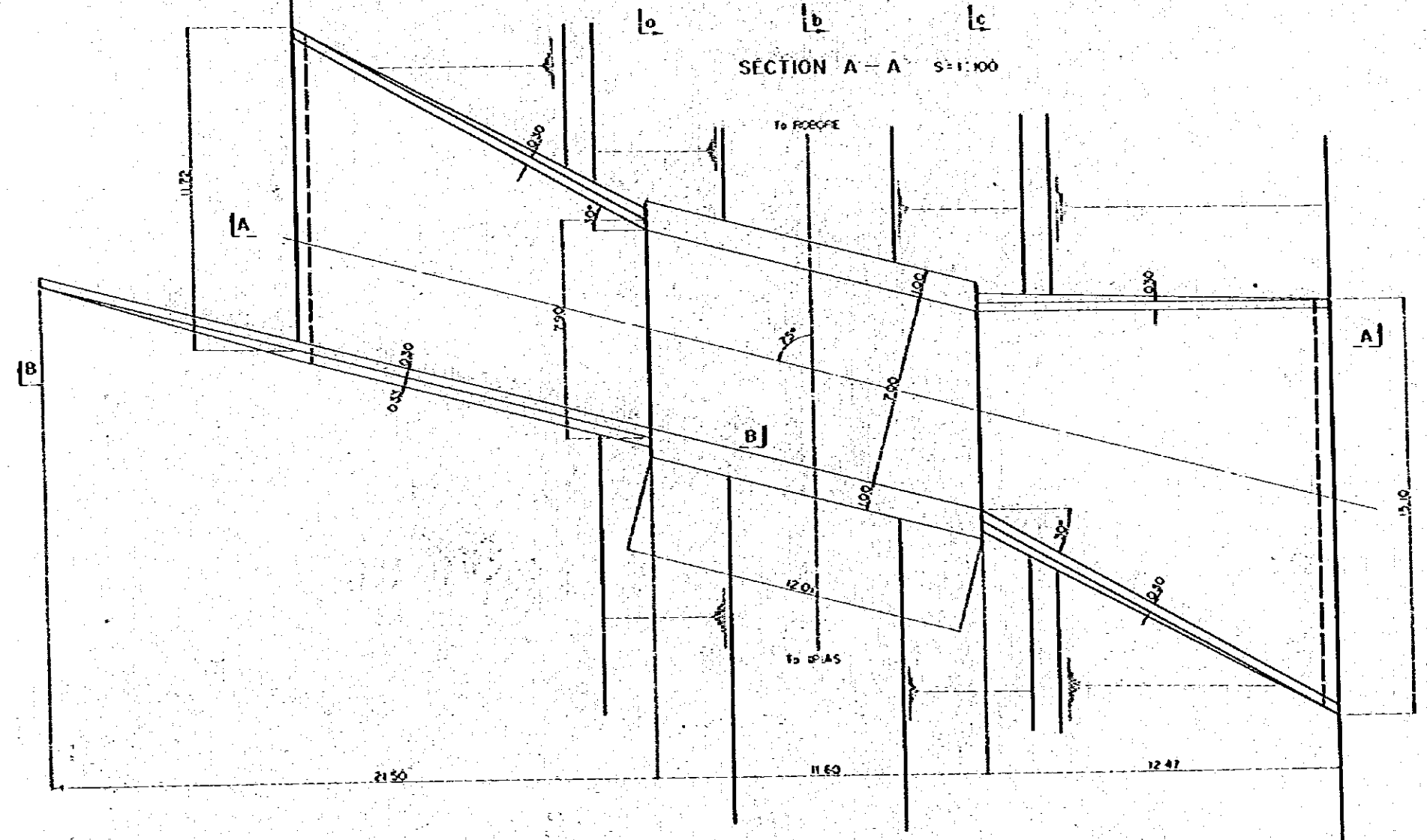
353<sup>K</sup>+160<sup>M</sup>  
RL+490.460



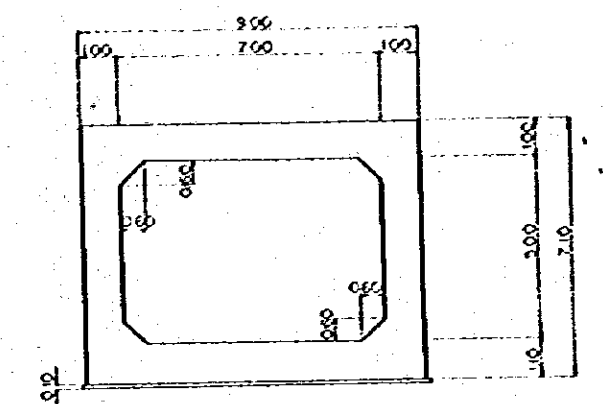
SECTION B - B S=1:100



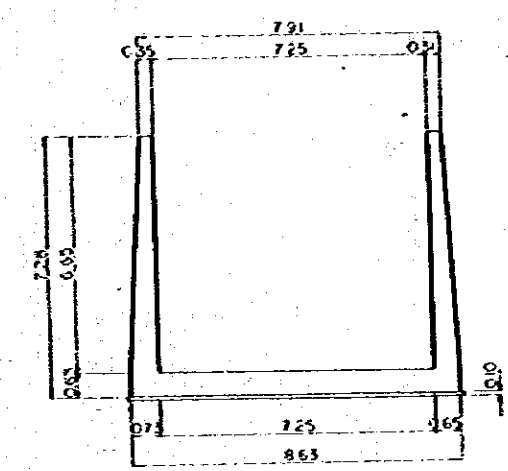
SECTION A - A S=1:100



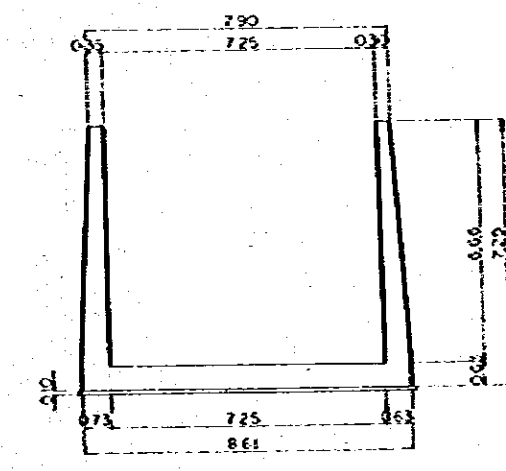
PLAN S=1:100



b - b



o - o

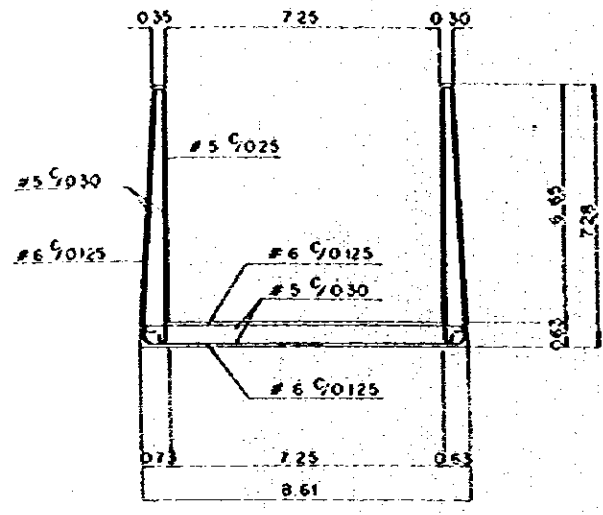


c - c

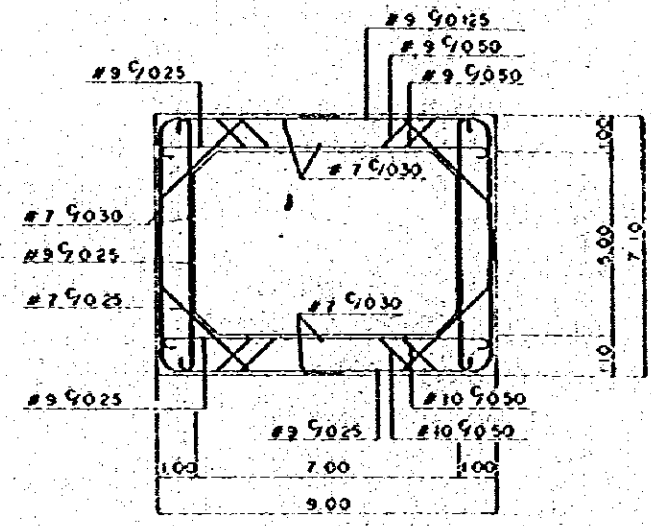
SECTION S=1:100

EMPRESA NACIONAL DE FERROCARRILES RAILWAY REHABILITATION PROJECT (IPUS-BR000)		
353 <sup>K</sup> +160 <sup>M</sup> BOX CULVERT (CM)		
GENERAL VIEW		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	No 39

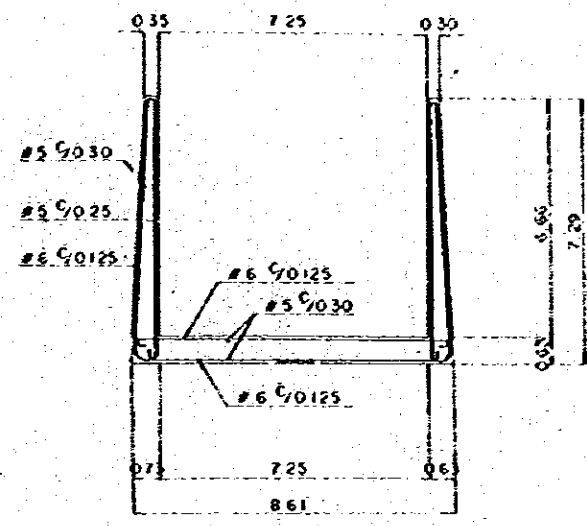
353<sup>M</sup>+160<sup>M</sup>



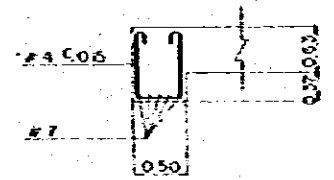
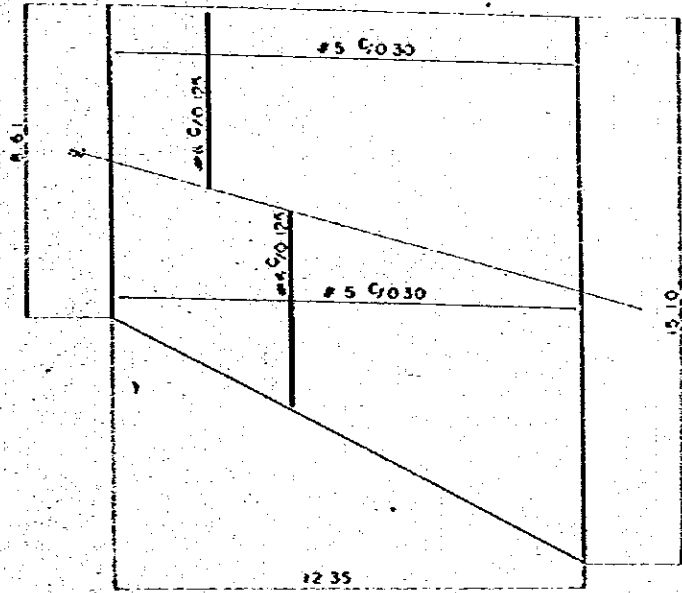
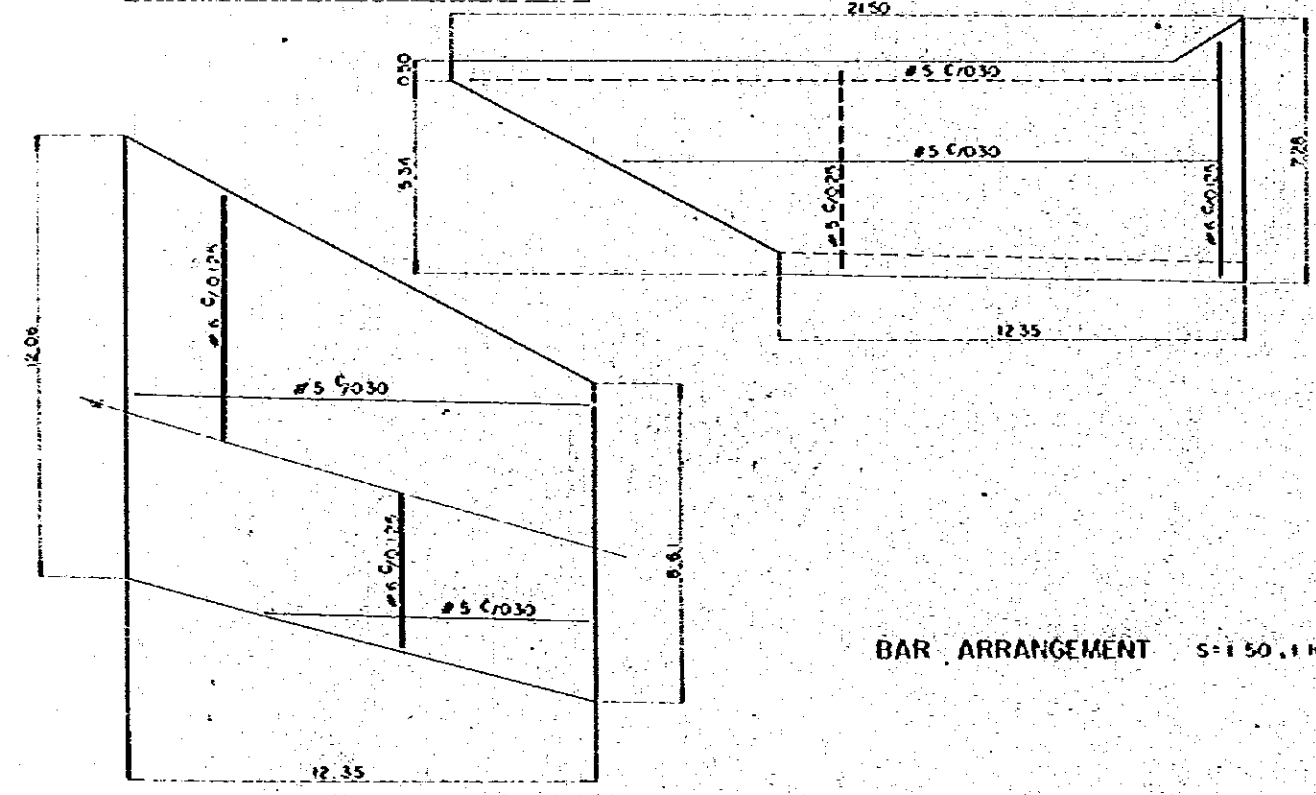
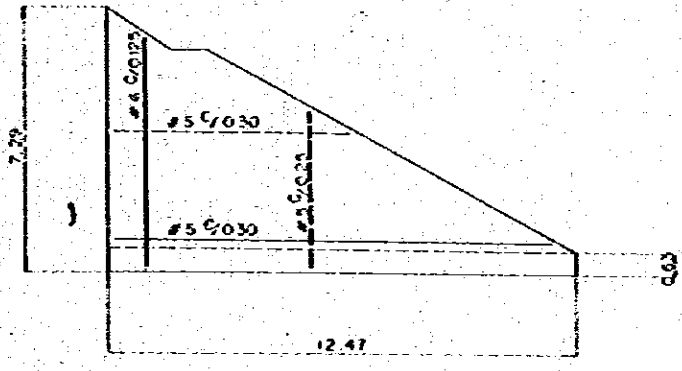
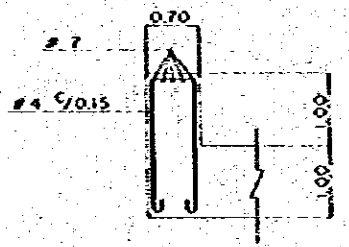
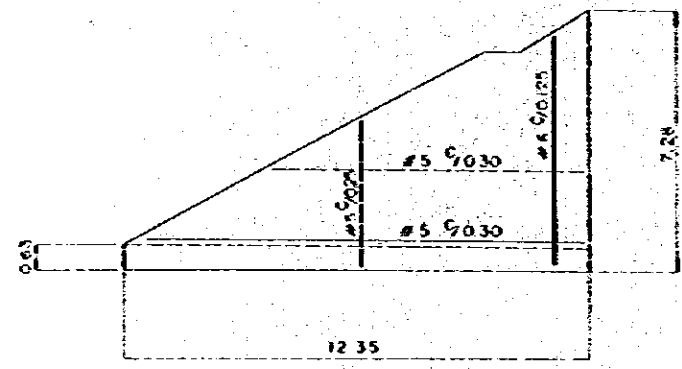
o - o



b - b



c - c

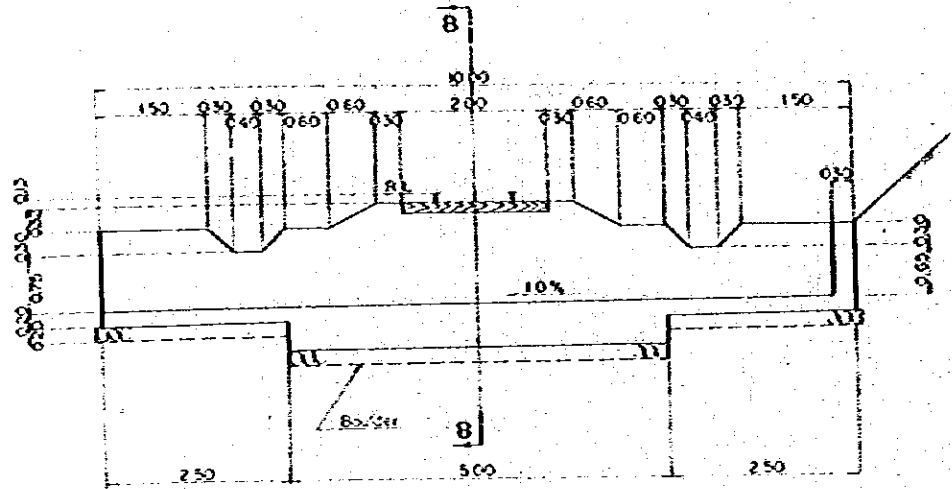


BAR ARRANGEMENT S=1:50, 1:100

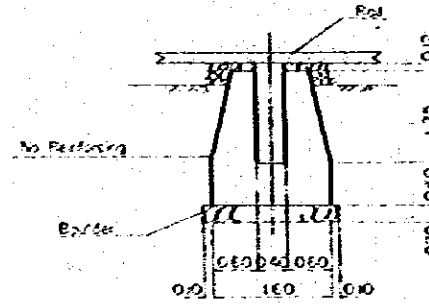
- NOTES
1. COMPRESSIVE STRENGTH OF CONCRETE - AT 28 DAYS  
 (a) STRUCTURAL CONCRETE  $f_{28} = 2000 \text{ kg/cm}^2$   
 (b) LEVELING CONCRETE  $f_{28} = 1500 \text{ kg/cm}^2$
  2. REINFORCING STEEL BAR  
 ASTM A615 GRADE 60 OR A616 GRADE 60  
 OR ASIT GRADE 60

ENTRESA NACIONAL DE FERROCARRILES		
RAILWAY REHABILITATION PROJECT (EL PASO RECORD)		
353 <sup>M</sup> +160 <sup>M</sup> BOX CULVERT (Cb)		
BAR ARRANGEMENT		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Consulting Enterprise		
Checked by Date	Approved by Date	40

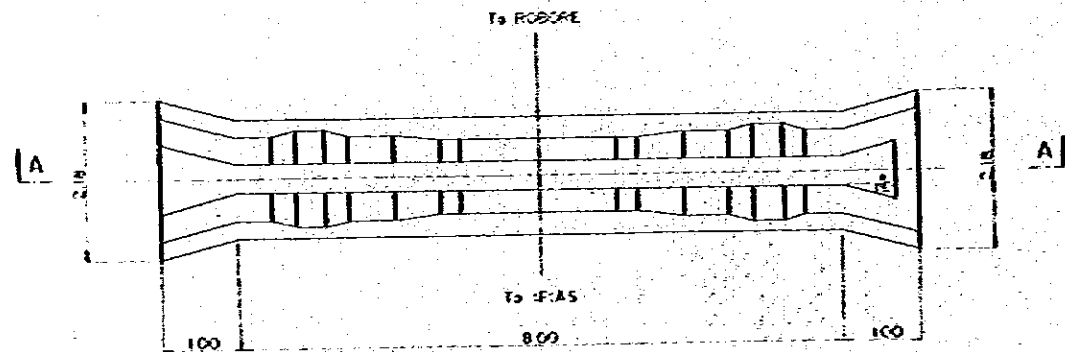
353<sup>K</sup>+328<sup>M</sup>  
 RL=491844



SECTION A - A S=1:50



SECTION B - B S=1:50

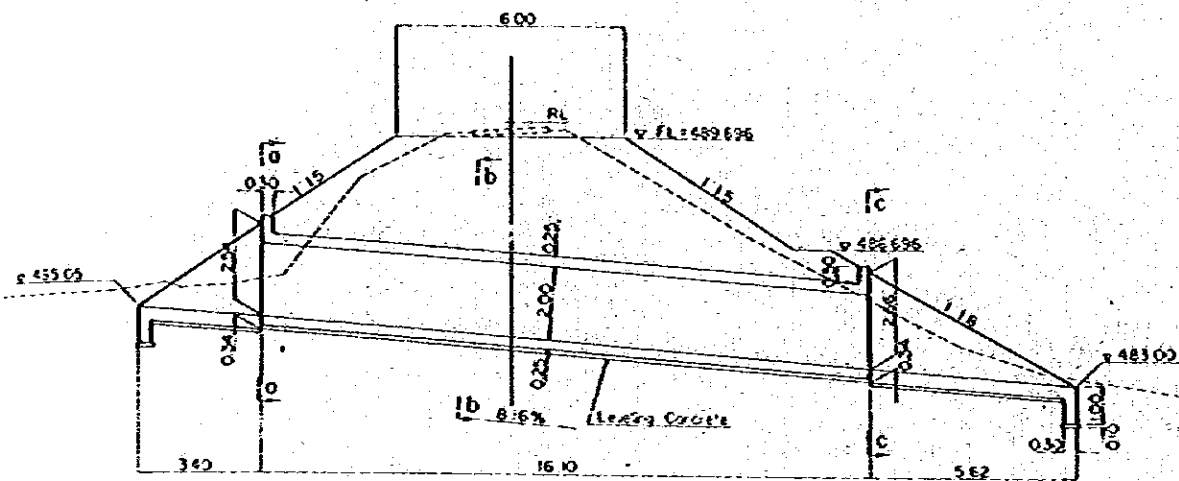


PLAN S=1:50

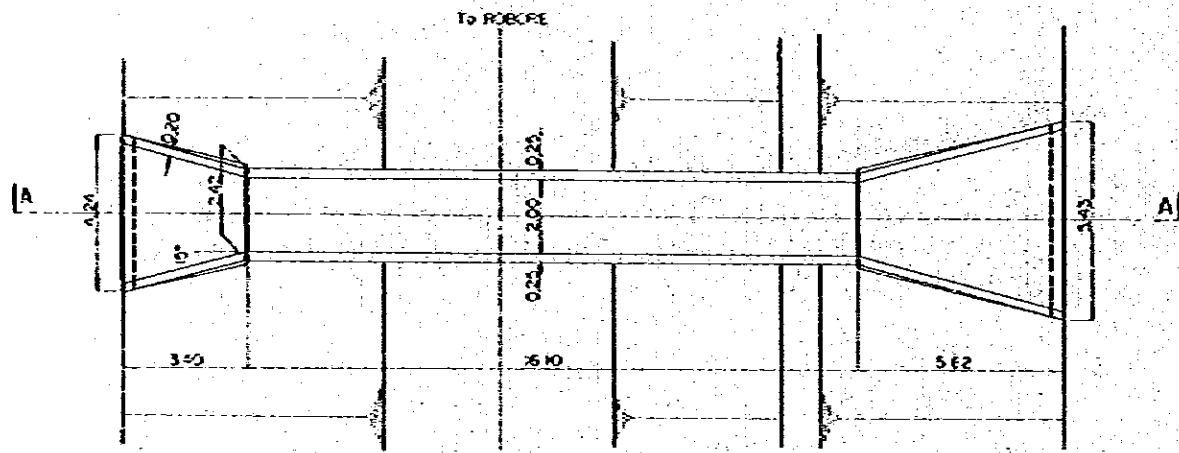
NOTE  
 CONCRETE TO BE 200/250  
 AT 28 CM-S

ENTRESA NACIONAL DE FERROCARRILES		
RAILWAY REHABILITATION PROJECT (FMAS-BORCAS)		
353 <sup>K</sup> +328 <sup>M</sup> OPEN DRAINAGE (D-0)		
GENERAL VIEW		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	41

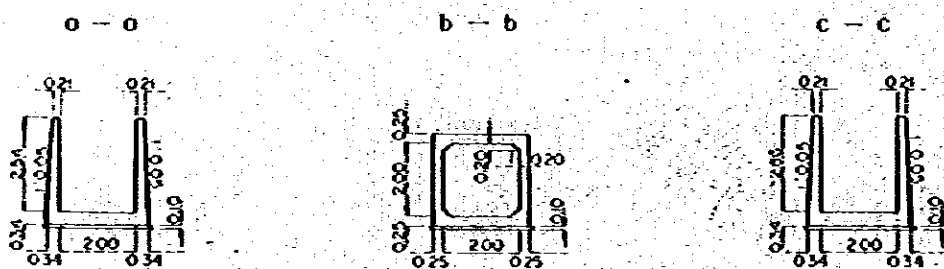
353<sup>M</sup>+930<sup>M</sup>  
RL=490060



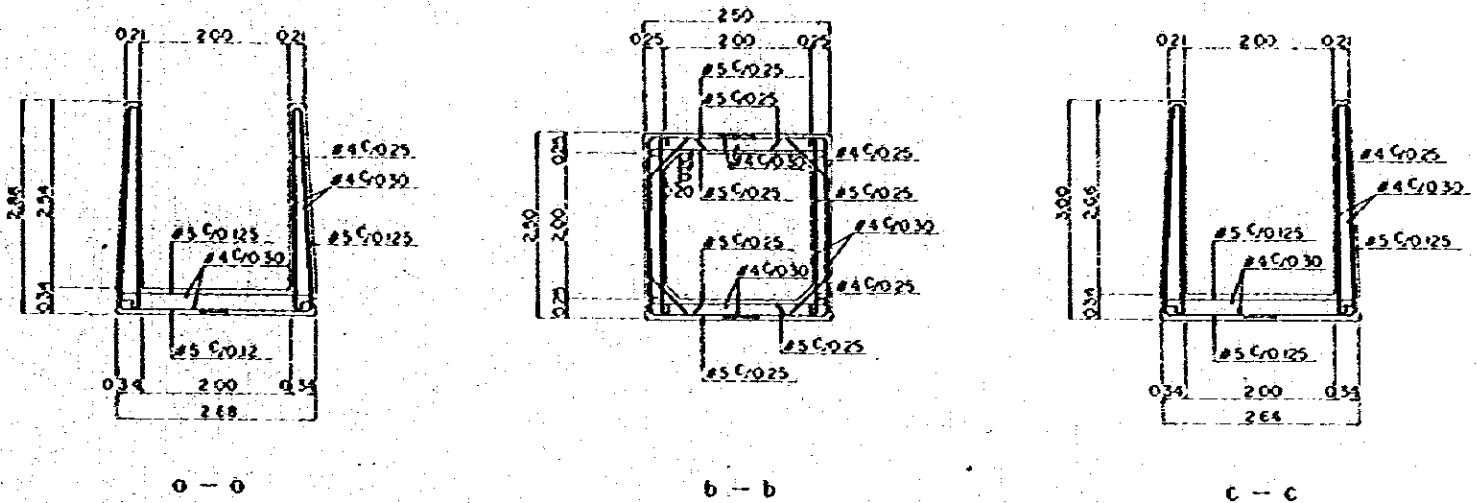
SECTION A - A S=1:100



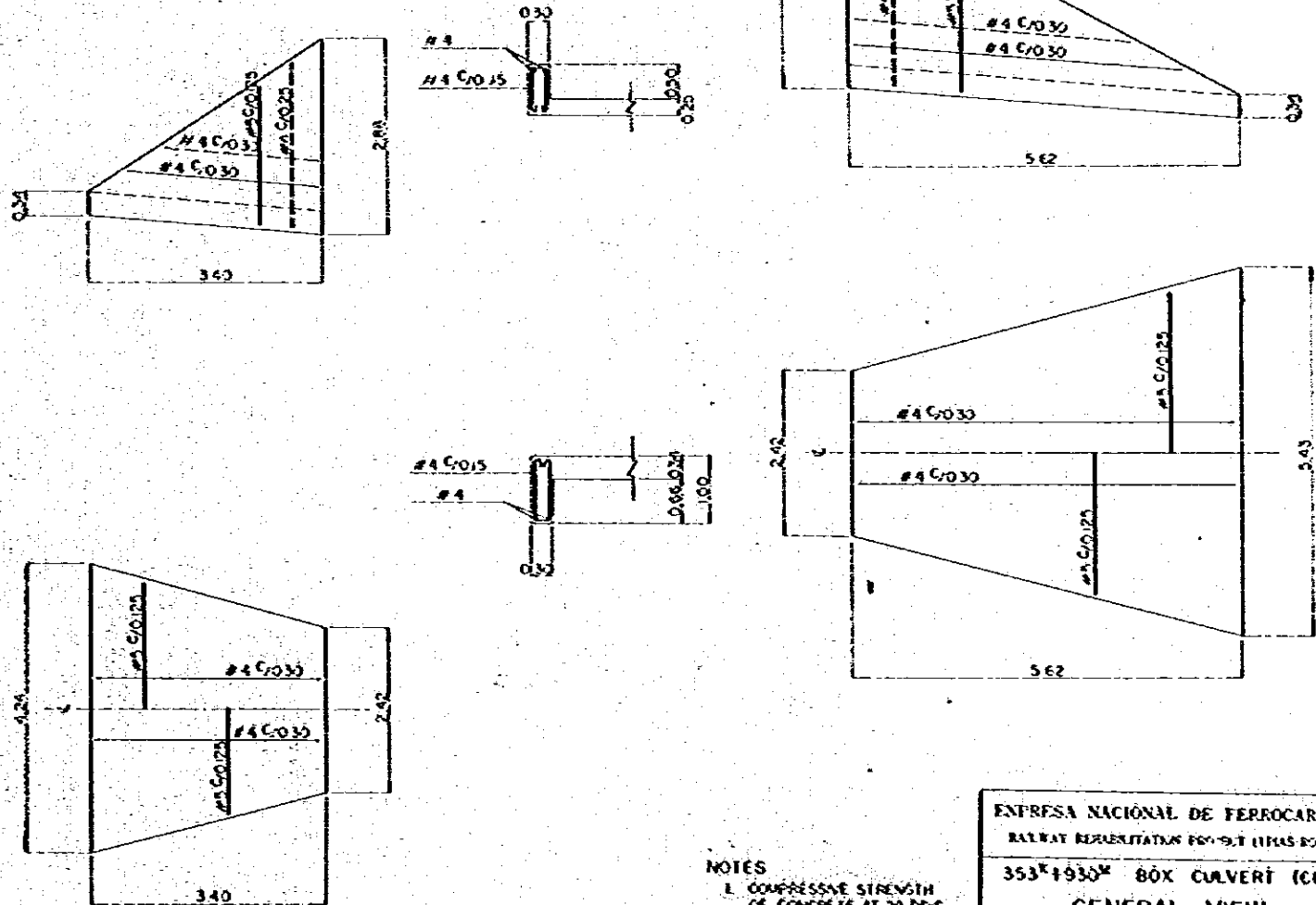
PLAN S=1:100



SECTION S=1:100



BAR ARRANGEMENT

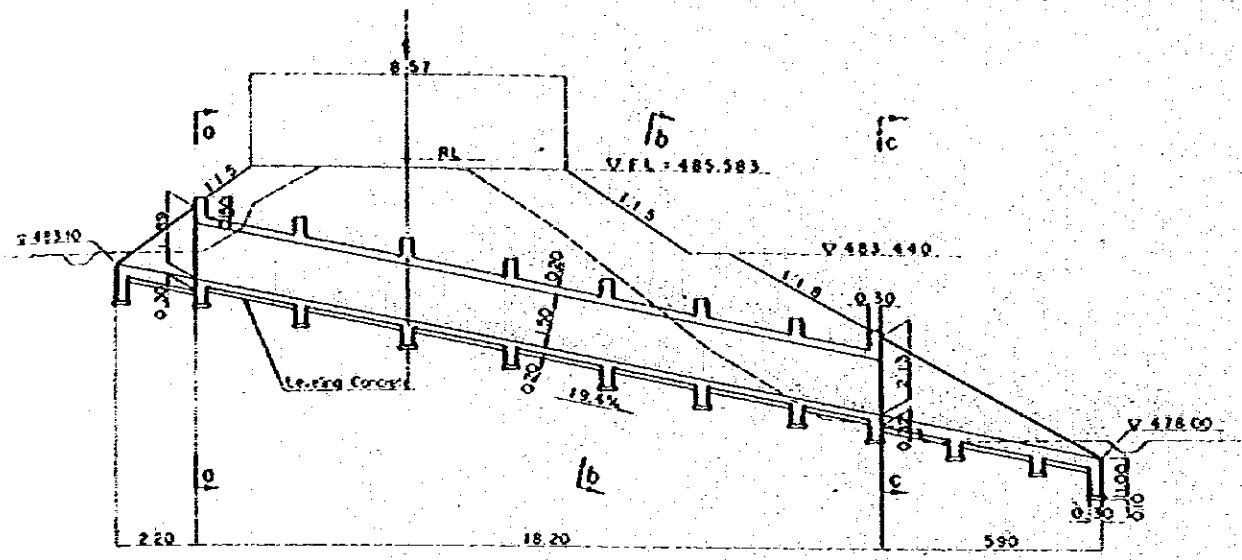


- NOTES
1. COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS OF STRUCTURAL CONCRETE  $f_{c'} = 20 \text{ MPa}$  (2900 PSI) NONWEARING CONCRETE  $f_{c'} = 150 \text{ MPa}$  (21700 PSI)
  2. REINFORCING STEEL BAR ASTM A655 GRADE 60 OR A615 GRADE 60 OR A617 GRADE 60

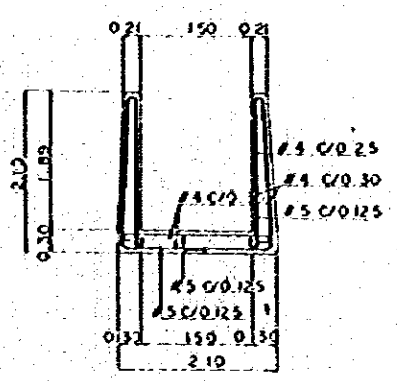
EMPRESA NACIONAL DE FERROCARRILES		
RAILWAY REPRESENTATION PROGRAM (LITHAS ECOMED)		
353 <sup>M</sup> +930 <sup>M</sup> BOX CULVERT (Cb)		
GENERAL VIEW		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	42

354#430M

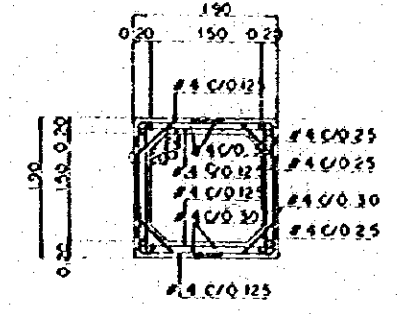
RL+485.833



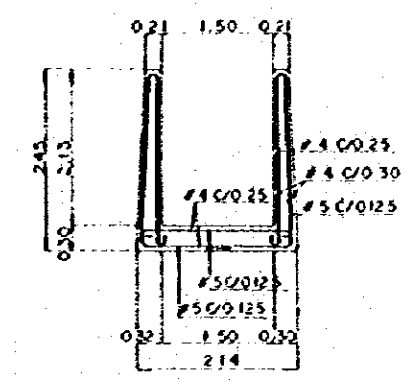
SECTION A-A S=1:100



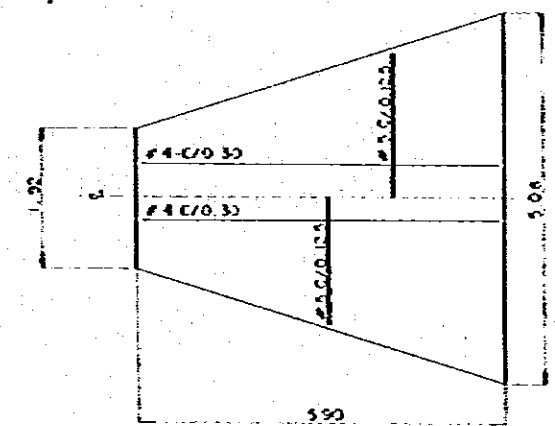
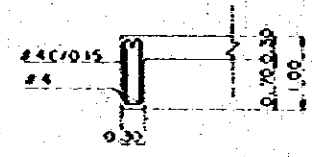
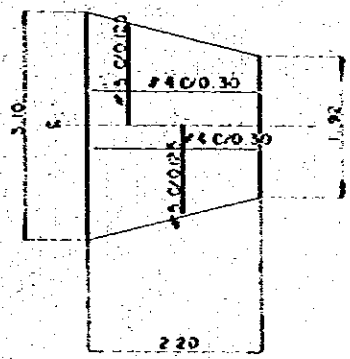
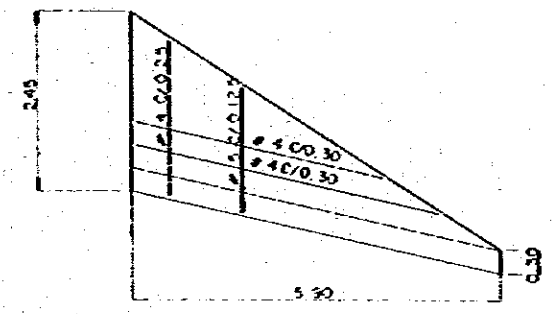
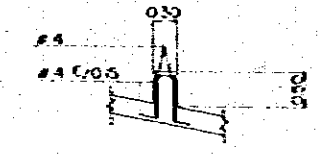
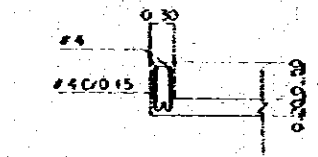
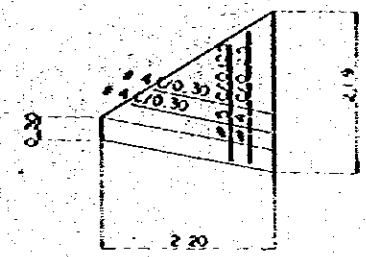
b - b



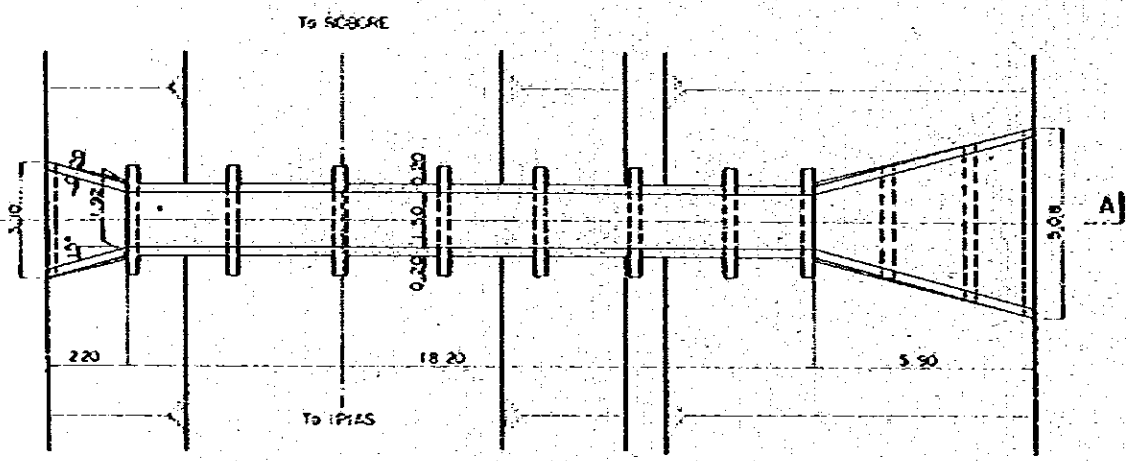
c - c



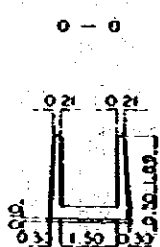
o - o



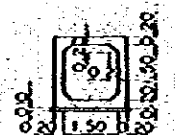
BAR ARRANGEMENT S=1:50



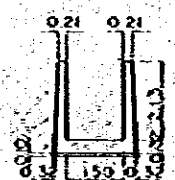
PLAN S=1:100



b - b



c - c



o - o

SECTION S=1:100

NOTES

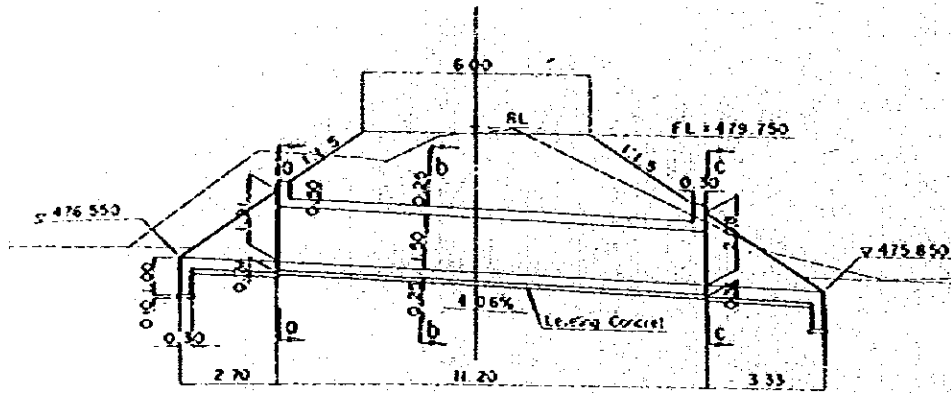
1. COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS OF STRUCTURAL CONCRETE  $f_{cu} = 20 \text{ MPa}$   
LEVELING CONCRETE  $f_{cu} = 10 \text{ MPa}$
2. REINFORCING STEEL BAR ASTM A63 GRADE 60 OR A637 GRADE 60

EMPRESA NACIONAL DE FERROCARRILES		
RAILWAY REHABILITATION PROJECT (IRAS) R.O.E.D		
354#430M BOX CULVERT (Cb)		
GENERAL VIEW		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	No. 43

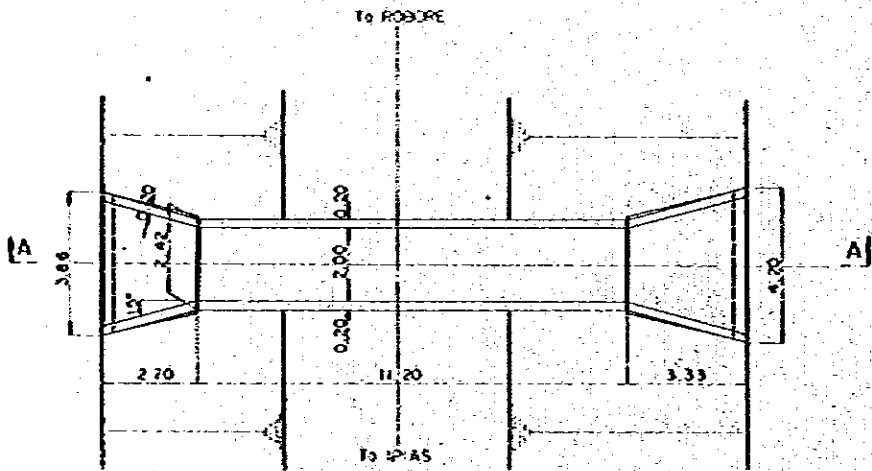


355+165<sup>M</sup>

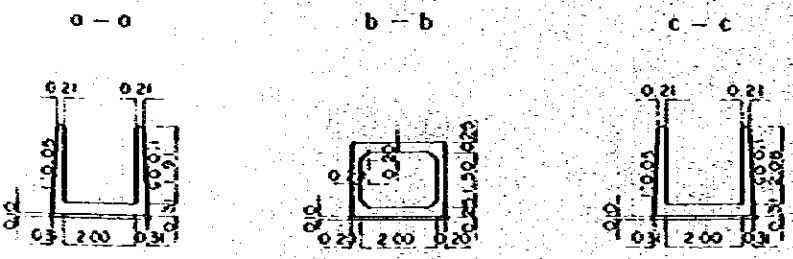
RL=480.200



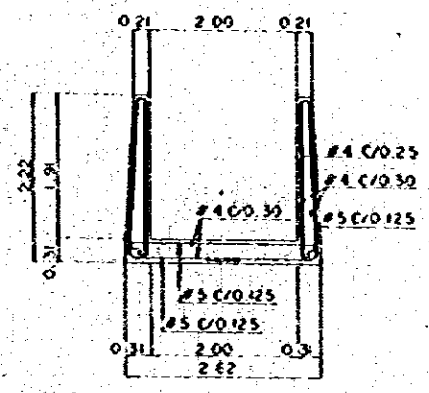
SECTION A-A S=1:100



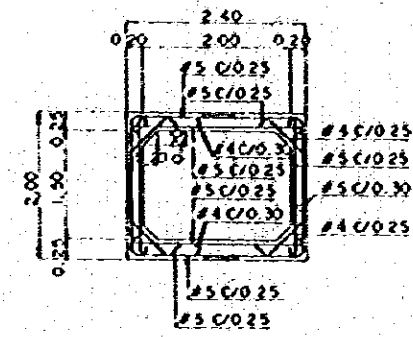
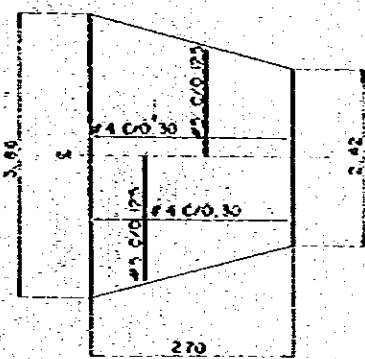
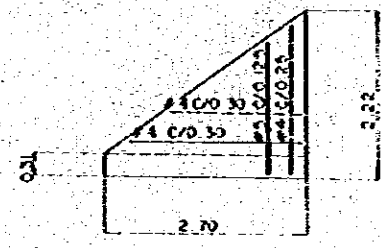
PLAN S=1:100



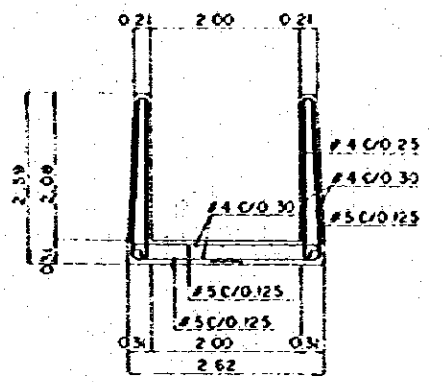
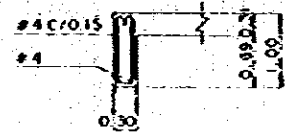
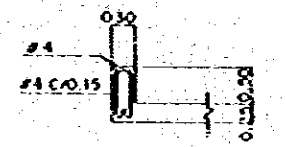
SECTION S=1:100



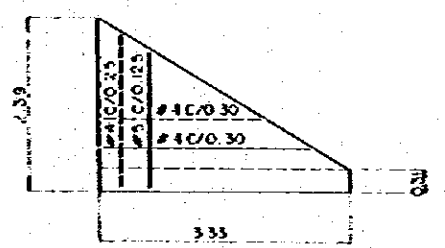
0-0



b-b



c-c



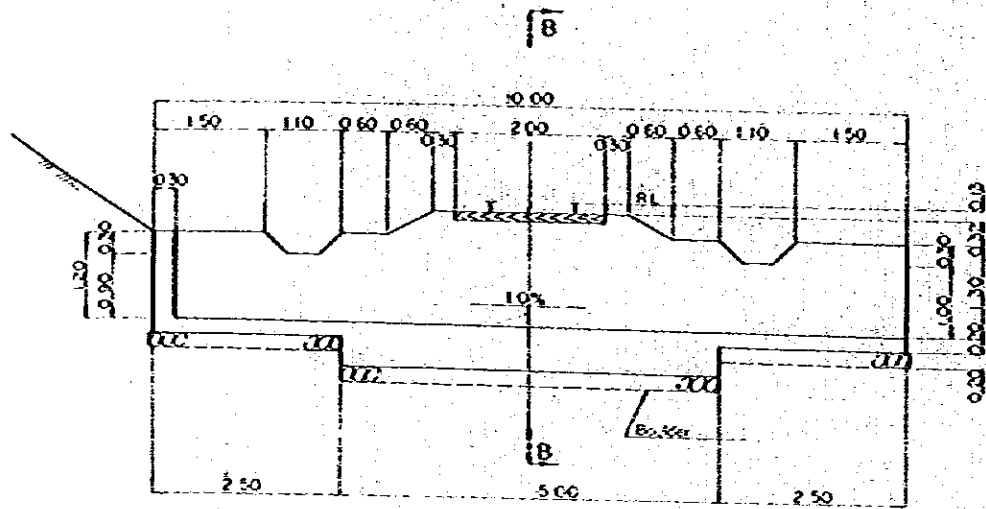
BAR ARRANGEMENT S=1:50

NOTES

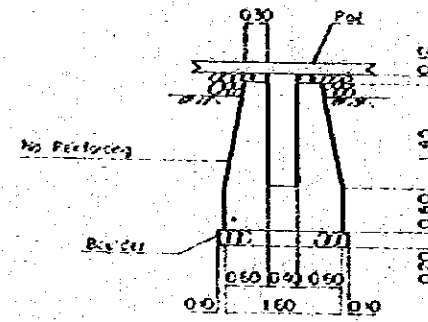
1. COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS  
a) STRUCTURAL CONCRETE  $f_{cu} = 20 \text{ N/mm}^2$   
b) LEVELING CONCRETE  $f_{cu} = 10 \text{ N/mm}^2$
2. REINFORCING STEEL BAR  
ASTM A615 GRADE 60 OR A616 GRADE 60 OR A617 GRADE 60

EMPRESA NACIONAL DE FERROCARRILES RAILWAY REHABILITATION PROJECT (LINAS-BOGOTA)		
355+165 <sup>M</sup> BOX CULVERT (Cb)		
GENERAL VIEW		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	No 44

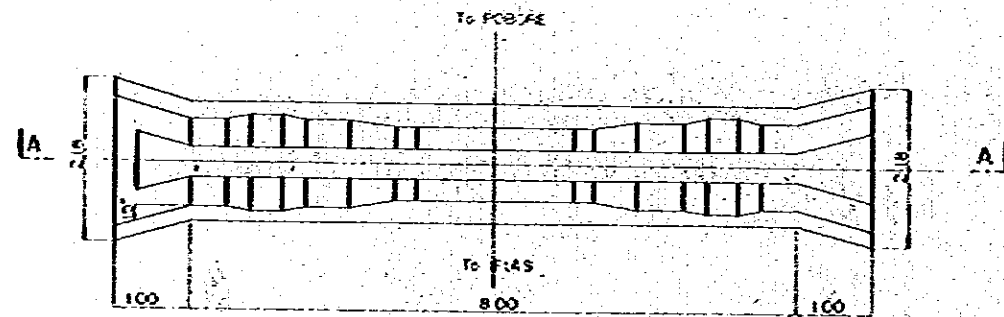
355<sup>K</sup>1793<sup>M</sup>  
 RL=474.970



SECTION A-A S=1:50



SECTION B-B S=1:50

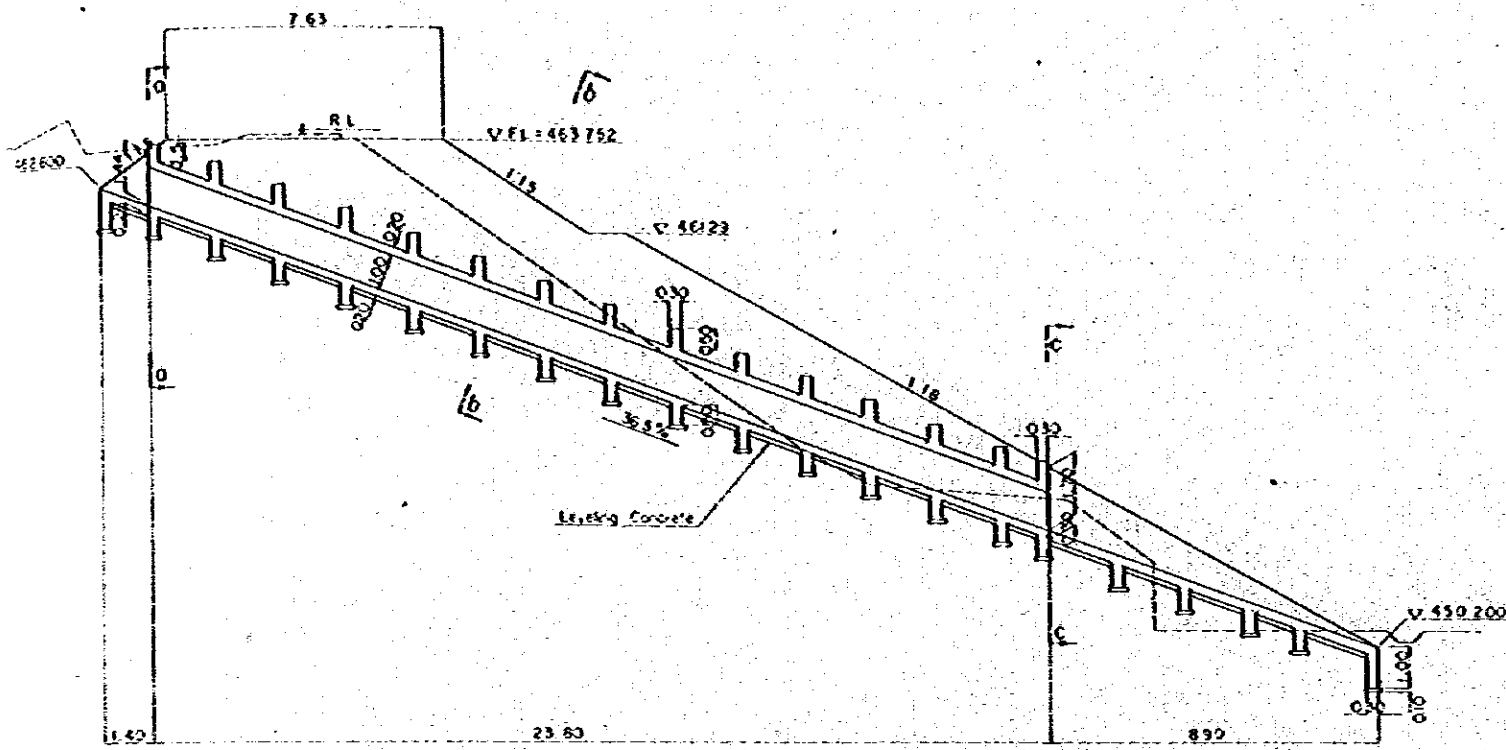


PLAN S=1:50

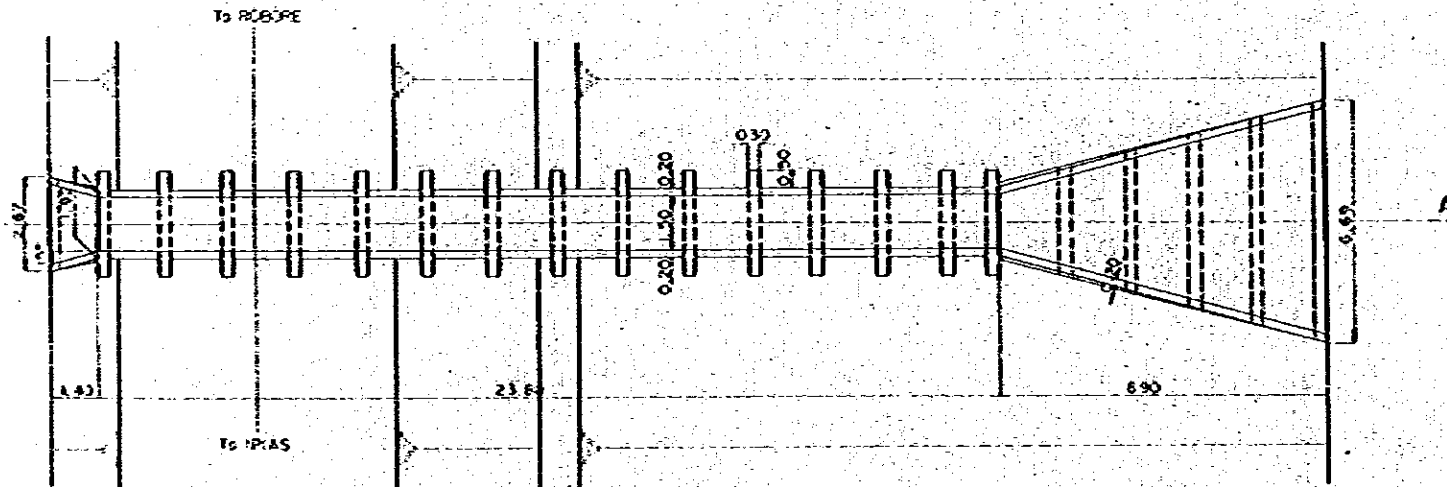
NOTE  
 CONCRETE TO BE 20%  
 AT 28 DAYS

EMPRESA NACIONAL DE FERRO ARRILES		
RAILWAY REHABILITATION PROJECT (RHS-RORP)		
355 <sup>K</sup> 1793 <sup>M</sup> OPEN DRAINAGE (DO)		
GENERAL VIEW		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	No 45

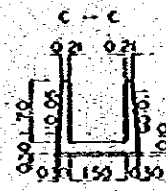
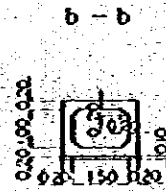
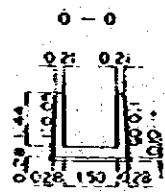
356+907<sup>M</sup>  
RL=464002



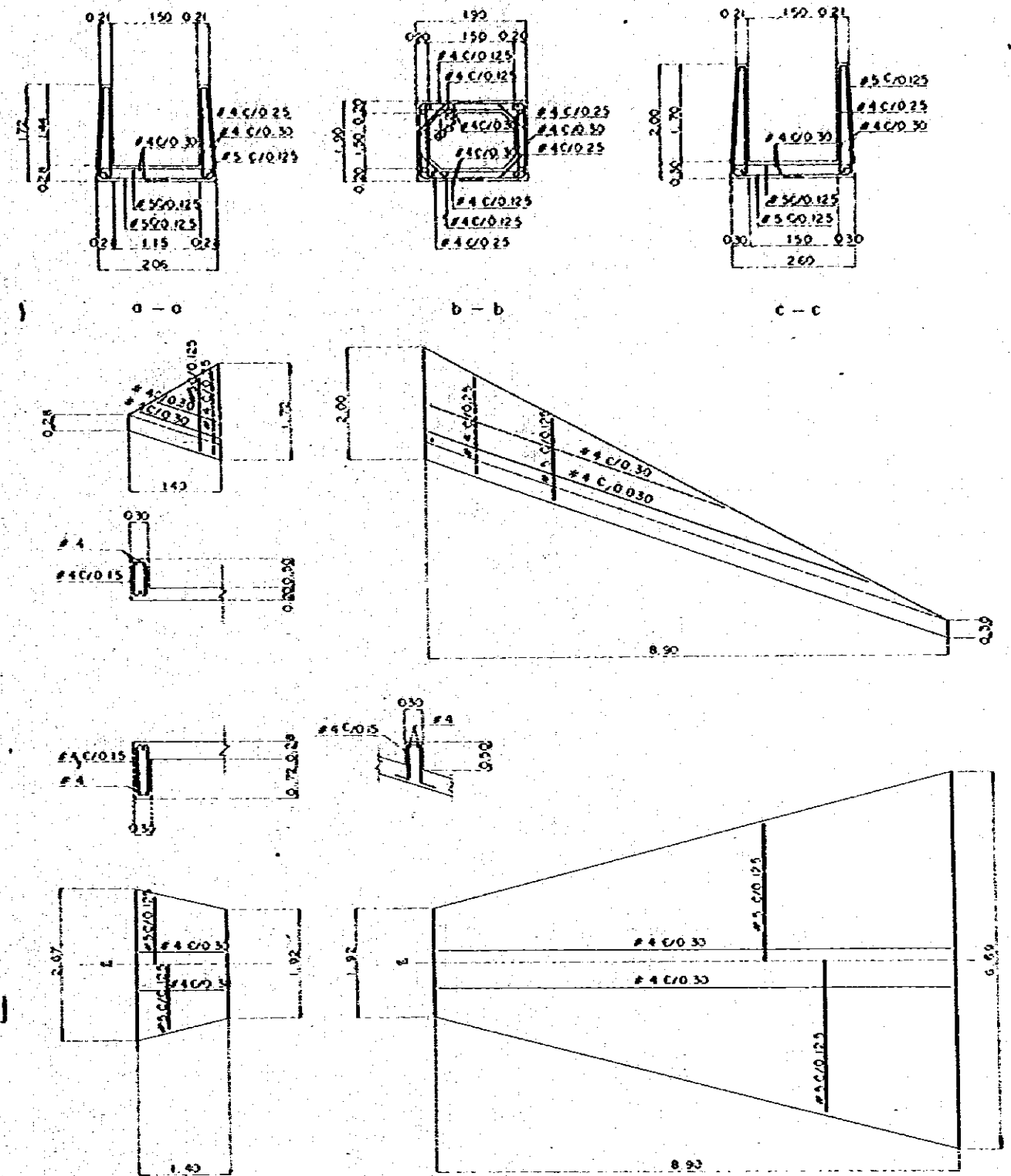
SECTION A-A S=1:100



PLAN S=1:100



SECTION S=1:100



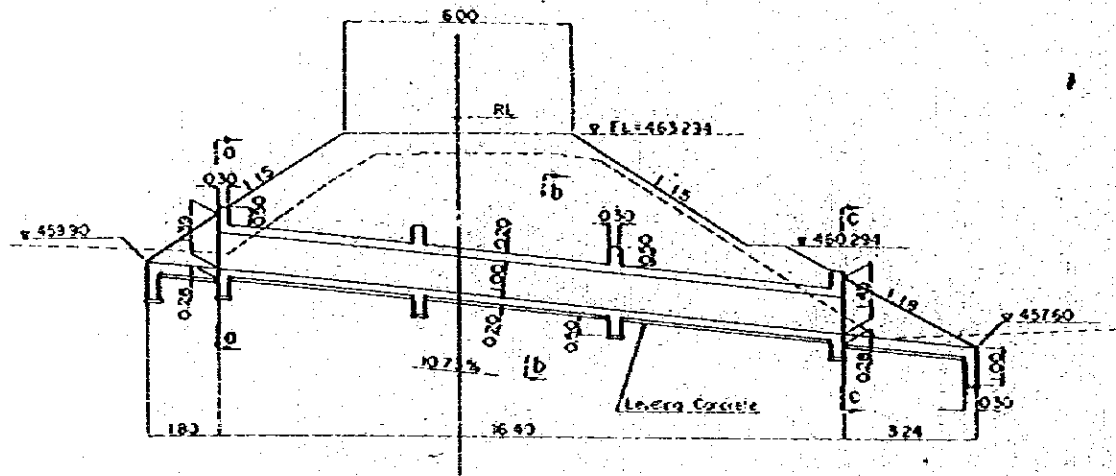
BAR ARRANGEMENT S=1:50

NOTES

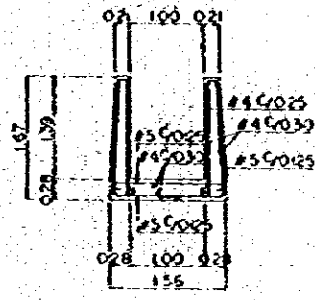
1. COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS
  - (a) STRUCTURAL CONCRETE  $f_{28} = 20 \text{ kg/cm}^2$
  - (b) LEVELING CONCRETE  $f_{28} = 16 \text{ kg/cm}^2$
2. REINFORCING STEEL BAR ASTM A615 GRADE 60 OR A66 GRADE 60 OR A67 GRADE 60

EMPRESA NACIONAL DE FERROCARRILES		
RAILWAY RECONSTRUCTION PROJECT (URUS-BIGOND)		
356+907 <sup>M</sup> BOX CULVERT (CB)		
GENERAL VIEW		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	No 46

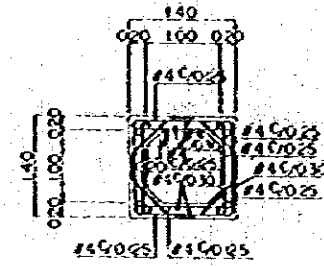
357<sup>K</sup>+032<sup>M</sup>  
 RL=463744



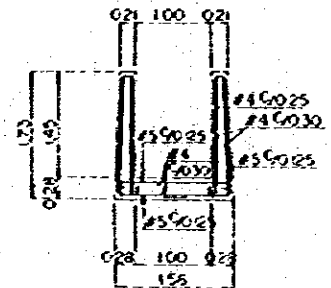
SECTION A - A S=1:100



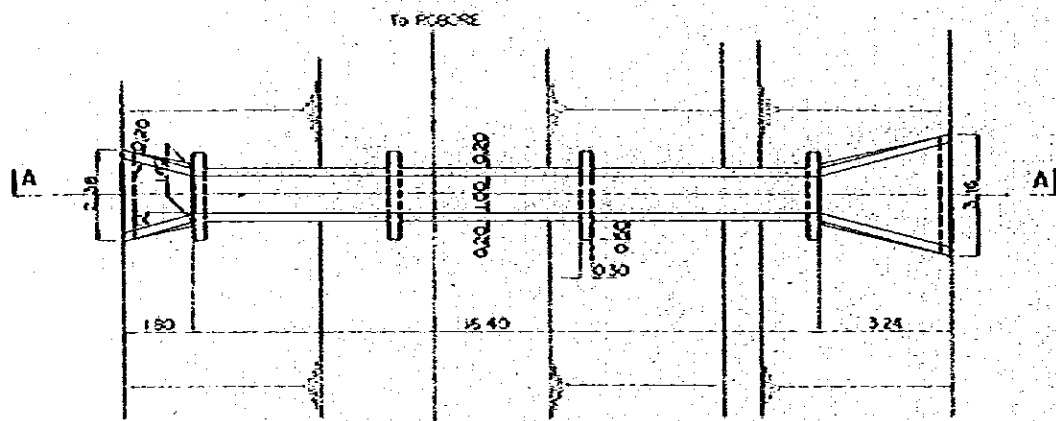
o - o



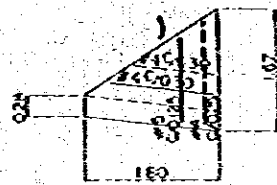
b - b



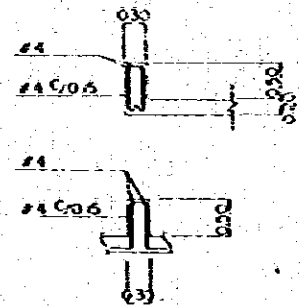
c - c



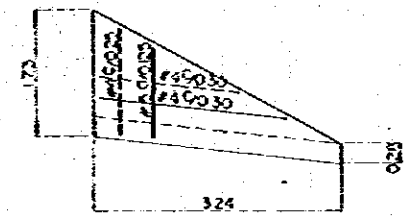
PLAN S=1:100



o - o



b - b

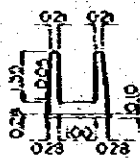


c - c

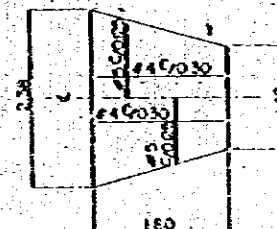
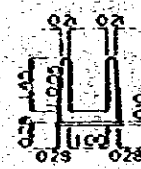
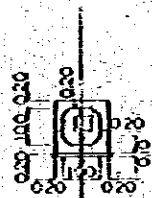
o - o

b - b

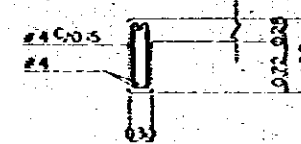
c - c



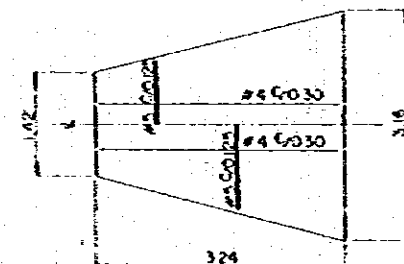
SECTION S=1:100



o - o



b - b



c - c

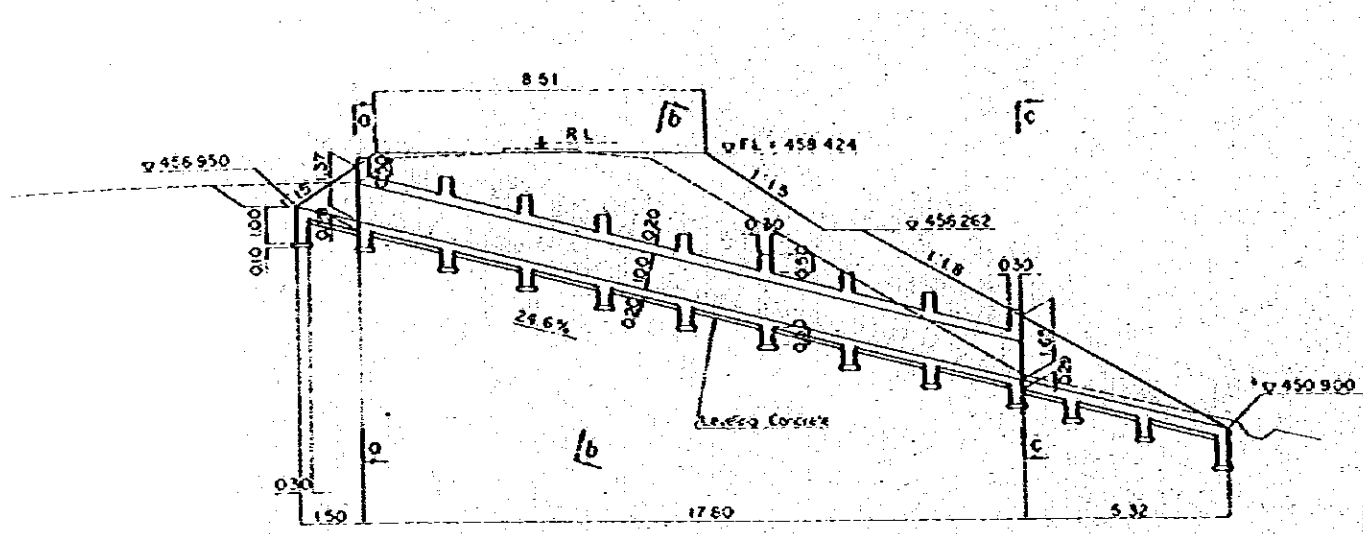
BAR ARRANGEMENT S=1:50

NOTES

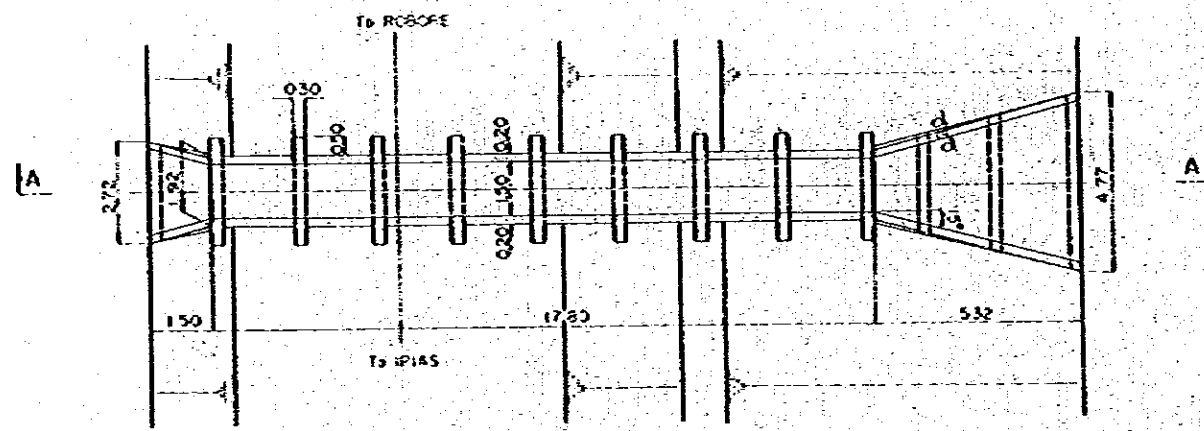
1. COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS  
 OF STRUCTURAL CONCRETE  $F_c = 2000 \text{ kg/cm}^2$   
 OF LEVELING CONCRETE  $F_c = 1000 \text{ kg/cm}^2$
2. REINFORCING STEEL BAR  
 ASTM #65 GRADE 60 OR #56 GRADE 60  
 OR #67 GRADE 60

EMPRESA NACIONAL DE FERROCARRILES		
RAILWAY REHABILITATION PROJECT (IFERUS-BORR)		
357 <sup>K</sup> +032 <sup>M</sup> BOX CULVERT (Cb)		
GENERAL VIEW		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	47

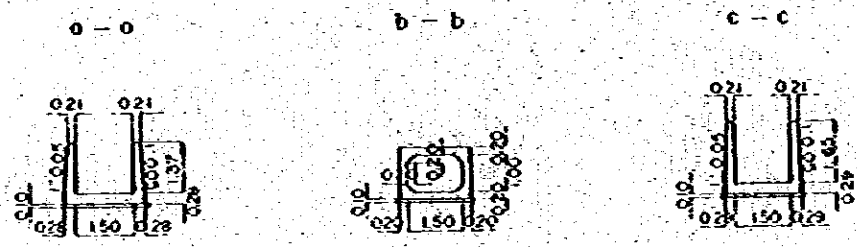
357<sup>K</sup>+536<sup>M</sup>  
 RL=458674



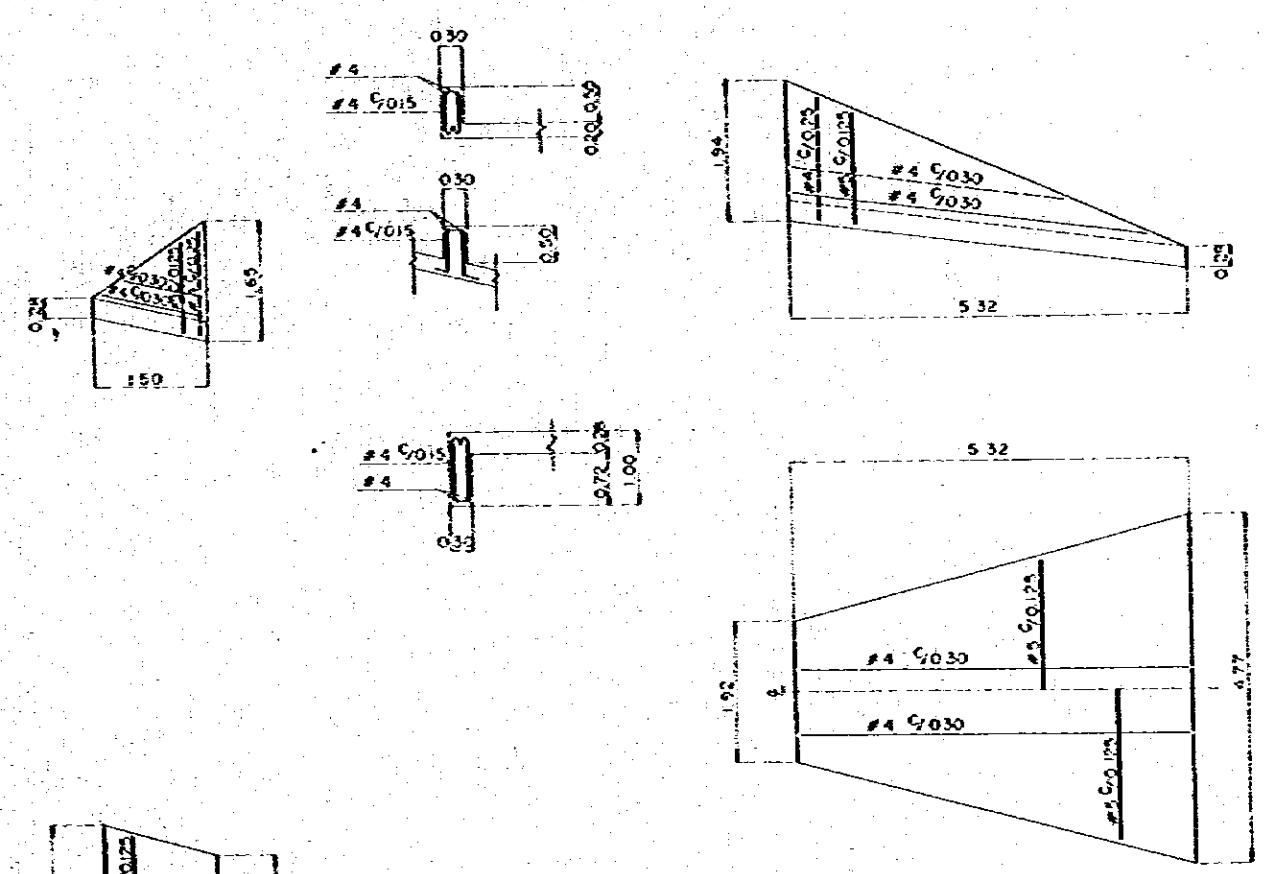
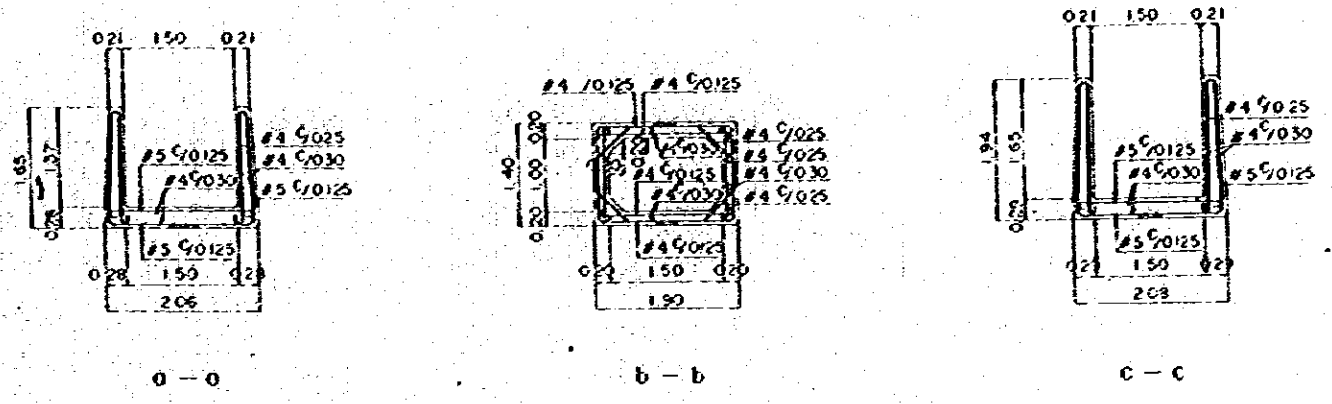
SECTION A - A S=1:100



PLAN S=1:100



SECTION S=1:100



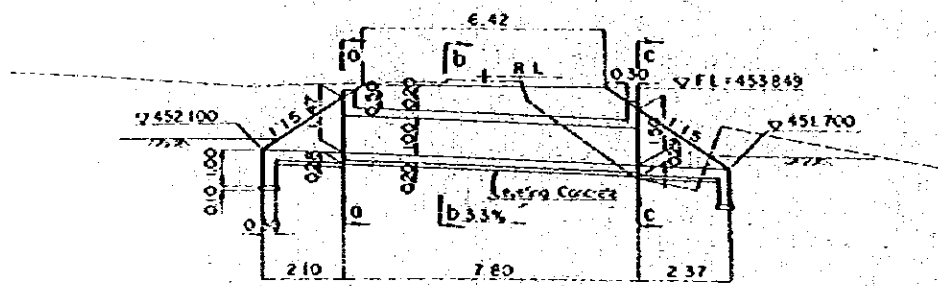
BAR ARRANGEMENT S=1:50

- NOTES:
1. COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS
  2. STRUCTURAL CONCRETE F<sub>28</sub>=2000 PSI
  3. LEVELING CONCRETE F<sub>28</sub>=4000 PSI
  4. REINFORCING STEEL BAR ASTM A63 GRADE 60 OR A63 GRADE 60 OR A617 GRADE 60

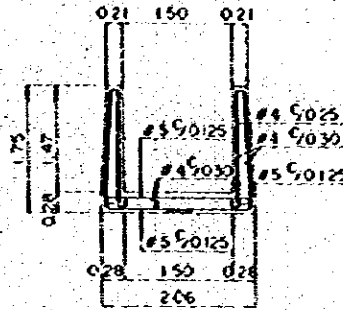
EMPRESA NACIONAL DE FERROCARRILES RAILWAY REHABILITATION PROJECT (IMPAS-ROOSES)			
357 <sup>K</sup> +536 <sup>M</sup> BOX CULVERT (Cb)			
GENERAL VIEW			
Executing Enterprise			
Drawn by Dize	Checked by Dize	Approved by Dize	
Constructing Enterprise			
Checked by Dize	Approved by Dize	48	

358<sup>M</sup>+700<sup>M</sup>

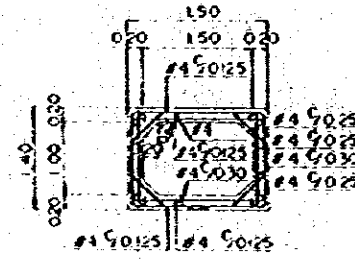
RL+454099



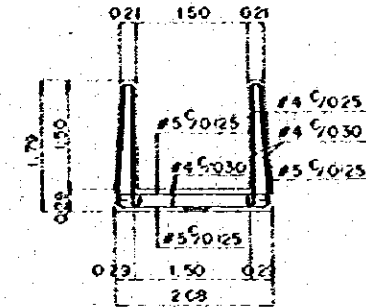
SECTION A - A S=1:100



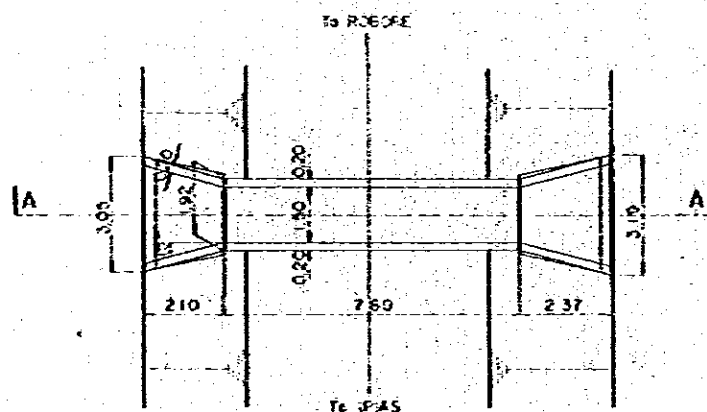
0 - 0



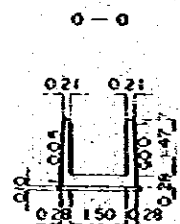
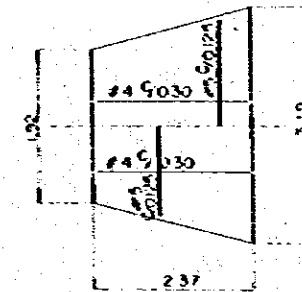
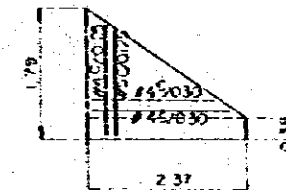
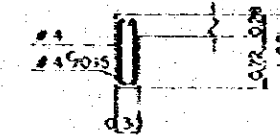
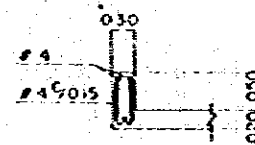
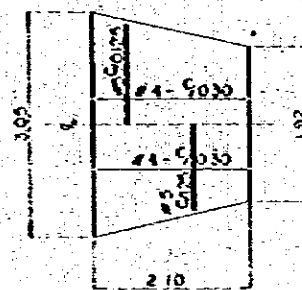
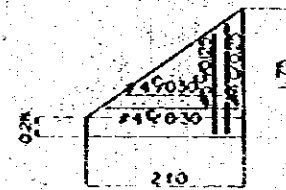
b - b



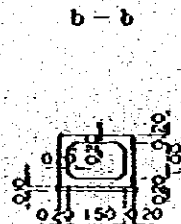
c - c



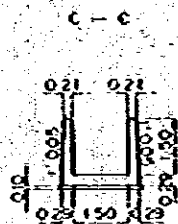
PLAN S=1:100



0 - 0



b - b



c - c

SECTION S=1:100

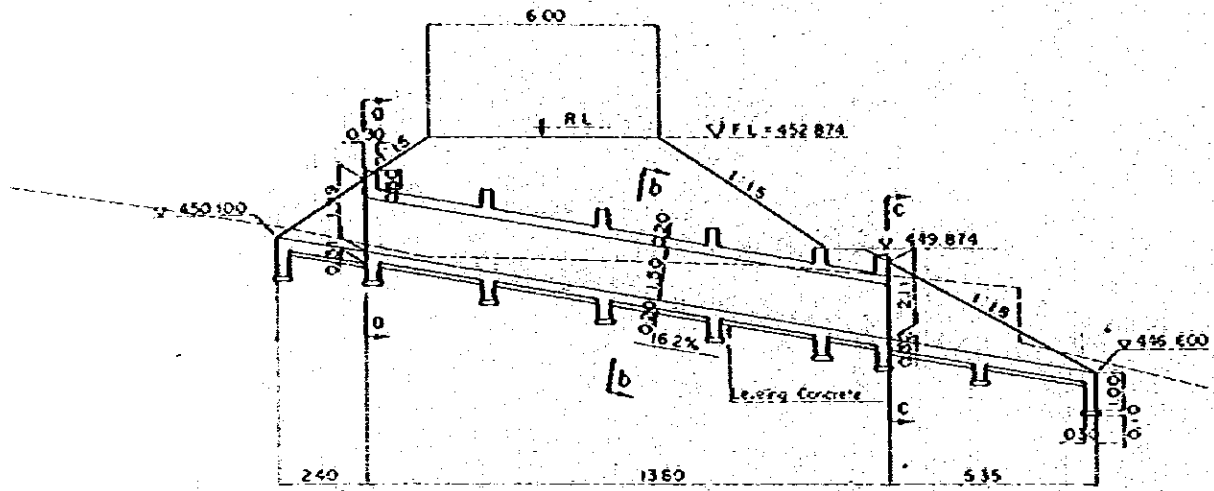
BAR ARRANGEMENT S=1:50

NOTES

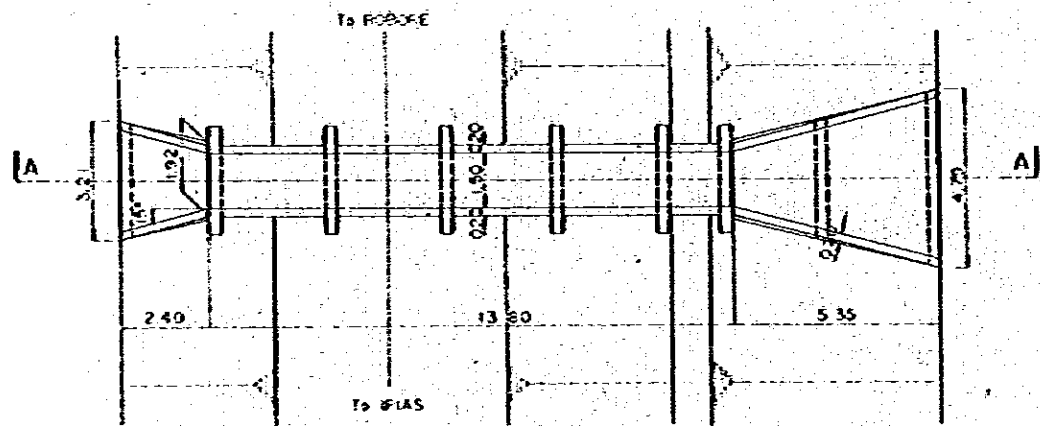
1. COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS  
 a) STRUCTURAL CONCRETE  $f_c = 20,000 \text{ kg/cm}^2$   
 b) LEVELING CONCRETE  $f_c = 15,000 \text{ kg/cm}^2$
2. REINFORCING STEEL BAR  
 ASTM A65 GRADE 60 OR A65 GRADE 60 OR A617 GRADE 60

EMPRESA NACIONAL DE FERROCARRILES RAILWAY MODERNIZATION PROJECT (1945-1960)			
358 <sup>M</sup> +700 <sup>M</sup> BOX CULVERT (CB)			
GENERAL VIEW			
Executing Enterprise			
Drawn by Date	Checked by Date	Approved by Date	
Contracting Enterprise			
Checked by Date	Approved by Date	No. 49	

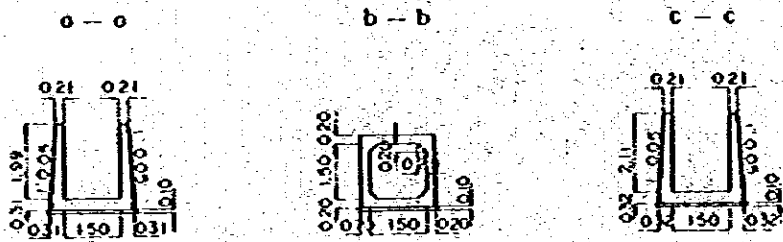
358<sup>K</sup>+869<sup>M</sup>  
 RL+453.124



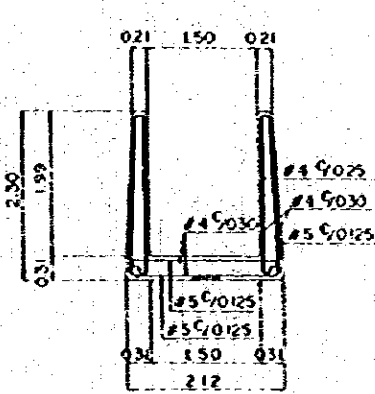
SECTION A-A S=1:100



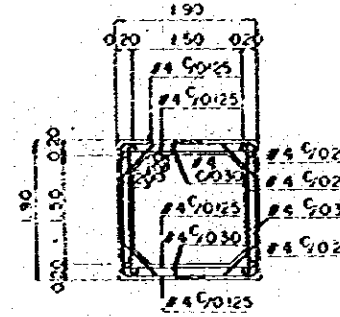
PLAN S=1:100



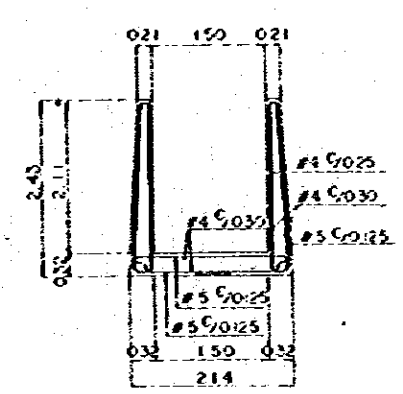
SECTION S=1:100



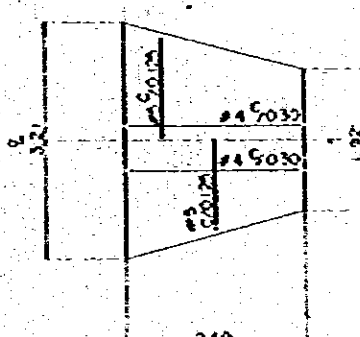
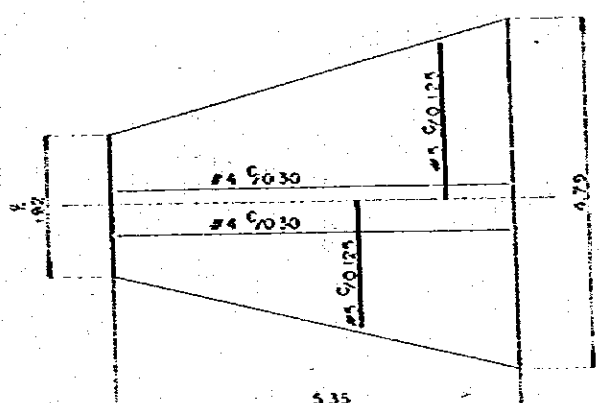
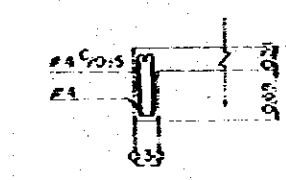
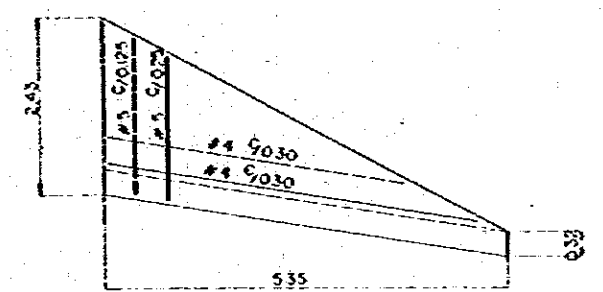
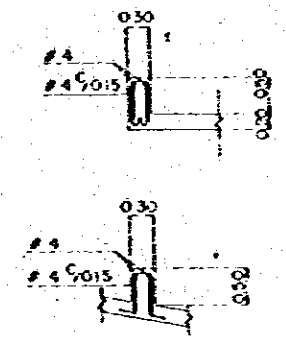
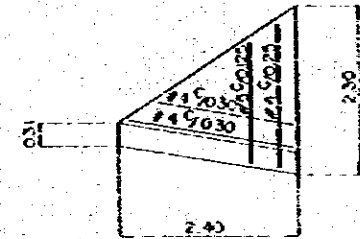
o - o



b - b



c - c



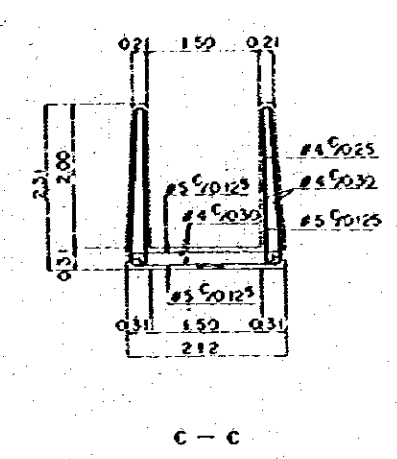
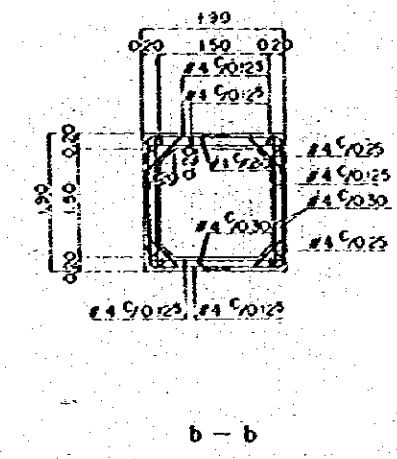
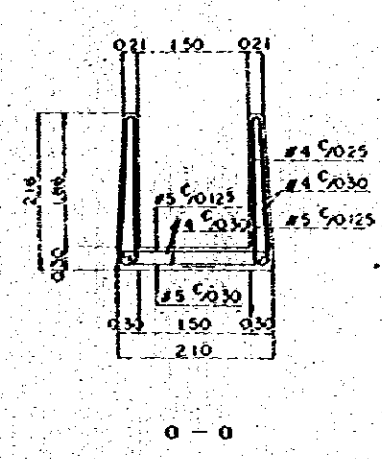
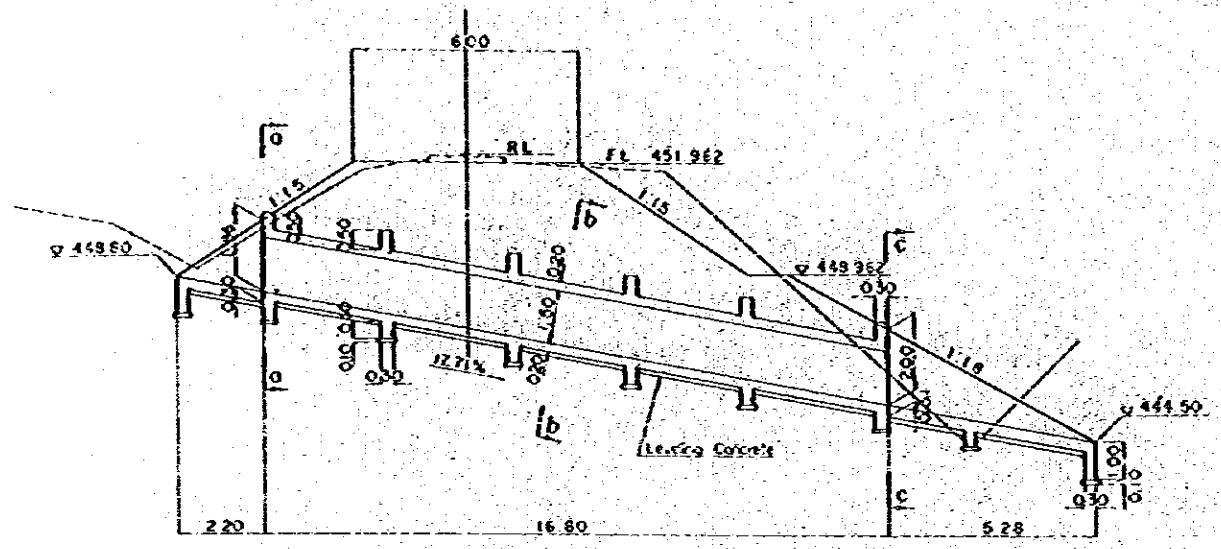
BAR ARRANGEMENT S=1:50

NOTES

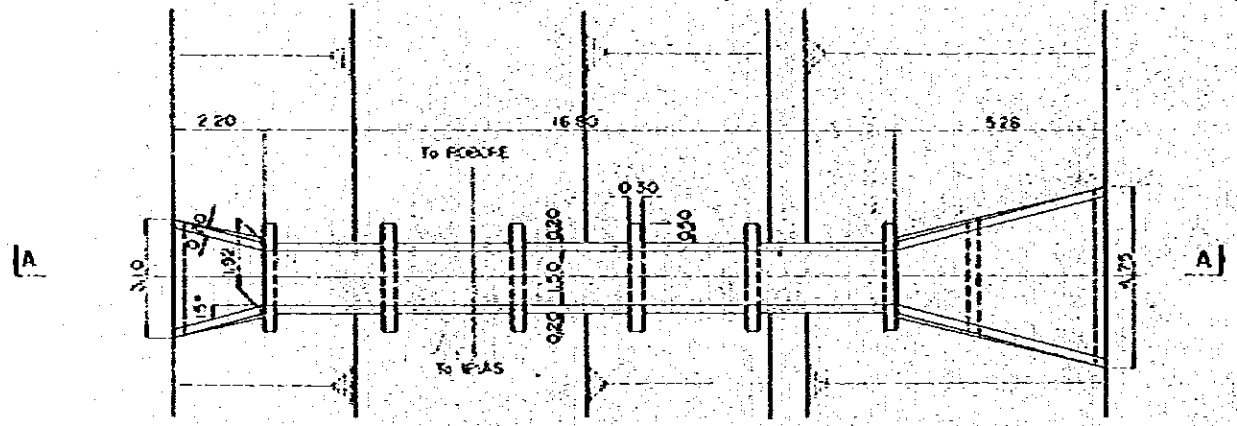
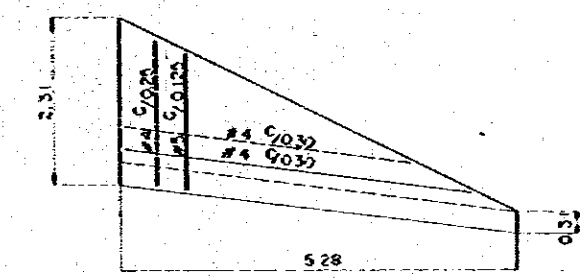
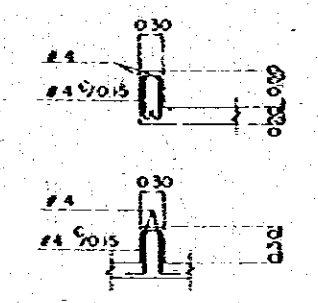
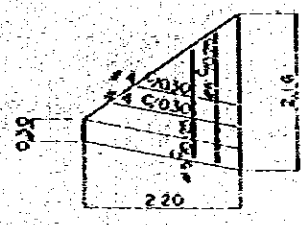
1. COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS  
 IN STRUCTURAL CONCRETE  $f_{cm} = 20 \text{ MPa}$   
 IN LEVELING CONCRETE  $f_{cm} = 16 \text{ MPa}$
2. REINFORCING STEEL BAR  
 ASTM A63 GRADE 60 OR A63 GRADE 60  
 OR A617 GRADE 60

EMPRESA NACIONAL DE FERROCARRILES		
RAILWAY REHABILITATION PROJECT (HRAS-BORDER)		
358 <sup>K</sup> +869 <sup>M</sup> BOX CULVERT (C6)		
GENERAL VIEW		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	50

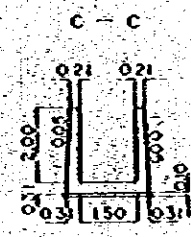
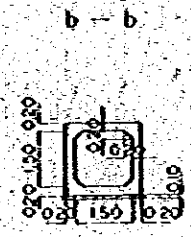
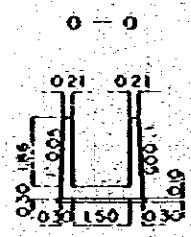
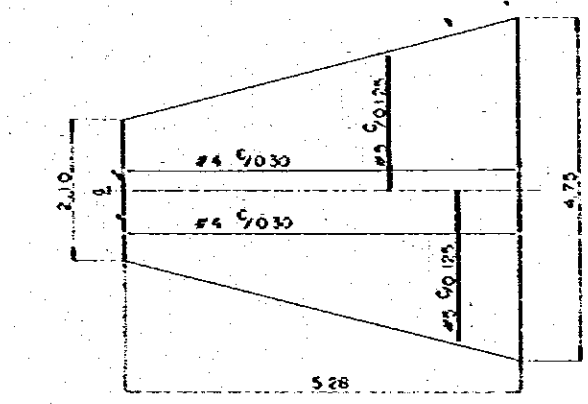
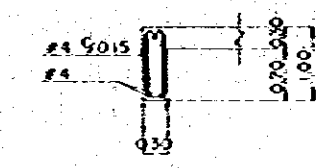
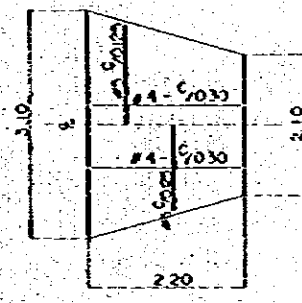
358<sup>M</sup>+980<sup>M</sup>  
RL = 452.212



SECTION A - A S = 1:100



PLAN S = 1:100



SECTION S = 1:100

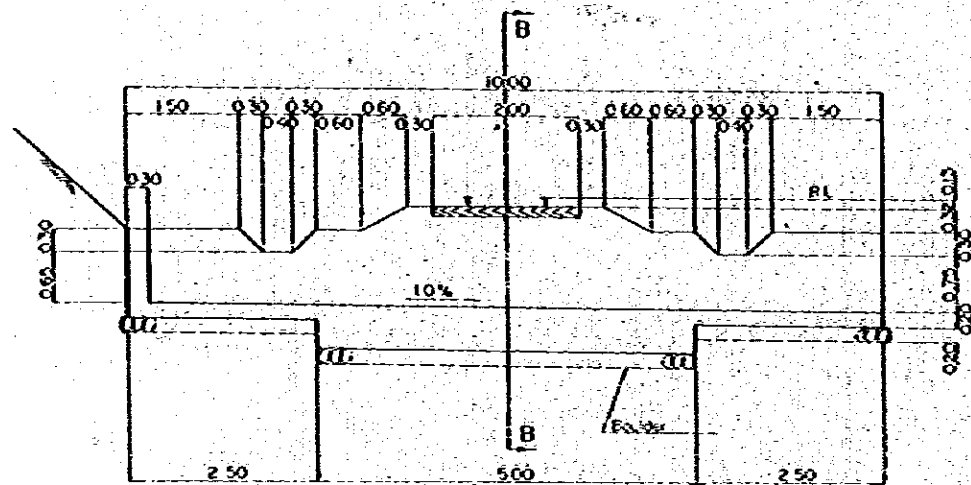
BAR ARRANGEMENT S = 1:50

- NOTES
1. COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS
    - a) STRUCTURAL CONCRETE  $f_c = 20,000 \text{ kg/cm}^2$
    - b) LEVELING CONCRETE  $f_c = 16,000 \text{ kg/cm}^2$
  2. REINFORCING STEEL BAR
    - a) ASTM #65 GRADE 60 OR #65 GRADE 60 OR #617 GRADE 60

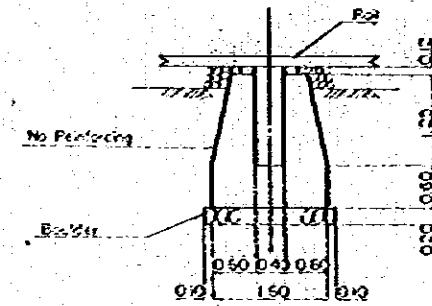
EMPRESA NACIONAL DE FERROCARRILES		
RAILWAY REHABILITATION PROJECT (PLAS INGRES)		
358 <sup>M</sup> +980 <sup>M</sup> BOX CULVERT (CB)		
GENERAL VIEW		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	No 51



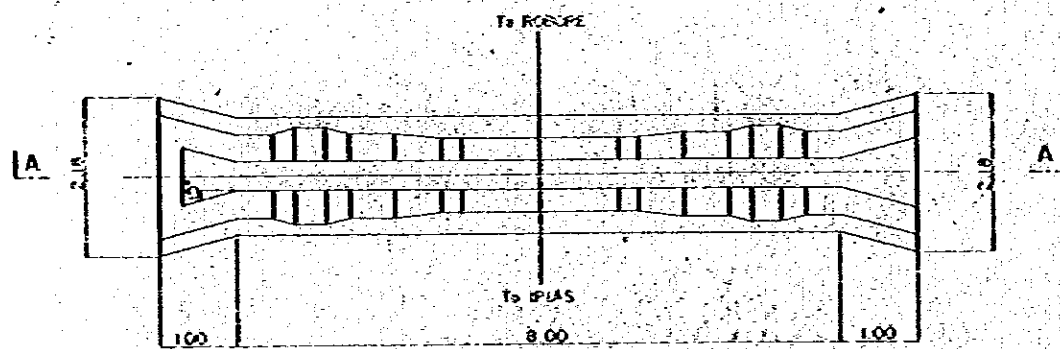
359<sup>K</sup>+300<sup>M</sup>  
RL=449.640



SECTION A - A S=1:50



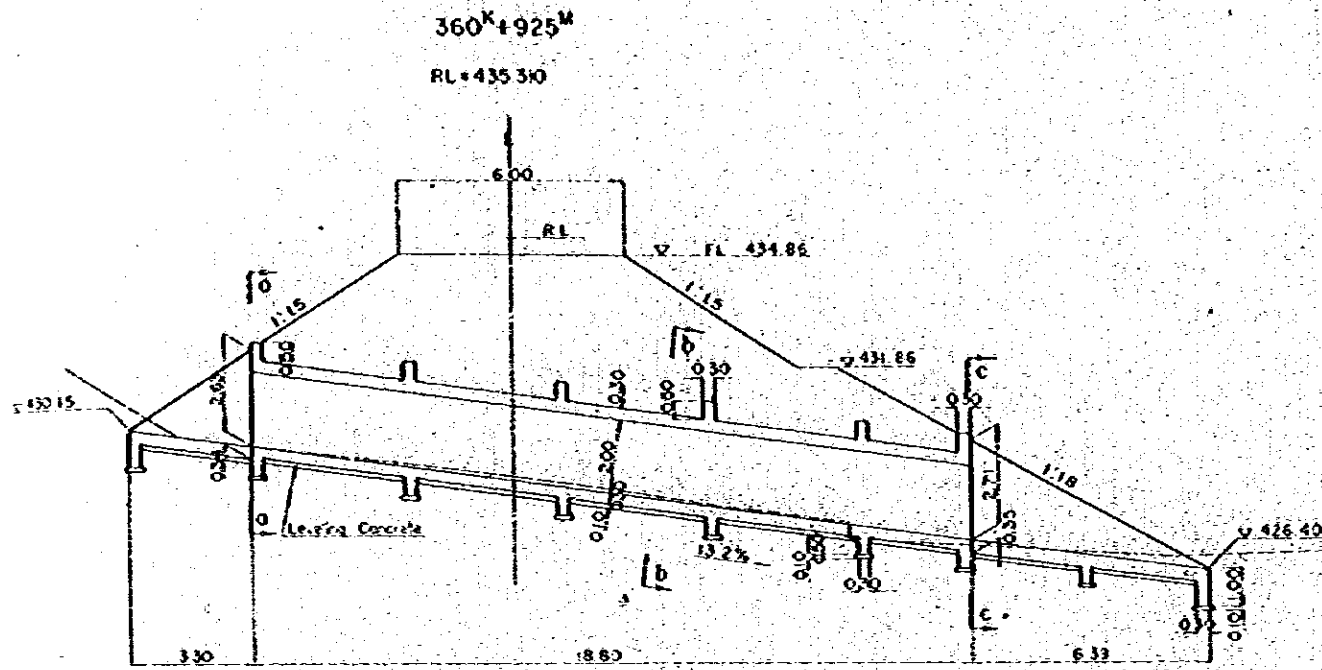
SECTION B - B S=1:50



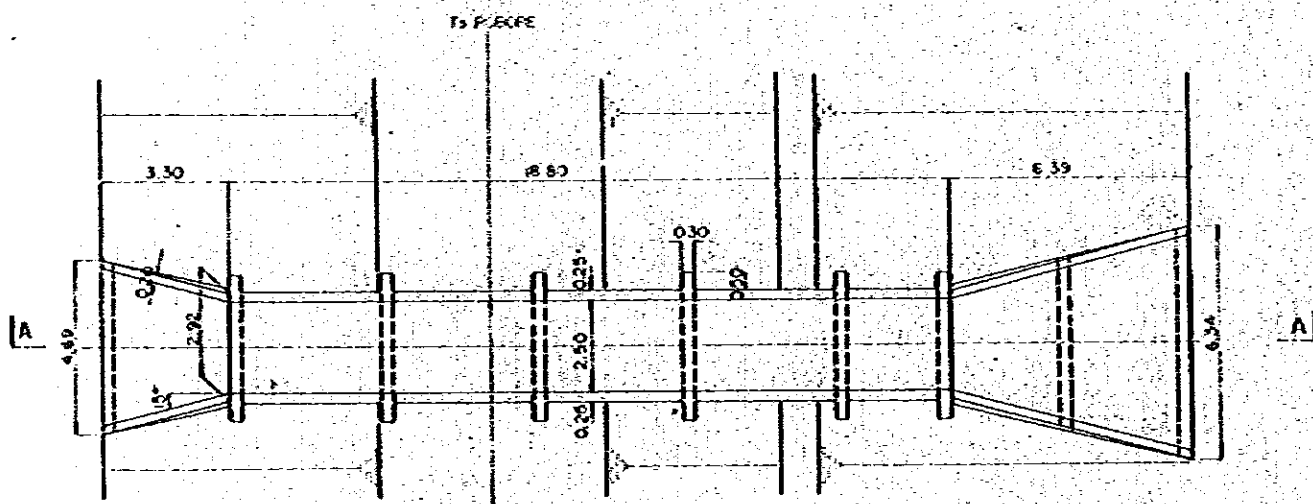
PLAN S=1:50

NOTE  
CONCRETE TO BE 2.0%  
AT 23 CM'S

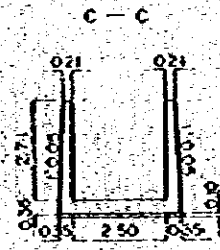
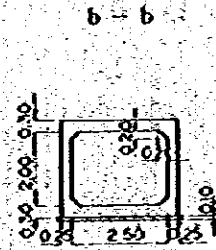
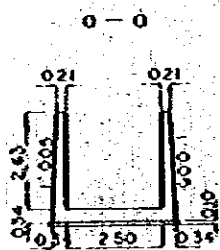
EMPRESA NACIONAL DE FERROCARRILES		
RAILWAY REHABILITATION PROJECT (IPAS-ROCK)		
359 <sup>K</sup> +300 <sup>M</sup> OPEN DRAINAGE (100)		
GENERAL VIEW		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	52



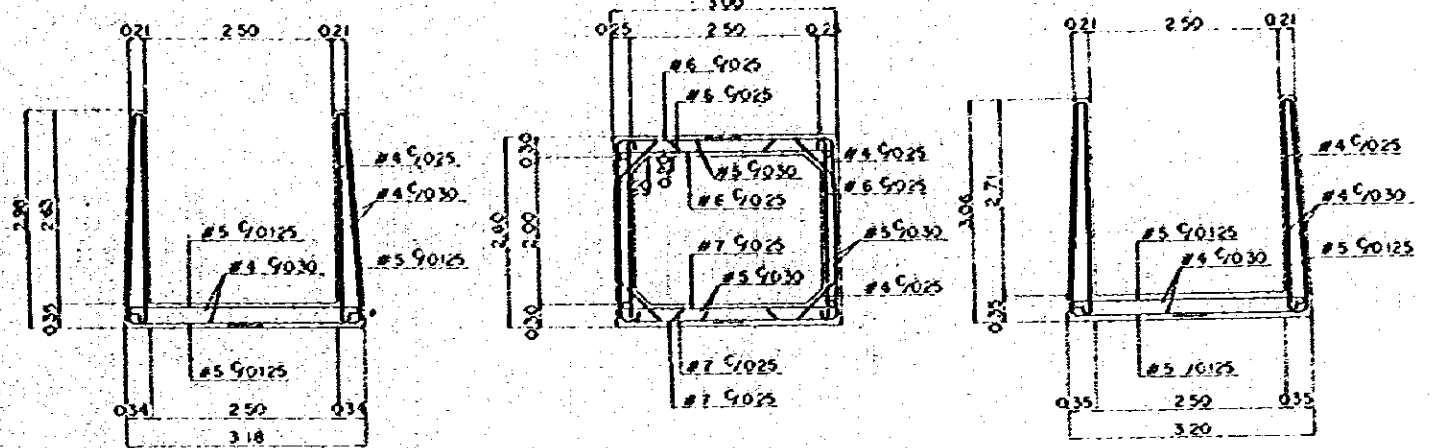
SECTION A-A S=1:100



PLAN S=1:100



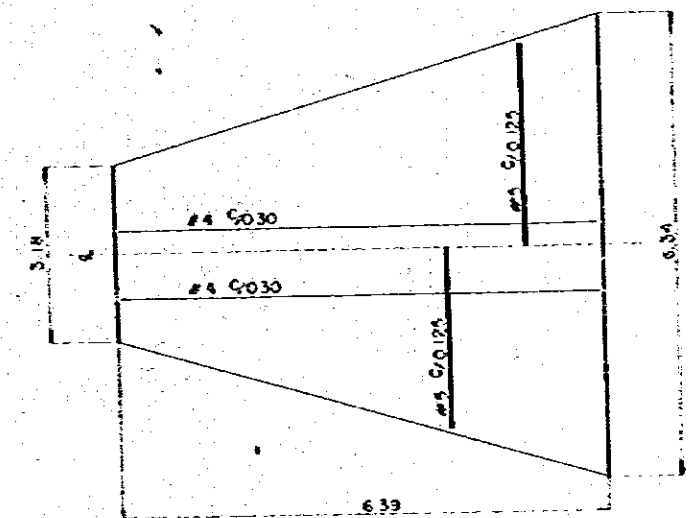
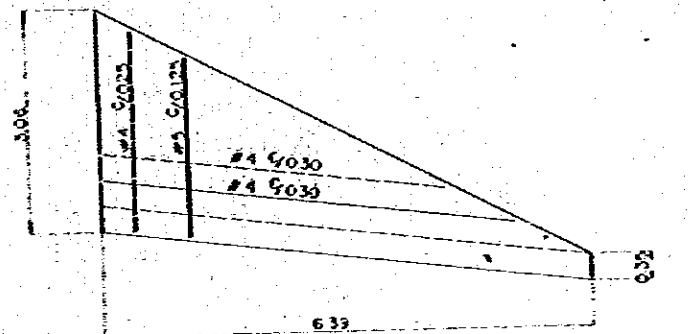
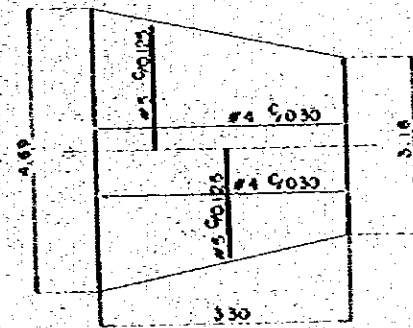
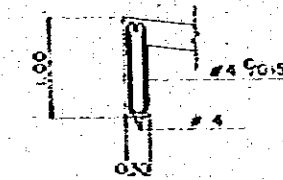
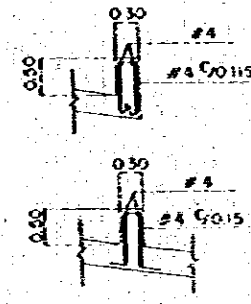
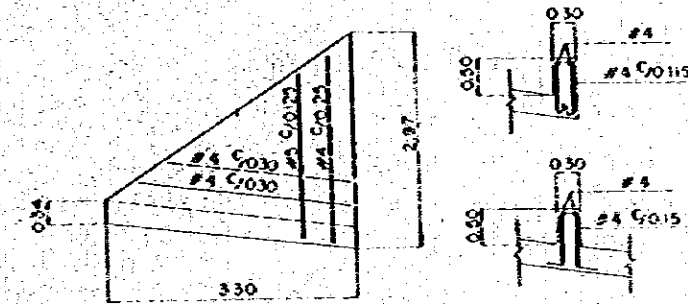
SECTION S=1:100



O-O

B-B

C-C



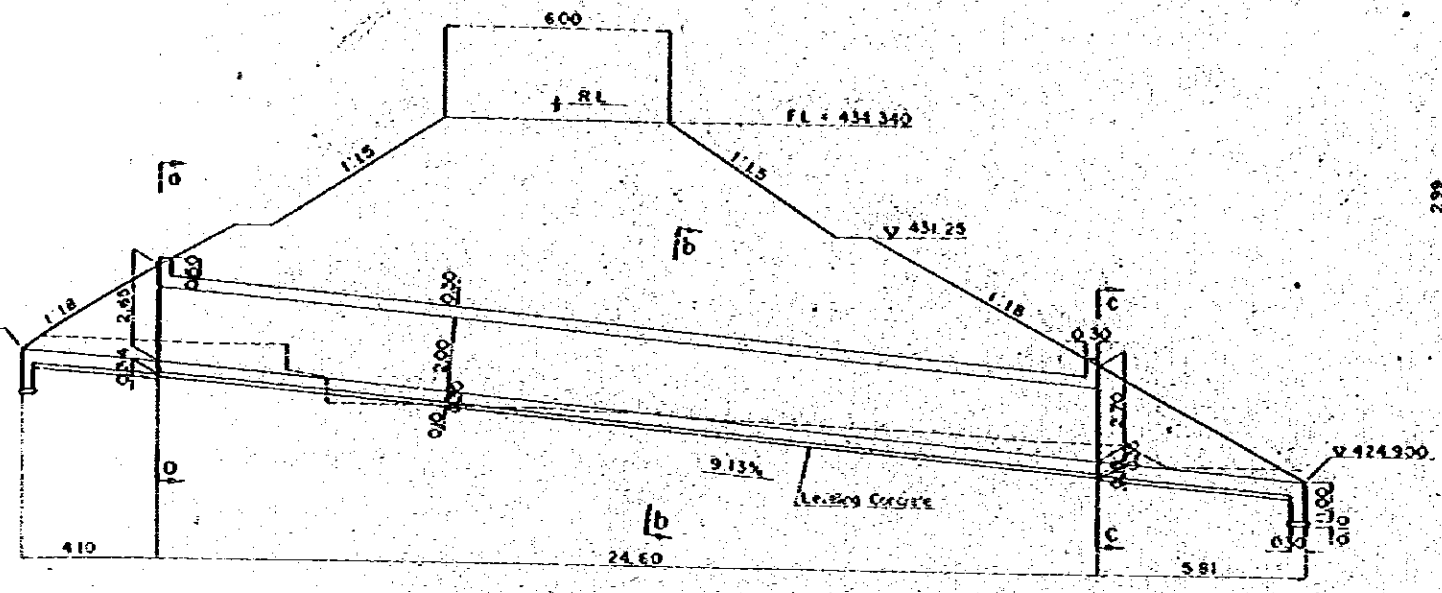
BAR ARRANGEMENT S=1:50

NOTES

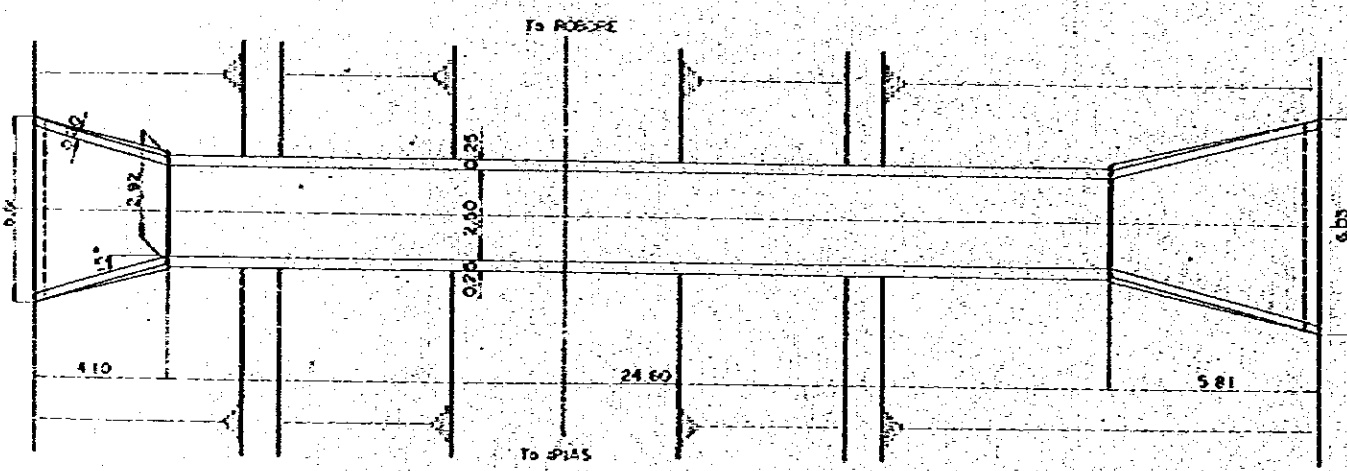
1. COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS
2. REINFORCING STEEL BAR ASTM A615 GRADE 60 OR A617 GRADE 60

ENTRESA NACIONAL DE FERROCARRILES		
RAILWAY REHABILITATION PROJECT (IFIAS BORRER)		
360 <sup>K</sup> 1925 <sup>M</sup> BOX CULVERT (CB)		
GENERAL VIEW		
Executing Enterprise		
Drawn by Evis	Checked by Dice	Approved by Dice
Constructing Enterprise		
Checked by Dice	Approved by Dice	No 53

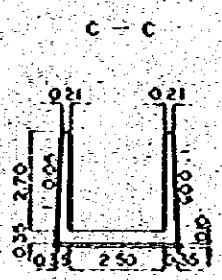
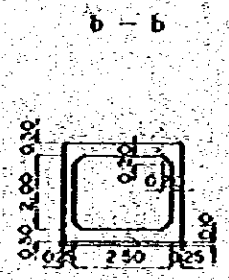
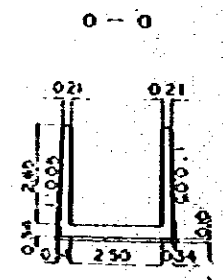
360K4986M  
RL=434700



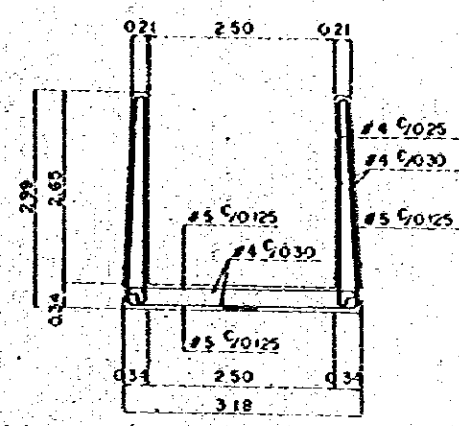
SECTION A - A S=1.100



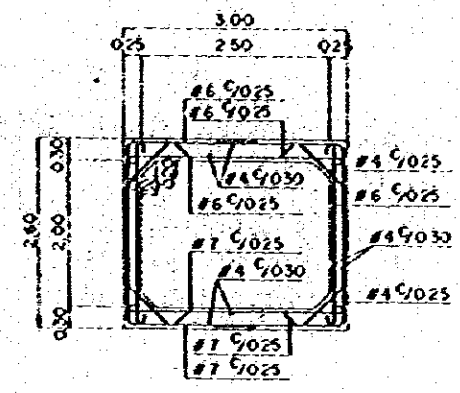
PLAN S=1:100



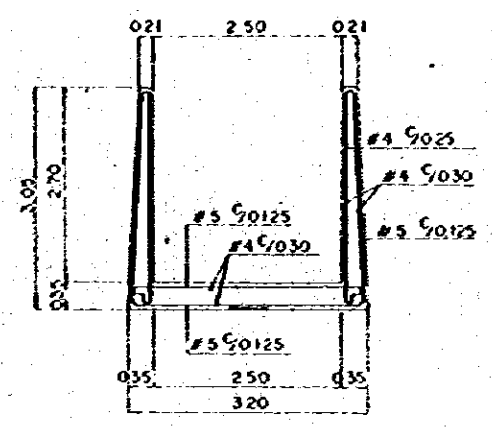
SECTION S=1:100



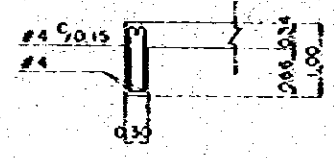
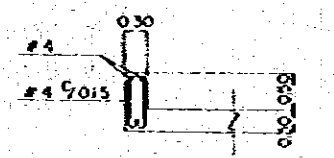
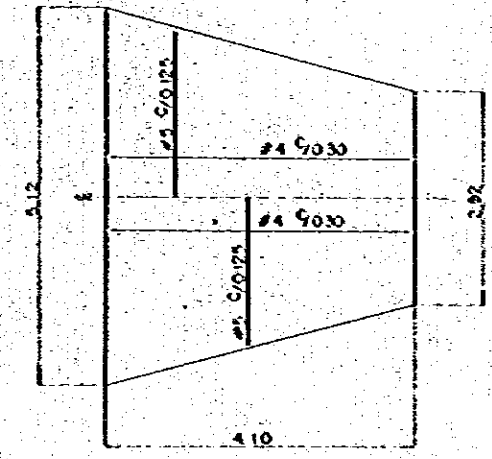
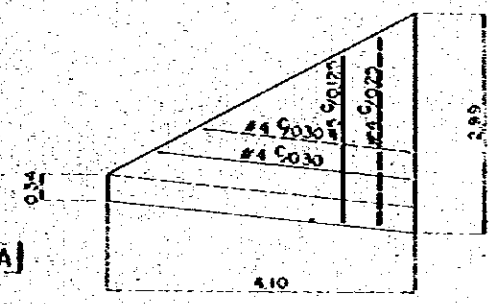
O - O



b - b



C - C

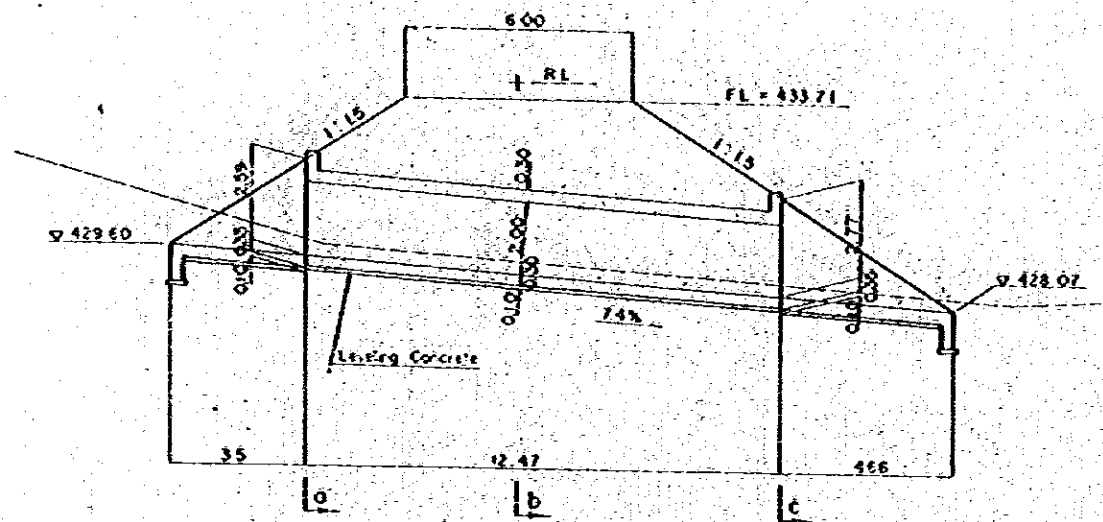


BAR ARRANGEMENT S=1:50

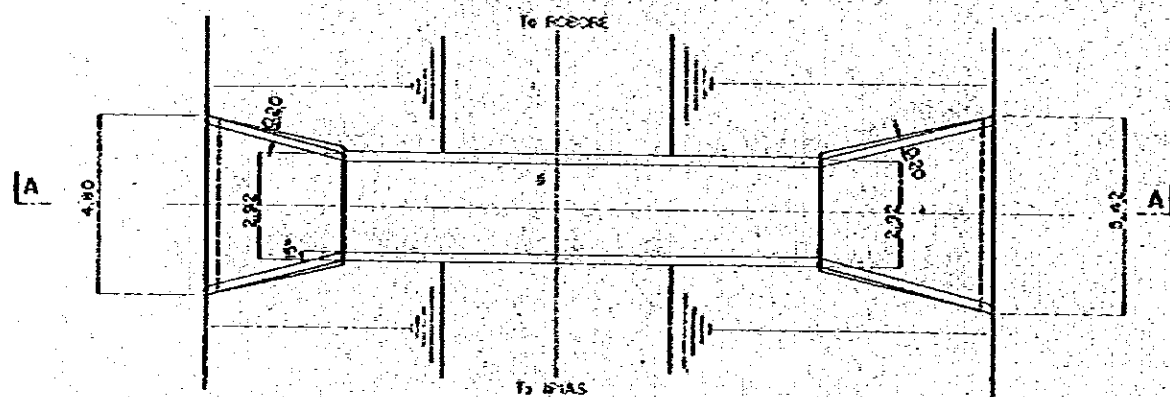
- NOTES
1. COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS IN STRUCTURAL CONCRETE (F<sub>28</sub>) 20,000 PSI IN LEVELING CONCRETE (F<sub>28</sub>) 10,000 PSI
  2. REINFORCING STEEL BAR ASTM #65 GRADE 60 OR #60 GRADE 60 OR #67 GRADE 60

EMPRESA NACIONAL DE FERROCARRILES		
RAILWAY REHABILITATION PROJECT (LIPUS BOGGER)		
360K4986M BOX CULVERT (Cb)		
GENERAL VIEW		
Executing Enterprise		
Drawn by Dia	Checked by Dia	Approved by Dia
Contracting Enterprise		
Checked by Dia	Approved by Dia	54

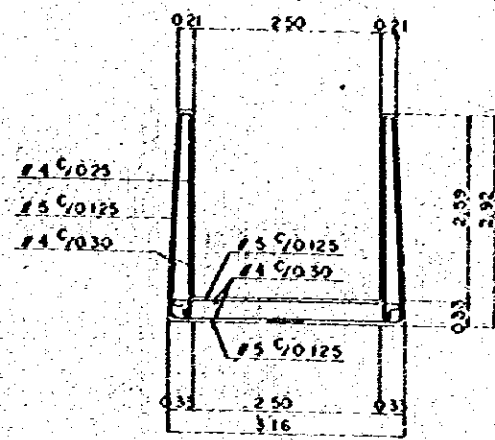
361' x 130'  
RL = 434.60



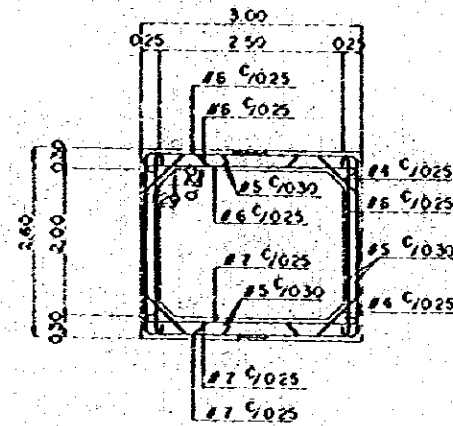
SECTION A - A



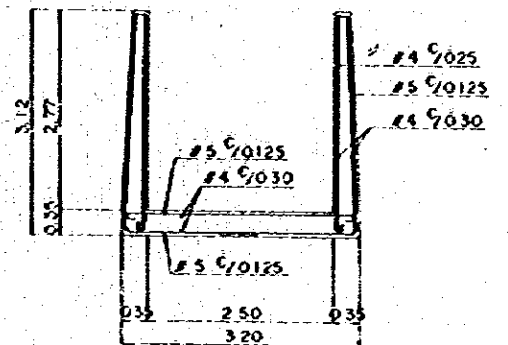
PLAN S=1:100



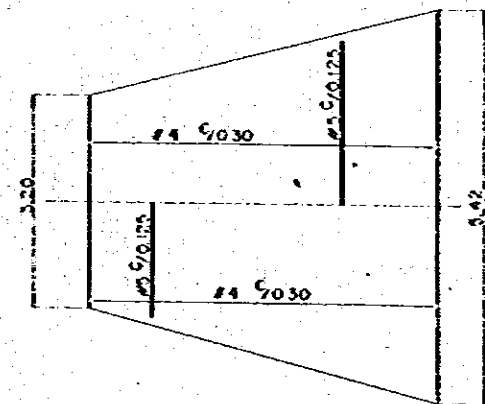
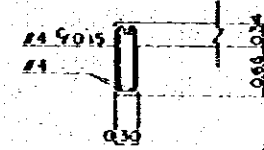
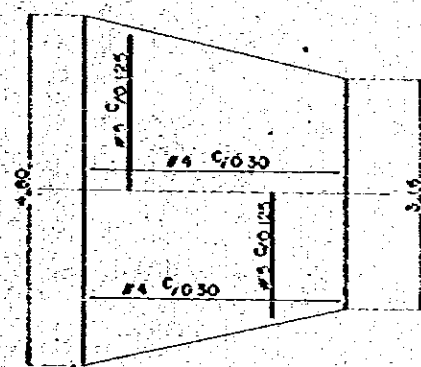
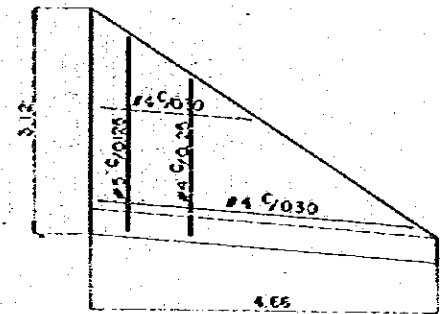
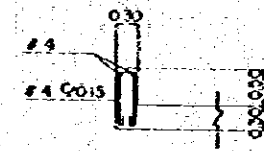
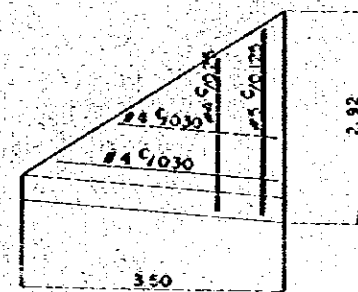
O - O



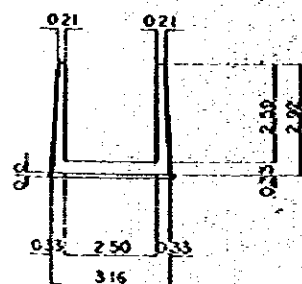
B - B



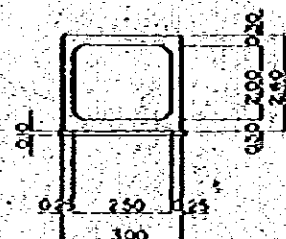
C - C



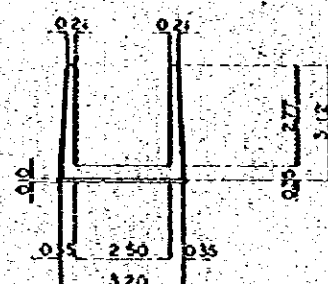
BAR ARRANGEMENT S=1:50



O - O



B - B



C - C

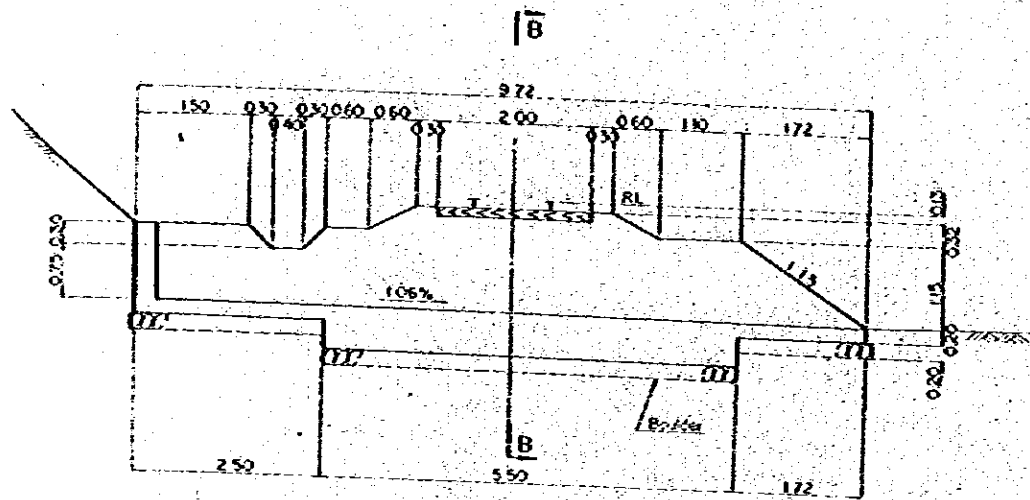
SECTION S=1:100

NOTES

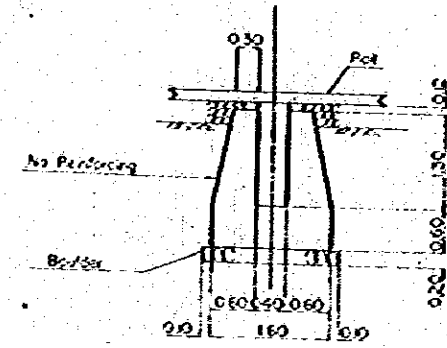
- 1 COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS  
a STRUCTURAL CONCRETE (F<sub>c</sub> = 20,000 PSI)  
b LEVELING CONCRETE (F<sub>c</sub> = 10,000 PSI)
- 2 REINFORCING STEEL BAR  
ASTM A615 GRADE 60 OR A615 GRADE 60 OR A617 GRADE 60

EMPRESA NACIONAL DE FERROCARRILES		
RAILWAY RECONSTRUCTION PROJECT (TIPLAS BOQUES)		
361' x 130' BOX CULVERT (Cb)		
GENERAL VIEW		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	% 55

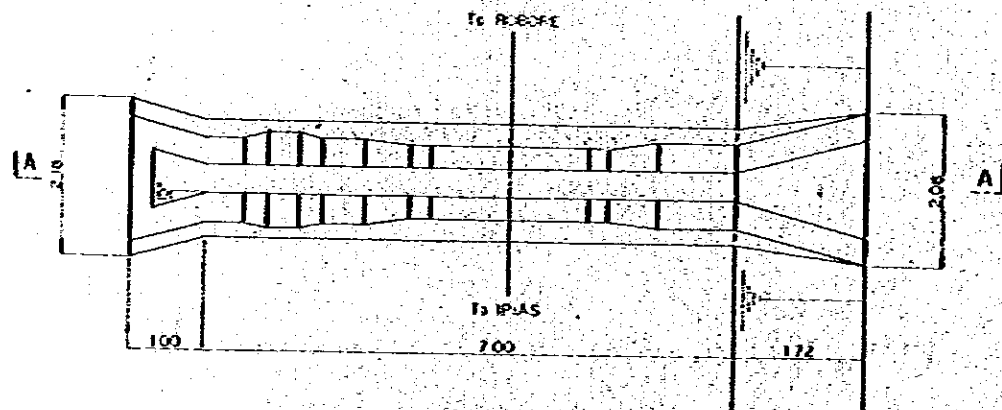
362<sup>K</sup>+127.5<sup>M</sup>  
 RL=426.725



SECTION A - A S=1:50



SECTION B - B S=1:50

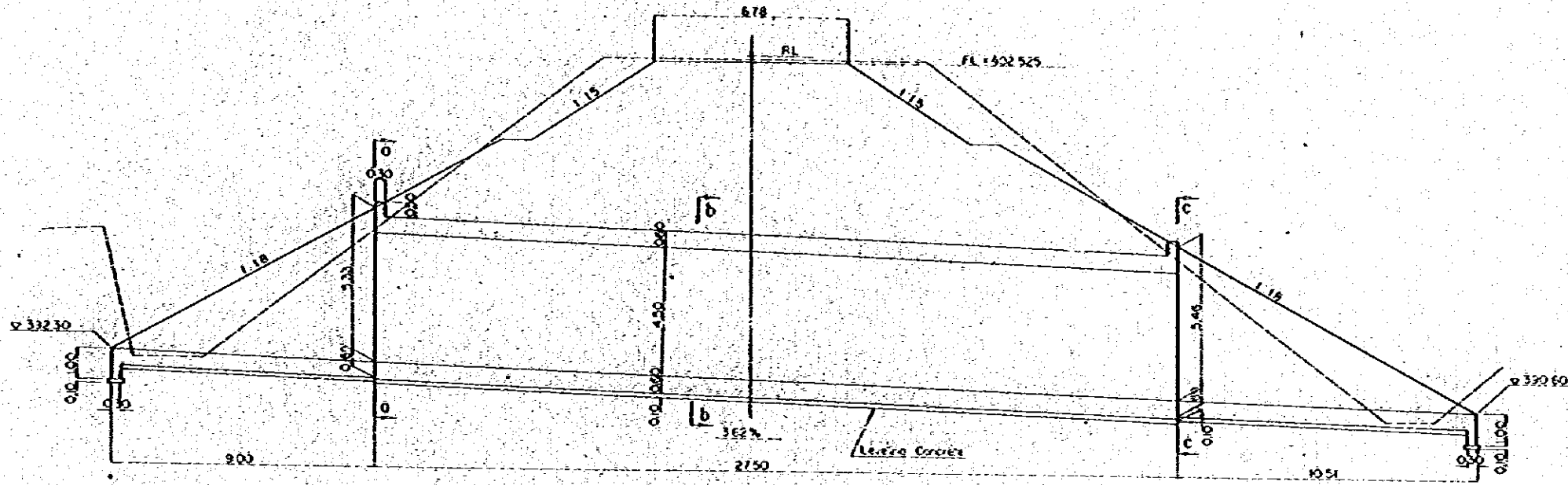


PLAN S=1:50

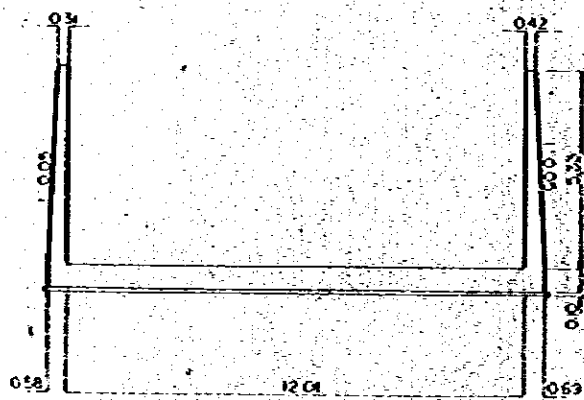
NOTE  
 CONCRETE TO BE 20<sup>3</sup>days  
 AT 28 DAYS

EMPRESA NACIONAL DE FERROCARRILES		
RAILWAY RENOVATION PROJECT (TUSAS RIVER)		
362 <sup>K</sup> +127.5 <sup>M</sup> OPEN DRAINAGE (00)		
GENERAL VIEW		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	% 56

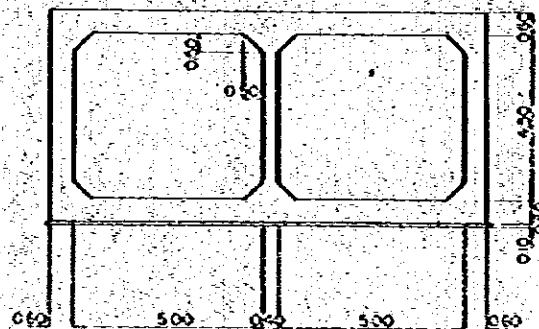
364<sup>R</sup>+778<sup>M</sup>  
 RL = 402.775



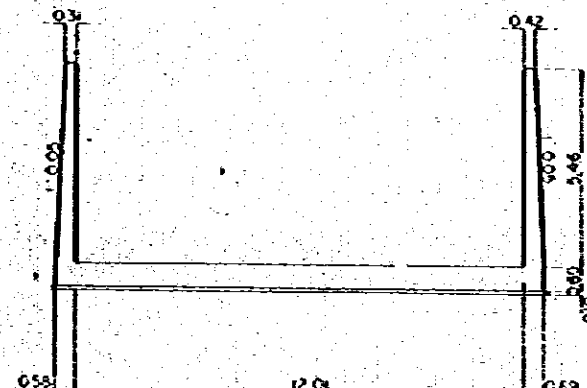
SECTION A - A S = 1:100



o - o



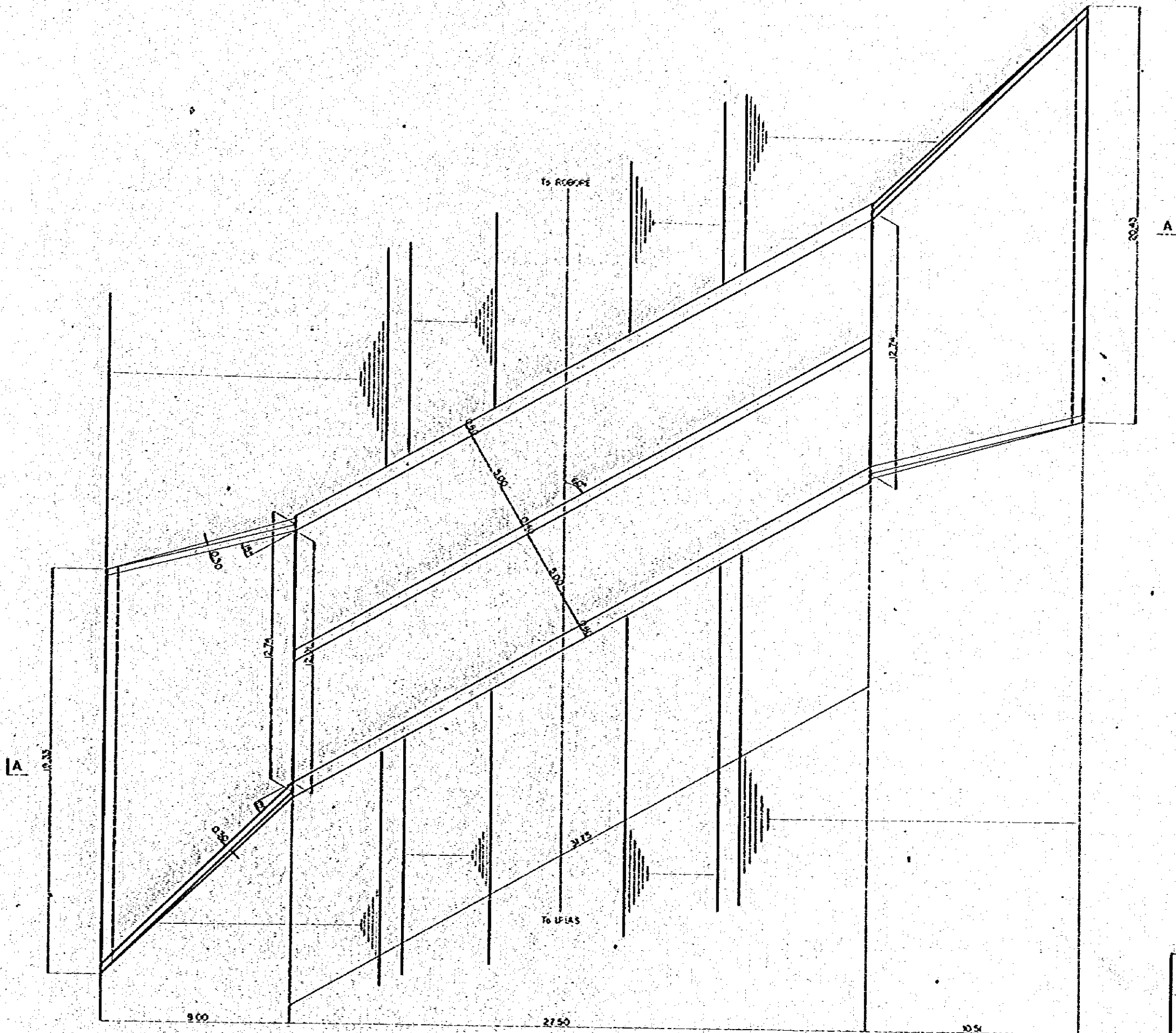
b - b



c - c

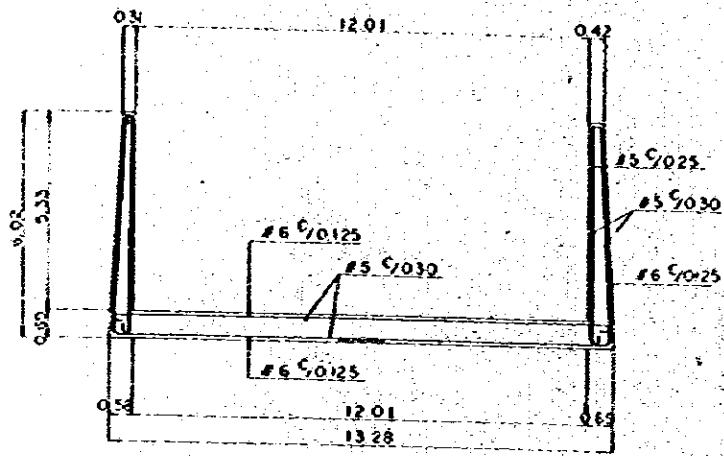
SECTION S = 1:100

EMPRESA NACIONAL DE FERROCARRILES		
RAILWAY REHABILITATION PROJECT (I PLUS ACCORD)		
364 <sup>R</sup> +778 <sup>M</sup> BOX CULVERT (C6)		
GENERAL VIEW (Sheet 1 OF 2)		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	57

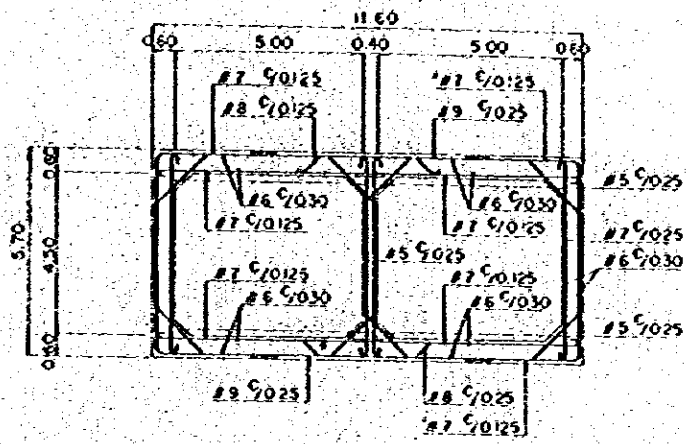


PLAN S=1:100

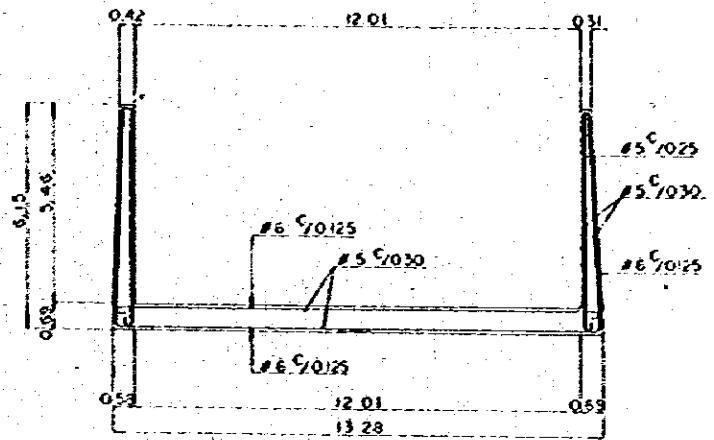
EMPRESA NACIONAL DE FERROCARRILES		
RAILWAY RENOVATION PROJECT (IPAS-BOGOTÁ)		
364x4778 <sup>mm</sup> BOX CULVERT (Cb)		
GENERAL VIEW (sheet 2 of 2)		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	No. 58



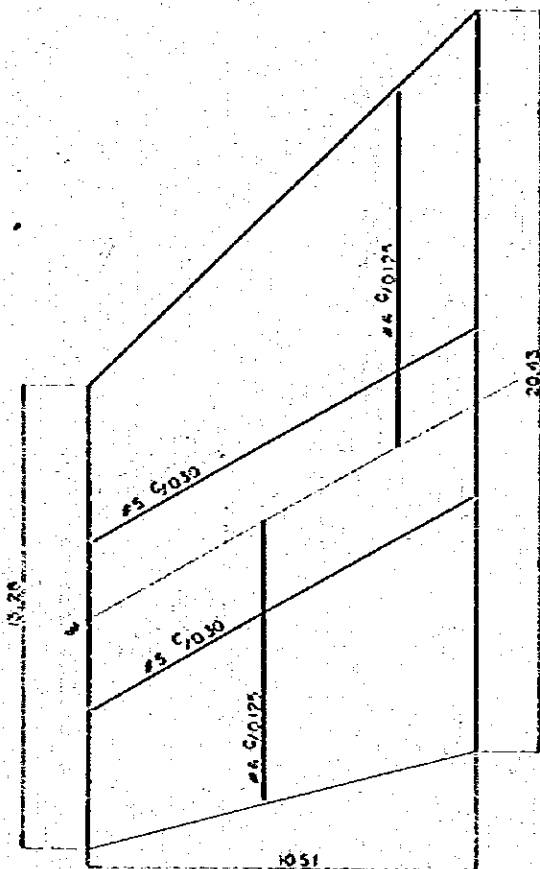
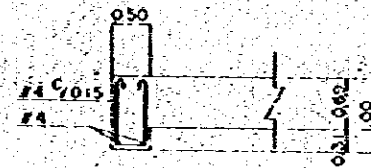
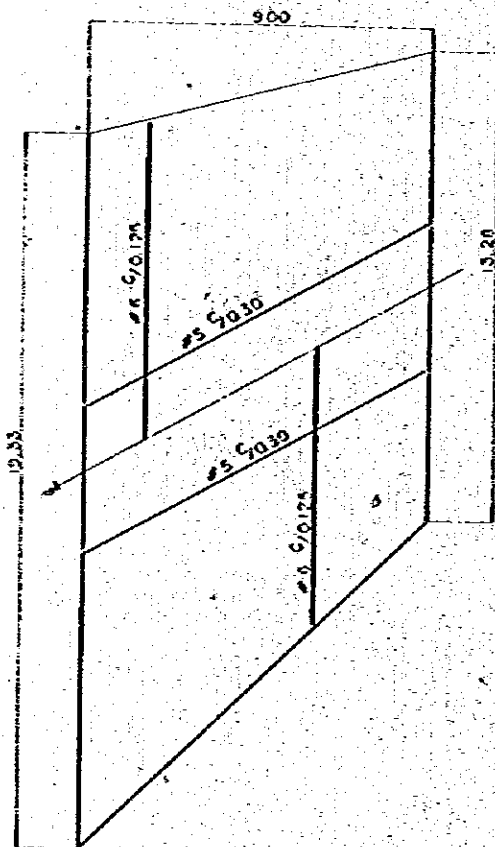
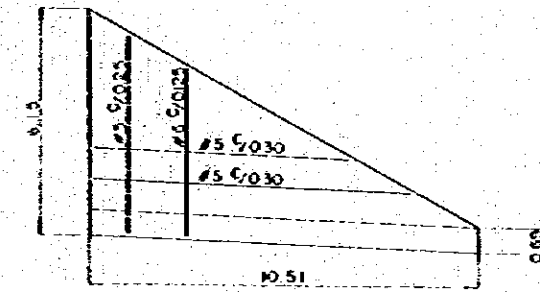
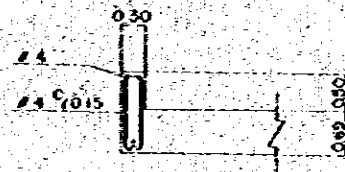
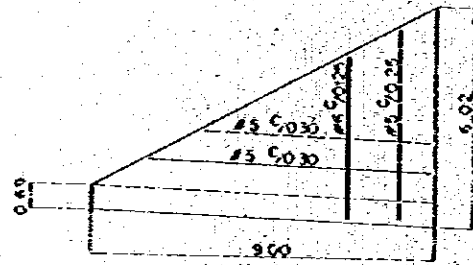
a - a



b - b



c - c

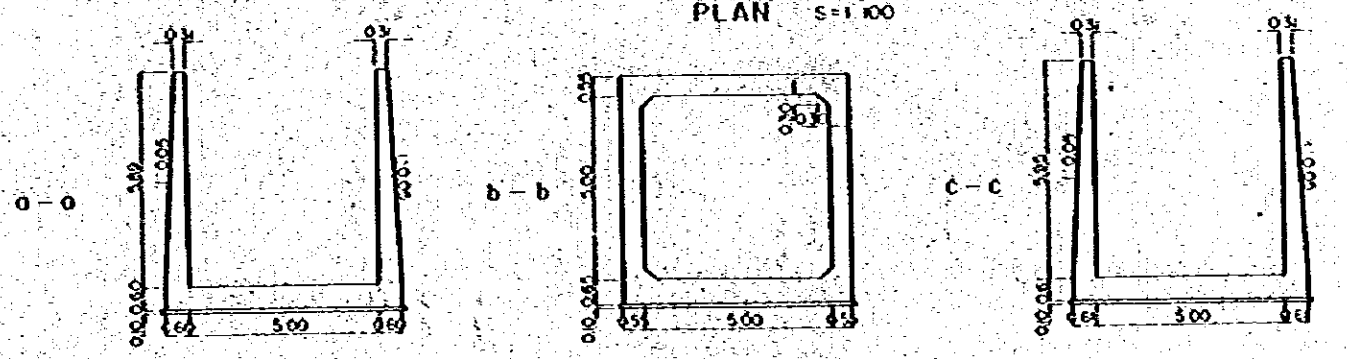
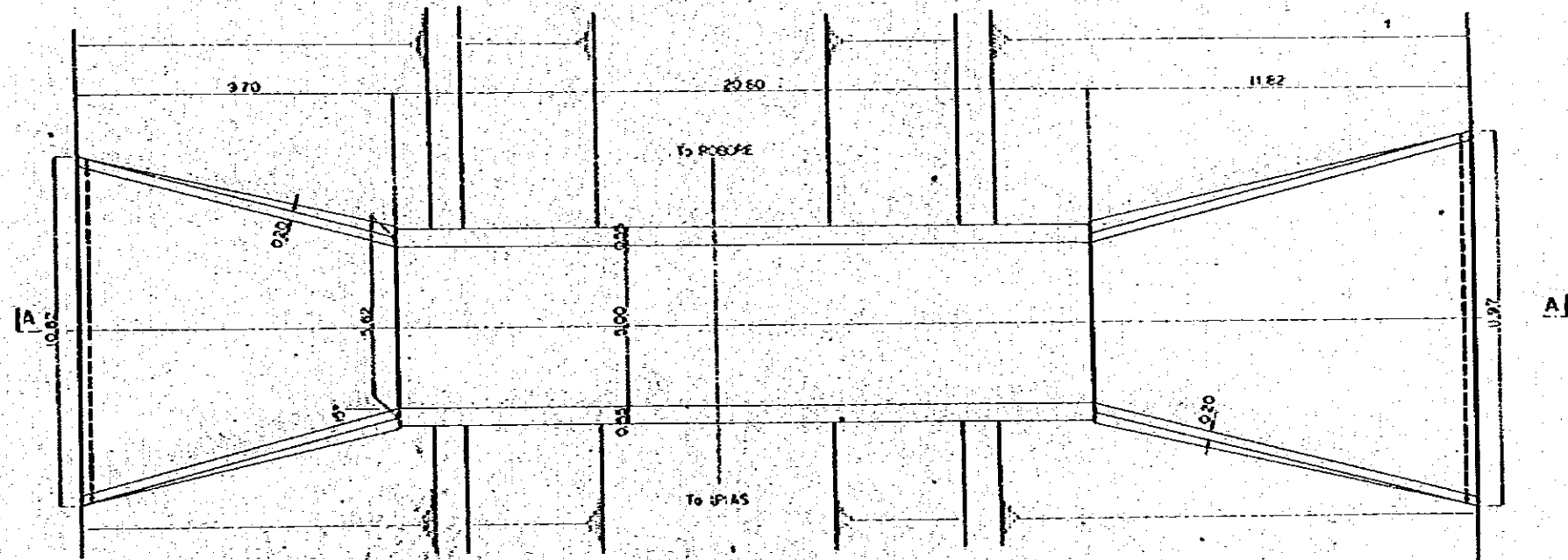
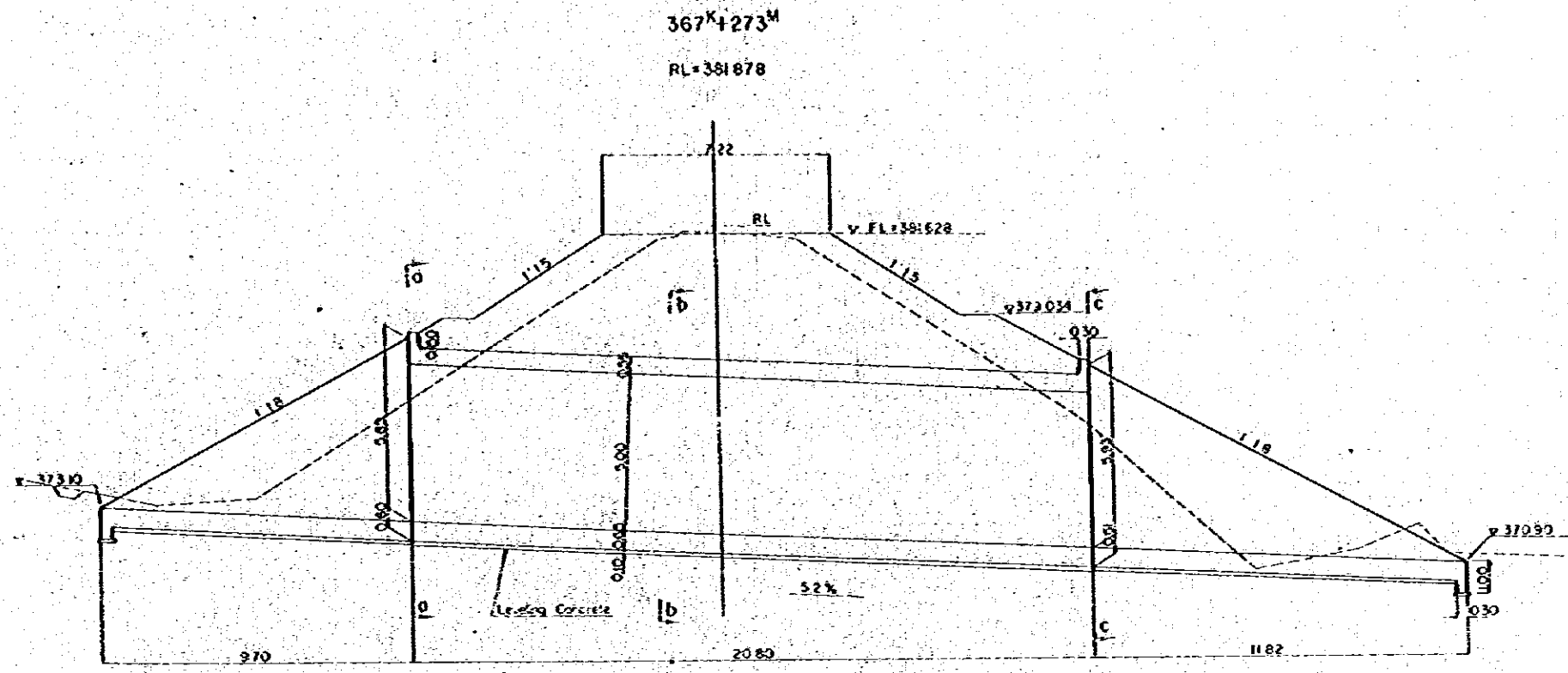


BAR ARRANGEMENT S=1:100, 1:50

- NOTES
1. COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS
    - G STRUCTURAL CONCRETE  $f_{cu} = 20 \text{ N/mm}^2$
    - H LEVELING CONCRETE  $f_{cu} = 15 \text{ N/mm}^2$
  2. REINFORCING STEEL BAR
    - ASTM A615 GRADE 60 OR A615 GRADE 60
    - OR A617 GRADE 60

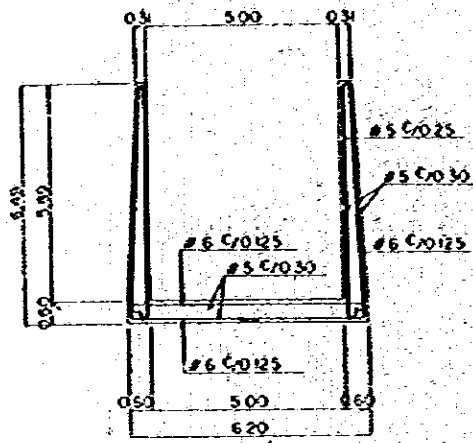
EMPRESA NACIONAL DE FERROCARRILES		
REUNION REGULACION PROYECTOS DE OBRAS		
364 <sup>a</sup> 1778 <sup>a</sup> BOX CULVERT (Cb)		
BAR ARRANGEMENT		
Executing Enterprise		
Drawn by Date	Checked by Date	Accepted by Date
Contracting Enterprise		
Checked by Date	Accepted by Date	59



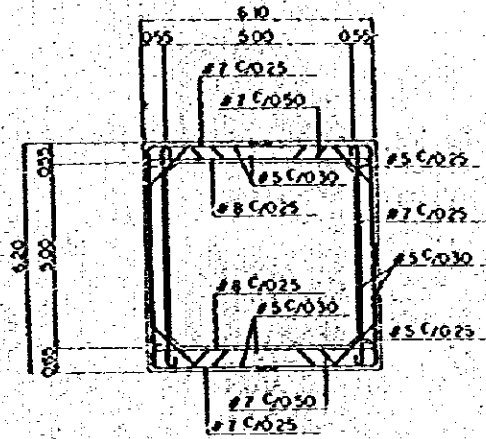


EMPRESA NACIONAL DE FERROCARRILES		
RAILWAY REHABILITATION PROJECT (PIAS) E-042		
367 <sup>M</sup> +273 <sup>M</sup> BOX CULVERT (CB)		
GENERAL VIEW		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	60

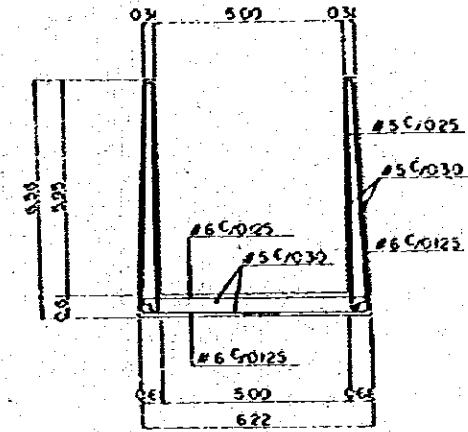
367<sup>N</sup>+273<sup>M</sup>



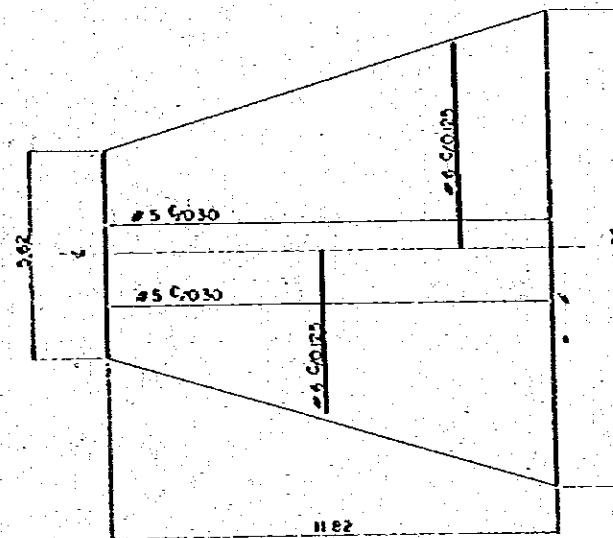
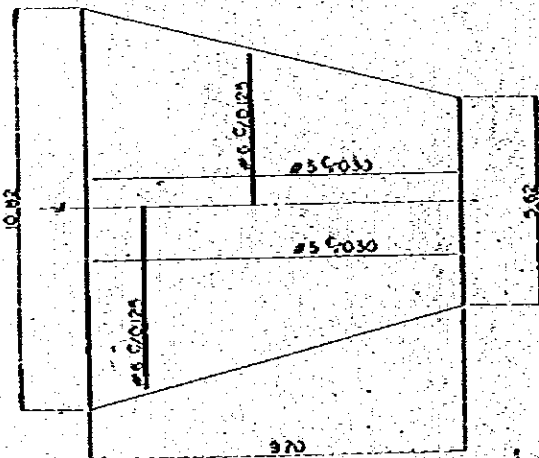
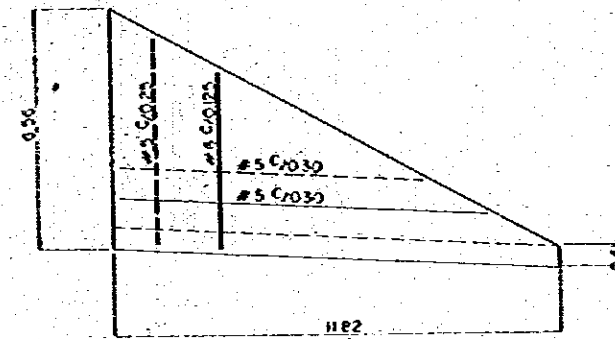
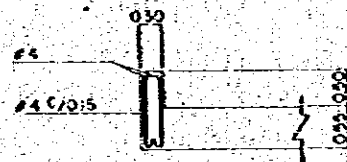
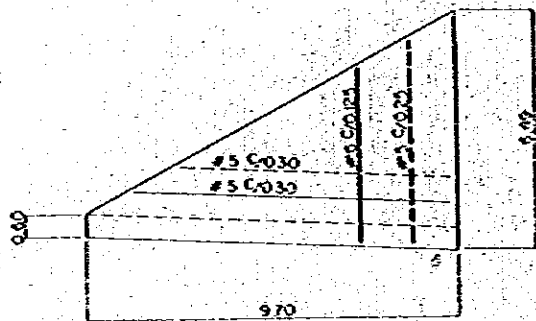
a - a



b - b



c - c

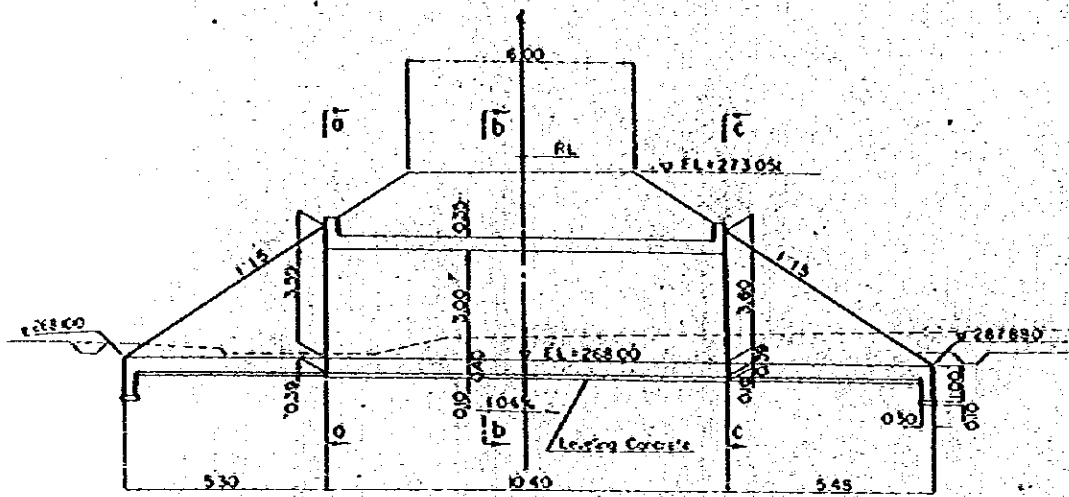


BAR ARRANGEMENT S=1 100, 1 50

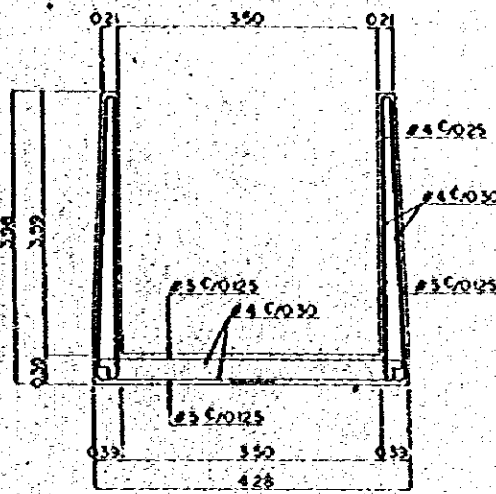
- NOTES
1. COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS  
 OF STRUCTURAL CONCRETE  $f_{28} = 20750 \text{ kg/cm}^2$   
 IN LEVELING CONCRETE  $f_{28} = 16050 \text{ kg/cm}^2$
  2. REINFORCING STEEL BAR  
 ASTM A615 GRADE 60 OR A616 GRADE 60  
 OR A617 GRADE 60

EMPRESA NACIONAL DE FERROCARRILES		
RAILWAY REPAIR/RECONSTRUCTION PROJECT (HUALA BARRIO)		
367 <sup>N</sup> +273 <sup>M</sup> BOX CULVERT (Cb)		
BAR ARRANGEMENT		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	No. 61

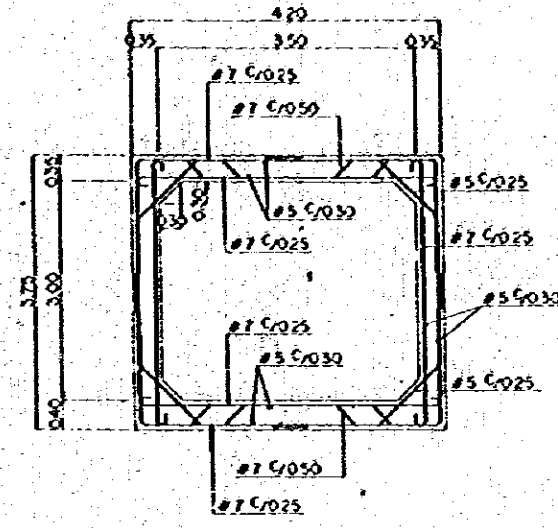
387<sup>K</sup>+050<sup>M</sup>  
 RL=273500



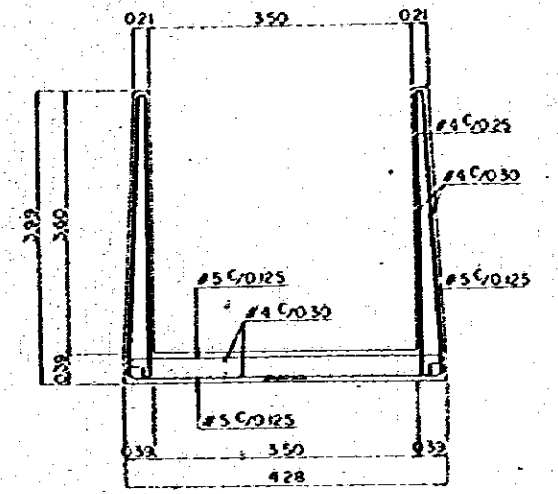
SECTION A - A S=1:100



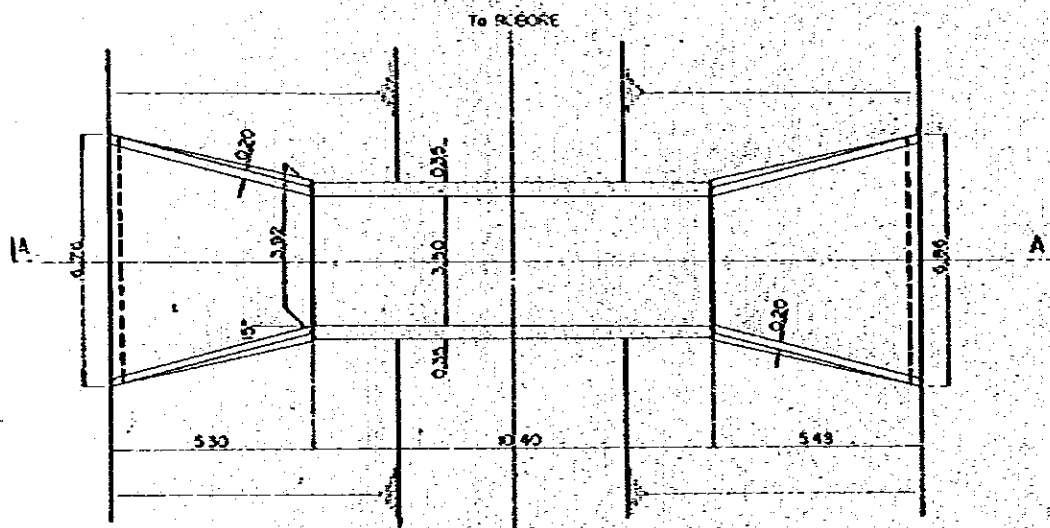
O - O



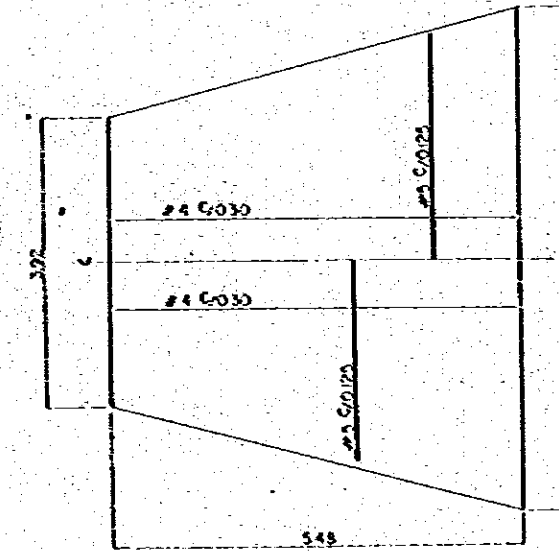
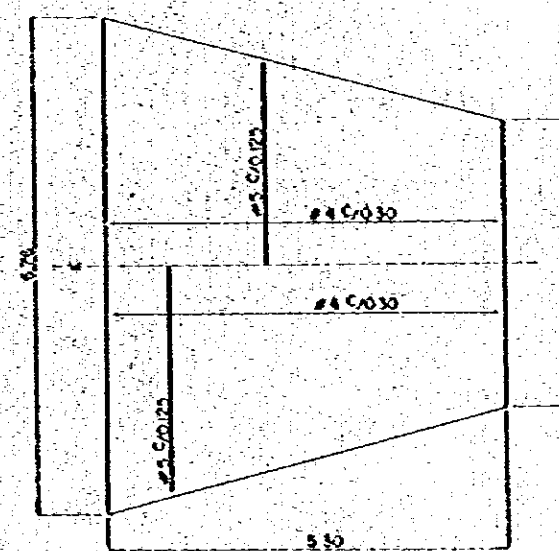
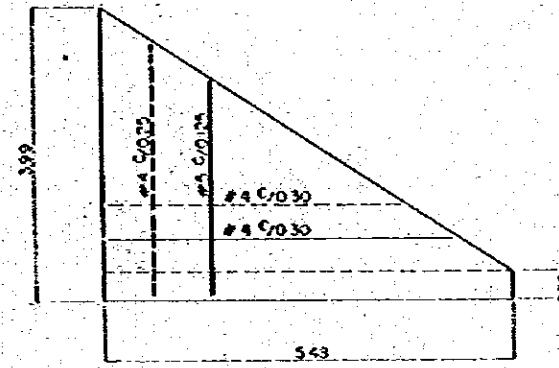
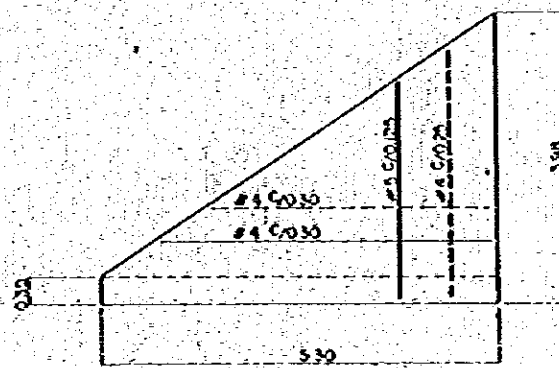
B - B



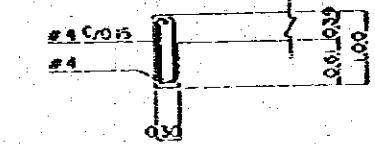
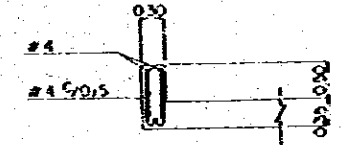
C - C



PLAN S=1:100

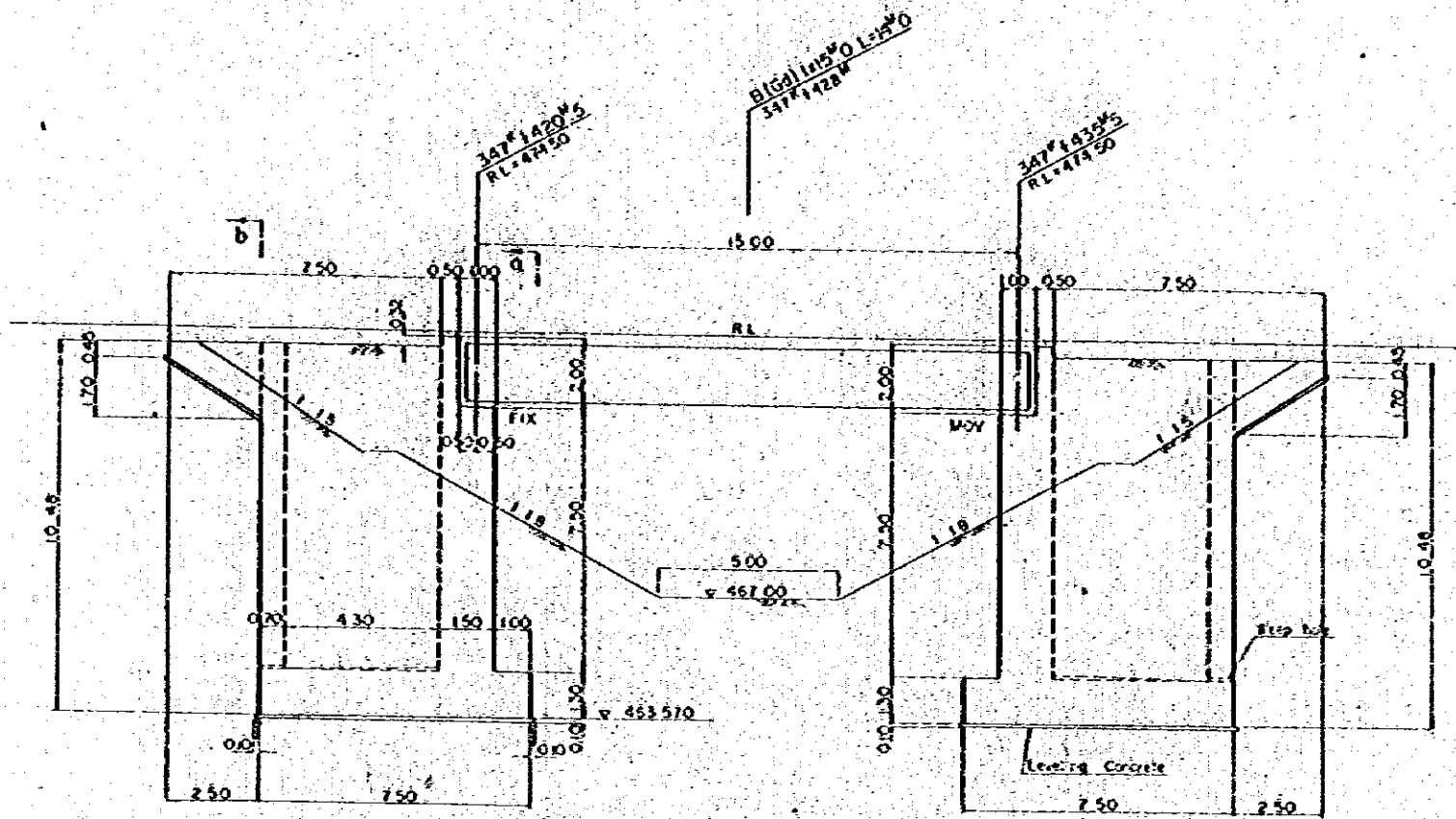


BAR ARRANGEMENT S=1:50

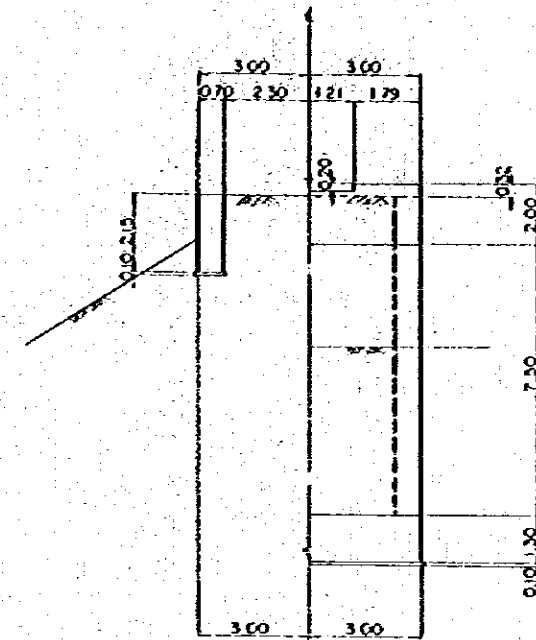


- NOTES
- 1 COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS
    - a) STRUCTURAL CONCRETE  $f_{cu} = 20 \text{ N/mm}^2$
    - b) LEVELING CONCRETE  $f_{cu} = 10 \text{ N/mm}^2$
  - 2 REINFORCING STEEL BAR ASTM A615 GRADE 60 OR A66 GRADE 60 OR A67 GRADE 60

EMPRESA NACIONAL DE FERROCARRILES		
ALBAT REHABILITATION PROJECT (IFRAS BOBOS)		
387 <sup>K</sup> +050 <sup>M</sup> BOX CULVERT (Cb)		
GENERAL VIEW		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Accepted by Date	62

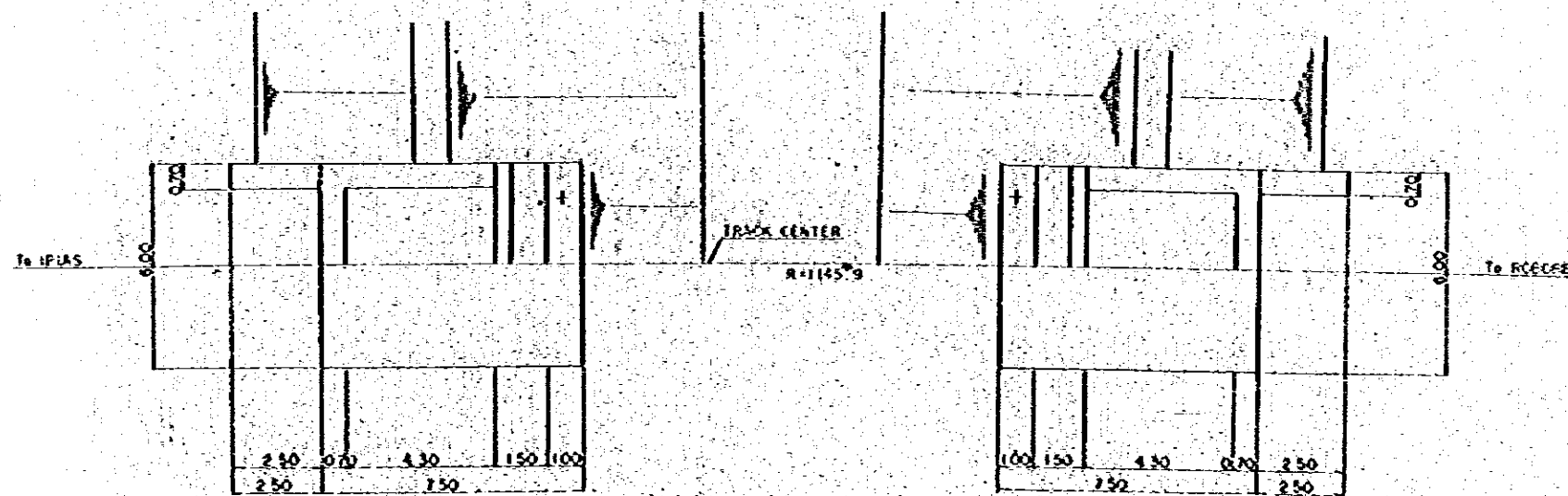


SIDE VIEW S=1:100



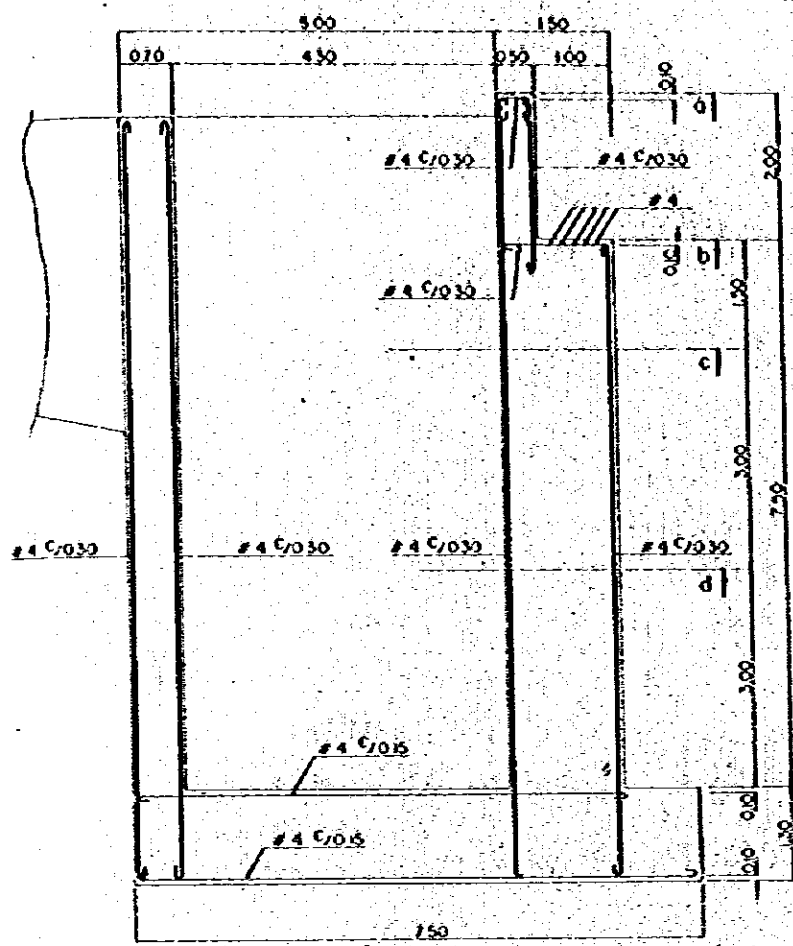
b - b a - a  
SECTION S=1:100

PLAN S=1:100

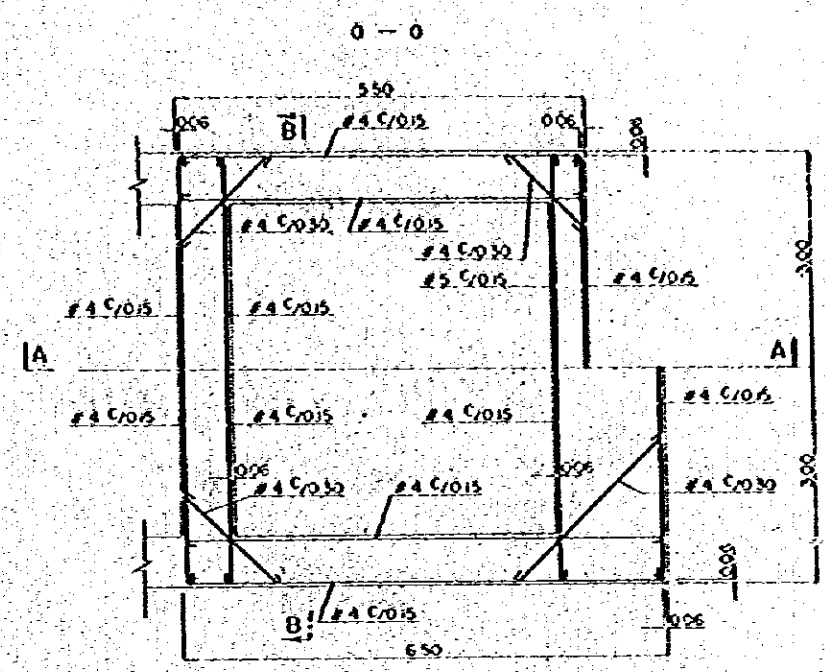


FOUNDATION PLAN S=1:100

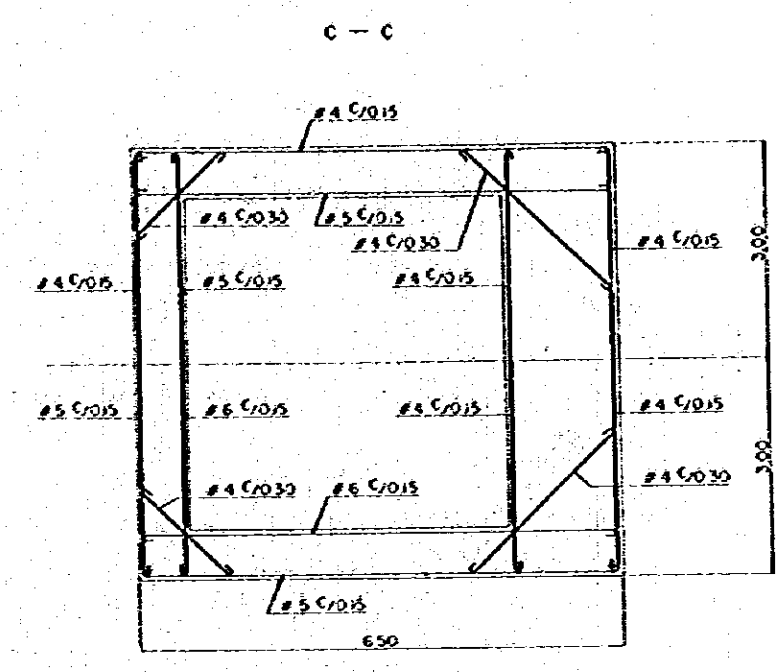
EMPRESA NACIONAL DE FERROCARRILES RAILWAY REHABILITATION PROJECT (IPIAS BOCECE)		
347+1428+5 BRIDGE <b>GENERAL VIEW</b>		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	No. 63



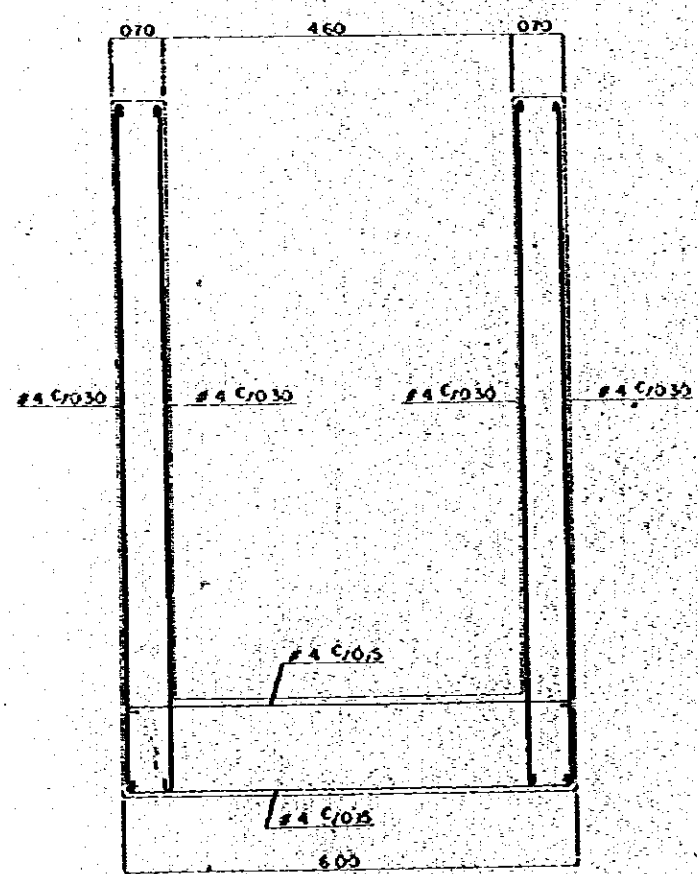
A - A



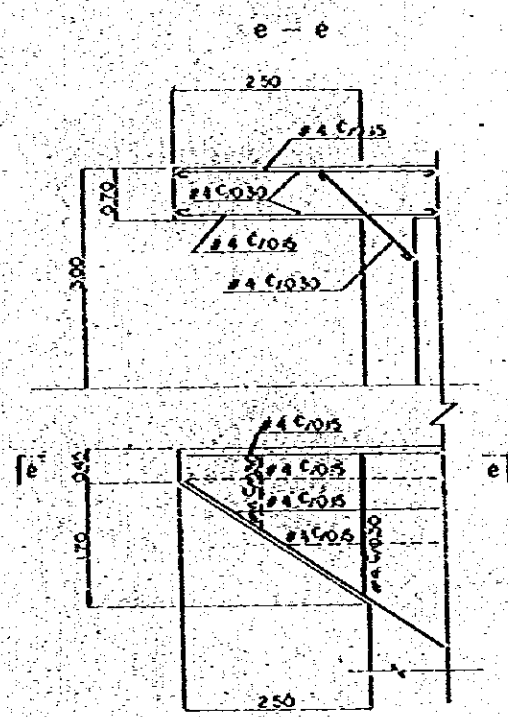
b - b



d - d



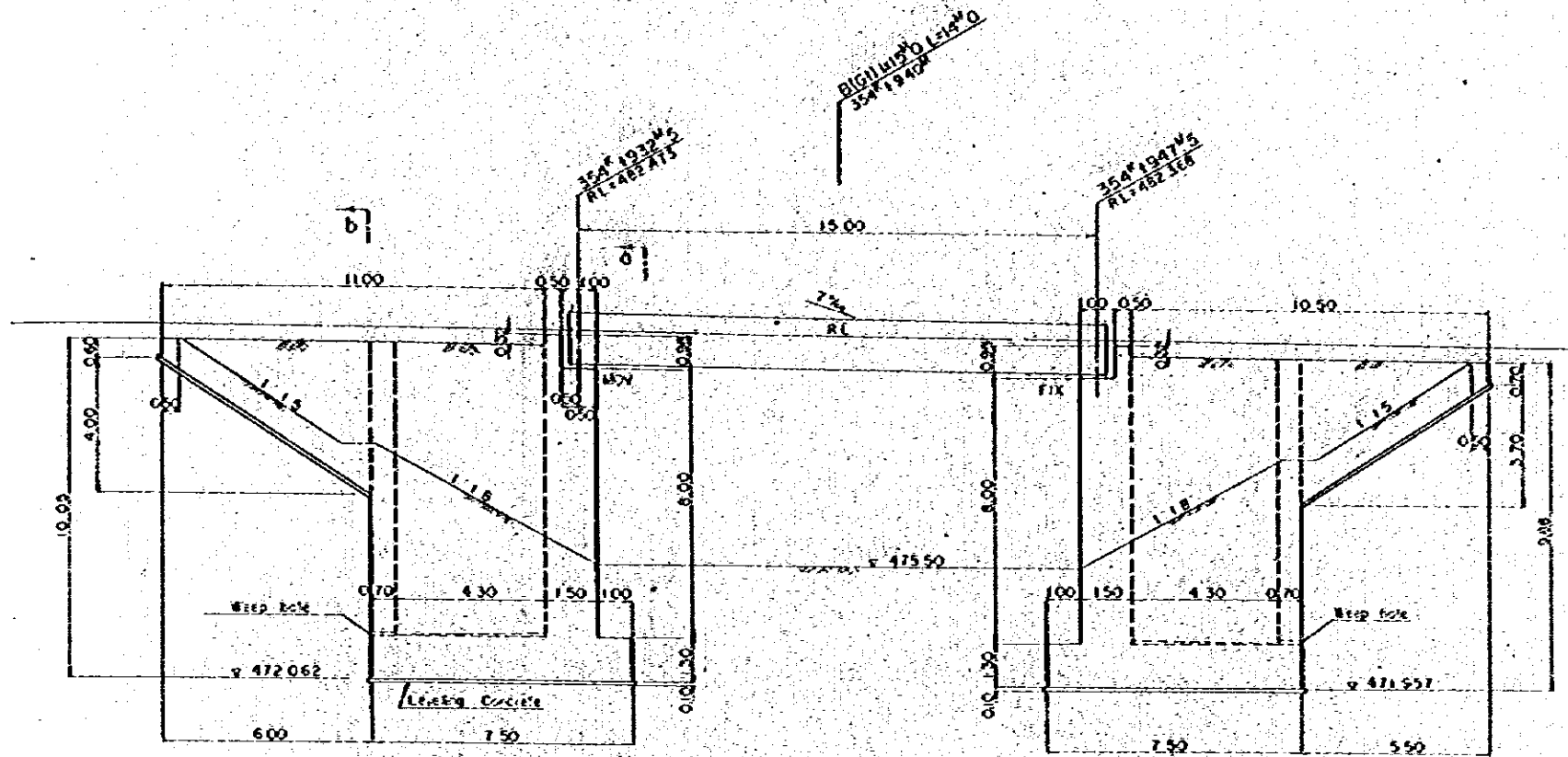
B - B



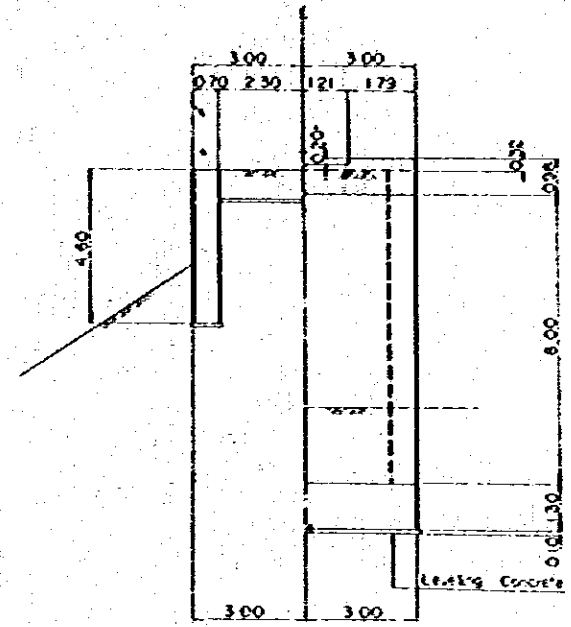
WING

- NOTES
- 1 COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS
  - a STRUCTURAL CONCRETE  $f_{c'} = 20,000 \text{ psi}$
  - b LEVELING CONCRETE  $f_{c'} = 10,000 \text{ psi}$
  - 2 REINFORCING STEEL BAR ASTM A615 GRADE 60 OR A616 GRADE 60 OR A617 GRADE 60

EMPRESA NACIONAL DE FERROCARRILES RAILWAY REPAIRS - PROJECT (IMPAS-BRIDGE)		
3474428 <sup>m</sup> BRIDGE BAR ARRANGEMENT		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	64

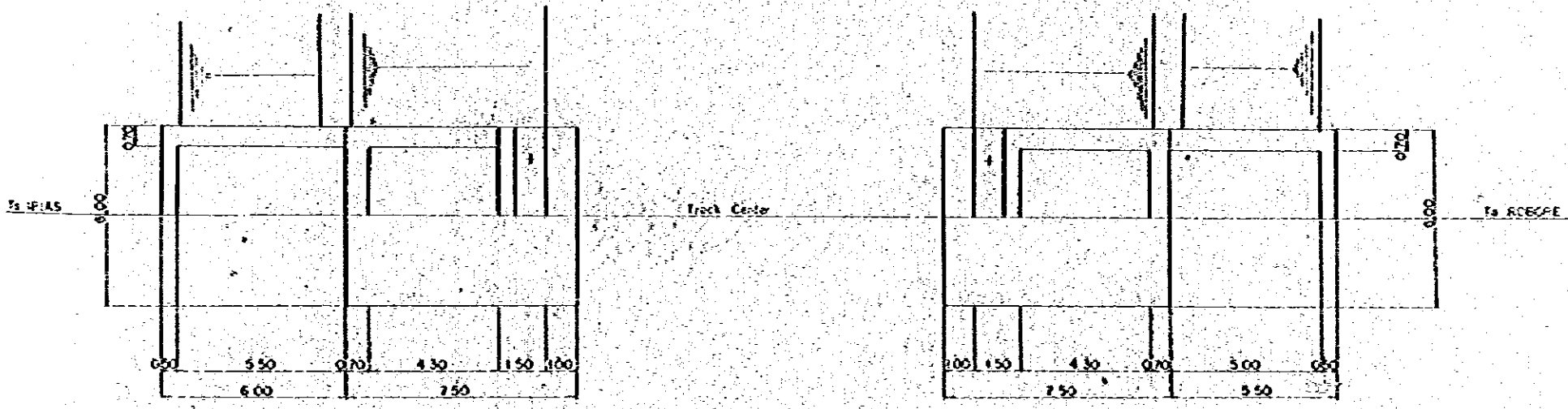


SIDE VIEW S=1:100



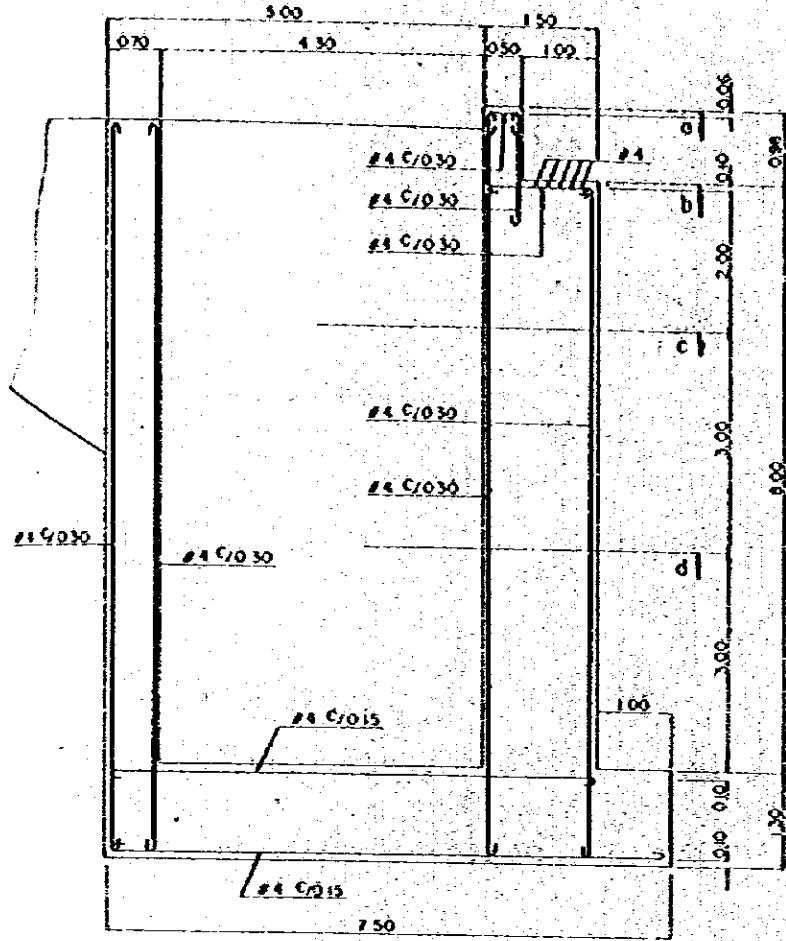
b-b o-o SECTION S=1:100

PLAN S=1:100

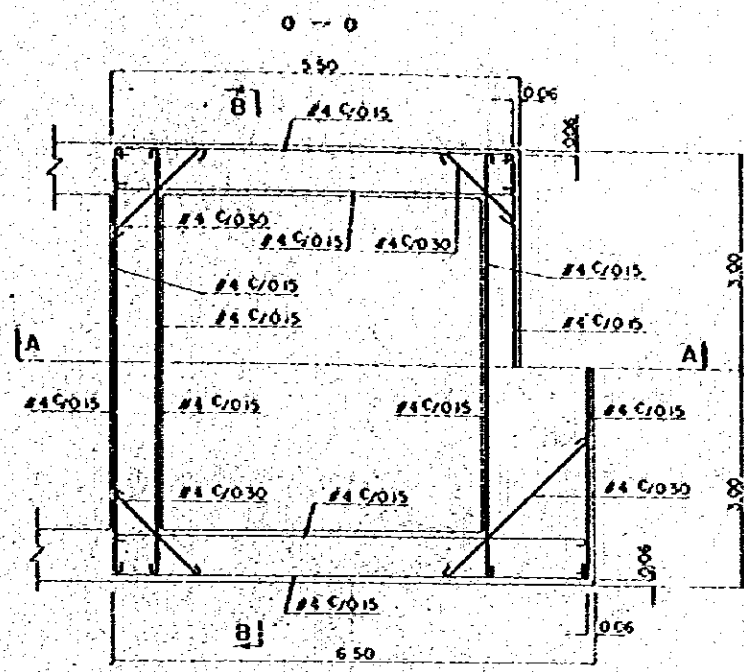


FOUNDATION PLAN S=1:100

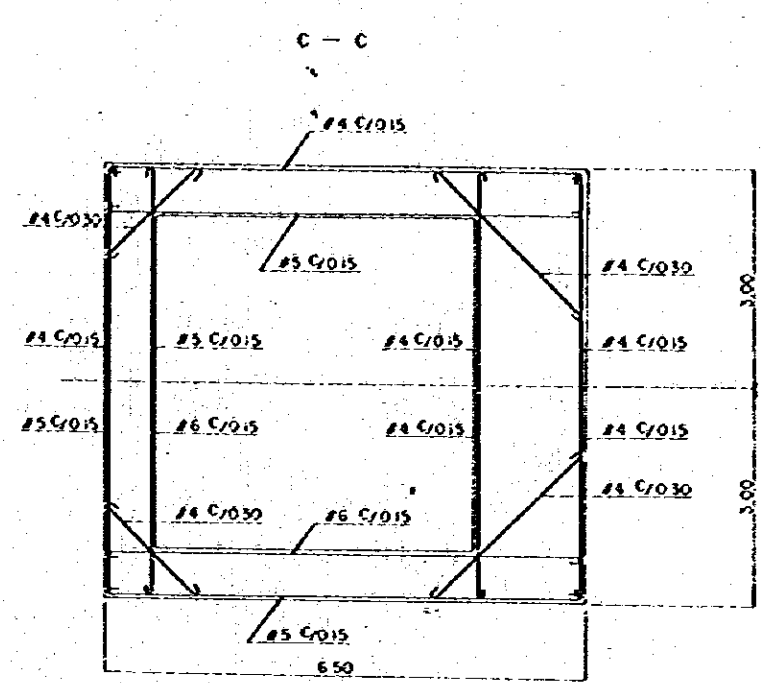
EMPRESA NACIONAL DE FERROCARRILES RAILWAY RESABILITATION PROJECT (IFIAS RECORD)		
354+1940 <sup>M</sup> BRIDGE		
<b>GENERAL VIEW</b>		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Constructing Enterprise		
Checked by Date	Approved by Date	65



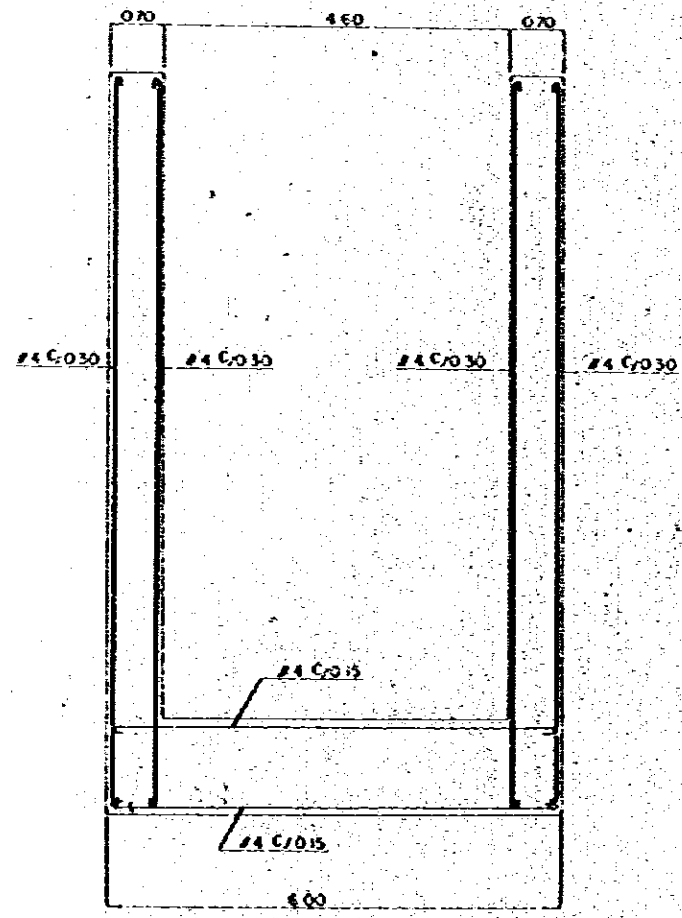
A - A



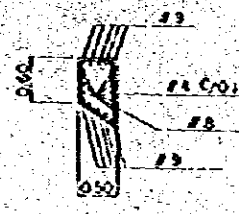
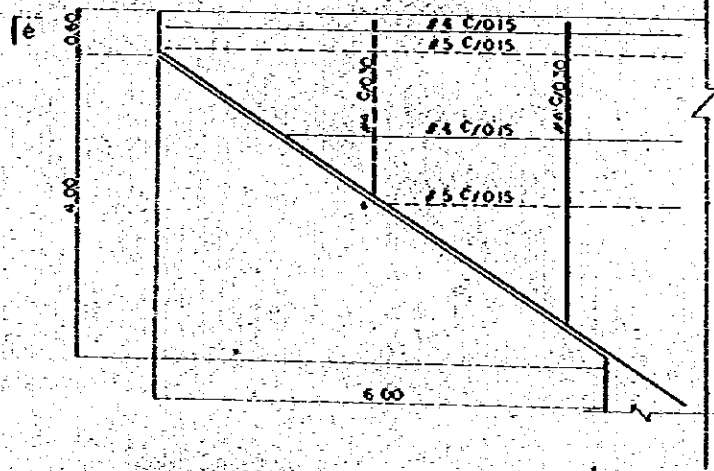
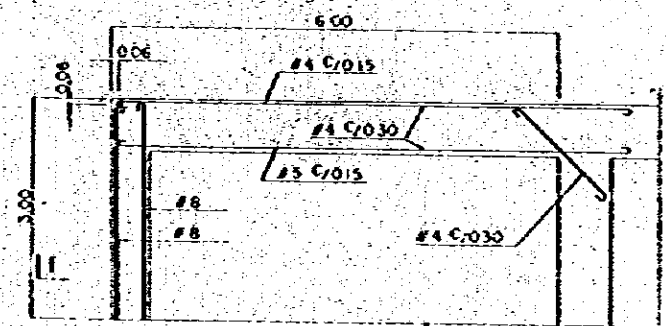
b - b



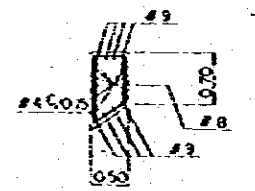
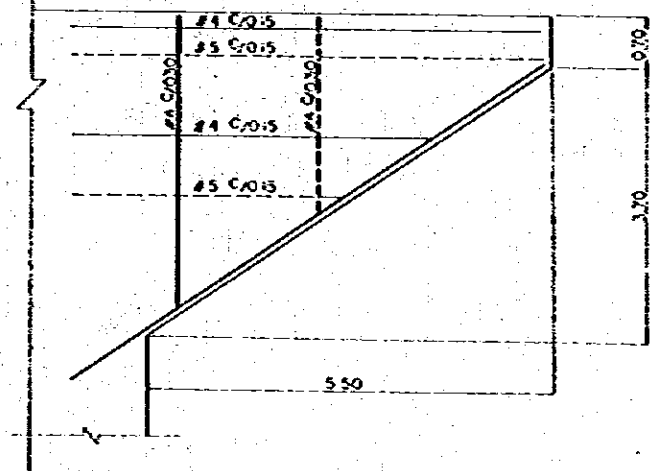
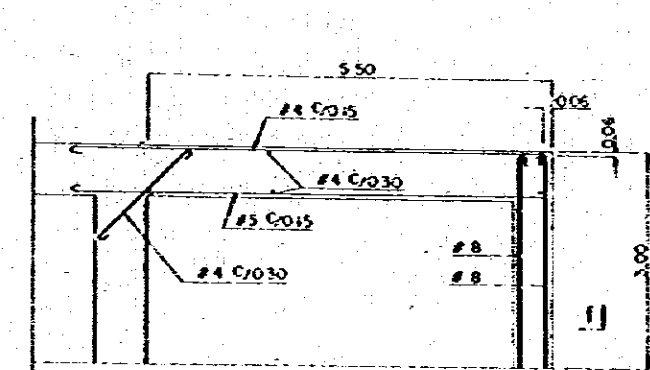
d - d



B - B



WING

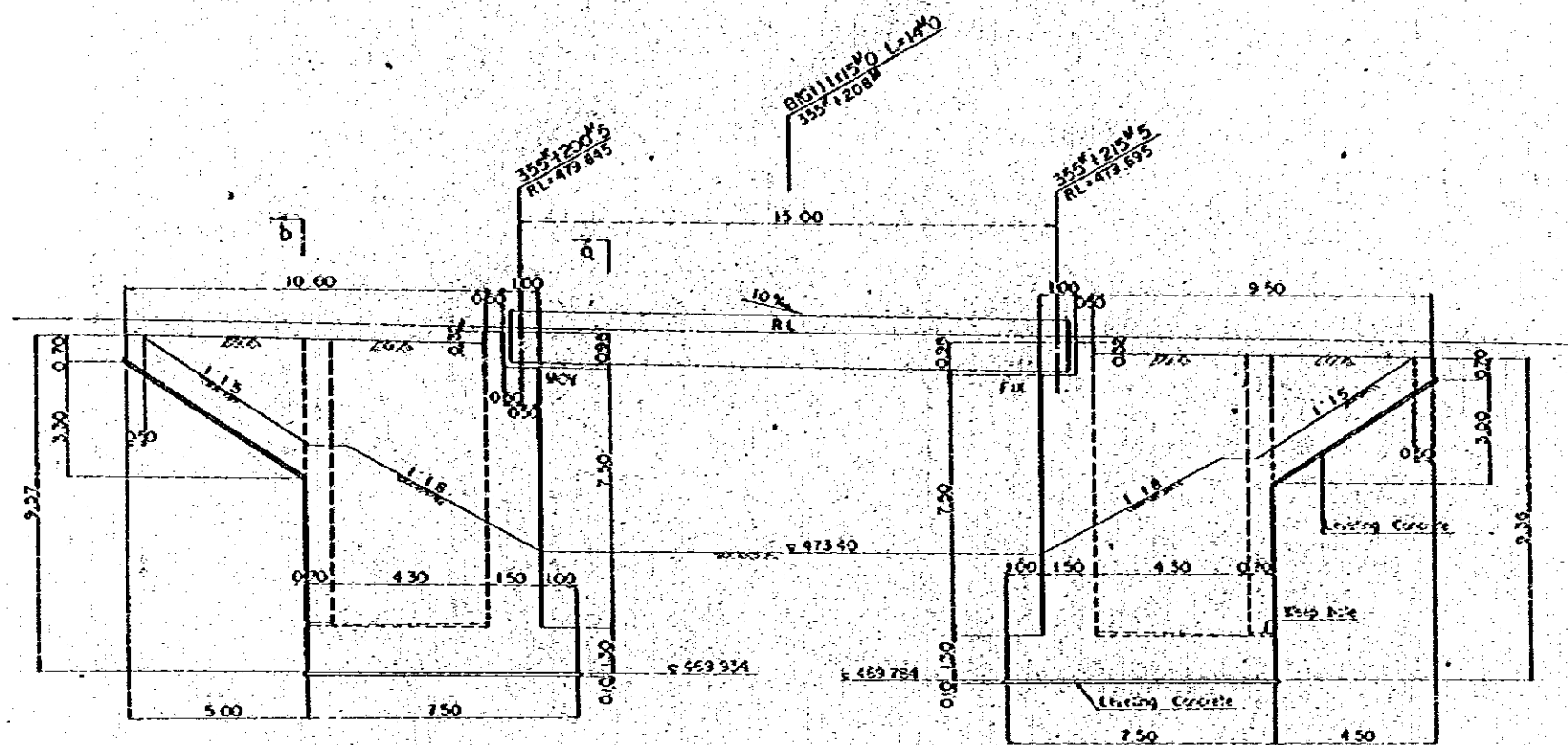


f - f

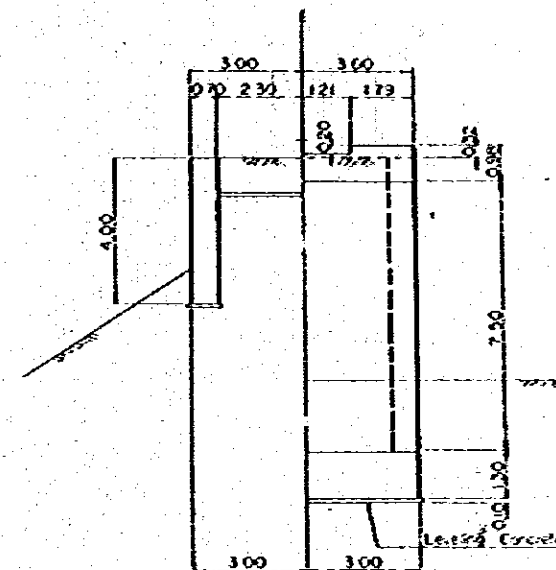
- NOTES
1. COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS STRUCTURAL CONCRETE  $f_{cu} = 20 \text{ MPa}$  (2800 kg/cm<sup>2</sup>)
  2. REINFORCING STEEL BAR AS PER SPEC 60 OR 25% GRADE 60 OR AS PER SPEC 60

S = 1:50

ENTRENSA NACIONAL DE FERROCARRILES		
RAILWAY RECONSTRUCTION PROJECT (LIPAS-BOGOTA)		
354 <sup>th</sup> + 940 <sup>th</sup> BRIDGE		
BAR ARRANGEMENT		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	66

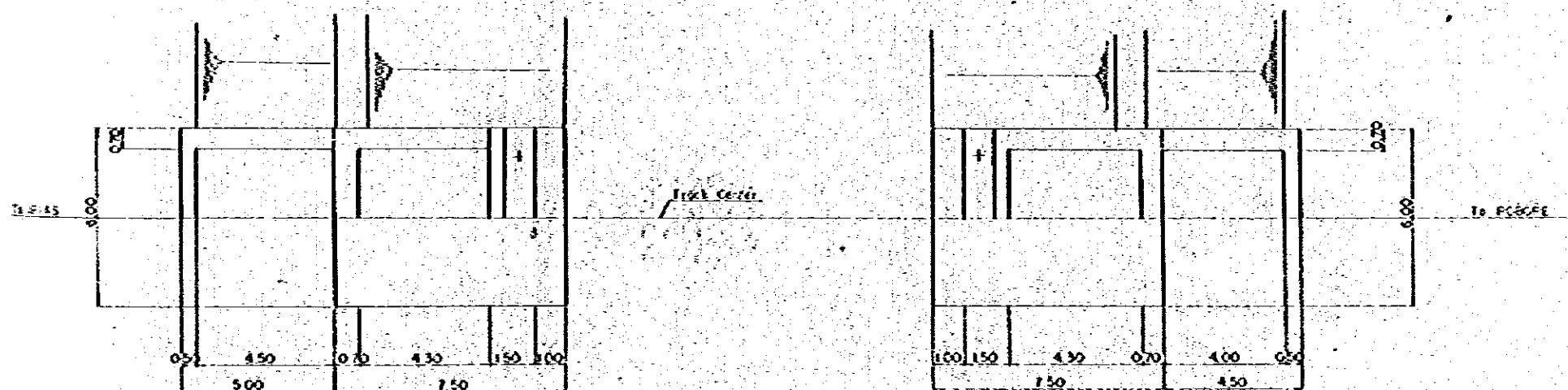


SIDE VIEW S=1:100



b - b a - a  
SECTION S=1:100

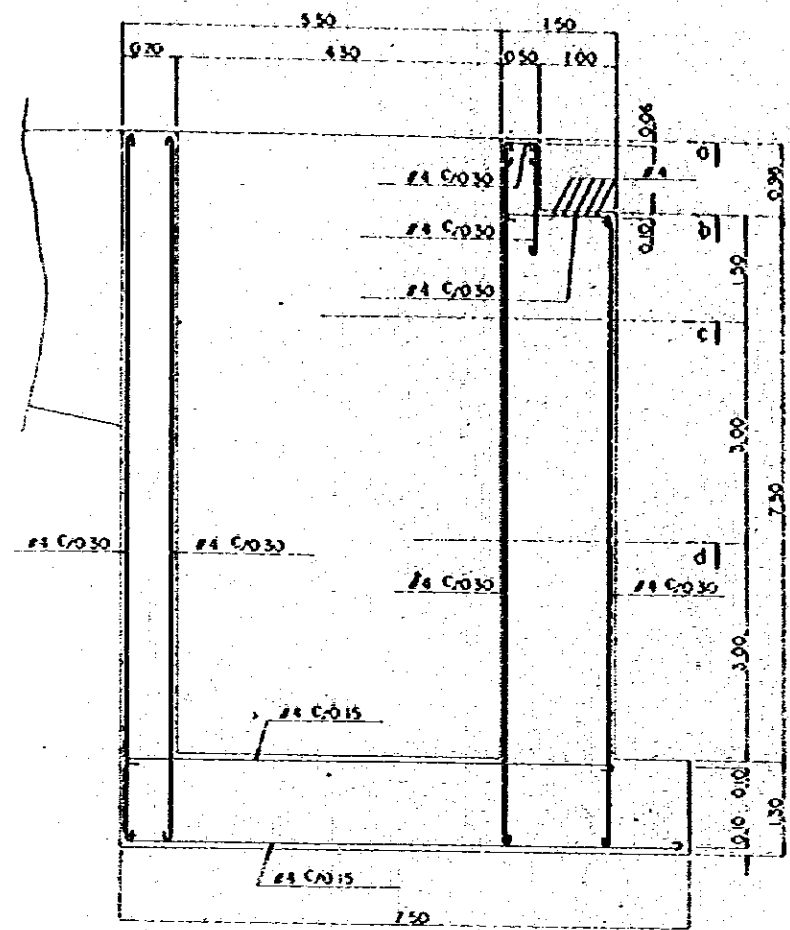
PLAN S=1:100



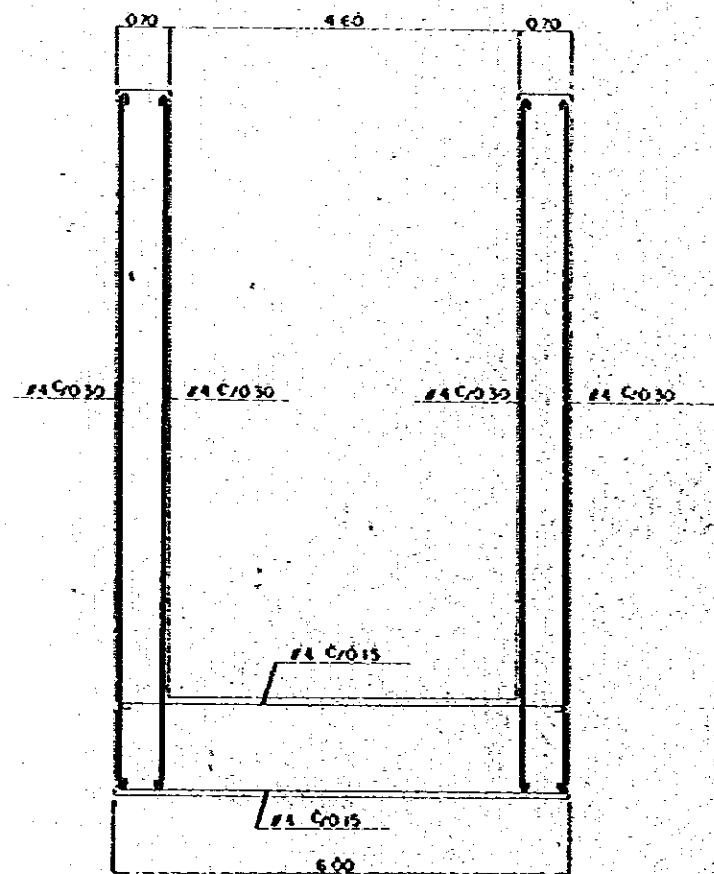
FOUNDATION PLAN S=1:100

EMPRESA NACIONAL DE FERROCARRILES		
RAILWAY RECONSTRUCTION PROJECT (UPPER-BRIDGE)		
355#4208# BRIDGE		
GENERAL VIEW		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	67

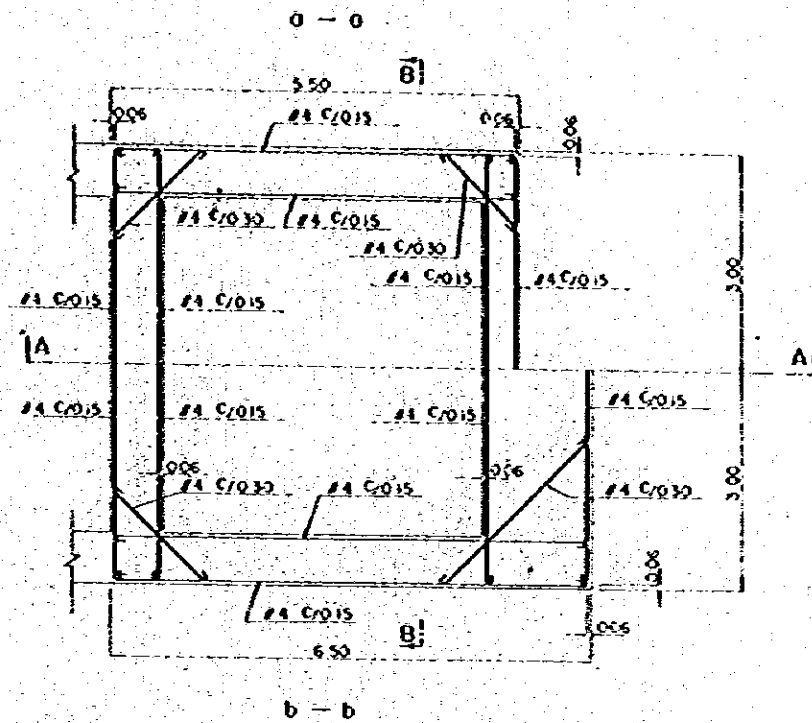




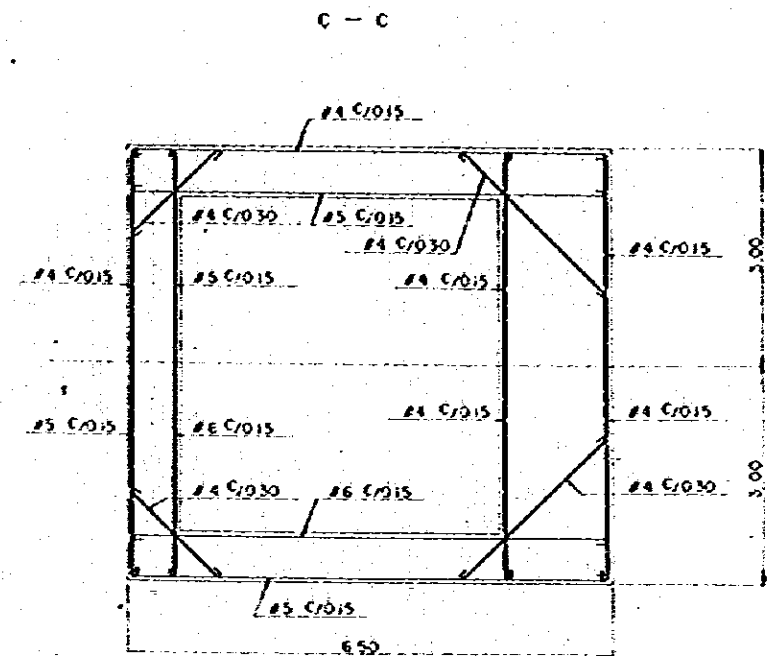
A - A



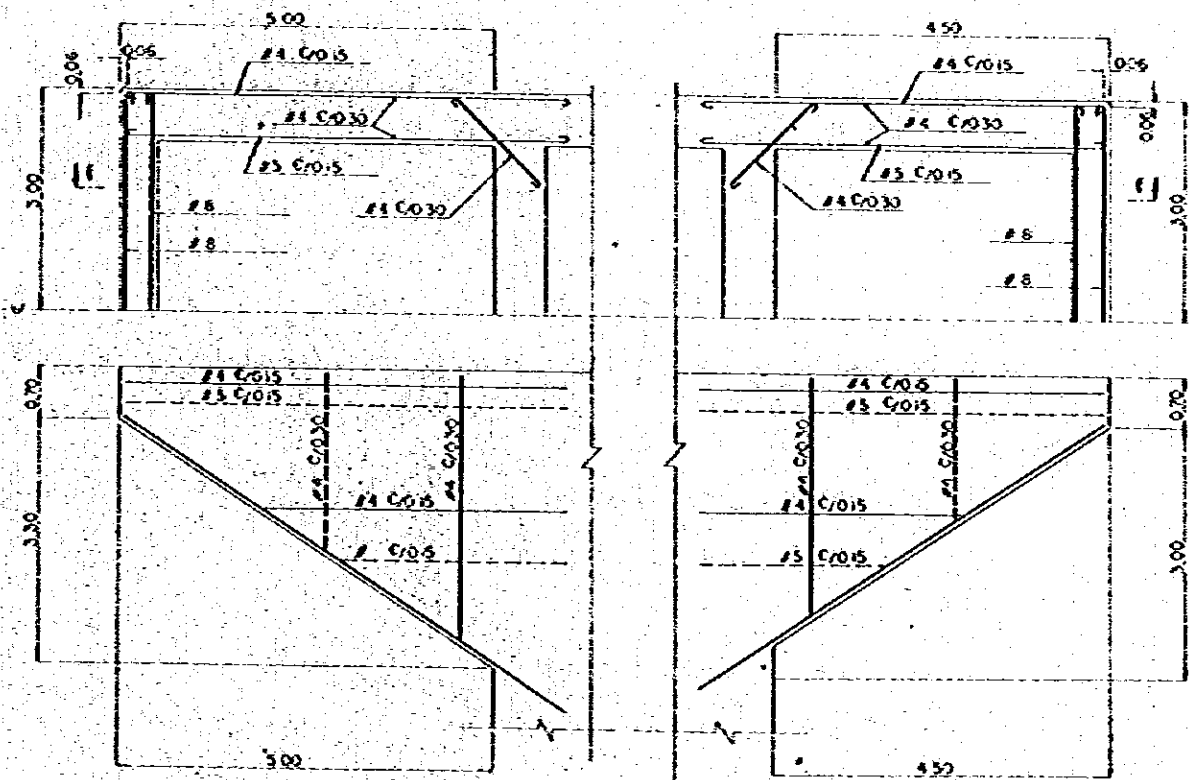
B - B



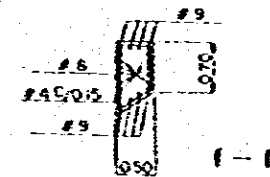
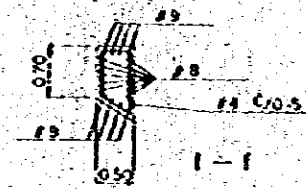
b - b



d - d



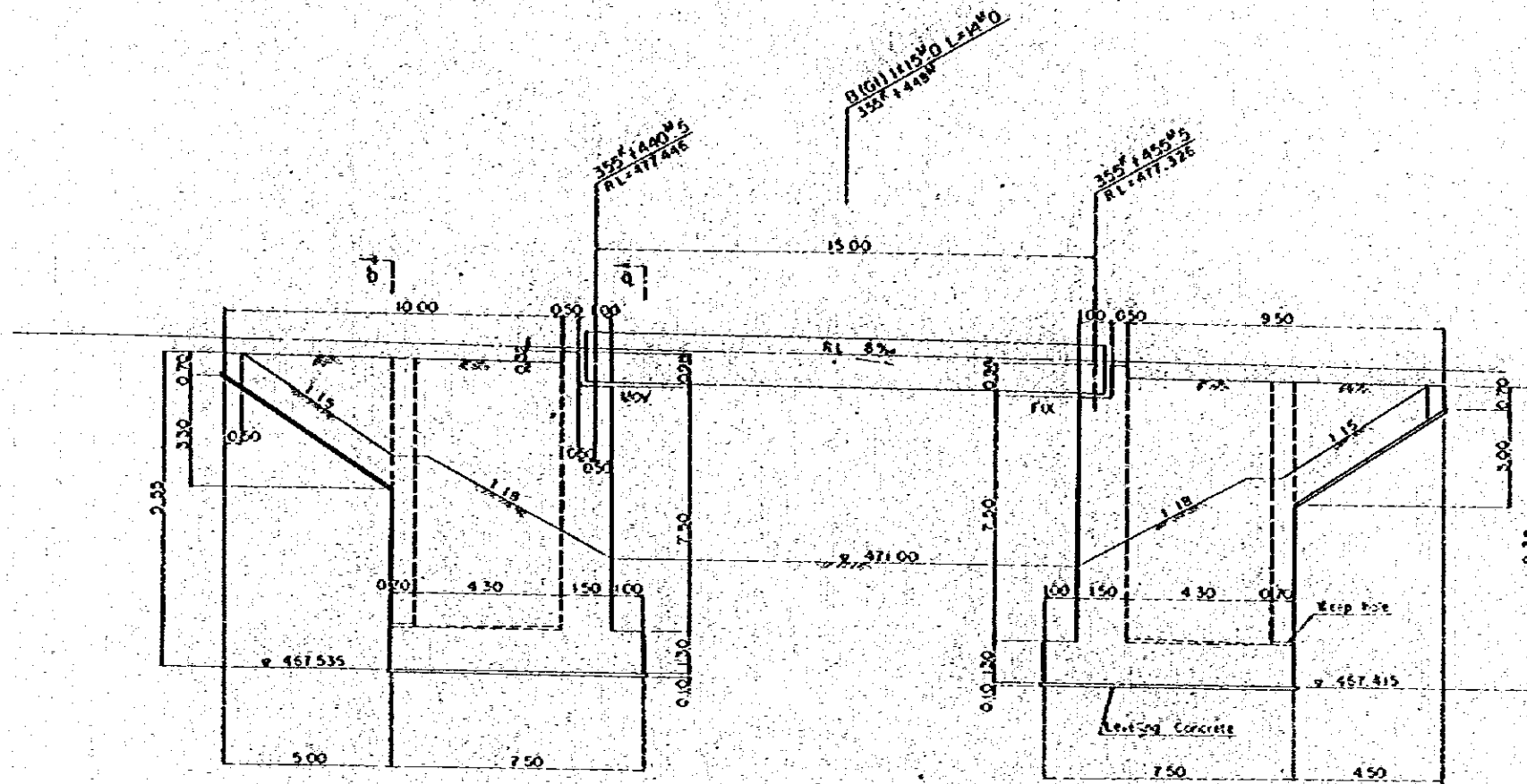
WING



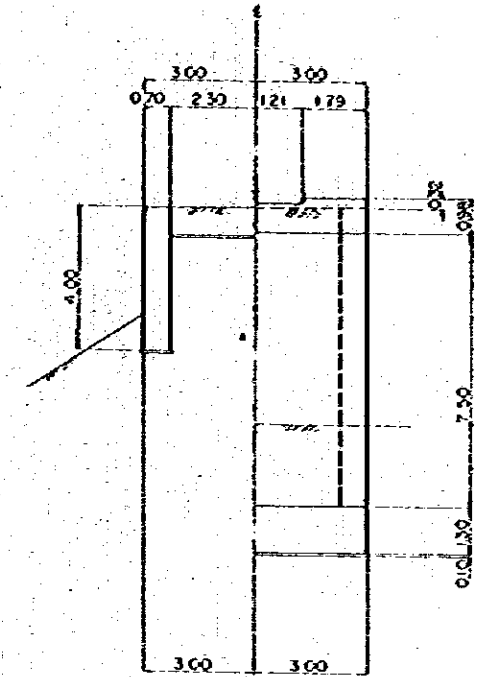
- NOTES
1. COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS
  2. REINFORCING STEEL BAR ASTM A615 GRADE 60 OR A615 GRADE 65 OR A617 GRADE 60

S = 1:50

EMPRESA NACIONAL DE FERROCARRILES		
RAILWAY RECONSTRUCTION PROJECT (1945-1960)		
355' x 1208' BRIDGE		
BAR ARRANGEMENT		
Executing Enterprise		
Drawn by Eyle	Checked by Eyle	Accepted by Eyle
Contracting Enterprise		
Checked by Eyle	Accepted by Eyle	No. 68

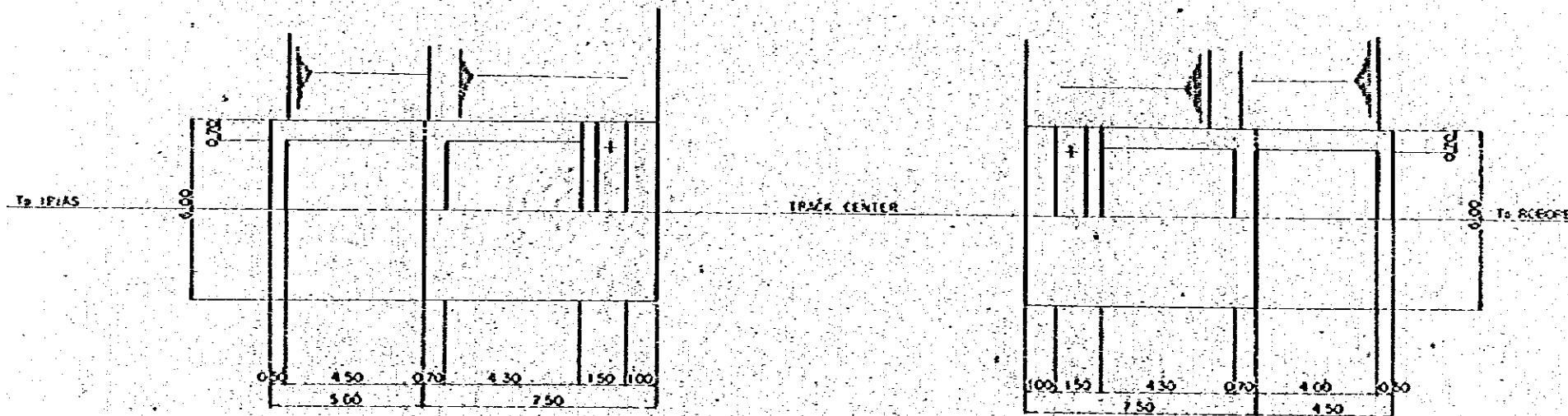


SIDE VIEW S=1:100



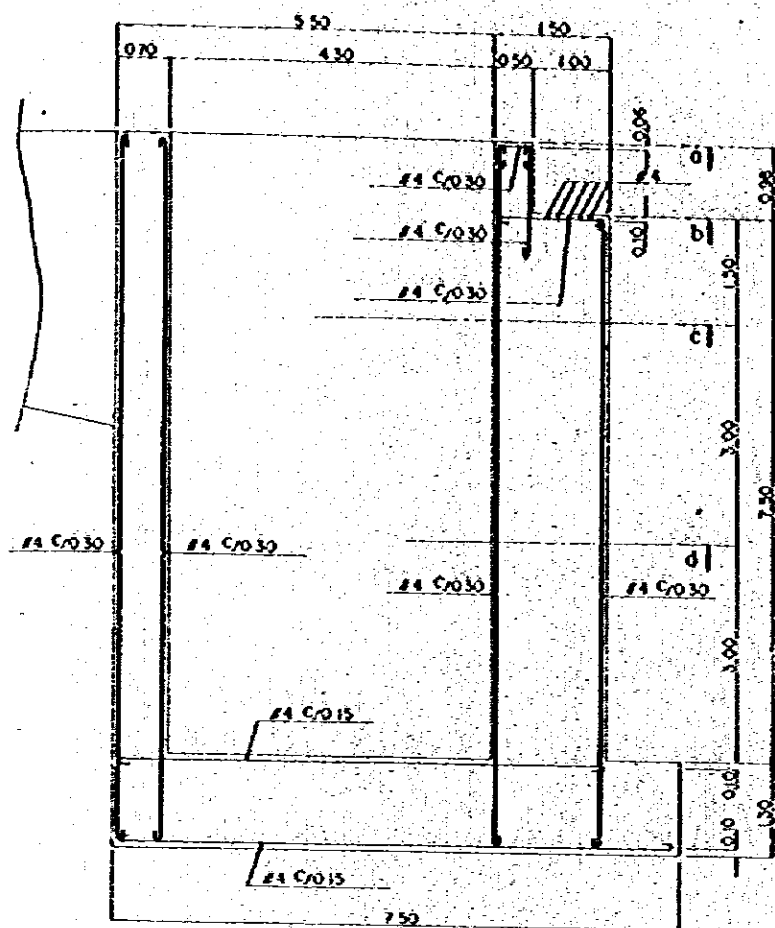
b-b a-a  
SECTION S=1:100

PLAN S=1:100

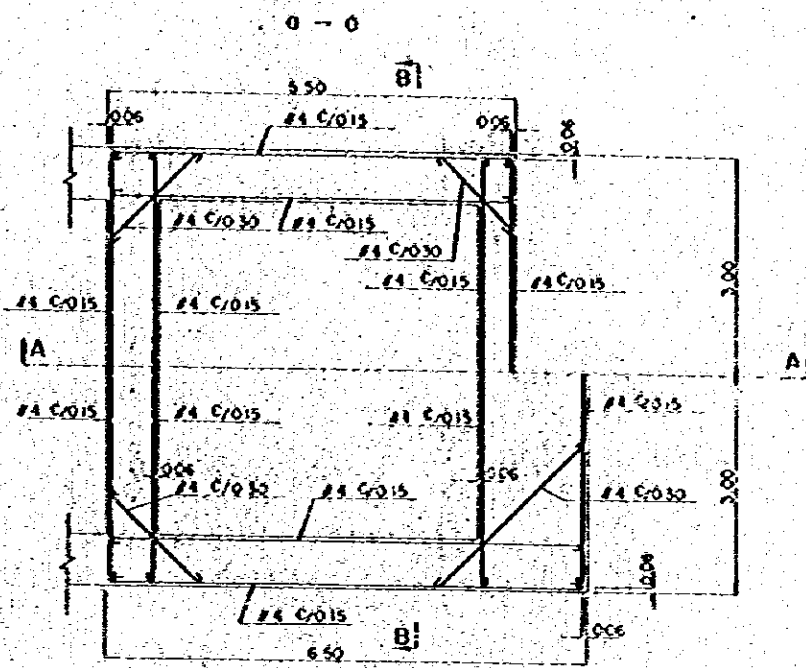


FOUNDATION PLAN S=1:100

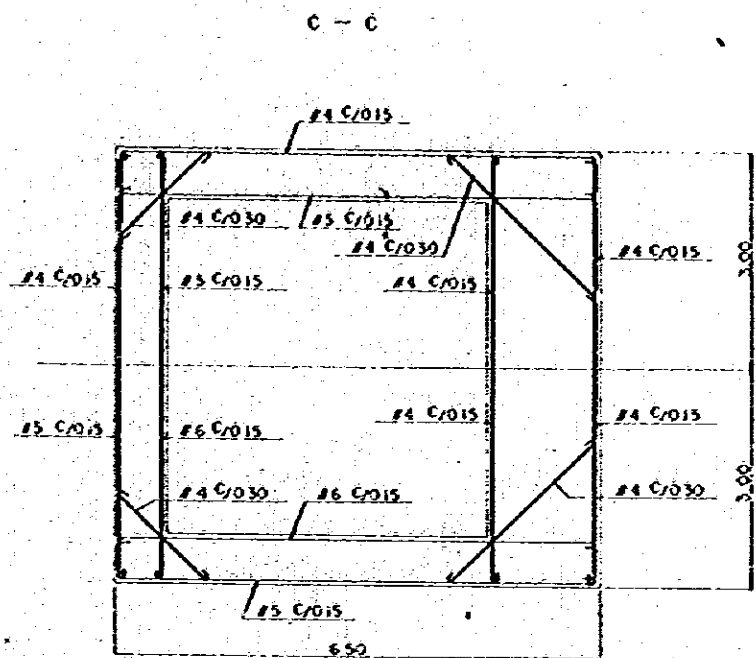
EMPRESA NACIONAL DE FERROCARRILES		
RAILWAY REHABILITATION PROJECT (IPIAS PROJECT)		
355+448 <sup>M</sup> BRIDGE		
GENERAL VIEW		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	69



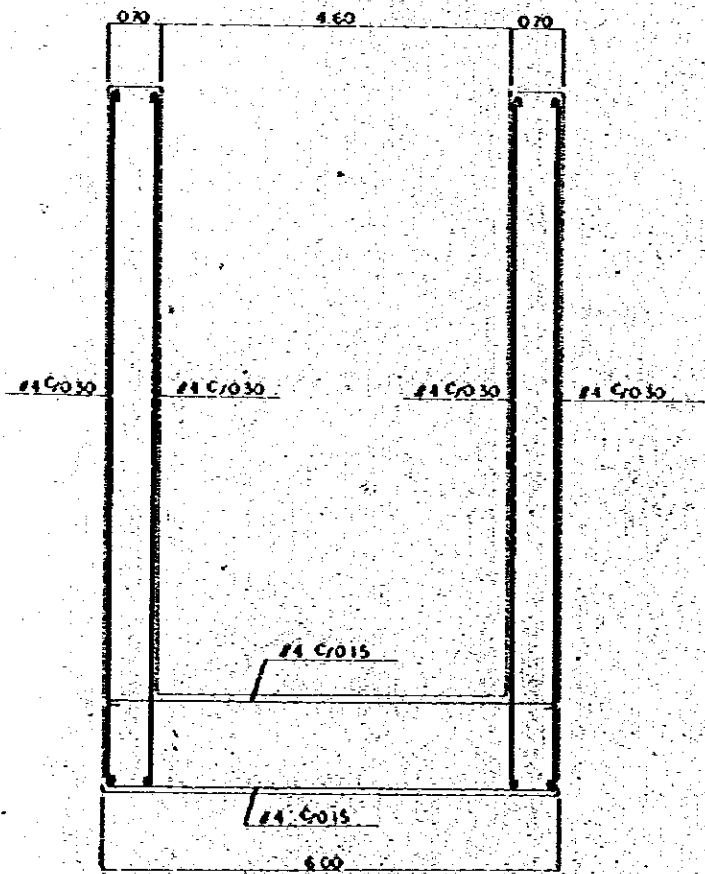
A - A



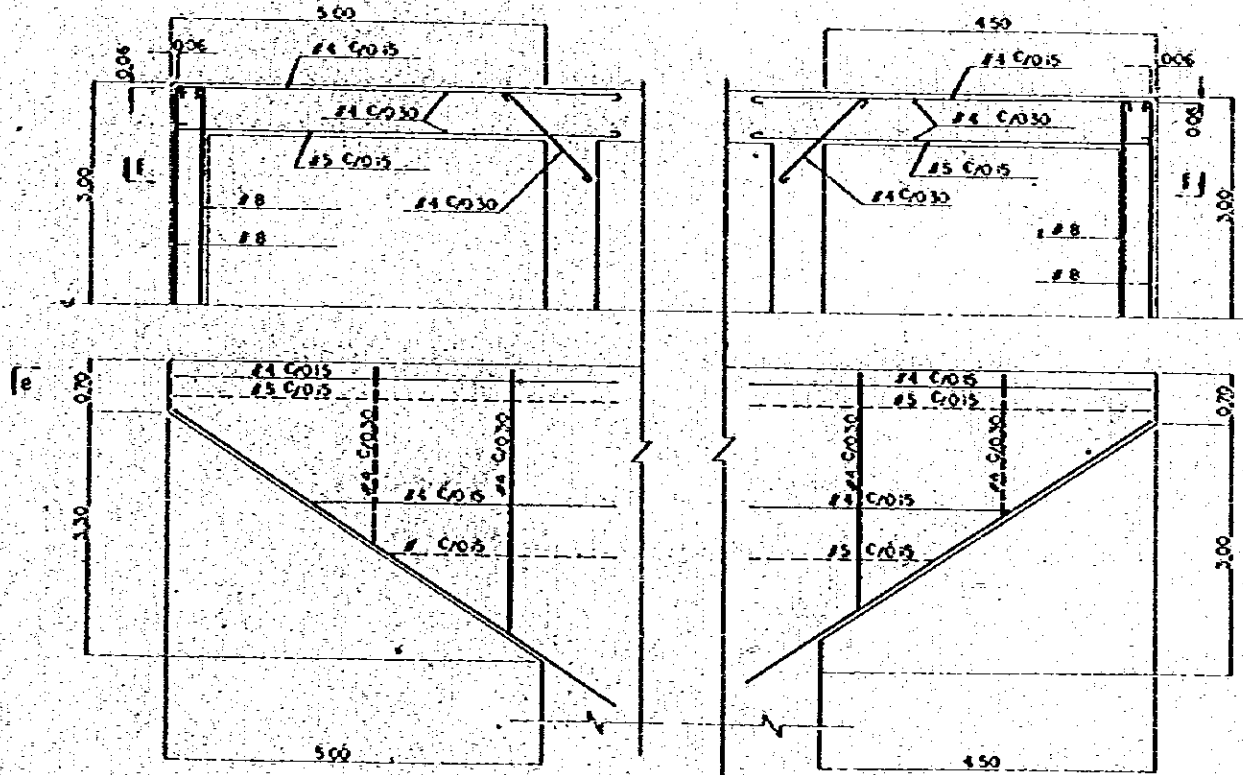
b - b



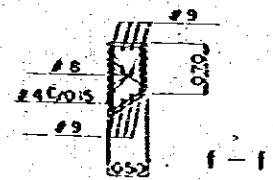
d - d



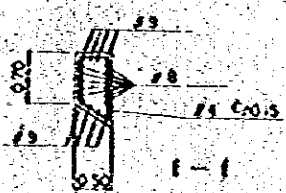
B - B



WING



f - f

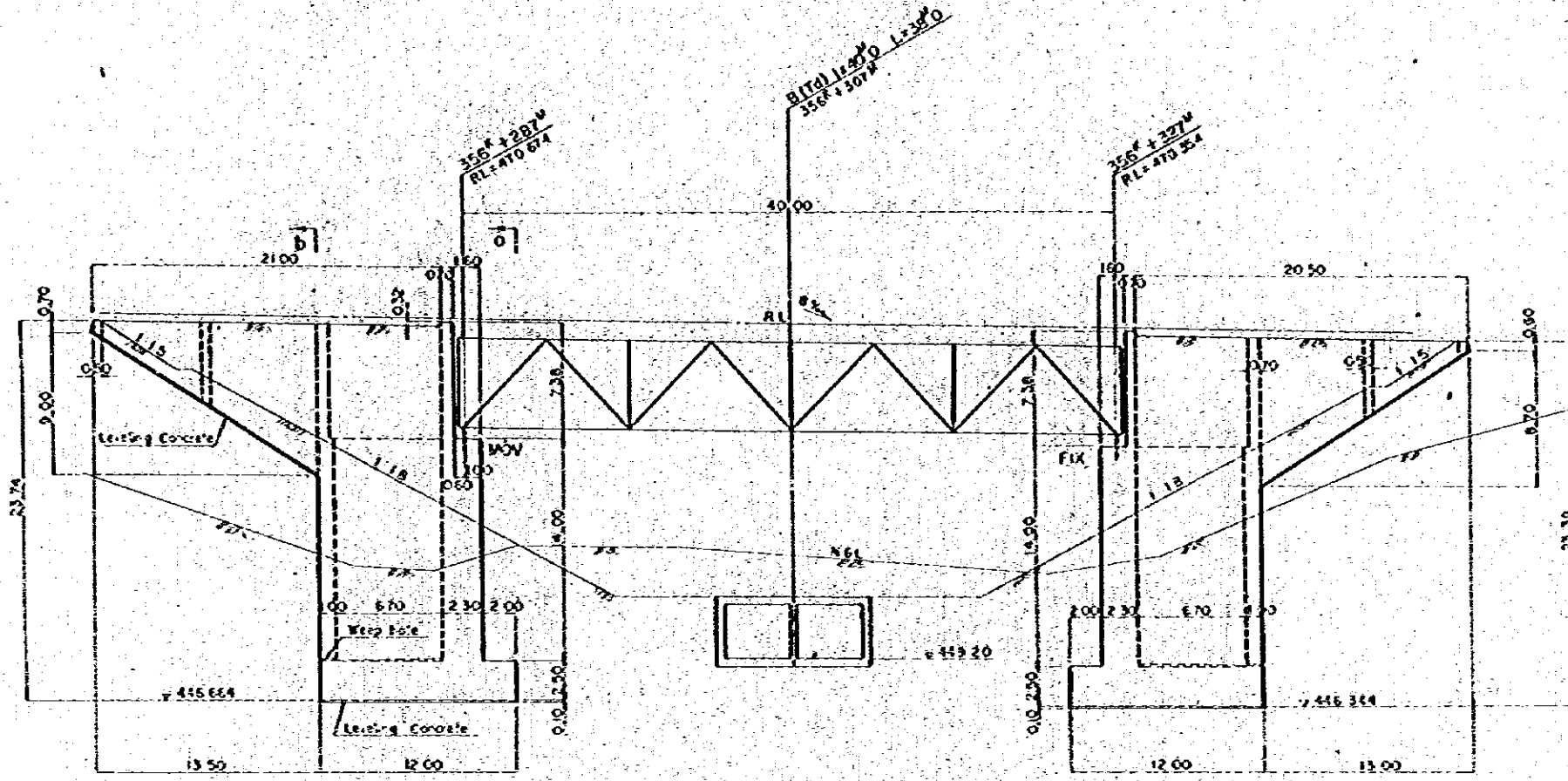


f - f

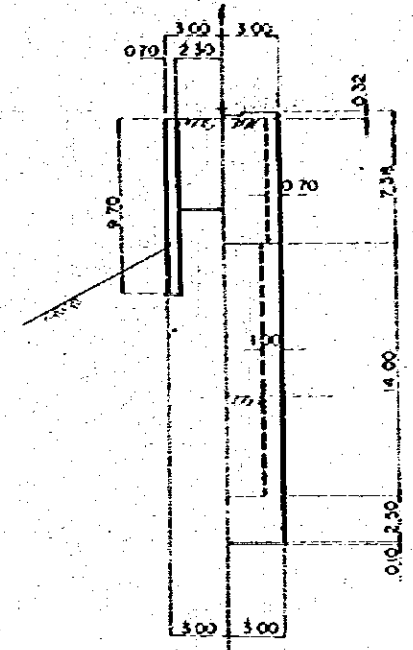
- NOTES
- 1 COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS
  - 2 REINFORCING STEEL BAR ASTM #65 GRADE 60 OR #66 GRADE 60 OR #67 GRADE 60

S=1.50

EMPRESA NACIONAL DE FERROCARRILES		
RAILWAY REHABILITATION PROJECT (LIMAS-BOGOTA)		
355# 448 <sup>M</sup> BRIDGE		
BAR ARRANGEMENT		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	70

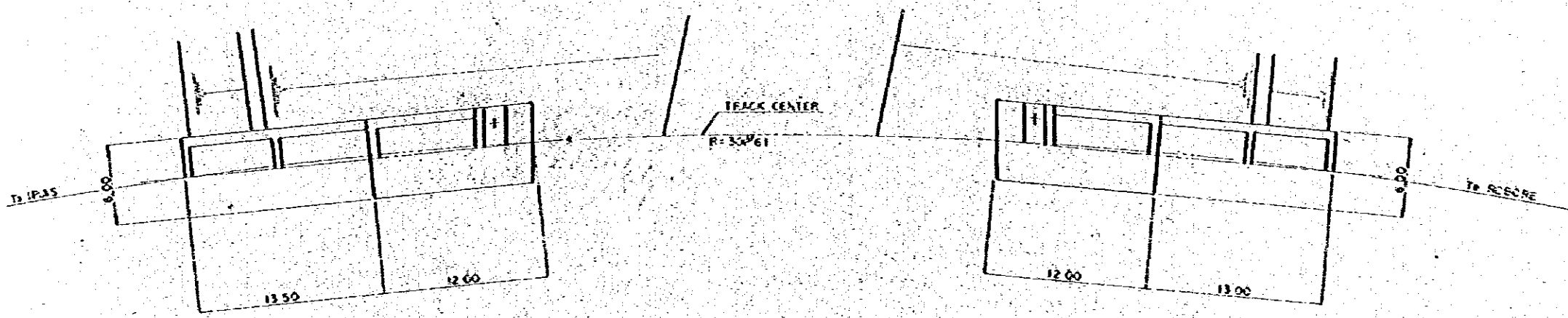


SIDE VIEW S=1:200



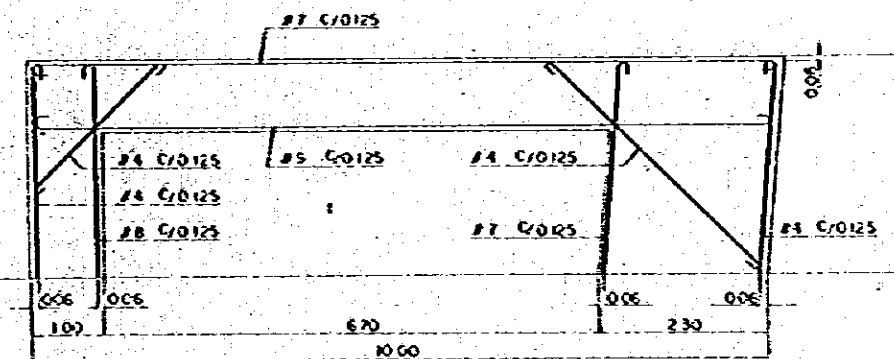
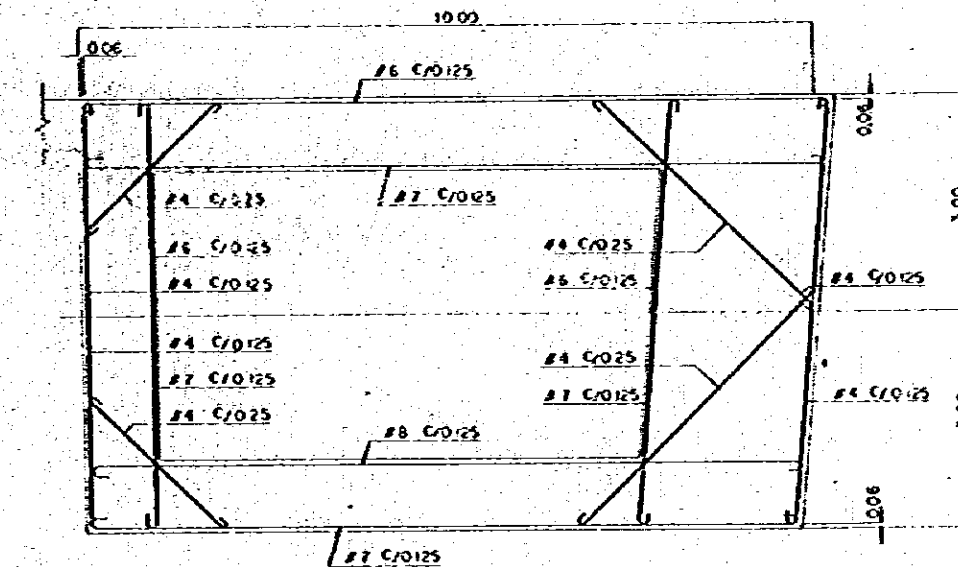
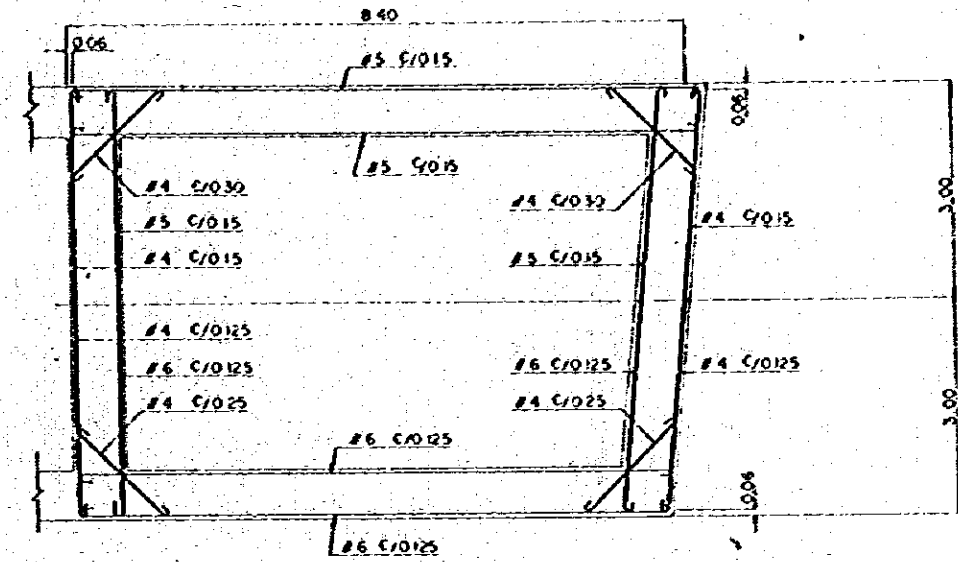
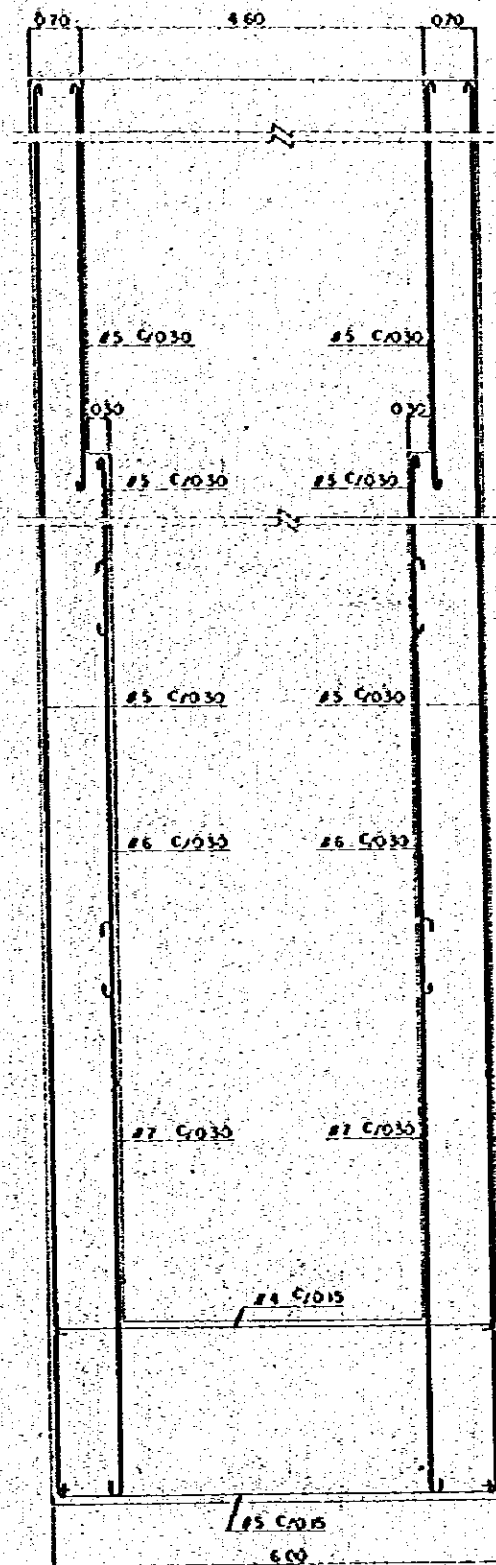
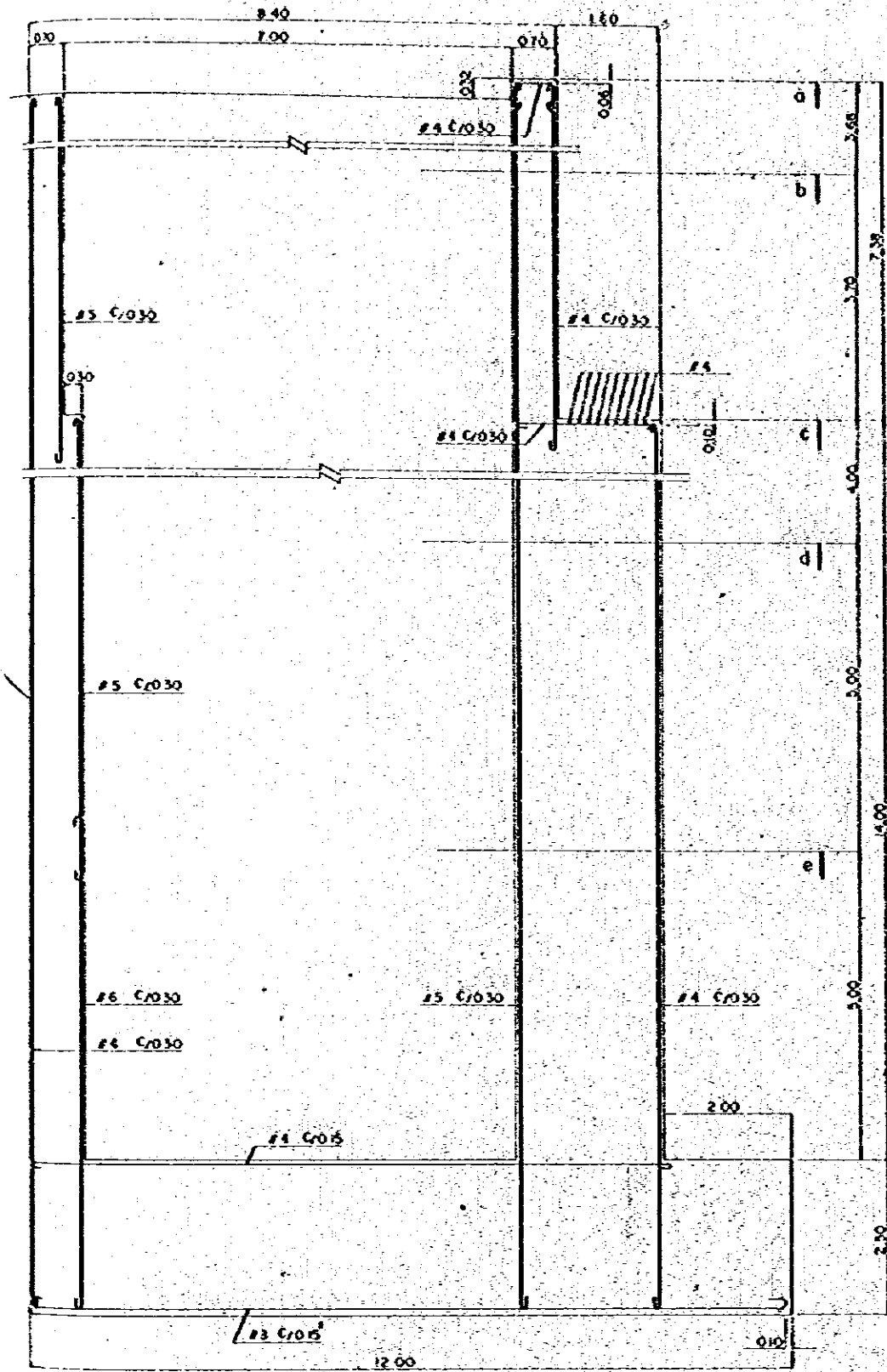
b-b o-o  
SECTION S=1:200

PLAN S=1:200



FOUNDATION PLAN S=1:200

EMPRESA NACIONAL DE FERROCARRILES		
RAILWAY REHABILITATION PROJECT (LIPAS BOSCH)		
356+307M BRIDGE		
GENERAL VIEW		
Executing Enterprise		
Drawn by Date	Checked by Date	Agreed by Date
Contracting Enterprise		
Checked by Date	Agreed by Date	71



NOTES  
 1. COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS  
 IN STRUCTURAL CONCRETE  $f'_c = 20,000 \text{ psi}$   
 IN LEVELING CONCRETE  $f'_c = 10,000 \text{ psi}$   
 2. REINFORCING STEEL BAR  
 ASTM A617 GRADE 60 OR A617 GRADE 60

S-1.50

EMPRESA NACIONAL DE FERROCARRILES		
RAILWAY REPAIRATION PROJECT (IMPUS MOORE)		
355 <sup>+</sup> 307 <sup>M</sup> BRIDGE		
BAR ARRANGEMENT (Sheet 1 of 2)		
Executing Enterprise		
Drawn by Date	Checked by Date	Approved by Date
Contracting Enterprise		
Checked by Date	Approved by Date	No. 72